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Calculation methods for estimating the number of active SwissCovid apps

EXPERIMENTAL STATISTICS

Neuchâtel, 2020

Published by:	Federal Statistical Office (FSO)	**Layout concept:**	Section DIAM
Information:	Rolf Weitkunat, tel. +41 58 4856724	**Downloads:**	www.statistics.ch
Editors:	Rolf Weitkunat, FSO	**Copyright:**	FSO, Neuchâtel 2020
Topic:	14 Health		Reproduction with mention of source authorised (except for commercial purposes)
Original text:	German		
Translation:	FSO language services		

Since 25th June 2020, the SwissCovid app has been available to the public for download and can be voluntarily installed and activated. The methods used to estimate the number of active SwissCovid apps are described below. Since the methodology used may still evolve, the number of active apps is published on the FSO microsite as experimental statistics. The method shall not change without prior communication and the corresponding quality assurance shall be ensured.

Configuration request method

The SwissCovid apps installed on smartphones by persons in Switzerland automatically make contact with the data centre four times a day (every 6 hours following activation of the app). This data centre is the backbone of the infrastructure of the SwissCovid app system. This contact is of a purely technical nature. It serves to compare the technical configurations of the apps with the latest available configuration specifications.

The data centre counts the total number of these configuration requests. At the end of the day, the total number of automatic configuration requests from all apps over the past 24 hours is divided by 4. A conservative estimate (underestimate) of the number of active SwissCovid Apps on the respective day can thus be assumed. For example, apps that are active for under 6 hours and devices in flight mode do not make configuration requests and are therefore not counted. For devices that are partially switched off for 24 hours or are not connected to the internet, the number of configuration requests may be below 4, resulting in an underestimation of the active number of users. Activating or deactivating bluetooth does not have any effect on automatic requests.

The assumption made that mobile phones can contact the data centre around the clock and also that the SwissCovid App is active cannot be verified. For data protection reasons, it is not possible to determine how often a particular device connects to the data centre, which is why the number of active apps must be estimated using strong assumptions.

Dummy request method

In parallell to the configuration request method, on behalf of the FOPH an alternative method based on dummy requests has been developed to estimate the number of active apps. This alternative method of recording all active apps making contact with the proximity tracing system is based on dummy requests which active apps send to the data centre on average every five days. Dummy requests protect privacy by obscuring whether a valid covid code has been transmitted by a particular device.

Based on a Poisson distribution with an expected value of 5 days, the time at which a dummy request is made is randomly generated. A request generates the time of the subsequent random dummy request. It should be noted that if the device is not active or is not connected to the internet, the dummy request is transmitted later on.

To calculate the daily numbers of active apps, the number of dummy requests is multiplied by 5. This is based on the assumption that on the day in question, in addition to each device that makes a dummy request, four other devices are active but do not send dummy requests. All Android devices and devices with iOS that have an app version 1.0.6 or newer installed will carry out this dummy request as described. For iOS devices that have an app version older than 1.0.6. installed, the method using configuration requests is still applied and the result is added to that of the dummy request method.

Number of downloads

The number of downloads of the SwissCovid app shows how often the app has been downloaded from the Apple App Store and the Google Playstore. It does not show how often the app has been installed and activated. Multiple counting is possible because devices are not identified for data protection reason.