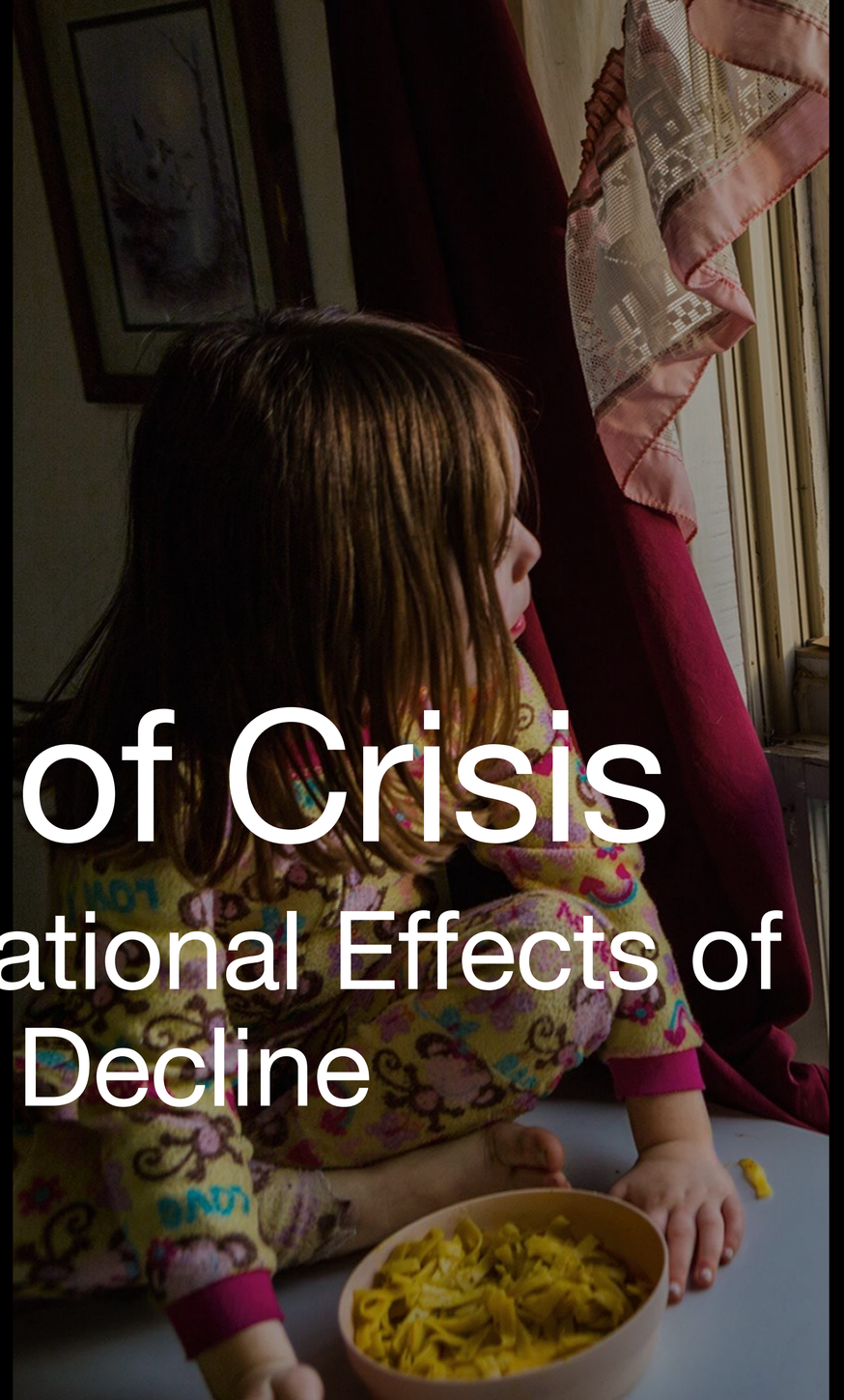


Children of Crisis

The Intergenerational Effects of Manufacturing Decline

Joonas Tuhkuri

Special thanks to

Yrjö Jahnsson Foundation
Emil Aaltonen Foundation

Part 1: The Research Project

The Children Project

Research question

What is the impact of manufacturing decline on children?

Focus: Educational attainment (high-school, college)

Motivation

Manufacturing decline a defining economic trend of last 50 years

Long-term effects—Future of Work—depend on next generation

Open question: How will the next generation adapt?

New result

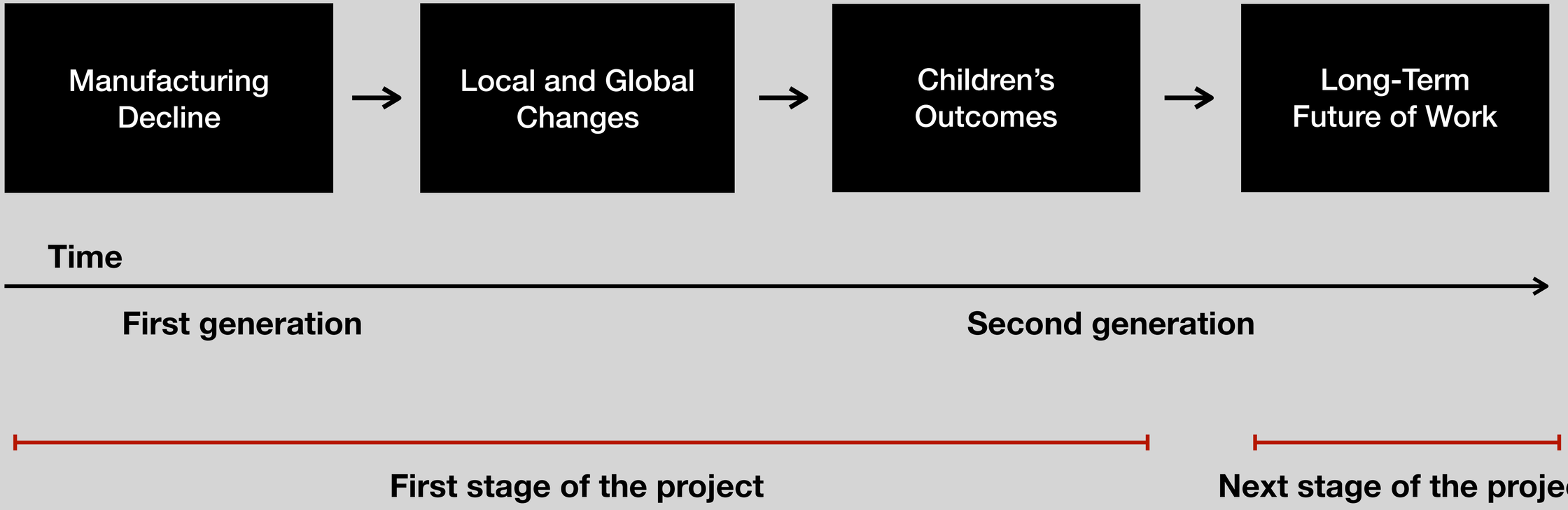
Disappearing factory jobs → more education

- High-school drop-out rate ↓ college attendance ↑
- Effects from children with parents working in manufacturing, stronger for poor children, and in residentially segregated places

Empirical setup

Empirics: US county-level panel 1991–2011

Identification: IV:s for technology and trade


Manufacturing Decline
Local and Global Changes
Children's Outcomes
Long-Term Future of Work
Time
First generation
Second generation
First stage of the project
Next stage of the project

Previous Work:
Effects of Manufacturing Decline

Employment & earnings ↓ (Autor et al. 2013–2018)

Opioid use ↑ (Charles et al. 2018)

Crime ↑ (Pierce & Schott 2016, Feler & Senses 2015)

Family ↓ (Autor et al. 2018)

Childhood poverty ↑ (Autor et al. 2018)

Social transfers ↑ (Autor et al. 2013, Balsvik et al. 2015)

Public goods ↓ (Feler and Senses 2015)

Politics ← → (Autor et al. 2017)

This Project: Education

New finding	High-school drop-out rate ↓
	College attendance ↑
Magnitude	3% mfg. emp. ↓ → 1% HS dropout ↓
	Explains half of the ↓ in HS dropout rate (previously puzzling trend)
Details	Parental & local characteristics
	Men/women & race
Robustness	Falsification test
	Mobility responses
	Different instruments

Related Literature

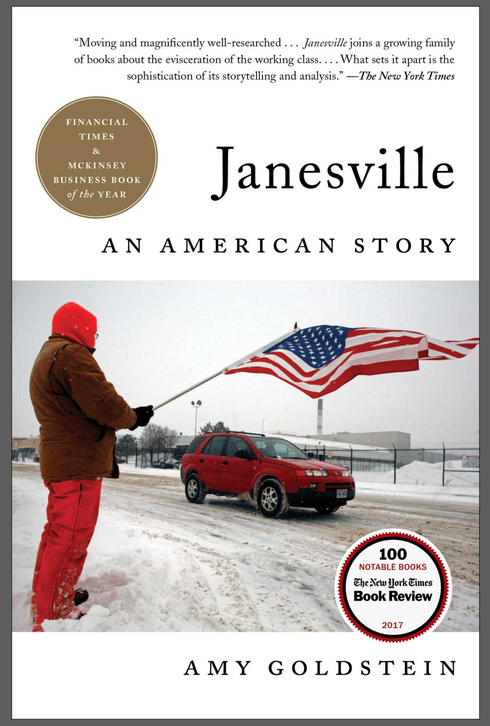
1. **Long-term changes in human capital supply**
   - Goldin & Katz 1997, 2011

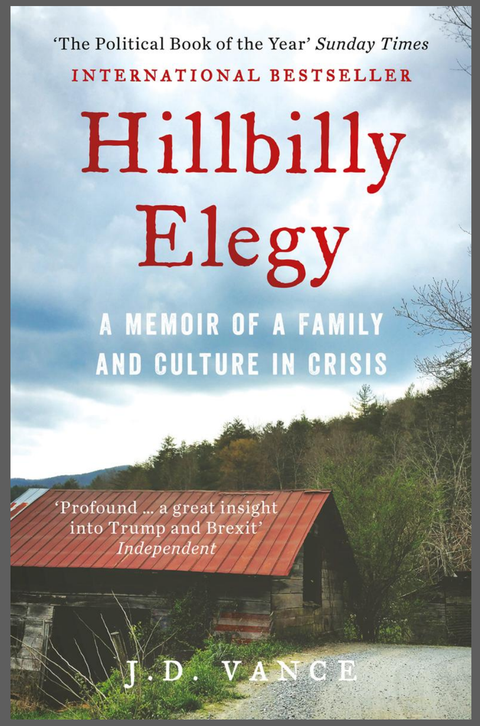
2. **Labor market conditions and educational attainment:**
   - Atkin 2016, Black et al. 2005, Cascio & Narayan 2015, Notowidigdo et al. 2018, Stuart 2018, Ananat et al. 2017, Shah & Millet Steinberg 2017, Jensen 2012, Greenland & Lopresti 2017

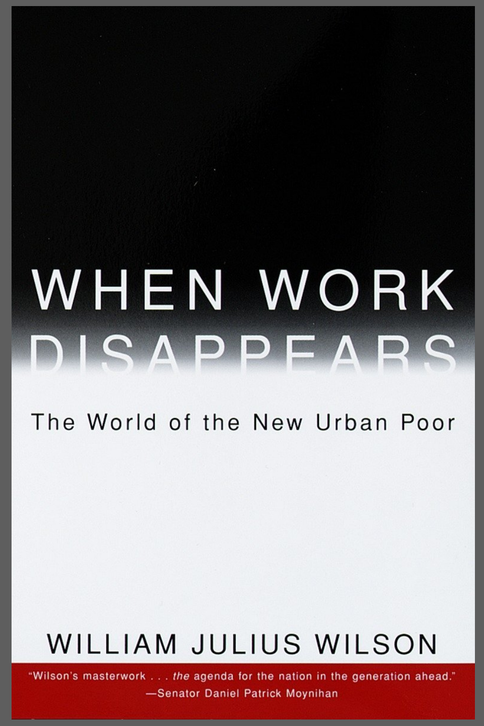
3. **Effects of parental job loss**
   - Oreopoulos et al. 2008, Hilger 2016, Stevens & Schaller 2011, Rege et al. 2011

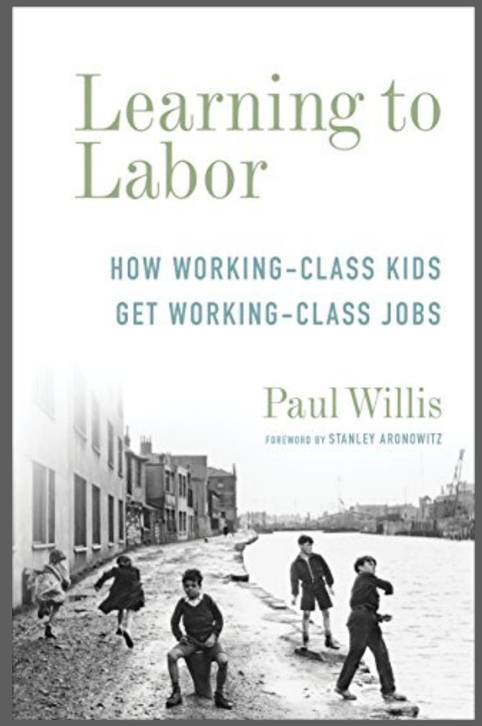
4. **Effects of manufacturing decline**
   - Autor et al. 2013a-b, 2014, 2018; Acemoglu et al. 2016, Pierce & Schott 2016, Yagan 2017

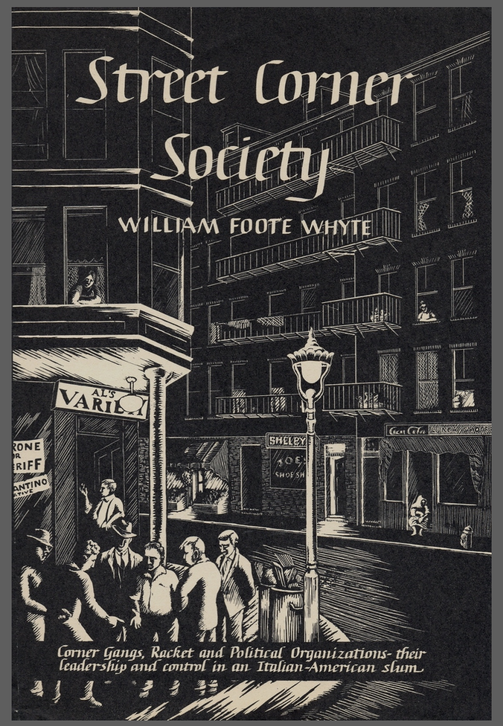
4. **Sociology of place and poverty**
   - Willis 1977, Wilson 1996, Whyte, 1943


"Moving and magnificently well-researched . . . *Janesville* joins a growing family of books about the evisceration of the working class. . . . What sets it apart is the sophistication of its storytelling and analysis." —*The New York Times*
FINANCIAL TIMES & MCKINSEY BUSINESS BOOK *of the* YEAR
Janesville
AN AMERICAN STORY
100 NOTABLE BOOKS The New York Times Book Review 2017
AMY GOLDSTEIN


'The Political Book of the Year' *Sunday Times*
INTERNATIONAL BESTSELLER
Hillbilly Elegy
A MEMOIR OF A FAMILY AND CULTURE IN CRISIS
'Profound ... a great insight into Trump and Brexit' *Independent*
J.D. VANCE


WHEN WORK DISAPPEARS
The World of the New Urban Poor
WILLIAM JULIUS WILSON
"Wilson's masterwork . . . *the* agenda for the nation in the generation ahead."
—Senator Daniel Patrick Moynihan


Learning to Labor
HOW WORKING-CLASS KIDS GET WORKING-CLASS JOBS
Paul Willis
FOREWORD BY STANLEY ARONOWITZ


Street Corner Society
WILLIAM FOOTE WHYTE
Corner Gangs, Racket and Political Organizations- their leader-ship and control in an Italian-American slum

Approach of this talk:

take a relevant real-world setting
make a new observation
think about forces at play
provide careful evidence
aim for more general lessons

Outline

Part 1: The Research Project

Part 2: Empirics

Part 3: Explanation & Empirical Details

Part 4: Project Plan

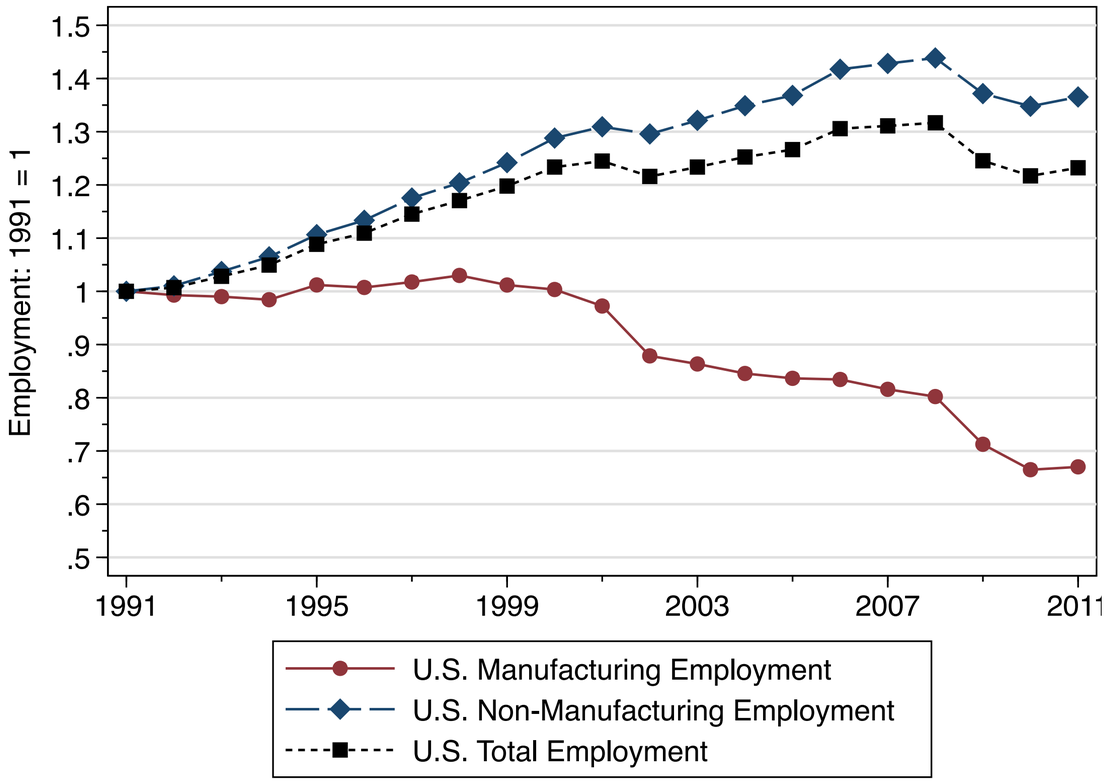
Key open questions (that we can think about together)

1. **What specific evidence should I seek for to understand the mechanism?**
2. **Which new data should I acquire?**
3. **What explanations are relevant and possibly testable?**

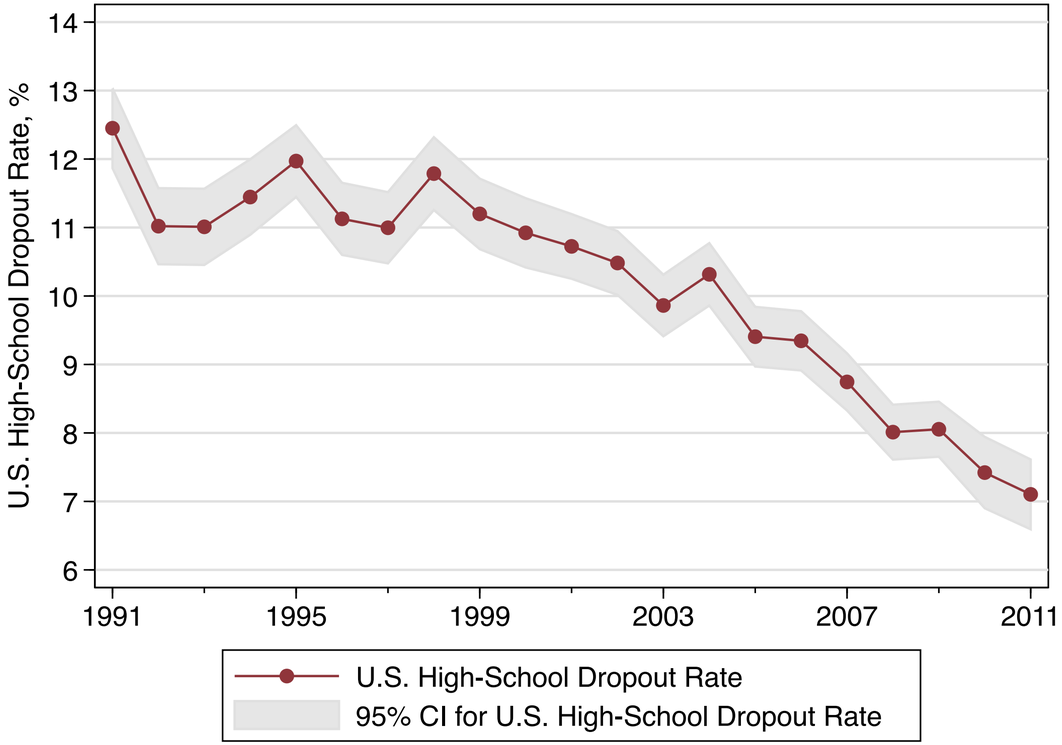
Part 2: Empirics

National Trends

Manufacturing employment



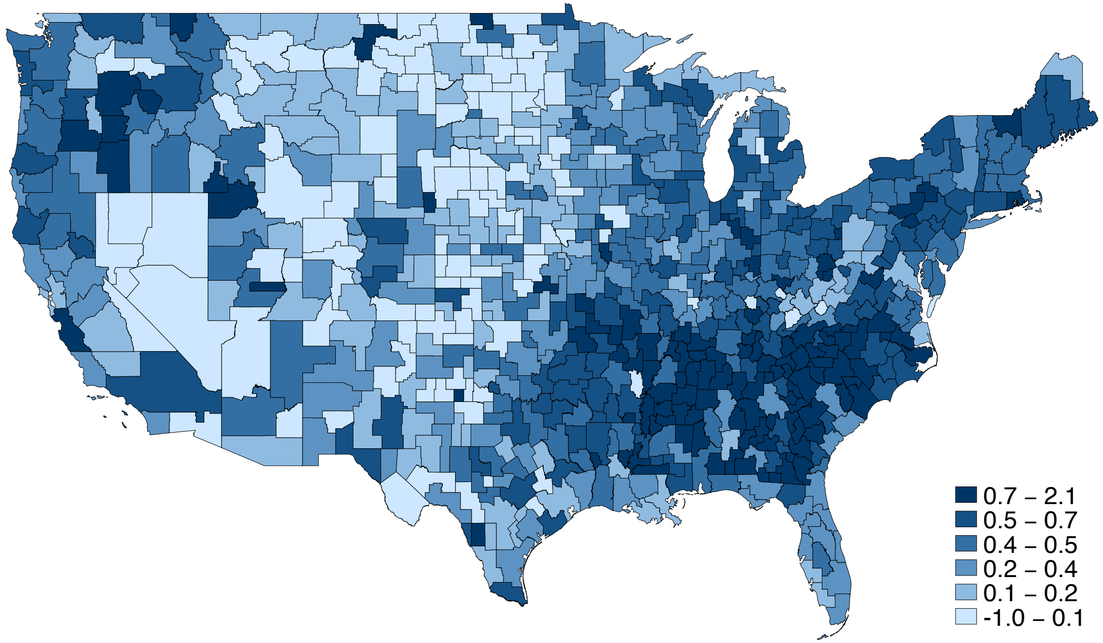
High-school dropout rate



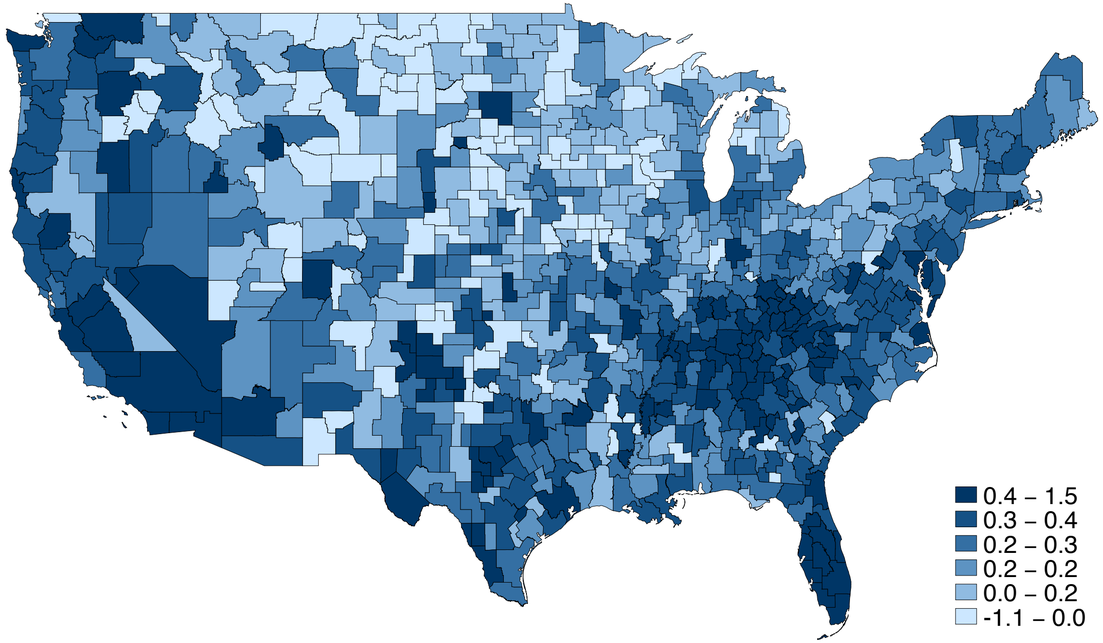
Sources: NCES, US Census/ACS, County Business Patterns.

Local Differences

Manufacturing employment (neg. chg.)



High-school dropout rate (neg. chg.)



Notes: *Negative* annual percentage point changes 1991-2011. Darker colors refer to larger declines.
Sources: US Census/ACS, County Business Patterns.

Research Design

Research design: Local labor market approach

- Identify a “manufacturing” labor demand shifter
- Some places experienced larger manufacturing declines than others
    - Detroit vs. Orlando
- Idea: similar places that face differential manufacturing decline

Interpretation of the local estimates:

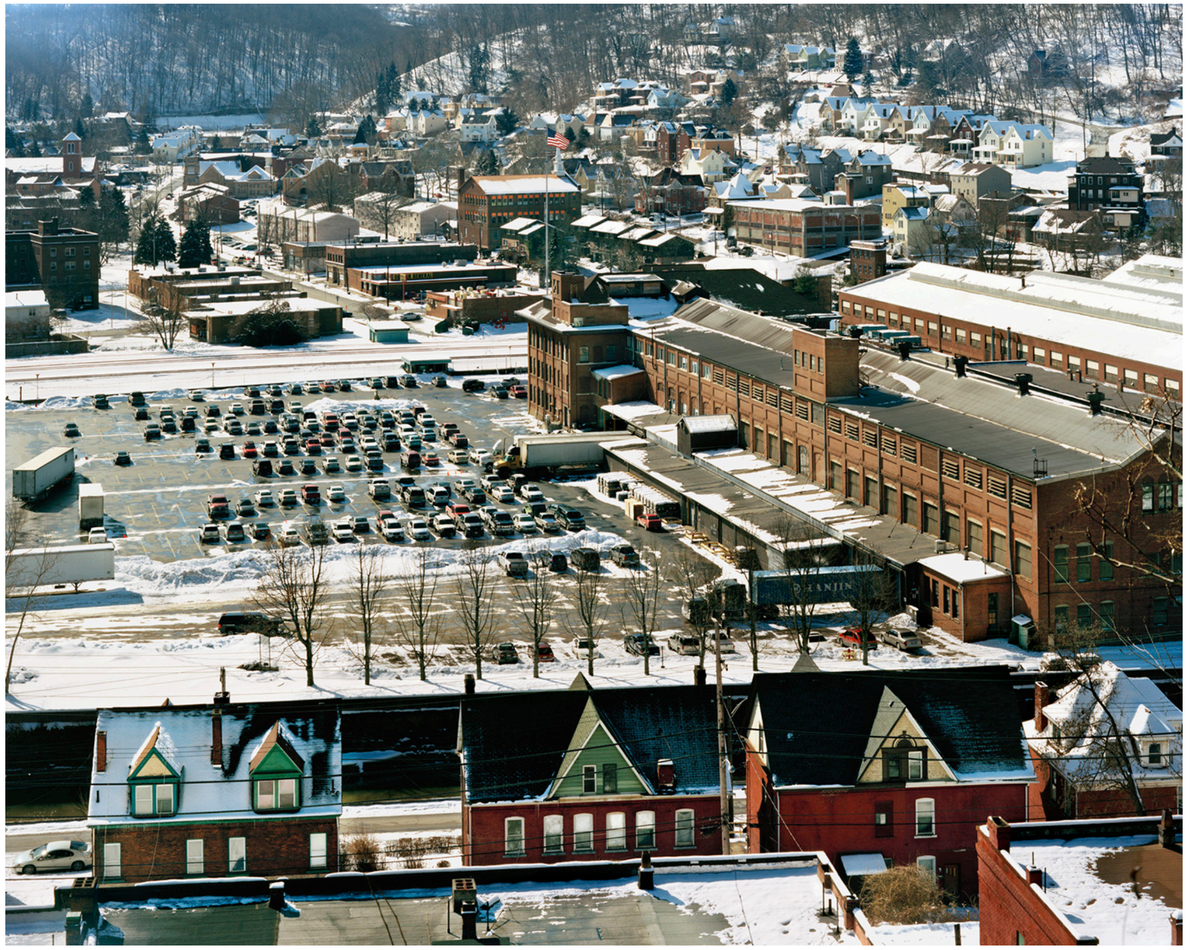
- Differential local exposure (not the only relevant margin)
- Mobility responses may mask or amplify effects

Empirical Context

US Commuting Zones 1991–2011

1. **Manufacturing decline “surprisingly swift”** (Pierce & Schott 2016)
2. **Low mobility** (Charles et al. 2018)
3. **Clear sources of variations** (Autor et al. 2013, Acemoglu & Restrepo 2018)

N = 722 Commuting zones



Data

Education	High-school	Census/ACS (IPUMS & full sample), NCES
	College	Census/ACS IRS (through Equality of Opportunity Project)
Labor	Employment, income, pop.	County Business Patterns, Census/ACS
IV	Trade	UN Comtrade (as in Autor 2013)
	Technology	Robots (IFR), Routine share (Autor and Dorn 2013)
Individual	Parental industry, income; individ. sex, race, migration	Census/ACS
Local	Segregation, inequality, tax, edu, teen labor, family	Census/ACS, IRS, NCES, IPEDS, Census of Government

IV → MFG → Education

Trade
- Exposure to Chinese Imports

Technology
- Exposure to robots
- Exposure to routine tasks

National Trends
- Exposure to national industry changes (shift-share)

Manufacturing
- Employment to population ratio
- By age

High-school
- High-school dropout rt. (16-19 year olds)
- By sex and race
- By parental attributes

College
- Any college (attendance)
- Associate degree
- BA degree
- College mobility (IRS)
- By sex and race

IV Strategy

The main ideas:
(1) provide “outside” variations in manufacturing intensity
(2) scale the reduced-form effects to a more interpretable version

Exclusion	IV → manufacturing intensity → outcome This context: IV induces only proportional changes in other variables that affect education (e.g. manuf. wages and revenues)
Independence	IVs as good as randomly assigned w/r to potential outcomes
Relevance	IV → manufacturing intensity (strongly)
Monotonicity	IV → manufacturing intensity (only to one direction for all units)

IV: National Trends

Exposure to National Trends in Manufacturing Employment (Shift-share/Bartik)

$$\Delta \widehat{MFG}_{i\tau}^{CZ} = \sum_j \frac{L_{ijt}}{L_{it}} \times \Delta L_{ij\tau}^{US}$$

$\sum_j \frac{L_{ijt}}{L_{it}}$ **Local industry-employment weights, baseline year t**

$\Delta L_{ij\tau}^{US}$ **Change in US manufacturing industry j employment over time frame τ**

Source: CBP, US Census

IV: Trade – China

Exposure to China's Imports

$$\Delta \widehat{CHN}_{i\tau}^{CZ} = \sum_j \frac{L_{ijt}}{L_{it}} \times \frac{\Delta M_{j\tau}^{OC}}{M_{j,t_{0-k}} - E_{j,t_{0-k}} + Y_{j,t_{0-k}}}$$

$\sum_j \frac{L_{ijt}}{L_{it}}$ **Local industry-employment weights, t = baseline year**

$\Delta M_{j\tau}^{OC}$ **Change in imports from China in a US manufacturing industry j over the time frame τ, in 8 other industrialized countries excluding the US**

$Y_{j,t_0} + M_{j,t_0} - E_{j,t_0}$ **Industry j imports - exports + shipments at the baseline year, k = 3 years**

Source: UN Comtrade, CBP (via Acemoglu et al. 2016)

IV: Technology – Robots

Exposure to Robots

$$\Delta\widehat{ROBOT}_{i\tau}^{CZ} = \sum_j \frac{L_{ijt}}{L_{it}} \times \frac{1}{N} \sum_{j \in N_{EU5}} \left[\frac{\Delta R_{i,\tau}}{L_{i,t-k}^{j}} - g_{i,\tau}^{j} \frac{R_{i,t}}{L_{i,t-k}^{j}} \right]$$

$\sum_j \frac{L_{ij\tau}}{L_{it}}$	Local industry-employment weights
$\frac{1}{N} \sum_{j \in N_{EU5}}$	Average over 5 selected European countries (Denmark, Finland, France, Italy, and Sweden)
$\Delta R_{i,\tau}$	Change in the amount of industrial robots in industry i country j over time frame τ
$g_{i,\tau}^{j}$	Growth rate of output of industry i in country j over time frame τ

Source: IFR, CBP, EU KLEMS (via Acemoglu and Restrepo 2018)

IV: Technology – Routine

Exposure to Routine Jobs

$$\widehat{ROUTINE}_i^{CZ} = \sum_j \frac{L_{ij,1950}}{L_{i,1950}} \times R_{j,1950}$$

$\sum_j \frac{L_{ij\tau}}{L_{it}}$ **Local industry-employment weights**

$R_{j,1950}$ **Routine occupation share among workers in industry j in 1950 in all US states except for the state that include the CZ i**

Alternatively used 1990 routine share, with similar

Source: Autor and Dorn (2013)

Next: Visual Results

Maps “Descriptive statistics”	IV, MFG, EDU
OLS “The relationship of interest”	MFG ➔ EDU
Reduced form “From cause to effect”	IV ➔ EDU (national trends, china, routine jobs, robots)
First stage “Causes of mfg. decline”	IV ➔ MFG (national trends, china, routine jobs, robots)
2SLS “Main result”	MFG ➔ EDU

Maps

OLS

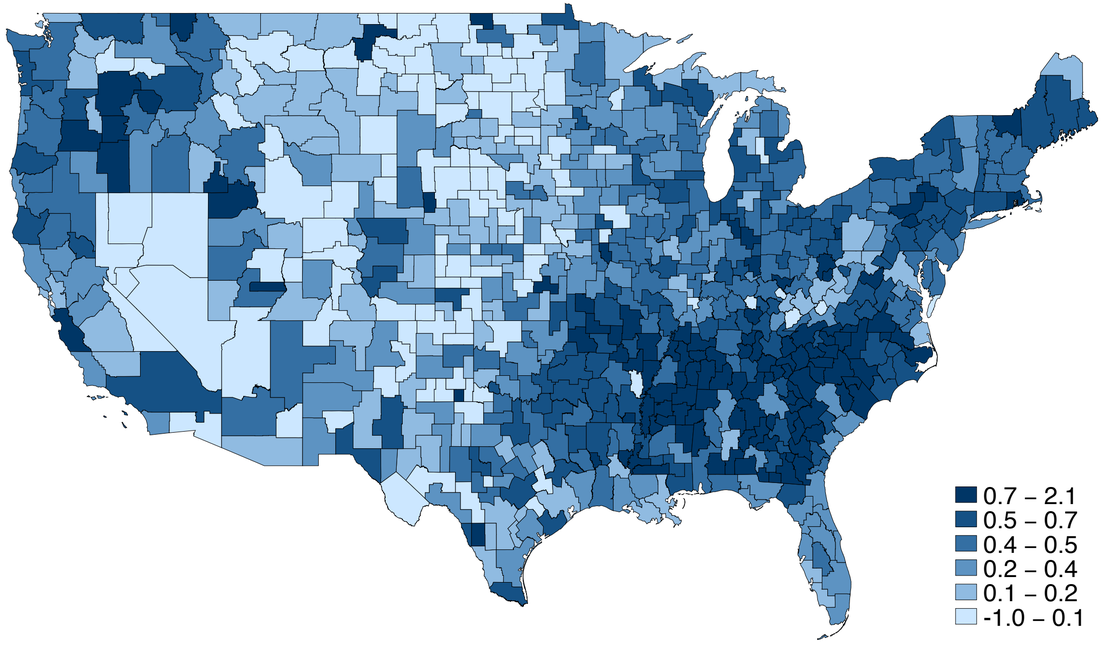
Reduced Form

First Stage

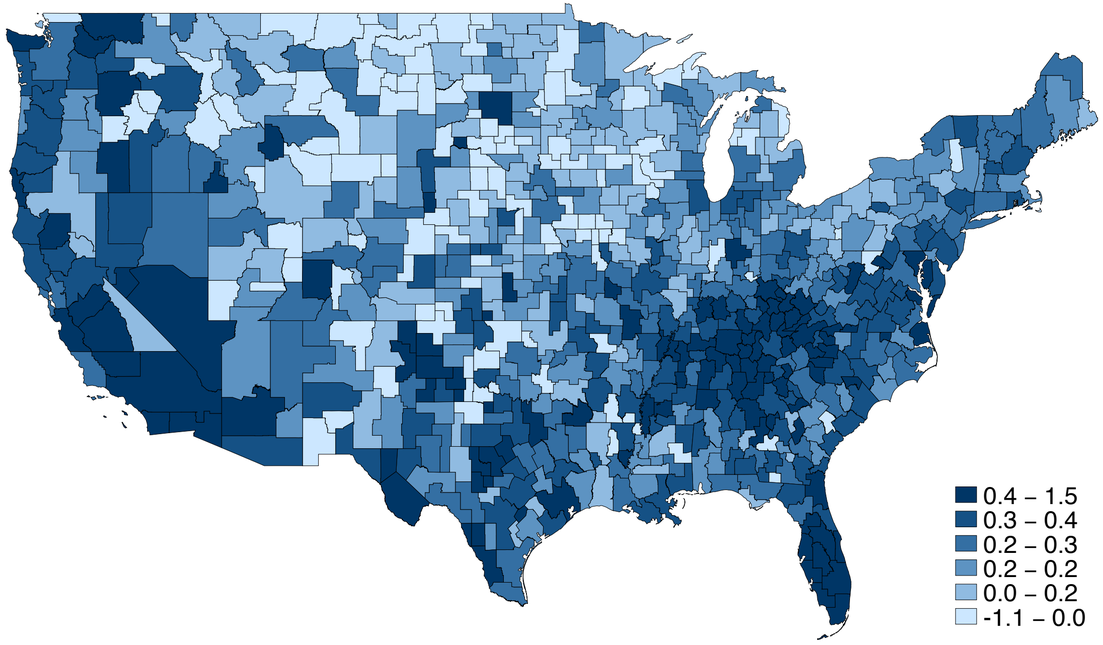
2SLS

Maps: MFG & HS-Dropout

Manufacturing employment (neg. chg.)



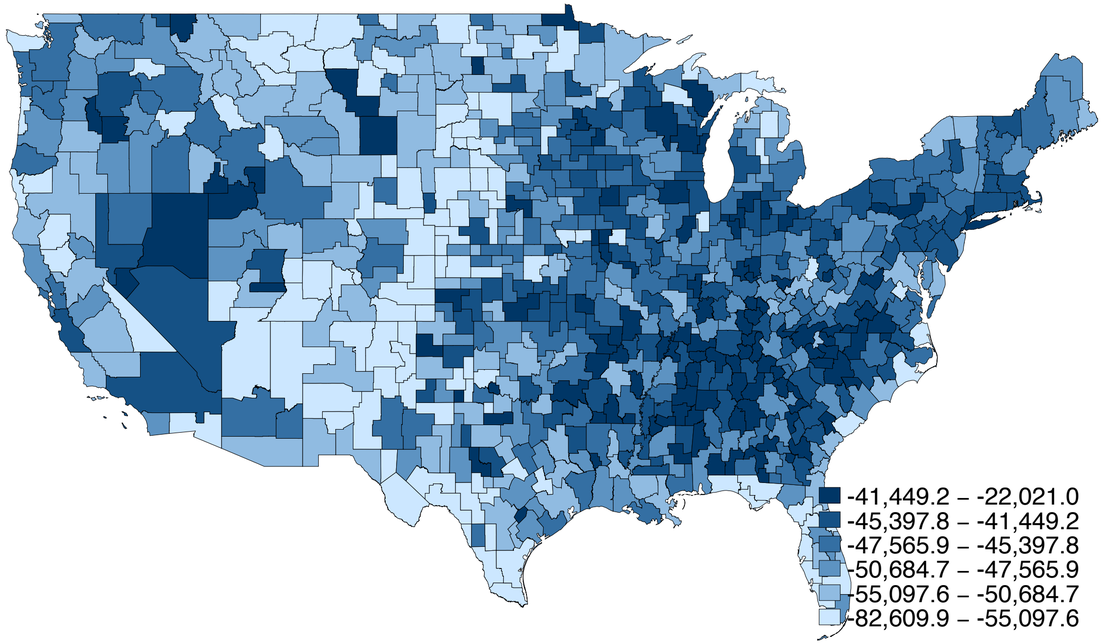
High-school dropout rate (neg. chg.)



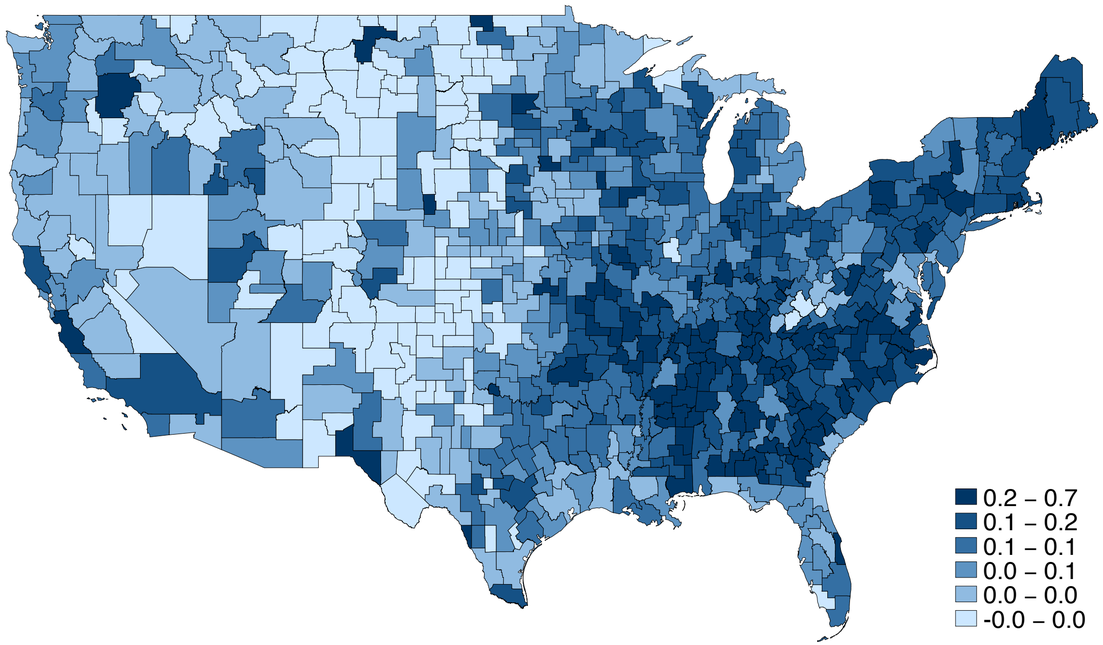
Notes: *Negative* annual percentage point changes 1991-2011. Darker colors refer to larger declines.
Sources: US Census/ACS, County Business Patterns.

Maps: IV (1)

Exposure to National Trends (pos. chg.)



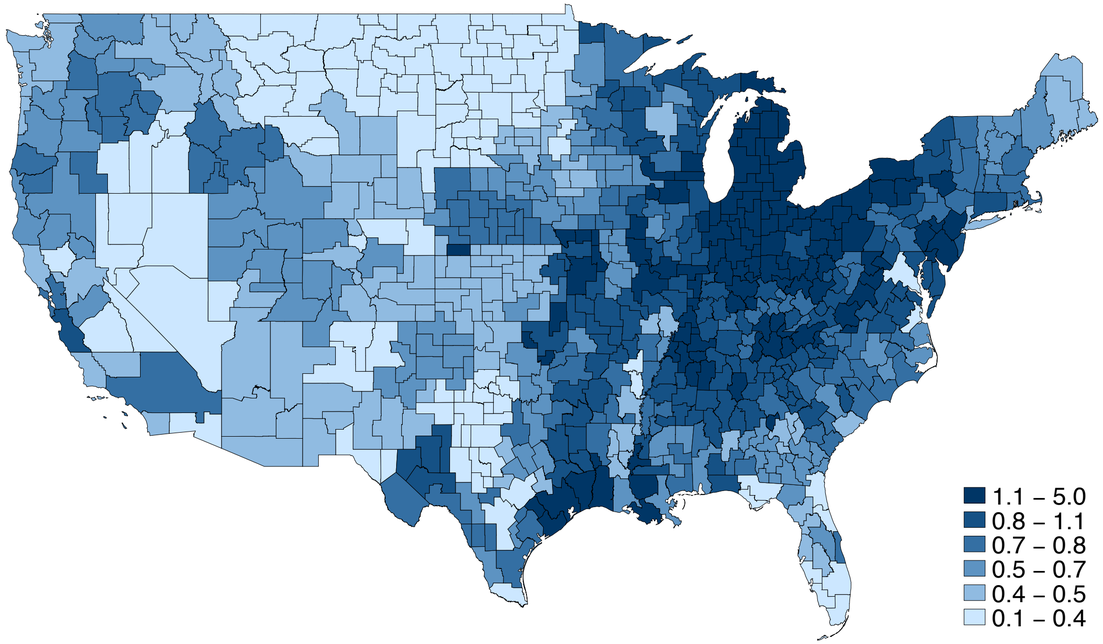
Exposure to China's Imports (pos. chg.)



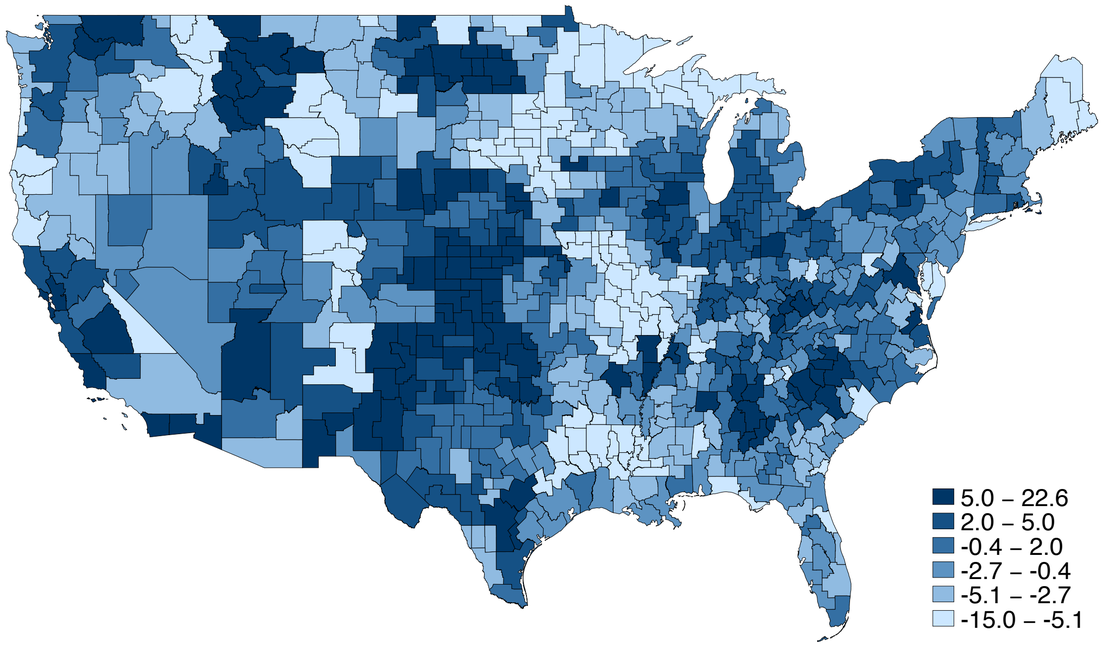
Notes: *Positive* annual percentage point changes 1991-2011. Darker colors refer to larger changes.
Sources: US Census/ACS, County Business Patterns, UN Comtrade

Maps: IV (2)

Exposure to Robots (pos. chg.)



Exposure to Routine Jobs (static)



Notes: *Robots,* annual percentage point changes 1991-2011. *Routine,* 1950 routine share of employment.
Sources: International Federation of Robotics, Autor & Dorn 2013.

Maps

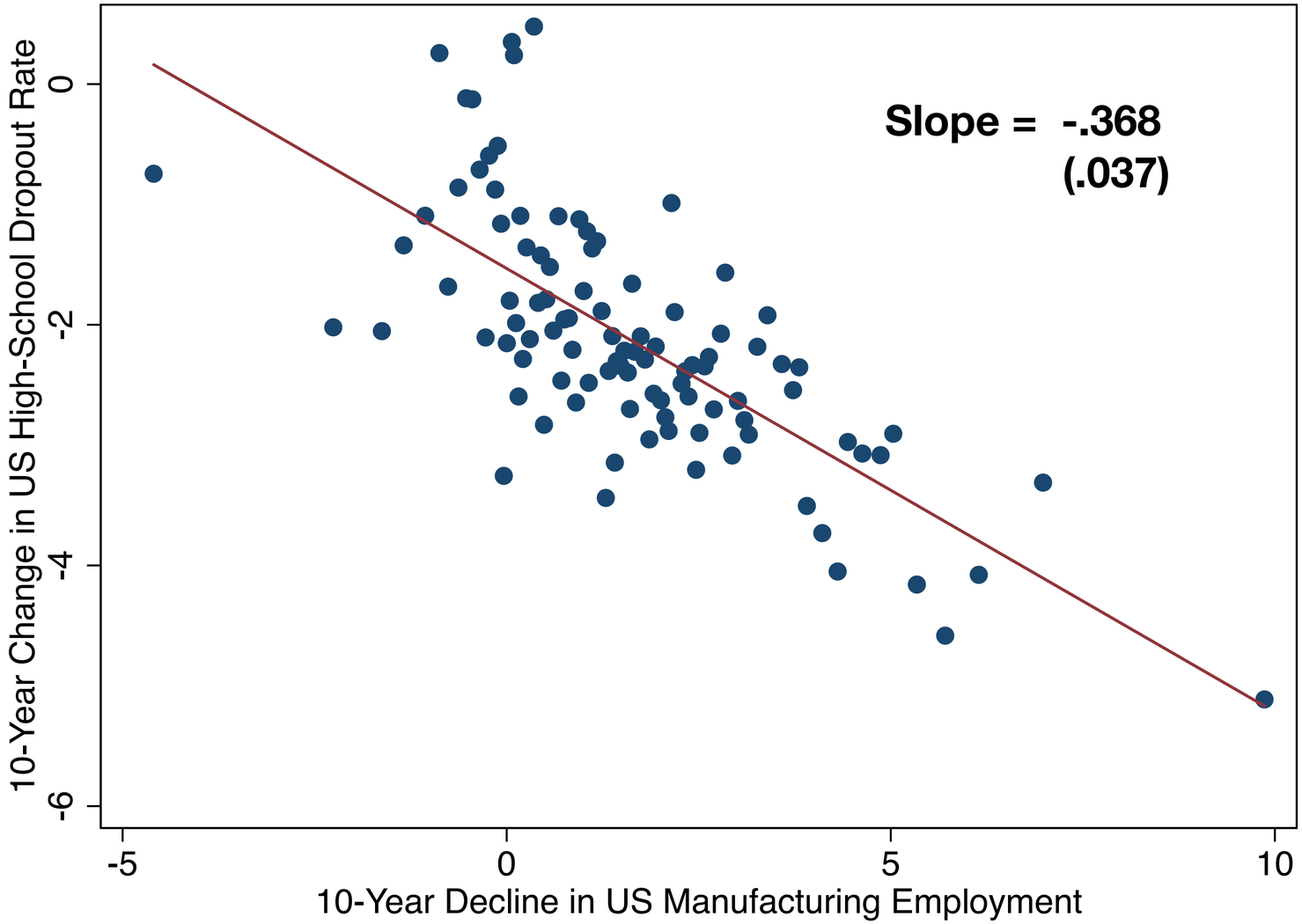
OLS

Reduced Form

First Stage

2SLS

OLS: MFG → HS-dropout



Maps

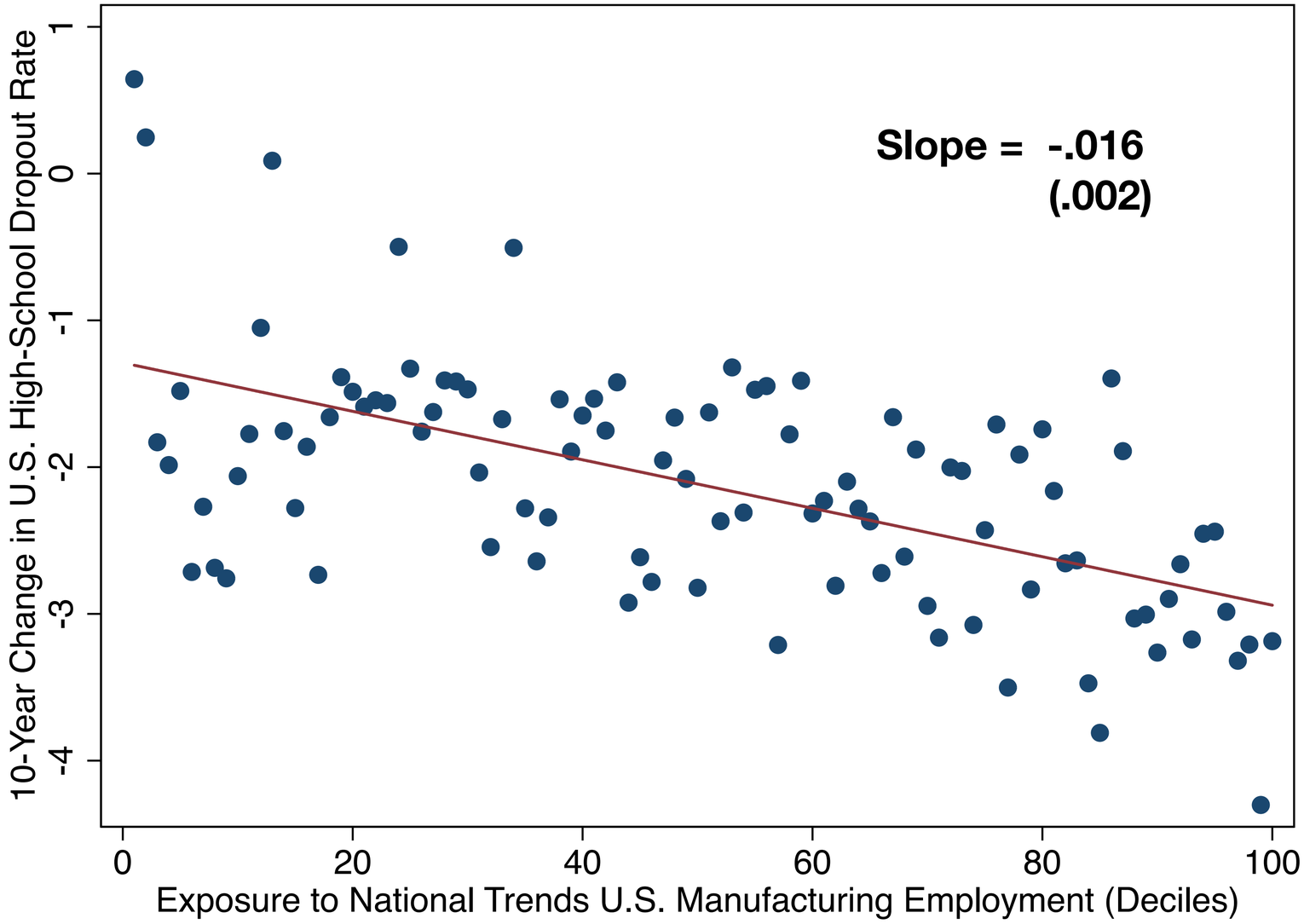
OLS

Reduced Form

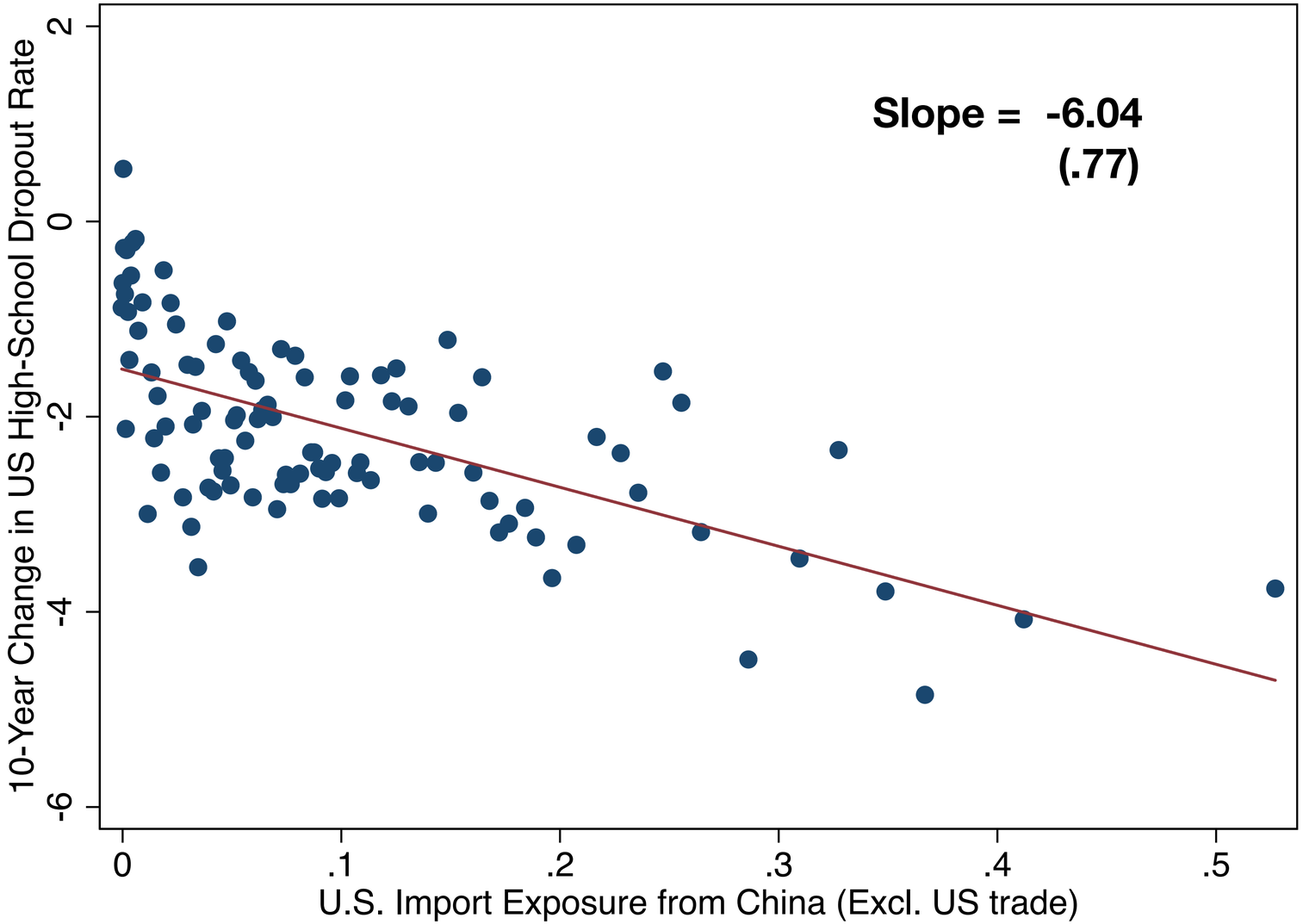
First Stage

2SLS

Reduced Form: National Trends → HS-dropout

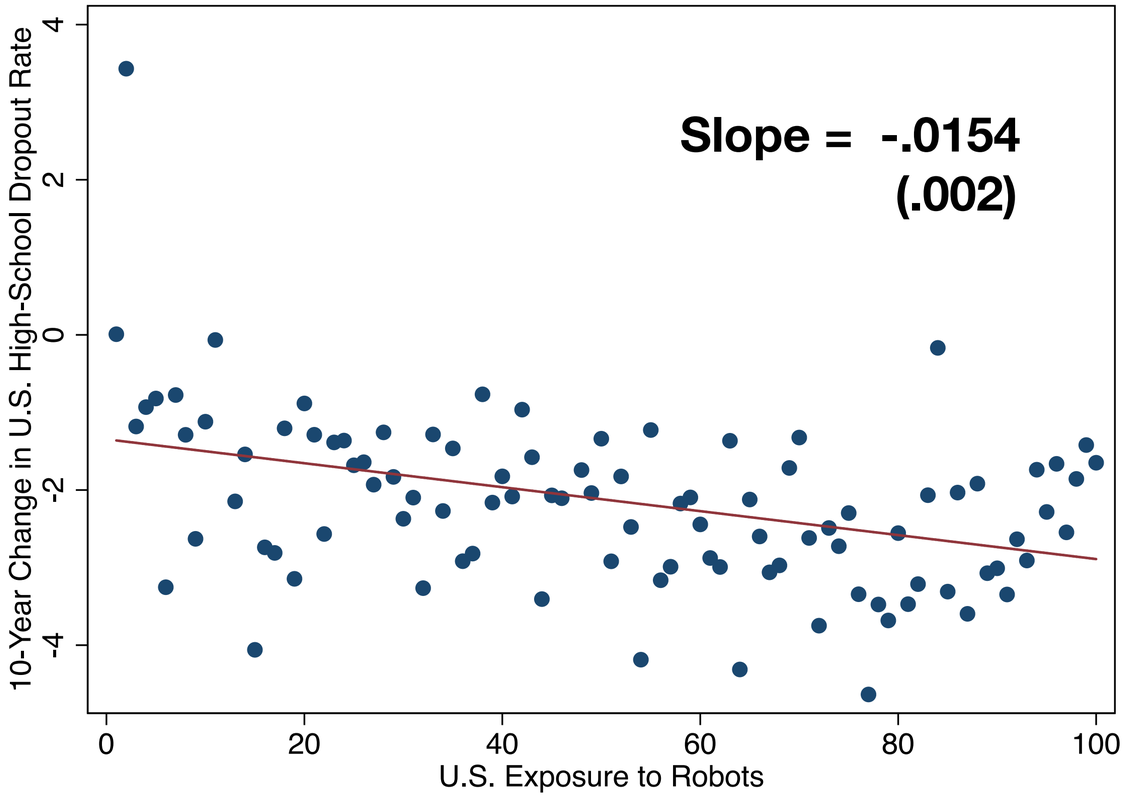


Reduced Form: China → HS-dropout

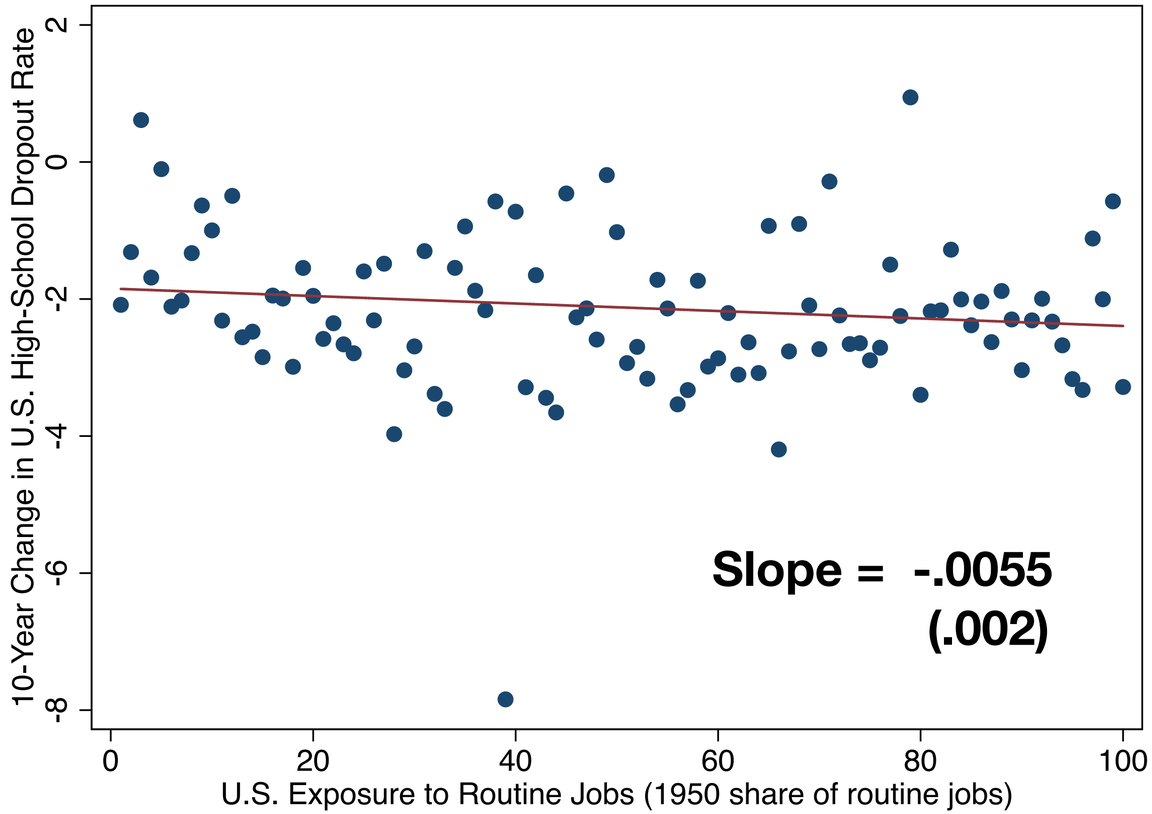


Reduced Form: Tech → HS-dropout

Robots



Routine



Maps

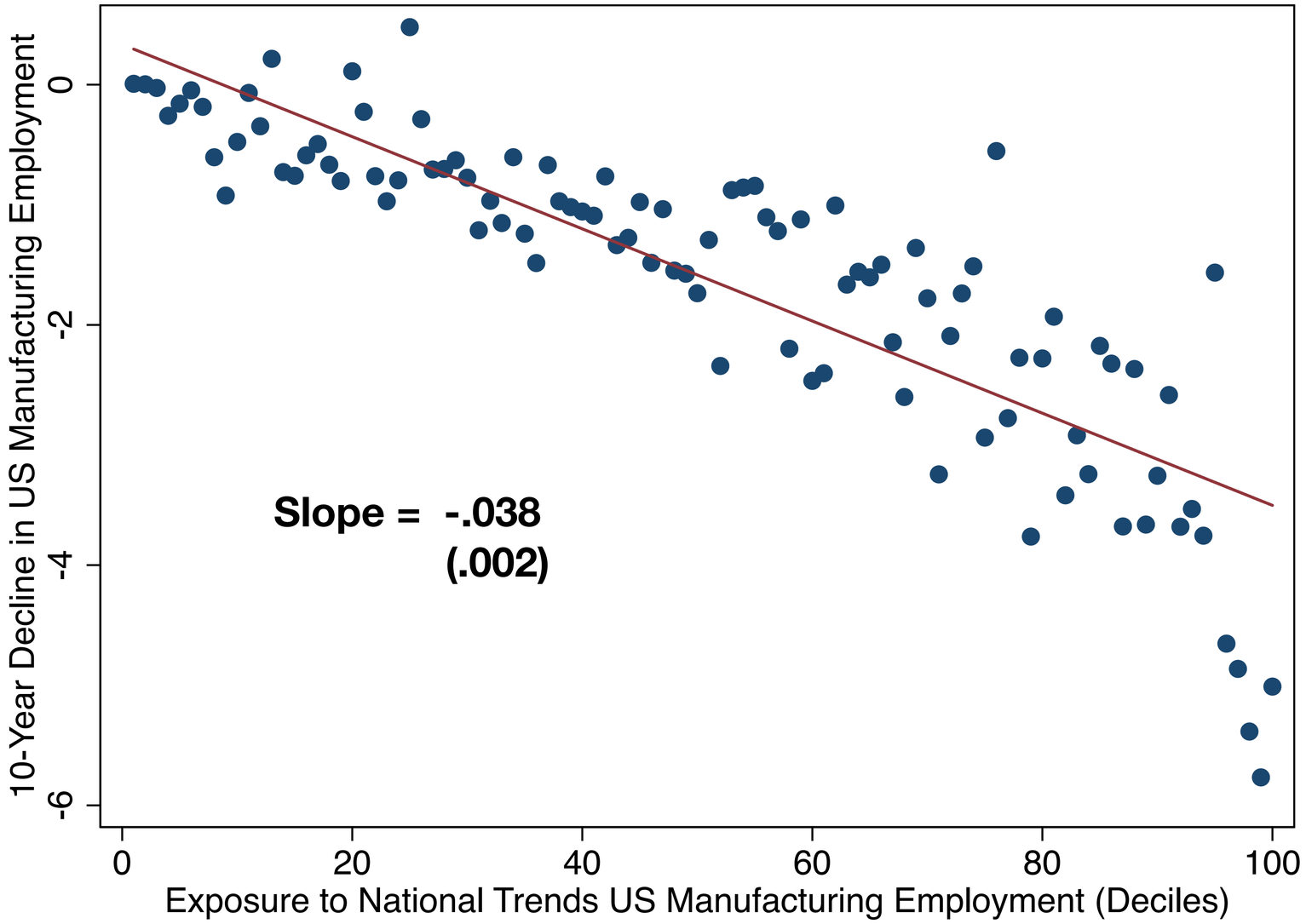
OLS

Reduced Form

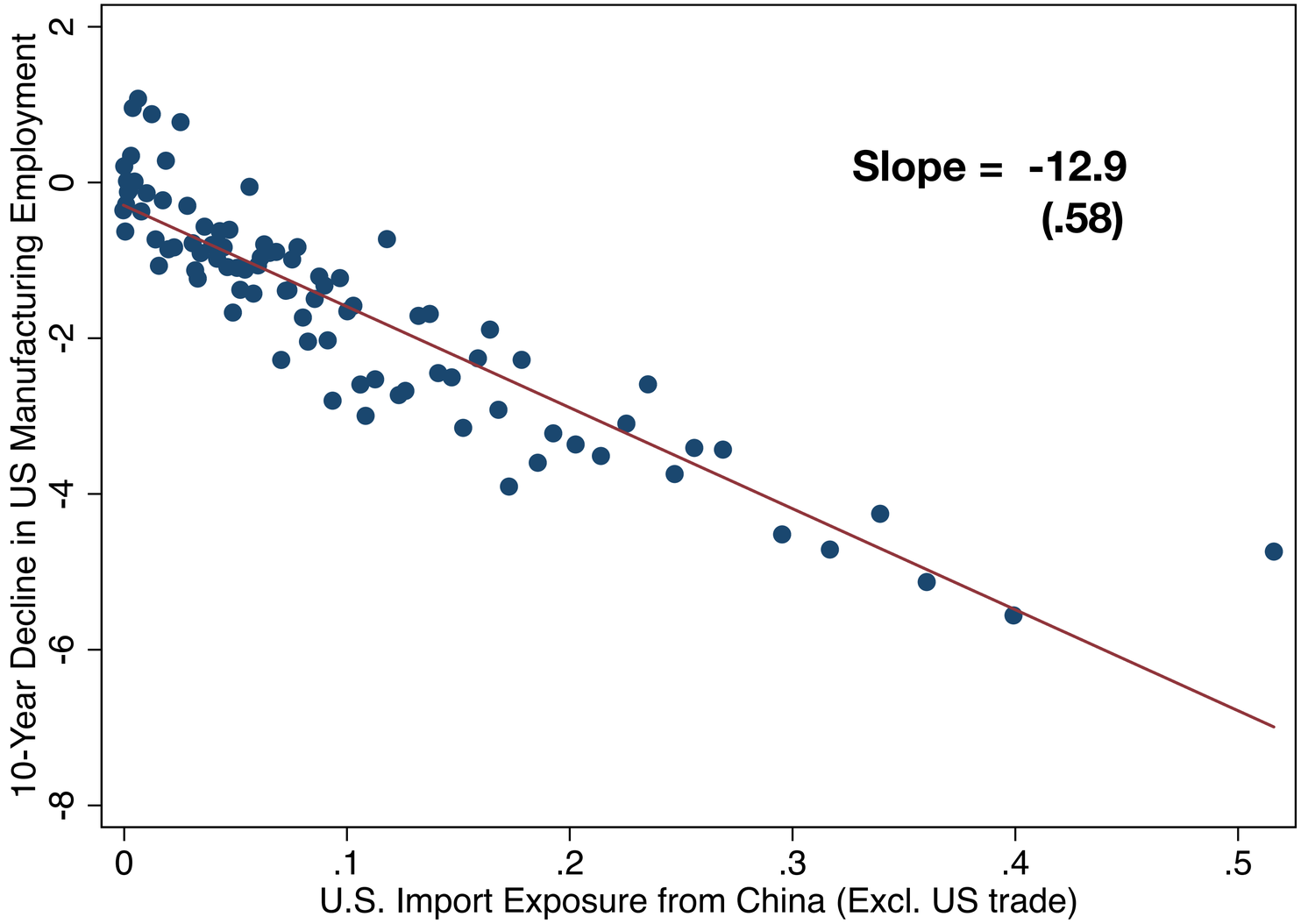
First Stage

2SLS

First Stage: National Trends → MFG

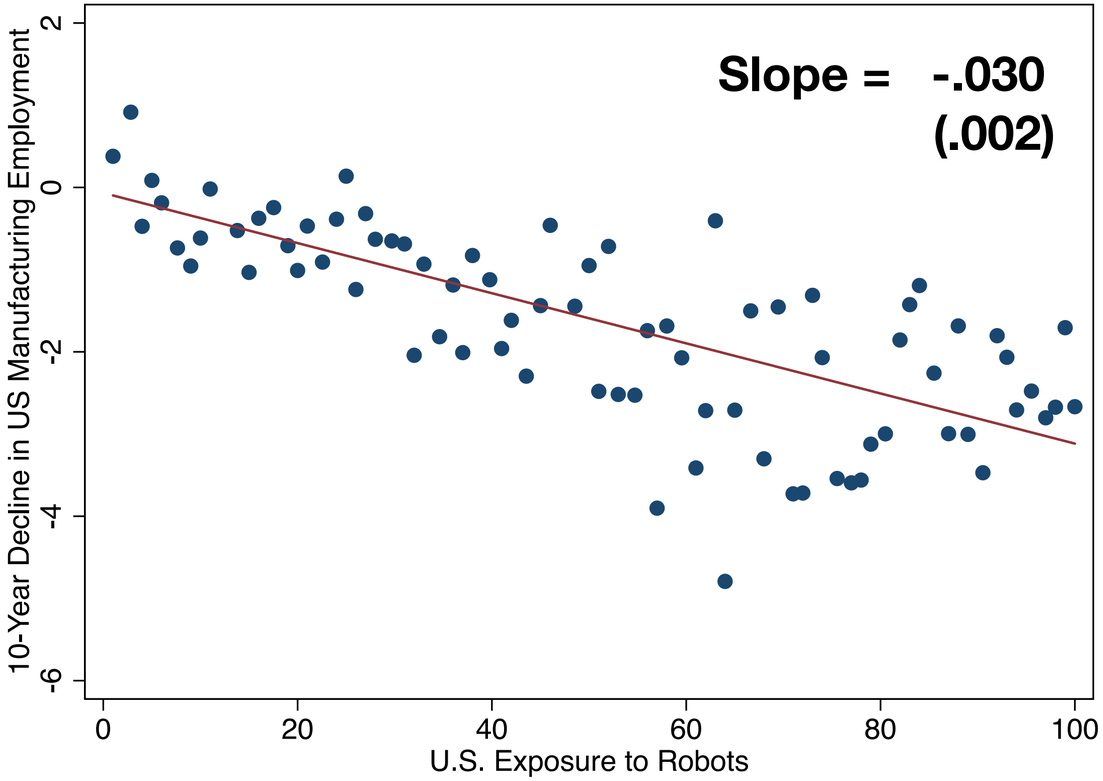


First Stage: China ➔ MFG

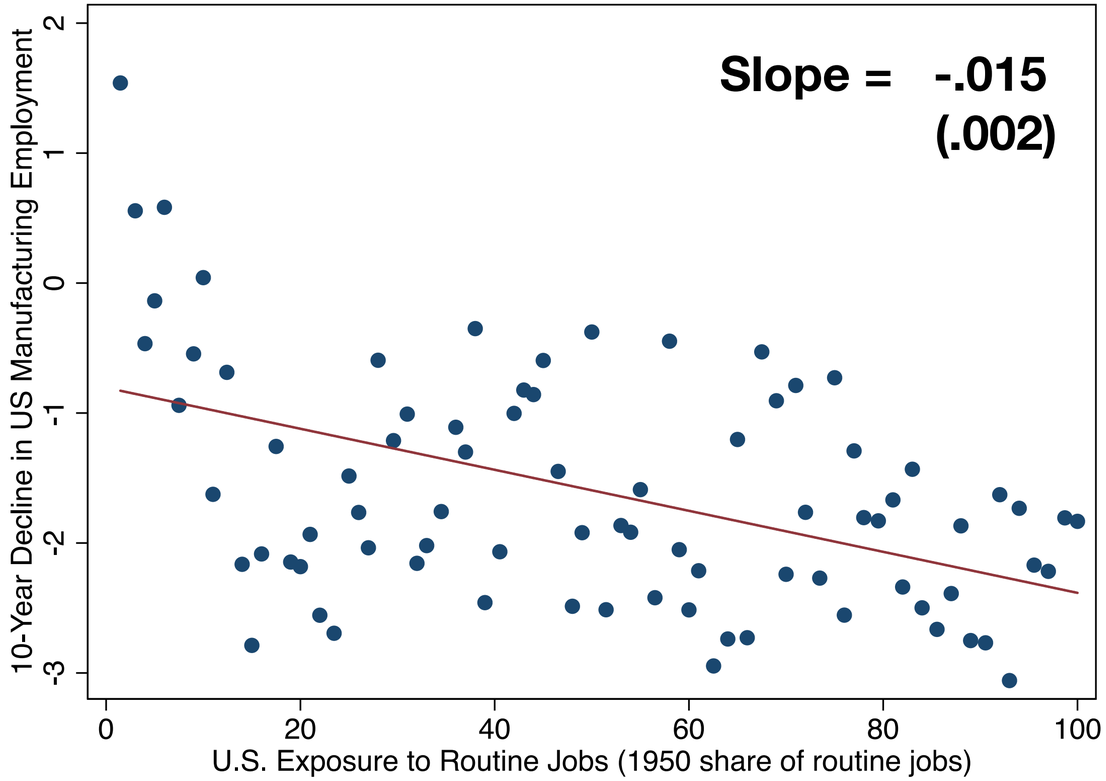


First Stage: Tech → MFG

Robots



Routine



Maps
OLS
Reduced Form
First Stage
2SLS

2SLS

Estimation

First Stage $$\Delta MFG_{i\tau}^{CZ} = \alpha_\tau + \beta \Delta IV_{i\tau}^{CZ} + \gamma X_{i0} + e_{i\tau}$$

Second Stage $$\Delta EDU_{i\tau}^{CZ} = \alpha_\tau + \beta \Delta MFG_{i\tau}^{CZ} + \gamma X_{i0} + e_{i\tau}$$

- Annualized stacked ten-year differences 1990–2010 in %-points
- SE:s clustered the treatment units, US Commuting Zones
- Baseline controls (for each difference)
  - Census regions (10 units)
  - Population & Employment-to-population ratio
  - Manufacturing-to-population ratio

2SLS: Main Result

High-School Dropout	**OLS**				**2SLS (China Shock)**			
	(1)	**(2)**	**(3)**	**(4)**	**(1)**	**(2)**	**(3)**	**(4)**
Manufacturing Decline	**-.233*** **	**-.228*** **	**-.113*** **	**-.098** **	**-.479*** **	**-.498*** **	**-.290*** **	**-.389** **
	(0.034)	(0.034)	(0.039)	(0.041)	(0.065)	(0.125)	(0.088)	(0.170)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Population &	–	Yes	Yes	Yes	–	Yes	Yes	Yes
Regions	–	–	Yes	Yes	–	–	Yes	Yes
Manufacturing Baseline	–	–	–	Yes	–	–	–	Yes
The First Stage					1.29***	1.26***	1.11***	.737***
SE					(0.076)	(0.073)	(0.073)	(0.084)
F-Statistic					314.3	224.9	75.6	94.3

Estimated in stacked 10-year first differences

Significance levels *** 1% ** 5% *

2SLS: Other IVs

High-School Dropout Rate	2SLS		First Stage F/R2	
	(1)	(2)	(1)	(2)
Manufacturing Decline				
IV: Exposure to China	**-.479*** **	**-.498*** **	314.3	224.9
	(0.065)	(0.125)	0.37	0.39
IV: Exposure to Robots	**-.302*** **	**-.287*** **	206.9	148.4
	(0.086)	(0.095)	0.24	0.26
IV: Exposure to Routine	**-.328*** **	**-.349*** **	206.8	144.0
	(0.122)	(0.112)	0.22	0.26
IV: Exposure to National Trends	**-.537*** **	**-.621*** **	232.3	156.3
	(0.166)	(0.193)	0.25	0.26
Time effects	Yes	Yes	Yes	Yes
Differential trends based on baseline demographics	–	Yes	–	Yes

Estimated in stacked 10-year first differences

Significance levels *** 1% ** 5% * 10%.

Robustness

Robustness

Pre-trends	Results robust to local pre-trend controls
Falsification	Changes in the main instrument do not predict past changes in the outcomes
Baseline level	Results robust to controlling for the baseline level of outcome and estimation in proportional (log) changes (also for baseline treatment)
Controls	Results hold for a varied set of baseline controls (differential trends)
Mobility	Estimate mobility responses: modest, imprecise and inconsistent Restrict sample to within-state stayers: no change in results Interact with local level of mobility: imprecise and insignificant
Reduced form	Results similar as reduced form (IV → Education)
Different IVs	Results similar for different sources of variations

Pre-trends

High-School Dropout Rate	2SLS (China Shock)		
	(1)	(2)	(3)
Manufacturing Decline	**-.479*** **	**-.451*** **	**-.395*** **
	(0.065)	(0.072)	(0.172)
Time effects	Yes	Yes	Yes
Population & Employment	–	–	Yes
Regions	–	–	Yes
Manufacturing Baseline	–	–	Yes
Pre-trend controls (70s, 80s)	–	Yes	Yes
The First Stage	1.29***	1.24***	.737***
SE	(0.076)	(0.078)	(0.083)
F-Statistic	314.3	174.8	82.5

Significance levels *** 1% ** 5% * 10%.

Falsification

Manufacturing Decline Treatment 2000–10	1980–90	1990–00	2000–10
	(1)	(2)	(3)
2SLS	**0.071**	**-0.087**	**-.235****
	(0.130)	(0.098)	(0.117)
OLS	**0.0375**	**0.059**	**-.157*****
	(0.064)	(0.046)	(0.052)

IV: China Shock

Controls: 10 Census Regions

Mobility

1. Restrict sample to within-state stayers: no change in results

2. Interact with local level of mobility: imprecise and insignificant

3. Estimate mobility responses: non-robust, imprecise and inconsistent
    - Inconsistency consistent with other studies (e.g. Autor et al. 2013)

Precautionary actions: Focus on high-school dropouts
Focus on college data incl. birth place from IRS

Part 3: Explanation & Empirical Details

Explanation
Empirical Details

Explanation

Possible explanations:

1. **Opportunity costs**: Not dropping out b/c no manufacturing or other jobs (time-consistent or inconsistent)
2. **Returns to education**: Long-term returns may be higher
3. **Income effects**: May work in negative direction (BA results)\
4. **Education production**: Schools + home/local environment
5. **Beliefs**: Change in beliefs about returns to education
6. **Preferences**: Change in time preferences
7. **Identity:** Change in identity and norms on education (Willis 1977)

Explanation

Empirical Details

Empirical Details

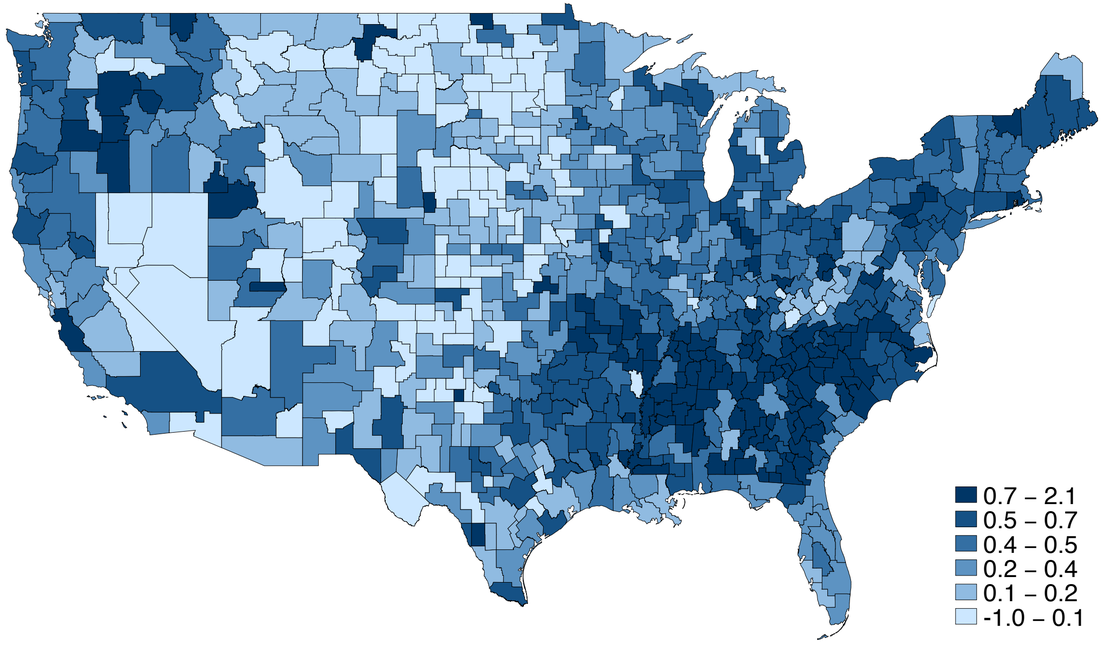
Four approaches to shed light on the mechanism:

1. **Detailed outcomes**: What types of education are changed?
2. **Individual characteristics:** Who or what kind of people are affected?
3. **Detailed treatment**: What kind of *treatment* affects the people?
4. **Local characteristics**: In what kind of *places* are the effects largest?

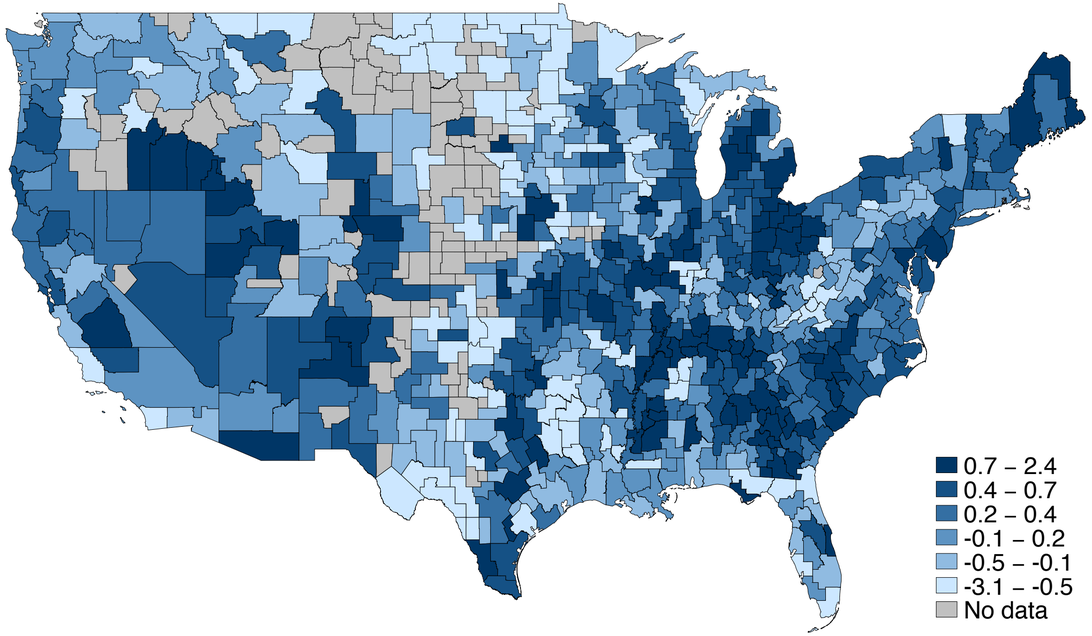
Coincidental changes: What other changes does manufacturing decline induce?

Detailed Outcomes: MFG & College

Manufacturing employment (neg. chg.)



College mobility (pos. chg.)



Notes: *Negative manufacturing and Positive college* annual percentage point changes 1991-2011.
Sources: US Census/ACS, County Business Patterns, IRS (via Equality of Opportunity Project).

College

Manufacturing Decline Effects	OLS	2SLS	
	(1)	(2)	(3)
College mobility (at 25 pct)	**.839*** **	**.866*** **	**.715*** **
	(.116)	(.187)	(.227)
Any college	**.072** **	**.087** **	**.026**
	(.029)	(.043)	(.055)
Assoc. degree	**.036**	**.302*** **	**.152***
	(.038)	(.060)	(.079)
BA degree	**.035**	**-.215*** **	**-.179** **
	(.031)	(.057)	(.078)
Time effects	Yes	Yes	Yes
Controls: Regions, Demographics	–	–	Yes

Estimated in stacked 10-vear differences

IV: China Shock

Men/Women

Manufacturing Decline Effects	2SLS			
	High-school dropout	Any College	Assoc. degree	BA degree
Men	**-.535***** (.057)	**.162**** (.063)	**.170***** (.070)	**-.008** (.075)
Women	**-.339***** (.058)	**.003** (.055)	**.426***** (.080)	**-.423***** (.078)

IV: China Shock
Estimated in stacked 10-year differences

White/Black + Men/Women

Manufacturing Decline on High-school dropout	2SLS		
	All	**Men**	**Women**
White	**-.414*** **	**-.472*** **	**-.340*** **
	(.048)	(.060)	(.061)
Black	**-.441***	**-.779** **	**.141**
	(.220)	(.302)	(.202)

IV: China Shock
Estimated in stacked 10-vear differences

Intergenerational: Parental Income

High-School Dropout	2SLS			
	Q1	Q2	Q3	Q4
Manufacturing Decline Effects	**-.827*** (0.121)	**-.496*** (0.082)	**-.379*** (0.058)	**-.268*** (0.052)

IV: China Shock
Estimated in stacked 10-year differences

Intergenerational: Manufacturing Families

Manufacturing Decline Effects	2SLS		
	All	**MFG**	**Not-MFG**
High-school dropout rate			
All	**-.446*** **	**-.404*** **	**-.138*** **
	(.049)	(.075)	(.052)
Men	**-.535*** **	**-.572*** **	**-.179** **
	(.057)	(.114)	(.072)
Women	**-.339*** **	**-.466*** **	**.018**
	(.058)	(.134)	(.064)

IV: China Shock
Estimated in stacked 10-year differences

Detailed Treatment: Age x Employment

Manufacturing Decline High-school Dropout Rate		2SLS		
		All	**MFG**	**not-MFG**
Age group	**16–34**	**-.410*****	**-.356*****	**-.118*****
		(.052)	(.066)	(.045)
	35-49	**-.499*****	**-.425*****	**-.144*****
		(.066)	(.080)	(.055)
	50-64	**-.733*****	**-.626*****	**-.211*****
		(.101)	(.120)	(.080)

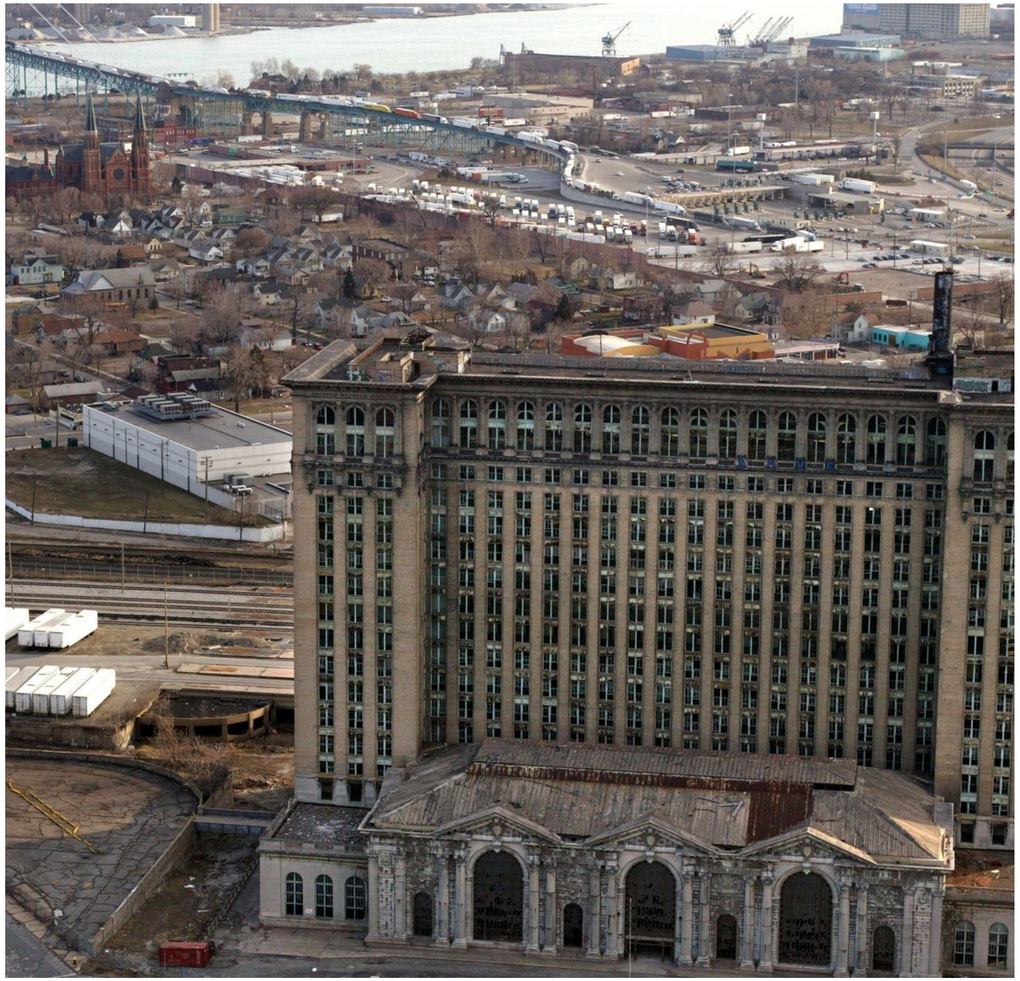
IV: China Shock

Estimated in stacked 10-year differences

Local Characteristics

Rural vs. Urban

Janesville, WI



Detroit, MI

Rural vs. Urban

	2SLS	
	High-school dropout	**College mobility**
Manufacturing Decline (main effect)	**-.397***** (.074)	**.730***** (.191)
Interaction: Manufacturing x rural	**-.114** (.092)	**-.115** (.347)
Rural (main effect)	**-.0004**** (.0002)	**.0017** (.0012)

IV: China Shock

Estimated in stacked 10-year differences

Local: Segregation

High-school Dropout Rate

	2SLS	
Interaction term	**Treatment**	**Interaction**
Segregation and Race		
Fraction Black	-0.213* (0.112)	-0.820** (0.363)
Income Segregation	-0.311** (0.131)	-2.239* (1.177)
Segregation of Affluence (>p75)	-0.308** (0.131)	-2.154** (1.063)
Fraction with Commute < 15 Mins	-0.596*** (0.143)	0.851*** (0.243)

Why Segregation?

Possible explanations:

1. Treatment intensity: Information effects larger for the right group
2. Identity: Segregated places higher working-class identity (Willis 1977)
3. Access to educational or other resources (next picture)

Why Segregation?

Local: Education (no effect)

High-school Dropout Rate

	2SLS	
Interaction term	**Treatment effect**	**Interaction**
K-12 Education		
School Expenditure per Student	-0.465** (0.200)	0.021 (0.034)
Student Teacher Ratio	-0.053 (0.251)	-0.021 (0.015)
Test Score Percentile (Income	-0.300*** (0.110)	-0.002 (0.004)
College		
Number of Colleges per Capita	-0.577*** (0.156)	5.757*** (1.823)
College Tuition	-0.458*** (0.164)	-0.000 (0.000)
College Graduation Rate	-0.483*** (0.161)	-0.000 (0.000)

Local: Social measures (no effect)

High-school Dropout Rate

	2SLS	
Interaction term	**Main effect**	**Interaction**
Social Capital		
Social Capital Index	-0.362*** (0.126)	0.038 (0.029)
Fraction Religious	-0.427** (0.167)	0.107 (0.292)
Violent Crime Rate	-0.317** (0.139)	-42.456 (36.070)
Local Labor Market		
Teenage (14-16) Labor Force	-0.475*** (0.162)	39.034* (23.495)

Local Income Effects? – High School

High-school Dropout Rate

	2SLS	
Interaction term	**Treatment effect**	**Interaction**
Income distribution		
Household Income per Capita	-0.190 (0.242)	-0.000 (0.000)
Gini coefficient	-0.281 (0.192)	-0.214 (0.331)
Fraction Middle Class (between p25 and p75)	-0.573** (0.280)	0.472 (0.427)
Fraction Single mothers	-0.518** (0.226)	0.209 (1.112)

Local Income Effects? – College BA

College: BA degree rate (exploring negative effects on BA graduation)

	2SLS	
Interaction term	**Treatment effect**	**Interaction**
Income distribution		
Household Income per Capita	-0.599** (0.306)	< 0.00 (0.00)
Gini coefficient	0.774*** (0.217)	-2.546*** (0.503)
Fraction Middle Class (between p25 and p75)	-1.714*** (0.319)	2.635*** (0.563)
Fraction Single mothers	0.217 (.164)	-2.177*** (0.738)

The Big Picture

Long-term effects (“Future of Work”)

- May not be doomed, after all

Regional divergence (“Left-behind places”)

- Permanent decline after a shock (as in Dix-Carneiro and Kovak)
- Intergenerational factors could be a reason: This project suggests not

Political economy (“Winners and losers”)

- Who are the winners and losers from the disappearance of factory jobs?
- Before vs. after human capital investment, views on trade policy & technology

Summary

The Children Project

Research question

What is the impact of manufacturing decline on children?

Focus: Educational attainment (high-school, college)

Motivation

Manufacturing decline a defining economic trend of last 50 years

Long-term effects—Future of Work—depend on next generation

Open question: How will the next generation adapt?

New result

Disappearing factory jobs → more education

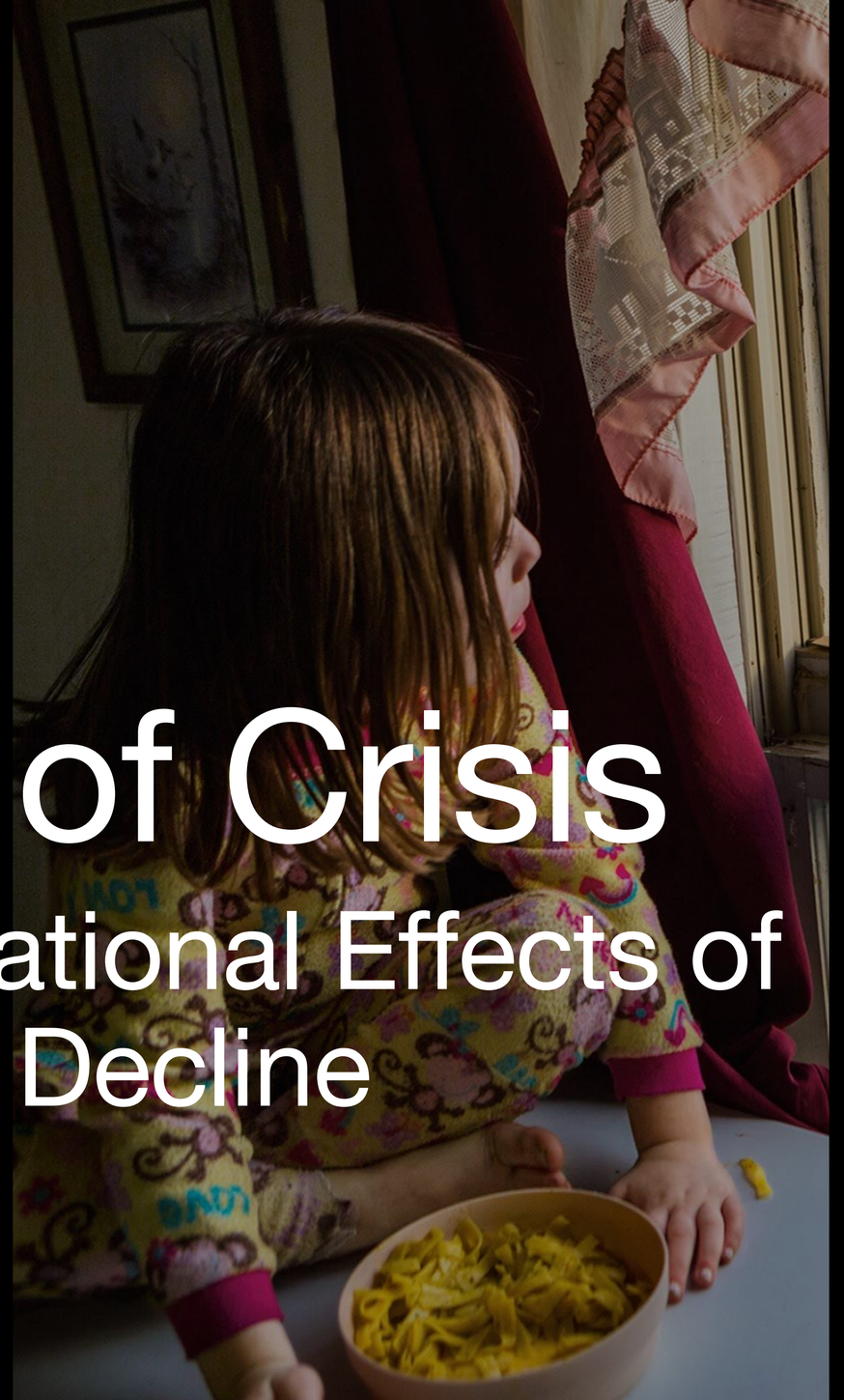
- High-school drop-out rate ↓ college attendance ↑
- Effects from children with parents working in manufacturing, stronger for poor children, and in residentially segregated places
- Potentially negative effects on 4-year degrees, correlated with income

Empirical setup

Empirics: US county-level panel 1991–2011

Identification: IV:s for technology and trade

Children of Crisis:
The Intergenerational Effects of Manufacturing Decline



Children of Crisis

The Intergenerational Effects of Manufacturing Decline

Joonas Tuhkuri