The Right Car for the Job

Picking the right car is never easy, but with the help of a small bit of mathematics, we can at least make a much more informed and objective decision.

This dashboard summarizes attributes for the following 2019 vehicles in an attempt to determine which vehicle would make the best purchase: a) a **Honda CRV**, b) a **Toyota Rav 4**, c) a **Hyundai Santa Fe**, or d) a **Ford Escape**.

Each vehicle was evaluated according to both employer-selected attributes (**Safety Features, Price Point, and Maintenance Cost**) and my own personally selected ones (**Fuel Economy, Insurance Cost, and Resale Value**).

A decision matrix was then made for all raw values on each vehicle (see the supplemental materials for raw values, weightings, and sources), and a score was calculated for each.

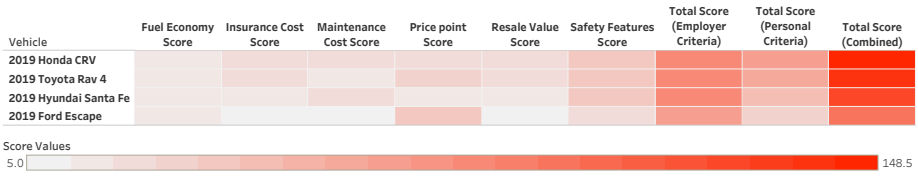
In doing so, the decision becomes much clearer. According to the list of scores below (higher values highlighted more strongly in red), we have selection preference: the 2019 Honda CRV!

Vehicle Scores Numeric Table

Vehicle	Fuel Economy Score	Insurance Cost Score	Maintenance Cost Score	Price point Score	Resale Value Score	Safety Features Score	Total Score (Employer Criteria)	Total Score (Personal Criteria)	Total Score (Combined)
2019 Honda CRV	17.5	25.0	20.0	21.0	25.0	40.0	81.0	67.5	148.5
2019 Toyota Rav 4	17.5	20.0	15.0	28.0	20.0	40.0	83.0	57.5	140.5
2019 Hyundai Santa Fe	14.0	15.0	25.0	14.0	15.0	40.0	79.0	44.0	123.0
2019 Ford Escape	17.5	10.0	10.0	35.0	5.0	20.0	65.0	32.5	97.5

Alternatively, we can view a more simplified version of this as a heatmap to the same effect:

Vehicle Scores Heat Map

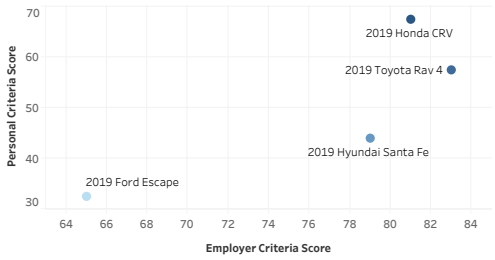


Do the employee and personal criteria support each other?

One concern in our methodology might be whether the personal criteria allowed in our decision matrix greatly affected the outcome, potentially even outweighing that of the criteria provided by the employer. This concern was addressed via the adjacent "Personal vs Employer Criteria" plot.

As can be seen on the plot, the scoring relationship between the employee criteria and personal criteria appears fairly well correlated. Darker blue values represent those with a higher overall score, and we can see a clear trend of darker blue points when advancing to higher vales in either criteria group. As such, use of the total combined score seems appropriate for this decision.

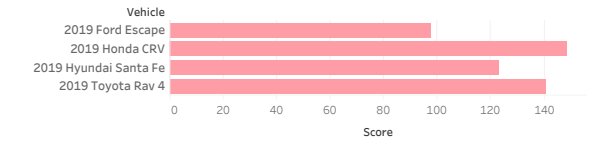
Personal vs Employer Criteria



Comparison of Attributes

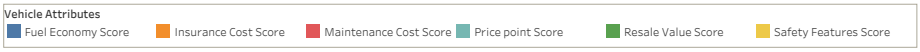
Other reviewers, however, might want to compare the vehicle attributes directly to better understand the data and make an informed choice. As such the following two charts are provided with their corresponding filters for a deeper dive.

Vehicle Scores (Single Attribute Comparison)

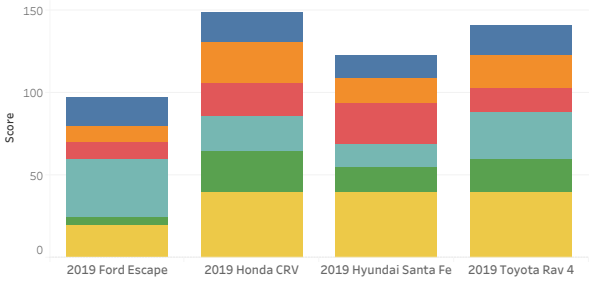


Vehicle Attribute Selection (Single)
Total Score (Combined)

Use the "Vehicle Attribute Selection" tool above to select a single attribute to compare across each vehicle.



Vehicle Scores (Attribute Distrubtion)



Vehicle Attribution Distrubtion (Multiple)
Multiple values

Use the "Vehicle Attribute Distribution" tool above to select multiple attribute scores to see their distrubtion compared to each vehicle's total score.

The heigh of each bar on the adjacent chart will represent the total score for each vehicle contributed by all of the attributes you select above (with each attribute colored according to the nearby legend).