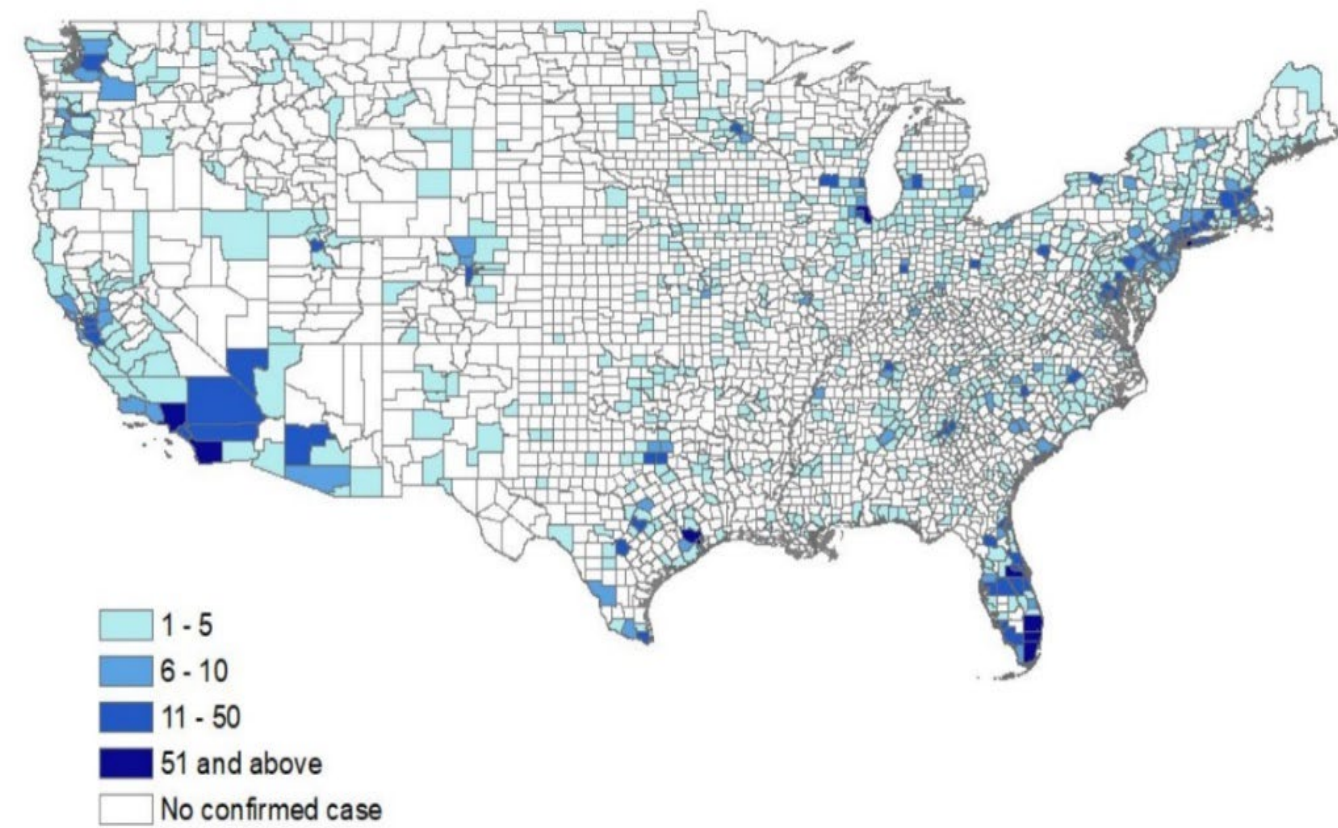


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Motivation

- Prior to COVID-19, one of the most alarming public health emergencies in the U.S. and worldwide came from the Zika virus
- Disease outbreaks can incur both direct medical costs and societal economic burden
- Little evidence on fiscal and social costs from such health crisis
- Understand (1) the role of governments and public health insurance programs in response to disease outbreaks (2) mechanisms of observed changes to inform future policy design and responses



Research Questions

- How did Zika outbreak affect government transfers through public health insurance programs?
- How did Zika outbreak affect county government finances and intergovernmental transfers?
- How did Zika outbreak affect fertility and birth outcomes?
- What's the impact of Zika outbreak on behavioral changes and potential downstream health impacts for affected populations?



Methodology

- Event-study and difference-in-differences designs to estimate the impact of confirmed Zika exposure on fiscal outcomes and fertility outcomes
- Baseline model: $Y_{ct} = \sum_{\tau=-5, \tau \neq 0}^4 \beta_{\tau} Z_{\tau, ct} + X_{ct} \Gamma + \delta_c + \gamma_t + \lambda_{rt} + \varepsilon_{ct}$
where Y_{ct} is the outcomes for county c in year t ; $Z_{\tau, ct}$ is an indicator variable for the lead and lag years (τ) when the first confirmed Zika case was recorded for county c in year t ; X_{iat} is a vector containing time-varying county characteristics; δ_c , γ_t , and λ_{rt} control for county fixed effects, year fixed effects, and region-by-year fixed effects, respectively

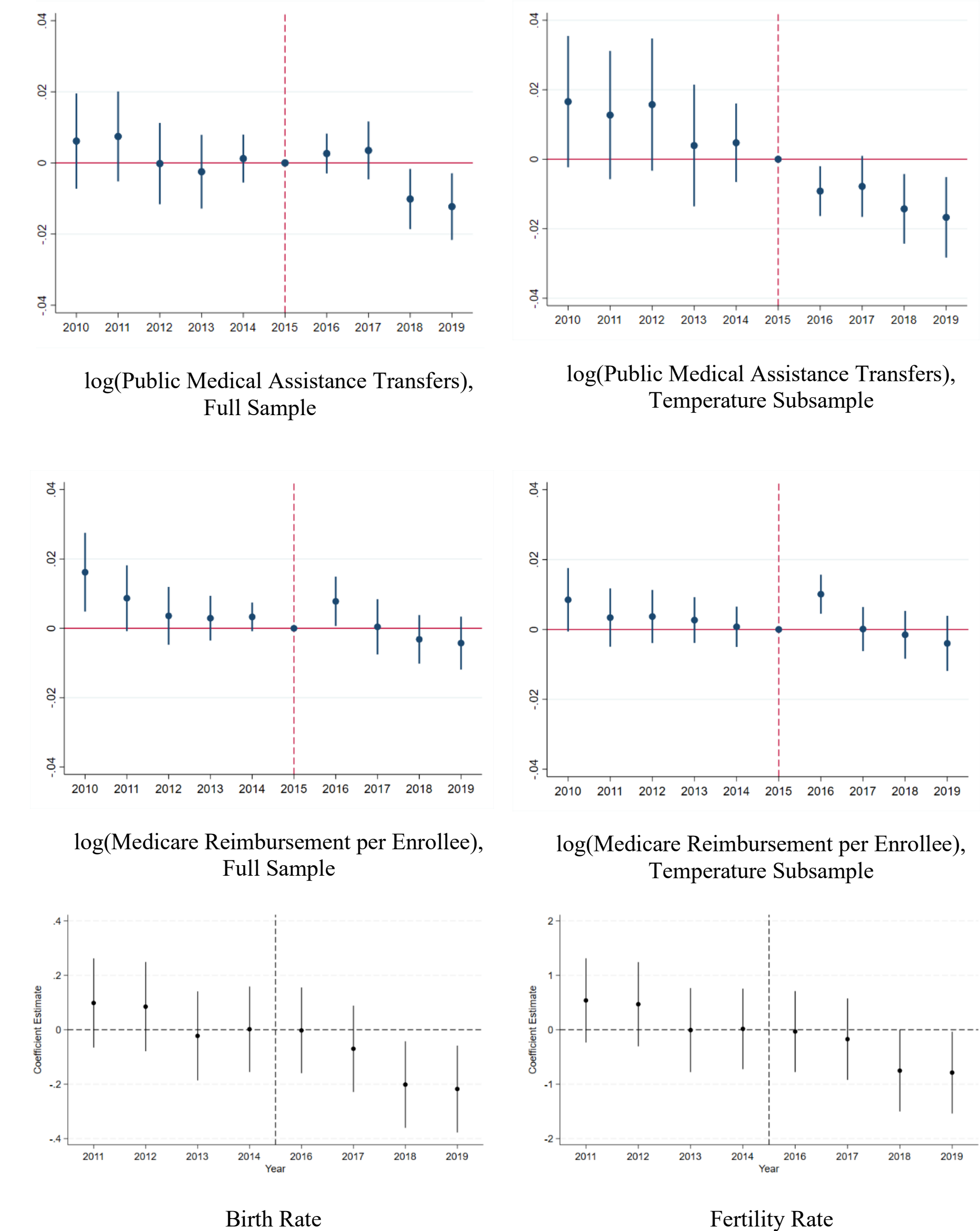
Data

- Zika Case Count: CDC Arboviral database
- Fertility and birth: NCHS Vital Statistics Data
- County Fiscal Data: Annual Survey of State and Local Government Finances
- Government transfers: Bureau of Economic Analysis
- Demographics: Census Bureau
- Employment and income: Bureau of Economic Analysis and Bureau of Labor Statistics
- Aviation: Bureau of Transportation Statistics
- Housing Price Index: Federal Housing Agency
- Climate Data: National Centers for Environmental Information

Variables and Sample

- Dependent variables (log of the amount per capita)
 - County expenditure and revenue
 - Government transfers: Public Medical Assistance, Medicare
 - Fertility: total births, birth rate, and fertility rate
- Treatment variable: reported Zika exposure
- Study period: 2010-2019
- Full sample: balanced panel of counties in continental U.S. for all years
- Optimal temperature sub-sample: counties with more than 166 days per year of optimal temperature for mosquitoes (70F-100F)

Results



Conclusion

- Public medical assistance transfers *immediately increased* in areas with a higher likelihood of local transmissions but *gradually decreased* in counties with a larger share of reproductive-age women or Hispanic population
- Medicare reimbursement to the elderly increased temporarily, coinciding with the federal decision to cover diagnostic tests under Medicare
- No significant increases in county governments' expenditures or changes in budget allocations, which could be due to the modest size and scope of Zika cases in the U.S.
- Zika outbreak led to a general decline in total births, birth rate, and fertility rate; such effect increased with intensity of the outbreak and persisted over time