The Cost of Fare-Free Public Transit in the COVID Economy

Looking into the Case of the EDSA Carousel Bus System in the Philippines

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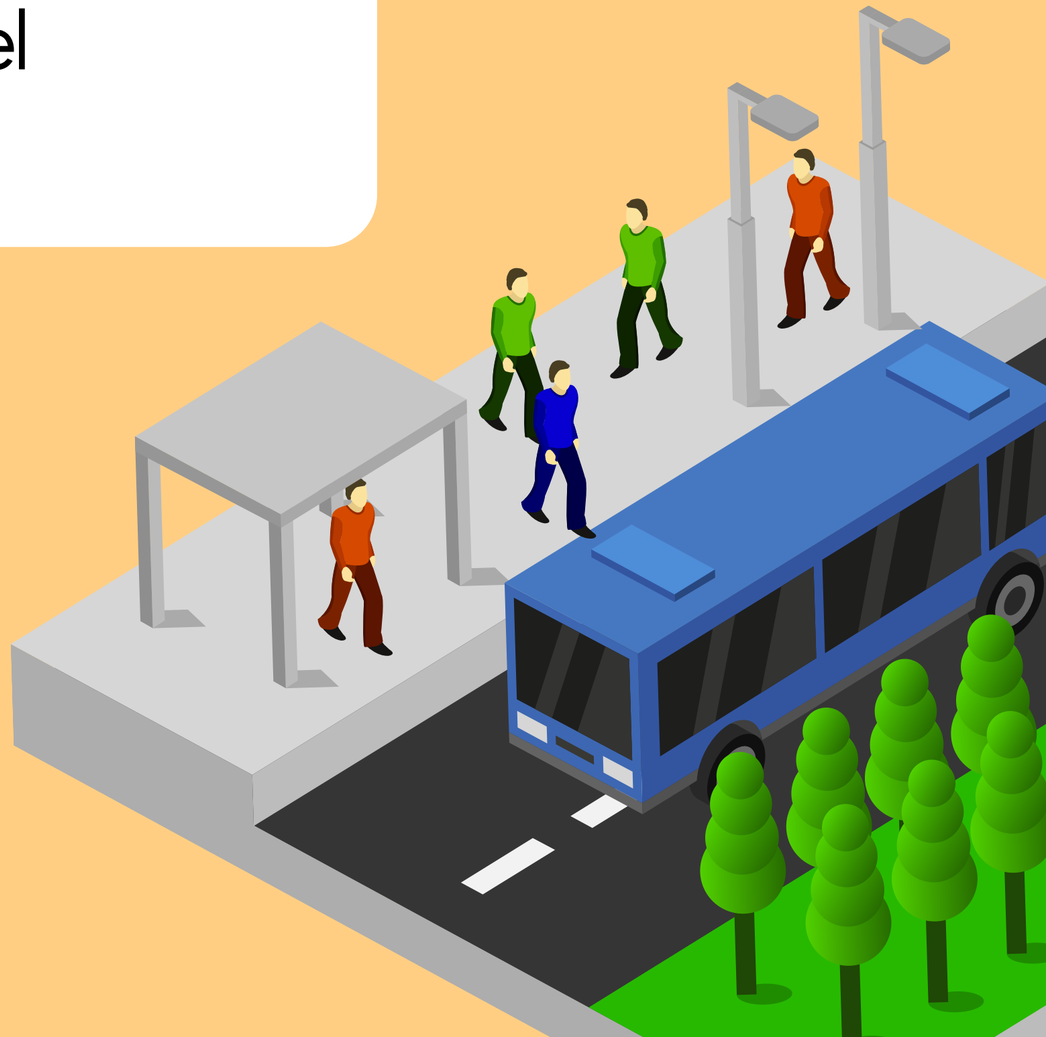
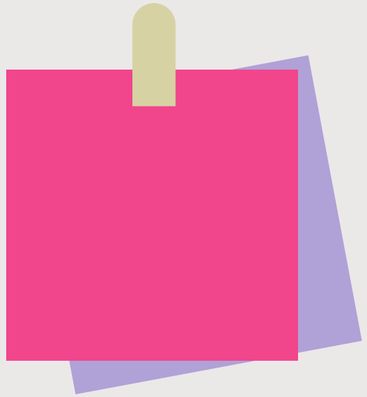


Public Transit in the Philippines

Economics of Fare-Free Public Transit Policy



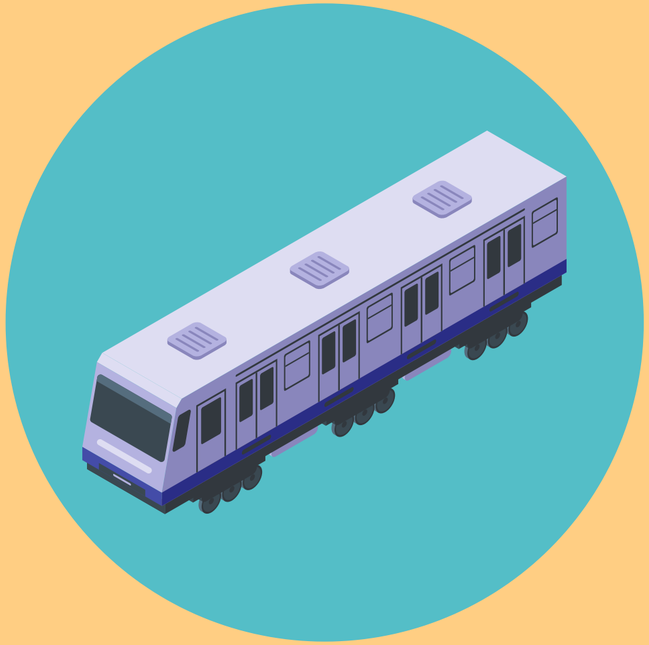
Results, Discussions & Recommendations

Public Transit in the Philippines

There are several works of literature which looks at the state of public transportation in the Philippines.

Each of these works look at specific aspect of transport system in the country.

Major Sources of Transport Crisis in Metro Manila



Demand in Mobility

Institutional Changes in the Transport Sector

Urban Planning

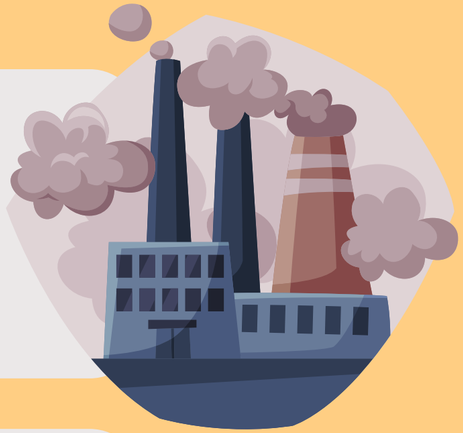
MMDA Bus Segregation System

MRT-3 Bus Augmentation Program

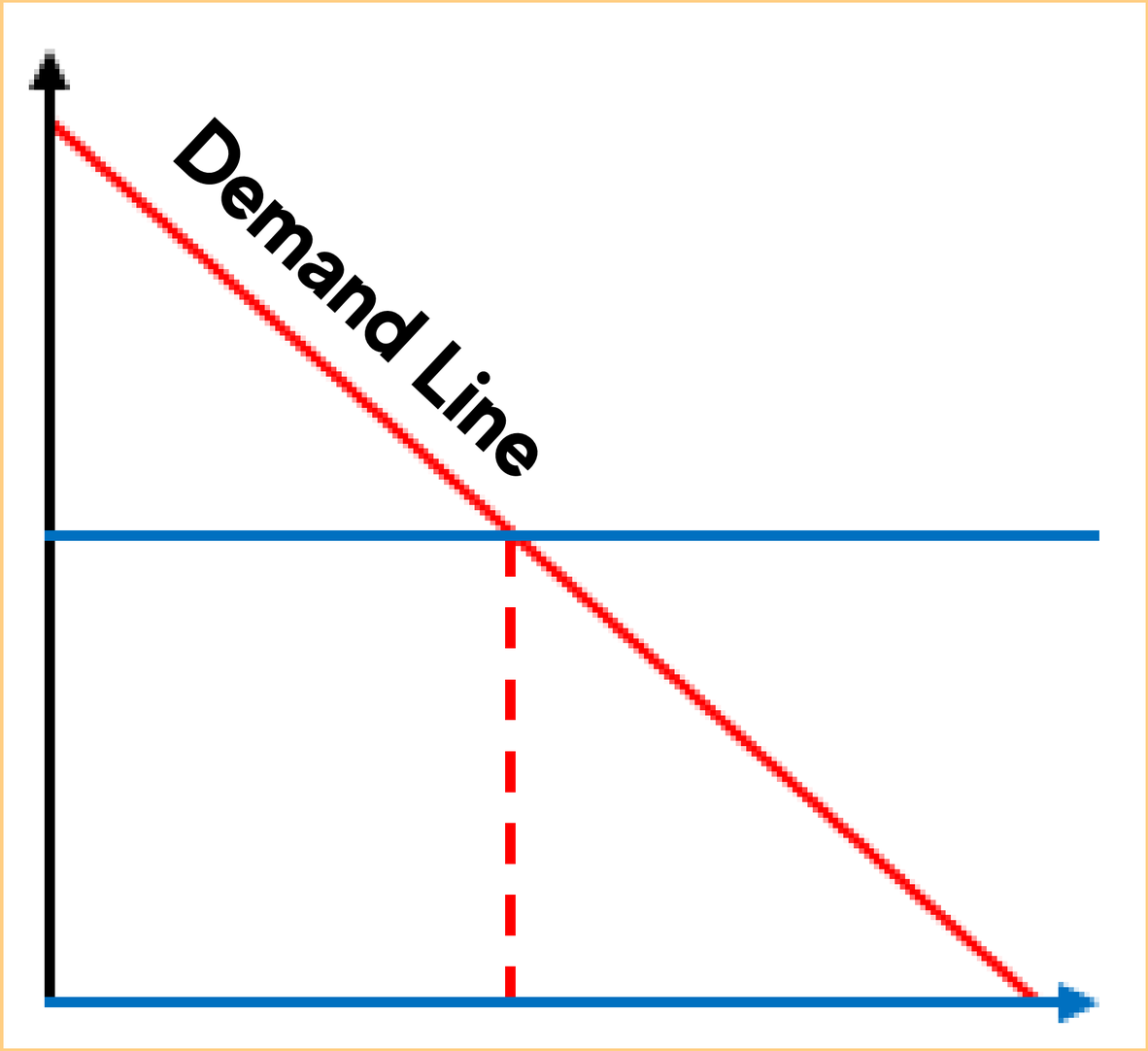
EDSA Carousel Bus System

Cost of Fare-Free Public Transit Policy

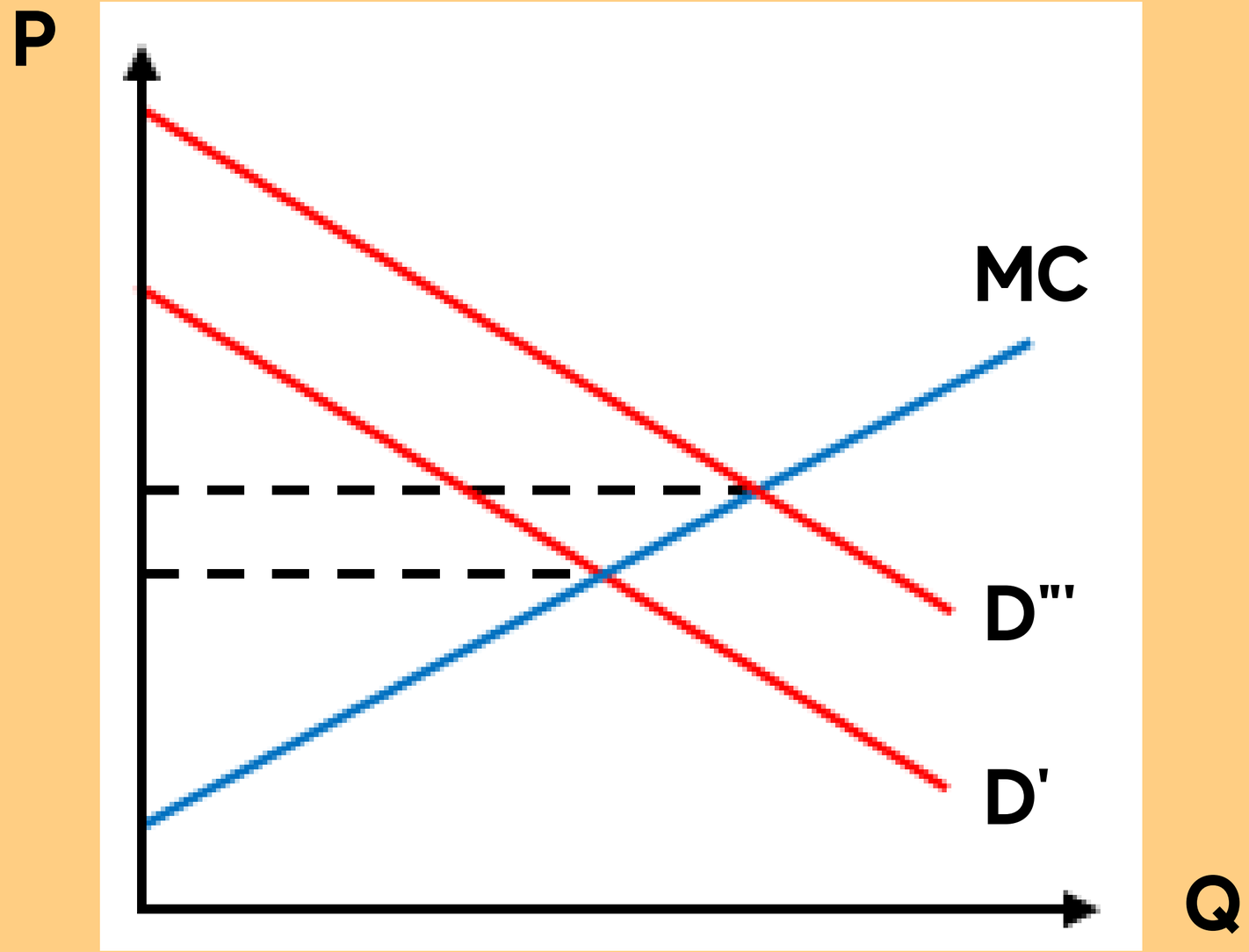
Externalities



Income/Consumption



Source: Rosen, 2005

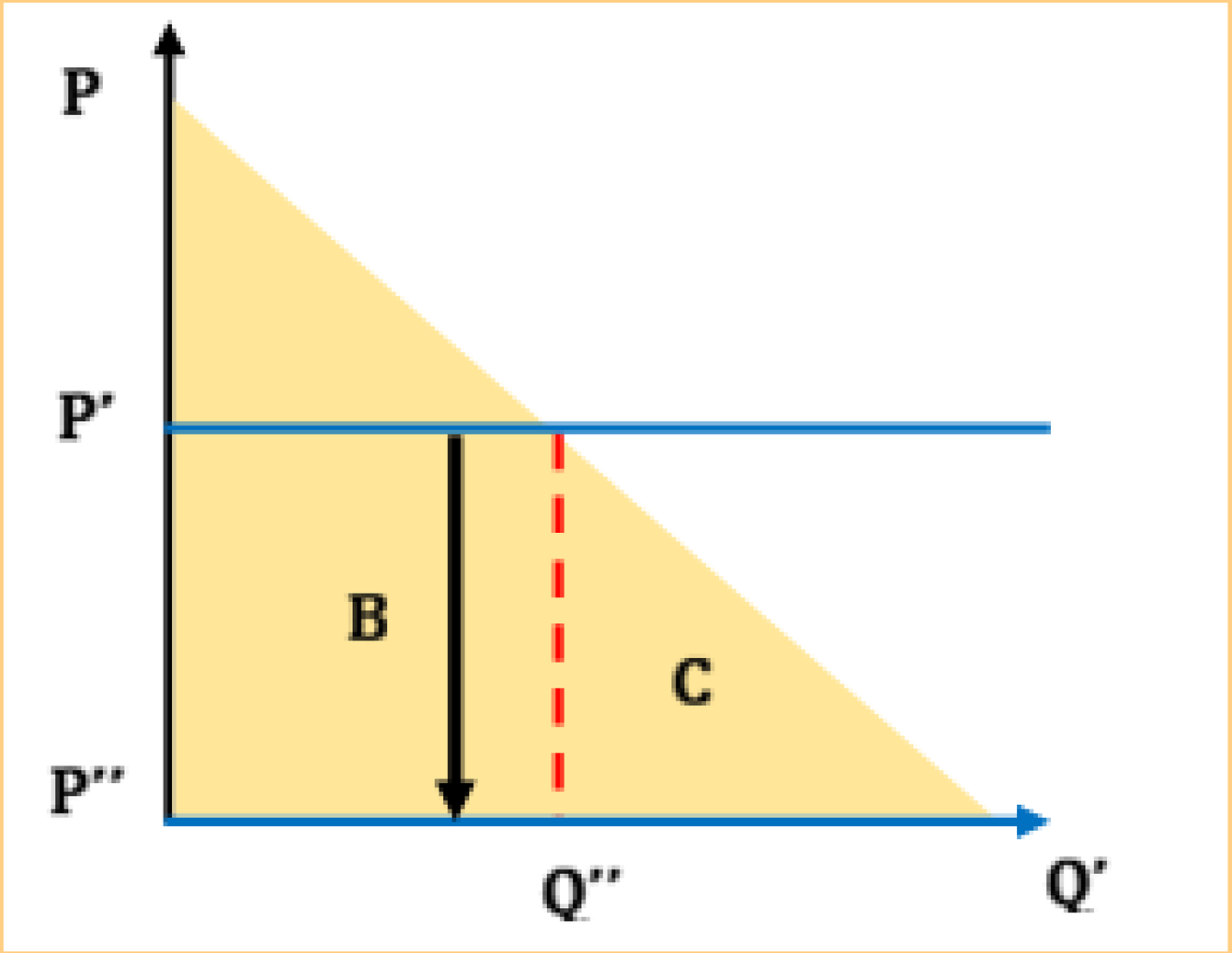


Source: Greene and Jones, 1997

$$\Delta CS = Q'(P' - P") + \frac{(Q - Q')(P" - P')}{2}$$

where:

ΔCS = change in consumer surplus
P' = price of a ticket before a FFPT
P"= price of a ticket after a FFPT
Q = number of passengers before a FFPT
Q' = number of passengers after a FFPT



Source: Rosen, 2005

Methodology*

Benefit-Cost Analysis

Binary Logistic Regression

Methodology

Benefit-Cost Analysis

This method will be done by determining the Benefit-Cost Ratio (BCR) between the pay-outs made through the Service Contracting Program and the revenues made by each bus driver in a normal setting (i.e., without the program).

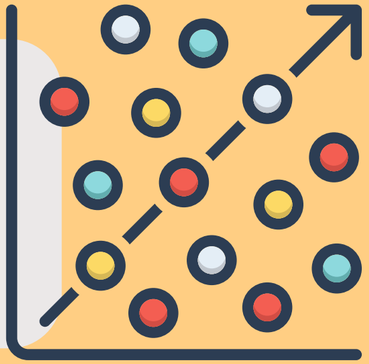
Methodology

Benefit-Cost Analysis

The BCR identifies whether a program is viable enough, such that it will bring cash inflows, either in the form of additional revenues or investments made through the program. Three generic ranges constitute the BCR (i.e., BCR < 1; BCR = 1; and BCR > 1), each having its own respective interpretation.

Methodology

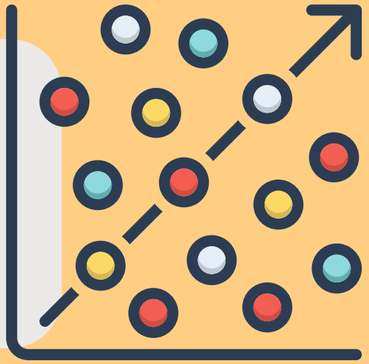
Binary Logistic Regression



This model looks the relationship between the predictor variables (independent) and the predicted variable (dependent), where the latter is binary variable.

Methodology

Binary Logistic Regression



The formula for the binary logistic regression is as follows:

$$P = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_1)}}$$

where:

β_0 = Population Intercept
β_1 = Population Slope Coefficient
x_1 = Independent Variable
P = Probability for the Dependent Variable to Occur at 1s

Results (Benefit-Cost Ratio)

1. The BCR for the Service Contracting Program only reaches at 1 **when the bus covers greater distance at half-seating.**

2. The BCR for the program only becomes financially profitable on the part of the bus firm as the **government shoulders both the operational costs and the extra revenue gained.**

3. The BCR does not account for social costs (externalities)

Southbound

BCR (Full Seating)	BCR (Half Seating)
0.104035309	0.2115385
0.208070618	0.4230769
0.416141236	0.8461538
0.520176545	1.0576923
0.540983607	1.1
0.559638214	1.1379310
0.563524590	1.1458333
0.566744731	1.1523810
0.578150419	1.1755725
0.580921994	1.1812081
0.586608730	1.1927711
0.587353630	1.1942857
0.589190067	1.1980198
0.592505855	1.2047619
0.592858747	1.2054795
0.593762495	1.2073171

Northbound

BCR (Full Seating)	BCR (Half Seating)
0.416141236	0.846153846
0.520176545	1.057692308
0.559638214	1.137931034
0.563524590	1.145833333
0.566744731	1.152380952
0.578150419	1.175572519
0.580921994	1.181208054
0.582070969	1.183544304
0.587353630	1.194285714
0.588635012	1.196891192
0.589190067	1.198019802
0.592858747	1.205479452
0.593183779	1.206140351
0.593484125	1.206751055
0.593762495	1.207317073

Results (Binary Logistic Regression)

1. Fare-Free Public Transit **significantly affects** the CPI for food and non-alcoholic beverages in Metro Manila

2. The inflation rate throughout Metro Manila is **not affected** by the implementation of the Service Contracting Program.

3. The program **does not affect** the household consumption expenditure made throughout the country.

Figure 4. The Effect of Free Public Transportation to the CPI of Food and Non-Alcoholic Beverages in Metro Manila Using Binomial Logistic Regression (95% C.I.)

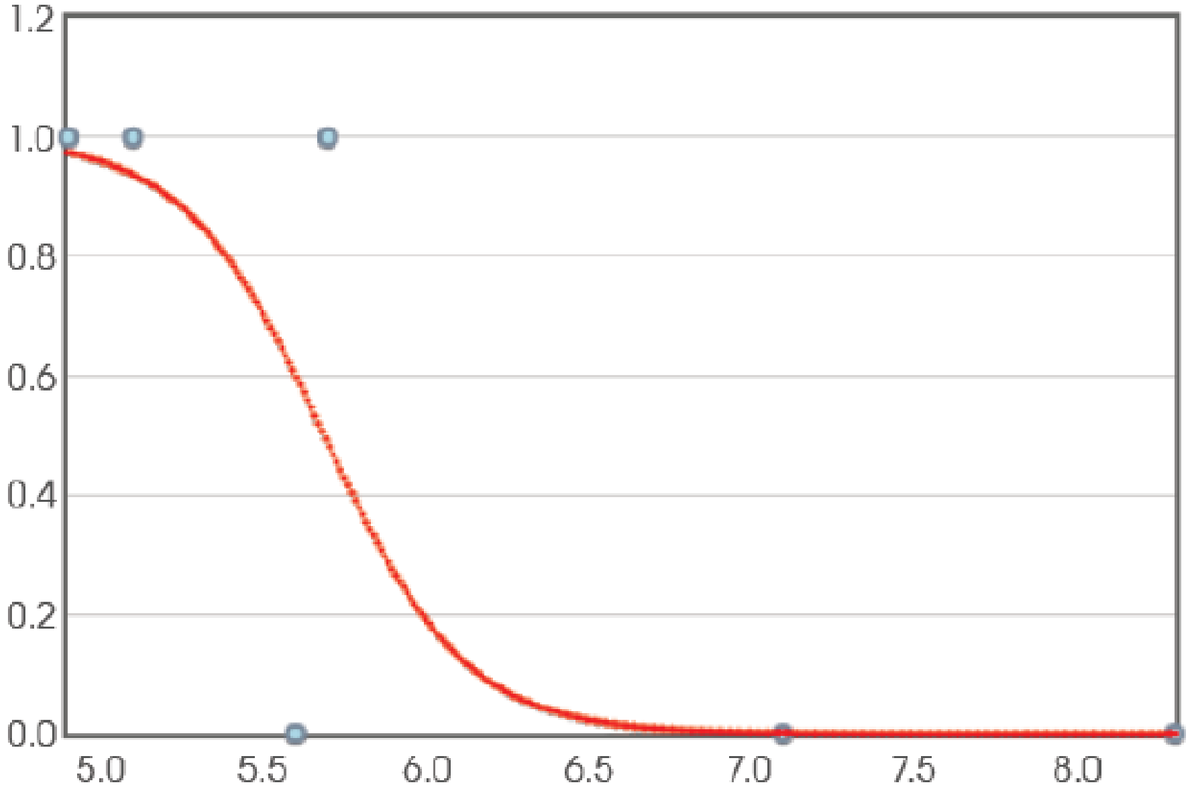
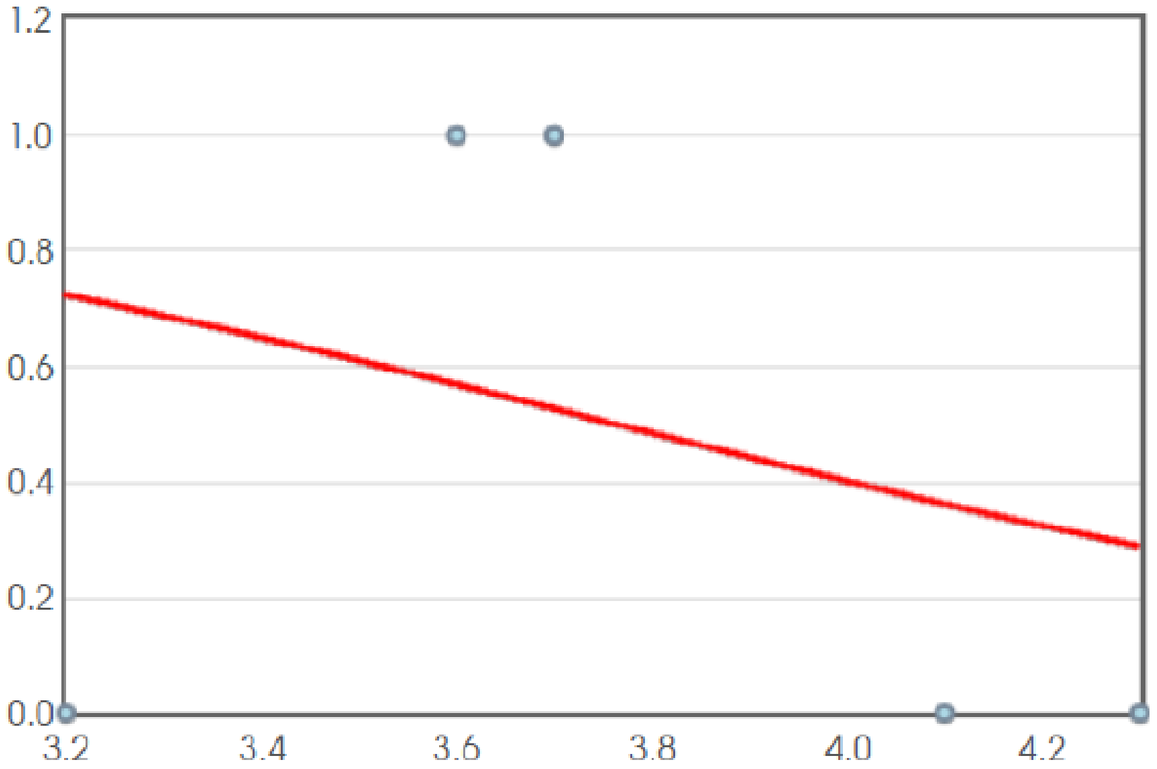


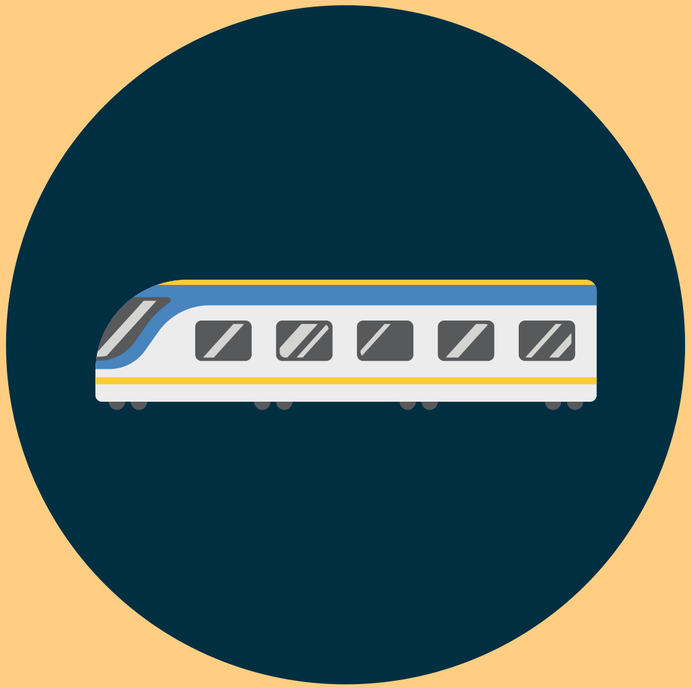
Figure 5. The Effect of Free Public Transportation to the Inflation Rate of Basic Goods and Services in Metro Manila Using Binomial Logistic Regression (95% C.I.)



Key Takeaways

Encourages Domestic Consumption

Reduces Transport Costs



Helps the Transport Sector

Recommendations

LGU-backed initiatives on Fare-Free Transit

Increasing the Consumer Power in the Economy

Thank you so much for listening!

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