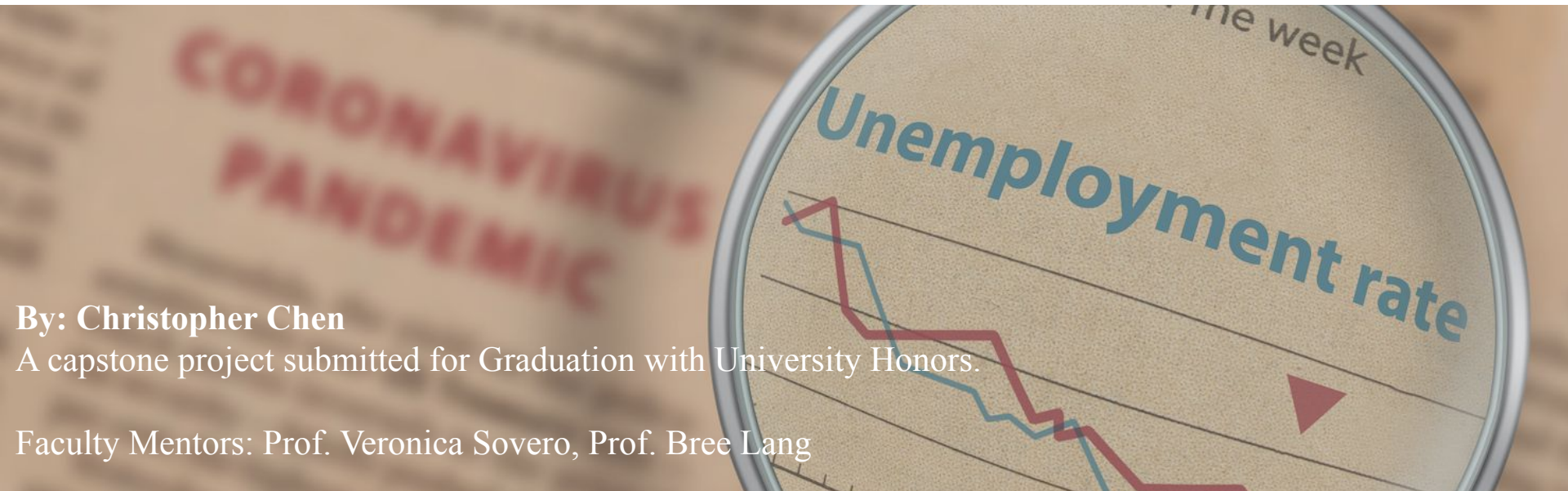


# SOCIAL CONNECTION IN TIMES OF ECONOMIC CRISIS: COVID-19 AND UNEMPLOYMENT



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A capstone project submitted for Graduation with University Honors.

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# Overview:

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3. Data
4. Methods
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  - b. COVID Model Regression
5. Conclusion

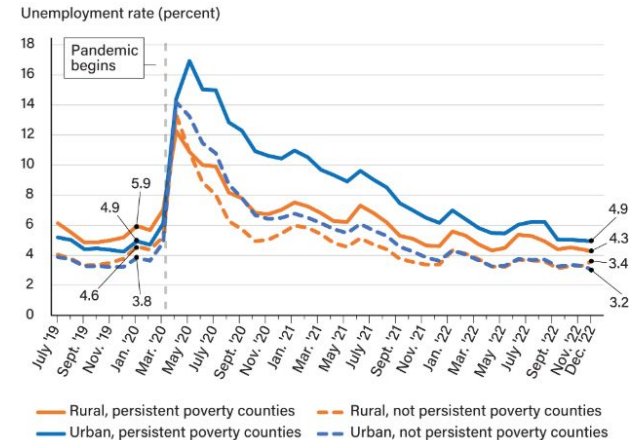
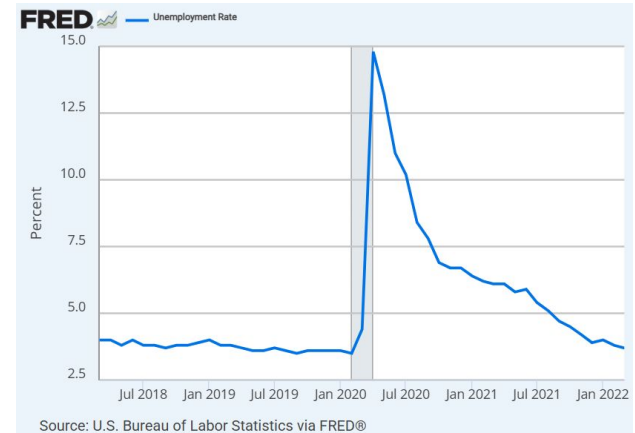


## Introduction

- Project investigates the effect that social capital, or economic connectedness (EC), has on the economy's response to the COVID-19.
- Higher EC is related to higher economic mobility.
- Analyze unemployment levels in the U.S. by ZIP Code and County against EC & COVID
- DiD suggests slight increases in high EC areas.
- COVID regression model shows high EC areas mitigate negative effects from COVID exposure.

# Unemployment and COVID-19

- Public health emergency called for social isolation.
- Major economic shut down.
  - Unemployment rate spiked up to 14.8% in U.S.
  - Most recovered by 2022, but not equally (Sanders, 2023)
- Job losses across the board (Montenovo et. al, 2022):
  - Nonessential face-to-face jobs
    - Saw the greatest decline
  - Essential face-to-face jobs
    - Fewer losses compared to previous recessions
    - High risk of exposure to COVID infection
  - Other nonessential jobs
    - Higher educated, higher income, least physical contact jobs were most protected.

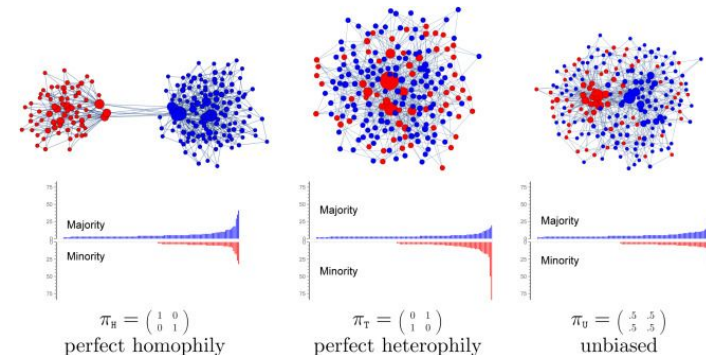
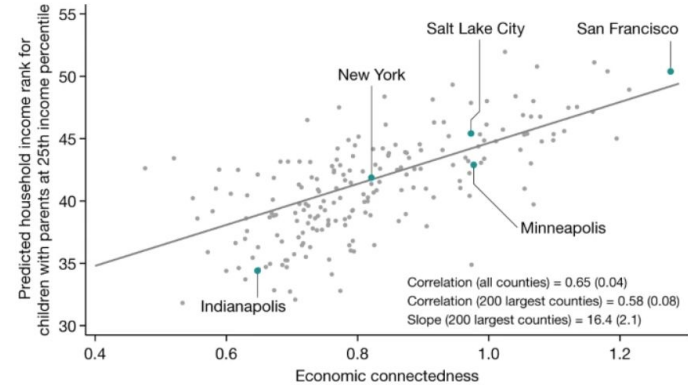


How do these economic outcomes relate to changes social behavior?

# Social capital and SES

- Social capital (or EC) is related to improvements in economic mobility.
  - Heavily discussed in Social Capital I and II (Chetty et. al, 2022)
  - Economic connectedness (EC): high levels of friendship between people of different SES.
- However, class segregation persists.
  - Homophily: tendency for people to bond w/ others of the same social group (Avin et. al, 2020)
- Previous studies have measured this phenomenon.
  - “Rich” often most isolated in urban/suburban settings.
  - Casual restaurants, parks, libraries, most redistributive.
  - Rubbing Shoulders (Massenkoff & Wilmers, 2023)
- Looking at where class segregation naturally persists can help us make strides towards integration.

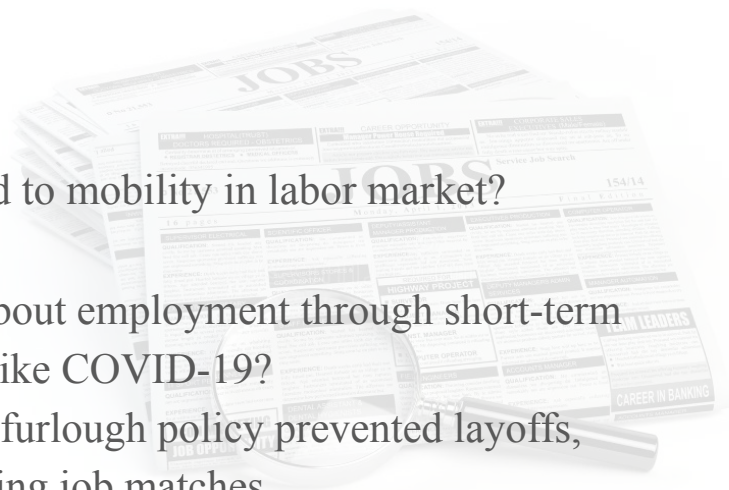
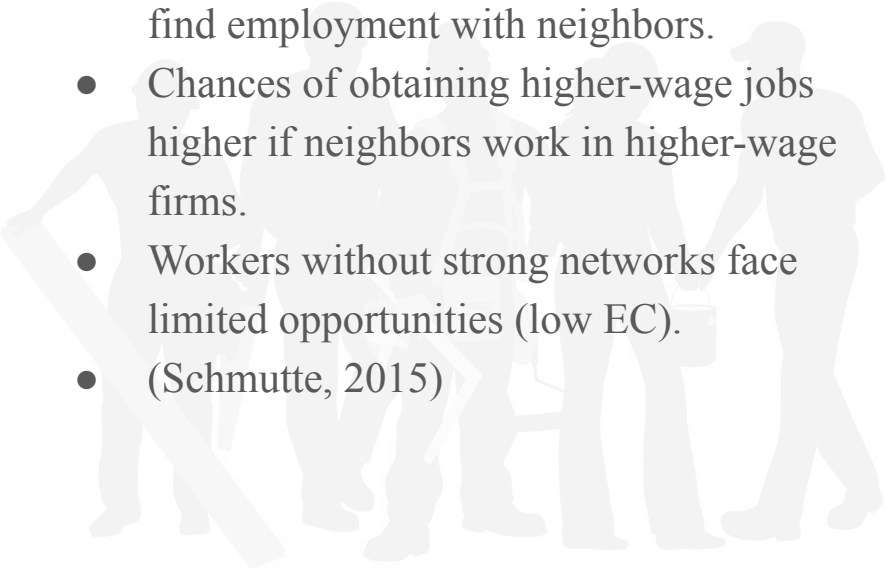
Fig. 4: Association between upward income mobility and EC across counties.



# Job Searches and Job Matches

Through what mechanisms does economic connectedness lead to mobility in labor market?

- Job search outcomes highly dependent on local labor markets.
- Workers are disproportionately likely to find employment with neighbors.
- Chances of obtaining higher-wage jobs higher if neighbors work in higher-wage firms.
- Workers without strong networks face limited opportunities (low EC).
- (Schmutte, 2015)
- What about employment through short-term crises, like COVID-19?
- Danish furlough policy prevented layoffs, preserving job matches.
  - Led to faster economic recovery than in the United States.
- Reallocating workers is costly and inefficient because of losses in productivity.
- Clear economic value in existing workplace social connections (preserve EC).
- (Bennedsen et. al, 2023)





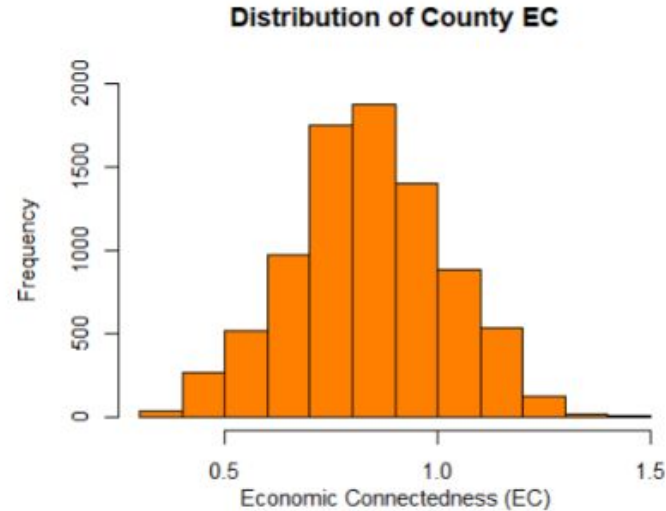
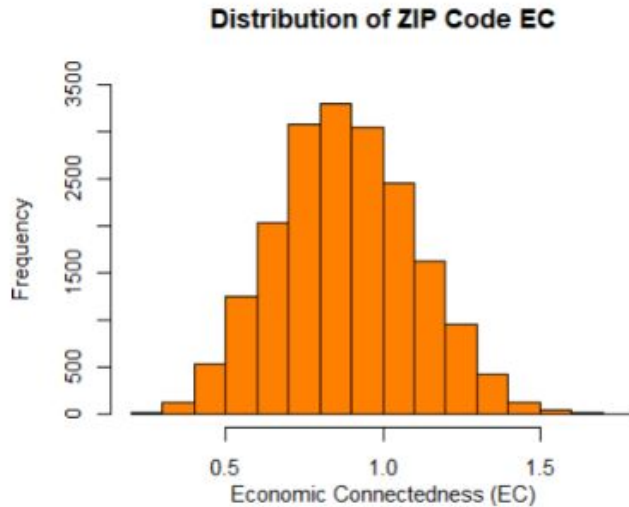
# Data Sources

- US Census Bureau ACS
  - DP02: Selected Social Characteristics in the United States
  - DP03: Selected Economic Characteristics
  - DP05: ACS Demographic and Housing Estimates
  - Collected unemployment and demographic data
  - Data collect by ZIP Code, 2018-2022
- Raj Chetty's Opportunity Atlas
  - via [socialcapital.org](https://socialcapital.org)
  - Collected EC by ZIP code in 2018
- COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University
  - via GitHub repository
  - Only county-level data available from 2020-2022



# Economic Connectedness (EC)

$$EC = \frac{\text{\# of High SES Friends}}{\text{Total \# of Friends}} \times 2$$



EC = 1 represents a community where low SES people have **an equal number** of friendships between low SES and high SES individuals.

EC = 0 represents **pure homophily**.



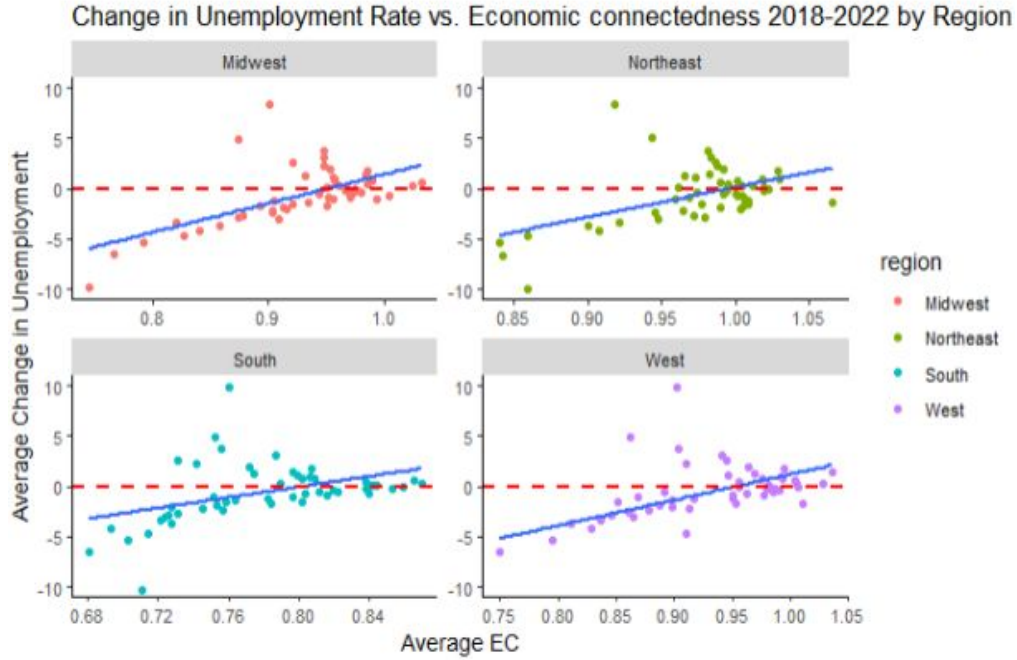
**Table 1: ZIP Code-level Summary Statistics**

Statistic	Mean	St. Dev.	Min	Max
Income (1000's)	88.077	37.045	7.753	595.736
Unemployment	5.334	3.315	0	100
Education	28.737	16.519	0	100
Age	40.857	6.747	14.4	75.6
Gender (Male)	49.772	3.542	14.4	100
Race (White)	78.397	20.792	0	100
EC	0.883	0.219	0.235	1.708

**Table 2: County-level Summary Statistics**

Statistic	Mean	St. Dev.	Min	Max
Income (1000's)	77.819	20.158	32.067	223.887
Unemployment	5.022	2.563	0	36
EC	0.837	0.18	0.334	1.427
Age	41.973	4.869	23.2	61.2
Gender (Male)	50.18	2.517	39.7	75.7
Education	22.684	9.503	3.767	78.338
Race (White)	82.496	15.73	1.675	99.9
Confirmed	11,355.04	41,022.39	29	1,935,154
Deaths	123.556	419.613	0	17,278
Case Rate	15.449	7.971	0.279	96.818
Death Rate	0.218	0.182	0	4.048

Figure 3: Binned Scatterplots of Unemployment and EC, faceted by region



ZIP Code Level Data

Figure 4: Average Economic Connectedness and COVID Case Rates

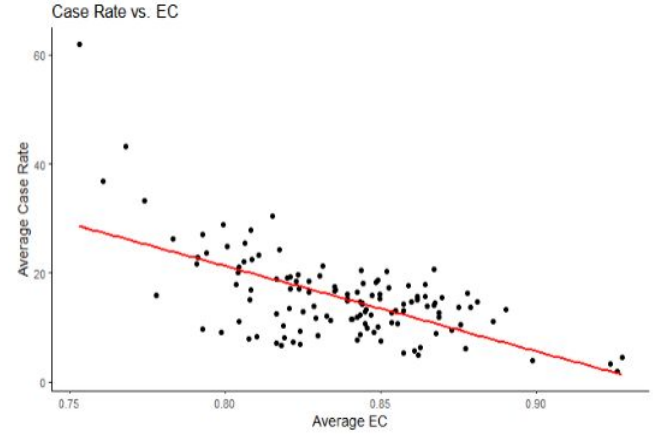
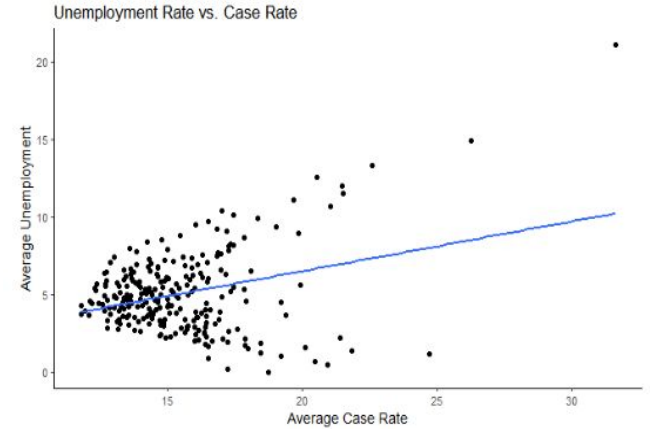


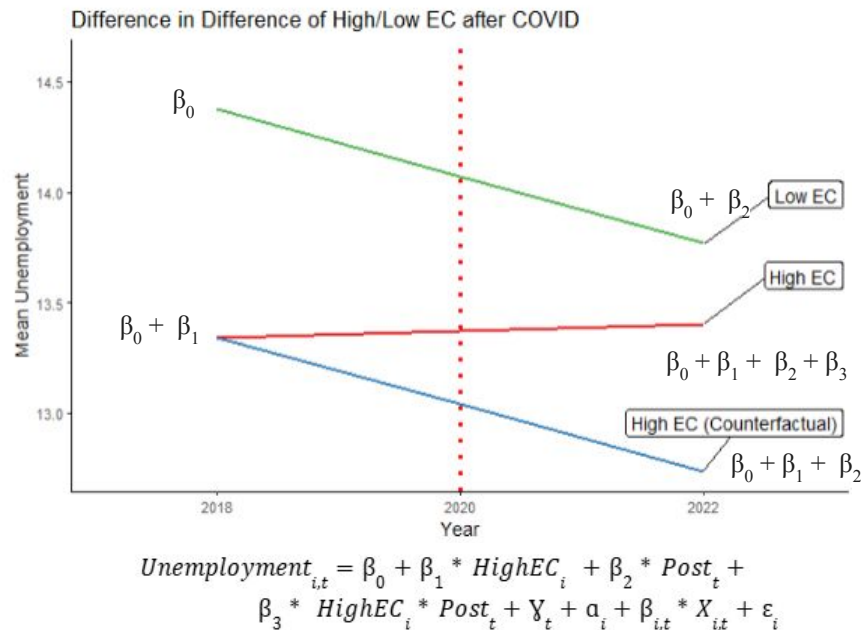
Figure 5: Average Unemployment and COVID Case Rates



County Level Data

# Difference-in-Differences

Figure 6: Difference-in-Differences Graph between High/Low EC, 2018-2022



High EC have **lower unemployment rates** than low EC overall (-1.033).

**Unemployment decreases** for low EC and counterfactual over time period (-0.607).

Areas of high EC see slightly **increased unemployment rates** in post period (0.061).

Table 3: Difference-in-Differences of High EC on Unemployment Rate

	Dependent variable: Unemployment Rate		
	(1)	(2)	(3)
High EC	-2.238*** (0.02)	-2.558*** (0.032)	<b>-1.033***</b> (0.032)
Post	-0.289*** (0.021)	-0.555*** (0.029)	<b>-0.607***</b> (0.026)
Income (1000's)			-0.015*** (0.0004)
Age			0.007*** (0.002)
Gender (Male)			-0.0004 (0.003)
Bachelor's			-0.024*** (0.001)
Race (White)			-0.056*** (0.001)
High EC:Post		0.532*** (0.041)	<b>0.668***</b> (0.036)
Constant	6.627*** (0.019)	6.787*** (0.023)	14.375*** (0.225)

Adjusted R<sup>2</sup>: 0.308

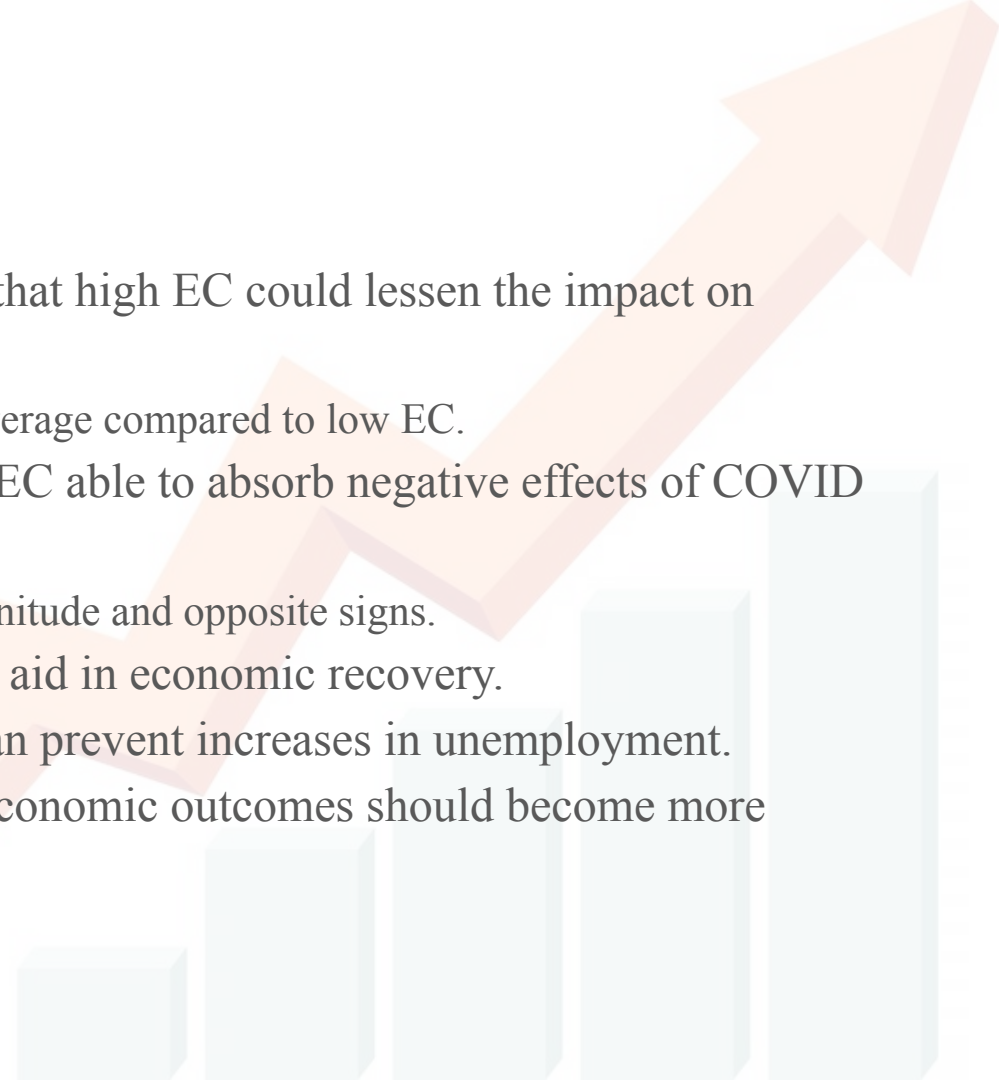
# COVID Regression

$$Unemployment_{i,t} = \beta_0 + \beta_1 * Case\_Rate_i + \beta_2 * HighEC_i + \beta_3 * Case\_Rate_i * HighEC_i + \gamma_t + \alpha_i + \beta_{i,t} * X_{i,t} + \epsilon_i$$

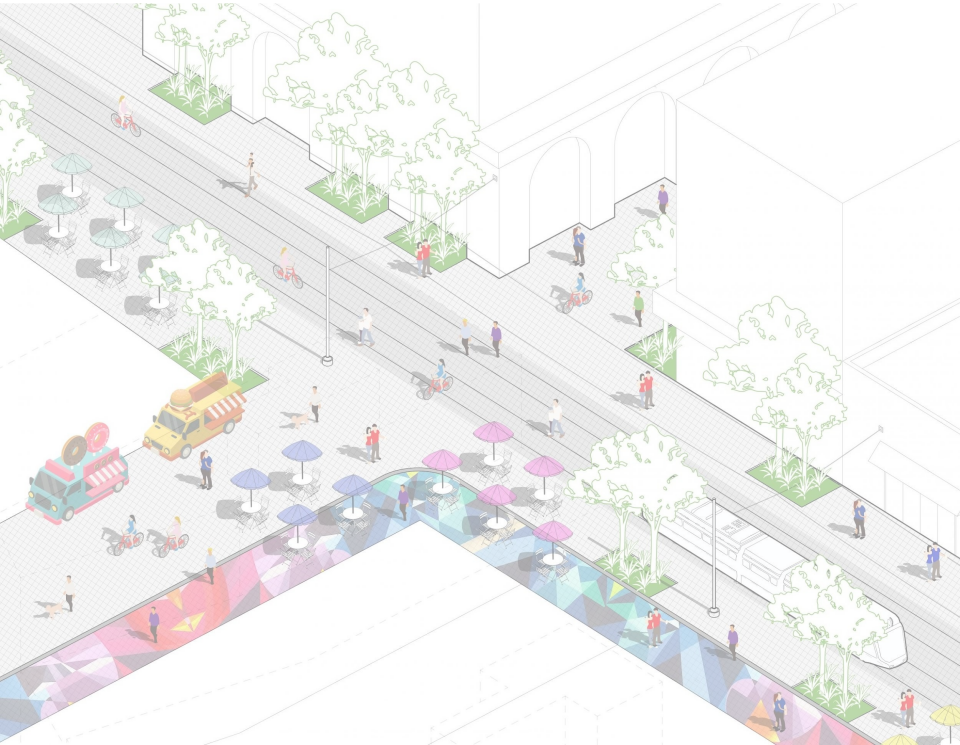
- Increases in case rate correlated with increases in unemployment by **0.037%**.
- Interaction between **Case Rate:High EC** has coefficient of **-0.038%**.
- High EC counties able to mitigate the negative effects of COVID exposure on unemployment on average.
- This is only in the post period (after 2020)

Table 4: COVID Model: Regression of Case Rate on Unemployment				
	Dependent variable: Unemployment Rate			
	(1)	(2)	(3)	(4)
Case Rate	0.031*** (0.004)	0.051*** (0.004)	0.032*** (0.004)	0.037*** (0.004)
High EC		-0.814*** (0.113)	-0.084 (0.113)	-0.563*** (0.116)
Income (1000's)			-0.033*** (0.002)	-0.017*** (0.003)
Age			0.0001 (0.005)	0.006 (0.007)
Gender (Male)			-0.022** (0.01)	-0.027** (0.011)
Bachelor's			0.0002 (0.004)	-0.017*** (0.005)
Race (White)			-0.058*** (0.002)	-0.047*** (0.002)
Case Rate:High EC		-0.081*** (0.007)	-0.038*** (0.006)	-0.038*** (0.006)
Constant	4.538*** (0.061)	5.221*** (0.074)	12.939*** (0.576)	12.261*** (1.148)
Adjusted R <sup>2</sup> : 0.557				

# Conclusion

- DiD models did not provide evidence that high EC could lessen the impact on unemployment over COVID-19.
    - High EC ZIP codes fared worse on average compared to low EC.
  - COVID regression model shows high EC able to absorb negative effects of COVID exposure in a county.
    - Coefficients were of about equal magnitude and opposite signs.
  - Higher economic connectedness could aid in economic recovery.
  - More opportunities and connections can prevent increases in unemployment.
  - Future research on social capital and economic outcomes should become more common to capture human behavior.
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# Policy Implications



- Ever increasing isolation due to advancements in technology.
- What are some ways to foster socio-economic mixing?
  - mixed-use zoning
  - building parks and trails
  - connection through public transit
  - civic engagement
  - diversity in programs
  - cultural experiences
  - support local businesses
- Prioritize sustainable economic development over economic growth within and across communities.

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**Thank you!**