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Article

Reply to the comments by Peter Winker to "Bielefeld may in fact not exist - Empirical evidence from official population data"

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Reply

Patrick Winter*

Reply to the Comments by Peter Winker to “Bielefeld May In Fact Not Exist – Empirical Evidence From Official Population Data” (<https://doi.org/10.1515/jbnst-2022-0038>)

<https://doi.org/10.1515/jbnst-2023-2002>

To 1:

I think we can safely say that both of the reviewer’s points here are given. The Bielefeld conspiracy is itself the theory required for my argument to be valid; it dates back to 1994 and has been cited from then on in many publications (although not necessarily the most academic ones). This is only the case for Bielefeld; there is no “Wuppertal conspiracy” or similar. I readily admit that I did not go into much detail about the theory’s background and content in the paper due to brevity, but two references therein do: Butkus et al. (2010) and Halle (2013) (both are in German). The Wikipedia article about it (https://en.wikipedia.org/wiki/Bielefeld_conspiracy) can also act as a good starting point, and its mere existence already underlines the theory’s popularity and importance.

The exact reasons why Bielefeld is claimed not to exist (as a city) differ somewhat between the various lines of argumentation, but I have never encountered a line based on a statistical analysis of Bielefeld’s population data (that is, I hope, original to my paper), so inverse causality should not be an issue here.

To 2a:

I agree with the reviewer’s first point by half: It is true that the incentive to exaggerate population numbers due to tax (or similar) reasons is constant over time. However, the decision to give in to this incentive, which would be very illegal, is probably not. It may be argued that the same person in charge will do so repeatedly, but when this person changes, it is unlikely that his/her successor will go down that road, too. For the case of Bielefeld, the city government has changed in 2009, but, as shown in the paper, the anomaly has equally occurred before and after that.

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Regarding the second point, I for one thing doubt that many administrative people will pay attention to (or even be aware of) the Benford law. If this were different, manipulations in official documents even at country-level, like in the balance sheets of Greece (Rauch et al. 2011), should not be detectable so easily. For another thing, Benford-testing is not the only method to identify made-up numbers (see, e.g., Hill 1999), and one who intends to fake data would need to avoid all pitfalls simultaneously.

To 2b.:

These are insightful points, and they have also been addressed by the other reviewer. I had to take the statistical divisions of Bielefeld as basis simply because the only other official structuring (city districts) consists of just 10 districts, i.e. too few for a reliable analysis. It seems that this indeed may induce a potentially constrained (but not prevented) growing and shrinking process. However, as the reviewer correctly notes, this just means that we do not know for sure anymore whether such population data has a particularly strong tendency to be Benford-distributed, since the corresponding argument (given by Ross 2010) is a sufficient but not a necessary one.

Also, I would like to ask a counter question here: Which official city structuring would not be constrained in some ways by governmental regulations? Any (re) structuring will be made with some purposes in mind, and these will in almost all cases include statistical ones, even when the resulting units are not explicitly labeled “statistical”. The intervention the reviewer describes for Bielefeld in 2017 can be an example hereof (by the way, for whatever reorganization has been planned or actually implemented then, the officially reported divisions are exactly the same for 2005 to 2020). For this reason, I would consider my results for the other cities’ units, actually any such results on city units, not as proof but as evidence for those population numbers also being likely to follow the Benford law.

(All references given here are resolved in the paper.)