

Following is a statement from Rick Nevin, critiquing the presentation given by Dr. Eric Baumer at the Dec. 3, 2013 meeting of the National Academies of Science Roundtable on Crime Trends assessing the research linking childhood lead exposure to subsequent crime rates.

Baumer, a criminologist at Florida State University, found that the evidence yields a “persuasive case for a significant association” between early lead exposure and future crime rates, but he concluded that the research is “open to notable questions and reasonable claims of spuriousness.” In other words, Baumer said, the link between lead exposure and crime may be coincidental rather than causal. Baumer also cast doubt on whether, if the lead impact is real, it would be “sufficient to yield relatively large aggregate reductions in crime rates.” [To view Baumer’s presentation, click [here](#).]

Nevin, an economist and consultant who has published a number of academic studies documenting the link between childhood lead exposure and crime rates in the United States and worldwide, rejects Baumer’s conclusions and faults his reasoning. Nevin explains his analysis [here](#).

* * *

Baumer’s National Academies presentation states that crime declined for all age groups in the 1990s, and appears to support this statement with a graph of “Age-Specific Homicide Victimization Rates” since 1990, but birth year lead exposure should be reflected in the age of the offender, not the age of the victim. Homicide offending rates by age show a 1991-2008 decline of 65 percent for ages 14-17, 42 percent for ages 18-24, and 30 percent for ages 25-34. Broader crime categories over longer time periods show an even more dramatic shift in offending by age group. From 1980-2011, the violent crime arrest rate fell by 35 percent for juveniles and fell 18 percent for ages 18-24, as the violent crime arrest rate increased by 16 percent for ages 35-49 and 34 percent for those over age 49. The property crime arrest rate for youths under age 15 fell 45 percent from 1970-2003, as the age 15-17 rate fell 27 percent, but the age 18-24 arrest rate rose 8 percent, and the property crime arrest rate for adults over-24 rose 58 percent. The 45 percent drop in the under-15 arrest rate compares offenders in 1970 born near the 1956 interim peak in gasoline lead emissions (and before 1960s slum demolition eradicated many housing units with severely deteriorated lead paint) versus youths in

2003 born after the early-1980s fall in gasoline lead. The 58 percent increase in the over-24 arrest rate compares adults in 1970 born before the post-WWII surge in gasoline lead emissions versus their 2003 counterparts born before 1980. These arrest *rates* by age group reflect arrests in each age group per 100,000 population in that age group, so the large shifts in arrest *rates* by age are not affected by any changes in the youth and young adult share of the overall the population.

Baumer's presentation does not even mention my 2007 study showing the same relationship between lead exposure and both property crime and violent crime trends in the U.S., Canada, Britain, France, Finland, Italy, West Germany, Australia and New Zealand. Across all nine nations, the statistical best-fit time-lag for the impact of lead exposure was 18 years for property crime, 23 years for violent crime, and 19 years for overall index crime, consistent with the peak ages of offending for property and violent crime. The time lags are the same within each nation even though the rise and fall of gasoline lead occurred at different times in different nations. Trends in offending rates by age in Britain and in Canada also show shifts in the peak ages of offending explained by birth year lead exposure trends.

Baumer does highlight a study by Reyes confirming the relationship between lead exposure and U.S. violent crime rates, but showing no relationship with property crime rates. Separate commentaries by [Jim Manzi](#) and [James Q. Wilson](#) have described this finding as "extraordinarily counter-intuitive" and an "oddity ... yet to be explained." The National Academies should know that this finding with respect to property crime is unique to the Reyes analysis. Studies of individual youths conducted by [Denno \(1990\)](#), [Needleman \(1996\)](#), [Dietrich \(2001\)](#), [Needleman \(2002\)](#) and [Wright \(2008\)](#) all link lead exposure to an increased risk of delinquency broadly defined, including both property and violent crime offending.

My 2007 study also showed that lead exposure trends explained 65 percent to 91 percent of the year-to-year variation in burglary rates across three or more decades in the U.S., Canada, Britain, Australia and New Zealand. These findings were based on crime through 2002. From 2002-2011, the burglary rate fell 40 percent in Canada, 47 percent in

Britain and 51 percent in Australia, tracking earlier lead exposure trends. I am not aware of any other criminology theory that has demonstrated any comparable predictive accuracy in forecasting ongoing international crime trends.

Rick Nevin
May 15, 2014