

'Driving' rates down: A population based cohort study of opening new radiation therapy centers on the use of mastectomy for breast cancer

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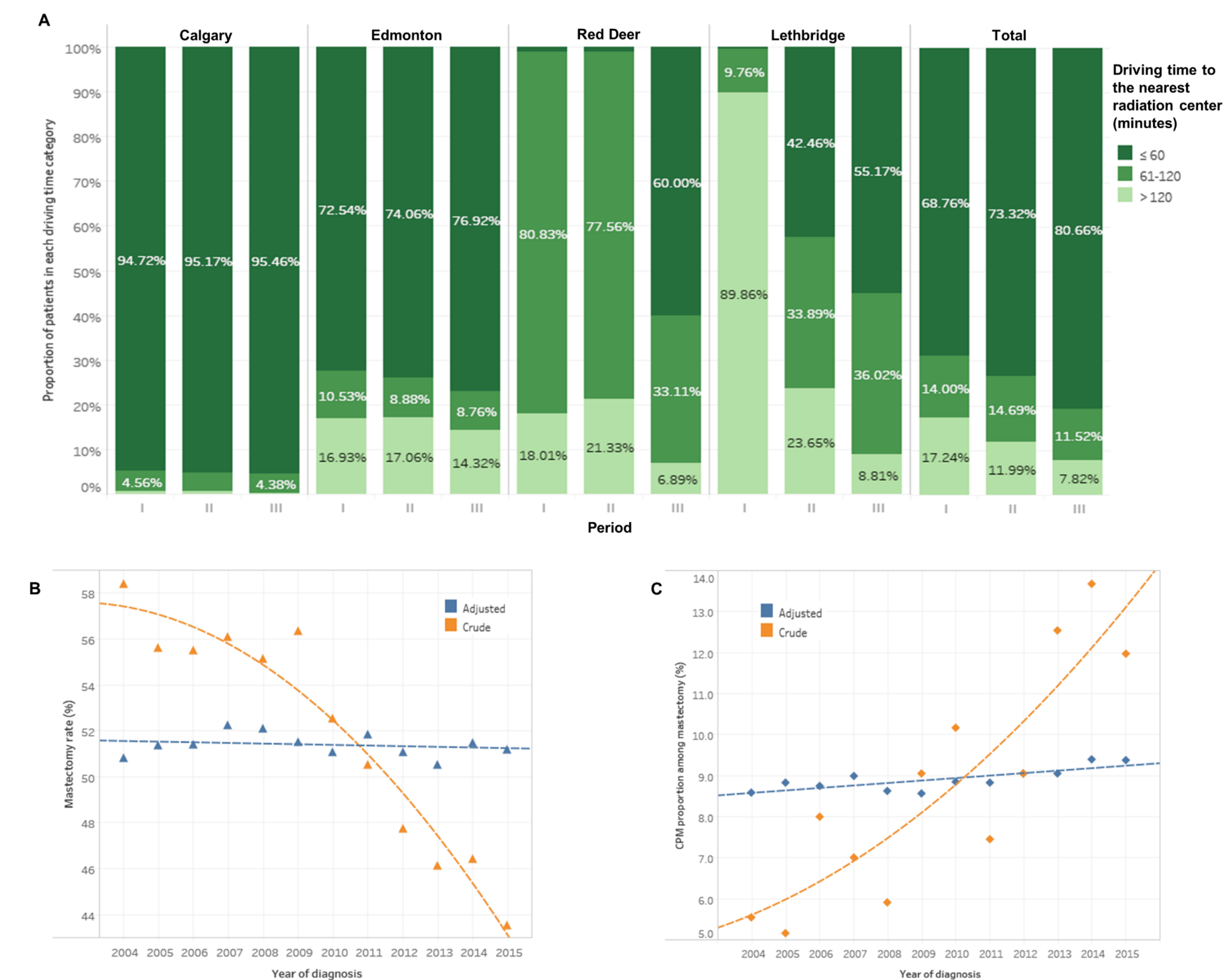


BACKGROUND

Two new cancer centers providing radiation therapy opened in Alberta, Canada in 2010 and 2013. We aimed to assess whether opening the new RT centers influenced mastectomy rates for breast cancer.

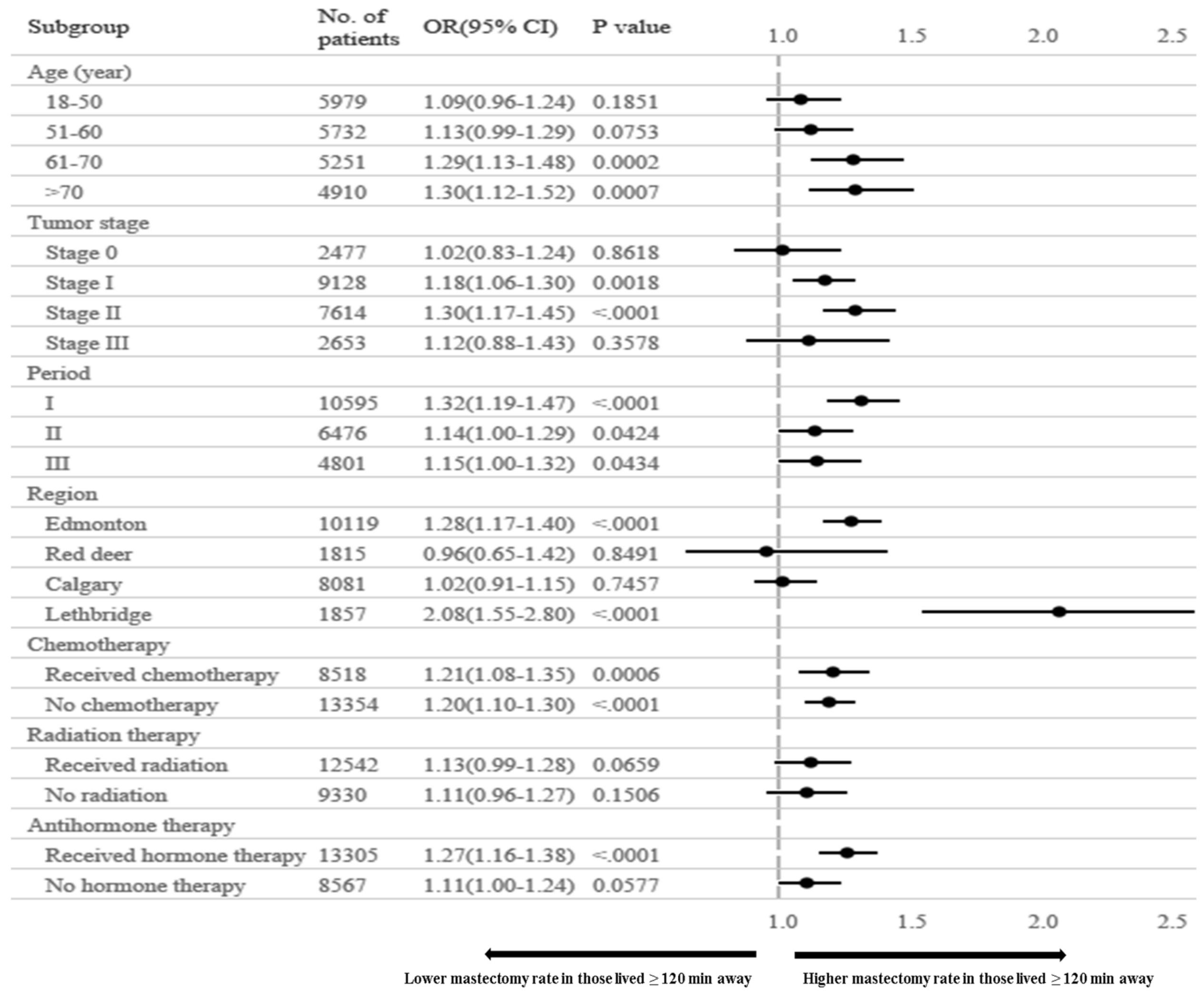
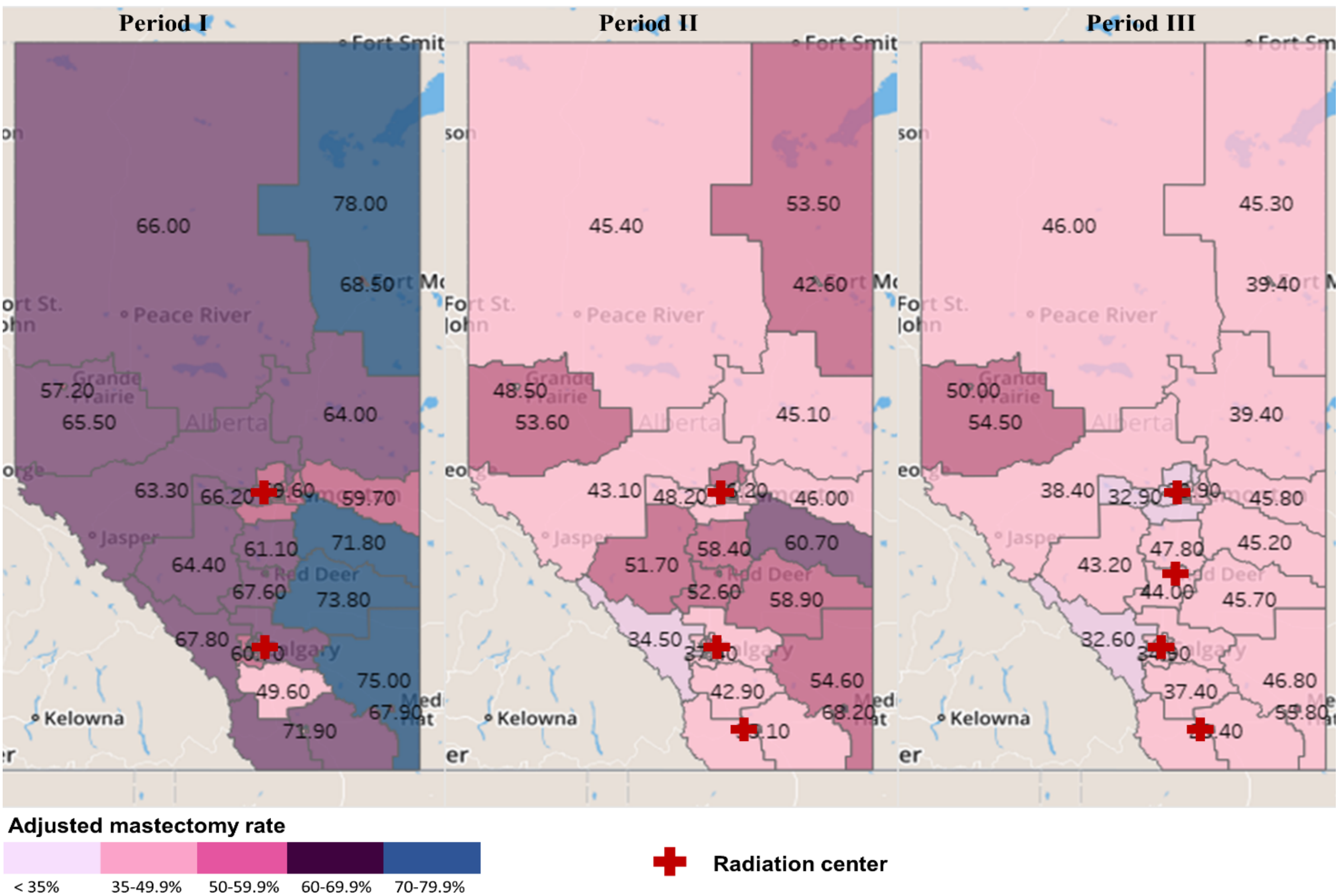
METHODS

Breast cancer patients who underwent surgery from 2004 through 2015 were identified from the Alberta Cancer Registry. Mastectomy rates for 64 pre-defined health status areas (HSAs) were calculated after adjusting for patient and system factors. Variations in mastectomy rates among the HSAs were quantified using weighted coefficient of variation (CV). Multivariable logistic regressions were performed to determine associations between driving time and mastectomy use in the entire cohort and subgroups.



RESULTS

Of the 21,872 patients, the proportion of patients who lived ≤ 60 minutes' drive from the nearest RT center significantly increased from 68.8% (95% CI: 67.7%-69.9%) to 80.7% (95% CI: 79.5%-81.9%) during the study period. Concurrently, the crude provincial mastectomy rate decreased from 56.2% (95% CI: 55.3%-57.1%) to 45.3% (95% CI: 44.1%-46.5%). However, variation in adjusted mastectomy rates (weighted CV) across the 64 HSAs increased from 9.5 to 14.6. Factors associated with mastectomy included age, larger tumor size, lymph node involvement, higher tumor grade, molecular subtype, lobular histology type, more comorbidities, academic institution, region, earlier period of diagnosis and longer driving time to the nearest RT center.



DISCUSSION & CONCLUSION

This study has several strengths. The study was conducted in Canada where there is a universal access health care system, thus negating the effects of insurance type on treatment choice. Comprehensive individual patient characteristics including the Charlson comorbidity index generally not used in prior studies were incorporated. In addition, the effects of opening new RT centers were quantified by driving times and measurements of geographic variations over time.

This study has some limitations. First, we measured the driving time to the nearest RT center based on patient postal code at the time of diagnosis, but patients may temporarily move to access RT, and this may have confounded driving time. Second, opening a new RT center has effects on treatment selection for breast cancer in multiple ways. We only assessed the effect of reduced driving time to RT center on mastectomy due to data availability. Third, multiple factors influence the use of mastectomy, some of which cannot be included in our analysis, such as patient preferences.

Opening new RT centers reduced driving times to the nearest cancer center for women with a new diagnosis of breast cancer in Alberta and this was associated with a reduction in mastectomy rates. The impact of increased access to RT on mastectomy use may amplify over longer time periods. However, variations between HSAs on mastectomy rates were not reduced by opening the two new RT centers.