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

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

Further information

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Acknowledgements

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INCIDENCE

During the April-December period the number of cases of bladder cancer diagnosed increased between 2018-2019 and 2021 by 20.4% from 181 cases per year to 218 cases.

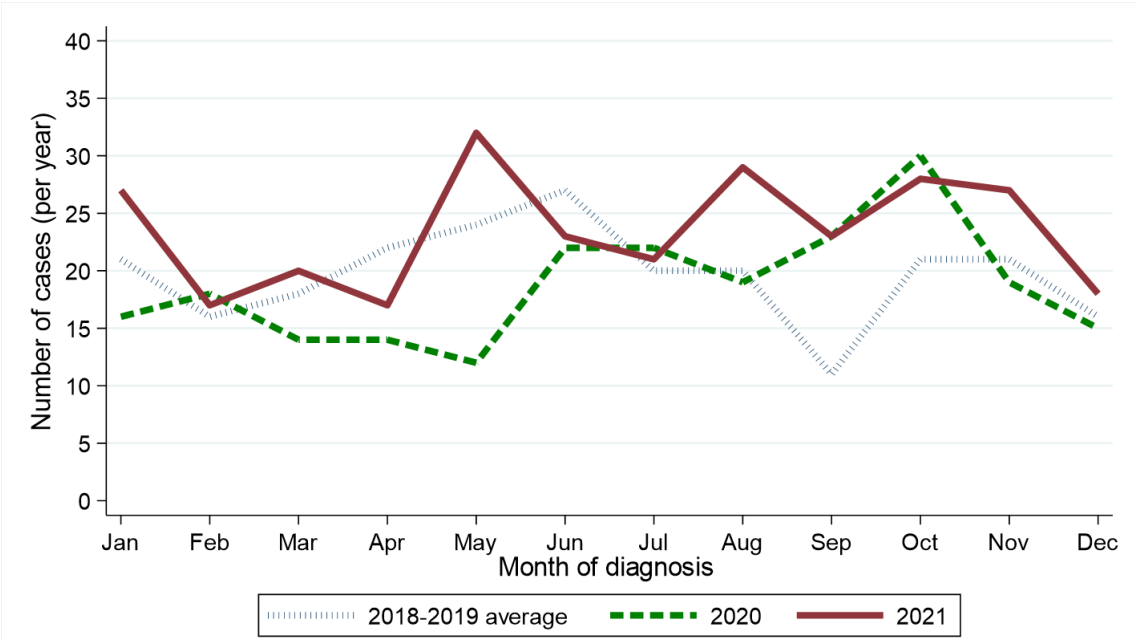
Table 1: Number of bladder cancer cases diagnosed in 2018-2021 by month and year of diagnosis

Period of diagnosis	Annual total	Month diagnosed											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	235	21	16	18	22	24	27	20	20	11	21	21	16
2020	224	16	18	14	14	12	22	22	19	23	30	19	15
2021	282	27	17	20	17	32	23	21	29	23	28	27	18

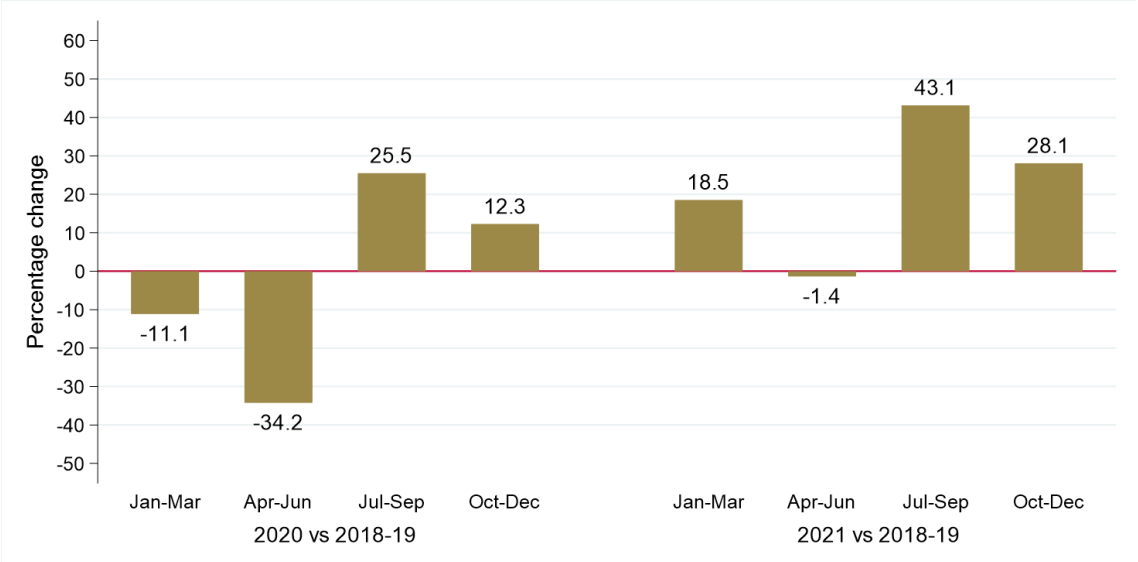
** Average cases per year rounded to the nearest integer. Row sums may thus differ slightly from the total.*

Figure 1: Number of bladder 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 bladder cancer cases diagnosed increased by 18.5% from 130 per year in 2018-2019 to 154 in 2021. Between the same two time periods the number of female bladder cancer cases diagnosed increased by 25.5% from 51 per year in 2018-2019 to 64 in 2021. The change in case distribution by gender between 2018-2019 and 2021 was not statistically significant.

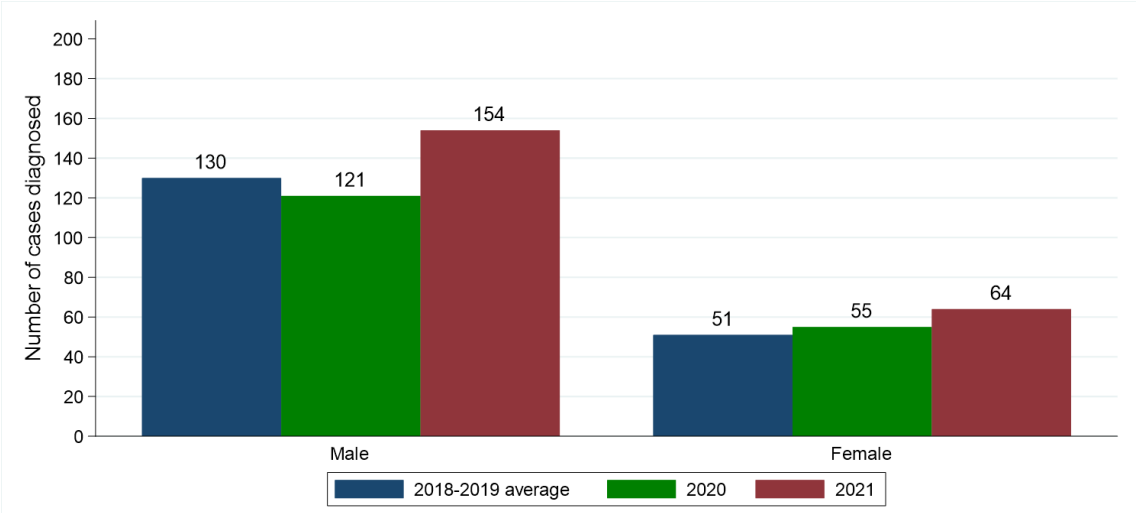
Table 2: Number and proportion of bladder cancer cases diagnosed in April-December of 2018-2021 by gender and period of diagnosis

Gender	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All persons	181	176	218	-2.8%	+20.4%
Male	130 (71.8%)	121 (68.8%)	154 (70.6%)	-6.9%	+18.5%
Female	51 (28.2%)	55 (31.3%)	64 (29.4%)	+7.8%	+25.5%

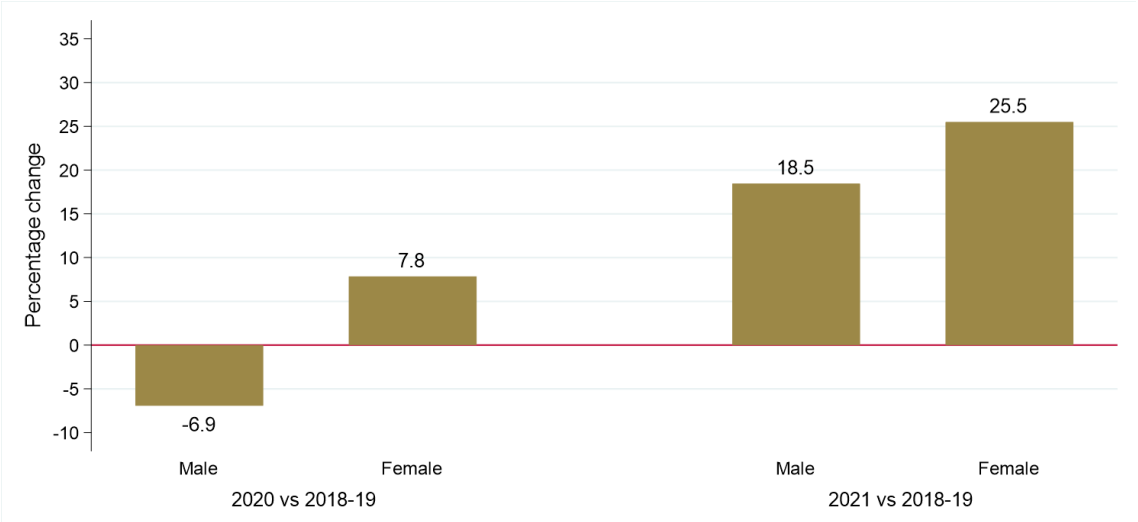
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 2: Number of bladder 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 bladder cancer diagnosed among those aged 0 to 54 did not change between 2018-2019 and 2021 with an average of 12 diagnosed each year. Between the same two time periods the number of cases of bladder cancer diagnosed among those aged 55 to 64 increased by 32.0% from 25 per year in 2018-2019 to 33 in 2021. The change in case distribution by age between 2018-2019 and 2021 was not statistically significant.

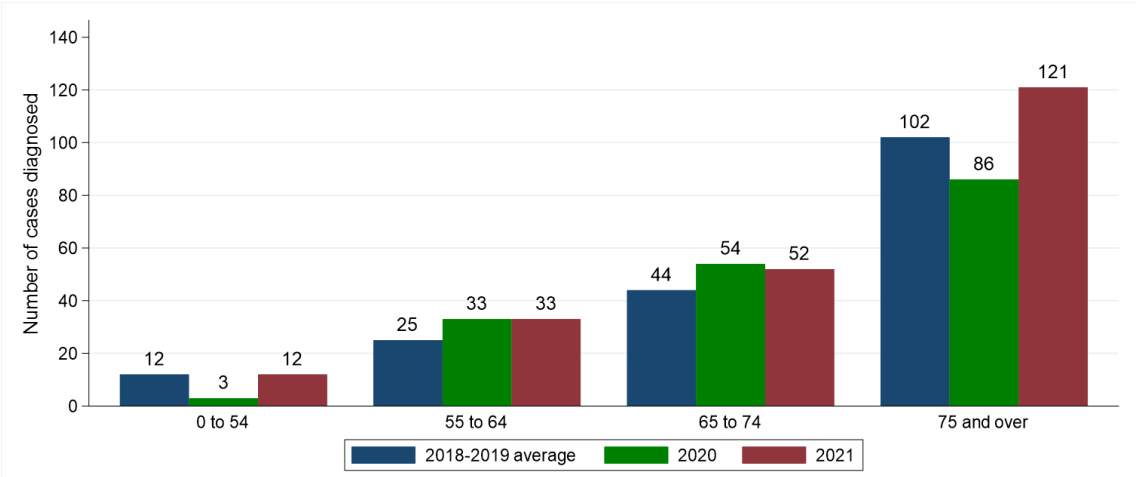
Table 3: Number and proportion of bladder cancer cases diagnosed in April-December of 2018-2021 by age and period of diagnosis

Age	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All ages	181	176	218	-2.8%	+20.4%
0 to 54	12 (6.6%)	3 (1.7%)	12 (5.5%)	-75.0%	0.0%
55 to 64	25 (13.8%)	33 (18.8%)	33 (15.1%)	+32.0%	+32.0%
65 to 74	44 (24.3%)	54 (30.7%)	52 (23.9%)	+22.7%	+18.2%
75 and over	102 (56.4%)	86 (48.9%)	121 (55.5%)	-15.7%	+18.6%

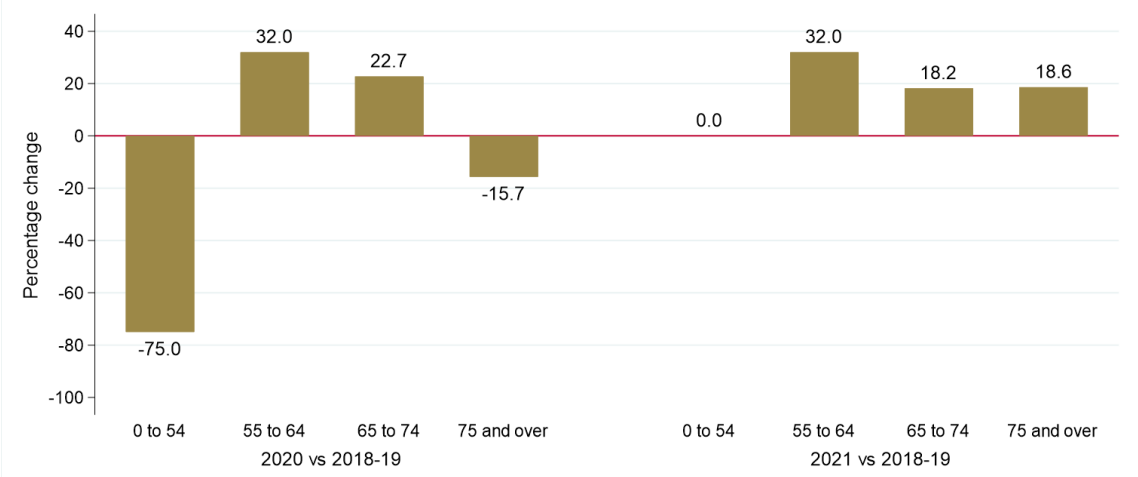
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 3: Number of bladder 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 bladder cancer diagnosed among those resident in Western HSCT did not change between 2018-2019 and 2021 with an average of 24 diagnosed each year. Between the same two time periods the number of cases of bladder cancer diagnosed among those resident in Northern HSCT increased by 41.2% from 51 per year in 2018-2019 to 72 in 2021. The change in case distribution by Health and Social Care Trust between 2018-2019 and 2021 was not statistically significant.

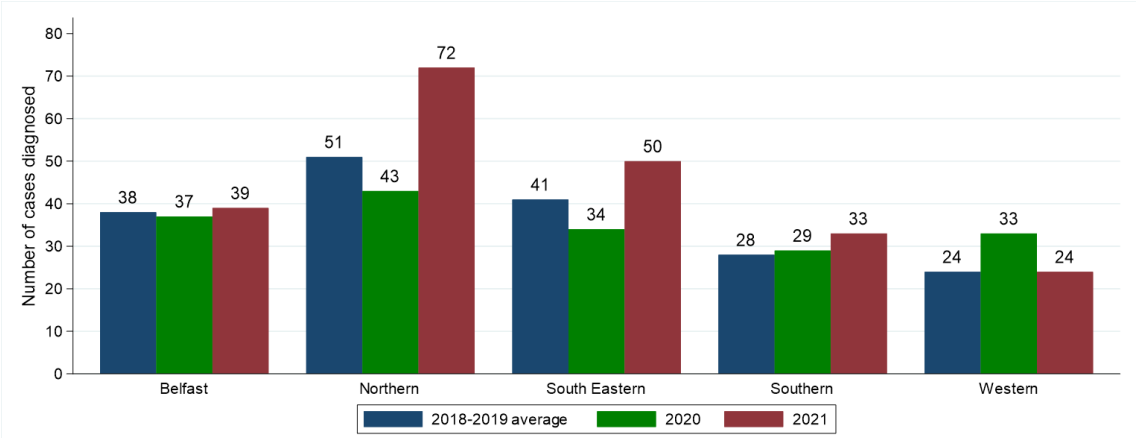
Table 4: Number and proportion of bladder cancer cases diagnosed in April-December of 2018-2021 by Health and Social Care Trust and period of diagnosis

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	181	176	218	-2.8%	+20.4%
Belfast	38 (21.0%)	37 (21.0%)	39 (17.9%)	-2.6%	+2.6%
Northern	51 (28.2%)	43 (24.4%)	72 (33.0%)	-15.7%	+41.2%
South Eastern	41 (22.7%)	34 (19.3%)	50 (22.9%)	-17.1%	+22.0%
Southern	28 (15.5%)	29 (16.5%)	33 (15.1%)	+3.6%	+17.9%
Western	24 (13.3%)	33 (18.8%)	24 (11.0%)	+37.5%	0.0%

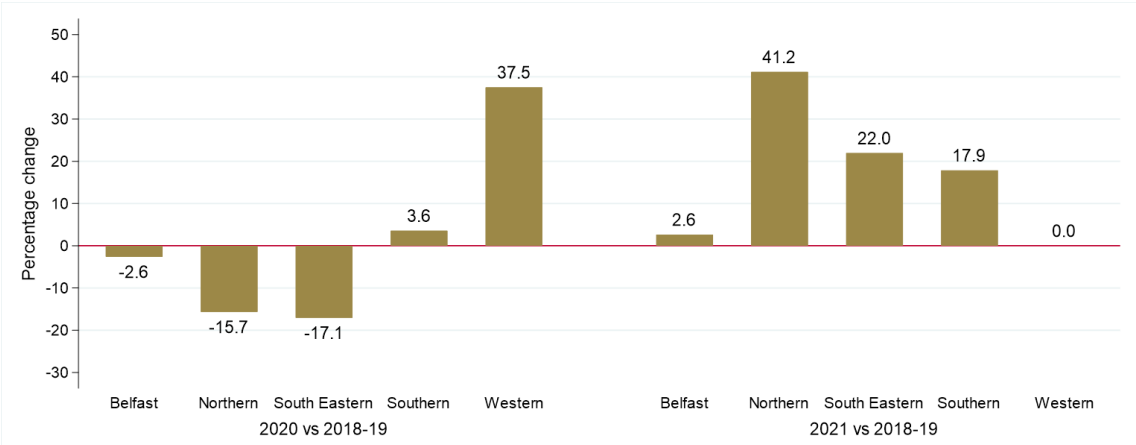
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown Health and Social Care Trust are included in totals.

Figure 4: Number of bladder 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 bladder cancer diagnosed among those resident in the most deprived quintile did not change between 2018-2019 and 2021 with an average of 33 diagnosed each year. Between the same two time periods the number of cases of bladder cancer diagnosed among those resident in the least deprived quintile increased by 46.3% from 41 per year in 2018-2019 to 60 in 2021. The change in case distribution by deprivation quintile between 2018-2019 and 2021 was not statistically significant.

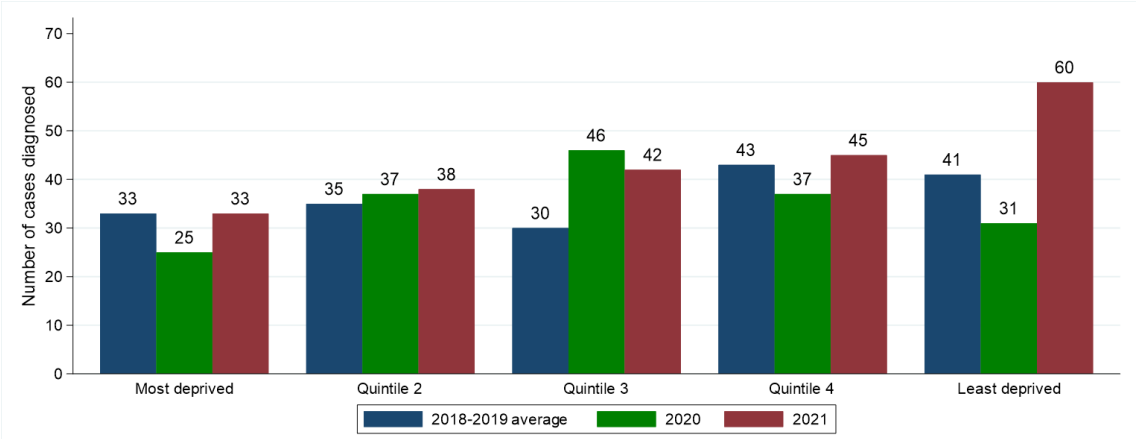
Table 5: Number and proportion of bladder cancer cases diagnosed in April-December of 2018-2021 by deprivation quintile and period of diagnosis

Deprivation quintile	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Northern Ireland	181	176	218	-2.8%	+20.4%
Most deprived	33 (18.2%)	25 (14.2%)	33 (15.1%)	-24.2%	0.0%
Quintile 2	35 (19.3%)	37 (21.0%)	38 (17.4%)	+5.7%	+8.6%
Quintile 3	30 (16.6%)	46 (26.1%)	42 (19.3%)	+53.3%	+40.0%
Quintile 4	43 (23.8%)	37 (21.0%)	45 (20.6%)	-14.0%	+4.7%
Least deprived	41 (22.7%)	31 (17.6%)	60 (27.5%)	-24.4%	+46.3%

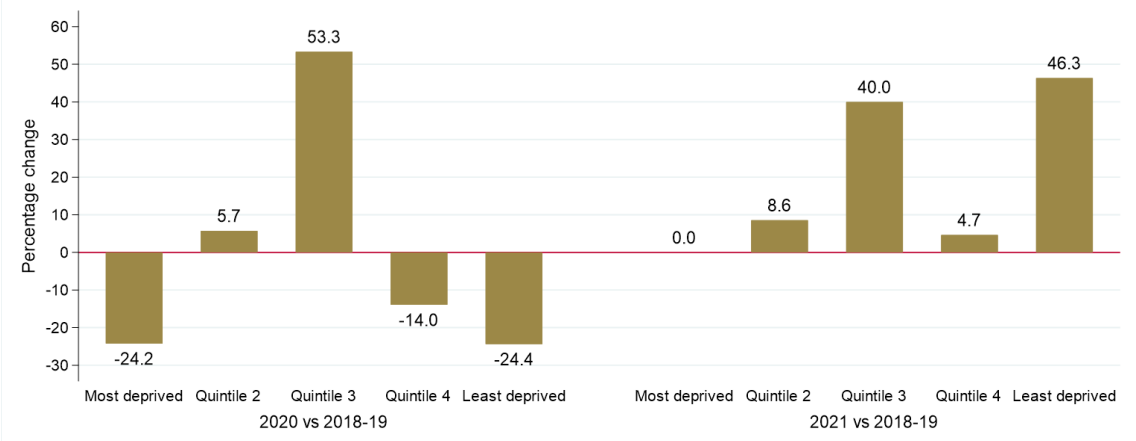
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*
Note: Cases with unknown deprivation quintile are included in totals.

Figure 5: Number of bladder 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 bladder cancer cases diagnosed at stage I in April to December of each year increased by 24.3% from 74 per year in 2018-2019 to 92 in 2021. In addition the number of bladder cancer cases diagnosed at stage IV increased by 94.4% from 18 per year in 2018-2019 to 35 in 2021. As a proportion of all cases, stage IV diagnosis increased from 9.9% in 2018-2019 to 16.1% in 2021. The change in stage distribution between 2018-2019 and 2021 was not statistically significant.

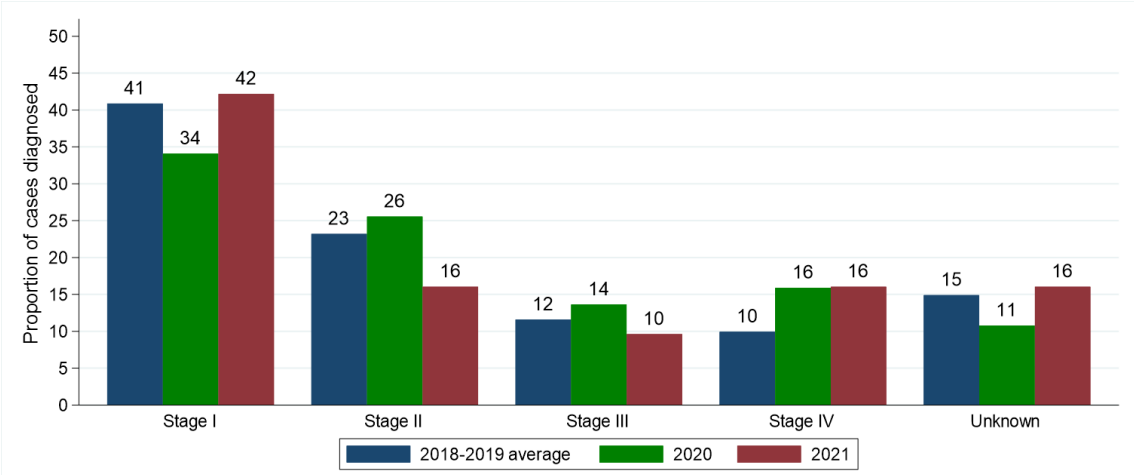
Table 6: Number and proportion of bladder cancer cases diagnosed in April-December of 2018-2021 by stage and period of diagnosis

Stage at diagnosis	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
All stages	181	176	218	-2.8%	+20.4%
Stage I	74 (40.9%)	60 (34.1%)	92 (42.2%)	-18.9%	+24.3%
Stage II	42 (23.2%)	45 (25.6%)	35 (16.1%)	+7.1%	-16.7%
Stage III	21 (11.6%)	24 (13.6%)	21 (9.6%)	+14.3%	0.0%
Stage IV	18 (9.9%)	28 (15.9%)	35 (16.1%)	+55.6%	+94.4%
Unknown	27 (14.9%)	19 (10.8%)	35 (16.1%)	-29.6%	+29.6%

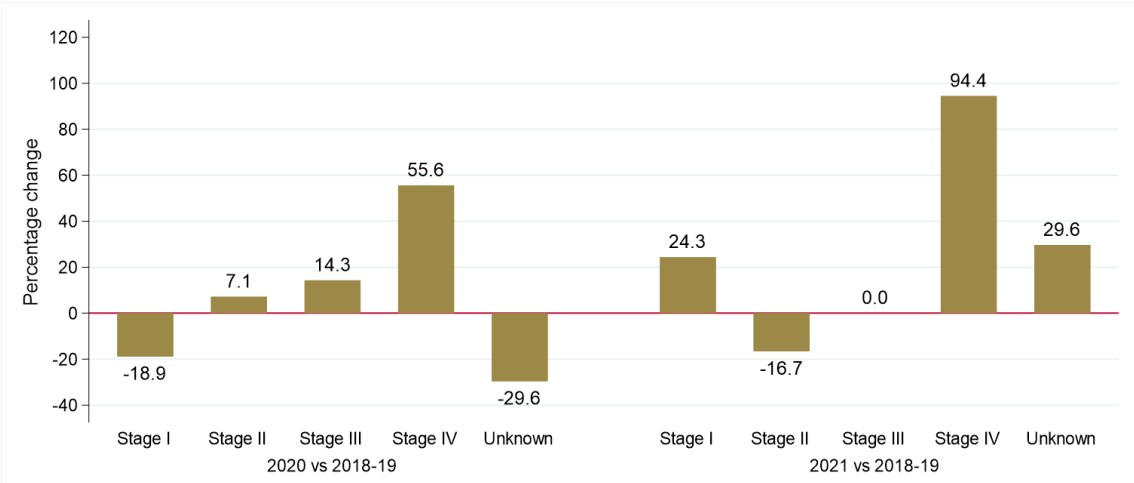
** Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.*

Figure 6: Proportion of bladder 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 bladder cancer cases resulting in treatment by surgery within six months increased by 15.9% from 157 per year in 2018-2019 to 182 in 2021. The resulting decrease in the proportion receiving surgery from 86.7% in 2018-2019 to 83.5% in 2021 was not statistically significant.

Between the same two time periods the number of bladder cancer cases resulting in treatment by systemic therapy increased by 35.0% from 60 per year in 2018-2019 to 81 in 2021. The resulting increase in the proportion receiving systemic therapy from 33.1% in 2018-2019 to 37.2% in 2021 was not statistically significant.

The number of bladder cancer cases treated with radiotherapy decreased by 31.8% from 44 per year in 2018-2019 to 30 in 2021. The resulting decrease in the proportion receiving radiotherapy from 24.3% in 2018-2019 to 13.8% in 2021 was statistically significant (p = 0.002).

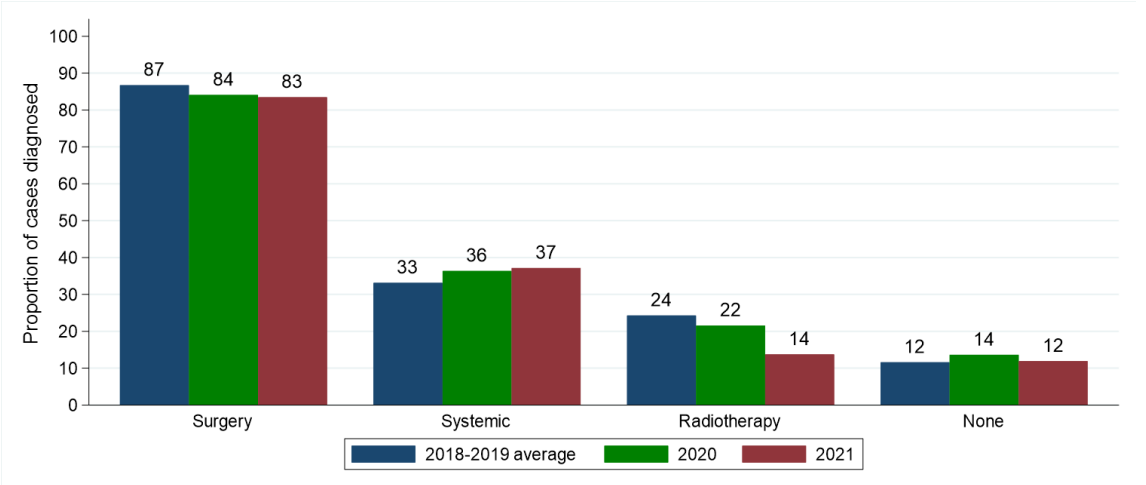
Excluding the first quarter of each year the number of bladder cancer cases receiving none of these treatments within six months of diagnosis increased by 23.8% from 21 per year in 2018-2019 to 26 in 2021. The resulting increase in the proportion receiving none of these treatments from 11.6% in 2018-2019 to 11.9% in 2021 was not statistically significant.

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

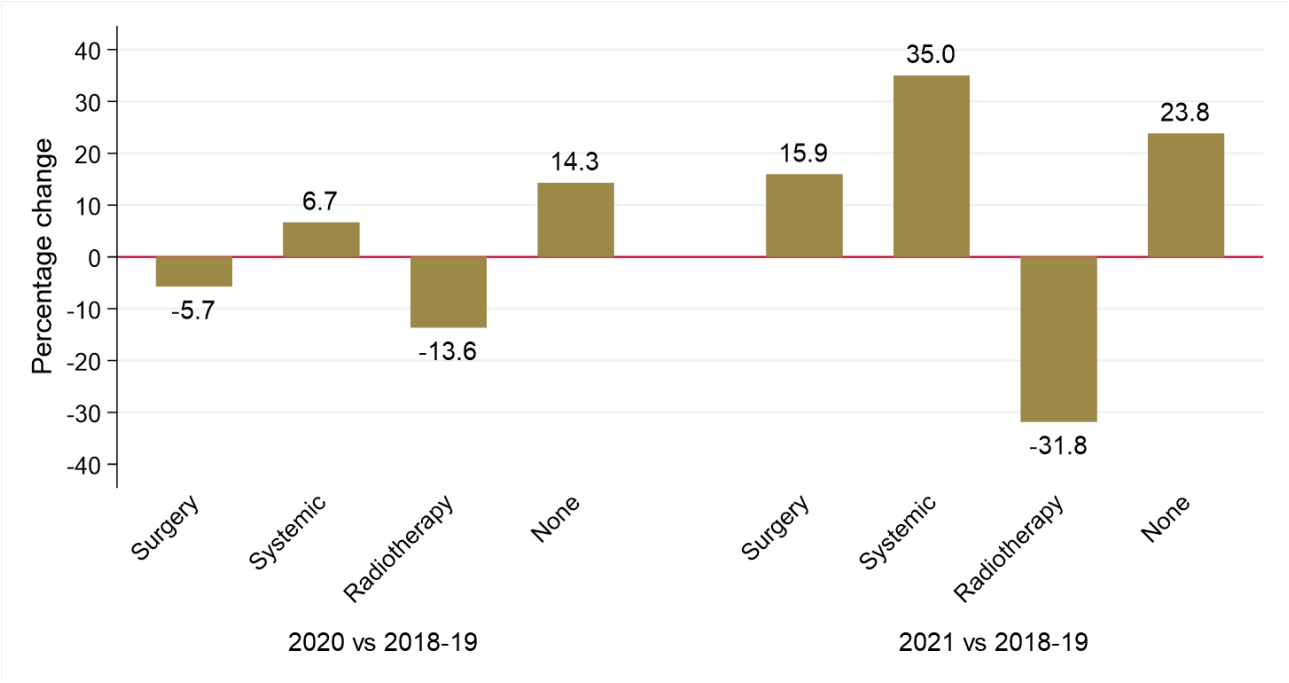
Treatment type	Period of diagnosis (Apr-Dec)			Percentage change	
	2018-2019*	2020	2021	2020 vs 2018-2019	2021 vs 2018-2019
Surgery	157 (86.7%)	148 (84.1%)	182 (83.5%)	-5.7%	+15.9%
Systemic therapy	60 (33.1%)	64 (36.4%)	81 (37.2%)	+6.7%	+35.0%
Radiotherapy	44 (24.3%)	38 (21.6%)	30 (13.8%)*	-13.6%	-31.8%
None of these treatments	21 (11.6%)	24 (13.6%)	26 (11.9%)	+14.3%	+23.8%

** Statistically significant change compared to 2018-2019*

Figure 7: Proportion of bladder 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

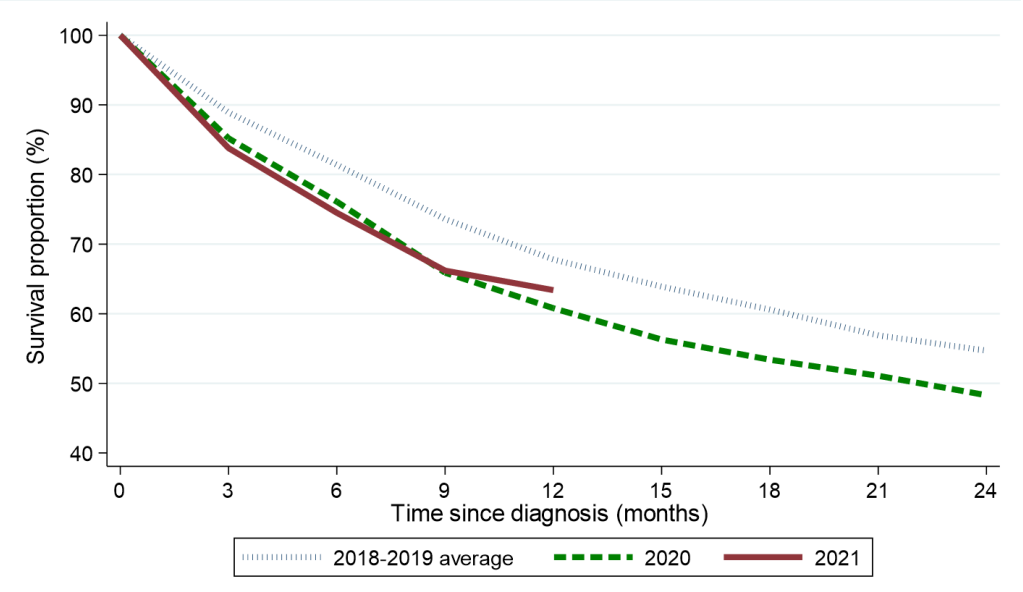
Survival among bladder cancer patients six months after diagnosis decreased from 81.4% among those diagnosed in April-December of 2018-2019 to 74.5% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year survival decreased from 67.8% to 63.4%. 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=0.441).

Table 8: Observed survival for patients with bladder 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	88.9% (85.2% - 91.7%)	85.2% (79.1% - 89.7%)	83.8% (78.2% - 88.1%)
Six months	81.4% (77.0% - 85.0%)	76.1% (69.1% - 81.8%)	74.5% (68.2% - 79.8%)
One year	67.8% (62.7% - 72.3%)	60.8% (53.2% - 67.6%)	63.4% (56.6% - 69.5%)
Two years	54.7% (49.4% - 59.7%)	48.3% (40.7% - 55.4%)	-

No statistically significant reductions compared to 2018-2019

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



DEATHS FROM COVID-19

During 2021 there were a total of 14 deaths from Covid-19 among bladder cancer patients diagnosed at any point since 1993.

NET SURVIVAL

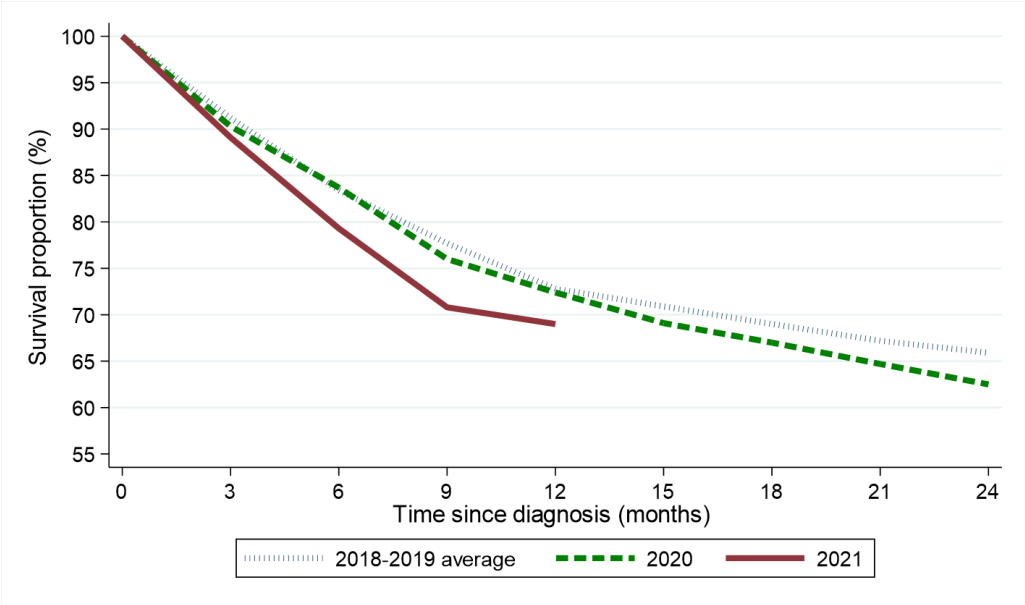
Net survival among bladder cancer patients six months after diagnosis decreased from 83.4% among those diagnosed in April-December of 2018-2019 to 79.3% among those diagnosed in April-December of 2021. This change was not statistically significant. Between the same two diagnosis periods, one-year net survival decreased from 72.8% to 69.0%. This change was not statistically significant.

Table 9: Age-standardised net survival for patients with bladder 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	91.2% (87.7% - 94.8%)	90.3% (86.3% - 94.5%)	89.1% (84.7% - 93.8%)
Six months	83.4% (78.6% - 88.5%)	83.7% (78.6% - 89.1%)	79.3% (73.0% - 86.1%)
One year	72.8% (67.6% - 78.4%)	72.4% (65.9% - 79.5%)	69.0% (61.5% - 77.5%)
Two years	65.9% (60.5% - 71.8%)	62.5% (55.0% - 71.0%)	-

No statistically significant reductions compared to 2018-2019

Figure 9: Age-standardised net survival for patients with bladder 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 bladder cancer increased between 2018-2019 and 2021 by 8.8% from 102 deaths per year to 111 deaths.

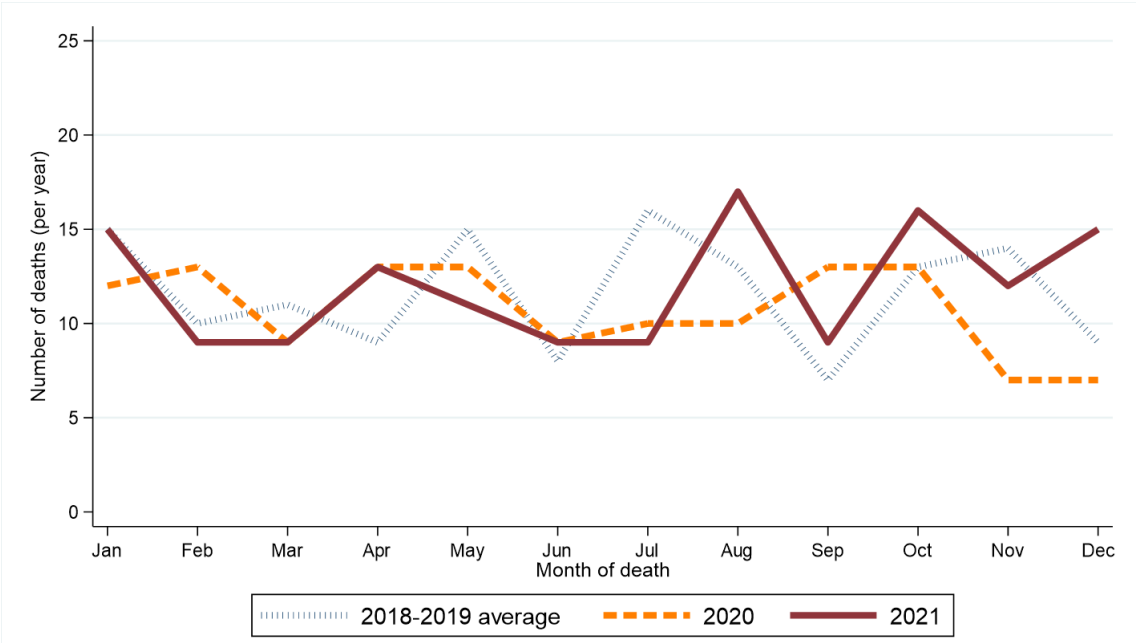
Table 10: Number of bladder cancer deaths in 2018-2021 by month and year of death

Period of death	Annual total	Month death occurred											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	137	15	10	11	9	15	8	16	13	7	13	14	9
2020	129	12	13	9	13	13	9	10	10	13	13	7	7
2021	144	15	9	9	13	11	9	9	17	9	16	12	15

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

Figure 10: Number of bladder 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