**NATIONAL PREPAREDNESS
LEADERSHIP INITIATIVE**

COHORT 19

TEAM ESSENTIALLY CRITICAL

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ABSTRACT

While much work in crisis management has focused on "critical" sectors and employees, it was generally with the intent of addressing an acute event that required priority services to continue for a short aftermath. COVID-19 has introduced a prolonged event that requires a shift in thinking of defining critical. This was observed with the emergent term "essential workers" which evolved from the early days of spring 2020 into 2021.

 The 'Arcs of Time' occurring during a pandemic present unique challenges that demand specific actions to optimize the response and services. To effectively address these, it is necessary that the entire workforce is assessed and evaluated with regards to the necessity of their occupation in light of the circumstances presented by a specific Arc. Preparation for and communication to the sectors of the workforce deemed essential during the Arcs will allow for a viable response that minimizes disruption and reduce confusion for future infectious disease outbreaks.

PROBLEM

The protracted nature of a pandemic has presented a new set of challenges for assessing and identifying personnel who fit into the classifications of Critical Infrastructure Workers. Unlike a natural disaster, or other acute event, control measures associated with the COVID-19 pandemic have persisted for more than a year. Furthermore, unlike other events that have typically been localized, the pandemic has affected the entire nation (and world). What would constitute essential critical infrastructure workers after a short-term, localized event is much different than the current situation. Experience with COVID-19 has resulted in classifications of new essential workers that address quality of lift stability.

The need for identifying critical infrastructure workers is directly tied to the wellbeing of our country and best outlined in the US Patriot Act (42 U.S.C. 5195c(e)):

(e) In this section, the term "critical infrastructure" means systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matter.[1]

Hence, it is apparent that the identification of the critical work force is necessary and inherently beneficial for the nation.

As noted, the duration of a crisis has a direct bearing on the identification of works deemed essential or critical, so it is necessary to provide a framework of understanding that goes beyond the events that precipitated the need for identifying critical infrastructure works. Furthermore, technological advances have affected the work environment such that occupations that previously may have required a predominately on-site workforce now have the ability for personnel to perform tasks virtually and work from nearly anywhere.

STAKEHOLDERS

The stakeholders associated with critical work force infrastructure are manifold if not ubiquitous. Most obvious are the entities that provide guidance on the matter, but there are numerous other entities that have a vested interest in the definition of essential workers. State and local governments require guidance to make decisions that affect the industries and workers in their remit, but most affected are the individual workers themselves. Those identified as critical, or essential, might perceive themselves as more exposed while those in categories deemed not critical can feel marginalized.

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[1] United States Code –Title 42; Critical Infrastructures Protection Act of 2001; (42 U.S.C. 5195c(e)) page 4596.

Federal agencies: The Center for Disease Control (CDC) is the primary agency for providing guidance on the risk of different tasks and function s with transmission of infectious diseases. This, in turn, provides direction for what are considered critical functions. The federal agency most directly involved in translating this information into essential worker classification is the Cybersecurity and Infrastructure Security Agency (CISA) as they publish the guidance that is promulgated across the country. Throughout the COVID-19 pandemic this entity developed four versions of a document titled "Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and National Resilience in COVID-19 Response'. It must be noted that this document was not created in a vacuum, but in close collaboration with others federal agencies, State and local governments, and the private sector.[2]

Local governmental entities: State and local governments utilized the guidance provided by CISA to make decisions, provide direction, and ultimately implement directives related to workers supporting the critical infrastructure. State government has larger ownership of setting policies based on this guidance while the local government may be more restrictive in application.

Other public and private sector stakeholders: While there are, perhaps, too many individual stakeholders to identify here, there are several categories that can be mentioned: public sector employees (those individuals deemed critical or not), large corporations, small business, and individual employees.

Citizens: Critical workers provide services to private citizens who rely on public and private infrastructure for basic life sustenance (water, electricity, transportation, etc.) in short-duration crises. As the crises move through the Arcs of Time, these necessities are joined by other goods and services that add to the comfort of the citizenry and require additional categories of critical workers (pharmacists, groceries, hardware).

Foreign Nations: As a world leader in banking, trade, security, and foreign aid, the United States has a commitment to maintain capabilities through short- and long-term crises. Other nations are key stakeholders in America's ability to maintain and sustain banking, logistics, military, and diplomatic operations that provide stability in foreign relations, markets, and society.

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[2] *Advisory Memorandum on Identification of Essential Critical Infrastructure Workers During COVID-19 Response*, U.S. Department of Homeland Security, Cybersecurity and Infrastructure Security Agency, Mach 28, 2020,
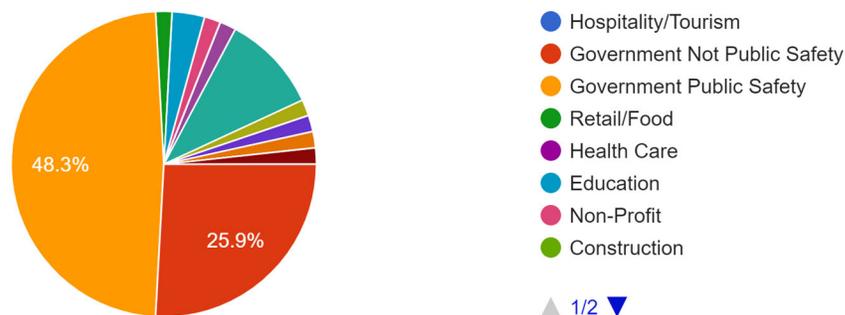
TEAM PERFORMANCE.

Our research included traditional review of published materials, development and distribution of a survey and multiple interviews of members of both the public and private sector.

Literature: Amongst others, some pertinent literature reviewed included the "Critical Infrastructures Protection Act of 2001", three versions of "Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and Nasional Resilience in COVID-19 Response Versions 2.0, 3.0 and 4.0" and the State of Missouri Vaccination Plan. In addition, the team leveraged real time guidance issued from local, state, federal, and employer-issued guidance in our respective remits.

Survey: The team issued a survey in March-April which was developed to help gain insight into the general understanding of the term 'essential worker'. Twelve questions assessed how the respondents perceived the issue. The survey was answered by nearly 60 people representing both the public and private sectors.

Your Industry
58 responses

- Hospitality/Tourism
- Government Not Public Safety
- Government Public Safety
- Retail/Food
- Health Care
- Education
- Non-Profit
- Construction

△ 1/2 ▼

Interviews: Throughout the program, the team interviewed various leaders who have been part of interpretation, implementation, or direct experience of essential worker policy related to COVID-19. These leaders were asked questions related to their experience with essential worker application during the pandemic, and how it has affected their ability to manage up, across, and down in their respective roles. Interviewees included:

- Michael Berkowitz, Founding Principal of 100 Resilient Cities and Resilient Cities Catalyst. Former roles include NYC Emergency Management and Deutche Bank as the Global Head of Operational Risk Management

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- Captain Lisa Delaney, CDC/NIOSH Associate Director for Emergency Preparedness and Response
- Jonathan Jenkins, COO of AC Disaster Consulting and leader in Florida and Portland emergency management response to COVID
- Ben Krakauer, Executive Advisor to the Commissioner to NYC Emergency Management and lead operational manager for NYC's covid response
- Michele Ryan, Director, St Louis County Office of Emergency Management
- Mohamed Telab, Chief of Protective Security for Regional II at CISA

One central theme throughout the interviews was that the function defines the critical worker; it does not matter where the individual performs her/his work. Another consistency that was identified was that short term natural disasters were the normal types of crisis requiring essential worker designations. In these scenarios essential workers were identified as being first responders, utility workers, health care professionals, transportation providers and those directly involved with the local, critical infrastructure. When contrasted with the longer duration of the current pandemic it was interesting to note that technology could be utilized to empower distributed teams; there was inconsistency across the US in application and need; and most workers/functions become critical at some point (e.g., workers in bicycle shops).

ACCOMPLISHMENTS.

Through the NPLI program, the team advanced the discussion on how essential worker definition and functions worked through the COVID-19 pandemic to identify areas for how this may be reconsidered in future infection disease outbreak.

The literature review informed the team that there is not active guidance that is set the prolonged nature of implementing essential working policy. COVID-19 resulted in many real-time, constantly changing guidance and directives on how to define essential.

This was reinforced through the survey results and interviews. Ultimately, much of the work and efforts on defining critical workers was done with an acute event in mind – and often developed years ago and not accounting for the rapidly changing work of technology that allows many employees to work remotely. We found that while there is a large agreement essential is based on the job function, the fact is many of these functions do not need to be in person. In addition, many functions became more pertinent as time moved

on, e.g. routine medical appointments that could be delayed days/weeks in an acute event could not be delayed during the extended timeline of COVID-19.

Assessing how risk changed over time, and the jobs functions that needed to continue, either onsite or remoted, throughout those periods of time apply well to the Arc of Time theory. In addition, severity of the outbreak plays a large role in the arcs of time and definition of essential workers. Whereas COVID-19 had a low fatality rate, but in an Ebola scenario, the policies and application of essential worker guidance would differ.

The survey successfully provided insight into how people understood the concept of essential workers and their challenges in interpreting and applying the guidance.

What were challenges in interpreting "essential worker" guidance during the pandemic? Check all that apply
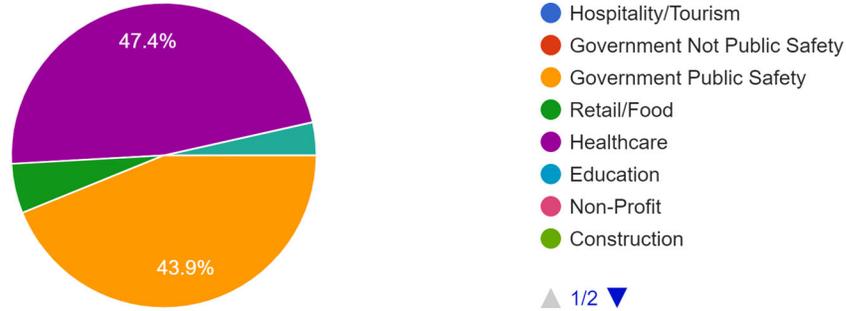
57 responses
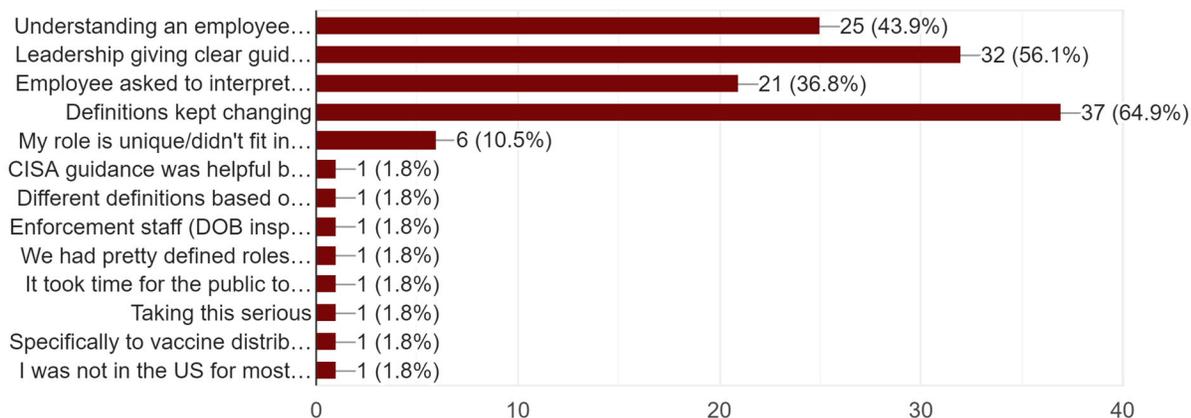
The general consensus was that healthcare workers and public safety officials were considered essential. Other sectors were identified by some respondents, but there was limited agreement after these two categories. Interestingly, 23% of the respondents considered hospitality and tourism essential.

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If you had to rate or put into tiers essential workers, which category would rank #1? Please consider risks to the workers, risks to the customers, contribution to society.
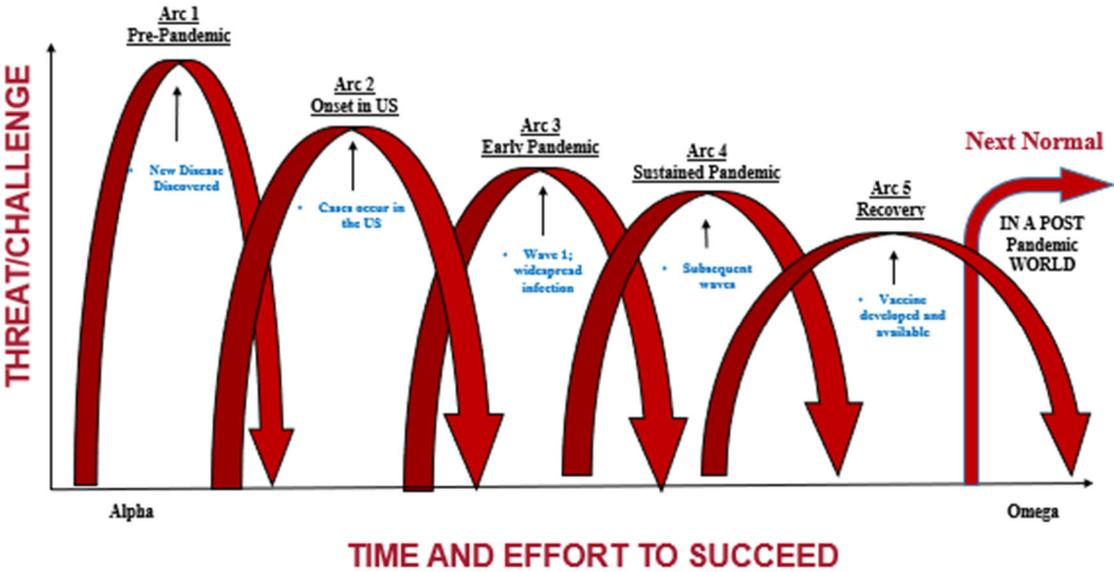
57 responses

- Hospitality/Tourism
- Government Not Public Safety
- Government Public Safety
- Retail/Food
- Healthcare
- Education
- Non-Profit
- Construction

△ 1/2 ▼

The respondents, by a ratio of 3:1, believed that the definition of essential worker should change throughout the phases of a pandemic. When considering business openings, the needs of society (65%) are as important as the safety of workers (63%).

We developed a matrix outlining the critical/essential workers against the Arcs of Time of the COVID-19 pandemic.

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Pandemic Arcs of Time
HYPOTHETICAL ARCS OF TIME

Arc	Characteristics	Concerns	Crit/Essent. Workers
Pre-pandemic/ preparedness	Monitoring; surveillance of emerging novel infection	Transmission to the US	Planning phase for pre-identified potential EWs (pandemic preparedness plans, BCP/COOP plans), credentialing systems
Onset in US	Isolated cases that can be linked; sustained human-to-human transmission	Front line workforce. Healthcare sector capability / capacity. Infected individuals exposed overseas and binging the virus stateside	Treat as an acute event EWs are most critical for immediate need – those who must go to work in person and those serving the direct response and needs of the outbreak.

Arc	Characteristics	Concerns	Crit/Essent. Workers
			Many workers may work remotely to reduce exposure.
Early Pandemic; Wave 1	Widespread human infection. Able to trace cases and contain via isolation/quarantine. Increased understanding of the disease	Full community wide transmission Closures to reduce community scale transmission (thinking most critical EWs continue) Widespread supply chain impacts	Expand categories of critical in-person function to those who must go to work in person, including those serving the direct response and downstream services Many workers continue to work remotely, but qualify of life functions factored in (e.g. grocery) Many workers will work remotely to reduce exposure.
Sustained Pandemic	Subsequent waves	Mental health Economic impacts including unemployment, small and medium businesses, real estate, and other services -Local/state government budget constraints as funding prioritized to response over normal operations	Revise and expand Definition of essential workers to those needed for chronic/longer term needs of the community, including reduce services/operations for sustaining key sectors such as food, service, personal care, and retail

Arc	Characteristics	Concerns	Crit/Essent. Workers
Recovery	Vaccine developed and delivered; transmission subsides	Limited resource/solution available (e.g., limited number of vaccine doses)	Blend as acute and sustained events require; acute-related critical services may still require additional measures in place for return to work; EW policy to go back to re-opening

CHALLENGES.

Our original proposal was to provide a framework for identification of essential/critical workers during the various phases of a pandemic. As the project unfolded it became apparent that there is a need to be flexible in definition as there are unexpected situations that arise which necessitate emendations of the identified workers.

The unique temporal aspect of the pandemic has also been a challenge; most Americans are used to dealing with short-term disruptions to their normal lives and are able to cope with lack of basic necessities for several days; however, as the crisis moved through the Arc of Time, Americans started demanding a return to pre-pandemic routines. Such changes required that more categories of workers become essential to meet expanded expectations and demand for goods and services.

We also had no opportunity, because of the pandemic, to meet in Cambridge as part of the NPLI experience; therefore, all of our interaction has been virtual. Another significant challenge was the dynamic schedules and demands of the jobs each of us occupy. It has been difficult to find times for everybody to connect, but we have managed to remain in touch throughout the project.

LEADERSHIP EFFECTIVENESS.

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Dimension 1, The Person. Each team member contributed to the project in different manners as experience and occupation varied. The basement was not encountered in this exercise as it was primarily academic.

Developing trust was critical throughout this project, as our varied schedules, work demands, and personal life requirements detracted from our ability to participate in all of the meetings and work on the various pieces of the project. However, we came to trust one another early on and began to rely on the skill sets of each member of the team.

Dimension 2, The Situation. As the pandemic continues to unfold we were challenged with the realism of an evolving landscape during our project; much as we would in a 'real world' situation. One tool that we found beneficial in navigating the dynamic nature of the pandemic, coupled with the updated information we obtained over the course of the project, was the POP-DOC loop. Although we did not formally correlate our actions in each meeting with the POP-DOC loop we did incorporate the various components of the thinking and action steps. This allowed us to best assimilate that information that we acquired and to develop plans that could be actioned prior to our next meeting.

The professional positions that we occupy added another wrinkle to the situation in the fact that each member had obligations that required attention which did not always allow for optimal engagement throughout the project. Flexibility and cooperation by all members ensured that when one was not able to be present or to perform a task we were still able to achieve our goal.

One additional contribution to the situation was the fact that we were required to perform the entirety of the course virtually. It was intriguing to see how the team cohesion developed rapidly even though we were unable to meet each other in person.

Dimension 3 - Leading Down: Leading down did not feature in our project as there were no subordinates engaged. However, the ultimate end will provide guidance for all, so while this was a dimension not directly engaged throughout our project there is a component of leading down that will be realized.

Dimension 4, Leading Up: Similarly to leading down, there was not a lot of leading up that occurred throughout the course of our project. There were, of course, the conversations with the NPLI faculty regarding our project and the leadership components therein which could constitute some element of

leading up. Providing feedback to CISA regarding our research also has an element of leading up as they are the entity providing guidance on the Essential Critical Infrastructure Workforce.

Dimension 5, Leading Across/Beyond: The categories of leading across and leading beyond were the aspects of meta-leadership most directly engaged throughout our project. We each connected with personnel within our organizations, as well as within our cohort, in the forms of interviews and invited our coworkers to participate in the survey. Several the interviews performed would constitute leading beyond as we reached out to people in federal agencies that were external to our immediate spheres of influence.

PROJECTED IMPACT.

Ideally, the projected impact of our project will be realized in being better prepared for identifying essential and critical workers if another pandemic should occur. The interviews and the survey identified a certain amount of confusion around the changing guidance and even with the terminology itself. If we are able to better identify the individuals who constitute the essential critical infrastructure workforce at the onset of a pandemic there would be less time spent by many organizations rationalizing the essentiality of their employees.

CONCLUSION.

As noted, the origin of the concept of essential workers is directly tied to critical infrastructure in response to an acute event. The longevity of a pandemic adds a dimension that was not directly addressed during the conception of the terminology. Although the notion of national economic security was identified as a component contributing to critical infrastructure the concept is much different in a short term even than it is in a protracted crisis. A great deal of critical infrastructure remains the same during an acute event as well as during a pandemic, but it is obvious that the longer an event continues the more that national economic security becomes a factor.

It may be best if the current terminology remains in place as the critical infrastructure itself does not change, but that there is a differentiation between the essential workforce that is needed to physically maintain it and those that have the ability to support it remotely. The advent of technology that allows for more personnel to work from a distance changed the landscape and must be accounted for. However, rather than the perpetual accretion of new categories of workers being identified as essential it may be that having an additional category, or subset, of workers that accounted for remote working would be all that was

necessary. 'Distributed teams' is one term that was brought to our attention and seems to provide an ideal solution.

That said, there must be some flexibility factored into the identification of the essential workforce as things change over time. Consistently throughout the interview process it was noted that as the situation evolved it was necessary to adjust the understanding of essential workers. One particularly striking example was the need for bicycle shops to be identified as critical infrastructure as they became an integral service for those people in New York City who shifted their mode of transportation away from public transit.

In conclusion, the pandemic has provided insight into some opportunities for improving the understanding and definition of the essential critical infrastructure workforce. Some consideration must be made to account for protracted, dynamic situations and to incorporate the technological advances that impact the workforce itself. A revision of the terminology associated with the essential critical infrastructure worker could enhance the general understanding of the dynamic nature of a pandemic, decrease confusion should there be another protracted crisis, and best account for the advances of technology that contribute to changes in the physical location of where essential works must be to carry out their jobs.

References.

1. United States Code –Title 42; Critical Infrastructures Protection Act of 2001; (42 U.S.C. 5195c(e)) page 4596. https://www.govinfo.gov/content/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42-chap68-subchapIV-B-sec5195c.pdf
2. "Advisory Memorandum on Identification of Essential Critical Infrastructure Workers During COVID-19 Response", U.S. Department of Homeland Security, Cybersecurity and Infrastructure Security Agency, Mach 28, 2020,
3. "Advisory Memorandum on Identification of Essential Critical Infrastructure Workers During COVID-19 Response", U.S. Department of Homeland Security, Cybersecurity and Infrastructure Security Agency, December 16, 2020, https://www.cisa.gov/sites/default/files/publications/ECIW_4.0_Guidance_on_Essential_Critical_Infrastructure_Workers_Final3_508_0.pdf
4. "COVID-19 Vaccination Plan", State of Missouri, November 11, 2020
5. "Interim List of Categories of Essential Workers Mapped to Standardized Industry Codes and Titles", Center for Disease Control, https://www.cdc.gov/vaccines/covid-19/categories-essential-workers.html
6. "COVID-19 Critical Infrastructure Sector Response Planning", Center for Disease Control, https://www.cdc.gov/coronavirus/2019-ncov/community/critical-infrastructure-sectors.html
7. "Meat and Poultry Processing Workers and Employers", Center for Disease Control, https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/meat-poultry-processing-workers-employers.html
8. "Critical Infrastructure and Key Resources Support" Annex, Department of Homeland Security, https://www.fema.gov/pdf/emergency/nrf/nrf-support-cikr.pdf
9. "To protect frontline workers during and after COVID-19, we must define who they are", Brookings, Adie Tomer and Joseph W. Kane, June 10, 2020, https://www.brookings.edu/research/to-protect-frontline-workers-during-and-after-covid-19-we-must-define-who-they-are/
10. "Congress needs to stop the 'essential' confusion", The Hill, Brian Finch and Amanda Halter, April 10, 2020, https://thehill.com/opinion/finance/492166-congress-needs-to-stop-the-essential-confusion