

1. Import the attached CSV files (Electric Vehicle Population dataset.csv).
2. Perform the following data cleaning operations in PowerBI.
 - a. Rename the values of Electric vehicle type column. Battery Electric Vehicle (BEV) to Battery Electric Vehicle. Plug-in Hybrid Electric Vehicle (PHEV) to Hybrid Electric Vehicle.

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File Home Transform Add Column View Tools Help

Close & Apply New Recent Enter Data Data source settings Manage Parameters Refresh Preview Properties Advanced Editor Manage Choose Columns Remove Columns Reduce Rows Sort Split Column Group By

Queries [1]

Electric vehicle

`= Table.ReplaceValue("#Replaced Value", "Plug-in Hybrid Electric Vehicle (PHEV)", "Hybrid Electric Vehicle",`

| | Model | Electric Vehicle Type | Clean Alternative Fuel Vehicle (CAFE) |
|----|----------------|--------------------------|---|
| 1 | KONA | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 2 | GRAND CHEROKEE | Hybrid Electric Vehicle | Not eligible due to low battery range |
| 3 | GRAND CHEROKEE | Hybrid Electric Vehicle | Not eligible due to low battery range |
| 4 | MODEL 3 | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 5 | I3 | Hybrid Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 6 | MODEL 3 | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 7 | PACIFICA | Hybrid Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 8 | MODEL Y | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 9 | MODEL 3 | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 10 | MODEL Y | Battery Electric Vehicle | Eligibility unknown as battery range ha |
| 11 | MODEL 3 | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |
| 12 | FUSION | Hybrid Electric Vehicle | Not eligible due to low battery range |
| 13 | PRIUS PRIME | Hybrid Electric Vehicle | Not eligible due to low battery range |
| 14 | MODEL 3 | Battery Electric Vehicle | Clean Alternative Fuel Vehicle Eligible |

- b. Exclude all the records from all the analysis where Vehicle Location column is Blank

| Enter Data | Data source settings Data Sources | Manage Parameters Parameters | Refresh Preview Query | Properties Advanced Editor Manage | Choose Columns Manage Columns | Remove Columns | Keep Rows Reduce Rows | Remove Rows | Sort | Split Column Group By | Data Type: Text Use First Row as Headers Replace Values |
|--|--------------------------------------|---------------------------------|---------------------------------|--|----------------------------------|----------------|--------------------------|-------------|------|--------------------------|---|
| = Table.SelectRows("#Replaced Value1", each [Vehicle Location] <> null and [Vehicle Location] <> "") | | | | | | | | | | | |
| | ABC Legislative District | ABC Vehicle ID | ABC Vehicle Location | ABC Electric Utility | | | | | | | |
| 1 | 43 | 249675142 | POINT (-122.34301 47.659185) | CITY OF SEATTLE - (WA) CITY OF TACOMA - (W | | | | | | | |
| 2 | 1 | 233928502 | POINT (-122.20578 47.762405) | PUGET SOUND ENERGY INC CITY OF TACOMA | | | | | | | |
| 3 | 14 | 229675939 | POINT (-120.6027202 46.5965625) | PACIFICORP | | | | | | | |
| 4 | 45 | 104714466 | POINT (-122.209285 47.71124) | PUGET SOUND ENERGY INC CITY OF TACOMA | | | | | | | |
| 5 | 22 | 185498386 | POINT (-122.89692 47.043535) | PUGET SOUND ENERGY INC | | | | | | | |
| 6 | 38 | 124595523 | POINT (-122.1713847 48.10433) | PUGET SOUND ENERGY INC | | | | | | | |
| 7 | 47 | 1815593 | POINT (-122.111625 47.36078) | PUGET SOUND ENERGY INC CITY OF TACOMA | | | | | | | |
| 8 | 45 | 124760555 | POINT (-122.151665 47.75855) | PUGET SOUND ENERGY INC CITY OF TACOMA | | | | | | | |
| 9 | 10 | 125048003 | POINT (-122.6880708 48.2179983) | PUGET SOUND ENERGY INC | | | | | | | |
| 10 | 48 | 240416207 | POINT (-122.201905 47.61385) | PUGET SOUND ENERGY INC CITY OF TACOMA | | | | | | | |
| 11 | 48 | 231013436 | POINT (-122.20264 47.6785) | PUGET SOUND ENERGY INC CITY OF TACOMA | | | | | | | |
| 12 | 26 | 212561716 | POINT (-122.6851642 47.506453) | PUGET SOUND ENERGY INC | | | | | | | |
| 13 | 26 | 229764972 | POINT (-122.639265 47.5373) | PUGET SOUND ENERGY INC | | | | | | | |

- c. Create a new variable Electric Range Bin which will have 3 values (High, low or Medium). If electric range column has value 0-100 then value will be low, if 101-200 then medium, if greater than 200 then High.

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| Home | Transform | Add Column | View | Tools | Help |
|--|------------------------|--|---|---|--|
| Custom Column | Invoke Custom Function | Conditional Column Index Column Duplicate Column | Format Merge Columns ABC Extract Parse | Statistics Standard Scientific Rounding Information | Date Time Duration Text Analytics Vision Azure Machine Learning |
| General | | | | | |
| = Table.AddColumn("#Changed Type", "Electric range bin", each if [Electric Range] <= 100 then "Low" else | | | | | |
| vehicle | ABC Vehicle ID | ABC Vehicle Location | ABC Electric Utility | ABC Electric range bin | |
| 1 | 249675142 | POINT (-122.34301 47.659185) | CITY OF SEATTLE - (WA) CITY OF TACOMA - (WA) | High | |
| 2 | 233928502 | POINT (-122.20578 47.762405) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | Low | |
| 3 | 229675939 | POINT (-120.6027202 46.5965625) | PACIFICORP | Low | |
| 4 | 104714466 | POINT (-122.209285 47.71124) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | |
| 5 | 185498386 | POINT (-122.89692 47.043535) | PUGET SOUND ENERGY INC | Low | |
| 6 | 124595523 | POINT (-122.1713847 48.10433) | PUGET SOUND ENERGY INC | High | |
| 7 | 1815593 | POINT (-122.111625 47.36078) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | Low | |
| 8 | 124760555 | POINT (-122.151665 47.75855) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | |
| 9 | 125048003 | POINT (-122.6880708 48.2179983) | PUGET SOUND ENERGY INC | High | |
| 10 | 240416207 | POINT (-122.201905 47.61385) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | Low | |
| 11 | 231013436 | POINT (-122.20264 47.6785) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | |
| 12 | 212561716 | POINT (-122.6851642 47.506453) | PUGET SOUND ENERGY INC | Low | |
| 13 | 229764972 | POINT (-122.639265 47.5373) | PUGET SOUND ENERGY INC | Low | |
| 14 | 179728755 | POINT (-122.299965 47.94171) | PUGET SOUND ENERGY INC | High | |
| 15 | 120633516 | POINT (-122.12302 47.67668) | PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | |

- d. In vehicle location column, latitudes and longitudes of the locations are given. Create 2 new columns based on this column. First column name will be Latitude_location which will have first numeric value and 2nd column will be Longitude_location which will have second numeric value.
Eg: POINT (-122.34301 47.659185) will have -122.34301 in latitude_location and 47.659185 in longitude_location.

The screenshot shows the Microsoft Power Query Editor interface. The formula bar at the top contains the formula: `= Table.RemoveColumns(#"Added Custom1",{"Vehicle Location - Copy.3", "Vehicle Location - Copy.2"})`. The table below has columns: Electric Utility, Electric range bin, Latitude_Loc, and Longitude_loc. The data rows show various locations with their corresponding latitude and longitude values. The right sidebar shows the 'Query Settings' pane with 'Electric vehicle' as the name and a list of applied steps including 'Removed Columns1'.

| | Electric Utility | Electric range bin | Latitude_Loc | Longitude_loc |
|----|---|--------------------|--------------|---------------|
| 1 | (9185) CITY OF SEATTLE - (WA) CITY OF TACOMA - (WA) | High | -122.34301 | 47.659185 |
| 2 | (2405) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | Low | -122.20578 | 47.762405 |
| 3 | (5965625) PACIFICORP | Low | -120.6027202 | 46.5965625 |
| 4 | (1124) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | -122.209285 | 47.71124 |
| 5 | (3535) PUGET SOUND ENERGY INC | Low | -122.89692 | 47.043535 |
| 6 | (10433) PUGET SOUND ENERGY INC | High | -122.1713847 | 48.10433 |
| 7 | (6078) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | Low | -122.111625 | 47.36078 |
| 8 | (5855) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | -122.151665 | 47.75855 |
| 9 | (2179983) PUGET SOUND ENERGY INC | High | -122.6880708 | 48.2179983 |
| 10 | (1385) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | Low | -122.201905 | 47.61385 |
| 11 | (85) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | -122.20364 | 47.6785 |
| 12 | (506453) PUGET SOUND ENERGY INC | Low | -122.6851642 | 47.506453 |
| 13 | (373) PUGET SOUND ENERGY INC | Low | -122.639265 | 47.5373 |
| 14 | (4171) PUGET SOUND ENERGY INC | High | -122.299965 | 47.94171 |
| 15 | (668) PUGET SOUND ENERGY INC CITY OF TACOMA - (...) | High | -122.12302 | 47.67668 |

ELECTRIC VEHICLE DATA ANALYSIS


Electric Vehicle Ty... 

All 

City 

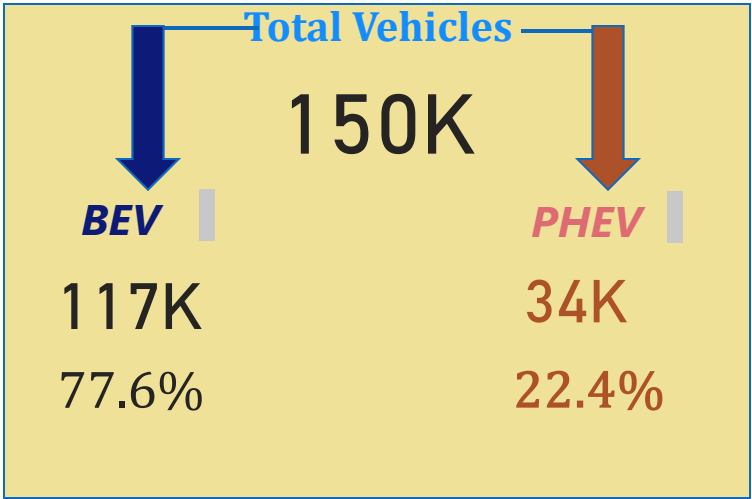
All 

State 

All 

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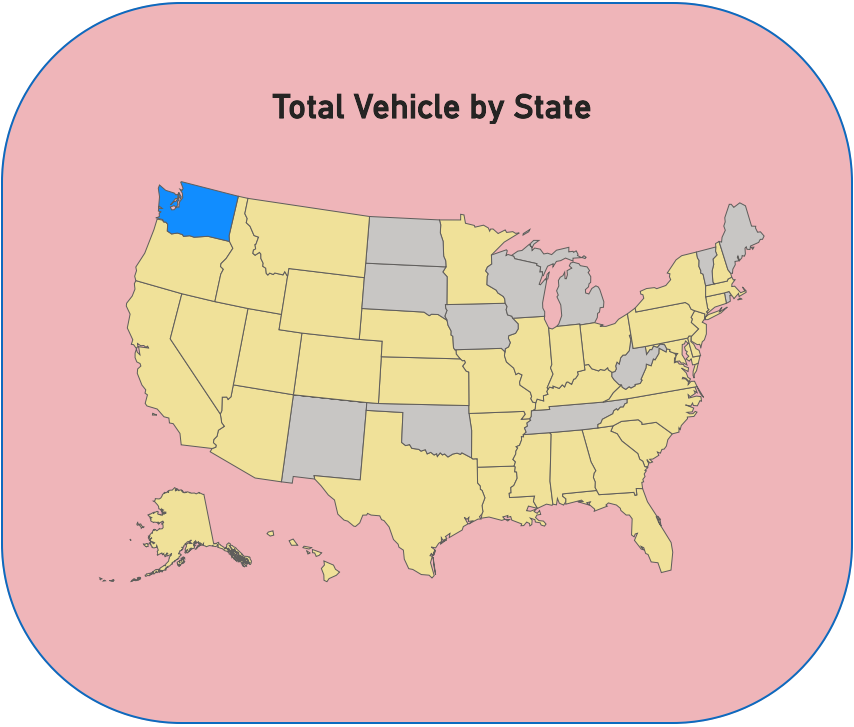
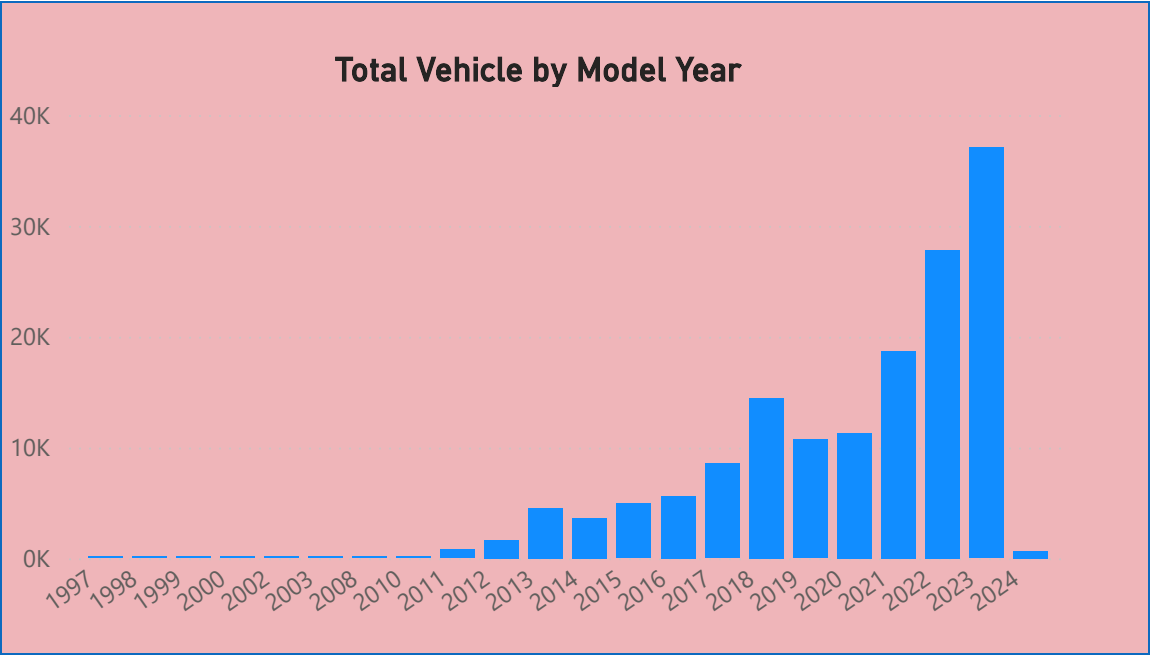
2ND_PAGE



ELECTRIC VEHICLE RANGE



67.88 Km



ELECTRIC VEHICLE DATA ANALYSIS

Electric Vehicle Ty...

All

City

All

State

All

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