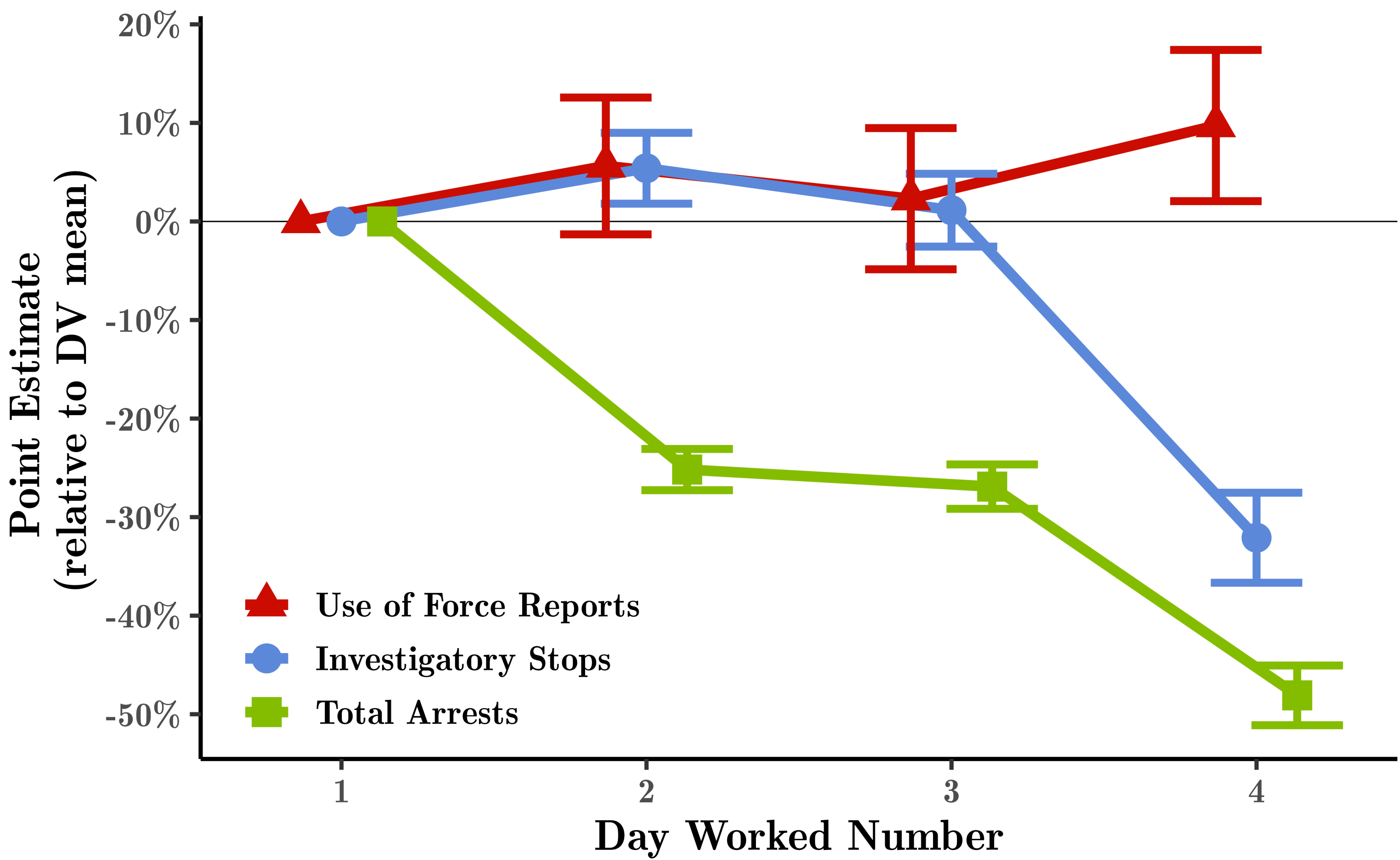


How Effective Are Tired Police Officers?

(NIGHT AND DAY PRODUCTIVITY OF POLICE OFFICERS)

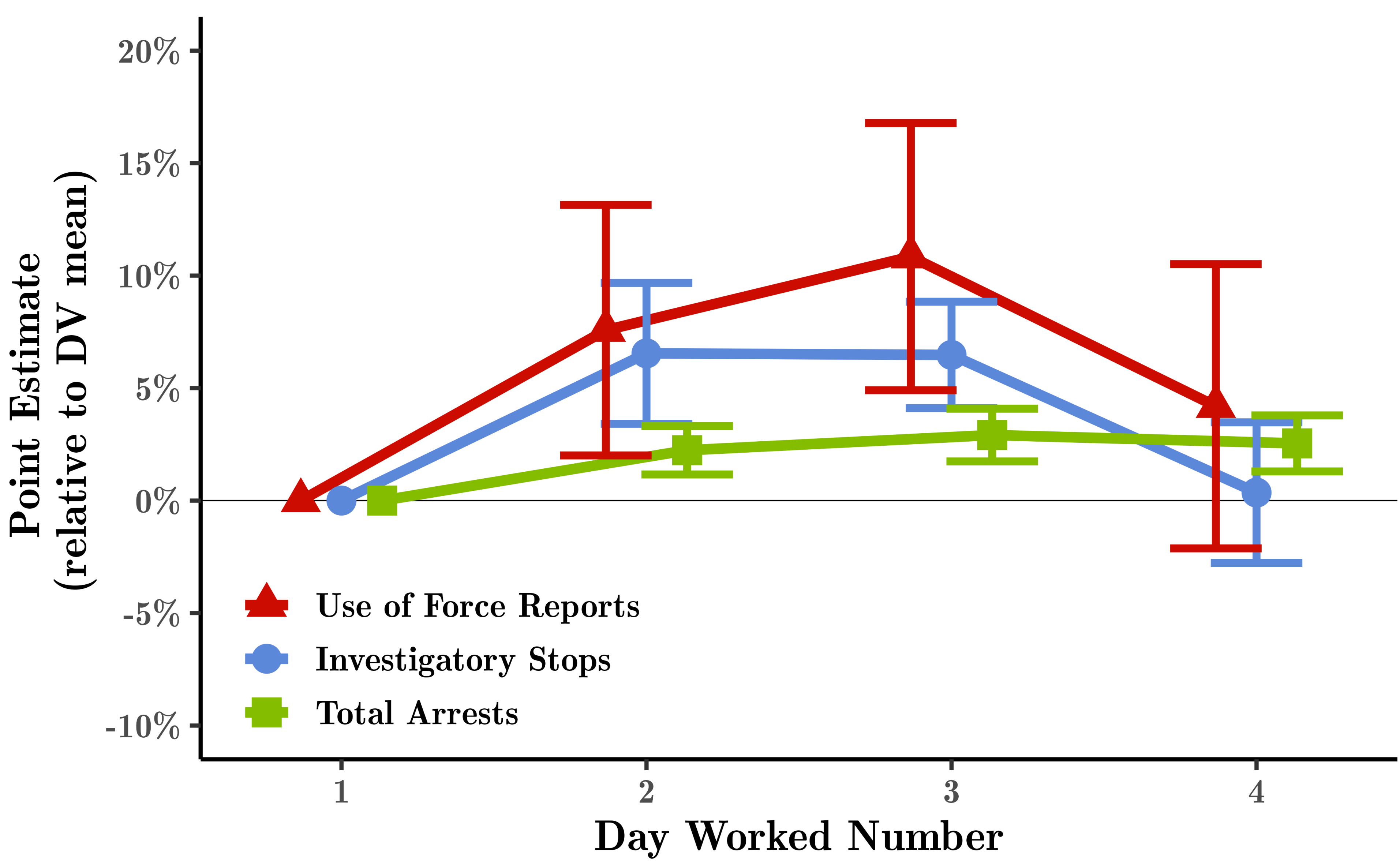
Toshio Ferrazares
UC Santa Barbara

After Working 4 Days, Night-Shift Officers Use MORE Force and Make FEWER Arrests and Stops



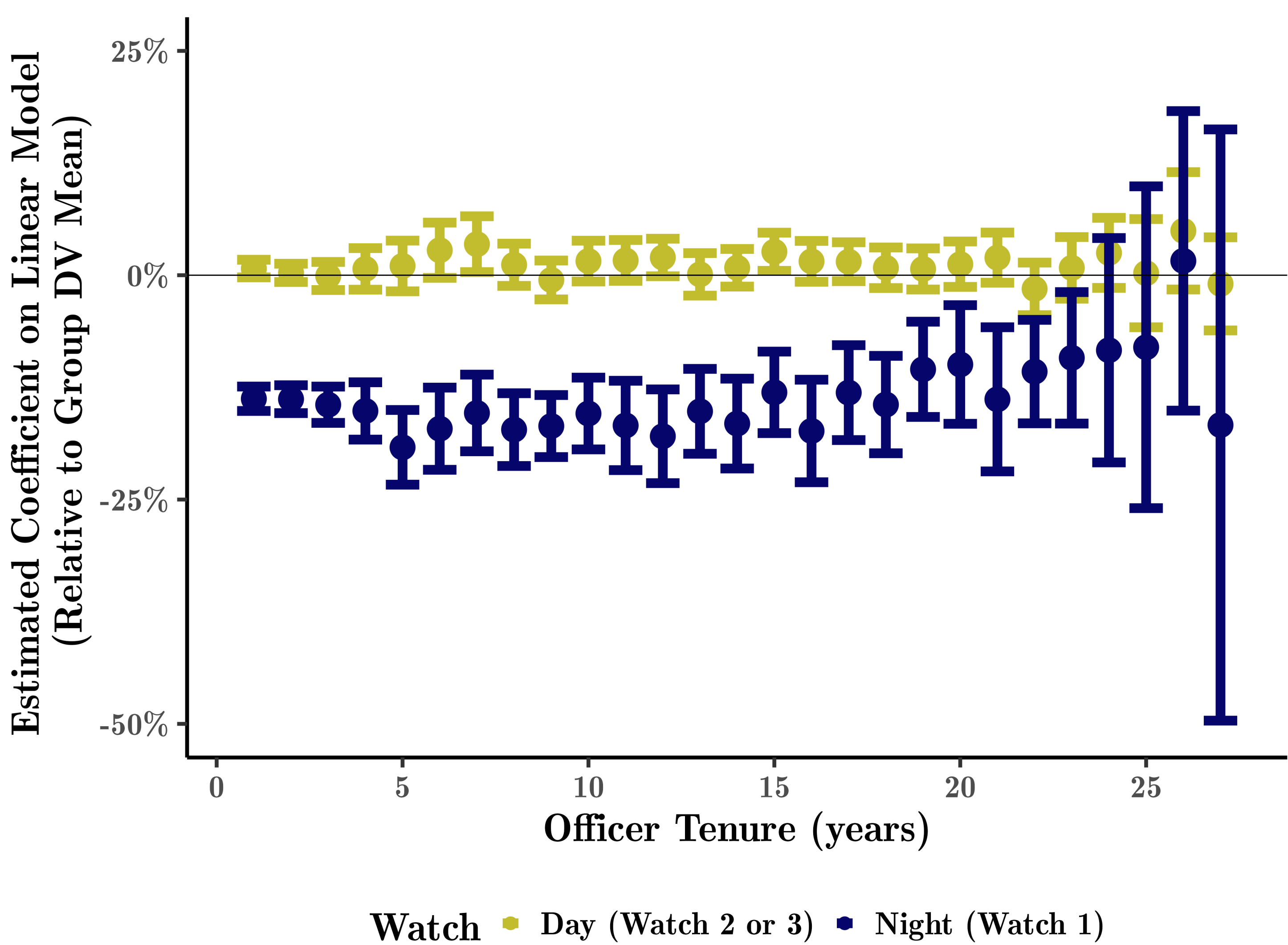
Note: This figure compares a police officers 1st day to their 2nd, 3rd, and 4th day working for three different outcomes. Estimated with OLS and a TWFE design with fixed effects for each officer, day, assignment. This figure restricts to only beat officers on night-shift (10pm to 7am). 95% CI shown, se clustered at officer level.

Day-Shift Officers see NO Declines In Arrests, (May Even Improve)



Note: This figure is the same as above, but restricts to day- and evening-shift officers.

Is Fatigue Solved By Experience? (No)

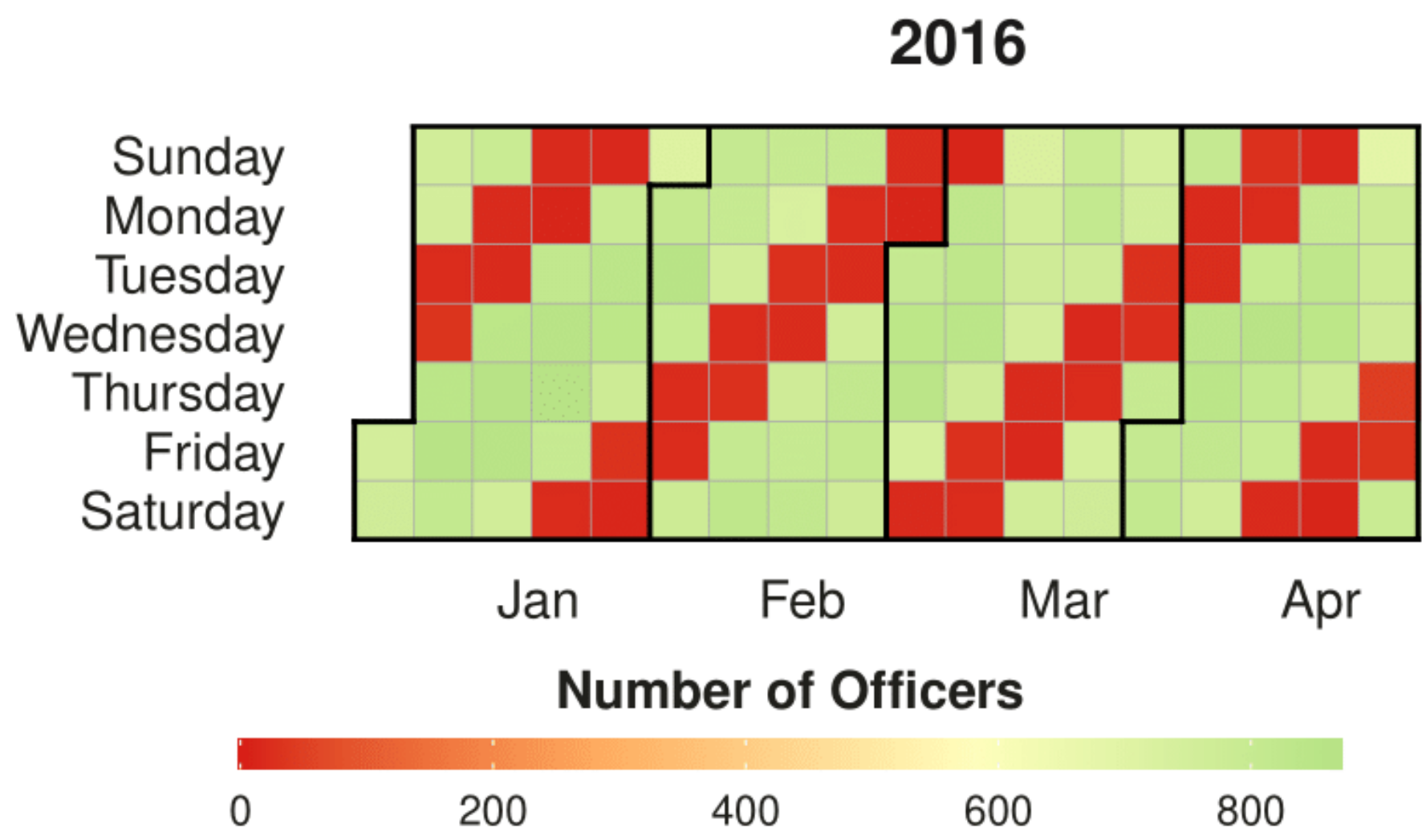


Chicago Police Department Shift Structure

CPD Police Officers are organized into **Day Off Groups**, which designate an officer's work days

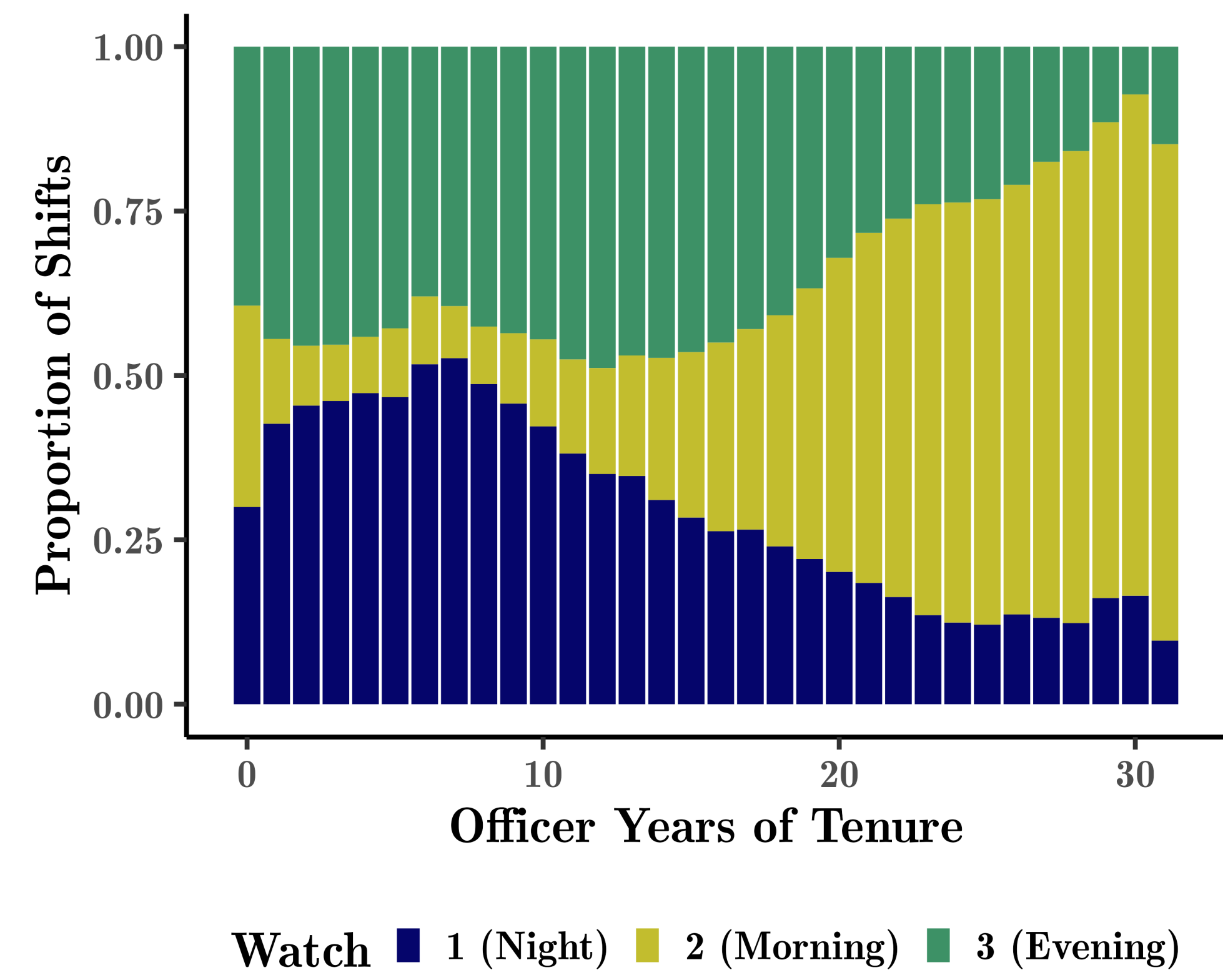
- Groups 61 to 66 correspond to officers who work **9-hour shifts** (4 on, 2 off) and make up 86% of all officers
- The paper: **restricts to the assigned four working days**

Figure: Day Off Group 63 Officer Heatmap



These police officers are divided between three watches:

- First Watch:** night shift, from 10pm to 7am
- Second Watch:** morning shift, from 6am to 3pm
- Third Watch:** evening shift: 2pm to 11pm



Watches are assigned by **seniority**, where experienced officers get first pick

Empirical Strategy (TWFE)

TWFE model to estimate a **dynamic** model:

$$y_{it} = \delta_2 \times 1(\text{DayWorkedNumber}(2)_{it}) + \delta_3 \times 1(\text{DayWorkedNumber}(3)_{it}) + \delta_4 \times 1(\text{DayWorkedNumber}(4)_{it}) + \theta_i + \tau_t + \beta_{it} + \varepsilon_i$$

y_{it} Various outcomes at the officer (i) and day (t) level
 $1(\text{DayWorkedNumber}(n)_{it})$ An indicator function that is equal to 1 on officer i 's n^{th} day worked.
 θ_i, τ_t Officer (11,097 total) and date fixed effects
 β_{it} Beat-Assignment fixed effects (up to 5,263 total)

Model estimated separately for **day-shift** and **night-shift**

A Few More Outcomes

