Reviewer: 1

Comments to the Author

The paper covers its main objective, which is to show the value enclosed in Network Event Data gathered by Mobile Network Operators, and the opportunities associated with these data sharing with public administrations to enable an enhanced decision-taking process for multiple purposes, among them the case of COVID-19 lockdowns monitoring and effectiveness.

In my humble opinion the paper will be suitable for its publication once its authors develop some clarifications, such as the following aspects:

Grammatical and spelling revision should be carried out. Some examples: "social benefits had to be weighed agains commecial and reputational risk", where I guess it should be written "social benefits had to be weighed against commercial and reputational risks"

Thank you for spotting this. We have made spelling and grammatical adjustments.

The following statement lacks context: "Several challenges existed within Telia as it was the first time a collaboration with a Public Health Agency would take place" worldwide, or in Sweden?

It is worldwide. We have clarified this in the text.

It is stated that data from 2019 were also provided together with data from 2020, to enable comparisons of travel patterns with regard to the previous year. Were possible variations on Telis' marketshare and number of total subscribers also provided, in order to discount those effects on the year-on-year insights?

Good question! We have added a simplified overview of how the extrapolation method works.

It is said that "At this time, media reports, personal experiences and rumours were circulating regarding inhabitant's compliance, or non-compliance, resulting in speculation and questions on how effective these new measures were". To measure that effectiveness, did the end user, PHAS, carry out any correlation analysis of mobility data with healthcare data? did the format in which the data were provided allow that kind of cross-data combination between data from different origins? What kind of time and space aggregation standards enable that kind of combination?

Great question! PHAS have not yet been able to perform such analyses but initiatives along that line of thought are on their way. We are planning to look at correlations between traveling patterns and the spread of the disease as measured by different healthcare data as suggested. We are hopeful that the mobility data available at the agency have the potential of finding such patterns but we are at this point of time unsure of the most suitable time and space resolution.

Telia has since the article was submitted also engaged in a research initiative together with telecom provider Ericsson and the Sahlgrenska University Hospital in Gothenburg Sweden.

The purpose of this collaboration is to explore if it is possible to create and refine insight models for planning and predicting healthcare resources and demands by using anonymous and aggregated mobility data from Telia. During this engagement, the mobility data was correlated with number of COVID-19 patients admitted to the hospital, and machine learning models were produced to forecast admitted COVID-19 patients by using mobility data.
https://www.teliacompany.com/sv/nyhetsrum/news-articles/20212/telia-ericsson-and-sahlgrenska-university-hospital-in-sweden-use-ai-to-help-improve-covid-19-planning/

Regarding the following point: "The process of anonymization and aggregation was very well documented at Telia and hence the legal department at PHAS could swiftly approve the collaboration from a legal and personal data protection perspective". Could some metrics be provided? (e.g. the k-anonymity and l-diversity thresholds adopted to ensure anonymization).

We understand this may be of interest to the reader. While the full process is considered a trade secret, we will share the k-anonymity metric: throughout the full process there needs to be at least five mobile phones that have the same behavior. The manuscript as been updated to reflect this on page 5.

In the next paragraph: "Also, the commercial contract was reviewed by the agency's procurement function to be in line with those rules. The formal decision of signing the contract was made by the General Director of PHAS." it is not very clear if we are still talking about a non-profit Data Use Agreement, or a Commercial Contract with a revenue; perhaps those issues are considered confidential, but it just seems to be a bit confusing given the overall context of the cooperation to read about a commercial contract.

The following paragraph in the article has been updated to clarify how the relationship evolved from from pro-bono to commercial:

"As the initial period of the collaboration progressed, and there were no signs that this pandemic would end in the short term, the collaboration was extended past the initial period and a new commercial contract was put in place that started on July 1 2020. At PHAS, the definition of the contract and the scope of the delivery was discussed at several levels. Also, the commercial contract was reviewed by the agency's procurement function to be in line with those rules. The formal decision of signing the contract was made by the General Director of PHAS."

The areas that could be further looked into in order to strengthen preparedness for potential future pandemics are a strong point in this paper; these learnings could be useful to other entities willing to cooperate in future business to government data sharing initiatives, however, I am missing some reflections on the technical aspects of it (platforms used to generate and share insights, format of the data shared, analytical tools used, level of

automation of the data deliveries, etc.). It would also be appreciated some level of detail on the human capabilities on both sides, and the level of common understanding form an analytical point of view, necessary to enable the cooperation (initial trust in the data statistical representativeness, standards for data aggregation, etc.).

Great suggestion. The last section on page 14 has been extended to also include technical aspects and some more technical detail on the platforms that were utilized has been added on page 6.