

**CRITICAL ANALYSIS ON THE ROLE OF BUSES DURING DISASTER: A
CASE STUDY OF KATRINA**

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Dissertation submitted in fulfillment of the
Requirements for the award of the degree of
Master of Science (Transportation Planning)

Faculty of Built Environment
Universiti Teknologi Malaysia

JANUARY 2013

To my beloved parents and family

Thanks for your immense love, your precious prayers, supports and all that you have done to me. May the blessing of God, shower upon you.

ACKNOWLEDGEMENT

I would like to take this opportunity to express my gratitude to everyone who has assisted me to make this project a success. First of all I would like to thank my supervisor. **Dr. Muhammad Zaly Shah Bin Muhammad Hussein** for his guidance and assistance throughout the project. Without him, I would not be able to complete my project in time. And I would like to express my appreciation to those who were involved directly or indirectly supporting me in the completion of this project. I really owe them where my words alone are not worth what they have done for me.

Thank You.

ABSTRACT

Despite the vast research by Americans on the Katrina's failures, little is known about the failures of bus deployment through pre-evacuation of Katrina in New Orleans. The overall image that emerges from the literature is negative: unsuccessful and poor management of buses through Katrina, many vulnerable residents had been left by the Local government; the buses were flooded in parking lots and many non-drivers had been forgotten by the Local government. The objective of this study is to find out the other nations' experiences in using the buses as a major mean to evacuate the non-drivers. Canada, Cuba, Japan and USSR were selected based on the frequency of disaster occurrence; also the cases were chosen by considering their success in deploying the buses for evacuation. Discusses which has done with the findings yields the suggestions in three main fields: Management of assets (buses), Federal aids to assist the Local authorities, identification of vulnerable residents and prepare them to face the events. This study increases the efficiency of bus operation among disaster prone countries that face frequent disasters.

ABSTRAK

Meskipun penyelidikan yang luas oleh Amerika pada kegagalan Katrina, sedikit saja diketahui tentang kegagalan penempatan bas melalui pra-pemindahan Katrina di New Orleans. Imej keseluruhan yang muncul dari literatur adalah negative. Pengurusan yang tidak berjaya dan lemah akan perkhidmatan bas semasa Katrina berlaku, ramai penduduk yang mudah terdedah kepada ancaman telah ditinggalkan oleh kerajaan tempatan dan bas telah membanjiri tempat letak kereta dan banyak bukan-pemandu telah dilupakan oleh kerajaan tempatan. Objektif kajian ini adalah untuk melihat pengalaman negara-negara lain dalam penggunaan bas sebagai min utama untuk mengosongkan bukan-pemandu. Kanada, Cuba, Jepun dan USSR telah dipilih berdasarkan kekerapan berlakunya bencana; juga kes tersebut dipilih dengan mengambil kira kejayaan mereka dalam menggerakkan bas untuk pemindahan. Perbincangan yang telah dilakukan dengan penemuan kadar hasil cadangan dalam tiga bidang utama: Pengurusan aset (bas) bantuan dari persekutuan untuk membantu pihak berkuasa tempatan, identifikasi penduduk yang terjejas dan mempersiapkan mereka untuk menghadapi bencana. Kajian ini meningkatkan kadar kecekapan operasi bas di kalangan negara-negara yang kerap terdedah kepada bencana yang kerap.

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GLOSSARY OF TERMS

- DFAA - Disaster Financial Assistance Arrangements
- EOC - Emergency operations center
- MSY - Louis Armstrong New Orleans International Airport
- NRP - National Response Plan
- USSR - Union Soviet Socialist Republics
- WHO - World Health Organization

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CHAPTER 1

INTRODUCTION

1.1 Background of Problem

Hurricane Katrina which happened in 2005, was one the most destructive disasters in the U.S. history. It caused many fatalities, mortalities and missing. More than 2,096 people from the Gulf Coast area reported missing; also 1,330 people were dead in the affected regions, moreover around 700,000 people were displaced; this migration was the greatest migration since 1930 (Homeland Security and Counterterrorism 2006). At the beginning, the Katina was a Hurricane but it became a disaster due to many failures which has happened in planning and management (Litman 2005). On the other hand, a research which was done before the Katrina showed that, there was no effective plan to evacuate transit dependents (Wolshon 2002). Transit dependent means the residents who don't have access to private cars and rely on public transport due to poverty, disabilities and etc. In case of Katrina's evacuation plan Wolshon (2006) stated that, the function of motorists' evacuation was well but many failures happened to serve the people who depended on public transit (Litman 2005; Wolshon 2006).

During the disaster, evacuation operation is the most important phase of emergency management needed to be implemented. The basic idea of evacuation is the easy move of people away from danger (Wolshon 2006), however it is not possible to evacuate everyone who is at risk (Wolshon 2006). The Southeast Louisiana Hurricane Evacuation and Sheltering Plan stated that "The primary

means of hurricane evacuation will be personal vehicles” and the other vehicles like; the public buses, school buses and municipal buses can be deployed to help people who lack transportation and need more assistances (Louisiana 2000).

The population of people who lived in the high-risk area was almost 1.4 million and some estimates showed that, 100,000 and 300,000 people did not or could not be evacuated from the city (Wolshon 2002; Wolshon 2006). For instance 112,000 people did not have access to personal vehicles at the time of the storm (Russell 2005). On the other hands efforts of public sector to deploy the public vehicles to evacuate the people who did not access to private cars were insufficient and the public sector could not provide enough information and guidance for people who did not have private cars (Renne 2005).

According to Litman (2005), in terms of transportation, the local and Federal government could not deploy the public transit, school buses, chartered buses and trains for evacuation. Actually, they failed to utilize the available vehicles due to many problems, and the failures caused many non-drivers that were waiting for government assistance became unsatisfied.

Meeting the needs of non-drivers throughout an evacuation require to provide a plan before a disaster which Hurricane Katrina has lacked it, at a same time improvements in emergency plans, can result in more efficient use of available resources. In Appendix A, some detailed information has provided to give more information about the Katrina condition, also the gathered information explores the role of organizations which involve in an emergency operation. On the other hand to understand the management method of Katrina, useful information provided in appendix B. The provided information in both Appendix A and Appendix B, help us to get a deeper konwladge about Katrina and its scale.

1.2 Problem Statement

According to Litman (2005), the Katrina was the example of failed operation in terms of non-drivers because of poor coordination in emergency situations and the absence of integrated transport service. Many of low-mobility groups of people could not evacuate the city in reasonable time (Wolshon 2006), due to lack of effective emergency transportation and public assistance. Most of stranded people in the affected area were from poor, elderly and sick groups who didn't have access to private vehicles, and the governments did not provide any regulation and provision to evacuate the homeless, low-income, or careless individuals or sick people who did not have a private car. Many public and school buses were flooded in the parking lots and they could not be used because of lacking the insurance liability and absence of bus drivers (Babble 2005; Litman 2005). Moreover, there were no incentives for bus drivers to continue their driving and evacuate people who were afraid about their family members. On the other hands, because low quality and poor service of public transport in North America Cities, the public transit is the last choice for people who live in those cities. Inefficiency of public transit in affected area caused the distrust of authority for evacuating people in an emergency situation (Litman 2005).

To sum up, the most important problem for non-drivers were the lack of vehicles, which expected to be provided by the public sector. On the other hands there were no clear regulations and guidance for at risk people. Many of them did not know, what should they do, where should they go and how should they leave?

1.3 Purpose of Study

According to the above problems in terms of transit dependents, the main purpose of the study is to illustrate the ways of improvement in the emergency evacuation for non-drivers who need bus assistances. So the purposes can be summarized as:

- To determine who needs buses for evacuation.
- To identify the factors that improve the efficiency of bus operation in evacuation the victims before/during disasters.
- To suggest the solutions to improve the efficiency of bus operation during emergency situations.

1.4 Research Question

The problem discussion leads us to the following research question:

1. Who needs to be evacuated by buses?
2. Which factors can improve the efficiency of bus operations in evacuation through emergencies?
3. How the operation of buses can be improved in emergency situations?

1.5 Significance of Study

The findings in this study help us to improve the readiness of public transportation for people who don't have access to private cars and need to get public assistances (public buses and school buses) during emergencies. Also the study illustrates the concept of non-drivers and identifies their needs which can be met by government and public sectors. The study will indicate the efficiency of buses during a pre-evacuation/evacuation; also the recommendations at the end of this study help the transport authority of disaster prone areas to consider a more prominent role for buses in an evacuation operation.

1.6 Scope

Emergency transportation has many phases, like; evacuate the people before and during the disaster, delivery of supplies and relief aid, search and rescue, quarantine and repair the Transportation infrastructure (Litman 2005). The scope of this research is limited to evacuation of non-drivers and the study does not cover the car owners. On the other hand the research focused on the role of buses to evacuate the non-drivers who did not access to private cars. The content of studied resources were consisting of many data which focused on the role of public transportation and buses in evacuation, also the references which pay attention to non-drivers were studied carefully, however the references which cover both of non-drivers and buses were not enough. Geographically the survey covered Louisiana (especially New Orleans) as an affected area but the results can be applied in disaster prone areas according to their capabilities and capacities.

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