

Design homework 1

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PART 1 ANALYSIS

The trend we observe in the data is that the world population overall is increasing. From the 19th century there is a sudden explosive growth, which seems to be only increasing. We observe in this an exponential growth.

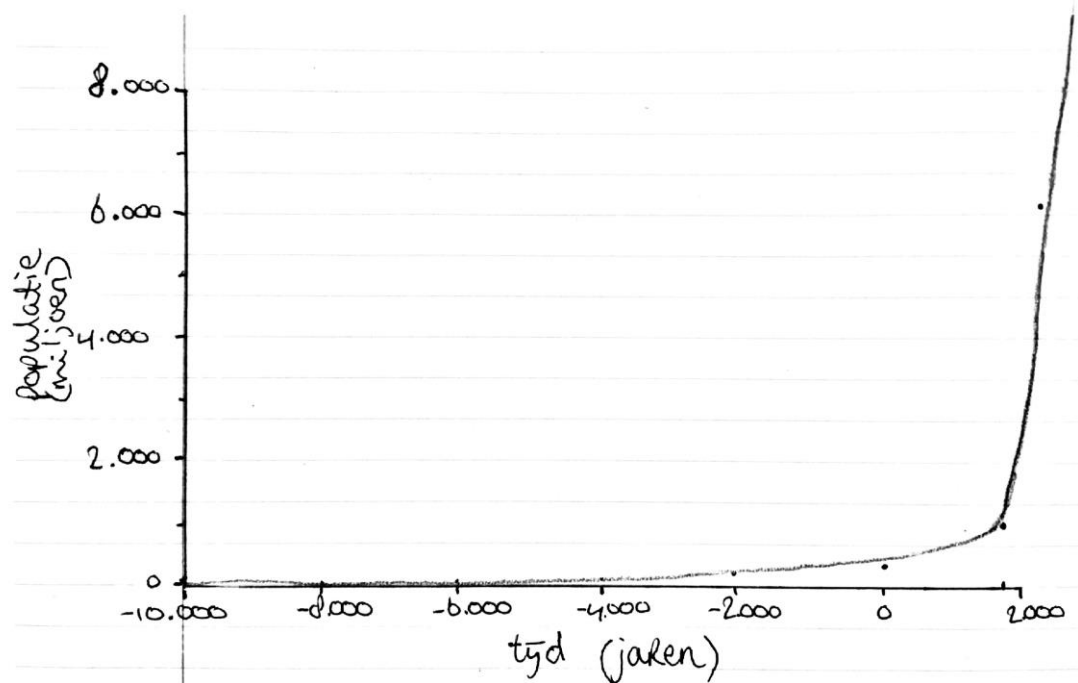
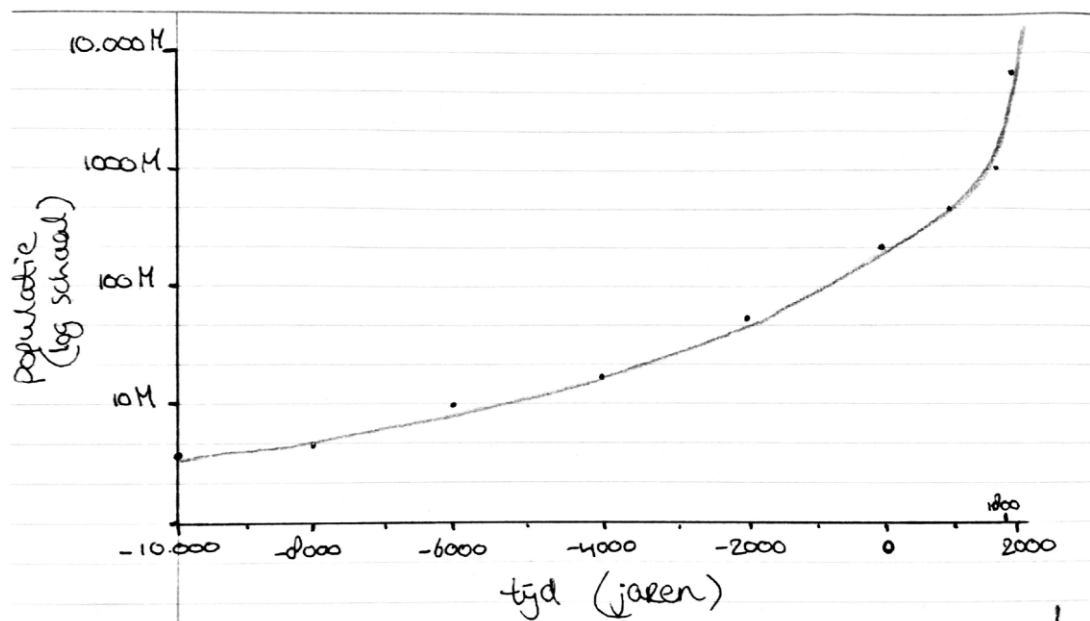
The differences between various estimates are big, with differences of factors 3. In some periods however, the differences between estimates are insignificant. The more we go back in time, the larger the differences between estimates are. In absolute terms the uncertainty is largest for the future estimates, because the differences in these estimates are bigger than the differences between estimates made for the past. In relative terms the uncertainty is bigger for estimates before 1950.

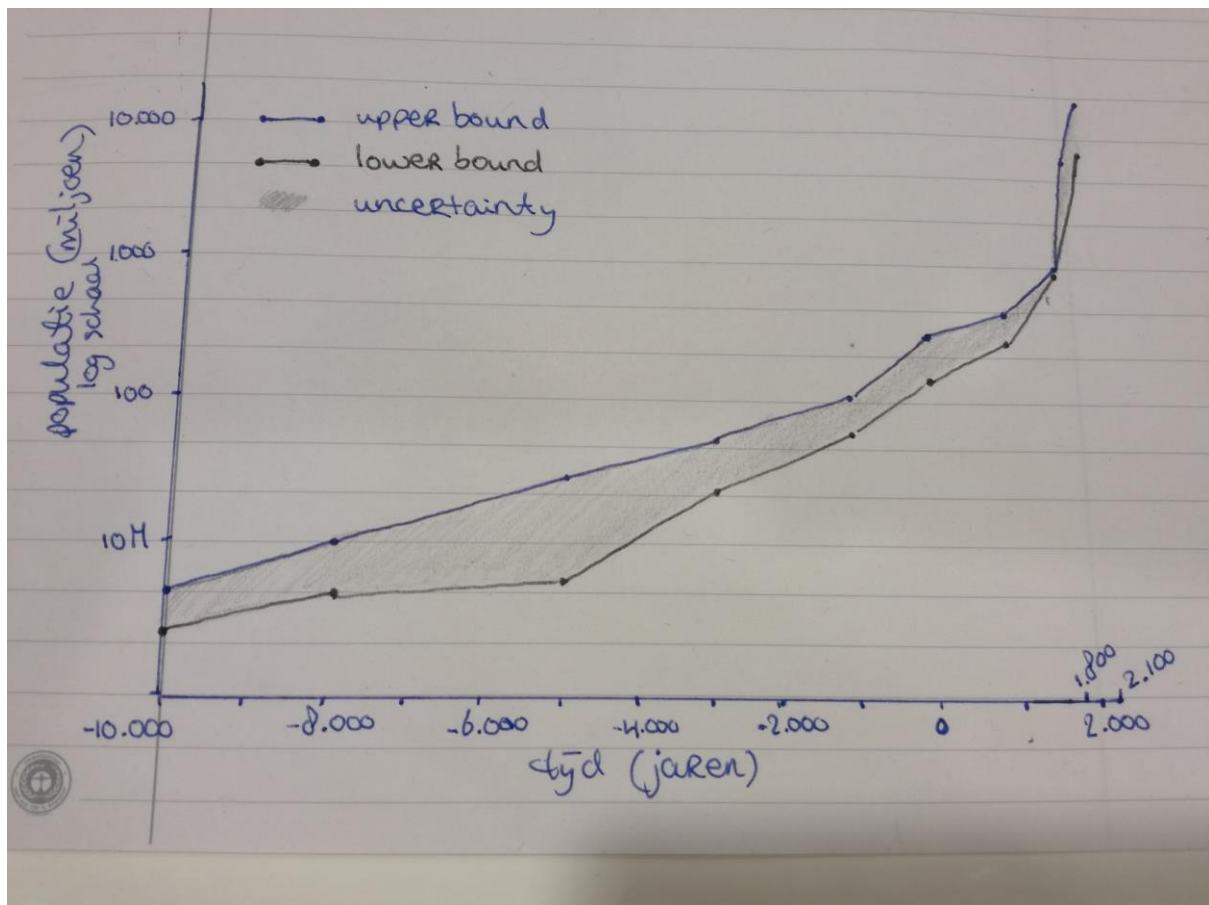
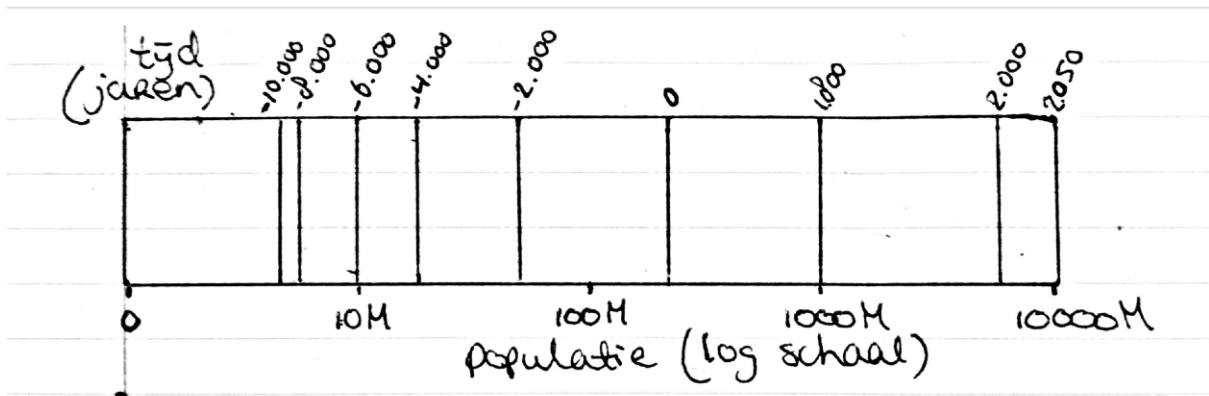
Plotting all the data in the same plot is not practical, because the differences in the data are too big. However, if your time period is small enough both the data and uncertainty can be clearly represented in the same plot.

The effect of linear interpolation on the uncertainty might be small, if the uncertainty is 'stable' over the period of time you are interpolating on. If the uncertainty varies a lot, the effect of interpolation will smoothen your data and provide less information.

We do not think linear interpolation is a suitable method for this data, because the data shows an exponential trend.

PART 2 SKETCHING





PART 3 GROUP REFLECTION

Every graph has its up and down sides, there is no clear winner. Which graph you choose depends on what you want to show and highlight.

The first graph is made on a logarithmic scale, this has the positive effect of showing both the linear growth pre circa 1800, and the exponential growth afterwards in one figure where both are readable. The downside is that it is harder to read the actual population counts for each individual year.

The second graph is made in normal linear scale, while this does make it hard to show both parts (before and after ~1800) in the same figure, it does make very clear just how explosive of a growth the world population has been through. If you wanted to convey to the public how big this change is then this would have been a good way of showing it.

The third graph shows the same data as the first graph, it has mostly the same up and downsides. This visualization is a more compact way of showing the growth.

The fourth graph shows the uncertainty in the data, it shows both the most optimistic and the most pessimistic estimations. the difference between both of these estimations is the uncertainty in the data. if you also wanted to show the uncertainty in the data then this graph would be the best choice.