



# Exploring Mode Choice Behavior Considering Access and Egress Time

**Sansano Rodelia  
Idrees Nafay  
Hiroshima University Team B**

# Background



- Going to intended destination means choosing one or more mode of transportation.
- As such, accessing these mode of transportation especially bus and train stations may post challenges and affect one's decision.
- This is also true when alighting vehicles to reach your destination.
- When choosing the main mode of transportation, the consideration for the access and egress time are often considered by travelers.

- The use of several applications to examine the best way to reach the destination reflects how access and egress time are considered by travelers.

The screenshot displays a Google Maps interface with a transit search. The search parameters are: Start: Tokyo University of Science, Kagurazaka; End: Tokyo Skytree, 1 Chome-1-2 Oshiage, Sun. The departure time is 10:00 AM from Kudanshita Station, with a fare of ¥200 and a 9-minute walking distance to the station. Three transit options are listed:

Departure Time	Duration	Lines
9:51 AM—10:21 AM	30 min	Tozai Line > Asakusa Line
9:53 AM—10:21 AM	28 min	Shinjuku Line > Asakusa Line
9:51 AM—10:21 AM	30 min	Chūō-Sōbu Line (Local) > Asakusa Line

The map view shows a purple route starting from Kudanshita Station, passing through Shinjuku City, and ending at the destination. The map includes labels for various Tokyo districts such as Itabashi City, Kita City, Adachi City, Katsushika City, Toshima City, Shinjuku City, Shibuya City, Minato City, Koto City, and Edogawa City. Landmarks like Senso-ji and Tokyo Disneyland are also visible.



## **Research Objective**

To analyze the effect of access and egress time of train and bus to the choice of main transportation mode of travelers.

## **Research Question**

How do the access and egress time of bus and train affect the behavior of travelers when choosing the main mode of transportation?

## Model (MNL)

$$\text{Train} = \text{Time} * \text{Travel time} + \text{Access} * \text{Access Time}_{\text{train}} + \text{Egress} * \text{Egress time}_{\text{train}}$$

$$\text{walk} = \text{Time} * \text{Traveltime}_{\text{walk}} + b1$$

$$\text{bus} = \text{Time} * \text{Traveltime}_{\text{bus}} + \text{Access} * \text{Access Time}_{\text{bus}} + \text{Egress} * \text{Egress time}_{\text{bus}} + b2$$

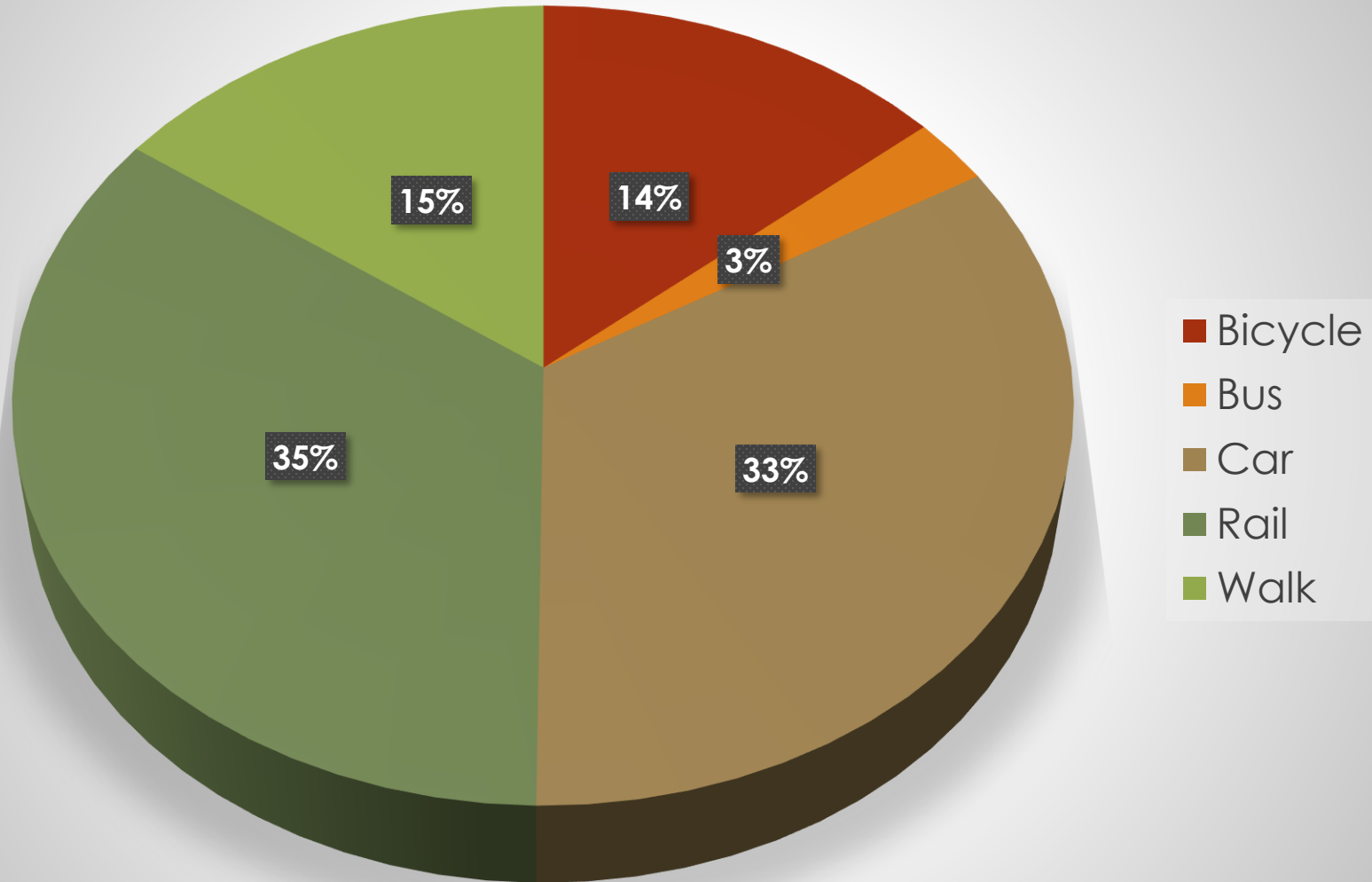
$$\text{car} = \text{Time} * \text{Traveltime}_{\text{car}} + b3$$

$$\text{bike} = \text{Time} * \text{Traveltime}_{\text{bike}} + b4$$

- *Travel time* = travel time using the selected mode
- *Access Time* = access time in order to use the selected mode
- *Egress Time* =  
egress time to reach the destination from upon alighting the selected mode

# Data Distribution

Main Transportation Mode Choice Distribution



# Estimation Result

Mode	Intercept	Time	Access Time	Egress Time
Train	0	-	-	-
Bus	1.62105	-0.2463004	-0.261384	-0.2425263
Walk	16.56226	0.1623675	-28.964607	-77.1721853
Car	16.17309	0.2163940	-27.932732	-81.0887735
Bicycle	16.76295	0.1376808	-29.802054	-75.6893723

- Travelers will less likely choose bus compared to train as the main mode of transportation when access time and egress time are higher.

## Policy Implication



- Improving and developing infrastructures that serves as access and egress to train stations can help improve promoting the use of trains as the main mode of transportation.
- Programs aiming to aid the access and egress to train stations such as bicycle rental or other services can also provide a boost to the railway industry as a main mode of transportation.





*Thank you for listening.*