Recent trends in incidence and survival of neuroendocrine 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.

N. Ireland Cancer Registry

Queen's University Belfast

HSC Public Health Agency

INCIDENCE

During the April-December period the number of cases of neuroendocrine cancer diagnosed increased between 2018-2019 and 2021 by 7.8% from 116 cases per year to 125 cases.

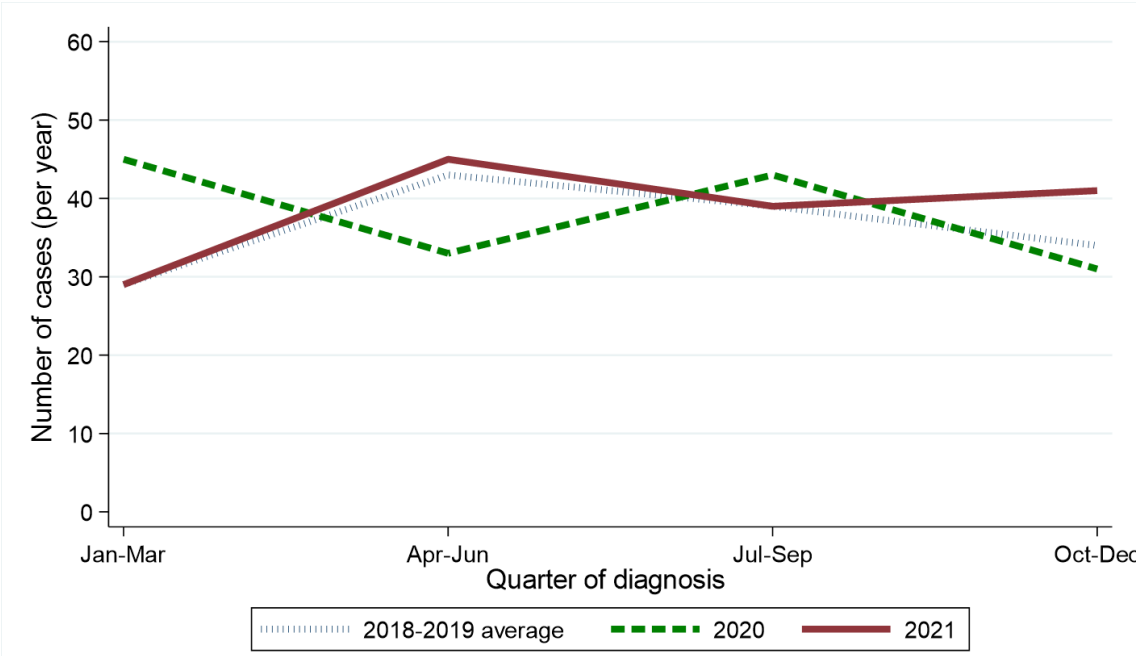
Table 1: Number of neuroendocrine cancer cases diagnosed in 2018-2021 by quarter and year of diagnosis

Period of diagnosis	Annual total	Quarter diagnosed			
		Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
2018-2019*	144	29	43	39	34
2020	152	45	33	43	31
2021	154	29	45	39	41

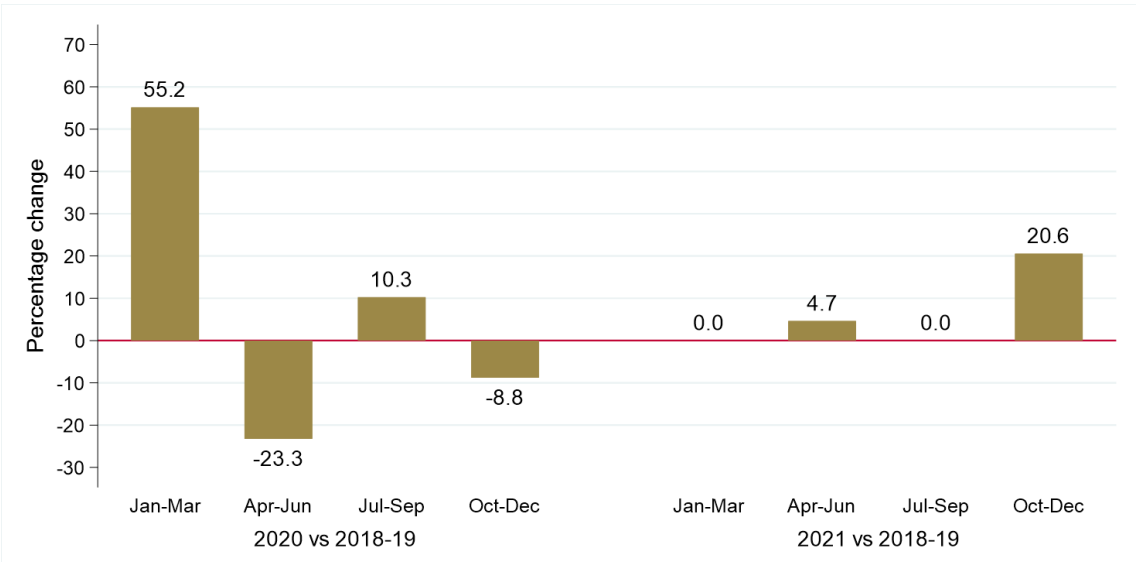
** Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.*

Figure 1: Number of neuroendocrine 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 neuroendocrine cancer cases diagnosed increased by 5.0% from 60 per year in 2018-2019 to 63 in 2021. Between the same two time periods the number of female neuroendocrine cancer cases diagnosed increased by 10.7% from 56 per year in 2018-2019 to 62 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was not statistically significant.

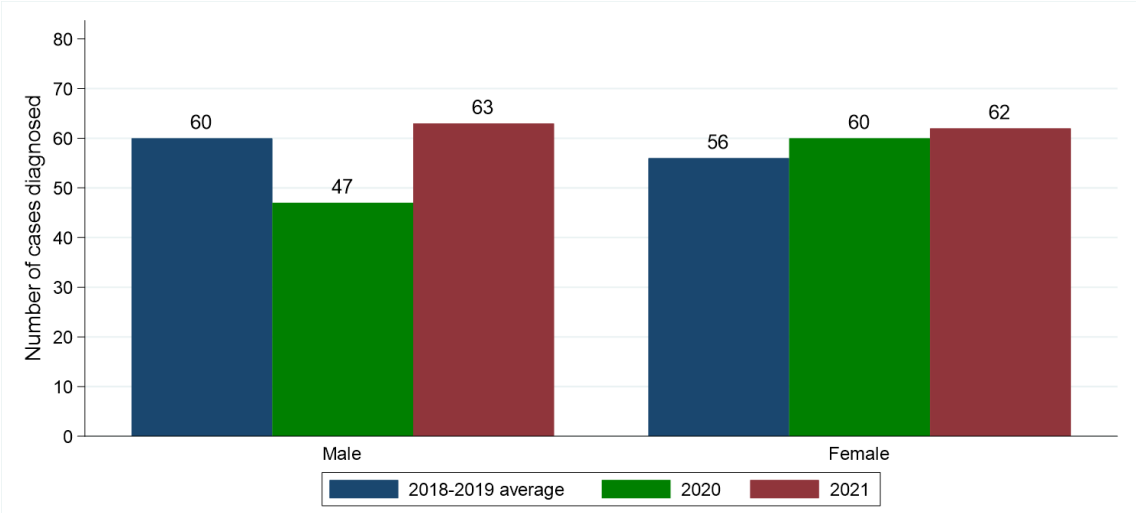
Table 2: Number and proportion of neuroendocrine cancer cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	116	107	125	-7.8%	+7.8%
Male	60 (51.7%)	47 (43.9%)	63 (50.4%)	-21.7%	+5.0%
Female	56 (48.3%)	60 (56.1%)	62 (49.6%)	+7.1%	+10.7%

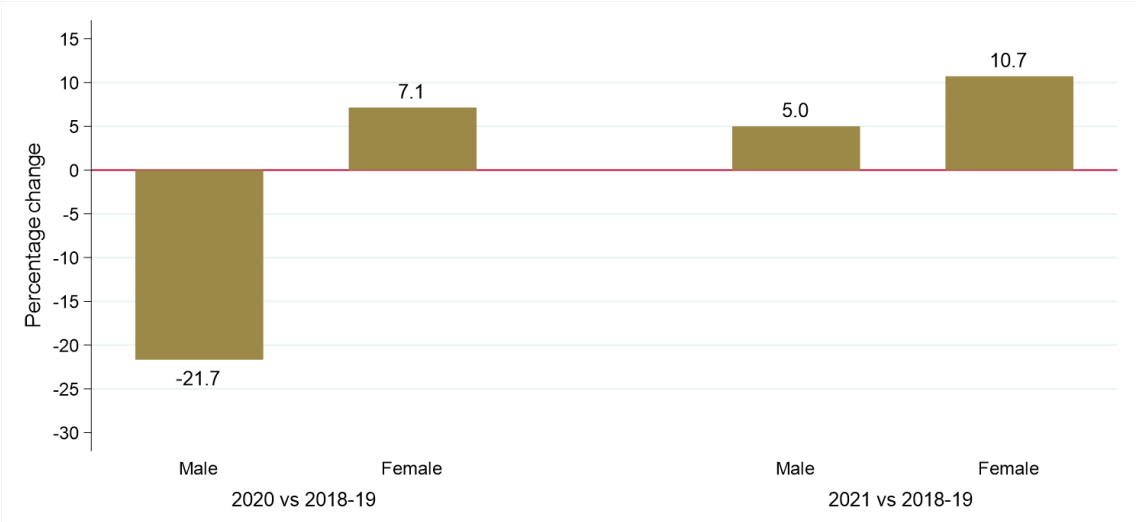
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 2: Number of neuroendocrine 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 neuroendocrine cancer diagnosed among those aged 55 to 64 decreased by 22.2% from 27 per year in 2018-2019 to 21 in 2021. Between the same two time periods the number of cases of neuroendocrine cancer diagnosed among those aged 75 and over increased by 69.2% from 26 per year in 2018-2019 to 44 in 2021. The change in case distribution by age between 2018-2019 and 2021 was statistically significant (p = 0.032).

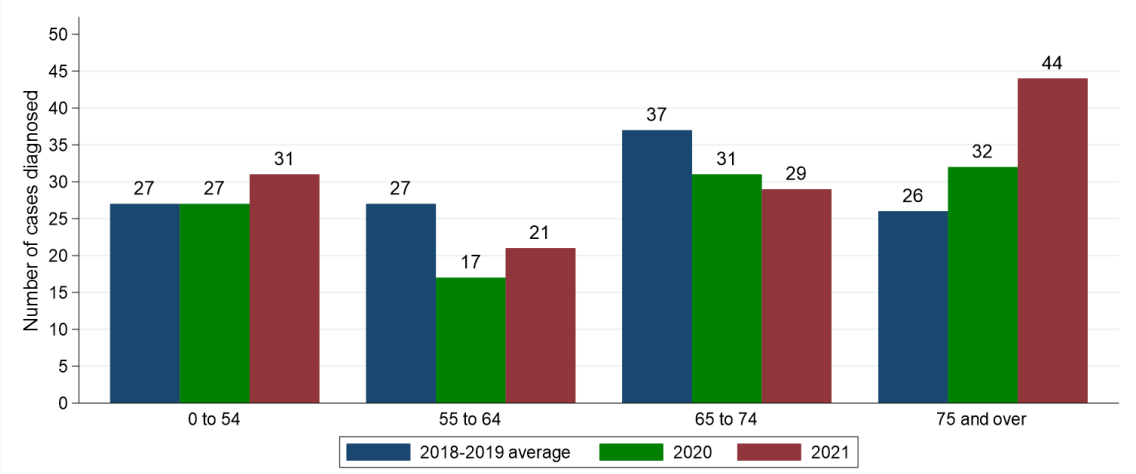
Table 3: Number and proportion of neuroendocrine cancer cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	116	107	125	-7.8%	+7.8%
0 to 54	27 (23.3%)	27 (25.2%)	31 (24.8%)	0.0%	+14.8%
55 to 64	27 (23.3%)	17 (15.9%)	21 (16.8%)	-37.0%	-22.2%
65 to 74	37 (31.9%)	31 (29.0%)	29 (23.2%)	-16.2%	-21.6%
75 and over	26 (22.4%)	32 (29.9%)	44 (35.2%)	+23.1%	+69.2%

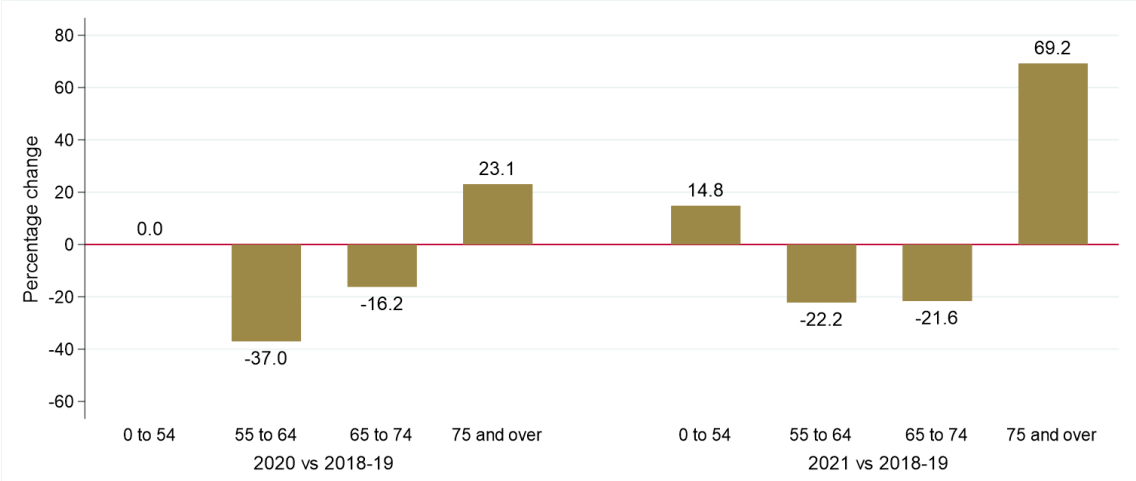
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 3: Number of neuroendocrine 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 neuroendocrine cancer diagnosed among those resident in Western HSCT decreased by 28.0% from 25 per year in 2018-2019 to 18 in 2021. Between the same two time periods the number of cases of neuroendocrine cancer diagnosed among those resident in South Eastern HSCT increased by 52.9% from 17 per year in 2018-2019 to 26 in 2021. The change in case distribution by Health and Social Care Trust between 2018-2019 and 2021 was not statistically significant.

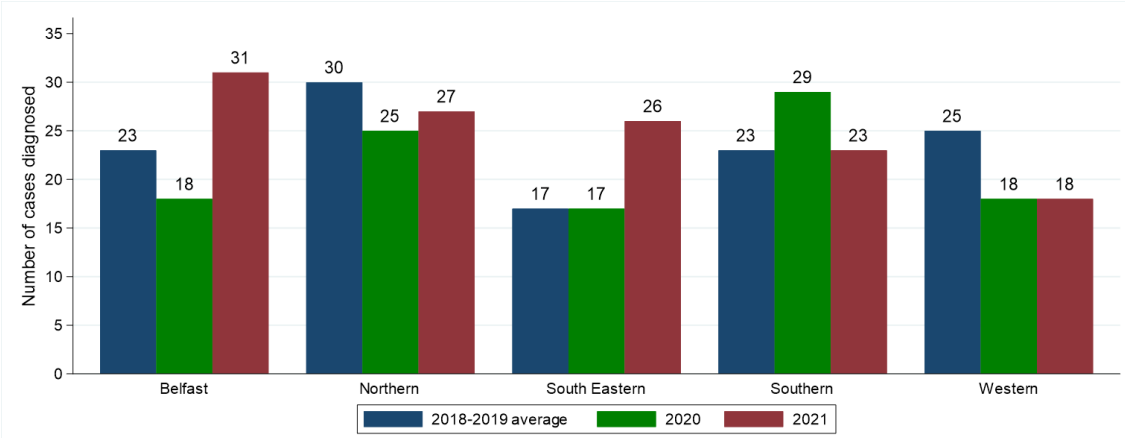
Table 4: Number and proportion of neuroendocrine cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

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	116	107	125	-7.8%	+7.8%
Belfast	23 (19.8%)	18 (16.8%)	31 (24.8%)	-21.7%	+34.8%
Northern	30 (25.9%)	25 (23.4%)	27 (21.6%)	-16.7%	-10.0%
South Eastern	17 (14.7%)	17 (15.9%)	26 (20.8%)	0.0%	+52.9%
Southern	23 (19.8%)	29 (27.1%)	23 (18.4%)	+26.1%	0.0%
Western	25 (21.6%)	18 (16.8%)	18 (14.4%)	-28.0%	-28.0%

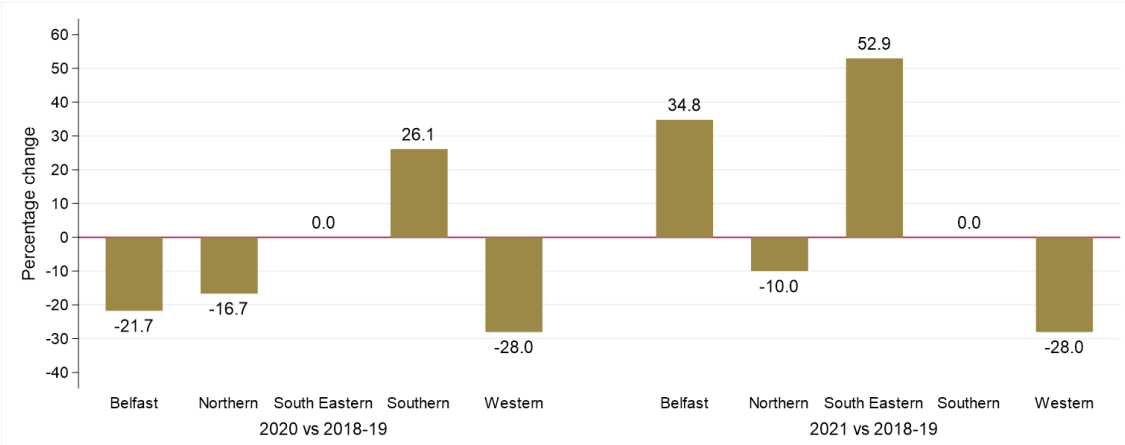
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of neuroendocrine 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 neuroendocrine cancer diagnosed among those resident in the most deprived quintile decreased by 14.8% from 27 per year in 2018-2019 to 23 in 2021. Between the same two time periods the number of cases of neuroendocrine cancer diagnosed among those resident in the least deprived quintile did not change between 2018-2019 and 2021 with an average of 26 diagnosed each year. The change in case distribution by deprivation quintile between 2018-2019 and 2021 was not statistically significant.

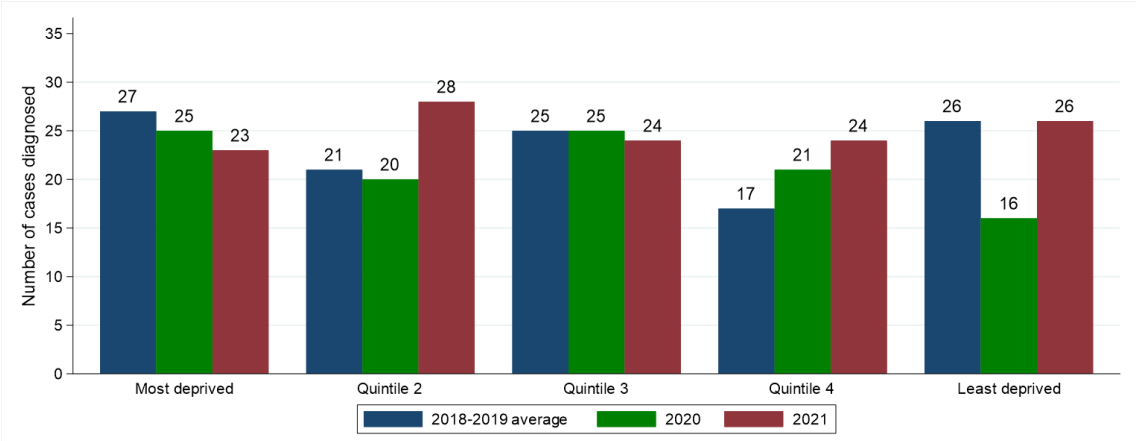
Table 5: Number and proportion of neuroendocrine cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	116	107	125	-7.8%	+7.8%
Most deprived	27 (23.3%)	25 (23.4%)	23 (18.4%)	-7.4%	-14.8%
Quintile 2	21 (18.1%)	20 (18.7%)	28 (22.4%)	-4.8%	+33.3%
Quintile 3	25 (21.6%)	25 (23.4%)	24 (19.2%)	0.0%	-4.0%
Quintile 4	17 (14.7%)	21 (19.6%)	24 (19.2%)	+23.5%	+41.2%
Least deprived	26 (22.4%)	16 (15.0%)	26 (20.8%)	-38.5%	0.0%

** 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 neuroendocrine 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

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

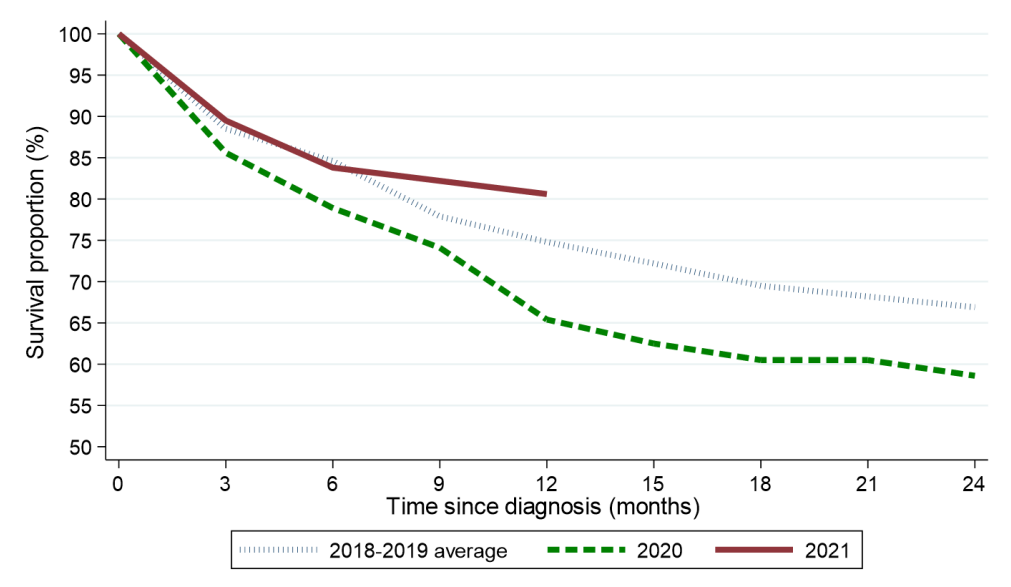
Survival among neuroendocrine cancer patients six months after diagnosis decreased from 84.6% among those diagnosed in April-December of 2018-2019 to 83.8% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival increased from 74.8% to 80.6%. 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=0.408).

Table 6: Observed survival for patients with neuroendocrine 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	88.5% (83.6% - 92.1%)	85.6% (77.3% - 91.1%)	89.5% (82.6% - 93.8%)
Six months	84.6% (79.2% - 88.7%)	78.9% (69.7% - 85.6%)	83.8% (76.1% - 89.3%)
One year	74.8% (68.7% - 80.0%)	65.4% (55.4% - 73.7%)	80.6% (72.4% - 86.5%)
Two years	66.9% (60.3% - 72.6%)	58.6% (48.5% - 67.3%)	-

No statistically significant reductions compared to 2018-2019

Figure 6: Observed survival for patients with neuroendocrine cancer diagnosed in April-December of 2018-2021 by period of diagnosis



DEATHS FROM COVID-19

During 2021 there were a total of 8 deaths from Covid-19 among neuroendocrine cancer patients diagnosed at any point since 1993.

NET SURVIVAL

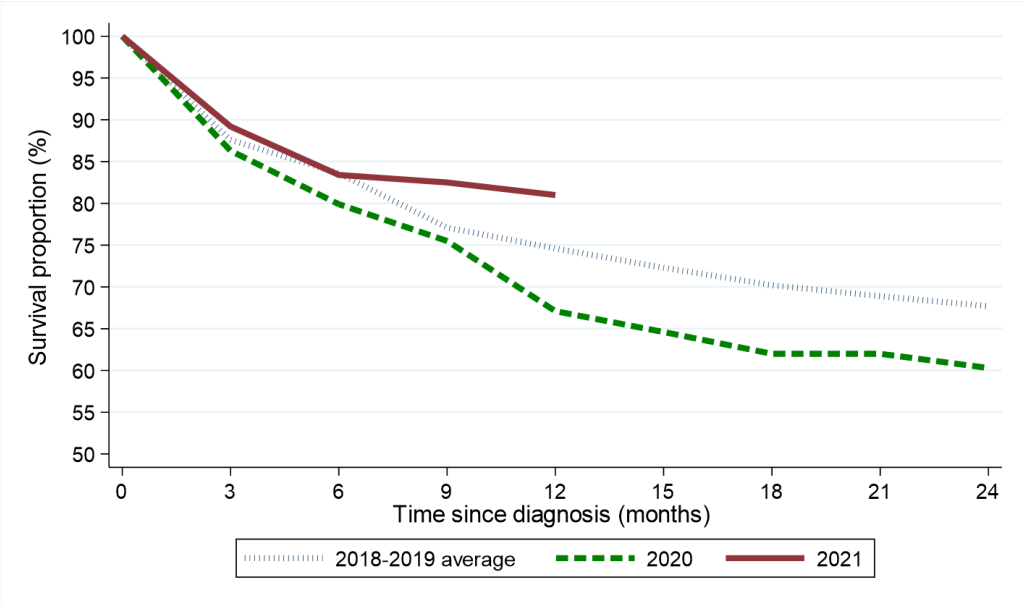
Net survival among neuroendocrine cancer patients six months after diagnosis decreased from 83.6% among those diagnosed in April-December of 2018-2019 to 83.4% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival increased from 74.6% to 81.0%. This change was not statistically significant.

Table 7: Age-standardised net survival for patients with neuroendocrine 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	87.6% (82.9% - 92.5%)	86.3% (79.9% - 93.2%)	89.2% (83.6% - 95.2%)
Six months	83.6% (78.2% - 89.4%)	79.9% (72.2% - 88.5%)	83.4% (76.7% - 90.7%)
One year	74.6% (68.4% - 81.3%)	67.1% (58.2% - 77.4%)	81.0% (73.9% - 88.8%)
Two years	67.7% (61.1% - 75.0%)	60.3% (50.6% - 71.8%)	-

No statistically significant reductions compared to 2018-2019

Figure 7: Age-standardised net survival for patients with neuroendocrine 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.