Recent trends in incidence, survival and mortality of kidney 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

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Acknowledgements

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INCIDENCE

During the April-December period the number of cases of kidney cancer diagnosed decreased between 2018-2019 and 2021 by 11.8% from 238 cases per year to 210 cases.

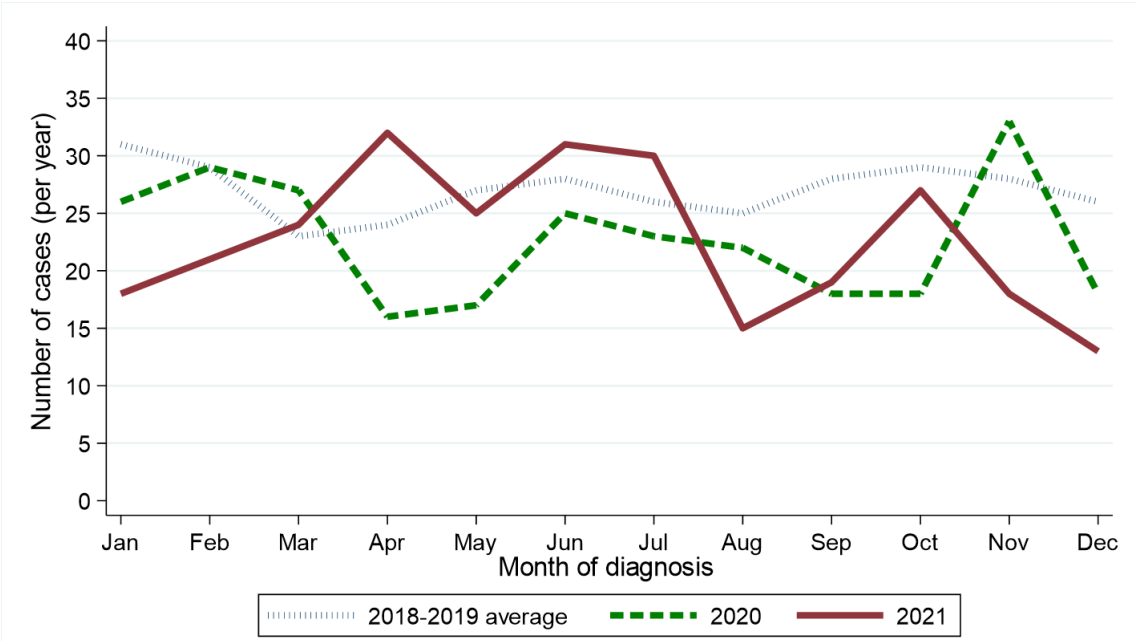
Table 1: Number of kidney cancer cases diagnosed in 2018-2021 by month and year of diagnosis

Period of diagnosis	Annual total	Month diagnosed											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	320	31	29	23	24	27	28	26	25	28	29	28	26
2020	272	26	29	27	16	17	25	23	22	18	18	33	18
2021	273	18	21	24	32	25	31	30	15	19	27	18	13

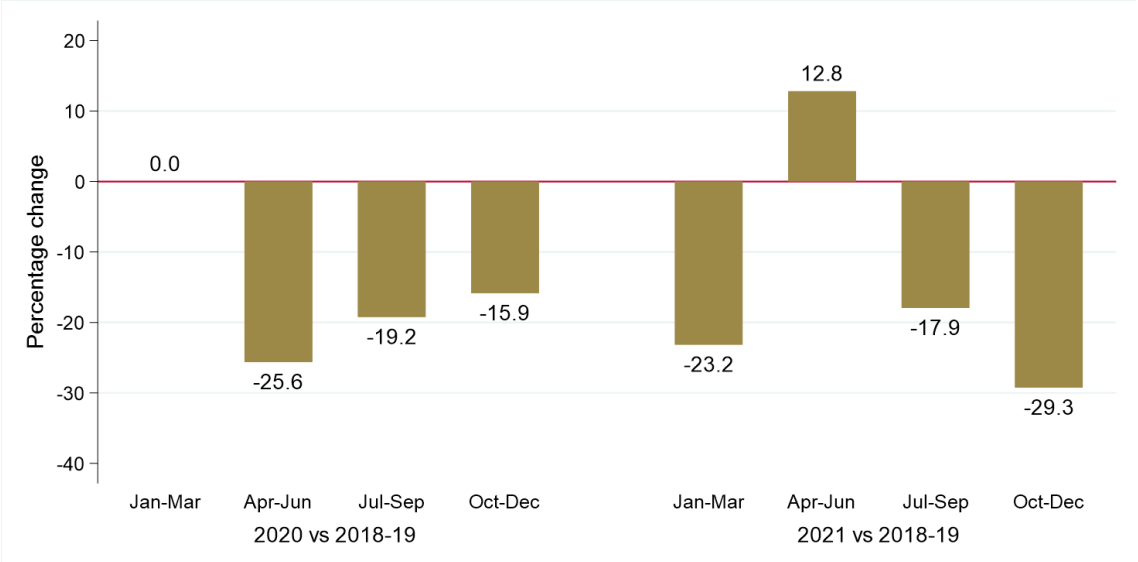
** Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.*

Figure 1: Number of kidney 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 kidney cancer cases diagnosed decreased by 9.1% from 154 per year in 2018-2019 to 140 in 2021. Between the same two time periods the number of female kidney cancer cases diagnosed decreased by 16.7% from 84 per year in 2018-2019 to 70 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was not statistically significant.

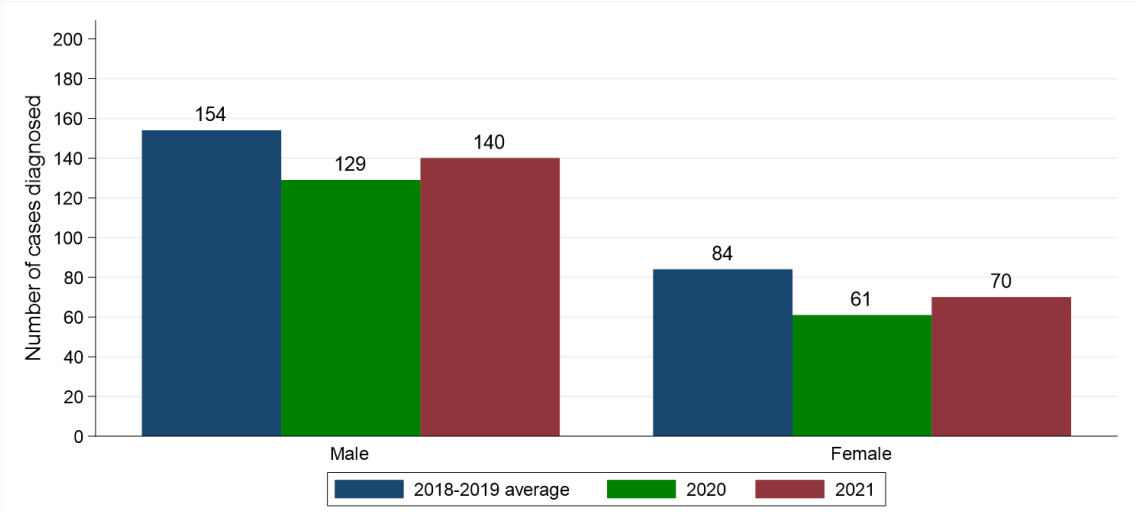
Table 2: Number and proportion of kidney cancer cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	238	190	210	-20.2%	-11.8%
Male	154 (64.7%)	129 (67.9%)	140 (66.7%)	-16.2%	-9.1%
Female	84 (35.3%)	61 (32.1%)	70 (33.3%)	-27.4%	-16.7%

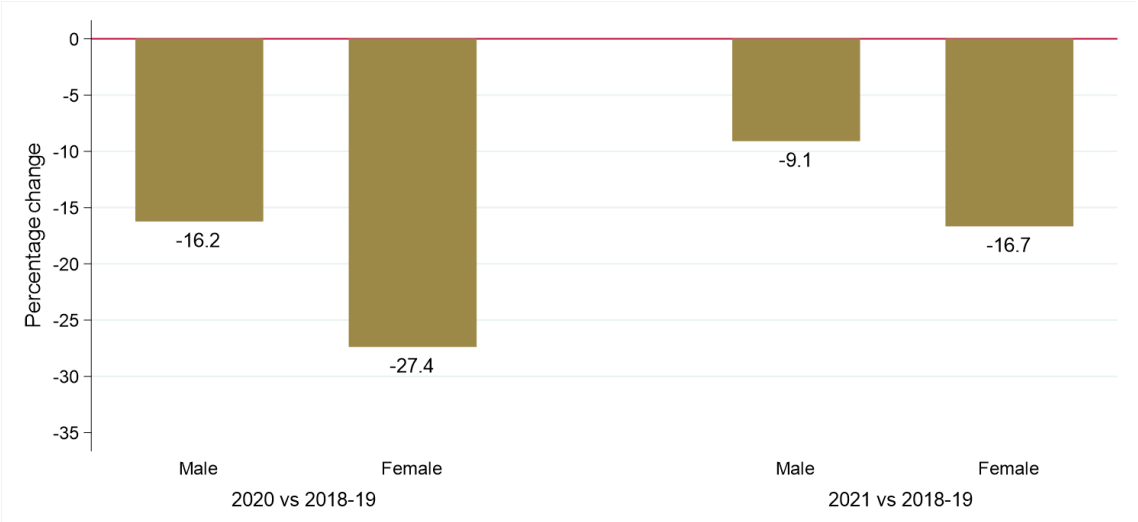
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 2: Number of kidney 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 kidney cancer diagnosed among those aged 65 to 74 decreased by 31.4% from 70 per year in 2018-2019 to 48 in 2021. Between the same two time periods the number of cases of kidney cancer diagnosed among those aged 55 to 64 did not change between 2018-2019 and 2021 with an average of 54 diagnosed each year. The change in case distribution by age between 2018-2019 and 2021 was not statistically significant.

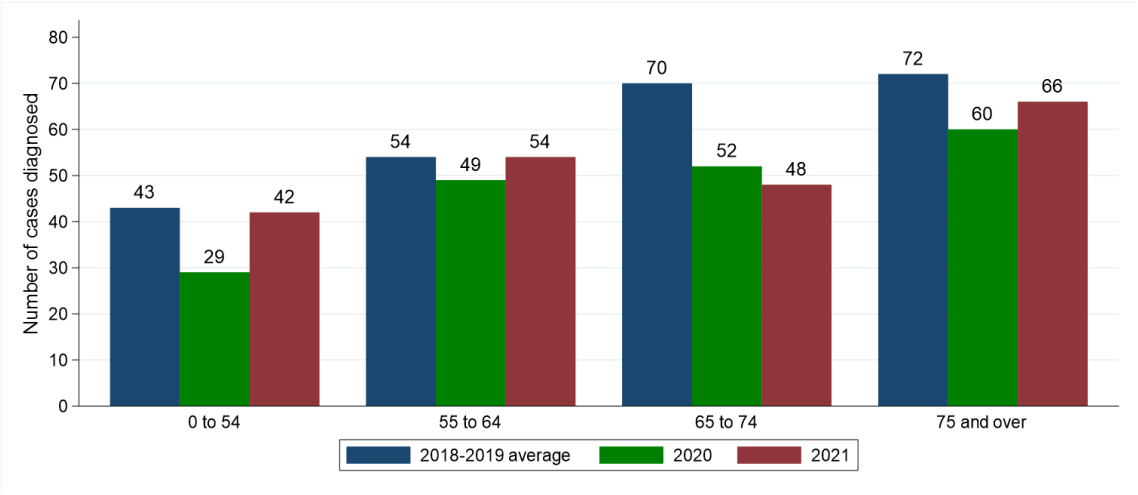
Table 3: Number and proportion of kidney cancer cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	238	190	210	-20.2%	-11.8%
0 to 54	43 (18.1%)	29 (15.3%)	42 (20.0%)	-32.6%	-2.3%
55 to 64	54 (22.7%)	49 (25.8%)	54 (25.7%)	-9.3%	0.0%
65 to 74	70 (29.4%)	52 (27.4%)	48 (22.9%)	-25.7%	-31.4%
75 and over	72 (30.3%)	60 (31.6%)	66 (31.4%)	-16.7%	-8.3%

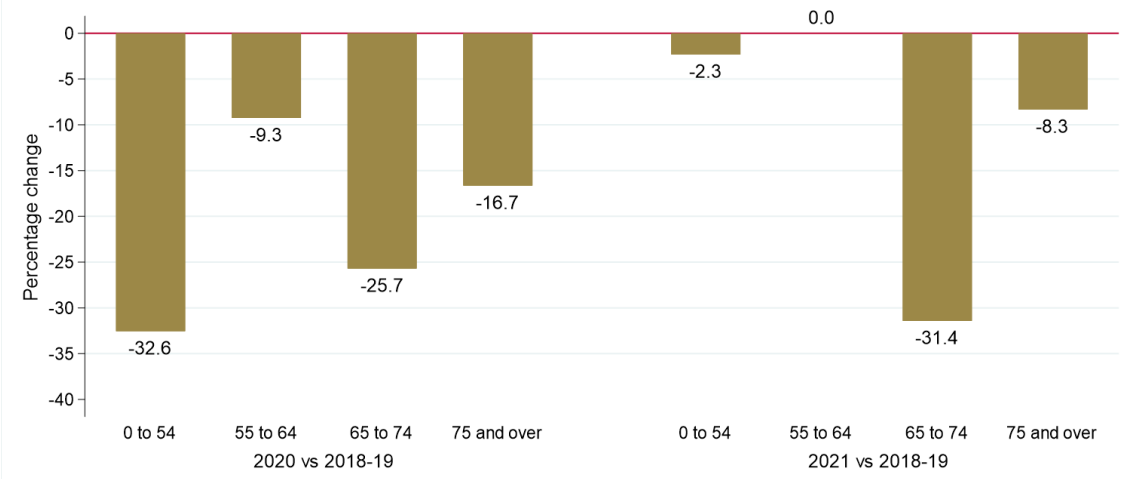
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 3: Number of kidney 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 kidney cancer diagnosed among those resident in Northern HSCT decreased by 20.0% from 75 per year in 2018-2019 to 60 in 2021. Between the same two time periods the number of cases of kidney cancer diagnosed among those resident in Western HSCT increased by 7.1% from 28 per year in 2018-2019 to 30 in 2021. The change in case distribution by Health and Social Care Trust between 2018-2019 and 2021 was not statistically significant.

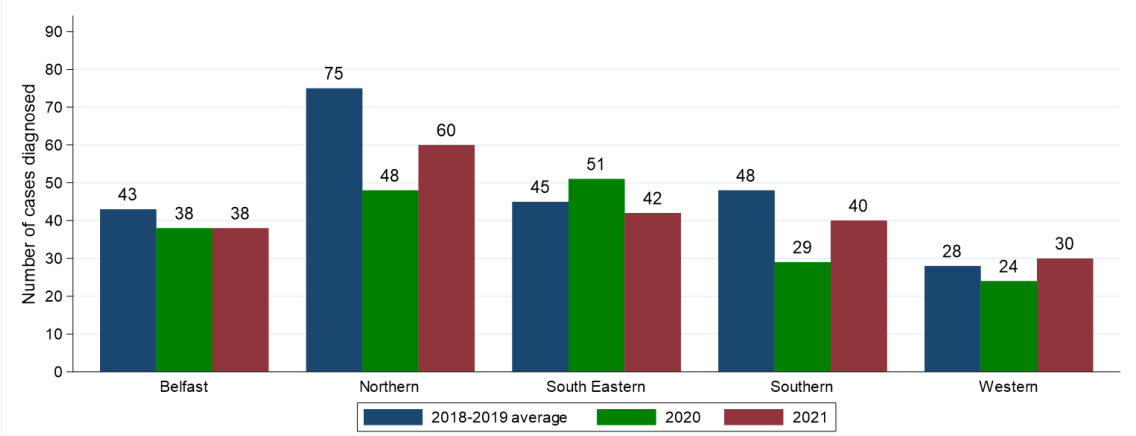
Table 4: Number and proportion of kidney cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

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	238	190	210	-20.2%	-11.8%
Belfast	43 (18.1%)	38 (20.0%)	38 (18.1%)	-11.6%	-11.6%
Northern	75 (31.5%)	48 (25.3%)	60 (28.6%)	-36.0%	-20.0%
South Eastern	45 (18.9%)	51 (26.8%)	42 (20.0%)	+13.3%	-6.7%
Southern	48 (20.2%)	29 (15.3%)	40 (19.0%)	-39.6%	-16.7%
Western	28 (11.8%)	24 (12.6%)	30 (14.3%)	-14.3%	+7.1%

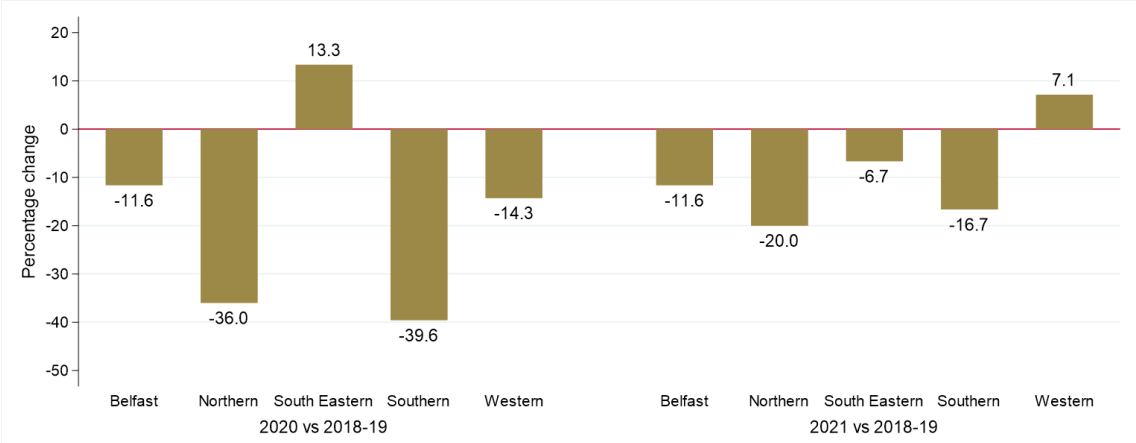
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of kidney 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 kidney cancer diagnosed among those resident in the least deprived quintile decreased by 23.1% from 52 per year in 2018-2019 to 40 in 2021. Between the same two time periods the number of cases of kidney cancer diagnosed among those resident in the most deprived quintile increased by 19.0% from 42 per year in 2018-2019 to 50 in 2021. The change in case distribution by deprivation quintile between 2018-2019 and 2021 was not statistically significant.

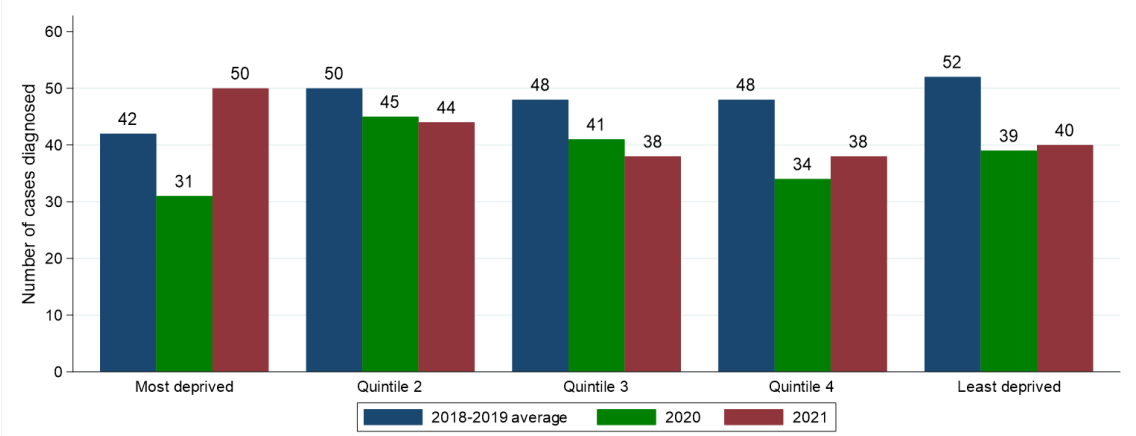
Table 5: Number and proportion of kidney cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	238	190	210	-20.2%	-11.8%
Most deprived	42 (17.6%)	31 (16.3%)	50 (23.8%)	-26.2%	+19.0%
Quintile 2	50 (21.0%)	45 (23.7%)	44 (21.0%)	-10.0%	-12.0%
Quintile 3	48 (20.2%)	41 (21.6%)	38 (18.1%)	-14.6%	-20.8%
Quintile 4	48 (20.2%)	34 (17.9%)	38 (18.1%)	-29.2%	-20.8%
Least deprived	52 (21.8%)	39 (20.5%)	40 (19.0%)	-25.0%	-23.1%

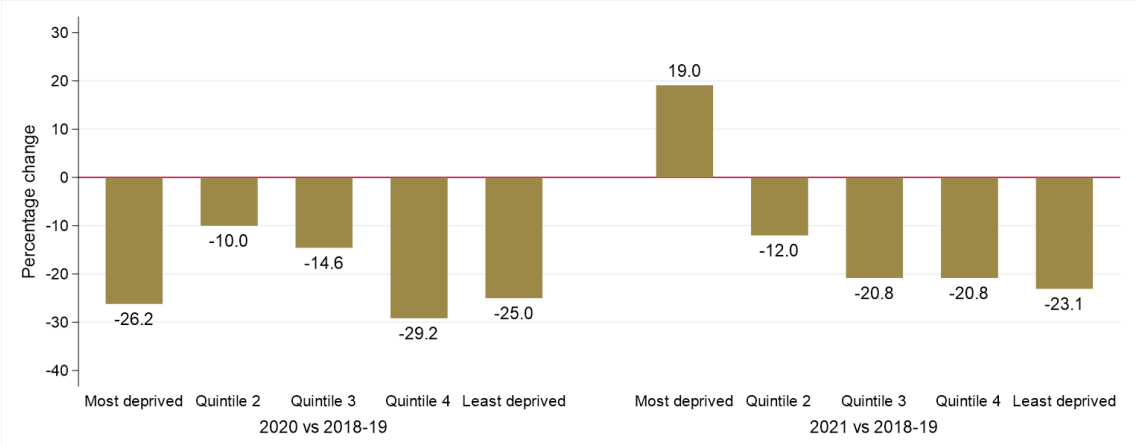
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown deprivation quintile are included in totals.

Figure 5: Number of kidney 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 kidney cancer diagnosed via histology/cytology decreased by 12.6% from 174 per year in 2018-2019 to 152 in 2021. As a proportion of all cases, histology/cytology diagnosis decreased from 73.1% in 2018-2019 to 72.4% in 2021. The change in case distribution by basis of diagnosis between 2018-2019 and 2021 was not statistically significant.

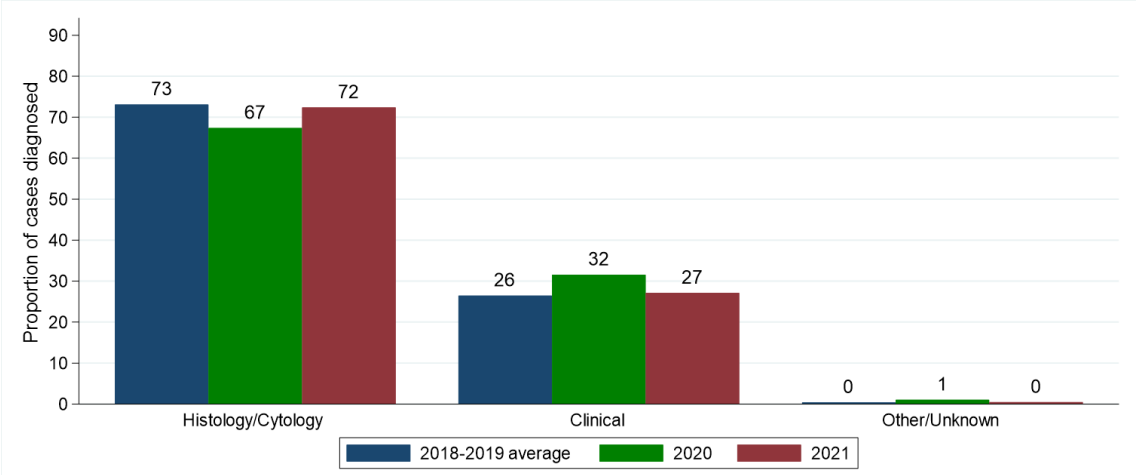
Table 6: Number and proportion of kidney cancer cases diagnosed in April-December of 2018-2021 by basis and period of diagnosis

Basis of diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All types	238	190	210	-20.2%	-11.8%
Histology/Cytology	174 (73.1%)	128 (67.4%)	152 (72.4%)	-26.4%	-12.6%
Clinical	63 (26.5%)	60 (31.6%)	57 (27.1%)	-4.8%	-9.5%
Other/Unknown	1 (0.4%)	2 (1.1%)	1 (0.5%)	-	-

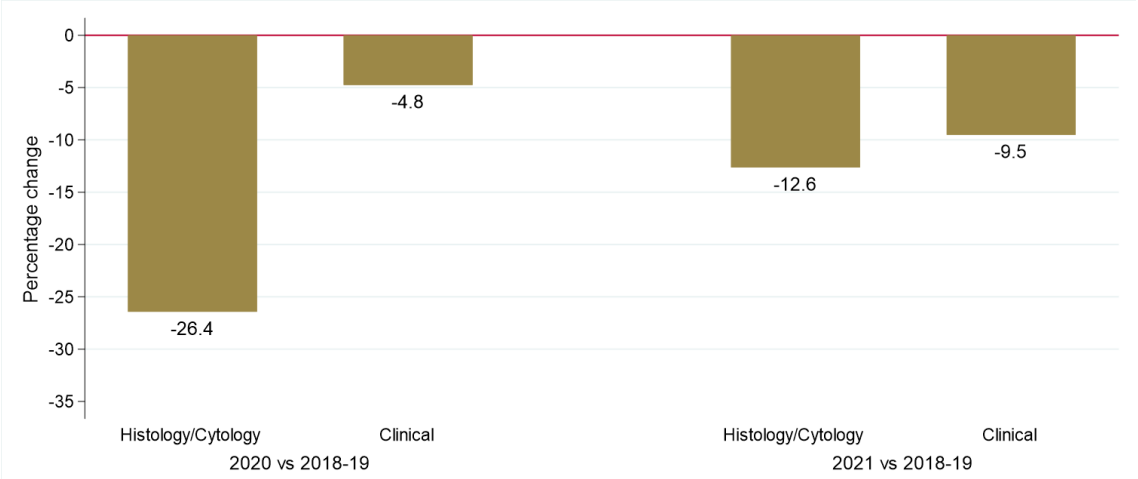
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 6: Proportion of kidney 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 kidney cancer cases diagnosed at stage I in April to December of each year decreased by 24.1% from 133 per year in 2018-2019 to 101 in 2021. In addition the number of kidney cancer cases diagnosed at stage IV increased by 27.0% from 37 per year in 2018-2019 to 47 in 2021. As a proportion of all cases, stage IV diagnosis increased from 15.5% in 2018-2019 to 22.4% in 2021. The change in stage distribution between 2018-2019 and 2021 was not statistically significant.

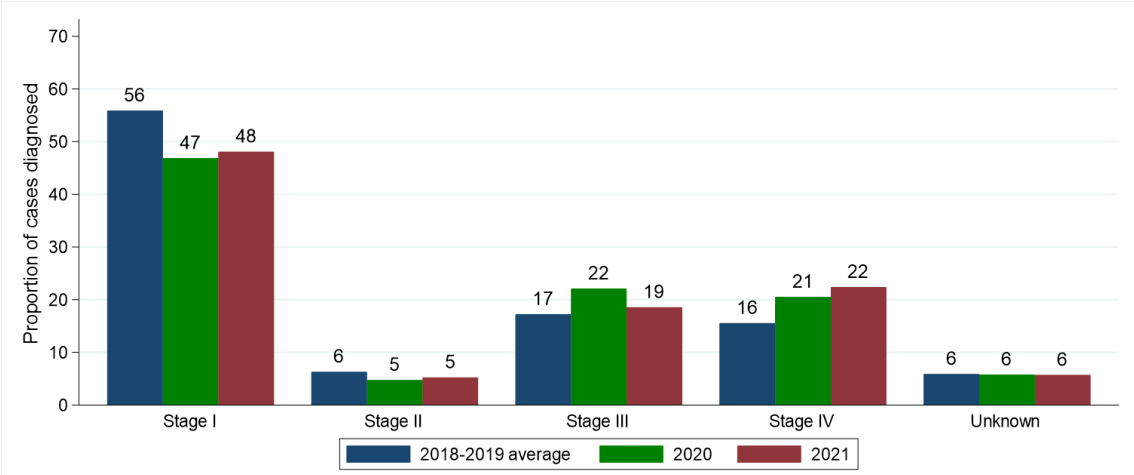
Table 7: Number and proportion of kidney cancer cases diagnosed in April-December of 2018-2021 by stage and period of diagnosis

Stage at diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All stages	238	190	210	-20.2%	-11.8%
Stage I	133 (55.9%)	89 (46.8%)	101 (48.1%)	-33.1%	-24.1%
Stage II	15 (6.3%)	9 (4.7%)	11 (5.2%)	-40.0%	-26.7%
Stage III	41 (17.2%)	42 (22.1%)	39 (18.6%)	+2.4%	-4.9%
Stage IV	37 (15.5%)	39 (20.5%)	47 (22.4%)	+5.4%	+27.0%
Unknown	14 (5.9%)	11 (5.8%)	12 (5.7%)	-21.4%	-14.3%

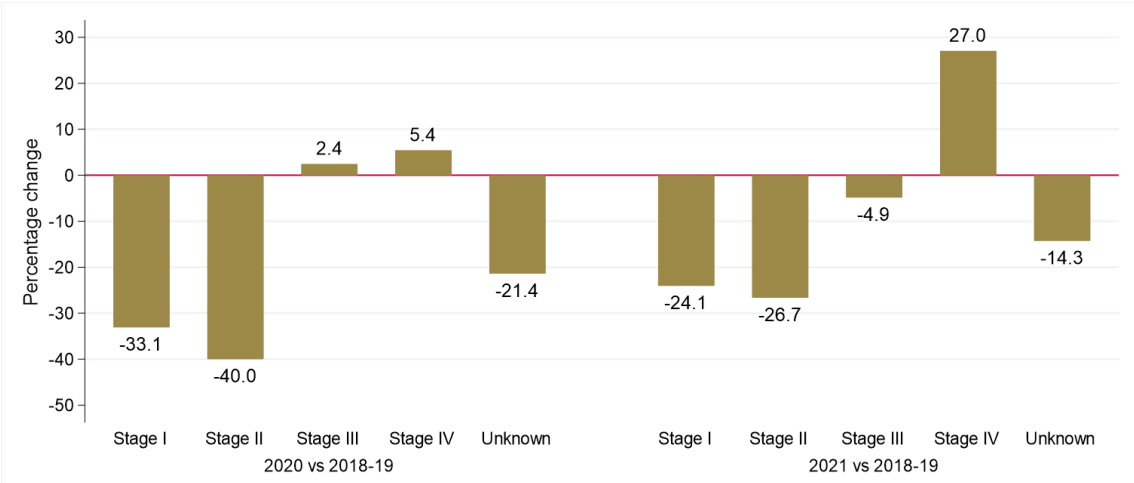
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 7: Proportion of kidney 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 kidney cancer cases resulting in treatment by surgery within six months decreased by 19.3% from 135 per year in 2018-2019 to 109 in 2021. The resulting decrease in the proportion receiving surgery from 56.7% in 2018-2019 to 51.9% in 2021 was not statistically significant.

Between the same two time periods the number of kidney cancer cases resulting in treatment by systemic therapy increased by 18.2% from 22 per year in 2018-2019 to 26 in 2021. The resulting increase in the proportion receiving systemic therapy from 9.2% in 2018-2019 to 12.4% in 2021 was not statistically significant.

The number of kidney cancer cases treated with radiotherapy increased by 53.8% from 13 per year in 2018-2019 to 20 in 2021. The resulting increase in the proportion receiving radiotherapy from 5.5% in 2018-2019 to 9.5% in 2021 was statistically significant (p = 0.037).

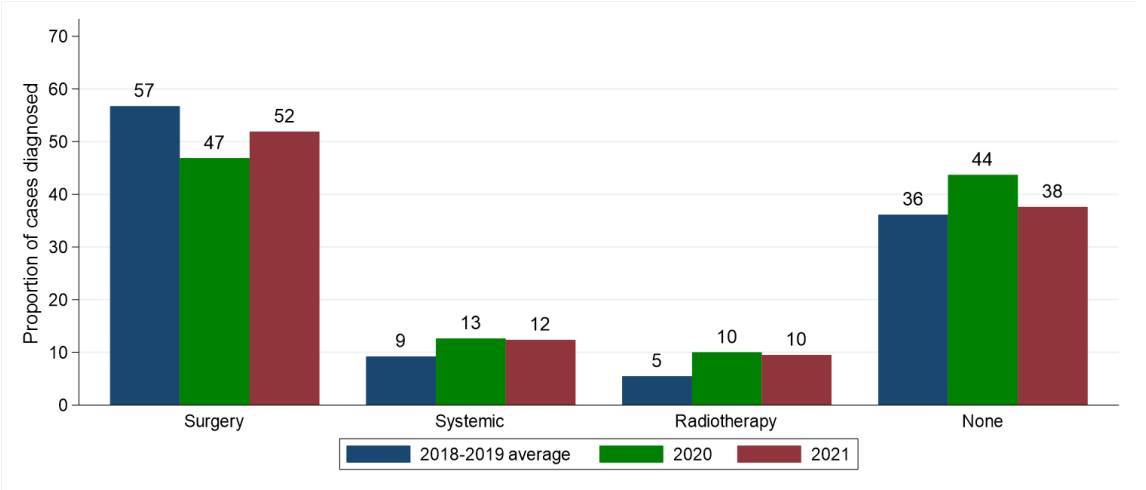
Excluding the first quarter of each year the number of kidney cancer cases receiving none of these treatments within six months of diagnosis decreased by 8.1% from 86 per year in 2018-2019 to 79 in 2021. The resulting increase in the proportion receiving none of these treatments from 36.1% in 2018-2019 to 37.6% in 2021 was not statistically significant.

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

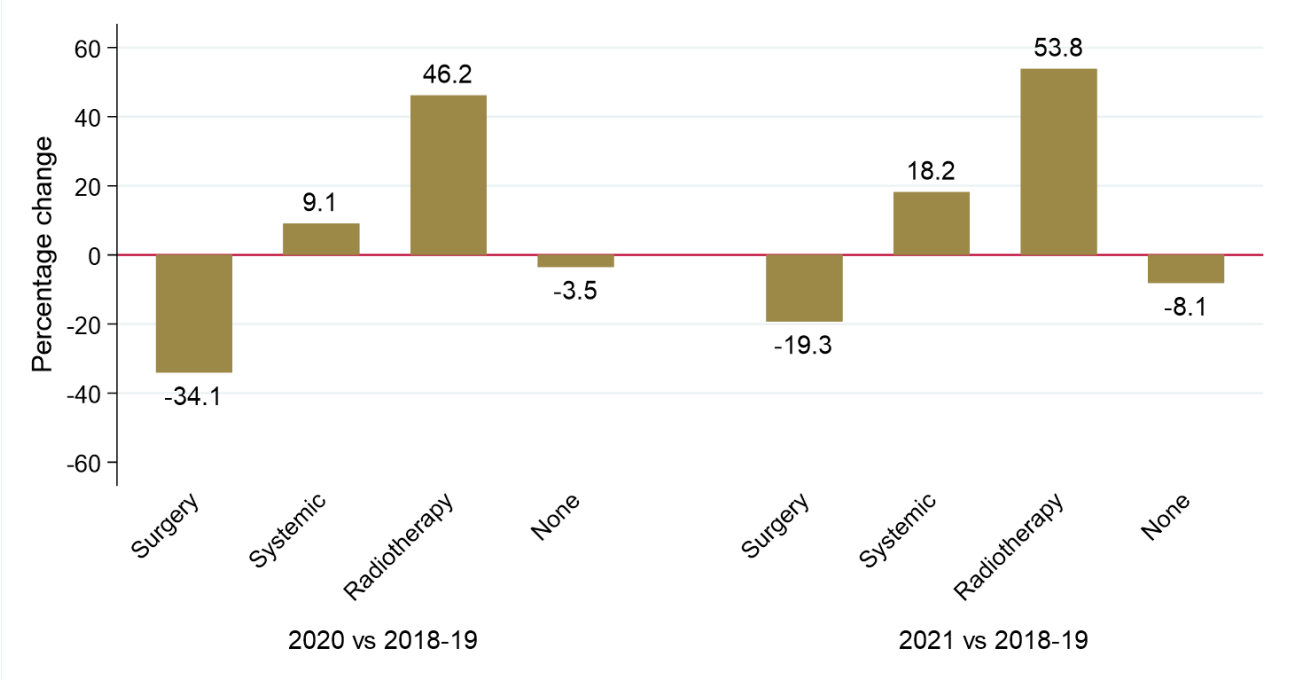
Treatment type	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Surgery	135 (56.7%)	89 (46.8%)*	109 (51.9%)	-34.1%	-19.3%
Systemic therapy	22 (9.2%)	24 (12.6%)	26 (12.4%)	+9.1%	+18.2%
Radiotherapy	13 (5.5%)	19 (10.0%)*	20 (9.5%)*	+46.2%	+53.8%
None of these treatments	86 (36.1%)	83 (43.7%)	79 (37.6%)	-3.5%	-8.1%

** Statistically significant change compared to 2018-2019*

Figure 8: Proportion of kidney 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

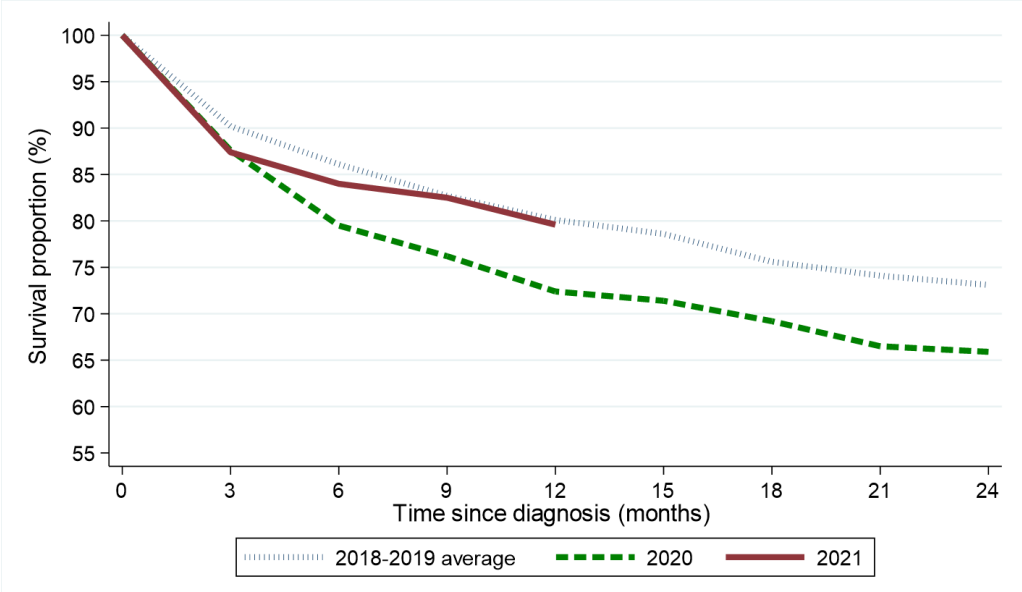
Survival among kidney cancer patients six months after diagnosis decreased from 86.1% among those diagnosed in April-December of 2018-2019 to 84.0% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival decreased from 80.1% to 79.6%. 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=0.735).

Table 9: Observed survival for patients with kidney 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	90.2% (87.1% - 92.5%)	87.6% (81.9% - 91.6%)	87.4% (82.0% - 91.2%)
Six months	86.1% (82.6% - 88.9%)	79.5% (72.9% - 84.6%)	84.0% (78.2% - 88.3%)
One year	80.1% (76.2% - 83.5%)	72.4% (65.4% - 78.3%)	79.6% (73.4% - 84.5%)
Two years	73.1% (68.8% - 76.9%)	65.9% (58.6% - 72.3%)	-

No statistically significant reductions compared to 2018-2019

Figure 9: Observed survival for patients with kidney cancer diagnosed in April-December of 2018-2021 by period of diagnosis



DEATHS FROM COVID-19

During 2021 there were a total of 15 deaths from Covid-19 among kidney cancer patients diagnosed at any point since 1993.

NET SURVIVAL

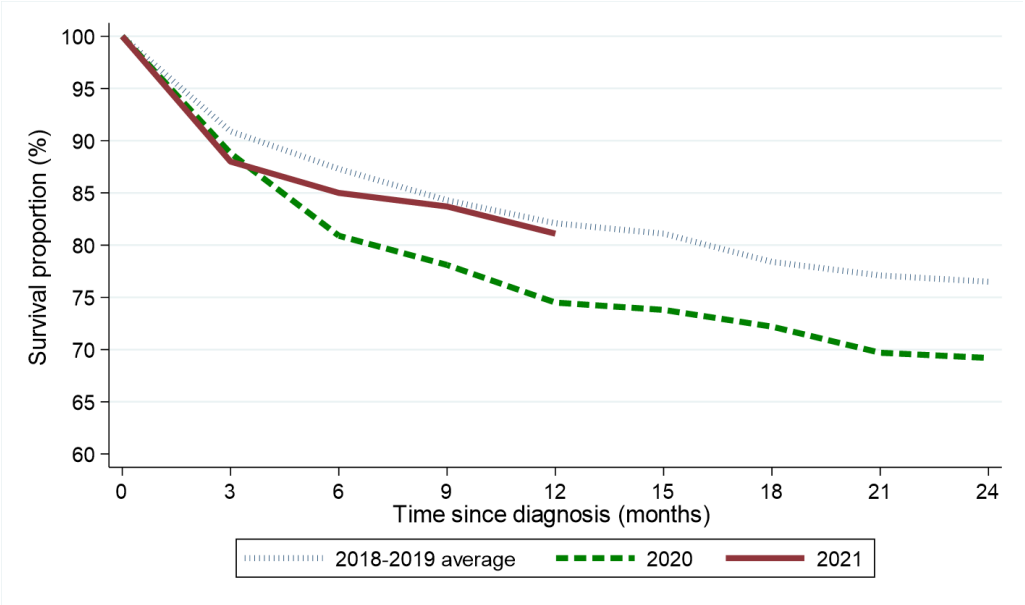
Net survival among kidney cancer patients six months after diagnosis decreased from 87.3% among those diagnosed in April-December of 2018-2019 to 85.0% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival decreased from 82.1% to 81.1%. This change was not statistically significant.

Table 10: Age-standardised net survival for patients with kidney 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	90.9% (88.3% - 93.6%)	88.8% (84.2% - 93.6%)	88.0% (83.5% - 92.8%)
Six months	87.3% (84.1% - 90.6%)	80.9% (75.1% - 87.2%)	85.0% (79.8% - 90.5%)
One year	82.1% (78.5% - 85.9%)	74.5% (68.1% - 81.5%)	81.1% (75.3% - 87.4%)
Two years	76.5% (72.3% - 81.0%)	69.2% (62.1% - 77.1%)	-

No statistically significant reductions compared to 2018-2019

Figure 10: Age-standardised net survival for patients with kidney 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 kidney cancer increased between 2018-2019 and 2021 by 6.0% from 83 deaths per year to 88 deaths.

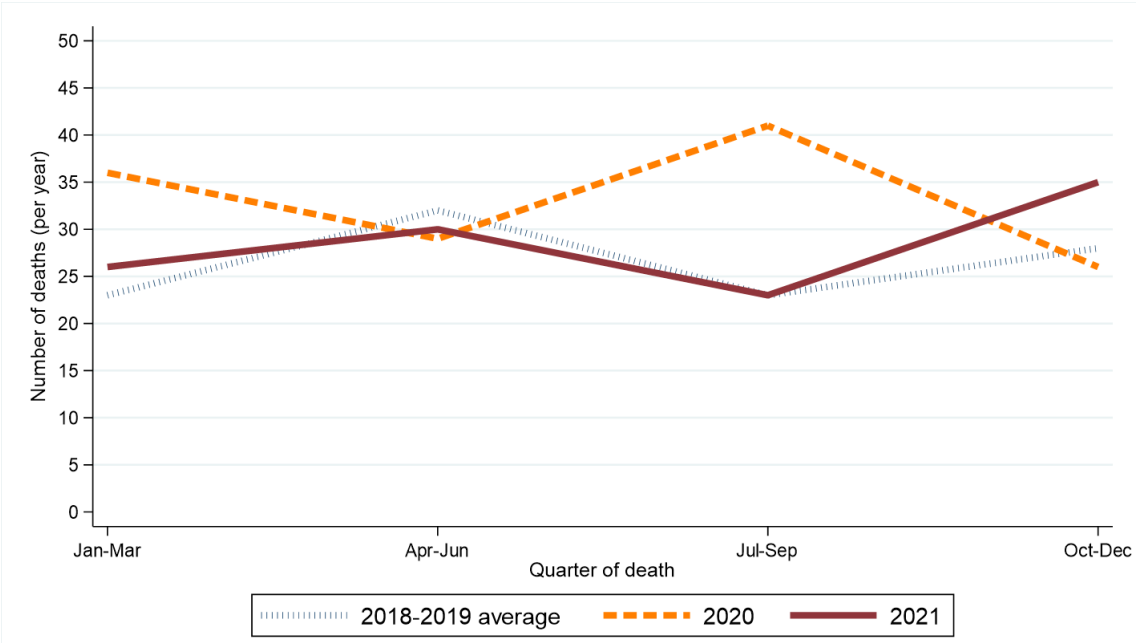
Table 11: Number of kidney cancer deaths in 2018-2021 by quarter and year of death

Period of death	Annual total	Quarter of death			
		Jan-Mar	Apr-Jun	Jul-Sept	Oct-Dec
2018-2019*	106	23	32	23	28
2020	132	36	29	41	26
2021	114	26	30	23	35

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

Figure 11: Number of kidney 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