

Supplementary Appendix
Income Inequality and Firearm Homicide in the United States:
A County-Level Cohort Study

Exploratory Spatial Analysis

To account for spatial autocorrelation, we used a Poisson-Lognormal spatial model with an intrinsic conditional autoregressive prior and the same covariates as the three models outlined in the manuscript.¹ Use of Integrated Nested Laplace Approximations (INLA) estimates Bayesian models while reducing the computational load generated by full Bayesian analysis in large geographic datasets.² These smoothed models borrow information across neighboring counties providing more stable estimates and shrinkage from extremes. Since INLA models are dependent on information from neighboring counties, they can impute some missing values; however, due to low rates of firearm homicides, the race-specific model for several race/ethnicity-specific subgroups failed to converge. As such, we present results for all races/ethnicities combined. Spatial analyses were conducted in R (version 3.4.3, "Kite-Eating Tree") through the R-Studio interface (version 1.1.419) and used the INLA package (version 17.06.20).

The incidence rate ratios and their corresponding 95% confidence intervals for all-race/ethnicity firearm homicide obtained from these analyses are presented in the table below.

	Model 1	Model 2	Model 3
Gini in 1990	1.39 (1.29–1.51)	1.31 (1.23–1.40)	1.00 (0.94–1.07)
Gini in 2000	1.76 (1.65–1.89)	1.50 (1.40–1.59)	1.05 (0.99–1.12)

Note. Model 1 includes the Gini index only. Model 2 additionally includes the county-level age and sex composition. Model 3 additionally includes county-level race/ethnicity composition, crime rate, deprivation, social capital, urbanicity, and firearm ownership level.

References

1. Besag J, York J, Mollie A. Bayesian image-restoration, with 2 applications in spatial statistics. *Ann Inst Stat Math*. 1991;43(1):1-20.
2. Rue H, Martino S, Chopin N. Approximate Bayesian Inference for Latent Gaussian Models Using Integrated Nested Laplace Approximations. *J R Stat Soc*. 2009;71(2001):319-392.