Study: Surge in obesity correlates with increased automobile usage

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The surge in passenger vehicle usage in the U.S. between the 1950s and today may be associated with surging levels of obesity, says Sheldon H. Jacobson, a University of Illinois researcher who specializes in statistics and data analysis.

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CHAMPAIGN, Ill. — Junk food, video games and a lack of exercise all have received their fair share of blame for the spiraling epidemic of obesity in the U.S. But according to a University of Illinois researcher, public health enemy No. 1 for our supersized nation may very well be the one staple of modern life most Americans can't seem to live without one (or more) of: the automobile.

Sheldon H. Jacobson, a professor of computer science and the director of the simulation and optimization laboratory at Illinois, says that the surge in passenger vehicle usage in the U.S. between the 1950s and today may be associated with surging levels of obesity.

"You can think of obesity as an energy imbalance," Jacobson said. "People consume food, which is a form of energy, and then they expend it in their activities. But if you look over the last 60-plus years, the automobile has become our primary mode of transportation – so much so, in fact, we have literally designed our way of life around it. It is that energy imbalance that ultimately may lead to obesity."

To analyze the relationship between obesity and vehicle use, Jacobson and students Douglas M. King and Rong Yuan looked at annual vehicle miles traveled per licensed driver as a surrogate measure for a person's total sedentary time.

Previously, Jacobson studied the effects of extra driver and passenger weight due to growing obesity trends in the U.S. causing excessive fuel consumption.

Jacobson said this new study reverse-engineers the relationship between weight and driving.

"What we did before was based on physics: You add more weight to a vehicle, it consumes more gasoline, and we burn more gasoline on an aggregate level," he said. "This then raises the question, 'Is the reverse true?' If we drive more, are we going to become heavier as a nation?"

After analyzing data from national statistics measured between 1985 and 2007, Jacobson discovered vehicle use correlated "in the 99-percent range" with national annual obesity rates.

"If we drive more, we become heavier as a nation, and the cumulative lack of activity may eventually lead to, at the aggregate level, obesity," he said.

Jacobson chose annual vehicle miles traveled as a proxy for a person's sedentary time because inactivity is most obvious when you are sitting in a car.

"When you are sitting in a car, you are doing nothing, so your body is burning the least amount of energy possible," he said. "And if you are eating food in your car, it becomes even worse."

The sedentary lifestyle that automobile use enables coupled with the prevalent role it plays in increasing the sprawl of our cities, towns and suburbs is the "societal price we pay for always being in a rush to get places," Jacobson said.

"For the last 60-plus years, we've literally built our society around the automobile and getting from point A to point B as quickly as we can. Because we choose to drive rather than walk or cycle, the result is an inactive, sedentary lifestyle. Not coincidentally, obesity also became a public health issue during this period."

Before the automobile became such a prevalent mode of transportation for the vast majority of Americans, "it took much more energy just to live," Jacobson said.

"The way our communities were built, the way we bought and prepared our food, even the heating and cooling systems in our living environments – just about everything took more physical energy. Over time, that has been eliminated."

Similarly, in developing nations that are just beginning to incorporate passenger vehicles into their way of life, obesity is on the rise.

"In places like China and India, where the automobile is increasingly competing with cycling and walking as a mode of transportation, they are observing more obesity," Jacobson said.

Jacobson, who also holds appointments as a professor of industrial and enterprise systems engineering, of civil and environmental engineering, and of pediatrics in the College of Medicine at Illinois, says researchers and policy-makers have not focused as aggressively as they should have on the automobile as a potential culprit of obesity.

"As a society, what we should be doing is encouraging activity in our daily routines," Jacobson said. "Ironically, the obstacle to that is the automobile. So what we really need to think about is how we use cars. What we really have to do is look at the system of issues that affect obesity, and come up with a national policy that covers all of these issues to address obesity. If we try to solve these societal problems in a vacuum, we will continue to get poor outcomes and make limited progress in addressing these issues."

To push the limits of their analysis, Jacobson and his team hypothesized how obesity could be eliminated completely through driving less.

"To completely eliminate obesity, every driver would have to reduce their driving by about 12 miles per day, which is around a third of the average daily miles traveled in the United States," Jacobson said. "But here's the catch: We have to still do everything we are currently doing."

How do we continue to do what we have been doing and still eliminate obesity?

"It's effectively impossible," Jacobson said. "But if every licensed driver reduced their travel by one mile per day, in six years the adult obesity rate would be 2.16 percent lower. In other words, almost 5 million fewer adults would be classified as obese based on the 2007 adult population. At the aggregate, if we drive less, not only will our carbon footprint be smaller, we will also lose more weight as a nation."

Ultimately, Jacobson said, we are going to have to rethink the way we use our automobiles if we want to address

obesity.

"We have had 60-plus years of infrastructure that has facilitated the obesity epidemic," he said. "How do you turn that around overnight? You don't. But you can make some changes. I am not convinced that tactical interventions like taking soda machines out of schools and adding 15 minutes of recess time will have an enduring impact. I do believe we need to re-think how we live as a society and effect policy changes that strategically focus on the root problems, not just the symptoms."

The results of Jacobson's research were published in an article titled "A Note on the Relationship Between Obesity And Driving" in the journal Transport Policy.

Editor's note: To reach Sheldon H. Jacobson, call 217-333-3328 or 217-244-7275; email shj@illinois.edu. For a copy of the paper, visit https://netfiles.uiuc.edu/shj/www/shj.html.

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