

## Supplemental Online Content

Reeping PM, Mak A, Branas CC, Gobaud AN, Nance ML. Firearm death rates in rural vs urban US counties. *JAMA Surg*. Published online April 26, 2023. doi:10.1001/jamasurg.2023.0265

### **eMethods.** Model Statement and Description

This supplemental material has been provided by the authors to give readers additional information about their work.

## eMethods:

Model Statement and description:

$$\log(E(Y|x)) = \log(\text{population}) + \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \beta_{14} X_{14} + \beta_{15} X_{15} + \beta_{16-35} X_{16-35}$$

X<sub>1</sub>= County type 2, Metro, counties in metro areas of 250,000 to 1 million population\*

X<sub>2</sub>= County type 3, Metro, counties in metro areas of fewer than 250,000 population\*

X<sub>3</sub>= County type 4, Nonmetro, urban population of 20,000 or more, adjacent to a metro area\*

X<sub>4</sub>= County type 5, Nonmetro, urban population of 20,000 or more, not adjacent to a metro area\*

X<sub>5</sub>= County type 6, Nonmetro, urban population of 2,500 to 19,000, adjacent to metro area\*

X<sub>6</sub>= County type 7, Nonmetro, urban population of 2,500 to 19,000, not adjacent to metro area\*

X<sub>7</sub>= County type 8, Nonmetro, completely rural or less than 2,500 urban population, adjacent to metro area\*

X<sub>8</sub>= County type 9, Nonmetro, completely rural or less than 2,500 urban population, not adjacent to metro area\*

X<sub>9</sub>= Median age (continuous)

X<sub>10</sub>= Median income (continuous)

X<sub>11</sub>= Percent white (continuous)

X<sub>12</sub>= Percent below federal poverty level (continuous)

X<sub>13</sub>= Percent female-led households (continuous)

X<sub>14</sub>= Percent high school completion (continuous)

X<sub>15</sub>= State level gun laws (continuous), obtained from the “Traveler’s Guide to the Firearm Laws of the Fifty States” series (2001-2020).<sup>1†</sup>

X<sub>16-35</sub>= a fixed effect for year (2001-2020)

Log(population)=offset

Y=counts of intentional firearm deaths, either suicide, homicide, or both

\* reference= County type 1, Metro, Counties in metro areas of 1 million population or more

† this measure of state level gun laws has been found to be consistent and reliable in relation to other gun law scales<sup>2</sup>

Note: the *geeglm* command was used in R, which automatically adjusts for overdispersion.

1. Kappas J. *Traveler's Guide to the Firearm Laws of the Fifty States (1997-2018)*. Traveler's Guide, Inc; 2019.
2. Reeping PM, Morrison CN, Rudolph KE, Goyal MK, Branas CC. A comparison and analysis of seven gun law permissiveness scales. *Inj Epidemiol*. 2020;(Under Rev.