# The 2020 census round



**Population Census planned for 2020**
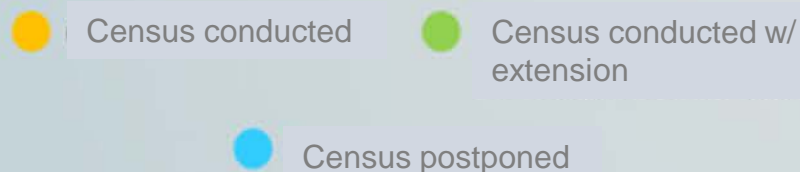
- **53 countries** planned to conduct their census in 2020.
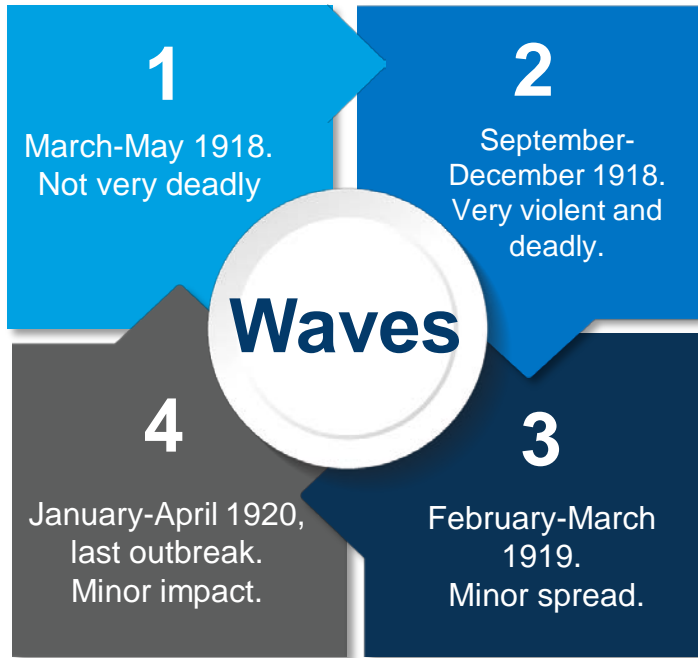- **Mexico** is one of only eight countries in the world that managed to carry it out.
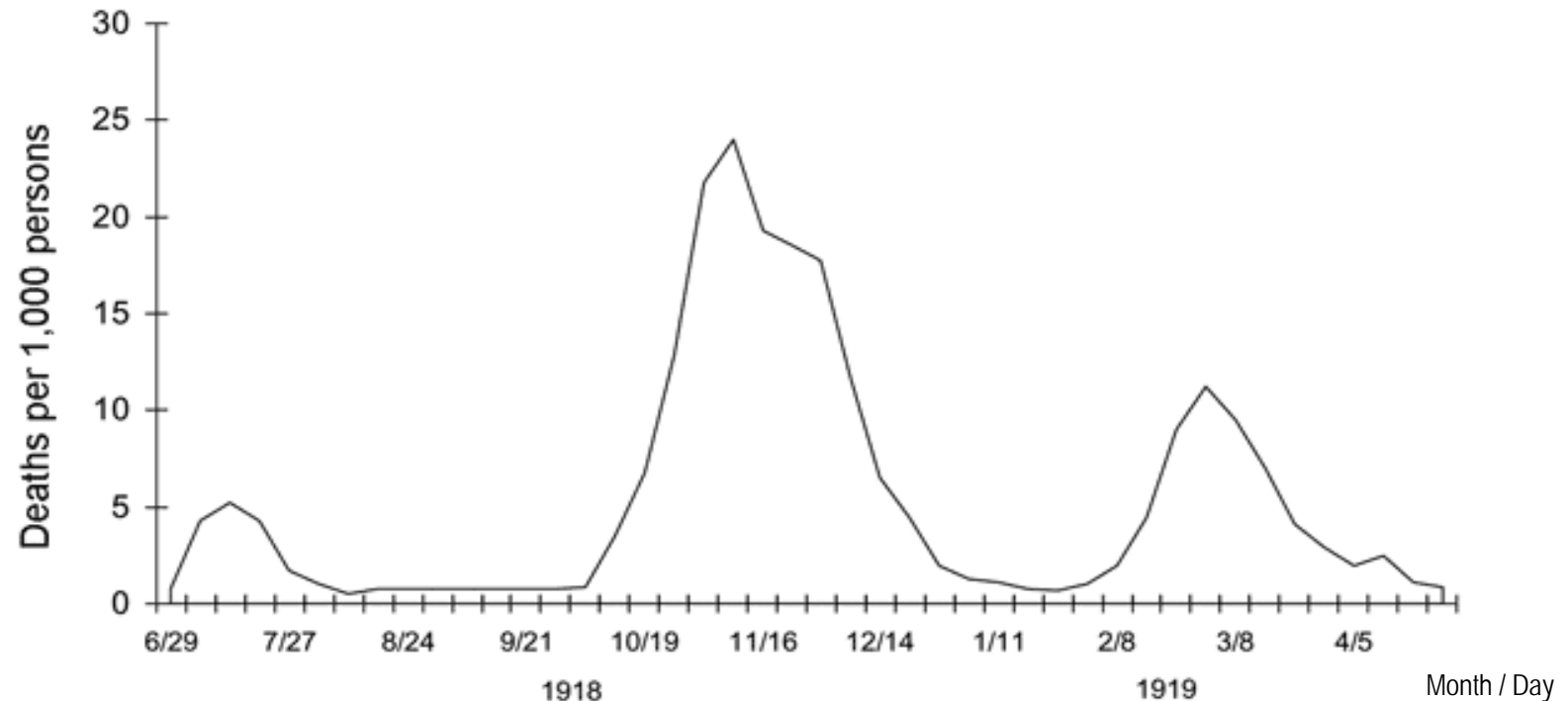- And **one of the first to publish results**.

Census conducted

Census conducted w/ extension

Census postponed

Source: UNSD, February 2021

# Lessons learned

## Evidence-based decision making

# 1918 Flu (H1N1)

- **Analyzed** statistical and historical **information from previous pandemics**.
- During 1918-1919 it affected mostly young adults aged 20-40 years.
- About **500 million people were infected** and at least **50 million died**.

## Waves

**1** — March-May 1918. Not very deadly

**2** — September-December 1918. Very violent and deadly.

**3** — February-March 1919. Minor spread.

**4** — January-April 1920, last outbreak. Minor impact.



Month / Day

Jeffery K. Taubenberger1, David M. Morens (2006). 1918 "Influenza: The mother of all pandemics". *Biomed magazine*, 17, p. 71.

# SARS Cov-1

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**Severe respiratory acute syndrome** demonstrated how quickly an infection spreads in a mobile and interconnected world.

## SARS spread in 2002 and 2003

Number of probable cases between November 2002 and July 2003

| 0-9 | 10-99 | 100-999 | 1.000-5.327 |



Source: World Health Organization



Probable cases of SARS by week of onset Worldwide* (n=5,910), 1 November 2002 - 10 July 2003
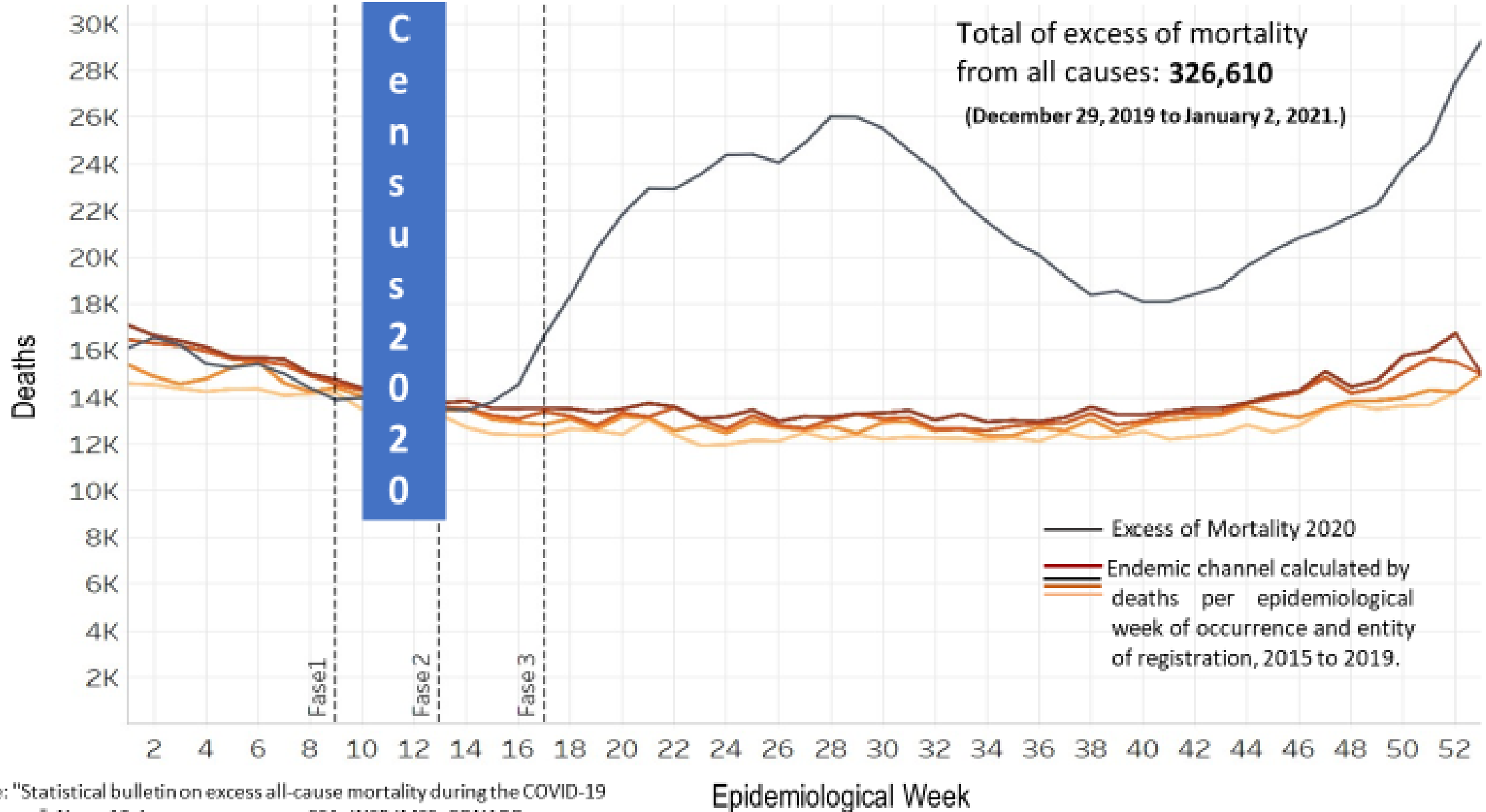
World Health Organization (2003). *Consensus document on the epidemiology of severe acute respiratory syndrome (SARS)*, p. 15

- The **international collaborative effort** allowed health experts to quickly contain its spread.

- Just over 8,000 people became ill, of whom about 1,000 died.

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# COVID-19 Effect ☼ Excess of Mortality 2020

Total of excess of mortality from all causes: **326,610**

(December 29, 2019 to January 2, 2021.)

Deaths

Census 2020

Fase1

Fase 2

Fase 3

—— Excess of Mortality 2020

—— Endemic channel calculated by deaths per epidemiological week of occurrence and entity of registration, 2015 to 2019.

Epidemiological Week

Source: "Statistical bulletin on excess all-cause mortality during the COVID-19 emergency". Num. 10. Inter-agency group SSA, INSP, IMSS, CONAPO, RENAPO, OPS & INEGI.

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# Context
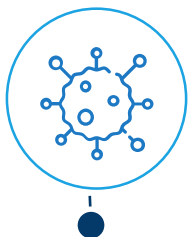
In the last quarter of 2019, the SARS-CoV-2 virus spread worldwide.

In Mexico, the first case was reported in March 2020.

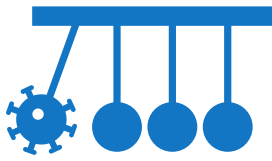Non-essential activities were suspended.

The generation of statistical information through face-to-face surveys and censuses was suspended.

Actions were implemented to minimize damage to statistical production.

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# Main Impacts of COVID-19 on the 2020 Census

- **Primary activity :** Enumeration was achieved within the planned timeframe.

    - In the last week: there was an increase in non-response and isolated assaults on enumerators.

- **Secondary activities :**

    - Verification: first week was completed, remaining two weeks rescheduled (June to August).

    - Non response follow up and integrated into the second phase of verification. **Questions** to **identify March 2020 residents** were **added to the census questionnaire.**

    - The **post-enumeration** survey was **cancelled.** However, the **Sampling Survey for Focused Estimation of Coverage (ENCOBER)** was conducted in the municipalities with the greatest differences in population with respect to historical indicators and estimates.

- **Of the 100% of the dwellings identified as inhabited, 96% were interviewed.**

# Guidelines for fieldwork
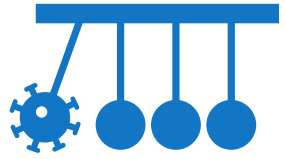
In **coordination and constant dialogue with the Health Ministry**, guidelines were developed, and measures were implemented for the **mitigation and prevention of COVID-19 in field operations** that have the approval of the country's health authorities.

At all times, **priority was given to the safety of the personnel** as well as the general population.
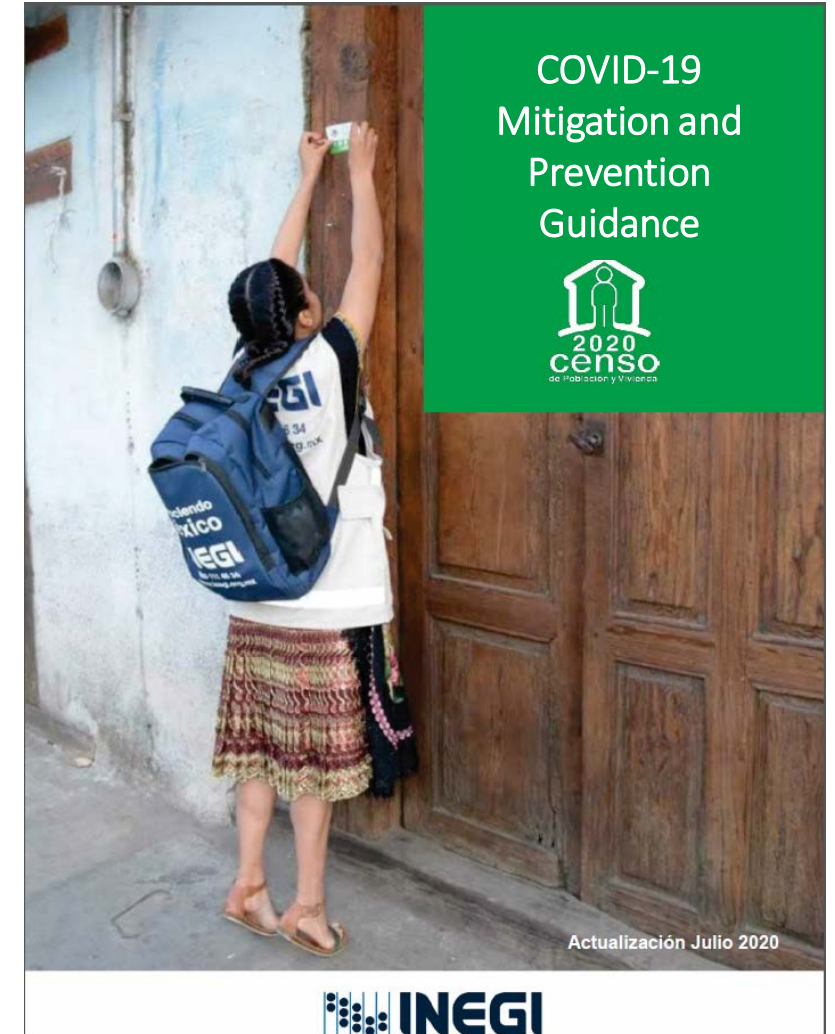
# Diffusion strategy

- Once the confinement period began, the **diffusion campaign** started, **promoting participation through self-enumeration**, focusing efforts on the municipalities with the greatest number of slopes.

- The first days of the confinement **were impacted by the excess of people communicating to the call center**, in the case of the Internet the communication was stable.

# Percentage of interviews according to mode of collection

Mobile Device
97.7%

Printed Questionnaires
2.0%

Self-enumeration
0.3%
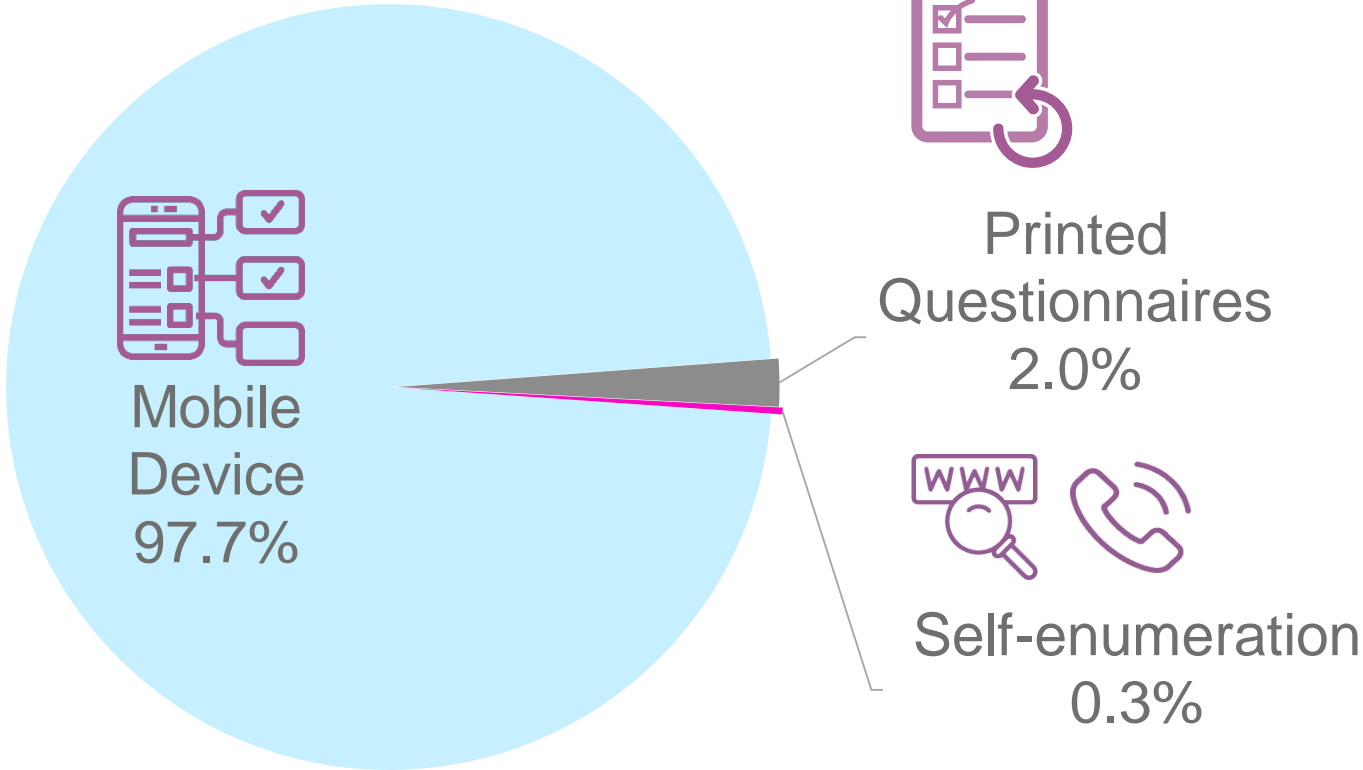
- Almost **1.6 million letters of invitation to self-enumeration were delivered**, of which just over 97,000 (6%) responded to the questionnaire.

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# Importance of planning

- **Planning the Census and its technification favored the speed of its data capture**, validation, and processing processes, even during the pandemic.

-  Due to its technification, **a considerable part of our work was oriented to planning**, **design**, and technological development.

## 2017
- Approach of census scenarios.
- Public consultation for questionnaires content and methodology.
- Definition of the census project.
- Tests of operational procedures.

## 2018
- Planning and execution of thematic tests.
- Definition of the conceptual framework and data collection instruments.
- Pilot census.
- Bidding for the purchase of mobile devices for data collection.

## 2019
- Statistical design of the census sample.
- Cartographical update in rural Basic Geostatistical areas.
- Statistical design of post-enumeration survey.
- Recruitment and selection of personnel.
- Training of operational staff.
- Beginning of communication campaign.

## 2020
- Data collection of urban environment characteristics and localities under 2,500 inhabitants.
- Launching of the Census.
- Sampling Survey for Coverage Focalized Estimation
- Information processing.
- Generation of results.
- Publication of results (Jan. 2021).

# Context of the COVID-19 pandemic on surveys

**During the pandemic, household surveys had three different scenarios:**

✓ Those that were able to **adjust their methodology and continue**.

✓ Those that **were created to account for the situation** that was being experienced due to the health crisis.

✓ Those that **had to be postponed** until better conditions.

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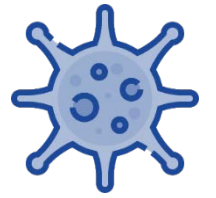
# ENOE and ENCO
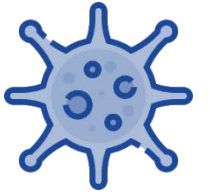
- The National Occupation and Employment Survey (**ENOE**, in Spanish) & National Consumer Confidence Survey (**ENCO**, in Spanish) **were suspended due to the COVID-19 pandemic**.

- **Replaced by telephonic surveys** to **maintain the generation of their most important indicators** of the labor market and perception of the economic situation.

- Maintained the **same conceptual design** but **different operational strategy and collection methodology**.

- The new methodological designs **imply changes** in:

    o The **size of the samples**.

    o The **resources for their application**.

    o The **interpretation of the results**.

- The statistics generated from the telephonic surveys were comparable with the original series.

# ENOE and ENCO
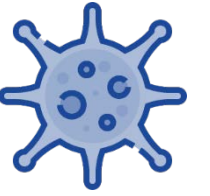
- On 15 June 2020, face-to-face interviews were resumed in the states where the number of infections decreased.

- On 17 July 2020, face-to-face surveys were allowed throughout the country.

- **From that date on**, the collection of information for the surveys is **carried out in a combined manner**: partly **face-to-face** and partly **by telephone,** this scheme was extended nationwide.

    After three months of collecting information by telephone, it was possible to identify advantages of this methodology: vulnerable personnel collecting information remotely, avoiding exposure to the virus, among others.

**Telephone interviews** were an emerging measure; however, their **effectiveness was such** that they went from being a reactive alternative to **an approved methodology for the ENOE survey in the new normality**.

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# ENOE$^N$ (New Edition)

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**Public Consultation** to incorporate telephone interviews, update catalogs, classifiers and migration to digital tools, from the ENOE.
October 8 to November 30 (2020).

## Valid combination

- **Results' analysis** of the strategic indicators shows that **there are no statistically significant changes** in the **strategic indicators** of occupation and employment.

- Improve the statistical accuracy of the results.

## Sampling design

- Telephone interviews' sample was taken from the 2020 first quarter ENOE sample.

- Face-to-face interviews' sample was taken from 2020 third quarter Housing sample.

- Adjustment by calibration was not necessary.

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# ECOVID-ML & ECOVID-ED

During the health crisis, *ad hoc* **household surveys were conducted** to **ascertain the impacts of the COVID-19 pandemic** on the most affected sectors, such as education and the labor market.

## Surveys design
Stratified sampling of telephones based on the National Numbering Plan of the Federal Telecommunications Institute.

## Capture method
Telephone interview using a paper questionnaire.

## COVID-19 and Labor Market Telephone Survey (ECOVID-ML, in Spanish)

- **Objective:** generate **complementary information to the** Telephone Occupation and Employment Survey **(ETOE)**.

## Survey for Measuring the Impact of COVID-19 on Education (ECOVID-ED, in Spanish)

- Objective: It seeks to **know how the student population concluded the last school year**, what educational resources they face in the current school year, how learning is supported from home, among other topics.

# Statistics based on Administrative Records

# Impact of the COVID-19 pandemic on Administrative Records
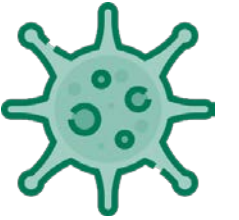
- Administrative Records **as a source of statistical information** have **numerous shortcomings** in developing countries, as the methods for obtaining them are archaic.

- The context of **the pandemic made even more challenging to generate statistics from Administrative Records** due to the **lack of personnel** considered non-essential **in the public offices**.

- They represent, however, **invaluable information for determining the number of deaths** during the pandemic.

# Background

Starting in **2020** and due to the **pandemic caused by COVID-19**, there is a **need for more timely information** to **measure excess mortality**.
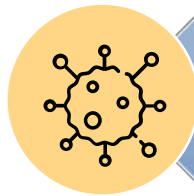
The **excess mortality** caused by the **COVID-19 pandemic** has generated a **need for information** on the behavior of **deaths registered** at the national level.

**Excess mortality** from all causes allows us to **estimate deaths** and **monitor the evolution** of the pandemic at different geographic levels.

**Excess mortality is estimated** by considering the **deaths that occurred** (observed) during the pandemic, **minus the expected deaths** for the same period, based on the historical trend of deaths.

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# Information cross-checks with the Health Ministry (HM)

**Four groups**
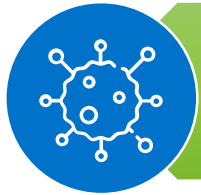
Subject to epidemiological surveillance (including COVID-19)

Maternal deaths

Deaths of children under five years of age

Aggressions (homicides)

- **INEGI** and **HM** jointly carry out a **rigorous and continuous process of confrontation**.

- **INEGI** is the **official source and releases the definitive measurement** of **deaths** after the confrontation process.

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SALUD
SECRETARÍA DE SALUD

# Excess mortality (Jan 2020 - Sep 2021ᵖ)

According to the information recorded during the 2015-2019 period, from **January 2020 to September 2021**ᵖ nationwide, **1,288,669** deaths were expected, and **1,941,722** occurred. Based on these results, there is **excess mortality** from all-causes of **653,053**, equivalent to **50.7** percent.
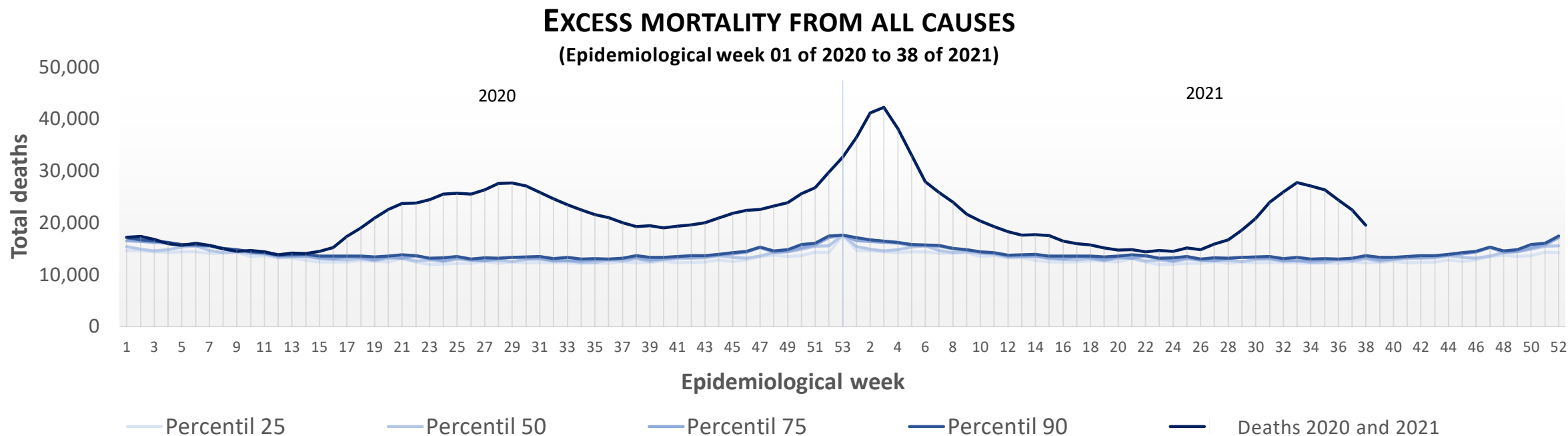


**EXCESS MORTALITY FROM ALL CAUSES**
**(Epidemiological week 01 of 2020 to 38 of 2021)**

Percentil 25  Percentil 50  Percentil 75  Percentil 90  Deaths 2020 and 2021

# Leading causes of death by sex 2020 to June 2021

## Leading causes of death by sex 2020

| Rank | Total | Male | Female |
|------|-------|------|--------|
| 1 | Heart diseases<br>218,703<br>In 2019 were 156,041 | COVID-19<br>128,802 | Heart diseases<br>97,132<br>In 2019 were 72,768 |
| 2 | COVID-19<br>200,270 | Heart diseases<br>121,556<br>In 2019 were 83,258 | Diabetes mellitus<br>72,094<br>In 2019 were 52,643 |
| 3 | Diabetes mellitus<br>151,019<br>In 2019 were 104,354 | Diabetes mellitus<br>78,922<br>In 2019 were 51,711 | COVID-19<br>71,463 |
| 4 | Malignant tumors<br>90,603<br>In 2019 were 88,680 | Malignant tumors<br>44,476<br>In 2019 were 43,296 | Malignant tumors<br>46,125<br>In 2019 were 45,384 |
| 5 | Influenza and pneumonia<br>58,037<br>In 2019 were 31,081 | Influenza and pneumonia<br>35,657<br>In 2019 were 17,034 | Influenza and pneumonia<br>22,375<br>In 2019 were 14,046 |
| 6 | Liver diseases<br>41,492<br>In 2019 were 40,578 | Aggressions (homicides)<br>32,336<br>In 2019 were 32,530 | Cerebrovascular diseases<br>18,072<br>In 2019 were 17,659 |
| 7 | Cerebrovascular diseases<br>37,020<br>In 2019 were 35,303 | Liver diseases<br>30,300<br>In 2019 were 29,692 | Liver diseases<br>11,189<br>In 2019 were 10,879 |
| 8 | Aggressions (homicides)<br>36,773<br>In 2019 were 36,661 | Accidents<br>25,343<br>In 2019 were 25,758 | Chronic obstructive pulmonary diseases<br>10,055<br>In 2019 were 11,269 |
| 9 | Accidents<br>32,356<br>In 2019 were 33,524 | Cerebrovascular diseases<br>18,946<br>In 2019 were 17,644 | Accidents<br>6,992<br>In 2019 were 7,730 |
| 10 | Chronic obstructive pulmonary diseases<br>21,949<br>In 2019 were 23,768 | Chronic obstructive pulmonary diseases<br>11,894<br>In 2019 were 12,499 | Renal insufficiency<br>6,618<br>In 2019 were 6,359 |

Legend: Heart diseases · Diabetes mellitus · Malignant tumors · Other non-communicable diseases · Accidents · Aggressions (homicides) · Communicable diseases · COVID-19

## Leading causes of death by sex, January-June 2021

| Rank | Total | Male | Female |
|------|-------|------|--------|
| 1 | COVID-19<br>145,159 | COVID-19<br>89,716 | COVID-19<br>55,437 |
| 2 | Heart diseases<br>113,899 | Heart diseases<br>62,617 | Heart diseases<br>51,276 |
| 3 | Diabetes mellitus<br>74,418 | Diabetes mellitus<br>38,355 | Diabetes mellitus<br>36,056 |
| 4 | Malignant tumors<br>44,197 | Malignant tumors<br>21,482 | Malignant tumors<br>22,714 |
| 5 | Influenza and pneumonia<br>20,956 | Liver diseases<br>15,041 | Cerebrovascular diseases<br>9,161 |
| 6 | Liver diseases<br>20,644 | Aggressions (homicides)<br>14,880 | Influenza and pneumonia<br>8,242 |
| 7 | Cerebrovascular diseases<br>18,843 | Accidents<br>13,130 | Liver diseases<br>5,602 |
| 8 | Aggressions (homicides)<br>16,972 | Influenza and pneumonia<br>12,713 | Chronic obstructive pulmonary diseases<br>4,232 |
| 9 | Accidents<br>16,912 | Cerebrovascular diseases<br>9,681 | Accidents<br>3,768 |
| 10 | Chronic obstructive pulmonary diseases<br>9,152 | Chronic obstructive pulmonary diseases<br>4,920 | Renal insufficiency<br>3,033 |

Legend: Heart diseases · Diabetes mellitus · Tumor maligno · Other non-communicable diseases · Accidents · Aggressions (homicides) · Communicable diseases · COVID-19
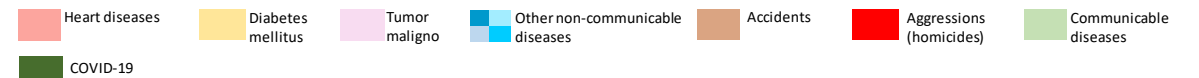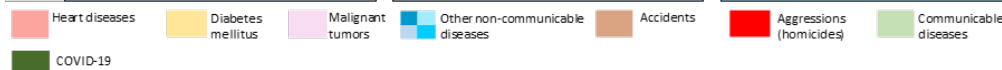
# Application of **SAE** statistical models

Statistical models were built using combined information from different sources to generate indicators of interest with a higher level of disaggregation.

Estimate at the municipal level the percentages of the main comorbidities associated with COVID-19: Obesity, Hypertension, and Diabetes.

Continuity of labor statistics by measuring the impact of COVID-19 on the labour market. Percentages of: Economically Active Population, Employed, Informally Employed, and Underemployed

The supply of information supported decision-making and allowed measurements at the local level.

# SAE on Health

- The **prevalence of Obesity, Hypertension and Diabetes was estimated** for municipalities using SAE techniques. There is no source of information with such a level of geographic disaggregation.

- The dependent variables are the percentage of population of 20 years and older with obesity, either with a previous diagnosis of hypertension or diabetes.*

- The **auxiliary variables** were selected from **Mortality Statistics**, the Intercensal Survey of 2015 and population projections.

- This complements the statistical information from primary sources that only provide national o state data (or bigger domains than the municipality).



**Heat maps for municipalities in Mexico**
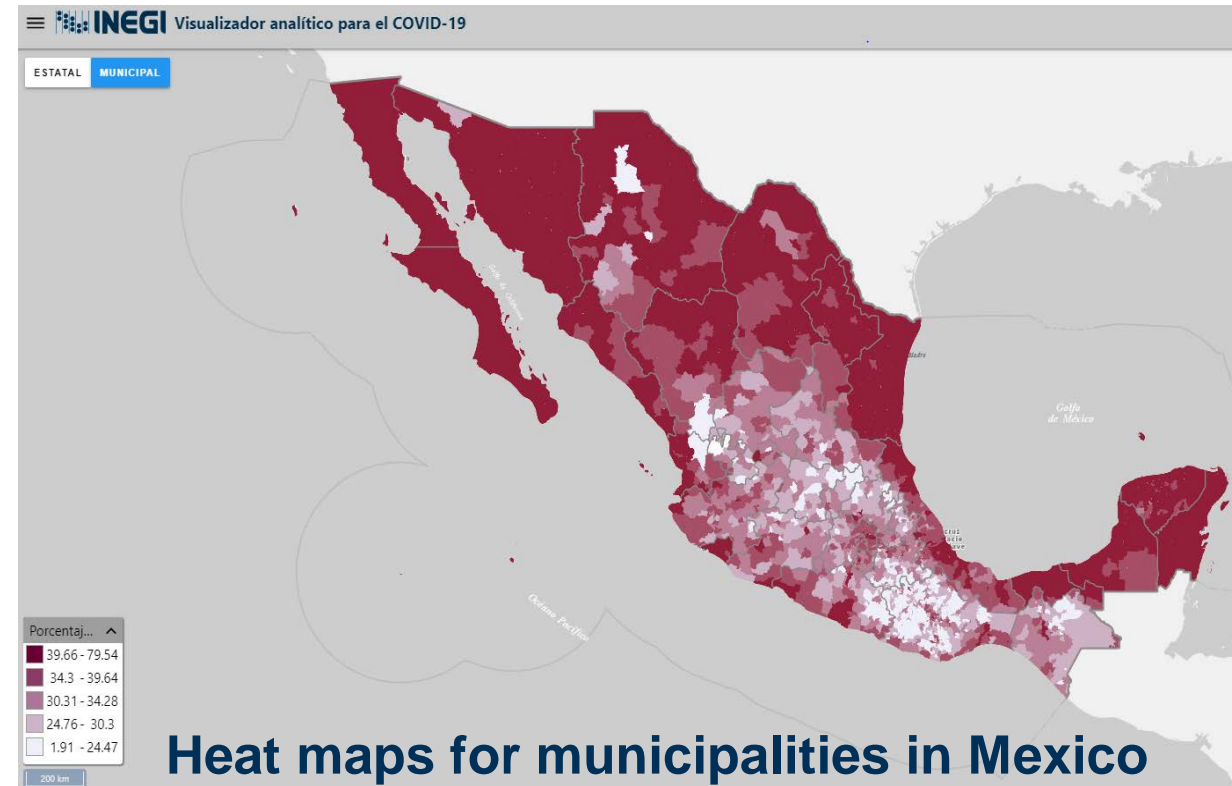
* Source: National Health and Nutrition Survey (ENSANUT) 2018

# SAE on Labour Force

- The **percentage** of the **Economically Active Population (PEA)**, the Employed Population, the Informally Employed Population, and the Underemployed Population were estimated using SAE techniques, for each country's states, for the second quarter of 2020.

- Estimates were obtained considering the historical behavior of the ENOE and the results of the ETOE.
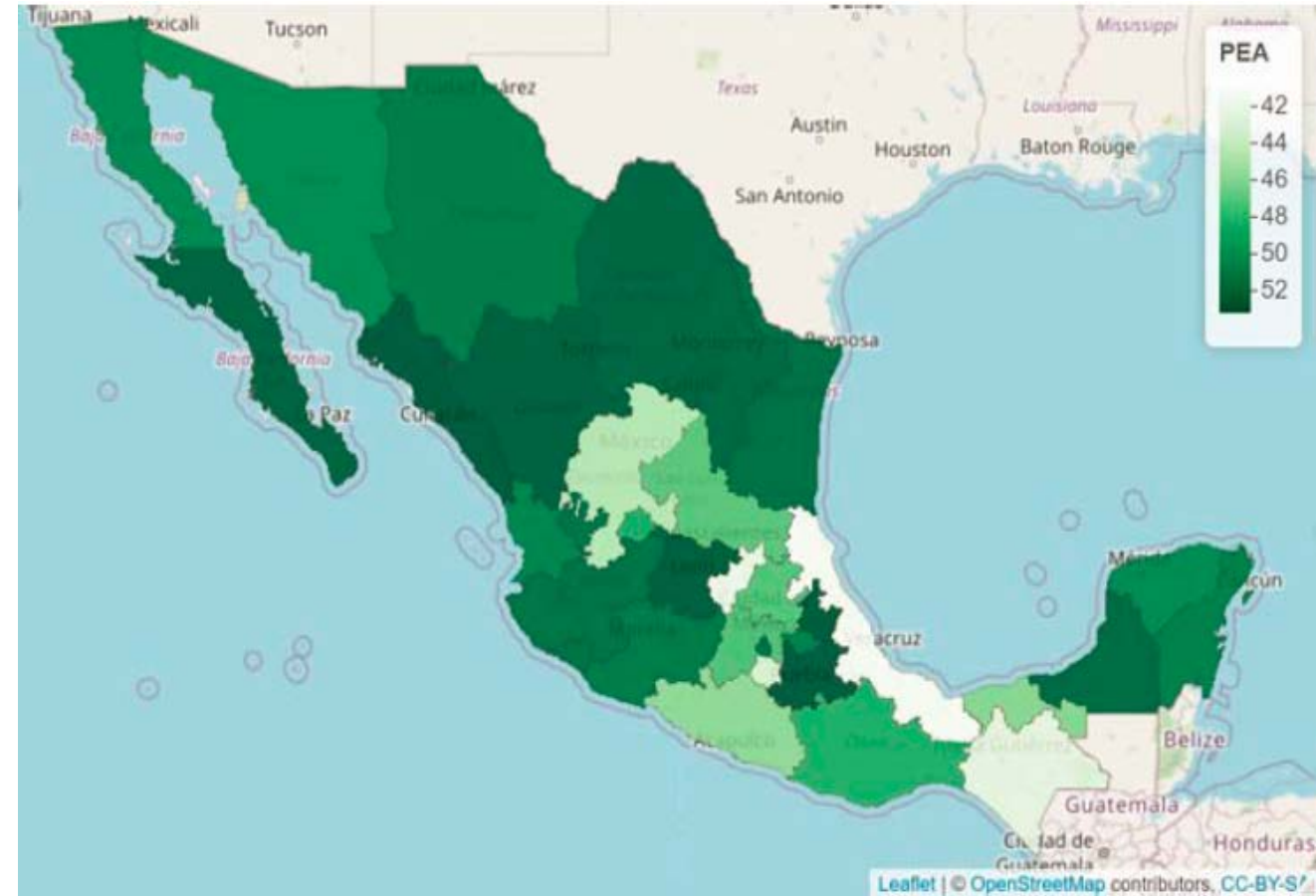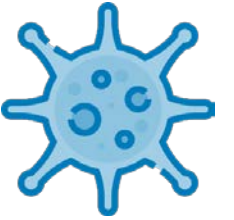
# Lessons learned

- **The generation of official statistics as an essential activity**

  INEGI did not stop its statistical production, aware of the importance of maintaining the continuity of the most important indicators and the creation of new ones to meet the information needs of decision-makers and other interested parties.

- **The challenge of maintaining a relationship of trust with the target population**

  This would not have been possible if INEGI had not good reputation with **individuals and organizations both nationally and internationally.**

- **Extending the use of ICTs**

  One of the reasons that made possible to conclude the Census was the change from paper to Mobile Computing Devices (MCDs), which allowed several phases of the Census to be more agile and efficient. This valuable experience is in the process of being applied in different surveys.

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# Lessons learned

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## Robust Risk Management

- **NSOs** should **perform robust Risk Management** (RM) that:
  - Includes **all phases of a census** and **the process of statistical generation**.
  - Considers **all types of risks**, even those that are unlikely.
  - High impact risks: Epidemic, pandemic (AH1N1, COVID-19), natural disasters (floods, hurricanes, and earthquakes), political and civil conflicts.
- A complete **RM must be carried out for all statistical projects**.
- Risk analysis will make it possible to adopt a **clear position in the face of a crisis** and to have a predefined course of action.

## High-Level Officers

- To have **high-level officers with managerial skills and experience** in:
  - Decision-making within organizations.
  - Statistical and operational matters, but also…
  - Knowledgeable of other phenomena, such as social, environmental, political, and economic phenomena at national and international levels.

# THANK YOU

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