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Yes, all the data used by this paper are publicly accessible. We upload

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**Comments to the Author**  
  
1. Is the manuscript technically sound, and do the data support the conclusions?  
  
The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #1: Yes

Reviewer #2: Yes

2. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #1: No

Reviewer #2: Yes

3. Have the authors made all data underlying the findings in their manuscript fully available?  
  
The [PLOS Data policy](https://urldefense.com/v3/__http:/www.plosone.org/static/policies.action*sharing__;Iw!!KGKeukY!kucfxaRme5LxitUh5oRFWfbWbKThYIMPJSo5NhND4z1Uk5sRRVTtOjrKWSj7fQGGbiY$) requires authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception (please refer to the Data Availability Statement in the manuscript PDF file). The data should be provided as part of the manuscript or its supporting information, or deposited to a public repository. For example, in addition to summary statistics, the data points behind means, medians and variance measures should be available. If there are restrictions on publicly sharing data—e.g. participant privacy or use of data from a third party—those must be specified.

Reviewer #1: No

Reviewer #2: Yes

4. Is the manuscript presented in an intelligible fashion and written in standard English?  
  
PLOS ONE does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors here.

Reviewer #1: Yes

Reviewer #2: No

5. Review Comments to the Author  
  
Please use the space provided to explain your answers to the questions above. You may also include additional comments for the author, including concerns about dual publication, research ethics, or publication ethics. (Please upload your review as an attachment if it exceeds 20,000 characters)

Reviewer #1: This paper studied an interesting and timely research question regarding the transit demand change during the COVID-19 pandemic. The authors employed the data from Transit App to capture transit demand and derived various indexes to describe the change patterns. Overall, this study offers timely data analytics to monitor transit demand during COVID-19. However, there are still several notable concerns with this paper. Detailed comments follow:  
  
The methodological contribution of this paper is limited. Most analyses conducted in this study are descriptive, and the whole paper lacks convincing and strict model build and description:

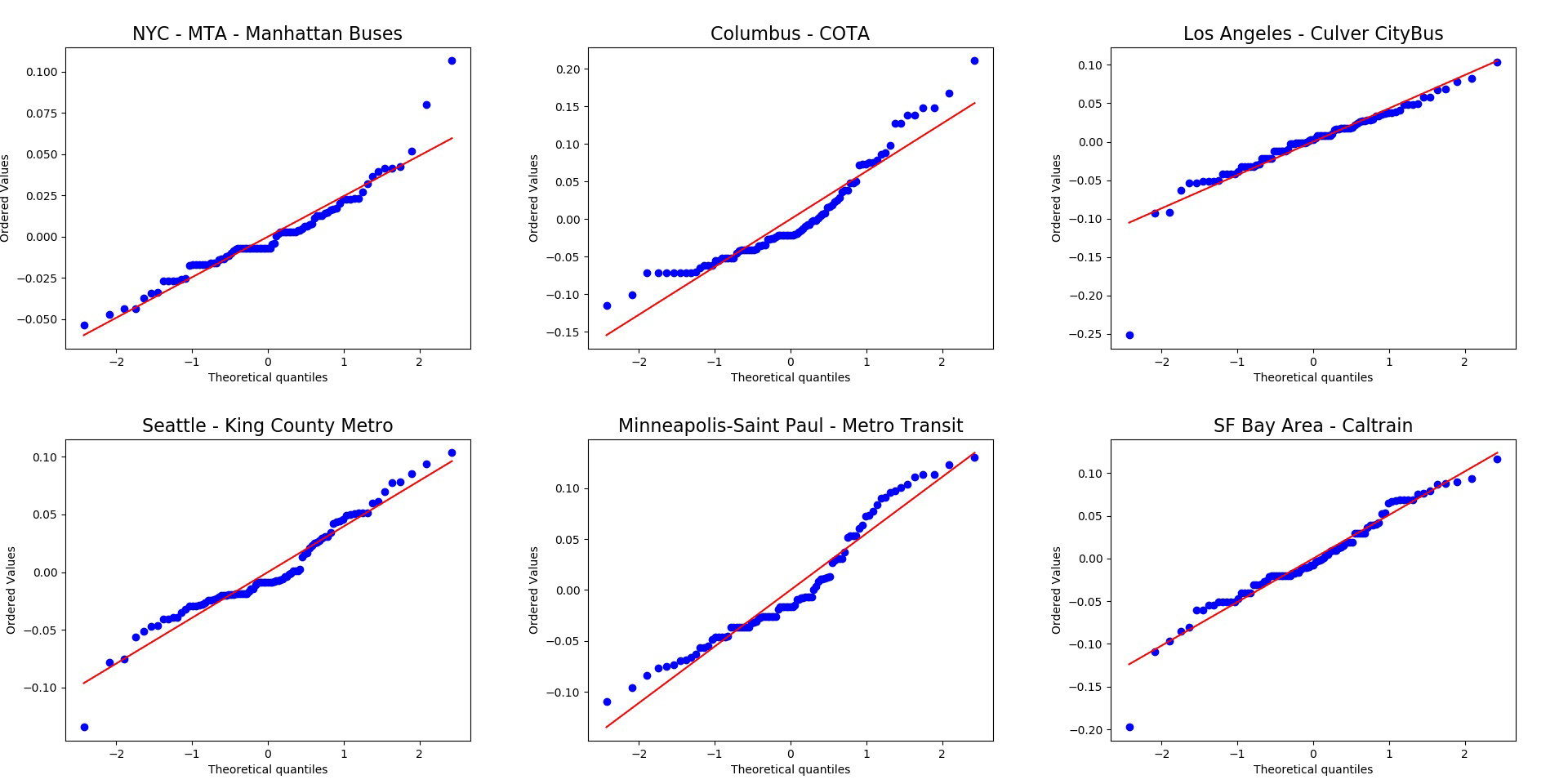
**Response**: we appreciate the comment and we admit that the methodological contribution of this paper is indeed limited. The techniques used by the paper are not new.

1) The authors employed a logistic function to fit the transit demand data for each transit system. First, the logistic function is quite different from the logistic model, the authors should be careful when describing their methods. Second, I failed to found any results of the logistic functions. The authors should at least give a summary of the fitting accuracy and statistical significance of the logistic functions for different transit systems.

Response: This is a reasonable suggestion and we made corresponding changes and clarifications correspondingly:

First, the logistic function is indeed different from the logistic model. We changed all “logistic model” to “logistic function” in section 2.2 to avoid confusions.

Second, we agree with the comment and we added three test to show logistic function’s goodness of fitting: R-squared, Shapiro-Wilk test p-value, and QQ plots. We added corresponding method explanations in section 2.2; we also added a new section to interpret the logistic function fitting results in section 3.1. The median of all model’s R-squared is 0.969 and 5% percentile is 0.92, which shows a very high fitting accuracy. Shapiro-Wilk test shows that 30 of 119 systems’ residual cannot reject the normality assumption. However, considering the sensitivity of Shapiro-Wilk test for large sample size (>50), we moreover used Q-Q plots to test the normality of the residuals. The Q-Q plots show that the results show that each system’s actual quantiles are very close to the theoretical normal distribution quantiles (we show some typical plots in Picture 1). Although many systems’ residuals do not pass the strict normality test due to outliners and test’s high sensitivity, their Q-Q plot still indicates their normality as shown in Picture 1. We can conclude that logistic function can properly fit the transit demand data with very high fitting accuracy.



Picture 1: QQ plots of some transit systems that did not pass the normality test.

2) When modeling the factors related to floor value, some essential variables are missing. For example, the population density, the job density, and the factors related to transit accessibility (for example, the number of transit stations in each city. The data can be derived from OSM POI). The authors should do more literature review regarding the built environment and public transit to understand which covariates are essential.

We appreciate the comment and added these proposed factors to the model. We used population density and employment density (employed civilian population 16 years old and over) of the county-equivalent. It turns out the population density and job density are highly correlated with the ratio of working from home, therefore we did not add the two variables to the final model duo to multicollinearity. It is also very intuitive: the industries that can work from home are naturally rooted in metropolitans, high-tech centers, and university cities, which generally have higher population and employment density.

3) Is the simple linear model appropriate to fit the floor value? Do the data meet the normality assumption? How to handle spatial auto-correlations? The authors should address these issues before using an OLS model.

4) Why the authors only build a model for floor value, while ignoring the other indexes like cliff and floor points, response intervals, the decay rate?

The visualization part is insufficient also. At least two figures are important but missing. First, a figure of the transit demand varying patterns across the study period. Second, a figure visualizing the observed data versus the fitted data using the logistic function. The indexes like floor value, cliff and floor points, response intervals, the decay rate, can also be annotated in the figures.

Some other minor comments:  
1) The authors should involve a proofreader to improve writing. Many words are unprofessional and hard to understand. For example, the floor value mostly means the closest integer less than or equal to a given number, rather than the lowest plateau value the authors want to express.

2) The holidays should be excluded from the study periods due to the unusual human mobility patterns.

3) The authors should also report the variables with insignificant P-values in Table 1.

4) In Line 353, why does the ratio of female have high multi-collinearity with the ratio of African Americans?

Reviewer #2: This interesting paper investigates the impacts of the COVID-19 pandemic of public transit ridership across major systems in the US. The main data supporting this research are provided by the Transit app. It is a very timely effort, focusing on an important topic with a strong tie to the society. Methods are adequate. But I have several concerns for the authors to address.  
  
1. Introduction section is not very motivating. For example, why is it important to study the changes in public transit ridership, along with some metrics like the floor value and so on? What knowledge do we gain from this? How can this knowledge be beneficial to the society? The authors could’ve done a better job discussing these points.

2. My major concern is that there is no lit review in this paper. Without discussing previous studies of relevant scopes, how can we know the research gap and the contributions of this work? It is important to add such a section to back up your ideas.

3. Variables. The authors should justify why some variables are selected. I am concerned about a few varaibles. One such variable, for example, is the occupation type factor. As described in lines 168-169, “Information, Financial activities, and professional and business service” were selected and adopted in the model. The assumption, as detailed in lines 164-165 and line 169, is that these types of workers are more likely to work from home during this pandemic and thus areas with more of these workers are more likely to experience a greater hit in ridership. This assumption/assertion is somehow problematic. I think these subgroups are less likely to use public transit but instead rely more on private vehicles before this pandemic. That said, they may not be an important component to the typical ridership. Therefore, looking at communities with higher percentage of these workers for examining sudden ridership change is less convincing.  
In addition to the variables already included in the model, I think the number of homeless people should be considered. Homeless people are more likely to take/occupy public transit, especially in large cities like NYC. As this particular subgroup of population reportedly has higher infection risk, the related transit systems may be affected more severely. This can also be related to the awareness factor discussed in the paper.  
  
4. Provide more details. Throughout the paper, the authors claimed that the Transit app is a widely used app. The only statements related to this is in lines 99-101—“the app covers over 200 cities aournd the world with … download on…” This is insufficient to back up the point that it is a widely used app, and thus leading me to question the representativeness of the data. As the study area is the US, so the authors should provide more details about the user coverage and usage stats (ideally some comparisons with other competitors for showing its market share) to define how “widely” it is being used in the US.  
More details about methods/analyses. Section 2 describes the analyses/methods, but I find it a bit loosely connected. More details should be provided to better connect these steps and help readers get the full picture.  
I think it would be great if every city in the maps is labeled.  
  
5. Figure 1. Why COVID curve (orange) is more prominent than the typical curve (blue)?  
6. There are many typos and formatting issues in the paper, making it difficult to read. The language should be improved.