

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2022-218

Anonymous Referee #2

Referee comment on "Spatial accessibility of emergency medical services under inclement weather: a case study in Beijing, China" by Yuting Zhang et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-218-RC2>, 2022

Summary: This paper presents a study that evaluates the spatial accessibility of emergency medical services during inclement weather, including rain and snow, and measures the impact of precipitation on traffic speeds. It compares the accessibility of emergency services during inclement weather to a baseline value calculated two weeks before the event and two weeks after the event. The results highlight four days when emergency medical service accessibility particularly decreased. The study also shows that snow has a particularly large impact on emergency service accessibility. The study has the potential to provide a scientific basis for discussions with transportation and urban planners to improve access to emergency medical services, particularly in rural areas or areas with unequal conditions.

General comments:

- The study includes examples of natural hazards and the difficulty of reaching emergency services in a timely manner (L. 55- 63). Can you provide the references for these examples?
- The study presents several case studies that use different models (L. 70 -104). Could you please summarise the research gaps in this area?
- The text gives a good description of the resolution of the data used. In line 157, please define "inclement" and "normal" weather in the datasets. Is a little rain already considered bad weather?
- Some sentences are very long sentences and compromise readability:
 - L. 22 – 25 ("and" is used twice in short succession)
 - L. 50 – 55
 - L. 74 – 79
 - L. 91 – 95
 - L. 117- 123

- L. 141 – 145
- L. 366 - 373
- L. 77: Please refer to the correct citation style and do not capitalize references: "Jones and Bentham...".
- L. 100: Could you please write out the abbreviation "PF-prone" when it is first mentioned?
- L. 132: Instead of referencing the link in brackets, please refer to the correct citation style.
- L. 145: "Beijing was attacked by a rainstorm...". Could you please paraphrase this sentence?
- L. 162: Section 2 has a wrong numbering of the subsections. Should this be 2.2.1. instead of 2.1, 2.2.2. instead of 2.2?
- L. 171: Instead of referencing the link in brackets, please use the correct citation style.
- L. 183: "third-level grade-A hospitals." Could you please provide a brief explanation of hospital classifications that might help readers if they are not familiar with it?
- L. 255: Could you please write out the abbreviation of "OD", when it is first mentioned?
- L. 465: Could you rephrase the phrase "we could guess"?
- **Figures:**
 - Could you please specify which software tools you used to create the figures?
 - L. 305: Figure 4 is difficult to read. Is it possible to highlight some particular days with observations?
- **Discussion:**
 - L. 435: In the discussion, it would be good to refer to the previously mentioned studies in the introduction and draw a link: How does this work build on the previously published literature body? Where do the results align, where do they differ?
 - L. 467: As next steps, you mention that future studies should consider data on "extreme precipitation" events. Are there other data analyses that can be done with the available data?

Specific comments:

- L. 24: Although it is mentioned in the Abstract, "inclement weather" is quite general. Later, in the introduction, the study refers to "rain or snow" (line 51). How much rain or snow is considered inclement weather, or is a little rain already inclement weather?
- L. 63 - 65: Since this is a very general context, could you please provide some more references?
- L. 78: Could you please name some references that use the 2SFCA method?
- L. 112 - 113: Could you please state the contribution of the study more clearly?
- L. 157: Can you give a brief description of the road network topology?
- L. 203: How many days with precipitation were included in the sample?
- L. 298: The analysis focuses on specific holidays (July 1st, September 10th). How transferable are the results of your study to other days?
- L. 254: "population medical accessibility index". The term can be a little difficult to understand. Can you briefly explain the term in more detail?

Technical corrections:

- L. 31: "towns with lower baseline EMS accessibility **are** more vulnerable to inclement weather. Furthermore,".
- L. 53: For quotations in continuous text, please insert a space in between the text and the reference: "The efficiency of emergency services is highly vulnerable to inclement weather conditions[...], and sometimes block roads completely (**Agarwal et al., 2006**;..."
- L. 152: For quotations in continuous text, please insert a space in between: "Andersson and Stålhult (2014) used network analysis"
- L. 188: How about phrasing the sentence: "The data records present the population size" or "The data records depict the population size..."?
- L. 192: How about phrasing the sentence: "Figure 2 presents" or "Figure 2 illustrates"?
- L. 315: Is it "In which the 15-min EMS coverage rate **reduced** by ..."?
- L. 319: "...which **led** to a significant reduction in overall EMS coverage..."
- L. 418: Here, should it be "within the **Sixth** Ring Road extent"? Later, in line 363 and in line 365, the text refers to "within the Sixth Ring road".
- L. 428: "...were almost no regions where the population medical accessibility index **decreased**."