# Impact of Advanced Car Features on Price

## Data Analyst: Maxwell Asare Gyamfi

## Client/Sponsor:

Mercedes Benz AG Pricing and Marketing Division

## Purpose:

The goal of this project is to analyze how Adaptive Cruise Control (ACC), when bundled with other advanced features such as lane assist, navigation system, blind spot monitoring, heated seats, remote start, and sunroof, influences the pricing of used vehicles. Using “johndave74’s” hybrid dataset from GitHub, the project will identify pricing patterns and estimate the individual and combined impact of these features on vehicle value. Although location data is not available, the analysis will focus on feature-based valuation to support Mercedes-Benz AG’s marketing and pricing teams. Insights from this project will help inform strategies for bundling features, setting standard prices for essential technologies, and adjusting pricing for luxury add-ons. The final deliverable will include a cleaned dataset, an exploratory analysis report showing pricing patterns for vehicles with ACC and other bundled features, and a set of recommendations for Mercedes-Benz AG’s marketing and pricing teams. These recommendations will highlight which features most influence price and suggest bundling strategies to optimize value perception.

## Scope / Major Project Activities:

| Activity | Description |
| --- | --- |
| Data Cleaning | Drop irrelevant columns, remove duplicates, handle missing values, and standardize feature names to prepare the dataset for analysis |
| Exploratory Data Analysis (EDA) | Investigate pricing patterns and feature relationships, including visualizations and correlation analysis to detect multicollinearity. |
| Feature Selection | Identify key features based on Mercedes-Benz AG’s strategic priorities, distinguishing essential technologies (e.g., ACC, blind spot monitoring) from luxury add-ons (e.g., heated seats, sunroof). Build models using these domain-informed selections to estimate both individual and bundled pricing impact. Validate the selections using Recursive Feature Elimination to ensure statistical robustness and refine the feature set if needed |
| Deliver Final Report | Prepare and deliver reports including recommendations |

## This project does not include:

* Recommendations related to feature design or user experience
* Analysis of competitor pricing strategies
* Brand-specific analysis beyond general observations
* Implementing any solution or recommendation

## Deliverables:

| Deliverable | Description/ Details |
| --- | --- |
| Cleaned Dataset | A refined version of the original dataset |
| EDA Report | Summary of pricing patterns, feature distributions, and relationships between key technologies including visualizations |
| Feature Selection Summary | Documentation of selected features including rationale for inclusion and combined effect |
| Recommendations | A list of recommendations highlighting high-impact features, bundling strategies, and pricing implications |

## Schedule Overview / Major Milestones:

| Milestone | Expected Completion Date | Description/Details |
| --- | --- | --- |
| *Data Cleaning* | *Week 1 (9/10/25)* | *All data is cleaned and processed* |
| *EDA* | *9/22/25 (Week 2-3)* | *Visualize pricing patterns, analyze feature relationships, and detect multicollinearity* |
| *Feature Selection* | *10/1/25 (Week 4)* | *Select key features and validate to assess bundled impact* |
| *Final Report* | *10/7/25 (Week 5)* | *Final report detailing insights, findings, and recommendations* |

## \*Estimated date for completion:

October 7, 2025