Frontier Gender Norms: History and Legacy

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Gender in the Economy: Change and Persistence of Norms

July 28, 2022
Motivation

- Gender inequity has been and still is a fundamental dimension of inequality in human societies
- Large productivity losses from female labor misallocation
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- Substantial variation in gender inequality in the world
  - across countries, within countries
  - over time: change but also persistence

Sources of variation in gender roles
- technology
- culture
- institutions
- (geography)

This paper: a persistent cultural imprint of American frontier history on gender norms
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Frontier Conditions and Women’s Lives

Isolation

1. **low density**: isolation from others within given county
2. **remoteness from urban centers**: limited government and social infrastructure

Distinctive demographics

- sharply male-biased sex ratios
- disproportionately prime-age adult

Women on the Frontier

- more likely to be married (early, with older men)
- high fertility (proxied by child-women ratios)
- low LFP, but among working women, higher status occupations
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Frontier conditions and gender roles: a view from economics of the family

- **Isolation** from extended family and social networks
  - most goods and services home-produced $\rightarrow$ increased domestic burden, esp. for women (Greenwood, Seshadri & Yorukoglu 2005; Cavalcanti & Tavares 2008)
  - lack of protection against violence or outside options (Figueredo et al. 2001)

- **High fertility**
  - high demand for children due to land abundance (Ashraf & Galor 2010; Easterlin 1976, Steckel 1992)
  - gap in desired fertility (Anderson & Ray 2010; Doepke & Tertilt 2018; Ashraf, Field, Voena & Ziparo 2020)
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- **Imbalanced sex ratios**
  - favors masculinity norms, violence (Baranov, De Haas & Grosjean 2022)
  - (favors female bargaining power $\rightarrow$ greater leisure) (Grosjean & Khattar 2019)
We trace out the frontier legacy w/ measure of total frontier experience (TFE) historically.

- FLFP remained persistently lower in high-TFE counties.
The Legacy of the Frontier on Gender Norms

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- Low FLFP ≠ greater leisure; rather, more domestic work
  (likely mirroring the historical domestic burden, though lack time use data then)
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We trace out the frontier legacy w/ measure of total frontier experience (TFE) historically

- FLFP remained persistently lower in high-TFE counties

- Low FLFP ≠ greater leisure; rather, more domestic work
  (likely mirroring the historical domestic burden, though lack time use data then)

- Conservative gender attitudes incl. among women

- Lower participation in politics
Contributions to the Literature

1. Cultural and Historical Origins of Gender Norms
   e.g., Fernandez et al, 2004; Fernandez & Fogli, 2009; Fogli & Veldkamp, 2011; Alesina et al, 2013
   → frontier settlement and conservative gender norms, distinctive geography of gender inequality

2. Historical Debates: Women on the Frontier
   e.g., Frager, 2008; Jeffrey, 1998; Jensen, 1981; Myres, 1982
   → reconciling seemingly competing historical narratives with quantitative analysis and insights from family economics

3. Comparative Perspective: Settlement of Australia and Gender Norms
   Baranov et al, 2020, 2021; Grosjean & Khattar, 2019
   → new insights on social isolation mechanism, possibly distinct in U.S.
Roadmap

Introduction

Historical Background

Fertility and Gender Inequality on the Frontier

The Frontier Legacy in the Long Run

Conclusion
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Mapping the Frontier

- Census started tracking frontier in 1874, noticing settlement contours

We follow Turner (1893) & Census (1890). The most significant thing about the American frontier is that it lies at the hither edge of free land. In the census reports it is treated as the margin of that settlement which has a density of two or more to the square mile. The term is an elastic one, and for our purposes does not need sharp definition. We shall consider the whole frontier belt including the Indian country and the outer margin of the ‘settled area’ of the census reports.

Frontier declared ‘closed’ in 1890, according to Turner & Census: up to and including 1890 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line.

Frontier as a “form of society rather than an area” (Turner, 1896)
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- Frontier as a “form of society rather than an area” (Turner, 1896)
Mapping the Frontier

- Locate frontier line and trace it over time
  - contour line for population density of 2 people/mi²
America’s Westward Expansion
America’s Westward Expansion

1790

U.S. Non-indigenous Population Density (per square mile)

- 0 - 2
- 2 - 6
- 6 - 18
- 18 - 45
- 45 - 90
- More than 90

Native land

Frontier, 1790
America’s Westward Expansion

1800

U.S. Non-indigenous Population Density (per square mile)

- 0
- 0 - 2
- 2 - 6
- 6 - 18
- 18 - 45
- 45 - 90
- More than 90

Native land

Frontier, 1800
America’s Westward Expansion

1820

U.S. Non-indigenous Population Density (per square mile)

- 0
- 0 - 2
- 2 - 6
- 6 - 18
- 18 - 45
- 45 - 90
- More than 90

Native land

Frontier, 1820
America’s Westward Expansion

1830

U.S. Non-indigenous Population Density (per square mile)

- 0
- 0 - 2
- 2 - 6
- 6 - 18
- 18 - 45
- 45 - 90
- More than 90

Native land

Frontier, 1830
America’s Westward Expansion

1840

U.S. Non-indigenous Population Density (per square mile)

0
0 - 2
2 - 6
6 - 18
18 - 45
45 - 90
More than 90

Native land
Frontier, 1840
America’s Westward Expansion

1870

U.S. Non-indigenous Population Density (per square mile)

- 0
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- 6 - 18
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Native land

Frontier, 1870
America’s Westward Expansion

1880

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Native land
Frontier, 1880
America’s Westward Expansion

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Mapping the Frontier

- Locate frontier line and trace it over time
  - contour line for population density of 2 people/mi\(^2\)

- Define frontier counties: “margins of civilization” on “frontier belt”
  1. counties with centroid within 100 km
  2. population density < 6 people/mi\(^2\) (Census cutoff for “fully settled”)

- Our measure generalizes prior, period-specific approaches

- Steckel (1989): frontier \(\approx\) Minnesota, Iowa, Kansas, Texas, and west

- Ferrie (1997): frontier \(\approx\) 90° west longitude between 1850 and 1870

- Measure of total frontier experience (TFE)
  - total number of years spent on the frontier between 1790 and 1890
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- **Locate frontier line and trace it over time**
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range of 0 to 63 years, mean of 18 years, std. dev. of 11 years
Images of Frontier Society
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Frontier Demographics
Two historical narratives of gender roles on the frontier

1. Frontier women as **entrepreneurial, independent**

   Economic necessity and labor scarcity → blurred gender roles, empowered women

   ... by the demands it made on human beings for survival, *frontier economy established a certain rough egalitarianism* which challenged other, long-established concepts of propriety. (Flexner & Fitzpatrick, 1996)

   *Men and women generally had different roles to play, but the mutuality between the sexes enforced by the needs of homesteading expanded women’s power to negotiate and win.* (Harris, 1984)

2. Frontier women as **home-bound**

   Increased domestic burden, no empowerment → asymmetric erosion of gendered work

   *Even though frontier conditions forced them into manly pursuits and led them to modify some of their standards, they hardly pressed for a liberation from female norms and culture. Much of the ‘freedom’ which women experienced was the freedom to work even harder than they had before, with dramatic results*” (Jeffrey, 1979)
Frontier conditions and gender roles: a view from economics of the family

- **Isolation** from extended family and social networks
  - most goods and services home-produced $\rightarrow$ increased domestic burden, esp. for women (Greenwood, Seshadri & Yorukoglu 2005; Cavalcanti & Tavares 2008)
  - lack of protection against violence or outside options (Figueroedo et al 2001)

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Marriage, Fertility, and Female Labor on the Frontier

\[ x_{ct} = \alpha + \beta \text{ frontier}_{ct} + \theta_{d(c)} + \theta_t + \varepsilon_{ct} \]
$$x_{ct} = \alpha + \beta \ frontier_{ct} + \theta_d(c) + \theta_t + \varepsilon_{ct}$$

<table>
<thead>
<tr>
<th>Frontier</th>
<th>Share of Women Ever Married (1)</th>
<th>Share of Men Ever Married (2)</th>
<th>Age Gap Between Spouses (3)</th>
<th>Women’s Divorce Rate (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0491*** (0.005)</td>
<td>-0.0624*** (0.007)</td>
<td>0.239*** (0.066)</td>
<td>-0.0014*** (0.000)</td>
</tr>
</tbody>
</table>

| Dep. Var. Mean (non-frontier) | 0.70 | 0.58 | 4.36 | 0.004 |
| Dep. Var. Std. Dev. (non-frontier) | 0.04 | 0.05 | 2.02 | 0.003 |
| Division Fixed Effects | ✓ | ✓ | ✓ | ✓ |
| Year Fixed Effects | ✓ | ✓ | ✓ | ✓ |
Marriage Rates by Age

Men

Women

marriage rate

frontier
non-frontier

frontier
non-frontier

marriage rate


frontier
non-frontier

marriage rate


frontier
non-frontier
Marriage, Fertility, and Female Labor on the Frontier

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<thead>
<tr>
<th>Family and Work</th>
<th>Child-Women Ratio (Fertility)</th>
<th>Share of Households w/ Grandmother</th>
<th>Female Labor Force Participation</th>
<th>Gender Occupational Segregation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Frontier</td>
<td>68.67***</td>
<td>-0.0055***</td>
<td>-0.025***</td>
<td>0.030***</td>
</tr>
<tr>
<td></td>
<td>(11.289)</td>
<td>(0.001)</td>
<td>(0.007)</td>
<td>(0.010)</td>
</tr>
</tbody>
</table>

Dep. Var. Mean (non-frontier) | 671  | 0.018 | 0.12 | 0.82 |
Dep. Var. Std. Dev. (non-frontier) | 119  | 0.006 | 0.13 | 0.22 |
Number of County-Years | 6,048 | 5,844 | 4,905 | 4,818 |
Division Fixed Effects | ✓    | ✓    | ✓    | ✓    |
Year Fixed Effects | ✓    | ✓    | ✓    | ✓    |
Semiparametric Analysis

\[ x_{cdt} = g(isolation_{cdt}) + \theta_d + \theta_t + \varepsilon_{cdt} \]
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Sex Ratio (Male/Female)  
Share of Prime Age Adults

![Graphs showing the relationship between sex ratio and prime age adult share with varying population density.](image-url)
Semiparametric Analysis

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Age Gap between Spouses

Women’s Divorce Rate
Semiparametric Analysis

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Child-Women Ratio

Share of HH’s w/ Grandmother
Semiparametric Analysis

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Female Labor Force Participation

Occasional Segregation

![Graphs showing female labor force participation and occupational segregation over population density with varying lines representing different years and divisions.](image)
<table>
<thead>
<tr>
<th></th>
<th>Women rel. to men</th>
<th>Women rel. to boys</th>
<th>Frontier</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
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<tbody>
<tr>
<td>Occupational Score</td>
<td>1.052***</td>
<td>0.072***</td>
<td>0.049***</td>
<td>0.023**</td>
<td>-0.114***</td>
<td>0.046**</td>
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<tr>
<td></td>
<td>(0.278)</td>
<td>(0.020)</td>
<td>(0.016)</td>
<td>(0.009)</td>
<td>(0.017)</td>
<td>(0.021)</td>
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<tr>
<td>Dep. Var. Mean (non-frontier)</td>
<td>12.6</td>
<td>0.74</td>
<td>0.77</td>
<td>0.92</td>
<td>0.49</td>
<td>0.99</td>
<td></td>
<td></td>
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<tr>
<td>Dep. Var. Std. Dev. (non-frontier)</td>
<td>2.92</td>
<td>0.17</td>
<td>0.25</td>
<td>0.16</td>
<td>0.23</td>
<td>0.17</td>
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<tr>
<td>Number of County-Years</td>
<td>4,795</td>
<td>4,795</td>
<td>6,048</td>
<td>6,047</td>
<td>6,035</td>
<td>5,941</td>
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<td>✓</td>
<td>✓</td>
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## Assessing Female Economic Empowerment on the Frontier

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- Dep. Var. Mean: Dependent Variable Mean (non-frontier)
- Dep. Var. Std. Dev.: Dependent Variable Standard Deviation (non-frontier)
- Frontier: Frontier 1.052*** (0.278)
- Division Fixed Effects: ✓
- Year Fixed Effects: ✓
An Upper Tail of Economically Empowered Women

Distribution of the Gender Gap in Occupational Scores, 1860

- mass in upper tail: occscore=42
- “managers, officials and proprietors”
- in practice: hotel keepers, restaurant keepers, saloon keepers and bartenders, traders and dealers
## The Role of Sex Ratios

### Marriage Patterns

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<td>Panel A. Non-Frontier Counties</td>
<td>0.195*** (0.024)</td>
<td>-0.318*** (0.026)</td>
<td>1.124*** (0.258)</td>
<td>-0.00192* (0.001)</td>
<td>222.3*** (53.756)</td>
<td>-0.0203*** (0.002)</td>
<td>-0.0749* (0.041)</td>
<td>0.0637* (0.034)</td>
</tr>
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<td>Dep. Var. Mean</td>
<td>0.70</td>
<td>0.58</td>
<td>4.36</td>
<td>0.004</td>
<td>671.84</td>
<td>0.01</td>
<td>0.12</td>
<td>0.82</td>
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<td>Dep. Var. Std. Dev.</td>
<td>0.04</td>
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<td>5,210</td>
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<td>4,300</td>
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<tr>
<td>Panel B. Frontier Counties</td>
<td>-0.00286 (0.006)</td>
<td>-0.0603*** (0.020)</td>
<td>0.141 (0.102)</td>
<td>-0.000625*** (0.000)</td>
<td>11.35 (28.370)</td>
<td>-0.00179** (0.001)</td>
<td>0.0136*** (0.005)</td>
<td>0.00108 (0.002)</td>
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<td>735</td>
<td>733</td>
<td>181</td>
<td>735</td>
<td>632</td>
<td>563</td>
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</tr>
</tbody>
</table>
Roadmap

Introduction

Historical Background

Fertility and Gender Inequality on the Frontier

The Frontier Legacy in the Long Run

Conclusion
Estimating the Long-Run Legacy of TFE

\[ y_c^t = \alpha + \beta_t \text{ total frontier experience}_c + x'_c \gamma + \theta_{s(c)} + \epsilon_c \]

- Total frontier experience \( c \) (TFE): number of decades on the frontier
- \( \beta_t \): allow TFE relationship to vary over time
- \( x_c \): predetermined geographic and agroclimatic controls (lat., long., area, temp., rain, distance to waterways, potential agri. prod., . . .)
- \( \theta_{s(c)} \): state fixed effects
- Clustered se's: 60 mi\(^2\) grid; spatial HAC 100–1000 km; state
## The Frontier Legacy of Gender Inequality in the Long Run

<table>
<thead>
<tr>
<th></th>
<th>Child-women Ratio (Fertility) (1)</th>
<th>Share Ever Married Female (2)</th>
<th>Share Ever Married Male (3)</th>
<th>Age Gap Spouses (4)</th>
<th>Female Labor Force Participation (5)</th>
<th>Gender Gap Labor Force Participation (6)</th>
<th>Gender Occupational Segregation (7)</th>
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<tr>
<td><strong>total frontier experience</strong></td>
<td>13.131*** (2.019)</td>
<td>0.005*** (0.001)</td>
<td>0.002** (0.001)</td>
<td>0.059*** (0.013)</td>
<td>-0.015*** (0.002)</td>
<td>-0.019*** (0.002)</td>
<td>0.007*** (0.002)</td>
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<tr>
<td><strong>Dep. Var. Mean</strong></td>
<td>375.70</td>
<td>0.78</td>
<td>0.69</td>
<td>4.44</td>
<td>0.17</td>
<td>0.22</td>
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<td>0.03</td>
<td>0.04</td>
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<td>2,032</td>
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(A) Outcomes Measured in 1940
# The Frontier Legacy of Gender Inequality in the Long Run

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<tr>
<th></th>
<th>Child-women Ratio (Fertility)</th>
<th>Share Ever Married Female</th>
<th>Share Ever Married Male</th>
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<th>Female Labor Force Participation</th>
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<tr>
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<td>(7)</td>
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<tr>
<td></td>
<td><strong>13.131</strong>***</td>
<td><strong>0.005</strong>***</td>
<td><strong>0.002</strong>**</td>
<td><strong>0.059</strong>***</td>
<td><strong>-0.015</strong>***</td>
<td><strong>-0.019</strong>***</td>
<td><strong>0.007</strong>***</td>
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<td></td>
<td>(2.019)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.013)</td>
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<tr>
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<td>0.03</td>
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## (A) Outcomes Measured in 1940

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## (B) Outcomes Measured in 2000

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<td></td>
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<tr>
<td></td>
<td>(0.881)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.002)</td>
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<td></td>
<td><strong>Dep. Var. Mean</strong></td>
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<tr>
<td></td>
<td>269.33</td>
<td>0.81</td>
<td>0.74</td>
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<td>0.06</td>
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<table>
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<td>Yes</td>
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The Frontier Legacy of Gender Inequality: Child-Women Ratios
The Frontier Legacy of Gender Inequality: FLFP
The Frontier Legacy of Upper Tail Working Women

<table>
<thead>
<tr>
<th></th>
<th>Occupational Score</th>
<th>At least High School Graduates</th>
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<tr>
<td></td>
<td>Women's Rel. to Men</td>
<td>Women's Rel. to Men</td>
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<td>(2)</td>
<td>(3)</td>
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<tr>
<td>total frontier experience</td>
<td>0.099* (0.051)</td>
<td>0.017*** (0.003)</td>
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(A) Outcomes Measured in 1940

<table>
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<th>(A) Outcomes Measured in 2000</th>
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<tr>
<td>total frontier experience</td>
<td>-0.008*** (0.002)</td>
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State FE | Yes | Yes | Yes | Yes
Geographic controls | Yes | Yes | Yes | Yes
### The Frontier Legacy of Gendered Time Use

#### Minutes Per Day Allocated to...

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<tr>
<th>Work</th>
<th>Leisure</th>
<th>Household Activities</th>
<th>Other</th>
<th>Leisure Share</th>
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<td>(1)</td>
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<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
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#### (A) Women Only

<table>
<thead>
<tr>
<th></th>
<th>Total Frontier Experience</th>
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<th></th>
<th></th>
<th>Leisure Share</th>
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<tr>
<td></td>
<td>(A) Women Only</td>
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<tr>
<td></td>
<td><strong>3.792</strong>*</td>
<td>-7.357***</td>
<td><strong>3.627</strong></td>
<td>0.086</td>
<td><strong>-0.005</strong>*</td>
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<tr>
<td></td>
<td>(1.945)</td>
<td>(1.807)</td>
<td>(1.884)</td>
<td>(2.424)</td>
<td>(0.001)</td>
</tr>
</tbody>
</table>

| Number of Individuals    | 10,177                    | 10,177   | 10,177   | 10,177   | 10,177        |
| Dep. Var. Mean           | 137                       | 266      | 225      | 800      | 0.19          |
| Dep. Var. Std. Dev.      | 220                       | 181      | 184      | 184      | 0.13          |

#### (B) Men Only

<table>
<thead>
<tr>
<th></th>
<th>Total Frontier Experience</th>
<th></th>
<th></th>
<th></th>
<th>Leisure Share</th>
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</thead>
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<td>(A) Men Only</td>
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<tr>
<td></td>
<td><strong>-3.581</strong></td>
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<td>0.123</td>
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<tr>
<td></td>
<td>(2.427)</td>
<td>(2.733)</td>
<td>(1.864)</td>
<td>(2.181)</td>
<td>(0.002)</td>
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| Number of Individuals    | 9,416                     | 9,416    | 9,416    | 9,416    | 9,416         |
| Dep. Var. Mean           | 221                       | 316      | 135      | 756      | 0.22          |
| Dep. Var. Std. Dev.      | 271                       | 217      | 155      | 187      | 0.15          |

| State Fixed Effects      | Yes                       | Yes      | Yes      | Yes      | Yes           |
| Survey Wave Fixed Effects| Yes                       | Yes      | Yes      | Yes      | Yes           |
| Geographic Controls      | Yes                       | Yes      | Yes      | Yes      | Yes           |
| Individual Demographic Controls| Yes              | Yes      | Yes      | Yes      | Yes           |
## Frontier Legacy of Gender Norms

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<th><strong>Life Style Survey (LSS)</strong></th>
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<th><strong>General Social Survey (GSS)</strong></th>
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<td>A Woman’s Place is in Home</td>
<td>Anti-Women’s Rights</td>
<td>Women Want Home &amp; Kid</td>
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<td>Movement</td>
<td>Working</td>
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<td>Men Better Leaders</td>
<td>Not Vote Woman President</td>
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<td></td>
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<td>Men Smarter</td>
<td>Women Take care Home not Country</td>
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<td>Mean Summary Index</td>
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</tr>
<tr>
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<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
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<td>(10)</td>
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<tr>
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<td>(0.007)</td>
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<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
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<td></td>
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<td>Yes</td>
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<tr>
<td>(B) Men Only</td>
<td>0.015***</td>
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<td>(0.018)</td>
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<td>(0.012)</td>
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<td>(0.008)</td>
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## Frontier History around Women in Politics

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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>total frontier experience, cong. district</td>
<td>0.044 (0.027)</td>
<td>-0.002 (0.009)</td>
<td>-0.0259*** (0.007)</td>
<td>-0.005* (0.003)</td>
<td>-0.015* (0.008)</td>
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<td>total frontier experience, county</td>
<td></td>
<td></td>
<td>-0.0259*** (0.007)</td>
<td>-0.005* (0.003)</td>
<td>-0.015* (0.008)</td>
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<td>State Fixed Effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Geographic controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
</tbody>
</table>

* *** p < 0.001, ** p < 0.01, * p < 0.05
Conclusion

- Frontier settlement was integral to American culture and identity
  - Settlers forged local norms and institutions at critical juncture of development
  - Lasting imprint on gender norms

- Frontier conditions and gender roles
  - Historically, women were more likely to marry, and did so earlier, with older men
  - Higher fertility, low FLFP (though with an thick upper tail)
  - Seemingly conflicting historical narratives about women on the frontier are complementary

- Mechanisms for persistence
  - Social norms
  - Weak political representation