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Reference Guide for the ReThink Health Dynamics Simulation Model

*A Tool for Regional
Health System Transformation*

Model Version 3u*

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*This guide presents estimates and output for the model's "Anytown USA" calibration, based on data for the entire United States and scaled to represent a hypothetical city with a population exactly one-thousandth that of the US. Calibrations of the model for other localities are not presented here. Those calibrations share the same structure and equations as the Anytown model, but their parameter values may differ.

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O. PREAMBLE

This is a reference guide for the ReThink Health Dynamics model, Version 3u, providing a detailed presentation of the model in its entirety. Experienced analysts may use it to learn about the model's main structures, numerical assumptions, uncertainty ranges, information sources, equations, and baseline projections. If readers believe that other structures or other numerical assumptions are warranted, we are open to reviewing the evidence and will consider suggestions for future revision.

1. BACKGROUND AND MODEL OVERVIEW

The ReThink Health Dynamics Model (RTH) is a deterministic compartmental system dynamics (SD) simulation model for exploring alternative interventions to improve and transform health and health care at a local level—the level of a city, county, health service region, or state. SD methodology was developed in the 1950s and has been used since the 1970s to model many areas of public health and social policy—including health system reform—especially those involving complex causal pathways with intermediate variables, delays, nonlinearities, and feedback loops (Sterman 2000; Homer and Hirsch 2006; Homer et al. 2010; Homer 2012). Previous SD models of health system reform—both at the national level—include the “Complex Health Economy” model (Homer et al. 2007), as well as the “HealthBound” model developed with the Centers for Disease Control and Prevention (CDC) (Milstein et al. 2010; Milstein et al. 2011). RTH was built on the foundation of these previous models, modified and extended to address issues of a more local nature.

The RTH model has been developed under the auspices of the Fannie E. Rippel Foundation, with additional funding from the California HealthCare Foundation and other sources. Work on the model began in 2011 with pilot projects in Pueblo, CO, and Manchester, NH, and its evolution and further application to other localities continue to this day. This guide presents Version 3u of the model and its calibration to a hypothetical “Anytown”, based on data for the entire United States and scaled to represent a city with a population—starting in the year 2000 and projected through 2040—exactly one-thousandth that of the US.

An overview of the model's causal structure is presented in Figure 1. The causal arrows move from interventions (also sometimes described in the model as initiatives or programs; see green text) to intermediate variables (maroon/brown text) and key outcome metrics (red text). The diagram also includes five key exogenous trends (black text): population aging, medical price inflation, economic recession, changes in insurance eligibility, and changes in underinsurance. (Other exogenous trends in the model—see Table 4—are not included in Figure 1 for simplicity's sake.) Overall, the model describes changes in health

risks, health status and acute episodes, quality and utilization of care, primary care capacity, health care costs, provider income, impacts of health on economic productivity, and the funding of interventions. Much of the model flows forward causally from risk to health to utilization to cost, with utilization also affected by primary care capacity and insurance coverage. But there are also numerous feedback influences complicating the picture. For example: rising health care costs feed back to adversely affect insurance coverage (via employers dropping coverage for some employees) and disadvantage (via personal indebtedness); and chronic illness feeds back to adversely affect disadvantage (via disability).

The model is highly detailed beyond what is seen in Figure 1, and much of this detail is described in Tables 1 to 4 and Figures 2 to 52. The full code of the model is presented below in the Vensim™ Equation Listing. The model includes about 1,000 constants, 38 exogenous trends, 12 X-Y lookup functions, 12 base run output series for ROI calculations, and 4,400 calculated output elements. It also includes 27 data time series (see the last few pages of code) against which model output may be compared for validation purposes, including historical data (2000-2010) and projections (through 2040) from the Census, and historical data from Vital Statistics, National Health Expenditure Accounts (NHE), and the American Hospital Association's Annual Survey of Hospitals (AHA/ASH).

Table 1 presents definitions and calibration data sources for the model's metrics in the areas of population, health care resources, utilization, and costs. The population is divided into 10 segments based on age (youth, working age, senior), health insurance coverage (yes or no; all seniors are assumed covered by Medicare at a minimum), and income or social class (advantaged or disadvantaged). Most of the model's population, utilization, and cost variables are broken out by these 10 segments, but also rolled up for reporting as aggregate totals or weighted averages.

Table 2 defines the model's 23 interventions, describes the options that exist in the model for specifying population targeting or other customization of the interventions, describes the direct impacts of the interventions as modeled, and describes how program cost is calculated for each intervention.

Table 3 presents the constants associated with each intervention determining its effect sizes (impact ratios or multipliers), impact time delay (if relevant), unit cost, and obsolescence rate (if relevant). Each constant is presented with a baseline or default value, and a range of minimum to maximum useful for sensitivity testing. Some of the interventions directly provide services to a portion of the population (with per-capita unit cost), while others address physicians or hospitals (with per-physician or per-100 beds unit cost). Some of the interventions have costs that are perennial, while others (more often the provider ones) require an initial large investment followed by maintenance to offset obsolescence of

Table 1. Output Variable Definitions and Data Sources

Variable	Definition	Data Sources and Years Covered (for Model Calibration)
Population – 10 segments <i>(1) Youth-Insured-Advantaged; (2) Youth-Insured-Disadvantaged; (3) Youth-Uninsured-Advantaged; (4) Youth-Uninsured-Disadvantaged; (5) Working Age-Insured-Advantaged; (6) Working Age-Insured-Disadvantaged; (7) Working Age-Uninsured-Advantaged; (8) Working Age-Uninsured-Disadvantaged; (9) Senior-Advantaged; (10) Senior-Disadvantaged</i>		
Age category	Youth: age 0-17; Working Age: age 18-64; Senior: age 65+	Census and ACS estimates of all ten segments for 2000 and 2010
Insurance category	Insured, Uninsured	
Socioeconomic status category	Advantaged: household income 200%+ of federal poverty level; Disadvantaged: less than 200%	Census projections by age group for 2020, 2030, and 2040
Chronic physical illness, none, mild, severe	None – self/parent reported health status = very good or excellent Mild – good Severe – poor or fair	NSCH youth estimates for 2007 BRFSS adult estimates for 2010
Fractions of population groups in each CPI category with chronic mental illness	Youth: Yes responses to “Does child have any kind of emotional, developmental, or behavioral problem for which [he/she] needs treatment or counseling?” Uncontrolled=subset of yes responses that are also yes response to NSCH question: “Do [S.C.]’s medical, behavioral, or other health conditions interfere with [his/her] ability to attend school on a regular basis?” Adults: national or state data from BRFSS. Chronic mental illness=at least 6 mentally unhealthy days. BRFSS question used to establish the number of mentally unhealthy days: “Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?” 6-13 days=CMI controlled 14+ days=CMI uncontrolled	NSCH youth estimates for 2007 BRFSS adult estimates for 2010
Fractions of population groups at high behavioral health risk	Youth: start with NSCH data for the total group: “Overweight OR obese OR no physical activity OR smoker in the house; consider additional criterion from High School Senior Survey for “use any illegal drug past month” and add to fraction at behavioral risk in same manner as adults. Adults: obese OR no physical activity OR current smoker OR binge drinking 2+ times per month; consider additional criterion: Nat’l Household Survey on Drug Abuse question for “use any illegal drug past month”.	NSCH youth estimates for 2007 NHANES adult estimates for 2009-10 (pooled)

Variable	Definition	Data Sources and Years Covered (for Model Calibration)
Fractions of population groups at high behavioral health risk engaged in substance abuse	Substance abuse equates to any use of cocaine, heroin, marijuana, or methamphetamine within the last month.	Monitoring the Future (High School Senior Survey) youth estimates for 2010 NHANES adult estimates for 2009-10 (pooled)
Fractions of disadvantaged and advantaged population groups living in high crime areas	Bureau of Justice Statistics National Crime Victimization Survey's rate-per-1,000 of violent victimization, divided by 100 (e.g., a rate of 30 is converted to a fraction of 0.30.)	BJS/NCVS annual 2000-2014. Community-wide victimization rates of 50 to 100 were seen in some places in the 1980s and 1990s. But rates have fallen during the 2000s, most strongly for the Advantaged but also for the Disadvantaged.
Fractions of disadvantaged and advantaged population groups with high environmental toxin exposures	Combines 4 metrics: 2 for area exceeding standards for air pollution (PM 2.5, Ozone; 26+ days of year), 1 for area with any health-related water standard violation, and 1 for households with inadequate plumbing (for drinking, bathing, or toilet).	PM 2.5 and Ozone from Air Quality System (EPA/AQS), annual 2000-13. Water from EPA's Safe Drinking Water Information System (EPA/SDWIS), annual 2006-13, and before that from EPA's "Providing Safe Drinking Water" state-level report. Inadequate plumbing from American Housing Survey (AHS), annual 2000-05 and odd-numbered years after that.
Health Care Resources		
Office-based providers (physicians and autonomous midlevels)	All measured in full-time equivalents (FTEs). Primary care providers (PCPs) include GPs, FPs, internists, and pediatricians. "FQHC PCPs" include both physicians (MD, DO) and midlevels (physician assistants and nurse practitioners) who conduct visits autonomously, and adjusting for the slightly lower visit capacity of midlevels. "General PCPs" include all non-FQHC office-based PCP physicians. "Specialists" include all office-based physicians who are not PCPs.	AMA/PCDUS estimates physicians by type (PCPs and specialists) for 2000 and annually for 2005-2009. CDC/VHS 2007 does the same for 2003-2004. Also used: NAMCS 2009 and AHRQ/Hcup 2010. Kaiser Family Foundation 2010 provides an estimate of FQHC PCPs, including midlevels and estimates of their visit capacity relative to that of physicians.
Inpatient hospital beds and occupancy rate	Staffed beds in non-federal acute care hospitals and the average fraction of those beds occupied.	AHA/ASH for 2000, 2005, 2007, 2008, and 2009.
Health Care Utilization (all calculated by population segment)		
Visits to provider offices	Visits per year broken out in the model by visit type (preventive/chronic vs. acute episode), by provider type (general PCP, FQHC PCP, specialist).	NAMCS 2010.
Visits to free-standing labs, diagnostic centers, and surgicenters	Visits per year, with these three categories taken together in the model (without differentiation) as "visits to non-hospital facility for test or procedure".	NSAS 2006.
Hospital outpatient department (OPD) visits	Visits per year, broken out by preventive/well visits and tests/procedures.	NHAMCS 2009, MEPS 2009.

Variable	Definition	Data Sources and Years Covered (for Model Calibration)
Hospital emergency room (ER) visits	Visits per year, broken out by urgent and non-urgent; and urgent further broken out as first visit vs. post-discharge (within 30 days) readmission. Non-urgent visits are defined as those that are ambulatory sensitive—i.e., adequately handled by an office-based provider if available.	NHAMCS 2009, MEPS 2009. Estimation of non-urgent fraction also made possible by unpublished analyses of ER visits by Grady Memorial Hospital of Atlanta (2010) and at Catholic Medical Center of Manchester, NH (2011). From these sources we estimate that in 2007, about 14% of ER visits nationally were non-urgent.
Hospital inpatient stays	Stays per year, broken out by elective vs. those coming through the ER; and, among the latter, by first stay vs. readmission.	MEPS 2009; NHDS 2009; AHRQ/HCUP 2008.
Nursing home stays and census	Stays per year and census, broken out by skilled nursing facility (SNF) and long-term nursing home. All SNF stays assumed to follow acute-care hospital discharge.	NNHS 2004; HRSA/ARF 2001; NHDS 2009.
Home health and hospice visits and census	Stays per year and census. Some home health follows acute-care hospital discharge, but some comes directly to home health without prior hospitalization.	NHHCS 2007; NHDS 2009.
Provider Finances and Health Care Costs		
Net income per PCP and per specialist	Average annual revenue less overhead expenses.	Tu and Ginsburg 2006; Bodenheimer et al 2007; MGMA 2012. Also, average revenue per office visit (PCP, specialist) from MEPS 2009.
Hospital profit margin	Average profit margin for acute-care hospitals based on patient revenue and operating costs.	AHA/ASH annual 2000-2010. Also, average revenue per hospital visit (OPD, ER, inpatient) from MEPS 2009.
Health care costs by category	Model accounts for all NHE "Personal Health Care" costs, in nominal dollars per year, broken out by category: hospital (facility) costs, physician and lab services, dental services, other professional services, nursing care, home health and hospice care, retail sales of prescription drugs, and retail sales of other medical products.	NHE annual 2000-2010. Also, average revenue per nursing home stay from MEPS 2009, and per home health case from MEPS 2009 and NHHCS 2007.
Employee Productivity		
Value of employee productivity and of lost productivity	The sum of the two metrics is total employee income, in nominal dollars per year. Lost productivity represents about 5% of employee income, with losses coming from absenteeism and presenteeism.	Census 2008-2010; Stewart et al. 2003; NFCMH 2003. Stewart et al. estimates productivity losses for those with and without depression. NFCMH estimates productivity losses from mental illness generally.
Health-Related Quality of Life Measures		
Quality of Life (QOL), Quality-adjusted life years (QALYs), and Healthy Days	These are well-established metrics for assessing population health. The model simulates and sums them across the entire population. A person in perfect health has a QOL of 1 (thus, 1 QALY per year), and 30 Healthy Days per month.	Jia and Lubetkin 2008; Homer 2015a. QOL is assessed using the EQ-5D questionnaire and is reported by the Medical Expenditure Panel Survey. Healthy Days are assessed as part of the Behavioral Risk Factor Surveillance System. The two metrics are well correlated, as shown by Jia and Lubetkin (2000-02 data); they present tables allowing conversion from one metric to the other.

Table 2. Intervention Options and their Consequences as Modeled

Intervention	Description	Consequences as Modeled
Enable healthier behaviors	<p>Promote healthy behavior and help people to stop behaviors that can lead to chronic physical illness—smoking, poor diet, inadequate exercise, alcohol and drug abuse, unprotected sex, etc.</p> <p>One may choose, for budgetary or equity purposes, to focus this intervention on the disadvantaged only; one may also choose to focus on youth only, working age only, or seniors only.</p>	<p>Reduces onset of mild and severe chronic physical illness, the likelihood of urgent events (e.g., heart attacks from cigarette smoke), as well as the onset of mental illness associated with drug abuse. Also reduces the need for medications for lifestyle-related disorders including asymptomatic hypertension and high cholesterol.</p> <p>Program cost is per capita per year for the high risk behavior population.</p>
Reduce environmental hazards	<p>Reduce the fraction of people with significant exposure to environmental hazards and pollutants in their homes, neighborhoods, or workplaces.</p> <p>One may choose, for budgetary or equity purposes, to focus this intervention on the disadvantaged only.</p>	<p>Reduces onset of mild and severe chronic physical illness (e.g., cardiovascular disease, asthma, cancer, chronic lead poisoning), and the likelihood of injuries (e.g., due to fire, falls, drowning, heat stroke) and other urgent events (e.g., heart or respiratory attacks triggered by air pollution) requiring an ER visit.</p> <p>Program cost is per capita per year for the population in hazardous surroundings.</p>
Reduce crime	<p>Reduce the fraction of people who live and work in high crime areas.</p> <p>One may choose, for budgetary or equity purposes, to focus this intervention on the disadvantaged only.</p>	<p>Reduces the likelihood of injuries requiring an ER visit, and also helps to discourage unhealthy behaviors (physical inactivity, drug abuse, unprotected sex) and encourage healthy ones.</p> <p>Program cost is per capita per year for the population in high crime areas.</p>
Create student pathways to advantage	<p>Provide programs for disadvantaged high school and college students to improve graduation and matriculation rates. Greater educational attainment improves one's chances to become advantaged through higher-paying jobs.</p>	<p>The advantaged are less likely to engage in unhealthy behavior, or to live in hazardous or high-crime environments, or to develop chronic physical or mental illness, or to be uninsured, or to go to the hospital for non-urgent care; and more likely to engage in self-care and care-seeking activities.</p> <p>Program cost is per disadvantaged young person enrolled in the program.</p>
Create family pathways to advantage	<p>Institute policies and programs (for example, living wage policies, tax credits and subsidies, and housing vouchers) to improve economic prospects so that some disadvantaged families—those earning below twice the federal poverty level—may become advantaged.</p>	<p>Same consequences as student pathways.</p> <p>Program cost is per capita per year for the disadvantaged population.</p>

Intervention	Description	Consequences as Modeled
<p>Improve routine preventive & chronic physical illness care</p>	<p>Improve physician compliance with all recommended guidelines for preventive and chronic physical illness care. Preventive care includes screening, immunization, lifestyle counseling, and referral to behavioral and mental health counselors as needed. Implementation may require investment in reminder systems and related training.</p>	<p>Reduces death rates and the frequency of acute and urgent episodes among patients with chronic physical illness, and rates of onset of mild and severe chronic physical illness; and increases rates of behavioral reform and mental illness control. These benefits are attained at the cost of additional physician visits and increased use of medications.</p> <p>Program cost is per office-based provider per year.</p>
<p>Improve care for chronic mental illness</p>	<p>Help the mentally ill better control their symptoms and live more positively and productively.</p> <p>One may choose, for budgetary or equity purposes, to focus this intervention on the disadvantaged only.</p>	<p>Reduces urgent psychological visits to the ER, and unhealthy behaviors; and improves routine physical care-seeking and self-care. These benefits are attained at the cost of increased use of medications and additional visits to mental health care professionals.</p> <p>Program cost is per capita per year for the previously uncontrolled population.</p>
<p>Support self-care</p>	<p>Help people who currently have problems with adherence to get regular preventive and chronic care and to follow physician advice for use of medications and other self-care. This may involve reminder systems as well as transportation and other support services for those who need them.</p> <p>One may choose, for budgetary purposes, to focus this intervention on the disadvantaged only.</p>	<p>Improves the extent and effectiveness of preventive and chronic physical illness care (with effects as described in the option above), and also reduces the likelihood of hospital readmission.</p> <p>Program cost is per capita per year for the previously non-adherent population.</p>
<p>Prevent hospital-acquired infections (HAI)</p>	<p>Implement procedural changes in hospitals to reduce the fraction of inpatients that develop an HAI.</p>	<p>A lower HAI rate means fewer deaths and fewer extended lengths of stay for inpatients. Although most insurers today reimburse for the additional costs of an HAI, the trend is toward reduced or non-reimbursement. Thus, in the near future, a lower HAI rate will improve a hospital's profit margin.</p> <p>Program cost is an initial investment per 100 beds, then subsequent rate of maintenance per year.</p>
<p>Redesign primary care practices for efficiency</p>	<p>Increase the fraction of PCPs whose practices or clinics are streamlined to run as efficiently as possible. This is sometimes referred to as idealized design of clinical office practices (IDCOP). The IDCOP approach comprises a number of techniques for appointment scheduling, staff utilization, and use of information technology.</p> <p>One may choose, for budgetary purposes, to focus this intervention on FQHC PCPs only.</p>	<p>Practice redesign helps PCPs better accommodate demand.</p> <p>Program cost is an per PCP per year.</p>

Intervention	Description	Consequences as Modeled
Recruit primary care providers for general (non-FQHC) offices and clinics	Recruit more general PCPs serving the non-poor (both insured and self-paying) and/or the insured poor (Medicaid). Some tactics include first-year income guarantees and local PCP residency programs.	<p>An expanded supply of general PCPs can better accommodate demand from the non-poor and from the insured poor.</p> <p>Program cost is per additional PCP arriving to the community due to the program.</p>
Recruit primary care providers for FQHC clinics	Recruit more PCPs serving the poor (both insured and uninsured) in Federally Qualified Health Center clinics.	<p>An expanded supply of FQHC providers can better accommodate demand from the insured poor and from the uninsured poor.</p> <p>Program cost is per additional PCP arriving to the community due to the program.</p>
Improve hospital efficiency	Make process improvements that reduce the average length of stay for inpatients.	<p>Allows for a reduction in beds for a given volume of inpatients, and thus reduces operating costs and improves hospital profit margin.</p> <p>Program cost is an initial investment per 100 beds, then subsequent rate of maintenance per year.</p>
Offer pre-visit consultation for non-urgent episodes	Establish telephone call centers, staffed by trained triage nurses with software support, to advise callers on whether they should seek medical care for their non-urgent episode or instead take care of themselves at home.	<p>Can reduce the number of primary visits to physicians and non-urgent visits to ERs, without affecting the quality or intensity of care for conditions that should receive medical care.</p> <p>Program cost is per capita across the entire population.</p>
Create patient-centered medical homes	Ensure that more patients go to primary care providers (PCPs), rather than specialists or hospitals, for their routine care and as their first stop for non-urgent episodic care. Medical homes need electronic medical records and perhaps decision-support systems for more effective referrals.	<p>Has the potential to reduce the cost of routine visits and non-urgent acute care, to improve patient adherence, and to reduce the number of referrals and admissions generated by non-urgent acute care. Also, decision support for PCPs should reduce their susceptibility to the allure of costly new hospital service offerings. However, more patients means more demand on PCPs, creating the possibility (unless averted through other means) of a PCP shortage for some population segments.</p> <p>Program cost is per PCP per year.</p>

Intervention	Description	Consequences as Modeled
Coordinate health care	<p>Coordinate patient care and provide coaching for patients and physicians to reduce duplicative or unnecessary referrals and admissions and to reduce medication costs. Care coordination requires sophisticated integrated information systems as well as coaching arrangements and protocols for shared decision making.</p> <p>You may also choose, for additional program cost, to include a regular process by which new, higher-priced medical technologies are assessed as they start to become popular and rejected if they do not meet cost-effectiveness criteria.</p>	<p>Reduces follow-up actions from an initial physician visit that might result in duplicative or unnecessary services—referrals to specialists, ambulatory tests and procedures, hospital admissions—without adversely affecting health outcomes. Also reduces ongoing medication costs by rationalizing use of prescription drugs.</p> <p>Program cost is per office-based provider per year.</p>
Reform medical malpractice	<p>Institute effective tort limits or a fairer adjudication process so that fewer lawsuits go forward and, as a result, doctors see less need to engage in purely defensive practices that do not benefit patients.</p>	<p>Reduces referrals to specialists, ambulatory tests and procedures, hospital admissions, and use of high-priced medications—without adversely affecting health outcomes.</p> <p>Program cost is per office-based provider per year.</p>
Improve post-discharge care	<p>Reduce the risk of hospital readmissions through improved discharge practices, including medication reconciliation and more referral to home health care and skilled nursing facilities for rehabilitation.</p>	<p>Reduces hospital utilization and costs, but increases utilization and costs of home health care and nursing facilities.</p> <p>Program cost is an initial investment per 100 beds, then subsequent rate of maintenance per year.</p>
Expand the use of reduced-intensity end-of-life care	<p>Increase the fraction of end-of-life patients using hospice services or hospital-based palliative care, both of which reduce the intensity of care.</p>	<p>Reduces health care costs</p> <p>Program cost is per capita per year across the entire population.</p>
Expand the use of value-based payments	<p>Value-based payment establishes basic care standards and rewards certain activities that improve quality or efficiency of care.</p> <p>You may expand the fraction of the insured population under value-based payment (a single time series) beyond its default values.</p>	<p>Value-based payment improves effort on the following provider-driven activities: Preventive and chronic care quality, Care coordination, Medical home, Self-care support, PCP practice redesign, and Post-discharge care quality.</p> <p>There is no program cost to expanding VBP.</p>
Expand the use of global payments	<p>Global payment for physicians typically entails a fixed salary with no fee-for-service extras or bonuses. Global payment for hospitals entails an insurance plan paying a capitated amount per insured population, with no fee-for-service extras.</p> <p>You may expand the fractions of PCPs, specialists, and hospital patients subject to global payment (three time series) beyond their default values.</p>	<p>Global payment suppresses the “pushback” responses of specialists to loss of income. It also mitigates, for some number of years, the loss of income for specialists and hospitals that would accompany implementation of care coordination and other initiatives that reduce healthcare utilization.</p> <p>There is no program cost to expanding global payments.</p>

Intervention	Description	Consequences as Modeled
Obtain catalytic funds for funding initiatives	<p>Most of the initiatives listed above require funding. Six sources of catalytic funds may be specified: (1) grants and assistance, (2) loans, (3) a tax on commercial healthcare costs; (4) a tax per employee; (5) a consumption tax on sweet beverages; and (6) a consumption tax on cigarettes. The first two of these are specified by time series, while a tax starts at a given time and is specified by an appropriate rate constant.</p> <p>For each of the six catalytic fund types, one may specify fractions of the funds restricted for “upstream” initiatives, restricted for “downstream” initiatives, or unrestricted.</p>	<p>If some of the catalytic funds are unused in one year, that remainder rolls over to the next year and may be used at any time.</p> <p>If funding is insufficient to cover all desired program spending, then the health system gains achieved due to initiatives will be limited. If the funding ceases and all funds are depleted, the gains made to date will start to erode and will eventually erode entirely.</p>
Capture and reinvest savings	<p>Capturing savings involves negotiating with payers – Commercial, Medicare, and Medicaid – an arrangement in which they calculate healthcare cost savings against appropriate benchmarks and then return to the community some fraction of those savings. These savings may be used to fund the initiatives listed above, or to share with providers or employers.</p> <p>For each of the three payer types, one may specify fractions of the captured savings restricted for “upstream” initiatives, restricted for “downstream” initiatives, or unrestricted.</p>	<p>It is assumed that the negotiated fraction of savings returned to the community starts at some nominal level, but may be adjusted downward if the accumulated funds become much greater than the community needs to continue paying for all selected initiatives.</p> <p>If some savings are unused in one year, that remainder rolls over to the next year. Captured savings are not segregated from catalytic funds; the two are merged as total funds available to the community.</p>

Table 3. Intervention Constants with Ranges of Uncertainty

Constant	Baseline Value	Min Value	Max Value	Sources or Rationale
Enable healthier behaviors				
Relative behavior risk onset under healthy behavior initiative	.50	.35	.65	Angell et al 2009; Brown et al 1991; CDC 2007; CDC 2009; CEBP 2013; Chaloupka et al 1996; DHHS 2000; Farkas et al. 2000; Farrelly et al 2008; Fichtenberg and Glantz 2002; Gerberding 2005; Glanz and Yaroch 2004; Glasgow et al 1997; Hingson and Sleet 2006; IOM 2007; Kahn et al 2002; Kruger et al 2007; Levi et al 2008; Longo et al 2001; McKinlay and Marceau 2000; Mokdad and Remington 2010; Moskowitz et al 2000; Powell et al 2007; Smedley and Syme 2000; Yach et al 2005; Homer et al 2010; Milstein et al 2011.
Relative behavior risk reform under healthy behavior initiative	2.5	2.0	3.0	
Per target population program cost for healthy behavior initiative (\$ per person engaged in risky behavior per year)	\$100/yr	\$30/yr	\$300/yr	
Reduce environmental hazards				
Multiplier on fraction of population in hazardous environment under hazard reduction initiative	.50	.35	.65	Brownson et al 2006; Dominici et al 2007; Northridge et al 2003; NSC 2003; Homer 2013; Milstein et al 2011.
Time for hazard reduction initiative to reduce hazard prevalence	5 yrs	3 yrs	7 yrs	
Per target population program cost for hazard reduction initiative (\$ per person in hazardous environment per year)	\$200/yr	\$60/yr	\$600/yr	
Reduce crime				
Multiplier on fraction of population in high crime area under crime fighting initiative	.50	.35	.65	CEBP 2013; NSC 2003; Milstein et al 2011.
Time for crime fighting initiative to reduce high crime prevalence	5 yrs	3 yrs	7 yrs	
Per target population program cost for crime fighting initiative (\$ per person in high crime area per year)	\$200/yr	\$60/yr	\$600/yr	
Create student pathways to advantage				
Relative disadvantaged fraction for completors of student pathways programs	.81	.70	.92	CEBP 2013. We combine costs and effects of 3 programs: Carrera Adolescent (high school completion), H&R Block (financial aid application), and Inside Track (college completion). We translate improved educational attainment to projected reductions in disadvantage based on analysis of ACS/Census 2006-10. More than 90% of the combined cost and more than 50% of the projected impact is from the Carrera program alone.
Time for student pathways initiative to reduce disadvantaged fraction	5 yrs	2 yrs	8 yrs	
Per completor program cost for student pathways initiative	\$14,000	\$3,000	\$30,000	

Create family pathways to advantage

Relative disadvantaged fraction under family pathways initiative	.825	.70	.95	CAP 2007, Giannarelli et al 2007. Latter study indicates a combination of wage-tax-voucher policies could reduce poverty about 33%; translate that to 17.5% reduction in disadvantage based on linear regression of Census data 1997-2010. Time constant reflects time for programs to be implemented throughout the community and for the recipients to make an established escape from disadvantage.
Time for family pathways initiative to reduce disadvantaged fraction	3 yrs	1 yr	5 yrs	
Per target population program cost for family pathways initiative (\$ per disadvantaged person per year)	\$1,000/yr	\$300/yr	\$3,000/yr	

Improve routine preventive and chronic physical illness care

Multiplier on prev/chron guideline non-compliance under quality initiative	.50	.35	.65	Asch et al 2006; CDC/DCEG 2002; Commonwealth Fund 2008; Donnelly et al 2008; Farley et al 2010; Ho et al 2006; IOM 2001; Jencks et al 2003; Kahn et al 2008; Kottke 2010; Larme and Pugh 2001; McGlynn et al 2003; Russell 2009; Wagner et al 1996; WHO 2002; Milstein et al 2010; Milstein et al 2011.
Time for prev/chron care to affect disease outcomes (years)	2 yrs	1.5 yrs	2.5 yrs	
Relative rate of mild CPI onset under full prev/chron care	.67	.50	.84	
Relative rate of severe CPI onset under full prev/chron care	.33	.25	.41	
Relative risky behavior reform under full prev/chron care	1.3	1.2	1.4	
Mitigation of excess risk of non-urgent acute episodes from CPI under proper chronic care	.50	.35	.65	
Mitigation of excess risk of urgent episodes from CPI under proper chronic care	.50	.35	.65	
Relative uncontrolled CMI under full physical prev/chron care	.80	.70	.90	
Time to implement prev/chron quality initiative	1 yr	0.5 yrs	3 yrs	
Per office-based physician program cost for prev/chron quality initiative (2010 \$ per full-time equivalent per year)	\$29,000 /yr	\$10,000 /yr	\$45,000 /yr	Magill et al 2015; "manage populations with outreach and registries, do care management, and enforce guidelines." Does not include pre-visit consultation, which is its own separate intervention.

Improve care for chronic mental illness

Relative uncontrolled CMI under mental illness care initiative	.50	.35	.65	NIMH 2001; Pratt et al 2007; Homer 2013.
Per target population program cost for mental illness care (2010 \$ per otherwise uncontrolled CMI person per year)	\$800/yr	\$240/yr	\$2,400/yr	Program steers people into proper care (talk therapy and medications); insurance is assumed to cover half or more of the cost, with program subsidizing the balance.

Support self-care

Fraction of patients (Insured Advan., Insured Disadv., Uninsured Advan., Uninsured Disadv.) seeking prev/chron care initially; and under self-care support initiative	.9, .7, .6, .35; .95, .9, .7, .6			O'Connor 2006; Gonzales et al 2007; Milstein et al 2010.
Fraction of patients (Insured Advan., Insured Disadv., Uninsured Advan., Uninsured Disadv.) adhering to self-care per doctor's orders initially; and under self-care support initiative	.8, .6, .8, .6; .9, .8, .9, .8			
Time for self-care support to affect self-care behavior	1 yr	0.5 yrs	3.0 yrs	
Per target population program cost for advantaged population self-care support (2010 \$ per otherwise non-adherent person per year)	\$100/yr	\$30/yr	\$300/yr	Program helps pay for self-care support, including a reminder system and, for the disadvantaged, also logistical assistance (transportation, childcare, etc.)
Per target population program cost for disadvantaged population self-care support (2010 \$ per otherwise non-adherent person per year)	\$200/yr	\$60/yr	\$600/yr	

Prevent hospital-acquired infections (HAI)

Multiplier on HAI fraction of stays under HAI prevention initiative	.50	.35	.65	Adams and Corrigan 2003; Pronovost et al 2006; Guerin et al 2010; Homer and Curry 2011. Assumes a full range of HAI prevention investments aimed at all major HAI categories.
Time to implement HAI prevention initiative	1 yr	0.5 yrs	3.0 yrs	
Per 100 beds program costs of HAI preventive initiative (2010 \$ per 100 beds)	\$1 mill.	\$300 thou.	\$3 mill.	
Obsolescence rate for HAI prevention investments	10%/yr	5%/yr	15%/yr	HAI data-capture and reporting systems require periodic updating or replacement; new staff need training.

Redesign primary care practices for efficiency

Multiplier on General PCP visit capacity under practice redesign	1.15	1.10	1.20	Milstein et al 2010; Radel et al 2001, and other literature on idealized design of clinical office practice (IDCOP).
Multiplier on FQHC PCP visit capacity under practice redesign	1.15	1.10	1.20	
Time to implement PCP practice redesign initiative	1 yr	0.5 yrs	3.0 yrs	
Per PCP program cost for practice redesign (2010 \$ per FTE)	\$20,000	\$6,000	\$60,000	Magill et al 2015; "enhance access with extended hours, electronic access, and practice care team."
Per PCP program cost for practice redesign (2010 \$ per FTE per year)	\$28,000 /yr	\$5,000 /yr	\$35,000 /yr	

Recruit PCPs for general (non-FQHC) offices and clinics

Multiplier on General PCPs under recruitment initiative	1.3	1.2	1.4	Assumes recruitment can significantly boost community's ability to attract PCPs to move in and join existing general PCP offices or clinics or open new ones.
General PCP relocation time	2 yrs	1.5 yrs	3 yrs	Average time to consider options, including recruitment offers and negotiations, and to make the move.
General PCP recruitment program cost per arriving PCP (2010 \$ per FTE)	\$200 thou.	\$50 thou.	\$500 thou.	Cost is primarily for subsidy of general PCP income based on guaranteed minimum for the first year or more.

Recruit PCPs for FQHC clinics

Multiplier on FQHC PCPs under recruitment initiative	1.3	1.2	1.4	Assumes recruitment can significantly boost community's ability to attract PCPs to move in and join its FQHC clinics.
FQHC PCP relocation time	2 yrs	1.5 yrs	3 yrs	Average time to consider options, including recruitment offers and negotiations, and to make the move.
FQHC PCP recruitment program cost per arriving PCP (2010 \$ per FTE)	\$200 thou.	\$50 thou.	\$500 thou.	Cost is primarily for subsidy of FQHC PCP income based on guaranteed minimum for the first year or more.

Hospital efficiency initiative

Multiplier on length of stay under hospital efficiency initiative	.85	.80	.90	Acute-care hospitals have already reduced length of stay (national average [AHA/ASH] 7.2 days 1990, 5.8 days 2000, 5.4 days 2009) and operating costs, but hospital leaders tell us more could be done; e.g., the Vanguard hospital system is planning 15% further cost reductions.
Time to implement hospital efficiency initiative	1 yr	0.5 yrs	3.0 yrs	
Per 100 beds program costs of hospital efficiency initiative (2010 \$ per 100 beds)	\$1.7 mill.	\$500 thou.	\$5.0 mill.	
Obsolescence rate for hospital efficiency investments	10%/yr	5%/yr	15%/yr	

Offer pre-visit consultation (screening) for non-urgent episodes

Relative non-urgent acute episodes to PCPs and Specialists under pre-visit screening	.85	.80	.90	O'Connell et al 2001; St. George et al 2003.
Relative non-urgent acute episodes to ER under pre-visit screening	.76	.70	.80	
Time to implement pre-visit screening initiative	1 yr	0.5 yrs	3.0 yrs	
Per capita program cost for pre-visit screening (2010 \$ per total population)	\$12/yr	\$4/yr	\$40/yr	Based on avg. telephone triage nurse salary of \$74k (indeed.com/salary); approx. 20 office-based MDs per 10k in US (AMA/PCDUS); and assuming ratio of one triage nurse per 12 MDs.

Create patient-centered medical homes (at PCP offices and clinics)

Relative prev/chron care to specialists under medical home	.50	.35	.65	Commonwealth Fund 2011; Rittenhouse et al 2011; Klein et al. 2010. Assumes medical home initiative will have good outreach to those currently using specialists or hospital OPDs for routine care.
Relative non-urgent acute episodes to specialists under medical home	.50	.35	.65	
Relative prev/chron care to hospital OPDs under medical home	.67	.50	.84	
Relative non-urgent acute episodes to hospital OPDs under medical home	.67	.50	.84	
Fraction of self-care gap closed under medical home	.10	.05	.15	Commonwealth Fund 2011 shows approx. 20% boost in physician use of self-care plans and reminders under medical home. Assume such plans and reminders can change behavior for half of initially non-adherent patients.
Time to implement medical home initiative	1 yr	0.5 yrs	3 yrs	Assume relatively costly electronic medical records and decision-support systems, and relatively speedy implementation process.
Per PCP program cost for medical home initiative (2010 \$ per full-time equivalent)	\$20,000	\$6,000	\$60,000	
Per PCP program cost for medical home initiative (2010 \$ per full-time equivalent per year)	\$10,000 /yr	\$3,000 /yr	\$15,000 /yr	Magill et al 2015; "provide self-care support and referrals to community resources."

Coordinate health care

Multiplier on fraction of non-urgent acute episodes with referral to specialist under care coordination	.75	.65	.85	Klein et al 2010; Commonwealth Fund 2011. Assumes coordination of care, if properly adopted by providers, can significantly reduce referrals to specialists, use of tests, procedures, and elective inpatient stays, reduce duplicative drug prescriptions, and encourage use of generic rather than branded drugs.
Multiplier on fraction of non-urgent acute episodes to outpatient tests or procedures under care coordination	.75	.65	.85	
Multiplier on fraction of non-urgent acute episodes to inpatient stay under care coordination	.75	.65	.85	
Multiplier on Rx drug costs per mild CPI patient under care coordination	.90	.80	1	
Multiplier on Rx drug costs per severe CPI patient under care coordination	.75	.65	.85	
Time to implement care coordination initiative	1 yr	0.5 yrs	3 yrs	
Fraction of cost growth mitigated for items under care coordination due to technology assessment	.33	.25	.40	Assumes that new technology brings progress, but that one-third of new things are not cost-effective, and that an enhanced care coordination system with frequent technology assessment could screen out unnecessary things before they become entrenched.
Delay time for starting technology assessment under care coordination	2 yrs	1 yr	3 yrs	Technology advances quickly, so the first assessments should begin within a couple of years after initial start of care coordination.

Multiplier on cost of care coordination from technology assessment	1.25	1.10	1.40	Technology assessment would require additional effort to evaluate new technologies for cost-effectiveness and update coordination protocols.
Per office-based physician program cost for care coordination (2010 \$ per FTE per year)	\$15,000 /yr	\$5,000/yr	\$20,000 /yr	Magill et al 2015; "track and coordinate care, including follow-up and care transitions."

Reform medical malpractice

Multiplier on fraction of non-urgent acute episodes with referral to specialist under malpractice reform	.975	.965	.985	Kessler and McClellan 1996; CBO 2006; Mello et al 2010; Wright 2011. Taken together these studies suggest that malpractice reforms (most commonly tort limits) can reduce total healthcare costs by 0.8-1.4%. Local communities may not always be able to institute tort limits, but they should be able to establish lawsuit screening panels, and we assume that between tort limits and screening panels, local action can achieve as much as the literature suggests. From the numbers, we estimate that the potential impact of malpractice reform on specific healthcare utilization factors is 10% that of Care Coordination.
Multiplier on fraction of non-urgent acute episodes to outpatient tests or procedures under malpractice reform	.975	.965	.985	
Multiplier on fraction of non-urgent acute episodes to inpatient stay under malpractice reform	.975	.965	.985	
Multiplier on Rx drug costs per mild CPI patient under malpractice reform	.99	.985	.995	
Multiplier on Rx drug costs per severe CPI patient under malpractice reform	.975	.965	.985	
Time to implement malpractice reform initiative	1 yr	0.5 yrs	3 yrs	
Per office-based physician program cost for malpractice reform (2010 \$ per FTE per year)	\$1,500	\$500	\$5,000	Per-physician cost of supporting and maintaining local tort reforms.

Improve post-discharge care

Multiplier on fraction of inpatients to home health under improved post-discharge initiative	1.4	1.2	1.8	A proprietary ACO study by Vanguard Health System indicates that discharges to home health and SNF could be increased significantly. Hospital physicians with whom we've spoken state that with proper attention the great majority of medication reconciliation problems could be eliminated. Cost assumes a full range of post-discharge improvement investments, with cost scaling based on number of beds.
Multiplier on fraction of inpatients to SNF under improved post-discharge initiative	1.4	1.2	1.8	
Multiplier on readmissions from inadequate medication reconciliation under improved post-discharge initiative	0.1	0	0.2	
Time to implement post-discharge initiative	1 yr	0.5 yrs	3 yrs	
Per 100 beds program costs of post-discharge initiative (2010 \$ per 100 beds)	\$1 mill.	\$300 thou.	\$3 mill.	
Obsolescence rate for post-discharge care investments	10%/yr	5%/yr	15%/yr	Hospital discharge info systems require periodic updating; new staff need training.

Expand the use of reduced-intensity end-of-life care (hospice and hospital palliative care)

Multiplier on hospice use under hospice initiative	1.35	1.25	1.45	Taylor et al 2007; NHPCO 2010; Garson and Engelhard 2011.
Time to implement hospice initiative	1 yr	0.5 yrs	3 yrs	We assume initiative would lead to a sizable increase in use of hospice; e.g., the 1.35 multiplier means its use in dying seniors would increase from 42% nationally to 57%.
Frac of deaths using hospital palliative care initial	27%	20%	35%	Morrison et al 2008, McCarthy et al 2015. 37% of all deaths occur during an inpatient stay, and about half of those get palliative care. Additional palliative care occurs post-discharge.
Multiplier on hospital palliative care use under end-of-life care initiative	1.2	1.1	1.3	27% x 1.2 = 32%. With hospice (above), this would bring overall use of end-of-life care from 69% to 89% of all deaths in US.
Avg savings per inpatient stay using palliative care 2010 (\$ per stay)	\$5,400	\$3,000	\$7,000	Morrison et al 2008; weighted avg of \$4,550 (2003) for hospital surviving and non-surviving, inflated to \$5,400 for 2010.
Per capita program cost for end-of-life care initiative (2010 \$ per total population per year)	\$1.25/yr	\$0.50 /yr	\$3.00 /yr	We assume per-capita costs similar to those of other social mass marketing campaigns.

Value-based payment

Provider compliance with 6 community initiatives absent VBP	0.8	0.6	1	Robinson 2001; Hussey et al 2009; Mechanic and Altman 2009; Miller 2009; Miller 2011; Landon 2012; Homer 2015c. The parameter settings here are at the suggestion of Dartmouth's Elliott Fisher.
Provider effort on 6 improvements incentivized by VBP absent community initiative	0.1	0	0.3	

Global payment

Global payment adjustment time	5 yrs	2 yrs	10 yrs	Homer 2015c. Salaries to physicians, as well as global payments to hospitals, are subject to annual adjustments by payers based on changing care intensity and utilization. We assume that this adjustment converges over a period of years toward the fee-for-service equivalent.
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Capture savings for reinvestment

Maximum fraction of cost savings available to community, by insurer (If accumulated funds exceed 6 years' worth of desired program spending, the actual captured fraction will start to be cut back from the maximum. And if the accumulated funds exceed 15 years' worth of desired program spending, the captured fraction will be cut to zero.)	.5 Commercial, .5 Medicare, .5 Medicaid	Fisher, McClellan et al 2009; Merlis 2010; Miller 2011; McGinnis and Small 2012. We have provisionally assumed 50% effective savings capture agreements with all insurer types based on Medicare's current ACO design specs.
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Fraction of community's captured savings shared with hospitals; with physicians; with employers	0; 0; 0	Set provisionally to zero, but negotiations could result in a significant fraction.
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Grants and assistance

Inflow of grants and assistance; Fraction of grants and assistance restricted to upstream initiatives; to downstream initiatives	\$24 million per year (or 1% of healthcare costs) for 5 years starting 2015. Zero upstream or downstream restrictions.	Communities tell us that the 1% x 5 years is a plausible default assumption. The inflow and restriction fractions are specified by input time series.
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Loans

Inflow of loans; Repayment of loans; Fraction of loans restricted to upstream initiatives; to downstream initiatives	Zero inflow and repayment. Zero upstream or downstream restrictions.	The inflow, repayment, and restriction fractions are specified by input time series.
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Tax on commercial healthcare costs

Tax as a fraction of commercial healthcare costs. Tax start time delay after 2015. Upstream and downstream restriction fractions.	Zero tax fraction, zero time delay, zero restrictions.	The parameters are all specified as constants.
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Tax per employee

Fraction of employees affected by tax. Tax rate per affected employee (\$/employee). Tax start time delay after 2015. Upstream and downstream restriction fractions.	100% of employees, zero tax rate, zero time delay, zero restrictions.	The parameters are all specified as constants.
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Tax on sweet beverage consumption

Tax as cents per ounce. Tax start time delay after 2015. Upstream and downstream restriction fractions. "Does this tax exclude diet beverages?"	Tax rate base=0 (test=1 cent/oz.), zero time delay, zero restrictions. Base: does not exclude diet beverages.	The parameters are all specified as constants.
Sweet beverage base price. Fractional reduction in consumption per 10% tax, and response time. Ounces of sweet beverage consumed per capita absent tax. Sugar-sweetened (non-diet) % of sweet beverages.	8 cents/oz base price. 8% reduction per 10% tax, with ½ year response time. 5,200 ozs/capita/yr absent tax. 62% of sweet beverages is sugar-sweetened.	The parameters are all specified as constants. See: Sugar-Sweetened Beverage Tax online sources. See also Homer 2013 (PRISM).

Tax on cigarette consumption

Tax as dollars per pack. Tax start time delay after 2015. Upstream and downstream restriction fractions.	Tax rate base=0 (test=\$1.00 per pack), zero time delay, zero restrictions.	The parameters are all specified as constants.
Cigarette pack base price. Fractional reduction in consumption per 10% tax, and response time. Smoker fraction of high-risk behavior population in 2015. Packs consumed per smoker per year.	\$6.24/pack base price. 8.4% reduction per 10% tax, with 7.5 yr average response time (PRISM). Smokers=24% of HRB popn in 2015 (BRFSS). 300 avg packs/smoker/year.	The parameters are all specified as constants. See: Homer 2013 (PRISM); Campaign for Tobacco-Free Kids 2013; Tynan et al MMWR 2012.

Table 4. Trend Assumptions (Time Series Inputs)

Trend	Description	Baseline assumptions for Anytown
Multipliers (3) on prevalence of disadvantage from economic conditions (e.g., recession)	Three time series (2000=1): for youth, working age, and seniors. (These are separate from other factors in the model affecting disadvantage: severe chronic illness, rising healthcare costs, and the “pathways” interventions.)	<ul style="list-style-type: none"> - Youth: ramps up to 1.1 during 2005-10, ramps back down to 1.0 by 2020. - Working age: ramps up to 1.15 during 2005-10, ramps back down to 1.0 by 2020. - Senior: remains at 1.0 throughout.
Multipliers (4) on prevalence of uninsurance from changes in state Medicaid eligibility criteria or federal mandate (e.g., CHIP, ACA)	Four time series (2000=1): for advantaged youth, disadvantaged youth, advantaged working age, and disadvantaged working age. (These are separate from the other factor in the model affecting uninsurance: rising healthcare costs.)	<ul style="list-style-type: none"> - Adv youth: ramps down to 0.81 during 2000-10, then flat until ACA ramps uninsurance down by another 50% 2014-2018. - Disadv youth: ramps down to 0.83 during 2000-10, then flat until ACA ramps uninsurance down by another 50% 2014-2018. - Working age (both): remains at 1.0 until ACA reduces uninsurance down by 50% 2014-2018.
Underinsured fraction of the Disadvantaged insured	Fraction of the Disadvantaged insured whose out-of-pocket costs are so high relative to their income that they behave as if they had no insurance at all (per Commonwealth Fund 2015; see Homer 2015b)	2000-03: 0.25; ramp to 2005: 0.23; ramp to 2010: 0.42; ramp to 2014+: 0.44.
Fraction of Advantaged popn in hazardous environment baseline	Combines prevalence measures of air pollution (PM 2.5, Ozone), water pollution, and inadequate plumbing.	2000: 0.33, ramp to 2005: 0.22, ramp to 2010: 0.12, ramp to 2015+: 0.15.
Fraction of Disadvantaged popn in hazardous environment baseline	Disadvantaged-to-Advantaged (D-to-A) ratio on this measure was in the range of 1.25-1.35 throughout 2000-2013.	2000: 0.43, ramp to 2005: 0.27, ramp to 2010: 0.16, ramp to 2015+: 0.20.
Fraction of Advantaged popn in high crime area baseline	Based on rate of violent victimization.	2000: 0.30, ramp to 2005: 0.25, ramp to 2010: 0.20, ramp to 2015+: 0.15.
Fraction of Disadvantaged popn in high crime area baseline	A widening gap: the D-to-A ratio on this measure increased from 1.4 in 2000 to 1.65 in 2010, to 1.9 in 2014.	2000: 0.42, ramp to 2005: 0.37, ramp to 2010: 0.33, ramp to 2015+: 0.29.
Fraction of general PCP (non-FQHC) appointment slots available to the non-senior Medicaid population	A decline in this fraction could reflect increased financial pressure on general PCPs; e.g., due to declining Medicaid reimbursement rates.	Calculations from NAMCS 2010 data indicate that 10.5% of general PCP visits were by the disadvantaged. The baseline slot fraction is a fixed 0.10.
Fraction of FQHC appointment slots available to the disadvantaged uninsured	A decline in this fraction could reflect increased financial pressure on FQHC PCPs; e.g., due to declining Medicaid reimbursement rates.	Calculations from NAMCS 2010 data indicate that 35% of FQHC visits were by the uninsured. The baseline slot fraction is a fixed 0.35.

Trend	Description	Baseline assumptions for Anytown
Real rate of inflation in healthcare costs	The national rate of inflation in healthcare costs expressed over and above general economic inflation. Allows for fixed market basket medical inflation, but also inflation from the adoption of new technologies and broadening criteria for their use.	Estimated based on difference between NHE and CPI annual changes 2000-12 and adjusted to give best fit to NHE spending growth: - Fluctuates within range of 2-5% during 2000-04, and 0-3% during 2005-14. Ramps up from 0% in 2010-2011 to a fixed 1.5% for 2015 and thereafter.
Birth rate	Births per year as a fraction of total population. Estimated from Vital Statistics and Census projection of youth population.	Declines from 1.44% in 2000 to 1.35% in 2010; but then ramps up to 1.55% in 2015 and declines to 1.45% by 2030.
Rate of 18to64 becoming 65	Fraction per year of working age population becoming seniors. Estimated from Census historical and Census projected working age and senior populations.	Rises from 1% in 2000, to 1.4% in 2010, and 2% in 2020; then ramps down to 1.85% by 2040.
Net migration rate	Population annual in-migration net of out-migration as a fraction of total population. Estimated from Census net migration projection made in 2000.	Declines from 0.38% in 2000, to 0.275% in 2010, to 0.27% in 2020; then ramps up to 0.33% in 2030 and thereafter.
Multiplier on death rate from improved urgent care	Trend (2000=1) applied to death rates for all ages. Estimated from Vital Statistics and Census projection of total and senior populations.	Ramps down to 0.9 in 2010, and continues declining with some deceleration to 0.74 in 2040.
General PCPs per capita trend multiplier	Trend (2000=1) in number of general PCPs per capita. Declines have been reported historically, but we are unsure whether these declines will continue in the future.	Fixed at 1.
Specialists per capita trend multiplier	Trend (2000=1) in number of office-based specialists per capita. We are unsure how this will change in the future.	Fixed at 1.
Hospital bed cost trend multiplier	Trend (2010=1) in inpatient costs per bed over and above general medical price inflation (see Real rate of inflation in healthcare costs, above.) Adjusted to achieve fit to historical AHA/ASH data on profit margin. Downward trajectory in these historical estimates assumed to continue in the future but more gradually, allowing model to project future decline in average hospital profit margin similar to that seen in another study (CMS unpublished study 2013).	Declines from 1.17 in 2000, to 1.11 in 2005, 1.07 in 2008, 1.0 in 2010, .95 in 2015, .93 in 2020, and .91 in 2030.
Hospital occupancy goal series	Aggregate occupancy goal may change over time reflecting a shift in hospital size (larger hospitals are able to handle higher average occupancy), competition among hospitals (beds "arms races" reduce average occupancy), or improved surge response capability (allowing higher average occupancy).	Fixed at 0.66.

Trend	Description	Baseline assumptions for Anytown
Fraction of HAIs not reimbursed	Fraction of hospital-acquired infections not reimbursed by insurers. Medicare first started non-reimbursing some HAIs in late 2008, and many private insurers have followed suit. Subject matter experts estimated the likely growth in non-reimbursement through 2020 as part of a modeling exercise at CDC in 2010.	Jumps from 0 in mid-2008 to 0.15 as of January 2009; then ramps up to 0.33 in 2015, and 0.5 in 2020 and thereafter.
Growth rate for use of local hospitals by outside population	This series does not apply in the Anytown model, where we have assumed zero cross-border flows (in or out) of hospital demand. For some localities, however, such demand flows are significant, and one must estimate at what rate the inflowing hospital demand will grow over time.	Fixed at zero.
Wages as a fraction of total regional income	Fraction of regional income (GDP for US overall) accounted for by wages as opposed to rents or corporate retained earnings. (See US Census Bureau 2001, 2011)	Ramps from 0.48 in 2000 to 0.43 in 2015 and beyond.
Fraction of insured population under value-based payment	A value-based payment plan is one in which physicians and hospitals are rewarded with higher payments for making greater efforts to improve quality and reduce costs in certain specified ways. When a sizable fraction of the population is covered by a VBP plan rather than conventional fee-for-service, providers will adjust their practices accordingly.	Ramps from 0.0 in 2010, to 0.25 in 2015, to 0.50 in 2020 and beyond. (See Homer 2015c.) <Setting after 2015 may be adjusted in baseline or as an intervention.>
Fraction of PCPs under global payment	A PCP operating under strict global payment is typically salaried and receives a fixed annual amount, with no fee-for-service extras or bonuses.	Ramps from 0.0 in 2010, to 0.60 in 2015 and beyond. (See Homer 2015c.) <Setting after 2015 may be adjusted in baseline or as an intervention.>
Fraction of specialists under global payment	A specialist operating under strict global payment is typically salaried and receives a fixed annual amount, with no fee-for-service extras or bonuses.	Ramps from 0.0 in 2010, to 0.15 in 2015 and beyond. (See Homer 2015c.) <Setting after 2015 may be adjusted in baseline or as an intervention.>
Fraction of hospital patients under global payment	An insurance plan that pays hospitals a global payment provides a capitated amount per insured population, with no fee-for-service extras. The fraction expressed here is an aggregate across all patient ages and insurance types.	Ramps from 0.0 in 2010, to 0.02 in 2015 and beyond. (See Homer 2015c.) <Setting after 2015 may be adjusted in baseline or as an intervention.>
Fraction of outpatient tests and procedures done at hospital outpatient department	Along with the trend of acquiring specialty practices, hospitals have also acquired many private ambulatory surgery centers and made them part of the hospital's OPD.	Ramps from 0.55 in 2005 to 0.80 in 2015 and beyond. <Setting after 2015 may be adjusted in baseline or as an intervention.>
Multiplier on long term nursing home admissions not post hospital	Long-term nursing home stays for ailing seniors have declined in favor of residential-based care.	Ramps from 1.0 in 2005 to 0.7 in 2015 and beyond. <Setting after 2015 may be adjusted in baseline or as an intervention.>

Figure 2. Chronic Physical Illness (CPI) Structure

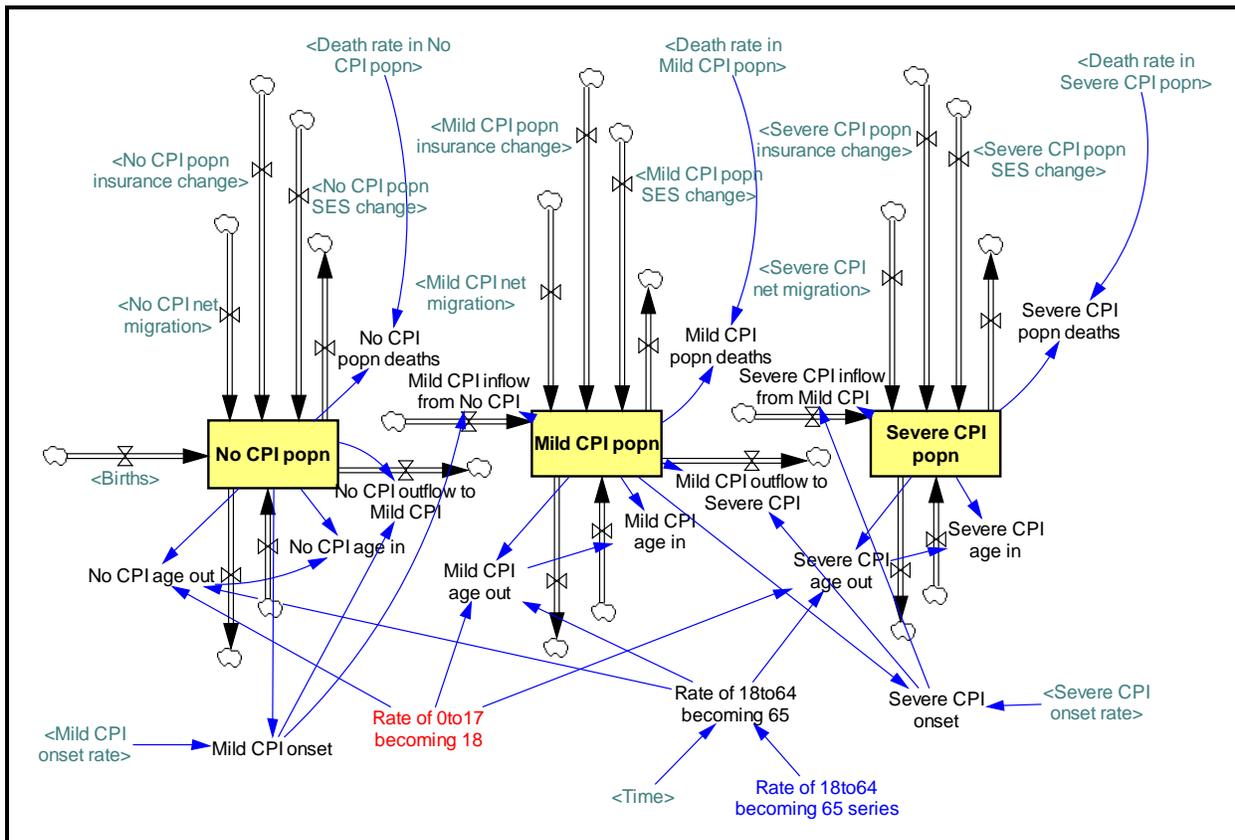


Figure 4. Influences on Uninsurance Structure

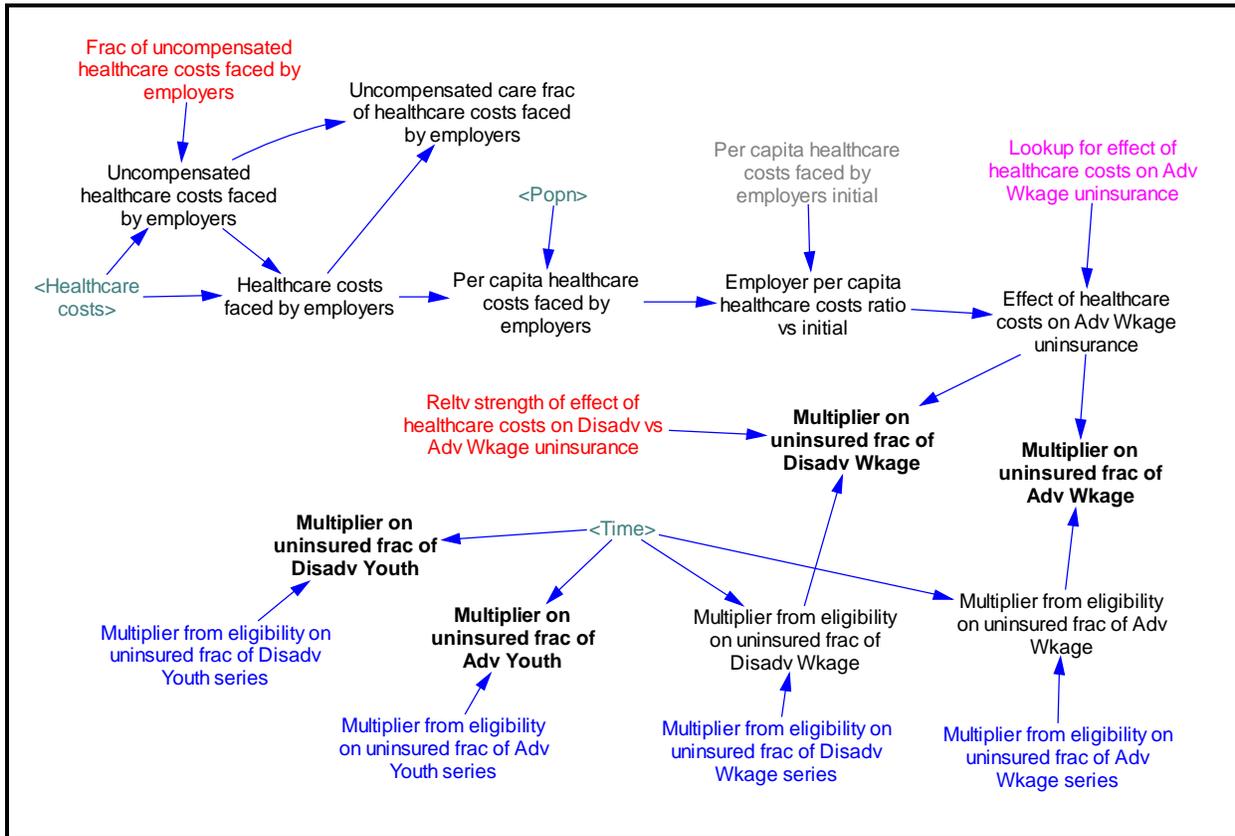


Figure 5. Influences on Disadvantage Structure

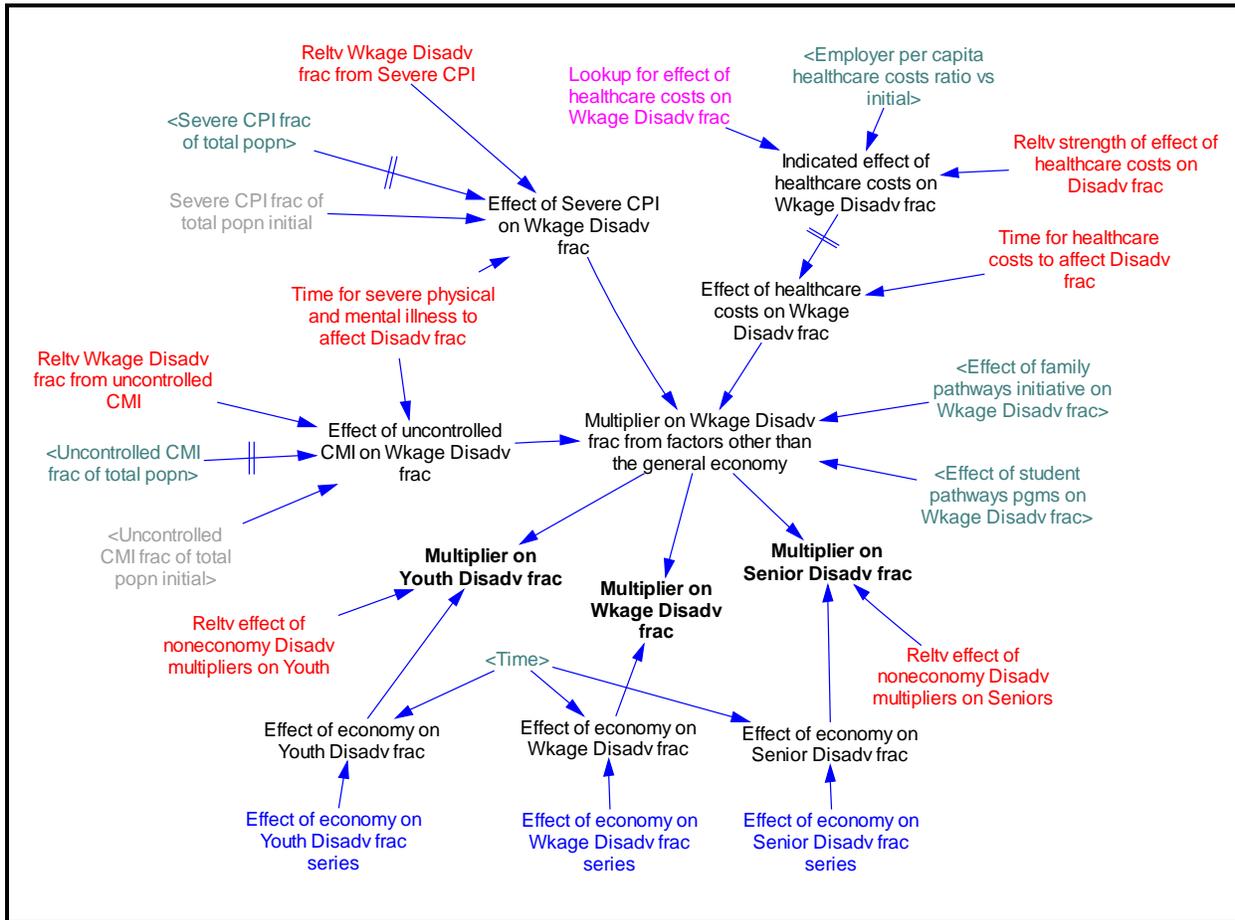


Figure 6. Pathways to Advantage Structures

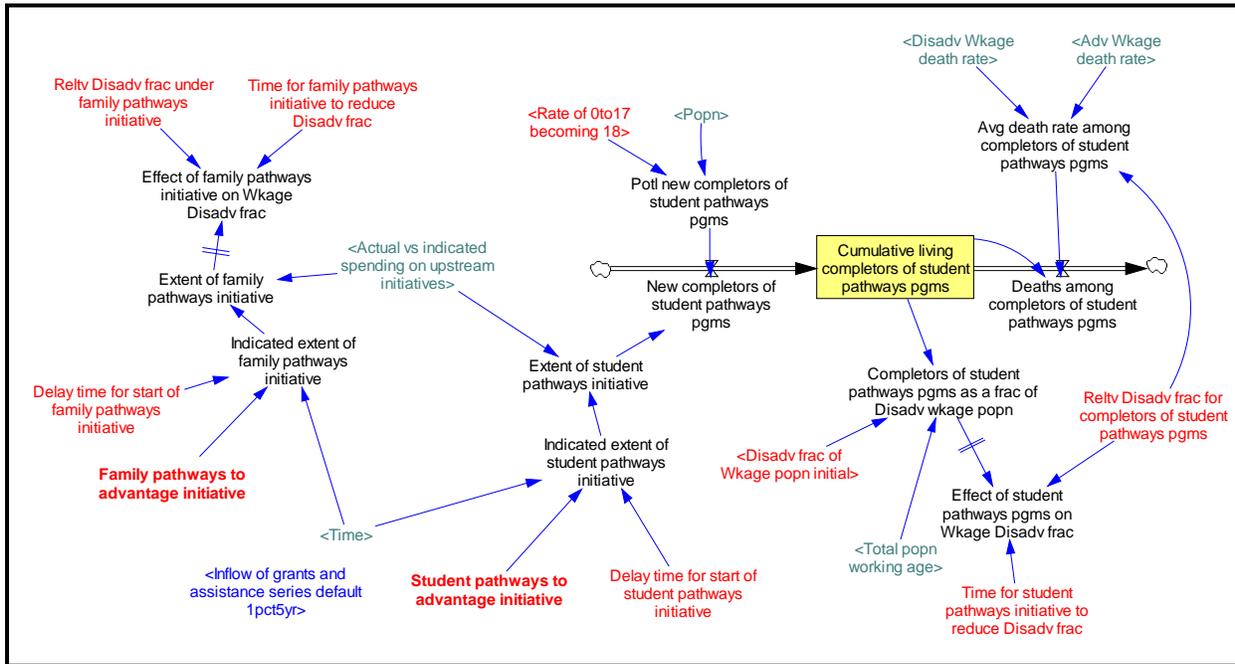


Figure 7. Chronic Mental Illness Structure

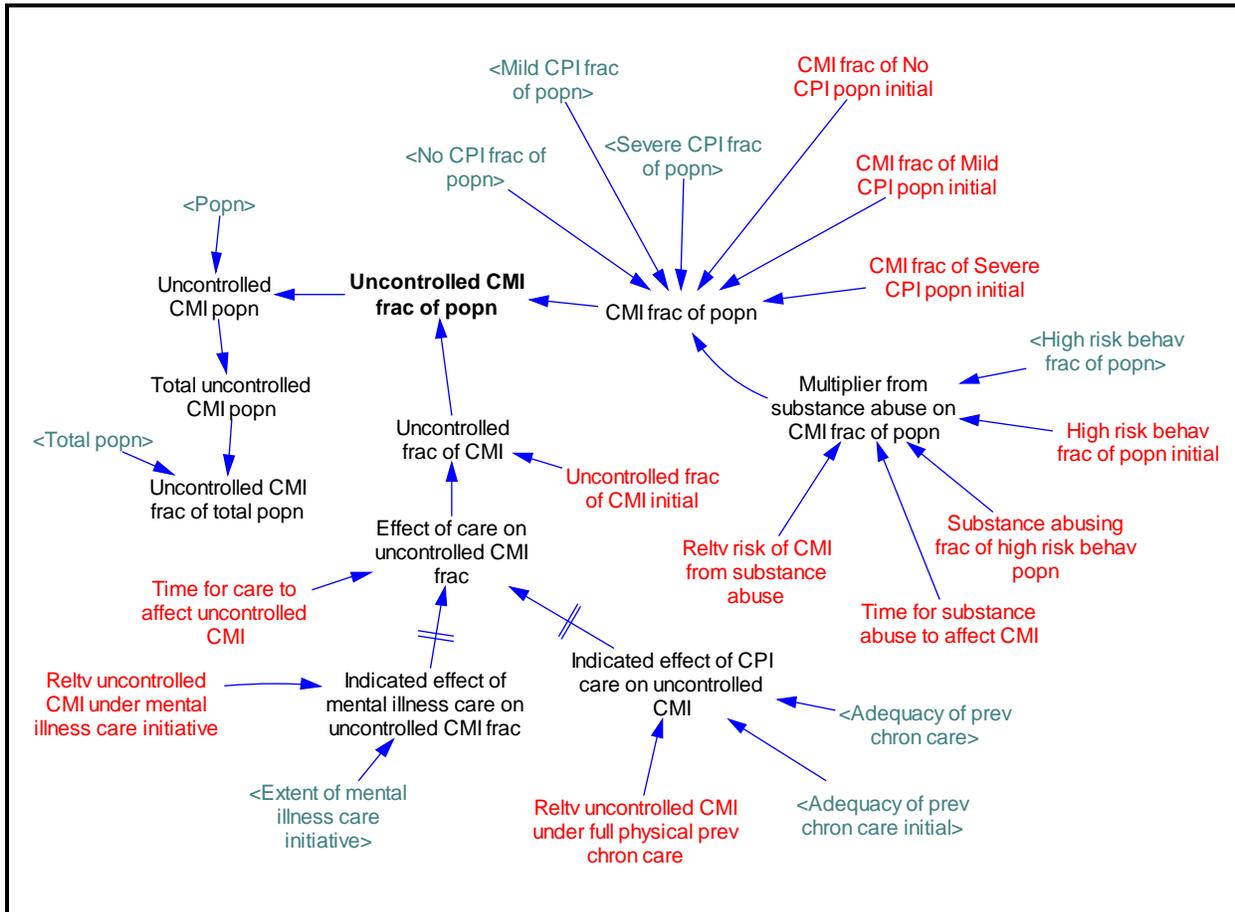


Figure 8. High-Risk Behavior Structure

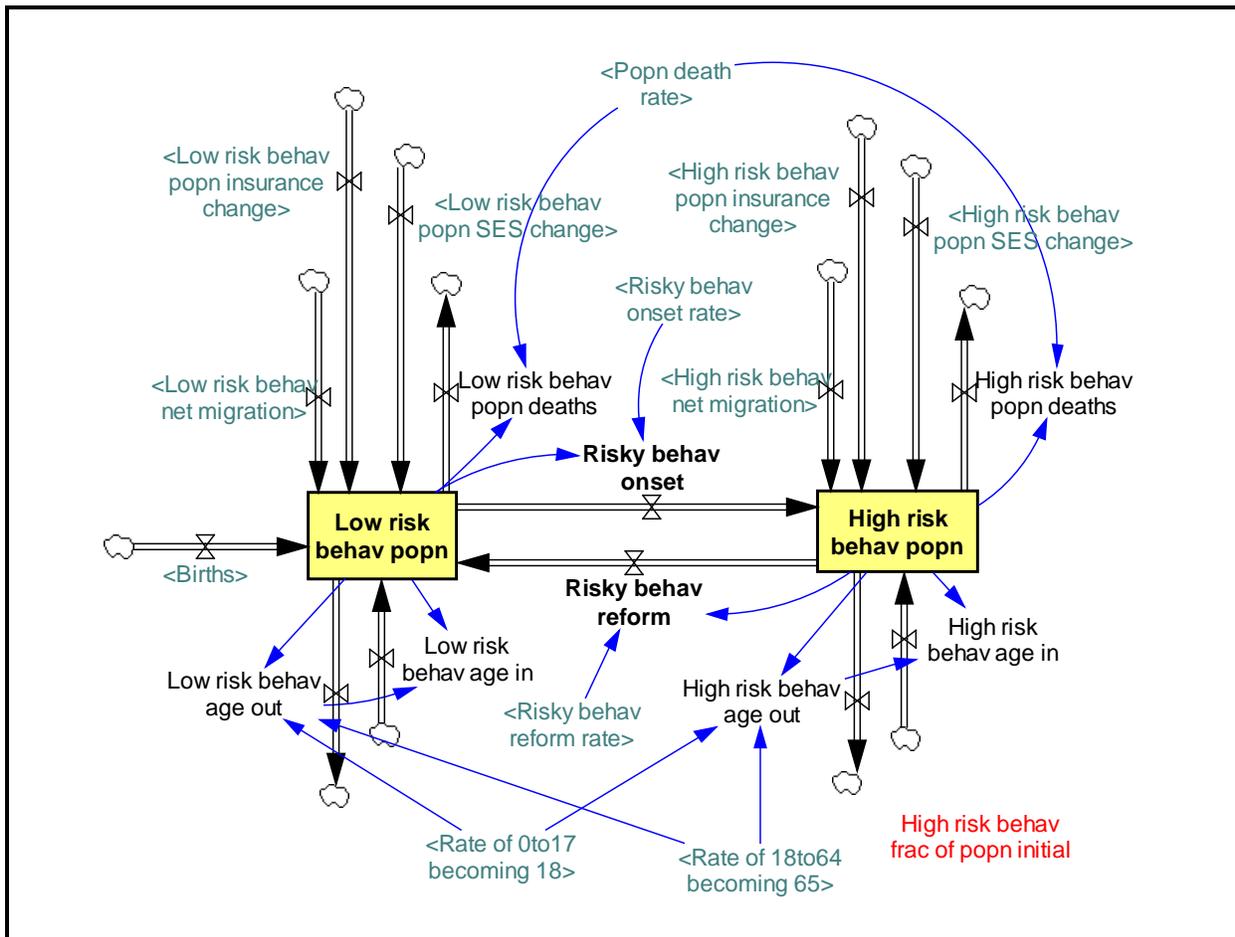


Figure 9. High-Risk Behavior Onset & Reform Rates Structure

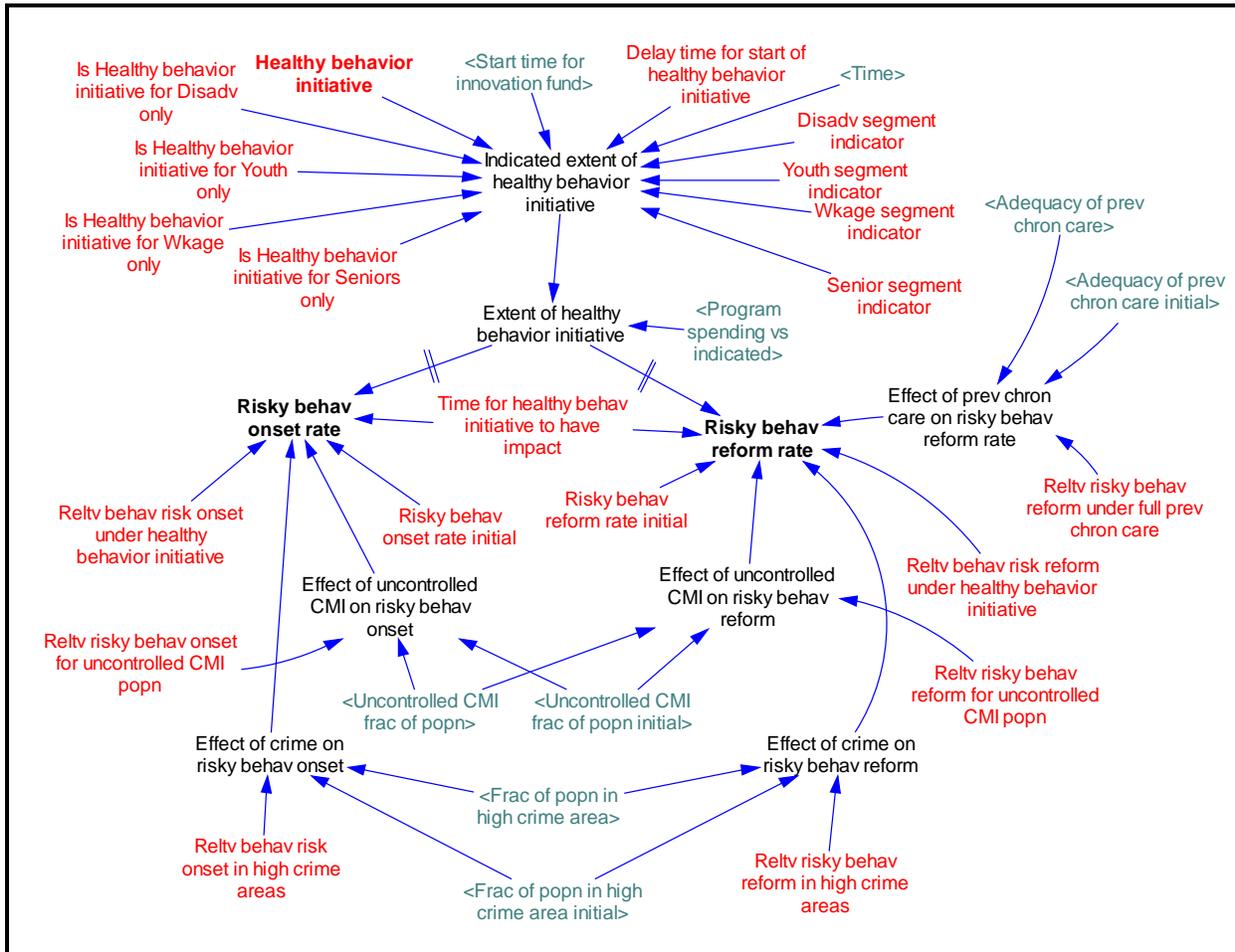


Figure 10. Hazardous Environment & Crime Structures

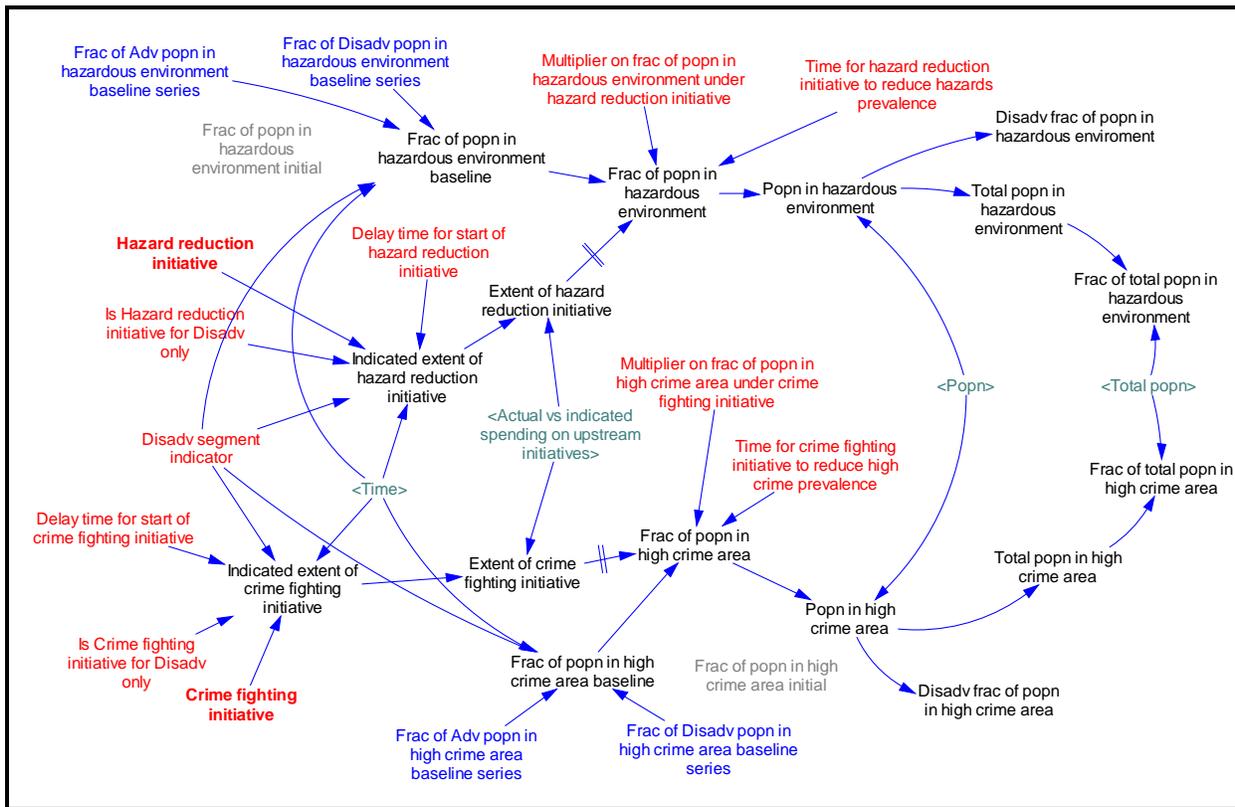


Figure 11. Demand for Physician Office Visits Structure

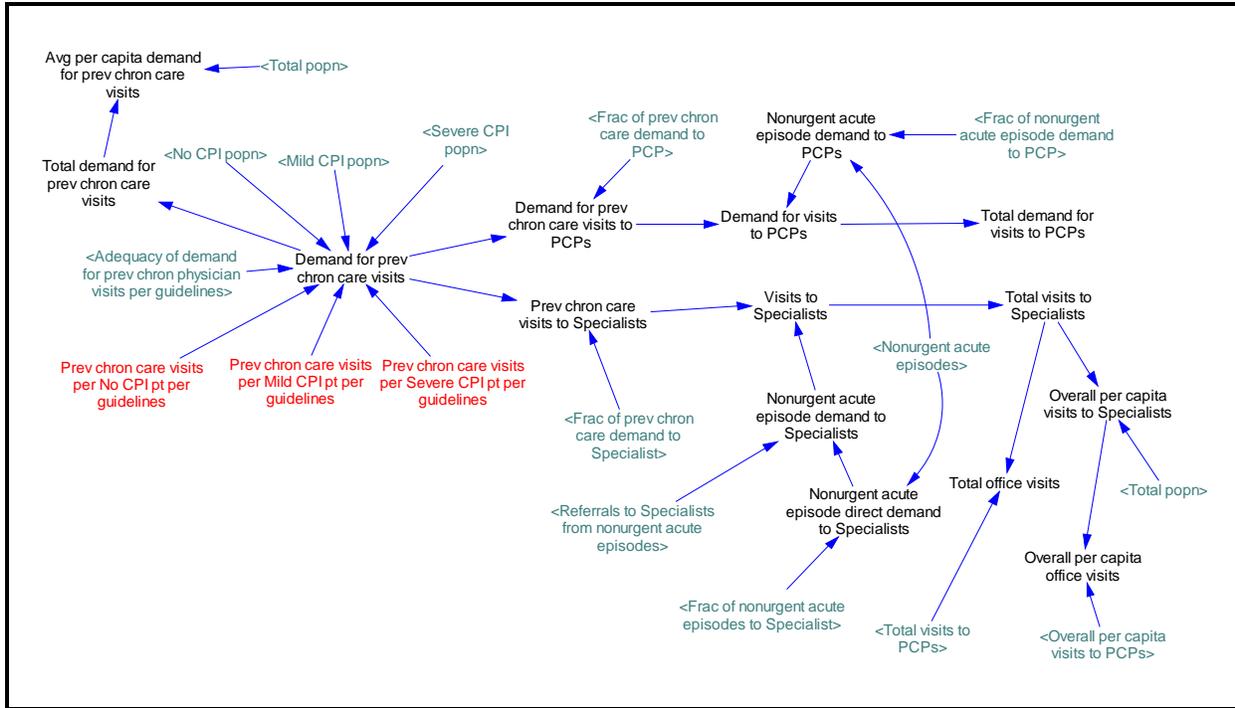


Figure 12. Adequacy of Preventive & Chronic Care, Self Care, and Underinsurance Fraction Structures

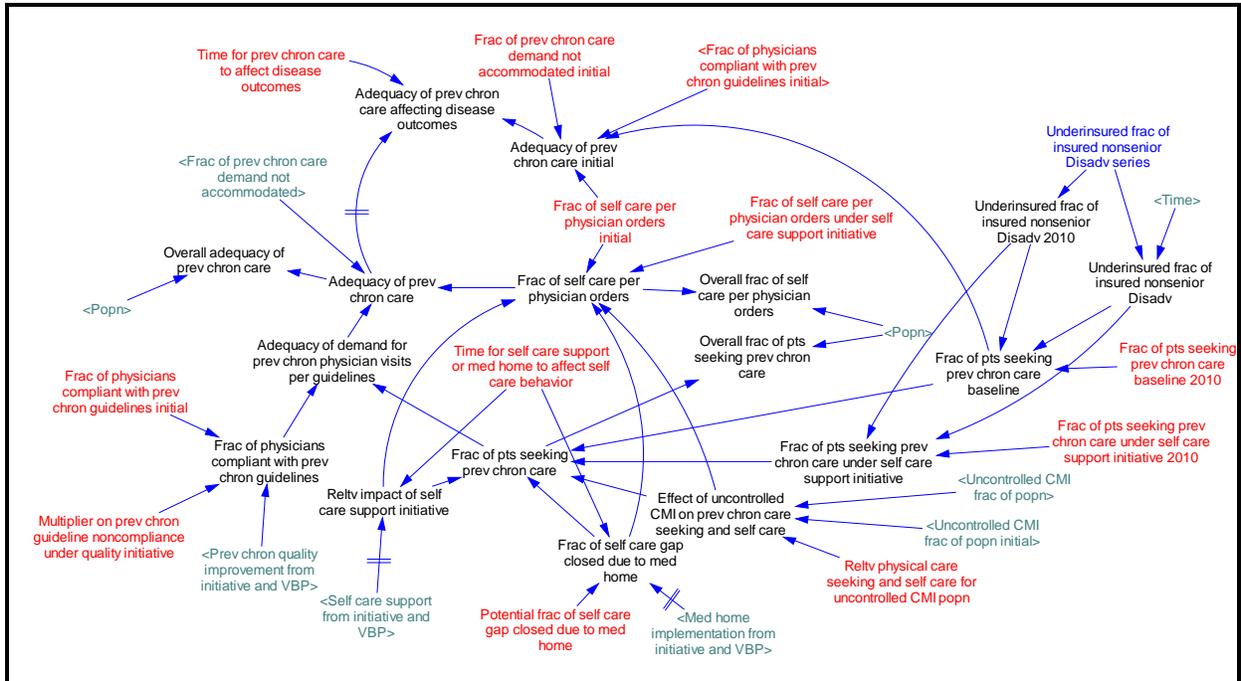


Figure 15. Non-Urgent Acute Episodes Structure

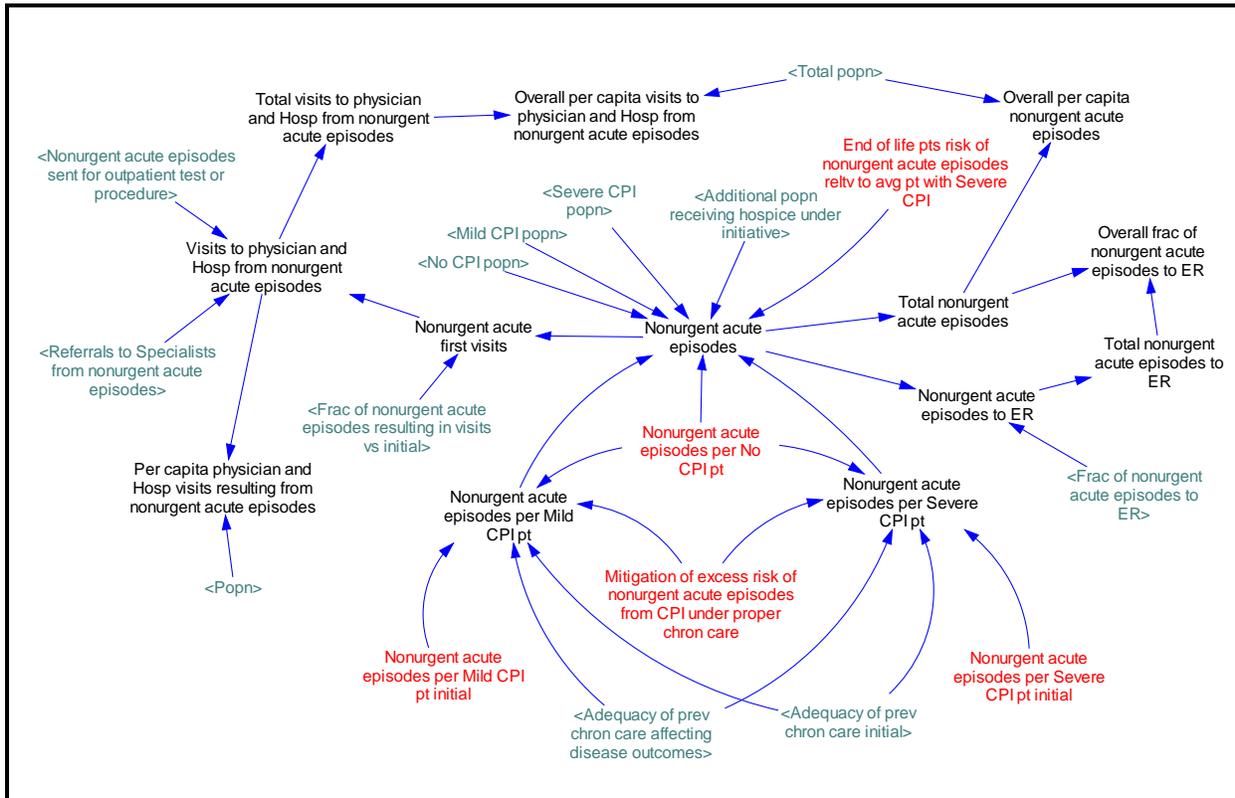


Figure 16. Locus of Non-Urgent Visits Structure

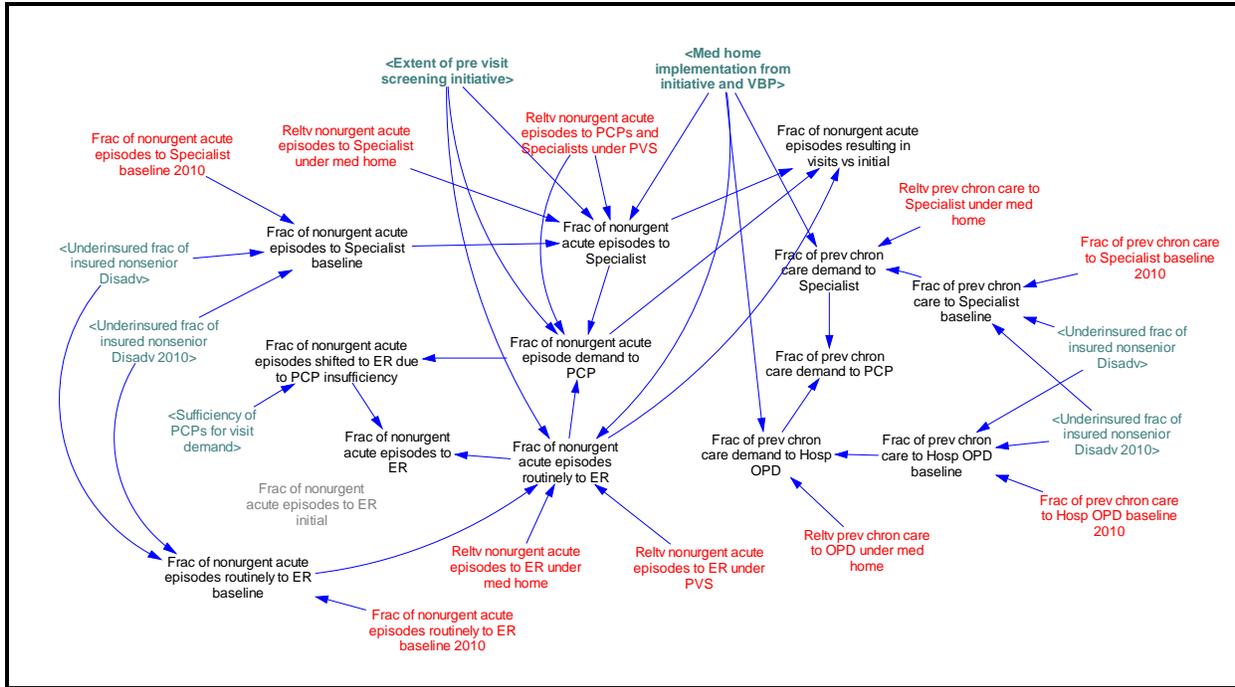


Figure 17. Outpatients Tests & Procedures Structure

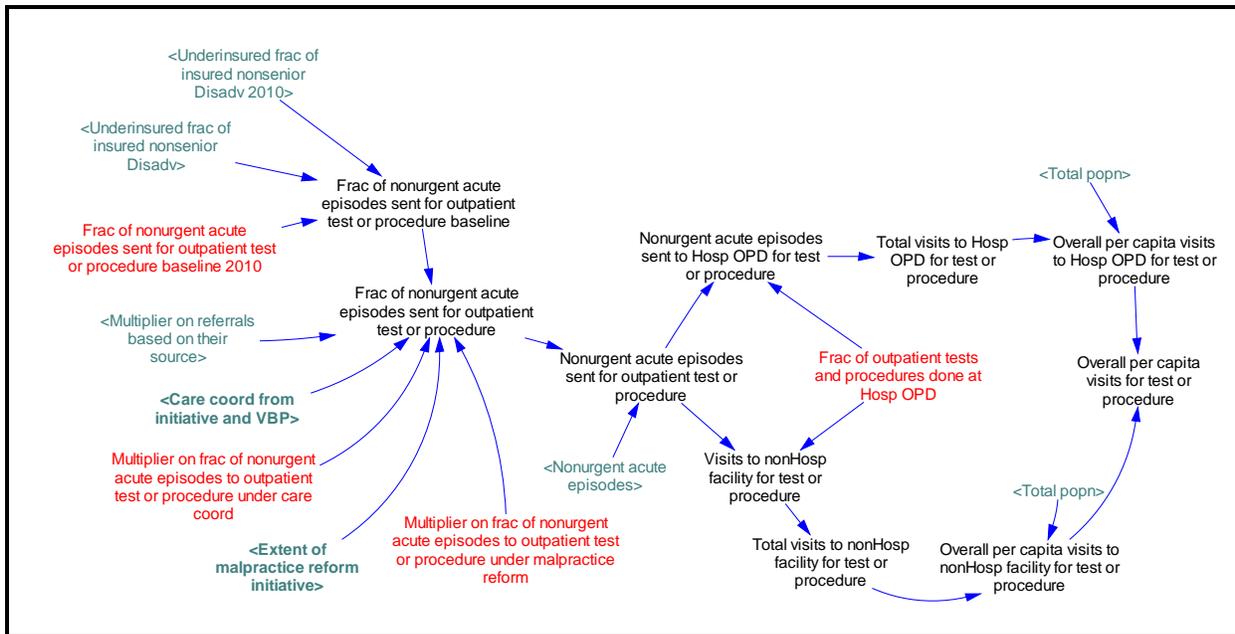


Figure 18. Value-Based Payment and Global Payment Fraction Structures

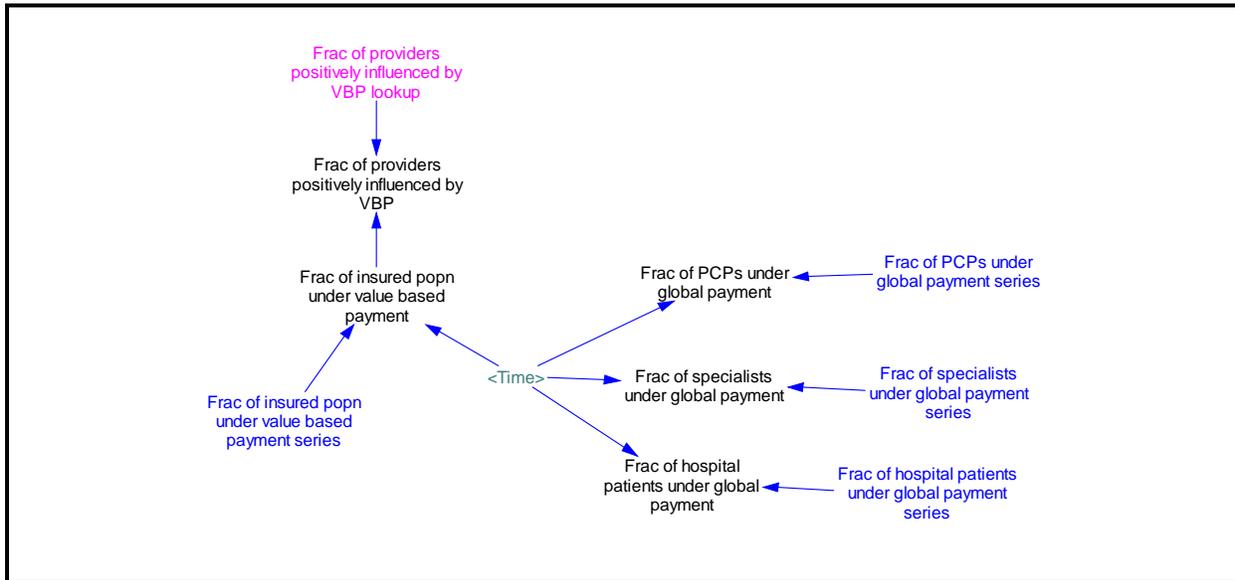


Figure 19. Six Clinical Initiatives Affected by Value-Based Payment Structure

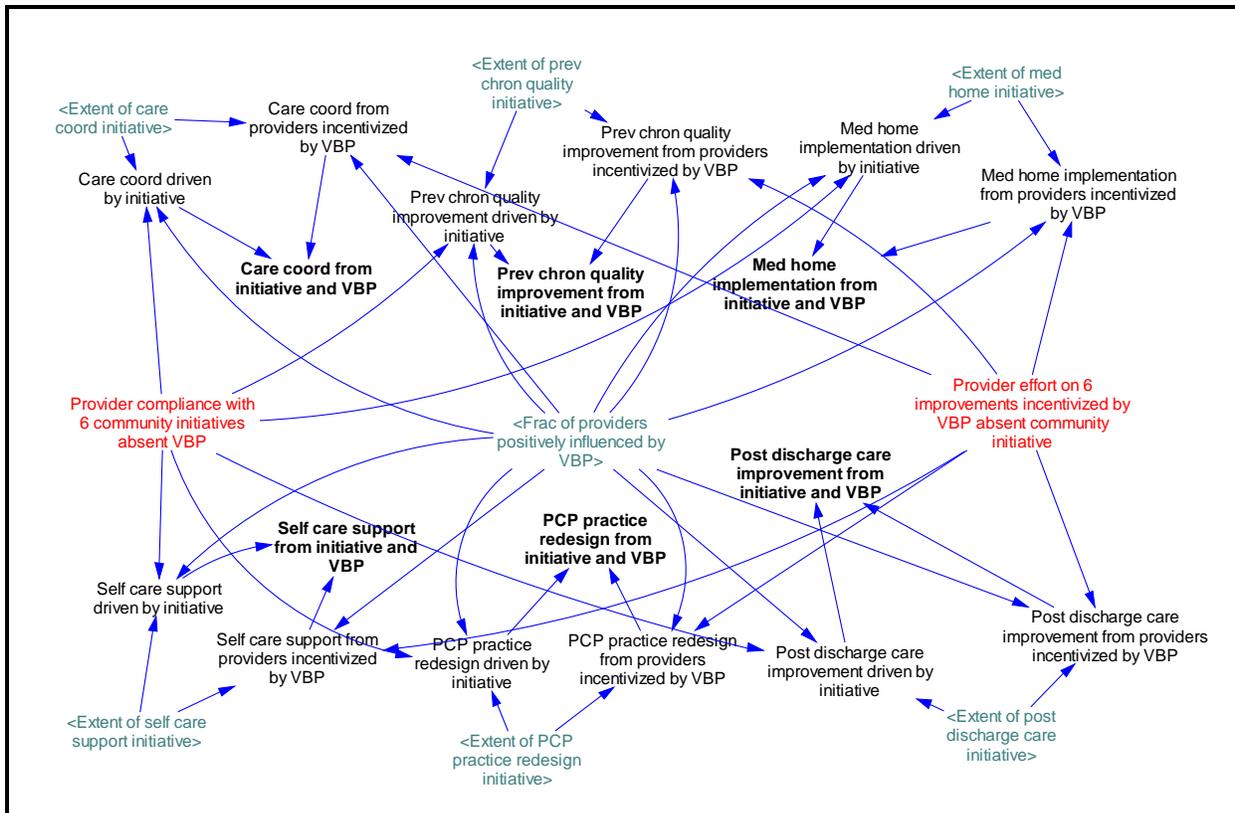


Figure 20. Care Coordination Initiative Structure

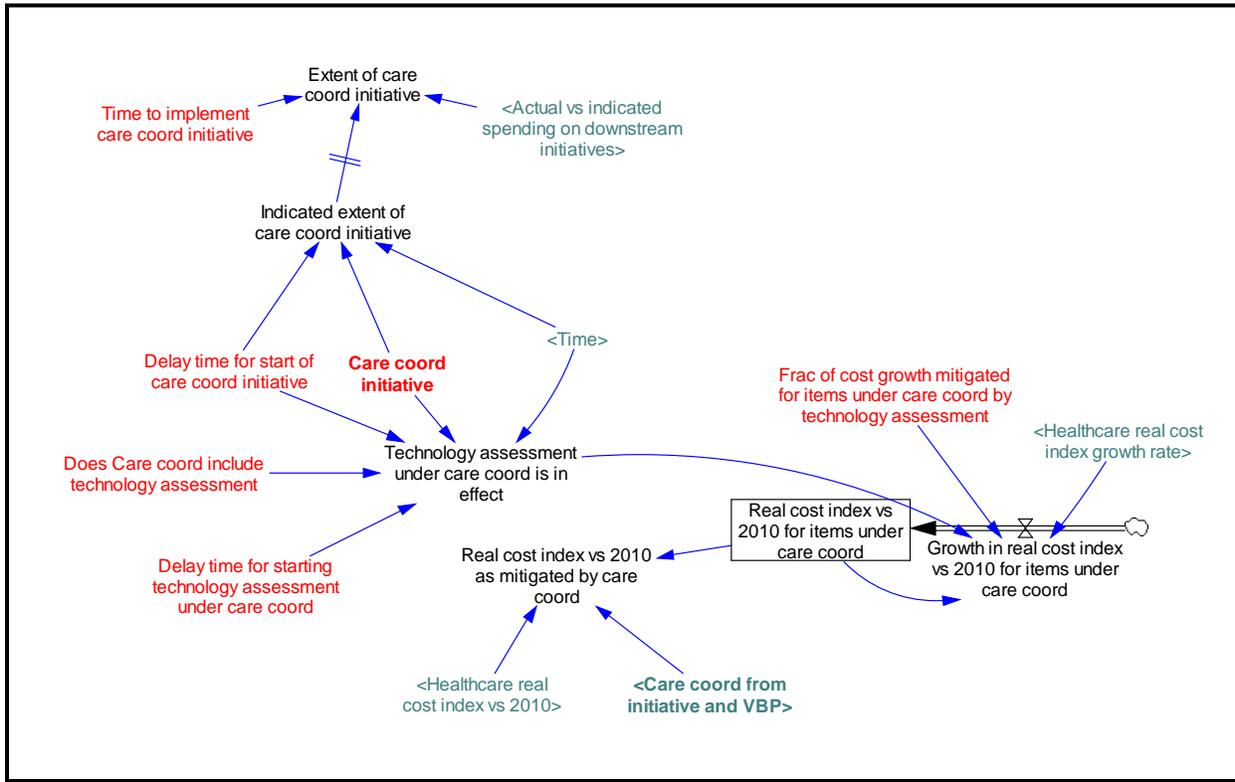


Figure 21. Primary Care Provider (PCP) Supply Structure

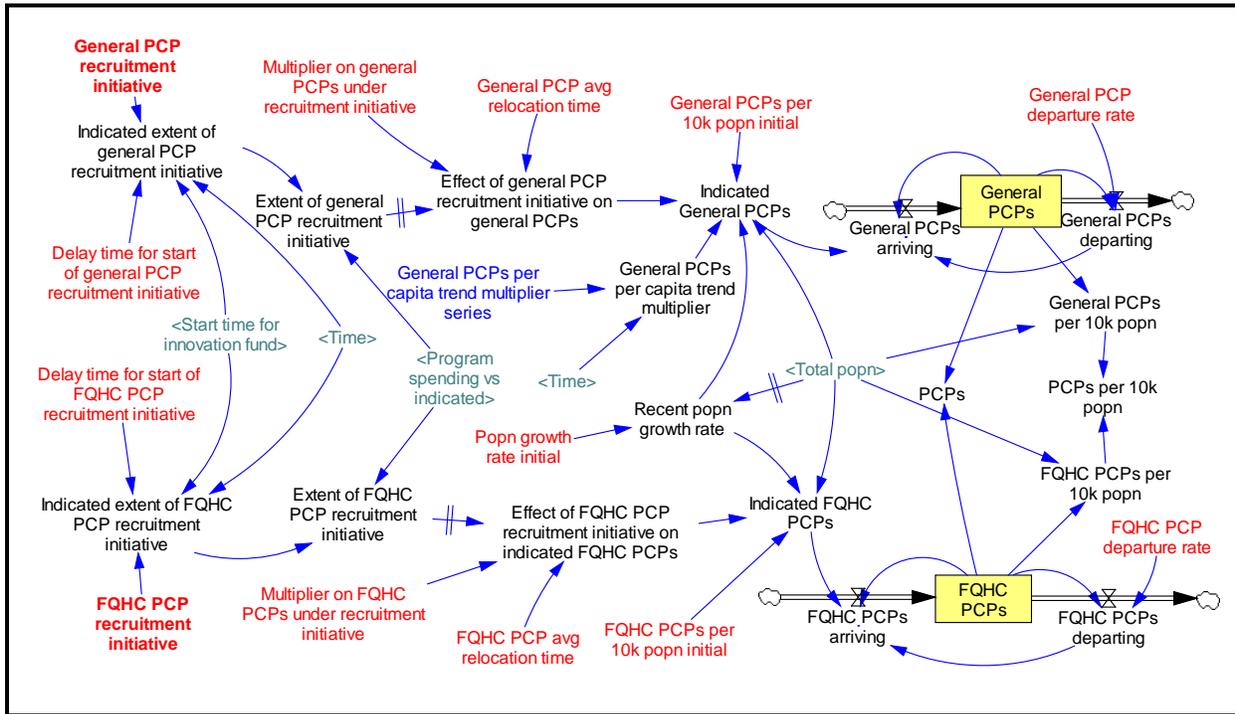


Figure 22. Specialist Supply Structure

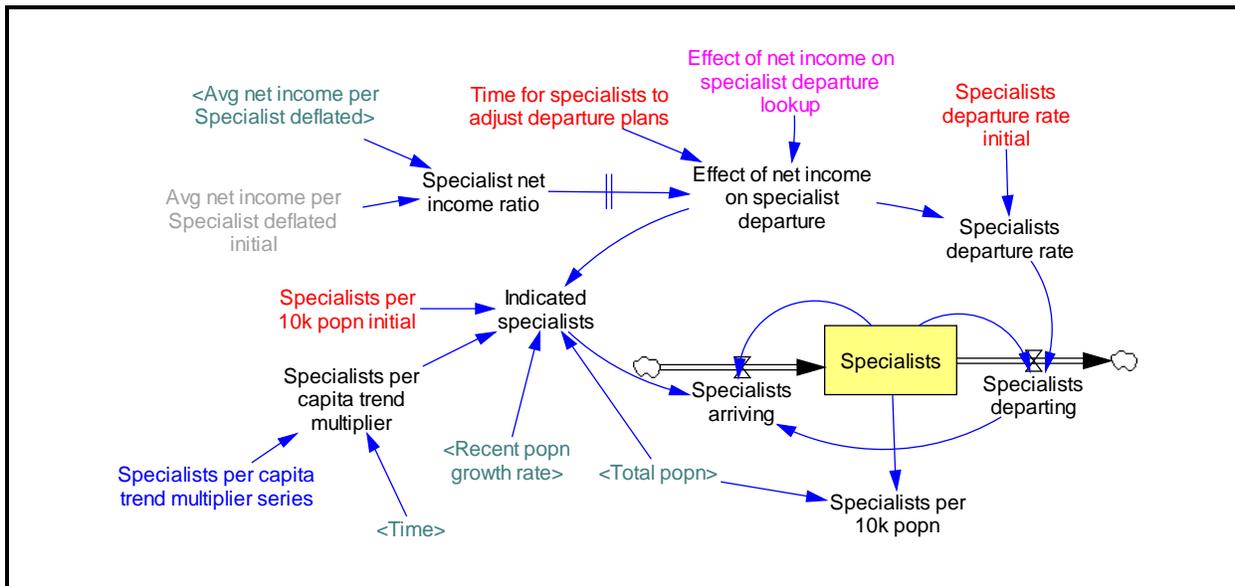


Figure 23. Physician Income Structure

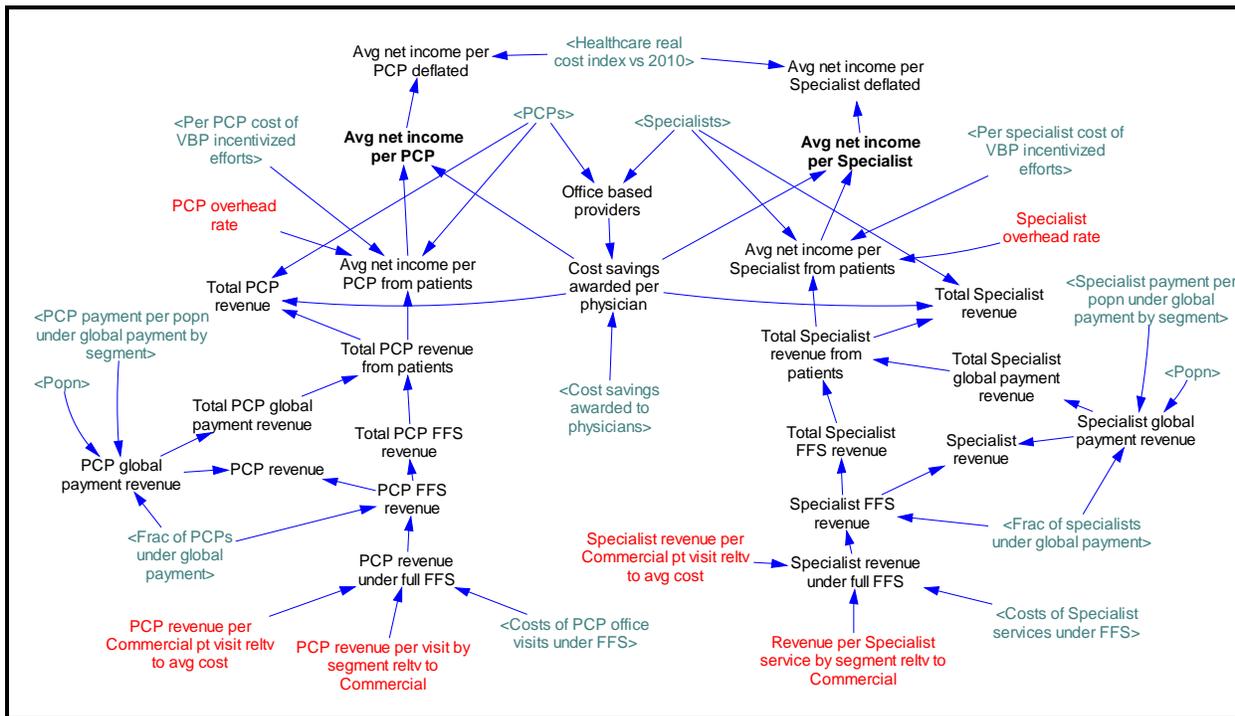


Figure 24. Global Payment Calculation Structure

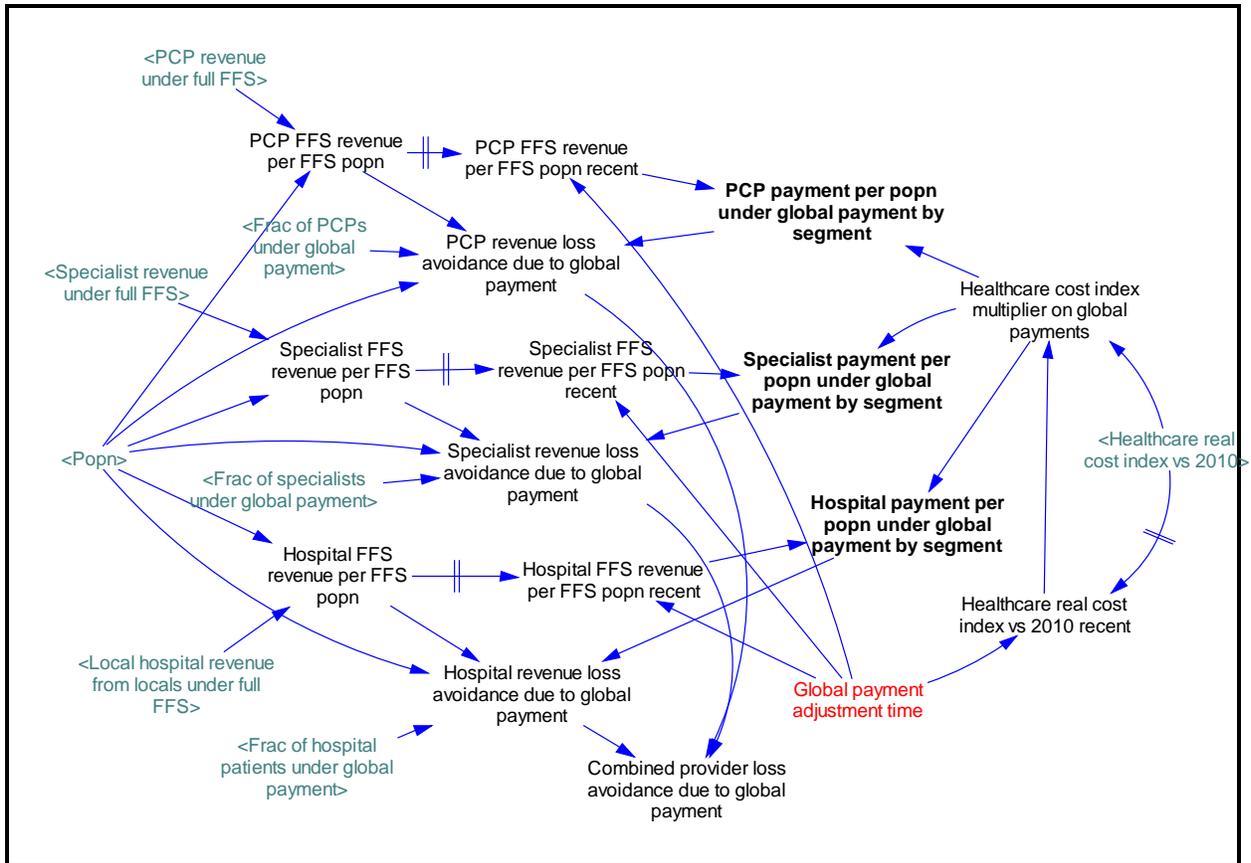


Figure 25. Urgent Episodes Rates Structure

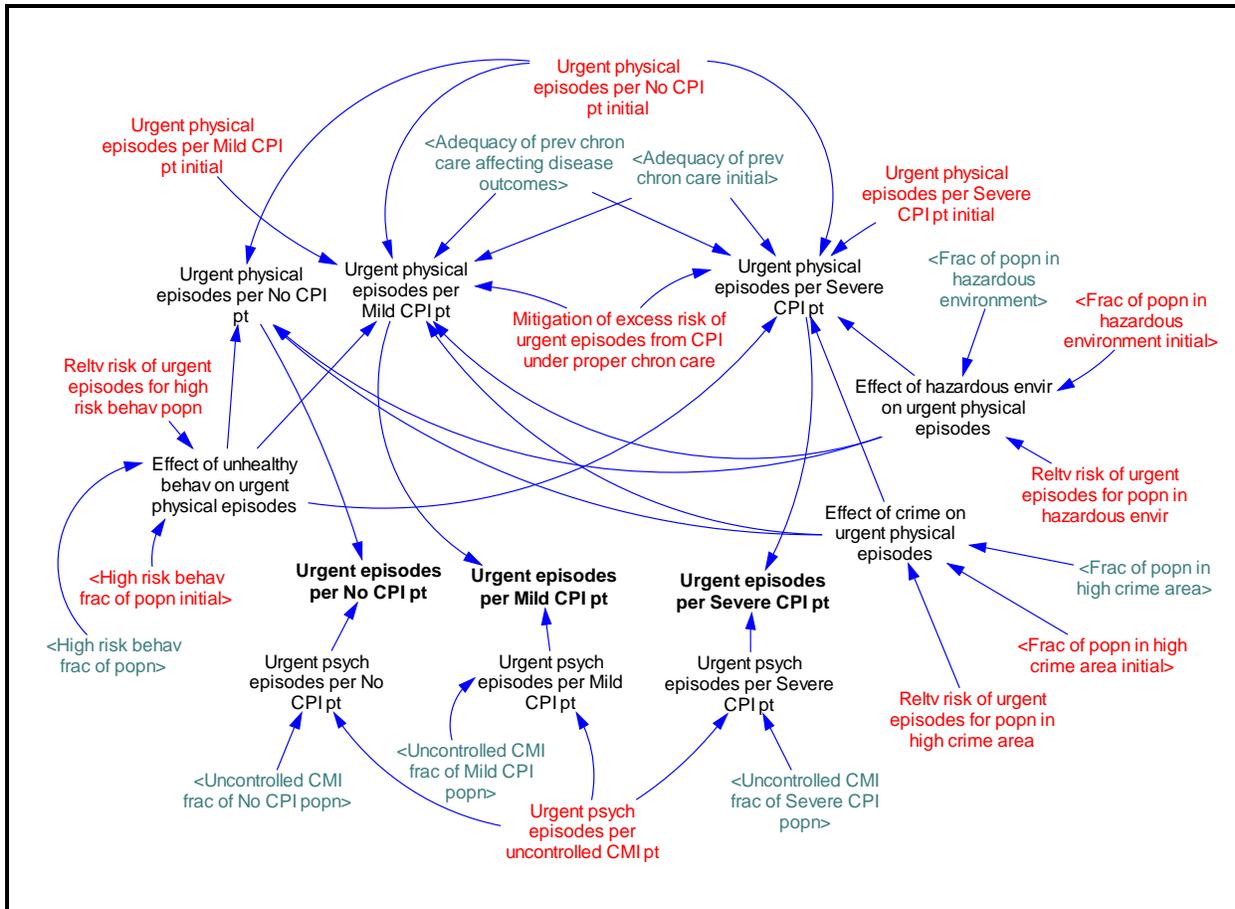


Figure 26. Hospital Emergency Room (ER) Visits Structure

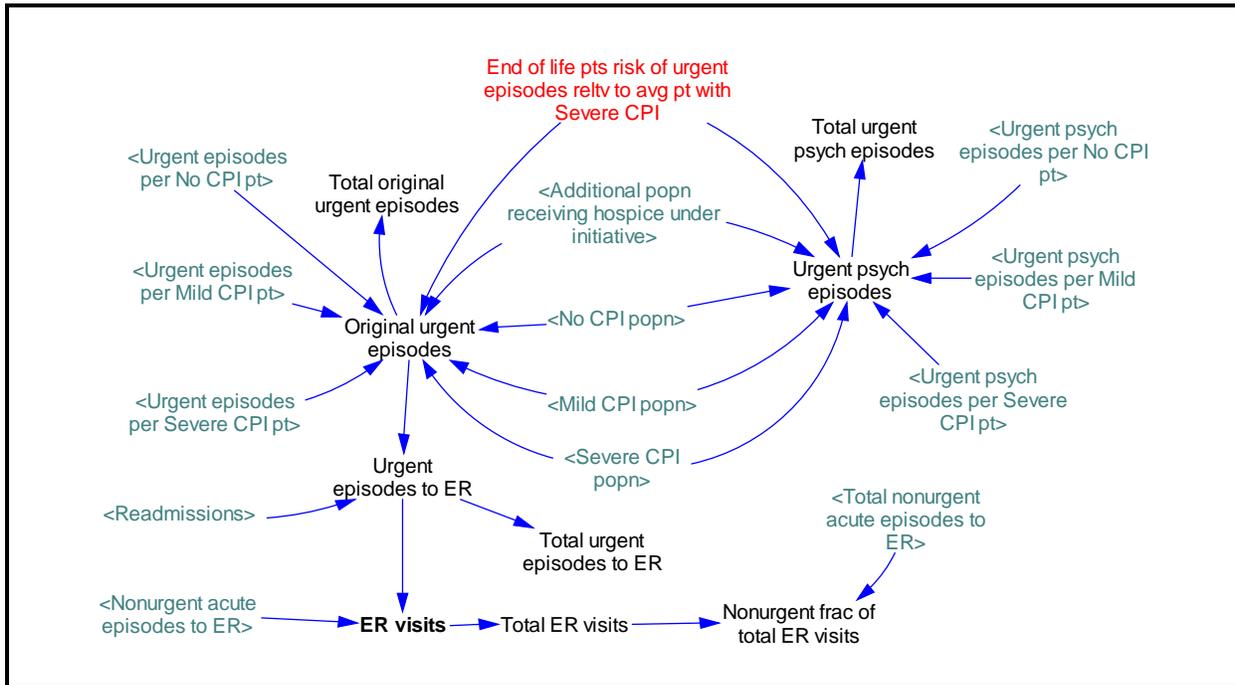


Figure 27. Hospital Inpatient Stays Structure

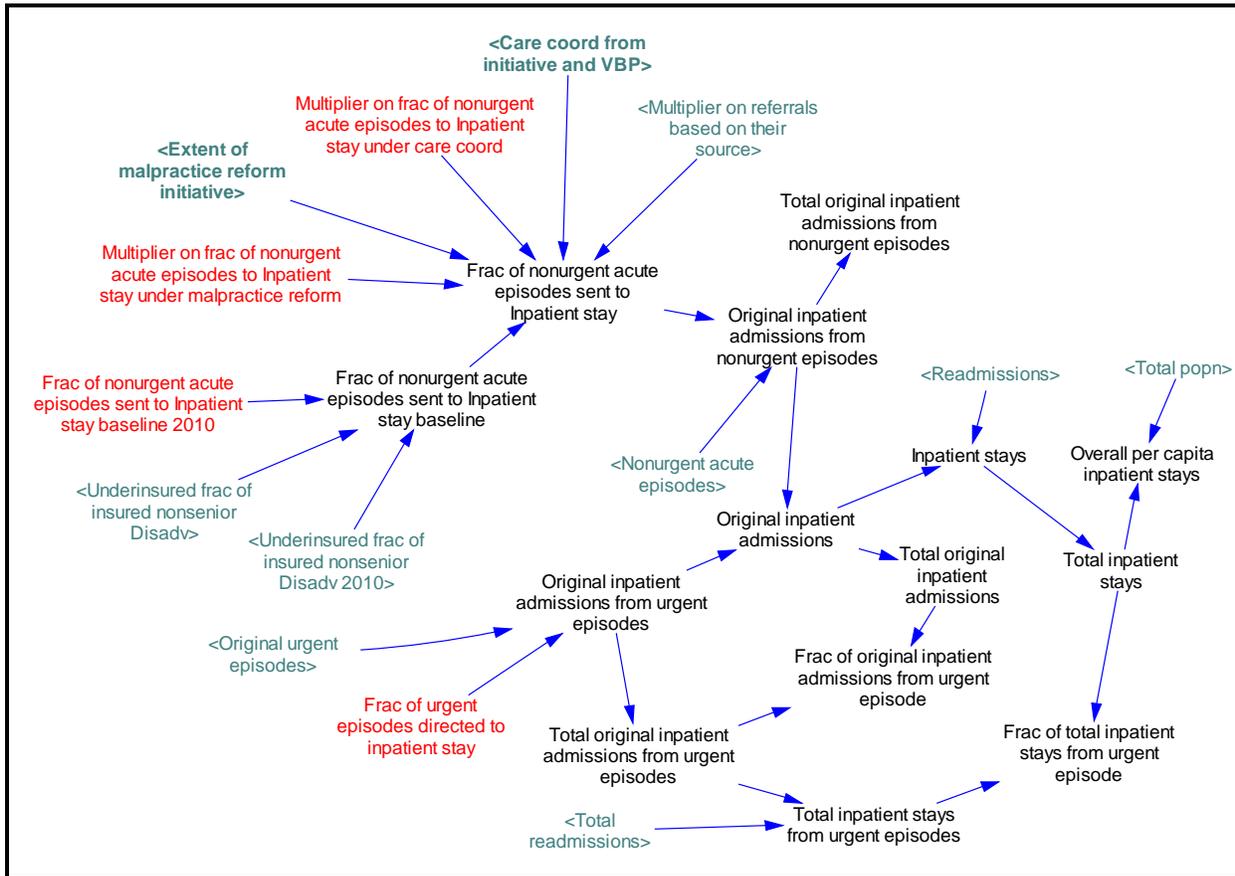


Figure 28. Discharge Planning & Readmissions Structure

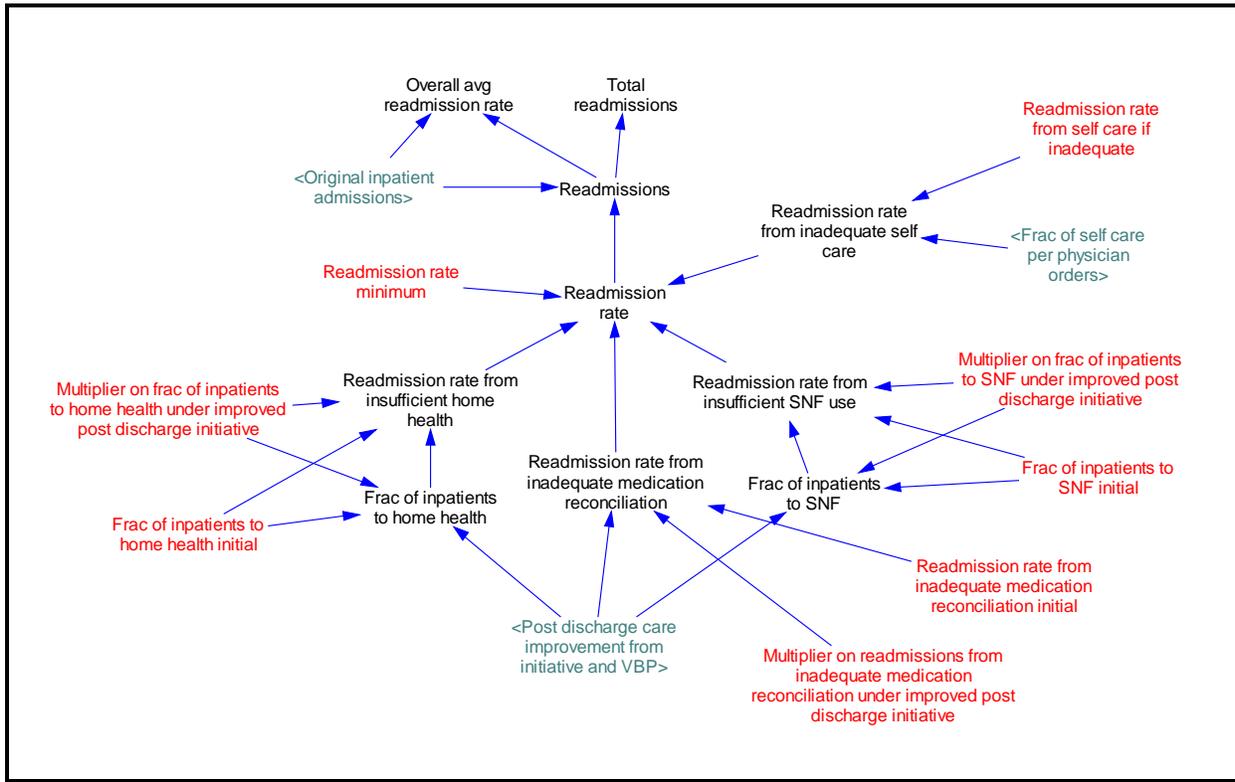


Figure 29. Hospital Beds & Net Income Structure

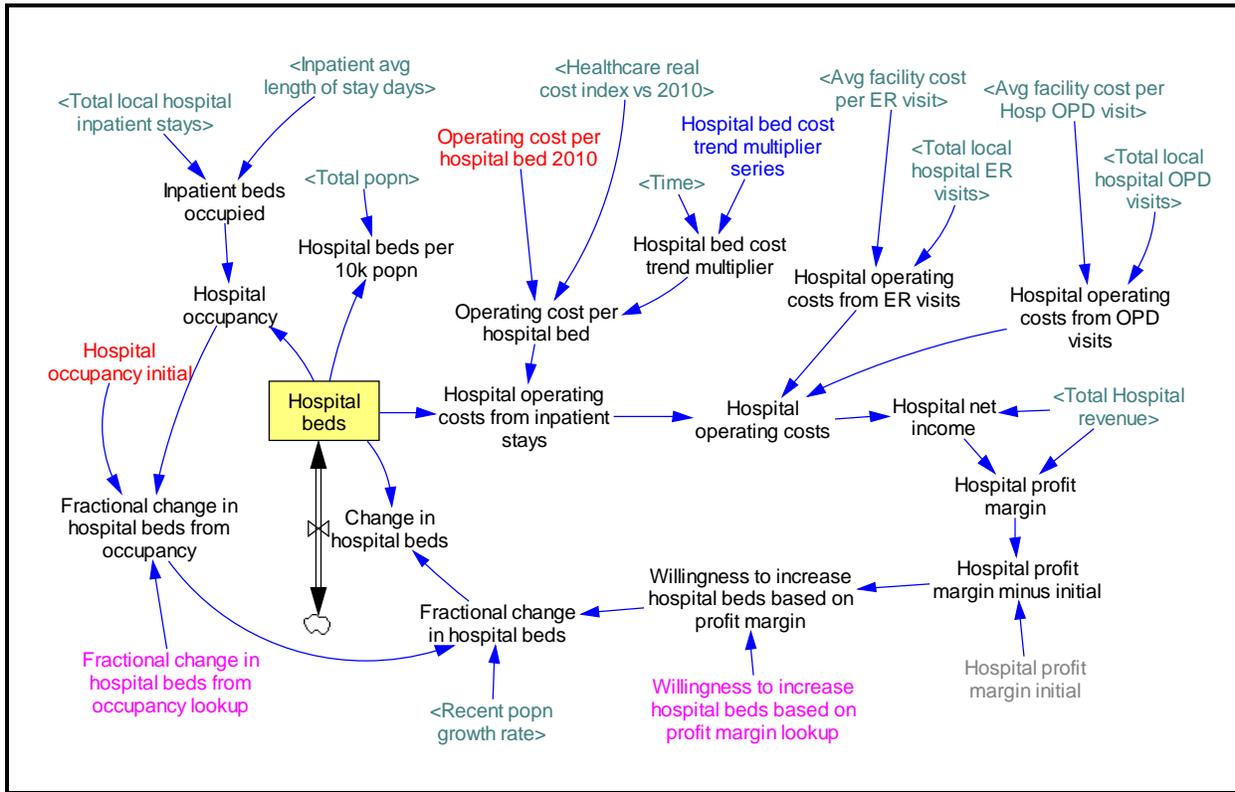


Figure 31. Length of Stay and Deaths Due to Hospital-Acquired Infections Structures

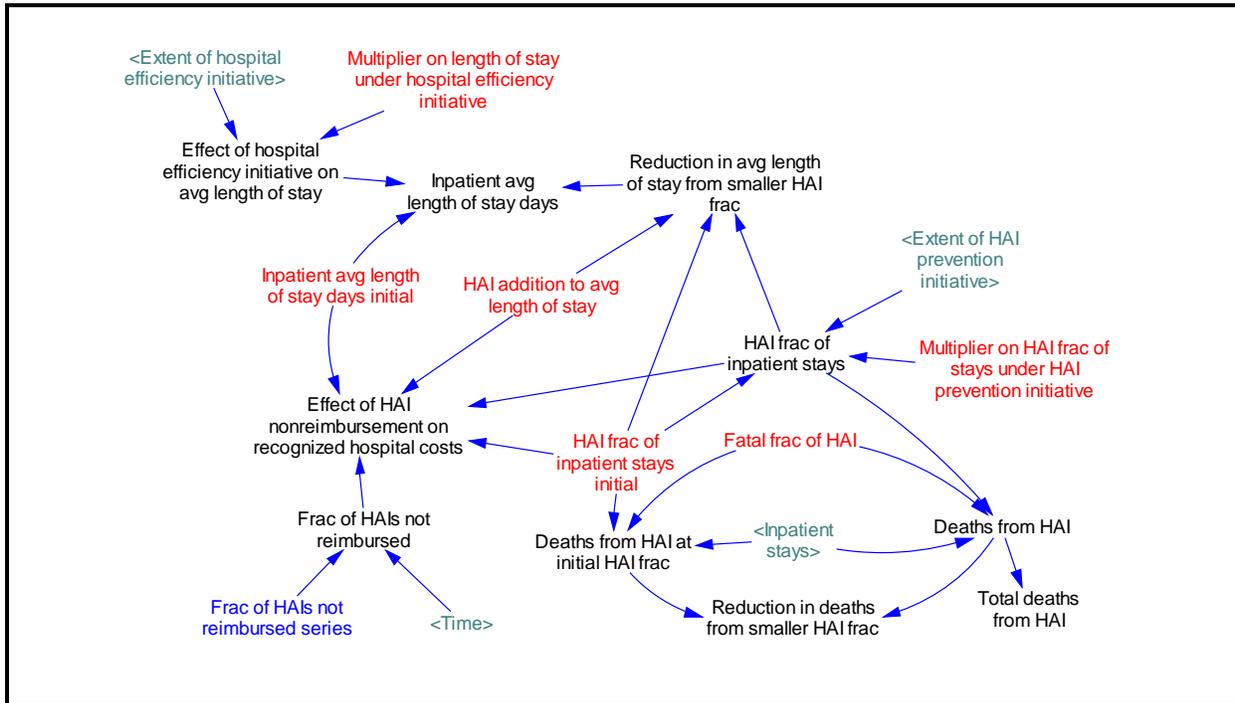


Figure 32. Hospital-Acquired Infection and Hospital Efficiency Initiative Structures

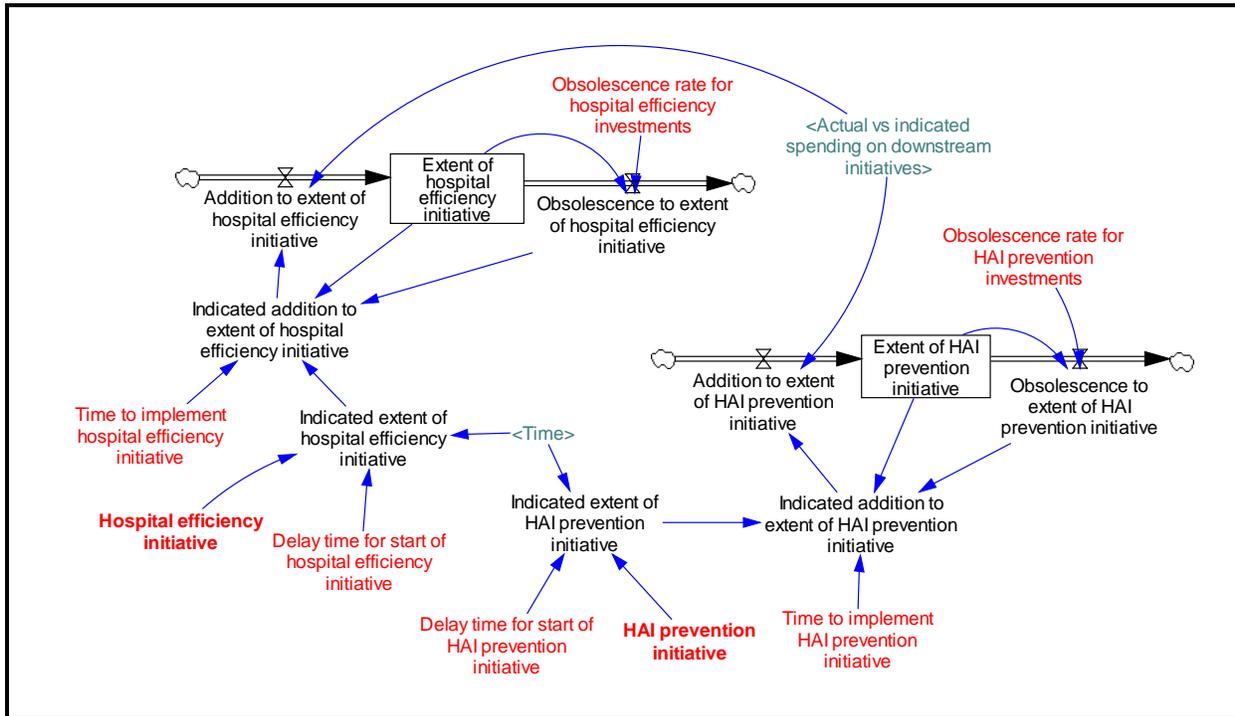


Figure 33. Nursing Facility Care Structure

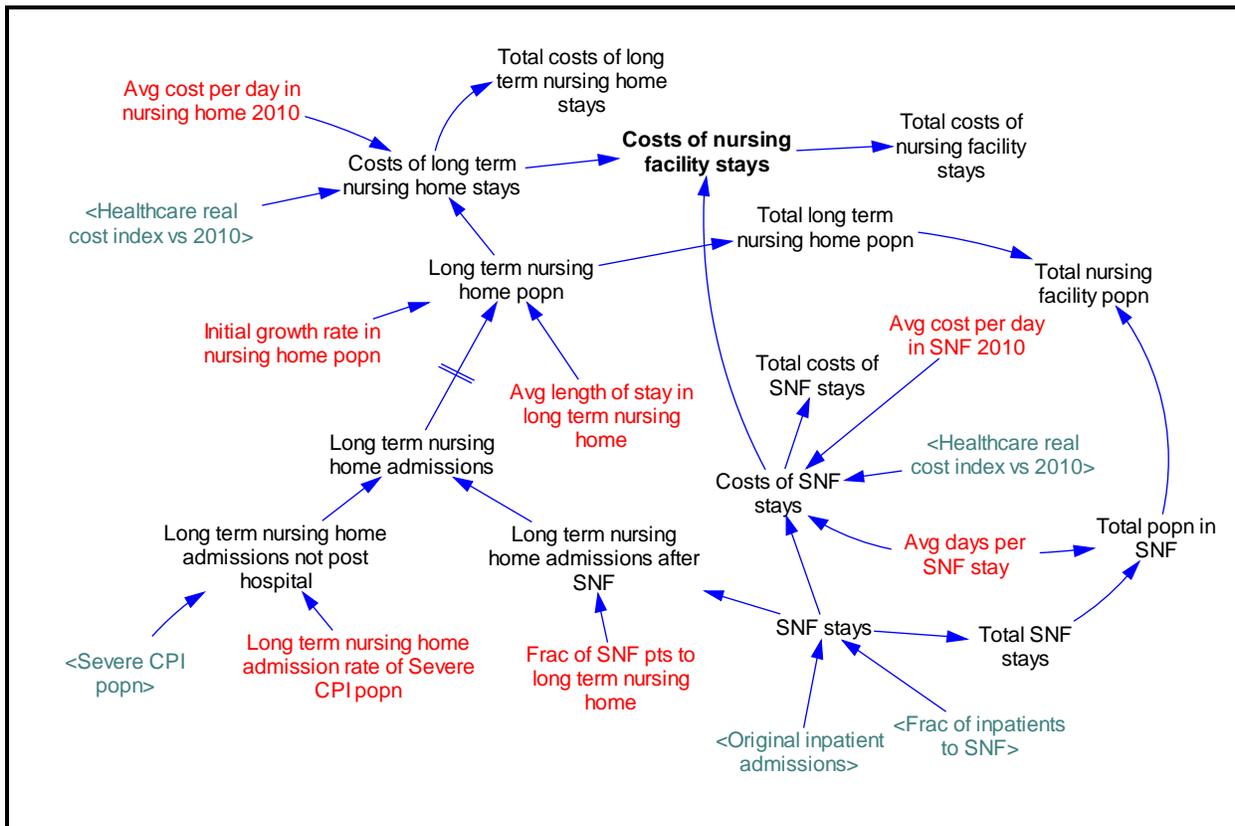


Figure 34. Home Health Care Structure

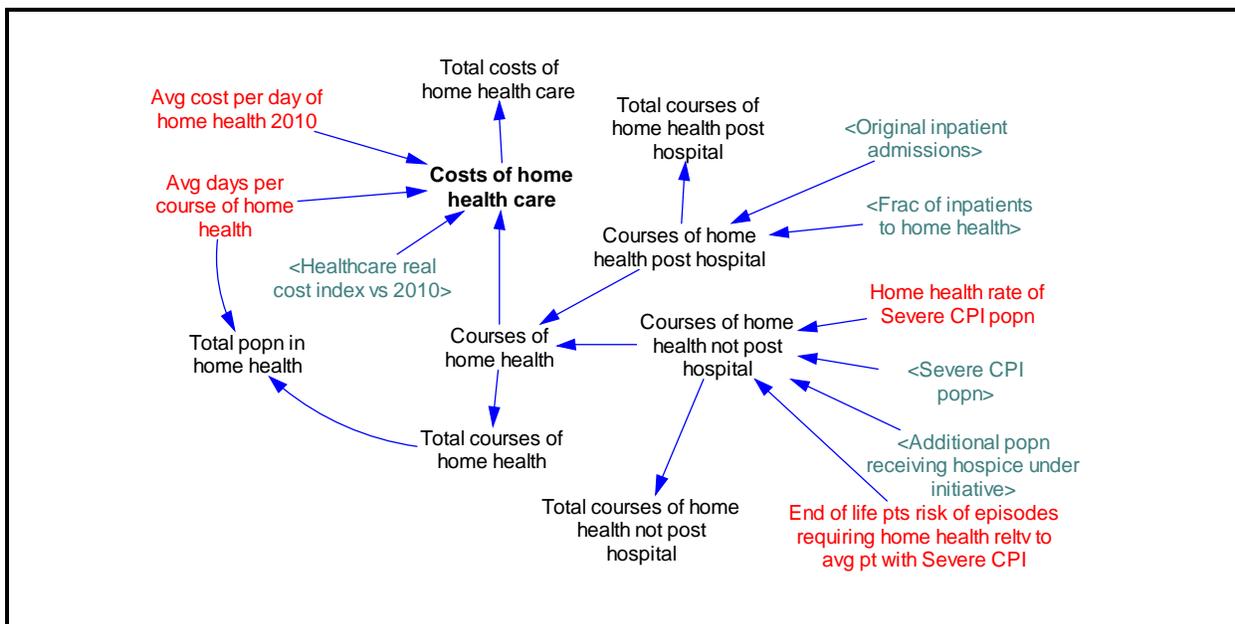


Figure 35. End-of-Life Hospice and Hospital Palliative Care Structures

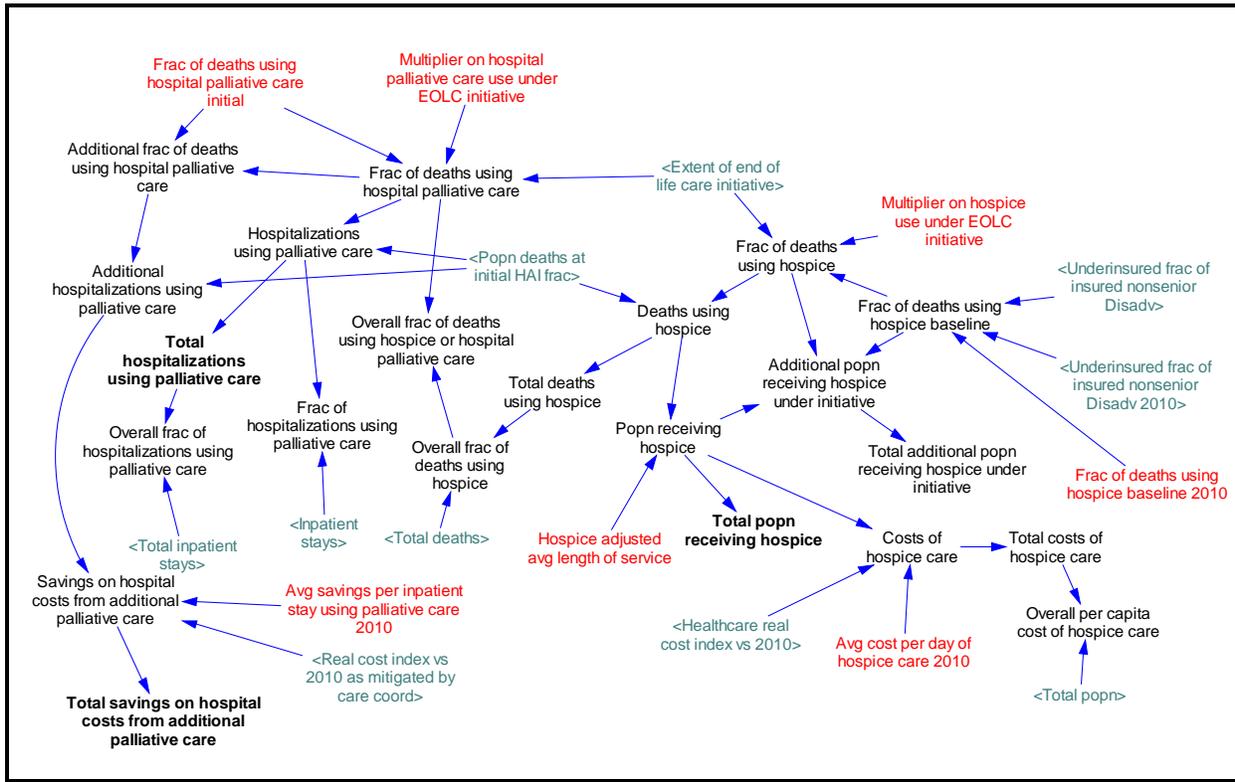


Figure 36. Other Professional Service Costs Structure

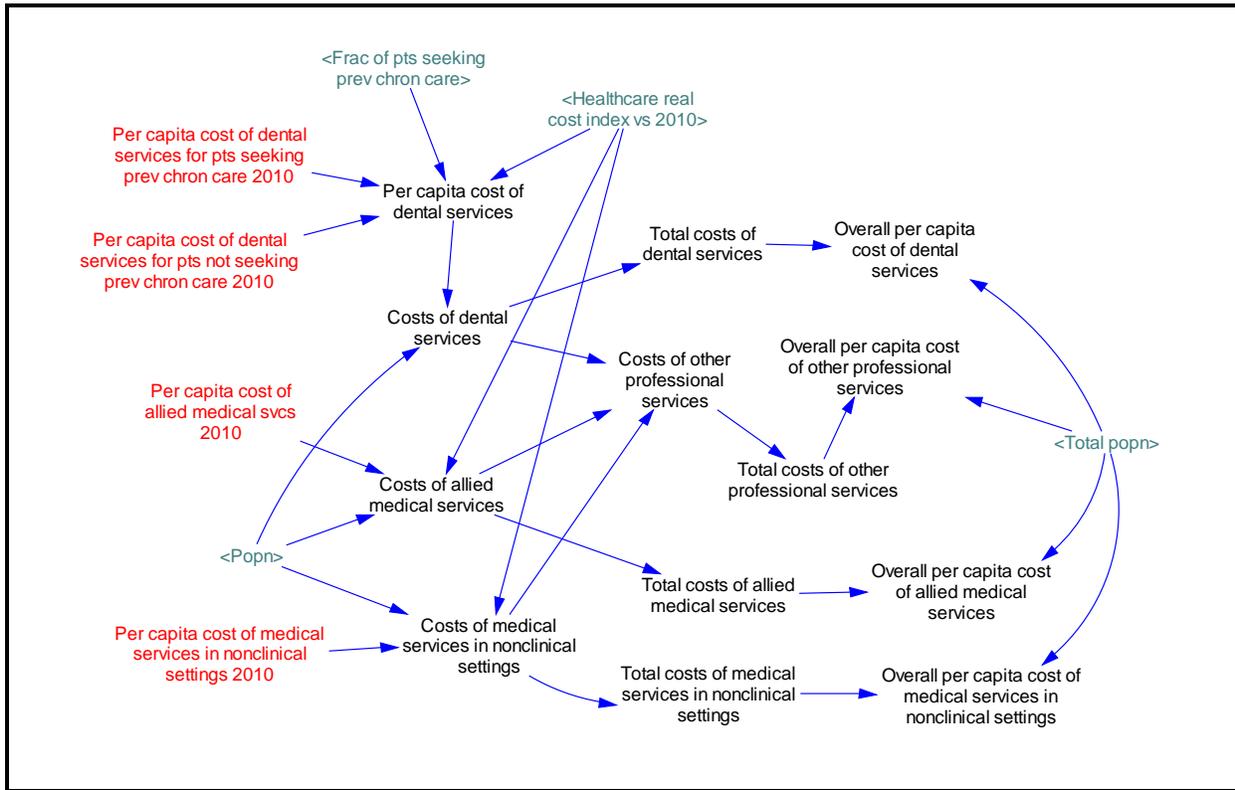


Figure 37. Prescription Drug Costs Structure

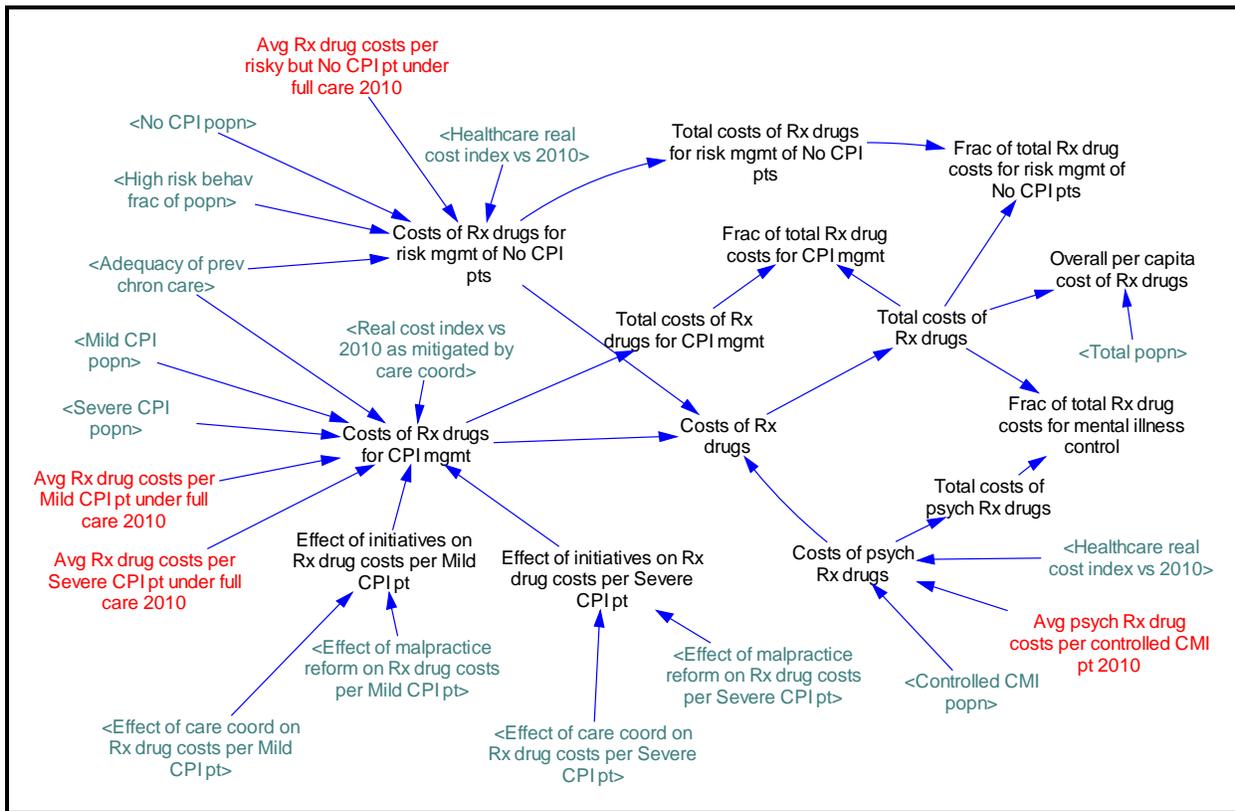


Figure 38. Total Healthcare Costs Structure

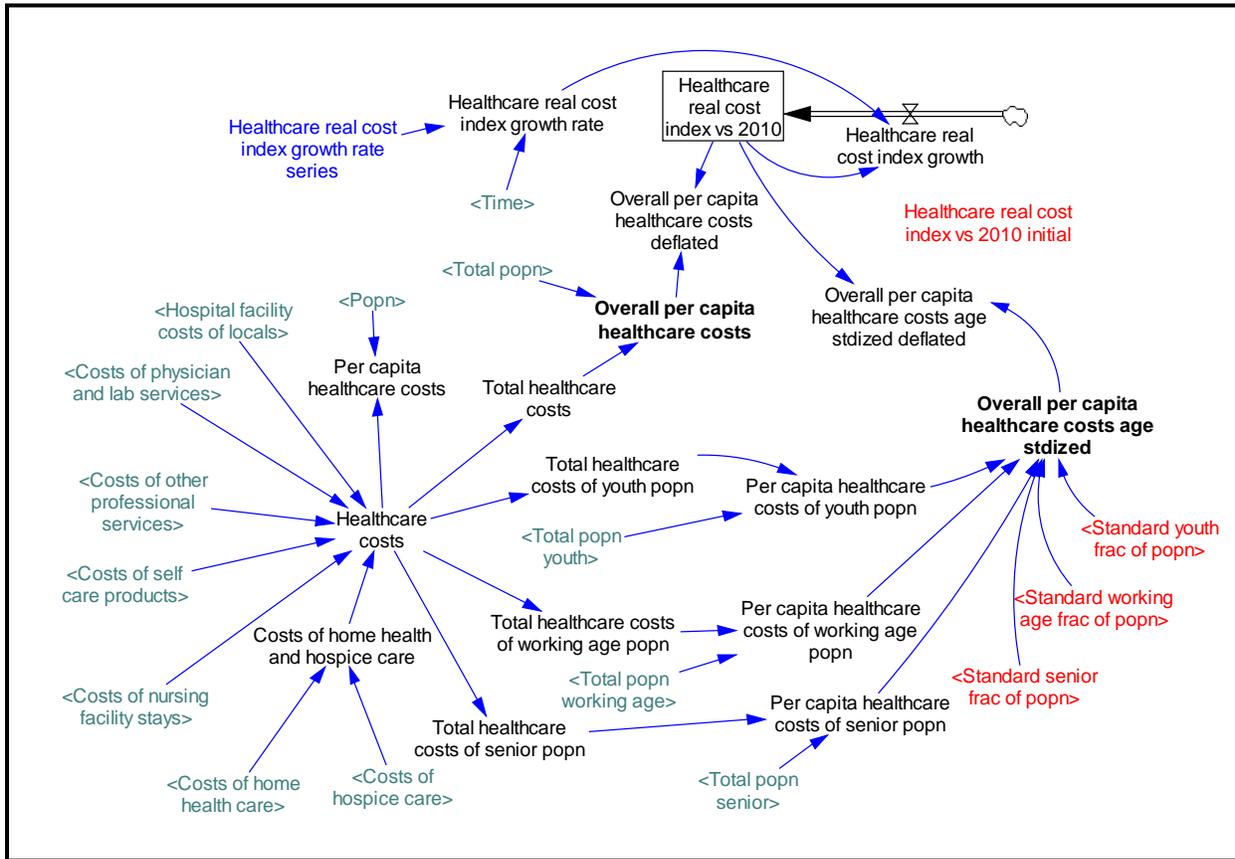


Figure 39. Cost Savings Available for Reinvestment Structure

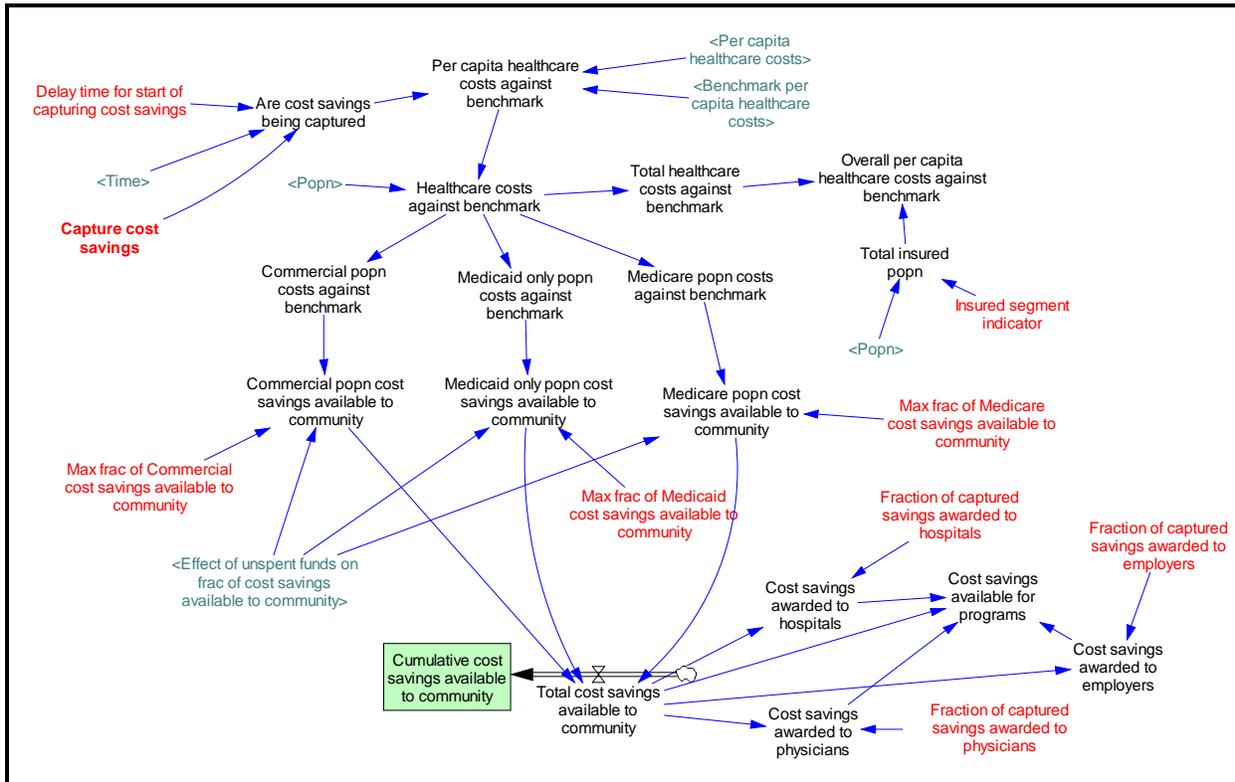


Figure 40. Cost Benchmarks and Savings-Limitation Structures

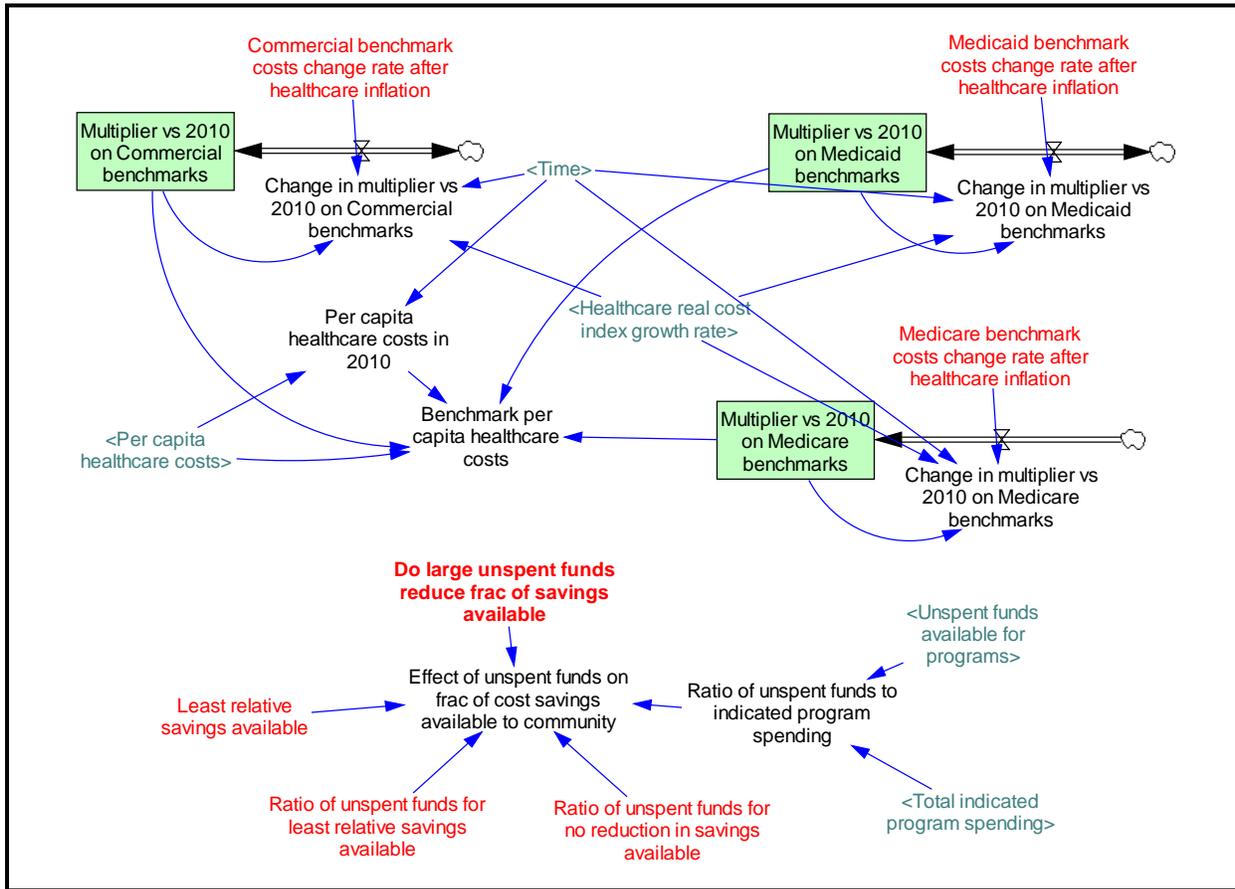


Figure 41. Indicated Spending on Population-Level Initiatives Structure

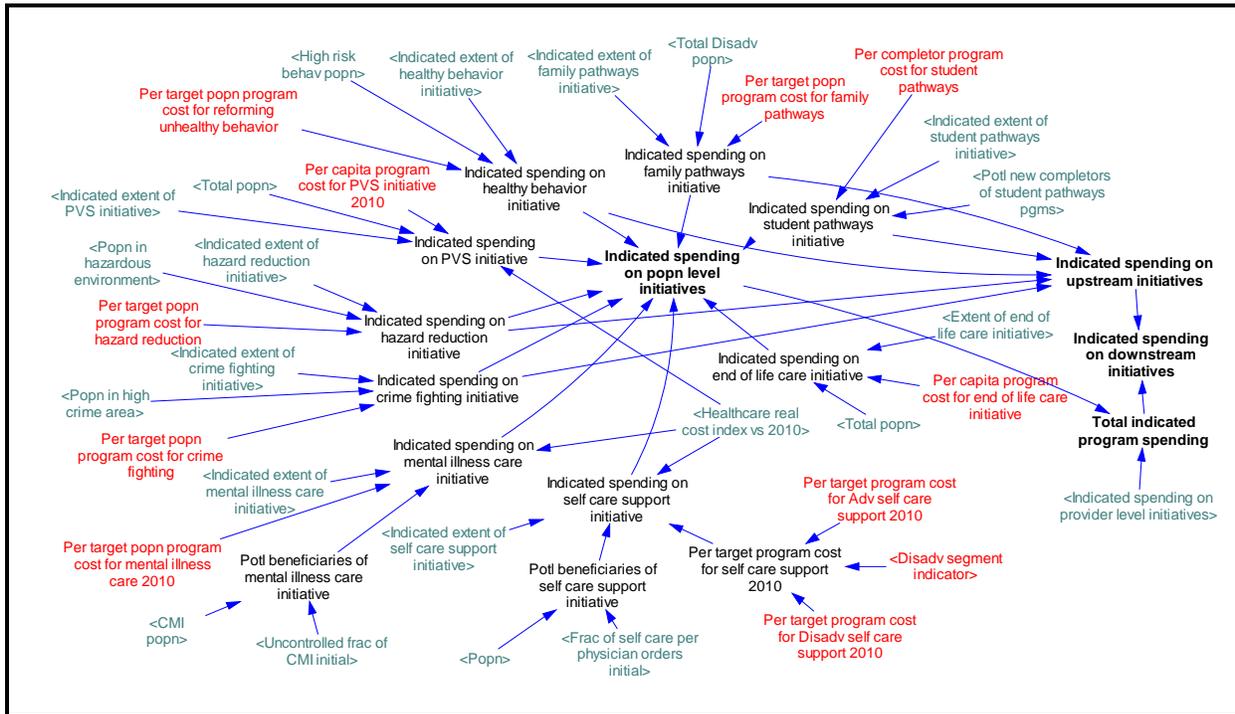


Figure 42. Indicated Spending on Provider-Level Initiatives Structure

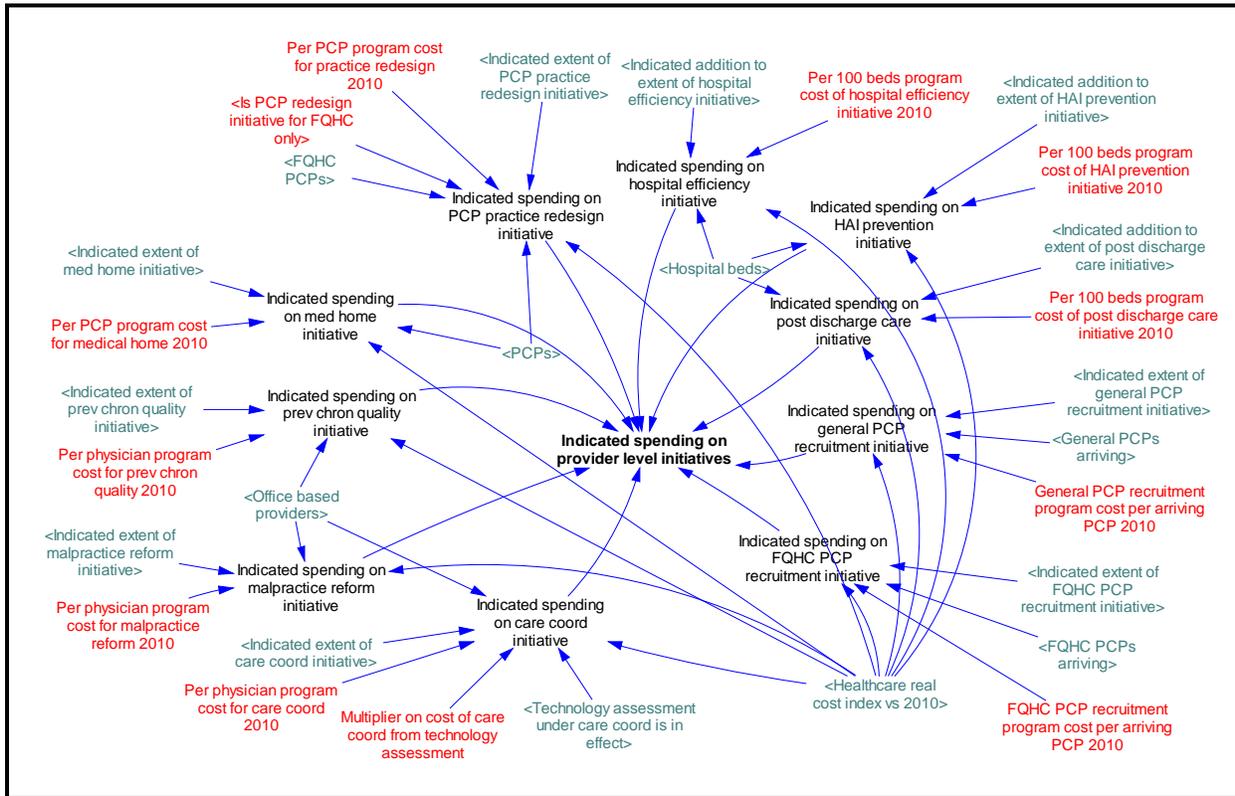


Figure 43. Non-Loan Funds Stock-Flow Structure
(not shown: parallel structure for loan funds)

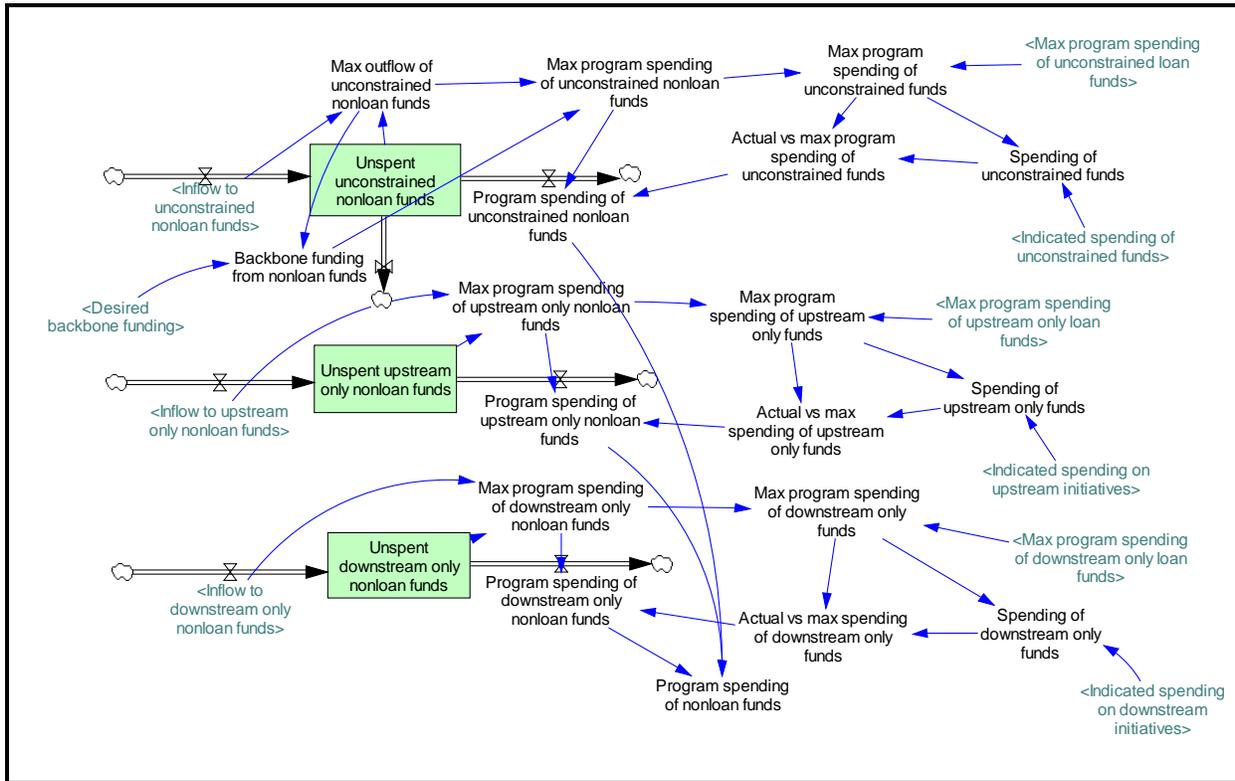


Figure 44. Non-Loan Fund Inflows with Upstream & Downstream Restrictions Structure

(not shown: parallel structure for loan funds)

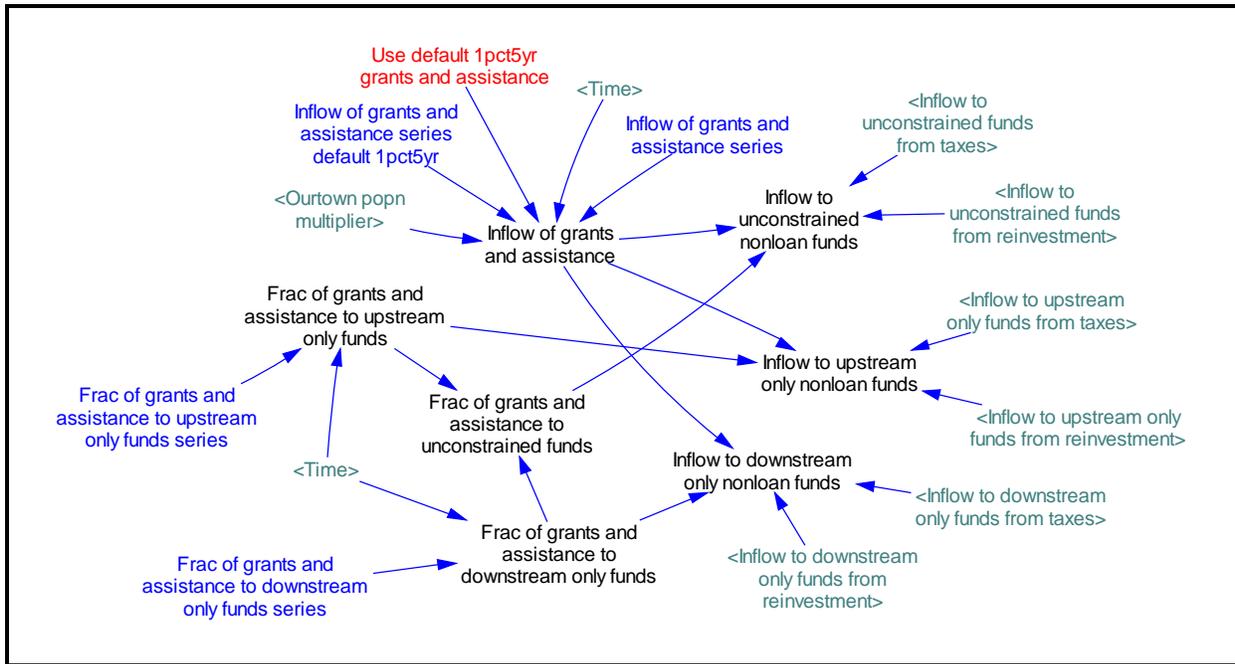


Figure 45. Four Types of Local Taxes for Funding Initiatives Structure

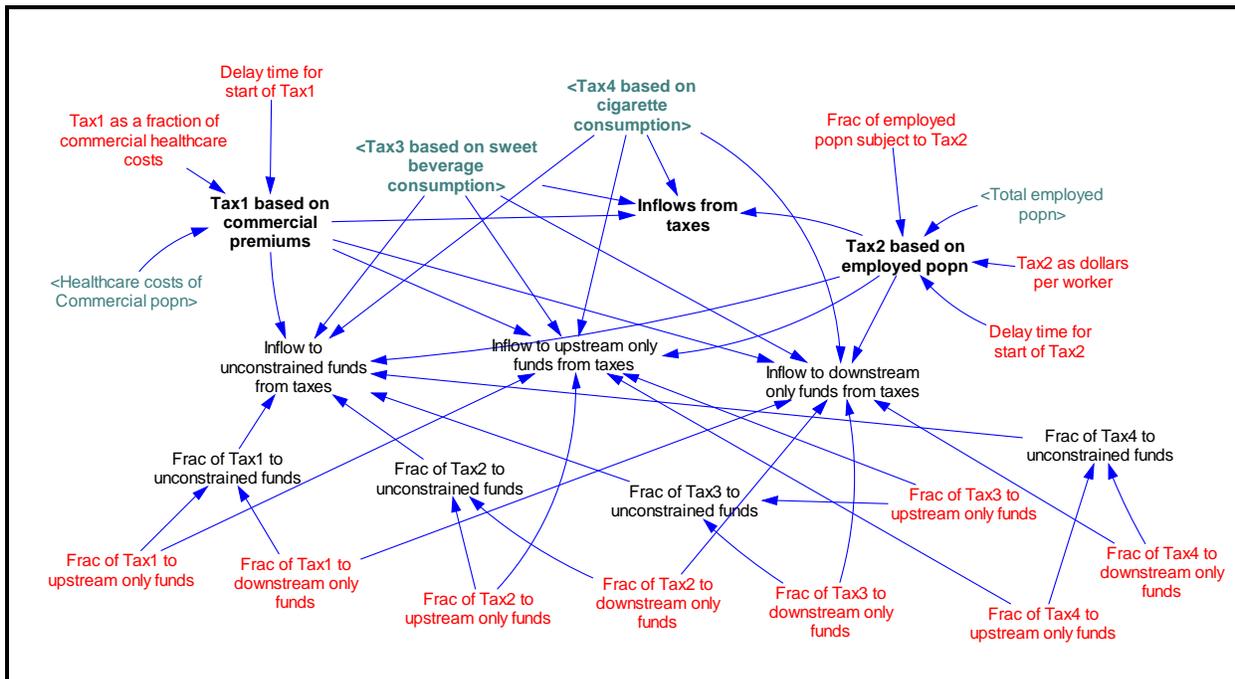


Figure 46. Sweet Beverage and Cigarette Taxes Detailed Structures

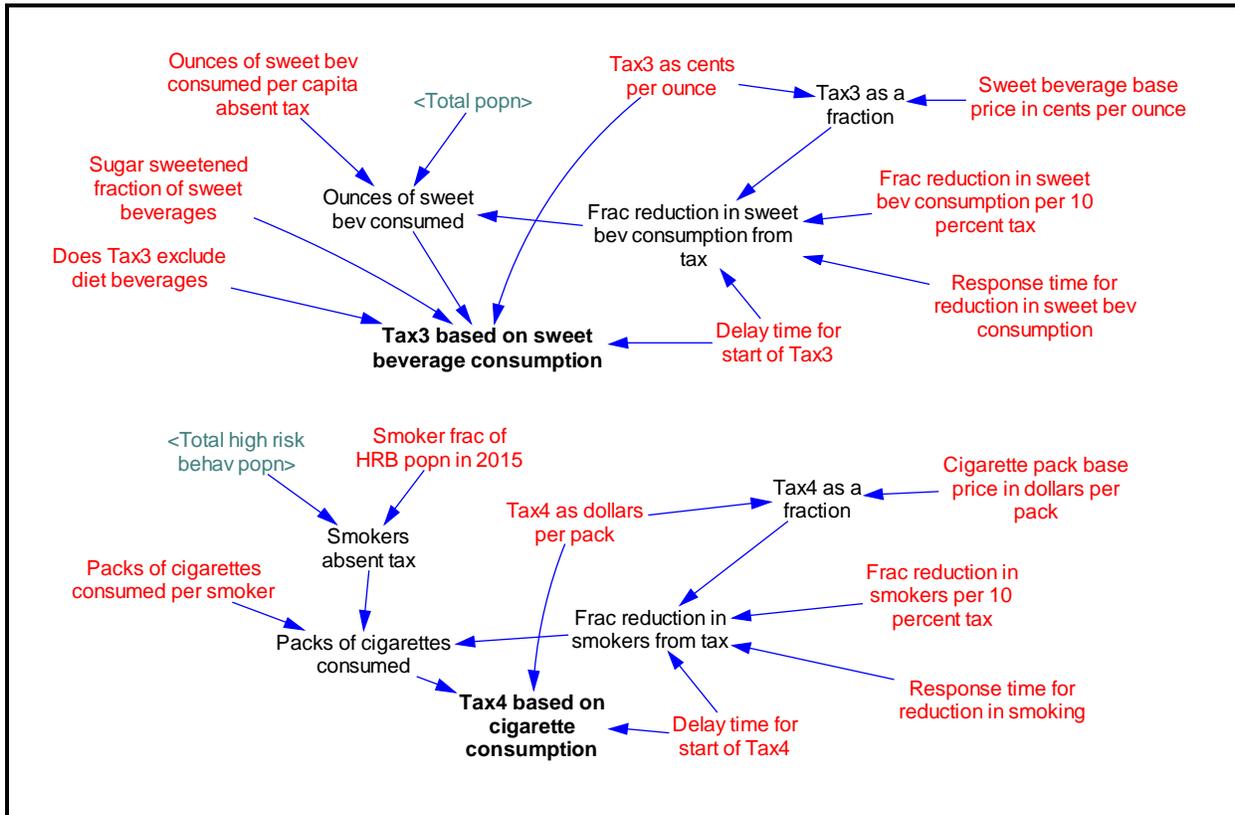


Figure 47. Value of Employee Productivity Structure

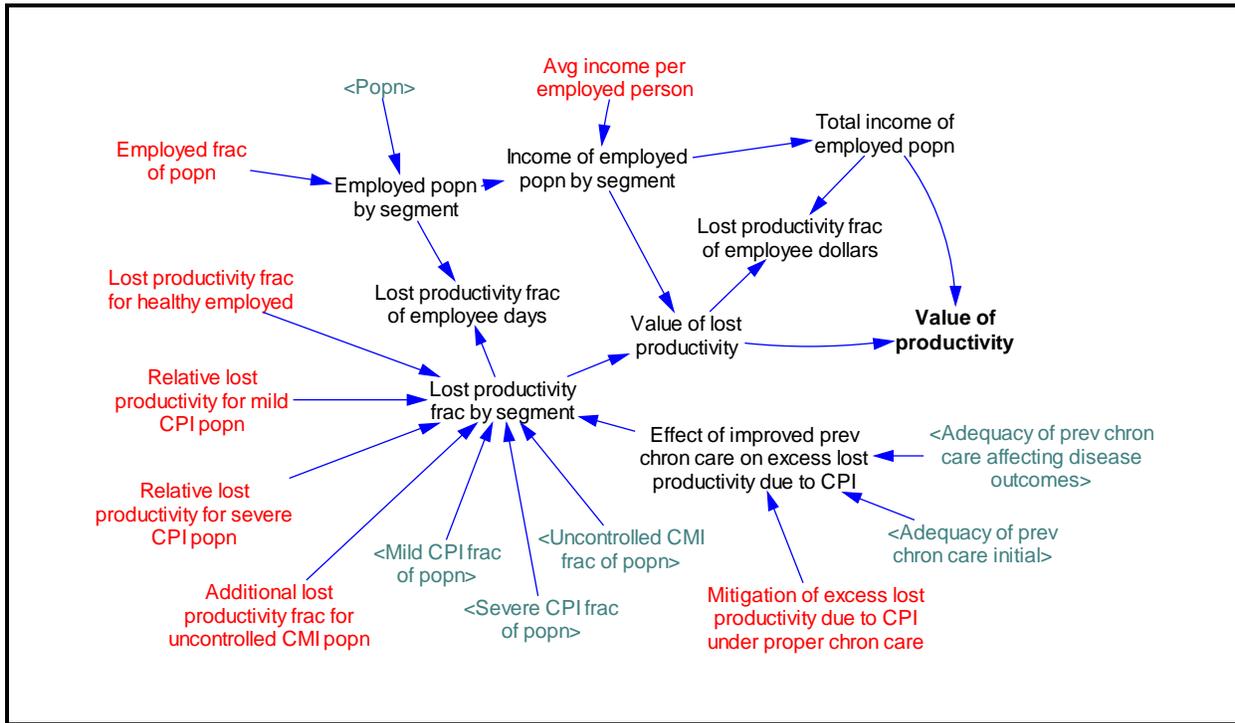


Figure 48. Quality of Life & Quality-Adjusted Life Years (QALYs) Structure

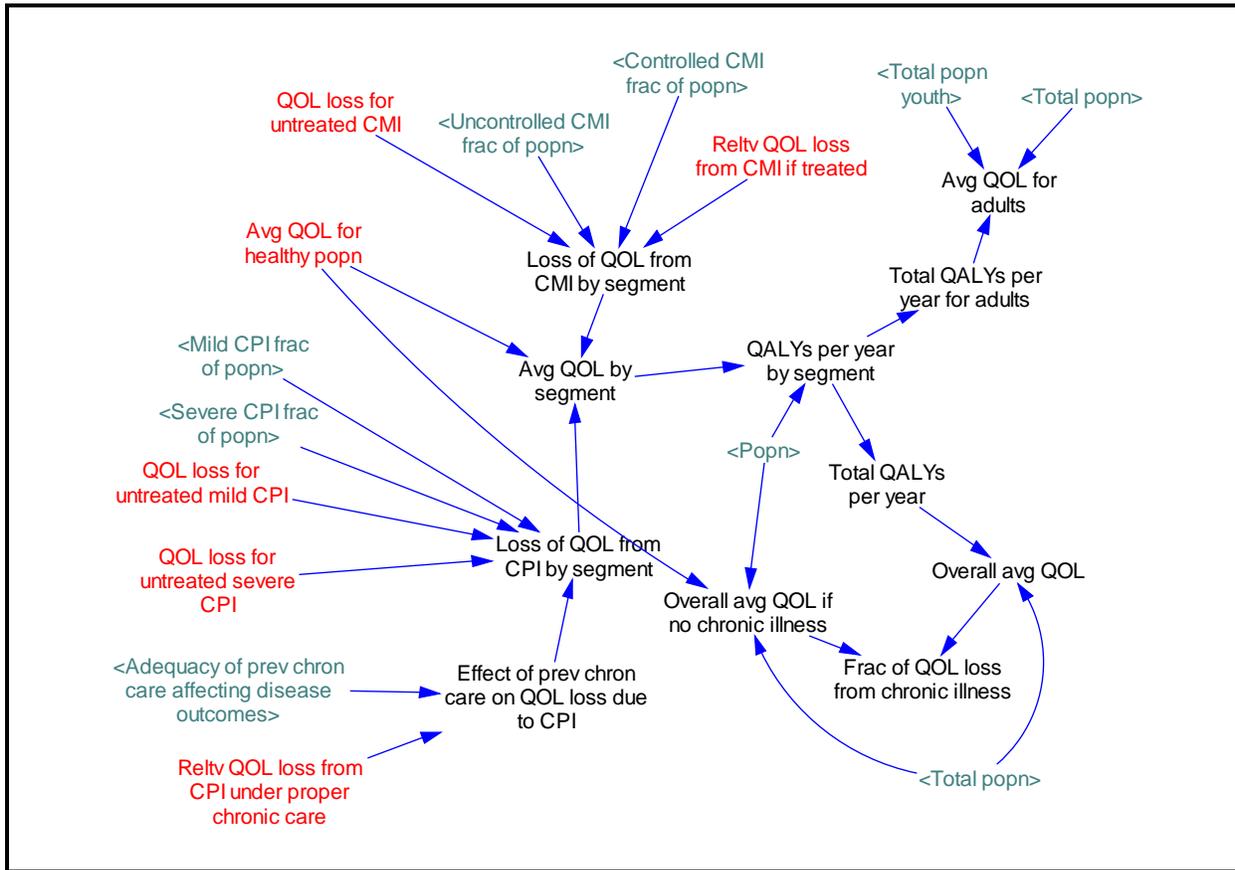


Figure 49. Healthy Days Structure

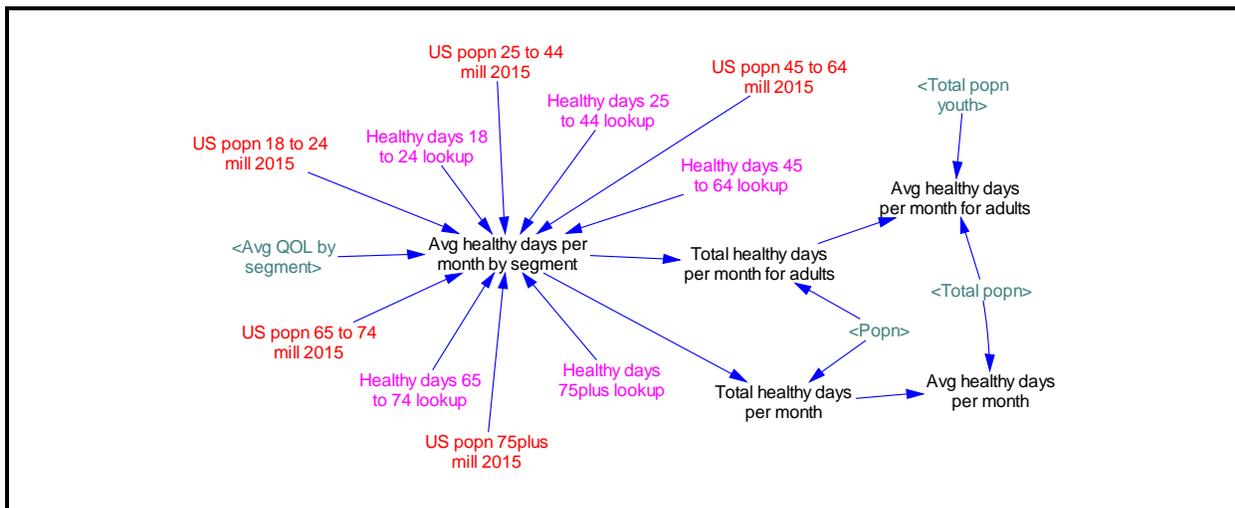


Figure 50. Discounted ROIs for Healthcare Costs, Deaths, & Value of Productivity
(not shown: undiscounted ROIs)

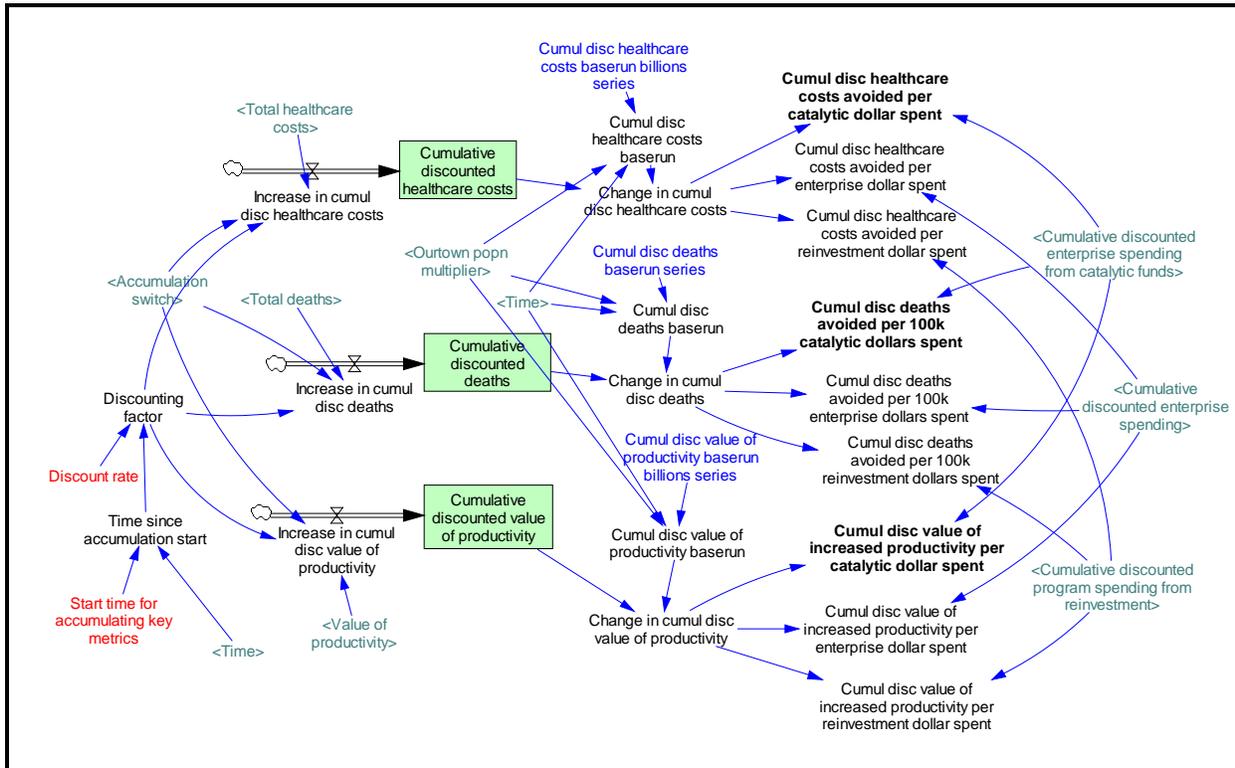


Figure 51. Discounted ROIs for QALYs & Healthy Days Structure
 (not shown: undiscounted ROIs)

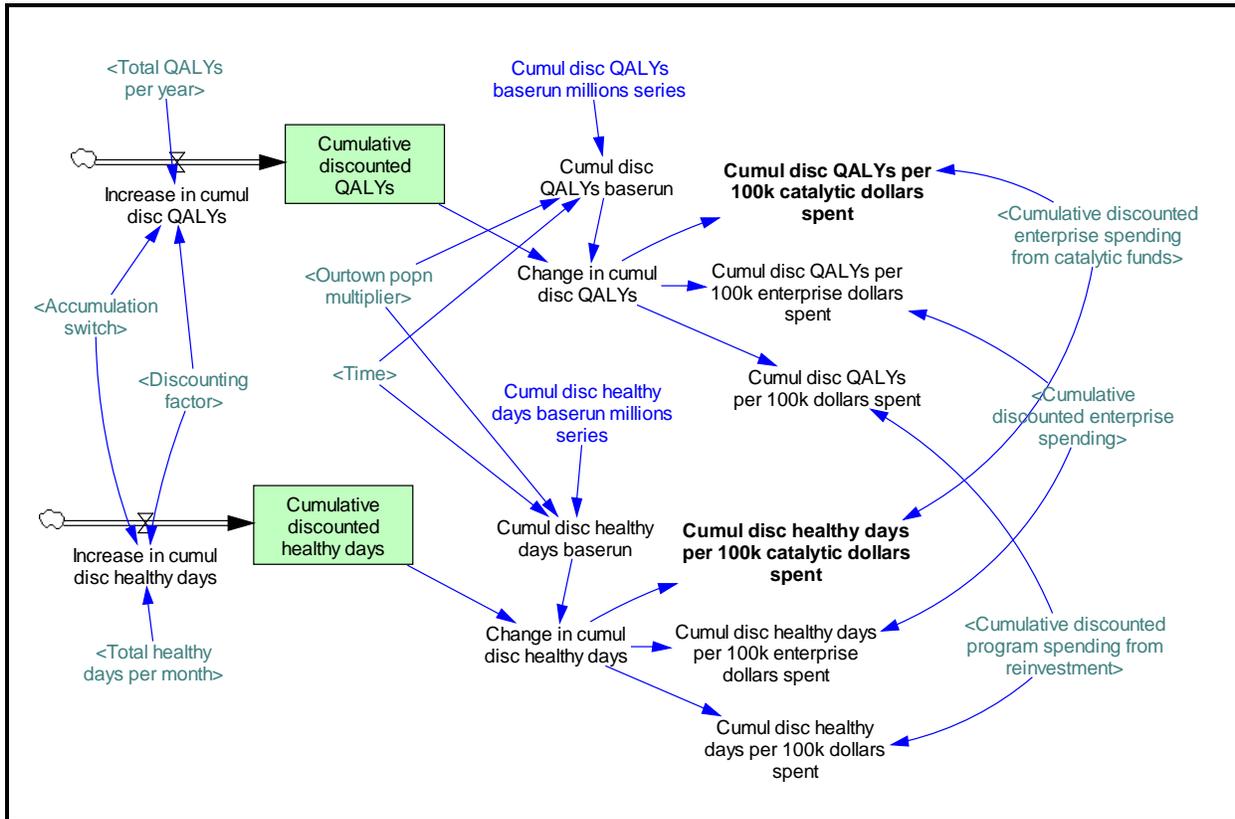
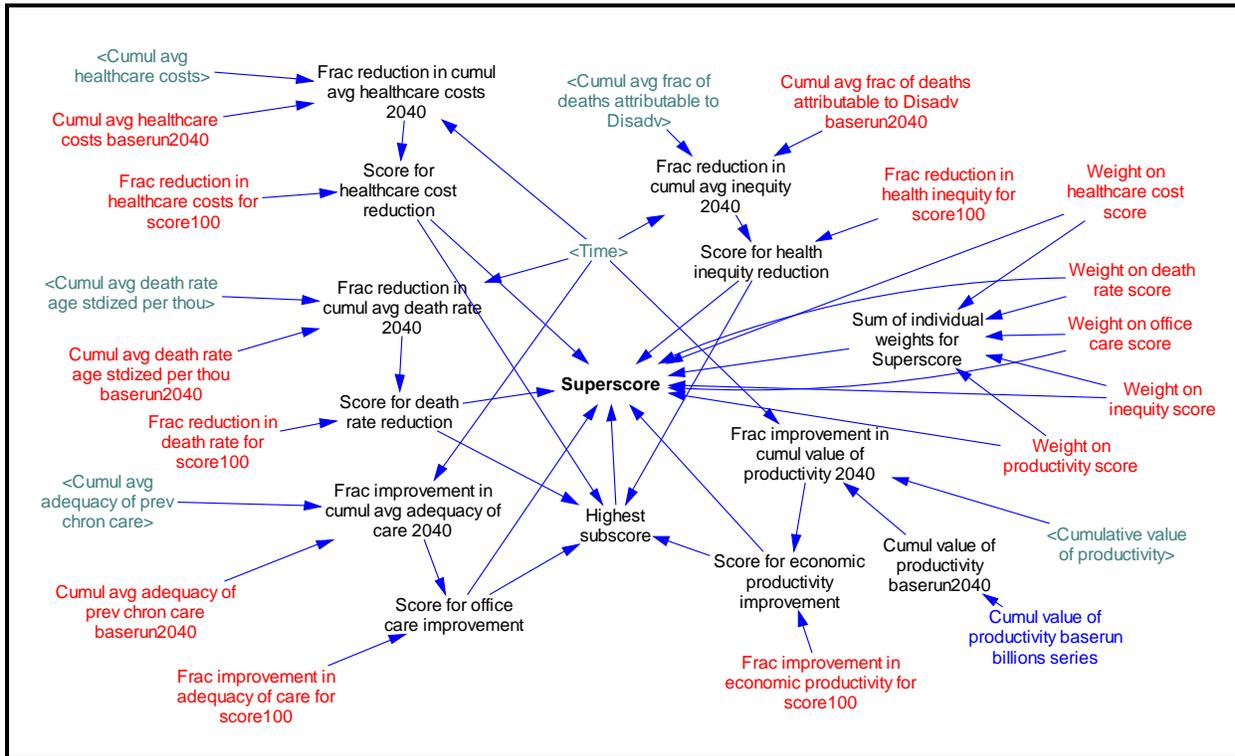


Figure 52. Superscore Structure



2. BASE RUN, 2000-2040

The base run of RTH-Anytown is the result of the model's dynamic stock-flow and feedback structure responding to the baseline exogenous trend assumptions listed in Table 4. The base run includes both a historical period, supported by data from 2000 to 2012, and a future period through 2040. The historical output closely fits US national-level data of many types in the areas of population demographics and flows, health risks and health status, health care resources and utilization, and provider income and health care costs. And the simulated future growth and aging of the population fits US Census projections (scaled down by a factor of 1,000) through 2040.

Uncertainty exists for all other future outputs. This is so because (a) one cannot know for certain what will happen to the exogenous trends, and (b) something significant about the model's structure or parameter estimation may be inadequate for projecting the future. In this, RTH is no different from any other model of a complex reality: Despite the fact that the model passes tests of validity—e.g., reproducing history and generating plausible future projections in response to a wide variety of test conditions—we simply cannot predict decades into the future with certainty.

This lack of certainty should be noted, but need not be a hindrance for our purposes. RTH is a policy model, not a forecasting tool, and a policy model can provide firm conclusions even when its base run projections are uncertain (Sterman 2000; Homer 2012). It is important that base run trend assumptions and future projections be plausible and, for ease of analysis, perhaps reflective of a "status quo" with a minimum of assumed changes in exogenous trends. But, in policy modeling a base run future need not be described as "most likely"—a statement of relative certainty—rather, it is only a starting point for the consideration of alternative policies and scenarios.

Figure 53 is a causal-loop diagram summarizing those aspects of the dynamic structure and the exogenous trends that are most important for understanding base run output past and future. Figures 54 to 71 present graphs, for the entire base run from 2000 to 2040, of output variables that tell the salient story and which, in most cases, have counterparts in available data for the historical period; see also Table 1 for definitions of these variables and data sources. Direct comparison of model output to historical data is presented only in Figure 68 (hospital profit margin), where some gaps between data and simulation over 10 years can be seen clearly. In all other cases, the time-series data are rather smooth (or represent only one or two points in time), and the gap between simulation and data is

negligible. Thus, there is no real need to show the data, allowing for more output variables to be shown on a single graph and allowing a richer presentation without clutter.

Consider first the historical period, 2000-2012. The population grows by 12%, and the senior fraction increases from 12.4% to 14.0% (Fig. 54). Economic recession during the latter part of the decade leads to increasing disadvantage for the youth and working age populations (Fig. 55). Throughout the period, uninsurance decreases for the youth population, due to the expansion of youth Medicaid eligibility under the CHIP program (Fig. 56). But uninsurance increases for the working age population, due to steeply rising health care costs causing employers to drop coverage for some employees. Specifically, per-capita health care costs rise by 34% (Figs. 70, 71), the vast majority of which is explained by medical price inflation in excess of general inflation (this excess running at an average of 2.3% per year during 2000-2012).

Some of the cost increase during 2000-2012 is also explained by other factors. One is an increase in the intensity of specialty care (“specialist pushback”; Fig. 64) in response to specialist incomes somewhat suppressed by the economic recession. Another key factor is a rise in non-urgent ER visits (Fig. 66), due to a sizable drop in the sufficiency of FQHC PCP capacity for the uninsured disadvantaged (Fig. 58). That drop in sufficiency occurs because of the increase in the uninsured disadvantaged population, which, in turn, comes as a result of the economic recession and the rise in working age uninsurance, as described above. Also contributing to the increase in health care costs is an increase in the prevalence of severe physical illness (Fig. 59) and untreated mental illness (Fig. 60). These illness trends are due in part to the rise in disadvantage due to the recession, leading to riskier behaviors and living conditions (Fig. 57); and also to the rise of working-age uninsurance, leading to lower average quality of preventive and chronic care (Fig. 58).

Despite the worsening conditions during 2000-2012, which cause a 3.5% increase in the per-capita rate of urgent events (Fig. 66), the age-standardized population death rate declines by 10% (Fig. 62). This decline is explained in the model as the result of a significant decline in the case fatality of urgent events during the decade, part of a long-term trend of improving emergency response and acute care in the US.

Consider now the future period, 2013-2040. Over these 27 years, the population grows by another 25.5% (Fig. 36). The senior fraction increases from 14.0% in 2013 to 19.3% in 2030 (by which time all baby boomers have passed their 65th birthdays) and then up a bit more to 20.7% in 2040. We assume the economy fully recovers from recession by 2020, which allows some temporary reduction in the disadvantaged fractions (Fig. 55). But the disadvantaged fractions resume an upward trajectory, and by 2037 the disadvantaged

fraction of the the total population is again greater than it was in 2013. Overall, from 2000 to 2040, the disadvantaged fraction of the population increases from 30% to 35%.

The insurance provisions of the Affordable Care Act, with some help from a recovering economy, reduce uninsurance among youth and the working age by about half from 2013 to 2020. But after 2020, uninsurance among the working age population starts to climb again and continues climbing to the end of the run (Fig. 56).

The reason for both the increasing disadvantaged and uninsured fractions after 2020 is that health care costs keep rising (Figs. 70, 71). With increasing costs, ACA-exempt employers drop coverage for more of their employees and non-exempt employers cut more employees back from full-time to part-time. Growing out-of-pocket medical expenses drive an increasing number of uninsured families (as well as underinsured ones) into debt and bankruptcy. From 2013 to 2040, per-capita health care costs rise by 58%. Of that rise, about 80% comes from medical price inflation (running at an assumed 1.5% per year), and most of the remainder comes from aging of the population—which leads to increases in ambulatory visits (Fig. 61), inpatient stays (Fig. 67), and the need for extended care (Fig. 69).

One other minor cause of cost increase is resumed growth after 2020 in non-urgent ER visits (Fig. 66). This growth reflects the development of some insufficiency of PCP capacity after 2015 for the insured disadvantaged (most insured under Medicaid) (Fig. 58). This insufficiency, in turn, occurs as a side effect of the ACA having moved millions into Medicaid, with not quite commensurate growth in primary care slots for Medicaid patients to serve them all.

Despite the growth of disadvantage after 2020, which causes a 2% increase in the per-capita rate of urgent events from during 2020-2040, the age-standardized population death rate declines by 9.5% from 2013 to 2040 (Fig. 62). This result reflects our assumption that urgent case fatality will continue to decline in the future, although at a gradually decreasing rate in line with Census population projections.

Another important metric is the value of employee productivity (Fig. 63). From 2000 to 2040, the number of workers rises by 28% and their productive value rises by 26%. At the same time, the lost productivity fraction (due to employee absenteeism and presenteeism) remains constant. Thus, the 2% lag in productive value growth relative to workforce growth does not occur because of absenteeism and presenteeism. Rather, it occurs because of stagnant incomes—which may ultimately be traced to rising health care costs.

One other metric graphed below is the average hospital operating profit margin (Fig. 68). The simulated profit margin rises from -4% in 2000 to a peak of +7% in 2025-2030, and then declines somewhat to +5% by 2040. This pattern reflects a corresponding growth and

decline in bed occupancy (due to accelerating and then decelerating growth in hospital demand driven by population aging) and also a trend assumption about the relative rate of growth in hospital operating costs. This operating cost growth trend assumption has significant impact on the simulated future of hospital profit margin—e.g., the timing and magnitude of the peak and the decline.

In conclusion, and returning to the diagram of Figure 53, the first thing to note is that most of the challenging high-cost future described in the base run is driven by the exogenous trend of medical price inflation, a trend that RTH does not attempt to explain but that clearly has its roots in a decades-old technological imperative in American medicine that has proven difficult to counter or resist (Homer et al. 2007). Some is also driven by aging of the population. Also, the base run would have looked even worse if it were not for assumptions about the ACA reducing uninsurance by half, and the economy rebounding fully by 2020. Also helping to explain the base run are certain key constraints, including (a) the limited number of primary care slots for the insured disadvantaged population, and (b) the high rate of underinsurance among that population, which is estimated to have grown from 25% in 2003 to 44% in 2014 (Homer 2015b). It might be a good policy idea to mitigate these constraints; but, then, that would take us beyond the base run and into the realm of interventions and alternative scenarios.

Figure 53. Main Causal Structure Driving Base Run Results

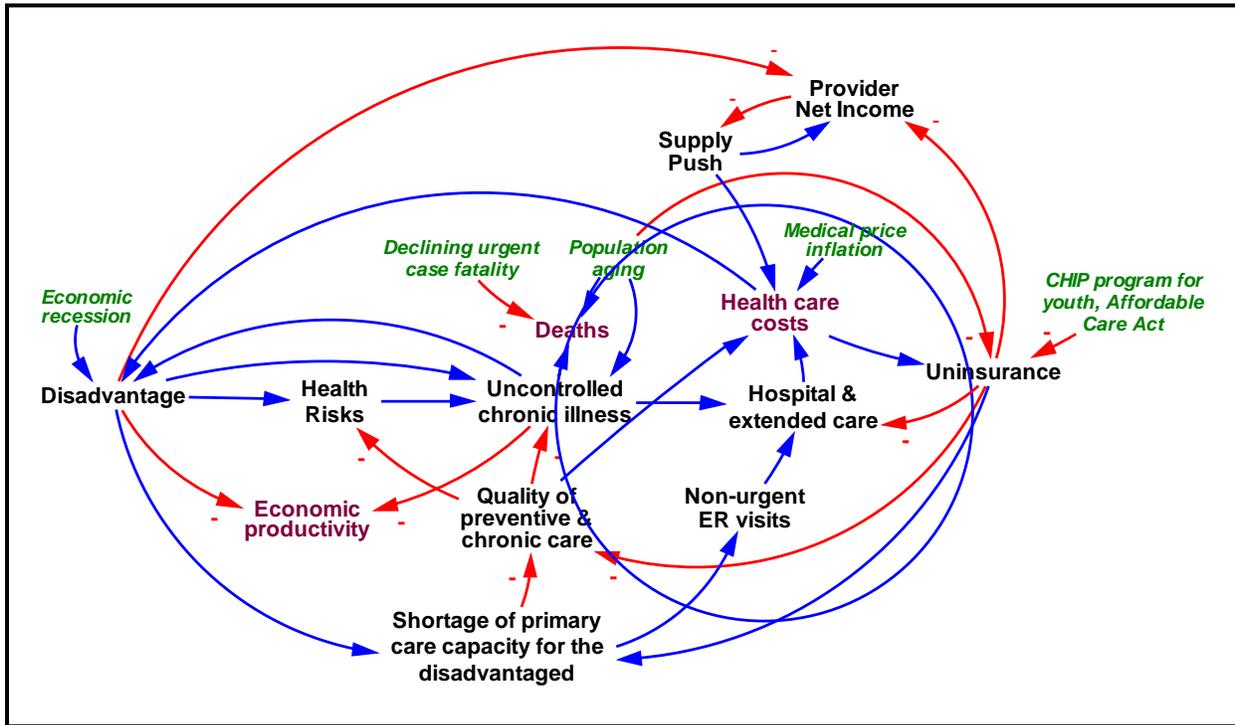
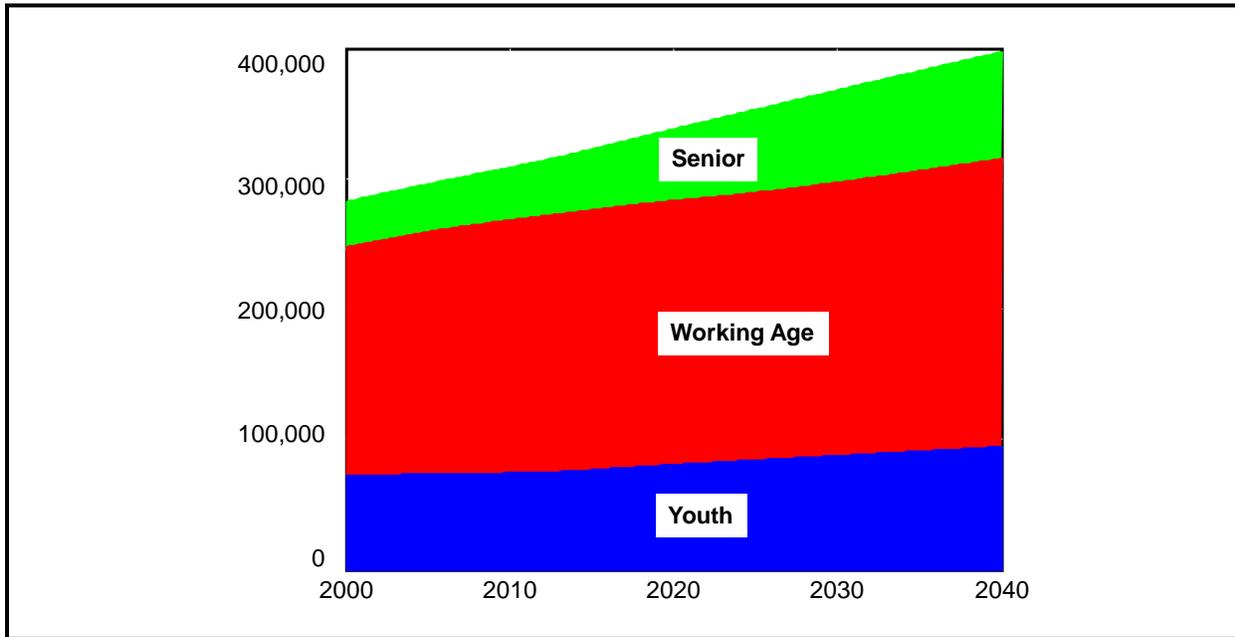
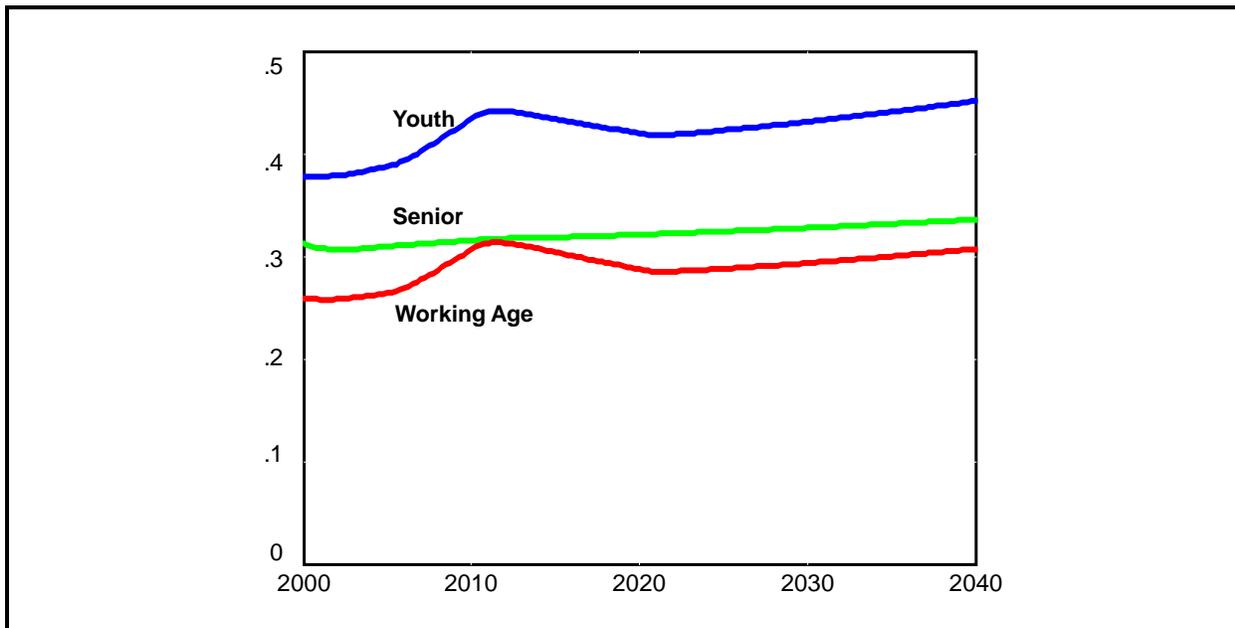


Figure 54. Anytown Population by Age Group, Base Run



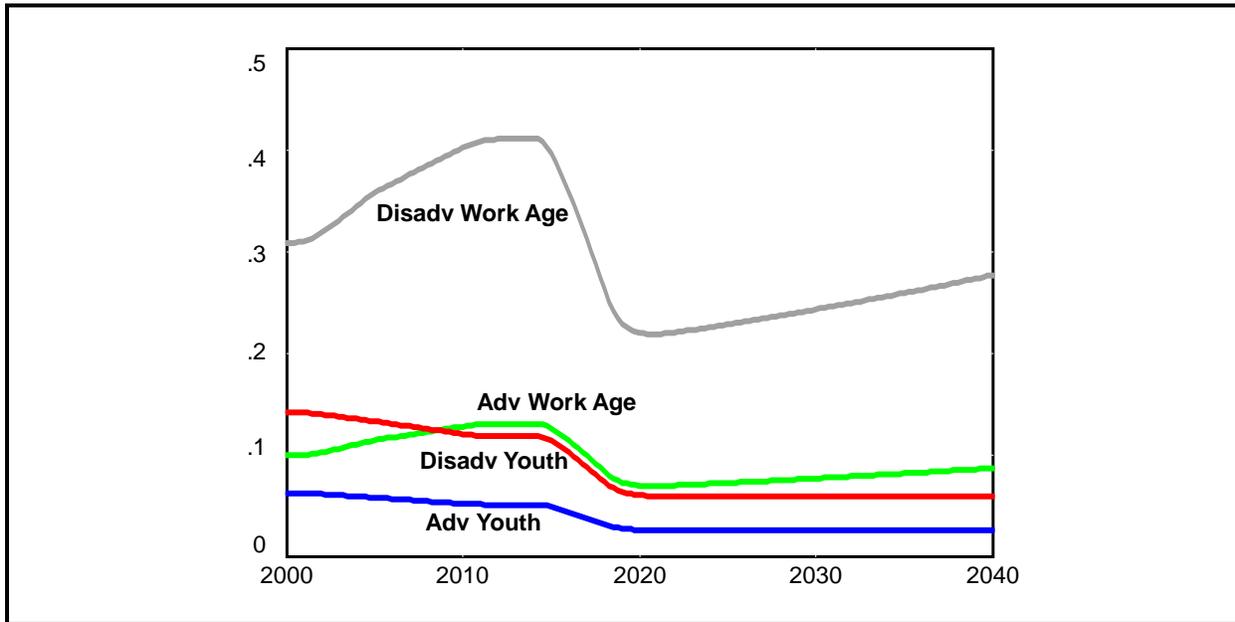
Source for comparison: Census 2000, 2010, and projected for 2020, 2030, and 2040.

Figure 55. Disadvantaged Fraction by Age Group, Base Run



Source for comparison: Census 2000, 2010.

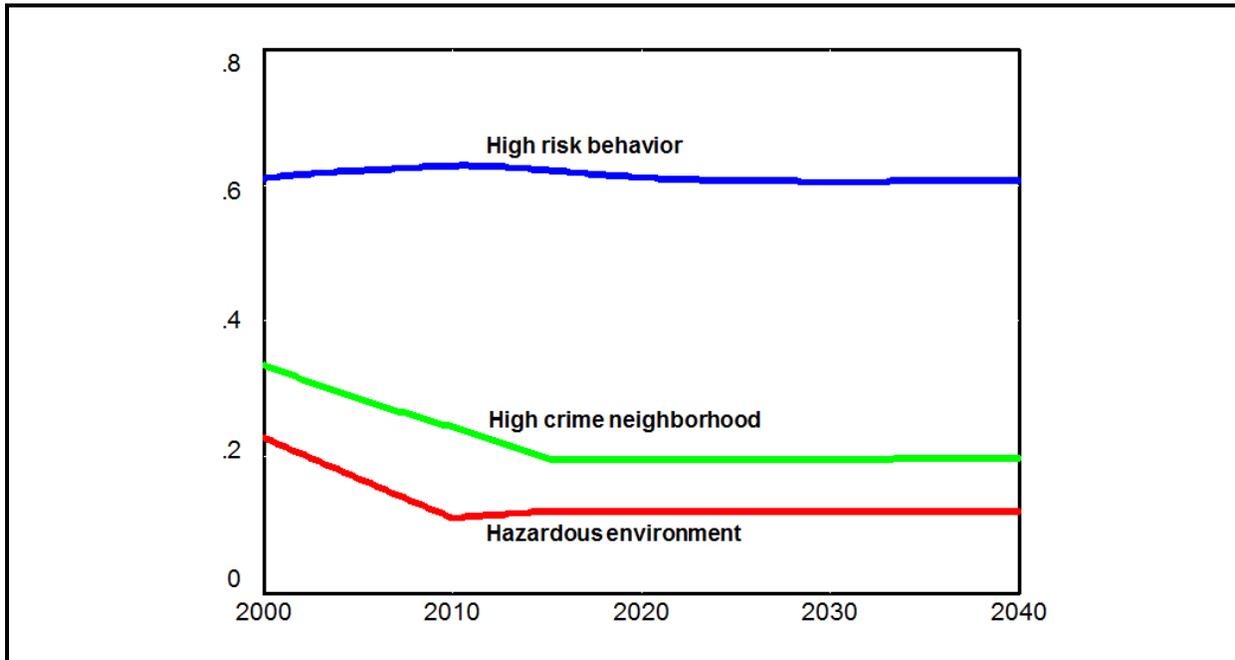
Figure 56. Uninsured Fraction by Age and Income Group, Base Run



Note: Uninsured fraction of Seniors is negligible.

Source for comparison: Census 2000, 2010.

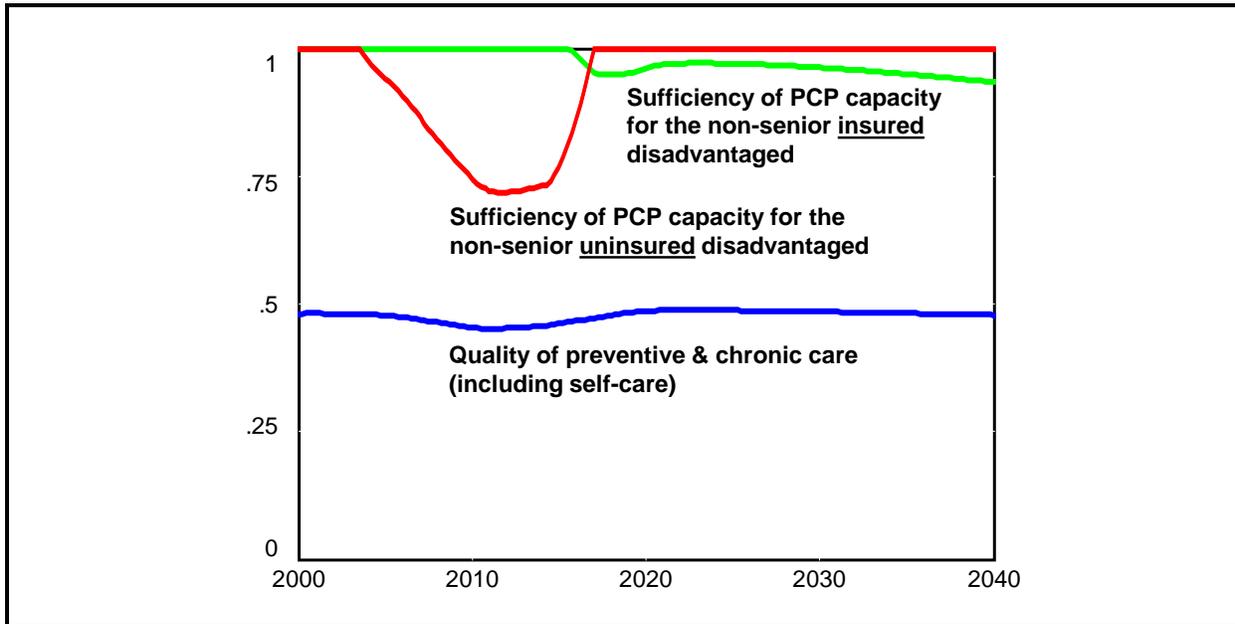
Figure 57. Behavioral & Environmental Risk Factor Prevalence, Base Run



Note: Weighted averages across all population subgroups.

Sources for comparison: NHANES 2009-10 (behavior), BJS/NCVS 2000-14 (crime), EPA/AQS 2000-13, EPA/SDWIS 2006-13, AHS 2000-13 (environment: PM 2.5, ozone, water, plumbing).

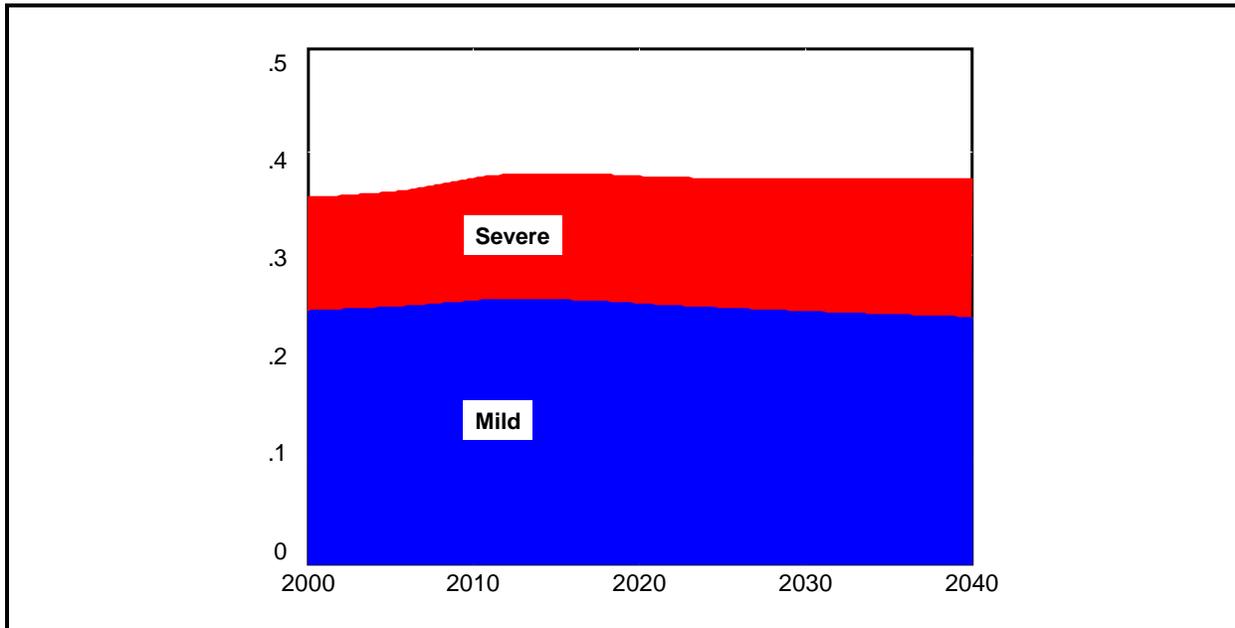
Figure 58. Quality of Preventive & Chronic Care and Sufficiency of PCP Capacity, Base Run



Note: The "Quality" variable is a weighted average across all population subgroups. The "PCP sufficiency" variables are shown for the non-senior disadvantaged subgroups only; for all other subgroups, it remains at 1.0 throughout the base run.

Sources for comparison: ASCH et al. 2006; Jencks et al. 2003; McGlynn et al. 2003; Commonwealth Fund 2008.

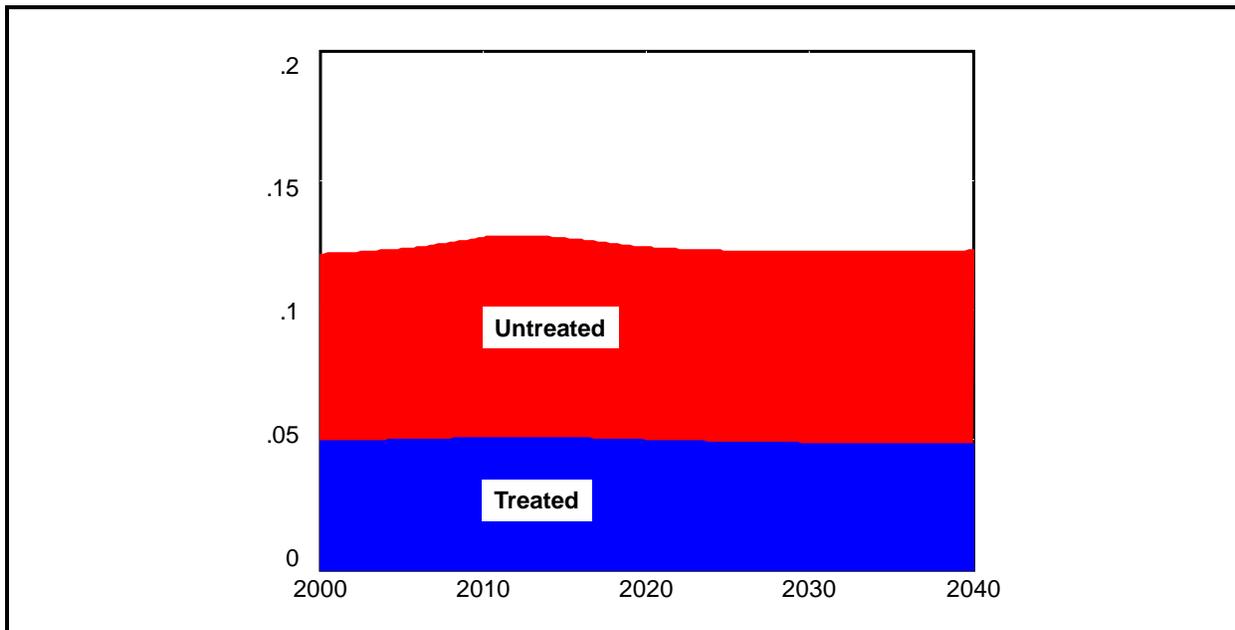
Figure 59. Chronic Physical Illness Prevalence, Base Run



Note: Weighted averages across all population subgroups.

Sources for comparison: BRFSS 2010, NSCH 2007.

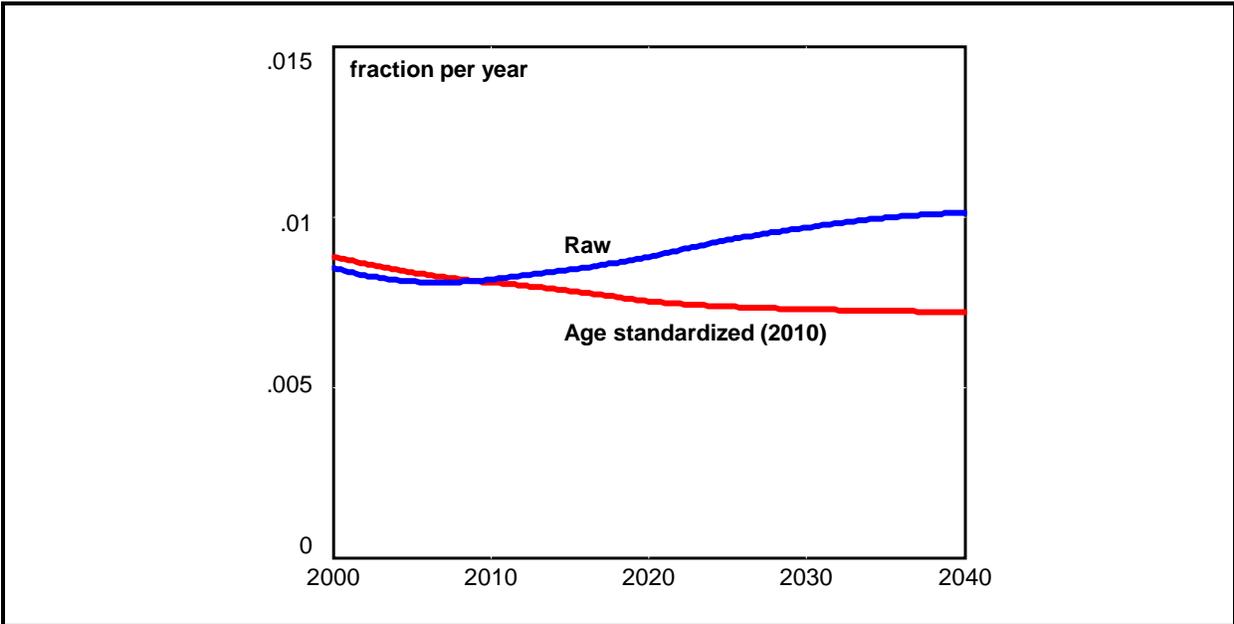
Figure 60. Chronic Mental Illness Prevalence, Base Run



Note: Weighted averages across all population subgroups.

Sources for comparison: BRFSS 2010; NSCH 2007.

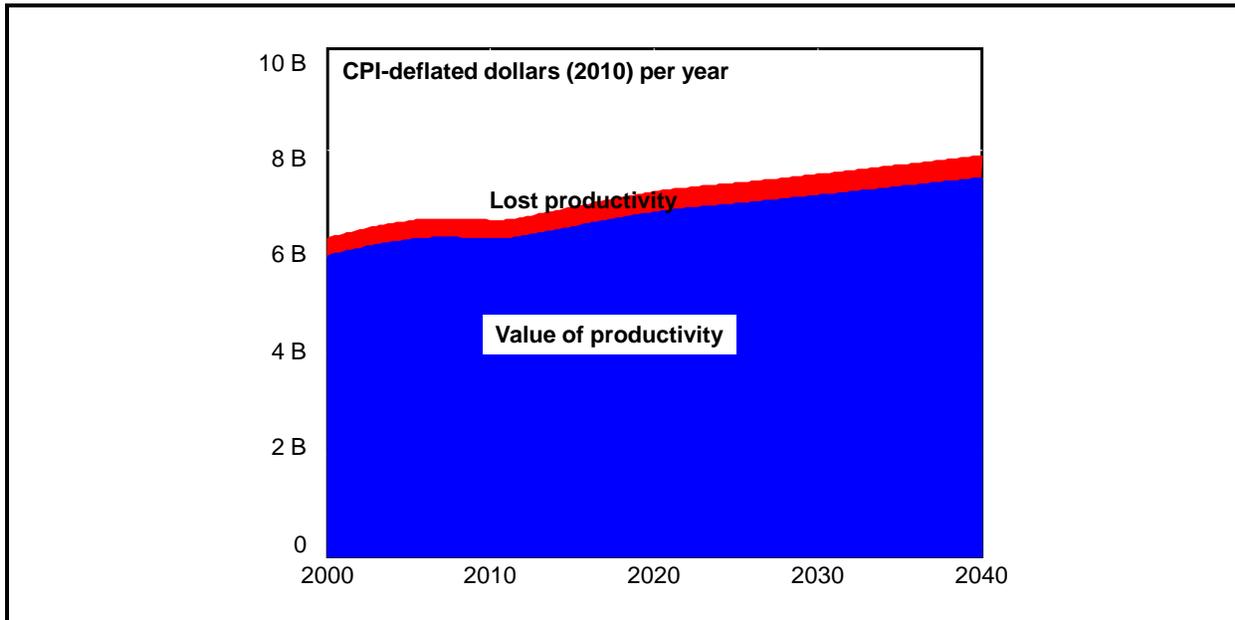
Figure 61. Population Death Rate, Base Run



Note: Weighted averages across all population subgroups.

Sources for comparison: Vital Statistics annual 2000-2010; Census 2000, 2010.

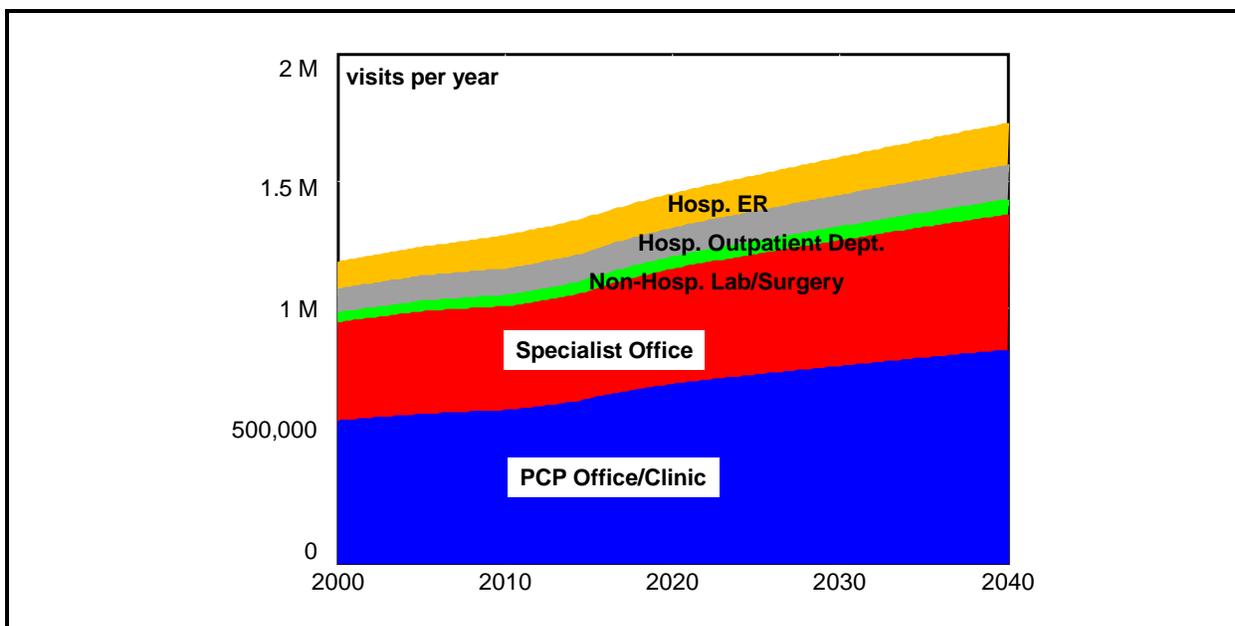
Figure 62. Value of Employee Productivity, Base Run



Note: The sum of the two metrics is employee income. Lost productivity amounts to 5.1-5.2% of employee income throughout the base run.

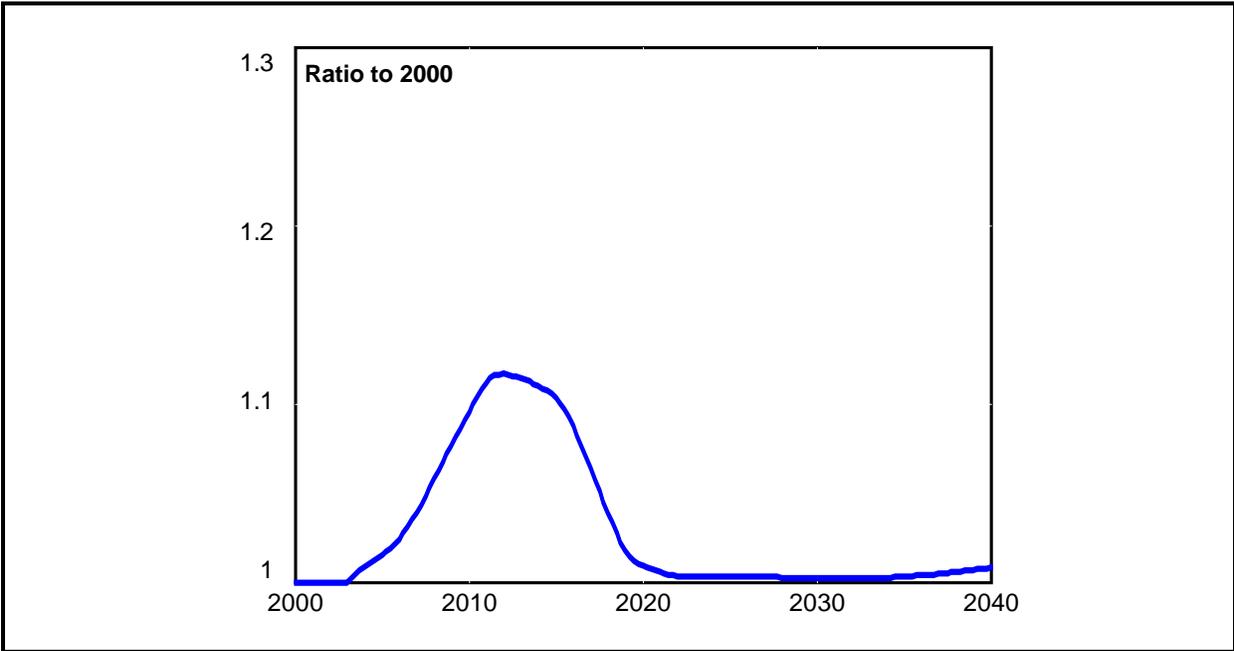
Sources for comparison: Census 2008-2010; Stewart et al. 2003; NFCMH 2003.

Figure 63. Ambulatory Care Visits by Locus, Base Run



Sources for comparison: NAMCS 2010; NHAMCS 2009; MEPS 2009; NSAS 2006.

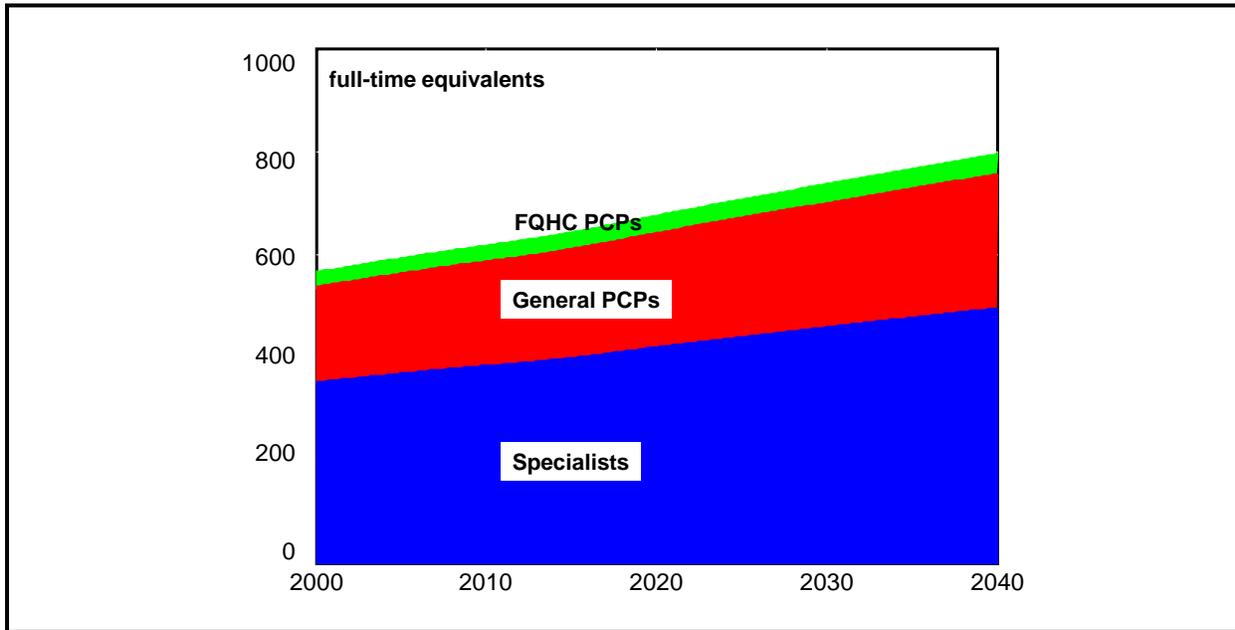
Figure 64. Specialist Relative Intensity of Care (Specialist Pushback), Base Run



Note: 1.0=neutral relative to 2000

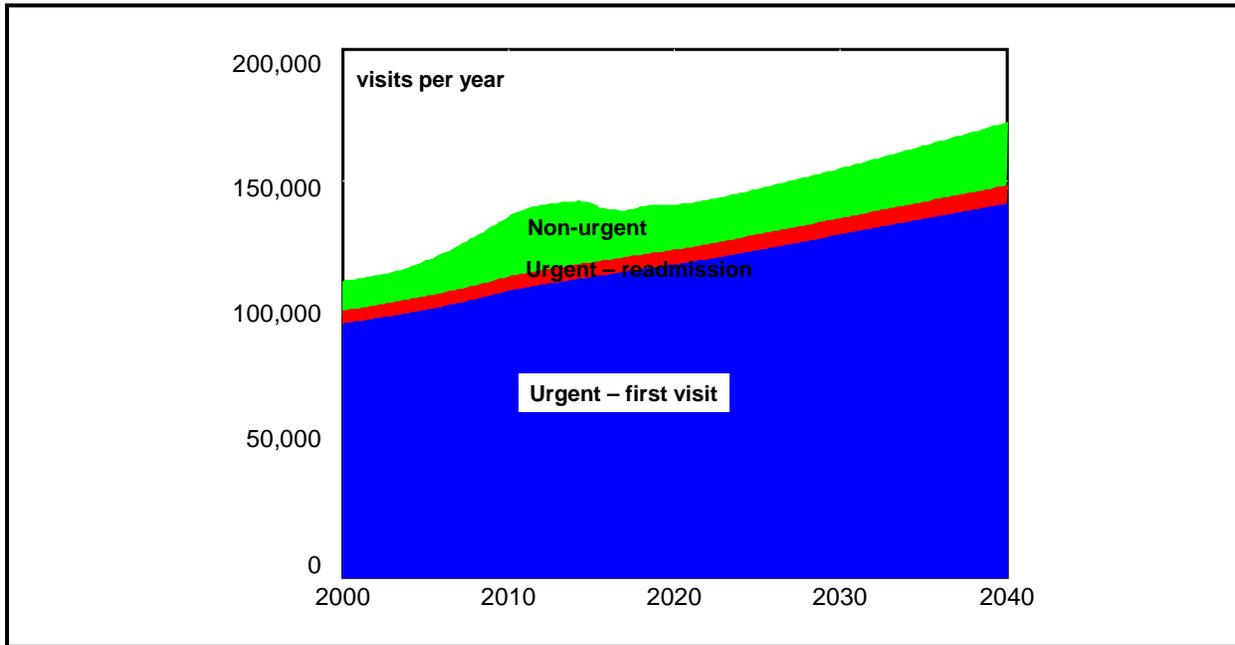
Sources for comparison: Fisher et al 1994; Mitchell et al 2000; Nguyen & Derrick 1997.

Figure 65. Office-Based Providers by Type, Base Run



Sources for comparison: AMA/PCDUS 2000 and annual 2005-2009; CDC/VHS 2007; AHRQ/HCUP 2010; NAMCS 2009; Kaiser Family Foundation 2010.

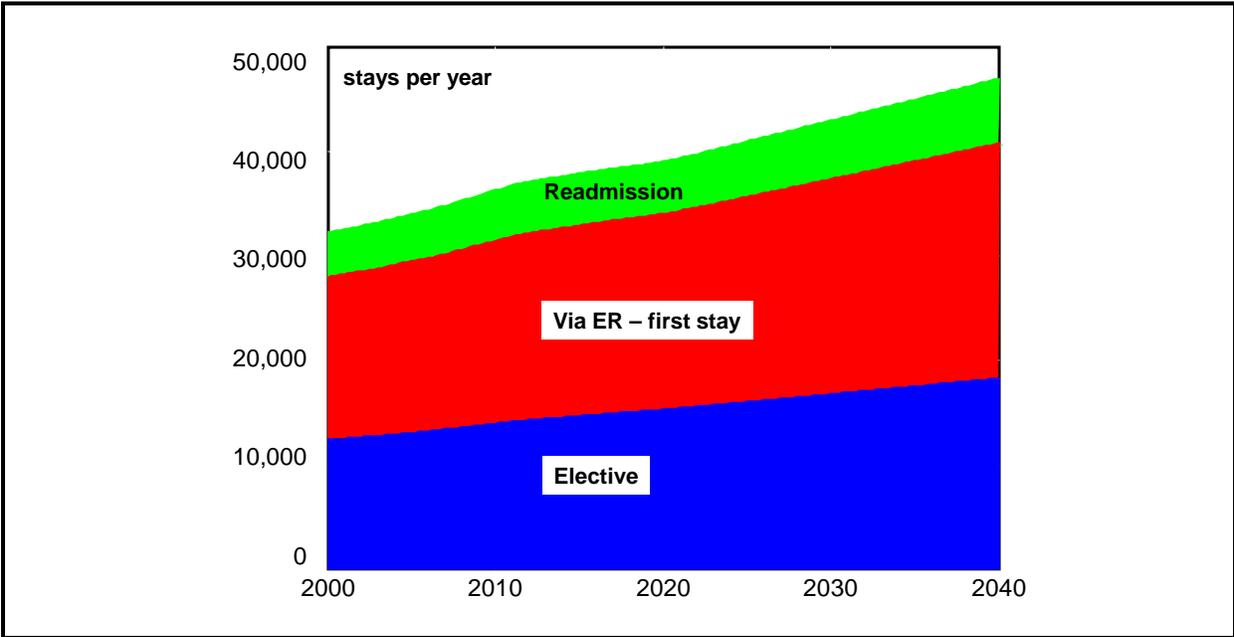
Figure 66. ER Visits by Urgency, Base Run



Note: We define non-urgent visits as those that are ambulatory sensitive, meaning that any office-based provider, if available, could have handled the episode. This is different than the NHAMCS definition of non-urgent as not requiring attention within 60 minutes; by this narrower NHAMCS definition, only 8% of ER visits nationally were non-urgent in 2007. An unpublished study at Grady Memorial Hospital in Atlanta for 2010 found that 30% of ER visits by uninsured patients were ambulatory sensitive. In unpublished analysis for 2011, Catholic Medical Center in Manchester NH found that 11% of their ER visits by the uninsured, and 9% of all ER visits combined, were non-urgent by the NHAMCS definition. From these pieces of information, we have synthetically estimated that in 2007 about 14% of ER visits nationally were ambulatory sensitive, rising to 17% by 2010.

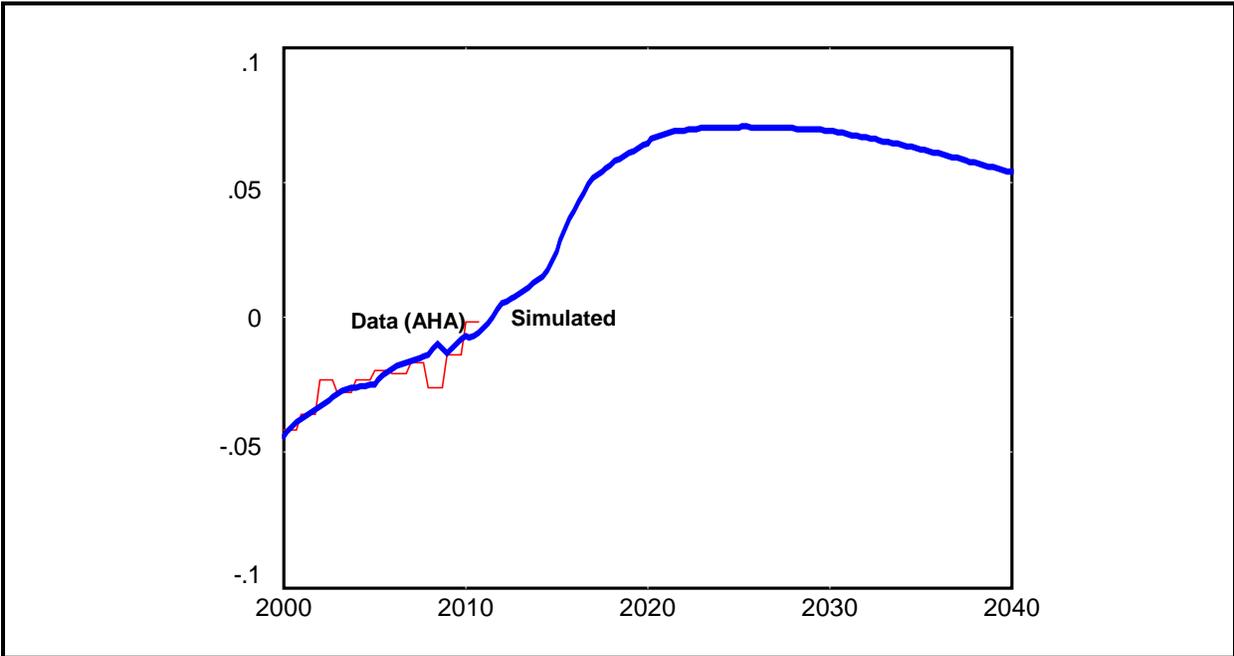
Sources for comparison: NHAMCS 2009; MEPS 2009.

Figure 67. Inpatient Stays by Route of Entry, Base Run



Sources for comparison: MEPS 2009; NHDS 2009; AHRQ/HCUP 2008.

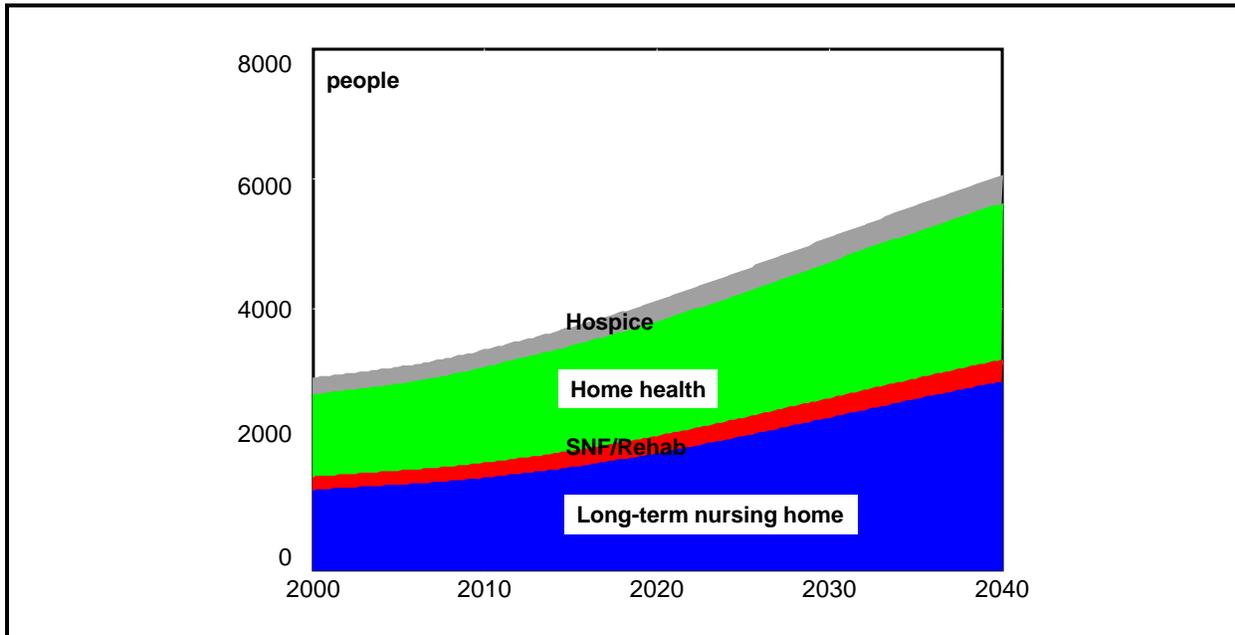
Figure 68. Average Hospital Profit Margin on Patient Revenue , Base Run



Note: Aggregate patient margin is reported in American Hospital Association’s Trendwatch Chartbook 2012 (Table 4.1), based on analysis of survey data from non-federal acute care hospitals.

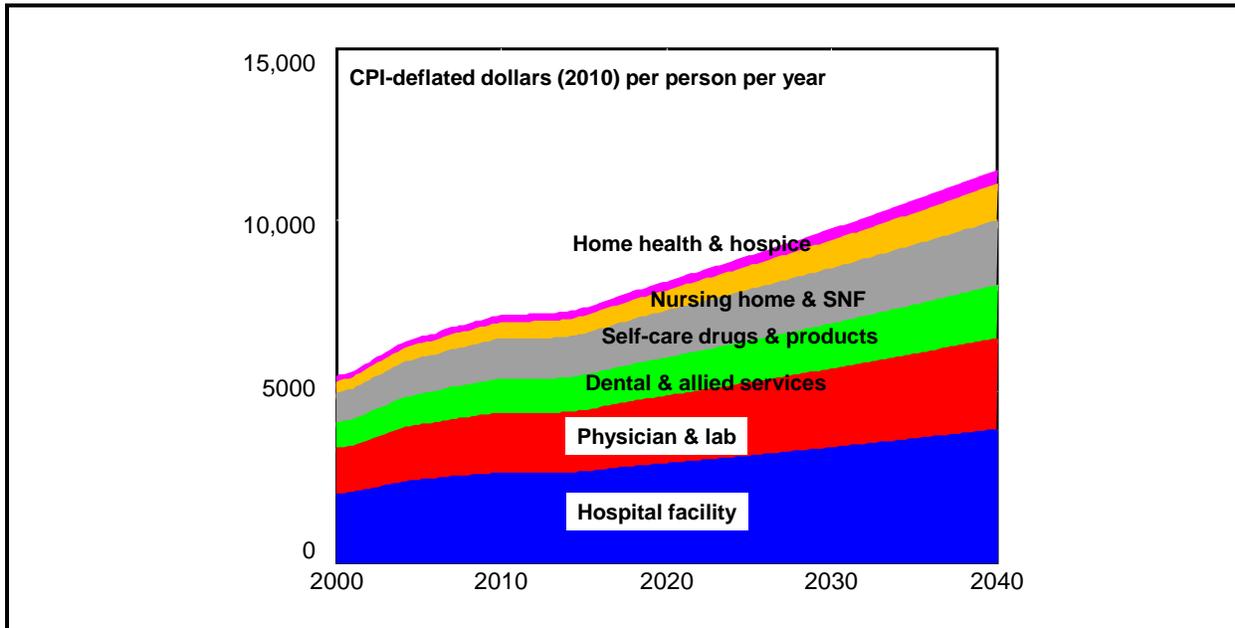
Source for comparison: AHA 2012 (based on annual data from AHA/ASH 2000-2010).

Figure 69. Extended Care Population by Type, Base Run



Sources for comparison: NNHS 2004; NHHCS 2007; HRSA/ARF 2001.

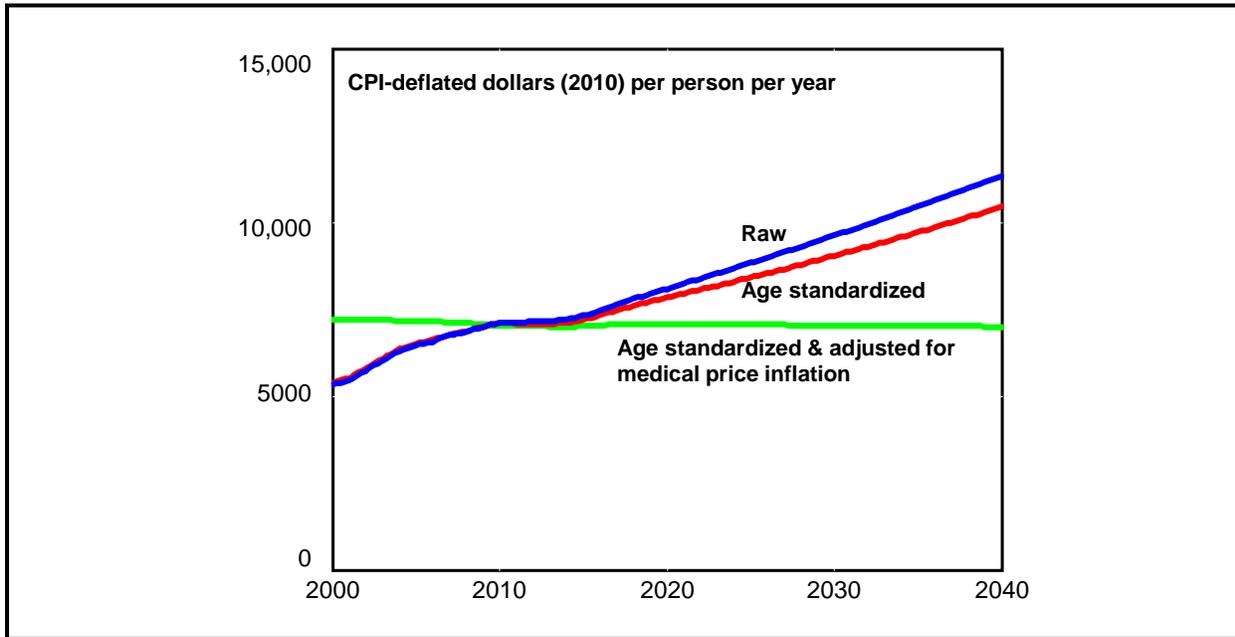
Figure 70. Health Care Costs per Capita by Type, Base Run



Note: CPI=Consumer price index

Sources for comparison: NHE annual 2000-2012.

Figure 71. Health Care Costs per Capita – Three Measures, Base Run



Note: Medical price inflation is expressed in excess of general inflation. It ranged from 2% to 5% per year during 2000-2004 and 0% to 3% during 2005-2012. In the base run, it ramps up from 0% to 1.5% during 2012-2015 and remains at 1.5% per year for all years after 2015. CPI=consumer price index.

Sources for comparison: NHE and CPI annual 2000-2012; Census 2000, 2010.

3. ACRONYMS: DATA SOURCES AND MISCELLANEOUS

Data Sources

AHA/ASH	American Hospital Association, Annual Survey of Hospitals
AHRQ/HCUP	Agency for Healthcare Research and Quality, Health Care Utilization Project
AHS	American Housing Survey
AMA/PCDUS	American Medical Association publication, Physician Characteristics and Distribution in the U.S. (annual)
BJS/NCVS	Bureau of Justice Statistics, National Crime Victimization Survey
BRFSS	Behavioral Risk Factor Surveillance System
CPI	Consumer Price Indices, Bureau of Labor Statistics
EPA/AQS	Environmental Protection Agency, Air Quality System
EPA/SDWIS	Environmental Protection Agency, Safe Drinking Water Information System
HRSA/ARF	Health Resources and Services Administration Area Resource Files
MEPS	Medical Expenditure Panel Survey
NAMCS	National Ambulatory Medical Care Survey
NHAMCS	National Hospital Ambulatory Medical Care Survey
NHANES	National Health and Nutrition Examination Survey
NHDS	National Hospital Discharge Survey
NHE	National Health Expenditure Accounts
NHHCS	National Home and Hospice Care Survey
NHIS	National Health Interview Survey
NNHS	National Nursing Home Survey
NSAS	National Survey of Ambulatory Surgery
NSCH	National Survey of Children's Health

Miscellaneous

ACA	(Patient Protection and) Affordable Care Act
ACO	Accountable Care Organization
CMS	Centers for Medicare and Medicaid Services
FQHC	Federally Qualified Health Center
HAI	Hospital-Acquired Infection
OPD	Hospital Outpatient Department
PCP	Primary Care Provider
SNF	Skilled Nursing Facility (or rehabilitation hospital)

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5. VENSIM™ EQUATION LISTING (ALPHABETICAL)

.Active

Active Equations

- (0001) ACA eligibility multiplier on uninsured Adv=IF THEN ELSE(Time<Start time for ACA eligibility expansion,1, IF THEN ELSE(Time<End time for ACA eligibility expansion,1 - Extent of adoption of ACA eligibility expansion for Adv*(1-MAX(0.001,ACA full adoption eligibility multiplier on uninsured Adv))*ZIDZ(Time-Start time for ACA eligibility expansion, End time for ACA eligibility expansion-Start time for ACA eligibility expansion), 1*(1-Extent of adoption of ACA eligibility expansion for Adv) + Extent of adoption of ACA eligibility expansion for Adv*MAX(0.001,ACA full adoption eligibility multiplier on uninsured Adv)))
- (0002) ACA eligibility multiplier on uninsured Disadv=IF THEN ELSE(Time<Start time for ACA eligibility expansion,1, IF THEN ELSE(Time<End time for ACA eligibility expansion, 1 - Extent of adoption of ACA eligibility expansion for Disadv*(1-MAX(0.001,ACA full adoption eligibility multiplier on uninsured Disadv))*ZIDZ(Time-Start time for ACA eligibility expansion, End time for ACA eligibility expansion-Start time for ACA eligibility expansion), 1*(1-Extent of adoption of ACA eligibility expansion for Disadv) + Extent of adoption of ACA eligibility expansion for Disadv*MAX(0.001,ACA full adoption eligibility multiplier on uninsured Disadv)))
- (0003) ACA full adoption eligibility multiplier on uninsured Adv=0.33
- (0004) ACA full adoption eligibility multiplier on uninsured Disadv=0.33
- (0005) Accumulation switch=IF THEN ELSE(Time>=Start time for accumulating key metrics, 1, 0)
- (0006) Actual backbone funding vs desired=XIDZ(Backbone funding, Desired backbone funding, 1)
- (0007) Actual vs indicated spending of downstream only funds=XIDZ(Spending of downstream only funds, Indicated spending on downstream initiatives, 1)
- (0008) Actual vs indicated spending of unconstrained funds=XIDZ(Spending of unconstrained funds, Indicated spending of unconstrained funds, 1)
- (0009) Actual vs indicated spending of upstream only funds=XIDZ(Spending of upstream only funds, Indicated spending on upstream initiatives, 1)
- (0010) Actual vs indicated spending on downstream initiatives=Actual vs indicated spending of downstream only funds + (1-Actual vs indicated spending of downstream only funds)*Actual vs indicated spending of unconstrained funds
- (0011) Actual vs indicated spending on upstream initiatives=Actual vs indicated spending of upstream only funds + (1-Actual vs indicated spending of upstream only funds)*Actual vs indicated spending of unconstrained funds

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- (0012) Actual vs max program spending of unconstrained funds= $ZIDZ(\text{Spending of unconstrained funds, Max program spending of unconstrained funds})$
- (0013) Actual vs max spending of downstream only funds= $ZIDZ(\text{Spending of downstream only funds, Max program spending of downstream only funds})$
- (0014) Actual vs max spending of upstream only funds= $ZIDZ(\text{Spending of upstream only funds, Max program spending of upstream only funds})$
- (0015) Addition to extent of HAI prevention initiative= $\text{Indicated addition to extent of HAI prevention initiative} * \text{Actual vs indicated spending on downstream initiatives}$
- (0016) Addition to extent of hospital efficiency initiative= $\text{Indicated addition to extent of hospital efficiency initiative} * \text{Actual vs indicated spending on downstream initiatives}$
- (0017) Addition to extent of post discharge care initiative= $\text{Indicated addition to extent of post discharge care initiative} * \text{Actual vs indicated spending on downstream initiatives}$
- (0018) Additional frac of deaths using hospital palliative care= $\text{Frac of deaths using hospital palliative care} - \text{Frac of deaths using hospital palliative care initial}$
- (0019) Additional hospitalizations using palliative care[subpop]= $\text{Additional frac of deaths using hospital palliative care} * \text{Popn deaths at initial HAI frac[subpop]}$
- (0020) Additional lost productivity frac for uncontrolled CMI popn=0.176
- (0021) Additional popn receiving hospice under initiative[subpop]= $\text{Popn receiving hospice[subpop]} * (1 - XIDZ(\text{Frac of deaths using hospice baseline[subpop], Frac of deaths using hospice[subpop], 1}))$
- (0022) Adequacy of demand for prev chron physician visits per guidelines[subpop]= $\text{Frac of physicians compliant with prev chron guidelines} * \text{Frac of pts seeking prev chron care[subpop]}$
- (0023) Adequacy of prev chron care[subpop]= $\text{Adequacy of demand for prev chron physician visits per guidelines[subpop]} * (1 - \text{Frac of prev chron care demand not accommodated[subpop]}) * \text{Frac of self care per physician orders[subpop]}$
- (0024) Adequacy of prev chron care affecting disease outcomes[subpop]= $\text{DELAY1}(\text{Adequacy of prev chron care[subpop], Time for prev chron care to affect disease outcomes, Adequacy of prev chron care initial[subpop]})$
- (0025) Adequacy of prev chron care in employed popn= $\text{SUM}(\text{Adequacy of prev chron care[subpop!]} * \text{Employed popn by segment[subpop!]}) / \text{Total employed popn}$
- (0026) Adequacy of prev chron care initial[subpop]= $\text{Frac of physicians compliant with prev chron guidelines initial} * \text{Frac of pts seeking prev chron care baseline[subpop]} * (1 - \text{Frac of prev chron care demand not accommodated initial[subpop]}) * \text{Frac of self care per physician orders initial[subpop]}$

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- (0027) Adv popn death rate age stdized= $((\text{Popn deaths}[\text{InsAdvYouth}] + \text{Popn deaths}[\text{UninsAdvYouth}]) / (\text{Popn}[\text{InsAdvYouth}] + \text{Popn} [\text{UninsAdvYouth}])) * \text{Standard youth frac of popn} + ((\text{Popn deaths}[\text{InsAdvWkage}] + \text{Popn deaths}[\text{UninsAdvWkage}]) / (\text{Popn}[\text{InsAdvWkage}] + \text{Popn} [\text{UninsAdvWkage}])) * \text{Standard working age frac of popn} + (\text{Popn deaths}[\text{AdvSr}] / \text{Popn}[\text{AdvSr}]) * \text{Standard senior frac of popn}$
- (0028) Adv popn deaths=Total deaths - Disadv popn deaths
- (0029) Adv popn healthcare costs=Total healthcare costs - Disadv popn healthcare costs
- (0030) Adv popn value of productivity=Value of productivity - Disadv popn value of productivity
- (0031) Adv Wkage death rate=Deaths Adv Wkage/Popn Adv Wkage
- (0032) Any CPI frac of employed popn= $\text{SUM}(\text{Any CPI frac of popn}[\text{subpop!}] * \text{Employed popn by segment}[\text{subpop!}]) / \text{Total employed popn}$
- (0033) Any CPI frac of popn[subpop]=Mild CPI frac of popn[subpop] + Severe CPI frac of popn[subpop]
- (0034) Any CPI frac of total popn=Mild CPI frac of total popn + Severe CPI frac of total popn
- (0035) Anytown popn 2010=307765
- (0036) Anytown popn initial=281422
- (0037) Are cost savings being captured=IF THEN ELSE(Time>=2015+Delay time for start of capturing cost savings, Capture cost savings, 0)
- (0038) Avg annual growth rate in per capita healthcare costs=Overall per capita healthcare costs reltv to start time $^{(1 / \text{MAX}(0.25, \text{Time}-\text{Start time for accumulating key metrics}))} - 1$
- (0039) Avg attending physician cost per ER visit 2010=200
- (0040) Avg attending physician cost per Hosp OPD test or procedure 2010=800
- (0041) Avg attending physician cost per Inpatient stay 2010=2000
- (0042) Avg cost per day in nursing home 2010=220
- (0043) Avg cost per day in SNF 2010=440
- (0044) Avg cost per day of home health 2010=90
- (0045) Avg cost per day of hospice care 2010=200
- (0046) Avg cost per Hosp OPD visit for prev chron care 2010=300

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- (0047) Avg cost per nonHosp facility visit for test or procedure 2010=1900
- (0048) Avg cost per PCP visit=Avg cost per PCP visit 2010 * Healthcare real cost index vs 2010
- (0049) Avg cost per PCP visit 2010=190
- (0050) Avg cost per Specialist visit 2010=320
- (0051) Avg costs of other self care products per Mild CPI pt
2010[subpop]=240,240,240,240,310,310,310,310,550,550
- (0052) Avg costs of other self care products per No CPI pt
2010[subpop]=110,110,110,110,165,165,165,165,440,440
- (0053) Avg costs of other self care products per Severe CPI pt 2010[subpop]
=410,410,410,410,500,500,500,500,1000,1000
- (0054) Avg days per course of home health=70
- (0055) Avg days per SNF stay=33
- (0056) Avg death rate among completors of student pathways pgms=Disadv Wkage death rate*Reltv
Disadv frac for completors of student pathways pgms+Adv Wkage death rate*(1-Reltv Disadv
frac for completors of student pathways pgms)
- (0057) Avg facility cost per ER visit 2010=1900
- (0058) Avg facility cost per ER visit under FFS=Total facility costs of ER visits by locals under FFS / Total
ER visits
- (0059) Avg facility cost per Hosp OPD visit=Total facility costs of Hosp OPD visits by locals under FFS /
Total Hosp OPD visits
- (0060) Avg facility cost per inpatient stay 2010=12500
- (0061) Avg facility cost per OPD visit for test or procedure 2010=1300
- (0062) Avg healthy days per month=Total healthy days per month / Total popn
- (0063) Avg healthy days per month by segment[InsAdvYouth]=Healthy days 18 to 24 lookup(Avg QOL
by segment[InsAdvYouth])
Avg healthy days per month by segment[InsDisYouth]=Healthy days 18 to 24 lookup(Avg QOL by
segment[InsDisYouth])
Avg healthy days per month by segment[UninsAdvYouth]=Healthy days 18 to 24 lookup(Avg
QOL by segment[UninsAdvYouth])
Avg healthy days per month by segment[UninsDisYouth]=Healthy days 18 to 24 lookup(Avg QOL
by segment[UninsDisYouth])

Avg healthy days per month by segment[InsAdvWkage]=(Healthy days 18 to 24 lookup(Avg QOL by segment[InsAdvWkage])*US popn 18 to 24 mill 2015+Healthy days 25 to 44 lookup(Avg QOL by segment[InsAdvWkage])*US popn 25 to 44 mill 2015+Healthy days 45 to 64 lookup(Avg QOL by segment[InsAdvWkage])*US popn 45 to 64 mill 2015) / (US popn 18 to 24 mill 2015+US popn 25 to 44 mill 2015+US popn 45 to 64 mill 2015)

Avg healthy days per month by segment[InsDisWkage]=(Healthy days 18 to 24 lookup(Avg QOL by segment[InsDisWkage])*US popn 18 to 24 mill 2015+Healthy days 25 to 44 lookup(Avg QOL by segment[InsDisWkage])*US popn 25 to 44 mill 2015+Healthy days 45 to 64 lookup(Avg QOL by segment[InsDisWkage])*US popn 45 to 64 mill 2015) / (US popn 18 to 24 mill 2015+US popn 25 to 44 mill 2015+US popn 45 to 64 mill 2015)

Avg healthy days per month by segment[UninsAdvWkage]=(Healthy days 18 to 24 lookup(Avg QOL by segment[UninsAdvWkage])*US popn 18 to 24 mill 2015+Healthy days 25 to 44 lookup(Avg QOL by segment[UninsAdvWkage])*US popn 25 to 44 mill 2015+Healthy days 45 to 64 lookup(Avg QOL by segment[UninsAdvWkage])*US popn 45 to 64 mill 2015) / (US popn 18 to 24 mill 2015+US popn 25 to 44 mill 2015+US popn 45 to 64 mill 2015)

Avg healthy days per month by segment[UninsDisWkage]=(Healthy days 18 to 24 lookup(Avg QOL by segment[UninsDisWkage])*US popn 18 to 24 mill 2015+Healthy days 25 to 44 lookup(Avg QOL by segment[UninsDisWkage])*US popn 25 to 44 mill 2015+Healthy days 45 to 64 lookup(Avg QOL by segment[UninsDisWkage])*US popn 45 to 64 mill 2015) / (US popn 18 to 24 mill 2015+US popn 25 to 44 mill 2015+US popn 45 to 64 mill 2015)

Avg healthy days per month by segment[AdvSr]=(Healthy days 65 to 74 lookup(Avg QOL by segment[AdvSr])*US popn 65 to 74 mill 2015+Healthy days 75plus lookup(Avg QOL by segment[AdvSr])*US popn 75plus mill 2015) / (US popn 65 to 74 mill 2015+US popn 75plus mill 2015)

Avg healthy days per month by segment[DisSr]=(Healthy days 65 to 74 lookup(Avg QOL by segment[DisSr])*US popn 65 to 74 mill 2015+Healthy days 75plus lookup(Avg QOL by segment[DisSr])*US popn 75plus mill 2015) / (US popn 65 to 74 mill 2015+US popn 75plus mill 2015)

(0064) Avg healthy days per month for adults=Total healthy days per month for adults / (Total popn - Total popn youth)

(0065) Avg income of employed popn=Total income of employed popn / Total employed popn

(0066) Avg income per capita=Total income of employed popn / Total popn

(0067) Avg income per employed person[subpop]=4896,3398,4896,3398,55390,15501,55390,15501,65873,14825

(0068) Avg length of stay in long term nursing home=4

(0069) Avg net income per PCP=Avg net income per PCP from patients + Cost savings awarded per physician

(0070) Avg net income per PCP 2020=SAMPLE IF TRUE(Time=2020, Avg net income per PCP, 0)

(0071) Avg net income per PCP deflated=Avg net income per PCP / Healthcare real cost index vs 2010

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- (0072) Avg net income per PCP from patients=(Total PCP revenue from patients * (1-PCP overhead rate) / PCPs) - Per PCP cost of VBP incentivized efforts
- (0073) Avg net income per Specialist=Avg net income per Specialist from patients + Cost savings awarded per physician
- (0074) Avg net income per Specialist 2020=SAMPLE IF TRUE(Time=2020, Avg net income per Specialist, 0)
- (0075) Avg net income per Specialist deflated=Avg net income per Specialist / Healthcare real cost index vs 2010
- (0076) Avg net income per Specialist deflated initial=INITIAL(Avg net income per Specialist deflated)
- (0077) Avg net income per Specialist from patients=(Total Specialist revenue from patients*(1-Specialist overhead rate) / Specialists) - Per specialist cost of VBP incentivized efforts
- (0078) Avg per capita demand for prev chron care visits=Total demand for prev chron care visits/Total popn
- (0079) Avg per capita referrals to Specialists from nonurgent acute episodes
=Total referrals to Specialists from nonurgent acute episodes/Total popn
- (0080) Avg psych Rx drug costs per controlled CMI pt
2010[subpop]=2300,2300,2300,2300,2600,2600,2600,2600,3000,3000
- (0081) Avg QOL by segment[subpop]=Avg QOL for healthy popn[subpop] - Loss of QOL from CMI by segment[subpop] - Loss of QOL from CPI by segment[subpop]
- (0082) Avg QOL for adults=Total QALYs per year for adults / (Total popn - Total popn youth)
- (0083) Avg QOL for healthy popn[subpop]=0.99,0.99,0.99,0.99,0.93,0.93,0.93,0.93,0.82,0.82
- (0084) Avg reltv referral tendency[subpop]=(1*(Frac of nonurgent acute episodes resulting in visits vs initial[subpop] - Frac of nonurgent acute episodes to Specialist[subpop] - Frac of nonurgent acute episodes to ER[subpop])) + Referral tendency of specialists relative to PCPs*Frac of nonurgent acute episodes to Specialist[subpop] + Referral tendency of ERs relative to PCPs*Frac of nonurgent acute episodes to ER[subpop]) / Frac of nonurgent acute episodes resulting in visits vs initial[subpop]
- (0085) Avg reltv referral tendency initial[subpop]=1*(1-Frac of nonurgent acute episodes to Specialist baseline[subpop]-Frac of nonurgent acute episodes to ER initial[subpop]) + Frac of nonurgent acute episodes to Specialist baseline[subpop]*Referral tendency of specialists relative to PCPs initial + Frac of nonurgent acute episodes to ER initial[subpop]*Referral tendency of ERs relative to PCPs
- (0086) Avg Rx drug costs per Mild CPI pt under full care
2010[subpop]=1400,1400,1400,1400,2000,2000,2000,2000,3200,3200

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- (0087) Avg Rx drug costs per risky but No CPI pt under full care
 2010[subpop]=150,150,150,150,1500,1500,1500,2500,2500
- (0088) Avg Rx drug costs per Severe CPI pt under full care
 2010[subpop]=3500,3500,3500,3500,5000,5000,5000,5000,7500,7500
- (0089) Avg savings per inpatient stay using palliative care 2010=5400
- (0090) Backbone funding=Backbone funding from nonloan funds + Backbone funding from loan funds
- (0091) Backbone funding from loan funds=MIN(Desired backbone funding from loan funds, Max backbone and pgm spending of unconstrained loan funds)
- (0092) Backbone funding from nonloan funds=MIN(Desired backbone funding, Max outflow of unconstrained nonloan funds)
- (0093) Backbone funding shortfall=Desired backbone funding - Backbone funding
- (0094) Benchmark per capita healthcare costs[InsAdvYouth]=Per capita healthcare costs in 2010[InsAdvYouth] * Multiplier vs 2010 on Commercial benchmarks
 Benchmark per capita healthcare costs[InsDisYouth]=Per capita healthcare costs in 2010[InsDisYouth] * Multiplier vs 2010 on Medicaid benchmarks
 Benchmark per capita healthcare costs[UninsAdvYouth]=Per capita healthcare costs[UninsAdvYouth]
 Benchmark per capita healthcare costs[UninsDisYouth]=Per capita healthcare costs[UninsDisYouth]
 Benchmark per capita healthcare costs[InsAdvWkage]=Per capita healthcare costs in 2010[InsAdvWkage] * Multiplier vs 2010 on Commercial benchmarks
 Benchmark per capita healthcare costs[InsDisWkage]=Per capita healthcare costs in 2010[InsDisWkage] * Multiplier vs 2010 on Medicaid benchmarks
 Benchmark per capita healthcare costs[UninsAdvWkage]=Per capita healthcare costs[UninsAdvWkage]
 Benchmark per capita healthcare costs[UninsDisWkage]=Per capita healthcare costs[UninsDisWkage]
 Benchmark per capita healthcare costs[AdvSr]=Per capita healthcare costs in 2010[AdvSr] * Multiplier vs 2010 on Medicare benchmarks
 Benchmark per capita healthcare costs[DisSr]=Per capita healthcare costs in 2010[DisSr] * Multiplier vs 2010 on Medicare benchmarks
- (0095) Birth rate=Birth rate series(Time)
- (0096) Birth rate series([(2000,0)-(2040,0.02)],(2000,0.0144),(2005,0.014),(2010,0.0135),(2015,0.0155),(2020,0.015),(2030,0.0145),(2040,0.0145))
- (0097) Births[InsAdvYouth]=Total births * Popn[InsAdvYouth] / Total popn youth
 Births[InsDisYouth]=Total births * Popn[InsDisYouth] / Total popn youth

Births[UninsAdvYouth]=Total births * Popn[UninsAdvYouth] / Total popn youth
Births[UninsDisYouth]=Total births * Popn[UninsDisYouth] / Total popn youth
Births[InsAdvWkage]=0
Births[InsDisWkage]=0
Births[UninsAdvWkage]=0
Births[UninsDisWkage]=0
Births[AdvSr]=0
Births[DisSr]=0

- (0098) Capture cost savings=0
- (0099) Care coord driven by initiative=Extent of care coord initiative*(Provider compliance with 6 community initiatives absent VBP+Frac of providers positively influenced by VBP*(1-Provider compliance with 6 community initiatives absent VBP))
- (0100) Care coord from initiative and VBP=Care coord driven by initiative + Care coord from providers incentivized by VBP
- (0101) Care coord from providers incentivized by VBP=(1-Extent of care coord initiative)*Frac of providers positively influenced by VBP*Provider effort on 6 improvements incentivized by VBP absent community initiative
- (0102) Care coord initiative=0
- (0103) Change in cumul deaths=Cumulative deaths - Cumul deaths baserun
- (0104) Change in cumul disc deaths=Cumulative discounted deaths - Cumul disc deaths baserun
- (0105) Change in cumul disc healthcare costs=Cumulative discounted healthcare costs - Cumul disc healthcare costs baserun
- (0106) Change in cumul disc healthy days=Cumulative discounted healthy days - Cumul disc healthy days baserun
- (0107) Change in cumul disc QALYs=Cumulative discounted QALYs - Cumul disc QALYs baserun
- (0108) Change in cumul disc value of productivity=Cumulative discounted value of productivity - Cumul disc value of productivity baserun
- (0109) Change in cumul healthcare costs=Cumulative healthcare costs - Cumul healthcare costs baserun
- (0110) Change in cumul healthy days=Cumulative healthy days - Cumul healthy days baserun
- (0111) Change in cumul QALYs=Cumulative QALYs - Cumul QALYs baserun
- (0112) Change in cumul value of productivity=Cumulative value of productivity - Cumul value of productivity baserun

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- (0113) Change in hospital beds=Hospital beds * Fractional change in hospital beds
- (0114) Change in multiplier vs 2010 on Commercial benchmarks=IF THEN ELSE(Time>=2010, Multiplier vs 2010 on Commercial benchmarks * (Healthcare real cost index growth rate + Commercial benchmark costs change rate after healthcare inflation), 0)
- (0115) Change in multiplier vs 2010 on Medicaid benchmarks=IF THEN ELSE(Time>=2010, Multiplier vs 2010 on Medicaid benchmarks * (Healthcare real cost index growth rate+Medicaid benchmark costs change rate after healthcare inflation), 0)
- (0116) Change in multiplier vs 2010 on Medicare benchmarks=IF THEN ELSE(Time>=2010, Multiplier vs 2010 on Medicare benchmarks * (Healthcare real cost index growth rate+Medicare benchmark costs change rate after healthcare inflation), 0)
- (0117) Change in uninsured frac of Adv Wkage popn=(Indic uninsured frac of Adv Wkage popn - Uninsured frac of Adv Wkage popn) / 1
- (0118) Change in uninsured frac of Adv Youth popn=(Indic uninsured frac of Adv Youth popn - Uninsured frac of Adv Youth popn) / 1
- (0119) Change in uninsured frac of Disadv Wkage popn=(Indic uninsured frac of Disadv Wkage popn - Uninsured frac of Disadv Wkage popn) / 1
- (0120) Change in uninsured frac of Disadv Youth popn=(Indic uninsured frac of Disadv Youth popn - Uninsured frac of Disadv Youth popn) / 1
- (0121) Change vs baseline in healthcare and program costs=Change vs baseline in healthcare costs + Total program spending
- (0122) Change vs baseline in healthcare costs=Total healthcare costs - Total healthcare costs baserun
- (0123) Change vs baseline in value of productivity less healthcare costs and program spending
=Value of productivity less healthcare costs and program spending - Value of prod less HC costs and pgm spending baserun
- (0124) Cigarette pack base price in dollars per pack=6.24
- (0125) CMI frac of Mild CPI popn
initial[subpop]=0.143,0.108,0.088,0.034,0.151,0.219,0.206,0.234,0.07,0.089
- (0126) CMI frac of No CPI popn
initial[subpop]=0.037,0.06,0.028,0.028,0.083,0.124,0.119,0.156,0.04,0.051
- (0127) CMI frac of popn[subpop]=(CMI frac of No CPI popn initial[subpop]*No CPI frac of popn[subpop] + CMI frac of Mild CPI popn initial[subpop]*Mild CPI frac of popn[subpop] + CMI frac of Severe CPI popn initial[subpop]*Severe CPI frac of popn[subpop]) * Multiplier from substance abuse on CMI frac of popn[subpop]

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- (0128) $\text{CMI frac of popn initial[subpop]} = \text{CMI frac of No CPI popn initial[subpop]} * (1 - \text{Mild CPI frac of popn initial[subpop]} - \text{Severe CPI frac of popn initial[subpop]}) + \text{CMI frac of Mild CPI popn initial[subpop]} * \text{Mild CPI frac of popn initial[subpop]} + \text{CMI frac of Severe CPI popn initial[subpop]} * \text{Severe CPI frac of popn initial[subpop]}$
- (0129) $\text{CMI frac of Severe CPI popn initial[subpop]} = 0.328, 0.26, 0.092, 0.186, 0.347, 0.459, 0.401, 0.441, 0.16, 0.229$
- (0130) $\text{CMI frac of total popn} = \text{Total CMI popn} / \text{Total popn}$
- (0131) $\text{CMI popn[subpop]} = \text{Popn[subpop]} * \text{CMI frac of popn[subpop]}$
- (0132) $\text{Combined provider loss avoidance due to capitation} = \text{Hospital revenue loss avoidance due to capitation} + \text{Specialist revenue loss avoidance due to capitation} + \text{PCP revenue loss avoidance due to capitation}$
- (0133) $\text{Commercial benchmark costs change rate after healthcare inflation} = -0.002$
- (0134) $\text{Commercial insured frac of total popn} = \text{Total Commercial insured popn} / \text{Total popn}$
- (0135) $\text{Commercial insured frac of total popn 2020} = \text{SAMPLE IF TRUE}(\text{Time} = 2020, \text{Commercial insured frac of total popn}, 0)$
- (0136) $\text{Commercial popn cost savings available for programs} = \text{Commercial popn cost savings available to community} * (1 - \text{Fraction of captured savings awarded to hospitals} - \text{Fraction of captured savings awarded to physicians} - \text{Fraction of captured savings awarded to employers})$
- (0137) $\text{Commercial popn cost savings available to community} = \text{MAX}(0, -\text{Commercial popn costs against benchmark}) * \text{Max frac of Commercial cost savings available to community} * \text{Effect of unspent funds on frac of cost savings available to community}$
- (0138) $\text{Commercial popn cost savings available to community 2020} = \text{SAMPLE IF TRUE}(\text{Time} = 2020, \text{Commercial popn cost savings available to community}, 0)$
- (0139) $\text{Commercial popn costs against benchmark} = \text{Healthcare costs against benchmark[InsAdvYouth]} + \text{Healthcare costs against benchmark[InsAdvWkage]}$
- (0140) $\text{Completers of student pathways pgms as a frac of Disadv wkage popn} = \text{MIN}(1, \text{Cumulative living completors of student pathways pgms} / (\text{Total popn working age} * \text{Disadv frac of Wkage popn initial}))$
- (0141) $\text{Controlled CMI frac of popn[subpop]} = \text{CMI frac of popn[subpop]} - \text{Uncontrolled CMI frac of popn[subpop]}$
- (0142) $\text{Controlled CMI frac of total popn} = \text{Total controlled CMI popn} / \text{Total popn}$

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- (0143) Controlled CMI frac of total popn initial=INITIAL(Controlled CMI frac of total popn)
- (0144) Controlled CMI popn[subpop]=CMI popn[subpop] * (1-Uncontrolled frac of CMI[subpop])
- (0145) Cost savings available for programs=Total cost savings available to community - (Cost savings awarded to hospitals+Cost savings awarded to physicians + Cost savings awarded to employers)
- (0146) Cost savings awarded per physician=Cost savings awarded to physicians / Office based providers
- (0147) Cost savings awarded to employers=Total cost savings available to community * Fraction of captured savings awarded to employers
- (0148) Cost savings awarded to hospitals=Total cost savings available to community * Fraction of captured savings awarded to hospitals
- (0149) Cost savings awarded to physicians=Total cost savings available to community * Fraction of captured savings awarded to physicians
- (0150) Cost to hospitals of VBP incentivized post discharge care=Post discharge care improvement from providers incentivized by VBP * (Hospital beds/100) * (Per 100 beds program cost of post discharge care initiative 2010 * Healthcare real cost index vs 2010 * Obsolescence rate for post discharge care investments* 2)
- (0151) Costs of allied medical services[subpop]=Popn[subpop] * Per capita cost of allied medical svcs 2010[subpop] * Healthcare real cost index vs 2010
- (0152) Costs of dental services[subpop]=Popn[subpop] * Per capita cost of dental services[subpop]
- (0153) Costs of freestanding lab services[subpop]=Popn[subpop] * Per capita cost of freestanding lab services 2010[subpop] * Healthcare real cost index vs 2010
- (0154) Costs of home health and hospice care[subpop]=Costs of home health care[subpop] + Costs of hospice care[subpop]
- (0155) Costs of home health care[subpop]=Courses of home health[subpop] * Avg days per course of home health * Avg cost per day of home health 2010* Healthcare real cost index vs 2010
- (0156) Costs of Hosp OPD visits for prev chron care by locals under FFS[subpop]=Prev chron care visits to Hosp OPD[subpop] * Avg cost per Hosp OPD visit for prev chron care 2010* Healthcare real cost index vs 2010
- (0157) Costs of hospice care[subpop]=Popn receiving hospice[subpop] * Avg cost per day of hospice care 2010 * 365 * Healthcare real cost index vs 2010
- (0158) Costs of hospital attending physician services[subpop]=Nonurgent acute episodes sent to Hosp OPD for test or procedure[subpop]*Avg attending physician cost per Hosp OPD test or

procedure 2010*Real cost index vs 2010 as mitigated by care coord + ER visits[subpop]*Avg attending physician cost per ER visit 2010*Healthcare real cost index vs 2010+Inpatient stays[subpop]*Avg attending physician cost per Inpatient stay 2010*Real cost index vs 2010 as mitigated by care coord

- Savings on attending physician costs from additional palliative care[subpop]

- (0159) Costs of long term nursing home stays[subpop]=Long term nursing home popn[subpop] * Avg cost per day in nursing home 2010*365 * Healthcare real cost index vs 2010
- (0160) Costs of medical services in nonclinical settings[subpop]=Popn[subpop] * Per capita cost of medical services in nonclinical settings 2010[subpop] * Healthcare real cost index vs 2010
- (0161) Costs of nonHosp facility visits for test or procedure[subpop]=Visits to nonHosp facility for test or procedure[subpop] * Avg cost per nonHosp facility visit for test or procedure 2010 * Real cost index vs 2010 as mitigated by care coord
- (0162) Costs of nursing facility stays[subpop]=Costs of long term nursing home stays[subpop] + Costs of SNF stays[subpop]
- (0163) Costs of other professional services[subpop]=Costs of dental services[subpop] + Costs of allied medical services[subpop] + Costs of medical services in nonclinical settings[subpop]
- (0164) Costs of other self care products[subpop]=(No CPI popn[subpop]*Avg costs of other self care products per No CPI pt 2010[subpop] + Mild CPI popn[subpop]*Avg costs of other self care products per Mild CPI pt 2010[subpop] + Severe CPI popn[subpop]*Avg costs of other self care products per Severe CPI pt 2010[subpop]) * Healthcare real cost index vs 2010
- (0165) Costs of PCP office visits under FFS[subpop]=Visits to PCPs[subpop] * Avg cost per PCP visit
- (0166) Costs of physician and lab services[subpop]=PCP revenue[subpop] + Specialist revenue[subpop] + Costs of freestanding lab services[subpop]
- (0167) Costs of physician office visits under FFS[subpop]=Costs of PCP office visits under FFS[subpop] + Costs of Specialist office visits under FFS[subpop]
- (0168) Costs of psych Rx drugs[subpop]=Controlled CMI popn[subpop] * Avg psych Rx drug costs per controlled CMI pt 2010[subpop] * Healthcare real cost index vs 2010
- (0169) Costs of Rx drugs[subpop]=Costs of Rx drugs for risk mgmt of No CPI pts[subpop] + Costs of Rx drugs for CPI mgmt[subpop] + Costs of psych Rx drugs[subpop]
- (0170) Costs of Rx drugs for CPI mgmt[subpop]=Adequacy of prev chron care[subpop] * (Mild CPI popn[subpop]*Avg Rx drug costs per Mild CPI pt under full care 2010[subpop]*Effect of initiatives on Rx drug costs per Mild CPI pt + Severe CPI popn[subpop]*Avg Rx drug costs per Severe CPI pt under full care 2010[subpop])*
Effect of initiatives on Rx drug costs per Severe CPI pt) * Real cost index vs 2010 as mitigated by care coord

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- (0171) Costs of Rx drugs for risk mgmt of No CPI pts[subpop]=Adequacy of prev chron care[subpop] * No CPI popn[subpop] * High risk behav frac of popn[subpop] * Avg Rx drug costs per risky but No CPI pt under full care 2010[subpop] * Healthcare real cost index vs 2010
- (0172) Costs of self care products[subpop]=Costs of Rx drugs[subpop] + Costs of other self care products[subpop]
- (0173) Costs of SNF stays[subpop]=SNF stays[subpop] * Avg days per SNF stay * Avg cost per day in SNF 2010 * Healthcare real cost index vs 2010
- (0174) Costs of Specialist office visits under FFS[subpop]=Visits to Specialists[subpop] * Avg cost per Specialist visit 2010 * Healthcare real cost index vs 2010
- (0175) Costs of Specialist services under FFS[subpop]=Costs of Specialist office visits under FFS[subpop] + Costs of hospital attending physician services[subpop] + Costs of nonHosp facility visits for test or procedure[subpop]
- (0176) Courses of home health[subpop]=Courses of home health post hospital[subpop] + Courses of home health not post hospital[subpop]
- (0177) Courses of home health not post hospital[subpop]=(Severe CPI popn[subpop]-Additional popn receiving hospice under initiative[subpop])*End of life pts risk of episodes requiring home health reltv to avg pt with Severe CPI) * Home health rate of Severe CPI popn[subpop]
- (0178) Courses of home health post hospital[subpop]=Original inpatient admissions[subpop] * Frac of inpatients to home health[subpop]
- (0179) CPI popn SES change total should sum to 0=SUM(No CPI popn SES change[subpop!]+Mild CPI popn SES change[subpop!]+Severe CPI popn SES change[subpop!])
- (0180) Crime fighting initiative=0
- (0181) Cumul avg adequacy of prev chron care=ZIDZ(Cumulative popn with adequate prev chron care, Cumulative popn years)
- (0182) Cumul avg adequacy of prev chron care baserun2040=0.483301
- (0183) Cumul avg death rate age stdized=ZIDZ(Cumulative deaths age stdized, Cumulative popn years)
- (0184) Cumul avg death rate age stdized per thou=Cumul avg death rate age stdized * 1000
- (0185) Cumul avg death rate age stdized per thou baserun2040=7.19144
- (0186) Cumul avg Disadv frac of popn deaths=ZIDZ(Cumulative Disadv popn deaths, Cumulative deaths)
- (0187) Cumul avg frac of deaths attributable to Disadv=ZIDZ(Cumulative Deaths attributable to Disadv, Cumulative deaths age stdized)

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- (0188) Cumul avg frac of deaths attributable to Disadv baserun2040=0.227332
 - (0189) Cumul avg healthcare costs=ZIDZ(Cumulative healthcare costs, Cumulative popn years)
 - (0190) Cumul avg healthcare costs baserun2040=9194.57
 - (0191) Cumul avg healthcare costs deflated 2020=SAMPLE IF TRUE(Time=2020, Cumul avg healthcare costs, 0)
 - (0192) Cumul avg healthy days per month=ZIDZ(Cumulative healthy days, Cumulative popn years) / 12
 - (0193) Cumul avg value of productivity net employee hc costs per capita=ZIDZ(Cumulative value of productivity net of employee healthcare costs, Cumulative popn years)
 - (0194) Cumul backbone funding= INTEG (Backbone funding,0)
 - (0195) Cumul deaths avoided per 100k catalytic dollars spent=ZIDZ(-Change in cumul deaths, Cumulative enterprise spending from catalytic funds*1e-005)
 - (0196) Cumul deaths avoided per 100k enterprise dollars spent=ZIDZ(-Change in cumul deaths, Cumulative enterprise spending*1e-005)
 - (0197) Cumul deaths avoided per 100k reinvestment dollars spent=ZIDZ(-Change in cumul deaths, Cumulative program spending from reinvestment*1e-005)
 - (0198) Cumul deaths baserun=Cumul deaths baserun series(Time) * Ourtown popn multiplier
 - (0199) Cumul deaths baserun series([(2015,0)-(2040,90000)],(2015,0),(2015.25,669.695),(2015.5,1342.24),(2015.75,2017.66),(2016,2695.99),(2016.25,3377.24),(2016.5,4061.45),(2016.75,4748.64),(2017,5438.85),(2017.25,6132.09),(2017.5,6828.4),(2017.75,7527.8),(2018,8230.33),(2018.25,8935.99),(2018.5,9644.83),(2018.75,10356.9),(2019,11072.1),(2019.25,11790.6),(2019.5,12512.4),(2019.75,13237.4),(2020,13965.8),(2020.25,14697.6),(2020.5,15433.1),(2020.75,16172.5),(2021,16915.6),(2021.25,17662.6),(2021.5,18413.3),(2021.75,19167.8),(2022,19926.2),(2022.25,20688.3),(2022.5,21454.1),(2022.75,22223.8),(2023,22997.1),(2023.25,23774.2),(2023.5,24555.1),(2023.75,25339.6),(2024,26127.7),(2024.25,26919.6),(2024.5,27715.1),(2024.75,28514.2),(2025,29316.9),(2025.25,30123.1),(2025.5,30933),(2025.75,31746.4),(2026,32563.2),(2026.25,33383.6),(2026.5,34207.4),(2026.75,35034.7),(2027,35865.4),(2027.25,36699.5),(2027.5,37537),(2027.75,38377.9),(2028,39222),(2028.25,40069.5),(2028.5,40920.2),(2028.75,41774.2),(2029,42631.4),(2029.25,43491.9),(2029.5,44355.5),(2029.75,45222.2),(2030,46092.1),(2030.25,46965.1),(2030.5,47841.5),(2030.75,48721.2),(2031,49604.2),(2031.25,50490.5),(2031.5,51380.1),(2031.75,52272.8),(2032,53168.8),(2032.25,54067.9),(2032.5,54970.2),(2032.75,55875.5),(2033,56784),(2033.25,57695.5),(2033.5,58610),(2033.75,59527.5),(2034,60448),(2034.25,61371.5),(2034.5,62297.9),(2034.75,63227.1),(2035,64159.2),(2035.25,65094.2),(2035.5,66032),(2035.75,66972.5),(2036,67915.9),(2036.25,68861.9),(2036.5,69810.7),(2036.75,70762.2),(2037,71716.3),(2037.25,72673),(2037.5,73632.4),(2037.75,74594.4),(2038,75558.9),(2038.25,76526),(2038.5,77495.6),(2038.75,78467.7),(2039,79442.3),(2039.25,80419.3),(2039.5,81398.8),(2039.75,82380.6),(2040,83364.9))

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- (0200) Cumul desired backbone funding= INTEG (Desired backbone funding,0)
- (0201) Cumul disc backbone funding= INTEG (Backbone funding*Discounting factor,0)
- (0202) Cumul disc deaths avoided per 100k catalytic dollars spent=ZIDZ(-Change in cumul disc deaths, Cumulative discounted enterprise spending from catalytic funds*1e-005)
- (0203) Cumul disc deaths avoided per 100k enterprise dollars spent=ZIDZ(-Change in cumul disc deaths, Cumulative discounted enterprise spending*1e-005)
- (0204) Cumul disc deaths avoided per 100k reinvestment dollars spent=ZIDZ(-Change in cumul disc deaths, Cumulative discounted program spending from reinvestment*1e-005)
- (0205) Cumul disc deaths baserun=Cumul disc deaths baserun series(Time) * Ourtown popn multiplier
- (0206) Cumul disc deaths baserun series([(2015,0)-(2040,60000)],(2015,0),(2015.25,669.695),(2015.5,1337.29),(2015.75,2002.8),(2016,2666.25),(2016.25,3327.67),(2016.5,3987.06),(2016.75,4644.45),(2017,5299.86),(2017.25,5953.31),(2017.5,6604.81),(2017.75,7254.39),(2018,7902.07),(2018.25,8547.85),(2018.5,9191.76),(2018.75,9833.81),(2019,10474),(2019.25,11112.4),(2019.5,11748.9),(2019.75,12383.7),(2020,13016.7),(2020.25,13647.9),(2020.5,14277.7),(2020.75,14906.1),(2021,15533.1),(2021.25,16158.7),(2021.5,16782.8),(2021.75,17405.4),(2022,18026.6),(2022.25,18646.2),(2022.5,19264.4),(2022.75,19881),(2023,20496),(2023.25,21109.5),(2023.5,21721.3),(2023.75,22331.5),(2024,22940.1),(2024.25,23547),(2024.5,24152.1),(2024.75,24755.6),(2025,25357.3),(2025.25,25957.3),(2025.5,26555.4),(2025.75,27151.8),(2026,27746.3),(2026.25,28338.9),(2026.5,28929.7),(2026.75,29518.6),(2027,30105.5),(2027.25,30690.6),(2027.5,31273.6),(2027.75,31854.7),(2028,32433.8),(2028.25,33010.9),(2028.5,33585.9),(2028.75,34158.9),(2029,34729.9),(2029.25,35298.7),(2029.5,35865.5),(2029.75,36430.1),(2030,36992.6),(2030.25,37552.9),(2030.5,38111.3),(2030.75,38667.7),(2031,39222),(2031.25,39774.3),(2031.5,40324.6),(2031.75,40872.8),(2032,41418.9),(2032.25,41962.8),(2032.5,42504.7),(2032.75,43044.4),(2033,43582),(2033.25,44117.4),(2033.5,44650.7),(2033.75,45181.7),(2034,45710.5),(2034.25,46237.2),(2034.5,46761.6),(2034.75,47283.7),(2035,47803.7),(2035.25,48321.3),(2035.5,48836.7),(2035.75,49349.9),(2036,49860.7),(2036.25,50369.3),(2036.5,50875.5),(2036.75,51379.5),(2037,51881.1),(2037.25,52380.4),(2037.5,52877.5),(2037.75,53372.1),(2038,53864.5),(2038.25,54354.5),(2038.5,54842.2),(2038.75,55327.5),(2039,55810.5),(2039.25,56291.1),(2039.5,56769.4),(2039.75,57245.3),(2040,57718.9))
- (0207) Cumul disc healthcare costs avoided per catalytic dollar spent=ZIDZ(-Change in cumul disc healthcare costs, Cumulative discounted enterprise spending from catalytic funds)
- (0208) Cumul disc healthcare costs avoided per enterprise dollar spent=ZIDZ(-Change in cumul disc healthcare costs, Cumulative discounted enterprise spending)
- (0209) Cumul disc healthcare costs avoided per reinvestment dollar spent=ZIDZ(-Change in cumul disc healthcare costs, Cumulative discounted program spending from reinvestment)

(0210) Cumul disc healthcare costs baserun=Cumul disc healthcare costs baserun billions series(Time) * 1e+009 * Ourtown popn multiplier

(0211) Cumul disc healthcare costs baserun billions series([(2015,0)-(2040,60)],(2015,0),(2015.25,0.582289),(2015.5,1.16476),(2015.75,1.74742),(2016,2.33029),(2016.25,2.91343),(2016.5,3.49683),(2016.75,4.08048),(2017,4.66435),(2017.25,5.24837),(2017.5,5.83242),(2017.75,6.41652),(2018,7.00067),(2018.25,7.58488),(2018.5,8.16917),(2018.75,8.75333),(2019,9.33722),(2019.25,9.92076),(2019.5,10.5039),(2019.75,11.0867),(2020,11.6691),(2020.25,12.2511),(2020.5,12.8329),(2020.75,13.4144),(2021,13.9955),(2021.25,14.5762),(2021.5,15.1564),(2021.75,15.7361),(2022,16.3154),(2022.25,16.8942),(2022.5,17.4726),(2022.75,18.0504),(2023,18.6278),(2023.25,19.2047),(2023.5,19.781),(2023.75,20.3569),(2024,20.9322),(2024.25,21.5071),(2024.5,22.0814),(2024.75,22.6551),(2025,23.2284),(2025.25,23.8011),(2025.5,24.3733),(2025.75,24.9449),(2026,25.516),(2026.25,26.0865),(2026.5,26.6565),(2026.75,27.2259),(2027,27.7947),(2027.25,28.3629),(2027.5,28.9306),(2027.75,29.4977),(2028,30.0642),(2028.25,30.6301),(2028.5,31.1954),(2028.75,31.7601),(2029,32.3242),(2029.25,32.8877),(2029.5,33.4506),(2029.75,34.0128),(2030,34.5745),(2030.25,35.1355),(2030.5,35.6959),(2030.75,36.2556),(2031,36.8147),(2031.25,37.3732),(2031.5,37.931),(2031.75,38.4882),(2032,39.0447),(2032.25,39.6006),(2032.5,40.1557),(2032.75,40.7102),(2033,41.264),(2033.25,41.8171),(2033.5,42.3696),(2033.75,42.9213),(2034,43.4723),(2034.25,44.0227),(2034.5,44.5723),(2034.75,45.1212),(2035,45.6693),(2035.25,46.2168),(2035.5,46.7635),(2035.75,47.3095),(2036,47.8547),(2036.25,48.3992),(2036.5,48.9429),(2036.75,49.4859),(2037,50.0281),(2037.25,50.5696),(2037.5,51.1103),(2037.75,51.6503),(2038,52.1894),(2038.25,52.7278),(2038.5,53.2654),(2038.75,53.8022),(2039,54.3383),(2039.25,54.8735),(2039.5,55.408),(2039.75,55.9416),(2040,56.4745))

(0212) Cumul disc healthy days baserun=Cumul disc healthy days baserun millions series(Time) * 1e+006 * Ourtown popn multiplier

(0213) Cumul disc healthy days baserun millions series([(2015,0)-(2040,2000)],(2015,0),(2015.25,25.6045),(2015.5,51.0792),(2015.75,76.4245),(2016,101.641),(2016.25,126.728),(2016.5,151.687),(2016.75,176.519),(2017,201.222),(2017.25,225.798),(2017.5,250.248),(2017.75,274.57),(2018,298.766),(2018.25,322.837),(2018.5,346.781),(2018.75,370.601),(2019,394.295),(2019.25,417.864),(2019.5,441.31),(2019.75,464.631),(2020,487.828),(2020.25,510.902),(2020.5,533.853),(2020.75,556.681),(2021,579.388),(2021.25,601.972),(2021.5,624.436),(2021.75,646.779),(2022,669.002),(2022.25,691.106),(2022.5,713.091),(2022.75,734.957),(2023,756.706),(2023.25,778.337),(2023.5,799.851),(2023.75,821.249),(2024,842.532),(2024.25,863.7),(2024.5,884.754),(2024.75,905.694),(2025,926.521),(2025.25,947.235),(2025.5,967.837),(2025.75,988.327),(2026,1008.71),(2026.25,1028.98),(2026.5,1049.13),(2026.75,1069.18),(2027,1089.13),(2027.25,1108.96),(2027.5,1128.68),(2027.75,1148.3),(2028,1167.81),(2028.25,1187.22),(2028.5,1206.52),(2028.75,1225.71),(2029,1244.8),(2029.25,1263.79),(2029.5,1282.67),(2029.75,1301.45),(2030,1320.13),(2030.25,1338.7),(2030.5,1357.18),(2030.75,1375.55),(2031,1393.82),(2031.25,1412),(2031.5,1430.07),(2031.75,1448.05),(2032,1465.92),(2032.25,1483.7),(2032.5,1501.38),(2032.75,1518.97),(2033,1536.45),(2033.25,1553.85),(2033.5,1571.14),(2033.75,1588.34),(2034,1605.45),(2034.25,1622.46),(2034.5,1639.38),(2034.75,1656.2),(2035,1672.93),(2035.25,1689.57),(2035.5,1706.12),(2035.75,1722.58),(2036,1738.94),(2036.25,1755.21),(2036.5,1771.4),(2036.75,1787.49),(2037,1803.49),(2037.25,1819.41),(2037.5,1835.23),(2037.75,1850.97),(2038,1866.62),(2038.25,1882.19),(2038.5,1897.66),(203

8.75,1913.05),(2039,1928.36),(2039.25,1943.58),(2039.5,1958.71),(2039.75,1973.76),(2040,1988.73))

- (0214) Cumul disc healthy days per 100k catalytic dollars spent=ZIDZ(Change in cumul disc healthy days, Cumulative discounted enterprise spending from catalytic funds*1e-005)
- (0215) Cumul disc healthy days per 100k dollars spent=ZIDZ(Change in cumul disc healthy days, Cumulative discounted program spending from reinvestment*1e-005)
- (0216) Cumul disc healthy days per 100k enterprise dollars spent=ZIDZ(Change in cumul disc healthy days, Cumulative discounted enterprise spending*1e-005)
- (0217) Cumul disc inflow to downstream only funds from reinv= INTEG (Inflow to downstream only funds from reinvestment*Discounting factor,0)
- (0218) Cumul disc inflow to downstream only nonloan funds= INTEG (Inflow to downstream only nonloan funds*Discounting factor,0)
- (0219) Cumul disc inflow to unconstrained funds from reinv= INTEG (Inflow to unconstrained funds from reinvestment*Discounting factor,0)
- (0220) Cumul disc inflow to unconstrained nonloan funds= INTEG (Inflow to unconstrained nonloan funds*Discounting factor,0)
- (0221) Cumul disc inflow to upstream only funds from reinv= INTEG (Inflow to upstream only funds from reinvestment*Discounting factor,0)
- (0222) Cumul disc inflow to upstream only nonloan funds= INTEG (Inflow to upstream only nonloan funds*Discounting factor,0)
- (0223) Cumul disc program spend of downstream only nonloan funds= INTEG (Program spending of downstream only nonloan funds*Discounting factor,0)
- (0224) Cumul disc program spend of loan funds= INTEG (Program spending of loan funds*Discounting factor,0)
- (0225) Cumul disc program spend of nonloan funds= INTEG (Program spending of nonloan funds*Discounting factor,0)
- (0226) Cumul disc program spend of upstream only nonloan funds= INTEG (Program spending of upstream only nonloan funds*Discounting factor,0)
- (0227) Cumul disc QALYs baserun=Cumul disc QALYs baserun millions series(Time) * 1e+006 * Ourtown popn multiplier
- (0228) Cumul disc QALYs baserun millions series([(2015,0)-(2040,6)],(2015,0),(2015.25,0.0718371),(2015.5,0.143318),(2015.75,0.214444),(2016,0.285216),(2016.25,0.355636),(2016.5,0.425703),(2016.75,0.49542),(2017,0.564786),(2017.25,0.6338

04),(2017.5,0.702473),(2017.75,0.770796),(2018,0.838772),(2018.25,0.906402),(2018.5,0.973689),(2018.75,1.04063),(2019,1.10723),(2019.25,1.17349),(2019.5,1.2394),(2019.75,1.30498),(2020,1.37021),(2020.25,1.43511),(2020.5,1.49967),(2020.75,1.56389),(2021,1.62777),(2021.25,1.69132),(2021.5,1.75454),(2021.75,1.81742),(2022,1.87997),(2022.25,1.9422),(2022.5,2.0041),(2022.75,2.06567),(2023,2.12691),(2023.25,2.18783),(2023.5,2.24843),(2023.75,2.30871),(2024,2.36867),(2024.25,2.42831),(2024.5,2.48764),(2024.75,2.54665),(2025,2.60535),(2025.25,2.66373),(2025.5,2.72181),(2025.75,2.77957),(2026,2.83703),(2026.25,2.89418),(2026.5,2.95103),(2026.75,3.00757),(2027,3.06381),(2027.25,3.11975),(2027.5,3.1754),(2027.75,3.23074),(2028,3.28579),(2028.25,3.34054),(2028.5,3.395),(2028.75,3.44917),(2029,3.50305),(2029.25,3.55664),(2029.5,3.60994),(2029.75,3.66296),(2030,3.71569),(2030.25,3.76814),(2030.5,3.8203),(2030.75,3.87219),(2031,3.9238),(2031.25,3.97512),(2031.5,4.02617),(2031.75,4.07695),(2032,4.12745),(2032.25,4.17768),(2032.5,4.22764),(2032.75,4.27732),(2033,4.32674),(2033.25,4.37589),(2033.5,4.42477),(2033.75,4.47339),(2034,4.52174),(2034.25,4.56983),(2034.5,4.61765),(2034.75,4.66522),(2035,4.71253),(2035.25,4.75958),(2035.5,4.80637),(2035.75,4.8529),(2036,4.89919),(2036.25,4.94522),(2036.5,4.99099),(2036.75,5.03652),(2037,5.0818),(2037.25,5.12682),(2037.5,5.17161),(2037.75,5.21614),(2038,5.26043),(2038.25,5.30448),(2038.5,5.34829),(2038.75,5.39185),(2039,5.43518),(2039.25,5.47826),(2039.5,5.52111),(2039.75,5.56372),(2040,5.6061))

(0229) Cumul disc QALYs per 100k catalytic dollars spent=ZIDZ(Change in cumul disc QALYs, Cumulative discounted enterprise spending from catalytic funds*1e-005)

(0230) Cumul disc QALYs per 100k dollars spent=ZIDZ(Change in cumul disc QALYs, Cumulative discounted program spending from reinvestment*1e-005)

(0231) Cumul disc QALYs per 100k enterprise dollars spent=ZIDZ(Change in cumul disc QALYs, Cumulative discounted enterprise spending*1e-005)

(0232) Cumul disc value of increased productivity per catalytic dollar spent =ZIDZ(Change in cumul disc value of productivity, Cumulative discounted enterprise spending from catalytic funds)

(0233) Cumul disc value of increased productivity per enterprise dollar spent =ZIDZ(Change in cumul disc value of productivity, Cumulative discounted enterprise spending)

(0234) Cumul disc value of increased productivity per reinvestment dollar spent =ZIDZ(Change in cumul disc value of productivity, Cumulative discounted program spending from reinvestment)

(0235) Cumul disc value of productivity baserun=Cumul disc value of productivity baserun billions series(Time) * 1e+009 * Ourtown popn multiplier

(0236) Cumul disc value of productivity baserun billions series([(2015,0)-(2040,200)],(2015,0),(2015.25,1.62113),(2015.5,3.23428),(2015.75,4.83943),(2016,6.4366),(2016.25,8.02576),(2016.5,9.60691),(2016.75,11.18),(2017,12.7452),(2017.25,14.3023),(2017.5,15.8514),(2017.75,17.3925),(2018,18.9256),(2018.25,20.4508),(2018.5,21.968),(2018.75,23.4773),(2019,24.9787),(2019.25,26.4721),(2019.5,27.9577),(2019.75,29.4353),(2020,30.9051),(20

20.25,32.3671),(2020.5,33.8212),(2020.75,35.2672),(2021,36.7047),(2021.25,38.1338),(2021.5,39.5542),(2021.75,40.9659),(2022,42.3689),(2022.25,43.7631),(2022.5,45.1487),(2022.75,46.5256),(2023,47.8939),(2023.25,49.2537),(2023.5,50.6049),(2023.75,51.9476),(2024,53.2819),(2024.25,54.6079),(2024.5,55.9255),(2024.75,57.2349),(2025,58.5362),(2025.25,59.8293),(2025.5,61.1144),(2025.75,62.3914),(2026,63.6606),(2026.25,64.9218),(2026.5,66.1752),(2026.75,67.4209),(2027,68.6588),(2027.25,69.8891),(2027.5,71.1118),(2027.75,72.327),(2028,73.5347),(2028.25,74.7349),(2028.5,75.9278),(2028.75,77.1133),(2029,78.2916),(2029.25,79.4626),(2029.5,80.6265),(2029.75,81.7833),(2030,82.933),(2030.25,84.0757),(2030.5,85.2114),(2030.75,86.3402),(2031,87.4621),(2031.25,88.5772),(2031.5,89.6855),(2031.75,90.787),(2032,91.8818),(2032.25,92.9699),(2032.5,94.0513),(2032.75,95.1262),(2033,96.1945),(2033.25,97.2562),(2033.5,98.3115),(2033.75,99.3603),(2034,100.403),(2034.25,101.439),(2034.5,102.468),(2034.75,103.492),(2035,104.509),(2035.25,105.52),(2035.5,106.525),(2035.75,107.523),(2036,108.516),(2036.25,109.502),(2036.5,110.483),(2036.75,111.457),(2037,112.425),(2037.25,113.388),(2037.5,114.344),(2037.75,115.295),(2038,116.24),(2038.25,117.179),(2038.5,118.113),(2038.75,119.04),(2039,119.962),(2039.25,120.879),(2039.5,121.789),(2039.75,122.694),(2040,123.594))

(0237) Cumul healthcare costs avoided per catalytic dollar spent=ZIDZ(-Change in cumul healthcare costs, Cumulative enterprise spending from catalytic funds)

(0238) Cumul healthcare costs avoided per enterprise dollar spent=ZIDZ(-Change in cumul healthcare costs, Cumulative enterprise spending)

(0239) Cumul healthcare costs avoided per reinvestment dollar spent=ZIDZ(-Change in cumul healthcare costs, Cumulative program spending from reinvestment)

(0240) Cumul healthcare costs baserun=Cumul healthcare costs baserun billions series(Time) * 1e+009 * Ourtown popn multiplier

(0241) Cumul healthcare costs baserun billions series([(2015,0)-(2040,90)],(2015,0),(2015.25,0.582289),(2015.5,1.16908),(2015.75,1.76042),(2016,2.35635),(2016.25,2.95698),(2016.5,3.56234),(2016.75,4.17245),(2017,4.78732),(2017.25,5.40691),(2017.5,6.03112),(2017.75,6.66002),(2018,7.29364),(2018.25,7.93202),(2018.5,8.57523),(2018.75,9.22305),(2019,9.87539),(2019.25,10.5322),(2019.5,11.1934),(2019.75,11.8591),(2020,12.5293),(2020.25,13.204),(2020.5,13.8834),(2020.75,14.5676),(2021,15.2563),(2021.25,15.9497),(2021.5,16.6476),(2021.75,17.3502),(2022,18.0574),(2022.25,18.7693),(2022.5,19.4858),(2022.75,20.2071),(2023,20.9331),(2023.25,21.6639),(2023.5,22.3994),(2023.75,23.1397),(2024,23.8849),(2024.25,24.6349),(2024.5,25.3898),(2024.75,26.1496),(2025,26.9144),(2025.25,27.684),(2025.5,28.4587),(2025.75,29.2384),(2026,30.023),(2026.25,30.8128),(2026.5,31.6076),(2026.75,32.4075),(2027,33.2125),(2027.25,34.0227),(2027.5,34.8381),(2027.75,35.6586),(2028,36.4844),(2028.25,37.3155),(2028.5,38.1518),(2028.75,38.9934),(2029,39.8404),(2029.25,40.6928),(2029.5,41.5505),(2029.75,42.4136),(2030,43.2822),(2030.25,44.1562),(2030.5,45.0358),(2030.75,45.9208),(2031,46.8114),(2031.25,47.7076),(2031.5,48.6094),(2031.75,49.5168),(2032,50.4299),(2032.25,51.3486),(2032.5,52.273),(2032.75,53.2031),(2033,54.139),(2033.25,55.0807),(2033.5,56.0281),(2033.75,56.9814),(2034,57.9405),(2034.25,58.9055),(2034.5,59.8764),(2034.75,60.8532),(2035,61.836),(2035.25,62.8247),(2035.5,63.8195),(2035.75,64.8202),(2036,65.8271),(2036.25,66.84),(2036.5,67.859),(2036.75,68.8841),(2037,69.9155),(2037.25,70.953),(2037.5,71.9967),(2037.75,73.0467),(2038,74.1029),(2038.25,75.1655),(2038.5,76.2344),(20

38.75,77.3096),(2039,78.3912),(2039.25,79.4793),(2039.5,80.5738),(2039.75,81.6747),(2040,82.7822))

(0242) Cumul healthy days added per 100k catalytic dollars spent=ZIDZ(Change in cumul healthy days, Cumulative enterprise spending from catalytic funds*1e-005)

(0243) Cumul healthy days added per 100k enterprise dollars spent=ZIDZ(Change in cumul healthy days, Cumulative enterprise spending*1e-005)

(0244) Cumul healthy days added per 100k reinvestment dollars spent=ZIDZ(Change in cumul healthy days, Cumulative program spending from reinvestment*1e-005)

(0245) Cumul healthy days baserun=Cumul healthy days baserun millions series(Time) * 1e+006 * Ourtown popn multiplier

(0246) Cumul healthy days baserun millions series([(2015,0)-(2040,3000)],(2015,0),(2015.25,25.6045),(2015.5,51.2682),(2015.75,76.9908),(2016,102.772),(2016.25,128.612),(2016.5,154.511),(2016.75,180.468),(2017,206.483),(2017.25,232.556),(2017.5,258.686),(2017.75,284.874),(2018,311.12),(2018.25,337.422),(2018.5,363.781),(2018.75,390.196),(2019,416.668),(2019.25,443.196),(2019.5,469.779),(2019.75,496.418),(2020,523.113),(2020.25,549.862),(2020.5,576.665),(2020.75,603.524),(2021,630.436),(2021.25,657.404),(2021.5,684.426),(2021.75,711.502),(2022,738.632),(2022.25,765.817),(2022.5,793.056),(2022.75,820.349),(2023,847.696),(2023.25,875.098),(2023.5,902.554),(2023.75,930.064),(2024,957.629),(2024.25,985.249),(2024.5,1012.92),(2024.75,1040.65),(2025,1068.44),(2025.25,1096.27),(2025.5,1124.17),(2025.75,1152.11),(2026,1180.12),(2026.25,1208.17),(2026.5,1236.28),(2026.75,1264.45),(2027,1292.67),(2027.25,1320.95),(2027.5,1349.28),(2027.75,1377.67),(2028,1406.11),(2028.25,1434.61),(2028.5,1463.16),(2028.75,1491.76),(2029,1520.43),(2029.25,1549.14),(2029.5,1577.92),(2029.75,1606.75),(2030,1635.63),(2030.25,1664.57),(2030.5,1693.57),(2030.75,1722.62),(2031,1751.73),(2031.25,1780.89),(2031.5,1810.11),(2031.75,1839.38),(2032,1868.71),(2032.25,1898.1),(2032.5,1927.54),(2032.75,1957.04),(2033,1986.59),(2033.25,2016.2),(2033.5,2045.86),(2033.75,2075.58),(2034,2105.35),(2034.25,2135.18),(2034.5,2165.07),(2034.75,2195.01),(2035,2225.01),(2035.25,2255.06),(2035.5,2285.17),(2035.75,2315.33),(2036,2345.55),(2036.25,2375.82),(2036.5,2406.15),(2036.75,2436.53),(2037,2466.97),(2037.25,2497.47),(2037.5,2528.02),(2037.75,2558.62),(2038,2589.28),(2038.25,2620),(2038.5,2650.77),(2038.75,2681.6),(2039,2712.48),(2039.25,2743.42),(2039.5,2774.41),(2039.75,2805.46),(2040,2836.57))

(0247) Cumul indicated loan repayment= INTEG (Indicated loan repayment, 0)

(0248) Cumul inflow to downstream only funds from reinv= INTEG (Inflow to downstream only funds from reinvestment, 0)

(0249) Cumul inflow to downstream only nonloan funds= INTEG (Inflow to downstream only nonloan funds, 0)

(0250) Cumul inflow to unconstrained funds from reinv= INTEG (Inflow to unconstrained funds from reinvestment,0)

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- (0251) Cumul inflow to unconstrained nonloan funds= INTEG (Inflow to unconstrained nonloan funds, 0)
 - (0252) Cumul inflow to upstream only funds from reinv= INTEG (Inflow to upstream only funds from reinvestment,0)
 - (0253) Cumul inflow to upstream only nonloan funds= INTEG (Inflow to upstream only nonloan funds, 0)
 - (0254) Cumul loan repayment= INTEG (Loan repayment, 0)
 - (0255) Cumul per capita change vs baseline in healthcare and program costs=ZIDZ(Cumulative change vs baseline in healthcare and program costs,Cumulative popn years)
 - (0256) Cumul per capita change vs baseline in value of productivity less healthcare costs and program spending=ZIDZ(Cumulative change vs baseline in value of productivity less healthcare costs and program spending,Cumulative popn years)
 - (0257) Cumul program spend of downstream only nonloan funds= INTEG (Program spending of downstream only nonloan funds, 0)
 - (0258) Cumul program spend of loan funds= INTEG (Program spending of loan funds, 0)
 - (0259) Cumul program spend of nonloan funds= INTEG (Program spending of nonloan funds, 0)
 - (0260) Cumul program spend of upstream only nonloan funds= INTEG (Program spending of upstream only nonloan funds, 0)
 - (0261) Cumul QALYs added per 100k catalytic dollars spent=ZIDZ(Change in cumul QALYs, Cumulative enterprise spending from catalytic funds*1e-005)
 - (0262) Cumul QALYs added per 100k enterprise dollars spent=ZIDZ(Change in cumul QALYs, Cumulative enterprise spending*1e-005)
 - (0263) Cumul QALYs added per 100k reinvestment dollars spent=ZIDZ(Change in cumul QALYs, Cumulative program spending from reinvestment*1e-005)
 - (0264) Cumul QALYs baserun=Cumul QALYs baserun millions series(Time) * 1e+006 * Ourtown popn multiplier
 - (0265) Cumul QALYs baserun millions series([(2015,0)-(2040,8)],(2015,0),(2015.25,0.0718371),(2015.5,0.143848),(2015.75,0.216033),(2016,0.288392),(2016.25,0.360924),(2016.5,0.433629),(2016.75,0.506506),(2017,0.579555),(2017.25,0.652776),(2017.5,0.726168),(2017.75,0.79973),(2018,0.873462),(2018.25,0.947364),(2018.5,1.02144),(2018.75,1.09567),(2019,1.17008),(2019.25,1.24465),(2019.5,1.31939),(2019.75,1.3943),(2020,1.46936),(2020.25,1.5446),(2020.5,1.61999),(2020.75,1.69555),(2021,1.77127),(2021.25,1.84715),(2021.5,1.92319),(2021.75,1.9994),(2022,2.07576),(2022.25,2.15229),(2022.5,2.22898),(2022.75,2.30583),(2023,2.38285),(2023.25,2.46002),(2023.5,2.53736),(2023.75,2.61485),

(2024,2.69251),(2024.25,2.77033),(2024.5,2.84831),(2024.75,2.92645),(2025,3.00476),(2025.25,3.08322),(2025.5,3.16185),(2025.75,3.24063),(2026,3.31958),(2026.25,3.39869),(2026.5,3.47797),(2026.75,3.5574),(2027,3.637),(2027.25,3.71676),(2027.5,3.79668),(2027.75,3.87676),(2028,3.95701),(2028.25,4.03741),(2028.5,4.11798),(2028.75,4.19872),(2029,4.27961),(2029.25,4.36067),(2029.5,4.4419),(2029.75,4.52328),(2030,4.60483),(2030.25,4.68654),(2030.5,4.76842),(2030.75,4.85046),(2031,4.93266),(2031.25,5.01503),(2031.5,5.09756),(2031.75,5.18025),(2032,5.26311),(2032.25,5.34612),(2032.5,5.42931),(2032.75,5.51265),(2033,5.59616),(2033.25,5.67983),(2033.5,5.76367),(2033.75,5.84767),(2034,5.93183),(2034.25,6.01615),(2034.5,6.10064),(2034.75,6.18529),(2035,6.2701),(2035.25,6.35508),(2035.5,6.44022),(2035.75,6.52552),(2036,6.61098),(2036.25,6.69661),(2036.5,6.7824),(2036.75,6.86836),(2037,6.95447),(2037.25,7.04075),(2037.5,7.12719),(2037.75,7.2138),(2038,7.30057),(2038.25,7.3875),(2038.5,7.4746),(2038.75,7.56186),(2039,7.64928),(2039.25,7.73686),(2039.5,7.82461),(2039.75,7.91252),(2040,8.0006)

(0266) Cumul value of increased productivity per catalytic dollar spent=ZIDZ(Change in cumul value of productivity, Cumulative enterprise spending from catalytic funds)

(0267) Cumul value of increased productivity per enterprise dollar spent=ZIDZ(Change in cumul value of productivity, Cumulative enterprise spending)

(0268) Cumul value of increased productivity per reinvestment dollar spent=ZIDZ(Change in cumul value of productivity, Cumulative program spending from reinvestment)

(0269) Cumul value of productivity baserun=Cumul value of productivity baserun billions series(Time) * 1e+009 * Ourtown popn multiplier

(0270) Cumul value of productivity baserun billions series([(2015,0)-(2040,200)],(2015,0),(2015.25,1.62113),(2015.5,3.24624),(2015.75,4.8753),(2016,6.50826),(2016.25,8.1451),(2016.5,9.78576),(2016.75,11.4302),(2017,13.0784),(2017.25,14.7304),(2017.5,16.386),(2017.75,18.0453),(2018,19.7083),(2018.25,21.3749),(2018.5,23.0451),(2018.75,24.7189),(2019,26.3962),(2019.25,28.0771),(2019.5,29.7615),(2019.75,31.4494),(2020,33.1408),(2020.25,34.8356),(2020.5,36.5338),(2020.75,38.235),(2021,39.9389),(2021.25,41.6453),(2021.5,43.3539),(2021.75,45.0646),(2022,46.7774),(2022.25,48.4922),(2022.5,50.2089),(2022.75,51.9276),(2023,53.6481),(2023.25,55.3706),(2023.5,57.095),(2023.75,58.8212),(2024,60.5494),(2024.25,62.2794),(2024.5,64.0114),(2024.75,65.7454),(2025,67.4812),(2025.25,69.2191),(2025.5,70.9589),(2025.75,72.7007),(2026,74.4446),(2026.25,76.1904),(2026.5,77.9383),(2026.75,79.6883),(2027,81.4403),(2027.25,83.1944),(2027.5,84.9506),(2027.75,86.7089),(2028,88.4694),(2028.25,90.232),(2028.5,91.9967),(2028.75,93.7637),(2029,95.5328),(2029.25,97.3041),(2029.5,99.0776),(2029.75,100.853),(2030,102.631),(2030.25,104.412),(2030.5,106.194),(2030.75,107.979),(2031,109.766),(2031.25,111.555),(2031.5,113.347),(2031.75,115.141),(2032,116.937),(2032.25,118.736),(2032.5,120.536),(2032.75,122.339),(2033,124.145),(2033.25,125.952),(2033.5,127.762),(2033.75,129.574),(2034,131.389),(2034.25,133.205),(2034.5,135.024),(2034.75,136.846),(2035,138.669),(2035.25,140.495),(2035.5,142.323),(2035.75,144.154),(2036,145.986),(2036.25,147.821),(2036.5,149.659),(2036.75,151.498),(2037,153.34),(2037.25,155.185),(2037.5,157.031),(2037.75,158.88),(2038,160.731),(2038.25,162.584),(2038.5,164.44),(2038.75,166.298),(2039,168.159),(2039.25,170.021),(2039.5,171.886),(2039.75,173.754),(2040,175.623))

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- (0271) Cumul value of productivity baserun2040=Cumul value of productivity baserun billions series(2040) * 1e+009 * Ourtown popn multiplier
- (0272) Cumulative change vs baseline in healthcare and program costs= INTEG (Increase in cumul change vs baseline in healthcare and program costs,0)
- (0273) Cumulative change vs baseline in value of productivity less healthcare costs and program spending
= INTEG (Increase in cumul change vs baseline prod less HC costs and pgm spend, 0)
- (0274) Cumulative cost savings available to community= INTEG (Total cost savings available to community, 0)
- (0275) Cumulative cost savings available to community 2020=SAMPLE IF TRUE(Time=2020, Cumulative cost savings available to community, 0)
- (0276) Cumulative deaths= INTEG (Increase in cumul deaths,0)
- (0277) Cumulative deaths age stdized= INTEG (Increase in cumul deaths age stdized,0)
- (0278) Cumulative Deaths attributable to Disadv= INTEG (Increase in Deaths attributable to Disadv,0)
- (0279) Cumulative deaths in employed popn= INTEG (Increase in cumul deaths in employed popn,0)
- (0280) Cumulative Disadv popn deaths= INTEG (Increase in cumul Disadv popn deaths,0)
- (0281) Cumulative discounted deaths= INTEG (Increase in cumul disc deaths,0)
- (0282) Cumulative discounted enterprise spending=Cumulative discounted program spending + Cumul disc backbone funding
- (0283) Cumulative discounted enterprise spending from catalytic funds=Cumulative discounted enterprise spending - Cumulative discounted program spending from reinvestment
- (0284) Cumulative discounted healthcare costs= INTEG (Increase in cumul disc healthcare costs,0)
- (0285) Cumulative discounted healthy days= INTEG (Increase in cumul disc healthy days,0)
- (0286) Cumulative discounted program spending=Cumul disc program spend of nonloan funds + Cumul disc program spend of loan funds
- (0287) Cumulative discounted program spending from reinvestment=Cumulative discounted program spending * Frac of cumul disc program spend from reinvestment
- (0288) Cumulative discounted QALYs= INTEG (Increase in cumul disc QALYs,0)
- (0289) Cumulative discounted value of productivity= INTEG (Increase in cumul disc value of productivity,0)

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- (0290) Cumulative enterprise spending=Cumulative program spending + Cumul backbone funding
- (0291) Cumulative enterprise spending from catalytic funds=Cumulative enterprise spending - Cumulative program spending from reinvestment
- (0292) Cumulative healthcare costs= INTEG (Increase in cumul healthcare costs,0)
- (0293) Cumulative healthcare costs in employed popn deflated= INTEG (Increase in cumul healthcare costs in employed popn deflated,0)
- (0294) Cumulative healthcare costs plus program spending=Cumulative healthcare costs + Cumulative program spending
- (0295) Cumulative healthy days= INTEG (Increase in cumul healthy days,0)
- (0296) Cumulative indicated program spending= INTEG (Increase in cumul indicated program spending,0)
- (0297) Cumulative living completors of student pathways pgms= INTEG (+New completors of student pathways pgms-Deaths among completors of student pathways pgms,0)
- (0298) Cumulative popn with adequate prev chron care= INTEG (Increase in cumul popn with adequate prev chron care,0)
- (0299) Cumulative popn years= INTEG (Increase in cumul popn years,0)
- (0300) Cumulative productivity less healthcare costs and program spending=Cumulative value of productivity - Cumulative healthcare costs plus program spending
- (0301) Cumulative program spending=Cumul program spend of nonloan funds + Cumul program spend of loan funds
- (0302) Cumulative program spending 2020=SAMPLE IF TRUE(Time=2020, Cumulative program spending, 0)
- (0303) Cumulative program spending from reinvestment=Cumulative program spending * Frac of cumul program spend from reinvestment
- (0304) Cumulative program spending shortfall=Cumulative indicated program spending - Cumulative program spending
- (0305) Cumulative program spending shortfall fraction=ZIDZ(Cumulative program spending shortfall, Cumulative indicated program spending)
- (0306) Cumulative QALYs= INTEG (Increase in cumul QALYs,0)
- (0307) Cumulative value of productivity= INTEG (Increase in cumul value of productivity,0)

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- (0308) Cumulative value of productivity 2020=SAMPLE IF TRUE(Time=2020, Cumulative value of productivity, 0)
- (0309) Cumulative value of productivity net of employee healthcare costs= INTEG
(Increase in cumul value of productivity net of employee healthcare costs,0)
- (0310) Cumulative value of productivity net of employee healthcare costs 2020
=SAMPLE IF TRUE(Time=2020, Cumulative value of productivity net of employee healthcare costs, 0)
- (0311) Death rate in employed popn=Deaths in employed popn / Total employed popn
- (0312) Death rate in Mild CPI popn[subpop]=Death rate in Mild CPI popn at initial HAI frac[subpop] *
Multiplier on deaths from smaller HAI frac[subpop]
- (0313) Death rate in Mild CPI popn at initial HAI frac[subpop]=Death rate in Mild CPI popn
initial[subpop] * Multiplier on death rate from improved urgent care* (Fraction of deaths
without urgent episode initial+(1-Fraction of deaths without urgent episode initial)*Urgent
physical episodes per Mild CPI pt[subpop]/Urgent physical episodes per Mild CPI pt
initial[subpop])
- (0314) Death rate in Mild CPI popn
initial[subpop]=0.0006,0.0006,0.0006,0.0006,0.0009,0.0009,0.0009,0.0009,0.0225,0.0225
- (0315) Death rate in No CPI popn[subpop]=Death rate in No CPI popn at initial HAI frac[subpop] *
Multiplier on deaths from smaller HAI frac[subpop]
- (0316) Death rate in No CPI popn at initial HAI frac[subpop]=Death rate in No CPI popn initial[subpop] *
Multiplier on death rate from improved urgent care* (Fraction of deaths without urgent
episode initial+(1-Fraction of deaths without urgent episode initial)*Urgent physical episodes
per No CPI pt[subpop]/Urgent physical episodes per No CPI pt initial[subpop])
- (0317) Death rate in No CPI popn
initial[subpop]=0.0003,0.0003,0.0003,0.0003,0.0006,0.0006,0.0006,0.0006,0.009,0.009
- (0318) Death rate in Severe CPI popn[subpop]=Death rate in Severe CPI popn at initial HAI frac[subpop]
* Multiplier on deaths from smaller HAI frac[subpop]
- (0319) Death rate in Severe CPI popn at initial HAI frac[subpop]=Death rate in Severe CPI popn
initial[subpop] * Multiplier on death rate from improved urgent care* (Fraction of deaths
without urgent episode initial+(1-Fraction of deaths without urgent episode initial)*Urgent
physical episodes per Severe CPI pt[subpop]/Urgent physical episodes per Severe CPI pt
initial[subpop])
- (0320) Death rate in Severe CPI popn
initial[subpop]=0.01,0.01,0.01,0.01,0.025,0.025,0.025,0.025,0.16,0.16

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- (0321) Deaths Adv Wkage=Popn deaths[InsAdvWkage]+Popn deaths[UninsAdvWkage]
- (0322) Deaths among completors of student pathways pgms=Cumulative living completors of student pathways pgms * Avg death rate among completors of student pathways pgms
- (0323) Deaths attributable to Disadv age stdized=Total Disadv popn * (Disadv popn death rate age stdized - Adv popn death rate age stdized)
- (0324) Deaths Disadv Wkage=Popn deaths[InsDisWkage]+Popn deaths[UninsDisWkage]
- (0325) Deaths from HAI[subpop]=Inpatient stays[subpop] * HAI frac of inpatient stays * Fatal frac of HAI
- (0326) Deaths from HAI at initial HAI frac[subpop]=Inpatient stays[subpop] * HAI frac of inpatient stays initial * Fatal frac of HAI
- (0327) Deaths in employed popn=SUM(Employed popn by segment[subpop!]*Popn death rate[subpop!])
- (0328) Deaths Senior=Popn deaths[AdvSr]+Popn deaths[DisSr]
- (0329) Deaths using hospice[subpop]=Popn deaths at initial HAI frac[subpop] * Frac of deaths using hospice[subpop]
- (0330) Deaths Wkage=Popn deaths[InsAdvWkage]+Popn deaths[InsDisWkage]+Popn deaths[UninsAdvWkage]+Popn deaths[UninsDisWkage]
- (0331) Deaths Youth=Popn deaths[InsAdvYouth]+Popn deaths[InsDisYouth]+Popn deaths[UninsAdvYouth]+Popn deaths[UninsDisYouth]
- (0332) Default grants and assistance=IF THEN ELSE(Time>=2015, IF THEN ELSE(Time<2015+Default grants and assistance duration, Default grants and assistance annual amount, 0), 0)
- (0333) Default grants and assistance annual amount=2.4e+009
- (0334) Default grants and assistance duration=5
- (0335) Delay time for start of backbone organization=0
- (0336) Delay time for start of capturing cost savings=0
- (0337) Delay time for start of care coord initiative=0
- (0338) Delay time for start of crime fighting initiative=0
- (0339) Delay time for start of end of life care initiative=0
- (0340) Delay time for start of family pathways initiative=0

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- (0341) Delay time for start of FQHC PCP recruitment initiative=0
- (0342) Delay time for start of general PCP recruitment initiative=0
- (0343) Delay time for start of HAI prevention initiative=0
- (0344) Delay time for start of hazard reduction initiative=0
- (0345) Delay time for start of healthy behavior initiative=0
- (0346) Delay time for start of hospital efficiency initiative=0
- (0347) Delay time for start of malpractice reform initiative=0
- (0348) Delay time for start of med home initiative=0
- (0349) Delay time for start of mental illness care initiative=0
- (0350) Delay time for start of post discharge care initiative=0
- (0351) Delay time for start of practice redesign initiative=0
- (0352) Delay time for start of prev chron care quality initiative=0
- (0353) Delay time for start of PVS initiative=0
- (0354) Delay time for start of self care support initiative=0
- (0355) Delay time for start of student pathways initiative=0
- (0356) Delay time for start of Tax1=0
- (0357) Delay time for start of Tax2=0
- (0358) Delay time for start of Tax3=0
- (0359) Delay time for start of Tax4=0
- (0360) Delay time for starting technology assessment under care coord=2
- (0361) Demand for prev chron care visits[subpop]=(No CPI popn[subpop]*Prev chron care visits per No
CPI pt per guidelines
+ Mild CPI popn[subpop]*Prev chron care visits per Mild CPI pt per guidelines + Severe CPI
popn[subpop]*Prev chron care visits per Severe CPI pt per guidelines) * Adequacy of demand
for prev chron physician visits per guidelines[subpop]

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- (0362) Demand for prev chron care visits to PCPs[subpop]=Demand for prev chron care visits[subpop] *
Frac of prev chron care demand to PCP[subpop]
- (0363) Demand for visits to PCPs[subpop]=Demand for prev chron care visits to PCPs[subpop] +
Nonurgent acute episode demand to PCPs[subpop]
- (0364) Demand for visits to PCPs by Adv popn=Demand for visits to PCPs[InsAdvYouth]+Demand for
visits to PCPs[UninsAdvYouth]+Demand for visits to PCPs[InsAdvWkage]+Demand for visits to
PCPs[UninsAdvWkage]+Demand for visits to PCPs[AdvSr]
- (0365) Demand for visits to PCPs by Disadv uninsured popn=Demand for visits to
PCPs[UninsDisYouth]+Demand for visits to PCPs[UninsDisWkage]
- (0366) Demand for visits to PCPs by dually insured popn=Demand for visits to PCPs[DisSr]
- (0367) Demand for visits to PCPs by Medicaid only popn=Demand for visits to
PCPs[InsDisYouth]+Demand for visits to PCPs[InsDisWkage]
- (0368) Desired backbone funding=IF THEN ELSE(Time>=2015+Delay time for start of backbone
organization, Desired backbone funding per year, 0)
- (0369) Desired backbone funding from loan funds=Desired backbone funding - Backbone funding from
nonloan funds
- (0370) Desired backbone funding per year=0
- (0371) Desired enterprise spending=Total indicated program spending + Desired backbone funding
- (0372) Disadv frac of CMI popn=(CMI popn[InsDisYouth]+CMI popn[UninsDisYouth]+CMI
popn[InsDisWkage]+CMI popn[UninsDisWkage]+CMI popn[DisSr]) / SUM(CMI popn[subpop!])
- (0373) Disadv frac of employed popn=(Employed popn by segment[InsDisYouth]+Employed popn by
segment[UninsDisYouth]+Employed popn by segment[InsDisWkage]+Employed popn by
segment[UninsDisWkage]+Employed popn by segment[DisSr])/Total employed popn
- (0374) Disadv frac of high risk behav popn=(High risk behav popn[InsDisYouth]+High risk behav
popn[UninsDisYouth]+High risk behav popn[InsDisWkage]+High risk behav
popn[UninsDisWkage]+High risk behav popn[DisSr]) / SUM(High risk behav popn[subpop!])
- (0375) Disadv frac of inadequate prev chron care=(Popn with inadequate prev chron
care[InsDisYouth]+Popn with inadequate prev chron care[UninsDisYouth]+Popn with
inadequate prev chron care[InsDisWkage]+Popn with inadequate prev chron
care[UninsDisWkage]+Popn with inadequate prev chron care[DisSr]) / SUM(Popn with
inadequate prev chron care[subpop!])
- (0376) Disadv frac of popn deaths=Disadv popn deaths / Total deaths

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- (0377) Disadv frac of popn in hazardous environment= $(\text{Popn in hazardous environment}[\text{InsDisYouth}] + \text{Popn in hazardous environment}[\text{UninsDisYouth}] + \text{Popn in hazardous environment}[\text{InsDisWkage}] + \text{Popn in hazardous environment}[\text{UninsDisWkage}] + \text{Popn in hazardous environment}[\text{DisSr}]) / \text{SUM}(\text{Popn in hazardous environment}[\text{subpop!}])$
- (0378) Disadv frac of popn in high crime area= $(\text{Popn in high crime area}[\text{InsDisYouth}] + \text{Popn in high crime area}[\text{UninsDisYouth}] + \text{Popn in high crime area}[\text{InsDisWkage}] + \text{Popn in high crime area}[\text{UninsDisWkage}] + \text{Popn in high crime area}[\text{DisSr}]) / \text{SUM}(\text{Popn in high crime area}[\text{subpop!}])$
- (0379) Disadv frac of Senior popn= $\text{Popn}[\text{DisSr}] / \text{Total popn senior}$
- (0380) Disadv frac of Senior popn initial=0.313
- (0381) Disadv frac of Severe CPI popn= $(\text{Severe CPI popn}[\text{InsDisYouth}] + \text{Severe CPI popn}[\text{UninsDisYouth}] + \text{Severe CPI popn}[\text{InsDisWkage}] + \text{Severe CPI popn}[\text{UninsDisWkage}] + \text{Severe CPI popn}[\text{DisSr}]) / \text{SUM}(\text{Severe CPI popn}[\text{subpop!}])$
- (0382) Disadv frac of total popn= $\text{Popn fraction}[\text{InsDisYouth}] + \text{Popn fraction}[\text{UninsDisYouth}] + \text{Popn fraction}[\text{InsDisWkage}] + \text{Popn fraction}[\text{UninsDisWkage}] + \text{Popn fraction}[\text{DisSr}]$
- (0383) Disadv frac of uncontrolled CMI popn= $(\text{Uncontrolled CMI popn}[\text{InsDisYouth}] + \text{Uncontrolled CMI popn}[\text{UninsDisYouth}] + \text{Uncontrolled CMI popn}[\text{InsDisWkage}] + \text{Uncontrolled CMI popn}[\text{UninsDisWkage}] + \text{Uncontrolled CMI popn}[\text{DisSr}]) / \text{SUM}(\text{Uncontrolled CMI popn}[\text{subpop!}])$
- (0384) Disadv frac of uninsured popn= $(\text{Popn}[\text{UninsDisYouth}] + \text{Popn}[\text{UninsDisWkage}]) / \text{Total Uninsured popn}$
- (0385) Disadv frac of Wkage popn= $\text{Total Disadv popn Wkage} / \text{Total popn working age}$
- (0386) Disadv frac of Wkage popn initial=0.259
- (0387) Disadv frac of Youth popn= $\text{Total Disadv popn Youth} / \text{Total popn youth}$
- (0388) Disadv frac of Youth popn initial=0.378
- (0389) Disadv popn death rate age stdized= $((\text{Popn deaths}[\text{InsDisYouth}] + \text{Popn deaths}[\text{UninsDisYouth}]) / (\text{Popn}[\text{InsDisYouth}] + \text{Popn}[\text{UninsDisYouth}])) * \text{Standard youth frac of popn} + ((\text{Popn deaths}[\text{InsDisWkage}] + \text{Popn deaths}[\text{UninsDisWkage}]) / (\text{Popn}[\text{InsDisWkage}] + \text{Popn}[\text{UninsDisWkage}])) * \text{Standard working age frac of popn} + (\text{Popn deaths}[\text{DisSr}] / \text{Popn}[\text{DisSr}]) * \text{Standard senior frac of popn}$
- (0390) Disadv popn deaths= $\text{Popn deaths}[\text{InsDisYouth}] + \text{Popn deaths}[\text{UninsDisYouth}] + \text{Popn deaths}[\text{InsDisWkage}] + \text{Popn deaths}[\text{UninsDisWkage}] + \text{Popn deaths}[\text{DisSr}]$

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- (0391) Disadv popn frac of ER visits=(ER visits[InsDisYouth]+ER visits[UninsDisYouth]+ER visits[InsDisWkage]+ER visits[UninsDisWkage]+ER visits[DisSr]) / SUM(ER visits[subpop!])
- (0392) Disadv popn healthcare costs=Healthcare costs[InsDisYouth]+Healthcare costs[UninsDisYouth]+Healthcare costs[InsDisWkage]+Healthcare costs[UninsDisWkage]+Healthcare costs[DisSr]
- (0393) Disadv popn value of productivity=Value of productivity by segment[InsDisYouth]+Value of productivity by segment[UninsDisYouth]+Value of productivity by segment[InsDisWkage]+Value of productivity by segment[UninsDisWkage]+Value of productivity by segment[DisSr]
- (0394) Disadv segment indicator[subpop]=0,1,0,1,0,1,0,1,0,1
- (0395) Disadv Wkage death rate=Deaths Disadv Wkage/Popn Disadv Wkage
- (0396) Discount rate=0.03
- (0397) Discounting factor=(1+Discount rate)^(-Time since accumulation start)
- (0398) Do large unspent funds reduce frac of savings available=1
- (0399) Does Care coord include technology assessment=0
- (0400) Does Tax3 exclude diet beverages=0
- (0401) Dual insured frac of total popn=Total Dual insured popn/Total popn
- (0402) Dual insured frac of total popn 2020=SAMPLE IF TRUE(Time=2020, Dual insured frac of total popn, 0)
- (0403) Effect of care coord on Rx drug costs per Mild CPI pt=1 + Care coord from initiative and VBP*(Multiplier on Rx drug costs per Mild CPI pt under care coord-1)
- (0404) Effect of care coord on Rx drug costs per Severe CPI pt=1 + Care coord from initiative and VBP*(Multiplier on Rx drug costs per Severe CPI pt under care coord-1)
- (0405) Effect of care on uncontrolled CMI frac[subpop]=DELAY1I(Indicated effect of mental illness care on uncontrolled CMI frac[subpop] * Indicated effect of CPI care on uncontrolled CMI[subpop], Time for care to affect uncontrolled CMI, 1)
- (0406) Effect of crime on risky behav onset[subpop]=(1-Frac of popn in high crime area[subpop]+Frac of popn in high crime area[subpop]*Reltv behav risk onset in high crime areas) / (1-Frac of popn in high crime area initial[subpop]+Frac of popn in high crime area initial[subpop]*Reltv behav risk onset in high crime areas)
- (0407) Effect of crime on risky behav reform[subpop]=(1-Frac of popn in high crime area[subpop]+Frac of popn in high crime area[subpop]*Reltv risky behav reform in high crime areas) / (1-Frac of

popn in high crime area initial[subpop]+Frac of popn in high crime area initial[subpop]*Reltv risky behav reform in high crime areas)

- (0408) Effect of crime on urgent physical episodes[subpop]=(1-Frac of popn in high crime area[subpop]+Frac of popn in high crime area[subpop]*Reltv risk of urgent episodes for popn in high crime area) / (1-Frac of popn in high crime area initial[subpop]+Frac of popn in high crime area initial[subpop]*Reltv risk of urgent episodes for popn in high crime area)
- (0409) Effect of economy on Senior Disadv frac=Effect of economy on Senior Disadv frac series(Time)
- (0410) Effect of economy on Senior Disadv frac series([(2000,0)-(2040,2)],(2000,1),(2005,1),(2010,1),(2015,1),(2020,1),(2025,1),(2030,1),(2035,1),(2040,1))
- (0411) Effect of economy on Wkage Disadv frac=Effect of economy on Wkage Disadv frac series(Time)
- (0412) Effect of economy on Wkage Disadv frac series([(2000,0)-(2040,2)],(2000,1),(2005,1),(2010,1.15),(2015,1.075),(2020,1),(2025,1),(2030,1),(2035,1),(2040,1))
- (0413) Effect of economy on Youth Disadv frac=Effect of economy on Youth Disadv frac series(Time)
- (0414) Effect of economy on Youth Disadv frac series([(2000,0)-(2040,2)],(2000,1),(2005,1),(2010,1.1),(2015,1.05),(2020,1),(2025,1),(2030,1),(2035,1),(2040,1))
- (0415) Effect of family pathways initiative on Wkage Disadv frac=1 + (Reltv Disadv frac under family pathways initiative-1)*DELAY1(Extent of family pathways initiative, Time for family pathways initiative to reduce Disadv frac)
- (0416) Effect of FQHC PCP recruitment initiative on indicated FQHC PCPs=1 + (Multiplier on FQHC PCPs under recruitment initiative-1)*DELAY1(Extent of FQHC PCP recruitment initiative,FQHC PCP avg relocation time,0)
- (0417) Effect of general PCP recruitment initiative on general PCPs=1 + (Multiplier on general PCPs under recruitment initiative-1)*DELAY1(Extent of general PCP recruitment initiative,General PCP avg relocation time,0)
- (0418) Effect of HAI nonreimbursement on recognized hospital costs=(1 + HAI frac of inpatient stays*HAI addition to avg length of stay/Inpatient avg length of stay days initial*(1-Frac of HAIs not reimbursed)) / (1 + HAI frac of inpatient stays initial*HAI addition to avg length of stay/Inpatient avg length of stay days initial)
- (0419) Effect of hazardous envir on Mild CPI onset rate[subpop]=(1-Frac of popn in hazardous environment[subpop]+Frac of popn in hazardous environment[subpop]*Reltv rate of Mild CPI onset for popn in hazardous envir) / (1-Frac of popn in hazardous environment initial[subpop]+Frac of popn in hazardous environment initial[subpop]*Reltv rate of Mild CPI onset for popn in hazardous envir)

- (0420) Effect of hazardous envir on Severe CPI onset rate[subpop]=(1-Frac of popn in hazardous environment[subpop]+Frac of popn in hazardous environment[subpop]*Reltv rate of Severe CPI onset for popn in hazardous envir) / (1-Frac of popn in hazardous environment initial[subpop]+Frac of popn in hazardous environment initial[subpop]*Reltv rate of Severe CPI onset for popn in hazardous envir)
- (0421) Effect of hazardous envir on urgent physical episodes[subpop]=(1-Frac of popn in hazardous environment[subpop]+Frac of popn in hazardous environment[subpop]*Reltv risk of urgent episodes for popn in hazardous envir) / (1-Frac of popn in hazardous environment initial[subpop]+Frac of popn in hazardous environment initial[subpop]*Reltv risk of urgent episodes for popn in hazardous envir)
- (0422) Effect of healthcare costs on Adv Wkage uninsurance=Lookup for effect of healthcare costs on Adv Wkage uninsurance(Employer per capita healthcare costs ratio vs initial)
- (0423) Effect of healthcare costs on Wkage Disadv frac=DELAY1I(Indicated effect of healthcare costs on Wkage Disadv frac, Time for healthcare costs to affect Disadv frac, 1)
- (0424) Effect of hospital efficiency initiative on avg length of stay=1 + (Multiplier on length of stay under hospital efficiency initiative-1)*Extent of hospital efficiency initiative
- (0425) Effect of improved prev chron care on excess lost productivity due to CPI[subpop]=1 - Mitigation of excess lost productivity due to CPI under proper chron care*(Adequacy of prev chron care affecting disease outcomes[subpop]-Adequacy of prev chron care initial[subpop])
- (0426) Effect of initiatives on Rx drug costs per Mild CPI pt=Effect of care coord on Rx drug costs per Mild CPI pt * Effect of malpractice reform on Rx drug costs per Mild CPI pt
- (0427) Effect of initiatives on Rx drug costs per Severe CPI pt=Effect of care coord on Rx drug costs per Severe CPI pt * Effect of malpractice reform on Rx drug costs per Severe CPI pt
- (0428) Effect of malpractice reform on Rx drug costs per Mild CPI pt=1 + Extent of malpractice reform initiative*(Multiplier on Rx drug costs per Mild CPI pt under malpractice reform-1)
- (0429) Effect of malpractice reform on Rx drug costs per Severe CPI pt=1 + Extent of malpractice reform initiative*(Multiplier on Rx drug costs per Severe CPI pt under malpractice reform-1)
- (0430) Effect of net income on specialist departure=Effect of net income on specialist departure lookup(DELAY1I(Specialist net income ratio,Time for specialists to adjust departure plans,1))
- (0431) Effect of net income on specialist departure lookup(((0.75,1)-(1.05,1.5)],(0.75,1.18),(0.8,1.15),(0.85,1.12),(0.9,1.08),(0.95,1.04),(1,1),(1.05,1))
- (0432) Effect of prev care on Mild CPI onset rate[subpop]=(1-Adequacy of prev chron care[subpop]+Adequacy of prev chron care[subpop]*Reltv rate of Mild CPI onset under full prev care)/ (1-Adequacy of prev chron care initial[subpop]+Adequacy of prev chron care initial[subpop]*Reltv rate of Mild CPI onset under full prev care)

- (0433) Effect of prev chron care on QOL loss due to CPI[subpop]=1 - Reltv QOL loss from CPI under proper chronic care*Adequacy of prev chron care affecting disease outcomes[subpop]
- (0434) Effect of prev chron care on risky behav reform rate[subpop]=(1-Adequacy of prev chron care[subpop]+Adequacy of prev chron care[subpop]*Reltv risky behav reform under full prev chron care) / (1-Adequacy of prev chron care initial[subpop]+Adequacy of prev chron care initial[subpop]*Reltv risky behav reform under full prev chron care)
- (0435) Effect of prev chron care on Severe CPI onset rate[subpop]=(1-Adequacy of prev chron care[subpop]+Adequacy of prev chron care[subpop]*Reltv rate of Severe CPI onset under full prev chron care) / (1-Adequacy of prev chron care initial[subpop]+Adequacy of prev chron care initial[subpop]*Reltv rate of Severe CPI onset under full prev chron care)
- (0436) Effect of risk status on Mild CPI onset rate[subpop]=(1-High risk behav frac of popn[subpop]+High risk behav frac of popn[subpop]*Reltv rate of Mild CPI onset for high risk behav popn) / (1-High risk behav frac of popn initial[subpop]+High risk behav frac of popn initial[subpop]*Reltv rate of Mild CPI onset for high risk behav popn)
- (0437) Effect of risk status on Severe CPI onset rate[subpop]=(1-High risk behav frac of popn[subpop]+High risk behav frac of popn[subpop]*Reltv rate of Severe CPI onset for high risk behav popn) / (1-High risk behav frac of popn initial[subpop]+High risk behav frac of popn initial[subpop]*Reltv rate of Severe CPI onset for high risk behav popn)
- (0438) Effect of Severe CPI on Wkage Disadv frac=DELAY3((1-Severe CPI frac of total popn+Severe CPI frac of total popn*Reltv Wkage Disadv frac from Severe CPI) / (1-Severe CPI frac of total popn initial+Severe CPI frac of total popn initial*Reltv Wkage Disadv frac from Severe CPI), Time for severe physical and mental illness to affect Disadv frac)
- (0439) Effect of specialist income reduction on intensity of care=1+(Max effect of specialist income reduction on intensity of care-1)*(Strength of specialist income reduction response*Reltv effect of specialist income reduction on intensity of care lookup(DELAY1I(Specialist net income ratio,Time for specialists to adjust intensity of care,1)))
- (0440) Effect of student pathways pgms on Wkage Disadv frac=DELAY1(Relvtv Disadv frac for completors of student pathways pgms*Completors of student pathways pgms as a frac of Disadv wkage popn +1*(1-Completors of student pathways pgms as a frac of Disadv wkage popn), Time for student pathways initiative to reduce Disadv frac)
- (0441) Effect of uncontrolled CMI on prev chron care seeking and self care[subpop]=(1-Uncontrolled CMI frac of popn[subpop]+Uncontrolled CMI frac of popn[subpop]*Reltv physical care seeking and self care for uncontrolled CMI popn) / (1-Uncontrolled CMI frac of popn initial[subpop]+Uncontrolled CMI frac of popn initial[subpop]*Reltv physical care seeking and self care for uncontrolled CMI popn)
- (0442) Effect of uncontrolled CMI on risky behav onset[subpop]=(1-Uncontrolled CMI frac of popn[subpop]+Uncontrolled CMI frac of popn[subpop]*Reltv risky behav onset for

uncontrolled CMI popn) / (1-Uncontrolled CMI frac of popn initial[subpop]+Uncontrolled CMI frac of popn initial[subpop]*Reltv risky behav onset for uncontrolled CMI popn)

(0443) Effect of uncontrolled CMI on risky behav reform[subpop]=(1-Uncontrolled CMI frac of popn[subpop]+Uncontrolled CMI frac of popn[subpop]*Reltv risky behav reform for uncontrolled CMI popn) / (1-Uncontrolled CMI frac of popn initial[subpop]+Uncontrolled CMI frac of popn initial[subpop]*Reltv risky behav reform for uncontrolled CMI popn)

(0444) Effect of uncontrolled CMI on Wkage Disadv frac=DELAY3((1-Uncontrolled CMI frac of total popn+Uncontrolled CMI frac of total popn*Reltv Wkage Disadv frac from uncontrolled CMI) / (1-Uncontrolled CMI frac of total popn initial +Uncontrolled CMI frac of total popn initial*Reltv Wkage Disadv frac from uncontrolled CMI), Time for severe physical and mental illness to affect Disadv frac)

(0445) Effect of unhealthy behav on urgent physical episodes[subpop]=(1-High risk behav frac of popn[subpop]+High risk behav frac of popn[subpop]*Reltv risk of urgent episodes for high risk behav popn) / (1-High risk behav frac of popn initial[subpop]+High risk behav frac of popn initial[subpop]*Reltv risk of urgent episodes for high risk behav popn)

(0446) Effect of unspent funds on frac of cost savings available to community
=MIN(1, MAX(Least relative savings available, 1 - Do large unspent funds reduce frac of savings available*(1-Least relative savings available)*ZIDZ(Ratio of unspent funds to indicated program spending-Ratio of unspent funds for no reduction in savings available, Ratio of unspent funds for least relative savings available-Ratio of unspent funds for no reduction in savings available)))

(0447) Employed frac of popn[subpop]=0.026,0.012,0.026,0.012,0.771,0.476,0.771,0.476,0.226,0.048

(0448) Employed frac of total popn=Total employed popn / Total popn

(0449) Employed popn by segment[subpop]=Popn[subpop] * Employed frac of popn[subpop]

(0450) Employer per capita healthcare costs ratio vs initial=Per capita healthcare costs faced by employers / Per capita healthcare costs faced by employers initial

(0451) End of life care initiative=0

(0452) End of life pts risk of episodes requiring home health reltv to avg pt with Severe CPI
=7.5

(0453) End of life pts risk of nonurgent acute episodes reltv to avg pt with Severe CPI
=7.5

(0454) End of life pts risk of urgent episodes reltv to avg pt with Severe CPI
=7.5

(0455) End time for ACA eligibility expansion=2018

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- (0456) Enterprise spending=Total program spending + Backbone funding
- (0457) Enterprise spending shortfall=Desired enterprise spending - Enterprise spending
- (0458) ER visits[subpop]=Urgent episodes to ER[subpop] + Nonurgent acute episodes to ER[subpop]
- (0459) Established health expend frac of total income=SMOOTHi(Health expend frac of total income, Time to establish changes in regional economy, Established health expend frac of total income initial)
- (0460) Established health expend frac of total income initial=0.125
- (0461) Extent of adoption of ACA eligibility expansion for Adv=0.75
- (0462) Extent of adoption of ACA eligibility expansion for Disadv=0.75
- (0463) Extent of care coord initiative=DELAY1I(Indicated extent of care coord initiative * Actual vs indicated spending on downstream initiatives, Time to implement care coord initiative, 0)
- (0464) Extent of crime fighting initiative[subpop]=Indicated extent of crime fighting initiative[subpop] * Actual vs indicated spending on upstream initiatives
- (0465) Extent of end of life care initiative=DELAY1I(Indicated extent of end of life care initiative * Actual vs indicated spending on downstream initiatives, Time to implement end of life care initiative, 0)
- (0466) Extent of family pathways initiative=Indicated extent of family pathways initiative * Actual vs indicated spending on upstream initiatives
- (0467) Extent of FQHC PCP recruitment initiative=Indicated extent of FQHC PCP recruitment initiative * Actual vs indicated spending on downstream initiatives
- (0468) Extent of general PCP recruitment initiative=Indicated extent of general PCP recruitment initiative * Actual vs indicated spending on downstream initiatives
- (0469) Extent of HAI prevention initiative= INTEG (Addition to extent of HAI prevention initiative - Obsolescence to extent of HAI prevention initiative,0)
- (0470) Extent of hazard reduction initiative[subpop]=Indicated extent of hazard reduction initiative[subpop] * Actual vs indicated spending on upstream initiatives
- (0471) Extent of healthy behavior initiative[subpop]=Indicated extent of healthy behavior initiative[subpop] * Actual vs indicated spending on upstream initiatives
- (0472) Extent of hospital efficiency initiative= INTEG (Addition to extent of hospital efficiency initiative - Obsolescence to extent of hospital efficiency initiative,0)

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- (0473) Extent of malpractice reform initiative=DELAY1I(Indicated extent of malpractice reform initiative * Actual vs indicated spending on downstream initiatives, Time to implement malpractice reform initiative, 0)
- (0474) Extent of med home initiative=DELAY1I(Indicated extent of med home initiative*Actual vs indicated spending on downstream initiatives, Time to implement Med home initiative, 0)
- (0475) Extent of mental illness care initiative[subpop]=Indicated extent of mental illness care initiative[subpop] * Actual vs indicated spending on downstream initiatives
- (0476) Extent of PCP practice redesign initiative=DELAY1I(Indicated extent of PCP practice redesign initiative*Actual vs indicated spending on downstream initiatives, Time to implement PCP practice redesign initiative, 0)
- (0477) Extent of post discharge care initiative= INTEG (Addition to extent of post discharge care initiative - Obsolescence to extent of post discharge care initiative,0)
- (0478) Extent of pre visit screening initiative=DELAY1I(Indicated extent of PVS initiative * Actual vs indicated spending on downstream initiatives, Time to implement PVS initiative, 0)
- (0479) Extent of prev chron quality initiative=DELAY1I(Indicated extent of prev chron quality initiative * Actual vs indicated spending on downstream initiatives, Time to implement prev chron quality initiative,0)
- (0480) Extent of self care support initiative[subpop]=Indicated extent of self care support initiative[subpop] * Actual vs indicated spending on downstream initiatives
- (0481) Extent of student pathways initiative=Indicated extent of student pathways initiative * Actual vs indicated spending on upstream initiatives
- (0482) Facility costs of ER visits by locals under FFS[subpop]=ER visits[subpop] * Avg facility cost per ER visit 2010 * Healthcare real cost index vs 2010
- (0483) Facility costs of Hosp OPD visits by locals under FFS[subpop]=Costs of Hosp OPD visits for prev chron care by locals under FFS[subpop]
+ Facility costs of Hosp OPD visits for test or procedure by locals under FFS[subpop]
- (0484) Facility costs of Hosp OPD visits for test or procedure by locals under FFS[subpop]=Nonurgent acute episodes sent to Hosp OPD for test or procedure[subpop] *
Avg facility cost per OPD visit for test or procedure 2010 * Real cost index vs 2010 as mitigated by care coord
- (0485) Facility costs of inpatient stays by locals under FFS[subpop]=Inpatient stays[subpop] * Avg facility cost per inpatient stay 2010 * Real cost index vs 2010 as mitigated by care coord *
Effect of HAI nonreimbursement on recognized hospital costs - Savings on hospital facility costs from additional palliative care[subpop]
- (0486) Family pathways to advantage initiative=0

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- (0487) Fatal frac of HAI=0.05
- (0488) FQHC PCP avg relocation time=2
- (0489) FQHC PCP departure rate=0.05
- (0490) FQHC PCP recruitment initiative=0
- (0491) FQHC PCP recruitment program cost per arriving PCP 2010=200000
- (0492) FQHC PCPs= INTEG (FQHC PCPs arriving - FQHC PCPs departing, Total popn * FQHC PCPs per 10k popn initial/10000)
- (0493) FQHC PCPs arriving=MAX(0, FQHC PCPs departing + (Indicated FQHC PCPs - FQHC PCPs)/1)
- (0494) FQHC PCPs departing= FQHC PCPs * FQHC PCP departure rate
- (0495) FQHC PCPs per 10k popn=FQHC PCPs*10000/Total popn
- (0496) FQHC PCPs per 10k popn initial=1
- (0497) Frac improvement in adequacy of care for score100=0.6
- (0498) Frac improvement in cumul avg adequacy of care 2040=IF THEN ELSE(Time<2040, 0, (Cumul avg adequacy of prev chron care - Cumul avg adequacy of prev chron care baserun2040) / Cumul avg adequacy of prev chron care baserun2040)
- (0499) Frac improvement in cumul value of productivity 2040=IF THEN ELSE(Time<2040, 0, (Cumulative value of productivity - Cumul value of productivity baserun2040) / Cumul value of productivity baserun2040)
- (0500) Frac improvement in economic productivity for score100=0.06
- (0501) Frac of Adv popn in hazardous environment baseline series(((2000,0)-(2040,0.4)),(2000,0.22),(2005,0.16),(2010,0.1),(2015,0.11),(2020,0.11),(2025,0.11),(2030,0.11))
- (0502) Frac of Adv popn in high crime area baseline series(((2000,0)-(2040,0.8)),(2000,0.3),(2005,0.25),(2010,0.2),(2015,0.15),(2020,0.15),(2025,0.15),(2030,0.15))
- (0503) Frac of Commercial reinvestment to downstream only funds=0
- (0504) Frac of Commercial reinvestment to unconstrained funds=1 - Frac of Commercial reinvestment to upstream only funds - Frac of Commercial reinvestment to downstream only funds
- (0505) Frac of Commercial reinvestment to upstream only funds=0

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- (0506) $\text{Frac of cost growth mitigated for items under care coord by technology assessment} = 0.33$
- (0507) $\text{Frac of cumul disc nonloan downstream only funds from reinv} = \text{ZIDZ}(\text{Cumul disc inflow to downstream only funds from reinv, Cumul disc inflow to downstream only nonloan funds})$
- (0508) $\text{Frac of cumul disc nonloan spend from downstream only funds} = \text{ZIDZ}(\text{Cumul disc program spend of downstream only nonloan funds, Cumul disc program spend of nonloan funds})$
- (0509) $\text{Frac of cumul disc nonloan spend from upstream only funds} = \text{ZIDZ}(\text{Cumul disc program spend of upstream only nonloan funds, Cumul disc program spend of nonloan funds})$
- (0510) $\text{Frac of cumul disc nonloan unconstrained funds from reinv} = \text{ZIDZ}(\text{Cumul disc inflow to unconstrained funds from reinv, Cumul disc inflow to unconstrained nonloan funds})$
- (0511) $\text{Frac of cumul disc nonloan upstream only funds from reinv} = \text{ZIDZ}(\text{Cumul disc inflow to upstream only funds from reinv, Cumul disc inflow to upstream only nonloan funds})$
- (0512) $\text{Frac of cumul disc program spend from reinvestment} = \text{Frac of cumul disc spend from nonloan funds} * ((1 - \text{Frac of cumul disc nonloan spend from upstream only funds} - \text{Frac of cumul disc nonloan spend from downstream only funds}) * \text{Frac of cumul disc nonloan unconstrained funds from reinv} + \text{Frac of cumul disc nonloan spend from upstream only funds} * \text{Frac of cumul disc nonloan upstream only funds from reinv} + \text{Frac of cumul disc nonloan spend from downstream only funds} * \text{Frac of cumul disc nonloan downstream only funds from reinv})$
- (0513) $\text{Frac of cumul disc spend from nonloan funds} = \text{ZIDZ}(\text{Cumul disc program spend of nonloan funds, Cumulative discounted program spending})$
- (0514) $\text{Frac of cumul nonloan downstream only funds from reinv} = \text{ZIDZ}(\text{Cumul inflow to downstream only funds from reinv, Cumul inflow to downstream only nonloan funds})$
- (0515) $\text{Frac of cumul nonloan spend from downstream only funds} = \text{ZIDZ}(\text{Cumul program spend of downstream only nonloan funds, Cumul program spend of nonloan funds})$
- (0516) $\text{Frac of cumul nonloan spend from upstream only funds} = \text{ZIDZ}(\text{Cumul program spend of upstream only nonloan funds, Cumul program spend of nonloan funds})$
- (0517) $\text{Frac of cumul nonloan unconstrained funds from reinv} = \text{ZIDZ}(\text{Cumul inflow to unconstrained funds from reinv, Cumul inflow to unconstrained nonloan funds})$
- (0518) $\text{Frac of cumul nonloan upstream only funds from reinv} = \text{ZIDZ}(\text{Cumul inflow to upstream only funds from reinv, Cumul inflow to upstream only nonloan funds})$
- (0519) $\text{Frac of cumul program spend from reinvestment} = \text{Frac of cumul spend from nonloan funds} * ((1 - \text{Frac of cumul nonloan spend from upstream only funds} - \text{Frac of cumul nonloan spend from downstream only funds}) * \text{Frac of cumul nonloan unconstrained funds from reinv} + \text{Frac of cumul nonloan spend from upstream only funds} * \text{Frac of cumul nonloan upstream only funds})$

from reinv+Frac of cumul nonloan spend from downstream only funds*Frac of cumul nonloan downstream only funds from reinv)

- (0520) Frac of cumul spend from nonloan funds=ZIDZ(Cumul program spend of nonloan funds, Cumulative program spending)
- (0521) Frac of deaths using hospice[subpop]=MIN(1,Frac of deaths using hospice baseline[subpop] * (1 + (Multiplier on hospice use under EOLC initiative-1)*Extent of end of life care initiative))
- (0522) Frac of deaths using hospice baseline[InsAdvYouth]=Frac of deaths using hospice baseline 2010[InsAdvYouth]
Frac of deaths using hospice baseline[InsDisYouth]=MIN(Frac of deaths using hospice baseline 2010[InsAdvYouth], (Frac of deaths using hospice baseline 2010[InsDisYouth] - Frac of deaths using hospice baseline 2010[UninsDisYouth])*
Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of deaths using hospice baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv)
Frac of deaths using hospice baseline[UninsAdvYouth]=Frac of deaths using hospice baseline 2010[UninsAdvYouth]
Frac of deaths using hospice baseline[UninsDisYouth]=Frac of deaths using hospice baseline 2010[UninsDisYouth]
Frac of deaths using hospice baseline[InsAdvWkage]=Frac of deaths using hospice baseline 2010[InsAdvWkage]
Frac of deaths using hospice baseline[InsDisWkage]=MIN(Frac of deaths using hospice baseline 2010[InsAdvWkage],(Frac of deaths using hospice baseline 2010[InsDisWkage] - Frac of deaths using hospice baseline 2010[UninsDisWkage])*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of deaths using hospice baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv)
Frac of deaths using hospice baseline[UninsAdvWkage]=Frac of deaths using hospice baseline 2010[UninsAdvWkage]
Frac of deaths using hospice baseline[UninsDisWkage]=Frac of deaths using hospice baseline 2010[UninsDisWkage]
Frac of deaths using hospice baseline[AdvSr]=Frac of deaths using hospice baseline 2010[AdvSr]
Frac of deaths using hospice baseline[DisSr]=Frac of deaths using hospice baseline 2010[DisSr]
- (0523) Frac of deaths using hospice baseline 2010[subpop]=0.48,0.3,0.3,0.13,0.48,0.3,0.3,0.13,0.445,0.445
- (0524) Frac of deaths using hospital palliative care=MIN(1,Frac of deaths using hospital palliative care initial * (1 + (Multiplier on hospital palliative care use under EOLC initiative-1)*Extent of end of life care initiative))
- (0525) Frac of deaths using hospital palliative care initial=0.27
- (0526) Frac of Disadv popn in hazardous environment baseline series([(2000,0)-(2040,0.4)],(2000,0.25),(2005,0.19),(2010,0.13),(2015,0.14),(2020,0.14),(2025,0.14),(2030,0.14))

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- (0527) Frac of Disadv popn in high crime area baseline series([(2000,0)-(2040,0.8)],(2000,0.42),(2005,0.37),(2010,0.33),(2015,0.29),(2020,0.29),(2025,0.29),(2030,0.29))
- (0528) Frac of employed popn in hazardous environment=SUM(Frac of popn in hazardous environment[subpop!]*Employed popn by segment[subpop!])/ Total employed popn
- (0529) Frac of employed popn in high crime area=SUM(Frac of popn in high crime area[subpop!]*Employed popn by segment[subpop!])/ Total employed popn
- (0530) Frac of employed popn subject to Tax2=1
- (0531) Frac of FQHC PCP slots available to Uninsured=Frac of FQHC PCP slots available to Uninsured series(Time)
- (0532) Frac of FQHC PCP slots available to Uninsured series([(2000,0)-(2040,0.4)],(2000,0.35),(2010,0.35),(2020,0.35),(2030,0.35),(2040,0.35))
- (0533) Frac of general PCP slots available to Disadv Uninsured=0
- (0534) Frac of general PCP slots available to Medicaid only popn=Frac of General PCP slots available to Medicaid only popn series(Time)
- (0535) Frac of General PCP slots available to Medicaid only popn series([(2000,0)-(2040,0.2)],(2000,0.11),(2010,0.11),(2020,0.11),(2030,0.11),(2040,0.11))
- (0536) Frac of grants and assistance to downstream only funds=LOOKUP BACKWARD(Frac of grants and assistance to downstream only funds series, Time)
- (0537) Frac of grants and assistance to downstream only funds series([(2014,0)-(2029,1)],(2014,0),(2015,0),(2016,0),(2017,0),(2018,0),(2019,0),(2020,0),(2021,0),(2022,0),(2023,0),(2024,0),(2025,0),(2026,0),(2027,0),(2028,0),(2029,0),(2030,0),(2031,0),(2032,0),(2033,0),(2034,0),(2035,0),(2036,0),(2037,0),(2038,0),(2039,0),(2040,0))
- (0538) Frac of grants and assistance to unconstrained funds=1 - Frac of grants and assistance to upstream only funds - Frac of grants and assistance to downstream only funds
- (0539) Frac of grants and assistance to upstream only funds=LOOKUP BACKWARD(Frac of grants and assistance to upstream only funds series, Time)
- (0540) Frac of grants and assistance to upstream only funds series([(2014,0)-(2029,1)],(2014,0),(2015,0),(2016,0),(2017,0),(2018,0),(2019,0),(2020,0),(2021,0),(2022,0),(2023,0),(2024,0),(2025,0),(2026,0),(2027,0),(2028,0),(2029,0),(2030,0),(2031,0),(2032,0),(2033,0),(2034,0),(2035,0),(2036,0),(2037,0),(2038,0),(2039,0),(2040,0))

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- (0541) $\text{Frac of HAIs not reimbursed} = \text{Frac of HAIs not reimbursed series}(\text{Time})$
- (0542) $\text{Frac of HAIs not reimbursed series}([(2000,0)-(2040,1)],(2000,0),(2008.5,0),(2009,0.15),(2015,0.33),(2020,0.5),(2030,0.5),(2040,0.5))$
- (0543) $\text{Frac of healthcare costs from Commercial popn} = \text{Healthcare costs of Commercial popn} / \text{Total healthcare costs}$
- (0544) $\text{Frac of healthcare costs from Dual insured popn} = \text{Healthcare costs of Dual insured popn} / \text{Total healthcare costs}$
- (0545) $\text{Frac of healthcare costs from Medicaid only popn} = \text{Healthcare costs of Medicaid only popn} / \text{Total healthcare costs}$
- (0546) $\text{Frac of healthcare costs from Medicare only popn} = \text{Healthcare costs of Medicare only popn} / \text{Total healthcare costs}$
- (0547) $\text{Frac of healthcare costs from uninsured popn} = \text{Healthcare costs of uninsured popn} / \text{Total healthcare costs}$
- (0548) $\text{Frac of hospital patients under global payment} = \text{Frac of hospital patients under global payment baseline} * (1 - \text{Payment reform initiative}) + \text{Frac of hospital patients under global payment if initiative} * \text{Payment reform initiative}$
- (0549) $\text{Frac of hospital patients under global payment 2020 if initiative} = 1$
- (0550) $\text{Frac of hospital patients under global payment baseline} = \text{Frac of hospital patients under global payment baseline series}(\text{Time})$
- (0551) $\text{Frac of hospital patients under global payment baseline series}([(2000,0)-(2030,1)],(2000,0),(2010,0),(2015,0.02),(2020,0.02),(2025,0.02),(2030,0.02))$
- (0552) $\text{Frac of hospital patients under global payment if initiative} = \text{IF THEN ELSE}(\text{Time} \leq 2015, \text{Frac of hospital patients under global payment baseline series}(\text{Time}), \text{Frac of hospital patients under global payment baseline series}(2015) + \text{MIN}(1, 0.2 * (\text{Time} - 2015)) * (\text{Frac of hospital patients under global payment 2020 if initiative} - \text{Frac of hospital patients under global payment baseline series}(2015)))$
- (0553) $\text{Frac of hospitalizations using palliative care}[\text{subpop}] = \text{ZIDZ}(\text{Hospitalizations using palliative care}[\text{subpop}], \text{Inpatient stays}[\text{subpop}])$
- (0554) $\text{Frac of inpatients to home health}[\text{subpop}] = \text{Frac of inpatients to home health initial}[\text{subpop}] * (1 + (\text{Multiplier on frac of inpatients to home health under improved post discharge initiative} - 1) * \text{Post discharge care improvement from initiative and VBP})$
- (0555) $\text{Frac of inpatients to home health initial}[\text{subpop}] = 0.03, 0.03, 0.03, 0.03, 0.09, 0.09, 0.09, 0.09, 0.18, 0.18$

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- (0556) $\text{Frac of inpatients to SNF[subpop]} = \text{Frac of inpatients to SNF initial[subpop]} * (1 + (\text{Multiplier on frac of inpatients to SNF under improved post discharge initiative} - 1) * \text{Post discharge care improvement from initiative and VBP})$
- (0557) $\text{Frac of inpatients to SNF initial[subpop]} = 0.02, 0.02, 0.02, 0.02, 0.07, 0.07, 0.07, 0.07, 0.14, 0.14$
- (0558) $\text{Frac of insured popn under value based payment} = \text{Frac of insured popn under value based payment baseline} * (1 - \text{Payment reform initiative}) + \text{Frac of insured popn under value based payment if initiative} * \text{Payment reform initiative}$
- (0559) $\text{Frac of insured popn under value based payment 2020 if initiative} = 1$
- (0560) $\text{Frac of insured popn under value based payment baseline} = \text{Frac of insured popn under value based payment baseline series}(\text{Time})$
- (0561) $\text{Frac of insured popn under value based payment baseline series}([(2000,0) - (2030,1)], (2000,0), (2010,0), (2015,0.25), (2020,0.5), (2025,0.5), (2030,0.5))$
- (0562) $\text{Frac of insured popn under value based payment if initiative} = \text{IF THEN ELSE}(\text{Time} \leq 2015, \text{Frac of insured popn under value based payment baseline series}(\text{Time}), \text{Frac of insured popn under value based payment baseline series}(2015) + \text{MIN}(1, 0.2 * (\text{Time} - 2015))) * (\text{Frac of insured popn under value based payment 2020 if initiative} - \text{Frac of insured popn under value based payment baseline series}(2015))$
- (0563) $\text{Frac of loans to downstream only funds} = \text{LOOKUP BACKWARD}(\text{Frac of loans to downstream only funds series}, \text{Time})$
- (0564) $\text{Frac of loans to downstream only funds series}([(2014,0) - (2029,1)], (2014,0), (2015,0), (2016,0), (2017,0), (2018,0), (2019,0), (2020,0), (2021,0), (2022,0), (2023,0), (2024,0), (2025,0), (2026,0), (2027,0), (2028,0), (2029,0), (2030,0), (2031,0), (2032,0), (2033,0), (2034,0), (2035,0), (2036,0), (2037,0), (2038,0), (2039,0), (2040,0))$
- (0565) $\text{Frac of loans to unconstrained funds} = 1 - \text{Frac of loans to upstream only funds} - \text{Frac of loans to downstream only funds}$
- (0566) $\text{Frac of loans to upstream only funds} = \text{LOOKUP BACKWARD}(\text{Frac of loans to upstream only funds series}, \text{Time})$
- (0567) $\text{Frac of loans to upstream only funds series}([(2014,0) - (2029,1)], (2014,0), (2015,0), (2016,0), (2017,0), (2018,0), (2019,0), (2020,0), (2021,0), (2022,0), (2023,0), (2024,0), (2025,0), (2026,0), (2027,0), (2028,0), (2029,0), (2030,0), (2031,0), (2032,0), (2033,0), (2034,0), (2035,0), (2036,0), (2037,0), (2038,0), (2039,0), (2040,0))$
- (0568) $\text{Frac of local ER visits by outside popn} = \text{ZIDZ}(\text{Total local ER visits by outside popn}, \text{Total local hospital ER visits})$

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- (0569) $\text{Frac of local inpatient stays by outside popn} = \frac{\text{ZIDZ}(\text{Total local inpatient stays by outside popn}, \text{Total local hospital inpatient stays})}{\text{Total local hospital inpatient stays}}$
- (0570) $\text{Frac of local OPD visits by outside popn} = \frac{\text{ZIDZ}(\text{Total local Hosp OPD visits by outside popn}, \text{Total local hospital OPD visits})}{\text{Total local hospital OPD visits}}$
- (0571) $\text{Frac of Medicaid reinvestment to downstream only funds} = 0$
- (0572) $\text{Frac of Medicaid reinvestment to unconstrained funds} = 1 - \text{Frac of Medicaid reinvestment to upstream only funds} - \text{Frac of Medicaid reinvestment to downstream only funds}$
- (0573) $\text{Frac of Medicaid reinvestment to upstream only funds} = 0$
- (0574) $\text{Frac of Medicare reinvestment to downstream only funds} = 0$
- (0575) $\text{Frac of Medicare reinvestment to unconstrained funds} = 1 - \text{Frac of Medicare reinvestment to upstream only funds} - \text{Frac of Medicare reinvestment to downstream only funds}$
- (0576) $\text{Frac of Medicare reinvestment to upstream only funds} = 0$
- (0577) $\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{InsAdvYouth}] = \frac{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsAdvYouth}]}{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{InsDisYouth}]}$
 $\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{InsDisYouth}] = \text{MIN}(\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsAdvYouth}], (\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsDisYouth}] - \text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisYouth}] * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisYouth}] * \text{Underinsured frac of insured nonsenior Disadv})$
 $\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{UninsAdvYouth}] = \frac{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsAdvYouth}]}{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisYouth}]}$
 $\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{UninsDisYouth}] = \frac{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisYouth}]}{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisYouth}]}$
 $\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{InsAdvWkage}] = \frac{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsAdvWkage}]}{\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsAdvWkage}]}$
 $\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline}[\text{InsDisWkage}] = \text{MIN}(\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsAdvWkage}], (\text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{InsDisWkage}] - \text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisWkage}] * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of nonurgent acute ambulatory visits with referral to Specialist baseline 2010}[\text{UninsDisWkage}] * \text{Underinsured frac of insured nonsenior Disadv})$

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- Frac of nonurgent acute ambulatory visits with referral to Specialist
baseline[UninsAdvWkage]=Frac of nonurgent acute ambulatory visits with referral to
Specialist baseline 2010[UninsAdvWkage]
- Frac of nonurgent acute ambulatory visits with referral to Specialist
baseline[UninsDisWkage]=Frac of nonurgent acute ambulatory visits with referral to Specialist
baseline 2010[UninsDisWkage]
- Frac of nonurgent acute ambulatory visits with referral to Specialist baseline[AdvSr]=Frac of
nonurgent acute ambulatory visits with referral to Specialist baseline 2010[AdvSr]
- Frac of nonurgent acute ambulatory visits with referral to Specialist baseline[DisSr]=Frac of
nonurgent acute ambulatory visits with referral to Specialist baseline 2010[DisSr]
- (0578) Frac of nonurgent acute ambulatory visits with referral to Specialist baseline
2010[subpop]=0.3,0.2,0.3,0.1,0.3,0.2,0.3,0.1,0.3,0.2
- (0579) Frac of nonurgent acute episode demand to PCP[subpop]=(1 + (Reltv nonurgent acute episodes
to PCPs and Specialists under PVS-1)*Extent of pre visit screening initiative) - Frac of
nonurgent acute episodes to Specialist[subpop] - Frac of nonurgent acute episodes routinely
to ER[subpop]
- (0580) Frac of nonurgent acute episodes resulting in visits vs initial[subpop]=Frac of nonurgent acute
episode demand to PCP[subpop] + Frac of nonurgent acute episodes to Specialist[subpop] +
Frac of nonurgent acute episodes routinely to ER[subpop]
- (0581) Frac of nonurgent acute episodes routinely to ER[subpop]=Frac of nonurgent acute episodes
routinely to ER baseline[subpop] * (1 + (Reltv nonurgent acute episodes to ER under PVS-
1)*Extent of pre visit screening initiative) * (1 + (Reltv nonurgent acute episodes to ER under
med home-1)*Med home implementation from initiative and VBP)
- (0582) Frac of nonurgent acute episodes routinely to ER baseline[InsAdvYouth]=Frac of nonurgent
acute episodes routinely to ER baseline 2010[InsAdvYouth]
Frac of nonurgent acute episodes routinely to ER baseline[InsDisYouth]=(Frac of nonurgent
acute episodes routinely to ER baseline 2010[InsDisYouth] - Frac of nonurgent acute episodes
routinely to ER baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv
2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of
insured nonsenior Disadv) + Frac of nonurgent acute episodes routinely to ER baseline
2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv
Frac of nonurgent acute episodes routinely to ER baseline[UninsAdvYouth]=Frac of nonurgent
acute episodes routinely to ER baseline 2010[UninsAdvYouth]
Frac of nonurgent acute episodes routinely to ER baseline[UninsDisYouth]=Frac of nonurgent
acute episodes routinely to ER baseline 2010[UninsDisYouth]
Frac of nonurgent acute episodes routinely to ER baseline[InsAdvWkage]=Frac of nonurgent
acute episodes routinely to ER baseline 2010[InsAdvWkage]
Frac of nonurgent acute episodes routinely to ER baseline[InsDisWkage]=(Frac of nonurgent
acute episodes routinely to ER baseline 2010[InsDisWkage] - Frac of nonurgent acute episodes
routinely to ER baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv
2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of
insured nonsenior Disadv) + Frac of nonurgent acute episodes routinely to ER baseline
2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv

Frac of nonurgent acute episodes routinely to ER baseline[UninsAdvWkage]=Frac of nonurgent acute episodes routinely to ER baseline 2010[UninsAdvWkage]

Frac of nonurgent acute episodes routinely to ER baseline[UninsDisWkage]=Frac of nonurgent acute episodes routinely to ER baseline 2010[UninsDisWkage]

Frac of nonurgent acute episodes routinely to ER baseline[AdvSr]=Frac of nonurgent acute episodes routinely to ER baseline 2010[AdvSr]

Frac of nonurgent acute episodes routinely to ER baseline[DisSr]=Frac of nonurgent acute episodes routinely to ER baseline 2010[DisSr]

(0583) Frac of nonurgent acute episodes routinely to ER baseline 2010[subpop]=0.01,0.065,0.02,0.05,0.01,0.065,0.02,0.05,0.01,0.06

(0584) Frac of nonurgent acute episodes sent for outpatient test or procedure[subpop]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[subpop]* Multiplier on referrals based on their source[subpop] * (1+(Multiplier on frac of nonurgent acute episodes to outpatient test or procedure under care coord-1)*Care coord from initiative and VBP) * (1+(Multiplier on frac of nonurgent acute episodes to outpatient test or procedure under malpractice reform-1)*Extent of malpractice reform initiative)

(0585) Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[InsAdvYouth]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[InsAdvYouth]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[InsDisYouth]=MIN(Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[InsAdvYouth], (Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[InsDisYouth] - Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv)

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[UninsAdvYouth]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsAdvYouth]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[UninsDisYouth]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsDisYouth]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[InsAdvWkage]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[InsAdvWkage]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[InsDisWkage]=MIN(Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[InsAdvWkage],(Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[InsDisWkage] - Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of nonurgent acute episodes sent for

outpatient test or procedure baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv)

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[UninsAdvWkage]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsAdvWkage]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[UninsDisWkage]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[UninsDisWkage]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[AdvSr]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[AdvSr]

Frac of nonurgent acute episodes sent for outpatient test or procedure baseline[DisSr]=Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[DisSr]

(0586) Frac of nonurgent acute episodes sent for outpatient test or procedure baseline 2010[subpop]=0.2,0.2,0.18,0.16,0.22,0.22,0.2,0.18,0.28,0.28

(0587) Frac of nonurgent acute episodes sent to Inpatient stay[subpop]=Frac of nonurgent acute episodes sent to Inpatient stay baseline[subpop] * Multiplier on referrals based on their source[subpop] * (1 + (Multiplier on frac of nonurgent acute episodes to Inpatient stay under care coord-1)*Care coord from initiative and VBP) * (1 + (Multiplier on frac of nonurgent acute episodes to Inpatient stay under malpractice reform-1)*Extent of malpractice reform initiative)

(0588) Frac of nonurgent acute episodes sent to Inpatient stay baseline[InsAdvYouth]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[InsAdvYouth]
Frac of nonurgent acute episodes sent to Inpatient stay baseline[InsDisYouth]=MIN(Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[InsAdvYouth], (Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[InsDisYouth] - Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv)

Frac of nonurgent acute episodes sent to Inpatient stay baseline[UninsAdvYouth]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsAdvYouth]

Frac of nonurgent acute episodes sent to Inpatient stay baseline[UninsDisYouth]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsDisYouth]

Frac of nonurgent acute episodes sent to Inpatient stay baseline[InsAdvWkage]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[InsAdvWkage]

Frac of nonurgent acute episodes sent to Inpatient stay baseline[InsDisWkage]=MIN(Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[InsAdvWkage],(Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[InsDisWkage] - Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv)

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- Frac of nonurgent acute episodes sent to Inpatient stay baseline[UninsAdvWkage]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsAdvWkage]
Frac of nonurgent acute episodes sent to Inpatient stay baseline[UninsDisWkage]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[UninsDisWkage]
Frac of nonurgent acute episodes sent to Inpatient stay baseline[AdvSr]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[AdvSr]
Frac of nonurgent acute episodes sent to Inpatient stay baseline[DisSr]=Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[DisSr]
- (0589) Frac of nonurgent acute episodes sent to Inpatient stay baseline 2010[subpop]=0.042,0.037,0.032,0.025,0.042,0.037,0.032,0.025,0.042,0.037
- (0590) Frac of nonurgent acute episodes shifted to ER due to PCP insufficiency[subpop]=Frac of nonurgent acute episode demand to PCP[subpop]*(1-Sufficiency of PCPs for visit demand[subpop])
- (0591) Frac of nonurgent acute episodes to ER[subpop]=Frac of nonurgent acute episodes routinely to ER[subpop] + Frac of nonurgent acute episodes shifted to ER due to PCP insufficiency[subpop]
- (0592) Frac of nonurgent acute episodes to ER initial[subpop]=INITIAL(Frac of nonurgent acute episodes to ER[subpop])
- (0593) Frac of nonurgent acute episodes to Specialist[subpop]=Frac of nonurgent acute episodes to Specialist baseline[subpop] * (1 + (Reltv nonurgent acute episodes to PCPs and Specialists under PVS-1)*Extent of pre visit screening initiative) * (1 + (Reltv nonurgent acute episodes to Specialist under med home-1)*Med home implementation from initiative and VBP)
- (0594) Frac of nonurgent acute episodes to Specialist baseline[InsAdvYouth] =Frac of nonurgent acute episodes to Specialist baseline 2010[InsAdvYouth]
Frac of nonurgent acute episodes to Specialist baseline[InsDisYouth]=MIN(Frac of nonurgent acute episodes to Specialist baseline 2010[InsAdvYouth], (Frac of nonurgent acute episodes to Specialist baseline 2010[InsDisYouth] - Frac of nonurgent acute episodes to Specialist baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of nonurgent acute episodes to Specialist baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv)
Frac of nonurgent acute episodes to Specialist baseline[UninsAdvYouth]=Frac of nonurgent acute episodes to Specialist baseline 2010[UninsAdvYouth]
Frac of nonurgent acute episodes to Specialist baseline[UninsDisYouth]=Frac of nonurgent acute episodes to Specialist baseline 2010[UninsDisYouth]
Frac of nonurgent acute episodes to Specialist baseline[InsAdvWkage]=Frac of nonurgent acute episodes to Specialist baseline 2010[InsAdvWkage]
Frac of nonurgent acute episodes to Specialist baseline[InsDisWkage]=MIN(Frac of nonurgent acute episodes to Specialist baseline 2010[InsAdvWkage], (Frac of nonurgent acute episodes to Specialist baseline 2010[InsDisWkage] - Frac of nonurgent acute episodes to Specialist baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured

- nonsenior Disadv) + Frac of nonurgent acute episodes to Specialist baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv)
 Frac of nonurgent acute episodes to Specialist baseline[UninsAdvWkage]=Frac of nonurgent acute episodes to Specialist baseline 2010[UninsAdvWkage]
 Frac of nonurgent acute episodes to Specialist baseline[UninsDisWkage]=Frac of nonurgent acute episodes to Specialist baseline 2010[UninsDisWkage]
 Frac of nonurgent acute episodes to Specialist baseline[AdvSr]=Frac of nonurgent acute episodes to Specialist baseline 2010[AdvSr]
 Frac of nonurgent acute episodes to Specialist baseline[DisSr]=Frac of nonurgent acute episodes to Specialist baseline 2010[DisSr]
- (0595) Frac of nonurgent acute episodes to Specialist baseline 2010[subpop]
 =0.35,0.15,0.25,0.1,0.4,0.15,0.25,0.1,0.4,0.2
- (0596) Frac of nonurgent acute episodes with referral to Specialist[subpop]
 =Frac of nonurgent acute ambulatory visits with referral to Specialist baseline[subpop] * Multiplier on referrals based on their source[subpop] * (1 + Care coord from initiative and VBP*(Multiplier on frac of nonurgent acute episodes with referral to Specialist under care coord-1)) * (1 + Extent of malpractice reform initiative*(Multiplier on frac of nonurgent acute episodes with referral to Specialist under malpractice reform-1))
- (0597) Frac of original inpatient admissions from urgent episode=Total original inpatient admissions from urgent episodes / Total original inpatient admissions
- (0598) Frac of outpatient tests and procedures done at Hosp OPD=0.55
- (0599) Frac of PCPs under global payment=Frac of PCPs under global payment baseline*(1-Payment reform initiative)
 + Frac of PCPs under global payment if initiative*Payment reform initiative
- (0600) Frac of PCPs under global payment 2020 if initiative=1
- (0601) Frac of PCPs under global payment baseline=Frac of PCPs under global payment baseline series(Time)
- (0602) Frac of PCPs under global payment baseline series([(2000,0)-(2030,1)],(2000,0),(2010,0),(2015,0.6),(2020,0.6),(2025,0.6),(2030,0.6))
- (0603) Frac of PCPs under global payment if initiative=IF THEN ELSE(Time<=2015, Frac of PCPs under global payment baseline series(Time), Frac of PCPs under global payment baseline series(2015)+MIN(1, 0.2*(Time-2015))*(Frac of PCPs under global payment 2020 if initiative-Frac of PCPs under global payment baseline series(2015)))
- (0604) Frac of physicians compliant with prev chron guidelines=Frac of physicians compliant with prev chron guidelines initial + (1-Frac of physicians compliant with prev chron guidelines initial)*Prev chron quality improvement from initiative and VBP*Multiplier on prev chron guideline noncompliance under quality initiative

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- (0605) $\text{Frac of physicians compliant with prev chron guidelines initial} = 0.78$
- (0606) $\text{Frac of popn in hazardous environment}[\text{subpop}] = \text{Frac of popn in hazardous environment baseline}[\text{subpop}] * (1 + (\text{Multiplier on frac of popn in hazardous environment under hazard reduction initiative} - 1) * \text{DELAY3I}(\text{Extent of hazard reduction initiative}[\text{subpop}], \text{Time for hazard reduction initiative to reduce hazards prevalence}, 0))$
- (0607) $\text{Frac of popn in hazardous environment baseline}[\text{subpop}] = \text{IF THEN ELSE}(\text{Disadv segment indicator}[\text{subpop}] = 0, \text{Frac of Adv popn in hazardous environment baseline series}(\text{Time}), \text{Frac of Disadv popn in hazardous environment baseline series}(\text{Time}))$
- (0608) $\text{Frac of popn in hazardous environment initial}[\text{subpop}] = \text{INITIAL}(\text{Frac of popn in hazardous environment baseline}[\text{subpop}])$
- (0609) $\text{Frac of popn in high crime area}[\text{subpop}] = \text{Frac of popn in high crime area baseline}[\text{subpop}] * (1 + (\text{Multiplier on frac of popn in high crime area under crime fighting initiative} - 1) * \text{DELAY3I}(\text{Extent of crime fighting initiative}[\text{subpop}], \text{Time for crime fighting initiative to reduce high crime prevalence}, 0))$
- (0610) $\text{Frac of popn in high crime area baseline}[\text{subpop}] = \text{IF THEN ELSE}(\text{Disadv segment indicator}[\text{subpop}] = 0, \text{Frac of Adv popn in high crime area baseline series}(\text{Time}), \text{Frac of Disadv popn in high crime area baseline series}(\text{Time}))$
- (0611) $\text{Frac of popn in high crime area initial}[\text{subpop}] = \text{INITIAL}(\text{Frac of popn in high crime area baseline}[\text{subpop}])$
- (0612) $\text{Frac of popn using local hospitals for ER visits} = 1$
- (0613) $\text{Frac of popn using local hospitals for inpatient stays} = \text{Frac of popn using local hospitals for inpatient stays series}(\text{Time})$
- (0614) $\text{Frac of popn using local hospitals for inpatient stays series}([(2000, 0) - (2040, 1)], (2000, 1), (2009, 1), (2014, 1), (2015, 1), (2020, 1), (2025, 1), (2030, 1), (2035, 1), (2040, 1))$
- (0615) $\text{Frac of popn using local hospitals for OPD visits} = 1$
- (0616) $\text{Frac of prev chron care demand not accommodated}[\text{subpop}] = \text{Frac of prev chron care demand to PCP}[\text{subpop}] * (1 - \text{Sufficiency of PCPs for visit demand}[\text{subpop}])$
- (0617) $\text{Frac of prev chron care demand not accommodated in employed popn} = \text{SUM}(\text{Frac of prev chron care demand not accommodated}[\text{subpop}!] * \text{Employed popn by segment}[\text{subpop}!]) / \text{Total employed popn}$
- (0618) $\text{Frac of prev chron care demand not accommodated initial}[\text{subpop}] = 0, 0, 0, 0, 0, 0, 0, 0, 0, 0$
- (0619) $\text{Frac of prev chron care demand to Hosp OPD}[\text{subpop}] = \text{Frac of prev chron care to Hosp OPD baseline}[\text{subpop}] * (1 + (\text{Reltv prev chron care to OPD under med home} - 1) * \text{Med home implementation from initiative and VBP})$

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- (0620) $\text{Frac of prev chron care demand to PCP[subpop]}=1 - \text{Frac of prev chron care demand to Specialist[subpop]} - \text{Frac of prev chron care demand to Hosp OPD[subpop]}$
- (0621) $\text{Frac of prev chron care demand to Specialist[subpop]}=\text{Frac of prev chron care to Specialist baseline[subpop]} * (1 + (\text{Reltv prev chron care to Specialist under med home-1}) * \text{Med home implementation from initiative and VBP})$
- (0622) $\text{Frac of prev chron care to Hosp OPD baseline[InsAdvYouth]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[InsAdvYouth]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[InsDisYouth]}=(\text{Frac of prev chron care to Hosp OPD baseline 2010[InsDisYouth]} - \text{Frac of prev chron care to Hosp OPD baseline 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of prev chron care to Hosp OPD baseline 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv}$
 $\text{Frac of prev chron care to Hosp OPD baseline[UninsAdvYouth]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[UninsAdvYouth]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[UninsDisYouth]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[UninsDisYouth]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[InsAdvWkage]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[InsAdvWkage]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[InsDisWkage]}=(\text{Frac of prev chron care to Hosp OPD baseline 2010[InsDisWkage]} - \text{Frac of prev chron care to Hosp OPD baseline 2010[UninsDisWkage]} * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of prev chron care to Hosp OPD baseline 2010[UninsDisWkage]} * \text{Underinsured frac of insured nonsenior Disadv}$
 $\text{Frac of prev chron care to Hosp OPD baseline[UninsAdvWkage]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[UninsAdvWkage]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[UninsDisWkage]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[UninsDisWkage]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[AdvSr]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[AdvSr]}$
 $\text{Frac of prev chron care to Hosp OPD baseline[DisSr]}=\text{Frac of prev chron care to Hosp OPD baseline 2010[DisSr]}$
- (0623) $\text{Frac of prev chron care to Hosp OPD baseline 2010[subpop]}=0.07,0.1,0.12,0.08,0.07,0.1,0.12,0.08,0.07,0.1$
- (0624) $\text{Frac of prev chron care to Specialist baseline[InsAdvYouth]}=\text{Frac of prev chron care to Specialist baseline 2010[InsAdvYouth]}$
 $\text{Frac of prev chron care to Specialist baseline[InsDisYouth]}=\text{MIN}(\text{Frac of prev chron care to Specialist baseline 2010[InsAdvYouth]}, (\text{Frac of prev chron care to Specialist baseline 2010[InsDisYouth]} - \text{Frac of prev chron care to Specialist baseline 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of prev chron care to Specialist baseline 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv})$

Frac of prev chron care to Specialist baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv)

Frac of prev chron care to Specialist baseline[UninsAdvYouth]=Frac of prev chron care to Specialist baseline 2010[UninsAdvYouth]

Frac of prev chron care to Specialist baseline[UninsDisYouth]=Frac of prev chron care to Specialist baseline 2010[UninsDisYouth]

Frac of prev chron care to Specialist baseline[InsAdvWkage]=Frac of prev chron care to Specialist baseline 2010[InsAdvWkage]

Frac of prev chron care to Specialist baseline[InsDisWkage]=MIN(Frac of prev chron care to Specialist baseline 2010[InsAdvWkage], (Frac of prev chron care to Specialist baseline 2010[InsDisWkage] - Frac of prev chron care to Specialist baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of prev chron care to Specialist baseline 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv)

Frac of prev chron care to Specialist baseline[UninsAdvWkage]=Frac of prev chron care to Specialist baseline 2010[UninsAdvWkage]

Frac of prev chron care to Specialist baseline[UninsDisWkage]=Frac of prev chron care to Specialist baseline 2010[UninsDisWkage]

Frac of prev chron care to Specialist baseline[AdvSr]=Frac of prev chron care to Specialist baseline 2010[AdvSr]

Frac of prev chron care to Specialist baseline[DisSr]=Frac of prev chron care to Specialist baseline 2010[DisSr]

- (0625) Frac of prev chron care to Specialist baseline 2010[subpop]=0.35,0.15,0.25,0.1,0.4,0.15,0.25,0.1,0.4,0.2
- (0626) Frac of providers positively influenced by VBP=Frac of providers positively influenced by VBP lookup(Frac of insured popn under value based payment)
- (0627) Frac of providers positively influenced by VBP lookup([(0,0)-(1,1)],(0,0),(0.1,0.12),(0.2,0.3),(0.3,0.5),(0.4,0.68),(0.5,0.82),(0.6,0.9),(0.7,0.94),(0.8,0.97),(0.9,0.99),(1,1))
- (0628) Frac of pts seeking prev chron care[subpop]=((Frac of pts seeking prev chron care baseline[subpop] + (Frac of pts seeking prev chron care under self care support initiative[subpop] - Frac of pts seeking prev chron care baseline[subpop]))*Reltv impact of self care support initiative[subpop])*(1-Frac of self care gap closed due to med home) + 1*Frac of self care gap closed due to med home) * Effect of uncontrolled CMI on prev chron care seeking and self care[subpop]
- (0629) Frac of pts seeking prev chron care baseline[InsAdvYouth]=Frac of pts seeking prev chron care baseline 2010[InsAdvYouth]
- Frac of pts seeking prev chron care baseline[InsDisYouth]=MIN(Frac of pts seeking prev chron care baseline 2010[InsAdvYouth], (Frac of pts seeking prev chron care baseline 2010[InsDisYouth] - Frac of pts seeking prev chron care baseline 2010[UninsDisYouth]*Underinsured frac of insured nonsenior Disadv 2010)/(1-Underinsured frac of insured nonsenior Disadv 2010) * (1-Underinsured frac of insured nonsenior Disadv) +

$$\text{Frac of pts seeking prev chron care baseline 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv}$$

$$\text{Frac of pts seeking prev chron care baseline[UninsAdvYouth]} = \text{Frac of pts seeking prev chron care baseline 2010[UninsAdvYouth]}$$

$$\text{Frac of pts seeking prev chron care baseline[UninsDisYouth]} = \text{Frac of pts seeking prev chron care baseline 2010[UninsDisYouth]}$$

$$\text{Frac of pts seeking prev chron care baseline[InsAdvWkage]} = \text{Frac of pts seeking prev chron care baseline 2010[InsAdvWkage]}$$

$$\text{Frac of pts seeking prev chron care baseline[InsDisWkage]} = \text{MIN}(\text{Frac of pts seeking prev chron care baseline 2010[InsAdvWkage]}, (\text{Frac of pts seeking prev chron care baseline 2010[InsDisWkage]} - \text{Frac of pts seeking prev chron care baseline 2010[UninsDisWkage]} * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of pts seeking prev chron care baseline 2010[UninsDisWkage]} * \text{Underinsured frac of insured nonsenior Disadv})$$

$$\text{Frac of pts seeking prev chron care baseline[UninsAdvWkage]} = \text{Frac of pts seeking prev chron care baseline 2010[UninsAdvWkage]}$$

$$\text{Frac of pts seeking prev chron care baseline[UninsDisWkage]} = \text{Frac of pts seeking prev chron care baseline 2010[UninsDisWkage]}$$

$$\text{Frac of pts seeking prev chron care baseline[AdvSr]} = \text{Frac of pts seeking prev chron care baseline 2010[AdvSr]}$$

$$\text{Frac of pts seeking prev chron care baseline[DisSr]} = \text{Frac of pts seeking prev chron care baseline 2010[DisSr]}$$

(0630) $\text{Frac of pts seeking prev chron care baseline 2010[subpop]} = 0.9, 0.7, 0.6, 0.35, 0.9, 0.7, 0.6, 0.35, 0.9, 0.7$

(0631) $\text{Frac of pts seeking prev chron care under self care support initiative[InsAdvYouth]} = \text{Frac of pts seeking prev chron care under self care support initiative 2010[InsAdvYouth]}$

$$\text{Frac of pts seeking prev chron care under self care support initiative[InsDisYouth]} = \text{MIN}(\text{Frac of pts seeking prev chron care under self care support initiative 2010[InsAdvYouth]}, (\text{Frac of pts seeking prev chron care under self care support initiative 2010[InsDisYouth]} - \text{Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisYouth]} * \text{Underinsured frac of insured nonsenior Disadv})$$

$$\text{Frac of pts seeking prev chron care under self care support initiative[UninsAdvYouth]} = \text{Frac of pts seeking prev chron care under self care support initiative 2010[UninsAdvYouth]}$$

$$\text{Frac of pts seeking prev chron care under self care support initiative[UninsDisYouth]} = \text{Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisYouth]}$$

$$\text{Frac of pts seeking prev chron care under self care support initiative[InsAdvWkage]} = \text{Frac of pts seeking prev chron care under self care support initiative 2010[InsAdvWkage]}$$

$$\text{Frac of pts seeking prev chron care under self care support initiative[InsDisWkage]} = \text{MIN}(\text{Frac of pts seeking prev chron care under self care support initiative 2010[InsAdvWkage]}, (\text{Frac of pts seeking prev chron care under self care support initiative 2010[InsDisWkage]} - \text{Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisWkage]} * \text{Underinsured frac of insured nonsenior Disadv 2010}) / (1 - \text{Underinsured frac of insured nonsenior Disadv 2010}) * (1 - \text{Underinsured frac of insured nonsenior Disadv}) + \text{Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisWkage]} * \text{Underinsured frac of insured nonsenior Disadv})$$

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- 2010) * (1-Underinsured frac of insured nonsenior Disadv) + Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisWkage]*Underinsured frac of insured nonsenior Disadv)
- Frac of pts seeking prev chron care under self care support initiative[UninsAdvWkage]=Frac of pts seeking prev chron care under self care support initiative 2010[UninsAdvWkage]
- Frac of pts seeking prev chron care under self care support initiative[UninsDisWkage]=Frac of pts seeking prev chron care under self care support initiative 2010[UninsDisWkage]
- Frac of pts seeking prev chron care under self care support initiative[AdvSr]=Frac of pts seeking prev chron care under self care support initiative 2010[AdvSr]
- Frac of pts seeking prev chron care under self care support initiative[DisSr]=Frac of pts seeking prev chron care under self care support initiative 2010[DisSr]
- (0632) Frac of pts seeking prev chron care under self care support initiative 2010[subpop]=0.95,0.9,0.7,0.6,0.95,0.9,0.7,0.6,0.95,0.9
- (0633) Frac of QOL loss from chronic illness=(Overall avg QOL if no chronic illness-Overall avg QOL) / (1-Overall avg QOL)
- (0634) Frac of self care gap closed due to med home=DELAY1(Potential frac of self care gap closed due to med home * Med home implementation from initiative and VBP, Time for self care support or med home to affect self care behavior)
- (0635) Frac of self care per physician orders[subpop]=((Frac of self care per physician orders initial[subpop] + (Frac of self care per physician orders under self care support initiative[subpop]-Frac of self care per physician orders initial[subpop]))*Reltv impact of self care support initiative[subpop])*(1-Frac of self care gap closed due to med home) + 1*Frac of self care gap closed due to med home) * Effect of uncontrolled CMI on prev chron care seeking and self care[subpop]
- (0636) Frac of self care per physician orders initial[subpop]=0.8,0.6,0.8,0.6,0.8,0.6,0.8,0.6,0.8,0.6
- (0637) Frac of self care per physician orders under self care support initiative[subpop]=0.9,0.8,0.9,0.8,0.9,0.8,0.9,0.8,0.9,0.8
- (0638) Frac of SNF pts to long term nursing home[subpop]=0,0,0,0,0.004,0.004,0.004,0.004,0.024,0.024
- (0639) Frac of specialists under global payment=Frac of specialists under global payment baseline*(1-Payment reform initiative) + Frac of specialists under global payment if initiative*Payment reform initiative
- (0640) Frac of specialists under global payment 2020 if initiative=1
- (0641) Frac of specialists under global payment baseline=Frac of specialists under global payment baseline series(Time)
- (0642) Frac of specialists under global payment baseline series([(2000,0)-(2030,1)],(2000,0),(2010,0),(2015,0.15),(2020,0.15),(2025,0.15),(2030,0.15))

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- (0643) $\text{Frac of specialists under global payment if initiative} = \text{IF THEN ELSE}(\text{Time} \leq 2015, \text{Frac of specialists under global payment baseline series}(\text{Time}), \text{Frac of specialists under global payment baseline series}(2015) + \text{MIN}(1, 0.2 * (\text{Time} - 2015)) * (\text{Frac of specialists under global payment 2020 if initiative} - \text{Frac of specialists under global payment baseline series}(2015)))$
- (0644) $\text{Frac of Tax1 to downstream only funds} = 0$
- (0645) $\text{Frac of Tax1 to unconstrained funds} = 1 - \text{Frac of Tax1 to upstream only funds} - \text{Frac of Tax1 to downstream only funds}$
- (0646) $\text{Frac of Tax1 to upstream only funds} = 0$
- (0647) $\text{Frac of Tax2 to downstream only funds} = 0$
- (0648) $\text{Frac of Tax2 to unconstrained funds} = 1 - \text{Frac of Tax2 to upstream only funds} - \text{Frac of Tax2 to downstream only funds}$
- (0649) $\text{Frac of Tax2 to upstream only funds} = 0$
- (0650) $\text{Frac of Tax3 to downstream only funds} = 0$
- (0651) $\text{Frac of Tax3 to unconstrained funds} = 1 - \text{Frac of Tax3 to upstream only funds} - \text{Frac of Tax3 to downstream only funds}$
- (0652) $\text{Frac of Tax3 to upstream only funds} = 0$
- (0653) $\text{Frac of Tax4 to downstream only funds} = 0$
- (0654) $\text{Frac of Tax4 to unconstrained funds} = 1 - \text{Frac of Tax4 to upstream only funds} - \text{Frac of Tax4 to downstream only funds}$
- (0655) $\text{Frac of Tax4 to upstream only funds} = 0$
- (0656) $\text{Frac of total deaths attributable to Disadv} = \text{Deaths attributable to Disadv age stdized} / \text{Total popn deaths age stdized}$
- (0657) $\text{Frac of total deaths from HAI} = \text{Total deaths from HAI} / \text{Total deaths}$
- (0658) $\text{Frac of total Hosp OPD visits for prev chron care} = \text{Total prev chron care visits to Hosp OPD} / \text{Total Hosp OPD visits}$
- (0659) $\text{Frac of total inpatient stays from urgent episode} = \text{Total inpatient stays from urgent episodes} / \text{Total inpatient stays}$
- (0660) $\text{Frac of total long term nursing home admissions originating from SNF} = \text{Total long term nursing home admissions after SNF} / \text{Total long term nursing home admissions}$
- (0661) $\text{Frac of total nursing facility popn in SNF} = \text{Total popn in SNF} / \text{Total nursing facility popn}$

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- (0662) $\text{Frac of total popn in hazardous environment} = \text{Total popn in hazardous environment} / \text{Total popn}$
- (0663) $\text{Frac of total popn in high crime area} = \text{Total popn in high crime area} / \text{Total popn}$
- (0664) $\text{Frac of total popn in home health} = \text{Total popn in home health} / \text{Total popn}$
- (0665) $\text{Frac of total popn in nursing facility} = \text{Total nursing facility popn} / \text{Total popn}$
- (0666) $\text{Frac of total Rx drug costs for CPI mgmt} = \text{Total costs of Rx drugs for CPI mgmt} / \text{Total costs of Rx drugs}$
- (0667) $\text{Frac of total Rx drug costs for mental illness control} = \text{Total costs of psych Rx drugs} / \text{Total costs of Rx drugs}$
- (0668) $\text{Frac of total Rx drug costs for risk mgmt of No CPI pts} = \text{Total costs of Rx drugs for risk mgmt of No CPI pts} / \text{Total costs of Rx drugs}$
- (0669) $\text{Frac of uncompensated healthcare costs faced by employers} = 0.2$
- (0670) $\text{Frac of urgent episodes directed to inpatient stay} = 0.135$
- (0671) $\text{Frac reduction in cumul avg death rate 2040} = \text{IF THEN ELSE}(\text{Time} < 2040, 0, (\text{Cumul avg death rate age stdized per thou baserun2040} - \text{Cumul avg death rate age stdized per thou}) / \text{Cumul avg death rate age stdized per thou baserun2040})$
- (0672) $\text{Frac reduction in cumul avg healthcare costs 2040} = \text{IF THEN ELSE}(\text{Time} < 2040, 0, (\text{Cumul avg healthcare costs baserun2040} - \text{Cumul avg healthcare costs}) / \text{Cumul avg healthcare costs})$
- (0673) $\text{Frac reduction in cumul avg inequity 2040} = \text{IF THEN ELSE}(\text{Time} < 2040, 0, (\text{Cumul avg frac of deaths attributable to Disadv baserun2040} - \text{Cumul avg frac of deaths attributable to Disadv}) / \text{Cumul avg frac of deaths attributable to Disadv baserun2040})$
- (0674) $\text{Frac reduction in death rate for score100} = 0.2$
- (0675) $\text{Frac reduction in health inequity for score100} = 0.3$
- (0676) $\text{Frac reduction in healthcare costs for score100} = 0.2$
- (0677) $\text{Frac reduction in smokers from tax} = \text{DELAY1}(\text{STEP}(\text{Tax4 as a fraction} / 0.1 * \text{Frac reduction in smokers per 10 percent tax, 2015} + \text{Delay time for start of Tax4}), \text{Response time for reduction in smoking})$
- (0678) $\text{Frac reduction in smokers per 10 percent tax} = 0.084$

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- (0679) $\text{Frac reduction in sweet bev consumption from tax} = \text{DELAY1}(\text{STEP}(\text{Tax3 as a fraction}/0.1 * \text{Frac reduction in sweet bev consumption per 10 percent tax}, 2015 + \text{Delay time for start of Tax3}), \text{Response time for reduction in sweet bev consumption})$
- (0680) $\text{Frac reduction in sweet bev consumption per 10 percent tax} = 0.08$
- (0681) $\text{Fraction of captured savings awarded to employers} = 0$
- (0682) $\text{Fraction of captured savings awarded to hospitals} = 0$
- (0683) $\text{Fraction of captured savings awarded to physicians} = 0$
- (0684) $\text{Fraction of deaths without urgent episode initial} = 0.65$
- (0685) $\text{Fraction of loan funds used to support backbone} = \text{ZIDZ}(\text{Backbone funding from loan funds}, \text{Max backbone and pgm spending of unconstrained loan funds})$
- (0686) $\text{Fraction of unconstrained nonloan funds used to support backbone} = \text{ZIDZ}(\text{Backbone funding from nonloan funds}, \text{Max outflow of unconstrained nonloan funds})$
- (0687) $\text{Fractional change in hospital beds} = \text{Recent popn growth rate} + \text{Fractional change in hospital beds from occupancy} * \text{IF THEN ELSE}(\text{Fractional change in hospital beds from occupancy} > 0, \text{Willingness to increase hospital beds based on profit margin}, 1)$
- (0688) $\text{Fractional change in hospital beds from occupancy} = \text{Fractional change in hospital beds from occupancy lookup}(\text{Hospital occupancy} - \text{Hospital occupancy goal})$
- (0689) $\text{Fractional change in hospital beds from occupancy lookup}([(-0.2, -0.1) - (0.3, 0.1)], (-0.2, -0.04), (-0.1, -0.015), (0, 0), (0.1, 0.015), (0.2, 0.04), (0.3, 0.08))$
- (0690) $\text{General PCP avg relocation time} = 2$
- (0691) $\text{General PCP departure rate} = 0.05$
- (0692) $\text{General PCP recruitment initiative} = 0$
- (0693) $\text{General PCP recruitment program cost per arriving PCP 2010} = 200000$
- (0694) $\text{General PCPs} = \text{INTEG}(\text{General PCPs arriving} - \text{General PCPs departing}, \text{Total popn} * \text{General PCPs per 10k popn initial}/10000)$
- (0695) $\text{General PCPs arriving} = \text{MAX}(0, \text{General PCPs departing} + (\text{Indicated General PCPs} - \text{General PCPs})/1)$
- (0696) $\text{General PCPs departing} = \text{General PCPs} * \text{General PCP departure rate}$
- (0697) $\text{General PCPs per 10k popn} = \text{General PCPs} * 10000 / \text{Total popn}$

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- (0698) General PCPs per 10k popn initial=6.5
- (0699) General PCPs per capita trend multiplier=General PCPs per capita trend multiplier series(Time)
- (0700) General PCPs per capita trend multiplier series([(2000,0.6)-(2040,1)],(2000,1),(2010,1),(2020,1),(2030,1),(2040,1))
- (0701) Global payment adjustment time=5
- (0702) Growth in local ER visits by outside popn=Total local ER visits by outside popn * Growth rate for use of local hospitals by outside popn
- (0703) Growth in local Hosp OPD visits by outside popn=Total local Hosp OPD visits by outside popn * Growth rate for use of local hospitals by outside popn
- (0704) Growth in local inpatient stays by outside popn=Total local inpatient stays by outside popn * Growth rate for use of local hospitals by outside popn
- (0705) Growth in real cost index vs 2010 for items under care coord=Real cost index vs 2010 for items under care coord * Healthcare real cost index growth rate* IF THEN ELSE(Healthcare real cost index growth rate>0, 1-Frac of cost growth mitigated for items under care coord by technology assessment*Technology assessment under care coord is in effect, 1)
- (0706) Growth rate for use of local hospitals by outside popn=Growth rate for use of local hospitals by outside popn series(Time)
- (0707) Growth rate for use of local hospitals by outside popn series([(2000,0)-(2040,0.02)],(2000,0),(2010,0),(2020,0),(2030,0),(2040,0))
- (0708) HAI addition to avg length of stay=8
- (0709) HAI frac of inpatient stays=HAI frac of inpatient stays initial * (1 + (Multiplier on HAI frac of stays under HAI prevention initiative-1)*Extent of HAI prevention initiative)
- (0710) HAI frac of inpatient stays initial=0.05
- (0711) HAI prevention initiative=0
- (0712) Hazard reduction initiative=0
- (0713) Health expend frac of total income=Total health expenditures / Total regional income
- (0714) Health expend frac of total income NHE series([(2000,0)-(2014,0.4)],(2000,0.134),(2001,0.141),(2002,0.149),(2003,0.154),(2004,0.155),(2005,0.155),(2006,0.156),(2007,0.159),(2008,0.164),(2009,0.174),(2010,0.174),(2011,0.173),(2012,0.172))
- (0715) Health expend frac relative to established=Health expend frac of total income / Established health expend frac of total income

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- (0716) Healthcare cost index multiplier on global payments=Healthcare real cost index vs 2010 / Healthcare real cost index vs 2010 recent
- (0717) Healthcare costs[subpop]=Hospital facility costs of locals[subpop] + Costs of physician and lab services[subpop] + Costs of other professional services[subpop] + Costs of self care products[subpop] + Costs of nursing facility stays[subpop] + Costs of home health and hospice care[subpop]
- (0718) Healthcare costs against benchmark[subpop]=Per capita healthcare costs against benchmark[subpop] * Popn[subpop]
- (0719) Healthcare costs faced by employers=Healthcare costs[InsAdvYouth] + Healthcare costs[InsAdvWkage] + Uncompensated healthcare costs faced by employers+Commercial popn cost savings available for programs - Cost savings awarded to employers
- (0720) Healthcare costs in employed popn=SUM(Employed popn by segment[subpop!]*Per capita healthcare costs[subpop!])
- (0721) Healthcare costs in employed popn 2020=SAMPLE IF TRUE(Time=2020, Healthcare costs in employed popn, 0)
- (0722) Healthcare costs in employed popn deflated=Healthcare costs in employed popn / Healthcare real cost index vs 2010
- (0723) Healthcare costs of Commercial popn=Healthcare costs[InsAdvYouth]+Healthcare costs[InsAdvWkage]
- (0724) Healthcare costs of Commercial popn 2020=SAMPLE IF TRUE(Time=2020, Healthcare costs of Commercial popn, 0)
- (0725) Healthcare costs of Dual insured popn=Healthcare costs[DisSr]
- (0726) Healthcare costs of Dual insured popn 2020=SAMPLE IF TRUE(Time=2020, Healthcare costs of Dual insured popn, 0)
- (0727) Healthcare costs of Medicaid only popn=Healthcare costs[InsDisYouth]+Healthcare costs[InsDisWkage]
- (0728) Healthcare costs of Medicaid only popn 2020=SAMPLE IF TRUE(Time=2020, Healthcare costs of Medicaid only popn, 0)
- (0729) Healthcare costs of Medicare only popn=Healthcare costs[AdvSr]
- (0730) Healthcare costs of Medicare only popn 2020=SAMPLE IF TRUE(Time=2020, Healthcare costs of Medicare only popn, 0)

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- (0731) Healthcare costs of uninsured popn=Healthcare costs[UninsAdvYouth]+Healthcare costs[UninsDisYouth]+Healthcare costs[UninsAdvWkage]+Healthcare costs[UninsDisWkage]
- (0732) Healthcare costs of uninsured popn 2020=SAMPLE IF TRUE(Time=2020, Healthcare costs of uninsured popn, 0)
- (0733) Healthcare employment=Personal healthcare expenditures in the region / Personal healthcare expend per healthcare job
- (0734) Healthcare real cost index growth=Healthcare real cost index vs 2010 * Healthcare real cost index growth rate
- (0735) Healthcare real cost index growth rate=Healthcare real cost index growth rate series(QUANTUM(Time,1))
- (0736) Healthcare real cost index growth rate series([(2000,0)-(2040,0.1)],(2000,0.021),(2001,0.053),(2002,0.047),(2003,0.046),(2004,0.026),(2005,0.018),(2006,0.029),(2007,0.015),(2008,0.025),(2009,0.02),(2010,0),(2011,0),(2012,0),(2013,0.005),(2014,0.01),(2015,0.015),(2020,0.015),(2040,0.015))
- (0737) Healthcare real cost index vs 2010= INTEG (Healthcare real cost index growth, Healthcare real cost index vs 2010 initial)
- (0738) Healthcare real cost index vs 2010 initial=0.75
- (0739) Healthcare real cost index vs 2010 recent=SMOOTH(Healthcare real cost index vs 2010, Global payment adjustment time)
- (0740) Healthy behavior initiative=0
- (0741) Healthy days 18 to 24 lookup([(0.7,10)-(1,30)],(0.805,15),(0.817,16),(0.821,17),(0.823,18),(0.824,19),(0.826,20),(0.829,21),(0.832,22),(0.839,23),(0.843,24),(0.914,25),(0.992,26),(0.994,27),(0.997,28),(0.998,29),(0.999,30))
- (0742) Healthy days 25 to 44 lookup([(0.7,10)-(1,30)],(0.793,15),(0.798,16),(0.799,17),(0.8,18),(0.801,19),(0.804,20),(0.811,21),(0.816,22),(0.821,23),(0.824,24),(0.827,25),(0.833,26),(0.842,27),(0.949,28),(0.995,29),(0.998,30))
- (0743) Healthy days 45 to 64 lookup([(0.7,10)-(1,30)],(0.767,15),(0.773,16),(0.776,17),(0.777,18),(0.778,19),(0.787,20),(0.795,21),(0.797,22),(0.8,23),(0.803,24),(0.809,25),(0.818,26),(0.823,27),(0.827,28),(0.834,29),(0.968,30))
- (0744) Healthy days 65 to 74 lookup([(0.7,10)-(1,30)],(0.74,15),(0.765,16),(0.768,17),(0.769,18),(0.77,19),(0.773,20),(0.776,21),(0.776,22),(0.779,23),(0.784,24),(0.796,25),(0.802,26),(0.809,27),(0.817,28),(0.823,29),(0.905,30))
- (0745) Healthy days 75plus lookup([(0.7,10)-(1,30)],(0.704,10),(0.705,11.5),(0.706,13.5),(0.708,15),(0.716,

16),(0.753,17),(0.756,18),(0.758,19),(0.764,20),(0.769,21),(0.77,22),(0.773,23),(0.776,24),(0.778,25),(0.782,26),(0.795,27),(0.806,28),(0.811,29),(0.883,30))

- (0746) High risk behav age in[InsAdvYouth]=0
High risk behav age in[InsDisYouth]=0
High risk behav age in[UninsAdvYouth]=0
High risk behav age in[UninsDisYouth]=0
High risk behav age in[InsAdvWkage]=(High risk behav age out[InsAdvYouth]+High risk behav age out[InsDisYouth]+High risk behav age out[UninsAdvYouth]+High risk behav age out[UninsDisYouth]) * ZIDZ(High risk behav popn[InsAdvWkage], High risk behav popn[InsAdvWkage]+High risk behav popn[InsDisWkage]+High risk behav popn[UninsAdvWkage]+High risk behav popn[UninsDisWkage])
High risk behav age in[InsDisWkage]=(High risk behav age out[InsAdvYouth]+High risk behav age out[InsDisYouth]+High risk behav age out[UninsAdvYouth]+High risk behav age out[UninsDisYouth]) * ZIDZ(High risk behav popn[InsDisWkage], High risk behav popn[InsAdvWkage]+High risk behav popn[InsDisWkage]+High risk behav popn[UninsAdvWkage]+High risk behav popn[UninsDisWkage])
High risk behav age in[UninsAdvWkage]=(High risk behav age out[InsAdvYouth]+High risk behav age out[InsDisYouth]+High risk behav age out[UninsAdvYouth]+High risk behav age out[UninsDisYouth]) * ZIDZ(High risk behav popn[UninsAdvWkage], High risk behav popn[InsAdvWkage]+High risk behav popn[InsDisWkage]+High risk behav popn[UninsAdvWkage]+High risk behav popn[UninsDisWkage])
High risk behav age in[UninsDisWkage]=(High risk behav age out[InsAdvYouth]+High risk behav age out[InsDisYouth]+High risk behav age out[UninsAdvYouth]+High risk behav age out[UninsDisYouth]) * ZIDZ(High risk behav popn[UninsDisWkage], High risk behav popn[InsAdvWkage]+High risk behav popn[InsDisWkage]+High risk behav popn[UninsAdvWkage]+High risk behav popn[UninsDisWkage])
High risk behav age in[AdvSr]=(High risk behav age out[InsAdvWkage]+High risk behav age out[InsDisWkage]+High risk behav age out[UninsAdvWkage]+High risk behav age out[UninsDisWkage]) * ZIDZ(High risk behav popn[AdvSr], High risk behav popn[AdvSr]+High risk behav popn[DisSr])
High risk behav age in[DisSr]=(High risk behav age out[InsAdvWkage]+High risk behav age out[InsDisWkage]+High risk behav age out[UninsAdvWkage]+High risk behav age out[UninsDisWkage]) * ZIDZ(High risk behav popn[DisSr], High risk behav popn[AdvSr]+High risk behav popn[DisSr])
- (0747) High risk behav age out[InsAdvYouth]=High risk behav popn[InsAdvYouth] * Rate of 0to17 becoming 18
High risk behav age out[InsDisYouth]=High risk behav popn[InsDisYouth] * Rate of 0to17 becoming 18
High risk behav age out[UninsAdvYouth]=High risk behav popn[UninsAdvYouth] * Rate of 0to17 becoming 18
High risk behav age out[UninsDisYouth]=High risk behav popn[UninsDisYouth] * Rate of 0to17 becoming 18
High risk behav age out[InsAdvWkage]=High risk behav popn[InsAdvWkage] * Rate of 18to64 becoming 65
High risk behav age out[InsDisWkage]=High risk behav popn[InsDisWkage] * Rate of 18to64 becoming 65

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- High risk behav age out[UninsAdvWkage]=High risk behav popn[UninsAdvWkage] * Rate of 18to64 becoming 65
 High risk behav age out[UninsDisWkage]=High risk behav popn[UninsDisWkage] * Rate of 18to64 becoming 65
 High risk behav age out[AdvSr]=0
 High risk behav age out[DisSr]=0
- (0748) High risk behav frac of employed popn= $\text{SUM}(\text{High risk behav frac of popn}[\text{subpop!}] * \text{Employed popn by segment}[\text{subpop!}]) / \text{Total employed popn}$
- (0749) High risk behav frac of popn[subpop]= $\text{ZIDZ}(\text{High risk behav popn}[\text{subpop}], \text{Popn}[\text{subpop}])$
- (0750) High risk behav frac of popn initial[subpop]=0.453,0.684, 0.543,0.628,0.577,0.731,0.663,0.758,0.609,0.816
- (0751) High risk behav frac of Senior popn= $(\text{High risk behav popn}[\text{AdvSr}] + \text{High risk behav popn}[\text{DisSr}]) / \text{Total popn senior}$
- (0752) High risk behav frac of total popn= $\text{Total high risk behav popn} / \text{Total popn}$
- (0753) High risk behav frac of total popn initial= $\text{INITIAL}(\text{High risk behav frac of total popn})$
- (0754) High risk behav frac of Wkage popn= $(\text{High risk behav popn}[\text{InsAdvWkage}] + \text{High risk behav popn}[\text{InsDisWkage}] + \text{High risk behav popn}[\text{UninsAdvWkage}] + \text{High risk behav popn}[\text{UninsDisWkage}]) / \text{Total popn working age}$
- (0755) High risk behav frac of Youth popn= $(\text{High risk behav popn}[\text{InsAdvYouth}] + \text{High risk behav popn}[\text{InsDisYouth}] + \text{High risk behav popn}[\text{UninsAdvYouth}] + \text{High risk behav popn}[\text{UninsDisYouth}]) / \text{Total popn youth}$
- (0756) High risk behav net migration[subpop]= $\text{Popn net migration}[\text{subpop}] * \text{High risk behav frac of popn}[\text{subpop}]$
- (0757) High risk behav popn[subpop]= $\text{INTEG} (+\text{Risky behav onset}[\text{subpop}] - \text{Risky behav reform}[\text{subpop}] - \text{High risk behav age out}[\text{subpop}] + \text{High risk behav age in}[\text{subpop}] + \text{High risk behav net migration}[\text{subpop}] - \text{High risk behav popn deaths}[\text{subpop}] + \text{High risk behav popn insurance change}[\text{subpop}] + \text{High risk behav popn SES change}[\text{subpop}], \text{High risk behav popn initial}[\text{subpop}])$
- (0758) High risk behav popn deaths[subpop]= $\text{High risk behav popn}[\text{subpop}] * \text{Popn death rate}[\text{subpop}]$
- (0759) High risk behav popn initial[subpop]= $\text{Popn initial}[\text{subpop}] * \text{High risk behav frac of popn initial}[\text{subpop}]$
- (0760) High risk behav popn insurance change[InsAdvYouth]= $-\text{High risk behav popn insurance change}[\text{UninsAdvYouth}]$
 High risk behav popn insurance change[InsDisYouth]= $-\text{High risk behav popn insurance change}[\text{UninsDisYouth}]$

High risk behav popn insurance change[UninsAdvYouth]=Change in uninsured frac of Adv Youth popn*(Popn[InsAdvYouth]+Popn[UninsAdvYouth])*High risk behav frac of popn[UninsAdvYouth]
 High risk behav popn insurance change[UninsDisYouth]=Change in uninsured frac of Disadv Youth popn*(Popn[InsDisYouth]+Popn[UninsDisYouth])*High risk behav frac of popn[UninsDisYouth]
 High risk behav popn insurance change[InsAdvWkage]=-High risk behav popn insurance change[UninsAdvWkage]
 High risk behav popn insurance change[InsDisWkage]=-High risk behav popn insurance change[UninsDisWkage]
 High risk behav popn insurance change[UninsAdvWkage]=Change in uninsured frac of Adv Wkage popn*(Popn[InsAdvWkage]+Popn[UninsAdvWkage])*High risk behav frac of popn[UninsAdvWkage]
 High risk behav popn insurance change[UninsDisWkage]=Change in uninsured frac of Disadv Wkage popn*(Popn[InsDisWkage]+Popn[UninsDisWkage])*High risk behav frac of popn[UninsDisWkage]
 High risk behav popn insurance change[AdvSr]=0
 High risk behav popn insurance change[DisSr]=0

- (0761) High risk behav popn SES change[InsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(High risk behav popn[InsAdvYouth], High risk behav popn[InsAdvYouth]+ High risk behav popn[UninsAdvYouth]) * ZIDZ(High risk behav popn[InsDisYouth]+High risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(High risk behav popn[InsAdvYouth], Popn1[InsAdvYouth]+Popn1[UninsAdvYouth]))
 High risk behav popn SES change[InsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(High risk behav popn[InsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(High risk behav popn[InsDisYouth],High risk behav popn[InsDisYouth]+High risk behav popn[UninsDisYouth]) * ZIDZ(High risk behav popn[InsDisYouth]+High risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth]))
 High risk behav popn SES change[UninsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(High risk behav popn[UninsAdvYouth],High risk behav popn[InsAdvYouth]+High risk behav popn[UninsAdvYouth]) * ZIDZ(High risk behav popn[InsDisYouth]+High risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(High risk behav popn[UninsAdvYouth], Popn1[InsAdvYouth]+Popn1[UninsAdvYouth]))
 High risk behav popn SES change[UninsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(High risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(High risk behav popn[UninsDisYouth], High risk behav popn[InsDisYouth]+High risk behav popn[UninsDisYouth]) * ZIDZ(High risk behav popn[InsDisYouth]+High risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth]))
 High risk behav popn SES change[InsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(High risk behav popn[InsAdvWkage], High risk behav popn[InsAdvWkage]+ High risk behav popn[UninsAdvWkage]) * ZIDZ(High risk behav popn[InsDisWkage]+High risk behav popn[UninsDisWkage],

- $$\text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]}) - \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[InsAdvWkage], Popn1[InsAdvWkage]} + \text{Popn1[UninsAdvWkage]}))$$

$$\text{High risk behav popn SES change[InsDisWkage]} = -\text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[InsDisWkage], Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) + \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[InsDisWkage], High risk behav popn[InsDisWkage]} + \text{High risk behav popn[UninsDisWkage]} * \text{ZIDZ}(\text{High risk behav popn[InsDisWkage]} + \text{High risk behav popn[UninsDisWkage], Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]}))$$

$$\text{High risk behav popn SES change[UninsAdvWkage]} = \text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[UninsAdvWkage], High risk behav popn[InsAdvWkage]} + \text{High risk behav popn[UninsAdvWkage]} * \text{ZIDZ}(\text{High risk behav popn[InsDisWkage]} + \text{High risk behav popn[UninsDisWkage], Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) - \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[UninsAdvWkage], Popn1[InsAdvWkage]} + \text{Popn1[UninsAdvWkage]}))$$

$$\text{High risk behav popn SES change[UninsDisWkage]} = -\text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[UninsDisWkage], Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) + \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{High risk behav popn[UninsDisWkage], High risk behav popn[InsDisWkage]} + \text{High risk behav popn[UninsDisWkage]} * \text{ZIDZ}(\text{High risk behav popn[InsDisWkage]} + \text{High risk behav popn[UninsDisWkage], Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]}))$$

$$\text{High risk behav popn SES change[AdvSr]} = \text{MAX}(0, \text{SES change in Senior popn} * \text{ZIDZ}(\text{High risk behav popn[DisSr], Popn1[DisSr]})) - \text{MAX}(0, -\text{SES change in Senior popn} * \text{ZIDZ}(\text{High risk behav popn[AdvSr], Popn1[AdvSr]}))$$

$$\text{High risk behav popn SES change[DisSr]} = -\text{MAX}(0, \text{SES change in Senior popn} * \text{ZIDZ}(\text{High risk behav popn[DisSr], Popn1[DisSr]})) + \text{MAX}(0, -\text{SES change in Senior popn} * \text{ZIDZ}(\text{High risk behav popn[AdvSr], Popn1[AdvSr]}))$$
- (0762) Highest subscore=MAX(Score for healthcare cost reduction, MAX(Score for death rate reduction, MAX(Score for office care improvement, MAX(Score for health inequity reduction, Score for economic productivity improvement))))
- (0763) Home health rate of Severe CPI popn[subpop]=0.03,0.03,0.03,0.03,0.1,0.1,0.1,0.1,0.23,0.23
- (0764) Hosp OPD visits[subpop]=Prev chron care visits to Hosp OPD[subpop] + Nonurgent acute episodes sent to Hosp OPD for test or procedure[subpop]
- (0765) Hospice adjusted avg length of service=85
- (0766) Hospital bed cost trend multiplier=Hospital bed cost trend multiplier series(Time)
- (0767) Hospital bed cost trend multiplier series([(2000,0.6)-(2040,2)],(2000,1.19),(2005,1.13),(2008,1.07),(2010,1),(2012,0.96),(2015,0.94),(2020,0.92),(2030,0.91),(2040,0.91))
- (0768) Hospital beds= INTEG (Change in hospital beds, Inpatient beds occupied / Hospital occupancy initial)
- (0769) Hospital beds per 10k popn=Hospital beds * 10000 / Total popn

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- (0770) Hospital efficiency initiative=0
- (0771) Hospital ER FFS costs from locals[subpop]=Facility costs of ER visits by locals under FFS[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost* Hospital revenue per ER visit by segment reltv to Commercial[subpop] * (1 - Frac of hospital patients under global payment*Frac of popn using local hospitals for ER visits)
- (0772) Hospital ER FFS revenue[subpop]=Facility costs of ER visits by locals under FFS[subpop]*Ratio of local hospital ER visits to total ER visits by locals*Hospital revenue per ER visit by segment reltv to Commercial[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost * (Frac of local ER visits by outside popn + (1-Frac of local ER visits by outside popn)*(1-Frac of hospital patients under global payment))
- (0773) Hospital facility costs of locals[subpop]=Hospital FFS costs from locals[subpop] + Hospital global payment revenue[subpop]
- (0774) Hospital facility costs of locals under FFS[subpop]=Facility costs of Hosp OPD visits by locals under FFS[subpop] + Facility costs of ER visits by locals under FFS[subpop] + Facility costs of inpatient stays by locals under FFS[subpop]
- (0775) Hospital FFS costs from locals[subpop]=Hospital Inpatient FFS costs from locals[subpop] + Hospital ER FFS costs from locals[subpop] + Hospital OPD FFS costs from locals[subpop]
- (0776) Hospital FFS revenue[subpop]=Hospital inpatient FFS revenue[subpop] + Hospital ER FFS revenue[subpop] + Hospital OPD FFS revenue[subpop]
- (0777) Hospital FFS revenue per FFS popn[subpop]=ZIDZ(Local hospital revenue from locals under full FFS[subpop], Popn[subpop])
- (0778) Hospital FFS revenue per FFS popn recent[subpop]=SMOOTH(Hospital FFS revenue per FFS popn[subpop], Global payment adjustment time)
- (0779) Hospital global payment revenue[subpop]=Popn[subpop] * Hospital payment per popn under global payment by segment[subpop] * Frac of hospital patients under global payment
- (0780) Hospital income per capita deflated initial=INITIAL(Hospital revenue per capita deflated)
- (0781) Hospital Inpatient FFS costs from locals[subpop]=Facility costs of inpatient stays by locals under FFS[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost * Hospital revenue per inpatient stay by segment reltv to Commercial[subpop] * (1 - Frac of hospital patients under global payment*Frac of popn using local hospitals for inpatient stays)
- (0782) Hospital inpatient FFS revenue[subpop]=Facility costs of inpatient stays by locals under FFS[subpop]*Ratio of local hospital inpatient stays to total inpatient stays by locals*Hospital

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- revenue per inpatient stay by segment reltv to Commercial[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost * (Frac of local inpatient stays by outside popn + (1-Frac of local inpatient stays by outside popn)*(1-Frac of hospital patients under global payment))
- (0783) Hospital net income=Total Hospital revenue - Hospital operating costs
- (0784) Hospital net income 2020=SAMPLE IF TRUE(Time=2020, Hospital net income, 0)
- (0785) Hospital occupancy=Inpatient beds occupied / Hospital beds
- (0786) Hospital occupancy goal=Hospital occupancy goal series(Time)
- (0787) Hospital occupancy goal series([(2000,0)-(2040,1)],(2000,0.66),(2010,0.66),(2015,0.66),(2020,0.66),(2025,0.66),(2030,0.66),(2035,0.66),(2040,0.66))
- (0788) Hospital occupancy initial=0.665
- (0789) Hospital OPD FFS costs from locals[subpop]=Facility costs of Hosp OPD visits by locals under FFS[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost * Hospital revenue per OPD visit by segment reltv to Commercial[subpop] * (1 - Frac of hospital patients under global payment*Frac of popn using local hospitals for OPD visits)
- (0790) Hospital OPD FFS revenue[subpop]=Facility costs of Hosp OPD visits by locals under FFS[subpop]*Ratio of local hospital OPD visits to total OPD visits by locals*Hospital revenue per OPD visit by segment reltv to Commercial[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost * (Frac of local OPD visits by outside popn + (1-Frac of local OPD visits by outside popn)*(1-Frac of hospital patients under global payment))
- (0791) Hospital operating costs=Hospital operating costs from inpatient stays + Hospital operating costs from ER visits+Hospital operating costs from OPD visits + Cost to hospitals of VBP incentivized post discharge care
- (0792) Hospital operating costs from ER visits=Total local hospital ER visits * Avg facility cost per ER visit under FFS
- (0793) Hospital operating costs from inpatient stays=Hospital beds * Operating cost per hospital bed
- (0794) Hospital operating costs from OPD visits=Total local hospital OPD visits * Avg facility cost per Hosp OPD visit
- (0795) Hospital payment per popn under global payment by segment[subpop]=Hospital FFS revenue per FFS popn recent[subpop] * Healthcare cost index multiplier on global payments
- (0796) Hospital profit margin=Hospital net income / Total Hospital revenue

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- (0797) Hospital profit margin 2020=SAMPLE IF TRUE(Time=2020, Hospital profit margin, 0)
- (0798) Hospital profit margin initial=INITIAL(Hospital profit margin)
- (0799) Hospital profit margin minus initial=Hospital profit margin - Hospital profit margin initial
- (0800) Hospital revenue loss avoidance due to capitation=SUM(Popn[subpop!] * Frac of hospital patients under global payment * (Hospital payment per popn under global payment by segment[subpop!] - Hospital FFS revenue per FFS popn[subpop!]))
- (0801) Hospital revenue per capita deflated=Total Hospital revenue / (Total popn * Healthcare real cost index vs 2010)
- (0802) Hospital revenue per Commercial pt visit reltv to avg cost=1.475
- (0803) Hospital revenue per ER visit by segment reltv to Commercial[subpop]
=1,0.29,1,0,1,0.29,1,0,0.36,0.28
- (0804) Hospital revenue per inpatient stay by segment reltv to Commercial[subpop]=1,0.39,1,0,1,0.39,1,0,0.94,0.89
- (0805) Hospital revenue per OPD visit by segment reltv to Commercial[subpop]=1,0.19,1,0,1,0.19,1,0,0.63,0.64
- (0806) Hospitalizations using palliative care[subpop]=Popn deaths at initial HAI frac[subpop] * Frac of deaths using hospital palliative care
- (0807) Income of employed popn by segment[subpop]=Employed popn by segment[subpop] * Avg income per employed person[subpop]
- (0808) Increase in cumul change vs baseline in healthcare and program costs
=Change vs baseline in healthcare and program costs * Accumulation switch
- (0809) Increase in cumul change vs baseline prod less HC costs and pgm spend
=Change vs baseline in value of productivity less healthcare costs and program spending* Accumulation switch
- (0810) Increase in cumul deaths=Total deaths * Accumulation switch
- (0811) Increase in cumul deaths age stdized=Total popn deaths age stdized * Accumulation switch
- (0812) Increase in cumul deaths in employed popn=Deaths in employed popn * Accumulation switch
- (0813) Increase in cumul Disadv popn deaths=Disadv frac of popn deaths * Total deaths * Accumulation switch
- (0814) Increase in cumul disc deaths=Total deaths * Accumulation switch * Discounting factor

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- (0815) Increase in cumul disc healthcare costs=Total healthcare costs * Accumulation switch * Discounting factor
- (0816) Increase in cumul disc healthy days=Total healthy days per month * 12 * Accumulation switch * Discounting factor
- (0817) Increase in cumul disc QALYs=Total QALYs per year * Accumulation switch * Discounting factor
- (0818) Increase in cumul disc value of productivity=Value of productivity * Accumulation switch * Discounting factor
- (0819) Increase in cumul healthcare costs=Total healthcare costs * Accumulation switch
- (0820) Increase in cumul healthcare costs in employed popn deflated=Healthcare costs in employed popn deflated * Accumulation switch
- (0821) Increase in cumul healthy days=Total healthy days per month * 12 * Accumulation switch
- (0822) Increase in cumul indicated program spending=Total indicated program spending * Accumulation switch
- (0823) Increase in cumul popn with adequate prev chron care=Overall adequacy of prev chron care * Total popn * Accumulation switch
- (0824) Increase in cumul popn years=Total popn * Accumulation switch
- (0825) Increase in cumul QALYs=Total QALYs per year * Accumulation switch
- (0826) Increase in cumul value of productivity=Value of productivity * Accumulation switch
- (0827) Increase in cumul value of productivity net of employee healthcare costs
=Value of productivity net of employee healthcare costs * Accumulation switch
- (0828) Increase in Deaths attributable to Disadv=Deaths attributable to Disadv age stdized * Accumulation switch
- (0829) Indic uninsured frac of Adv Wkage popn=Uninsured frac of Adv Wkage popn initial * Multiplier on uninsured frac of Adv Wkage
- (0830) Indic uninsured frac of Adv Youth popn=Uninsured frac of Adv Youth popn initial * Multiplier on uninsured frac of Adv Youth
- (0831) Indic uninsured frac of Disadv Wkage popn=Uninsured frac of Disadv Wkage popn initial * Multiplier on uninsured frac of Disadv Wkage
- (0832) Indic uninsured frac of Disadv Youth popn=Uninsured frac of Disadv Youth popn initial * Multiplier on uninsured frac of Disadv Youth

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- (0833) Indicated addition to extent of HAI prevention initiative= $\text{MAX}(0, \text{Obsolescence to extent of HAI prevention initiative} + (\text{Indicated extent of HAI prevention initiative} - \text{Extent of HAI prevention initiative}) / \text{Time to implement HAI prevention initiative})$
- (0834) Indicated addition to extent of hospital efficiency initiative= $\text{MAX}(0, \text{Obsolescence to extent of hospital efficiency initiative} + (\text{Indicated extent of hospital efficiency initiative} - \text{Extent of hospital efficiency initiative}) / \text{Time to implement hospital efficiency initiative})$
- (0835) Indicated addition to extent of post discharge care initiative= $\text{MAX}(0, \text{Obsolescence to extent of post discharge care initiative} + (\text{Indicated extent of post discharge care initiative} - \text{Extent of post discharge care initiative}) / \text{Time to implement post discharge care initiative})$
- (0836) Indicated Disadv frac of Senior popn= $\text{Disadv frac of Senior popn initial} * \text{Multiplier on Senior Disadv frac}$
- (0837) Indicated Disadv frac of Wkage popn= $\text{Disadv frac of Wkage popn initial} * \text{Multiplier on Wkage Disadv frac}$
- (0838) Indicated Disadv frac of Youth popn= $\text{Disadv frac of Youth popn initial} * \text{Multiplier on Youth Disadv frac}$
- (0839) Indicated effect of CPI care on uncontrolled CMI[subpop]= $(1 - \text{Adequacy of prev chron care[subpop]} + \text{Adequacy of prev chron care[subpop]} * \text{Reltv uncontrolled CMI under full physical prev chron care}) / (1 - \text{Adequacy of prev chron care initial[subpop]} + \text{Adequacy of prev chron care initial[subpop]} * \text{Reltv uncontrolled CMI under full physical prev chron care})$
- (0840) Indicated effect of healthcare costs on Wkage Disadv frac= $1 * (1 - \text{Reltv strength of effect of healthcare costs on Disadv frac}) + \text{Reltv strength of effect of healthcare costs on Disadv frac} * \text{Lookup for effect of healthcare costs on Wkage Disadv frac}(\text{Employer per capita healthcare costs ratio vs initial})$
- (0841) Indicated effect of mental illness care on uncontrolled CMI frac[subpop]= $1 + (\text{Reltv uncontrolled CMI under mental illness care initiative} - 1) * \text{Extent of mental illness care initiative[subpop]}$
- (0842) Indicated extent of care coord initiative= $\text{IF THEN ELSE}(\text{Time} \geq 2015 + \text{Delay time for start of care coord initiative}, \text{Care coord initiative}, 0)$
- (0843) Indicated extent of crime fighting initiative[subpop]= $\text{IF THEN ELSE}(\text{Time} \geq 2015 + \text{Delay time for start of crime fighting initiative}, \text{Crime fighting initiative}, 0) * \text{IF THEN ELSE}(\text{Is Crime fighting initiative for Disadv only} = 1, \text{Disadv segment indicator[subpop]}, 1)$
- (0844) Indicated extent of end of life care initiative= $\text{IF THEN ELSE}(\text{Time} \geq 2015 + \text{Delay time for start of end of life care initiative}, \text{End of life care initiative}, 0)$
- (0845) Indicated extent of family pathways initiative= $\text{IF THEN ELSE}(\text{Time} \geq 2015 + \text{Delay time for start of family pathways initiative}, \text{Family pathways to advantage initiative}, 0)$

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- (0846) Indicated extent of FQHC PCP recruitment initiative=IF THEN ELSE(Time>=2015+Delay time for start of FQHC PCP recruitment initiative, FQHC PCP recruitment initiative, 0)
- (0847) Indicated extent of general PCP recruitment initiative=IF THEN ELSE(Time>=2015+Delay time for start of general PCP recruitment initiative, General PCP recruitment initiative, 0)
- (0848) Indicated extent of HAI prevention initiative=IF THEN ELSE(Time>=2015+Delay time for start of HAI prevention initiative, HAI prevention initiative, 0)
- (0849) Indicated extent of hazard reduction initiative[subpop]=IF THEN ELSE(Time>=2015+Delay time for start of hazard reduction initiative, Hazard reduction initiative, 0) * IF THEN ELSE(Is Hazard reduction initiative for Disadv only=1, Disadv segment indicator[subpop], 1)
- (0850) Indicated extent of healthy behavior initiative[subpop]=IF THEN ELSE(Time>=2015+Delay time for start of healthy behavior initiative, Healthy behavior initiative, 0) * IF THEN ELSE(Is Healthy behavior initiative for Disadv only=1, Disadv segment indicator[subpop], 1) * IF THEN ELSE(Is Healthy behavior initiative for Youth only +Is Healthy behavior initiative for Wkage only+Is Healthy behavior initiative for Seniors only=0, 1, IF THEN ELSE(Is Healthy behavior initiative for Youth only =1, Youth segment indicator[subpop],0) + IF THEN ELSE(Is Healthy behavior initiative for Wkage only=1, Wkage segment indicator[subpop],0) + IF THEN ELSE(Is Healthy behavior initiative for Seniors only=1, Senior segment indicator[subpop],0))
- (0851) Indicated extent of hospital efficiency initiative=IF THEN ELSE(Time>=2015+Delay time for start of hospital efficiency initiative, Hospital efficiency initiative, 0)
- (0852) Indicated extent of malpractice reform initiative=IF THEN ELSE(Time>=2015+Delay time for start of malpractice reform initiative, Malpractice reform initiative, 0)
- (0853) Indicated extent of med home initiative=IF THEN ELSE(Time>=2015+Delay time for start of med home initiative, Med home initiative, 0)
- (0854) Indicated extent of mental illness care initiative[subpop]=IF THEN ELSE(Time>=2015+Delay time for start of mental illness care initiative, Mental illness care initiative, 0) * IF THEN ELSE(Is Mental illness care initiative for Disadv only=1, Disadv segment indicator[subpop], 1)
- (0855) Indicated extent of PCP practice redesign initiative=IF THEN ELSE(Time>=2015+Delay time for start of practice redesign initiative, PCP practice redesign initiative, 0)
- (0856) Indicated extent of post discharge care initiative=IF THEN ELSE(Time>=2015+Delay time for start of post discharge care initiative, Post discharge care initiative, 0)
- (0857) Indicated extent of prev chron quality initiative=IF THEN ELSE(Time>=2015+Delay time for start of prev chron care quality initiative, Prev chron care quality initiative, 0)
- (0858) Indicated extent of PVS initiative=IF THEN ELSE(Time>=2015+Delay time for start of PVS initiative, Pre visit screening initiative, 0)

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- (0859) Indicated extent of self care support initiative[subpop]=IF THEN ELSE(Time>=2015+Delay time for start of self care support initiative, Self care support initiative, 0) * IF THEN ELSE(Is Self care support initiative for Disadv only=1, Disadv segment indicator[subpop], 1)
- (0860) Indicated extent of student pathways initiative=IF THEN ELSE(Time>=2015+Delay time for start of student pathways initiative, Student pathways to advantage initiative, 0)
- (0861) Indicated FQHC PCPs=FQHC PCPs per 10k popn initial * (1+Recent popn growth rate*1) * Total popn/10000 * Effect of FQHC PCP recruitment initiative on indicated FQHC PCPs
- (0862) Indicated General PCPs=General PCPs per 10k popn initial * (1+Recent popn growth rate*1) * Total popn/10000 * General PCPs per capita trend multiplier * Effect of general PCP recruitment initiative on general PCPs
- (0863) Indicated loan repayment=LOOKUP BACKWARD(Indicated loan repayment series, Time)
- (0864) Indicated loan repayment series([(2014,0)-(2029,1)],(2014,0),(2015,0),(2016,0),(2017,0),(2018,0),(2019,0),(2020,0),(2021,0),(2022,0),(2023,0),(2024,0),(2025,0),(2026,0),(2027,0),(2028,0),(2029,0),(2030,0),(2031,0),(2032,0),(2033,0),(2034,0),(2035,0),(2036,0),(2037,0),(2038,0),(2039,0),(2040,0))
- (0865) Indicated specialists=Total popn * Specialists per 10k popn initial/10000 * (1+Recent popn growth rate*1) * Specialists per capita trend multiplier / Effect of net income on specialist departure
- (0866) Indicated spending of unconstrained funds=Indicated spending on upstream initiatives from unconstrained funds + Indicated spending on downstream initiatives from unconstrained funds
- (0867) Indicated spending on care coord initiative=Indicated extent of care coord initiative * Per physician program cost for care coord 2010* Office based providers * Healthcare real cost index vs 2010 * (1 + (Multiplier on cost of care coord from technology assessment-1)*Technology assessment under care coord is in effect)
- (0868) Indicated spending on crime fighting initiative=SUM(Indicated extent of crime fighting initiative[subpop!] * Popn in high crime area[subpop!] * Per target popn program cost for crime fighting)
- (0869) Indicated spending on downstream initiatives=Total indicated program spending - Indicated spending on upstream initiatives
- (0870) Indicated spending on downstream initiatives from unconstrained funds =Indicated spending on downstream initiatives - Spending of downstream only funds
- (0871) Indicated spending on end of life care initiative=Extent of end of life care initiative * Per capita program cost for end of life care initiative* Total popn

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- (0872) Indicated spending on family pathways initiative=Indicated extent of family pathways initiative * Per target popn program cost for family pathways* Total Disadv popn
- (0873) Indicated spending on FQHC PCP recruitment initiative=Indicated extent of FQHC PCP recruitment initiative * FQHC PCP recruitment program cost per arriving PCP 2010* FQHC PCPs arriving * Healthcare real cost index vs 2010
- (0874) Indicated spending on general PCP recruitment initiative=Indicated extent of general PCP recruitment initiative * General PCPs arriving* General PCP recruitment program cost per arriving PCP 2010 * Healthcare real cost index vs 2010
- (0875) Indicated spending on HAI prevention initiative=Indicated addition to extent of HAI prevention initiative * (Hospital beds/100) * Per 100 beds program cost of HAI prevention initiative 2010 * Healthcare real cost index vs 2010
- (0876) Indicated spending on hazard reduction initiative=SUM(Indicated extent of hazard reduction initiative[subpop!] * Popn in hazardous environment[subpop!])* Per target popn program cost for hazard reduction)
- (0877) Indicated spending on healthy behavior initiative=SUM(Indicated extent of healthy behavior initiative[subpop!] * High risk behav popn[subpop!]) * Per target popn program cost for reforming unhealthy behavior)
- (0878) Indicated spending on hospital efficiency initiative=Indicated addition to extent of hospital efficiency initiative * (Hospital beds/100) * Per 100 beds program cost of hospital efficiency initiative 2010 * Healthcare real cost index vs 2010
- (0879) Indicated spending on malpractice reform initiative=Indicated extent of malpractice reform initiative * Per physician program cost for malpractice reform 2010* Office based providers * Healthcare real cost index vs 2010
- (0880) Indicated spending on med home initiative=Indicated extent of med home initiative * Per PCP program cost for medical home 2010* PCPs * Healthcare real cost index vs 2010
- (0881) Indicated spending on mental illness care initiative=SUM(Indicated extent of mental illness care initiative[subpop!] * Per target popn program cost for mental illness care 2010* Potl beneficiaries of mental illness care initiative[subpop!]) * Healthcare real cost index vs 2010)
- (0882) Indicated spending on PCP practice redesign initiative=Indicated extent of PCP practice redesign initiative * Per PCP program cost for practice redesign 2010* IF THEN ELSE(Is PCP redesign initiative for FQHC only=1, FQHC PCPs, PCPs) * Healthcare real cost index vs 2010
- (0883) Indicated spending on popn level initiatives=Indicated spending on healthy behavior initiative + Indicated spending on hazard reduction initiative+Indicated spending on crime fighting initiative + Indicated spending on mental illness care initiative + Indicated spending on family pathways initiative + Indicated spending on student pathways initiative+Indicated spending on

self care support initiative + Indicated spending on end of life care initiative + Indicated spending on PVS initiative

- (0884) Indicated spending on post discharge care initiative=Indicated addition to extent of post discharge care initiative * (Hospital beds/100) * Per 100 beds program cost of post discharge care initiative 2010 * Healthcare real cost index vs 2010
- (0885) Indicated spending on prev chron quality initiative=Indicated extent of prev chron quality initiative * Per physician program cost for prev chron quality 2010* Office based providers * Healthcare real cost index vs 2010
- (0886) Indicated spending on provider level initiatives=Indicated spending on care coord initiative + Indicated spending on med home initiative+Indicated spending on PCP practice redesign initiative + Indicated spending on prev chron quality initiative + Indicated spending on FQHC PCP recruitment initiative + Indicated spending on general PCP recruitment initiative + Indicated spending on post discharge care initiative+Indicated spending on hospital efficiency initiative + Indicated spending on HAI prevention initiative + Indicated spending on malpractice reform initiative
- (0887) Indicated spending on PVS initiative=Total popn * Indicated extent of PVS initiative * Per capita program cost for PVS initiative 2010* Healthcare real cost index vs 2010
- (0888) Indicated spending on self care support initiative=SUM(Indicated extent of self care support initiative[subpop!] * Per target program cost for self care support 2010[subpop!] * Potl beneficiaries of self care support initiative[subpop!]) * Healthcare real cost index vs 2010
- (0889) Indicated spending on student pathways initiative=Indicated extent of student pathways initiative * Per completor program cost for student pathways* Potl new completors of student pathways pgms
- (0890) Indicated spending on upstream initiatives=Indicated spending on healthy behavior initiative + Indicated spending on hazard reduction initiative+Indicated spending on crime fighting initiative + Indicated spending on family pathways initiative+Indicated spending on student pathways initiative
- (0891) Indicated spending on upstream initiatives from unconstrained funds=Indicated spending on upstream initiatives - Spending of upstream only funds
- (0892) Inflow of grants and assistance=(1-Use default grants and assistance)*LOOKUP BACKWARD(Inflow of grants and assistance series, Time) + Use default grants and assistance*Default grants and assistance
- (0893) Inflow of grants and assistance series([(2014,0)-(2040,3e+007)],(2014,0),(2015,2.4e+007),(2016,2.4e+007),(2017,2.4e+007),(2018,2.4e+007),(2019,2.4e+007),(2020,0),(2021,0),(2022,0),(2023,0),(2024,0),(2025,0),(2026,0),(2027,0),(2028,0),(2029,0),(2030,0),(2031,0),(2032,0),(2033,0),(2034,0),(2035,0),(2036,0),(2037,0),(2038,0),(2039,0),(2040,0))

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- (0894) Inflow of loans=LOOKUP BACKWARD(Inflow of loans series, Time)
- (0895) Inflow of loans series([(2014,0)-(2029,1)],(2014,0),(2015,0),(2016,0),(2017,0),(2018,0),(2019,0),(2020,0),(2021,0),(2022,0),(2023,0),(2024,0),(2025,0),(2026,0),(2027,0),(2028,0),(2029,0),(2030,0),(2031,0),(2032,0),(2033,0),(2034,0),(2035,0),(2036,0),(2037,0),(2038,0),(2039,0),(2040,0))
- (0896) Inflow to downstream only funds from reinvestment=Commercial popn cost savings available for programs*Frac of Commercial reinvestment to downstream only funds+Medicaid cost savings available for programs*Frac of Medicaid reinvestment to downstream only funds + Medicare popn cost savings available for programs*Frac of Medicare reinvestment to downstream only funds
- (0897) Inflow to downstream only funds from taxes=Tax1 based on commercial premiums*Frac of Tax1 to downstream only funds + Tax2 based on employed popn*Frac of Tax2 to downstream only funds + Tax3 based on sweet beverage consumption*Frac of Tax3 to downstream only funds+Tax4 based on cigarette consumption*Frac of Tax4 to downstream only funds
- (0898) Inflow to downstream only loan funds=Inflow of loans*Frac of loans to downstream only funds
- (0899) Inflow to downstream only nonloan funds=(Inflow of grants and assistance*Frac of grants and assistance to downstream only funds) + Inflow to downstream only funds from taxes + Inflow to downstream only funds from reinvestment
- (0900) Inflow to unconstrained funds from reinvestment=Commercial popn cost savings available for programs*Frac of Commercial reinvestment to unconstrained funds+Medicaid cost savings available for programs*Frac of Medicaid reinvestment to unconstrained funds + Medicare popn cost savings available for programs*Frac of Medicare reinvestment to unconstrained funds
- (0901) Inflow to unconstrained funds from taxes=Tax1 based on commercial premiums*Frac of Tax1 to unconstrained funds + Tax2 based on employed popn*Frac of Tax2 to unconstrained funds + Tax3 based on sweet beverage consumption*Frac of Tax3 to unconstrained funds+Tax4 based on cigarette consumption*Frac of Tax4 to unconstrained funds
- (0902) Inflow to unconstrained loan funds=Inflow of loans*Frac of loans to unconstrained funds
- (0903) Inflow to unconstrained nonloan funds=(Inflow of grants and assistance*Frac of grants and assistance to unconstrained funds) + Inflow to unconstrained funds from taxes + Inflow to unconstrained funds from reinvestment
- (0904) Inflow to upstream only funds from reinvestment=Commercial popn cost savings available for programs*Frac of Commercial reinvestment to upstream only funds+Medicaid cost savings available for programs*Frac of Medicaid reinvestment to upstream only funds + Medicare popn cost savings available for programs*Frac of Medicare reinvestment to upstream only funds

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- (0905) Inflow to upstream only funds from taxes=Tax1 based on commercial premiums*Frac of Tax1 to upstream only funds + Tax2 based on employed popn*Frac of Tax2 to upstream only funds + Tax3 based on sweet beverage consumption*Frac of Tax3 to upstream only funds+Tax4 based on cigarette consumption*Frac of Tax4 to upstream only funds
- (0906) Inflow to upstream only loan funds=Inflow of loans*Frac of loans to upstream only funds
- (0907) Inflow to upstream only nonloan funds=(Inflow of grants and assistance*Frac of grants and assistance to upstream only funds) + Inflow to upstream only funds from taxes + Inflow to upstream only funds from reinvestment
- (0908) Inflows from taxes=Tax1 based on commercial premiums + Tax2 based on employed popn + Tax3 based on sweet beverage consumption+Tax4 based on cigarette consumption
- (0909) Initial growth rate in nursing home popn=0.018
- (0910) Inpatient avg length of stay days=(Inpatient avg length of stay days initial * Effect of hospital efficiency initiative on avg length of stay) - Reduction in avg length of stay from smaller HAI frac
- (0911) Inpatient avg length of stay days initial=4.75
- (0912) Inpatient beds occupied=Total local hospital inpatient stays * Inpatient avg length of stay days/ 365
- (0913) Inpatient stays[subpop]=Original inpatient admissions[subpop] + Readmissions[subpop]
- (0914) Insured segment indicator[subpop]=1,1,0,0,1,1,0,0,1,1
- (0915) Is Crime fighting initiative for Disadv only=0
- (0916) Is Hazard reduction initiative for Disadv only=0
- (0917) Is Healthy behavior initiative for Disadv only=0
- (0918) Is Healthy behavior initiative for Seniors only=0
- (0919) Is Healthy behavior initiative for Wkage only=0
- (0920) Is Healthy behavior initiative for Youth only=0
- (0921) Is Mental illness care initiative for Disadv only=0
- (0922) Is PCP redesign initiative for FQHC only=0
- (0923) Is Self care support initiative for Disadv only=0
- (0924) Least relative savings available=0

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- (0925) Loan repayment=MIN(Indicated loan repayment, Max outflow of loan funds)
- (0926) Local hospital ER revenue from locals under full FFS[subpop]=Facility costs of ER visits by locals under FFS[subpop]* Ratio of local hospital ER visits to total ER visits by locals* (1-Frac of local ER visits by outside popn) * Hospital revenue per ER visit by segment reltv to Commercial[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost
- (0927) Local hospital inpatient revenue from locals under full FFS[subpop]=Facility costs of inpatient stays by locals under FFS[subpop]* Ratio of local hospital inpatient stays to total inpatient stays by locals*(1-Frac of local inpatient stays by outside popn)*Hospital revenue per inpatient stay by segment reltv to Commercial[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost
- (0928) Local hospital OPD revenue from locals under full FFS[subpop]=Facility costs of Hosp OPD visits by locals under FFS[subpop]*Ratio of local hospital OPD visits to total OPD visits by locals*(1-Frac of local OPD visits by outside popn)*Hospital revenue per OPD visit by segment reltv to Commercial[subpop] * Hospital revenue per Commercial pt visit reltv to avg cost
- (0929) Local hospital revenue from locals under full FFS[subpop]=Local hospital inpatient revenue from locals under full FFS[subpop] + Local hospital ER revenue from locals under full FFS[subpop] + Local hospital OPD revenue from locals under full FFS[subpop]
- (0930) Long term nursing home admission rate of Severe CPI
popn[subpop]=0,0,0,0,0.004,0.003,0.004,0.003,0.029,0.026
- (0931) Long term nursing home admissions[subpop]=Long term nursing home admissions after SNF[subpop] + Long term nursing home admissions not post hospital[subpop]
- (0932) Long term nursing home admissions after SNF[subpop]=SNF stays[subpop] * Frac of SNF pts to long term nursing home[subpop]
- (0933) Long term nursing home admissions not post hospital[subpop]=Severe CPI popn[subpop] * Long term nursing home admission rate of Severe CPI popn[subpop]
- (0934) Long term nursing home popn[subpop]=DELAY1I(Long term nursing home admissions[subpop], Avg length of stay in long term nursing home, Long term nursing home admissions[subpop]/(1+Initial growth rate in nursing home popn*Avg length of stay in long term nursing home)) * Avg length of stay in long term nursing home
- (0935) Lookup for effect of healthcare costs on Adv Wkage uninsurance(((1,0)-(4,4)],[1,1),(1.5,1.42),(2,1.84),(2.5,2.26),(3,2.68),(3.5,3.1),(4,3.52))
- (0936) Lookup for effect of healthcare costs on Wkage Disadv frac(((1,0.8)-(4,4)],[1,1),(1.25,1.065),(1.5,1.13),(2,1.26),(2.5,1.39),(3,1.52),(3.5,1.65),(4,1.78))

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- (0937) Loss of QOL from CMI by segment[subpop]=QOL loss for untreated CMI * (Uncontrolled CMI frac of popn[subpop] + Controlled CMI frac of popn[subpop])*Reltv QOL loss from CMI if treated)
- (0938) Loss of QOL from CPI by segment[subpop]=Effect of prev chron care on QOL loss due to CPI[subpop] * (Mild CPI frac of popn[subpop]*QOL loss for untreated mild CPI + Severe CPI frac of popn[subpop]*QOL loss for untreated severe CPI)
- (0939) Lost productivity frac by segment[subpop]=Lost productivity frac for healthy employed * (1 + Mild CPI frac of popn[subpop])*(Relative lost productivity for mild CPI popn-1)*Effect of improved prev chron care on excess lost productivity due to CPI[subpop] + Severe CPI frac of popn[subpop]*(Relative lost productivity for severe CPI popn-1)*Effect of improved prev chron care on excess lost productivity due to CPI[subpop]) + Additional lost productivity frac for uncontrolled CMI popn*Uncontrolled CMI frac of popn[subpop]
- (0940) Lost productivity frac for healthy employed=0.031
- (0941) Lost productivity frac of employee days=SUM(Employed popn by segment[subpop!]) * Lost productivity frac by segment[subpop!]) / SUM(Employed popn by segment[subpop!])
- (0942) Lost productivity frac of employee dollars=Value of lost productivity / Total income of employed popn
- (0943) Lost productivity frac of employee dollars 2020=SAMPLE IF TRUE(Time=2020, Lost productivity frac of employee dollars, 0)
- (0944) Low risk behav age in[InsAdvYouth]=0
 Low risk behav age in[InsDisYouth]=0
 Low risk behav age in[UninsAdvYouth]=0
 Low risk behav age in[UninsDisYouth]=0
 Low risk behav age in[InsAdvWkage]=(Low risk behav age out[InsAdvYouth]+Low risk behav age out[InsDisYouth]+
 Low risk behav age out[UninsAdvYouth]+Low risk behav age out[UninsDisYouth]) * ZIDZ(Low risk behav popn[InsAdvWkage], Low risk behav popn[InsAdvWkage]+Low risk behav popn[InsDisWkage]+Low risk behav popn[UninsAdvWkage]+Low risk behav popn[UninsDisWkage])
 Low risk behav age in[InsDisWkage]=(Low risk behav age out[InsAdvYouth]+Low risk behav age out[InsDisYouth]+
 Low risk behav age out[UninsAdvYouth]+Low risk behav age out[UninsDisYouth]) * ZIDZ(Low risk behav popn[InsDisWkage], Low risk behav popn[InsAdvWkage]+Low risk behav popn[InsDisWkage]+Low risk behav popn[UninsAdvWkage]+Low risk behav popn[UninsDisWkage])
 Low risk behav age in[UninsAdvWkage]=(Low risk behav age out[InsAdvYouth]+Low risk behav age out[InsDisYouth]+
 Low risk behav age out[UninsAdvYouth]+Low risk behav age out[UninsDisYouth]) * ZIDZ(Low risk behav popn[UninsAdvWkage], Low risk behav popn[InsAdvWkage]+Low risk behav popn[InsDisWkage]+Low risk behav popn[UninsAdvWkage]+Low risk behav popn[UninsDisWkage])

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- $\text{Low risk behav age in[UninsDisWkage]} = (\text{Low risk behav age out[InsAdvYouth]} + \text{Low risk behav age out[InsDisYouth]}) +$
 $\text{Low risk behav age out[UninsAdvYouth]} + \text{Low risk behav age out[UninsDisYouth]} * \text{ZIDZ}(\text{Low risk behav popn[UninsDisWkage]}, \text{Low risk behav popn[InsAdvWkage]} + \text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsAdvWkage]} + \text{Low risk behav popn[UninsDisWkage]})$
- $\text{Low risk behav age in[AdvSr]} = (\text{Low risk behav age out[InsAdvWkage]} + \text{Low risk behav age out[InsDisWkage]}) +$
 $\text{Low risk behav age out[UninsAdvWkage]} + \text{Low risk behav age out[UninsDisWkage]} * \text{ZIDZ}(\text{Low risk behav popn[AdvSr]}, \text{Low risk behav popn[AdvSr]} + \text{Low risk behav popn[DisSr]})$
- $\text{Low risk behav age in[DisSr]} = (\text{Low risk behav age out[InsAdvWkage]} + \text{Low risk behav age out[InsDisWkage]}) +$
 $\text{Low risk behav age out[UninsAdvWkage]} + \text{Low risk behav age out[UninsDisWkage]} * \text{ZIDZ}(\text{Low risk behav popn[DisSr]}, \text{Low risk behav popn[AdvSr]} + \text{Low risk behav popn[DisSr]})$
- (0945) $\text{Low risk behav age out[InsAdvYouth]} = \text{Low risk behav popn[InsAdvYouth]} * \text{Rate of 0to17 becoming 18}$
- $\text{Low risk behav age out[InsDisYouth]} = \text{Low risk behav popn[InsDisYouth]} * \text{Rate of 0to17 becoming 18}$
- $\text{Low risk behav age out[UninsAdvYouth]} = \text{Low risk behav popn[UninsAdvYouth]} * \text{Rate of 0to17 becoming 18}$
- $\text{Low risk behav age out[UninsDisYouth]} = \text{Low risk behav popn[UninsDisYouth]} * \text{Rate of 0to17 becoming 18}$
- $\text{Low risk behav age out[InsAdvWkage]} = \text{Low risk behav popn[InsAdvWkage]} * \text{Rate of 18to64 becoming 65}$
- $\text{Low risk behav age out[InsDisWkage]} = \text{Low risk behav popn[InsDisWkage]} * \text{Rate of 18to64 becoming 65}$
- $\text{Low risk behav age out[UninsAdvWkage]} = \text{Low risk behav popn[UninsAdvWkage]} * \text{Rate of 18to64 becoming 65}$
- $\text{Low risk behav age out[UninsDisWkage]} = \text{Low risk behav popn[UninsDisWkage]} * \text{Rate of 18to64 becoming 65}$
- $\text{Low risk behav age out[AdvSr]} = 0$
- $\text{Low risk behav age out[DisSr]} = 0$
- (0946) $\text{Low risk behav net migration[subpop]} = \text{Popn net migration[subpop]} * (1 - \text{High risk behav frac of popn[subpop]})$
- (0947) $\text{Low risk behav popn[subpop]} = \text{INTEG} (+\text{Births[subpop]} - \text{Risky behav onset[subpop]} + \text{Risky behav reform[subpop]} + \text{Low risk behav age in[subpop]} - \text{Low risk behav age out[subpop]} + \text{Low risk behav net migration[subpop]} - \text{Low risk behav popn deaths[subpop]} + \text{Low risk behav popn insurance change[subpop]} + \text{Low risk behav popn SES change[subpop]}, \text{Low risk behav popn initial[subpop]})$
- (0948) $\text{Low risk behav popn deaths[subpop]} = \text{Low risk behav popn[subpop]} * \text{Popn death rate[subpop]}$
- (0949) $\text{Low risk behav popn initial[subpop]} = \text{Popn initial[subpop]} * (1 - \text{High risk behav frac of popn initial[subpop]})$

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- (0950) Low risk behav popn insurance change[InsAdvYouth]=-Low risk behav popn insurance change[UninsAdvYouth]
 Low risk behav popn insurance change[InsDisYouth]=-Low risk behav popn insurance change[UninsDisYouth]
 Low risk behav popn insurance change[UninsAdvYouth]=Change in uninsured frac of Adv Youth popn*(Popn[InsAdvYouth]+Popn[UninsAdvYouth])*(1-High risk behav frac of popn[UninsAdvYouth])
 Low risk behav popn insurance change[UninsDisYouth]=Change in uninsured frac of Disadv Youth popn*(Popn[InsDisYouth]+Popn[UninsDisYouth])*(1-High risk behav frac of popn[UninsDisYouth])
 Low risk behav popn insurance change[InsAdvWkage]=-Low risk behav popn insurance change[UninsAdvWkage]
 Low risk behav popn insurance change[InsDisWkage]=-Low risk behav popn insurance change[UninsDisWkage]
 Low risk behav popn insurance change[UninsAdvWkage]=Change in uninsured frac of Adv Wkage popn*(Popn[InsAdvWkage]+Popn[UninsAdvWkage])*(1-High risk behav frac of popn[UninsAdvWkage])
 Low risk behav popn insurance change[UninsDisWkage]=Change in uninsured frac of Disadv Wkage popn*(Popn[InsDisWkage]+Popn[UninsDisWkage])*(1-High risk behav frac of popn[UninsDisWkage])
 Low risk behav popn insurance change[AdvSr]=0
 Low risk behav popn insurance change[DisSr]=0
- (0951) Low risk behav popn SES change[InsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(Low risk behav popn[InsAdvYouth],Low risk behav popn[InsAdvYouth]+ Low risk behav popn[UninsAdvYouth]) * ZIDZ(Low risk behav popn[InsDisYouth]+Low risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(Low risk behav popn[InsAdvYouth], Popn1[InsAdvYouth]+Popn1[UninsAdvYouth]))
 Low risk behav popn SES change[InsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(Low risk behav popn[InsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(Low risk behav popn[InsDisYouth],Low risk behav popn[InsDisYouth]+Low risk behav popn[UninsDisYouth]) * ZIDZ(Low risk behav popn[InsDisYouth]+Low risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth]))
 Low risk behav popn SES change[UninsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(Low risk behav popn[UninsAdvYouth],Low risk behav popn[InsAdvYouth]+Low risk behav popn[UninsAdvYouth]) * ZIDZ(Low risk behav popn[InsDisYouth]+Low risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(Low risk behav popn[UninsAdvYouth], Popn1[InsAdvYouth]+Popn1[UninsAdvYouth]))
 Low risk behav popn SES change[UninsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(Low risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(Low risk behav popn[UninsDisYouth],Low risk behav popn[InsDisYouth]+Low risk behav popn[UninsDisYouth]) * ZIDZ(Low risk behav popn[InsDisYouth]+Low risk behav popn[UninsDisYouth], Popn1[InsDisYouth]+Popn1[UninsDisYouth]))

$$\text{Low risk behav popn SES change[InsAdvWkage]} = \text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[InsAdvWkage]}, \text{Low risk behav popn[InsAdvWkage]} + \text{Low risk behav popn[UninsAdvWkage]}) * \text{ZIDZ}(\text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsDisWkage]}, \text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) - \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[InsAdvWkage]}, \text{Popn1[InsAdvWkage]} + \text{Popn1[UninsAdvWkage]}))$$

$$\text{Low risk behav popn SES change[InsDisWkage]} = -\text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[InsDisWkage]}, \text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) + \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[InsDisWkage]}, \text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsDisWkage]}) * \text{ZIDZ}(\text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsDisWkage]}, \text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]}))$$

$$\text{Low risk behav popn SES change[UninsAdvWkage]} = \text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[UninsAdvWkage]}, \text{Low risk behav popn[InsAdvWkage]} + \text{Low risk behav popn[UninsAdvWkage]}) * \text{ZIDZ}(\text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsDisWkage]}, \text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) - \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[UninsAdvWkage]}, \text{Popn1[InsAdvWkage]} + \text{Popn1[UninsAdvWkage]}))$$

$$\text{Low risk behav popn SES change[UninsDisWkage]} = -\text{MAX}(0, \text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[UninsDisWkage]}, \text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]})) + \text{MAX}(0, -\text{SES change in Wkage popn} * \text{ZIDZ}(\text{Low risk behav popn[UninsDisWkage]}, \text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsDisWkage]}) * \text{ZIDZ}(\text{Low risk behav popn[InsDisWkage]} + \text{Low risk behav popn[UninsDisWkage]}, \text{Popn1[InsDisWkage]} + \text{Popn1[UninsDisWkage]}))$$

$$\text{Low risk behav popn SES change[AdvSr]} = \text{MAX}(0, \text{SES change in Senior popn} * \text{ZIDZ}(\text{Low risk behav popn[DisSr]}, \text{Popn1[DisSr]})) - \text{MAX}(0, -\text{SES change in Senior popn} * \text{ZIDZ}(\text{Low risk behav popn[AdvSr]}, \text{Popn1[AdvSr]}))$$

$$\text{Low risk behav popn SES change[DisSr]} = -\text{MAX}(0, \text{SES change in Senior popn} * \text{ZIDZ}(\text{Low risk behav popn[DisSr]}, \text{Popn1[DisSr]})) + \text{MAX}(0, -\text{SES change in Senior popn} * \text{ZIDZ}(\text{Low risk behav popn[AdvSr]}, \text{Popn1[AdvSr]}))$$

- (0952) LRB and HRB total less total popn should equal 0=LRB and HRB total popn-Total popn
- (0953) LRB and HRB total popn=SUM(High risk behav popn[subpop!]+Low risk behav popn[subpop!])
- (0954) Malpractice reform initiative=0
- (0955) Max backbone and pgm spending of unconstrained loan funds=MAX(0, Inflow to unconstrained loan funds + (Unspent unconstrained loan funds/1) - Repayment of unconstrained loan funds)
- (0956) Max effect of specialist income reduction on intensity of care=2.35
- (0957) Max frac of Commercial cost savings available to community=0.5
- (0958) Max frac of Medicaid cost savings available to community=0.5
- (0959) Max frac of Medicare cost savings available to community=0.5

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- (0960) Max outflow of downstream only loan funds= $\text{MAX}(0, \text{Inflow to downstream only loan funds} + (\text{Unspent downstream only loan funds}/1))$
- (0961) Max outflow of loan funds=Max outflow of unconstrained loan funds + Max outflow of upstream only loan funds+Max outflow of downstream only loan funds
- (0962) Max outflow of unconstrained loan funds= $\text{MAX}(0, \text{Inflow to unconstrained loan funds} + (\text{Unspent unconstrained loan funds}/1))$
- (0963) Max outflow of unconstrained nonloan funds= $\text{MAX}(0, \text{Inflow to unconstrained nonloan funds} + (\text{Unspent unconstrained nonloan funds}/1))$
- (0964) Max outflow of upstream only loan funds= $\text{MAX}(0, \text{Inflow to upstream only loan funds} + (\text{Unspent upstream only loan funds}/1))$
- (0965) Max program spending of all funds=Max program spending of unconstrained funds + Max program spending of upstream only funds+Max program spending of downstream only funds
- (0966) Max program spending of downstream only funds=Max program spending of downstream only nonloan funds + Max program spending of downstream only loan funds
- (0967) Max program spending of downstream only loan funds= $\text{MAX}(0, \text{Inflow to downstream only loan funds} + (\text{Unspent downstream only loan funds}/1) - \text{Repayment of downstream only loan funds})$
- (0968) Max program spending of downstream only nonloan funds= $\text{MAX}(0, \text{Inflow to downstream only nonloan funds} + (\text{Unspent downstream only nonloan funds}/1))$
- (0969) Max program spending of unconstrained funds=Max program spending of unconstrained nonloan funds + Max program spending of unconstrained loan funds
- (0970) Max program spending of unconstrained loan funds=Max backbone and pgm spending of unconstrained loan funds - Backbone funding from loan funds
- (0971) Max program spending of unconstrained nonloan funds=Max outflow of unconstrained nonloan funds - Backbone funding from nonloan funds
- (0972) Max program spending of upstream only funds=Max program spending of upstream only nonloan funds + Max program spending of upstream only loan funds
- (0973) Max program spending of upstream only loan funds= $\text{MAX}(0, \text{Inflow to upstream only loan funds} + (\text{Unspent upstream only loan funds}/1) - \text{Repayment of upstream only loan funds})$
- (0974) Max program spending of upstream only nonloan funds= $\text{MAX}(0, \text{Inflow to upstream only nonloan funds} + (\text{Unspent upstream only nonloan funds}/1))$

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- (0975) Med home implementation driven by initiative= $\text{Extent of med home initiative} * (\text{Provider compliance with 6 community initiatives absent VBP} + \text{Frac of providers positively influenced by VBP} * (1 - \text{Provider compliance with 6 community initiatives absent VBP}))$
- (0976) Med home implementation from initiative and VBP= $\text{Med home implementation driven by initiative} + \text{Med home implementation from providers incentivized by VBP}$
- (0977) Med home implementation from providers incentivized by VBP= $(1 - \text{Extent of med home initiative}) * \text{Frac of providers positively influenced by VBP} * \text{Provider effort on 6 improvements incentivized by VBP absent community initiative}$
- (0978) Med home initiative=0
- (0979) Medicaid benchmark costs change rate after healthcare inflation=-0.001
- (0980) Medicaid cost savings available for programs= $\text{Medicaid only popn cost savings available to community} * (1 - \text{Fraction of captured savings awarded to hospitals} - \text{Fraction of captured savings awarded to physicians} - \text{Fraction of captured savings awarded to employers})$
- (0981) Medicaid only frac of total popn= $\text{Total Medicaid only popn} / \text{Total popn}$
- (0982) Medicaid only frac of total popn 2020= $\text{SAMPLE IF TRUE}(\text{Time}=2020, \text{Medicaid only frac of total popn}, 0)$
- (0983) Medicaid only popn cost savings available to community= $\text{MAX}(0, -\text{Medicaid only popn costs against benchmark}) * \text{Max frac of Medicaid cost savings available to community} * \text{Effect of unspent funds on frac of cost savings available to community}$
- (0984) Medicaid only popn cost savings available to community 2020= $\text{SAMPLE IF TRUE}(\text{Time}=2020, \text{Medicaid only popn cost savings available to community}, 0)$
- (0985) Medicaid only popn costs against benchmark= $\text{Healthcare costs against benchmark}[\text{InsDisYouth}] + \text{Healthcare costs against benchmark}[\text{InsDisWkage}]$
- (0986) Medicare benchmark costs change rate after healthcare inflation=-0.0025
- (0987) Medicare only frac of total popn= $\text{Total Medicare only popn} / \text{Total popn}$
- (0988) Medicare only frac of total popn 2020= $\text{SAMPLE IF TRUE}(\text{Time}=2020, \text{Medicare only frac of total popn}, 0)$
- (0989) Medicare popn cost savings available for programs= $\text{Medicare popn cost savings available to community} * (1 - \text{Fraction of captured savings awarded to hospitals} - \text{Fraction of captured savings awarded to physicians} - \text{Fraction of captured savings awarded to employers})$
- (0990) Medicare popn cost savings available to community= $\text{MAX}(0, -\text{Medicare popn costs against benchmark}) * \text{Max frac of Medicare cost savings available to community} * \text{Effect of unspent funds on frac of cost savings available to community}$

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- (0991) Medicare popn cost savings available to community 2020=SAMPLE IF TRUE(Time=2020, Medicare popn cost savings available to community, 0)
- (0992) Medicare popn costs against benchmark=Healthcare costs against benchmark[AdvSr] + Healthcare costs against benchmark[DisSr]
- (0993) Mental illness care initiative=0
- (0994) Mild CPI age in[InsAdvYouth]=0
Mild CPI age in[InsDisYouth]=0
Mild CPI age in[UninsAdvYouth]=0
Mild CPI age in[UninsDisYouth]=0
Mild CPI age in[InsAdvWkage]=(Mild CPI age out[InsAdvYouth]+Mild CPI age out[InsDisYouth]+Mild CPI age out[UninsAdvYouth]+Mild CPI age out[UninsDisYouth]) * ZIDZ(Mild CPI popn[InsAdvWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsAdvWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI age in[InsDisWkage]=(Mild CPI age out[InsAdvYouth]+Mild CPI age out[InsDisYouth]+Mild CPI age out[UninsAdvYouth]+Mild CPI age out[UninsDisYouth]) * ZIDZ(Mild CPI popn[InsDisWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsAdvWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI age in[UninsAdvWkage]=(Mild CPI age out[InsAdvYouth]+Mild CPI age out[InsDisYouth]+Mild CPI age out[UninsAdvYouth]+Mild CPI age out[UninsDisYouth]) * ZIDZ(Mild CPI popn[UninsAdvWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsAdvWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI age in[UninsDisWkage]=(Mild CPI age out[InsAdvYouth]+Mild CPI age out[InsDisYouth]+Mild CPI age out[UninsAdvYouth]+Mild CPI age out[UninsDisYouth]) * ZIDZ(Mild CPI popn[UninsDisWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsAdvWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI age in[AdvSr]=(Mild CPI age out[InsAdvWkage]+Mild CPI age out[InsDisWkage]+Mild CPI age out[UninsAdvWkage]+Mild CPI age out[UninsDisWkage]) * ZIDZ(Mild CPI popn[AdvSr], Mild CPI popn[AdvSr]+Mild CPI popn[DisSr])
Mild CPI age in[DisSr]=(Mild CPI age out[InsAdvWkage]+Mild CPI age out[InsDisWkage]+Mild CPI age out[UninsAdvWkage]+Mild CPI age out[UninsDisWkage]) * ZIDZ(Mild CPI popn[DisSr], Mild CPI popn[AdvSr]+Mild CPI popn[DisSr])
- (0995) Mild CPI age out[InsAdvYouth]=Mild CPI popn[InsAdvYouth] * Rate of 0to17 becoming 18
Mild CPI age out[InsDisYouth]=Mild CPI popn[InsDisYouth] * Rate of 0to17 becoming 18
Mild CPI age out[UninsAdvYouth]=Mild CPI popn[UninsAdvYouth] * Rate of 0to17 becoming 18
Mild CPI age out[UninsDisYouth]=Mild CPI popn[UninsDisYouth] * Rate of 0to17 becoming 18
Mild CPI age out[InsAdvWkage]=Mild CPI popn[InsAdvWkage] * Rate of 18to64 becoming 65
Mild CPI age out[InsDisWkage]=Mild CPI popn[InsDisWkage] * Rate of 18to64 becoming 65
Mild CPI age out[UninsAdvWkage]=Mild CPI popn[UninsAdvWkage] * Rate of 18to64 becoming 65
Mild CPI age out[UninsDisWkage]=Mild CPI popn[UninsDisWkage] * Rate of 18to64 becoming 65
Mild CPI age out[AdvSr]=0
Mild CPI age out[DisSr]=0

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- (0996) Mild CPI frac of popn[subpop]=ZIDZ(Mild CPI popn[subpop], Popn[subpop])
- (0997) Mild CPI frac of popn
initial[subpop]=0.071,0.186,0.104,0.259,0.253,0.316,0.315,0.382,0.33,0.341
- (0998) Mild CPI frac of Senior popn=(Mild CPI popn[AdvSr]+Mild CPI popn[DisSr]) / Total popn senior
- (0999) Mild CPI frac of total popn=Total Mild CPI popn / Total popn
- (1000) Mild CPI frac of Wkage popn=(Mild CPI popn[InsAdvWkage]+Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsAdvWkage]+Mild CPI popn[UninsDisWkage]) / Total popn working age
- (1001) Mild CPI frac of Youth popn=(Mild CPI popn[InsAdvYouth]+Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsAdvYouth]+Mild CPI popn[UninsDisYouth]) / Total popn youth
- (1002) Mild CPI inflow from No CPI[InsAdvYouth]=(Mild CPI onset[InsAdvYouth]+Mild CPI onset[UninsAdvYouth]) * ZIDZ(Mild CPI popn[InsAdvYouth], Mild CPI popn[InsAdvYouth]+Mild CPI popn[UninsAdvYouth])
Mild CPI inflow from No CPI[InsDisYouth]=(Mild CPI onset[InsDisYouth]+Mild CPI onset[UninsDisYouth]) * ZIDZ(Mild CPI popn[InsDisYouth], Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth])
Mild CPI inflow from No CPI[UninsAdvYouth]=(Mild CPI onset[InsAdvYouth]+Mild CPI onset[UninsAdvYouth]) * ZIDZ(Mild CPI popn[UninsAdvYouth], Mild CPI popn[InsAdvYouth]+Mild CPI popn[UninsAdvYouth])
Mild CPI inflow from No CPI[UninsDisYouth]=(Mild CPI onset[InsDisYouth]+Mild CPI onset[UninsDisYouth]) * ZIDZ(Mild CPI popn[UninsDisYouth], Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth])
Mild CPI inflow from No CPI[InsAdvWkage]=(Mild CPI onset[InsAdvWkage]+Mild CPI onset[UninsAdvWkage]) * ZIDZ(Mild CPI popn[InsAdvWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[UninsAdvWkage])
Mild CPI inflow from No CPI[InsDisWkage]=(Mild CPI onset[InsDisWkage]+Mild CPI onset[UninsDisWkage]) * ZIDZ(Mild CPI popn[InsDisWkage], Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI inflow from No CPI[UninsAdvWkage]=(Mild CPI onset[InsAdvWkage]+Mild CPI onset[UninsAdvWkage]) * ZIDZ(Mild CPI popn[UninsAdvWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[UninsAdvWkage])
Mild CPI inflow from No CPI[UninsDisWkage]=(Mild CPI onset[InsDisWkage]+Mild CPI onset[UninsDisWkage]) * ZIDZ(Mild CPI popn[UninsDisWkage], Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI inflow from No CPI[AdvSr]=Mild CPI onset[AdvSr]
Mild CPI inflow from No CPI[DisSr]=Mild CPI onset[DisSr]
- (1003) Mild CPI net migration[subpop]=Popn net migration[subpop] * Mild CPI frac of popn[subpop]
- (1004) Mild CPI onset[subpop]=No CPI popn[subpop] * Mild CPI onset rate[subpop]

- (1005) Mild CPI onset rate[subpop]=Mild CPI onset rate initial[subpop] * Effect of risk status on Mild CPI onset rate[subpop] * Effect of prev care on Mild CPI onset rate[subpop] * Effect of hazardous envir on Mild CPI onset rate[subpop]
- (1006) Mild CPI onset rate initial[subpop]=0.001,0.001,0.09,0.21,0.008,0.02,0.018,0.0185,0.052,0.105
- (1007) Mild CPI outflow to Severe CPI[InsAdvYouth]=(Severe CPI onset[InsAdvYouth]+Severe CPI onset[UninsAdvYouth]) * ZIDZ(Mild CPI popn[InsAdvYouth], Mild CPI popn[InsAdvYouth]+Mild CPI popn[UninsAdvYouth])
Mild CPI outflow to Severe CPI[InsDisYouth]=(Severe CPI onset[InsDisYouth]+Severe CPI onset[UninsDisYouth]) * ZIDZ(Mild CPI popn[InsDisYouth], Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth])
Mild CPI outflow to Severe CPI[UninsAdvYouth]=(Severe CPI onset[InsAdvYouth]+Severe CPI onset[UninsAdvYouth]) * ZIDZ(Mild CPI popn[UninsAdvYouth], Mild CPI popn[InsAdvYouth]+Mild CPI popn[UninsAdvYouth])
Mild CPI outflow to Severe CPI[UninsDisYouth]=(Severe CPI onset[InsDisYouth]+Severe CPI onset[UninsDisYouth]) * ZIDZ(Mild CPI popn[UninsDisYouth], Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth])
Mild CPI outflow to Severe CPI[InsAdvWkage]=(Severe CPI onset[InsAdvWkage]+Severe CPI onset[UninsAdvWkage]) * ZIDZ(Mild CPI popn[InsAdvWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[UninsAdvWkage])
Mild CPI outflow to Severe CPI[InsDisWkage]=(Severe CPI onset[InsDisWkage]+Severe CPI onset[UninsDisWkage]) * ZIDZ(Mild CPI popn[InsDisWkage], Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI outflow to Severe CPI[UninsAdvWkage]=(Severe CPI onset[InsAdvWkage]+Severe CPI onset[UninsAdvWkage]) * ZIDZ(Mild CPI popn[UninsAdvWkage], Mild CPI popn[InsAdvWkage]+Mild CPI popn[UninsAdvWkage])
Mild CPI outflow to Severe CPI[UninsDisWkage]=(Severe CPI onset[InsDisWkage]+Severe CPI onset[UninsDisWkage]) * ZIDZ(Mild CPI popn[UninsDisWkage], Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage])
Mild CPI outflow to Severe CPI[AdvSr]=Severe CPI onset[AdvSr]
Mild CPI outflow to Severe CPI[DisSr]=Severe CPI onset[DisSr]
- (1008) Mild CPI popn[subpop]= INTEG (Mild CPI inflow from No CPI[subpop]-Mild CPI outflow to Severe CPI[subpop]-Mild CPI age out[subpop]+Mild CPI age in[subpop]+Mild CPI net migration[subpop]-Mild CPI popn deaths[subpop]+Mild CPI popn insurance change[subpop]+Mild CPI popn SES change[subpop], Mild CPI popn initial[subpop])
- (1009) Mild CPI popn deaths[subpop]=Mild CPI popn[subpop] * Death rate in Mild CPI popn[subpop]
- (1010) Mild CPI popn initial[subpop]=Popn initial[subpop]*Mild CPI frac of popn initial[subpop]
- (1011) Mild CPI popn insurance change[InsAdvYouth]=-Mild CPI popn insurance change[UninsAdvYouth]
Mild CPI popn insurance change[InsDisYouth]=-Mild CPI popn insurance change[UninsDisYouth]
Mild CPI popn insurance change[UninsAdvYouth]=Change in uninsured frac of Adv Youth popn*(Popn[InsAdvYouth]+Popn[UninsAdvYouth])*Mild CPI frac of popn[UninsAdvYouth]

Mild CPI popn insurance change[UninsDisYouth]=Change in uninsured frac of Disadv Youth popn*(Popn[InsDisYouth]+Popn[UninsDisYouth])*Mild CPI frac of popn[UninsDisYouth]
Mild CPI popn insurance change[InsAdvWkage]=-Mild CPI popn insurance change[UninsAdvWkage]
Mild CPI popn insurance change[InsDisWkage]=-Mild CPI popn insurance change[UninsDisWkage]
Mild CPI popn insurance change[UninsAdvWkage]=Change in uninsured frac of Adv Wkage popn*(Popn[InsAdvWkage]+Popn[UninsAdvWkage])*Mild CPI frac of popn[UninsAdvWkage]
Mild CPI popn insurance change[UninsDisWkage]=Change in uninsured frac of Disadv Wkage popn*(Popn[InsDisWkage]+Popn[UninsDisWkage])*Mild CPI frac of popn[UninsDisWkage]
Mild CPI popn insurance change[AdvSr]=0
Mild CPI popn insurance change[DisSr]=0

- (1012) Mild CPI popn SES change[InsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(Mild CPI popn[InsAdvYouth],Mild CPI popn[InsAdvYouth]+Mild CPI popn[UninsAdvYouth]) * ZIDZ(Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(Mild CPI popn[InsAdvYouth], Popn[InsAdvYouth]+Popn[UninsAdvYouth]))
Mild CPI popn SES change[InsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(Mild CPI popn[InsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(Mild CPI popn[InsDisYouth],Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth]) * ZIDZ(Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth]))
Mild CPI popn SES change[UninsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(Mild CPI popn[UninsAdvYouth],Mild CPI popn[InsAdvYouth]+Mild CPI popn[UninsAdvYouth]) * ZIDZ(Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(Mild CPI popn[UninsAdvYouth], Popn[InsAdvYouth]+Popn[UninsAdvYouth]))
Mild CPI popn SES change[UninsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(Mild CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(Mild CPI popn[UninsDisYouth],Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth]) * ZIDZ(Mild CPI popn[InsDisYouth]+Mild CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth]))
Mild CPI popn SES change[InsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(Mild CPI popn[InsAdvWkage],Mild CPI popn[InsAdvWkage]+Mild CPI popn[UninsAdvWkage]) * ZIDZ(Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) - MAX(0, -SES change in Wkage popn * ZIDZ(Mild CPI popn[InsAdvWkage], Popn[InsAdvWkage]+Popn[UninsAdvWkage]))
Mild CPI popn SES change[InsDisWkage]=-MAX(0, SES change in Wkage popn * ZIDZ(Mild CPI popn[InsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) + MAX(0, -SES change in Wkage popn * ZIDZ(Mild CPI popn[InsDisWkage],Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage]) * ZIDZ(Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage]))

Mild CPI popn SES change[UninsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(Mild CPI popn[UninsAdvWkage],Mild CPI popn[InsAdvWkage]+Mild CPI popn[UninsAdvWkage]) * ZIDZ(Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) - MAX(0, -SES change in Wkage popn * ZIDZ(Mild CPI popn[UninsAdvWkage], Popn[InsAdvWkage]+Popn[UninsAdvWkage]))

Mild CPI popn SES change[UninsDisWkage]=-MAX(0, SES change in Wkage popn * ZIDZ(Mild CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) + MAX(0, -SES change in Wkage popn * ZIDZ(Mild CPI popn[UninsDisWkage],Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage]) * ZIDZ(Mild CPI popn[InsDisWkage]+Mild CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage]))

Mild CPI popn SES change[AdvSr]=MAX(0, SES change in Senior popn * ZIDZ(Mild CPI popn[DisSr], Popn[DisSr])) - MAX(0, -SES change in Senior popn * ZIDZ(Mild CPI popn[AdvSr], Popn[AdvSr]))

Mild CPI popn SES change[DisSr]=-MAX(0, SES change in Senior popn * ZIDZ(Mild CPI popn[DisSr], Popn[DisSr]))+ MAX(0, -SES change in Senior popn * ZIDZ(Mild CPI popn[AdvSr], Popn[AdvSr]))

- (1013) Mitigation of excess lost productivity due to CPI under proper chron care
=0.5
- (1014) Mitigation of excess risk of nonurgent acute episodes from CPI under proper chron care
=0.5
- (1015) Mitigation of excess risk of urgent episodes from CPI under proper chron care
=0.5
- (1016) Multiplier from eligibility on uninsured frac of Adv Wkage=PreACA eligibility multiplier on uninsured Adv Wkage series(Time) * ACA eligibility multiplier on uninsured Adv
- (1017) Multiplier from eligibility on uninsured frac of Disadv Wkage=PreACA eligibility multiplier on uninsured Disadv Wkage series(Time) * ACA eligibility multiplier on uninsured Disadv
- (1018) Multiplier from substance abuse on CMI frac of popn[subpop]=DELAY1((1-High risk behav frac of popn[subpop]*Substance abusing frac of high risk behav popn[subpop] + High risk behav frac of popn[subpop]*Substance abusing frac of high risk behav popn[subpop]*Reltv risk of CMI from substance abuse) / (1-High risk behav frac of popn initial[subpop]*Substance abusing frac of high risk behav popn[subpop]+High risk behav frac of popn initial[subpop]*Substance abusing frac of high risk behav popn[subpop]*Reltv risk of CMI from substance abuse), Time for substance abuse to affect CMI)
- (1019) Multiplier on cost of care coord from technology assessment=1.25
- (1020) Multiplier on death rate from improved urgent care=Multiplier on death rate from improved urgent care series(Time)
- (1021) Multiplier on death rate from improved urgent care series([(2000,0.7)-(2040,1.1)],(2000,1),(2005,0.95),(2010,0.9),(2020,0.83),(2030,0.78),(2040,0.74))

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- (1022) Multiplier on deaths from smaller HAI $\frac{\text{frac}[\text{subpop}]=1 - \text{Reduction in deaths from smaller HAI}}{\text{frac}[\text{subpop}]/\text{Popn deaths at initial HAI}} = 1$
- (1023) Multiplier on FQHC PCP visit capacity under practice redesign=1.15
- (1024) Multiplier on FQHC PCPs under recruitment initiative=1.3
- (1025) Multiplier on frac of inpatients to home health under improved post discharge initiative =1.4
- (1026) Multiplier on frac of inpatients to SNF under improved post discharge initiative =1.4
- (1027) Multiplier on frac of nonurgent acute episodes to Inpatient stay under care coord =0.75
- (1028) Multiplier on frac of nonurgent acute episodes to Inpatient stay under malpractice reform =0.975
- (1029) Multiplier on frac of nonurgent acute episodes to outpatient test or procedure under care coord =0.75
- (1030) Multiplier on frac of nonurgent acute episodes to outpatient test or procedure under malpractice reform =0.975
- (1031) Multiplier on frac of nonurgent acute episodes with referral to Specialist under care coord =0.75
- (1032) Multiplier on frac of nonurgent acute episodes with referral to Specialist under malpractice reform =0.975
- (1033) Multiplier on frac of popn in hazardous environment under hazard reduction initiative =0.5
- (1034) Multiplier on frac of popn in high crime area under crime fighting initiative =0.5
- (1035) Multiplier on general PCP visit capacity under practice redesign=1.15
- (1036) Multiplier on general PCPs under recruitment initiative=1.3
- (1037) Multiplier on HAI frac of stays under HAI prevention initiative=0.5
- (1038) Multiplier on hospice use under EOLC initiative=1.35

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- (1039) Multiplier on hospital palliative care use under EOLC initiative=1.2
- (1040) Multiplier on length of stay under hospital efficiency initiative=0.85
- (1041) Multiplier on prev chron guideline noncompliance under quality initiative
=0.5
- (1042) Multiplier on readmissions from inadequate medication reconciliation under improved post
discharge initiative
=0.1
- (1043) Multiplier on referrals based on their source[subpop]=Avg reltv referral tendency[subpop] / Avg
reltv referral tendency initial[subpop]
- (1044) Multiplier on Rx drug costs per Mild CPI pt under care coord=0.9
- (1045) Multiplier on Rx drug costs per Mild CPI pt under malpractice reform
=0.99
- (1046) Multiplier on Rx drug costs per Severe CPI pt under care coord=0.75
- (1047) Multiplier on Rx drug costs per Severe CPI pt under malpractice reform
=0.975
- (1048) Multiplier on Senior Disadv frac=(1*(1-Reltv effect of noneconomy Disadv multipliers on
Seniors)+Reltv effect of noneconomy Disadv multipliers on Seniors*Multiplier on Wkage
Disadv frac from factors other than the general economy) * Effect of economy on Senior
Disadv frac
- (1049) Multiplier on uninsured frac of Adv Wkage=Multiplier from eligibility on uninsured frac of Adv
Wkage * Effect of healthcare costs on Adv Wkage uninsurance
- (1050) Multiplier on uninsured frac of Adv Youth=PreACA eligibility multiplier on uninsured Adv Youth
series(Time) * ACA eligibility multiplier on uninsured Adv
- (1051) Multiplier on uninsured frac of Disadv Wkage=Multiplier from eligibility on uninsured frac of
Disadv Wkage * (1 + (Effect of healthcare costs on Adv Wkage uninsurance-1)*Reltv strength
of effect of healthcare costs on Disadv vs Adv Wkage uninsurance)
- (1052) Multiplier on uninsured frac of Disadv Youth=PreACA eligibility multiplier on uninsured Disadv
Youth series(Time) * ACA eligibility multiplier on uninsured Disadv
- (1053) Multiplier on Wkage Disadv frac=Multiplier on Wkage Disadv frac from factors other than the
general economy* Effect of economy on Wkage Disadv frac
- (1054) Multiplier on Wkage Disadv frac from factors other than the general economy

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- =Effect of Severe CPI on Wkage Disadv frac * Effect of uncontrolled CMI on Wkage Disadv frac*
 Effect of healthcare costs on Wkage Disadv frac * Effect of family pathways initiative on
 Wkage Disadv frac * Effect of student pathways pgms on Wkage Disadv frac
- (1055) Multiplier on Youth Disadv frac=(1*(1-Reltv effect of noneconomy Disadv multipliers on
 Youth)+Reltv effect of noneconomy Disadv multipliers on Youth*Multiplier on Wkage Disadv
 frac from factors other than the general economy) * Effect of economy on Youth Disadv frac
- (1056) Multiplier vs 2010 on Commercial benchmarks= INTEG (Change in multiplier vs 2010 on
 Commercial benchmarks,1)
- (1057) Multiplier vs 2010 on Medicaid benchmarks= INTEG (Change in multiplier vs 2010 on Medicaid
 benchmarks,1)
- (1058) Multiplier vs 2010 on Medicare benchmarks= INTEG (Change in multiplier vs 2010 on Medicare
 benchmarks,1)
- (1059) Net inflow to downstream only funds=Inflow to downstream only nonloan funds + Net inflow to
 downstream only loan funds
- (1060) Net inflow to downstream only loan funds=Inflow to downstream only loan funds - Repayment
 of downstream only loan funds
- (1061) Net inflow to unconstrained funds=Inflow to unconstrained nonloan funds + Net inflow to
 unconstrained loan funds
- (1062) Net inflow to unconstrained loan funds=Inflow to unconstrained loan funds - Repayment of
 unconstrained loan funds
- (1063) Net inflow to upstream only funds=Inflow to upstream only nonloan funds + Net inflow to
 upstream only loan funds
- (1064) Net inflow to upstream only loan funds=Inflow to upstream only loan funds - Repayment of
 upstream only loan funds
- (1065) Net migration rate=Net migration rate series(Time)
- (1066) Net migration rate series([(2000,-0.01)-
 (2040,0.01)],(2000,0.0038),(2005,0.003),(2010,0.00275),(2020,0.0027),(2030,0.0033),(2040,0.
 003))
- (1067) New completors of student pathways pgms=Potl new completors of student pathways pgms *
 Extent of student pathways initiative
- (1068) No CPI age in[InsAdvYouth]=0
 No CPI age in[InsDisYouth]=0
 No CPI age in[UninsAdvYouth]=0
 No CPI age in[UninsDisYouth]=0

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- No CPI age in[InsAdvWkage]=(No CPI age out[InsAdvYouth]+No CPI age out[InsDisYouth]+No CPI age out[UninsAdvYouth]+No CPI age out[UninsDisYouth]) * ZIDZ(No CPI popn[InsAdvWkage], No CPI popn[InsAdvWkage]+No CPI popn[InsDisWkage]+No CPI popn[UninsAdvWkage]+No CPI popn[UninsDisWkage])
- No CPI age in[InsDisWkage]=(No CPI age out[InsAdvYouth]+No CPI age out[InsDisYouth]+No CPI age out[UninsAdvYouth]+No CPI age out[UninsDisYouth]) * ZIDZ(No CPI popn[InsDisWkage], No CPI popn[InsAdvWkage]+No CPI popn[InsDisWkage]+No CPI popn[UninsAdvWkage]+No CPI popn[UninsDisWkage])
- No CPI age in[UninsAdvWkage]=(No CPI age out[InsAdvYouth]+No CPI age out[InsDisYouth]+No CPI age out[UninsAdvYouth]+No CPI age out[UninsDisYouth]) * ZIDZ(No CPI popn[UninsAdvWkage], No CPI popn[InsAdvWkage]+No CPI popn[InsDisWkage]+No CPI popn[UninsAdvWkage]+No CPI popn[UninsDisWkage])
- No CPI age in[UninsDisWkage]=(No CPI age out[InsAdvYouth]+No CPI age out[InsDisYouth]+No CPI age out[UninsAdvYouth]+No CPI age out[UninsDisYouth]) * ZIDZ(No CPI popn[UninsDisWkage], No CPI popn[InsAdvWkage]+No CPI popn[InsDisWkage]+No CPI popn[UninsAdvWkage]+No CPI popn[UninsDisWkage])
- No CPI age in[AdvSr]=(No CPI age out[InsAdvWkage]+No CPI age out[InsDisWkage]+No CPI age out[UninsAdvWkage]+No CPI age out[UninsDisWkage]) * ZIDZ(No CPI popn[AdvSr], No CPI popn [AdvSr]+No CPI popn[DisSr])
- No CPI age in[DisSr]=(No CPI age out[InsAdvWkage]+No CPI age out[InsDisWkage]+No CPI age out[UninsAdvWkage]+No CPI age out[UninsDisWkage]) * ZIDZ(No CPI popn[DisSr], No CPI popn [AdvSr]+No CPI popn[DisSr])
- (1069) No CPI age out[InsAdvYouth]=No CPI popn[InsAdvYouth] * Rate of 0to17 becoming 18
 No CPI age out[InsDisYouth]=No CPI popn[InsDisYouth] * Rate of 0to17 becoming 18
 No CPI age out[UninsAdvYouth]=No CPI popn[UninsAdvYouth] * Rate of 0to17 becoming 18
 No CPI age out[UninsDisYouth]=No CPI popn[UninsDisYouth] * Rate of 0to17 becoming 18
 No CPI age out[InsAdvWkage]=No CPI popn[InsAdvWkage] * Rate of 18to64 becoming 65
 No CPI age out[InsDisWkage]=No CPI popn[InsDisWkage] * Rate of 18to64 becoming 65
 No CPI age out[UninsAdvWkage]=No CPI popn[UninsAdvWkage] * Rate of 18to64 becoming 65
 No CPI age out[UninsDisWkage]=No CPI popn[UninsDisWkage] * Rate of 18to64 becoming 65
 No CPI age out[AdvSr]=0
 No CPI age out[DisSr]=0
- (1070) No CPI frac of popn[subpop]=ZIDZ(No CPI popn[subpop], Popn[subpop])
- (1071) No CPI frac of popn initial[subpop]=1 - Mild CPI frac of popn initial[subpop] - Severe CPI frac of popn initial[subpop]
- (1072) No CPI frac of total popn=1 - Mild CPI frac of total popn - Severe CPI frac of total popn
- (1073) No CPI net migration[subpop]=Popn net migration[subpop] * No CPI frac of popn[subpop]
- (1074) No CPI outflow to Mild CPI[InsAdvYouth]=(Mild CPI onset[InsAdvYouth]+Mild CPI onset[UninsAdvYouth]) * ZIDZ(No CPI popn[InsAdvYouth], No CPI popn[InsAdvYouth]+No CPI popn[UninsAdvYouth])

- No CPI outflow to Mild CPI[InsDisYouth]=(Mild CPI onset[InsDisYouth]+Mild CPI onset[UninsDisYouth]) * ZIDZ(No CPI popn[InsDisYouth], No CPI popn[InsDisYouth]+No CPI popn[UninsDisYouth])
- No CPI outflow to Mild CPI[UninsAdvYouth]=(Mild CPI onset[InsAdvYouth]+Mild CPI onset[UninsAdvYouth]) * ZIDZ(No CPI popn[UninsAdvYouth], No CPI popn[InsAdvYouth]+No CPI popn[UninsAdvYouth])
- No CPI outflow to Mild CPI[UninsDisYouth]=(Mild CPI onset[InsDisYouth]+Mild CPI onset[UninsDisYouth]) * ZIDZ(No CPI popn[UninsDisYouth], No CPI popn[InsDisYouth]+No CPI popn[UninsDisYouth])
- No CPI outflow to Mild CPI[InsAdvWkage]=(Mild CPI onset[InsAdvWkage]+Mild CPI onset[UninsAdvWkage]) * ZIDZ(No CPI popn[InsAdvWkage], No CPI popn[InsAdvWkage]+No CPI popn[UninsAdvWkage])
- No CPI outflow to Mild CPI[InsDisWkage]=(Mild CPI onset[InsDisWkage]+Mild CPI onset[UninsDisWkage]) * ZIDZ(No CPI popn[InsDisWkage], No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage])
- No CPI outflow to Mild CPI[UninsAdvWkage]=(Mild CPI onset[InsAdvWkage]+Mild CPI onset[UninsAdvWkage]) * ZIDZ(No CPI popn[UninsAdvWkage], No CPI popn[InsAdvWkage]+No CPI popn[UninsAdvWkage])
- No CPI outflow to Mild CPI[UninsDisWkage]=(Mild CPI onset[InsDisWkage]+Mild CPI onset[UninsDisWkage]) * ZIDZ(No CPI popn[UninsDisWkage], No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage])
- No CPI outflow to Mild CPI[AdvSr]=Mild CPI onset[AdvSr]
- No CPI outflow to Mild CPI[DisSr]=Mild CPI onset[DisSr]
- (1075) No CPI popn[subpop]= INTEG (+Births[subpop]-No CPI outflow to Mild CPI[subpop]+ No CPI age in[subpop]- No CPI age out[subpop] +No CPI net migration[subpop]-No CPI popn deaths[subpop]+No CPI popn insurance change[subpop]+No CPI popn SES change[subpop], No CPI popn initial[subpop])
- (1076) No CPI popn deaths[subpop]=No CPI popn[subpop] * Death rate in No CPI popn[subpop]
- (1077) No CPI popn initial[subpop]=Popn initial[subpop] * (1-Mild CPI frac of popn initial[subpop]- Severe CPI frac of popn initial[subpop])
- (1078) No CPI popn insurance change[InsAdvYouth]=-No CPI popn insurance change[UninsAdvYouth]
 No CPI popn insurance change[InsDisYouth]=-No CPI popn insurance change[UninsDisYouth]
 No CPI popn insurance change[UninsAdvYouth]=Change in uninsured frac of Adv Youth popn*(Popn[InsAdvYouth]+Popn[UninsAdvYouth])*No CPI frac of popn[UninsAdvYouth]
 No CPI popn insurance change[UninsDisYouth]=Change in uninsured frac of Disadv Youth popn*(Popn[InsDisYouth]+Popn[UninsDisYouth])*No CPI frac of popn[UninsDisYouth]
 No CPI popn insurance change[InsAdvWkage]=-No CPI popn insurance change[UninsAdvWkage]
 No CPI popn insurance change[InsDisWkage]=-No CPI popn insurance change[UninsDisWkage]
 No CPI popn insurance change[UninsAdvWkage]=Change in uninsured frac of Adv Wkage popn*(Popn[InsAdvWkage]+Popn[UninsAdvWkage])*No CPI frac of popn[UninsAdvWkage]
 No CPI popn insurance change[UninsDisWkage]=Change in uninsured frac of Disadv Wkage popn*(Popn[InsDisWkage]+Popn[UninsDisWkage])*No CPI frac of popn[UninsDisWkage]
 No CPI popn insurance change[AdvSr]=0
 No CPI popn insurance change[DisSr]=0

(1079) No CPI popn SES change[InsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(No CPI popn[InsAdvYouth],No CPI popn[InsAdvYouth]+No CPI popn[UninsAdvYouth]) * ZIDZ(No CPI popn[InsDisYouth]+ No CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(No CPI popn[InsAdvYouth], Popn[InsAdvYouth]+Popn[UninsAdvYouth]))

No CPI popn SES change[InsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(No CPI popn[InsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(No CPI popn[InsDisYouth],No CPI popn[InsDisYouth]+No CPI popn[UninsDisYouth]) * ZIDZ(No CPI popn[InsDisYouth]+No CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth]))

No CPI popn SES change[UninsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(No CPI popn[UninsAdvYouth],No CPI popn[InsAdvYouth]+No CPI popn[UninsAdvYouth]) * ZIDZ(No CPI popn[InsDisYouth]+ No CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(No CPI popn[UninsAdvYouth], Popn[InsAdvYouth]+Popn[UninsAdvYouth]))

No CPI popn SES change[UninsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(No CPI popn[UninsDisYouth],No CPI popn[InsDisYouth]+No CPI popn[UninsDisYouth]) * ZIDZ(No CPI popn[InsDisYouth]+No CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(No CPI popn[UninsDisYouth],No CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth]))

No CPI popn SES change[InsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(No CPI popn[InsAdvWkage],No CPI popn[InsAdvWkage]+No CPI popn[UninsAdvWkage]) * ZIDZ(No CPI popn[InsDisWkage]+ No CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) - MAX(0, -SES change in Wkage popn * ZIDZ(No CPI popn[InsAdvWkage], Popn[InsAdvWkage]+Popn[UninsAdvWkage]))

No CPI popn SES change[InsDisWkage]=-MAX(0, SES change in Wkage popn * ZIDZ(No CPI popn[InsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) + MAX(0, -SES change in Wkage popn * ZIDZ(No CPI popn[InsDisWkage],No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage]) * ZIDZ(No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage]))

No CPI popn SES change[UninsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(No CPI popn[UninsAdvWkage],No CPI popn[InsAdvWkage]+No CPI popn[UninsAdvWkage]) * ZIDZ(No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) - MAX(0, -SES change in Wkage popn * ZIDZ(No CPI popn[UninsAdvWkage], Popn[InsAdvWkage]+Popn[UninsAdvWkage]))

No CPI popn SES change[UninsDisWkage]=-MAX(0, SES change in Wkage popn * ZIDZ(No CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) + MAX(0, -SES change in Wkage popn * ZIDZ(No CPI popn[UninsDisWkage],No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage]) * ZIDZ(No CPI popn[InsDisWkage]+No CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage]))

No CPI popn SES change[AdvSr]=MAX(0, SES change in Senior popn * ZIDZ(No CPI popn[DisSr], Popn[DisSr])) - MAX(0, -SES change in Senior popn * ZIDZ(No CPI popn[AdvSr], Popn[AdvSr]))

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- No CPI popn SES change[DisSr]=-MAX(0, SES change in Senior popn * ZIDZ(No CPI popn[DisSr], Popn[DisSr]))+ MAX(0, -SES change in Senior popn * ZIDZ(No CPI popn[AdvSr], Popn[AdvSr]))
- (1080) Nonurgent acute episode demand to PCPs[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episode demand to PCP[subpop]
- (1081) Nonurgent acute episode demand to Specialists[subpop]=Nonurgent acute episode direct demand to Specialists[subpop] + Referrals to Specialists from nonurgent acute episodes[subpop]
- (1082) Nonurgent acute episode direct demand to Specialists[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episodes to Specialist[subpop]
- (1083) Nonurgent acute episodes[subpop]=No CPI popn[subpop]*Nonurgent acute episodes per No CPI pt[subpop] + Mild CPI popn[subpop]*Nonurgent acute episodes per Mild CPI pt[subpop] + (Severe CPI popn[subpop]-Additional popn receiving hospice under initiative[subpop])*End of life pts risk of nonurgent acute episodes reltv to avg pt with Severe CPI)*Nonurgent acute episodes per Severe CPI pt[subpop]
- (1084) Nonurgent acute episodes per Mild CPI pt[subpop]=Nonurgent acute episodes per Mild CPI pt initial[subpop] + (Nonurgent acute episodes per No CPI pt[subpop]-Nonurgent acute episodes per Mild CPI pt initial[subpop])*(Adequacy of prev chron care affecting disease outcomes[subpop]-Adequacy of prev chron care initial[subpop])*Mitigation of excess risk of nonurgent acute episodes from CPI under proper chron care
- (1085) Nonurgent acute episodes per Mild CPI pt initial[subpop]=1.5,1.5,1.5,1.5,1.5,1.5,1.5,1.5,2,2
- (1086) Nonurgent acute episodes per No CPI pt[subpop]=1,1,1,0.95,0.95,0.95,0.95,1.3,1.3
- (1087) Nonurgent acute episodes per Severe CPI pt[subpop]=Nonurgent acute episodes per Severe CPI pt initial[subpop] + (Nonurgent acute episodes per No CPI pt[subpop]-Nonurgent acute episodes per Severe CPI pt initial[subpop])*(Adequacy of prev chron care affecting disease outcomes[subpop]-Adequacy of prev chron care initial[subpop])*Mitigation of excess risk of nonurgent acute episodes from CPI under proper chron care
- (1088) Nonurgent acute episodes per Severe CPI pt initial[subpop]=3,3,3,3,3,3,3,4,4
- (1089) Nonurgent acute episodes sent for outpatient test or procedure[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episodes sent for outpatient test or procedure[subpop]
- (1090) Nonurgent acute episodes sent to Hosp OPD for test or procedure[subpop]=Nonurgent acute episodes sent for outpatient test or procedure[subpop] * Frac of outpatient tests and procedures done at Hosp OPD
- (1091) Nonurgent acute episodes to ER[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episodes to ER[subpop]

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- (1092) Nonurgent acute first visits[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episodes resulting in visits vs initial[subpop]
- (1093) Nonurgent frac of total ER visits=Total nonurgent acute episodes to ER / Total ER visits
- (1094) Obsolescence rate for HAI prevention investments=0.1
- (1095) Obsolescence rate for hospital efficiency investments=0.1
- (1096) Obsolescence rate for post discharge care investments=0.1
- (1097) Obsolescence to extent of HAI prevention initiative=Extent of HAI prevention initiative * Obsolescence rate for HAI prevention investments
- (1098) Obsolescence to extent of hospital efficiency initiative=Extent of hospital efficiency initiative * Obsolescence rate for hospital efficiency investments
- (1099) Obsolescence to extent of post discharge care initiative=Extent of post discharge care initiative * Obsolescence rate for post discharge care investments
- (1100) Office based providers=PCPs + Specialists
- (1101) Operating cost per hospital bed=Operating cost per hospital bed 2010 * Healthcare real cost index vs 2010* Hospital bed cost trend multiplier
- (1102) Operating cost per hospital bed 2010=635000
- (1103) Original inpatient admissions[subpop]=Original inpatient admissions from urgent episodes[subpop] + Original inpatient admissions from nonurgent episodes[subpop]
- (1104) Original inpatient admissions from nonurgent episodes[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episodes sent to Inpatient stay[subpop]
- (1105) Original inpatient admissions from urgent episodes[subpop]=Original urgent episodes[subpop] * Frac of urgent episodes directed to inpatient stay
- (1106) Original urgent episodes[subpop]=No CPI popn[subpop]*Urgent episodes per No CPI pt[subpop] + Mild CPI popn[subpop]*Urgent episodes per Mild CPI pt[subpop] + (Severe CPI popn[subpop]-Additional popn receiving hospice under initiative[subpop])*End of life pts risk of urgent episodes reltv to avg pt with Severe CPI)*Urgent episodes per Severe CPI pt[subpop]
- (1107) Ounces of sweet bev consumed=Total popn * Ounces of sweet bev consumed per capita absent tax * (1 - Frac reduction in sweet bev consumption from tax)
- (1108) Ounces of sweet bev consumed per capita absent tax=5200
- (1109) Ourtown popn 2010=307765

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- (1110) Ourtown popn multiplier=Ourtown popn 2010 / Anytown popn 2010
- (1111) Overall adequacy of prev chron care= $\text{SUM}(\text{Adequacy of prev chron care}[\text{subpop!}] * \text{Popn}[\text{subpop!}]) / \text{SUM}(\text{Popn}[\text{subpop!}])$
- (1112) Overall avg frac of inpatients to home health= $\text{Total courses of home health post hospital} / \text{Total original inpatient admissions}$
- (1113) Overall avg frac of inpatients to SNF= $\text{Total SNF stays} / \text{Total original inpatient admissions}$
- (1114) Overall avg PCP workload ratio= $\text{Total visits to PCPs} / \text{Total visit capacity of PCPs}$
- (1115) Overall avg QOL= $\text{Total QALYs per year} / \text{Total popn}$
- (1116) Overall avg QOL if no chronic illness= $\text{SUM}(\text{Avg QOL for healthy popn}[\text{subpop!}] * \text{Popn}[\text{subpop!}]) / \text{Total popn}$
- (1117) Overall avg readmission rate= $\text{SUM}(\text{Readmissions}[\text{subpop!}]) / \text{SUM}(\text{Original inpatient admissions}[\text{subpop!}])$
- (1118) Overall behav risk onset rate= $\text{Total behav risk onset} / \text{Total low risk behav popn}$
- (1119) Overall behav risk reform rate= $\text{Total behav risk reform} / \text{Total high risk behav popn}$
- (1120) Overall frac of deaths using hospice= $\text{Total deaths using hospice} / \text{Total deaths}$
- (1121) Overall frac of deaths using hospice or hospital palliative care= $\text{Overall frac of deaths using hospice} + \text{Frac of deaths using hospital palliative care}$
- (1122) Overall frac of hospitalizations using palliative care= $\text{Total hospitalizations using palliative care} / \text{Total inpatient stays}$
- (1123) Overall frac of inpatients to home health= $\text{Total courses of home health post hospital} / \text{Total inpatient stays}$
- (1124) Overall frac of inpatients to SNF= $\text{Total SNF stays} / \text{Total inpatient stays}$
- (1125) Overall frac of nonurgent acute episodes to ER= $\text{Total nonurgent acute episodes to ER} / \text{Total nonurgent acute episodes}$
- (1126) Overall frac of prev chron care demand not accommodated= $\text{SUM}(\text{Demand for prev chron care visits}[\text{subpop!}] * \text{Frac of prev chron care demand not accommodated}[\text{subpop!}]) / \text{SUM}(\text{Demand for prev chron care visits}[\text{subpop!}])$
- (1127) Overall frac of prev chron care demand to PCP= $\text{SUM}(\text{Demand for prev chron care visits}[\text{subpop!}] * \text{Frac of prev chron care demand to PCP}[\text{subpop!}]) / \text{SUM}(\text{Demand for prev chron care visits}[\text{subpop!}])$

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- (1128) Overall frac of pts seeking prev chron care= $\text{SUM}(\text{Frac of pts seeking prev chron care}[\text{subpop!}] * \text{Popn}[\text{subpop!}]) / \text{SUM}(\text{Popn}[\text{subpop!}])$
- (1129) Overall frac of self care per physician orders= $\text{SUM}(\text{Frac of self care per physician orders}[\text{subpop!}] * \text{Popn}[\text{subpop!}]) / \text{SUM}(\text{Popn}[\text{subpop!}])$
- (1130) Overall Mild CPI onset rate= $\text{Total Mild CPI onset} / \text{Total No CPI popn}$
- (1131) Overall Mild CPI popn death rate= $\text{Total Mild CPI popn deaths} / \text{Total Mild CPI popn}$
- (1132) Overall net migration rate= $\text{Total net migration} / \text{Total popn}$
- (1133) Overall No CPI popn death rate= $\text{Total No CPI popn deaths} / \text{Total No CPI popn}$
- (1134) Overall per capita cost of allied medical services= $\text{Total costs of allied medical services} / \text{Total popn}$
- (1135) Overall per capita cost of dental services= $\text{Total costs of dental services} / \text{Total popn}$
- (1136) Overall per capita cost of ER facility use under FFS= $\text{Total facility costs of ER visits by locals under FFS} / \text{Total popn}$
- (1137) Overall per capita cost of freestanding lab services= $\text{Total costs of freestanding lab services} / \text{Total popn}$
- (1138) Overall per capita cost of home health and hospice care= $\text{Overall per capita cost of home health care} + \text{Overall per capita cost of hospice care}$
- (1139) Overall per capita cost of home health care= $\text{Total costs of home health care} / \text{Total popn}$
- (1140) Overall per capita cost of Hosp OPD facility use under FFS= $\text{Total facility costs of Hosp OPD visits by locals under FFS} / \text{Total popn}$
- (1141) Overall per capita cost of hospice care= $\text{Total costs of hospice care} / \text{Total popn}$
- (1142) Overall per capita cost of hospital attending physician services= $\text{Total costs of hospital attending physician services} / \text{Total popn}$
- (1143) Overall per capita cost of hospital facility use= $\text{Total hospital facility costs of locals} / \text{Total popn}$
- (1144) Overall per capita cost of inpatient facility use under FFS= $\text{Total facility costs of inpatient stays by locals under FFS} / \text{Total popn}$
- (1145) Overall per capita cost of medical services in nonclinical settings= $\text{Total costs of medical services in nonclinical settings} / \text{Total popn}$
- (1146) Overall per capita cost of nonHosp facility visits for test or procedure= $\text{Total costs of nonHosp facility visits for test or procedure} / \text{Total popn}$

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- (1147) Overall per capita cost of nursing facility stays=Total costs of nursing facility stays / Total popn
- (1148) Overall per capita cost of other professional services=Total costs of other professional services / Total popn
- (1149) Overall per capita cost of other self care products=Total costs of other self care products / Total popn
- (1150) Overall per capita cost of physician and lab services=Total costs of physician and lab services / Total popn
- (1151) Overall per capita cost of physician office visits under FFS=Total costs of physician office visits under FFS / Total popn
- (1152) Overall per capita cost of Rx drugs=Total costs of Rx drugs / Total popn
- (1153) Overall per capita cost of self care products=Overall per capita cost of Rx drugs + Overall per capita cost of other self care products
- (1154) Overall per capita cost of SNF stays=Total costs of SNF stays / Total popn
- (1155) Overall per capita cost of Specialist services under FFS=Total costs of Specialist services under FFS / Total popn
- (1156) Overall per capita ER visits=Total ER visits / Total popn
- (1157) Overall per capita healthcare costs=Total healthcare costs / Total popn
- (1158) Overall per capita healthcare costs against benchmark=Total healthcare costs against benchmark / Total insured popn
- (1159) Overall per capita healthcare costs age stdized=Per capita healthcare costs of youth popn*Standard youth frac of popn + Per capita healthcare costs of working age popn*Standard working age frac of popn + Per capita healthcare costs of senior popn*Standard senior frac of popn
- (1160) Overall per capita healthcare costs age stdized deflated=Overall per capita healthcare costs age stdized / Healthcare real cost index vs 2010
- (1161) Overall per capita healthcare costs at start time=SAMPLE IF TRUE(Time=Start time for accumulating key metrics, Overall per capita healthcare costs, 0)
- (1162) Overall per capita healthcare costs deflated=Overall per capita healthcare costs / Healthcare real cost index vs 2010
- (1163) Overall per capita healthcare costs reltv to start time=XIDZ(Overall per capita healthcare costs, Overall per capita healthcare costs at start time, 1)

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- (1164) Overall per capita Hosp OPD visits=Total Hosp OPD visits / Total popn
- (1165) Overall per capita inpatient stays=Total inpatient stays / Total popn
- (1166) Overall per capita long term nursing home costs=Total costs of long term nursing home stays/
Total popn
- (1167) Overall per capita nonurgent acute episodes=Total nonurgent acute episodes/Total popn
- (1168) Overall per capita office visits=Overall per capita visits to PCPs + Overall per capita visits to
Specialists
- (1169) Overall per capita prev chron care visits=Total prev chron care visits / Total popn
- (1170) Overall per capita prev chron care visits to Hosp OPD=Total prev chron care visits to Hosp OPD /
Total popn
- (1171) Overall per capita urgent episodes=Total urgent episodes to ER / Total popn
- (1172) Overall per capita visits for test or procedure=Overall per capita visits to Hosp OPD for test or
procedure + Overall per capita visits to nonHosp facility for test or procedure
- (1173) Overall per capita visits to Hosp OPD for test or procedure=Total visits to Hosp OPD for test or
procedure / Total popn
- (1174) Overall per capita visits to nonHosp facility for test or procedure=Total visits to nonHosp facility
for test or procedure / Total popn
- (1175) Overall per capita visits to PCPs=Total visits to PCPs / Total popn
- (1176) Overall per capita visits to physician and Hosp from nonurgent acute episodes
=Total visits to physician and Hosp from nonurgent acute episodes/Total popn
- (1177) Overall per capita visits to Specialists=Total visits to Specialists / Total popn
- (1178) Overall popn change rate=Total popn change / Total popn
- (1179) Overall popn death rate=Total deaths / Total popn
- (1180) Overall popn death rate age stdized=((Popn deaths[InsAdvYouth]+Popn
deaths[InsDisYouth]+Popn deaths[UninsAdvYouth]+Popn deaths[UninsDisYouth]) /
(Popn[InsAdvYouth]+Popn[InsDisYouth]+Popn[
UninsAdvYouth]+Popn [UninsDisYouth]))*Standard youth frac of popn + ((Popn
deaths[InsAdvWkage]+Popn deaths[InsDisWkage]+Popn deaths[UninsAdvWkage]+Popn
deaths[UninsDisWkage]) / (Popn[InsAdvWkage]+Popn[InsDisWkage]+Popn
[UninsAdvWkage]+Popn [UninsDisWkage]))*Standard working age frac of popn + ((Popn
deaths[AdvSr]+Popn deaths[DisSr]) / (Popn[AdvSr]+Popn[DisSr]))*Standard senior frac of popn

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- (1181) Overall Severe CPI onset rate=Total Severe CPI onset / Total Mild CPI popn
- (1182) Overall Severe CPI popn death rate=Total Severe CPI popn deaths / Total Severe CPI popn
- (1183) Overall sufficiency of PCPs for visit demand=MIN(1,Total visits to PCPs / Total demand for visits to PCPs)
- (1184) Overall uncontrolled frac of CMI=Uncontrolled CMI frac of total popn / CMI frac of total popn
- (1185) Packs of cigarettes consumed=Smokers absent tax * Packs of cigarettes consumed per smoker * (1 - Frac reduction in smokers from tax)
- (1186) Packs of cigarettes consumed per smoker=300
- (1187) Payment reform initiative=0
- (1188) PCP capacity for Adv popn relative to demand=(Visit capacity of general PCPs-Visits to general PCPs by dually insured popn-Visits to general PCPs by Medicaid only popn-Visits to general PCPs by Disadv uninsured popn) / Demand for visits to PCPs by Adv popn
- (1189) PCP capacity for Disadv uninsured relative to demand=(Visit capacity of FQHC PCPs*Frac of FQHC PCP slots available to Uninsured+Visit capacity of general PCPs*Frac of general PCP slots available to Disadv Uninsured) / Demand for visits to PCPs by Disadv uninsured popn
- (1190) PCP capacity for Dually insured popn relative to demand=(Visit capacity of FQHC PCPs-Visits to FQHC PCPs by Disadv uninsured popn-Visits to FQHC PCPs by Medicaid only popn + Visit capacity of general PCPs-Visits to PCPs by Adv popn-Visits to general PCPs by Medicaid only popn-Visits to general PCPs by Disadv uninsured popn) / Demand for visits to PCPs by dually insured popn
- (1191) PCP capacity for Medicaid only popn relative to demand=(Visit capacity of FQHC PCPs-Visits to FQHC PCPs by Disadv uninsured popn-Visits to FQHC PCPs by dually insured popn + Visit capacity of general PCPs*Frac of general PCP slots available to Medicaid only popn) / Demand for visits to PCPs by Medicaid only popn
- (1192) PCP FFS revenue[subpop]=PCP revenue under full FFS[subpop] * (1-Frac of PCPs under global payment)
- (1193) PCP FFS revenue per FFS popn[subpop]=ZIDZ(PCP revenue under full FFS[subpop], Popn[subpop])
- (1194) PCP FFS revenue per FFS popn recent[subpop]=SMOOTH(PCP FFS revenue per FFS popn[subpop], Global payment adjustment time)
- (1195) PCP global payment revenue[subpop]=Popn[subpop] * PCP payment per popn under global payment by segment[subpop] * Frac of PCPs under global payment

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- (1196) PCP overhead rate=0.64
- (1197) PCP payment per popn under global payment by segment[subpop]=PCP FFS revenue per FFS popn recent[subpop] * Healthcare cost index multiplier on global payments
- (1198) PCP practice redesign driven by initiative=Extent of PCP practice redesign initiative*(Provider compliance with 6 community initiatives absent VBP+Frac of providers positively influenced by VBP*(1-Provider compliance with 6 community initiatives absent VBP))
- (1199) PCP practice redesign from initiative and VBP=PCP practice redesign driven by initiative + PCP practice redesign from providers incentivized by VBP
- (1200) PCP practice redesign from providers incentivized by VBP=(1-Extent of PCP practice redesign initiative)*Frac of providers positively influenced by VBP*Provider effort on 6 improvements incentivized by VBP absent community initiative
- (1201) PCP practice redesign initiative=0
- (1202) PCP revenue[subpop]=PCP FFS revenue[subpop] + PCP global payment revenue[subpop]
- (1203) PCP revenue loss avoidance due to capitation=SUM(Popn[subpop!] * Frac of PCPs under global payment * (PCP payment per popn under global payment by segment[subpop!] - PCP FFS revenue per FFS popn[subpop!]))
- (1204) PCP revenue per Commercial pt visit reltv to avg cost=1.3
- (1205) PCP revenue per visit by segment reltv to Commercial[subpop]=1,0.5,1,0,1,0.5,1,0,0.8,0.8
- (1206) PCP revenue under full FFS[subpop]=Costs of PCP office visits under FFS[subpop] * PCP revenue per Commercial pt visit reltv to avg cost* PCP revenue per visit by segment reltv to Commercial[subpop]
- (1207) PCPs=General PCPs+FQHC PCPs
- (1208) PCPs per 10k popn=General PCPs per 10k popn + FQHC PCPs per 10k popn
- (1209) Per 100 beds program cost of HAI prevention initiative 2010=1e+006
- (1210) Per 100 beds program cost of hospital efficiency initiative 2010=1.7e+006
- (1211) Per 100 beds program cost of post discharge care initiative 2010=1e+006
- (1212) Per capita change vs baseline in healthcare and program costs=Change vs baseline in healthcare and program costs / Total popn
- (1213) Per capita change vs baseline in value of productivity less healthcare costs and program spending=Change vs baseline in value of productivity less healthcare costs and program spending/ Total popn

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- (1214) Per capita cost of allied medical svcs 2010[subpop]=109,109,109,109,223,223,223,223,484,484
- (1215) Per capita cost of dental services[subpop]=(Per capita cost of dental services for pts seeking prev chron care 2010*
Frac of pts seeking prev chron care[subpop] + Per capita cost of dental services for pts not seeking prev chron care 2010*(1-Frac of pts seeking prev chron care[subpop])) * Healthcare real cost index vs 2010
- (1216) Per capita cost of dental services for pts not seeking prev chron care 2010
=300
- (1217) Per capita cost of dental services for pts seeking prev chron care 2010
=350
- (1218) Per capita cost of freestanding lab services
2010[subpop]=150,150,150,150,150,150,150,150,150,150
- (1219) Per capita cost of medical services in nonclinical settings
2010[subpop]=246,246,246,246,424,424,424,424,721,721
- (1220) Per capita healthcare costs[subpop]=ZIDZ(Healthcare costs[subpop], Popn[subpop])
- (1221) Per capita healthcare costs against benchmark[subpop]=IF THEN ELSE(Are cost savings being captured=0, 0, Per capita healthcare costs[subpop] - Benchmark per capita healthcare costs[subpop])
- (1222) Per capita healthcare costs faced by employers=Healthcare costs faced by employers / (Popn[InsAdvWkage]+Popn[InsAdvYouth])
- (1223) Per capita healthcare costs faced by employers initial=INITIAL(Per capita healthcare costs faced by employers)
- (1224) Per capita healthcare costs in 2010[subpop]=SAMPLE IF TRUE(Time=2010, Per capita healthcare costs[subpop], 0)
- (1225) Per capita healthcare costs in employed popn deflated=Healthcare costs in employed popn deflated / Total employed popn
- (1226) Per capita healthcare costs of Commercial popn=Healthcare costs of Commercial popn / Total Commercial insured popn
- (1227) Per capita healthcare costs of Dual insured popn=Healthcare costs of Dual insured popn / Total Dual insured popn
- (1228) Per capita healthcare costs of Medicaid only popn=Healthcare costs of Medicaid only popn / Total Medicaid only popn

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- (1229) Per capita healthcare costs of Medicare only popn=Healthcare costs of Medicare only popn / Total Medicare only popn
- (1230) Per capita healthcare costs of senior popn=Total healthcare costs of senior popn / Total popn senior
- (1231) Per capita healthcare costs of uninsured popn=Healthcare costs of uninsured popn / Total Uninsured popn
- (1232) Per capita healthcare costs of working age popn=Total healthcare costs of working age popn / Total popn working age
- (1233) Per capita healthcare costs of youth popn=Total healthcare costs of youth popn / Total popn youth
- (1234) Per capita physician and Hosp visits resulting from nonurgent acute episodes[subpop]=ZIDZ(Visits to physician and Hosp from nonurgent acute episodes[subpop], Popn[subpop])
- (1235) Per capita prev chron care visits[subpop]=ZIDZ(Prev chron care visits[subpop], Popn[subpop])
- (1236) Per capita program cost for end of life care initiative=1.25
- (1237) Per capita program cost for PVS initiative 2010=12
- (1238) Per capita total program spending=Total program spending / Total popn
- (1239) Per capita value of productivity less healthcare costs and program spending
=Value of productivity less healthcare costs and program spending / Total popn
- (1240) Per completor program cost for student pathways=14000
- (1241) Per office based provider cost of VBP incentivized care coord=Care coord from providers incentivized by VBP * Per physician program cost for care coord 2010* Healthcare real cost index vs 2010
- (1242) Per office based provider cost of VBP incentivized prev chron quality improvement
=Prev chron quality improvement from providers incentivized by VBP * Per physician program cost for prev chron quality 2010* Healthcare real cost index vs 2010
- (1243) Per PCP cost of VBP incentivized efforts=Per office based provider cost of VBP incentivized care coord + Per office based provider cost of VBP incentivized prev chron quality improvement+Per PCP cost of VBP incentivized medical home + Per PCP cost of VBP incentivized practice redesign+Per PCP cost of VBP incentivized self care support
- (1244) Per PCP cost of VBP incentivized medical home=Med home implementation from providers incentivized by VBP * Per PCP program cost for medical home 2010* Healthcare real cost index vs 2010

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- (1245) Per PCP cost of VBP incentivized practice redesign=PCP practice redesign from providers incentivized by VBP * Per PCP program cost for practice redesign 2010* Healthcare real cost index vs 2010
- (1246) Per PCP cost of VBP incentivized self care support=SUM(Potl beneficiaries of self care support initiative[subpop!]) * Per target program cost for self care support 2010[subpop!] * Self care support from providers incentivized by VBP[subpop!])* Healthcare real cost index vs 2010 / PCPs
- (1247) Per PCP program cost for medical home 2010=10000
- (1248) Per PCP program cost for practice redesign 2010=28000
- (1249) Per physician program cost for care coord 2010=15000
- (1250) Per physician program cost for malpractice reform 2010=1500
- (1251) Per physician program cost for prev chron quality 2010=35000
- (1252) Per specialist cost of VBP incentivized efforts=Per office based provider cost of VBP incentivized care coord + Per office based provider cost of VBP incentivized prev chron quality improvement
- (1253) Per target popn program cost for crime fighting=200
- (1254) Per target popn program cost for family pathways=1000
- (1255) Per target popn program cost for hazard reduction=200
- (1256) Per target popn program cost for mental illness care 2010=800
- (1257) Per target popn program cost for reforming unhealthy behavior=100
- (1258) Per target program cost for Adv self care support 2010=100
- (1259) Per target program cost for Disadv self care support 2010=200
- (1260) Per target program cost for self care support 2010[subpop]=Per target program cost for Adv self care support 2010*(1-Disadv segment indicator[subpop]) + Per target program cost for Disadv self care support 2010*Disadv segment indicator[subpop]
- (1261) Personal healthcare expend per capita=Personal healthcare expenditures in the region/Total popn
- (1262) Personal healthcare expend per healthcare job=155000

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- (1263) Personal healthcare expenditures in the region=Total healthcare costs - Total hospital facility costs of locals + Total Hospital revenue
- (1264) Personal healthcare frac of total health expenditures=0.845
- (1265) Popn[subpop]=No CPI popn[subpop] + Mild CPI popn[subpop] + Severe CPI popn[subpop]
- (1266) Popn Adv Wkage=Popn[InsAdvWkage]+Popn[UninsAdvWkage]
- (1267) Popn death rate[subpop]=ZIDZ(Popn deaths[subpop], Popn[subpop])
- (1268) Popn deaths[subpop]=No CPI popn deaths[subpop] + Mild CPI popn deaths[subpop] + Severe CPI popn deaths[subpop]
- (1269) Popn deaths at initial HAI frac[subpop]=No CPI popn[subpop]*Death rate in No CPI popn at initial HAI frac[subpop]+Mild CPI popn[subpop]*Death rate in Mild CPI popn at initial HAI frac[subpop] + Severe CPI popn[subpop]*Death rate in Severe CPI popn at initial HAI frac[subpop]
- (1270) Popn Disadv Wkage=Popn[InsDisWkage]+Popn[UninsDisWkage]
- (1271) Popn fraction[subpop]=Popn[subpop] / Total popn
- (1272) Popn growth rate initial=0.009
- (1273) Popn in hazardous environment[subpop]=Popn[subpop] * Frac of popn in hazardous environment[subpop]
- (1274) Popn in high crime area[subpop]=Popn[subpop] * Frac of popn in high crime area[subpop]
- (1275) Popn initial[InsAdvYouth]=Total popn initial * Youth frac of total popn initial * (1-Disadv frac of Youth popn initial) * (1-Uninsured frac of Adv Youth popn initial)
 Popn initial[InsDisYouth]=Total popn initial * Youth frac of total popn initial * Disadv frac of Youth popn initial* (1-Uninsured frac of Disadv Youth popn initial)
 Popn initial[UninsAdvYouth]=Total popn initial * Youth frac of total popn initial * (1-Disadv frac of Youth popn initial) * Uninsured frac of Adv Youth popn initial
 Popn initial[UninsDisYouth]=Total popn initial * Youth frac of total popn initial * Disadv frac of Youth popn initial* Uninsured frac of Disadv Youth popn initial
 Popn initial[InsAdvWkage]=Total popn initial * Working age frac of total popn initial * (1-Disadv frac of Wkage popn initial) * (1-Uninsured frac of Adv Wkage popn initial)
 Popn initial[InsDisWkage]=Total popn initial * Working age frac of total popn initial * Disadv frac of Wkage popn initial* (1-Uninsured frac of Disadv Wkage popn initial)
 Popn initial[UninsAdvWkage]=Total popn initial * Working age frac of total popn initial * (1-Disadv frac of Wkage popn initial) * Uninsured frac of Adv Wkage popn initial
 Popn initial[UninsDisWkage]=Total popn initial * Working age frac of total popn initial * Disadv frac of Wkage popn initial* Uninsured frac of Disadv Wkage popn initial
 Popn initial[AdvSr]=Total popn initial * Senior frac of total popn initial * (1-Disadv frac of Senior popn initial)

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- Popn initial[DisSr]=Total popn initial * Senior frac of total popn initial * Disadv frac of Senior popn initial
- (1276) Popn net migration[subpop]=Popn[subpop] * Net migration rate
- (1277) Popn receiving hospice[subpop]=Deaths using hospice[subpop] * Hospice adjusted avg length of service/365
- (1278) Popn with inadequate prev chron care[subpop]=Popn[subpop] * (1-Adequacy of prev chron care[subpop])
- (1279) Popn1[subpop]=Low risk behav popn[subpop] + High risk behav popn[subpop]
- (1280) Post discharge care improvement driven by initiative=Extent of post discharge care initiative*(Provider compliance with 6 community initiatives absent VBP+Frac of providers positively influenced by VBP*(1-Provider compliance with 6 community initiatives absent VBP))
- (1281) Post discharge care improvement from initiative and VBP=Post discharge care improvement driven by initiative + Post discharge care improvement from providers incentivized by VBP
- (1282) Post discharge care improvement from providers incentivized by VBP=(1-Extent of post discharge care initiative)*Frac of providers positively influenced by VBP*Provider effort on 6 improvements incentivized by VBP absent community initiative
- (1283) Post discharge care initiative=0
- (1284) Potential frac of self care gap closed due to med home=0.1
- (1285) Potl beneficiaries of mental illness care initiative[subpop]=CMI popn[subpop] * Uncontrolled frac of CMI initial[subpop]
- (1286) Potl beneficiaries of self care support initiative[subpop]=Popn[subpop] * (1-Frac of self care per physician orders initial[subpop])
- (1287) Potl new completors of student pathways pgms=(Popn[InsDisYouth]+Popn[UninsDisYouth]) * Rate of 0to17 becoming 18
- (1288) Pre visit screening initiative=0
- (1289) PreACA eligibility multiplier on uninsured Adv Wkage series([(2000,0)-(2020,2)],(2000,1),(2010,1),(2014,1))
- (1290) PreACA eligibility multiplier on uninsured Adv Youth series([(2000,0)-(2020,2)],(2000,1),(2010,0.81),(2014,0.81))
- (1291) PreACA eligibility multiplier on uninsured Disadv Wkage series([(2000,0)-(2020,2)],(2000,1),(2010,1),(2014,1))

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- (1292) PreACA eligibility multiplier on uninsured Disadv Youth series(((2000,0)-(2020,2)),(2000,1),(2010,0.83),(2014,0.83))
- (1293) Prev chron care quality initiative=0
- (1294) Prev chron care visits[subpop]=Demand for prev chron care visits[subpop] * (1-Frac of prev chron care demand not accommodated[subpop])
- (1295) Prev chron care visits per Mild CPI pt per guidelines=3.2
- (1296) Prev chron care visits per No CPI pt per guidelines=2
- (1297) Prev chron care visits per Severe CPI pt per guidelines=6.4
- (1298) Prev chron care visits to Hosp OPD[subpop]=Demand for prev chron care visits[subpop] * Frac of prev chron care demand to Hosp OPD[subpop]
- (1299) Prev chron care visits to Specialists[subpop]=Demand for prev chron care visits[subpop] * Frac of prev chron care demand to Specialist[subpop]
- (1300) Prev chron quality improvement driven by initiative=Extent of prev chron quality initiative*(Provider compliance with 6 community initiatives absent VBP+Frac of providers positively influenced by VBP*(1-Provider compliance with 6 community initiatives absent VBP))
- (1301) Prev chron quality improvement from initiative and VBP=Prev chron quality improvement driven by initiative + Prev chron quality improvement from providers incentivized by VBP
- (1302) Prev chron quality improvement from providers incentivized by VBP=(1-Extent of prev chron quality initiative)*Frac of providers positively influenced by VBP*Provider effort on 6 improvements incentivized by VBP absent community initiative
- (1303) Program spending of downstream only loan funds=Max program spending of downstream only loan funds * Actual vs max spending of downstream only funds
- (1304) Program spending of downstream only nonloan funds=Max program spending of downstream only nonloan funds * Actual vs max spending of downstream only funds
- (1305) Program spending of loan funds=Program spending of unconstrained loan funds + Program spending of upstream only loan funds+Program spending of downstream only loan funds
- (1306) Program spending of nonloan funds=Program spending of unconstrained nonloan funds + Program spending of upstream only nonloan funds+Program spending of downstream only nonloan funds
- (1307) Program spending of unconstrained loan funds=Max program spending of unconstrained loan funds * Actual vs max program spending of unconstrained funds

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- (1308) Program spending of unconstrained nonloan funds=Max program spending of unconstrained nonloan funds * Actual vs max program spending of unconstrained funds
- (1309) Program spending of upstream only loan funds=Max program spending of upstream only loan funds * Actual vs max spending of upstream only funds
- (1310) Program spending of upstream only nonloan funds=Max program spending of upstream only nonloan funds * Actual vs max spending of upstream only funds
- (1311) Provider compliance with 6 community initiatives absent VBP=0.8
- (1312) Provider effort on 6 improvements incentivized by VBP absent community initiative =0.1
- (1313) Psych frac of original urgent episodes=Total urgent psych episodes / Total original urgent episodes
- (1314) QALYs per year by segment[subpop]=Popn[subpop] * Avg QOL by segment[subpop]
- (1315) QOL loss for untreated CMI=0.17
- (1316) QOL loss for untreated mild CPI=0.035
- (1317) QOL loss for untreated severe CPI=0.12
- (1318) Rate of 0to17 becoming 18=0.056
- (1319) Rate of 18to64 becoming 65=Rate of 18to64 becoming 65 series(Time)
- (1320) Rate of 18to64 becoming 65 series([(2000,0)-(2040,0.02)],(2000,0.01),(2010,0.014),(2020,0.02),(2030,0.019),(2040,0.0185))
- (1321) Ratio of cumul backbone funding to desired=XIDZ(Cumul backbone funding, Cumul desired backbone funding, 1)
- (1322) Ratio of cumul loan repayment to indicated=XIDZ(Cumul loan repayment, Cumul indicated loan repayment, 1)
- (1323) Ratio of loan repayment to max outflow=ZIDZ(Loan repayment, Max outflow of loan funds)
- (1324) Ratio of local hospital ER visits to total ER visits by locals=Total local hospital ER visits / Total ER visits
- (1325) Ratio of local hospital inpatient stays to total inpatient stays by locals =Total local hospital inpatient stays / Total inpatient stays

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- (1326) Ratio of local hospital OPD visits to total OPD visits by locals= $\frac{\text{Total local hospital OPD visits}}{\text{Total Hosp OPD visits}}$
- (1327) Ratio of unspent funds for least relative savings available=15
- (1328) Ratio of unspent funds for no reduction in savings available=6
- (1329) Ratio of unspent funds to indicated program spending= $\frac{\text{ZIDZ(Unspent funds available for programs)}}{\text{Total indicated program spending}}$
- (1330) Readmission rate[subpop]=Readmission rate minimum + Readmission rate from inadequate medication reconciliation+Readmission rate from insufficient home health[subpop] + Readmission rate from insufficient SNF use[subpop] + Readmission rate from inadequate self care[subpop]
- (1331) Readmission rate from inadequate medication reconciliation=Readmission rate from inadequate medication reconciliation initial * (1 + (Multiplier on readmissions from inadequate medication reconciliation under improved post discharge initiative-1)*Post discharge care improvement from initiative and VBP)
- (1332) Readmission rate from inadequate medication reconciliation initial=0.04
- (1333) Readmission rate from inadequate self care[subpop]=Readmission rate from self care if inadequate*(1-Frac of self care per physician orders[subpop])
- (1334) Readmission rate from insufficient home health[subpop]=(Frac of inpatients to home health initial[subpop]*Multiplier on frac of inpatients to home health under improved post discharge initiative) - Frac of inpatients to home health[subpop]
- (1335) Readmission rate from insufficient SNF use[subpop]=(Frac of inpatients to SNF initial[subpop]*Multiplier on frac of inpatients to SNF under improved post discharge initiative) - Frac of inpatients to SNF[subpop]
- (1336) Readmission rate from self care if inadequate=0.1
- (1337) Readmission rate minimum=0.02
- (1338) Readmissions[subpop]=Original inpatient admissions[subpop] * Readmission rate[subpop]
- (1339) Real cost index vs 2010 as mitigated by care coord=Real cost index vs 2010 for items under care coord*Care coord from initiative and VBP+Healthcare real cost index vs 2010*(1-Care coord from initiative and VBP)
- (1340) Real cost index vs 2010 for items under care coord= INTEG (Growth in real cost index vs 2010 for items under care coord, Healthcare real cost index vs 2010 initial)
- (1341) Recent popn growth rate=(DELAY1I(Total popn,2,Total popn/(1+Popn growth rate initial)^2) - DELAY1I(Total popn, 4,Total popn/(1+Popn growth rate initial)^4)) / (2 * DELAY1I(

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- Total popn,2,Total popn/(1+Popn growth rate initial)^2))
- (1342) Recommended grants and assistance annual amount=Default grants and assistance annual amount * Ourtown popn multiplier
- (1343) Reduction in avg length of stay from smaller HAI frac=HAI addition to avg length of stay * (HAI frac of inpatient stays initial - HAI frac of inpatient stays)
- (1344) Reduction in deaths from smaller HAI frac[subpop]=Deaths from HAI at initial HAI frac[subpop] - Deaths from HAI[subpop]
- (1345) Referral tendency of ERs relative to PCPs=1.3
- (1346) Referral tendency of specialists relative to PCPs=Referral tendency of specialists relative to PCPs initial * Effect of specialist income reduction on intensity of care
- (1347) Referral tendency of specialists relative to PCPs initial=1.5
- (1348) Referrals to Specialists from nonurgent acute episodes[subpop]=Nonurgent acute episodes[subpop] * Frac of nonurgent acute episodes with referral to Specialist[subpop]
- (1349) Regional income per capita=Total regional income/Total popn
- (1350) Relative lost productivity for mild CPI popn=1.25
- (1351) Relative lost productivity for severe CPI popn=2.55
- (1352) Reltv behav risk onset in high crime areas=2
- (1353) Reltv behav risk onset under healthy behavior initiative=0.5
- (1354) Reltv behav risk reform under healthy behavior initiative=2.5
- (1355) Reltv Disadv frac for completors of student pathways pgms=0.81
- (1356) Reltv Disadv frac under family pathways initiative=0.825
- (1357) Reltv effect of noneconomy Disadv multipliers on Seniors=0.5
- (1358) Reltv effect of noneconomy Disadv multipliers on Youth=1
- (1359) Reltv effect of specialist income reduction on intensity of care lookup([(0.75,0)-(1.05,1)],(0.75,1),(0.8,0.96),(0.85,0.85),(0.9,0.67),(0.95,0.37),(1,0),(1.05,0))
- (1360) Reltv impact of self care support initiative[subpop]=DELAY1I(Self care support from initiative and VBP[subpop],Time for self care support or med home to affect self care behavior,0)
- (1361) Reltv nonurgent acute episodes to ER under med home=0.67

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- (1362) Reltv nonurgent acute episodes to ER under PVS=0.76
 - (1363) Reltv nonurgent acute episodes to PCPs and Specialists under PVS=0.85
 - (1364) Reltv nonurgent acute episodes to Specialist under med home=0.5
 - (1365) Reltv physical care seeking and self care for uncontrolled CMI popn=0.5
 - (1366) Reltv prev chron care to OPD under med home=0.67
 - (1367) Reltv prev chron care to Specialist under med home=0.5
 - (1368) Reltv QOL loss from CMI if treated=0.33
 - (1369) Reltv QOL loss from CPI under proper chronic care=0.33
 - (1370) Reltv rate of Mild CPI onset for high risk behav popn=2
 - (1371) Reltv rate of Mild CPI onset for popn in hazardous envir=1.4
 - (1372) Reltv rate of Mild CPI onset under full prev care=0.67
 - (1373) Reltv rate of Severe CPI onset for high risk behav popn=2
 - (1374) Reltv rate of Severe CPI onset for popn in hazardous envir=1
 - (1375) Reltv rate of Severe CPI onset under full prev chron care=0.33
 - (1376) Reltv risk of CMI from substance abuse=4.5
 - (1377) Reltv risk of urgent episodes for high risk behav popn=1.4
 - (1378) Reltv risk of urgent episodes for popn in hazardous envir=1.2
 - (1379) Reltv risk of urgent episodes for popn in high crime area=1.2
 - (1380) Reltv risky behav onset for uncontrolled CMI popn=3
 - (1381) Reltv risky behav reform for uncontrolled CMI popn=0.5
 - (1382) Reltv risky behav reform in high crime areas=0.5
 - (1383) Reltv risky behav reform under full prev chron care=1.3
 - (1384) Reltv strength of effect of healthcare costs on Disadv frac=0.75
 - (1385) Reltv strength of effect of healthcare costs on Disadv vs Adv Wkage uninsurance

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- =1.06
- (1386) Reltv uncontrolled CMI under full physical prev chron care=0.8
- (1387) Reltv uncontrolled CMI under mental illness care initiative=0.5
- (1388) Reltv Wkage Disadv frac from Severe CPI=2
- (1389) Reltv Wkage Disadv frac from uncontrolled CMI=2
- (1390) Repayment of downstream only loan funds=Max outflow of downstream only loan funds * Ratio of loan repayment to max outflow
- (1391) Repayment of unconstrained loan funds=Max outflow of unconstrained loan funds * Ratio of loan repayment to max outflow
- (1392) Repayment of upstream only loan funds=Max outflow of upstream only loan funds * Ratio of loan repayment to max outflow
- (1393) Response time for reduction in smoking=7.5
- (1394) Response time for reduction in sweet bev consumption=0.5
- (1395) Revenue per Specialist service by segment reltv to Commercial[subpop]=1,0.5,1,0,1,0.5,1,0,0.8,0.8
- (1396) Risk behav popn SES change total should sum to 0=SUM(Low risk behav popn SES change[subpop!]+High risk behav popn SES change[subpop!])
- (1397) Risky behav onset[subpop]=Low risk behav popn[subpop] * Risky behav onset rate[subpop]
- (1398) Risky behav onset rate[subpop]=Risky behav onset rate initial[subpop] * (1 + DELAY1I(Extent of healthy behavior initiative[subpop],Time for healthy behav initiative to have impact, 0))*(Reltv behav risk onset under healthy behavior initiative-1)) * Effect of uncontrolled CMI on risky behav onset[subpop] * Effect of crime on risky behav onset[subpop]
- (1399) Risky behav onset rate initial[subpop]=0.06,0.14,0.09,0.14,0.07,0.115,0.11,0.135,0.03,0.055
- (1400) Risky behav reform[subpop]=High risk behav popn[subpop] * Risky behav reform rate[subpop]
- (1401) Risky behav reform rate[subpop]=Risky behav reform rate initial[subpop] * (1 + DELAY1I(Extent of healthy behavior initiative[subpop],Time for healthy behav initiative to have impact, 0))*(Reltv behav risk reform under healthy behavior initiative-1)) * Effect of prev chron care on risky behav reform rate[subpop] * Effect of uncontrolled CMI on risky behav reform[subpop] * Effect of crime on risky behav reform[subpop]
- (1402) Risky behav reform rate initial[subpop]=0.01,0.005,0.01,0.005,0.04,0.04,0.04,0.04,0.01,0.01

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- (1403) Savings on attending physician costs from additional palliative care[subpop]=Savings on hospital costs from additional palliative care[subpop] * Avg attending physician cost per Inpatient stay 2010/(Avg facility cost per inpatient stay 2010+Avg attending physician cost per Inpatient stay 2010)
- (1404) Savings on hospital costs from additional palliative care[subpop]=Additional hospitalizations using palliative care[subpop] * Avg savings per inpatient stay using palliative care 2010*Real cost index vs 2010 as mitigated by care coord
- (1405) Savings on hospital facility costs from additional palliative care[subpop]=Savings on hospital costs from additional palliative care[subpop] * Avg facility cost per inpatient stay 2010/(Avg facility cost per inpatient stay 2010+Avg attending physician cost per Inpatient stay 2010)
- (1406) Score for death rate reduction=Frac reduction in cumul avg death rate 2040 / Frac reduction in death rate for score100* 100
- (1407) Score for economic productivity improvement=Frac improvement in cumul value of productivity 2040 / Frac improvement in economic productivity for score100* 100
- (1408) Score for health inequity reduction=Frac reduction in cumul avg inequity 2040 / Frac reduction in health inequity for score100* 100
- (1409) Score for healthcare cost reduction=Frac reduction in cumul avg healthcare costs 2040 / Frac reduction in healthcare costs for score100* 100
- (1410) Score for office care improvement=Frac improvement in cumul avg adequacy of care 2040 / Frac improvement in adequacy of care for score100* 100
- (1411) Self care support driven by initiative[subpop]=Extent of self care support initiative[subpop]*(Provider compliance with 6 community initiatives absent VBP+Frac of providers positively influenced by VBP*(1-Provider compliance with 6 community initiatives absent VBP))
- (1412) Self care support from initiative and VBP[subpop]=Self care support driven by initiative[subpop] + Self care support from providers incentivized by VBP[subpop]
- (1413) Self care support from providers incentivized by VBP[subpop]=(1-Extent of self care support initiative[subpop])*Frac of providers positively influenced by VBP*Provider effort on 6 improvements incentivized by VBP absent community initiative
- (1414) Self care support initiative=0
- (1415) Senior frac of total popn=Total popn senior / Total popn
- (1416) Senior frac of total popn initial=0.124
- (1417) Senior segment indicator[subpop]=0,0,0,0,0,0,0,0,1,1

- (1418) $SES \text{ change in Senior popn} = (\text{Disadv frac of Senior popn} - \text{Indicated Disadv frac of Senior popn}) * \text{Total popn senior} / 1$
- (1419) $SES \text{ change in Wkage popn} = (\text{Disadv frac of Wkage popn} - \text{Indicated Disadv frac of Wkage popn}) * \text{Total popn working age} / 1$
- (1420) $SES \text{ change in Youth popn} = (\text{Disadv frac of Youth popn} - \text{Indicated Disadv frac of Youth popn}) * \text{Total popn youth} / 1$
- (1421) Severe CPI age in[InsAdvYouth]=0
 Severe CPI age in[InsDisYouth]=0
 Severe CPI age in[UninsAdvYouth]=0
 Severe CPI age in[UninsDisYouth]=0
 Severe CPI age in[InsAdvWkage]=(Severe CPI age out[InsAdvYouth]+Severe CPI age out[InsDisYouth]+Severe CPI age out[UninsAdvYouth]+Severe CPI age out[UninsDisYouth]) * ZIDZ(Severe CPI popn[InsAdvWkage], Severe CPI popn[InsAdvWkage]+Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsAdvWkage]+Severe CPI popn[UninsDisWkage])
 Severe CPI age in[InsDisWkage]=(Severe CPI age out[InsAdvYouth]+Severe CPI age out[InsDisYouth]+Severe CPI age out[UninsAdvYouth]+Severe CPI age out[UninsDisYouth]) * ZIDZ(Severe CPI popn[InsDisWkage], Severe CPI popn[InsAdvWkage]+Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsAdvWkage]+Severe CPI popn[UninsDisWkage])
 Severe CPI age in[UninsAdvWkage]=(Severe CPI age out[InsAdvYouth]+Severe CPI age out[InsDisYouth]+Severe CPI age out[UninsAdvYouth]+Severe CPI age out[UninsDisYouth]) * ZIDZ(Severe CPI popn[UninsAdvWkage], Severe CPI popn[InsAdvWkage]+Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsAdvWkage]+Severe CPI popn[UninsDisWkage])
 Severe CPI age in[UninsDisWkage]=(Severe CPI age out[InsAdvYouth]+Severe CPI age out[InsDisYouth]+Severe CPI age out[UninsAdvYouth]+Severe CPI age out[UninsDisYouth]) * ZIDZ(Severe CPI popn[UninsDisWkage], Severe CPI popn[InsAdvWkage]+Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsAdvWkage]+Severe CPI popn[UninsDisWkage])
 Severe CPI age in[AdvSr]=(Severe CPI age out[InsAdvWkage]+Severe CPI age out[InsDisWkage]+Severe CPI age out[UninsAdvWkage]+Severe CPI age out[UninsDisWkage]) * ZIDZ(Severe CPI popn[AdvSr], Severe CPI popn[AdvSr]+Severe CPI popn[DisSr])
 Severe CPI age in[DisSr]=(Severe CPI age out[InsAdvWkage]+Severe CPI age out[InsDisWkage]+Severe CPI age out[UninsAdvWkage]+Severe CPI age out[UninsDisWkage]) * ZIDZ(Severe CPI popn[DisSr], Severe CPI popn[AdvSr]+Severe CPI popn[DisSr])
- (1422) Severe CPI age out[InsAdvYouth]=Severe CPI popn[InsAdvYouth] * Rate of 0to17 becoming 18
 Severe CPI age out[InsDisYouth]=Severe CPI popn[InsDisYouth] * Rate of 0to17 becoming 18
 Severe CPI age out[UninsAdvYouth]=Severe CPI popn[UninsAdvYouth] * Rate of 0to17 becoming 18
 Severe CPI age out[UninsDisYouth]=Severe CPI popn[UninsDisYouth] * Rate of 0to17 becoming 18

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- Severe CPI age out[InsAdvWkage]=Severe CPI popn[InsAdvWkage] * Rate of 18to64 becoming 65
- Severe CPI age out[InsDisWkage]=Severe CPI popn[InsDisWkage] * Rate of 18to64 becoming 65
- Severe CPI age out[UninsAdvWkage]=Severe CPI popn[UninsAdvWkage] * Rate of 18to64 becoming 65
- Severe CPI age out[UninsDisWkage]=Severe CPI popn[UninsDisWkage] * Rate of 18to64 becoming 65
- Severe CPI age out[AdvSr]=0
- Severe CPI age out[DisSr]=0
- (1423) Severe CPI frac of employed popn=SUM(Severe CPI frac of popn[subpop!]*Employed popn by segment[subpop!])/ Total employed popn
- (1424) Severe CPI frac of popn[subpop]=ZIDZ(Severe CPI popn[subpop], Popn[subpop])
- (1425) Severe CPI frac of popn initial[subpop]=0.014,0.059,0.027,0.096,0.07,0.221,0.114,0.239,0.186,0.362
- (1426) Severe CPI frac of Senior popn=(Severe CPI popn[AdvSr]+Severe CPI popn[DisSr]) / Total popn senior
- (1427) Severe CPI frac of total popn=Total Severe CPI popn / Total popn
- (1428) Severe CPI frac of total popn initial=INITIAL(Severe CPI frac of total popn)
- (1429) Severe CPI frac of Wkage popn=(Severe CPI popn[InsAdvWkage]+Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsAdvWkage]+Severe CPI popn[UninsDisWkage]) / Total popn working age
- (1430) Severe CPI frac of Youth popn=(Severe CPI popn[InsAdvYouth]+Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsAdvYouth]+Severe CPI popn[UninsDisYouth]) / Total popn youth
- (1431) Severe CPI inflow from Mild CPI[InsAdvYouth]=(Severe CPI onset[InsAdvYouth]+Severe CPI onset[UninsAdvYouth]) * ZIDZ(Severe CPI popn[InsAdvYouth], Severe CPI popn[InsAdvYouth]+Severe CPI popn[UninsAdvYouth])
- Severe CPI inflow from Mild CPI[InsDisYouth]=(Severe CPI onset[InsDisYouth]+Severe CPI onset[UninsDisYouth]) * ZIDZ(Severe CPI popn[InsDisYouth], Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth])
- Severe CPI inflow from Mild CPI[UninsAdvYouth]=(Severe CPI onset[InsAdvYouth]+Severe CPI onset[UninsAdvYouth]) * ZIDZ(Severe CPI popn[UninsAdvYouth], Severe CPI popn[InsAdvYouth]+Severe CPI popn[UninsAdvYouth])
- Severe CPI inflow from Mild CPI[UninsDisYouth]=(Severe CPI onset[InsDisYouth]+Severe CPI onset[UninsDisYouth]) * ZIDZ(Severe CPI popn[UninsDisYouth], Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth])

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- Severe CPI inflow from Mild CPI[InsAdvWkage]=(Severe CPI onset[InsAdvWkage]+Severe CPI onset[UninsAdvWkage]) * ZIDZ(Severe CPI popn[InsAdvWkage], Severe CPI popn[InsAdvWkage]+Severe CPI popn[UninsAdvWkage])
- Severe CPI inflow from Mild CPI[InsDisWkage]=(Severe CPI onset[InsDisWkage]+Severe CPI onset[UninsDisWkage]) * ZIDZ(Severe CPI popn[InsDisWkage], Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsDisWkage])
- Severe CPI inflow from Mild CPI[UninsAdvWkage]=(Severe CPI onset[InsAdvWkage]+Severe CPI onset[UninsAdvWkage]) * ZIDZ(Severe CPI popn[UninsAdvWkage], Severe CPI popn[InsAdvWkage]+Severe CPI popn[UninsAdvWkage])
- Severe CPI inflow from Mild CPI[UninsDisWkage]=(Severe CPI onset[InsDisWkage]+Severe CPI onset[UninsDisWkage]) * ZIDZ(Severe CPI popn[UninsDisWkage], Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsDisWkage])
- Severe CPI inflow from Mild CPI[AdvSr]=Severe CPI onset[AdvSr]
- Severe CPI inflow from Mild CPI[DisSr]=Severe CPI onset[DisSr]
- (1432) Severe CPI net migration[subpop]=Popn net migration[subpop] * Severe CPI frac of popn[subpop]
- (1433) Severe CPI onset[subpop]=Mild CPI popn[subpop] * Severe CPI onset rate[subpop]
- (1434) Severe CPI onset rate[subpop]=Severe CPI onset rate initial[subpop] * Effect of risk status on Severe CPI onset rate[subpop] * Effect of prev chron care on Severe CPI onset rate[subpop] * Effect of hazardous enviro on Severe CPI onset rate[subpop]
- (1435) Severe CPI onset rate
initial[subpop]=0.0058,0.006,0.084,0.11,0.009,0.022,0.029,0.0175,0.083,0.125
- (1436) Severe CPI popn[subpop]= INTEG (Severe CPI inflow from Mild CPI[subpop]-Severe CPI age out[subpop]+Severe CPI age in[subpop]+Severe CPI net migration[subpop]-Severe CPI popn deaths[subpop]+Severe CPI popn insurance change[subpop]+Severe CPI popn SES change[subpop], Severe CPI popn initial[subpop])
- (1437) Severe CPI popn deaths[subpop]=Severe CPI popn[subpop] * Death rate in Severe CPI popn[subpop]
- (1438) Severe CPI popn initial[subpop]=Popn initial[subpop]*Severe CPI frac of popn initial[subpop]
- (1439) Severe CPI popn insurance change[InsAdvYouth]=-Severe CPI popn insurance change[UninsAdvYouth]
Severe CPI popn insurance change[InsDisYouth]=-Severe CPI popn insurance change[UninsDisYouth]
Severe CPI popn insurance change[UninsAdvYouth]=Change in uninsured frac of Adv Youth popn*(Popn[InsAdvYouth]+Popn[UninsAdvYouth])*Severe CPI frac of popn[UninsAdvYouth]
Severe CPI popn insurance change[UninsDisYouth]=Change in uninsured frac of Disadv Youth popn*(Popn[InsDisYouth]+Popn[UninsDisYouth])*Severe CPI frac of popn[UninsDisYouth]
Severe CPI popn insurance change[InsAdvWkage]=-Severe CPI popn insurance change[UninsAdvWkage]

Severe CPI popn insurance change[InsDisWkage]=-Severe CPI popn insurance change[UninsDisWkage]
 Severe CPI popn insurance change[UninsAdvWkage]=Change in uninsured frac of Adv Wkage popn*(Popn[InsAdvWkage]+Popn[UninsAdvWkage])*Severe CPI frac of popn[UninsAdvWkage]
 Severe CPI popn insurance change[UninsDisWkage]=Change in uninsured frac of Disadv Wkage popn*(Popn[InsDisWkage]+Popn[UninsDisWkage])*Severe CPI frac of popn[UninsDisWkage]
 Severe CPI popn insurance change[AdvSr]=0
 Severe CPI popn insurance change[DisSr]=0

- (1440) Severe CPI popn SES change[InsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(Severe CPI popn[InsAdvYouth],Severe CPI popn[InsAdvYouth]+Severe CPI popn[UninsAdvYouth]) * ZIDZ(Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(Severe CPI popn[InsAdvYouth], Popn[InsAdvYouth]+Popn[UninsAdvYouth]))
 Severe CPI popn SES change[InsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(Severe CPI popn[InsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(Severe CPI popn[InsDisYouth],Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth]) * ZIDZ(Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth]))
 Severe CPI popn SES change[UninsAdvYouth]=MAX(0, SES change in Youth popn * ZIDZ(Severe CPI popn[UninsAdvYouth],Severe CPI popn[InsAdvYouth]+Severe CPI popn[UninsAdvYouth]) * ZIDZ(Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) - MAX(0, -SES change in Youth popn * ZIDZ(Severe CPI popn[UninsAdvYouth], Popn[InsAdvYouth]+Popn[UninsAdvYouth]))
 Severe CPI popn SES change[UninsDisYouth]=-MAX(0, SES change in Youth popn * ZIDZ(Severe CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth])) + MAX(0, -SES change in Youth popn * ZIDZ(Severe CPI popn[UninsDisYouth],Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth]) * ZIDZ(Severe CPI popn[InsDisYouth]+Severe CPI popn[UninsDisYouth], Popn[InsDisYouth]+Popn[UninsDisYouth]))
 Severe CPI popn SES change[InsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(Severe CPI popn[InsAdvWkage],Severe CPI popn[InsAdvWkage]+Severe CPI popn[UninsAdvWkage]) * ZIDZ(Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) - MAX(0, -SES change in Wkage popn * ZIDZ(Severe CPI popn[InsAdvWkage], Popn[InsAdvWkage]+Popn[UninsAdvWkage]))
 Severe CPI popn SES change[InsDisWkage]=-MAX(0, SES change in Wkage popn * ZIDZ(Severe CPI popn[InsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) + MAX(0, -SES change in Wkage popn * ZIDZ(Severe CPI popn[InsDisWkage],Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsDisWkage]) * ZIDZ(Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage]))
 Severe CPI popn SES change[UninsAdvWkage]=MAX(0, SES change in Wkage popn * ZIDZ(Severe CPI popn[UninsAdvWkage],Severe CPI popn[InsAdvWkage]+Severe CPI popn[UninsAdvWkage]) * ZIDZ(Severe CPI popn[InsDisWkage]+Severe CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) - MAX(0, -SES change in Wkage popn * ZIDZ(Severe CPI popn[UninsAdvWkage], Popn[InsAdvWkage]+Popn[UninsAdvWkage]))
 Severe CPI popn SES change[UninsDisWkage]=-MAX(0, SES change in Wkage popn * ZIDZ(Severe CPI popn[UninsDisWkage], Popn[InsDisWkage]+Popn[UninsDisWkage])) + MAX(0, -SES change

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- $$\text{in Wkage popn} * \text{ZIDZ}(\text{Severe CPI popn}[\text{UninsDisWkage}], \text{Severe CPI popn}[\text{InsDisWkage}] + \text{Severe CPI popn}[\text{UninsDisWkage}]) * \text{ZIDZ}(\text{Severe CPI popn}[\text{InsDisWkage}] + \text{Severe CPI popn}[\text{UninsDisWkage}], \text{Popn}[\text{InsDisWkage}] + \text{Popn}[\text{UninsDisWkage}]))$$
- $$\text{Severe CPI popn SES change}[\text{AdvSr}] = \text{MAX}(0, \text{SES change in Senior popn} * \text{ZIDZ}(\text{Severe CPI popn}[\text{DisSr}], \text{Popn}[\text{DisSr}])) - \text{MAX}(0, -\text{SES change in Senior popn} * \text{ZIDZ}(\text{Severe CPI popn}[\text{AdvSr}], \text{Popn}[\text{AdvSr}]))$$
- $$\text{Severe CPI popn SES change}[\text{DisSr}] = -\text{MAX}(0, \text{SES change in Senior popn} * \text{ZIDZ}(\text{Severe CPI popn}[\text{DisSr}], \text{Popn}[\text{DisSr}])) + \text{MAX}(0, -\text{SES change in Senior popn} * \text{ZIDZ}(\text{Severe CPI popn}[\text{AdvSr}], \text{Popn}[\text{AdvSr}]))$$
- (1441) Smoker frac of HRB popn in 2015=0.3
- (1442) Smokers absent tax=Total high risk behav popn * Smoker frac of HRB popn in 2015
- (1443) SNF stays[subpop]=Original inpatient admissions[subpop] * Frac of inpatients to SNF[subpop]
- (1444) Specialist FFS revenue[subpop]=Specialist revenue under full FFS[subpop] * (1-Frac of specialists under global payment)
- (1445) Specialist FFS revenue per FFS popn[subpop]=ZIDZ(Specialist revenue under full FFS[subpop], Popn[subpop])
- (1446) Specialist FFS revenue per FFS popn recent[subpop]=SMOOTH(Specialist FFS revenue per FFS popn[subpop], Global payment adjustment time)
- (1447) Specialist global payment revenue[subpop]=Popn[subpop] * Specialist payment per popn under global payment by segment[subpop] * Frac of specialists under global payment
- (1448) Specialist net income ratio=Avg net income per Specialist deflated / Avg net income per Specialist deflated initial
- (1449) Specialist overhead rate=0.64
- (1450) Specialist payment per popn under global payment by segment[subpop]=Specialist FFS revenue per FFS popn recent[subpop] * Healthcare cost index multiplier on global payments
- (1451) Specialist revenue[subpop]=Specialist FFS revenue[subpop] + Specialist global payment revenue[subpop]
- (1452) Specialist revenue loss avoidance due to capitation=SUM(Popn[subpop!]) * Frac of specialists under global payment * (Specialist payment per popn under global payment by segment[subpop!] - Specialist FFS revenue per FFS popn[subpop!]))
- (1453) Specialist revenue per Commercial pt visit reltv to avg cost=1.27

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- (1454) Specialist revenue under full FFS[subpop]=Costs of Specialist services under FFS[subpop] * Specialist revenue per Commercial pt visit reltv to avg cost* Revenue per Specialist service by segment reltv to Commercial[subpop]
- (1455) Specialists= INTEG (Specialists arriving-Specialists departing, Total popn * Specialists per 10k popn initial/10000)
- (1456) Specialists arriving=MAX(0, Specialists departing + (Indicated specialists-Specialists)/1)
- (1457) Specialists departing=Specialists*Specialists departure rate
- (1458) Specialists departure rate=Specialists departure rate initial * Effect of net income on specialist departure
- (1459) Specialists departure rate initial=0.05
- (1460) Specialists per 10k popn=Specialists*10000/Total popn
- (1461) Specialists per 10k popn initial=12.5
- (1462) Specialists per capita trend multiplier=Specialists per capita trend multiplier series(Time)
- (1463) Specialists per capita trend multiplier series([(2000,0.6)-(2040,1)],(2000,1),(2010,1),(2020,1),(2030,1),(2040,1))
- (1464) Spending of downstream only funds=MIN(Max program spending of downstream only funds, Indicated spending on downstream initiatives)
- (1465) Spending of unconstrained funds=MIN(Max program spending of unconstrained funds, Indicated spending of unconstrained funds)
- (1466) Spending of upstream only funds=MIN(Max program spending of upstream only funds, Indicated spending on upstream initiatives)
- (1467) Spending on care coord initiative=Indicated spending on care coord initiative * Actual vs indicated spending on downstream initiatives
- (1468) Spending on crime fighting initiative=Indicated spending on crime fighting initiative * Actual vs indicated spending on upstream initiatives
- (1469) Spending on downstream initiatives=Indicated spending on downstream initiatives * Actual vs indicated spending on downstream initiatives
- (1470) Spending on end of life care initiative=Indicated spending on end of life care initiative * Actual vs indicated spending on downstream initiatives
- (1471) Spending on family pathways initiative=Indicated spending on family pathways initiative * Actual vs indicated spending on upstream initiatives

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- (1472) Spending on FQHC PCP recruitment initiative=Indicated spending on FQHC PCP recruitment initiative * Actual vs indicated spending on downstream initiatives
- (1473) Spending on general PCP recruitment initiative=Indicated spending on general PCP recruitment initiative * Actual vs indicated spending on downstream initiatives
- (1474) Spending on HAI prevention initiative=Indicated spending on HAI prevention initiative * Actual vs indicated spending on downstream initiatives
- (1475) Spending on hazard reduction initiative=Indicated spending on hazard reduction initiative * Actual vs indicated spending on upstream initiatives
- (1476) Spending on healthy behavior initiative=Indicated spending on healthy behavior initiative * Actual vs indicated spending on upstream initiatives
- (1477) Spending on hospital efficiency initiative=Indicated spending on hospital efficiency initiative * Actual vs indicated spending on downstream initiatives
- (1478) Spending on malpractice reform initiative=Indicated spending on malpractice reform initiative * Actual vs indicated spending on downstream initiatives
- (1479) Spending on med home initiative=Indicated spending on med home initiative * Actual vs indicated spending on downstream initiatives
- (1480) Spending on mental illness care initiative=Indicated spending on mental illness care initiative * Actual vs indicated spending on downstream initiatives
- (1481) Spending on PCP practice redesign initiative=Indicated spending on PCP practice redesign initiative * Actual vs indicated spending on downstream initiatives
- (1482) Spending on popn level downstream initiatives=Spending on mental illness care initiative + Spending on self care support initiative+Spending on PVS initiative + Spending on end of life care initiative
- (1483) Spending on popn level initiatives=Spending on upstream initiatives + Spending on popn level downstream initiatives
- (1484) Spending on popn level initiatives 2020=SAMPLE IF TRUE(Time=2020, Spending on popn level initiatives, 0)
- (1485) Spending on post discharge care initiative=Indicated spending on post discharge care initiative * Actual vs indicated spending on downstream initiatives
- (1486) Spending on prev chron quality initiative=Indicated spending on prev chron quality initiative * Actual vs indicated spending on downstream initiatives

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- (1487) Spending on provider level initiatives=Spending on downstream initiatives - Spending on popn level downstream initiatives
- (1488) Spending on provider level initiatives 2020=SAMPLE IF TRUE(Time=2020, Spending on provider level initiatives, 0)
- (1489) Spending on PVS initiative=Indicated spending on PVS initiative * Actual vs indicated spending on downstream initiatives
- (1490) Spending on self care support initiative=Indicated spending on self care support initiative * Actual vs indicated spending on downstream initiatives
- (1491) Spending on student pathways initiative=Indicated spending on student pathways initiative * Actual vs indicated spending on upstream initiatives
- (1492) Spending on upstream initiatives=Indicated spending on upstream initiatives * Actual vs indicated spending on upstream initiatives
- (1493) Spending shortfall for care coord initiative=Indicated spending on care coord initiative - Spending on care coord initiative
- (1494) Spending shortfall for crime fighting initiative=Indicated spending on crime fighting initiative - Spending on crime fighting initiative
- (1495) Spending shortfall for downstream initiatives=Indicated spending on downstream initiatives - Spending on downstream initiatives
- (1496) Spending shortfall for end of life care initiative=Indicated spending on end of life care initiative - Spending on end of life care initiative
- (1497) Spending shortfall for family pathways initiative=Indicated spending on family pathways initiative - Spending on family pathways initiative
- (1498) Spending shortfall for FQHC PCP recruitment initiative=Indicated spending on FQHC PCP recruitment initiative - Spending on FQHC PCP recruitment initiative
- (1499) Spending shortfall for general PCP recruitment initiative=Indicated spending on general PCP recruitment initiative - Spending on general PCP recruitment initiative
- (1500) Spending shortfall for HAI prevention initiative=Indicated spending on HAI prevention initiative - Spending on HAI prevention initiative
- (1501) Spending shortfall for hazard reduction initiative=Indicated spending on hazard reduction initiative - Spending on hazard reduction initiative
- (1502) Spending shortfall for healthy behavior initiative=Indicated spending on healthy behavior initiative - Spending on healthy behavior initiative

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- (1503) Spending shortfall for hospital efficiency initiative=Indicated spending on hospital efficiency initiative - Spending on hospital efficiency initiative
- (1504) Spending shortfall for malpractice reform initiative=Indicated spending on malpractice reform initiative - Spending on malpractice reform initiative
- (1505) Spending shortfall for med home initiative=Indicated spending on med home initiative - Spending on med home initiative
- (1506) Spending shortfall for mental illness care initiative=Indicated spending on mental illness care initiative - Spending on mental illness care initiative
- (1507) Spending shortfall for PCP practice redesign initiative=Indicated spending on PCP practice redesign initiative - Spending on PCP practice redesign initiative
- (1508) Spending shortfall for post discharge care initiative=Indicated spending on post discharge care initiative - Spending on post discharge care initiative
- (1509) Spending shortfall for prev chron quality initiative=Indicated spending on prev chron quality initiative - Spending on prev chron quality initiative
- (1510) Spending shortfall for PVS initiative=Indicated spending on PVS initiative - Spending on PVS initiative
- (1511) Spending shortfall for self care support initiative=Indicated spending on self care support initiative - Spending on self care support initiative
- (1512) Spending shortfall for student pathways initiative=Indicated spending on student pathways initiative - Spending on student pathways initiative
- (1513) Spending shortfall for upstream initiatives=Indicated spending on upstream initiatives - Spending on upstream initiatives
- (1514) $Sr \text{ frac of employed popn} = (\text{Employed popn by segment}[\text{AdvSr}] + \text{Employed popn by segment}[\text{DisSr}]) / \text{Total employed popn}$
- (1515) Standard senior frac of popn=0.13
- (1516) Standard working age frac of popn=1-Standard youth frac of popn-Standard senior frac of popn
- (1517) Standard youth frac of popn=0.24
- (1518) Start time for ACA eligibility expansion=2014
- (1519) Start time for accumulating key metrics=2015
- (1520) Strength of specialist income reduction response=1-Frac of specialists under global payment

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- (1521) Student pathways to advantage initiative=0
- (1522) Substance abusing frac of high risk behav
popn[subpop]=0.48,0.48,0.48,0.48,0.1,0.205,0.29,0.3,0.05,0.1
- (1523) Sufficiency of PCPs for demand from Adv popn=MIN(1,ZIDZ(Visits to PCPs by Adv popn, Demand for visits to PCPs by Adv popn))
- (1524) Sufficiency of PCPs for demand from Disadv uninsured popn=MIN(1,ZIDZ(Visits to PCPs by Disadv uninsured popn, Demand for visits to PCPs by Disadv uninsured popn))
- (1525) Sufficiency of PCPs for demand from dually insured popn=MIN(1,ZIDZ(Visits to PCPs by dually insured popn, Demand for visits to PCPs by dually insured popn))
- (1526) Sufficiency of PCPs for demand from Medicaid only popn=MIN(1,ZIDZ(Visits to PCPs by Medicaid only popn, Demand for visits to PCPs by Medicaid only popn))
- (1527) Sufficiency of PCPs for visit demand[InsAdvYouth]=Sufficiency of PCPs for demand from Adv popn
Sufficiency of PCPs for visit demand[InsDisYouth]=Sufficiency of PCPs for demand from Medicaid only popn
Sufficiency of PCPs for visit demand[UninsAdvYouth]=Sufficiency of PCPs for demand from Adv popn
Sufficiency of PCPs for visit demand[UninsDisYouth]=Sufficiency of PCPs for demand from Disadv uninsured popn
Sufficiency of PCPs for visit demand[InsAdvWkage]=Sufficiency of PCPs for demand from Adv popn
Sufficiency of PCPs for visit demand[InsDisWkage]=Sufficiency of PCPs for demand from Medicaid only popn
Sufficiency of PCPs for visit demand[UninsAdvWkage]=Sufficiency of PCPs for demand from Adv popn
Sufficiency of PCPs for visit demand[UninsDisWkage]=Sufficiency of PCPs for demand from Disadv uninsured popn
Sufficiency of PCPs for visit demand[AdvSr]=Sufficiency of PCPs for demand from Adv popn
Sufficiency of PCPs for visit demand[DisSr]=Sufficiency of PCPs for demand from dually insured popn
- (1528) Sugar sweetened fraction of sweet beverages=0.62
- (1529) Sum of individual weights for Superscore=Weight on healthcare cost score+Weight on death rate score+Weight on office care score
+Weight on inequity score+Weight on productivity score
- (1530) Superscore=IF THEN ELSE(Highest subscore<0.01, 0, (Score for healthcare cost reduction*Weight on healthcare cost score + Score for death rate reduction*Weight on death rate score + Score for office care improvement*Weight on office care score + Score for health inequity reduction*Weight on inequity score + Score for economic productivity improvement*Weight on productivity score)*5/Sum of individual weights for Superscore)

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- (1531) Sweet beverage base price in cents per ounce=8
- (1532) Tax1 as a fraction of commercial healthcare costs=0
- (1533) Tax1 based on commercial premiums=Healthcare costs of Commercial popn * Tax1 as a fraction of commercial healthcare costs* STEP(1, 2015+Delay time for start of Tax1)
- (1534) Tax2 as dollars per worker=0
- (1535) Tax2 based on employed popn=Total employed popn * Frac of employed popn subject to Tax2 * Tax2 as dollars per worker* STEP(1, 2015+Delay time for start of Tax2)
- (1536) Tax3 as a fraction=Tax3 as cents per ounce / Sweet beverage base price in cents per ounce
- (1537) Tax3 as cents per ounce=0
- (1538) Tax3 based on sweet beverage consumption=Ounces of sweet bev consumed * IF THEN ELSE(Does Tax3 exclude diet beverages, Sugar sweetened fraction of sweet beverages, 1) * Tax3 as cents per ounce/100 * STEP(1, 2015+Delay time for start of Tax3)
- (1539) Tax4 as a fraction=Tax4 as dollars per pack / Cigarette pack base price in dollars per pack
- (1540) Tax4 as dollars per pack=0
- (1541) Tax4 based on cigarette consumption=Packs of cigarettes consumed * Tax4 as dollars per pack * STEP(1, 2015+Delay time for start of Tax4)
- (1542) Technology assessment under care coord is in effect=IF THEN ELSE(Time>=2015+Delay time for start of care coord initiative+Delay time for starting technology assessment under care coord, Care coord initiative * Does Care coord include technology assessment, 0)
- (1543) Time for care to affect uncontrolled CMI=1
- (1544) Time for crime fighting initiative to reduce high crime prevalence=5
- (1545) Time for family pathways initiative to reduce Disadv frac=3
- (1546) Time for hazard reduction initiative to reduce hazards prevalence=5
- (1547) Time for healthcare costs to affect Disadv frac=1
- (1548) Time for healthy behav initiative to have impact=2
- (1549) Time for prev chron care to affect disease outcomes=2
- (1550) Time for self care support or med home to affect self care behavior=1

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- (1551) Time for severe physical and mental illness to affect Disadv frac=6
- (1552) Time for specialists to adjust departure plans=5
- (1553) Time for specialists to adjust intensity of care=2
- (1554) Time for student pathways initiative to reduce Disadv frac=5
- (1555) Time for substance abuse to affect CMI=1
- (1556) Time since accumulation start=MAX(0, Time - Start time for accumulating key metrics)
- (1557) Time to establish changes in regional economy=5
- (1558) Time to implement care coord initiative=1
- (1559) Time to implement end of life care initiative=1
- (1560) Time to implement HAI prevention initiative=1
- (1561) Time to implement hospital efficiency initiative=1
- (1562) Time to implement malpractice reform initiative=1
- (1563) Time to implement Med home initiative=1
- (1564) Time to implement PCP practice redesign initiative=1
- (1565) Time to implement post discharge care initiative=1
- (1566) Time to implement prev chron quality initiative=1
- (1567) Time to implement PVS initiative=1
- (1568) Total additional popn receiving hospice under initiative=SUM(Additional popn receiving hospice under initiative[subpop!])
- (1569) Total Adv popn=Total popn - Total Disadv popn
- (1570) Total Any CPI popn=Total Mild CPI popn + Total Severe CPI popn
- (1571) Total available program funds surplus=MAX(0, Max program spending of all funds - Total program spending)
- (1572) Total behav risk onset=SUM(Risky behav onset[subpop!])
- (1573) Total behav risk reform=SUM(Risky behav reform[subpop!])

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- (1574) Total births=Total popn * Birth rate
- (1575) Total CMI popn=SUM(CMI popn[subpop!])
- (1576) Total Commercial insured popn=Popn[InsAdvYouth]+Popn[InsAdvWkage]
- (1577) Total controlled CMI popn=SUM(Controlled CMI popn[subpop!])
- (1578) Total cost savings available to community=Commercial popn cost savings available to community + Medicaid only popn cost savings available to community+Medicare popn cost savings available to community
- (1579) Total cost savings available to community 2020=SAMPLE IF TRUE(Time=2020, Total cost savings available to community, 0)
- (1580) Total costs of allied medical services=SUM(Costs of allied medical services[subpop!])
- (1581) Total costs of dental services=SUM(Costs of dental services[subpop!])
- (1582) Total costs of dental services 2020=SAMPLE IF TRUE(Time=2020, Total costs of dental services, 0)
- (1583) Total costs of freestanding lab services=SUM(Costs of freestanding lab services[subpop!])
- (1584) Total costs of home health care=SUM(Costs of home health care[subpop!])
- (1585) Total costs of home health care 2020=SAMPLE IF TRUE(Time=2020, Total costs of home health care, 0)
- (1586) Total costs of Hosp OPD visits for prev chron care under FFS=SUM(Costs of Hosp OPD visits for prev chron care by locals under FFS[subpop!])
- (1587) Total costs of Hosp OPD visits for test or procedure by locals under FFS
=SUM(Facility costs of Hosp OPD visits for test or procedure by locals under FFS[subpop!])
- (1588) Total costs of hospice care=SUM(Costs of hospice care[subpop!])
- (1589) Total costs of hospice care 2020=SAMPLE IF TRUE(Time=2020, Total costs of hospice care, 0)
- (1590) Total costs of hospital attending physician services=SUM(Costs of hospital attending physician services[subpop!])
- (1591) Total costs of long term nursing home stays=SUM(Costs of long term nursing home stays[subpop!])
- (1592) Total costs of medical services in nonclinical settings=SUM(Costs of medical services in nonclinical settings[subpop!])

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- (1593) Total costs of nonHosp facility visits for test or procedure=SUM(Costs of nonHosp facility visits for test or procedure[subpop!])
- (1594) Total costs of nursing facility stays=SUM(Costs of nursing facility stays[subpop!])
- (1595) Total costs of nursing facility stays 2020=SAMPLE IF TRUE(Time=2020, Total costs of nursing facility stays, 0)
- (1596) Total costs of other professional services=SUM(Costs of other professional services[subpop!])
- (1597) Total costs of other self care products=SUM(Costs of other self care products[subpop!])
- (1598) Total costs of PCP office visits under FFS=SUM(Costs of PCP office visits under FFS[subpop!])
- (1599) Total costs of physician and lab services=SUM(Costs of physician and lab services[subpop!])
- (1600) Total costs of physician office visits under FFS=SUM(Costs of physician office visits under FFS[subpop!])
- (1601) Total costs of psych Rx drugs=SUM(Costs of psych Rx drugs[subpop!])
- (1602) Total costs of Rx drugs=SUM(Costs of Rx drugs[subpop!])
- (1603) Total costs of Rx drugs for CPI mgmt=SUM(Costs of Rx drugs for CPI mgmt[subpop!])
- (1604) Total costs of Rx drugs for risk mgmt of No CPI pts=SUM(Costs of Rx drugs for risk mgmt of No CPI pts[subpop!])
- (1605) Total costs of self care products=Total costs of Rx drugs + Total costs of other self care products
- (1606) Total costs of self care products 2020=SAMPLE IF TRUE(Time=2020, Total costs of self care products, 0)
- (1607) Total costs of SNF stays=SUM(Costs of SNF stays[subpop!])
- (1608) Total costs of Specialist office visits under FFS=SUM(Costs of Specialist office visits under FFS[subpop!])
- (1609) Total costs of Specialist services under FFS=SUM(Costs of Specialist services under FFS[subpop!])
- (1610) Total courses of home health=SUM(Courses of home health[subpop!])
- (1611) Total courses of home health not post hospital=SUM(Courses of home health not post hospital[subpop!])
- (1612) Total courses of home health post hospital=SUM(Courses of home health post hospital[subpop!])

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- (1613) Total deaths=SUM(Popn deaths[subpop!])
- (1614) Total deaths at initial HAI frac=SUM(Popn deaths at initial HAI frac[subpop!])
- (1615) Total deaths from HAI=SUM(Deaths from HAI[subpop!])
- (1616) Total deaths using hospice=SUM(Deaths using hospice[subpop!])
- (1617) Total demand for prev chron care visits=SUM(Demand for prev chron care visits[subpop!])
- (1618) Total demand for visits to PCPs=SUM(Demand for visits to PCPs[subpop!])
- (1619) Total Disadv insured popn=Popn[InsDisYouth]+Popn[InsDisWkage]+Popn[DisSr]
- (1620) Total Disadv popn=
 Popn[InsDisYouth]+Popn[UninsDisYouth]+Popn[InsDisWkage]+Popn[UninsDisWkage]+Popn[DisSr]
- (1621) Total Disadv popn Wkage=Popn[InsDisWkage]+Popn[UninsDisWkage]
- (1622) Total Disadv popn Youth=Popn[InsDisYouth]+Popn[UninsDisYouth]
- (1623) Total Dual insured popn=Popn[DisSr]
- (1624) Total employed popn=SUM(Employed popn by segment[subpop!])
- (1625) Total ER visits=SUM(ER visits[subpop!])
- (1626) Total facility costs of ER visits by locals under FFS=SUM(Facility costs of ER visits by locals under FFS[subpop!])
- (1627) Total facility costs of Hosp OPD visits by locals under FFS=Total costs of Hosp OPD visits for prev chron care under FFS + Total costs of Hosp OPD visits for test or procedure by locals under FFS
- (1628) Total facility costs of inpatient stays by locals under FFS=SUM(Facility costs of inpatient stays by locals under FFS[subpop!])
- (1629) Total health expend per capita=Total health expenditures/Total popn
- (1630) Total health expenditures=Personal healthcare expenditures in the region / Personal healthcare frac of total health expenditures
- (1631) Total healthcare costs=SUM(Healthcare costs[subpop!])
- (1632) Total healthcare costs 2020=SAMPLE IF TRUE(Time=2020, Total healthcare costs, 0)
- (1633) Total healthcare costs against benchmark=SUM(Healthcare costs against benchmark[subpop!])

(1634) Total healthcare costs baserun=Total healthcare costs baserun billions series(Time) * 1e+009 *
Ourtown popn multiplier

(1635) Total healthcare costs baserun billions series([(2000,0)-
(2040,8)],(2000,1.49),(2000.25,1.51),(2000.5,1.52),(2000.75,1.53),(2001,1.54),(2001.25,1.57),(
2001.5,1.59),(2001.75,1.61),(2002,1.64),(2002.25,1.66),(2002.5,1.68),(2002.75,1.71),(2003,1.7
3),(2003.25,1.76),(2003.5,1.78),(2003.75,1.8),(2004,1.83),(2004.25,1.84),(2004.5,1.86),(2004.7
5,1.88),(2005,1.89),(2005.25,1.91),(2005.5,1.92),(2005.75,1.93),(2006,1.94),(2006.25,1.96),(20
06.5,1.98),(2006.75,1.99),(2007,2.01),(2007.25,2.02),(2007.5,2.03),(2007.75,2.04),(2008,2.06),
(2008.25,2.07),(2008.5,2.09),(2008.75,2.1),(2009,2.12),(2009.25,2.13),(2009.5,2.14),(2009.75,
2.16),(2010,2.17),(2010.25,2.17),(2010.5,2.18),(2010.75,2.18),(2011,2.19),(2011.25,2.2),(2011.
5,2.2),(2011.75,2.21),(2012,2.21),(2012.25,2.22),(2012.5,2.23),(2012.75,2.23),(2013,2.24),(201
3.25,2.25),(2013.5,2.26),(2013.75,2.27),(2014,2.27),(2014.25,2.29),(2014.5,2.3),(2014.75,2.31)
,(2015,2.33),(2015.25,2.35),(2015.5,2.37),(2015.75,2.38),(2016,2.4),(2016.25,2.42),(2016.5,2.4
4),(2016.75,2.46),(2017,2.48),(2017.25,2.5),(2017.5,2.52),(2017.75,2.53),(2018,2.55),(2018.25,
2.57),(2018.5,2.59),(2018.75,2.61),(2019,2.63),(2019.25,2.64),(2019.5,2.66),(2019.75,2.68),(20
20,2.7),(2020.25,2.72),(2020.5,2.74),(2020.75,2.76),(2021,2.77),(2021.25,2.79),(2021.5,2.81),(
2021.75,2.83),(2022,2.85),(2022.25,2.87),(2022.5,2.89),(2022.75,2.9),(2023,2.92),(2023.25,2.9
4),(2023.5,2.96),(2023.75,2.98),(2024,3),(2024.25,3.02),(2024.5,3.04),(2024.75,3.06),(2025,3.0
8),(2025.25,3.1),(2025.5,3.12),(2025.75,3.14),(2026,3.16),(2026.25,3.18),(2026.5,3.2),(2026.75
,3.22),(2027,3.24),(2027.25,3.26),(2027.5,3.28),(2027.75,3.3),(2028,3.32),(2028.25,3.35),(2028
.5,3.37),(2028.75,3.39),(2029,3.41),(2029.25,3.43),(2029.5,3.45),(2029.75,3.47),(2030,3.5),(20
30.25,3.52),(2030.5,3.54),(2030.75,3.56),(2031,3.58),(2031.25,3.61),(2031.5,3.63),(2031.75,3.
65),(2032,3.67),(2032.25,3.7),(2032.5,3.72),(2032.75,3.74),(2033,3.77),(2033.25,3.79),(2033.5,
3.81),(2033.75,3.84),(2034,3.86),(2034.25,3.88),(2034.5,3.91),(2034.75,3.93),(2035,3.95),(203
5.25,3.98),(2035.5,4),(2035.75,4.03),(2036,4.05),(2036.25,4.08),(2036.5,4.1),(2036.75,4.13),(2
037,4.15),(2037.25,4.17),(2037.5,4.2),(2037.75,4.23),(2038,4.25),(2038.25,4.28),(2038.5,4.3),(
2038.75,4.33),(2039,4.35),(2039.25,4.38),(2039.5,4.4),(2039.75,4.43),(2040,4.46))

(1636) Total healthcare costs of senior popn=Healthcare costs[AdvSr]+Healthcare costs[DisSr]

(1637) Total healthcare costs of working age popn=Healthcare costs[InsAdvWkage]+Healthcare
costs[InsDisWkage]+Healthcare costs[UninsAdvWkage]+Healthcare costs[UninsDisWkage]

(1638) Total healthcare costs of youth popn=Healthcare costs[InsAdvYouth]+Healthcare
costs[InsDisYouth]+Healthcare costs[UninsAdvYouth]+Healthcare costs[UninsDisYouth]

(1639) Total healthy days per month=SUM(Avg healthy days per month by
segment[subpop!]*Popn[subpop!])

(1640) Total healthy days per month for adults=Avg healthy days per month by
segment[InsAdvWkage]*Popn[InsAdvWkage] + Avg healthy days per month by
segment[InsDisWkage]*Popn[InsDisWkage] + Avg healthy days per month by
segment[UninsAdvWkage]*Popn[UninsAdvWkage] +Avg healthy days per month by
segment[UninsDisWkage]*Popn[UninsDisWkage] + Avg healthy days per month by
segment[AdvSr]*Popn[AdvSr] + Avg healthy days per month by segment[DisSr]*Popn[DisSr]

(1641) Total high risk behav popn=SUM(High risk behav popn[subpop!])

-
- (1642) Total Hosp OPD visits=SUM(Hosp OPD visits[subpop!])
- (1643) Total Hospital and physician revenue=Total Hospital revenue + Total PCP revenue + Total Specialist revenue
- (1644) Total Hospital ER FFS revenue=SUM(Hospital ER FFS revenue[subpop!])
- (1645) Total hospital facility costs of locals=SUM(Hospital facility costs of locals[subpop!])
- (1646) Total Hospital FFS revenue=SUM(Hospital FFS revenue[subpop!])
- (1647) Total Hospital global payment revenue=SUM(Hospital global payment revenue[subpop!])
- (1648) Total Hospital inpatient FFS revenue=SUM(Hospital inpatient FFS revenue[subpop!])
- (1649) Total Hospital OPD FFS revenue=SUM(Hospital OPD FFS revenue[subpop!])
- (1650) Total Hospital revenue=Total Hospital revenue from patients + Cost savings awarded to hospitals
- (1651) Total hospital revenue 2020=SAMPLE IF TRUE(Time=2020, Total Hospital revenue, 0)
- (1652) Total hospital revenue from locals under full FFS=SUM(Local hospital revenue from locals under full FFS[subpop!])
- (1653) Total Hospital revenue from patients=Total Hospital FFS revenue + Total Hospital global payment revenue
- (1654) Total hospitalizations using palliative care=SUM(Hospitalizations using palliative care[subpop!])
- (1655) Total income of employed popn=SUM(Income of employed popn by segment[subpop!])
- (1656) Total indicated program spending=Indicated spending on popn level initiatives + Indicated spending on provider level initiatives
- (1657) Total inpatient stays=SUM(Inpatient stays[subpop!])
- (1658) Total inpatient stays from urgent episodes=Total original inpatient admissions from urgent episodes + Total readmissions
- (1659) Total insured popn=SUM(Popn[subpop!]*Insured segment indicator[subpop!])
- (1660) Total local ER visits by outside popn= INTEG (Growth in local ER visits by outside popn, Total local ER visits by outside popn initial)
- (1661) Total local ER visits by outside popn initial=0

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- (1662) Total local Hosp OPD visits by outside popn= INTEG (Growth in local Hosp OPD visits by outside popn, Total local Hosp OPD visits by outside popn initial)
- (1663) Total local Hosp OPD visits by outside popn initial=0
- (1664) Total local hospital ER visits=Total ER visits*Frac of popn using local hospitals for ER visits + Total local ER visits by outside popn
- (1665) Total local hospital inpatient stays=Total inpatient stays*Frac of popn using local hospitals for inpatient stays+Total local inpatient stays by outside popn
- (1666) Total local hospital OPD visits=Total Hosp OPD visits*Frac of popn using local hospitals for OPD visits + Total local Hosp OPD visits by outside popn
- (1667) Total local inpatient stays by outside popn= INTEG (Growth in local inpatient stays by outside popn, Total local inpatient stays by outside popn initial)
- (1668) Total local inpatient stays by outside popn initial=0
- (1669) Total long term nursing home admissions=SUM(Long term nursing home admissions[subpop!])
- (1670) Total long term nursing home admissions after SNF=SUM(Long term nursing home admissions after SNF[subpop!])
- (1671) Total long term nursing home popn=SUM(Long term nursing home popn[subpop!])
- (1672) Total low risk behav popn=SUM(Low risk behav popn[subpop!])
- (1673) Total Medicaid only popn=Popn[InsDisYouth]+Popn[InsDisWkage]
- (1674) Total Medicare only popn=Popn[AdvSr]
- (1675) Total Mild CPI onset=SUM(Mild CPI onset[subpop!])
- (1676) Total Mild CPI popn=SUM(Mild CPI popn[subpop!])
- (1677) Total Mild CPI popn deaths=SUM(Mild CPI popn deaths[subpop!])
- (1678) Total net migration=SUM(Popn net migration[subpop!])
- (1679) Total No CPI popn=SUM(No CPI popn[subpop!])
- (1680) Total No CPI popn deaths=SUM(No CPI popn deaths[subpop!])
- (1681) Total nonurgent acute episodes=SUM(Nonurgent acute episodes[subpop!])
- (1682) Total nonurgent acute episodes to ER=SUM(Nonurgent acute episodes to ER[subpop!])

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- (1683) Total nursing facility popn=Total long term nursing home popn + Total popn in SNF
- (1684) Total office visits=Total visits to PCPs + Total visits to Specialists
- (1685) Total original inpatient admissions=SUM(Original inpatient admissions[subpop!])
- (1686) Total original inpatient admissions from nonurgent episodes=SUM(Original inpatient admissions from nonurgent episodes[subpop!])
- (1687) Total original inpatient admissions from urgent episodes=SUM(Original inpatient admissions from urgent episodes[subpop!])
- (1688) Total original urgent episodes=SUM(Original urgent episodes[subpop!])
- (1689) Total PCP FFS revenue=SUM(PCP FFS revenue[subpop!])
- (1690) Total PCP global payment revenue=SUM(PCP global payment revenue[subpop!])
- (1691) Total PCP revenue=Total PCP revenue from patients + (Cost savings awarded per physician*PCPs)
- (1692) Total PCP revenue 2020=SAMPLE IF TRUE(Time=2020, Total PCP revenue, 0)
- (1693) Total PCP revenue from patients=Total PCP FFS revenue + Total PCP global payment revenue
- (1694) Total popn=SUM(Popn[subpop!])
- (1695) Total popn change=Total births - Total deaths + Total net migration
- (1696) Total popn deaths age stdized=Total popn * Overall popn death rate age stdized
- (1697) Total popn in hazardous environment=SUM(Popn in hazardous environment[subpop!])
- (1698) Total popn in high crime area=SUM(Popn in high crime area[subpop!])
- (1699) Total popn in home health=Total courses of home health * Avg days per course of home health/365
- (1700) Total popn in SNF=Total SNF stays * Avg days per SNF stay/365
- (1701) Total popn initial=Anytown popn initial * Ourtown popn multiplier
- (1702) Total popn receiving hospice=SUM(Popn receiving hospice[subpop!])
- (1703) Total popn senior=Popn[AdvSr] + Popn[DisSr]
- (1704) Total popn working age=Popn[InsAdvWkage] + Popn[InsDisWkage] + Popn[UninsAdvWkage] + Popn[UninsDisWkage]

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- (1705) Total popn youth=Popn[InsAdvYouth] + Popn[InsDisYouth] + Popn[UninsAdvYouth] + Popn[UninsDisYouth]
- (1706) Total prev chron care visits=SUM(Prev chron care visits[subpop!])
- (1707) Total prev chron care visits to Hosp OPD=SUM(Prev chron care visits to Hosp OPD[subpop!])
- (1708) Total program spending=Spending of unconstrained funds + Spending of upstream only funds + Spending of downstream only funds
- (1709) Total program spending 2020=SAMPLE IF TRUE(Time=2020, Total program spending, 0)
- (1710) Total program spending shortfall=Total indicated program spending - Total program spending
- (1711) Total program spending vs indicated=XIDZ(Total program spending, Total indicated program spending, 1)
- (1712) Total QALYs per year=SUM(QALYs per year by segment[subpop!])
- (1713) Total QALYs per year for adults=QALYs per year by segment[InsAdvWkage]+QALYs per year by segment[InsDisWkage]+QALYs per year by segment[UninsAdvWkage]+QALYs per year by segment[UninsDisWkage]+QALYs per year by segment[AdvSr]+QALYs per year by segment[DisSr]
- (1714) Total readmissions=SUM(Readmissions[subpop!])
- (1715) Total referrals to Specialists from nonurgent acute episodes=SUM(Referrals to Specialists from nonurgent acute episodes[subpop!])
- (1716) Total regional income=Total income of employed popn / Wages frac of total regional income
- (1717) Total savings on hospital costs from additional palliative care=SUM(Savings on hospital costs from additional palliative care[subpop!])
- (1718) Total Severe CPI onset=SUM(Severe CPI onset[subpop!])
- (1719) Total Severe CPI popn=SUM(Severe CPI popn[subpop!])
- (1720) Total Severe CPI popn deaths=SUM(Severe CPI popn deaths[subpop!])
- (1721) Total SNF stays=SUM(SNF stays[subpop!])
- (1722) Total Specialist FFS revenue=SUM(Specialist FFS revenue[subpop!])
- (1723) Total Specialist global payment revenue=SUM(Specialist global payment revenue[subpop!])

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- (1724) Total Specialist revenue=Total Specialist revenue from patients + (Cost savings awarded per physician*Specialists)
- (1725) Total Specialist revenue 2020=SAMPLE IF TRUE(Time=2020, Total Specialist revenue, 0)
- (1726) Total Specialist revenue from patients=Total Specialist FFS revenue + Total Specialist global payment revenue
- (1727) Total uncontrolled CMI popn=SUM(Uncontrolled CMI popn[subpop!])
- (1728) Total Uninsured popn=
Popn[UninsAdvYouth]+Popn[UninsDisYouth]+Popn[UninsAdvWkage]+Popn[UninsDisWkage]
- (1729) Total uninsured popn Wkage=Popn[UninsAdvWkage]+Popn[UninsDisWkage]
- (1730) Total uninsured popn Youth=Popn[UninsAdvYouth]+Popn[UninsDisYouth]
- (1731) Total urgent episodes to ER=SUM(Urgent episodes to ER[subpop!])
- (1732) Total urgent psych episodes=SUM(Urgent psych episodes[subpop!])
- (1733) Total visit capacity of PCPs=Visit capacity of general PCPs + Visit capacity of FQHC PCPs
- (1734) Total visits to Hosp OPD for test or procedure=SUM(Nonurgent acute episodes sent to Hosp OPD for test or procedure[subpop!])
- (1735) Total visits to nonHosp facility for test or procedure=SUM(Visits to nonHosp facility for test or procedure[subpop!])
- (1736) Total visits to PCPs=Visits to FQHC PCPs + Visits to general PCPs
- (1737) Total visits to physician and Hosp from nonurgent acute episodes=SUM(Visits to physician and Hosp from nonurgent acute episodes[subpop!])
- (1738) Total visits to physician offices=Total visits to PCPs + Total visits to Specialists
- (1739) Total visits to Specialists=SUM(Visits to Specialists[subpop!])
- (1740) Uncompensated care frac of healthcare costs faced by employers=Uncompensated healthcare costs faced by employers / Healthcare costs faced by employers
- (1741) Uncompensated healthcare costs faced by employers=Frac of uncompensated healthcare costs faced by employers*(Healthcare costs[UninsDisYouth]+Healthcare costs[UninsDisWkage])
- (1742) Uncontrolled CMI frac of employed popn=SUM(Uncontrolled CMI frac of popn[subpop!]*Employed popn by segment[subpop!])/ Total employed popn

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- (1743) Uncontrolled CMI frac of Mild CPI popn[subpop]=CMI frac of Mild CPI popn initial[subpop] * Uncontrolled frac of CMI[subpop]
- (1744) Uncontrolled CMI frac of No CPI popn[subpop]=CMI frac of No CPI popn initial[subpop] * Uncontrolled frac of CMI[subpop]
- (1745) Uncontrolled CMI frac of popn[subpop]=CMI frac of popn[subpop] * Uncontrolled frac of CMI[subpop]
- (1746) Uncontrolled CMI frac of popn initial[subpop]=CMI frac of popn initial[subpop] * Uncontrolled frac of CMI initial[subpop]
- (1747) Uncontrolled CMI frac of Severe CPI popn[subpop]=CMI frac of Severe CPI popn initial[subpop] * Uncontrolled frac of CMI[subpop]
- (1748) Uncontrolled CMI frac of total popn=Total uncontrolled CMI popn / Total popn
- (1749) Uncontrolled CMI frac of total popn initial=INITIAL(Uncontrolled CMI frac of total popn)
- (1750) Uncontrolled CMI popn[subpop]=Popn[subpop] * Uncontrolled CMI frac of popn[subpop]
- (1751) Uncontrolled frac of CMI[subpop]=Uncontrolled frac of CMI initial[subpop] * Effect of care on uncontrolled CMI frac[subpop]
- (1752) Uncontrolled frac of CMI initial[subpop]=0.111,0.227,0.165,0.119,0.604,0.703,0.645,0.711,0.661,0.705
- (1753) Underinsured frac of insured nonsenior Disadv=Underinsured frac of insured nonsenior Disadv series(Time)
- (1754) Underinsured frac of insured nonsenior Disadv 2010=Underinsured frac of insured nonsenior Disadv series(2010)
- (1755) Underinsured frac of insured nonsenior Disadv series([(2000,0)-(2020,1)],(2000,0.25),(2003,0.25),(2005,0.23),(2010,0.42),(2012,0.42),(2014,0.44))
- (1756) Uninsured frac of Adv Wkage popn=Popn[UninsAdvWkage] / (Popn[UninsAdvWkage] + Popn[InsAdvWkage])
- (1757) Uninsured frac of Adv Wkage popn initial=0.099
- (1758) Uninsured frac of Adv Youth popn=Popn[UninsAdvYouth] / (Popn[UninsAdvYouth] + Popn[InsAdvYouth])
- (1759) Uninsured frac of Adv Youth popn initial=0.062
- (1760) Uninsured frac of Disadv Wkage popn=Popn[UninsDisWkage] / (Popn[UninsDisWkage] + Popn[InsDisWkage])

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- (1761) Uninsured frac of Disadv Wkage popn initial=0.308
- (1762) Uninsured frac of Disadv Youth popn= $\text{Popn}[\text{UninsDisYouth}] / (\text{Popn}[\text{UninsDisYouth}] + \text{Popn}[\text{InsDisYouth}])$
- (1763) Uninsured frac of Disadv Youth popn initial=0.141
- (1764) Uninsured frac of total popn= $\text{Popn fraction}[\text{UninsAdvYouth}] + \text{Popn fraction}[\text{UninsDisYouth}] + \text{Popn fraction}[\text{UninsAdvWkage}] + \text{Popn fraction}[\text{UninsDisWkage}]$
- (1765) Uninsured frac of total popn 2020= $\text{SAMPLE IF TRUE}(\text{Time}=2020, \text{Uninsured frac of total popn}, 0)$
- (1766) Uninsured frac of Wkage popn= $\text{Total uninsured popn Wkage} / \text{Total popn working age}$
- (1767) Uninsured frac of Youth popn= $\text{Total uninsured popn Youth} / \text{Total popn youth}$
- (1768) Unspent downstream only funds= $\text{Unspent downstream only nonloan funds} + \text{Unspent downstream only loan funds}$
- (1769) Unspent downstream only loan funds= $\text{INTEG}(\text{Inflow to downstream only loan funds} - \text{Repayment of downstream only loan funds} - \text{Program spending of downstream only loan funds}, 0)$
- (1770) Unspent downstream only nonloan funds= $\text{INTEG}(\text{Inflow to downstream only nonloan funds} - \text{Program spending of downstream only nonloan funds}, 0)$
- (1771) Unspent funds available for programs= $\text{Unspent nonloan funds available for programs} + \text{Unspent loan funds available for programs}$
- (1772) Unspent funds available for programs 2020= $\text{SAMPLE IF TRUE}(\text{Time}=2020, \text{Unspent funds available for programs}, 0)$
- (1773) Unspent loan funds available for programs= $\text{Unspent unconstrained loan funds} + \text{Unspent upstream only loan funds} + \text{Unspent downstream only loan funds}$
- (1774) Unspent nonloan funds available for programs= $\text{Unspent unconstrained nonloan funds} + \text{Unspent upstream only nonloan funds} + \text{Unspent downstream only nonloan funds}$
- (1775) Unspent unconstrained funds= $\text{Unspent unconstrained nonloan funds} + \text{Unspent unconstrained loan funds}$
- (1776) Unspent unconstrained loan funds= $\text{INTEG}(\text{Inflow to unconstrained loan funds} - \text{Repayment of unconstrained loan funds} - \text{Program spending of unconstrained loan funds} - \text{Backbone funding from loan funds}, 0)$
- (1777) Unspent unconstrained nonloan funds= $\text{INTEG}(\text{Inflow to unconstrained nonloan funds} - \text{Program spending of unconstrained nonloan funds} - \text{Backbone funding from nonloan funds}, 0)$

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- (1778) Unspent upstream only funds=Unspent upstream only nonloan funds + Unspent upstream only loan funds
- (1779) Unspent upstream only loan funds= INTEG (Inflow to upstream only loan funds-Repayment of upstream only loan funds-Program spending of upstream only loan funds,0)
- (1780) Unspent upstream only nonloan funds= INTEG (Inflow to upstream only nonloan funds-Program spending of upstream only nonloan funds,0)
- (1781) Urgent episodes per Mild CPI pt[subpop]=Urgent physical episodes per Mild CPI pt[subpop] + Urgent psych episodes per Mild CPI pt[subpop]
- (1782) Urgent episodes per No CPI pt[subpop]=Urgent physical episodes per No CPI pt[subpop] + Urgent psych episodes per No CPI pt[subpop]
- (1783) Urgent episodes per Severe CPI pt[subpop]=Urgent physical episodes per Severe CPI pt[subpop] + Urgent psych episodes per Severe CPI pt[subpop]
- (1784) Urgent episodes to ER[subpop]=Original urgent episodes[subpop] + Readmissions[subpop]
- (1785) Urgent physical episodes per Mild CPI pt[subpop]=Urgent physical episodes per Mild CPI pt initial[subpop]*Effect of hazardous envir on urgent physical episodes[subpop]*Effect of crime on urgent physical episodes[subpop]*Effect of unhealthy behav on urgent physical episodes[subpop] + (Urgent physical episodes per No CPI pt initial[subpop]-Urgent physical episodes per Mild CPI pt initial[subpop])*(Adequacy of prev chron care affecting disease outcomes[subpop]-Adequacy of prev chron care initial[subpop])*Mitigation of excess risk of urgent episodes from CPI under proper chron care
- (1786) Urgent physical episodes per Mild CPI pt initial[subpop]= 0.35,0.45,0.35,0.45,0.35,0.45,0.35,0.45,0.4,0.5
- (1787) Urgent physical episodes per No CPI pt[subpop]= Urgent physical episodes per No CPI pt initial[subpop] * Effect of hazardous envir on urgent physical episodes[subpop] * Effect of crime on urgent physical episodes[subpop] * Effect of unhealthy behav on urgent physical episodes[subpop]
- (1788) Urgent physical episodes per No CPI pt initial[subpop]= 0.2,0.3,0.2,0.3,0.2,0.3,0.2,0.3,0.25,0.35
- (1789) Urgent physical episodes per Severe CPI pt[subpop]=Urgent physical episodes per Severe CPI pt initial[subpop]*Effect of hazardous envir on urgent physical episodes[subpop]*Effect of crime on urgent physical episodes[subpop]*Effect of unhealthy behav on urgent physical episodes[subpop]+ (Urgent physical episodes per No CPI pt initial[subpop]-Urgent physical episodes per Severe CPI pt initial[subpop])*(Adequacy of prev chron care affecting disease outcomes[subpop]-Adequacy of prev chron care initial[subpop])*Mitigation of excess risk of urgent episodes from CPI under proper chron care

- (1790) Urgent physical episodes per Severe CPI pt initial[subpop]=
0.6,0.7,0.7,0.7,0.6,0.7,0.6,0.7,0.65,0.75
- (1791) Urgent psych episodes[subpop]=No CPI popn[subpop]*Urgent psych episodes per No CPI
pt[subpop] + Mild CPI popn[subpop]*Urgent psych episodes per Mild CPI pt[subpop] + (Severe
CPI popn[subpop]-Additional popn receiving hospice under initiative[subpop])*End of life pts
risk of urgent episodes reltv to avg pt with Severe CPI)*Urgent psych episodes per Severe CPI
pt[subpop]
- (1792) Urgent psych episodes per Mild CPI pt[subpop]=Urgent psych episodes per uncontrolled CMI pt
* Uncontrolled CMI frac of Mild CPI popn[subpop]
- (1793) Urgent psych episodes per No CPI pt[subpop]=Urgent psych episodes per uncontrolled CMI pt *
Uncontrolled CMI frac of No CPI popn[subpop]
- (1794) Urgent psych episodes per Severe CPI pt[subpop]=Urgent psych episodes per uncontrolled CMI
pt * Uncontrolled CMI frac of Severe CPI popn[subpop]
- (1795) Urgent psych episodes per uncontrolled CMI pt=0.27
- (1796) US popn 18 to 24 mill 2015=30.983
- (1797) US popn 25 to 44 mill 2015=84.327
- (1798) US popn 45 to 64 mill 2015=83.839
- (1799) US popn 65 to 74 mill 2015=26.967
- (1800) US popn 75plus mill 2015=19.87
- (1801) Use default grants and assistance=1
- (1802) Value of lost productivity=SUM(Income of employed popn by segment[subpop!] * Lost
productivity frac by segment[subpop!])
- (1803) Value of prod less HC costs and pgm spending baserun=Value of prod less HC costs and program
spending baserun billions series(
Time) * 1e+009 * Ourtown popn multiplier
- (1804) Value of prod less HC costs and program spending baserun billions series([(2000,2)-
(2040,5)],(2000,4.4),(2000.25,4.41),(2000.5,4.42),(2000.75,4.43),(2001,4.44),(2001.25,4.44),(2
001.5,4.43),(2001.75,4.43),(2002,4.42),(2002.25,4.41),(2002.5,4.4),(2002.75,4.4),(2003,4.39),(
2003.25,4.38),(2003.5,4.37),(2003.75,4.36),(2004,4.35),(2004.25,4.34),(2004.5,4.34),(2004.75,
4.34),(2005,4.33),(2005.25,4.33),(2005.5,4.33),(2005.75,4.32),(2006,4.32),(2006.25,4.3),(2006.
5,4.29),(2006.75,4.27),(2007,4.25),(2007.25,4.24),(2007.5,4.23),(2007.75,4.22),(2008,4.21),(20
08.25,4.19),(2008.5,4.17),(2008.75,4.15),(2009,4.14),(2009.25,4.12),(2009.5,4.1),(2009.75,4.0
9),(2010,4.07),(2010.25,4.06),(2010.5,4.06),(2010.75,4.06),(2011,4.06),(2011.25,4.06),(2011.5,
4.07),(2011.75,4.07),(2012,4.08),(2012.25,4.09),(2012.5,4.1),(2012.75,4.11),(2013,4.12),(2013.

25,4.12),(2013.5,4.13),(2013.75,4.14),(2014,4.15),(2014.25,4.15),(2014.5,4.15),(2014.75,4.15),
(2015,4.16),(2015.25,4.15),(2015.5,4.15),(2015.75,4.15),(2016,4.14),(2016.25,4.14),(2016.5,4.
14),(2016.75,4.13),(2017,4.13),(2017.25,4.13),(2017.5,4.12),(2017.75,4.12),(2018,4.11),(2018.
25,4.11),(2018.5,4.1),(2018.75,4.1),(2019,4.1),(2019.25,4.09),(2019.5,4.09),(2019.75,4.08),(20
20,4.08),(2020.25,4.08),(2020.5,4.07),(2020.75,4.06),(2021,4.05),(2021.25,4.04),(2021.5,4.03),
(2021.75,4.02),(2022,4.01),(2022.25,4),(2022.5,3.99),(2022.75,3.98),(2023,3.97),(2023.25,3.96
) ,(2023.5,3.94),(2023.75,3.93),(2024,3.92),(2024.25,3.91),(2024.5,3.9),(2024.75,3.88),(2025,3.
87),(2025.25,3.86),(2025.5,3.85),(2025.75,3.84),(2026,3.82),(2026.25,3.81),(2026.5,3.8),(2026.
75,3.79),(2027,3.78),(2027.25,3.76),(2027.5,3.75),(2027.75,3.74),(2028,3.73),(2028.25,3.71),(2
028.5,3.7),(2028.75,3.69),(2029,3.68),(2029.25,3.66),(2029.5,3.65),(2029.75,3.64),(2030,3.62),
(2030.25,3.61),(2030.5,3.6),(2030.75,3.59),(2031,3.57),(2031.25,3.56),(2031.5,3.55),(2031.75,
3.53),(2032,3.52),(2032.25,3.51),(2032.5,3.49),(2032.75,3.48),(2033,3.46),(2033.25,3.45),(203
3.5,3.44),(2033.75,3.42),(2034,3.41),(2034.25,3.39),(2034.5,3.38),(2034.75,3.36),(2035,3.35),(
2035.25,3.33),(2035.5,3.32),(2035.75,3.3),(2036,3.29),(2036.25,3.27),(2036.5,3.26),(2036.75,3
.24),(2037,3.23),(2037.25,3.21),(2037.5,3.2),(2037.75,3.18),(2038,3.16),(2038.25,3.15),(2038.5
,3.13),(2038.75,3.12),(2039,3.1),(2039.25,3.08),(2039.5,3.07),(2039.75,3.05),(2040,3.03))

- (1805) Value of productivity=Total income of employed popn - Value of lost productivity
- (1806) Value of productivity 2020=SAMPLE IF TRUE(Time=2020, Value of productivity, 0)
- (1807) Value of productivity by segment[subpop]=Income of employed popn by segment[subpop] * (1 - Lost productivity frac by segment[subpop])
- (1808) Value of productivity less healthcare costs and program spending=Value of productivity - Total healthcare costs - Total program spending
- (1809) Value of productivity net of employee healthcare costs=Value of productivity - Healthcare costs in employed popn
- (1810) Value of productivity net of employee healthcare costs 2020=SAMPLE IF TRUE(Time=2020, Value of productivity net of employee healthcare costs, 0)
- (1811) Value of productivity net of employee healthcare costs per capita=Value of productivity net of employee healthcare costs / Total popn
- (1812) Value of productivity per capita=Value of productivity / Total popn
- (1813) Visit capacity of FQHC PCPs=FQHC PCPs * Visit capacity per FQHC PCP
- (1814) Visit capacity of general PCPs=General PCPs * Visit capacity per general PCP
- (1815) Visit capacity per FQHC PCP=Visit capacity per FQHC PCP initial * (1 + (Multiplier on FQHC PCP visit capacity under practice redesign-1)*PCP practice redesign from initiative and VBP)
- (1816) Visit capacity per FQHC PCP initial=4080

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- (1817) Visit capacity per general PCP=Visit capacity per general PCP initial * (1 + (Multiplier on general PCP visit capacity under practice redesign-1)*PCP practice redesign from initiative and VBP*(1-1s PCP redesign initiative for FQHC only))
- (1818) Visit capacity per general PCP initial=4080
- (1819) Visits to FQHC PCPs=Visits to FQHC PCPs by Disadv uninsured popn + Visits to FQHC PCPs by Medicaid only popn+Visits to FQHC PCPs by dually insured popn
- (1820) Visits to FQHC PCPs by Disadv uninsured popn=MIN(Demand for visits to PCPs by Disadv uninsured popn, Visit capacity of FQHC PCPs*Frac of FQHC PCP slots available to Uninsured)
- (1821) Visits to FQHC PCPs by dually insured popn=MIN(Demand for visits to PCPs by Medicaid only popn+Demand for visits to PCPs by dually insured popn, Visit capacity of FQHC PCPs - Visits to FQHC PCPs by Disadv uninsured popn) * ZIDZ(Demand for visits to PCPs by dually insured popn, Demand for visits to PCPs by Medicaid only popn+Demand for visits to PCPs by dually insured popn)
- (1822) Visits to FQHC PCPs by Medicaid only popn=MIN(Demand for visits to PCPs by Medicaid only popn+Demand for visits to PCPs by dually insured popn, Visit capacity of FQHC PCPs - Visits to FQHC PCPs by Disadv uninsured popn) * ZIDZ(Demand for visits to PCPs by Medicaid only popn, Demand for visits to PCPs by Medicaid only popn+Demand for visits to PCPs by dually insured popn)
- (1823) Visits to general PCPs=Visits to PCPs by Adv popn + Visits to general PCPs by Medicaid only popn+Visits to general PCPs by dually insured popn+ Visits to general PCPs by Disadv uninsured popn
- (1824) Visits to general PCPs by Disadv uninsured popn=MIN(Demand for visits to PCPs by Disadv uninsured popn - Visits to FQHC PCPs by Disadv uninsured popn, Visit capacity of general PCPs*Frac of general PCP slots available to Disadv Uninsured)
- (1825) Visits to general PCPs by dually insured popn=MIN(Visit capacity of general PCPs - Visits to general PCPs by Medicaid only popn, Demand for visits to PCPs by Adv popn+Demand for visits to PCPs by dually insured popn-Visits to FQHC PCPs by dually insured popn) * ZIDZ(Demand for visits to PCPs by dually insured popn-Visits to FQHC PCPs by dually insured popn, Demand for visits to PCPs by Adv popn+Demand for visits to PCPs by dually insured popn-Visits to FQHC PCPs by dually insured popn)
- (1826) Visits to general PCPs by Medicaid only popn=MIN(Demand for visits to PCPs by Medicaid only popn - Visits to FQHC PCPs by Medicaid only popn, Visit capacity of general PCPs*Frac of general PCP slots available to Medicaid only popn)
- (1827) Visits to nonHosp facility for test or procedure[subpop]=Nonurgent acute episodes sent for outpatient test or procedure[subpop] * (1-Frac of outpatient tests and procedures done at Hosp OPD)

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- (1828) Visits to PCPs[subpop]=Demand for visits to PCPs[subpop] * Sufficiency of PCPs for visit demand[subpop]
- (1829) Visits to PCPs by Adv popn=MIN(Visit capacity of general PCPs - Visits to general PCPs by Medicaid only popn - Visits to general PCPs by Disadv uninsured popn, Demand for visits to PCPs by Adv popn+Demand for visits to PCPs by dually insured popn-Visits to FQHC PCPs by dually insured popn) * ZIDZ(Demand for visits to PCPs by Adv popn, Demand for visits to PCPs by Adv popn+Demand for visits to PCPs by dually insured popn-Visits to FQHC PCPs by dually insured popn)
- (1830) Visits to PCPs by Disadv uninsured popn=Visits to FQHC PCPs by Disadv uninsured popn + Visits to general PCPs by Disadv uninsured popn
- (1831) Visits to PCPs by dually insured popn=Visits to FQHC PCPs by dually insured popn + Visits to general PCPs by dually insured popn
- (1832) Visits to PCPs by Medicaid only popn=Visits to general PCPs by Medicaid only popn + Visits to FQHC PCPs by Medicaid only popn
- (1833) Visits to physician and Hosp from nonurgent acute episodes[subpop]=Nonurgent acute first visits[subpop] + Referrals to Specialists from nonurgent acute episodes[subpop] + Nonurgent acute episodes sent for outpatient test or procedure[subpop]
- (1834) Visits to Specialists[subpop]=Prev chron care visits to Specialists[subpop] + Nonurgent acute episode demand to Specialists[subpop]
- (1835) Wages frac of total regional income=Wages frac of total regional income series(Time)
- (1836) Wages frac of total regional income series([(2000,0)-(2020,1)],(2000,0.48),(2005,0.46),(2010,0.44),(2015,0.44),(2020,0.44))
- (1837) Weight on death rate score=0.2
- (1838) Weight on healthcare cost score=0.2
- (1839) Weight on inequity score=0.2
- (1840) Weight on office care score=0.2
- (1841) Weight on productivity score=0.2
- (1842) Willingness to increase hospital beds based on profit margin=Willingness to increase hospital beds based on profit margin lookup(Hospital profit margin minus initial)
- (1843) Willingness to increase hospital beds based on profit margin lookup([(-0.1,0)-(0.1,1)],(-0.1,0),(-0.05,0),(0,0.5),(0.05,1),(0.1,1))
- (1844) Wkage segment indicator[subpop]=0,0,0,0,1,1,1,1,0,0

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- (1845) Working age frac of total popn=1 - Youth frac of total popn - Senior frac of total popn
 - (1846) Working age frac of total popn initial=1-Youth frac of total popn initial-Senior frac of total popn initial
 - (1847) Workload ratio of FQHC PCPs=ZIDZ(Visits to FQHC PCPs, Visit capacity of FQHC PCPs)
 - (1848) Workload ratio of general PCPs=ZIDZ(Visits to general PCPs, Visit capacity of general PCPs)
 - (1849) Youth frac of total popn=Total popn youth / Total popn
 - (1850) Youth frac of total popn initial=0.257
 - (1851) Youth segment indicator[subpop]=1,1,1,1,0,0,0,0,0

.Array

Subscribed Arrays

(1852) subpop:

InsAdvYouth,InsDisYouth,UninsAdvYouth,UninsDisYouth,InsAdvWkage,InsDisWkage,UninsAdvWkage,UninsDisWkage,AdvSr,DisSr

.Control

Simulation Control Parameters

(1853) FINAL TIME = 2040

(1854) INITIAL TIME = 2000

(1855) SAVEPER = TIME STEP

(1856) TIME STEP = 0.25

.Data

Historical Time Series Data

(1857) Births Vital Stats=IF THEN ELSE(Time>=2011, :NA:, Births Vital Stats series(Time))

(1858) Births Vital Stats series([(2000,0)-(2010,8000)],
 (2000,4059),(2001,4026),(2002,4022),(2003,4090),(2004,4112),(2005,4138),(2006,4266),(2007,
 ,4316),(2008,4248),(2009,4131),(2010,3999))

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- (1859) Consumer price index urban series([(2000,0)-(2014,400)],
(2000,172.2),(2001,177.1),(2002,179.9),(2003,184),(2004,188.9),(2005,195.3),(2006,201.6),(2007,207.342),(2008,215.303),(2009,214.537),(2010,218.056),(2011,224.939),(2012,229.594),(2013,232.957))
- (1860) Consumer price index urban vs 2010= IF THEN ELSE(Time>=2014, :NA:, Consumer price index urban series(QUANTUM(Time,1)) / Consumer price index urban series(2010))
- (1861) Deaths senior Vital Stats= IF THEN ELSE(Time>=2007, :NA:, Deaths senior Vital Stats series(Time))
- (1862) Deaths senior Vital Stats series([(2000,0)-(2010,2000)],(2000,1759),(2006,1759.4))
- (1863) Deaths wkage Vital Stats= IF THEN ELSE(Time>=2007, :NA:, Deaths wkage Vital Stats series(Time))
- (1864) Deaths wkage Vital Stats series([(2000,0)-(2010,2000)], (2000,595.7),(2006,619.3))
- (1865) Deaths youth Vital Stats=IF THEN ELSE(Time>=2007, :NA:, Deaths youth Vital Stats series(Time))
- (1866) Deaths youth Vital Stats series([(2000,0)-(2010,2000)], (2000,48.6),(2006,47.6))
- (1867) Disadv frac of senior popn Census= IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Disadv frac of senior popn Census series(Time), IF THEN ELSE(Time>=2010, Disadv frac of senior popn Census series(Time), -1e+009)))
- (1868) Disadv frac of senior popn Census series([(2000,0)-(2020,1)], (2000,0.313),(2010,0.316))
- (1869) Disadv frac of wkage popn Census= IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Disadv frac of wkage popn Census series(Time), IF THEN ELSE(Time>=2010, Disadv frac of wkage popn Census series(Time), -1e+009)))
- (1870) Disadv frac of wkage popn Census series([(2000,0)-(2020,1)], (2000,0.259),(2010,0.313))
- (1871) Disadv frac of youth popn Census=IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Disadv frac of youth popn Census series(Time), IF THEN ELSE(Time>=2010, Disadv frac of youth popn Census series(Time), -1e+009)))
- (1872) Disadv frac of youth popn Census series([(2000,0)-(2020,1)], (2000,0.378),(2010,0.44))
- (1873) Health expend frac of total income NHE=IF THEN ELSE(Time>=2013, :NA:, Health expend frac of total income NHE series(QUANTUM(Time,1)))
- (1874) Hospital patient margin AHA=IF THEN ELSE(Time>=2011, :NA:, Hospital patient margin AHA series(QUANTUM(Time,1)))

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- (1875) Hospital patient margin AHA series([(2000,-0.06)-(2010,0.02)], (2000,-0.042),(2001,-0.036),(2002,-0.023),(2003,-0.028),(2004,-0.023),(2005,-0.02),(2006,-0.021),(2007,-0.017),(2008,-0.026),(2009,-0.014),(2010,-0.002))
- (1876) Per capita home health care costs NHE 2010 dollars=IF THEN ELSE(Time>=2013, :NA:, Per capita home health care nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1877) Per capita home health care nominal costs NHE series([(2000,0)-(2014,400)], (2000,115),(2001,121),(2002,127),(2003,137),(2004,150),(2005,165),(2006,176),(2007,192),(2008,205),(2009,219),(2010,230),(2011,238),(2012,248))
- (1878) Per capita hospital facility costs NHE 2010 dollars=IF THEN ELSE(Time>=2013, :NA:, Per capita hospital facility nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1879) Per capita hospital facility nominal costs NHE series([(2000,0)-(2014,4000)], (2000,1472),(2001,1576),(2002,1691),(2003,1813),(2004,1933),(2005,2062),(2006,2185),(2007,2300),(2008,2399),(2009,2534),(2010,2630),(2011,2703),(2012,2816))
- (1880) Per capita nursing facility costs NHE 2010 dollars= IF THEN ELSE(Time>=2013, :NA:, Per capita nursing facility nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1881) Per capita nursing facility nominal costs NHE series([(2000,0)-(2014,800)], (2000,302),(2001,318),(2002,328),(2003,346),(2004,361),(2005,381),(2006,393),(2007,420),(2008,436),(2009,452),(2010,463),(2011,480),(2012,484))
- (1882) Per capita other professional service costs NHE 2010 dollars=IF THEN ELSE(Time>=2013, :NA:, Per capita other professional service nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1883) Per capita other professional service nominal costs NHE series([(2000,0)-(2014,2000)], (2000,581),(2001,627),(2002,678),(2003,712),(2004,761),(2005,800),(2006,832),(2007,879),(2008,922),(2009,952),(2010,982),(2011,1006),(2012,1039))
- (1884) Per capita personal healthcare costs NHE 2010 dollars=IF THEN ELSE(Time>=2013, :NA:, Per capita personal healthcare nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1885) Per capita personal healthcare nominal costs NHE series([(2000,0)-(2014,8000)], (2000,4128),(2001,4438),(2002,4768),(2003,5108),(2004,5438),(2005,5757),(2006,6065),(2007,6380),(2008,6637),(2009,6908),(2010,7097),(2011,7303),(2012,7533))

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- (1886) Per capita physician and lab service costs NHE 2010 dollars= IF THEN ELSE(Time>=2013, :NA:, Per capita physician and lab service nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1887) Per capita physician and lab service nominal costs NHE series([(2000,0)-(2014,4000)], (2000,1030),(2001,1107),(2002,1185),(2003,1268),(2004,1343),(2005,1412),(2006,1471),(2007,1534),(2008,1601),(2009,1642),(2010,1680),(2011,1737),(2012,1803))
- (1888) Per capita retail medical product nominal costs NHE series([(2000,0)-(2014,2000)], (2000,629),(2001,688),(2002,760),(2003,831),(2004,890),(2005,937),(2006,1008),(2007,1056),(2008,1076),(2009,1109),(2010,1113),(2011,1138),(2012,1143))
- (1889) Per capita retail medical product service costs NHE 2010 dollars=IF THEN ELSE(Time>=2013, :NA:, Per capita retail medical product nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1890) Per capita Rx drug costs NHE 2010 dollars=IF THEN ELSE(Time>=2013, :NA:, Per capita Rx drug nominal costs NHE series(QUANTUM(Time,1)) / Consumer price index urban vs 2010)
- (1891) Per capita Rx drug nominal costs NHE series([(2000,0)-(2014,2000)], (2000,428),(2001,486),(2002,550),(2003,610),(2004,659),(2005,695),(2006,753),(2007,784),(2008,798),(2009,830),(2010,827),(2011,843),(2012,840))
- (1892) Popn net migration Census=IF THEN ELSE(Time>=2011, :NA:, Popn net migration Census series(Time))
- (1893) Popn net migration Census series([(2000,0)-(2010,4000)], (2001,1078),(2002,822),(2003,986),(2004,948),(2005,1006),(2006,866),(2007,863),(2008,855))
- (1894) Senior frac of total popn Census=IF THEN ELSE(Time>=2041, :NA:, ZIDZ(Total popn senior Census, Total popn Census))
- (1895) Total deaths Vital Stats=IF THEN ELSE(Time>=2011, :NA:, Total popn deaths Vital Stats series(Time))
- (1896) Total popn Census=IF THEN ELSE(Time>=2041, :NA:, Total popn youth Census + Total popn working age Census+Total popn senior Census)
- (1897) Total popn deaths Vital Stats series([(2000,0)-(2010,4000)], (2000,2403),(2001,2416),(2002,2443),(2003,2448),(2004,2398),(2005,2448),(2006,2426),(2007,2424),(2008,2472),(2009,2437),(2010,2466))
- (1898) Total popn senior Census=IF THEN ELSE(Time>=2041, :NA:, Total popn senior Census series(Time))
- (1899) Total popn senior Census series([(2000,0)-(2040,400000)], (2000,34992),(2010,40268),(2020,54804),(2030,72092),(2040,81238))

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- (1900) Total popn working age Census=IF THEN ELSE(Time>=2041, :NA:, Total popn working age Census series(Time))
- (1901) Total popn working age Census series([(2000,0)-(2040,400000)], (2000,174136),(2010,194296),(2020,204897),(2030, 213597),(2040,230431))
- (1902) Total popn youth Census=IF THEN ELSE(Time>=2041, :NA:, Total popn youth Census series(Time))
- (1903) Total popn youth Census series([(2000,0)-(2040,400000)], (2000,72294),(2010,74181),(2020,81685),(2030,87815),(2040,93986))
- (1904) Unins frac of Adv wkage popn Census=IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Unins frac of Adv wkage popn Census series(Time), IF THEN ELSE(Time>=2010, Unins frac of Adv wkage popn Census series(Time), -1e+009)))
- (1905) Unins frac of Adv wkage popn Census series([(2000,0)-(2020,0.8)], (2000,0.099),(2010,0.131))
- (1906) Unins frac of Adv youth popn Census=IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Unins frac of Adv youth popn Census series(Time), IF THEN ELSE(Time>=2010, Unins frac of Adv youth popn Census series(Time), -1e+009)))
- (1907) Unins frac of Adv youth popn Census series([(2000,0)-(2020,0.2)], (2000,0.062),(2010,0.05))
- (1908) Unins frac of Disadv wkage popn Census=IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Unins frac of Disadv wkage popn Census series(Time), IF THEN ELSE(Time>=2010, Unins frac of Disadv wkage popn Census series(Time), -1e+009)))
- (1909) Unins frac of Disadv wkage popn Census series([(2000,0)-(2020,0.8)], (2000,0.308),(2010,0.402))
- (1910) Unins frac of Disadv youth popn Census=IF THEN ELSE(Time>=2011, -1e+009, IF THEN ELSE(Time<2001, Unins frac of Disadv youth popn Census series(Time), IF THEN ELSE(Time>=2010, Unins frac of Disadv youth popn Census series(Time), -1e+009)))
- (1911) Unins frac of Disadv youth popn Census series([(2000,0)-(2020,0.4)], (2000,0.141),(2010,0.117))
- (1912) Working age frac of total popn Census= IF THEN ELSE(Time>=2041, :NA:, ZIDZ(Total popn working age Census, Total popn Census))
- (1913) Youth frac of total popn Census=IF THEN ELSE(Time>=2041, :NA:, ZIDZ(Total popn youth Census, Total popn Census))