

# Health Womanpower: The Role of Federal Policy in Women's Entry into Medicine

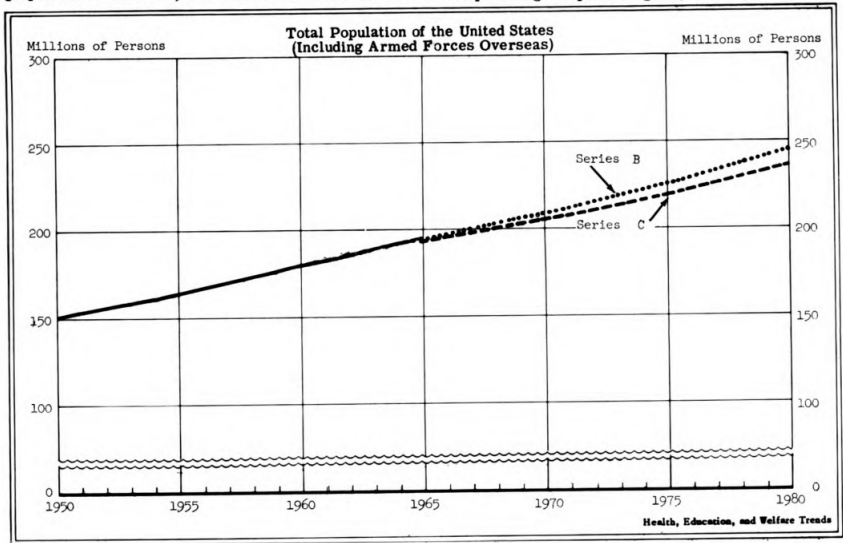
Thomas Helgerman

October 3, 2022

# Health Manpower in Crisis

## POPULATION BY AGE GROUPS: 1900-1980

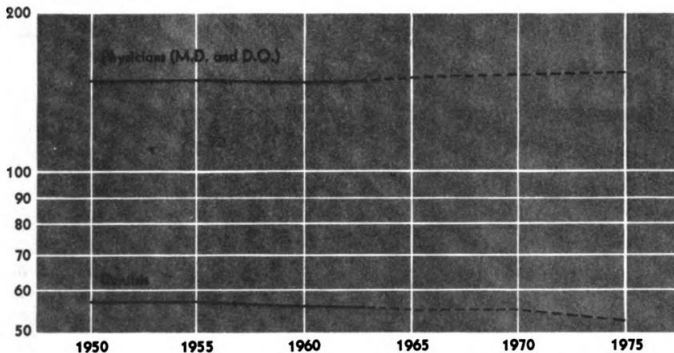
By 1980, the population of the United States may reach 245 million, with the age group under 5 increasing as a proportion of the total, and a somewhat smaller increase in the percentage of persons aged 65 and over.



# Health Manpower in Crisis

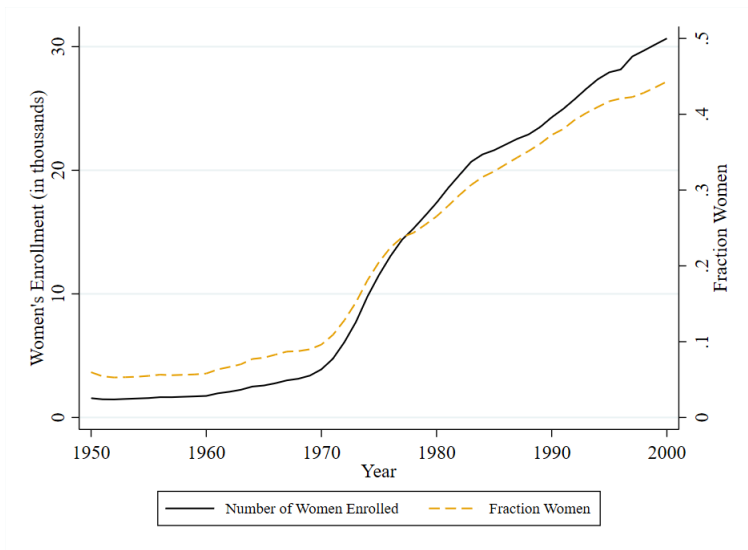
## TREND IN PHYSICIAN AND DENTIST SUPPLY, 1950-75

Rate per 100,000 population



Source: U.S. Department of Health, Education, and Welfare; Public Service. *Health Manpower Source Book*, Section 18, *Manpower in the 1960's* (PHS Pub. 263) 1964. Projections are based on numbers of graduates of U.S. medical, osteopathic, and dental schools at current planned growth.

# Rapid Convergence in the 1970s



**Source:** JAMA Education Number; AAMC

# What Drove Convergence?

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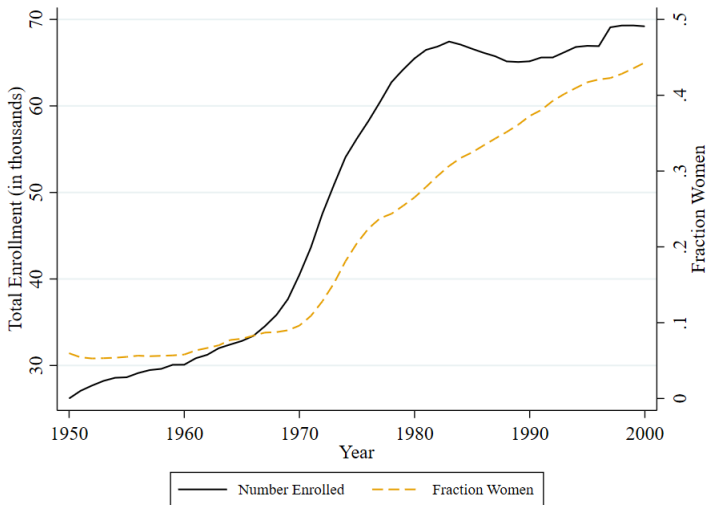


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- Increased returns to experience (Blau & Kahn 1997)

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Supply-Side Changes (Walsh 1979, More 1999, AAMC 2005, Boulis & Jacobs 2008)

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  - Endpoint of a series of activist efforts to end sex discrimination in higher education

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  - 38 new medical schools constructed between 1963 and 1980

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Cross-Demand Changes (*ibid*)

- Drop in demand for medical education for men
  - Wartime draft begins in 1969
  - Educational deferments end in 1971
  - Vietnam draft ends in 1973

- **Research Question:** How did federal policy aimed at influencing the supply of seats in medical schools affect women's entry in the 1970's?
- **Data:** Novel school-by-year dataset with medical school enrollment & application information
- **Explanation #1:** Success of anti-discrimination policy
  - **Design:** Continuous Difference-in-Differences
  - **Dose:** Funding at stake from violation of non-discrimination policy
  - **Gains for Women:** 4 seats at the mean
- **Explanation #2:** Expansion in total number of seats
  - **Design:** OLS and Synthetic Control
  - **General Results:** Women gain 20% of newly created seats
  - **Case Studies:** Actual gains could be much higher

# Contributions & Related Literature

- Characterizing women's entry into professional schools
  - Katz, Rozema & Sanga (2022): Law Schools
  - Moehling, Niemesh & Thomasson (2019): Medical Schools
- Role of anti-discrimination policy in women's entry into professional occupations
  - Beller (1983): Title VII of the Civil Rights Act of 1964
  - Rim (2021): Title IX
- Effectiveness of federal anti-discrimination efforts in reducing gender discrimination
  - Beller 1979, 1982; Neumark & Stock 2006; Bailey, Helgerman & Stuart 2022
- Changes in supply of enrollment
  - Blair & Smetters (2022)

## ① Removal of admissions barriers for women

Discrimination in Medical School Admissions  
Policy and Activity Effort to End Discrimination  
Data  
Empirical Design and Results

## ② Rapid increase in capacity of medical schools

Health Manpower Policy  
Conceptual Framework  
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Expansion of Existing School  
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# Prevalence of Discrimination

- Bernice Sandler, Testimony from 1970 Congressional Hearings on Equal Rights in Education and Employment
  - “Women are denied admission to graduate and professional training programs because of rather odd and illogical reasoning on the part of university decisionmakers: ‘If a woman is not married, she’ll get married. If she is married, she’ll probably have children. If she has children, she can’t possibly be committed to a profession. If she has older children, she is too old to being training.’”

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- Lopate, *Women in Medicine*
  - “Although the ratio of women to men in medical colleges has risen steadily in the past fifteen years from 5.4 per cent to nearly 8 per cent ... school heads are still reluctant to allow a much higher proportion of women students than they have at present ... the admissions officers feel that if the proportion of women in medicine increases greatly, the number of practice hours given to communities would be severely cut.”

[Picture of *MSAR*]

# Policy Directed at Sex Discrimination

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- 1967: Executive Order 11375
  - Amends EO 11246
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  - Amends EO 11246
  - Sex is added as a protected category
- 1971: Comprehensive Health Manpower Training Act
  - Medical schools cannot receive funds if they discriminate on the basis of sex
- 1972: Title IX
  - June 1973: Title IX goes into effect
  - 1975: HEW releases guidance on enforcement of Title IX

# Early Action on Sex Discrimination in Higher Education

## **WOMEN'S EQUITY ACTION LEAGUE.—UNIVERSITIES AND COLLEGES CHARGED WITH SEX DISCRIMINATION UNDER EXECUTIVE ORDER 11246 AS AMENDED<sup>1</sup>**

**January 31, 1970:**

Class action filed against all universities and colleges holding Federal contracts.

University of Maryland, College Park, Md.

**March 16, 1970:**

City University of New York, New York, N.Y.

University of North Carolina, Chapel Hill, N.C.

**March 25, 1970:** Harvard University, Cambridge, Mass. (National Organization for Women—N.O.W.).

**March 26, 1970:** University of Pittsburgh (University Committee for Women's Rights).

**April 14, 1970:** Western Carolina University, Cullowhee, N.C.

...

...

**May 28, 1970:** University of Michigan, Ann Arbor, Mich. (FOCUS on Equal Employment for Women).



# Early Action on Sex Discrimination in Higher Education

## JOB DISCRIMINATION?

# *HEW probe on sex bias to resume at 'U'*

By HESTER PULLING

An investigation into charges that the University discriminates against women will resume this week as officials of the Department of Health, Education and Welfare plan to probe University files and personnel.

The complaint against the University was filed with the U.S. Department of Labor last May by a local group—the Ann Arbor FOCUS on Equal Employment for Women (FOCUS). Two weeks ago an HEW investigating team began looking into the charges.

"So far, we don't have any verifiable evidence of overt discrimi-

nation on the basis of sex," says Clifford Minton, head of the HEW team.

Minton adds that he and his associates have found "administrative and procedural deficiencies in personnel administration which appear to operate to the disadvantage of women."

Members of FOCUS and other local groups backing the discrimination charges claim that there are "more stones to turn over" in the investigation.

"The HEW team is concentrating on individual cases while our complaint was that the whole pattern of admission and employment

of women by the University is discriminatory," a spokesman for the group said yesterday.

Another member of FOCUS, Kathy Shortridge, said it was difficult to come up with individual cases. "Women are rightly hesitant about coming to HEW—they are very vulnerable," she said.

"We don't necessarily think the talks will be recriminating, but women are still in a difficult position," Mrs. Shortridge added.

"If women are afraid and have something to report, they should call me."

The basis for the complaint is an executive order by former Pres-

Source: Michigan Daily, September 3, 1970

## Sex Discrimination: Campuses Face Contract Loss over HEW Demands

The women's liberation movement has a new ally: the Department of Health, Education, and Welfare. HEW is demanding that colleges and universities, under threat of losing all federal contracts, stop discriminating against women students and employees. Furthermore, HEW is demanding that female employees be compensated for financial loss suffered because of discrimination over the last 2 years. The government is currently withholding new contracts from the University of Michigan and at least three other campuses, pending compliance with HEW demands.

The HEW action, begun last spring (*Science*, 1 May 1970), is authorized by Executive Order 11246, which prohibits discrimination by federal con-

tractors. The Order, amended by President Johnson in 1968 to include sex discrimination, requires contractors to survey their own labor practices and submit an affirmative action plan for correcting deficiencies. HEW is charged with regulating all federal contracts to educational institutions.

The sex discrimination provisions of the order have been largely ignored and still would be, but for the efforts of Bernice Sandler, a staff member for the House Education Committee, who founded Women's Equity Action League (WEAL). WEAL, a Washington-based group with a membership that includes several congresswomen, sent letters to women's groups at campuses across the country advising them of the potential power of Execu-

Source: *Science* 170: 834

## **HEW's Demands for Michigan**

The following are excerpts from HEW's nine requirements for an affirmative action plan for ending sex discrimination at the University of Michigan.

The university must:

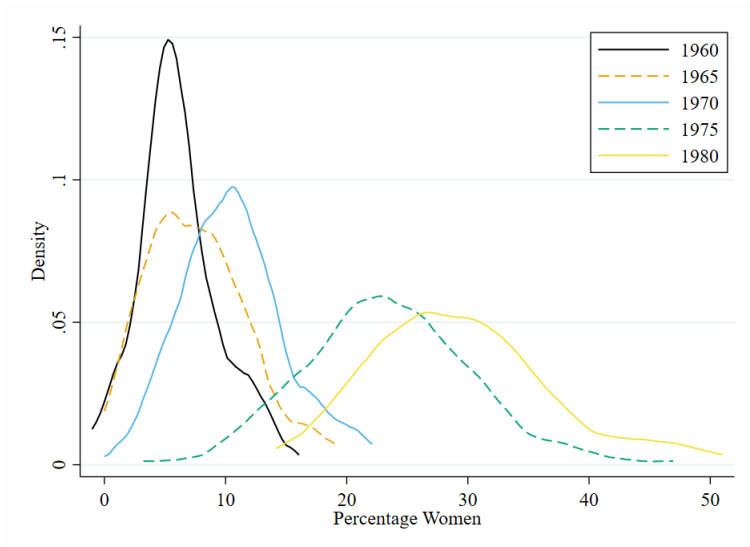
- 1) Achieve salary equity in every job category in the university.
- 2) Compensate, through the payment of back wages, each female employee who has lost wages due to discriminatory treatment by the university. Payment must be retroactive to 13 October 1968 (the date President Johnson amended Executive Order 11246 to include sex discrimination).
- 3) Achieve a ratio of female employment in academic positions at least equivalent to availability as determined by the number of qualified female applicants.
- 4) Increase ratios of female admissions to all Ph.D. graduate programs.

**Source:** *Science* 170: 834

- Timing
  - October 5, 1970: WEAL files formal complaints against all medical schools for violation of EO 11246 (More 1999)
  - Very beginning of Fall 1971 admissions cycle
- Data Collection: *DHEW* obligations to medical schools in 1969
- Three types of support
  - Research (*NIH*)
  - Training (*HPEA*)
  - Construction
    - Removed to obtain better measure of permanent support

- Sources
  - *Journal of Medical Education* Study of Applicants
  - *Journal of the American Medical Association* Education Number
    - *Medical School Admission Requirements*
- Universe
  - All AMA-approved Medical Schools in the U.S.
- Data
  - Number of Men & Women
  - Applications received
  - First-time first-year enrollments
- Years
  - 1961-1965: Estimated Enrollments Only
  - 1967-1977: New Entrants
  - 1966, 1978-1980: First-Year Students

# Changes in Distribution of Women's Representation

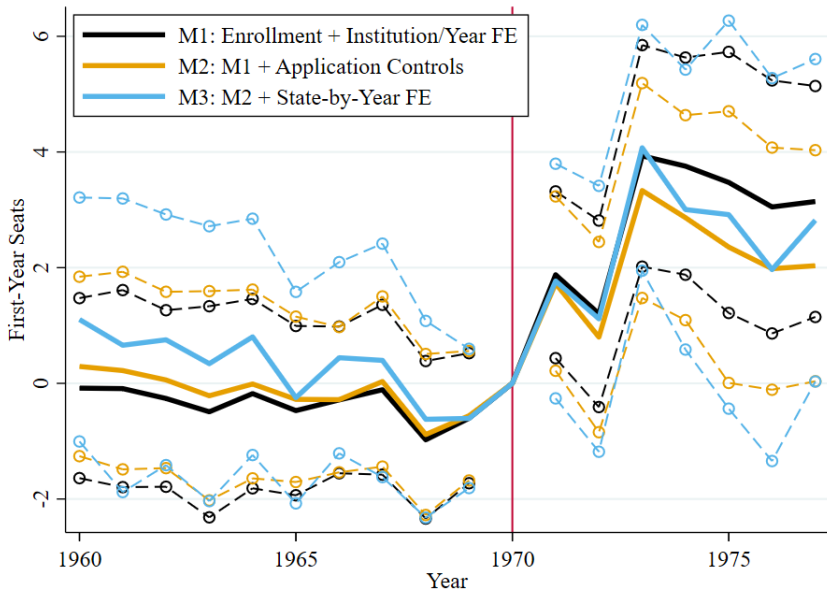


I utilize an event study framework of the form:

$$Y_{it} = \sum_{\tau=1960, \tau \neq 1969}^{\tau=1977} \alpha_{\tau} d_{i,1970} \mathbb{1}(t = \tau) + \beta' \mathbf{X}_{it} + \gamma_i + \delta_{st} + \varepsilon_{it}$$

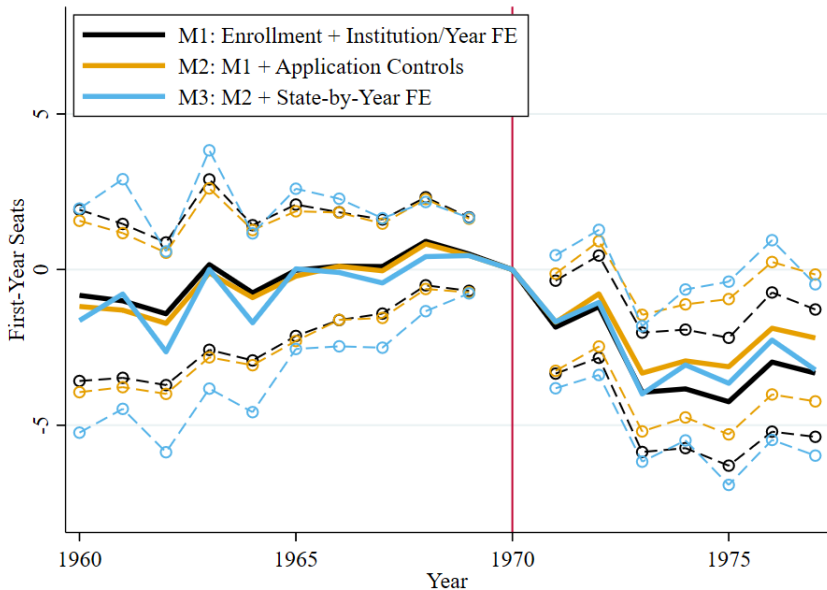
- $Y_{it}$ : Number of women enrolled at institution  $i$  in year  $t$
- $d_{i,1969}$ : Adjusted *DHEW* Funding in 1969
- $\mathbf{X}_{it}$ : Time-varying covariates
  - Total Enrollment
  - Number of Applications, Men and Women
- $\gamma_i$ : Institution fixed effects
- $\delta_{st}$ : State-by-year fixed effects
- Standard errors clustered at institution level

# Results: Women's Enrollment





# Results: Men's Enrollment



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# Health Manpower Policy: Timeline

## Policy Enactment Dates:

**1963** ... • Health Professions Educational Assistance Act

**1965** ... • HPEAA Amendments

**1968** ... • Health Manpower Act

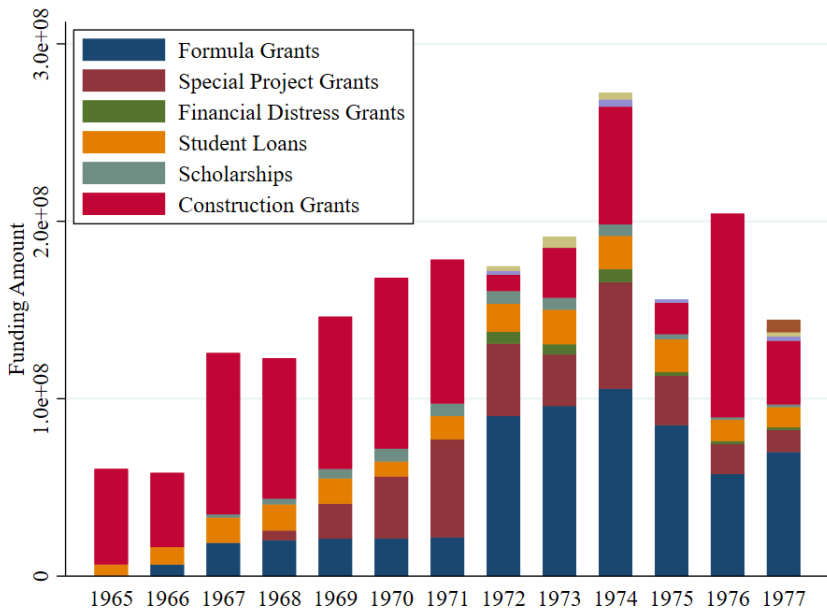
**1971** ... • Comprehensive Health Manpower Training Act

**1976** ... • Health Professions Educational Assistance Act

## Appropriations for Programs:



# Health Manpower Policy: Programs



- Medical school chooses enrollment  $E$  and admissions threshold for men  $a_m$  and women  $a_f$  to maximize the weighted sum of profit and student quality (Fu 2014)
- I model the choice of enrollment with a standard demand function (Azevedo & Leshno 2016)
  - $R(E) = E \cdot T(E) = E(P - bE)$
  - $C(E) = cE$
  - $\Pi(E) = R(E) - C(E)$
- Observable, single dimension of student quality
  - Separate density for men ( $m(x)$ ) and women ( $f(x)$ )
- Admissions committee considers weighted sum of student quality:
  - $\int_{a_m}^{\infty} xm(x)dx + \int_{a_f}^{\infty} xf(x)dx$
- Consistency between enrollment and admissions decisions requires that
  - $E = \int_{a_m}^{\infty} m(x)dx + \int_{a_f}^{\infty} f(x)dx$

# Model: Admission Committee's Problem & Prediction

The admissions committee solves

$$\underset{E, a_f, a_m}{\text{maximize}} \quad \Pi(E) + \gamma \left\{ \int_{a_m}^{\infty} x m(x) dx + \int_{a_f}^{\infty} x f(x) dx \right\} \quad (1a)$$

$$\text{subject to} \quad E = \int_{a_m}^{\infty} m(x) dx + \int_{a_f}^{\infty} f(x) dx, \quad (1b)$$

$$\bar{F} \geq \int_{a_f}^{\infty} f(x) dx \quad (1c)$$

Model Takeaways:

- Women's enrollment falls such that the constraint binds
- Total enrollment also falls

Decomposing women's lost seats:

- Direct Effect: Conditional on enrollment
- Indirect Effect: Through lower enrollment

I consider a simple specification to estimate women's enrollment gains:

$$\Delta F_{it} = \alpha + \beta_t \Delta E_{it} + \varepsilon_{it} \quad (2)$$

- $\Delta F_{it}$ : Change in female enrollment at institution  $i$  between periods  $t - 1$  and  $t$
- $\Delta E_{it}$ : Change in total enrollment at institution  $i$  between periods  $t - 1$  and  $t$
- $\varepsilon_{it}$ : Serial correlation robust standard errors clustered at the institution level
- $\beta_t$  is binned in two-year interval to reduce noise

# OLS Evidence: Results

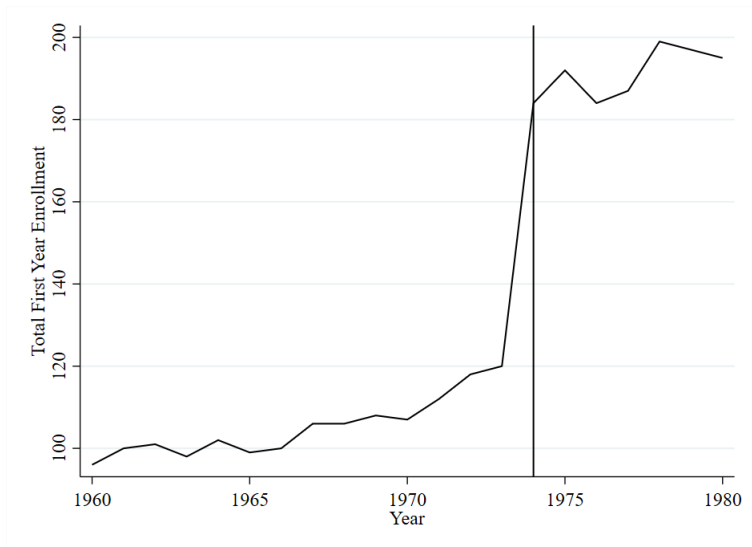


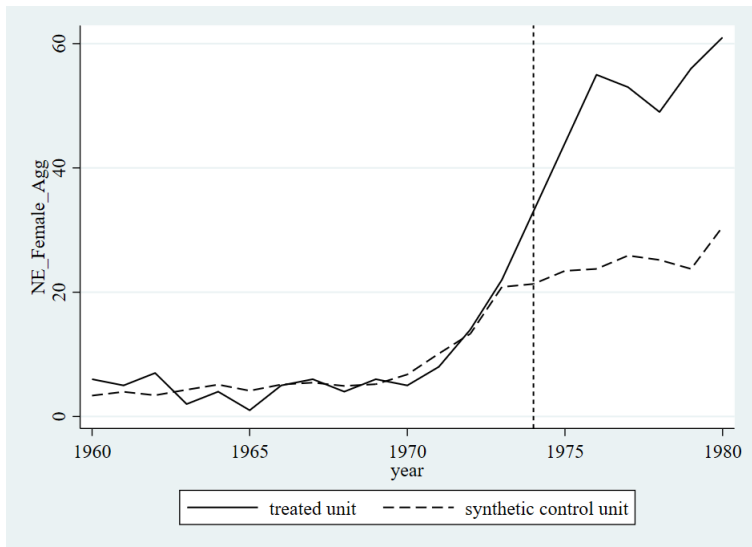


# Expansion of Existing Schools

- Information on Construction Grants Awarded from FY 1965 - 1979
  - FY of Award and Recipient
  - Number of new first-year seats promised
  - No information on construction completion
- Identification Strategy: Synthetic Control
  - Allows for flexible estimation of dynamic treatment effects
- Treated School: University of Cincinnati
  - Largest single-year expansion of enrollment after 1970
  - Clearly tied to construction grant under Health Manpower policy
- Donor Pool: Schools that do not receive a construction grant with a specified increase in first-year seats

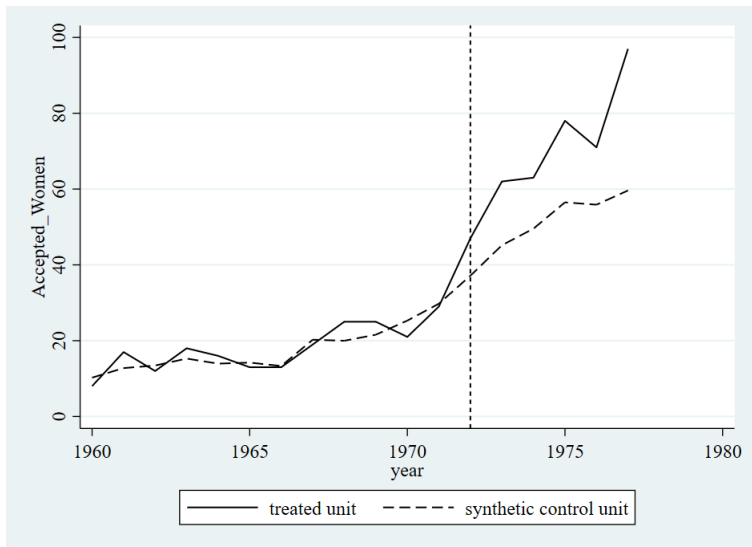
# Enrollment Expansion





# Construction of New Schools

- Data
  - State-year panel of the number of matriculating students
  - Reported separately by sex
  - Collected from *Journal of Medical Education*
- Identification Strategy: Synthetic Control
  - Most medical schools are added in states with large numbers of students
  - Violation of convex hull condition
- Treated State: Minnesota
  - Mayo Medical School (Opens 1972)
  - University of Minnesota at Duluth Medical School (Opens 1972)
- Donor Pool: States that do not open a new medical school



Why is this important to understand?

- Entry of women into professional occupations was an important part of the the convergence in labor market outcomes between men and women in the 2nd half of the 21st century (Goldin 2006, 2014)
- Entry of historically under-represented groups into high-skilled occupations in the 2nd half of the 21st century was of large economic significance
  - Hsieh et al. (2019) estimate this explains 20% - 40% of growth in GDP per capita from 1960-2010
- Mechanisms are important to understand in light of lack of progress in the entry of other under-represented groups
  - Black men comprise a lower fraction of medical school enrollees [2.9%] in 2019 than they did in 1978 [3.1%] (Morris et al. 2021)

# Thank You!

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