

Maternal Stress and Birth Outcomes: Evidence from an Unexpected Earthquake Swarm

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We examine the impact of a major earthquake that unexpectedly affected the Canterbury region of New Zealand on a wide-range of birth outcomes, including birth weight, gestational age and an indicator of general newborn health. We control for observed and unobserved differences between pregnant women in the area affected by the earthquake and other pregnant women by including mother fixed effects in all of our regression models. We extend the previous literature by comparing the impact of the initial unexpected earthquake to the impacts of thousands of aftershocks that occurred in the same region over the 18 months following the initial earthquake. We find that exposure to these earthquakes reduced gestational age, increased the likelihood of having a late birth and negatively affected newborn health - with the largest effects for earthquakes that occurred in the first and third trimester of pregnancy. Our estimates are similar when we focus on just the impact of the initial earthquake or, in contrast, on all earthquakes controlling for endogenous location decisions using an instrumental variables approach. This suggests that the previous estimates in the literature that use this approach are likely unbiased and that treatment effects are homogenous in the population. We present supporting evidence that the likely channel for these adverse effects is maternal stress.