
Impact of Covid-19 on incidence, survival and mortality of lung cancer in Northern Ireland

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

Further information

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The incidence, prevalence and survival statistics in this publication are designated as official statistics signifying that they comply with the Code of Practice for Official Statistics.



INCIDENCE

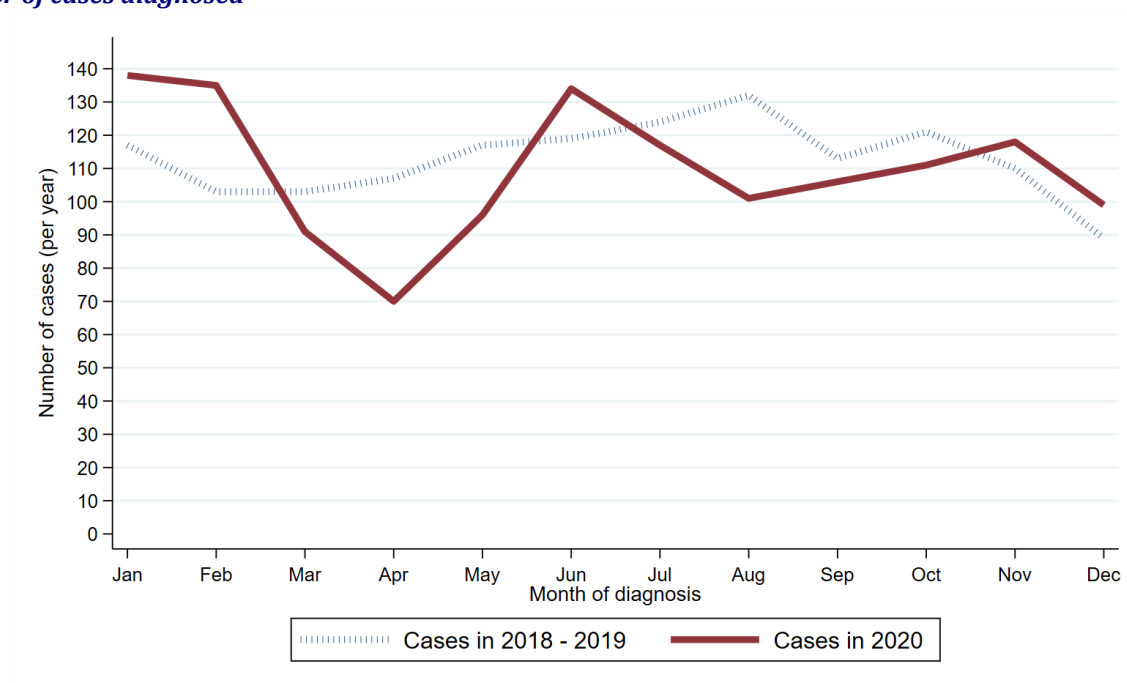
During the April-December period when Covid-19 was present the number of cases of lung cancer diagnosed decreased by 7.5% (77 patients) from 1,029 per year in 2018 - 2019 to 952 in 2020.

Table 1: Number of lung cancer cases diagnosed in 2018-2020 by month and year of diagnosis

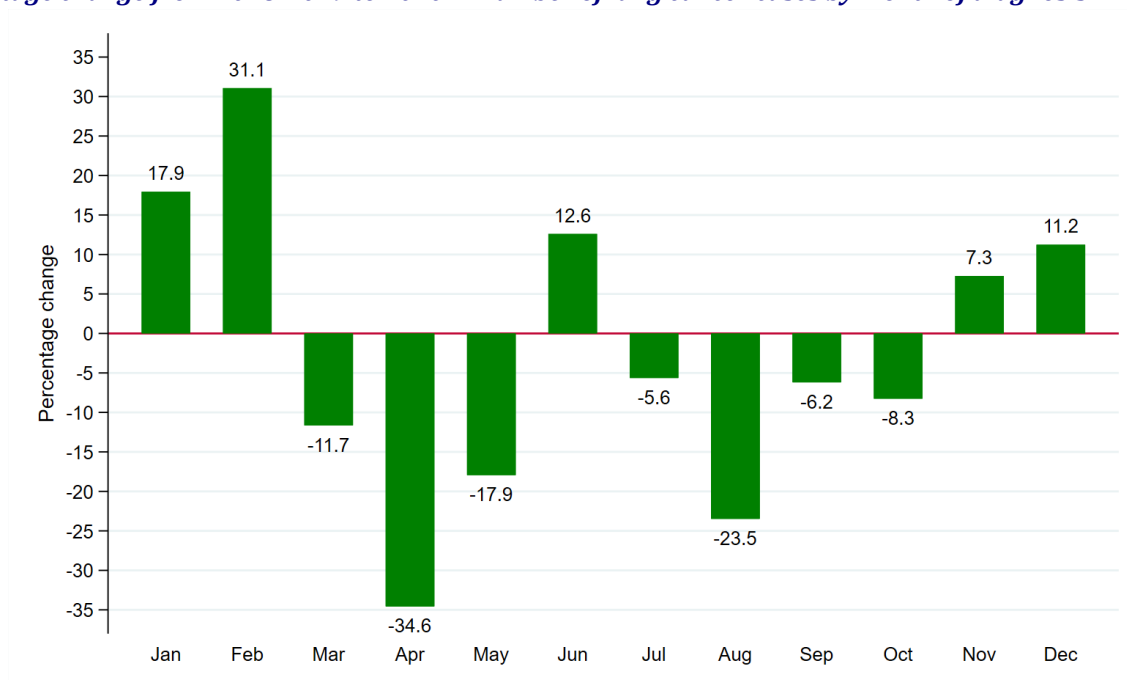
Period of diagnosis	Annual total	Month case diagnosed											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	1,352	117	103	103	107	117	119	124	132	113	121	110	89
2020	1,316	138	135	91	70	96	134	117	101	106	111	118	99

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

Figure 1: Number of lung cancer cases diagnosed in 2018-2020 by month and year of diagnosis
(a) Number of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by month of diagnosis



GENDER

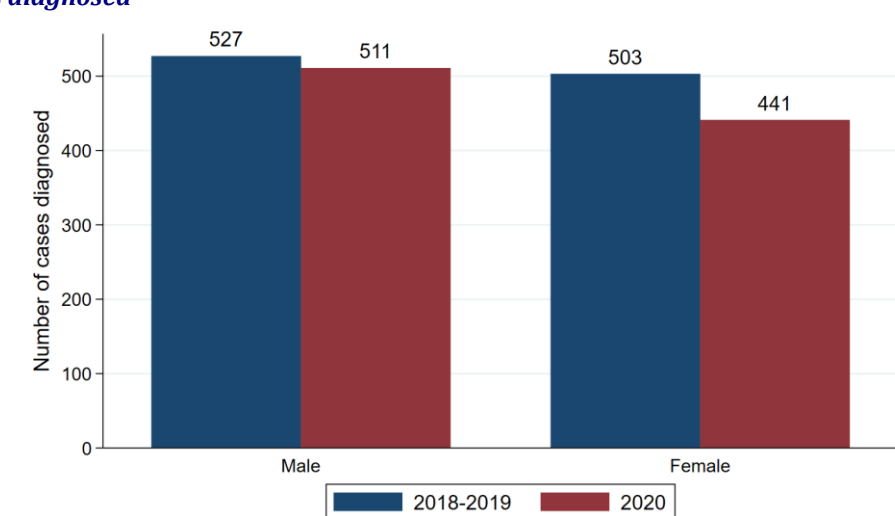
Excluding the first quarter of each year among males the number of cases of lung cancer diagnosed decreased by 3.0% from 527 per year in 2018 - 2019 to 511 in 2020. Between the same two time periods the number of cases among females decreased by 12.3% from 503 per year to 441. The change in case distribution by gender between 2018 - 2019 and 2020 was not statistically significant.

Table 2: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by gender and period of diagnosis

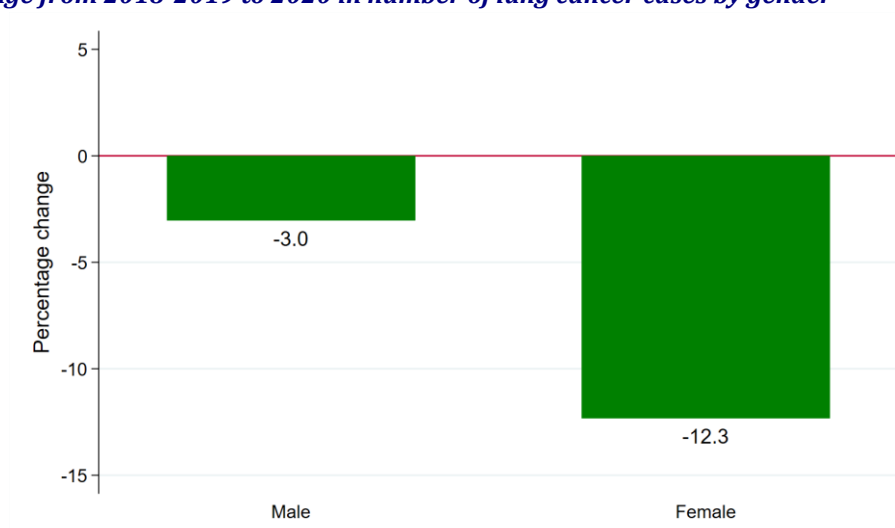
Gender	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
Male	527 (51.2%)	511 (53.7%)	-3.0% (16 patients)
Female	503 (48.9%)	441 (46.3%)	-12.3% (62 patients)
All persons	1,029	952	-7.5% (77 patients)

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

Figure 2: Lung cancer cases diagnosed in April-December of 2018-2020 by gender and period of diagnosis
(a) Number of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by gender



AGE

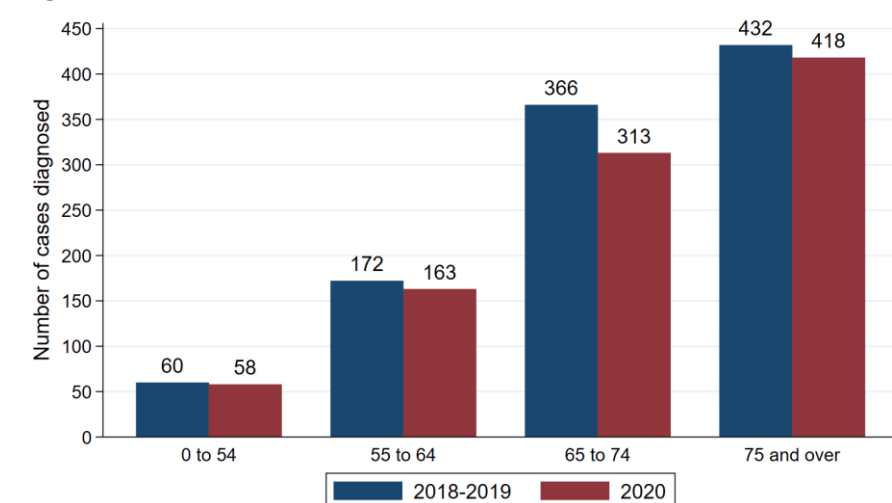
Excluding the first quarter of each year among people aged 65 to 74 the number of cases of lung cancer diagnosed decreased by 14.5% from 366 per year in 2018 - 2019 to 313 in 2020. Between the same two time periods, the number of cases among people aged 75 and over decreased by 3.2% from 432 per year to 418. The change in case distribution by age between 2018 - 2019 and 2020 was not statistically significant.

Table 3: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by age and period of diagnosis

Age group	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
0 to 54	60 (5.8%)	58 (6.1%)	-3.3% (2 patients)
55 to 64	172 (16.7%)	163 (17.1%)	-5.2% (9 patients)
65 to 74	366 (35.6%)	313 (32.9%)	-14.5% (53 patients)
75 and over	432 (42.0%)	418 (43.9%)	-3.2% (14 patients)
All ages	1,029	952	-7.5% (77 patients)

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

Figure 3: Lung cancer cases diagnosed in April-December of 2018-2020 by age and period of diagnosis
(a) Number of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by age at diagnosis



HEALTH AND SOCIAL CARE TRUST

Excluding the first quarter of each year among residents of Belfast HSCT the number of cases of lung cancer diagnosed decreased by 18.3% from 251 per year in 2018 - 2019 to 205 in 2020. Between the same two time periods the number of cases among residents of South Eastern HSCT decreased by 1.1% from 174 per year to 172. The change in case distribution by HSCT between 2018 - 2019 and 2020 was not statistically significant.

Table 4: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by Health and Social Care Trust and period of diagnosis

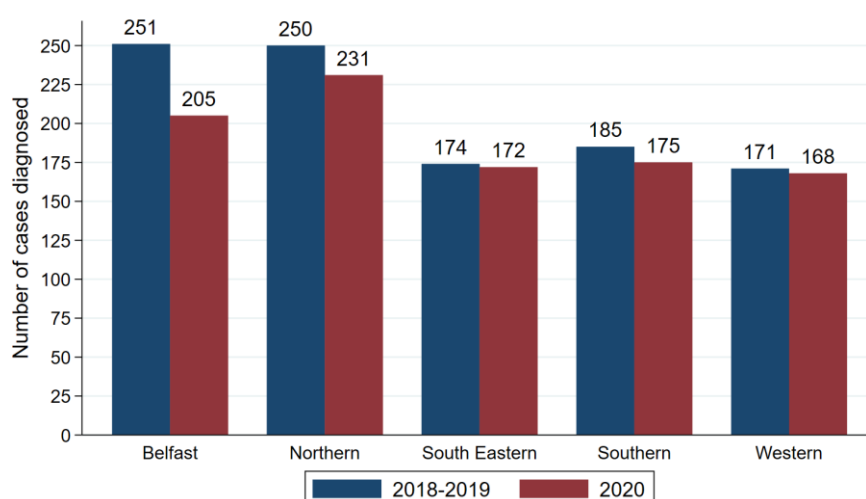
Health and Social Care Trust	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
Belfast HSCT	251 (24.4%)	205 (21.5%)	-18.3% (46 patients)
Northern HSCT	250 (24.3%)	231 (24.3%)	-7.6% (19 patients)
South Eastern HSCT	174 (16.9%)	172 (18.1%)	-1.1% (2 patients)
Southern HSCT	185 (18.0%)	175 (18.4%)	-5.4% (10 patients)
Western HSCT	171 (16.6%)	168 (17.6%)	-1.8% (3 patients)
Northern Ireland	1,029	952	-7.5% (77 patients)

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

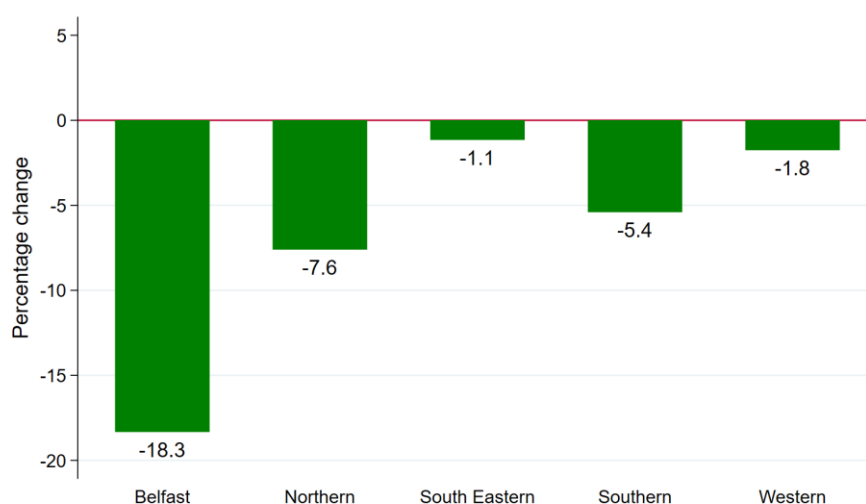
Note: Cases with unknown Health and Social Care Trust are included in totals

Figure 4: Lung cancer cases diagnosed in April-December of 2018-2020 by Health and Social Care Trust and period of diagnosis

(a) Number of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by Health and Social Care Trust



DEPRIVATION

Excluding the first quarter of each year among residents of the most deprived areas the number of cases of lung cancer diagnosed decreased by 5.7% from 282 per year in 2018 - 2019 to 266 in 2020. Between the same two time periods the number of cases among residents of the least deprived areas decreased by 21.6% from 162 per year to 127. The change in case distribution by deprivation quintile between 2018 - 2019 and 2020 was not statistically significant.

Table 5: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by deprivation quintile and period of diagnosis

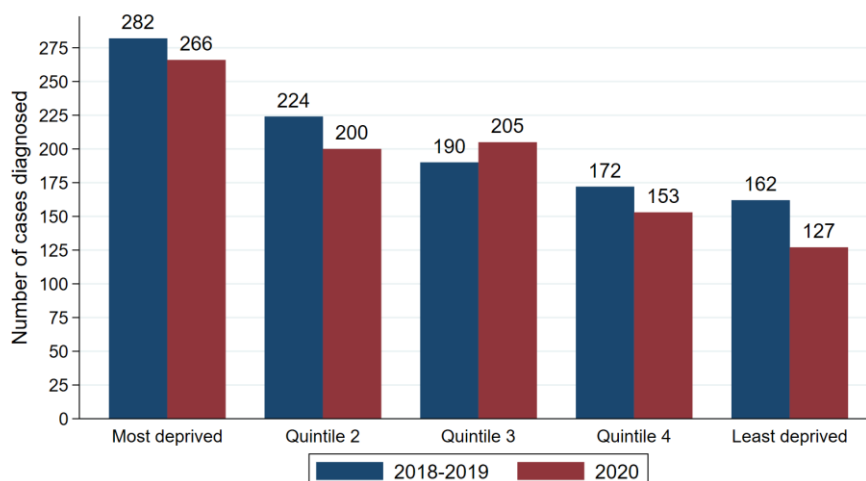
Deprivation quintile	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
Most deprived	282 (27.4%)	266 (27.9%)	-5.7% (16 patients)
Quintile 2	224 (21.8%)	200 (21.0%)	-10.7% (24 patients)
Quintile 3	190 (18.5%)	205 (21.5%)	+7.9% (15 patients)
Quintile 4	172 (16.7%)	153 (16.1%)	-11.0% (19 patients)
Least deprived	162 (15.7%)	127 (13.3%)	-21.6% (35 patients)
Northern Ireland	1,029	952	-7.5% (77 patients)

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

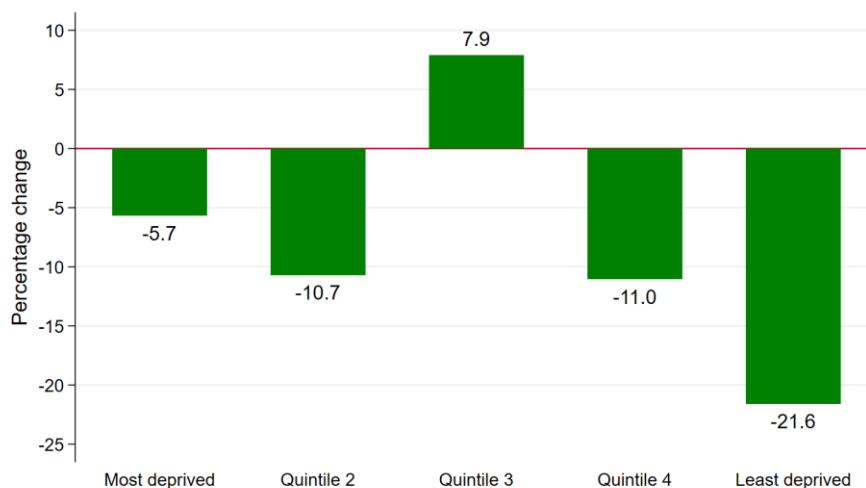
Note: Cases with unknown deprivation quintile are included in totals

Figure 5: Lung cancer cases diagnosed in April-December of 2018-2020 by deprivation quintile and period of diagnosis

(a) Number of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by deprivation quintile



BASIS OF DIAGNOSIS

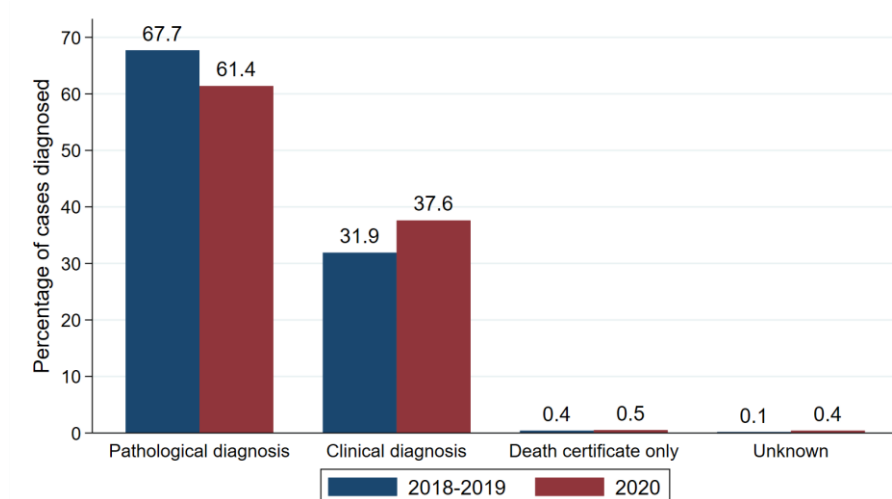
Excluding the first quarter of each year the number of lung cancer cases diagnosed pathologically decreased by 16.1% from 697 per year in 2018 - 2019 to 585 in 2020, while the number of cases diagnosed clinically increased by 9.1% from 328 per year to 358. The change in case distribution by basis of diagnosis between 2018 - 2019 and 2020 was statistically significant ($p = 0.003$).

Table 6: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by basis and period of diagnosis

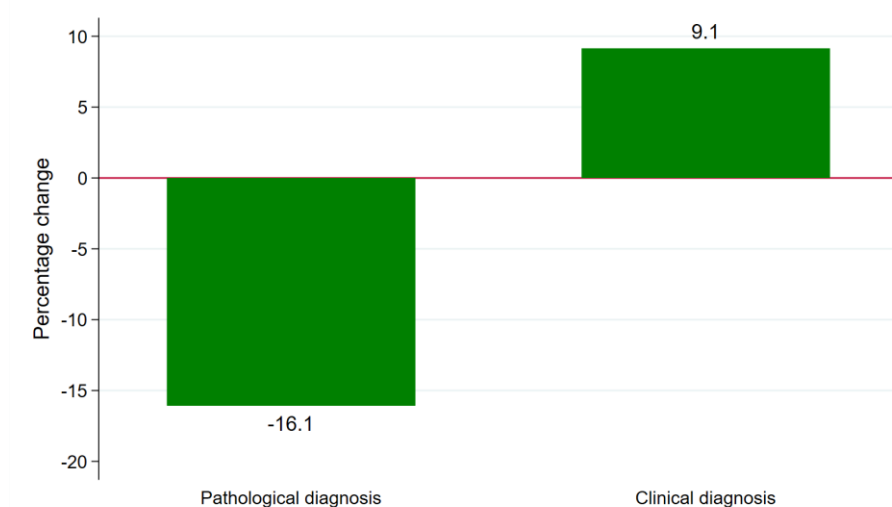
Basis of diagnosis	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
Pathological diagnosis	697 (67.7%)	585 (61.4%)	-16.1% (112 patients)
Clinical diagnosis	328 (31.9%)	358 (37.6%)	+9.1% (30 patients)
Death certificate only	4 (0.4%)	5 (0.5%)	+25.0% (1 patients)
Unknown	1 (0.1%)	4 (0.4%)	+300.0% (3 patients)
All groups	1,029	952	-7.5% (77 patients)

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

Figure 6: Lung cancer cases diagnosed in April-December of 2018-2020 by basis and period of diagnosis
(a) Proportion of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by basis of diagnosis



STAGE

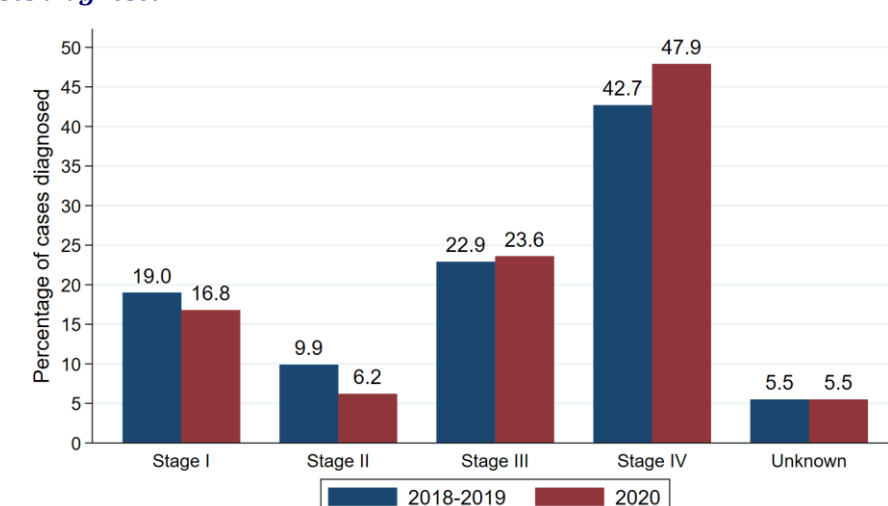
Excluding the first quarter of each year the number of lung cancer cases diagnosed at Stage I decreased by 18.4% from 196 per year in 2018 - 2019 to 160 in 2020. Between the same two time periods the number of cases diagnosed at Stage IV increased by 3.9% from 439 per year to 456. The change in case distribution by stage at diagnosis between 2018 - 2019 and 2020 was statistically significant ($p = 0.003$).

Table 7: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by stage at diagnosis and period of diagnosis

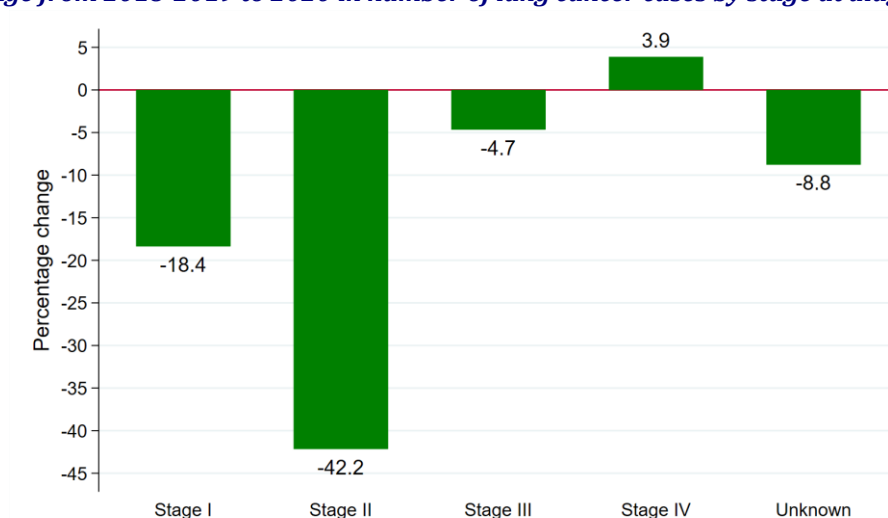
Stage at diagnosis	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
Stage I	196 (19.0%)	160 (16.8%)	-18.4% (36 patients)
Stage II	102 (9.9%)	59 (6.2%)	-42.2% (43 patients)
Stage III	236 (22.9%)	225 (23.6%)	-4.7% (11 patients)
Stage IV	439 (42.7%)	456 (47.9%)	+3.9% (17 patients)
Unknown	57 (5.5%)	52 (5.5%)	-8.8% (5 patients)
All stages	1,029	952	-7.5% (77 patients)

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

Figure 7: Lung cancer cases diagnosed in April-December of 2018-2020 by stage and period of diagnosis
(a) Proportion of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by stage at diagnosis



METHOD OF HOSPITAL ADMISSION

Excluding the first quarter of each year the number of cases of lung cancer where the patient had an emergency admission recorded as the most recent hospital admission type up to 30 days prior to diagnosis increased by 2.9% from 275 per year in 2018 - 2019 to 283 in 2020. The change in case distribution by hospital admission type between 2018 - 2019 and 2020 was not statistically significant.

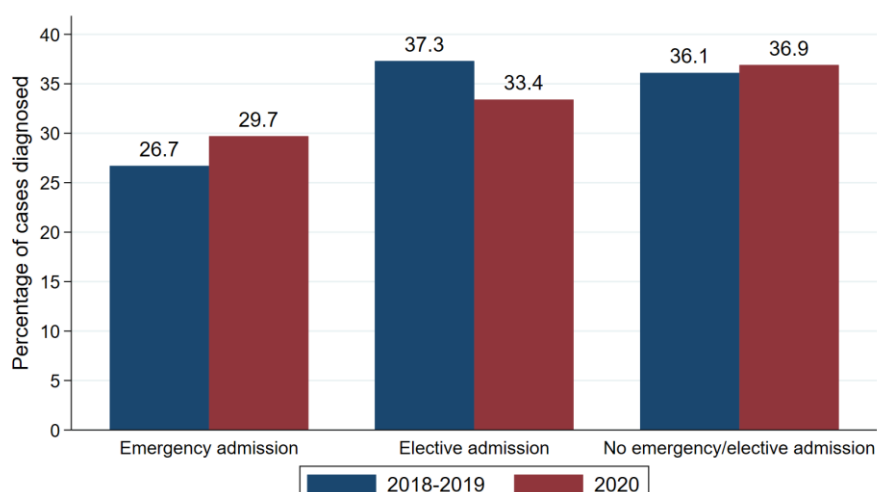
Table 8: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by method of admission to hospital and period of diagnosis

Method of admission to hospital	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019*	2020	
Emergency admission	275 (26.7%)	283 (29.7%)	+2.9% (8 patients)
Elective admission	384 (37.3%)	318 (33.4%)	-17.2% (66 patients)
No emergency/elective admission recorded	371 (36.1%)	351 (36.9%)	-5.4% (20 patients)
All persons	1,029	952	-7.5% (77 patients)

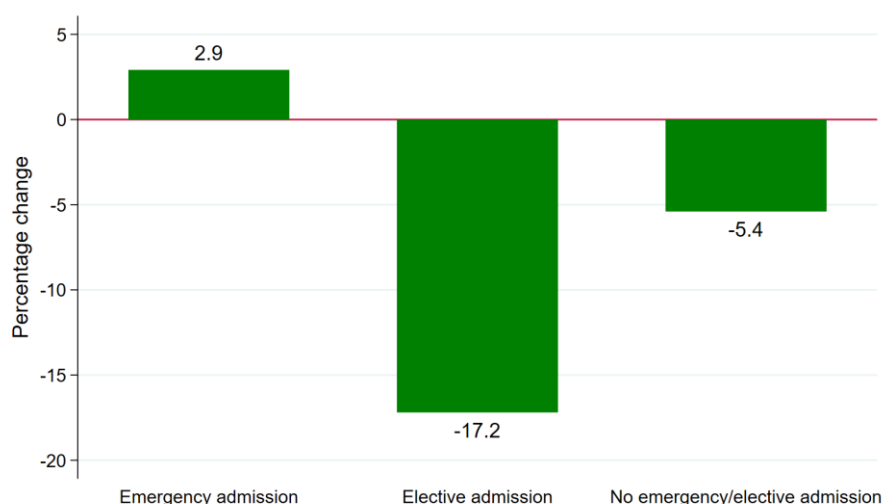
* Average cases per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

Figure 8: Lung cancer cases diagnosed in April-December of 2018-2020 by method of admission to hospital and period of diagnosis

(a) Proportion of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by method of admission to hospital



TREATMENT

Excluding the first quarter of each year the number of lung cancer cases where the patient was treated with surgery (within six months of diagnosis) decreased by 40.3% from 129 per year for those diagnosed in 2018 - 2019 to 77 for those diagnosed in 2020. The resulting change in the proportion receiving surgery from 12.5% in 2018 - 2019 to 8.1% in 2020 was statistically significant ($p < 0.001$).

Between the same two time periods the number of cases where the patient was treated with chemotherapy (within six months) decreased by 7.4% from 242 per year to 224. The proportion receiving chemotherapy did not change between 2018 - 2019 and 2020, with 23.5% of patients receiving this treatment type.

The number of lung cancer cases where the patient was treated with radiotherapy (within six months of diagnosis) decreased by 26.6% from 346 per year for those diagnosed in April-December of 2018 - 2019 to 254 for those diagnosed in April-December of 2020. The resulting change in the proportion receiving radiotherapy from 33.6% in 2018 - 2019 to 26.7% in 2020 was statistically significant ($p < 0.001$).

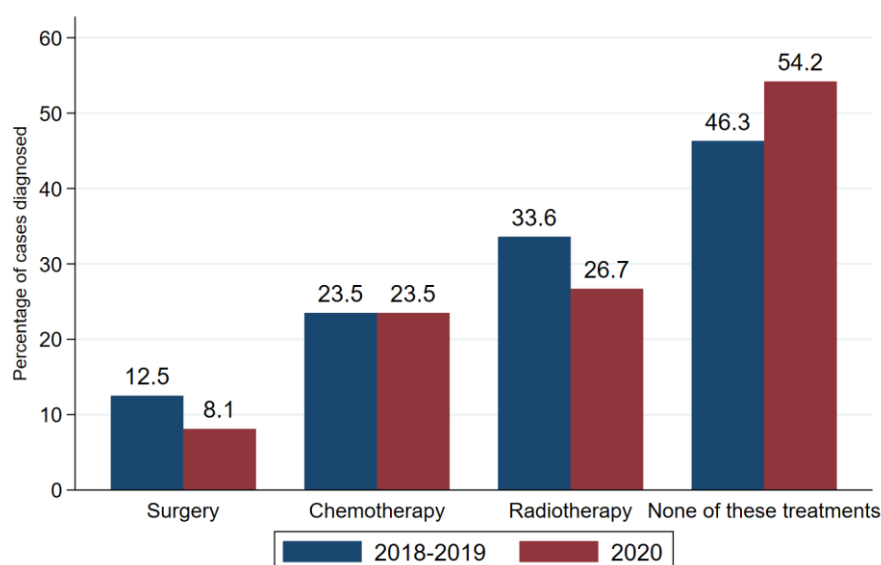
The proportion of patients receiving none of surgery, chemotherapy or radiotherapy (within six months of diagnosis) who were diagnosed in April-December 2020 was 54.2%. This compared to 46.3% of those diagnosed in 2018 - 2019. This change was statistically significant ($p < 0.001$).

Table 9: Number and proportion of lung cancer cases diagnosed in April-December of 2018-2020 by treatment type and period of diagnosis

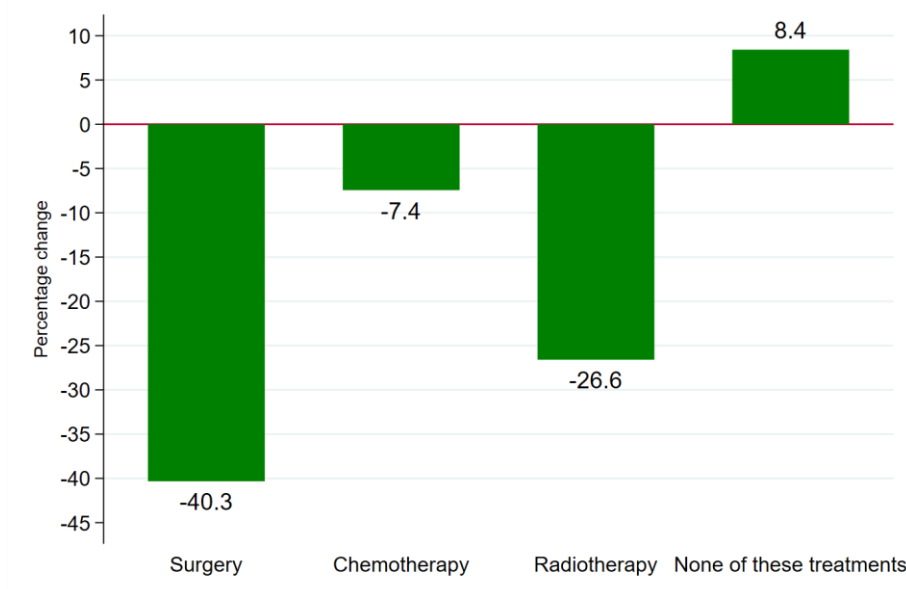
Treatment type	Period of diagnosis (Apr-Dec)		Percentage change
	2018-2019 average	2020	
Surgery	129 (12.5%)	77 (8.1%)*	-40.3% (52 patients)
Chemotherapy	242 (23.5%)	224 (23.5%)	-7.4% (18 patients)
Radiotherapy	346 (33.6%)	254 (26.7%)*	-26.6% (92 patients)
None of these treatments	476 (46.3%)	516 (54.2%)*	+8.4% (40 patients)

* Statistically significant change

Figure 9: Lung cancer cases diagnosed in April-December of 2018-2020 by treatment received and period of diagnosis
(a) Proportion of cases diagnosed



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer cases by treatment received



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

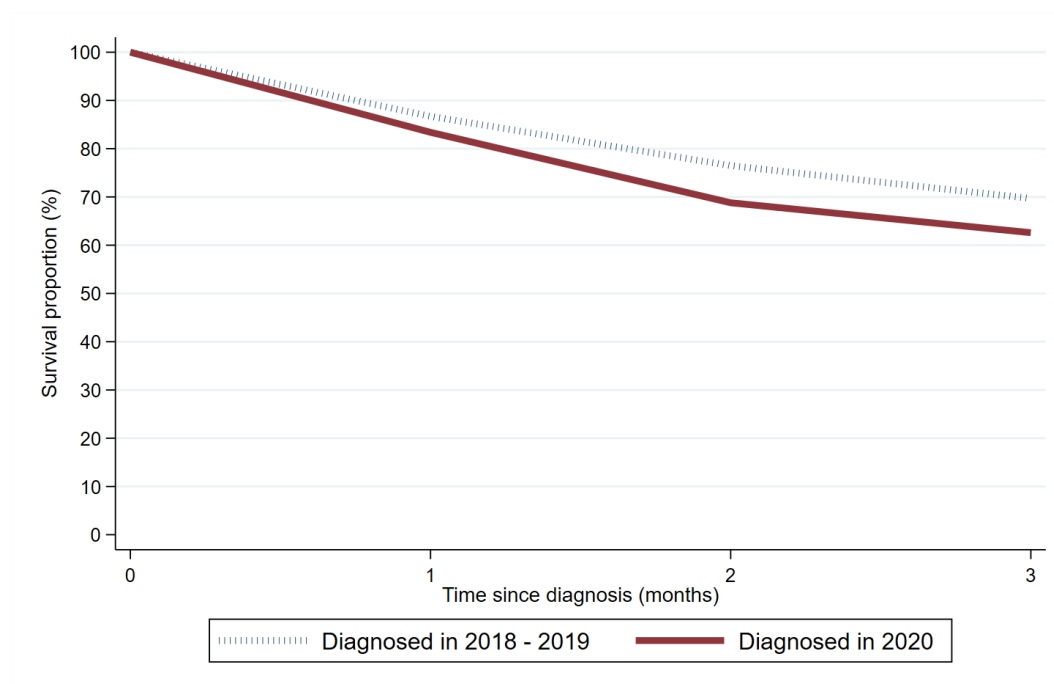
Survival among lung cancer patients one month after diagnosis decreased from 86.7% among those diagnosed in April-December of 2018 - 2019 to 83.4% among those diagnosed in April-December of 2020. This change was not statistically significant. Between the same two diagnosis periods, three-month survival decreased from 69.7% to 62.6%. This change was statistically significant.

Table 10: Observed survival for patients with lung cancer diagnosed in April-December of 2018-2020 by period of diagnosis

Survival time	Period of diagnosis (Apr-Dec)	
	2018-2019	2020
1 month	86.7% (85.1% - 88.1%)	83.4% (80.9% - 85.6%)
2 months	76.5% (74.6% - 78.3%)	68.8% (65.8% - 71.7%)*
3 months	69.7% (67.6% - 71.6%)	62.6% (59.4% - 65.7%)*

* Statistically significant reduction

Figure 10: Observed survival for patients with lung cancer diagnosed in April-December of 2018-2020 by period of diagnosis



DEATHS FROM COVID-19

During 2020 there were a total of 45 deaths from Covid-19 among lung cancer patients diagnosed at any point since 1993. Among the patients who died of Covid-19, 22 were diagnosed with lung cancer in 2020, while 12 were diagnosed in 2019.

NET SURVIVAL

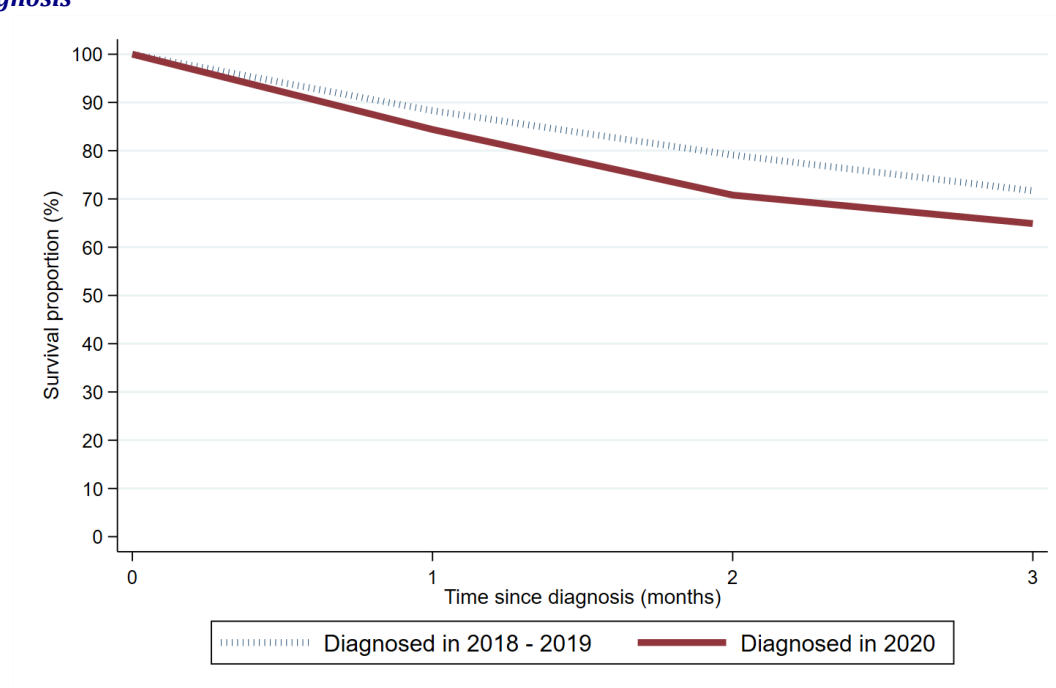
Age-standardised net survival (which takes account of deaths from other causes such as Covid-19) among lung cancer patients one month after diagnosis decreased from 88.3% among those diagnosed in April-December of 2018 - 2019 to 84.4% among those diagnosed in April-December of 2020. This change was not statistically significant. Between the same two time periods, three-month age-standardised net survival decreased from 71.7% to 64.9%. This change was statistically significant.

Table 11: Age-standardised net survival for patients with lung cancer diagnosed in April-December of 2018-2020 by period of diagnosis

Survival time	Period of diagnosis (Apr-Dec)	
	2018-2019	2020
1 month	88.3% (86.8% - 89.9%)	84.4% (81.8% - 87.1%)
2 months	79.1% (77.3% - 81.0%)	70.8% (67.7% - 74.1%)*
3 months	71.7% (69.5% - 74.0%)	64.9% (61.6% - 68.4%)*

* Statistically significant reduction

Figure 11: Age-standardised net survival for patients with lung cancer diagnosed in April-December of 2018-2020 by period of diagnosis



CANCER MORTALITY

During the April-December period when Covid-19 was present the number of deaths of lung cancer increased by 0.9% from 778 per year in 2018 - 2019 to 785 in 2020.

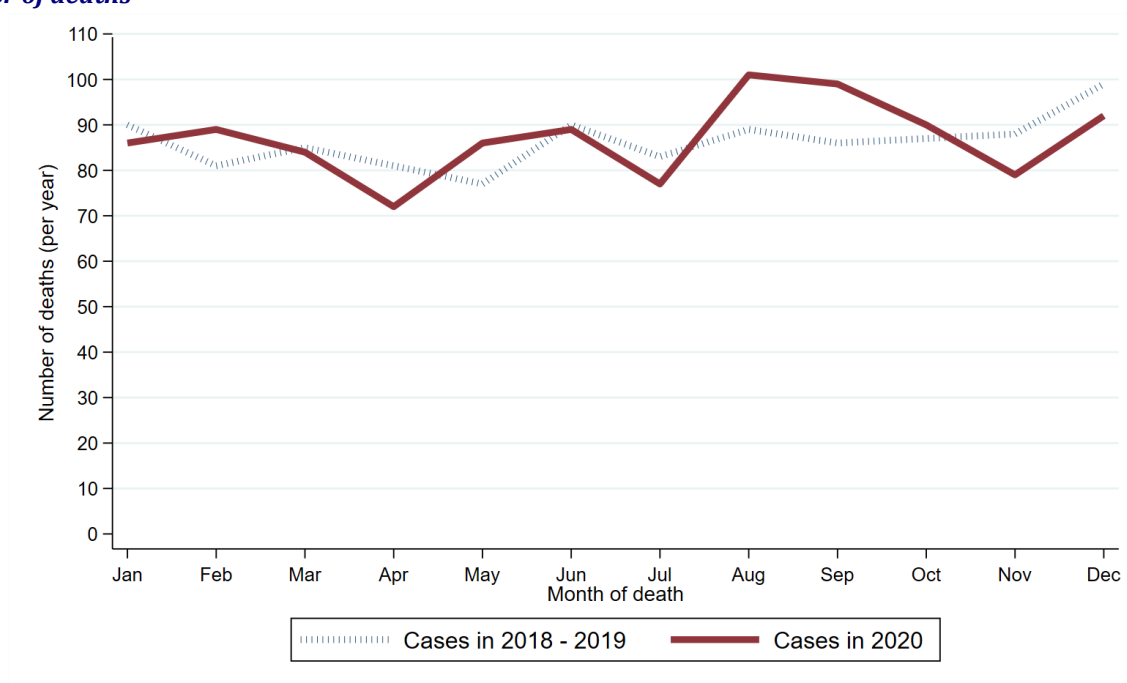
Table 12: Number of lung cancer deaths in 2018-2020 by month and year of death

Period of death	Annual total	Month death occurred											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2018-2019*	1,034	90	81	85	81	77	90	83	89	86	87	88	99
2020	1,044	86	89	84	72	86	89	77	101	99	90	79	92

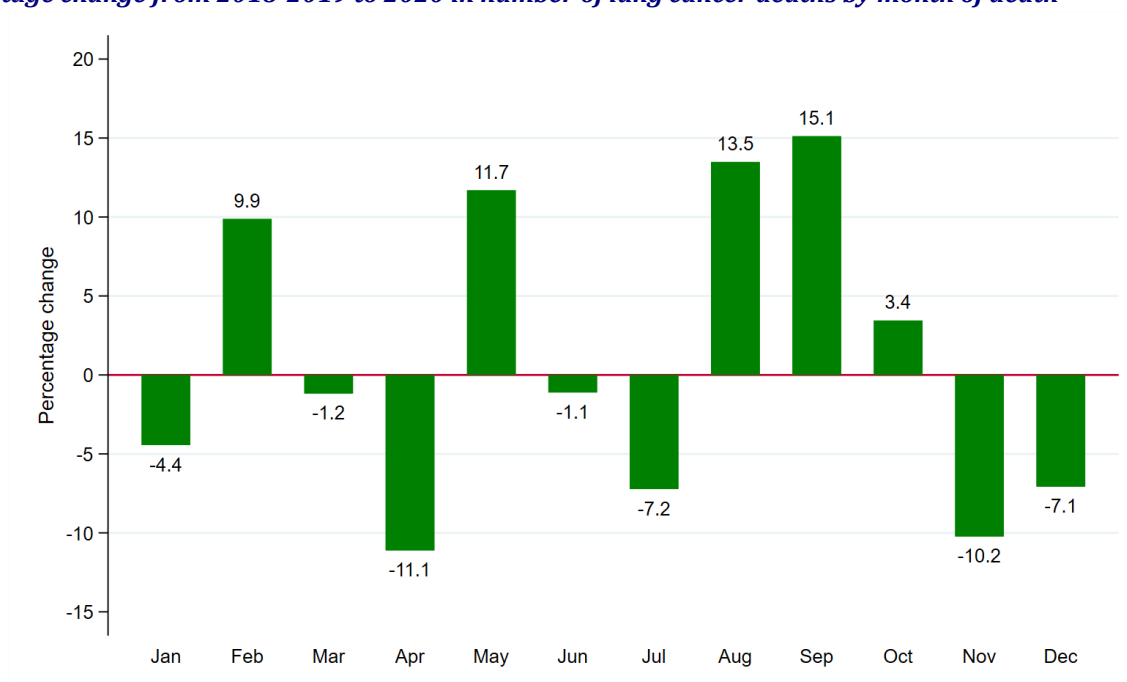
* Average deaths per year rounded to the nearest integer. Row sums may thus differ slightly from the total.

Figure 12: Number of lung cancer deaths in 2018-2020 by month and year of death

(a) Number of deaths



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer deaths by month of death



GENDER

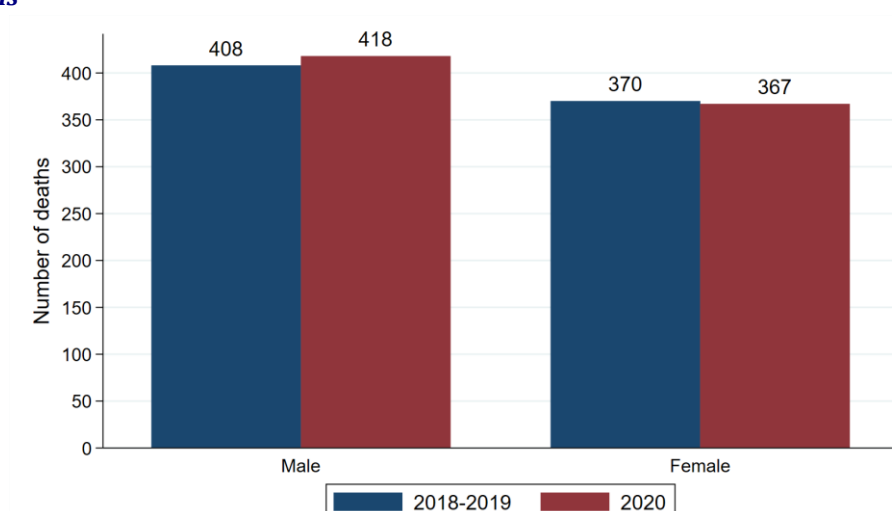
Excluding the first quarter of each year among males the number of deaths from lung cancer increased by 2.5% from 408 per year in 2018 - 2019 to 418 in 2020. Between the same two time periods the number of deaths among females decreased by 0.8% from 370 per year to 367. The change in distribution of deaths by gender between 2018 - 2019 and 2020 was not statistically significant.

Table 13: Number and proportion of lung cancer deaths in April-December of 2018-2020 by gender and period of death

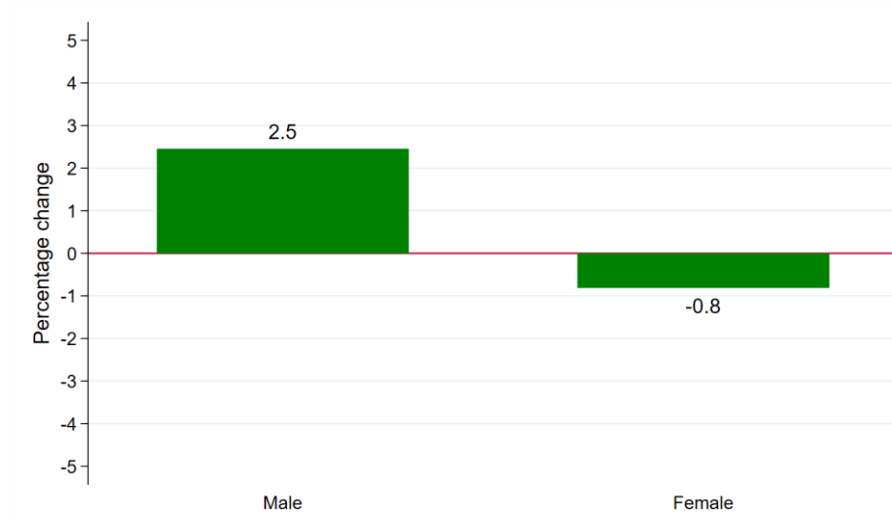
Gender	Period of death (Apr-Dec)		Percentage change
	2018-2019*	2020	
Male	408 (52.4%)	418 (53.2%)	+2.5%
Female	370 (47.6%)	367 (46.8%)	-0.8%
All persons	778	785	+0.9%

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

Figure 13: Lung cancer deaths in April-December of 2018-2020 by gender and period of death
(a) Number of deaths



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer deaths by gender



AGE

Excluding the first quarter of each year among people aged 0 to 54 the number of deaths from lung cancer decreased by 20.0% from 40 per year in 2018 - 2019 to 32 in 2020. Between the same two time periods the number of deaths among people aged 55 to 64 increased by 7.6% from 119 per year to 128. The change in distribution of deaths by age between 2018 - 2019 and 2020 was not statistically significant.

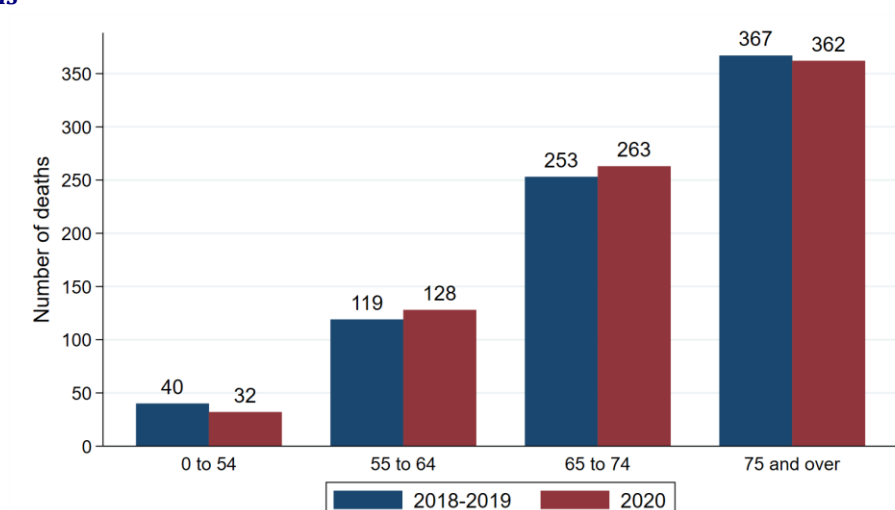
Table 14: Number and proportion of lung cancer deaths in April-December of 2018-2020 by age and period of death

Age group	Period of death (Apr-Dec)		Percentage change
	2018-2019*	2020	
0 to 54	40 (5.1%)	32 (4.1%)	-20.0%
55 to 64	119 (15.3%)	128 (16.3%)	+7.6%
65 to 74	253 (32.5%)	263 (33.5%)	+4.0%
75 and over	367 (47.2%)	362 (46.1%)	-1.4%
All ages	778	785	+0.9%

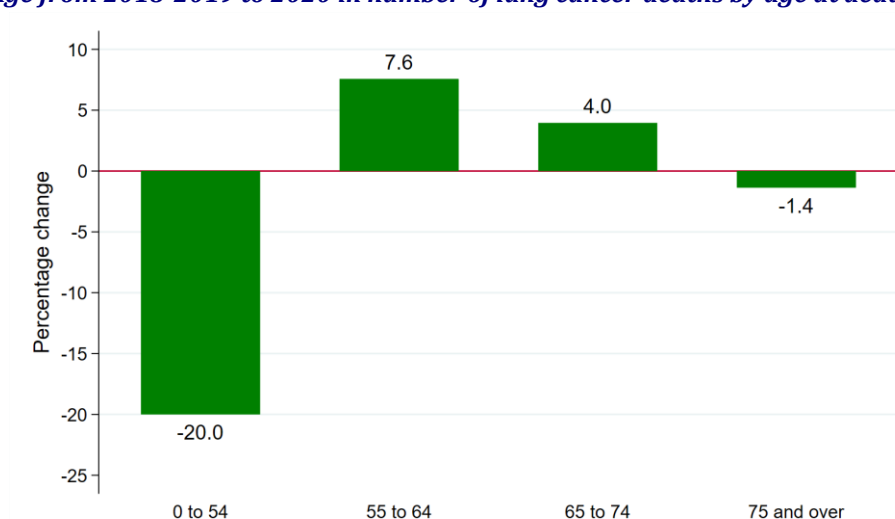
* Average deaths per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

Figure 14: Lung cancer deaths in April-December of 2018-2020 by age and period of death

(a) Number of deaths



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer deaths by age at death



HEALTH AND SOCIAL CARE TRUST

Excluding the first quarter of each year among residents of Western HSCT the number of deaths from lung cancer decreased by 7.9% from 127 per year in 2018 - 2019 to 117 in 2020. Between the same two time periods the number of deaths among residents of South Eastern HSCT increased by 9.3% from 140 per year to 153. The change in distribution of deaths by HSCT between 2018 - 2019 and 2020 was not statistically significant.

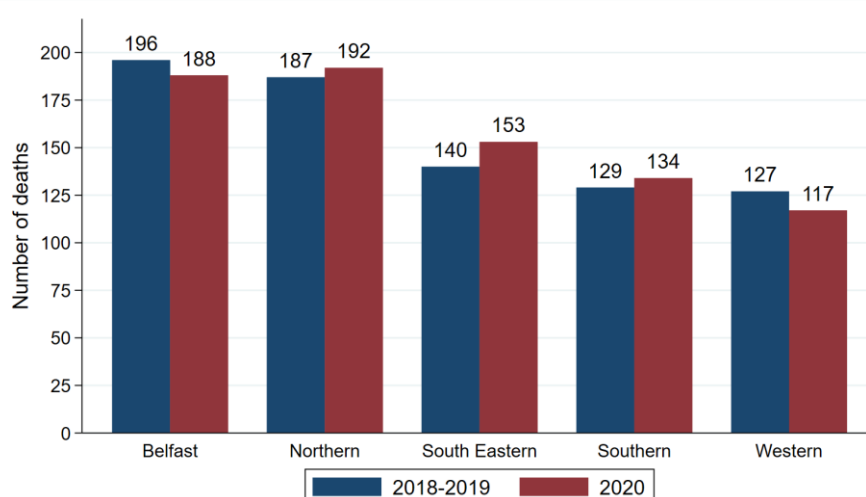
Table 15: Number and proportion of lung cancer deaths in April-December of 2018-2020 by Health and Social Care Trust and period of death

Health and Social Care Trust	Period of death (Apr-Dec)		Percentage change
	2018-2019*	2020	
Belfast HSCT	196 (25.2%)	188 (23.9%)	-4.1%
Northern HSCT	187 (24.0%)	192 (24.5%)	+2.7%
South Eastern HSCT	140 (18.0%)	153 (19.5%)	+9.3%
Southern HSCT	129 (16.6%)	134 (17.1%)	+3.9%
Western HSCT	127 (16.3%)	117 (14.9%)	-7.9%
All persons	778	785	+0.9%

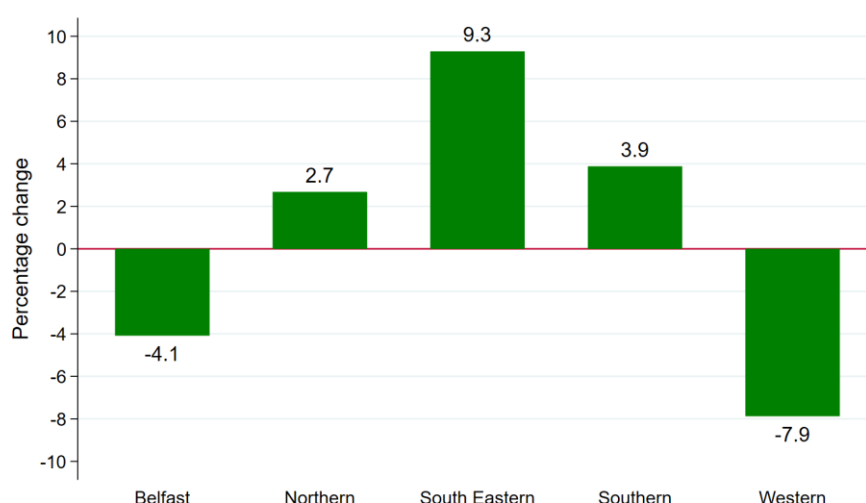
* Average deaths per year rounded to the nearest integer. Column sums may thus differ slightly from the total.

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

Figure 15: Lung cancer deaths in April-December of 2018-2020 by Health and Social Care Trust and period of death
(a) Number of deaths



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer deaths by Health and Social Care Trust



DEPRIVATION

Excluding the first quarter of each year among residents of the most deprived areas the number of deaths from lung cancer increased by 11.2% from 206 per year in 2018 - 2019 to 229 in 2020. Between the same two time periods the number of deaths among residents of the least deprived areas increased by 7.8% from 116 per year to 125. The change in distribution of deaths by deprivation quintile between 2018 - 2019 and 2020 was not statistically significant.

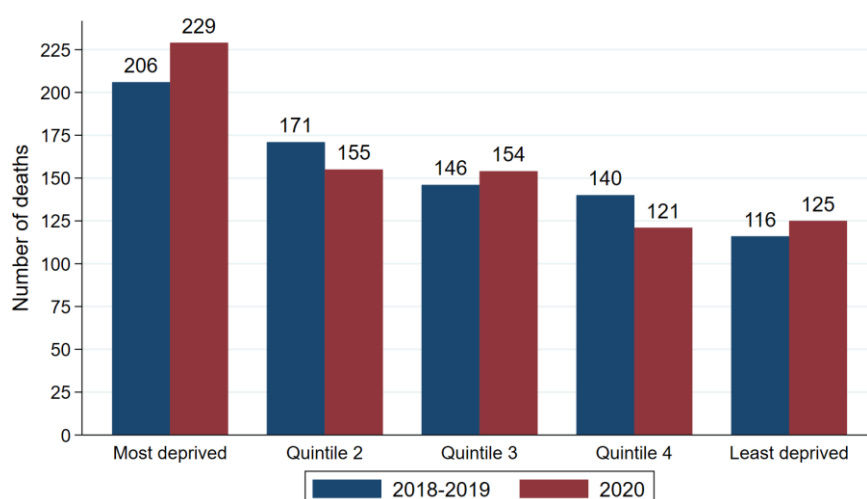
Table 16: Number and proportion of lung cancer deaths in April-December of 2018-2020 by deprivation quintile and period of death

Deprivation quintile	Period of death (Apr-Dec)		Percentage change
	2018-2019*	2020	
Most deprived	206 (26.5%)	229 (29.2%)	+11.2%
Quintile 2	171 (22.0%)	155 (19.7%)	-9.4%
Quintile 3	146 (18.8%)	154 (19.6%)	+5.5%
Quintile 4	140 (18.0%)	121 (15.4%)	-13.6%
Least deprived	116 (14.9%)	125 (15.9%)	+7.8%
Northern Ireland	778	785	+0.9%

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

Note: Deaths with unknown deprivation quintile are included in totals

Figure 16: Lung cancer deaths in April-December of 2018-2020 by deprivation quintile and period of death
(a) Number of deaths



(b) Percentage change from 2018-2019 to 2020 in number of lung cancer deaths by deprivation quintile

