

Thesis Proposal, Kacey Polisky

ntroduction

In the aftermath of Hurricane Katrina, President Bush issued a report stating that emergency planning is a national priority. (Burkhammer 2006) When it comes to emergency planning and evacuation plans it's pretty easy to see the need for one. If people do not know when, where and how to move in an emergency injury's can occur, people can be stranded and lives can be lost. No matter where you are, whether the place is familiar to you or not, it's important to know where to go in an emergency because they can happen at anytime, anyplace and to anyone. Places change all the time and an updated evacuation plan is always a good idea. Western Michigan University has a fairly large population on its campus at any given point in time and it would be nearly impossible to move students, staff and visitors off of campus by car in a timely manner. It's apparent that any attempts to leave campus by car using the exits currently available would not at all be effective. In case of a panic situation, accidents could occur at the exits that would block outgoing traffic partially or completely. The railroad tracks on the southern edge of campus pose a problem because if for some reason there was a problem with the train it would block all (three) of the direct southern exits off of campus. This could also block emergency personnel from getting onto campus.

In today's changing world the threats to human life are greater than ever. Bigger and more powerful storms, larger and more frequent chemical and biological concerns threatening to destroy life all over the world and the overwhelming idea of terrorism. The need for evacuation plans is greater now than it ever has been before in history. The world populations are growing larger everyday putting more and more people in danger.

The United States Census Bureau predicts the world population will grow from the current 6.6 million to an estimated 9 million by 2040. The need for strong planning in case of emergencies will only continue to grow as our populations grow and more people are put in danger.

Problem statement

A current evacuation plan needs to be developed and implemented, incorporating updated methods and demographics, on Western Michigan University's main campus in order to ensure the safety of the students and faculty in case of an emergency. What needs to be done on Western Michigan University's campus in order to safely and effectively evacuate students and staff in case of an emergency?

Literature Review

The first thing Americans think of when they hear the word evacuation is Hurricane Katrina. Since the hurricane hit scientists have been studying what happened that caused such a huge loss of life and terrible conditions for the living. One such study was done by researchers from the Harvard School of Public Health. Since the aftermath of Katrina, a great deal has been learned about the physical and social situations that lead to the devastation along the gulf coast. We have learned that in the face of hurricanes many people do not feel it necessary to evacuate even when they are told to do so. Researchers have found that people are more likely to evacuate if they trust the source of the information. People with family or friends nearby are more likely to leave and as we saw in New Orleans, people with lower incomes are less likely to leave not only because they cannot afford to but because they are not able to heed warnings with proper instructions. Along the gulf coast hurricanes have come and gone for years and many

residents in the area take the threat less seriously and chose to stay because they think that just because they survived a previous storm that they will survive the next. It is also very difficult for people to leave all of their possessions behind. Almost half of the evacuees in the Houston shelter reported hearing that they needed to evacuate but were given no clear instructions on how to leave. It's easy to say that the people who chose to stay behind suffered the worst out of everyone affected but in this case that couldn't be more wrong. Over half of the shelters reported not having food or water, less than half reported not having enough medicine and almost 25% reported being threatened with violence. The conclusion the researchers came to was that communication is the key. Second to communication are supplies. The researchers say if people could be more effectively warned as well as given instruction than people would be more likely to leave and designated areas for evacuees need to be properly stocked and prepared for casualties. (Altma et al. 2006) It is clear that this situation was of such a large magnitude but it was also a scene that people knew was a very real possibility and planning ahead could have made so much difference.

Another article I read about the evacuation process was actually written before Hurricane Katrina ever hit and it looks at evacuating New Orleans. The article by Brian Wolshon explores the transportation side of evacuating. Brian states that in case of an evacuation only about 60% of people will want to or be able to leave. He says that are several reasons for this but the main one would be the lack of access to transportation. Living in a large city means not really needing a car sometimes. With the amount of people leaving some people may just not be able to get out. The article discusses the concept of reversing traffic, or contraflow, on the freeways to only go one way in order to

get people out more quickly. (Wolshon 2002). A concern pointed out in this article that is very common on college campuses is the idea of not everyone having transportation. A large portion of this school lives on campus and if allowed to leave by car many people would be stranded and wondering where to go. At least when leaving by foot everyone can stick together to get to safety.

A new important tool for disaster preparedness and evacuations is the use of Geographic Information Systems (GIS). Planners in Colorado are beginning to use GIS to map HAZMAT storage facilities. This mapping system allows planners to see in advance which areas would be affected in a spill and how many people would be affected. In addition they could also know how many shelters and supplies they would need for those people and where to evacuate them to. The city of Denver in Colorado is taking it even farther by using Global Positioning Systems (GPS) to help determine rising water levels. (Fickes 2002) Sometimes it seems like disasters hit so fast that there is no way of planning for them but it is very obvious that towns like Denver are really taking the crucial steps to plan ahead that could save thousands of lives someday and other cities around the country and world should follow their footsteps.

I recently read an article in our very own Kalamazoo Gazette that was probably one of the most interesting I have come across while researching this topic. The article is written by a reporter who is trying to obtain emergency preparedness plans from 6 counties surrounding Kalamazoo County. The reporter found that in 3 of the 6 counties plans did not exist at all, in 2 of them the officials stated that the plans were not public record because of the Anti-Terrorism Act that was passed after September 11th. The last county did allow access to the plan but it was 3 years old and no newer plan would be

made public. (Nixon 2007) Local governments do not want to give out evacuation plans even if there is a chemical plant in the city. We do not want terrorists to know where we are vulnerable or how we will act in an emergency to the point where we ourselves don't know what to do and ultimately could die just trying to keep a secret.

Regis College in Massachusetts has listed on their official website a plan for an extreme national emergency. This plan has two basic parts. The first part lets students and staff know that if a campus wide evacuation was required the students would be "released" to go to their homes. The plan tells everyone who chooses to stay which hall to go to and that the rest of campus will be locked down. The document in whole is less than one page but does let students know that a meal schedule will be set up once everyone is inside and a spokesperson will announce it. The second part of the plan is for internal evacuation or in building evacuation. The plan simply states to follow the fire drill plan and that any suspicious mail should be reported and no students are allowed to open mail directed to Regis College. Regis is not unlike many other colleges who lack more important information. Michigan State University has the best emergency preparedness websites that I have come across in my research college campuses. The site clearly outlines what MSU is doing to prepare itself for an emergency. Included in the plans are evacuation plans in every building on campus, a centralized alarm system, they have purchased the amount of equipment needed to effectively control an emergency situation including medical supplies and they have become integrated into the FBI and other intelligence agencies so that they can accurately assess dangerous situations. MSU has made this website specifically to help people become aware and prepared for emergencies. It cannot be stressed enough that the key to staying out of harms way in a

disaster is knowing what to do ahead of time. Tools like the MSU website are helping to educate people to help save lives.

“Most of the people killed in disasters are killed during evacuations, they die in car crashes and flash floods while trying to evacuate” says Lt. Byron Sieber, commander for planning and research for Grand Folks, N.D. Police Department. (Fickes 2002)

Although it may seem that because Westerns Campus isn’t exactly New York City that we don’t need a current and effective evacuation plan. In recent years it has become painfully apparent to millions of people that a good evacuation plan is important. The government has set up the Department of Homeland Security to help protect us from disasters yet many towns know just as much about how to protect themselves now as they did 50 years ago. “To ensure that evacuations are efficient and safe, local governments are relying on interagency agreements, technology and communication with their residents.” (Fickes 2002) The government is not just going to hand over an evacuation plan for us. It’s up to students like me to research and develop these plans for the local area.

Outdated and unavailable evacuation plans are much more common than people might think. Most people would assume that there is some type of evacuation plan for their area but chances are the one they have is so old it wouldn’t be effective or officials in charge of the plan won’t let it out. Which begs the question, what good is an evacuation plan if nobody knows what it is? A good example of this is Three Mile Island. The nuclear power plant had a melt down in 1979 that could have killed thousands. “Two days after the accident, state officials notified the county that the existing 5 mile radius was not sufficient...”(Angel 2004) It’s essential for us to know

what kinds of dangers there are on this campus so that we know where to go and how far to move away. In 2004 an American Prepared Campaign gave 9 out of 19 of Americas largest schools failing or needs improvement scores on there terrorism preparedness plans. (Sechena 2005) I realize that many people in Kalamazoo do not think that they are a target for terrorism but any type of chemical accident could produce the same types of results. “Commonly transported by rail or truck tank cars, ammonia, chlorine, and vinyl chloride represent the many chemical agents capable of smothering large communities within expansive toxic plumes.” (Sechena 2005) It’s important to be aware of what is going out in the community you live in. It has become very apparent through my research that many times different agencies do not want to give up the information on what kinds of hazards they are dealing with but I am hoping for full cooperation on this project so that the true risks can be assessed.

Evacuations can occur before, during or after an emergency. Each of these cases requires a little different action but knowing ahead of time what needs to be done is vital. “The key to getting it right is preparation, half of the impact of your efforts to manage an evolving crisis comes from the work you do before you ever have a problem.” (Hatcliffe,Brassell-Cicchini 2006) I think most people just assume they will run in the opposite direction if something happens but that isn’t always the case. There are problems with evacuations no matter which scale you look at them on. An area like WMU’s campus poses many challenges. There are many topics that are beyond the scope of my research here, one being individual building evacuations. The buildings on campus do have them but it will depend on how well the students can recognize and find them that will determine how quickly they can get off of campus. Many of the plans I

have read about explain how to evacuate based on the exits available. It is apparent to me that the exits currently available on campus are not sufficient to move people in case of an emergency. If I want to get off of campus at noon it's very difficult and that is only with a portion of the population leaving. I can't imagine what it would be like if everyone was trying to leave in a hurry and in a panic.

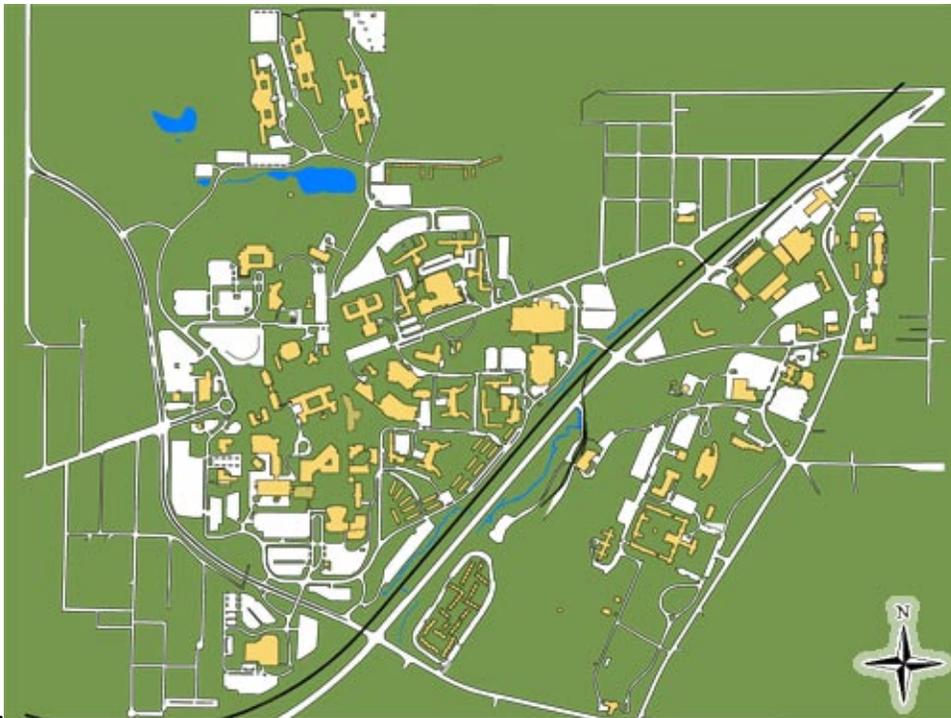
Objectives

I have several objectives that need to be accomplished in order for me to produce an effective thesis. First I am going to need to gather data on the number of people on WMU's campus. I am going to need to gather data on who lives on campus and who does not. I am going to need to know how those people who do not live on campus get there and if they drive I need to know where they park. I am going to need to know how many people with disabilities are located on campus and where they are located. If possible I would like to gather information on which days of the week students have class in order to see which days of the week the campus is most populated. My second objective is to research and evaluate current exits leading off of campus. I will need to assess all paths whether they are roads, parking lots or walking paths. Thirdly I need to determine which types of disasters are most likely to occur on campus. I need to gather data on what types of hazardous materials are on campus and where they are located. I will need to evaluate which of those could cause wide spread damage. I need to evaluate environmental hazards as well as chemical or biological hazards. Lastly I will need to formulate a plan that will allow students, faculty and visitors to quickly and effectively move people off of campus by foot. Included in this will be formulating a list of things people should avoid doing in case of an evacuation. After all is said and done with my

research I would also like to have developed a usable GIS data layer of the populations on campus. . I would also like to make the recommendation that phones be put into all classrooms on campus. A large hurdle in this project is finding a way to get the word out that there is an emergency. In almost every article I read the conclusion was that communication is absolutely vital to evacuating safely and I think the benefits would be immense and the cost very low.

Study Area

Founded in 1903 Western Michigan University is located within the city of Kalamazoo in Kalamazoo County Michigan. The university has an enrollment of around 25,000 students a year. WMU is also home to 900 full time faculty. The campus is set on 1,200 acres including 151 buildings. The dorms on campus can hold up to 5,700 students making WMU the fourth largest school. *Western Michigan University-Main Campus*



Design

My design method for this project is fairly straight forward. I will need to obtain my demographic data from WMU's registrar's office. I will need to gather numbers on the number of people on campus and where they are located. After I develop a complete GIS layer I will need to use spatial decisions to determine what the best route for evacuation depending on the type of disaster making sure to not direct to many people into constrained areas. To help me achieve this goal I will need to break campus up into areas that will be able to move together. The most consuming part of this project will be making spatial decisions once the data is gathered and ready for analysis. I will also be conducting several interviews with officials in Kalamazoo and WMU to gather input on the best methods for evacuation. There is not an absolute way to form an evacuation and every area is unique. I am hoping by working with a variety of people in our community and studying what has worked for other areas similar to WMU that I can create a plan that will work best for our campus. I am hoping to include in my design a way to upgrade communication on campus in order to make my plan as effective as it can be. An idea for how this could be implemented would be by putting a phone in every room on campus. That way in case of an emergency the word could spread quickly to everyone and it would make evacuating be immensely more fast and effective and also greatly reduce any injuries.

Expected outcome

When my research is completed I hope to have a clear and effective evacuation plan that can be used on Western Michigan University's main campus in case of an emergency. My expected outcome is an evacuation plan that is easy to follow and

effective for many different types of disasters. The main goal would be for Westerns administration to notice the need for the changes through my research and see that my recommendations could help improve the safely conditions for Westerns population. The ultimate goal would be for the changes to be put into effect and for everyone to know how to evacuate campus.

Budget for 2007-2008 Thesis: Evacuation Plans for WMU Main Campus

<p>Travel: Trips to Kalamazoo from Manistee (1 trip every 2 weeks for data collection May-August) .485*350.62 (roundtrip)*8trips</p> <p>Meetings and Travel in Kalamazoo Sept.-Dec. 10 meetings/trips (Meetings include: WMU Public Safety, Kalamazoo Public Safety, WMU Registrars, Kalamazoo Road Commission) 10 meetings*10miles(round trip)*.485</p> <p>Meals: When I drive to Kalamazoo May-August(assuming round trip in one day) \$30 a day*8 trips</p>	<p>= \$1360</p> <p>=\$48.50</p> <p>=\$240</p>
Total Travel	\$1648.50
<p>Supplies: USB Storage Device (Store all of my GIS demographic data and maps on) Notebooks, pens, sticky notes, planner, large printed map, paper, etc. (Supplies I will need for meetings, data collection, analysis, large map to work visually from) Publication costs: Producing final maps for my thesis in color.</p>	<p>=\$69.99</p> <p>=\$200</p>
Total Materials and Supplies	\$269.99
Total Budget	\$1918.49

Thesis Schedule for 2007-2008

MAY- AUGUST	SEPTEMBER	OCTOBER- NOVEMBER	DECEMBER	JANUARY- FEBRUARY	MARCH
Gather data and conduct interviews.	Begin organizing data and begin data analysis. Begin forming GIS data layer.	Data analysis and map building	Finish up maps and begin writing first draft.	Complete writing and begin submitting to advisor and committee in sections for review.	Make revisions made by committee and have final draft ready for submission at the end of the month.

Works Cited

- Angel, Wendy. "In Event of Emergency: Mishap At Nuclear Plant Prompts Revisions in Evacuation Planning." American City and County 9 (2004). WorldCat. Western Michigan University, Kalamazoo. 25 Feb. 2007.
- Brodie, Mollyann, Erin Weltzien, Drew Altman, Robert J. Blendon, and John M. Benson. "Experiences of Hurricane Katrina Evacuees in Houston Shelters: Implications for Future Planning." American Journal of Public Health 96 (2006): 1402-1408. Wilson Select. Western Michigan University, Kalamazoo. 1 Feb. 2007.
- Burkhammer, Lori. "Emergency Planning Survey Raises Doubt." American City and County 121 (2006): 16-18. GEOBase. Western Michigan University, Kalamazoo. 15 Feb. 2007.
- "Evacuation Plans." FEMA. FEMA. 07 Feb. 2007
<www.fema.gov/plan/prepare/evacuation.shtm>.
- Frickes, Michael. "Community Evacuation: Ensuring Safe Passage." American City and County 17 (2002): 70+. Wilson Select. Western Michigan University, Kalamazoo. 25 Feb. 2007.
Keyword: Evacuation.
- Hatcliffe, Mike, and Lori Brassell-Cicchini. "Perception Vs. Reality: Communicating in a Crisis." Risk Management Magazine 12 (2006): 56. Wilson Select. Western Michigan University, Kalamazoo. 25 Feb. 2007. Keyword: Disaster Management.
- "How Has MSU Prepared and How Can You Be Better Prepared." Michigan State University-Be Prepared. 2003. Michigan State University. 16 Apr. 2007 <www.msu.edu>.
- "Planning for Emergencies." Job Safety and Health Quarterly 4 (2003). Article First. Western Michigan University, Kalamazoo. 25 Feb. 2007. Keyword: Evacuation Plans.

Preston, Meredith. "Be Better Prepared: Governments are Readyng Themselves for the Next Katrina." American City & County 4 (2006). Wilson Select. Western Michigan University, Kalamazoo. 24 Feb. 2007. Keyword: Evacuation Plans.

"Regis College Campus Police." Regis College. 2007. Regis College. 16 Apr. 2007 <www.regiscollege.edu>.

Sechena, Ruth. "Prepare Your School for Chemical, Biological, and Radiological Threats." Education Digest 8 (2005). Article First. Western Michigan University, Kalamazoo. 25 Feb. 2007. Keyword: Disaster Management.

Wolshon, Brian. "Planning for the Evacuation of New Orleans." ITE Journal 72 (2002). Wilson Select. Western Michigan University, Kalamazoo. 15 Feb. 2007.