

# COVID-19 Mobile Apps Trends Derived from Long-Term Google Play Analysis

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**Abstract.** In this paper, we describe the 5-year trends of COVID-related mobile apps in the Google Play platform obtained by retrospectively analyzing app descriptions. Out of 21764 and 48750 unique apps available free of charge in the “medical” and “health and fitness”, there were 161 and 143 COVID-related apps, respectively. The prominentrise in apps’ prevalence occurred in January 2021.

**Keywords.** COVID-19, mobile apps, Google Play

## 1. Introduction

The outbreak of COVID-19 was followed by the development and new features of mobile apps targeting this disease. Although there are studies that selectively analyze the content of a limited amount of apps [1],[2], there is so far no comprehensive overview of the overall picture of COVID-related apps in terms of market dynamics. In this paper, we explored the trends of the COVID-related mHealth market by retrospectively analyzing Google Play app metadata.

## 2. Methods

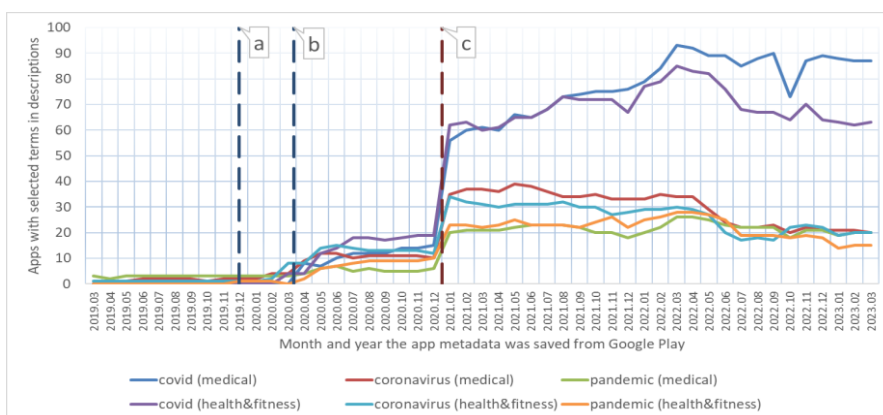
To analyze the mHealth trends, we developed a set of Python scripts that use the Selenium driver to download Google Play metadata from the platform listed in the categories “medical” and “health and fitness”. We downloaded the metadata in monthly intervals during the first week of each month. The app links were collected using third-party websites, which allowed us to obtain a sample of considerable size. We evaluated the presence of COVID-related apps retrospectively by searching for keywords in the available app descriptions: “COVID”, “coronavirus”, and “pandemic” with appropriate regular expressions and their variations.

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### 3. Results

Based on our data collection of apps available free of charge ranging from March 2019 to March 2023, we analyzed the metadata of 21764 and 48750 unique apps in the “medical” and “health and fitness” categories. The first 4 apps with the “COVID” term in the description appeared in March 2020, the same month that the pandemic was declared by the World Health Organization (WHO, 11 March 2020), about two months after the COVID-19 outbreak was announced on 30 January 2020, and about 4 months after the first human cases of COVID-19 were identified in Wuhan in December 2019. There were 161 and 143 unique apps in these categories featuring any of the keywords in their descriptions. Figure 1 shows the 5-year trend in Google Play and indicates an apparent rise in the number of apps related to the disease in January 2021, right after the first deliveries of the COVID-19 vaccines began on December 14, 2020.



**Figure 1.** The number of apps with COVID-related terms in descriptions and “health-fitness” categories. Vertical lines: a) first cases; b) declared pandemic; c) first vaccine deliveries.

### 4. Discussion and Conclusions

The main limitation of the evaluation is that, despite the considerable sample size, we were unable to collect a complete set of apps for Google Play due to platform restrictions. Based on the acquired data and the pandemic’s status, we anticipate that the amount of COVID-related apps will no longer grow as rapidly as initially. The current use case can be extrapolated to the analysis of the “hype” topic in medicine in general.

### References

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