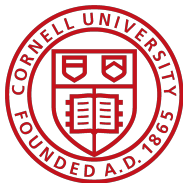


Less Funding, More Lecturers, Fewer Professors: Stagnating State Funding for Higher Education and its Effect on Faculty

Senan Hogan-Hennessy
Economics Department, Cornell University
seh325@cornell.edu



Cornell Economics, Alumni Workshop
11 May 2024

Introduction

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OPINION FACULTY

The End of Faculty Tenure

Marc Stein argues declines in tenure density constitute the greatest threat U.S. higher education has ever faced.

By Marc Stein
Published April 25, 2022

Is Tenure Really Dying? And Would That Be Good or Bad?

Is academic tenure in for major changes over the next decade?

Wednesday, September 21, 2022

FACULTY & STAFF

Report Reveals Biggest Decrease in Real Wages for Full-Time Faculty



Rebecca Kelliher

Jun 22, 2022



The American Association of University Professors (AAUP) released its [2021-22 Annual Report on the Economic Status of the Profession](#), which details findings from the AAUP's annual Faculty Compensation Survey. One of the report's biggest takeaways is that real wages for full-time faculty in 2021 fell below Great Recession levels of the late 2000s, after adjusting for inflation.



Introduction



MENU

HOME / STATE BUDGET AND TAX / FUNDING DOWN, TUITION UP

Funding Down, Tuition Up

State Cuts to Higher Education Threaten Quality and Affordability at Public Colleges

UPDATED AUGUST 15, 2016 | BY MICHAEL MITCHELL, MICHAEL LEACHMAN, AND KATHLEEN MASTERSON^[1]

Years of cuts in state funding for public colleges and universities have driven up tuition and harmed students' educational experiences by forcing faculty reductions, fewer course offerings, and campus closings. These choices have made college less affordable and less accessible for students who need degrees to succeed in today's economy.

REPORT JUN 11, 2020

Mounting Peril for Public Higher Education During the Coronavirus Pandemic

Absent federal action, state budget cuts are about to add to colleges' pain from the pandemic.

PBS
NEWS
HOUR



By –
Jon Marcus,
The
Hechinger
Report

Leave a
comment

Most Americans don't realize state funding for higher ed fell by billions

Education Feb 26, 2019 12:20 PM EDT

Introduction — Preview & Road-Map

Three connected topics:

1. Document the substitution away from professors towards lecturers, at US public universities
2. Link the substitution to stagnating state funding, with a causal approach
3. Infer the mechanism for these changes, limited hiring, and implications for university decision-making.

Trends in US Higher Education

Shifts in State Funding

Effects on Faculty

Mechanism for Faculty Substitution

Trends in US Higher Education

I measure university characteristics + outcomes using National Centre for Education Statistics data (IPEDS).



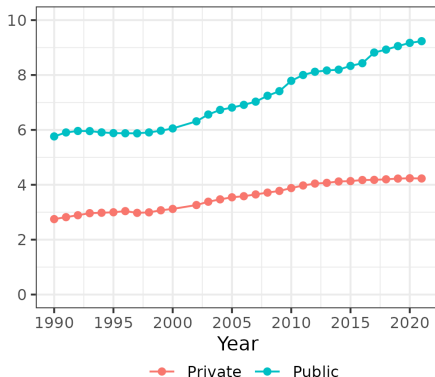
- ▶ Panel data, universe of US higher education institutions 1990–2021
- ▶ Focus on public, 4-year universities
- ▶ Measure student enrolment, funding, and employment figures.

Trends in US Higher Education

- ▶ There were 5.8 million students enrolled at public universities in 1990, 2.7 million private
- ▶ There were 9.2 million students enrolled at public universities in 2021, 4.2 million private.

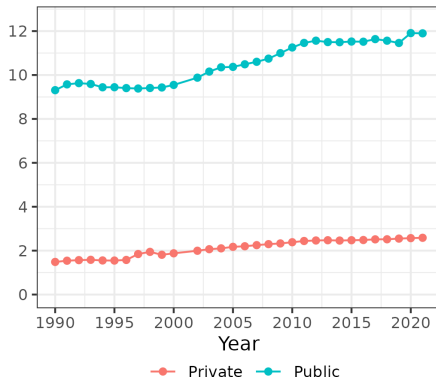
(a) Total Enrolment, Nation-wide.

Student Enrolment, millions



(b) Mean Enrolment, per University.

Student Enrolment, thousands

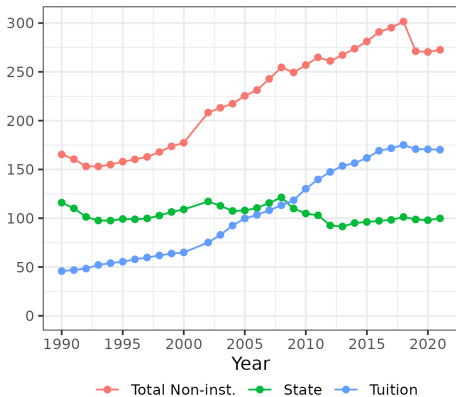


Trends in US Higher Education

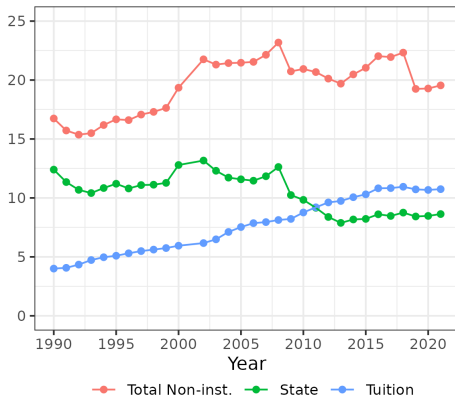
Despite rising enrolment, thanks to higher education returns and increased access, **state funding has stagnated**.

Figure: Average Funding among Public Universities, by Year.

Mean Total Funding, \$ millions



Mean Funding per Student, \$ thousands



Non-institutional funding = sum of federal, state, and local funding plus tuition revenues.

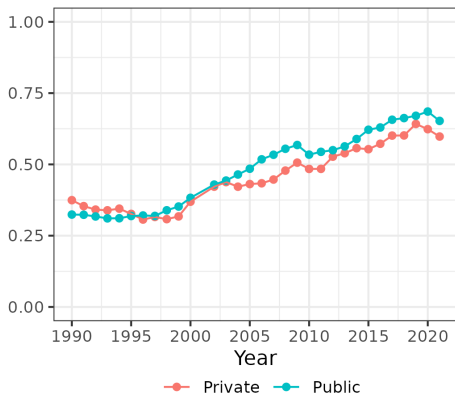
Trends in US Higher Education

At the same time, utilisation of lecturers has increased drastically, and tenure-track/tenured professors fallen at public universities.

Figure: Trends in Faculty Counts.

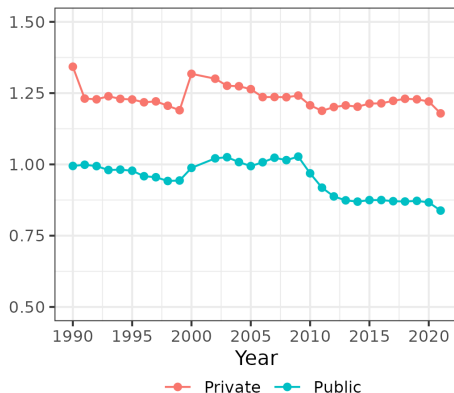
(a) Non-tenure Track (lecturers).

Lecturer count / 100 students



(b) Tenure-Track (Asst. Professors).

Asst. Professors / 100 students

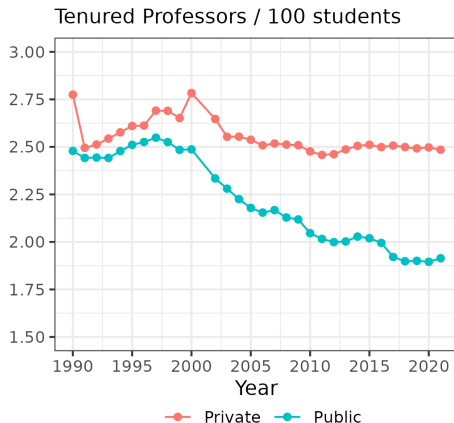


Trends in US Higher Education

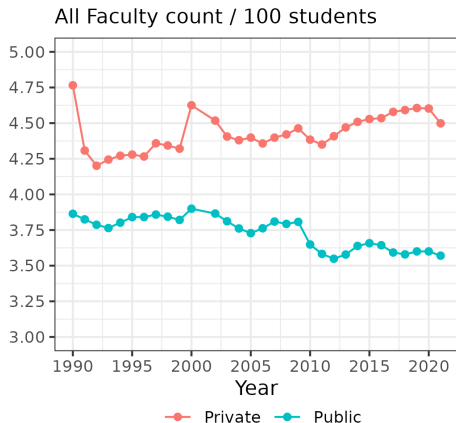
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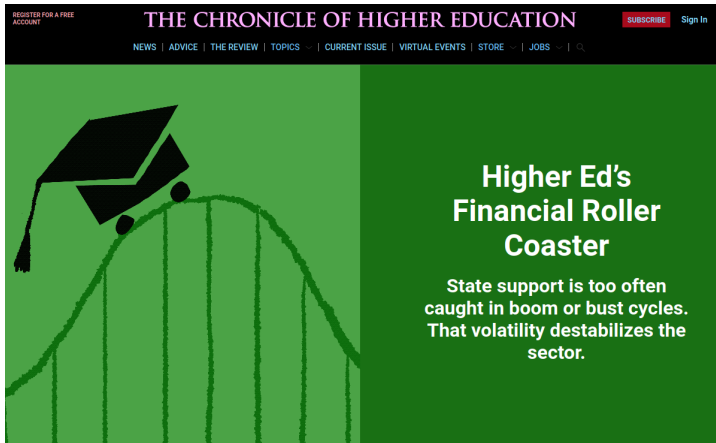


(b) All Faculty.



Trends in US Higher Education

So what are these trends about?



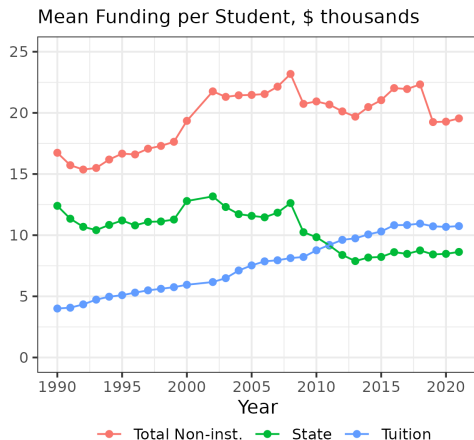
Trends in US Higher Education

So what are these trends about?

States decide an annual budget:

1. State legislature plans annual budget
2. Back-and-forth bargaining with governor, who signs off when they agree
3. Higher education is attractive to cut funding in this bargaining, thanks to low lobbying power.

Figure: Average Public University Funding.

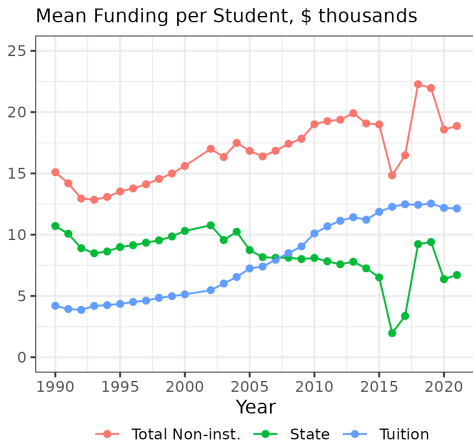


⇒ institutional set-up leads to public universities stifled year-on-year.

Trends in US Higher Education

So what are these trends about?

Figure: Average Illinois University Funding.



This process in Illinois, 2015:

1. Democrat state legislature plans annual budget
2. Sends to Republican governor, then **bargaining went nowhere**
3. 2016 fiscal year starts with no budget, state staff furloughed etc.

⇒ Partisan disagreements led to public universities stiffed 2016.

Shifts in State Funding

⇒ Stagnating state funding, and increasing reliance on lecturers.

Are state funding cuts **causing** the faculty changes?

- ▶ States with worsening economic conditions may find it harder to attract/keep faculty
- ▶ Political alignment may be correlated with state funding, and faculty outcomes
- ▶ Otherwise concurrent trends e.g., around the 2008 recession.

The New York Times

SUB

Slashing Its Budget, West Virginia University Asks, What Is Essential?

The state's flagship school will no longer teach world languages or creative writing — a sign, its president says, of the future at many public universities.



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451



By Anemona Hartocollis

Published Aug. 18, 2023 Updated Aug. 21, 2023

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Christian Adams wants to be an immigration or labor lawyer, so he planned to major in Chinese studies at West Virginia University, with an emphasis on the Mandarin language.

But as his sophomore year begins, he has learned that, as part of a plan to close a \$45 million budget deficit through faculty layoffs and academic program consolidation, the university has proposed **13 / 26**

Shifts in State Funding

Estimate causal effects, state funding \rightarrow faculty, using Shift–Share IV (Deming Walters 2017, Chakrabarti Gorton Lovenheim 2020).

1. Exploit different rates of historical reliance on state funding between universities
2. Interacted with state-wide changes in higher education funding.

$$Z_{i,t} = - \underbrace{\left(\frac{\text{Total State Funding}_{s(i),t}}{\text{Student Population}_{s(i),t}} \right)}_{\text{1. State-wide higher ed funding}} \sum_{\tau=0}^3 \underbrace{\frac{1}{4} \left(\frac{\text{State Funding}_{i,1990+\tau}}{\text{Total Revenues}_{i,1990+\tau}} \right)}_{\text{2. Historical reliance on state funding}}$$

The Shift–Share IV approach assumes:

- ▶ State-wide shifts in funding for higher education affect all campuses (exogenous).
- ▶ State-wide funding shifts affect faculty only via impacting their employer's finances (exclusion).

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Strong instrument for public university state funding:

- ▶ $-\$1,000$ per student funding shift-share $\rightarrow -\$1,176$ state funding
- ▶ -10% per student funding shift-share $\rightarrow -9.77\%$ state funding.

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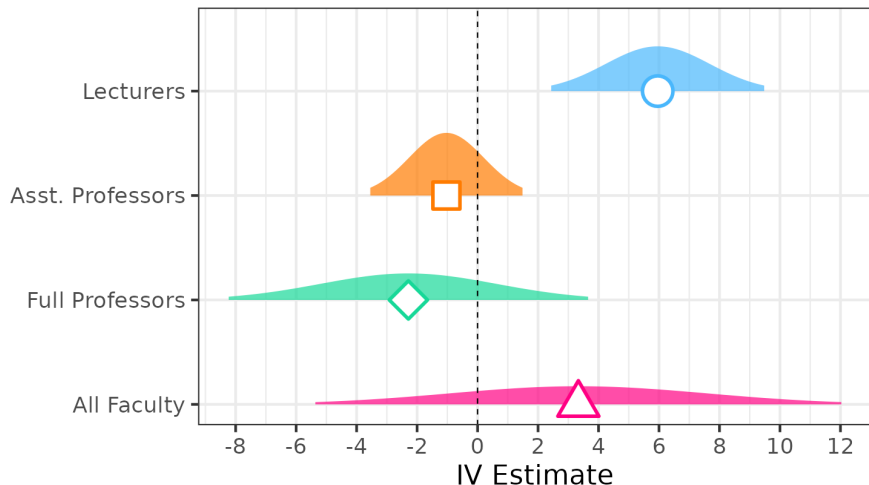
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Shifts in State Funding — Effects on Faculty

Shift-Share IV Results for the average public university:

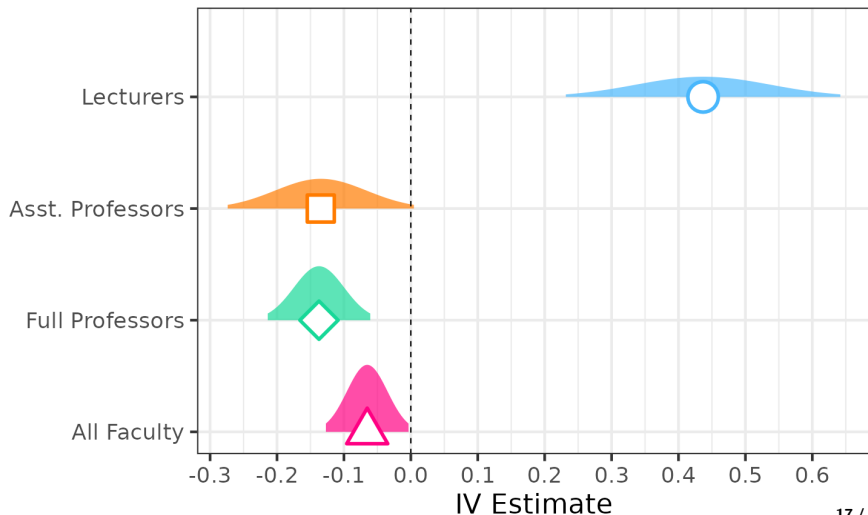
- \$1,000 state funding per student $\rightarrow \approx 6$ more lecturers / 100 students.
- \$1,000 state funding per student \rightarrow Ambiguous on professor count.



Shifts in State Funding — Effects on Faculty

Shift–Share IV Results for the average public university:

- 10% state funding per student $\rightarrow \approx 4.4\%$ more lecturers / students.
- 10% state funding per student $\rightarrow \approx 1.4\%$ fewer professors / students.

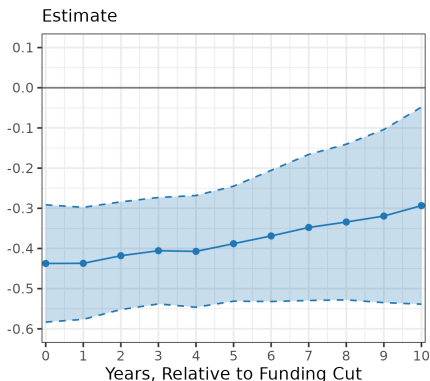


Shifts in State Funding — Effects on Faculty

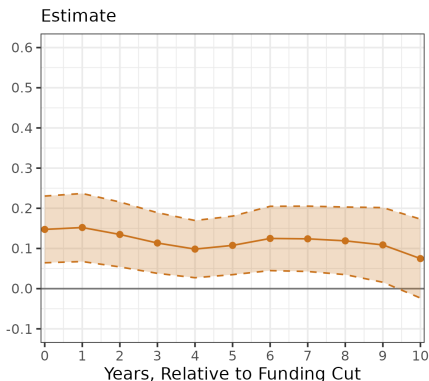
Are effects transitory? Do universities only rely on lecturers during a short budget crisis, and hire more professors once the storm clears?

Substitution effects long-lasting → local projections elasticity estimates:

(a) Non-tenure Track (lecturers).



(b) Tenure-Track (Asst. Professors).



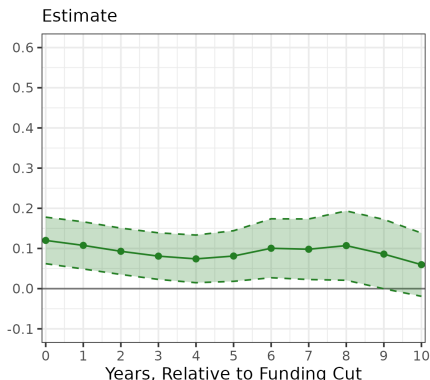
⇒ Substitution towards lecturers lingers for multiple years.

Shifts in State Funding — Effects on Faculty

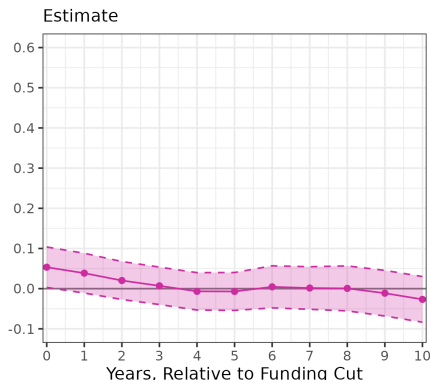
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(a) Tenured (Full Professors).



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Mechanism for Faculty Substitution

Stagnating state funding led to substitution towards lecturers, at US public universities, but unclear how these effects come about.

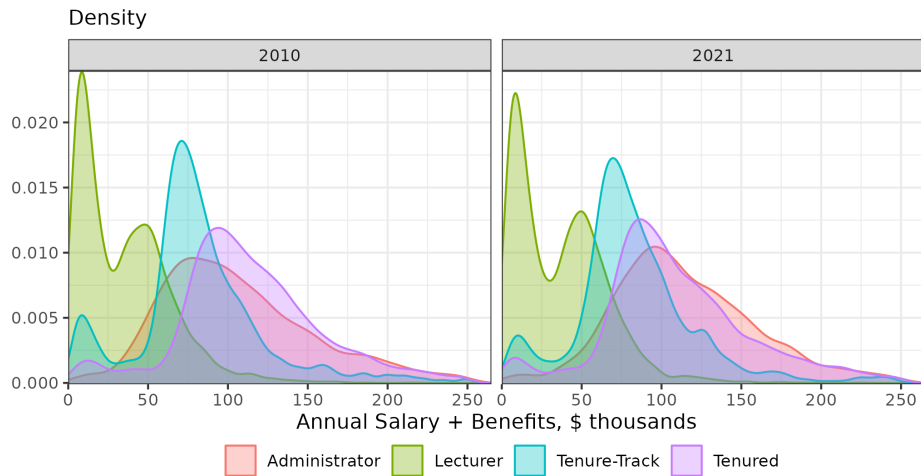
- ▶ Are **faculty let-go** by their universities?
- ▶ Are **faculty leaving voluntarily**, following pay cuts?
- ▶ Are **faculty poached by other universities** e.g., after promotion limits at their current university?

Investigate these channels, with data on every faculty member at Illinois public universities 2010–2021.

→ Salary info is public knowledge (Public Act 96-0266), so I collected data for every faculty member at Illinois public universities 2010–2021.

Mechanism for Faculty Substitution

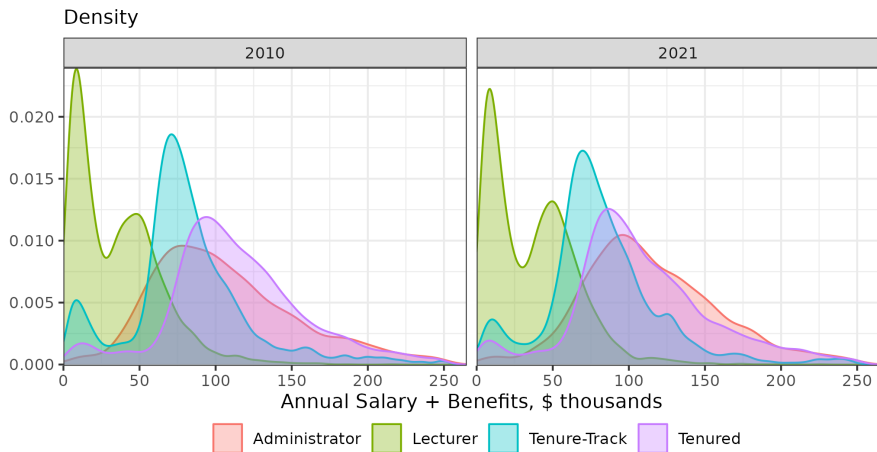
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≈ 16,500 total faculty in 2010

≈ 14,800 total faculty in 2021.

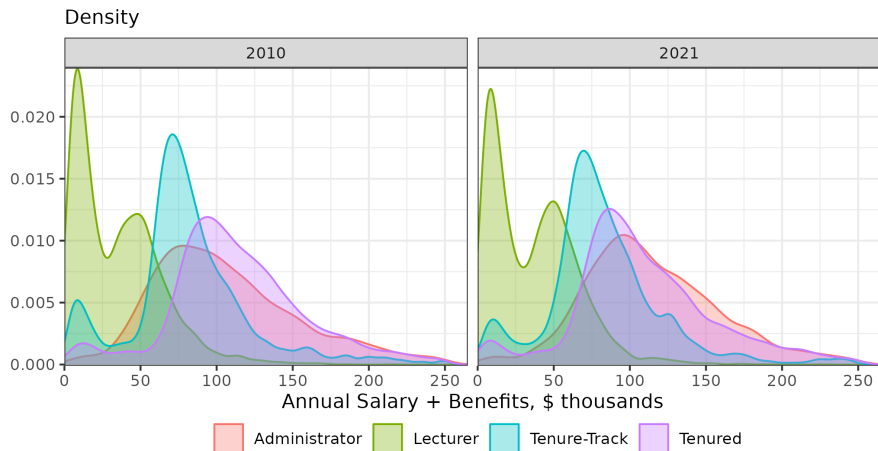
Mechanism for Faculty Substitution



To briefly summarise effects of state funding cuts on Illinois faculty:

- ▶ **No measurable effect of state funding cuts** on follow-on salaries, exit rates, or promotions among Illinois faculty, in shift-share analysis
- ▶ These data represent those who are already faculty
⇒ i.e., **incumbent faculty** unaffected by state funding cuts.

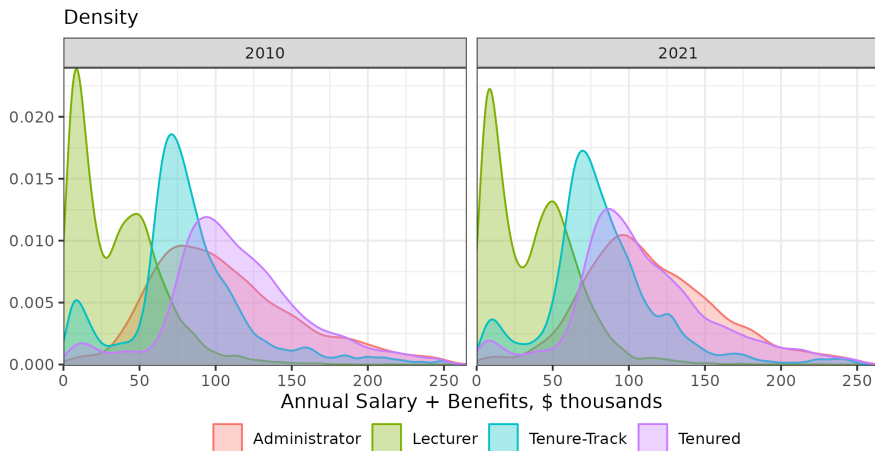
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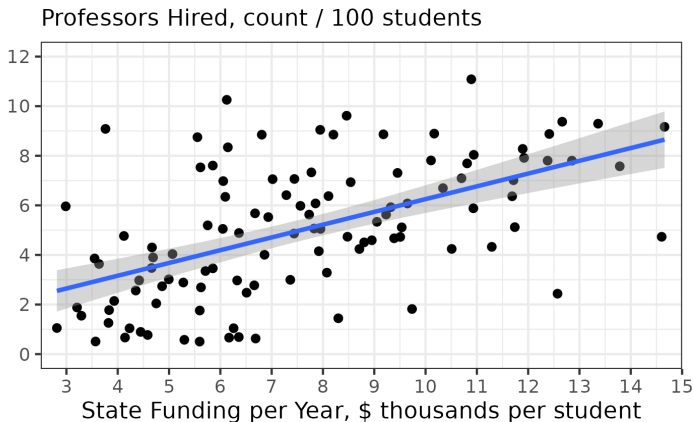
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Mechanism for Faculty Substitution

Condundrum: Incumbent faculty unaffected, large substitution effects?
⇒ limits professor hiring, supported by hiring data (Wapman et al 2022).

Figure: Public University Funding and Professor Hiring, Total across 2011–2021.

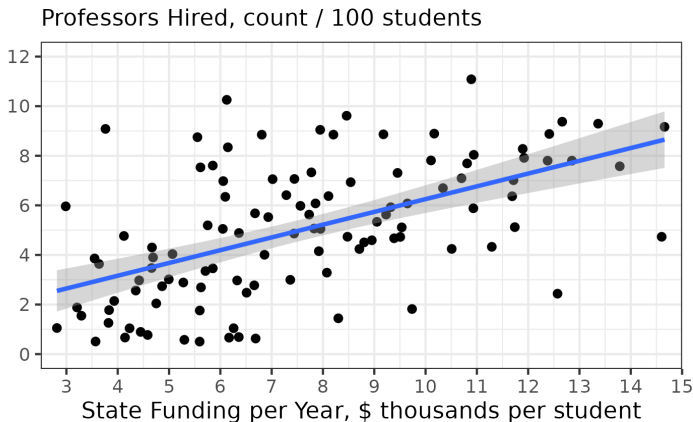


Shift-share analysis: state funding cuts → reduced professor hiring.

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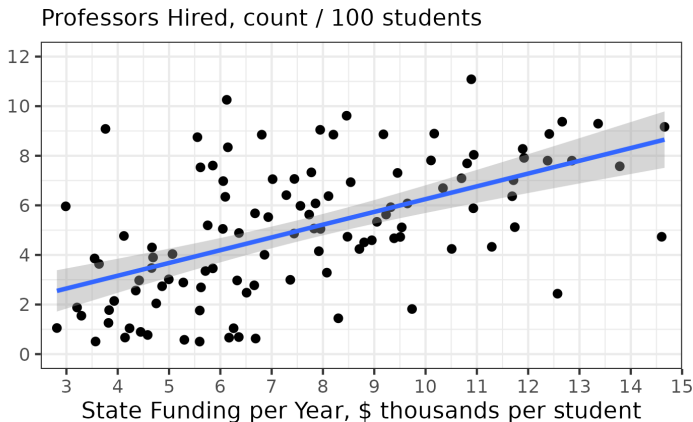


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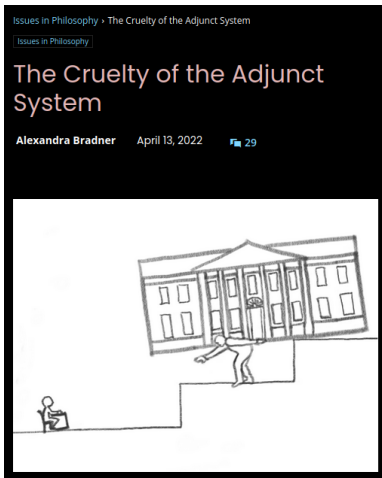
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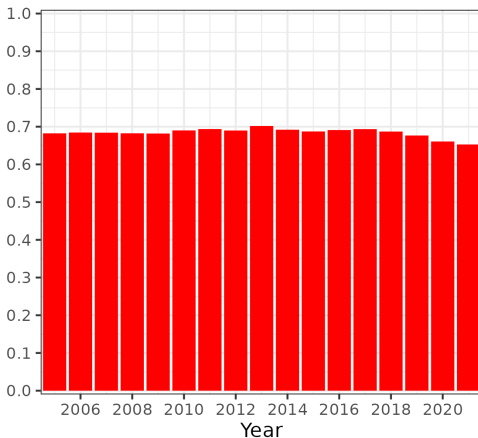
Conclusion

More lecturers a bad thing? No, but many are over-worked, under-paid. . .



(a) Part-time Rate, Lecturers at Public Unis

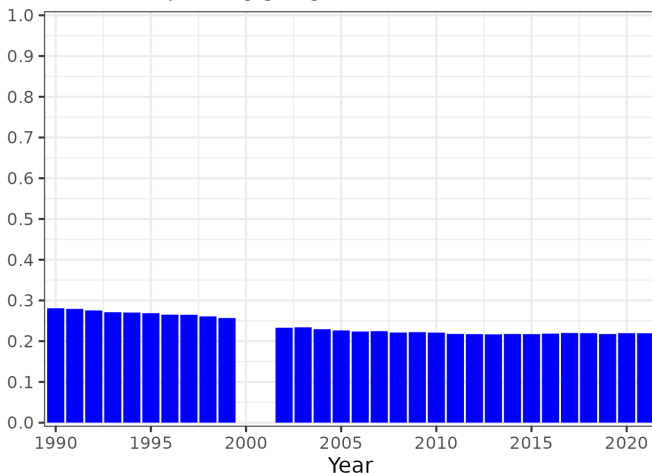
Percent of Lecturers Working Part-time



Conclusion

Implies that public universities (who educate the majority of US higher ed students) make long-lasting personnel decisions based on yearly funding cuts. While instruction salaries are $< 30\%$ of total spending...

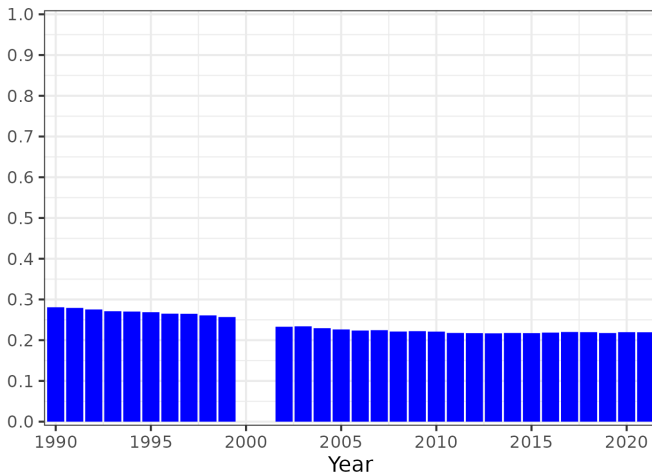
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Percent of Total Spending going to Instruction Salaries

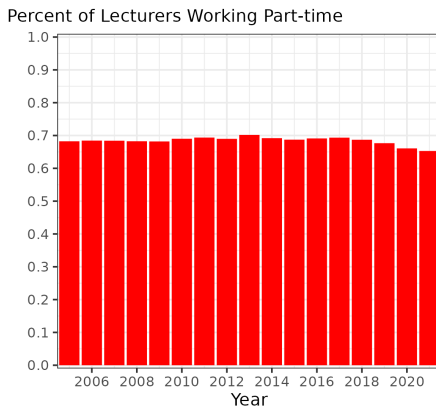


Conclusion

Main results:

1. State funding cuts lead to substituting professors for lecturers
2. No measurable effect on incumbent professors in Illinois
3. Evidence that effects happen via limiting hiring of new professors.

⇒ Implications for unis' human-resources and LR decision-making.



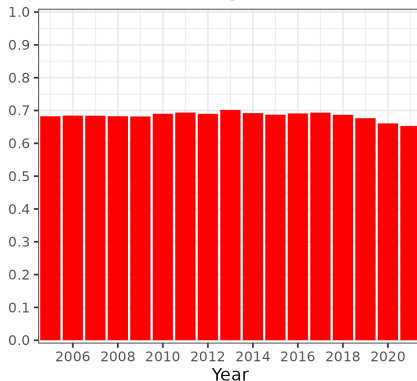
Thank you all for your time, Q&A comments welcomed or seh325@cornell.edu.

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