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REVIEWER REPORT of

Title: Breaking Barriers: Improving Patient Adherence to Appointments and Provider Productivity through Telehealth

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Reviewer:

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Summary This study examines the effects of telehealth on patients' adherence to medical appointments and punctuality. By partnering with an American medical provider that adopted telehealth during the pandemic, the study analyzes the effects of telehealth on the outcome variables (probabilities of no-show and late arrival) with observational data from January 2020 to December 2021. The results show that the adoption of telehealth at healthcare providers significantly reduces no-shows by 3.5 percentage points (26.5%) and late arrivals by 9.7 percentage points (31.0%). Moreover, the study shows telehealth is particularly effective in improving adherence to follow-up appointments compared to new patients. In addition, the study also found that telehealth can reduce health disparities by fostering access for underserved populations.

Empirical Analysis

1. The study suggests that the adoption of telehealth by healthcare providers reduces no-shows by 3.5 percentage points (26.5%) and late-arrivals by 9.7 percentage points (31.0%). However,

it is unclear whether the improvement is induced by the potential addition of patients who were attracted by telehealth. As mentioned in the manuscript, telehealth provides patients with more flexibility in receiving treatment which yields reduced barriers to visiting healthcare providers. Thus, the adoption of telehealth increases the overall visits (lines 18-30, page 5), possibly by introducing patients with high virtualization potential, such as mental health (line 31, page 5). Moreover, according to Figure 1, the monthly total appointments (in-person and telehealth) from March 2021 seem to be more than those before the pandemic. This suggests that telehealth expands the overall demand. Consider such an example: Before the deployment of telehealth, patients A, B, C, D, and E have appointments with a clinic. Among the five patients, patient E cannot make it to the appointment, resulting in a no-show rate of 1/5. After the clinic's introduction of the option of telehealth, patient F is attracted to the clinic by the telehealth service, resulting in a no-show rate of 1/6, which is lower than that of 1/5. In this scenario, telehealth reduced the no-show rate by adding online visits, which is shown to have a lower rate of missed appointments (lines 41-50, page 6). It is unclear whether patient E's motivation to show up for the appointment is affected by telehealth.

The above issue causes two issues. First, it reduces the reliability of the effects of telehealth in reducing no-show behaviours. Second, attracting more virtual patients, potentially those with low-severity conditions, deprioritizes the appointments of patients with high-severity conditions. This may lead to healthcare resource misallocation.

2. Same for the outcome variable $Late_i$, can you rule out the possibility that the reduction in $Late_i$ is affected by the addition of virtual visits? I wonder if the additional patients attracted by telehealth are more self-motivated so that they are less likely to arrive late.

3. According to Figure 2, the left figure supports the hypothesis that "Telehealth appointments re-

duce no-shows more significantly for follow-up appointments than for new patient appointments". However, the right figure suggests that telehealth appointments enhance punctuality more significantly for new appointments than for follow-up appointments. It would be interesting to explore and interpret why new and follow-up patients benefit differently from telehealth in terms of no-shows and punctuality

Minor issues

1. The study suggests that telehealth can mitigate the health disparities among different social-demographic groups. It might be interesting to explore the effects of telehealth on "habit formation" of show-up and punctuality behaviors. For example, you can check whether the effects of telehealth persist after its removal.

2. Section 5.2 shows that telehealth appointments cause a higher revisit probability, the authors argue that this indicates telehealth cannot fully substitute in-person visits. I wonder if the higher revisit probability for telehealth is driven by the increase in their perceived ease of telehealth as they already had experiences of using telehealth in the previous visit. Thus, the increased revisits may not necessarily mean that the treatment of telehealth is not as good as in-person visits, instead, patients revisit the clinic because the barrier to the provider decreased.

3. The predictors included in the fourth and fifth columns of EC.11 seem to be identical. What is the differences between the two columns?