

Industry specialization, social capital, & income inequality in US counties, 2010–2020

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IDEA

We will share some initial thoughts about an exploratory research project examining the intricate relationships between inequality, innovative industry clusters, and social capital. We are eager to hear your thoughts about related literatures, data that we might integrate, and methodological approaches that we might use to generate an understanding of these relationships.

Although frequently forwarded as an economic development strategy to promote job growth, innovative industry clustering may also exacerbate regional inequalities. Skilled workers in industries related to the cluster may experience wage increases and improved job prospects, while even skilled workers in declining industries may face job displacement and wage stagnation, contributing to overall economic inequality in the region. The growth of innovative industry clusters can drive up housing costs, making it difficult for lower-income individuals to afford to live in those regions, with implications for wealth inequality. Certainly, this is the underside of the story of the growth of Silicon Valley.

Yet there are other examples of communities that have been able to promote more inclusive economic development. The formation of innovative clusters often relies on strong social networks and collaboration between businesses, research institutions, local governments, and other stakeholders. The strength of these social connections is part of the social capital in the region and can potentially lead to more inclusive growth. In many cases, such connections are brokered by nonprofit organizations that connect community members and business elites. The various organizations that enhance entrepreneurial ecosystem formation may be able to guide more inclusive economic development and alleviate social inequality.

Research questions: We would like to explore the interconnectedness of economic inequality, the emergence of innovative industry clusters, and the role of social capital in fostering sustainable growth. While each of these elements has been studied individually, little research appears to address the potential connections. We see the following as our initial primary objectives:

1. Map and explore the link between economic inequality and innovative industry clusters at the U.S. county level from 2010 to 2020.
2. Explore which industry clusters are associated with higher (and growing) levels of economic inequality over time.
3. Examine whether certain types of industry clusters exacerbate or mitigate economic inequality.
4. Assess the impact of social capital on the emergence of industrial concentrations, and whether this association moderates the association with income inequality.
5. Provide evidence-based insights into interventions that can harness the positive aspects of innovative industry clusters while addressing potential negative consequences, especially concerning inequality.
6. In reverse causal direction: Investigate how economic inequality influences the formation and growth of innovative industry clusters.

Methodology: The research will employ a mixed-methods approach, combining quantitative analyses of economic and demographic data with qualitative case studies of selected industry clusters. This interdisciplinary methodology will allow for a nuanced understanding of the complex interactions at play.

Data: For initial analyses, we draw on income inequality data from the American Community Survey (2010–2020) and industry specialization in County Business Patterns from the U.S. Census Bureau (2000–2020). These data allow us to measure industry specialization through a county’s location quotient and entropy measures of industries (by employment and establishments in NAICS codes). We will also integrate county-level data on the presence of different types of nonprofit organizations from the National Center for Charitable Statistics and the social connectedness from the Social Capital Atlas. We will also explore further data sources to measure additional aspects of our research question (e.g., measuring innovativeness of the industry specialization, founding rates, wealth inequality, etc.) and the mechanisms undergirding their relationship (e.g., networks among businesses and nonprofits).

Preliminary analysis for discussion: In the following section, we offer some very preliminary analyses about the descriptive association between the Gini coefficient of income (high value indicating greater concentration of income among fewer people) and multiple measures of industry association, as well as how this association is moderated by social capital.

EXPLORATORY ANALYSIS

Question:

How are organizational demography and industry composition associated with the Gini of income? Does this association depend on the county's social capital?

Variables:

- Gini coefficient (x100) from ACS in 2010, 2015, and 2020
- **Location quotients** (LQ = county employment in NAICS/county emp) / (national emp in NAICS/national emp) indicative of industry concentration relative to national level
 - Max LQ of any NAICS category (to indicate extreme specialization), top-coded at 99th p-tile
 - LQ for NAICS 3111 (animal food manufacturing) as a potential case study
- Herfindahl-Hirshman Index (HHI) of industry concentration [1: more concentrated]
 - HHI by employment in county
 - HHI by establishments in county
- Other features of county's organizational community:
 - Number of nonprofits by NTEE sub-sector from National Center for Charitable Statistics (logged) [demeaned to avoid multicollinearity]
 - Number of establishments by NAICS from County Business Patterns (logged)
 - County population from ACS (logged)
- Social capital ("clustering") from Social Capital Atlas (Chetty et al. 2022 in *Nature*)

Preliminary tables reported below:

- Tables 1a–1d: Association between industry concentration (HHIs and LQs) and Gini coefficient, with random effects
- Table 2: Predictors of change in Gini coefficient from 2010–2020, with fixed effects
- Figure 1: Mapping industry concentration and Gini coefficients of income in US. Counties
- Figure 2: Association between average Gini coefficient and industry concentration
- Figure 3: Association between change in Gini coefficient and industry concentration (by CBSA for ease of interpretation)

Preliminary findings:

- These models suggest a weak association between different measures of industry concentration and Gini coefficient. There is some suggest evidence that greater industry concentration is associated with lower Gini coefficients.
- This tendency is in contrast to established work that has hypothesized and shown a positive effect of a diverse organizational demography and income inequality in non-US contexts such as Denmark (Sorensen and Sorenson 2007).
- Furthermore, the associations in Table 2 suggest that higher social capital softens the association between industry concentration and *the Gini of income*. We were curious in

such an association because prior work has shown the positive effect of cohesive social networks on local development (e.g., Safford 2009).

- The volatile associations between concentrations of employment in particular NAICS codes (Table 3) suggest that it is not so much a question of *whether* industry concentration lowers income inequality, but *when* this is the case. This may depend on the concentration in question—some industries are associated with less of an increase, or even a modest decline, in income inequality.
- Although the statistical significance of these effects is close to or below a conventional cut-off, the fact that we are examining the population of counties makes these a secondary concern. As we explore these associations further, we would benefit from ideas for potential mechanisms and patterns of interest.

REFERENCES

- Sorensen, Jesper B., and Olav Sorenson. 2007. “Corporate Demography and Income Inequality.” *American Sociological Review* 72(5):766–83. doi: [10.1177/000312240707200506](https://doi.org/10.1177/000312240707200506).
- Safford, Sean. 2009. *Why the Garden Club Couldn't Save Youngstown: The Transformation of the Rust Belt*. Harvard University Press.

TABLES AND FIGURES

Table 1a. Industry diversity (HHI of establishments by NAICS category) predicting Gini coefficient, county RE and clustered SE, year & state FE (2010, 2015, 2020)

	(1)	(2)	(3)	(4)	(5)
	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>
NAICS diversity (HHI by # est)	-.089 (.048)	-.103* (.052)	-.040 (.052)	-.079 (.045)	-.001 (.043)
Population (log)	.355*** (.068)				1.372*** (.082)
Civic capacity		1.318*** (.115)			1.111*** (.099)
Business establishments (log)			.440*** (.067)		
Clustering (social capital)				.457*** (.065)	.452*** (.081)
Median income (logged)					-1.579*** (.076)
Constant	45.472*** (.330)	45.562*** (.328)	45.519*** (.331)	45.271*** (.290)	43.962*** (.245)
Observations	9383	9302	9383	9249	9169
<i>df</i>	54	53	54	54	56

Note: Standard errors in parentheses; * p<.05, ** p<.01, *** p<.001. Number of establishments excluded from full models because it is multicollinear with population.

Table 1b. Industry diversity (HHI of employment by NAICS category) predicting Gini coefficient, county RE and clustered SE, year & state FE (2010, 2015, 2020)

	(1) <i>Gini of income</i>	(2) <i>Gini of income</i>	(3) <i>Gini of income</i>	(4) <i>Gini of income</i>	(5) <i>Gini of income</i>
NAICS diversity (HHI by # emp)	.020 (.065)	-.024 (.059)	.054 (.066)	-.146* (.062)	.150* (.064)
Population (log)	.409*** (.075)				1.461*** (.087)
Civic capacity		1.322*** (.115)			1.131*** (.099)
Business establishments (log)			.499*** (.073)		
Clustering (social capital)				.480*** (.066)	.469*** (.080)
Median income (logged)					-1.576*** (.075)
Constant	45.486*** (.331)	45.590*** (.327)	45.526*** (.332)	45.275*** (.290)	43.938*** (.244)
Observations	9383	9302	9383	9249	9169
<i>df</i>	54	53	54	54	56

Note: Standard errors in parentheses; * p<.05, ** p<.01, *** p<.001. Number of establishments excluded from full models because it is multicollinear with population.

Table 1c. Vet LQ predicting Gini coefficient, county RE and clustered SE, year & state FE (2010, 2015, 2020)

	(1) <i>Gini of income</i>	(2) <i>Gini of income</i>	(3) <i>Gini of income</i>	(4) <i>Gini of income</i>	(5) <i>Gini of income</i>
Vet location quotient	.073 (.104)	.066 (.106)	.080 (.104)	.067 (.106)	.062 (.108)
Population (log)	.859*** (.113)				1.959*** (.147)
Civic capacity		1.870*** (.241)			1.440*** (.240)
Business establishments (log)			1.029*** (.111)		
Clustering (social capital)				-.180 (.131)	.724*** (.151)
Median income (logged)					-1.473*** (.140)
Constant	45.584*** (.531)	45.776*** (.526)	45.589*** (.547)	46.031*** (.495)	43.785*** (.448)
Observations	2152	2149	2152	2151	2148
<i>df</i>	52	51	52	52	54

Note: Standard errors in parentheses; * p<.05, ** p<.01, *** p<.001. Number of establishments excluded from full models because it is multicollinear with population.

Table 1d. Max LQ predicting Gini coefficient, county RE and clustered SE, year & state FE

	(1)	(2)	(3)	(4)	(5)
	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>
Max location quotient	-.017 (.050)	-.044 (.050)	-.004 (.050)	-.078 (.049)	.006 (.048)
Population (log)	.393*** (.070)				1.374*** (.080)
Civic capacity		1.323*** (.115)			1.112*** (.099)
Business establishments (log)			.474*** (.066)		
Clustering (social capital)				.454*** (.065)	.452*** (.081)
Median income (logged)					-1.579*** (.076)
Constant	45.494*** (.332)	45.603*** (.328)	45.529*** (.332)	45.316*** (.291)	43.961*** (.245)
Observations	9383	9302	9383	9249	9169
<i>df</i>	54	53	54	54	56

Note: Standard errors in parentheses; * p<.05, ** p<.01, *** p<.001.

Table 2. Predictors of change in Gini coefficient, with county FE

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>	<i>Gini of income</i>
NAICS diversity (HHI by # est)	-.104* (.049)	-.083 (.051)				
NAICS diversity (HHI by # est) # Clustering (social capital)		.067* (.034)				
NAICS diversity (HHI by # emp)			-.021 (.080)	-.038 (.090)		
NAICS diversity (HHI by # emp) # Clustering (social capital)				.058 (.059)		
Max location quotient					.032 (.067)	.052 (.068)
Max location quotient # Clustering (social capital)						-.031 (.076)
year=2015	1.125*** (.051)	1.114*** (.050)	1.116*** (.053)	1.108*** (.051)	1.123*** (.051)	1.112*** (.050)
year=2020	1.422*** (.060)	1.389*** (.057)	1.342*** (.060)	1.349*** (.057)	1.348*** (.059)	1.352*** (.057)
Constant	43.136*** (.031)	43.140*** (.030)	43.153*** (.032)	43.143*** (.033)	43.150*** (.031)	43.164*** (.034)
Observations	9386	9249	9386	9249	9386	9249
<i>R</i> ²	.10	.10	.10	.10	.10	.10
<i>AIC</i>	37503.46	36505.47	37526.53	36520.01	37526.04	36520.91
<i>df</i>	2	3	2	3	2	3

Standard errors in parentheses; * p<.05, ** p<.01, *** p<.001

Table 3. Association between Gini coefficient (10-year trend) and NAICS with max LQ, sorted by magnitude of coefficient

	(1)	(2)
<i>Controls</i>	Gini	Δ Gini
Clustering (social capital)	.385*** (.079)	-.033 (.137)
Population (log)	1.297*** (.088)	-.005 (.139)
Civic capacity	.900*** (.098)	-.243 (.168)
Median income (logged)	-1.714*** (.077)	-.218* (.109)
<i>State FE</i>	<i>Yes</i>	<i>Yes</i>
<i>NAICS categories with max LQ in a county</i>		
Securities and Commodity Exchanges	10.287**	-3.978**
Other Information Services	8.854***	-4.019**
Personal and Household Goods Repair and Maintenance	8.736***	-3.010*
Other Amusement and Recreation Industries	8.693***	-5.049*
Electronic Shopping and Mail-Order Houses	8.538*	-6.606***
Other Financial Investment Activities	8.098***	-3.833**
Other Miscellaneous Store Retailers	7.768***	-8.019***
Educational Support Services	7.750***	-2.920*
Nondepository Credit Intermediation	7.702**	-5.448**
Promoters of Performing Arts, Sports, and Similar Events	7.675***	-3.447**
Sporting Goods, Hobby, and Musical Instrument Stores	7.663***	-5.825***
Scenic and Sightseeing Transportation, Water	6.956***	-3.327*
Psychiatric and Substance Abuse Hospitals	6.944***	-3.566*
Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	6.759***	-4.918**
Outpatient Care Centers	6.682***	-4.353
Management, Scientific, and Technical Consulting Services	6.564***	-4.282***
Special Food Services	6.539**	-0.544
Rooming and Boarding Houses	6.417***	-4.675***
Scheduled Air Transportation	6.359***	-3.849**
Residential Building Construction	6.285***	-3.663
Apparel Accessories and Other Apparel Manufacturing	5.886**	-4.720***
Depository Credit Intermediation	5.782***	-0.581
Computer and Peripheral Equipment Manufacturing	5.692***	-4.636***
Insurance Carriers	5.529***	-0.342
Monetary Authorities-Central Bank	5.446***	-4.614***
Book Stores and News Dealers	5.235***	-7.247***
Commercial and Industrial Machinery and Equipment Rental and Leasing	5.023***	-5.076***
Services to Buildings and Dwellings	5.021***	-8.043***
Colleges, Universities, and Professional Schools	4.993*	-2.548*
Business, Professional, Labor, Political, and Similar Organizations	4.976***	-7.102***
Satellite Telecommunications	4.964***	-3.818**
Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	4.916**	-3.560**
Other Telecommunications	4.912***	-4.275***
Highway, Street, and Bridge Construction	4.861***	-0.552
Electric Lighting Equipment Manufacturing	4.844***	-3.605*
Community Food and Housing, and Emergency and Other Relief Services	4.770**	-5.476***
Securities and Commodity Contracts Intermediation and Brokerage	4.755**	-2.363
Home Health Care Services	4.679*	-4.144*
Freight Transportation Arrangement	4.630***	-5.639***
Automotive Parts, Accessories, and Tire Stores	4.630***	-2.552

Leather and Hide Tanning and Finishing	4.604***	-3.145**
Cut and Sew Apparel Manufacturing	4.427***	-3.841**
Other Leather and Allied Product Manufacturing	4.378**	-4.570***
Performing Arts Companies	4.339*	-6.648**
Household Appliance Manufacturing	4.267***	-4.276***
Pipeline Transportation of Crude Oil	4.253***	-4.858***
Urban Transit Systems	4.253*	-3.741**
Charter Bus Industry	4.202**	-4.349***
Drugs and Druggists' Sundries Merchant Wholesalers	4.166**	-4.017**
Lime and Gypsum Product Manufacturing	4.155***	-4.138***
Scenic and Sightseeing Transportation, Land	4.094**	-3.788*
Hardware Manufacturing	4.067***	-3.687**
Radio and Television Broadcasting	4.059***	-6.918***
Cable and Other Subscription Programming	4.011***	-4.653***
Tobacco Manufacturing	4.011*	-4.069**
Inland Water Transportation	4.004***	-3.227*
Death Care Services	3.981***	-4.326*
Other Support Activities for Transportation	3.961*	-4.023**
Scientific Research and Development Services	3.874***	-3.515**
Beverage Manufacturing	3.873***	-5.067***
Electrical Equipment Manufacturing	3.862***	-3.882**
Paper and Paper Product Merchant Wholesalers	3.830***	-4.820***
Support Activities for Animal Production	3.800***	-4.864***
Deep Sea, Coastal, and Great Lakes Water Transportation	3.785**	-3.415**
Other Ambulatory Health Care Services	3.726**	-6.479*
Consumer Goods Rental	3.696*	-2.777*
Oil and Gas Extraction	3.673***	-4.608***
Forest Nurseries and Gathering of Forest Products	3.672	-4.374***
Building Material and Supplies Dealers	3.666**	-3.264
General Freight Trucking	3.648***	-3.398
Religious Organizations	3.600***	-5.734**
Scenic and Sightseeing Transportation, Other	3.558**	-2.629*
Iron and Steel Mills and Ferroalloy Manufacturing	3.523***	-3.967***
Taxi and Limousine Service	3.514*	-4.086
Grocery and Related Product Merchant Wholesalers	3.483***	-10.926***
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	3.465*	-6.540***
Nonscheduled Air Transportation	3.453*	-4.563***
Offices of Other Health Practitioners	3.447	-4.476
Other Residential Care Facilities	3.414**	-3.946**
Support Activities for Water Transportation	3.407**	-4.257***
Drinking Places (Alcoholic Beverages)	3.405**	-5.707***
Support Activities for Mining	3.379***	-4.107***
Metal and Mineral (except Petroleum) Merchant Wholesalers	3.366***	-1.861
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	3.363***	-2.360*
Support Activities for Forestry	3.248***	-3.473*
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3.243**	-3.945**
Other Transportation Equipment Manufacturing	3.219*	-4.007***
Electronic and Precision Equipment Repair and Maintenance	3.213*	-4.109*
Semiconductor and Other Electronic Component Manufacturing	3.203***	-5.379***
Motor Vehicle Manufacturing	3.163**	-3.509**
Interurban and Rural Bus Transportation	3.159**	-3.903**
Lawn and Garden Equipment and Supplies Stores	3.129***	-4.040**
Support Activities for Air Transportation	3.116**	-4.678**
Nonferrous Metal (except Aluminum) Production and Processing	3.105*	-3.642**
Printing and Related Support Activities	3.093**	-3.426*
Communications Equipment Manufacturing	3.082**	-3.403**

Pipeline Transportation of Natural Gas	3.077***	-3.926**
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	3.076**	-2.637
Machinery, Equipment, and Supplies Merchant Wholesalers	3.037**	-3.928
Industrial Machinery Manufacturing	3.020***	-4.709***
Local Messengers and Local Delivery	3.004**	-3.454*
Other Pipeline Transportation	3.002**	-3.318*
Support Activities for Crop Production	2.986***	-4.732***
Engine, Turbine, and Power Transmission Equipment Manufacturing	2.982**	-3.904**
Advertising, Public Relations, and Related Services	2.977***	-4.533***
Alumina and Aluminum Production and Processing	2.945**	-3.932**
Basic Chemical Manufacturing	2.939**	-3.404**
Timber Tract Operations	2.930**	-4.638***
Steel Product Manufacturing from Purchased Steel	2.930**	-3.928**
Miscellaneous Nondurable Goods Merchant Wholesalers	2.930***	-3.332*
Fishing	2.926***	-3.967**
Beer, Wine, and Liquor Stores	2.923**	-4.274***
General Rental Centers	2.915**	-6.118***
Other Food Manufacturing	2.900**	-4.139**
Amusement Parks and Arcades	2.887*	-3.956**
Sugar and Confectionery Product Manufacturing	2.887**	-3.165**
Support Activities for Rail Transportation	2.883**	-3.311*
Shoe Stores	2.868**	-4.299**
RV (Recreational Vehicle) Parks and Recreational Camps	2.865***	-3.897**
Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	2.863**	-4.092**
Data Processing, Hosting, and Related Services	2.862***	1.525
Electric Power Generation, Transmission and Distribution	2.858**	-3.699**
Rubber Product Manufacturing	2.856***	-2.980*
Direct Selling Establishments	2.848*	-5.520***
Petroleum and Coal Products Manufacturing	2.844**	-3.959**
Remediation and Other Waste Management Services	2.844***	-1.726
Other Professional, Scientific, and Technical Services	2.840***	-4.103***
Footwear Manufacturing	2.827**	-4.577***
Land Subdivision	2.803*	-6.228***
Farm Product Raw Material Merchant Wholesalers	2.803***	-3.156**
Gasoline Stations	2.795***	-4.617***
Waste Treatment and Disposal	2.780**	-3.846**
Other Heavy and Civil Engineering Construction	2.764**	-3.165*
Other Specialty Trade Contractors	2.759**	-3.778**
Spectator Sports	2.751**	-5.534***
Health and Personal Care Stores	2.744**	-4.821
Audio and Video Equipment Manufacturing	2.744*	-4.238***
Facilities Support Services	2.740**	-3.117
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	2.737**	-3.514*
Other Wood Product Manufacturing	2.733**	-4.655***
Clay Product and Refractory Manufacturing	2.723*	-4.269***
Logging	2.709***	-4.248***
Glass and Glass Product Manufacturing	2.709**	-3.370**
Pharmaceutical and Medicine Manufacturing	2.675*	-3.408**
Miscellaneous Durable Goods Merchant Wholesalers	2.663**	-4.416
Lumber and Other Construction Materials Merchant Wholesalers	2.657***	-6.679***
Paint, Coating, and Adhesive Manufacturing	2.655	-3.416**
Florists	2.652*	-3.465
Chemical and Allied Products Merchant Wholesalers	2.643**	-4.275***
Grain and Oilseed Milling	2.642**	-3.068*

Traveler Accommodation	2.640**	-3.371
Sawmills and Wood Preservation	2.637**	-4.049***
Spring and Wire Product Manufacturing	2.634*	-4.046***
Railroad Rolling Stock Manufacturing	2.627*	-4.469***
Newspaper, Periodical, Book, and Directory Publishers	2.600*	-5.264**
Coal Mining	2.591**	-4.533***
Other Miscellaneous Manufacturing	2.584*	-3.241*
Architectural and Structural Metals Manufacturing	2.577**	-3.731*
Drycleaning and Laundry Services	2.575**	-1.902
Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	2.543**	-2.393
Soap, Cleaning Compound, and Toilet Preparation Manufacturing	2.531*	-4.571**
Animal Food Manufacturing	2.526**	-3.877**
Vocational Rehabilitation Services	2.523	-4.163***
Agriculture, Construction, and Mining Machinery Manufacturing	2.519**	-3.903**
Other Nonmetallic Mineral Product Manufacturing	2.504*	-3.275*
Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	2.502**	-5.529**
Individual and Family Services	2.494**	-4.872*
Utility System Construction	2.474*	-5.656**
Textile and Fabric Finishing and Fabric Coating Mills	2.473*	-2.522*
Metalworking Machinery Manufacturing	2.464*	-4.666***
Converted Paper Product Manufacturing	2.463**	-4.289***
Seafood Product Preparation and Packaging	2.463**	-4.211**
Junior Colleges	2.429*	-3.966**
Foundries	2.404**	-3.974**
Building Finishing Contractors	2.401**	-2.059
Veneer, Plywood, and Engineered Wood Product Manufacturing	2.395**	-4.048***
Cutlery and Handtool Manufacturing	2.393*	-3.452**
Employment Services	2.379**	-10.046***
Apparel Knitting Mills	2.332*	-5.276***
Water, Sewage and Other Systems	2.316**	-4.137***
Activities Related to Credit Intermediation	2.316*	-3.472**
Coating, Engraving, Heat Treating, and Allied Activities	2.313	-4.417*
Medical Equipment and Supplies Manufacturing	2.310**	-3.188*
Other Transit and Ground Passenger Transportation	2.289	-3.059*
Other Textile Product Mills	2.287**	-3.224**
Bakeries and Tortilla Manufacturing	2.284	-4.678*
Fruit and Vegetable Preserving and Specialty Food Manufacturing	2.273*	-4.543***
Forging and Stamping	2.257*	-3.785*
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic)	2.245*	-4.426**
Repair and Maintenance		
Hunting and Trapping	2.237*	-5.130***
Nonmetallic Mineral Mining and Quarrying	2.223**	-3.684**
Other Fabricated Metal Product Manufacturing	2.214**	-4.603***
Motor Vehicle Parts Manufacturing	2.192**	-4.401***
Gambling Industries	2.167*	-3.401**
Aerospace Product and Parts Manufacturing	2.164*	-3.231**
Vending Machine Operators	2.154*	-4.329**
Office Furniture (including Fixtures) Manufacturing	2.151*	-4.490***
Automotive Repair and Maintenance	2.147	-6.171***
Specialized Freight Trucking	2.144*	-4.932***
Other Motor Vehicle Dealers	2.140*	-3.432**
Plastics Product Manufacturing	2.130*	-3.846**
Foundation, Structure, and Building Exterior Contractors	2.117	-6.048***
Petroleum and Petroleum Products Merchant Wholesalers	2.085*	-4.468**
Other Schools and Instruction	2.08	-5.528***
Animal Slaughtering and Processing	2.078*	-3.226**

Ship and Boat Building	2.073*	-4.043***
School and Employee Bus Transportation	2.071	-2.679
Pulp, Paper, and Paperboard Mills	2.060*	-3.912***
Lessors of Real Estate	2.032*	-7.533***
Textile Furnishings Mills	2.032	-3.936**
Wholesale Electronic Markets and Agents and Brokers	2.023	-4.237**
Nursing Care Facilities (Skilled Nursing Facilities)	2.004*	-1.723
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	1.996*	-3.971**
Other General Purpose Machinery Manufacturing	1.979*	-3.813**
Motor Vehicle Body and Trailer Manufacturing	1.972*	-4.045**
Other Electrical Equipment and Component Manufacturing	1.97	-3.507*
Boiler, Tank, and Shipping Container Manufacturing	1.952*	-3.822**
Waste Collection	1.928*	-3.283*
Metal Ore Mining	1.877*	-3.820**
Commercial and Service Industry Machinery Manufacturing	1.871*	-3.692**
Technical and Trade Schools	1.857*	-1.873
Offices of Physicians	1.787*	-9.131***
Dairy Product Manufacturing	1.778*	-4.352***
Nonresidential Building Construction	1.760*	-0.24
Fabric Mills	1.757	-3.961**
Other Chemical Product and Preparation Manufacturing	1.75	-4.797***
Other Furniture Related Product Manufacturing	1.681	-4.423***
Household and Institutional Furniture and Kitchen Cabinet Manufacturing	1.62	-4.438***
Civic and Social Organizations	1.575	-4.710**
Support Activities for Road Transportation	1.562	-4.525**
Fiber, Yarn, and Thread Mills	1.489	-4.137**
Electronics and Appliance Stores	1.395	-5.867***
Cement and Concrete Product Manufacturing	1.385	-4.628***
Agencies, Brokerages, and Other Insurance Related Activities	1.355	-5.600**
Computer Systems Design and Related Services	1.289	-5.813***
Building Equipment Contractors	1.254	-1.108
Child Day Care Services	1.248	-3.413**
Business Support Services	1.22	-3.823**
Museums, Historical Sites, and Similar Institutions	1.219	-4.151***
Offices of Dentists	1.024	-3.540**
Grocery Stores	0.986	-1.514
Warehousing and Storage	0.98	-4.320***
Furniture and Home Furnishing Merchant Wholesalers	0.805	-6.519***
Used Merchandise Stores	0.749	-4.135***
Specialty (except Psychiatric and Substance Abuse) Hospitals	0.475	-5.932***
Social Advocacy Organizations	0.464	-5.381***
Business Schools and Computer and Management Training	0.394	-4.016**
Restaurants and Other Eating Places	0.209	-5.167***
Activities Related to Real Estate	-0.145	-3.190**
Specialty Food Stores	-0.207	-4.344***
Professional and Commercial Equipment and Supplies Merchant Wholesalers	-0.475	-5.857***
Office Supplies, Stationery, and Gift Stores	-0.68	5.391***
Elementary and Secondary Schools	-1.004	-5.236***
Furniture Stores	-1.843*	-4.765***
Natural Gas Distribution	-2.611**	-3.884**
Offices of Real Estate Agents and Brokers	-4.589***	-7.825***
NAICS	Gini	Δ Gini
Securities and Commodity Exchanges	10.287**	-3.978**
Other Information Services	8.854***	-4.019**
Personal and Household Goods Repair and Maintenance	8.736***	-3.010*
Other Amusement and Recreation Industries	8.693***	-5.049*

Electronic Shopping and Mail-Order Houses	8.538*	-6.606***
Other Financial Investment Activities	8.098***	-3.833**
Other Miscellaneous Store Retailers	7.768***	-8.019***
Educational Support Services	7.750***	-2.920*
Nondepository Credit Intermediation	7.702**	-5.448**
Promoters of Performing Arts, Sports, and Similar Events	7.675***	-3.447**
Sporting Goods, Hobby, and Musical Instrument Stores	7.663***	-5.825***
Scenic and Sightseeing Transportation, Water	6.956***	-3.327*
Psychiatric and Substance Abuse Hospitals	6.944***	-3.566*
Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	6.759***	-4.918**
Outpatient Care Centers	6.682***	-4.353
Management, Scientific, and Technical Consulting Services	6.564***	-4.282***
Special Food Services	6.539**	-0.544
Rooming and Boarding Houses	6.417***	-4.675***
Scheduled Air Transportation	6.359***	-3.849**
Residential Building Construction	6.285***	-3.663
Apparel Accessories and Other Apparel Manufacturing	5.886**	-4.720***
Depository Credit Intermediation	5.782***	-0.581
Computer and Peripheral Equipment Manufacturing	5.692***	-4.636***
Insurance Carriers	5.529***	-0.342
Monetary Authorities-Central Bank	5.446***	-4.614***
Book Stores and News Dealers	5.235***	-7.247***
Commercial and Industrial Machinery and Equipment Rental and Leasing	5.023***	-5.076***
Services to Buildings and Dwellings	5.021***	-8.043***
Colleges, Universities, and Professional Schools	4.993*	-2.548*
Business, Professional, Labor, Political, and Similar Organizations	4.976***	-7.102***
Satellite Telecommunications	4.964***	-3.818**
Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	4.916**	-3.560**
Other Telecommunications	4.912***	-4.275***
Highway, Street, and Bridge Construction	4.861***	-0.552
Electric Lighting Equipment Manufacturing	4.844***	-3.605*
Community Food and Housing, and Emergency and Other Relief Services	4.770**	-5.476***
Securities and Commodity Contracts Intermediation and Brokerage	4.755**	-2.363
Home Health Care Services	4.679*	-4.144*
Freight Transportation Arrangement	4.630***	-5.639***
Automotive Parts, Accessories, and Tire Stores	4.630***	-2.552
Leather and Hide Tanning and Finishing	4.604***	-3.145**
Cut and Sew Apparel Manufacturing	4.427***	-3.841**
Other Leather and Allied Product Manufacturing	4.378**	-4.570***
Performing Arts Companies	4.339*	-6.648**
Household Appliance Manufacturing	4.267***	-4.276***
Pipeline Transportation of Crude Oil	4.253***	-4.858***
Urban Transit Systems	4.253*	-3.741**
Charter Bus Industry	4.202**	-4.349***
Drugs and Druggists' Sundries Merchant Wholesalers	4.166**	-4.017**
Lime and Gypsum Product Manufacturing	4.155***	-4.138***
Scenic and Sightseeing Transportation, Land	4.094**	-3.788*
Hardware Manufacturing	4.067***	-3.687**
Radio and Television Broadcasting	4.059***	-6.918***
Cable and Other Subscription Programming	4.011***	-4.653***
Tobacco Manufacturing	4.011*	-4.069**
Inland Water Transportation	4.004***	-3.227*
Death Care Services	3.981***	-4.326*
Other Support Activities for Transportation	3.961*	-4.023**
Scientific Research and Development Services	3.874***	-3.515**
Beverage Manufacturing	3.873***	-5.067***

Electrical Equipment Manufacturing	3.862***	-3.882**
Paper and Paper Product Merchant Wholesalers	3.830***	-4.820***
Support Activities for Animal Production	3.800***	-4.864***
Deep Sea, Coastal, and Great Lakes Water Transportation	3.785**	-3.415**
Other Ambulatory Health Care Services	3.726**	-6.479*
Consumer Goods Rental	3.696*	-2.777*
Oil and Gas Extraction	3.673***	-4.608***
Forest Nurseries and Gathering of Forest Products	3.672	-4.374***
Building Material and Supplies Dealers	3.666**	-3.264
General Freight Trucking	3.648***	-3.398
Religious Organizations	3.600***	-5.734**
Scenic and Sightseeing Transportation, Other	3.558**	-2.629*
Iron and Steel Mills and Ferroalloy Manufacturing	3.523***	-3.967***
Taxi and Limousine Service	3.514*	-4.086
Grocery and Related Product Merchant Wholesalers	3.483***	-10.926***
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	3.465*	-6.540***
Nonscheduled Air Transportation	3.453*	-4.563***
Offices of Other Health Practitioners	3.447	-4.476
Other Residential Care Facilities	3.414**	-3.946**
Support Activities for Water Transportation	3.407**	-4.257***
Drinking Places (Alcoholic Beverages)	3.405**	-5.707***
Support Activities for Mining	3.379***	-4.107***
Metal and Mineral (except Petroleum) Merchant Wholesalers	3.366***	-1.861
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	3.363***	-2.360*
Support Activities for Forestry	3.248***	-3.473*
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3.243**	-3.945**
Other Transportation Equipment Manufacturing	3.219*	-4.007***
Electronic and Precision Equipment Repair and Maintenance	3.213*	-4.109*
Semiconductor and Other Electronic Component Manufacturing	3.203***	-5.379***
Motor Vehicle Manufacturing	3.163**	-3.509**
Interurban and Rural Bus Transportation	3.159**	-3.903**
Lawn and Garden Equipment and Supplies Stores	3.129***	-4.040**
Support Activities for Air Transportation	3.116**	-4.678**
Nonferrous Metal (except Aluminum) Production and Processing	3.105*	-3.642**
Printing and Related Support Activities	3.093**	-3.426*
Communications Equipment Manufacturing	3.082**	-3.403**
Pipeline Transportation of Natural Gas	3.077***	-3.926**
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	3.076**	-2.637
Machinery, Equipment, and Supplies Merchant Wholesalers	3.037**	-3.928
Industrial Machinery Manufacturing	3.020***	-4.709***
Local Messengers and Local Delivery	3.004**	-3.454*
Other Pipeline Transportation	3.002**	-3.318*
Support Activities for Crop Production	2.986***	-4.732***
Engine, Turbine, and Power Transmission Equipment Manufacturing	2.982**	-3.904**
Advertising, Public Relations, and Related Services	2.977***	-4.533***
Alumina and Aluminum Production and Processing	2.945**	-3.932**
Basic Chemical Manufacturing	2.939**	-3.404**
Timber Tract Operations	2.930**	-4.638***
Steel Product Manufacturing from Purchased Steel	2.930**	-3.928**
Miscellaneous Nondurable Goods Merchant Wholesalers	2.930***	-3.332*
Fishing	2.926***	-3.967**
Beer, Wine, and Liquor Stores	2.923**	-4.274***
General Rental Centers	2.915**	-6.118***
Other Food Manufacturing	2.900**	-4.139**
Amusement Parks and Arcades	2.887*	-3.956**

Sugar and Confectionery Product Manufacturing	2.887**	-3.165**
Support Activities for Rail Transportation	2.883**	-3.311*
Shoe Stores	2.868**	-4.299**
RV (Recreational Vehicle) Parks and Recreational Camps	2.865***	-3.897**
Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	2.863**	-4.092**
Data Processing, Hosting, and Related Services	2.862***	1.525
Electric Power Generation, Transmission and Distribution	2.858**	-3.699**
Rubber Product Manufacturing	2.856***	-2.980*
Direct Selling Establishments	2.848*	-5.520***
Petroleum and Coal Products Manufacturing	2.844**	-3.959**
Remediation and Other Waste Management Services	2.844***	-1.726
Other Professional, Scientific, and Technical Services	2.840***	-4.103***
Footwear Manufacturing	2.827**	-4.577***
Land Subdivision	2.803*	-6.228***
Farm Product Raw Material Merchant Wholesalers	2.803***	-3.156**
Gasoline Stations	2.795***	-4.617***
Waste Treatment and Disposal	2.780**	-3.846**
Other Heavy and Civil Engineering Construction	2.764**	-3.165*
Other Specialty Trade Contractors	2.759**	-3.778**
Spectator Sports	2.751**	-5.534***
Health and Personal Care Stores	2.744**	-4.821
Audio and Video Equipment Manufacturing	2.744*	-4.238***
Facilities Support Services	2.740**	-3.117
Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	2.737**	-3.514*
Other Wood Product Manufacturing	2.733**	-4.655***
Clay Product and Refractory Manufacturing	2.723*	-4.269***
Logging	2.709***	-4.248***
Glass and Glass Product Manufacturing	2.709**	-3.370**
Pharmaceutical and Medicine Manufacturing	2.675*	-3.408**
Miscellaneous Durable Goods Merchant Wholesalers	2.663**	-4.416
Lumber and Other Construction Materials Merchant Wholesalers	2.657***	-6.679***
Paint, Coating, and Adhesive Manufacturing	2.655	-3.416**
Florists	2.652*	-3.465
Chemical and Allied Products Merchant Wholesalers	2.643**	-4.275***
Grain and Oilseed Milling	2.642**	-3.068*
Traveler Accommodation	2.640**	-3.371
Sawmills and Wood Preservation	2.637**	-4.049***
Spring and Wire Product Manufacturing	2.634*	-4.046***
Railroad Rolling Stock Manufacturing	2.627*	-4.469***
Newspaper, Periodical, Book, and Directory Publishers	2.600*	-5.264**
Coal Mining	2.591**	-4.533***
Other Miscellaneous Manufacturing	2.584*	-3.241*
Architectural and Structural Metals Manufacturing	2.577**	-3.731*
Drycleaning and Laundry Services	2.575**	-1.902
Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	2.543**	-2.393
Soap, Cleaning Compound, and Toilet Preparation Manufacturing	2.531*	-4.571**
Animal Food Manufacturing	2.526**	-3.877**
Vocational Rehabilitation Services	2.523	-4.163***
Agriculture, Construction, and Mining Machinery Manufacturing	2.519**	-3.903**
Other Nonmetallic Mineral Product Manufacturing	2.504*	-3.275*
Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	2.502**	-5.529**
Individual and Family Services	2.494**	-4.872*
Utility System Construction	2.474*	-5.656**
Textile and Fabric Finishing and Fabric Coating Mills	2.473*	-2.522*
Metalworking Machinery Manufacturing	2.464*	-4.666***

Converted Paper Product Manufacturing	2.463**	-4.289***
Seafood Product Preparation and Packaging	2.463**	-4.211**
Junior Colleges	2.429*	-3.966**
Foundries	2.404**	-3.974**
Building Finishing Contractors	2.401**	-2.059
Veneer, Plywood, and Engineered Wood Product Manufacturing	2.395**	-4.048***
Cutlery and Handtool Manufacturing	2.393*	-3.452**
Employment Services	2.379**	-10.046***
Apparel Knitting Mills	2.332*	-5.276***
Water, Sewage and Other Systems	2.316**	-4.137***
Activities Related to Credit Intermediation	2.316*	-3.472**
Coating, Engraving, Heat Treating, and Allied Activities	2.313	-4.417*
Medical Equipment and Supplies Manufacturing	2.310**	-3.188*
Other Transit and Ground Passenger Transportation	2.289	-3.059*
Other Textile Product Mills	2.287**	-3.224**
Bakeries and Tortilla Manufacturing	2.284	-4.678*
Fruit and Vegetable Preserving and Specialty Food Manufacturing	2.273*	-4.543***
Forging and Stamping	2.257*	-3.785*
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic)	2.245*	-4.426**
Repair and Maintenance		
Hunting and Trapping	2.237*	-5.130***
Nonmetallic Mineral Mining and Quarrying	2.223**	-3.684**
Other Fabricated Metal Product Manufacturing	2.214**	-4.603***
Motor Vehicle Parts Manufacturing	2.192**	-4.401***
Gambling Industries	2.167*	-3.401**
Aerospace Product and Parts Manufacturing	2.164*	-3.231**
Vending Machine Operators	2.154*	-4.329**
Office Furniture (including Fixtures) Manufacturing	2.151*	-4.490***
Automotive Repair and Maintenance	2.147	-6.171***
Specialized Freight Trucking	2.144*	-4.932***
Other Motor Vehicle Dealers	2.140*	-3.432**
Plastics Product Manufacturing	2.130*	-3.846**
Foundation, Structure, and Building Exterior Contractors	2.117	-6.048***
Petroleum and Petroleum Products Merchant Wholesalers	2.085*	-4.468**
Other Schools and Instruction	2.08	-5.528***
Animal Slaughtering and Processing	2.078*	-3.226**
Ship and Boat Building	2.073*	-4.043***
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Elementary and Secondary Schools	-1.004	-5.236***
Furniture Stores	-1.843*	-4.765***
Constant	42.106***	4.802***
Observations	(823)	(1.194)
<i>df</i>	9078	3026
	271	270

Standard errors in parentheses; * p<.05, ** p<.01, *** p<.001

FIGURES

Figure 1. Map with primary data on income inequality (Gini) and industry specialization (max LQ) in 2020

Income inequality

Industry specialization

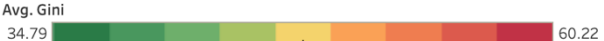
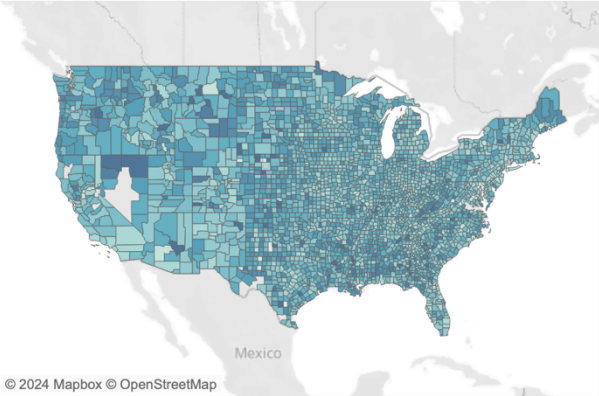
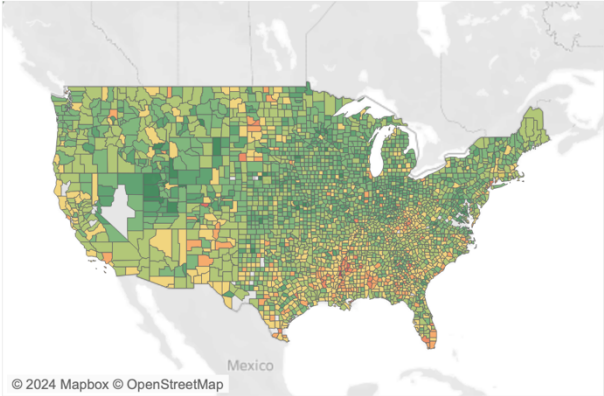


Figure 2. Association between average Gini coefficient of income and industry diversification

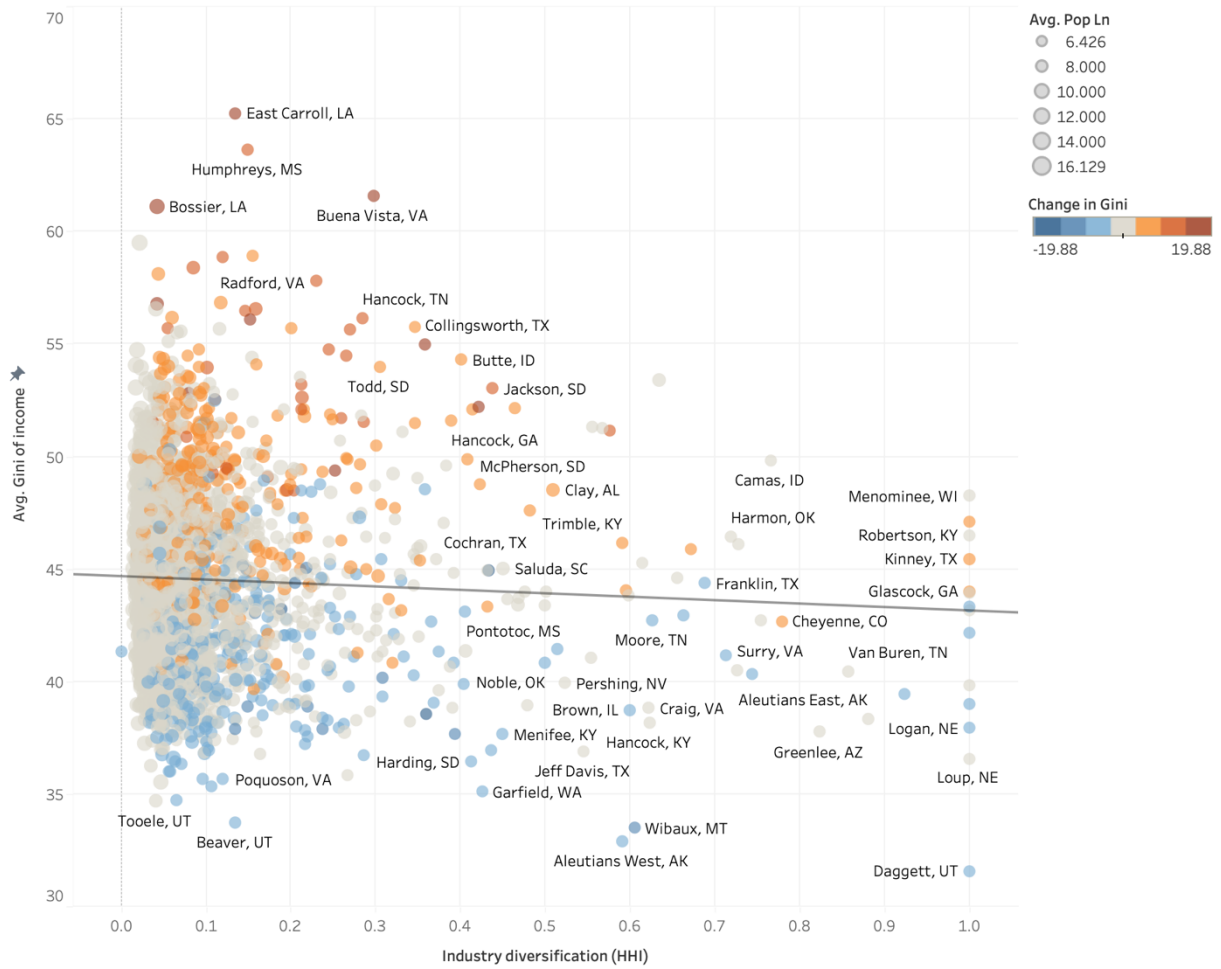


Figure 3. Association between change in average Gini coefficient (2010–2020) and industry diversification aggregated to CBSA level

