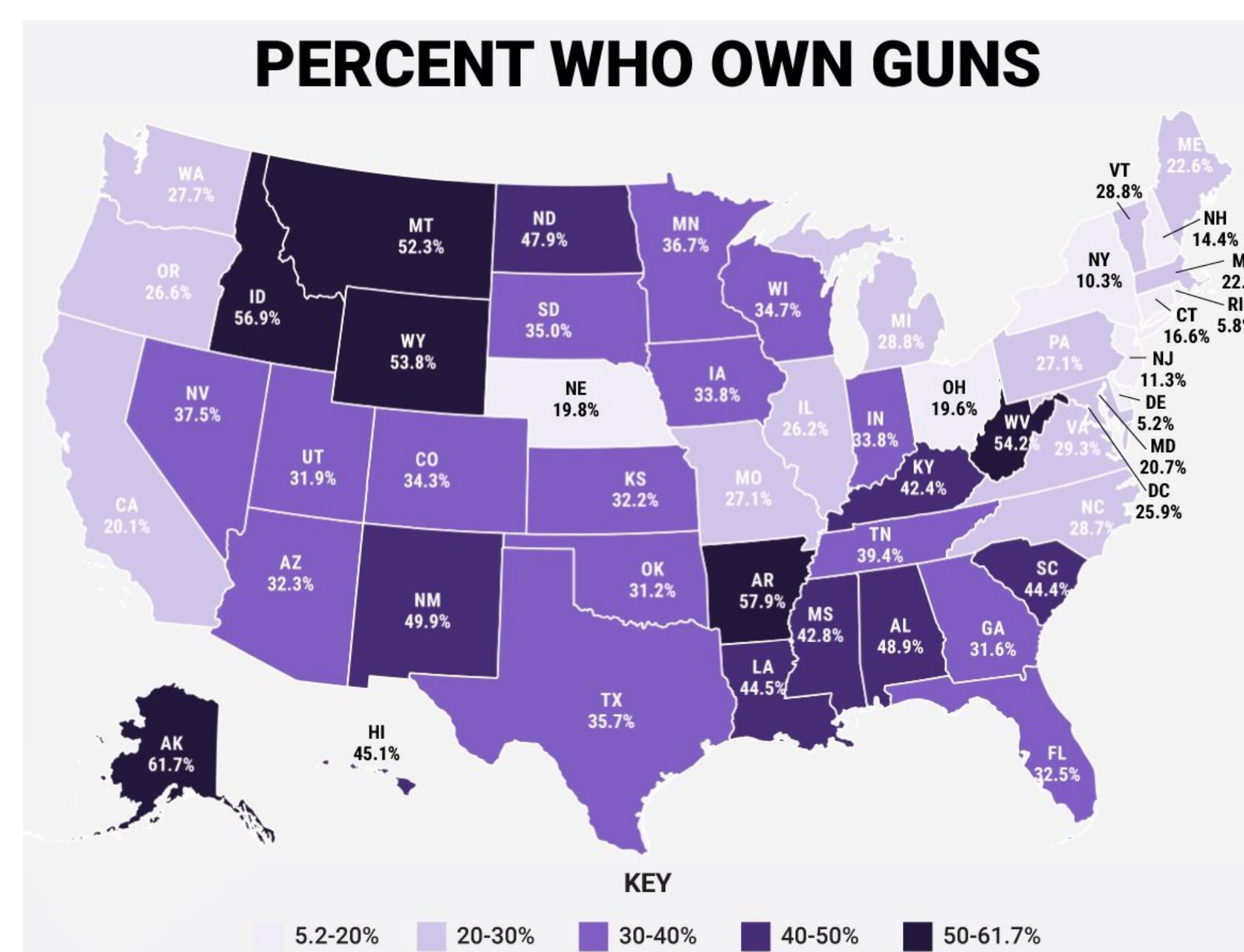


## Background & Purpose

- An estimated 30% of all U.S. households, and 46% of rural households, contain at least one firearm.<sup>1</sup>
- In 2017, nearly 40,000 persons died of firearm injuries in the U.S. The majority of firearm deaths are due to suicide, with homicide as the second factor and accidental injury as the last.<sup>2</sup>
- Safe gun storage can reduce the risks of accidental injury and self harm,<sup>3</sup> but many gun owners do not take these steps.<sup>4</sup>
- We estimated the prevalence of gun ownership and safe storage practices among adults in three states, examining these by residence, presence of a vulnerable individual in the home, and reported risky behavior.

Figure 1. Gun ownership among adults in the US, 2015<sup>5</sup>



## Methods

- Data source:** 2017 BRFSS public use data for states that included the Firearms Module (Idaho, Oregon & Texas; n = 22,519)
- Studied population:** those who answered firearm questions and for whom demographic and health information was present (15,802).
- Definitions:**
  - Gun ownership:** one or more firearms kept in or around the home, with garages, storage areas and motor vehicles included as "home."
  - Safe storage:** no loaded weapons in the house OR any loaded weapons locked.
  - Residence** was measured by BRFSS at the county level and reported as metropolitan (urban, n = 6,185), nonmetropolitan (rural, n = 1,720), and suppressed (n=7,944).
  - Vulnerable household:** presence of a child or of an adult with depression or poor mental health
  - Risky behavior:** inconsistent seat belt use, smoking, or binge drinking.
- Analysis:** Conducted in STATA, accounting for weighting. Differences between the groups tested using Wald Chi Square tests.

Figure 2. Firearm ownership and storage, 3 states, by residence. 2017 BRFSS

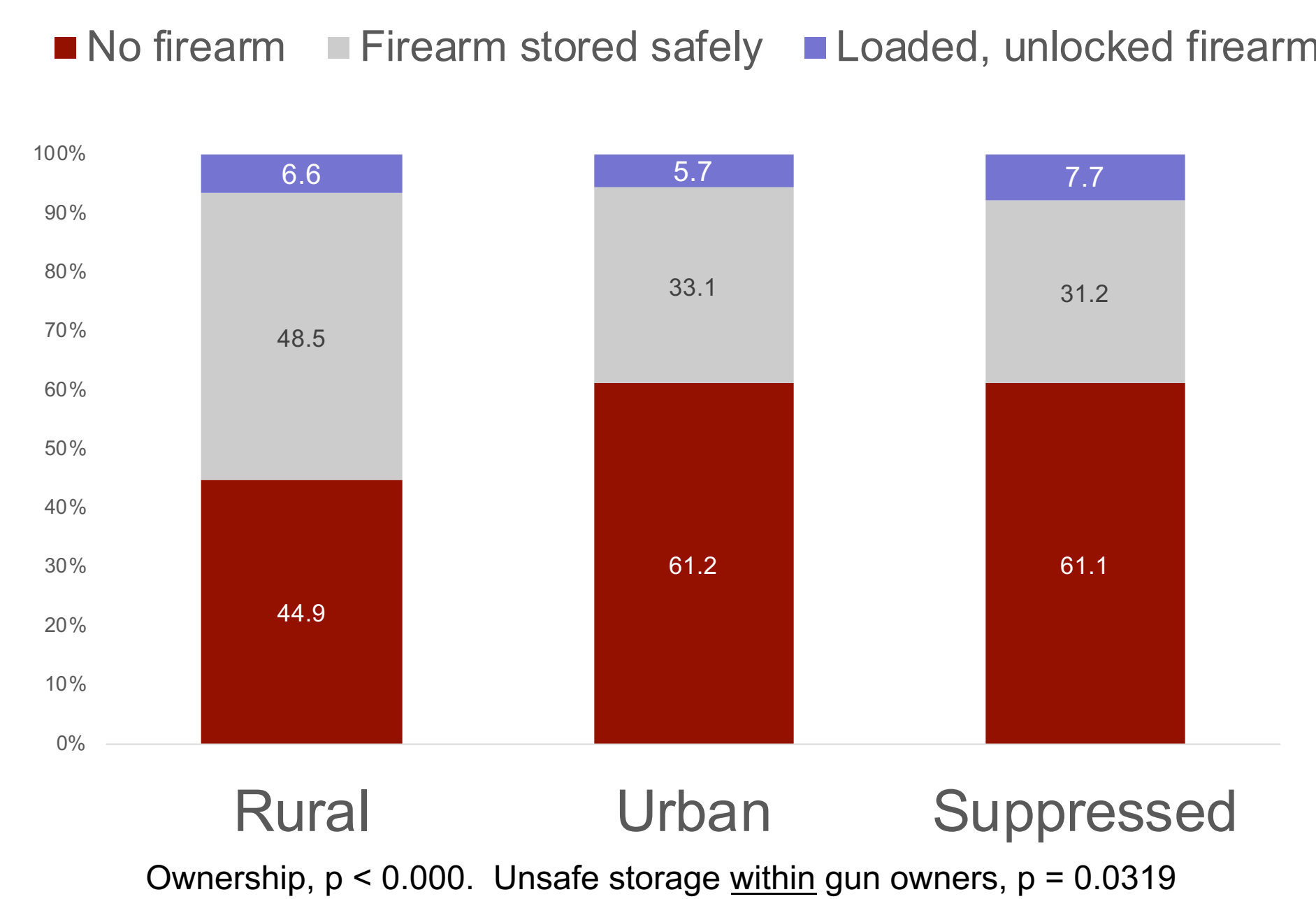


Figure 3. Proportion of adults reporting unsafe gun storage, by potential vulnerability, all respondents, 2017 BRFSS

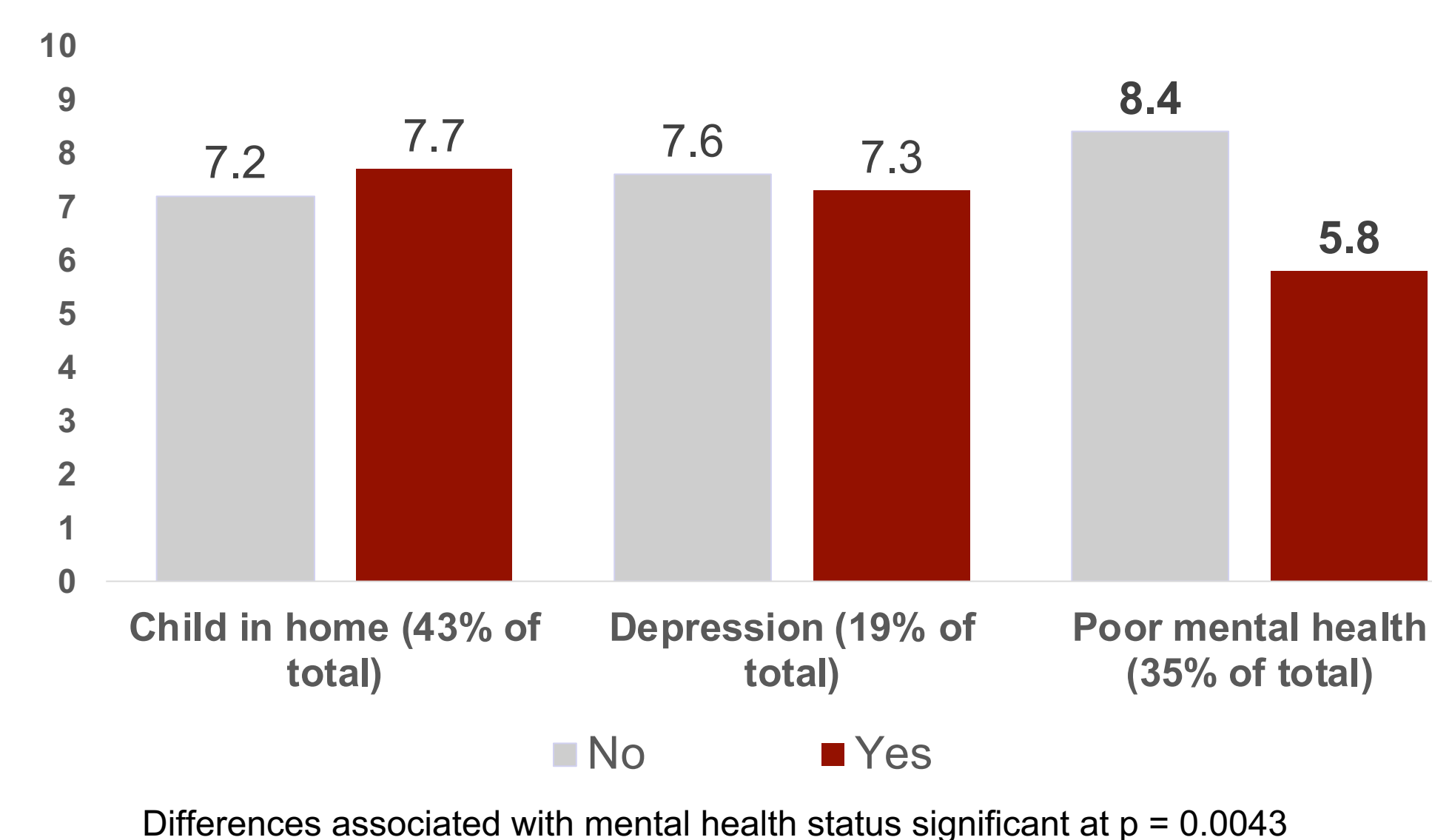


Table 1. Association of risk behaviors with firearm storage, 3 states, 2017 BRFSS

|                        |                                | No gun in home | Gun, safely stored | Gun, unsafely stored | p value      |        |
|------------------------|--------------------------------|----------------|--------------------|----------------------|--------------|--------|
| <b>Seat Belt Use</b>   | <b>Consistent</b>              | Estimate (SE)  | 62.0% (1.0%)       | 31.0% (1.0%)         | 7.0% (0.5%)  | 0.0001 |
|                        | <b>Inconsistent</b>            | Estimate (SE)  | 47.3% (3.4%)       | 41.2% (3.4%)         | 11.6% (2.3%) |        |
| <b>Smoking status</b>  | <b>Non smoker</b>              | Estimate (SE)  | 60.7% (1.1%)       | 32.1% (1.0%)         | 7.2% (0.6%)  | 0.6566 |
|                        | <b>Current smoker</b>          | Estimate (SE)  | 60.3% (2.5%)       | 31.2% (2.4%)         | 8.5% (1.5%)  |        |
| <b>Drinking habits</b> | <b>No use of alcohol</b>       | Estimate (SE)  | 67.4% (1.4%)       | 26.5% (1.3%)         | 6.1% (0.7%)  | 0.0001 |
|                        | <b>Moderate use of alcohol</b> | Estimate (SE)  | 55.3% (1.6%)       | 36.5% (1.5%)         | 8.2% (0.9%)  |        |
|                        | <b>Binge drinking</b>          | Estimate (SE)  | 52.5% (2.5%)       | 38.3% (2.4%)         | 9.2% (1.4%)  |        |

## Results

- Rural residents were more likely to own a firearm than urban or other adults (Figure 2). Within gun owners, rural residents were less likely to report unsafe storage (12.2% of rural, 14.7% of urban, 19.8% of suppressed; p = 0.0319).
- Within all respondents, presence of a vulnerable individual in the home (child, adult reporting depression, adult reporting poor mental health) was not associated with unsafe firearm storage.
- Within all respondents, adults who reported inconsistent seat belt use and those who reported moderate to binge drinking were more likely to report unsafe firearm storage than their counterparts. Smoking was not statistically associated with firearm storage.
- Because data suppression leads to small cell sizes, it was not possible to analyze vulnerability or risk factors for unsafe gun storage within rural populations alone.
- Rural residence was not associated with unsafe gun storage in multivariable analysis, whether among all respondents or restricted to gun owners only.
- Vulnerability factors (depression, poor mental health, child in home) were not associated with unsafe gun storage after controlling for other individual characteristics.
- Other findings in adjusted analysis among all respondents:
  - Female gender, age 65 or older versus 18-64, and Hispanic ethnicity (versus non-Hispanic white) were associated with lower odds for unsafe gun storage
  - Inconsistent seat belt use, income greater than \$25,000, and residence in Texas (versus Idaho) were associated with increased odds of unsafe gun storage.

## Discussion

- Rural adults were not more likely to report access to loaded, unlocked firearms than were other adults, and among gun owners, were less likely to report unsafe storage.
- Previous research has noted that risky behaviors in other spheres (e.g., binge drinking) are associated with unsafe gun storage.<sup>6</sup> However, we did not find that unsafe behaviors were associated with unsafe gun storage after adjusting for personal characteristics.
- Unlike prior work,<sup>7</sup> we did not find that presence of a child in the home was associated with safer gun storage.
- Data suppression makes it nearly impossible for researchers to examine risk factors for inappropriate gun storage among rural populations. The Centers for Disease Control and Prevention should consider techniques and strategies for making residence data, at least a the rural/urban dichotomy, more accessible for public health research.

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