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HEALTH INEQUALITY: CLOSING THE LIFE EXPECTANCY GAP OVER TIME?

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Camden and Islington Public Health

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Purpose of this slide set

- Reducing the level of health inequality is a priority for both Camden and Islington Councils and Clinical Commissioning Groups. This slide set is intended to inform Camden and Islington public health teams and CCGs about causes of death contributing to changes in the life expectancy gap over time.
- Specifically, this slide set shows how the gap in life expectancy between the most and least deprived areas have changed over time in Camden and Islington, and explores what causes of death are contributing to these changes.

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Summary

Camden

- In Camden, the life expectancy gap between people living in the most and least deprived areas has narrowed for men and women in the most recent years although it is not statistically significant.
- Men and women in poor areas in Camden are still die earlier (9.5 and 7.3 years earlier respectively) than men and women living in wealthier areas in the borough.
- Despite no changes in the life expectancy gap overall in Camden, the mortality gap has widened for chronic hearth disease/ myocardial infraction (CHD/MI) for women, and for chronic liver disease (CLD) and stroke/TIA for men. This trend is explained by increasing death rate for these causes in most deprived areas while it has remained fairly unchanged in the least deprived ones.
- The mortality gap has narrowed for COPD and lung cancer for both men and women, and for CHD/MI for men and stroke/TIA for women.
- The large number of deaths from CHD/MI for women and stroke for men means the widening gap from this cause outweighed the narrowing effect from COPD and lung cancer on the life expectancy gap overall. This may explain why there has been little improvement in the life expectancy gap in the recent years in Camden.

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Summary

Islington

- The life expectancy gap has increased for men in Islington, whereas there has been no substantial change for women in the borough.
- Men and women in poor areas in Islington still die earlier (8.0 and 2.7 years earlier respectively) than men and women living in wealthier areas in the borough.
- The widening gap for men in Islington is due to deprivation attributable deaths for chronic liver disease (CLD), chronic hearth disease/ myocardial infraction CHD/MI and stroke/TIA. There has been no clear trend driving these changes. Some of it is explained by increasing death rates in more deprived areas, but for stroke there has been an increase in deaths in the least deprived quintile.
- The mortality gap has widened for women for CLD, CHD/MI and lung cancer. Some of this trend is explained by increasing death rates in more deprived areas.
- The mortality gap has narrowed for stroke and COPD for women. However, the large number of deaths from CHD/MI means the widening gap from this cause outweighs the narrowing effect from COPD, stroke/TIA on the overall life expectancy gap for women.

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Method

- The analysis presented in this slide set quantifies the inequality gap in mortality by measuring the proportion of deaths that can be attributed to deprivation. The main measure that has been applied is **population attributable risk**. This measure calculates the age standardised death rate for each deprivation quintile, and uses the rate for the least deprived quintile as reference rate. It then calculates the number and proportion of deaths in the other quintiles in excess of the reference rate.
- Note that this means a negative value may be produced if the least deprived quintile does not have the lowest death rate.
- The causes of death covered in this analysis include **stroke/TIA, coronary heart disease /myocardial infarction (CHD/MI), chronic liver disease (CLD), chronic obstructive pulmonary disease (COPD)** and **lung cancer**. These causes are common causes of death that tend to be related to deprivation.
- Data on **cause of death** are based on ONS mortality files for 2009 to 2015. The data have been grouped into five-year periods to ensure the numbers are large enough for robust analysis.
- Data on **deprivation** are based on the Index of Multiple Deprivation (2015), with small areas (Lower Super Output Areas) in Camden and Islington grouped into five equal groups (quintiles) within each borough based on their deprivation score. It should be noted that deprivation quintiles are not comparable across Camden and Islington.
- Other inequality measures have also been applied, with results available in the summary tables in the Appendix. These measures show consistent results with the population attributable risk.

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Deprivation level

- **Camden**: clear geographical pattern with respect to deprivation
- **Islington**: no clear cut pattern - most and least deprived people live side-by-side
- Deprivation quintiles are not comparable between Camden and Islington - overall level of deprivation is different in the two boroughs.

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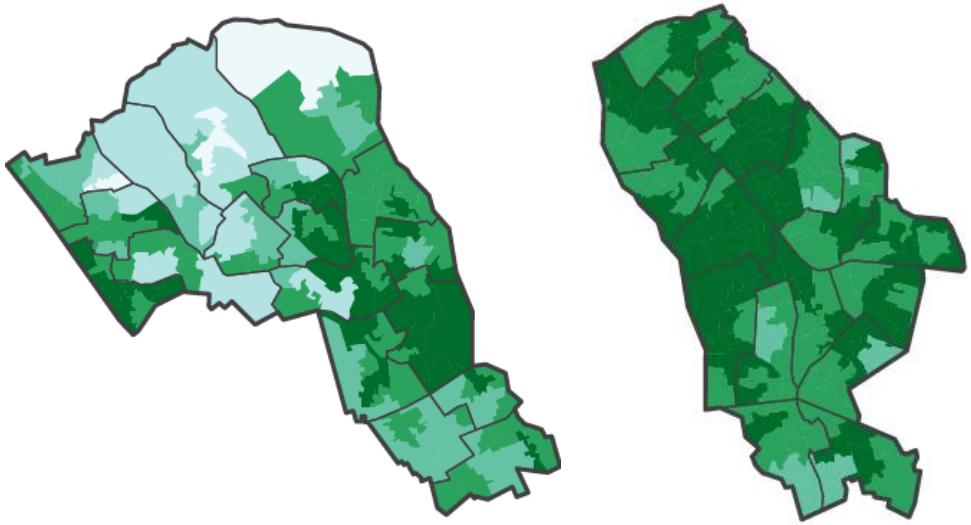

IMD 2015 Local Quintile

- 1 - most deprived borough
- 2
- 3
- 4
- 5 - least deprived borough

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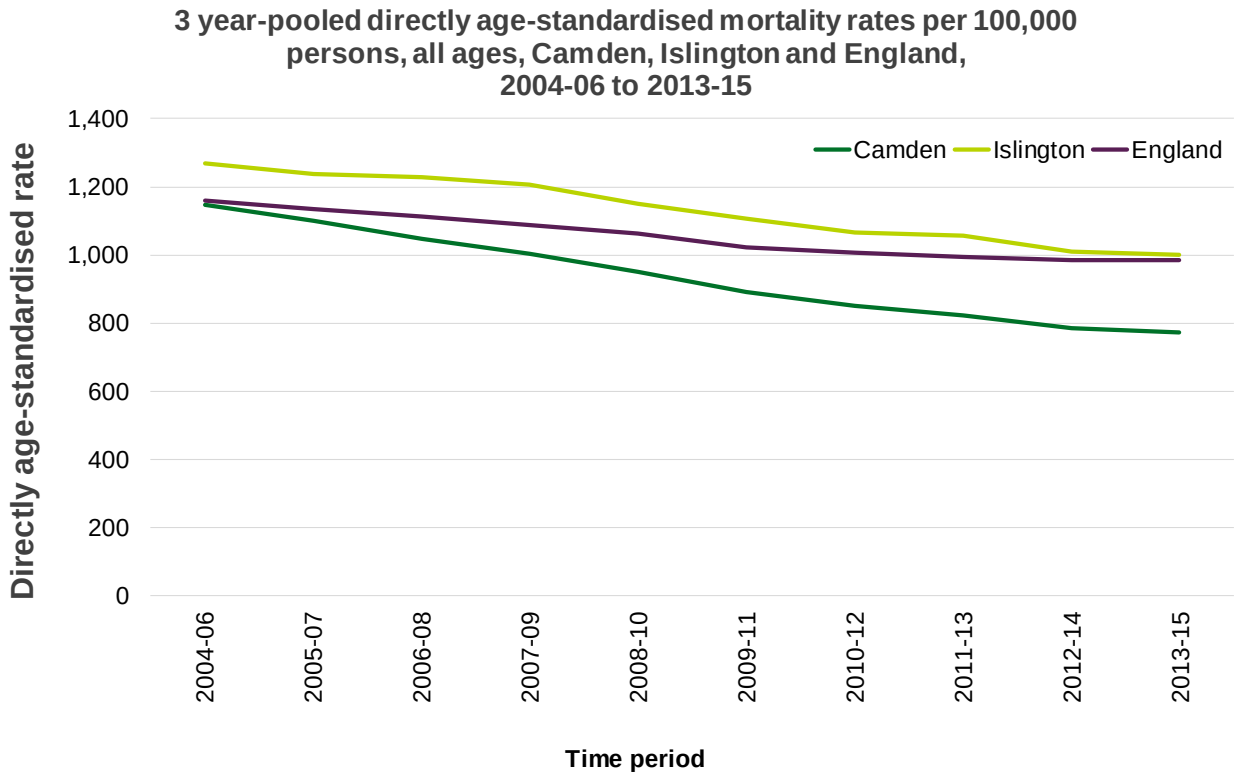
Background: Overall deaths



- The overall death rate in both Islington and Camden has been falling since 2004-06.
- In recent years Camden has seen mortality rates falling slightly faster than the England average.
- The main causes of death (cardiovascular disease, cancer, and respiratory disease), have all fallen over time for both men and women (data not shown).

Source: PHE Public Health Profiles, 2017

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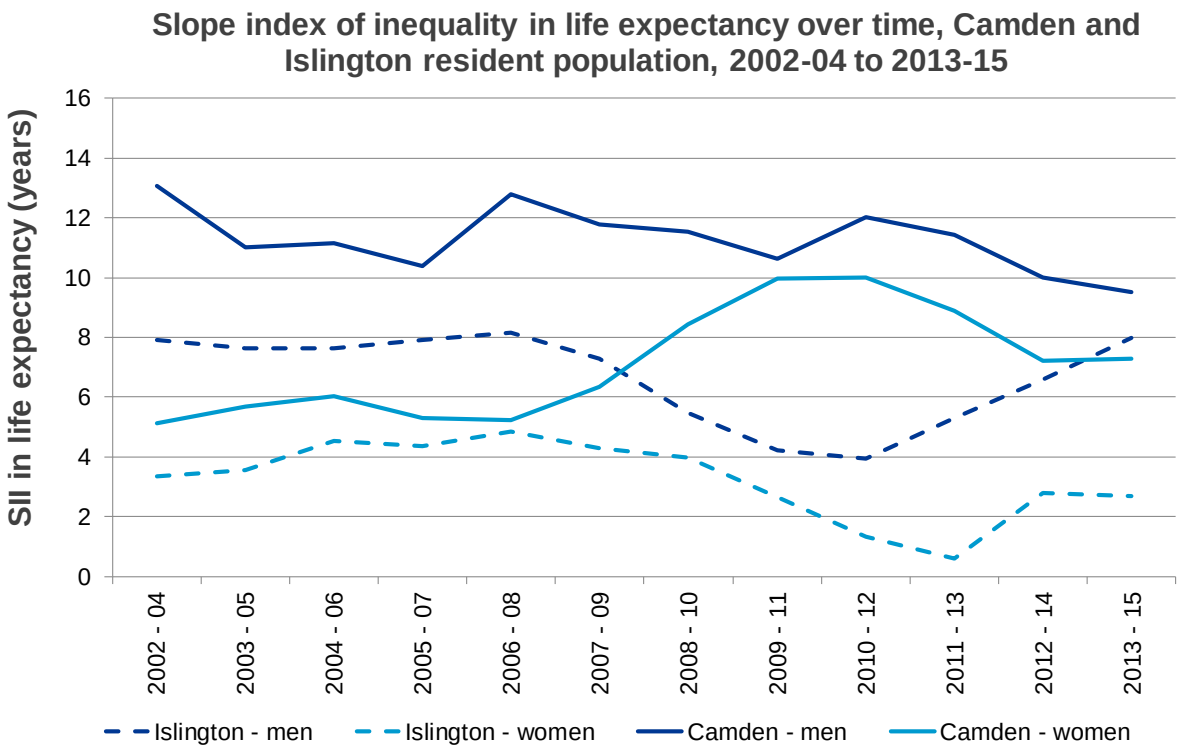
Overview of life expectancy gap



- While the overall death rate has decreased in both Camden and Islington, it has fallen at different rates for people living in more and less deprived areas within each borough.
- For men and women in Islington, there has been an increase in the gap in life expectancy between 2010-12 and 2013-15.
- The life expectancy gap in Camden has narrowed for both men and women in the same period, although it is not statistically significant.
- However, men and women in poor areas in Camden still die earlier (9.5 and 7.3 years earlier respectively) than men and women living in wealthier areas in the borough.

Source: PHOF 2017

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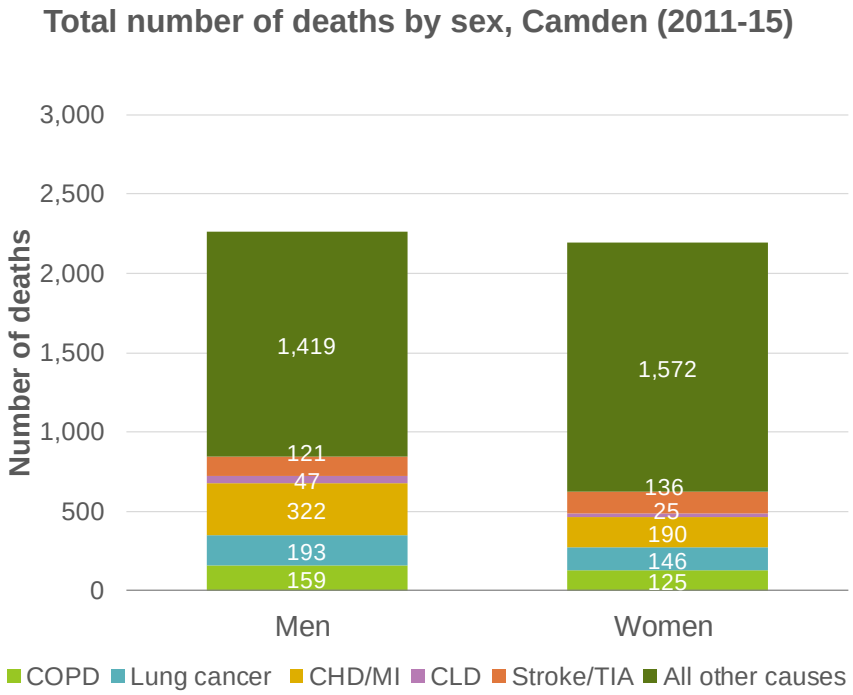
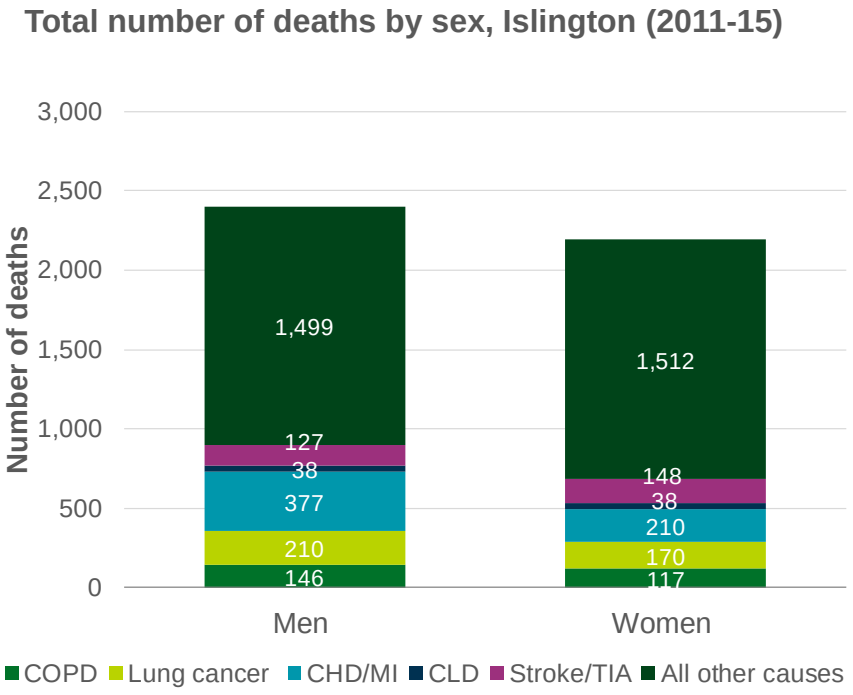
Overview: Main causes of death





- Of the causes of death analysed in this slide set, CHD/MI contributes the largest number for both men and women in both boroughs. Lung cancer, COPD, and stroke are the next most common causes of death. Stroke contributes to more deaths among women than men, whereas the opposite is true for COPD.
- 'All other causes of death' include all cancers other than lung cancer. Because there is no clear association with deprivation for many of these causes, they are not included in the analysis presented here.

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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Deprivation attributable deaths in Camden: Women

- The overall mortality gap between more and less deprived women has widened for **CHD/MI**.
- CHD/MI in particular accounts for a large number of deaths for women, meaning the impact on the overall life expectancy gap is substantial.
- The widening gap for stroke and CHD/MI is mostly due to more deprived women falling behind: the death rate for CHD/MI has fallen in the least deprived quintiles, while it has increased in the more deprived ones.
- The mortality gaps for **COPD**, **stroke**, and to a lesser extent **lung cancer** have narrowed. However, the number of deaths is comparatively small.
- COPD has the widest mortality gap due to deprivation (49% attributable risk), followed by lung cancer, and CHD/MI.

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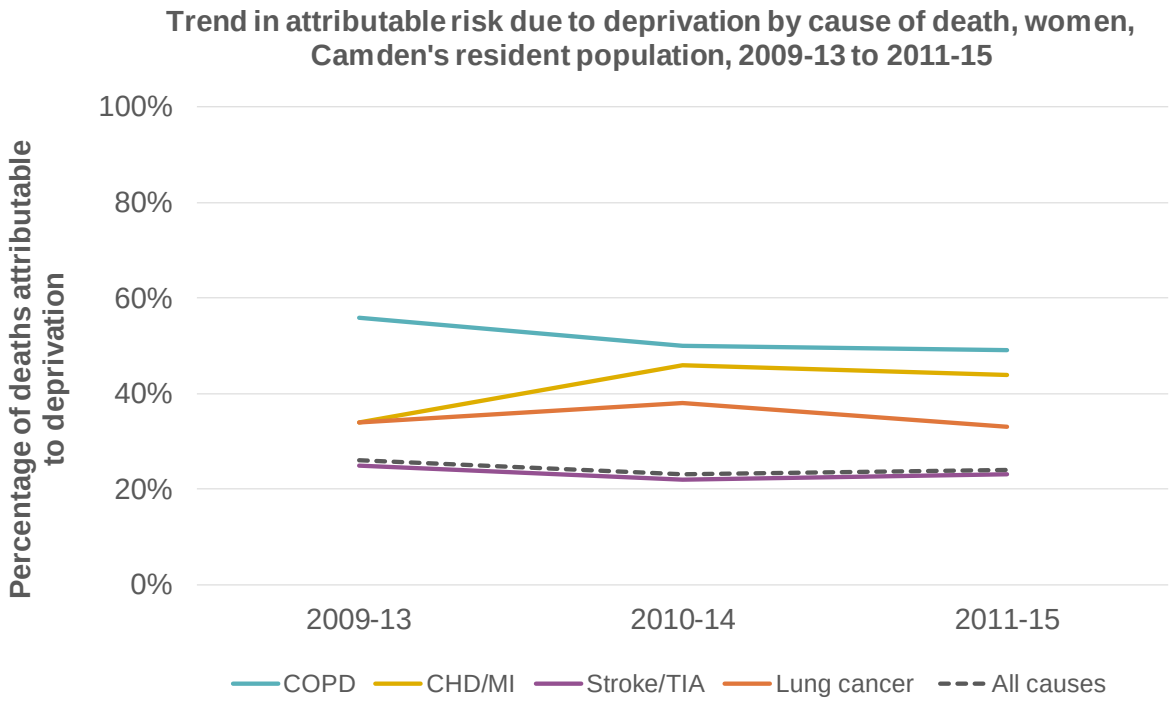
Trend in mortality gap for women



- In Camden, about a quarter of all deaths for women between 2009-13 and 2011-15 were attributable to deprivation.
- The mortality gap between more and less deprived women has widened for CHD/MI over the same period.
- In 2011-15, COPD had the highest proportion of deprivation attributable deaths (49%), followed by CHD (44%), and lung cancer (33%).

Source: ONS mortality files 2015, analysis by Camden & Islington PH
Note: the number of deaths form chronic liver disease (CLD) were no sufficiently large (>=30) to produce meaningful results.

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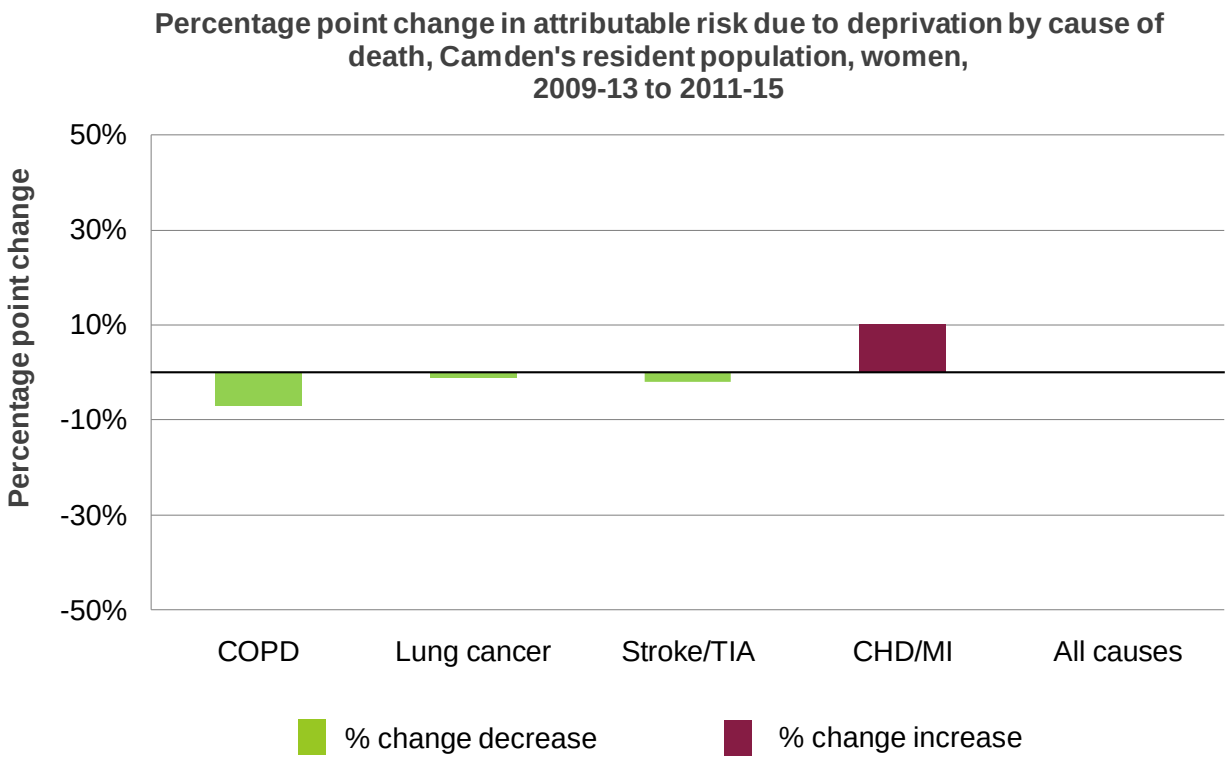
Trend in mortality gap for women



- The proportion of deprivation attributable deaths for women remained stable between 2009-13 and 2011-15.
- The proportion of deprivation attributable deaths has increased for CHD/MI from 34% to 44% in the same period.
- It has fallen for COPD (from 56% to 49%), and to a lessen extent for lung cancer (from 34% to 33%) and stroke (from 25% to 23%).
- The large number of deaths from CHD/MI means the widening gap from this cause outweighs the narrowing effect from COPD, stroke and lung cancer on the overall life expectancy gap for women.

Source: ONS mortality files 2015, analysis by Camden & Islington PH
Note: the number of deaths form chronic liver disease (CLD) were no sufficiently large (>=30) to produce meaningful results.

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Deprivation attributable deaths in Camden: Men

- The overall mortality gap between more and less deprived men has widened for **stroke** and **CLD**.
- The mortality gaps for **CHD/MI**, **lung cancer** and **COPD** have also narrowed. The numbers of deaths for CHD/MI accounts for a large number of deaths means the narrowing the gap from this cause outweighs the widening effect from stroke, and CLD on the life expectancy gap overall.
- **COPD** has the widest mortality gap due to deprivation (68% attributable risk), followed by **lung cancer**, **CHD/MI** and **stroke**.

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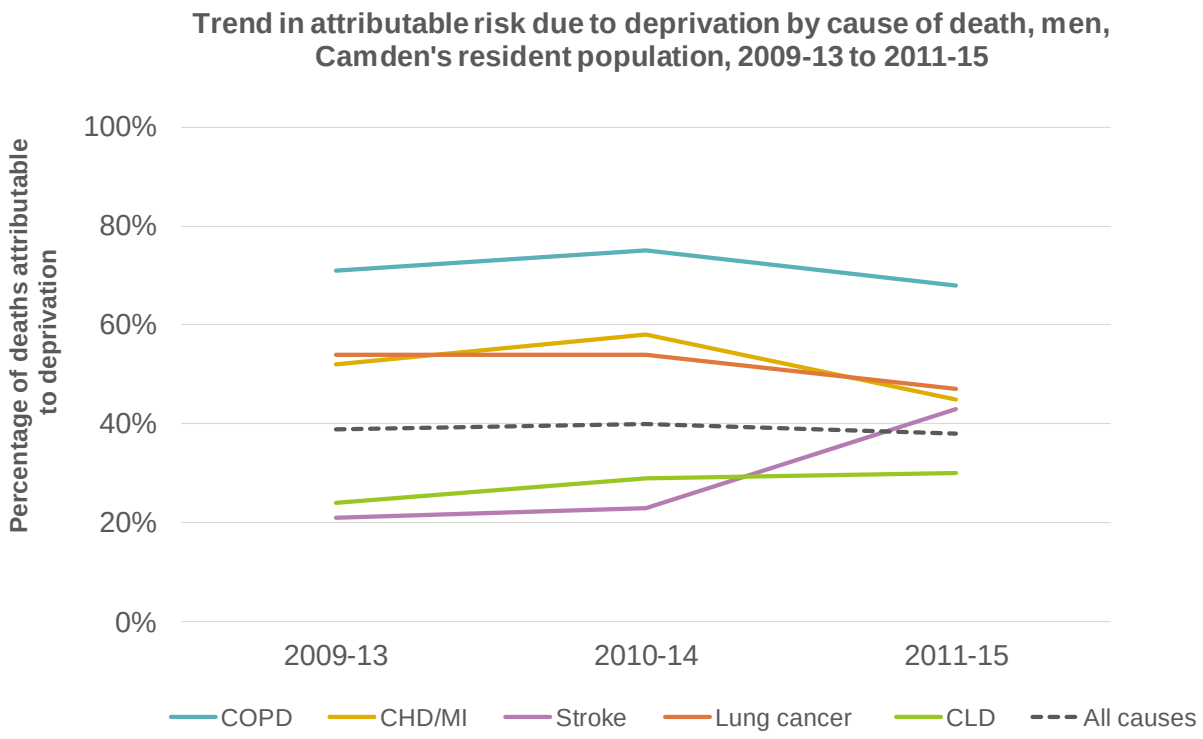
Trend in mortality gap for men



- In Camden, about 40% of all causes of death for men between 2009-13 and 2011-15 were attributable to deprivation (38% and 39%).
- COPD has the highest proportion of deprivation attributable deaths (71%- 68%), followed by lung cancer (54%-47%), and CHD/MI (52%-45%).
- Over this period, the mortality gap for stroke between more and less deprived has doubled, from 21% to 43%.

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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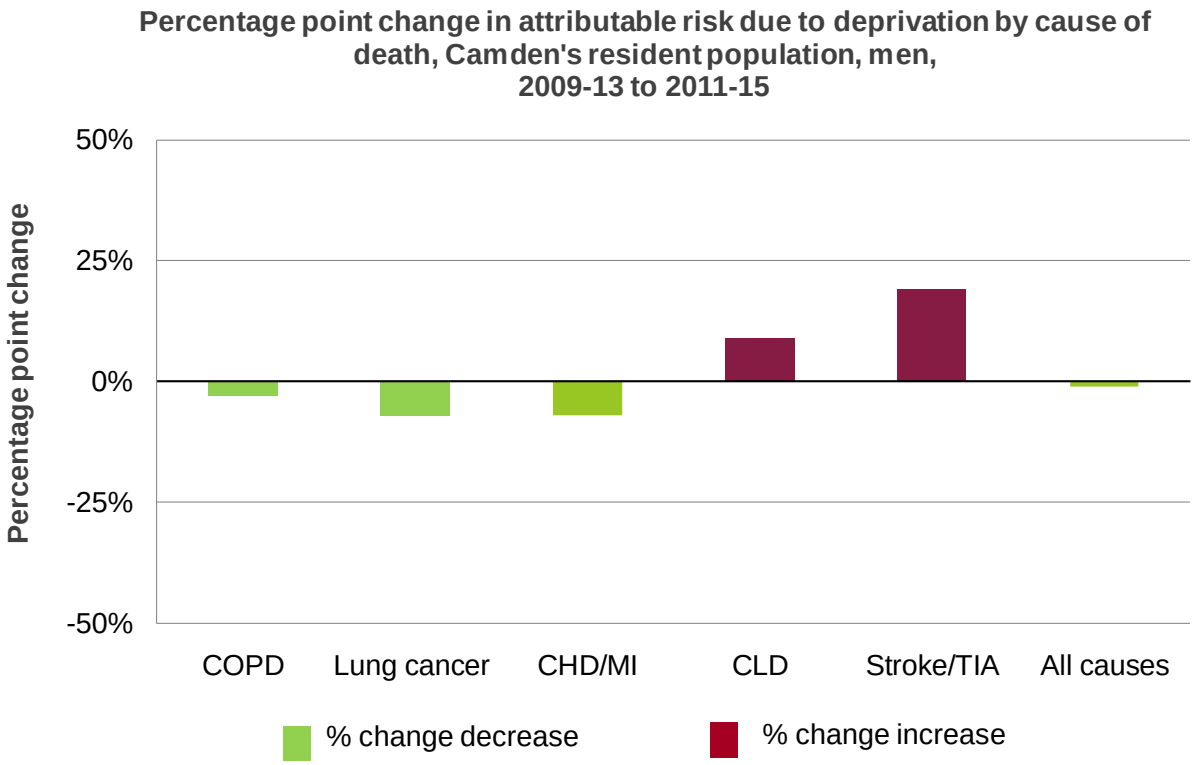
Trend in mortality gap for men



- The proportion of deprivation attributable deaths has remained fairly stable between 2009-13 and 2011-15.
- Over this period, the proportion of deprivation attributable deaths has doubled for stroke (from 21% to 43%), and increased for CLD from 24% to 30%.
- It has notably decreased for lung cancer (54% to 47%) and CHD/MI (52% to 45%), and to a lesser extent for COPD (from 71% to 68%).
- The number of deaths from CHD/MI accounts for a large number of deaths means the narrowing the gap from this cause outweighs the widening effect from stroke and CLD on the overall life expectancy gap for men.

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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Deprivation attributable deaths in Islington: Women

- The overall mortality gap between more and less deprived women has widened for **CLD**, **CHD/MI** and **lung cancer**.
- CHD/MI in particular accounts for a large number of deaths for women, meaning the impact on the overall life expectancy gap is substantial.
- The mortality gaps for **stroke** and **COPD** have narrowed. However, the number of deaths from these causes is comparatively small.
- **CLD** has the highest proportion of deprivation attributable deaths (61%) followed by **lung cancer** and **CHD/MI.**

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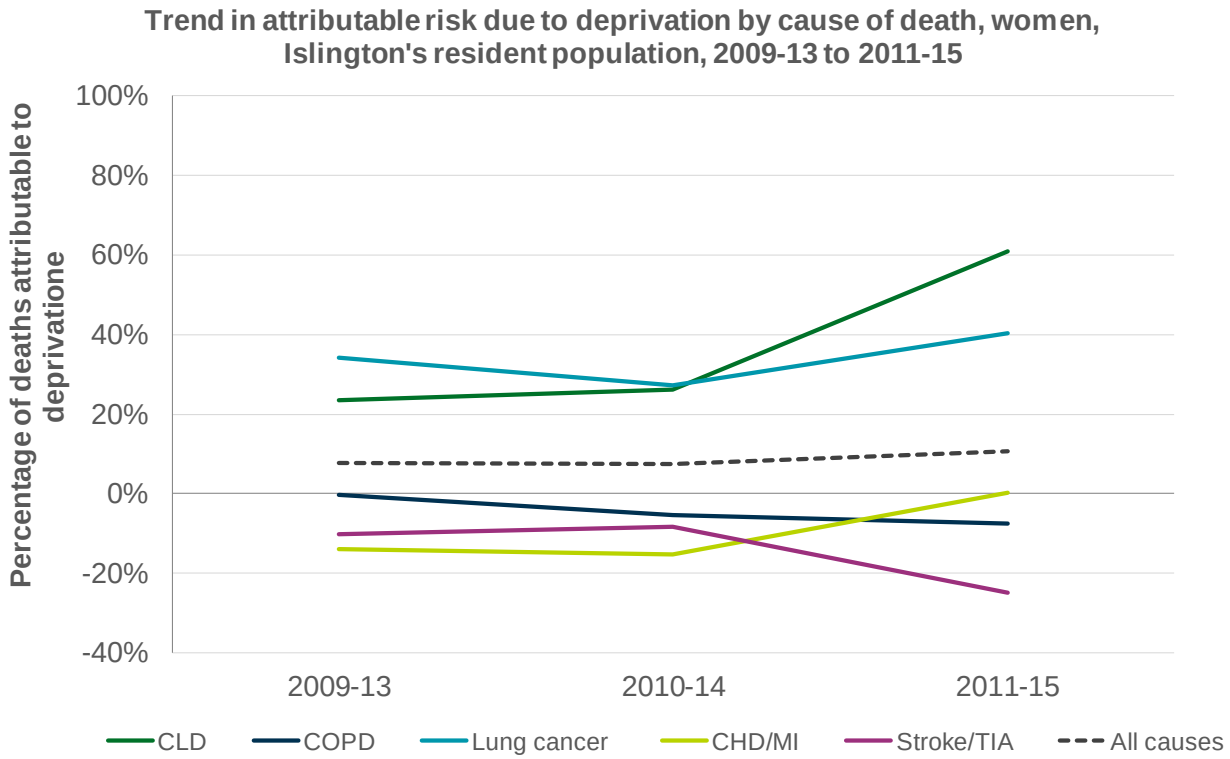
Trend in mortality gap for women



- In Islington, around 10% of deaths (between 8% and 11%) for women between 2009-13 and 2011-15 were attributable to deprivation.
- CLD has the highest proportion of deprivation attributable deaths (61%), followed by lung cancer (38%-40%).
- The proportion of deprivation attributable deaths for CLD has more than tripled since 2009-13 (from 23% to 61%).
- COPD, Stroke/TIA and CHD/MI have negative values for deprivation attributable deaths. This is because women in the most affluent areas have comparatively high death rates to other most deprived areas (data not shown).

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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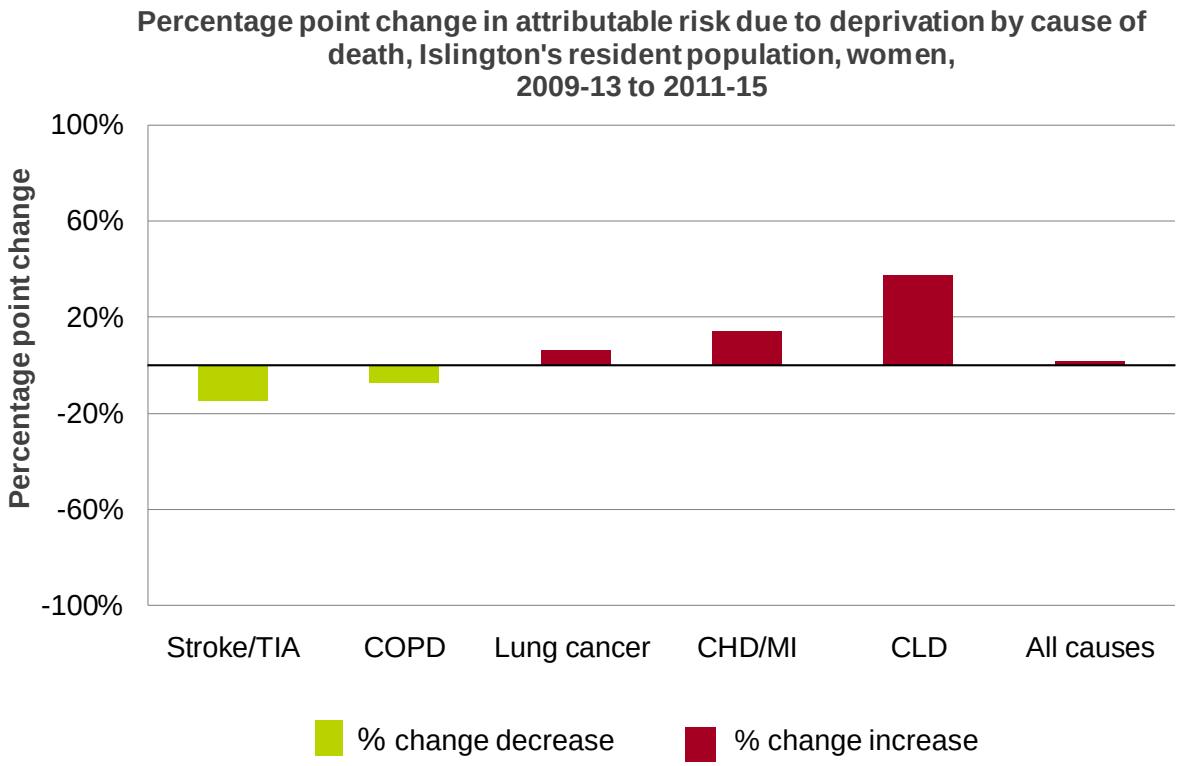
Trend in mortality gap for women



- Between 2009-13 and 2011-15, the mortality gap between more and less deprived women has widened, notably from CLD from 23% to 61%, CHD/MI from 57% to 62%, and lung cancer from 34% to 40%.
- It has narrowed for Stroke/TIA (-10% to -25%) and COPD (0% to 7%).

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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Deprivation attributable deaths in Islington: Men

- The mortality gap between more and less deprived women has mainly widened for **CLD**, followed by **stroke**, **CHD/MI** and **lung cancer**.
- CHD/MI in particular accounts for a large number of deaths for men, meaning the impact on the overall life expectancy gap is substantial.
- The mortality gap has remained stable for all other causes.
- **CLD** has the highest proportion of deprivation attributable deaths (63%) and has more than tripled since 2009-13.

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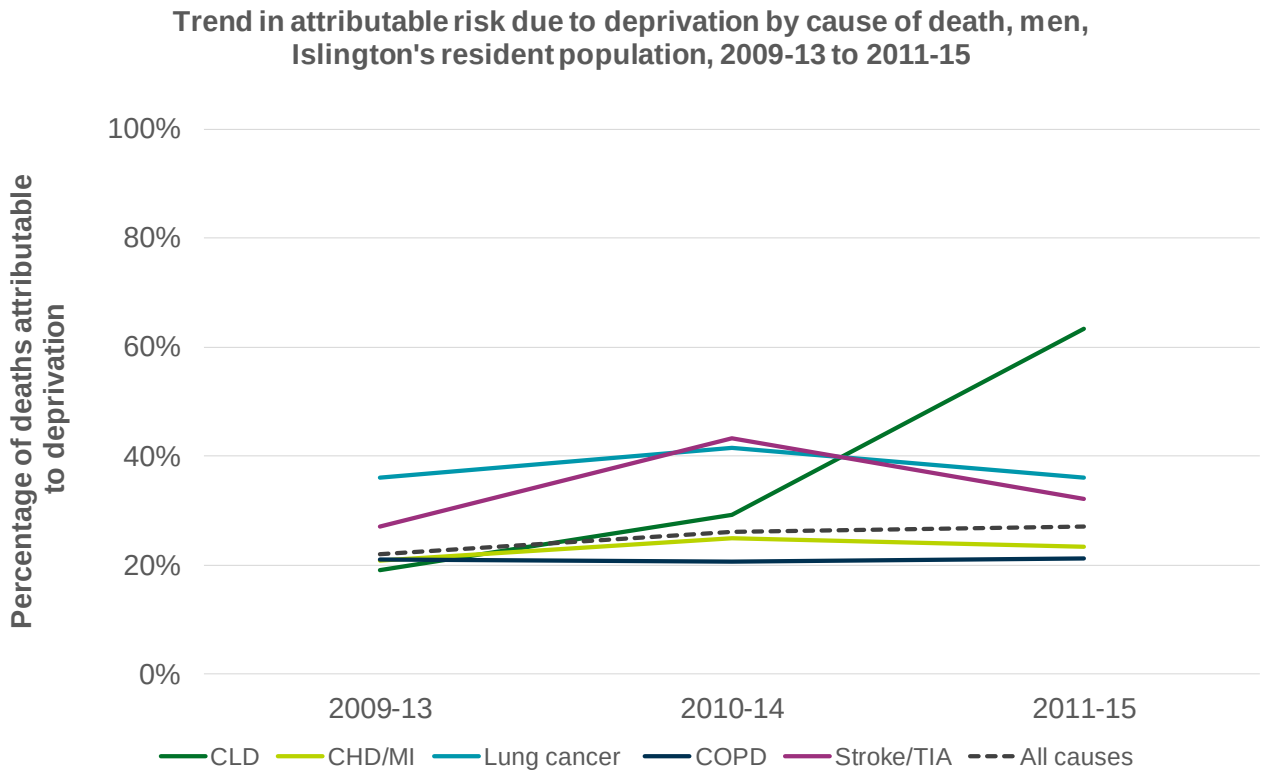
Trend in mortality gap for men



- About a quarter of all causes of death in Islington men between 2009-13 and 2011-15 were attributable to deprivation (between 22% and 27%).
- CLD has the highest proportion of deprivation attributable deaths in 2011-15 (63%).
- Lung cancer (36%) has the second highest proportion of attributable deaths followed by stroke (30%).

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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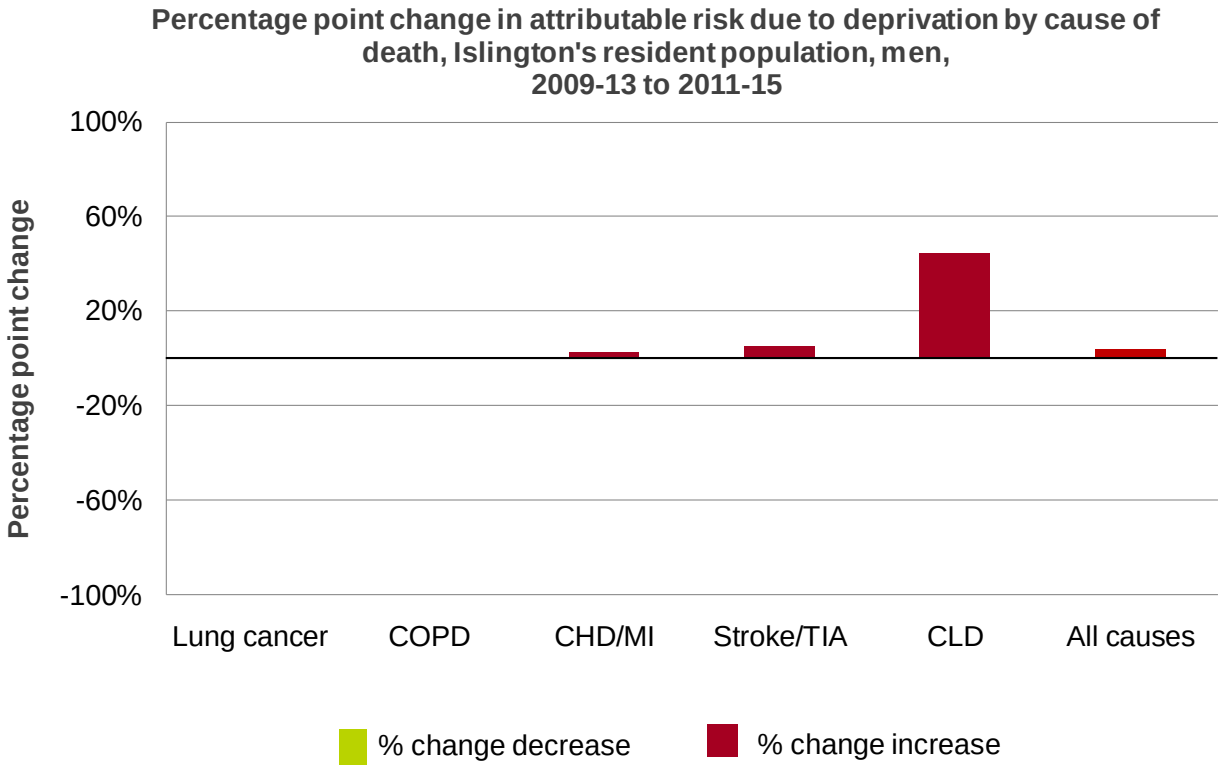
Trend in mortality gap for men



- The proportion of deprivation attributable deaths for men between 2009-13 and 2011-15 has increased from 23% to 27%.
- The proportion of deprivation attributable deaths for CLD has than tripled between 2009-13 and 2011-15 (from 22% to 63%).
- There has also been an increase for stroke (27% to 32%) and CHD/MI (21% to 23%).
- The number of deaths from CLD is relatively small compared to other causes. Further investigation is needed to better understand which causes may have driven the widening of the male life expectancy gap in Islington.

Source: ONS mortality files 2015, analysis by Camden & Islington PH

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Appendix: health inequality measures for men, Camden

Cause of death 2009-13	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	49	6.25	61	1.99	0.30	22%	71%	125	157
Lung cancer	52	3.61	53	1.26	0.20	15%	54%	125	125
CHD/MI	80	3.22	100	1.37	0.21	16%	52%	209	362
CLD	9	2.26	17	1.76	0.28	21%	24%	13	44
Stroke/TIA	10	1.56	13	0.60	0.10	7%	21%	24	111
All causes	370	2.29	475	1.04	0.16	12%	39%	970	2,311

Cause of death 2011-15	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	53	6.30	60	2.07	0.31	23%	68%	120	159
Lung cancer	46	3.31	48	1.30	0.20	15%	47%	100	193
CHD/MI	58	2.75	74	1.26	0.20	15%	45%	155	322
Stroke/TIA	25	2.96	31	1.44	0.22	17%	43%	55	121
CLD	8	2.19	16	1.67	0.27	20%	30%	16	47
All causes	368	2.40	445	1.07	0.17	13%	38%	913	2,261

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Appendix: health inequality measures for women, Camden

Cause of death 2009-13	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	25	4.32	26	1.56	0.24	18%	56%	53	119
Lung cancer	22	2.50	29	1.33	0.21	16%	34%	42	127
CHD/MI	31	2.75	37	1.42	0.22	17%	34%	51	200
Stroke/TIA	13	2.00	20	1.16	0.18	14%	25%	25	142
All causes	185	1.82	229	1.82	0.12	9%	26%	383	2,137

Cause of death 2011-15	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	21	3.41	19	1.14	0.18	13%	49%	49	125
Lung cancer	11	1.68	18	0.18	0.13	9%	33%	45	146
CHD/MI	25	2.76	34	1.35	0.21	16%	44%	66	190
Stroke/TIA	4	1.28	10	0.64	0.10	8%	23%	22	136
All causes	193	1.91	233	0.81	0.13	10%	24%	452	2,194

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Appendix: health inequality measures for men, Islington

Cause of death 2009-13	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	19	1.63	18	0.47	0.08	6%	21%	42	154
CHD/MI	59	1.68	68	0.61	0.10	7%	21%	117	423
Stroke/TIA	6	1.24	8	0.23	0.04	3%	27%	50	145
Lung cancer	39	2.14	48	0.90	0.14	11%	36%	98	202
CLD	4	1.37	3	0.27	0.04	3%	19%	12	48
All causes	254	1.54	288	0.47	0.08	6%	22%	740	2,436

Cause of death 2011-15	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	12	1.45	10	0.29	0.05	3%	21%	40	146
CHD/MI	44	1.62	65	0.70	0.11	8%	23%	117	377
Stroke/TIA	12	1.59	22	0.73	0.12	7%	32%	51	127
Lung cancer	42	2.24	54	1.00	0.16	12%	36%	104	210
CLD	10	3.80	9	0.94	0.15	11%	63%	32	38
All causes	261	1.60	307	0.54	0.09	6%	27%	726	2,397

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Appendix: health inequality measures for women, Islington

Cause of death 2009-13	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	4	1.17	1	0.06	0.01	1%	0%	0	114
CHD/MI	7	1.14	7	0.16	0.02	2%	-14%	-32	236
Stroke/TIA	0	1.02	-2	-0.08	-0.01	1%	-10%	-13	143
Lung cancer	22	1.88	22	0.57	0.09	7%	34%	68	180
CLD	6	1.94	7	0.80	0.13	10%	23%	10	34
All causes	90	1.24	37	0.09	0.01	1%	8%	164	2,157

Cause of death 2011-15	Absolute Range	Relative Range	Slope Index Inequality	Relative Index Inequality	Concentration Index	Concentration index %	% Attributable Risk	No. of attributable deaths	Number of deaths
COPD	6	1.27	-1	-0.06	-0.01	1%	-7%	-9	117
CHD/MI	13	1.33	9	0.25	0.04	3%	0%	1	210
Stroke/TIA	-6	0.80	-9	-0.35	-0.06	4%	-25%	-34	148
Lung cancer	22	2.10	17	0.48	0.08	6%	40%	75	170
CLD	8	3.42	7	0.78	0.12	9%	61%	29	38
All causes	100	1.28	18	0.04	0.01	1%	11%	229	2,195

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Further information

This slide set has been created by Camden and Islington's Public Health Knowledge Intelligence team. For further information please contact Ester Romeri.

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We would also very much welcome your comments on this analysis and how it could better suit your individual or practice requirements, so please contact us with your ideas.

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