

# research highlights

## Windfall from Eliminating Excessive Health Care Spending Could Transform America

THE INSTITUTE OF MEDICINE estimates that \$750 billion is lost each year to wasteful or excessive health care spending – dollars that add minimal value to health and well being. In a paper published in the *American Journal of Preventive Medicine*, researchers from the UCLA Fielding School of Public Health and Los Angeles County Department of Public Health calculate that this spending comes at a substantial cost.

“If cut from the medical enterprise, these funds could provide businesses and households with a huge windfall, with enough money left over to fund deficit reduction on the order of the most ambitious plans in Washington,” says Dr. Frederick Zimmerman, professor and chair of the Department of Health Policy and Management and one of the study’s authors. “These funds could also cover needed investments in transportation infrastructure, early childhood education, human capital programs, rural development, job retraining programs and much more.”

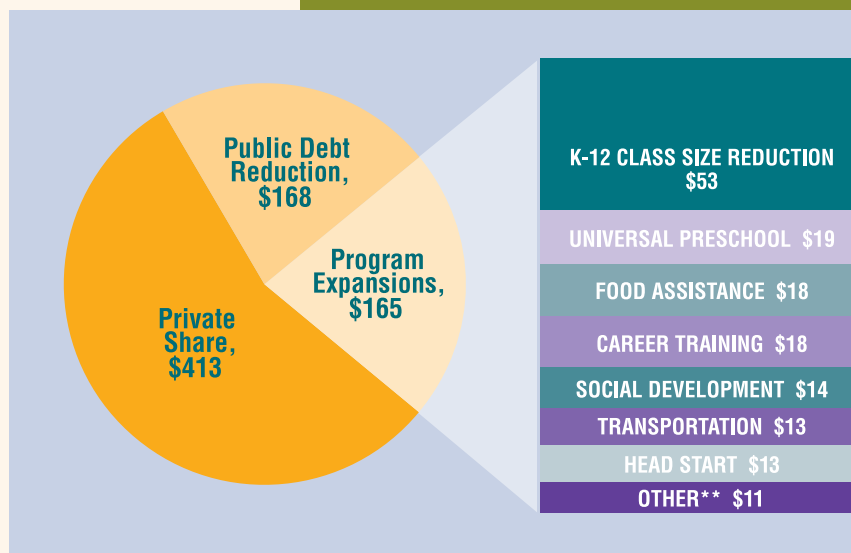
The research group – which also included graduate student Mac McCullough; Dr. Jonathan Fielding, professor at the school and director of the Los Angeles County Department of Public Health; and Dr. Steven Teutsch of the department – conducted a detailed review of the literature before presenting one of the myriad ways the \$750 billion might benefit Americans.

Under the group’s scenario, more than \$410 billion per year (55 percent of the total, approximately the public-private split for all health care expenditures) would be returned to the private sector for individuals and companies to use as they please. Twenty-seven percent (\$202 billion) of the savings would go to deficit reduction, yielding a greater reduction than the congressional “super committee” sought and failed to achieve.

Fourteen percent (\$104 billion) would support additional investments in human capital, urban and rural quality of life, and physical infrastructure. For example, Head Start could be doubled in size and universal preschool could be provided; average class size could be reduced from 22-25 to 13-17 students; and trained nurses could conduct regular home visits for high-risk pregnancies. Two percent of the savings, amounting to \$18 billion, would promote urban and rural quality of life by improving the built environment surrounding schools, expanding and modernizing public libraries, improving wastewater treatment, providing rural development grants to every small town in the nation, and providing job training opportunities to nearly 50,000 unemployed persons. And under the research group’s scenario, the remaining 2 percent would be devoted to fully funding an extensive wish list of transportation projects to alleviate road congestion and promote mass transit alternatives.

“By no means will it be easy to liberate the wasted health care expenditures,” Zimmerman notes. “But we believe reconceptualizing our excess health care spending by looking at its opportunity cost to society is an important first step. Eliminating wasteful health care spending could transform America with little to no reduction in the quality of, or access to, health care actually provided.”

### How the \$750 Billion Saved from Eliminating Wasteful and Excessive Health Care Spending Could Be Used to Benefit Americans\*



\*All figures are in billions (2012 \$)

\*\*Includes nurse home visits for high-risk pregnancies, improved water treatment, crime and violence prevention programs, Safe Routes to School expansion, teenage pregnancy prevention program, rural development grants, school-based smoking prevention program, and urban greening programs.

## Studies Raise Concerns About Exposure to Vehicle-Related Pollution Near Freeways

TWO SEPARATE STUDIES by UCLA Fielding School of Public Health research groups raise concerns about the potential health effects of exposure to vehicle-related pollution near freeways. In dense urban areas such as Southern California, as much as half of the population lives within 1.5 kilometers of a freeway; more than 10 percent of U.S. households are located within 100 meters of four-lane highways.

A joint study by researchers at the FSPH, the UCLA Department of Atmospheric and Oceanic Sciences (AOS) and the California Air Resources Board has confirmed an earlier FSPH study showing that in the pre-sunrise hours – with stable, nocturnal meteorological conditions – vehicle-related pollution from a freeway in Southern California extends more than 2 kilometers downwind, well beyond what previous research had shown. The new study, published in the journal *Atmospheric Environment*, reports that this large downwind pollutant impact zone during the pre-sunrise hours was observed for four additional freeways across the Los Angeles Basin, making it clear that heavily trafficked roadways potentially have a much greater impact on downwind populations than was previously understood.

“Our findings have significant implications for more extensive human exposures to vehicle-related pollutants than previously indicated based on daytime measurements of roadway plumes,” says Dr. Arthur Winer, professor emeritus of environmental health sciences at the school, who headed the study along with Dr. Suzanne Paulson of AOS. “If your home is within about 2 km downwind of a freeway, you may want to close your windows in the early morning hours and not run or otherwise heavily exercise within the 2 km impact zone until a few hours after sunrise.”

In a separate study, which was also published in *Atmospheric Environment*, a team led by Dr. Yifang Zhu found that ultrafine particles on and near freeways carry more electrical charges than ultrafine particles in the background air. Very high concentrations of toxic ultrafine particles have been reported on and immediately downwind of major roadways. The presence of the charges on these ultrafine particles substantially affects their transport mechanisms, which influence population exposure. Zhu’s group found that concentrations of charged particles were

approximately 10-fold higher on Southern California’s Interstate 405 than in the background air.

“Because the number of charges on particles affect their aerodynamic behavior, this finding is important in understanding the near-roadway and traffic emission-related health effects,” says Zhu, associate professor of environmental health sciences at the school. “These data will help to better estimate population exposure to ultrafine particles on and near roadways.”

## Living in Neighborhoods with History of High Jobless Rates Increases Depression Risk

MIDDLE-AGE AND OLDER ADULTS living in neighborhoods with historically high rates of unemployment are more likely to experience symptoms of depression than those whose neighborhoods have lower jobless rates, regardless of whether they are employed themselves, according to a UCLA Fielding School of Public Health study headed by Drs. Richard G. Wight and Carol S. Aneshensel



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of the Department of Community Health Sciences. The findings also suggest that residing in a high-unemployment neighborhood earlier in life takes a toll on an individual's mental health later in life. Published in the *Journal of Epidemiology and Community Health*, the paper is the latest to come out of Aneshensel's National Institute on Aging-funded study "Neighborhood SES and Emotional Distress in Old Age."

"Our study highlights the importance of considering historical conditions when examining the mental health impact of urban neighborhood context, especially those that are tied to period effects such as climbing unemployment rates due to the current U.S. recession," says Aneshensel.

Other studies have found significant associations between neighborhood jobless rates and a variety of health measures, but little was known about the impact of past neighborhood unemployment on the current and future mental health of residents.

Using four waves of data from the nationally representative U.S. Health and Retirement Study between 2000 and 2006, along with data on unemployment by U.S. Census tracts between 1990 and 2000, the researchers examined how an urban neighborhood's unemployment level, as well as changes in unemployment rates over time, influenced emotional well-being among residentially stable late-middle-age and older adults.

Even when taking into account an individual's employment status and other socioeconomic factors, the researchers found that symptoms of depression in 2000 were most likely to be found among those living in neighborhoods with high unemployment between 1990 and 2000, and whose neighborhood jobless rates rose between 1990 and 2000. The study found no evidence that the harmful effects of having lived in a high-unemployment neighborhood worsened between 2000 and 2006, suggesting that individuals in these neighborhoods take an emotional "hit" from the unemployment history of the neighborhood, but that it doesn't accelerate with time.

"Job growth interventions targeting urban neighborhoods entrenched in high unemployment may help to alleviate emotional distress due to prolonged exposure to job insecurity and fear of job loss, especially among those in late middle age, who often face age discrimination in hiring practices," says Wight, the study's lead author.



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## STD Rates Lowest Where Local Health Departments Are Integrated

THE OCCURRENCE OF SEXUALLY TRANSMITTED DISEASES within a population appears to be lowest in communities where core public health activities are shared by many partners, according to a study by a group headed by Dr. Hector P. Rodriguez, associate professor of health policy and management at the UCLA Fielding School of Public Health. The study, published in the *American Journal of Public Health*, found, conversely, that public health systems where the local health department shoulders much of the effort and offers comprehensive services are likely to have higher STD rates.

Rodriguez and colleagues linked countywide incidence rates of STDs – specifically chlamydia and gonorrhea – to the organization and governance of local public health systems and health departments. The 307 counties included in the study were separated into six categories of local health systems determined by size, financial allotments and number of services offered. Local boards of health deemed by the researchers to be independent and comprehensive – meaning that the departments individually offered a wide range of health serv-

ices – produced the highest STD rates. When local health boards shared public health activities with many working partners, the number of annual cases dropped substantially.

The study also found that counties with higher concentrations of African-American residents were more likely to have independent and comprehensive local public health services – and higher STD incidence.

STD incidence rates in the United States have remained steady in recent years despite improved surveillance and prevention strategies. Untreated, STDs can have serious long-term health effects, including cervical cancer, infertility, and pregnancy complications. Racial disparities in STD rates are among the widest of any health disparities, and are largely influenced by area-level socio-demographic factors.

“Interventions for the modifiable local public health system correlates of STD incidence, including the involvement of public health system partners in core activities, might improve the reach and effectiveness of surveillance and control activities and reduce racial disparities in the burden of STDs,” the study authors concluded. “To improve public health system effectiveness, clarifying how to build and maintain effective community health partnerships should be a high priority for researchers and public health practitioners.”

## Women in Malawi HIV Prevention Trial More Forthcoming in Computer-Assisted Self-Interview

### Audio Computer-Assisted Self-Interview in Malawi HIV Prevention Trial Involving Low-Literacy Women

WOMEN IN AN HIV PREVENTION TRIAL in Malawi were more likely to reveal information about sensitive behaviors when undertaking an audio computer-assisted self-interview than when asked the same questions face-to-face by a human interviewer, a UCLA Fielding School of Public Health study has found.

The study, conducted during the course of a clinical trial testing the safety and effectiveness of two topical HIV microbicides, showed significant differences in responses to questions on sexual behavior and gel use in the computer-assisted interview, which even non-numerically literate women were able to use, than when the study subject was interacting with an interviewer. The computer-assisted interviews used images in addition to audio to enhance comprehension for the low-literacy women.

“Our findings suggest that the use of audio computer-assisted self-interviews in international HIV prevention trials among low-literacy study populations may result in slightly lower – but presumably more accurate – reporting of adherence to use of study products such as microbicides, but certainly higher reporting of other sensitive and highly relevant behaviors such as anal intercourse,” says Dr. Pamina Gorbach, professor of epidemiology and principal investigator of the study, which was published in the journal *AIDS and Behavior*.

“Given that sexual behaviors are known to be under-reported and adherence over-reported, the differences when using these computer interviews support the assumption that they can improve the accuracy of the data.” Significantly, Gorbach notes, the women participating in the trial found the computer-assisted interviews preferable to face-to-face interviewing.

In the study, 585 women completed the same questionnaire through a face-to-face interview and in an audio computer-assisted self-interview. In the group receiving the microbicide, nearly 30 percent of the women provided inconsistent responses on questions regarding total sex acts and sex acts in which condom and gel were used; overall, the women were more likely to report lack of adherence to gel and condom use, as well as sexual behaviors such as anal intercourse, when interacting with the computer.



Note: Images change as participant selects more partners; computer audio reads the number shown.

The study also demonstrated that consistency or edit checks can be programmed into the computer interview and may reduce, although not necessarily eliminate, internally discrepant responses.

“When considered in the context of the mixed findings reported in other studies that used biomarkers to validate reporting by interview mode, the audio computer-assisted self-interview is clearly not a cure-all for over-reporting of adherence,” Gorbach cautions. “Further research and new approaches to collection of data on self-reported adherence may be necessary to reduce the significant over-reporting that remains a challenge for HIV prevention trials.”

## Curbing Tobacco Use in China by Making Substitute Crops Profitable

IN CHINA, 350 million people smoke. Each year, 1 million die from smoking-related disease, and many more become disabled. Approximately 20 million Chinese farmers produce the world’s largest share of tobacco, nearly 40 percent of the global supply. What is the key to cutting the number of deaths and smoking-related health problems? Convince Chinese farmers to grow some other crop.

Dr. Virginia Li, professor emerita of community health sciences at the UCLA Fielding School of Public Health, set out to do just that. She contacted local Chinese agriculture officials in Yunnan Province, where Asia’s largest cigarette manufacturer is located. Li and her local partners designed a tobacco crop-substitution project, the core of which is a farmer-led, for-profit enterprise.

The farmers, many of whom are not formally educated, were able to acquire the knowledge and skills necessary to substitute food crops, including fruits and vegetables, for tobacco. By doing that, their annual income increased between 21 percent and 110 percent per acre of land, and the amount of tobacco being grown was reduced. A report on the project appeared in the *American Journal of Public Health*.

Tobacco farming and promotion are the twin forces driving the demand for tobacco. “For China to reduce tobacco use, public anti-smoking campaigns are not sufficient,” Li says. “The key is to show that income from crop substitutions can exceed that from tobacco growth. That’s essential to persuading farm families to stop planting tobacco, which is their livelihood.”

So in the tobacco-growing Yuxi municipality of Yunnan Province, Li and her collaborators from the Yuxi Bureau of Agriculture designed and initiated a tobacco crop-substitution project. The agriculture bureau worked with village heads to recruit farm families through announcements at village meetings and word of mouth. At three sites, 458 farm families volunteered to participate in a new for-profit cooperative model.

Assisted by the local bureau, farmers organized cooperatives through which they acquired the necessary skills for accounting, producing the highest possible crop yield, conducting market research, and storing and selling their produce. They elected their own officers, and participating farmers wrote the charter and bylaws. Each cooperative’s responsibilities to its members included supplying seeds, pesticides and needed materials at the lowest possible cost through bulk purchasing.

The project successfully demonstrated an approach that engaged farmers in cooperatives to substitute food crops for tobacco. “This was a remarkable accomplishment,” Li says. “The Yuxi pilot demonstrated that farmers, many of whom do not read or write, are able to learn the knowledge and skills necessary to operate an enterprise that gives them an income superior to tobacco farming.”



Assisted by the local bureau, farmers in the tobacco-growing Yuxi municipality of Yunnan Province, China organized cooperatives through which they acquired the necessary skills to successfully substitute food crops for tobacco.