Citizen Assessments of Government Actions in the COVID-19 Outbreak in China

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This study investigates citizen assessments of government actions in the COVID-19 outbreak in China. Empirical analyses based on a large-scale online survey indicate that the Chinese public expects the government to improve its support for the frontline medical staff, management of public stress and anxiety, and disclosure of government information. Specifically, indirect exposure to COVID-19 through second-hand information is negatively associated with citizen assessments of government actions; by contrast, the first-hand frontline experience with the epidemic is positively associated with citizen assessments of government actions. Findings suggest that citizens with first-hand experience might be more able to judge government actions under the actual constraints of resources and opportunities, and are less likely to overemphasize the costs or risks associated with government actions than others without frontline experience. Our work suggests that governments should effectively communicate detailed information regarding government actions to the public during public health emergencies, as more informed citizens might be more supportive of governments with limited resources and, probably, more actively collaborate with governments.

INTRODUCTION

Citizen assessments of government actions can directly determine the choices of citizens and often shape the decisions of policymakers (Gottlieb, 2016; James, 2011) and therefore substantially affect the overall social outcomes of public emergencies (Bieling, 2014; Hanaoka, Shigeoka & Watanabe 2018). Thus, examining citizen assessments and their determinants during public emergencies can provide theoretically important insights into citizen-state interactions and practically relevant policy lessons for practitioners to improve emergency preparedness and response plans. This study focuses on the effects of information exposure on citizen assessments of government actions in three major aspects, namely, information management, emergency management, and public health management in the COVID-19 outbreak in China.

Individual attitudes toward government service quality are determined by the gap between performance and expectation (Donahue & Miller, 2006). Citizens’ knowledge of this gap is mainly accumulated through direct personal experience or indirect social learning (James, 2009; Kelly & Swindell, 2002; Van Ryzin, 2013). However, systematic empirical evidence on the effect of first-hand experience or second-hand information on citizen assessments of public services remains limited and mainly drawn from the e-government sector in advanced industrial democracies owing to the availability of citizen surveys in these contexts (Porumbescu, 2016; Tolbert & Mossberger, 2006; Welch, Hinnant & Moon, 2005). However, little is known about the impact of direct or indirect exposure to public health emergencies on citizen assessments of government actions. This omission is serious because public health emergencies have been increasing (e.g., the 2009 H1N1 pandemic, the 2015–2016 Zika virus epidemic, the ongoing 2018–20 Kivu Ebola epidemic, and the ongoing COVID-19 outbreak) international concern in recent years (Modjarrad et al., 2016; Rolland et al., 2020).
As of June 9, 2020, COVID-19 had caused more than 6,900,000 confirmed cases and more than 400,000 deaths in 216 countries and territories (Li et al., 2020; World Health Organization, 2020; Wu & McGoogan, 2020), at least 700 times worse than the syndrome-related coronavirus (SARS) 17 years ago (Dong, Du & Gardner, 2020; Liu, Gayle, Wilder-Smith & Rocklov, 2020). COVID-19 has caused worldwide public panic, medical resource shortages, and global economic disruption (Bell & Blanchflower, 2020; Horesh & Brown, 2020; Qian et al., 2020; Van Bavel et al., 2020). In many countries, the public has adjusted its assessments of government actions regarding information disclosure, public health management, and crisis management. This research explores citizen assessments of government actions in the COVID-19 outbreak in China.

We use the data from a large-scale online survey conducted from February 6, 2020 to February 7, 2020 for empirical analyses. Specifically, we asked over 50,000 respondents to evaluate the necessary policy reforms in response to the COVID-19 emergency, including government information disclosure, public health system reform, and emergency management capacity building. We attempt to answer three questions in this article: (i) What are the citizen assessments of government actions in the three aspects, namely, information management, emergency management, and public health management during the COVID-19 emergency in China? (ii) How does the first-hand experience with COVID-19 or indirect exposure to COVID-19 through second-hand information shape citizen assessments of government actions? (iii) What can we learn from the survey regarding government actions to the public health emergency in the global context?

EARLY GOVERNMENT ACTIONS IN THE COVID-19 OUTBREAK IN CHINA

Since the first COVID-19 patient appeared in Wuhan in December 2019, the Chinese government has taken various measures to deal with the epidemic (People’s Daily, 2020; Xinhua News Agency, 2020) and controlled the epidemic effectively (Jia et al., 2020; Qiu, Chen & Shi, 2020; Tian et al., 2020; Zhang et al., 2020). As illustrated in Table 1, the early government actions (from December 8, 2019 to February 6, 2020) in the COVID-19 outbreak in China mainly include three types, namely, information management, public health management, and emergency management. For information management, the national and local health commissions were responsible for epidemic information disclosure and external communication. For public health management, the medical experts and research groups were funded and subsidized by governments to carry out epidemiological investigation, scientific research, and treatment of patients. For emergency management, central and local governments set up leading groups to deal with the epidemic and urged the health, transportation and other government departments to take emergency actions, such as constructing specialized hospitals, restricting population mobility and public transport, prohibiting public gatherings/public events, extending the Spring Festival holiday, and postponing the opening of schools.

DATA, VARIABLE, AND METHODS

We administered the online survey nationally from 3 p.m. on February 6, 2020 to 10 a.m. on February 7, 2020 and covered 54,517 web users. Figure 1 shows the number of daily newly confirmed cases in China and our online survey was conducted during the epidemic peak of COVID-19 in China. We collected 38,175 valid questionnaires from 54,517 respondents (valid response rate = 70.0%). We removed all the respondents with missed or abnormal information and outlier values (i.e., age under 18 or above 80, answer-question time under one minute or above 15 minutes) from the sample. Table 2 shows the demographic and geographical characteristics of the respondents.

The questionnaire was designed to investigate the public attitudes to and opinions on COVID-19 prevention and control. As illustrated in Figure 2, we listed three groups and 11 policy items in information management (I1–I5), public health management (P1–P3), and emergency management (E1–E3) and required the respondents to select all policy items that
they think should be improved by the government in the process of epidemic prevention and control. In addition to demographic characteristics (age, gender, education, occupation, and residential location), we included questions to measure respondents’ attention and indirect exposure to epidemic information (the original question in the questionnaire is “how much time do you spend browsing epidemic information each day”), personal frontline experience in epidemic prevention, and assessments of government actions.

Similar to most Internet-based surveys, this survey encountered the demographic imbalance of samples. Our samples were skewed to younger and male respondents compared with the overall population, and the proportion of respondents from northern
China is relatively high (see Table 2). To address these imbalances, we used the post-stratification strategy (Bethlehem, 2009) to reweight our sample data. Based on the national sample survey of 1% population in 2015, we selected gender (with two categories), age (with four categories), and area (with seven categories) as auxiliary variables, divided population $U$ into 56 strata ($U_1, U_2, \ldots, U_{56}$), and investigated the joint distribution of gender, age, and area in the population. In this way, the adjustment weight $w_i$ for an observed element $i$ in stratum $U_h$ is equal to

$$w_i = \frac{N_h / N}{n / n_h} \quad [1]$$

where $N$ is the number of population elements, $N_h$ is the number of population elements in stratum $U_h$, $n$ is the number of sample elements, and $n_h$ is the number of sample elements in stratum $U_h$. With post-stratification weights, our samples were representative of the national population, and the estimates of population characteristics were accurate. All of the following statistical analyses employed these post-stratification weights.

We used logit models, as shown in equation 2, to estimate the impacts of indirect information exposure and frontline experience on citizen assessments of government actions with demographic characteristics and city-level variables controlled:

$$\ln \left( \frac{P(Y_i=1)}{1-P(Y_i=1)} \right) = \beta_0 + \beta_1 \text{Indirect.exposure}_i + \beta_2 \text{Frontline.experience}_i + \beta_3 \text{Age}_i + \beta_4 \text{Age.squared}_i + \beta_5 \text{Female}_i + \beta_6 \text{Education}_i + \beta_7 \text{Agricultural.sector}_i + \beta_8 \text{Service.sector}_i + \beta_9 \text{Confirmed.cases}_i + \beta_{10} \text{GDP.per.capita}_i + \beta_{11} \text{Distance.to.Wuhan}_i + \epsilon_i \quad [2]$$

where $Y_i$ is the citizen assessments of government

|   | Policy Items to be Assessed in the Questionnaire                                                                 |
|---|--------------------------------------------------------------------------------------------------------------|
| 11 | Managing public stress and anxiety                                                                           | 70.4% |
| 12 | Full and timely disclosure of government information                                                          | 61.5% |
| 13 | Publicity of epidemic prevention knowledge                                                                   | 54.7% |
| 14 | Data and information sharing between central and local governments                                          | 39.5% |
| 15 | Citizen privacy protection during epidemiological investigations                                              | 32.9% |
|    | P1. Care and concern for the frontline medical staff                                                          | 72.4% |
|    | P2. Scientific decision making and early warning based on big data                                            | 40.3% |
|    | P3. Emergency research capacity of medical research institutions                                              | 37.9% |
|    | E1. Capacity building of government emergency management                                                       | 51.6% |
|    | E2. Encouraging full participation of social organizations and the public                                      | 32.5% |
|    | E3. Emergency response of the medical system                                                                  | 39.5% |

Note: Selection ratios indicate the percentage of respondents who selected a certain policy item.
Table 1. Timeline of Early Government Actions in the COVID-19 Outbreak in China from December 8, 2019 to February 6, 2020

| Government Action                                                                 | Time          |
|----------------------------------------------------------------------------------|---------------|
| **Information management**                                                       |               |
| Wuhan Health Commission made a notice about the case of novel pneumonia.          | Dec. 8, 2019  |
| Wuhan Health Commission issued the urgent notice on treating pneumonia with unknown causes. | Dec. 30, 2019 |
| China regularly and proactively informed WHO, relevant countries, and regional organizations of the epidemic information. | Jan. 3, 2020  |
| The head of the Chinese CDC contacted the head of the American CDC and introduced the epidemic information. | Jan. 4, 2020  |
| The National Health Commission began daily updates on the epidemic information.   | Jan. 11, 2020 |
| The National Health Commission shared the gene sequence of the novel coronavirus with WHO. | Jan. 12, 2020 |
| The head of the expert group of the National Health Commission confirmed the human-to-human transmission of the epidemic. | Jan. 20, 2020 |
| The National Health Commission made a statement on the incubation period of the novel coronavirus. | Jan. 26, 2020 |
| The National Health Commission published the fifth edition of the Diagnosis and Treatment Protocol. | Feb. 5, 2020  |
| **Public health management**                                                     |               |
| The expert group of the National Health Commission arrived in Wuhan to carry out the relevant investigation and verification work. | Dec. 31, 2019 |
| The National Health Commission initially confirmed the pathogen of the epidemic. | Jan. 8, 2020  |
| China Railway Customer Service Center carried out big data analysis in cooperation with epidemic prevention and control. | Jan. 21, 2020 |
| China carried out comprehensive scientific research on epidemic emergency response. | Jan. 24, 2020 |
| Zhejiang province employed "big data + grid management" to accurately identify and track relevant personnel. | Jan. 26, 2020 |
| The vaccine research and development of the novel coronavirus was officially approved. | Jan. 28, 2020 |
| The Ministry of Finance announced daily subsidies for the frontline medical staff. | Jan. 30, 2020 |
| Wuhan carried out body temperature monitoring of the entire population.          | Feb. 6, 2020  |
| **Emergency management**                                                         |               |
| Dr. Zhang Jixian reported the case of novel pneumonia through the disease control system; Wuhan began to conduct an investigation. | Dec. 27, 2019 |
| The National Health Commission set up a leading group to deal with the epidemic. | Jan. 1, 2020  |
| Wuhan implemented exit control and restrictions on crowd gathering.             | Jan. 14, 2020 |
| Wuhan closed public transportation and exit channel, and decided to build specialized hospitals to treat epidemic patients. | Jan. 23, 2020 |
| All provinces and municipalities except Tibet launched level I response to major public health emergencies. | Jan. 23, 2020 – Jan. 25, 2020 |
| The central committee of the Chinese Communist Party set up a leading group for responding to the epidemic. | Jan. 25, 2020 |
| The premier of the State Council arrived in Wuhan to guide the prevention and control of the epidemic. | Jan. 27, 2020 |
| Hubei province extended the Spring Festival holiday and maintained the social distancing policy. | Feb. 1, 2020  |
| Wuhan built the mobile cabin hospital to treat mild patients.                   | Feb. 3, 2020  |
Table 2. Demographic and Geographical Characteristic Variables of Respondents

| Demographic Characteristic Variable | All Samples \(n = 38,175\) (%) | 1% Population of China \(N = 16\) million (%) |
|-------------------------------------|----------------------------------|-------------------------------------------|
| Gender                              |                                  |                                           |
| Male                                | 61.1                             | 50.6                                      |
| Female                              | 38.9                             | 49.4                                      |
| Age                                 |                                  |                                           |
| < 30                                | 42.1                             | 21.9                                      |
| 30–39                               | 34.0                             | 19.0                                      |
| 40–49                               | 15.6                             | 23.1                                      |
| ≥ 50                                | 8.3                              | 36.0                                      |
| Area                                |                                  |                                           |
| Eastern                             | 20.3                             | 26.6                                      |
| Southern                            | 8.5                              | 11.8                                      |
| Central                             | 13.7                             | 18.8                                      |
| Northern                            | 35.9                             | 13.0                                      |
| Northwest                           | 4.1                              | 7.2                                       |
| Southwest                           | 5.0                              | 14.0                                      |
| Northeast                           | 12.4                             | 8.7                                       |

Note: Eastern: Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, and Shandong provinces; Southern: Guangdong, Guangxi, and Hainan provinces; Central: Jiangxi, Henan, Hubei, and Hunan provinces; Northern: Beijing, Tianjin, Hebei, Shanxi, and Inner Mongolia provinces; Northwest: Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang provinces; Southwest: Chongqing, Sichuan, Guizhou, Yunnan, and Tibet; Northeast: Liaoning, Jilin, and Heilongjiang provinces.

actions measured by the choice outcome for each policy item (chosen = 0, meaning that this policy item is assessed as low and should be improved; not chosen = 1); Indirect_exposure\(_i\) is the daily time consumed in browsing epidemic information (in hours); Frontline_experience\(_i\) indicates frontline experience in the epidemic prevention and control (respondents who are medical staff members, health department staff members, medical material production enterprise employees, NGO staff members, volunteers, community workers, media workers, researchers in related disciplines, or confirmed patients and their families are assigned to the frontline experienced subgroup \([\text{Frontline\_experience}_{i} = 1]\)); Age\(_i\) is the self-reported age; Age\(^2\)\(_i\) is the square of self-reported age; Female\(_i\) is the indicator for being female; Education\(_i\) refers to educational attainment (in years); Agricultural_sector\(_i\) is the indicator of employment in the primary industry; Service_sector\(_i\) is the indicator of employment in the tertiary industry; Confirmed_cases\(_i\) is the real-time number of confirmed cases at the city level when the respondents answered the questionnaire; GDP\(_{\text{per\_capita}}\)\(_i\) is the log of the city-level per capita GDP in 2018; Distance\(_{\text{to\_Wuhan}}\)\(_i\) is the geographic distance from the city of the respondents to Wuhan (in 100 kilometers). Table 3 shows the statistical description of these variables. In addition, Table 4 illustrates the results of the correlation test. The tests of VIFs and correlation prove that the potential for a multicollinearity problem is low.

**EMPIRICAL FINDINGS**

**General Assessments of Government Actions during COVID-19**

Based on the post-stratification weighted sample, Figure 3 illustrates that the five policy items with the highest ratios of selection are P1 (72.4%), I1 (70.4%),
Table 3. Descriptive Statistics of Variables

| Variable                      | Measure                                                                 | Mean  | Standard Deviation | Minimum | Maximum |
|-------------------------------|-------------------------------------------------------------------------|-------|--------------------|---------|---------|
| Indirect exposure             | Daily time consumed in browsing epidemic information (hours)            | 3.02  | 1.97               | 0       | 6       |
| Frontline experience          | Frontline experience in the epidemic prevention and control (dummy)     | .55   | .50                | 0       | 1       |
| Age                           | Self-reported age                                                       | 32.86 | 10.86              | 18      | 80      |
| Age squared                   | Square of self-reported age                                             | 1197.34 | 848.25          | 324     | 6400    |
| Female                        | Being female                                                            | .39   | .49                | 0       | 1       |
| Education                     | Educational attainment (years)                                          | 14.72 | 2.91               | 9       | 22      |
| Agricultural sector           | Employment in the primary industry                                      | .08   | .27                | 0       | 1       |
| Service sector                | Employment in the tertiary industry                                     | .59   | .49                | 0       | 1       |
| Confirmed cases (city)        | Real-time number of confirmed cases at the city level*                  | 135.03 | 945.69          | 0       | 11618   |
| GDP per capita (city)         | Log of the city-level per capita GDP in 2018                            | 11.11 | .57                | 9.43    | 12.15   |
| Distance to Wuhan (city)      | Geographic distance from the city of the respondents to Wuhan (100 kilometers) | 9.10  | 4.56               | .17     | 35.83   |

Note: N = 38,175. * The daily epidemic information was normally updated after 8 a.m. by each province/city and most of our respondents on February 7 answered the questionnaire before 8 a.m. For responses from 8 a.m. to 10 a.m. on February 7, we renewed the latest number of confirmed cases.

The potential for a multicollinearity problem is low. We test all of the variance inflation factors (VIFs) of the independent variables and determine that all of the VIFs are between 1.04 and 1.91.

Table 4. Results of Correlation Test

| Variables          | Indirect exposure | Frontline experience | Age          | Age squared | Female | Education | Agricultural sector | Service sector | Confirmed cases | GDP per capita | Distance to Wuhan |
|--------------------|-------------------|----------------------|--------------|-------------|--------|-----------|--------------------|----------------|-----------------|----------------|-----------------|
| Indirect exposure  | 1.000             |                      |              |             |        |           |                    |                |                 |                |                 |
| Frontline experience | 0.184            | 1.000                |              |             |        |           |                    |                |                 |                |                 |
| Age                | 0.130             | 0.053                | 1.000        |             |        |           |                    |                |                 |                |                 |
| Age squared        | 0.116             | 0.047                | 0.979        | 1.000       |        |           |                    |                |                 |                |                 |
| Female             | 0.023             | -0.036               | 0.098        | 0.077       | 1.000  |           |                    |                |                 |                |                 |
| Education          | 0.000             | -0.001               | -0.004       | -0.030      | -0.029 | 1.000     |                    |                |                 |                |                 |
| Agricultural sector | 0.022            | 0.014                | 0.077        | 0.076       | 0.007  | -0.127    | 1.000              |                |                 |                |                 |
| Service sector     | -0.050            | -0.081               | -0.102       | -0.088      | 0.133  | 0.099     | -0.346             | 1.000          |                 |                |                 |
| Confirmed cases    | 0.011             | -0.006               | -0.019       | -0.018      | -0.007 | 0.027     | -0.004             | 0.023          | 1.000           |                |                 |
| GDP per capita     | 0.017             | -0.014               | 0.038        | 0.019       | 0.037  | 0.145     | -0.039             | -0.004         | 0.124           | 1.000          |                 |
| Distance to Wuhan  | 0.071             | 0.083                | 0.141        | 0.130       | 0.060  | -0.016    | 0.059              | -0.037         | -0.220          | -0.112         | 1.000           |
Table 5. Regression Results of Logit Models

|                  | I1       | I2       | I3       | I4       | I5       | P1       | P2       | P3       | E1       | E2       | E3       |
|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Indirect exposure| .962***  | .973**   | .950***  | .954***  | .955***  | .973**   | .961***  | .976**   | .960***  | .939***  | .967***  |
|                  | (-3.68)  | (-2.31)  | (-4.75)  | (-4.41)  | (-4.12)  | (-2.55)  | (-3.77)  | (-2.15)  | (-3.85)  | (-5.76)  | (-2.89)  |
| Frontline experience | 1.513*** | 1.594*** | 1.317*** | 1.285*** | 1.385*** | 1.378*** | 1.534*** | 1.631*** | 1.399*** | 1.392*** | 1.786*** |
|                  | (8.23)   | (11.40)  | (7.47)   | (5.85)   | (7.56)   | (6.48)   | (9.96)   | (11.16)  | (8.42)   | (6.86)   | (12.10)  |
| Age              | .982**   | .952***  | .960***  | .992     | .979***  | .948***  | .966***  | .960***  | .957***  | .981**   | .951***  |
|                  | (-2.12)  | (-6.36)  | (-4.70)  | (-9.1)   | (-2.60)  | (-6.29)  | (-4.04)  | (-5.20)  | (-4.91)  | (-1.96)  | (-5.67)  |
| Age squared      | 1.000**  | 1.001*** | 1.000*** | 1.000    | 1.000    | 1.000    | 1.000    | 1.000    | 1.000    | 1.000    | 1.000*** |
|                  | (2.04)   | (5.86)   | (3.99)   | (1.25)   | (2.47)   | (5.76)   | (3.37)   | (4.35)   | (3.92)   | (1.80)   | (4.72)   |
| Female           | 1.126**  | 1.058    | .933*    | .994     | .946     | .985     | 1.062    | 1.055    | 1.083**  | 1.004    | 1.015    |
|                  | (2.49)   | (1.32)   | (-1.81)  | (-1.2)   | (1.20)   | (1.30)   | (2.17)   | (.10)    | (.39)    |          |          |
| Education        | .962***  | .933***  | .980***  | .960**   | .955***  | .972***  | .930**   | .939**   | .903**   | .960***  | .938***  |
|                  | (-4.40)  | (-8.67)  | (-2.84)  | (-5.00)  | (-5.50)  | (-4.04)  | (-7.72)  | (-7.92)  | (-12.56) | (-5.48)  | (-8.26)  |
| Agricultural sector | .752***  | .913     | .779***  | .877     | .794**   | .791***  | .862     | .694**   | .895     | .666***  | .708***  |
|                  | (-3.20)  | (-1.11)  | (-2.91)  | (-1.30)  | (-2.34)  | (-2.59)  | (-1.63)  | (-3.88)  | (-4.69)  | (-5.37)  |          |
| Service sector   | .722***  | .880***  | .739***  | .798***  | .738***  | .704***  | .753**   | .682***  | .795***  | .732***  | .664***  |
|                  | (-6.54)  | (-2.78)  | (-6.79)  | (-4.62)  | (-5.89)  | (-7.22)  | (-5.19)  | (-7.08)  | (-4.94)  | (-6.12)  | (-7.82)  |
| Confirmed cases (city) | 1.000**  | 1.000*** | 1.000*** | 1.000    | 1.000    | 1.000    | 1.000    | 1.000    | 1.000    | 1.000    | 1.000*** |
|                  | (-.20)   | (-2.69)  | (.25)    | (.27)    | (.41)    | (.71)    | (.19)    | (.31)    | (.26)    | (.12)    | (-1.33)  |
| GDP per capita (city) | 1.073    | .906**   | 1.151*** | .982     | 1.070    | .989     | .977     | 1.044    | .995     | 1.008    | 1.101*   |
|                  | (1.49)   | (-2.28)  | (3.24)   | (-.42)   | (1.58)   | (-.20)   | (.92)    | (-.11)   | (.15)    | (.86)    |          |
| Distance to Wuhan (city) | 1.021*** | 1.019**  | 1.011**  | 1.008    | 1.010*   | 1.008    | 1.012**  | 1.008    | 1.013**  | 1.010    | 1.007    |
|                  | (3.11)   | (3.60)   | (2.01)   | (.13)    | (1.80)   | (1.25)   | (1.96)   | (1.19)   | (2.46)   | (1.59)   | (1.15)   |
| Constant         | .440     | 10.459***| .664     | 4.176*** | 3.281**  | 2.055    | 12.096***| 6.586*** | 11.613***| 6.150*** | 4.310*** |
|                  | (-1.56)  | (2.95)   | (-.84)   | (2.87)   | (2.48)   | (1.32)   | (4.75)   | (3.61)   | (5.10)   | (3.34)   | (2.63)   |
| N                | 38175    | 38175    | 38175    | 38175    | 38175    | 38175    | 38175    | 38175    | 38175    | 38175    | 38175    |
| Pseudo R²        | .02      | .03      | .01      | .01      | .01      | .02      | .03      | .03      | .01      | .03      | .03      |

Note: Robust standard errors clustered by cities, * p < .1, ** p < .05, *** p < .01 (two-tailed).

I1: Managing public stress and anxiety; I2: Full and timely disclosure of government information; I3: Publicity of epidemic prevention knowledge; I4: Data and information sharing between central and local governments; I5: Citizen privacy protection during epidemiological investigations; P1: Care and concern for the frontline medical staff; P2: Scientific decision making and early warning based on big data; P3: Emergency research capability of medical research institutions; E1: Capacity building of government emergency management; E2: Encouraging full participation of social organizations and the public; E3: Emergency response of the medical system.
I2 (61.5%), I3 (54.7%), and E1 (51.6%). Specifically, within the field of information management, the selection ratios of data and information sharing between central and local governments (I4) and citizen privacy protection during epidemiological investigations (I5) are lower than those of the three other information management measures. Within the field of public health management, the public pays most attention to caring for the frontline medical staff (P1). Within the field of emergency management, what the public expects the most is building the capacity building of government emergency management (E1).

Results of Logit Models
The regression results in Table 5 indicate that long daily time consumed in browsing epidemic information significantly reduces the odds of assessing respective policy items as high, which means that the respondents with strong indirect exposure to epidemic information tend to have low assessments of these policy items and hope that the government can improve these policy items in the process of epidemic prevention and control. Meanwhile, respondents in the frontline experienced subgroup (Frontline_experience = 1) have significantly high assessments of government actions. Furthermore, we also test that there is no significant interaction effect between indirect information exposure and frontline experience on assessments of government actions.

In terms of the basic demographic characteristics, the female respondents tend to have higher assessments of managing public stress and anxiety (I1) and government emergency management (E1) and lower assessment of publicity of epidemic prevention knowledge (I3) than male respondents. The growth of Age, significantly reduces the odds of assessing respective policy items as high while the growth of Age_squared, significantly increases the odds, which illustrates that middle-age respondents have overall lower assessments of government actions compared with the younger and the older. The improvement of education level has a significantly negative impact on the odds of assessing respective policy items as high, which indicates that highly educated people have lower assessments of government actions. Respondents in different occupations also have different assessments. Compared with the respondents in the secondary industry, the primary industry employed respondents tend to have lower assessments of I1, I3, I5, P1, P3, E2, and E3, while the tertiary industry employed respondents have lower assessments of all 11 policy items.

CONCLUSION AND IMPLICATIONS
This study evaluates citizen assessments of government actions in the COVID-19 outbreak in China. The Chinese public expects the government to improve the support for the frontline medical staff, management of public stress and anxiety, and disclosure of information, whereas they pay the least attention to citizen privacy protection and social participation. The citizen assessments in China show that, while information management receives concern, privacy protection can give way to life protection in a crisis. Similarly, in Europe, where the strongest privacy regulations exist, the privacy protection policy is relaxed in the wake of the outbreak. Our empirical findings indicate that the government should act and respond quickly in the face of the pandemic, such as guiding the public in a timely manner, timely release of information, protecting medical staff, and taking decisive actions.

Our empirical findings also reveal that different subgroups of people have different assessments of government actions. Specifically, people with strong indirect information exposure, limited frontline experience, high educational attainment, and who are employed in the tertiary industry exhibit low assessments of government actions and expect the government to exert further effort. The evidence suggests that citizens who participate in epidemic prevention and have frontline experience are more able to judge government actions under the actual constraints of resources and opportunities, and therefore are more satisfied with government actions than others without frontline experience. To the contrary, people who spend more time browsing second-hand epidemic information tend to feel the huge impact of the epidemic on their production and
life with lower assessments of, and higher requirements for, government actions.

The COVID-19 pandemic has seriously affected the global social and economic life, intensified social panic, and caused multifaceted public complaints. If governments want to act virtuously and establish effective responses toward the pandemic, then they should pay further attention to citizen assessments of government actions and make evidence-based decisions to respond to citizen assessments. As shown in our empirical findings, governments should effectively communicate detailed information regarding government actions to the public during public health emergencies, as citizens with first-hand information and frontline experience tend to support governments and may actively collaborate with governments. At the beginning of the COVID-19 outbreak in many countries, people complained that their government exhibited sluggish information management, public health management, and emergency management. After the pandemic intensified, many governments began to cooperate and made decisions, such as sealing cities and districts, building cabin hospitals, and supplying masks (Hale et al., 2020; Weible et al., 2020). In the global fight against this pandemic, countries should abandon political prejudice, strengthen cooperation, and jointly establish an inclusive global public health system.

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