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

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 ¼ 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

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

+ 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.