

REPRODUCTIVE RIGHTS AND FEMALE INVENTOR PRODUCTIVITY

2026 6th Annual Global PhD Colloquium

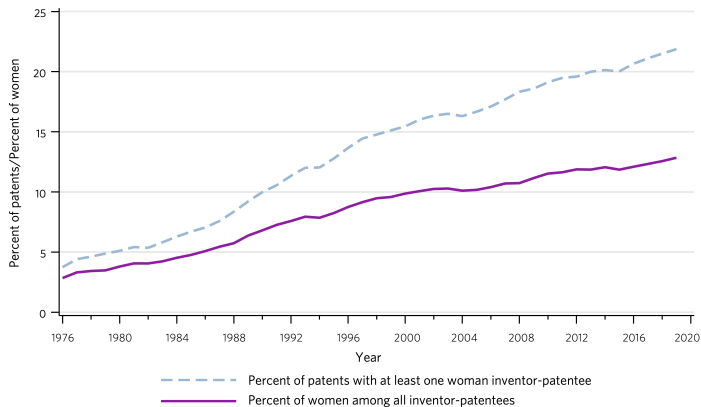
Kunal Sachdeva

University of Michigan, Ross

May 18th, 2026

Women Are Underrepresented in U.S. Innovation

Half of the workforce; roughly one in eight inventors



Source: Authors' analysis of PatentsView data, 1976–2019

Patenting and participation by U.S.-based women inventor-patentees, 1976–2019.

Source: *USPTO OCE, Progress and Potential 2020.*

So What? Massive Misallocation of Scarce Resource Problem

The U.S. is leaving the largest productivity lever in the modern economy on the table

>> ***This is not an equality problem, inventors are part of the production function***

The economy increasingly runs on ideas, not tangible capital

- Hsieh, Hurst, Jones & Klenow (2019, *Econometrica*): improved allocation of women and Black workers into high-skilled occupations accounts for **~20–40% of U.S. per-capita GDP growth since 1960**.

The inventor pipeline is leaking “lost Einsteins”

- Bell, Chetty, Jaravel, Petkova & Van Reenen (2019, *QJE*): closing gender, race, and class gaps could yield **~4× more U.S. inventors**.

The mix of innovation is biased, too

- Koning, Samila & Ferguson (2021, *Science*): female-majority teams are more likely to develop women’s-health needs technology.
- Hochberg, Kakhbod, Li & Sachdeva (2026, *JFE*): female-led patents are systematically under-cited despite comparable quality.

TRAP Laws: A New Wave of Reproductive Restrictions

2011–2016: 11 states adopted Targeted Regulation of Abortion Provider laws

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News Markets Insights Video

Abortion Clinics Are Closing at a Record Pace

At least 162 providers have closed since 2011.

by Esmé E. Depree
from Bloomberg Businessweek

February 24, 2016 – 4:00 AM PST

Abortion access in the U.S. has been vanishing at the fastest annual pace on record, propelled by Republican state lawmakers' push to legislate the industry out of existence. Since 2011, at least 162 abortion providers have shut or stopped offering the procedure, while just 21 opened.

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Bloomberg Businessweek, Feb. 24, 2016.

THE TEXAS TRIBUNE

DONATE Data Centers ICE Death Flood Protection Falls Government Salaries Explorer Primary Runoff Ballot

HEALTH CARE

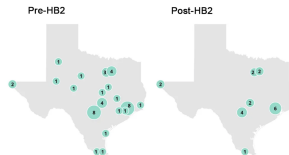
Here Are the Texas Abortion Clinics That Have Closed Since 2013

Though the Supreme Court on Monday handed Texas abortion providers a major victory by striking down the state's most stringent abortion restrictions, House Bill 2 leaves behind a trail of shuttered clinics. Take a look.

BY ALEXA URA, RYAN MURPHY, ANNIE DANIEL AND LINDSAY CARBONELL

JUNE 28, 2016, 6:00 A.M. CENTRAL UPDATED JUNE 28, 2016, 6:00 A.M. CENTRAL

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Texas Tribune, June 28, 2016.

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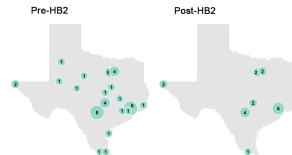
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>> What are the effects of TRAP Laws?

What This Paper Asks

One main effect, two proposed mechanisms

>> ***How did reproductive-rights restrictions reach the corporate innovation workforce – and through what channel?***

H1 (Main effect). TRAP-law adoption → lower female inventor productivity at large public firms.

H2a (Mechanism: Mobility). Female inventors leave TRAP states; firms in TRAP states lose female talent through out-migration and in-migration deterrence.

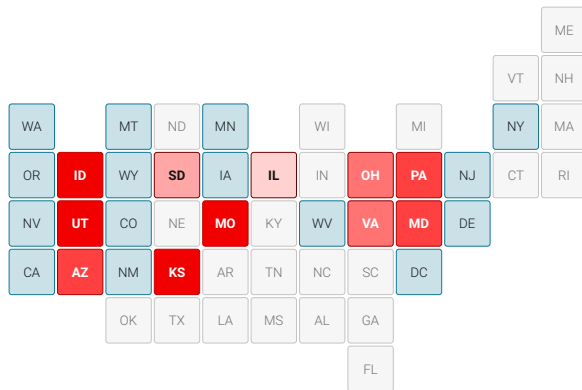
H2b (Mechanism: Disengagement). Female inventors who *remain* in TRAP states reduce effort (“quiet quitting”), reflected in workplace ratings and individual patent output.

Where TRAP Laws Were Enforced (2011–2016)

11 treated states (red, shaded by enforcement year) vs. 15 adjacent control states (teal)

Design. Stacked DiD (Gormley & Matsa 2011) on staggered TRAP enforcement (2011–2016); 11 treated + 15 adjacent control states; firm $\times$ cohort + year $\times$ cohort FE.

Panel. USPTO + Compustat + Revelio + Glassdoor + Dimensions + state college data (40,993 firm-years; 10M+ inventor-years).



Treated (11): ID, KS, MO, UT (2011) · AZ, MD, PA (2012) · OH, VA (2013) · SD (2015) · IL (2016)

What It Finds (Among Many Things)

Results mapped to the paper's hypotheses – with plain-English readings

Hypothesis	Outcome (Post × Treat)	Interpretation/Effect
H1 (Main effect)	Firm female-patent share	~1 in 7 women-on-patents disappears
	Female-related (women's-health) patents	Less women's-health innovation gets made
	Firm real patent value (Kogan-style)	≈\$1–2M lower per patent [†]
H2a (Mobility)	Female out-migration	1 extra woman per 100 leaves each year
	Female in-migration deterrence	~2 per 100 fewer move in
	Female inventor share at firm	~1 in 10 female-inventor slots gone
H2b (Disengagement)	Individual female patents	Each remaining woman patents ~7% less
	Individual female citations	Her patents are cited ~15% less
	Glassdoor (overall / work-life)	Noticeable drop (~1/10 to 1/5 of a star)
Spillover	Male inventor citations	Men's patents also cited ~10% less

>> ***Paper suggests that TRAP laws push female inventors out of treated states and reduce productivity of those who stay.***

My View of the Research – Policy

National Access to Abortions Remains a Challenge

>> ***This is a current (last week!) issue at the national level...***

The New York Times

Supreme Court | Major Decisions | Mail-Order Abortion Pills | Voting Rights Act | Deportation Protections Arguments | 'Shadow Docket' Origins | Birthright Citizens

Supreme Court Allows Abortion Pill Access by Mail to Continue

A federal appeals court ruling against the Food and Drug Administration would have restricted access by mail to mifepristone.

Listen • 8:28 min

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POLITICO

Magazine | Brain battles | Depressed about politics? | Mail-order abortion pills | Lamar Alexander looks back

SCOTUS Preserved Abortion by Mail. Opponents Already Know Their Next Moves.

The mifepristone ruling reveals how conflicts over abortion are still evolving after the fall of Roe v. Wade.

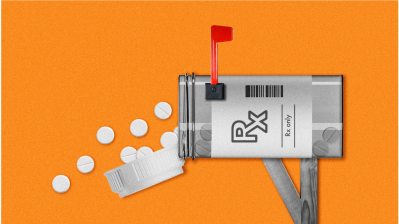


Illustration by POLITICO (source images via iStock)

By ALICE MIRANDA OLLSTEIN
05/15/2024 03:00 AM EDT

My View of the Research – Literature

A Long Literature on Female Inventor Output & Innovation

1. Reproductive-rights shocks on innovation careers

- **Chen (2026)** – First TRAP-law evidence inside the corporate innovation workforce. ← **This Paper**
- Myers (2017, 2025) – driving-distance treatment intensity for abortion access.
- Lin et al. (2023) – staggered-rollout design template the paper follows.
- Dench, Pineda-Torres & Myers (2024) – post-Dobbs labor-supply effects.
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2. The pipeline gap (“Lost Einsteins”)

- **Chen (2026)** – Adds a *mid-career* leak to the inventor pipeline. ← **This Paper**
- Bell, Chetty, Jaravel, Petkova & Van Reenen (2019) – childhood exposure to innovation predicts who becomes an inventor.
- Aghion, Akcigit, Hyytinen & Toivanen (2017) – family background & inventorship in Finland.
- Koning, Samila & Ferguson (2021) – patents by women disproportionately target women’s health.
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3. Team composition & recognition gaps

- **Chen (2026)** – Policy shocks reshape firm team gender mix via inventor mobility. ← **This Paper**
- Hofstra et al. (2020) – the diversity-innovation paradox in science.
- Hochberg et al. (2023) – female-led patents systematically under-cited.
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>> ***Discussion goal is to sharpen the findings, get to the truth, and advance our literature***

Comment 1 – Mechanism

The paper's most novel claim is also the least directly measured



>> The abortion-rate coefficient is ~ 0 in the main spec. Worth giving the mechanism the strongest possible support.

Comment 1 – Suggested Tests

Bring each asserted box in the chain to data, one link at a time

- **Suggestion 1 – for the *Reduced abortion access* box (first stage).**

Clinic-count panels (Guttmacher) and state-year abortion rates (CDC Abortion Surveillance). Confirms TRAP actually moved access in the treated states before claiming any downstream effect.

- **Suggestion 2 – for the *Fertility & family-planning friction* box (middle link).**

State $\times$ year $\times$ age-cohort birth records (CDC Vital Statistics), ACS fertility module, FMLA / maternity claims. Pins down whether fertility behavior actually shifted in the affected cohorts.

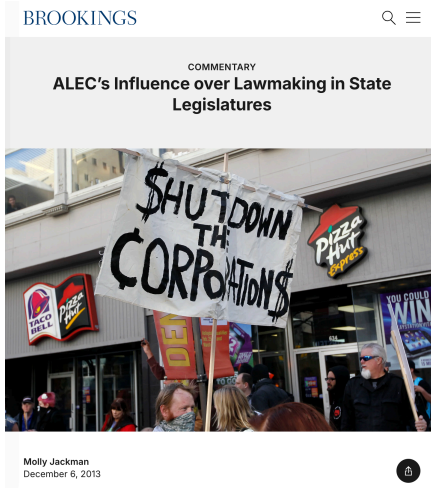
- **Suggestion 3 – for the *Inventor exit & lower effort* box (final link).**

Heterogeneity by reproductive age: do women 25–44 drive the entire effect? An age-graded gradient supports a fertility-driven exit channel; a flat effect across ages does not.

>> *Each test maps one asserted box onto observable data – any one of them sharpens the mechanism, all three close the chain.*

Comment 2 – Treatment

ALEC Model Bills Introduced in U.S. States



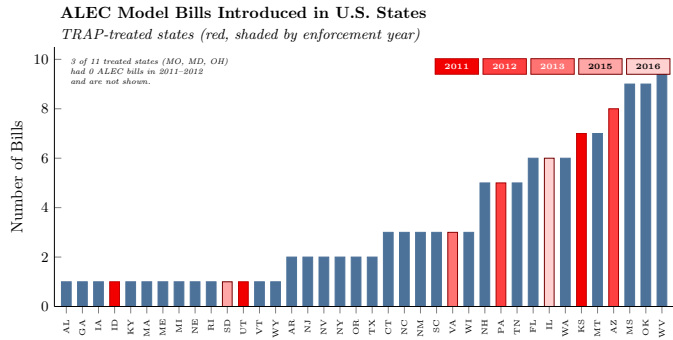
Source: Brookings Institution.



Source: The Washington Post.

Comment 2 – Treatment

ALEC Model Bills Introduced in U.S. States

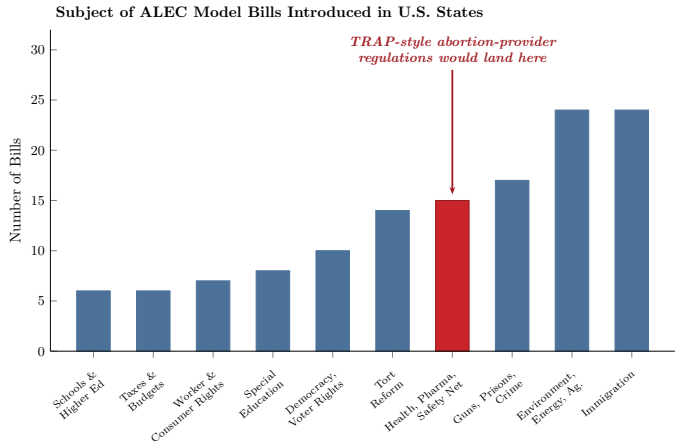


Patenting and participation by U.S.-based women inventor-patentees, 1976–2019.

Source: USPTO OCE, Progress and Potential 2020.

Comment 2 – Treatment

Subject of ALEC Model Bills Introduced in U.S. States



Patenting and participation by U.S.-based women inventor-patentees, 1976–2019.

Comment 2 – Treatment

Treated states differ from controls on many contemporaneous policies

Treated vs. control states differ on:

- **Partisan lean.** Vote Imbalance gap of 9.76 (Table 2): treated -3.605 vs. control $+6.159$.
- **Co-adopted policies.** Right-to-work coverage, anti-DEI legislation, Medicaid expansion, healthcare benefit mandates, corporate tax rates.

Telling clues inside the paper's own results:

- Abortion-rate coefficient is ~ 0 in the main spec (Table 3).
- Effects also show up in *academic publications* (Table OA9) – governed by different institutions than corporate HR.

>> ***If TRAP were operating through abortion access (and abortions), then the abortion rate should be doing some of the work. The paper suggests that it doesn't***

Comment 2 – Suggested Tests

Isolate the reproductive-rights channel from the broader policy bundle

- **Suggestion 1: Non-reproductive-policy placebos.** Run the same staggered DiD on right-to-work / voter-ID adoption. Null on female-inventor outcomes $\Rightarrow$ rock-solid validation of the reproductive-rights interpretation.
- **Suggestion 2: Continuous treatment intensity (Myers et al. 2025).** County-level driving distance to nearest provider. Within-state variation that bundled policies don't share.

>> *Either test peels TRAP off the bundle and pins the result to reproductive rights specifically.*

Comment 3 – Identification

TRAP May Not Actually Bind for These Inventors

The sample concentrates the women *least likely* to feel TRAP.

Rank	Company	State	SIC	Female Inventors
1	INTL BUSINESS MACHINES CORP	NY	7370	6595
2	MICROSOFT CORP	WA	7372	4170
3	GE AEROSPACE	OH	9997	2165
4	INTEL CORP	CA	3674	1967
5	ALPHABET INC	CA	7370	1950
6	HP INC	CA	3570	1750
7	AMAZON.COM INC	WA	5961	1648
8	APPLE INC	CA	3663	1493
9	PROCTER & GAMBLE CO	OH	2840	1459
10	BOEING CO	VA	3721	1267
11	MERCK & CO	NJ	2834	1214
12	FORD MOTOR CO	MI	3711	1184
13	3M CO	MN	9997	1177
14	DUPONT DE NEMOURS INC	DE	2820	1168
15	JOHNSON & JOHNSON	NJ	2834	1140
16	MOTOROLA SOLUTIONS INC	IL	3663	1116
17	AT&T INC	TX	4812	1103
18	ORACLE CORP	TX	7372	1071
19	XEROX HOLDINGS CORP	CT	3577	1028
20	ABBOTT LABORATORIES	IL	3845	1019

Source: Chen (2026), Table IA2.

Who these women actually are

- **Urban**, high-income.
- **Employer-insured** – out-of-state care covered.
- **Geographically mobile** – can travel for care.

Comment 3 – Identification

The effect on men looks a lot like the effect on women

Male effects are 70–110% of female effects across outcomes.

Outcome (Post × Treat)	Female	Male	Male / Female
Out-migration	+1.0 pp ^{***}	+0.9 pp ^{***}	90%
In-migration deterrence	−1.7 pp ^{***}	−1.9 pp ^{***}	112%
Citation decline	−15.9% ^{***}	−11.0% ^{**}	69%
Early-career patent decline	−9.1% ^{***}	−7.4% ^{***}	81%

Source: Chen (2026), Tables 7A, 8B, OA8.

>> ***If the mechanism is female-specific fertility friction, the female effect should clearly exceed the male spillover – it doesn't.***

Comment 3 – Suggested Tests

Two extensions that can inform the results

- **Suggestion 1: Triple-difference (Female $\times$ Post $\times$ Treat).** Pool men and women in a single regression and formally test whether the female coefficient *significantly* exceeds the male one. *The single cleanest test of whether the mechanism is female-specific – which is what this comment is really about.*
- **Suggestion 1: Decompose the male effect.** Three operational tests, mapped one-to-one to the paper's own explanations:
 - Household-disruption channel: Match men to female partners via **Revelio profile links or shared USPTO inventor home address**; compare partnered vs. unpartnered men in treated states .
 - Lost-collaborator channel: For each man, compute his **pre-period share of female coauthors** (years $t-5$ to $t-1$ from patent teams); compare top vs. bottom tercile .
 - Firm-reallocation channel: Classify firms as **single-state vs. multi-state** by their pre-period inventor footprint (already in the paper's mobility table); compare male effects across the two .

>> ***Either way, the results are interesting and will get closer to the truth***

Excited for This Paper!

Documents new facts and policy relevant.

>> ***A research agenda at the intersection of reproductive policy, gender, and the innovation production function.***

- A natural complementary **adult-stage** shock to the Bell et al. (2019) “lost Einsteins” pipeline story.
- Great data work: USPTO + Compustat + Revelio + Glassdoor + Dimensions + state enrollment in a single panel
- **Thoughtful, empirical design:** each test is tied to a specific channel, like seeing this type of work.

A meaningful step in understanding how policy shapes *who* invents, and *what* gets invented.

Looking forward to where this agenda goes.

