Visualizing Mode of Transport Choices by Employed Residents (2000–2020)

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Introduction

This visualization shows how transportation habits of employed residents have changed over the decade. This shows how the residents' choices of transportation has changed as the public transportation infrastructure evolves over the years.

Previous Visualization[1]

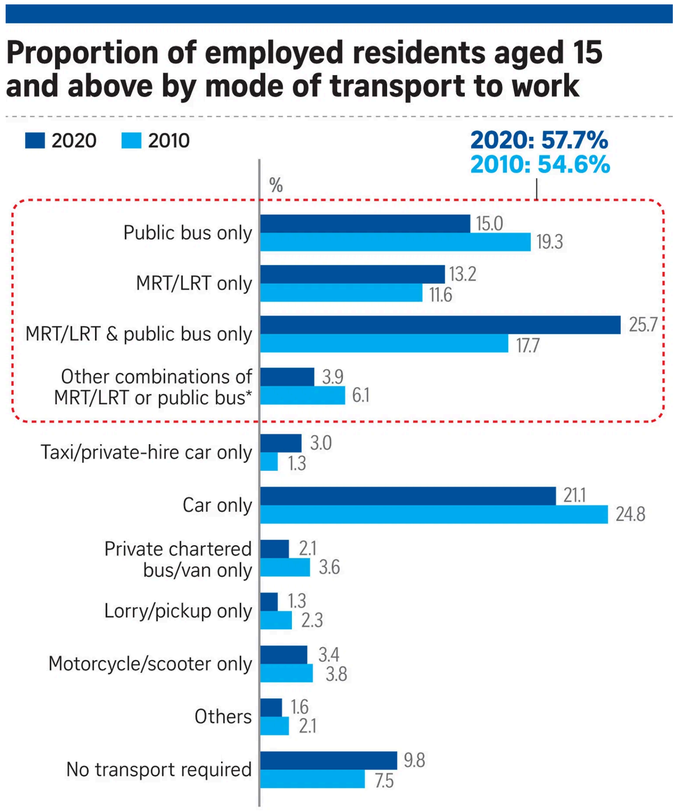

Figure 1

Strengths and weakness

- Strength: The title is clear and concise, clearly describing what the visualization is about. The data is well organized and easy to read. The visualization is simple and easy to understand.
- Weakness: The visualization does not properly indicate the transportation sector (Public/Private/Other). Exact values not included, leading to visual distortion. Range of data insufficient to discern any concrete differences between the years.

Suggested Improvements

1. *Use sparkline* to show the change over the years.
2. *Include a column* for percentage increase or decrease.
3. *Use color* to show the percentage increase or decrease.
4. *Group the data* into public, private and others respectively.
5. Usage of *actual values* instead of solely percentage values to properly display the change of values.

Implementation

Data

- Data was collected from 2000 to 2020 from the Department of Statistics Singapore.[2] Some data were omitted and combined during the cleaning process.
- The data includes rows that are not present in the entire dataset for certain years. Therefore, rows that are not in common throughout the dataset were removed. To better display the data trend from 2000 to 2020, rows with vague or low data counts have been consolidated into a single data row as well.
- Column names were renamed to better reflect the data they represent.

Software

The Quarto publication framework and the R programming language were used, along with the following third-party packages:

- *tidyverse* collection of R packages used in this project like *dplyr* for data import
- *gt* is used to create presentation-ready tables
- *scales* package provides tools to easily scale variables for visualization (display values in thousand(k))
- *gtExtras* for adding sparklines to the table

Improved Visualization

Percentage Change in Modes of Transport to Work for Residents Aged 15 and Above
in percentage 2000 - 2020

Categories[1]	Change and Trends (2000 - 2020) Change (%)	Trend
Public		
MRT & Public Bus Only	▲ 171.7%	205.87k 559.34k
MRT Only	▲ 124.84%	127.84k 287.43k
Public Bus Only	▼ 11.97%	370.06k 325.78k
Public Total	▲ 66.61%	703.77k 1.17m
Private		
Private Chartered Bus/Van Only	▼ 54.56%	98.78k 44.88k
Taxi Only	▲ 253.67%	18.41k 65.12k
Car Only	▲ 30.79%	351.55k 459.80k
Lorry/Pickup Only	▼ 8.82%	31.69k 28.89k
Motorcycle/Scooter Only	▲ 3.7%	70.86k 73.49k
Private Total	▲ 17.66%	571.30k 672.18k
Others		
No Transport Required	▲ 135.78%	90.30k 212.91k
Others	▼ 68.42%	110.63k 34.94k
Others Total	▲ 23.35%	200.92k 247.84k

[1] Removed Rows:
1. One Mode Of Transport,
2. Two Or More Modes Of Transport,
3. MRT & Car Only,
4. MRT & Another Mode,
5. Other Combinations Of MRT Or Public Bus,
6. Other combinations of MRT/LRT or Public Bus

Source: Department of Statistics, Singapore

Figure 2

Further Suggestions for Interactivity

For static visualization wise, one other addition we could add are figures in the x-axis to visualize how the trend changes over the years from 2000 to 2020. For an interactive visualization, we could use the 'react_sparkline()' function from the dataui package[3] to create an interactive sparkline that allows users to hover over the sparkline to see the exact values for each year. This would allow users to see the exact values for each year and compare the trends between the different transportation sectors.

Conclusion

We successfully implemented all suggested improvements for the non-interactive visualization. By implementing the percentage change and sparklines, we are able to display a clear visualiaztion that shows the change in the trends of transportation choices by employed residents over the years.

[1] https://www.straitstimes.com/singapore/more-spore-residents-take-trains-and-buses-to-work-fewer-drive-to-the-office-population

[2] https://tablebuilder.singstat.gov.sg/table/CT/17607

[3] https://github.com/timelyportfolio/dataui