

# Preterm birth linked to lengthy traffic exposure in Houston

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If the frustration of sitting in traffic wasn't enough, there is now a new reason to hate the gridlock. Researchers at Baylor College of Medicine and Texas Children's Hospital have discovered a possible correlation between preterm birth and vehicle emissions, typically produced as exhaust in heavy traffic commutes.

The team of investigators focused on Houston-area women who delivered prematurely, and found that women who lived in the outer loop of the Houston area had a higher rate of [preterm birth](#), compared to women who lived in the inner loop.

Numerous [risk factors](#) have been associated with preterm birth, including prior history of perterm birth, ethnicity and race, mom's age, smoking and even air pollution. However, these risk factors have not been proven as enough evidence to explain the higher rate of preterm births in the United States compared to similarly developed countries.

"Given the association between preterm birth and maternal smoking, we wondered if some of the same chemicals in traffic pollution—called polycyclic aromatic hydrocarbons—could similarly increase risk of preterm birth," said Dr. Kjersti Aagaard, associate professor of obstetrics and gynecology at Baylor and Texas Children's and senior author of the study. "Since we cannot easily measure those in any individual pregnant mom, we relied on a database where we recorded zip codes of where women live and where they work, and linked those to the occurrence of preterm birth as well as extensive vehicle emissions data.

Our goal was to see if we could get a brief snapshot of these risks estimates, with the plan to take a deeper dive into this problem in the future."

Preterm birth is the leading cause of newborn death and illness. In the United States approximately 10 to 12 percent of women deliver prematurely. Similarly developed countries show a preterm birth rate of approximately 5 to 9 percent a year.

"Babies born preterm have many health problems," said Dr. Maike Kahr, postdoctoral fellow of obstetrics and gynecology at Baylor and lead author of the study. "Because they are not fully mature when born, they are most likely admitted to the NICU and have respiratory and other health issues. Compared to Europe or Australia, it is very unique in the U.S. that preterm birth rates are so high, and we really don't know why."

"We wanted to explore whether there are more community risk factors, especially in Houston, that might have a possible connection to preterm birth," said Kahr.

Researchers were able to collect information from 9,004 pregnancies in Harris County. Information regarding women's residency was compared to the amount of traffic exposure in their surrounding area.

"We gathered information on the VMT, which is the vehicle miles of travel, so the higher amount of VMT means the more women are exposed to traffic. The higher the traffic, the more traffic noise and air pollution around the pregnant women," said Kahr.

While traffic exposure may be for longer periods of time for women living outside the loop, researchers found there is actually less traffic, meaning traffic congestion, in the outer loop when compared to traffic congestion in the inner loop.

"Compared to the inner city loop of Houston, there is less local [traffic congestion](#) in the zip codes in the outer loop," said Kahr. "However, these women may have longer commute times, so would actually be exposed to a higher level of exhaust over the course of the day or week. We therefore looked at our coded data on how many pregnant women commute to work, and we found that the majority of women have to commute every day to work in the inner loop. So pregnant women who live in the outer loop have to commute longer distances and their exposure to [traffic](#) noise and air pollutants might be for longer periods of time at a higher intensity or dose than those residing in the inner loop," she said.

Kahr stresses the significance of understanding the ambient factors that may reduce a [women's](#) risk of delivering preterm.

"It is important to know if there are factors that might lead to preterm birth that you can potentially mitigate or change," she said. "Our hope is that this initial research will inspire further studies. If ultimately we can demonstrate through several channels a link between vehicle exhaust and commuter routes with preterm birth, then communities may choose to invest in alternate commuter options."

Provided by Baylor College of Medicine

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