

# Measuring business exit

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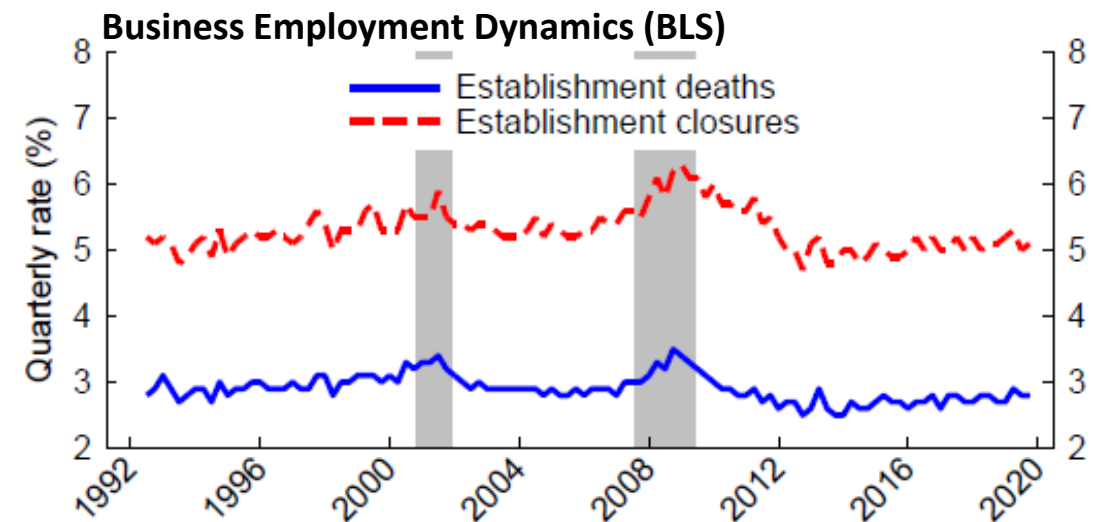
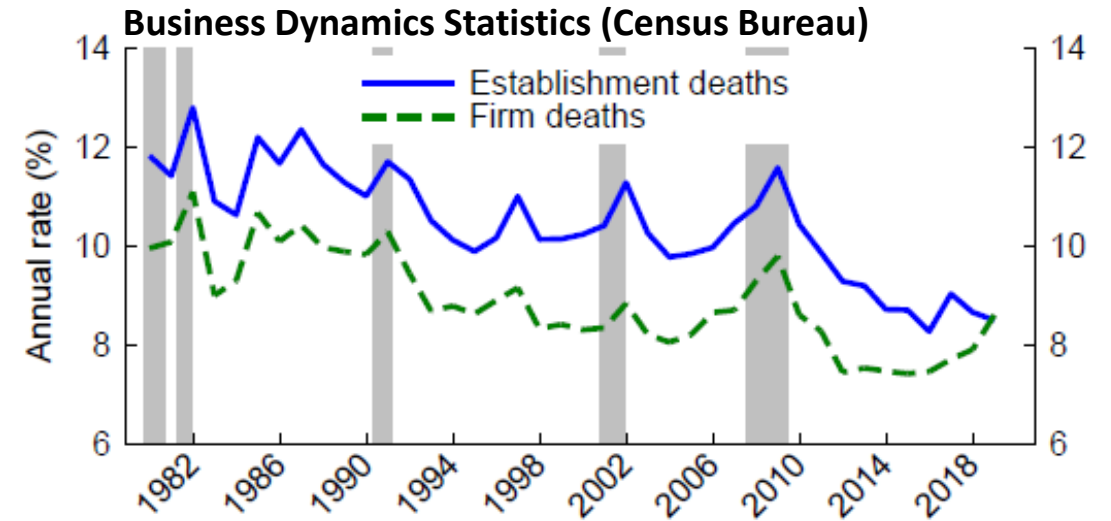
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Without implication, this presentation draws on joint work with Tomaz Cajner, Leland Crane, Aaron Flaaen, Adrian Hamins-Puertolas, Christopher Kurz, and Jacob Williams. I thank John Haltiwanger for helpful comments.

The analysis and conclusions set forth here are those of the author and do not indicate concurrence by members of the Federal Reserve staff or the Board of Governors.

# Business shutdown stylized facts (2015-2019)

- Annual firm exit (BDS)
  - 8% of firms
  - 2% of employment
- Annual establishment exit (BDS)
  - 8½ % of establishments
  - 3½ % of employment
- Countercyclical (see also Tian 2018)
- Driven by very small (and young) units
  - Though large firms often close some establishments, and more than 5% of 10+ year old firms exit annually (BDS)
- Temporary closure is common: 2% of establishments per quarter (BED)



# Role of business exit

- Business exit can be healthy and productive
  - Exit is productivity enhancing as lower-productivity firms or establishments are selected (Foster et al. 2016; Decker et al. 2020) and replaced
  - Exit is a natural consequence of business owner lifecycles
- On the other hand, exit:
  - Permanently destroys jobs
    - No recall option; see Fujita & Moscarini (2017)
    - Displacement causes long-term harm (e.g., Davis & von Wachter 2011)
  - May destroy proprietor wealth
  - Destroys intangible/firm-specific capital—and physical capital through reallocation frictions (Cooper & Haltiwanger 2007)
  - May have adverse productivity consequences if selection does not function or if not matched with business creation (e.g., Caballero 2007)
  - Alters economic geography of local communities
- Exit measurement quality matters for productivity, entrepreneurship, competition, and labor market research and policy

# COVID-19 highlighted importance of timely exit measurement

- Social distancing and business restrictions led to large revenue declines
  - In Spring 2020, widespread concern for survival prospects of affected businesses
  - Surge of business exits could destroy many jobs, reshape local communities, materially impact proprietor wealth, and reduce potential output
  - Exit selection may not operate productively in pandemic environment
- Robust policy discussion about exit and possible prevention.
- High demand for timely measurement of business exit.

# Difficulty of timely exit measurement

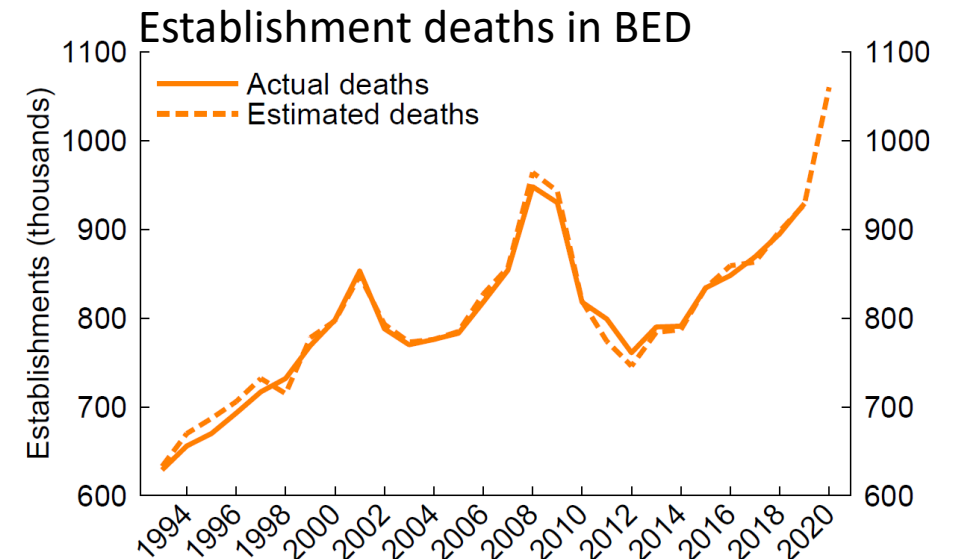
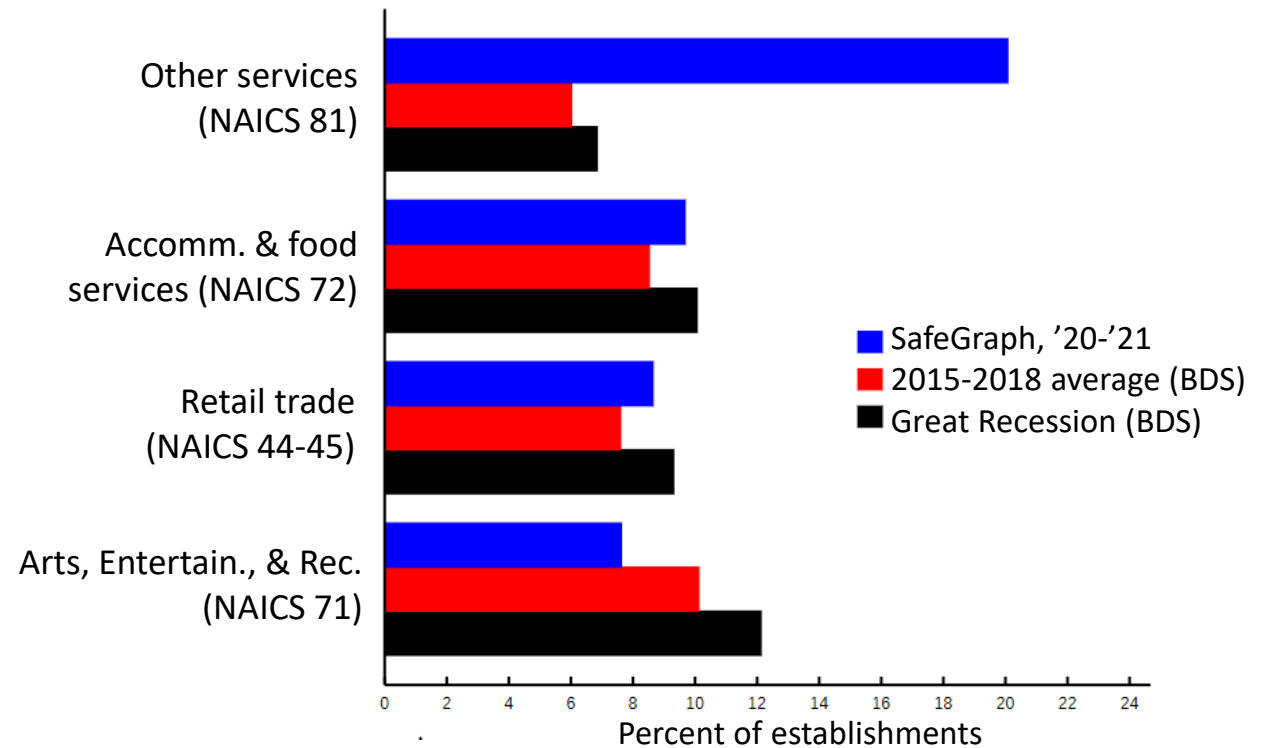
- Official data based on administrative sources are high quality but released with substantial lag
  - Establishment closure data (BLS) lag 2 quarters
  - Establishment exit data (BLS) lag 6 quarters (see Sadeghi 2008)
  - Firm exit data (Census Bureau) lag 2.5 years
- Official exit (and entry) data do not significantly influence key payroll and NIPA data releases (prior to annual revisions)
- During the pandemic, analysts have turned to nontraditional/ alternative data
  - Hamilton (2020), Cajner et al. (2020), Chetty et al. (2020), Kurmann et al. (2021), Crane et al. (2021)
  - Also: Stat agency microdata, e.g. Dalton, Handwerker, and Loewenstein (2020, others); Dalton (2021)

# A taxonomy of nontraditional business exit data

1. Business services client databases
  - Examples: ADP, Homebase, Womply
  - Strengths: Timely, high frequency, direct indicators of business activity
  - Weaknesses: Cannot distinguish client turnover from exit
2. Customer-tracking datasets
  - Examples: SafeGraph (cell phones), consumer credit cards
  - Strengths: No client turnover problem
  - Weaknesses: Not useful in some industries
3. Private sector census-, search-, or crowdsource-based business lists
  - Examples: D&B/NETS, Yelp
  - Strengths: Nominal coverage of universe
  - Weaknesses: Measurement requires continual verification by data provider (Crane & Decker 2020)
4. Ad hoc surveys by researchers or statistical agencies
  - Example: Census Bureau Pulse
  - Strengths: Scientific construction of sample
  - Weaknesses: Exit vs. nonresponse

# Example: SafeGraph (cell phone tracking data)

- Crane et al. (2021) estimate: <200,000 excess estab exits in pandemic's first year
  - Estimate constructed in near real time
  - Roughly corroborated by recent BED closure/reopen data (see appendix slide)
- Weakness: SafeGraph method does not work in some industries (e.g., construction)



Source: BLS Business Employment Dynamics, author estimates.

# Wrapping up

- Exit measurement is important to researchers, forecasters, and policymakers
  - Implications for productivity, entrepreneurship, local economies, and labor markets
- Official (BLS, Census Bureau) exit data:
  - High quality, comprehensive
  - Provide critical context for understanding nontraditional estimates
  - Released with substantial lag
  - Along with entry data, do not directly influence payroll or most NIPA data prior to annual revisions
- Nontraditional data:
  - Timely (some within days) and high frequency (daily, weekly, monthly)
  - Customer attrition, industry specifics, and sample selection limit accuracy
  - May be less useful in other kinds of recessions (pandemic focused on in-person services)



Thanks

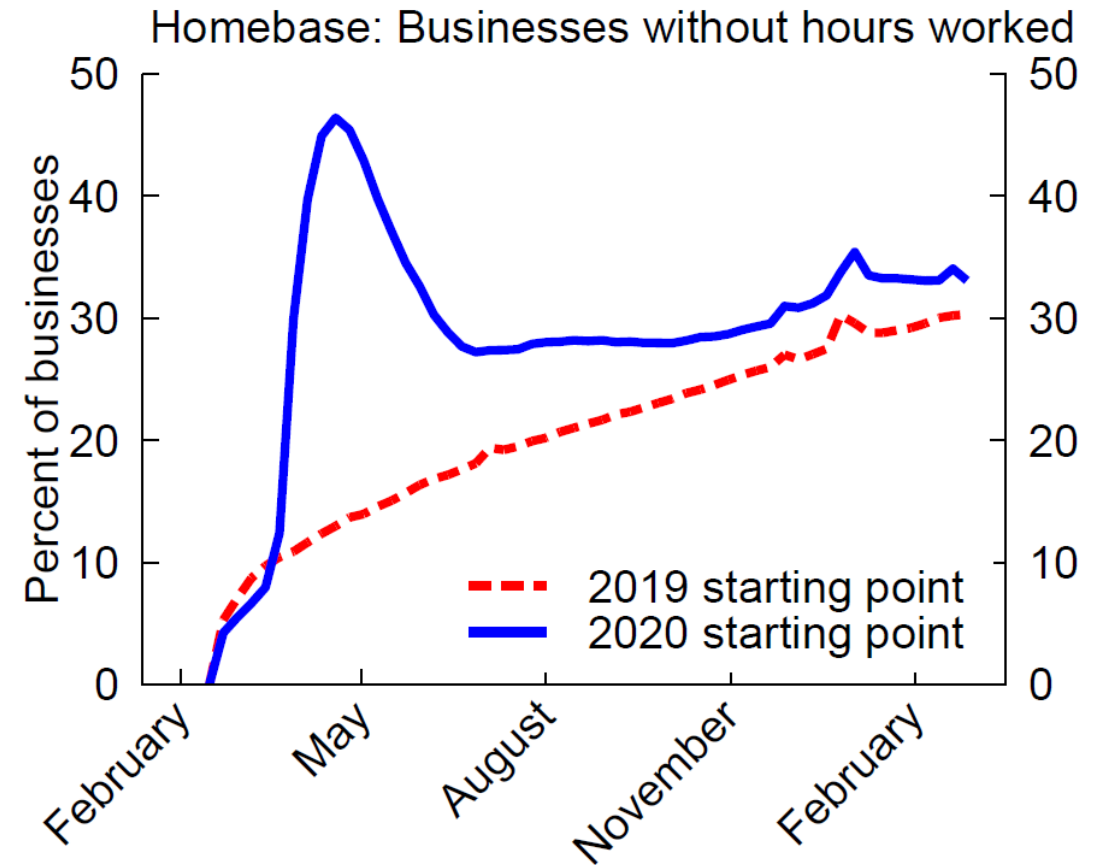
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# Appendix slides: Taxonomy of nontraditional data on business exit

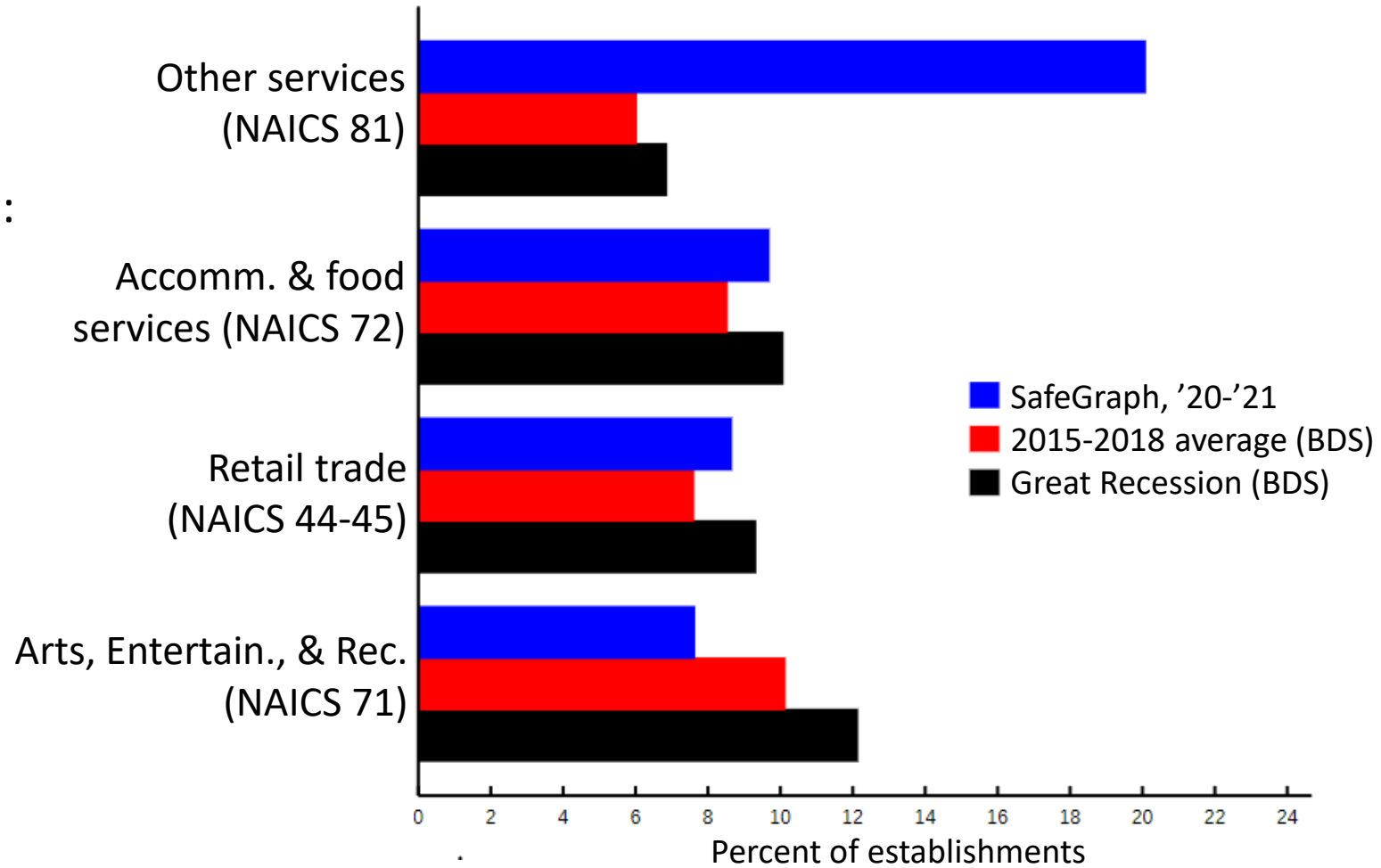
# 1. Business services client databases

- Observe activity of client businesses
  - Paycheck issuance (ADP)
  - Hours worked (Homebase; also Kronos; Gusto)
  - Revenue transactions (Womply)
- Limitations: Cannot distinguish between client churn and business shutdown



## 2. Customer-tracking datasets

- Observe patterns of customer interactions with businesses
  - Consumer credit cards?
  - Phone tracking/customer visit: **SafeGraph**
- Identify establishments with large (65%) y-o-y drop in foot traffic
  - Crane et al. (2021) estimate: <200,000 excess estab exits in pandemic's first year
  - Appears roughly corroborated by BED closure/reopen data
- Limitations: Inappropriate for some industries; short time series

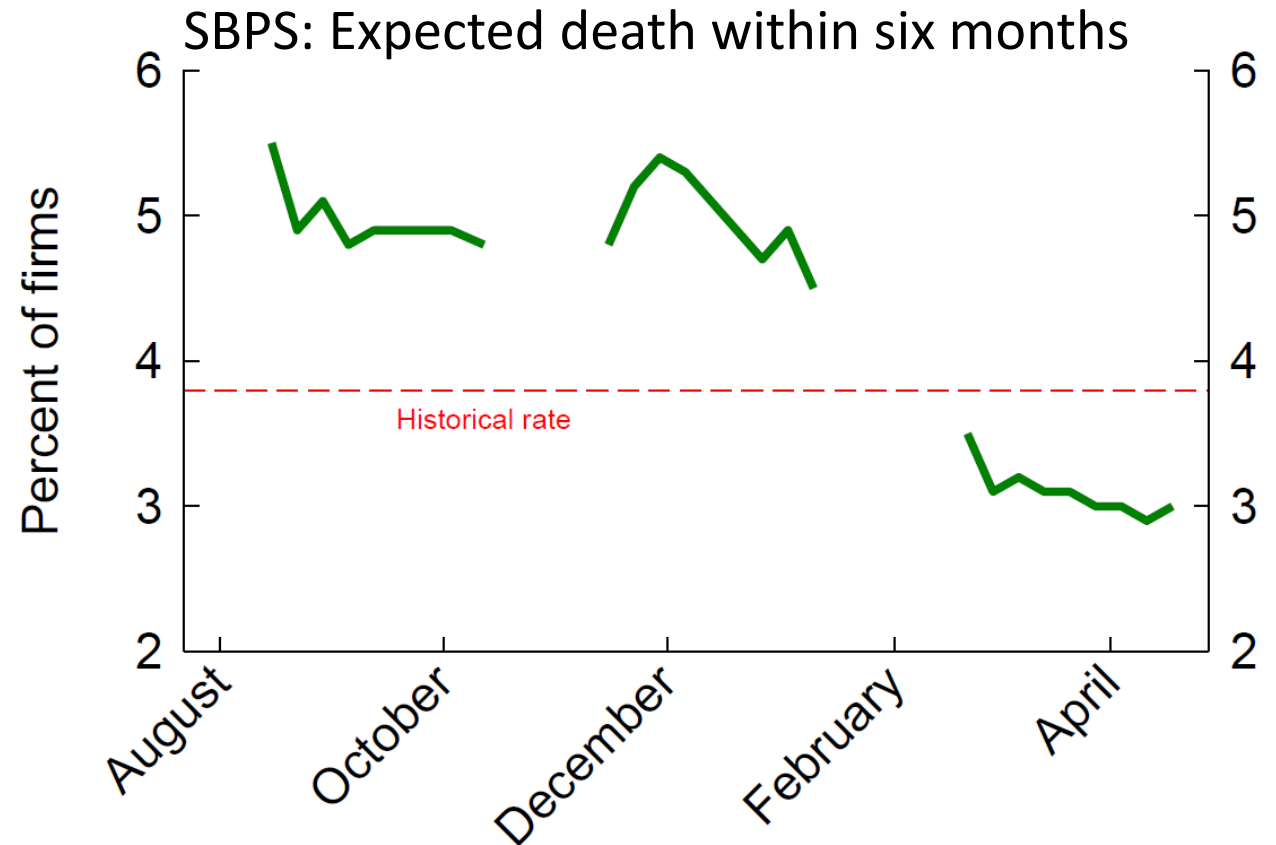


### 3. Private sector census-, search-, or crowdsource-based business lists

- Private companies that make it their business to know all the businesses
  - Dun & Bradstreet/National Establishment Time Series (NETS)
  - Infogroup
  - Yelp
- Limitations: Measurement requires continual affirmative monitoring by the data provider—infeasible for millions of businesses
  - Crane & Decker (2020): D&B/NETS tracks business dynamics poorly

## 4. Ad hoc surveys by researchers or statistical agencies

- Surveys of businesses or business owners
  - Census Bureau Small Business Pulse/SBPS (Buffington, Dennis, Dinlersoz, Foster, Klimek 2020)
  - Bartik, Bertrand, Cullen, Glaeser, Luca, Stanton (2020)
  - CPS (households) (Fairlie 2020)
- Limitations: Nonresponse versus exit



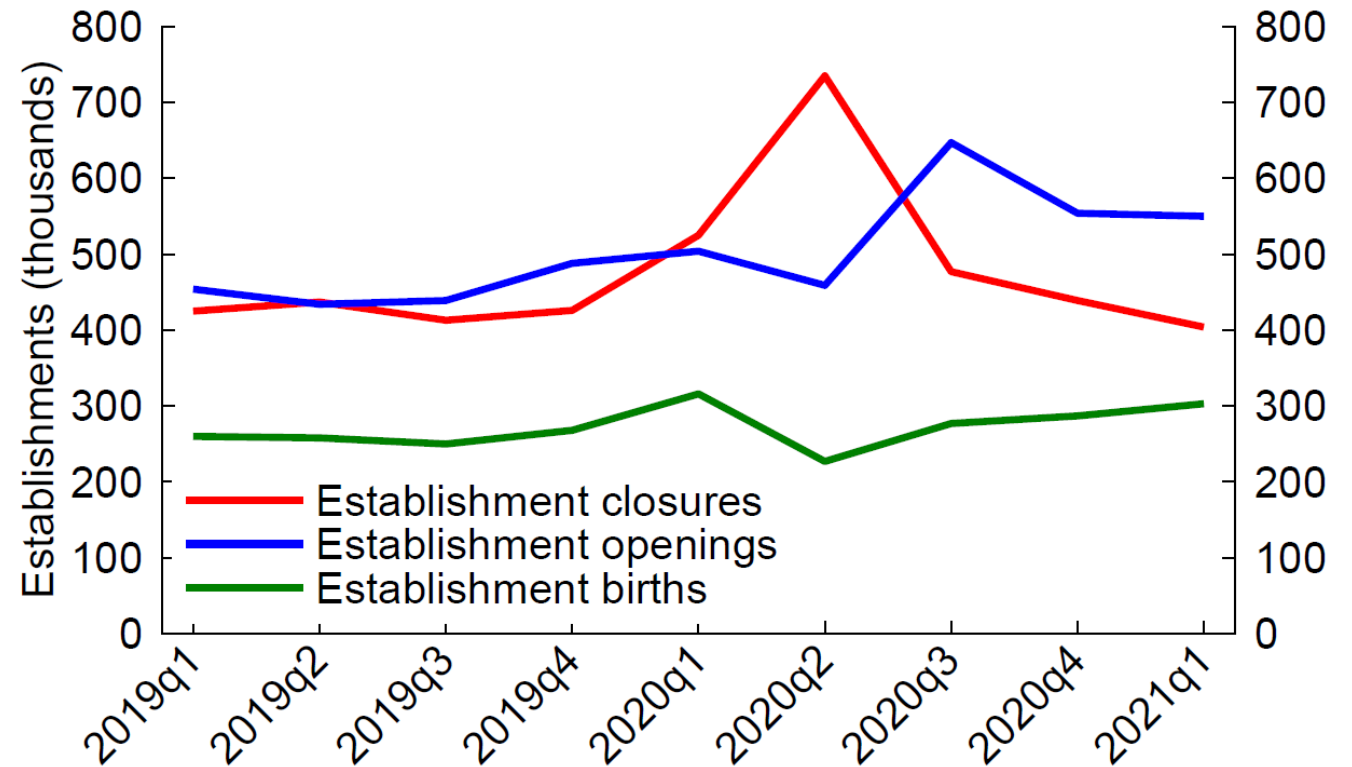
Note: Six month expectations. Data correspond to end of survey week. Historical rate is 2015-2018 from Business Dynamics Statistics.  
Source: Census Bureau Business Dynamics Statistics and Small Business Pulse Survey; data through April 12-18 2021.

Appendix slides: Estimating deaths with currently available BED data



# BED data through 2020q4

- Surge in *closures* with peak in 2020q2
- Surge in *openings* starting in 2020q3
- Dip in *births* in 2020q2, rising thereafter
  - Death data only available through 2020q1
- Can we infer deaths from closures and openings?



Source: BLS Business Employment Dynamics. Seasonally adjusted.

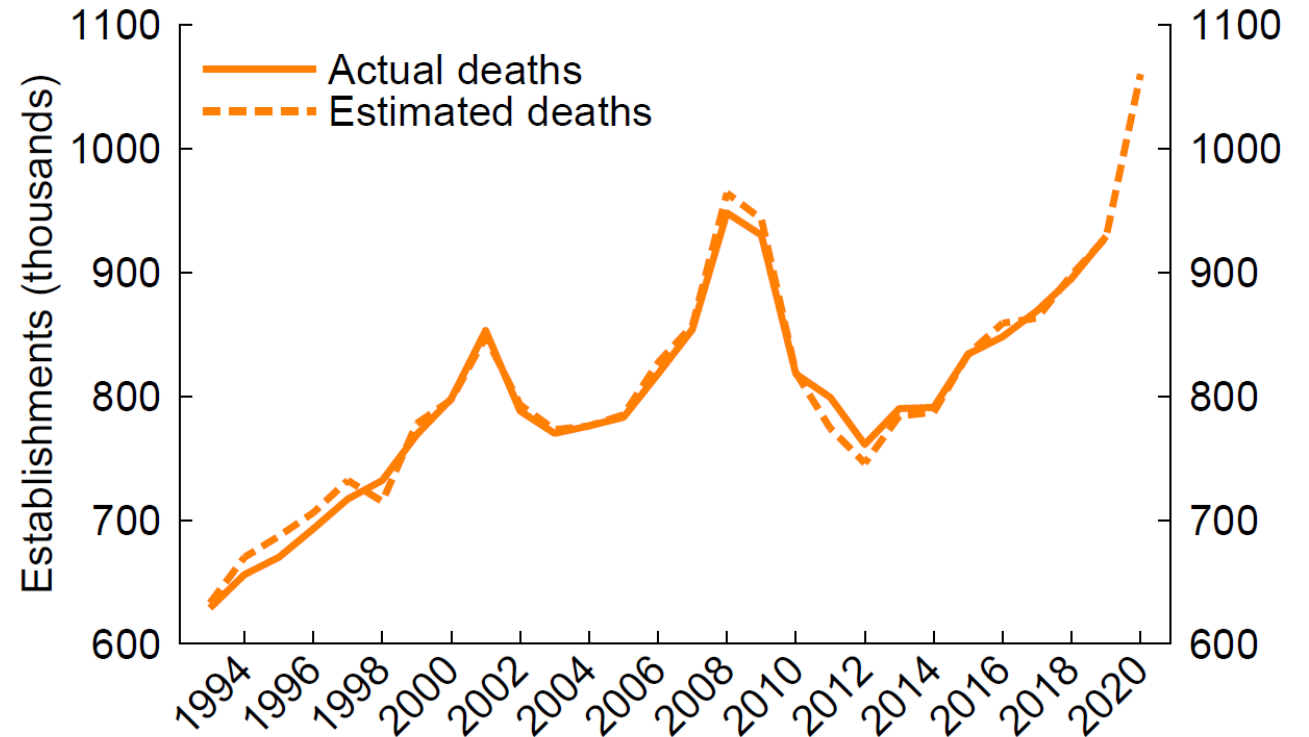
# BED-based estimates

- Reopenings = openings – births
- Assume

$$\sum_{q=2020q1}^{2020q4} deaths_q = \sum_{q=2020q1}^{2020q4} closures_q - \sum_{q=2020q2}^{2021q1} reopenings_q$$

# Evaluating BED-based estimates

- In 2019, estimated deaths are 928,000 versus 929,000 actual
- 1993-2019 RMSE = 10,000
- Implies 1.06 million deaths in 2020
  - **190,000 excess deaths** versus 2015-2019 average



Source: BLS Business Employment Dynamics, author estimates.