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# Self-Isolation Compliance In The COVID-19 Era Influenced By Compensation: Findings From A Recent Survey In Israel

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**ABSTRACT** To contain the novel coronavirus disease (COVID-19) pandemic, health and government authorities have imposed sweeping self-quarantine orders for communities worldwide. Health officials assume that the public will have high rates of compliance. However, studies suggest that a major obstacle to compliance for household quarantine is concern about loss of income. A cross-sectional study of the adult population of Israel was conducted in the last week of February 2020 to assess public attitudes toward the COVID-19 outbreak. In particular, public compliance rates with self-quarantine were assessed, depending on whether lost wages would be compensated for. When compensation was assumed, the compliance rate was 94 percent. When compensation was removed, the compliance rate dropped to less than 57 percent. This study demonstrated that providing people with assurances about their livelihoods during self-quarantine is an important component of compliance with public health regulations.

**I**n December 2019 increasing numbers of cases of a novel severe acute respiratory syndrome (SARS) coronavirus were registered in Wuhan, China. The virus, originally named SARS-CoV-2, rapidly spread throughout China and abroad. Since February 12, 2020, the disease caused by this novel coronavirus has been called coronavirus disease 2019 (COVID-19), and its spread around the globe is ongoing as of this writing.<sup>1,2</sup> As of May 5, 2020, about 3.5 million confirmed cases had been recorded in 215 territories and countries, and nearly 242,000 people had died.<sup>3</sup>

Many efforts are being undertaken by governments around the world to contain the spread of COVID-19. A major component of these efforts applied by public health authorities is self-quarantine.<sup>4</sup> People who may have been exposed to COVID-19 are instructed to subject themselves to household quarantine for a minimum of fourteen days, which effectively prevents them from closely interacting with other people as well as

from attending school and going to a workplace or any public venue. Self-quarantine is not the same as isolation, which separates people known to be ill from others who are not. Arguably, self-quarantine could be effective in slowing the spread of this contagious disease, as it did with SARS in 2003.<sup>5</sup>

Although self-quarantine of people suspected of having been exposed to a disease is an action that someone takes to protect others, research suggests that during a disease outbreak, people view favorably public health actions such as self-quarantine.<sup>6</sup> Accordingly, public health officials assume high compliance rates by the public with self-quarantine instructions. However, different studies suggest that a major obstacle to compliance with household quarantine is concern over loss of income resulting from prolonged absence from work.<sup>7,8</sup> Acknowledging this, the governments of Canada and Hong Kong implemented specific plans to reimburse people who lost income during the SARS outbreak in 2003.<sup>9</sup>

Crisis managers rely on public compliance with self-quarantine. Officials usually have limited capacity to enforce and monitor this measure, and hence the public health benefits of household quarantine can be achieved only if the public cooperates. Therefore, it is imperative to assess public attitudes toward compliance with household self-quarantine in light of economic considerations. The purpose of the current study was to assess public attitudes toward the COVID-19 outbreak, in particular concerning compliance with public health regulations such as self-quarantine and comparing differences in attitudes depending on whether compensation for lost wages is or is not offered.

## Study Data And Methods

This cross-sectional study was conducted in Israel during the last week of February 2020. A randomized sample of the country's adult population was engaged in a study to assess public attitudes concerning the outbreak of COVID-19. Responses were collected through the iPanel online polling service.<sup>10</sup> Since 2006 iPanel has provided an online platform for a wide variety of information collection services, including polls and public opinion surveys. It adheres to the stringent standards of the European Society for Opinion and Marketing Research (ESOMAR).

**STUDY SAMPLE** The study's final sample included 563 respondents who represented the adult population of Israel (see below). At the time responses were collected, five cases of COVID-19 had been confirmed in Israel, and more than five thousand Israelis were required to self-quarantine at home.

**QUESTIONNAIRE** The main tool used in this study was a questionnaire designed specifically for the study. The questionnaire included six items that assessed public attitudes toward the COVID-19 outbreak, including one item each about news consumption and personal concern and two items each about public panic and attitudes toward public health regulations. In addition, the questionnaire included three items that assessed compliance with public health regulations on a nominal scale (yes, no, maybe, or don't know). The first two items assessed compliance with self-quarantine using the following text: "Assuming you were requested by a medical official to stay in self-quarantine and assuming the state will [not] compensate you for lost wages, will you stay in self-quarantine?" The negative form of the question (using the word *not*) was asked after the positive form. The third item assessed willingness to report individuals violating self-quarantine by asking: "If you were asked to report to the Ministry of Health individuals

violating self-quarantine decrees designed to protect public health, would you report them?"

**ANALYSIS** Statistical analyses were conducted using SPSS Statistics, version 25. The analyses chiefly used descriptive methods. Chi-square tests were used to evaluate differences between groups. We considered *p* values of 0.05 or less to be significant.

**LIMITATIONS** This study had several limitations. First, although conducting the study during the crisis was important to assess situational attitudes, the attitudes it assessed are likely to change as the pandemic progresses, because of the study's cross-sectional nature. In particular, compliance rates with self-quarantine may change dramatically as the threat of infection is perceived to increase. This limitation can be addressed by performing the assessment at multiple times to evaluate shifts in the studied opinions.

Second, the study used an internet-based methodology. While this allowed for the rapid acquisition of responses from a wide geographical distribution and resulted in a representative sample of the adult population of Israel, it also meant that respondents needed computer skills to participate. This means that the conclusions should not be generalized beyond people with high computer skills.

Third, respondents were asked to predict their future actions rather than to report actual behavior, which might have led to reporting biases.

Lastly, the results are not generalizable beyond the Israeli public. Additional studies in other countries are needed to expand the database to other cultures and contexts.

## Study Results

Exhibit 1 summarizes the sociodemographic breakdown of the study sample. Along with their responses to the questions detailed above, respondents were asked to provide their attitudes toward the COVID-19 outbreak. The results suggest that a majority of the Israeli public was monitoring the situation by consuming news reports: More than 60 percent of respondents reported monitoring the news "a lot" or "very much" (exhibit 2).

When asked if they were worried about the outbreak, half of respondents replied "a lot" or "very much," while only 16 percent replied "not at all" or "a little." The mean score for this question was 3.55 out of 5.00, which suggests a moderate level of concern. In contrast, 63 percent of respondents believed that there was panic in the general public. More than 80 percent ascribed the public concerns over COVID-19 to media coverage of the outbreak.

EXHIBIT 1

**Sociodemographic distribution of respondents to the survey of attitudes toward compliance with self-quarantine during the COVID-19 outbreak in Israel, 2020**

Variables	Percent
<b>SEX</b>	
Female	50.4
Male	49.6
<b>MEAN AGE, YEARS<sup>a</sup></b>	
18–35	45.8
36–55	37.8
56–70	16.4
<b>RELIGION</b>	
Jewish	81.0
Other <sup>b</sup>	19.0
<b>RELIGIOSITY<sup>c</sup></b>	
Secular	63.6
Traditional	12.7
Religious	12.9
Ultra-Orthodox	10.8
<b>PLACE OF RESIDENCE</b>	
Haifa and northern Israel	35.3
Tel-Aviv and central Israel	27.2
Southern Israel and coastline plain	21.3
Greater Jerusalem	8.7
HaSharon region	7.5
<b>FAMILY STATUS</b>	
In a relationship	73.5
Single	26.5
<b>CHILDREN</b>	
Has any children	67.9
Has children younger than age 18	83.8
Has no children	32.1
<b>EDUCATION</b>	
Less than high school diploma	16.9
High school diploma	19.5
Vocational education	24.9
Bachelor's degree	29.5
Master's degree or more	9.2
<b>INCOME</b>	
Less than average	40.8
Average	20.8
More than average	28.8
Missing data	9.6
<b>EMPLOYMENT</b>	
Part- or full-time employee	65.9
Self-employed	7.1
Retired or unemployed	12.6
Student	12.6
Missing data	1.8

**SOURCE** Authors' analysis of data from iPanel. **NOTE** The number of respondents was 563 except where otherwise indicated. <sup>a</sup>*n* = 557. Mean age was 39.57 years (standard deviation: 14.09). <sup>b</sup>Includes Muslims, Christians, and Druze. <sup>c</sup>*n* = 456. Relevant to the Jewish portion of the sample only.

When asked to what extent they trusted the public health instructions issued by the Ministry of Health during the COVID-19 outbreak, 53 percent reported a high level of trust, 33 percent a moderate level, and 15 percent a low level. Sub-

sequently, respondents were asked whether they believed that taking criminal action against people who did not self-quarantine would increase compliance with the ministry's instructions. Sixty-nine percent felt that this step would help contain the disease.

Respondents were asked to report their intent to comply with self-quarantine under two circumstances. When state-sponsored compensation for lost wages was assumed, 94 percent of respondents indicated that they would comply with a two-week self-quarantine instructed by a medical official (exhibit 3). Only 0.7 percent said that they would not comply. However, when monetary compensation was removed, the compliance rate dropped to 57 percent, and 11 percent said that they would not comply.

In an effort to characterize people likely not to comply, we compared the sociodemographic characteristics of respondents who replied "no" or either "maybe" or "don't know" to those of the total sample. The analysis demonstrated that there were no significant differences between the two groups (exhibit 4). Self-employed people were more likely to refuse to self-quarantine when compensation was removed, but this finding was not significant, either (*p* = 0.052) (data not shown).

When compensation was removed, the group of undecided respondents (those who responded either "maybe" or "don't know") was overrepresentative of people with higher-than-average incomes (exhibit 4). No differences were observed for other sociodemographic variables between this group and the total sample.

Lastly, respondents were asked whether they would report a person who was in breach of a self-quarantine decree if asked to do so by health authorities. Fifty-eight percent replied that they would report such a person, while 7 percent said that they would not. The remaining 35 percent were unsure whether or not they would comply with the request.

**Discussion**

The results of this study demonstrate several interesting phenomena concerning public attitudes toward the COVID-19 outbreak. While on an individual level people tend to estimate their level of concern as moderate, on a communal level people tend to ascribe high levels of panic to others. It is this perceived irrationality on the part of other people that can lead to unwanted behavior, such as the panic buying seen during the COVID-19 outbreak<sup>11</sup> and the spread of rumors.<sup>12</sup> Similar notions were reported after the SARS outbreak in 2003<sup>13</sup> and the swine flu pandemic in 2009.<sup>14</sup>

**EXHIBIT 2**

**Distribution of survey respondents' attitudes toward COVID-19 outbreak issues in Israel, 2020**

To what extent:	Not at all	A little	Moderately	A lot	Very much	Mean (±SD)
Do you follow the news reports about the COVID-19 outbreak?	2.3%	7.5%	28.8%	34.8%	26.6%	3.76 (±1.00)
Are you worried by the COVID-19 outbreak?	2.5	13.9	33.7	26.1	23.8	3.55 (±1.07)
Do you think the public is reacting in panic to the COVID-19 outbreak?	0.7	8.2	28.2	38.5	24.3	3.78 (±0.93)
Do you think the media is contributing to public concerns over COVID-19?	1.2	4.1	13.9	40.7	40.1	4.14 (±0.89)
Do you trust the public health instructions of the MOH during the COVID-19 outbreak?	4.3	10.5	32.5	33.6	19.2	3.53 (±1.05)
Do you think taking criminal action against individuals violating quarantine decree will increase compliance with MOH instructions?	2.0	8.7	20.1	33.9	35.3	3.92 (±1.04)

**SOURCE** Authors' analysis of data from iPanel. **NOTES** Mean score is based on a total of 5.00. MOH is Israel Ministry of Health. SD is standard deviation.

In addition, the results of this study suggest that Israelis tend to conform to government regulations. They exhibit a relatively high level of trust in health authorities' instructions and comply with a variety of regulations, including reporting disorderly people who breach self-quarantine, and they support complying with self-quarantine regulations and taking criminal actions against those who do not comply. Nevertheless, the results of this study highlight an important message to COVID-19 crisis managers. Decision makers need to take a broader view of the situation: in particular, addressing people's concern about their livelihood. Providing people with assurances about their household incomes during times of absence from their workplaces seems to be an important component in compliance with public health regulations.<sup>15</sup> Should this aspect be ignored, health officials risk losing twice: first, by reducing the effectiveness of their measures to contain the spread of the disease by prompting people not to self-quarantine; and second, by losing trust and becoming irrelevant to people's decision-making processes.

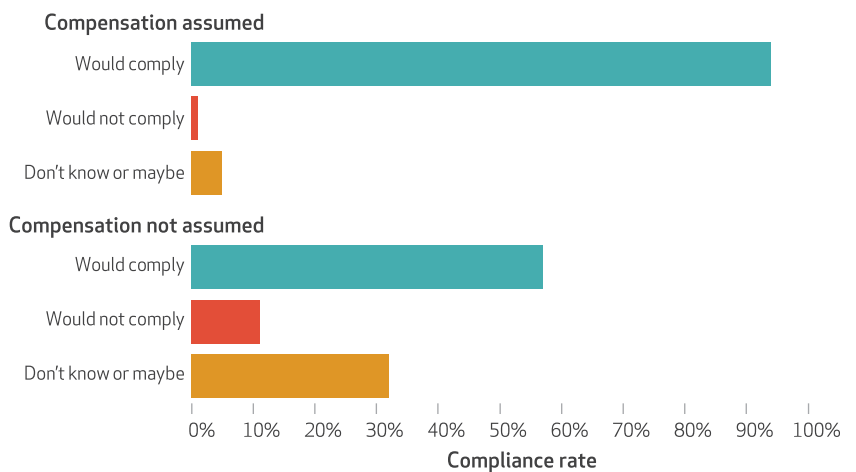
When decision makers ensure that people in self-quarantine continue to receive their incomes, the chances of achieving maximal compliance are very high. If for any reason there is no way to compensate people for lost wages, then decision makers should consider ways to optimize compliance rates. However, this could prove to be quite a challenge. The lack of significant differences between the noncompliance group and the total sample suggests that any person can disobey public health instructions issued during a disease outbreak if lost wages are not compensated for. Nevertheless, if the state decides that it cannot provide monetary compensation for people in self-quarantine, the findings here suggest that an important group to target with compliance-supporting messages

would be people who have yet to decide how to behave if no compensation is offered. They account for about one-third of the population and can be characterized as people with higher incomes. Targeting risk-communication efforts at this group could lead to higher compliance rates, even in the absence of monetary compensation.

Decision makers should note the trade-off inherent in the decision to compensate or not compensate people in self-quarantine. The economic implications of providing monetary compensation can be enormous, especially as numbers of suspected exposures rise. Nonetheless, increased numbers of compensated people should not necessarily discourage the state from considering compensation on the basis of excess expenditure. Choosing to discontinue or revoke

**EXHIBIT 3**

**Expected rates of compliance with self-quarantine during the COVID-19 outbreak in Israel, according to whether or not respondents would receive monetary compensation for lost wages, 2020**



**SOURCE** Authors' analysis of data from iPanel **NOTES** N = 563. Respondents were asked whether they would comply with a two-week self-quarantine instructed by a medical official.

**EXHIBIT 4**

**Sociodemographic distribution of survey respondents according to their attitudes toward compliance with self-quarantine during the COVID-19 outbreak in Israel without compensation for lost wages, 2020**

Variables	Total sample (N = 563)	Noncompliance group (n = 60)	Undecided group (n = 183)	p value <sup>a</sup>	
				Total versus noncompliance	Total versus undecided
Sex				0.07	0.58
Female	50.4%	38.3%	48.1%		
Male	49.6	61.7	51.9		
Religion				0.28	0.14
Jewish	81.0	86.7	85.8		
Other <sup>b</sup>	19.0	13.3	14.2		
Religiosity <sup>c</sup>				0.77	0.90
Secular	63.6	61.5	63.1		
Other <sup>d</sup>	36.4	38.5	36.9		
Family status				0.56	0.72
In a relationship	73.5	70.0	74.9		
Single	26.5	30.0	25.1		
Has children				0.33	0.69
Yes	67.9	61.7	69.4		
No	32.1	38.3	30.6		
Education				0.76	0.59
Less than bachelor's degree	61.3	63.3	59.0		
Bachelor's degree or more	38.7	36.7	41.0		
Income				0.30	0.02
Less than average	45.2	46.2	35.4		
Average	23.0	30.8	20.7		
More than average	31.8	23.1	43.9		

**SOURCE** Authors' analysis of data from: iPanel. **NOTE** The undecided group were respondents who answered "maybe" or "don't know."  
<sup>a</sup>Calculated from chi-square tests of homogeneity. <sup>b</sup>Includes Muslims, Christians, and Druze. <sup>c</sup>Relevant to the Jewish portion of the sample only. <sup>d</sup>Includes traditional, religious, and ultra-Orthodox.

compensation could lead to higher rates of noncompliance with self-quarantine, which in turn could lead to increased morbidity and mortality—and these have their own price tags. Furthermore, increased numbers of exposures could lead to more drastic measures, such as placing entire areas under quarantine in an effort to control the spread of the disease. Under such circumstances, crisis managers should weigh the costs of loss of production and disturbance to the economy and critical infrastructure resulting from the absence from work of large numbers of workers—as well as the costs of distributing water and food to quarantined populations and other logistical issues. These might prove to have an even greater price tag than reimbursement for lost wages.

Moreover, governments might adopt compensation programs in a disease outbreak for reasons other than to encourage compliance with self-quarantine orders. For instance, during the current COVID-19 outbreak, the US government decided to send payments to people without regard for whether they self-quarantined, as a way to promote economic stability and reduce hard-

ships for those who became unemployed or had additional expenses associated with social distancing measures.

**Conclusion**

In some emergencies, such as the outbreak of COVID-19, public health officials request that members of the public self-quarantine. This action could have dramatic implications for a household's income. This study demonstrates that decision makers should pay attention to the economic implications of self-quarantine. If each household's income during the self-quarantine period is assured, high levels of compliance with public health regulations can be expected. This would not be the case if decision makers did not guarantee such economic safety. Continuous earning is a crucial factor in determining public compliance with public health regulations, in particular those related to self-quarantine. This is particularly important in countries that rely on public compliance with regulations. ■

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article. That version is available in the online appendix. To access the appendix, click on the Details tab of the article online.

## NOTES

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