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# Research Links Lead Exposure, Criminal Activity

## Data May Undermine Giuliani's Claims

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[Rudy Giuliani](#) never misses an opportunity to remind people about his track record in fighting crime as mayor of New York City from 1994 to 2001.

"I began with the city that was the crime capital of America," Giuliani, now a candidate for president, recently told Fox's Chris Wallace. "When I left, it was the safest large city in America. I reduced homicides by 67 percent. I reduced overall crime by 57 percent."

Although crime did fall dramatically in New York during Giuliani's tenure, a broad range of scientific research has emerged in recent years to show that the mayor deserves only a fraction of the credit that he claims. The most compelling information has come from an economist in [Fairfax](#) who has argued in a series of little-noticed papers that the "New York miracle" was caused by local and federal efforts decades earlier to reduce lead poisoning.

The theory offered by the economist, Rick Nevin, is that lead poisoning accounts for much of the variation in violent crime in the United States. It offers a unifying new neurochemical theory for fluctuations in the crime rate, and it is based on studies linking children's exposure to lead with violent behavior later in their lives.

What makes Nevin's work persuasive is that he has shown an identical, decades-long association between lead poisoning and crime rates in nine countries.

"It is stunning how strong the association is," Nevin said in an interview.

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"Sixty-five to ninety percent or more of the substantial variation in violent crime in all these countries was explained by lead."

Through much of the 20th century, lead in U.S. paint and gasoline fumes poisoned toddlers as they put contaminated hands in their mouths. The consequences on crime, Nevin found, occurred when poisoning victims became adolescents. Nevin does not say that lead is the only factor behind crime, but he says it is the biggest factor.

Giuliani's presidential campaign declined to address Nevin's contention that the mayor merely was at the right place at the right time. But [William Bratton](#), who served as Giuliani's police commissioner and who initiated many of the policing techniques credited with reducing the crime rate, dismissed Nevin's theory as absurd. Bratton and Giuliani instituted harsh measures against quality-of-life offenses, based on the "broken windows" theory of addressing minor offenses to head off more serious crimes.

Many other theories have emerged to try to explain the crime decline. In the 2005 book "Freakonomics," Steven D. Levitt and Stephen J. Dubner said the legalization of abortion in 1973 had eliminated "unwanted babies" who would have become violent criminals. Other experts credited lengthy prison terms for violent offenders, or demographic changes, socioeconomic factors, and the fall of drug epidemics. New theories have emerged as crime rates have inched up in recent years.

Most of the theories have been long on intuition and short on evidence. Nevin says his data not only explain the decline in crime in the 1990s, but the rise in crime in the 1980s and other fluctuations going back a century. His data from multiple countries, which have different abortion rates, police strategies, demographics and economic conditions, indicate that lead is the only explanation that can account for international trends.

Because the countries phased out lead at different points, they provide a rigorous test: In each instance, the violent crime rate tracks lead poisoning levels two decades earlier.

"It is startling how much mileage has been given to the theory that abortion in the early 1970s was responsible for the decline in crime" in the 1990s, Nevin said. "But they legalized abortion in Britain, and the violent crime in Britain

soared in the 1990s. The difference is our gasoline lead levels peaked in the early '70s and started falling in the late '70s, and fell very sharply through the early 1980s and was virtually eliminated by 1986 or '87.

"In [Britain](#) and most of [Europe](#), they did not have meaningful constraints [on leaded gasoline] until the mid-1980s and even early 1990s," he said. "This is the reason you are seeing the crime rate soar in [Mexico](#) and [Latin America](#), but [it] has fallen in the United States."

Lead levels plummeted in [New York](#) in the early 1970s, driven by federal policies to eliminate lead from gasoline and local policies to reduce lead emissions from municipal incinerators. Between 1970 and 1974, the number of New York children heavily poisoned by lead fell by more than 80 percent, according to data from the New York City Department of Health.

Lead levels in New York have continued to fall. One analysis in the late 1990s found that children in New York had lower lead exposure than children in many other big U.S. cities, possibly because of a 1960 policy to replace old windows. That policy, meant to reduce deaths from falls, had an unforeseen benefit -- old windows are a source of lead poisoning, said Dave Jacobs of the National Center for Healthy Housing, an advocacy group that is publicizing Nevin's work. Nevin's research was not funded by the group.

The later drop in violent crime was dramatic. In 1990, 31 New Yorkers out of every 100,000 were murdered. In 2004, the rate was 7 per 100,000 -- lower than in most big cities. The lead theory also may explain why crime fell broadly across the United States in the 1990s, not just in New York.

The centerpiece of Nevin's research is an analysis of crime rates and lead poisoning levels across a century. The United States has had two spikes of lead poisoning: one at the turn of the 20th century, linked to lead in household paint, and one after World War II, when the use of leaded gasoline increased sharply. Both times, the violent crime rate went up and down in concert, with the violent crime peaks coming two decades after the lead poisoning peaks.

Other evidence has accumulated in recent years that lead is a neurotoxin that causes impulsivity and aggression, but these studies have also drawn little attention. In 2001, sociologist Paul B. Stretesky and criminologist Michael Lynch showed that U.S. counties with high lead levels had four times the

murder rate of counties with low lead levels, after controlling for multiple environmental and socioeconomic factors.

In 2002, Herbert Needleman, a psychiatrist at the [University of Pittsburgh](#), compared lead levels of 194 adolescents arrested in [Pittsburgh](#) with lead levels of 146 high school adolescents: The arrested youths had lead levels that were four times higher.

"Impulsivity means you ignore the consequences of what you do," said Needleman, one of the country's foremost experts on lead poisoning, explaining why Nevin's theory is plausible. Lead decreases the ability to tell yourself, "If I do this, I will go to jail."

Nevin's work has been published mainly in the peer-reviewed journal *Environmental Research*. Within the field of neurotoxicology, Nevin's findings are unsurprising, said Ellen Silbergeld, professor of environmental health sciences at [Johns Hopkins University](#) and the editor of *Environmental Research*.

"There is a strong literature on lead and sociopathic behavior among adolescents and young adults with a previous history of lead exposure," she said.

Two new studies by criminologists Richard Rosenfeld and Steven F. Messner have looked at Giuliani's policing policies. They found that the mayor's zero-tolerance approach to crime was responsible for 10 percent, maybe 20 percent, at most, of the decline in violent crime in [New York City](#).

Nevin acknowledges that crime rates are rising in some parts of the United States after years of decline, but he points out that crime is falling in other places and is still low overall by historical measures. Also, the biggest reductions in lead poisoning took place by the mid-1980s, which may explain why reductions in crime might have tapered off by 2005. Lastly, he argues that older, recidivist offenders -- who were exposed to lead as toddlers three or four decades ago -- are increasingly accounting for much of the violent crime.

Nevin's finding may even account for phenomena he did not set out to address. His theory addresses why rates of violent crime among black adolescents from inner-city neighborhoods have declined faster than the


overall crime rate -- lead amelioration programs had the biggest impact on the urban poor. Children in inner-city neighborhoods were the ones most likely to be poisoned by lead, because they were more likely to live in substandard housing that had lead paint and because public housing projects were often situated near highways.

Chicago's Robert Taylor Homes, for example, were built over the Dan Ryan Expressway, with 150,000 cars going by each day. Eighteen years after the project opened in 1962, one study found that its residents were 22 times more likely to be murderers than people living elsewhere in [Chicago](#).

Nevin's finding implies a double tragedy for America's inner cities: Thousands of children in these neighborhoods were poisoned by lead in the first three quarters of the last century. Large numbers of them then became the targets, in the last quarter, of Giuliani-style law enforcement policies.

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