CONGRESSIONAL BUDGET OFFICE

The Health Insurance Simulation Model Used in Preparing CBO's 2018 Baseline

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This material updates information provided in Congressional Budget Office, *CBO's Health Insurance Simulation Model: A Technical Description* (October 2007), www.cbo.gov/publication/19224.

CBO's Health Insurance Simulation Model (HISIM)

- The first version was developed by CBO in 2002 to model various proposals affecting health insurance coverage, including direct subsidies, changes to tax incentives, and insurance market reforms.
- The model has been expanded to accommodate additional proposals, including expansion of public programs, mandates for people to have insurance, and other insurance market reforms.
- The model is updated regularly to incorporate new data, CBO's most recent economic forecast, changes in law or regulations, and technical improvements.
- The model helps CBO prepare baseline budget projections, which are published two or three times a year and are the basis for estimating budgetary effects of proposals relative to current law.

Major Outcomes Modeled

- HISIM is used to estimate the number of people enrolled in:
  - Employment-based coverage,
  - Medicaid,
  - Coverage obtained through marketplaces established by the Affordable Care Act and other nongroup coverage,
  - Other insurance, and
  - No insurance.
- HISIM is also used to estimate average premiums in the marketplaces.
- Those outcomes are combined with results from other models in the process of estimating budgetary effects of a proposal over the coming decade.
- For additional information, see Congressional Budget Office, *How CBO and JCT Analyze Major Proposals That Would Affect Health Insurance Coverage* (February 2018), www.cbo.gov/publication/53571.

Data

- *Survey of Income and Program Participation (SIPP)*—the base data on individuals and families
- *Medical Expenditure Panel Survey, Household Component*—for determining individual-level expenditures
- *National Health Expenditure Accounts*—a benchmark for total spending
- *National Compensation Survey*—for grouping workers together into simulated firms
- *Medical Expenditure Panel Survey*, *Insurance Component*—a benchmark for private insurance premiums
- *Administrative data on participation in the marketplaces and Medicaid*—benchmarks for enrollment

Benchmarking and Calibration

- The model is calibrated regularly to account for changes in health care costs and to incorporate CBO's latest economic forecast, including projections of inflation, unemployment, and income.
- The SAS-Optimizing Routine is used to reweight survey observations to simultaneously match initial targets for coverage, employment status, immigration status, and the income distribution.
- Targets are set on the basis of data on insurance coverage, marketplace premiums, and premiums for employment-based private health insurance.

Advantages of Microsimulation Modeling

- By simulating behavior for each individual and family unit, the model captures the distribution of responses rather than an average response by cell or subgroup, as in a simpler spreadsheet-type approach.
- By taking advantage of detailed information collected in household surveys (such as the SIPP) on individuals and families and the relationships between key variables (such as income, health status, employment status, and coverage), the model produces better estimates of the outcomes under new policies than a spreadsheet would.

Advantages of Microsimulation Modeling (Continued)

- By using microdata, the model captures nonlinear relationships between key variables.
- Because it applies parameters drawn from research to predict behavioral responses and to project the effect of a change in policy, the model can assess a broad array of policy choices in the context of existing research:
  - Take-up elasticities can be applied to individuals and families faced with new options, and
  - Firm-offer elasticities can be applied to the simulated firms to predict which ones would offer coverage to their employees if new options are available.

Modeling Individuals' Coverage Decisions Using Elasticities

- Individual behavior is modeled with an elasticity approach.
  - Take-up elasticities are drawn from research based on real-world behavior.
  - Elasticities incorporate inertia and other behavioral responses that economic theory may not be able to fully explain but that have nonetheless been observed in studies.
  - Elasticities may vary among population subgroups depending on their income and their insurance status.
- For example, Medicaid enrollees and Medicaid-eligible individuals who are uninsured would respond differently to new options.

About This Document

These slides were prepared to enhance the transparency of the Congressional Budget Office's work and to encourage external review of that work. In keeping with CBO's mandate to provide objective, impartial analysis, this document makes no recommendations.

Jessica Banthin composed this document, and Benjamin Plotinsky edited it. An electronic version is available on CBO's website (www.cbo.gov/publication/53592).