

ELECTRIC VEHICLES POPULATION

Market size analysis for electric vehicles involves a multi-step process that includes defining the market scope, collecting and preparing data, analytical modelling, and communicating findings through visualization and reporting.



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INSIGHT

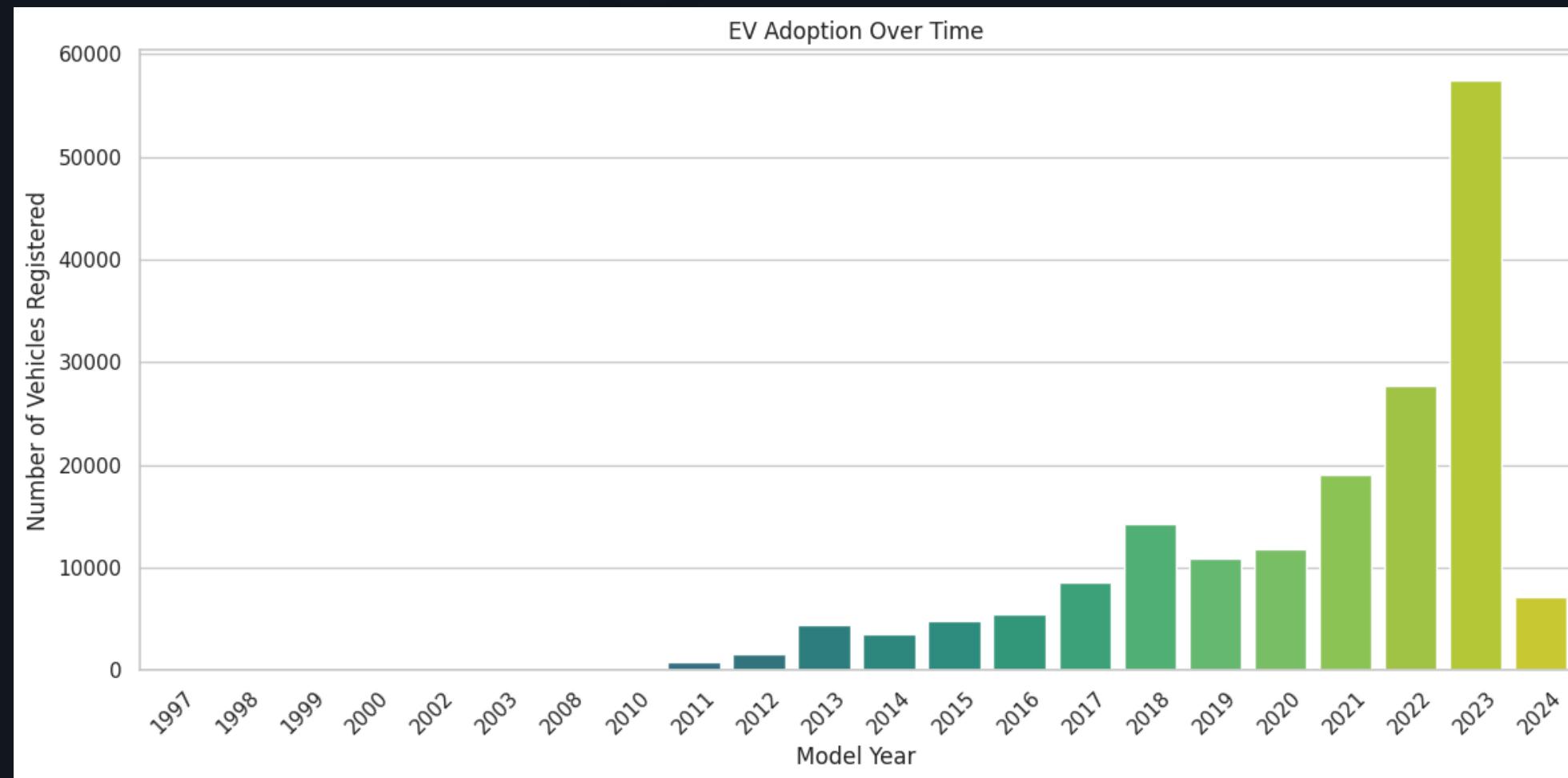
BUSINESS CONTEXT

- **Goal:** Analyze the growth and distribution of electric vehicles (EVs) using real-world population data.
- **Why it matters:** EV adoption trends can inform policy, infrastructure planning, and market opportunity.

DATASET DESCRIPTION

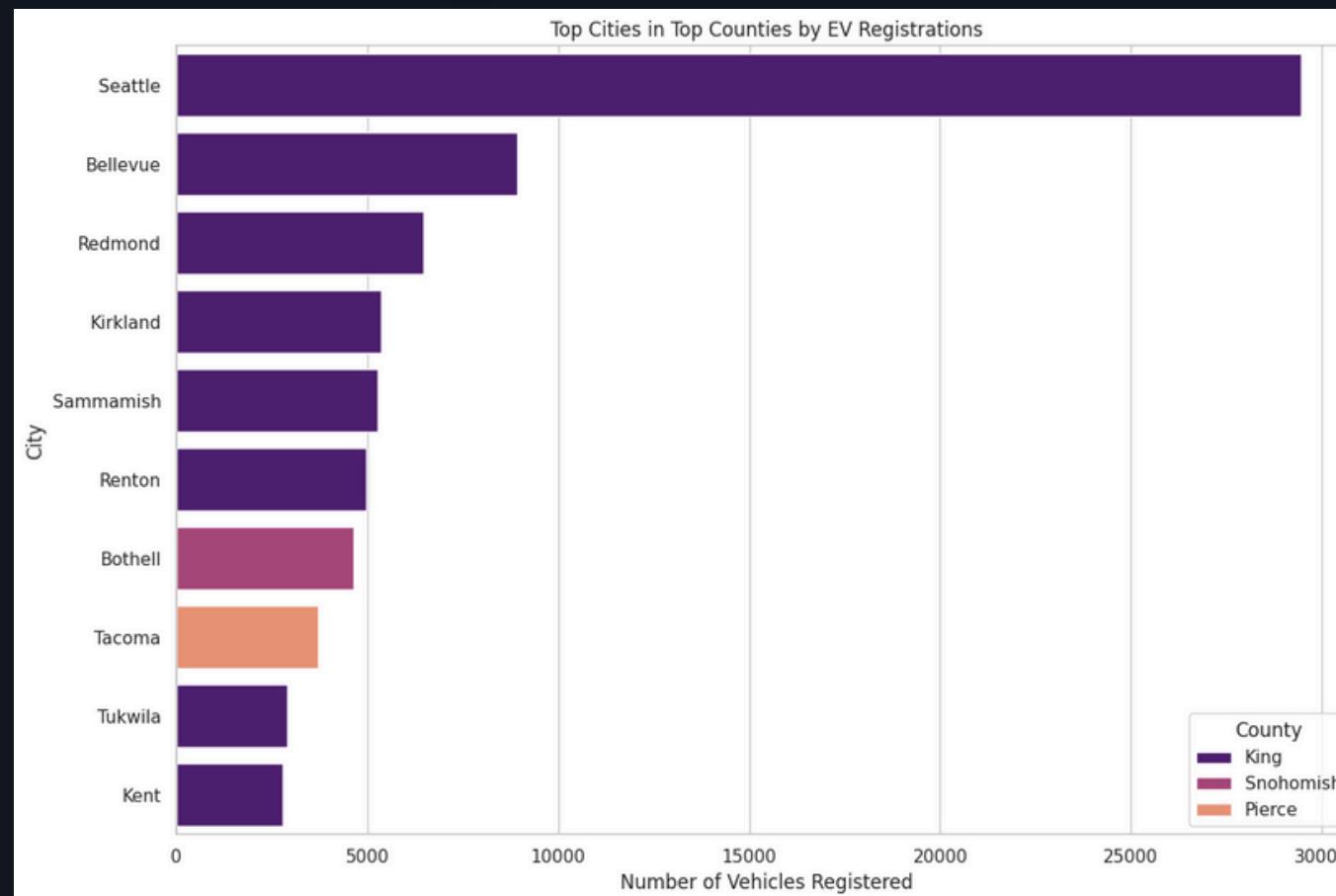
- **Source:** Data Science case study on Market Size Analysis. (Data Source: [Data.gov](https://www.data.gov))
- **Features:** Model Year, Make, Model, Electric Vehicle Type (Battery EV vs Plug-in Hybrid), County, City, ZIP Code, Electric Range, Clean Alternative Fuel Vehicle status

EU Adoption growth over time

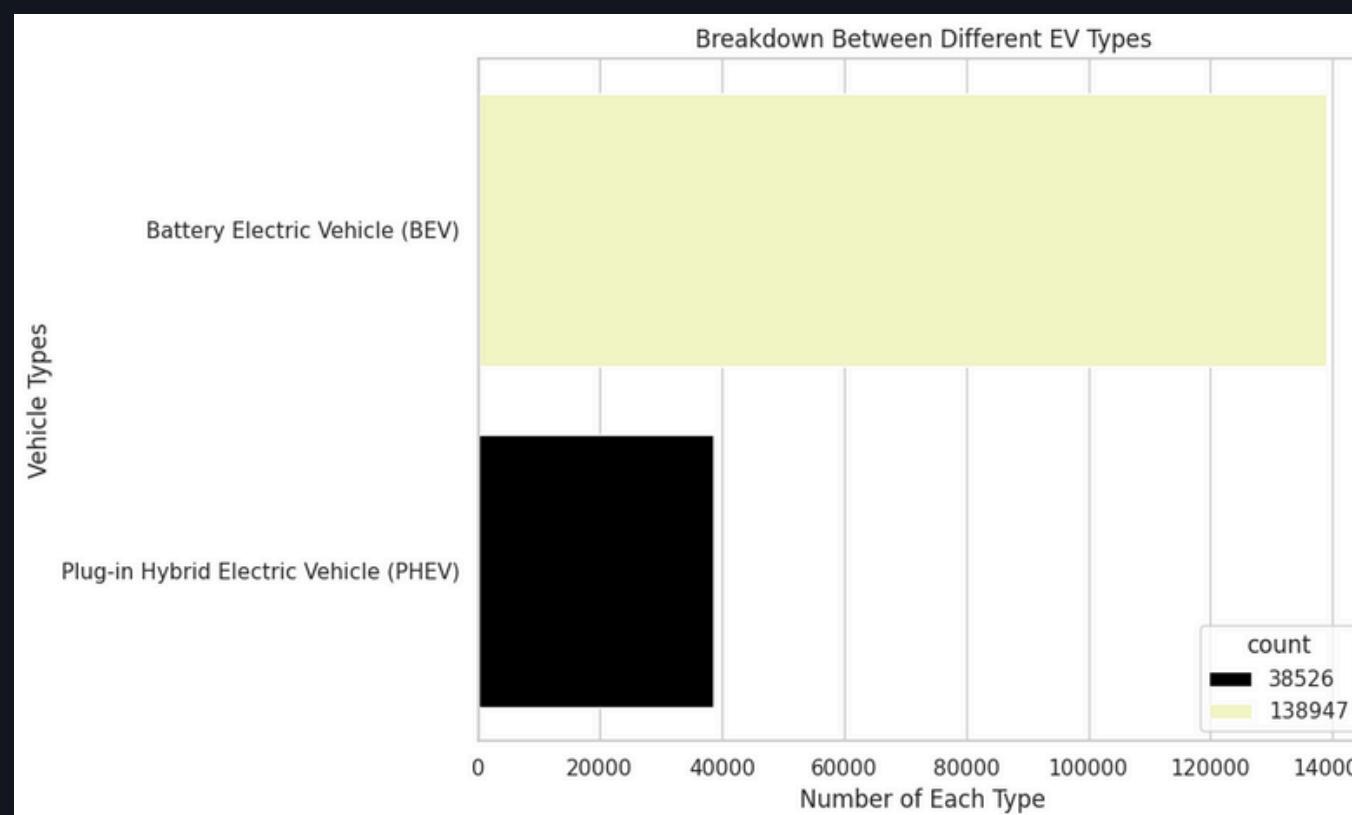


- EV registrations grew modestly from early years up to 2016.
- A noticeable acceleration in adoption begins from 2017 onward.
- The growth trend becomes steeper post-2019, reflecting broader market acceptance.
- 2023 marks the highest number of registrations, signaling a peak in EV adoption to date.
- The data suggests a clear upward trajectory, likely driven by improving range, infrastructure, and consumer awareness.

ADOPTION PATTERNS: CITY INSIGHTS AND EV TYPE

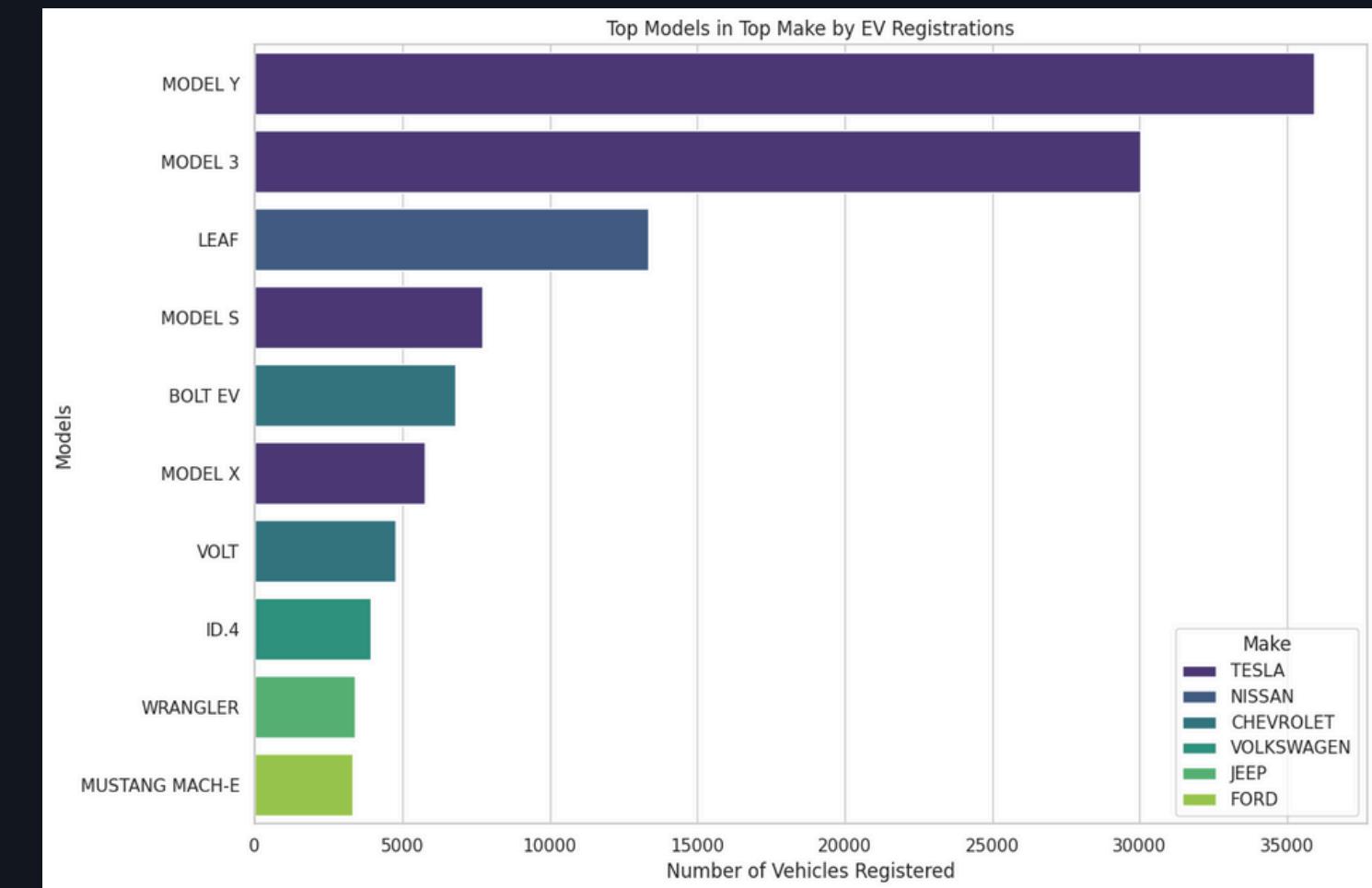
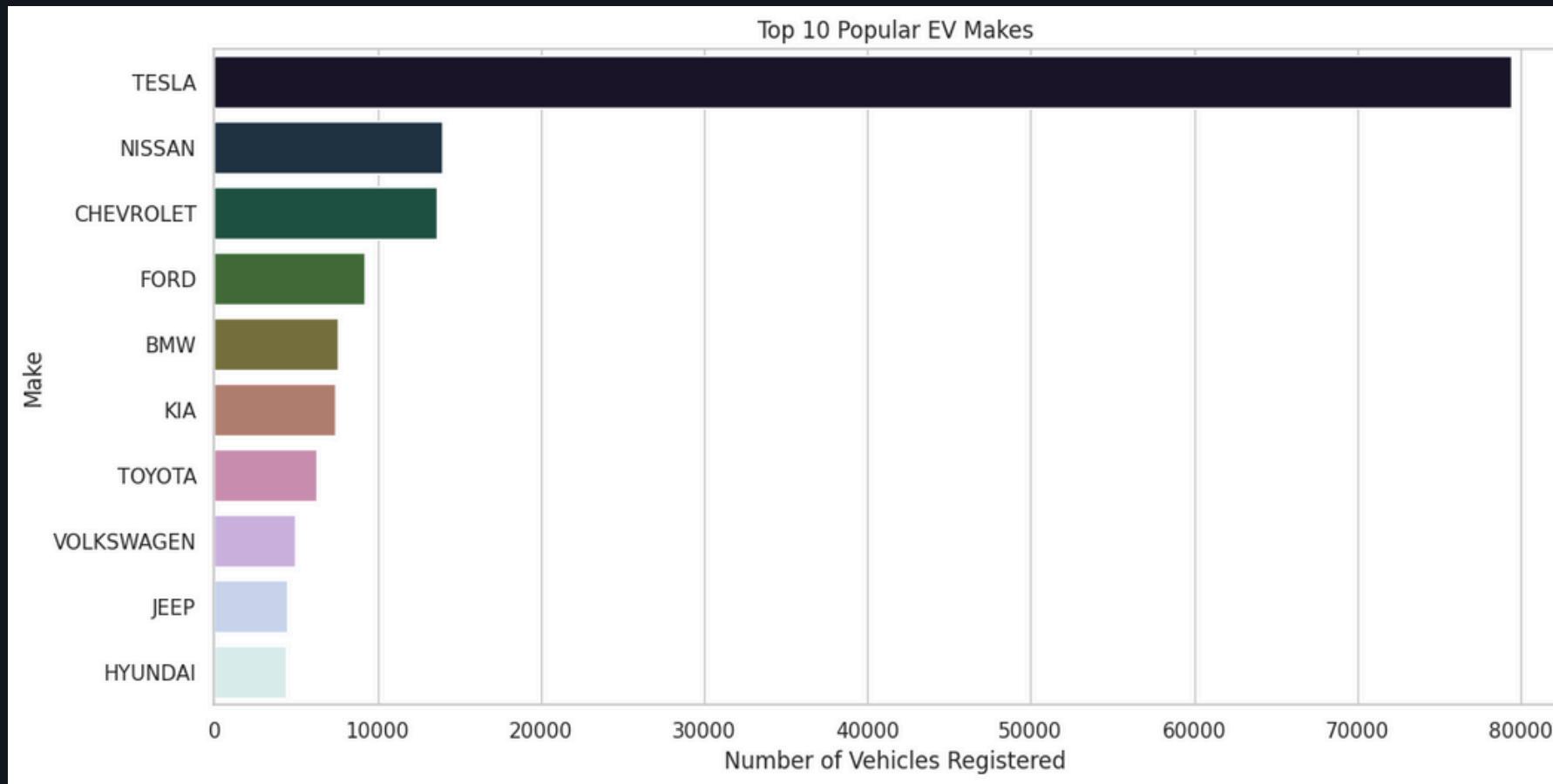


- **Seattle (King County)** leads EV adoption by a wide margin.
- **Bellevue and Redmond**, also in King County, follow with high but notably lower counts.
- **Snohomish County** cities (e.g., Kirkland, Sammamish) show moderate adoption.
- **Pierce County** cities (e.g., Tacoma, Tukwila) report the lowest EV registrations.
- **King County** dominates overall, highlighting a regional concentration of EV adoption.



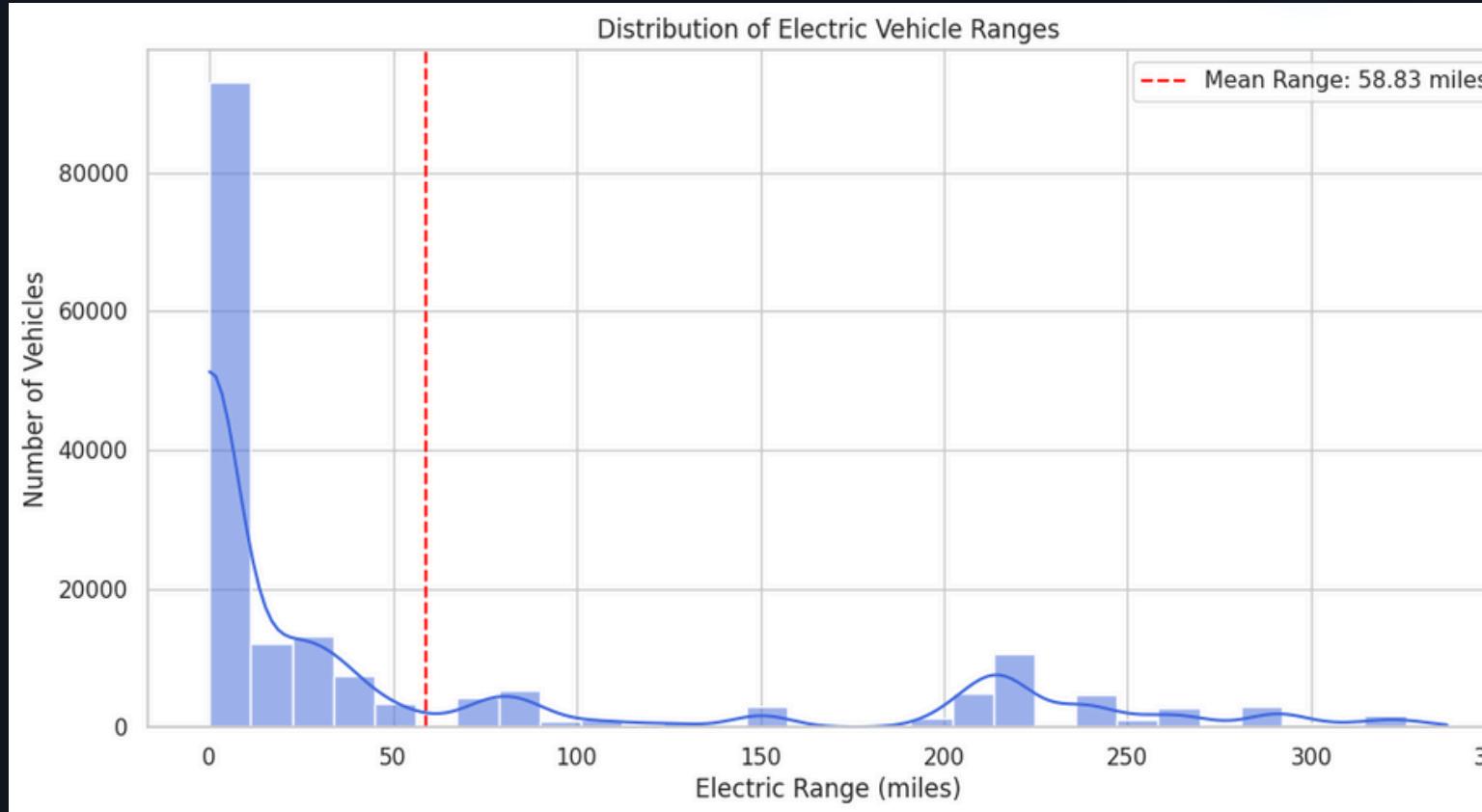
- **Battery Electric Vehicles (BEVs)** are significantly more popular than Plug-in Hybrid Electric Vehicles (PHEVs) in the current registration data.
- This suggests a growing consumer preference for fully electric vehicles, likely driven by longer ranges, better infrastructure, and environmental awareness.

TOP EU brands & models

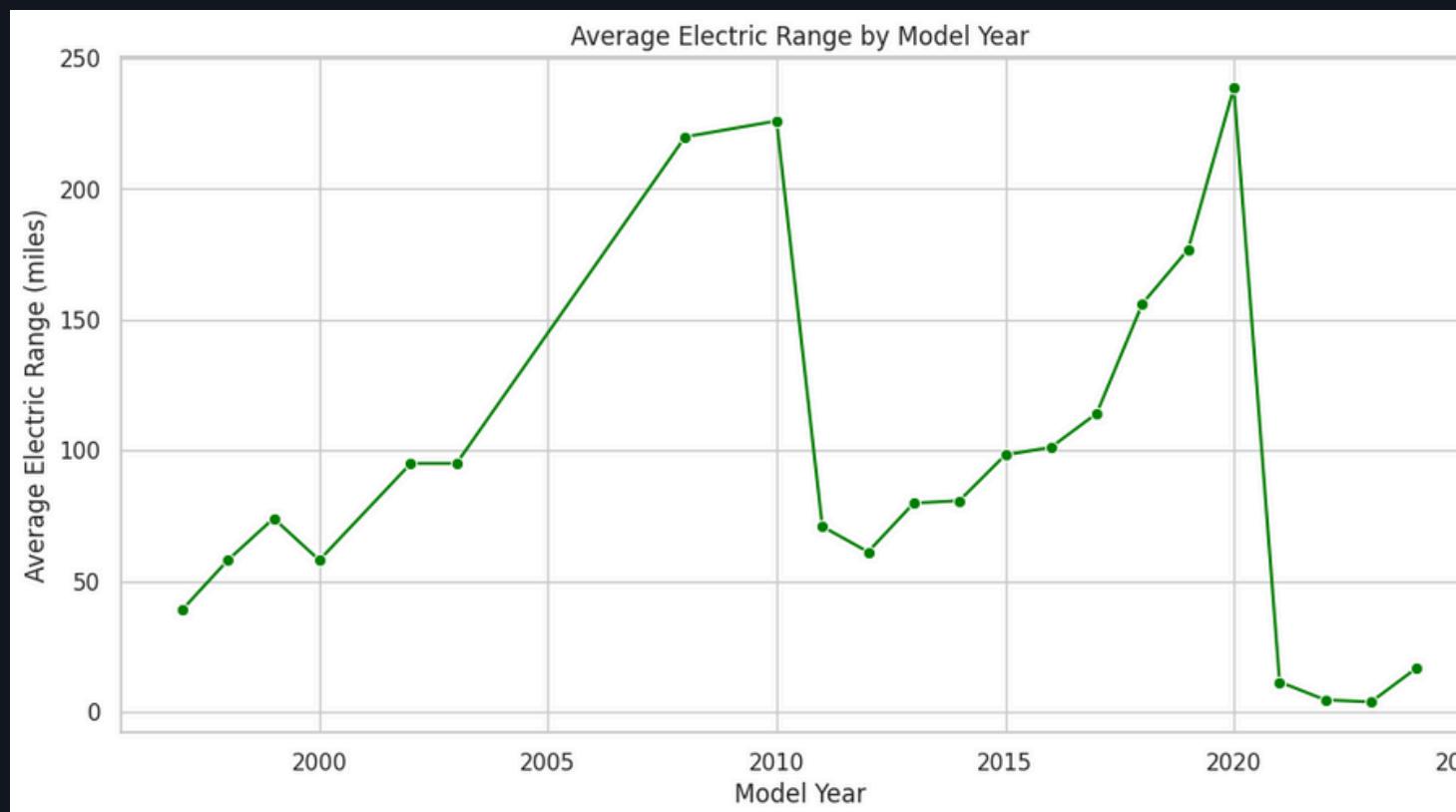


- **TESLA** dominates EV registrations, far surpassing other manufacturers.
- **NISSAN** and **CHEVROLET** follow, but with significantly fewer vehicles.
- **MODEL Y** and **MODEL 3** are the top registered models which are from Tesla.
- **NISSAN LEAF** is the most popular non-Tesla model.
- Other notable models include the **Tesla Model S/X** and **Chevrolet Bolt EV/Volt**.

EV RANGE DISTRIBUTION AND ELECTRICITY RANGE AVERAGE BY MODEL YEAR

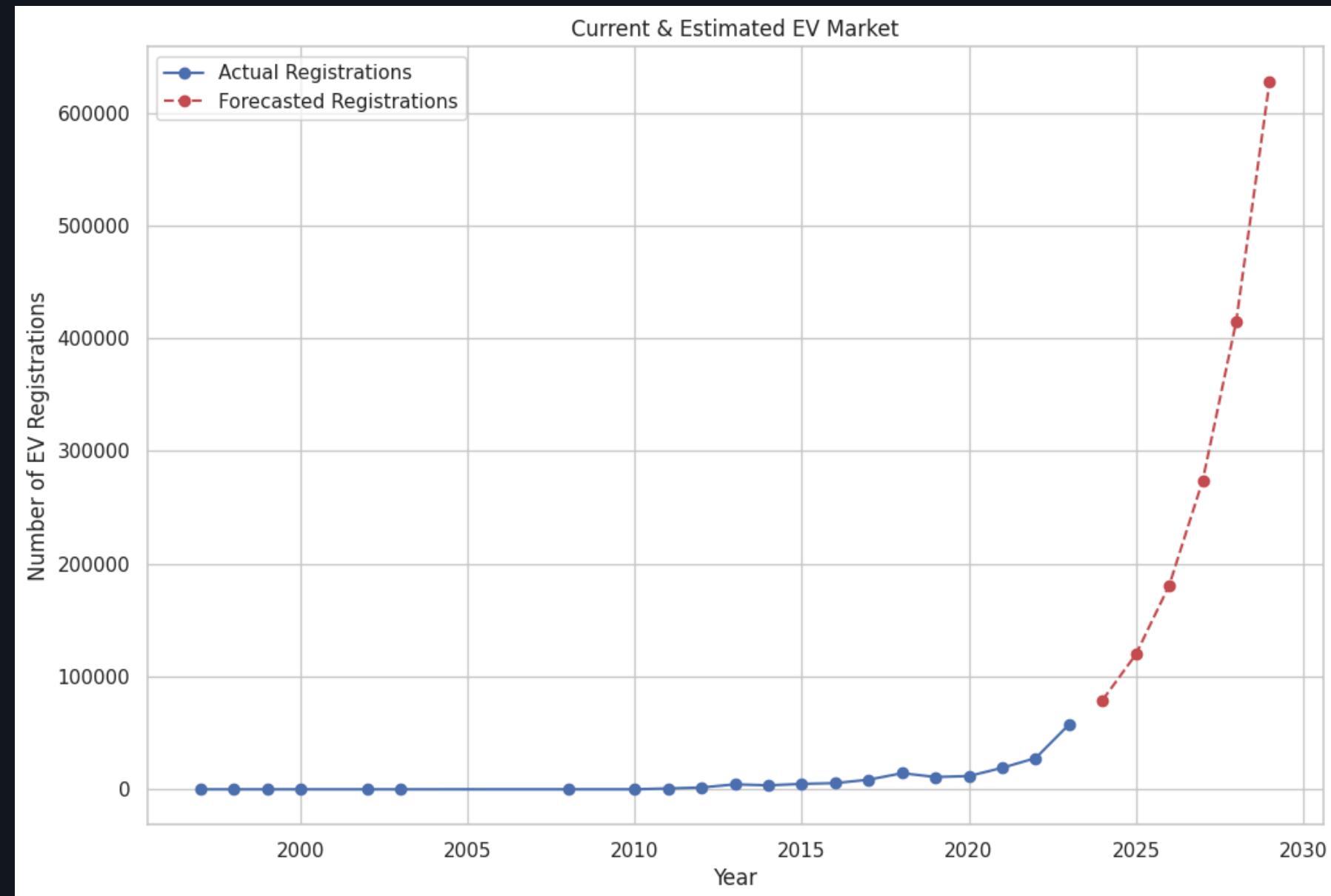


- Majority of EVs have a low electric range, peaking just below 50 miles.
- The range distribution is right-skewed, with few high-range vehicles.
- Mean range is ~58.8 miles, but most vehicles fall below this average.
- Despite the availability of EVs with ranges up to 350 miles, the market is still saturated with shorter-range models.
 - While electric vehicles with high ranges are available, the average range is skewed lower due to the disproportionately large number of vehicles with limited electric range.



- EV range has steadily increased over the past two decades, driven by battery improvements.
- 2020 marks the peak in average electric range.
- A sharp drop follows, likely due to data gaps or more low-range models.
- Recent data shows a slight recovery in average range.
 - Despite short-term fluctuations, the long-term trend indicates steady improvement in electric vehicle range.

ESTIMATED GROWTH IN MARKET SIZE



- Registrations were low and stable until ~2010.
- Post-2010, EV adoption shows a consistent upward trend.
- Forecasts predict rapid future growth, with registrations expected to rise sharply in the coming years.

CONCLUSION

- The consistent rise in actual EV registrations and steep forecasted growth indicate a rapidly expanding market.
- The data suggests strong consumer adoption trends that are likely to continue.
- This points to a promising future for the EV industry, with growing demand, shifting preferences, and increased investment opportunities.

SUMMARY

- Market size analysis is a key element of market research, used to estimate potential sales volume and understand demand dynamics.
- It helps businesses evaluate market potential, saturation levels, and growth opportunities.
- Based on our analysis of electric vehicle registrations, the data reveals a promising outlook for the EV industry, driven by a clear shift in consumer preferences.
- This upward trend signals increased investment potential and expanding business opportunities in the EV space.



THANK YOU

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Full implementation available on GitHub

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