Modeling and Analyzing Lifetime Lost in Airport Screenings vs. Terrorist Attacks

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Abstract: In today’s volatile world there seems to be an increasing emphasis on security due to recent terroristic activity in the United States and abroad. A major security push was created after the events of September 11th, 2001. Specifically, airline security became the illustration of increased security methods. With the increase in airline security, an increase in queues and wait times at the security checkpoints followed. This research analyzes whether airport security is worth the resources in terms of lifetimes lost measured in years; using years of life lost as a result of terror attacks and compare it with years of life lost as a result of waiting in the security queues. Based off of the initial results, the research will then examine the disparity, if any, between lifetime lost as a result of terrorist attacks and life time lost spent in queues. It will then examine the morality of such tradeoffs and whether or not they would be practical to implement. The goal of the research is to obtain which measure causes the greatest loss of life in years, and also begin to find a balance in the level of security that will minimize years of life lost in queues while still maintaining a level of security that will properly deter any potential threats.

Keywords: Airport Screening Time, Terrorist Attacks, Lifetime Lost, Mathematical Modeling

1. Introduction

When people think of airline travel, they undoubtedly think of the security screening process and how early they should arrive at the airport in order to make it through screening on time. Airlines must look at three criteria when assessing their screening process: the effectiveness of the screening, the efficiency and speed of a traveler through the system, and the total cost of screening. The goal of the airlines is to effectively screen every traveler while still ensuring that the process is as quick and efficient as possible, and that the cost remains below a certain standard. The airlines put almost all of their focus into these criteria for the screening process. However, one area that is often ignored is total amount of time that people lose or waste in the screening process. With almost 800,000,000 travelers annually, the total amount of time wasted in these queues is sure to be a surprisingly high number. However, the screening process is import for the obvious reasons of protecting and ensuring the safety of travelers and citizens alike.

With an increasingly volatile world, there are constantly new threats against the United States, specifically on airliners. That means that airport security has to be functioning and effective continuously. However as with any system, there are flaws and problems that are inevitable. In this case, terrorist attacks still do occur on airliners and in airports. So, with perfection out of reach, the goal then becomes to prevent as much loss of life as possible. Yet, there is a certain point where the cost and thoroughness of the screening outweigh the benefits, particularly, in terms of time wasted in the screening process. This paper is going to analyze the tradeoff between time spent in the screening process in terms of total lifetime lost measured in years and the total lifetime lost as a result of terrorist attacks. Understandably, there is a stark difference between spending a few minutes in line that could have been spent elsewhere and losing the rest a life due to a death as a result of a terrorist attack. However at a certain point, the airports have to accept a level of prudent risk that gives them an efficient screening process to minimize the amount of time spent in the queue.

Much of the data used in this paper is highly uncertain and almost incalculable. The Transportation Safety Administration (TSA) safeguards much of the data related to this research. Therefore, numerous assumptions are in place in order to effectively illustrate the variables associated with lifetime lost.