

The impact of Covid-19 emergency on ISTAT data collection - transient and permanent effects

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Abstract

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The emergency developed through three main phases, characterized by different purposes and priorities. Phase 1 (from March 9: Introducing restrictive measures for the mobility of people, economic sectors lock-down), Phase 2 (from April 16: establishing coexistence measures with the virus, progressive reduction of sector lockdown and people movement restrictions), Phase 3 (from June 15: involving initiatives for the economic recovery).

Various legislative decrees produced by the Italian Government characterize the above three phases. Specific measures issued by ISTAT followed, with the aim of managing official statistical surveys in the emergency. These measures aim both at consistency with the new regulatory requirements and the need to lighten the statistical burden on the survey units unable to provide data within the prescribed timing. The new decrees also led to the suspension of all penalties for units failing to comply with the response obligation.

In this framework, ISTAT has activated a specific Task Force on methodological solutions for the continuity and quality of statistical production in the emergency. The health emergency, therefore, led ISTAT to identify a set of new methods and solutions for the management of survey processes that involved both the data collection facilities and the surveyed units.

Some of these solutions have a temporary nature and they are gradually reducing as the level of emergency decreases. Others have a permanent impact on data collection processes (new modes, new sources, new procedures) and they represent a push towards efficiency, modernization and automation of processes. In this perspective, the emergency represented an impulse towards the adoption of more advanced data collection techniques.

This contribution, in the framework of Centralized Data Collection (CDC) such as that adopted by ISTAT, analyses the transitory and permanent effects of the emergency in the various direct survey contexts: on businesses, on households, on institutions, on other units.

In particular, it will pay attention analytically to the various survey monitoring indicators (primarily the participation rates) during the different phases of the emergency and in the different survey contexts, highlighting in detail the permanent effects that they are manifesting on the investigation processes.

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¹ Paragraph 5.

² Paragraph 7

³ Paragraph 1, 7.1

⁴ Paragraph 4

⁵ Paragraphs 2,8

⁶ Paragraph 6

⁷ Paragraphs 3

Finally, it will present some considerations on data collection issues that emerged from three targeted surveys conducted by ISTAT in order to analyze the effects of the health emergency in the economic and social contexts.

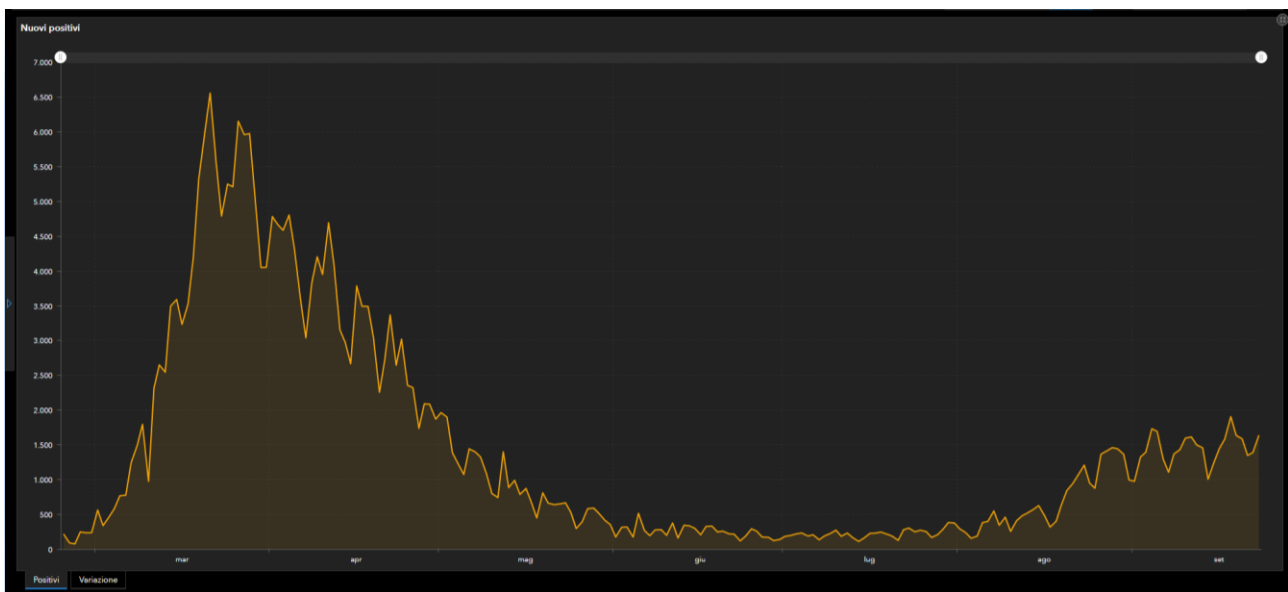
1. Introduction

The health emergency for COVID-19 officially begins in Italy starting from February 2020, limited to some territories defined as “red areas”, but with immediate and very significant effects on all components of the country's economic and social system.

Italy was among the European countries most affected by the Covid-19 health emergency. As of September 24, the total number of cases was 302,537 with a number of deaths equal to 35,758.

The distribution in the territory recorded a higher number of cases in the northern regions and in particular in Lombardy with a number of cases equal to 105,226 and a number of deaths equal to 16,925, just under half of the total cases registered in the national territory. From a temporal point of view, the maximum number of infections was recorded on 21 March 2020, for an absolute number of 6,557.

Figure 1. Trend in the number of infections from Covid-19 in Italy (Source Italian Ministry of Health).



In order to stem the spread of the virus, the Italian government has undertaken a set of measures that have affected both the possibility of movement of people in the performance of various work and personal activities and the activity of companies. The timetable of the main legal measures undertaken by the Italian Government is as follows:

- February 23, 2020: Restrictive measures for the mobility of people (red areas only), DPCM (Decree of the Presidency of the Council of Ministers) February 23, 2020, DPCM March 4, 2020 and DPCM March 8, 2020
- March 9, 2020: Progressive extension of the restrictive measures to the whole national territory, DPCM March 9, 2020
- March 11, 2020: Lockdown of production sectors, DPCM March 11, 2020 - DPCM March 22 2020
- May 3, 2020: Sector lockdown end date, DPCM April 10, 2020
- June 3, 2020: People movement restrictions end date, DPCM May 17, 2020

- June 15, 2020: Recovery of further activities including summer camps for children, game rooms, betting rooms, bingo halls, as well as the activities of wellness centers, spas, cultural and social centers, DPCM June 11 2020
- August 15, 2020: Urgent measures to support and raise the economy, DPCM August 14, 2020.

According to the above measures, the emergency developed through three main phases, characterized by different purposes and priorities. Phase 1 (from March 9: Introducing restrictive measures for the mobility of people, economic sectors lock-down), Phase 2 (from May 4: establishing coexistence measures with the virus, progressive reduction of sector lockdown and people movement restrictions), Phase 3 (from 15 June: involving initiatives for the economic recovery). The analyses carried out in the following paragraphs refer to these three phases of the emergency.

Following the government measures, ISTAT adopted a set of solutions to manage external risks. Some of them directly concerned the internal organization of work. In fact, as a public sector body, smart working was immediately adopted as the main solution to reduce health protection risks.

In order to ensure the data collection of the most important official statistics, in particular those relating to European Regulations and national press releases, and to minimize the burden on respondents in a difficult period, several remodeling action of the survey processes were carried out in the form of rescheduling of closing dates, cancellations, postponements of survey periods. In some cases, ISTAT carried out a review of the survey techniques in order to respond immediately to the constraints imposed by the new regulations. All these activities were officially managed through four specific resolutions signed by the ISTAT President, issued from March 25, to June 9, 2020.

In parallel, in order to ensure the continuation of the survey processes, a specific Task-Force was activated which involved the senior researchers of the main production structures, so as monitoring the progress of the surveys and resolve any critical issues, not only with reference to the collection aspects but to all phases of the survey process.

Concerning Data Collection the main actions adopted by ISTAT are described in a dedicated section of the official website “Information on the health emergency and recovery”: <https://www.istat.it/it/archivio/239854>.

2. Solution to ensure continuity of data collection processes and innovation involved by emergency

In order to ensure the continuity of data collection processes ISTAT has adopted a set of strictly coordinated actions, since the beginning of the pandemic. In particular, ISTAT has activated various initiatives aimed at collection of new data to better understand the health and socio-economic effects of pandemic in Italy: more intensive use of register-based administrative data, role of SR (Statistical Registers) in generating new and more relevant information for Covid-19, exploitation of new data sources.

In fact, data collection was the first activity of ISTAT hit by the global pandemic. The immediate effects concerned the complaints from companies about how to comply with the obligation to respond, especially in relation to the compulsory closure of various businesses and the consequent layoff of many employees. As regards households, the main problems concerned the realization of face-to-face interviews. Other significant effects on the data collection activities carried out by ISTAT concerned the failure of private companies engaged in external services (Call Centers, CATI, CAPI data collection services) and the difficulties in the public network of data collection (notably regions and municipalities). In order to ensure the prosecution of the data collection of the most important official statistics and to minimize the burden on respondents ISTAT President signed four specific resolutions which concerned:

- Postponement of the *deadlines* for delivering data for most of short-terms surveys and structural surveys. For short-term surveys, companies were requested to submit the data if available/possible according to the standard deadlines.
- Temporary *suspension* (in April 2020) of data collection for HBS (Household Budget Surveys) and business and customers sentiment's surveys due to major failures in external services of data collection.
- Temporary changes in data collection *techniques* from CAPI to CATI, since the CATI was more sustainable both from the point of view of the respondents and from that of the services offered by external companies.

At the same time ISTAT reprogrammed *censuses surveys planned in the year 2020*: the agricultural, population and public institution considering the high impact of field operations with CAPI technique

Since the beginning of the pandemic, it was clear that not only the publication of standard output was under threat, but also that an information gap had arisen in official statistics, just on the issue of the Covid-19 pandemic effects on the economic and social contexts. Thus, ISTAT launched three new targeted "rapid" surveys aimed at businesses and households in order to investigate the current situation and prospects.

With reference to businesses, data on how companies were reacting to Covid-19 (voluntary or mandatory shutdowns), measures adopted by firms to secure workers from health risks, short and medium-long terms initiatives (new businesses, more digital processes, new business models, etc) were all not covered by official statistics. In order to cope with this relevant data gap, a special survey was launched and completed in May 2020. The random sample included 90.468 companies and the survey was carried out on voluntary basis, achieving 45.5% response rate. The information content of the questionnaire was designed jointly by ISTAT and high level government experts from leading public institutions on economics, health care and social affairs. Estimates from the survey are available on ISTAT website (www.istat.it). A second edition of the survey is planned for the end of October 2020.

A second survey "Diary of the day and activities at the time of the coronavirus", carried out by CATI technique, investigated the Covid-19 pandemic effects on the everyday life of the people. It is aimed at better understanding how the spread of the coronavirus was changing habits of life of the people, documenting how they were organizing, in this particular and complex moment, their daily life and what difficulties they were encountering.

A third initiative concerns the Covid -19 serological survey carried out by the Ministry of Health and ISTAT, with the collaboration of the Italian Red Cross and that took place from 25 May to 15 July 2020. The objective of the survey was to understand how many people have developed antibodies to the Coronavirus, even in the absence of symptoms. Through the survey, the necessary information was obtained to estimate the size and extent of the infection in the population and describe its frequency in relation to certain factors such as gender, age, region of belonging, economic activity. The sample design carried out by ISTAT provided for the observation of 150,000 individuals throughout the Italian territory.

The various problems met in conducting direct surveys during the health emergency have also activated various initiatives aimed at greater exploitation of available administrative sources and the use of new sources. From this point of view, the emergency has favored the introduction of innovations in data collection processes [4].

Given the significant reduction in the response rate of direct surveys, the average response rate of short terms surveys drops from about 90% to about 84% in March (reference period February) to about 83% in April (reference period March) to then progressively recover in late May and early June), administrative data emerged as one of the most reliable sources of information. Normally, ISTAT core statistical processes, in the different fields of investigation, are built around the basic registers on economic units, population and territory. The presence of this data production infrastructure has proved to be particularly useful and flexible with respect to the pandemic. In particular, the use of administrative sources by statistical data production

processes during the global pandemic assumed mainly the form of integration of multiple data sources using the Registers as benchmark for any operation. It should be noted that the exploitation of new data sources, such as big data and new administrative data sources, was already planned by ISTAT. However, the global pandemic has strongly accelerated the adoption of these new sources in real statistical production. A very promising example in the business statistics field is electronic invoicing data available in Italy since January 2020, as a consequence of a new fiscal regulation. These data include both Business to Business and Business to Consumer monetary transactions for the purchase of goods and services between economic operators. The high frequency and the high detail of these data make them of great interest for the production of both short terms and structural business statistics.

A further consideration concerns the effectiveness of the centralized data collection model [1], [2], [3] adopted by ISTAT in absorbing the consequences of an external shock. Centralized model managing all the data collection stages (design, organization, implementation, acquisition of administrative archives) has shown flexibility and resilience to the external shock caused by the pandemic. This result is also relevant for the future as the data collection system resulted well equipped to manage external shocks.

The following paragraphs will highlight in detail the effects of the pandemic in the various survey sectors, identified by the units to which they address: households, businesses, public institutions and other. In particular, the attention will be placed on a) the survey solutions adopted to respond to the emergency b) trends of participation rates in the different phases that characterized the emergency c) Permanent innovative effects that were involved by the pandemic, that will characterize the ISTAT data collection even after the end of the emergency.

3. Household surveys during the pandemic

The evolution of the pandemic in Italy and the resulting national and local legislations have led ISTAT to define the strategies necessary to balance the needs of continuity and quality of statistical production with those of the health of citizens involved in household surveys.

The restrictive measures in personal contacts between people have put in serious difficulty all those surveys conducted in a face to face mode which involve contacts with respondents at their respective homes. The closing, for a certain period of time, of the contact centers and call centers and the time necessary to reorganize their activities in smart working mode mainly impacted on the surveys conducted in CATI mode, but also in CAWI mode if we consider the support provided towards the respondents. The non-distribution of snail mail has impacted not only on all the surveys being started, whatever the survey mode, but also on all those surveys already started but for which postal reminders are required.

The actions taken, some in urgency and others for a longer period, provided for the reorientation of the survey modes that are no longer sustainable during the emergency period and the redefinition of the survey time calendars.

In this context, as part of the household surveys, the health emergency had a marginal impact on the EU Survey on Income and Living Conditions (EU-SILC)⁸, and in most prominent on the Labor Force Survey (LFS),

⁸ When the situation began to become critical, Eusilc fieldwork was in the final phase. The survey, conducted with a CAPI-CATI mixed mode, the closure of the CATI contact center prompted the immediate conclusion of the survey with this survey mode, while the residual interviews assigned to the CAPI network were conducted, where possible, by telephone by the same interviewers network using their phone.

the Household Budget Survey (HBS), the Multi-Purpose Survey on Aspects of Daily Life and the Consumer sentiment Survey⁹.

For the LFS, conducted with a mixed CAPI-CATI mode, the adopted solutions were aimed, initially, at managing the emergency immediately and, later, in a more structured way at ensuring the continuity of the survey. Starting from the last reference weeks of the first quarter of 2020, already in the fieldwork starting from the end of February, the restrictive measures imposed on personal contacts, prompted Istat to reconvert the CAPI mode into the CATI mode. Therefore, where a telephone number is available, the interviews are conducted by the interviewers of the CAPI network in telephone mode, using their personal telephone and the CAPI software currently installed on the interviewers' laptops¹⁰. The closure of the CATI call center for about one month, a period used by the company in charge of the telephone data collection to reconvert all its activities to smart working mode, meant that for the last three weeks of the first quarter of 2020 and for the first three weeks of the second quarter of 2020, the interviews initially pre-assigned to the CATI network were reassigned to the CAPI network in order to be conducted in the manner described above. The scarce availability of telephone numbers for incoming rotation groups (for this reason usually interviewed in CAPI mode) has prompted Istat to acquire, for the second quarter of 2020, a new completely telephone sample, selecting the names of the households belonging to the rotation groups already interviewed and outgoing from the LFS sample, who had provided a telephone number during previous interviews, so that they could be interviewed by the CAPI network. Starting from the third quarter of 2020, with the relaxation of the restrictive measures, a sample was selected for wave 1 according to the standard methods¹¹. In consideration of the fact that according to the Istat President resolution, the telephone mode continues to be the prevailing one, from the point of view of CAPI data collection, the interviewer contacts the household by telephone or, in the absence of a number, goes to the family home in order to obtain a telephone number where to conduct the interview. The household can communicate the telephone number in addition to the interviewer, also by calling the toll-free number. In order to facilitate the collection of information, it is also possible to carry out the interview face to face, in this case the household will be able to express this preference, subject to the consent signed by the family and interviewer, and in full compliance with health protocols. Furthermore, starting from the last reference weeks of the first quarter of 2020, in order to meet the difficulties that the survey network would have encountered in the field, given the contingent situation, the fieldwork period, for each reference week, was extended of one week, compatibly with the EU regulation.

HBS, which includes also a module dedicated to Trips and Holidays survey, on the other hand, involves the administration of an initial and final interview with the CAPI mode and the self-compilation of a paper diary by the family, previously delivered by the interviewer and then returned to him which subsequently provides for the relative data entry. The health emergency initially impacted on the reference month of March, for which the households were compiling the diary and the final interview. In this context, following the measures imposed by the lockdown, the indications provided to the interviewers were to contact the units by telephone at the number provided by the family itself during the initial contacts to be dictated what the households recorded in the diary delivered to them prior to the lockdown and to conduct the final interview. Similarly to the LFS, the scarce availability of telephone numbers has prompted ISTAT to select a sample fully equipped with a telephone for the second quarter of 2020. The time required for the selection of the new sample and its distribution to the survey network, as well as the stringent survey schedule, pushed ISTAT to suspend the survey for the reference period of April and to send the new sample into the field for the reference months of May and June, with the use of the CAPI software, whose management is adapted to the telephone channel according to specific indications provided by ISTAT to the survey network; the diary is

⁹ The survey, conducted with CATI mode, saw the cancellation of the survey for the month of April, coinciding with the closing period of the CATI call center, a period during which the company in charge of data collection reconverted the activity to smart working mode to guarantee recovery of the activities in the following period.

¹⁰ The emergency conditions in which Istat was forced to intervene did not allow to set up and distribute to the CAPI interviewers' network a software useful for conducting the interviews by telephone, therefore a note was distributed to the survey network to adapt the management of the CAPI questionnaire to the telephone channel.

¹¹ Only about 25% of households has a telephone number.

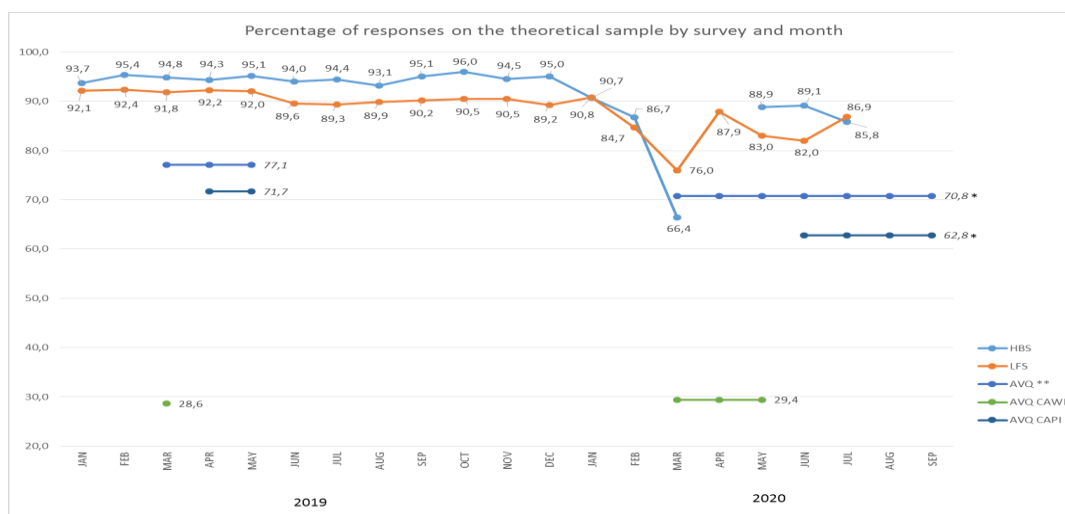
presented by telephone and households are instructed to record the information necessary for its compilation. Starting from the reference month of July 2020, the survey resumes with the standard sample. Contact with families can take place at home (only 25% of the names extracted are accompanied by the telephone number) for the delivery of the diary and the retrieval of the telephone number. The main method of administering the interview remains the telephone one. However, at the request of the household and to facilitate the conduction of the interview, in compliance with all safety rules and protocols, the interview can also be conducted in person.

Fieldwork activity for LFS and HBS was further aggravated by the non-delivery of information letters to household sample throughout the second quarter of 2020 and the first period of the third quarter of 2020, causing interviewers to encounter greater difficulties in obtaining the availability of families.

A little different is the context of the Multipurpose survey on aspects of daily life which also includes the module on ICT. The survey was in fact launched a few days before the lockdown, and it was practically impossible to block its start due to the fact that the information letters signed by the ISTAT President addressed to the sample households had already sent. The survey was planned with a sequential mode initially in the period 16 March-19 April with the CAWI mode and subsequently from 27 April to 17 May with the interviewers municipal network through the administration of a CAPI interview and the self-compilation by of each family member of a paper questionnaire previously delivered by the interviewer. The first consequence of the start of the lockdown is the closure of the contact center that provides inbound support (through the supervision of both a toll-free number and a dedicated e-mail box) to respondents, especially on the web questionnaire. The contact center took about a couple of weeks to convert all activities to smart working mode. For this reason and due to delays in the delivery of information letters and to the interruption of the mailing service of postal reminders, ISTAT has decided to extend the CAWI survey until 31 May. This extension allowed ISTAT to reorganize the subsequent survey phase with the municipal network. The next phase was launched starting from 10 June and it will end definitively on 2 October 2020. Municipalities, which in the meantime have started many of their activities in smart working mode, have been granted a very large period of time to allow them to better organize themselves in the activities of interviewers selection, participate in remote training and start the fieldwork. The interviewers were instructed to contact the households by telephone, where possible, to administer the interview that should have been carried out with the CAPI mode over the telephone, and to agree with the respondents themselves the methods of delivery of the paper questionnaire. In the absence of a telephone number, the interviewer can contact the household at home to obtain a telephone number where they can possibly conduct the interview. The possibility to fill in, in web mode, all the questionnaires or only the self-completed questionnaires is offered by the interviewers to the respondents. However, at the request of the family and subject to signed consent, in compliance with all safety regulations and protocols, the interview can also be conducted in person.

The following graph shows the trend of the percentage of responses on the total theoretical sample units in 2019 and 2020 for the aforementioned surveys, for a comparison between the pre-covid period and the period of coexistence with the pandemic.

Figure 2 – Percentage of responses on the theoretical sample by survey and month



* Partial figures

** AVQ is the Italian acronym for the Multi-Purpose Survey on Aspects of Daily Life

For the two continuous surveys, HBS and LFS, the pandemic began to have its effects immediately starting from the reference month of February. For HBS, the percentage of complete interviews on the theoretical ones decreased from 93-94%, with peaks of even 95-96%, in the previous months to 86.7% in February¹² to drop to 66.4% in the reference month of March. After the suspension of the fieldwork in April, the measures put in place make it possible to bring the situation to a much better one, but still far from the pre-covid period. Even for the LFS, where the survey calendar is less tight than the HBS, the collapse of the indicator took place starting from the reference month of February, passing from values more or less around 90% to 84.7% in February and at 76% in the reference month of March. Here, too, the actions taken make it possible to raise the situation in the following months. The trend of the indicators for the two surveys should also be read considering that all the interviews by HBS and part of those by LFS were carried out over the telephone by the CAPI interviewers' network, i.e. by interviewers who in most cases were not trained in conducting telephone interviews and took time to develop new contact strategies. It is also known that telephone contact is more difficult because it is easier to refuse.

With regard to the Multipurpose survey on aspects of daily life, however, the extension of the fieldwork during the CAWI phase, by more than one month and a half compared to the month of the 2019 edition, made it possible to exceed the share of complete interviews by 0.8 percentage points obtained with this survey mode in the previous edition. With regard, however, to the phase with the municipal network¹³, still in the fieldwork, the extension of the duration of the survey period has not yet made it possible to reach the levels of the previous edition. At the time of writing, more than two and a half months from the start of this phase, the percentage of complete interviews is still almost 7 percentage points lower than the share reached in 2019 with just over a month and a half of fieldwork.

In conclusion, the measures adopted by ISTAT to cope with the effects of the pandemic on conducting households surveys, even if they did not allow to reach the performance levels previously achieved in terms of complete interviews, have certainly made it possible to realize some surveys, which for the survey modes with which they are designed, could hardly have been carried out, thus allowing to guarantee the continuity of the production of statistical information.

¹² The 2020 HBS sample was subject to a redesign that saw a gradual increase in the sample size. The trend of the first months of 2020 is also to be observed in the light of an adjustment phase of the survey network, due to the increase in the sample size.

¹³ In the graph the AVQ CAPI diction has been used, based on what was initially foreseen, but it should be remembered that the interviews were also conducted by telephone and some in an entirely web mode.

4. Short-term economic surveys

In the framework of the short-term economic surveys, ISTAT has activated a series of measures to ensure the continuity and quality of statistical production in the health emergency. In particular, for companies with greater difficulties, it provided the possibility to transmit the requested data by 30 June, with reference to the months from January to April, while confirming the need to acquire the data within the terms indicated in the information letter, useful for the timely publication of data. That in order to comply: i) the European statistical regulations, whose fulfillment is mandatory for the Member States of the European Union, ii) the need to disseminate the data produced as timely as possible for the benefit of economic operators, analysts and policy makers, but also of all citizens who want to understand the evolution of the economy.

The following table shows, for some selected surveys, both the response rate (*RR*) at the deadline set by the information letter and at the deadline postponed by Istat for the months most affected by the pandemic (from January to April 2020).

The selected surveys, despite the ongoing emergency, met the active collaboration of the involved enterprises. Overall, the average gap between the *RR* of 2020 and those in 2019 was about 6 percentage points (*pp*). In particular the greatest decrease was recorded for the Employment in large enterprises survey, with an average fall of about 9 *pp*. Focusing on the single survey periods, those that have suffered the greatest decrease in terms of *RR* compared to 2019 are the months of February and March, since the collection periods takes place into the most severe phase of the crisis, i.e. phase 1 of the health emergency (between 9 March and 4 May). The most significant decreases were recorded for the Employment in large enterprises and Industrial production surveys, with 11.6 *pp* (February) and 15.6 *pp* (March) respectively.

The *RR* of January did not recorded any decrease, instead it closed with an average increase of about 2.5 *pp*, this positive trend is mainly attributable to the still initial state of the crisis; particularly relevant is the increase of about 6 *pp* registered by Retail trade survey in 2020 starting from 72% in 2019. Compared to the months involved in Phase 1, although with variations still negative, the *RR* referring to the month of April started to rise again: the increase is attributable to initiatives for the economic recovery introduced by the Government. The only exception to this trend is represented by Employment in large enterprises survey, which in April closed with a *RR* of 79.4%, recording a decrease of 14.9 *pp* compared to 2019.

The decrease of *RR*, for the selected surveys, was largely recovered at the new deadline introduced by Istat, with an average growth of about 3.5% compared to 2019 for the first four months of the year. This improvement is due to the extension of the deadline, but also to the recovery decree that aims to boost the economy introduced by the Italian government. The recovery is more evident for Retail trade survey that closes the data collection (*DC*) for the months from January to April with an average increase of approximately 6.6 starting from an average *RR* of 75.1% in 2019. Employment in large enterprises survey also recovers the gap with 2019, passing from an average rate of 81.7% to 93.5%, with the only exception in the data for April, compared to the same month of 2019, undergoes a decline of about 2 *pp*.

Table 1- SHORT-TERM SURVEYS, RESPONSE RATES – Period Jan - Apr, years 2019 and 2020

Covid Phase*	Surveys	Months	Deadlines 2020 for the provision of data	Response Rate at the end of Survey Period, years 2020	pp difference %**	pp difference % ***
Phase 0	Retail trade survey	Jan	25/02/2020	77,2	-7	12,2
Phase 1		Feb	25/03/2020	67,6	-14,5	6,5
Phase 1		Mar	25/04/2020	66,5	-14,7	5,3
Phase 2		Apr	26/05/2020	71,5	-8,2	2,5
Phase 0	Industrial production	Jan	25/02/2020	91,4	2,3	5,8
Phase 1		Feb	25/03/2020	81,5	-8	3,5
Phase 1		Mar	27/04/2020	74,8	-15,6	2
Phase 2		Apr	26/05/2020	85,6	-6,3	-0,1
Phase 0	Employment in large enterprises	Jan	05/03/2020	90	1	6,2
Phase 1		Feb	03/04/2020	78,4	-11,8	3,7
Phase 2		Mar	05/05/2020	79	-9,1	5
Phase 2		Apr	03/06/2020	79,4	-14,9	-2,3
Phase 1	Turnover and orders	Jan	16/03/2020	90,1	1,2	3,8
Phase 1		Feb	14/04/2020	77,5	-13,1	0,3
Phase 2		Mar	15/05/2020	82,4	-7	1
Phase 2		Apr	14/06/2020	85,6	-4,6	-0,9

Note: * Phase 0 Pre Covid, Phase 1 Lockdown, Phase 2 Progressive reduction of sector lockdown, Phase 3 Economic recovery

Note: ** Comparison was carried out between current month and the same month years ago

Note: *** Comparison was carried out between current month at the new deadline and the same month years ago

Source: Elaboration on data extracted from Business Statistical Portal

Figure 3 shows how the decrease in the propensity to answer to statistic surveys has affected all classes of employees' enterprises, the class 20-49 is the one that recorded the highest variation, marking an average decrease of 7.2%. With reference to the most representative classes by number of companies for each individual survey, the following variations are recorded: -3.8% for classes 100-249 and 50-99 for the Turnover and orders survey; -3.7% for class 0-19 for Retail trade survey ; -8.3% for the class with more than 500 employees for the Employment in large enterprises and -5.9% for the class 100-249 for the Industrial production.

Figure 3 - SHORT-TERM SURVEYS, AVERAGE RESPONSE RATES AT DEADLINES 2020 FOR THE PROVISION OF DATA BY CLASS OF EMPLOYEES. Period Jan - Apr, years 2019 and 2020. Percentage changes(*) (**).



Note: * For the Employment in large enterprises survey, the graph shows only the variations referred to the first class (> = 500), because the survey involved companies with at least 500.

Note: ** For technical reasons , the data are calculated on the Saturday following the deadline

Source: Elaboration on data extracted from Business Statistical Portal

5. Structural business surveys: strategies adopted and survey participation rates

The emergency generated by the pandemic in the March-June 2020 period was managed for structural business surveys essentially in two different ways. The postponement of the deadline useful for the transmission of the requested data was adopted for the investigations ongoing in the mentioned period (Prodcom, R&D, Outward, RCL-SES) and - depending on the original closing dates - the postponements were more than one, with the aim of reducing the statistical burden on the responding companies in the most critical months. For investigations still in preparation, such as Iulgi (Survey on local units of large companies) and ICT (Business Information and Communication Technologies), the entire period of data collection was postponed, with the aim primarily of ensuring that the start-up took place once the critical phase was over. These measures were accompanied by an occasional investigation on businesses, as already mentioned in the introduction.

Monitoring of returns rates became a critical issue, as several businesses parameters had to be taken into account in order to adopt the best communication strategy, and time became a primary key variable to observe, so that, within the mentioned Pandemic Task force, several monitoring indicators have been defined and implemented.

The management of contacts with the survey units has also undergone changes. The communication calendar was completely reviewed and the reminders to the units, where essentially notifications of the postponements defined, sent close to previously set deadlines. Both Inbound and Outbound services undergone period of service suspension due to the pandemic restriction. Beside that, it has to be mentioned that specific codes have been defined for units that showed difficulties in transmitting the data on the given dates. This outcome has enabled monitoring of the situation in general and in particular for large companies subject to penalties.

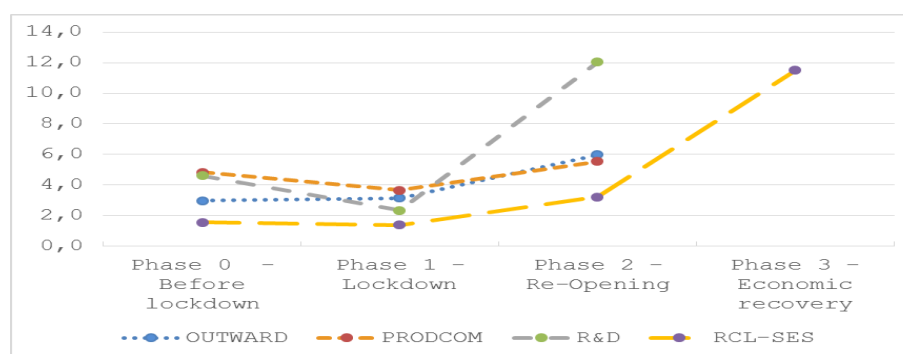
The pandemic has had several effects on structural investigations that can be described in terms of transient and long-lasting effects. The former refers substantially to the trends in returns over time, while the latter

refers to the differences recorded in terms of final outcome rates compared to the previous edition of the same survey.

The present contribution analyzes the participation to the structural surveys during pandemic. The different indicators on trends of the outcomes rate have been calculated for all the surveys going on during the pandemic covid-19 in spring 2020, Outward, Prodcum, R&D and RCL-SES.

Looking at the values recorded in terms of daily outcomes rate (over thousands of sampling units), for phase of the four mentioned surveys, it is evident that the lockdown phase (Phase 1, between 9th March and 3rd May 2020) affected the business participation rate, particularly for Prodcum and R&D where the decrease from previous phase is around one and two, respectively, points per thousand, whereas for Outward and Rcl-Ses, we recorded only a slightly difference between the first two periods. During Phase 2 – Re-Opening (between 4th of May and 14th June 2020), the daily outcome rates showed a decisive increase especially in R&D, whereas Rcl-Ses recovered mostly in Phase 3 – Economic recovery (beyond 14th of June).

Figure 4 – Daily outcome rates per pandemic phase and survey (per thousands of sampling units)



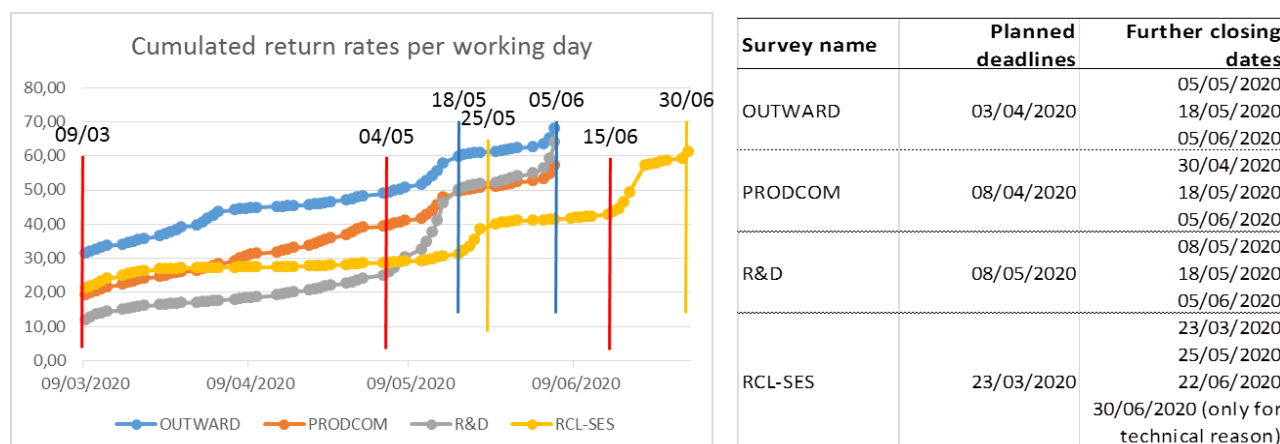
In order to better understand the meaning of those figures, it has to be stressed that three of the mentioned surveys should have had their closure in late March/April, whereas R&D closure was supposed to be soon after the end of Lockdown phase, at the beginning of May. This means that the Phase 1 fell exactly in the period in which most of the businesses is used to fill in the questionnaire, in fact commonly most of the sampling units waits until the last 2-3 weeks of the collection period to comply with the obligation to respond. So that even small reduction in daily outcomes rates per thousands in Phase 1 hide a high depression in expected questionnaire return rates.

Moreover, being Outward and Rcl-Ses started in autumn 2019, at the 9th of March they recorded 30 and 20 percent of outcome rates respectively, same as Prodcum that started in late January (and recorded a 20 percent outcome rates), whereas R&D had the lower percentage (with 10 %) being started in February.

In the following, the cumulated daily outcome rates trends is also depicted, starting from 9 March till the end of the four surveys data collection period.

Outward and Prodcum during Phase 1 show a slight increase due to the mentioned formal deadline; whereas in Phase 2 there are decisive increases for the deadline postponed to 18th May for Outward, Prodcum and R&D and to 25th of May for RCL-SES. Particularly, the 18th May deadline (compared with the values recorded the 3rd May) generated an increase of 26 points percent over total sampling units for R&D, whereas only around 11 point percent for Outward and Prodcum, and the same was for RCL-SES, considering the 25th May deadline. In this way the R&D outcome rate reaches same values of Prodcum that is 50 percent, whereas the one of Outward rises up to 60 percent. Thus it is clear that the effect of the pandemic on each survey depends on the level reached in the previous steps of the survey and on its lenght. In Phase 3, lastly, we could follow only the RCL-SES businesses behavior, that recorded a pick of new outcomes related to the 22nd June deadline, in fact 19 percent of the sampling units sent the questionnaire after the 14th June (even if last deadline was moved to 30th June, for technical reason).

Figure 5 – Cumulated daily outcomes per survey and related deadlines (days as working day, outcomes as percent over total survey sampling units)



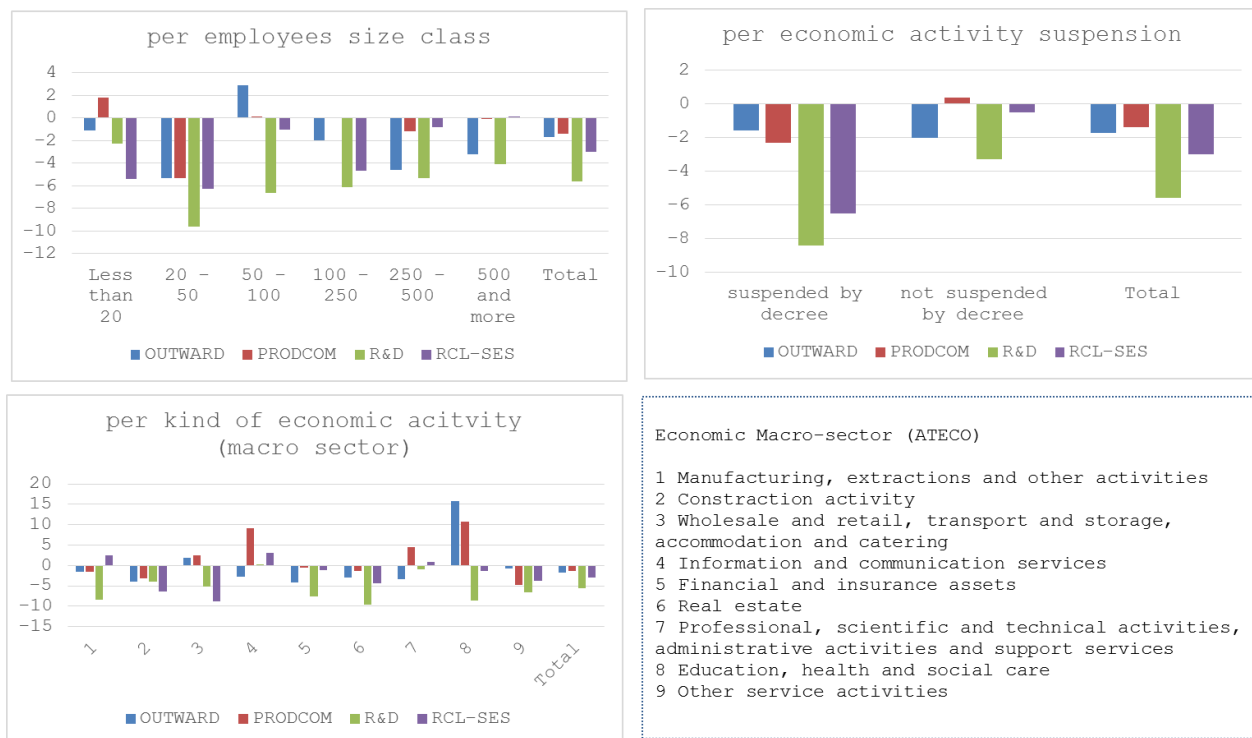
Looking at the final outcome rates, it emerges that the values are slightly less than what was recorded in the previous edition of the survey, particularly for R&D that is with 64.2 percent, 5 percentage points below the previous score, whereas RCL-SES final reaches 61.4 percent, 3.5 percentage points less than 4 years before, lastly Prodcom (with an outcome rates of 57.4 percent) and Outward (68.7 percent) register a difference less than 2 percent.

The following graph shows where are mainly concentrated the outcomes' falls for each survey. For R&D and RCL-SES the economic activity suspension seems to be a relevant factor in the reduction of survey participation. The economic macro-sector mainly affected is *Manufacturing, extractions and other activities* for R&D, whereas for RCL-SES is *Wholesale and retail, transport and storage, accommodation and catering* (that represents also the highest quota of the sampling units with 27 percent of the all sample) with 9 percentage points less than the previous edition.

In terms of dimension, the size class less than 50 employees, that is also the size class with higher increase in terms of sampling units involved in the survey than the previous run, around 8 thousands units more, is more affected for R&D, whereas for RCL-SES the small-medium businesses (with 20 to 50 employees) scored 6.3 p.p. less than the year before and the medium size class (employees between 100 and 250) 5.3 p.p. less.

The economic activity suspension affected business units in Prodcom with a reduction in outcome rates of 2 percent, whereas this action doesn't seem to affect Outward. At macro-economic level, we underline that for Prodcom there are increases recorded for the sectors less represented in the sample, but this is not the case for Wholesale and retail, transport and storage, accommodation and catering, which represent a relatively relevant section of the sample and shows a slight increase, as it happens in in Outward.

Figure 6 - Differences in outcome rates for surveys run in year 2020 compared with previous edition (percentage points)



In conclusion, the outcomes in structural surveys were affected slightly by the pandemic, except for R&D, a sign that the strategy adopted for their management has had its positive effects. The final results, however, depending on the survey analysed, register falls in different areas, i.e. depending on the defined lockdown of the specific activities and therefore the impact is on a particular macro-sector or size. For the future, it is important to note that the monitoring indicator scheme defined for structural surveys during the pandemic within the mentioned Task Force, will be adopted as a standard for monitoring structural investigations.

6. Institution surveys during the pandemic

This section analyses the effects of the emergency in the context of surveys on Institutions.

In particular, it will pay attention on solutions adopted in order to mitigate the impact of Covid 19 pandemic on survey processes.

We will focus on three surveys carried out during the period of health emergency in which were involved Municipalities and Schools:

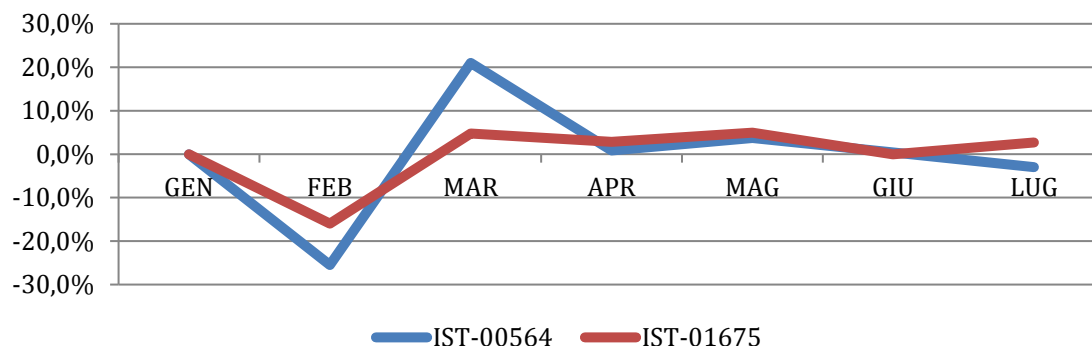
- Survey on Building Permits (Rilevazione statistica dei permessi di costruire – IST-00564)
- "Rapid" Survey on Building Permits (Rilevazione statistica "rapida" dei permessi di costruire – IST-01675)
- Integration to disabled students in public and private schools (Integrazione degli studenti con disabilità nelle scuole pubbliche e private – IST 02234)

The survey on building permits is a census involving all Italian municipalities (about 8,000) that collects data for all units of the target population on a monthly basis about new construction projects or enlarging pre-existing structures, residential and non-residential, authorized by certified building permits.

The "rapid" survey, on the other hand, is based on a sample of 1,034 municipalities; it was introduced in 2003 with the aim of producing a set of quarterly indicators of building permits; this is a subset of indicators of the structural survey to be transmitted to Eurostat. Both are included in the National Statistical Program (PSN).

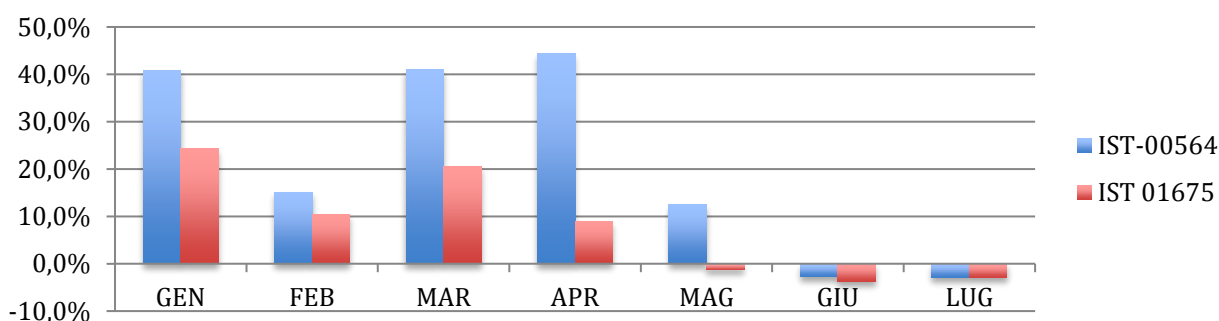
In order to meet the difficulties encountered by respondents, for both surveys, the deadline to send data of January, February, March, April and May was postponed to 30th June; at the same time ISTAT asked to send data monthly, by the dates previously scheduled.

Figure 7. Surveys on Building Permits - Short-term percentage change



As it can be seen in Figure 7, the data transmission for the month of February compared to the previous months decline significantly, for both surveys, respectively of -25,5% and -16%. This can be explained by the fact that the deadline for sending February data was scheduled for the end of March, in the middle of the phase 1, during which it couldn't be easy to complete the required fulfillment due to closure of various sectors and people movement restriction. The response rate increased again in March (respectively +21% and + 4,8%) and have less variations in subsequent months.

Figure 8. Surveys on Building Permits - Trend percentage change



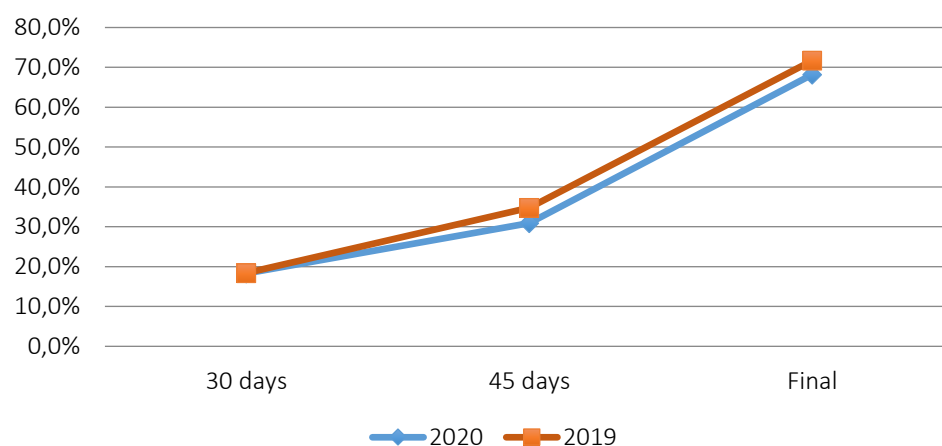
The Figure 8 shows the variation between 2019 and 2020 in terms of response rates. It's important to underline that since May 2019 automatic procedures have been implemented in order to monitor the entire data collection process. The aim is to identify and apply corrective actions to control non-respondents like sending extra reminders by ordinary and certified email in addition to those already scheduled. This arrangement, made before the emergency, affected significantly the response rate; despite the positive effect due to the new strategies adopted, we can observe a significant drop in February.

The survey "Integration fo disabled students in public and private schools" involved about 55,000 schools of all orders and level, from nursery to high school. It aims to detect resources, activities and tools that each Institute adopt to facilitate school integration of students with disabilities. In addition, on a selected sample of students, information on socio-demographic characteristics and type of support received are collected.

This year, following the suspension of normal teaching activities due to the Covid-19 emergency, ISTAT decided to collect only information related to Institute.

In addition, unlike previous years in which the survey began at the end of March, in 2020 it has been decided to postpone both the start date and the closing date: the survey started on May 4th, at the beginning of phase 2, and ended on June 30th.

Figure 9. Integration to disabled students in public and private schools - Percentage of responses rate by year



One month after the start of the field operations, the general response rate was 18.3% with a substantial homogeneity between the different regions. Even regions most severely affected by the virus (Lombardia, Veneto and Piemonte) showed response rates in line with the national average. At the beginning of phase 3, about 45 days since the beginning of the survey, the response rate was approximately 30.4%. Reaching respondents was the real challenge for this survey because schools were closed for the entire period of field operations. For this reason ISTAT decided to send extra email reminders in the last period of survey.

At the end of field operations the response rate was 68,2%. As it can be seen in Figure 9, comparing the response rates with 2019 data, we find very low differences, about 3%.

In conclusion we can assume that the emergency had a strong impact on the response rates, mainly in the phase 1. However, the strategies adopted in the previous years minimize and compensated this effect.

Moreover, the postponement of the date of field operations, combined with a greater number of reminders, surely minimized the emergency effect, bringing the final result to the level of the previous year.

7. Impact on Sectoral surveys (agriculture, transport, tourism, culture and consumer prices)

In the field of sectoral surveys (agriculture, transport, tourism, culture and consumer prices), ISTAT has activated a series of actions to ensure the continuity and quality of statistical production even in a crisis situation. In particular, it envisaged the following possibilities:

a) for the monthly surveys on agriculture, transport and tourism, the reshaping of the supply of the requested data, with reference to the months from February to May, by 30 June, while confirming the need to acquire the data within the terms indicated in the informative letters, useful for the timely publication of data;

b) for the structural surveys on agriculture, transport (rail), tourism and culture, interventions were made to renew the conditions, methods and terms for the provision of data, with postponements in the deadline after 30 May 2020. Furthermore, some surveys scheduled for the same period and not covered by Community statistical regulations have been postponed, eg. Library survey.

c) for the consumer prices survey, the suspension of all data collection activities that require the physical presence of the detectors in commercial establishments entailed the remodeling of the survey technique that passed from face to face to CATI mode, contacting the stores by telephone.

The aforementioned actions, undertaken by ISTAT on the various sectors and surveys, have allowed:

- ✓ comply with European statistical regulations, the fulfillment of which is mandatory for the Member States of the European Union;
- ✓ disseminating the data produced in a timely manner for the benefit of economic operators at a particular time for the country;
- ✓ meet Eurostat's requests to provide timely, reliable and complete (monthly and quarterly) short-term statistics, which are essential to provide a framework objective of the economic and social situation in Europe and to develop an adequate response to the economic and social shocks caused from the coronavirus pandemic.

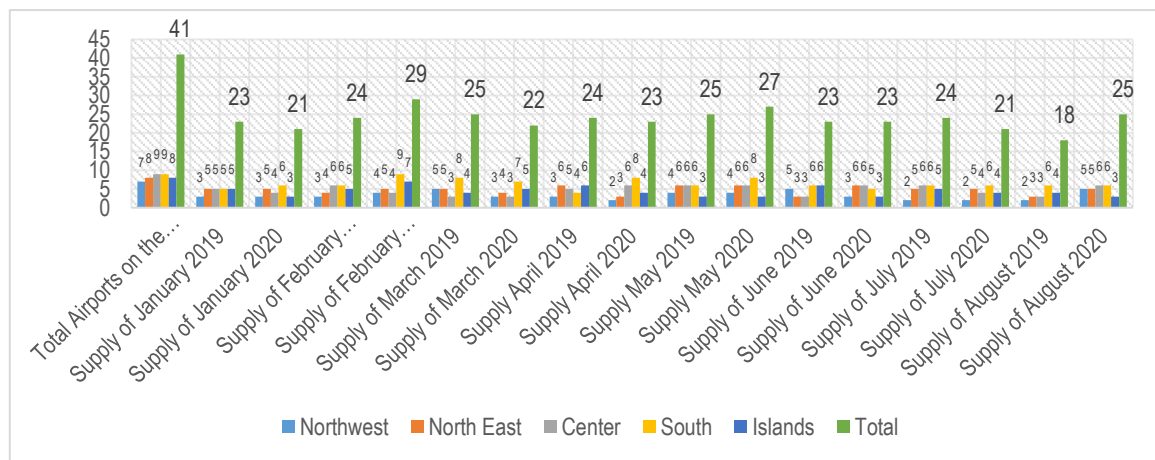
To implement the remodeling measures of the aforementioned sector surveys, a series of activities were undertaken:

- monthly surveys (Deadline at 30 June 2020 for the short-term surveys already started): official communications reporting the new deadline for data transmission were sent periodically (every 15 - 20 days) by certified e-mail to the survey units. Annual surveys (new deadline for the transmission of data from structural surveys already started): official communications indicating the new deadlines for data transmission were sent by certified e-mail (every 20-30 days) to the survey units;
- technique change (consumer prices): with an official letter the municipalities involved in the surveys were notified of the need to change the technique from CAPI to CATI given the emergency. Considering the relevance of the data collected for the production of statistical indicators of considerable interest at national and international level, also in relation to the monitoring of the effects produced by the health emergency on the economic and social system, municipalities were invited to continue data collection if possible by adopting alternative methods. So for the products in the basket observed locally, the survey could be carried out by the municipality, where possible, via the web, by email or by telephone, trying to agree with the respondent an appropriate time to collect the prices, in order to minimize the burden for the respondent himself. ISTAT also provided technical information on the methods that would allow data collection to be carried out in a more sustainable manner in the current health emergency context. If, even following these indications, it was not possible to carry out the survey, it was necessary to enter the outcome of the survey not performed or closed company, it would then be the responsibility of ISTAT to enter the outcome of non-survey performed due to an extraordinary event and estimate the missing data.

The temporary failure of the contact center and the time needed to reorganize their activities in smart working mode have mainly impacted on the surveys conducted in CAWI mode if we consider the support activities they carry out towards respondents. The suspension of the postal service also impacted not only on all the surveys being started, whatever the survey technique used, but also on all those surveys already started that envisage postal communications / reminders. It was therefore necessary to make greater use of ordinary e-mail to communicate with respondents and provide them with support / assistance, also for this reason in the period February - May, greater use was made of sending email reminders on a regular basis, 10/15 days, according to the frequency of the various surveys in progress. The communications were sent directly to the e-mail boxes of the survey managers / referents (in the case of intermediate bodies) and / or to the e-mail boxes of the survey units. During the lockdown period, the respondents (companies, regions, municipalities) also carried out many of their activities in smart working mode using PEC and e-mail to communicate, as well as remodeling the terms in the delivery of data, made it possible to obtain good results on response rates. The following analyses show for some sectoral surveys selected on the basis of the impact of the pandemic, the lockdown, and on the basis of priorities of the statistics indicated by Eurostat (Principal European Economic), the response rate at the deadline provided for in the informative letter and the one

remodeled by the ISTAT resolution. For the monthly survey on air transport¹⁴, the informative letter indicates the expiration date of the 15th day of the month following the reference period, it happens that only a constant subset of the airports fulfills punctual delivery. The response rate per reference month is normally consolidated after about three months and with at least one reminder. While noting the collaboration of the representatives of the airport companies, it can nevertheless be noted, coinciding with the lockdown period, a slight decrease in the monthly deliveries of March 2020, whose deadline was scheduled for 15/4/2020. Analysing the situation at territorial level, considering the distribution of the airports on the territory, the coverage rate of supplies resulted decreasing in the geographical areas with the greatest Covid incidence, such as the North-West and the North-East. Negative repercussions due to the closure of airports have affected the punctuality of deliveries, especially in smaller airports.

Figure 10. Supplies acquired at the deadline of the 15th day of the month following the reference month by territorial division - Years 2019 and 2020



Source: processing of data extracted from the ARCAM acquisition system

The graph points out the number of supplies acquired and monitored in the data collection weeks of the year 2020 compared to the same weeks of the year 2019, by territorial division. The lockdown period certainly weighed on the delivery schedules during the months of March and April and the airport companies preferred to concentrate their efforts and work on file transmissions in the weeks in which the deadline of the 15th day of the month fell. The criticalities arise above all for the airports of the North-West area, while the regular resumption of deliveries occurs starting from the third week of May¹⁵.

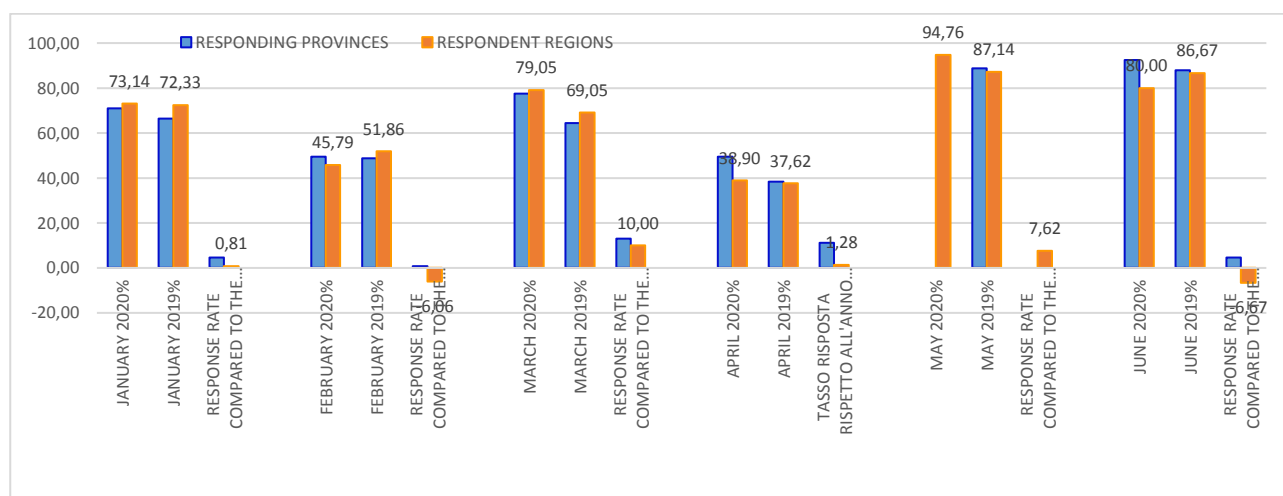
¹⁴ The air transport survey is a total and monthly survey that collects information on the transport of passengers, cargo and mail, flight stages, seats available, aircraft movements and airlines. (EU Regulation no. 437/2003 and subsequent amendments and additions), the field of observation of the survey consists of the movements recorded in national airports (with a number of passengers per year exceeding 15,000 units) of Italian and foreign transported cargo (passengers, freight and mail). Commercial movements are recorded - scheduled and non-scheduled (charter) flights. The data must be transmitted by the fifteenth day of the month following the reference month.

The data are collected, processed and transmitted to Istat electronically by the airport management companies (airports) in compliance with the paths provided by Istat. The data must be transmitted via the ARCAM acquisition portal, which allows the acquisition of data in compliance with the security rules required by current legislation.

The survey began on 11 February 2020, on the eve of the lockdown period caused by the Covid health emergency: the civil aviation sector also had to face the very serious crisis that hit national air transport, in particular that of passengers. . Also for the air transport survey, as part of the initiatives adopted by Istat for economic surveys, it was decided to set the deadline for the transmission of data to Istat at 30 June 2020, subject to PEC communications and emails.

¹⁵ Phase 2 (from 16 April: definition of measures for coexistence with the virus, progressive reduction of the block in the sector and restrictions on the movement of people), Phase 3 (from 9 June: involvement initiatives for economic recovery).

Figure 11. Variation in the response rate of the “Movement of customers in accomodation” survey at regional and provincial level



Source: elaboration on the ISTAT MOV / C models sent by the Regions.

Analyzing the response rate in the months of January - April 2020 and the same months for the year 2019 for the survey "Customer movement in accommodation establishments¹⁶", it is possible to note an increase in the response rate in 2020 (+13.08 pp in March 2020 (lockdown period) and +11.21 pp in April 2020). This increase in the response rate could be attributable to the increased reminders sent by PEC and emails to the regional contacts, who had started their smart working and to the shift of the supply dates to 30 June.

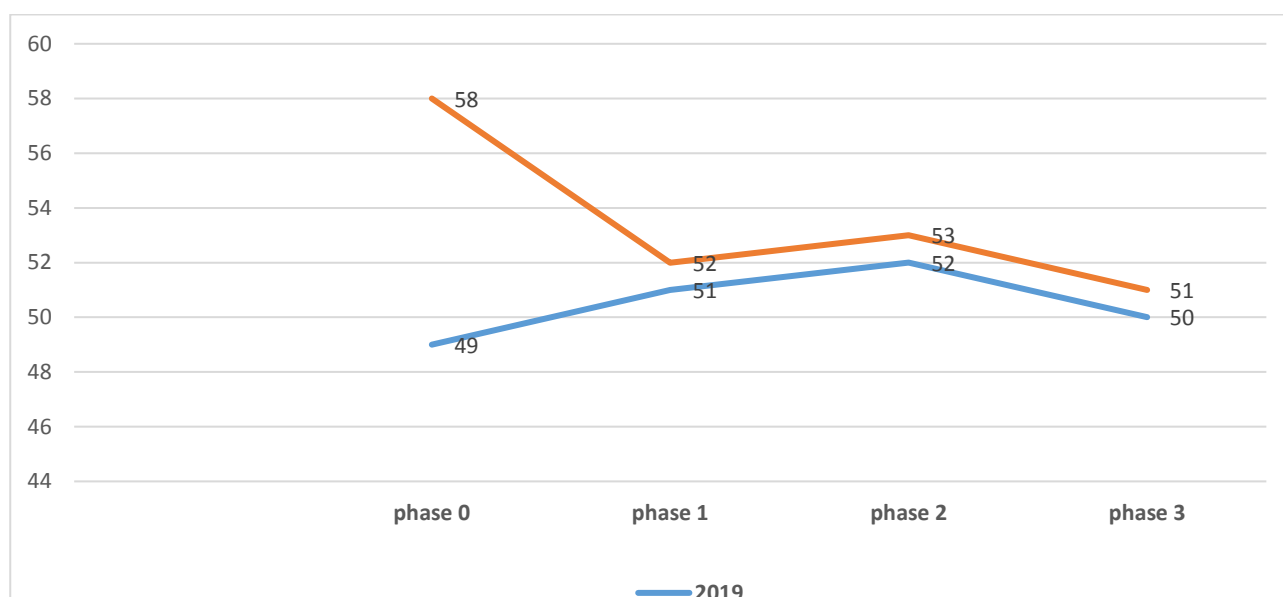
In conclusion, the sectoral surveys (monthly and yearly), despite the ongoing emergency situation, met the active collaboration of the responding units involved. Surely the actions taken by ISTAT to ensure the continuity of the surveys as the reshaping of new deadlines and techniques (eg consumer prices) had a positive effect. Sending PEC communications and emails and assistance to respondents via email boxes constantly ensured by ISTAT staff have allowed, despite the difficulties linked to Covid-19, to carry out surveys and guarantee statistical production and dissemination in accordance with the deadlines and European quality standards.

¹⁶ The "Customer movement in accommodation establishments" survey is a census survey carried out on a monthly basis which aims to collect information for each month of the year and for each municipality in the national territory, on the arrivals and presences of customers (residents and not) in accommodation facilities. The survey responds to the dictates of the EU Regulation no. 692/2011 of the European Parliament and of the Council relating to European statistics on tourism, as amended by the EU Delegated Regulation no. 2019/1681 of the Commission of 1 August 2019. The survey units are the accommodation establishments present on the national territory. The survey is carried out through the transmission of data on the daily movement of customers communicated by the operators of the accommodation facilities to the intermediate bodies (Statistical Offices of the Regions and Autonomous Provinces) and collected and summarized monthly by the latter (by the 30th of the month of subsequent to the reference one) through the ISTAT MOV / C model, a file with a record layout prepared by Istat. The investigation was launched on March 3 a few days before the introduction of restrictive measures for the mobility of people, blocking the economic sectors.

7.1 Road freight transport survey

Analyzing the response rate of the "road freight transport"¹⁷ survey in the periods of the different phases of the lockdown (Phase 0 Pre Covid, Phase 1 Lockdown, Phase 2 Progressive reduction of the block in the sector, Phase 3 Economic recovery) it results an increase, compared to 2019, in the response rate, especially in the pre-covid period (+9 pp), probably attributable to an improvement in the survey technique via the Business Statistical Portal and the planning of all weeks of survey with precise expiration dates for sending data. In the phases 1, 2 and 3 slight increases are attributable to the sending of email reminders to the survey representatives and the resumption of activities.

Figure 12. Road freight transport survey - Variation in response rate for months January - August - years 2019 and 2020



Source: processing of data extracted from the statistical enterprise portal

8. Conclusions

Despite the pandemic has severely hit Italy, ISTAT has managed to guarantee both the continuity of the statistical production as well as the dissemination of new and more relevant data to better understand the social and economic impact of Covid-19. The centralized data collection approach adopted by ISTAT has helped to tackle the problems that emerged, ensuring adequate flexibility and strong coordination of the

¹⁷ The survey on "Road freight transport" is a continuous sample survey, conducted in accordance with the provisions of EU Regulation no. 70/2012 for freight transport statistics and related implementation rules. The annual sample consists of 43,000 vehicles. The observation period of the phenomenon covers all 52 weeks of the year. The unit of analysis consists of vehicles registered in Italy, with a payload greater than or equal to 35 quintals and suitable for carrying out the transport of goods. The survey unit is made up of both companies that operate on behalf of third parties by offering professional transport services and companies that operate on their own. Data collection takes place on a weekly basis. The respondents send the data, referring to the transport of goods carried out in the sample week, within 5 days of the end of the period. to trips made during a predetermined week of activity by the championship vehicle. The questionnaire must be completed following the instructions attached to it and must be returned via the statistical portal of companies

measures to be taken as well as integration of the actions and coherence with national regulations. It also represents a solution in view of possible other future external shocks.

The emergency involved a set of permanent innovation effects in data collection processes that in part accelerated previously existing trend and in part are completely new.

The integration of statistical production systems on a set of basic and extended statistical registers resulted particularly resilient to the shocks produced by the pandemic. In addition, the registers allow to constantly check the completeness, quality and coverage of data collected through direct reporting or administrative data.

Relevant and permanent effects also emerged on data collection techniques. As an example, the forced digitalization of households over the most critical phase of global pandemic should be capitalized to persistently reduce burden on the respondents and to adopt less expensive techniques.

The pandemic has also speeded up the use of new data sources in real statistical production. On this regard, previous interest and experimental engagement of ISTAT in exploring new data sources has proven to be essential in supporting the quick implementation of these data in real statistical production. An example is represented by “Electronic invoicing”. New data are available in Italy since January 2020 due to a new fiscal regulation. These data include both Business to Business and Business to Consumer monetary transactions. This information is useful for both Structural and Short term business statistics.

The use of new data sources and administrative data will be very likely consolidated and incremented in the near future given the fact that Covid-19 introduced new awareness, vision and organizational solutions, that will focus on costs, timeliness and respondent burden, also accepting some risks in term of other quality dimensions.

9. Acknowledgement

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