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A Predictive Modeling Framework for Studying Disparities in Colorectal Cancer Incidence

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A predictive modeling framework for studying disparities in colorectal cancer incidence

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Colorectal cancer (CRC) is the second leading cause for cancer related deaths in United States and it is imperative to determine the consequences leading to the deaths. Studies have also identified gender as a key cause of disparity with males being more at risk when compared to the females. Colonoscopies performed as a screening for CRC are both a useful diagnostic tool, and an important prophylactic, as precancerous polyps are generally removed during the procedure. They also allow for diagnosis in earlier stages, significantly increasing survival chances. In our work, given the data-set containing diagnosis/procedure codes and demographic data of over a million patients we explored for patterns that may aid in future screenings. The study was focused on the racial, gender, and age disparities in CRC diagnosis. To that end, we have also begun analysis of those in the data-set who had been given colonoscopies prior to (or as the means of) their diagnosis, as well as survival modeling, given the dates of their entry to (representing either routine screenings or referral) and exit from the data (representing either death, a second opinion, or remission). Our initial results show that males are typically diagnosed earlier and at a slightly higher rate than females, and yet, females had a consistently higher survival probability, while African Americans of both genders had a slightly higher chance of diagnosis.