

COVID19 pandemic and  
household surveys:  
recommendations from  
UN-ECLAC

Statistics Division  
ECLAC

**October - 2020**



# Movement restrictions

- Since the health emergency arising from the global COVID-19 pandemic, national statistical offices (NSOs) have had to interrupt abruptly the collection of primary information as part of many of their statistical operations, including household surveys.
- Considering the rapid spread of the disease, governments have had to impose curfews, movement restrictions and compulsory quarantines, among other health measures



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# Household surveys

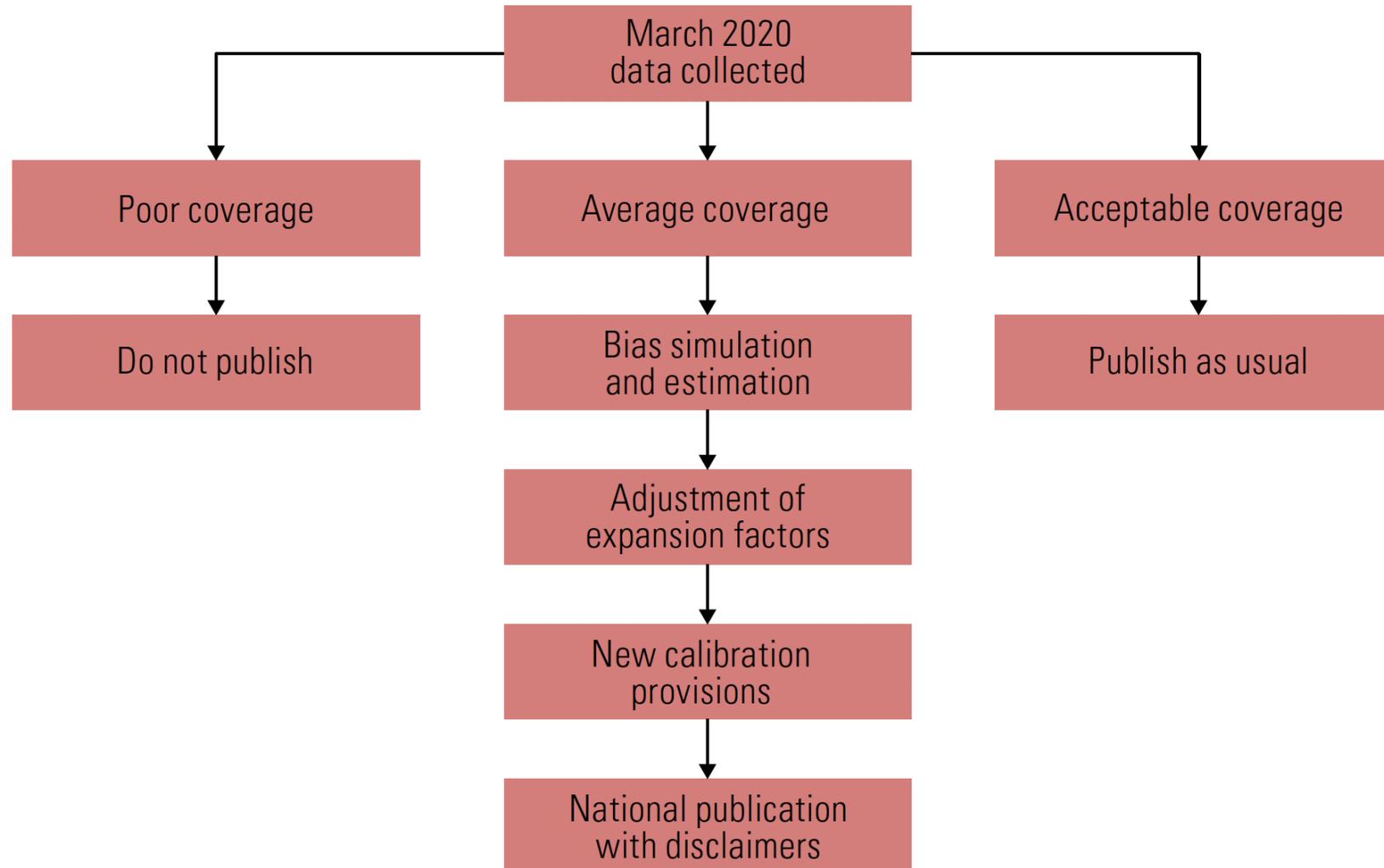
- Movement restrictions have led to the suspension of face-to-face data collection for household surveys until further notice.
- The NSOs are carrying out surveys over the telephone or the Internet.
  - This change in the collection methodology is necessary if employment and poverty figures are to continue to be produced.
  - These indicators are particularly important in the context of the pandemic, given the profound impact movement restrictions and quarantines have on people's employment.



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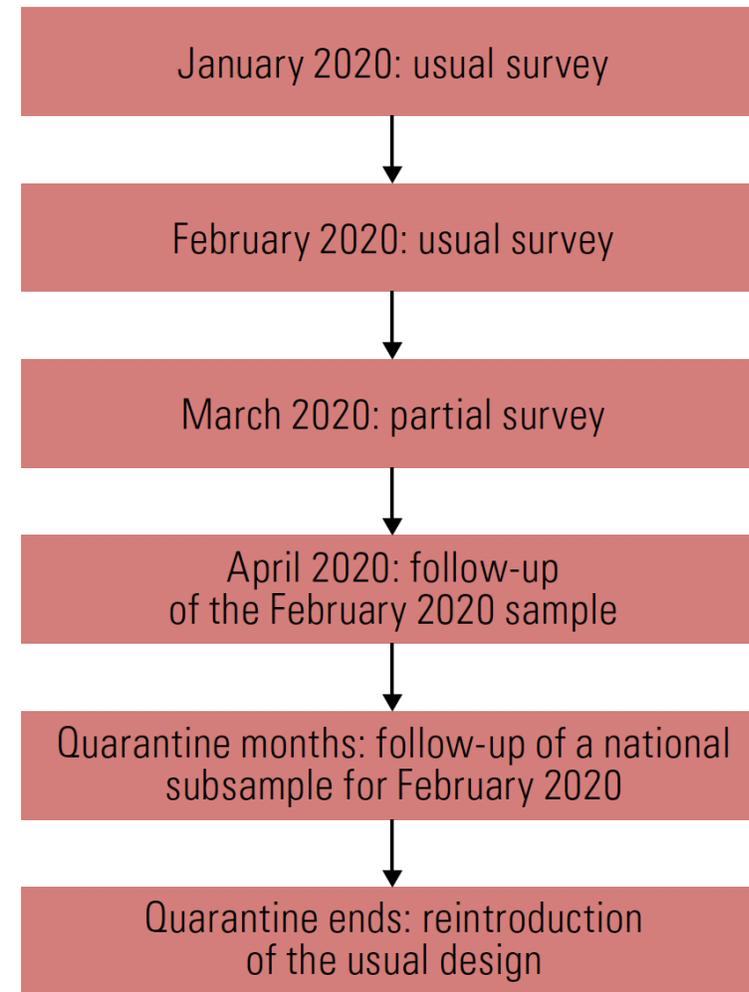
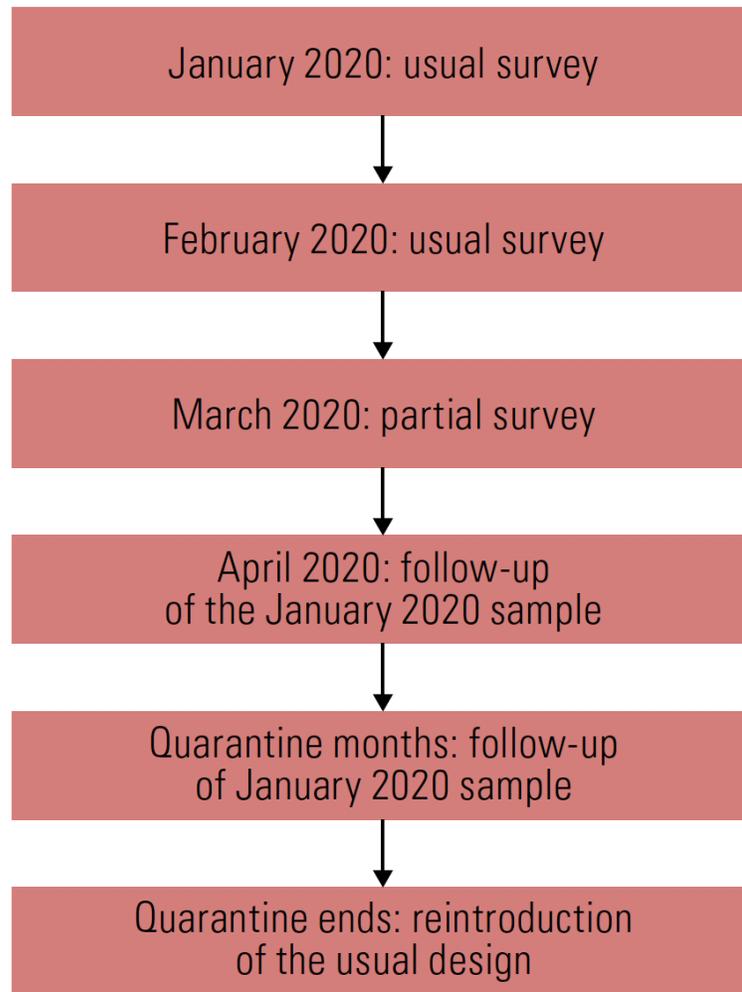
# March 2020 - Possible scenarios and recommendations



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# Quarantine months: possible scenarios and recommendations



# Detecting bias

- Changing the household survey data collection modality from face-to-face interviews to a telephone-based modality may generate biases (of selection, coverage and non-response) among survey respondents.
- The recommendation is to define a sample of households from a previous period and contact those selected households for they to provide current information.



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## However...

- Not all the households in the original sample provided their telephone contact information.
- Some households provided their contact information, but at the time of the interview they do not live at the selected address.
- Some households provided their contact information, but they have changed their contact telephone number.
- Not all households that provided their contact information are willing to answer the survey questionnaire



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# Loss of effective respondents

Just assume that 85% of the sample did provide contact details and that the probability of a contacted household responding to the entire survey is 80%, then:

- Responses would be obtained from only 68% of the original sample.
- We would have an attrition effect on the panel (loss of participants the longer the panel is used for).
  - There will be households that will stop responding to the survey because they are contacted repeatedly.



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# Loss of effective respondents

- In this scenario, it is highly likely that respondent households do not have similar characteristics to non-respondent or non-covered households.
- Reasons for household non-response to the survey may be associated with the phenomenon being measured:
  - for example, there are more unemployed people in non-respondent households,
  - or non-response rates are higher among households living in poverty).

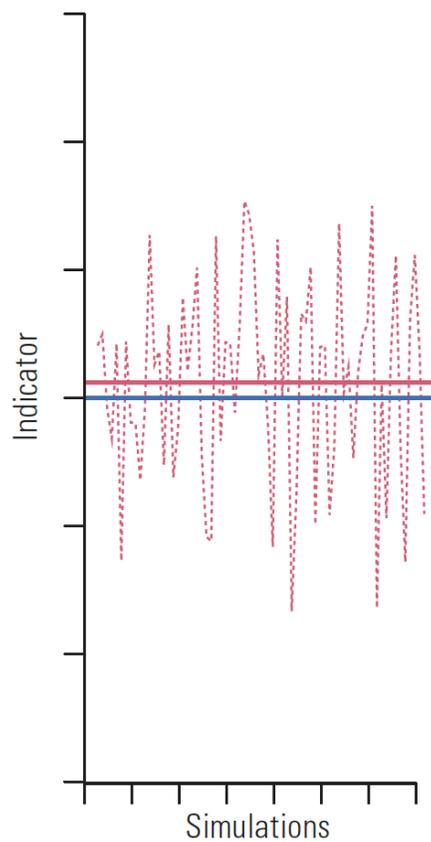


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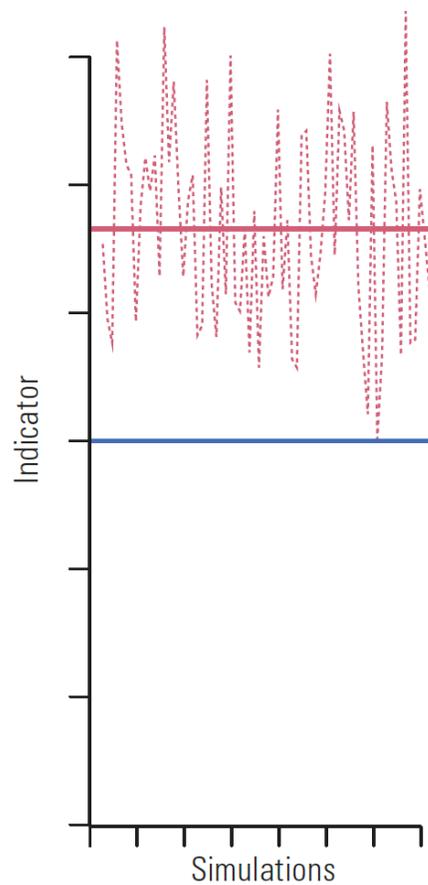
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# Estimating the effect of bias

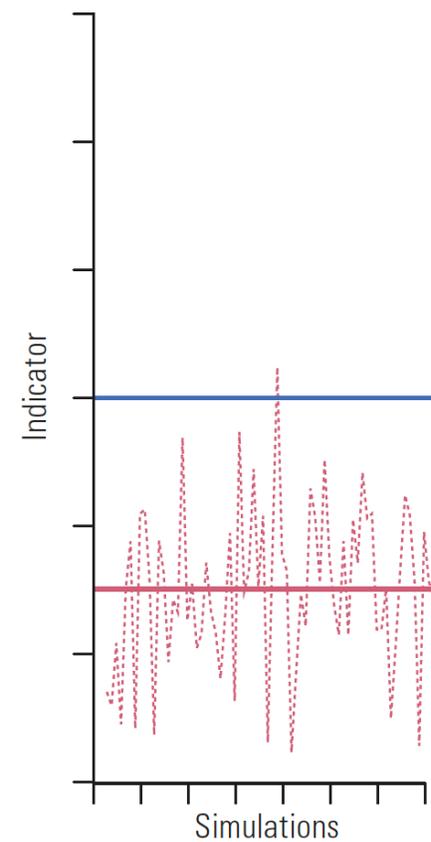
A. No bias



B. Positive bias



C. Negative bias



— Average of the simulations

— Published estimate



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# Correcting nonresponse bias

## Propensity Score

- This approach proposed by Rosenbaum and Rubin (1983) is useful for elucidating the structure of non-response and therefore for correcting coverage bias and non-response bias.

$$\text{logit}(\hat{\phi}_k) = \mathbf{x}_k \hat{\beta}$$

- The adjusted expansion factor would take the following form:

$$w_k = \frac{d_k}{\hat{\phi}_k}$$



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# Correcting nonresponse bias

## Two-stage calibration

- Sarndal (2007) assert that when sample surveys are affected by non-response, it is possible to use the calibration approach.
- In the first stage, the calibration of the original sample weights could be based on:
  - totals for age, subnational region, area and sex, available from robust population projections.
- In the second stage, the calibration of the weights of the telephone sample could be based on:
  - totals of per capita income, occupation status, branch of activity and level of education, obtained from the publication of the original survey.

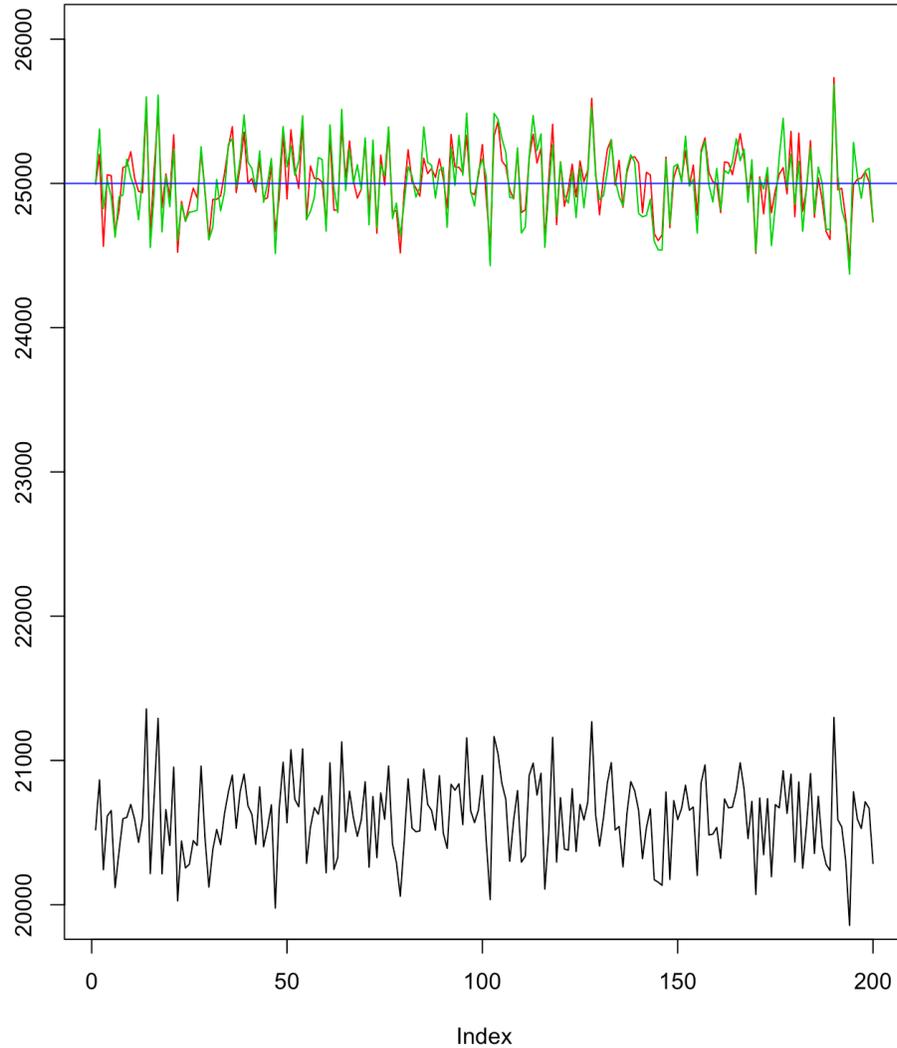


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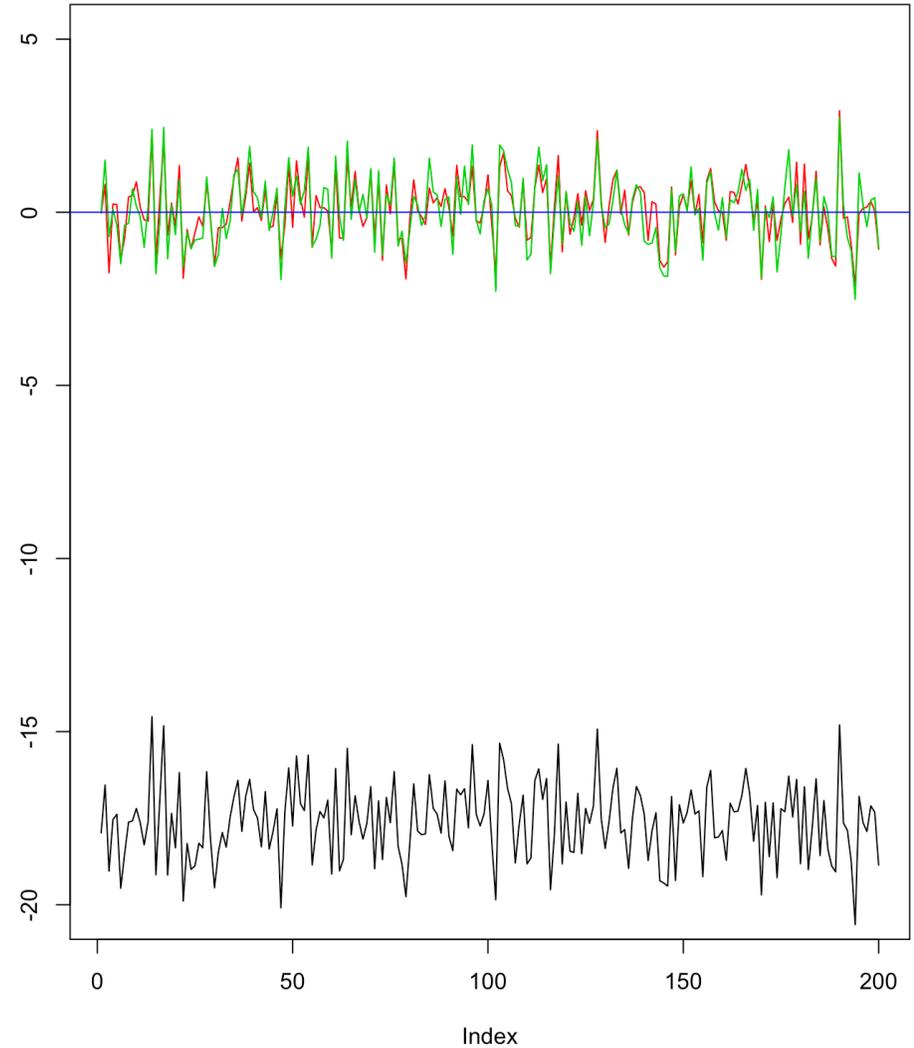
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# Do not simply weight

Expectation



Relative Bias (in percentage)



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# Based on COVID publications from ECLAC

## COVID-19 REPORTS

### Recommendations for the publication of official statistics from household surveys in the context of the coronavirus disease (COVID-19) pandemic

April, 2020

#### Summary

In the context of the global COVID-19 pandemic, ECLAC is preparing a series of short publications with relevant policy recommendations. A number of recommendations are made in this note on gathering labour market information through household surveys, paying particular attention to the sample designs required for this purpose.

#### A. Introduction

Since the health emergency arising from the global COVID-19 pandemic, which has led most of the countries of the region to declare states of emergency, national statistical offices (NSOs) have had to interrupt abruptly the collection of primary information as part of many of their statistical operations, including household surveys. This note describes possible scenarios for the collection and analysis of household survey data and provides a set of recommendations regarding the capture, publication and dissemination of official statistics from those surveys, in the context of the international situation caused by the COVID-19 pandemic.

In those countries that have declared states of emergency, in order to stop the spread of the disease and protect those people most vulnerable to it, governments have taken difficult decisions that have affected society and the normal functioning of government institutions, educational entities, industry, transportation and commercial establishments, among others. In some cases, the general public has begun to collaborate with voluntary quarantines; but in light of the rapid spread of the disease, governments have had to impose curfews, movement restrictions and compulsory quarantines, among other health measures, and remote learning and working methodologies have been implemented or developed.

In view of this situation, the Statistics Division of ECLAC sent out a short questionnaire to the NSOs and central banks of Latin America and the Caribbean, to learn about the effects that the health emergency was having on the functioning of statistical institutions. Responses from 20 countries indicated that, as at 20 March, they had all declared some form of health emergency as a result of COVID-19. The statistical operations most affected by the situation were, surveys, followed by administrative records and censuses. With regard to household surveys, most respondents said that information collection would be postponed to later in the year in most cases. The main information collection difficulties are movement restrictions and the closure of establishments.

A series of videoconferences have been held since 24 March to assess the impacts of the COVID-19 pandemic on statistical operations.<sup>1</sup> These videoconferences have been convened by ECLAC, in conjunction with the International Labour Organization (ILO) and the National Institute of Statistics (INE) of Chile, in its capacity as coordinator of the virtual talks of the Knowledge Transmission Network (KTN) of the Statistical Conference of the Americas, chaired by the National Administrative Department of Statistics (DANE)

<sup>1</sup> See [online] <https://rtc.cepal.org/en/conectados-rtc/planes-de-contingencia-adoptados-por-las-oficinas-nacionales-de-estadistica-ante-la>



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## COVID-19 REPORTS

### Recommendations for eliminating selection bias in household surveys during the coronavirus disease (COVID-19) pandemic

May 2020

#### Summary

In the context of the global coronavirus disease (COVID-19) pandemic, the Economic Commission for Latin America and the Caribbean (ECLAC) is preparing a series of short publications with relevant policy recommendations. A number of recommendations are made in this note to address bias problems that may arise in household surveys carried out during this exceptional period, as a complement to the suggestions made in a previous note on the sample designs for this type of survey.

#### Introduction

In an attempt to slow the spread of COVID-19, countries have imposed movement restrictions on people, which have prevented the face-to-face collection of information for household surveys. In order to address this issue and to continue producing relevant and timely official statistics, some national statistical offices (NSOs) have resorted to conducting surveys by telephone or via the Internet. The document "Recommendations for the publication of official statistics from household surveys in the context of the coronavirus disease (COVID-19) pandemic" contains some possible lines of action for drawing the sample of households to participate in the surveys, in particular using a selected panel from a recent period for which the telephone contact information is available (ECLAC, 2020). This note complements the recommendations made in that document, by proposing two approaches to minimize the bias generated by non-response that will be encountered when carrying out surveys by telephone. In addition, a third approach is proposed for those instances in which it is difficult to obtain auxiliary information.

#### A. Detecting bias

Changing the household survey data collection modality from face-to-face interviews to a telephone- or web-based modality may have unintended consequences and, in particular, may generate biases (of selection, coverage and non-response) among survey respondents. In a scenario where a sample of households from a previous period is being used (hereinafter the "original sample") and where every effort is being made to contact those selected households, the process is inevitably exposed to the following difficulties:

- Not all the households in the original sample provided their telephone contact information.
- Some households provided their contact information, but at the time of the interview they do not live at the selected address.
- Some households provided their contact information, but they have since changed their contact telephone number.
- Not all households that provided their contact information are willing to answer the survey questionnaire.

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# ECLAC recommendations at the beginning of the pandemic

- The publication of official statistics was based on probabilistic selection of household samples and not predictive models.
- Form a probabilistic monitoring panel to conduct surveys by telephone while slowly returning to face-to-face interviews.
- In cases where response rates were very low, it was recommended to publish the statistics at the national level, avoiding the usual disaggregation.
- Use selection and coverage bias correction models to adjust sampling weights based on the auxiliary information available in the tracking panel.



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# ECLAC recommendations for returning to a “new normal”

- Consider a transition period in which telephone operations continue to be carried out, maintaining flexibility , and noting that new confinements in some areas are possible.
- Evaluate the possibility of continuing to use mixed surveys in this pandemic period.
- Reconcile face-to-face and telephone questionnaires to maintain comparability in construct measurement in both collection modes.
- Before fieldwork collect contact information and basic household data during for those households selected in the sample.



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# ECLAC recommendations for returning to a “new normal”

- Adapt new version of final disposition codes of the selected households, maintaining the comparability between face-to-face and telephone surveys, and noting that the selection of households was performed by using an area sampling frame.
- Adopt technical procedures for eliminating coverage and selection biases, as regular processes for household surveys inside NSO.



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# Assessment of the COVID impact into the official statistics

- With the arrival of the pandemic, countries had to change several aspects of the survey, including collection methods and analysis techniques:
  - It changed the collection mode, affecting disposition codes.
  - New weight adjustment schemes were introduced, seeking to eliminate coverage, and non-response bias.
  - Calibration schemes were revisited and, for the sake of flexibility in the estimation stage, the number of calibration restrictions decreased.



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# Assessment of the COVID impact into the official statistics

- To separate the effect of these changes from the effect of the pandemic it is recommended to maintain mixed mode collection schemes during a reasonable time in the post-pandemic period.
- This measure can be executed in several ways:
  - NSO can perform parallel independent surveys with appropriate sample sizes.
  - It is also possible to maintain a telephone subsample while face-to-face surveys would incorporate larger sizes allowing for traditional disaggregations.
  - Gradually incorporation of face-to-face schemes while decreasing telephone schemes.



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# Thank you

Please, do not hesitate to contact ECLAC Statistics Division if you require assistance on the design and analysis of sample surveys, bias detection and calibration.

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