

Hospital Care for Diabetes in Relation to Patient Demographics

In this project, we aim to see how demographic data for patients, such as race, gender, age, and weight are related to hospital procedures and outcomes for a patient when they are dealing with diabetes. Outcomes and procedures can be defined as the number of lab tests, procedures, medication, diagnosis, type of prescribed drug, and patient readmission. We know that the healthcare field can suffer from bias in administering treatment to minorities and women. By going through our data, we can assess what kinds of procedures and treatments are administered to patients of all demographics, and how this might affect their outcomes. For instance, are certain drugs prescribed more often to certain demographics? Are other drugs more suited to better outcomes? Are certain demographics more readmitted than others? The results of our model can be used as a guiding tool for healthcare providers in determining where the current operating procedure may be failing certain patients, and provide a way for healthcare providers to be mindful of such an issue, and put more resources towards the wellbeing of their patients.

We are assuming our data will be able to show any trends or relation between demographics and type of care received. We are also assuming that the drugs prescribed may not be equally as effective, which is something we can research and find out. We are assuming that non-prescribed medication has not been prescribed to the patient in the past. Additionally, when it comes to procedures and testing administered to the patient, we are assuming that these are uniform and standard. Given that our data is taken from multiple hospitals, it is possible that one hospital may only have the capability to perform two tests, while another performs five. In this case it would be possible to come to the conclusion that the patient given two tests could

possibly have received five tests. We are assuming that large portions of the dataset are not missing or unusable, and that what is unusable or missing can be dealt with through our data preparation methods.

Studies and research are conducted into the quality of care given to patients based on different demographics already, but these are conducted ultimately with smaller sample sizes and a pure statistics based methodology. There may be cases of machine learning applied to this problem, but this is not common practice.

