Cancer Incidence in the Medicaid Population: A Retrospective Analysis of a National All-Payer Claims Database

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INTRODUCTION

- Research into cancer disparities among Medicaid patients indicates that enrollees with cancer experience worse survival compared to individuals with private health insurance, are more likely to be diagnosed at an advanced stage, and are less likely to receive cancer-directed treatments[1]
- The 2014 Medicaid expansion under the Affordable Care Act sought to narrow disparities in care by improving access to insurance for low-income individuals[2]; however, limited real-world evidence of cancer burden in the Medicaid population in the post-expansion period is available

OBJECTIVE

- Describe the cancer burden in the US Medicaid population to support population health management and resource planning

METHODS

Study Design

- This retrospective observational study used the STATinMED RWD Insights all-payer medical and pharmacy claims database, which provides insights into approximately 87% of the US healthcare system
- Medicaid-insured patients ≥18 years old with ≥1 inpatient claim, or ≥2 outpatient claims ≥30 days apart, with International Classification of Diseases, 9th/10th Revision, Clinical Modification (ICD-9/10 CM) cancer diagnosis codes were identified from 01/01/2015–12/31/2020 (**Figure 1**)
  - ICD-9/10 CM cancer diagnosis codes for benign tumor, in situ cancers (except for bladder), basal cell, and squamous cell skin cancers were excluded; patients with an incident cancer diagnosis were included in the analysis
  - The first date of cancer diagnosis was defined as the index date
  - All patients had medical benefits ≥12 months pre- (baseline) and post-index date (follow-up)

Statistical Analysis

- Cancer incidence, baseline patient characteristics, cancer treatment, healthcare costs, and 12-month mortality during the follow-up period were assessed
- All incidence rates were calculated by dividing the number of newly diagnosed cancer cases by the appropriate RWD Insights Medicaid population and were stratified by metastatic status, age group, and sex
- Descriptive analyses were conducted for the eligible patient population
  - Means and standard deviations were computed for continuous variables; frequency and percentages were generated for categorical variables
  - Differences between groups were compared using t-tests for continuous variables and Chi-square tests for categorical variables
- All analyses were conducted with SAS version 9.4 software (SAS Institute, Cary, NC). All statistical tests were two-sided, with $p < 0.05$

Figure 1. Study Design
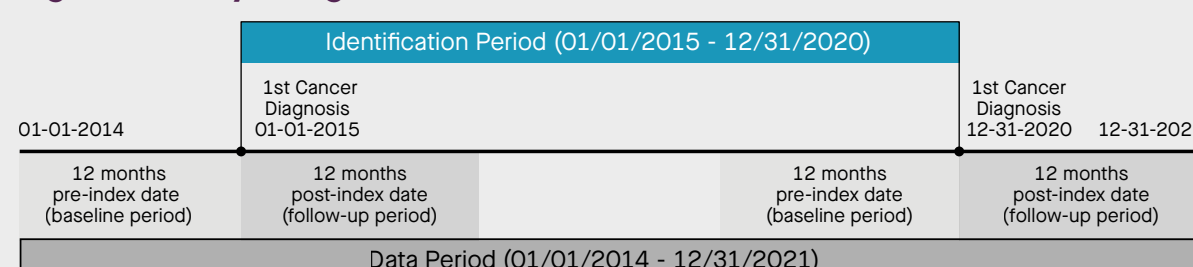
KEY RESULTS: MEDICAID-INSURED PATIENTS HAD A HEIGHTENED BURDEN OF LIVER CANCER COMPARED TO NATIONAL ESTIMATES

- For the years 2015–2019, average annual cancer incidence was higher in the Medicaid population (460 per 100,000 [0.46%]) (**Figure 2**) compared to the national estimate of 425 per 100,000 (0.42%) in the general population based on the Surveillance, Epidemiology, and End Results (SEER) Program data[3]
- In 2020, there was a significant decline in the cancer detection rate to 243 per 100,000 (0.24%) (**Figure 2**), which may be attributed to restricted access to healthcare due to COVID-19

Figure 2. Incidence of any Cancer by year in the US Medicaid Population (2015–2020)
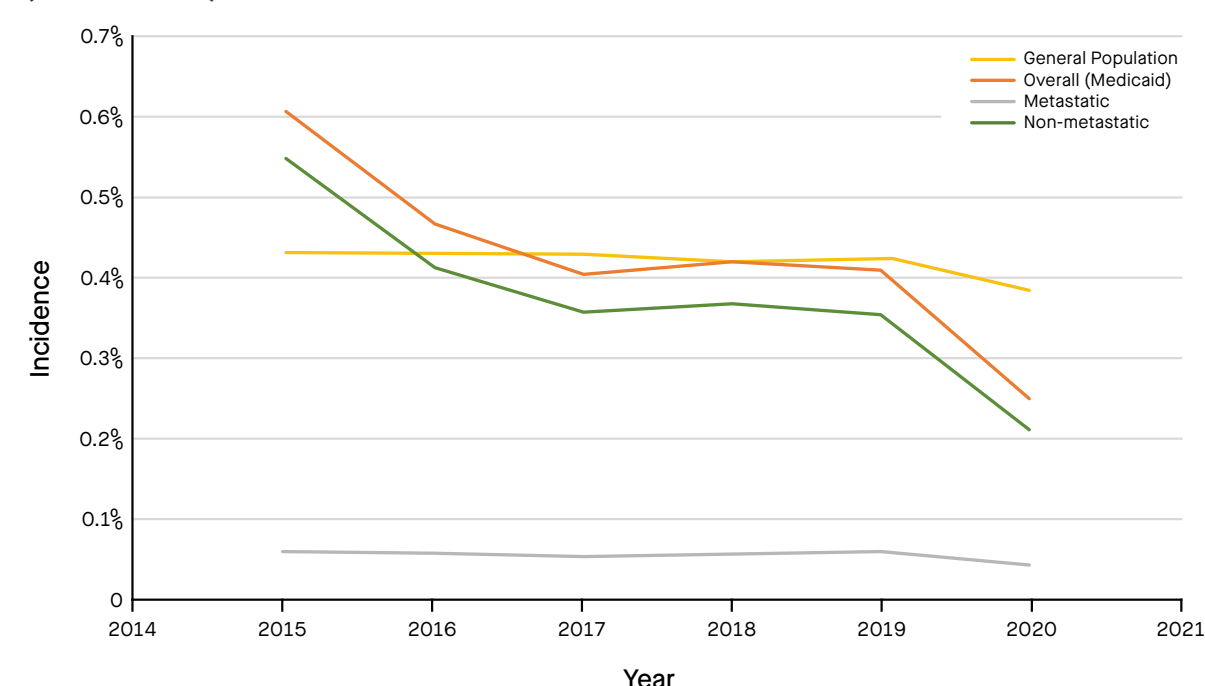
- The top 10 states with the highest cancer incidence were CA, WA, MI, OH, PA, OR, NY, UT, HI, and NJ (**Figure 3**), all of which have adopted Medicaid expansion
  - A higher proportion of patients were diagnosed with metastases in states that did not participate in Medicaid expansion than those that did (14.1% vs 12.6%, $p<0.0001$)

Figure 3. Incidence of Any Cancer by State in the US Medicaid Population (2015–2020)
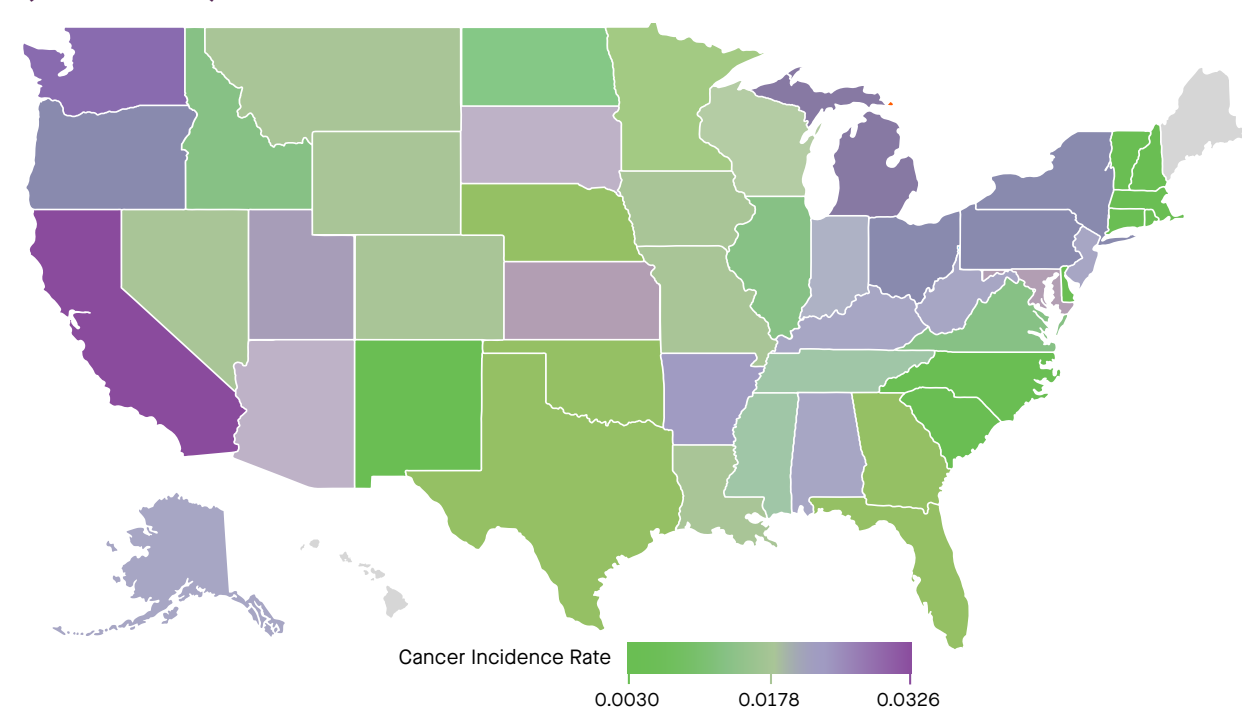
- Cancer incidence generally increased with age, particularly at 50 years (**Figure 4**); over half of the cancer patients were 50-64 years of age (**Table 1**)
- Out of 279,749 incident cancer patients, 33,979 (12.2%) had metastatic disease at diagnosis (**Table 1**); this proportion increased from 10% in 2015 to 16% in 2020
- Compared to those with non-metastatic cancer, patients with metastatic cancer were more likely to be older (55.5 vs 53.1), male (42.1% vs 39.3%), smokers (33.2% vs 28.0%), and have ≥1 comorbidity (41.1% vs 39.2%) (all $p<0.0001$; **Table 1**)
- Approximately half of the patients (53.2%) did not receive any form of anti-cancer treatment during the 12 months following diagnosis: 29.7% of those with metastases and 56.4% with non-metastatic cancer (**Table 1**)
  - Surgery was the predominant treatment choice for patients with cancer (35.3%), followed by chemotherapy (25.5%), and radiotherapy (16.4%)
  - Patients with metastases had significantly increased utilization of all types of anti-cancer treatments as well as multiple anti-cancer treatments combination compared to those without metastases (all $p<0.0001$)
- In the 12-month follow-up period, patients with metastases incurred significantly higher total costs compared to patients with non-metastatic cancer ($93,640 [SD: $245,767] vs $44,011 [SD: $163,708], $p<0.0001$; **Table 1**)
- Overall, 2% of patients died within 12 months post-diagnosis, with a higher mortality rate observed in patients with metastatic cancer relative to patients with non-metastatic cancer (17.4% vs 0.005%, $p<0.0001$; **Table 1**)

Figure 4. Incidence of any Cancer by Age, Sex, and Metastatic Status in the US Medicaid Population (2015–2020)
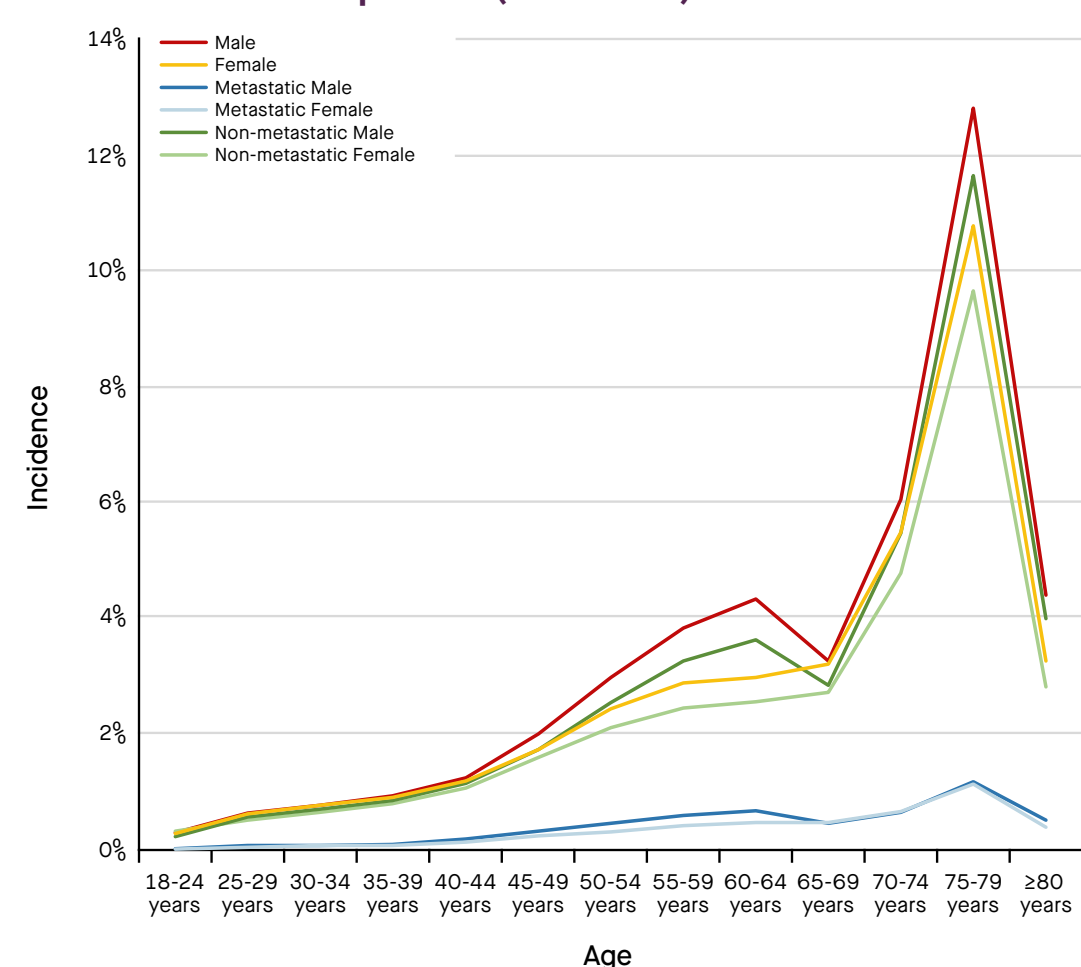

Table 1. Patient and Clinical Characteristics in the US Medicaid Population (2015–2020)

		Metastatic	Non-Metastatic	
		(n=33,979)	(n=245,770)	p-value
Baseline Patient Characteristics				
Age at Diagnosis	Mean (SD)	55.51 (11.48)	53.06 (13.82)	<0.0001
Age Group, n (%)	18-34 years	1988 (5.9)	29,650 (12.1)	<0.0001
	35-49 years	6233 (18.3)	54,073 (22)	<0.0001
	50-64 years	20648 (60.8)	123,811 (50.4)	<0.0001
	65-79 years	4507 (13.3)	33,209 (13.5)	<0.0001
	≥80 years	603 (1.8)	5027 (2.1)	0.0009
Sex, n (%)	Male	14,304 (42.1)	96470 (39.3)	<0.0001
	Female	19,675 (57.9)	149,300 (60.8)	<0.0001
Race, n (%)*	White	12,460 (80.0)	101,480 (81.6)	<0.0001
	Black	2633 (16.9)	19,096 (15.4)	<0.0001
	Asian	379 (2.4)	3056 (2.5)	0.8659
	Other	99 (0.6)	787 (0.6)	0.9615
Smoking Status, n (%)	Yes	11,296 (33.2)	68,706 (28)	<0.0001
Quan-Charlson Comorbidity Index Score	Score ≥1	13,959 (41.4)	96,381 (39.2)	<0.0001
Follow-up Clinical Characteristics				
Anti-cancer Treatment, n (%)	No therapy	10,078 (29.7)	138,604 (56.4)	<0.0001
	Single therapy	8165 (24)	59,124 (24.1)	0.9128
	Multiple therapies	15,736 (46.3)	48,048 (19.5)	<0.0001
Treatment Types, n (%)	Surgery	17,834 (52.5)	81,023 (33)	<0.0001
	Chemotherapy	15,553 (45.8)	55,778 (22.7)	<0.0001
	Radiotherapy	14,252 (41.9)	31,485 (12.8)	<0.0001
	Antimetabolites	3973 (11.7)	5575 (2.3)	<0.0001
	Hormone therapy	977 (2.9)	3290 (1.3)	<0.0001
Follow-up HCRU Costs and 12-Month Mortality				
Total cost, Mean (SD)		$93,640 ($245,767)	$44,011 ($163,708)	<0.0001
Death, n (%)		5905 (17.4)	12 (0.005)	<0.0001

*For patients with available data.

CONCLUSIONS

- The higher cancer burden in the US Medicaid-insured population relative to the general population suggests an increased presence of cancer risk factors that are correlated with lower socioeconomic status (eg, tobacco or alcohol use, obesity, diabetes) in the Medicaid population
- The results may also indicate that disparities in cancer care, such as access to cancer screening, persist in the post-expansion period
- The higher proportion of patients diagnosed with metastases in non-Medicaid expansion states may reflect inadequate access to screening or timely care
- The disease burden associated with metastatic cancer underscores the need for future Medicaid expansion in additional states and an increased focus on early cancer detection in the Medicaid population

References

1. Walker GV, et al. *J Clin Oncol.* 2014;32(28):3118-25.
2. Kim U, et al. *Cancer.* 2020;126(18):4209-4219.
3. Cancer Stat Facts: Cancer of Any Site. The Surveillance, Epidemiology, and End Results (SEER) Program. https://seer.cancer.gov/statfacts/html/all.html. Accessed June 14, 2023.