

Using mixed modes for household surveys amid COVID-19

- Lessons and implications from South Korea

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1. Background

We have been experiencing hectic times since 2020 due to COVID-19. The pandemic has significantly changed the way in which surveys are conducted, and many things happened to field surveys and national statistical offices around the world.

South Korea saw its first confirmed COVID-19 case at the end of January in 2020. After the initial spike of the pandemic in early March, social distancing restrictions gradually brought infections down, but the first shock continued until mid-April. This season of the year is usually quite busy for Statistics Korea (KOSTAT) with the start of annual or bi-annual household surveys such as household finances and living conditions survey, regional employment survey, monthly household survey such as economically active population survey and other social surveys regarding household statistics. These household surveys were carried out used face-to-face for technical reasons, so conducting surveys amid the pandemic was very challenging last year.

Faced with such obstacles, Statistics Korea established a contingency response team, and this team created several guidelines on field surveys while collaborating with the survey team of the headquarters and the field survey team of regional statistical offices. Since household survey data is time-sensitive for various users, especially policymakers, KOSTAT had to use mixed modes to continue to produce field surveys during the pandemic. However, there were at that time many concerns that using mixed modes might affect data quality because it was not yet clear whether the effect of using mixed modes is easily measurable. Under these circumstances, we tried several new approaches across the survey process from survey preparation to data dissemination.

This paper focuses on describing the implementation of field surveys, survey results after using mixed modes, and how the mixed modes affected the survey data. In section 2, the paper describes the contingency plan of KOSTAT. In sections 3 and 4, it presents two case studies; we elaborated on household finances and living conditions survey. We also introduced briefly the economically active population survey. The last part provides some findings and implications from the case studies.

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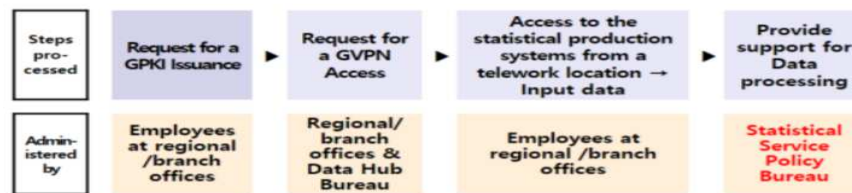
2. Contingency plan in response to the COVID-19 crisis³

To overcome the COVID-19 crisis, KOSTAT immediately established contingency response systems; and set up a contingency response office, led by the Vice Commissioner of KOSTAT. The objective of the contingency response system is to efficiently implement interventions and establish cooperation mechanisms between the headquarters of KOSTAT and its regional statistical offices.

The contingency response team is responsible for managing and controlling survey work arrangements and field interviews, while the regional offices are required to provide real-time update to the contingency response team on COVID-19 infection cases and any regional environmental changes that could affect field surveys. The contingency response team created a set of Response Guidelines for the regional offices to comply with the guidelines on work arrangements and field interviews.

In terms of guidelines for field interviews, the headquarters first set up teleworking arrangements to ensure that field work is not disrupted by the potential closure of regional or branch offices. It is essential to managing the teleworking set-up with GPKI⁴, GVPN⁵, and other security systems. (see Figure 1)

Figure 1: Teleworking set-up



Second, the Guidelines stressed that non-contact survey collection modes, such as telephone, fax, and self-administrative, can be used for field surveys. Video clips were prepared to provide training to interviewers remotely instead of in-person training courses.

The Guidelines also recommended utilizing existing data to reduce the response burden on households. Such policy stressed the importance of minimizing direct data collection activities, focusing on identifying changes and updates, and encouraged the use of relevant administrative data or private sector data to complement and replace relevant survey items.

³ https://kosis.kr/covid_eng/response_system.do

⁴ GPKI stands for government public critical infrastructure: administrative and electronic signature certificate

⁵ GVPN identifies a government virtual private network available on a pre-designated PC using GPKI and allows users to handle administrative affairs anytime, anywhere if the internet is connected

3. Case 1: Household finances and living conditions survey

3.1 Survey overview

The Household finances and living conditions (HFLC) survey is an annual survey depicting households' financial stability and economic conditions. It measures households' incomes, expenditures, assets, liabilities, and other economic and financial aspects by asking about 185 questions to approximately 20,000 households across the nation, including single-person households, households with a shared livelihood wherein members are related by blood, marriage, or adoption,. Face-to-face interviewing is the preferred mode of data collection due to the complexity and difficulty of the survey. A household remains in the sample for five consecutive years under a rotating panel design. The panel sample consists of five sub-sample groups. One panel group is replaced by a new one every year. Accordingly, 80% of the sample households participate in the survey for two consecutive years, while 20% only answer in the current survey year.

The HFLC survey utilizes administrative data on income and non-consumption expenditures. KOSTAT collaborates with data providers such as tax, health insurance, and other social insurance related agencies. Data collected from the field go through a data cleaning process before being combined with the administrative data. This is because administrative data can be considered more accurate. It was found that combining two different data sources decrease the measurement errors or non-sampling errors in surveys. This HFLC survey plays a vital role in measuring household poverty levels.

3.2 COVID-19 response plan

The fieldwork of the 2020 HFLC survey came after the pandemic's outbreak last year. In response, KOSTAT created detailed response plans for each contingency in the pandemic situation that are flexible and could be easily adapted depending on field conditions. The top priority was to safely complete this survey amid the crisis, maintaining the usual response rate level, and to prevent the spread of the virus and protect our interviewers and respondents from the virus while doing the survey. Around this priority, we built action standards that applied to the survey processes of planning, preparation, field operation and quality control. We enhanced communications with regional statistical offices to better consider local circumstances related to survey administration and on-site safety concerns while allowing the use of mixed survey modes such as telephone, internet, and self-administered methods to accommodate households' preference.

- **Planning phase:** giving priorities to the prevention of contagion and maintaining the current response rate

- Creating plans to minimize gatherings of enumerators and allowing the use of survey modes preferred by respondents
- Providing extra support, including updated guidelines for special quarantine areas such as Daegu metropolitan city and Gyeongbuk province
- Distributing instructions on providing questionnaires to participating households with regard to the extended use of non-face-to-face modes⁶, and the smooth operation thereof
- **Preparation phase:** training interviewers and staff involved in field surveys with a focus on safety
 - Providing facial masks and portable hand sanitizers to all interviewers and checking them for symptoms of COVID-19 such as fever and cough on a daily basis to protect interviewers and reassure participating households that all is safe
 - Minimizing compulsory group training for interviewers and replacing face-to-face training with virtual training to protect interviewers and to prevent the spread of the virus. It turned out that no known cases of COVID-19 were reported during the survey
- **Field operation phase:** preparing and operating the field survey
 - Preliminary survey for two days: reasserting the guideline's message with focus on safety protocols right before the main survey starts
 - Main survey for 17 days: communicating with regional offices about the implementation plans, which are updated frequently in response to field conditions, and collecting data
- **Quality control phase:** checking that data quality meets the standards of official statistics, especially in terms of time series
 - Verifying over the phone if any irregular responses were collected through non-contact modes⁷

⁶ In this survey, non-contact (or non-face-to-face) survey modes include telephone, internet, and self-administered method. The self-administered mode refers to how interviewers deliver questionnaires to the household and collect the completed questionnaires after each household prepares responses to the questionnaire independently. During the answering time, the household and interviewer communicate on the phone if necessary. *And this survey uses PAPI (Paper and Pencil) because of the complexity and difficulty of the questionnaire. We are now considering applying CAPI (Computer-assisted personal interviewing) with some editing.*

⁷ In this paper, non-contact modes mean survey data collection modes in a field without in-person interviewing at a particular place like home or office: these contain telephone, internet, fax, and self-administration; some used to call it "remote-modes." Alternately, a contact mode means a survey mode with in-person interviewing such as a face-to-face.

and authenticating housing price data provided by all newly selected samples⁸ for the current year

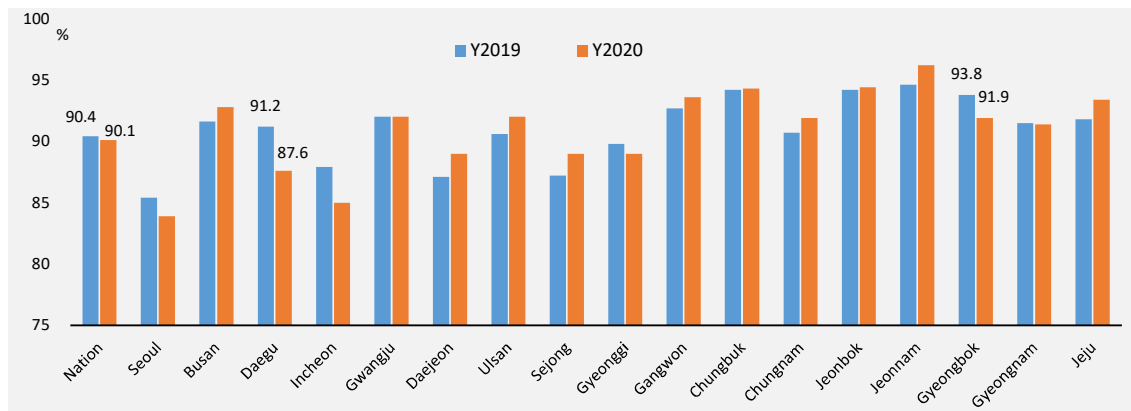
- Conducting an in-depth analysis of paradata, mode effects, and other confirming time series in order to ensure data quality

3.3 Survey results in terms of response rate and participation in each survey mode

(1) Response rates

The 2020 HFCLC survey response rate was 90.1%, which was similar to 90.4% of the 2019 survey (see Figure 2). In some metropolitan areas such as Seoul, Daegu, and Incheon, response rates decreased compared to those of 2019. Among provinces, including rural areas, the only place that the response rate went down was Gyeongbuk. Mainly, Daegu was the hardest-hit by the virus, and Gyeongbuk, which is near Daegu, was another coronavirus hot spot during the survey period. The pandemic affected survey response rates in these regions. With the exception of a few impacted areas including Daegu and Gyeongbuk, most regions showed moderately high response rates due to the use of mixed survey modes and limited impact of COVID-19.

Figure 2. Response rate (%) by region: Y2019 and Y2020



(2) Participation rates by survey mode or region

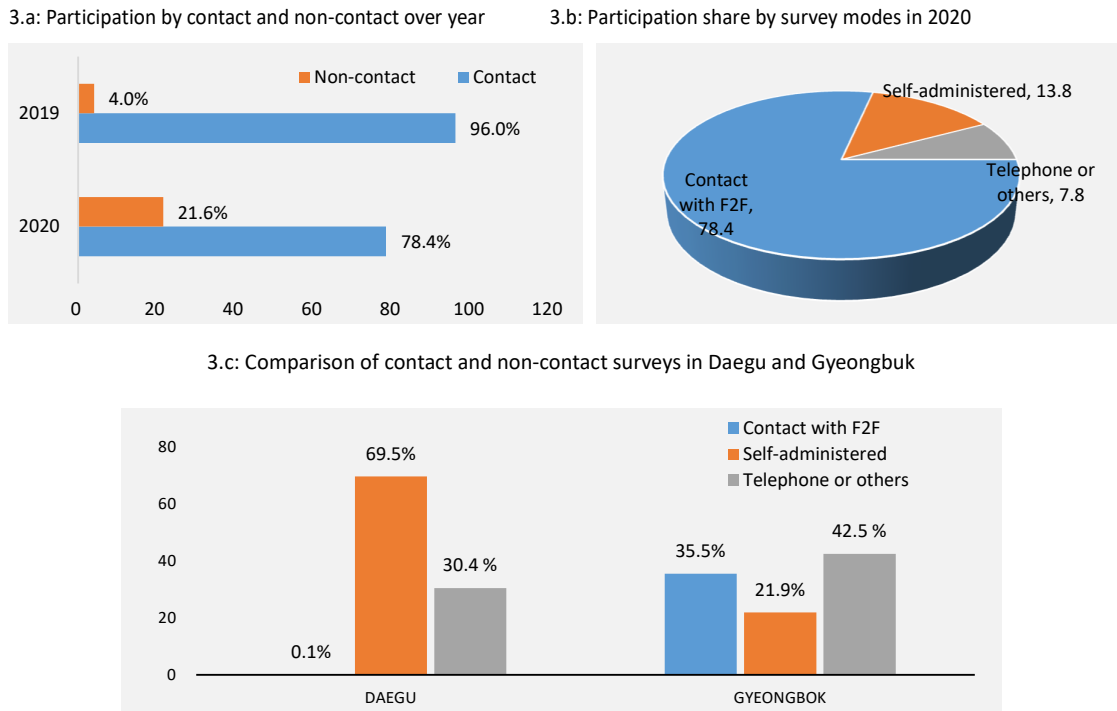
Interestingly, 22% of respondents (households) answered through a non-contact mode, and the proportions of non-contact survey modes grew by 18 percentage points, from 4% in 2019 to 22% in

⁸ This survey adopted the rotating panel sample design, and 20% sample among the entire sample households is changed by new households every year. So, this 20% of households answered this survey for the first time in 2020, so there was no previous information for these households, while 80% of households have the last year's data.

2020. Self-administered mode is the most preferred non-contact survey mode; 14.1% of households selected this mode(see Figure 3b).

As a results of analyzing participation rates in each survey mode in different regions, it turned out that the special quarantine areas of Daegu and Gyeongbuk showed significantly higher proportions of non-contact survey modes with 99.9% and 64.5% respectively. The proportion of non-contact surveys in other regions was between 2.5% to 25.6%. This is to be expected considering that using a non-contact mode was mandatory in Daegu and highly encouraged in Gyeongbuk, which mostly consists of rural areas with many elderly people aged 65 or over who prefer face-to-face surveys. As shown in figure 3.c, the participation by telephone in Gyeongbuk was higher than that in Daegu. It could be understandable that Gyeongbuk contains more rural areas and senior households; they would like to answer through the telephone with the interview’s guidance; These senior households tend to be uncomfortable with using the self-administered mode without any help of interviewers. More results of contact and non-contact survey modes in each household characteristic are referred to table A1 in Annex.

Figure 3: Proportion of participation by survey modes



(3) Participation rates: by household characteristics or survey modes

Additionally, the share of non-contact modes was higher among households with more than persons and whose heads are aged less than 50. Households whose heads are aged above 60 showed a tendency

of selecting telephone and other non-contact modes, which was 41.4%, while households with heads aged less than 50 preferred the self-administered mode with percentage from 18.9% to 24.7%. Households with one or two persons tended to select telephone and other non-contact modes while households with three persons or more preferred the self-administered mode (see Table 1).

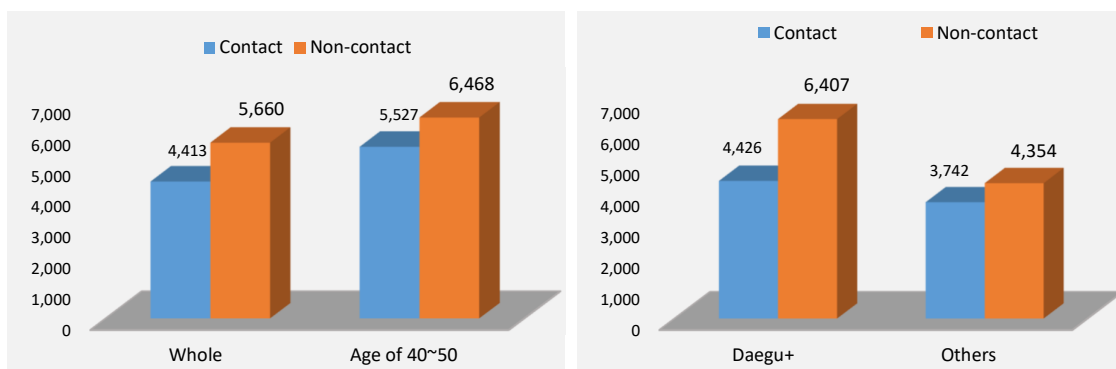
Table 3: Participation rates by two household characteristics by survey modes

Classification		Total	Contact households	Non-contact households		
				total	Self-administration	Telephone and others
Total		100%	100%	100%	100%	100%
Age of household head	In 20s and 30s	13%	12%	19%	18.9%	16.3%
	In 40s	19%	17%	27%	31.1%	20.7%
	In 50s	23%	23%	24%	24.7%	21.6%
	60 or older	45%	49%	31%	25.3%	41.4%
Household size	1-person	25%	27%	20%	14.6%	28.1%
	2-person	31%	33%	25%	21.5%	30.2%
	3-person	19%	19%	21%	24.0%	16.6%
	4-person+	24%	22%	35%	39.9%	25.0%

(4) Exploring survey mode effects

To explore how the mode effect worked, we compared income results for each survey mode, specifically by contact/non-contact modes. Figure 4 shows the household's average annual income by households responded through contact and non-contact survey modes, respectively in the 2020 survey. Overall, households by non-contact modes have a higher income than households by contact mode. The income gaps between groups by a non-contact and a contact mode have similar patterns regardless of age groups and regions. It means the households by non-contact modes generally have a higher income than the households through contact mode. The income gap in Daegu looks more pronounced than in other areas, but this is no surprise because Daegu is one of large metropolitan cities in South Korea.

Figure 4: Household income(KRW) from the field survey by contact or non-contact, 2020



The reason groups by a non-contact mode usually had a higher income than groups by a contact mode

can be explained by the selection of different survey modes based on households' characteristics. Households in younger age groups, households living in urban areas and households with more than three persons mostly selected non-contact modes; these groups tended to have a higher level of education and better and higher paying jobs, or were double income households. These income gaps would come from mode effects. However, it is still difficult to verify if the mode effect, including selection effect and measurement effect, is measurable even when other factors related to this effect are neglected.

Figure 5 shows the relationships between two income patterns; 1) income from survey results alone and 2) income from survey results after adjusting the field survey results with administrative data. Figure 5.a demonstrates the 2020 income figures from mixed-mode surveys and both 2018 and 2019 income data from face-to-face survey results⁹. Here, we were able to assess the mode effects by observing the income gap patterns over the three years. As it turns out that the gaps between income from the survey only and income after being adjusted with administrative data have similar patterns over the three year period.

Figure 5: Comparison of Household income(KRW) from the field survey results and household income from the adjusted results

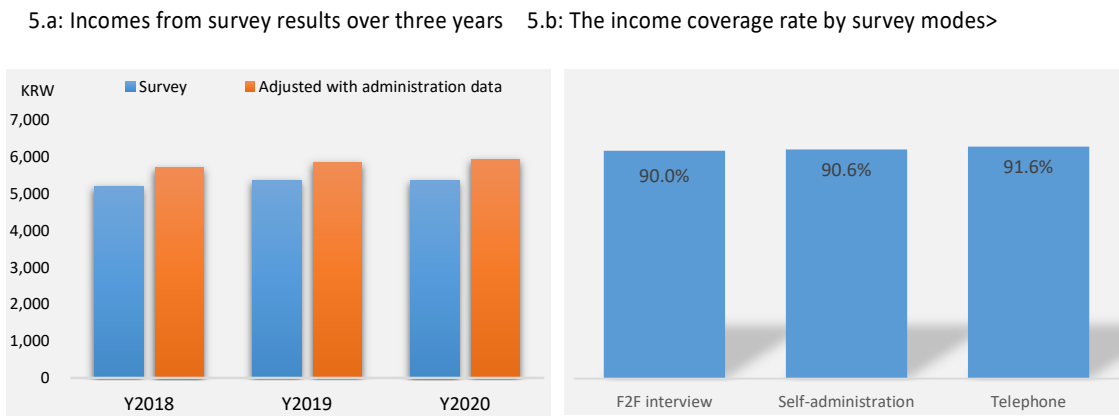


Figure 5.b shows the coverage rate¹⁰ of survey results over the adjusted results. It turned out that incomes for three different modes show little difference from one another, and income coverage rate by

⁹ This survey measures yearly income of the previous year; i.e., 2020 income means the household income for the year of 2019 measured in the 2020 survey.

¹⁰ Coverage rate = (the field survey results / the adjusted results)*100(%). It means that the higher coverage rate identifies that the field survey results alone can cover better the final result combining administrative data

Self-administered mode looks a tiny bit higher than other modes. The reason can be explained by the fact that those households tended to have a higher level education and higher-paying jobs, or/and were younger age groups. This suggests that there might not be mode effects from these two results, or that we did not separated mode effects from other factors.

3.5 Findings and limitations

(1) Findings

The 2020 HFLC Survey was successfully administered even during the pandemic thanks to the adoption of mixed survey modes for the first time. To sum up the results, 90.1% of sample households participated in the survey. Even though households in the sample were allowed to choose their preferred survey mode for the 2020 survey, households still tended to select in-person survey, except for special quarantine areas such as Daegu and Gyeongbuk. A total of 22% of the respondents answered through non-contact modes, and about 63% of non-contact respondents preferred the self-administered mode.

We also tried to analyze the survey results to figure out the mode effects in many ways such as time series patterns, response propensity by household characteristics, and regional survey situations and others. However, it turned out there were no significant disparities in household responses regarding key measurement targets such as income, expenditure, and assets at the national and sub-national levels.

The response errors made when using non-contact modes were mostly eliminated during field surveys or editing. Last year, it was very challenging to use mixed-modes for the survey without a pre-test to figure out how to deal with possible mode effects. For that reason, we applied a stronger editing process to the data collected through non-contact modes so that response errors in the data were corrected. For example, we authenticated the reasons for changes by referring to the previous year's data. The housing price data provided by newly selected samples was cross-checked with official housing price indexes to ensure data accuracy.

Additionally, non-contact modes could help to remove interviewer effects and provide more time for respondents to complete a survey questionnaire, positively affecting the accuracy of survey results. For example, there could be cases where some interviewers use their knowledge and experiences for certain survey questions instead of following the instructions, resulting in biased results. Also, some households tend not to give 'true' answers in front of interviewers for certain reasons.

(2) Limitations in exploring mode effects

There were some limitations in measuring the mode effects from surveys last year:

- The non-contact modes were not used evenly across the entire respondents. Region or age-related biases or a combination of two or more factors were observed, which makes it difficult to discern the mode effects.
- The number of households responded non-contact modes was not enough to measure the mode effects. Only 22 % of respondents chose three different kinds of non-contact modes, and over 60% of them used a self-administered, which means that selection bias could have occurred.
- More para-data was needed to explore the mode effects. Last year, we missed useful data and learning opportunities from the data at intervals along the way before editing survey data.

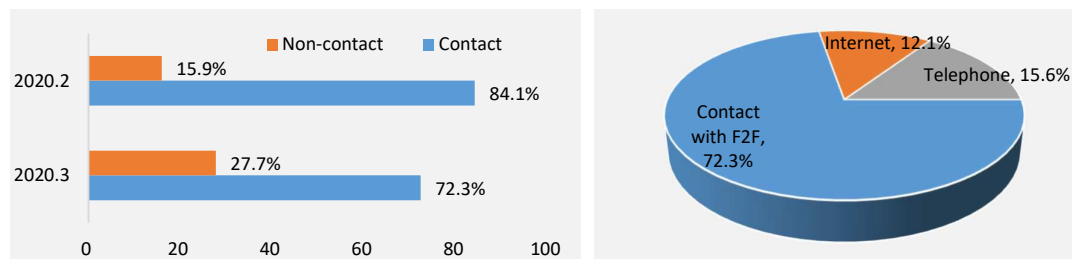
4. Case 2: Economically active population survey

The Economically Active Population Survey (EAPS) in Korea is conducted under a rotation sampling system, in which approximately 965 households - 1/36 of the total sample- are replaced every month. The households newly added to the sample decide in person whether to participate one month before the survey begins. When the actual survey begins, they can select the desired mode for responding. Overall, about 85% of households select contact survey methods, and in some regions, about 40% of households choose non-contact methods to respond the survey before the COVID-19 pandemic.

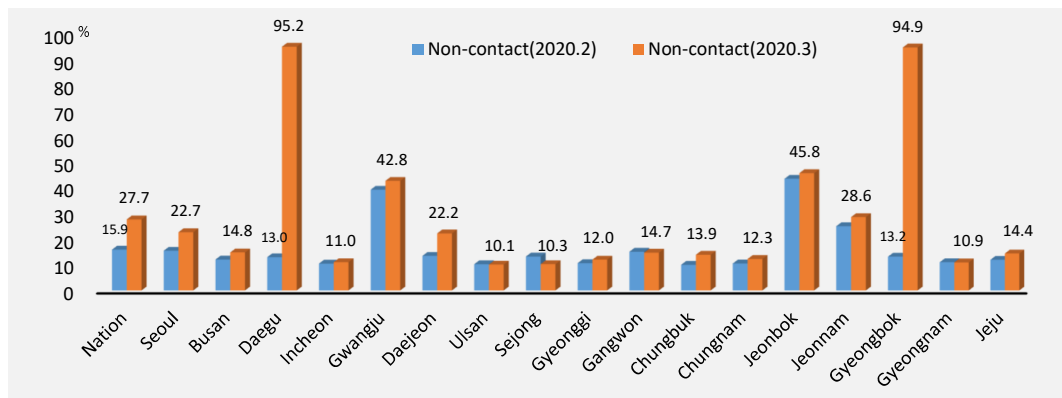
As the wave of the pandemic started in Daegu and Gyeongbuk at the end of February 2020, KOSTAT fully implemented non-contact surveys in March for the EASP in the hard-hit regions (excluding newly added sample households) and decided to first apply non-contact modes before contact modes in other regions. Accordingly, the proportion of non-contact surveys in general rose 11.8 percentage points from 15.9% in February to 27.7% in March (see Figure 6.a and 6.b), and reached 95.2% in Daegu and 94.9% in Gyeongbuk (see Figure 6.c). Participation shares of contact and con-contact survey modes in each individual characteristic are shown in the table A2 in Annex.

Figure 6: Proportion of participation by survey modes

6.a: Participation by contact and non-contact over year 6.b: participation share by survey modes



6.c: Proportion of non-contact surveys by region



Analysis of individual characteristics (gender, age, education) for each survey mode found no differences between genders, and the proportion of non-contact mode was high among those in their 30s and 40s with a university degree or higher (see Table 4). In terms of economic activity/status for each mode, the proportion of employed persons to all respondents who selected non-contact modes was 60.2%, higher than the figure of 56.4% for contact modes; the proportion of non-contact modes was high among employed persons, professionals and related workers, clerks, and regular employees (see Table 5).

Table 4: Participation rates by Individual characteristics by survey modes

		Contact	Non-contact
Total		100.0%	100.0%
Gender	Male	46.8%	47.3%
	Female	53.2%	52.7%
Age	15~29 years old	15.9%	17.4%
	30~39 years old	11.1%	15.5%
	40~49 years old	16.0%	21.0%
	50~59 years old	19.7%	19.0%
	60 years old and over	37.3%	27.1%
Education	Middle school graduates and under	31.8%	24.6%
	High school graduates	37.2%	34.9%
	University graduates and over	31.0%	40.5%

Table 5: Participation rates by Economic activity/status by survey modes

		Contact	Non-contact
Total		100.0%	100.0%
	Employed	56.4%	60.2%

Economically active	Unemployed		2.4%	2.1%
	Economically inactive		41.2%	37.7%
Occupation of workers	Managers		1.3%	1.8%
	Professionals and Related Workers		16.1%	21.0%
	Clerks		14.6%	17.8%
	Service Workers		12.7%	11.0%
	Sales Workers		10.5%	10.4%
	Skilled Agricultural, Forestry and Fishery Workers		8.8%	7.7%
	Craft and Related Trades Workers		8.5%	8.6%
	Equipment, Machine Operating and Assembling Workers		11.4%	11.4%
	Elementary Workers		16.1%	10.4%
Status of workers	Wage & salary workers	Regular employees	48.0%	55.5%
		Temporary employees	17.9%	13.6%
		Daily workers	4.9%	3.3%
	Self-employed workers	Employer	5.2%	5.1%
		Own account workers	18.7%	18.0%
		Unpaid family workers	5.3%	4.6%

It is necessary to review whether the differences in characteristics or economic status for each survey mode cause any bias in the survey results, and whether allowing respondents to select the desired mode positively affects the response rate by increasing accessibility.

Figure 7: Non-response rate in the EAPS : Y2019 and Y2020

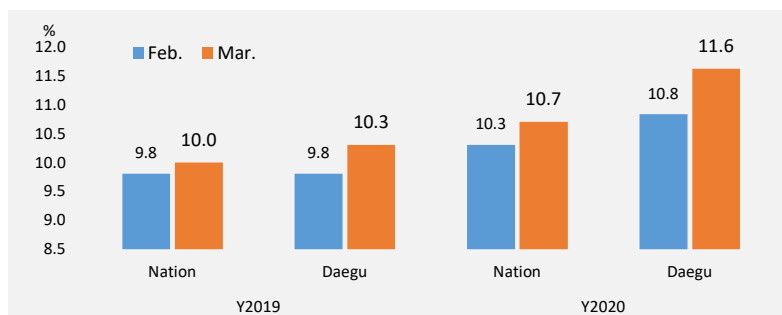
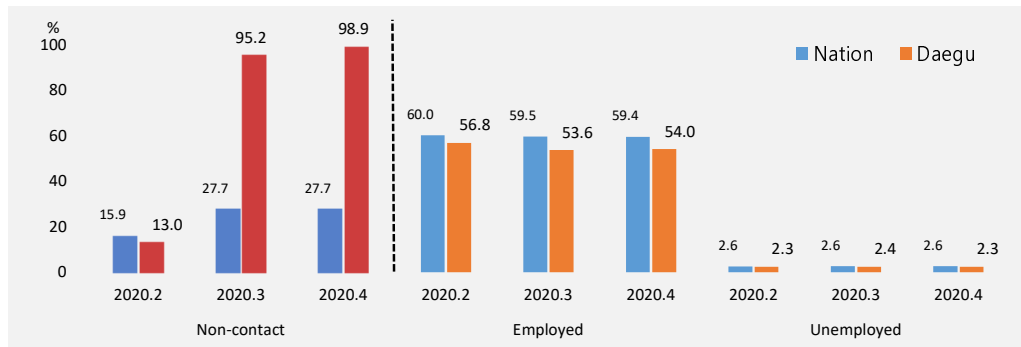


Figure 7 shows non-response rate in the EAPS for year of 2019 and 2020 respectively. First of all, the non-response rate in the EAPS when the WHO declared the pandemic (March 11) and the first wave of the pandemic hit (March of 2020) was 10.7%, an increase of 0.4 percentage points from 10.3% in February of 2020. Daegu, the hardest-hit region, saw the non-response rate increase 0.8 percentage points from 10.8% in February of 2020 to 11.6% in March. The non-response rate in 2020 compared to the same period in 2019 showed an upward trend due to multiple effects of the pandemic. This indicates that the pandemic and the full implementation of non-contact surveys has some impact on the non-response rate.

Figure 8: Percentage of non-contact mode, by survey month and economically active status: 2020.2~2020.4



As shown in Figure 8, as a result of monitoring the survey modes selected by respondents from different regions and the changes this had on, it was found that the survey modes frequently changed each month according to each respondent's preference, and this didn't affect the survey results. In Daegu, the proportion of non-contact modes was 95.2% in March of 2020. The proportion of employed persons decreased by 3.2%p in March as the number of non-economically active population increased due to COVID-19, and the rate maintained a similar level in April.

In response to the crisis facing field surveys amid the WHO's pandemic declaration and the first wave of the pandemic, KOSTAT has rapidly shifted the entire survey processes, including survey preparation and modes to non-contact forms. As a result, it was possible to maintain a stable response rate by encouraging respondents to participate in surveys, while also minimizing biases caused by this shift towards non-contact surveys.

5. Lessons and implications from case studies

We went through many challenges in 2020, and we found that the non-contact mode could partially work for future HFLC surveys. For the current year of surveys, non-contact modes could work for 80% the existing panel sample group as the households in this panel group have already completed the previous year's survey. We could make the best use of the rotating sampling design the EAPS adopted as mentioned earlier in chapter 4 as well.

We could use this previous data to edit the data from the current month or year. On the other hand, it will not be possible to use non-contact modes for the new panel group as there are no previous data to verify missing data/or response errors made using non-contact modes. The new panel group refers to participates in the survey of the current year for the first time.

There are a lot of lessons we learned from this study; we could use mixed-modes for official survey

statistics in response to a worsening survey environment, including the pandemic crisis. However, we need to keep in mind that challenges still remain in measuring the mode effects, and this is something to address as we move forward. At the same time, we should consider the following points when using mixed modes for surveys.

- We should prepare survey instructions and training programs customized for each survey mode that respondents can select in order to increase survey participation and data accuracy
- Mode effects and interview effects could occur at the same time, making it hard to distinguish between the impact of each. Accordingly, we should clarify the survey design to understand more about how this work.
- It is necessary to define the characteristics of samples for which non-contact modes are suitable. Whether we can use a non-contact mode depends on the structure of the sample and the survey's level of complexity.
- Mixed modes might be more acceptable in surveys measuring facts than subjective opinion surveys, including social desirability questions which are socially or economically sensitive to answer.

This paper is solely based on our experiences and case studies. Accordingly, some may disagree with or contest certain matters in this paper. Ultimately, it is our shared responsibility to figure out practical solutions for better survey methods and addressing issues such as mixed mode effects, as we are all involved in the field of statistics as official charge of official statistics, experts in academic and institutional areas, policymakers and data users.

Annex.

The three tables below show participation proportions by contact and non-contact survey modes in each household characteristic in the 2020 HFLC survey (see table A1) and individual characteristics in February 2020 EAPS (see table A2.1 and A2.2). Overall, respondent households or individuals preferred contact survey mode.

Based on a non-contact mode basis, households with a younger head or households with more than three household members preferred self-administered survey mode (see table A1).

Additionally, younger people under 40s preferred answering through internet mode to telephone mode while aged people over 50s selected more telephone mode than internet among non-contact modes; people aged over 60s highly selected telephone mode compare to other age groups. Education level is also correlated with age variable; young people tend to be in a highly educated group, so they preferred internet mode to telephone mode (see table A2.1). Participants' preference tendency by economic status could be explained in the same way as that of age or education variable. It is because age, education, and economic activities/status are pretty correlated each other; for example, people who are economically inactive or daily/temporary workers tend to older people or lower level of education, so they tended to select telephone mode (see table A2.2)

Table A1. participation shares by survey modes in age of household head and household size, respectively, in 2020 HFLC survey (%)

Classification		Total	Contact mode	Non-contact survey modes		
				Sub-total	Self-administration	Telephone and others
Total		100.0	78.4	21.6	13.8	7.8
Age of household head	In 20s and 30s	100.0	70.2	29.8	20.0	9.8
	In 40s	100.0	68.8	31.2	22.7	8.5
	In 50s	100.0	77.9	22.1	14.8	7.3
	60 or older	100.0	85.0	15.0	7.8	7.2
Household size	1-person	100.0	83.2	16.8	8.1	8.8
	2-person	100.0	83.0	17.0	9.5	7.5
	3-person	100.0	76.3	23.7	17.1	6.7
	4-person+	100.0	69.2	30.8	22.7	8.1

Table A2.1 Participation shares by survey modes in gender, age, and education groups, respectively, in February 2020 EAPS (%)

Classification		Total	Contact mode	Non-contact survey modes		
				Sub-total	Internet	Telephone
Gender	Male	100.0	72.1	27.9	12.2	15.7
	Female	100.0	72.5	27.5	12.0	15.5
Age	15~29 years old	100.0	70.5	29.5	14.8	14.7
	30~39 years old	100.0	65.2	34.8	21.8	13.0
	40~49 years old	100.0	66.5	33.5	18.6	14.9
	50~59 years old	100.0	73.0	27.0	10.3	16.6
	60 years old and over	100.0	78.2	21.8	5.1	16.7
Education	Middle school graduates and under	100.0	77.2	22.8	6.0	16.9
	High school graduates	100.0	73.6	26.4	11.0	15.5
	University graduates and over	100.0	66.7	33.3	18.7	14.6

Table A2.2. Participation shares by survey modes in economic activities/status respectively, in February 2020 EAPS (%)

classification		Total	Contact mode	Non-contact survey modes			
				Sub-total	Internet	Telephone	
Economically active	Employed	100.0	71.0	29.0	13.6	15.4	
	Unemployed	100.0	75.2	24.8	13.0	11.8	
	Economically inactive	100.0	74.0	26.0	9.8	16.1	
Occupation of workers	Managers	100.0	77.8	22.2	16.2	6.0	
	Professionals and Related Workers	100.0	75.1	24.9	20.2	4.7	
	Clerks	100.0	76.6	23.4	18.8	4.6	
	Service Workers	100.0	85.0	15.0	11.1	4.0	
	Sales Workers	100.0	83.2	16.8	12.2	4.6	
	Skilled Agricultural, Forestry and Fishery Workers	100.0	87.6	12.4	5.9	6.5	
	Craft and Related Trades Workers	100.0	83.1	16.9	11.1	5.8	
	Equipment, Machine Operating and Assembling Workers	100.0	84.4	15.6	11.7	3.9	
	Elementary Workers	100.0	89.0	11.0	6.8	4.2	
Status of workers	Wage & salary workers	Regular employees	100.0	67.9	32.1	17.9	14.2
		Temporary employees	100.0	76.3	23.7	9.0	14.7
		Daily workers	100.0	78.5	21.5	6.4	15.2
	Self-employed workers	Employer	100.0	71.2	28.8	12.8	16.0
		Own account workers	100.0	71.8	28.2	9.9	18.4
		Unpaid family workers	100.0	73.9	26.1	7.6	18.5