Recent trends in incidence, survival and mortality of oral cancer in Northern Ireland

(A comparison between April-December of 2021, 2020 and 2018-2019)

INCIDENCE

During the April-December period the number of cases of oral cancer diagnosed decreased between 2018-2019 and 2021 by 16.9% from 219 cases per year to 182 cases.
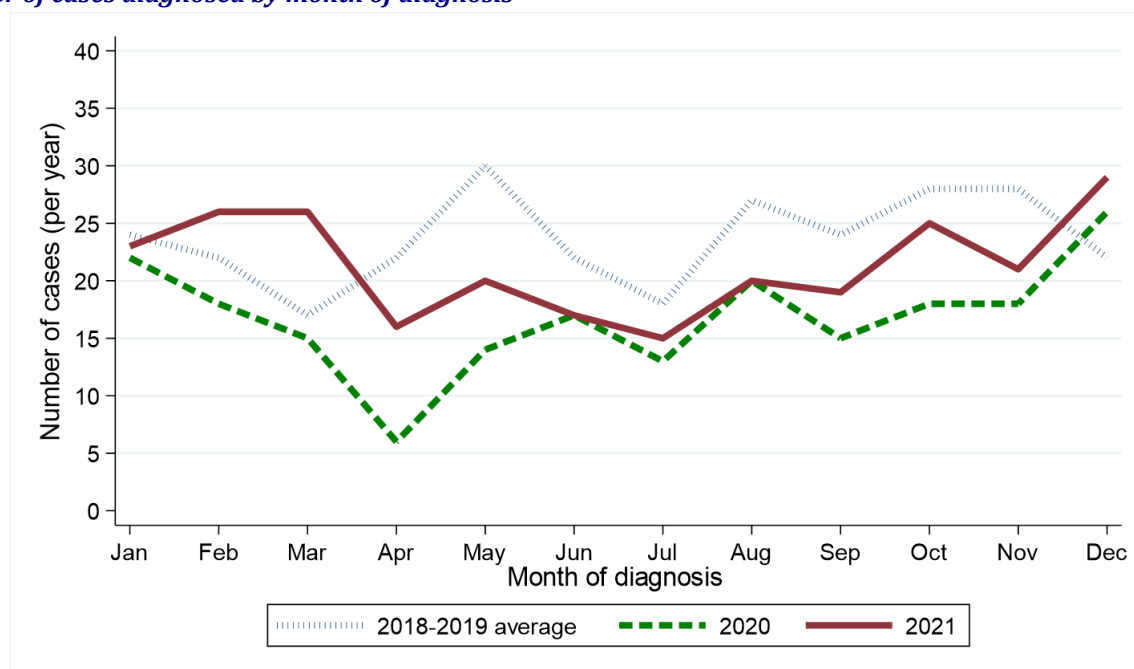
Table 1: Number of oral cancer cases diagnosed in 2018-2021 by month and year of diagnosis

Period of diagnosis	Annual total	Month diagnosed											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	282	24	22	17	22	30	22	18	27	24	28	28	22
2020	202	22	18	15	6	14	17	13	20	15	18	18	26
2021	257	23	26	26	16	20	17	15	20	19	25	21	29

* Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.

Figure 1: Number of oral cancer cases diagnosed in 2018-2021 by month/quarter and year of diagnosis
(a) Number of cases diagnosed by month of diagnosis

(b) Percentage change over time in number of cases by quarter of diagnosis
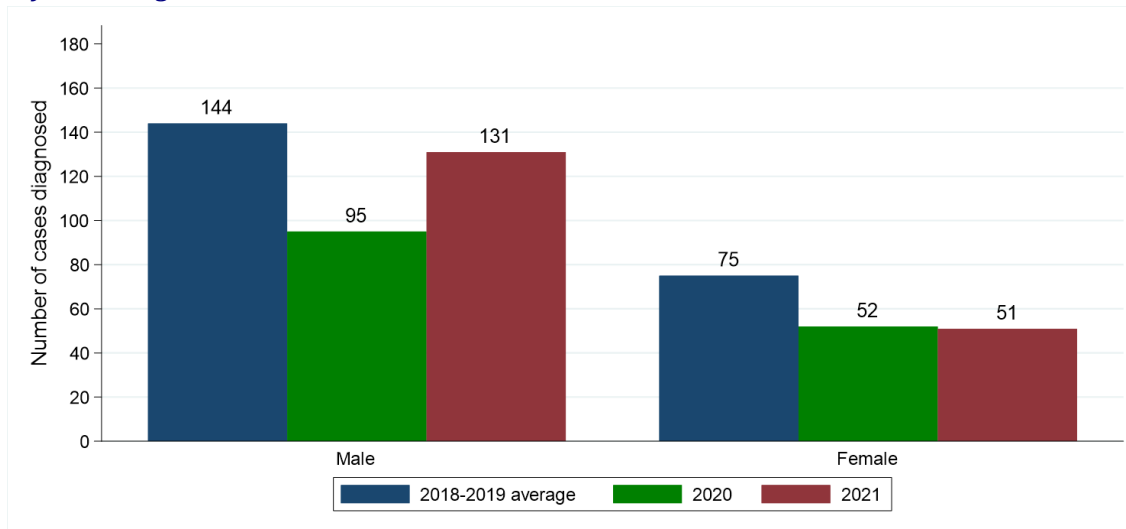
GENDER

Excluding the first quarter of each year the number of male oral cancer cases diagnosed decreased by 9.0% from 144 per year in 2018-2019 to 131 in 2021. Between the same two time periods the number of female oral cancer cases diagnosed decreased by 32.0% from 75 per year in 2018-2019 to 51 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was not statistically significant.

Table 2: Number and proportion of oral cancer cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	219	147	182	-32.9%	-16.9%
Male	144 (65.8%)	95 (64.6%)	131 (72.0%)	-34.0%	-9.0%
Female	75 (34.2%)	52 (35.4%)	51 (28.0%)	-30.7%	-32.0%

* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

Figure 2: Number of oral cancer cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis
(a) Number of cases diagnosed

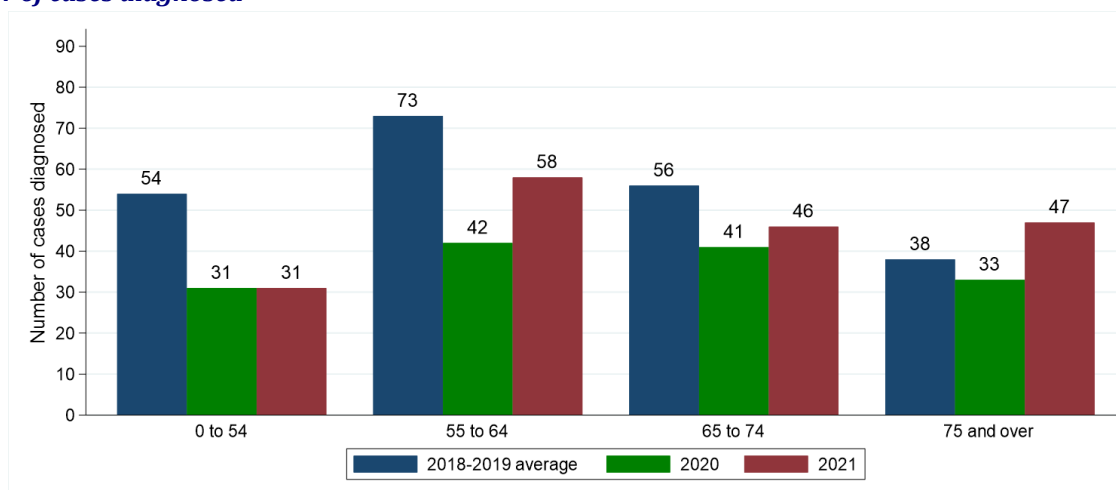*(b) Percentage change over time in number of cases*

AGE

Excluding the first quarter of each year the number of cases of oral cancer diagnosed among those aged 0 to 54 decreased by 42.6% from 54 per year in 2018-2019 to 31 in 2021. Between the same two time periods the number of cases of oral cancer diagnosed among those aged 75 and over increased by 23.7% from 38 per year in 2018-2019 to 47 in 2021. The change in case distribution by age between 2018-2019 and 2021 was statistically significant (p = 0.043).

Table 3: Number and proportion of oral cancer cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	219	147	182	-32.9%	-16.9%
0 to 54	54 (24.7%)	31 (21.1%)	31 (17.0%)	-42.6%	-42.6%
55 to 64	73 (33.3%)	42 (28.6%)	58 (31.9%)	-42.5%	-20.5%
65 to 74	56 (25.6%)	41 (27.9%)	46 (25.3%)	-26.8%	-17.9%
75 and over	38 (17.4%)	33 (22.4%)	47 (25.8%)	-13.2%	+23.7%

* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

Figure 3: Number of oral cancer cases diagnosed in April-December of 2018-2021 by age and period of diagnosis
(a) Number of cases diagnosed

(b) Percentage change over time in number of cases
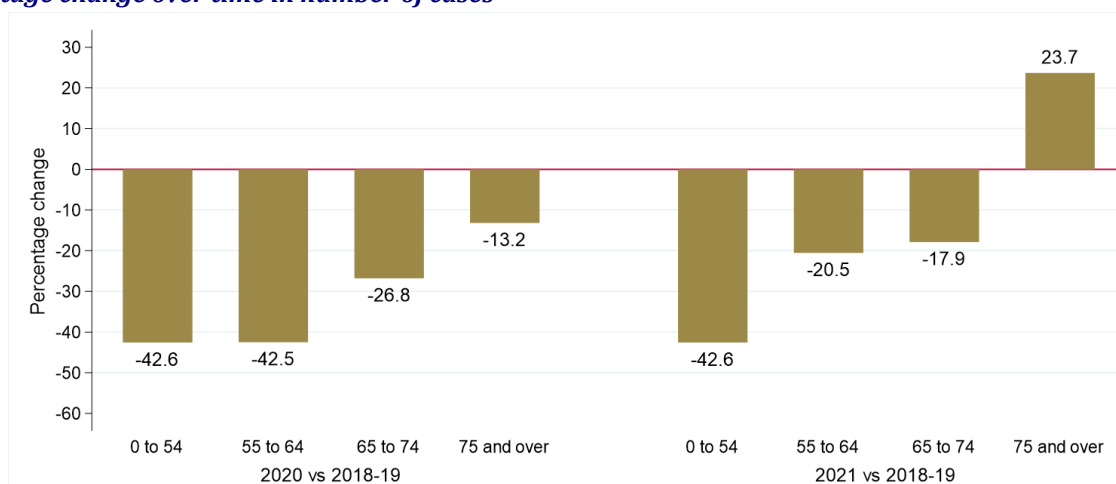
HEALTH AND SOCIAL CARE TRUST

Excluding the first quarter of each year the number of cases of oral cancer diagnosed among those resident in South Eastern HSCT decreased by 55.3% from 47 per year in 2018-2019 to 21 in 2021. Between the same two time periods the number of cases of oral cancer diagnosed among those resident in Western HSCT increased by 23.5% from 34 per year in 2018-2019 to 42 in 2021. The change in case distribution by Health and Social Care Trust between 2018-2019 and 2021 was statistically significant (p = 0.003).

Table 4: Number and proportion of oral cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

Health and Social Care Trust	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	219	147	182	-32.9%	-16.9%
Belfast	55 (25.1%)	30 (20.4%)	37 (20.3%)	-45.5%	-32.7%
Northern	49 (22.4%)	39 (26.5%)	40 (22.0%)	-20.4%	-18.4%
South Eastern	47 (21.5%)	28 (19.0%)	21 (11.5%)	-40.4%	-55.3%
Southern	35 (16.0%)	29 (19.7%)	42 (23.1%)	-17.1%	+20.0%
Western	34 (15.5%)	21 (14.3%)	42 (23.1%)	-38.2%	+23.5%

* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.
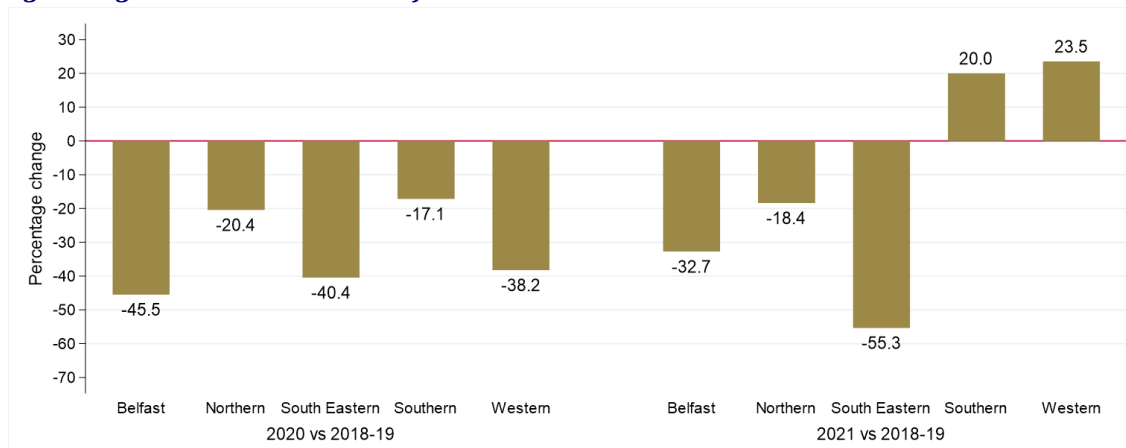
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of oral cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis
(a) Number of cases diagnosed
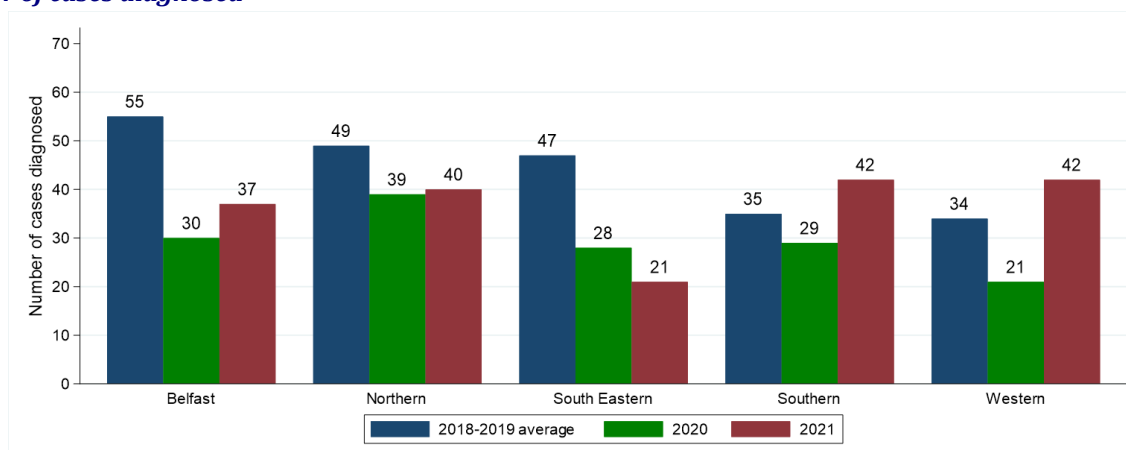
(b) Percentage change over time in number of cases

Socio-economic deprivation

Excluding the first quarter of each year the number of cases of oral cancer diagnosed among those resident in the least deprived quintile decreased by 46.5% from 43 per year in 2018-2019 to 23 in 2021. Between the same two time periods the number of cases of oral cancer diagnosed among those resident in the most deprived quintile decreased by 14.0% from 57 per year in 2018-2019 to 49 in 2021. The change in case distribution by deprivation quintile between 2018-2019 and 2021 was not statistically significant.

Table 5: Number and proportion of oral cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	219	147	182	-32.9%	-16.9%
Most deprived	57 (26.0%)	36 (24.5%)	49 (26.9%)	-36.8%	-14.0%
Quintile 2	37 (16.9%)	36 (24.5%)	44 (24.2%)	-2.7%	+18.9%
Quintile 3	43 (19.6%)	24 (16.3%)	31 (17.0%)	-44.2%	-27.9%
Quintile 4	40 (18.3%)	25 (17.0%)	35 (19.2%)	-37.5%	-12.5%
Least deprived	43 (19.6%)	26 (17.7%)	23 (12.6%)	-39.5%	-46.5%

* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.
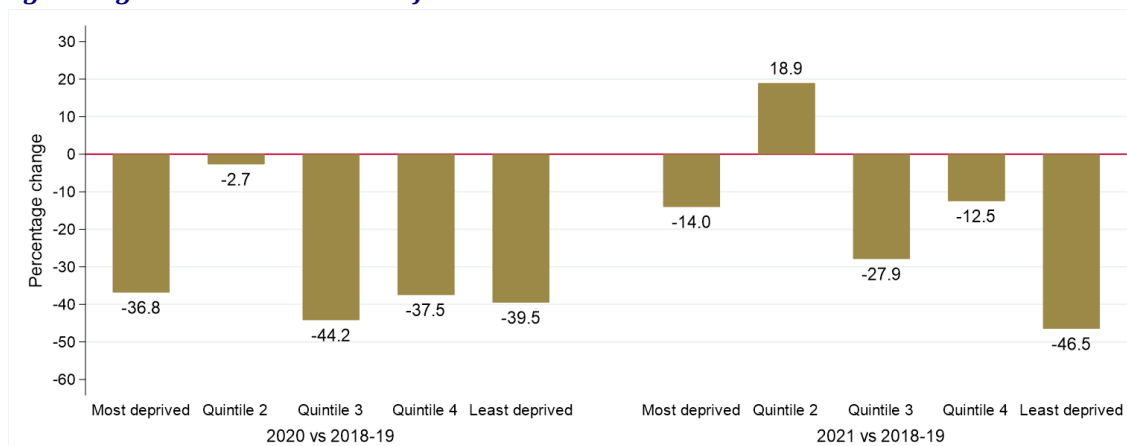
Note: Cases with unknown deprivation quintile are included in totals.

Figure 5: Number of oral cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis
(a) Number of cases diagnosed
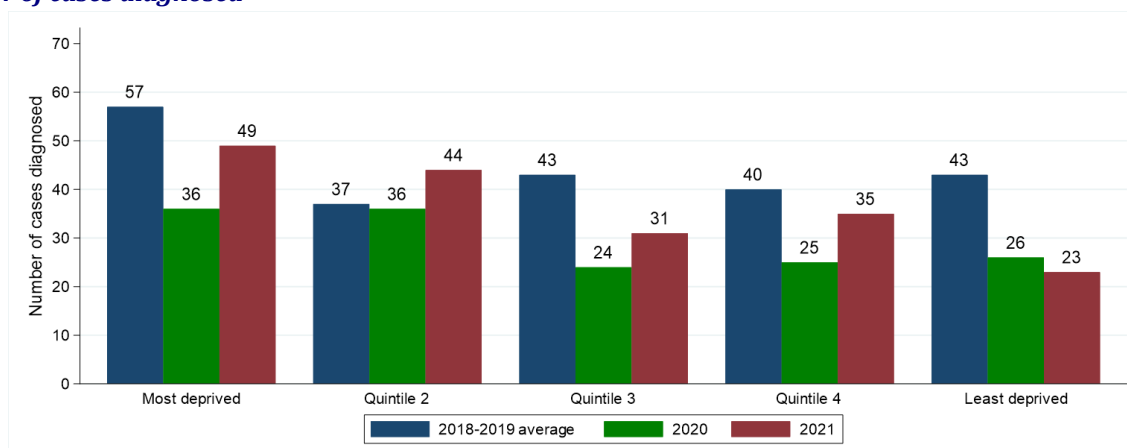
(b) Percentage change over time in number of cases

STAGE AT DIAGNOSIS

The number of oral cancer cases diagnosed at stage I in April to December of each year decreased by 18.0% from 50 per year in 2018-2019 to 41 in 2021. In addition the number of oral cancer cases diagnosed at stage IV decreased by 25.5% from 98 per year in 2018-2019 to 73 in 2021. As a proportion of all cases, stage IV diagnosis decreased from 44.7% in 2018-2019 to 40.1% in 2021. The change in stage distribution between 2018-2019 and 2021 was not statistically significant.

Table 6: Number and proportion of oral cancer cases diagnosed in April-December of 2018-2021 by stage and period of diagnosis

Stage at diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All stages	219	147	182	-32.9%	-16.9%
Stage I	50 (22.8%)	35 (23.8%)	41 (22.5%)	-30.0%	-18.0%
Stage II	25 (11.4%)	21 (14.3%)	27 (14.8%)	-16.0%	+8.0%
Stage III	32 (14.6%)	28 (19.0%)	32 (17.6%)	-12.5%	0.0%
Stage IV	98 (44.7%)	58 (39.5%)	73 (40.1%)	-40.8%	-25.5%
Unknown	15 (6.8%)	5 (3.4%)	9 (4.9%)	-66.7%	-40.0%

* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

Figure 6: Proportion of oral cancer cases diagnosed in April-December of 2018-2021 by stage and period of diagnosis
(a) Proportion of cases diagnosed
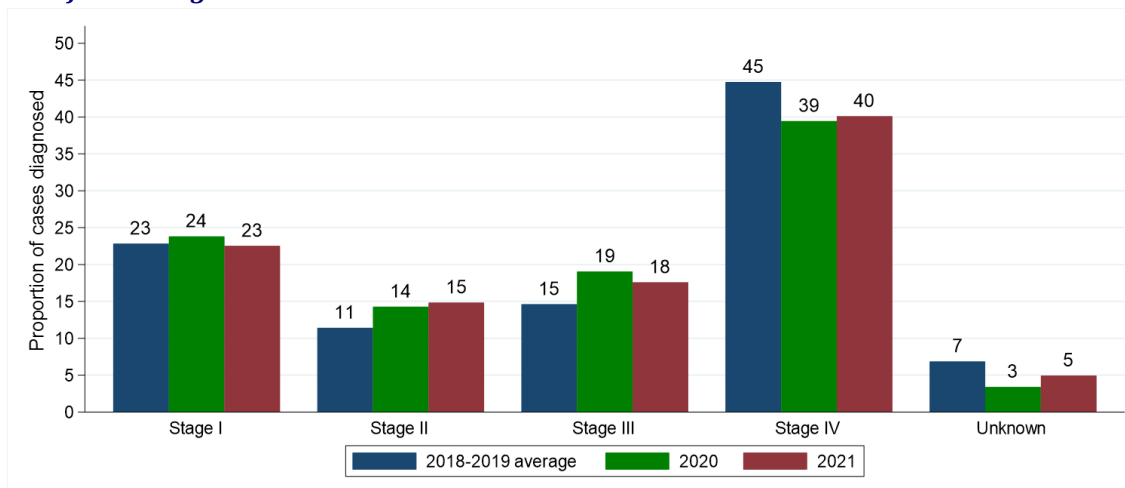
(b) Percentage change over time in number of cases
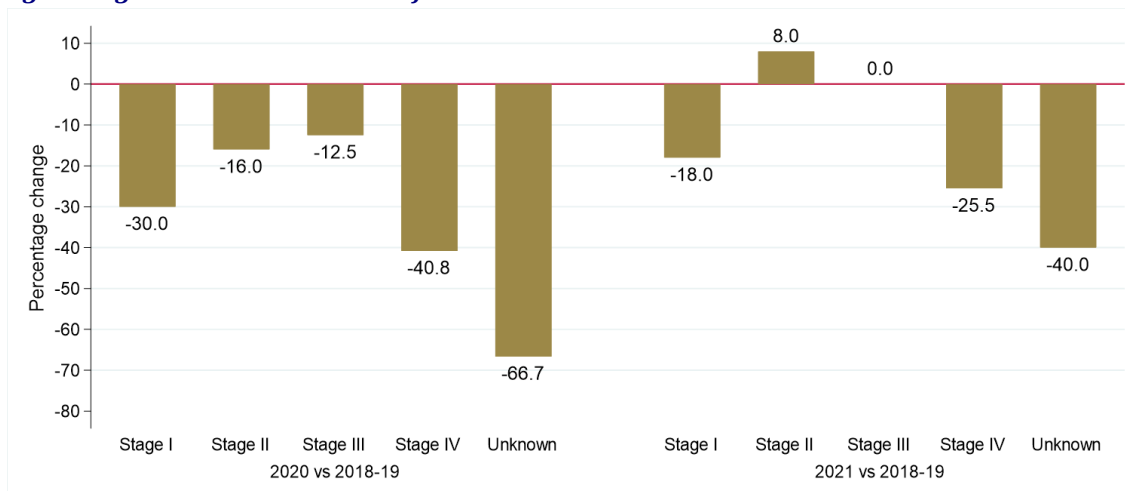
TREATMENT

Excluding the first quarter of each year the number of oral cancer cases resulting in treatment by surgery within six months decreased by 37.0% from 108 per year in 2018-2019 to 68 in 2021. The resulting decrease in the proportion receiving surgery from 49.3% in 2018-2019 to 37.4% in 2021 was statistically significant (p = 0.008).

Between the same two time periods the number of oral cancer cases resulting in treatment by systemic therapy decreased by 3.6% from 56 per year in 2018-2019 to 54 in 2021. The resulting increase in the proportion receiving systemic therapy from 25.6% in 2018-2019 to 29.7% in 2021 was not statistically significant.

The number of oral cancer cases treated with radiotherapy decreased by 22.0% from 132 per year in 2018-2019 to 103 in 2021. The resulting decrease in the proportion receiving radiotherapy from 60.3% in 2018-2019 to 56.6% in 2021 was not statistically significant.

Excluding the first quarter of each year the number of oral cancer cases receiving none of these treatments within six months of diagnosis increased by 22.2% from 27 per year in 2018-2019 to 33 in 2021. The resulting increase in the proportion receiving none of these treatments from 12.3% in 2018-2019 to 18.1% in 2021 was not statistically significant.

Table 7: Number and proportion of oral cancer cases diagnosed in April-December of 2018-2021 by treatment type (within six months of diagnosis) and period of diagnosis

Treatment type	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Surgery	108 (49.3%)	60 (40.8%)	68 (37.4%)*	-44.4%	-37.0%
Systemic therapy	56 (25.6%)	41 (27.9%)	54 (29.7%)	-26.8%	-3.6%
Radiotherapy	132 (60.3%)	93 (63.3%)	103 (56.6%)	-29.5%	-22.0%
None of these treatments	27 (12.3%)	24 (16.3%)	33 (18.1%)	-11.1%	+22.2%

* Statistically significant change compared to 2018-2019

Figure 7: Proportion of oral cancer cases diagnosed in April-December of 2018-2021 by treatment type (within six months of diagnosis) and period of diagnosis
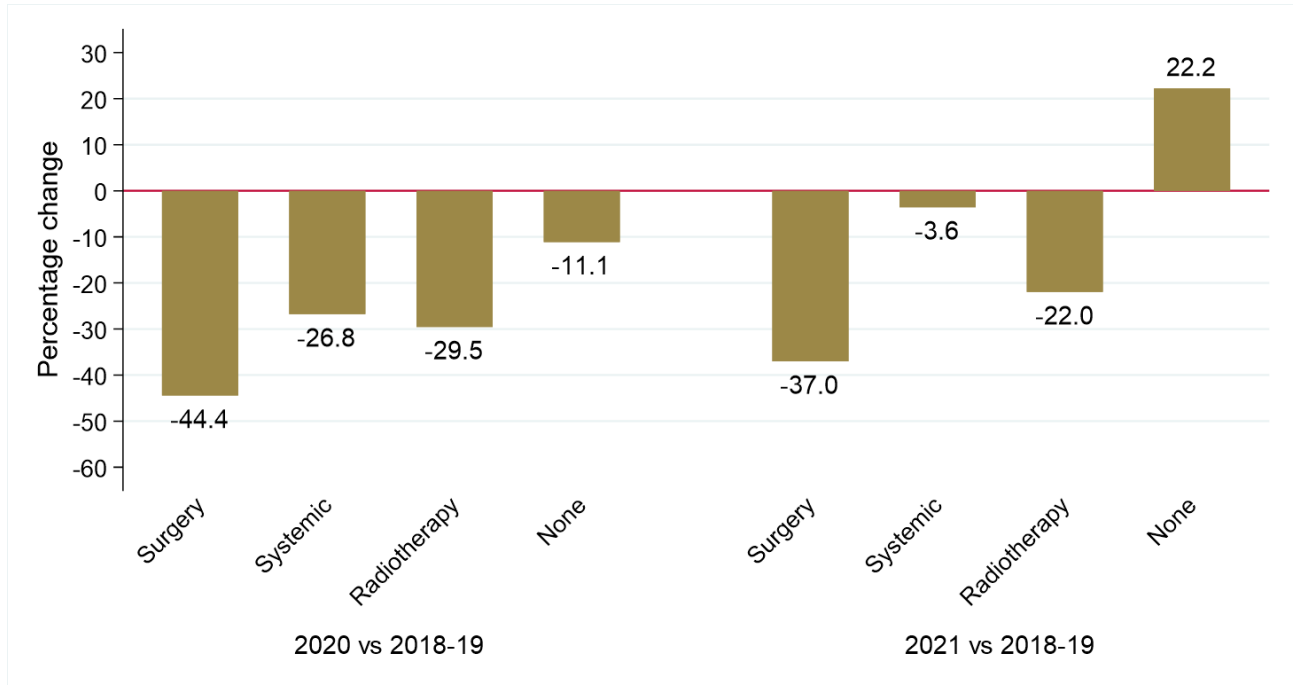*(a) Proportion of cases diagnosed*
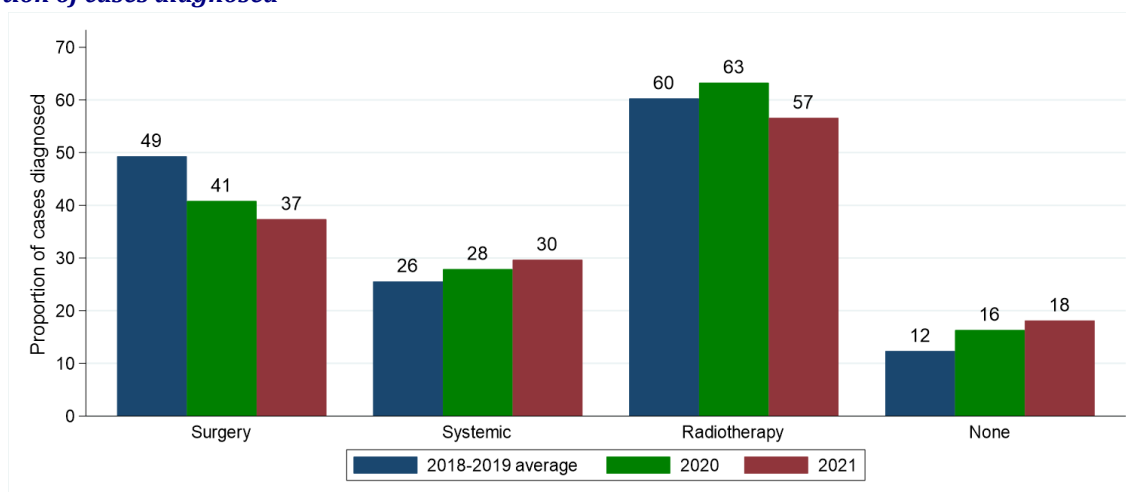
(b) Percentage change over time in number of cases

SURVIVAL

Changes in survival are evaluated using two measures. Observed survival examines the time between diagnosis and death from any cause. It thus represents what cancer patients experience, however, due to the inclusion of non-cancer deaths (e.g. heart disease), it may not reflect how changes in cancer care impact survival from cancer. Thus changes in age-standardised net survival are also examined. This measure provides an estimate of patient survival which has been adjusted to take account of deaths unrelated to cancer. It also assumes a standard age distribution thereby removing the impact of changes in the age distribution of cancer patients on changes in survival over time. While this measure is hypothetical, as it assumes patients can only die from cancer related factors, it is a better indicator of the impact of changes in cancer care on patient survival.
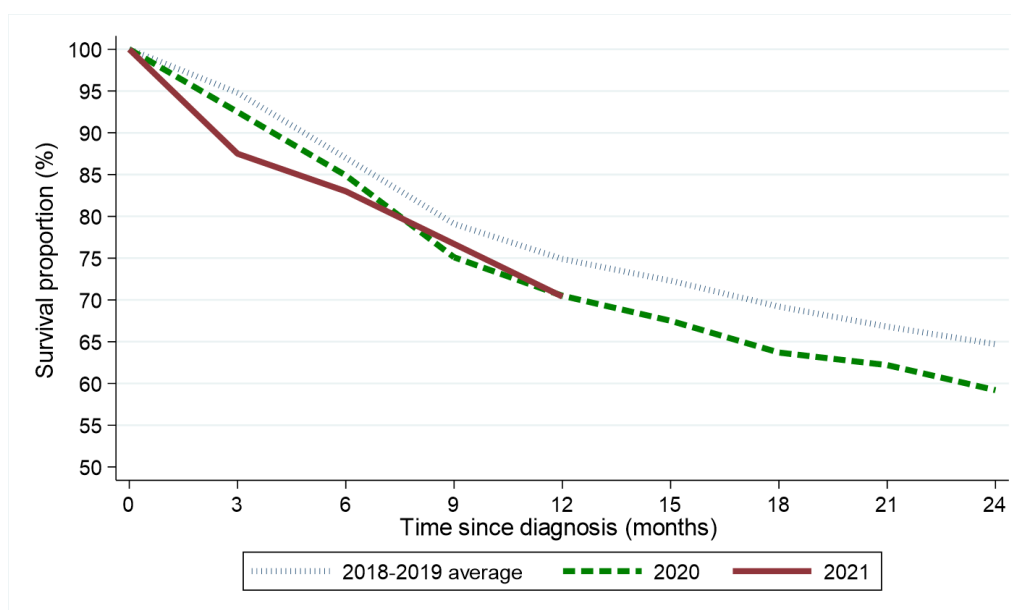
OBSERVED SURVIVAL

Survival among oral cancer patients six months after diagnosis decreased from 87.0% among those diagnosed in April-December of 2018-2019 to 83.0% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival decreased from 74.9% to 70.4%. This change was not statistically significant. The log-rank test of equality indicates no statistically significant difference between the survival functions for 2018-2019 and 2021 (p=0.467).

Table 8: Observed survival for patients with oral cancer diagnosed in April-December of 2018-2021 by period of diagnosis

Survival time	Period of diagnosis (Apr-Dec)		
	2018-2019	**2020**	**2021**
Three months	94.8% (92.2% - 96.5%)	92.5% (86.5% - 95.9%)	87.5% (81.6% - 91.6%)*
Six months	87.0% (83.4% - 89.8%)	84.9% (77.6% - 90.0%)	83.0% (76.5% - 87.8%)
One year	74.9% (70.5% - 78.7%)	70.5% (62.0% - 77.5%)	70.4% (63.1% - 76.6%)
Two years	64.7% (59.9% - 69.0%)	59.2% (50.3% - 67.0%)	-

* Statistically significant reduction compared to 2018-2019

Figure 8: Observed survival for patients with oral cancer diagnosed in April-December of 2018-2021 by period of diagnosis

DEATHS FROM COVID-19

During 2021 there were a total of 6 deaths from Covid-19 among oral cancer patients diagnosed at any point since 1993.
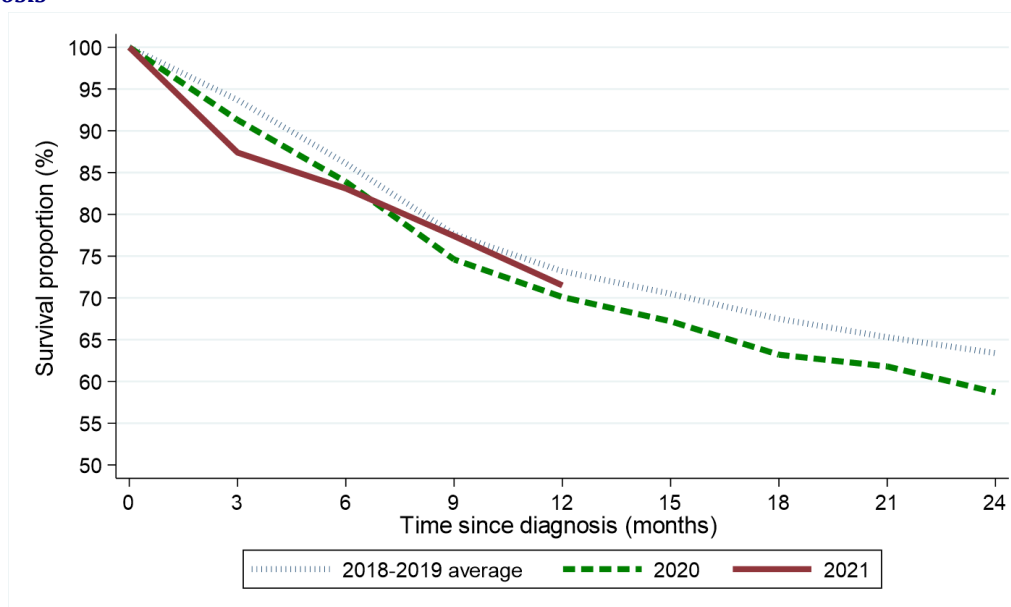
NET SURVIVAL

Net survival among oral cancer patients six months after diagnosis decreased from 86.1% among those diagnosed in April-December of 2018-2019 to 83.1% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival decreased from 73.2% to 71.5%. This change was not statistically significant.

Table 9: Age-standardised net survival for patients with oral cancer diagnosed in April-December of 2018-2021 by period of diagnosis

Survival time	Period of diagnosis (Apr-Dec)		
	2018-2019	**2020**	**2021**
Three months	93.7% (90.8% - 96.7%)	91.3% (85.9% - 97.0%)	87.4% (82.4% - 92.7%)
Six months	86.1% (82.1% - 90.2%)	83.9% (76.8% - 91.6%)	83.1% (77.4% - 89.2%)
One year	73.2% (68.1% - 78.7%)	70.1% (61.8% - 79.5%)	71.5% (64.6% - 79.2%)
Two years	63.4% (57.7% - 69.7%)	58.7% (49.5% - 69.6%)	-

No statistically significant reductions compared to 2018-2019

Figure 9: Age-standardised net survival for patients with oral cancer diagnosed in April-December of 2018-2021 by period of diagnosis

Note: All patients are followed up to the end of 2022. This enables calculation of two-year survival for patients diagnosed in 2018-2020, however only survival up to one year from diagnosis can be calculated for patients diagnosed in 2021.

MORTALITY

During the April-December period the number of deaths from oral cancer did not change between 2018-2019 and 2021 with 79 deaths in 2021.

Table 10: Number of oral cancer deaths in 2018-2021 by quarter and year of death

Period of death	Annual total	Quarter of death			
		Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
2018-2019*	105	26	29	25	25
2020	106	29	27	22	28
2021	107	28	31	26	22

* Average deaths per year rounded to the nearest integer. Row sums may thus differ slightly from the total.

Figure 10: Number of oral cancer deaths in 2018-2021 by quarter and year of death
(a) Number of deaths by quarter of death
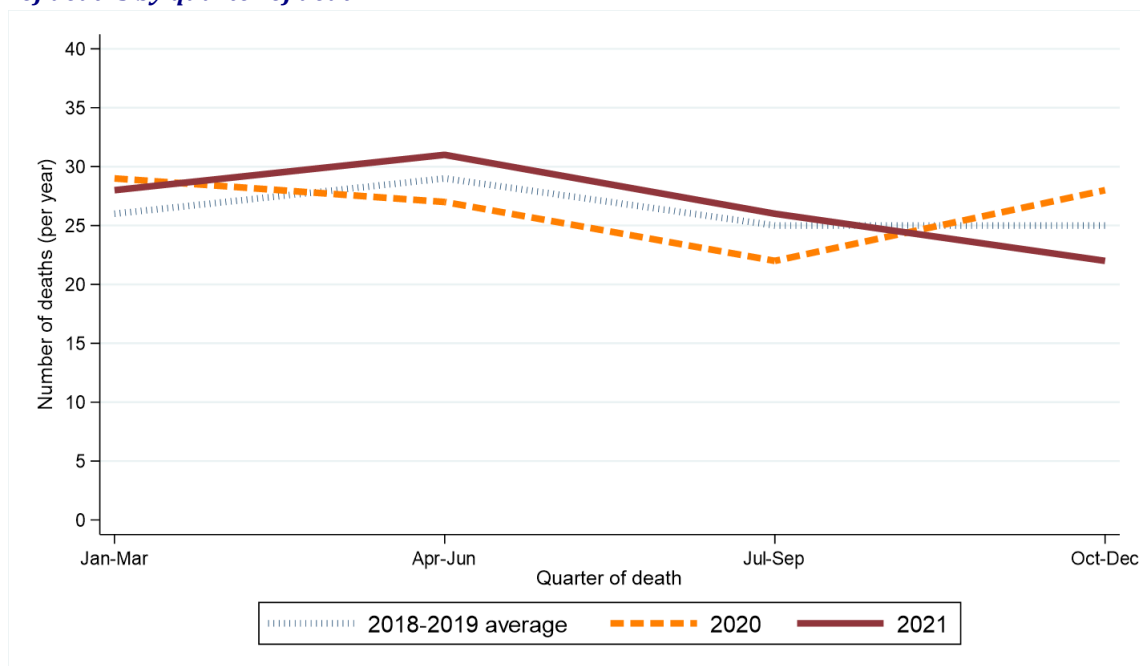
(b) Percentage change over time in number of deaths by quarter of death