


## Policy Analysis

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# Another Vision of the Situation of the COVID-19 Pandemic in Mexico During 2020

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### Abstract

The number of coronavirus disease 2019 (COVID-19) cases and deaths registered in Mexico during 2020 could be underestimated, due to the sentinel surveillance adopted in this country. Some consequences of following this type of epidemiological surveillance were the high case fatality rate and the high positivity rate for COVID-19 shown in Mexico in 2020. During this year, the Mexican Ministry of Health only considered cases from the public health system, which followed this sentinel surveillance, but did not consider those cases from the private health system. To better understand this pandemic, it is important to include all the results obtained by all the institutions capable of testing for COVID-19; thus, the Mexican Government could then make good decisions to protect the population from this disease.

At the end of February 2020, the first cases of coronavirus disease 2019 (COVID-19) were reported in Mexico.<sup>1</sup> On March 30, 2020, the Government of this country decided to impose quarantine (“lockdown”) to contain the spread.<sup>2</sup> Unfortunately, this pandemic has left a financial impact on Mexico.<sup>3</sup> Even though the number of cases and deaths caused by COVID-19 had been increasing rapidly during the month of May 2020, the Mexican Government decided to ease some restrictions to reopen economic activities.<sup>4</sup> After this rushed decision, the number of COVID-19 cases and deaths continued to rise over the following months (Table 1).<sup>5</sup>

### Official Numbers of This Pandemic

During 2020, Mexico was among the top 10 countries with the highest number of COVID-19 cases, as well as among the top 5 countries with the highest number of deaths attributed to this disease, showing a case fatality rate (CFR) of up to 12% and a mortality rate close to 1%.<sup>5</sup> Some Mexican officials, especially several politicians, do not agree with these statistics, because they have declared that the number of cases and deaths per 1 million inhabitants should be taken into account. Considering the population of Mexico, during 2020, this country was far from being among the countries with the highest number of COVID-19 cases, but it remained among the countries with the highest number of deaths related to this disease.<sup>5,6</sup>

### The Reality Behind the Official Reports

To register and confirm the cases of COVID-19 during 2020, Mexico used a sentinel surveillance system, in which the Ministry of Health considered 100% of the severe cases (hospitalized), but only took the 10% of mild cases (outpatient care) with COVID-19 to be analyzed.<sup>7</sup> Perhaps this could be one of the reasons why Mexico showed a high CFR during 2020. For example, at the end of this year, Mexico registered 1,426,094 confirmed cases of COVID-19 and 125,807 reported deaths; thus, the CFR was 8.82% (Table 1). From these confirmed cases, 20% were severe and 80% were mild cases. It is noteworthy that these percentages were practically maintained from October to December 2020.<sup>8,9</sup> If the Mexican Ministry of Health had considered 100% of mild cases, the total number of COVID-19 cases registered would have increased by a few million more, and the CFR would have decreased.

Another consequence of analyzing 100% of severe cases and only 10% of mild cases was the high positivity rate registered in Mexico, which was around 43% for the last months of 2020.<sup>8</sup> In other words, Mexico only had to perform approximately 2.2 tests to confirm a case. In contrast, some countries like Australia and Vietnam had less than a 1% positivity rate until the end of 2020; this means thousands of tests were needed to find 1 case.<sup>10,11</sup>

In accordance with the World Health Organization criteria, when “less than 5% of samples are positive for COVID-19, at least for the last 2 weeks, assuming that surveillance for suspected cases is comprehensive”, the epidemic is controlled. The explanation for this criterion is that “the percentage of positive samples can be interpreted only with comprehensive surveillance and testing of suspected cases, in the order of 1/1000 population/week.”<sup>12</sup> In other words, when the number of tests is enough, the positivity rate helps us to determine if the severe acute

**Table 1.** Cumulative COVID-19 cases and deaths in Mexico from March to December 2020

Month	Cases	Deaths	CFR
March	1,215	29	2.39
April	19,224	1859	9.67
May	90,664	9930	10.95
June	226,089	27769	12.28
July	424,637	46688	10.99
August	599,560	64414	10.74
September	743,216	77646	10.45
October	924,962	91753	9.92
November	1,113,543	105940	9.51
December	1,426,094	125807	8.82

Data represent cumulative COVID-19 cases and deaths through the end of each month. This information was obtained from reports from the World Health Organization.<sup>5</sup>

respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission is controlled in the community; therefore, the Governments could consider reopening.

A high positivity rate like the one Mexico showed during 2020 means that the epidemic was not under control and, consequently, the Government had to wait to have fewer confirmed positive COVID-19 cases before reopening. Nevertheless, the positivity rate can only be considered when the number of tests has been sufficient. Nonetheless, during 2020, Mexico was one of the countries with the fewest tests performed. For example, on December 31, 2020, Mexico reported 1,426,094 cumulative confirmed cases of COVID-19 and 1,794,948 negative cases; thus, 3,221,042 samples were analyzed.<sup>8</sup> Considering that until March 2020 the population in Mexico was 126,014,024 people, Mexico carried out around 25 tests per 1000 people from March to the end of December 2020, but this only represents 0.58 tests/wk, when the recommendation is 1/1000 population/wk.<sup>6,12</sup> This number of tests is less in comparison with the number of tests performed in the United States in the same period, where around 750 tests were conducted per 1000 people, which represents 17 weekly tests.<sup>13,14</sup>

Therefore, it is necessary to increase the number of tests in Mexico or to include all the tests performed by the private health-care system and especially by several educational institutions, which have provided COVID-19 testing service to the general public.<sup>15</sup>

Unlike the United States, where every certified laboratory capable of testing for COVID-19 can report to public health authorities,<sup>16</sup> in Mexico during 2020, the official reports of this pandemic only considered cases from the public health system, which followed as mentioned above, the sentinel surveillance, but did not consider cases from the private health system, nor those identified by educational institutions.<sup>7</sup>

If Mexico wants to have an idea of the real situation of this pandemic, it is important to consider 100% of the cases of the public and private health systems, as well as the cases identified by educational institutions, including all people who were in close contact with people with confirmed COVID-19. Thus, the number of cases of COVID-19 registered in Mexico would increase, without considering asymptomatic patients. A study has reported that the number of asymptomatic patients could be among 18% to 81% of all infected patients.<sup>17</sup> In addition, the Mexican Ministry of Health showed the results of a study that included 9464 samples from which it was estimated that 25% of the people in Mexico have antibodies against SARS-COV-2; this means that around

32 million people were infected by this virus, but close to 70% of them were asymptomatic.<sup>18</sup> Of course, it is very difficult to screen asymptomatic patients, unless they have been in close contact with a person infected with this virus.<sup>19</sup>

### Underestimated Deaths Caused by COVID-19

The reality is that not all deaths from COVID-19 were registered in 2020. In comparison with the past 5 years, the annual average of general deaths in Mexico increased around 40% during 2020, but only approximately 39% of this excess mortality was confirmed for COVID-19.<sup>20</sup> Of course, there were several cases in which, the people could not get a bed in crowded hospitals and died with all the symptoms of COVID-19; however, in those cases, it was impossible to confirm the infection. Therefore, the remaining 61% of this excess mortality may or may not be due to COVID-19. If this remaining 61% of excess mortality were due to COVID-19, the number of deaths from this disease in Mexico would double, and the CFR would increase.

### Conclusions

The cases and deaths due to COVID-19 were underestimated in Mexico during 2020. To protect the population, it is important to make good decisions knowing the real situation of this pandemic. To achieve this, the health authorities should consider the positivity rate, but also taking into account all the data generated by public and private health systems, including those generated by educational institutions, and at the same time increasing the number of COVID-19 tests. Of course, the reality of this pandemic is more complex, considering that not only the behaviors of society and the decisions of our Government facilitate the spread of this virus, but also chronic diseases and hospital infrastructure affect the development of this disease. Mexico should consider the lessons learned during 2020 to prevent the next waves of infection by this virus or be prepared for another pandemic in the future.

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