1. Title: Effect of Covid-19 and the enacted policy measures on individual travel behavior

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3. Abstract: Between August 2019 and January 2020, we carried out a large-scale tracking study involving 3,000 people in Switzerland. Participants were tracked using the GPS–based travel diary app “Catch my Day” for a total of 8 weeks based on a rolling recruitment design. The app recorded travel choices and imputed the chosen travel mode. Although the study was officially finished by the end of January 2020 and participants had received their compensation payments, around 300 participants continued to record their travel behavior voluntarily. After the Covid-19 crisis reached Switzerland in March of 2020, we asked all participants to re-start tracking in order to learn about the implications of the enacted policy measures for personal mobility. Roughly half of the participants agreed to participate in this second study, and we are in the process of tracking the mobility of around 1,000 people.

Unlike other tracking studies that are currently ongoing in Switzerland and elsewhere, we have pre-crisis observations for the same individuals, along with demographic characteristics and preference parameters that were collected during the previous study. For example, we observe that the effect of the containing measures differs by age and income (the proportional reduction of travel is lowest for the lowest income category as they have to keep working). This unique data set will allow us to compare the current travel behavior with the baseline before the Covid-19 crisis and thus determine the effect of the epidemic, and of the measures enacted to contain it, for different segments of the population. Among other things we are measuring the effect of the governmental restrictions on participants’ computed activity spaces, which are based on the 95% confidence ellipse of the activity locations weighted by duration. The activity spaces serve as important inputs for epidemiological models of disease propagation. The results from the tracking data are available at https://ivtmobis.ethz.ch/mobis/covid19/reports/mobis_covid19_report_2020-06-04.html.

We will carry out another participant survey to collect additional information about risk preferences, the beliefs about the danger of Covid-19 to the respondents and to others, the frequency of online purchases, the time used for home office, the preferred sources of information and personal views extending or relaxing the special measures in the near future. The survey will conclude with a stated mode choice experiment for different trip purposes. By randomly varying the level of the assumed prevalence of Covid-19 in the general population (along with the private costs of travel), we will be able to identify the impact of the disease threat on mobility.

Our results will be useful to improve behavioral models about travel choices and to predict the effect of future measures, such as the tightening or relaxation of current restrictions. This will help inform policy makers about the consequences of Covid-19-related mandates and thus facilitate an evidence-based analysis of the costs and benefits of policy measures in the current pandemic and similar challenges in the future.

4. Data description

We generate our own data during this project. There are two types of data. First, there is the tracking data measured with the app. The data from the previous study is stored at a server at ETH Zurich. The new tracking data is being compiled and processed every day.
Second, we have data from different surveys involving the participants: An initial and a final survey from the original study, plus a survey of the current participants. The data will be made available in an anonymized version. Respondents’ tracks and survey responses can be linked via a participant ID.

5. JEL codes: I12, I14, I18, R41, R49

6. Keywords: Covid-19, coronavirus, mode choice, travel behavior, stated choice experiment, tracking, activity space