



Irish Car Market Analysis for the years 2019-2024 based on Python

Zixuan(Gia) Gao Date: 29/10/2024

1 Data Preparation

2 Analysis

3 Conclusions

4 Future Work



1 Data Preparation

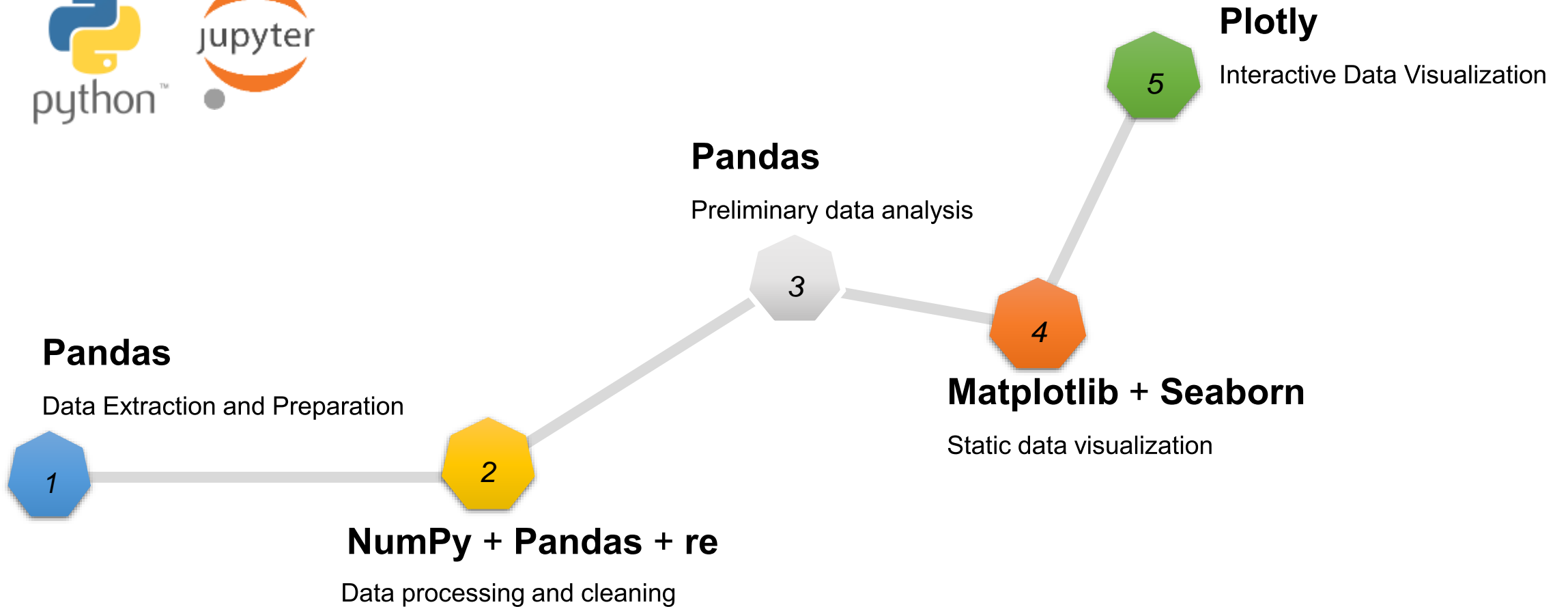


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Fill Category Variables

```
df['Model'].where(~df['Model'].str.contains(r'\d{1,2}-[A-Za-z]{3}', na=False), df.groupby(['Make', 'Bodytype'])['Model'].transform(lambda x: x.mode().iloc[0] if not x.mode().empty else None))
```

02

Recheck

```
print(df.dtypes)
df.to_csv("updated_motion_data.csv",
index=False)
```

04

01

Data type conversion

```
pd.to_datetime()
df[cols_to_str].astype(str)
df[cols_to_numeric].apply(pd.to_numeric, errors='coerce')
```

03

Fill Numerical Variables

```
df['Price'].where(~price_condition,
df.groupby(['Make', 'Model', 'Fuel', 'Bodytype'])['Price'].transform(lambda x: x[x != -1].mean() if not x.empty else None))
```

2 Analysis





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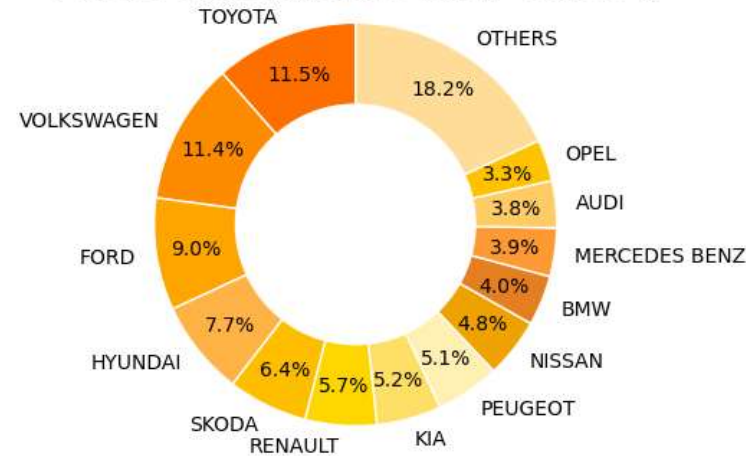
Topline Analysis

Buyer Preferences

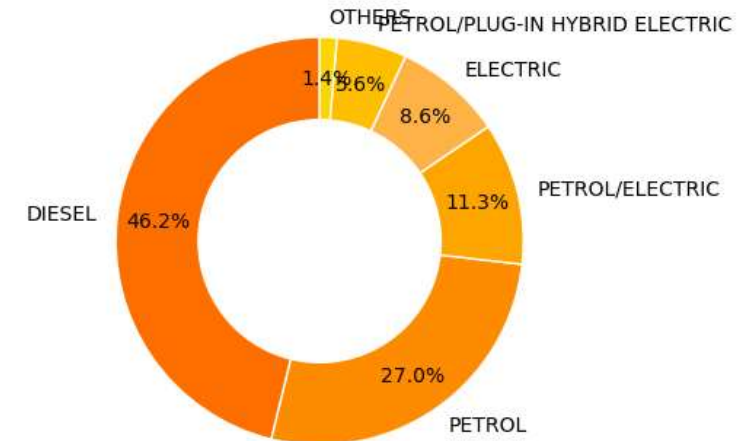
Reasons For TOYOTA Increase

Market Share

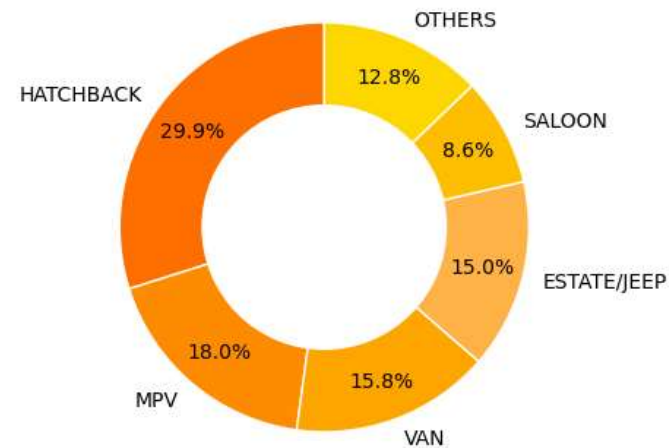
Market Share by Make (with "Others")



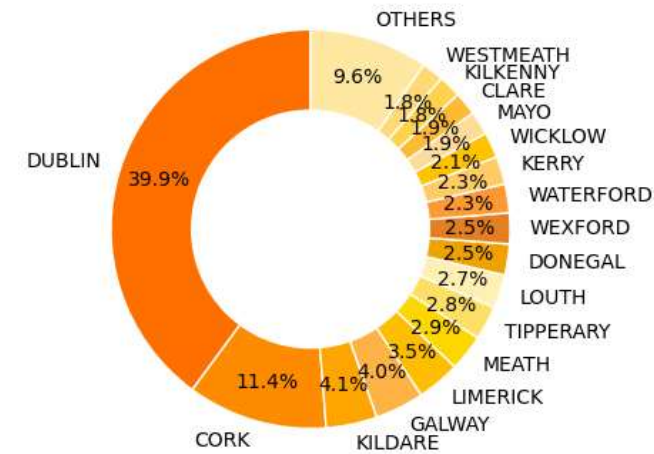
Market Share by Fuel Type (with "Others")



Market Share by Bodytype (with "Others")



Market Share by County (with "Others")



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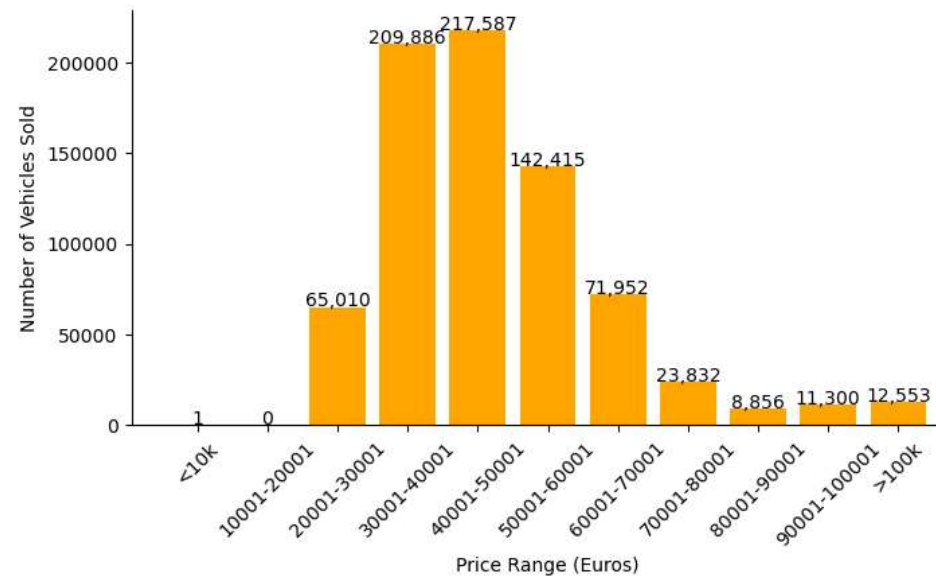
Pricing Insights

**Topline
Analysis**

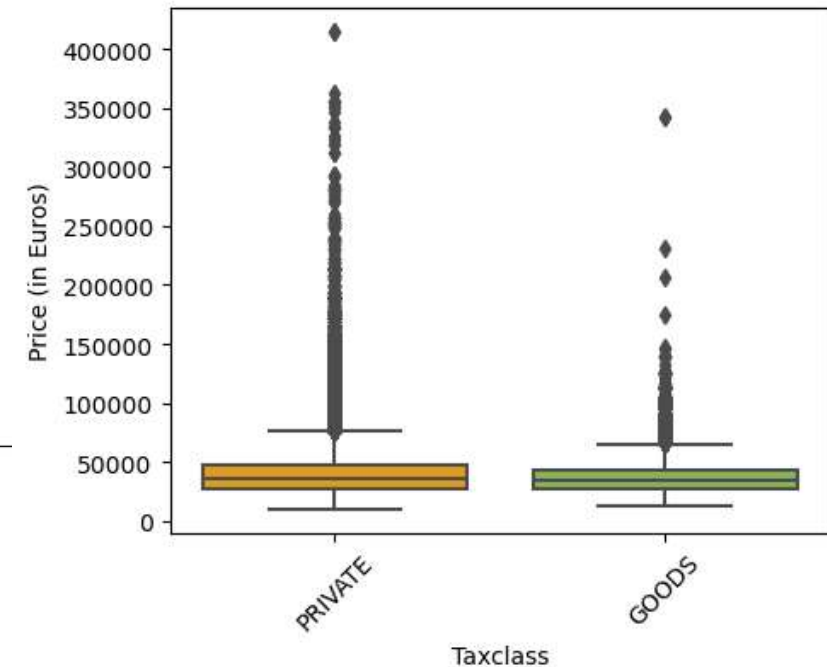
Buyer
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Reasons
For
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Increase

Sales Distribution Across Price Ranges



Vehicle Price Distribution by Taxclass



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Buyer Preferences

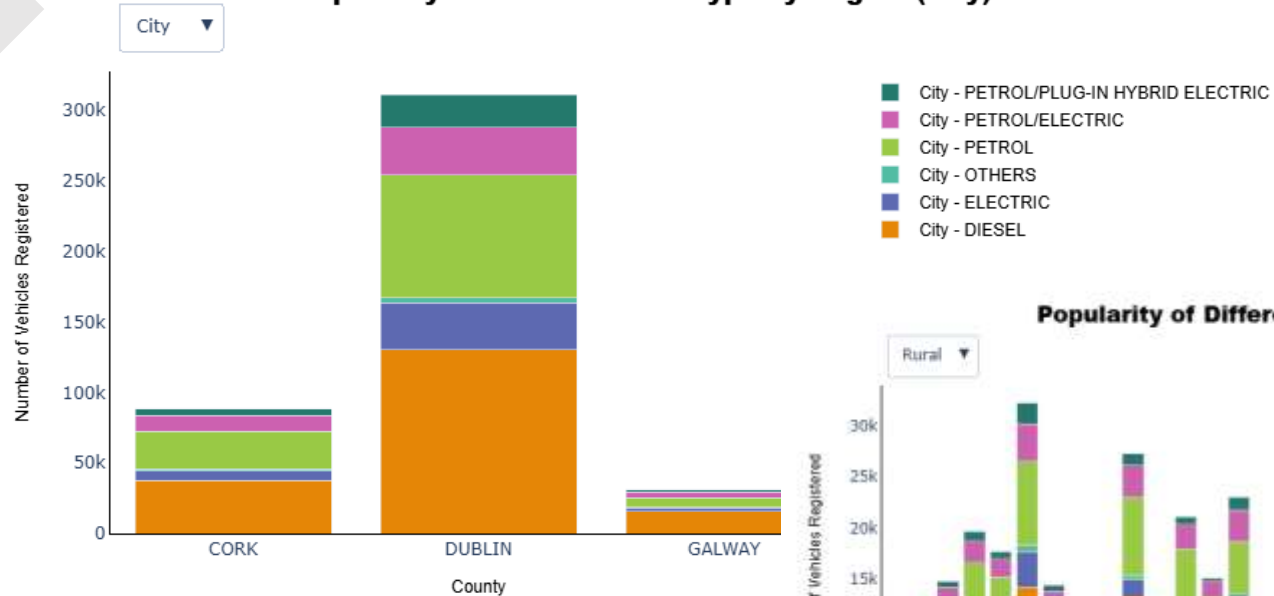
Reasons For TOYOTA Increase

Geographical Distribution

Popularity of Different Fuel Type by Region (City)

City ▼

County	City - DIESEL	City - ELECTRIC	City - OTHERS	City - PETROL	City - PETROL/ELECTRIC	City - PETROL/PLUG-IN HYBRID ELECTRIC
CORK	~35k	~5k	~1k	~25k	~10k	~5k
DUBLIN	~130k	~35k	~5k	~90k	~30k	~35k
GALWAY	~15k	~2k	~1k	~5k	~2k	~2k



Popularity of Different Fuel Type by Region (Rural)

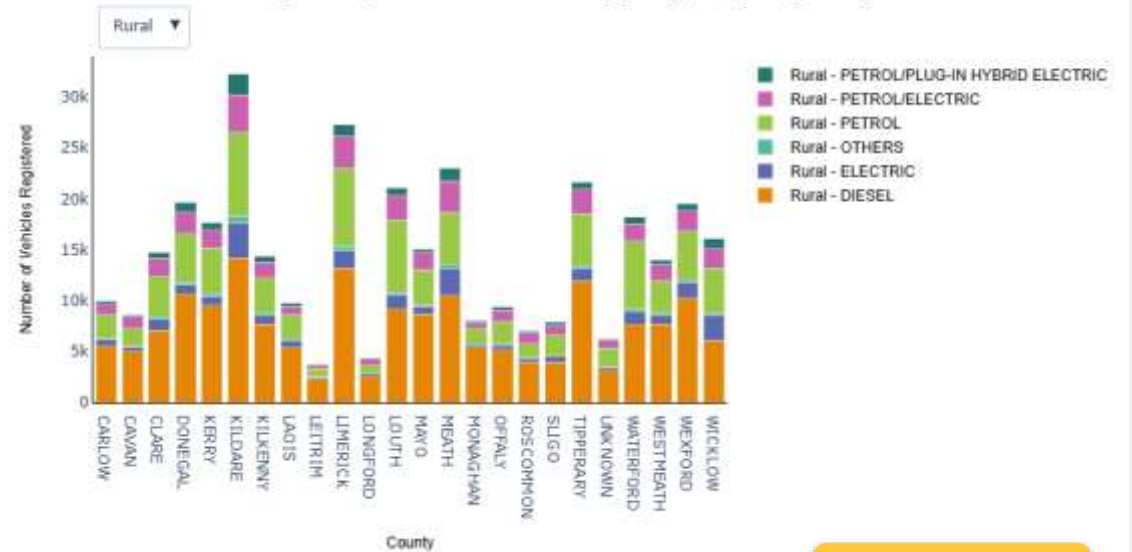
Number of Vehicles Registered

County

Rural ▼

- Rural - PETROL/PLUG-IN HYBRID ELECTRIC
- Rural - PETROL/ELECTRIC
- Rural - PETROL
- Rural - OTHERS
- Rural - ELECTRIC
- Rural - DIESEL

County	Rural - DIESEL	Rural - ELECTRIC	Rural - OTHERS	Rural - PETROL	Rural - PETROL/ELECTRIC	Rural - PETROL/PLUG-IN HYBRID ELECTRIC
CARLOW	5000	500	1000	1000	1000	500
CAYAN	4500	500	1000	1000	1000	500
CLARE	7000	500	1000	1000	1000	500
DONEGAL	10500	1000	1000	1000	1000	500
KERRY	9500	1000	1000	1000	1000	500
KILDARE	14000	1000	1000	1000	1000	500
KILKENNY	7500	1000	1000	1000	1000	500
LAOIS	5500	500	1000	1000	1000	500
LEITHIN	2500	500	1000	1000	1000	500
LIMERICK	13000	1000	1000	1000	1000	500
LONGFORD	3500	500	1000	1000	1000	500
LOUTH	9000	1000	1000	1000	1000	500
MAYO	8500	1000	1000	1000	1000	500
MEATH	10500	1000	1000	1000	1000	500
MONAGHAN	5000	500	1000	1000	1000	500
OFFALY	5000	500	1000	1000	1000	500
ROSCOMMON	4000	500	1000	1000	1000	500
SLIGO	3500	500	1000	1000	1000	500
TIPPERARY	12000	1000	1000	1000	1000	500
UNIONOWN	3000	500	1000	1000	1000	500
WATERFORD	7500	1000	1000	1000	1000	500
WESTMEATH	7500	1000	1000	1000	1000	500
WEXFORD	10000	1000	1000	1000	1000	500
WICKLOW	6000	1000	1000	1000	1000	500



Link Chart

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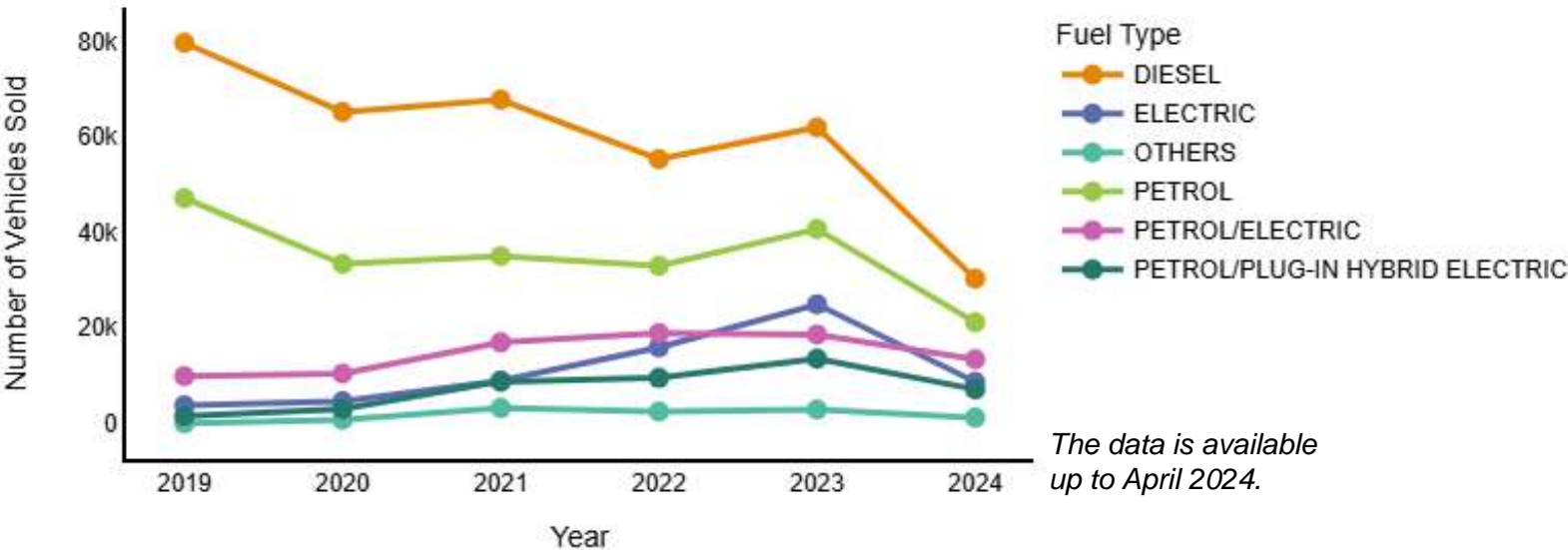
Adoption of
Eco-Friendly Vehicles

Topline
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Buyer
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Reasons
For
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Changes in Preference for Different Vehicle Fuel Types Over Time



[Link Chart](#)

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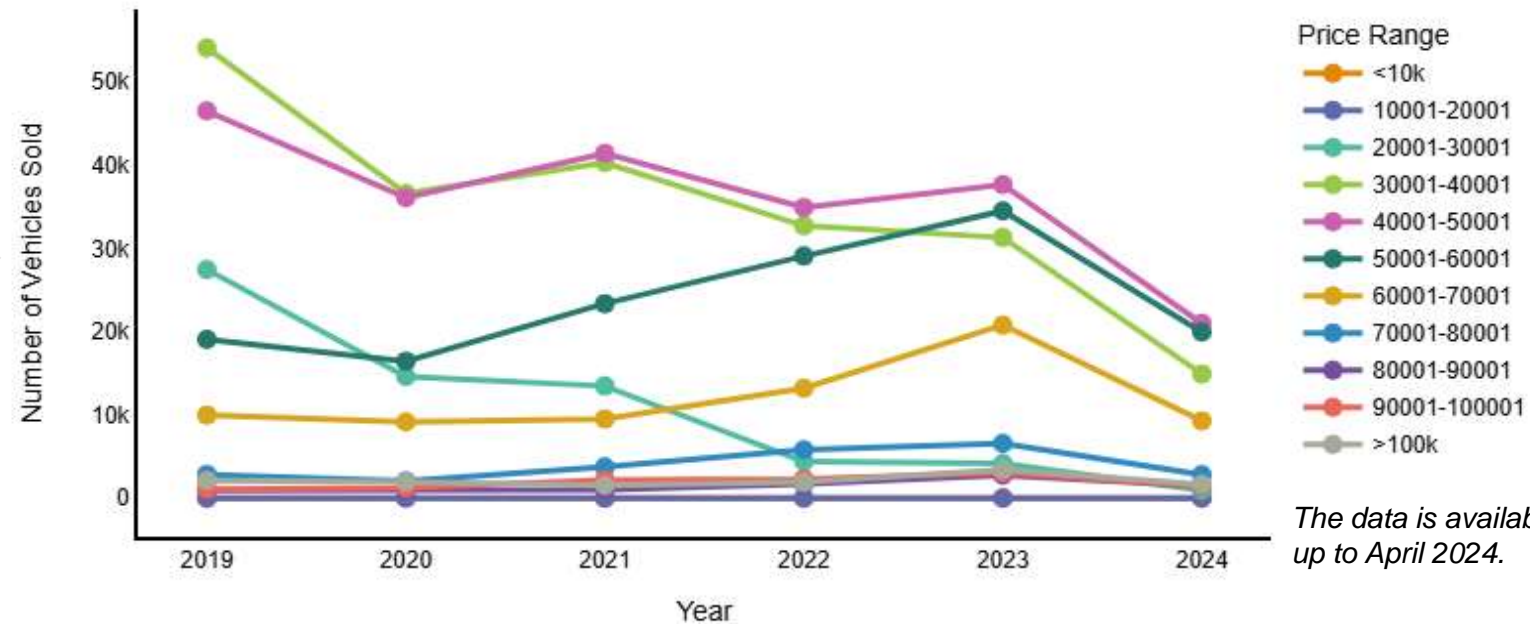
Preference for
Mid-Range Prices

Topline
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**Buyer
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Reasons
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Changes in Preference for Accepted Vehicle Price Over Time



The data is available
up to April 2024.

[Link Chart](#)

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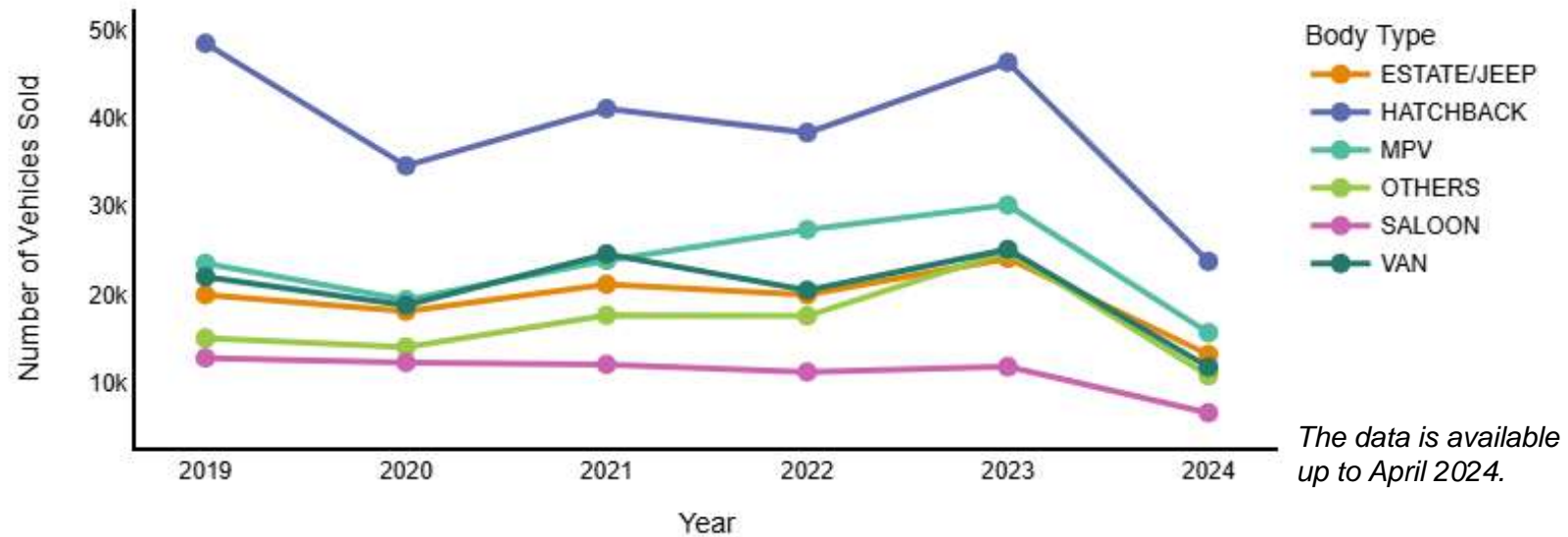
Diverse
Body Type Choices

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Changes in Preference for Different Body Types Over Time



[Link Chart](#)

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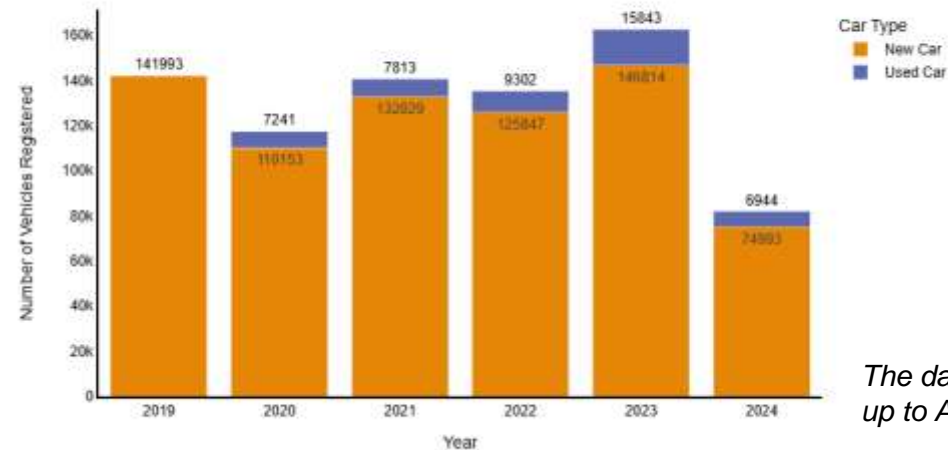
Economic Influence on New vs. Used

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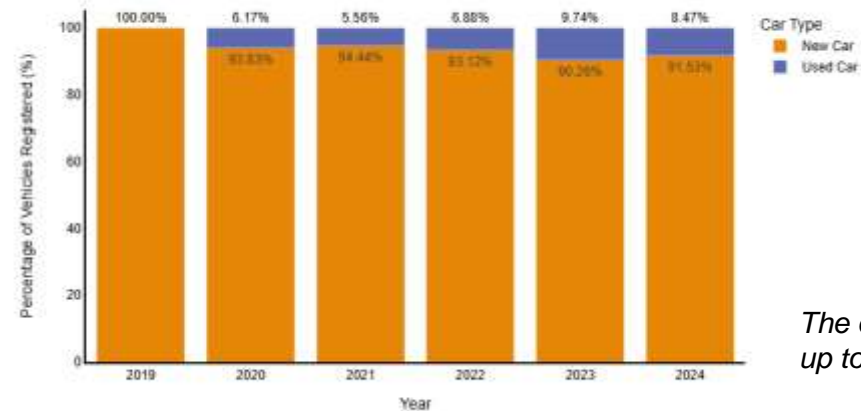
Changes in Preference of New vs Used Cars (Quantity)



The data is available
up to April 2024.

[Link Chart](#)

Changes in Preference of New vs Used Cars (Percentage)



The data is available
up to April 2024.

[Link Chart](#)

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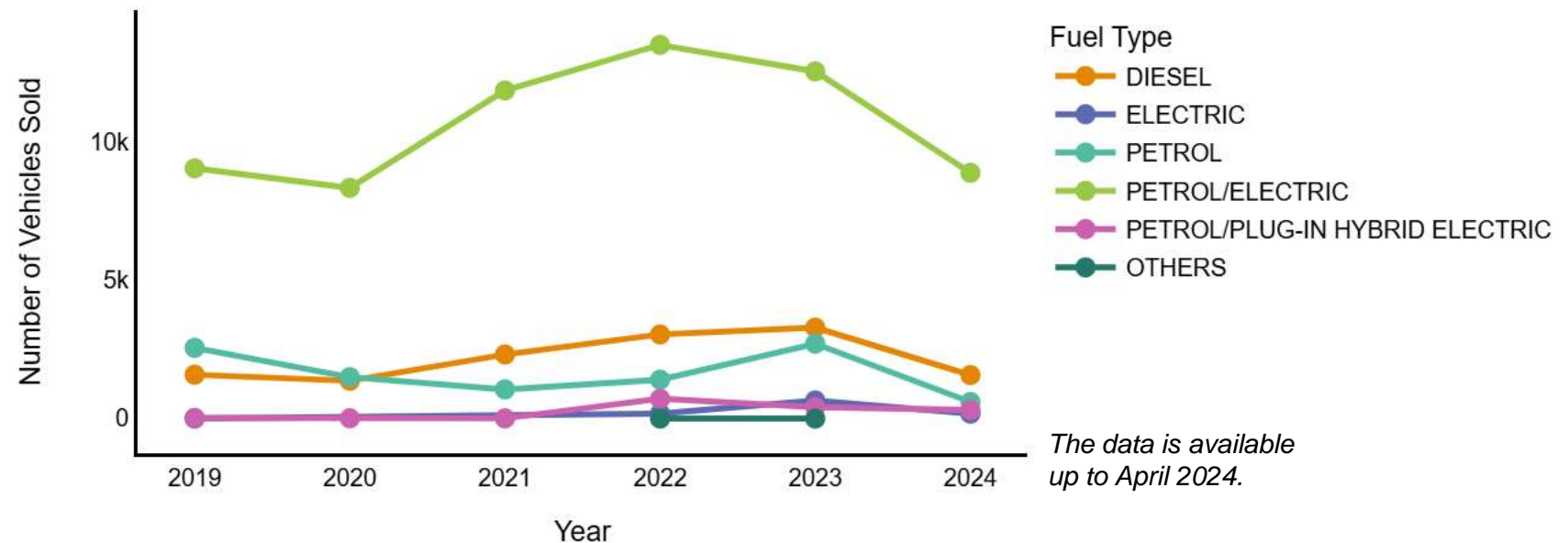
Fuel Type diversification

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Reasons
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Changes in Fuel Type of TOYOTA Sales Over Time



[Link Chart](#)

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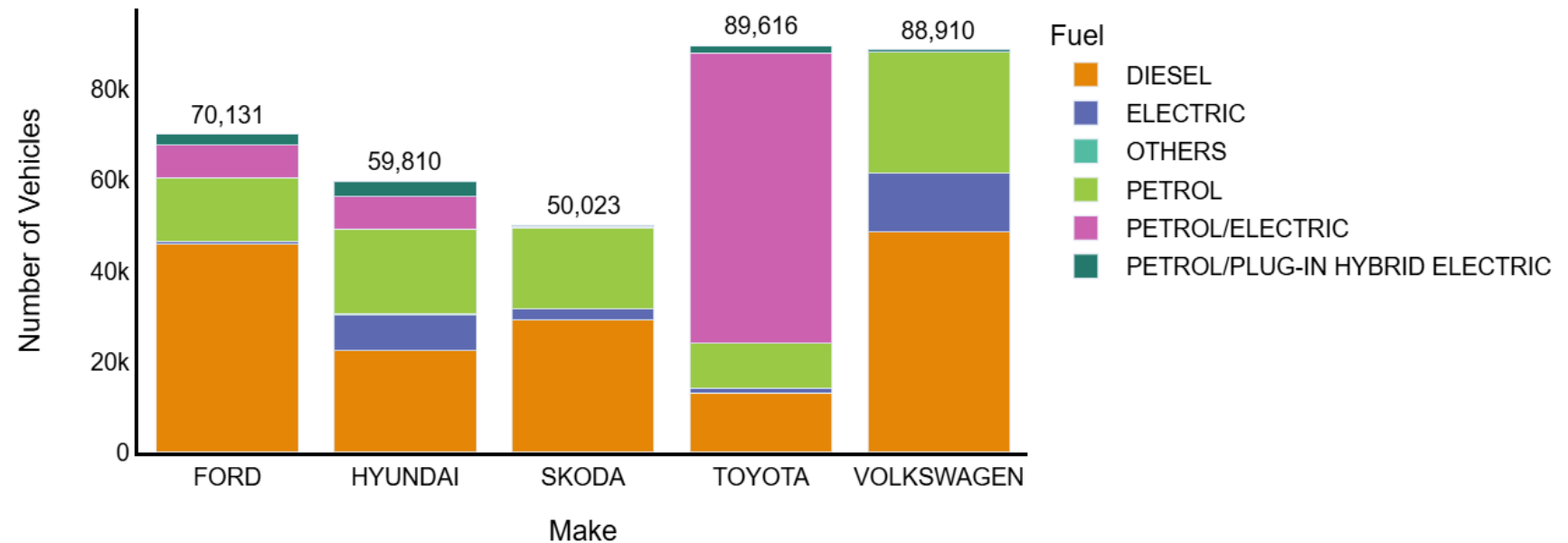
Competitiveness
in major fuel types

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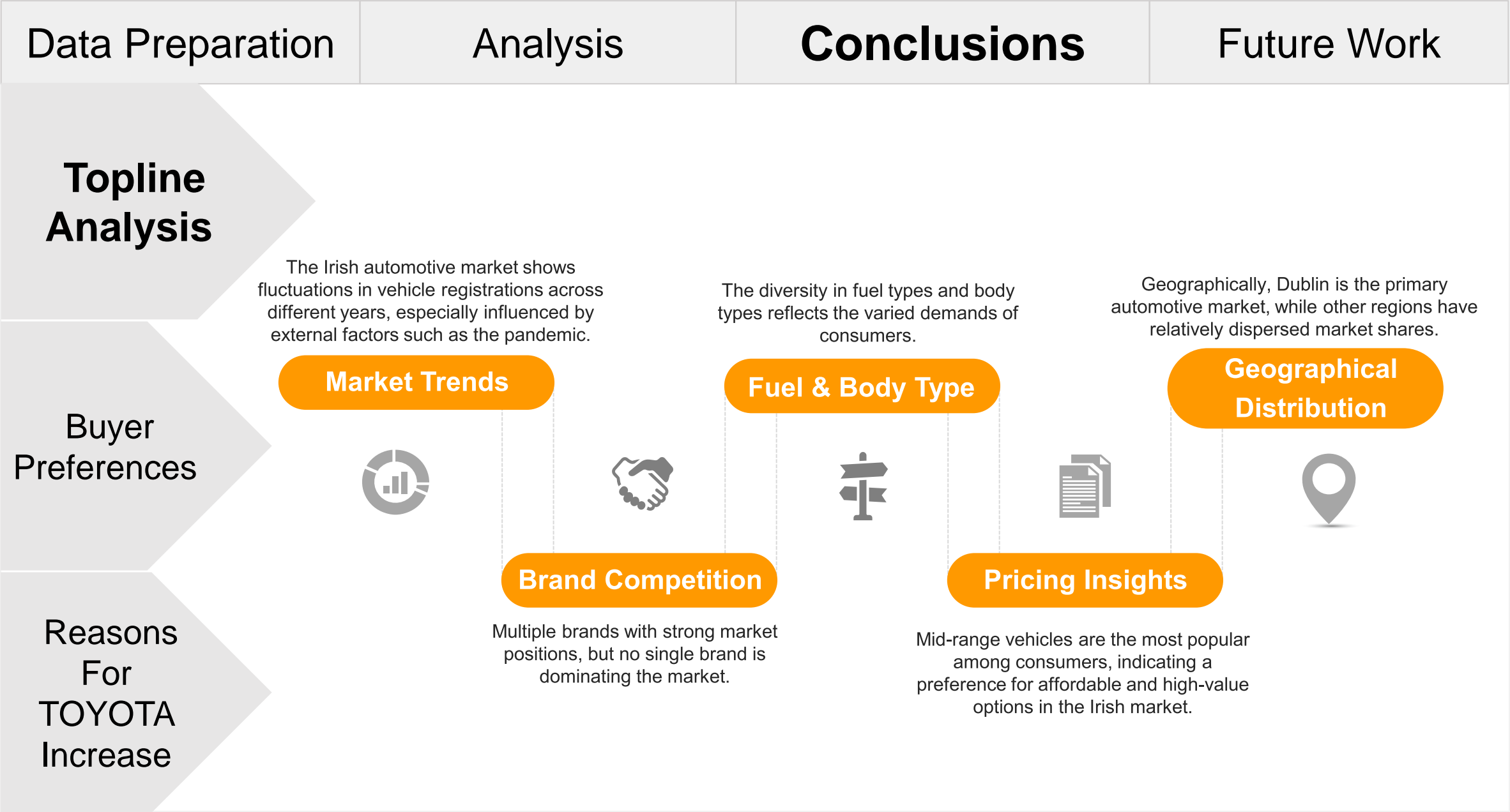
Fuel Type Market Share of Top 5 Makes (Including Toyota)



[Link Chart](#)

3 Conclusion





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**Buyer
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Adoption of
Eco-Friendly Vehicles

Preference for
Mid-Range Prices

Diverse
Body Type Choices

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Strong Performance of Hybrid Models

Toyota has a clear advantage in the hybrid vehicle sector, meeting the market's demand for environmentally friendly vehicles.

Buyer
Preferences

Diverse Fuel Type Coverage

Toyota also offers diesel and petrol vehicles, attracting a more diverse group of consumers.

Reasons
For
TOYOTA
Increase



Government Incentives

Ireland has promoted eco-friendly vehicles through subsidies and tax cuts, reducing the cost of hybrids and electric cars, making Toyota more appealing.

Emission Taxes

Carbon emission taxes and restrictions on high-emission vehicles have encouraged consumers to opt for low-emission hybrid cars.

4 Future Work



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Time Series Forecasting sales trends

Forecast vehicle sales trends
for 2024 and the coming years

Seasonality and Cyclical Factors Analysis

Identify changes in car buying
preferences across different
quarters or months

Detailed Analysis of Vehicle Configuration Demand

Use clustering analysis to group similar
configuration demands and identify high-
demand configuration combinations



Policy Impact Assessment

compare the timing of policy
implementations with sales data

Market Segmentation Analysis

Segment the market based on multiple
dimensions such as geographical
distribution, fuel type, and price range



Thanks!
Q &A

Zixuan(Gia) Gao Date: 29/10/2024