

FORECASTING ELECTRIC VEHICLE ADOPTION IN AUSTRALIA'S TRANSPORTATION INDUSTRY

DATA6000

SUBMITTED BY

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bUSSINESS PROBLEM

- EV sales in Australia are growing more slowly than in European countries, the US or China

HOW CAN CHARGING STATION BE PLANNED TO ACCELERATE EU ADOPTION,
AND WHICH REGIONS SHOULD BE PRIORITISED?



DATA SOURCES AND DATA USED

OUR WORLD IN DATA –
EV VS NON-EV CAR
SALES IN AUSTRALIA.

CLIMATE CHANGE
DATA – MIF

DATA.GOV.AU – NSW
EV CHARGING STATION
LOCATIONS.

KAGGLE – GLOBAL EV
CHARGING STATIONS
AND AUSTRALIAN CAR
PRICES.



TYPE OF DATA: TIME
SERIES (SALES),
POINT LOCATIONS
(CHARGERS), PRICES
BY BRAND, POLICY
DESCRIPTIONS.

UNIT OF ANALYSIS:
COUNTRY/STATE/REGION
LEVEL DEPENDING
ON DATASET.

1. DEFINE BUSINESS PROBLEM



2. COLLECT EV SALES, CHARGER AND PRICE DATA



3. CLEAN AND PREPARE DATA



4. DESCRIPTIVE ANALYTICS (CLIMATE, SALES, CHARGERS, PRICES)



5. K-MEANS CLUSTERING AND CORRELATION & REGRESSION ANALYSIS



6. VISUALISATION AND INSIGHT

**METHODS:
GEOSPATIAL ANALYSIS,
K-MEANS CLUSTERING,
CORRELATION AND MULTIPLE
REGRESSION ANALYTICS
METHODOLOGY**

TYPE OF DATASET HOD: WHAT, HOW MUCH, INPUT & OUTPUT

METHOD NAME

GEOSPATIAL ANALYSIS, K-MEANS CLUSTERING,
PEARSON CORRELATION, MULTIPLE REGRESSION



HOW MUCH DATA

Thousands of records on car sales,
charger locations and car prices
across years and regions



HOW DATA WAS INPUT

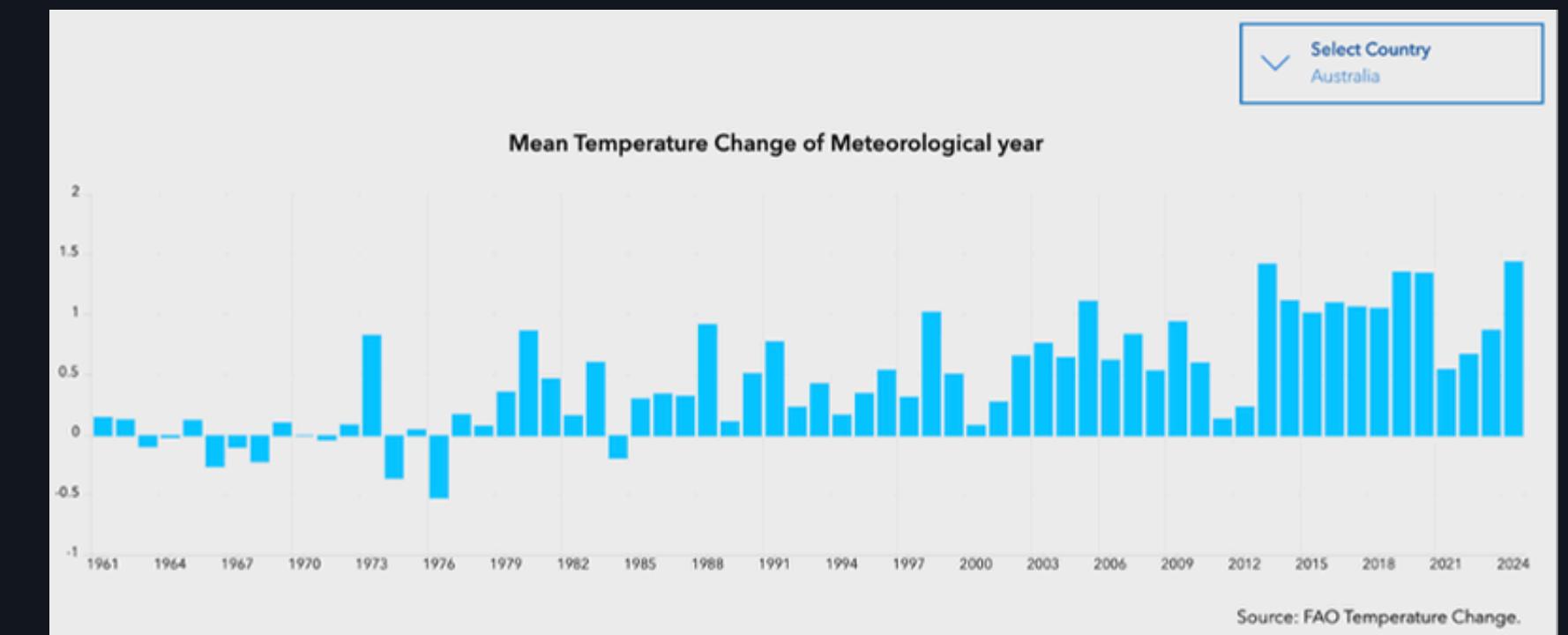
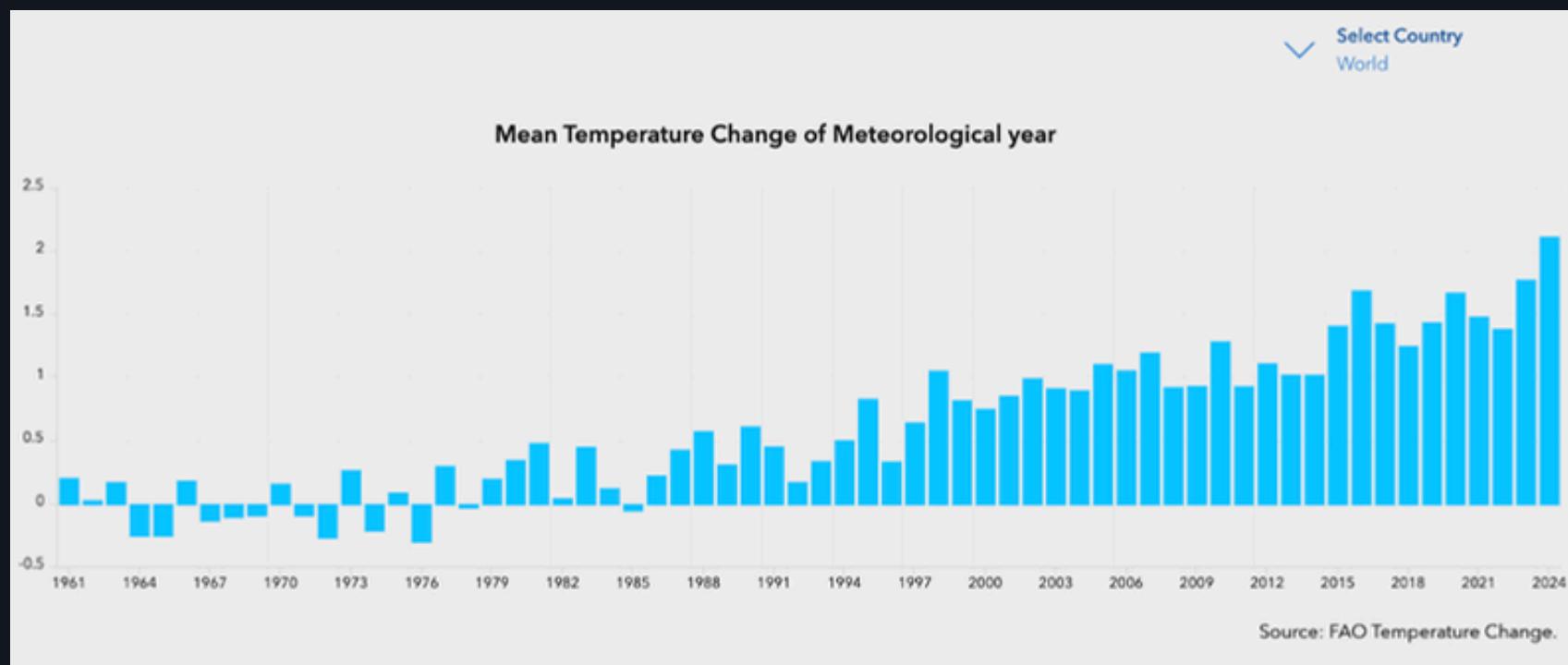
Downloaded CSV datasets, imported
into an analytics tool, cleaned and
merged key variables (sales,
chargers, prices).

MODEL OUTPUT

Maps of charger density and access,
clusters of regions, correlations and
regression insights linking chargers
to EV sales



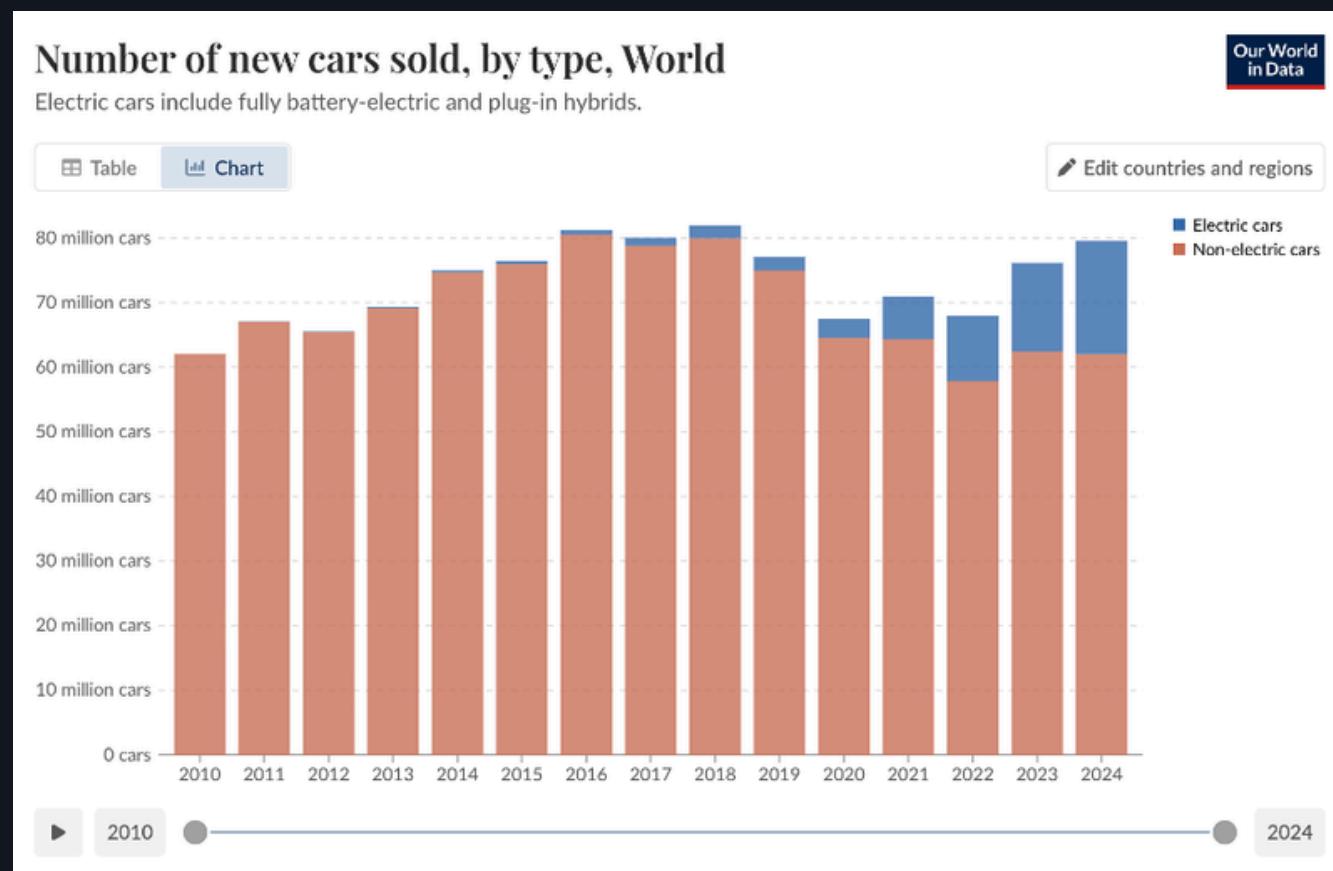
DESCRIPTIVE ANALYTICS



GLOBAL ANNUAL SURFACE TEMPERATURE CHANGE BY YEAR 1998–2024 (SOURCE: MIF., 2025) SHOWS GLOBAL ANNUAL SURFACE TEMPERATURE CHANGE ALSO RISING OVER THOSE YEARS WHETHER CLEARLY WARMER THAN THE EARLIER YEAR

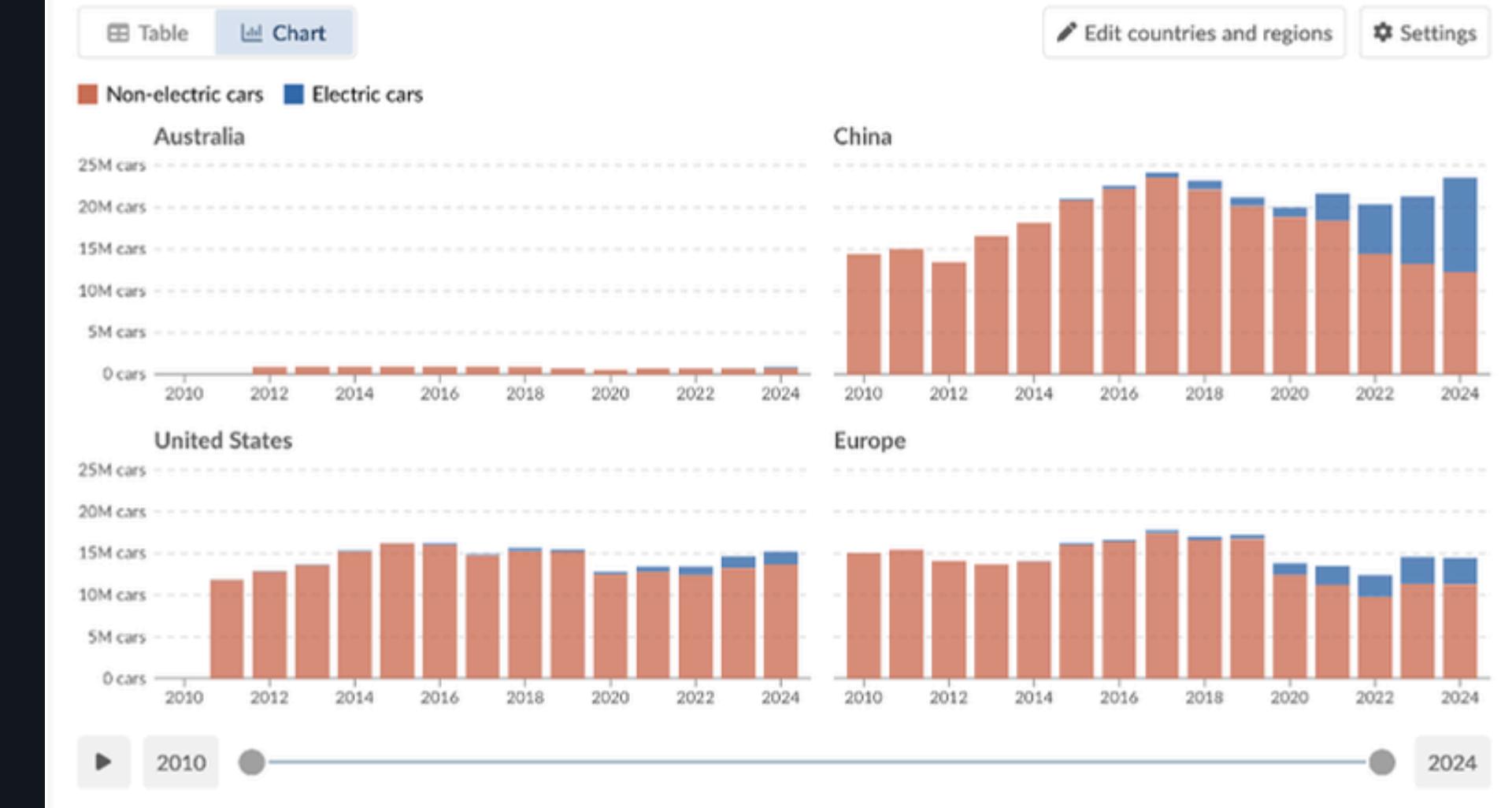
AUSTRALIA ANNUAL SURFACE TEMPERATURE CHANGE BY YEAR 1998–2024 (SOURCE: MIF., 2025) SHOWS AUSTRALIA'S ANNUAL SURFACE TEMPERATURE CHANGE FOLLOWING A SIMILAR UPWARD TREND, SO AUSTRALIA IS WARMING ALONG WITH THE REST OF THE WORLD.

DESCRIPTIVE ANALYTICS



Number of new cars sold, by type

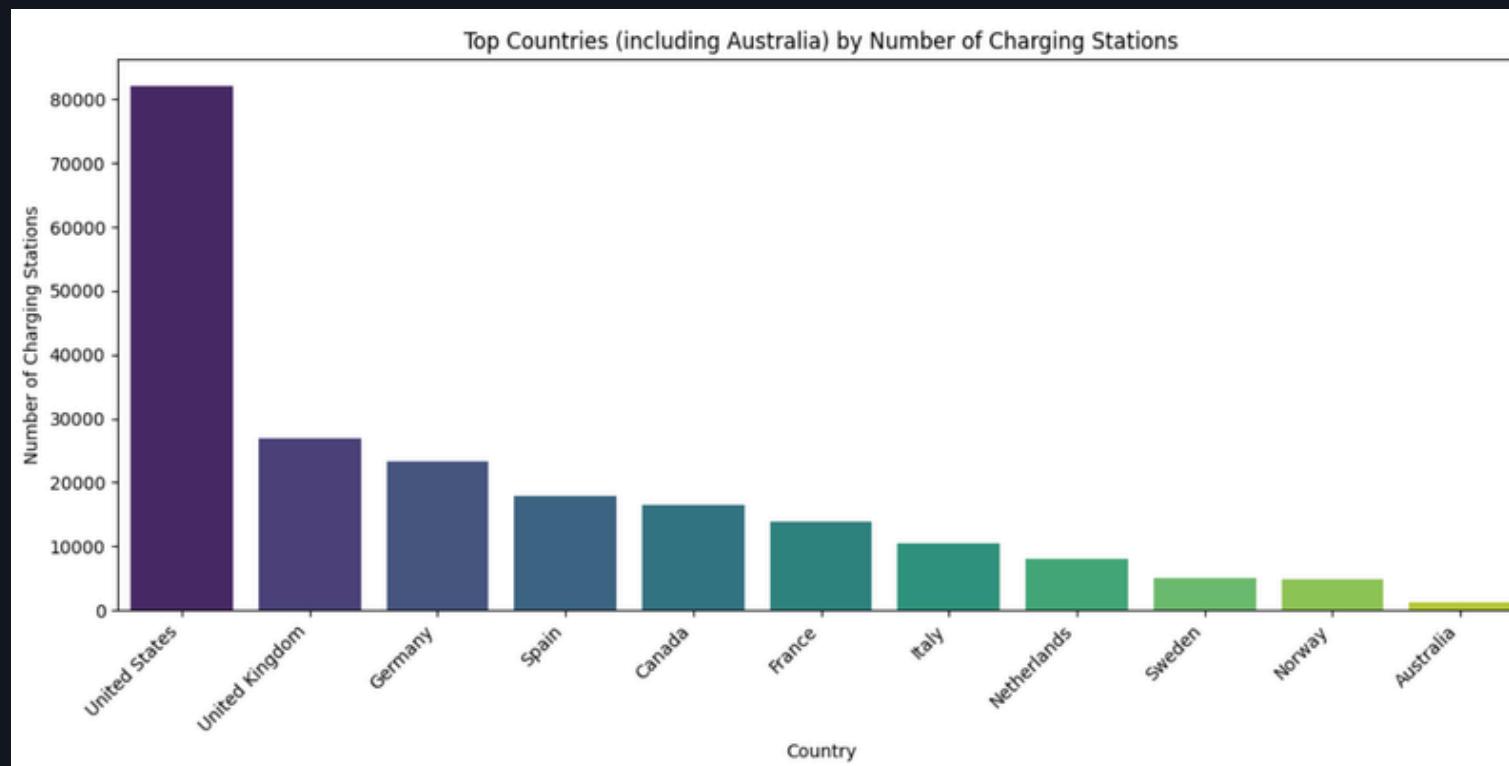
Electric cars include fully battery-electric and plug-in hybrids.



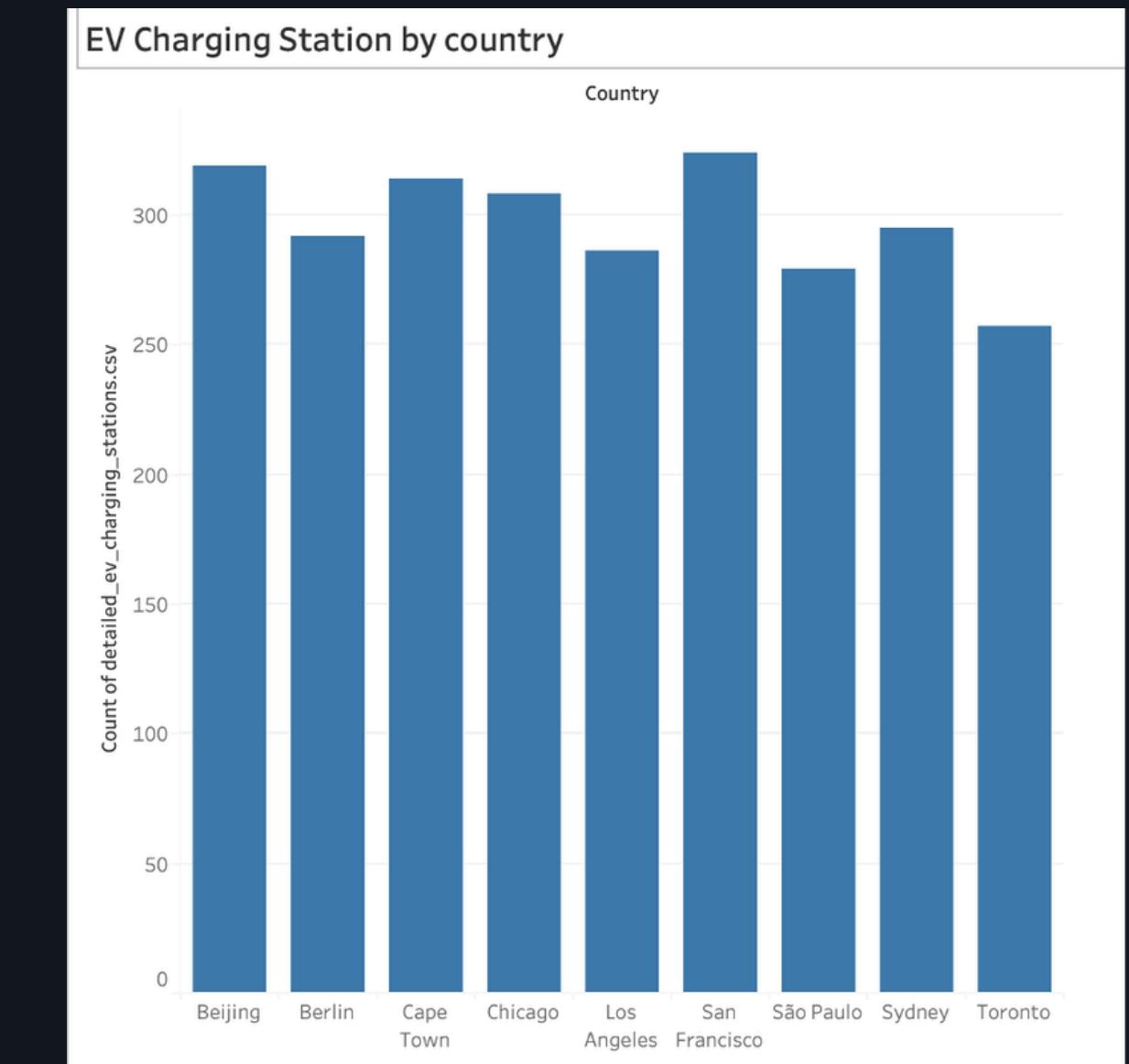
WORLD EV SOLD VS NON-EV CAR 2010-2024 (SOURCE: INTERNATIONAL ENERGY AGENCY. GLOBAL EV OUTLOOK .,2025) SHOWS GLOBALLY EV SALES HAVE GROWN QUICKLY SINCE 2018 BUT NON-EV CARS STILL ACCOUNT FOR BIG SHARE, SO THE GLOBAL TRANSITION IS UNDER WAY BUT NOT COMPLETE.

ELECTRIC VEHICLE CARS VS NON-ELECTRIC VEHICLE CARS SOLD IN AUSTRALIA, CHINA, US AND EUROPE BY COUNTRY 2010-2024 (SOURCE: INTERNATIONAL ENERGY AGENCY. GLOBAL EV OUTLOOK .,2025) COMPARES EV AND NON-EV SALES ACROSS AUSTRALIA, CHINA, THE US, AND EUROPE SHOW THAT THESE OTHER REGIONS HAVE MUCH LARGER EV SHARE THAN AUSTRALIA, ESPECIALLY IN 2024.

DESCRIPTIVE ANALYTICS



country	station_count
United States	82138
United Kingdom	26825
Germany	23373
Spain	17825
Canada	16490
France	13820
Italy	10354
Netherlands	8091
Sweden	4953
Norway	4790
Australia	1241



NUMBER EV CHARGER STATIONS COMPARE TO OTHER COUNTRIES TO AUSTRALIA

PREDICTIVE / EXPLANATORY ANALYTICS

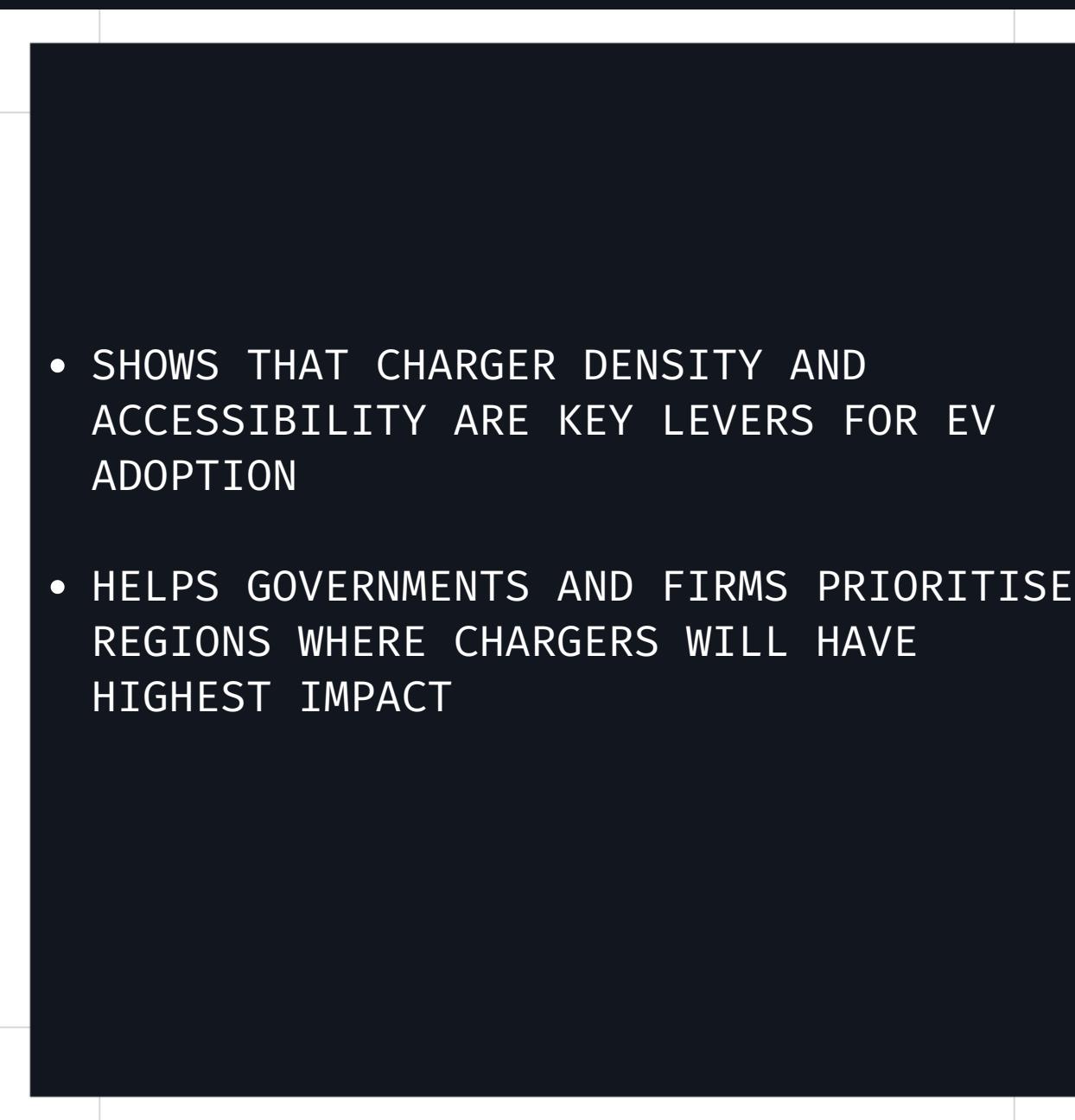
- PLOT ALL CHARGING STATIONS AND CALCULATE AVERAGE DISTANCE TO NEAREST CHARGER TO FIND POORLY SERVED REGIONS
- USE K-MEANS CLUSTERING TO GROUP AREAS BY CHARGER DENSITY AND EV POTENTIAL
- APPLY CORRELATION AND REGRESSION TO QUANTIFY HOW CHARGER AVAILABILITY RELATES TO EV SALES GROWTH



EVALUATION & REFLECTION

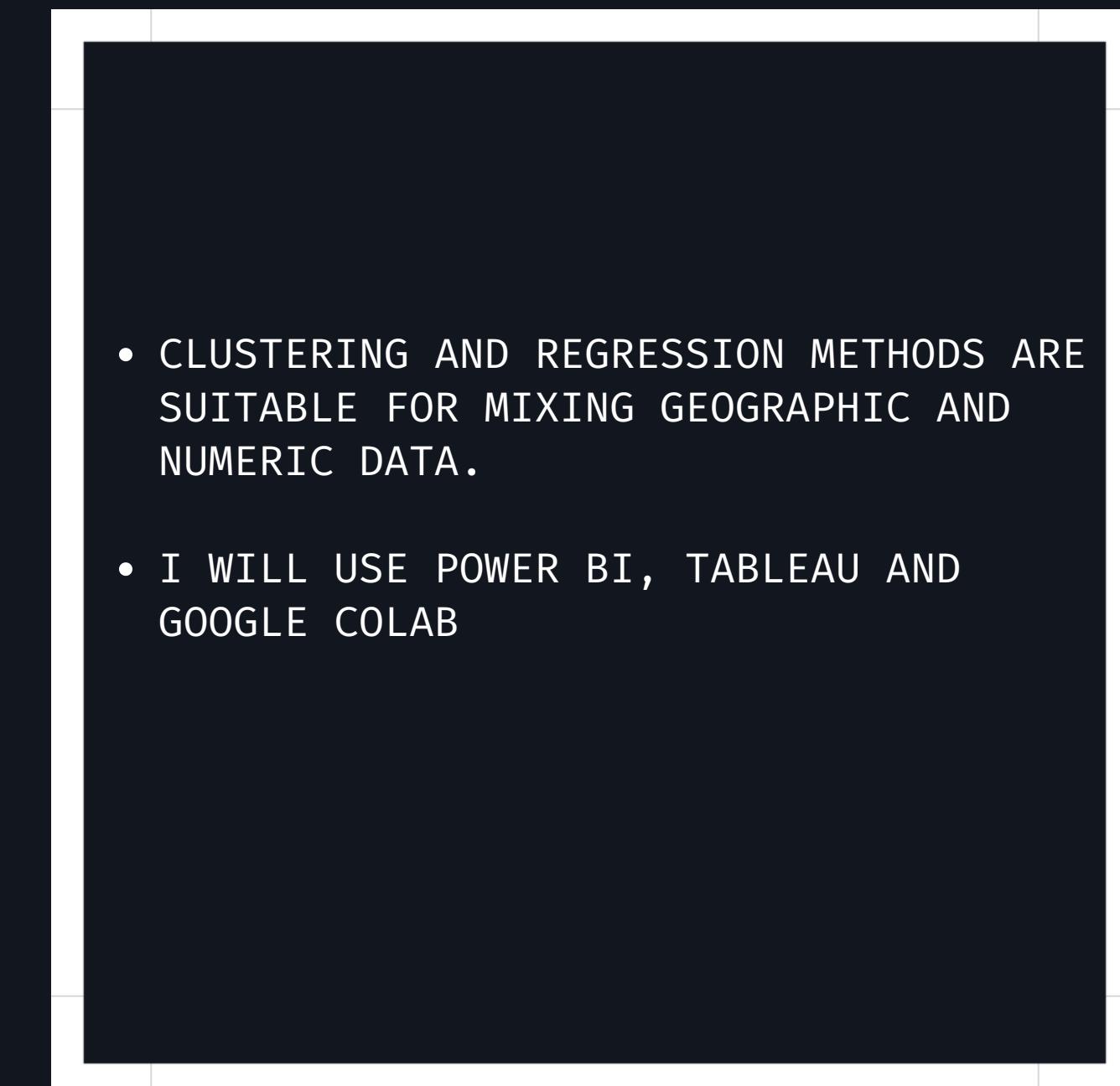
MODEL & SIGNIFICANCE

- SHOWS THAT CHARGER DENSITY AND ACCESSIBILITY ARE KEY LEVERS FOR EV ADOPTION
- HELPS GOVERNMENTS AND FIRMS PRIORITISE REGIONS WHERE CHARGERS WILL HAVE HIGHEST IMPACT



TECHNIQUES, SOFTWARE & PEER REVIEW

- CLUSTERING AND REGRESSION METHODS ARE SUITABLE FOR MIXING GEOGRAPHIC AND NUMERIC DATA.
- I WILL USE POWER BI, TABLEAU AND GOOGLE COLAB



LIMITATIONS

- SECONDARY DATA FROM MULTIPLE SOURCES WITH DIFFERENT QUALITY AND COVERAGE
- FOCUS MAINLY ON INFRASTRUCTURE; PRICE, POLICY DESIGN AND CONSUMER ATTITUDES ALSO MATTER

THANK YOU

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