

Appendix 1-4: Public Survey Summary and Analysis- Baltimore Community Risk Perception Survey

Introduction

The Baltimore Community Risk Perception Survey was an online survey with 20 questions pertaining to personal risk perceptions of natural hazards listed in the DP3 as well as man-made hazards, with an additional 6 voluntary questions pertaining to personal demographic information. The web-based survey was given via [SurveyMonkey](#) and was disseminated via email distributions maintained by Baltimore City agencies, community organizations, and through social media. (See Chapter 1.) A paper-based version of the web survey was distributed to senior centers, health clinics, and Resiliency Hub leaders for dissemination. The survey was open and distributed between July 17, 2018 and August 15, 2018. Questions were multiple choice, with about fifteen opportunities for free response. Respondents spent an average of 10 minutes answering the questions, with an overall completion rate of 81%.

The number of respondents at the time of analysis (August 15) was 1,028 respondents. Inclusion criteria was straightforward, in an effort to allow the greatest number and variability in responses. Only those respondents who neither lived *nor* worked in Baltimore were excluded, of which there were 31 respondents. Another 38 respondents containing only home and work locations, with no survey data, were eliminated as non-responses.

| Inclusion Criteria |
|---|
| Respondent lives in Baltimore <i>or</i> Respondent works in Baltimore |

Respondents mostly identified as White (62%), with 30% identifying as Black or African American. In addition, only 3% of respondents identified as Hispanic. Of the 600 respondents who chose to answer whether they had a disability that would impact their daily life, 8% reported they did. The majority of respondents (71%) identified as female with 23% identifying as male. The only age group under-represented were those between the ages of 15-24 with 2% reported belonging to that group. Reporting race, age, disability status, and gender were voluntary, and the number of respondents who did so was between 600-740. An overwhelming majority of respondents (97%) reported that they lived in Baltimore (1,001 respondents), and 43% of respondents reported that they worked in Baltimore.

General Summary of Responses

No natural hazard had less than 78% of respondents reporting some level of concern. The most concern was reported around extreme precipitation, heat, wind, and flooding. The least concern was reported around land events, followed next by concern about coastal hazards/storms. 75% of the respondents reported that at least one of the hazards listed had affected them personally.

Regarding concerns of over man-made hazards, the most (78%) reported concern was over an active shooter, and the least (49%) reported concern was over terrorism. 57% of the respondents reported that at least one of the man-made hazards listed had affected them personally.

70% of respondents reported that they felt their neighborhood was *particularly* at risk for one of the listed natural or man-made hazards listed, most commonly from wind or precipitation from storms. 72% of respondents reported that they felt their loved ones were *particularly* at risk for the negative impacts of the listed hazards and man-made hazards, especially children and the elderly.

When asked about which populations, in general, are most vulnerable to hazards, respondents cited vulnerable age groups such as children and the elderly most often, then racial or ethnic minorities, and finally those with disabilities or access concerns. When asked to explain why those populations would be at the most risk, the most commonly cited reason was that they would not have access to protective measures for the listed hazards.

Concern over Natural Hazards

Respondents were asked to rate their level for concern for the natural hazards identified in Baltimore's Disaster Planning Preparedness Project (DP3) as those most likely to impact the city. Respondents who reported they were "very concerned" were focused mostly on extreme heat, extreme precipitation and wind from storms, and flooding (about 30% of respondents). (See Figure 1.) Coastal hazard storms and land events (such as rock slides and sinkholes) were reported as "very concerning" by the least number of respondents (17%). The same trend held true for those reporting "moderate" concern, with slightly lower total percentages. But for those reporting they were "somewhat concerned", the most often reported hazards were land events (32%) and coastal hazards (32%). Those who reported that they were "not concerned" most often reported land events and coastal hazard storms, and least often reported extreme precipitation and wind from storms, and flooding.

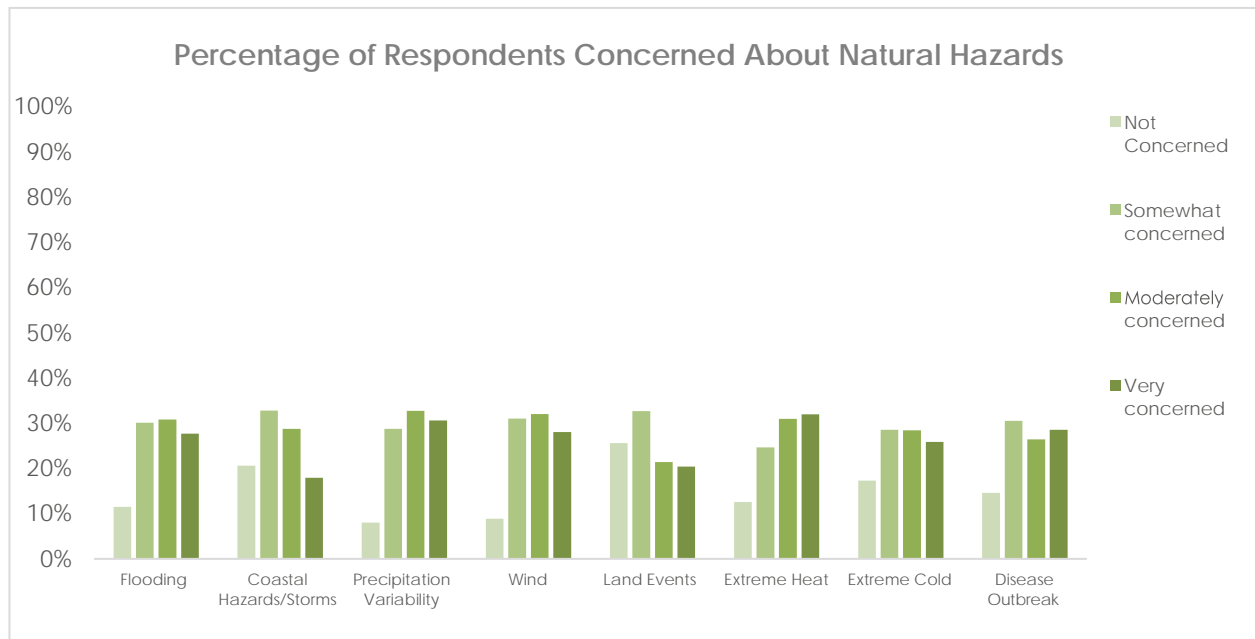


Figure 1. Reported Concern for Natural Hazards

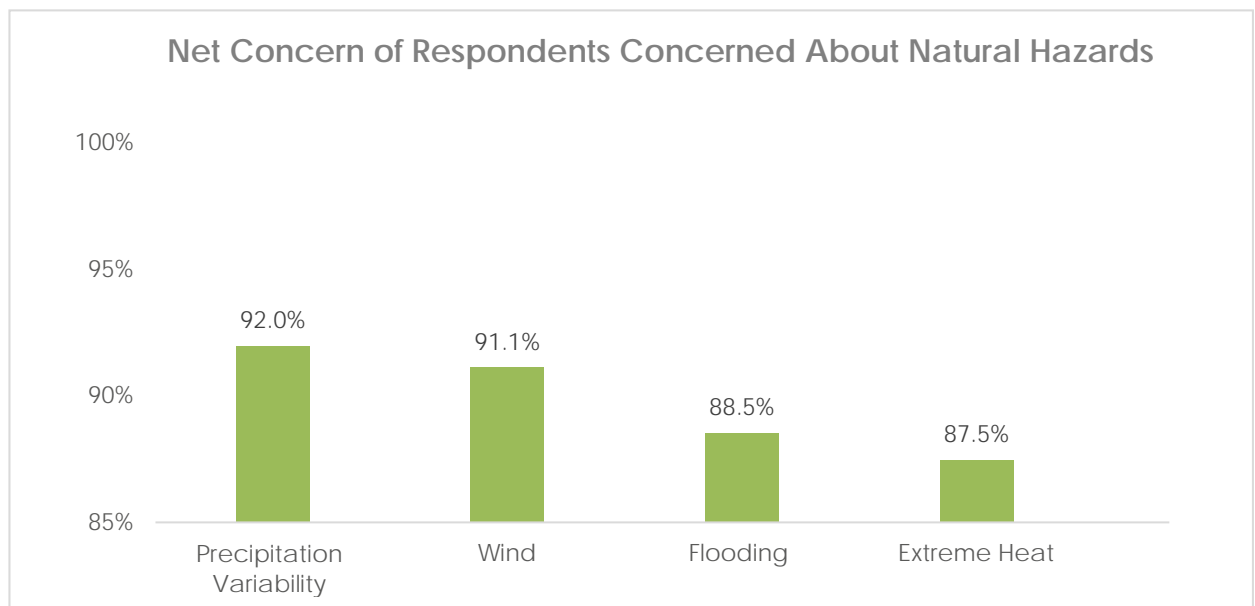


Figure 2. Natural Hazards of Greatest Concern (By Net Concern)

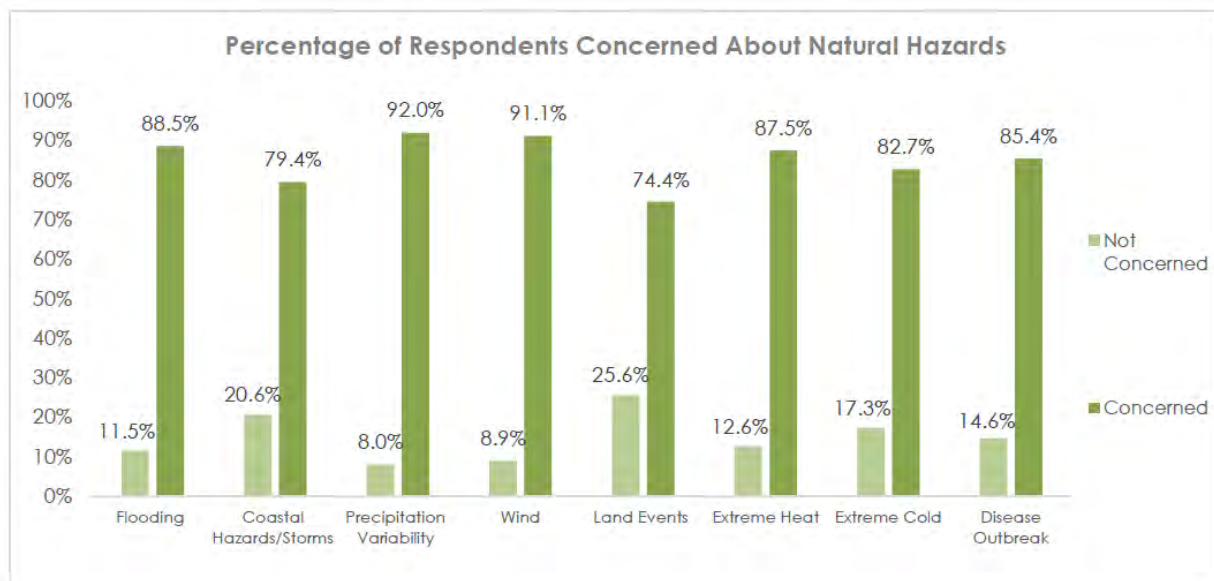


Figure 3. Net Concern for Natural Hazards

When asked if the above listed hazards had affected them personally, 620 respondents reported that they had been affected (57% of the total pool). Respondents were asked to identify all of the hazards that had affected them. The most respondents reported they had been affected by extreme wind, extreme heat, flooding, or precipitation variability. (See figures 4-5.)

These results trend with reported concern, suggesting that being affected by a hazard may increase most citizens' level of concern or awareness of the risks of harm associated with the hazard (Table 1).

| Table 1: The natural hazards of greatest concern compared to % of survey pop. affected | | |
|--|-------------|------------|
| Natural Hazard | % Concerned | % Affected |
| Precipitation Variability | 92.0 | 54.7 |
| Wind | 91.1 | 49.0 |
| Flooding | 88.5 | 44.2 |
| Extreme Heat | 87.5 | 41.6 |

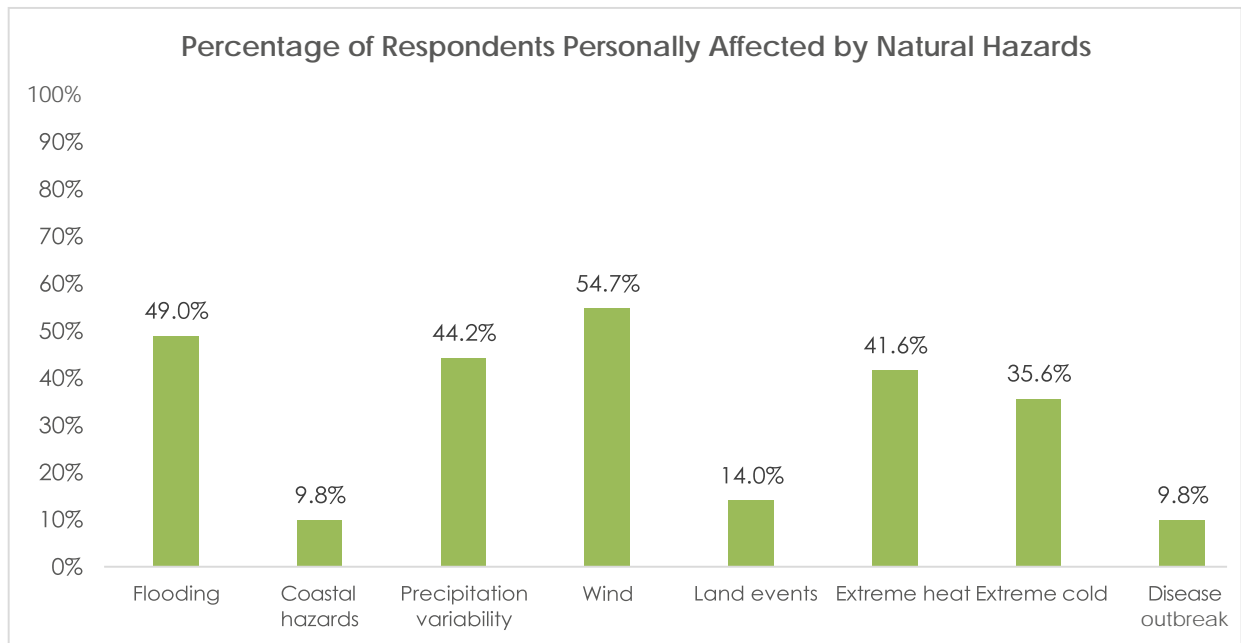


Figure 4. Percent of Respondents Personally Affected by Natural Hazards

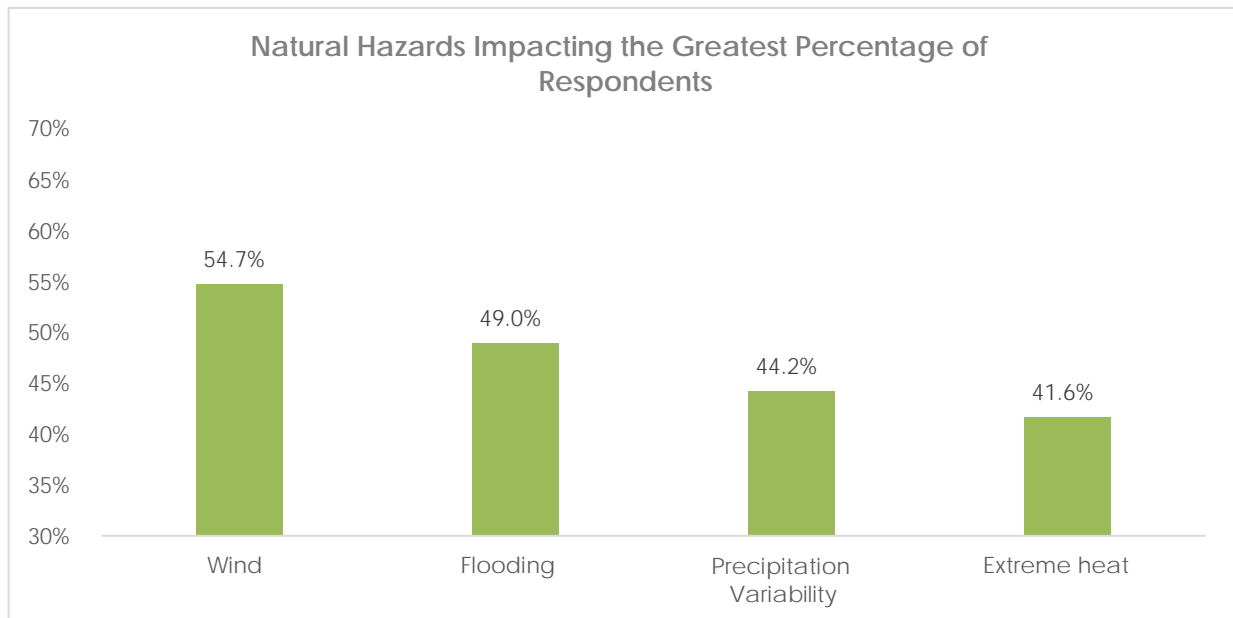


Figure 5. Natural Hazards Impacting the Greatest Percentage of Respondents

Concern over Man-Made Hazards

Man-made hazards included in the survey were selected based on likely threats, including those that pose a threat to most metropolitan areas. Survey respondents were given the option to list additional hazards. 817 respondents answered this question, dropping only two (2) respondents from the beginning of the survey.

A notable percentage (78%) reported concern over an active shooter, and a cyber-attack (71%). There was no man-made hazard where fewer than 48% of respondents reported concern.

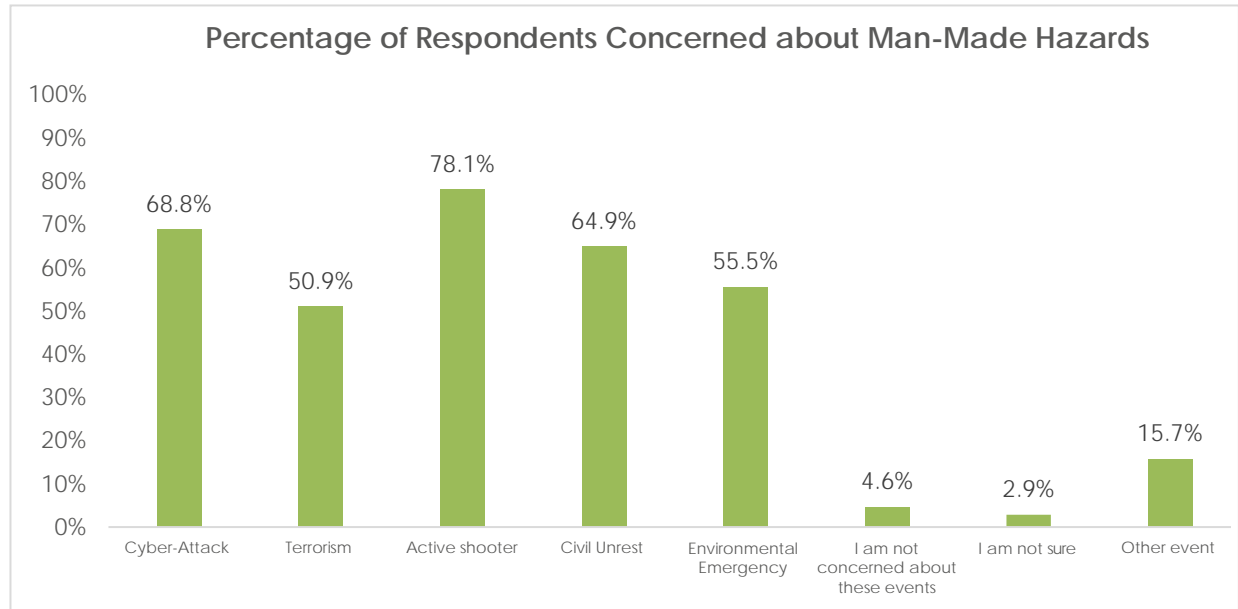


Figure 6. Reported Concern for Man-Made Hazards

When asked if the man-made hazards had affected them personally, 65% reported civil unrest had affected them, and only 14% reported that an active shooter had affected them personally.

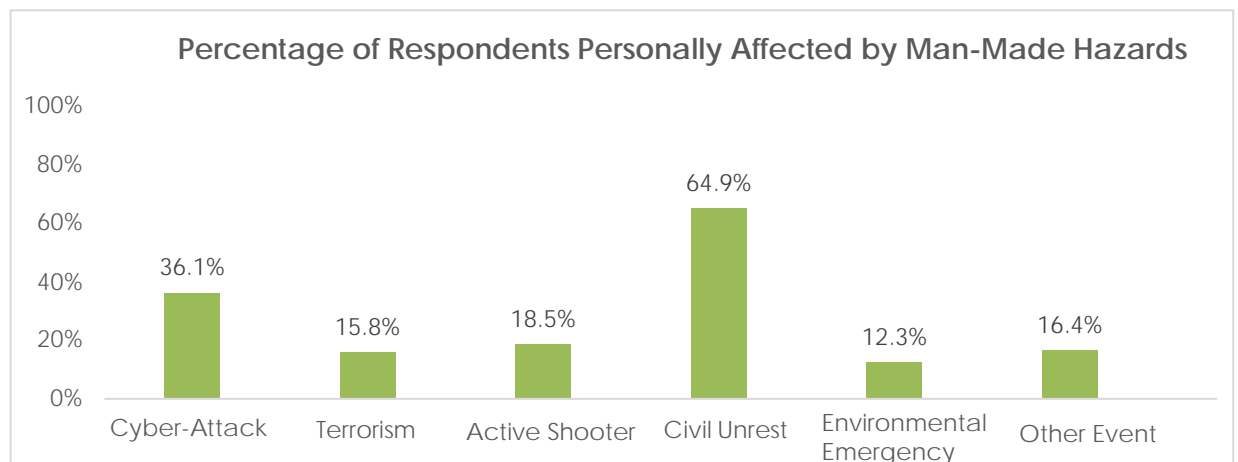


Figure 7. Percentage of Respondents Personally Affected by Man-Made Hazards

The most populous response to the category of “other”, which was an open-ended text response, was some variation of crime/gun violence (many respondents mentioned the group they felt was most responsible, which varied, but most often included “street/neighborhood,” or “police”). (See Table 2.)

| Table 2: Percentage of those concerned vs. those directly affected by man-made hazards | | |
|--|-------------|------------|
| Man-Made Hazard | % Concerned | % Affected |
| Cyber-Attack | 68.8 | 36.1 |
| Terrorism | 50.9 | 15.8 |
| Active Shooter | 78.1 | 18.5 |
| Civil Unrest | 64.9 | 64.9 |
| Environmental Emergency | 55.5 | 12.3 |
| Other [crime (20%), police (9%)] | 15.7 | 16.4 |

Specific Population Concerns

72% of respondents reported that they thought their neighborhood was at a *particular* risk for hazards and man-made hazards, with a slight difference between races (only 3% more of those who identified as Black/African American responded “yes” versus those who identified as White). The reported natural hazards of greatest concern regarding one’s neighborhood were not notably different than the reported natural hazards of greatest concern overall.

“I feel that we are all potentially vulnerable, but those who lack resources are all the more vulnerable.”

Age and race were the most common characteristics for determining vulnerability when respondents were asked if a particular group was at risk. Within open-ended responses, citing age as a qualifier for vulnerability, the elderly was the most common response, followed by children. Disability (most frequently categorized as difficulty with mobility or navigation) was also mentioned by 56% of respondents. There was also a write-in option to include populations not listed as choices. The group mentioned by the largest number of people was the homeless (35%).

“Neighbors who have limited mobility or limited income and cannot prepare to the greatest extent.”

The trends over which natural hazard or man-made hazard is of most concern when asking about a loved one were not greatly different than responses regarding the respondent’s own neighborhood.

Notable Findings: Aggregate Analysis

Concerning Natural Hazards

- Wind events was consistently cited as a hazard of concern (ranked second in net concern, behind precipitation variability, and ranked first in hazards by which respondents have been personally affected). This trend tracked with interview responses.
- Extreme cold, though not identified in the DP3, is a noted concern for community members, with net concern for the event (82.7%) higher than land events (74.4%) and coastal hazards (79.4%). Extreme cold was mentioned in a number of open-ended responses as well, particularly as it related to power outages.
- Disease outbreaks, while also not identified in the DP3, appeared to be a validated concern for community members, ranking just above extreme cold in net concern.
- 72% of respondents feel their neighborhood is at particular risk for at least one of the natural hazards.
 - The most commonly cited events for which respondents believe their neighborhood is at particular risk include: precipitation variability (63%), wind (63%), and flooding (60%).

"I worry specifically about people (like myself) with asthma and respiratory illness during high ozone days."

Concerning Man-Made Hazards

While simple examples of each type of man-made hazard were included in the survey, write-in responses and comments suggest that community members have varied definitions and understanding of what constitutes the man-made events listed. This will be an important consideration as strategies for incorporating man-made hazards into the DP3 are developed.

- Write-in responses to questions related to man-made hazards suggest that respondents have a very personalized view of man-made hazards, in that many cited "crime," "robbery," "police brutality," "mugging," "robbery," and other individual events.
- A notable percentage of respondents (78%) reported concern over an active shooter and a cyber-attack (71%).
 - However, write-in responses suggest at least some respondents understand an active shooter to be a type of shooting or gun violence. Respondents cited gang violence, armed robbery, and other events in describing man-made hazards.
- Violence is a major area of concern. About half of respondents are concerned about terrorism, and 78.1% are concerned about active shooter. When asked about any additional man-made events of concern, 63% of open-ended responses focus on crime, violence, or police brutality in some form. No other topics were mentioned nearly as frequently.

Concerning Vulnerable Populations

- 74% of respondents feel their loved ones or people they care about are particularly at risk.

- The elderly and children were the most common group written in to the open-ended response.
- Several respondents listed their neighbors as a population of concern, as well.
- 75% of respondents feel another group is particularly at risk.
 - Homeless was the most common answer.
- *Age group* and *Race/ethnicity* were the top categories chosen when asked if a particular group was at particular risk.
- Proximity to water is a recognized potential vulnerability, with a number of write-in responses citing infrastructure and residents near the Inner Harbor and Patapsco River as particularly vulnerable.
- Language barriers and the challenges facing immigrant populations are recognized.
 - Several write-in vulnerable responses included immigrants or non-native English speakers.

"Severe weather
must be horrible
to deal with
when homeless"

Regional Analysis

Responses were disaggregated by region according to the nine (9) regions of the city defined by the Baltimore City [Mayor's](#) Office. Analysts used zip code and neighborhood information provided by respondents to aggregate responses into the appropriate region.

As demonstrated in Table 3, several regions are underrepresented, an important consideration in the interpretation of the data.

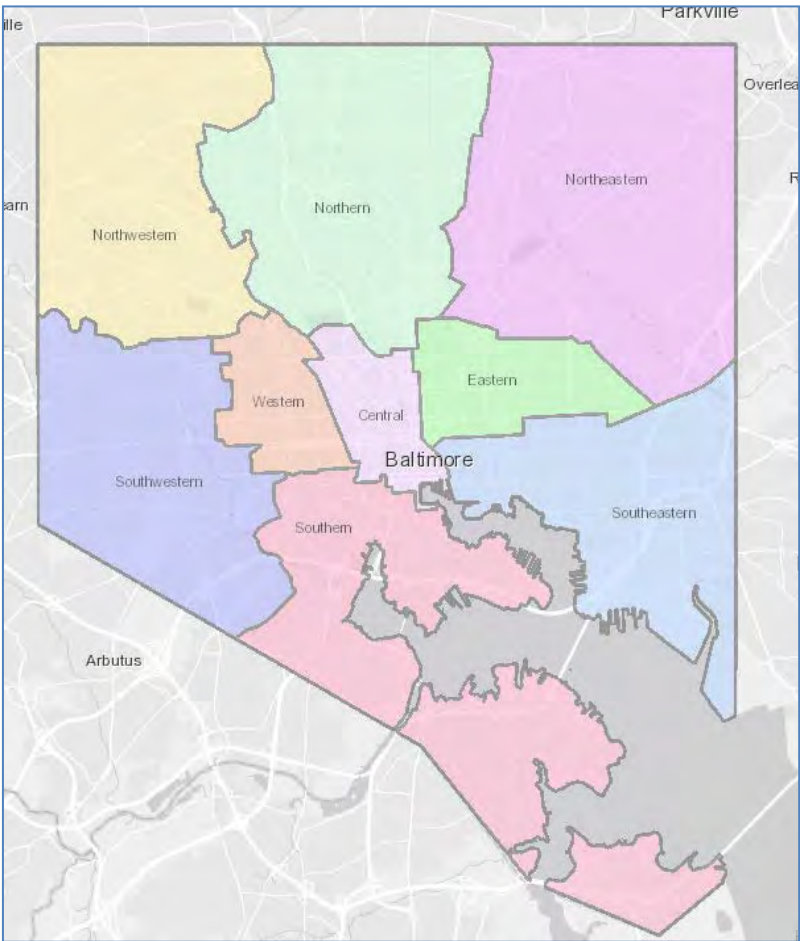


Figure 8. Baltimore regions used in regional analysis

| Table 3. Number of Respondents by Region | | | | | | | | |
|--|-----------|-----------|-------|------|------|-----------|-----------|-------|
| Central | Southeast | Northwest | South | East | West | Northeast | Southwest | North |
| 102 | 140 | 122 | 69 | 66 | 60 | 189 | 65 | 200 |

Notable Findings – Regional Analysis

Natural Hazards

- The Southwest region is the only one where more than 90% of respondents are concerned about all of the top four most concerning natural hazards from the aggregated analysis. Precipitation variability and extreme heat garnered the concern of 97% of Southwestern Baltimore residents.
- The Central region had, on average, some of the lowest rates of concern in the city; however, the level of concern for that region regarding natural hazards did not drop below 70%.
- The Western region of the city had, notably, the highest concern regarding a disease outbreak (90%), and the Southeast region had the lowest (69%). As no one region was at or below 50% concerned, it would be valid to say that disease outbreaks are a city-wide concern.
- The Southwest region has the greatest percentage of residents directly affected by flooding, which trends with the corresponding high percentage of concern.
 - Likewise, no region has a population of greater than 10% which has been affected by coastal hazards/storms; a natural hazard of least concern in the aggregated analysis.

Man-Made Hazards

- An active shooter is the only man-made hazard that concerns more than 70% of residents across all regions of Baltimore.
- Concern regarding terrorism was notably (about 10%) higher than the aggregated concern in the Southwest and Northwest regions of the city.
- Civil unrest has notably affected almost 60% of the residents in West Baltimore (a 15% increase over the next-highest percentage of a region affected).
- Civil unrest is also the man-made hazard that has affected the highest percentage of Baltimore residents across all regions.

Concern for Natural Hazards – by region

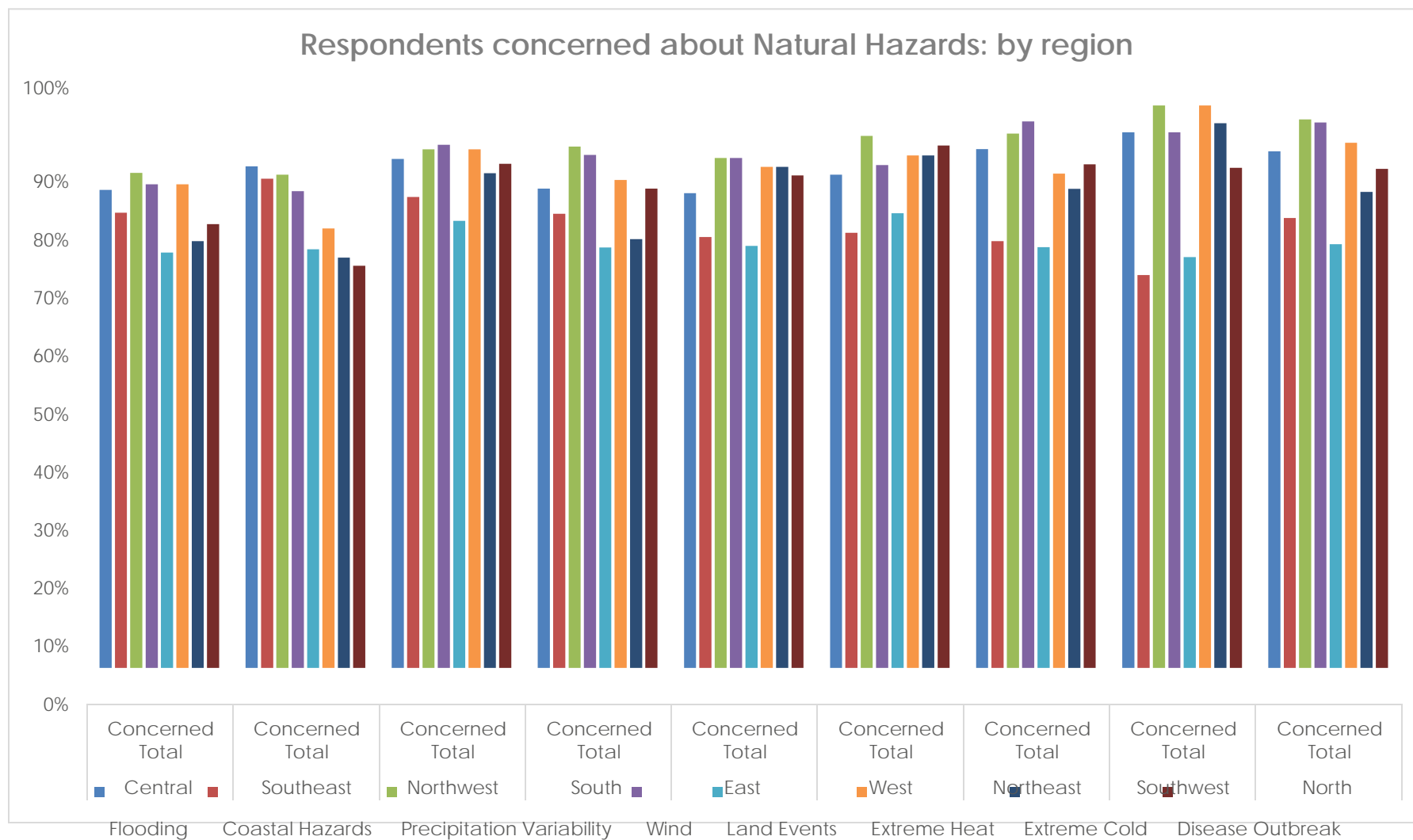


Figure 9. Reported Levels of Concern for Natural Hazards – By Region

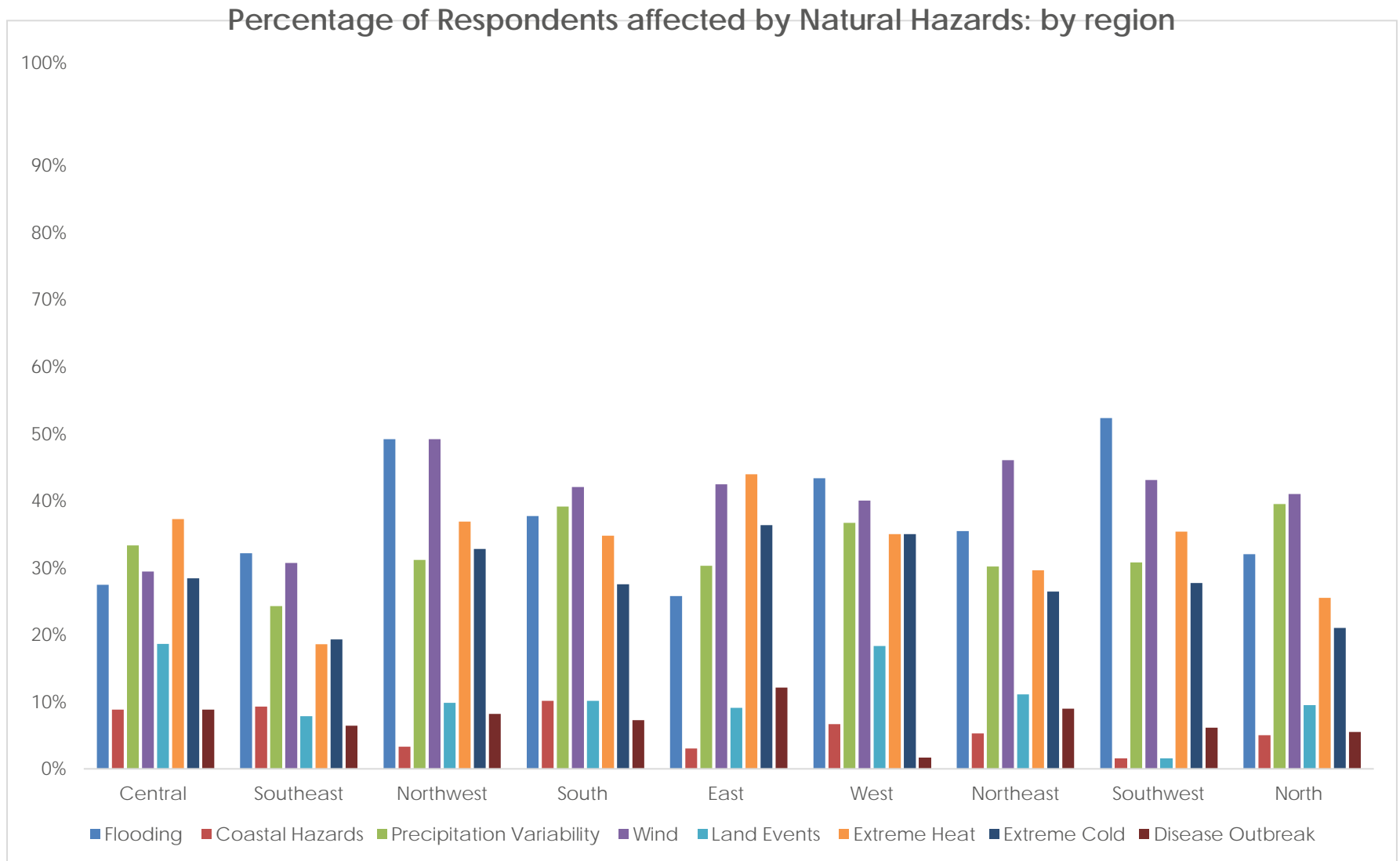


Figure 10. Percent of Respondents Personally Affected by Natural Hazards

Concern over Man-Made Hazards by Region

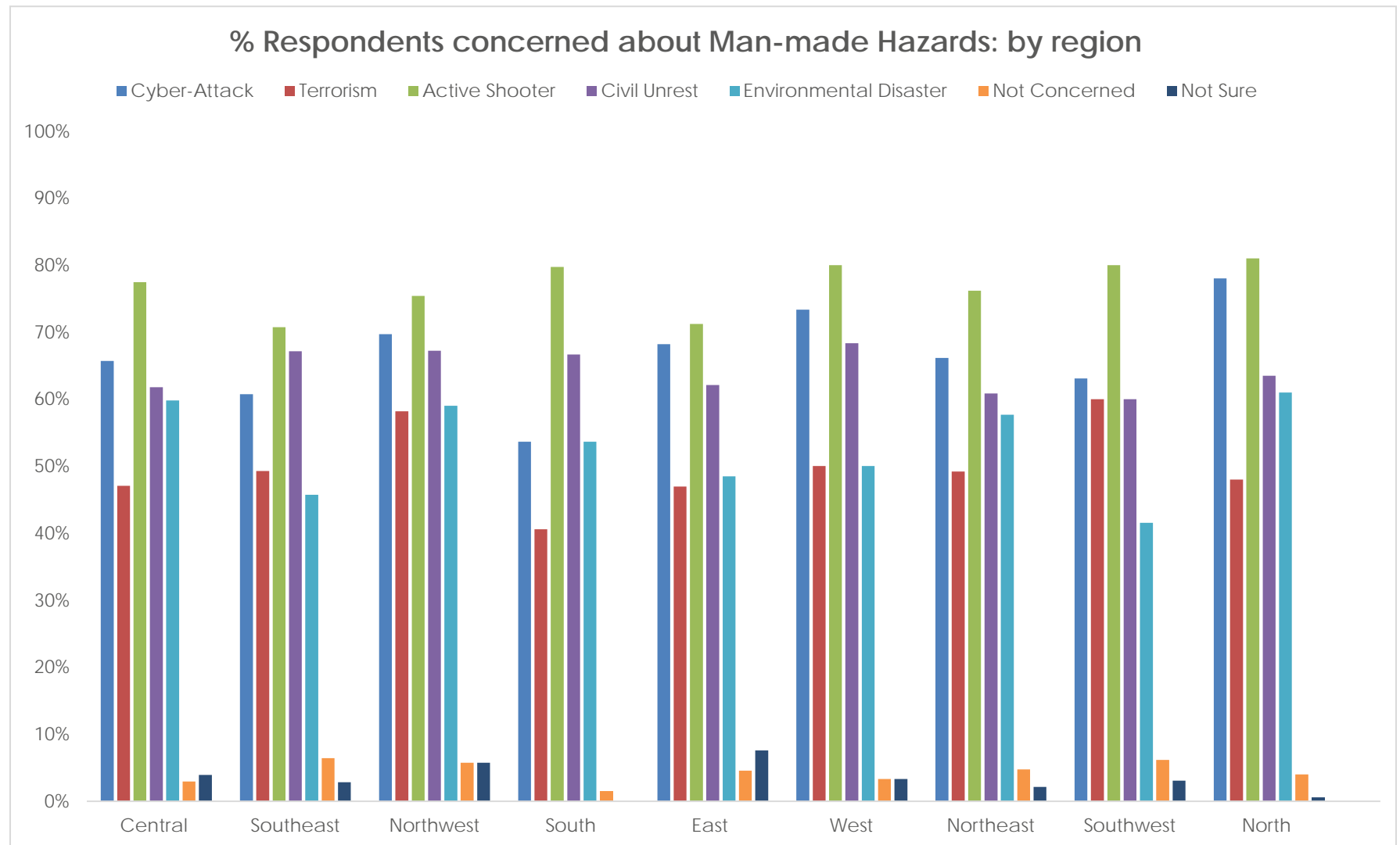


Figure 11. Reported Concern for Man-Made Hazards – By Region

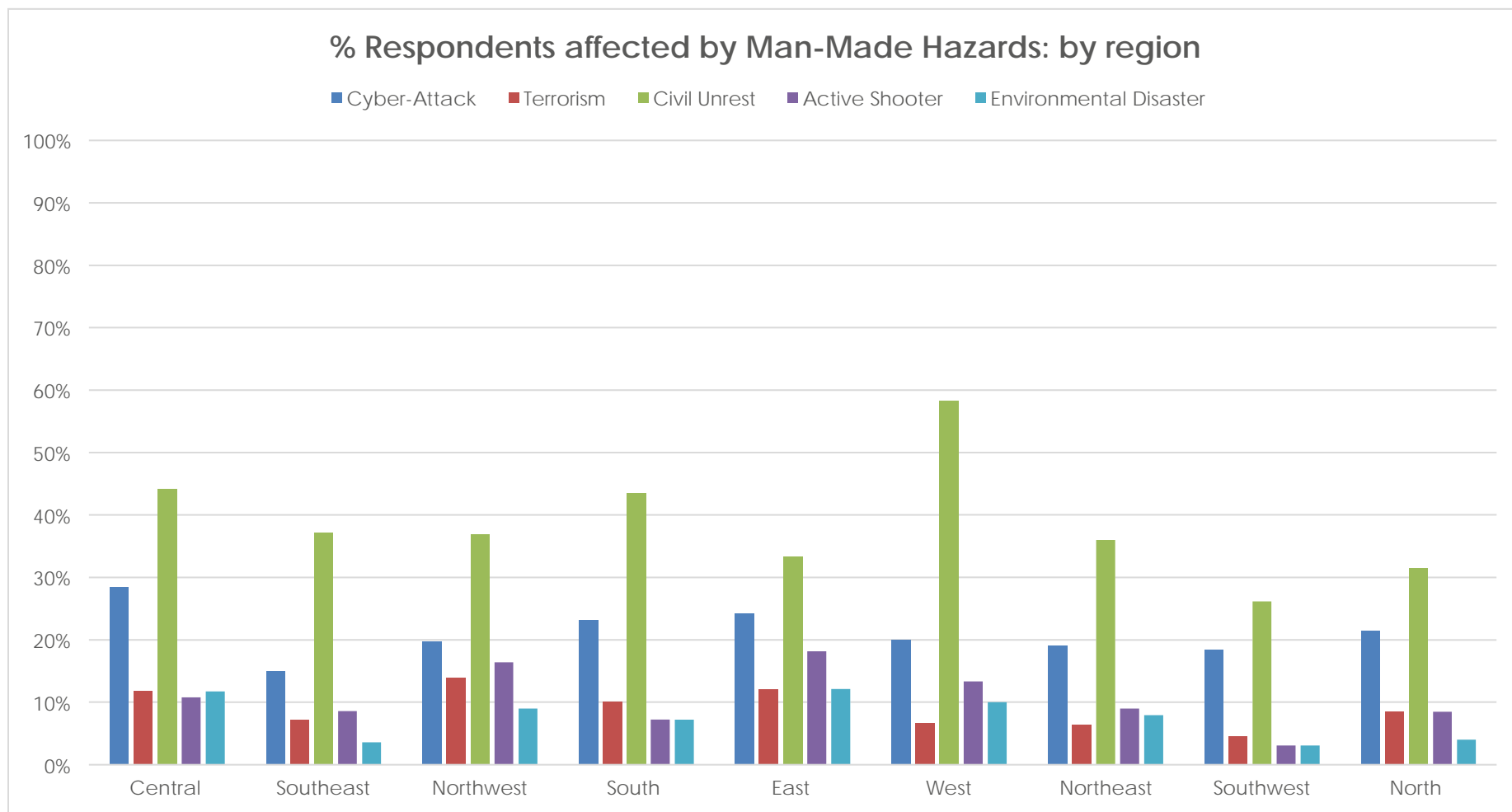


Figure 12. Percent of Respondents Personally Affected by Man-Made Hazards

Hazard Definitions Used in Survey

| Hazards in Previous DP3 | |
|----------------------------------|--|
| Flooding | Severe flooding on roadways, into buildings, etc. |
| Coastal Hazards | Storms and other threats unique to areas on the water, including rivers and the harbor. (e.g. hurricanes, sea level rise, storm surge, etc.) |
| Precipitation Variability | Significant or extreme rain, snow, or hail. (e.g. thunderstorms with lightning and hail, and winter storms/nor'easters, drought) |
| Wind | Extreme wind that occurs during different types of weather events and can impact buildings, power, etc. (e.g. wind from thunderstorms, tornadoes, and derechos) |
| Extreme Heat | Code Red Extreme Heat Alert days, when extremely high temperatures cause the Health Department to issue a Code Red alert |
| Land Events | Events impacting the ground, roadways, and foundation of buildings. (e.g. earthquakes, landslides, and sinkholes) |
| Added Natural Hazards | |
| Extreme Cold | Code Blue Extreme Cold Alert days, when temperatures, including wind chill, are expected to be 13°F or below |
| Disease Outbreak | Occurrences of disease beyond what would normally be expected for your city and/or the season. (e.g. seasonal flu, Zika, etc.) |

| Man-Made Hazards | |
|--------------------------------|---|
| Cyber-attack | Attack on computer or technology systems |
| Terrorism | Violence perpetrated by a group or individual for the purpose of intimidation and forwarding a political agenda. |
| Active shooter | An individual actively engaged in killing, or attempting to kill, people in a specific and populated area with a gun. |
| Civil unrest | A group of at least 3 people acting aggressively or violently in reaction to a specific trigger. (e.g. large-scale protests, riots) |
| Environmental emergency | Sudden onset disasters or accidents that cause or threaten to cause severe environmental damage. (e.g. oil spill) |