



Lighthouse of Broward/Stand Among Friends Outreach to Visually Impaired PEP  
Dates of program: January 2014 – August 2014  
Communities Served: All Broward County  
Target Audience: Visually Impaired and Blind transportation users

Brief Introduction of project: the partnership of LHOB and SAF conducted a review of 4800 paratransit trips taken by 68 blind clients/alumni and applied Six-Sigma analysis methodology to determine the breaks in efficiency and affect on customer satisfaction. Several focus meetings were held with alumni and LHOB staff to explain the reason for requesting trip logs and for conducting a parallel effort—a telephonic survey which ultimately reached 55 of the clients who provided their trip logs. These logs also were used to do a quadrant analysis of the start/end points of each of the paratransit trips.

Project Summary: The trip log analysis revealed that cancellations were the primary cause of inefficiencies in delivery of paratransit service. There was insufficient data to know the root cause of cancellations. A meeting with management of the Paratransit program was very informative as the managers have made extensive changes and adjustments in order to improve the service. They agreed that cancellations have a devastating effect on efficiency, costs and satisfaction. Our report was met with great interest and respect. The telephonic interview reached the prevalent demographics typical of the blind population—over age 56, adult onset of vision impairment, and slightly more females than males (60:40 ratio). The interview group did have a significantly larger percentage of totally blind people than is typical of the population (45% totally blind vs 5% totally blind in general impaired population). The information gathered showed the great importance of Paratransit (TOPS) as indispensable to the independent functioning and “aging in place” that reduces community costs for social and medical support services. There is no viable competing public transportation alternative.

Challenges: The satisfaction survey revealed some reluctance and fear on the part of those surveyed that their comments might hurt the program or their right to use it. Past paratransit management efforts to remove blind people from program rolls were the primary cause of this fear. Considerable effort was made by LHOB’s interviewer to reassure respondents of the confidential nature of the responses. The survey questions were adjusted with additional pre-survey introductory remarks, slight modification of the wording, and re-ordering of the sequence of

questions. As a result 55 surveys were fully completed and significant comments and suggestions were gathered.

Solutions: Paratransit management reported a number of creative and well-planned changes that address the weaknesses that have plagued the service for many years and added to the costs of providing it. National best practices, technology, human resource management and standardization of rolling stock all have been applied along with great appreciation for the needs of the consumers. The LHOB/SAF project proposed an additional tool that may be beneficial—the case management of consumers to create neighbor groups that would schedule trips jointly to common destinations already used individually. In this way, paratransit vehicles would be filled with consumers who live near each other, and would travel to a single location quickly and directly. In addition, multiple trips to the same location would be reduced in a given time period because of the coordination of the neighbor groups—achieving more effective multi-loading of vehicles that is impossible to obtain using just computer scheduling software. Consumers coordinating these trips would actually communicate to select a mutual single day and time for common destinations. Another role for case management would be to provide detail as to cause for cancellations with the goal of reducing this major element in driving up costs. Case management to create these travel groups and review their experience and satisfaction would be most likely to succeed if done by a nonprofit trusted and known by the consumers. This approach appears likely to yield significant cost savings by reducing trips in general as well as cancellations of trips, and improving customer satisfaction. This suggestion was met with great interest by Paratransit management and would dovetail nicely with their plans to support agencies in developing their own fleets to transport their own clients to their agencies.

Results: Information acquired from the trip log analysis was shared with Broward Paratransit by LHOB/SAF. Business analysis was facilitated for any RFP response to the initiative to support LHOB to develop its own transport service for clients to LHOB, an opportunity LHOB has long been seeking. The possibility of an additional tool to reduce costs and increase satisfaction—the use of consumer neighbors to coordinate their own trips—was shown. The telephonic survey and focus meetings provided data that supported that Paratransit reduces community costs for social and medical support services by sustaining “aging in place” for disabled seniors. Finally, data showed that consumers alone cannot bear additional costs for building a more effective transportation system—the majority are living on small fixed incomes—and that many are disabled to the extent that regular public transportation is not an option for them.

Conclusion: Costs can be contained and consumer satisfaction increased through a partnership of all constituents—paratransit management, riders and nonprofit agencies serving disabled populations.

Recommendations: It is recommended that County paratransit management, non-profit management and consumers continue planning and discussing new tools and tactics to reduce costs and increase efficiency and satisfaction. A reduction in costs benefits all transportation planning across the board as paratransit services are a significant proportion of the transportation budget.

#### Contact Information

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# ***Program for Empowering People***

***SPEAK UP BROWARD Initiative of the  
Broward Metropolitan Planning Organization***



**LIGHTHOUSE**  
OF BROWARD

STAND  
**AMONG**   
FRIENDS

***Grant Awardee Presentation***

# ABOUT THE ORGANIZATIONS

The partnership of Lighthouse of Broward (LHOB) and Stand Among Friends (SAF) at Florida Atlantic University proposes to conduct outreach activities designed to collect quantitative and qualitative data to illustrate the need and usage of transportation for people who are either blind or visually impaired. All of the individuals with visual impairments that LHOB and SAF serve are unable to drive due to their disability.

This partnership has 40 years of experience with working age adults and senior adults who are blind or visually impaired. The demographics of the visually impaired community also include other under-represented communities of interest to the Speak Up Broward Initiative, namely minority and low-income populations and people with limited English proficiency. The purpose of the outreach will be to “exchange information and obtain input about the future of our transportation system and how to fund it.”



# ABOUT THE PROJECT

LHOB/SAF will conduct **outreach and information gathering activities comprised of three components: a survey, at least one focus group and an analytical review of individual respondents' paratransit use logs** as part of a longer term assessment of potential operational and cost efficiencies and improved effectiveness. The survey will be administered verbally to approximately **68 people who are blind or have vision-impairment.**



# THE PROJECT: QUANTITATIVE DATA

**Six Sigma** is a disciplined, data-driven approach and methodology for eliminating defects (driving toward **six** standard deviations between the mean and the nearest specification limit) in any process – from manufacturing to transactional and from product to service (source: [isixsigma.com](http://isixsigma.com))

## **DEFINITIONS:**

**MEAN** - the average of the sum divided by the number of numbers.

**MEDIAN** - the "middle" value in the list of numbers.

**MODE** - the value that occurs most often

**STANDARD DEVIATION** - a measure of how spread out numbers are.

**VARIATION** - A specifically defined mathematical measure of variability in a data set or population. It is the square of the standard deviation. the property of a characteristic, process or system to take on different values when it is repeated. What the difference that the customer sees and feels.



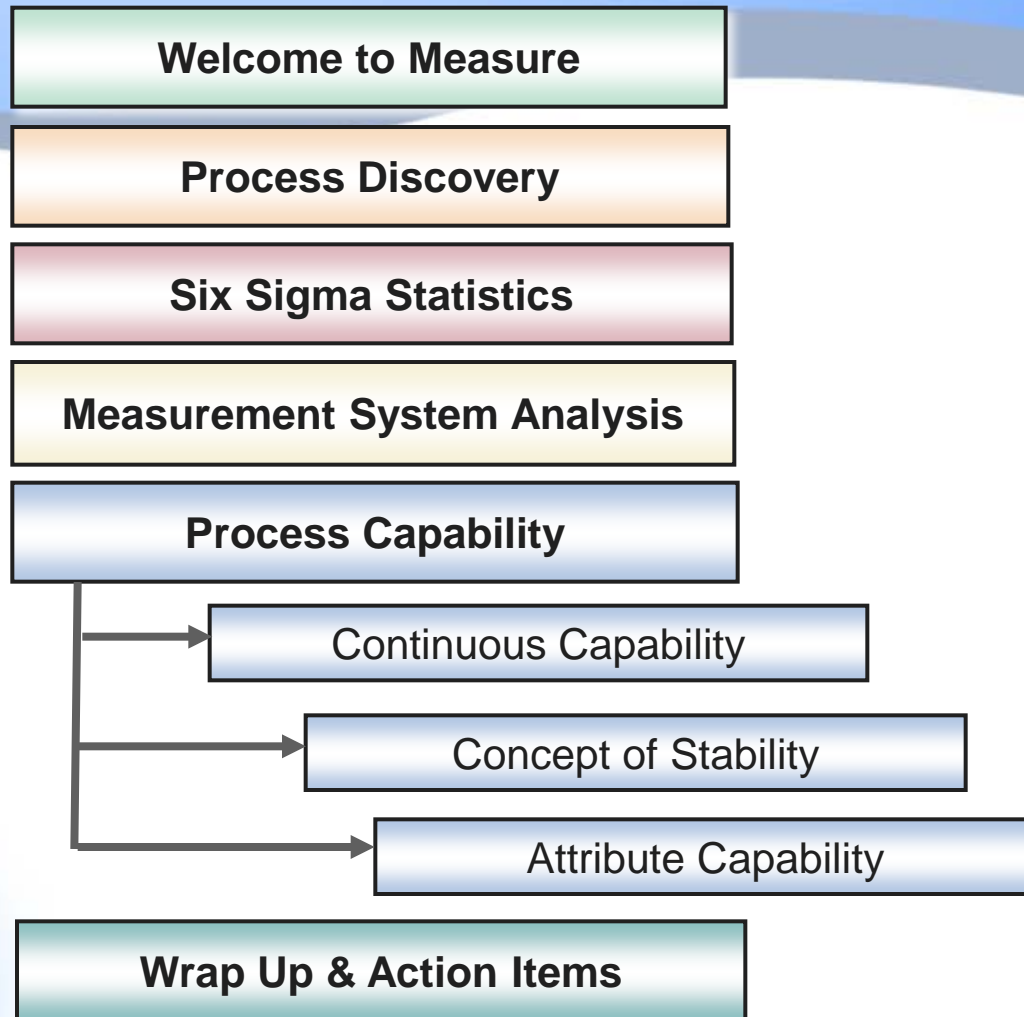
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**THE PROJECT:**  
**Broward County Transit**  
**Process Capability**

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# Process Capability



# Understanding Process Capability

## *Process Capability:*

### **Research Question 1**

- Does the process meet the expectations of the customer without any additional efforts?
- Provides insight as to whether the process has a :
  - Centering Issue (relative to specification limits)
  - Variation Issue
  - A combination of Centering and Variation
  - Inappropriate specification limits
- Allows for a baseline metric for improvement.

### **Research Question 2**

***Is Broward County Paratransit capable?***

*\*Efforts: Time, Money, Manpower, Technology, and Manipulation*



# Typical Sources of Problems

- \* Machines
- \* Methods
- \* Materials
- \* Measurements
- \* Mother Nature (Environment)
- \* Manpower (People)



# Completed Trips

## Trip Status = Completed

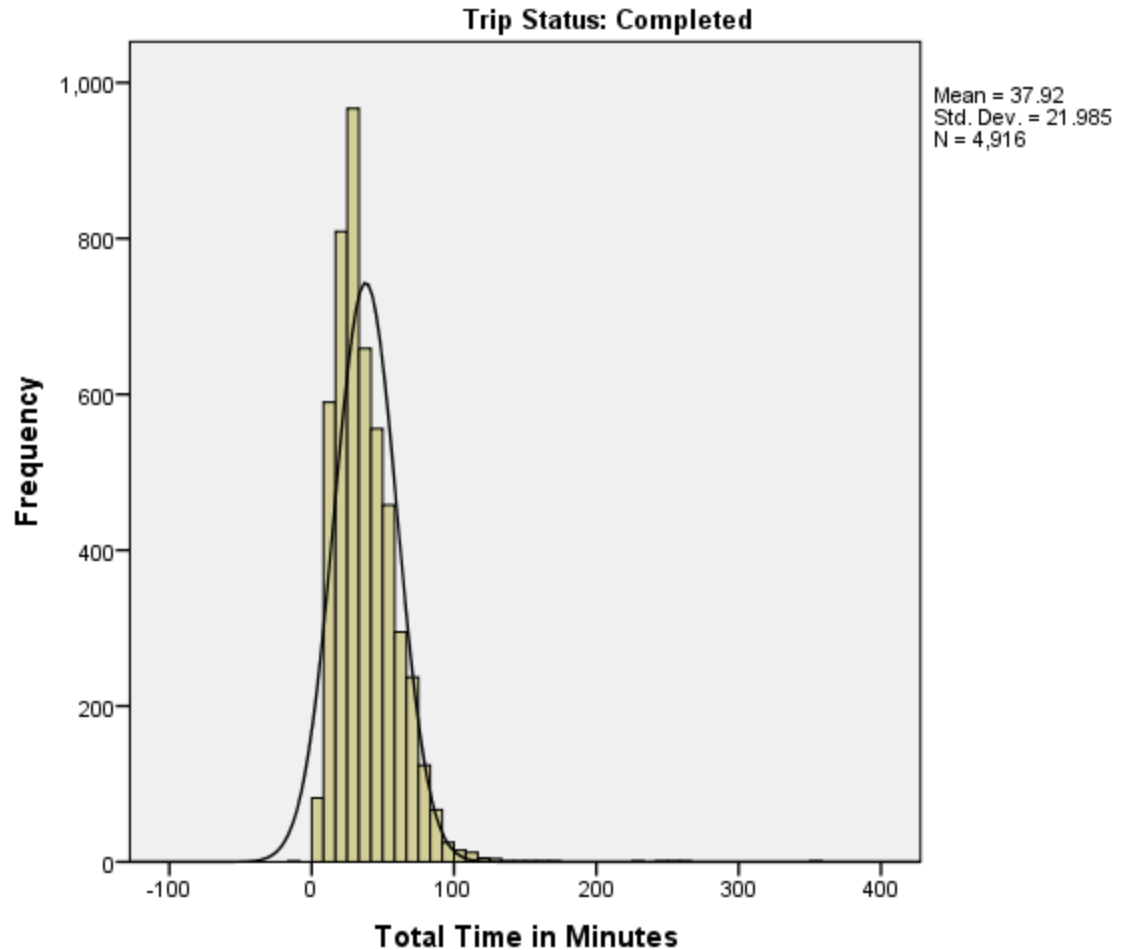
### Case Processing Summary<sup>a</sup>

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Total Time in Minutes	4916	100.0%	0	0.0%	4916	100.0%
Total Miles	4916	100.0%	0	0.0%	4916	100.0%

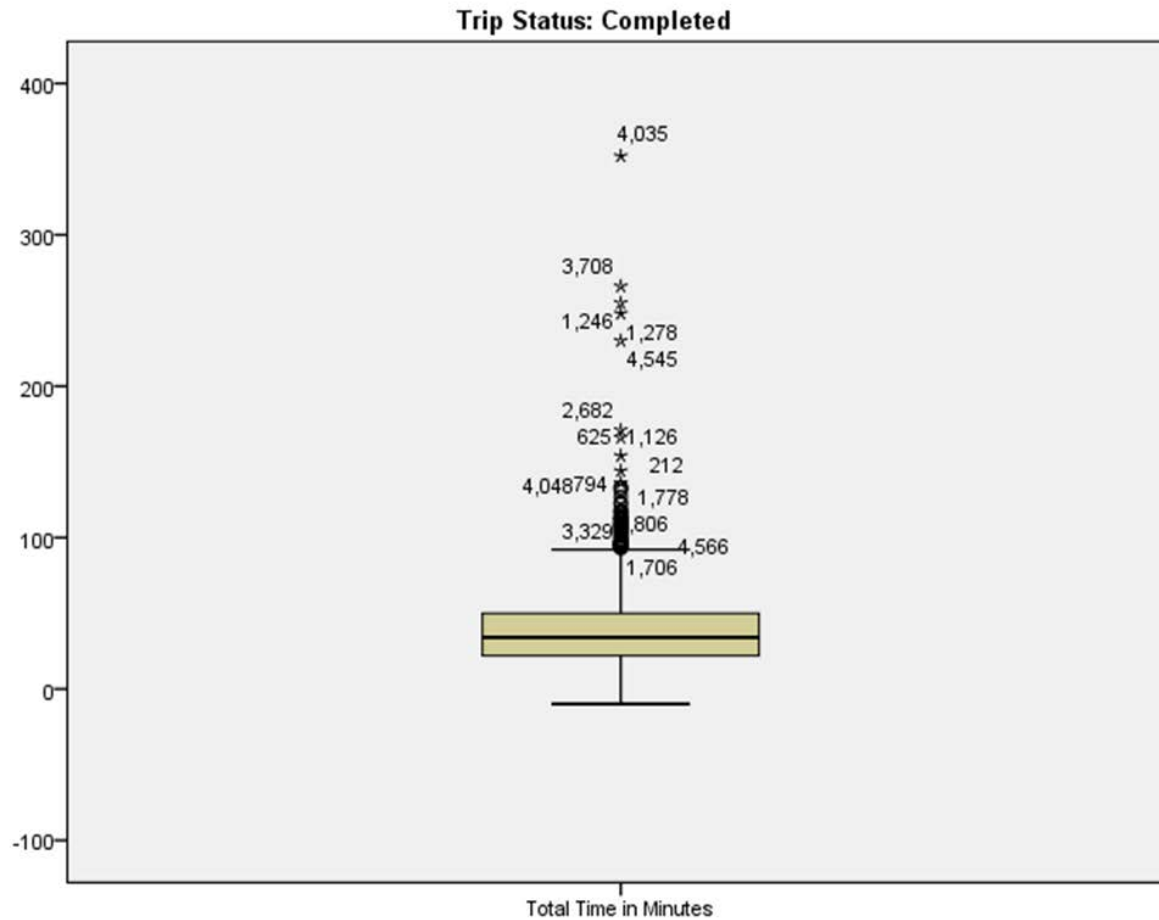
a. Trip Status = Completed



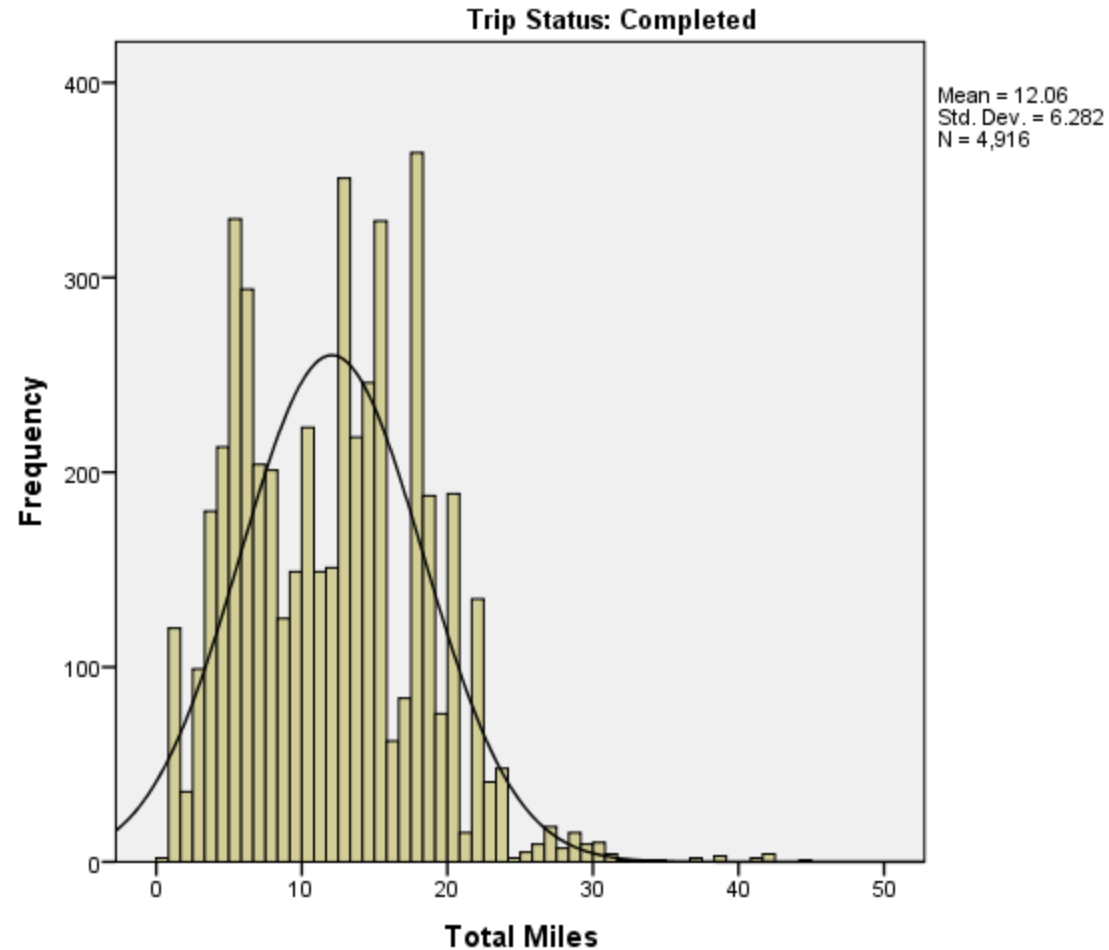
# Status of Travel in Broward County by Minutes



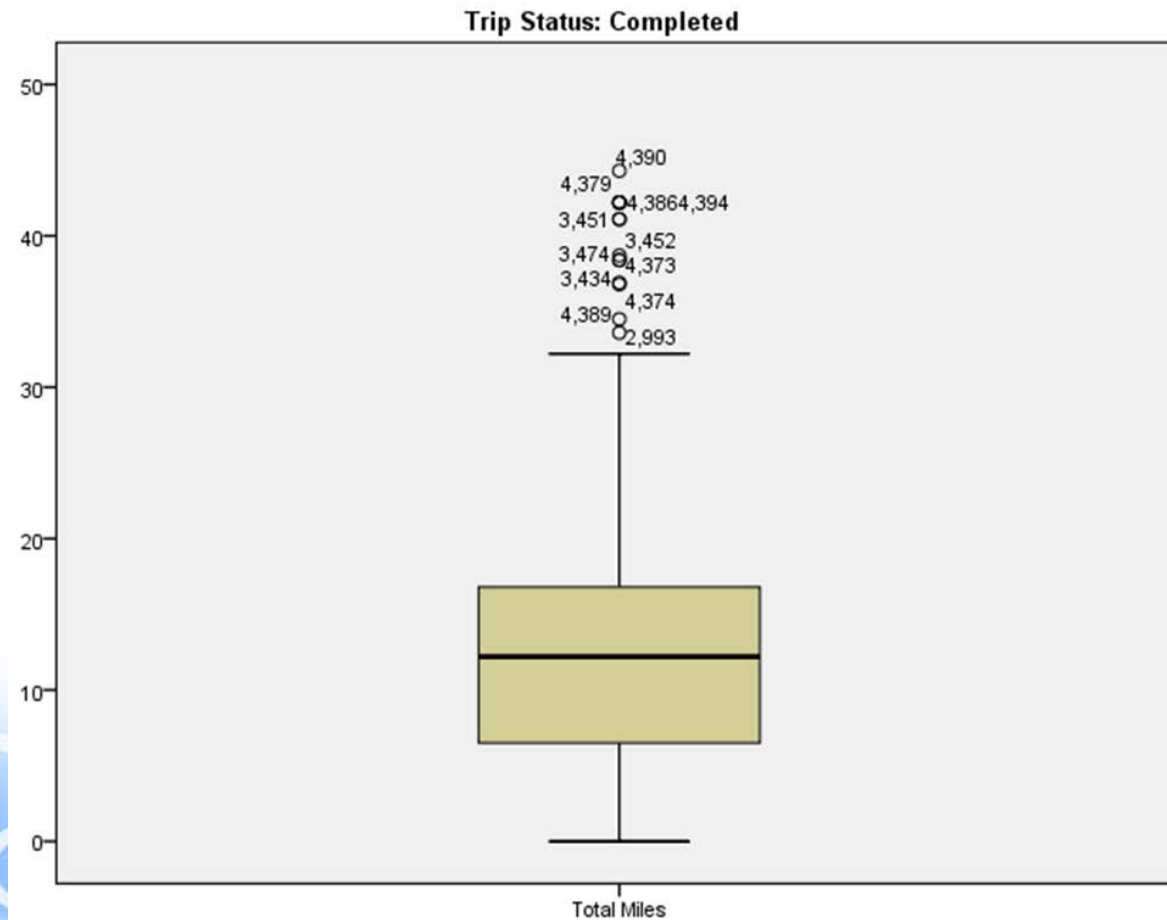
# Outliers for Minutes



# Current Status of Travel by Miles



# Outliers in Miles





# Cancelled and or Disputed Trips

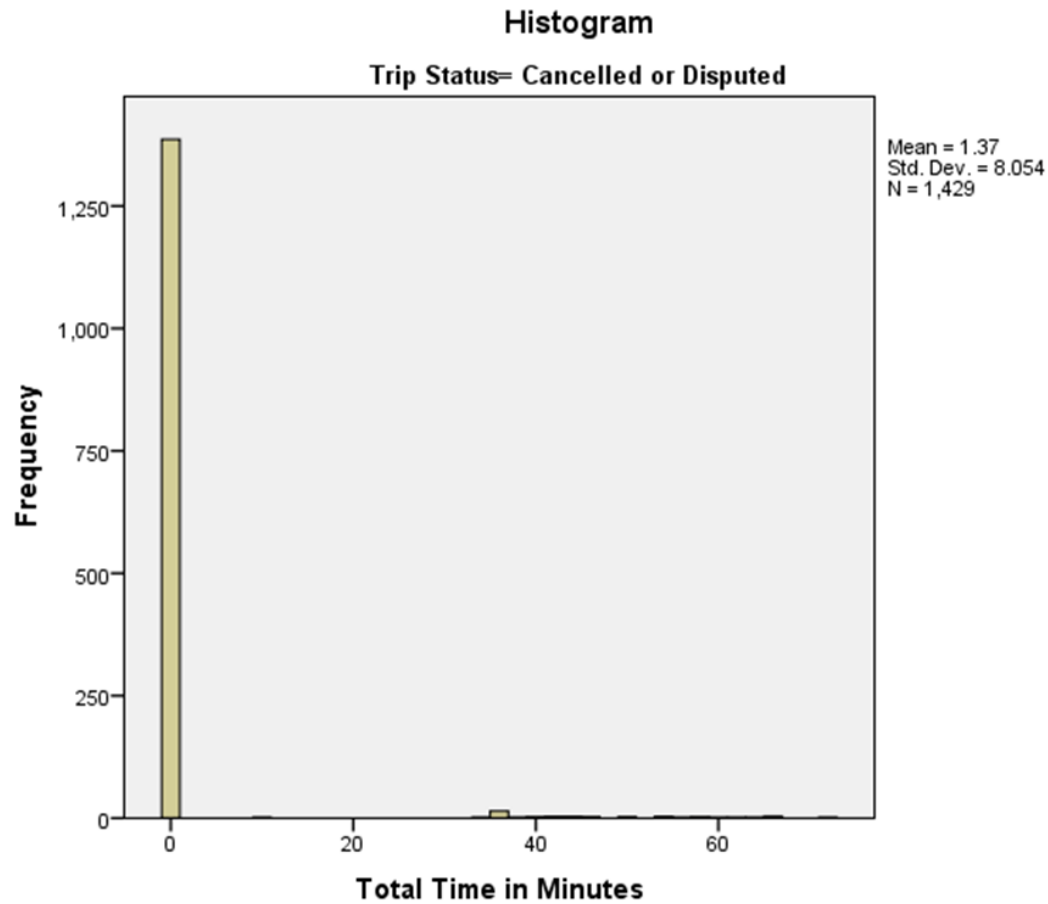
## Trip Status = Cancelled or Disputed

Case Processing Summary <sup>a</sup>						
Cases						
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Total Time in Minutes	1429	85.9%	234	14.1%	1663	100.0%
Total Miles	1429	85.9%	234	14.1%	1663	100.0%

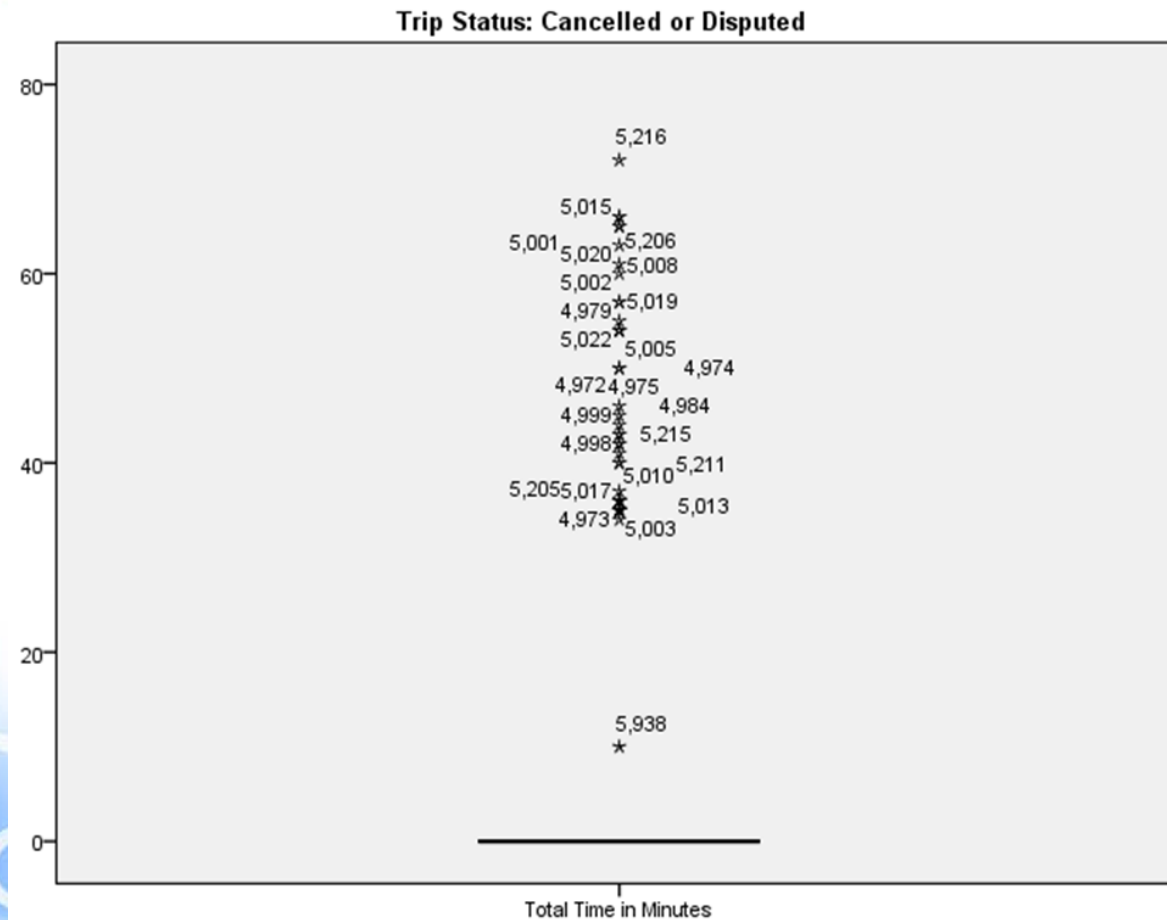
a. Trip Status = Cancelled or Disputed



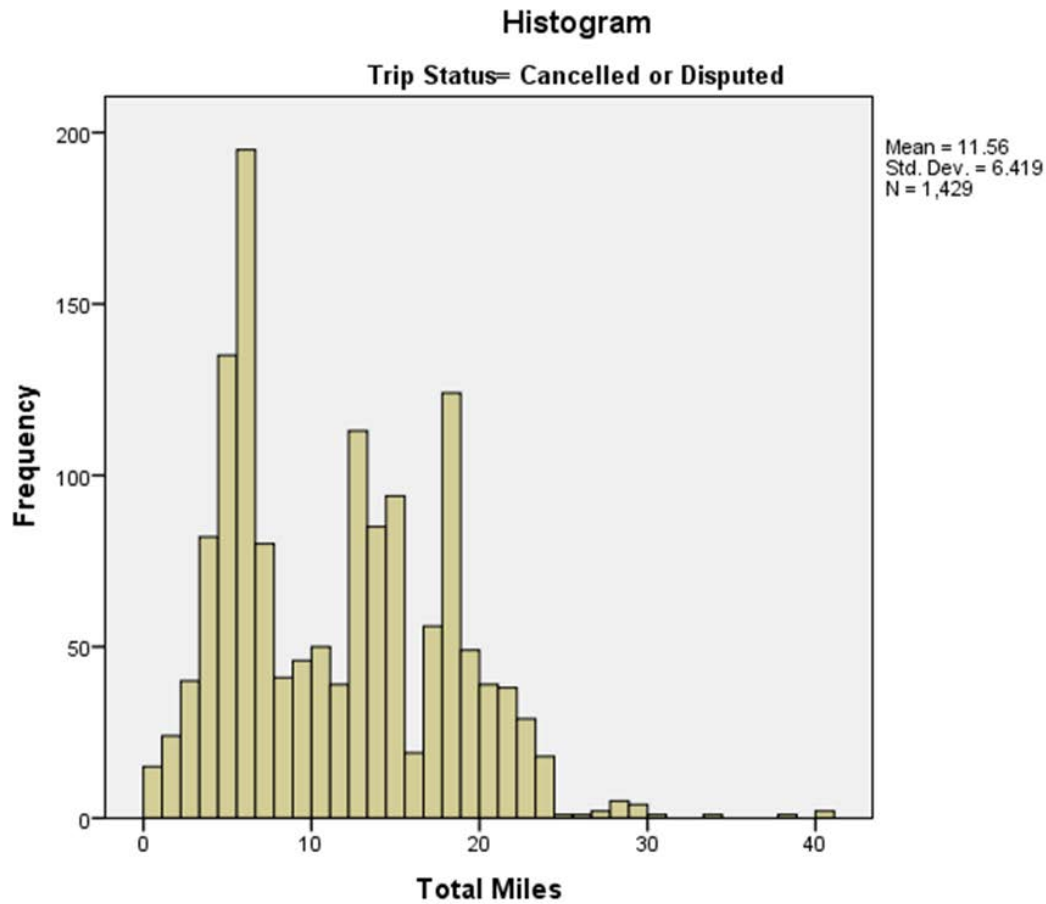
# Cancelled or Disputed in Minutes



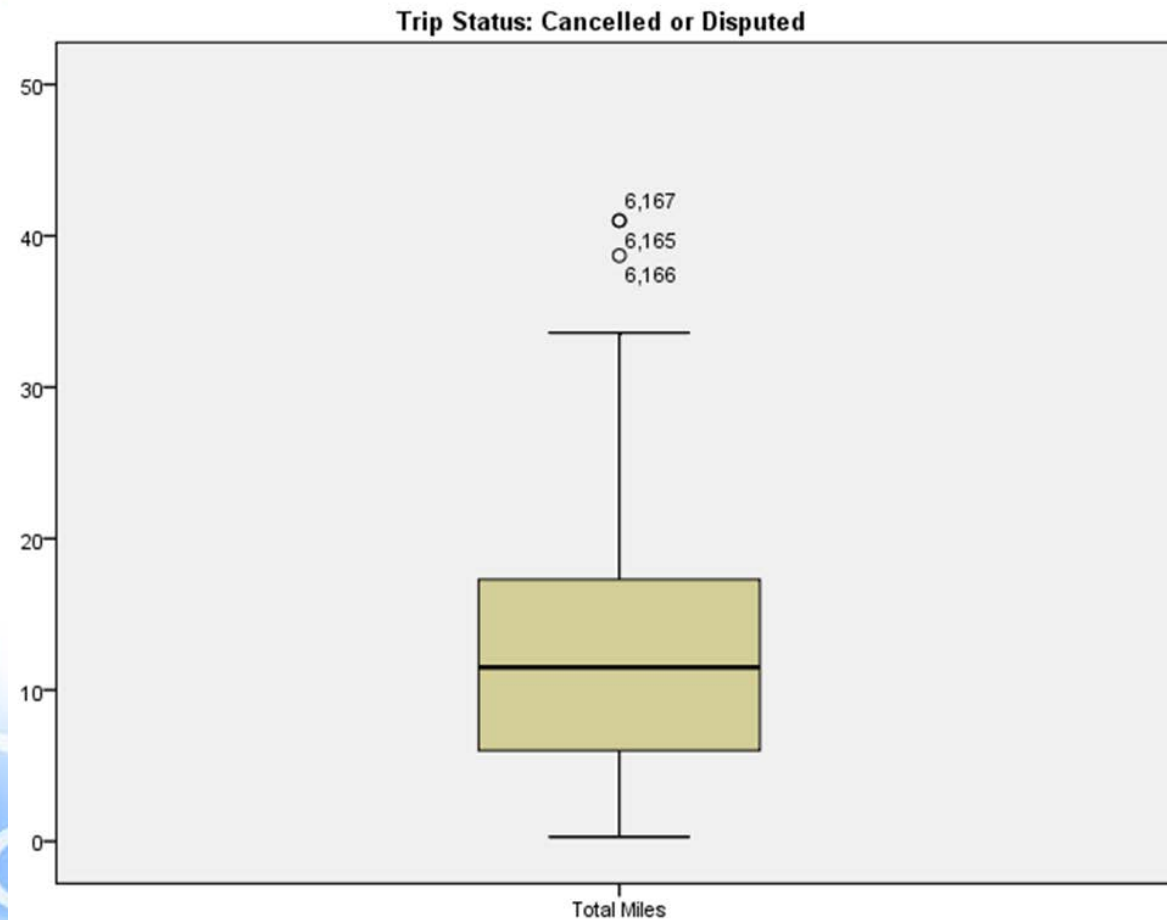
# Cancelled or Disputed Outliers in Minutes



# Cancelled or Disputed Trips Miles

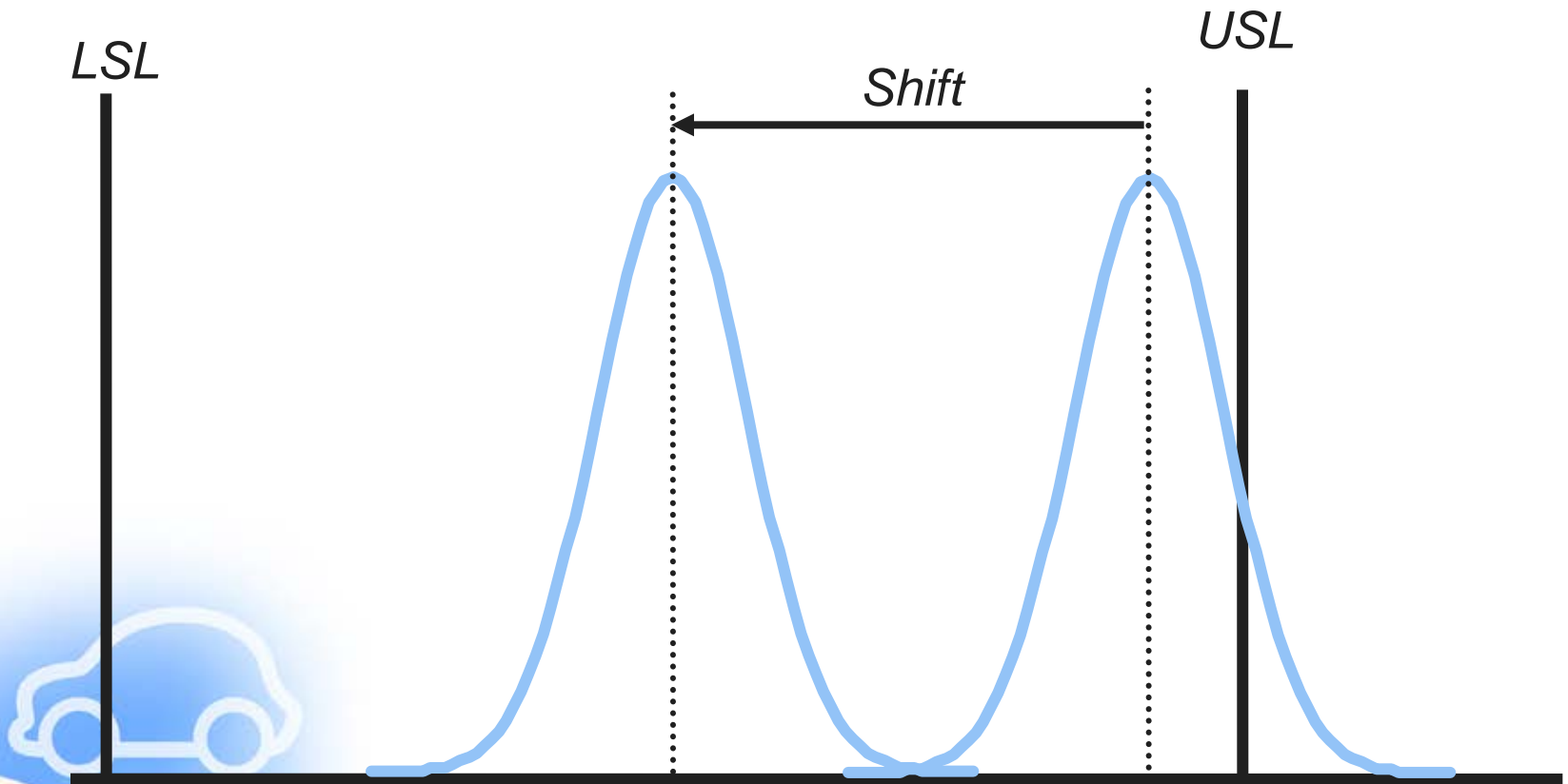


# Outliers in Miles for Cancelled or Disputed

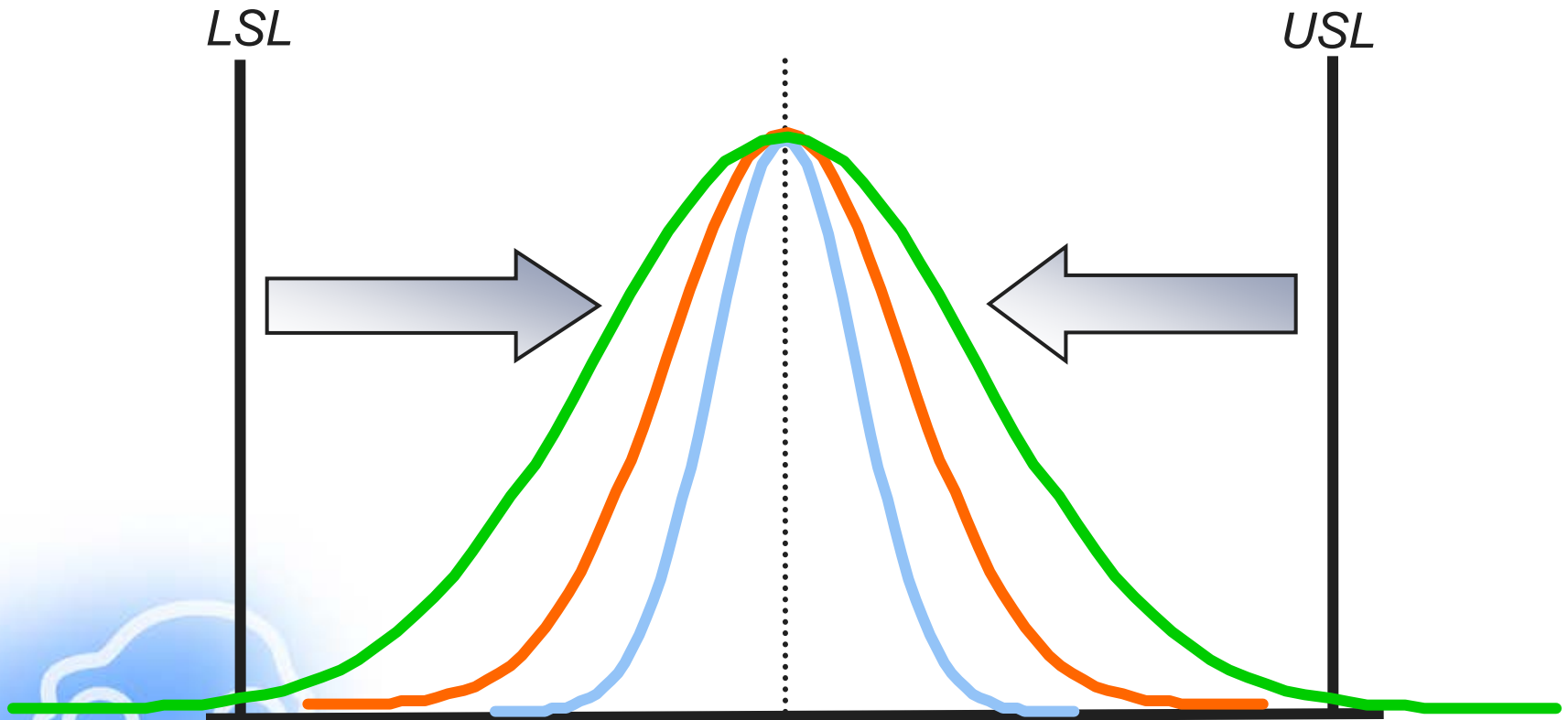


# Problem Solving Options – Shift the Mean

**Objective 1:** This involves finding the variables that will shift the process over to the target. This is usually the easiest option.

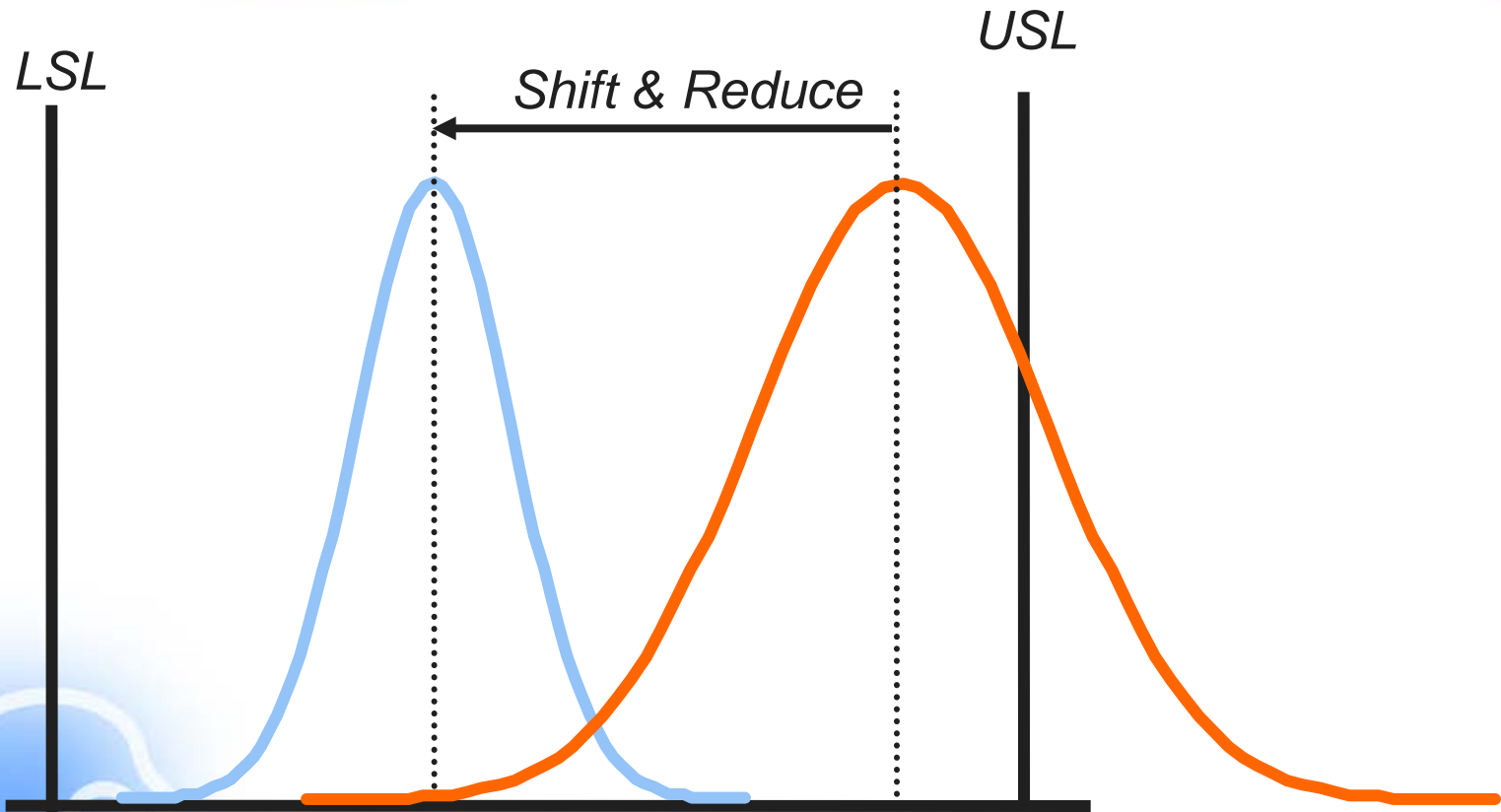


**Objective 2: This is typically not so easy to accomplish and occurs often in Six Sigma projects.**

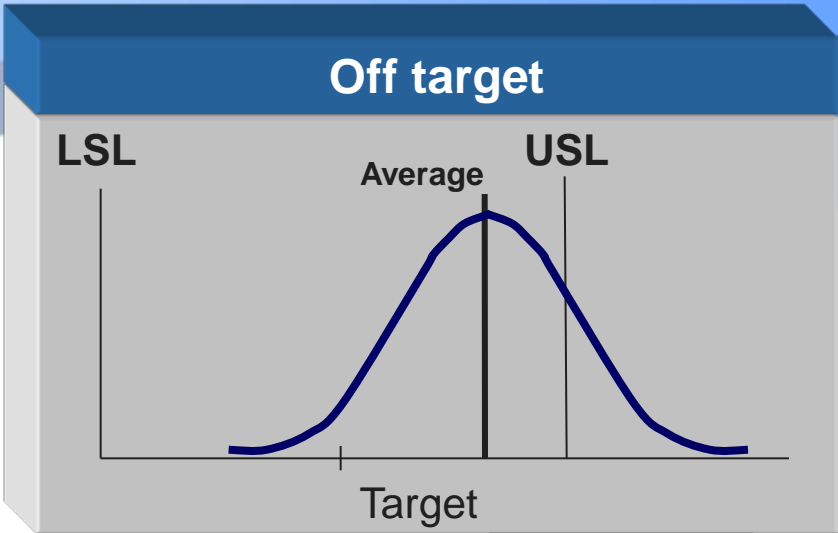
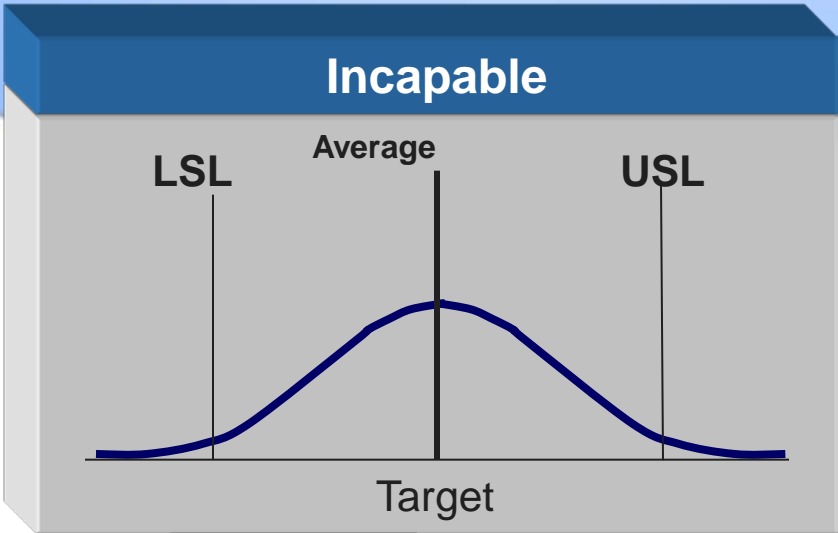


***What to expect from this research!!!***

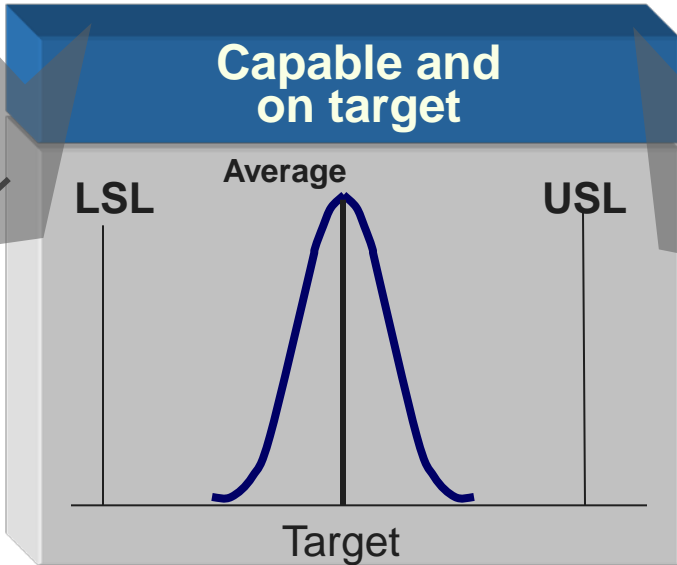
***This occurs often in Six Sigma projects.***







Reduce spread

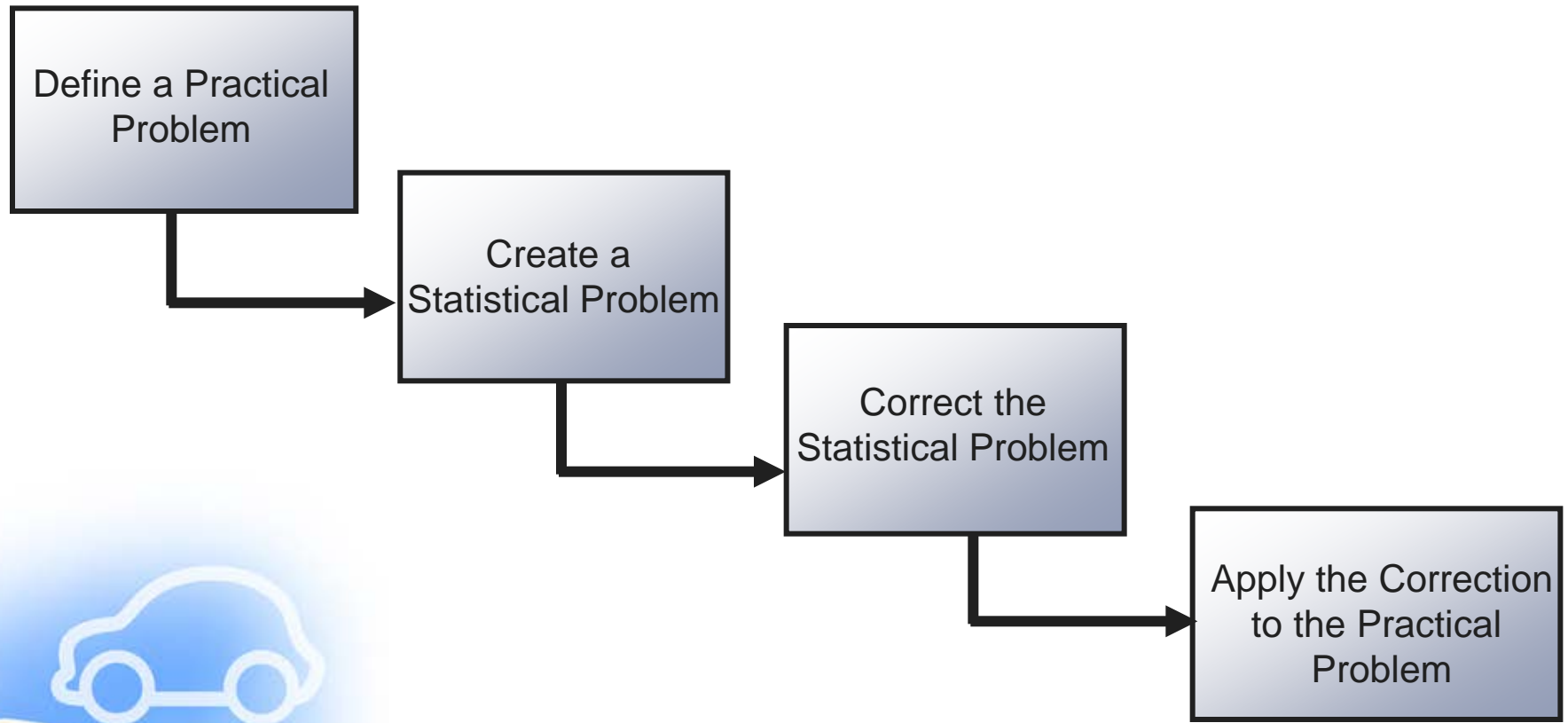


Center process



## ***Our Statistical Problem:***

What is the probability of our process producing a defect ?



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