This study focused on the impacts of traffic congestion on air quality and the associated health burden in urban areas in China. In addition, the authors also developed a new temporal-allocation approach in transportation emission to improve the current emission inventory by using the real-time congestion data. The manuscript is well written and organized, but some minor points should be improved before the publication.

- In section 2.1, the authors used the ECF value only from the gasoline vehicles. Can the authors briefly discuss the uncertainties of this method since the diesel vehicles is also an important contributor to the transportation emission?
- In section 2.2, the authors mentioned that the CMAQ model was with “updated SOA formation mechanism”. What are the improvements of this model?
- Can the authors add the WRF scheme set-up to provide more details of the meteorology simulations?
- The study was conducted in the 2020 when the COVID-19 happened across China. If possible, could the author simply discuss/compare the congestion impacts during the COVID-19 period and normal year (such as 2019)?
- The manuscript mentioned that the population data is from China's Seventh Census. Please explain more how to use/adjust the population data.
- Please improve the graphic abstract such as adding the unit of the histogram figure and deleting “(a)” in the regional plot.