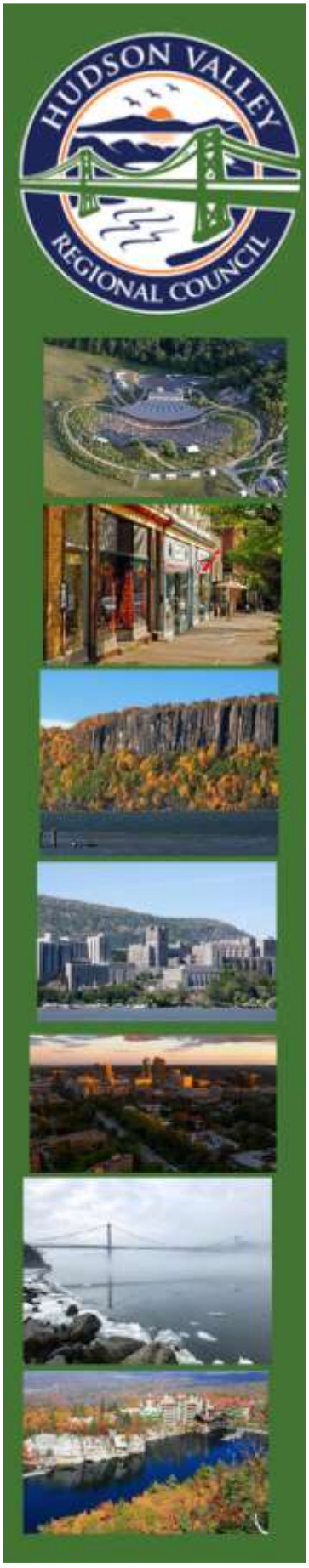

Towards a Regional Resiliency Network

Lessons Learned from the COVID-19 Pandemic

A Response & Recovery Action Plan for the Hudson Valley Region

Hudson Valley Regional Council
December 2022

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EXECUTIVE SUMMARY

In 2022, with a grant from the US Department of Commerce - Economic Development Administration using COVID-19 CARES Act Funds, the Hudson Valley Regional Council sought to address increasing concerns about vulnerabilities to natural disasters and the COVID-19 pandemic that impacted every community by considering how to help communities to become more resilient. The project also offers recommendations to track their progress towards a state of readiness and ability to bounce back from emergencies.

The purpose of this project is to identify and address how resiliency is defined and determine how communities can use available resources to respond to, withstand, and recover from public health emergencies due to COVID-19 and other adverse events. The work of the project included assessing regional economic conditions, surveys of local government and civic organizations, and a survey of businesspeople, along with interviews with the economic development and planning officials from throughout the Hudson Valley Region.

This work has culminated in a Regional Response and Recovery Plan.

The Response & Recovery Action Plan: A Regional Resiliency Network

The Hudson Valley's Response and Recovery Action Plan will involve a dispersed and diverse network of government agencies, civic organizations, and businesses that:

- Is based on region-wide coordination in preparedness and disaster response.
- Develops and disseminates objective indicators of the Region's overall condition and preparedness.
- Supports innovation in service delivery in the face of crises.
- Actively communicates and engages with all communities in the Region.

The key concept in the overarching strategy is the reliance upon a network of allies rather than a single agency or small group of organizations to lead the effort. The elements of the Response Recovery Action Plan build upon the three primary actions laid out in the full plan and begin with a fourth additional action: planning for resilience and recovery.

Primary Action I: Planning

Plans establish a context and focal points around which to build and maintain the organizational networks needed for effective disaster response and resiliency. There are three planning recommendations that are central to the implementation of the Response & Recovery Action Plan:

Recommendation I-1. Ensure each county maintains a Current Continuity of Operations Plan (COOP).
Recommendation I-2. Maintain County and Local Hazard Mitigation Plans.
Recommendation I-3. Update the Hudson Valley's Comprehensive Economic Development Strategy to fully address issues of resiliency and disaster preparedness and create a coordinating mechanism for the Regional Resiliency Network.

Primary Action II: Designate/Maintain Working Groups for a Resiliency Network

The central lesson from the research and outreach conducted to prepare this plan is that resiliency is impossible without working relationships that extend across jurisdictions, across government agencies and civic groups and incorporate both the public and private sector. This plan recommends the designation and maintenance of four types of workings groups/response teams to be incorporated into a region-wide resiliency network. This may involve giving a designation to an already operating working group or response team.

Recommendation II-1. Each county should designate an economic development working group.
Recommendation II-2. Each county should designate strategic industries working groups.
Recommendation II-3. Each county should designate an intermunicipal working group.
Recommendation II-4. Each county should designate a human services response team.

Primary Action III: Assigning Local Experts to Track Progress

Getting access to timely, relevant, and credible data is essential for coordinating any response to a disaster. Thus, this Response and Recovery Plan recommends that each county designate organizations to track the performance indicators associated with this effort.

Recommendation III-1. Each county should designate organizations tasked with collecting and analyzing data on key performance indicators for the county's efforts at improving resiliency.

Primary Action IV: Coordinating the Regional Resiliency Network, Hosting Progress Report Meetings, and Conducting Community Workshops for Network Members

Every member of this proposed Regional Resiliency Network is already fully engaged in providing services and conducting their essential businesses. In that context, those already-full agendas can eventually erode the network unless there is a catalyst keeping the network together and coordinating its activities. This plan has three recommendations to realize such a coordination role:

Recommendation IV-1. Institutionalize the Response and Recovery Plan and the Regional Resiliency Network in the Hudson Valley Regional Council.
Recommendation IV-2. Convene an Annual Resilience Summit to track progress of the Regional Resiliency Network.
Recommendation IV-3. Conduct community workshops on issues related to resilience.

Once the initial steps of the region-wide plan have been implemented, more detailed planning should be expected to take place in counties and localities throughout the Hudson Valley. The full report contains recommendations and best practices for evaluating these planning efforts to monitor, track, and measure results in improving resilience.

I. INTRODUCTION

In 2022, with a grant from the US Department of Commerce - Economic Development Administration using COVID-19 CARES Act Funds, the Hudson Valley Regional Council (HVRC) sought to address increasing concerns about vulnerabilities to natural disasters and the COVID-19 pandemic that impacted every community by considering how to help communities to become more resilient and track their progress towards a state of readiness and the ability to bounce back from emergencies.

The purpose of this project is to identify and address how resiliency is defined and determine how communities can use available resources to respond to, withstand, and recover from public health emergencies due to COVID-19 and other adverse events. The project also evaluated and provided a basis for future education in promoting resilience thinking and increasing community capacity to build relationships before, during, and after disasters at the community level to mitigate the current and future impact of COVID-19 and other disruptive events that may occur in the future.

Local governments' ability to plan and track progress towards a state of readiness will improve the ability of Hudson Valley communities, our natural and built infrastructure, and our economies to recover more quickly after disruptive events. With this in mind, HVRC evaluated the vulnerabilities of communities in the region and launched an initiative to develop a regional response, including a set of technical resources for use by communities and a framework for coordinating a regional response. Local governments can use the recommendations and best practices in this report to help build "resilience" as a core value, and to prepare for vulnerabilities due to emergencies – whether natural or manmade.

The devastation caused by events such as hurricanes and the COVID-19 pandemic has raised the sense of urgency among HVRC members to engage in building knowledge about resilience. Successfully launching a resilience plan will require local governments to anticipate events and provide consistent, thoughtful leadership in building resilience as a core community value. Taking the first step can be the most daunting part of any community initiative, so this report also offers advice about initial actions to get a resilience program started. These preparations must emphasize the priorities of local communities and their concern for changing conditions and climate threats involving their lands, homes, and businesses that are critical to current and future lifestyles.

HVRC's members are located in a region that is prone to flooding. The characteristics of Hudson Valley counties in terms of their populations, land, access to resources, and degree of formal preparedness planning demonstrates some differences. Therefore, preserving this diversity dictates that any proposed planning tool or key performance indicators (KPIs) for resilience must also provide for some degree of customization.

About this Initiative

The project takes a highly abstract concept – resiliency – and makes it a reality by defining it and breaking it into digestible parts that can be measured and tracked over time. The resiliency framework in this report contains key performance indicators separated into key topics and specific actions that can be undertaken to improve the region's ability to bounce back after shocks**.**

Background on the Hudson Valley Regional Council

The Hudson Valley Regional Council (HVRC) is an organization of county governments established in 1977 comprising Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester counties. It is one of nine regional councils in the State that, in addition to providing a regional perspective, offers education & outreach, technical assistance, and advocacy to the communities served.

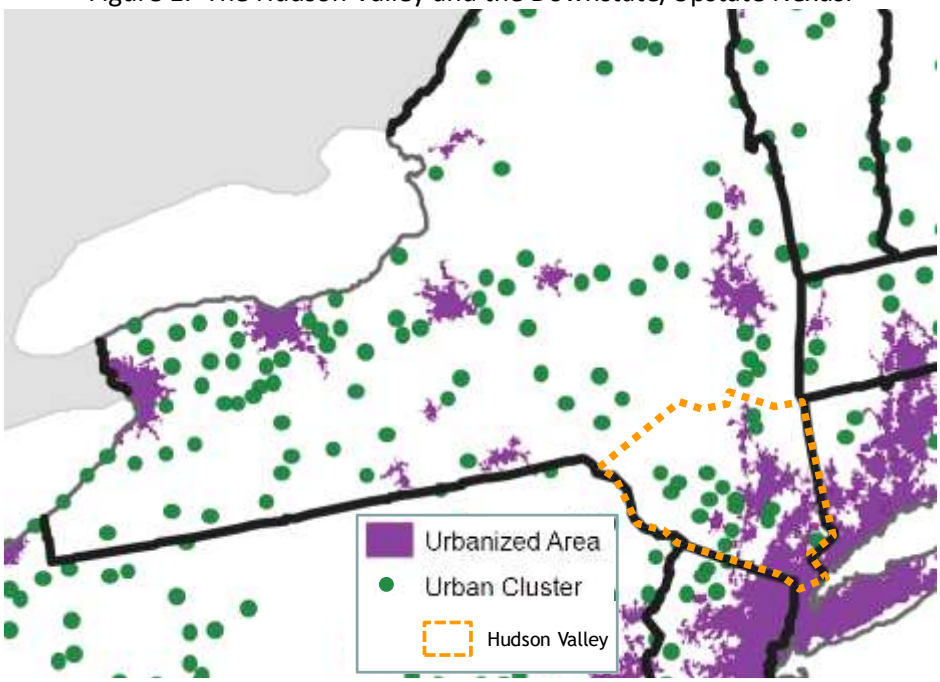
As the Hudson Valley Economic Development District under the US Economic Development Administration, HVRC delivers services to its member counties as well as local governments through several federal and State grant programs: US Department of Commerce EDA's Partnership Planning Program, NYS DEC 604(b) Water Quality Planning Program, NYSERDA CEC Program, and NYS DEC Climate Leadership Support Services Program. HVRC also provides regional platforms to our counties through the Materials Management Working Group and to regional sustainability partners through the Mid-Hudson Regional Sustainability Coalition. This project was made possible by a grant from EDA under the CARES Act of 2021.

The Region We Serve: Hudson Valley and the Downstate/Upstate Nexus

As noted in the 2023 CEDS for the Hudson Valley:

Since the European settlement, the Hudson Valley region has been driven by geography. The port of New York and the major metropolis which grew up around it were flanked by the Hudson Valley's extensive natural resources and the Hudson's presence as a transportation route. The Valley is bordered on the south by a massive urban hub of the global economy and to the north by forests and farms that have been sources of material goods for hunters, traders and farmers, while also providing inspiration for generations of artists and respite for generations of travelers and tourists. The Valley itself remains a patchwork of farms, forests, parks, cities and towns supporting virtually all manner of human activity and enterprise. Figure 1 shows the Valley's relationship to the urbanized Atlantic seaboard.

Figure 1. The Hudson Valley and the Downstate/Upstate Nexus.



Source: US Census Bureau.

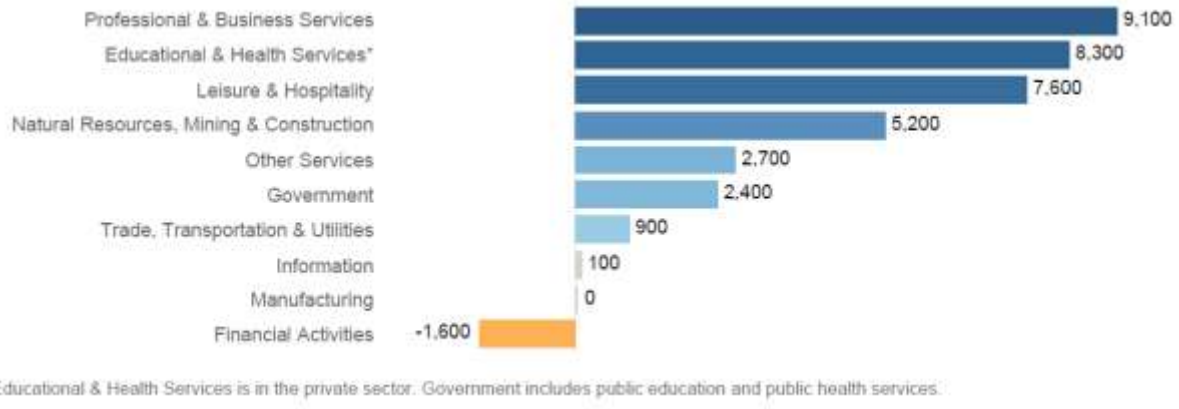
The 21st Century has seen the divergence of New York State into two distinct economies: the dynamic downstate region driven by New York City's global prominence, and a rural upstate economy often lagging

behind in the growth in jobs, income, and population. The Hudson Valley's geography provides the region with a unique connection between both of these worlds, positioning it as an important laboratory to build a successful fusion between these two parts of the Empire State.[1]

II. THE HUDSON VALLEY'S ONGOING RECOVERY

While the COVID-19 pandemic becomes endemic, the Hudson Valley's economic recovery continues. The latest analysis from the NYS Department of Labor documents this trend. As reported by the NYS Department of Labor in its *Labor Market Briefing for the Hudson Valley, October 2022*, during the period from October 2021 to October 2022, the region added 34,700 nonfarm jobs, including 32,300 private sector jobs and 2,400 government job. The numbers in the private sector look even better, with an addition of 30,100 private sector jobs. Figure 2 provides a graphic summary of what that recovery looked like.

Figure 2. Year over Year Change in Covered Employment
Hudson Valley Region, October 2021 to 2022.



Source: NYS Department of Labor, Labor Market Briefing, Hudson Valley, October, 2022.

As indicated in Figure 2, another encouraging sign is that 7,600 of the recent job gains have occurred in Leisure & Hospitality, 8,300 in Educational and Health Services and 9,100 in Professional & Business Services, sectors that were particularly hard hit by the pandemic. But, as discussed below, many sectors in the Region's counties still have a way to go before regaining all the jobs lost during the pandemic.

Changing Threats and Opportunities Associated with COVID-19

Not only did the pandemic and its associated lockdowns dramatically reduce overall economic activity, the response by business in various sectors accelerated trends already at work in the economy. For example, transportation, distribution, and warehousing enterprises have seen pre-COVID trends accelerate. Networks of large scale, remotely located, centralized distribution centers are being replaced by smaller facilities nestled in and around major market centers to enable more rapid, flexible responses to the growing volume of on-line orders. Similarly, as the pandemic has accelerated the move to remote

[1] Hudson Valley Regional Council, Comprehensive Economic Development Strategy, 2019-2023, November 2019, p, 8.

work, existing models of stand-alone office parks are being reconsidered in lieu of smaller, mixed-use facilities. Complementing this trend is the "hybridization" of food and retail enterprises, where the concept of a stand-alone grocery store or restaurant is giving way to a recombination of this uses (along with office space and warehousing) into new multi-use enterprises and facilities.

Finally, the use of remote work by companies has been accelerated by the pandemic. Located in the transition between the New York City region and Upstate New York, the Hudson Valley is likely to feel the long-term effects of this trend. Indeed, it is a potential source of growth for the Region in terms of population, employment and wealth. Analyses in this section indicate that, while the overall numbers may be small, the trend is already influencing hiring practices of the region's employers as well as on the housing market, and the Hudson Valley appears to be receiving an ever-greater number of relocating workers. At the same time, the rise of remote work has also given rise to a re-thinking of how to use office space itself. If workers are no longer bound to a particular office as part of their job, companies have been reconsidering how they use space to get their work done.

Population & Employment Trends

Anecdotally, one reported effect of the pandemic was sizeable in-migration to the Hudson Valley from New York City from people seeking to relocate to an area with lower population density. A previous analysis of home purchases led to the following conclusions:

> [In] each county, the total sales in June to December 2020 was below total sales in June to December 2019. This contradicts the anecdotes of a boom in the local housing markets, but, upon reflection, should not be surprising. The data are comparing two very different economic situations. In 2019, the economy was continuing the steady growth begun in the previous decade. By 2020, the economy was in a COVID-induced tailspin. Therefore, the drop in sales should not be unexpected.
>
> It is the second finding that reinforces the anecdotes about the rise in remote workers flocking to the Region. Note that in every county, despite the drop in number of sales, the median value of the houses sold increased dramatically, ranging from 8% in Dutchess County to over 20% in Ulster County. These rising prices in the face of declining sales indicates that the Region is seeing a growth in purchases of higher end homes and/or a bidding up of home prices. This is consistent with the situation of a housing market being influenced by an influx of upper-income home buyers, such as would occur if remote workers were relocating into the Hudson Valley.[2]

[2] Hudson Valley Regional Council, Comprehensive Economic Development Strategy, Annual Update, 2021, pages 15-16.

The recently released 2020 Census counts by county reinforce these conclusions. As seen in Table 1, population growth the Hudson Valley Region was modest—lower than growth in the US and comparable to New York State as a whole.

Table 1. Population Change, 2010-20			
Jurisdiction	2010	2020	% Change, 2010-20
United States	308,745,538	331,449,281	7.4%
New York	19,378,102	20,201,249	4.2%
Hudson Valley	2,290,851	2,398,150	4.7%
Dutchess	297,488	295,911	-0.5%
Orange	372,813	401,310	7.6%
Putnam	99,710	97,668	-2.0%
Rockland	311,687	338,329	8.5%
Sullivan	77,547	78,624	1.4%
Ulster	182,493	181,851	-0.4%
Westchester	949,113	1,004,457	5.8%
Source: US Census Bureau, DEC Redistricting Data (PL 94-171).			

A Mixed Economic Recovery

While the Hudson Valley was hit hard by the COVID-19 pandemic, the regional economy has begun a recovery as the severity of the pandemic waned as lockdowns were lifted and supply chain issues eased. To date, the recovery has been mixed, both geographically and by sector. This section contains tables showing how numbers of establishments, employment levels and average annual wages have changed from 2019 (prior to the pandemic) to 2021—the most recent year for which the New York State Department of Labor has data.

Table 2 compares changes in overall numbers of establishments, jobs, and wages over 2019, 2020 and 2021 for the Region as a whole as well as for its constituent counties of Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester. As shown in the first four columns of Table, 2, In every case, the region and counties have gained establishments (i.e., numbers of businesses) since the year prior to the pandemic (2019). While the surge in inflation in the past year or so has probably diminished those gains, the right-most columns of the Table show that by 2021, average annual wages (not adjusted for inflation) exceeded the pre-pandemic levels.

However, changes in *total employment* since 2019 show a much more mixed picture. While the Region and counties have grown jobs significantly from 2020 to 2021, as of 2021, total jobs for all of these jurisdictions are still below the 2019 peak. Employment for the Region as a whole is still 6.9% below 2019. The shortfalls in total employment in each county ranges from 3.2% in Rockland to 8.7% in Ulster. At the writing of this report, the Hudson Valley as a whole is still about 65,000 jobs below its previous peak. Table 3 shows how those shortfalls translate to specific sectors in each county's economy.

Table 2. Change in Establishments, Employment & Wages, Total, All Ownerships												
	Establishments				Average Employment				Average Annual Wage			
	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
Hudson Valley	76,553	76,881	78,092	2.0%	940,890	849,248	875,882	-6.9%	$62,760	$69,230	$72,161	15.0%
Dutchess	8,391	8,444	8,585	2.3%	113,675	103,373	104,887	-7.7%	$55,617	$60,449	$63,973	15.0%
Orange	10,627	10,760	11,006	3.6%	148,273	135,666	141,878	-4.3%	$49,513	$54,277	$56,388	13.9%
Putnam	3,094	3,082	3,159	2.1%	26,345	24,144	25,012	-5.1%	$54,760	$60,055	$61,254	11.9%
Rockland	11,018	11,204	11,476	4.2%	129,855	118,668	125,666	-3.2%	$54,287	$58,650	$60,244	11.0%
Sullivan	2,058	2,086	2,152	4.6%	29,392	26,240	27,337	-7.0%	$43,548	$47,856	$50,946	17.0%
Ulster	5,270	5,301	5,460	3.6%	60,614	54,395	55,353	-8.7%	$45,746	$49,907	$52,939	15.7%
Westchester	36,097	36,007	36,254	0.4%	432,737	386,761	395,753	-8.5%	$75,892	$84,810	$88,612	16.8%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

Table 3 below shows the percent change in employment from 2019 to 2021 by county at the two-digit level of the North American Industrial Classification System (NAICS) code. Those sectors for which each county has some of the largest shortfalls are highlighted in red. Many of the counties are still lagging in job recovery in Healthcare, Arts, Entertainment & Recreation, and Accommodation & Food Services, as tourism (particularly overnight stays) and the arts were particularly hard hit by the pandemic. For Dutchess, the sectors that are still well below their 2019 peak include Construction, Educational Services, Healthcare, Arts, and Accommodation & Food Services. In Orange County, those sectors still lagging the farthest behind include Retail Trade, Waste Services, and Accommodation & Food Services. Note that, unlike the other counties, Orange has overcome the pandemic losses in Arts and Entertainment & Recreation. This may be due to the opening of Legoland during the time of the pandemic. Putnam is experiencing its biggest shortfalls in Manufacturing, Arts, and Other Services. Rockland is still lagging farthest behind in Retail, Transport & Warehousing, Healthcare, Arts, Entertainment & Recreation, and Accommodation & Food Services. Sullivan, Ulster and Westchester counties are also behind in employment growth in Healthcare, Arts, Entertainment & Recreation, and Accommodation & Food Services, among other sectors.

Table 3. Percent Change in Employment, 2019-21 by County, Hudson Valley Region								
	HV Region	Dutchess	Orange	Putnam	Rockland	Sullivan	Ulster	Westchester
NAICS Code								
00 - Total, All Industries	-6.9%	-7.7%	-4.3%	-5.1%	-3.2%	-7.0%	-8.7%	-8.5%
11 - Agriculture, Forestry, Fishing & Hunting	-0.5%	14.1%	-0.2%	17.8%	5.4%	-10.2%	-12.1%	7.8%
21 - Mining	-12.3%	-2.1%	-16.0%	NA	-100.0%	-6.6%	-20.7%	0.0%
22 - Utilities	-11.2%	2.5%	-2.8%	-0.7%	0.7%	81.7%	7.5%	-26.9%
23 - Construction	-5.9%	**-6.7%**	-3.8%	-1.9%	-0.8%	**14.4%**	**-7.6%**	-8.5%
31-33 - Manufacturing	-5.3%	-6.6%	-1.2%	**-14.0%**	-5.1%	6.0%	-2.8%	-8.7%
42 - Wholesale Trade	-6.0%	-4.0%	0.5%	2.1%	-0.3%	-1.3%	-9.0%	-12.2%
44-45 - Retail Trade	-6.5%	-4.6%	**-7.6%**	1.9%	**-7.2%**	-1.2%	-3.0%	-7.6%
48-49 - Transport & Warehousing	-3.5%	-0.8%	1.1%	**-8.3%**	**-8.3%**	**-13.5%**	**-10.7%**	-3.5%
51 - Information	-10.9%	-19.8%	-9.5%	-9.2%	-13.0%	1.2%	-9.9%	-9.5%
52 - Finance & Insurance	-3.5%	-6.3%	2.8%	-11.8%	1.7%	9.2%	-7.7%	-4.5%
53 - Real Estate & Rental & Leasing	-7.4%	6.9%	-1.3%	7.2%	-6.2%	-2.3%	-25.4%	-8.9%
54 – Prof. & Tech. Svcs.	-2.6%	-10.2%	0.5%	**-7.9%**	**-4.4%**	**-9.1%**	-2.7%	-1.4%
55 - Management of Companies & Enterprises	-4.4%	-1.2%	-4.0%	-20.5%	-25.3%	-5.6%	23.1%	-3.7%
56 – Admin. & Waste Svcs.	-7.1%	-6.2%	**-10.3%**	1.6%	-0.3%	-0.6%	-12.9%	-9.8%
61 - Educational Services	-7.9%	**-11.4%**	-7.4%	-5.5%	-5.9%	-6.4%	-7.1%	-7.8%
62 - Health Care & Social Assistance	-4.9%	**-8.3%**	-3.1%	**-6.6%**	**6.0%**	**-9.7%**	**-16.3%**	**-6.9%**
71 - Arts, Entertainment, & Recreation	-23.1%	**-29.8%**	2.8%	**-15.4%**	**-30.0%**	**-35.5%**	**-30.7%**	**-25.7%**
72 - Accommodation & Food Services	-15.3%	**-10.6%**	**-8.5%**	**-6.2%**	**-17.8%**	**-19.9%**	**-12.3%**	**-19.1%**
81 - Other Services, Ex. Public Admin	-11.2%	-8.7%	-9.7%	**-15.3%**	-3.4%	-3.3%	-3.6%	-13.9%
92 - Public Administration	-4.1%	-5.9%	-2.2%	-4.4%	-6.1%	-6.0%	-3.8%	-3.4%
99 - Unclassified	54.2%	57.8%	83.3%	88.2%	34.6%	40.3%	61.6%	53.3%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.								

Table 4 shows detailed results for the Hudson Valley Region. A similar table for each of the seven constituent counties is found in the appendices to this report.

Table 4. Change in Establishments, Employment & Wages, All Ownerships by Sector, Hudson Valley Region												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	76,553	76,881	78,092	2.0%	940,890	849,248	875,882	-6.9%	$62,760	$69,230	$72,161	15.0%
11 - Agriculture, Forestry, Fishing & Hunting	420	461	467	11.2%	3,767	3,630	3,749	-0.5%	$36,383	$38,012	$40,111	10.2%
21 - Mining	49	46	46	-6.1%	675	583	592	-12.3%	$80,256	$87,225	$89,306	11.3%
22 - Utilities	81	81	78	-3.7%	5,524	5,418	4,906	-11.2%	$140,671	$138,493	$169,300	20.4%
23 - Construction	8,321	8,429	8,522	2.4%	56,447	50,633	53,136	-5.9%	$72,780	$73,911	$75,560	3.8%
31-33 - Manufacturing	1,670	1,659	1,668	-0.1%	43,181	40,354	40,886	-5.3%	$84,114	$88,807	$91,268	8.5%
42 - Wholesale Trade	3,129	3,069	2,937	-6.1%	30,780	29,018	28,925	-6.0%	$81,396	$83,724	$88,893	9.2%
44-45 - Retail Trade	8,509	8,300	8,120	-4.6%	112,462	101,103	105,174	-6.5%	$35,367	$38,900	$41,783	18.1%
48-49 - Transport & Warehousing	1,765	1,786	1,763	-0.1%	34,791	30,472	33,564	-3.5%	$52,524	$55,980	$57,803	10.0%
51 - Information	1,090	1,206	1,236	13.4%	15,360	14,034	13,689	-10.9%	$80,957	$91,241	$110,074	36.0%
52 - Finance & Insurance	3,235	3,231	3,197	-1.2%	28,137	27,424	27,154	-3.5%	$148,694	$154,072	$157,535	5.9%
53 - Real Estate & Rental & Leasing	3,832	3,892	3,825	-0.2%	17,071	15,923	15,807	-7.4%	$64,804	$72,388	$70,378	8.6%
54 – Prof. & Tech. Svcs.	8,136	8,350	8,222	1.1%	46,404	44,543	45,187	-2.6%	$108,810	$140,038	$141,880	30.4%
55 - Management of Companies & Enterprises	419	456	461	10.0%	12,835	12,387	12,269	-4.4%	$174,132	$164,050	$163,381	-6.2%
56 – Admin. & Waste Svcs.	5,273	5,398	5,339	1.3%	51,204	45,760	47,589	-7.1%	$46,418	$49,475	$52,470	13.0%
61 - Educational Services	1,852	1,858	1,799	-2.9%	104,484	96,124	96,223	-7.9%	$66,385	$71,859	$73,483	10.7%
62 - Health Care & Social Assistance	7,458	7,446	7,311	-2.0%	183,024	172,625	174,005	-4.9%	$56,833	$61,290	$67,192	18.2%
71 - Arts, Entertainment, & Recreation	1,517	1,522	1,468	-3.2%	20,063	12,693	15,433	-23.1%	$34,196	$41,807	$41,977	22.8%
72 - Accommodation & Food Services	6,003	5,913	5,941	-1.0%	75,117	55,492	63,640	-15.3%	$26,485	$27,701	$29,987	13.2%
81 - Other Services, Ex. Public Admin	9,021	8,765	8,522	-5.5%	41,796	35,255	37,135	-11.2%	$37,470	$40,730	$41,913	11.9%
92 - Public Administration	864	869	874	1.2%	55,366	53,592	53,116	-4.1%	$74,681	$77,666	$86,664	16.0%
99 - Unclassified	3,912	4,146	6,298	61.0%	2,402	2,184	3,704	54.2%	$50,860	$52,460	$62,158	22.2%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

Projected Employment Growth in 2022

As shown in Table 5, overall employment recovery remains mixed, with Dutchess, Ulster, and Westchester showing no change from 2021 to 2022, Sullivan logging a 2% change, and all other counties at 1% increases. **NOTE:** ESRI calculates these estimates using changes from March 1 of the previous year to March 1 of the current year. The individual county estimates are derived by "stepping down" from estimates for larger regions. Consequently, these data are likely to be revised over time.

Table 5. Estimated Year over Year Employment Change 2021 to 2022.

	Estimated Jobs, 1st Qtr. (2021)	Estimated Jobs, 1st Qtr. (2022)	% Change	Current Average Earnings
Hudson Valley	980,809	982,221	0%	$82,089
Dutchess	120,369	120,267	(0%)	$73,867
Orange	157,618	159,054	1%	$67,507
Putnam	28,578	28,791	1%	$74,625
Rockland	136,953	138,969	1%	$71,851
Sullivan	29,771	30,356	2%	$60,662
Ulster	62,878	62,693	(0%)	$63,892
Westchester	444,641	442,091	(1%)	$97,125

Source: EMSI using QCEW data from March, 2022.

Employment, Unemployment & Distress

As shown in Table 6, The 24-month average unemployment of the Hudson Valley region is slightly below the United States as a whole at 6.57% and 6.72% respectively. The 24-month average unemployment rate does not vary much with all but one county falling between 6 and 7% unemployment. However, the Hudson Valley is wealthier than the rest of the United States. Both money income per capita and personal income per capita are significantly higher in the Hudson Valley region. Note however, that this prosperity is not evenly shared throughout the region, with Ulster and Sullivan counties having incomes below the US average. As in years past, Westchester County is an outlier on the high end with a PCPI of $115,386 which is almost twice that of the United States. Westchester County also had the highest Per Capita Money Income as measured by the 2000 Census and the ACS 5-year rate, again almost twice the US average. As will be discussed below, this relative affluence does not exempt Westchester from the risks associated with economic disruptions associated with a pandemic.

Table 6. Indicators of Stress, March, 2022.						
Jurisdiction	24 Month Unemployment	Threshold Calculation	BEA PCPI	Threshold Calculation	ACS 5-Year PCMI	Threshold Calculation
Hudson Valley Region	6.57	-0.15	$83,837	140.9	$83,837	140.9
Dutchess	6.21	-0.51	$62,319	104.7	$62,319	104.7
Orange	6.67	-0.05	$57,688	96.9	$57,688	96.9
Putnam	6.01	-0.71	$73,152	122.9	$73,152	122.9
Rockland	6.37	-0.35	$66,350	111.5	$66,350	111.5
Sullivan	7.02	0.3	$52,249	87.8	$52,249	87.8
Ulster	6.47	-0.25	$56,071	94.2	$56,071	94.2
Westchester	6.75	0.03	$115,386	193.9	$115,386	193.9
U.S.	6.72	0	$59,510	100	$59,510	100

Note: The threshold calculation for unemployment reflects the percentage point difference between the unemployment rate for the selected area and the U.S. figure. For example, if a region has a 24-month rate of 6.9 and the U.S. rate is 7.9, the difference shown in the threshold column is -1.0—meaning it is 1 percentage point lower than the national rate. The threshold calculation for income is the selected area's per capita value divided by U.S. per capita income and shown as a percentage share of the U.S. figure. For example, if the selected area has a threshold calculation of 145.2, this means its per capita income is 45.2% higher than the nation at large.

Source: StatsAmerica, using U.S. Bureau of Labor Statistics (unemployment), U.S. Bureau of Economic Analysis (PCPI) and U.S. Census Bureau (ACS 5-year PCMI) data

Employment by Industry, 2021-22

Table 7 provides a listing of employment by industry for the Hudson Valley region and each of its seven constituent counties, showing employment estimates for 2021 and 2022 to see how the recovery has progressed over the past year. NOTE: these are estimates generated by EMSI which uses its own methodology for projecting current-year employment, so the numbers may differ from those provided by the Department of Labor. As discussed above, the overall employment recovery is mixed. The same is true across industries. Several counties show strength in manufacturing growth while others lag behind. Over 2021, the strongest recovery has occurred in the "eds and meds" sectors (education and health care). There are also signs of life in the hospitality-related sectors, with Sullivan's jobs in that category estimated to have grown by 10%, year to year, although these estimates show Sullivan—and the entire region—still below pre-pandemic levels of employment in that sector. Putnam is estimated to have grown by 3% in that category, with all other counties essentially unchanged.

Table 7. Estimated Year over Year Employment Change by Industry, 2021 to 2022.								
	Hudson Valley	Dutchess	Orange	Putnam	Rockland	Sullivan	Ulster	Westchester
Agriculture, Forestry, Fishing and Hunting								
Estimated Jobs, 1st Qtr.(2021)	5,763	1,193	1,915	55	110	552	1,378	559
Estimated Jobs, 1st Qtr.(2022)	5,819	1,229	1,970	56	109	534	1,352	570
% Change Year to Year	1%	3%	3%	2%	-1%	-3%	-2%	2%
Earnings (Adjusted for COL*)	$43,064	$42,932	$44,481	$45,021	$41,137	$44,955	$44,404	$44,852
Mining, Quarrying, and Oil and Gas Extraction								
Estimated Jobs, 1st Qtr.(2021)	623	233	63	34	86	84	102	20
Estimated Jobs, 1st Qtr.(2022)	622	237	64	39	74	83	101	25
% Change Year to Year	-0%	2%	0%	14%	-14%	-1%	-2%	22%
Earnings (Adjusted for COL*)	$91,519	$91,710	$112,885	$68,631	$129,876	$72,019	$77,904	$107,521
Utilities								
Estimated Jobs, 1st Qtr.(2021)	5,104	765	578	125	1,048	165	234	2,188
Estimated Jobs, 1st Qtr.(2022)	5,130	781	578	123	1,053	187	235	2,173
% Change Year to Year	1%	2%	0%	-2%	0%	13%	0%	-1%
Earnings (Adjusted for COL*)	$213,063	$161,127	$189,354	$184,346	$174,055	$131,063	$180,794	$233,811
Construction								
Estimated Jobs, 1st Qtr.(2021)	63,397	6,454	8,343	3,210	8,970	1,578	3,712	31,131
Estimated Jobs, 1st Qtr.(2022)	63,705	6,370	8,502	3,212	9,140	1,603	3,683	31,194
% Change Year to Year	0%	-1%	2%	0%	2%	2%	-1%	0%
Earnings (Adjusted for COL*)	$71,710	$66,753	$65,822	$61,675	$71,010	$70,675	$58,412	$67,654
Manufacturing								
Estimated Jobs, 1st Qtr.(2021)	41,674	7,194	8,846	1,300	7,577	1,637	3,339	11,782
Estimated Jobs, 1st Qtr.(2022)	41,416	6,940	9,030	1,296	7,560	1,692	3,366	11,531
% Change Year to Year	-1%	-4%	2%	-0%	-0%	3%	1%	-2%
Earnings (Adjusted for COL*)	$98,895	$121,725	$70,411	$81,499	$103,098	$55,509	$65,559	$108,597
Wholesale Trade								
Estimated Jobs, 1st Qtr.(2021)	29,986	1,788	7,660	1,186	4,559	503	1,395	12,895
Estimated Jobs, 1st Qtr.(2022)	29,925	1,784	7,827	1,239	4,562	513	1,397	12,603
% Change Year to Year	-0%	-0%	2%	5%	0%	2%	0%	-2%
Earnings (Adjusted for COL*)	$86,675	$82,410	$69,281	$71,739	$91,725	$61,516	$65,646	$88,501

Table 7. Estimated Year over Year Employment Change by Industry, 2021 to 2022.								
	Hudson Valley	Dutchess	Orange	Putnam	Rockland	Sullivan	Ulster	Westchester
Retail Trade								
Estimated Jobs, 1st Qtr.(2021)	108,853	13,658	20,861	3,101	13,295	2,837	8,563	46,537
Estimated Jobs, 1st Qtr.(2022)	107,113	13,456	20,531	3,126	13,034	2,829	8,472	45,665
% Change Year to Year	-2%	-1%	-2%	1%	-2%	-0%	-1%	-2%
Earnings (Adjusted for COL*)	$42,743	$41,908	$40,918	$39,076	$40,576	$37,963	$41,059	$40,326
Transportation and Warehousing								
Estimated Jobs, 1st Qtr.(2021)	31,122	4,260	7,676	782	3,504	994	1,462	12,446
Estimated Jobs, 1st Qtr.(2022)	31,392	4,365	7,811	808	3,517	989	1,443	12,458
% Change Year to Year	1%	2%	2%	3%	0%	-0%	-1%	0%
Earnings (Adjusted for COL*)	$61,193	$64,339	$58,475	$69,562	$47,821	$41,431	$55,792	$60,167
Information								
Estimated Jobs, 1st Qtr.(2021)	14,143	1,265	2,178	446	1,561	153	902	7,638
Estimated Jobs, 1st Qtr.(2022)	13,898	1,263	2,193	442	1,510	156	890	7,443
% Change Year to Year	-2%	-0%	1%	-1%	-3%	2%	-1%	(3%
Earnings (Adjusted for COL*)	$100,791	$79,503	$91,110	$81,037	$85,492	$57,718	$57,935	$102,370
Finance and Insurance								
Estimated Jobs, 1st Qtr.(2021)	31,490	2,893	3,186	690	3,087	558	1,518	19,558
Estimated Jobs, 1st Qtr.(2022)	31,339	2,898	3,173	696	3,098	545	1,515	19,415
% Change Year to Year	-0%	0%	-0%	1%	0%	-2%	-0%	(1%
Earnings (Adjusted for COL*)	$150,805	$92,528	$88,579	$84,097	$113,626	$94,048	$85,194	$159,668
Real Estate and Rental and Leasing								
Estimated Jobs, 1st Qtr.(2021)	19,323	1,811	1,852	371	2,522	413	924	11,430
Estimated Jobs, 1st Qtr.(2022)	19,287	1,831	1,850	372	2,555	407	908	11,364
% Change Year to Year	-0%	1%	-0%	0%	1%	-1%	-2%	-1%
Earnings (Adjusted for COL*)	$72,808	$60,381	$78,972	$58,583	$57,497	$45,146	$59,061	$69,446
Professional, Scientific, and Technical Services								
Estimated Jobs, 1st Qtr.(2021)	58,858	4,843	6,927	1,732	8,374	621	2,639	33,722
Estimated Jobs, 1st Qtr.(2022)	59,255	4,824	7,045	1,736	8,501	619	2,680	33,849
% Change Year to Year	1%	-0%	2%	0%	2%	-0%	2%	0%
Earnings (Adjusted for COL*)	$111,946	$74,925	$81,648	$72,285	$83,218	$61,258	$69,059	$118,715

Table 7. Estimated Year over Year Employment Change by Industry, 2021 to 2022.								
	Hudson Valley	Dutchess	Orange	Putnam	Rockland	Sullivan	Ulster	Westchester
Management of Companies and Enterprises								
Estimated Jobs, 1st Qtr.(2021)	12,371	1,447	761	53	667	431	362	8,650
Estimated Jobs, 1st Qtr.(2022)	12,326	1,517	743	51	619	448	363	8,584
% Change Year to Year	-0%	5%	-2%	-4%	-7%	4%	0%	-1%
Earnings (Adjusted for COL*)	$165,673	$84,643	$82,675	$212,147	$182,632	$91,331	$84,008	$165,837
Administrative and Support and Waste Management and Remediation Services								
Estimated Jobs, 1st Qtr.(2021)	51,658	5,622	8,011	1,314	8,720	1,083	2,802	24,106
Estimated Jobs, 1st Qtr.(2022)	52,173	5,736	8,130	1,335	8,993	1,119	2,836	24,023
% Change Year to Year	1%	2%	1%	2%	3%	3%	1%	-0%
Earnings (Adjusted for COL*)	$50,804	$56,338	$44,734	$42,654	$48,238	$39,812	$47,017	$47,382
Educational Services								
Estimated Jobs, 1st Qtr.(2021)	44,371	12,250	3,796	945	6,604	277	1,063	19,435
Estimated Jobs, 1st Qtr.(2022)	44,888	12,426	3,897	950	6,715	289	1,074	19,537
% Change Year to Year	1%	1%	3%	1%	2%	4%	1%	1%
Earnings (Adjusted for COL*)	$39,045	$36,690	$29,741	$43,933	$27,953	$26,097	$39,888	$40,304
Health Care and Social Assistance								
Estimated Jobs, 1st Qtr.(2021)	171,940	19,843	23,805	4,423	31,534	7,071	9,172	76,092
Estimated Jobs, 1st Qtr.(2022)	175,226	19,970	24,277	4,476	33,416	7,243	9,137	76,707
% Change Year to Year	2%	1%	2%	1%	6%	2%	-0%	1%
Earnings (Adjusted for COL*)	$66,771	$74,888	$66,033	$70,768	$48,994	$47,480	$58,450	$65,950
Arts, Entertainment, and Recreation								
Estimated Jobs, 1st Qtr.(2021)	18,239	1,968	2,276	863	1,701	360	1,194	9,876
Estimated Jobs, 1st Qtr.(2022)	17,739	1,879	2,351	843	1,617	337	1,198	9,514
% Change Year to Year	-3%	-5%	3%	-2%	-5%	-6%	0%	-4%
Earnings (Adjusted for COL*)	$42,244	$32,155	$35,028	$33,541	$36,858	$42,337	$38,120	$42,019
Accommodation and Food Services								
Estimated Jobs, 1st Qtr.(2021)	59,436	8,440	9,191	1,698	7,183	2,944	6,134	23,847
Estimated Jobs, 1st Qtr.(2022)	59,692	8,522	9,318	1,740	7,165	3,240	6,220	23,487
% Change Year to Year	0%	1%	1%	3%	-0%	10%	1%	-2%
Earnings (Adjusted for COL*)	$30,560	$28,440	$27,603	$27,618	$28,772	$37,765	$30,529	$28,956

Table 7. Estimated Year over Year Employment Change by Industry, 2021 to 2022.								
	Hudson Valley	Dutchess	Orange	Putnam	Rockland	Sullivan	Ulster	Westchester
Other Services (except Public Administration)								
Estimated Jobs, 1st Qtr.(2021)	57,760	5,215	7,217	1,592	8,094	1,677	2,774	31,191
Estimated Jobs, 1st Qtr.(2022)	57,115	5,240	7,321	1,581	8,211	1,709	2,726	30,328
% Change Year to Year	-1%	0%	1%	-1%	1%	2%	-2%	-3%
Earnings (Adjusted for COL*)	$33,564	$39,871	$38,233	$35,302	$30,052	$29,874	$31,030	$28,732
Government								
Estimated Jobs, 1st Qtr.(2021)	151,627	18,950	32,009	4,534	17,037	5,765	13,035	60,297
Estimated Jobs, 1st Qtr.(2022)	151,068	18,718	31,962	4,540	16,791	5,744	12,919	60,394
% Change Year to Year	-0%	-1%	-0%	0%	-1%	-0%	-1%	0%
Earnings (Adjusted for COL*)	$105,384	$101,030	$90,694	$106,021	$107,635	$94,953	$95,607	$104,412
Unclassified Industry								
Estimated Jobs, 1st Qtr.(2021)	3,072	277	469	124	719	68	175	1,239
Estimated Jobs, 1st Qtr.(2022)	3,093	282	483	128	728	69	177	1,227
% Change Year to Year	1%	2%	3%	3%	1%	1%	1%	-1%
Earnings (Adjusted for COL*)	$56,380	$45,382	$43,311	$47,386	$52,322	$47,875	$47,779	$60,149
*Earnings adjusted for Cost of Living by EMSI. SOURCE: EMSI.								

III. ASSESSING REGIONAL VULNERABILITY

This section summarizes three sets of data assessing the vulnerability of the Hudson Valley. The County High-level Economic Recovery and Resilience Index (CHERRI) provides an overview of each county's economy's ability to respond to and recover from a major disruption such as a pandemic. The designation of Disadvantaged Communities under the New York State Climate Leadership and Community Protection Act of 2019 and the US Census Bureau, 2019 Community Resilience Estimates both provide a more detailed assessment of communities at risk of disruptions due to environmental and socio-economic factors. Together, these analyses provide a sense of the extent and nature of the vulnerability of the Hudson Valley's communities.

Examining the Pandemic Impact through the CHERRI Database

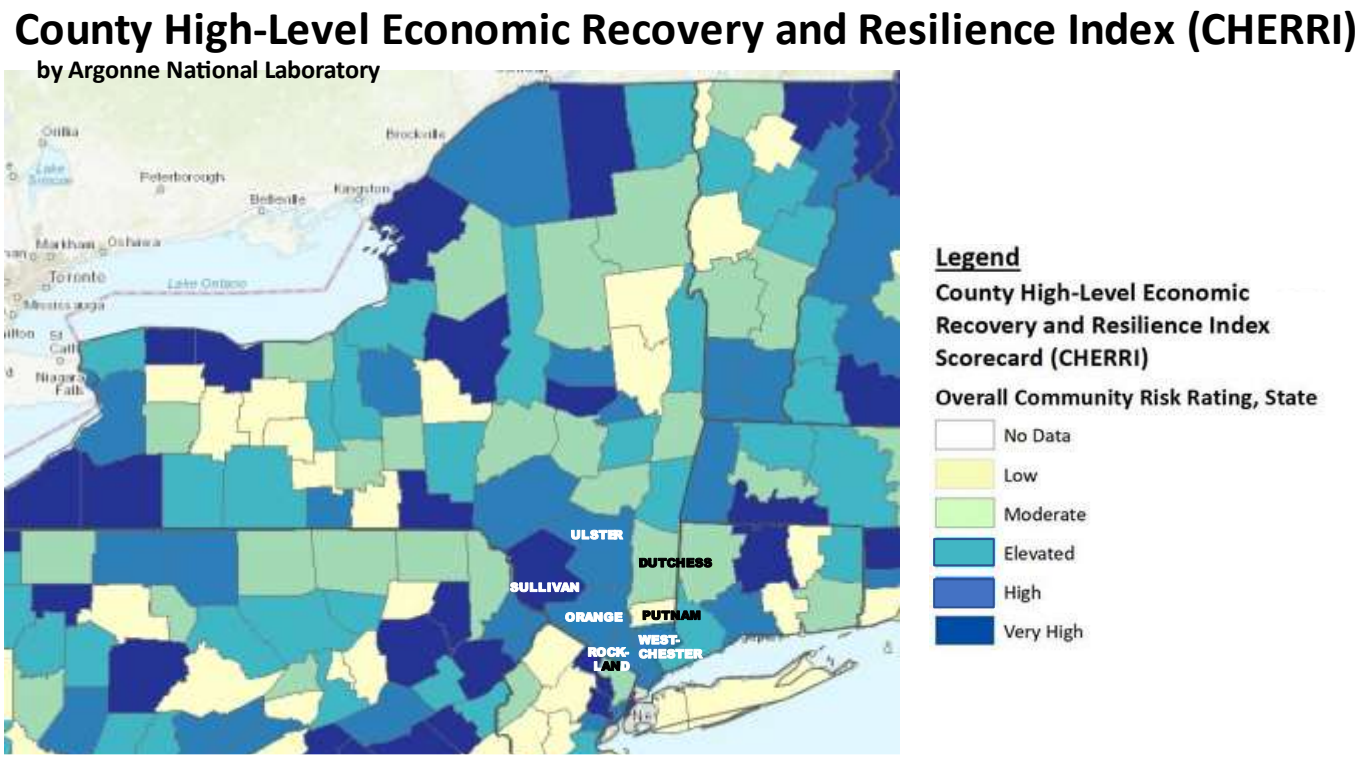
The National Preparedness Analytics Center (NPAC) of the federal Argonne National Laboratory has created a series of indices intended to provide those responsible for responding to the effects of the pandemic with high-level indicators of the state of economic recovery and resilience at the County level. This database is known as the County High-level Economic Recovery and Resilience Index (CHERRI). According to the National Preparedness Analytics Center, CHERRI was constructed using the following methodology:

> The CHERRI is built on an existing body of research and is comprised of six indices. Three indices are metrics derived from the CDC's Social Vulnerability Index. These indicators provide insight into the demographic, social, and economic profiles of a community. The other three indices are developed by Argonne National Laboratory and quantify current economic impacts, housing stability, and impacts to state and local revenue due to COVID-19.
>
> Below are descriptions of the six indices:
>
> - CDC Social Vulnerability Index – Minority Status and Language: Measures vulnerability based on percentage of non-English speakers and minority. The social and economic marginalization of certain racial and ethnic groups, including real estate discrimination, has rendered these populations more vulnerable at all stages of disaster. African Americans; Native Americans; and populations of Asian, Pacific Islander, or Hispanic origin are correlated with higher vulnerability rates.
> - CDC Social Vulnerability Index – Socioeconomic Status: Measures vulnerability based on income, employment, poverty, and education percentages in a community. Economically disadvantaged populations are disproportionately affected by disasters. The poor are less likely to have the income or assets needed to prepare for a possible disaster or to recover after a disaster.
> - CDC Social Vulnerability Index – Household Composition and Disability: Measures vulnerability household composition and disabled person percentages in community. People in any of these categories are likelier to require financial support, transportation, medical care, or assistance with ordinary daily activities during disasters.
> - Argonne's County Economic Impact Index (CEII): Measures the monthly change in county-level GDP compared to a pre-pandemic baseline. It provides a current picture of economic impact from COVID-19, as well as the change in impact over time.
> - Argonne's Housing Stability Index (HSI): Measures the real-time percentage of households that are at risk of eviction or foreclosure during the COVID-19 pandemic. Estimates are available for both rental and owner-occupied housing.

- Argonne's Local Government Revenue Vulnerability Index (LGRVI): Measures change in local government revenue, including taxes, fees, and intergovernmental transfers, based on baseline data and current data on consumption, travel trends and unemployment.
- The county-level data from each of these six indices were transformed to a 0 to 1 scale and combined using equal weighting to produce an overall risk index. The six individual indices and the combined index were then binned into quintiles within each individual state from lowest to highest risk/vulnerability.[3]

NOTE: The indices are compiled based upon data derived from economic modeling conducted by the NPAC rather than direct estimates by the US Census Bureau or NYS Department of Labor. Consequently, these measures are not likely to be as precise as those derived from actual counts. Nonetheless, in the absence of such counts, the CHERRI can provide preliminary guidance about each county's potential risks associated with the pandemic.

Figure 3.



Source: https://disgeoportal.egs.anl.gov/

Figure 3 shows how the economic recovery and resilience risk for Hudson Valley Region's counties are assessed using the CHERRI index. The scale uses quintiles. That is, the counties ranked among the top 20% for risks are classified "Very High." The counties that are among the 60 to 80 percentile in terms of risk are categorized as "High." Counties in the lowest 20% in terms of risk are classified as "Low Risk," etc.

[3] https://disgeoportal.egs.anl.gov/portal/apps/MapSeries/index.html?appid=5ae1735ba1924ee59abd762fb8e4b726

Note that Sullivan is classified as Very High Risk. Ulster, Orange, Rockland, and Westchester are High Risk, while Dutchess's risk is considered Moderate, and Putnam is classified as a Low Risk county.

Potential Areas of Risk for Hudson Valley Counties

Table 8 provides a breakdown of each county's overall assessment under the six specific indices that make up the CHERRI. For each index, the table provides the score for each county and then how that score compares to all other counties in the US and all other counties in New York State. As indicated above, a "Very High" rating is among the top 20% (in either the US or New York), "High" is in the top 60% to 80%, etc.

Table 8 shows how each of the counties ended up with the overall risk index score. For example, Dutchess County has an overall score of 0.570, which is Elevated compared to the US and Moderate compared to the other counties in New York State. The data in the table indicate that these ratings are driven by higher risks for the County in several areas:

- the Minority Status/Language Index: indicating that the County as a relatively high concentration of population either in minority status or with limited English language capabilities, populations that are typically hit the hardest by disasters.
- the County Economic Impact Index: indicating that the County's economy is relatively vulnerable to disruption by disasters, including pandemics.
- the Housing Stability Index: indicating that a high proportion of households could be at risk for losing their housing in a major disruption.

Again, these measures may not be definitive, but they do serve to highlight the types of risks each county may wish to assess as they pursue recovery from the pandemic.

The results of Table 8 show some common risk factors shared by most all of the Hudson Valley Region's counties. Every county is high in its Minority Status/Language Index, suggesting that a key component for recovery and to reduce future risks may be to provide better opportunities for engagement with minority and limited-English-language populations so that they have proper access to programs and opportunities that can help them avoid disasters or more effectively respond to them, should they arise.

The Housing Stability Index ranges from Moderate to Very High for all counties. (Only Putnam and Rockland rate "Low" when compared to New York State counties.) This indicates that it may be important for these counties to address housing affordability, not only in terms of social equity, but also to ensure that the counties' communities will be more resilient in the face of future calamities, whether they are caused by economic disruption, natural disaster, or public health emergencies.

Thus, while economic resilience and recovery are the major concerns of this current plan, it is clear that, in order to address this issue sufficiently, counties must examine their performance in such areas as housing affordability and the capacity to meet challenges associated with increasing population diversity.

The Geography of Risk: NYS Climate Act's Disadvantaged Communities and the Census Community Resilience Estimates

This section reviews risk data compiled through two efforts: New York State's Climate Act and the US Census Bureau's Community Resilience Index. Both sources illustrate that the risks found in the Hudson Valley are both substantively diverse and widely distributed geographically.

Table 8. Components of the County High-level Economic Recovery & Resilience Index, June 2022.

	Dutchess	Orange	Putnam	Rockland	Sullivan	Ulster	Westchester
Overall Community Risk Index	**0.570**	**0.478**	**0.695**	**0.456**	**0.353**	**0.518**	**0.473**
Risk Rating vs. US	Elev.	High	Mod.	High	Very High	Elev.	High
Risk Rating vs. NYS	Mod.	High	Lo	High	Very High	High	High
CDC Socio-economic Index	**0.744**	**0.710**	**0.858**	**0.627**	**0.457**	**0.638**	**0.710**
Socio-economic Risk vs. US	Mod.	Mod.	Low	Mod.	Elev.	Mod.	Mod.
Socio-economic Risk vs. NYS	Mod.	Mod.	Low	Mod.	Very High	Mod.	Mod.
CDC Household Composition Index	**0.740**	**0.587**	**0.836**	**0.630**	**0.410**	**0.631**	**0.675**
HH Composition Risk vs. US	Low	Mod.	Low	Low	High	Low	Low
HH Composition Risk vs. NYS	Low	Mod.	Low	Mod.	Very High	Mod.	Low
CDC Minority Status/Language Index	**0.277**	**0.176**	**0.301**	**0.134**	**0.272**	**0.362**	**0.101**
Minor. Status/Lang. Risk vs. US	High	Very High	High	Very High	High	High	Very High
Minor. Status/Lang. Risk vs. NYS	Very Hi	Very High	Very High	Very High	Very High	High	Very High
County Economic Impact Index	**0.399**	**0.405**	**0.398**	**0.407**	**0.403**	**0.400**	**0.407**
Econ. Impact vs. US	Elev.	Mod.	Elev.	Mod.	Mod.	Elev.	Mod.
Econ. Impact vs. NYS	Elev.	Low	Elev.	Low	Mod.	Mod.	Low
Housing Stability Index	**0.548**	**0.545**	**0.700**	**0.581**	**0.524**	**0.523**	**0.557**
Housing Stability Risk vs. US	Very High	Very High	High	Very High	Very High	Very High	Very High
Housing Stability Risk vs. NYS	Mod.	Elev.	Low	Low	Elev.	Elev.	Mod.
Local Government Revenue Vulnerability Index	**0.555**	**0.562**	**0.544**	**0.539**	**0.542**	**0.551**	**0.521**
Local Government Revenue Vulnerability vs. US	Mod.	Mod.	Elev.	Elev.	Elev.	Mod.	High
Local Government Revenue Vulnerability Rating vs. NYS	Elev.	Mod.	High	Very High	High	Elev.	Very High

Source: compiled by Fairweather Consulting from the County High-Level Recovery & Resilience Index (CHERRI) created by the National Preparedness Analytics Center, Argonne National Laboratory.

NYS Climate Act Disadvantaged Communities

With the passage of the Climate Leadership and Community Protection Act, New York State Government created a Climate Justice Working Group (CJWG) made up of representatives of organizations involved in environmental justice issues, including both state agencies and not-for-profit organizations. The CJWG was tasked with identifying disadvantaged communities (DACs) who are often overlooked when addressing climate-related issues. DACs were identified through the analysis of 35 variables linked with

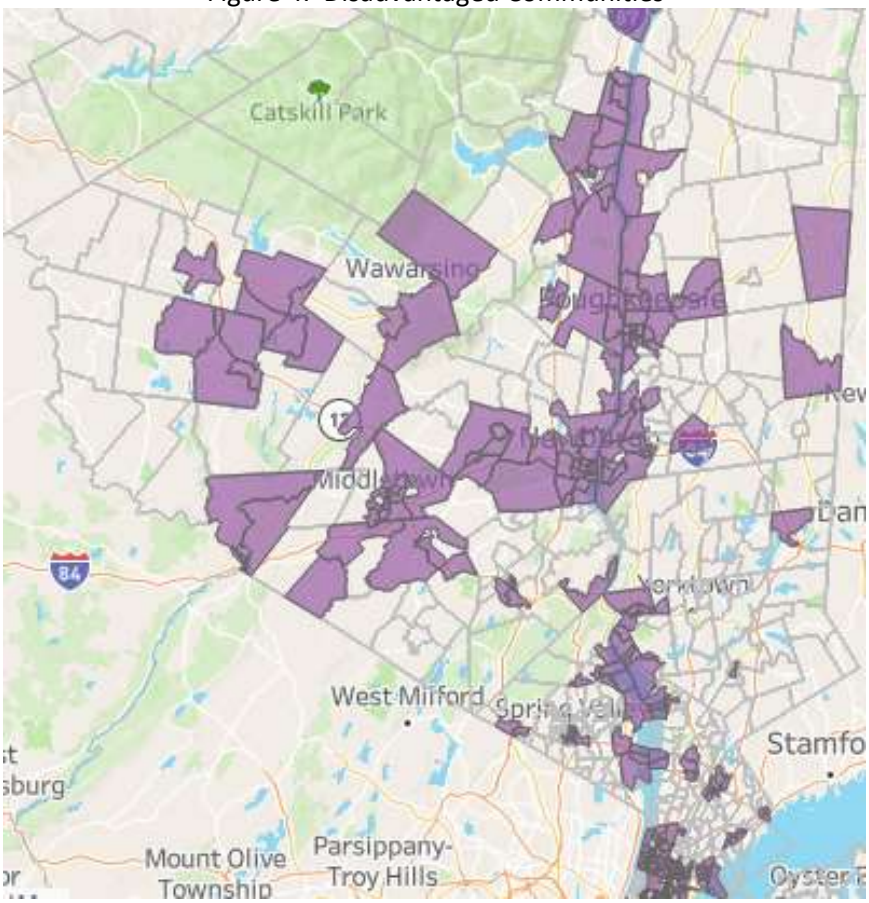
climate-related risks, such as flooding or extreme heat, health vulnerabilities like asthma and COPD, and emergency department visits, as well as several socio-economic factors including race, ethnicity, and income.[4]

The variables are in two categories: those associated with environmental burdens and climate change risk and a second category of data addressing population characteristics and health vulnerabilities. Thus, the DAC database can provide indications of risk related to both environmental/climate factors and the demographic makeup of the population. Maps generated to determine the Disadvantaged Communities by the CJWG illustrate the nature and extent of vulnerability to climate risk and other disruptions.

As shown in Figure 4, THE CJWG-designated disadvantaged communities are found throughout the Hudson Valley, particularly in the cities and villages with economically disadvantaged populations.

The factors that contribute to DAC status vary from community to community, some resulting from environmental/climate burdens, socioeconomic characteristics, or a combination of the two.

Figure 4. Disadvantaged Communities

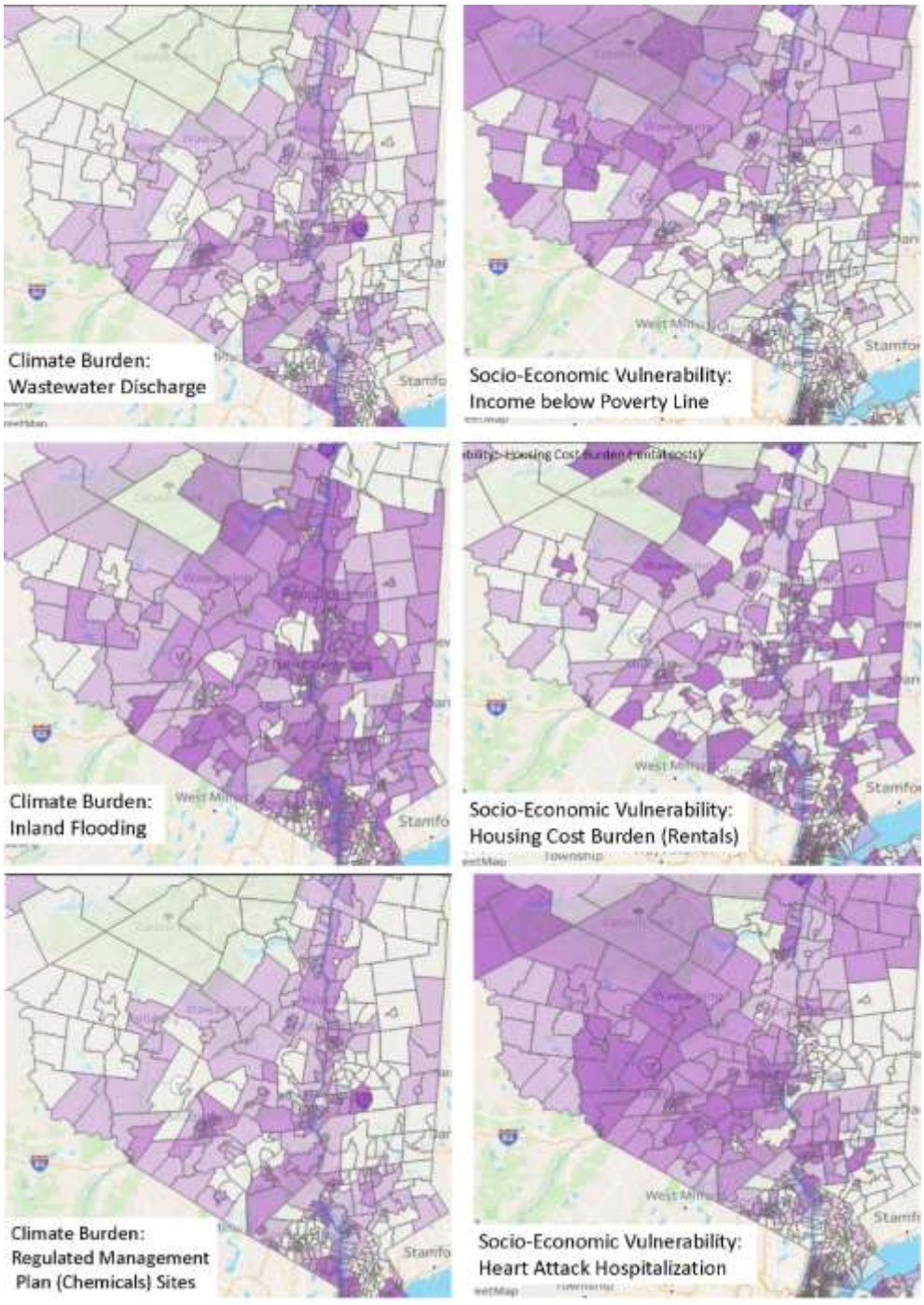


Source: New York State Climate Justice Working Group.

[4] New York State Department of Environmental Conservation, NYS Energy Research & Development Agency, "New York State's Draft Disadvantaged Communities Criteria." 2022. (https://climate.ny.gov/-/media/Project/Climate/Files/LMI-dac-criteria-fact-sheet.pdf)

Figure 5 shows maps of several of the individual criteria that contribute to the DACs designation. They indicate that the individual risks that contribute to DACs are found in many non-DAC communities throughout the Hudson Valley Region.

Figure 5. Maps Showing the Geographic Distribution of Various Criteria Used in the DAC Designation



Source: New York State Climate Justice Working Group.

As the maps in Figure 5 make clear, the factors that contribute to both climate burdens and socio-economic vulnerability are widely distributed throughout the Hudson Valley. An interactive map from which these maps are derived can be found at the following website:

https://climate.ny.gov/Our-Climate-Act/Disadvantaged-Communities-Criteria/Disadvantaged-Communities-Map

The US Census Bureau's Community Resilience Estimates

In the wake of the COVID pandemic, the US Census Bureau has created a new data tool, Community Resilience Estimates. According to the Census Bureau's website:

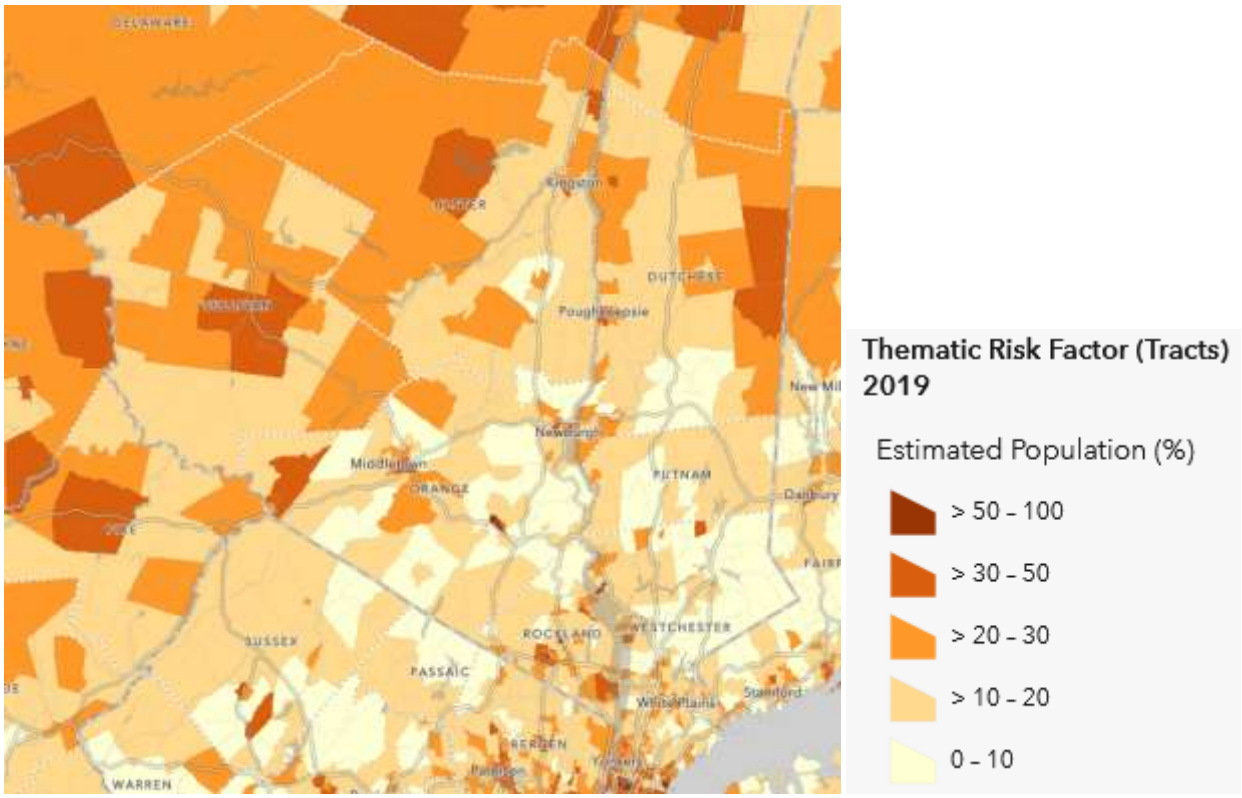
> [The] Community Resilience Estimates (CRE).... tracks how at-risk every single neighborhood in the United States is to the impacts of COVID-19 and other local disasters, by measuring the capacity of individuals and households at absorbing, enduring, and recovering from the external stresses of the impacts of a disaster.[5]
>
> The Census Bureau created the CRE using socioeconomic data from the American Community Survey. Specifically, "Individual and household characteristics from the 2019 American Community Survey (ACS) were modeled, in combination with data from to Population Estimates Program...
>
> "Risk factors from the 2019 ACS include:
>
> - Income to Poverty Ratio
> - Single or Zero Caregiver Household
> - Crowding
> - Communication Barrier
> - Households without Full-time, Year-round Employment
> - Disability
> - No Health Insurance
> - Age 65+
> - No Vehicle Access
> - No Broadband Internet Access"[6]

The map in Figure 6 shows the percent of the population with at least three of the risk factors described above. As expected, there are high concentrations of population with at least three of the risk factors in dense populations centers in the Hudson Valley (e.g., Beacon, Brewster, Kingston, Kiryas Joel, Middletown, Newburgh, Yonkers, etc.). Yet, it is surprising that some rural, low-density towns in the northern reaches of Sullivan, Ulster, and Dutchess counties also have high concentrations of population with at least three risk factors. While some of these areas have prisons (which would increase the risk factors), not all do.

[5] https://www.census.gov/programs-surveys/community-resilience-estimates/about.html

[6] https://experience.arcgis.com/experience/b0341fa9b237456c9a9f1758c15cde8d/

Figure 6. Percent of Population with a least 3 of the CRE Risk Factors, 2019



Source: US Census Bureau, Community Risk Estimates.

As was indicated above, these databases make it very clear that, in the Hudson Valley Region, the risks come from a variety of climate-related and socio-economic factors that are geographically dispersed. Consequently, the capabilities to respond to these risks must also be varied and have the ability to reach throughout each of the Region's counties.

IV. ASSESSING THE REGION'S RESPONSE TO THE PANDEMIC

This section of the document provides a "gap analysis" to identify gaps, priorities and opportunities related to the response to the COVID pandemic that has taken place in the Region. This has involved reviewing the results of outreach for this project (i.e., individual interviews, group meetings, surveys, etc.), as well as a review of the response to COVID both within the region and in counties throughout the United States. The central thrust of this effort is to identify exemplary initiatives in the private and public sectors that have the potential to serve as prototypes to address unmet needs related to the pandemic throughout the Region. These findings are summarized in a SWOT analysis at the section's end.

Local Responses throughout the United States

Data on local responses to the COVID-19 pandemic were gathered using the COVID-19 Local Action Tracker created by The National League of Cities in cooperation with Bloomberg Philanthropies. According to the Tracker's website, "The data in this Tracker serves as a reflection of the ways that cities across the country leapt into action to meet community needs and learn from each other at the height of the pandemic and over the following two years." The Tracker compiled information on local COVID responses from across the United States from February 2020 to February 2022.[7] The Local Action Tracker is intended to serve as a guide for local leaders regarding potential responses to the pandemic. The project has tracked initiatives in 800 cities, encompassing 672 proposals for American Rescue Plan Act plans and proposals and 4,871 local policies, all of which have impacted a population of 107 million people in the United States.[8]

The initiatives included in the Tracker's database are summarized in the Table 9 below. The responses have been recategorized to correspond to FEMA's six Recovery Support Functions. As shown in in the table, the vast majority of local initiatives were found in two Recovery Support Functions: Community Planning & Capacity Building (1,247 initiatives) and Health and Social Services (1,575). Infrastructure was next (580) followed by Housing (460) and the Economy (344). This is consistent with the nature of the COVID pandemic, where the greatest risks involved community health and the continued functioning of government. Infrastructure, Housing, and the Economy were areas in which communities had more limited tools, narrowing the types of responses they could undertake. The full database of local initiatives can be accessed through the National League of Cities website at https://www.nlc.org/resource/covid-19-local-action-tracker/

[7] https://www.nlc.org/resource/covid-19-local-action-tracker/

[8] Ibid.

Table 9. Local Initiatives Described in the COVID-19 Local Action Tracker Database by FEMA Recovery Support Functions.			
Topic Area	Number of Initiatives	Topic Area	Number of Initiatives
PLANNING & CAPACITY BLDG.	**1,247**	**HEALTH & SOCIAL SERVICES**	**1,575**
Fiscal Stability	42	Food & Nutrition	93
Anti-discrimination	16	Individual/Family Stability	124
Communication	111	Medical & Behavioral Health	130
Government Operations	526	Prevention of Spread	819
Community Resilience	69	Education & Childcare	83
Participatory Government	51	Vaccination	326
Public Safety	42	**INFRASTRUCTURE**	**580**
Re-opening	390	Digital Connectivity	72
ECONOMY	**344**	Mobility	162
Business & Economic Stability	344	Utilities	346
HOUSING	**460**	**ARPA PROJECTS**	**666**
Housing	460		
Compiled by Fairweather Consulting using data from the COVID-19 Local Action Tracker Database.			

The Results of Surveys by the Hudson Valley Regional Council

As part of the research for this project, two on-line surveys were conducted. One survey focused on public and civic organizations. The second was a survey of businesses within the Hudson Valley Region. Full tabulations of both surveys can be found in the appendices.

Public/Civic Organizations

From August 2021 to November 2022, the Hudson Valley Regional Council staff conducted surveys with officials in the seven counties of the area as well as leaders of cities and other public institutions. For purposes of the survey, public sector institutions were defined as any one of the following: any level of government (county, city, town, etc.), chambers of commerce, community or civic organizations, economic development organizations, educational institutions, industrial development agencies, labor organizations or unions, non-profits, or any workforce development or job placement organization. Fifty-one responses were received.

Among those organizations, the biggest effect the pandemic had on their operations was a shift to remote work, more digitized processes, and remote meetings. The impact on the organizations' budgets was mixed, with about half of them reporting reductions in their budgets (either a "major shortfall" or "slight reduction") and half reporting either "no change" or an increase. When asked about their budget for the coming year, 55% expected no change, while another 27% expected a slight increase.

When asked about their policy priorities both currently and over the next five years, their highest priorities were Community Engagement, Supporting Small Businesses, Housing Affordability and Workforce Development. The responses are as expected, given the range of issues likely to concern to economic development and community organizations throughout the United States both before and during the pandemic. Consistent with these responses, the organizations identified their top priorities as

Infrastructure, Business Retention, Promoting Entrepreneurship and Retraining Workers for In-Demand Occupations.

When asked about the current state of the economy, over 60% felt that tourism in their area was performing at the same or slightly above its pre-pandemic levels, while 70% of respondents felt that there was some distress in their main street business districts, with vacant storefronts and most businesses operating at partial capacity. When asked what tools small- and medium-sized businesses could use that they do not currently have access to, the vast majority of the replies focused on Internet applications. For example, 25% indicated website development. Another 25% selected using social media accounts. Other options selected included using on-line and digital advertising and accepting payments online.

These organizations had a mixed record regarding planning. On the positive side, about half of the respondents indicated they had a business continuity or disaster response plan in place, with another 17% indicating it is a work in progress. In addition, about 40% indicated they were working with stakeholders in the area to create a resilience strategy for future economic disasters. On the other hand, most organizations did not have plans in place for attracting or supporting remote workers or addressing long term office vacancies.

Private Businesses

From August 2021 to May 2022, the Hudson Valley Regional Council staff conducted surveys with businesses owners in the seven counties. This involved meeting with business owners face-to-face in their businesses, cold calling businesses, and attending chamber of commerce meetings. Through these interactions, we were able to direct them to our survey online. Ninety-two responses were received.

Among the 92 respondents, about one-half had sales below $500,000 per year, with 20% reporting sales over $1 million and 7% with sales over $5 million. Approximately 40% of the 92 respondents were Minority or Woman Owned Business Enterprises (MWBE).

Consistent with national trends, the issues of greatest concern to the respondents were attracting employees and maintaining inventories. Many businesses indicated a willingness to pivot. 41% of the respondents indicated that they had diversified the goods and services sold to customers since the pandemic. Sixty percent reported that broadband connectivity was critical to the success of their businesses, and 60% were satisfied with the service they received. Eight percent reported severe problems with connectivity, the rest had service that was usually reliable with occasional interruptions.

Most businesses reported little change in their use of online retailing or use of local vendors for supplies. Seventy-one% indicated no interest in more information on how to connect with local vendors. Similar to the responses by public/civic organizations, the business respondents indicated that the services that would be most useful to them to increase sales tended toward internet-related services (e.g., search engine optimization, use of social media, use of digital advertising, etc.).

As mentioned earlier, the full results of these surveys can be found in the appendices to this report.

Interviews with Local Economic Developers and Planners

As part of the research into the impact of COVID on the region and the responses it evoked, interviews were conducted with planning and economic development officials from each of the seven counties. A list of those interviews is provided below.

Dutchess County, November 17, 2022, Ron Hicks, Deputy County Executive; Eoin Wrafter, Commissioner of Planning & Development

City of Poughkeepsie, November 17, 2022, Natalie Quinn, Development Director

Orange County, November 16, 2022, Bill Fioravanti, Executive Director; OCIDA, Steve Gross, Director of Economic Development; Alan Sorenson, Planning Commissioner

City of Newburgh, November 10, 2022, Alexandra Church, Planning Director

Putnam County, November 15, 2022, Kathleen Abels President, EDC; Ilona Campo, Confidential Planning Secretary; John Tully Planning, Director; Tracy Woller Walsh, Tourism Director

Rockland County, November 16, 2022, Michael D'Angelo, Deputy Commissioner of Planning; Alexandra Obremski, Director, Office of Community Development; Steven Porath, Executive Director, IDA; Douglas Schuetz, Acting Commissioner of Planning

Town of Ramapo, November 14, 2022, Town Supervisor Michael Specht

Sullivan County, November 16, 2022, Freda Eisenberg, Commissioner, Jill M. Weyer, Deputy Commissioner, Division of Planning, Community Development and Real Property

Ulster County, November 17, 2022, Dennis Doyle, Director, Planning Department; Tim Weidemann, Director of Economic Development

City of Kingston, November 11, 2022, Steve Noble, Mayor

Westchester County, November 16, 2022, Norma Drummond – Commissioner, Department of Planning

City of Yonkers, Monday, November 14, 2022, Louis Albano, Commissioner of Planning & Development; Kelly Olson-Chiarella, Director of Office for the Aging; Lee Ellman, Deputy Planning Commissioner; Alba Guevara, Community Development, Program Assistant; Jaime McGill – Executive Director, IDA

During these interviews, the officials discussed how the pandemic effected their economy, the other potential hazards that exist in their counties, exemplary responses to the pandemic that took place in each county and overall lessons learned from the experience. The results of these surveys contributed to the SWOT analysis presented below.

SWOT Analysis

SWOT Analysis is a technique for summarizing analytical findings into a preliminary assessment of **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats. In this case, the SWOT analysis is used to identify those characteristics of the responses to the COVID pandemic that strengthened or weakened that response. It also identifies opportunities to strengthen the regional resiliency that emerged from the pandemic and well as potential threats to regional resiliency.

Strengths

Pre-existing cooperative relationships or a culture of cooperation: During the interviews, officials made it clear that any success they had in marshalling responses to COVID depended upon existing networks of cooperative relationships among the public and private sectors throughout their counties. For example, Dutchess County's efforts were greatly enhanced by the existence of an economic development working group/rapid response team that was originally convened to respond to a fire at The Gap warehouse in southern Dutchess County years earlier. Other counties reported similar benefits from existing networks

of relationships. Several mentioned that even the networks put together for the 2020 Census count were invaluable in assembling responses to the pandemic.

Local administrative capacity: The pandemic response involved managing and coordinating a variety of programs, addressing issues ranging from food insecurity to housing to business recovery. One of the ways this complexity was managed was through available paid professional staff. For example, officials with the City of Yonkers credit their ability to sustain a variety of initiatives to the fact that they had access to paid staff not typically found in smaller municipalities.

Commitment to communicate and/or build trust: Maintaining communications during the crisis was essential to coping with the pandemic. This was made possible by local officials' commitment to maintain communications that ranged from hosting daily briefings, recruiting trusted spokespersons to reach under-represented communities, and creating communication channels using a variety of media.

Willingness to improvise: COVID was an unprecedented disaster. Those charged with managing the crisis had little preparation or existing tools to respond to the crisis. Those localities that fared best showed a willingness to improvise during the crisis, trying novel responses and making course corrections as required. As indicated below, a McKinsey& Co. study indicates such a willingness to "pivot" was a key to successfully coping with the pandemic.

Weaknesses

Limited local data: Virtually all interviews included mention of the lack of reliable local data as a weakness in standing up a response to the pandemic. For example, the New York State Labor Department typically reports employment data from its Quarterly Census of Employment & Wages at the county level. In normal times, this is sufficient for planning purposes. During the course of the pandemic, lack of information about employment trends in municipalities constrained the ability of organizations responding to the crisis to understand the economic situations in affected localities. Similar gaps in information affected considerations of public health, tourism, and pandemic-caused in-migration.

Organizations operating in isolation: During the interviews, officials made it clear that organizations that tried to respond to the crisis through standard programs operating in isolation from other organizations did not fare well. Such standard responses were not sufficient to cope with the multiple dimensions involved in the issues stemming from the pandemic. Similarly, the responses by local government—even if they involved multiple departments within the government—were weakened by an inability to cross jurisdictional boundaries and/or engage private organizations.

Problems with housing supply: Prior to the pandemic, many communities were experiencing shortages of affordable housing. These shortages made it even more difficult to ensure that households experiencing loss of income were able to stay in their homes or find alternative, cheaper housing. provide those affected by the pandemic. At the same time, the rent moratoria imposed during the pandemic proved a hardship for many landlords who are major suppliers of housing to the lower ends of the market.

Inability to communicate across diverse populations: As noted in the discussion of the CHERRI database, many communities in the Hudson Valley are noted for their ethnic, linguistic, and socio-economic diversity. Some interviewees reported issues with establishing regular lines of communications with populations whose special communication needs had not previously come to the attention of municipal leadership. This included habits such as English-only messaging across media and a lack of awareness of the need for certain communities to be contacted by individuals and/or organizations that were already trusted within that community.

Opportunities

New relationships built during COVID response: As the pandemic required public and private organizations to reshape their business models, many were introduced to new partners with long-term potential to improve the organization's prospects. Businesses learned how to serve customers virtually or found alternative, local suppliers. Civic organizations or government agencies discovered new partners to enable them to provide more effective services. For example, in one county, the Office for the Aging was able to recruit its "meals on wheels" drivers to serve as the office's "eyes and ears" to check in on housebound clients. The potential exists to build upon these new ties to improve services.

Experience in managing pivots both in both the public and private sectors: Public and private organization both become more experienced in how to revamp their business models in response to changing conditions. These lessons have the potential to continue to foster innovation in these organizations long after the pandemic subsides.

Discovery of previously unknown or underestimated issues: Many interviewees indicated that the pandemic highlighted longstanding issues in their communities that had previously received little attention. The one most often mentioned was food insecurity and how the pandemic made officials aware of the extent of the problem in their communities.

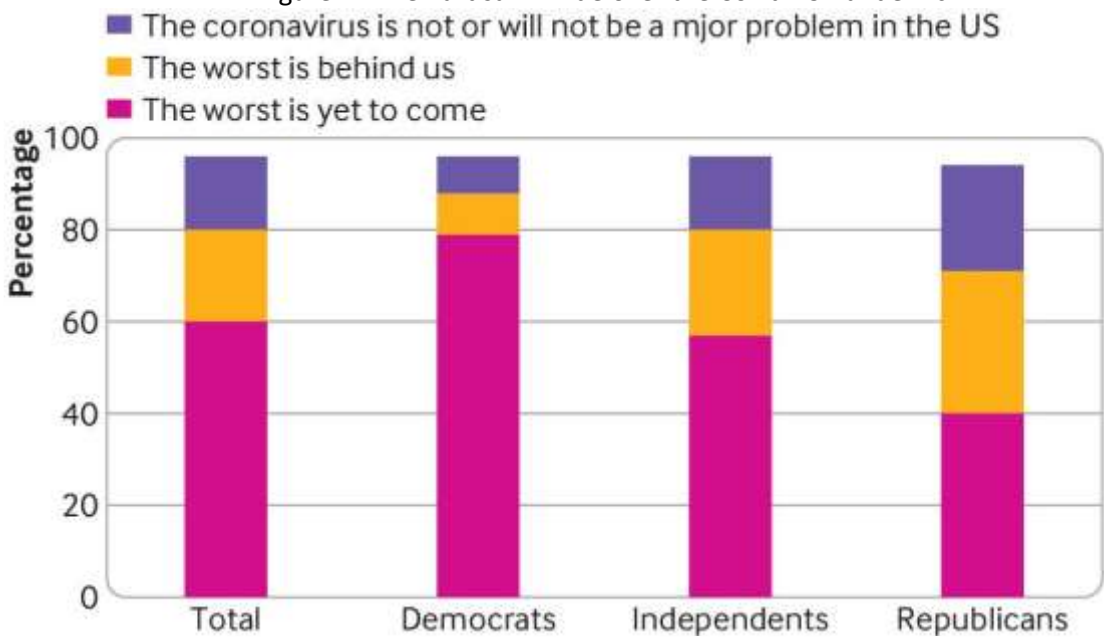
Continued revitalization of walkable neighborhoods: Virtually all interviewees reported that, during the pandemic, the already-existing trend of revitalization of walkable neighborhoods in cities, village and hamlets seemed to accelerate, raising the possibility of further strengthening such places in the pandemic's aftermath.

Threats

Increasing frequencies of crises: Accelerating climate change makes it more likely that the Hudson Valley will experience more crises in the coming year, both climate disasters (e.g., storms and flooding) and public health disasters such as pandemics.

Politicization of crisis responses: One unfortunate feature of the COVID-19 pandemic was its politicization, where one's response to the pandemic was closely associated with one's political party affiliation. (See Figure 7 below.) If this reoccurs in future disasters, it may be difficult to secure the broad consensus and cooperation needed for an effective response or to maintain adequate preparedness.

Figure 7. The Partisan Divide over the Covid-19 Pandemic



Source: Source: Kaiser Family Foundation health tracking poll (conducted July 14-19, 2020) as reported by the British Medical Journal.

Failure to plan for continuity of operations/preparedness or to memorialize/institutionalize lessons learned from the pandemic response: Prior to the pandemic, many government agencies and organizations appeared to lack plans for continuity of operations in the wake of a disaster. This lack could make future disasters much worse. In addition, if these organizations do not formally internalize the lessons learned from the pandemic, the ability to respond to future disasters could be weakened.

Lessons Learned from Local Responses

A review of the responses by local officials in the Hudson Valley, along with the review of projects among these nearly 5,000 initiatives in the Local Action Tracker database reveals some common features or best practices found in these responses. These include:

Local Responses to Local Needs: While the pandemic was a world-wide event, it effected each community differently, depending upon the composition of the local economy, population, and civic sector. Consequently, the responses by each community varied, driven by local needs. Statewide and national programs were an important part of the response. But as expressed in the interviews with officials in the seven counties of the Hudson Valley Region, successful responses relied upon the capacity of local governments and local organizations to set priorities and assemble the resources required to meet the challenges at hand.

The Ability to Pivot: Creative redeployment of resources to meet new needs was a key feature of many successful initiatives in both the public and private sectors in the Hudson Valley and beyond. For example, during the pandemic, some jurisdictions kept their transit drivers on payroll and deployed them to deliver food to homebound seniors and others. Restaurants pivoted to takeout and delivery of meals from in

house dining. Another initiative converted a shuttered school district's funding for free or reduced lunches to EBT cards that the families could use to purchase food at grocery stores. A McKinsey study of private sector responses to the pandemic summarizes the importance of pivoting:

> Business-model innovation emerged as the key differentiator for those that have gained ground during the pandemic. In fact, the survey respondents who said their companies addressed the crisis very effectively were 1.5 times more likely to report undertaking business-model innovations than those who thought their organizations' responses were not effective.[9]

That same principle applies to the public sector. Successful initiatives often involved creatively redeploying existing (and potentially idle) resources to meet unprecedented needs arising from the pandemic.

Reliance on Distributed/Dispersed Networks: In the counties of the Hudson Valley and beyond, an adequate response to the pandemic required a wide range of services stretched across communities widely dispersed throughout the region's seven counties. Launching and sustaining such a response was far beyond the capabilities of any single government or organization.

Successful responses inevitably involved a network of organizations coordinating their activities across a variety of populations and geographies. In that context, those local government that were already embedded in collaborative networks with other government and public and private agencies fared best when assembling their response to the pandemic. For example, Dutchess County created a micromarketing program in which the County provided small businesses with a subsidy to join the County Chamber of Commerce and, at the same time, retained a local marketing firm to work with the businesses to promote themselves through the Chamber network and beyond. The County estimated that the value to each participating business was approximately $12,000. Putnam County used ARPA funds to contract with the Putnam Community Action Program to operate a mobile food bank that circulated throughout the County. Westchester County gave grants to Chamber of Commerce to issue vouchers to individuals who could use them to purchase food from local restaurants—addressing food insecurity while simultaneously supporting local restaurants.

A Commitment to Planning & Relationship-building: Counties reported substantial benefits from pre-disaster planning. For example, as host to a nuclear power plant, Orange County has long been required by the Federal Energy Regulatory Commission to maintain a Continuity of Operations Plan in case of a nuclear disaster. The County reported that this pre-disaster planning provided two benefits. First, the plan provided County government with prescribed procedures to perform in case of an emergency. Second, the continuous planning process built relationships among County agencies and local communities and organizations that proved invaluable in mounting their response to the pandemic. Similarly, the City of Yonkers reported that they were able to quickly and effectively partner with not-for-profit organizations during the pandemic response. The City has long standing relationships with many of the organizations as they are funded through the City's CDBG funding. The City additionally engages with these organizations through the Community Planning Council, a standalone group with membership comprised of the local not-for-profit sector.

The Importance of Federal Funds in Encouraging & Supporting Innovation: A longstanding theorem on organizations asserts that bureaucracies can become more innovative in the presence of extra resources

[9] McKinsey & Company, Strategic resilience during the COVID-19 crisis, March 2, 2021. (https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/strategic-resilience-during-the-covid-19-crisis)

or "slack" to buffer the organization against unanticipated hardships.[10] Federal funding during COVID provided local governments with the extra funding that gave them a cushion to take chances on innovative responses to the pandemic without worry that a failed initiative would leave the government with no capability to respond. For example, ARPA funding enabled Ulster County and the City of Kingston to stand up the Kingston Emergency Food Collaborative and to further address the issue of food emergency planning.

Indeed, during an era of tax caps and limited local spending, one of the lessons from the pandemic may be the need to rethink our notions of governmental efficiency. As an OECD report on the global response to the pandemic concluded, "Risk management is too often construed as a means of maintaining the leanest possible operations in the name of efficiency, and consequently, reducing redundancy to zero. Without redundancy, there is much greater vulnerability and little or no ability to absorb shocks, which in turn can quickly turn into failures. . . ."[11] During the pandemic, much federal funding served as a "shock absorber" to enable service providers to take risks in meeting urgent needs. That same lack of "slack" affected businesses. As was documented in recent research on the pandemic, "...[In] the wake of a massive economic shock, many small businesses lack the capacity to undertake the necessary changes to survive....[12] The section that follows indicates that future emergency responses must be aware of the particularly severe stress felt by small businesses in such situations.

[10] Victor A. Thompson, "Bureaucracy and Innovation," *Administrative Science Quarterly*, Vol. 10, No. 1, Special Issue on Professionals in Organizations (Jun., 1965), pp. 1-20

[11] OECD Policy Responses to Coronavirus (COVID-19), A systemic resilience approach to dealing with Covid-19 and future shocks, 28 April 2020.
(https://www.oecd.org/coronavirus/policy-responses/a-systemic-resilience-approach-to-dealing-with-covid-19-and-future-shocks-36a5bdfb/)

[12] Mark Partridge, Seung-hun Chung, Sydney Schreiner Wertz, "Lessons from the 2020 Covid recession for understanding regional resilience." Journal of Regional Science, 25 January 2022.
(https://doi.org/10.1111/jors.12584)

V. PLANNING FOR RESILIENCE

This section examines the steps involved in planning for resilience. It is intended to provide specific guidance in the process of preparing for and/or responding to disasters. As such, this section can be thought of as a resource to be consulted when implementing the action plan recommended at the end of this report.

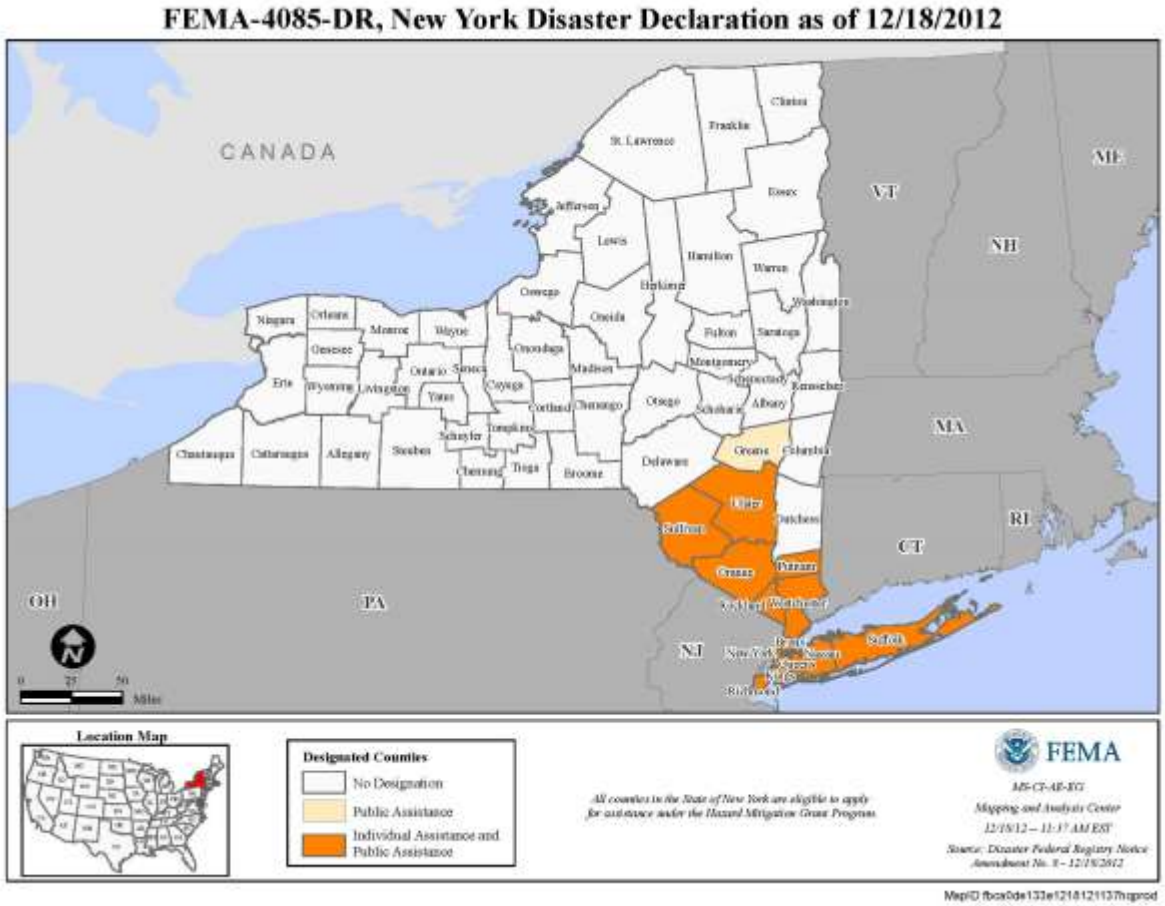
The resiliency framework proposed in the pages that follow divides the work into four priority segments – **People, Planning, Economy, and Land** – to build on topics for overarching priorities. Under each topic of the resilience framework, relevant areas are proposed that local leaders can consider when selecting key performance indicators (KPIs) to monitor over time to understand if their efforts are moving the community to improved resilience. There is no right or wrong answer; KPIs can be selected based on how realistic they are to manage, how relevant they are to the community's goals, and key governance documents such as CEDS, Comprehensive Plans and Hazard Mitigation Plans. This report also recommends that these plans be synchronized to be more effective.

Today, an unprecedented amount of funding is available from the federal government to facilitate efforts to recover from COVID-19 and natural disasters. But utilization of these resources means that communities need to follow through to launch their own programs to educate and involve communities in resilience preparedness. The model proposed in this report acknowledges and builds on each community's physical, cultural, and economic priorities by putting leadership in control. Local leaders and economic developers will guide the direction of their planning through a Regional Resiliency Network that addresses the need to increase community capacity, safeguard critical ecosystems, address economic livelihoods, and protect people by promoting sustainable communities.

Vulnerabilities in the Region

The previous section outlined the diverse risks facing the Hudson Valley region. One factor underlying many of its environmental risks and threats of natural disaster is water. The region rises from just above sea level at Rye in Westchester along the shores of Long Island Sound to 4,108 feet above sea level at the top of Slide Mountain in Shandaken in Ulster County. The seven counties that comprise the Mid-Hudson region supply drinking water to more than 20 million people in the New York metropolitan area, Philadelphia, and Trenton, as well as providing for its own communities. An analysis of recent major disaster declarations demonstrates that the Hudson Valley is prone to flooding. There have been four major FEMA declarations over the past 10 years since Hurricane Sandy, all involving flooding. (See Figure 8.)

Figure 8.

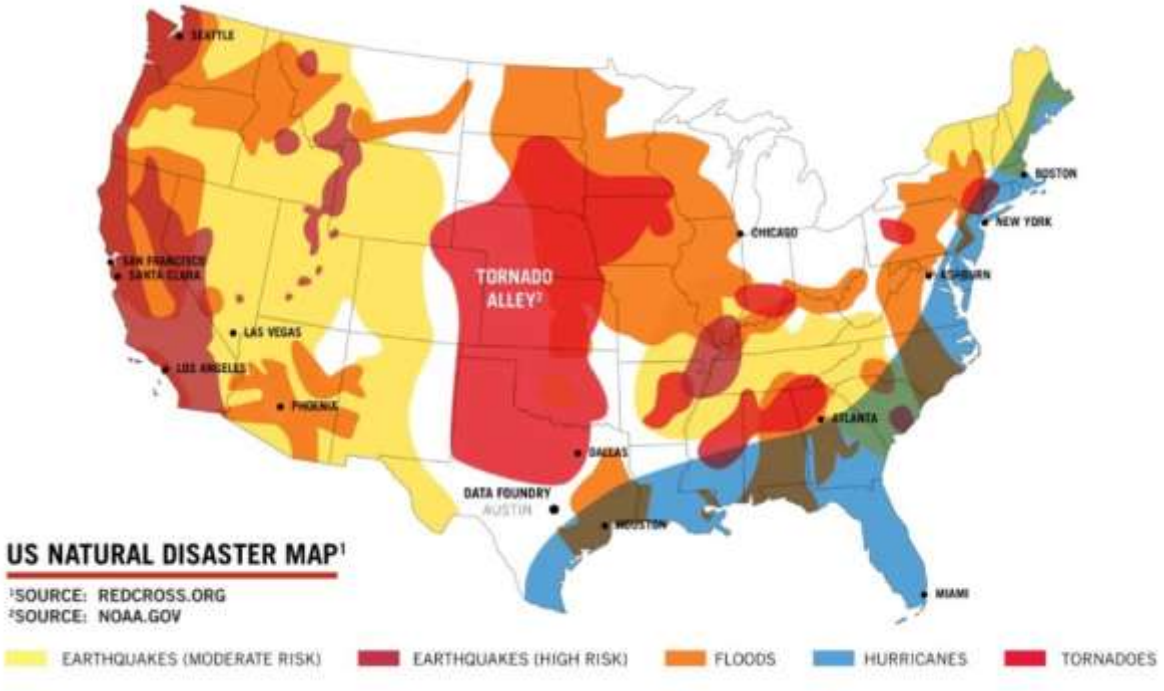


Source: FEMA's Hurricane Sandy declared disaster 4085

The Impact of COVID-19 and Natural Disasters

The COVID-19 pandemic created tragic consequences for human life along with complications and uncertainties in communities around the globe. From a health and economic standpoint, this emergency took a heavy toll on the Hudson Valley due to the proximity to the highly populated New York City, which quickly rose early in the pandemic to be among the top 10 hot spots for the country. While every state and county were declared a disaster due to the pandemic of 2020-2021, the map in Figure 9 from the National Oceanographic and Atmospheric Administration shows that this region additionally is prone to flooding and can also receive tornadoes.

Figure 9.



With the federal government offering an unprecedented amount of recovery resources for the COVID-19 Pandemic and natural disasters, local communities are challenged to find capacity to take advantage of the funds. Throughout this paper and in the resources section of the Appendix, HVRC seeks to create a guide for local leaders that can undertake specific actions and impactful ways to recover, plan and become more resilient.

A Guide for Local Resiliency Planning

Using online and original research, as well as the experience of various organizations and consultants to create its recommendations, this section is intended to be a living guide, taking advantage of lessons learned and best practices to inform the details of disaster planning in the Hudson Valley. Due to ongoing safety and social distancing protocols during the COVID-19 Pandemic, virtually all outreach, interviews, and focused discussions took place either online or through virtual meetings supported by HVRC staff. While the consultations were less formal and more conversational, this effort considered numerous questions:

Resilience

- In general, what does the word "resilience" mean?
- Does the region or individual communities have formal resilience programs?
- Is there formal reporting to let local leaders know where they stand on readiness for emergencies?
- What specifically can improve economic resilience, which is an essential element of keeping people employed and revenue flowing?

Infrastructure

- Are there areas within the region that need new/expanded/rehabilitated infrastructure?
- Is there interest in utilizing more "green" energy sources such as solar power?
- Does every community have access to broadband internet?

COVID-19

- How did the COVID-19 pandemic impact the economy in this region?
- What were the specific impacts? (i.e., business closures, lost revenues, increased unemployment, workforce issues, increased expenses for PPE, increased expenses for overtime and salaries for staff, etc.)
- Are there any lessons learned or best practices experienced from the COVID-19 pandemic that communities would like to share?

Emergency Preparedness

- Has this region been impacted by a federally declared disaster in the past 10 years?
- Do the region's communities have staff/personnel dedicated to emergency response and recovery?
- Within the region, are there shared resources and are roles that can be defined that would provide more comprehensive support during and after an emergency?
- What aspects of preparedness and recovery are local communities most concerned about?
    - Emergency communications before or after a crisis
    - Health capacity – EMO, hospital services, community clinics
    - Impacts on industries, such as tourism, agriculture, corporate headquarters, etc.
    - Public safety capacity
    - State of infrastructure
    - Social services
    - Procedures to tap into federal resources, should an event require additional support

What is Resilience and Why Does it Matter?

Natural and manmade shocks can set local economies back years. Economic resilience programs are efforts that seek to retain businesses and bolster a community's ability to avoid, withstand and minimize the duration of shocks to your economy. Promoting resilience is also about measuring a community's ability to prepare for anticipated threats, help small businesses recover rapidly, and adapt to changing conditions. It is a term that applies to individuals and families, businesses, and communities.

Individual or **family resilience** is influenced by the values and decisions of the heads of household and parents on children. It can be increased by:

- Teaching family members about what to do in an emergency
- Having a cohesive, flexible family structure
- Strengthening social networks
- Having financial security and a "rainy day fund"
- Maintaining the right level of insurance on homes and belongings
- Keeping emergency food supplies and medicines on hand

- Using open communication and collaborative problem-solving.[13]

When the concept of resilience is applied to a **community**, it speaks to enhancing the capacity of a city or county government to meet adversity, and reorganize, while retaining its structure, identity, and distinctiveness.[14] In the context of this publication, we are focusing primarily on **economic resilience,** which is more often the challenge for local elected and appointed leadership to care for the community as a whole. It is the ability to identify potential risks to a community's revenues, businesses, and jobs to implement strategies that protect critical business functions:

- Infrastructure
- Customers and access to markets
- Equipment
- Data protection
- Insurance
- Operations
- Buildings
- Inventory
- Backup energy
- Business continuity plans

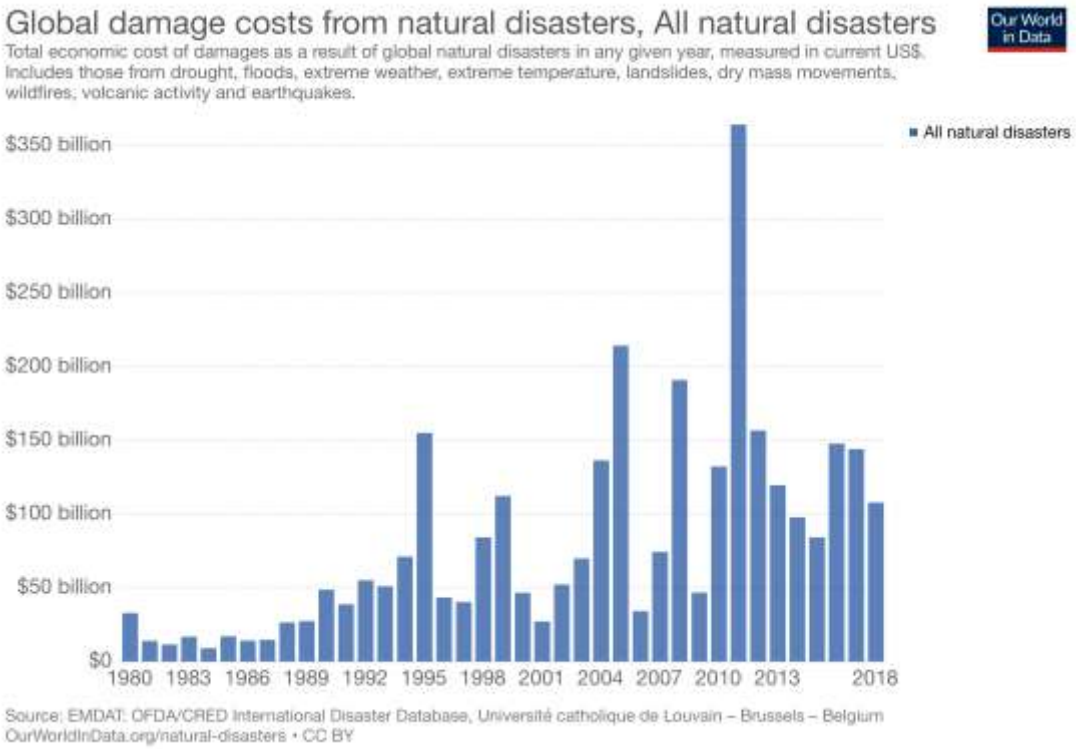
While communities are unique and disasters vary, there is a clear linkage and resemblance between how to recover from one type of disaster to another. Often times the results of natural and manmade disasters are the same, whether they are due to weather or the pandemic, the loss of a major industry, crime or civil unrest, cyberattacks or terrorism. In fact, the best practices disaster recovery programs offered by the federal government to help in the event of the disaster are virtually identical.

As the built environment has become more elaborate, damage costs from natural disasters are increasing over the years, as can be seen in Figure 10 below. In 2021, there were 58 major disasters in the US. The 20 most costly totaled $152.6 billion. Since 2005, the US has spent $593 billion on disaster recovery. While the perception is that the federal government will take responsibility for funding recovery, the fact is that states and local communities must also carry a significant and increasing share of the costs.

[13] Froma Walsh (2012) 'Facilitating Family Resilience: Relational Resources for Positive Youth Development in Conditions of Adversity', pp. 179-183.

[14] John Fleming & Robert J Ledogar (2008) Resilience, an Evolving Concept: A Review of Literature Relevant to Aboriginal Research, Pimatisiwin, 6:2, 7-23, p.3.

Figure 10.



Cycle of a Disaster

If a jurisdiction has never had a disaster, its leaders may not understand the various phases it will go through, which kind of help can be received in each stage and who it can partner with on recovery. Most communities are not prepared for how quickly they can exhaust local resources, as federal and state governments will not carry the full cost. In most cases, even to receive reimbursement means that local communities must foot the bill first for things like cleanup. It may take months to receive reimbursement and there will be a local match required which is usually at least 25%. In some cases, there may be items that cannot be reimbursed, depending on the timing and uses of funds.

Communities also tend to overestimate how long help will be available and the fact that long-term recovery may take anywhere from 5 to 20 years before a community stabilizes to a new normal. For example, disaster loans from the US Small Business Administration may only be available for the first 3 to 9 months and all other types of grants usually have deadlines as well. FEMA may be on hand for a certain amount of time, after which emergency operations will end. One might consider the following stages of a disaster and what activities typically occur at each stage.

STAGES OF A DISASTER

Pre-Disaster Steady State

Planning

Infrastructure

Eco-System Management

Mitigation

Preparedness

Stakeholder Engagement

Threat/Vulnerability Assessments

Investment

Emergency Response

Search and Rescue

Crisis Management

EOC – C3

ESFs

Contain

R&D for Cure

Social Distancing

Relief and Stabilization

Mass Care

Restoration of Services

Work Arounds for Damaged and Destroyed Assets

Relief for small businesses, schools and critical community assets

Stabilization and Containment of Threats

Vulnerabilities

Long-Term Recovery

Repair, Rebuild and New

Brand/Reputation

Finance

Recovery of community fabric

Embedded resilience investments

New Steady State

Planning

Infrastructure

Eco-System Management

Mitigation

Preparedness

Stakeholder Engagement

Vulnerability Assessments

Investment

The Disaster Declaration & Partnering After a Crisis

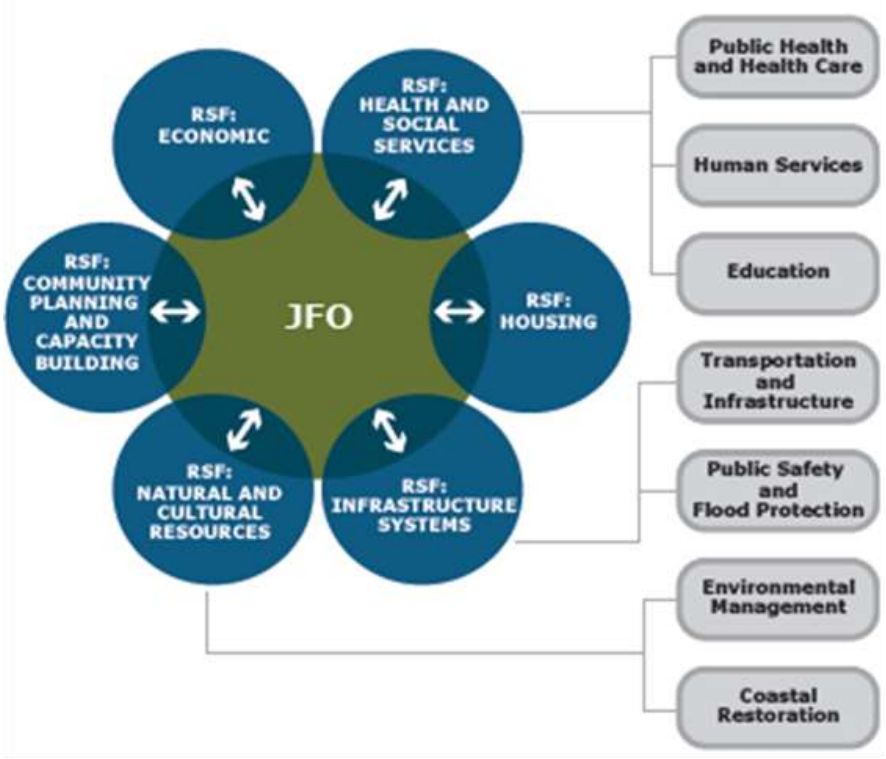
When a disaster strikes, community leaders face myriad time-critical and competing challenges. When it is obvious that the situation is beyond local capability to deal with and the situation is clearly overwhelming to local human and financial resources, local elected officials can then go to their state which can in turn request support from the federal government.

When a federal disaster is declared, various agencies come in to assist. Dealing with many different agencies can be confusing and typically there's an "alphabet soup" of acronyms that relate to agencies, their programs and activities. It is helpful to consider recovery within a system of topics to organize needs and functions, each with a defined set of capacities, resources, and potential partners to add support. If a community understands this before a disaster, it is much easier to work with federal agencies as partners in recovery.

The Federal Emergency Management Agency developed a Natural Recovery Disaster Framework which, "…provides a flexible structure that enables disaster recovery managers to operate in a unified and collaborative manner. The NDRF focuses on how best to restore, redevelop, and revitalize the health, social, economic, natural, and environmental fabric of the community and build a more resilient nation."

The framework defines guiding principles, roles, responsibilities, and a structure to help communities recover.

Figure 11.



The Federal Emergency Management Agency (FEMA) has a defined system of recovery support functions (RSFs) with associated expertise coordinated and contributed to by various other agencies to address disasters.

The 6 FEMA RSFs include:

- **Community Planning & Capacity Building**
  This topic area focuses on restoring and strengthening state, territorial, tribal, and local government's ability to plan for recovery, engage the community in the recovery planning process, and build local plan implementation and recovery management capacity.
- **Economic**
  Returning economic and business activities (including agricultural) to a state of health and developing new economic opportunities that result in a sustainable and economically viable community is the topic of this RFS. It integrates the expertise of the Federal Government to help local, regional/metropolitan, state, tribal, territorial, and insular area governments and the private sector sustain and/or rebuild businesses and employment and develop economic opportunities that result in sustainable and economically resilient communities.
- **Health & Social Services**
  Healthcare is an economic driver in many communities, which, if damaged, makes this sector critical to most communities' disaster recovery. Likewise, Social Services have a significant impact on the ability of a community to recover. This RSF supports locally-led recovery efforts to address public health, health care facilities and coalitions, and essential social service needs.

- **Housing**
  Housing is a critical and often challenging component of disaster recovery that must be adequate, affordable, and accessible to make a difference for the whole community. This RSF coordinates and facilitates the delivery of Federal resources to implement housing solutions to effectively support the community's needs and contribute to its sustainability and resilience.
- **Infrastructure**
  This RSF works to facilitate the restoration of infrastructure systems and services to support a viable, sustainable community, improve resilience, and protect from future hazards.
- **Natural and Cultural Resources**
  This RSF focuses on protecting natural and cultural resources and historic properties through appropriate response and recovery actions to preserve, conserve, rehabilitate, and restore them consistent with post-disaster community priorities, in compliance with applicable environmental and historic preservation laws and Executive Orders.

Roles and Responsibilities in Recovery and Resiliency

Disasters stress the limits of local leadership, both human and financial. Local leaders who are tasked with managing response and recovery from the emergency are also often suffering from personal hardships in their own homes. Those that seek and accept help and who know how to work with others are more likely to recover more quickly. In disaster recovery, the role of local leaders becomes:

- Inspiration for Community Recovery
- Spokesperson
- Convener
- Analyst
- Visionary / Catalyst
- Gap Filler
- Connector / Advocate
  Appoint Project Managers / Manage Projects (small communities)

Local government responsibilities:

- First level of response in emergency management.
- Assessment of the situation and activate nearest Emergency Operations Center (EOC).
- Request for assistance from the state if magnitude of disaster exceeds resources.
- To serve as applicant and grant recipient for state and federal assistance.

Economic Developers can help with:

- Collecting and analyzing data and documenting economic impacts.
- Identifying businesses and industries that were impacted.
- Support resources at local, state, and federal levels.
- Disseminating credible information to businesses.
- Representing and being an advocate for business interests.
- Strengthening and collaborating among partners at local, regional, and state organizations.
- Providing input to community's comprehensive plans, CEDS and Hazard Mitigation Plans – specifically giving feedback regarding infrastructure and other public services needed to improve commerce.

NOTE: There is a detailed description of the elements of Crisis Communications in the appendices to this report**.**

Best Practice

A helpful exercise to do during "blue skies" is to create a Stakeholder Map which can help local leaders to understand the expertise of local and regional organizations and where to get support in an emergency. A map of economic recovery stakeholders should include chambers of commerce, economic development organizations, industry-specific associations, destination marketing organizations, business incubators, Small Business Development Centers, higher education, financial institutions, foundations, and non-profits that work on economic issues. When the time comes, knowing how to contact these organizations, having knowledge of their programs, and calling on them to help spread the work can be the best way to get many things done quickly after a disaster, thereby sparing local leaders from burnout.

Roles of State Government:

- Determine if severity and magnitude of disaster is beyond State's capabilities.
- Commit resources to help local jurisdictions recover.
- Activate state recovery team.
- Identify activities for immediate response.

Roles of Non-profits and Philanthropies:

- Volunteer Organizations Active in Disaster (VOAD).
- Humanitarian relief.
- Rebuilding.
- Gather donations.

Support Businesses can provide:

- Donations of goods and services.
- Can offer use of valuable equipment, warehouse space, professional expertise.
- Cash donations to philanthropic organizations like the Red Cross.
- In-kind donations to help other businesses recover.

Programs to Build Resilience

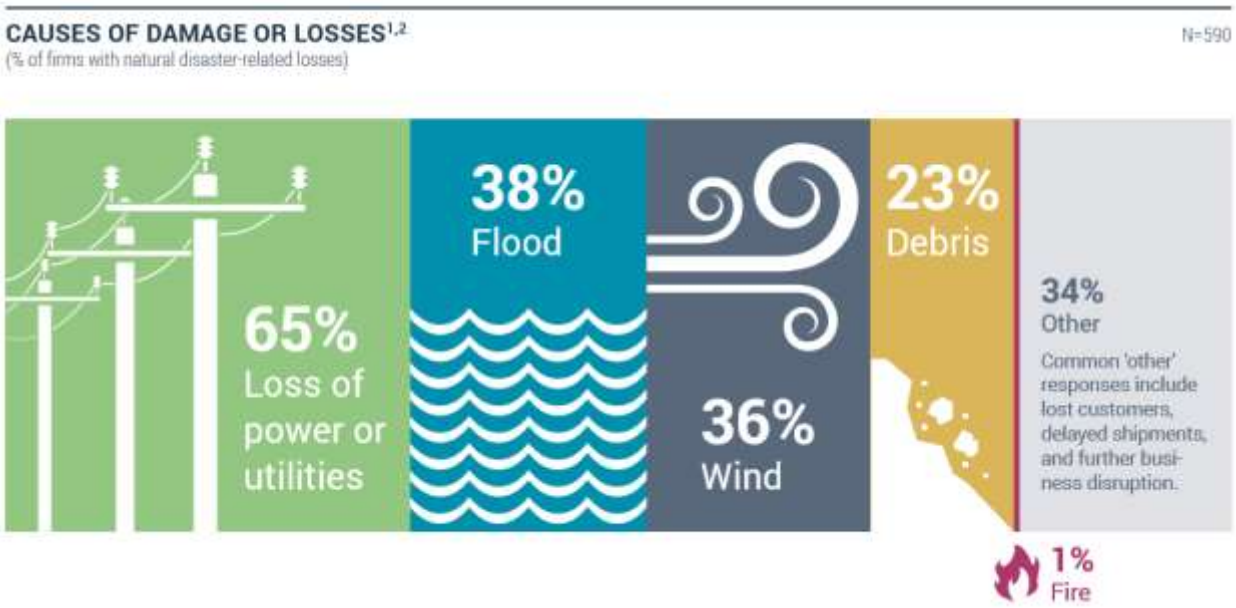
After a disaster, businesses typically fend for themselves. Help is scarce and businesses are not the first priority of communities, which are putting health, safety and housing first. However, getting people back to work and money flowing is essential to recovery and therefore, paying attention to the needs of businesses is urgent. Without jobs, recovery stops quickly.

A best case for businesses is to have adequate insurance, cash flow and a reserve fund, as well as a business continuity plan for storage of critical information and records. But often times, small businesses are not prepared. They don't have the resources that larger businesses have and owners may be solely focused on using all of their time and resources to grow their businesses. According to a national study by the Federal Reserve Bank in 2017 – Small Business Credit Survey Report on Disaster Impacted Firms – as much as 60% of small businesses don't have an emergency plan and without a plan, 43% won't reopen after a crisis, and 75% fail within three years. This is too much of an economy to lose!

Figure 12.

Who is most vulnerable? Businesses that are…

- Young.
- Minority or women-owned.
- Businesses that lease, versus own location.
- Tourism, retail, wholesale businesses.
- Manufacturing businesses that face disrupted supply chains.
- Those that rely on the local market or have little market diversity.
- Located where other businesses don't re-open.
- Located in a distressed downtown.
- Near a major anchor that is closed.
- In highly competitive industries.
- Can't adjust to changing situations.



Source: Federal Reserve Bank 2017

Several critical factors need to be considered in business vulnerability after a crisis:

- Access to capital.
- Capacity constraints of small businesses and the inability to use trust lands as collateral.
- Insufficient workforce development, financial management, and business education.
- Regulatory constraints on land held in trust or with restricted use.
- Underdeveloped physical infrastructure.

Energy Infrastructure as an Essential Element of Economic Resilience

As shown in the study highlighted above, the leading reason why businesses fail after disasters is not the disaster's damage itself, but the loss of power afterwards. This disrupts essential communication,

government services, refrigeration of food, computer and business operations, HVAC systems and even the provision of health services when backup generators are not available. The presence of renewable energy systems, locally controlled microgrids and backup generators have proven to be helpful in getting communities up and running as quickly as possible. In some cases, communities have made substantial investments in their own energy systems, both for the sake of environment sustainability and to increase their resiliency by providing local backup to regional grid systems.

Five Ways to Help Small Businesses After a Crisis

The facts above indicate that an urgent priority in recovery is to work with businesses and start to address their most critical issues. While there are many more things that can be done, the support businesses need generally falls into five key categories of work:

#1 – Let them back in!

Often areas of a community that has been damaged are locked down as public safety officials address the damage and seek to prevent looting. However, business owners have experienced that if they are not allowed re-entry to their businesses, this can cause further damage – often more severe than the impact of the initial disaster. Some examples from across the country showed the same result:

In Galveston, Texas after Hurricane Ike in 2008, business owners were not allowed to re-enter for 12 days, allowing flood waters to destroy facilities and inventory with mold.

In Colorado after the 2013 floods, many small businesses were not allowed to return to their restaurants, retail facility and offices for 6 weeks. Restaurants serving tourists in towns like Jamestown, Lyons and Manitou Springs towns lost all their inventory, and valuable equipment was damaged from prolonged inundation with water.

In the Florida Keys after Hurricane Irma in 2017, some businesses chose not to evacuate rather than being locked out from returning. Owners and employees put their lives at risk fighting winds and storm surge. Some businesses that followed evacuation orders regretted their decision when they were not allowed back in for nearly two weeks.

A better solution than risking looting while keeping everyone out is to create a credentialing system that will allow authorized business representatives back into their company establishments. This has been deployed very successfully in Louisiana, which has an online registration system where businesses can pre-authorize people to receive credentials that are recognized by public safety officials. More information on this orderly system for re-entry can be seen at www.lsp.org.

#2 – Identify who was impacted

After a disaster, it's often the case that community leaders do not know which businesses were impacted. Entire counties may be designated to be part of a disaster, but this does not mean that every business was actually impacted. Without proper identification, it is far more difficult to plan for recovery. Knowing which businesses were hit directly, the industries that were impacted, and the concentration of locations where economic injury is occurring will provide a greater likelihood of early support. This knowledge will also help community leaders to understand the likelihood of long-term impacts from the loss of direct and indirect revenues – in other words the multiplier effects of the disaster on other businesses in the supply chains, local budgets, and in a worst case, business closures and the permanent loss of community wealth.

Beyond doing a door-to-door visual assessment, the use of geographic information system (GIS) is a more powerful and accurate way to help create, manage, analyze, and map all types of data. An example of this was used in the tornado-impacted areas of Western Kentucky after the December 2021 outbreak that affected a large region of the state. Taking a GIS map of business locations provided by an economic development mapping software service, Zoom Prospector, consultants for the FEMA Economic Recovery Support Function (ERSF) obtained a map from NOAA of the tornado tracks. The map tracks showed the exact paths of the tornadoes and the wind strengths, expressed in ESF numbers and color bands. Taking the data from NOAA and layering it over the business locations maps, individual businesses could be identified as being in the direct tornado paths. The GIS map then allowed for the extraction of the business names, contacts, and types of firms into an Excel spreadsheet which could be analyzed further.

The maps in Figure 13 below show the impact to the City of Mayfield, which suffered a direct hit from one of the tornados on December 10, 2021. Each dot on the map signified the location of a business and the colors show the type of business by NAICS code.

Figure 13.

#3 – Do a business assessment survey

While mapping can provide the locations and names of businesses that were impacted, another extremely helpful tool is to assess actual impacts and what firms are experiencing through a survey. In various disasters around the country, surveys have been deployed by volunteers at chambers of commerce and other community organizations who have gone door to do with paper surveys, made phone calls and deployed online surveys. Questions address the current status of the business (i.e., open with noninterruption, open with limited services, closed temporarily, closed permanently, etc.). The survey should also address what has happened with the business' workforce, whether the business is experiencing normal revenue or economic injury, what their plans are for the future, and any issues the business might need help with. Armed with this kind of information, economic developers and community leaders will be in a better position to assist and design recovery programs that will be most relevant to their business community.

#4 – Provide technical assistance

Case management and coaching for businesses is a highly effective way to improve small business survival. This is an excellent role for organizations like business incubators and Small Business Development Centers (SBDCs), which are typically located in community colleges. Business assistance can also come from MBA students and SCORE volunteers, business incubators and industry associations. Since the 1960's SCORE has worked in partnership with the US Small Business Administration in providing volunteer mentors to help with business issues. After a disaster, businesses may need help with:

- Rewriting business plans.
- Financial management support and applications for loans.
- Market research and marketing assistance.
- Business continuity training.
- Workforce retention strategies and policy rewrites.
- Retraining support for employees.
- Commercialization and technology transfer programs.
- Getting their business online for the first time.
- Making connections with new suppliers and other businesses.

#5 – Identify various forms of financing

While many businesses will say they do not want to take on more debt, often the best course of action is to get a low interest loan from the SBA or some other emergency program rather than risking bankruptcy. Businesses typically need under $100,000 to get by after a disaster, with most needing under $25,000 to make repairs, meet payroll and cover sales shortfalls. Here are some alternatives types of financing that can help:

The first program that usually comes in after a major disaster are **SBA disaster loans for businesses and homeowners for property damage**. These are loans which usually have a short deadline for those with direct impact from the disaster in a federally-declared jurisdiction. Later a second type of loan – the economic injury loan – is available for up to 9 months after a disaster for business losses. These loans may include adjacent counties. Both loans can provide up to $2 million for businesses. Microloans made possible from SBA through local community development finance institutions (CDFIs) can typically provide $500 to $50,000 for clients who cannot obtain traditional bank financing.

Another type of loan can be made to help bridge the time between a regular loan and a disaster. An example of this is Florida's **Bridge Loan Program**, which offers no fee financing made available within the first weeks after a disaster to extend quick access to working capital. There is no interest for a short period of time and then the loan should be replaced with a longer-term loan, usually after six months. This type of loan could be put in place regionally or at the state level but requires a large budget to set up the fund.

Revolving Loan Funds are typically seeded by the federal government such as by the US Economic Development Administration or US Department of Agriculture, with local matching funds. They provide low interest loans through local CDFIs to help businesses, typically for a specific purpose. For example, the Hudson Valley Agriculture Revolving Loan Fund was recently seeded for the Hudson Valley AgriBusiness Development Corporation with CARES Act Funding to support local farmers and related businesses in multiple counties in the region. Other typical uses of RLFs might be to help downtown businesses in certain zones, or a particular type of business a community wishes to support such as tech startups or other specified industries. RLFs can also be used in disaster jurisdictions to help with recovery.

Forgivable Loans have resiliency goals attached as conditions, such as retaining employees, creating new jobs, leasing a certain amount of space, or simply staying in business. Loans are forgiven if a business re-opens or stays active within a certain period of time after receiving the loan. Typically, businesses must already have obtained a disaster loan from a financial institution. Another common practice is for CDFIs which help businesses in disaster areas to simply suspend interest for up to a year after a disaster to help retain impacted businesses that have existing loans.

During the COVID-19 pandemic, many communities across the country created Emergency Small Business Grants. They did so using various systems from first come, first served, to lotteries, to merit systems. Some of the best run grant programs targeted businesses that were well established in the community and those that demonstrated resilience and determination to recover through a point system. One such program was utilized in the Hudson Valley in Westchester County, which made grants to hundreds of small businesses and non-profits in 2021 and 2022. Using an online application system, the County's IT department programmed in a points allocation based on answers to a series of questions, which then automatically tallied a score – a highly effective way to ensure fairness while minimizing the time of county employees it took to manage the program. Following grants like this, another bests practice is to survey the businesses about the effectiveness of the grants in helping them to stay in business. These programs helped to build business confidence, show empathy from local officials to the business community, and help alleviate losses of small businesses and employment.

Pre- and Post-Recovery Planning for Resilience

To a large extent, experience shows that resilience is improved by planning. Disasters of all types – whether natural, technological, or human-caused hazards can take a high toll on the economy, whether it's a pandemic, a closure of a major business or industry, or the effects of a storm. According to the National Institute for Science and Technology (NIST), an agency of the U.S. Department of Commerce, planning and implementing prioritized measures can strengthen resilience and improve a community's abilities to continue or restore vital services in a timely way, and to build back better after damaging events. (See Figure 14.) This makes them better prepared for future events and more attractive to businesses and residents alike. NIST provides a planning guidebook that includes a six-step process to better understand and plan for risks.

Figure 14.

SIX-STEP PROCESS TO PLANNING FOR COMMUNITY RESILIENCE
1.
FORM A COLLABORATIVE PLANNING TEAM
• Identify leader
• Identify team members
• Identify key stakeholders
2.
UNDERSTAND THE SITUATION
Social Dimensions
• Characterize social functions & dependencies
• Identify support by built environment
• Identify key contacts
Built Environment
• Identify and characterize built environment
• Identify key contacts
• Identify existing community plans
Link Social Functions & Built Environment
• Define clusters
3.
DETERMINE GOALS & OBJECTIVES
• Establish long-term community goals
• Establish performance goals
• Define community hazards
• Determine anticipated performance
• Summarize results
4.
PLAN DEVELOPMENT
• Evaluate gaps
• Identify solutions
• Develop implementation strategy
5.
PLAN PREPARATION, REVIEW, AND APPROVAL
• Document plan and strategy
• Obtain feedback and approval
• Finalize and approve plan
6.
PLAN IMPLEMENTATION AND MAINTENANCE
• Execute approved solutions
• Evaluate and update
• Modify strategy as needed
NIST

More information and links to the NIST Community Resilience Planning Guide for Buildings and Infrastructure Systems (Guide) and companion Playbook can be found in the Appendix to this report.

Developing a community's Hazard Mitigation Plan can appear daunting, but assistance is available. Sources of funding, such as the American Recovery Act, exist to hire support to develop a documented plan. Like other tools, a hazard mitigation plan will likely change over time as a community's priorities shift, investments are made, and resiliency measures are adopted. However, getting a plan started, even in a simple format, is critical because it provides the foundation upon which the community can begin discussing and practicing preparation measures before a disaster occurs, saving lives. Over time, the community's hazard mitigation plan can be tailored to meet its immediate and long-term needs for building resilience. The importance of Hazard Mitigation Plans is emphasized in the recommendations at the end of this report.

Three Primary Actions for Building Community Resilience

Natural and human-caused disasters can take a high toll on communities. However, managing disaster risks can reduce the costs in lives, livelihoods, and quality of life. In addition, planning and implementing prioritized measures strengthen resilience and improve a community's ability to bounce back faster after serious events. Natural disasters and COVID-19 have underscored that community resilience is worth striving for, but it doesn't happen by accident. It requires us to anticipate events and provide consistent, thoughtful leadership in building resilience as a core community value.

Many of the measurements above are interrelated. Although no one item will ensure that a community can bounce back quickly from shocks, it is recommended that local leaders wishing to take on resilience initiatives select KPIs from each of the four categories. Consider this an ongoing activity requiring a holistic perspective. Getting a program going can involve as many steps as communities wish to educate citizens. We recommend these primary actions for consideration to get your program into action:

1) It is recommended that communities create working groups to agree on items to track that are relevant. Then, discuss each item in depth and customize the wording to fit your community's capacity, capability, and practices.
2) Assign local experts engaged in each activity to track and report on measurements over time. This will help build ownership and leadership over these measurements, which are essential to resiliency for now and into the future.
3) Coordinate the response by hosting progress report meetings and then follow these up with written summaries. A reasonable interval to review progress is quarterly to keep a sharp focus and understand what it is to be a resilient community. This should also include conducting community workshops to help train people of all ages and engage them in ongoing discussions about what resiliency means.

For those who would like to learn more, the Appendix to this report includes helpful resources from public and private sources to assist communities with resilience planning and program development.

IV. RESPONSE & RECOVERY ACTION PLAN

Resilience requires the participation of the individual and their broader community; thus, it is useful to begin to view resilience as a property of an overall system. Resilience is not solely an individual attribute or trait.[15]

This final section of this report lays out a strategy for resiliency and a Response and Recovery Action Plan for the Hudson Valley. It is based upon the idea articulated in the above quote: that for any jurisdiction, resiliency is only possible in the context of strong working relationships that reach across types of services and span the full extent of that jurisdiction's geography.

The Strategy: A Regional Resiliency Network

A strategy is an overall approach taken to address an issue or opportunity. It serves as a guide for individual decisions made in implementing that approach. In the case of the Hudson Valley Region's response and recovery action plan, the review of existing conditions and best practices (both regionally and nationally) have been used to formulate this strategy to achieve resiliency:

The Hudson Valley's Response and Recovery Action Plan will involve a dispersed and diverse network of government agencies, civic organizations and businesses that:

- Is based on region-wide coordination in preparedness and disaster response.
- Develops and disseminates objective indicators of the Region's overall condition and preparedness.
- Supports innovation in service delivery in the face of crises.
- Actively communicates and engages with all communities in the Region.

The key concept in this strategy is the reliance upon a network of allies rather than a single agency or small group of organizations to lead the effort. The network approach promotes flexibility both the geographic reach of the effort and in terms of subject areas that can be addressed. It also provides for resilience in the organization itself in that, within the network there would be deliberate redundancy of functions and geography. This serves to ensure adequate capacity to respond in a case any single member of the network is incapacitated. Finally, the network approach maximizes the expertise and experience available to support preparedness or respond to a disaster. The Response and Recovery Action Plan outlines the components and activities of this network and proposes that the network itself be coordinated through the Hudson Valley Regional Council through its planning process for the Comprehensive Economic Development Strategy (CEDS).

[15] Katarzyna Klasa, Stephanie Galaitsi, Andrew Wister & Igor Linkov, "System models for resilience in gerontology: application to the COVID-19 pandemic," *BMC Geriatrics* volume 21, Article number: 51 (2021).

The Response & Recovery Action Plan

The Resiliency Strategy informs the Response Recovery Action Plan described here. The elements of the Plan build upon the three primary actions laid out in the previous section, beginning with a fourth additional action: planning for resilience and recovery.

Primary Action I: Planning

Plans establish a context and focal points around which to build and maintain the organizational networks needed for effective disaster response and resiliency. There are three planning recommendations that are central to the implementation of the plan:

Recommendation I-1. Ensure Each County Maintains a Current Continuity of Operations Plans (COOP): Continuity of Operation Plans provide guidance for organization on how to maintain critical operations in the face of all manner of disasters. Given the increasingly likelihood of natural disasters and public health emergencies, continuity planning is essential for local governments.

This Response and Recovery Action Plan calls upon each County government to create and annually update a Continuity of Operations Plan and to work with their municipalities to ensure that each of them develop such plans. New York State's Office of Emergency Management in the Division of Homeland Security and Emergency Services maintains a website to foster the creation of COOPs by local governments. The site provides access to a two-day training program on continuity planning, and provides other materials related to COOP. The Division's 2021 COOP Resource Package can be downloaded at this link:

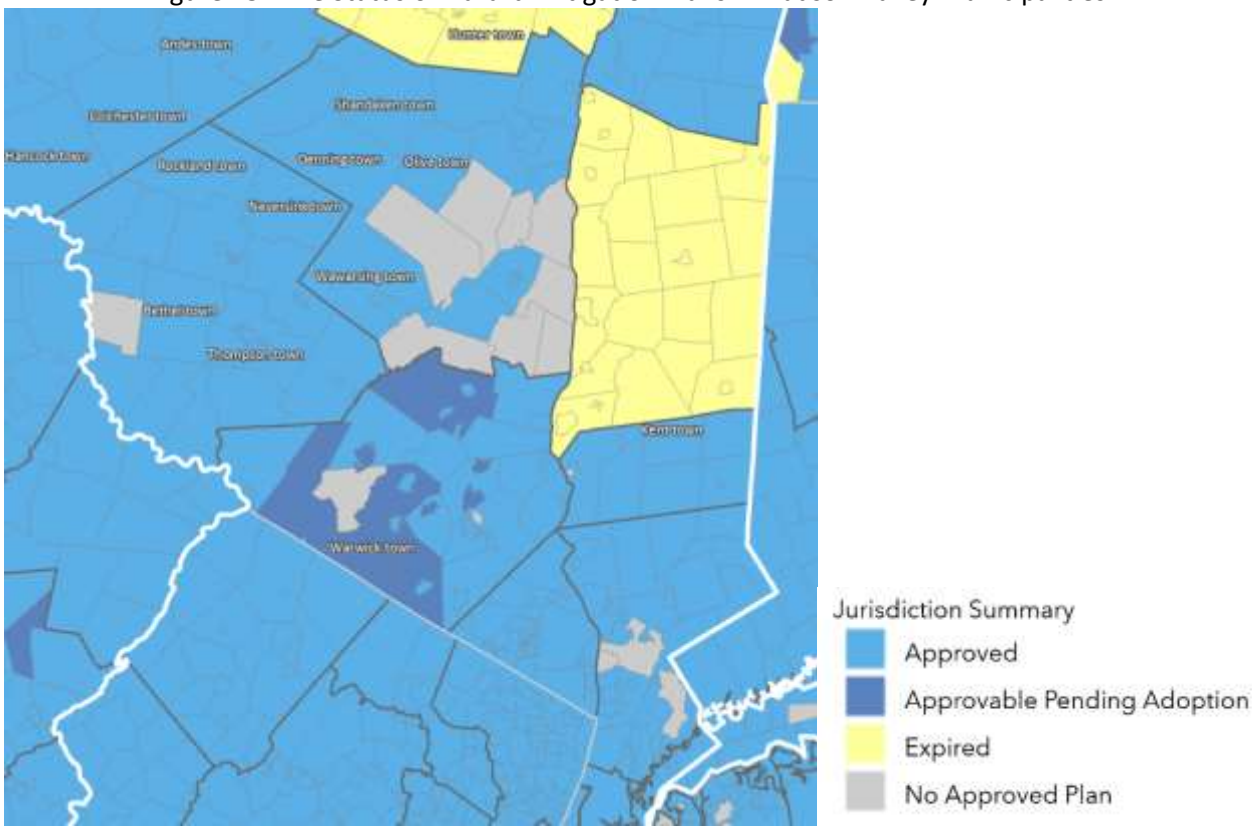
https://www.dhses.ny.gov/system/files/documents/2021/10/nys-coop-resource-package.pdf

Recommendation I-2. Maintain County and Local Hazard Mitigation Plans: According to Mitigate NY, the State's Hazard Mitigation Planning Website, "[a] hazard mitigation plan identifies and evaluates risks and vulnerabilities associated with natural hazards and resulting disasters, and leads to the development of long-term strategies for risk reduction."[16] This should be the foundational document for municipalities preparing to respond to disasters. All counties in the Hudson Valley region have approved current Hazard Mitigation Plans, except Dutchess, whose plan has expired. Interviews with the County officials indicated that they are currently working on updating the plan for the County.

As shown in Figure 15, excluding Dutchess County, 13 municipalities in the region have no approved plan. The Response and Recovery Action Plan recommends that all seven counties in the Hudson Valley Region seek to ensure that all municipalities have current and approved Hazard Mitigation Plans.

[16] https://mitigateny.availabs.org/about

Figure 15. The Status of Hazard Mitigation Plans in Hudson Valley Municipalities.



Source: US Federal Emergency Management Agency
(https://fema.maps.arcgis.com/apps/webappviewer/index.html?id=ec2fb023df744cf480da89539338c386)

Recommendation I-3. Update the Hudson Valley's Comprehensive Economic Development Strategy to fully address issues of resiliency and disaster preparedness and create a coordinating mechanism for the Regional Resiliency Network. As advised by the Economic Development Administration, "the CEDS, at a minimum, should include an identification of the region's key vulnerabilities and resilience-building goals, measurable objectives, and/or projects in the action plan."[17] The next CEDS update for the Hudson Valley should fully comply with this recommendation. This CEDS should include recommendations for structuring the Regional Resiliency Network that will have long term responsibility for implementing this plan. The CEDS should include guidelines for addressing resiliency in municipalities' comprehensive plans.

Primary Action II: Designate/Maintain Working Groups for a Resiliency Network

The central lesson from the research and outreach conducted to prepare this plan was that resiliency is impossible without working relationships that extend across jurisdictions, across government agencies and civic groups and incorporate both the public and private sector. This plan recommends the designation and maintenance of four types of workings groups/response teams to be incorporated into a

[17] US Economic Development Administration, CEDS Content Guidelines: Economic Resilience
(https://www.eda.gov/ceds/content/economic-resilience.htm)

region-wide resiliency network. As will be discussed below, it is proposed that this regional network be coordinated through the Hudson Valley Regional Council.

Recommendation II-1. Each county should designate an economic development working group. Accounts of the pandemic response from across the nation and throughout the Hudson Valley testified to the indispensability of having a committee of economic developers, businesses, public officials and others to keep abreast of the changing conditions of the disaster, formulate responses and keep businesses informed about shifts in regulations or funding opportunities that could affect their bottom lines. According to the interviews with county officials, most counties already have such a group in place. It is important that these groups be designated as an official component of Hudson Valley's resiliency network, to be convened at regular intervals (e.g., semi-annually) and prepared to serve as a lead entity for coordinating each county's response to the economic impacts of a disaster.

Recommendation II-2. Each county should designate strategic industries working groups. The economic development working groups defined in Recommendation II-1 are intended focus on the overall response to economic issues within the County. At the same time, each county should also bring together representatives from key industries to promote disaster related information-sharing within each of those industries and among the industry's firms and local governments. While the strategic industries will vary from county to county, these groups could include representatives from such industries as tourism, manufacturing, health care, etc. In those counties where such groups already exist, they should be incorporated into the resiliency network for the county. As with the economic development group, these groups should meet regularly (e.g., annually) and serve as a mechanism to keep local officials aware of the issues and opportunities facing firms in their respective industries.

Recommendation II-3. Each county should designate an intermunicipal working group. Most counties have associations of town supervisors and/or mayors that regularly meet to discuss intergovernmental relations, etc. These groups should be considered part of the Regional Resiliency Network and meet regularly (e.g., annually) to review issues related to disaster preparedness in their home county.

Recommendation II-4. Each county should designate a human services response team. Every county reported on the importance of coordinating the work of not-for-profit and civic organizations in standing up an effective response to the pandemic. Again, in those counties where such a team exists, it should be designated a part of the Regional Resiliency Network, meeting regularly to share information about the team's capacity to address human services issues likely to emerge in disaster situations.

Primary Action III: Assigning Local Experts to Track Progress

This is one of the conclusions reached by Kentucky's GIS manager, Kent Anness when assessing the state's relatively strong response to the COVID pandemic: "All successful responses start with a map. Stakeholders may come to the table with their own understanding or view of a problem at hand, but with everyone operating using the same maps and data, the barriers typically preventing effective cross-agency collaboration start to break down."[18]

Getting access to timely, relevant, and credible data is essential for coordinating any response to a disaster. During this planning process, the HVRC has enabled local officials to access the StateBook online economic database to track local conditions. Going forward, this Response and Recovery Plan

[18] Matt Leger, Kentucky's COVID-19 Economic Impact Dashboard, Data Smart City Solutions, Ash Center, Harvard Kennedy School, August, 2020. (https://datasmart.ash.harvard.edu/news/article/kentuckys-covid-19-economic-impact-dashboard-enabling-cross-state-communication-and).

recommends that each county designate organizations to track the performance indicators associated with this effort.

Recommendation III-1. Each county should designate organizations tasked with collecting and analyzing data on key performance indicators for the county's efforts at improving resiliency. While the likely organizations include the county offices of planning, economic development and health, the precise offices selected by each county will depend upon the precise performance indicators identified by each county and the capabilities of their local agencies/departments.

Primary Action IV: Coordinating the Regional Resiliency Network, Hosting Progress Report Meetings & Conducting Community Workshops Network Members

Every member of this proposed Regional Resiliency Network is already fully engaged in providing services and conducting their essential businesses. Those already-full agendas can eventually erode the network unless there is a catalyst keeping the network together and coordinating its activities. This plan has three recommendations to realize such a coordination role.

Recommendation IV-1. Institutionalize the Plan and the Regional Resiliency Network in the Hudson Valley Regional Council. The Council was established in 1977 as an organization of county governments comprising Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester counties. As such, HVRC is already constituted as a mechanism through which the counties can coordinate this regional network, maintaining the diversity of participants and perspectives essential to the network, rather than having the work driven by a monolithic, independent agency.

Recommendation IV-2. Convene an Annual Resilience Summit to track progress of the Regional Resiliency Network. The summit (which could be held every September as Disaster Preparedness Month) would feature annual progress reports from the counties and their constituent networks, along with presentations by experts on critical and/or emerging issues related to resilience. The summit could also provide opportunities for intercounty networking and information-sharing on the part of network participants.

Recommendation IV-3. Conduct Community Workshops on issues related to resilience. Through HVRC, the Regional Resiliency Network could hold sessions to help train people of all ages and engage them in ongoing discussions about what resiliency means and also provide opportunities for local officials to learn of the capabilities of the networks in their county and the Hudson Valley as a whole. For example, during this planning process the HVRC held webinars for local officials on disaster preparedness and resilience that can serve as models for future programming. The presentations used in these webinars can be found in the appendices.

Evaluation Framework

This plan can be evaluated in two phases. The first phase would involve the establishment and activation of the Regional Resiliency Network. The key performance indicators for this would be simple and straight forward. It would be expected that after one year of implementation, the following benchmarks would be met:

1. Each county either has a complete, current Continuity of Operations Plan or is in the process of creating one.
2. Each County has a current Hazard Mitigation Plan or is in the process of updating it.
3. Each County has designated the working groups/response teams defined under Primary Action II.

4. The Hudson Valley Regional Council has been designated the coordinator of the Regional Resiliency Network by its constituent counties and has begun conducting meetings/workshops related to resiliency issues in the Hudson Valley region.

A Guide to Evaluating Community Resilience

Once Phase 1 of the region-wide plan is implemented, more detailed planning should be expected to take place in counties and localities throughout the Hudson Valley. Below are found recommendations for promising and best practices for evaluating these plans so that community members may monitor, track and measure improving resilience. It is vital to track progress over time in any community resilience program. For example, what can local leaders do to prove a community is more resilient today than it was a year ago?

The best key performance indicators (KPIs)s are ones that both local leaders and the community can understand and support. Therefore, when selecting items for your resilience framework, it is a good idea to have group discussions and work sessions on how to apply meaningful measurements to each community based on assets and services. It is also valuable to assign measurements and report to people responsible for each area.

When choosing KPIs, items selected must be manageable, relevant to the community, and measurable. Some things may spark interest in planning for improvements in the future and can be considered aspirational. In selecting KPI, consider whether it is:

- ✓ **Manageable**: It is crucial to start with a realistic number of KPIs and add more measurements over time. It is recommended that communities start with two to three in each topic at a minimum.
- ✓ **Relevant:** Not all KPIs apply to every community. Choose ones that make sense and would significantly make an impact if improved over time.
- ✓ **Measurable:** Make sure you choose a KPI for which you have an actual data source – in other words, choose KPIs that can be tracked and measured based on consistent data.

Given that each community is different concerning size, available resources, and level of activity or responsibility, any resilience strategy must accommodate that reality. For example, if a community does not have responsibility for housing, its attention to this form of infrastructure will be less robust than those addressing housing. However, it is important to note; there should be someone identified who has the primary responsibility for every core function, even though it may not be an internal person or organization. Each of these elements must be addressed in some way to ensure overall resilience.

Below is a list of KPIs sorted into each of the major headings – People, Planning, Economy, and Land – that can be considered for your resiliency program. Each KPI is designed to be easy to track over months, quarters and years. The KPIs are numbered for easy reference. This is by no means an exhaustive list of resiliency measures and the experience and assets of individual communities should be taken into consideration when designing your program.

PEOPLE

The desire to nourish a community-wide family, keep everyone fed, live in harmony, and minimize internal and external conflicts are handed down from generation to generation.

Topic	Measurement
Cultural/ historical assets	PP1) Updated inventory and plans to protect historic sites, museum and library collections community centers, etc.
Education	PP2) Educational attainment level of citizens
Health	PP3) Updated inventory of essential health equipment such as X-rays, CAT scans, MRIs, mammogram
Health	PP4) Capacity of health clinics, access to emergency services, bed space in the hospital
Health	PP5) Number of health practitioners
Health	PP6) Percentage of the population with health insurance coverage
Health	PP7) Availability of specialty health providers, dental services, preventive medical programs, and services
Vulnerable populations	PP8) Life expectancy as measured in the average number of years people are currently living
Vulnerable populations	PP9) Infant mortality rate
Vulnerable populations	PP10) Percentage of the population 65 years and older

PLANNING

To a large extent, experience shows that resilience is improved by planning. Conversely, failing to plan can also bring greater assurance of failure. This area covers community strategic planning, hazard mitigation, and emergency planning topics. It also covers Hazard Mitigation Plans, emergency communication plans and systems to reach residents and businesses.

Topic	Measurement
Emergency Management	P1) # Of subscribers to emergency communications (mobile, email, alerts)
Emergency Management	P2) # Of visits to a website for resilience/emergency management information
Emergency Management	P3) Updated communications plan including key messages to residents and businesses
Emergency Management	P4) A qualified team appointed and tasked with managing economic incident response and/or recovery
Emergency Management	P5) # Of trained EMT staff and access to emergency transportation; agreements with regional emergency services, if needed
Emergency Management	P6) # Of times emergency responders meet and undertake joint training activities (e.g., exercises, risk assessment, plan reviews) per year
Emergency Management	P7) # Of fire fighters (e.g., regular, volunteer, wildland)

Emergency Management	P8) # Of police officers
Emergency Management	P9) Community has MOU's related to resilience with regional, state or national organizations that can provide essential services (e.g., American Red Cross and other voluntary organizations, federal and state agencies)
Emergency Management	P10) Community has a budget set aside to address emergencies
Emergency Management	P11) Community has a current Hazard Mitigation Plan
Emergency Management	P12) Community produces annual updates on the state of community resilience (goals, progress, priorities, etc.)

ECONOMY

Any community's ability to exercise and promote its self-determination – and resiliency – is tied to the economic well-being of its people and the fiscal condition of its local government. Communities rich in assets with economic development capacity are better able to attract more capital investment, create quality jobs, and develop strong native businesses. Therefore, this section of KPIs focuses on business development and diversity, as well as continuity. It also addresses the critical aspect of infrastructure including energy.

Topic	**Measurement**
Building codes/zoning / permitting	E1) Percentage of buildings that conform to building codes and standards for earthquakes, flooding, wind, fire
Building codes/zoning / permitting	E2) Number of buildings located in high-risk areas
Business	E3) Updated business database including management contacts
Business	E4) Diversity of businesses and industries
Business	E5) Businesses that have continuity plans and insurance
Business	E6) Unemployment rate
Education	E7) Presence of business incubator and/or technical assistance programs for community members to encourage entrepreneurship
Financial security	E8) Average and median household income
Financial security	E9) Percentage of population living in poverty
Housing	E10) Updated inventory of housing stock (residential, condos, apartments, affordable housing, seniors' lodges, etc.)
Housing	E11) Inventory of temporary emergency shelters and their capacity
Infrastructure	E12) Percentage of population that has access to broadband internet
Infrastructure	E13) Percentage of population with electrical service
Infrastructure	E14) Sustainable energy sources and use as a percentage of demand
Infrastructure	E15) # and stats of bridges and dams, maintenance schedule
Infrastructure	E16) Plan for maintaining critical infrastructure

Infrastructure	E17) Plan for emergency communications with tourists, should there be a disaster
Infrastructure	E18) Water quality / percentage of population that has access to reliable water supplies

LAND

An increasingly significant concern across the country is the need to consider environmental sustainability, soil, and water quality, preserving natural species, and natural buffers to ward against flooding, fires, and other natural disasters.

Topic	Measurement
Natural Resources	L1) Documentation of natural resilience strategies (e.g., controlled burns) and biomimetics (adoption of natural forms of safety and security)
Sustainability	L2) Documentation of efforts to protect and improve soil, water, air, energy, and seed supply and quantity for long-term needs
Natural Resources	L3) Water quality measures
Agriculture	L4) Innovation in agriculture and conservation practices (e.g., adoption of water conservation measures such as drip irrigation or water harvesting; Diversification of farming systems; Introduction or reintroduction of drought- or saline-tolerant crops; Organic agriculture; Terracing; Reintroduction of native species; Shifting and rotation of grasslands; Reforestation; Replanting of corals, sea grass and mangroves; Fish houses; Selective fishing gear.)
Natural Resources	L5) Documented knowledge and conditions related to biodiversity
Sustainability	L6) Sustainable management of shared resources (e.g., Grazing regulations; Fishing quotas; Sustainable tourism; Control of wildlife poaching and illegal logging; or harvesting forest products.)
Natural Resources	L7) Change in the number of native species
Sustainability	L8) Level of recycling and utilization of waste as a resource
Food sovereignty	L9) Diversity of food locally grown, hunted or fished from local waters
Food sovereignty	L10) Percentage of food grown locally
Food sovereignty	L11) Availability of backup food supplies in storage
Food security	L12) Availability/utilization of Federal food assistance programs to help people purchase food
Food sovereignty	L13) Percentage of people growing a portion of their own household food needs
Food sovereignty	L14) Maintenance and use of local crop varieties and animal breeds (e.g., seed guardians, expert animal breeders, animal breeding groups, home gardens, community seed banks)
Food sovereignty	L15) Capacity of farms

Food sovereignty	L16) Capacity of dairies and fisheries
Food security	L17) Number and location of food manufacturers and distributors
Food sovereignty	L18) Capacity and inventory of community seed bank

Sample Reporting

To make resilience monitoring a relevant activity that is rooted in local realities, it is essential that community leaders select KPIs relevant to their unique capacity and resources. The types of measurements that have been recommended above are designed to be flexible and customized to different situations.

Worksheets and Scoring: The following is an example of how a community can decide which measurements fit their circumstances, track, and report on progress year to year. It is recommended that these measurements be revisited at least quarterly, if not at regular leadership meetings. Building this kind of reporting into regular meetings will help build resilience as a core value and reinforce the chosen measurements. Some communities have designated resilience officers who could be named as responsible for the overall reporting, while individual measurements can be handled by the person responsible for implementation of each item. In communities where there is no resilience officer, it is recommended that an assignment be made for the reporting.

PEOPLE					
TARGET	**INITIATIVE**	**KPI**	**2020**	**2021**	**STATUS**
Adequate supports for seniors over 65 years of age	Complete health & social service needs survey	Completed survey	None	complete	Review recommendations for 2022
Complete historical site inventory	Hire resources to complete inventory	Completed inventory	None	ongoing	Staff hired, to be completed June 2022
PLANNING					
TARGET	**INITIATIVE**	**KPI**	**2020**	**2021**	**STATUS**
50% of members sign up for emergency alerts	Door-to-door solicitation	Number of people in the database	5%	6%	Positive trend
1.52 firefighters per 1000 population	Firefighter recruitment campaign	Number of active firefighters in database	3	3	Neutral

ECONOMY					
TARGET	**INITIATIVE**	**KPI**	**2020**	**2021**	**STATUS**
Broadband internet access for all members of the community	Sign MOU with the service provider	Service implementation	None	MOU signed	Initial planning underway
Electrical service for all members of the community	Extend coverage to residents on the south side of the river	Service-connected	None	25% complete	Complete 100% in 2022
LAND					
TARGET	**INITIATIVE**	**KPI**	**2020**	**2021**	**STATUS**
Entire population living above the poverty line	Launch construction apprentice program on reserve	Number of certifications completed	None	Launched in January	3 graduates
1000 trees per hectare	Tree planting program	Number of new trees planted	50	100	Double planting efforts in 2022

APPENDIX 1: County by County Economic Data

Table 5. Change in Establishments, Employment & Wages, All Ownerships by Sector, Dutchess County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	8,391	8,444	8,585	2.3%	113,675	103,373	104,887	-7.7%	$55,617	$60,449	$63,973	15.0%
11 - Agriculture, Forestry, Fishing & Hunting	123	135	140	13.8%	704	735	803	14.1%	$34,016	$35,160	$39,153	15.1%
21 - Mining	16	14	14	-12.5%	243	222	238	-2.1%	$80,445	$81,842	$81,435	1.2%
22 - Utilities	7	7	7	0.0%	746	759	765	2.5%	$117,306	$118,600	$127,780	8.9%
23 - Construction	1,013	1,011	1,006	-0.7%	5,551	4,939	5,178	-6.7%	$66,340	$68,777	$68,785	3.7%
31-33 - Manufacturing	201	198	201	0.0%	7,462	7,035	6,973	-6.6%	$105,486	$110,649	$111,852	6.0%
42 - Wholesale Trade	259	256	254	-1.9%	1,792	1,669	1,721	-4.0%	$73,380	$78,208	$81,372	10.9%
44-45 - Retail Trade	1,015	1,001	992	-2.3%	13,865	12,667	13,221	-4.6%	$33,586	$37,121	$39,285	17.0%
48-49 - Transport & Warehousing	204	203	192	-5.9%	3,583	3,559	3,554	-0.8%	$45,559	$46,819	$50,287	10.4%
51 - Information	119	125	135	13.4%	1,553	1,295	1,245	-19.8%	$59,807	$70,226	$78,011	30.4%
52 - Finance & Insurance	311	319	324	4.2%	2,684	2,542	2,515	-6.3%	$75,993	$81,920	$87,234	14.8%
53 - Real Estate & Rental & Leasing	308	312	319	3.6%	1,451	1,428	1,551	6.9%	$50,570	$53,869	$57,953	14.6%
54 – Prof. & Tech. Svcs.	825	853	834	1.1%	3,800	3,550	3,412	-10.2%	$67,668	$72,172	$72,366	6.9%
55 - Management of Companies & Enterprises	41	51	51	24.4%	1,323	1,403	1,307	-1.2%	$81,557	$86,541	$82,325	0.9%
56 – Admin. & Waste Svcs.	529	529	523	-1.1%	5,476	4,962	5,137	-6.2%	$52,123	$55,851	$59,452	14.1%
61 - Educational Services	218	216	208	-4.6%	16,622	15,082	14,724	-11.4%	$55,799	$60,571	$62,907	12.7%
62 - Health Care & Social Assistance	893	898	869	-2.7%	22,100	20,603	20,255	-8.3%	$58,160	$64,019	$70,219	20.7%
71 - Arts, Entertainment, & Recreation	169	169	159	-5.9%	2,163	1,286	1,519	-29.8%	$23,402	$29,592	$29,170	24.6%
72 - Accommodation & Food Services	800	779	781	-2.4%	10,144	7,885	9,073	-10.6%	$23,318	$25,006	$26,863	15.2%
81 - Other Services, Ex. Public Admin	836	834	823	-1.6%	4,037	3,494	3,686	-8.7%	$42,185	$45,165	$45,479	7.8%
92 - Public Administration	144	143	143	-0.7%	8,179	8,074	7,695	-5.9%	$70,445	$69,987	$91,054	29.3%
99 - Unclassified	364	394	610	67.6%	199	185	314	57.8%	$41,885	$42,305	$50,743	21.1%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

Table 6. Change in Establishments, Employment & Wages, All Ownerships by Sector, Orange County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	10,627	10,760	11,006	3.6%	148,273	135,666	141,878	-4.3%	$49,513	$54,277	$56,388	13.9%
11 - Agriculture, Forestry, Fishing & Hunting	108	117	114	5.6%	1,282	1,224	1,279	-0.2%	$36,121	$37,633	$39,356	9.0%
21 - Mining	8	7	8	0.0%	75	61	63	-16.0%	$91,806	$95,239	$108,621	18.3%
22 - Utilities	20	19	16	-20.0%	570	578	554	-2.8%	$131,238	$136,855	$143,986	9.7%
23 - Construction	1,162	1,212	1,219	4.9%	7,025	6,601	6,757	-3.8%	$63,704	$63,759	$66,800	4.9%
31-33 - Manufacturing	315	320	328	4.1%	8,984	8,496	8,874	-1.2%	$58,301	$59,495	$62,157	6.6%
42 - Wholesale Trade	523	508	485	-7.3%	7,444	7,554	7,482	0.5%	$57,829	$62,363	$66,549	15.1%
44-45 - Retail Trade	1,492	1,480	1,436	-3.8%	22,077	19,688	20,389	-7.6%	$31,688	$35,172	$37,711	19.0%
48-49 - Transport & Warehousing	367	376	383	4.4%	8,850	7,784	8,949	1.1%	$46,767	$49,990	$52,088	11.4%
51 - Information	128	140	149	16.4%	2,490	2,355	2,253	-9.5%	$63,820	$75,033	$80,685	26.4%
52 - Finance & Insurance	411	400	397	-3.4%	2,808	2,805	2,887	2.8%	$71,721	$76,541	$80,274	11.9%
53 - Real Estate & Rental & Leasing	385	390	387	0.5%	1,526	1,412	1,506	-1.3%	$54,281	$81,405	$62,458	15.1%
54 – Prof. & Tech. Svcs.	988	999	1,012	2.4%	5,627	5,437	5,657	0.5%	$70,120	$74,873	$80,671	15.0%
55 - Management of Companies & Enterprises	44	52	57	29.5%	816	751	783	-4.0%	$68,646	$79,217	$71,866	4.7%
56 – Admin. & Waste Svcs.	666	688	658	-1.2%	8,479	7,461	7,608	-10.3%	$35,007	$39,429	$42,414	21.2%
61 - Educational Services	247	255	244	-1.2%	15,959	14,621	14,783	-7.4%	$62,753	$68,649	$68,958	9.9%
62 - Health Care & Social Assistance	1,026	1,012	998	-2.7%	26,099	24,561	25,278	-3.1%	$54,003	$58,213	$61,581	14.0%
71 - Arts, Entertainment, & Recreation	170	163	161	-5.3%	2,241	1,660	2,304	2.8%	$27,370	$32,041	$32,160	17.5%
72 - Accommodation & Food Services	881	890	907	3.0%	10,837	8,493	9,921	-8.5%	$22,065	$23,446	$25,920	17.5%
81 - Other Services, Ex. Public Admin	981	975	962	-1.9%	6,377	5,520	5,758	-9.7%	$33,686	$37,010	$38,895	15.5%
92 - Public Administration	153	152	150	-2.0%	8,393	8,284	8,212	-2.2%	$67,780	$70,387	$76,464	12.8%
99 - Unclassified	556	607	939	68.9%	317	324	581	83.3%	$39,864	$40,858	$43,633	9.5%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

Table 7. Change in Establishments, Employment & Wages, All Ownerships by Sector, Putnam County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	3,094	3,082	3,159	2.1%	26,345	24,144	25,012	-5.1%	$54,760	$60,055	$61,254	11.9%
11 - Agriculture, Forestry, Fishing & Hunting	18	19	18	0.0%	45	46	53	17.8%	$33,190	$39,814	$40,314	21.5%
21 - Mining		3		NA		21		NA		$83,358		NA
22 - Utilities	4	5	4	0.0%	137	127	136	-0.7%	$129,516	$140,564	$128,450	-0.8%
23 - Construction	590	584	593	0.5%	2,691	2,420	2,639	-1.9%	$63,293	$65,239	$68,953	8.9%
31-33 - Manufacturing	76	74	76	0.0%	1,486	1,318	1,278	-14.0%	$66,363	$71,791	$75,361	13.6%
42 - Wholesale Trade	129	124	117	-9.3%	1,176	1,143	1,201	2.1%	$68,170	$68,777	$74,907	9.9%
44-45 - Retail Trade	286	283	280	-2.1%	2,855	2,748	2,910	1.9%	$34,332	$36,851	$38,351	11.7%
48-49 - Transport & Warehousing	91	89	80	-12.1%	805	745	738	-8.3%	$50,443	$53,051	$56,012	11.0%
51 - Information	51	57	58	13.7%	424	384	385	-9.2%	$75,044	$90,638	$84,097	12.1%
52 - Finance & Insurance	103	103	98	-4.9%	557	554	491	-11.8%	$68,061	$73,092	$82,829	21.7%
53 - Real Estate & Rental & Leasing	83	86	90	8.4%	222	208	238	7.2%	$50,860	$57,234	$51,536	1.3%
54 – Prof. & Tech. Svcs.	299	310	299	0.0%	1,184	1,163	1,091	-7.9%	$64,099	$70,050	$75,074	17.1%
55 - Management of Companies & Enterprises	6	6	5	-16.7%	78	61	62	-20.5%	$111,254	$182,569	$205,742	84.9%
56 – Admin. & Waste Svcs.	245	244	251	2.4%	1,031	951	1,047	1.6%	$45,009	$45,403	$46,871	4.1%
61 - Educational Services	77	77	73	-5.2%	3,439	3,210	3,251	-5.5%	$76,268	$81,916	$81,934	7.4%
62 - Health Care & Social Assistance	241	238	236	-2.1%	4,399	4,178	4,110	-6.6%	$55,714	$62,663	$64,738	16.2%
71 - Arts, Entertainment, & Recreation	82	78	77	-6.1%	799	521	676	-15.4%	$27,463	$33,009	$30,399	10.7%
72 - Accommodation & Food Services	202	199	205	1.5%	1,914	1,507	1,795	-6.2%	$23,160	$25,241	$27,266	17.7%
81 - Other Services, Ex. Public Admin	328	312	306	-6.7%	1,357	1,174	1,150	-15.3%	$35,343	$39,784	$40,336	14.1%
92 - Public Administration	35	35	36	2.9%	1,660	1,583	1,587	-4.4%	$58,347	$65,174	$65,810	12.8%
99 - Unclassified	148	163	257	73.6%	76	84	143	88.2%	$49,282	$45,026	$51,223	3.9%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

Table 8. Change in Establishments, Employment & Wages, All Ownerships by Sector, Rockland County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	11,018	11,204	11,476	4.2%	129,855	118,668	125,666	-3.2%	$54,287	$58,650	$60,244	11.0%
11 - Agriculture, Forestry, Fishing & Hunting	9	10	12	33.3%	56	62	59	5.4%	$27,021	$27,631	$29,333	8.6%
21 - Mining	3			-100.0%	126			-100.0%	$94,359			-100.0%
22 - Utilities	15	16	15	0.0%	1,070	1,031	1,077	0.7%	$129,637	$136,257	$135,942	4.9%
23 - Construction	1,094	1,133	1,167	6.7%	7,984	7,436	7,918	-0.8%	$69,026	$71,490	$72,770	5.4%
31-33 - Manufacturing	233	235	237	1.7%	7,642	7,406	7,254	-5.1%	$85,988	$91,301	$91,132	6.0%
42 - Wholesale Trade	587	579	564	-3.9%	4,466	4,307	4,453	-0.3%	$84,249	$87,956	$95,255	13.1%
44-45 - Retail Trade	1,234	1,213	1,189	-3.6%	14,006	12,170	12,991	-7.2%	$33,264	$37,295	$40,231	20.9%
48-49 - Transport & Warehousing	203	209	200	-1.5%	4,118	3,451	3,775	-8.3%	$46,039	$50,988	$51,043	10.9%
51 - Information	142	150	147	3.5%	1,901	1,595	1,653	-13.0%	$76,418	$74,971	$83,357	9.1%
52 - Finance & Insurance	437	433	441	0.9%	2,467	2,416	2,508	1.7%	$95,860	$104,092	$128,602	34.2%
53 - Real Estate & Rental & Leasing	510	533	523	2.5%	2,159	2,030	2,026	-6.2%	$50,691	$52,659	$56,499	11.5%
54 – Prof. & Tech. Svcs.	1,316	1,349	1,331	1.1%	6,834	6,518	6,532	-4.4%	$82,968	$84,774	$87,177	5.1%
55 - Management of Companies & Enterprises	52	58	63	21.2%	883	726	660	-25.3%	$125,223	$175,221	$153,027	22.2%
56 – Admin. & Waste Svcs.	788	815	808	2.5%	8,516	7,713	8,493	-0.3%	$43,284	$47,313	$48,303	11.6%
61 - Educational Services	305	303	297	-2.6%	12,971	11,928	12,200	-5.9%	$63,006	$67,963	$68,376	8.5%
62 - Health Care & Social Assistance	1,216	1,217	1,201	-1.2%	31,533	31,140	33,423	6.0%	$44,534	$46,243	$48,067	7.9%
71 - Arts, Entertainment, & Recreation	190	188	178	-6.3%	1,941	1,077	1,358	-30.0%	$26,902	$35,914	$37,291	38.6%
72 - Accommodation & Food Services	785	767	772	-1.7%	9,263	6,716	7,617	-17.8%	$24,790	$26,334	$28,456	14.8%
81 - Other Services, Ex. Public Admin	1,001	1,004	959	-4.2%	5,969	5,204	5,764	-3.4%	$31,503	$33,684	$34,426	9.3%
92 - Public Administration	95	96	101	6.3%	5,353	5,099	5,028	-6.1%	$75,064	$78,256	$85,427	13.8%
99 - Unclassified	805	895	1,270	57.8%	596	550	802	34.6%	$44,931	$48,478	$55,038	22.5%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

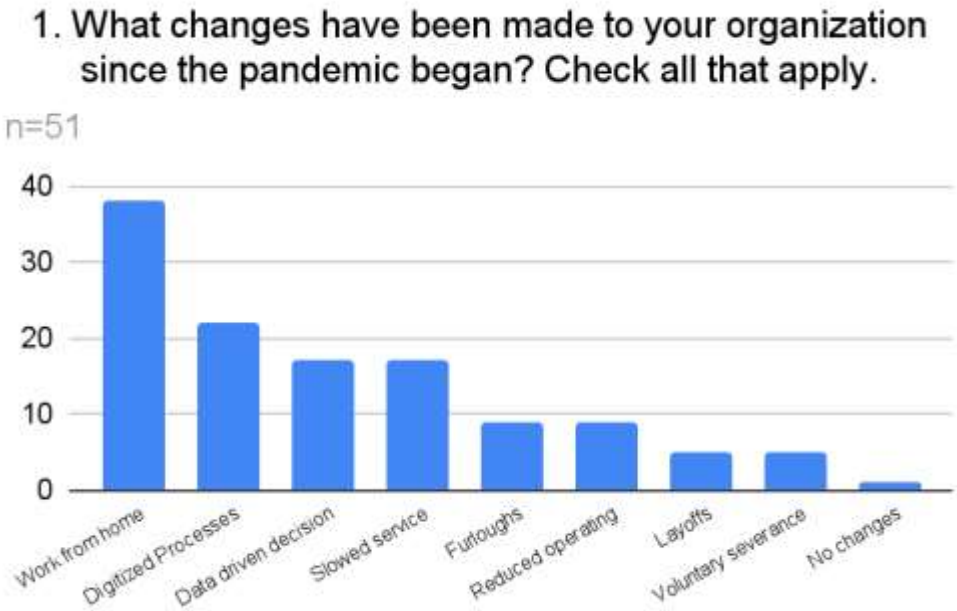
Table 9. Change in Establishments, Employment & Wages, All Ownerships by Sector, Sullivan County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	2,058	2,086	2,152	4.6%	29,392	26,240	27,337	-7.0%	$43,548	$47,856	$50,946	17.0%
11 - Agriculture, Forestry, Fishing & Hunting	24	29	30	25.0%	371	330	333	-10.2%	$37,469	$36,640	$41,437	10.6%
21 - Mining	7	7	7	0.0%	91	82	85	-6.6%	$55,517	$62,207	$70,472	26.9%
22 - Utilities	8	8	8	0.0%	93	153	169	81.7%	$109,290	$103,367	$96,924	-11.3%
23 - Construction	240	240	240	0.0%	1,087	1,055	1,244	14.4%	$63,169	$74,123	$87,656	38.8%
31-33 - Manufacturing	52	50	49	-5.8%	1,580	1,576	1,675	6.0%	$42,189	$48,729	$51,389	21.8%
42 - Wholesale Trade	56	59	56	0.0%	519	465	512	-1.3%	$52,316	$57,001	$58,151	11.2%
44-45 - Retail Trade	252	249	248	-1.6%	2,665	2,607	2,632	-1.2%	$30,746	$33,311	$33,783	9.9%
48-49 - Transport & Warehousing	108	115	119	10.2%	1,363	1,108	1,179	-13.5%	$36,121	$38,358	$41,088	13.8%
51 - Information	25	28	29	16.0%	172	159	174	1.2%	$46,179	$51,032	$47,501	2.9%
52 - Finance & Insurance	70	70	68	-2.9%	458	478	500	9.2%	$71,491	$78,781	$85,513	19.6%
53 - Real Estate & Rental & Leasing	97	101	104	7.2%	352	323	344	-2.3%	$30,109	$34,550	$34,758	15.4%
54 – Prof. & Tech. Svcs.	133	131	136	2.3%	407	326	370	-9.1%	$48,697	$45,805	$48,705	0.0%
55 - Management of Companies & Enterprises	10	11	11	10.0%	425	456	401	-5.6%	$69,703	$87,224	$81,694	17.2%
56 – Admin. & Waste Svcs.	109	111	111	1.8%	885	815	880	-0.6%	$35,346	$38,634	$39,120	10.7%
61 - Educational Services	47	47	45	-4.3%	2,550	2,415	2,386	-6.4%	$60,459	$63,394	$65,396	8.2%
62 - Health Care & Social Assistance	195	193	197	1.0%	7,633	6,971	6,891	-9.7%	$37,977	$41,532	$42,609	12.2%
71 - Arts, Entertainment, & Recreation	44	49	47	6.8%	454	210	293	-35.5%	$42,095	$63,186	$33,039	-21.5%
72 - Accommodation & Food Services	241	252	252	4.6%	4,109	2,724	3,290	-19.9%	$32,992	$32,979	$35,523	7.7%
81 - Other Services, Ex. Public Admin	166	168	165	-0.6%	942	862	911	-3.3%	$32,314	$36,045	$36,774	13.8%
92 - Public Administration	71	71	71	0.0%	3,174	3,080	2,985	-6.0%	$60,997	$61,654	$77,409	26.9%
99 - Unclassified	104	99	159	52.9%	62	47	87	40.3%	$38,891	$44,212	$61,292	57.6%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

Table 10. Change in Establishments, Employment & Wages, All Ownerships by Sector, Ulster County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	5,270	5,301	5,460	3.6%	60,614	54,395	55,353	-8.7%	$45,746	$49,907	$52,939	15.7%
11 - Agriculture, Forestry, Fishing & Hunting	64	72	76	18.8%	949	852	834	-12.1%	$34,692	$37,673	$38,110	9.9%
21 - Mining	9	8	8	-11.1%	111	92	88	-20.7%	$61,762	$70,124	$71,340	15.5%
22 - Utilities	6	7	7	16.7%	240	257	258	7.5%	$120,692	$126,895	$128,702	6.6%
23 - Construction	562	566	580	3.2%	2,876	2,456	2,656	-7.6%	$57,690	$61,368	$61,044	5.8%
31-33 - Manufacturing	188	191	194	3.2%	3,364	3,076	3,270	-2.8%	$52,269	$55,733	$56,592	8.3%
42 - Wholesale Trade	169	210	162	-4.1%	1,468	1,367	1,336	-9.0%	$58,006	$74,501	$63,599	9.6%
44-45 - Retail Trade	661	649	637	-3.6%	8,395	7,939	8,144	-3.0%	$32,018	$35,161	$37,359	16.7%
48-49 - Transport & Warehousing	174	503	173	-0.6%	1,928	1,685	1,721	-10.7%	$43,084	$63,904	$49,025	13.8%
51 - Information	104	182	118	13.5%	913	848	823	-9.9%	$40,768	$50,386	$59,211	45.2%
52 - Finance & Insurance	204	166	211	3.4%	1,402	1,337	1,294	-7.7%	$70,734	$60,315	$73,308	3.6%
53 - Real Estate & Rental & Leasing	177	117	142	-19.8%	889	826	663	-25.4%	$47,133	$48,927	$34,785	-26.2%
54 – Prof. & Tech. Svcs.	486	174	499	2.7%	1,711	1,639	1,664	-2.7%	$58,814	$47,703	$60,767	3.3%
55 - Management of Companies & Enterprises	19	22	23	21.1%	346	331	426	23.1%	$72,639	$79,030	$74,060	2.0%
56 – Admin. & Waste Svcs.	305	449	442	44.9%	2,311	1,892	2,014	-12.9%	$42,227	$30,559	$32,164	-23.8%
61 - Educational Services	113	541	114	0.9%	7,165	5,612	6,658	-7.1%	$60,654	$25,277	$67,791	11.8%
62 - Health Care & Social Assistance	525	530	510	-2.9%	10,060	9,250	8,425	-16.3%	$45,408	$48,425	$55,195	21.6%
71 - Arts, Entertainment, & Recreation	155	147	178	14.8%	861	575	597	-30.7%	$30,031	$34,253	$54,084	80.1%
72 - Accommodation & Food Services	545	114	542	-0.6%	7,595	6,558	6,658	-12.3%	$23,498	$66,672	$27,820	18.4%
81 - Other Services, Ex. Public Admin	456	313	313	-31.4%	2,390	2,263	2,304	-3.6%	$28,562	$45,371	$47,428	66.1%
92 - Public Administration	106	105	106	0.0%	5,493	5,426	5,286	-3.8%	$64,529	$65,009	$79,432	23.1%
99 - Unclassified	243	237	429	76.5%	146	117	236	61.6%	$36,010	$39,693	$47,358	31.5%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

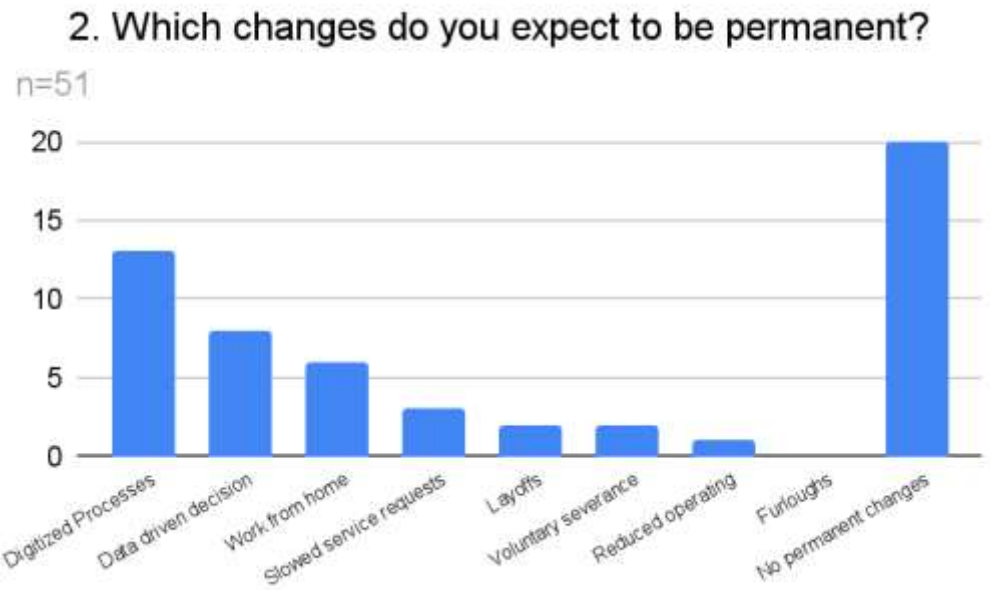
Table 11. Change in Establishments, Employment & Wages, All Ownerships by Sector, Westchester County												
	Establishments				Average Employment				Average Annual Wage			
NAICS Code	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21	2019	2020	2021	% Change, 2019-21
00 - Total, All Industries	36,097	36,007	36,254	0.4%	432,737	386,761	395,753	-8.5%	$75,892	$84,810	$88,612	16.8%
11 - Agriculture, Forestry, Fishing & Hunting	76	80	77	1.3%	360	381	388	7.8%	$47,137	$48,153	$49,358	4.7%
21 - Mining	4	5	5	25.0%	12	12	12	0.0%	$205,059	$182,268	$178,740	-12.8%
22 - Utilities	21	21	21	0.0%	2,668	2,514	1,949	-26.9%	$157,109	$148,958	$225,554	43.6%
23 - Construction	3,659	3,684	3,718	1.6%	29,233	25,726	26,743	-8.5%	$79,924	$80,206	$81,446	1.9%
31-33 - Manufacturing	605	592	583	-3.6%	12,663	11,447	11,563	-8.7%	$104,477	$111,888	$118,615	13.5%
42 - Wholesale Trade	1,409	1,376	1,300	-7.7%	13,915	12,545	12,220	-12.2%	$98,789	$100,702	$106,742	8.0%
44-45 - Retail Trade	3,570	3,427	3,338	-6.5%	48,600	43,284	44,888	-7.6%	$39,043	$42,721	$46,310	18.6%
48-49 - Transport & Warehousing	619	622	618	-0.2%	14,146	12,187	13,649	-3.5%	$62,756	$66,785	$68,019	8.4%
51 - Information	522	591	600	14.9%	7,908	7,422	7,156	-9.5%	$97,300	$109,124	$139,846	43.7%
52 - Finance & Insurance	1,699	1,697	1,659	-2.4%	17,762	17,263	16,959	-4.5%	$189,852	$195,265	$196,105	3.3%
53 - Real Estate & Rental & Leasing	2,272	2,289	2,225	-2.1%	10,473	9,675	9,546	-8.9%	$74,174	$81,455	$79,357	7.0%
54 – Prof. & Tech. Svcs.	4,089	4,207	4,113	0.6%	26,842	25,865	26,462	-1.4%	$135,392	$186,267	$186,584	37.8%
55 - Management of Companies & Enterprises	248	256	253	2.0%	8,965	8,660	8,630	-3.7%	$211,608	$190,174	$192,653	-9.0%
56 – Admin. & Waste Svcs.	2,633	2,698	2,675	1.6%	24,512	21,596	22,118	-9.8%	$51,022	$53,268	$57,235	12.2%
61 - Educational Services	847	847	818	-3.4%	45,779	42,312	42,223	-7.8%	$72,936	$78,611	$80,930	11.0%
62 - Health Care & Social Assistance	3,363	3,360	3,301	-1.8%	81,199	75,923	75,620	-6.9%	$65,407	$71,021	$80,423	23.0%
71 - Arts, Entertainment, & Recreation	708	729	705	-0.4%	11,605	7,364	8,621	-25.7%	$39,206	$47,606	$49,356	25.9%
72 - Accommodation & Food Services	2,550	2,485	2,482	-2.7%	31,255	22,556	25,286	-19.1%	$29,622	$30,782	$33,207	12.1%
81 - Other Services, Ex. Public Admin	5,252	5,024	4,866	-7.3%	20,725	17,109	17,853	-13.9%	$40,833	$44,593	$46,028	12.7%
92 - Public Administration	260	268	265	1.9%	23,112	22,047	22,325	-3.4%	$84,070	$89,323	$93,606	11.3%
99 - Unclassified	1,693	1,753	2,635	55.6%	1,006	878	1,542	53.3%	$62,624	$64,169	$78,453	25.3%
Source: NYS Department of Labor, Quarterly Census of Employment & Wages.												

APPENDIX 2: Tabulation of the Surveys

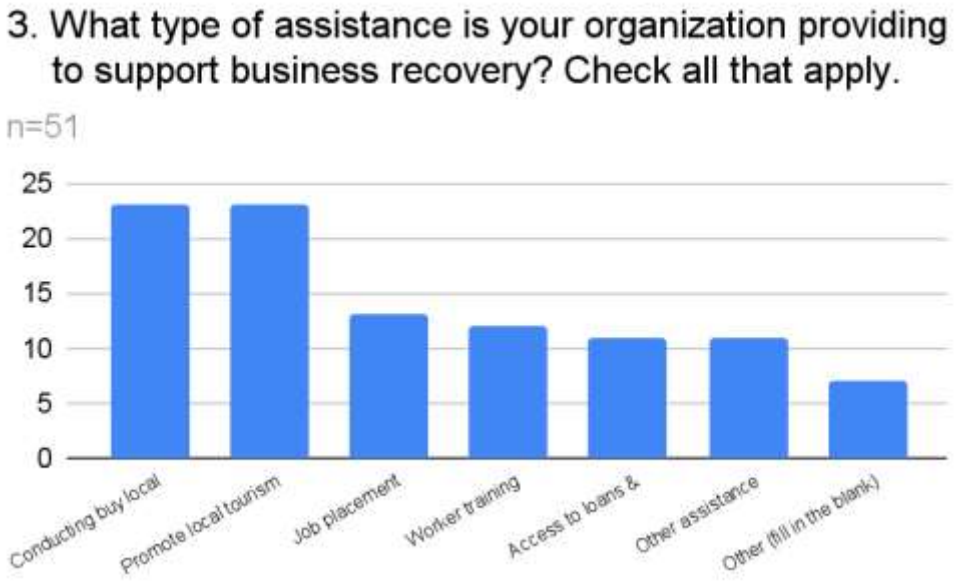
Public Sector Report



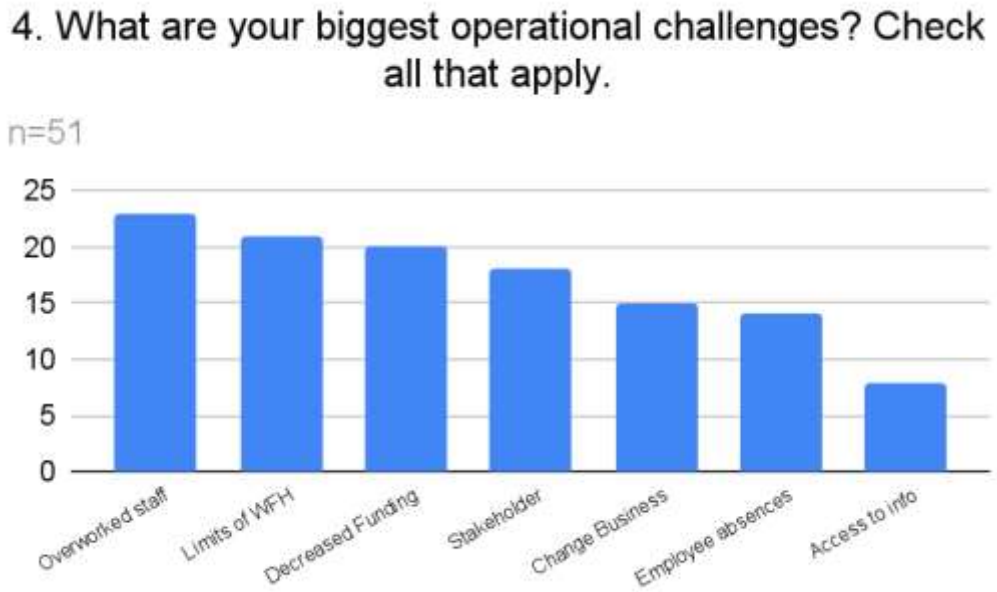
This bar graph shows how organizations adapted to the Pandemic with "employees working from home" being the most popular answer (38). “Moved from paper to digital/electronic processes” was the second most popular choice (22). “Data driven decision making” and “slowed service requests” each were selected 17 times; "Furloughs" was selected 9 times; "Reduced operating hours" was selected 9 times; "Layoffs" was selected 5 times; "Voluntary severance packages offered" was selected 5 times.



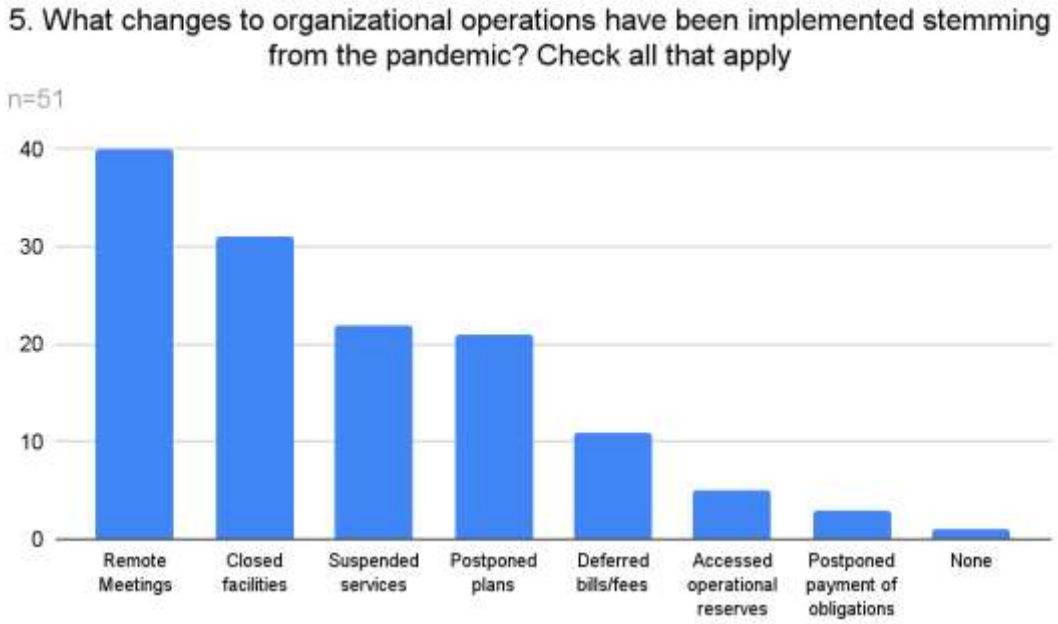
The following bar graph shows the changes organizations made in response to the pandemic, and how many thought they would be permanent. Although digitizing records was the most popular change (13), more organizations thought the changes would not be permanent (20). "Slowed service requests" was selected 3 times; "Layoffs" was selected 2 times; "Voluntary severance packages offered" was selected 2 times; "Reduced operating hours" was selected 1 time; "Furloughs" was not expected to be permanent by any business.



This is a bar graph showing the type of help organizations tried to provide to the business communities in their areas. The most popular answer was a tie between "conducting buy local campaigns" and "promote local tourism" (23 each). "Job placement services" was selected 13 times; "Worker training" was selected 12 times; "Access to loans & grants" was selected 11 times; "Other assistance" was selected 11 times. Other answers included housing, business consultations, youth employment programs, increased network opportunities, and more services to the business community.

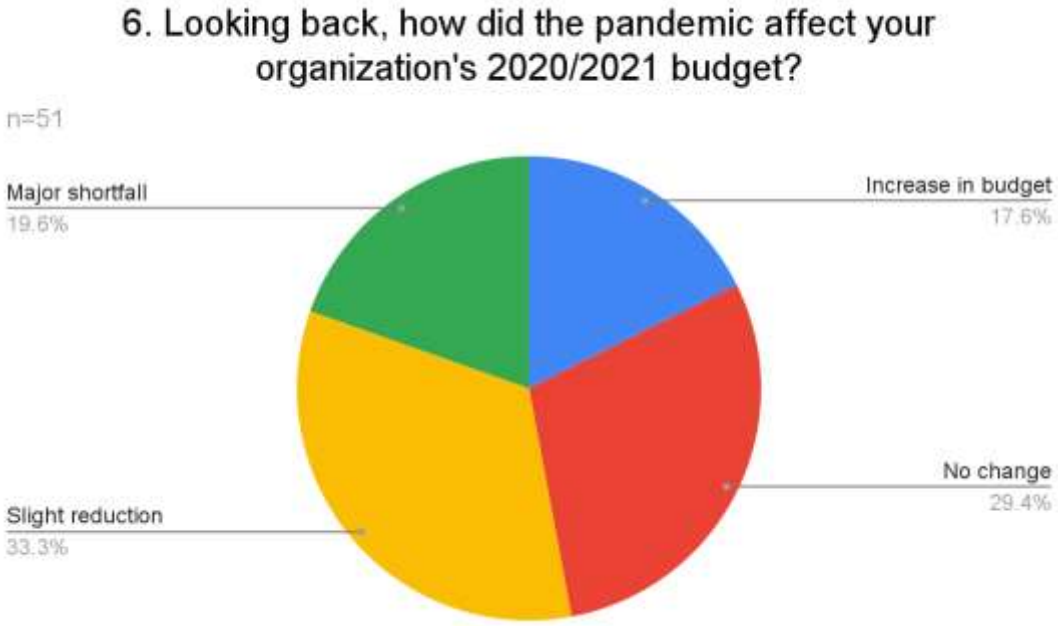


This bar graph shows the operational challenges organizations face. The most popular answers were "overworked staff" (23) and "limitations from working at home" (21). "Staying connected to stakeholders" was selected 18 times; "Need to change the way we do business" was selected 15 times; "Employee absences" was selected 14 times; "Access to info" was selected 8 times.

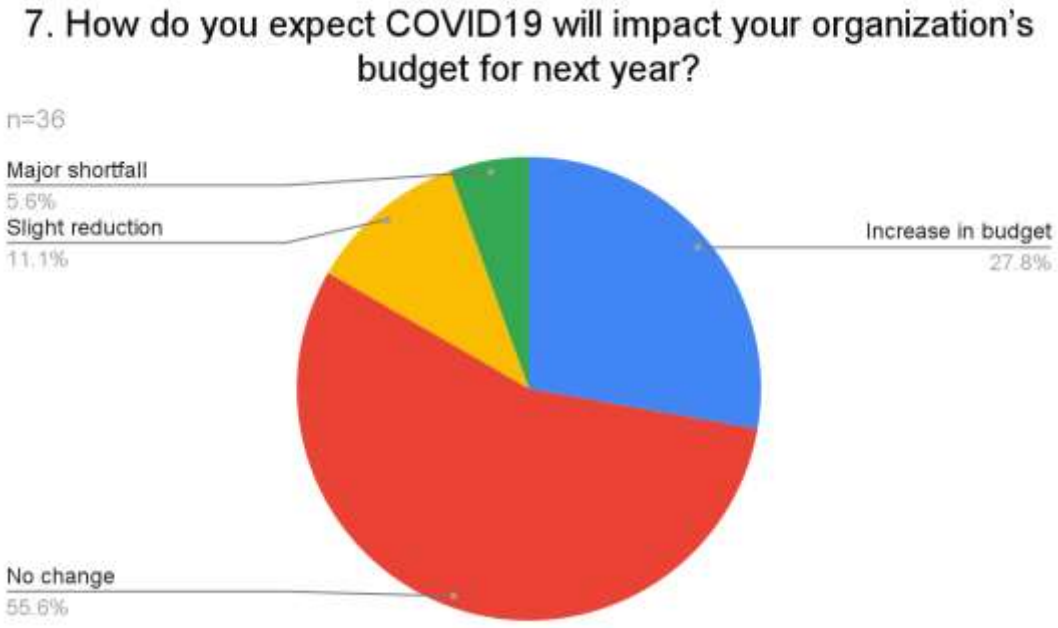


This bar graph shows the operations that organizations implemented because of the pandemic. "Conducting remote public meetings" (40) and "closing public facilities" (31) were the most popular answers. Only one organization said that they made none of the above changes because of the pandemic. "Suspended some or all services offered" was selected 22 times; "Postponed or decreased the scale of planned projects/budgets" was selected 21 times; "Deferred bill collections and/or late penalties" was selected 11 times; "Accessed emergency/operational reserves" was selected 5 times; "Postponed

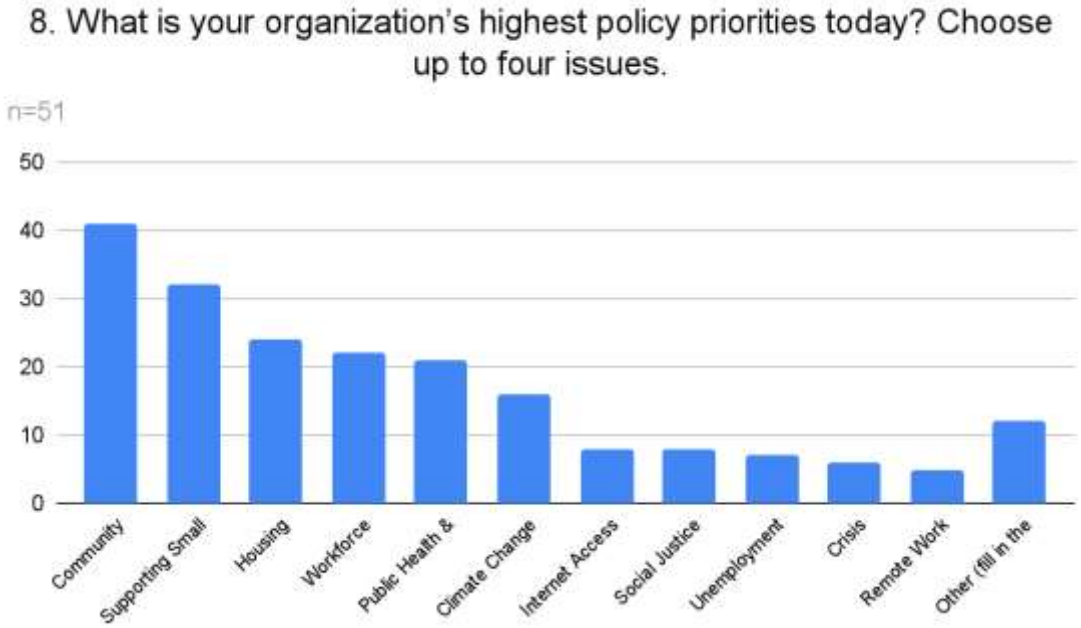
appropriations or payment of obligations" was selected 3 times. One business selected no organizational operation.



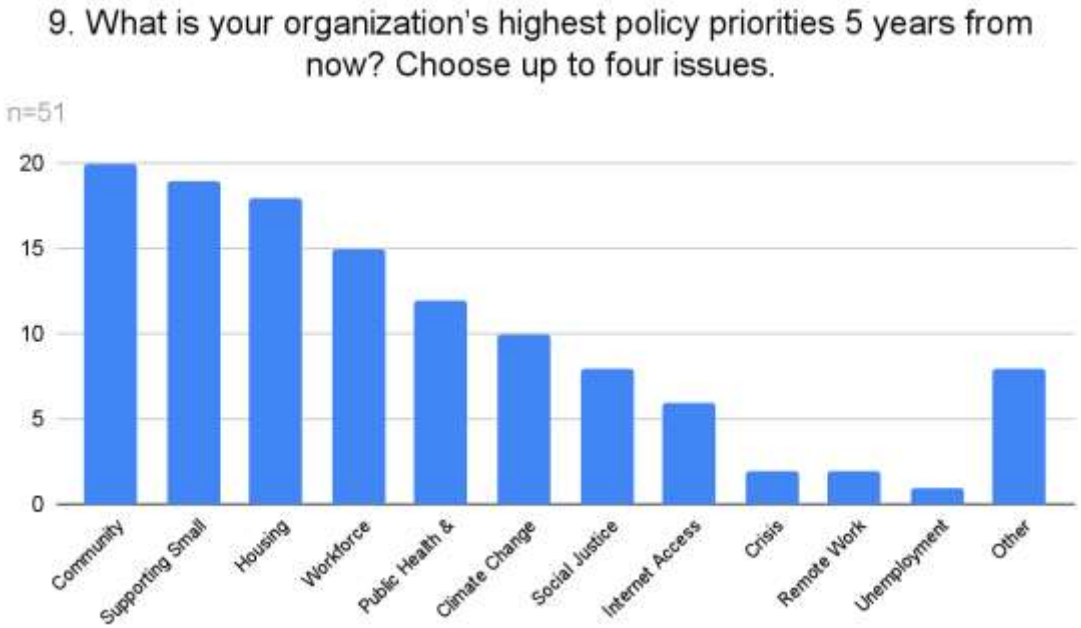
This pie chart shows how organizations' 2020/2021 budgets were affected by the pandemic. "Increase in budget" was selected 18% of the time; "No change" was selected 29% of the time; "Slight reduction" was selected 33% of the time; "Major shortfall" was selected 20% of the time.



This pie chart shows how organizations predict their budgets will be affected next year by the pandemic. "Increase in budget" was selected 18% of the time; "No change" was selected 29% of the time; "Slight reduction" was selected 33% of the time; "Major shortfall" was selected 20% of the time.

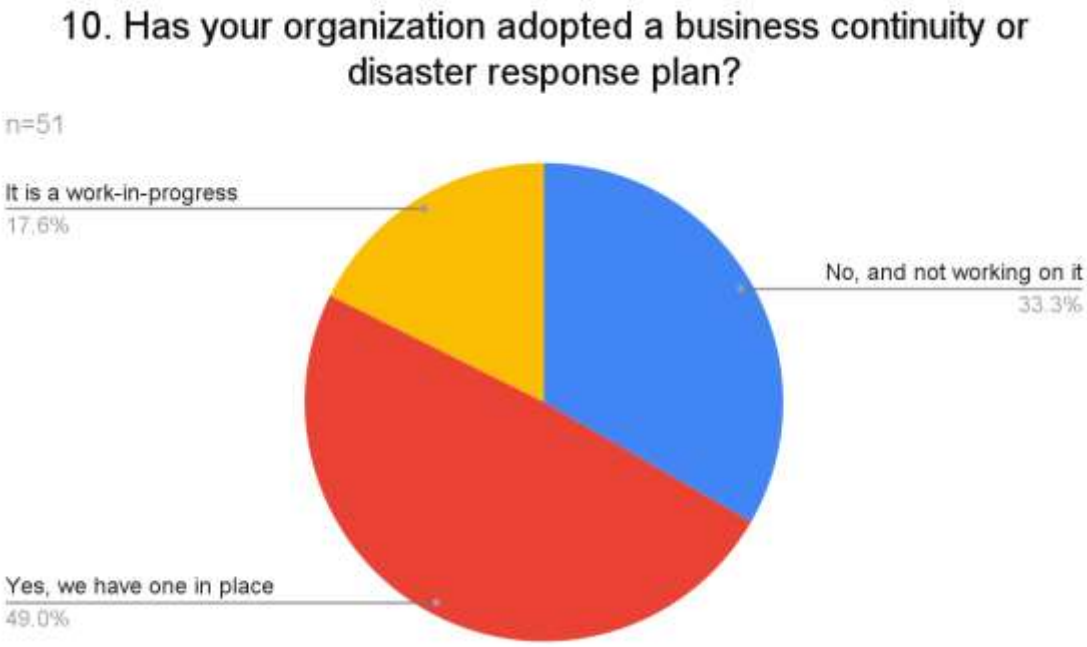


This bar graph shows what organizations say are their highest priority issues currently. The number one issue among those surveyed was "community engagement" (41). "Housing Affordability" was selected 24 times; "Workforce Development/Worker Retraining" was selected 22 times; "Public Health & Wellness" was selected 21 times; "Climate Change" was selected 16 times; "Internet Access & Digital Divide" was selected 8 times; "Social Justice/Systemic Racism" was selected 8 times; "Unemployment" was selected 7 times; "Crisis Communication" was selected 6 times; "Remote Work" was selected 5 times. Issues listed under "other" include infrastructure upgrades, work force attraction, generating revenue, affordability, financial health, and preparing for climate change among others.

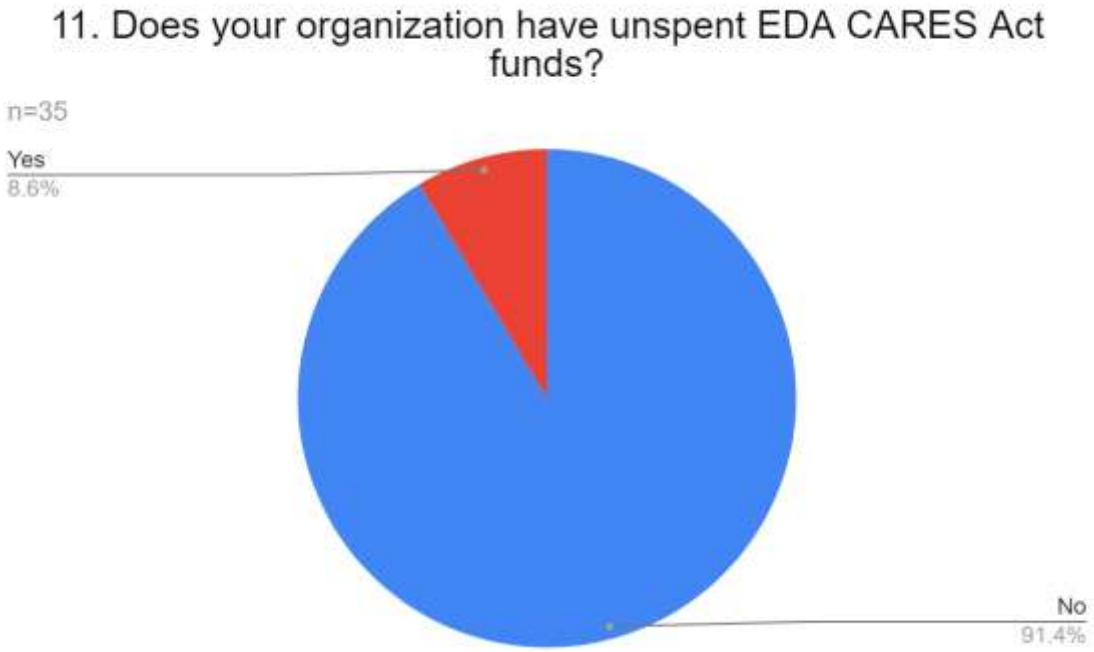


This bar graph shows what organizations say will be their policy priorities 5 years from now. “Community engagement” continues to be a top answer among organizations polled. "Housing Affordability" was

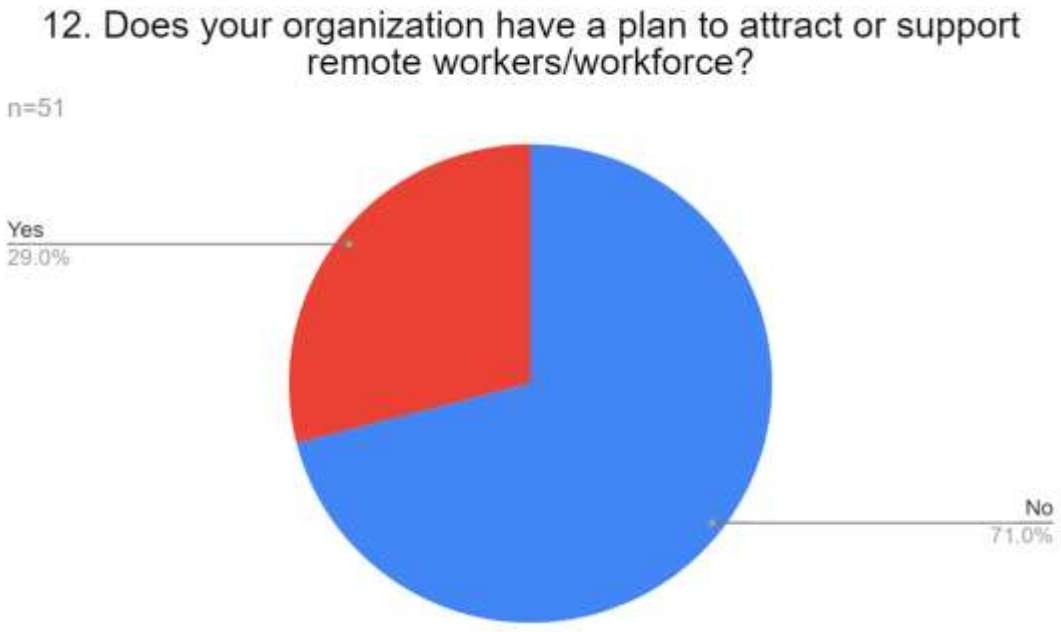
selected 18 times; "Workforce development/Worker retraining" was selected 15 times; "Public health & wellness" was selected 12 times; "Climate change" was selected 10 times; "Social justice/Systemic racism" was selected 8 times; "Internet access & digital divide" was selected 6 times; "Crisis communication" was selected 2 times; "Remote work" was selected 2 times; "Unemployment" was selected 1 time; "Other" was selected 8 times. Issues listed under “other” include infrastructure upgrades, workforce training, tourism development, virtual support groups, and business opportunities among others.



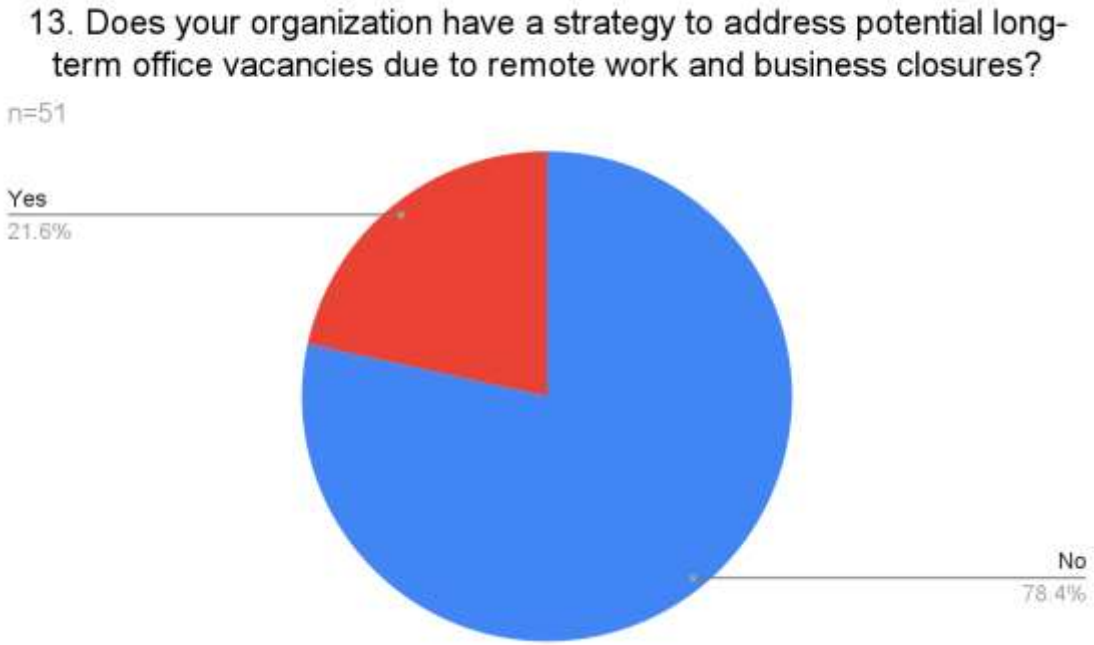
This pie chart shows the preparedness of organizations by asking them if they have adopted a business continuity or disaster response plan. "No, and we are not currently working on one" was selected 33% of the time; "Yes, we have one in place" was selected 49% of the time; "It is a work-in-progress" was selected 18% of the time.



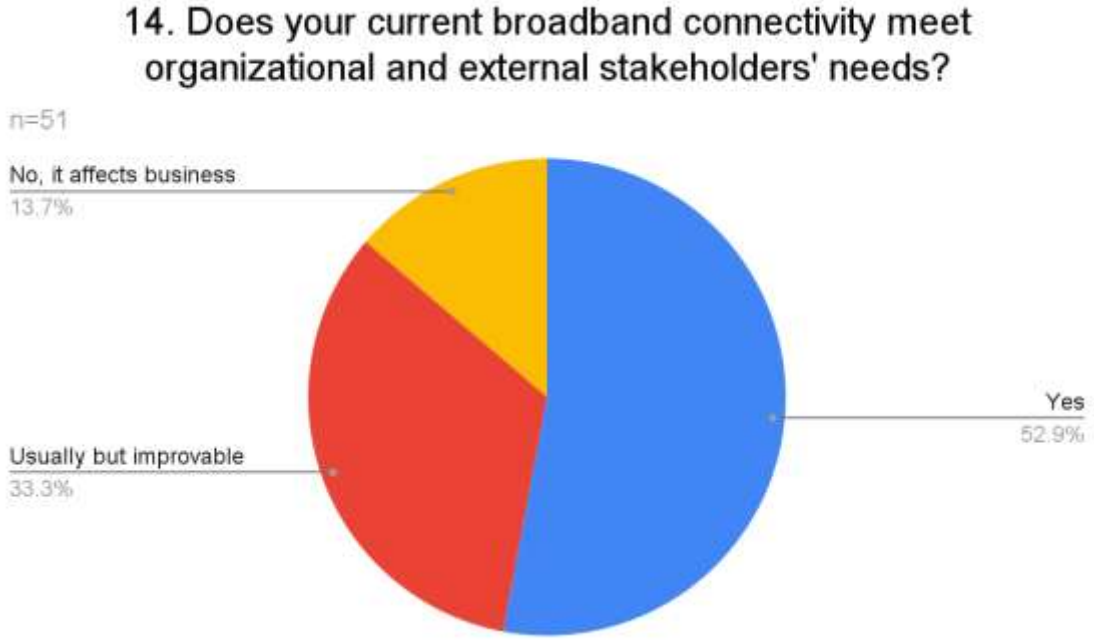
This pie chart shows if organizations have any unspent EDA CARES Act funds. "No" was selected 91% of the time; "Yes" was selected 9% of the time.



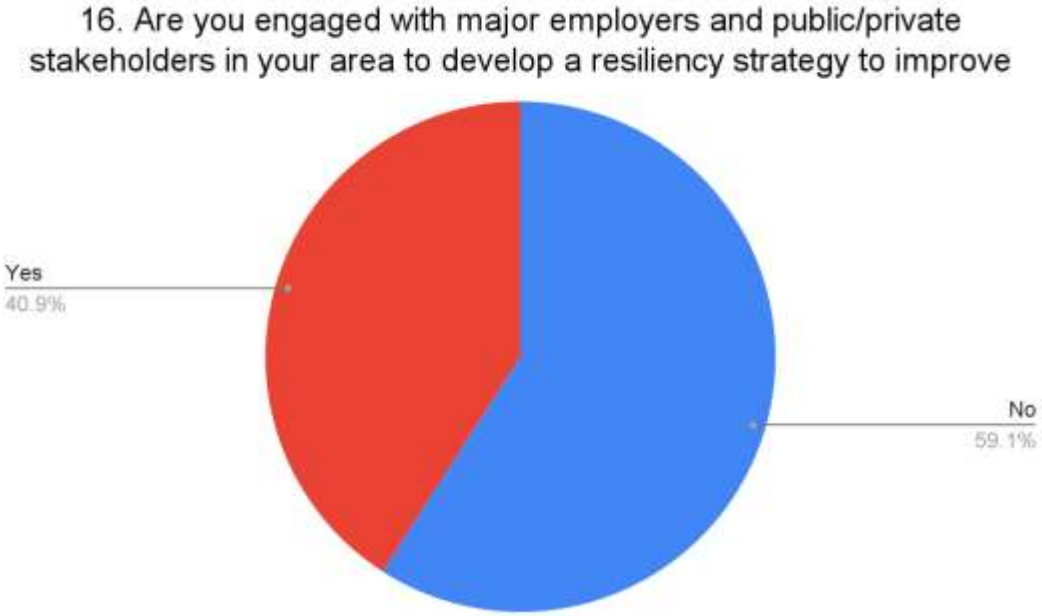
Organizations were asked if they had a plan to attract or support remote workers. "No" was selected 71% of the time; "Yes" was selected 29% of the time.



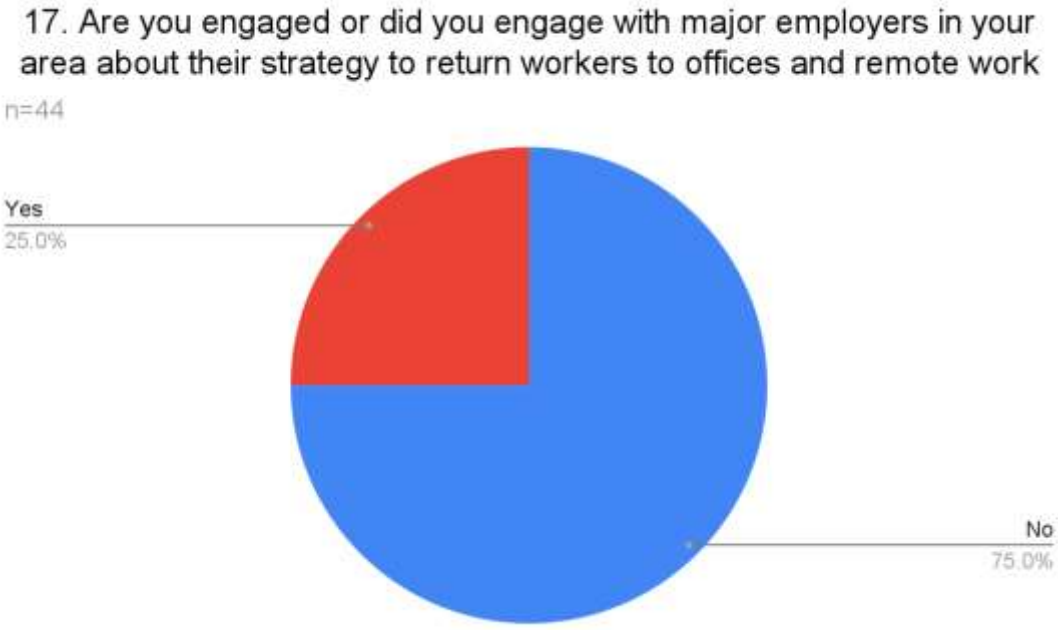
Organizations were asked if they had a strategy to address potential long-term vacancies in their community. "No" was selected 78% of the time; "Yes" was selected 22% of the time.



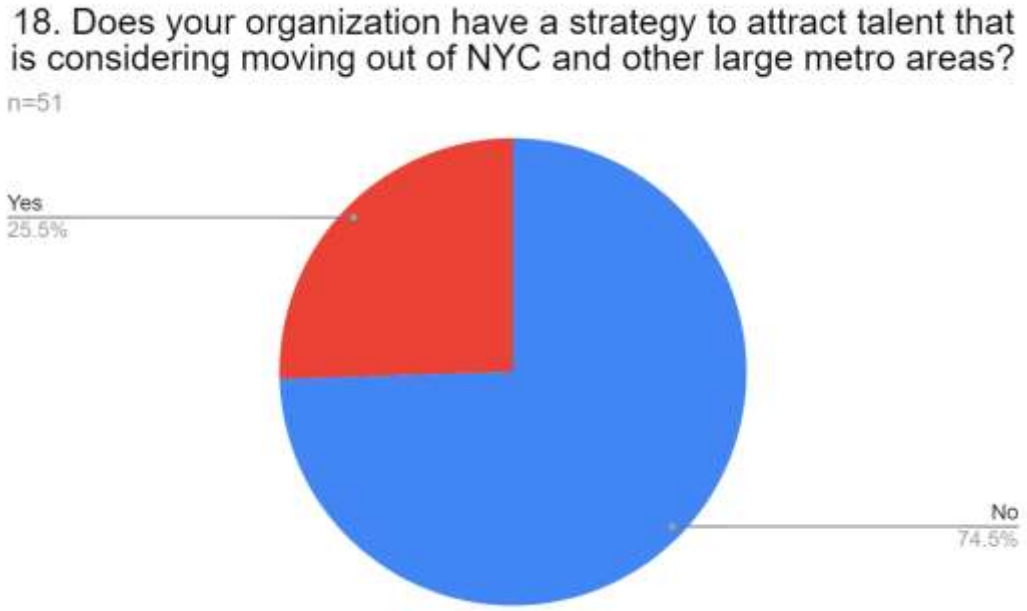
We asked organizations if they had proper access to the internet. "Yes" was selected 53% of the time; "Usually, but could be improved" was selected 33% of the time; "No and it affects business" was selected 14% of the time.



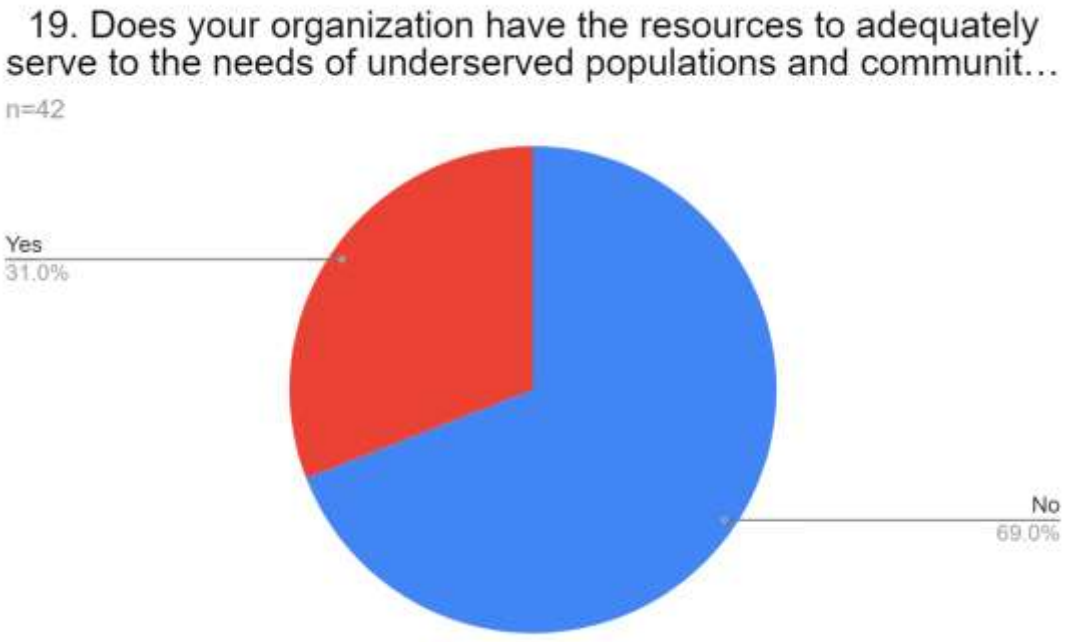
We asked organizations if they were developing economic resiliency strategies for future economic disasters with any stakeholders in their area. "No" was selected 59% of the time; "Yes" was selected 41% of the time.



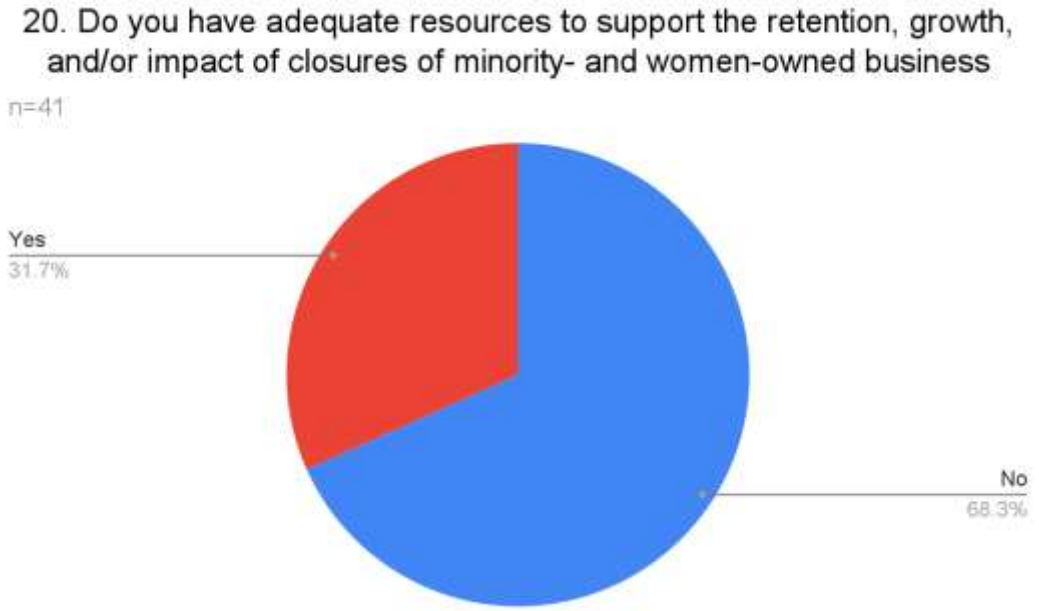
The pie chart above shows how organizations responded when asked about engaging with their local major employers. "No" was selected 75% of the time; "Yes" was selected 25% of the time.



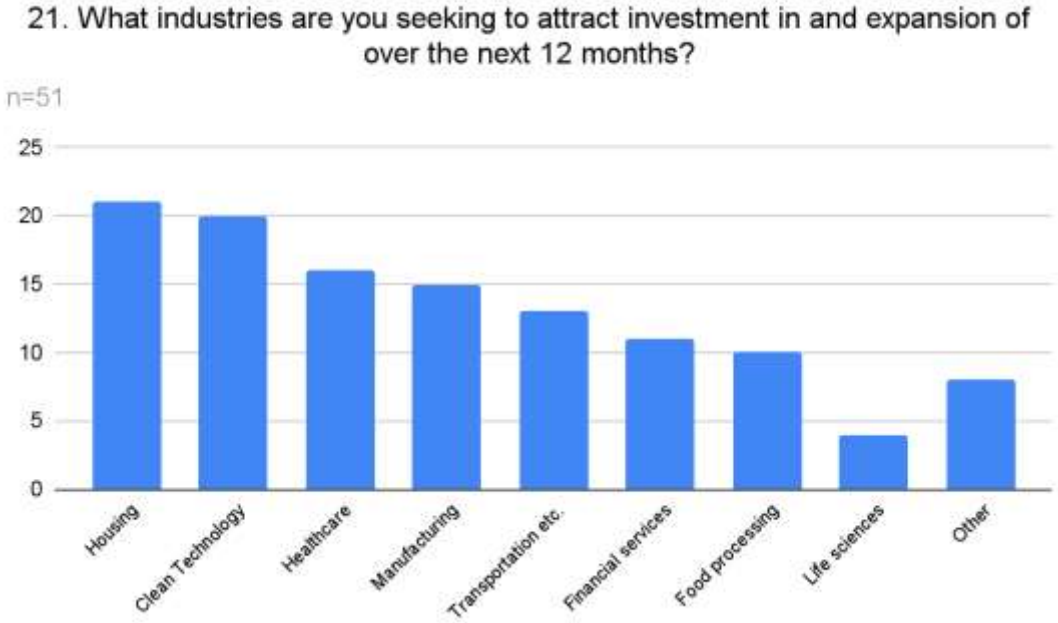
We had asked organizations if they a strategy to attract talent that is considering moving out of NYC and other large metro areas. "No" was selected 75% of the time; "Yes" was selected 25% of the time.



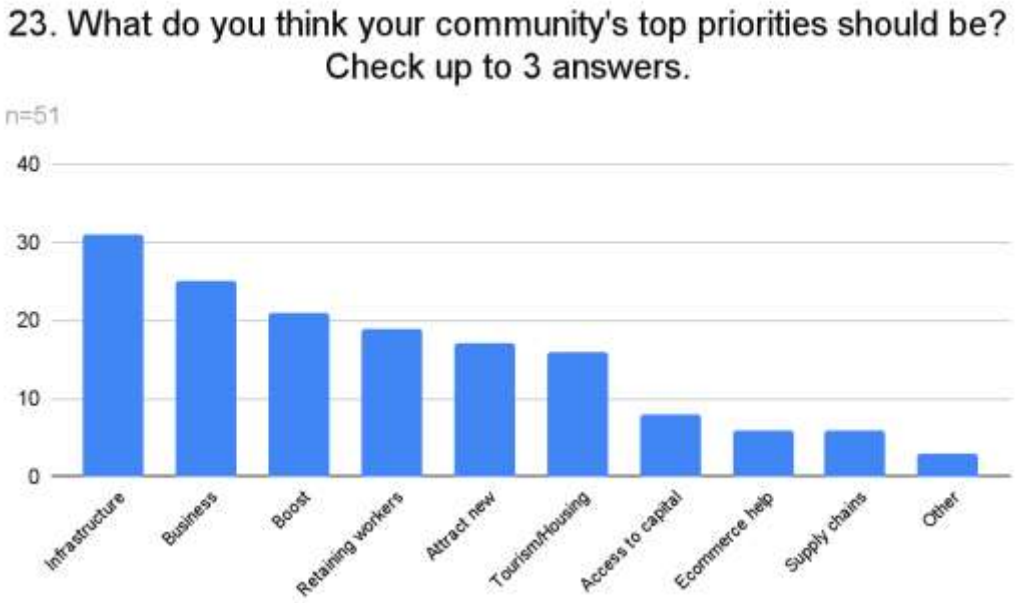
We had asked organizations if they had the capabilities to help underserved populations and communities. "No" was selected 69% of the time; "Yes" was selected 31% of the time.



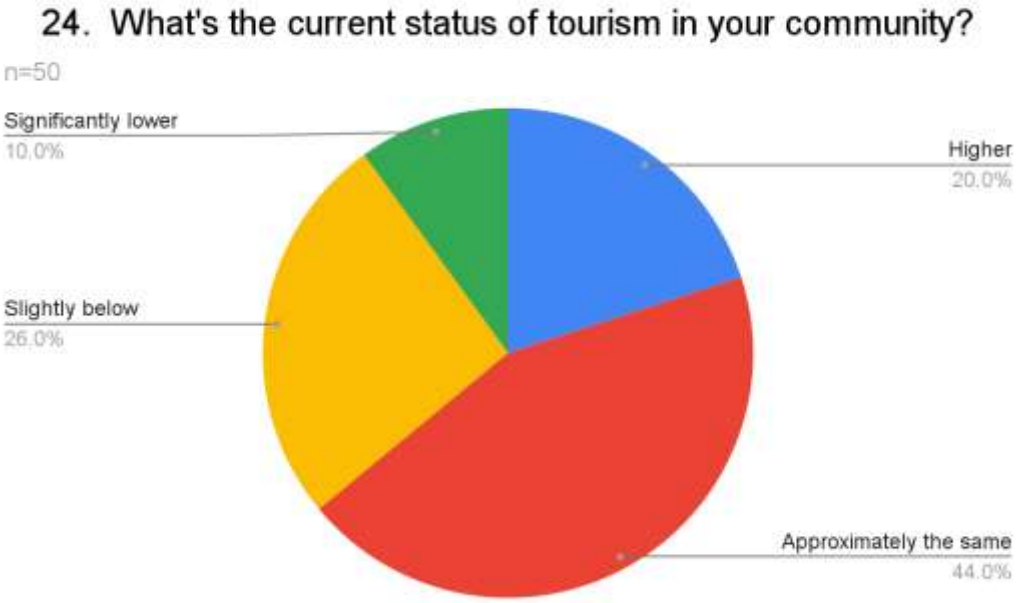
The pie chart above asked a similar question except focused on MWBE. "No" was selected 68% of the time; "Yes" was selected 32% of the time.



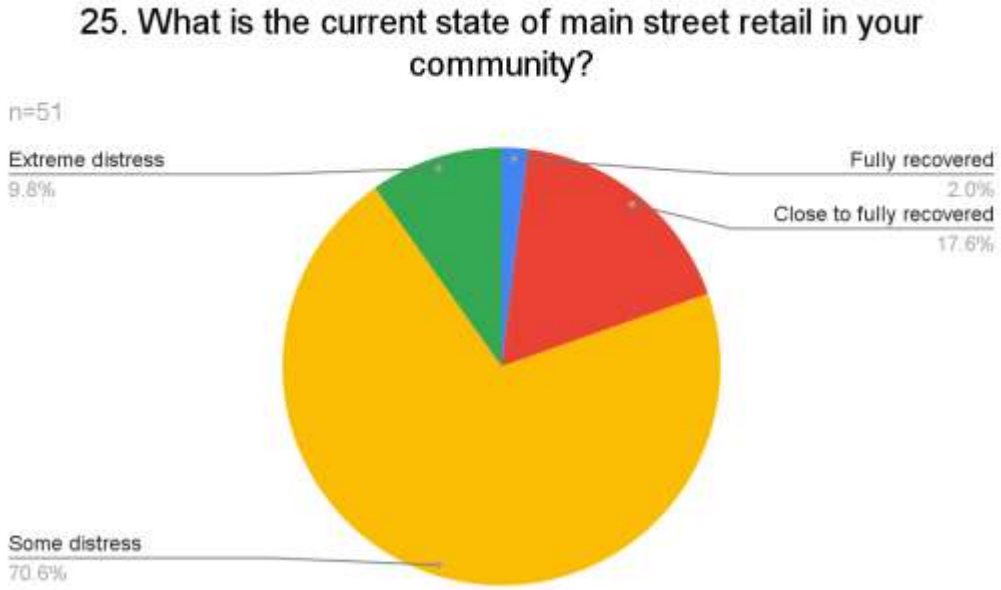
This bar graph shows what industries organizations are targeting to start business in their areas. "Housing Development/Construction" was selected 21 times; "Clean Tech/Renewable Energy" was selected 20 times; "Healthcare" was selected 16 times; "Manufacturing" was selected 15 times; "Transportation/Warehousing/Logistics" was selected 13 times; "Financial Services/Insurance" was selected 11 times; "Food Processing" was selected 10 times; "Life Sciences" was selected 4 times; "Other" was selected 8 times. Options listed under “other” included entertainment, food services, retail, semiconductors, sustainability planning, project development, and data centers.



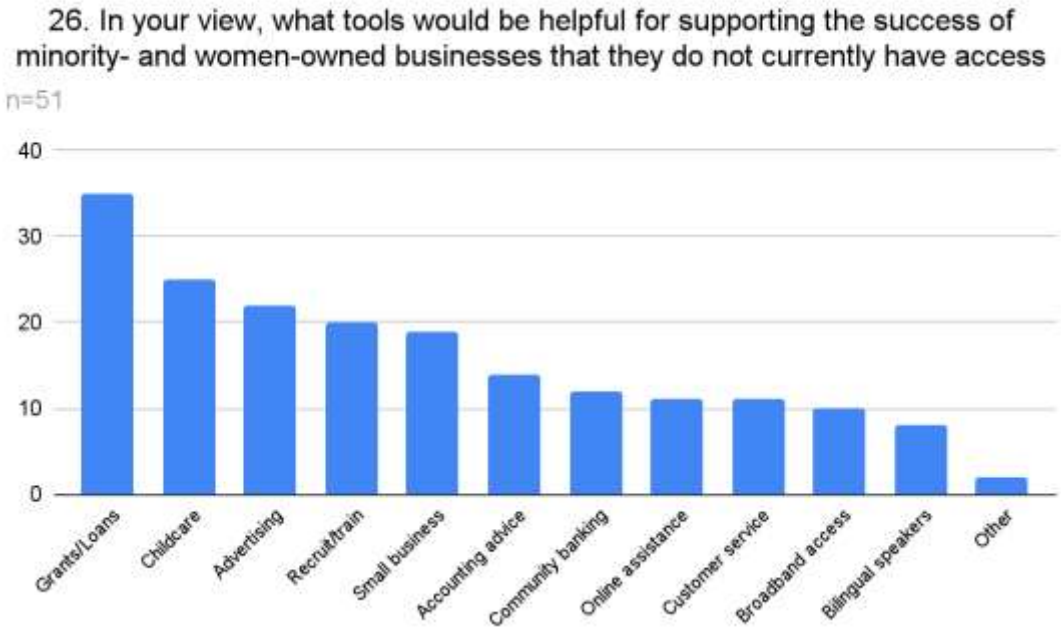
This bar graph shows what organizations think the community's top priorities should be. "Public infrastructure/transportation improvements" was selected 31 times; "Business retention/keeping existing business open" was selected 25 times; "Promoting entrepreneurship, small business incubation" was selected 21 times; "Retraining workers for in-demand occupations" was selected 19 times; "Attracting new business from outside the area" was selected 17 times; "Tourism and community promotion Increasing supply of affordable/market-rate housing" was selected 16 times; "Assisting main street businesses with becoming e-commerce savvy" was selected 6 times; "Supply chain assistance" was selected 6 times; "Other" was selected 3 times.



The pie chart above shows how organizations responded when asked their opinion about the status of tourism in their community. "Higher than pre-pandemic levels" was selected 20% of the time; "Approximately the same as pre-pandemic levels" was selected 44% of the time; "Slightly below pre-pandemic levels" was selected 26% of the time; "Significantly lower than pre-pandemic levels" was selected 10% of the time.

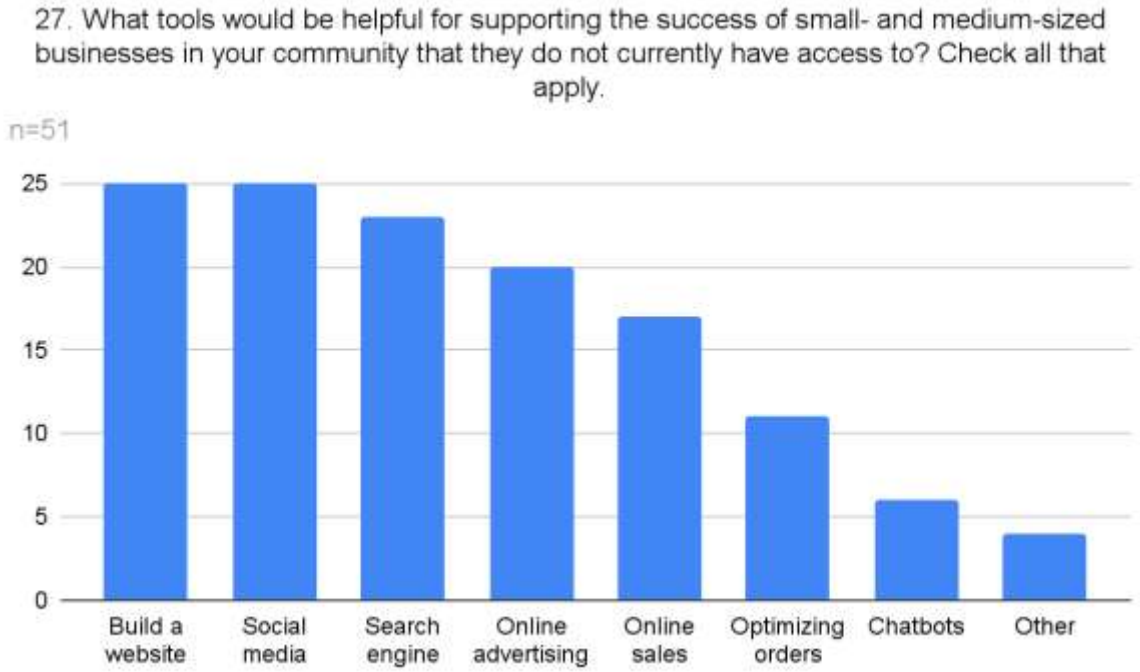


Similarly, this pie chart shows the answers given by organizations when asked about the state of their main street. "Fully recovered" was selected 2% of the time; "Close to fully recovered" was selected 18% of the time; "Some distress, some vacant storefronts, most businesses operating at least at partial capacity" was selected 71% of the time; "Extreme distress, substantial number of vacant storefronts" was selected 10% of the time.

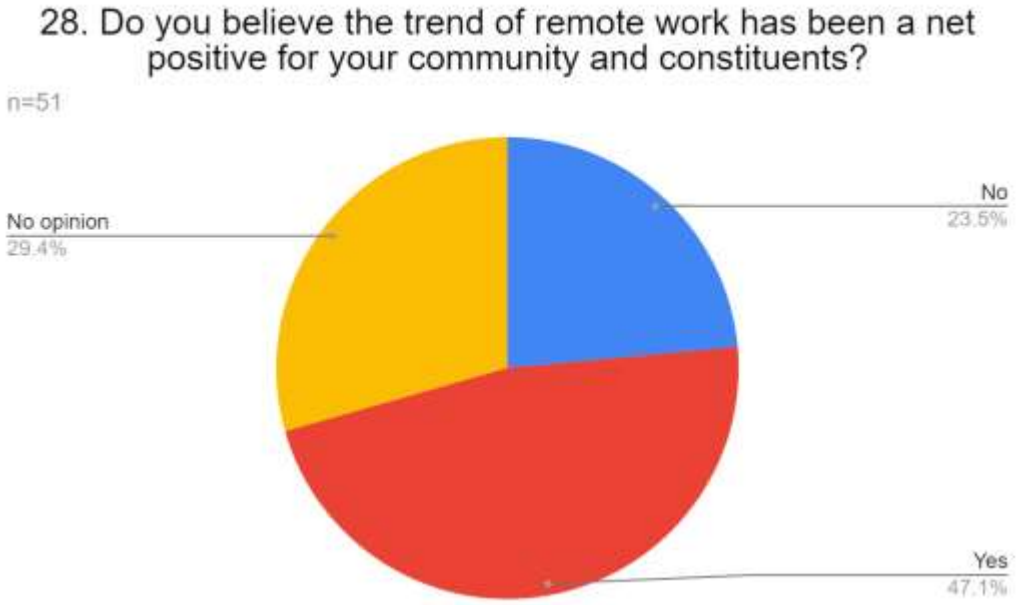


This bar graph shows what organizations thought would be the best tools for MWBE that they do not have access to. "Access to grants and loans" was selected 35 times; "Childcare" was selected 25 times; "Advertising and marketing" was selected 22 times; "Recruiting and training workers" was selected 20 times; "Small business experts" was selected 19 times; "Accounting, tax, legal advice" was selected 14 times; "Community banking resources" was selected 12 times; "Assistance developing an online presence or e-commerce business" was selected 11 times; "Customer service" was selected 11 times; "Broadband

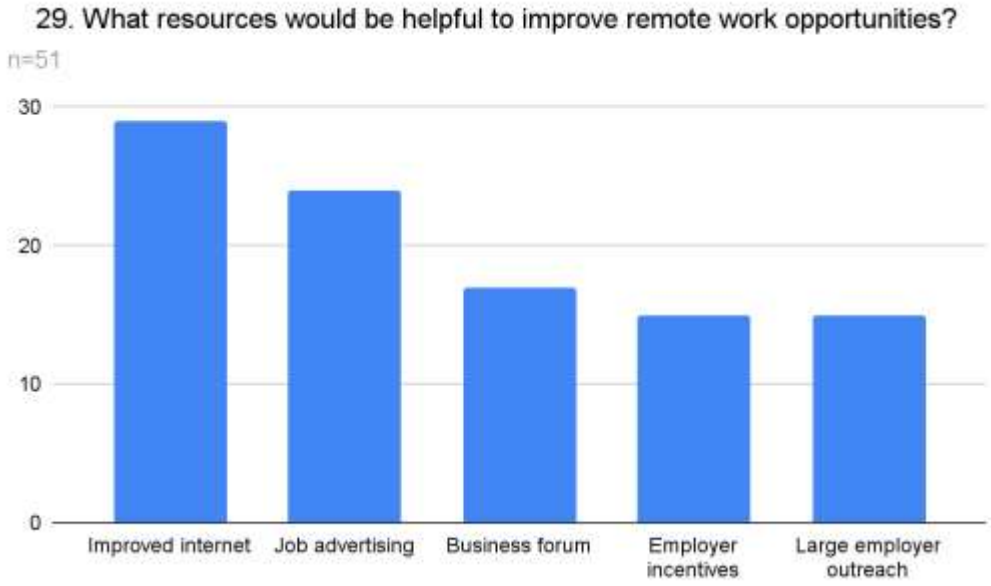
access" was selected 10 times; "Access to bilingual speakers/translators (for businesses owned by non-English speakers)" was selected 8 times; "Other" was selected 2 times. Answers listed under “other” included train town board members and local business experts trusted by the MWBE community.



This bar graph shows what organizations thought would be the best tools for small- and medium-sized businesses that they do not have access to. "Building a website" was selected 25 times; "Using social media accounts (Facebook, LinkedIn, Twitter, Instagram) to engage with customers" was selected 25 times; "Search engine optimization to rank higher on search engine results" was selected 23 times; "Using online/digital advertising" was selected 20 times; "Selling and accepting payments online" was selected 17 times; "Optimizing customer order fulfillment and delivery" was selected 11 times; "Using a chatbot or automated assistant to interact with customers online 24/7" was selected 6 times; "Other" was selected 4 times. Answers listed under “other” include access to capital, streamlined permitting approvals, internships for younger workers, and county support.

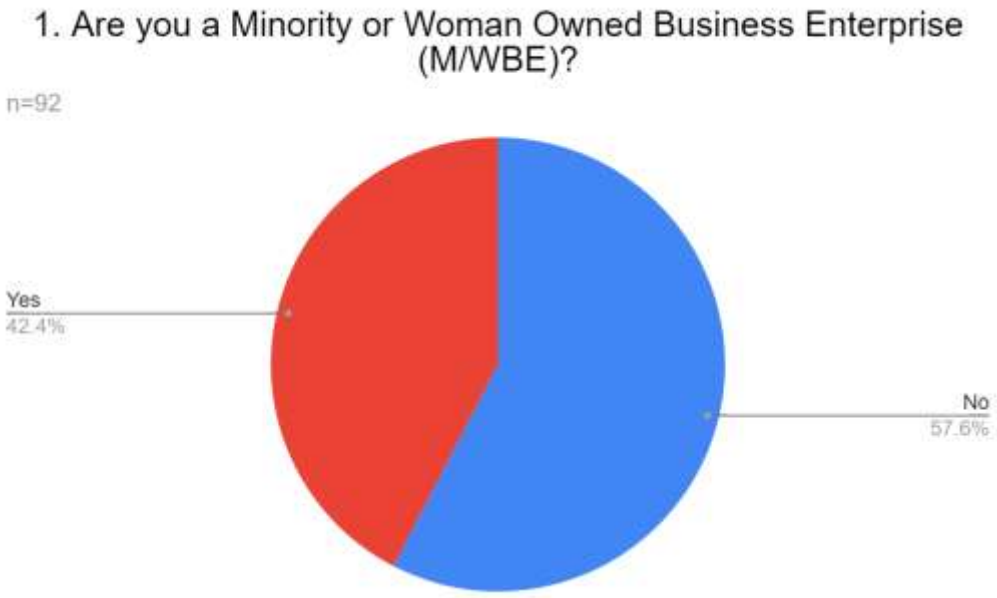


The pie chart above shows how organizations responded when asked about the effect that remote working has had on their community. "No" was selected 24% of the time; "Yes" was selected 47% of the time; "No opinion" was selected 29% of the time.

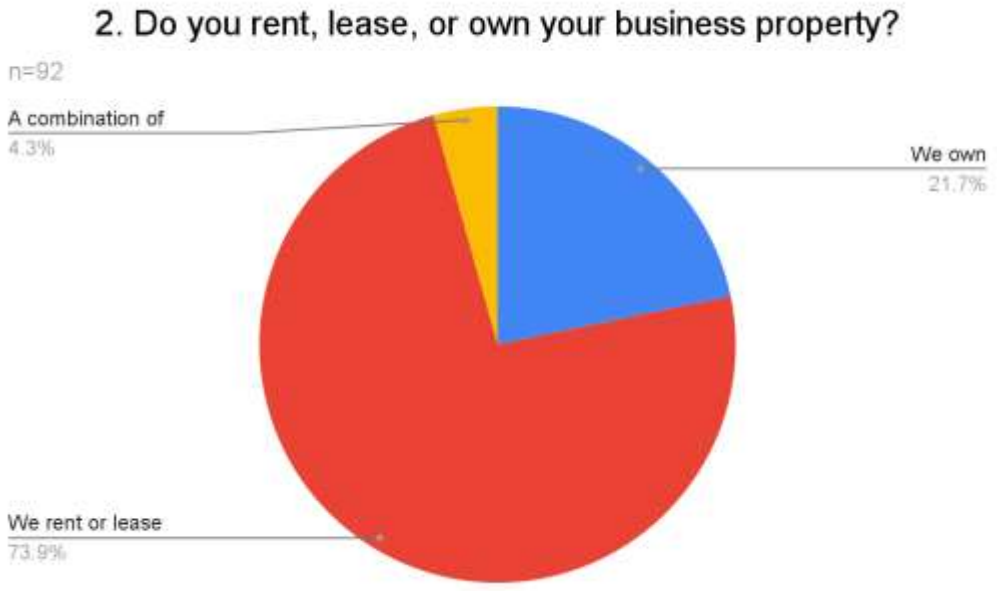


This bar graph has organizations responses when asked about what would help improve remote work opportunities. "Improved broadband connectivity." was selected 29 times; "Promotion of remote job opportunities to unemployed/underemployed residents." was selected 24 times; "Create online community/forums to discuss remote work challenges and opportunities." was selected 17 times; "Create an employer incentive program to encourage employers to hire new local remote employees." was selected 15 times; "Outreach to large/national employers about local skilled workforce for remote work jobs." was selected 15 times.

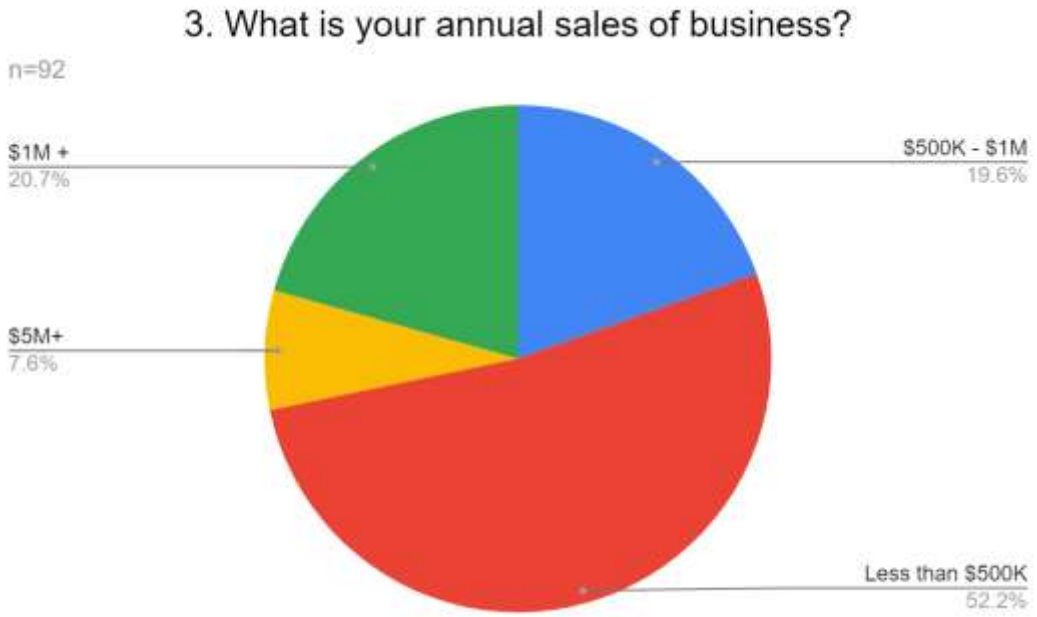
Business Report



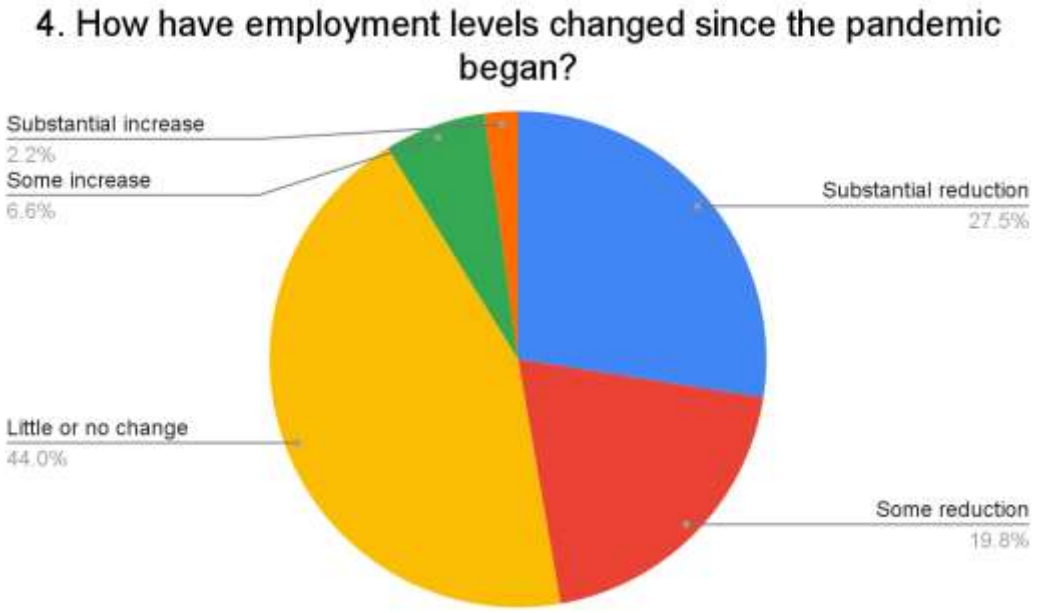
This pie chart shows how many of our respondents were MWBEs. "No" was selected 58% of the time; "Yes" was selected 42% of the time.



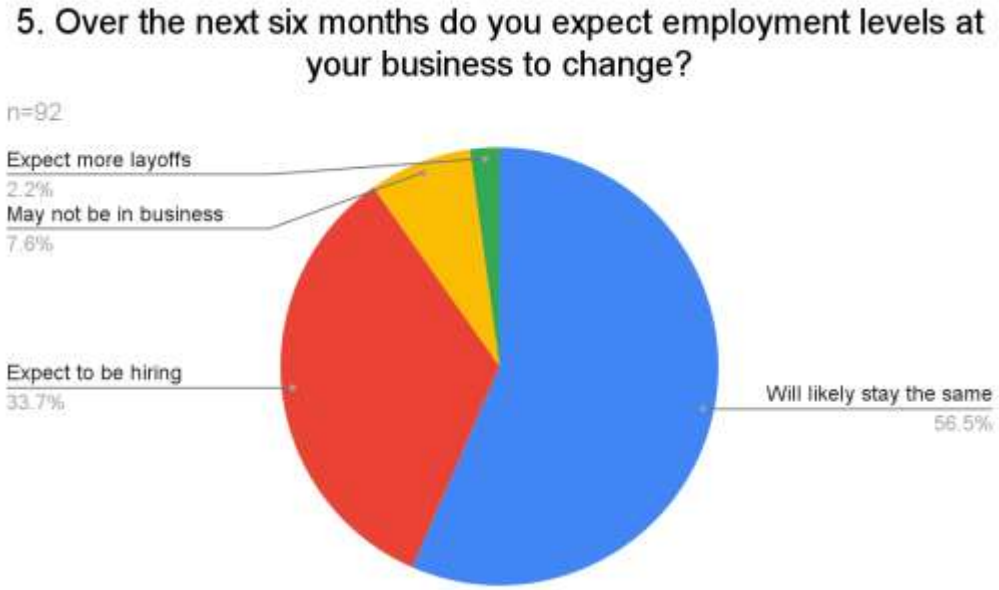
We also asked businesses about if they rent or own the property they use for business. "We own" was selected 22% of the time; "We rent or lease" was selected 74% of the time; "A combination of owning/renting or leasing (if multiple facilities)" was selected 4% of the time.



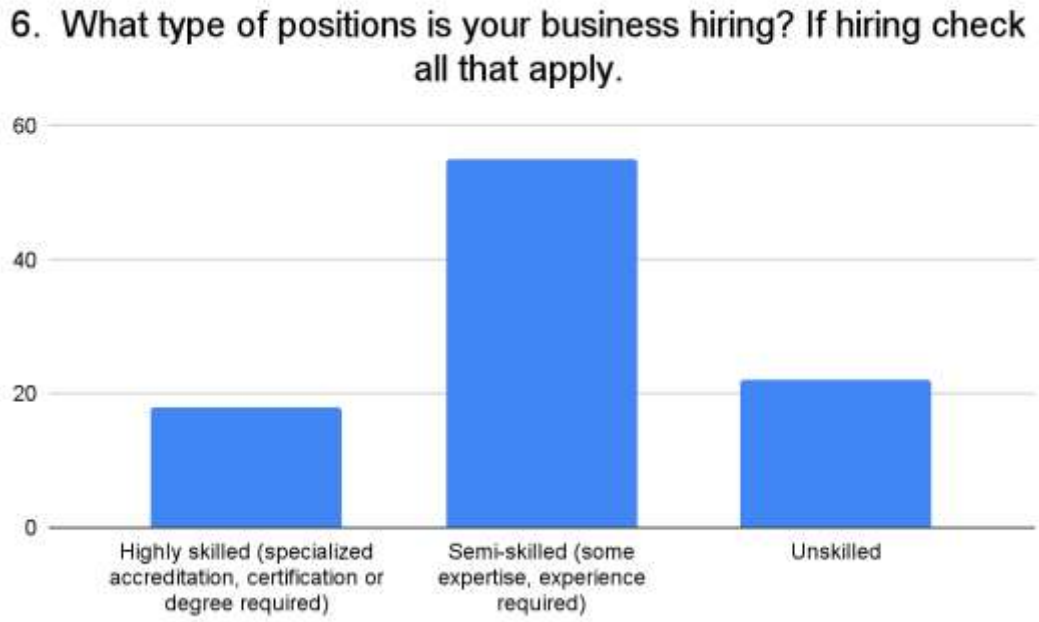
We asked businesses about what their annual sales of business. "$500K - $1M" was selected 20% of the time; "Less than $500K" was selected 52% of the time; "$5M+" was selected 8% of the time; "$1M +" was selected 21% of the time.



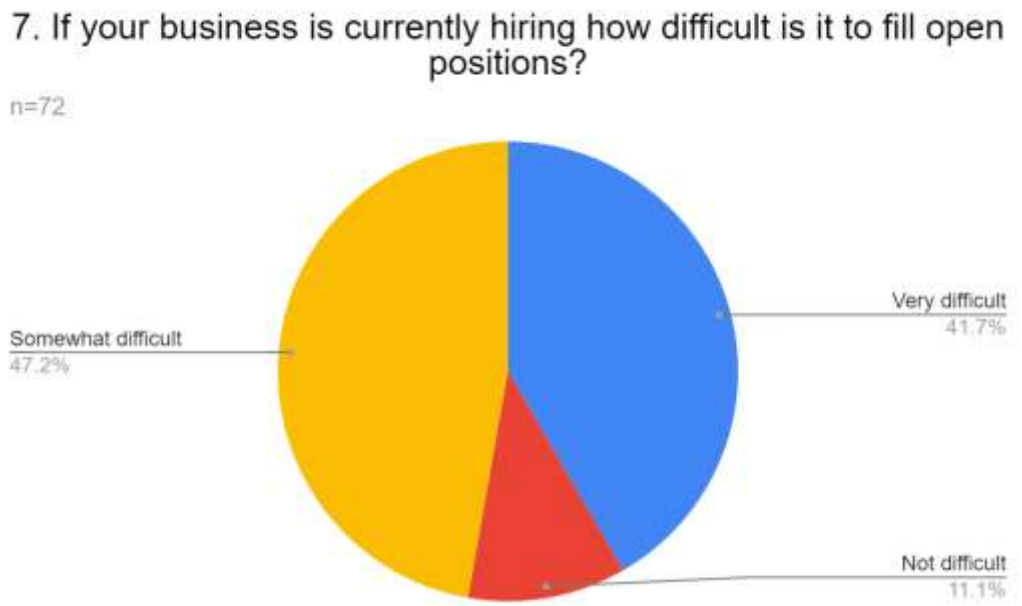
"Substantial reduction (more than 25%)" was selected 27% of the time; "Some reduction (11% - 25%)" was selected 20% of the time; "Little or no change (10% or less)" was selected 44% of the time; "Some increase (11% - 25%)" was selected 7% of the time; "Substantial increase (more than 25%)" was selected 2% of the time.



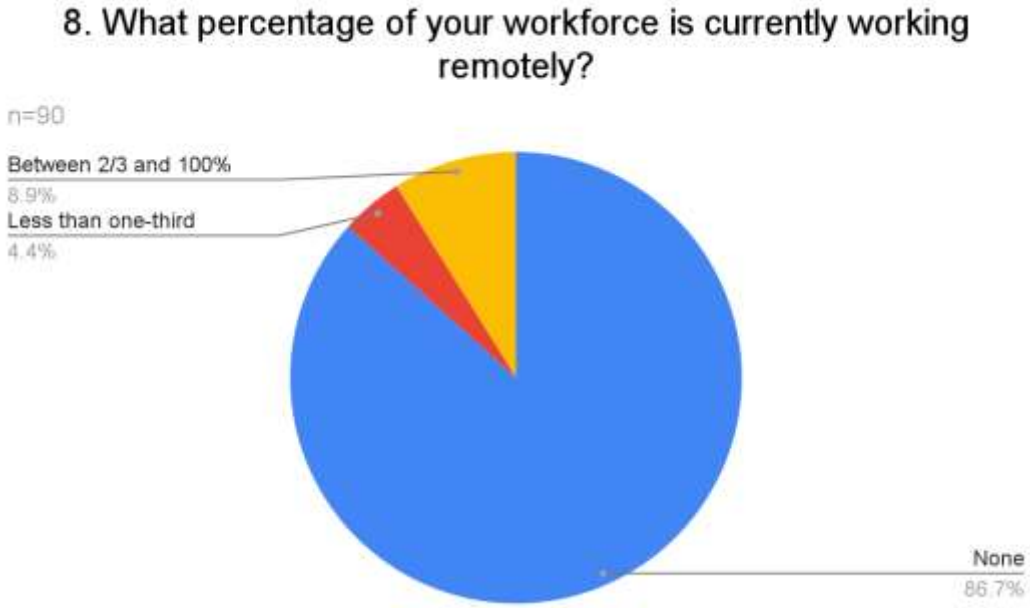
Similarly, we asked businesses about where they expected their future employment levels to be over the next six months. "Substantial reduction (more than 25%)" was selected 27% of the time; "Some reduction (11% - 25%)" was selected 20% of the time; "Little or no change (10% or less)" was selected 44% of the time; "Some increase (11% - 25%)" was selected 7% of the time; "Substantial increase (more than 25%)" was selected 2% of the time.



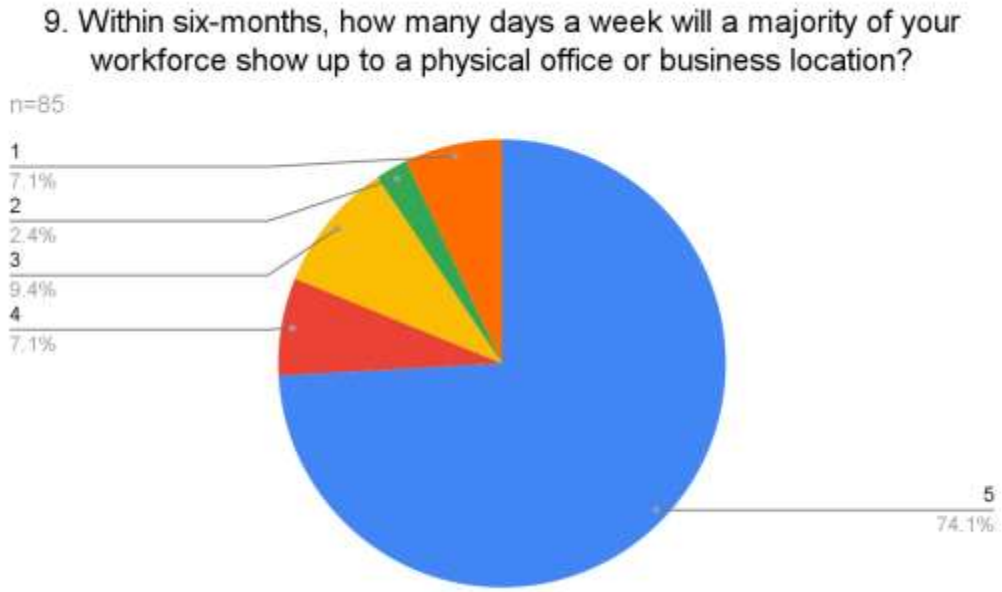
The bar graph above shows what type of employees businesses are looking to hire. "Highly skilled" was selected 18 times; "Semi-skilled" was selected 55 times; "Unskilled" was selected 22 times.



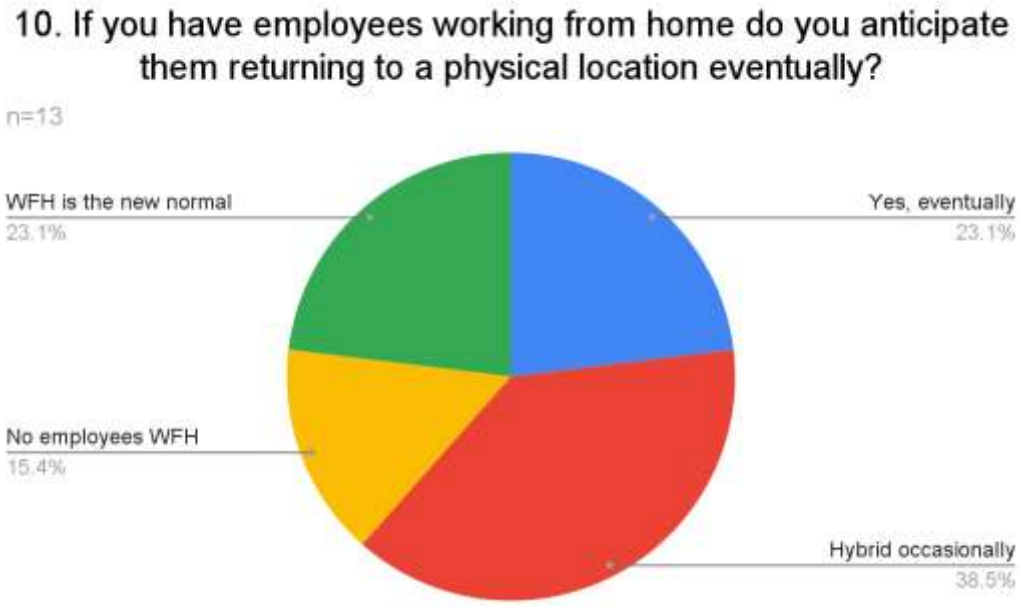
The pie chart above shows how organizations responded when trying to fill open positions. "Very difficult" was selected 42% of the time; "Not difficult" was selected 11% of the time; "Somewhat difficult" was selected 47% of the time.



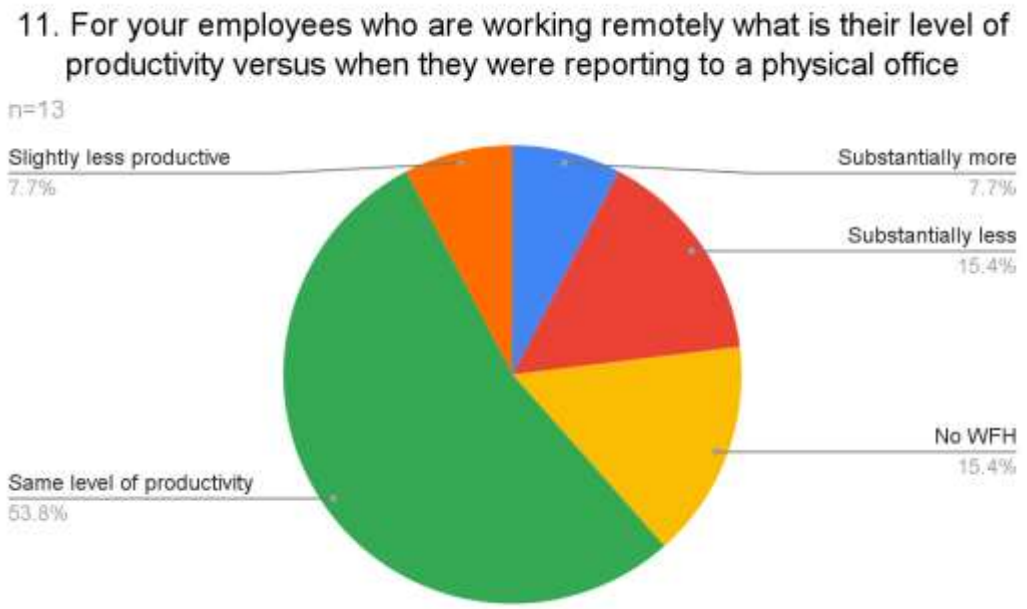
The next pie chart deals with remote working. "None" was selected 87% of the time; "Less than one-third" was selected 4% of the time; "Between two-thirds and 100%" was selected 9% of the time.



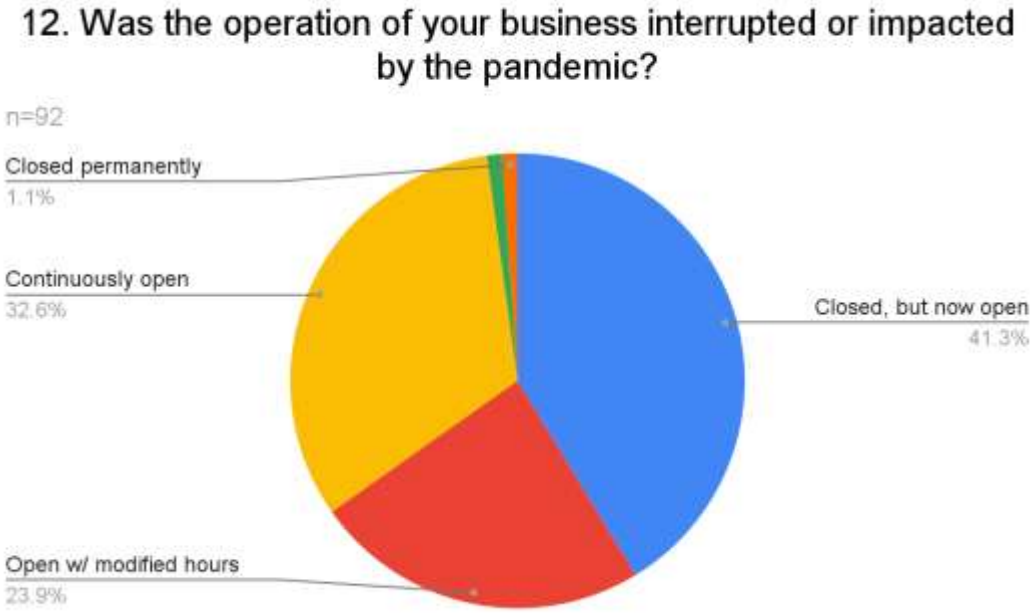
Following the previous graph, we also asked employers how many days a week they expected workers to be at their business location. "5" was selected 74% of the time; "4" was selected 7% of the time; "3" was selected 9% of the time; "2" was selected 2% of the time; "1" was selected 7% of the time.



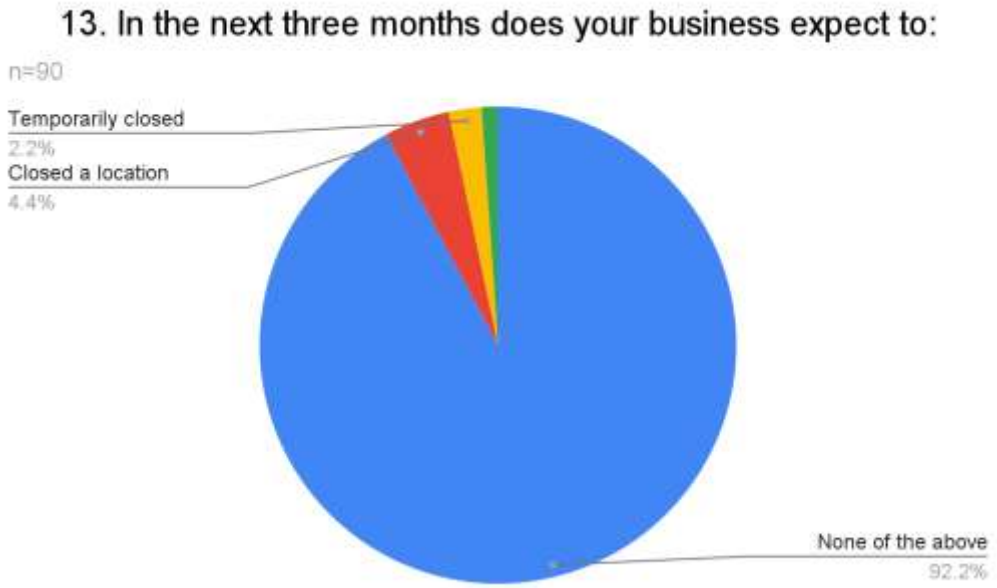
The pie chart above shows businesses anticipation for having workers return to their locations. "Yes, eventually workers will return to a physical location once it is safe and advisable to do so" was selected 23% of the time; "We anticipate employing a hybrid workforce model with employees working remotely sometimes and commuting to a physical location occasionally" was selected 38% of the time; "We do not have employees working from home" was selected 15% of the time; "No, having a remote workforce will likely be the new normal and they will not return to a physical office" was selected 23% of the time.



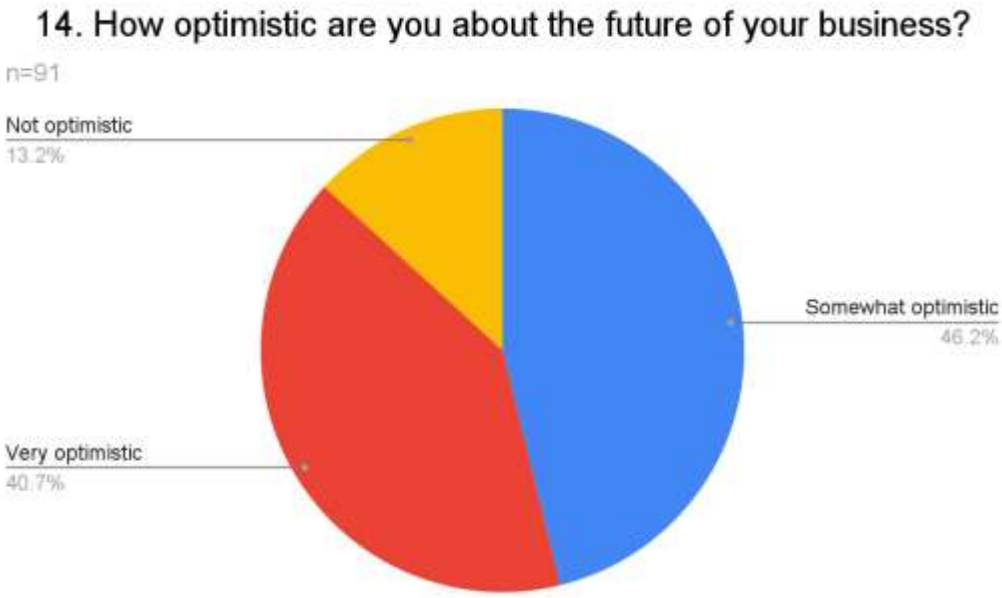
We asked businesses how they thought the pandemic had affected their employees productivity. "Substantially more productive" was selected 8% of the time; "Substantially less productive" was selected 15% of the time; "My employees are not working from home" was selected 15% of the time; "Same level of productivity" was selected 54% of the time; "Slightly less productive" was selected 8% of the time.



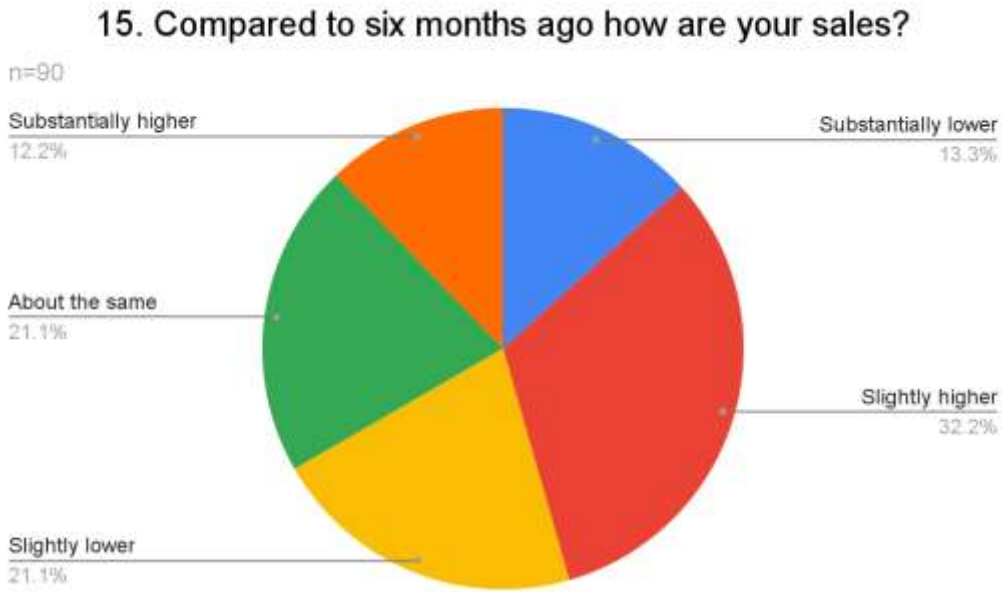
We also asked businesses how the pandemic affected their businesses, specifically asking if they had stayed open throughout the entire pandemic. "The business was closed temporarily and has since reopened" was selected 41% of the time; "The business stayed open with modified hours" was selected 24% of the time; "The business stayed open continuously" was selected 33% of the time; "Business is still closed but plans to reopen" was selected 1% of the time; "Business is closed permanently" was selected 1% of the time.



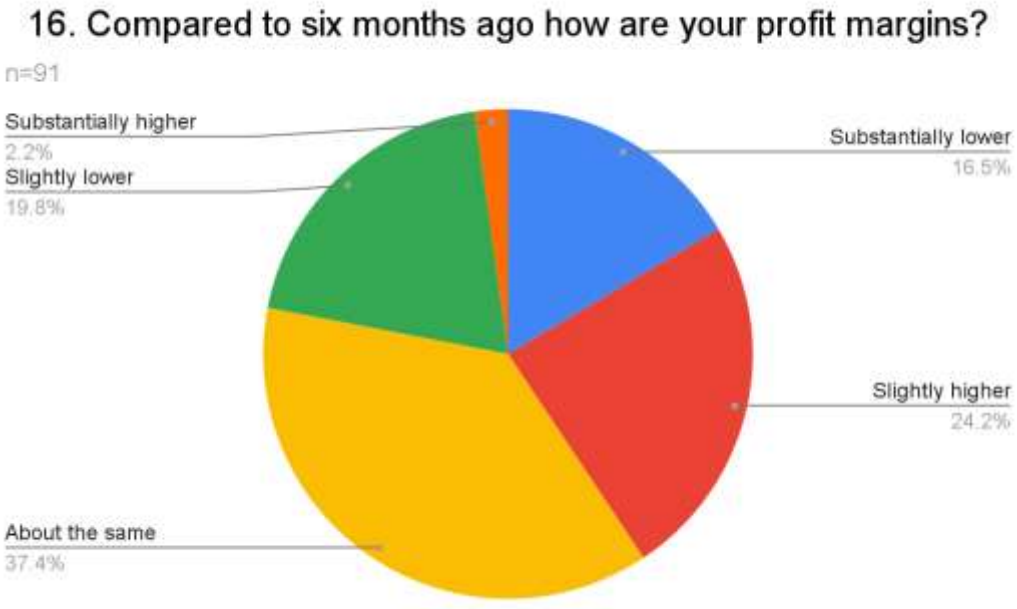
Similarly, we then asked businesses if they expected to stay open in the next three months. "None of the above" was selected 92% of the time; "Permanently close a location" was selected 4% of the time; "Temporarily close a location." was selected 2% of the time; "Open a new location." was selected 1% of the time.



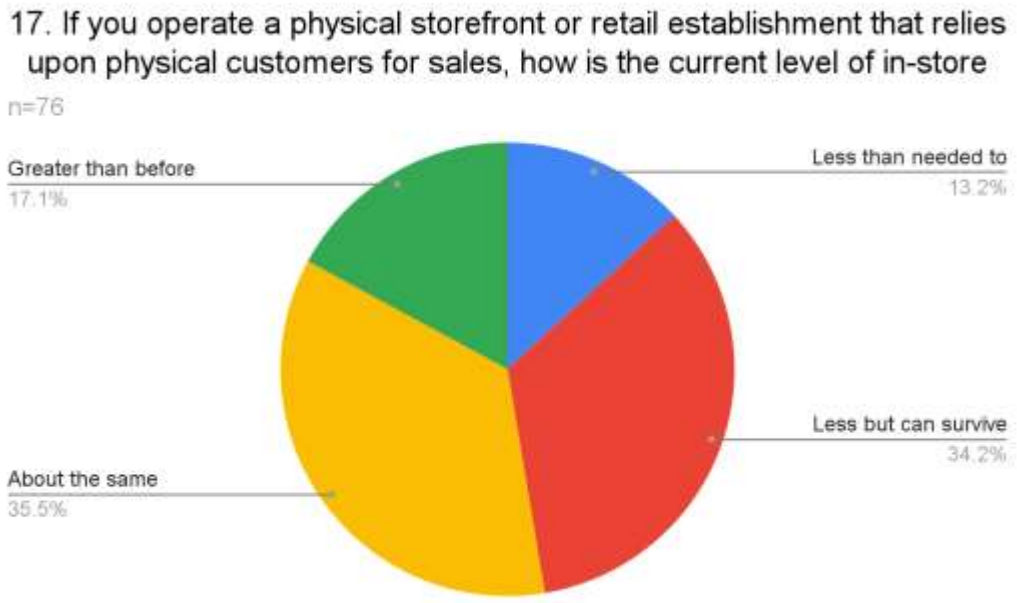
We also asked businesses how optimistic they were feeling about the future of their businesses. "Somewhat optimistic" was selected 46% of the time; "Very optimistic" was selected 41% of the time; "Not optimistic" was selected 13% of the time.



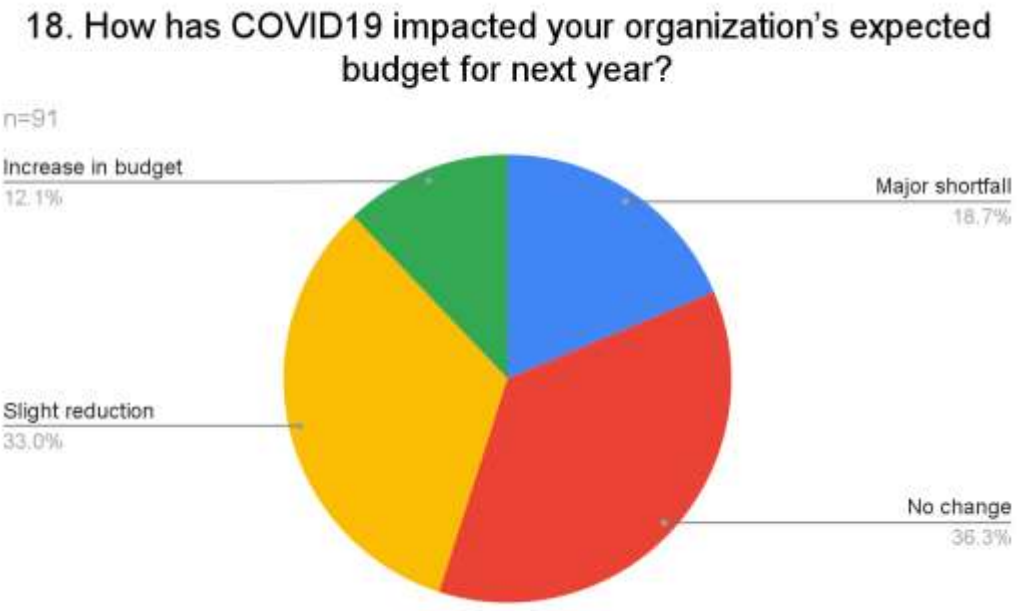
The pie chart above shows how businesses answered how their sales compared from six months prior. "Substantially lower" was selected 13% of the time; "Slightly higher" was selected 32% of the time; "Slightly lower" was selected 21% of the time; "About the same" was selected 21% of the time; "Substantially higher" was selected 12% of the time.



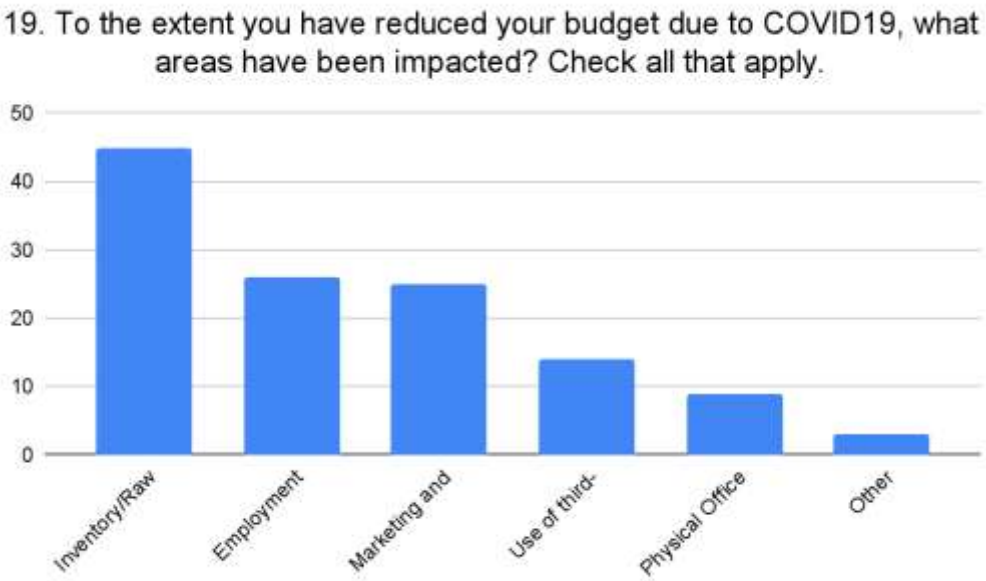
Similarly, this pie chart asks businesses about their profit margins compared to six months ago. "Substantially lower" was selected 16% of the time; "Slightly higher" was selected 24% of the time; "About the same" was selected 37% of the time; "Slightly lower" was selected 20% of the time; "Substantially higher" was selected 2% of the time.



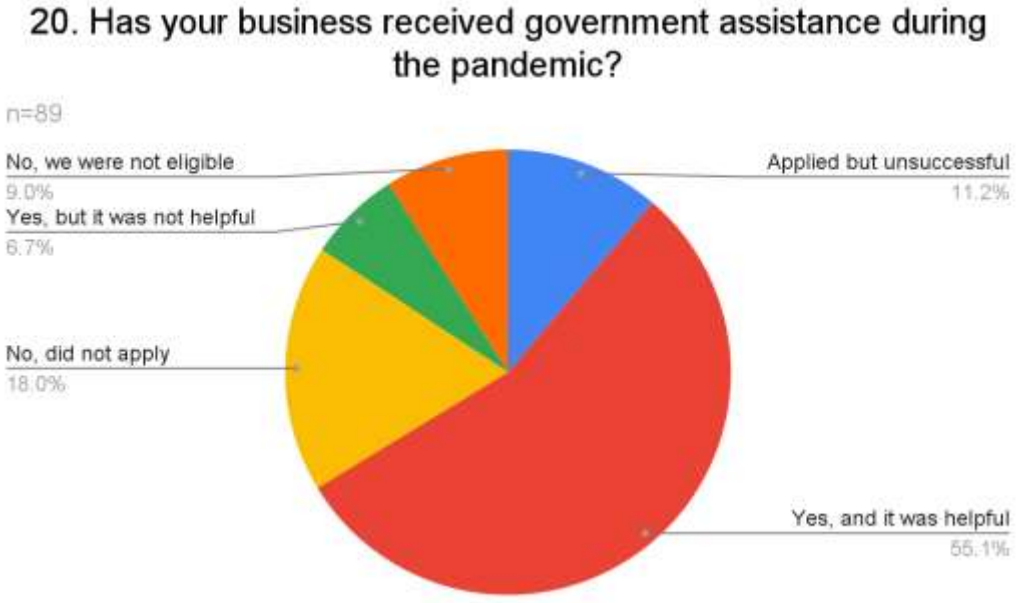
This pie chart shows how businesses think how foot traffic has been affected by the pandemic. "Less than is necessary for us to remain open without an increase in traffic" was selected 13% of the time; "Less than prior to the pandemic but we will survive" was selected 34% of the time; "About the same as expected before the pandemic" was selected 36% of the time; "Greater than before the pandemic" was selected 17% of the time.



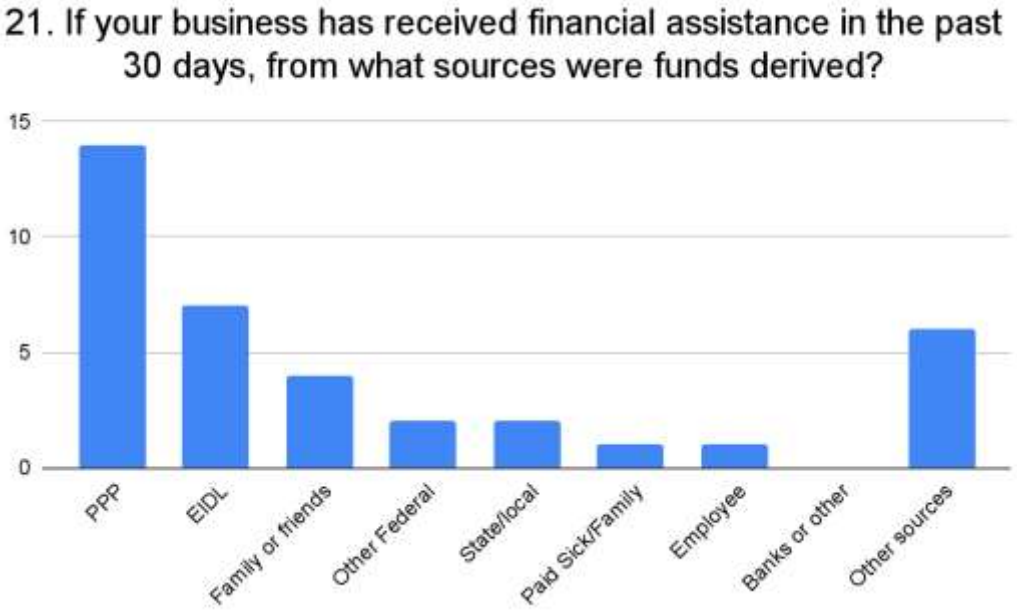
This pie chart shows how businesses answered questions about how the pandemic has affected their future budgets. "Major shortfall" was selected 19% of the time; "No change" was selected 36% of the time; "Slight reduction" was selected 33% of the time; "Increase in budget" was selected 12% of the time.

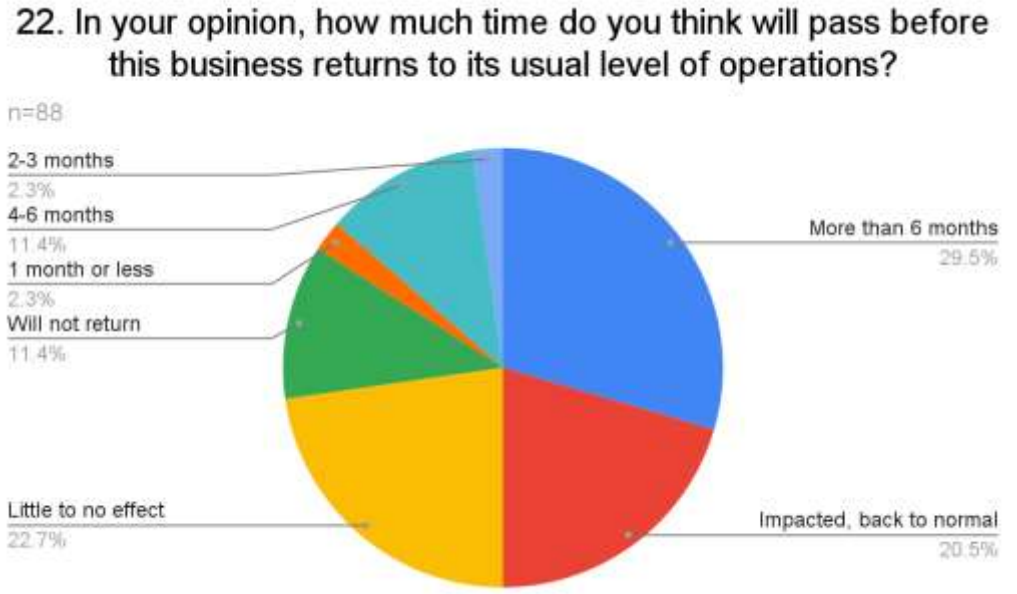


The bar graph above shows how what areas have been affected due to a reduced budget. "Inventory/Raw Materials/Cost of Goods Sold" was selected 45 times; "Employment and payroll" was selected 26 times; "Marketing and PR" was selected 25 times; "Use of third-party vendors/consultants" was selected 14 times; "Physical Office Space & Utilities" was selected 9 times; "Other" was selected 5 times. Answers given under “other” include foot traffic, lost retirements, and the cost and availability of goods.

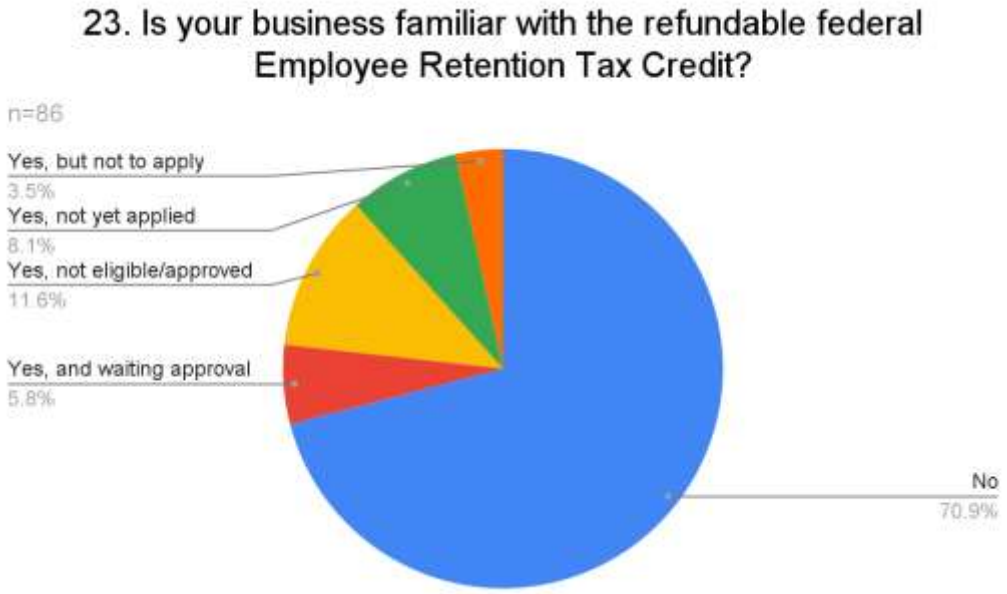


The pie chart above asked businesses if they had received government assistance during the pandemic as well as how its helpfulness. "No, we applied but were unsuccessful in obtaining assistance" was selected 11% of the time; "Yes, and it was helpful" was selected 55% of the time; "No, we did not apply for assistance" was selected 18% of the time; "Yes, but it was not helpful" was selected 7% of the time; "No, we were not eligible for assistance" was selected 9% of the time.

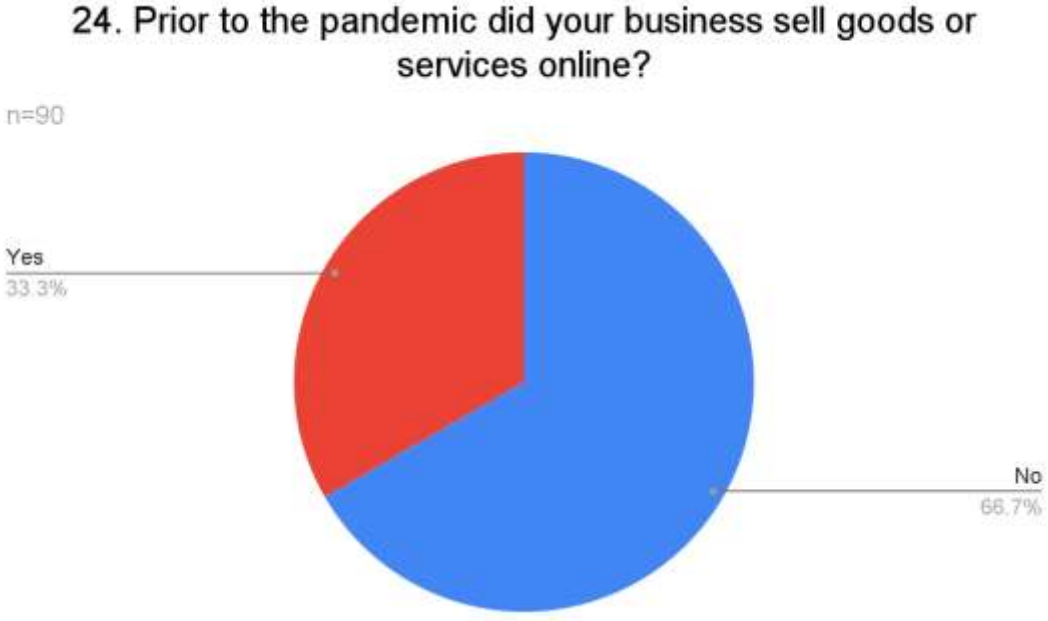




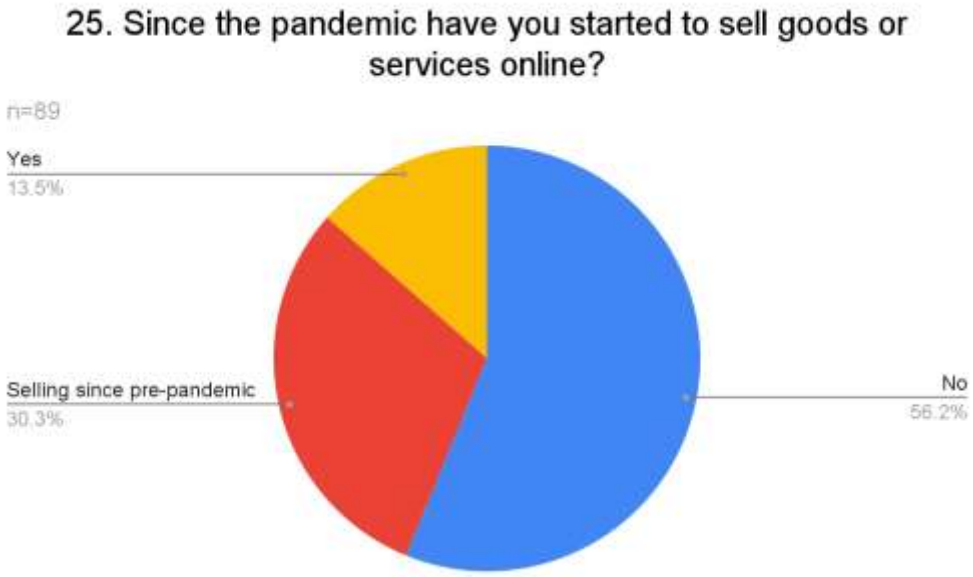
The pie chart above shows how organizations responded when asked about engaging with their local major employers. "More than 6 months" was selected 30% of the time; "This business was impacted but has now returned to its usual level of operations." was selected 20% of the time; "There has been little or no effect on this business's usual level of operations" was selected 23% of the time; "I do not believe this business will return to its usual level of operations" was selected 11% of the time; "1 month or less" was selected 2% of the time; "4-6 months" was selected 11% of the time; "2-3 months" was selected 2% of the time; "There has been little or no effect on this business's usual level of operations" was selected 23% of the time; "I do not believe this business will return to its usual level of operations" was selected 11% of the time; "1 month or less" was selected 2% of the time.



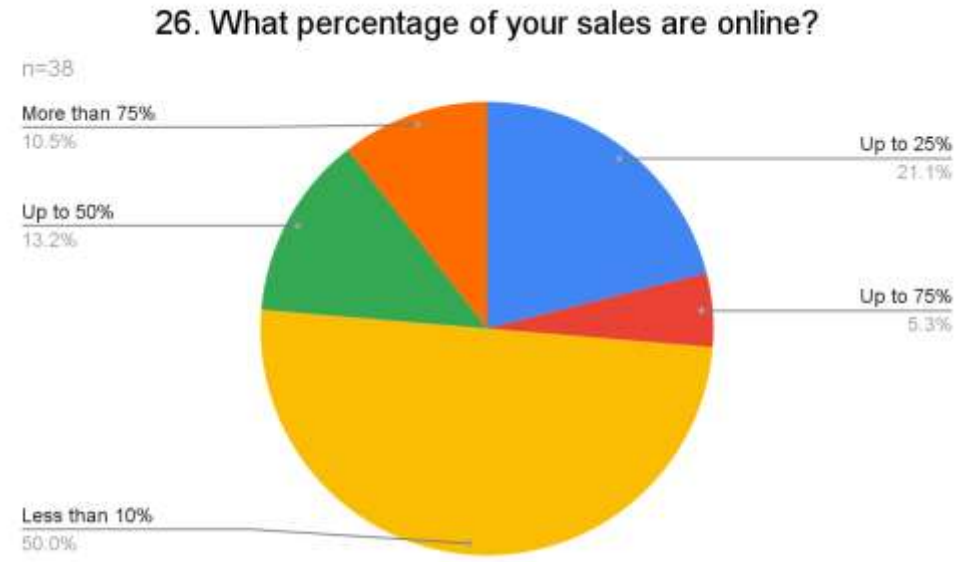
We asked businesses if they were familiar with the federal Employee Retention Tax Credit. "No" was selected 71% of the time; "Yes, and we are awaiting approval" was selected 6% of the time; "Yes, but we were not eligible or were not approved" was selected 12% of the time; "Yes, but we have not yet applied" was selected 8% of the time; "Yes, but we decided not to apply" was selected 3% of the time.



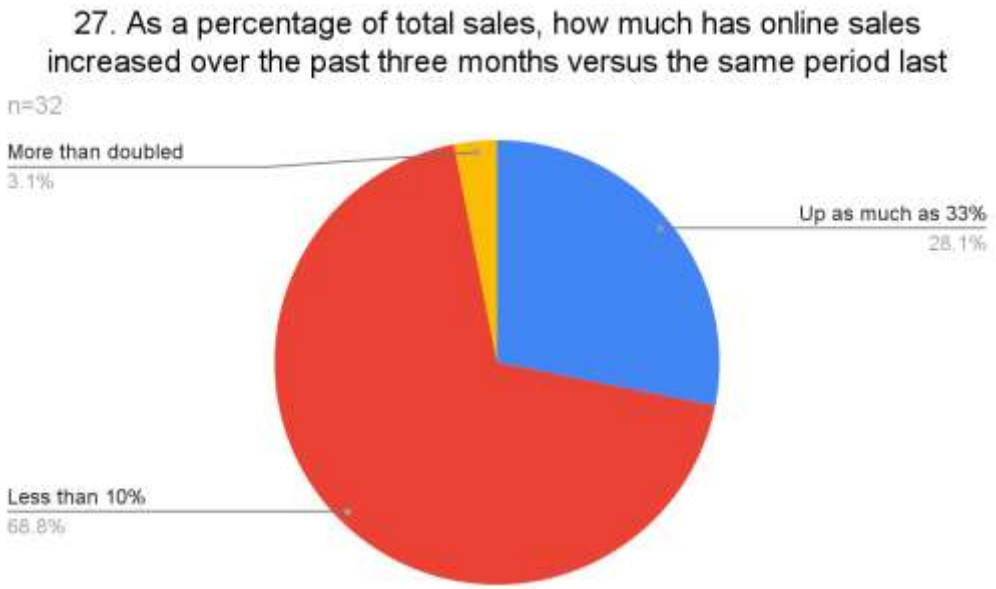
We had asked businesses if they had sold their goods and services online prior to the pandemic starting. "No" was selected 67% of the time; "Yes" was selected 33% of the time.



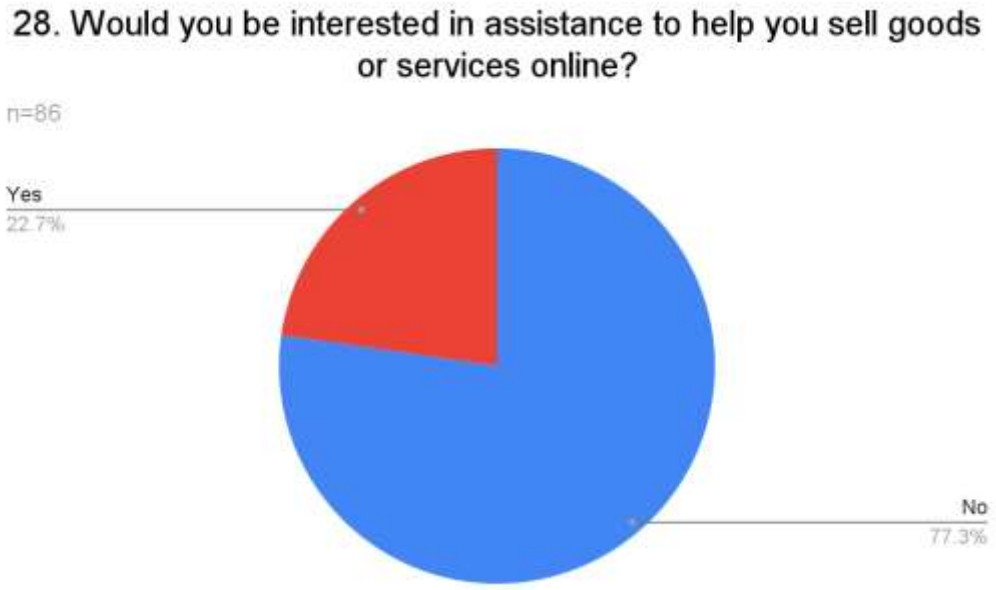
Following up on the previous pie chart, this asks if businesses had begun to sell goods and services online since the pandemic had started. "No" was selected 56% of the time; "We have been selling online before pandemic started." was selected 30% of the time; "Yes" was selected 13% of the time.



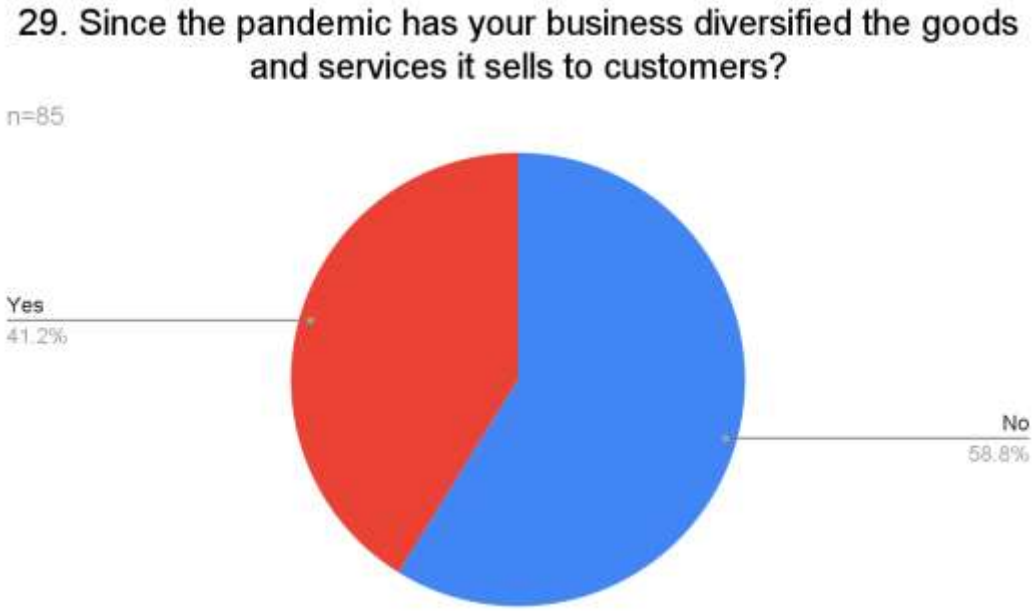
The pie chart above shows what percentage of the businesses' sales were made online. "Up to 25%" was selected 21% of the time; "Up to 75%" was selected 5% of the time; "Less than 10%" was selected 50% of the time; "Up to 50%" was selected 13% of the time; "More than 75%" was selected 11% of the time.



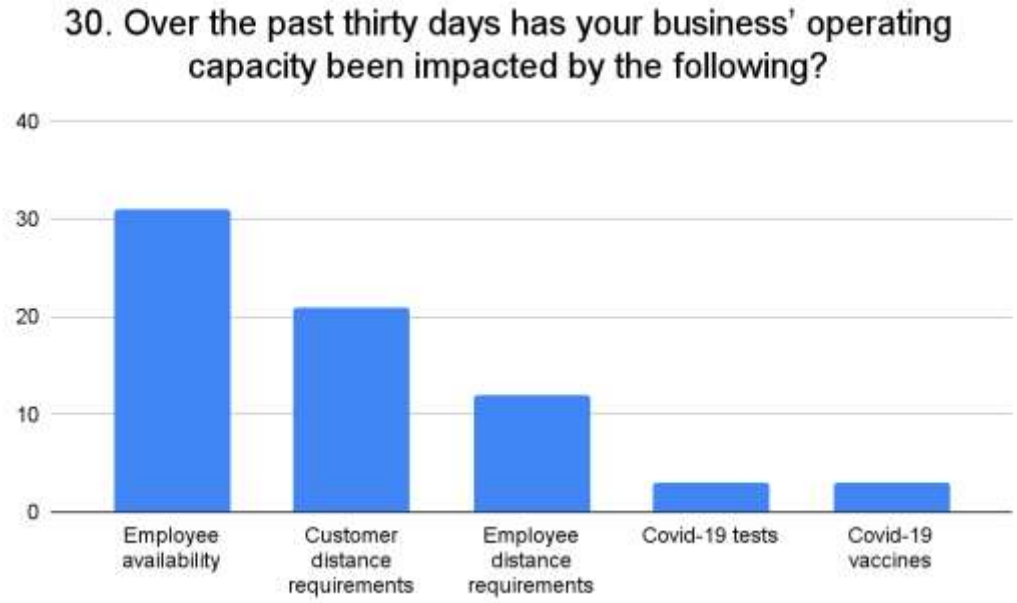
The pie chart above shows how organizations responded when asked about engaging with their local major employers. "Up as much as 33%" was selected 28% of the time; "Less than 10%" was selected 69% of the time; "More than doubled" was selected 3% of the time



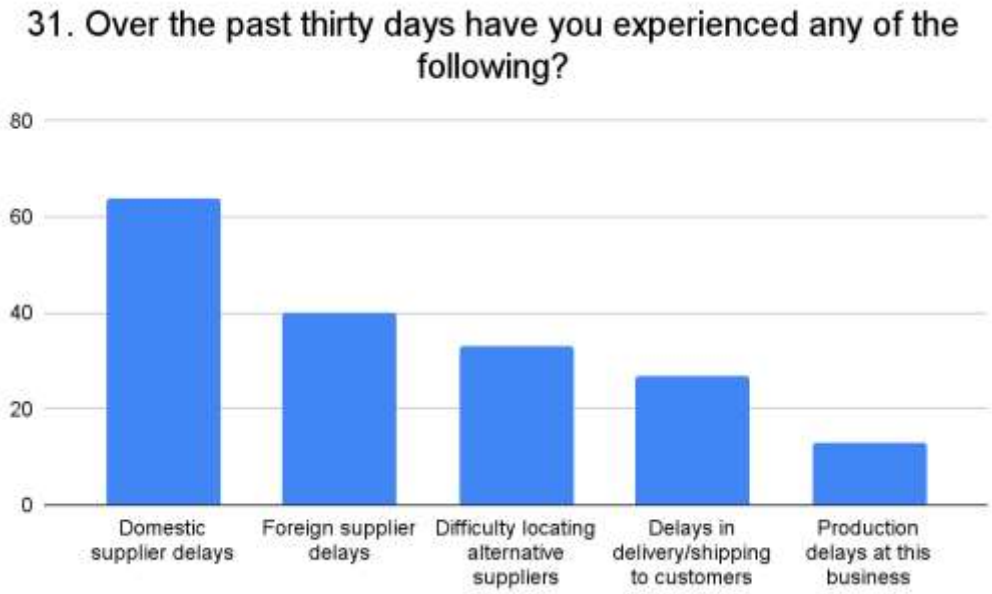
Following up on the previous graph, this pie chart shows businesses' interest in assistance in selling goods and services online. "No" was selected 77% of the time; "Yes" was selected 23% of the time.



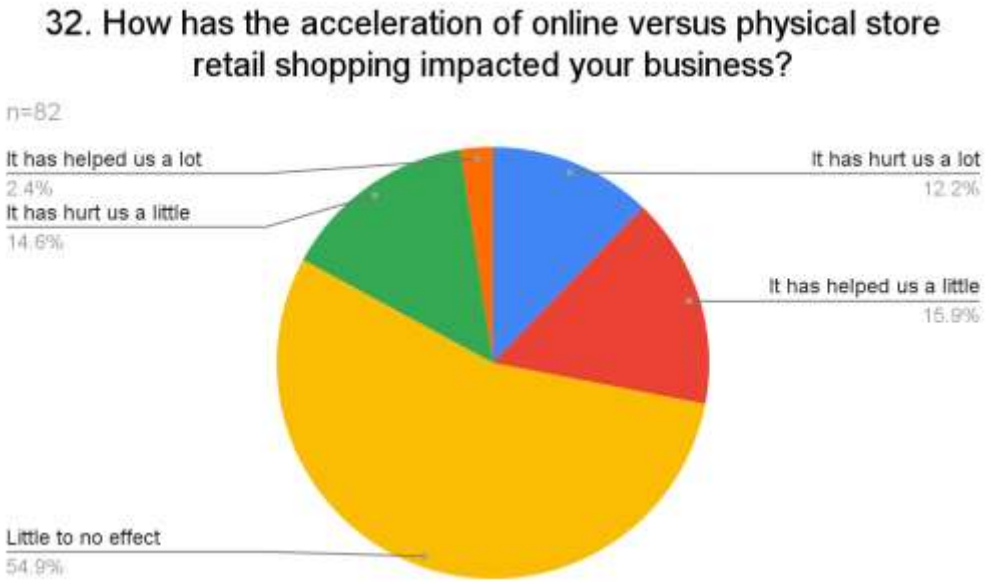
The pie chart above shows if businesses said they had diversified their products in response to the pandemic. "No" was selected 59% of the time; "Yes" was selected 41% of the time.



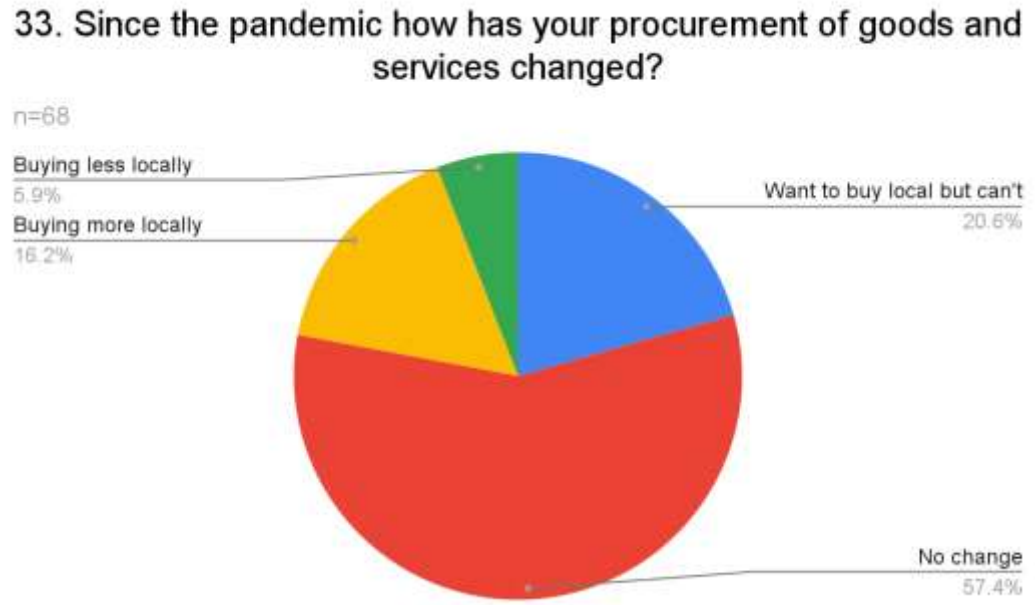
We asked businesses how their operating capacity had been affected by the pandemic over the last 30 days. "Availability of employees to work" was selected 31 times; "Physical distancing requirements of customers or clients and/or limits on the number of concurrent customers or clients" was selected 21 times; "Physical distancing requirements of employees" was selected 12 times; "Availability of COVID-19 tests for employees" was selected 3 times; "Availability of COVID-19 vaccine for employees" was selected 3 times.



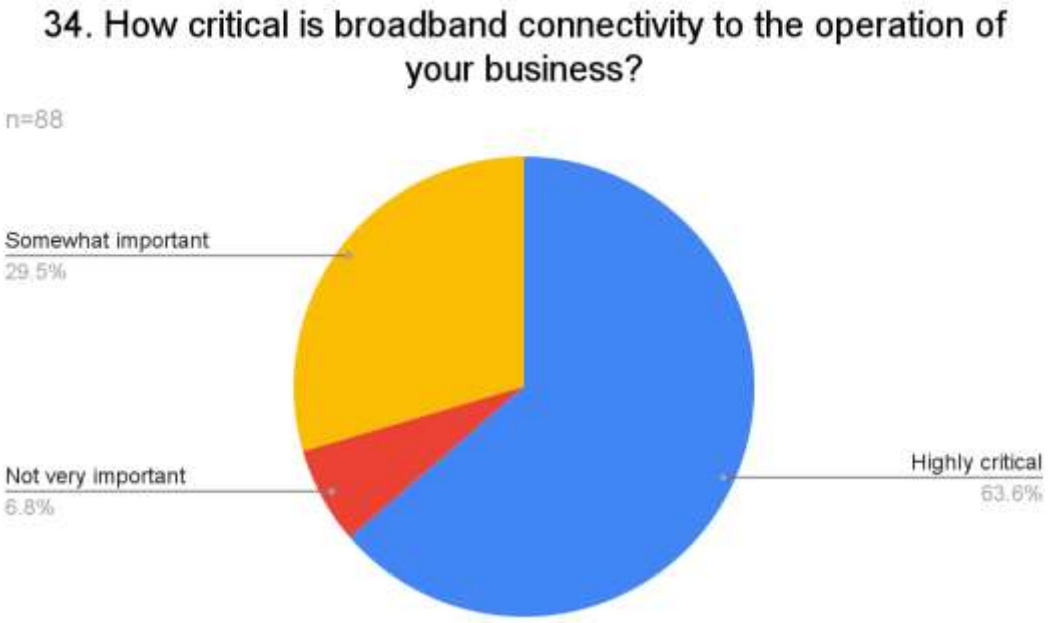
We asked businesses if they had experienced any of the following hindrances over the last 30 days. "Domestic supplier delays" was selected 64 times; "Foreign supplier delays" was selected 40 times; "Difficulty locating alternative suppliers" was selected 33 times; "Delays in delivery/shipping to customers" was selected 27 times; "Production delays at this business" was selected 13 times.



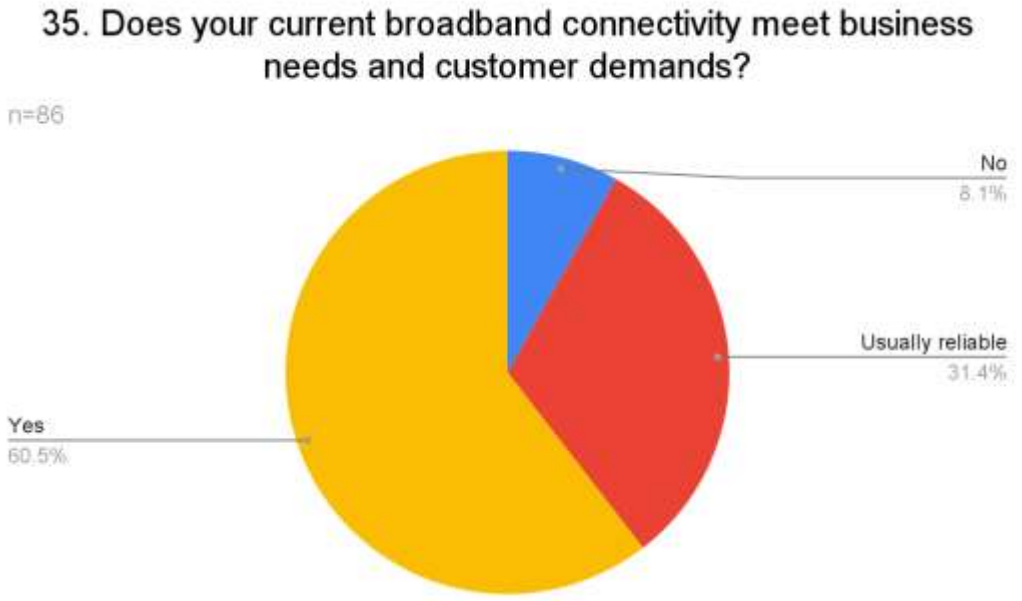
The pie chart above shows the responses from businesses to the question of how the rise of online shopping affected their business. "It has hurt us a lot" was selected 12% of the time; "It has helped us a little" was selected 16% of the time; "Little to no effect" was selected 55% of the time; "It has hurt us a little" was selected 15% of the time; "It has helped us a lot" was selected 2% of the time.



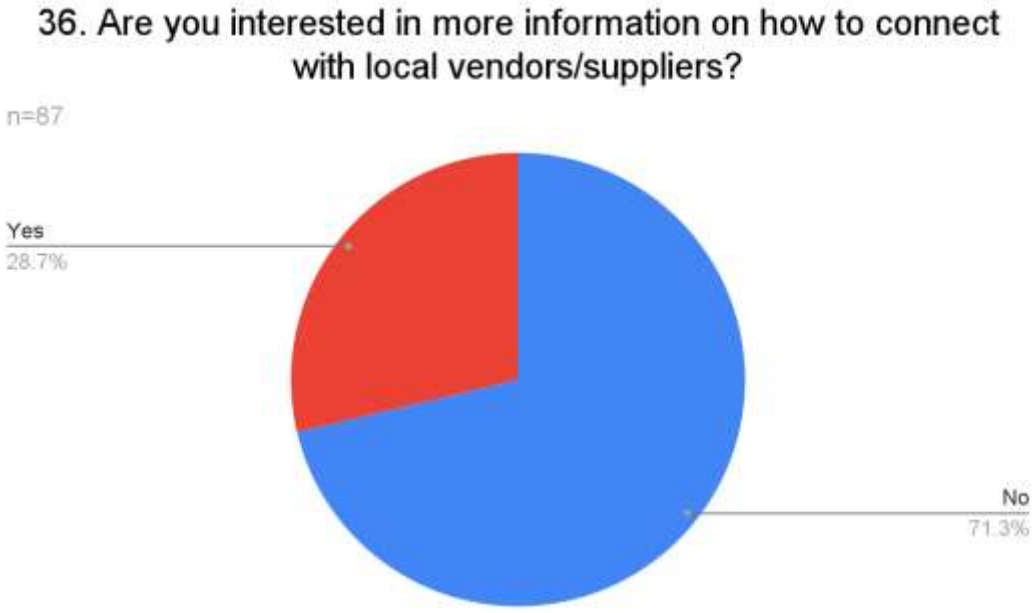
This pie chart shows businesses' responses to a question about if the way they bought and received supplies. "Would like to buy good locally but cannot find local vendors/suppliers" was selected 21% of the time; "No change" was selected 57% of the time; "Buying more goods and services locally" was selected 16% of the time; "Buying less goods and services locally" was selected 6% of the time.



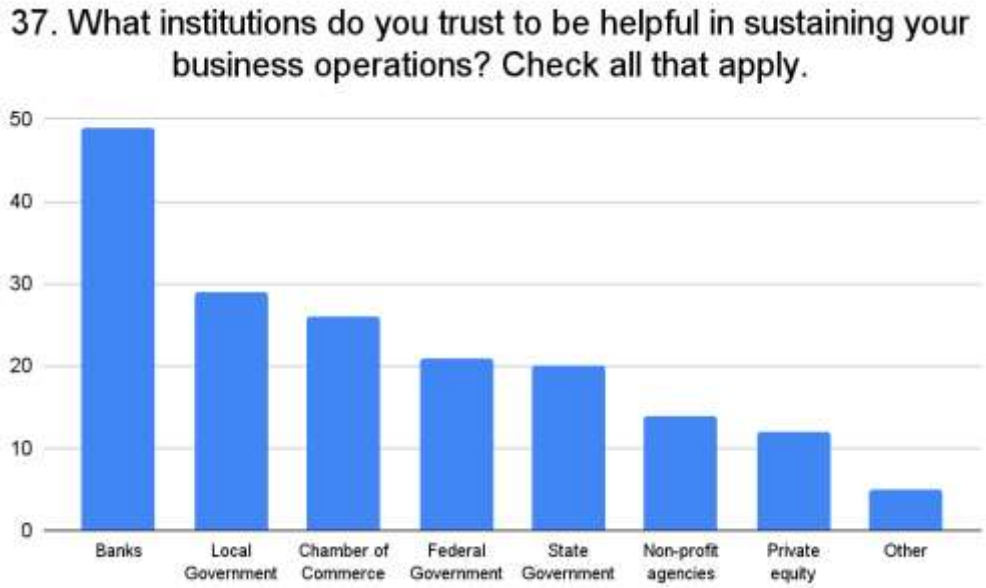
The pie chart above shows the responses from businesses when asked about how vital internet was to their operation. "Highly critical" was selected 64% of the time; "Not very important" was selected 7% of the time; "Somewhat important" was selected 30% of the time.



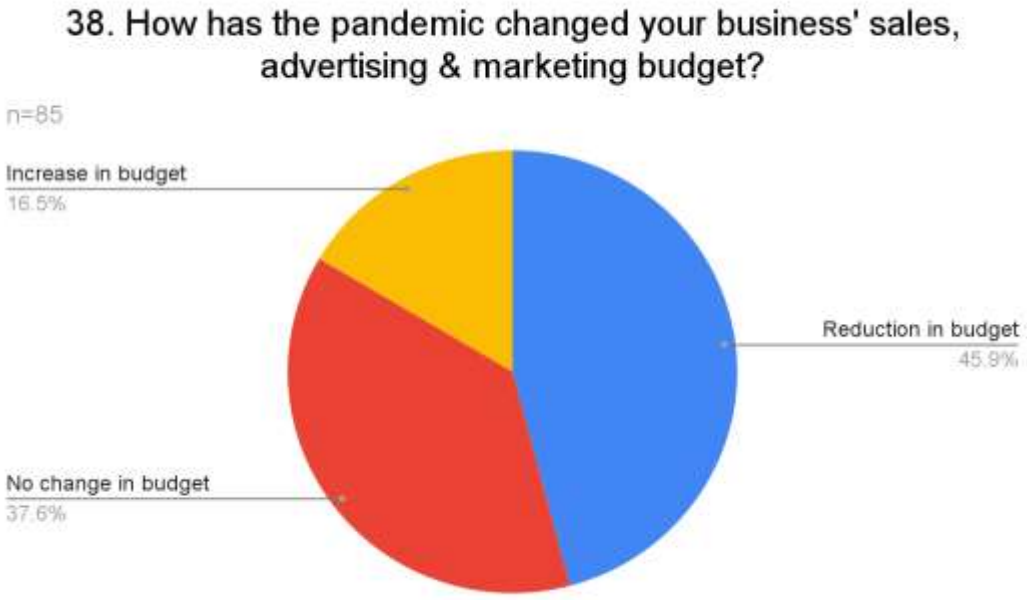
Following up on the previous graph, this pie chart shows the responses to if businesses' internet needs were sufficient to keep up with customer demands. "No, and it is negatively impacting my business" was selected 8% of the time; "Usually reliable but some improvements could be made" was selected 31% of the time; "Yes, my business is connected and is service is reliable" was selected 60% of the time.



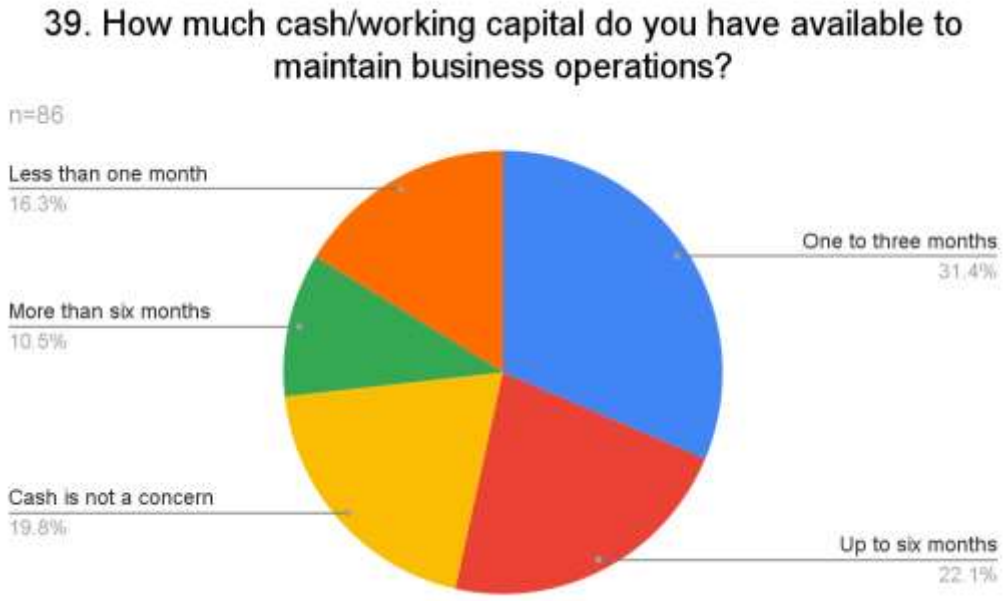
We asked businesses if they would be interested in learning more information about how to connect with local vendors and suppliers. "No" was selected 71% of the time; "Yes" was selected 29% of the time.



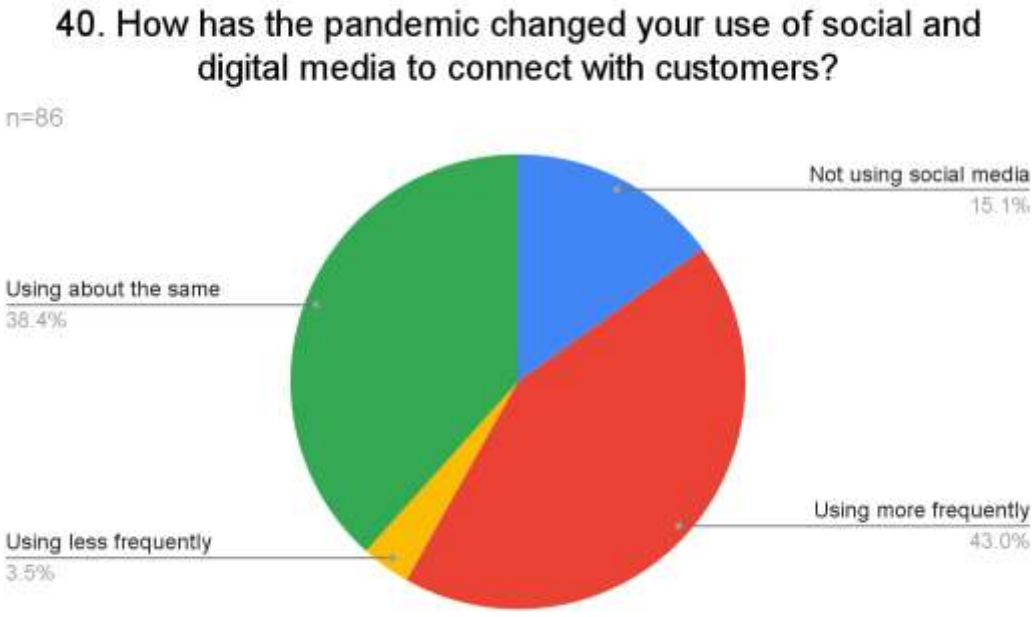
We asked businesses which institutions they trusted to help them maintain operations. "Banks/lending institutions" was selected 49 times; "Local Government" was selected 29 times; "Chamber of Commerce" was selected 26 times; "Federal Government" was selected 21 times; "State Government" was selected 20 times; "Non-profit agencies" was selected 14 times; "Private equity" was selected 12 times; "Other" was selected 5 times.



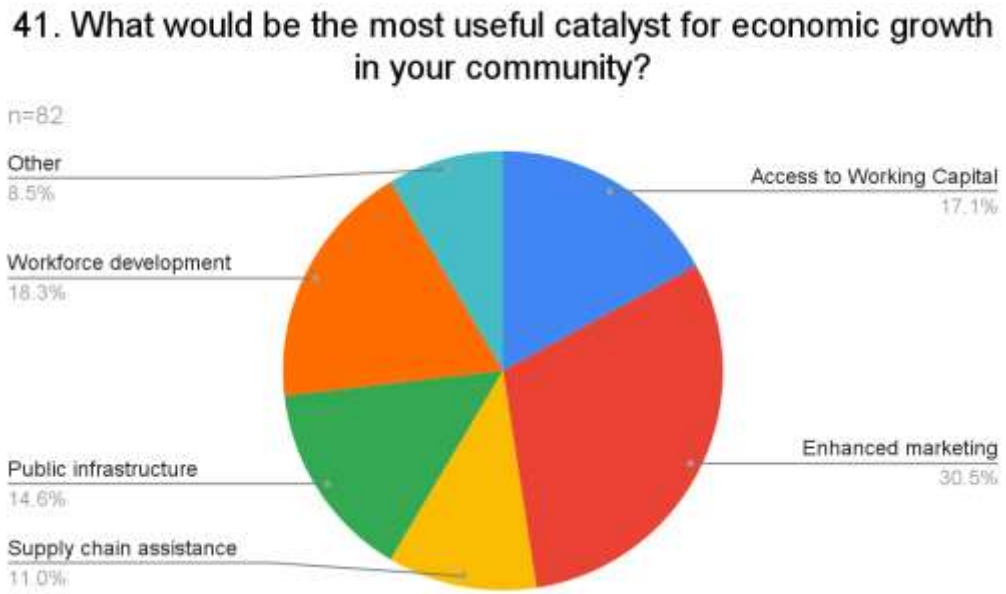
This pie chart shows businesses' responses to a question about their budgeting for advertising and marketing. "Reduction in budget" was selected 46% of the time; "No change in budget" was selected 38% of the time; "Increase in budget" was selected 16% of the time.



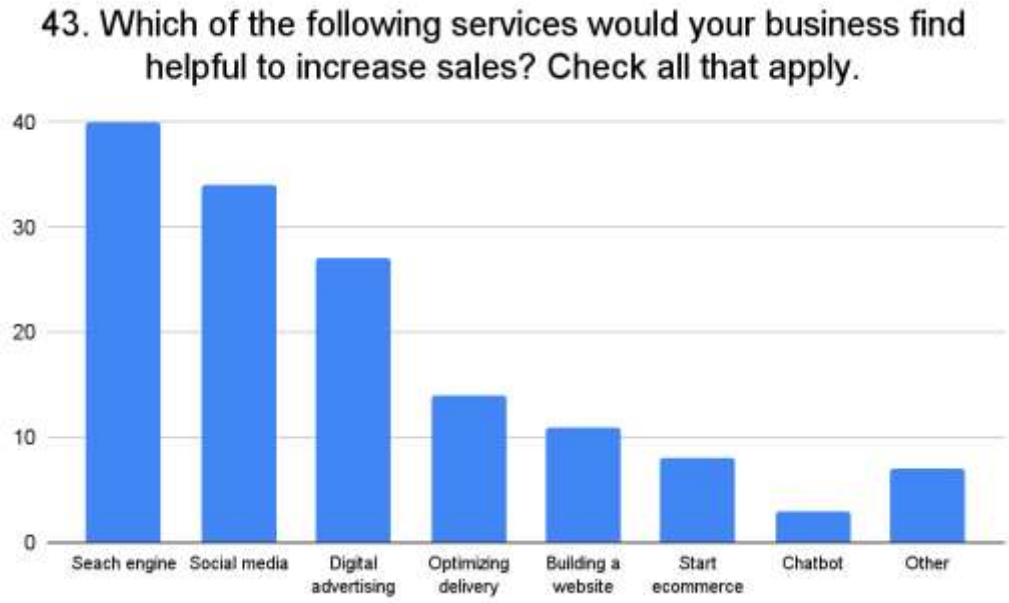
The pie chart above shows businesses' access to capital to keep their business running. "One to three months" was selected 31% of the time; "Up to six months" was selected 22% of the time; "Cash/working capital is not a business concern" was selected 20% of the time; "More than six months" was selected 10% of the time; "Less than one month" was selected 16% of the time.



The pie chart above shows "Not using social/digital media" was selected 15% of the time; "Using social/digital media more frequently" was selected 43% of the time; "Using social/digital media less frequently" was selected 3% of the time; "Using social/digital media about the same" was selected 38% of the time.

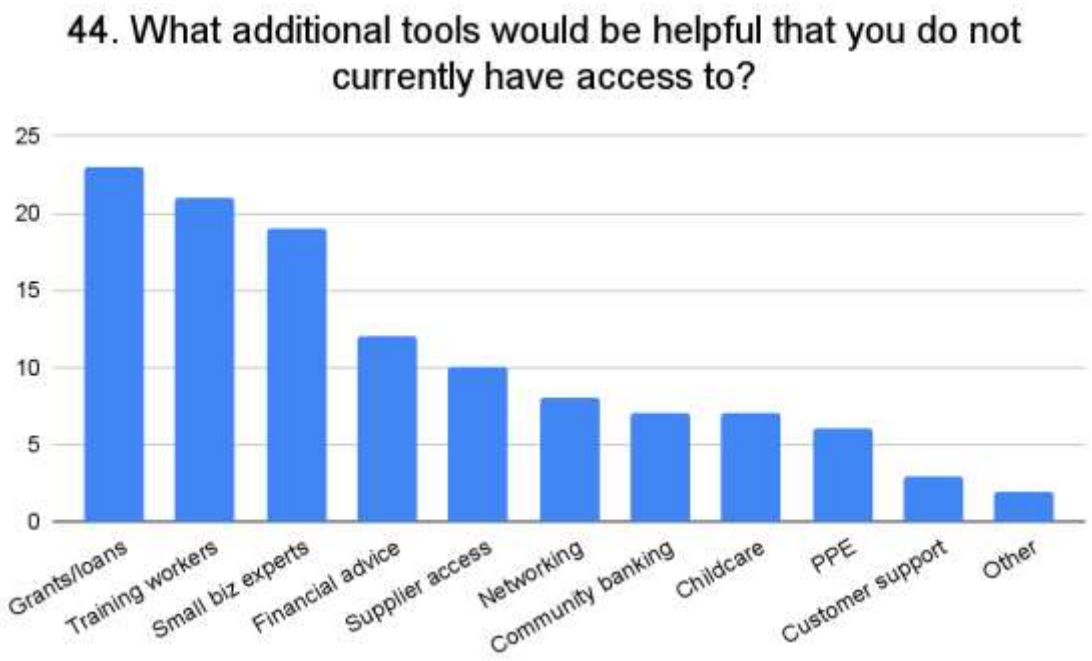


The pie chart above shows how organizations responded when asked about engaging with their local major employers. Only one in four organizations said that they had. "Access to Working Capital" was selected 17% of the time; "Enhanced marketing & promotion to attract tourism, new residents, business expansion" was selected 30% of the time; "Supply chain assistance" was selected 11% of the time; "Public infrastructure improvements" was selected 15% of the time; "Workforce development, training, re-skilling of workers" was selected 18% of the time; "Other" was selected 9% of the time. Answers provided under "other" include COVID mandates ending, everyone getting vaccinated, affordable housing, less regulation for businesses, and focus on family-owned businesses.



The bar graph above shows what services would be helpful in increasing sales. "Using social media accounts (Facebook, LinkedIn, Twitter, Instagram) to engage with customers" was selected 34 times; "Using online/digital advertising" was selected 27 times; "Optimizing customer order fulfillment and

delivery" was selected 14 times; "Building a website" was selected 11 times; "Selling and accepting payments online" was selected 8 times; "Using a chatbot or automated assistant to interact with customers online 24/7" was selected 3 times; "Other" was selected 10 times. Answers given under “other” include fixing the supply chain, economic development boosts, finding qualified help, and tech upgrades.



Businesses were asked what tools would be helpful that they do not have access to. "Access to grants and loans" was selected 23 times; "Recruiting and training workers" was selected 21 times; "Small business experts" was selected 19 times; "Accounting, tax, legal advice" was selected 12 times; "Access to more vendors and suppliers" was selected 10 times; "Networking with other business owners" was selected 8 times; "Community banking resources" was selected 7 times; "Childcare" was selected 7 times; "PPE" was selected 6 times; "Customer service support" was selected 3 times; "Other" was selected 4 times. Answers provided under “other” include fixing the supply chain and easier PPP and grant access.

APPENDIX 3: Economic Resilience Webinar Series

CARES Resilient Economy Webinar Series
Session 1: Resilience & Economic Development

Presenters:
Carla Castillo, Interim Executive Director, HVRC
Lynn Knight, Certified Economic Developer
Stephen Jordan, CEO, Institute for Sustainable Development

1

Regional Efforts

Hudson Valley Regional Council

• Technical Assistance • Advocacy • Coordination • • Education • Planning • Collaboration •

- Economic Development Technical Assistance & Planning
- Water Quality Planning
- Clean Energy Implementation
- Climate Smart Implementation
- Climate Action Planning
- Regional Platforms
  - Materials Management Working Group
  - Mid-Hudson Regional Sustainability Coalition

2

Partners

3

HVRC CARES Project

HVRC's CARES Project is made possible with funding from the US Department of Commerce Economic Development Administration

- CARES Project – Learnings From and Best Practice Responses to the Pandemic
- CARES Resilient Economy Lunch & Learn Webinar Series
  - November 30: Resilience & Economic Development
  - December 7: Retaining Small Businesses After a Crisis
  - December 14: The Role of Economic Developers in Crisis Communications
- Today's webinar

Webinar Presenters

- **Lynn A. Knight** (lynn.knight07@gmail.com, 703-798-7892)– Certified Economic Developer with more than 30 years of multi-sector experience in 35 U.S. states and territories. Previously managed a national program that certified economic development organizations for excellence, and an economic recovery program that deployed hundreds of subject matter experts to disaster communities. She has helped disaster communities in 20 states and U.S. territories.
- **Stephen Jordan** (sjordan@isdus.org, 202-550-0277)– As CEO re-launched the Institute for Sustainable Development in June 2018 in response to the devastating series of disasters that took place in 2017. The Institute has become a resource for municipalities, economic development organizations, chambers of commerce, and corporate citizens on the front lines of community disaster recovery, resilience, and sustainable development.

What is Resilience and Why Does it Matter?

- What is resilience?
- The disaster management life cycle
- Key factors you should address
- Building capacity for resilience
- Partner resources

The Disaster Management Life Cycle

Stephen Jordan, CEO

Institute for Sustainable Development

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Resilience in Disaster Planning

Hurricane Sandy 2012

Natural and manmade disasters can set economies back years

Economic resilience programs are efforts that seek to bolster a community's ability to avoid, withstand and minimize the duration of shocks to your economy

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What Makes a Disaster?

- Unforeseen/Unpredicted
- Overwhelming Magnitude
- Failure of Protection
- Lack of Preparedness/Management Skill-Sets
- Concentration of Exposed Valuables (People, Assets, Trust)
- PANIC and UNCERTAINTY, loss of community wealth

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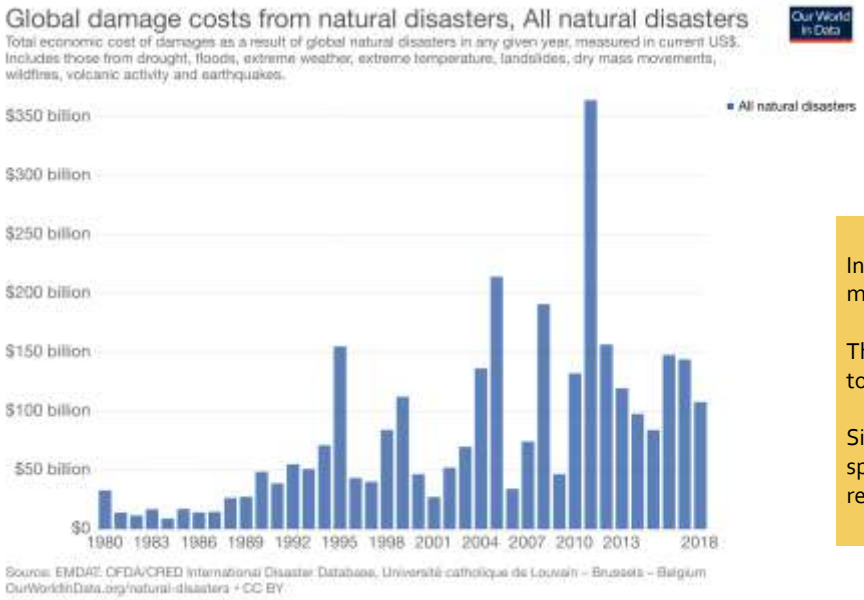
Recovery issues are often the same, whether it's…

- Natural disasters
  - Weather
  - Pandemic
- Man-made
  - Loss of major business or industry
  - Crime, terrorism, civil unrest
  - Power disruptions
  - Hazardous material spills
- Technological
  - Cyber attacks, fraud, theft



In 2021, there were 58 major disasters

The 20 most costly totaled $152.6B

Since 2005, the US has spent $593B on disaster recovery

COVID-19

On August 5, 2021, every state, every county in the nation became part of a federal disaster declaration.

Some disasters risks CAN be predicted

Source: NOAA

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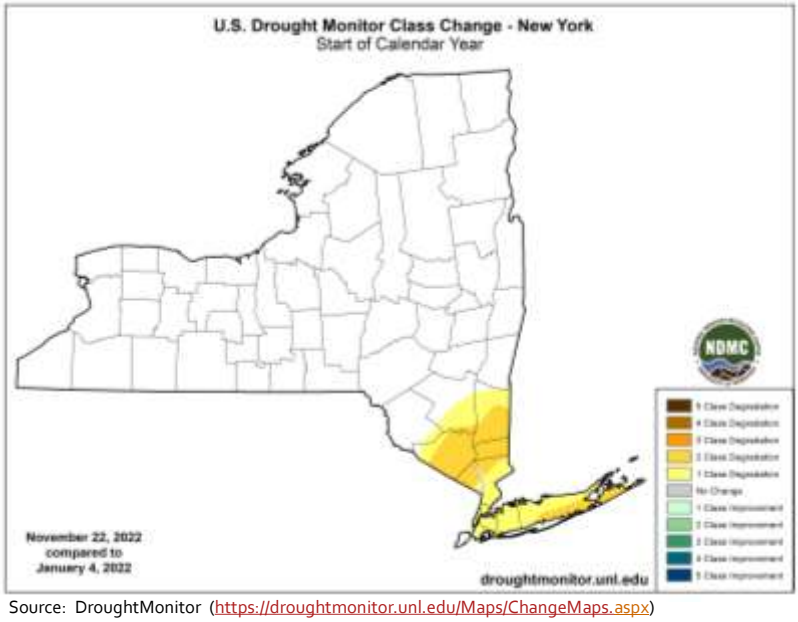
Droughts are another form of disaster, which has impacted your area



Source: DroughtMonitor (https://droughtmonitor.unl.edu/Maps/ChangeMaps.aspx)

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Five Levels of Impact

The Disaster Management Framework

Pre-Disaster Steady State
Planning
Infrastructure
Eco-System Management
Mitigation
Preparedness
Stakeholder Engagement
Threat/Vulnerability Assessments
Investment

Emergency Response
Search and Rescue
Crisis Management
EOC – C_3
ESFs
Contain
R&D for Cure
Social Distancing

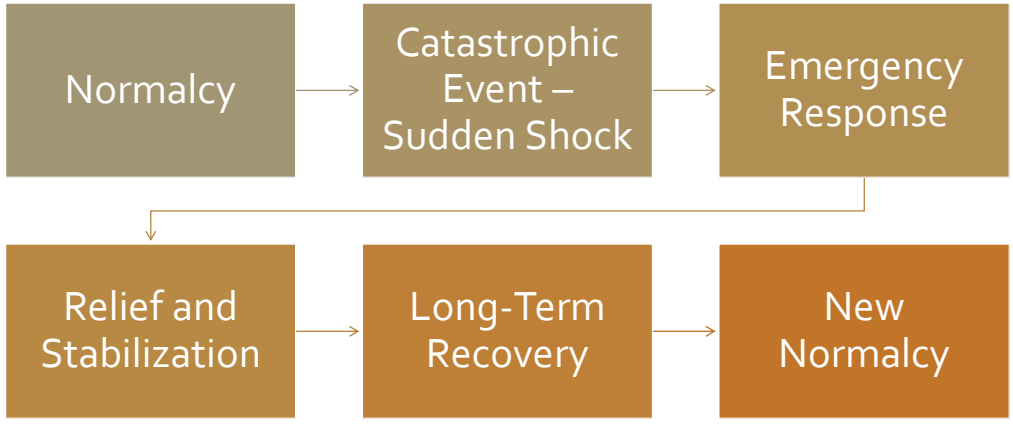
Relief and Stabilization
Mass Care
Restoration of Services
Work Arounds for Damaged and Destroyed Assets
Relief for small businesses, schools and critical community assets
Stabilization and Containment of Threats/Vulnerabilities

Long-Term Recovery
RSFs
Repair, Rebuild and New
Brand/Reputation
Finance
Recovery of community fabric
Embedded resilience investments

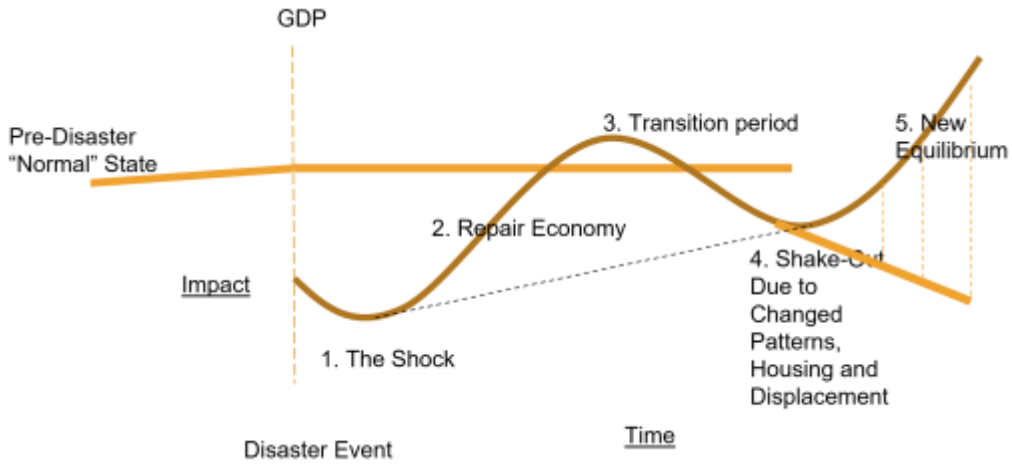
New Steady State
Planning
Infrastructure
Eco-System Management
Mitigation
Preparedness
Stakeholder Engagement
Threat/Vulnerability Assessments
Investment

Car Accident Analogy

The Community Continuum



The Jordan-Alesch Model of Disaster Recovery



Establishing a baseline for Blue Skies

- Normalcy
- Interdependency
- Chronic Stresses
- Investments and Adaptations
- Carrying Capacity

What Factors Affect Carrying Capacity?

- Demographics
- Structure of Economy
- Interdependency
- Quality of Life
- Legacy Systems
- Infrastructure
- Innovation

What are some initiatives that can boost resilience?

Lynn Knight, CEcD

Economic Resilience

Economic resilience is the ability to identify potential risks to revenues, businesses, and jobs to implement strategies that protect critical business functions:

- Customers
- Equipment
- Data protection
- Insurance
- Operations
- Buildings
- Inventory
- Backup Energy
- Business continuity plans

What are some resilience KPIs you can measure that impact the economy?

Topic	Measurement
Building codes/zoning/ permitting	Percentage of buildings that conform to building codes and standards for earthquakes, flooding, wind, fire
Building codes/zoning/ permitting	Number of buildings located in high-risk areas
Business	Updated business database including management contacts
Business	Diversity of businesses and industries
Business	Businesses that have business continuity plans and insurance
Business	Unemployment rate
Education	Presence of business incubator and/or technical assistance programs for community members to encourage entrepreneurship
Financial security	Average and median household income
Financial security	Percentage of population living in poverty
Housing	Updated inventory of housing stock (residential, condos, apartments, affordable housing, seniors' lodges, etc.)
Housing	Inventory of temporary emergency shelters and their capacity
Infrastructure	Percentage of population that has access to broadband internet
Infrastructure	Percentage of population with electrical service
Infrastructure	Sustainable energy sources and use as a percentage of demand
Infrastructure	# and stats of bridges and dams, maintenance schedule
Infrastructure	Plan for maintaining critical infrastructure
Infrastructure	Plan for emergency communications with tourists, should there be a disaster
Infrastructure	Water quality / percentage of population that has access to potable and reliable water

Resilience Leadership

- **VALUES.** "Resilience thinking" should be a core value
- **PLANNING.** Comprehensive planning defines your community's risks and vision for economic resilience
- **ESTABLISH ROLES.** Who can you turn to for what?
- **PRACTICE WITH PARTNERS.** Practice exercises before the disaster

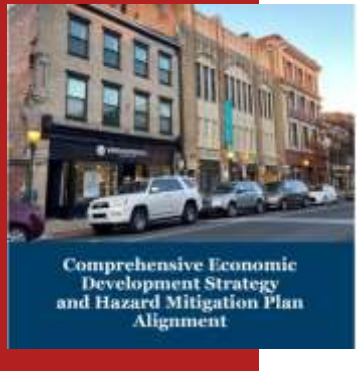
Best Practices in Dealing with Disasters

- INSURANCE is the best means for resilience
- Continuously improve infrastructure & address vulnerabilities
- Promote business continuity/preparedness and ensure that businesses know their vulnerabilities
- Employ safe development practices -locating structures outside of floodplains, Preserve natural buffers

Study resilience best practices for industries in your region

- Recruit new businesses that maximize your labor skills and regional assets
- Train workers for resiliency – ability to shift between industries
- Engage in efforts to assist businesses in surviving the loss of money circulating in the local economy
- Understand available financial resources to help businesses in event of a disaster

Planning for Disaster Recovery



Discuss resiliency in your CEDs plan

- EDA requires that you incorporate resiliency in your CEDS
- Determine gaps and vulnerabilities
- Consider how to align CEDS and Hazard Mitigation Plans
  - New tool launched 9/22
    https://eda.gov/files/disaster/fema_ceds_hmp_alignment_guide_2022.pdf

Pre-disaster planning is far easier than *post*-disaster planning

Action Steps for Resiliency Planning for your CEDS

Evaluate how a disaster could affect the local economy

Inventory current assets and economic drivers to define local dynamics and possible recovery resources

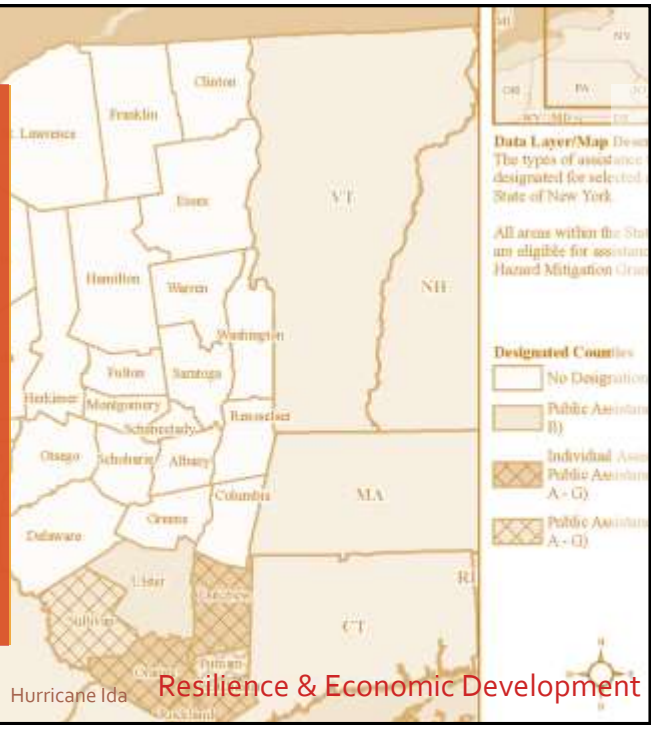
- Key industries/clusters
- Key employers and their location
- Worker issues
- Regulatory changes
- Single industry communities

Roles and Responsibilities of Partners in Recovery & Resiliency

What is your role?

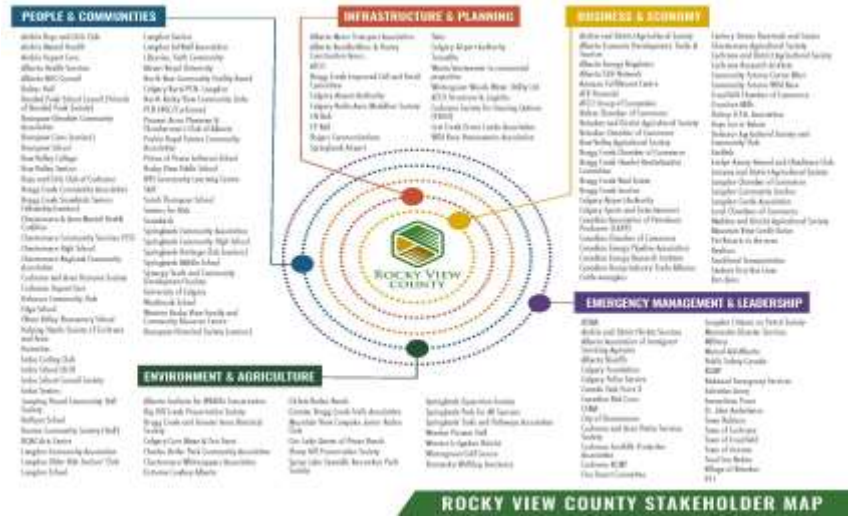
Your Roles After a Disaster

- Inspiration for Community Recovery
- Spokesperson
- Convener
- Analyst
- Visionary / Catalyst
- Gap Filler
- Connector / Advocate
- Appoint Project Managers / Manage Projects (small communities)



Metcalfe's Law Adapted for Resilience

First Law of Networking: Stakeholder Mapping Builds Capacity by Spreading the Work



Responsibilities of Local Government

- First level of response in emergency management
- Assess situation and activate nearest Emergency Operations Center (EOC)
- Request assistance from the state if magnitude of disaster exceeds resources
- Serve as applicant and grant recipient for state and federal assistance

The Role of Economic Developers

- Identify support resources at local, state and federal levels
- Disseminate credible information to businesses
- Represent business interests
- Document economic impacts
- Strengthen collaboration and partnerships among local, regional and state organizations
- Provide input to community's comprehensive plans
  - Give feedback regarding infrastructure and other public services needed to improve commerce
- Update economic development strategic plans

Responsibilities of State Government

- Determine if severity and magnitude of disaster is beyond State's capabilities
- Commit resources to help local jurisdictions recover
- Activate state crisis action team
- Identify activities for immediate response

Non-profits and Business Philanthropy

Non-profits

- Volunteer Organizations Active in Disaster (VOAD)
- Humanitarian relief
- Rebuilding
- Gather donations
- More difficult to control

Business support after disasters

- Donations of goods and services
- Can offer use of valuable equipment, warehouse space, professional expertise
- Cash donations to philanthropic organizations like the Red Cross

Where Do Federal Funds Come From?

Congressional Budget Appropriations
- Disaster Relief Fund
- Disaster Supplementals
- Housing & Urban Development (HUD): CDBG-DR

Disaster funds that are part of "normal" priorities
- Economic Development Administration (EDA)
- Department of Transportation
- U.S. Department of Agriculture (USDA)

Disaster Relief Fund

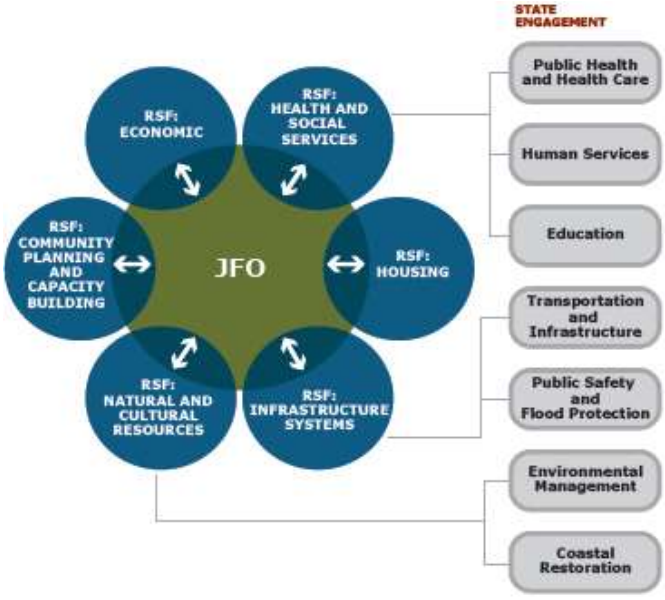
DRF created under the Stafford Act

FEMA administers funds for:

Mass care	Infrastructure repairs	Debris clearing	Aid for uninsured families	Mitigation of future disaster effects

Federal Government Recovery Support Function (RSF)

National Disaster Recovery Framework brings together recovery capabilities of up to 30 Federal departments and agencies



Potential Federal Partners for Economic RSF

- **Commerce/ED**
- FEMA
- SBA
- USDA
- NIST
- MBDA
- HUD
- DOL
- Treasury
- Interior
- EPA
- HHS
- FDIC

Economic RSF Functions

Improve the flow of info

- Assess impacts to the economy
- Retain businesses
- Connect business with recovery services
- Support economic diversification
- Consider workforce impacts - DOL
- Increase access to financing - SBA

Economic RSF Initiatives

- Workforce development
- Entrepreneurship
- Community economic development planning
- Business development
- Federal funding management planning
- Information dissemination

How do you measure a good recovery?

- DURATION of return to Normalcy
- Soft landing from repair economy to normal economy
- Patch and Repair compared to Upgrade and Replace
- What if you have to deal with a new Normal due to the severity of the catastrophe? Getting Right-Sizing Right

How do you measure a good resilience program?

- Before a disaster
  - Risks are identified and addressed
  - Reduced obsolescence of infrastructure
  - Hazard mitigation
  - Enhanced natural defenses
  - Capacity & roles established
- After a disaster
  - IMPACT versus MAGNITUDE of event
  - Dramatic reduction in repetitive losses

Enhancing Long-Term Recovery, Resilience, and Transformation

Recap

- What is resilience?
- The disaster management life cycle
- Key factors you should address
- Building capacity for resilience
- Partner resources

Questions?

Upcoming Webinars in Series

CARES Resilient Economy Webinar Series

- **Lunch & Learns:** Wednesdays 12:00 – 1:30PM
  - **December 7:** Retaining Small Businesses After a Crisis
    - Small businesses are the backbone of our economy, yet often they get left behind to fend for themselves when there is a crisis. This webinar will explore why it is so important to pay attention to business retention, to understand who is the most vulnerable, and ways you can help ensure small business survival as part of your economic recovery. We will discuss specific steps you can take as well as creative financing and technical assistance to help them get back on their feet.
  - **December 14:** The Role of Economic Developers in Crisis Communications
    - Although health and safety always come first, a second priority for communities is to get businesses back up and running, people employed, and local revenues flowing after a crisis. This webinar will discuss why it is so important that economic developers play a role in keeping businesses informed and communicating the "back in business" message. We will discuss what you can do to prepare, establishing roles, best practice examples, and pitfalls to avoid.

Hudson Valley Regional Council

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CONTACT US

HVRC
105 Ann Street, Ste2
Newburgh, NY 12550
845-564-4075

HVRC Newsletters

Carla C. Castillo G.
Interim Executive Director
ccastillo@hudsonvalleyrc.org

Eleanor Peck
Mid-Hudson Clean Energy Communities Manager & CEC Coordinator
epeck@hudsonvalleyrc.org

Melanie Patapis
Climate Smart Communities Coordinator
mpatapis@hudsonvalleyrc.org

Mary Lambert
Climate Action Planning Institute Coordinator
mlambert@hudsonvalleyrc.org

Caleb Fine
Economic Resilience Coordinator
cfine@hudsonvalleyrc.org

Hudson Valley Regional Council

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CARES Resilient Economy Webinar Series
Session 2: Retaining Small Businesses After a Crisis

Presenters:
Carla Castillo, Interim Executive Director, HVRC
Lynn Knight, Certified Economic Developer
Calandra Cruickshank, Founder & CEO, StateBook International

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Regional Efforts

Hudson Valley Regional Council

• Technical Assistance • Advocacy • Coordination • • Education • Planning • Collaboration •

- Economic Development Technical Assistance & Planning
- Water Quality Planning
- Clean Energy Implementation
- Climate Smart Implementation
- Climate Action Planning
- Regional Platforms
  - Materials Management Working Group
  - Mid-Hudson Regional Sustainability Coalition

2

Partners

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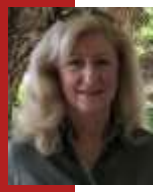
HVRC CARES Project

HVRC's CARES Project is made possible with funding from the US Department of Commerce Economic Development Administration

- CARES Project – Learnings From and Best Practice Responses to the Pandemic
- CARES Resilient Economy Lunch & Learn Webinar Series
  - November 30: Resilience & Economic Development
  - December 7: Retaining Small Businesses After a Crisis
  - December 14: The Role of Economic Developers in Crisis Communications
- Today's webinar

Webinar Presenters



- **Lynn A. Knight** (lynn.knight07@gmail.com, 703-798-7892) – Certified Economic Developer with more than 30 years of multi-sector experience in 35 U.S. states and territories. Previously managed a national program that certified economic development organizations for excellence, and an economic recovery program that deployed hundreds of subject matter experts to disaster communities. She has helped disaster communities in 20 states and U.S. territories.
- **Calandra Cruickshank** (calandra@statebook.com, 845-853-3760) – Founder & CEO of StateBook International, the premiere location intelligence data provider in the US, trusted by Fortune 500 companies, the U.S. Department of Commerce, and local and regional governments across the country. As a partner with the International Sustainable Resilience Center and advisor to Climate Alpha, Calandra works with communities to improve economic resilience and develop data-driven strategies based on actionable analytics and insights.

Supporting your businesses after a crisis

In this presentation

- Why getting help to small businesses is critical
- 5 ways to help businesses after a crisis
- What community leaders can do

Taking care of business

- After a disaster, businesses typically fend for themselves.
- Help is scarce.
- A best case is insurance, cash flow and a business continuity plan.
- Getting people back to work and money flowing in is essential to recovery!

Typically, small businesses are not prepared

- 60% don't have an emergency plan.
- Without a plan, 43% won't reopen after a crisis .
- 75% fail within 3 years.
- Too much of your economy to lose!

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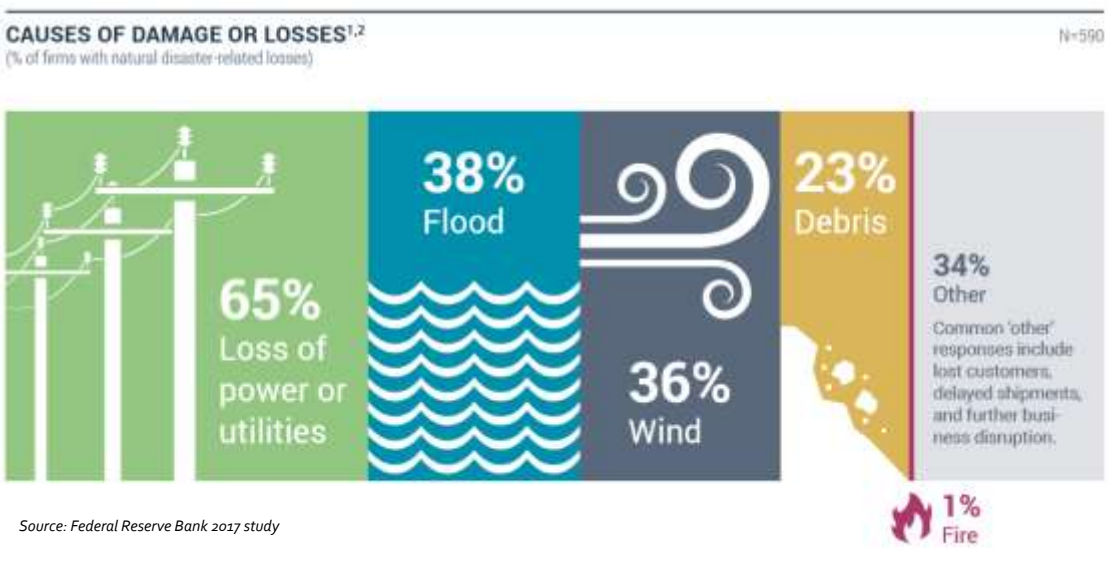
Who is Most Vulnerable?

Businesses that are…

- Young
- Minority or women-owned
- Businesses that lease, versus own location
- Tourism, retail, wholesale businesses
- Manufacturing businesses that face disrupted supply chains
- Those that rely on the local market or have little market diversity
- Located where other businesses don't re-open
- Distressed downtown
- Near a major anchor that is closed
- In highly competitive industries
- Can't adjust to changing situations



5 ways to help businesses after a crisis

1. Let them back in!

Business owners not allowed re-entry can do further damage.

In Galveston after Hurricane Ike, business owners not allowed to enter for 12 days, allowing flood waters to destroy facilities and inventory.

In Colorado after 2013 floods, some businesses not allowed in for 6 weeks!

In FL Keys after 2017 Hurricane Irma, some businesses chose not to evacuate rather than being locked out.

- Best re-entry is through a tiered community re-entry system.
- Allows for safe, orderly return of community members and to facilitate a timely response to disaster.

How it works:

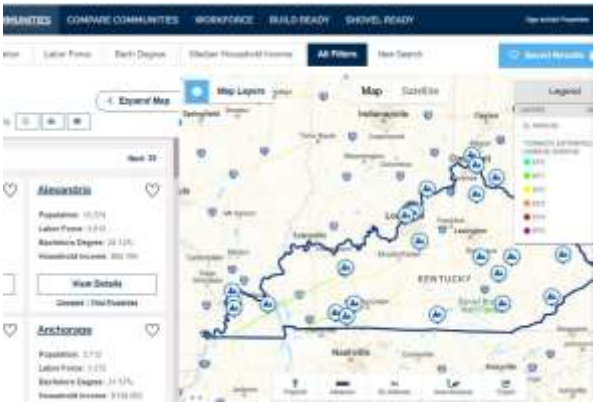
- ID cards or passes are issued for individuals and businesses.
- Local law enforcement is trained to recognize cards/passes and allow access when the appropriate "tier" is activated.

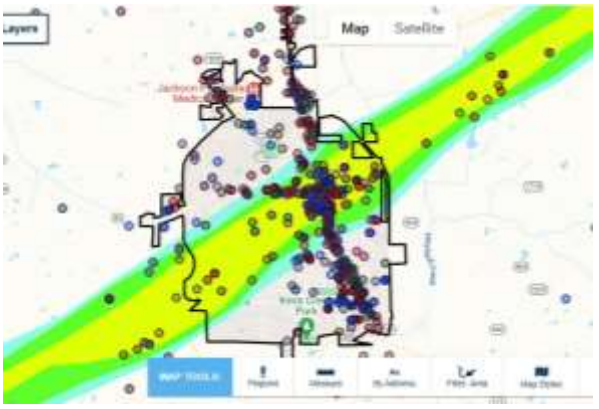
Louisiana's Reentry Program

- Codified re-entry plan with local economic development organizations and government
- www.lsp.org

2. Identify who was impacted

- In a disaster declaration, entire counties will be designated.
- But how do you know which businesses actually had direct impact?
- Secondary impact?





How tornado tracks from NOAA were added to a GIS map of business locations

Map data generated list of businesses by location, NAICs code with contacts

1,147 businesses representing 9,771 employees were identified

Name	Address	City	State	Zip	Phone	Lat	Long	naics	naicsd	EstEmploy	EstSales
Cornerstone Construction LLP	7102 Chandlers Rd	Auburn	KY	42206	NULL	36.941767	-86.793814	236115	Construction Companies	1	211000
Chandlers Chapel United Methodist Church	7760 Chandlers Rd	Auburn	KY	42206	(270) 542-6354	36.949627	-86.790921	813110	Churches	3	0
Choppers Salon	36 Main St	Benton	KY	42025	(270) 252-0034	36.877402	-88.345388	812112	Beauty Salons	5	147000
Briensburg United Methodist Church	1908 Briensburg Rd	Benton	KY	42025	(270) 527-8758	36.900737	-88.321668	813110	Churches	1	0
Seaford Lawn & Garden Equipment, Inc	91 Main St	Benton	KY	42025	NULL	36.879673	-88.34478	561730	Lawn & Grounds Maintenance	2	120000
Houston Smith Equipment & Motor SLS	3272 Tom Lane Rd	Benton	KY	42025	(270) 703-1111	36.812891	-88.484858	484230	Trucking-Overdimensional Load	1	202000
The Intuitive Life Advisor	825 Dyke Rd	Benton	KY	42025	(815) 281-1077	36.914114	-88.294521	561311	Personal Coaching	3	278000
D C Electric Inc	1262 Dyke Rd	Benton	KY	42025	(270) 527-8664	36.915129	-88.287606	238210	Electric Contractors	20	2345000
U-Haul Neighborhood Dealer	38 Main St	Benton	KY	42025	(270) 527-4503	36.877007	-88.345683	532120	Truck Renting & Leasing	5	1844000
Seaford Lawn Equipment	91 Main St	Benton	KY	42025	(270) 527-3550	36.879673	-88.34478	423820	Tractor-Dealers (Whls)	2	2130000
Cole Cemetery Association Inc	16 Bondurant Ln	Benton	KY	42025	NULL	36.829525	-88.428462	813910	Associations	2	0
Marshall County Refuse Disposal	835 Benton Briensburg Rd	Benton	KY	42025	(270) 527-8437	36.880762	-88.330217	921120	Government Offices-County	3	0
Lake Life Powersports & Marine	46 Main St	Benton	KY	42025	(270) 527-0895	36.876137	-88.34626	441222	Boat Dealers Sales & Service	6	1303000
State Farm Insurance	36 Main St	Benton	KY	42025	(270) 252-7333	36.877402	-88.345388	524210	Insurance	5	675000
Five & Dime	49 Main St	Benton	KY	42025	(270) 527-5660	36.875154	-88.344892	453310	Antiques-Dealers	2	671000
Z's Mattresses	265 Cross Creek Farms Rd	Benton	KY	42025	(270) 252-9557	36.909578	-88.310562	442110	Mattresses	3	675000
Dollar General	3738 US Highway 68 E	Benton	KY	42025	(859) 995-2735	36.894294	-88.304148	452319	Variety Stores	7	1026000
Crystal & Co	40 Main St	Benton	KY	42025	(270) 527-5020	36.876826	-88.345758	812112	Beauty Salons	4	147000
America's Mattress	265 Cross Creek Farms Rd	Benton	KY	42025	(270) 761-9997	36.909578	-88.310562	442110	Mattresses	3	675000
Tools Inc	2711 US Highway 68 E	Benton	KY	42025	(270) 527-0107	36.899933	-88.318459	333517	Machine Tools-Manufacturers	3	619000
Egner Chiropractic & Rehab Center	619 Old Symsonia Rd	Benton	KY	42025	(270) 527-3050	36.868745	-88.369218	621310	Chiropractors DC	3	240000
Nelson Trucking Excavating	1833 Benton Briensburg Rd	Benton	KY	42025	(270) 252-3342	36.896313	-88.326302	238910	Excavating Contractors	10	1173000
Gerald D Chambers & Sons Inc	30 Main St	Benton	KY	42025	(270) 527-8757	36.878062	-88.347303	238910	Excavating Contractors	19	2228000
Marshall County Hospital Home Health	673 Old Symsonia Rd	Benton	KY	42025	(270) 527-8084	36.86949	-88.370139	621610	Home Health Service	12	516000
Rad Accessories LLC	46 Main St	Benton	KY	42025	NULL	36.876137	-88.34626	999990	Nonclassified Establishments	0	0
Johnsson Directorys Plus Inc	667 Shamewell Rd	Benton	KY	42025	(270) 527-3032	36.819359	-88.475941	511140	Publishers-Directory & Guide (Mfrs)	11	2638000
5 Rivers Taxidermy & Outfitters LLC	157 Chase Loop	Benton	KY	42025	(270) 703-7600	36.877483	-88.345779	115210	Taxidermists	1	161000

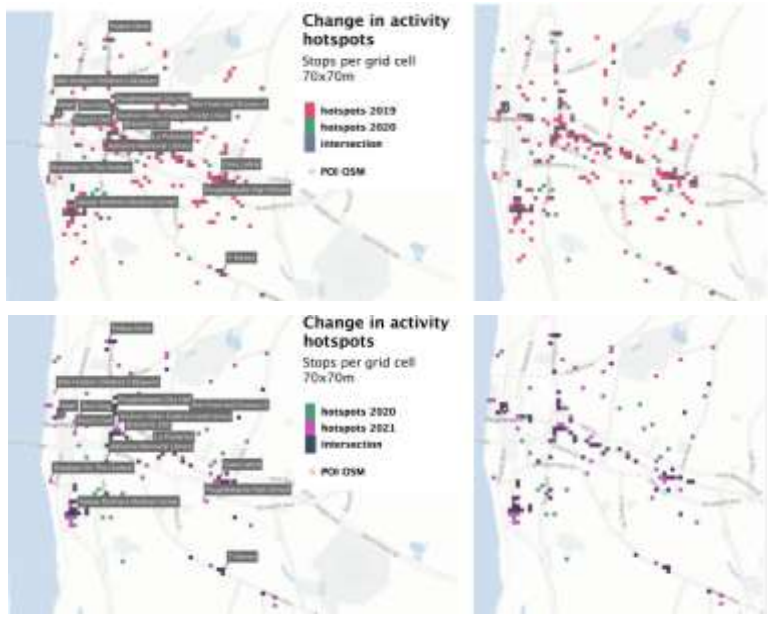
Real-time cell phone data

Mobility Monitor

Changes in hotspot activity

Poughkeepsie, NY
2019 – 2021

70 x 70 meter grid



Mobility Monitor

POUGHKEEPSIE, NY

Dutchess County

town	category	place_name	year	%_up_to_15min	%_from_15min_1hour	%_from_1hour_to_3hours	%_from_3hours_to_6hours	%_more_than_6hours	all_dwell_types count
Poughkeepsie	restaurant	Palace Diner	2019	12.5	39.03	26.04	0.69	0.35	288
Poughkeepsie	restaurant	Palace Diner	2020	0	0	0	0	0	0
Poughkeepsie	restaurant	Palace Diner	2021	52.32	28.27	18.14	0.42	0.42	237
Poughkeepsie	town_hall	Poughkeepsie City Hall	2019	35.4	27.33	24.84	11.8	0	161
Poughkeepsie	town_hall	Poughkeepsie City Hall	2020	20.97	45.16	20.97	12.1	0.81	124
Poughkeepsie	town_hall	Poughkeepsie City Hall	2020-2019	-14.43	17.83	-3.87	0.3	0.81	-37
Poughkeepsie	town_hall	Poughkeepsie City Hall	2021	30.77	37.19	19.23	12.19	0.64	156
Poughkeepsie	town_hall	Poughkeepsie City Hall	2021-2020	9.8	-7.98	-1.74	0.08	-0.17	32
Poughkeepsie	convenience	La Poblanita	2019	46.81	27.93	17.97	11.44	1.8	278
Poughkeepsie	convenience	La Poblanita	2020	68.47	24.12	4.12	3.53	1.76	170
Poughkeepsie	convenience	La Poblanita	2020-2019	19.66	-3.81	-7.85	-7.91	0.16	-108
Poughkeepsie	convenience	La Poblanita	2021	66.85	24.72	3.37	1.12	3.93	178
Poughkeepsie	convenience	La Poblanita	2021-2020	0.38	0.6	-0.75	-2.41	2.17	8
Poughkeepsie	bank	TD Bank	2019	82.35	14.22	1.47	0.98	0.49	204
Poughkeepsie	bank	TD Bank	2020	0	0	0	0	0	0
Poughkeepsie	bank	TD Bank	2021	92.86	7.14	0	0	0	126

The hotspots (top-5 percentile) locating restaurants and bank are not observed through all periods (2019-2020-2021). Declining town halls and convenience stores visits over the 2019-2020 period, increasing activities in 2021.

Mobility Monitor

POUGHKEEPSIE, NY
Dutchess County

Dynamics of visitors' origins change 2019-2021

Time delta 2020-2019

Time delta 2021-2020

Real-time cell phone data

Mobility Monitor

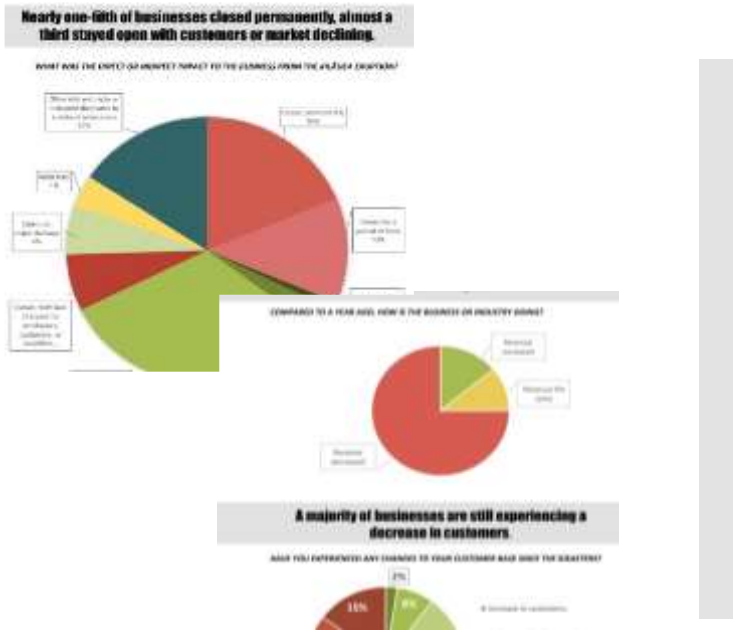
Changes in hotspot activity

Poughkeepsie, NY
2019 – 2021

70 x 70 meter grid

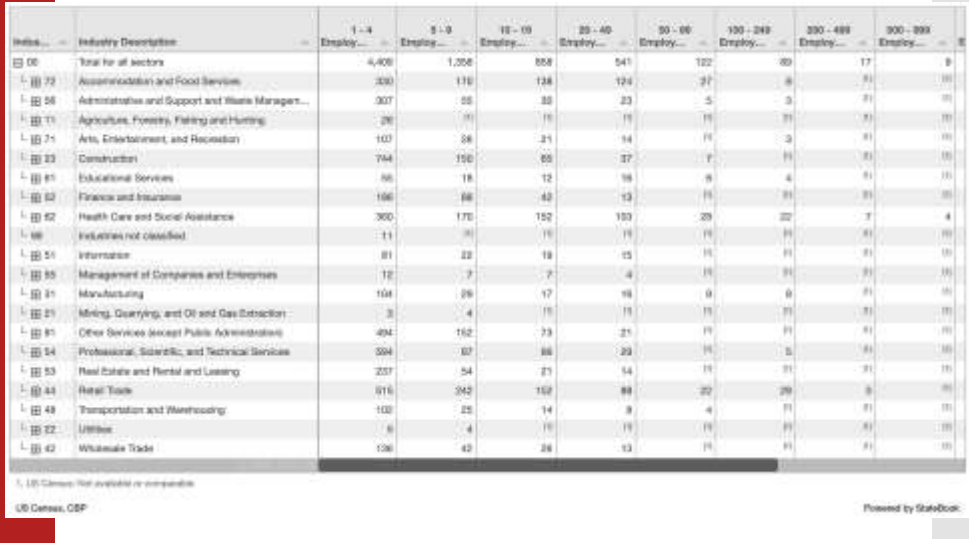
3. Conduct a business assessment

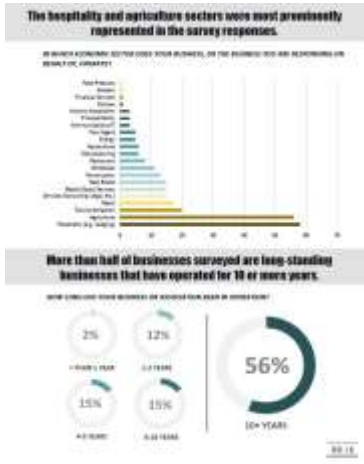
- After the tornadoes, the **Mayfield-Graves, Ky Chamber of Commerce** conducted a telephone survey of 258 businesses.
- After **Hurricanes Harvey, Irma, Maria, Michael**, volunteers did door to door surveys in small towns and business districts.
- **In Hawaii** after the volcano eruption of 2018, businesses were surveyed.



3. Conduct a business assessment

Your small businesses are among your largest employers!





Hawaii business assessment after 2018 Kilauea eruption and Hurricane Lane.
Let's take a look at the results…

4. Provide technical assistance

- Case management
- Help re-write business plans
- Financial management support
- Marketing help
  - Improve website to reach beyond local customers
- Business continuity training
- Workforce retention strategies and policy re-writes
- Re-training support for employees
- Commercialization and technology-transfer programs
- Market analysis

Services Provided by the SBDC

AMERICA'S SBDC KENTUCKY

- BUSINESS COACHING
- ASSISTANCE FOR SMALL BUSINESS OWNERS SEEKING CAPITAL
- CONDUCT MARKET RESEARCH
- PROVIDE CONNECTIONS TO OTHER SMALL BUSINESS RESOURCES

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5. Identify creative financing

- Small business owners will do anything to remain independent and avoid debt.
- They borrow from family or friends, take out second mortgages, max out credit cards
- TRUTH: If they don't get some financial help, they're at greater risk.

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Financing makes a huge difference

Businesses typically need under $100K to get by after a disaster -- most under $25K

- **SBA loans**
- **Bridge loans** – low or no-interest loans until longer-term loans come through
- **Emergency microloans** – up to $5,000 loan from a local or regional economic development organization
  - Revolving Loan Fund (RLF)
  - Simple collateral requirements
  - Quick lending decisions
- **Forgiveable loan** – credit for resilience
- **Grants** – typically small

Example of a state program

Florida's Bridge Loan Program

- No-fee financing so businesses can have quick access to working capital.
- Made available within the first few weeks of a disaster.
- Usually available for just a few months
- Must be repaid when term expires
  - Should be replaced with a long-term loan

U.S. Small Business Administration
SBA
Your Small Business Resource

- Business and Home Loans for Property Damage

Low-interest direct loans to businesses of all sizes, nonprofits, homeowners and renters not covered by insurance or other recovery funds to repair or replace disaster-damaged or destroyed real estate, personal property, machinery and equipment, inventory, and other business assets.

- Economic Injury Loans for Working Capital

Low-interest loans to small businesses and nonprofit organizations. Economic Injury Disaster Loans to help meet working capital needs caused by the disaster.

Economic Injury Disaster Loan assistance is available regardless of whether the business suffered physical property damage.

Types of SBA Disaster Loans, Loan Limits and Loan Terms

Types of Loans	Borrowers	Purpose	Max. Amount
Business Loans	Businesses and private nonprofits	Repair or replace real estate, inventory, equipment, etc.	$2 million *
Economic Injury Loans	Small businesses and private nonprofits	Working capital loans	$2 million *
Home Loans	Homeowners	Repair or replace primary residence	$200,000
Home Loans	Homeowners and renters	Repair or replace personal property	$40,000
Mitigation	Businesses, private nonprofits and homeowners.	Mitigate / prevent future loss of the same type	20% of verified physical damage. Homeowners limited to $200,000

Interest rates **as low as**:
2.830 % for businesses,
1.875 % for nonprofit organizations, and
1.438 % for homeowners and renters, with terms up to 30 years.

The first loan payment is due **18 months** from the **date on the SBA Promissory Note**.

The filing deadline to submit an applications is:
Mar. 14, 2022, for physical property damage, and
Sept. 12, 2022, for economic injury applications.

Lending | SBA Microloans

Smaller Loans range from $500 - $50,000 for small businesses

- Borrowers receive business training and technical assistance on topics such as money management, business plan development, marketing and financing.
- For clients who cannot obtain traditional bank financing because of insufficient or no collateral, a low credit score, lack of business experience, etc.
- Made possible through the U.S. Small Business Administration.

NY State Revolving Loan Fund

Micro loans $500 to $25,000 for businesses under 100 employees, regular loans up to $20M

Hudson Valley AgriBusiness
DEVELOPMENT CORPORATION

$2.6M Hudson Valley Agriculture Revolving Loan Fund

CARES Act funding through US EDA grant for seed funding

Revolving loan fund will support capital access needs, address the increasing demand for local food supply, and enable businesses to adapt operations to protect local farms and the regional food system

Ulster, Dutchess, Columbia, Greene, Orange and Sullivan counties

Forgivable Loan

- Businesses must meet resiliency goals, such as retaining employees, staying in business
- Loans are forgiven if a business reopens within 12 months of receiving the loan
- Businesses must have already obtained a disaster loan from the SBA, or another financial institution

Emergency Small Business Grants

- Government usually can't give money to existing businesses, but can create "forgivable loan"
- A good option is a "gift" from a foundation, but most foundations don't give money to businesses
- You can set up a local grant through a foundation specifically for disaster recovery

Communities creating their own grants

- Bastrop County, Texas –
- Thousands of acres burned in 2001, 2015, then floods and a tornado
- Worked with United Way, set up local 501(c)3 to raise money that could be used to help small businesses
- Opened a recovery center
- Created a website where people could donate http://www.bastropcountylongtermrecovery.org

Additional Resilience & Recovery Strategies & Funding Sources

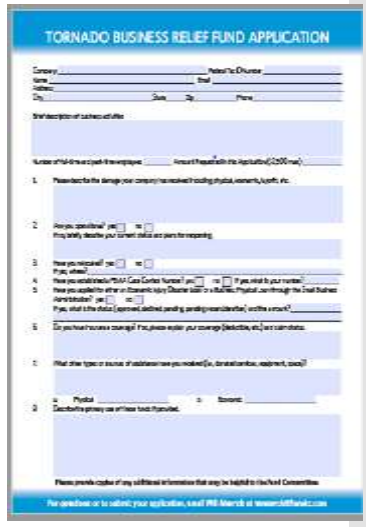
- Establish emergency business recovery center
  - Funding may be available from your state departments of emergency management or FEMA
- Build your economic risk profile - identification, frequency of specific types of disasters and past impacts
  - Funding may be available from your state departments of emergency management or FEMA
- Develop a funding mechanism to incentivize businesses to encourage their development of continuity plans
  - The Resilience Innovation Hub + Insurance Information Institute are developing a national model to incentivize continuity planning.
- Organize resources to protect and quickly restore essential services such as power, water, and telecommunications infrastructure
  - The Cybersecurity and Infrastructure Security Agency offers a guidebook to creating these partnerships.

https://resiliencescorecard.org/

COVID 19 Emergency Grants

Business to Business in-kind Assistance

- Especially helpful when large businesses want to help smaller businesses in their supply chain.
- In 2013, an EF-5 tornado in Moore, OK hit 300 businesses in path and 2,100 within 1 mile.
- Greater Oklahoma City Back to Business Initiative
  - Impacted businesses posted needs for items such as furniture, space, equipment.
  - Local businesses not impacted could offer what they had available to lend or give to impacted business.
- Regional Greater Oklahoma City Chamber worked with local chambers to establish the Tornado Business Relief Fund.


TORNADO BUSINESS RELIEF FUND APPLICATION

What you can do to help close local gaps

Encourage	Encourage businesses to get technical assistance
Persuade	Persuade banks and investors to invest in a small business recovery fund and low-interest loans
Support	Support a Revolving Loan Fund (RLF) using federal seed funds from EDA
Create	Create a grant fund via donations to community foundations or in-kind donations between businesses

Questions?

Lynn Knight
Lynn.knight07@gmail.com

Calandra Cruickshank
calandra@statebook.com

Thank you for supporting your small businesses!

Upcoming Webinars in Series

CARES Resilient Economy Webinar Series

- **Lunch & Learns:** Wednesdays 12:00 – 1:30PM
  - **December 14:** The Role of Economic Developers in Crisis Communications
    - Although health and safety always come first, a second priority for communities is to get businesses back up and running, people employed, and local revenues flowing after a crisis. This webinar will discuss why it is so important that economic developers play a role in keeping businesses informed and communicating the "back in business" message. We will discuss what you can do to prepare, establishing roles, best practice examples, and pitfalls to avoid.

CONTACT US

HVRC
105 Ann Street, Ste2
Newburgh, NY 12550
845-564-4075

HVRC Newsletters

Carla C. Castillo G.
Interim Executive Director
ccastillo@hudsonvalleyrc.org

Eleanor Peck
Mid-Hudson Clean Energy Communities Manager & CEC Coordinator
epeck@hudsonvalleyrc.org

Melanie Patapis
Climate Smart Communities Coordinator
mpatapis@hudsonvalleyrc.org

Mary Lambert
Climate Action Planning Institute Coordinator
mlambert@hudsonvalleyrc.org

Caleb Fine
Economic Resilience Coordinator
cfine@hudsonvalleyrc.org

Hudson Valley Regional Council

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CARES Resilient Economy Webinar Series
Session 3: Crisis Communications for Economic Recovery

Presenters:
Carla Castillo, Interim Executive Director, HVRC
Lynn Knight, Certified Economic Developer
Cynthia Richmond, former Deputy Director for Economic Development, Arlington and Loudoun Counties, Virginia

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Regional Efforts

Hudson Valley Regional Council

• Technical Assistance • Advocacy • Coordination •
• Education • Planning • Collaboration •

- Economic Development Technical Assistance & Planning
- Water Quality Planning
- Clean Energy Implementation
- Climate Smart Implementation
- Climate Action Planning
- Regional Platforms
  - Materials Management Working Group
  - Mid-Hudson Regional Sustainability Coalition

2

Partners

3

HVRC CARES Project

HVRC's CARES Project is made possible with funding from the US Department of Commerce Economic Development Administration

- CARES Project – Learnings From and Best Practice Responses to the Pandemic
- CARES Resilient Economy Lunch & Learn Webinar Series
  - November 30: Resilience & Economic Development
  - December 7: Retaining Small Businesses After a Crisis
  - December 14: The Role of Economic Developers in Crisis Communications
- Today's webinar

Presenters

- **Lynn A. Knight** (lynn.knight07@gmail.com) – Certified Economic Developer with multi-sector experience in 35 U.S. states and territories. She previously owned a public relations firm for 14 years and frequently dealt with crisis issues. Formerly the VP of Knowledge Management at the International Economic Development Council, she managed a national program economic recovery program that deployed hundreds of subject matter experts to disaster communities in 20 states and territories.
- **Cynthia Richmond** (crichmond@gmail.com) – Has more than 30 years' experience in local economic development, including business recruitment and retention, small business assistance, policy development, real estate development and economic sustainability. Until her recent retirement, Cindy served as Deputy Director for Economic Development in both Arlington and Loudoun County, Virginia. In the private sector, she worked as a Regional Economist for Battelle Memorial Institute in Columbus, Ohio. Cindy has a master's degree in City and Regional Planning from The Ohio State University.

Crisis Communications for Economic Recovery

Kentucky governor after West Liberty tornado

Communications are an essential element of recovering from crises

Provide timely information & dispel rumors

Lead through crisis

Take time to communicate

- When severe weather or dangerous situations are imminent, disseminate information widely
- Leaders are often judged on timeliness and accuracy of information
- Best Practice: Today elected officials and community leaders are using a wider variety of channels, including social media, email, website, phone recordings, TV and radio

Why we're talking about this

- Best crisis communications are planned during "blue skies"
- Need to communicate clearly, consistently, and comprehensively to range of stakeholders
- Communications are particularly important for leveraging the private sector
- Economic development organizations, industry associations and Chambers are vital resources to inform local government about business needs

Incorporate business communications into core activities

- Local government leaders make emergency decisions that have a direct impact on business:
  - Business re-entry
  - Access to property
  - Approach to power restoration
  - Infrastructure rebuilding
  - Long-term marketing campaign outside the community
- It is important to incorporate business and industry communications early

Why communicating with businesses is essential to recovery

- Rumors spread quickly and can lead to slower economic recovery
- Businesses may delay opening or move
- They will attempt to contact you for information
- How you communicate – or don't communicate can have a big impact on how quickly they recover

Key Steps in Planning

- Designate a spokesperson
- Update contacts
- Establish a base
- Gather all facts
- Draft statements
- Anticipate tough questions
- Maintain contact with businesses

When it's happening, you need data

- You need a ready, versatile and current database
- Economic developers typically buy data or create their own
- We know the business locations and owners
- Customer Relationship Management (CRM) systems are tied to our data
- Data gives us capacity to reach out and communicate with businesses, individuals and government

Arlington on 9/11

Emergency Operations Center

Establish a location to coordinate communications

- Government depts., state and federal agencies should operate out of one place
- Invite economic development and business organizations to work in the center

Emergency Business Contacts

Determine who you must contact and how to reach them

- Relationship building is a continuous process
- Gather home and office contacts for business leaders and media
- Use a good customer relationship management database

Controlling the Message

- Misinformation is harmful to businesses, the economy, and the community following a major disaster
- Providing timely, accurate information to businesses and the media will help to get the economy moving
- Key is timeliness and control
- Make this a team effort

Uniform, Credible Response

- Designate your spokespeople
- Consistent, accurate messaging builds confidence among residents and businesses
- Enforce organizational roles and procedures for communicating

Prepare

Brainstorm "What-ifs?"

Be creative but prepare for the worst

- Think through topics
- Practice answering toughest questions
- Develop "must air" points

Central Themes in Messages

- Communities must understand how their economy is being affected
- Publicize milestones: recovery successes, businesses returning, re-opening
- Be ready for media cycle; news outlets will revisit disasters at anniversaries
- Consider hiring a PR firm

Social Media

- Internet can be accessed when networks are down
- Businesses should use social media to advertise when they are open again
- Some communities engage citizens on social media to track recovery efforts

Consider Needs of Essential Customers

Communications needs of visitors

- Evacuation plans, safety procedures
- Airport is open and flights are departing
- Alternative accommodations and services
- Which businesses are open
- How you care for visitors affects reputation and economy for the future

2006 Hawaii earthquake

2015 Puerto Vallarta, Mexico

Case Study: Colorado Forest Fires & Floods (2013)

After successive fires, burn scars made it easy for rainfall to create catastrophic floods from mountains onto small towns

18 counties declared disasters, $2B in damage
Local officials lamented the publicity that the entire state of Colorado was destroyed

When recovering, EDA brought in an economic development assessment team to help brainstorm long- and short-term recovery

Colorado

Recommendations

- A pro-active, positive message of being open for business was needed. This needed to come from the local government, EDOs, tourism promotion agencies.
- Infrastructure should be built back better, with resiliency and greater capacity in mind.
- Take a new look at the community's assets. Some communities were too dependent on tourism, so it was time to diversify. Other business opportunities were identified in strategic planning process.

2012 Hurricane Sandy, New Jersey - $62B damage

Media stories left the impression that the entire New Jersey Shore was out of business

Yet some tourist areas were unaffected

The state waged a campaign to communicate "open for business" and inspire businesses and the community

Example: Kentucky Emergency Management

Kentucky Emergency Management created a Facebook page to provide disaster updates and helpful advice

They also used their page to explain prevention tactics and rebuilding strategies.

Best Practice: Joplin, Missouri Recovery

Example: Joplin, MO's Strategy after a Disaster

- May 22, 2011, an EF-5 tornado struck
- 2.8B damage, 161 fatalities
- Chamber of Commerce used social media, posting on Facebook within 1 hour of the tornado to relay initial information and resources to businesses

Best Practice: Joplin, Missouri

- The Joplin Chamber set up and staffed an information hotline to combat misinformation
- Chamber staff answered calls from businesses:
  - Utility restoration
  - Cleanup, business services
  - Rebuilding efforts
  - Financing options
  - Other practical matters important for businesses

Best Practice: Joplin, Missouri Recovery

Joplin chamber rebuilt their website to focus on resources and provide an update on the status of businesses.

- Created an employer tracking system from emergency grant funds
- 3 weeks after the tornado, 1100 chamber members and 200+ non-members had been reached

Case Study: Polk County, Florida

Example: Post-Disaster Communication in Polk County, Florida

- Polk County was struck by a series of three hurricanes in 2004/05.
- The Polk County EM office released a daily news flier in English and Spanish on general community recovery

Case Study: Polk County, Florida

Economic Development Organization's Role in Post-Disaster Communication

- The Central Florida Development Council, in partnership with the county's 13 chambers of commerce, provided information for businesses
- CFDC updated its website daily to provide updates on recovery information for local businesses

Central Florida Development Council, Inc. of POLK COUNTY, FLORIDA

Case Study: Polk County, Florida

Updates included:

- list of vacant space for temporary needs
- list of licensed contractors
- business recovery resources such as capital and technical assistance programs

List of licensed contractors was valuable in avoiding scams

Utilized hard copy flyers and local media to communicate locations of economic recovery meetings and services available to businesses.

Be a conduit for 2-way communications

- After a disaster you will provide valuable information to businesses
- If you survey and interview businesses, they can also provide important information to you about their needs and realities
- Be their advocate. Ensure their comments, issues and recommendations are shared with local, state and federal officials

In summary: What businesses need to hear from you

- Empathy: How you're advocating for biz needs
- Business re-entry procedures
- Reputable service providers:
  - Cleanup
  - Financing
  - Business counsel
  - Rebuilding efforts
- Confident leadership: your plans for mitigation & future economic resilience

Comments? Questions?

Lynn Knight
Lynn.knight07@gmail.com

Cynthia Richmond
crichmond@gmail.com

Thank you!

Where to find the webinar recordings

CARES Resilient Economy Webinar Series

https://hudsonvalleyregionalcouncil.org/regional-initiatives/economic-development/#special-cares-project

- **Resilience & Economic Development**
  Lynn Knight and Stephen Jordan presented the first webinar about what economic resilience is, how to measure it, and how to build capacity for economic recovery after a disaster.
- **Retaining Small Businesses After a Crisis**
  Lynn Knight and Calandra Cruickshank presented the second webinar about what tools and best practices should be used to help businesses weather economic disasters.
- **Crisis Communications for Economic Recovery**
  Lynn Knight and Cynthia Richmond presented the third webinar about using communications to get businesses back up and running, people employed, and local revenues flowing after a crisis.

CONTACT US

HVRC
105 Ann Street, Ste2
Newburgh, NY 12550
845-564-4075

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Carla C. Castillo G.
Interim Executive Director
ccastillo@hudsonvalleyrc.org

Eleanor Peck
Mid-Hudson Clean Energy Communities Manager & CEC Coordinator
epeck@hudsonvalleyrc.org

Melanie Patapis
Climate Smart Communities Coordinator
mpatapis@hudsonvalleyrc.org

Mary Lambert
Climate Action Planning Institute Coordinator
mlambert@hudsonvalleyrc.org

Caleb Fine
Economic Resilience Coordinator
cfine@hudsonvalleyrc.org

Hudson Valley Regional Council

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APPENDIX 4: Helpful Resources & References

Hudson River Flood Impact: Mapping tool to estimate flooding levels along all counties bordering the Hudson River.

www.ciesin.columbia.edu/hudson-river-flood-map/

Cornell CALS, Flooding & Sea-Level Rise Mappers: Additional flood mapping software.

https://cals.cornell.edu/water-resources-institute/watersheds/hudson-river-estuary/climate-change/resources-adapting/flooding-sea-level-rise-mappers

Cornell CALS, Climate Projections in the Hudson Valley. Provides projections for air temperature, precipitation projections, heat wave projections, and sea level rise projections for the Mid-Hudson region.

https://cals.cornell.edu/water-resources-institute/watersheds/hudson-river-estuary/climate-change/resources-adapting/climate-projections-hudson-valley

CMRA Mapper: Per their website: "Climate Mapping for Resilience and Adaptation (CMRA) integrates information from across the federal government to help people consider their local exposure to climate-related hazards." Focuses on five hazards: coastal inundation, drought, extreme heat, flooding, and wildfires. The home website provides each hazard has its own page that lists definitions, maps, and funding resources. **The CMRA Assessment Tool** on the page allows users to view projections for their communities' vulnerabilities to the hazards listed above.

https://resilience.climate.gov/

Environmental Justice Mapping Tools Guide, New York Sea Grant, 11/4/2020: A guide to different tools. On page two, the guide lists the tools by category, whether it is a state or national-level tool, and displays what the tools can be used for. The categories covered are Environmental, Facilities Monitoring, Demographics, Native American Territories, Health Data, Housing Data, and Climate Change & Resilience. Beyond the table are descriptions of every tool listed as well as how to access them.

https://seagrant.sunysb.edu/images/uploads/pdfs/EnvironmentalJustice-MappingToolsGuide.pdf

Disadvantaged Communities Criteria, New York State: Fact sheet about how New York identifies communities as disadvantaged. Uses both population characteristics as well as environmental burden and climate change risks to evaluate.

https://climate.ny.gov/-/media/project/climate/files/LMI-dac-criteria-fact-sheet.pdf

Participating Communities, New York State: Interactive map listing all communities participating in "Climate Smart Communities" including those that have made their communities more resilient to climate change.

https://climatesmart.ny.gov/actions-certification/participating-communities/

Local Hazard Mitigation Plan Status, New York State: Lists the statuses of all New York counties' Hazard Mitigation Plans. HMPs are updated every 5 years.

https://mitigateny.availabs.org/local

Responding to Climate Change in New York State (ClimAID), NYSERDA, 2014

https://www.nyserda.ny.gov/climaid

NYS Division of Homeland Security and Emergency Services Hazard Mitigation

https://www.dhses.ny.gov/hazard-mitigation.

New York Climate Change Science: Has many maps for climate change and environmental hazard projections.

https://nyclimatescience.org/highlights/maps.

New York Climate Change Science Clearinghouse: Has a slew of interactive maps about how climate change can affect New York. Some issues the site covers are climate & weather, flooding, sea level, and social & economic.

https://nyclimatescience.org/highlights/maps.

Additional Resources & References

An Analysis of an Inventory of Community Resilience Frameworks. Jarrod Loerzel and Maria Dillard, National Institute of Standards and Technology, Oct 2021. *Journal of Research of the National Institute of Standards and Technology*. Vol. 126, Article No. 126.031.

https://nvlpubs.nist.gov/nistpubs/jres/126/jres.126.031.pdf

Department of the Interior, Climate Action Plan. 2021.

https://www.doi.gov/sites/doi.gov/files/department-of-interior-climate-action-plan-final-signed-508-9.14.21.pdf

Disaster Resiliency and Recovery Resources: A Guide for Rural Communities. August 2021. USDA Rural Development. A resource for rural communities seeking disaster resiliency and recovery assistance. USDA RD has more than 40 loan, grant, and technical assistance programs available to help improve the economy and quality of life in rural America.

https://www.rd.usda.gov/sites/default/files/rd_disastertoolkit-final508.pdf

Community Resilience Planning Guide, National Institute for Science & Technology (NIST), U.S. Department of Commerce.

Community Resilience Planning Guide | NIST

Survey of Federal Community Resilience Programs and Available Resilience Planning Tools. Thomas Olszewski, Irina Liu and Allison Cunningham. February 2021. IDA Science and Technology Policy Institute. Prepared for U.S. Department of Commerce, National Institute of Standards and Technology. NIST GCR 21-027.

The National Institute of Standards and Technology (NIST) is assembling a portfolio of frameworks, data, software, and other tools to reduce technical and administrative barriers to communities' efforts in resilience planning and implementation.

https://nvlpubs.nist.gov/nistpubs/gcr/2021/NIST.GCR.21-027.pdf

https://doi.org/10.6028/NIST.GCR.21-027

Southeast Coastal Ocean Observing Regional Association (SECOORA)

SECOORA's mission is to observe, understand, and increase awareness of our coastal ocean; promoting knowledge, economic and environmental health through strong regional partnerships. SECOORA is one of 11 regional coastal observing systems that comprise the NOAA led United States Integrated Ocean Observing System (U.S. IOOS®). IOOS is essentially the weather service for the coastal oceans and Great Lakes, providing the ability to "see" what is happening both above and below the surface and making that information readily available.

Southeast Region: https://secoora.org/

Mid-Atlantic Region: http://maracoos.org/

Northeast Region: http://www.neracoos.org/

Gulf of Mexico: https://gcoos.org/

Investing in Nature for Development: do nature-based interventions deliver local development outcomes? Roe, D., Turner, B., Chausson, A., Hemmerle, E. and Seddon, N. 2021. IIED, London.

"Investing in nature for development shows us how interventions that protect, manage, restore, create and harness nature can deliver a wide range of human development outcomes…"

https://pubs.iied.org/sites/default/files/pdfs/2021-06/20206iied_0.pdf

Leadership in Times of Crisis, A Toolkit for Economic Recovery, 2015 and 2022. International Economic Development Council, retrievable from www.RestoreYourEconomy.org

Principles for Ecosystem Restoration to Guide The United Nations Decade 2021–2030. UN Environment Programme & Food and Agriculture Organization of the United Nations.

"…through Resolution 73/284, the United Nations General Assembly declared 2021–2030 as the United Nations Decade on Ecosystem Restoration (hereafter the "UN Decade"). To support the implementation

of the UN Decade and help achieve its goals, there is a need for a shared vision of ecosystem restoration, defined as "the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity.

https://cdn.ymaws.com/www.ser.org/resource/resmgr/publications/principles_for_ecosystem_res.pdf

Comprehensive Economic Development Strategy & Hazard Mitigation Plan Alignment Guide, an initiative of the U.S. Economic Development Administration and FEMA.

https://www.fema.gov/fact-sheet/comprehensive-economic-development-strategy-and-hazard-mitigation-plan-alignment-guide. The Guide provides voluntary, practical information about the benefits and approach for aligning the two plans and creating better collaboration between economic developers, hazard mitigation specialists, and emergency managers.

Federal Reserve Bank (2018) ***Small Business Credit Survey on Disaster-Impacted Firms*** https://www.newyorkfed.org/medialibrary/media/smallbusiness/2017/SBCS-Report-on-Disaster-Affected-Firms.pdf

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APPENDIX 5: A Guide to Crisis Communications

Crisis Communications: An Essential Element of Economic Recovery

Communications with business are an essential element of successful economic recovery and should be integrated into activities before and after a disaster. When severe weather or dangerous situations are imminent, local leaders are often judged on timeliness and accuracy of information. Today community leaders are using a wider variety of channels, including social media, email, website, phone recordings, TV, and radio to communicate.

The best crisis communications plans are developed during "blue skies" and consider the needs of businesses which provide for local employment and essential revenues. Economic development organizations, industry associations and chambers of commerce are all vital resources to help inform businesses about what is going on and provide two-way communications with government about business needs.

Local government leaders make a myriad of emergency decisions that have a direct impact on businesses, so it is essential to let them know what is going on regarding such issues as:

- How to gain access to their property.
- When power and other essential services will be restored.
- Rebuilding of infrastructure, including mitigation efforts to avoid repeat disruption.
- Long-term marketing of the community as disaster areas re-open for business.

In the absence of communications, rumors spread quickly and can lead to slower economic recovery. Businesses may delay opening or even move out of the area if their confidence is not regained. How local leaders communicate – or don't communicate can have a big impact on how quickly they recover.

Key Steps in Crisis Communications

- Designating a spokesperson.
- Updating and keeping contacts current.
- Establishing a base of operations in an emergency.
- Quickly gathering facts.
- Drafting statements.
- Anticipating tough questions from the media.
- Maintain contact with businesses throughout the recovery.

Economic developers should play a key role in communications and typically make excellent spokespeople. They tend to have existing relationships with the business community and can provide vital information about the economy. As the keepers of data during normal times, they typically buy data or create their own. They have information about business locations and essential infrastructure. Since this is so much information to keep track of, a good practice is to have a Customer Relationship Management (CRM) system that is up to date with home and office contacts for business leaders that tie into economic data.

Economic developers also tend to be good marketers who know how to speak to businesses and sell their communities. They know what can be discussed publicly and what should be held confidential. These are the kinds of traits and experiences that make good spokespeople. By designating them in advance of a disaster to be the spokesperson for businesses, they can be better prepared in the event of a crisis.

Another best practice is to **establish a location to coordinate communications**. When government departments, state and federal agencies operate out of one place, it is more likely that everyone will share accurate, up to date information as news breaks. A good practice is to invite economic development and business organizations to work in the center.

Consistent, accurate messaging helps build confidence among residents and businesses, and this is better insured by controlling the message. It is important to prepare spokespeople by brainstorming the "What-ifs?" and worst possible questions. Thinking through topics of discussion and practicing answers to the toughest questions will help ensure that interviews with the media go well. One technique is to develop "must air" points which will include essential information and themes that you would like to talk about no matter what questions are asked. Some helpful information to include in messages includes, milestones and recovery successes, including businesses returning and re-opening

Communities are **using social media more often to communicate rapid messages**. The advantages are many. The internet can be accessed when networks are down, and social media is a direct way to reach constituents and customers instantly. Some communities also engage citizens on social media to track recovery efforts.

It is important to remember and **communicate to visitors** on things like evacuation plans, safety procedures, the status of transportation and airports, which businesses are open, as well as alternative accommodations and services. In essence, how you care for visitors will affect the reputation and economy for the future.

Best Practice: Hurricane Sandy

In the 2012 Hurricane Sandy, media stories left the impression that the entire New Jersey Shore was out of business, yet some tourist areas including Cape May were unaffected. It was therefore urgent that a message get out that the Cape was open for business to preserve its economy which normally receives 12 million tourists annually. The state waged successful campaign to communicate "open for business" which inspired businesses and the community to communicate "Stronger than the Storm" widely.

It is also important after a disaster to be ready for media cycle. The media will revisit disasters at anniversaries. If messages are not getting out or additional capacity is needed, some communities that have had disasters consider hiring public relations firms which can help manage reputation issues and what information is disseminated about the community.

Best Practice: The Role of a Chamber of Commerce in Joplin

On May 22, 2011, an EF-5 tornado struck Joplin, Missouri's downtown. It left behind 161 fatalities and $2.8B in damage. The Joplin Chamber of Commerce acted within one hour of the tornado. Using social media, they posted on Facebook to relay initial information and resources to businesses. They set up and staffed an information hotline to combat misinformation. Chamber staff and volunteers answered calls from businesses on such issues as utility restoration, cleanup and business services, financing options and other practical matters. The Chamber rebuilt its website to focus on reputable resources, financing opportunities for recovery, and provide an update on the status of businesses. They created an employer tracking system from emergency grant funds. Within three weeks after the tornado, 1100 chamber members and 200+ non-members had been reached.

Advocating for Business Needs

During and after a disaster economic developers and local leaders will need to provide valuable information to businesses. If you take the time to survey and interview businesses, you will also be well positioned to provide important information about their needs and realities. Armed with this information, it is an opportunity to help accelerate economic recovery and be their advocate. Creating articulate summaries of business impacts and needs will help ensure that their comments, issues, and recommendations are shared with local, state, and federal officials. It will also demonstrate empathy to businesses, which will help restore confidence in your community when it is most needed.

After a crisis, remember that businesses need information and a voice in rebuilding efforts. It is important to include them in planning and to provide confident leadership that will explain concrete steps being taken towards mitigation and future economic resilience.