

Introduction and Objectives

Intracranial meningiomas are the most common primary CNS tumor and can pose significant morbidity if large or malignant.^{1,2} Prior literature shows that non-White or lower socioeconomic status (SES) patients tend to have later diagnoses and present with more serious disease.^{3,4} The Affordable Care Act (ACA) has increased access to healthcare, allowing for earlier diagnosis and management of many conditions.^{5,6}

Objectives:

- Determine if Medicaid expansion was associated with a change in incidence rates of intracranial meningiomas.
- Determine if Medicaid expansion was associated with a change in incidence rates among subgroups of race, county SES, and tumor behavior.

Materials and Methods

Population: The Surveillance, Epidemiology, and End Results (SEER) database was used to conduct a difference-in-difference (DID) analysis between 2010-2019.

Intervention and outcomes: Determine if there is a change in incidence rates between counties that adopted Medicaid expansion (intervention group) to those that did not (control group). States that adopted during intervention period were excluded.

Analysis: Subgroup analysis by race, county SES (>25% under 150% federal poverty level), tumor behavior based on ICD-10 behavior codes, where “borderline malignant” and “malignant” codes were characterized as high-grade.

Discussion

This study found an **increase in relative incidence of high-grade intracranial meningiomas after Medicaid expansion**. The **ACA increased access to care for the more aggressive forms of meningioma** without increasing the overall incidence of detection. This may also represent **potential cost-savings associated with the ACA**, as these severe cases are now more likely to receive appropriate treatment earlier in the disease course, where there is an increased chance for curative treatment.

Subgroup analysis demonstrated an **increased relative incidence among Black and lower SES populations**. Given that these populations are more likely to go undiagnosed for longer periods due to social determinants of health, this result indicates **improved access to care for these underserved communities**. White populations experienced a decreased relative incidence, perhaps because they are less likely to be impacted by social determinants of health and tend to have better healthcare access and outcomes.^{3,7}

The analysis showed that there was no impact by the ACA on overall meningioma incidence. While many tumors – particularly malignant ones – have seen an increase in incidence following the ACA, previous studies have indicated that meningioma incidence rates have mostly stabilized in the recent decade following a massive rise due to improved imaging capabilities and access in the early 2000s.⁸ While our results concur that benign meningioma incidence has remained relatively stable, this is not true for malignant forms.

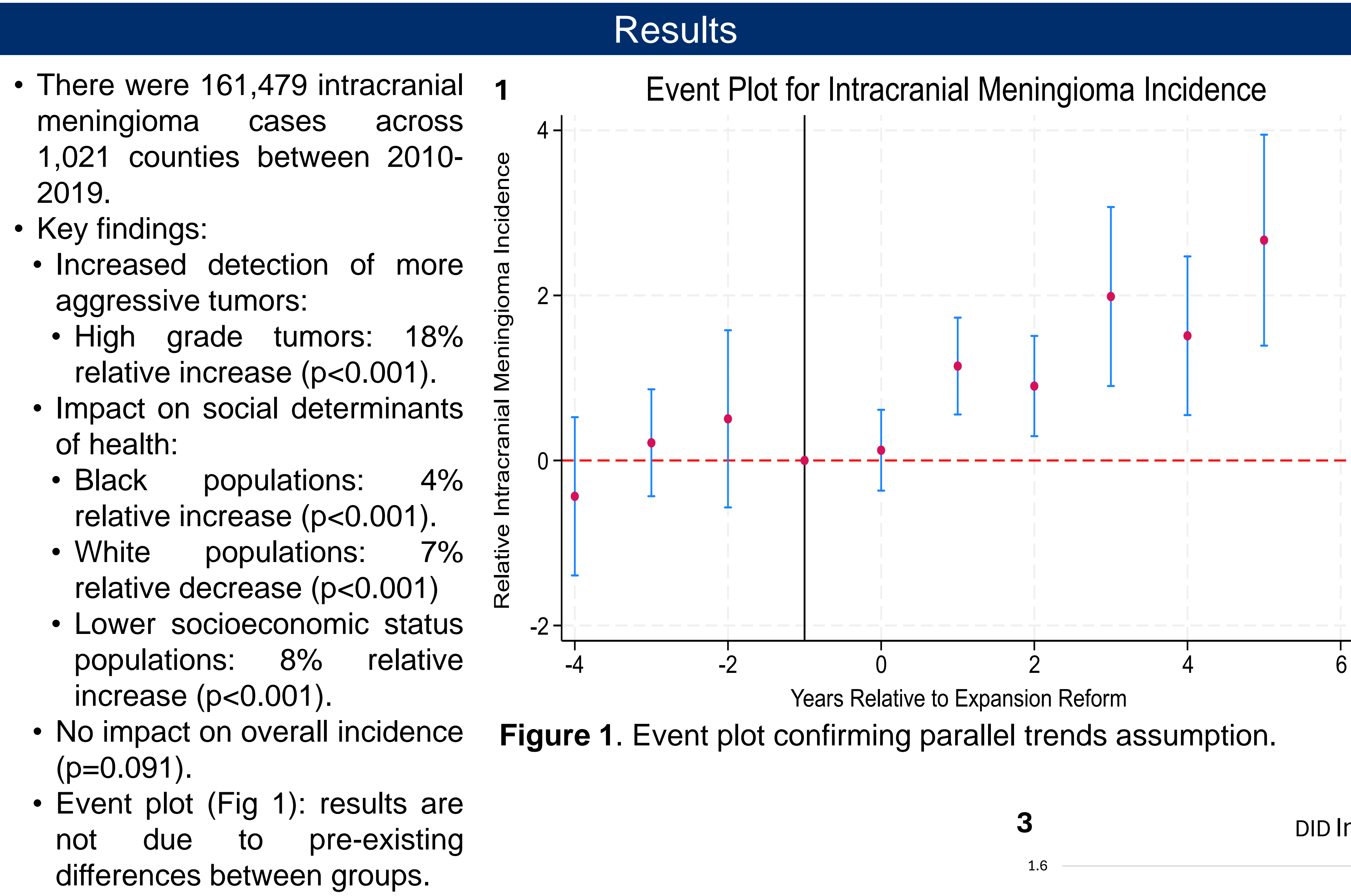


Figure 1. Event plot confirming parallel trends assumption.

Figure 3. DID-determined incidence multipliers for 2014-2019.

Figure 2. DID incidence rate ratio (IRR) estimates relative to control group. *p<0.05. **p<0.001

Incidence	Control Group, Before Expansion	Control Group, After Expansion	Intervention Group, Before Expansion	Intervention Group, After Expansion	DID Incidence Rate Ratio Estimate (95% CI)	P-Value
Overall	9.02	11.36	10.05	11.75	0.99 (0.97-1.00)	0.091
Benign, All	8.65	10.90	9.51	11.05	0.98 (0.96-0.99)	0.002
Benign, Microscopic	3.10	3.10	3.53	3.56	1.02 (1.01-1.04)	0.003
High-Grade, All	0.38	0.46	0.55	0.70	1.18 (1.06-1.29)	<0.001
High-Grade, Microscopic	0.34	0.42	0.52	0.67	1.18 (1.06-1.31)	<0.001
White	11.46	14.70	12.76	14.84	0.93 (0.91-0.95)	<0.001
Black	9.30	11.64	10.24	12.12	1.04 (1.02-1.06)	<0.001
Asian and Pacific Islander	6.27	8.25	8.18	9.74	0.97 (0.93-1.03)	0.408
Hispanic	5.20	6.56	5.04	6.47	1.01 (0.99-1.03)	0.192
Low Socioeconomic Status	8.94	10.52	8.94	10.11	1.08 (1.04-1.11)	<0.001

Table 1. Incidence per 100,000 people and incidence rate ratio. DID: difference-in-difference