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

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

Further information

Further information is available at: www.qub.ac.uk/research-centres/nicr

Phone: +44 (0)28 9097 6028 **e-mail:** nicr@qub.ac.uk

Acknowledgements

The Northern Ireland Cancer Registry (NICR) uses data provided by patients and collected by the health service as part of their care and support.

NICR is funded by the Public Health Agency and is based in Queen's University, Belfast.

INCIDENCE

During the April-December period the number of cases of unknown primary cancer diagnosed decreased between 2018-2019 and 2021 by 6.3% from 144 cases per year to 135 cases.

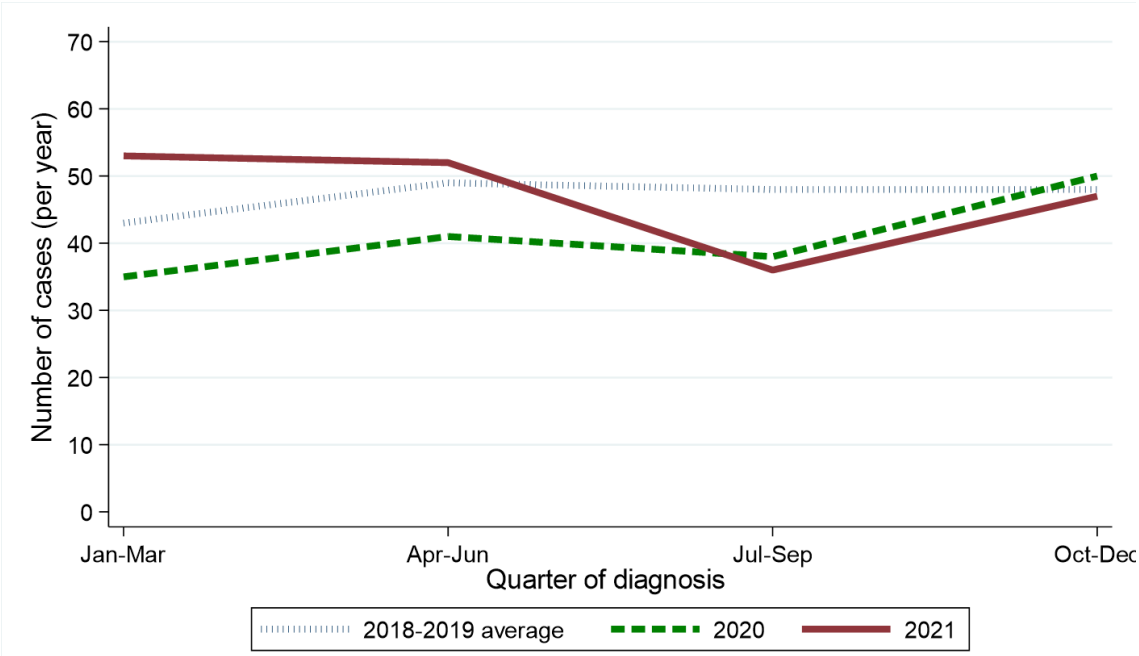
Table 1: Number of unknown primary cancer cases diagnosed in 2018-2021 by quarter and year of diagnosis

Period of diagnosis	Annual total	Quarter diagnosed			
		Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
2018-2019*	187	43	49	48	48
2020	164	35	41	38	50
2021	188	53	52	36	47

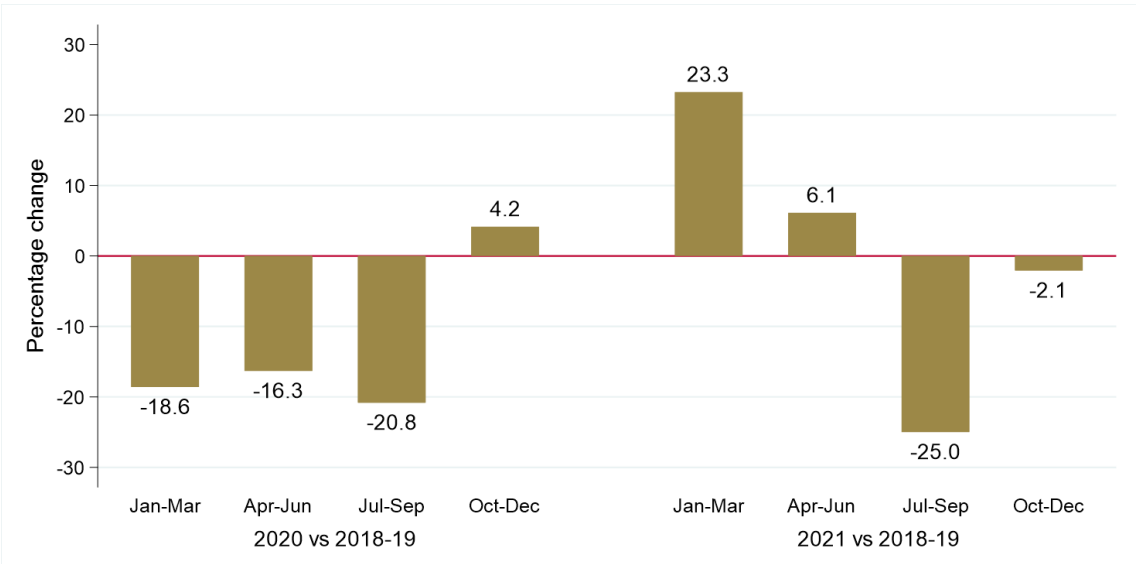
** Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.*

Figure 1: Number of unknown primary cancer cases diagnosed in 2018-2021 by quarter and year of diagnosis

(a) Number of cases diagnosed by quarter 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 unknown primary cancer cases diagnosed decreased by 3.0% from 66 per year in 2018-2019 to 64 in 2021. Between the same two time periods the number of female unknown primary cancer cases diagnosed decreased by 10.1% from 79 per year in 2018-2019 to 71 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was not statistically significant.

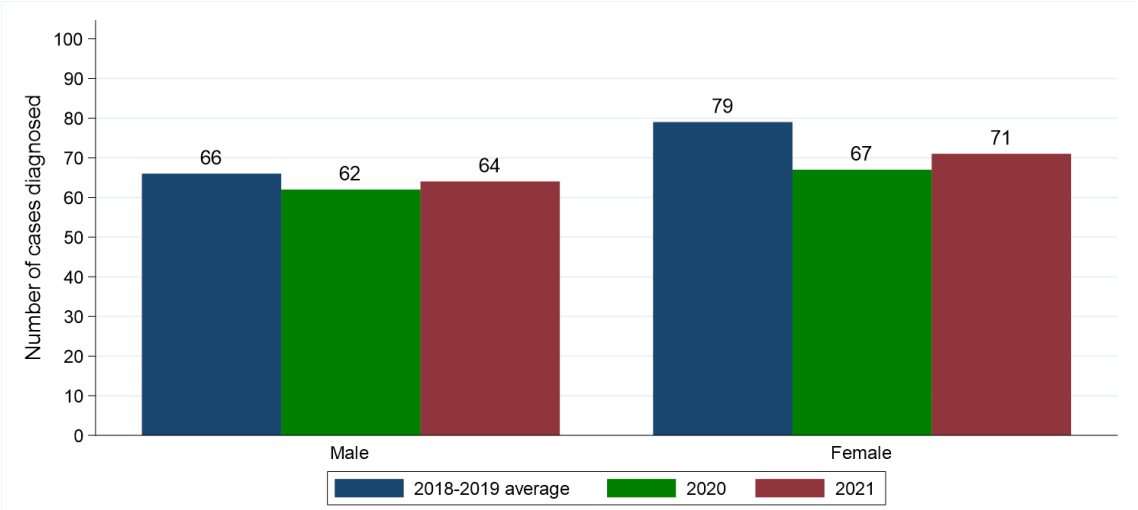
Table 2: Number and proportion of unknown primary cancer cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	144	129	135	-10.4%	-6.3%
Male	66 (45.8%)	62 (48.1%)	64 (47.4%)	-6.1%	-3.0%
Female	79 (54.9%)	67 (51.9%)	71 (52.6%)	-15.2%	-10.1%

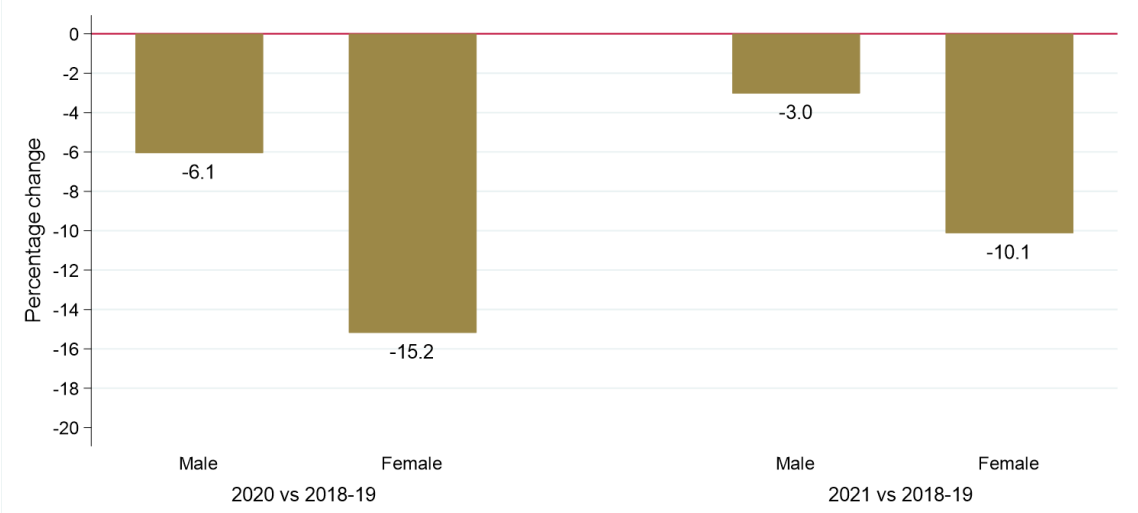
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 2: Number of unknown primary 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 unknown primary cancer diagnosed among those aged 0 to 54 decreased by 35.7% from 14 per year in 2018-2019 to 9 in 2021. Between the same two time periods the number of cases of unknown primary cancer diagnosed among those aged 55 to 64 increased by 28.6% from 14 per year in 2018-2019 to 18 in 2021. The change in case distribution by age between 2018-2019 and 2021 was not statistically significant.

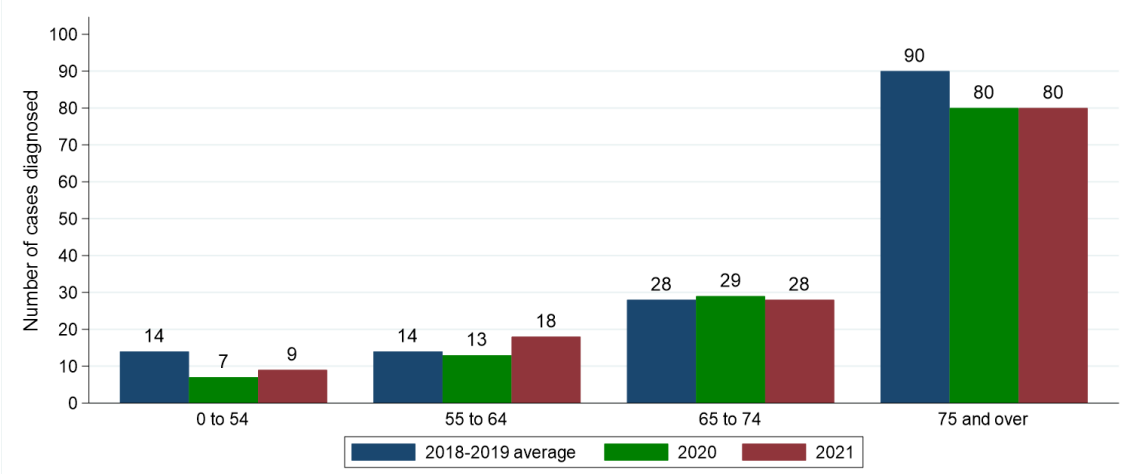
Table 3: Number and proportion of unknown primary cancer cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	144	129	135	-10.4%	-6.3%
0 to 54	14 (9.7%)	7 (5.4%)	9 (6.7%)	-50.0%	-35.7%
55 to 64	14 (9.7%)	13 (10.1%)	18 (13.3%)	-7.1%	+28.6%
65 to 74	28 (19.4%)	29 (22.5%)	28 (20.7%)	+3.6%	0.0%
75 and over	90 (62.5%)	80 (62.0%)	80 (59.3%)	-11.1%	-11.1%

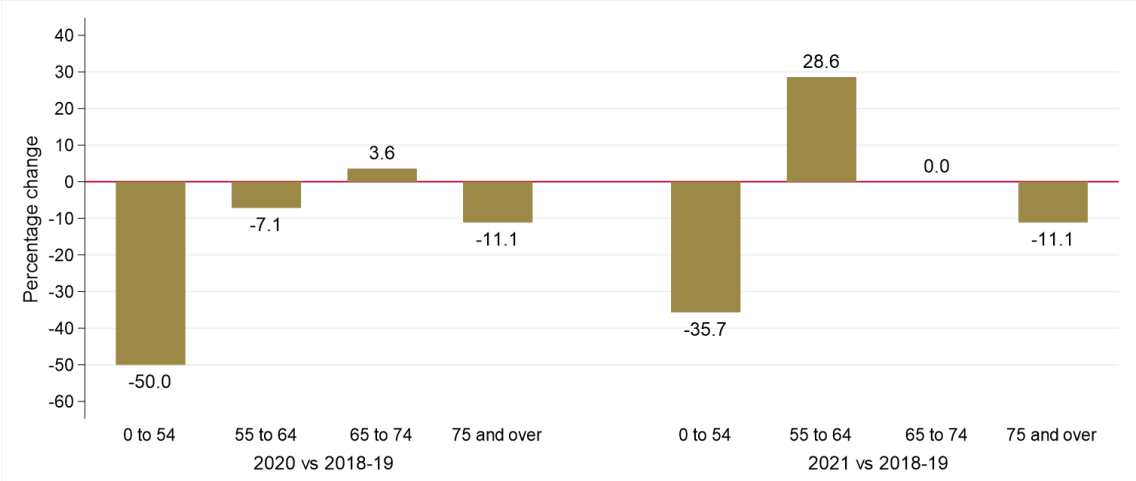
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 3: Number of unknown primary 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 unknown primary cancer diagnosed among those resident in Northern HSCT decreased by 29.3% from 41 per year in 2018-2019 to 29 in 2021. Between the same two time periods the number of cases of unknown primary cancer diagnosed among those resident in South Eastern HSCT increased by 24.0% from 25 per year in 2018-2019 to 31 in 2021. The change in case distribution by Health and Social Care Trust between 2018-2019 and 2021 was not statistically significant.

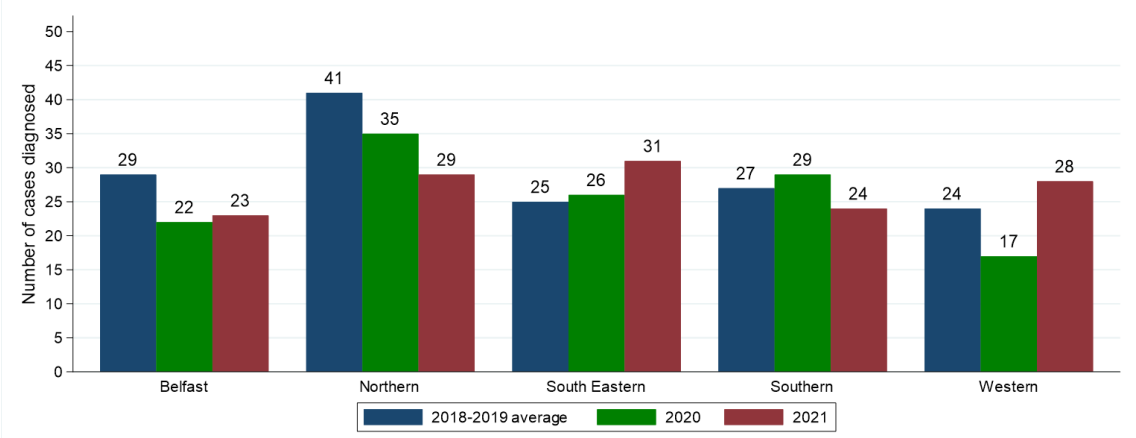
Table 4: Number and proportion of unknown primary cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

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	144	129	135	-10.4%	-6.3%
Belfast	29 (20.1%)	22 (17.1%)	23 (17.0%)	-24.1%	-20.7%
Northern	41 (28.5%)	35 (27.1%)	29 (21.5%)	-14.6%	-29.3%
South Eastern	25 (17.4%)	26 (20.2%)	31 (23.0%)	+4.0%	+24.0%
Southern	27 (18.8%)	29 (22.5%)	24 (17.8%)	+7.4%	-11.1%
Western	24 (16.7%)	17 (13.2%)	28 (20.7%)	-29.2%	+16.7%

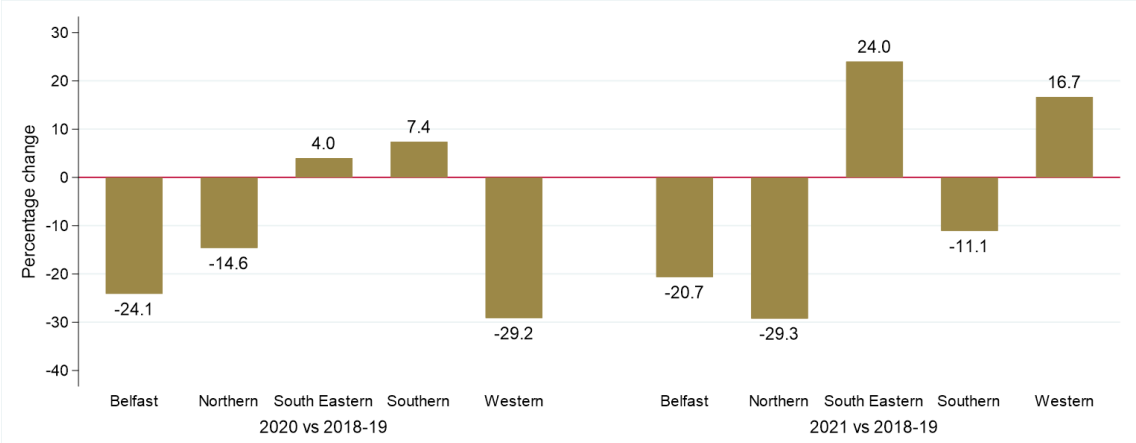
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of unknown primary 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 unknown primary cancer diagnosed among those resident in the most deprived quintile decreased by 20.0% from 35 per year in 2018-2019 to 28 in 2021. Between the same two time periods the number of cases of unknown primary cancer diagnosed among those resident in the least deprived quintile decreased by 4.3% from 23 per year in 2018-2019 to 22 in 2021. The change in case distribution by deprivation quintile between 2018-2019 and 2021 was not statistically significant.

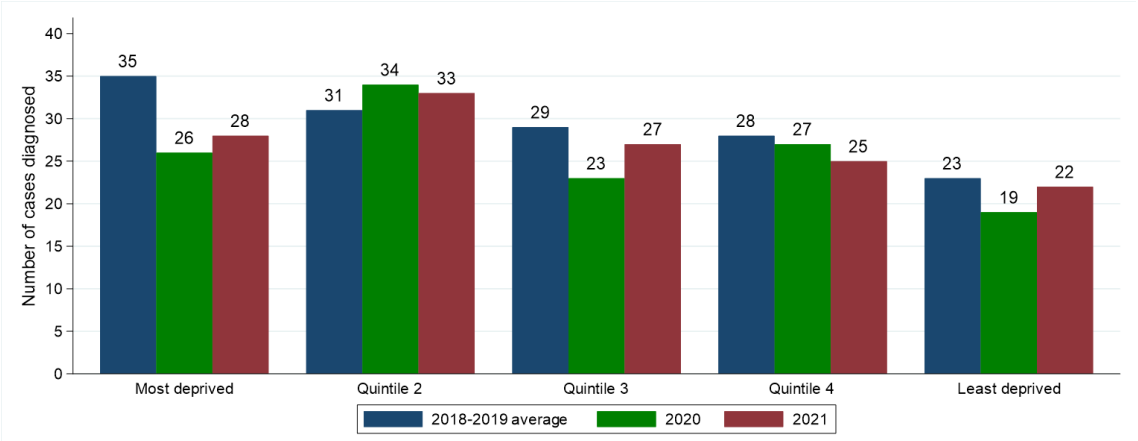
Table 5: Number and proportion of unknown primary cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	144	129	135	-10.4%	-6.3%
Most deprived	35 (24.3%)	26 (20.2%)	28 (20.7%)	-25.7%	-20.0%
Quintile 2	31 (21.5%)	34 (26.4%)	33 (24.4%)	+9.7%	+6.5%
Quintile 3	29 (20.1%)	23 (17.8%)	27 (20.0%)	-20.7%	-6.9%
Quintile 4	28 (19.4%)	27 (20.9%)	25 (18.5%)	-3.6%	-10.7%
Least deprived	23 (16.0%)	19 (14.7%)	22 (16.3%)	-17.4%	-4.3%

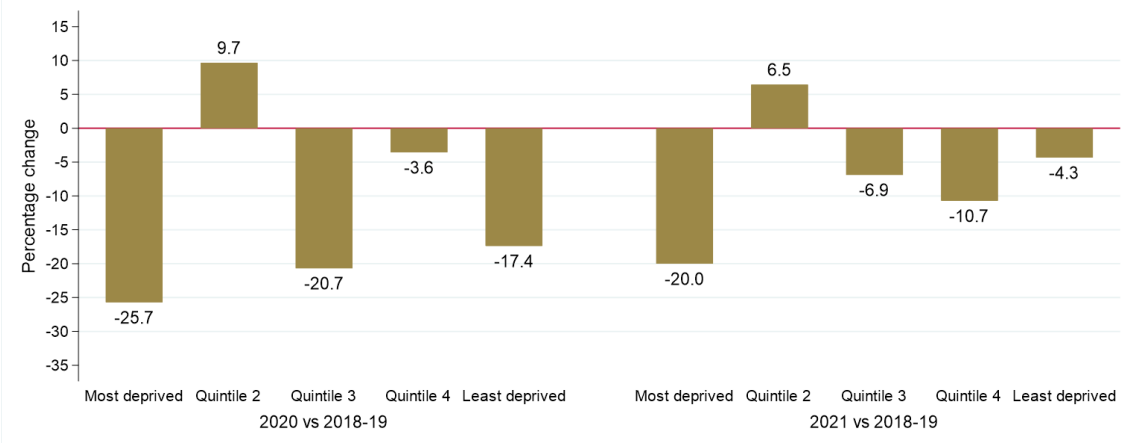
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown deprivation quintile are included in totals.

Figure 5: Number of unknown primary 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



BASIS OF DIAGNOSIS

Excluding the first quarter of each year the number of cases of unknown primary cancer diagnosed via histology/cytology decreased by 30.0% from 60 per year in 2018-2019 to 42 in 2021. As a proportion of all cases, histology/cytology diagnosis decreased from 41.7% in 2018-2019 to 31.1% in 2021. The change in case distribution by basis of diagnosis between 2018-2019 and 2021 was statistically significant (p = 0.043).

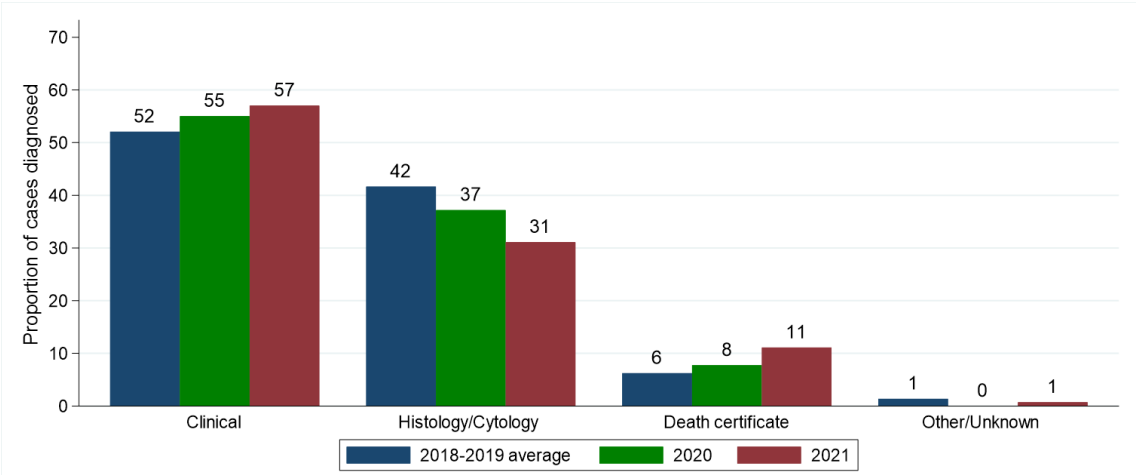
Table 6: Number and proportion of unknown primary cancer cases diagnosed in April-December of 2018-2021 by basis and period of diagnosis

Basis of diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All types	144	129	135	-10.4%	-6.3%
Clinical	75 (52.1%)	71 (55.0%)	77 (57.0%)	-5.3%	+2.7%
Histology/Cytology	60 (41.7%)	48 (37.2%)	42 (31.1%)	-20.0%	-30.0%
Death certificate	9 (6.3%)	10 (7.8%)	15 (11.1%)	+11.1%	+66.7%
Other/Unknown	2 (1.4%)	0 (0.0%)	1 (0.7%)	-	-

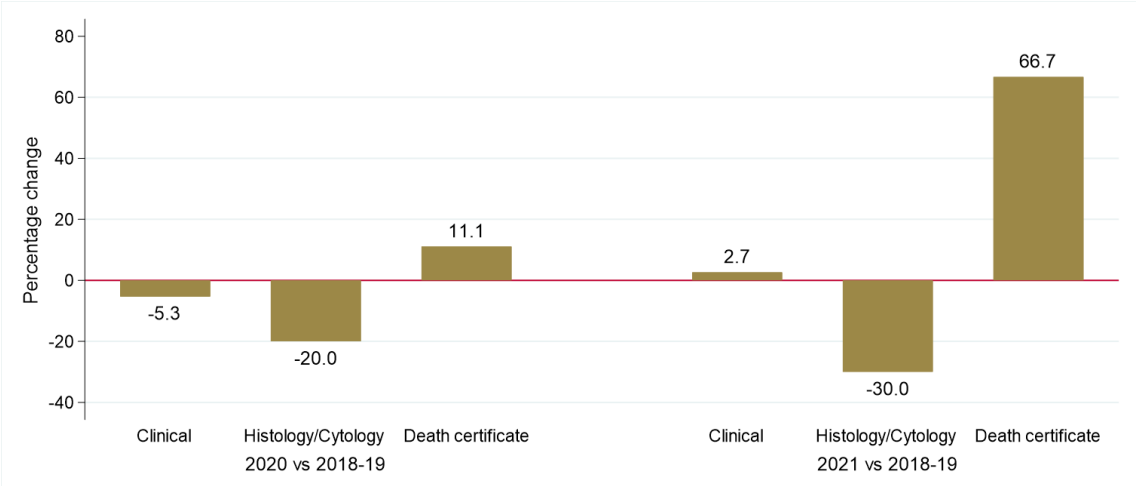
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 6: Proportion of unknown primary cancer cases diagnosed in April-December of 2018-2021 by basis 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

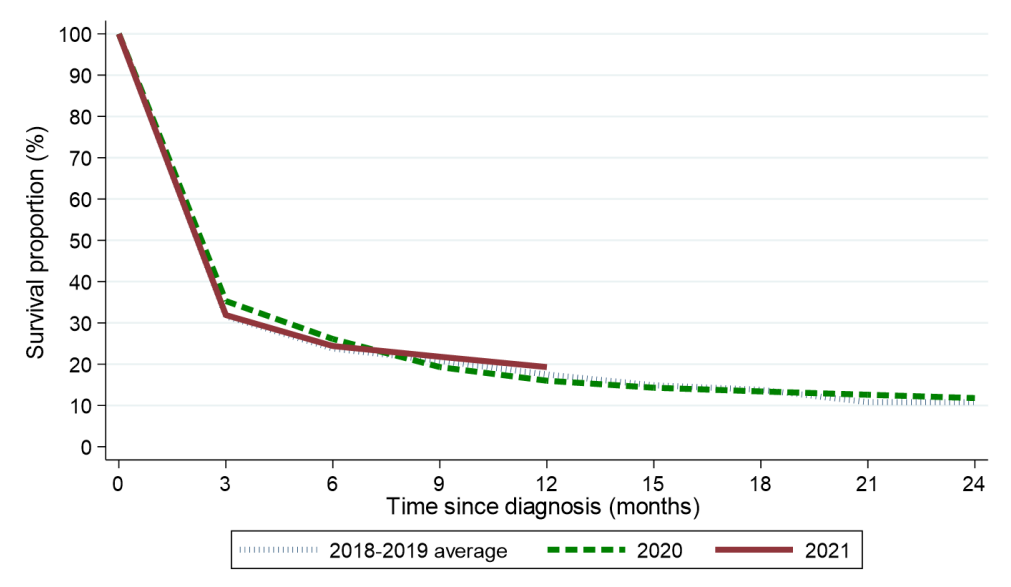
Survival among unknown primary cancer patients six months after diagnosis increased from 23.8% among those diagnosed in April-December of 2018-2019 to 24.4% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival increased from 17.5% to 19.3%. 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=0.864).

Table 7: Observed survival for patients with unknown primary 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	31.6% (26.1% - 37.2%)	35.3% (26.8% - 43.8%)	31.9% (23.8% - 40.4%)
Six months	23.8% (18.9% - 29.0%)	26.1% (18.6% - 34.2%)	24.4% (17.1% - 32.4%)
One year	17.5% (13.2% - 22.2%)	16.0% (10.1% - 23.1%)	19.3% (12.8% - 26.9%)
Two years	10.8% (7.4% - 14.8%)	11.8% (6.8% - 18.3%)	-

No statistically significant reductions compared to 2018-2019

Figure 7: Observed survival for patients with unknown primary cancer diagnosed in April-December of 2018-2021 by period of diagnosis



DEATHS FROM COVID-19

During 2021 there were a total of 10 deaths from Covid-19 among unknown primary cancer patients diagnosed at any point since 1993.

NET SURVIVAL

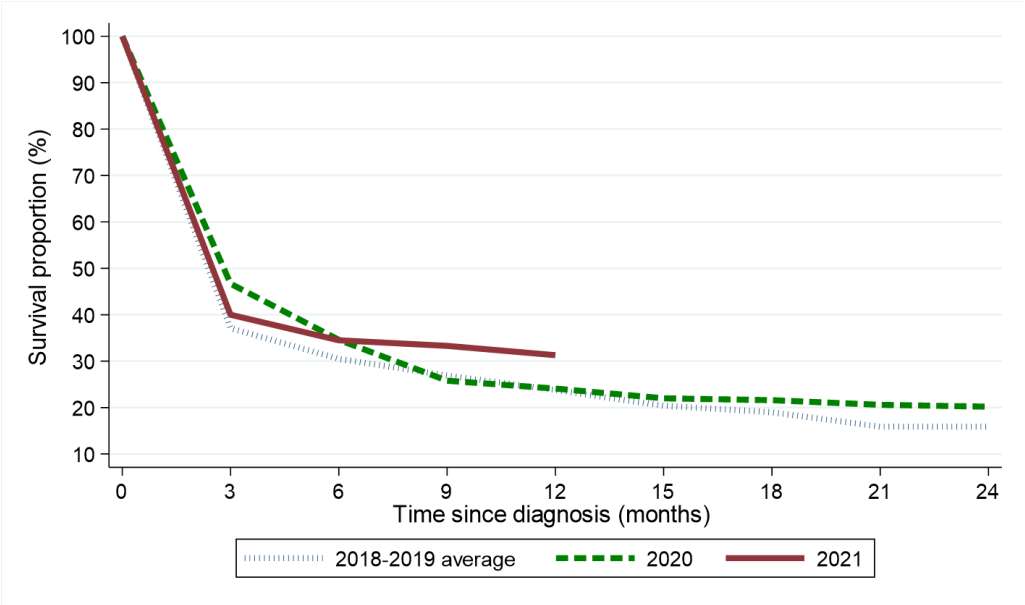
Net survival among unknown primary cancer patients six months after diagnosis increased from 30.5% among those diagnosed in April-December of 2018-2019 to 34.5% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival increased from 23.8% to 31.3%. This change was not statistically significant.

Table 8: Age-standardised net survival for patients with unknown primary 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	37.1% (30.9% - 44.6%)	46.7% (38.0% - 57.4%)	40.0% (29.9% - 53.5%)
Six months	30.5% (24.6% - 37.8%)	34.6% (26.5% - 45.2%)	34.5% (25.3% - 47.1%)
One year	23.8% (18.1% - 31.3%)	24.1% (16.6% - 35.0%)	31.3% (21.2% - 46.1%)
Two years	15.9% (11.3% - 22.4%)	20.2% (13.2% - 30.9%)	-

No statistically significant reductions compared to 2018-2019

Figure 8: Age-standardised net survival for patients with unknown primary 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 unknown primary cancer increased between 2018-2019 and 2021 by 3.3% from 184 deaths per year to 190 deaths.

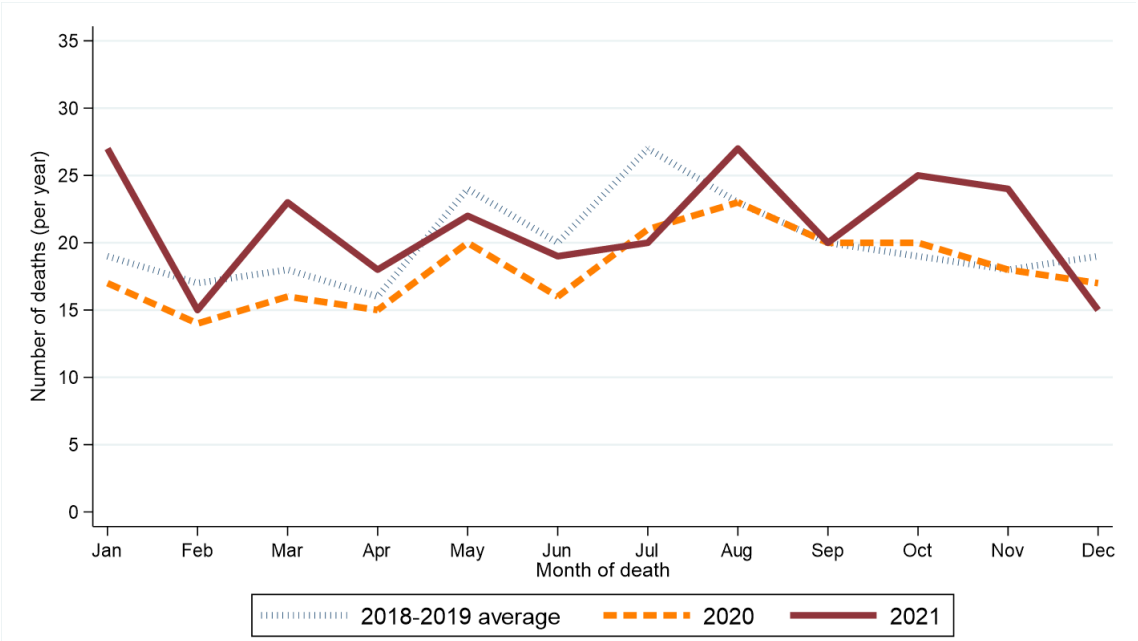
Table 9: Number of unknown primary cancer deaths in 2018-2021 by month and year of death

Period of death	Annual total	Month death occurred											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	237	19	17	18	16	24	20	27	23	20	19	18	19
2020	217	17	14	16	15	20	16	21	23	20	20	18	17
2021	255	27	15	23	18	22	19	20	27	20	25	24	15

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

Figure 9: Number of unknown primary cancer deaths in 2018-2021 by month/quarter and year of death

(a) Number of deaths by month of death



(b) Percentage change over time in number of deaths by quarter of death