

# Gender Composition in Law Enforcement:

An Analysis using Law Enforcement Management and Administrative Statistics (LEMAS), 2020

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## Research Question

- Women bring value to law enforcement roles [1, 3].
- **Are there significant predictors for the proportion of FT sworn female officers at a law enforcement agency?**
- Sworn officers are those with general arrest powers.
- Employees regularly scheduled to work 35+ hours per week are considered full-time.

## Data: LEMAS 2020

**Sample:** representative of law enforcement agencies in United States, includes all agencies (State, Sheriff, Local) with 100+ sworn officers and a sample of smaller agencies.

Over-all response rate: 78.1% [2].

Variables are both categorical and numeric, including:

- **Personnel**
- **Budget**
- **Service Area**
- **Community Policing**
- **Selection and Training**
- **Hiring and Retention**
- **Equipment and Operations**
- **Technology**
- **Policies and Procedures**

## Methods

### Clean and prepare data

(n = 3499 x p = 437)

- Drop noncontributory, low variance variables and state agencies; handle missing & out of range values

### Create model matrix

- One-hot coding for categorical variables
- Scale and center predictors

### Screen variables by fitting models

- binomial logistic regression with logit link:

$$\log\text{-odds}(\text{♀ FT sworn officer})$$

$$\sim \text{1st predictor} + \text{2nd predictor}$$

- **Response:** log-odds =  $\log(\text{success}/\text{failure})$ , with success = PERS\_FEMALE (Number of Female Full-time Sworn Officers/Deputies) and failure = (FTSWORN (Number of full-time sworn personnel) – PERS\_FEMALE)

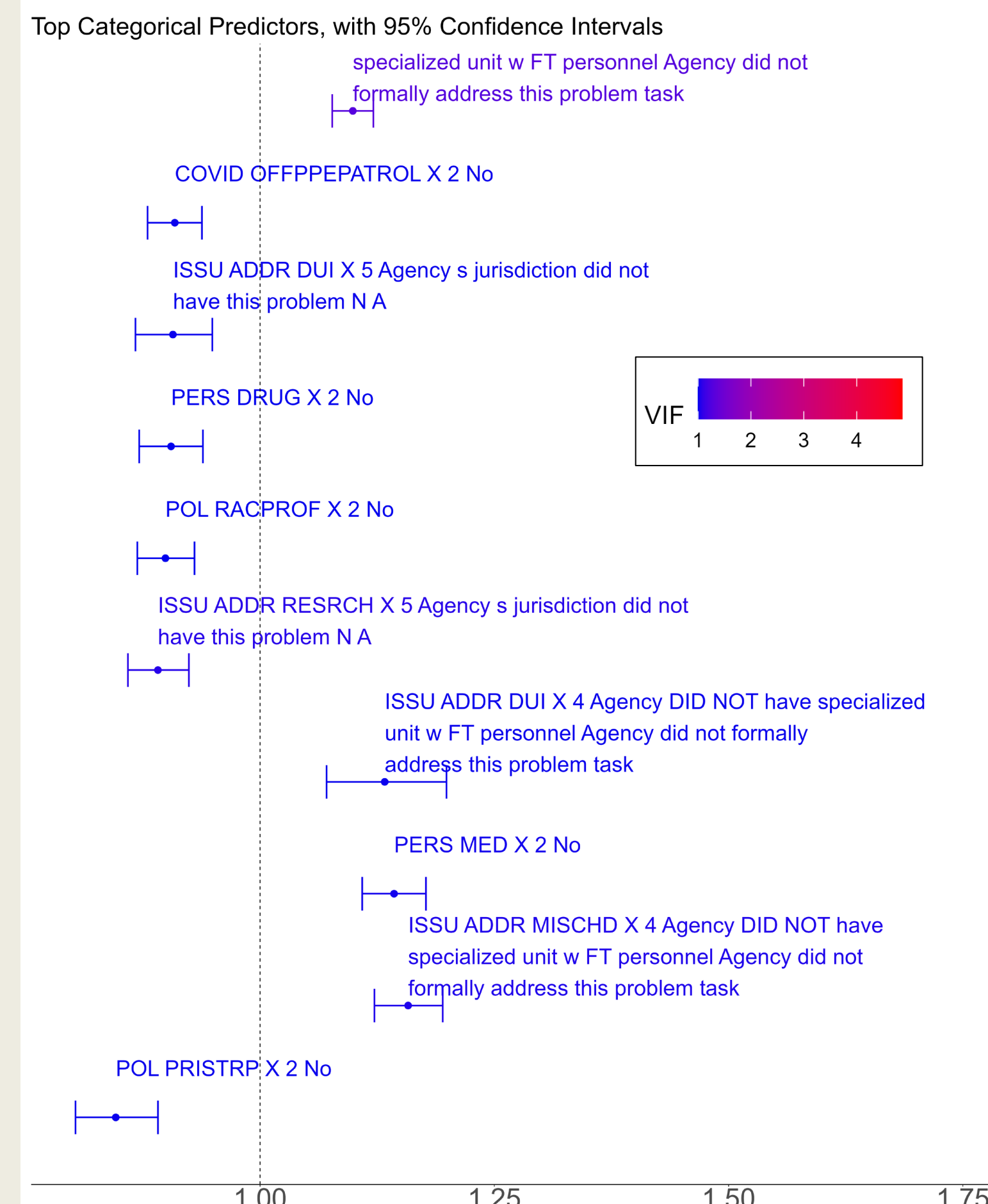
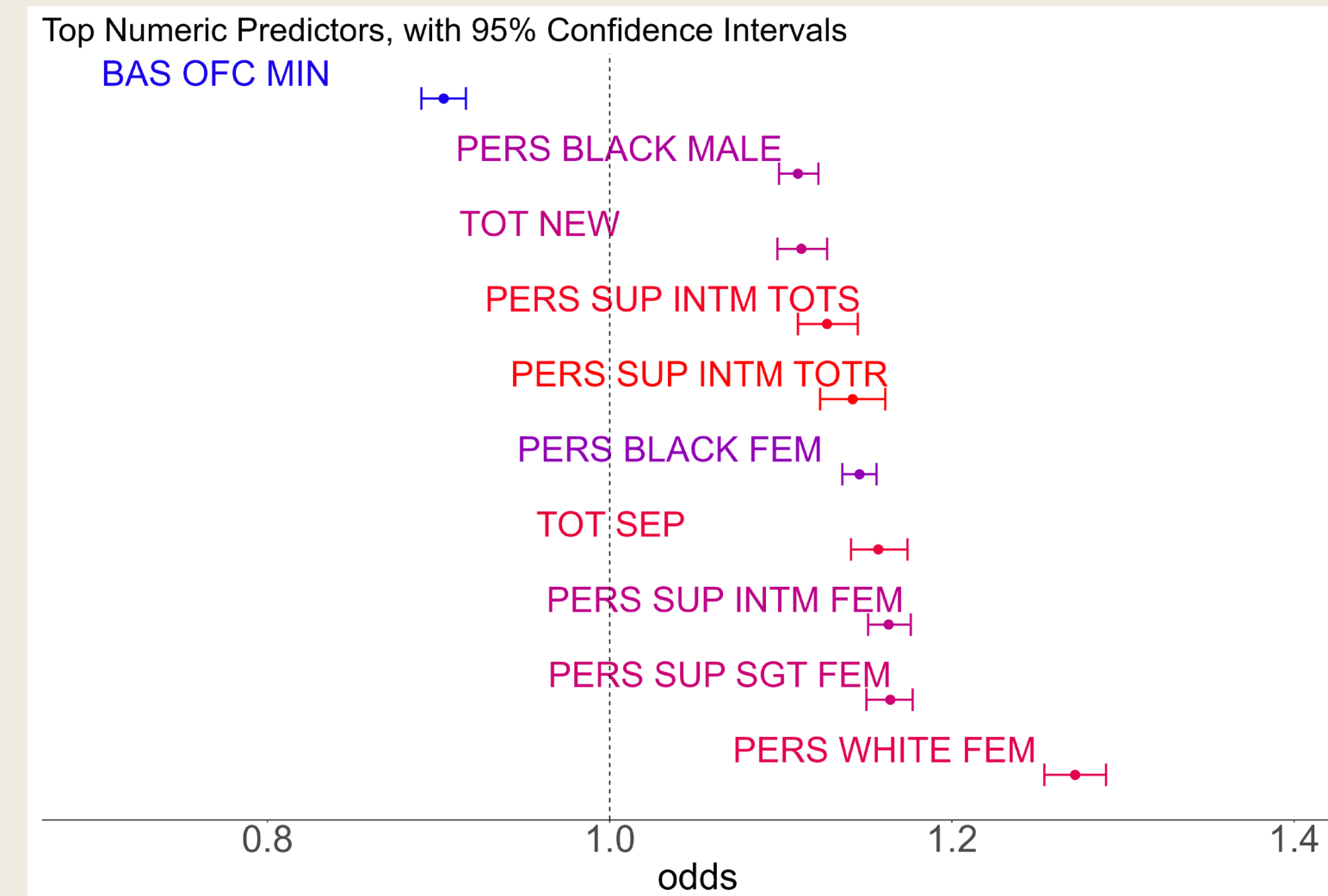
- **1st predictor:** control variable – included in every model, serves as control for agency size: TOTFTEMP (Total number of full-time paid agency employees)

- **2nd predictor:** another variable in the dataset (most were tested)

### Filter results for significant 2nd predictors:

- VIFs < 5
- Bonferroni adjusted p-values < 0.05

## Results and Conclusions



- There *are* predictors for the proportion of FT female sworn officers – these are significant ( $p > 0.05$ ), but there are many of them in LEMAS 2020, with **each predictor contributing a very small effect individually.**
- Consistent with previous research [3], when it comes to inference, **there is not a single dominant factor in the data.** Gender balance appears to be influenced by a diffuse dimension, perhaps organizational culture or structural characteristics, which would be challenging to isolate in a study of establishment characteristics of law enforcement.
- Limitations include that this analysis serves as variable selection to identify variables for further study, and it focus on identifying associations – it can not make any causation claims.

## References and Acknowledgements

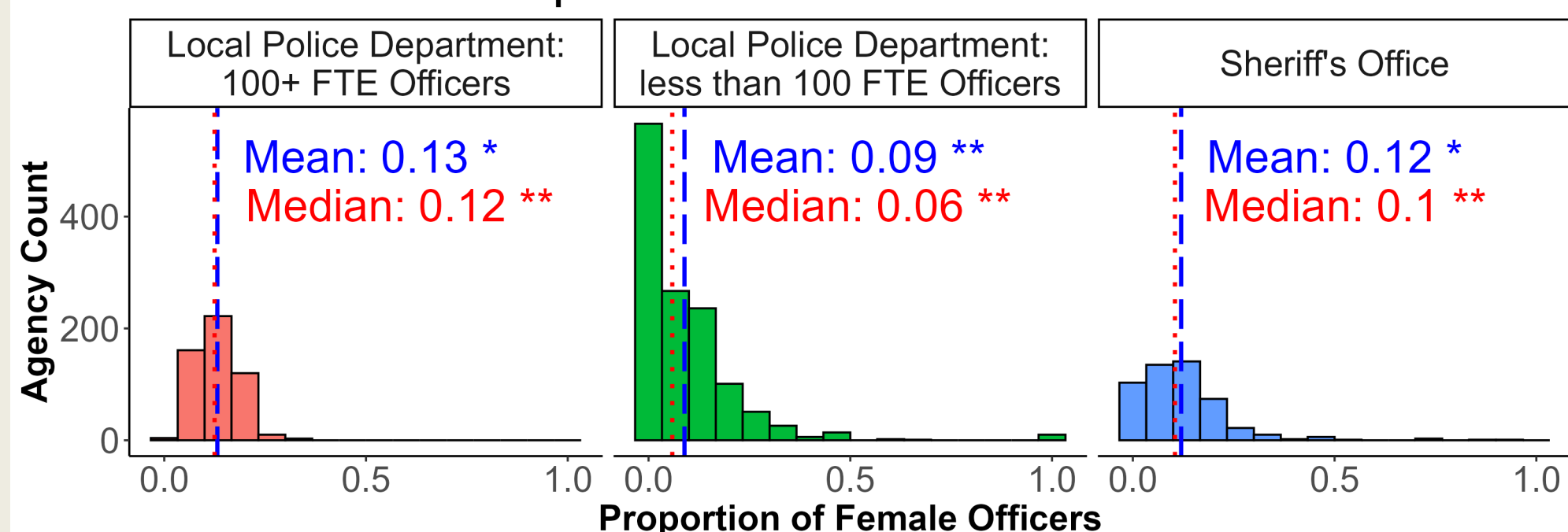
[1] U.S. Department of Justice, National Institute of Justice. *Women in Policing: Breaking Barriers and Blazing a Path*. Washington, DC: U.S. Department of Justice, 2019. <https://nij.ojp.gov/library/publications/women-policing-breaking-barriers-and-blazing-path>.

[2] United States Department of Justice, Office of Justice Programs, Bureau of Justice Statistics. *Law Enforcement Management and Administrative Statistics (LEMAS), 2020*. Inter-university Consortium for Political and Social Research, 2023. <https://doi.org/10.3886/ICPSR38651.v1>.

[3] S. Kim, "The representation of women in policing and community policing implementation," thesis, Michigan State University, 2024.

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Distributions: Proportion of Female FT Officers



\* = Significantly different from at least one other group, \*\* = Significantly different from both other groups