

# A Study on Public bus fare elasticity for different routes in urban area

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# **A Study on Public bus fare elasticity for different routes in urban area**

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## APPROVAL

The Thesis and Project titled “**A Study on Public bus fare elasticity for different routes in urban area**” Submitted to the Department of Civil Engineering has been examined Thoroughly and satisfactorily accepted in partial fulfillment of the requirement for the Degree of Bachelor of Science (B.Sc.) in Civil Engineering on 1st December 2021.



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## **CANDIDATE'S DECLARATION**

This is hereby declared that this thesis or any part of it has not been submitted elsewhere and any degree

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## **DEDICATED TO MY FAMILY**

**Father & Mother**

Their continuous inspirations made this effort possible

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1st January 2022

# Abstract

There is a long debate regarding public bus fare in Bangladesh, that, the bus fares are not allocated according to passengers' opinion, rather than, bus operators decision dictates. Though Government have fix designated bus fare inventory, those are little practiced in the field. Therefore, issues of bus fare remain questionable and seem to be unjustified. A shed in public opinion regarding bus fare is come to a focus in this regard. In this study, we design a question survey to investigate bus fare sensitive with respect to bus trip among passengers. We perform survey in two routes of Dhaka city. The route 1 is Mirpur to Dhanmondi and Route 2 is Dhanmondi to New Market. In total 101 respondents take part in the survey. Among them 57.43% were male within the responses. 42.57% respondents had monthly household income within the range of 30-50k BDT. Large number of respondents do not have personal vehicle. Among the collected data, 73.27% respondents were travelling in peak hour. Almost 82% respondents considered that existing bus fare is not expensive. 5.94% respondents were captive rider, i.e., not willing to change modes at all. The demand curve, in this case, %bus fare increase vs. %ridership curve, show that doubling bus fare leads the curve to the infeasible region, where ridership reduces drastically. The Model 1- Linear model and Model 2- Polynomial model have degree of determinacy  $R^2$  value 0.89 and 0.97 respectively. Route 1, i.e., Mirpur to Dhanmondi is more sensitive to fare increasing compare to the other counterpart. Male are more sensitive to fare increment. At low or high fare increment, both male and female react similarly. 31-50 years age passenger groups are most sensitivity. Elderly and very young passengers are less sensitive to higher and lower bus fare increment respectively. Low income and high-income respondents are very sensitive and less sensitive to bus fare increment respectively. Off peak hour passengers are more sensitive to bus fare change. Slight increase in bus fare affects ridership more for non-AC local bus passengers. At lower fare increment, seating bus passengers' ridership remain similar regardless of AC or non-AC buses. Fare elasticity at 30% increment level is -0.11, that is, increase in 1% additional fare will decrease ridership by 0.11%, which is inelastic. At 70% fare increment level, fare elasticity for male is -1.09, that is elastic. The increase in 1% additional fare decrease ridership by 1.09%. Fare elasticity for 18-30 years age group at 30% fare increment level is 0.0, that is perfectly inelastic. Increase or decrease of additional fare will not change ridership at this level. Fare elasticity for non-AC local bus passenger group at 70% fare increment level is -1.8, that is inelastic, increase of 1% additional fare will decrease ridership by 1.8%. The fare elasticity investigation

can be extended for large scale survey by concerned authority. Future bus fare adjustment should be based on public survey and bus fare sensitivity among different groups of passengers.

# Chapter 01

## Introduction

### 1.1 General

With the increase of price of diesel and other fuels, the bus owners raise the bus fare which resulting public nuisance. Though Government fixed public bus fare 2.15 BDT/km from previously allotted 1.70 BDT/km in 2021, many bus operators do not follow the policy precisely. Regardless of other service parameters, such as, seat comfort, on-time arrival, frequency, travel time, adequate ventilation—bus fare is a key concern for passengers. It is often raised the voice that passengers' right most of time ignored by the bus operators and bus fare seems to be unjustified. Therefore, the opinion of passengers is crucial to ensure the convenience and comfortable bus journey in metropolitan area, where significant number of people commutes through public buses.

### 1.2 Back ground

Though Government have fix designated bus fare inventory, those are little practiced in the field. Therefore, issues of bus fare remain questionable and seem to be unjustified. A shed in public opinion regarding bus fare is come to a focus in this regard. In this study, we design a question survey to investigate bus fare sensitive with respect to bus trip among passengers. There is a long debate regarding public bus fare in Bangladesh, that, the bus fares are not allocated according to passengers' opinion, rather than, bus operators decision dictates. The purpose of the study is to investigate passengers' sensitivity in terms of fare elasticity regarding bus fare in different routes of Dhaka city.

### 1.3 Work Plan

A pilot survey is performed to design question survey form. Perform field survey in 2 routes of Dhaka city, one is Route 1: Mirpur to Dhanmondi and another one is Route 2: Dhanmondi to New Market. Record passenger's

opinion regarding bus fare in the design survey form. Data analysis, graphical representation of demand (ridership) curve and calculate bus fare elasticity, effects of bus fare on ridership i.e., trips. Make recommendations and findings on bus fare and ridership relationship for different groups of passengers, such as, male, female, peak hour, off peak hour, low and moderate income, young, elderly people and so on.

#### **1.4 Summary**

Sensitivity study in terms of bus fare elasticity can help to understand deep insight the passenger's view point regarding bus fare. It is essential to investigate that different groups of people, based on age, gender, monthly income may react differently with the bus fare increment.

## Chapter2

# Literature Review

### 2.1 General

This chapter discusses literature review related to public bus fare elasticity in different countries around the world. Also, relevant issues are discussed for better understanding.

### 2.2 Prior studies

Prior researches have been conducted on the bus fare elasticity. Following earlier research are described here as literature review of the research.

References	Topics	Remarks
Hensher (1998)	Fare elasticity model for public transport in urban area	Direct and cross elasticity calculation for public transportation in Sydney, Australia
Katz and Rahman (2013)	Effects of overcrowding, bus fare and travel time loss	Study passengers' opinion on bus fare and overcrowding in Dhaka city
Dunkerley et al. (2018)	Influence of bus fare and journey time elasticities	Relate trip purpose, journey types and alternative mode availability with bus fare

## 2.3 Fare elasticity

Fare elasticity of ridership is a measure of ridership's sensitivity to a change in bus fare. Sensitivity is the change in number of trips relative to changes in bus fare.

$$\text{Fare Elasticity of ridership, } E = \left( \frac{R_1 - R_2}{(R_1 + R_2)/2} \right) / \left( \frac{F_1 - F_2}{(F_1 + F_2)/2} \right)$$

Where,

F1 = Bus fare at a point 1 in fare-ridership (demand) curve

R1 = No. of trips (ridership) at the point 1 in fare-ridership (demand) curve

F2 = Bus fare at a point 2 in fare-ridership (demand) curve

R2 = No. of trips (ridership) at the point 2 in fare-ridership (demand) curve

If  $E < 1$  fare is inelastic. Large change in bus fare will cause small change in ridership

If  $E > 1$  fare is elastic. Small change in bus fare will cause large change in ridership

If  $E = 1$  fare is unitary elastic. Same change in bus fare will cause same change in ridership

+ve sign in elasticity (E) means, increasing fare will cause increase in ridership and vice versa.

-ve sign in elasticity (E) means, increasing fare will cause decrease in ridership and vice versa.

If bus ridership is relatively static even when the bus fare changes, the ridership is said to be inelastic and its coefficient of elasticity  $< 1.0$

When the value of elasticity  $> 1$ , it suggests that the bus ridership is more than proportionally affected by the change in bus fare.

If elasticity = 0, then it is known as perfectly inelastic, meaning bus ridership will remain unchanged at this bus fare.

If elasticity is elastic, an increase in bus fare will lead to greater proportion decline in the bus ridership. Conversely, a decrease in bus fare will lead to greater than proportion increase in bus ridership.

## **2.4 Summary**

The opinion of passengers is crucial to ensure the convenience and comfortable bus journey in metropolitan area, where significant number of people commutes through public buses. Sensitivity study in terms of bus fare elasticity can help to understand deep insight the passenger's view point regarding bus fare.



## Chapter 3

# Methodology

### 3.1 General

In a demand curve of economics, demand is in abscissa or X-axis and price is in ordinate or Y-axis. The relationship is straight line with descending slope. In our study, demand is ridership or no. of trips and price corresponding to bus fare. We study the bus fare effect on ridership by demand curve and calculate elasticity to observe sensitivity for different groups of people.

### 3.2 Survey Design

Following are the features which are closely relevance with bus fare. The survey questions consist of general demographic information, travel information and fare sensitivity related information, which are mentioned in the following information.

General information:

Routes-

Gender- Male, female

Age (years)- 18-30, 31-50 and >50

Monthly household income (BDT)- <30k, 30-50k, 50-100k and >100k

Travel information:

Personal vehicle- Yes, no

Travel hour- Peak (8:00-10:00AM or 4:00-6:00PM), off peak

Bus service type- AC seating, Non-AC seating, Non-AC local

Bus fare level- Very cheap, cheap, not expensive, expensive

Switch to alternative modes-Auto Rickshaw, Ridesharing, Para-transit (tempo), not willing to change mode (Captive riders)

Fare sensitivity study (fare elasticity):

Fare increment by- 5BDT, 10BDT, 15BDT, 20BDT, 25BDT, 30BDT, 40BDT and 50BDT for each case there is either Yes or No option.

Formulation of bus fare elasticity is given in the following

$$\text{Fare Elasticity of ridership, } E = \frac{\frac{(R_1 - R_2)}{(R_1 + R_2)}}{\frac{(F_1 - F_2)}{(F_1 + F_2)}}$$

### 3.3 Summary

We study the bus fare effect on ridership by demand curve and calculate elasticity to observe sensitivity for different groups of people.

## **Chapter 4**

# **Data Collection**

### **4.1 General**

The field data were collected through survey and interviewing motorcycle riders. A large number of people depend on motorcycles for their movement, so their needs should be considered with special attention.

### **4.2 Survey**

Survey data from 101 passengers were collected in the two routes of Dhaka city. The routes were, Route 1: Mirpur to Dhanmondi and Route 2: Dhanmondi to New Market.

Existing bus fare are as following:

Route 1: Mirpur to Dhanmondi- seating bus fare 20 BDT and non-seating bus fare 10 BDT

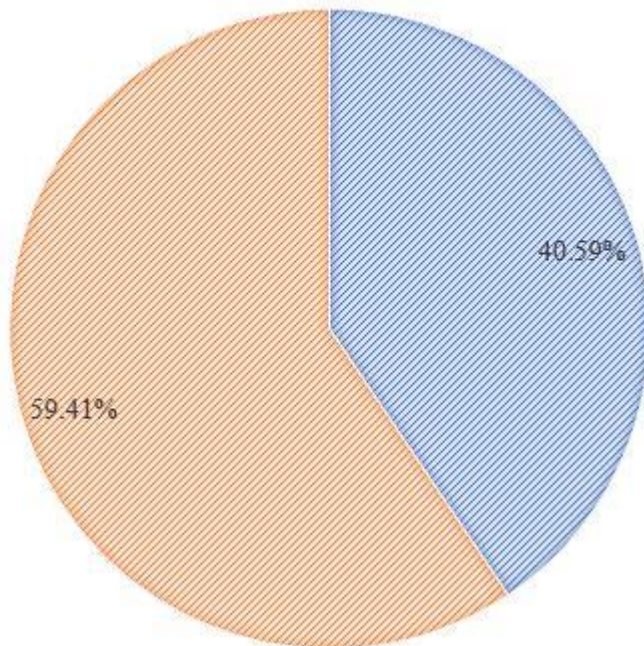
Route 2: Dhanmondi to New Market- seating bus fare 15 BDT and non-seating bus fare 10 BDT.

### **4.3 Demographic data**

Following are the survey data summary of our study

## ROUTES

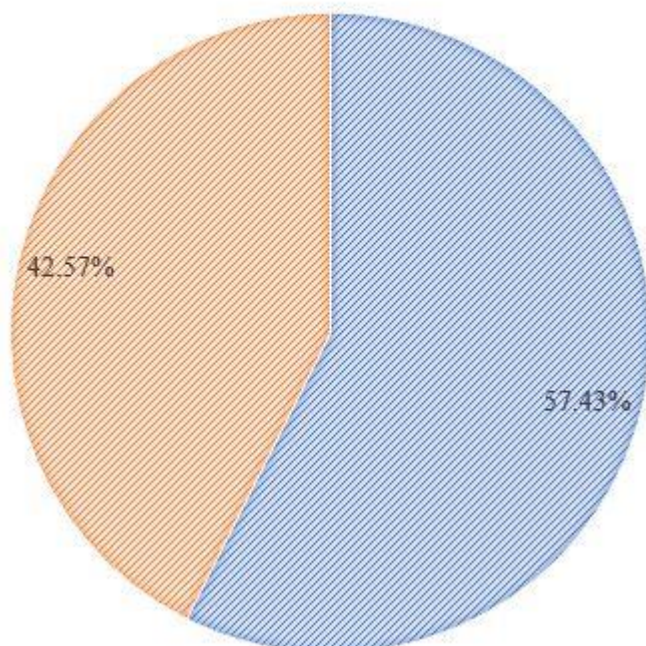
■ Route 1: Mirpur to Dhanmondi    ■ Route 2: Dhanmondi to New Market



Among the survey data, 59.41% and 40.59% passengers are on Route 1 and Route 2 respectively.

## GENDER

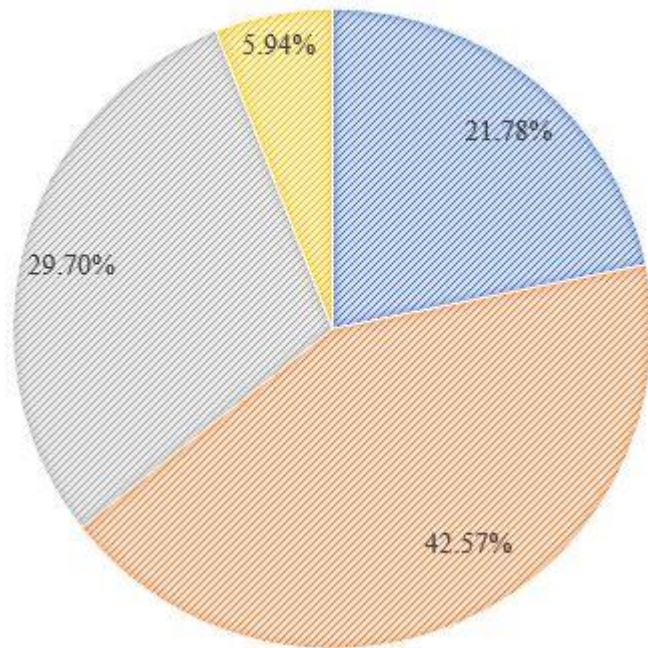
■ Male    ■ Female



Among the respondents, 57.43% and 42.57% were male and female respectively.

### MONTHLY HOUSEHOLD INCOME (BDT)

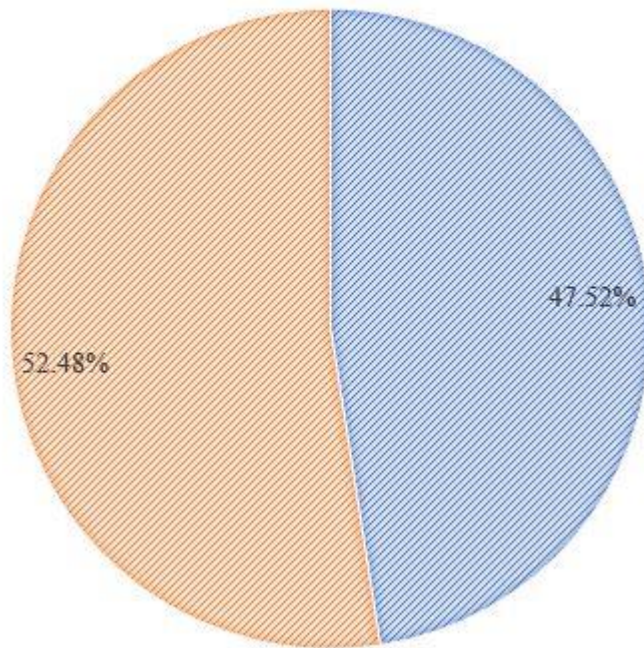
■ <30k ■ 30-50k ■ 50-100k ■ >100k



42.57% respondents had monthly household income within 30-50k BDT.

## PERSONAL VEHICLE

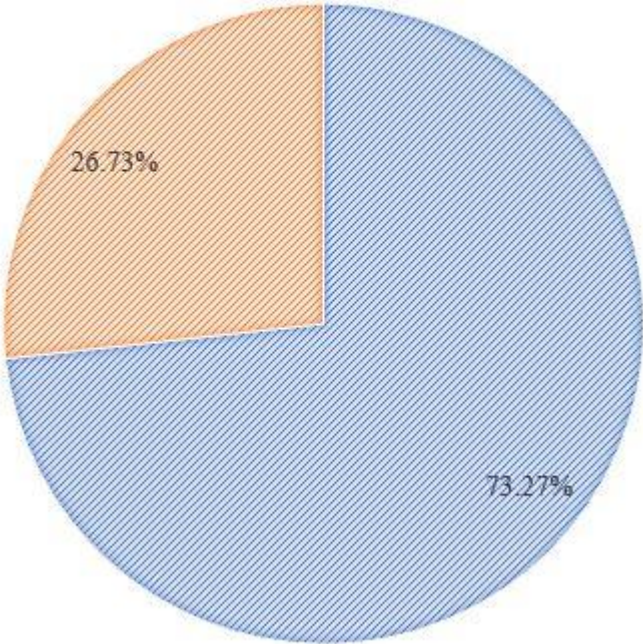
■ Yes ■ No



52.48% respondents do not have personal vehicle, i.e., car or bike.

### TRAVEL TIME

■ Peak ■ Off peak

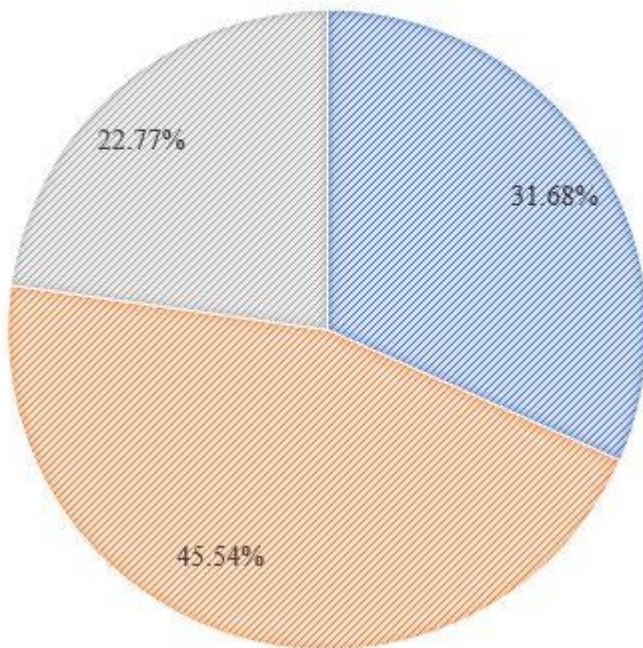


73.37% and 26.73% respondents were travelling peak hour and off-peak hour respectively.



### SERVICE TYPE

■ AC seating ■ Non-AC seating ■ Non-AC local

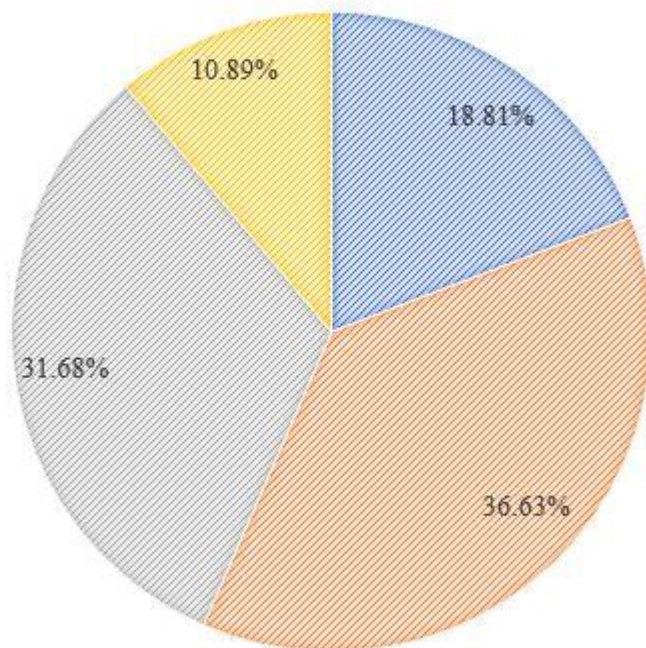


Large portion of passengers were travelling non-AC bus service.



## BUS FARE LEVEL

■ Very cheap ■ Cheap ■ Not Expensive ■ Expensive

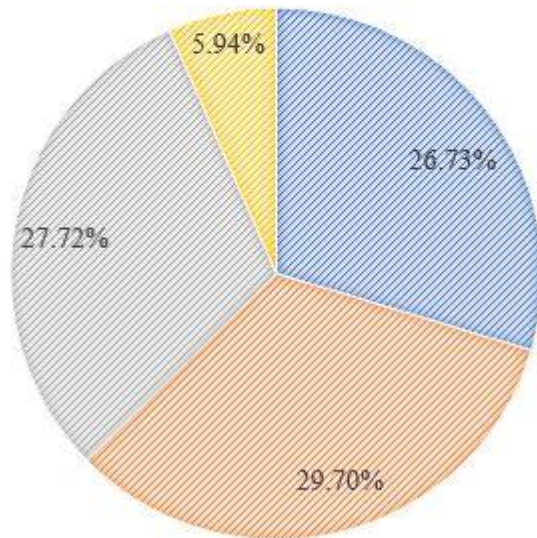


36.63% respondents considered existing bus fare is cheap.

Almost 82% respondents considered that existing bus fare is not expensive.

## SWITCH TO ALTERNATIVE MODES

- Autorickshaw
- Paratransit (Tempo)
- Ridesharing
- Not willing to change modes at all (Captive rider)



5.94% respondents were captive rider, i.e., not willing to change modes at all.

### 4.9 Summary

A large number of people depend on motorcycle for their movement, so their safety need to ensured. The next chapter discusses data analysis portion of the study.

## Chapter 5

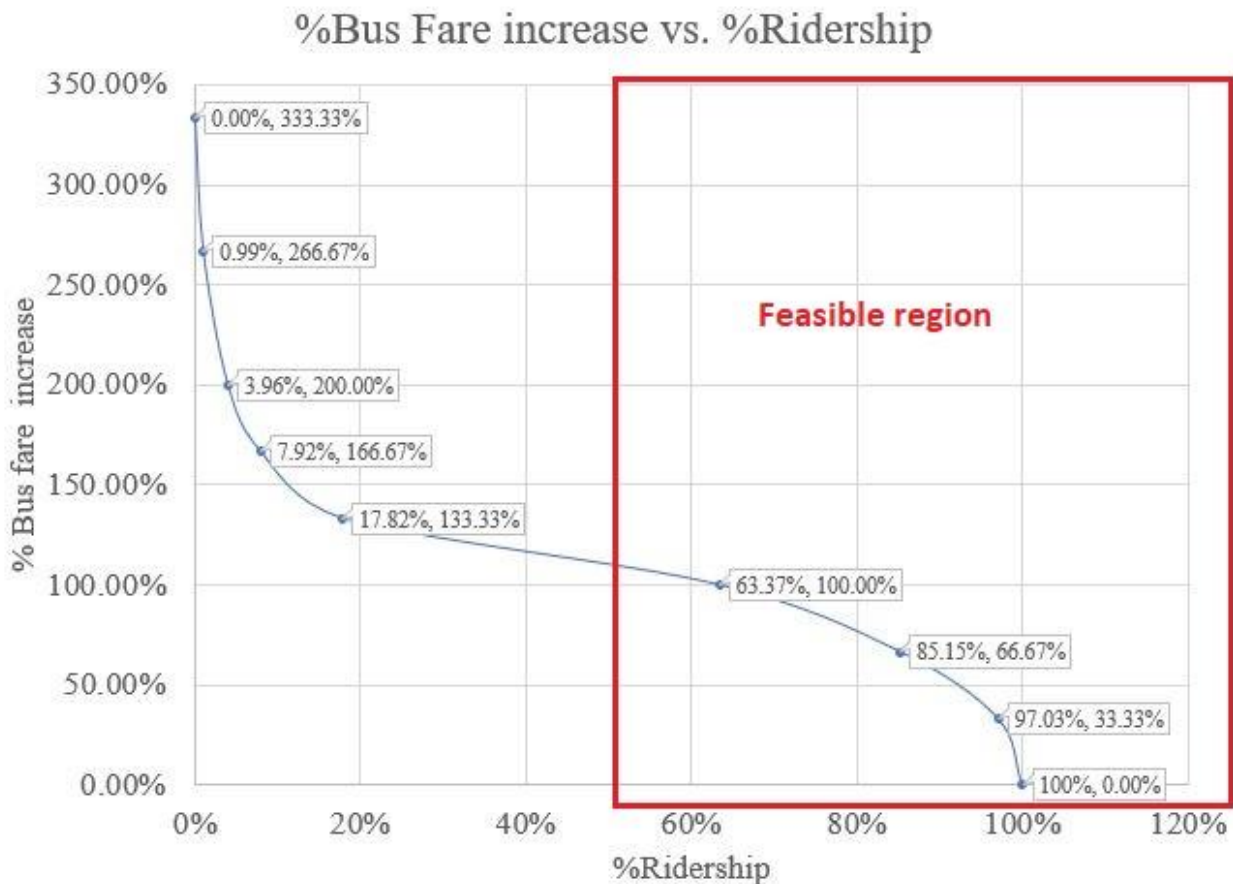
# Data Analysis

### 5.1 General

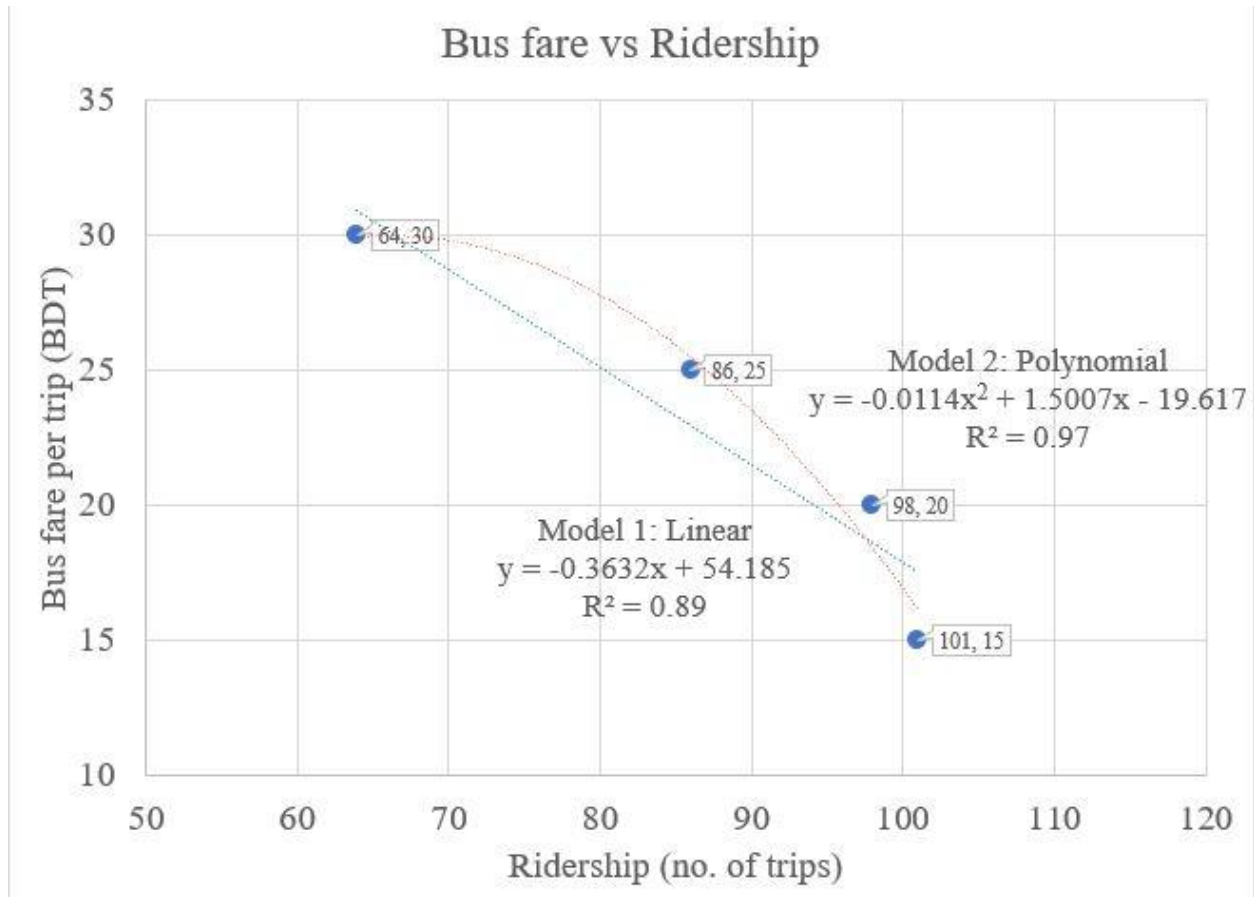
Raising bus fare shrinks real income of public and increase out-of-pocket cost, result in adverse effect on the entire economy. Bus operators can conduct field survey to investigate whether the elasticity is in inelastic side before changing bus fare, so that revenue generation will not reduce due to faulty decision.

### 5.2 Demand curve

Right side red box is the feasible region in the demand curve, in this case, %bus fare increase vs. %ridership curve.

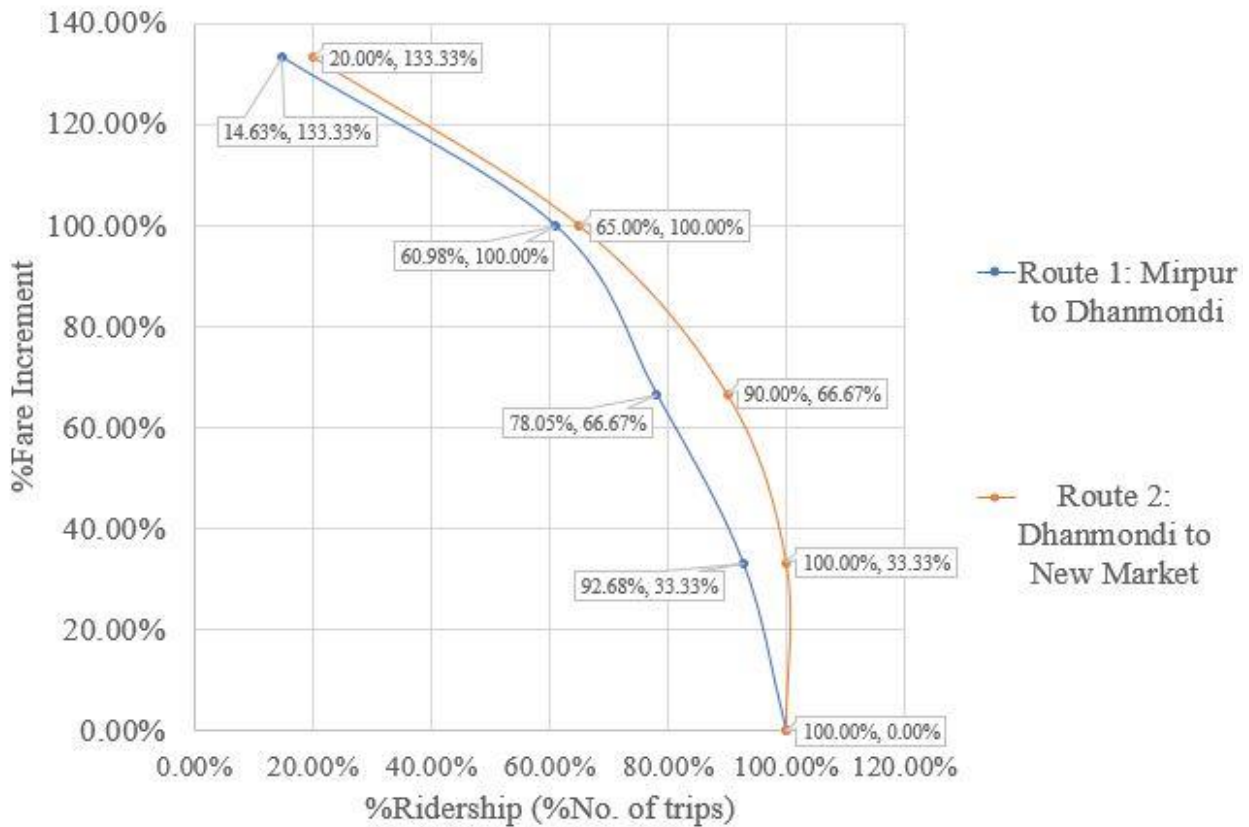


Because beyond this region, the ridership reduces significantly due to increase of bus fare.



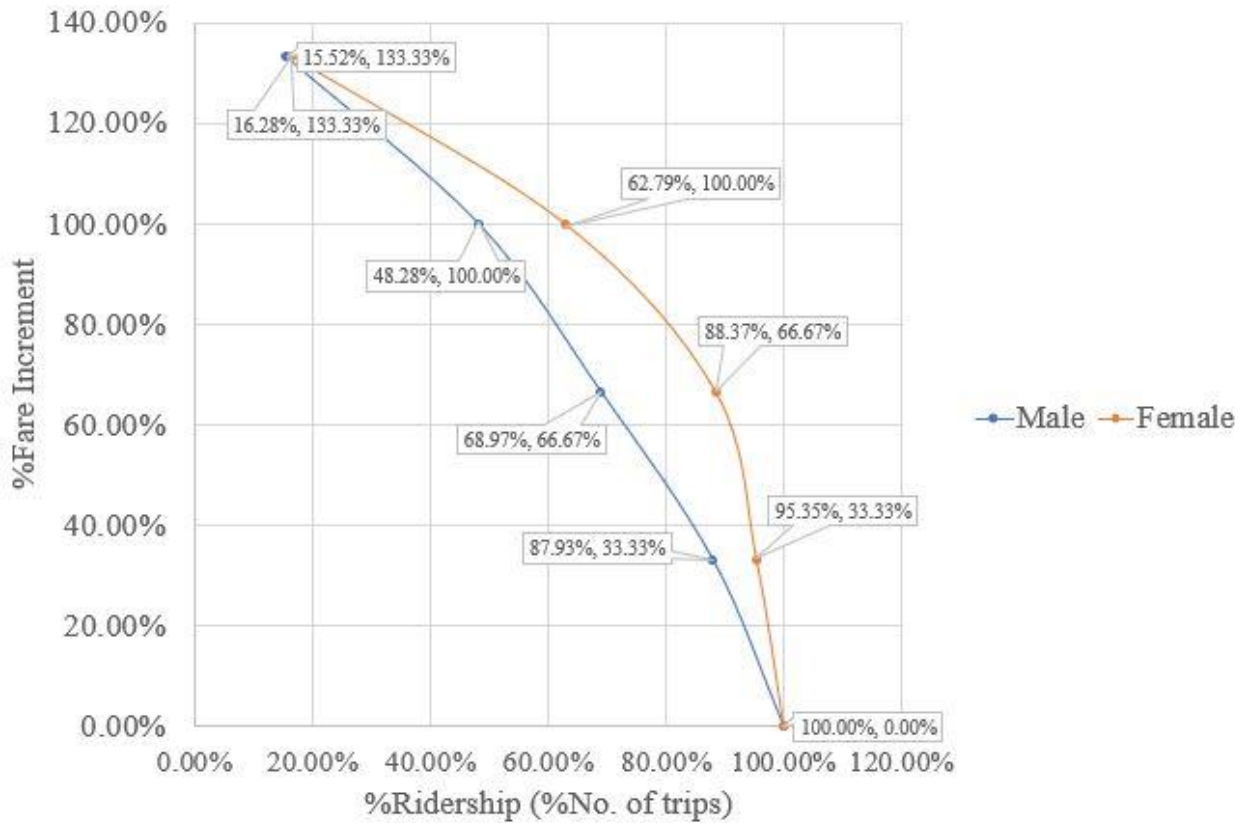
Considering only feasible region of the demand curve, the prediction model 2: polynomial curve fits better with  $R^2 = 0.97$ .

## Routewise %Bus fare increment vs ridership



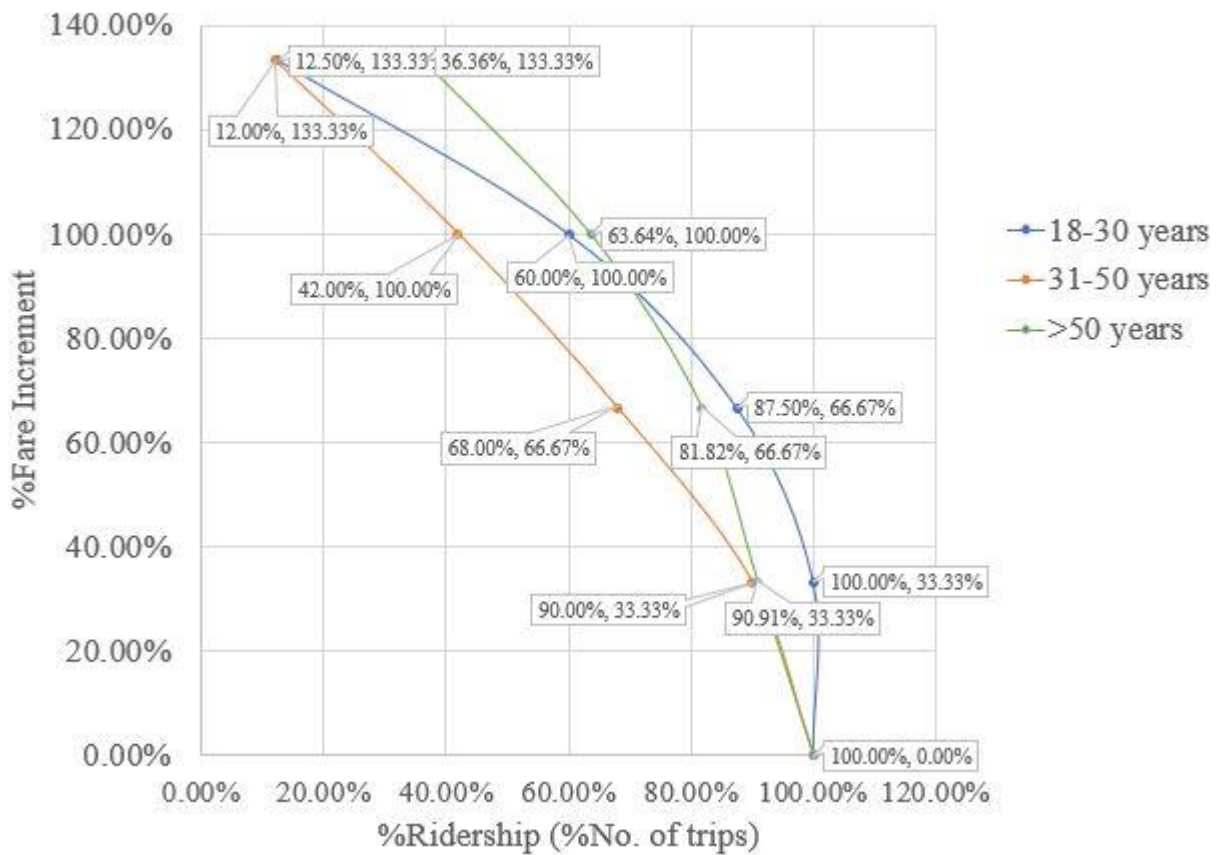
The demand (%Fare increment vs. %ridership) curve corresponding to Route 2 is steeper i.e., inelastic compare to Route 1. Route 1 is more sensitive to fare increment.

### Gender-wise %Bus fare increment vs ridership



Male are more sensitive to fare increment due to flat slope in the graph. At low or high fare increment, both male and female react similarly.

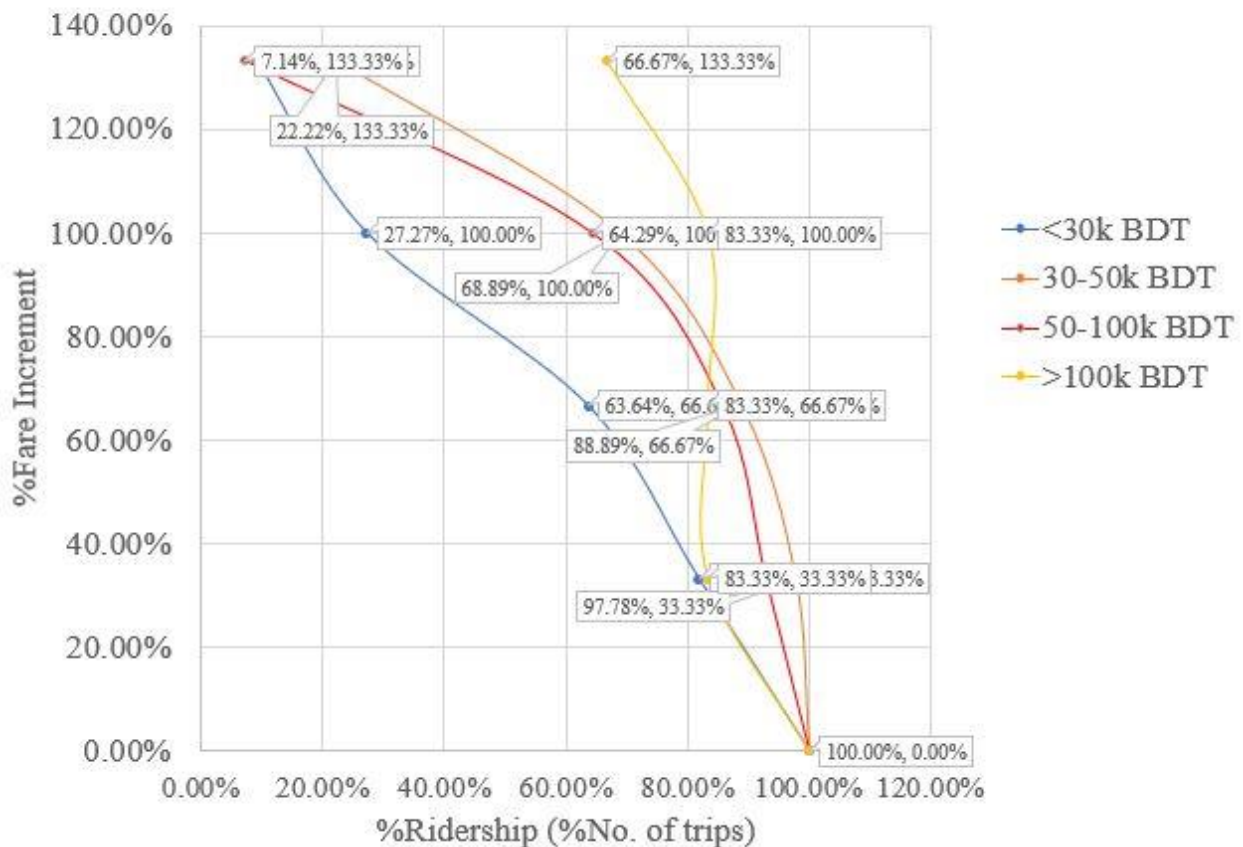
## Age wise %Bus fare increment vs ridership



31-50 years age passenger groups are most sensitivity, fare increment effects their ridership most.

Elderly passengers are less sensitive to higher fare increment. At low fare increment, 18-30 years age passenger groups react insignificant.

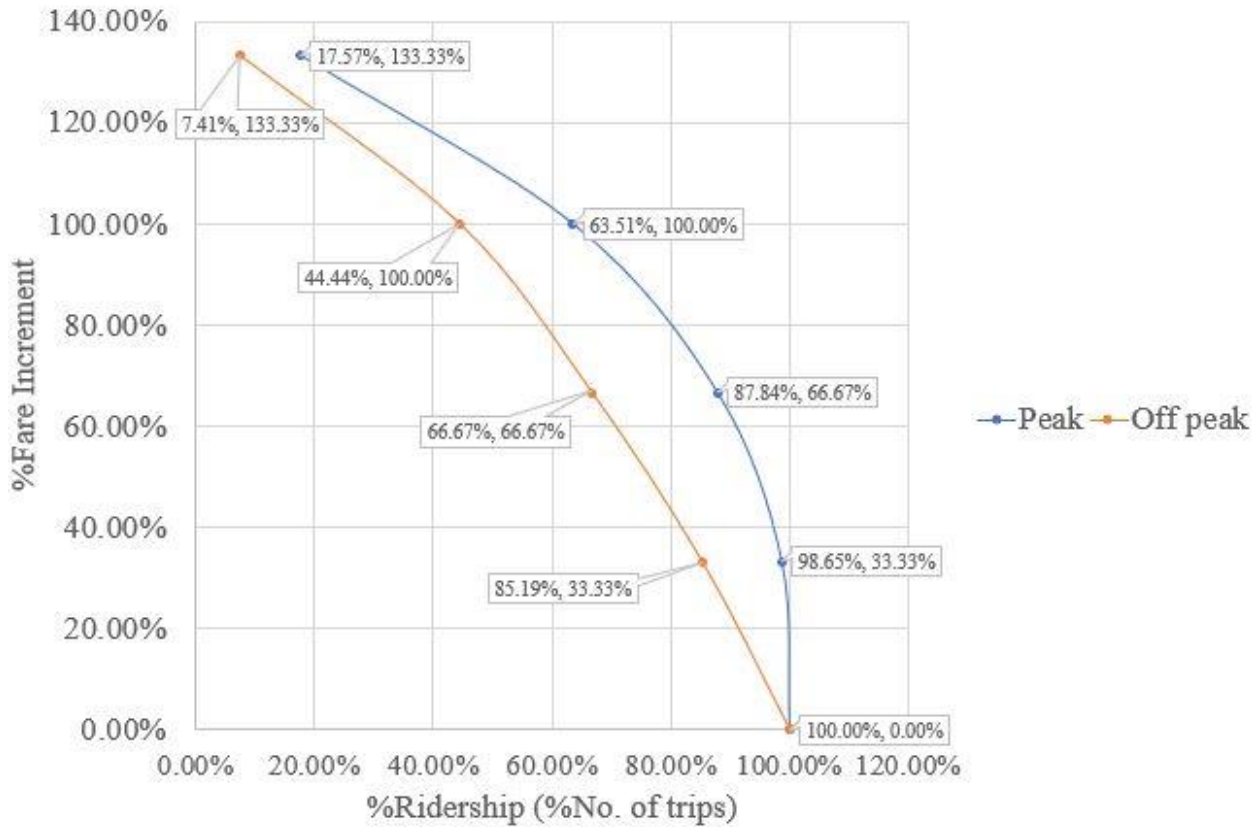
## Monthly Income wise %Bus fare increment vs ridership



Low income (<30k BDT monthly) people are very sensitive (flat slope) to bus fare increment. High income (>100k BDT monthly) passengers are insensitive to bus fare increase. Both middle income group react to bus fare increment similarly.

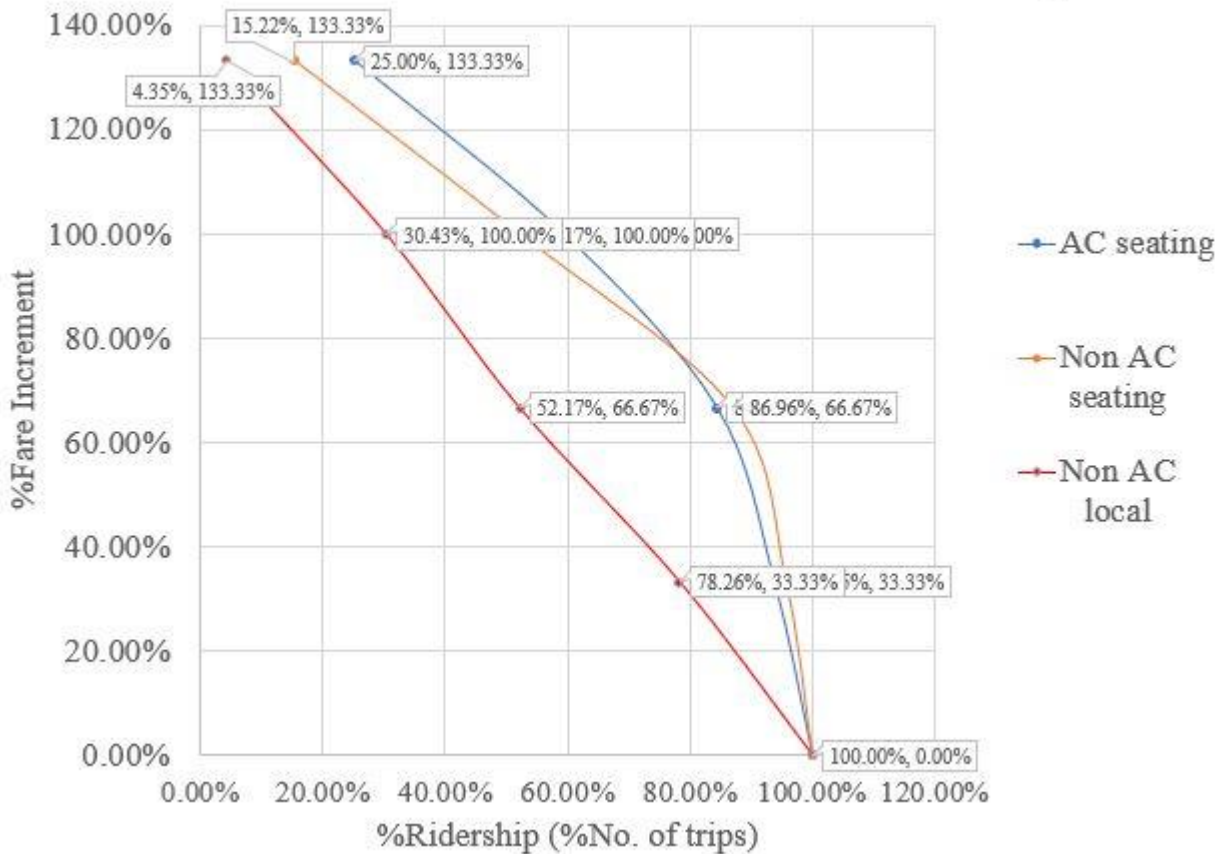


### Travel time wise %Bus fare increment vs ridership



Passengers in off peak hour have mild slope compare to that of peak hour in the graph. Off peak hour passengers are more sensitive to bus fare change.

Service wise %Bus fare increment vs ridership



Non-AC local bus passengers are more sensitive to fare increment, i.e., slight increase in bus fare affect ridership more. At low fare increment, both AC seating and Non-AC seating passengers react similarly, however, at higher increment they deviate.

### 5.3 Elasticity matrix

Bus fare and ridership relationship

Elasticity matrix

Fare increment	30.00%	70.00%	100.00%	130.00%	160.00%	200.00%	250.00%	300.00%
Elasticity	-0.11	-0.59	-1.61	-7.29	-5.77	-5.67	-6.00	-12.00
types	Inelastic	Inelastic	Elastic	Highly Elastic	Highly Elastic	Highly Elastic	Highly Elastic	Highly Elastic
Remarks	Feasible	Feasible	Feasible	Infeasible	Infeasible	Infeasible	Infeasible	Infeasible

Explanation:

Increasing 30% bus fare have fare elasticity -0.11 means increase in 1% fare will decrease ridership by 0.11%, which is inelastic (elasticity <1).

Similarly. Increasing 100% bus fare have elasticity -1.61 means increase in 1% fare will decrease ridership by 1.61%, which is elastic (elasticity >1). So, increasing bus fare will cause revenue loss to the bus authority at this point.

Increasing bus fare by 5BDT at Route 2 is perfectly inelastic, i.e., increasing fare will not affect ridership.

The more a ridership (demand) curve is flat, the more it is elastic and sensitive to bus fare. Small increase in bus fare will cause large decrease in ridership.

The more a ridership (demand) curve is sharp sloped, the more it is inelastic and insensitive.

Route 2: Dhanmondi to New Market is little steeper slope compare to Route 1: Mirpur to Dhanmondi with respect to bus fare and ridership relations. Route 1 is more elastic and sensitive in bus fare increment with respect to ridership. Reason may be, more availability of alternative modes and existing bus fare. Male and female wise, the influence of bus fare increment is almost same.

Fare Elasticity matrix with respect to routes and gender					
Fare increment		30%	70%	100%	130%
Routes	Route 1: Mirpur to				
	Dhanmondi	-0.27	-0.77	-1.35	-7.97
	Route 2: Dhanmondi to				
	New Market	0.00	-0.47	-1.77	-6.88
Gender	Male	-0.45	-1.09	-1.94	-6.68
	Female	-0.17	-0.34	-1.86	-7.65

At 30% fare increment level, fare elasticity for male is -0.45, i.e., inelastic. The increase in 1% additional fare will decrease ridership by 0.45% and vice versa.

At 70% fare increment level, fare elasticity for male is -1.09, that is elastic. The increase in 1% additional fare decrease ridership by 1.09% and vice versa.

Fare Elasticity matrix with respect to travel time and age					
Fare increment		30%	70%	100%	130%
Travel time	Peak	-0.05	-0.52	-1.77	-7.37
	Off peak	-0.56	-1.10	-2.20	-9.29
Age	18-30	0.00	-0.60	-2.05	-8.52
	31-50	-0.37	-1.25	-2.60	-7.22
	>50	-0.33	-0.47	-1.38	-3.55

At 100% fare increment level, fare elasticity for peak hour travel is -1.77, that is elastic. Increase of 1% additional fare will decrease ridership by 1.77% and vice versa.

Fare elasticity for 18-30 years age group at 30% fare increment level is 0.0, that is perfectly inelastic.

Increase or decrease of additional fare will not change ridership at this level.

Fare Elasticity matrix with respect to income and bus service type					
Fare increment		30%	70%	100%	130%
Household Income (BDT)	<30k	-0.70	-1.13	-4.40	-6.50
	30-50k	-0.08	-0.43	-1.39	-6.66
	51-100k	-0.26	-0.36	-1.57	-10.40
	>100k	-0.64	0.00	0.00	-1.44
Bus Service type	AC seating	-0.23	-0.47	-1.91	-5.30
	Non-AC seating	-0.16	-0.43	-2.75	-7.13
	Non-AC local	-0.85	-1.80	-2.89	-9.75

Fare elasticity for monthly income <30k BDT group at 30% fare increment level is -0.7, that is inelastic. Increase of 1% additional fare will decrease ridership by 0.7% and vice versa.

Fare elasticity for Non-AC local bus passenger group at 70% fare increment level is -1.8, that is inelastic. Increase of 1% additional fare will decrease ridership by 1.8% and vice versa.

#### 5.4 Summary

Since bus fare is comparatively low than alternative modes of transport within the city, increasing fare increase the daily cost of passengers.

## Chapter - 6

# Conclusions

### 6.1 General

Raising bus fare shrinks real income of public and increase out-of-pocket cost, result in adverse effect on the entire economy. Bus operators can conduct field survey to investigate whether the elasticity is in inelastic side before changing bus fare, so that revenue generation will not reduce due to faulty decision. By keeping bus fare within tolerance of low-income people will sooth public misery and discomfort.

### 6.2 Findings

- Almost 82% respondents considered that existing bus fare is not expensive.
- 5.94% respondents were captive rider, i.e., not willing to change modes at all.
- Doubling bus fare leads the demand curve to the infeasible region, where ridership reduces drastically.
- The Model 1- Linear model and Model 2- Polynomial model have degree of determinacy  $R^2$  value 0.89 and 0.97 respectively.
- At low or high fare increment, both male and female react similarly.
- 31-50 years age passenger groups are most sensitivity.
- Elderly and very young passengers are less sensitive to higher and lower bus fare increment respectively.
- Low-income respondents are very sensitive to bus fare increment.
- Off peak hour passengers are more sensitive to bus fare change.
- Fare elasticity at 30% increment level is -0.11, that is, increase in 1% additional fare will decrease ridership by 0.11%, which is inelastic.

### **6.3 Recommendations**

Recommendations are:

- Slight increment of bus fare by bus operators due to increasing gasoline prices by Government will not affect ridership.
- However, the increment of bus fare will increase passengers' out of pocket daily cost.
- Also, it will reduce real income of low income.
- Since, the fare elasticity for 30% increment still inelastic, this increment will not affect the revenue of the bus operators.
- Perhaps, the practice of increasing bus fare, without extensive public survey should stopped; considering overall economic effects.

### **6.4 Future study**

Large scale survey on bus fare needs to be performed to make the findings of the bus fare-ridership study into policy making. The framework of this study can be implemented for other cities and other geographic conditions. Various other socio-economic features along with cross elasticity with other mode of transportation can be investigated.

### **6.5 Summary**

By keeping bus fare within tolerance of low-income people will sooth public misery and discomfort. The survey framework developed in this study is applicable for large scale survey as well, which can be used for nation-wide policy making.

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## APPENDIX

Data sample

Select Routes	Gender	Age	Household income (BDT)	Do you have household personal vehicle (car/motor or cycle)?	Travel hour	Bus service type	Bus fare level (BDT)	Switch to other modes
Mirpur 1 to Dhanmondi	Male	31-50	<30k	No	Peak hour (8-10AM and 4-6PM)	Non AC seating	40 (Not expensive)	Ridesharing
Dhanmondi to New Market	Female	18-30	30-50k	No	Peak hour (8-10AM and 4-6PM)	AC seating	50 (Expensive)	Auto Rickshaw
Mirpur 1 to Dhanmondi	Male	>50	50-100k	No	Off peak hour	AC seating	40 (Not expensive)	Para-tansit (Tempo)
Dhanmondi to New Market	Male	31-50	30-50k	Yes	Peak hour (8-10AM and 4-6PM)	Non AC standing	20 (Very cheap)	Para-tansit (Tempo)
Dhanmondi to New Market	Female	31-50	30-50k	No	Peak hour (8-10AM and 4-6PM)	Non AC standing	30 (Cheap)	will not switch to other modes
Mirpur 1 to Dhanmondi	Female	31-50	30-50k	No	Peak hour (8-10AM and 4-6PM)	Non AC seating	30 (Cheap)	Para-tansit (Tempo)
Mirpur 1 to Dhanmondi	Male	31-50	50-100k	Yes	Peak hour (8-10AM and 4-6PM)	Non AC standing	20 (Very cheap)	Para-tansit (Tempo)

Dhanmondi to New Market	Male	18-30	<30k	Yes	Off peak hour	Non AC standing	30 (Cheap)	Ridesharing
Dhanmondi to New Market	Male	>50	>100k	Yes	Peak hour (8-10AM and 4-6PM)	AC seating	50 (Expensive)	Personal vehicle
Mirpur 1 to Dhanmondi	Female	18-30	30-50k	No	Off peak hour	Non AC seating	30 (Cheap)	Auto Rickshaw
Dhanmondi to New Market	Male	18-30	50-100k	Yes	Peak hour (8-10AM and 4-6PM)	AC seating	30 (Cheap)	Auto Rickshaw
Mirpur 1 to Dhanmondi	Male	18-30	50-100k	No	Peak hour (8-10AM and 4-6PM)	AC seating	40 (Not expensive)	Ridesharing
Dhanmondi to New Market	Female	18-30	50-100k	No	Peak hour (8-10AM and 4-6PM)	AC seating	30 (Cheap)	Auto Rickshaw
Mirpur 1 to Dhanmondi	Male	18-30	30-50k	No	Peak hour (8-10AM and 4-6PM)	Non AC seating	20 (Very cheap)	will not switch to other modes
Dhanmondi to New Market	Male	18-30	50-100k	Yes	Peak hour (8-10AM and 4-6PM)	Non AC standing	40 (Not expensive)	Auto Rickshaw
Mirpur 1 to Dhanmondi	Female	31-50	30-50k	No	Off peak hour	Non AC seating	20 (Very cheap)	will not switch to other modes
Dhanmondi to New Market	Male	>50	<30k	No	Peak hour (8-10AM and 4-6PM)	Non AC standing	30 (Cheap)	Para-tansit (Tempo)
Dhanmondi to New Market	Male	31-50	>100k	Yes	Peak hour (8-10AM and 4-6PM)	AC seating	50 (Expensive)	Ridesharing
Dhanmondi to New Market	Male	18-30	<30k	No	Peak hour (8-10AM and 4-6PM)	Non AC seating	20 (Very cheap)	Auto Rickshaw

Mirpur 1 to Dhanmondi	Male	31-50	30-50k	Yes	Off peak hour	AC seating	30 (Cheap)	Para-tansit (Tempo)
Mirpur 1 to Dhanmondi	Male	31-50	30-50k	Yes	Peak hour (8-10AM and 4-6PM)	Non AC seating	40 (Not expensive)	Para-tansit (Tempo)
Mirpur 1 to Dhanmondi	Male	18-30	>100k	No	Off peak hour	Non AC seating	20 (Very cheap)	Auto Rickshaw
Mirpur 1 to Dhanmondi	Female	>50	50-100k	No	Off peak hour	AC seating	30 (Cheap)	Personal vehicle
Mirpur 1 to Dhanmondi	Female	18-30	<30k	Yes	Peak hour (8-10AM and 4-6PM)	Non AC seating	30 (Cheap)	Auto Rickshaw
Mirpur 1 to Dhanmondi	Female	>50	50-100k	No	Peak hour (8-10AM and 4-6PM)	AC seating	40 (Not expensive)	Para-tansit (Tempo)
Mirpur 1 to Dhanmondi	Female	31-50	>100k	Yes	Peak hour (8-10AM and 4-6PM)	AC seating	75 (Very expensive)	Personal vehicle
Mirpur 1 to Dhanmondi	Male	18-30	<30k	No	Peak hour (8-10AM and 4-6PM)	AC seating	40 (Not expensive)	Ridesharing
Dhanmondi to New Market	Female	31-50	50-100k	No	Peak hour (8-10AM and 4-6PM)	AC seating	40 (Not expensive)	Para-tansit (Tempo)
Dhanmondi to New Market	Male	18-30	<30k	Yes	Peak hour (8-10AM and 4-6PM)	AC seating	20 (Very cheap)	Auto Rickshaw

If fare increase by 5 BDT, do you use bus service?	If fare increase by 10 BDT, do you use bus service?	If fare increase by 15 BDT, do you use bus service?	If fare increase by 20 BDT, do you use bus service?	If fare increase by 25 BDT, do you use bus service?	If fare increase by 30 BDT, do you use bus service?	If fare increase by 40 BDT, do you use bus service?	If fare increase by 50 BDT, do you use bus service?
Yes	Yes	No	No	No	No	No	No

Yes	Yes	Yes	Yes	No	No	No	No
Yes	Yes	No	No	No	No	No	No
Yes	No	No	No	No	No	No	No
Yes	Yes	No	No	No	No	No	No
Yes	No	No	No	No	No	No	No
Yes	No	No	No	No	No	No	No
Yes	No	No	No	No	No	No	No
Yes	Yes	Yes	Yes	Yes	Yes	No	No
Yes	Yes	Yes	Yes	No	No	No	No
Yes	Yes	No	No	No	No	No	No
Yes	Yes	No	No	No	No	No	No
Yes	Yes	Yes	No	No	No	No	No
Yes	Yes	Yes	Yes	No	No	No	No
Yes	Yes	Yes	No	No	No	No	No
Yes	Yes	Yes	No	No	No	No	No
Yes	Yes	Yes	Yes	No	No	No	No
Yes	Yes	Yes	Yes	Yes	No	No	No
Yes	Yes	Yes	No	No	No	No	No
Yes	Yes	Yes	Yes	No	No	No	No
Yes	No	No	No	No	No	No	No
Yes	No	No	No	No	No	No	No
No	No	No	No	No	No	No	No
Yes	Yes	No	No	No	No	No	No
No	No	No	No	No	No	No	No
Yes	Yes	Yes	Yes	Yes	No	No	No
Yes	No	No	No	No	No	No	No
Yes	Yes	Yes	Yes	No	No	No	No

Yes	No	No	No	No	No	No	No
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