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Leonard D. Schaeffer Center
for Health Policy & Economics

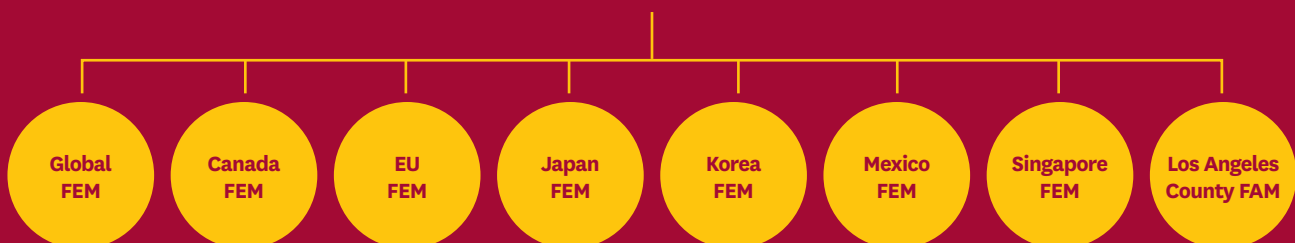
HEALTH POLICY MICROSIMULATION

For over a decade, the USC Schaeffer Center for Health Policy & Economics has developed an economic demographic microsimulation model to answer salient questions in health policy. The Center's flagship project is the Future Elderly Model (FEM), which has been used to explore a variety of issues including understanding the fiscal implications of the widening socioeconomic gradient in life expectancy, quantifying the value of new medical technologies, and assessing the social benefits (and costs) of disease prevention. While the FEM projects trends from ages 50 and older, the Future Americans Model (FAM) extends the FEM to the entire adult population in the United States.

A NETWORK OF MODELS

A robust, multi-disciplinary group of research institutions, nonprofit organizations, and government agencies have collaborated with the USC Schaeffer Center team to build microsimulation models based on the FEM and FAM framework:

USC SCHAEFFER FEM & FAM



Researchers at the Leonard D. Schaeffer Center for Health Policy & Economics at the University of Southern California have taken a model-based approach to answering society's big questions, including:

- *Which early childhood interventions best maximize life course outcomes?*
- *What benefits would result from a breakthrough in Alzheimer's disease treatment?*
- *How should we adapt government programs to prepare for our future elderly?*

Since 2004, the National Institute on Aging has supported this work as one of thirteen prestigious Edward R. Roybal Centers for Translation Research in the Behavioral and Social Sciences of Aging. Center findings have been published more than sixty times and cited — or commissioned — by government agencies, the White House, the National Academies of Science, and private organizations interested in aging policy.

This microsimulation research has resulted in approximately \$15 million in additional funding beyond the core NIA grant, prizes from both Research! America and the MetLife Foundation for impact, and frequent reference in mainstream, national media.

APPROACH

To answer these questions, the Schaeffer Center leverages microsimulation modeling, a data-driven forecast of individuals to project larger population-level trends. By predicting future outcomes reflected in longitudinal panel surveys, microsimulations reliably answer “what if” questions facing decision makers as they prepare for the critical challenges of the coming decades.

The Schaeffer Center's flagship model is the Future Elderly Model (FEM), an economic demographic microsimulation that projects a rich set of health and economic outcomes for aging populations age 50 and older.

Developed in the 1990s with funding from the Centers for Medicare and Medicaid Services (CMS), the FEM was initially designed to improve CMS's ability to understand how factors such as medical breakthroughs, demographic trends, and risk factors could impact spending. In the following decade, the model was expanded to take into account economic considerations such as earnings, labor force participation, and pensions.

In 2014, Schaeffer Center researchers released the Future Adult Model (FAM), which extends the FEM to adults age 25 and older. This expansion allows for exploration of the effects of factors such as education, substance use, and mental health at earlier stages in the life course.

DATA

Data driving the FEM comes from a multitude of sources. The Health and Retirement Study (HRS), a longitudinal panel study that surveys a representative sample of the adult population in the United States, is the foundational data used.

These data are supplemented with merged Social Security covered earnings histories and data on health trends and healthcare costs coming from three longitudinal and nationally representative health surveys in the United States: the National Health Interview Survey (NHIS), the Medical Expenditure Panel Survey (MEPS), and the Medicare Current Beneficiary Survey (MCBS).

The FAM integrates the Panel Survey of Income Dynamics into the model and also relies on the HRS, MEPS, and MCBS. Schaeffer Center microsimulations are maintained by a robust team of data scientists, research administrators, and policy analysts. Collaborators have been integral to the success and growth of the model. Collaborators include:

- Columbia University
- Harvard University
- Stanford University
- RAND Corporation
- University of Michigan
- University of Pennsylvania
- HEC Montreal
- University of Rome Tor Vergata
- Tokyo University
- National University of Singapore
- Organization for Economic Co-operation and Development (OECD)

APPLICATIONS



GLOBAL IMPACT OF INEQUALITY ON THE FUTURE ELDERLY

Partner Institution: Organization for Economic Co-operation and Development (OECD)

In 2017, the OECD released “Preventing Ageing Unequally” – a report examining how the two global mega-trends of population aging and rising inequalities have been developing and interacting, both within and across generations. The OECD partnered with the Schaeffer Center and the Centre for Economic and International Studies, University of Rome Tor Vergata to develop a pilot model (Global FEM) that projects the health and economic circumstances of population cohorts in Belgium, Italy, and the US to assess how current income inequalities during working-age years could pass into inequalities at older ages and the impact of inequality in life-expectancy trends on social benefits.



CHANGES IN LIFE EXPECTANCY AND THE PROGRESSIVITY OF FEDERAL PROGRAMS

Partner Institution: The National Academy of Sciences, Engineering, and Medicine

For a recent National Academy of Sciences, Engineering, and Medicine report, a committee chaired by Ronald Lee (University of California, Berkeley) and Peter R. Orszag (Citigroup) collaborated with Schaeffer Center researchers to investigate the macroeconomic implications of trends in health inequality in the US. Employing the FEM, the committee examined how changes in life expectancy will likely affect the progressivity of federal programs. Findings suggest significant reductions in progressivity of both Medicare and Social Security if current mortality trends persist and noticeable effects on total programing costs.



IMPACT OF TOBACCO TAXATION IN LOS ANGELES COUNTY

Partner Institution: Los Angeles County Department of Public Health

The Los Angeles County Department of Public Health relied on the Schaeffer Center’s micro-simulation efforts to analyze the long term health effects of Proposition 56, The California Tobacco Tax for Healthcare, Research, and Prevention Act of 2016, which increased the taxes on cigarettes and other tobacco products in the state of California. The collaboration resulted in a new dynamic microsimulation, the Future Los Angeles Model, which projects future health and economic trends in the adult population of LA County. Using this model, the department was able to map out the projected long-term impact of the proposed tax, including 50,000 fewer new adolescent and young adult smokers and 11,000 fewer premature deaths across the region.

ISSUES



The USC Schaeffer Center uses microsimulation to investigate policy questions concerning a range of health and economic trends, including:

- The burden of chronic disease and disability on the health care system and informal care sector
- Forestalling disease through prevention and risk factor targeting
- The fiscal implications of trends in life expectancy and socioeconomic status
- How life sciences advances impact cost and spending as we search for improved treatment and cures
- Strategies for Medicare and Social Security reform
- The value of delayed aging in extending healthy lives and improving public health

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For more information about the Schaeffer Center visit:
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Or contact:
Kukla Vera, Director of External Affairs
Schaeffer Center for Health Policy & Economics
University of Southern California
kuklaver@usc.edu
213.821.7978

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