INTRODUCTION: It is well documented that patients undergoing total knee arthroplasty (TKA) are negatively affected by a multitude of socioeconomic factors including lower income, being Medicaid beneficiaries, and living in lower income neighborhoods. The area deprivation index (ADI) tool created by the University of Wisconsin-Madison ranks neighborhoods by socioeconomic disadvantage in a region of interest. The calculation of ADI includes factors for the theoretical domains of income, education, employment, and housing quality with higher levels of ADI being associated with higher levels of deprivation. While numerous studies have examined the relationship between socioeconomic status and outcomes of primary TKA, few have utilized state level ADI as a proxy for socioeconomic disadvantage in this patient population. Therefore, the purpose of this study is to understand if patients with higher ADI scores undergoing TKA have differences in demographic and perioperative factors.

METHODS: Patients who were >1 year post-op from a primary TKA procedure between December 2020 and August 2022 were retrospectively recruited for this study from an urban, academic tertiary medical center. Prisoners, individuals <18 years of age, traumatic injuries, infection, and revision surgeries were excluded from the study. Medical charts were reviewed for patient address, demographics, medical comorbidities, procedure information, and subsequent hospital visits. Patients were grouped according to their state level ADI with 1-3 being low, 4-6 being moderate, and 7-10 being high. The study cohorts were compared using Pearson’s Chi-squared test and Fisher’s exact test. The Kruskal-Wallis H Test was used to evaluate non-parametric, continuous values. This study is IRB-approved by the institution of study.

RESULTS SECTION: A total of 215 patients fit the inclusion criteria for this study. Patients with higher ADIs were more likely to be female (p=0.009), Black/African American (p<0.001), have Medicaid as their primary insurance (p=0.041), be younger at the time of surgery (p=0.038), have cardiovascular disease (p=0.029), and be diagnosed with anxiety or depression (p=0.022) (Table 1). Additionally, patients with higher ADIs were more likely to present to the emergency department (ED) (p=0.006) and be re-admitted to the hospital within 90 days following TKA (p=0.0014) (Table 2).

DISCUSSION: In patients undergoing TKA, higher levels of ADI are associated with increased rates of cardiovascular disease, higher rates of anxiety depression, increased 90-day ED visits, and 90-day hospital readmissions. One study from Alvarez et al found that national level ADI was not a predictor of ED visits following TKA, however, a different study from found Khlopas et al ED visits to be substantially higher in individuals at the highest percentile of ADI. The validity of social vulnerability indices and their ability to predict future hospital visits following TKA should be further investigated. Limitations of this study include the use of a single center with a skewed distribution of higher ADI scoring patients and the use of a state instead of national level measure of deprivation.

SIGNIFICANCE/CLINICAL RELEVANCE: Higher values of state-level ADI are associated with increased 90-day post-operative emergency department visits and 90-day hospital readmission rates following TKA and should be considered in operative planning.

REFERENCES: