

Complex Event Resilience of Small- and Medium-Sized Enterprises: Natural Disaster Planning During the COVID-19 Pandemic

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Key Initial Findings

- 29 % of respondents experienced a natural disaster during the pandemic;
- 66 % of respondents have experience implementing natural disaster resilience planning, of which 23 % are using disaster resilience actions to address COVID-19.
- 72 % of respondents are concerned about future complex events in the context of COVID-19. These concerns arise from natural disaster(s) during a pandemic for 31 %.

Survey Methods. The survey instrument¹ asked respondents how COVID-19 impacted their small- and medium-sized enterprise (SME) and how the SME has adapted; about the SME’s experience with natural disasters and resilience planning; and elicited beliefs about the future. The survey was conducted online through direct emails, at the invitation of partner networks, and through social media posts.

Descriptive Statistics. There were 1374 survey responses; Fig. 1 gives the breakdown by Census region.²

Moreover, 1123 businesses self-identified as either essential or non-essential. Of note, 13 % of these respondents identify that only a segment of their business is essential, while 6 %

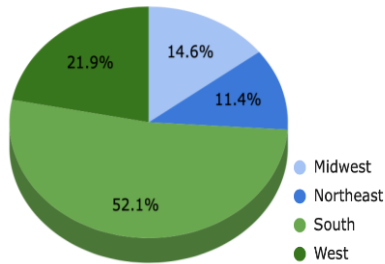


Fig. 1. Respondents by Census region.

indicate that they are unsure about their SME’s classification. Figure 2 reports businesses by size and classification as essential or not. 55% of SMEs are microbusiness, 31 % are small, and 14 % are medium-sized businesses.

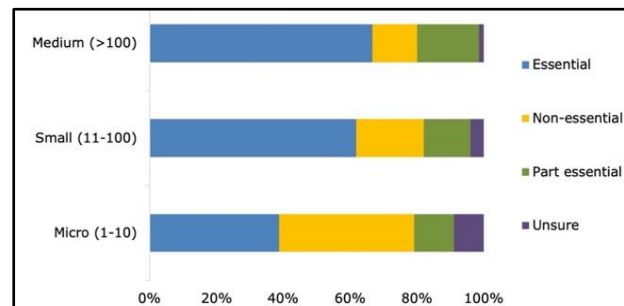


Fig. 2. SME designation as essential/non-essential by size. n=1112.

930 businesses reported industry type. 24 % of SMEs are classified under construction, 17 % in medical services, 16 % in retail and wholesale, and 8 % in manufacturing, among others. The median value of SME length of time in business is 51 years.

¹ Approved by the NIST IRB and under OMB CONTROL NO. 0693-0078. Expiration 07/31/2022. Survey instrument and sampling, see: Helgeson, J.F., J.F. Fung, Y. Zhang, A. Roa-Henriquez, A. Zycherman, C. Nierenberg, D. Butry, and D. Ramkissoon. (2020). Eliciting lessons

from small- and medium-sized enterprises (SMEs) for natural disaster resilience planning and recovery during the COVID-19 pandemic: SME Complex Event Resilience, NIST DCI 002, Gaithersburg, MD. <https://doi.org/10.6028/NIST.DCI002>.

² N=1357 provided location information

Past SME experience with natural disasters. A large majority of survey respondents in each region indicate that their SME has been affected by some natural hazard in the past. See Fig. 3. The division

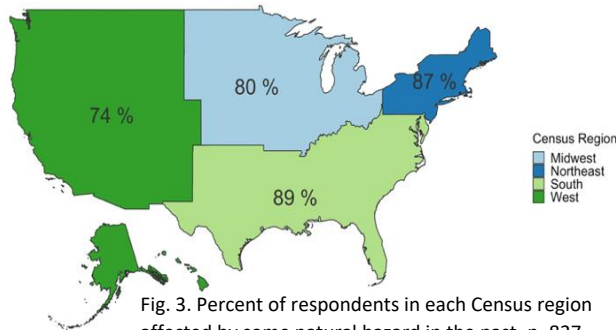


Fig. 3. Percent of respondents in each Census region affected by some natural hazard in the past. n=837.

between those with chronic (13 %) versus acute (18 %) natural hazards experience indicates a slightly higher concern with acute risks; 57 % report having experienced both types in the past (pre-COVID-19).³

SME experience with natural disasters during the COVID-19 Pandemic. The survey asked respondents if their SME experienced a natural disaster since March 13th, 2020.⁴ A natural disaster had affected 29 % of SMEs during the pandemic.⁵ See Fig. 4, which indicates the percent of respondents whose response to the natural disaster experienced was affected by COVID-19 circumstances.

Current and future plans to address complex events: concurrent COVID-19 and natural disaster risks. 98.6 % of respondents expressed

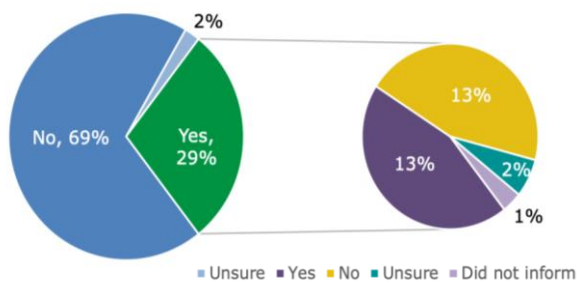


Fig. 4. SMEs affected by a natural disaster during COVID-19, left. n=1038. Of those affected by a natural disaster, fraction whose response to the event was affected by COVID-19, right. n=300.

³ Chronic natural disaster risks: drought, extreme cold, heat waves, winter storms, flooding. Acute natural disaster risks: hurricanes, storm surge, earthquakes, tsunamis, tornadoes, and wildfires.

concern over one or more complex events occurring during COVID-19.⁶ Fig. 5 presents the fraction of respondents by region that expressed concern over

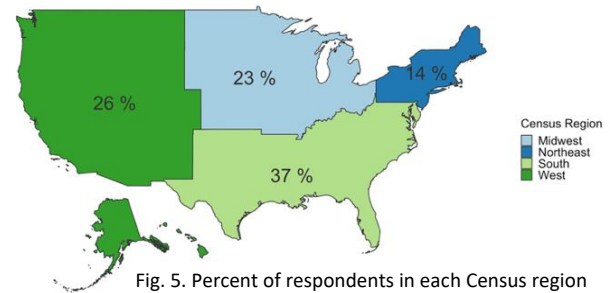


Fig. 5. Percent of respondents in each Census region that expressed concern over natural hazard risk in the context of COVID-19. n=1038.

complex events arising specifically from concurrent natural disasters and COVID-19. Fig. 6 summarizes categories of expressed needs by to help their SMEs address future complex risks.



Fig. 6. Categories of expressed needs

Future Activities/Research. This data collection is the first in a longitudinal effort to address SME Complex Event Resilience. Fig. 7 provides the four objectives of this effort. Feedback and collaboration are welcome.

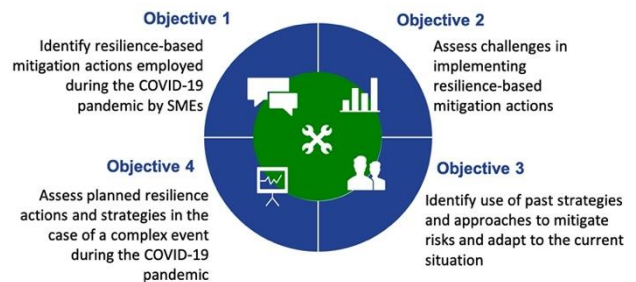


Fig. 7. Longitudinal study objectives.

⁴ Date of the Federal Emergency Declaration.

⁵ Specifically, the period between March 13 and August 8, 2020.

⁶ n=1006.