

# Pregnant women with long commutes to work at increased risk for adverse birth outcomes

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In a study published in *Economics & Human Biology* researchers from Lehigh University and the University of Wisconsin-Madison found that pregnant women who commute long-distance to work have an increased

risk of adverse birth outcomes, including having babies born at a low-birth weight. The study is the first to examine the impact of long-distance commuting during pregnancy on infant health.

An analysis of data gleaned from 2014 and 2015 New Jersey [birth](#) records, revealed that for pregnant women who commute at least 50 miles to work, each ten miles of [travel](#) distance increased the probability of having a low birth weight baby by nearly one percentage point (0.9) or 14 percent, compared to the national average. In other words, the longer the long-distance commute, the higher the risk for giving birth to a low birth weight infant. Low birth weight is defined as under 2,500 grams or about 5.5 pounds.

Increasing maternal travel distance by ten miles over the 50-mile long-distance threshold was also associated with an increase in the probability of slowed fetal growth, known as intrauterine growth restriction. For every ten miles or travel distance added to a long commute, the probability of having intrauterine growth restriction increased by 0.6 percentage points or 43 percent, compared to the average rate among pregnant women living within 10 miles of their workplaces.

The researchers attribute the higher risk of adverse birth outcomes to an increase in chronic maternal stress induced by a long commute. They also found that long-commutes during pregnancy were associated with under-use of prenatal care, possibly due to less "[leisure time](#)" that could be allocated to prenatal visits.

"The finding that low birth weight might be associated with a source of stress like long-distance commuting is somewhat expected, since chronic strain has been found to be linked to adverse birth outcomes," said Muzhe Yang, Associate Professor of Economics at Lehigh University and co-author of the study. "However, it was surprising to find an association with under-use of prenatal care among pregnant women

commuting long-distance."

The researchers found that long commutes during pregnancy were associated with a reduced number of prenatal visits, reduced likelihood of completing the first checkup within the first trimester of a pregnancy, and an increased likelihood of delaying the first checkup to the third trimester or not having any prenatal visit at all.

Among the long-distance commuters that were studied, an increase of 10 miles in travel distance was associated with a 2.5 percent reduction in the number of prenatal visits and a 2.84 percent decrease in the probability that the mother completes her first prenatal visit in the first trimester. Their findings are consistent with previous research that found that missing a prenatal visit early in the pregnancy, rather than later, has the most impact on negative birth outcomes.

"These results suggest a self-reinforcing mechanism," said Yang Wang, Assistant Professor of Public Affairs at the University of Wisconsin-Madison and co-author of the study. "Those who are in greater need of prenatal care because of the potential adverse effects of stress triggered by long commutes are under-using prenatal care, which could lead to even worse birth outcomes."

The data analyzed in the study come from 2014 and 2015 birth records collected by the New Jersey Department of Health covering all 21 counties of the state. According to the most recent census data, about 2.2 million U.S. workers travel at least 50 miles each way between home and work and about 1.7 million U.S. workers spend 90 minutes or more commuting in each direction.

New Jersey is one of the states with the longest commute times. According to the U.S. Census Bureau, average travel time to work for workers aged 16 and over during 2011-2015 is estimated to be 25.9

minutes for the United States and 31.0 minutes for New Jersey. The study focused on pregnant women whose travel distances to their workplaces are between 50 and 100 mile.

In the sample used in the study, the average travel distance between a pregnant woman's home and her workplace was about 64 miles and the associated travel time by car was about 78 minutes. The average number of prenatal visits was about 11 times, while the range of the typical average number of prenatal visits for most pregnant women is between 10 and 15. Approximately 15 percent did not have their first prenatal checkup during the first trimester.

The authors suggest that one possible way to break the self-reinforcing mechanism behind the under-use of prenatal care by this subset of women in greater need is to reduce the opportunity cost of time spent on scheduling prenatal visits among pregnant women who are long commuters. This solution, they write, has important implications for public policy proposals regarding family or maternity leave, which could potentially facilitate the greater use of prenatal care among pregnant women who are long commuters.>{"Our study could impact public policy proposals that consider expanding maternity leave to cover the prenatal period," said Wang.

"The findings highlight a subpopulation of pregnant [women](#) who are likely in greater need of prenatal [maternity leave](#) to facilitate prenatal visits," added Yang. "Having the needed time off during the prenatal period can be particularly important for [pregnant women](#) who are long commuters."

The authors cite previous research on the long-lasting impacts of maternal stress which demonstrated that maternal stress endured during pregnancy can negatively affect a wide range of outcomes in children including on cognition, health, and educational attainment.

**More information:** Yang Wang et al, Long Commutes to Work during Pregnancy and Infant Health at Birth, *Economics & Human Biology* (2019). [DOI: 10.1016/j.ehb.2019.03.006](https://doi.org/10.1016/j.ehb.2019.03.006)

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