

Does Living Along a Busy Highway Increase Premature Births?

*Open-road tolling contributes to better infant health—
and saves \$440 million in health care costs*

By JANET CURRIE AND REED WALKER

Reducing traffic congestion with open-road tolling limits pollution and contributes to better infant health—and saves \$440 million in health care costs. Among families living within 2 kilometers of expressway toll booths, premature births fell by between 6.7 percent and 9.2 percent after the installation of E-ZPass tolling systems. The incidence of low birth weight fell by between 8.5 percent and 11.3 percent.

Where a child lives during his or her formative years can affect many things: the quality of education, the amount of exercise, the availability of a healthy diet, and even cognitive development. But what about the nearby environment? Can living along a busy highway, for example, increase the risk for asthma or other health issues from car pollution? As this brief shows, it can. Based on the paper “Traffic Congestion and Infant Health: Evidence from E-ZPass,” the findings show that installing an EZPass toll booth, which lowers traffic congestion and pollution, improves infant health.¹

The Connection between Pollution Near Homes and Infant Health

Researchers have found that even relatively low levels of air pollution—in this case carbon monoxide (CO)—have a significant effect on infant health and infant mortality.² Carbon monoxide is a particularly noxious to birth out-

KEY FINDINGS

- The costs of implementing “traffic taming” measures in residential areas may be at least partially justified by their health benefits.
- After E-ZPass was installed, which reduces pollution, low birth weight and premature births were reduced significantly in residential areas closest to the toll plaza.
- Among the roughly 30,000 births to mothers living within 2 kilometers of a toll plaza, 255 premature births and 275 low birth weight births were averted with EZ-Pass.
- Reducing prenatal exposure to the pollutants from congestion could reduce preterm births by as many as 8,600 annually, for a cost savings of at least \$444 million per year.

comes.³ Although many studies show strong correlations between pollution and babies’ health, correlations are not definitive. Wealthier people, for example, are more able to move away from pollution, and income is closely tied to pregnancy outcomes.

The current study was able to sidestep this issue by taking advantage of a policy change that funded the installation of EZ-Pass lanes in Pennsylvania and New Jersey. The study

compared birth outcomes among women who lived near the new EZ-Pass toll booths with mothers who lived along the same roadways, but a little farther from the toll plazas. The assumption was that mothers living farther from the toll booths did not experience the beneficial drop in pollution resulting from the newly installed EZ-Pass.

E-ZPass Improves Infant Health

An E-ZPass system cuts pollution by reducing lines, stop-and-go traffic, and congestion.⁴ Although the research team was unable to collect data directly from pollution monitors in all sites of the study, in one location that had a monitor, nitrogen oxide fell by about 11 percent after the E-ZPass system began.

The effect on birth outcomes of less congestion and presumably lower pollution was remarkable. In the area closest to the toll plaza, low birth weight and premature births were reduced significantly after E-ZPass was installed. The reduction tapered off after about 1 kilometer, but was still evident.

The estimates suggest that among the roughly 30,000 births to mothers living within 2 kilometers of a toll plaza, 255 premature births and 275 low birth weight births were averted after EZ-Pass went into effect. There is of course some overlap between the low birth weight births and the premature births. Nevertheless, the results are impressive.

Health Care Savings from Reduced Pollution Add Up to \$444 Million Annually

Reducing traffic congestion has the potential to improve not only quality of life, but long-term health as well. A recent report by the Institute of Medicine finds that premature births cost society about \$51,600 per infant (in 2005 dollars) in short and long-term medical costs.⁵ Hence, in the current study, the reductions in the risk of premature births can be conservatively valued at about \$9.8 to \$13 million for the 30,000 births in their study.

Although it is difficult to know how many of the roughly 4 million babies born each year in the United States are affected by traffic congestion, estimates by the American Housing Survey suggest that 26 percent of occupied housing units suffer from street noise or other drawbacks due to traffic. Therefore, nationwide, roughly 1 million infants

annually could potentially be affected. Reducing prenatal exposure to the pollutants from congestion could reduce preterm births by as many as 8,600 annually, for a cost savings of at least \$444 million per year.

Policy Implications

The strong link between busy roadways and infant health suggests several options for housing policy. First, zoning is a clear tool for separating residential areas from high traffic areas, and the costs of implementing “traffic taming” measures in residential areas may be at least partially justified by their health benefits. Moreover, the health benefits should be included when weighing the costs and benefits of public transportation investments.

Unfortunately, housing that is affordable to low-income families is more often in the path of pollutants.⁶ Those who can afford to move away from potentially harmful or noxious environments do. Currie and Reed’s results point to costly ramifications of housing policies that leave families breathing bad air. ■

Endnotes

1. See Janet Currie and Reed Walker, “Traffic Congestion and Infant Health: Evidence from E-ZPass,” *American Economic Journal: Applied Economics*, 3(1) (2011): 65–90.
2. Janet Currie, Matthew Neidell, and Johannes Schneider. “Air Pollution and Infant Health: Lesson from New Jersey,” *Journal of Health Economics*, 2009.
3. World Health Organization, *Carbon Monoxide: WHO Air Quality Guidelines*, 2nd ed. (Copenhagen, WHO Regional office for Europe, 2000).
4. Anthony Saka et al., “An Estimation of Mobile Emissions Reduction from Using Electronic Toll Collection in the Baltimore Metropolitan Area: A Case Study of the Fort McHenry Tunnel Toll Plaza.” (Baltimore, MD: National Transportation Center, Morgan State University, March 2000). Mohan Venigalla and Michael Krimmer, “Impact of Electronic Toll Collection and Electronic Screening on Heavy-Duty Vehicle Emissions,” *Transportation Research Record: Journal of the Transportation Research Board*, vol. 1987 (2007).
5. R. E. Behrman and A.S. Butler, *Preterm Birth: Causes, Consequences, and Prevention* (Washington D.C.: National Academies Press Institute, 2007).
6. Janet Currie. “Inequality at Birth: Some Causes and Consequences,” *American Economic Associations Papers and Proceedings*, May 2011.

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ABOUT THE HOW HOUSING MATTERS TO FAMILIES AND COMMUNITIES RESEARCH INITIATIVE

This brief summarizes research funded by the John D. and Catherine T. MacArthur Foundation as part of its How Housing Matters to Families and Communities Research Initiative. The initiative seeks to explore whether, and if so how, having a decent, stable, affordable home leads to strong families and vibrant communities. By illuminating the ways in which housing matters and highlighting innovative practices in the field, the Foundation hopes to encourage collaboration among leaders and policymakers in housing, education, health, and economic development to help families lead healthy, successful lives. The views expressed herein are not necessarily those of the MacArthur Foundation.

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