Peer and Place Effects on Family Formation

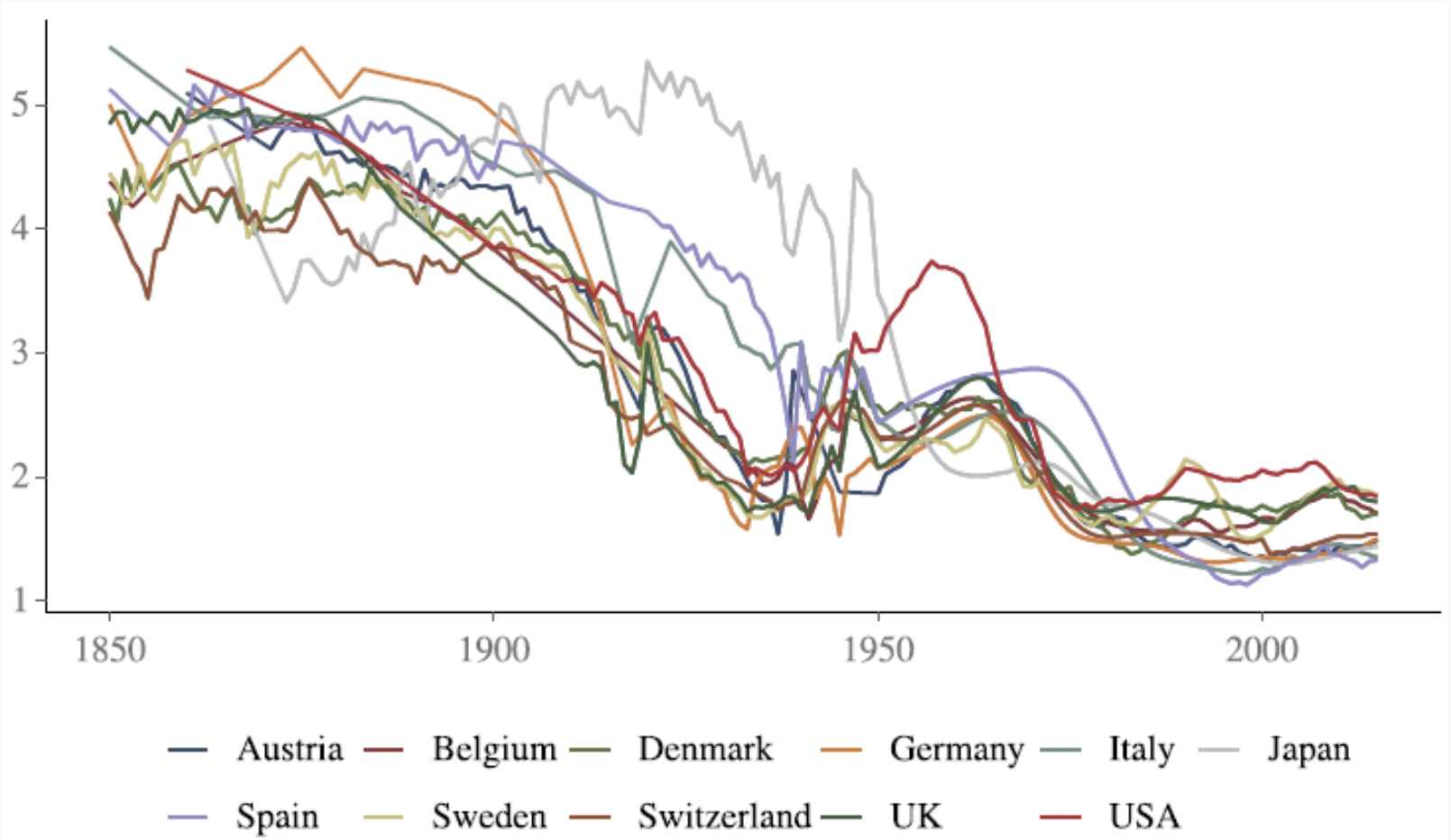
Evidence from U.S. Military Duty-Station Assignment

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IHS Graduate Conference for the Social Sciences

Fertility Has Declined Across the Developed World

- Fertility has fallen across high-income countries since the mid-19th century. Now below replacement after 1970.
- United States: fertility fell from about 2.1 births per woman in 2007 to about 1.6 today (Hamilton et al., 2025; Martin et al., 2025).
- Long-run fiscal solvency, slower labor force growth, and population aging.


5
4
3
2
1
1850
1900
1950
2000
Austria
Belgium
Denmark
Germany
Italy
Japan
Spain
Sweden
Switzerland
UK
USA

What explains the fertility decline?

- **Economics of fertility**: prices, income, housing, contraception, and family policy (Becker, 1960; Goldin and Katz, 2002; Doepke et al., 2023; Bloom et al., 2024).
- **Social norms and peers**: networks, workplaces, religion, and observed family models (Manski, 1993; Fernandez and Fogli, 2009; La Ferrara et al., 2012).

Our angle: place and peer effects on fertility

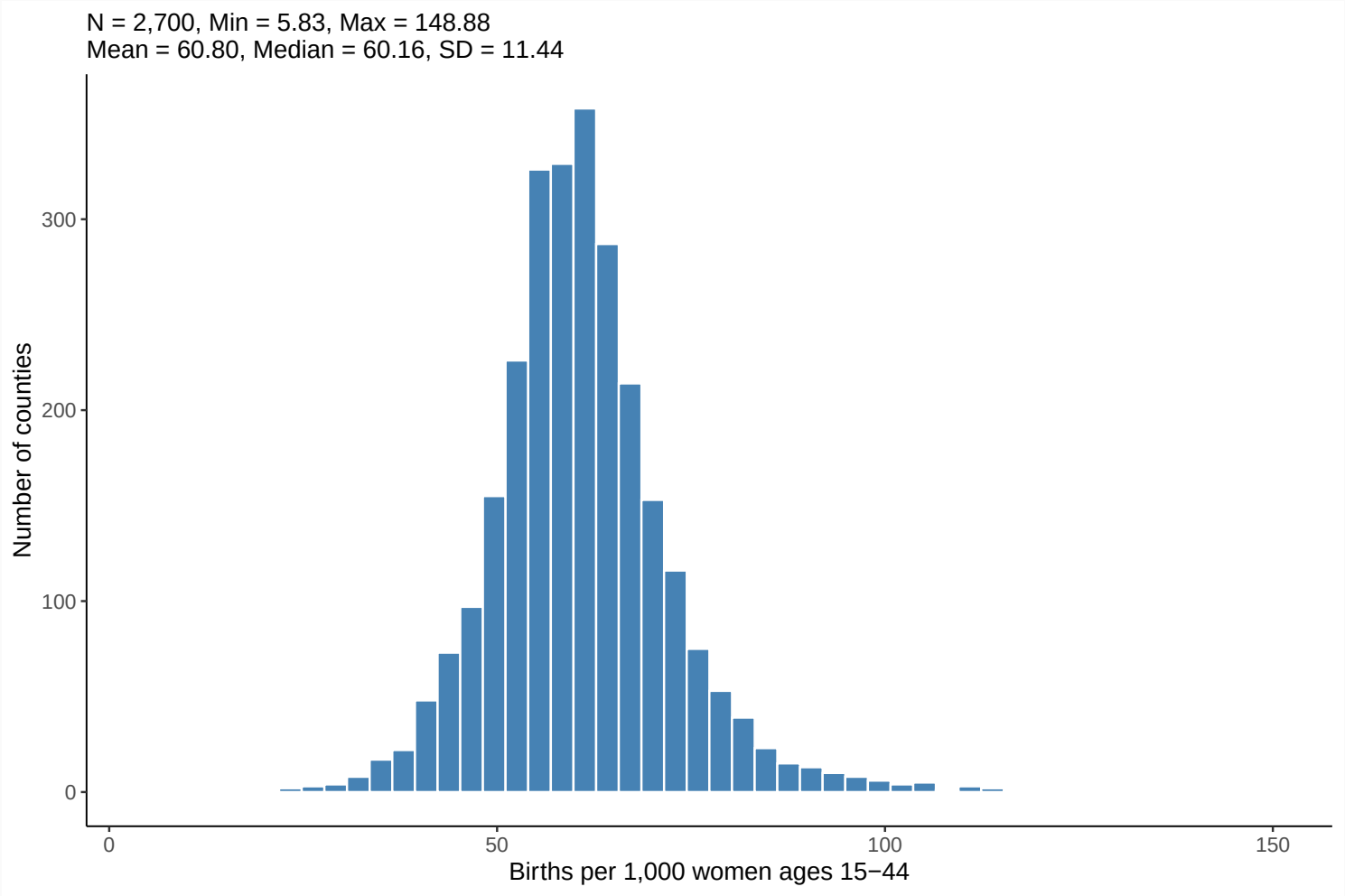
- **Place**: the local civilian fertility environment at the duty station.
- **Peers**: the family-formation history of the military work group a service member joins.
- We use quasi-random U.S. military duty-station assignment

U.S. fertility is geographically uneven

- Fertility rates varies substantially across places within the United States (Hamilton et al., 2025; Martin et al., 2025).
  - 22.3 births per 1,000 women ages 15-44 in Hampshire County, Massachusetts
  - 104.6 births per 1,000 women ages 15-44 in Rockland County, New York
- Different marriage markets, housing, work, childcare, and norms.

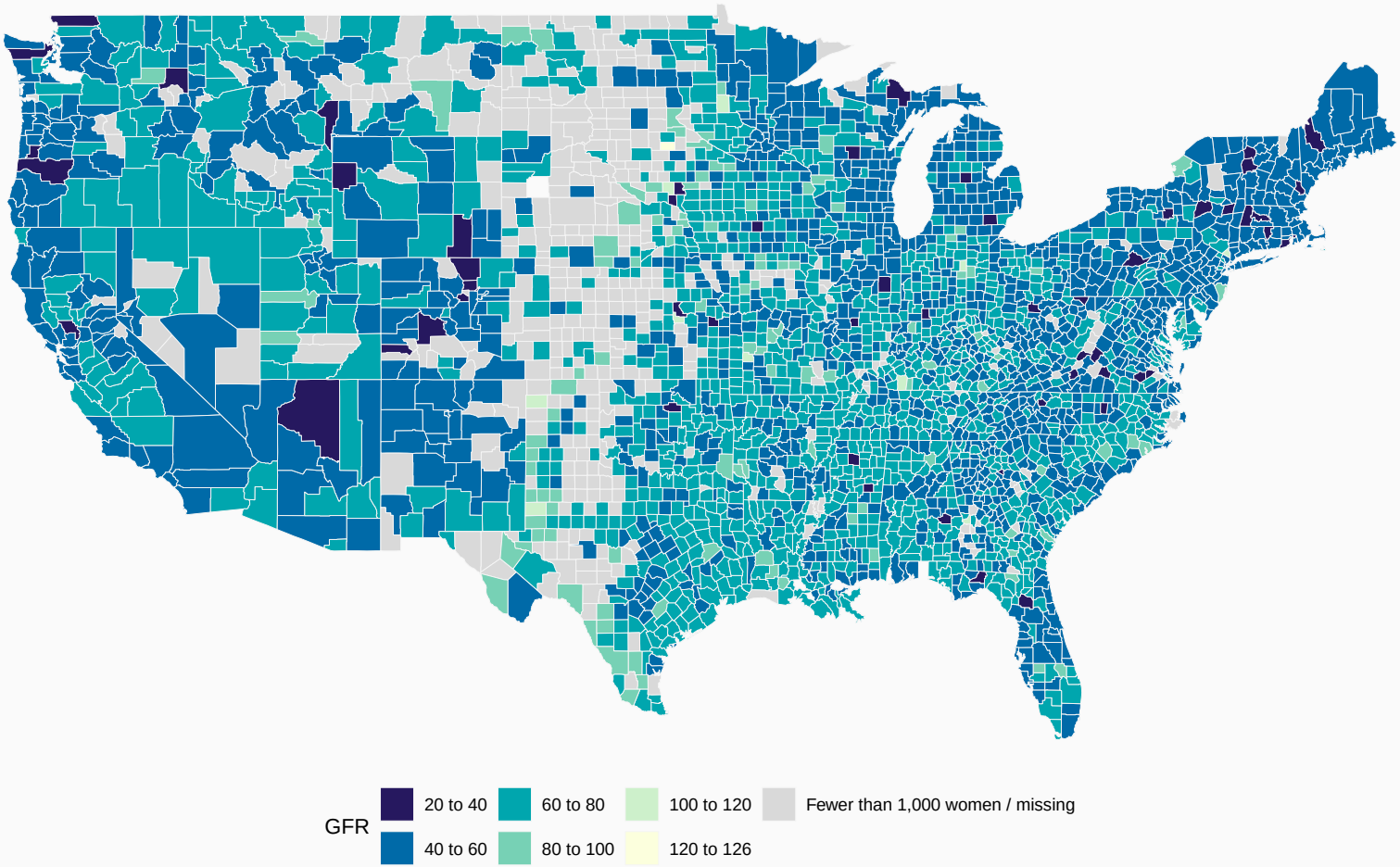
▸ U.S. GFR trend

County GFR distribution



▸ Kernel density

County GFR map



▸ 99th pct map

Geographic Variation in Fertility: Sorting or Causal?

- The empirical challenge: geographic variation may reflect place effects, sorting, or both.

Place might cause fertility

- Local family norms
- Childcare and housing markets
- Marriage-market composition

People sort into places

- Preferences over family size
- Kin networks and religion
- Local jobs
- Plans for marriage and children

Research question

Does place itself shape fertility and family formation?

Identification setting: duty-station assignment

- **Accession pipeline**: branch → recruiter → screening → basic training → Military Occupation Specialty training → first duty station.
- Goals of random assignment: to equalize desirable and undesirable assignments, hardship of military service, and opportunities for professional development
- Conditional on branch, Military Occupation Specialty, rank, cohort, and home of record, assignment to duty locations is plausibly as-good-as-random.
- additionally adjust for AFQT and baseline demographic and family-status traits.

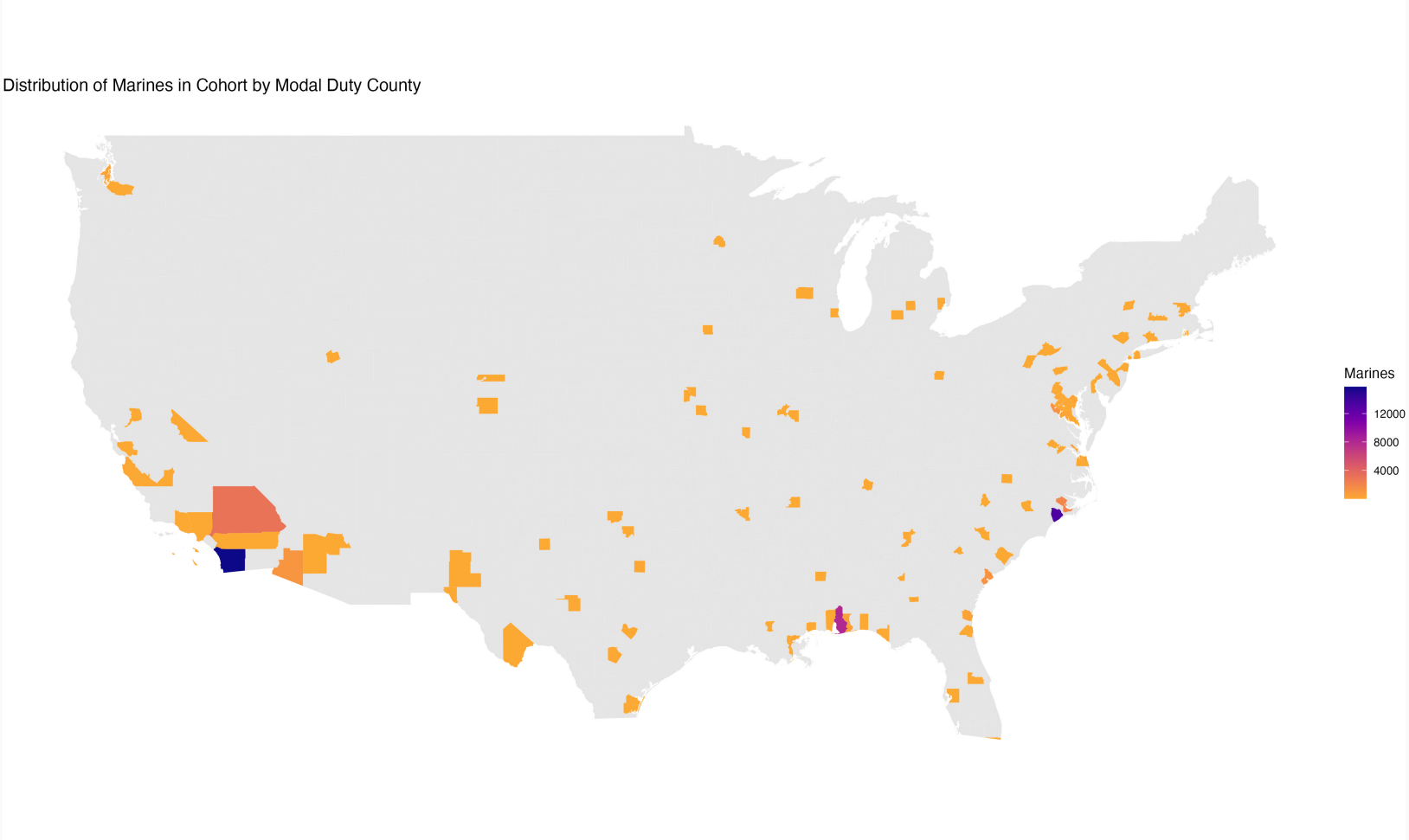
Data

- NCHS Vital Statistics natality, 2020–2022
- SEER population
- Defense Manpower Data Center (DMDC) personnel records for FY 2021–2022

Summary Statistics: Marine Sample

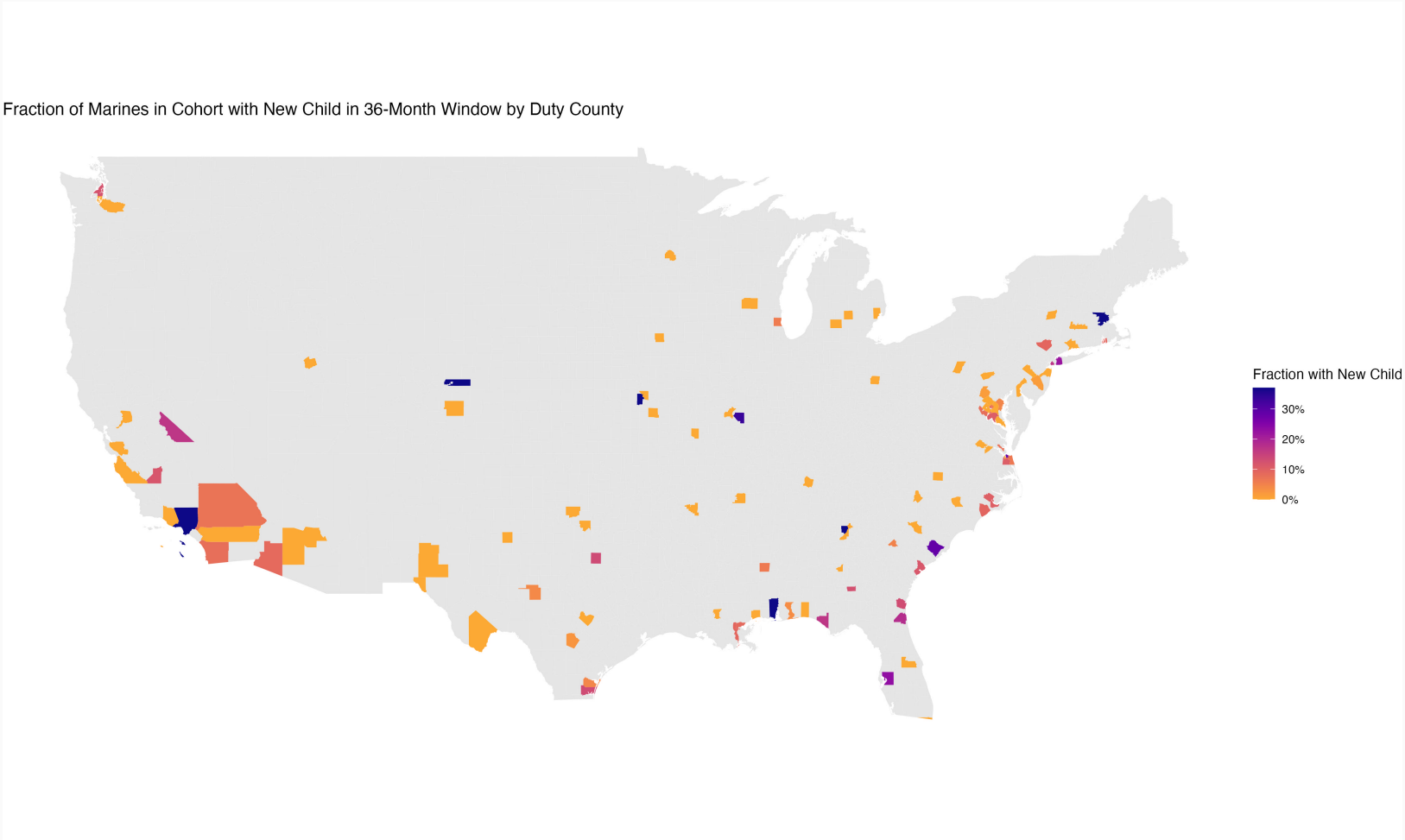
Variable	Mean/share	SD	*N*
Panel A: Demographics and Baseline Family Status			
Age	19.09	1.61	58,666
AFQT percentile score	61.12	18.36	57,188
Female	10.32%		58,666
Married at baseline	1.00%		58,666
Children at baseline	< 0.01	0.04	58,566
High school (12th grade)	94.03%		58,666
Bachelor's degree	3.82%		58,666
Panel B: Peer Environment and Fertility Outcomes			
Pre-arrival peer fertility rate	0.06	0.05	50,369
Marines in arrival unit	654.86	462.12	50,637
Any new child within 3 years	8.00%		50,519
Children gained within 3 years	0.09	0.32	50,637

Marines in the FY 2021–2022 cohort, by modal duty county



Current restricted extract: Marines only. Navy and Army integration in progress.

Marine fertility by modal duty county



Fraction of Marines in the FY 2021–2022 cohort with a new child in the 36 months after arrival, by modal duty county.

Reduced-form place-effects specification

Current county-level place-effects regression:

$$NewChild_i = \sum_c \alpha_c \mathbf{1}\{ModalCounty_i = c\} + \delta_{HOR(i)} + \lambda_{MOS(i)} + \varepsilon_i.$$

- $NewChild_i$: any new child in the 36 periods after arrival.
- α_c: modal-duty-county fixed effects.
- Home of Record fixed effects and Military Occupation Specialty fixed effects

Second-stage link to civilian fertility

Are county effects correlated with civilian fertility?

$$\widehat{\alpha}_{c,m}^{centered} = \theta_m \cdot CivilianGFR_c^z + u_c.$$

- $\widehat{\alpha}_{c,m}^{centered}$: centered county effect.
- $CivilianGFR_c^z$: standardized civilian county GFR.

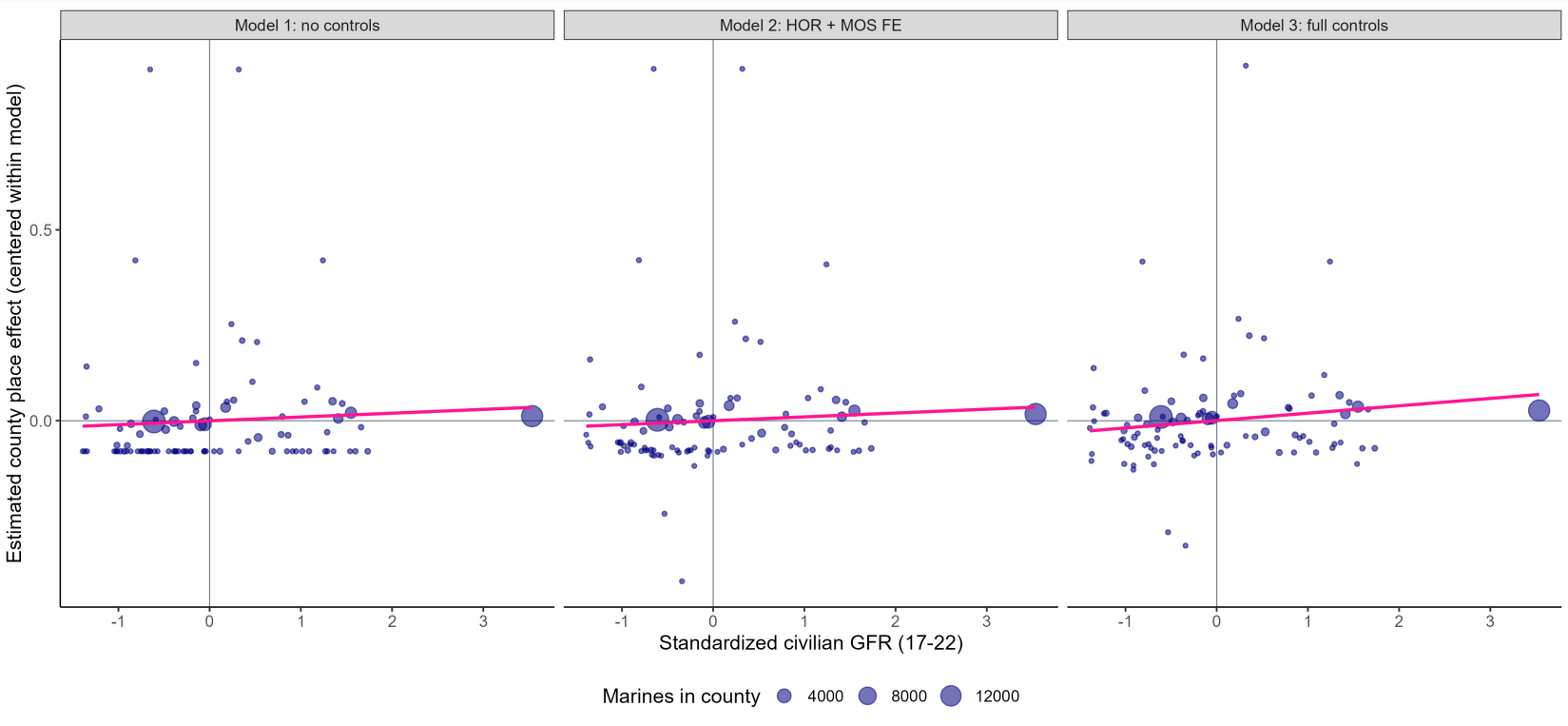
Peer-effects specification

Current peer-effects regression:

$$NewChild_i = \theta \cdot MilitaryGroupFertility_{g(i)} + X_i'\beta + \delta_{HOR(i)} + \lambda_{MOS(i)} + \varepsilon_i.$$

- $MilitaryGroupFertility_{g(i)}$: births per Marine in i's arrival military peer group during the 12 periods before arrival.
- Measured before i enters the group.
- Standard errors clustered at the modal UIC.

Do military place effects covary with civilian fertility?



Precision-weighted Stage-2 slopes are essentially zero across all three specifications (Model 1 = 0.003, Model 2 = 0.001, Model 3 = 0.006; all $p > 0.59$).

▸ Robustness: ages 15–44

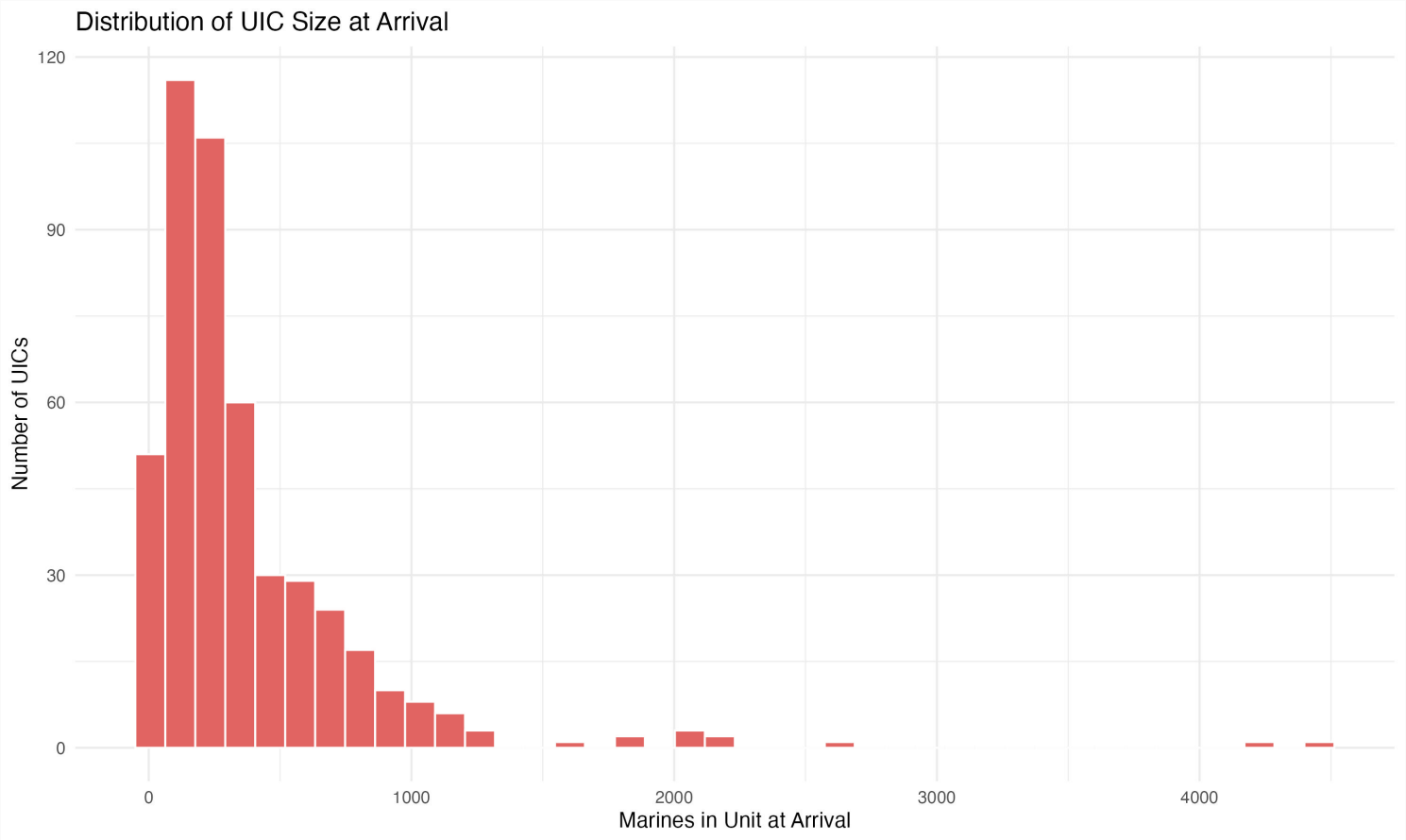
Peer effects: result

Pre-arrival fertility in the military unit predicts whether the focal Marine has a child in the next 36 months.

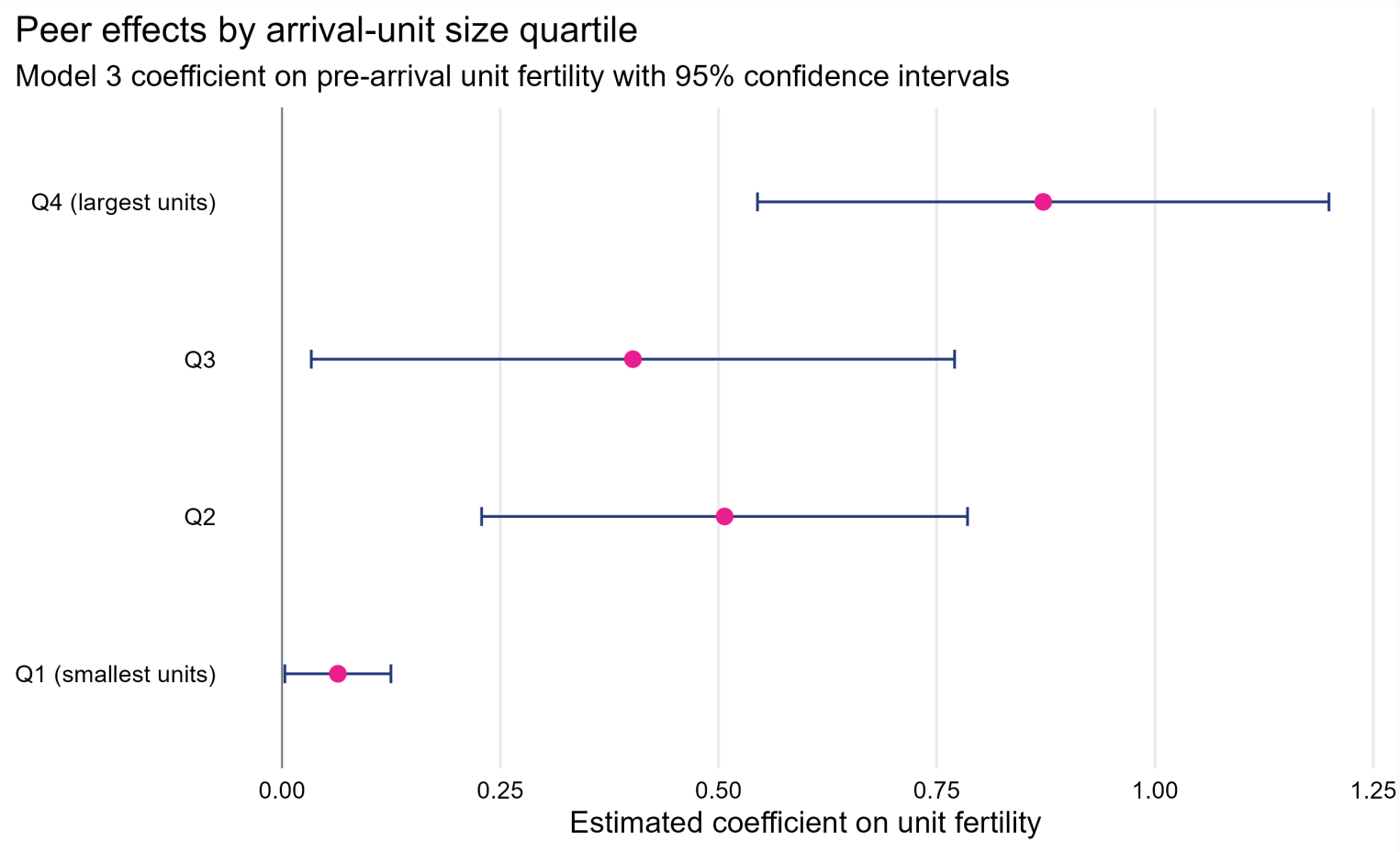
	Model 1 no controls	Model 2 + HOR, MOS FE	Model 3 + full controls
Military-unit fertility rate	0.135** (0.043)	0.140** (0.045)	0.136** (0.044)
Individual controls	No	No	Yes
MOS / HOR / FY FE	No	Yes	Yes
SEs clustered at UIC	Yes	Yes	Yes

A one-unit increase in pre-arrival military-unit fertility is associated with about a 13.5–14.0 percentage-point higher probability of a new child over the next 36 months.

Unit sizes vary widely



Peer effects: heterogeneity by unit size



Quartiles are defined over the Marine-level distribution of arrival-unit size, not over the distribution of unique UICs.

Next Steps

- Integrate Navy, Air Force, and Army to expand geographic coverage and assignment variation.
- Expand peer-effects analysis: network-as-exposure, you-as-the-shock, and Borusyak-Hull style recentered IV.
- Extend outcomes beyond new child to marriage, divorce, and dependent-status transitions.

Thank you

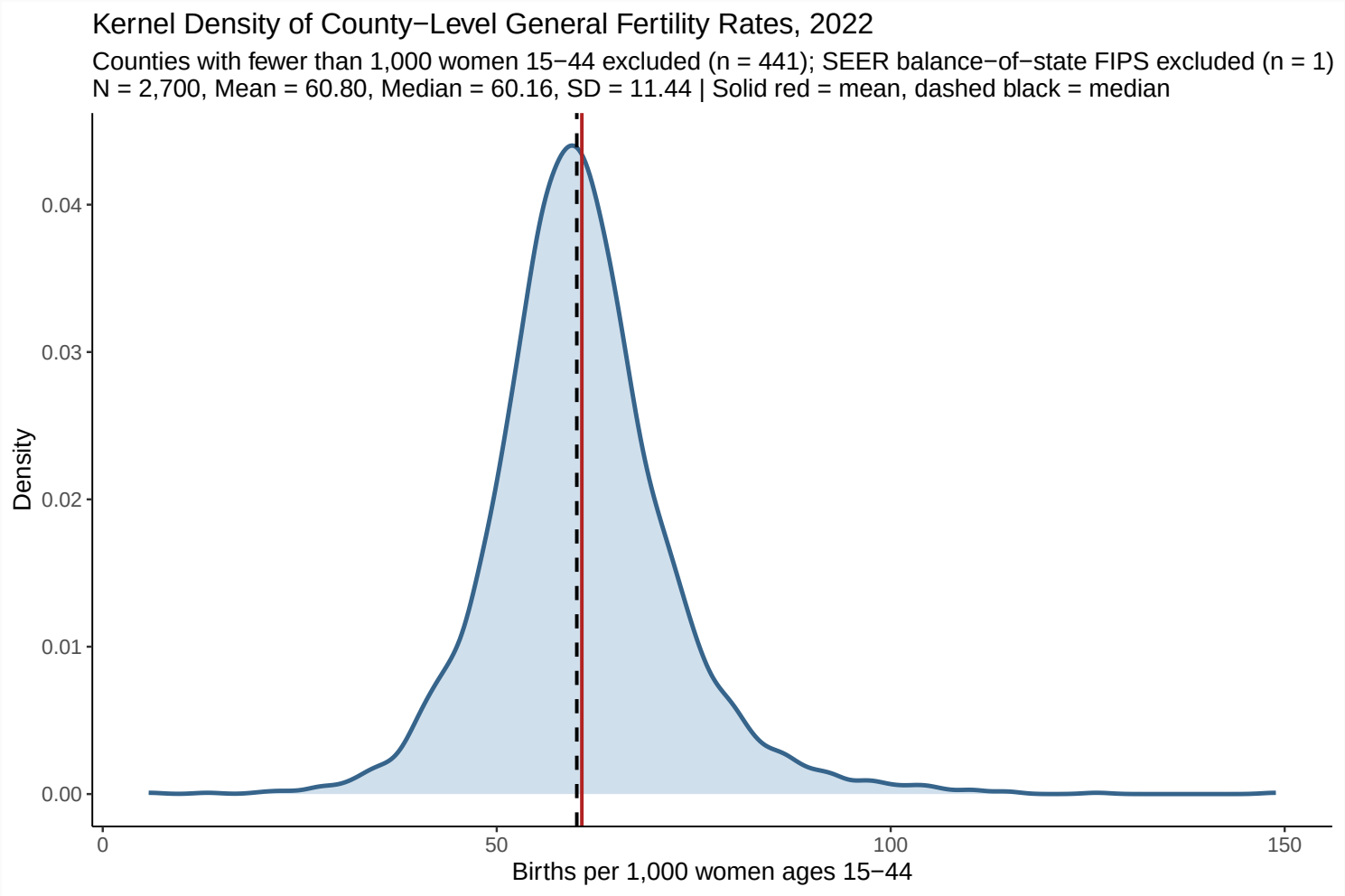
Questions and comments welcome.

Appendix: U.S. GFR trend



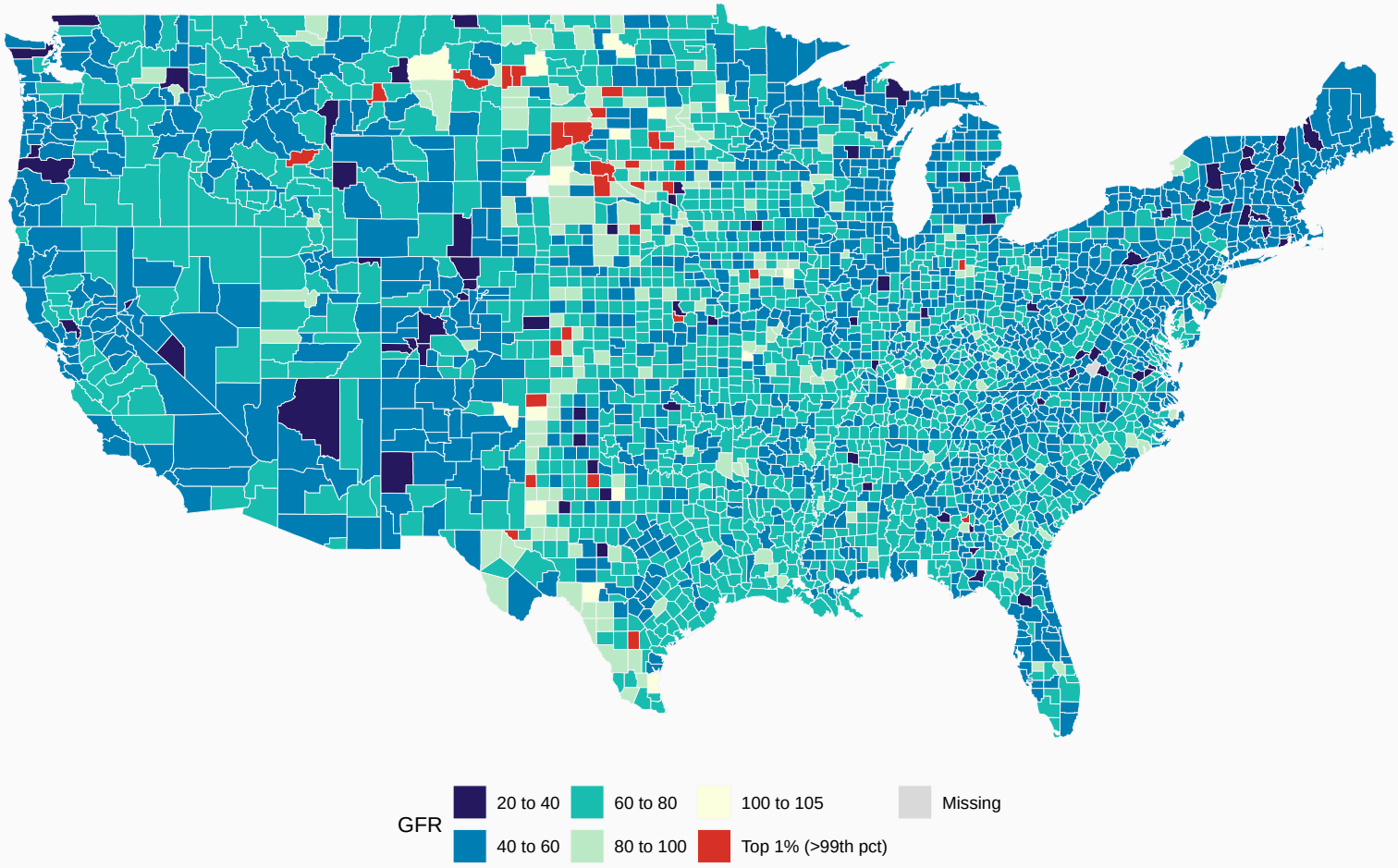
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Appendix: County GFR density



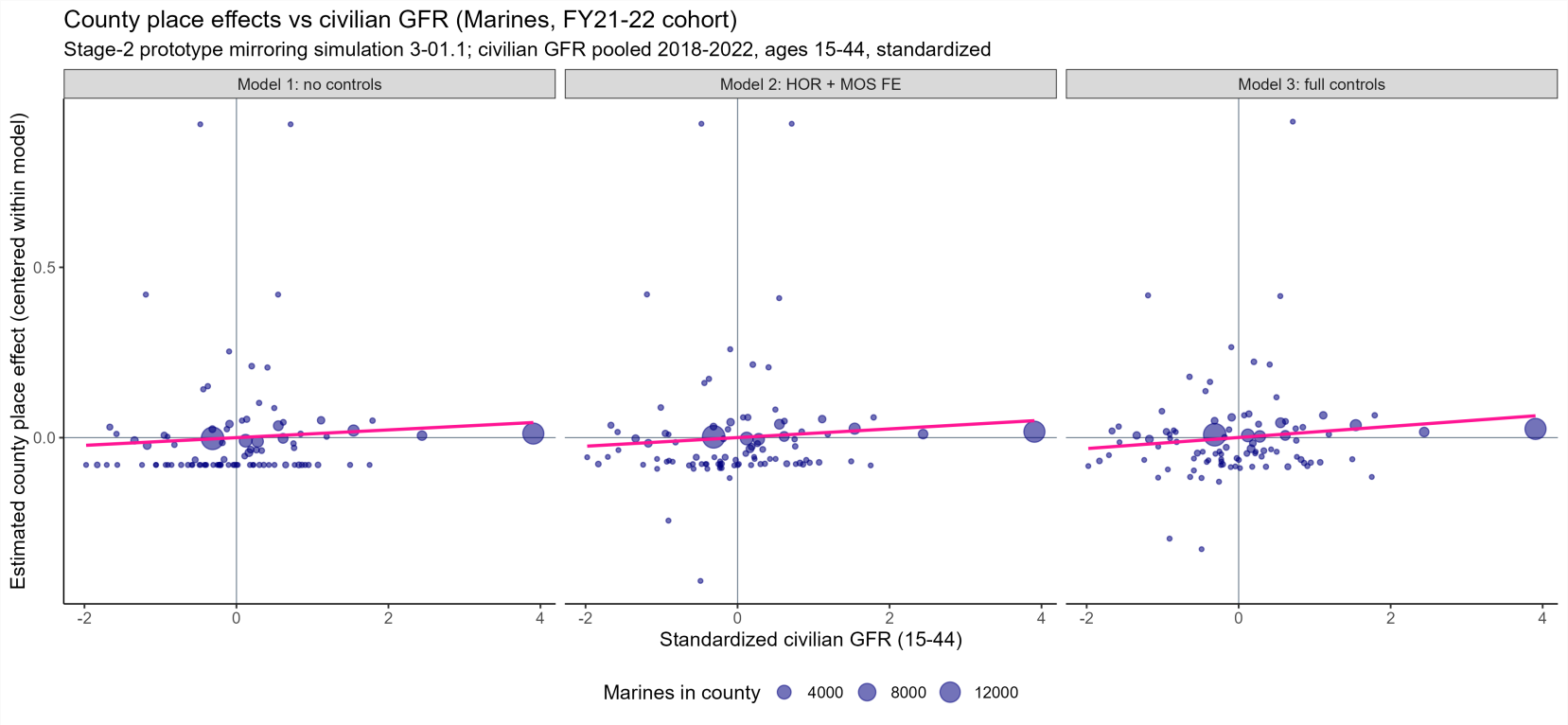
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Appendix: County GFR map, 99th percentile



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Appendix: Stage-2 robustness with civilian GFR ages 15–44



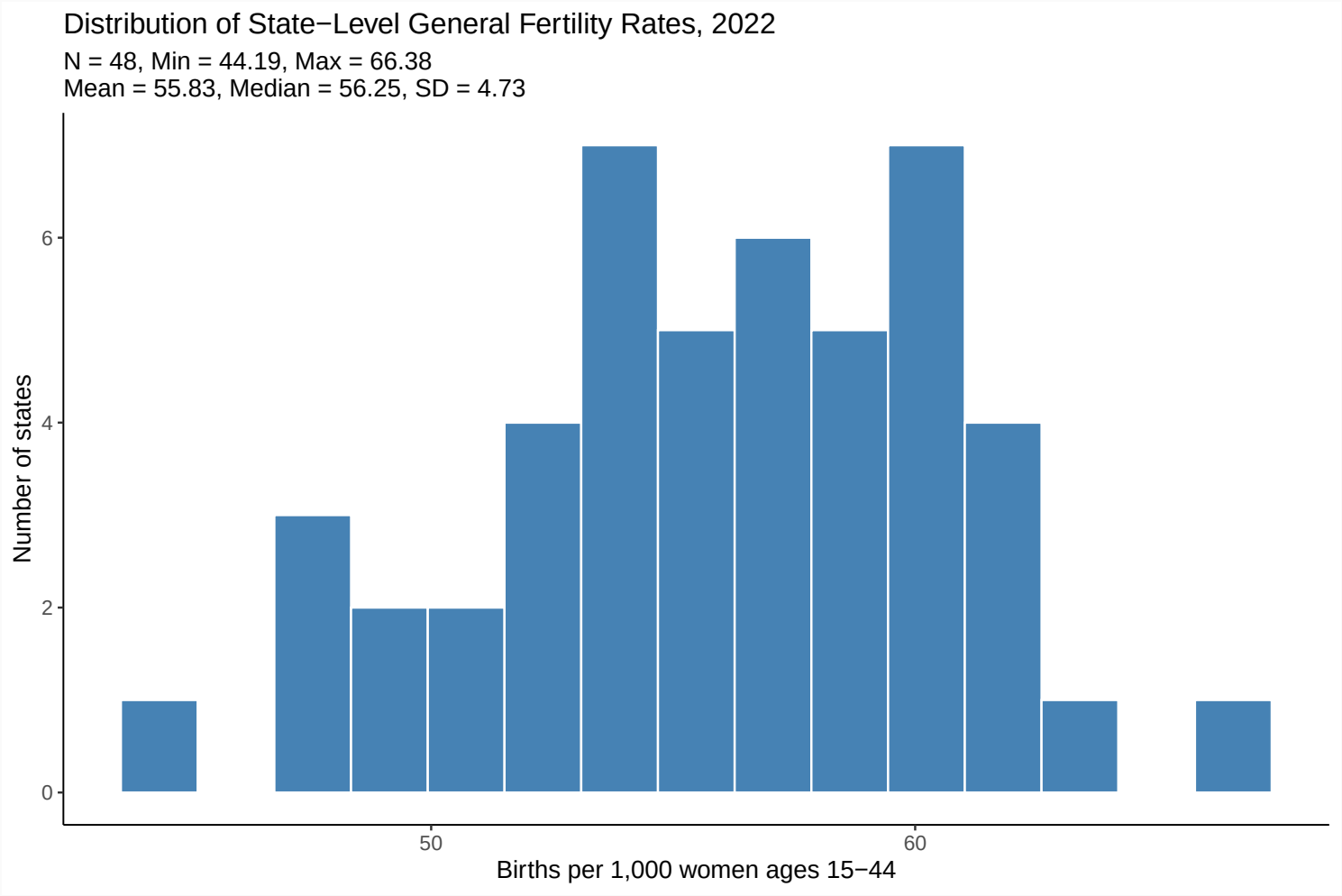
Using the broader standard civilian GFR measure for ages 15–44 yields the same near-flat Stage-2 relationship.

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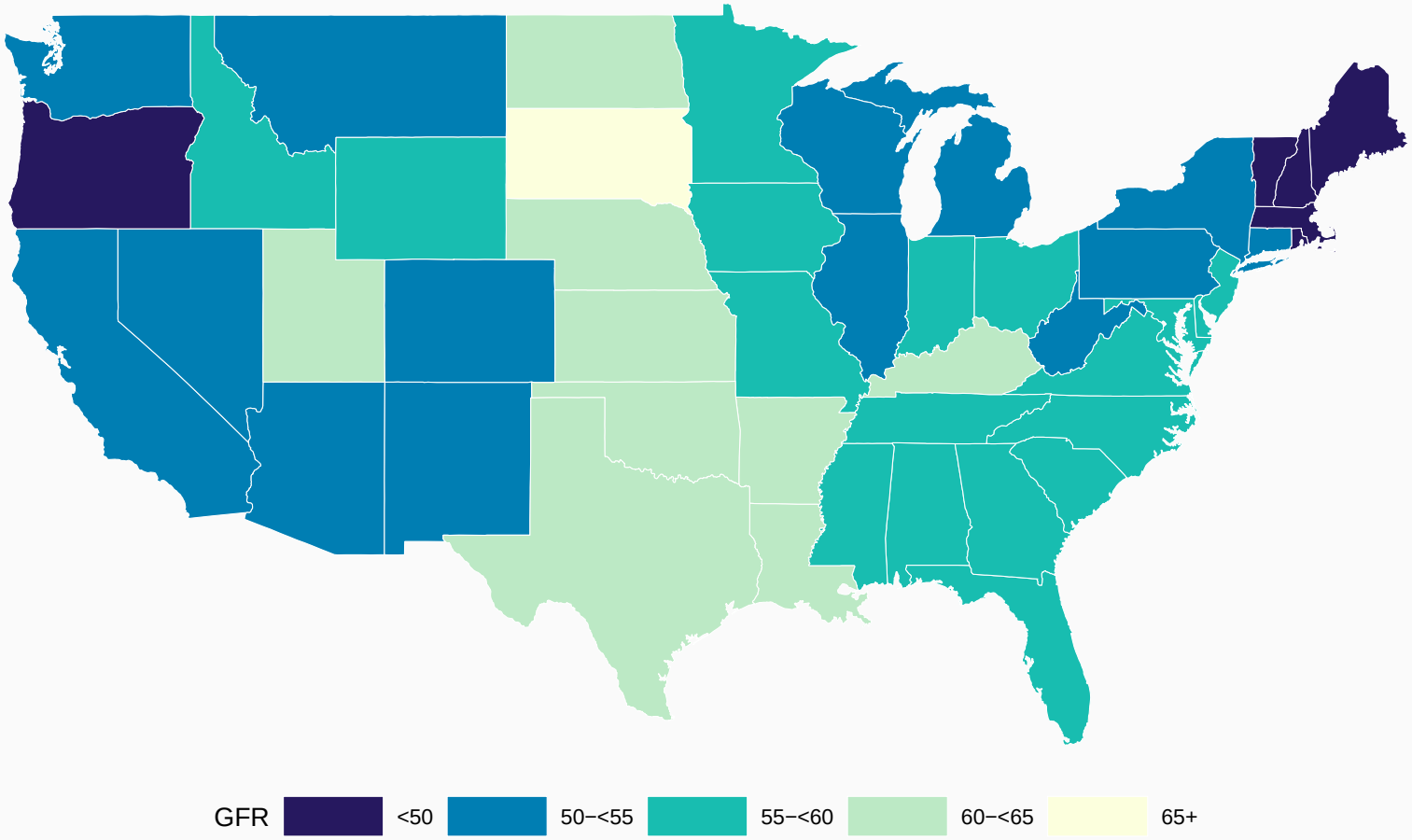
Appendix: More about Borusyak-Hull style peer effects

- Within an assignment cell, realized assignment is quasi-random.
- But the assignment support itself can be non-random: some bases can receive cells that are systematically more family-oriented than others.
- A Borusyak-Hull style recentered measure subtracts the expected peer composition implied by the assignment-support structure.
- The remaining variation comes from whether a base received an unusually high- or low-fertility draw relative to that expectation.

Appendix: State GFR distribution



Appendix: State GFR map



Appendix: Balance test results

Joint F-test on the modal-duty-county block, controlling for MOS, home-of-record state, and accession FY.

Trait	N	F	p-value	Mean (SD)
AFQT score	56,658	9.4	$< 10^{-150}$	61.1 (18.4)
Female	58,100	5.1	$< 10^{-60}$	0.10 (0.30)
Hispanic	58,100	3.2	$< 10^{-25}$	0.29 (0.45)
Baseline age	58,100	2.5	$< 10^{-15}$	19.1 (1.6)
White	58,001	2.3	$< 10^{-12}$	0.82 (0.38)
High school only	58,100	2.0	$< 10^{-8}$	0.94 (0.24)
Black	58,001	1.7	$< 10^{-5}$	0.12 (0.32)
Baseline married	58,100	1.6	$< 10^{-4}$	0.009 (0.09)
Baseline children	58,002	0.5	≈ 1	0.002 (0.04)