
Recent trends in incidence, survival and mortality of liver 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 liver cancer diagnosed did not change between 2018-2019 and 2021 with 121 cases diagnosed in 2021.

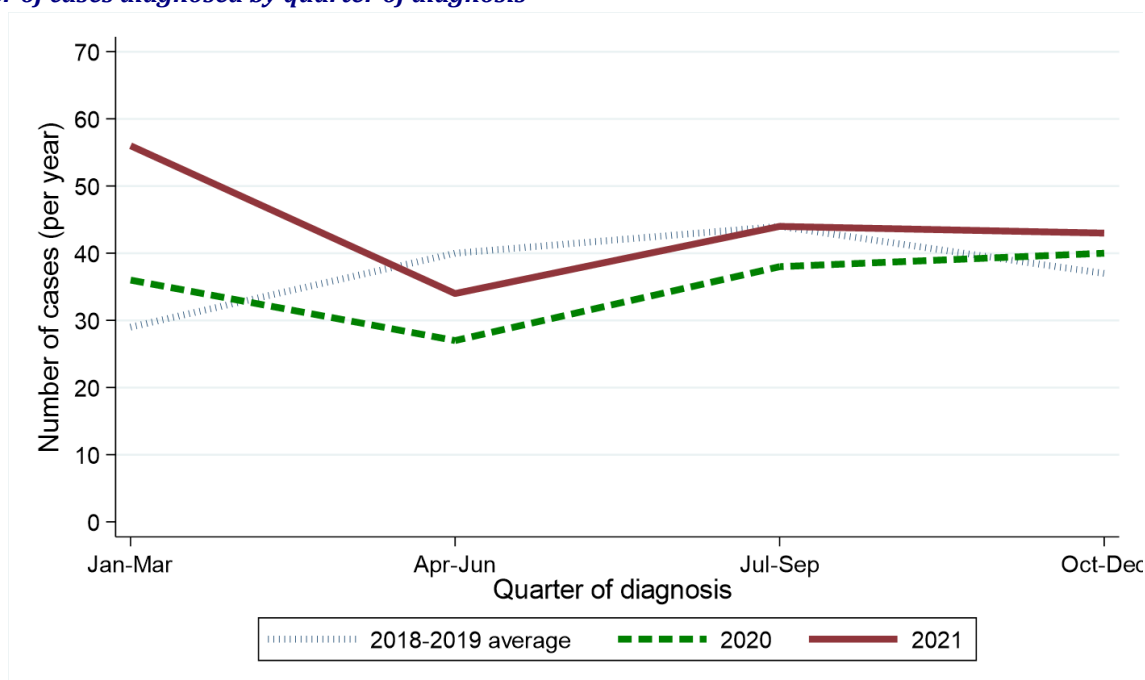
Table 1: Number of liver cancer cases diagnosed in 2018-2021 by quarter and year of diagnosis

Period of diagnosis	Annual total	Quarter diagnosed			
		Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
2018-2019*	150	29	40	44	37
2020	141	36	27	38	40
2021	177	56	34	44	43

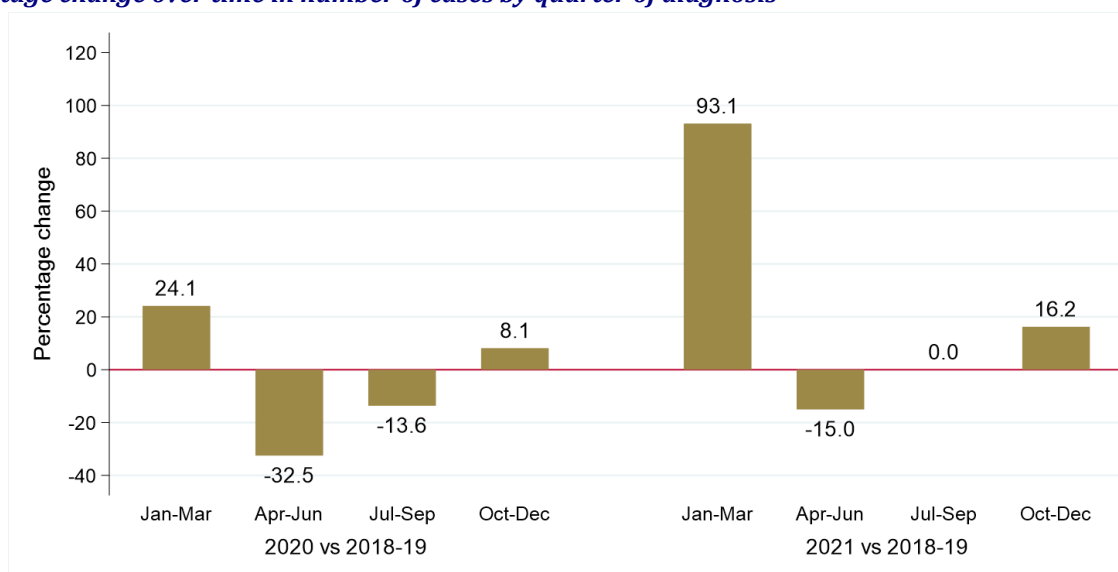
* Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.

Figure 1: Number of liver 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

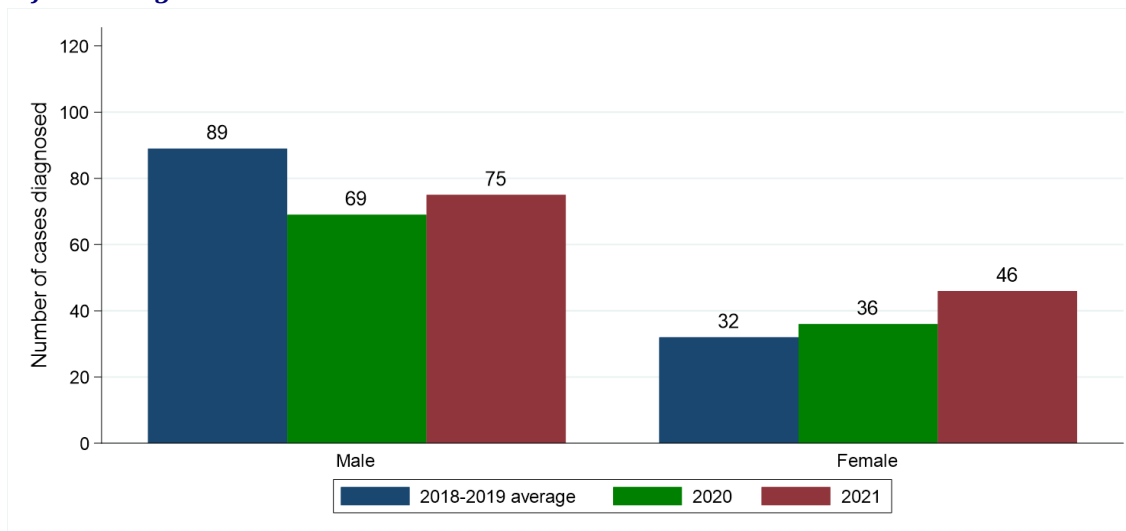
Excluding the first quarter of each year the number of male liver cancer cases diagnosed decreased by 15.7% from 89 per year in 2018-2019 to 75 in 2021. Between the same two time periods the number of female liver cancer cases diagnosed increased by 43.8% from 32 per year in 2018-2019 to 46 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was statistically significant ($p = 0.025$).

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

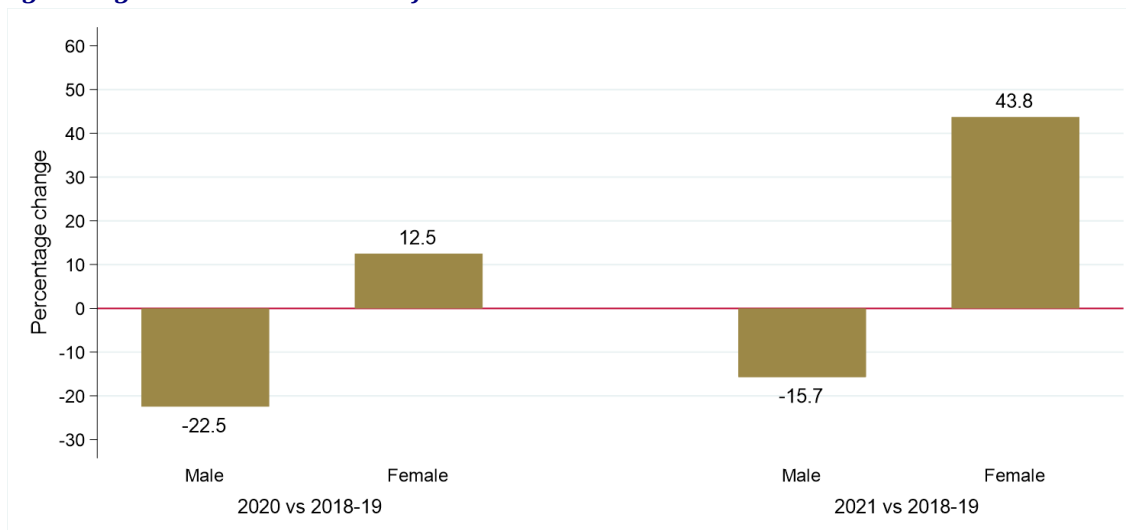
Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	121	105	121	-13.2%	0.0%
Male	89 (73.6%)	69 (65.7%)	75 (62.0%)	-22.5%	-15.7%
Female	32 (26.4%)	36 (34.3%)	46 (38.0%)	+12.5%	+43.8%

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

Figure 2: Number of liver 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

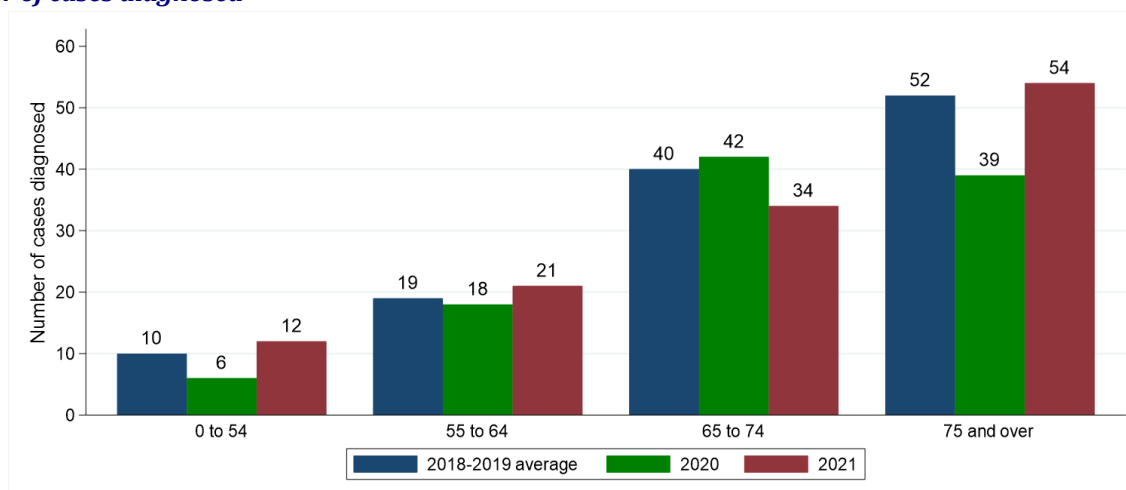
Excluding the first quarter of each year the number of cases of liver cancer diagnosed among those aged 65 to 74 decreased by 15.0% from 40 per year in 2018-2019 to 34 in 2021. Between the same two time periods the number of cases of liver cancer diagnosed among those aged 0 to 54 increased by 20.0% from 10 per year in 2018-2019 to 12 in 2021. The change in case distribution by age between 2018-2019 and 2021 was not statistically significant.

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

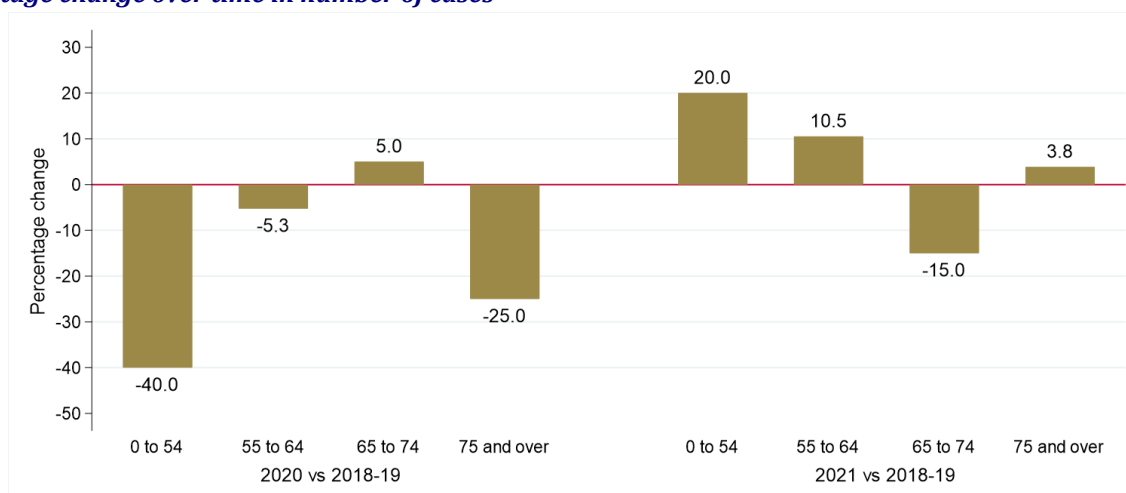
Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	121	105	121	-13.2%	0.0%
0 to 54	10 (8.3%)	6 (5.7%)	12 (9.9%)	-40.0%	+20.0%
55 to 64	19 (15.7%)	18 (17.1%)	21 (17.4%)	-5.3%	+10.5%
65 to 74	40 (33.1%)	42 (40.0%)	34 (28.1%)	+5.0%	-15.0%
75 and over	52 (43.0%)	39 (37.1%)	54 (44.6%)	-25.0%	+3.8%

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

Figure 3: Number of liver 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 liver cancer diagnosed among those resident in Western HSCT decreased by 21.1% from 19 per year in 2018-2019 to 15 in 2021. Between the same two time periods the number of cases of liver cancer diagnosed among those resident in Southern HSCT increased by 60.0% from 15 per year in 2018-2019 to 24 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 liver cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

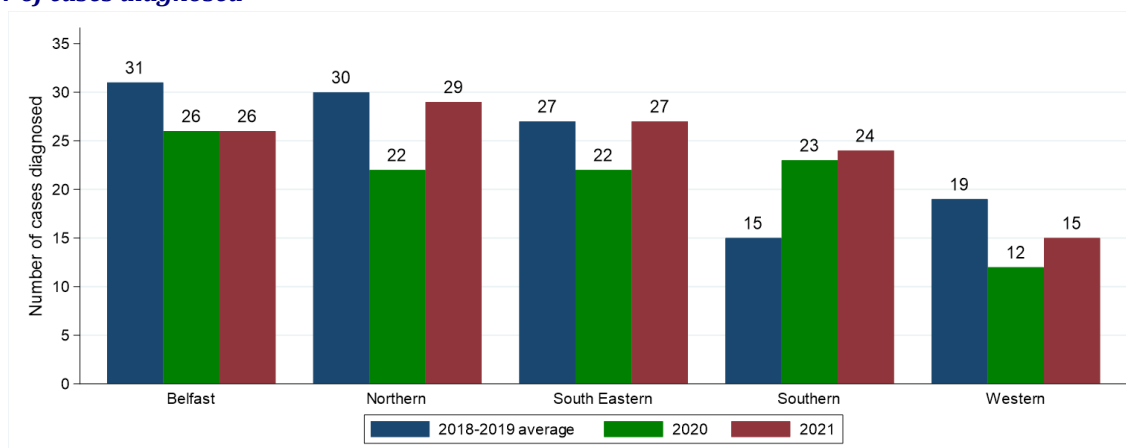
Health and Social Care Trust	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	121	105	121	-13.2%	0.0%
Belfast	31 (25.6%)	26 (24.8%)	26 (21.5%)	-16.1%	-16.1%
Northern	30 (24.8%)	22 (21.0%)	29 (24.0%)	-26.7%	-3.3%
South Eastern	27 (22.3%)	22 (21.0%)	27 (22.3%)	-18.5%	0.0%
Southern	15 (12.4%)	23 (21.9%)	24 (19.8%)	+53.3%	+60.0%
Western	19 (15.7%)	12 (11.4%)	15 (12.4%)	-36.8%	-21.1%

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

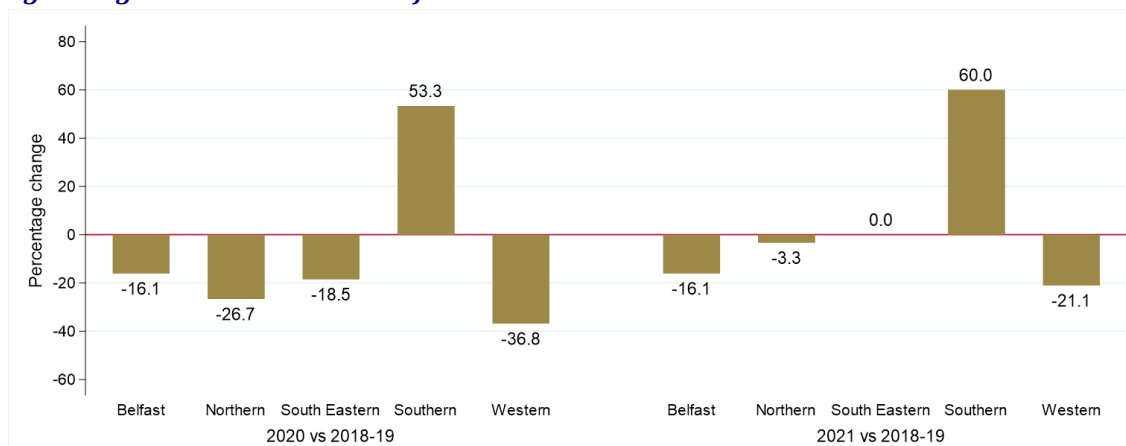
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of liver 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 liver cancer diagnosed among those resident in the most deprived quintile decreased by 10.3% from 29 per year in 2018-2019 to 26 in 2021. Between the same two time periods the number of cases of liver cancer diagnosed among those resident in the least deprived quintile increased by 4.0% from 25 per year in 2018-2019 to 26 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 liver cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

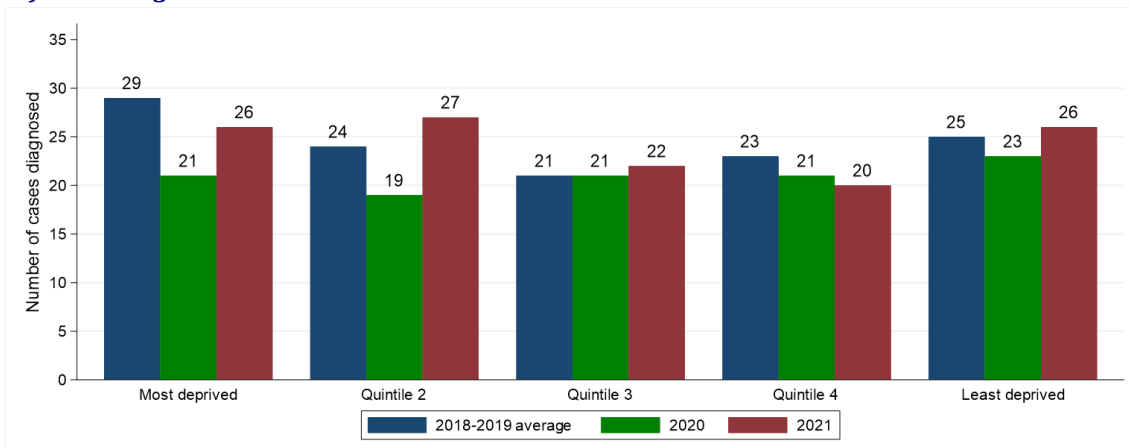
Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	121	105	121	-13.2%	0.0%
Most deprived	29 (24.0%)	21 (20.0%)	26 (21.5%)	-27.6%	-10.3%
Quintile 2	24 (19.8%)	19 (18.1%)	27 (22.3%)	-20.8%	+12.5%
Quintile 3	21 (17.4%)	21 (20.0%)	22 (18.2%)	0.0%	+4.8%
Quintile 4	23 (19.0%)	21 (20.0%)	20 (16.5%)	-8.7%	-13.0%
Least deprived	25 (20.7%)	23 (21.9%)	26 (21.5%)	-8.0%	+4.0%

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

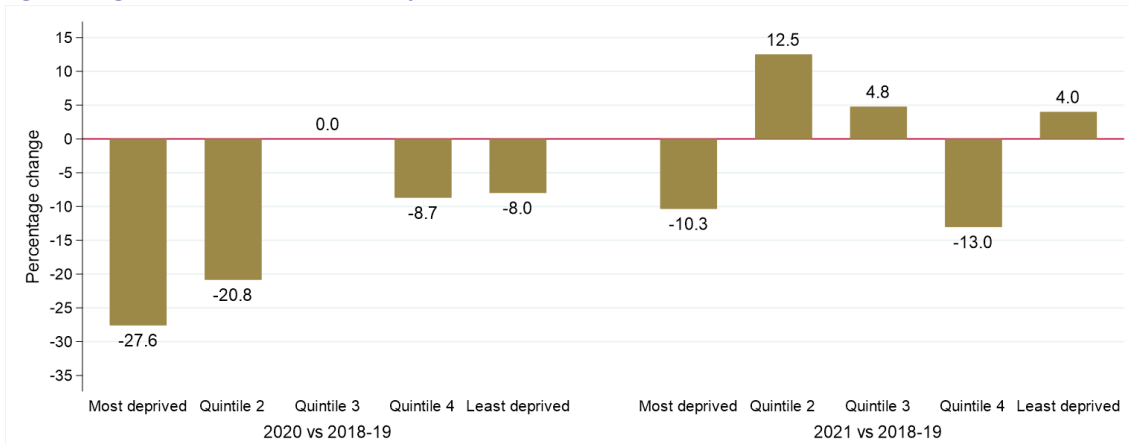
Note: Cases with unknown deprivation quintile are included in totals.

Figure 5: Number of liver 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

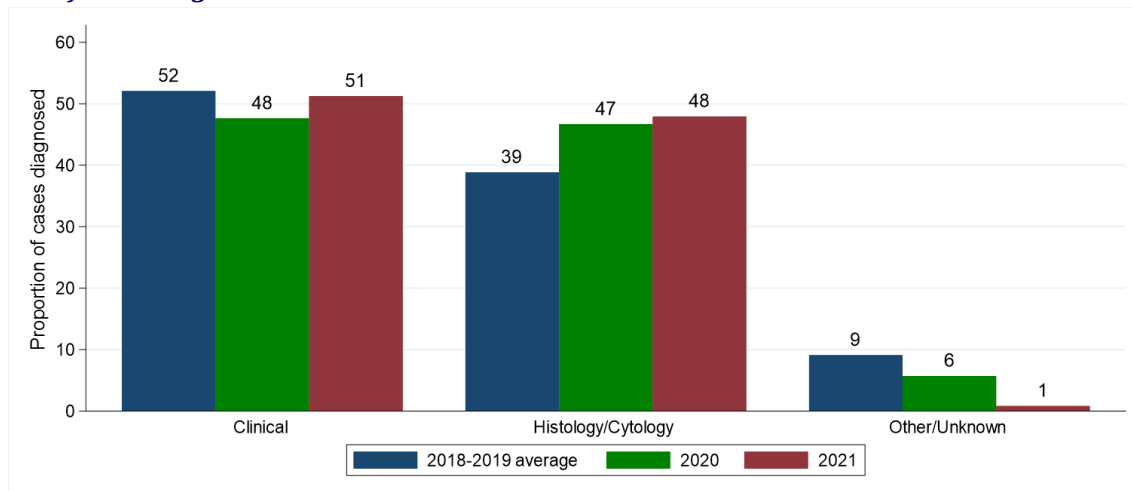
Excluding the first quarter of each year the number of cases of liver cancer diagnosed via histology/cytology increased by 23.4% from 47 per year in 2018-2019 to 58 in 2021. As a proportion of all cases, histology/cytology diagnosis increased from 38.8% in 2018-2019 to 47.9% in 2021. The change in case distribution by basis of diagnosis between 2018-2019 and 2021 was not statistically significant.

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

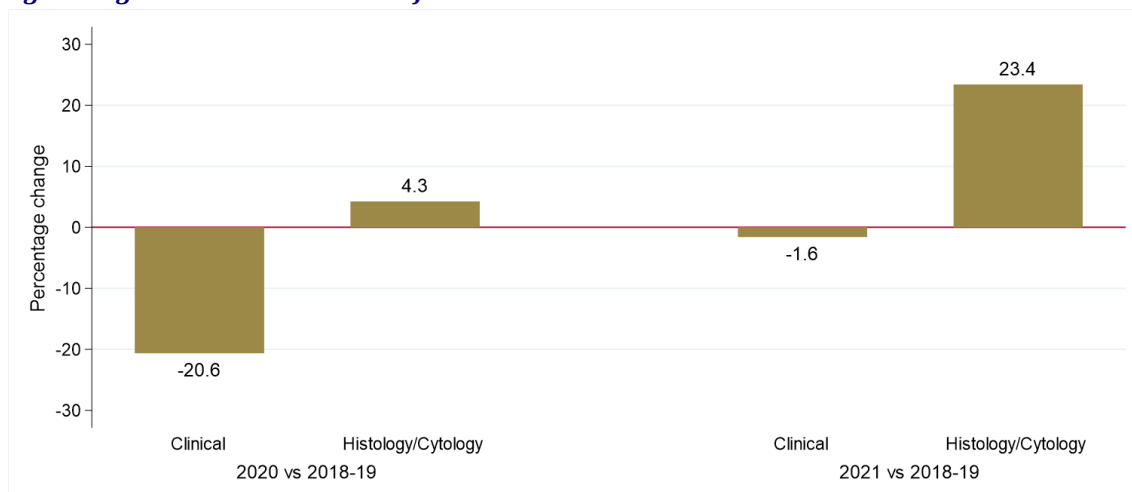
Basis of diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All types	121	105	121	-13.2%	0.0%
Clinical	63 (52.1%)	50 (47.6%)	62 (51.2%)	-20.6%	-1.6%
Histology/Cytology	47 (38.8%)	49 (46.7%)	58 (47.9%)	+4.3%	+23.4%
Other/Unknown	11 (9.1%)	6 (5.7%)	1 (0.8%)	-45.5%	-90.9%

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

Figure 6: Proportion of liver 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



STAGE AT DIAGNOSIS

The number of liver cancer cases diagnosed at stage I in April to December of each year increased by 38.9% from 18 per year in 2018-2019 to 25 in 2021. In addition the number of liver cancer cases diagnosed at stage IV did not change between 2018-2019 and 2021 with an average of 26 diagnosed each year. As a proportion of all cases stage IV diagnosis did not change between 2018-2019 and 2021 with 21.5% of cases diagnosed in this manner. The change in stage distribution between 2018-2019 and 2021 was not statistically significant.

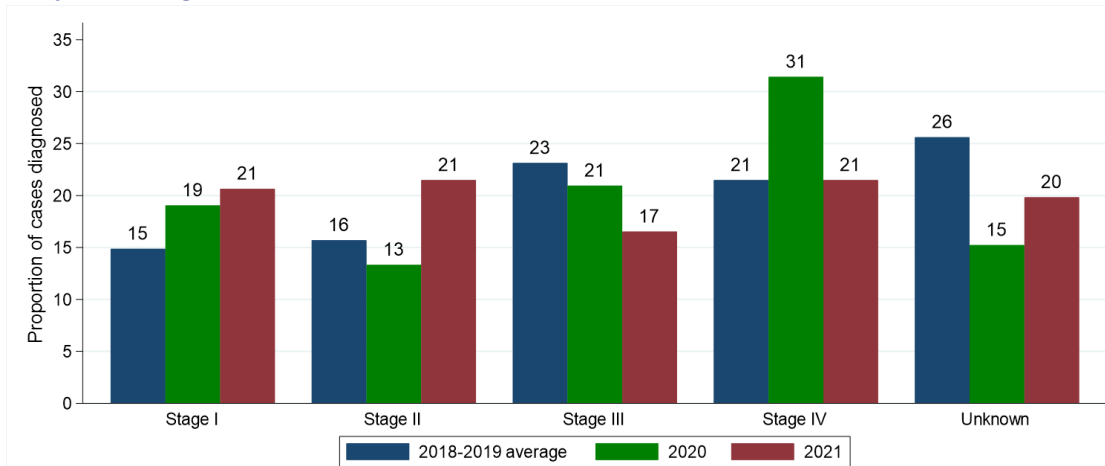
Table 7: Number and proportion of liver cancer cases diagnosed in April-December of 2018-2021 by stage and period of diagnosis

Stage at diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All stages	121	105	121	-13.2%	0.0%
Stage I	18 (14.9%)	20 (19.0%)	25 (20.7%)	+11.1%	+38.9%
Stage II	19 (15.7%)	14 (13.3%)	26 (21.5%)	-26.3%	+36.8%
Stage III	28 (23.1%)	22 (21.0%)	20 (16.5%)	-21.4%	-28.6%
Stage IV	26 (21.5%)	33 (31.4%)	26 (21.5%)	+26.9%	0.0%
Unknown	31 (25.6%)	16 (15.2%)	24 (19.8%)	-48.4%	-22.6%

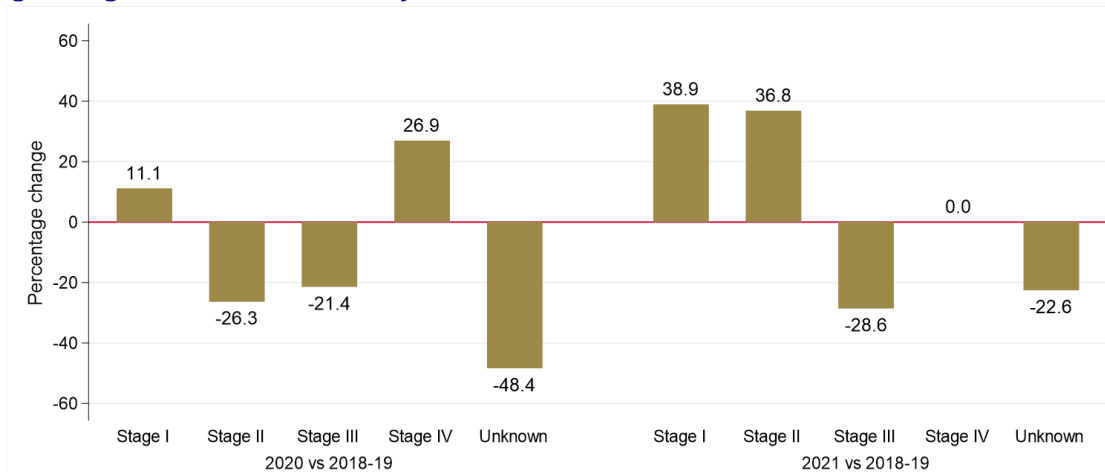
* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

Figure 7: Proportion of liver 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 liver cancer cases resulting in treatment by surgery within six months increased by 2.9% from 34 per year in 2018-2019 to 35 in 2021. The resulting increase in the proportion receiving surgery from 28.1% in 2018-2019 to 28.9% in 2021 was not statistically significant.

Between the same two time periods the number of liver cancer cases resulting in treatment by systemic therapy increased by 22.2% from 27 per year in 2018-2019 to 33 in 2021. The resulting increase in the proportion receiving systemic therapy from 22.3% in 2018-2019 to 27.3% in 2021 was not statistically significant.

The number of liver cancer cases treated with radiotherapy increased by 11.1% from 9 per year in 2018-2019 to 10 in 2021. The resulting increase in the proportion receiving radiotherapy from 7.4% in 2018-2019 to 8.3% in 2021 was not statistically significant.

Excluding the first quarter of each year the number of liver cancer cases receiving none of these treatments within six months of diagnosis decreased by 18.4% from 76 per year in 2018-2019 to 62 in 2021. The resulting decrease in the proportion receiving none of these treatments from 62.8% in 2018-2019 to 51.2% in 2021 was statistically significant ($p = 0.037$).

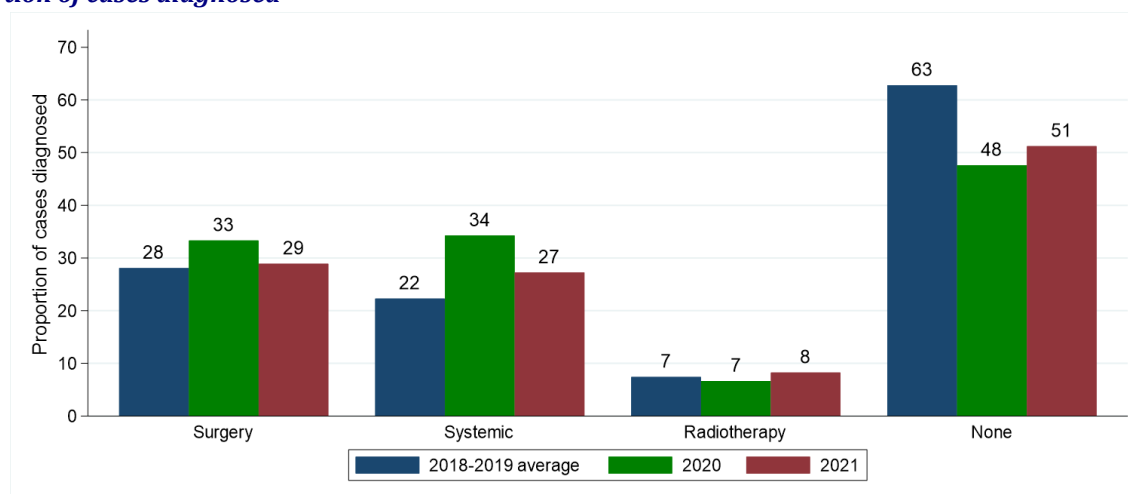
Table 8: Number and proportion of liver cancer cases diagnosed in April-December of 2018-2021 by treatment type (within six months of diagnosis) and period of diagnosis

Treatment type	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Surgery	34 (28.1%)	35 (33.3%)	35 (28.9%)	+2.9%	+2.9%
Systemic therapy	27 (22.3%)	36 (34.3%)*	33 (27.3%)	+33.3%	+22.2%
Radiotherapy	9 (7.4%)	7 (6.7%)	10 (8.3%)	-22.2%	+11.1%
None of these treatments	76 (62.8%)	50 (47.6%)*	62 (51.2%)*	-34.2%	-18.4%

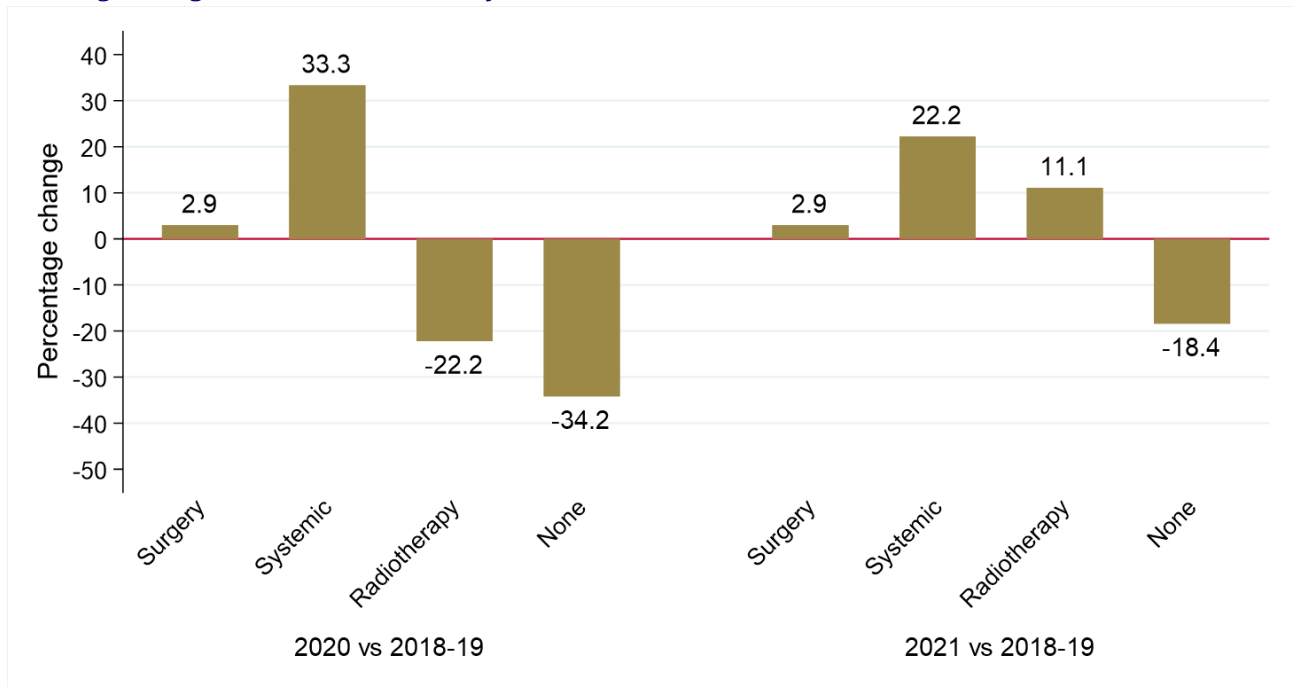
* Statistically significant change compared to 2018-2019

Figure 8: Proportion of liver 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

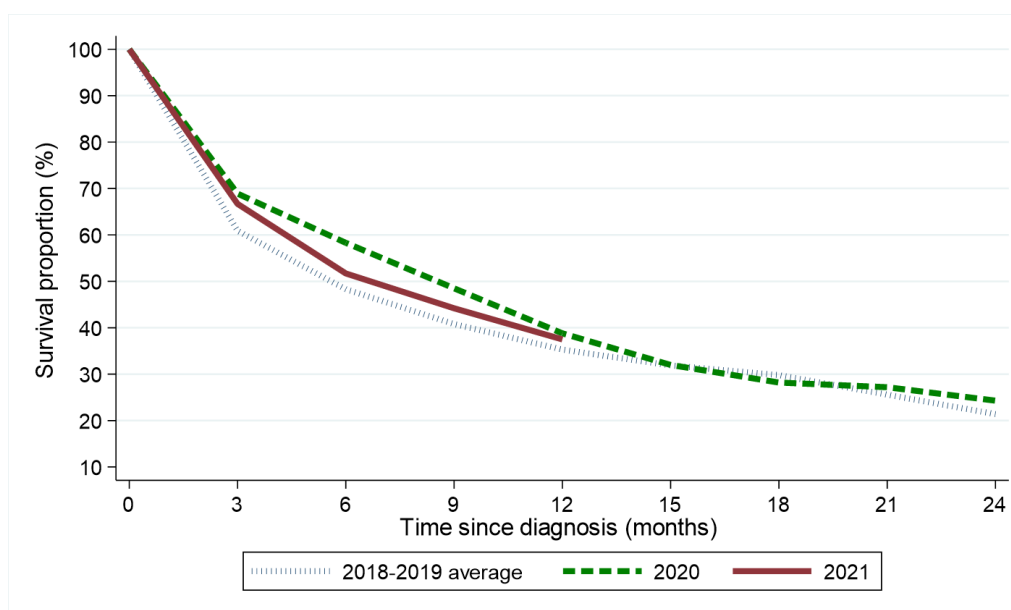
Survival among liver cancer patients six months after diagnosis increased from 48.3% among those diagnosed in April-December of 2018-2019 to 51.7% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival increased from 35.3% to 37.5%. 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 ($p=0.587$).

Table 9: Observed survival for patients with liver 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	60.9% (54.4% - 66.8%)	68.9% (59.0% - 76.9%)	66.7% (57.5% - 74.3%)
Six months	48.3% (41.8% - 54.5%)	58.3% (48.1% - 67.1%)	51.7% (42.4% - 60.2%)
One year	35.3% (29.3% - 41.4%)	38.8% (29.5% - 48.1%)	37.5% (28.9% - 46.1%)
Two years	21.4% (16.5% - 26.8%)	24.3% (16.5% - 32.9%)	-

No statistically significant reductions compared to 2018-2019

Figure 9: Observed survival for patients with liver 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 liver cancer patients diagnosed at any point since 1993.

NET SURVIVAL

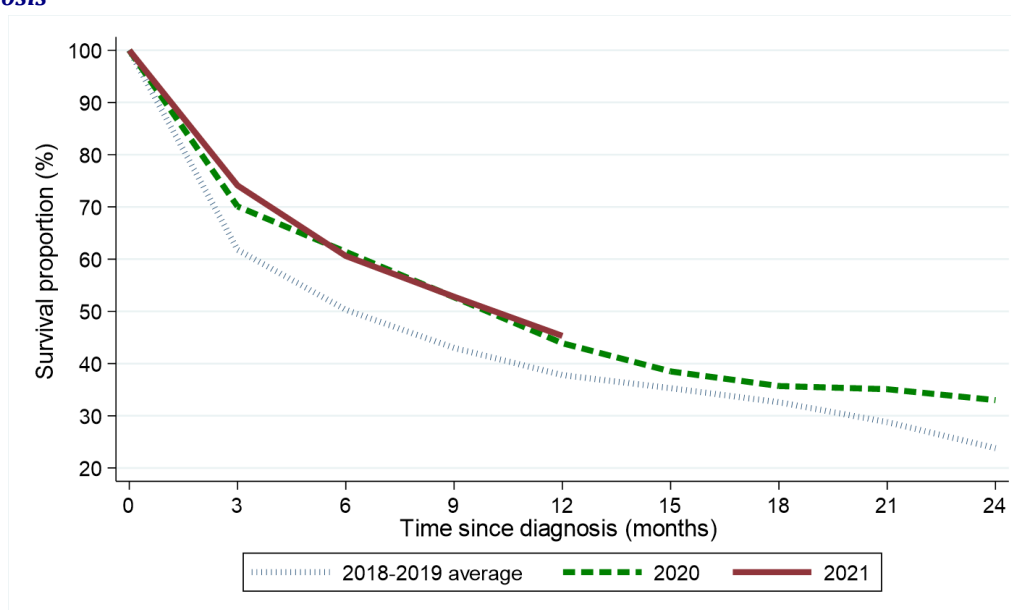
Net survival among liver cancer patients six months after diagnosis increased from 50.3% among those diagnosed in April-December of 2018-2019 to 60.6% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival increased from 37.8% to 45.3%. This change was not statistically significant.

Table 10: Age-standardised net survival for patients with liver 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	61.8% (55.5% - 68.8%)	70.1% (60.8% - 80.9%)	74.1% (66.5% - 82.5%)
Six months	50.3% (43.8% - 57.8%)	61.4% (51.9% - 72.7%)	60.6% (51.9% - 70.7%)
One year	37.8% (31.7% - 45.1%)	43.9% (33.4% - 57.6%)	45.3% (36.6% - 56.1%)
Two years	23.8% (18.2% - 31.2%)	33.0% (23.8% - 45.7%)	-

No statistically significant reductions compared to 2018-2019

Figure 10: Age-standardised net survival for patients with liver 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 liver cancer increased between 2018-2019 and 2021 by 14.2% from 113 deaths per year to 129 deaths.

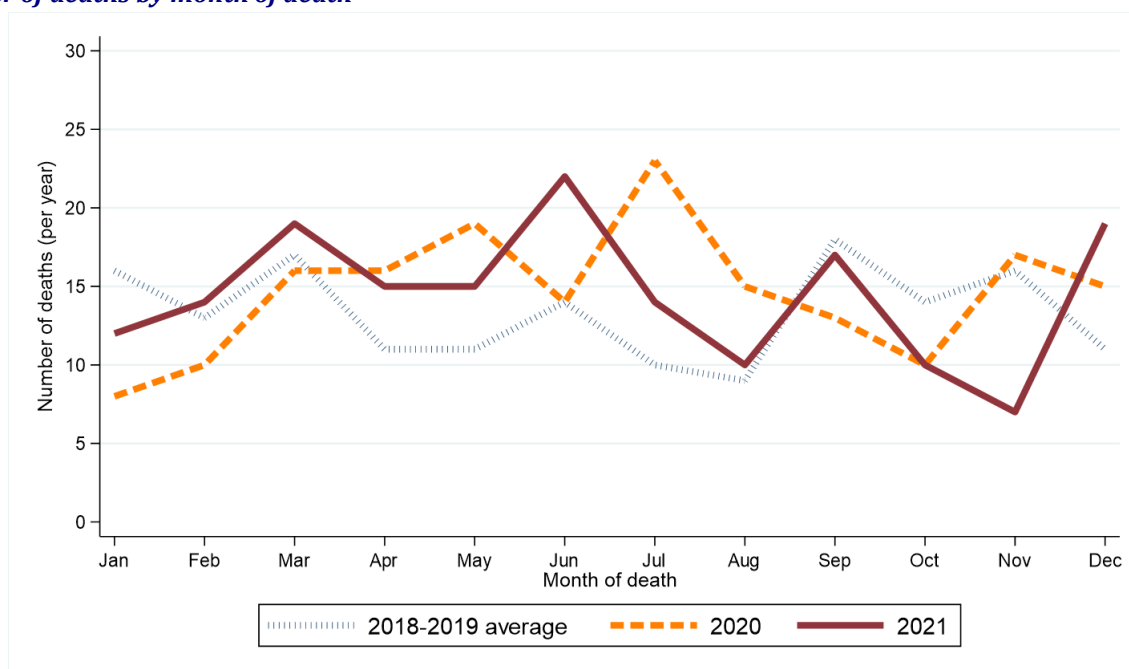
Table 11: Number of liver cancer deaths in 2018-2021 by month and year of death

Period of death	Annual total	Month death occurred											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	158	16	13	17	11	11	14	10	9	18	14	16	11
2020	176	8	10	16	16	19	14	23	15	13	10	17	15
2021	174	12	14	19	15	15	22	14	10	17	10	7	19

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

Figure 11: Number of liver 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

