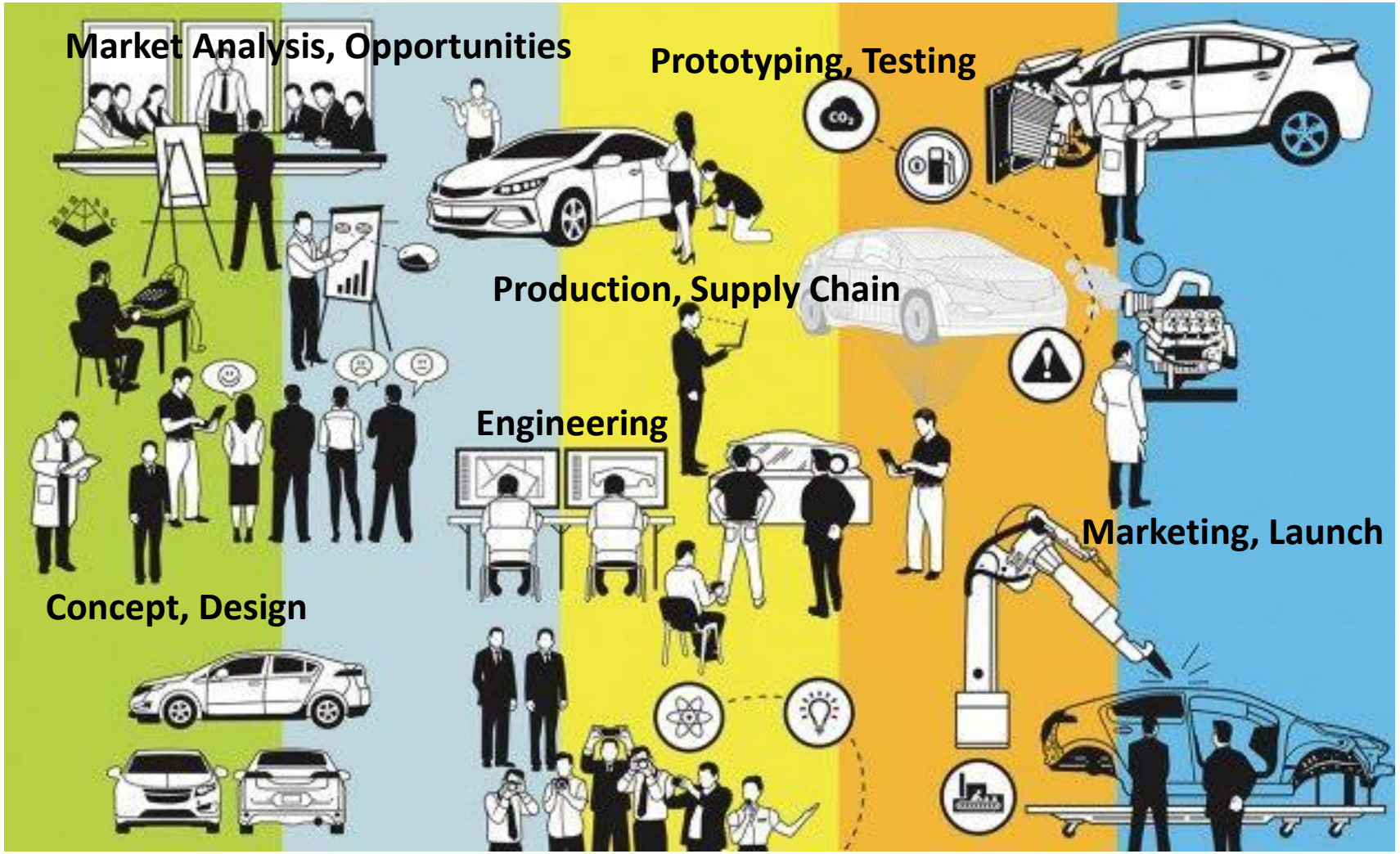
Bringing a New Car to Market 1

Introduction

Jim Rauf

Bringing a New Car to Market Cars are Complicated 30,000 to 50,000 Parts

Bringing a New Car to Market Complex and Multi-Stage Process



Bringing a New Car to Market

Complex and Multi-Stage Process

Introduction

A little history

Automobile industry

Product Planning-Market Analysis & Identification of Opportunities

Understand market trends, consumer preferences, emerging technologies and government regulations

Analyze competitors - identify gaps in the market for new car

Concept and Design

Translate market insights into conceptual ideas for a new car

Collaborate with design teams and engineers to develop innovative and appealing vehicle concepts

Engineering and Development

Design the vehicle - safety, performance, and efficiency

Extensive testing - prototype testing, crash testing, emissions testing and performance testing

Address any design or engineering challenges that arise during the development phase

Regulatory Compliance

Demonstrate safety , emissions, mileage compliance

Certify models' configurations

Manufacturing Planning:

Manufacturing plan - consider production volume, assembly processes, and quality control

Identify component suppliers establish partnerships

Set up manufacturing facilities and production lines

Production and Quality Control:

Begin production - ensure adherence to quality standards and specifications

Implement quality control measures - identify and address manufacturing defects

Conduct pre-launch inspections and testing - guarantee the reliability and safety of the vehicles

Launch and Distribution

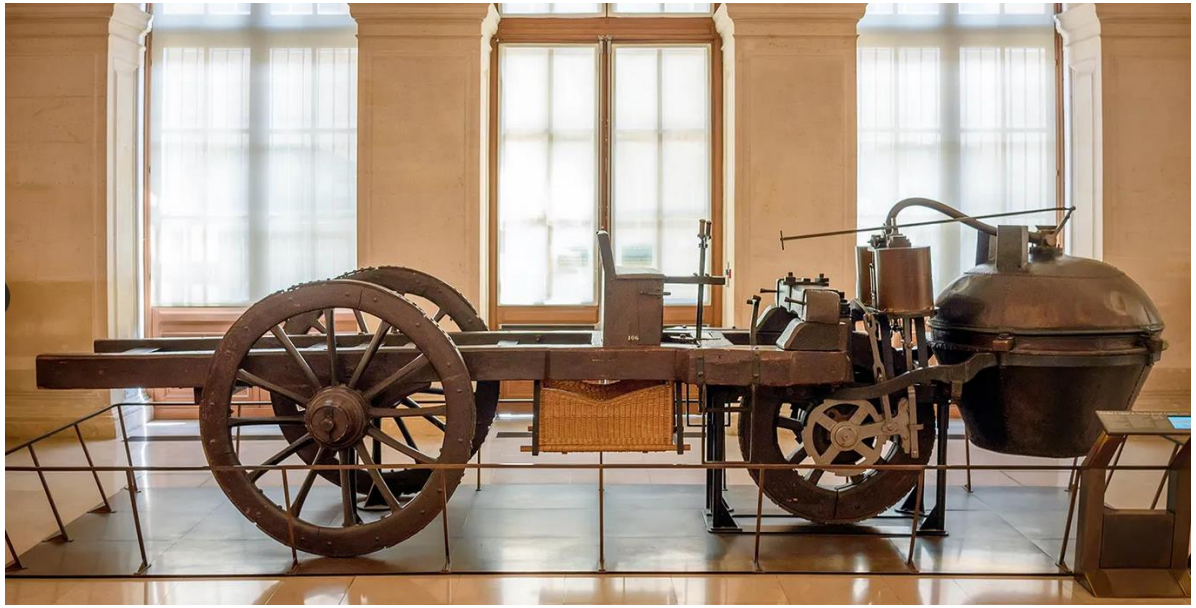
Marketing campaigns to generate excitement and drive sales

Coordinate with dealerships and distributors to ensure a smooth rollout

Monitor customer feedback - address post-launch issues

Bringing a New Car to Market

Some History



In 1769 Nicolas-Joseph Cugnot built a three-wheeled steam-driven vehicle

Replica of the Benz Patent-Motorwagen built in 1885

Bringing a New Car to Market Early Efforts

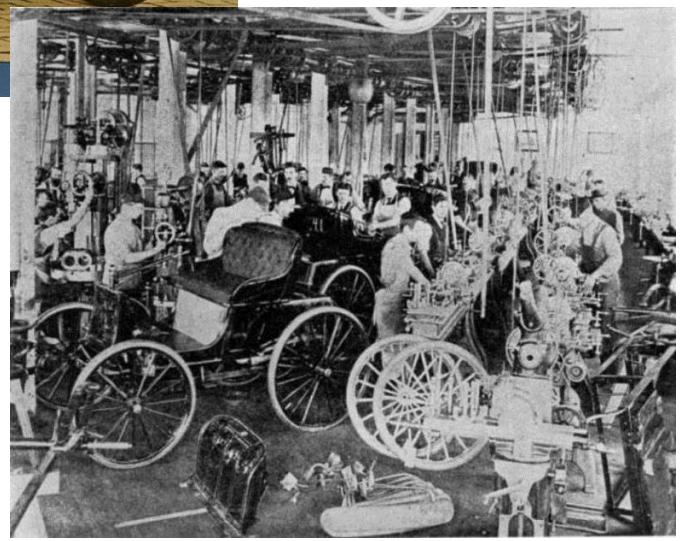
- Initially automobiles were motorized carriages—”Horseless Carriages”
- Built one at a time by hand
- Often by tinkerers
- Customers were well to do
- Styling was not a consideration
- Safety was not a consideration
- Reliability was a struggle
- Production “Volumes” were low

1898 Stover

Bringing a New Car to Market

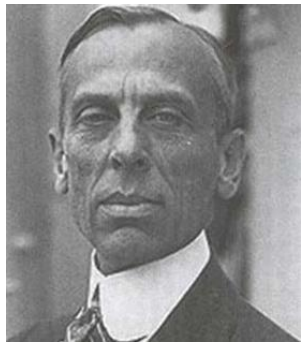
- Automobiles were “Manufactured” by many companies
- Several countries in Europe
- United States
  - **Duryea**
  - First U.S. “production” automobile
- Varied power sources
  - Internal Combustion Engines (ICE)
  - Steam Engines
  - Battery Electric Motors
  - Hybrids-ICE and Battery electric motors

Early Efforts



Bringing a New Car to Market

- Initially cars were sold based on “performance”
  - They worked
  - Reliability
  - Durability
  - Price
  - Mechanical features
- “Style” was not a consideration
- As cars became more reliable and durable brand differentiation became a factor
- Led by convenience features and style



Automobiles Have Changed

- **GM** introduced model changes to boost sales
- 1924, the U.S. automobile market began reaching saturation
- **Alfred P. Sloan Jr**. of **GM** suggested annual model-year ***design changes*** to convince car owners to buy new replacements each year
- **Sloan** often used the term **dynamic obsolescence**
- Design changes were usually *styling or appearance changes*
- **Harley Earl** of **GM’s** *Art and Color Section* provided the “refreshing” of their cars styling

Bringing a New Car to Market

- The total value of the US car and automobile manufacturing market is **$104.1 billion** in 2023
- **923,000 Americans** work in motor vehicles and parts manufacturing
- **1,251,600** are employed by automobile dealers
- The revenue of United States motor vehicle and parts dealers was **$1.53 trillion** as of 2021
- The auto industry accounts for ~ **3% of America's GDP**
- The US automobile industry sold an estimated **16.03 million cars and light truck vehicles** in 2023

Automobile Industry

- There were 36.2 million used light vehicles sold in the United States in 2022
- As of 2020,~ 91.5% of households report having access to at least one vehicle
- There were 290.8 million registered vehicles in the United States in 2022.
- There are approximately 1.446 billion vehicles registered in the world.
- Americans spend ~ **$698 billion annually** on the combination of automobile loans and insurance
- Over 66.7 million vehicles were sold globally in 2023

Bringing a New Car to Market

- Thousands of people are involved in the design and development of a new vehicle
- There is endless array of things that have to be done
- It's an incredibly complex process that occupies thousands of people for several years
- If the average total compensation for each engineer, designer, accountant, marketing person and executive is approximately $100,000 per year
- A team might be 1,000 people
- With four years to develop a car, that's *at least* $400,000,000

Automobile Industry

- Those employees need computers, office space, engineering labs and countless other resources required to design and engineer such a complex machine
- Meanwhile, another group of engineers and autoworkers are preparing factories for the commencement of production
    - Modify the assembly plants
    - New tooling to stamp out parts
    - Re-tooling a factory can easily eclipse the human cost of developing a new car
- And if they require a whole new factory is required, additional billion dollars is needed

Bringing a New Car to Market

- **Volkswagen AG (VWAGY)**
- Revenue: $284.34 billion
- Net Income : $19.76 billion
- Market Cap: $81.0 billion

- **Toyota Motor Corp. (TM)**
- Revenue: $270.58 billion
- Net Income : $20.39 billion
- Market Cap: $189.4 billion

- **Stellantis (STLA)**
- Revenue : $181.58 billion
- Net Income : $16.97 billion
- Market Cap: $45.2 billion

Manufacturers are Large Companies

- **Mercedes Benz AG (MBGYY)**
- Revenue : $156.23 billion
- Net Income : $25.64 billion
- Market Cap: $70.2 billion

- **Ford Motor Co. (F)**
- Revenue : $151.74 billion
- Net Income : $9.01 billion
- Market Cap: $46.1 billion

- **General Motors (GM)**
- Revenue : $147.21 billion
- Net Income : $9.68 billion
- Market Cap: $50.0 billion

Honda Motor Co. Ltd. (HMC)
•Revenue: $126.17 billion
•Net Income : $5.29 billion
•Market Cap: $39.8

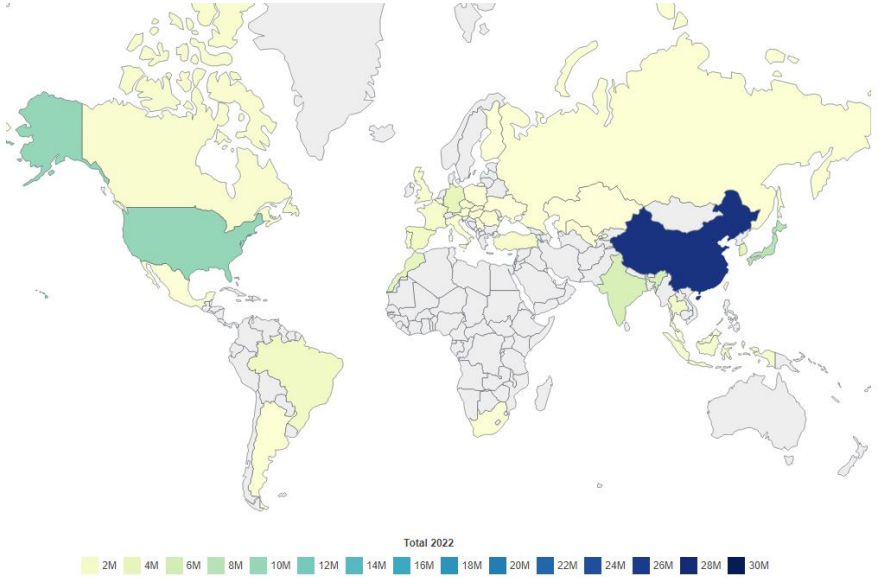
Tesla Motors (TSLA)
•Revenue : $74.86 billion
•Net Income: $11.19 billion
•Market Cap: $547 billion

Nissan Motors (NSANY)
•Revenue : $73.73 billion
•Net Income : $0.9 billion
•Market Cap: $12.7 billion

BYD Co. Ltd. (BYDDY)
•Revenue : $51.37 billion
•Net Income : $1.48 billion
•Market Cap: $74.7 billion

Bringing a New Car to Market

- In 2024, the number of cars in the world is about **1.475 billion**
- One car for every 5.5 humans, or 182 per 1000 humans
- Automobiles are now designed and manufactured in numerous countries around the world



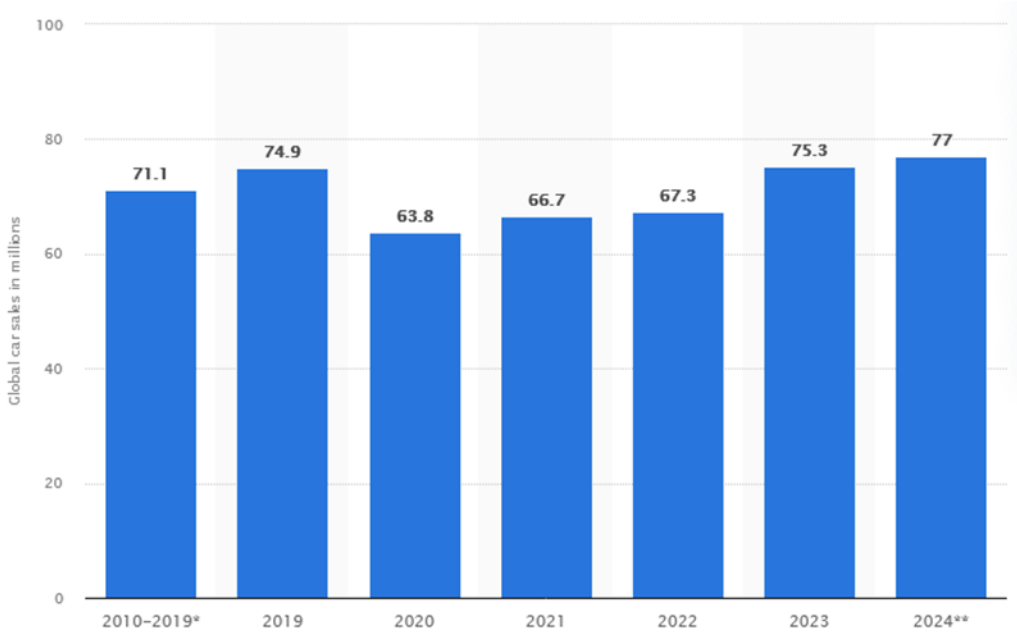
Market is Worldwide

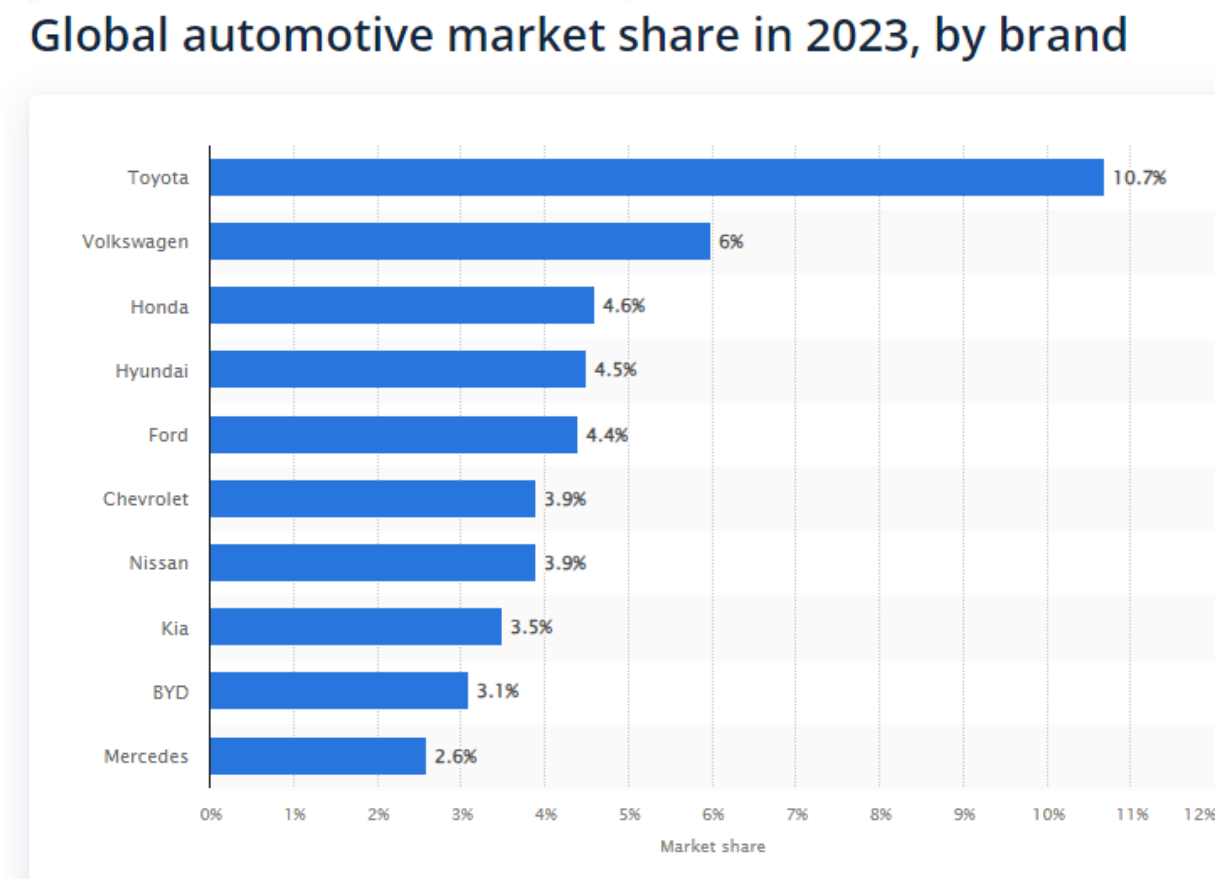
Region	2023
Europe (EU+UK+EFTA)	12,847,500
USA*	15,457,400
Mexico*	1,360,100
Japan	3,992,700
Brazil*	2,180,200
India	4,101,700
China	25,798,000
*Light vehicles	

Bringing a New Car to Market

Market is Worldwide

Global Sales



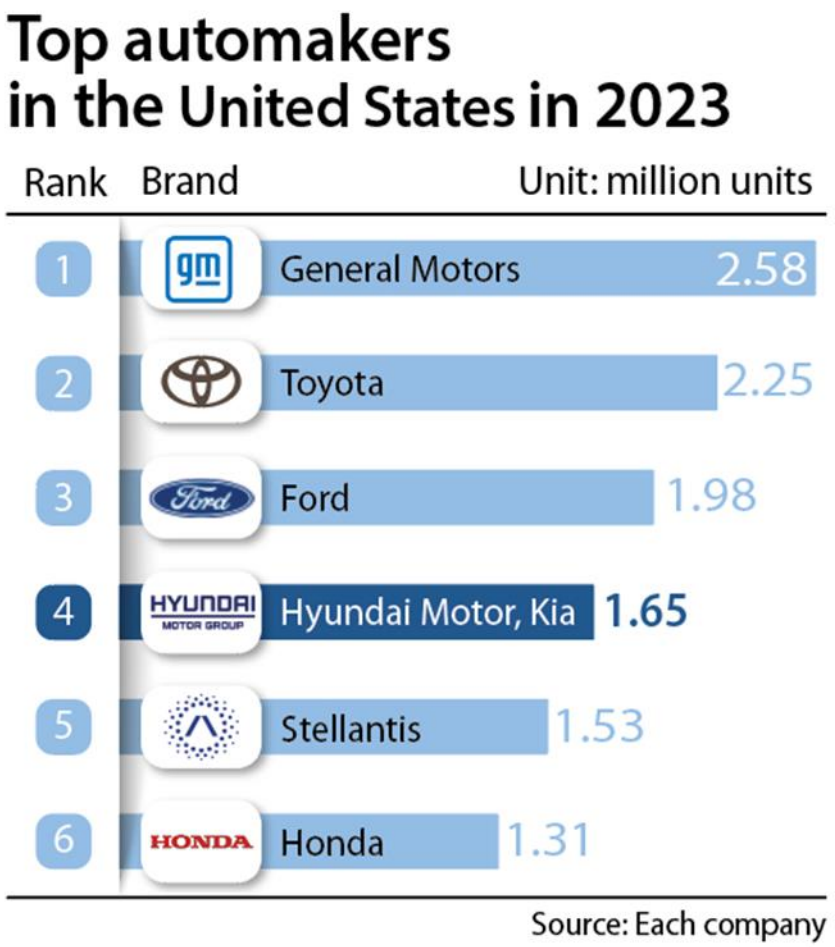


Bringing a New Car to Market

2023 Manufacturer Global Car Sales

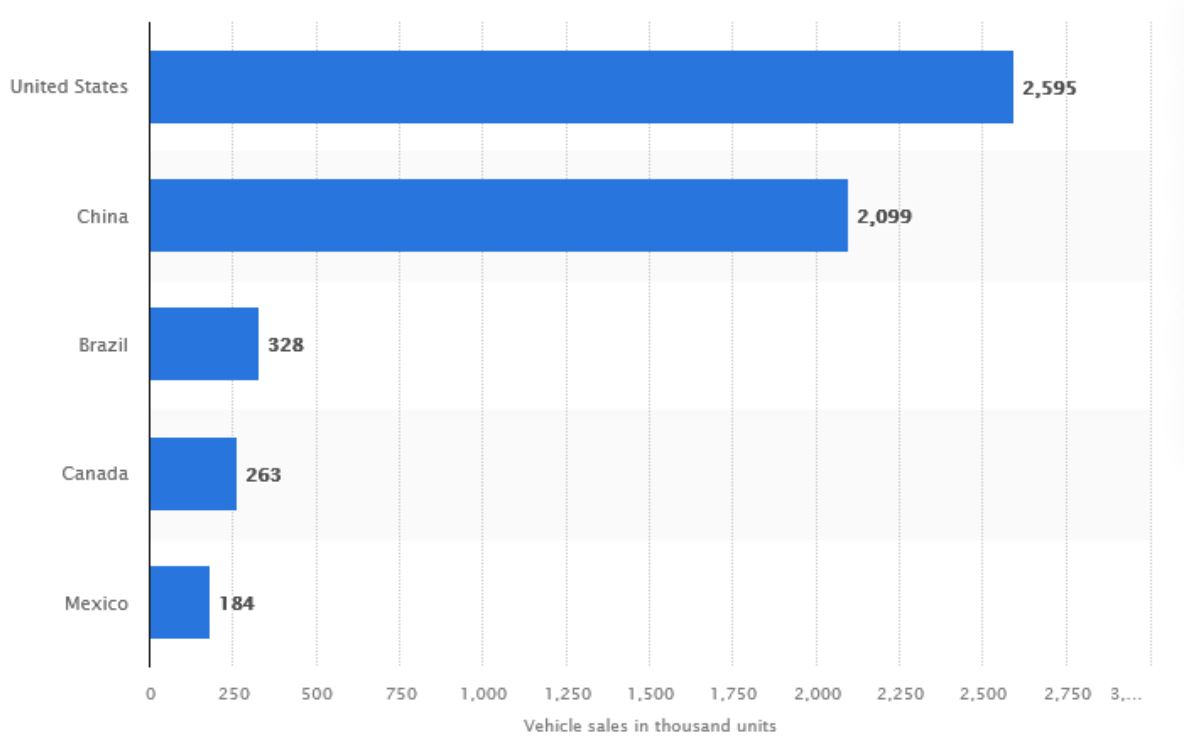
Toyota	10,307,395
VW	9,566,961
Hyundai	7,302,451
Stellantis	6,392,600
GM	6,188,476
Ford	4,413,545
Honda	4,188,039
Nissan	3,374,271
BMW	2,555,341
Changan	2,553,052
Mercedes Benz	2,493,177
Renault	2,235,345
Maruti Suzuki	2,066,219
Tesla	1,808,581
Geely	1,686,516

Market is Worldwide



Bringing a New Car to Market

GM Sales by Country



Market is Worldwide

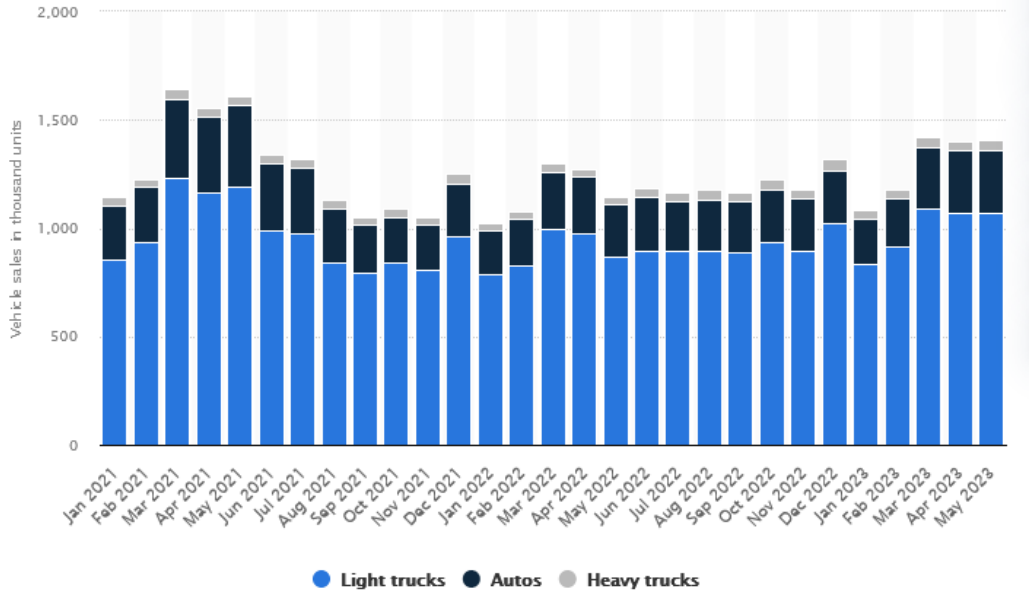
Toyota Sales by Country

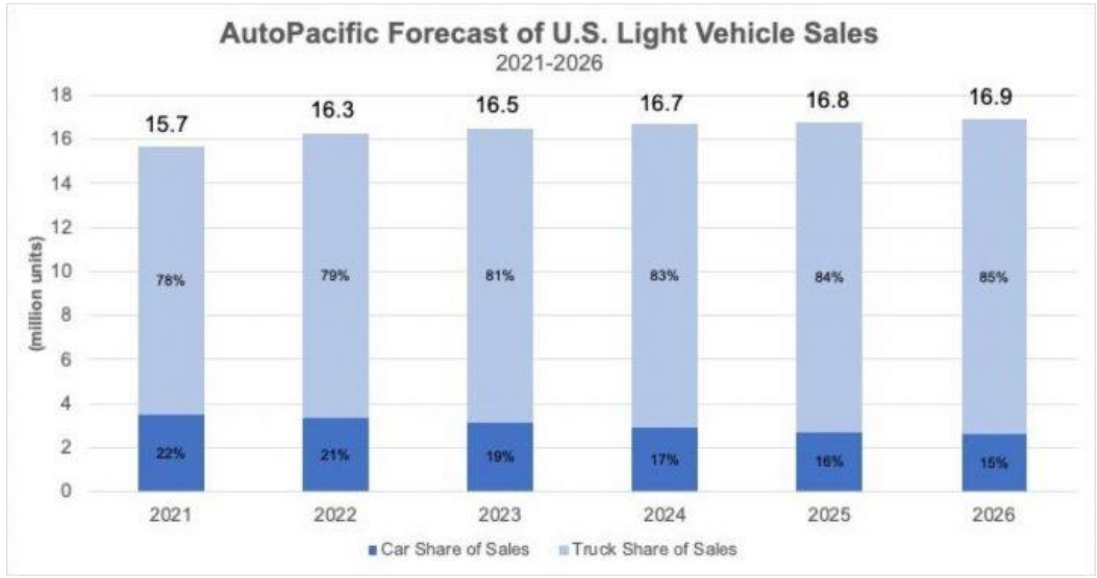
Region	Country	2023
Worldwide sales		10,307,395
Outside Japan		8,634,425
North America		2,617,033
	U.S.	2,248,477
	Canada	227,460
	Mexico	106,794
Latin America		478,796
	Brazil	194,412
	Argentina	87,439
Europe		1,126,107
	U.K.	147,010
	Russia	435
	France	133,267
	Italy	115,904
	Germany	90,101
	Spain	97,545
Asia		3,318,504
	China	1,907,587
	India	222,069
Japan		1,672,970
Oceania		277,939
	Australia	230,439
Middle East		568,257
Africa		247,789
	South Africa	139,283

Bringing a New Car to Market

Vehicle Mix

SUV , CUV and Light Trucks Dominate U.S. Market





2023 U.S. Light Vehicle Sales		
Passenger Cars	3,227,425	20.70%
Light Trucks and SUVs	12,380,961	79.30%
Total	15,608,386	100.00%

Bringing a New Car to Market Market is Worldwide

In 2024, the number of cars in the world is about **1.475 billion**

Bringing a New Car to Market

Market is Worldwide

2022 Global Best-Selling Brands

	Group	Major Brands	% of 2022 Market Share
1.	Toyota Group	TOYOTA, LEXUS	13.0%
2.	Volkswagen Group	VW, Audi, PORSCHE	10.2%
3.	Hyundai–Kia	HYUNDAI, KIA, GENESIS	8.7%
4.	Renault Nissan Alliance	NISSAN, RENAULT, MITSUBISHI	8.2%
5.	Stellantis	PEUGEOT, DODGE, Jeep	8.2%

Top Five have ~50% of Market

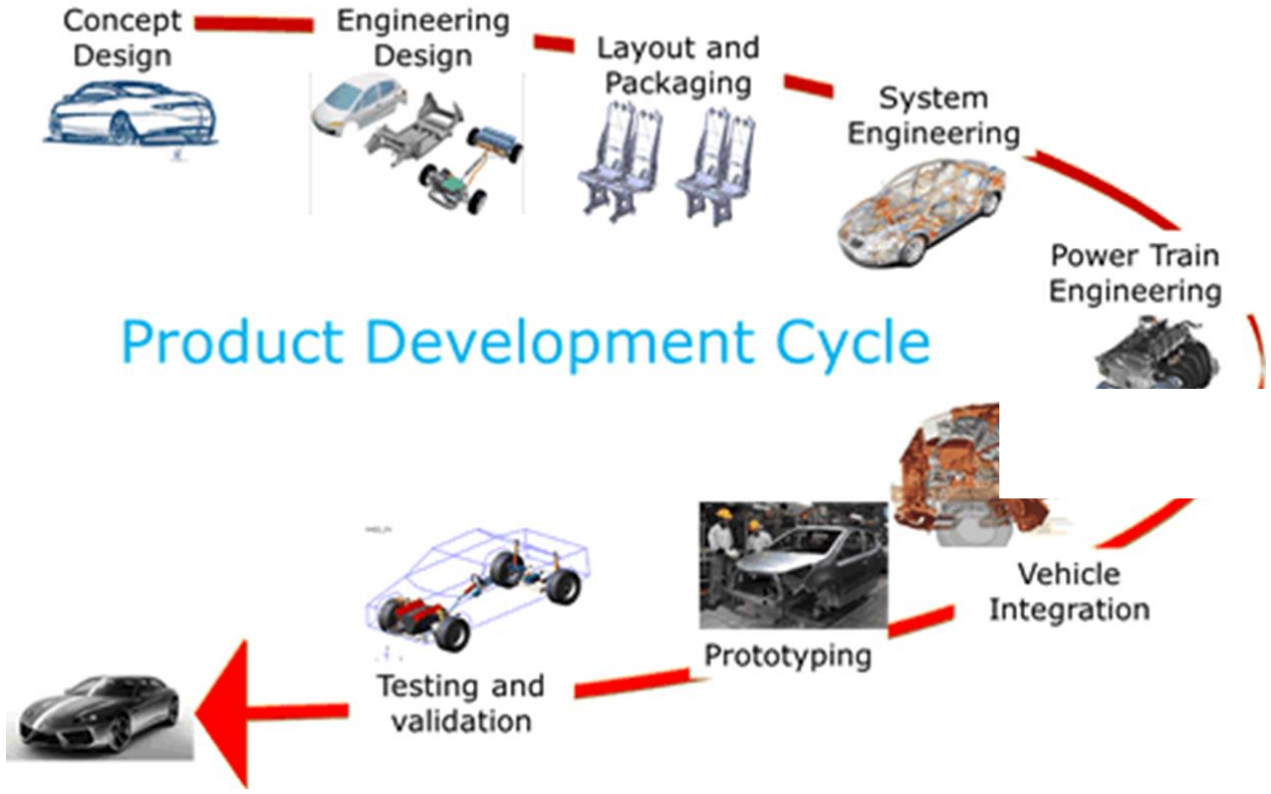
Bringing a New Car to Market

Many Brand Names

Ten Auto Manufacturers

65 Auto Brands

Bringing a New Car to Market



Product Planning to Delivery to Customer

- Bringing a new car to market involves a complex and multi-faceted process
- It requires careful planning, coordination, and execution
- Automobile manufacturers world-wide follow the same general sequence of steps to bring a new car to market
- Specific steps may vary slightly depending on the company and the nature of the car
- Manufacturers may have different names for their organizations

Bringing a New Car to Market

- **Product Planning**
- Long-term product planning
- Market analysis
- Competitive intelligence
- New product launches

- **Marketing and Sales**:
- Market research
- Advertising and promotions
- Brand management
- Sales strategy development
- Dealer network management

- **Research and Development**:
- Design engineering
- Product development
- Prototype testing
- Innovation and technology research

Some Functions Within Car Companies

- **Supply Chain Management**:
- Procurement
- Inventory management
- Logistics and distribution
- Supplier relationship management

- **Manufacturing**:
- Production planning
- Assembly line operations
- Quality control
- Supply chain management

- **Regulatory Affairs and Compliance**:
- Compliance with safety regulations
- Emissions standards compliance
- Regulatory reporting and documentation

- **After-sales Service & Support**
- Customer service
- Warranty management
- Vehicle maintenance and repair
- Technical support

- **Finance and Accounting**:
- Financial planning and analysis
- Budgeting and forecasting
- Accounts payable and receivable
- Financial reporting

- **Information Technology (IT)**:
- Systems infrastructure
- Software development and support
- Data management and analytics
- Cybersecurity

- **Human Resources (HR)**:
- Recruitment and staffing
- Training and development
- Employee relations
- Compensation and benefits

- **Legal and Corporate Affairs**:
- Contract negotiation and management
- Intellectual property protection
- Corporate governance
- Legal compliance

- **Corporate Communications**:
- Public relations
- Internal communications
- Crisis management
- Stakeholder relations

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