Boeing’s Most Ordered Airplanes 1955-2022

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**Abstract**

The Boeing Company is one of the world’s largest and most renowned aircraft manufacturers, holding the title of the biggest exporter in the United States of America. This project provides an in-depth analysis of Boeing's airplane orders and deliveries, utilizing publicly available data sourced from Kaggle.com, an online repository of open datasets. The primary goal of this project is to gain valuable insights into Boeing's aircraft production and distribution patterns by identifying the most ordered commercial airplane models, the key customers responsible for these orders, and the years with the highest volume of orders and deliveries. The analysis aims to understand the underlying trends and factors that may have influenced these significant periods in Boeing's history.

A central feature of the project is the development of an interactive dashboard that enables users to select specific airplane models and years. This dashboard will present a comprehensive view of all airlines that placed orders for the selected aircraft within the chosen year, including the quantities of airplanes ordered and delivered. This tool will serve as a useful resource for stakeholders looking to understand Boeing’s market performance and customer engagement over time.

Throughout this project, various data processing and analytical methods are employed, including data collection, cleaning, and transformation, to ensure the dataset is robust and accurate. Advanced data visualization techniques are applied to highlight key trends and patterns. The project utilizes a range of tools and technologies such as Microsoft Excel, Microsoft Access, Power BI, and SQL to facilitate the analysis and presentation of the findings. The document details the step-by-step process of data handling, insight generation, and the creation of interactive visualizations, providing screenshots and references to all the tools and sources used in this comprehensive project.

**Company Background**

The Boeing Company is an American multinational corporation that designs, manufacturers, and sells airplanes, rotorcraft, rockets, satellites and missiles worldwide. The Boeing Company is one of the largest global aerospace manufacturers and the fourth largest defense contractor in the world based on 2022 revenue. Boeing is also the largest exported in the United States of America by dollar value.

The Boeing Company was founded by William E. Boeing in Seattle, Washington, on July 15, 1916. The present corporation is the result of the merger of Boeing with McDonnell Douglas on August 1, 1997. The Boeing Company employes around 170,000 people around the world with its biggest facilities in Everett and Renton in Washington State and South Carolina. The Boeing Company is ranked 54th on the fortune 500 list in 2020. And the 121st on the fortune global 500 list. As of 2023, the Boeing Company’s corporate headquarters is in the crystal city neighborhood of Arlington County, Virginia.

The Company’s three divisions are Commercial Airplanes, Defense, Space & Security, and Global Services. The Boeing Commercial Airplanes (BCA) builds commercial aircrafts including the 737,767,777, and 787 along with freighter and business jet variants of most. The Boeing Defense, Space & Security (BDS) builds military airplanes, rotorcraft, and missiles, as well as space systems for both commercial and military customers, including satellites, spacecraft and rockets. Finally, the Boeing Global Services (BGS) provides aftermarket support, such as maintenance and upgrades, to customers who purchase equipment from BCA, BDS, or other manufacturers.

The Boeing 737 Aircraft is a narrow-body airliner produced at the Renton factory in Washington state, the aircraft was developed to supplement the Boeing 727 on short and thin routes. The Boeing 737 have multiple variants including 737-100/900 and the fourth generation of the 737 MAX series the 737-8, -9, and -10. Similarly, the 787 aircraft and the 777 aircrafts. The Boeing 777 have another variant such as 777X also known as 777 MAX. Some of Boeing old airplanes models that are no longer manufactured or in service are the 707, 747, and 757.

**Project Goal**

This project will serve as a deep dive into the public data to show the most sold aircraft for the Boeing Company and drive valuable insights based on the data to drive future Business decisions. This project will analyze data to drive and recommend decisions and solutions for the company. This project will examine the data to show the most sold aircraft and what airlines order the most Boeing aircrafts as well as show the distribution of those airliners around the world. By the end of this project, you will be able to determine the most ordered aircraft and the most ordering airlines of the Boeing Commercial airplanes as well as the years that the Boeing company had the most orders and deliveries in the company history. This project will also provide some insights and recommendations for Boeings future next steps based on the analyzed data. In the folder for this project, you will find Excel file that contains the clean and organized data along with a PowerBI dashboard that are developed specifically for this project. Note that the data for this project does not include current data. The data for this project is from 1955-2022.

**The Data**

The data used in this project was sourced from Kaggle.com, a popular online platform that hosts a wide range of publicly available datasets. Specifically, this dataset contains approximately 9,100 rows of data, each representing an individual aircraft order made by various airlines. The dataset is rich in detailed information, providing insights into key aspects of Boeing’s order and delivery process.

Each row in the dataset includes the following key attributes:

**Aircraft Type:** This column identifies the specific model of the aircraft ordered by the airline, such as the Boeing 737, 747, 787, etc. This allows for an analysis of the most popular models and how their orders have changed over time.

**Year of Order:** This indicates the year in which the airline placed the order for the aircraft. It is crucial for understanding trends over time and identifying any cyclical patterns or major shifts in demand for certain aircraft models.

**Year of Delivery:** This shows the year when the aircraft was delivered to the airline. The discrepancy between the year of order and year of delivery can help reveal production delays, shifts in delivery schedules, or changes in Boeing’s manufacturing capacity.

**Quantities Ordered:** This column specifies how many units of each aircraft were ordered by the airline. It provides insight into the scale of orders, highlighting whether certain airlines tend to place large bulk orders or smaller individual orders.

**Airlines Ordering the Aircraft**: This includes the names of the airlines that placed the orders for the aircraft. It allows for a deeper understanding of which airline companies have the highest demand for Boeing’s products and which geographical regions are driving Boeing's sales.

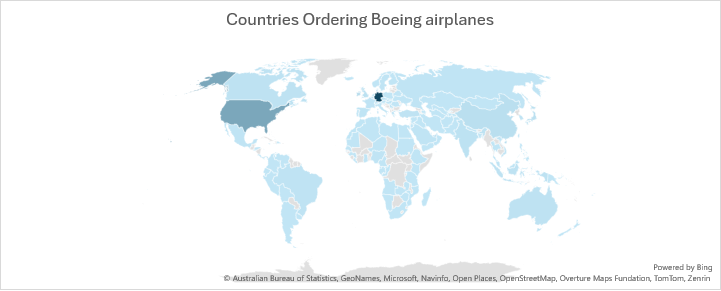
**Country of the Airline**: This column identifies the country in which the airline is based. It is valuable for understanding Boeing's international market presence and determining which countries are major consumers of Boeing aircraft.

The data spans multiple years, covering a variety of global airlines and aircraft models. This comprehensive data set enables the exploration of trends, patterns, and anomalies in the aircraft ordering and delivery process. Through this dataset, it becomes possible to analyze key factors influencing Boeing's market, identify peak years for orders and deliveries, and understand the geographical spread of Boeing’s customers.

Some of the airplane models included in this set of data are the DC-10 and the 707, 737 and all its variants and 767,777, and 787 with all its variants and more. The data sets been manipulated to include the years from 1955 to 2022 only and orders that has been delivered as well.

**The Analysis**

The data collected shows the countries where airlines order airplanes across the span of the years between 1955 and 2022 and how many airplanes they ordered of each kind and if the airplanes were delivered by Boeing. The first step in the analysis is to identify the countries that order airplanes most and identify which kind of airplanes is ordered the most. As well as which kind is delivered the most to customers. Using the data in Excel, it is clear that Boeing airplanes are ordered and serves million of travelers across the world. According to the data Germany is the most country that orders Boeing airplanes with **34,352** airplanes ordered from a total of **67,165** airplanes ordered around the world in the time from 1955 to 2022, followed by the United States with **13,629** airplanes Shown in the map below is all the countries that have ordered airplanes in that period.



From the map above we can start to see where most of the Boeing airplane orders come from geographically. While Germany being a central hub for the world aviation it makes sense that the country orders the most airplanes followed by one of the biggest countries in the world which is the United States of America. From here we can start looking at the types of airplanes that are most ordered in the span of the 67 years. Across this time period the data shows that the most ordered airplane is the Boeing 737 MAX with 6,288 airplanes ordered and 768 delivered as of 2022 followed by the 737-800 with 5,441 ordered airplanes and 4989 airplanes delivered. This shows that Boeing’s best seller airplane and by far the airplane with the most orders is the 737 MAX.

These findings make sense that the Boeing 737 MAX the fourth generation narrow-body airliner is Boeing’s best seller airplanes as Boeings top customers are all domestic airliners that fly short distances such as United Airlines, American Airliner and Southwest airlines. The data shows that these airliners are the highest ordering customers. United airlines have the most orders with Boeing in the same 67 years period with 2,281 airplanes ordered followed by American airliners with 1,450 airplanes ordered.

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| **Airliner** | **Sum of Order Total** |
| United Airlines | 2281 |
| American Airlines | 1450 |
| Southwest Airlines | 1271 |
| Delta Air Lines | 1044 |
| International Lease Finance Co | 839 |

**Conclusion**

According to the Data and the analysis done, we can draw the conclusion that the Boeing 737 MAX is the best seller airplane for the Boeing company with the most orders across a 67 years’ time period. Given that the 737 airplane was originally made to replace the original 737 airplane and the 737 MAX was introduced by Boeing in 2014 this makes it by far one of the most sold airplanes for the Boeing company. To conclude, most Boeing customers rely on Boeing in making narrow-body jets. One of the recommendations that this paper would bring forward is for Boeing to find ways to increase the production of the 737 MAX and possibly introduce a new aircraft with similar configurations and specifications to the market which will help increase revenue and fill the gap between the supply and demand of the 737 MAX.

**Sources**

https://www.kaggle.com/datasets/nurielreuven/boeing-historical-airplane-orders-deliveries?resource=download