Using shaded contour plots to estimate bathtub curves
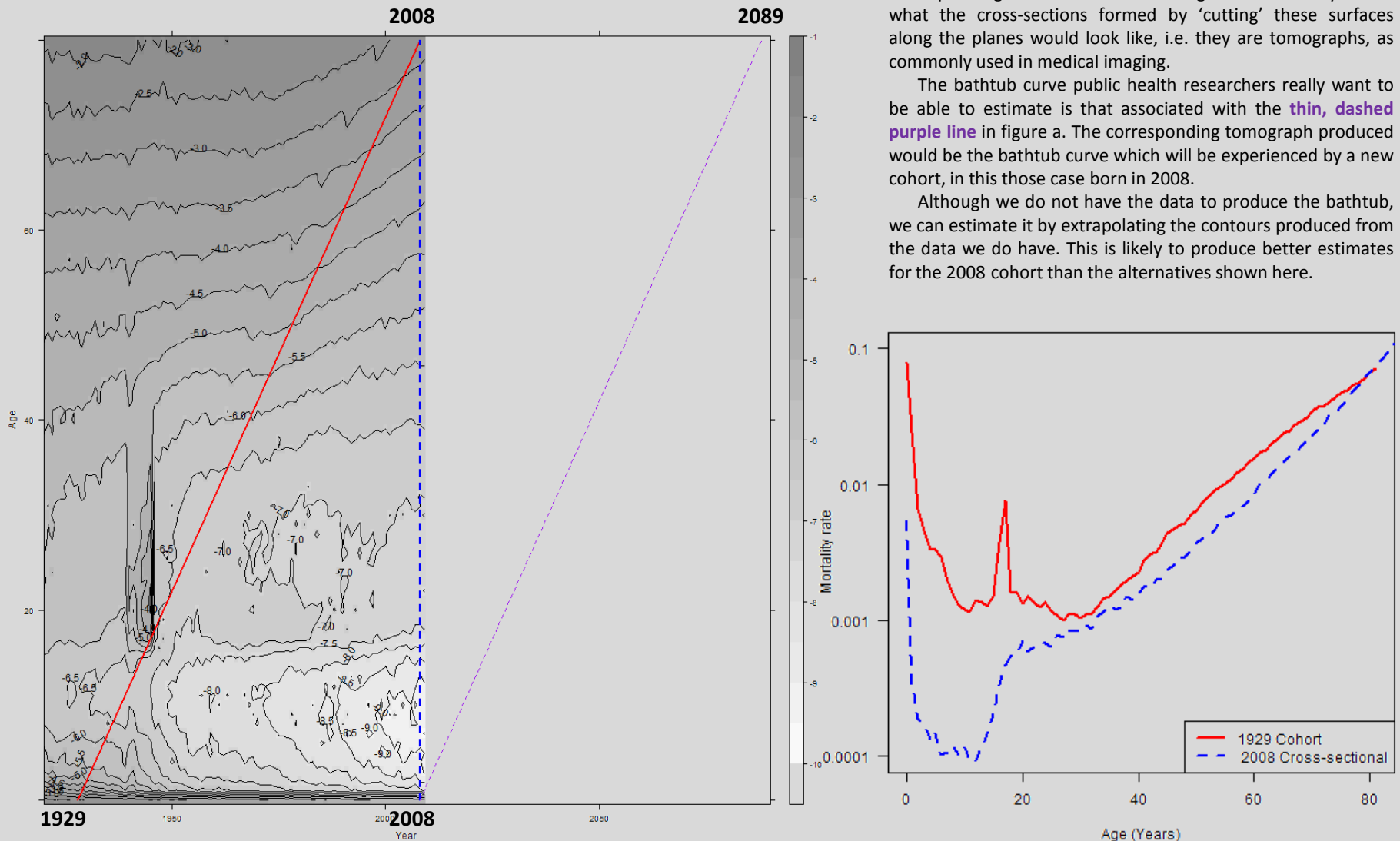
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These figures show how 'bathtub curves', mortality rates as a function of age, can be read from contour maps.

The **red** and **blue** lines in figure a indicate two planes which cut the landscape at right angles to both age and year. The corresponding **red** and **blue** lines in figure b effectively shows what the cross-sections formed by 'cutting' these surfaces along the planes would look like, i.e. they are tomographs, as commonly used in medical imaging.

The bathtub curve public health researchers really want to be able to estimate is that associated with the **thin, dashed purple line** in figure a. The corresponding tomograph produced would be the bathtub curve which will be experienced by a new cohort, in this those case born in 2008.

Although we do not have the data to produce the bathtub, we can estimate it by extrapolating the contours produced from the data we do have. This is likely to produce better estimates for the 2008 cohort than the alternatives shown here.

a) Contour plot of mortality surface for Males, England & Wales with two coloured lines indicating the 1929 cohort (red), and a synthetic cohort (cross section) based on age-related mortality in 2008 (dashed blue line).

b) Mortality as a function of age for the two colour lines added to figure a