

RESEARCH REPORT

Oral Cancer in America

Persistent Disparities and Emerging Risks

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Introduction

Oral cancer — the [13th most common cancer worldwide](#) — is expected to cause [12,000 deaths](#) in the United States (US) in 2026 (about 2% of all cancer deaths), with nearly 60,000 new cases diagnosed this same year.

Oral cancer had a [5-year relative survival rate of approximately 70%](#) between 2016 and 2022. [Risk factors for oral cancer](#) include male gender, tobacco and alcohol use, a diet low in fruits and vegetables, genetics, and [unprotected sexual practices](#). It is estimated that the human papillomavirus (HPV) causes [60%–70%](#) of oral cancers in the US, and [vaccination against HPV](#) has been found to lower the risk of developing oral cancer.

While it can be useful to distinguish between cancers that develop in the [oral cavity](#) (i.e., the inner lip, parts of the tongue excluding the base and lingual tonsil, gingiva, floor of the mouth, and palate) and those that develop in the [oropharyngeal region](#) (i.e., the base of the tongue, the lingual tonsil and palatine tonsils, the oropharynx, and the pharynx), the analyses presented in this paper examined both types of cancer together, as national statistics and surveillance often combine both types into a single entity for reporting. Therefore, the umbrella term “oral cancer” will be used to describe both types of cancer in this paper.

In 2022, an [analysis by CareQuest Institute for Oral Health and colleagues](#) examined incidence, prevalence, and cost estimates for oral cancer by using medical and dental claims data from 2012–2019. The results of that analysis found that adults enrolled in Medicaid experienced a substantially higher burden of oral cancer—across prevalence, incidence, and mortality—than those with commercial insurance, despite overall declines over time. That paper also noted that older adults, males, those who used tobacco or alcohol, and people who had an HIV/AIDS diagnosis had higher risks of being diagnosed with oral cancer, and that oral cancer treatment costs were consistently higher for commercially insured enrollees than Medicaid enrollees. The current report updates those estimates by using claims data from 2019–2022. For the purpose of continuity throughout the paper, the 2012–2019 period will be referred to as the “first cohort” and the 2019–2022 period as the “second cohort.”

Methods

The [first cohort includes data analyzed](#) from US Medicaid and commercial insurance claims from the IBM Watson Health MarketScan databases (2015–2019) to compare oral cancer incidence, prevalence, and risk factors among adults aged 21–64 years. Oral cancer cases were identified by using ICD-10 diagnostic codes, with incidence rates estimated by using logistic regression models that included demographic characteristics, comorbidities, tobacco and alcohol use, HIV/AIDS diagnosis, and prior-year dental visits. Mortality rates were assessed by using inpatient discharge status codes, and treatment costs were calculated by summing inpatient, outpatient, and chemotherapy-related claims.

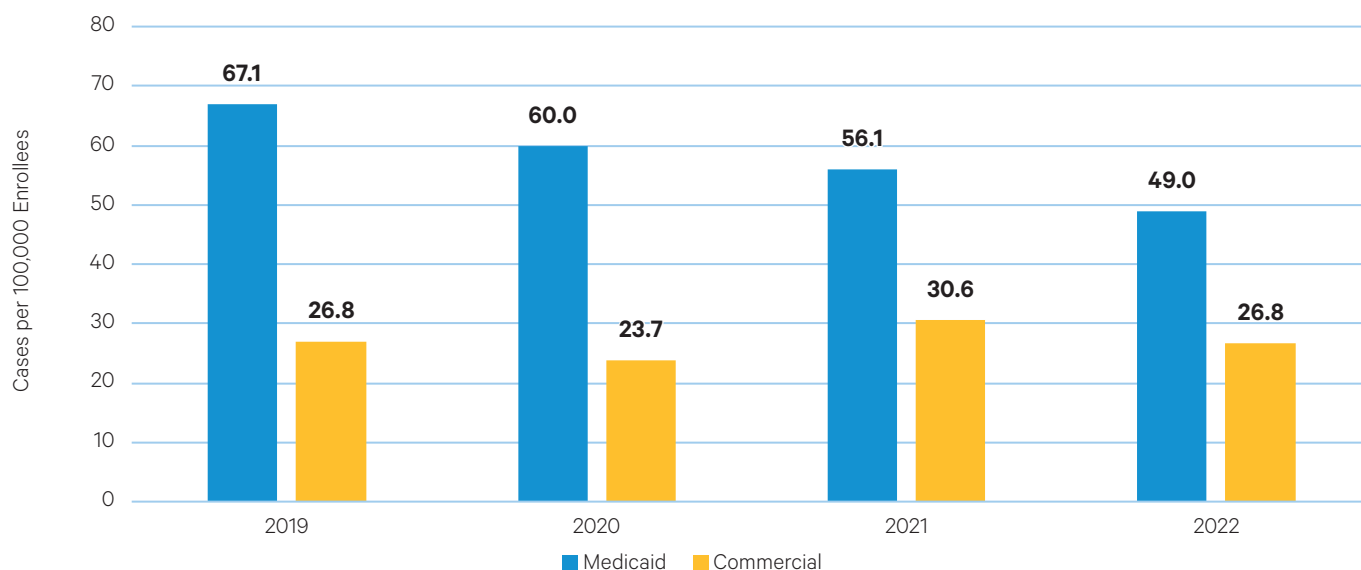
A similar methodology was used to calculate incidence rates and prevalence for oral cancer from 2019 to 2022. Analyses were limited to adults aged 21–64 years, cases were identified by using ICD-10 codes (C00–C14), and rates were calculated per 100,000 people of the insured population. We then used multiple logistic regression models to estimate the odds of incidence of oral cancer and, as covariates, included prior-year dental visit, smoking status, HIV diagnosis, and alcohol use along with demographic characteristics. Total and mean costs for oral cancers were calculated for both net and gross payments. Therefore, absolute figures for the incidence rate and prevalence are not directly comparable between the two cohorts, yet we were able to compare trends across the two ranges of years.

Trends in Oral Cancer Incidence Rates

In the second cohort, the **incidence rate** of oral cancer — that is, the number of cases that are newly diagnosed each year per 100,000 population — was consistently higher among Medicaid enrollees compared to commercial insurance enrollees (Figure 1). The annual incidence rate of oral cancer decreased consistently for Medicaid enrollees between 2019 and 2022, from 67.1 to 49.0 cases per 100,000 enrollees. That trend continues a pattern in the first cohort of declining incident rates among Medicaid enrollees. Among commercial insurance enrollees, the rate remained relatively stable, with 26.8 new cases per 100,000 enrollees in both 2019 and 2022 and slight variation in the intervening years. This stability is also consistent with that found in the first cohort.

Across both insurance types, the incidence of oral cancer in the second cohort increased with age, with adults aged 60 years or older having the highest rates per 100,000 enrollees for each year from 2019 through 2022 (Figure 2). The trend in incidence rates for Medicaid enrollees aged 45 years or older consistently trended downward. In contrast, incidence rates among Medicaid enrollees aged 21–44 years showed more variability across years; for example, the incidence rate for adults aged 30–44 was 34.0 per 100,000 enrollees in 2019, 36.3 in 2020, 29.9 in 2021, and 29.3 in 2022. For adults with commercial insurance, the incidence rate of oral cancer was lower versus Medicaid enrollees and for younger versus older

Figure 1. Oral Cancer Incidence Rates per 100,000 Enrollees, by Insurance Type, 2019–2022



enrollees. However, the year-by-year rates for commercially insured adults showed more variability across years and age groups than for Medicaid enrollees. For example, while incidence rates consistently declined from 2019 to 2022 among Medicaid enrollees aged 60 years or older, the rate among commercial enrollees of the same age varied from 69.8 per 100,000 enrollees in 2019 to 60.9 (2020), 84.9 (2021), and 72.2 (2022).

Males had consistently and substantially higher incidence rates than females across years and insurance types. Further, males with Medicaid coverage had notably higher incidence rates of oral cancer than did males with commercial insurance coverage (Figure 3). For example, in 2022, males with Medicaid coverage had an incidence rate of 190.5 cases per 100,000 enrollees, nearly four times the incidence rate of females with Medicaid coverage (48.7) and more than five times the rate of males with commercial insurance (37.2).

Figure 2. Oral Cancer Incidence Rates per 100,000 Enrollees, by Age and Insurance Type, 2019–2022

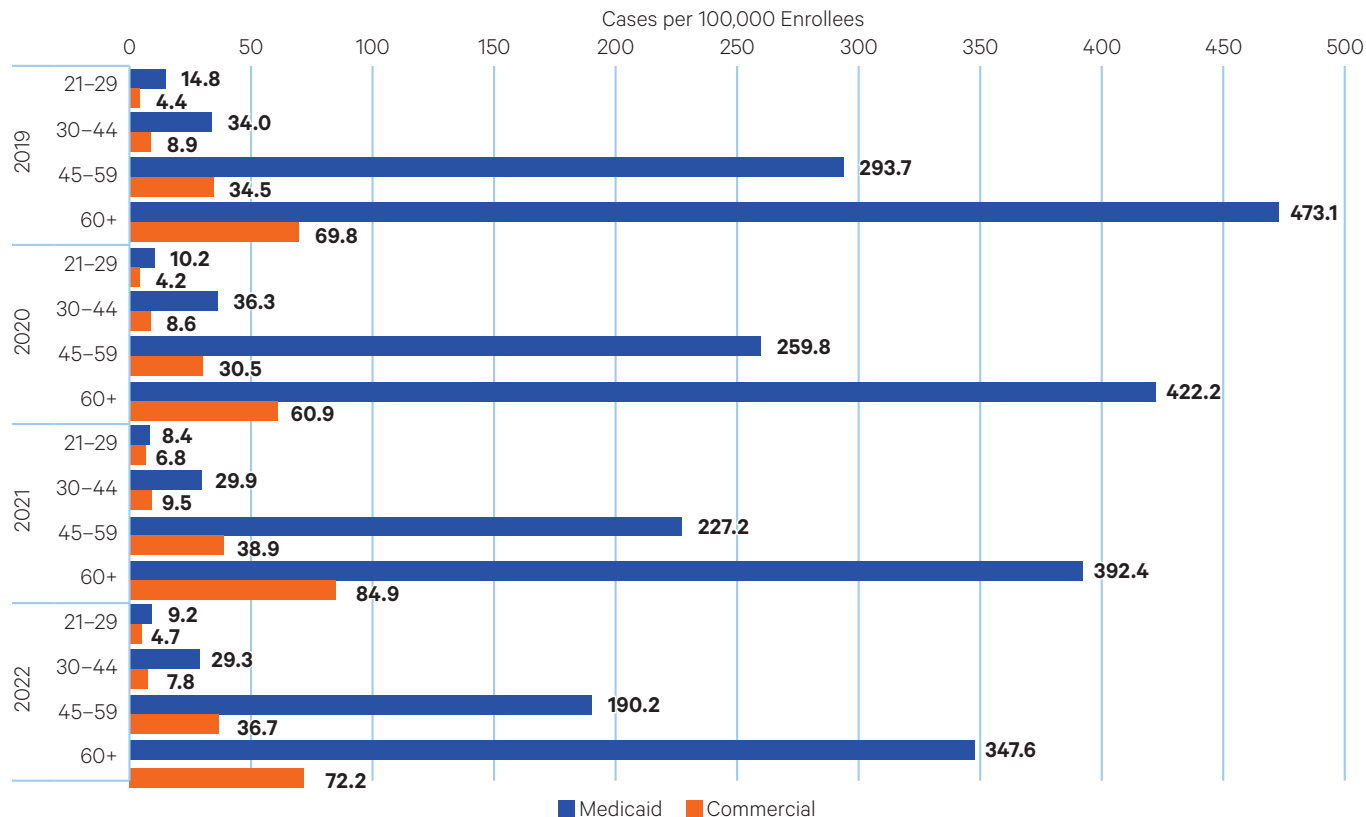
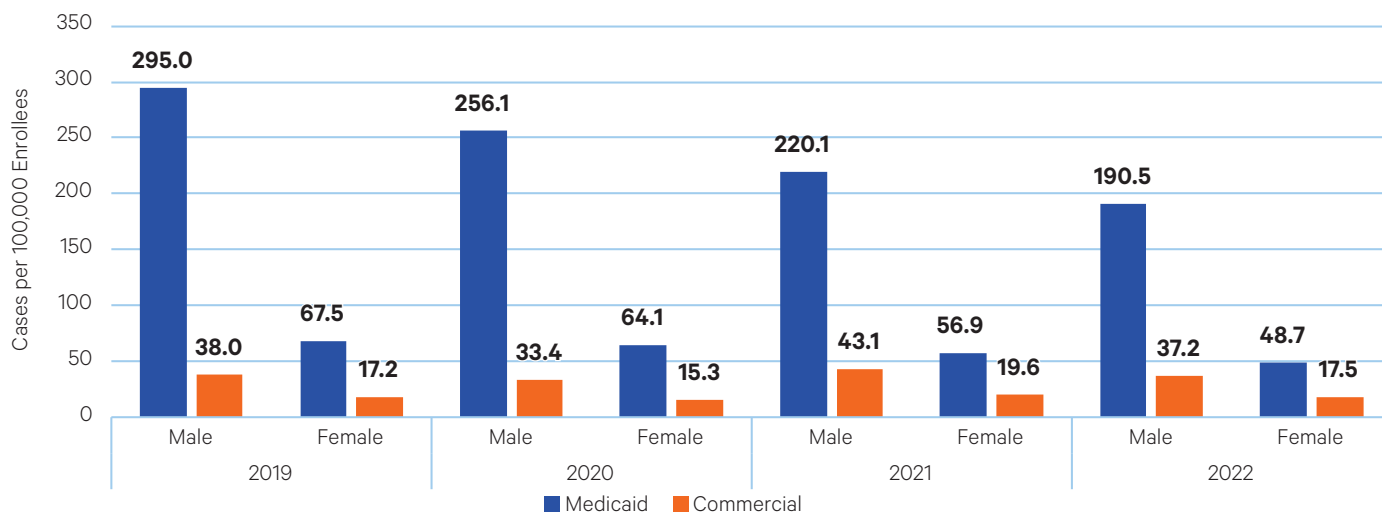


Figure 3. Oral Cancer Incidence Rates per 100,000 Enrollees, by Gender and Insurance Type, 2019–2022



Trends in Oral Cancer Prevalence

Similar to incidence rates, between 2019 and 2022 the **prevalence** of oral cancer — that is, the number of all (both new and existing) cases counted during a 12-month period — was consistently higher among Medicaid enrollees compared to commercial insurance enrollees (Figure 4). The prevalence of oral cancer decreased consistently among Medicaid enrollees, from 139.2 to 111.9 cases per 100,000 enrollees. That trend continues the pattern of declining prevalence among Medicaid enrollees in the first cohort. Among commercial insurance enrollees, the prevalence increased slightly, from 56.3 per 100,000 enrollees in 2019 to 61.7 in 2022. This relative stability is also consistent with that found in the first cohort.

Across both insurance types, the prevalence of oral cancer increased with age, with adults aged 60 years or older having the highest prevalence for each year from 2019 through 2022 (Figure 5). The prevalence among Medicaid enrollees generally trended downward from 2019 to 2022. While the prevalence of oral cancer was lower overall for commercial insurance enrollees than for Medicaid enrollees, and older commercial enrollees had consistently higher oral cancer prevalence, the year-by-year prevalence showed more variability across years and age groups among commercial enrollees than among Medicaid enrollees. For example, while Medicaid enrollees aged 45–59 showed a consistent decline in prevalence from 2019 to 2022, the prevalence among commercial enrollees of the same age varied from 75.3 per 100,000 enrollees in 2019 to 73.3 (2020), 82.4 (2021), and 84.4 (2022).

Across both insurance types, the prevalence of oral cancer increased with age, with adults aged 60 years or older having the highest prevalence for each year from 2019 through 2022.

Figure 4. Oral Cancer Prevalence per 100,000 Enrollees, by Insurance Type, 2019–2022

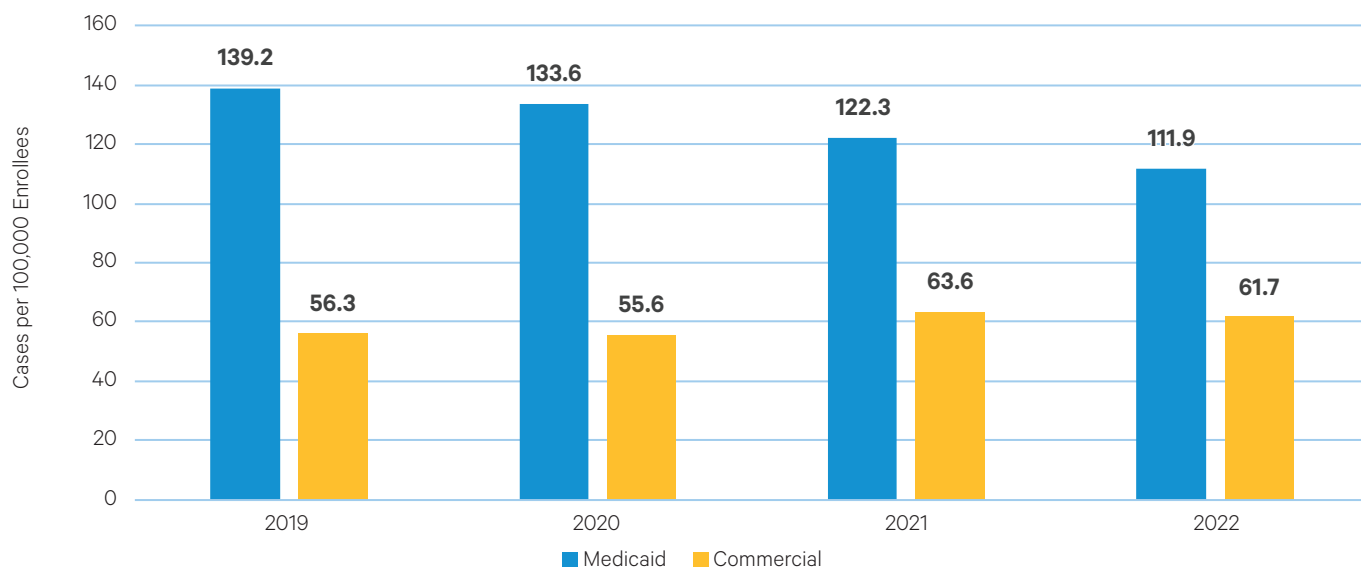
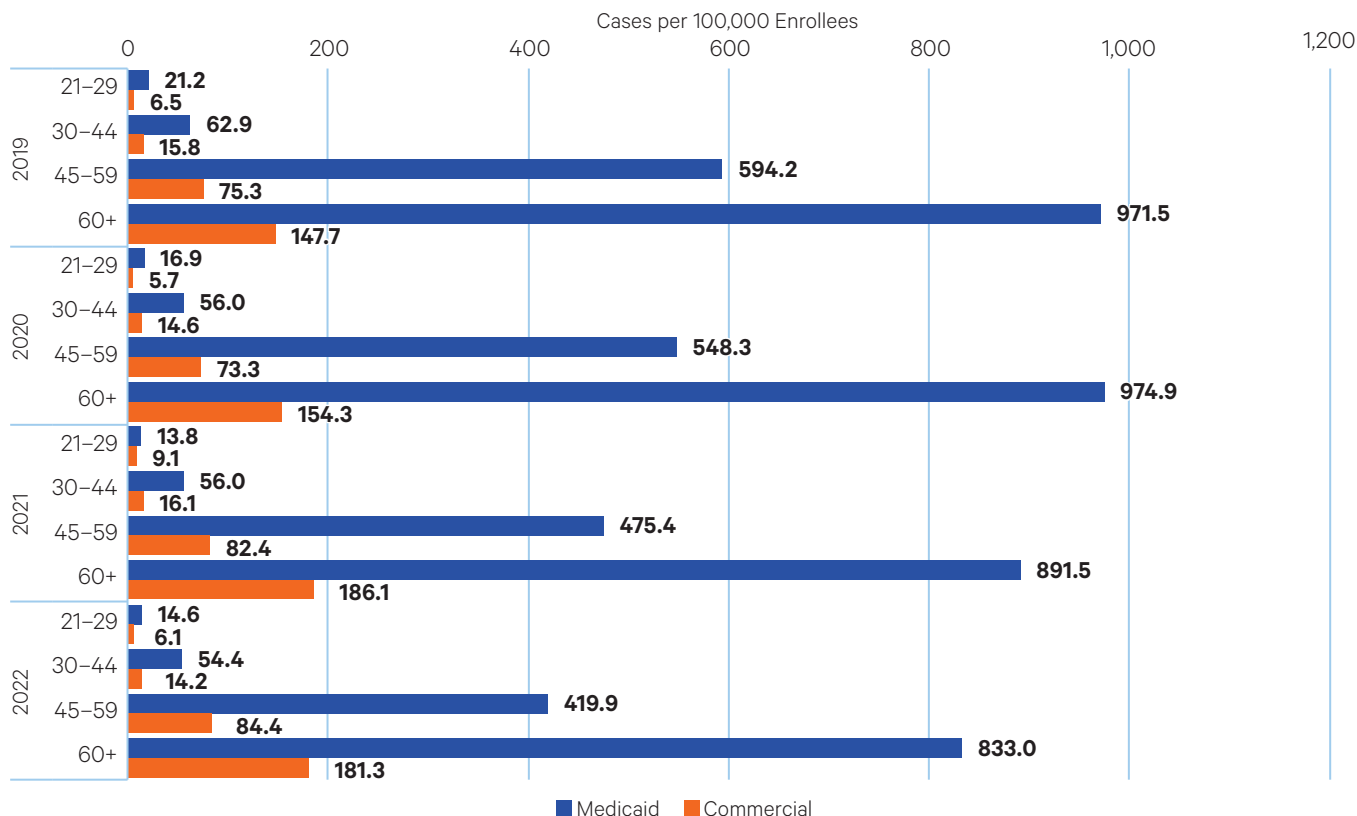


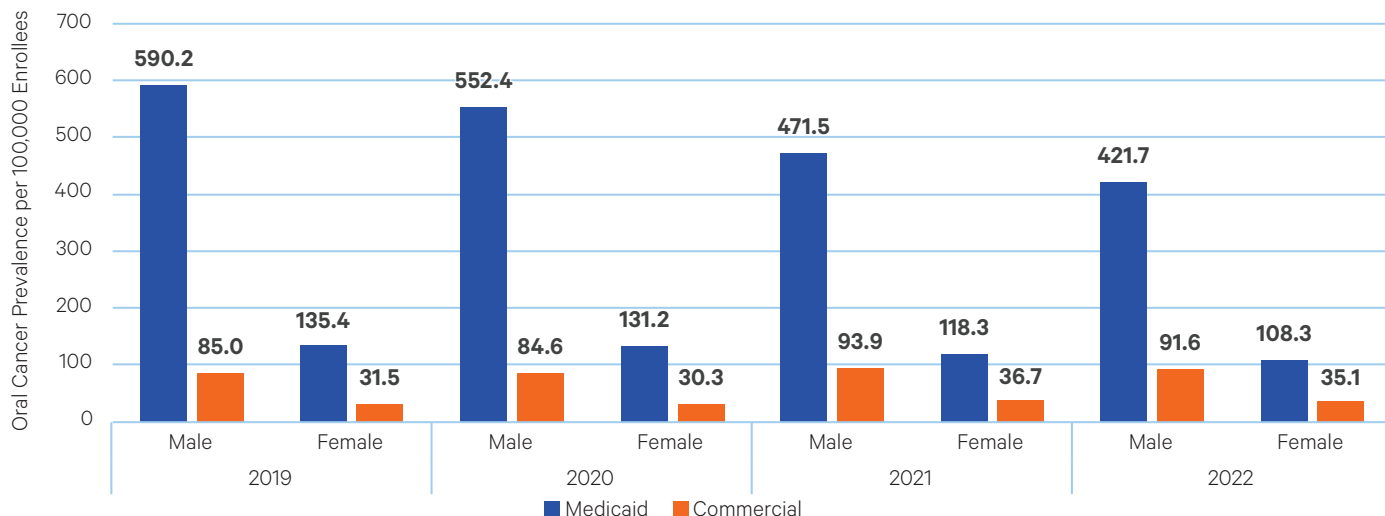
Figure 5. Oral Cancer Prevalence per 100,000 Enrollees, by Age and Insurance Type, 2019–2022



Similar to incidence rates, males had consistently and substantially higher prevalence than females across years and insurance types (Figure 6). Further, males with Medicaid coverage had a notably higher prevalence of oral cancer than did males with commercial insurance coverage. For example, in

2022, males with Medicaid coverage had a prevalence of 421.7 cases per 100,000 enrollees, nearly four times the prevalence among females with Medicaid coverage (108.3) and over four times the prevalence among males with commercial insurance (91.6).

Figure 6. Oral Cancer Prevalence per 100,000 Enrollees, by Gender and Insurance Type, 2019–2022



Oral Cancer Correlates

In the second cohort, correlates of oral cancer diagnosis in 2019 included being male, older, having had a dental visit in the past year, and use of tobacco and alcohol (Table 1 for years 2019 and 2022, Appendix for years 2020 and 2021). In all subsequent years, these correlates remained statistically significant, with the addition of an HIV/AIDS diagnosis as a correlate of an oral cancer diagnosis starting in 2020. These findings are largely consistent with those from the first cohort,

in which older age, being male, current tobacco and alcohol use, and HIV/AIDS diagnosis were all correlates of being diagnosed with oral cancer. In contrast to the second cohort, the first cohort suggested having had a dental visit in the prior year was associated with lower odds of receiving an oral cancer diagnosis. Because the second cohort included a period of [disruption in preventive dental care](#) due to the COVID-19 pandemic, fewer cases may have been detected during this disruption, resulting in more cases being detected when individuals were able to return for routine dental screenings.

Table 1. Correlates of Oral Cancer Diagnosis in 2019 and 2022 (2020–21 in Appendix)

Factor	Odds Ratio	95% Confidence Interval	p-value
2019			
Gender			
Female	<i>ref</i>	<i>ref</i>	<i>ref</i>
Male	2.55	2.33, 2.78	<0.001
Age (years)			
21–29	<i>ref</i>	<i>ref</i>	<i>ref</i>
30–44	1.98	1.53, 2.60	<0.001
45–59	11.40	9.02, 14.60	<0.001
≥60	18.90	14.90, 24.40	<0.001
Having had a dental visit in the past year			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.63	1.47, 1.79	<0.001
Tobacco use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	2.82	2.44, 3.25	<0.001
Alcohol use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	2.24	1.93, 2.58	<0.001
HIV/AIDS diagnosis			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.21	0.73, 1.87	0.40
2022			
Gender			
Female	<i>ref</i>	<i>ref</i>	<i>ref</i>
Male	2.46	2.22, 2.72	<0.001
Age (years)			
21–29	<i>ref</i>	<i>ref</i>	<i>ref</i>
30–44	2.28	1.70, 3.12	<0.001
45–59	11.20	8.52, 15.00	<0.001
≥60	20.90	15.90, 28.10	<0.001
Having had a dental visit in the past year			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.79	1.59, 2.01	<0.001

Table 1. Correlates of Oral Cancer Diagnosis in 2019 and 2022 (2020–21 in Appendix 1) *continued*

Factor	Odds Ratio	95% Confidence Interval	p-value
Tobacco use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	3.00	2.50, 3.56	<0.001
Alcohol use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.86	1.54, 2.24	<0.001
HIV/AIDS diagnosis			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.82	1.12, 2.78	0.010

ref = reference category

Costs of Oral Cancer

Overall, mean gross (amount billed) and mean net (amount paid after adjustments) costs associated with oral cancer were consistently higher for commercial insurance than for Medicaid (Table 2). Mean commercial gross costs per member were approximately twice those of Medicaid; for example, in 2022, mean gross commercial costs were \$14,072 (1st quartile (Q1) = \$305, 3rd quartile (Q3) = \$9,540), compared to \$7,954 (Q1 = \$0, Q3 = \$2,134). Mean net costs were also consistently higher for commercial insurance than for Medicaid. For total net costs overall and for 2019 and 2020, Medicaid costs were higher than those for commercial plans; in 2021 and 2022, total net commercial costs were slightly higher than Medicaid costs.

From 2019 to 2020, all mean and total net and gross costs for oral cancer increased for both Medicaid and commercial plans. In 2021, costs for Medicaid — average and total net and gross — all decreased, while all commercial costs increased, potentially after a pandemic-induced decline in dental services in 2020. In 2022, all Medicaid costs, with the exception of total net costs, increased from 2021 levels. Meanwhile, all commercial costs decreased from 2021 to 2022 in a return to more typical levels after the 2021, post-COVID-19 bump.

Table 2. Mean and Total Gross and Net Insurance Oral Cancer Costs, by Insurance Type and Year

	Overall	2019	2020	2021	2022
Mean gross costs — Medicaid (Q1, Q3)	\$6,826 (\$0, \$2,598)	\$6,259 (\$0, \$2,936)	\$7,290 (\$0, \$3,531)	\$6,007 (\$0, \$2,125)	\$7,954 (\$0, \$2,134)
Mean gross costs — commercial (Q1, Q3)	\$13,519 (\$281, \$8,897)	\$12,228 (\$255, \$7,316)	\$13,292 (\$281, \$9,082)	\$14,454 (\$285, \$9,305)	\$14,072 (\$305, \$9,540)
Total gross costs — Medicaid (Q1, Q3)	\$118,921,036 (\$0, \$1,793,407)	\$28,772,878 (\$0, \$1,095,637)	\$31,609,632 (\$0, \$573,734)	\$27,678,642 (\$0, \$832,859)	\$30,859,885 (\$0, \$1,793,407)
Total gross costs — commercial (Q1, Q3)	\$137,448,467 (\$0, \$587,266)	\$31,647,052 (\$0, \$376,823)	\$32,446,095 (\$0, \$345,434)	\$39,907,164 (\$0, \$487,767)	\$33,448,155 (\$0, \$587,266)
Mean net costs — Medicaid (Q1, Q3)	\$8,353 (\$95, \$4,544)	\$7,960 (\$105, \$5,022)	\$9,779 (\$114, \$6,373)	\$7,809 (\$87, \$3,929)	\$7,871 (\$69, \$3,201)
Mean net costs — commercial (Q1, Q3)	\$12,885 (\$149, \$7,304)	\$11,522 (\$126, \$5,940)	\$12,520 (\$145, \$7,383)	\$14,063 (\$155, \$8,045)	\$13,374 (\$176, \$7,810)
Total net costs — Medicaid (Q1, Q3)	\$145,517,376 (\$0, \$384,558)	\$36,592,996 (\$0, \$284,982)	\$42,401,527 (\$0, \$384,558)	\$35,983,066 (\$0, \$356,376)	\$30,539,788 (\$0, \$316,190)
Total net costs — commercial (Q1, Q3)	\$130,998,232 (\$0, \$655,876)	\$29,818,983 (\$0, \$459,143)	\$30,562,083 (\$0, \$346,353)	\$38,827,209 (\$0, \$655,876)	\$31,789,958 (\$0, \$584,422)

Q1 = 1st quartile; Q3 = 3rd quartile

Comparisons Between the Two Cohorts

Several trends were consistent between the two cohorts. In both time cohorts, incidence rates and prevalence of oral cancer were consistently higher among Medicaid enrollees than among commercial enrollees. This pattern remained consistent across all years, age groups, and genders. Similarly, both the incidence rate and prevalence of oral cancer increased consistently with age, with adults aged 60 or older showing substantially higher rates than younger adults. Regardless of insurance type, men had notably and consistently higher incidence rates and prevalence of oral cancer than did women.

Some notable differences emerged over time. Although the incidence rate of oral cancer consistently declined among Medicaid enrollees in the first and second cohorts, the incidence became more variable and relatively flat among commercially insured individuals in both cohorts. While prevalence declined steadily among Medicaid enrollees during both cohorts, commercial insurance enrollees experienced a slight increase in oral cancer prevalence during the second cohort after remaining relatively low and stable during the first cohort.

Correlates of oral cancer diagnosis — notably male gender, older age, tobacco and alcohol use, and HIV/AIDS diagnoses — remained stable across both time periods. One notable difference was found for having had a dental visit in the prior year; during the first cohort, that factor appeared to have a protective effect, with enrollees with a dental visit having lower odds of an oral cancer diagnosis. However, the analysis of the second cohort found that those with a dental visit had higher odds of an oral cancer diagnosis. This difference may be related to the decrease in access to dental care starting in 2020 due to the COVID-19 pandemic and an increase in diagnoses once routine dental visits resumed.

Regardless of insurance type, men had notably and consistently higher incidence rates and prevalence of oral cancer than did women.

Mean gross insurance costs of treating oral cancer were consistently higher for commercial insurance enrollees than for Medicaid enrollees. These cost differences likely reflect higher reimbursement levels for commercial insurance compared to Medicaid rather than more utilization or disease burden. While there is a consistent pattern of higher disease burden and lower average spending in Medicaid and lower disease burden and higher average spending by commercial plans, perhaps due to more covered services in the latter, trends in the more recent time period raise concerns that an increasing incidence rate and prevalence of oral cancer among older adults could increase future treatment costs.

Limitations

This study has some limitations that should be considered in interpreting the results. Because these analyses relied on medical and dental claims data, no information is available on social determinants, drivers, and influencers of health, such as barriers to care. Information on individuals' race and ethnicity was not available in the commercial data, and older adults who were dually eligible for Medicaid and Medicare were not included in the analyses, limiting the conclusions that can be

drawn by different demographic characteristics. The more recent cohort (2019–2022) included disruptions to care related to the COVID-19 pandemic that were not reflected in the earlier cohort. Prior research shows that preventive and restorative dental care dropped substantially [during April 2020 in response to the pandemic](#), while oral surgery, endodontic (root canal), and other major restorative care increased.



Conclusion

From 2019 to 2022 (the second cohort), oral cancer incidence rates and prevalence remained consistently higher among Medicaid enrollees than among commercially insured adults. In contrast, rates among commercially insured adults were largely stable, with emerging increases among older age groups. Commercially insured enrollees had higher average treatment costs, while Medicaid had higher total net costs overall. Across both insurance types, older age, male gender, current tobacco and alcohol use, and HIV/AIDS diagnosis remained strong correlates of oral cancer diagnosis, while the role of dental utilization in the likelihood of receiving an oral cancer diagnosis requires more investigation. Together, these findings highlight the need for enhanced screening and targeted prevention strategies for older adults and males to address persistent and shifting disparities in oral cancer diagnosis.

Across both insurance types, older age, male gender, current tobacco and alcohol use, and HIV/AIDS diagnosis remained strong correlates of oral cancer diagnosis, while the role of dental utilization in the likelihood of receiving an oral cancer diagnosis requires more investigation.

Appendix

Correlates of Oral Cancer Diagnosis in 2020 and 2021

Factor	Odds Ratio	95% Confidence Interval	p-value
2020			
Gender			
Female	<i>ref</i>	<i>ref</i>	<i>ref</i>
Male	2.64	2.41, 2.91	<0.001
Age (years)			
21–29	<i>ref</i>	<i>ref</i>	<i>ref</i>
30–44	2.82	2.07, 3.92	<0.001
45–59	15.60	11.70, 21.30	<0.001
≥60	25.70	19.20, 35.30	<0.001
Having had a dental visit in the past year			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.89	1.68, 2.11	<0.001
Tobacco use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	2.86	2.43, 3.35	<0.001
Alcohol use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	2.13	1.81, 2.49	<0.001
HIV/AIDS diagnosis			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.76	1.13, 2.60	0.007
2021			
Gender			
Female	<i>ref</i>	<i>ref</i>	<i>ref</i>
Male	2.35	2.15, 2.57	<0.001
Age (years)			
21–29	<i>ref</i>	<i>ref</i>	<i>ref</i>
30–44	2.58	1.93, 3.52	<0.001
45–59	14.80	11.30, 19.80	<0.001
≥60	26.30	20.00, 35.30	<0.001
Having had a dental visit in the past year			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.82	1.63, 2.02	<0.001
Tobacco use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	3.16	2.71, 3.67	<0.001
Alcohol use			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.99	1.69, 2.32	<0.001
HIV/AIDS diagnosis			
No	<i>ref</i>	<i>ref</i>	<i>ref</i>
Yes	1.64	1.05, 2.44	0.021
<i>ref</i> = reference category			

CareQuest Institute for Oral Health

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