CSC423 – PowerPoint transcript

Slide 1:

“Hi everyone. My name is Jasmine Dumas and I’m giving this voiceover on behalf of my group which consists of Samantha Stanley and Christopher Lee. We are all in the online section of the course and we worked on a data set to predicting brain size and intelligence.”

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Slide 2:

“Our chosen dataset was from DASL (pronounced "dazzle") which is an online library of datafiles and stories that illustrate the use of basic statistics methods. Participants in this study consisted of 40 right-handed Anglo introductory psychology students at a large southwestern university.  Magnetic Resonance Imagine (MRI) was used to determine the brain size of individuals.  Full Scale Intelligent Quotient (FSIQ), Verbal Intelligent Quotient (VIQ), and Performance Intelligent Quotient (PIQ) scores, as well as the height and weight and gender of participants were obtained. From these 6 covariates we proceeded to make inferences about building a model to predict the MRI score. We would expect to see higher intelligence among individuals with a larger MRI count.”

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Slide 3:

“Our overall sample size was small and consisted of 3 missing entries (from two male participants), which we conclude was to limit any identification of participants. There was a distinct grouping within the FSIQ variable which led to experimentation in splitting the data set which we attribute to the small data size and the limited subtest administered. We observed strong correlation between some covariates but that was expected as VIQ and PIQ are components of the overall FSIQ score. “

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Slide 4:

“We performed multiple methods of automated variable selection and this resulted in the final linear model which included the Gender dummy variable, PIQ and Height variables which were significant to the model. We did not identify any interaction terms or higher order terms. We also performed statistical transformation on our covariates to improve our model but the change was negligible so we opted for a parsimonious.”

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Slide 5:

“The data shows that, in general, people with higher MRI counts have higher FSIQ scores and conversely high PIQ scores. However, when comparing differences between the genders, MRI scores, are strongly related to physical attributes of weight and height. Yet FSIQ scores are homogenous across genders. There are many other factors that contribute to intelligence than brain size and those would have had to been investigated to develop a more robust model. We interpret our model as a cautious estimation of a linear relationship between brain size and gender, height, and PIQ scores.”

“Thank you to everyone for listening. We enjoyed working on this project and found it to be a great exercise and culmination of our skills learned in this course”