Worldwide Sales Records for the Top Three Bestselling BMW Models from 2014 to 2024

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Abstract

For the present study, researchers sought to explore Bayerische Motoren Werke Aktiengesellschaft (BMW) vehicle sales data to better understand trends and statistics within BMW sales records between 2014 and 2024. This dataset was selected for its public availability, its relative straightforwardness (compared with data from some other fields), and its tidiness. Data were analyzed and visualized using multiple packages embedded in R software (e.g., tidyverse, ggplot2, readr, etc.). Study results are based on the top 3 most popular models. Results (1) summarize the most popular BMW colors and models between 2014-2024, (2) visualize relations between BMW price and sales volume by fuel type, and (3) visualize relations between price and BMW model by region (among the top three best-selling models from 2014-2024). Study limitations include (1) the large size and wide breadth of the dataset (especially in contrast with the resources researchers had with which to analyze the data), (2) technical difficulties navigating GitHub software, and (3) technical difficulties navigating GitKraken software. Strengths of the study include (1) the cleanliness of the dataset, (2) effective interpersonal collaboration dynamics, and (3) reproducibility, given the public dataset and code. Possible future directions for related studies could include (1) answering similar questions using data from other vehicle brands ("makes") and (2) expanding the time range to include data earlier than 2014.

Introduction

Cars are an important part of how people get around. In the United States alone, there are 287,096,500 registered automobiles as of 2023 (*Alternative Fuels Data Center*, n.d.). Consumer car buying habits can vary by a variety of factors, including, but not limited to, color(Batra et al., 2015) , model (*Find Your New BMW Luxury Vehicle Online | BMW USA*, n.d.), price (Nerurkar et al., 2023), region (**igunza2017?**), and fuel type (**nerurkar2023a?**). In addition, car buying habits have been heavily affected by events in the last 10 years, including the

global pandemic and resulting challenges in supply chain management(Jansen & Sinha, 2024). In order to better understand the needs and desires of the modern consumer, it is vital that car manufacturers, like BMW, understand current data about car sales.

Research Questions

RQ1: What were the top three bestselling BMW models between 2014 and 2024?

RQ2: Which BMW car colors were the most popular each year between 2014 and 2024?

RQ3: How has the price and number of sales for the top three bestselling BMW models changed from 2014 to 2024 for each fuel type?

RQ4: How has the price of each of the top three bestselling BMW models changed between 2014 and 2024 by region?

Methods

The BMW Worldwide Sales Records 2010 to 2024 data set was accessed and downloaded from Kaggle (Kashif, n.d.). Relevant variables included BMW model, sales year, region (Africa, Asia, Europe, Middle East, North America, or South America), car color, fuel type (diesel, electric, hybird, or petrol), price, and the number of sales. R was used to examine the data (R Core Team, 2025). R packages including tidyverse, ggplot2, readr, knitr, tinytex, and here were used to assess and present the data in a table and three visualizations (Müller, 2025; Wickham, 2016; Wickham et al., 2019, 2024; Xie, 2021, 2025).

First, the data set was filtered to the past decade between 2014 and 2024. The top three bestselling BMW models were identified by calculating the sum of the number of sales for each model across the past decade. All subsequent analyses and visualizations were for the top three models from 2014 to 2024.

Popularity of BMW car color by year was assessed by grouping the data by year and color, then computing the average sales volume. Detailed information was outlined in a table, and presented in bar charts for each year.

In order to visualize the relationship between price and sales each year by fuel type, the data was grouped by year and fuel type, then the average price and sales volume were calculated. Trends were shown visually with a connected scatterplot.

Trends in top three bestselling BMW model price by region from 2014 to 2024 were visualized using separate line graphs showing the relationship between model price by year for each region, with each model represented in a different color.

Results

The average number of sales from 2014 to 2024 by BMW model revealed that the 7 Series was best-selling BMW model during this decade, followed by the 3 Series and i8. Subsequent results are reported among the 7 Series, 3 Series, and i8 models (RQ1).

Across all years from 2014 to 2024, silver, black, and grey were consistently the most popular BMW car colors, showing the highest average sales in nearly every year as shown in Figure 1 and detailed in Table 1. Silver remained the top-selling color throughout most of the decade, followed closely by grey, black, and blue. White also maintained strong sales and regularly appeared among the top three colors each year.

Table 1.

Table 1: Average BMW Sales by Color and Year

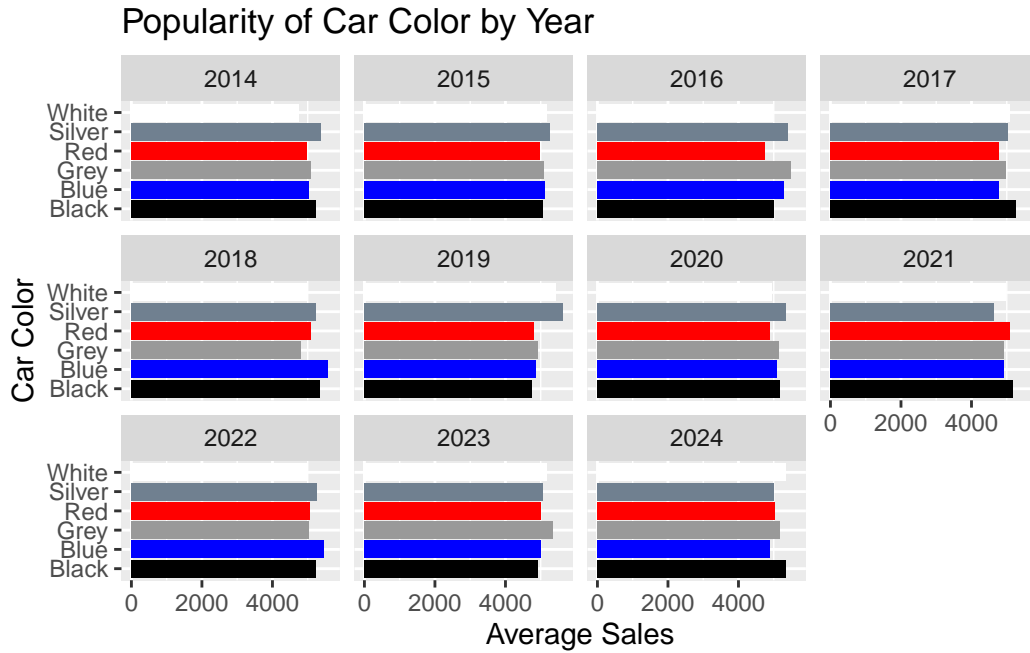| Year	Black	Blue	Grey	Red	Silver	White
2014	5246.193	5021.206	5099.291	4969.466	5361.287	4752.626
2015	5062.669	5110.622	5093.288	4987.896	5262.360	5166.954
2016	5000.129	5287.796	5473.719	4761.274	5412.843	4989.021
2017	5247.097	4786.644	4967.043	4774.551	5034.609	5101.685
2018	5342.121	5575.413	4820.367	5092.037	5240.073	4966.728
2019	4749.289	4863.615	4916.527	4793.864	5630.716	5424.828
2020	5174.411	5085.630	5135.804	4882.518	5352.735	4936.214
2021	5163.140	4924.646	4930.406	5102.480	4639.070	4971.324
2022	5218.601	5470.257	5026.483	5053.137	5254.768	4973.940
2023	4911.170	5015.682	5346.292	4993.044	5065.218	5172.119
2024	5348.875	4886.994	5170.550	5030.333	5011.713	5340.253

Figure 1.

Popularity of Car Color by Year

Figure 2 shows that BMW prices for all fuel types: Diesel, Petrol, Hybrid, and Electric, increased between 2014 and 2024 (RQ3). Despite these price increases, Electric and Hybrid vehicles maintained relatively stable sales, indicating consistent demand. Petrol vehicles displayed moderate changes in sales, whereas Diesel vehicles showed the largest fluctuations, with frequent declines in sales when prices rose. Overall, Electric and Hybrid models demonstrated steady demand, while Diesel and Petrol models were more sensitive to price changes.

Figure 2.

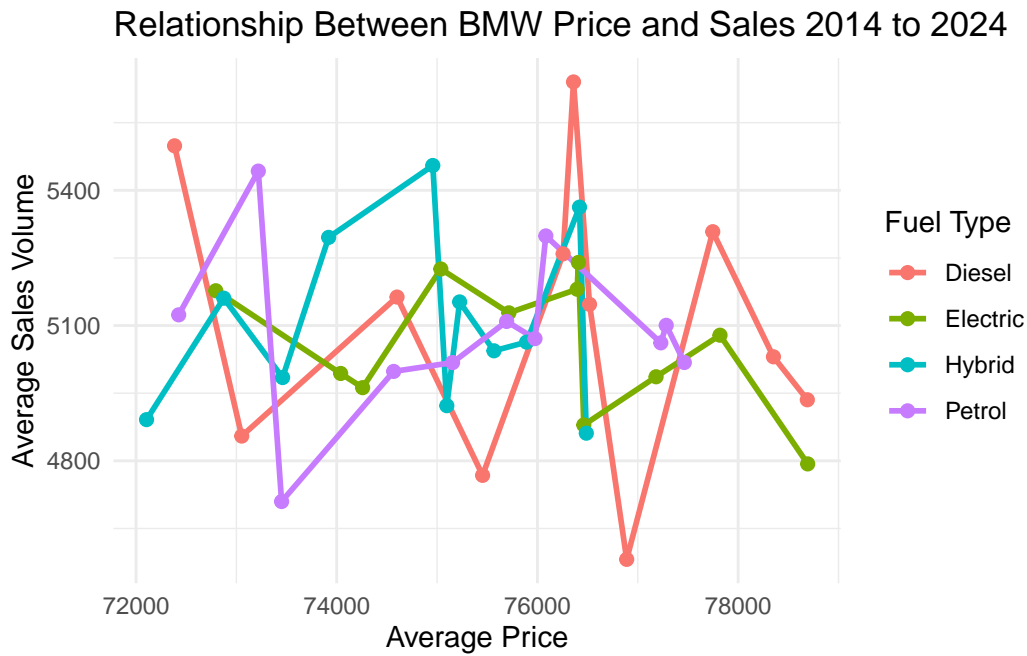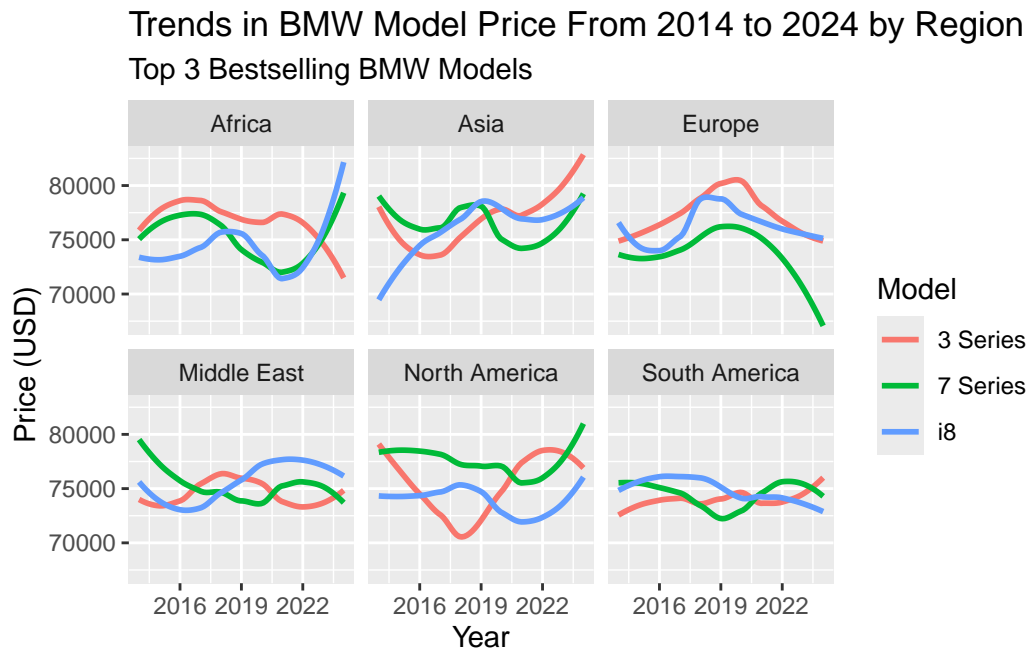Relationship Between BMW Price and Sales 2014 to 2024

Figure 3 shows that from 2014 to 2024, the prices of the BMW 3 Series, 7 Series, and i8 increased in all six regions: Africa, Asia, Europe, the Middle East, North America, and South America (RQ4). The 3 Series showed the most consistent growth, especially in Asia and North America. The 7 Series fluctuated but ended higher in every region, with more increases in Asia and North America. The i8 also rose in price, with important growth in Asia and North America and moderate growth elsewhere.

Figure 3.

Trends in BMW Model Price From 2014 to 2024 by Region
Top 3 Bestselling BMW Models

Discussion

For research question 1, the 3 series, 7 series, and i8 were found to be the best selling throughout the decade. This is unsurprising, as all three o(**bagwell-gray2020?**)f these cars are smaller vehicles that could be described as sedans. Sedans are thought to be popular for 6 primary reasons: "fuel economy, overall crash test rating, costs, features, performance, and dependability"(Saatchi et al., n.d.). Their enduring popularity is evidenced by the overall popularity of these three models. This also explains the results of research question 3, as consistent demand has led to a steady increase in price, particularly as car prices increased overall (Jansen & Sinha, 2024).

Next, addressing research question 2, the data showed that Silver, Grey, and Black were the most consistently popular colors, with Blue and Red also being most popular some years. This is inconsistent with the research about car color popularity, which concludes that the color white is by far the most popular paint color(Axalta Coating Systems Germany GmbH & Co. KG, 2022).

Finally, with regard to research question 4, changes in car sales varied widely. Demand for hybrid and electric cars stayed mostly consistent and demand for petrol and diesel cars varied

more widely. This is unexpected, as previous research has shown that prices of gas and diesel cars are less elastic than the price for hybrid and fully electric cars(Fridstrøm & Østli, 2021).

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