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COSC/MATH 4931

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Midterm Writeup:

A Relationship Between the Size and Intelligence of Dog Breeds

In this project, I will examine a possible link between dog size and intelligence. I have

found two datasets to use for this project. The first includes information about the sizes of 150

distinct dog breeds, including a low and high numeric value for dog height, in inches, and

weight, in pounds. The second dataset provides information about the intelligence of 136

distinct dog breeds. In this dataset, the breeds are given a categorical value entitled

classification. The classification refers to the dogs' "working/obedience intelligence," the

highest value being "brightest dogs" and the lowest value being "lowest degree of

working/obedience intelligence."

The degree of intelligence for each breed is based upon obedience trials performed by the

American Kennel Club and the Canadian Kennel Club per the request of Stanley Coren, a

"professor of canine psychology at the University of British Columbia"(2) for his book The

Intelligence of Dogs. In these evaluations, the dogs were taught a new command. The low and

high number of repetitions it took for dogs of a certain breed to understand a new command, and

the probability that they would obey the first command are provided in the dataset as reps_lower,

reps_upper, and obey, respectively. As an example of how these values are used to classify

dogs, a breed falls into the "Brightest Dogs" category if dogs have a reps_upper value less than

or equal to 5, and obey the first command "95% of the time or better" (2). From there, the

intelligence rating goes down.

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      I began organizing my data by combining the breed intelligence and breed size .csv files into one table. Since there are different breeds in each dataset, quite a few rows were missing either size data or intelligence data. Neither of these would be useful for gathering information, so I eliminated the rows for which data values were missing for any column.

      I made a plot by taking the values from the height and weight columns for all of the breeds and storing them into arrays using NumPy.
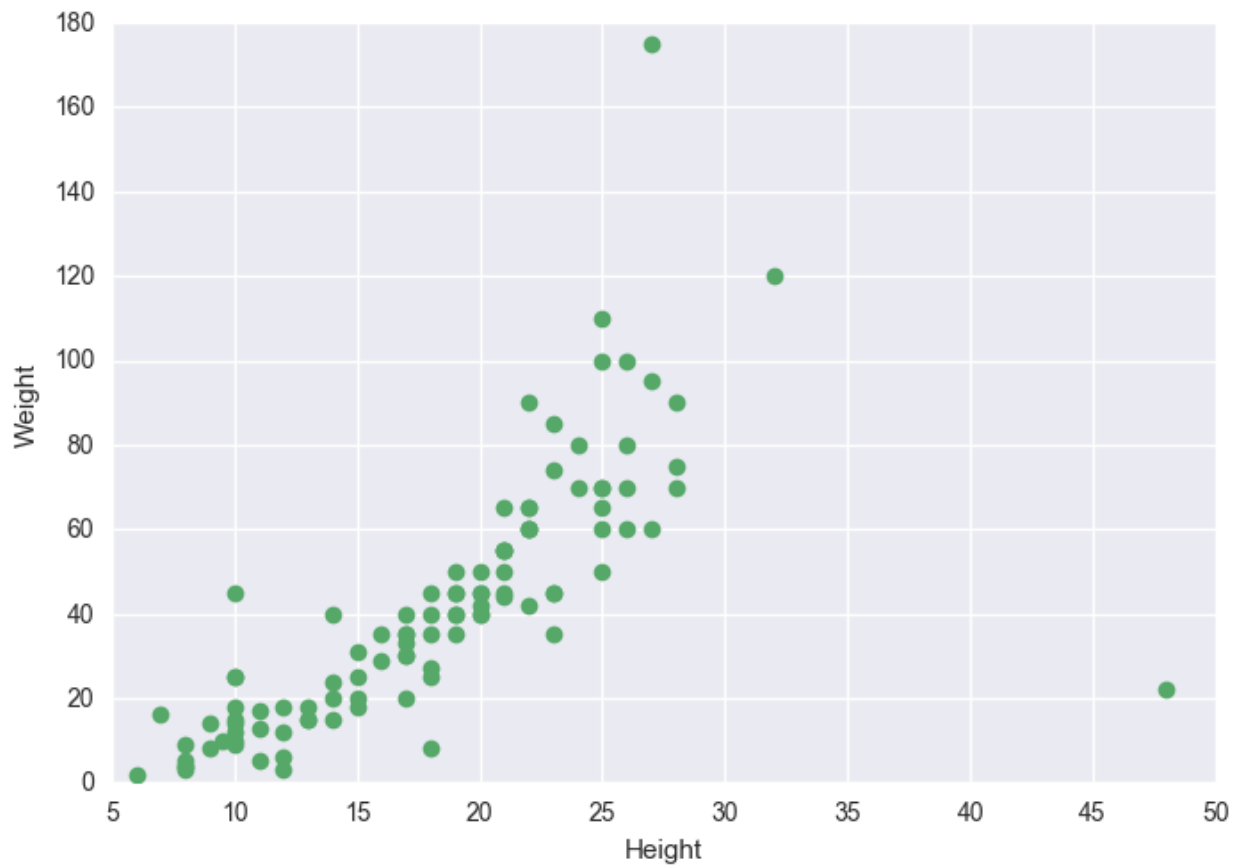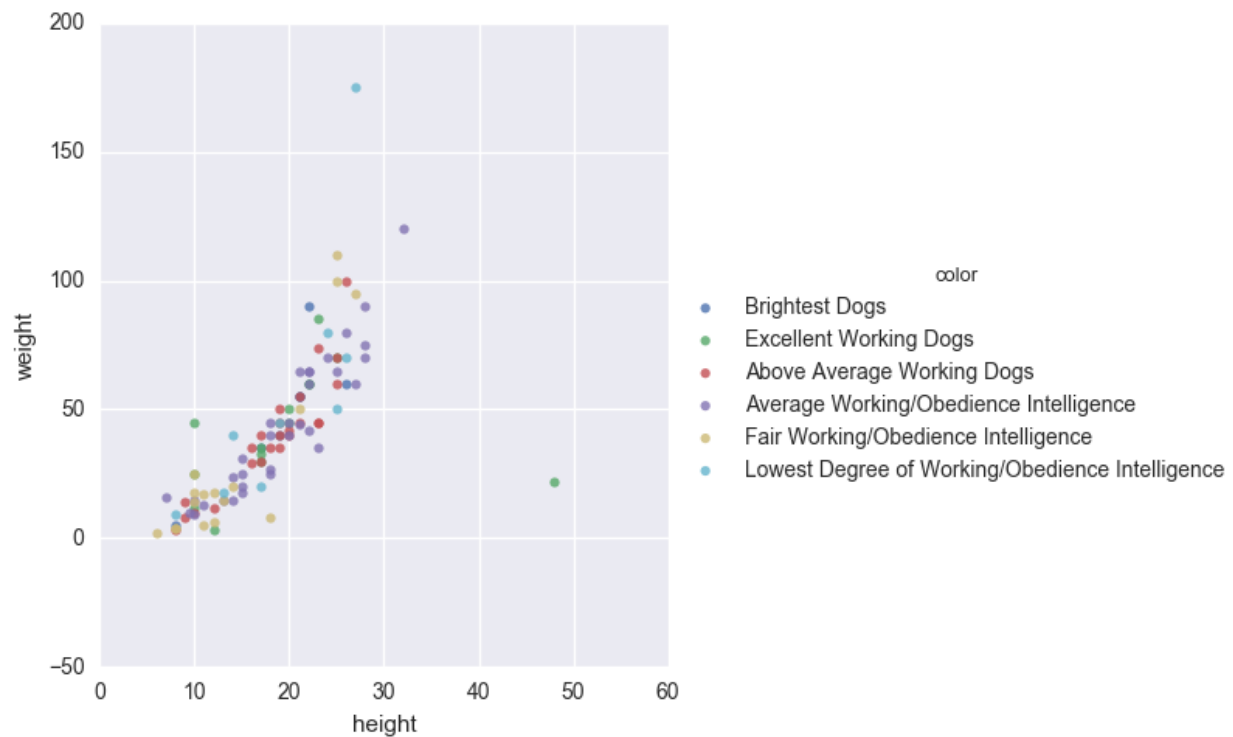
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Next, I used the same plots, except colored each of the points based on their classification.

Just by looking at this graph, it is hard to tell whether there will be a relationship between breed size and intelligence. There are many data points of each color spread across the plot, so I must find another way to group the breeds. My first thought was taking a closer look at the build of the dogs, possibly shorter, heavier dogs might be more or less intelligent than shorter, lighter dogs. Moving forward, I'd like to analyze the breed sizes so that I could find a way to categorize the breed sizes, rather than just using the numeric values.

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<div align="center">References</div>

1. Fishman, L. Is there are relationship between dog size and dog intelligence?, *Data.world*. Retrieved March 9, 2017, from Data.World: https://data.world/len/dog-size-intelligence-linked.

2. "The Intelligence of Dogs", *En.m.wikipedia.org*. Retrieved March 9, 2017, from Wikipedia. https://en.m.wikipedia.org/wiki/The_Intelligence_of_Dogs#cite_ref-ReferenceA_18-0.

GitHub URL: https://github.com/0314beilkej/Dog-Data-Science-Project