Canoo Overview:

Canoo is an electric vehicle (EV) startup that aims to revolutionise urban transportation with its innovative electric vehicles and subscription-based model. The company was founded in 2017 and is headquartered in California, USA. Canoo is known for its unique approach to vehicle design, focusing on modular platforms that can be adapted for various types of vehicles, including delivery vans and personal commuter cars.

Canoo gained attention for its distinctive designs, particularly its "skateboard" platform, which integrates the battery and drivetrain into the vehicle's chassis, allowing for more interior space and flexibility in design. The company's first vehicle, the Canoo Lifestyle Vehicle (LV), features a spacious interior with a minimalist design and is targeted towards urban commuters.

In addition to its innovative vehicle designs, Canoo also offers a subscription-based model, where customers can pay a monthly fee for access to the vehicle, insurance, maintenance, and other services, similar to a smartphone subscription.

Canoo had gone public through a merger with a special purpose acquisition company (SPAC) named Hennessy Capital Acquisition Corp. IV. Following the merger, Canoo started trading on the NASDAQ stock exchange under the ticker symbol GOEV.

Canoo:

- **Vehicle models:** Canoo offers a variety of electric vehicle models, including the LDV 130, LDV 190, LV, Pickup, and MPDV.
- **Partnerships:** Canoo has partnered with a number of companies, including the U.S. Postal Service, NASA, Walmart, and Zeeba.
- **Technology:** Canoo's vehicles use a number of innovative technologies, such as a proprietary skateboard platform and a steer-by-wire system.
- **Sustainability:** Canoo is committed to sustainability, and its vehicles are designed to be environmentally friendly.

Trends: Canoo focuses on several key trends:

- **Subscription model:** Offering vehicles as a service rather than traditional ownership.
- **Modular platform:** Designing a flexible platform adaptable to different vehicle types.
- **Technology focus:** Integrating advanced features like steer-by-wire and AI-powered experiences.

- **Commercial vehicles:** Targeting fleet and delivery companies with vans and trucks.

Key Players:

- **Competitors:** Established automakers like Ford, GM, and Tesla, plus EV startups like Rivian and Lucid.
- **Partners:** U.S. Postal Service for delivery vehicles, Walmart for potential deliveries, Zeeba for subscription services, and NASA for lunar exploration vehicles.
- **Investors:** BlackRock, Coatue Management, and hedge funds like Senator Investment Group.

STEPS INVOLVED

Here's a detailed step-by-step solution to gather information about Canoo and its competitors using Python programming:

1: **Identify Relevant Websites**

- **Canoo's Official Website**: Checked Canoo's official website for information about the company, its products, and financial reports.
- **Stock Market Analysis Platforms**: Websites like NASDAQ, provide stock market data, including financial performance metrics,KPI, and analyst reports.
- Various websites were available which have data from previous year sales , I need to go through each and every website that contain data in tabular form some of them were:
  - https://evadoption.com/ev-sales/evs-percent-of-vehicle-sales-by-brand/
  - https://www.goodcarbadcar.net/u-s-auto-sales-brand-rankings-december-2018-ytd/

2: **Understand Website Structure**

Inspect the HTML structure of the websites mentioned above to understand how the data is organized. Identify key elements such as: tables on Financial reports and Competitor information

3: **Write Python Script**

Here's a basic outline of the Python script:

- Import Necessary Libraries:
  - requests: To make HTTP requests to fetch web pages.
  - BeautifulSoup: To parse HTML content.
  - csv: To write data to CSV file.
  - selenium: Used for automating web browsers

    - pandas ydata-profiling: generates a comprehensive report containing descriptive statistics and visualizations
    - Pandas and numpy
    - pandas.plotting: For analysis purpose
    - matplotlib: For plotting graph
- Scrape Data:
    - Used the defined libraries to scrape relevant information from each website.
- Store Data:
    - Store the scraped data in a CSV file format for analysis work than further generate report in html format.

4: **Analysis work**

After extracting data in csv file format and I did the analysis work by plotting various graphs such as various competitors and year by sale in EV market.

5: **Handle Challenges**

- Inconsistent Website Layouts: Different websites had different HTML structures. Therefore I wrote robust scraping code that can handle variations in layouts.
- Missing Data: Some websites did not had all the information I needed. Handled missing data gracefully in my script.
- Dynamic Website Structure: Some Websites use dynamic content loading via JavaScript, which required tools like Selenium to interact with the website and extract the required data.

SUMMARY

New car sales in the U.S. are expected to reach 15.3 to 15.4 million units in 2023, according to Cox Automotive. This is up from 15 million units in 2022, but still below pre-pandemic levels. The automotive industry is still facing a number of challenges, including the global chip shortage, rising inflation, and supply chain disruptions. However, there are also some positive signs, such as strong demand for new vehicles and a recovering economy. Pickup trucks and crossover SUVs are expected to remain the most popular vehicle segments in the U.S. in 2023. Electric vehicles are also expected to gain market share, as more and more consumers are choosing to go electric.

The US new car sales market experienced significant fluctuations over the past two decades. After reaching a peak of nearly 18 million new car sales in 2000, it took 15 years until 2015 for the market to recover to that level. Sales remained flat in 2016 and slightly decreased in 2017, while stabilizing in 2018. The COVID-19 pandemic

exacerbated challenges in the market, causing factory closures, supply chain disruptions, and decreased consumer spending, leading to a shortage of new cars. Despite recent recovery efforts, challenges persist, including high inflation, rising interest rates, and the lingering impact of the global chip shortage. Moving forward, the US new car sales market is expected to maintain resilience, with an average annual growth rate projected at 2.5%, albeit at a slower pace.

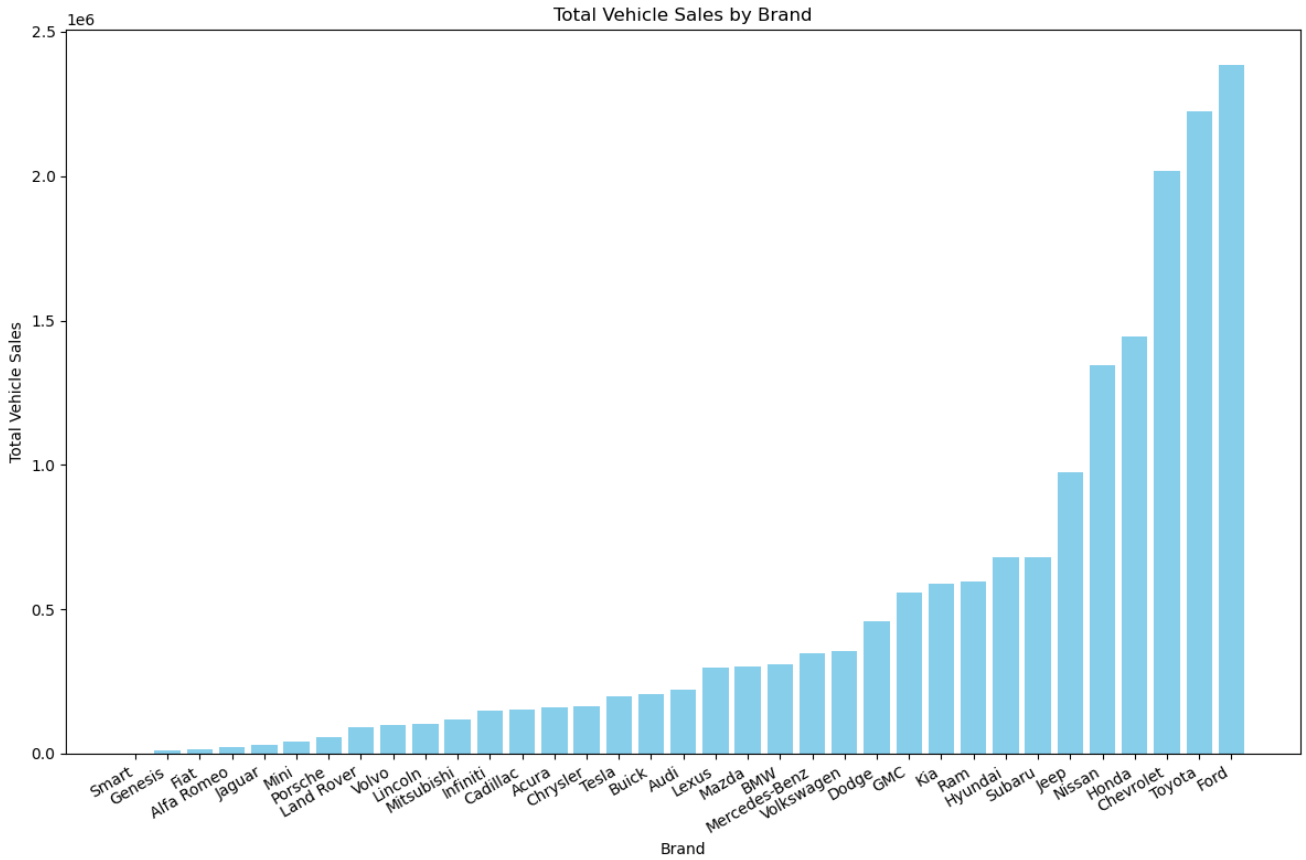
Here are some of the new car sales trends in the US:

- **The increasing popularity of electric vehicles:** Electric vehicles are becoming increasingly popular in the US, as the government offers incentives to encourage people to buy them. In 2022, electric vehicles accounted for 5.0% of new car registrations in the US. This is up from 2.2% in 2021.
- **The growing popularity of SUVs:** SUVs are also becoming increasingly popular in the US, as they are seen as more practical and comfortable than sedans. In 2022, SUVs accounted for 46.6% of new car registrations in the US. This is up from 42.6% in 2021.
- **The growing popularity of online car buying:** More and more people are buying cars online in the US. In 2022, 15.0% of new car purchases were made online. This is up from 12.0% in 2021. The convenience and flexibility of online car buying are driving its popularity.
- **The increasing use of technology in cars:** Cars are becoming increasingly technologically advanced, with features such as autonomous driving, advanced driver assistance systems, and infotainment systems becoming more common.
- **The growing demand for sustainable cars:** Consumers are becoming more aware of the environmental impact of cars, and are demanding more sustainable options. This is driving the development of electric vehicles and other low-emissions vehicle

RECOMMENDATION

- The rise of mobility as a service (MaaS): MaaS is a concept where people can access transportation services on demand, rather than owning their own car. This could lead to a decrease in the number of cars on the road and a more sustainable transportation system.
- The development of self-driving cars: Self-driving cars have the potential to revolutionize transportation, making it safer, more efficient, and more accessible. However, there are still many challenges that need to be overcome before self-driving cars become a reality.

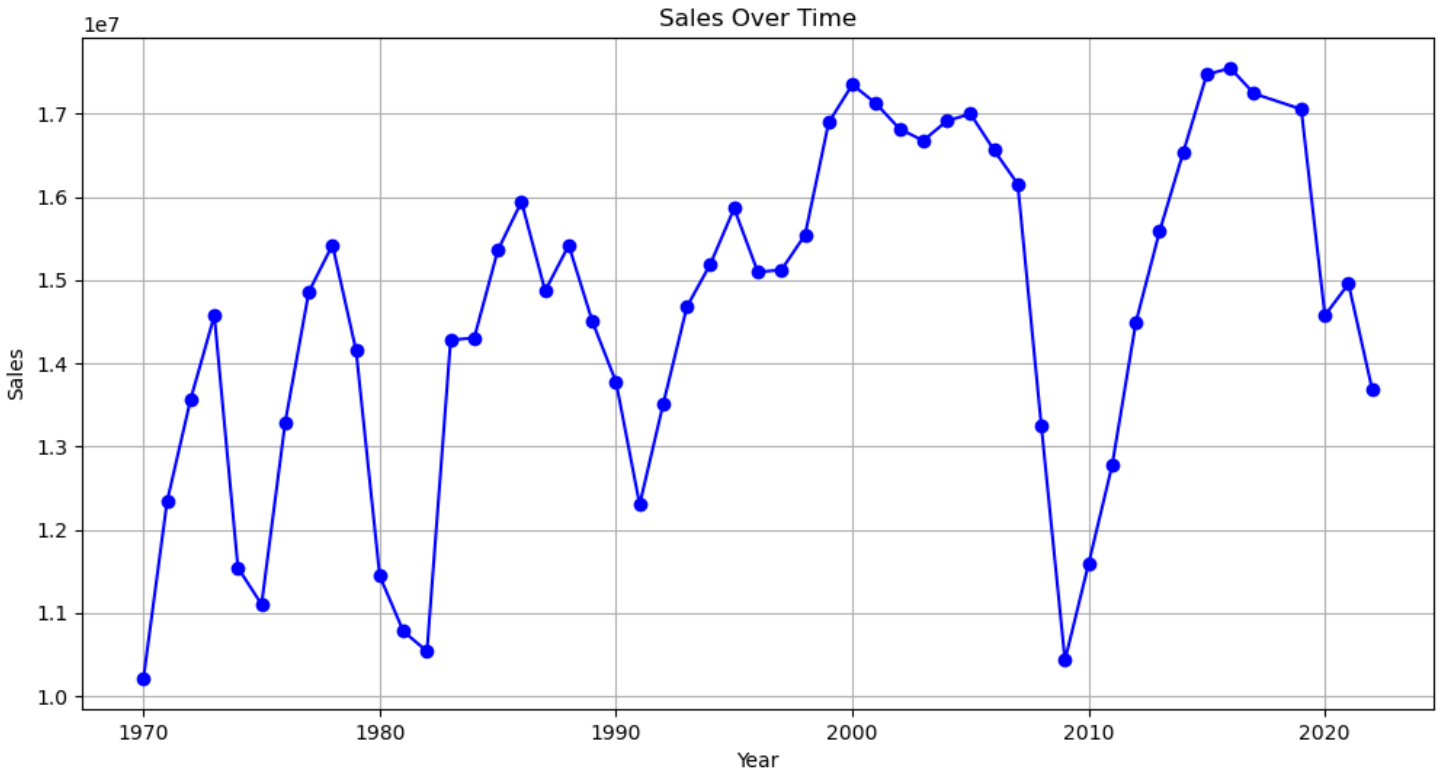
- The growth of the electric vehicle market: The electric vehicle market is expected to grow rapidly in the coming years, as governments around the world introduce policies to encourage the adoption of these vehicles.
- The increasing importance of connectivity: Cars are becoming increasingly connected, with features such as internet access, Wi-Fi, and telematics becoming more common. This connectivity is opening up new possibilities for car manufacturers and consumers alike.



These brands are popular in the USA for a variety of reasons, including their reliability, fuel efficiency, and affordability. They also offer a wide range of models to choose from, which caters to the needs of different consumers.

1. Toyota
2. Ford
3. Chevrolet
4. Honda
5. Nissan
6. Volkswagen
7. Kia
8. GMC
9. Ram

10.Hyundai


Sales Over Time
1e7
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
Sales
1970
1980
1990
2000
2010
2020
Year