

The Grassroots Digital Economy in Real Time During COVID-19

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Agenda

- Background and Motivation
- Domain Name Data
- Methods
- Findings
- Questions

The Evolving Economic Impact of COVID-19

- “Most unequal” recession in modern U.S. history ([Long et al. 2020](#))
 - Disparate impact across industries, regions, and demographic groups
- Economic outlook uncertain
 - Outbreaks and surges
 - Closings / reopenings
 - How shifts to virtual activity will affect economic behavior long term

The Need for Real Time Data

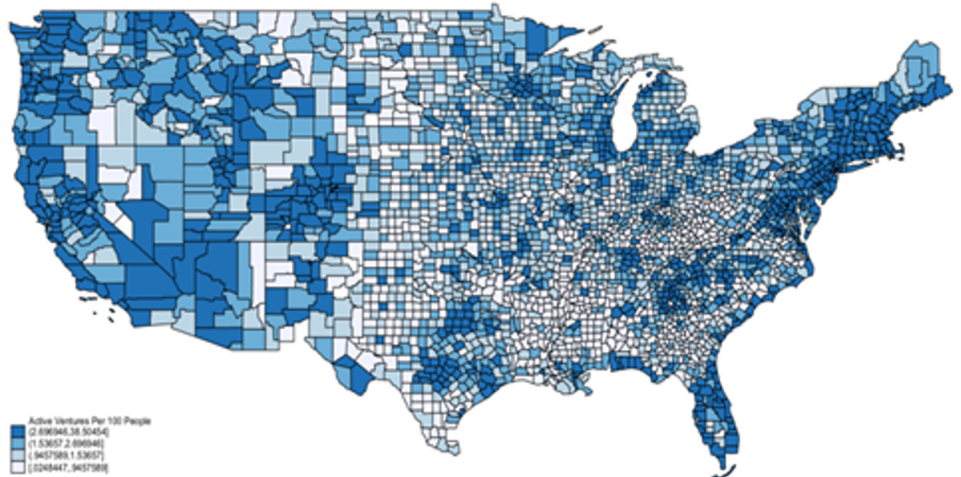
Policymakers and researchers are turning to high-frequency data to get a more timely snapshot of the U.S. economy during the COVID-19 pandemic

- Traditional economic indicators often reported at lower frequencies and/or limited to state or national level
- Private sector and new census data to fill the gap
 - Chetty et al.'s [Opportunity Insights Economic Tracker](#)
 - Brookings [Metro Recovery Index](#)
 - [US Census Pulse Surveys](#) conducted weekly during pandemic

What are Ventures?

A **venture** is a business, non-profit, cause or idea represented by an active domain name host and its redirects

- Data shared by GoDaddy, largest domain name registrar
 - 20 million+ ventures in the U.S.
- Monthly data is de-identified and geocoded by zip code
- Aggregated to County for this analysis
 - Density of ventures/100 people
- Measure of **digital economic activity** within communities



Density of Ventures per 100 people, by County

[Access venture data here](#)

What Kind of Economic Activity Do Ventures Represent?

In 2020, GoDaddy's survey of 2,000+ randomly sampled U.S. ventures found that...

- 75% of ventures are commercial (80% commercial-machine learning)
- Most ventures are micro in size (55% solo entrepreneurs, 8% 11+ employees)
- Ventures provide a main or supplemental source of income for 60% of site owners
- Prior to launching venture, 22% were out of the workforce

**Ventures include micro-businesses and start-ups
often overlooked in government business data**

How Are Ventures Different?

- Broadband is necessary for ventures, but:
 - Moderate correlation between ventures and County broadband subscriptions
 - Varies much more widely in the US compared to Korea; some rural counties have only $\frac{1}{4}$ of the population with broadband subscriptions; poor urban neighborhoods and some cities low as well.
- Low correlation with IT employment in counties
- Moderate correlation with small businesses in counties

Ventures & Resilience

In response to COVID-19, many small businesses shifted operations online

- 2020 survey
 - 35% online only, 19% in 2019
 - 25% increased online businesses activity
 - 25% shut-down temporarily, less than 2% permanently
 - 60% said their website helped them navigate the pandemic

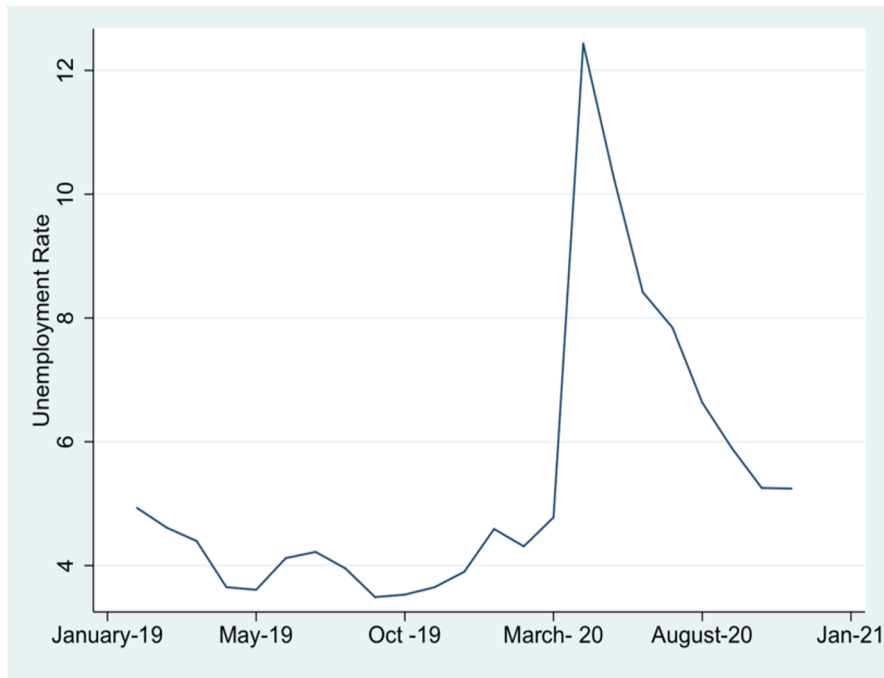
Research Questions

- Does this digital economic activity have benefits for communities?
- How did this matter pre-pandemic?
- Did ventures help to lessen unemployment during the pandemic, when so much daily activity shifted online?

Pre-Covid Research on Ventures (Summary)

- Density of ventures mattered for community outcomes **before** the pandemic.
- A positive and significant predictor of **County prosperity**, controlling for other factors and using statistical matching (CEM) to control for selection bias.
 - (Prosperity index adapted from Economic Innovation Group and includes benefits for residents and businesses, economic health – poverty rates, % population in workforce, % population with HS diploma, housing vacancy, median income, change in # of jobs, change in # of establishments)
- Positive and significant for County **change in prosperity index, 2007-2019** – a measure of change and also recovery from the last recession (2008). CEM used to control for selection bias.
- **Change in County median income, 2016-2019** significant and positive for **highly active ventures only** (positive but not significant for ventures overall).
- **Results support the potential that ventures were a source of economic resilience during Covid-19, especially given the shift online with social distancing.**

Unemployment from Jan. 2019 - November 2020



- Unemployment less than 4% in October 2019 at its lowest point and over 12% in April 2020
- Plateaued by November 2020 at higher levels than before (under 6%)
- Did higher density of domain name hosts per county lower county unemployment rates during this period?

Data and Methods

- Time series regression with time fixed effects by month
- Monthly venture density by county, January 2019-November 2020
- County-level unemployment, Bureau of Labor Statistics, available monthly
- Lagged models, ventures in the previous month are used to predict unemployment rates in the following month.
- Controls: **broadband subscriptions**, **small business density**, factors known to affect broadband skills and community economic outcomes - **demographics** (race/ethnicity, educational attainment, age cohorts), **industries** including IT employment (NAICS codes).
- Interaction term for density of ventures X broadband subscriptions (% of population with a subscription)

Table 3- Modeling Monthly Unemployment Rates January 2019-November 2020

	Unemployment Rate Jan 19-Nov 2020	Unemployment Rate March-Nov 2020 (Pandemic)
Venture Density- Lagged	0.1893* (0.0688)	0.5270* (0.1393)
Broadband Subscriptions	0.0330* (0.0029)	0.0838* (0.0065)
Lagged Venture Density X Broadband Subscriptions	-0.0018** (0.0008)	-0.0054** (0.0016)
Small Business Density	-0.0583* (0.0085)	-0.0657 (0.0841)

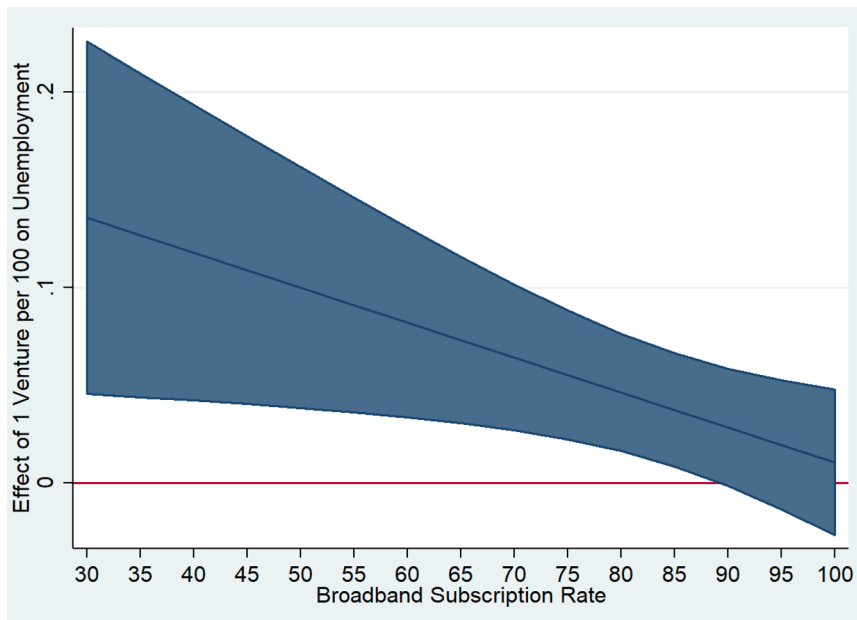
+ both periods - % Black, Hispanic, Indigenous, Educational Employment, only HS, Millennials, GenX

+ 1st column – Transportation Employment

- both periods – Construction, Retail, Finance, Public Sector, College grads

- 2nd column – Agriculture, Wholesale

Discussion



- Ventures made a difference for decreasing unemployment during Covid-19, but only in communities where at least 60% of residents had broadband
- This suggests a local market with a threshold of online residents was important, too, for resilience
- Counties with a high density of small businesses had lower unemployment pre-pandemic but not later
- Broadband on its own was not enough without a higher density of ventures, too
- The combined effect contributed to community resilience, measured by changes in county unemployment

Conclusions: Community Resilience

- Counties cover entire nation, urban and rural
- Ventures mattered for County economic outcomes before the pandemic – for prosperity, recovery from last recession (all ventures) and median income (high activity ventures)
- Monthly data on ventures before and during the pandemic shows that
 - in Counties with at least 60% of the population with broadband,
 - the combination of more inclusive internet use and this digital economic activity led to a significant decrease in unemployment rates
- Neither broadband nor ventures alone were significant, but in combination they were a source of economic resilience
- Time series data throughout the pandemic allows for lagged models that strengthen causal arguments

Further Research

We continue to explore other outcomes where monthly data is available

Some initial results:

- Data from the Census Business Pulse aggregated monthly for Metros – those with more ventures per capita had fewer businesses with a revenue loss compared to metros with lower venture density.
- Data from Opportunity Insights monthly - Metros with more ventures per capita had higher credit card/debit card spending relative to January 2020, compared to metros with lower venture density.