**Team: Gary Kong, Elizabeth Willard, Vernon Robinson, Amina Alavi**

**Research question: How does motorcycle power affect the ratings for motorcycles?**

The objective of this research is to study the relationship between motorcycle power and the rating of motorcycles. This research will also involve analyzing the strength of this relationship. The Y concept will be motorcycle ratings (review average out of 5 stars). The X concept will be the maximum power output in horsepower. To get a full picture, we will also assess the impact of other motorcycle attributes on the model, including these as non-key X concepts.

The actor who can change the X concept (motorcycle power) is the motorcycle manufacturer/designer. Changes or differences in ratings of motorcycles (the Y concept) will be of interest to three key audience groups. First, motorcycle manufacturers/designers may use these insights to make better-informed product development decisions by prioritizing designing products with features and specifications that predict positive ratings. Second, differences in ratings of motorcycles will interest investors who can evaluate the attractiveness of different manufacturers based on motorcycle ratings. Third, customers interested in purchasing motorcycles can use rating information to inform purchasing decisions.

The data source is a .CSV file containing 17732 unique values, in which each row represents a motorcycle brand, model, and year combination. The data includes 28 features that describe a given motorcycle. To operationalize our X concept, we will use the “power” variable. To operationalize our Y concept, we will use the “ratings” variable. The secondary X variables that we will include are fuel capacity, weight, wheelbase, cooling system, brake type, seat height, and transmission type.