How do Gender and Age Influence whether a Person Held Leadership Roles during Childhood?

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Introduction

1. Research Question

How do gender and age influence whether a person held leadership roles during childhood?

2. Population

- Investigating childhood leadership experiences
- Dataset from Pew Research Center's American Trends Panel (ATP) conducted on July 17-23, 2023
- N = 5057 U.S. adults
    - Recruited through address-based sampling (ABS)
    - Includes a weight adjusted for SRS sampling design, simulation, and alignment with U.S. adult population benchmarks
- Measurements: leadership experiences during childhood, gender, age categories, and various demographic metrics

Sampling Frame

1. **Sampling Design: Stratified Random Sampling**
    - N = 400 individuals
    - Variables:
        - Stratum: gender & age
            - F_AGECAT - Age category of respondents (18-29, 30-49, 50-64, 65+)
            - F_GENDER - Gender of respondents (men, women)
        - EVERLEAD1_W131: “Still thinking about when you were growing up, would you say you took on leadership roles in your school or community?
    - Proportional Allocation for each stratum
    - Sampling Element:
        - A U.S. adult respondent who provided survey responses for Wave 131
    - Sampling Unit
        - An individual adult (18 years or older) selected from the American Trends Panel
2. **Monte Carlo**
    - Used to compare both SRS & Stratified Random Sampling

Sample Size Justification

- **Sample size: 400**
  - Based on 95% confidence level and a desired margin of error of ± 0.05
  - 385 rounded to 400 for simplicity and conservative estimation
- **Proportional allocation**
  - Divided sample across strata defined by gender and age group
  - Strata: gender × age group
    - Female 30–49 made up ~24% of the population → ~96 sampled
  - Ensured fair representation and improved estimation precision across groups
- **Nonresponse Adjustment (Handled by ATP Data)**
  - No need to handle nonresponse manually in the stratified simulation
  - The ATP weights (WEIGHT_W131) already account for:
    - Initial recruitment nonresponse
    - Wave-specific survey nonresponse
    - Panel attrition
    - Design changes over time
  - Each respondent is assigned a calibrated weight aligned with population benchmarks

    ⇒ Ensuring our inferences are representative of U.S. adults even when using complex designs.

Estimation and Inference

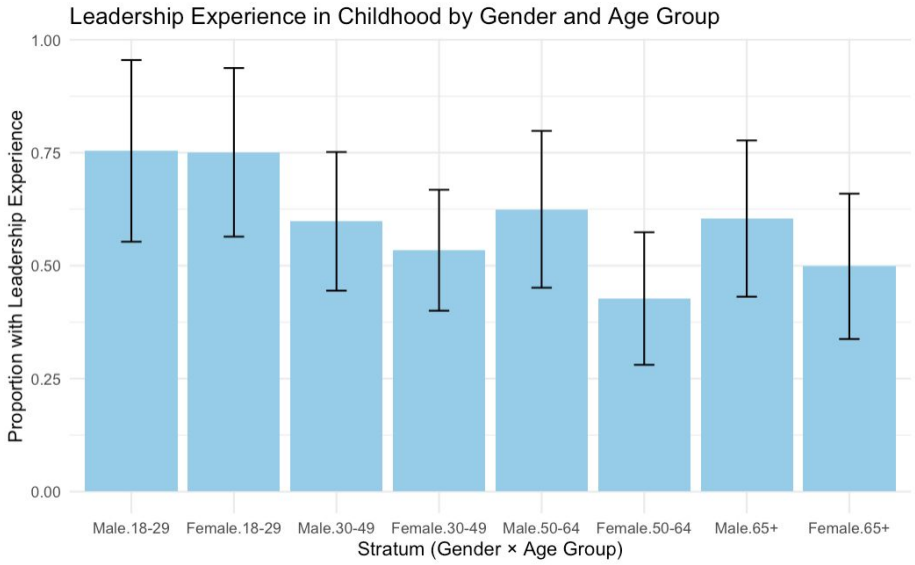
- **Overall Leadership Experience**

	Estimate	SE	95% CI
Overall Leadership %	58.45%	± 3.04%	[52.5%, 64.3%]

- **Regression Estimator**
  - **leader ~ F_GENDER + F_AGECAT**
  - **Baseline Group = Male 18~29**

	Estimate	SE	Significance
Age 50–64	-1.00	0.44	Significant (p = 0.02377)
Female	-0.41	0.25	Insignificant (p = 0.10851)

- **Bar Chart**

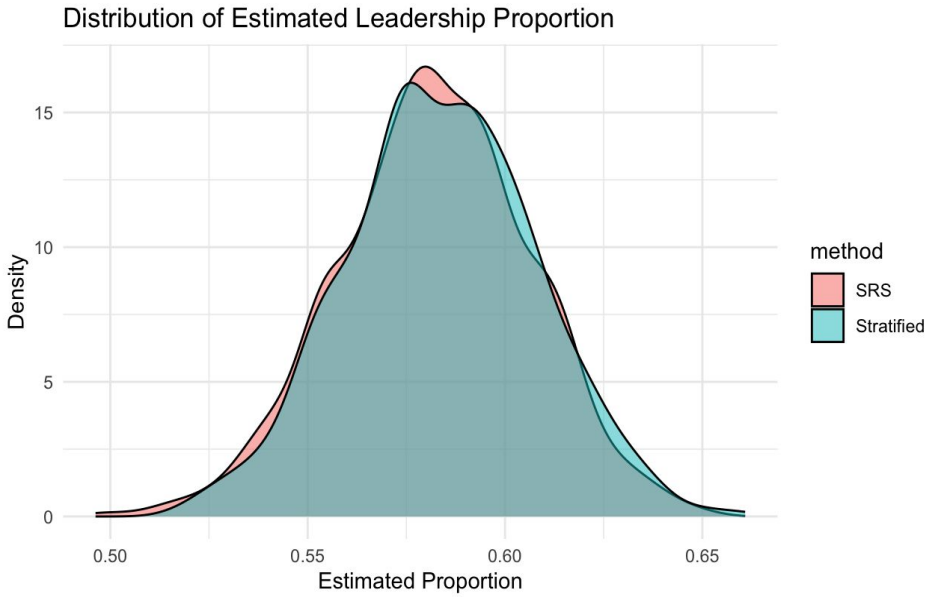


Younger respondents show the highest leadership proportions, while the percentages tend to decline with age, more steeply among women than men.

Monte Carlo Simulation

- **Goal:** Compare stratified sampling and SRS using 1,000 simulated samples (N = 400 each)
- **In each iteration, we computed:**
  - Estimated proportion of people who held leadership roles in childhood
  - Associated standard error (SE) for the estimate
- **Both methods produced similar mean estimates:**
  - Stratified: 0.5839
  - SRS: 0.5819
- **Stratified sampling had slightly lower:**
  - Standard Error (0.0245 vs. 0.0246)
  - Error Bound (±0.0480 vs. ±0.0483)
- **Density plot:**
  - Stratified sampling is slightly more concentrated
- **Stratified sampling is more precise → smaller average error and tighter distribution**

Metric	Stratified Sampling	SRS
Mean Estimate	0.5839	0.5819
Mean Standard Error	0.0245	0.0246
Mean 95% Error Bound	±0.0480	±0.0483



Conclusion

- **Findings:**
  - Young adults (18–29) had the highest childhood leadership rates
    - Male: 75.4%, Female: 75.1%
  - Lowest group: Women aged 50–64
    - Only 42.7% reported leadership experience (SE: 7.5%)
    - Leadership experiences tend to decline with age, especially for women
  - Individuals aged 50–64 are significantly less likely to have held leadership roles in childhood even after adjusting for gender
- **Why the sample supports unbiasedness:**
  - Proportional allocation preserved subgroup structure
  - SRS and stratified sampling both converge to population estimate
- **Implications:**
  - Unequal access in early life can lead to long-term disparities
  - Calls for targeted early interventions

Thank you