

1.5 Meter Monitor

FACTSHEET 21 JULY 2021

Since March 2020, several measures have been installed to mitigate the spread of the COVID-19 virus. With the introduction of vaccinations and the infection rates dropping at the beginning of June 2021, the government decided to loosen up several of these preventive measures. Shortly after this, however, infection rates started to rapidly increase, which has led to the reinstallation of some of these measures. Social distancing is currently the key measure operative, but to what extent do people still comply with this measure? How crowded are the streets of Amsterdam currently? Do people keep a 1.5-meter distance?

Based on footage of municipal surveillance cameras, we report on the status of social distancing and crowding on the streets of Amsterdam. We show developments during the day and over the weeks. In this fifth factsheet, we add an additional twelve weeks to the data from the last factsheet. Thus, we cover the period from March 5th, 2020, to June 19th, 2021. Additionally, in this factsheet, we provide insight into post-lockdown behavior after the two largest lockdown periods starting in March 2020 and December 2020.

Method

We use video footage recorded by 57 municipal surveillance cameras in Amsterdam (see Figure 1 for their location). These recordings are stored for this project by the Amsterdam Police Department and obtained with the permission of the Dutch Public Prosecutor. The research was approved by the Ethics Committee for Legal and Criminological Research (CERCO) at Vrije Universiteit Amsterdam.

Video footage of the 57 cameras was recorded on all Thursdays and Saturdays from 9 am to 8 pm starting March 2020. So far, data is available until June 19th, 2021, with the exception of the days between July 23rd and August 29th 2020 (no data was stored in this period due to practical circumstances). At each full hour of the available footage, a still frame was sampled from each camera available.

To automatically detect people in these still frames and to measure the number of contact moments (defined as instances where an individual keeps less than 1.5-meter distance from another individual), a computer vision algorithm was used. This algorithm was developed by the research team and successfully passed performance tests, also on videos recorded during darkness, against a subsample of still frames observed and coded by human coders that we used as benchmark. In total, for the analyses presented in the current factsheet, we analyzed 63,985 still frames.



*This project is part of the COVID-19 research program funded by ZonMw.
See <https://corona-compliance.org/>*

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For technical reasons, some intended observation points are missing from the data. These reasons include occasional camera failure and video conversion failures. To optimize the available information and reduce bias, we used a statistical approach known as multiple imputation to compute outcome measures for the missing data points.

Figure 1: Placement of the municipal surveillance cameras used for the study



Results

Figure 2 shows the observed number of people on the street (circles) and the observed number of contact moments (triangles) over the course of the day on Saturdays (red) and Thursdays (blue). Saturdays are more crowded than Thursdays, and crowding is particularly high between 12 pm and 6 pm. Further, the number of contact moments follows the same pattern over the day as the number of people on the street, indicating that the number of contact moments increases as the streets are getting more crowded.

Figure 2: Average number of people on the street and contact moments on Saturdays and Thursdays

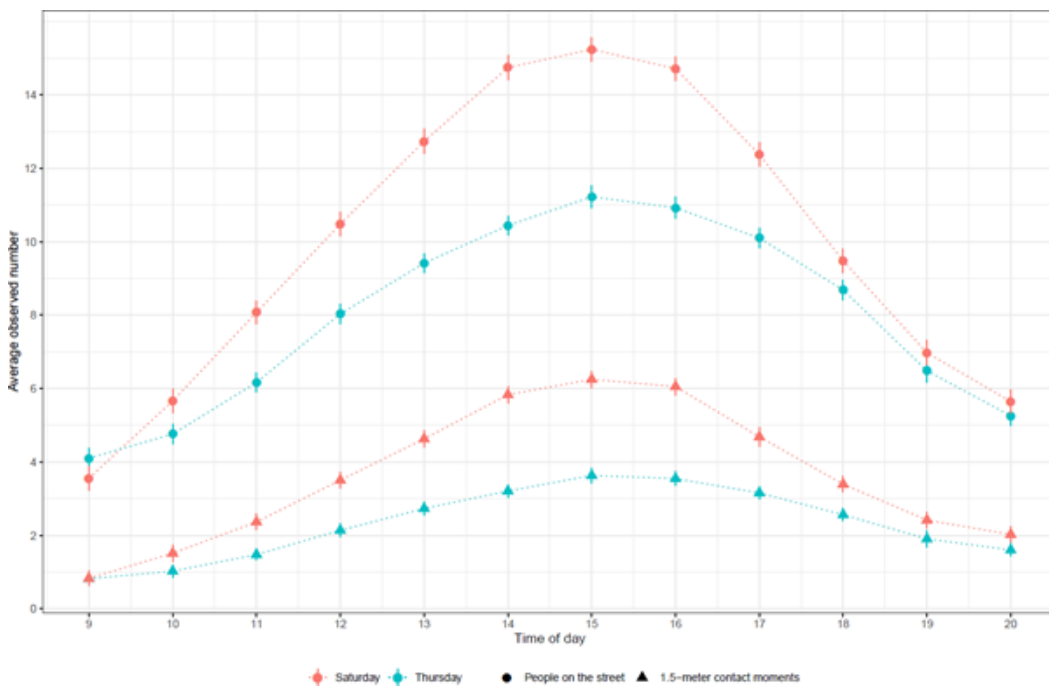
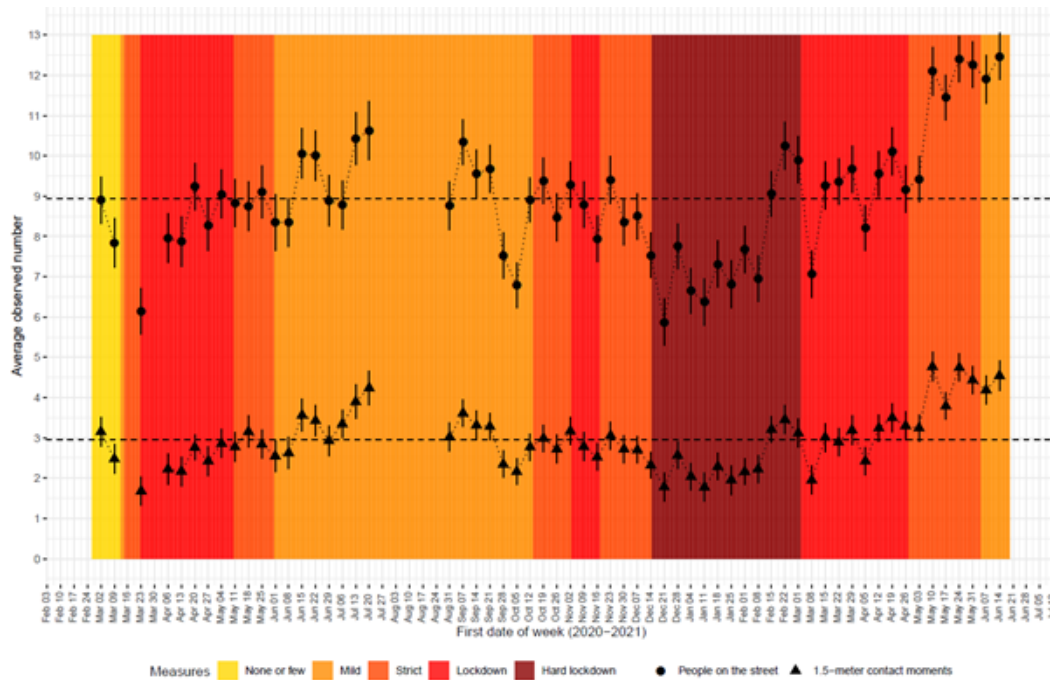


Figure 3 illustrates the average numbers of people (circles) and contact moments (triangles) per week. To facilitate the interpretation of the data, these figures are set against the strictness of the measures in place at that time, indicated by the background colors. Most notably, in both 2020 and 2021 we see a fairly dramatic increase in numbers of people and contact moments from the beginning of May, suggesting that these upward trends may be linked to the termination of the lockdown and arrival of the spring weather, which invites for more outdoor activities. Adding to this interpretation, it should be noted that the increase in number of people and contact moments were significantly larger in the period after the recent third lockdown (December 2020 – April 2021) compared to the period following the first lockdown (March – May 2020). This may indicate that people have fallen back into their pre-pandemic, everyday routines to a larger degree than previously.

Figure 3: People on the street and contact moments in Amsterdam between March 2020 and June 2021



Note. The strictness of the measures was defined as follows: Yellow indicates none or very few measures (e.g., the Prime-Minister asking us to not shake hands); light orange indicates mild measures (e.g., mandatory closing times for bars, limitations to the allowed number of visitors indoors); bright yellow indicates strict measures (e.g., certain sectors closed down, limits to sport events); red indicates lockdown (e.g., schools closed, flow locations closed); and dark red indicates hard lockdown (e.g., all non-essential shops closed).

Discussion

With the current relaxation of many COVID-19 measures, the number of people and contact moments are rising to an ultimate high. This indicates that people seem to comply less with the still-operative 1.5-meter distance directive than in the previous phases of the pandemic, possibly also because the streets are getting more crowded. In the public discourse, it has been suggested that we are facing a new ‘roaring twenties,’ with a feeling of freedom and exuberance among citizens now that the end of the 15-month long pandemic is in sight. On the one hand, this is not surprising after being in a lockdown for more than nineteen weeks and the rising temperatures outside. On the other hand, with the risk of a fourth wave predicted by the Outbreak Management Team—given increasing infection rates and the rise of the Delta variant in a population that is not fully vaccinated—these behavioral trends should be closely monitored and potentially regulated.



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