

**HOST:** Today we welcome Debra Brody, an epidemiologist with NCHS's National Health and Nutrition Examination Survey, or NHANES. Debra has been studying trends and exposure to secondhand smoke in America and has just authored a new study focusing on secondhand smoke exposure among adults in the U.S.

**HOST:** First off, what are some of the reasons why secondhand smoke is a public health threat and what did you set out to accomplish with this new study?

**DEBRA BRODY:** Well, I want to begin by defining secondhand smoke and that is the smoke that is breathed in involuntarily from the burning tobacco of smokers. And because it contains toxic chemicals, it has many of the same harmful health risks to non-smokers as tobacco smoke has to active smokers. And this would include increased risks of respiratory diseases, heart disease, stroke, and lung cancer. So the bottom line is that no amount of exposure to secondhand smoke is safe. And while we can not determine the exact source of exposure, our goal was to assess the current proportion of the non-smoking adult population in the U.S. who are exposed to the burning smoke of others.

**HOST:** So how does NHANES measure secondhand smoke?

**DEBRA BRODY:** So NHANES is a national survey that assesses the health and nutritional status of adults and children in the U.S., and the survey is unique in that it combines interviews with physical exams and laboratory testing. So as part of the laboratory component, we draw blood from our participants and measure cotinine levels. Cotinine is a metabolite of the chemical nicotine that's found in tobacco smoke. And cotinine provides a good measurement of the amount of nicotine a person has in his or her body due to tobacco inhalation. So persons who don't smoke should not have any cotinine in their system unless they breathe in smoke from other people's tobacco. In this report, secondhand smoke is based on having a certain level of cotinine in the blood, indicating current exposure to tobacco smoke.

**HOST:** With the growth of E-cigarettes, is there a way to measure secondhand smoke with that?

**DEBRA BRODY:** That's a good question. So we can't distinguish from the cotinine level the source of the tobacco product. So we don't know whether it's based on cigarette smoking or cigar, pipe, or hookas or possibly even from the vapor from E-cigarettes.

**HOST:** I see. So how many folks participated in this study?

**DEBRA BRODY:** Our report focuses on data from non-smoking adults during the period of 2015 to 2018, and in this four-year period there were about 7,600 non-smoking adults who were 18 years and older who had blood drawn during the examination and answered questions about their smoking status and their current tobacco use. But I want to mention NHANES is a population-based survey and is nationally representative of all adults in the U.S.

**HOST:** So what's the bottom line here? How prevalent is secondhand exposure in the adult population?

**DEBRA BRODY:** So we found that 20.8% or about one in five non-smoking adults 18 years and older were exposed to secondhand smoke. Overall, we found the percentage of secondhand smoke exposure was similar for men and women.

**HOST:** So how has this changed over time?

**DEBRA BRODY:** If we look back to when we first measured cotinine in the survey - and that was in the late 80's - and at that time close to 90% of all Americans were exposed to secondhand smoke. Now, in this report we examine the change in exposure prevalences over a 10-year period. So that would be since 2009-2010. Across the 10-year timeframe we observed a downward trend overall.

**HOST:** So this isn't part of your study of course but you mentioned that when you originally started measuring this back in the late 80's, ninety percent of adults were exposed. I trust that what has happened is we've seen the results since then of all the smoke-free establishments?

**DEBRA BRODY:** Yeah that's really a good question. So exposure has steadily decreased in the U.S. obviously with increases in regulatory oversight concerning smoke-free indoor air quality. And then individual policies regarding smoking in homes and cars, and then declines in smoking, particularly cigarette smoking overall.

**HOST:** So are your findings consistent with other studies on secondhand smoke?

**DEBRA BRODY:** As I mentioned, NHANES is a national survey representing the U.S. population and has been measuring secondhand smoke exposure using a biomarker - that is cotinine - for more than 40 years. While there are some other surveys focused on tobacco smoke, there really isn't any other survey that has measured exposure like this among non-tobacco users over so many years.

**HOST:** And what groups of people are more likely to be exposed to secondhand smoke?

**DEBRA BRODY:** We saw that exposure was disproportionately more prevalent among non-Hispanic blacks compared to non-Hispanic whites, non-Hispanic Asians, and Hispanic adults. There are other findings from this report that highlight what we might say is a "health equity" concern as well. We found that the prevalence of secondhand smoke exposure increased with decreasing level of family income and that the percentage of exposure also increased with decreasing education levels.

**HOST:** Now are children more likely to be exposed to secondhand smoke than adults? Do we know about that?

**DEBRA BRODY:** We did not include children for this short report but we have focused on youths in other reports. We do know the percentage of secondhand smoke exposure in children exceeds adult prevalences, and it may be because of the involuntary nature of exposure. Children may not be able to protect themselves from possible sources whereas adults can protect themselves and may be able to stay away from others who are smoking cigarettes or using other tobacco products.

**HOST:** One more question: Are there plans for any pains to continue to track secondhand smoke exposure in the population?

**DEBRA BRODY:** Yes. Our measurements of the cotinine levels will continue to be collected in future NHANES studies in order to track progress in reducing all secondhand smoke exposure.

**HOST:** Our thanks to Debra Brody for joining us to discuss her new research on secondhand smoke exposure among American adults. The new report was released yesterday, on February 4<sup>th</sup>.

**HOST:** Today, there is another new report from NHANES – this one on fruit and vegetable consumption among American adults. The new report features 2015-2018 data, and shows that 2/3 of adults age 20 and up consume fruit on a given day and over 9 in 10 consume vegetables. The study shows that more women consume fruit than men, whereas an equal percentage of women and men consume vegetables. Income level seems to play a key role here. As the level of income rises among adults, so does fruit and vegetable consumption. While vegetable consumption among adults has remained essentially unchanged over the past two decades, fruit consumption has decreased since 1999-2000, when over three quarters of adults consumed fruit on a given day.

This has been another edition... of “Statcast.” Next week we’ll be discussing the latest quarterly health indicators from the National Health Interview Survey.