Crappyminers

Title: Why buy larger cars?

Summary: Explaining the decision of car type (Large car or small car) using macro-economic indicators based on three decision factors: 1) Economy, the cost to purchase and operate the vehicle; 2) Functionality, the customer needs provided by the vehicle; 3) Safety, the protection vehicle provides during accident.

Terminologies:

Name	Source	Year	Category and Meaning
Conventional Gas Price	Energy Information Administration	'13-'15	Economy; More people buying higher MPG cars for cheap gas
USD to Euro Exchange Rate	Bloomberg	'13-'15	Economy; More people buying European cars because of cheaper imported price
Vehicle registration count	US Department of Transportation	2013	Functionality; Higher vehicle density implies smaller cars fit better
Population density*	United States Census Bureau	2013	Functionality; Smaller cars fit better
Obesity*	Centers for Disease Control and Prevention	2013	Functionality; Larger driver space
Average Family Size	StateMaster.com	2004	Functionality; Occupant capability
Snow depth*	Weather Channel	'01-'13	Safety; More snow, more demands on larger car
Deaths per 100,000 population**	Highway Loss Data Institute	2013	Safety; Higher accidental death, more concerns on safety
Occupant Death Rate Percentage Difference	Highway Loss Data Institute	2013	Safety; Difference in chance of occupant death after accident of large cars
Deaths per 100 million vehicle miles traveled*	Highway Loss Data Institute	2013	Safety; Higher accidental death rate, more concerns on safety

(* p-value <0.1; ** p-value <0.05; *** p-value <0.01)

Findings:

The third party data are mutually independent. Regression analysis shows that most variables are statistically insignificant, those statically significant does not have a strong correlation (low R-sq value). The gas price does suggest a negative correlation with large car sales. The euro exchange is less correlated with the sales of European cars.

In the last slide, the two graphs show the two static variables we considered- Obesity Index and Snowfall- that can be correlated with the Large/European Car Preference. The red dots are relevant data by states, and the blue line is the trend line. We found that:

1) The trend line in blue shows that States with higher snowfall tends have a preference for large cars
2) The trend line shows States with higher Obesity Index tend to sell European cars less. (European cars are usually smaller than cars from other origin)