Fuel impact on Mileage and Environment

Messaging: With this project I am trying to help one choose a car which is environment friendly. The presentation uses data from 2017.

Narrative Structure: The presentation follows interactive visualization slide show. The visualization embeds user interactivity on each slide. The visualization communicates the role of fuel and cylinders on fuel efficiency along with interaction to get more information on the topic.

Visual Structure: To keep the consistent visual structure
1. positive trends are annotated in green,
2. negative trends are annotated in red,
3. animations are introduced to highlight the important details,
4. links are provided on slides to help user navigate within the scenes,
5. user can use links on each scene for further information.
6. The animations do not start immediately so that the user has time to read the chart and once animation starts it highlights the important details on the chart.
7. The presentation allows user to navigate between the scenes and read more information by clicking on further reading links.

Scenes: Visualization follows user-directed ordering and consists of three scenes, all the scenes follow the similar visual structure for user to communicate with user, user interaction and navigation.
- Scenes contain annotated charts.
- Every scene has navigation links in teal color for user to go to next slide or previous slide.
- External link to read on any scene is provided as a hyperlink and is placed rightfully near its or related concept introduction.
- Animations are used to draw attention to important details.
- Annotations are used to show trends in data.
- To allow for user interactions, every chart in every scene has tooltip which can be seen at mouse over and disappears on mouse leave event.

The first scene gives the overview of environment friendly cars based on their average city and highway MPG.
- Annotations are used to communicate trends in data and helps in classification based on environment friendliness.
- Animations are used to highlight the most efficient vehicles and environment friendly (electric) vehicles.
- For navigation scene provides "Fuel Based Comparison" link to navigate to the next scene.
- The scene has annotation "Please mouse over individual circle for more details.." to encourage user to hover over the circles on scatter plot for getting more information on

the chart data.

The second scene compares the vehicles using either Gasoline or Diesel as type of fuel. The scene uses 2 charts based on fuel type, the charts depict the impact of number of cylinders on fuel efficiency and by keeping the scales for Y-axis same for 2 charts, it allows user to draw parallels between the fuel types.
- Two charts are coordinated with the parameter Average MPG category and; color coordinated based on number of cylinders for easier transition from one fuel type chart to another.
- State of the scene is defined by parameter MPG category; user can modify it using the drop down.
- The drop down is colored orange to provide visual affordance to user and it lists all possible options in the dropdown.
- The scene has annotation "Please mouse over individual circle for more details.." to encourage user to hover over the circles on scatter plot for getting more information on the chart data.

The third scene concludes the role of cylinders and fuel type on car fuel efficiency.
- Top 10 cars with Average MPG are shown in a bar chart and every bar shows the type of fuel used by the vehicle.
- Annotation is used to show the anomaly in data from Honda.
- State of the scene is defined by parameter MPG category; user can modify it using the drop down.
- The scene leaves user with further reading section that helps customer find more on Fuel types, cylinders and standards manufacturers have to follow to meet environment friendly scales.
- If the user gets convinced from the presentation and is looking for a new vehicle, scene provides link to best fuel efficient cars rated by SmartWay of the year.

Annotations: Annotations across the scenes depict trends in data and highlights the important details.
- Colors for annotations are kept consistent across the scenes to promote visual consistency.
  - o Positive trends are colored green
  - o Negative trends are colored red
  - o Annotation to highlight data is done using black color.
- Annotations for highlights are performed by a drop line and text associated with it.
- Annotations for showing trends are done using arrows in the direction of trends and corresponding trend information.

Parameters: The visualization uses Average MPG as parameter to render corresponding charts. Average MPG is a scene level parameter which stores state of the data being presented on the webpage. The state is used as filter on data. The initial state is set to AverageCityMPG and user can modify the MPG category to view data accordingly.

Transitions: Visualization provides trigger to modify Average MPG category using a drop-

down menu. This user driven input allows for user led structure, is defaulted to one value at the start. The drop down is colored orange to attract attention of the user and it lists all possible options in the dropdown. D3 transitions are added on each chart for user guidance.