

# UK Death Rate Trends for Malignant Neoplasms: Skin

Data Sources: UK Office of National Statistics (ONS)

Time Period: Yearly Data, 2010 - 2022

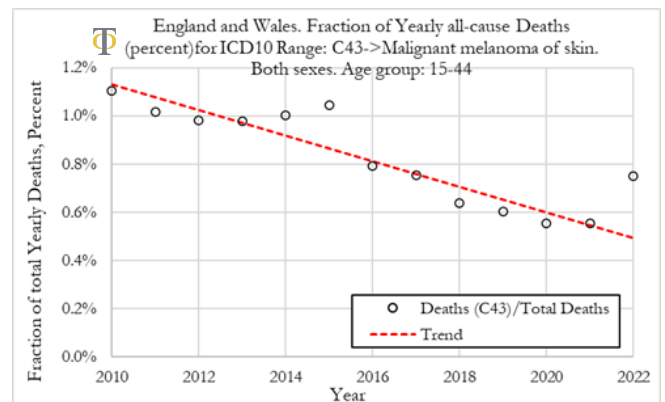
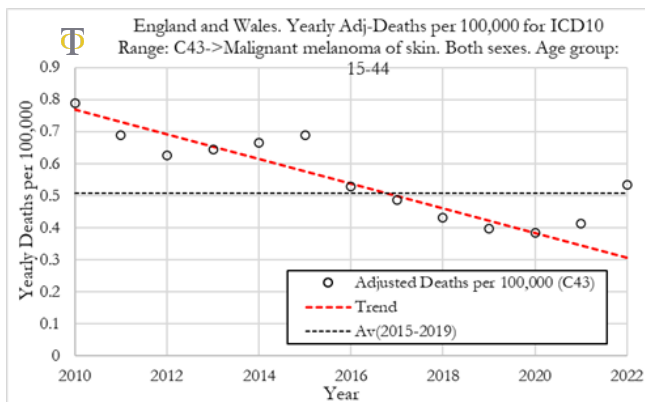
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In this Project Brief, we investigate the trends in death rates for ICD10 code C43 (Malignant neoplasm of skin), which represents only 3.0% of all malignant neoplasm deaths in 2019 for 15 to 44 year-olds in the UK. This analysis investigates the absolute trends in adjusted deaths for a single ICD10 code. We also investigate the fraction of deaths attributable to ICD10 code C43 versus deaths from all other causes.

## Adjusted Death Rates & Deaths from Malignant Neoplasms of the Skin

The Figures below show yearly adjusted deaths for malignant neoplasms of skin in England and Wales. The red dashed line shows the average from 2010 to 2019. The dotted line shows the 2015-2019 average death rate. Left: Adj-Deaths per 100,000. Right: Adj-Deaths (number).



### Summary:

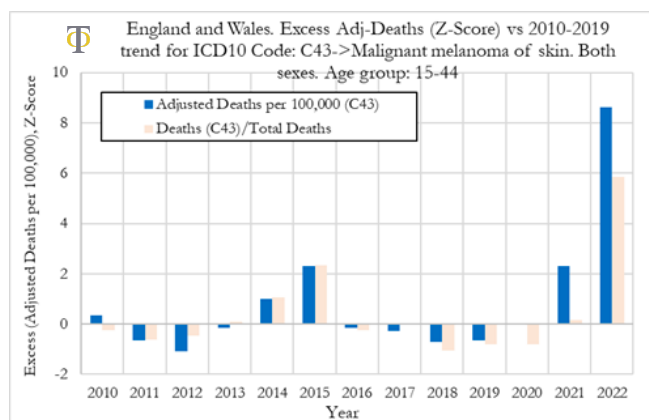
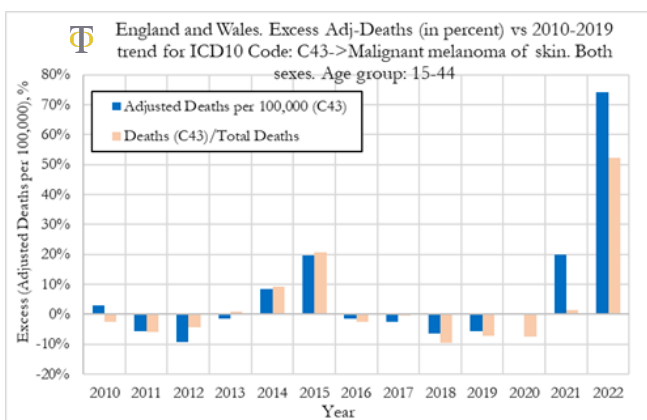
- We can observe that death rates per year from malignant neoplasms of the skin have been trending lower from 2010 to 2019. In 2010 the deaths rate was about 0.8 per 100,000, in 2019 it was around 0.4 per 100,000, a 50% reduction.
- The death rate dropped slightly in 2020 to 0.39 per 100,000 and then rose slightly to 0.41 per 100,000 in 2021.
- In 2022 the death rate jumped to about 0.53 per 100,000.

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**Analysis of Excess Adjusted Death Rates from Malignant Neoplasms of the Skin**

In the Figure below (left) we can observe that the excess deaths rates from malignant neoplasms of skin were about zero in 2020, +20% in 2021, and about +75% in 2022. In terms of statistical significance of the excess deaths, we observe from the Figure (right) that for cancers of skin, in 2020 the Z-score for adjusted death rates was zero. In 2021 the Z-score was close to 2.2, which is a weak signal in statistical terms. In 2022 the Z-score was above 8, which is a very strong signal and indicates that the excess deaths from skin cancers are statistically significant deviations from the 2010-2019 trend.

When looking at changes in the fraction of all deaths attributed to cancers of skin, we observe that the fraction of deaths for these cancers were below trend in 2020 and slightly above trend 2021 (but with low statistical significance). In 2022 however, the fraction of deaths for these cancers jumped about 52%, with a Z-score close to 6, indicating very high statistical significance. It appears that cancers of the skin as a fraction of all deaths deviated significantly from prior trends in 2022.



**Summary:**

- Our analysis shows that the excess deaths rates from malignant neoplasms of skin were about zero in 2020, +20% in 2021, and about +75% in 2022.
- In 2021 the Z-score was close to 2.2, which is a signal in statistical terms, which merits a note.
- In 2022 the Z-score was above 8, which is a very strong signal.
- These signals are corroborated by similar findings when measuring rises in the fraction of deaths from malignant neoplasms of the skin relative to all other deaths with classified causes.

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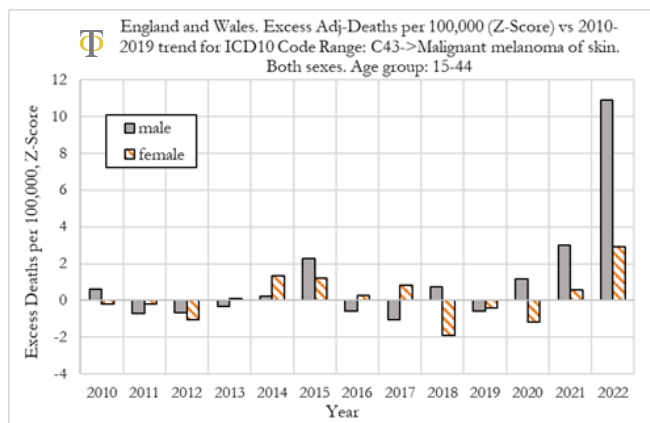
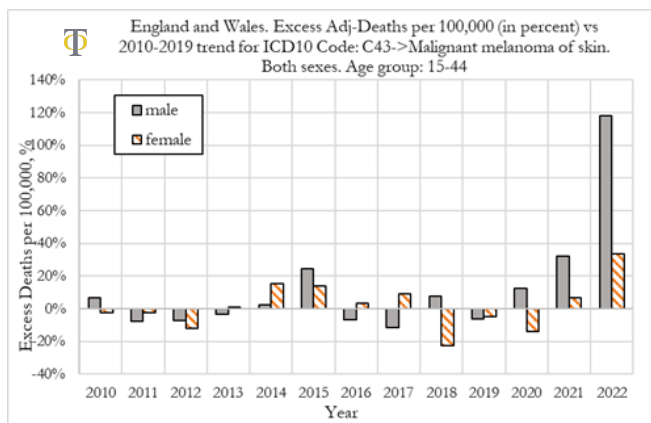
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**Analysis of Excess Adjusted Death Rates from Malignant Neoplasms of the Skin for Males and Females**

We now compare excess deaths rates from malignant neoplasms of skin for males and females aged 15-44, as shown in the Figure below.

When comparing excess death rates attributed to malignant neoplasms of skin for males and females, shown in the Figure below (left), we observe that in 2020, 2021 females showed no noticeable excess mortality, with respective Z-scores close to zero (low statistical significance). In 2022 however, women experienced about +35% deviation from trend with high statistical significance (with a Z-score around 3).

Men suffered rising excess death rates from malignant neoplasms of the skin of about 15% in 2020 and 35% in 2021. The signal strength for men in 2020 was weak (with a Z-score about to 1.5), and in 2021 the signal was strong enough to warrant further investigation (with a Z-score about to 3), as shown in the Figure (right). In 2022 the signal strength for men was very strong (with a Z-score close to 11), with the deviation from trend of being close to 120%.



**Summary:**

- We observe that men experienced a small rise in the excess death rate from malignant neoplasms of the skin in 2020, albeit not statistically significant. For women the excess death rate dropped in 2020.
- In 2021, men suffered worse outcomes than women, with men experiencing a 35% deviation from trend, compared to about 5% for women.
- In 2022, men suffered much worse outcomes than women, with men experiencing a 120% deviation from trend, compared to about 35% for women.
- Further investigation is needed to understand the factors contributing to this difference in malignant cancers of the skin for males and females.