Covid-19 crisis boosted renewal process of statistics production and dissemination

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Abstract

At the beginning of the Covid-19 crisis, a lot of concerns on e.g. teleworking and the data collection of statistics aroused. Fortunately, the threats of the initial phase did not materialize, and retrospectively it can be said that the pandemic accelerated renewal process of statistics significantly.

The main driver for change was the emphasis on society's information needs during the exceptional circumstances. New, faster, and more in-depth information was urgently needed to deal with the crisis and to understand its consequences for the people, economy, and society. In addition, aim of avoiding social contacts encouraged innovations in new data collection methods like web scraping.

To provide relevant information for society, statistical agencies were forced to seek new data sources and collaborate with external stakeholders with potential data sources. Cooperation with researchers also took some new forms which might continue in the future.

New communication channels and tools for disseminating statistics have also been created across the countries. New era for experimental statistics has come and all kind of visualisations and dashboards are expected by users from now on.

This article describes consequences of pandemic for statistics production. Experiences are based on Statistics Finland's internal Covid-19 group activities and European collaboration. All countries have probably some special features related to statistics production and innovations during the pandemic era. The aim of this article is to present some interesting experiences from Finland and to analyze common development trends of statistics. Most of the observed trends were already underneath, but pandemic bring them clearly visible.

Keywords: Covid-19, information needs, innovations, timeliness, experimental statistics

1. Introduction

Production of statistics is a business, that never stops evolving. Information needs are changing along the time and new technologies are introduced in production processes. Already before the pandemic digitalization provided new possibilities for statistics production with new data sources, automated processing solutions and visualization tools.

At the beginning of the pandemic, there were a lot of concerns about the health of employees, working from home and on the other hand accumulation of source data for statistics. Fortunately, the threats of the initial phase did not materialize and retrospectively it can be said that the pandemic gave Statistics Finland the boost for development. Motivation of staff to produce required information and analysis increased significantly and willingness for cooperation within society and with external partners was high. Old phrase of "Never let a good crisis go to waste" is still therefore at least partially true.

Pandemic was a significant accelerator for the development of statistics. The need for more timely and more granular data to mitigate the negative effects of pandemic on persons, economy and society was unprecedented. In addition to new data needs aim of avoiding face-to-face contacts gave rise to innovations of new data collection methods like digital interviews and web-scraping. For dissemination of statistics the pandemic era also boosted development. Compiled information and dashboards for monitoring trends were urgently asked by users. Probably all these changes would have happened also without pandemic, but with much slower pace.

In this article Statistics Finland's innovations related to processes of statistics and products during the pandemic are described. Also, some learnings from communication of statistics during the times of crisis are presented and these are hopefully interesting for other national statistics institutions.

2. Where to get data for new information needs?

In a situation where the crisis has not affected society's functions too much, new information production can be carried out. To launch new surveys or to start negotiation with data owners with potential information is a slow road to get new data for statistics needs. Much quicker way is to modify existing data collections with new questions and

variables. And the quickest way is to use existing data sources. Linking existing data sets provide a lot of potential to produce new information with relatively little effort and without additional response burden. To enable quick response to information needs the data sets should already be well-structured with suitable identifiers for linking work and descriptions of variables to understand the content.

During the pandemic the aim of avoiding social contacts forced statisticians to seek new data sources for statistics to replace personal interviews or visits in commercial premises, which gave boost for development of web-scraping techniques. Statistics Finland and many other European NSIs developed further and increased the use of web scraping techniques in data collections related to price statistics. In addition, social media data was used as data source for fast indicators of social moods of citizens and economic trend at least in Italy and Netherlands.

Statistics Finland added pandemic related questions to several data collections for reference years 2020 to 2022. At the request of State Treasury, Statistics Finland launched new Citizen Pulse data collection in April 2020. The survey has produced regular public opinion data for example on compliance with COVID-19 restrictions, trust in public authorities and respondents' confidence in the future. This survey has been a success and provides timely data for the government on citizens' opinions and feelings. The content of Citizen Pulse data collection is flexible and in March 2022 questions were added to collect information on citizens' opinions related to war in Ukraine.

Below three examples of results based on the Citizen Pulse data collection are provided. From Figure 1 it can be seen that citizens' opinion on communication of the authorities decreased significantly along the pandemic. In the beginning of the pandemic era in 2020 over 70 percent of respondents were at least partially satisfied with communication of the authorities and after 1,5 years of Covid-19 restrictions only around 50 percent were satisfied with communication.

In the second example (Figure 2) it can be seen that the stress levels of young adults (15-29 years) increased significantly after the first pandemic year. In this age group share of respondents feeling pretty much or a lot of stress increased from 20 percent to over 40 percent after the Omicron variant caused strict restrictions for society again in the beginning of 2022.

Third example (Figure 3) describes the flexibility of Citizen Pulse survey. In 2022 when the war in Ukraine started, the content of the survey was modified by adding new questions. One set of new questions were related to concerns of the citizens related to war in Ukraine. In the Figure 3 it can seen that the economic development in Finland was the most common source of concerns. After the invasion in March 2022 almost 60 percent of respondents reported a lot or pretty much concerns related to Finland's economy. The security situation in Finland also caused at least pretty much concerns for over 40 percent of respondents. In addition to these remarks, it can be seen that after the initial shock the concerns started to decrease slightly.

Figure 1. Communication of the authorities during the pandemic in 2020-2021
(% of respondents at least partially satisfied with the communication, weekly)
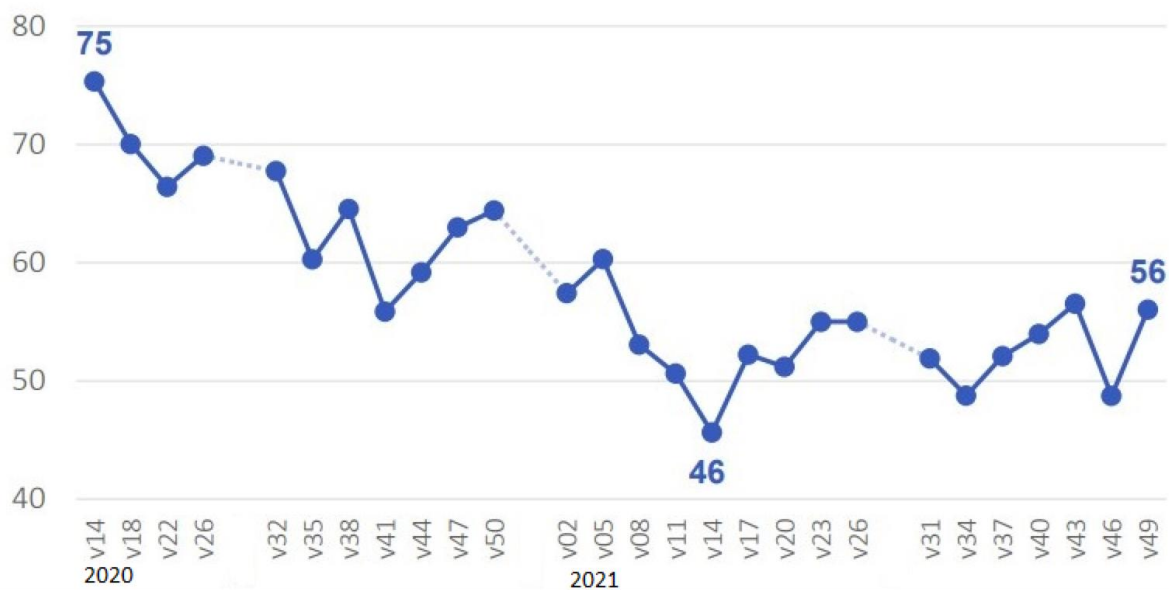
Source: Citizen Pulse, Statistics Finland, Prime Minister's Office

Figure 2. Feelings of stress by age groups 2020-2022
(% of respondents feeling pretty much or a lot of stress, weekly)
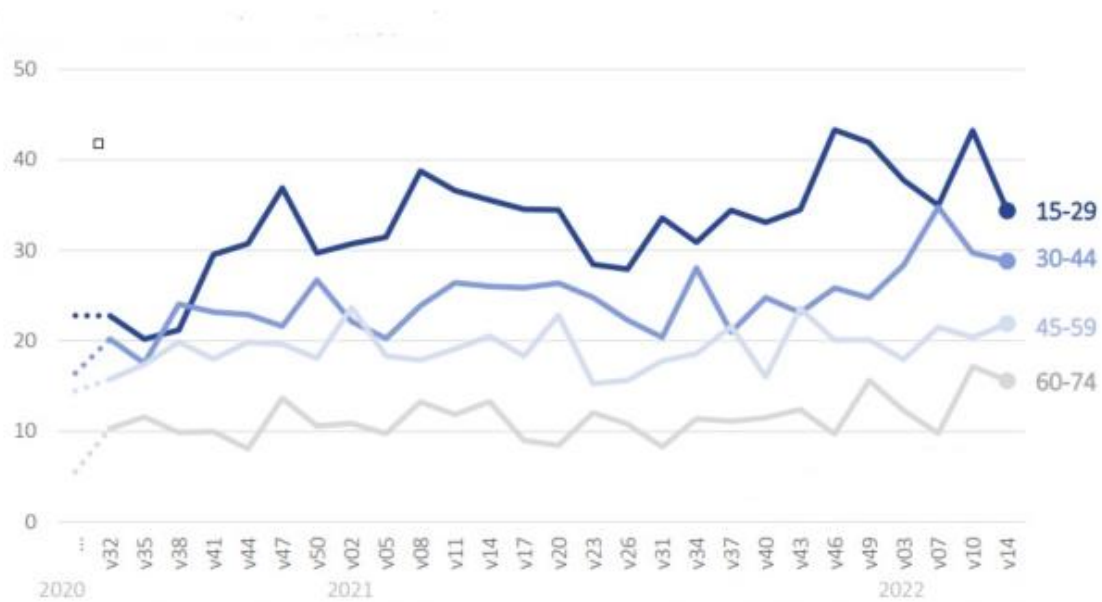
Source: Citizen Pulse, Statistics Finland, Prime Minister's Office

Figure 3. Concerns related to crisis in Ukraine in 2022 (% of respondents, weekly)
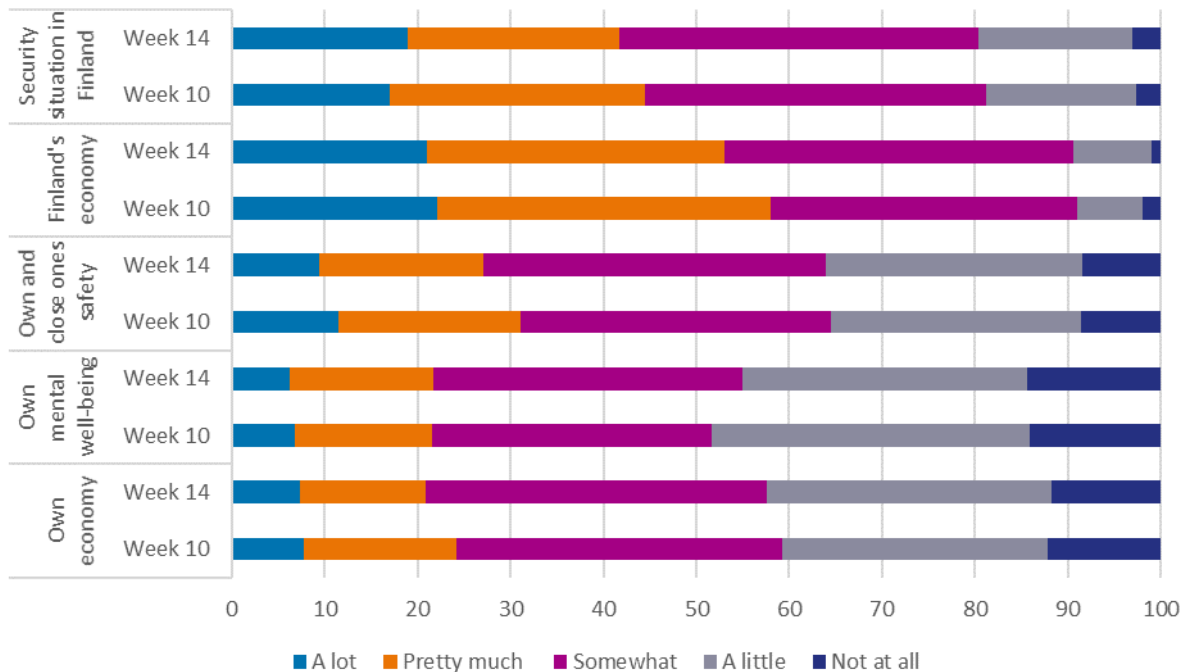
Source: Citizen Pulse, Statistics Finland, Prime Minister's Office

3. Timeliness of statistics was crucial during the pandemic

When pandemic hit Finland in March 2020, information requests related to health, economy, businesses, and labour increased remarkably. Meeting these demands was difficult since regular statistics production is not designed for providing high frequency and fast information for decision makers. On the other hand, in the beginning of the pandemic users did not know exactly what figures were essential with respect to pandemic and its consequences.

In April 2020 Statistics Finland started to publish weekly data on deaths and in May 2020 weekly statistics on bankruptcies. Both statistics were published under the category of experimental statistics since compilation methods differ from corresponding regular monthly statistics. In addition to new experimental statistics the production of some regular statistics were speeded up. For example, preliminary quarterly figures on foreign trade of goods and services were published around 40 days after the end of reference period instead of normal 75 days delay. This was possible by using monthly balance of payments figures as indicators for the quarterly foreign trade of goods and services statistics. This might cause revisions later, but the need to provide fast statistics during the times of crisis has moved the equilibrium point between timeliness and accuracy of statistics in the favor of timeliness.

During the period April 2020-May 2021 Statistics Finland published fast indicator on production of economy. This indicator was developed already before the pandemic in cooperation with ETLA Economic Research. Fast indicator is based on microlevel data, and it provides estimates of the Finnish monthly real economic activity indicator, the Trend Indicator of Output, and of quarterly gross domestic product. Firm-level turnovers and real-time traffic volumes data are used as source data. The Monthly indicator was published right after the reference month with t+0 days delay and it revealed to has a pretty good correlation with regular monthly Trend Indicator of Output, which is published with t+45 days delay (see Figure 4). The forecast was published as experimental statistics and it responded to the information needs generated by the state of emergency more quickly than the officially produced regular statistics. The production method of this nowcasting indicator is described in more detail in an article published by Journal of Empirical Economics.

Figure 4. Nowcasting indicator and Trend indicator of output 2006-2021 (Year-on-Year changes, %)
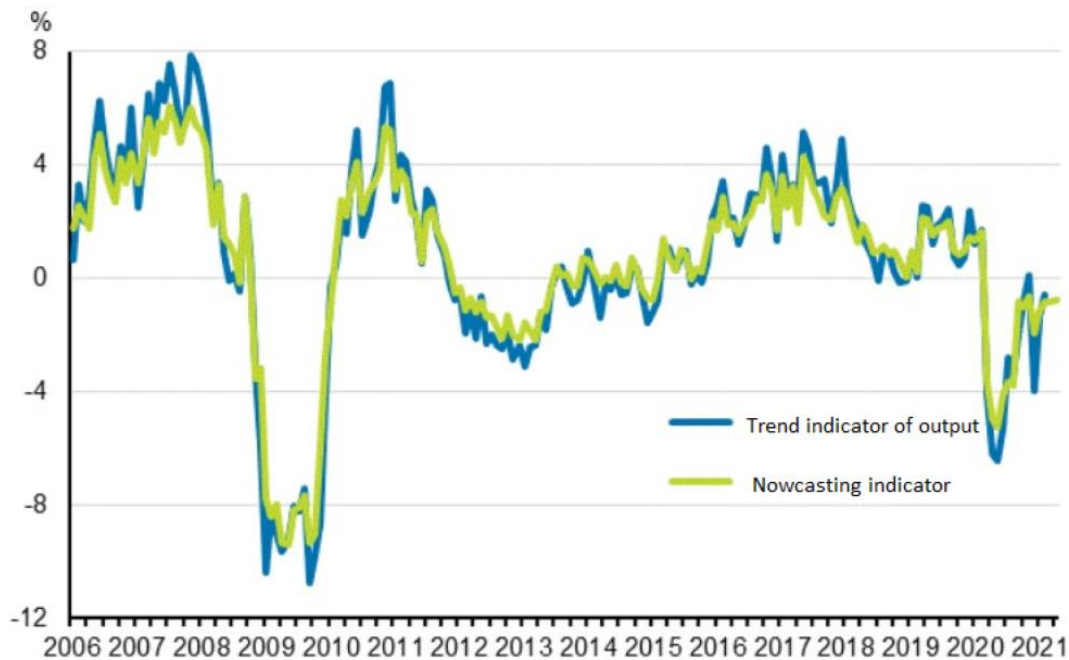

4. New products and services to help decision makers

Tourism scenarios

In 2020 travelling demand in Finland decreased drastically. Inbound tourism decreased around 70 % and domestic tourism around 20 %. Statistics Finland in cooperation with Ministry of Economic Affairs and Visit Finland built a macroeconomic nowcasting and forecasting model for tourism demand. Model combines inputs from tourism satellite account, short-term tourism statistics and expert views on recovery. Nowcasts and forecasts were produced for 2021 and 2022 with three different recovery scenarios: business as usual, optimistic, and pessimistic. The estimates were updated regularly and were used to plan the recovery measures for tourism industries in Finland.

Figure 5. Recovery scenarios for tourism demand in Finland 2020-2022, billion euros
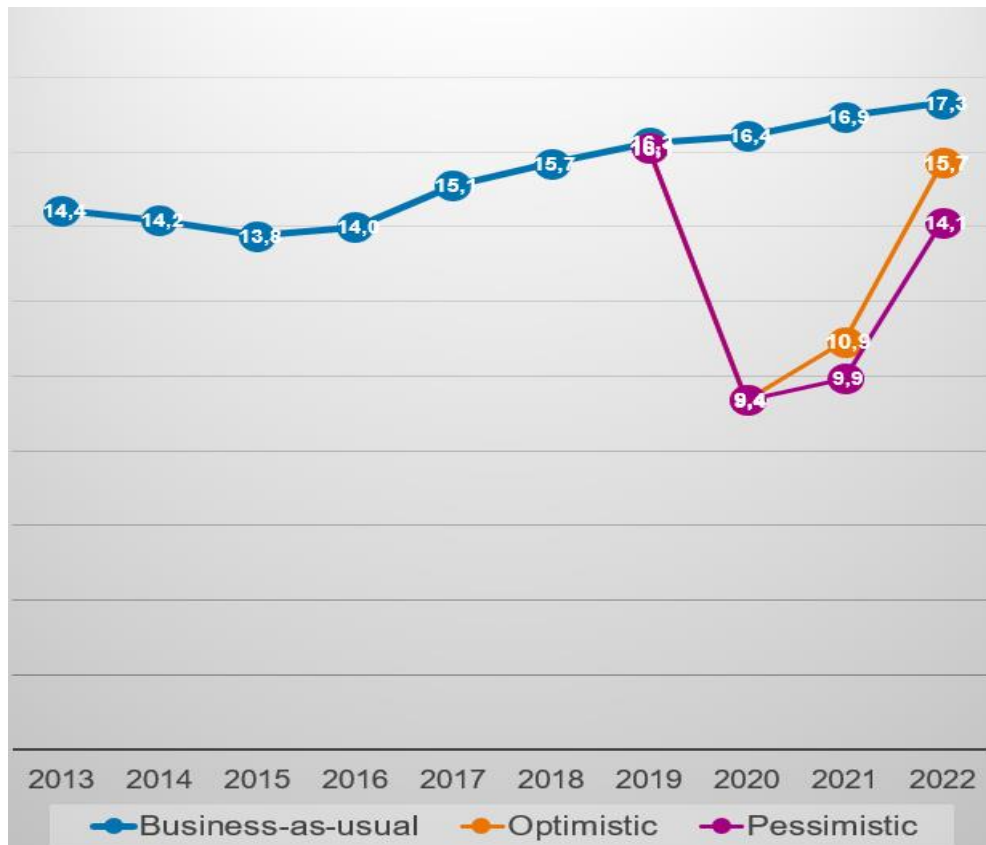
Date of scenarios: 9 September 2021

Helsinki Graduate School of Economics: Situation Room

When the Covid-19 pandemic hit Europe, Statistics Finland was contacted by Helsinki Graduate School of Economics (HGSE) with an idea of launching the Covid-19 Situation Room. HGSE is an academic initiative bringing together three Finnish universities – Aalto University, Hanken School of Economics, and University of Helsinki. The Situation Room included leading economists from Helsinki GSE, VATT Institute for Economic Research, as well as members from several public authorities. The Situation Room utilized data from relevant public and private sources and produced regular reports for policymakers.

Statistics Finland's Research Services unit was considered an appropriate partner for the Situation Room as it already offered unit-level data, i.e. microdata, for scientific studies and statistical surveys. Even if the remote access system for efficient data

delivery and user license procedures existed, several issues had to be solved in a short period of time:

- Contracts and other agreements with a new partner
- Permission to access the data in some cases already before the official release of statistics
- Prioritizing the new service despite the fact that other Researcher Services users were forced to wait for their services to be delivered
- Organization of the new service
- Negotiations with data providers regarding new data needs.

In addition to data sources administrated by Statistics Finland, the Situation Room also gained access to data from the Finnish Institute for Health and Welfare, the Ministry of Economic Affairs and Employment, the Tax authority, the Social Insurance Institution of Finland, Finnish Customs, Bank of Finland, and many other public and private sector organizations. Agreements for the use of data were mainly signed between HGSE and data owners. Statistics Finland provided secure technical system for efficient data delivery. By providing new service for the researchers, Statistics Finland also got information on potential new data sources which could be used for statistics production in the future, although this would require a separate negotiations and agreement with the data owner.

In just about two weeks, most of the issues were solved and the new service was opened. Researchers had already at that time a large number of datasets available for the estimation of economic impacts of Covid-19, and more data was constantly added to the service. The first HGSE report (only in Finnish), on enterprises most hit by the pandemic with up-to-date figures on furloughed or laid-off workers and business subsidies, was published on 15 April 2020.

Analyses by the Situation Room provided quick and innovative support for decision-making during the Covid-pandemic. Access to up-to-date data enabled insights into, for example, economic developments, employment, and regional differences on short notice. The Situation Room provided standardized reports as well as ad-hoc analyses based on current developments and needs during the pandemic, and results were

primarily communicated as reports, in live webcasts and by access to the [Covid-19 Data & Graph Vault](#). The Situation Room was closed in the end of 2021.

Statistics Finland's strategy for the future also includes actions to strengthen data production for decision making, with tasks going beyond regular statistics production. Experiences from the Covid-19 Situation Room were positive and the need for this type of a service clearly exists also after the Covid-19 crisis. More information on the Situation Room experiences can be found on paper, which was prepared for the UNECE Conference of European Statisticians and presented in plenary meeting 2021: [Covid-19 Situation Room: successful partnership with academia and public sector organisations](#).

Following examples visualize the results of analysis provided by the Situation Room. First example is a result obtained by linking data on Covid-19 patients with other register data on person level. From Figure 6 it can be seen that by only looking at the absolute numbers of Covid-patients, it could have been concluded that persons with lower-level education were more exposed to virus in 2020, but by looking at the figures adjusted to number of persons in each education group the interpretation was different.

The second example of the Situation Room results concerns changes in labour earnings. From Figure 7 it can be seen that earnings of occupations related to traffic and tourism decreased by up to 30 percent in October 2020 compared to October 2019. The main data source for this analysis was the new national income register. It is also noteworthy that these monthly level figures on earnings by occupations were released with only T+30 days delay.

The third example in Figure 8 describes more in-depth analysis, in which regional administrative data are linked with infections data and population register data. The aim of this analysis was to study effects of remote education in primary and second-degree schools on the spread of the virus. The report related to Figure 8 states that infection numbers declined significantly in intervention municipalities where remote education was put in place for 16-18-year-old students, both among the students and their family members. On the other hand, the decline in infection numbers could not be directly tied to remote education, as other restrictions were enforced simultaneously.

Figure 6. Education level of Covid-19 patients in 2020 (absolute and relative)
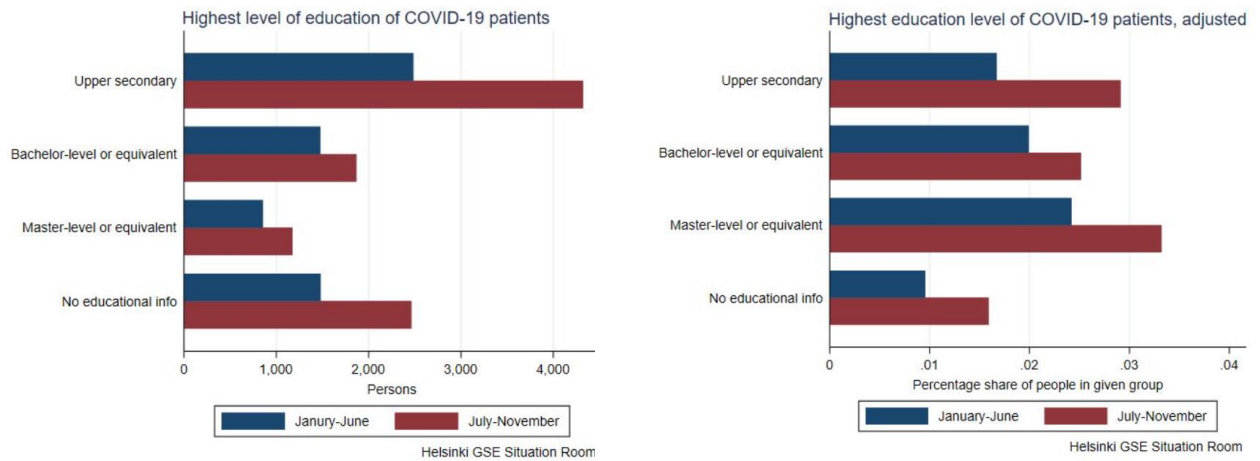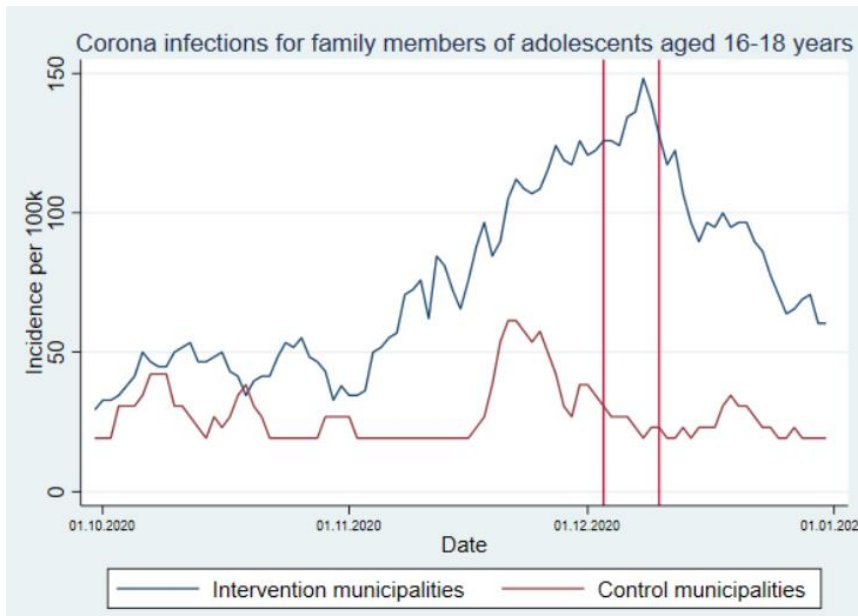

Source: Helsinki GSE Situation Room

Figure 7. Changes in labour earnings in October 2020 from October 2019. Top and bottom 10 changes by occupation (%)
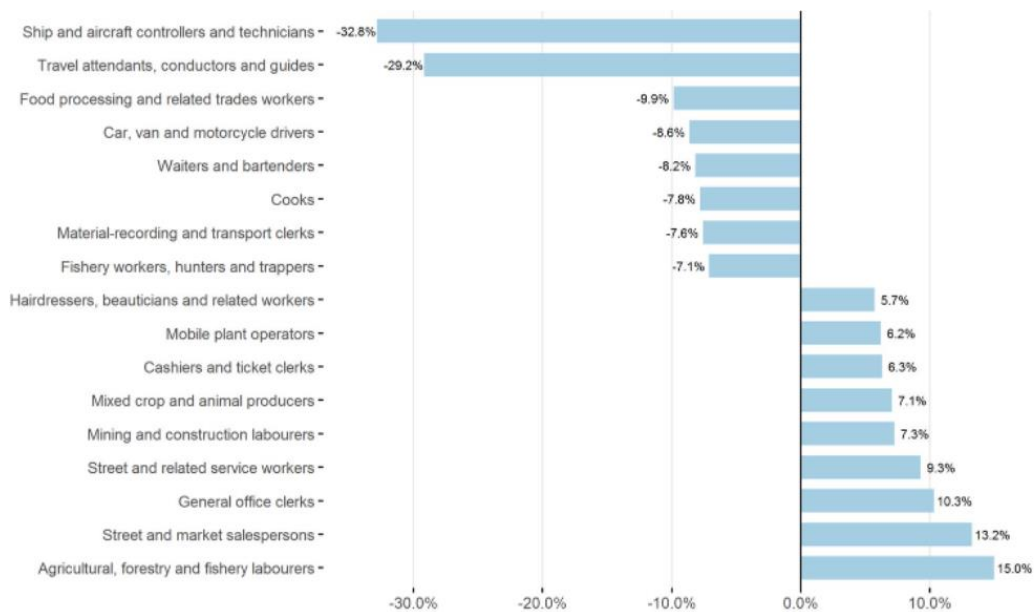
Source: Helsinki GSE Situation Room

Figure 8. Incidence of corona infections for family members of adolescents aged 16–18 years in municipalities that shifted to distance education and in comparison municipalities

Source: Helsinki GSE Situation Room: The impact of distance education on Covid-19 infections: preliminary results (3/2021)

5. Communication on pandemic with statistics

Theme pages and newsletters

Pandemic related information can be found under many statistics and themes. Need to gather these in one place for the users was identified quickly after the pandemic hit. The theme page Coronavirus – topical statistical data (in Finnish) was actively updated throughout the pandemic, new information and links to articles were added and obsolete data were moved to the archive. This kind of separate web page proved to be a viable way to compile statistics related to the pandemic in one place.

Vast amount of Covid-related information was published by many authorities, newspapers, private companies, and citizens. Statistics Finland was forced to put more effort on communication to get the facts visible. Statistics Finland started to produce and deliver weekly newsletters related to pandemic. Newsletters contained information on recent and forthcoming statistics publications and articles. Newsletters were

published on the web page and were also sent to all users who had registered to get information on statistics releases.

Reviews and dashboards

There was a lot of demand for reviews and dashboards, which combine data from various statistical domains. For example, the economy is so complex that it is difficult to get a broad understanding of it from individual statistics. During the pandemic, Statistics Finland therefore began to produce a quarterly Review on Economic Development (only in Finnish) looking at the effects of the pandemic from the perspectives of the national economy, businesses, employment, consumers and public finance.

Dashboards revealed to be appropriate tool for monitoring pandemic with a set of selected indicators. Statistics Finland recognized this need, but unfortunately was not able to make progress with dashboards and visualizations, since technical resources were mainly allocated to a large project on new web pages. Other authorities and even individual citizens built dashboards by using the open data published by national statistics authorities.

Within ESS cooperation the Recovery dashboard was built (see Figure 10). It contains monthly and quarterly indicators from several statistical areas, which are relevant for tracking the economic and social recovery from the COVID-19 pandemic.

Figure 9. Dashboard on Covid-related indicators ([Eurostat](#))
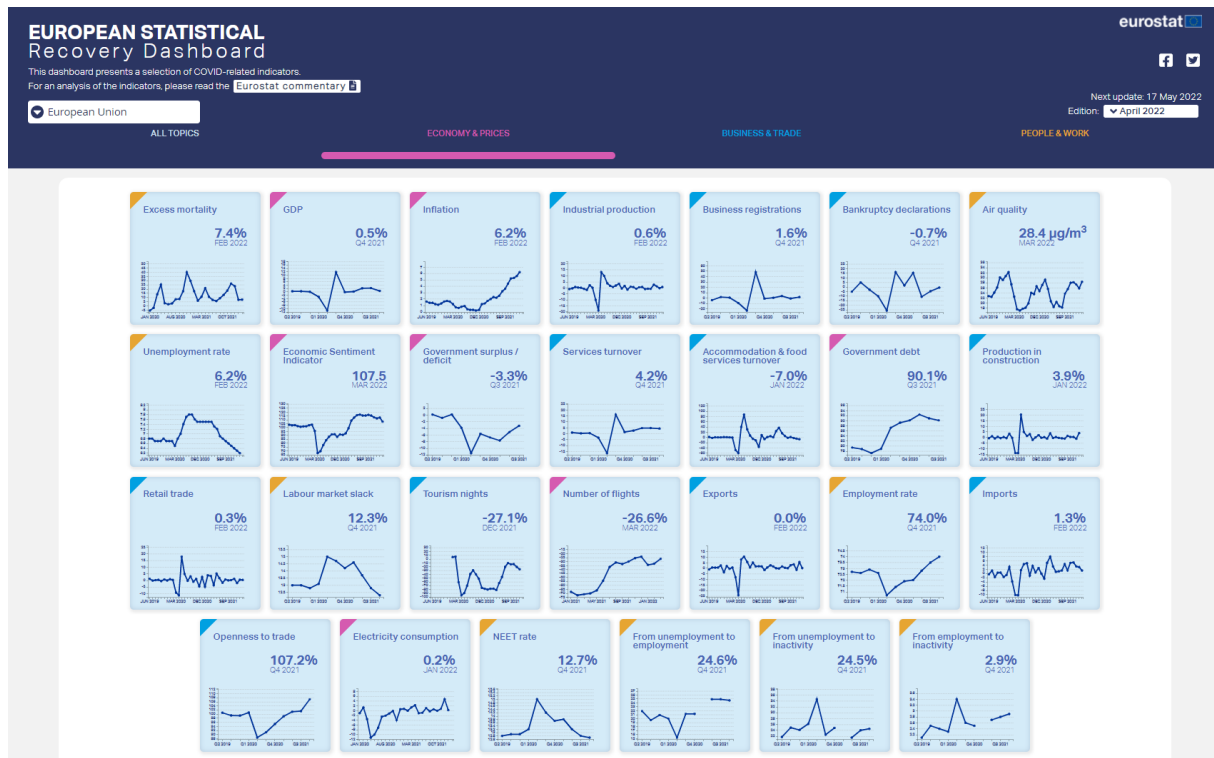
Analysis and articles

In addition to statistical releases, Statistics Finland's expert articles analyzing the effects of the pandemic in more depth were published in [Tieto&Trendit](#) online magazine. In 2021 around 30 Covid-related articles and blogs were published. Themes of the articles varied a lot and covid-effects were analyzed for example related to national economy, employment, teleworking, housing markets, use of media, migration, and crimes.