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Planning to conduct a hazard and vulnerability assessment of Middletown, Ohio

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

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ABSTRACT

The problem was the Middletown Division of Fire (MDF) did not have a plan to conduct a hazard and vulnerability assessment of the city of Middletown, Ohio resulting in decreased preparedness and increased risk to first responders and the community. The purpose of this descriptive research was to develop such a plan, through literature review, surveys and interviews in order to answer the questions: why should there be a hazard and vulnerability assessment of Middletown, Ohio, what should it include, how should it be conducted and who should be involved?

The results determined and recommendations are that MDF should lead a community coalition effort, conducting such an assessment with the Risk Hazard and Value Evaluation (RHAVE) method and current local processes. These systems should have the ability to move and integrate data elements illustrating the community's people, property and processes; in order to better save lives, protect property and manage risk.

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INTRODUCTION

Each year throughout the United States of America communities are devastated by natural and manmade disasters resulting in extreme loss of life and property. The United State Department of the Interior ([USDI], 2007) reports that annually these catastrophic events "cause hundreds of deaths and cost of billions in disaster aid, disruption of homes and critical infrastructure" (p. 1).

When these events occur the fire service is among the first to respond; often involved in the trenches as well as the command post. Carter (2003) describes during the tragedy that was September 11, 2001 and or the technical response to Anthrax contamination of the United Postal Service, the fire service was integrally involved in protecting "the safety and security of the citizens, visitors, and critical infrastructure within their jurisdiction" (p. 6).

The ability for the fire service to save lives and protect property is predicated on the quality of its planning. The quality of planning for these kinds of events is often based upon an understanding of associated hazards and vulnerabilities. Experts acknowledge the relationship of hazards and vulnerabilities "facilitate the development of risk communication and reduction strategies that target the need of specific groups" (Patton & Johnston, 2001, p. 271-272).

That said the fire service represented by the local fire department does not always know the hazards and vulnerabilities of its community, leaving it at a disadvantage. Trulson (2007) states his city of Joplin, Missouri "has not completed a detailed risk assessment to evaluate the impact of risk and vulnerability" thereby making it impossible to "predict resource needs and evaluate response capabilities" (p. 6).

The problem was the Middletown Division of Fire (MDF) did not have a plan to conduct a hazard and vulnerability assessment of the city of Middletown, Ohio resulting in decreased preparedness and increased risk to the first responders and the community. The purpose of this research was to develop a plan for conducting a hazard and vulnerability assessment of the city of Middletown, Ohio. Through descriptive research the following questions were asked:

(1) Why should there be a hazard and vulnerability assessment of Middletown, Ohio?

(2) What should the hazard and vulnerability assessment of Middletown, Ohio include?

(3) How should the hazard and vulnerability assessment of Middletown, Ohio be completed?

(4) Who should be involved in conducting the hazard and vulnerability assessment of Middletown, Ohio?

BACKGROUND AND SIGNIFICANCE

The Middletown Division of Fire (MDF) is a career, full-time organization comprised of 82 paid employees providing both operations and administrative functions. The operations force is composed of 68 personnel, forming three platoons who respond 24 hours a day, seven days a week. A platoon commander supervises five stations, consisting of four fire companies, staffing four engines with the fourth cross-staffing a ladder, and three ambulance crews. The administrative staff consists of four personnel: one training captain, one fire marshal, the chief and administrative assistant. The MDF provides fire, Emergency Medical Services (EMS), and other technical services to the city of Middletown and Butler County through participation of regional hazardous materials and technical rescue teams.

Middletown, Ohio is a mix of residential, commercial, and industrial properties and has an interstate, two railroads, airport, and river. The city has a population of approximately 53,000

and a corporate limit of 25.5 square miles. Middletown was established in 1791 and incorporated in 1886. Located in southwest Ohio, in between the cities of Dayton and Cincinnati and close to the Great Miami River, Middletown experienced over a century of economic success. The foundation of the local economy was based largely on commercial and heavy industry; made mostly of steel and paper mills. That has significantly changed for the worse in the last twenty years.

While the local business and economic landscape has struggled emergency calls for service have grown. Census (United States Census Bureau [U.S. Census], 2010) indicates of the 21,447 Middletown households, 18,461 of them, or 86.1 percent of all households, have an income at or below 80 percent of the area median income $39,600. The distressed economy has resulted in a reduced tax base challenged to provide resources for emergency services. This has caused repeated budget reductions removing necessary resources most significantly staffing, in the form of personnel reductions in 2005 and 2010. During this same time MDF has seen an increase of 1,000 annual emergency calls for service; a run volume of 9,000 rising to 10,000 per year. For these reasons, the ability for MDF to meet the needs of its community is tested on a daily basis. Given this reality the probability that MDF could quickly adapt to accommodate the requirements of a historic event is unlikely.

Middletown, Ohio directly as a community or indirectly as a part of Butler County has experienced many natural disasters in the past one hundred years. Most of these have been tornadoes, floods, blizzards, and droughts. Within Butler County, over the last 60 years there have been 15 tornadic events, including two F4 and one F3, causing over $60 million in damage, killing one person and injuring 31 others. The National Oceanic and Atmospheric Administration notes, since 1993 there have been 62 recognized floods resulting in over $6

million in property loss and one death. In regards to blizzards, during the same time winter storms have produced over $19 million in damage and five deaths. The worst drought in 50 years occurred in 1984 resulting in over 15,000 wildfires and natural fuel fires; typically 4,000 to 6,000 acres burn in Ohio each year (National Climatic Data Center ([NCDC], 2010).

In addition to the natural hazards presented, Middletown, Ohio has multiple manmade vulnerabilities. Interstate Highway 75 is a primary north/south corridor that bisects the east part of the city. The trucking industry uses it extensively to transport all types of product to include significant amounts of hazardous materials such as, explosive, flammable gases and solids, corrosives, radioactive materials and biological agent (Ohio Department of Public Safety [ODPS], 2010). Another source of hazardous materials transportation MDF must consider would be either of its two rail systems, that on a weekly basis move over a million tons of hazardous cargo. Not to be forgotten would be the use of hazardous materials in Middletown, Ohio. The city has long been home for commercial processing and heavy industry that include steel and paper mills as well as manufactured gases and electroplating. The unintended release of these materials could cause significant harm to the first responder and or the community. MFD responded to 105 hazardous material incidents in 2009 ([MDF], 2009, p. 25).

As stated, for Middletown, Ohio these natural and manmade hazards have presented for some time, currently do so and are not likely to change in the near future. The dilemma is that as this happens, MDF responds without the details of a hazard and vulnerability assessment. The lack of this intelligence collected and placed in a useable form prevents MDF from accurately understanding the situation and or needed resources; ultimately reducing its ability to achieve its mission, save lives and protect property.

The intent of this research is to develop a plan for conducting a hazard and vulnerability assessment of the city of Middletown, Ohio; specifically to identify why, how, what and who is needed for such an activity. The outcome of this research and resulting plan should increase the preparedness and decrease the risk of Middletown's first responders and residents. Hardly could there be more motivation than that for this researcher or any other executive fire officer.

Precourse work for the Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM) course, the third year of the National Fire Academy (NFA), Executive Fire Officer Program (EFOP) required significant examination of community hazard assessment as a means to plan and then manage disastrous events. This was later reinforced through multiple simulations of significant and complex emergencies. During said study and exercise this researcher became keenly aware of how important it would be to understand the hazards and vulnerabilities of Middletown, Ohio before, during and after a catastrophic occurrence. Federal Emergency Management Agency ([FEMA (2009)] states the objective of EAFSOEM is to "prepare senior fire officers to effectively manage the emergency response to large scale incidents" (SM 1-3). A vital component of this ability and process is a response plan based upon a community hazard and vulnerability assessment. Benefits from such a plan would translate beyond MDF into other partner municipal safety agencies such as Middletown Police and Public works and Utilities as well as regional partners like the Butler County Hazardous Materials and Technical Response teams.

The effect of this research supports all five of the United States Fire Administration (USFA) operational objectives. To improve preparedness and reduce risk for at risk populations, the very young and old, relates to USFA objective one and two. To improve preparedness and reduce risk to firefighters speaks to USFA objective three. Moreover, a hazard and vulnerability

assessment is a significant part of USFA objective four, “a comprehensive, multi-hazard risk-reduction plan”. Lastly, in total this project exemplifies USFA objective five, “to respond appropriately in a timely manner to emerging issues” (United States Fire Administration [USFA], 2005, p. 3).

LITERATURE REVIEW

Literature review of academic journals, books, reports, articles, internet searches and other related papers as well as surveys and interviews provided an established source of opinion on the subject of community hazard and vulnerability assessments. Specifically the areas examined were: 1. Why should there be a hazard and vulnerability assessment of a Middletown, Ohio? 2. What should the hazard and vulnerability assessment for Middletown, Ohio include? 3. How should the hazard and vulnerability assessment of Middletown, Ohio be completed? 4. Who should be involved in the hazard and vulnerability assessment of Middletown, Ohio?

Why conduct a community hazard and vulnerability assessment? In response to the escalating cost of disasters: human, financial, and environmental, the federal government enacted legislation, the United States Disaster Mitigation Act ([USDMA], 2000). The principle purpose for this policy was to reduce the increasing cost of these tragic events by placing focus on the pre-incident planning rather than post-incident response. Godschalk (2003) agrees while pointing out the extreme costs of not performing such an assessment. He reports that worldwide in 2001 there were “700 natural disasters, resulting in 25,000 deaths and $36 billion in economic losses” (p. 136). He suggests that to focus efforts on such a process would result in a better ways to “mitigate” these staggering figures. Brining this to the local level, McMahon (2004) states the chief reason for conducting such an evaluation is life safety. He writes that the “most important

reason" to conduct risk and vulnerability analysis is to save lives "yours and the members of your fire department" (p. 1).

The National Oceanic and Atmosphere Administration ([NOAA], 2010) asserts the reason for conducting a community hazard and vulnerability assessment are "to protect people, property and resources (¶ 1). They explain this process saves lives, protects infrastructure, guards business vitality and limits loss to the environment. Kazda, Villegas, Patel, Migala, & Martinez, (2009) claim the process of evaluating a community for risk is both a primary responsibility and central function for safety agencies. The resulting data are necessary for risk to be managed, decisions to be made, resources to be placed, and assets to be protected. Trulson (2007) believes that this process not only protects the area and infrastructure but also prepares "the emergency planners and responders" to do a more effective job (p. 30).

Much is recognized of improved incident response but what also must be understood is the positive effect on the other incident phases; the pre-incident prevention and post-incident recovery. The foundation of today's modern fire service is the ability to plan. Carter (2003) offers it is the first critical step in protecting the public against both natural and manmade threats. The basis for developing appropriate policies and procedures cannot be done without "first completing the necessary risk, hazard and vulnerability assessment" (p. 21). Marlatt (2004) agrees stating it improves overall operational effectiveness in both regular response as well as the catastrophic event. He contends this process of assessment and the resulting plans do not eliminate risks but "manage them at a level acceptable to the community" (p. 4).

Weichselgartner (2001) claims the process of hazard and vulnerability assessment is needed to change the very way we view disasters and their associated costs. He describes that for far too long people have viewed them as "acts of God, luck, fortune, or fate" (p. 85). They

occur with regularity and predictability. For this paradigm to change we must accept decisions of evaluation will "create increased risks, or they may reduce risk to potential disasters" (p. 86).

FEMA (1997) offers a system consisting of a standard methodology and a practice to share intelligence across governmental boundaries. Though these experts recognize it is impossible to prevent natural disasters it is possible to achieve safer communities. This is done by applying a mode of communication and a system to evaluate hazards and vulnerabilities, that later can be used to create a policies and decisions.

In summary, the reasons for conducting a community hazard and vulnerability assessment are many. History tells us catastrophic events will occur and do so in a predictable manner. To ignore these facts and fail to learn from the experience will only result in a greater loss and increased cost to businesses, governments and communities. In contrast, to accept this reality and prepare through a process of community hazard and vulnerability assessment, will serve both to ready the first responder and the public for the extreme event while also improving the present day capability.

What should be included in a community hazard and vulnerability assessment? The USDMA of 2000 mandate local communities create hazard mitigation plans including multihazard maps. The details for this can be found in Code of Federal Regulation ([CFR], 2002, title 44, part 201, section 6) where it lists items that must be present in a hazard-mitigation plan: description of the type, location and extent of hazards along with a risk-based means of ranking hazard vulnerability. Zartarian & Schultz (2010) observe society as a group and individuals are confronted with environmental hazards. They must identify the "tools" at hand to improve the probability of better outcomes. FEMA (1997) encourages the identification of specific hazards threatening a community. They describe the method as "the process of defining

and describing the hazard, including its physical characteristics, magnitude/severity, probability, frequency, causative factors, and locations affected" (p. xxv).

Bender (2002) suggests analysis of vulnerability must consider the foundation of the community, by including the "social, political, institutional, scientific and technical" domains (p. 136). He believes the process must involve much more than simply listing population, geography and economy; to do so would address gaps found in the more traditional approaches of community hazard and vulnerability assessment.

Kazda et al. (2009) add that the needs assessment of a community must not forget the "spatial components" of the process, i.e., the opinions of the public being protected (p. 210). These must be "integrated" with other means of collection and measure such as "census data and geographic information systems" (p. 211). Cutter, Johnson, Finch, & Berry (2007) concede a hazard and vulnerability assessment which employs screening and mapping of multihazard areas highest in vulnerability. Their process not only identifies what is at risk but also who and where. This provides for an increased ability to create "targeted impact-reduction strategies" (p. 12).

Zartarian & Schultz (2010) offer the following as essential tools: "information, strategies, exposure models, data bases, sampling/analytical methods, and geographic information system (GIS) maps" (p. 351). FEMA (1997) requires an outcome of multi-hazard mapping indicating the location and type of individual hazards.

More and more attention is being given to flood prevention by the academic community. Bernardara, Rocqigny, Goutal, Arnaud, & Passoni (2010) suggest that the processes of hazard assessment, specifically of flood potential, should include modeling, statistical interpretation, historical analysis and case study. They offer the probability of hydraulic predictions lie in the quality of the science used.

Expert opinions discovered while researching what should be included in a community hazard and vulnerability assessment first identified it needed to include the necessary details to accurately describe the hazards as well as the people, buildings and processes at risk. Next it must also contain the ability to manipulate the data, such as create scenarios or integrate with GIS.

How should a community hazard and vulnerability assessment be conducted? The Critical Infrastructure Protection Information Center (CIPIC), created by the United States Fire Administration (USFA), is established to help local governments develop protective measures for key facilities and critical processes. The CIPIC publishes information papers, protection methods and training materials for emergency planners ([USFA], 2007). The *Risk, Hazard, and Value Evaluation (RHAVE)* program, developed by the Commission on Fire Accreditation International (CFAI) and the USFA, outlines a process of community evaluation to identify and classify local fire and other hazards. This system consists of a CD-ROM and users guide that is supported 24 hours per day, 7 days a week by telephone or internet (Commission on Fire Accreditation International, Inc. [CFAI], 2002).

HAZUS (FEMA, 2004) uses a combination of statistical analysis of potential and historical events, with loss-estimation software to predict impact caused by flooding, earthquake, and hurricanes. The product utilizes GIS technology, recent history and engineering experience with local data to produce information for pre-event planning and or situation intelligence for mitigation and response. The tools contained within this system are intended to be used by local emergency planners and responders to calculate a community's economic and social loss potential. The economic arenas identified are: critical facilities, infrastructure, residential and commercial buildings, schools, lost business and jobs. The social arenas are: displaced

population, households and shelter needs. Schneider & Schauer (2006) disagree with the opinion HAZUS can be used to do more than measure financial impact. They emphasize HAZUS uses economic damage as the primary measure to evaluate hazard impacts and therefore is not adept to measure the social impact as well as it does financial.

FEMA (1995) Capability and Hazard Identification Program (CHIP) provides local jurisdictions with a common methodology to conduct a community hazard and vulnerability assessment. Through this process of collecting and classifying data local governments can plan, assess potential, set priorities, process activities, improve capability through mutual/alternate aid agreements. The program is designed to define the risks of the specific response area and to improve national preparedness as a whole. The entire investment of effort by the local community is estimated to take an average of ten hours, from start to finish. This includes "reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing, reviewing and submitting" the information (p. 1-1).

The National Fire Protection Association ([NFPA], 2010) created the NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs, to outline a process for local governments and businesses to prepare for the catastrophic consequences caused by disasters, natural or manmade and technological events. The standard provides for a predictable framework to be used for planning and/or decision making by the public or private arenas. The outcome of the hazard and vulnerability assessment is a set of tools that may be used for all phases of the incident: "prevention, mitigation, preparedness, response and recovery" (p. 2).

Wasewar & Kumar (2010) point out that chemicals; the manufacture, transportation and use thereof, have become more and more a part of our communities. The hazards this potentially

exposes the public to demands a means of threat evaluation. They describe a process of measure called “Quantitative Risk Assessment” realized by the employment of hazard scenarios, risk assessment and data analysis (p. 19).

The National Association for Court Management ([NACM], 2006) prescribes a methodology of hazard assessment and planning for courts in the United States of America. The basis for the program is to develop an all hazards evaluation that then can be converted to mitigation strategies. The goals of this system relative to our courts and hazardous events are: protection of facilities and operations, limit damage to records and equipment and reduce injuries and death.

NOAA created a product named Risk and Vulnerability Assessment Tool (RVAT) that is designed to be used by both the public and private sectors for prediction, planning, mitigation, response and recovery from earthquakes, hurricanes, floods and high winds. Risk is shown by the programs interactive mapping of those most probable to face a given hazard. Census data, societal analysis, economic impact, and environmental analysis demonstrate if people, infrastructure and property are truly vulnerable. The vulnerability is quantified by a community rating system that lends itself for decision making; pre, during post incident (NOAA, 2010).

IDRISI Taiga is a computer based risk and vulnerability analysis product marketed primarily to the private sector; significant users of this product are the petroleum industry and nuclear facilities. It has an extensive capability in the areas of planning, mapping and resource management. The program integrates GIS with case studies and environmental modeling to predict future outcomes (Clark Labs, 2009).

Research in how a community hazard and vulnerability assessment should be conducted exposed multiple techniques that can effectively place the necessary data in a usable form. To

name just a few there are various FEMA systems, a NFPA product, commercial or privately created methods as well as the locally developed process that can measure a community's hazards and vulnerabilities. That said, when choosing a system the choice may very well depend on what the user wants it to produce beyond placing data in a quantitative shape. These systems are individually unique and as such produce equally unique results. Whereas one may lend itself more for modeling and scenario based capabilities another is more adept at evaluating the impact to the local business community or population as a culture.

Who should be involved in a community hazard and vulnerability assessment? Vermeire, Munns, Jr., Sekizawa, Sutter, & Kraak (2007) suggest in today's complicated world, analysis must be integrated and broad-based to be worthwhile, this rule holds true for risk assessment as well. The process of risk assessment includes many players; two primary groups are "decision-makers" and "stake-holders" (p. 340). It is important to appreciate the many and varied perceptions of individual sectors involved in the activity of hazard and vulnerability assessment. One example would be the need for chemical business partners to see the "tangible benefit" of this process to their community before they can "accept this way of doing business" (p. 341).

Branch & Bradbury (2006) emphasize there is an increasing opinion that decision making as it applies to risk assessment, benefits from a partnership of government agencies and business entities. They point to the success achieved by the U.S. Department of Energy's Environmental Restoration and Waste Management Program (DOE/EM), U.S. Department of Defense's Army (DoD/Army) and the Citizen Advisory Boards (CAB) involved in the 1990's remediation of "contaminated" military bases (p. 724). The "agency representatives and stakeholder participants" agree that their open discussion and exchange of ideas were of paramount

significance relative to the project outcome (p. 726). Daniels & Walker (1996) describe the synergy achieved by cooperative groups as "situation improvement" as apposed seeking a single solution from a single faction (p. 71).

Bokman (2003) offers the NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs technical committee is composed of thirty members representing a diverse group concerned about hazard, vulnerability and risk management; some examples are "the Department of Homeland Security (DHS), International Association of Emergency Managers (IAEM), Edward Jones, US Steel, Marine Insurance" (¶. 4). These individuals and agencies share the same concerns, their people, property and processes. Recent historic events that illuminated this reality were the threats to our "computer capabilities" caused by "Y2K" and again to our physical infrastructure during the terrorist attacks of "9-11" (¶ 4-5).

Hall & Wiggins (2000) claim that the process of community risk analysis is best accomplished when including six domains "social, technical, administrative, political, legal and economic" (p. 181). In order to accomplish this, a team of those capable representing these domains should be created. Members may be federal, state, and local legislators, judiciary, engineers, architects, insurers, merchants, first responders and the general public. Cashman et al. (2008) agree that there are real benefits to involving a diverse group of individuals and/or agencies with community assessments but point out there are downfalls to this approach. They suggest there is significant data indicating project outcomes are often less than what was planned; many of the stakeholders involved lose interest and or become disengaged while the data is being collected and before decisions are formed.

Literature review concerning who should be involved in a community hazard and vulnerability assessment revealed that ideally it should include a sufficiently diverse group,

capable of representing the complex differences of the community; while balancing their shared core values and the necessary technical competency. Several examples that may be used as models included various levels of government, business, public safety experts, special partners or consultants and the citizenry at large.

PROCEDURES

The reason for this research was to gather contemporary information on the subject of conducting a community hazard and vulnerability assessment of Middletown, Ohio. The procedures utilized to accomplish this applied research project were composed of three principle methods: first literature review of subject matter experts, second collection of data via a survey instrument from community risk management experts, third interviews with local stakeholders. If an individual wanted to achieve the same purpose and or build upon this applied research they would follow the above stated procedures in the manner described below.

The beginning of this research began at the National Fire Academy's Learning Resource Center September 2010. Once completed greater examination continued at the Gardner-Harvey library, Miami University, Middletown, Ohio and the Middletown Public Library, Middletown, Ohio until January 2011. Books, periodicals, academic journals and internet searches were used to answer the following questions: Why should there be a hazard and vulnerability assessment of Middletown, Ohio? What should the hazard and vulnerability assessment of Middletown, Ohio include? How should the hazard and vulnerability assessment of Middletown, Ohio be completed? Who should be involved in conducting the hazard and vulnerability assessment of Middletown, Ohio?

This applied research project used the descriptive method as a means to gain detailed information on the subject of conducting a community hazard and vulnerability assessment of

Middletown, Ohio in 2011. In order to obtain current opinions and attitudes of national, state and local community risk management experts a survey instrument was created. A cover letter was developed giving details as to the purpose and process for the survey and sent by email to each respondent. The cover letter can be seen in Appendix A. The survey model resulted from the four research questions and the desire to gain input from community risk management experts. These community risk management experts were identified both in the literature review and the EAFSOEM course. A web based survey instrument was used and may be seen in Appendix B. The web based survey instrument was sent to the National Society of Executive Fire Officers, Alumni email group of the Ohio Executive Fire Officers Program and members of the Butler County Fire Chiefs Association. These groups were selected for their recognized expertise in the area of community risk management and ability to deliver opinions that could be cleanly compared and contrasted based upon their national, state or local perspective. The survey was sent out Jan 12, 2011 by email with instructions on how to complete it and requesting it to be returned by Jan 19, 2011. This was followed by subsequent emails and phone calls offering assistance and the availability to answer questions if needed.

The survey was built using seven questions. This was done believing that an efficiently brief survey could ascertain the needed information while maximizing response due to minimum effort required of the respondent. The style of question was closed ended, providing the respondent the ability to convey their opinion while at the same time giving the surveyor the ability to simply quantify the response.

Question one question asked the respondent to identify which population group they belonged to. This was done to allow examination of individual groups for the purpose of comparison and/or individual study.

Question two asked the respondent if they had conducted a community hazard and vulnerability assessment. This was done to gain some insight into how common this activity is. The literature review clearly presented how important this action could be for the community, region, state and nation; while at the same time contrasting it with the reality not all communities have done such an assessment.

Question three asked the respondent why they had conducted a community hazard and vulnerability assessment. This was done to better understand the varied motivations or mandates discovered during literature review for conducting such analysis.

Question four asked the respondent what elements had been included in their community hazard and vulnerability assessment. The purpose for this question was to identify the items needed or of value in such an assessment, by those who had actually accomplished the task.

Question five asked the respondent how they had conducted their community hazard and vulnerability assessment. Literature review had shown multiple systems that were available. Answers to this question could be used to help identify, of the many systems, if there was one or more commonly used.

Question six asked the respondent who had been involved in their community hazard and vulnerability assessment. It had become known during information gathering on this subject that the process of community assessment could be done by wide range of individuals or groups. Feedback here could give a more complete understanding of who these individuals or groups were and how commonly they had been involved.

Question seven asked the respondents if their community hazard and vulnerability assessment had increased preparedness and decreased risks to their first responders and public.

This question was asked to more fully realize the probability of achieving such an outcome; as this was the stated purpose of this applied research project.

A total of 923 individuals were surveyed. The total population was 679 from the National Society of Executive Fire Officers, 176 from the alumni group of the Ohio Fire Executive Fire Officer Program and 68 members of the Butler County Fire Chiefs' Association. A total of 216 were returned. The survey results can be seen in Appendix C.

In order to more completely describe the current situation relative to this research project, interviews were conducted using open ended questions of representatives from Middletown, Ohio stakeholders. These Middletown, Ohio stakeholders were identified in the National Fire Academy, Executive Analysis of Community Risk Reduction (EACRR) course ([EACRR], 2009). One person, often in a position of responsibility was interviewed from each of the population groups: Mr. David Duritsch from the Middletown Public Works and Utilities department, Mr. David VanArsdale from the Middletown Division of Police, Mr. Bill Trick from the Chamber of Commerce, Ms. Jackie Phillips from the Middletown Health Department, Ms. Anita Scott-Jones from the Middletown City Council and Mr. Brent Dominy from the Middletown Division of Fire, was asked to give a 15-30 minute interview. These interviews took place January 3 – 7, 2011. Interviews were all offered to be conducted at a convenient location for the individual being interviewed; five interviews were conducted in their offices and one done by phone.

The interview was composed of six questions intended to cover the same areas identified in the EAFSOEM course, literature review and surveys. The interviews were used to gain a greater understanding of the material being researched and the perspectives and opinions of local

stakeholders, who likely later would be included in a community hazard and vulnerability assessment. By doing so answers to research question one through four were identified

The first question was used to ascertain how much experience the interviewee had with community hazard and vulnerability assessment. The second question was designed to gain the interviewee's opinion on the motivation for said activity. The third question was intended to distinguish the details of required assessment items from the local viewpoint. The purpose for the fourth question was to add weight to any systems of assessment previously found through literature review and/or to identify others that had not been discovered. The reason for the fifth question was to learn who the interviewee believed was needed for described analysis. The last question was used to discover the interviewee's opinion, that the assessment would result as expected. The exact interview details are shown in Appendix D.

Assumptions and Limitations

During the literature review an assumption was made that all research read was unbiased and truthful.

During the survey process it was assumed all individuals answered honestly and without the influence of others and that they all understood the intent and meaning of the questions being asked. This may have been an erroneous assumption. It is difficult to know for sure but should be noted that every effort was made to maintain standard, unbiased assistance and interaction throughout the survey process. However, it was unavoidable to prevent some difference as a consequence.

A limitation was the fact most survey questions were closed-ended; the exception being questions 3 – 6 allowed the respondent to enter "other, please specify" if none of the closed-ended responses were appropriate. This was done to cause answers to be more uniform in order

to measure for similarity or difference. In doing so however it could have limited the respondent from answering more fully or individual.

Another limitation was that only 216 of the 923 surveys, 23% were returned. This limited return percentage brings into question the validity of the documented outcome. Another statistical limitation of the survey was that each population subgroup varied in number and as a result weighted the outcome differently; the validity of a subgroup as compared to another and/or the data as a whole. Lastly, though attention was focused to be accurate and thorough human error could have occurred during data collection or entry.

RESULTS

The a process of descriptive research, utilizing literature review, a survey instrument and personal interviews, information was collected to answer the following four research questions.

The first research question asked, why should there be a hazard and vulnerability assessment of Middletown, Ohio? Through literature review of subject matter experts it was found there are many reasons, one of which would be that disasters continue to occur with increasing regularity and costs, to our country and its population. Deyle, Chapin, & Baker (2008) propose over the last three decades hurricanes have regularly assaulted the Florida coast resulting in an increased cost to the U.S. and its communities. Another reason is that this single act can pay dividends in multiple areas of readiness. Hannigan (2009) emphasizes that it is paramount to understand the hazards and vulnerabilities of a community to “prepare”, “respond”, and “recover” (p. 41).

A survey instrument was used to collect current attitudes and opinions of community risk management experts; national, state and local. Specifically question three asked why they had conducted a community hazard and vulnerability assessment. The most popular responses were

"Desire to prepare for future events" with 57.6% and "Desire to improve current capabilities" with 35.9 % (Appendix C Survey Results).

Personal interviews were conducted of individuals representing Middletown, Ohio stakeholders, to more completely answer the questions. Personal interview question number two asked, why did their department or work group conduct a community hazard and vulnerability assessment of Middletown, Ohio? Mr. VanArsdale (personal communication, January 4, 2011) responded: To get ahead of any problems before they occur and to assist the court with their needs. Ms. Jackie Phillips (personal communication, January 4, 2011) responded: It is necessary to qualify and/or be competitive for grant dollars and to improve our ability to serve. Mrs. Anita Scott-Jones (personal communication, January 8, 2011) responded: It is necessary for the legislative body to know what deficits exist, where they are and how to address them. Mr. David Duritsch (personal communication January 3, 2011) responded: The Water Treatment assessment was conducted because of federal directive, the Public Health & Terrorism Preparedness and Response Act, 2002. The streets assessment was in response to state and federal requirements related to confined spaces. Mr. Brent Dominy (personal communication, January 7, 2011) responded: There is a need for Fire Officers and Firefighters to know what the hazards are before they encounter an incident and the resources that are required to mitigate the incident. Mr. Bill Trick (personal communication, January 4, 2011) responded: To make sure business can survive, provide for our customers, eliminate unsafe conditions for our employees and in-turn to obtain preferential insurance rates both private as well as state Bureau of Workers' Compensation (BWC), (Appendix D Personal Communications).

The reasons for conducting a community hazard and vulnerability assessment are many; the sum of which is to provide for the whole community at the present and in the future.

The second research question asked, what should the hazard and vulnerability assessment of Middletown, Ohio include? Literature review in this area suggested that the answer to this question lie in a list of items, first beginning with the hazards that are likely to occur and then include the people, hard assets, and the public processes at risk. Sullivan (2004) remarks that the process of "hazard analysis" begins with evaluating what the community is likely to experience, from "fire to terrorism", and then must include a "prioritized" and "pre-planned" list of facilities and people (p. 1 – 7). At the foundation must be the essential information that will later develop into a preparedness program. USFA (2001) asserts the data collected and placed in the "RHAVE model" can then be used to develop "risk reduction policies such as the "deployment of emergency service resources" (¶ 3).

A survey instrument was used to better answer this question. Survey question three asked the respondent, what was included in their community hazard and vulnerability assessment? The two most popular responses were "hazards" with 92.3% and "key facilities and occupancies" with 92.3% (Appendix C Survey Results).

Personal interviews were used to assist in answering this question, specifically personal interview question number four. It asked the respondent, what they had included in their community hazard and vulnerability assessment? Mr. VanArsdale (personal communication, January 4, 2011) responded: Fixed assets and processes of business. Ms. Phillips (personal communication, January 4, 2011) responded: Data: socio-economic, employment, education, age disability, special needs, shelters, and necessary resource capability. Mrs. Scott-Jones (personal communication, January 5, 2011) responded: Economic issues, crime, health issues, public safety concerns, infrastructure…the assessment must be comprehensive. Mr. Duritsch (personal communication, January 3, 2011) responded: Identified what we had, what where the

potential risks, and a plan of response should the worst occur. Mr. Dominy (personal communication, January 7, 2011) responded: Building size and location, built-in protection, hazards involved with the building…focusing on infrastructure. Mr. Trick (personal communication, January 4, 2011) responded: Tax records, training and safety assessments from the BWC and reports from the state and local legislature (Appendix D Personal Communication).

The research identified the many items that must be included in a Middletown, Ohio community hazard and vulnerability assessment; from which hazards and key facilities are a priority. This list should be comprehensive and will vary upon individual perspective.

The third research question asked, how should the hazard and vulnerability assessment of Middletown, Ohio be completed? Literature review offered that there are numerous methods available to give structure and/or provide for how this should be done; FEMA, NFPA, commercially and privately created systems (Niggeler, 2009). Of these systems it did not identify those that were better or worse than another. It suggested the value of selecting the system lies in understanding what the capabilities are of each system relative to the user's purpose (VanBeek, 2008).

Survey question five asked, how did your department complete the community hazard and vulnerability assessment? The two most popular responses were RHAVE with 38.9% and locally created system or product with 32.2% (Appendix C Survey Results).

In answering this research question personal interviews provided the following by asking personal interview question number four, how did your department complete the hazard and vulnerability assessment of Middletown, Ohio? Mr. VanArsdale (personal communication, January 4, 2011) responded: For the city security/vulnerability assessment we developed it locally for the municipal court we used their judicial standards. Ms. Phillips (personal

communication, January 4, 2011) responded: An academically created product created by one of our partners….a local university or college. Mrs. Scott-Jones (personal communication January 5, 2011) responded: We conduct an annual retreat in which we review facts as they are know, review previously set goals, create new plans and goals. Mr. Duritsch (personal communication, January 3, 2011) responded: The specific directives, be it the federal act or code of federal regulations, establishes the process of how these assessments are completed. Mr. Dominy (personal communication, January 7, 2011) responded: Our department created an outline of what was needed, fire companies collected the information and then it was passed-on to administration for recording. Mr. Trick (personal communication, January 4, 2011) responded: Model created by local management (Appendix D Personal Communications).

The research identified the multiple systems capable of performing a community hazard and vulnerability assessment of Middletown, Ohio; of which the RHAVE and locally created system were the most common.

The fourth research question asked, who should be involved in the hazard and vulnerability assessment of Middletown, Ohio? Literature review suggested leadership should come from FEMA but the actual working group expected to accomplish this task should be composed of a working group including various levels of government, business, safety experts, and the public at large (FEMA, 1997). (Trulson, 2007) agrees while adding it should be the local fire department who owns leadership at the local level; able to guide and motivate the diverse work group through the process.

The survey instrument used survey question six to better answer this question, who was involved in the community hazard and vulnerability assessment? The two most common

responses were, local fire department with 86.8% and local officials/agencies (other than fire department) (Appendix C Survey Results).

In answering this research question personal interviews provided the following by asking personal interview question number five, who was involved in the hazard and vulnerability assessment of Middletown, Ohio? Mr. VanArsdale (personal communication, January 4, 2011) responded: Our police officers…we selective those with special expertise and training, courts personnel and private consultant. Ms. Phillips (personal communication, January 4, 2011) responded: Local university or college, other governmental agencies such as the county health department, nonprofit agencies, schools and churches. Mrs. Scott-Jones (personal communication, January 5, 2011) responded: The city council, city manager, department directors, community leaders and the media. Mr. Duritsch (personal communication, January 3, 2011) responded: Our personnel, fire department, law department, private consultant. Mr. Dominy (personal communication, January 7, 2011) responded: Our department delegated to the company level, city building department for plans/assistance, private contractors for architectural drawings of new construction, county tax department for more building information. Mr. Trick (personal communication, January 4, 2011) responded: Federal and State Chamber of Commerce, State BWC, local Safety Council, Board of Directors, Public Officials (city, county and state) (Appendix D Personal Communication).

Research indicated that a group of individuals and/or agencies should be involved in the Middletown, Ohio hazard and vulnerability assessment. They should be able to represent and consider the various perspectives of both the public and private arenas. Additionally, interaction with national, state and regional agencies are ideal, however this effort will primarily involve Middletown stakeholders led by the MDF.

In summary, through the course of descriptive research, involving literature review, a survey instrument and personal interviews, it has been determined a community hazard and vulnerability assessment of Middletown, Ohio would likely prepare the first responder and the public for future significant events while also improving present response capability. This process should include detailed community data while focusing on hazards and key facilities, utilizing the RHAVE and or a locally created product, done by a diverse group of stakeholders led by MDF.

DISCUSSION

The purpose of this research was to study the problem of MDF not having a plan to conduct a hazard and vulnerability assessment of Middletown, Ohio. In an organized manner the areas of why, what, how and who, relative to this plan were examined.

In researching the reason(s) why conduct a hazard and vulnerability assessment of Middletown, Ohio several opinions were found to share the same priorities while differing in perspective. Carter (2003) and Godschalk (2003) insisted the reason was to save lives and protect property. Other experts identified historical data as a justification for analysis, to change the paradigm from response to prevention (USDMA, 2000, NOAA, 2010 and Trulson). Even though Marlatt (2004) and Wiechselgartner (2001) agreed the process was about risk management; Marlatt believed it was about managing the risk whereas Wiechslegartner believed it was about changing it.

Though not completely agreed upon by all experts, enough has been found to cause this researcher to believe that the reasons for performing a community assessment are: to better save lives and protect property, to better prevent as well as respond to emergencies and to better manage as well as change risk.

The elements found while seeking to identify what is needed in a hazard and vulnerability assessment of Middletown, Ohio were significant. The importance rested not only in collecting the right data but in a manner or form that is capable of becoming something more such as policy or strategy. Examples of putting the right data points into the system were stressed by some experts (FEMA, 1997 and Bernardara et al., 2010). Another example of this was noted in the survey results listing "hazards" and "key facilities and occupancies" as the most common results (Appendix C Survey Results). A number of other authorities emphasized attention placed on the processes capable of delivering value to the data: modeling, sampling, analytical methods, GIS, etc. (Cutter et al., 2007, Kazda et al., 2009 and Zartarian & Schultz, 2010). Also recognized locally when interviewing Ms. Duritsch (personal communications, January 3, 2011) identified what we had, what where the potential risks, and a plan of response should the worst occur.

The process of examination in this area has caused this researcher to know what should be included in the hazard and vulnerability assessment of Middletown, Ohio. First it should include a comprehensive list identifying people, property and processes. Second it must include the ability to translate or move the data, such as modeling or GIS to create action i.e., "targeted impact-reduction strategies" (Cutter et al., 2007, p. 12).

Interesting and even conflicted answers were found when searching for how the hazard and vulnerability assessment of Middletown, Ohio should be completed. Identified were several well known and supported methods for completing such a process, FEMA products, NFPA 1601, locally and commercially created (Niggeler, 2009). VanBeek (2008) offered that his research did not indicate one system being more common or capable than another, that the worth of the system was decided by how well its capabilities matched the user's needs. This was challenged by Trulson (2007) who contends systems containing a GIS capability are superior while also

noting “only 28%” of those he researched had this capacity (p. 32). This researcher found the most common methods were RHAVE and a locally created product (Appendix C Survey Results). This was certainly the case locally for Middletown, Ohio as evident in research interviews; all six interviews provided a response demonstrating the current use of a locally created methodology for community hazard and vulnerability assessment (Appendix D Personal Communication).

Research results in this area validated the use of the RHAVE product or another system capable of integrating GIS and or mapping/modeling functions. It also stressed the importance of customizing the product by local means. This would insure the value of the process by building upon what is already in place and modifying function with the community’s individual requirements.

Analysis of who should be involved in a community hazard and vulnerability assessment not only yielded suggestions for those who should be involved but also provided insight into the roles they should play. Some experts insist the ideal circumstance is a team of individuals or groups capable of delivering the diverse perspectives of the community (Bookman, 2003 and Branch & Bradbury (2006). An example of such is found in Middletown, Ohio: Ms. Phillips (personal communication, January 4, 2011) responded: Local university or college, other governmental agencies such as the county health department, nonprofit agencies, schools and churches. Vermeire et al. (2007) adds these individuals or groups serve in two capacities “decision-makers” and “stake-holders” (p. 340). Cashman et al. (2008) acknowledged there is value to this approach but warns the group, recognized as stakeholders, are often prone to lose focus and become disinterested. This researcher believes the means to address such concerns are found in the opinions of FEMA and Trulson. FEMA (1997) believes that there should be

participation on the national level and that it should be in the form of leadership. Trulson (2007) charges the home fire department should communicate that leadership to the local level. Survey results agree with the most popular response: local fire department with 86.8% (Appendix C Survey Results).

From an organizational standpoint this research has indicated that a hazard and vulnerability assessment of Middletown, Ohio is necessary. The literature review, survey results and personal communications established significant information that not always agreed but ultimately confirmed that doing so would substantially improve the quality of life for the community; specifically the responder and the resident. In doing so would increase organizational efficiency, providing the resources necessary to solve problems before they occur during the regular duty day or the catastrophic occurrence.

RECOMMENDATIONS

This research project was accomplished due to the fact MDF did not have a plan to conduct a community hazard and vulnerability assessment of Middletown, Ohio. The absence of such a plan could result in decreased preparedness and increased risk to the first responder and the community. The purpose of this research was to provide the details necessary for such a plan to evolve; to identify the why, what, how and who needed for such an assessment. Based upon this research the following recommendations are made:

The first recommendation is that MDF conduct a hazard and vulnerability assessment of Middletown, Ohio. Sufficient evidence has been discovered to support the probability it will result in greater organizational efficiency, increased ability to save lives and property and the means to manage or reduce risk.

The second recommendation is the hazard and vulnerability assessment include a thorough list of data points outlining the population, assets and systems composing Middletown, Ohio. It must also include the ability to move the data: to integrate with GIS, model, map and assist in scenario and decision processes.

The third recommendation is that the hazard and vulnerability assessment be conducted using the RHAVE method in concert with local systems already in place. Research suggests the RHAVE system has the capacity required in both volume and function while the local processes can address the unique community characteristics.

The fourth recommendation is that the hazard and vulnerability assessment be conducted by a Middletown coalition comprised of a diverse collection of groups and individuals representing various facets of the public and private sectors, such as but limited to: fire, police, health, public works and engineering, city government, business, schools, churches. Furthermore, the research has demonstrated this coalition should have a champion and that MDF is most qualified for this responsibility.

In conclusion, this applied research project has answered the questions why, what, how and who relative to conducting a hazard and vulnerability assessment of Middletown, Ohio; and as such has identified the plan for doing so. This researcher recommends the plan identified wherein be implemented and championed by MDF and used or built upon by future readers and or researchers.

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Appendix A

Survey Cover Letter

January 12, 2011

Dear Sir or Ma'am:

I am currently enrolled in the Executive Fire Officer Program at the National Fire Academy. As part of that program I am conducting research on the subject of planning a hazard and vulnerability for the city of Middletown, Ohio. The purpose of this research is to collect data and conduct problem analysis on the subject to increase preparedness and decrease risk to first responders and the community.

An important part of this research is your expert opinion. As such a survey has been created and made available through a web page (see details below).

The survey consists of just seven questions and should only take two to three minutes. Please complete this survey by Jan 19, 2011. To access the web page and take the survey just click the enclosed link.

http://www.surveymonkey.com/s/VMDXD6C

For your information, all survey respondents will remain anonymous and their input will be kept confidential.

I thank you in advance for your assistance and promise to share the results of this survey and the applied research project.

Steve Botts
Fire Chief
Middletown Division of Fire
Middletown, Ohio

Appendix B

Survey Instrument

1. Please select from the following choices what best describes your position.

    - Fire Official (other than Ohio)
    - Ohio Fire Official
    - Butler County, Ohio Fire Official

2. Has your department conducted a hazard and vulnerability assessment of your community?

    - Yes
    - No

3. Why did your department conduct the community hazard and vulnerability assessment?

    - Required to do so by individual or agency having authority
    - Desire to improve upon past performance
    - Desire to improve on current capabilities
    - Desire to prepare for future events
    - Other

4. What was included in the community hazard and vulnerability assessment?

    - Population and census data
    - Critical infrastructure
    - Key facilities and occupancies
    - Data analysis; historical, past, present and potential
    - Hazards
    - Vulnerabilities
    - Risks
    - Protection and mitigation measures
    - Response contingencies
    - Resource capability
    - Alternate resource capability: mutual, state and federal aid
    - Other

5. How did your department complete the community hazard and vulnerability assessment?

    - Risk, Hazard and Value Evaluation (RHAVE), FEMA
    - HAZUS, FEMA
    - Capability and Hazard Identification Program (CHIP), FEMA
    - NFPA 1600
    - Commercially purchased system or product
    - Locally created system or product
    - Other

6. Who was involved in the community hazard and vulnerability assessment?

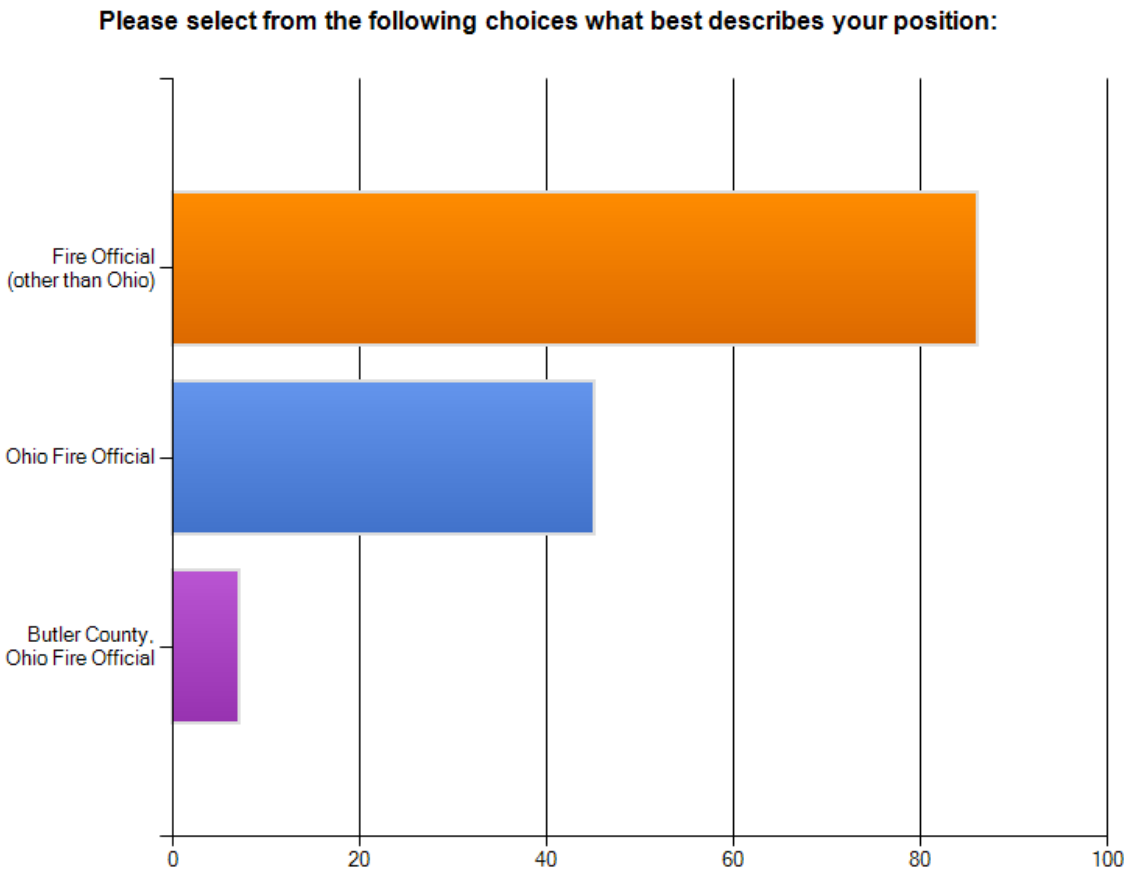
    - Federal Officials/Agencies
    - State Officials/Agencies
    - Region or County Officials/Agencies
    - Local Officials/Agencies (other than Fire Department)
    - Local Fire Department
    - Private Sector Individual/Entities
    - Other

7. Did the community hazard and vulnerability assessment increase preparedness and decrease risks to your first responders and the public?

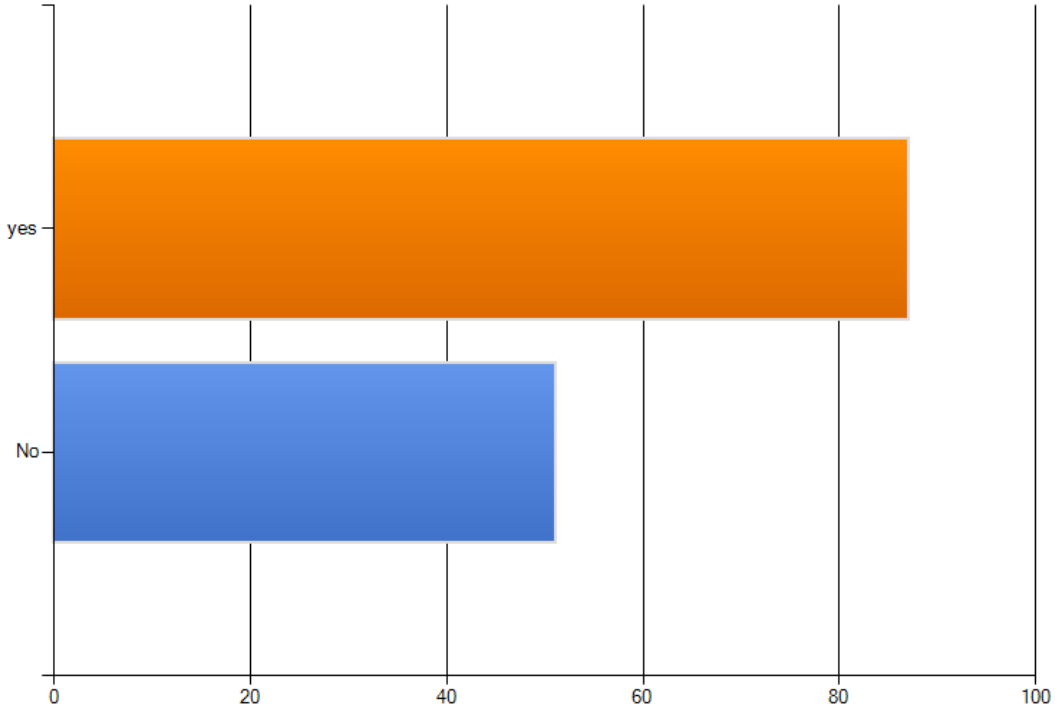
    - Yes
    - No

Appendix C

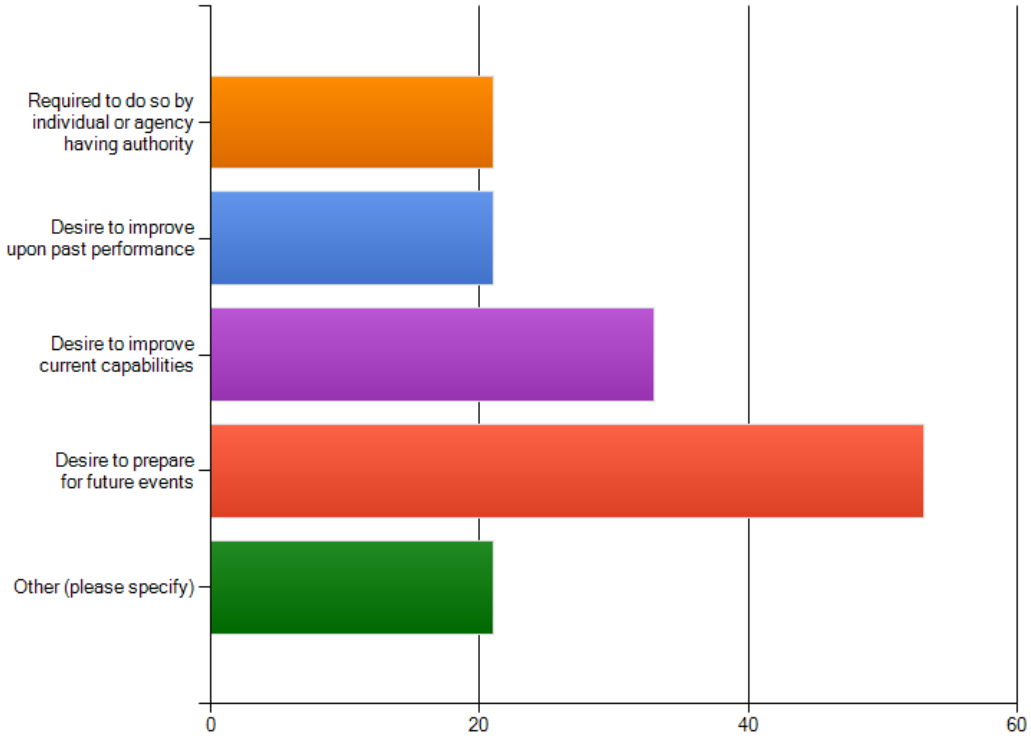
Survey Results



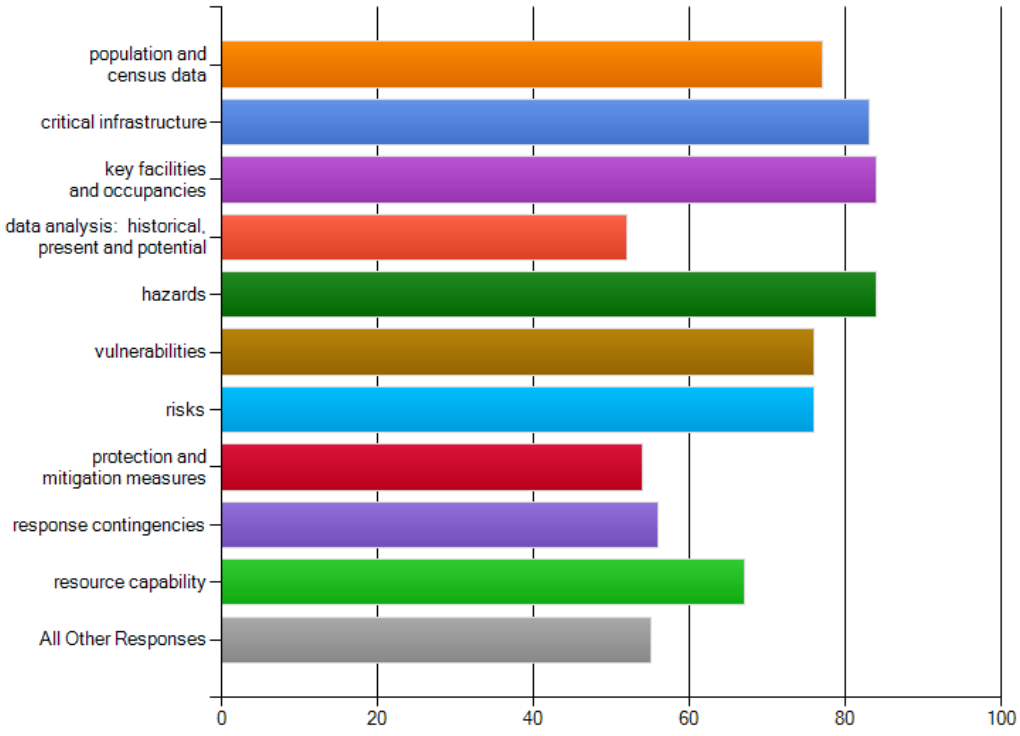
Has your department conducted a hazard and vulnerability assessment of your community?



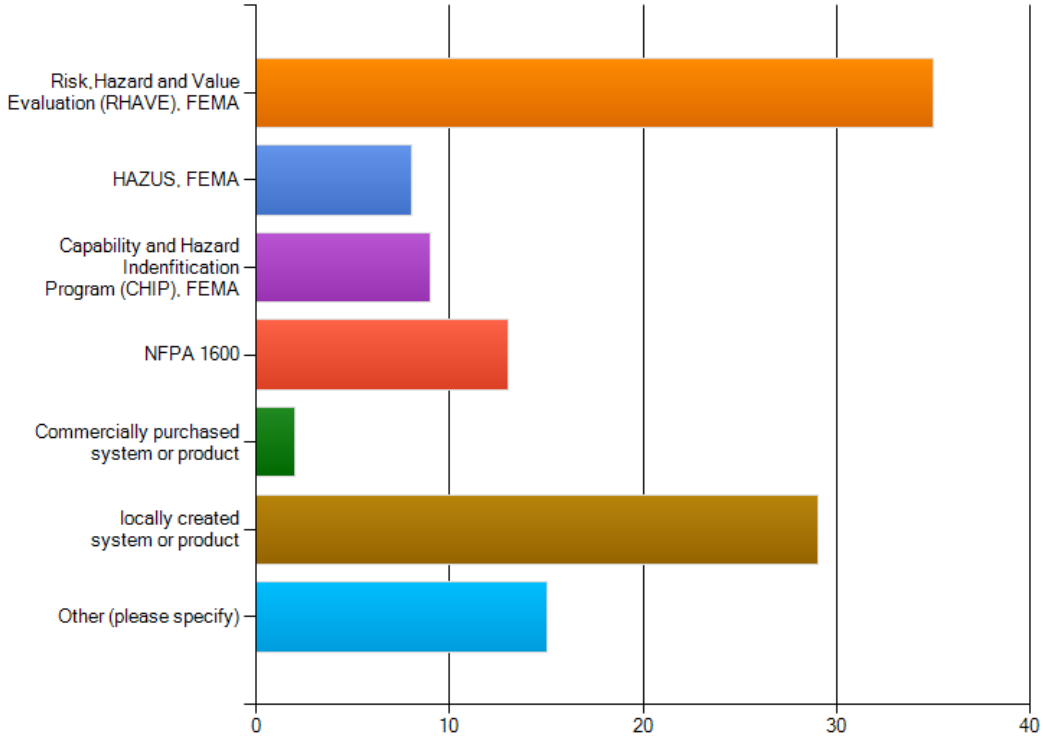
Why did your department conduct the community hazard and vulnerability assessment?



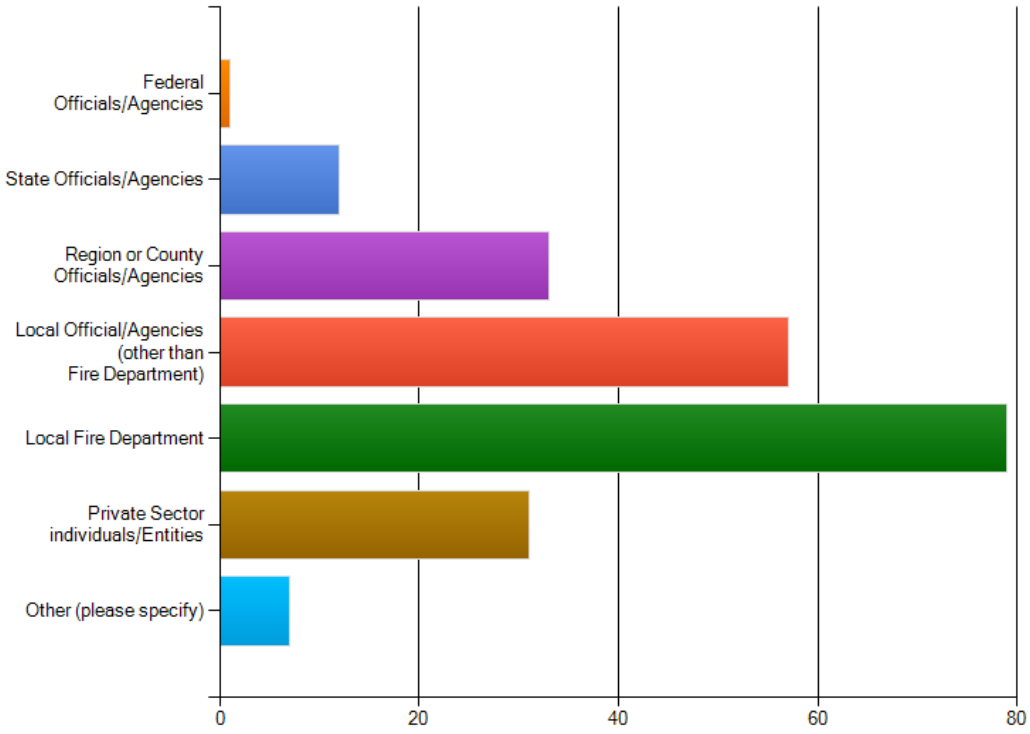
What was included in the community hazard and vulnerability assessment?



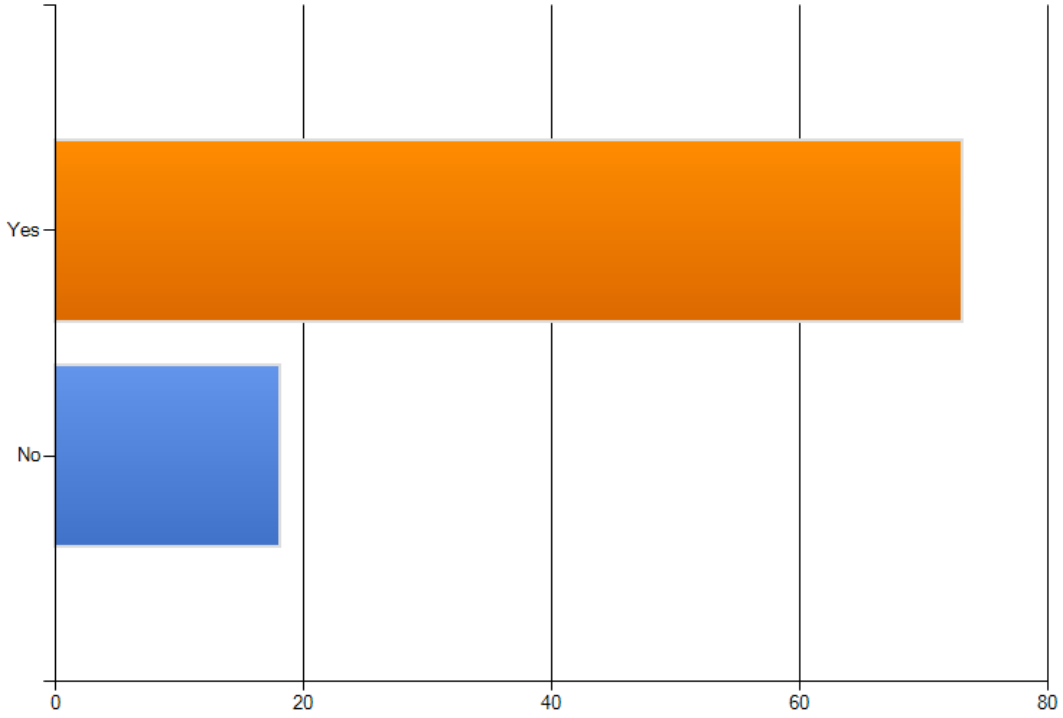
How did your department complete the community hazard and vulnerability assessment?



Who was involved in the community hazard and vulnerability assessment?



Did the community hazard and vulnerability assessment increase preparedness and decrease risk to your first responders and the public?



Appendix D

Personal Communication

Interview with Mr. David Duritsch, Middletown Ohio

The interview took place on January 3, 2011 at his office at 1 Donham Plaza, Middletown Ohio at 10:30 AM. The following is an account of the discussion with Mr. Duritsch who is the Department Director for the City of Middletown's Public Works and Utilities Departments.

1. Has your department conducted a hazard and vulnerability assessment of Middletown, Ohio? Yes, we have conducted three: Waste Water, Water Treatment and recently Streets.
2. Why did (or would) your department conduct the community hazard and vulnerability assessment of Middletown, Ohio? The Waste Water assessment was conducted to manage risk of hazardous chemicals: chlorine especially. The Water Treatment assessment was conducted because of federal directive, the Public Health & Terrorism Preparedness and Response Act, 2002. The streets assessment was in response to state and federal requirements related to confined spaces.
3. What was (would be) included in the hazard and vulnerability assessment of Middletown, Ohio? Identified what we had, what where the potential risks, and a plan of response should the worst occur.
4. How did (would) your department complete the hazard and vulnerability assessment of Middletown, Ohio? The specific directives be it the federal act or code of federal regulations establishes the process of how these assessments are completed.

5. Who was (would be) involved in the hazard and vulnerability assessment of Middletown, Ohio? Our personnel, fire department, law department, private consultant.
6. Did (Would) the hazard and vulnerability assessment of Middletown, Ohio increase preparedness and decrease risks to responders and the public? Yes and no, yes I believe the process identifies needs and improves preparedness and no in that over time often the assessment sits on a shelf and can be forgotten.

Interview with Mr. David VanArsdale, Middletown Ohio

The interview took place on January 4, 2011 at his office at 1 Donham Plaza, Middletown Ohio at 11:00 AM. The following is an account of the discussion with Mr. VanArsdale who holds the rank of Major and supervises the Investigation Section for the Middletown Division of Police (MDP).

1. Has your department conducted a hazard and vulnerability assessment of Middletown, Ohio? Yes, we have done several different assessments, one post 9-11 to look at the security, vulnerability of the city as a whole…the most recent we assisted the municipal court perform an assessment as they examine complying with national judicial standards.
2. Why did (would) your department conduct the community hazard and vulnerability assessment of Middletown, Ohio? To get ahead of any problems before they occur and to assist the court with their needs.
3. What was (would be) included in the hazard and vulnerability assessment of Middletown, Ohio? Fixed assets and processes of business.
4. How did (would) your department complete the hazard and vulnerability assessment of Middletown, Ohio? For the city security/vulnerability assessment we developed it locally for the municipal court we used their judicial standards.

5. Who was (would be) involved in the hazard and vulnerability assessment of Middletown, Ohio? Our police officers…we selective those with special expertise and training, courts personnel and private consultant.
6. Did (Would) the hazard and vulnerability assessment of Middletown, Ohio increase preparedness and decrease risks to responders and the public? Quantitatively I would have to say I do not know…we have not developed a means to measure with outcomes but qualitatively with my experience I would say yes.

Interview with Mr. Bill Trick, Middletown Ohio

The interview took place on January 4, 2011 at his office at 1500 Central Ave., Middletown, Ohio at 1:00 PM. The following is an account of the discussion with Mr. Trick who is the President and Chief Executive Officer of The Chamber of Commerce Serving Middletown, Monroe and Trenton, Ohio.

1. Has your department conducted a hazard and vulnerability assessment of Middletown, Ohio? Yes in two perspectives…financial and physical.
2. Why did (or would) your department conduct the community hazard and vulnerability assessment of Middletown, Ohio? To make sure business can survive, provide for our customers, eliminate unsafe conditions for our employees and in-turn obtain preferential insurance rates both private as well as state Bureau of Workers' Compensation (BWC).
3. What was (would be) included in the hazard and vulnerability assessment of Middletown, Ohio? Tax records, training and safety assessments from the BWC and reports from the state and local legislature.
4. How did (would) your department complete the hazard and vulnerability assessment of Middletown, Ohio? Model created by local management.

5. Who was (would be) involved in the hazard and vulnerability assessment of Middletown, Ohio? Federal and State Chamber of Commerce, State BWC, local Safety Council, Board of Directors, Public Officials (city, county and state)
6. Did (Would) the hazard and vulnerability assessment of Middletown, Ohio increase preparedness and decrease risks to responders and the public? Yes, we monitor relative benchmarks available to us: reports from federal and state chambers, local tax and BWC rates.

Interview with Ms. Jackie Phillips, Middletown Ohio

The interview took place on January 4, 2011 at her office at 1 Donham Plaza, Middletown Ohio at 2:00 PM. The following is an account of the discussion with Ms. Phillips who is a Registered Nurse, and holds the position of Health Commissioner for the Middletown City Health Department.

1. Has your department conducted a hazard and vulnerability assessment of Middletown, Ohio? Yes, we do these every three to five years.
2. Why did (would) your department conduct the community hazard and vulnerability assessment of Middletown, Ohio? It is necessary to qualify and/or be competitive for grant dollars and to improve our ability to serve.
3. What was (would be) included in the hazard and vulnerability assessment of Middletown, Ohio? Data: socio-economic, employment, education, age disability, special needs, shelters, and necessary resource capability.
4. How did (would) your department complete the hazard and vulnerability assessment of Middletown, Ohio? An academically created product created by one of our partners….a local university or college.

5. Who was (would be) involved in the hazard and vulnerability assessment of Middletown, Ohio? Local university or college, other governmental agencies such as the county health department, nonprofit agencies, schools and churches.
6. Did (Would) the hazard and vulnerability assessment of Middletown, Ohio increase preparedness and decrease risks to responders and the public? Yes but it needs continual investment to keep the process and information current and useful.

Interview with Mrs. Anita Scott-Jones, Middletown Ohio

The interview took place on January 5, 2011 by phone, at 4:00 PM. The following is an account of the discussion with Mrs. Jones who is a City Council Person and holds the position of Vice-Mayor for the city of Middletown, Ohio.

1. Has your department conducted a hazard and vulnerability assessment of Middletown, Ohio? Yes
2. Why did (or would) your department conduct the community hazard and vulnerability assessment of Middletown, Ohio? It is necessary for the legislative body to know what deficits exist, where they are and how to address them.
3. What was (would) be included in the hazard and vulnerability assessment of Middletown, Ohio? Economic issues, crime, health issues, public safety concerns, infrastructure…the assessment must be comprehensive.
4. How did (would) your department complete the hazard and vulnerability assessment of Middletown, Ohio? We conduct an annual retreat in which we review facts as they are know, review previously set goals, create new plans and goals.

5. Who was (would be) involved in the hazard and vulnerability assessment of Middletown, Ohio? The city council, city manager, department directors, community leaders and the media.
6. Did (Would) the hazard and vulnerability assessment of Middletown, Ohio increase preparedness and decrease risks to responders and the public? Yes, each year we review strengths and weaknesses and set goals. These are managed throughout the year and used as the platform the following year…this is how we know we are making progress and ensure it occurs.

Interview with Mr. Brent Dominy, Middletown Ohio

The interview took place on January 7, 2011 at his office at 1 Donham Plaza, Middletown Ohio at 4:00 PM. The following is an account of the discussion with Mr. Dominy who holds the rank of Deputy Chief and serves as Shift Commander for the Middletown Division of Fire.

1. Has your department conducted a hazard and vulnerability assessment of Middletown, Ohio? Yes, we have done many in the form of pre-fire plans, evaluating buildings/structures within the community….assess them in terms of needs and handling an incident there.
2. Why did (or would) your department conduct the community hazard and vulnerability assessment of Middletown, Ohio? There is a need for Fire Officers and Firefighters to know what the hazards are before they encounter an incident and the resources that are required to mitigate the incident.

3. What was (would be) included in the hazard and vulnerability assessment of Middletown, Ohio? Building size and location, built-in protection, hazards involved with the building…focusing on infrastructure.
4. How did (would) your department complete the hazard and vulnerability assessment of Middletown, Ohio? Our department created an outline of what was needed, fire companies collected the information and then it was passed-on to administration for recording.
5. Who was (would) be involved in the hazard and vulnerability assessment of Middletown, Ohio? Our department delegated to the company level, city building department for plans/assistance, private contractors for architectural drawings of new construction, county tax department for more building information.
6. Did (Would) the hazard and vulnerability assessment of Middletown, Ohio increase preparedness and decrease risks to responders and the public? Yes, it gives first responders an opportunity to fight the fire before it actually occurs.