



Article

Perceived Trust in Public Authorities Nine Months after the COVID-19 Outbreak: A Cross-National Study

Daicia Price ^{1,*}, Tore Bonsaksen ^{2,3}, Mary Ruffolo ¹, Janni Leung ⁴, Vivian Chiu ⁴, Hilde Thygesen ^{3,5}, Mariyana Schoultz ⁶ and Amy Ostertun Geirdal ⁷

¹ School of Social Work, University of Michigan, Ann Arbor, MI 48109, USA; mruffolo@umich.edu

² Department of Health and Nursing Sciences, Faculty of Social and Health Sciences, Inland Norway University of Applied Sciences, Elverum, 2318 Hamar, Norway; tore.bonsaksen@inn.no

³ Faculty of Health Studies, VID Specialized University, Sandnes, 4024 Stavanger, Norway; hilde.thygesen@oslomet.no

⁴ Faculty of Health and Behavioural Science, The University of Queensland, St Lucia, QLD 4072, Australia; j.leung1@uq.edu.au (J.L.); vivian.chiu@uq.net.au (V.C.)

⁵ Department of Occupational Therapy, Faculty of Health Sciences, Oslo Metropolitan University, Prosthetics and Orthotics, 0167 Oslo, Norway

⁶ Health and Life Sciences, Northumbria University, Newcastle upon Tyne NE1 8SU, UK; mariyana.schoultz@northumbria.ac.uk

⁷ Department of Social Work, Faculty of Social Sciences, Oslo Metropolitan University, 0167 Oslo, Norway; amyoge@oslomet.no

* Correspondence: daiciars@umich.edu



Citation: Price, Daicia, Tore Bonsaksen, Mary Ruffolo, Janni Leung, Vivian Chiu, Hilde Thygesen, Mariyana Schoultz, and Amy Ostertun Geirdal. 2021. Perceived Trust in Public Authorities Nine Months after the COVID-19 Outbreak: A Cross-National Study. *Social Sciences* 10: 349. <https://doi.org/10.3390/socsci10090349>

Academic Editor: David Barker

Received: 26 August 2021

Accepted: 15 September 2021

Published: 18 September 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract: This study aimed to examine the perceived trust in information provided by public authorities and financial measures put in place to address the impact of COVID-19. Using a cross-national approach among four Western countries—the United States of America, Norway, Australia, and the United Kingdom—provides an analysis of responses related to trust and how they were associated with age group, gender, education level, employment status, size of place of residence, infection status, and social media use. When controlling for all included variables in logistic regression analyses, the likelihood of having trust in the public authorities' information was higher for women, those with higher levels of education, and those living in urban areas. Being infected with the coronavirus, and spending more time daily on social media, were both associated with lower likelihood of reporting trust in information. Although policies implemented to respond to economic concerns varied cross-nationally, higher age, identifying as female, being employed, living in a city, no COVID-19 infection experience and lower levels of social media usage were associated with a higher likelihood of trusting in the financial measures put in place to counteract the economic effects of COVID-19.

Keywords: coronavirus; cross-national study; pandemic; public authorities; social media; trust

1. Introduction

On 5 January 2020, the World Health Organization published a public statement to share that a cluster of illnesses had been identified in China. COVID-19 was declared a global pandemic that required immediate national responses to protect public health and safety on 21 March 2020. When considering responses to public health, natural disasters, and social crises, the questioning of public authorities' information delivered and economic response to address the impact of crises has been well documented (Hanfling et al. 2012; Smith and Silva 2015; OECD 2013). Western countries responded in various but largely similar ways, including limiting travel, requiring face coverings, and closing businesses and schools. These actions resulted in many people becoming underemployed or unemployed, and many countries experiencing economic distress. COVID-19 initiated a co-occurring health and financial pandemic (Devine et al. 2021). Each country was able to determine

their individual policies and procedures for health and safety and fiscal management (Elgin et al. 2020; Hale et al. 2020; OECD 2013).

Although previous experiences with health pandemics offered an opportunity for public authorities to learn ways to communicate effectively with residents, COVID-19 demonstrated that the communication of government entities continues to be ineffective (Kreps et al. 2005; Seeger et al. 2018; Skidmore 2016; Kim and Kreps 2020). Ineffective methods of delivering information can lead to distrust and a lack of commitment to following recommendations that promote safety (Kreps et al. 2005; Huang 2020). Kim and Kreps (2020) offer a systemic overview of the ways that communication error did not support the desired outcome of having public participation in harm reduction strategies to reduce the impact of COVID-19. This supported earlier recommendations that public authorities providing clear, consistent, and unified information is critical to prevention, response, and recovery from public health issues (Kim and Kreps 2020; Kreps et al. 2005; Seeger et al. 2018; Skidmore 2016).

Despite the similar preventive measures implemented globally, compliance levels and sentiments toward the implementations differed between countries. Citizen responses to these actions varied from relief to frustration. While some individuals felt confident in the decisions of government entities to implement restrictions, others felt that government mandates threatened their human rights and independence (Jakovljevic et al. 2020). During COVID-19, trust in government increased in some countries (Oude Groeniger et al. 2021; Goldfinch et al. 2021; Pak et al. 2021), whereas trust has eroded in others (Deslatte 2020). People's trust in the medical advice and information received from the government determines the public compliance with the recommendations (Newton 2020; Jakovljevic et al. 2020; Wong and Jensen 2020; Guillon and Kergall 2020; OECD 2013). Relationships between the general civilian public and officials with a responsibility to deliver safety and security are critical during healthcare emergencies to increase positive attitudes and behaviors in citizens that support compliance to recommendations (Levi and Stoker 2000). Therefore, understanding the underlying social effects on trust and its determinants is critical to coping with and addressing the COVID-19 pandemic.

When considering public health emergencies, the information shared and the response of individuals can be associated with their personal experiences (Wachinger et al. 2013). Age, gender, and educational levels are demographics identified in previous studies to demonstrate differences in perception (Fielding et al. 2005; Trumbo and McComas 2003). During a global flu pandemic in 2009, older adults, women, and those with higher levels of education were more likely to engage in prevention activities to reduce the spread of the virus (Bish and Michie 2010; Freimuth et al. 2014). Similarly to public health emergencies, when financial crisis arise in Western countries, the response of the government to utilize financial resources to support businesses and individuals can directly impact the trust of individuals (Keele 2007). In previous examples, the funding of social programs and reforms led to greater trust in public authorities. Understanding the level of trust in financial responses during COVID-19 can support additional understanding of the levels of trust in public officials (OECD 2013).

Literature Review

At the initial onset of the COVID-19 pandemic, Gozgor (2021) found that older adults and healthy individuals tended to trust and support the government initiatives and comply with restrictions, while more individuals that are educated are less trusting and more likely not to follow recommendations. Kim and Kreps (2020) contend that public authorities could have prevented some of the damage that occurred if they communicated effectively to their constituents based on their demographics.

While early studies of trust in governments during the initial phases of the COVID-19 implementation have supported an increase in trust, it is important to examine if this trust level is maintained over time, or if it diminishes. Delivering accurate information, having consistency in responses and transparency in challenges and decision-making, and

producing positive outcomes for citizens by providing resources to address identified needs, all develop and maintain trust in government officials (Jakovljevic et al. 2020). During the first wave of the global pandemic, when there was a reduction in positive COVID-19 cases, government responses were identified as effective; however, concerns remained about the ongoing impacts of resident's responses as the pandemic continued (Anastasiou and Duquenne 2021).

The responses of citizens across the world continued to vary as information was shared that included discussions of development and implementation of responses (i.e., immunizations, distance protocols, emergency funding to families) through multiple modes of media. Communication from governmental entities, especially coverage from media sources, has been linked to the trust of citizens. Obtaining negative media attention can disrupt the public trust in government officials (Liu et al. 2012; Reinhardt 2015). Social media users describe concerns about the role of propaganda in describing the COVID-19 virus and government responses in terms of the physical and financial wellness of citizens (Geirdal et al. 2021). Examining trust in public authorities to deliver transparent and accurate information and to provide financial support for constituents that address their economic stability as impacted by COVID-19 can provide considerations for identifying potential problems citizens may have with adhering to policy recommendations to reduce the spread of COVID-19 during a time of an international health crisis.

Research that describes the connection between trust and compliance with recommendations warrants research to identify groups that are less inclined to report trust in public authorities. Using a cross-national approach to an international health issue provides an opportunity to explore other Western countries' similarities and differences. In the context of interventions such as immunizations and practices to prevent the spread of COVID-19, knowing which groups are less likely to report trust in public authorities can support the development of policies and procedures to enhance the trust of those groups. A cross-national approach provides additional information to understand each individual country's experience while simultaneously learning about others. Understanding the level of trust in public authorities influences ways individuals in different countries experience the impacts of a health pandemic. It will help us to better address ways to mitigate responses during a pandemic.

The aim of this cross-national study was to examine (i) trust among the general population in the government and public authorities' information and financial measures proposed to counteract the adverse economic effects of the COVID-19 pandemic nine months after the outbreak, and (ii) trust in public authorities in relation to sociodemographic variables, whether one has experienced COVID-19 infection, and use of social media. Identifying groups that are less likely to trust public authorities will support recommendations for focused engagement and trust-building to increase public compliance with recommendations that will mitigate the adverse impacts of COVID-19. Being able to increase trust in public authorities can improve the willingness of individuals to engage in recommended behaviors, such as immunizations, handwashing, wearing masks, etc. Based on a review of the literature, this study hypothesized that there would be differences based on sociodemographic variables, social media use (e.g., frequency of use), and country of origin, in terms of how individuals experienced the ways public authorities tried to mitigate the adverse effects of the pandemic based on their level of trust in public authorities.

2. Methods

The study had a cross-sectional survey design. The link to the survey was distributed through social media in each of the involved countries for one month, between 24 October and 29 November 2020, using targeted ads from the university-sponsored social media accounts and sharing posts by individuals. A landing site for the survey was established at the researchers' universities; OsloMet—Oslo Metropolitan University, Norway; University of Michigan, USA; Northumbria University, UK; and the University of Queensland, Australia. The initiator of the project was AØG from OsloMet. Due to ethical considerations and

permissions in each of the countries, each country had their own project lead. The survey was simultaneously co-developed by the researchers in two languages, Norwegian and English, and was based on a previous survey conducted by the research group in the early phase (April 2020) of the pandemic outbreak (Geirdal et al. 2021; Ruffolo et al. 2021). Language and cultural differences were considered during the survey's development process.

2.1. Inclusion and Exclusion

To be included in the study, participants had to be 18 years or older, understand Norwegian or English, live in Norway, USA, UK, or Australia, and have access to an electronic device and internet. There were no exclusion criteria.

2.2. Measures

2.2.1. Sociodemographic Characteristics

The sociodemographic variables collected included age group (18–29 years, 30–39 years, 40–49 years, 50–59 years, 60–69 years, 70 years and above), gender identity (male, female, other, prefer not to respond), highest completed education level (high school or associated/technical degree or lower, Bachelor's degree, Master's/doctoral degree), place of residence (rural or farming area; town or suburb; or city), and employment status (having full-time, part-time, or no employment).

2.2.2. Social Media Use

The participants were asked to indicate the amount of time they had spent on social media on a typical day during the last month. In line with the work of Ellison and co-workers (Ellison et al. 2007), response options were less than 10 min, 10–30 min, 31–60 min, 1–2 h, 2–3 h, and more than three hours.

2.2.3. Infection

Infection was measured with the item: "Have you been infected by COVID-19?" Response options were "yes" or "no".

2.2.4. Trust in Public Authorities

This study's two outcome variables were constructed from the following questions: "Do you have trust in the government and public authorities' information about the COVID-19 pandemic?" and "Do you have trust in the government and public authorities' financial measures during the COVID-19 pandemic?" Both questions had the response options "yes" and "no".

2.3. Statistical Analysis

Analyses were performed for the total sample and for each of the four countries. Categorical independent variables were cross-tabulated with the outcome measures, and differences in proportions were examined with chi-squared tests. Logistic regression analysis was used to assess direct associations between each of the independent variables and the two outcomes, while concurrently controlling for covariation between all included variables. All independent variables were entered in one step: age group, gender, education level, employment status, size of place of residence, infection status, and social media use. Odds ratio (OR) was used as effect size, and the 95% confidence interval of the OR was reported. Statistical significance was set at $p < 0.05$. Missing values were handled by case-wise deletion.

2.4. Ethics

The data collected in this study were anonymous. The researchers adhered to all relevant regulations in their respective countries concerning ethics and data protection. The study was approved by OsloMet (20/03676) and the regional committees for medical and health research ethics (REK; ref. 132066) in Norway, reviewed by the University of Michigan

Institutional Review Board for Health Sciences and Behavioral Sciences (IRB HSBS) and designated as exempt (HUM00180296) in the USA, by Northumbria University Health Research Ethics (HSR1920-080) in the UK, and HSR1920-080 2020000956 in Australia.

3. Results

3.1. Participants

The participants included 3474 individuals from Norway ($n = 547$, 15.7%), the USA ($n = 2130$, 61.3%), the UK ($n = 640$, 18.4%) and Australia ($n = 157$, 4.5%). In the total sample, there was a spread across age groups, with a lower proportion of participants being 70 years or older. There were more women (73.3% women versus 22.2% men), with 48 (1.4%) participants reporting “other” gender identity and 36 (1.0%) preferred not to say. In total, 71% had a bachelor’s degree or higher levels of education; 15% reported living in a rural/farming area, 46% in town/suburb, and 37% in the city. Full-time or part-time employment was held among 66.3%.

3.2. Trust in Public Authorities

The number and proportions of participants reporting that they had trust in information provided and the financial measures put in place to counter the economic effects of COVID-19 by public authorities in the total sample and for each of the four countries are provided in Table 1. When examining variations in trust between countries, large variations emerged. There was a significant difference ($p < 0.001$) between countries related to trusting public authorities, with participants from Norway and Australia having the highest level of trust (91.8%; 80.9%) and participants from the UK and USA having lower levels of trust (37.3%; 40.8%). Significant variation ($p < 0.001$) in trust related to financial responses was also noted, with participants from Norway and Australia reporting higher levels of trust (69.4%, 64.7%), while participants from the UK and USA reported lower levels of trust (33.2%, 21.1%).

Table 1 displays the outcomes from the descriptive analysis of trust in the authorities’ information and financial measures, respectively, cross-tabulated with age group, gender, education level, size of place of living, employment, infection status and social media use. Across age groups, no significant differences occurred for trust in the authorities’ information, while trust in financial measures more frequently occurred in the higher age groups. Women more often reported trust on both outcomes, compared to men, and those with higher levels of education more often reported trust in both outcomes, compared to their counterparts with lower levels of education. Similarly, in both outcome measures, participants living in cities more often reported trust than those living in towns and suburbs and those living in rural areas, while somewhat lower proportions of those who were employed reported trust, compared to those who did not have employment. Among those who had been infected by the coronavirus, trust was reported less frequently than among those who had not been infected. Trust in the authorities’ information and financial measures was also significantly different between categories of social media use, with those spending more time daily on social media being less likely to report having trust in public authorities.

Between the countries, the results showed evidence of similarities as well as dissimilarities. For example, trust was more prevalent in the younger age groups of US Americans, while the opposite pattern was shown among participants from the UK, although there was a uniform pattern across countries of more distrust among those who had been infected, compared to those who had not. All unadjusted results are shown in Table 1.

Table 1. Number and proportions of participants with trust in the public authorities' information about COVID-19 and in their financial measures to counter the economic effects of COVID-19 within subgroups.

Characteristics	Total Sample (<i>n</i> = 3474)		USA (<i>n</i> = 2130)		UK (<i>n</i> = 640)		Norway (<i>n</i> = 547)		Australia (<i>n</i> = 157)	
	Inform.	Financial	Inform.	Financial	Inform.	Financial	Inform.	Financial	Inform.	Financial
Age group	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
18–29 years	341 (53.9)	184 (29.1)	209 (51.5)	86 (21.2)	35 (28.7)	34 (27.9)	80 (93.0)	54 (63.5)	17 (89.5)	10 (52.6)
30–39 years	365 (51.7)	217 (30.8)	220 (46.1)	104 (21.8)	38 (35.2)	35 (32.4)	90 (89.1)	63 (63.0)	17 (85.0)	15 (75.0)
40–49 years	266 (47.4)	197 (35.1)	106 (36.4)	63 (21.6)	43 (33.6)	44 (34.4)	103 (84.4)	77 (63.1)	14 (70.0)	13 (65.0)
50–59 years	235 (53.3)	167 (38.0)	62 (31.5)	37 (18.9)	49 (43.8)	39 (34.8)	100 (98.0)	73 (72.3)	24 (80.0)	18 (60.0)
60–69 years	210 (47.4)	150 (33.9)	90 (31.9)	51 (18.1)	26 (49.1)	19 (35.8)	69 (92.0)	59 (78.7)	25 (75.8)	21 (63.6)
70 years + years	151 (52.2)	120 (42.0)	67 (34.5)	49 (25.5)	14 (60.9)	11 (47.8)	60 (98.4)	51 (85.0)	10 (90.9)	9 (81.8)
<i>p</i>	0.13	0.001	<0.001	0.47	<0.01	0.52	<0.01	<0.01	0.57	0.57
Gender identity										
Male	312 (44.3)	216 (30.7)	137 (30.5)	73 (16.3)	45 (41.7)	34 (31.5)	112 (94.9)	95 (81.2)	18 (60.0)	14 (46.7)
Female	1242 (53.4)	814 (35.1)	606 (44.5)	313 (23.0)	157 (36.0)	146 (33.5)	389 (91.5)	282 (66.8)	90 (88.2)	73 (71.6)
<i>p</i>	<0.001	<0.05	<0.001	<0.01	0.28	0.69	0.22	<0.01	<0.001	<0.05
Education level										
High school/tech. degree or lower	368 (43.1)	250 (29.3)	144 (29.6)	77 (15.8)	74 (38.7)	71 (37.2)	121 (85.8)	81 (57.9)	29 (80.6)	21 (58.3)
Bachelor's degree	568 (51.6)	357 (32.5)	286 (42.8)	139 (20.8)	68 (35.8)	58 (30.5)	176 (90.7)	131 (68.2)	38 (77.6)	29 (59.2)
Master's/doctoral degree	645 (56.1)	436 (38.1)	334 (44.6)	179 (25.1)	63 (37.1)	54 (31.8)	205 (96.7)	165 (78.2)	43 (84.3)	38 (74.5)
<i>p</i>	<0.001	<0.001	<0.001	0.001	0.84	0.35	0.001	<0.001	0.69	0.18
Size of place										
Rural/farming	179 (38.4)	126 (27.1)	96 (30.8)	64 (20.6)	46 (41.4)	41 (36.9)	36 (85.7)	21 (50.0)	–	–
Town/suburb	716 (49.2)	457 (31.5)	443 (42.5)	226 (21.7)	81 (41.1)	79 (40.1)	179 (90.9)	140 (71.4)	13 (72.2)	12 (66.7)
City	687 (58.2)	459 (39.1)	225 (43.5)	105 (20.4)	79 (32.9)	63 (26.3)	287 (93.5)	215 (70.7)	96 (82.8)	76 (65.5)
<i>p</i>	<0.001	<0.001	<0.001	0.81	0.14	<0.01	0.17	<0.05	0.50	0.39
Employment										
Full-time or part-time	469 (47.4)	307 (31.2)	540 (43.7)	273 (22.1)	141 (35.0)	131 (32.5)	149 (87.6)	271 (72.1)	74 (81.3)	59 (64.8)
No employment	1108 (52.6)	734 (34.9)	220 (35.1)	120 (19.3)	65 (43.6)	52 (34.9)	353 (93.6)	106 (63.5)	35 (79.5)	29 (65.9)
<i>p</i>	<0.01	<0.05	<0.001	0.16	0.06	0.60	<0.05	<0.05	0.81	0.90

Table 1. Cont.

Characteristics	Total Sample (<i>n</i> = 3474)		USA (<i>n</i> = 2130)		UK (<i>n</i> = 640)		Norway (<i>n</i> = 547)		Australia (<i>n</i> = 157)	
	Inform.	Financial	Inform.	Financial	Inform.	Financial	Inform.	Financial	Inform.	Financial
Infected										
Infected	74 (32.9)	51 (22.7)	46 (31.5)	27 (18.5)	20 (30.3)	17 (25.8)	7 (70.0)	6 (60.0)	–	–
Not infected	1506 (43.3)	991 (34.5)	717 (41.6)	368 (21.4)	186 (38.4)	166 (34.2)	495 (92.2)	371 (69.6)	108 (81.8)	86 (65.2)
<i>p</i>	<0.001	<0.001	<0.05	0.41	0.21	0.17	<0.05	0.51	0.10	0.29
Social media use										
<10 min	51 (66.2)	38 (50.7)	6 (25.0)	4 (16.7)	7 (50.0)	3 (21.4)	36 (100.0)	30 (88.2)	–	–
10–30 min	142 (52.2)	116 (42.8)	49 (33.8)	32 (22.1)	19 (40.4)	20 (42.6)	65 (94.2)	55 (80.9)	9 (81.8)	9 (81.8)
31–60 min	249 (50.7)	192 (39.1)	86 (32.3)	57 (21.4)	41 (45.6)	38 (42.2)	100 (92.6)	78 (72.2)	22 (81.5)	19 (70.4)
1–2 h	475 (55.4)	322 (37.6)	224 (45.0)	129 (26.0)	46 (35.1)	40 (30.5)	174 (92.1)	131 (69.3)	31 (79.5)	22 (56.4)
2–3 h	253 (44.7)	134 (23.7)	192 (44.9)	80 (18.7)	36 (33.6)	33 (30.8)	1 (50.0)	2 (100.0)	24 (82.8)	19 (65.5)
<3 h	361 (50.3)	208 (29.1)	180 (42.0)	80 (18.7)	39 (31.0)	34 (27.0)	126 (88.1)	81 (57.0)	16 (80.0)	13 (65.0)
<i>p</i>	<0.001	<0.001	0.001	0.07	0.24	0.11	0.05	0.001	0.99	0.52

Note. Statistical tests are chi-squared tests, and Fisher's exact tests in cases where there were cells with expected counts less than 5. *p*-values refer to differences within the total sample and within each of the subsamples. – suppressed due to small cell sizes.

3.3. Associations with Trust in the Public Authorities' Information about COVID-19

In the total sample, when controlling for all included variables, the likelihood of having trust in the public authorities' information was higher for women (OR: 1.41, $p < 0.001$), those with higher levels of education (Master's/doctoral degree; OR: 1.45, $p < 0.001$; Bachelor's degree; OR: 1.25, $p < 0.05$), and those living in urban areas (city; OR: 1.96, $p < 0.001$, town/suburb; OR: 1.37, $p < 0.01$). Being infected with coronavirus (OR: 0.46, $p < 0.001$) and spending more time daily on social media (OR: 0.91, $p < 0.01$) were associated with a lower likelihood of reporting trust in information.

Confirming the unadjusted results, differences between the UK and USA were shown as regards the association with age: more people in the younger age groups in the USA had trust in the authorities' information, while trust was more frequent in the older age groups in the UK. In Norway, having employment was associated with a more than doubled likelihood of reporting trust in the authorities' information. In Australia, although within a very wide confidence interval, women displayed more than eight times the likelihood of men of trusting the information given by the public authorities. Table 2 displays the results for the adjusted analyses.

Table 2. Adjusted associations with trust in the public authorities' information about COVID-19 within subgroups.

Independent Variables	Total Sample	USA	UK	Norway	Australia
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Higher age	0.97 (0.92–1.03)	0.86 (0.79–0.91) ***	1.17 (1.00–1.36) *	1.21 (0.95–1.54)	0.79 (0.52–1.20)
Female gender	1.41 (1.18–1.70) ***	1.49 (1.16–1.90) **	0.79 (0.49–1.28)	0.75 (0.30–1.91)	8.60 (2.83–26.12) ***
Bachelor's degree education ¹	1.25 (1.03–1.52) *	1.48 (1.13–1.95) **	1.11 (0.68–1.79)	1.18 (0.54–2.60)	0.71 (0.19–2.59)
Master's/doctoral degree education ¹	1.45 (1.20–1.77) ***	1.86 (1.42–2.43) ***	1.04 (0.65–1.66)	2.59 (0.96–6.96)	1.74 (0.43–7.00)
Having employment	1.02 (0.85–1.22)	0.94 (0.73–1.19)	0.68 (0.44–1.05)	2.33 (1.10–4.94) *	0.65 (0.18–2.30)
Town/suburb ²	1.37 (1.09–1.71) **	1.31 (0.98–1.76)	1.03 (0.61–1.72)	1.78 (0.62–5.08)	-
City ²	1.96 (1.55–2.48) ***	1.28 (0.93–1.77)	0.70 (0.41–1.19)	2.18 (0.78–6.12)	-
Infected	0.46 (0.33–0.63) ***	0.63 (0.42–0.96) *	0.80 (0.44–1.46)	0.15 (0.03–0.66) *	0.19 (0.01–2.88)
Social media use	0.91 (0.86–0.96) **	1.05 (0.97–1.14)	0.90 (0.78–1.04)	0.85 (0.66–1.09)	0.95 (0.62–1.44)
Cox Snell R²	4.1%	5.3%	4.4%	5.2%	16.5%
Nagelkerke R²	5.4%	7.2%	5.9%	12.6%	26.5%

¹ Compared with "high school, technical degree or lower". ² Compared with "rural or farming". The distribution on this variable in the Australian subsample did not allow for estimating OR. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

3.4. Associations with Trust in the Public Authorities' Financial Measures to Counteract Effects of COVID-19

Table 3 displays the adjusted odds ratios for having trust in the authorities' financial measures to counter the effects of the pandemic. In the whole sample, when controlling for all included variables, the likelihood of having trust in the public authorities' financial measures was higher for those of higher age (OR: 1.10, $p < 0.01$), women (OR: 1.31, $p < 0.01$), those in employment (OR: 1.25, $p < 0.05$), and those living in cities (OR: 1.68, $p < 0.001$). Having been infected with the coronavirus (OR: 0.60, $p < 0.01$) and spending more time on social media (OR: 0.82, $p < 0.001$) were associated with a lower likelihood of trusting financial measures put in place by public authorities.

Table 3. Adjusted associations with trust in the public authorities' financial measures to counteract the economic effects of COVID-19 within subgroups.

Independent Variables	Total Sample	USA	UK	Norway	Australia
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Higher age	1.10 (1.04–1.16) **	1.00 (0.92–1.09)	0.99 (0.85–1.15)	1.20 (1.04–1.39) *	1.00 (0.73–1.37)
Female gender	1.31 (1.08–1.59) **	1.44 (1.07–1.94) *	1.23 (0.74–2.04)	0.56 (0.33–0.95) *	3.15 (1.24–8.01) *
Bachelor's degree education ¹	1.08 (0.88–1.34)	1.33 (0.96–1.84)	0.69 (0.42–1.12)	1.22 (0.74–2.00)	0.84 (0.30–2.38)
Master's/doctoral degree education ¹	1.22 (0.99–1.49)	1.57 (1.14–2.16) **	0.77 (0.48–1.24)	1.71 (1.01–2.89) *	1.69 (0.58–4.96)
Having employment	1.25 (1.03–1.51) *	1.11 (0.83–1.48)	0.87 (0.55–1.37)	1.74 (1.08–2.81) *	0.84 (0.31–2.30)
Town/suburb ²	1.15 (0.90–1.47)	0.89 (0.64–1.24)	1.10 (0.66–1.84)	2.45 (1.20–5.00) *	–
City ²	1.68 (1.30–2.15) ***	0.85 (0.58–1.23)	0.57 (0.33–0.97)*	2.34 (1.17–4.67) *	–
Infected	0.60 (0.42–0.85) **	0.88 (0.54–1.43)	0.74 (0.39–1.38)	0.59 (0.15–2.31)	0.23 (0.02–3.41)
Social media use	0.82 (0.78–0.88) ***	0.91 (0.83–1.00)	0.87 (0.76–1.01)	0.83 (0.72–0.96) *	0.98 (0.71–1.36)
Cox Snell R²	3.9%	1.3%	4.1%	9.3%	9.4%
Nagelkerke R²	5.4%	2.0%	5.7%	13.1%	13.1%

¹ Compared with “high school, technical degree or lower”. ² Compared with “rural or farming”. The distribution on this variable in the Australian subsample did not allow for estimating OR. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

The Norwegian subset showed significantly more trust among those of higher age and those employed, compared to their counterparts. In Norway, women were less inclined to trust the authorities' financial measures, compared to men, while the opposite pattern was shown in the USA and Australia. In the UK, participants living in cities were less inclined to have trust in financial measures than those living in rural areas, while the opposite pattern was shown for the Norwegian subset.

4. Discussion

This study aimed to examine (i) trust among the general population in the government and public authorities' information and financial measures regarding the COVID-19 pandemic nine months after the outbreak, and (ii) trust in public authorities in relation to sociodemographic variables, whether one has experienced COVID-19 infection, and the use of social media. When examining the total sample, female gender, higher educational levels, living in urban areas, having employment, no COVID-19 infection experience and lower social media usage were associated with trusting information provided by public authorities. The same associations were revealed for trusting the financial measures put in place by public authorities with the addition of higher age, although the policies implemented to respond to economic concerns varied somewhat cross-nationally.

Trust in public authorities has been known to increase with age (Christensen and Læg Reid 2005; Pew Research Center 2019). Consistent with previous research, in the UK, higher-aged participants were more likely to trust information. It is interesting that when examining individual countries, in the UK, the older the participant, the more likely they were to trust in the information provided by public authorities, while in the USA, the older participants were less likely to trust in the information. Higher age was associated with trust in financial measures in the total sample, with Norway exhibiting the same pattern. This may be attributed to the financial stability or less reliance on employment for older adults, due to their having more access to a steady income due to retirement or benefits due to age that are received from public support, which may increase their level of trust in financial measures.

Women have been described as having greater trust than men overall, even when something has occurred to violate trust (Haselhuhn et al. 2015). Feminine traits of being forgiving, empathetic, and community-oriented have been associated with greater trust in public authorities (McDermott and Jones 2020). There is some thought that women are more likely to trust public authorities due to their occupations aligning with government or civil servant roles connected to the public sector (Christensen and Læg Reid 2005). Women who are caretakers of others and associated with decisions regarding healthcare and the schooling of children may be exposed to more information that feels responsive to the health crisis. The USA and Australia as individual countries exhibited the same associations at significant levels, with women in Australia being 8 times more likely to report trust in information provided. Although the same trend was not observed in the UK and Norway, there were also no significant differences in the levels of reported trust in those countries based on gender, as seen during the first wave of COVID-19 in UK (Enria et al. 2021). This may be explained by social norms present in the represented countries.

Inconsistent with earlier findings by Gozgor (2021), participants with higher levels of education were found to trust information provided by public authorities at higher rates. The findings in this study are consistent with previous reports that higher education levels can be associated with greater trust in government (Charron and Rothstein 2016; Bouckaert and Van de Walle 2001). This may be attributed to the increased amount of time that COVID-19 policies had been in place at the time of this survey, and information and data were being shared in various ways (e.g., public service announcements, news media, peer-reviewed research). Access to, and greater understanding of, the information provided may have been more widespread among people with higher education levels, resulting in higher levels of trust. In the data analyzed by Gozgor, responses were collected electronically, with a live landing site not affiliated with an academic institution (Gozgor 2021). Responses in the current study were collected through university landing sites, which may include more participants that are connected to an academic institution that is funded by public authorities. Being connected to an academic institution may increase access to various sources of information, and increase the likelihood of these respondents reporting having trust (Charron and Rothstein 2016).

Information provided through various sources about access to financial stimulus packages may influence the levels of reported trust. While employed individuals were more likely to affirm trusting the financial measures provided overall, Norway was the only specific country to mirror this trend at a significant rate. As personal experiences influence attitudes, those who are employed may feel that the aid provided during a time of crisis is sufficient without having personal experience of reliance on federal aid.

Individual experiences influence our thoughts, attitudes, and behaviors (Schwerter and Zimmermann 2020). People who did not trust guidelines for public behavior, and acted accordingly, may be more likely to contract the virus (Schwerter and Zimmermann 2020). This could explain the association between infection and lack of trust in authorities' information. In addition, people who have tried their best to follow the guidelines may still have contracted the virus. This may also have contributed to lowering the trust among those who have been infected.

Spending less time on social media may decrease potential exposure to invalid news (Bonsaksen et al. 2021; Liu et al. 2012). While the use of social media to engage with others and maintain relationships can support social and emotional health, each unit increase in social media use was found to be associated with a lower likelihood of trusting in government information or financial responses to the public health crisis. Adjusted associations for social media use demonstrated a lower likelihood of trusting information and financial measures overall. Using social media less may reduce the amount of conflicting information present. For example, a newsfeed on social media will share a variety of information without a person seeking information. Information provided on social media can come from various sources that may not be credible. In the US, less social media use did not increase the odds of reporting trust in information provided by public authorities, although

it did increase the odds of reporting trust in financial measures put into place to address the impact of COVID-19. This difference may be due to the political climate of the election cycle of the US during data collection.

Trust can influence the behaviors of citizens towards reducing the spreading of COVID-19 by following guidelines and recommendations supported by public authorities (Jakovljevic et al. 2020). The lower likelihood of trust among males, those with lower levels of education, unemployed individuals, those that live in rural or farming communities, people who have been infected by coronavirus, and frequent users of social media can also lead to challenges in decreasing the spread of COVID-19. The results provide an opportunity for public authorities to engage with those groups that are less likely to report having trust in public authorities in order to increase the effectiveness of addressing this global health pandemic and prepare to manage future crises. As suggested by previous researchers, revising public information policies and procedures can be a way to increase and maintain trust among constituents.

5. Study Limitations

Participants were invited to participate in our online survey; therefore, those in the population who do not use social media are not represented in our study. Although anyone within our four countries could participate, we may have a higher number of participants geographically located closer to our landing sites because of recruitment through the universities. The results are therefore not representative of the population in the four countries. As the survey was open to an unlimited amount of people, we are unable to speak about response rates.

Trust was not operationally defined in the survey, so responses to items related to trust in government were based on the perception of the participant. Trust was measured in relation to the COVID-19 pandemic, and we had not assessed general trust not in relation to the pandemic, so we do not have information to compare general levels of trust in the community of the participants, and thus rely on previous findings. There are pre-existing differences in the general levels of trust of the general population between the countries in our study, which may have increased or decreased due to how the government and authorities have responded to the pandemic (Dalton 2005; Easton 1975).

Financial measures were not specified; thus, the question leaves it to the respondent to state whether (s)he feels the financial measures, in general, are trustworthy.

6. Conclusions

This study aimed to examine trust in public authorities held by the general population based on sociodemographic variables and lived experiences. Identifying as female, having higher levels of education, and living in urban areas were associated with trust, whereas spending more time on social media and having been infected with the coronavirus were associated with distrust. The demographics of gender, age, and level of education are consistent with individuals that were more likely to engage in prevention activities to reduce the spread of the global flu virus in 2009 (Bish and Michie 2010; Freimuth et al. 2014).

The study provides information for social welfare professionals, policy makers, and program development administrators on the need to identify and target groups based on their levels of trust, especially as they relate to information and financial support provided by public officials. It is critical that public authorities use engagement strategies that promote trust in information and policies. Practices that engage citizens can lead to an increased investment in the prevention of and commitment to participating in intervention measures implemented to mitigate the negative impacts of COVID-19. Future research needs to continue to measure changes over time, and focus on shifts in trust in public authorities during and after the COVID-19 pandemic.

Professionals that are responsible for social welfare, policy development, and program administration should be aware of the differences in the general public's likelihood to trust information and financial support offered when developing programs that target different

population groups. Effective communication and financial support for individuals may influence the levels of trust in public authorities. Trust among citizens may be a vital component when seeking to increase effectiveness of interventions that are used to support the safety and wellness of communities. Increasing trust among men, people with lower educational levels, high utilizers of social media, and those living in communities that are more rural may foster higher levels of public health compliance to reduce the spread of COVID-19. This is consistent with previous recommendations that public authorities provide clear, consistent, and unified information to improve prevention, response to, and recovery from public health issues (Kim and Kreps 2020; Kreps et al. 2005; Seeger et al. 2018; Skidmore 2016). Recognizing that people's trust in the medical advice and information received from the government determines public compliance with the recommendations, it is critical that groups that have lower trust are engaged (Newton 2020; Jakovljevic et al. 2020; Wong and Jensen 2020; Guillon and Kergall 2020; OECD 2013).

Future research on trust in public authorities during an ongoing crisis/pandemic needs to include more longitudinal studies to assess change over time, so as to determine causation. Studies that incorporate more of the voice of the participants using qualitative or mixed method approaches can facilitate the understanding of how differences in sociodemographic factors and social media use impact trust. This information can guide policy development and public authority responses during a pandemic.

Author Contributions: D.P. and T.B. drafted the manuscript. All authors contributed to the conceptualization, methodology, validation, formal analysis, investigation, data curation, and writing of the manuscript. A.O.G administered the project. All authors have read and agreed to the published version of the manuscript.

Funding: The study received no funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the University of Michigan Institutional Review Board for Health Sciences and Behavioral Sciences (HUM00180296, 22 April 2020).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author by completion of the research project. The data are not publicly available due to the ongoing publication of the project.

Acknowledgments: The authors acknowledge the time and efforts of the participants when responding to the survey.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Anastasiou, Evgenia, and Marie-Noelle Duquenne. 2021. First-wave COVID-19 pandemic in Greece: The role of demographic, social, and geographical factors in life satisfaction during lockdown. *Social Sciences* 10: 186. [\[CrossRef\]](#)
- Bish, Alison, and Susan Michie. 2010. Demographic and attitudinal determinants of protective behaviours during a pandemic: A review. *British Journal of Health Psychology* 15: 797–824. [\[CrossRef\]](#)
- Bonsaksen, Tore, Mariyana Schoultz, Hilde Thygesen, Mary Ruffolo, Daicia Price, Janni Leung, and Amy Østertun Geirdal. 2021. Loneliness and its associated factors nine months after the covid-19 outbreak: A cross-national study. *International Journal of Environmental Research and Public Health* 18: 2841. [\[CrossRef\]](#)
- Bouckaert, Geert, and Steven Van de Walle. 2001. Government performance and trust in government. Paper presented at Permanent Study Group of Productivity and Quality in the Public Sector at the European Group of Public Administration Annual Conference, Vaasa, Finland, September 5–8.
- Charron, Nicholas, and Bo Rothstein. 2016. Does education lead to higher generalized trust? The importance of quality of government. *International Journal of Educational Development* 50: 59–73. [\[CrossRef\]](#)
- Christensen, Thomas, and Per Lægrend. 2005. Trust in government: The relative importance of service satisfaction, political factors, and demography. *Public Performance & Management Review* 28: 487–511.
- Dalton, Russell. 2005. The social transformation of trust in government. *International Review of Sociology* 15: 133–54. [\[CrossRef\]](#)
- Deslatte, Aaron. 2020. The erosion of trust during a global pandemic and how public administrators should counter it. *American Review of Public Administration* 50: 489–96. [\[CrossRef\]](#)

- Devine, Daniel, Jennifer Gaskell, Will Jennings, and Gerry Stoker. 2021. Trust and the coronavirus pandemic: What are the consequences of and for trust? An early review of the literature. *Political Studies Review* 19: 274–85. [CrossRef]
- Easton, David. 1975. A re-assessment of the concept of political support. *British Journal of Political Science* 5: 435–57. [CrossRef]
- Elgin, Ceyhun, Gokce Basbug, and Abdullah Yalaman. 2020. Economic policy responses to a pandemic: Developing the COVID-19 economic stimulus index. *Covid Economics: Vetted and Real Time Papers* 3: 40–54.
- Ellison, Nicole B., Charles Steinfield, and Cliff Lampe. 2007. The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication* 12: 1143–68. [CrossRef]
- Enria, Luisa, Naomi Waterlow, Nina Trivedy Rogers, Hannah Brindle, Sham Lal, Rosalind M. Eggo, Shelley Lees, and Chrissy H. Roberts. 2021. Trust and transparency in times of crisis: Results from an online survey during the first wave (April 2020) of the COVID-19 epidemic in the UK. *PLoS ONE* 16: e0239247.
- Fielding, Richard, Wendy Lam, Ella Ho, Tai Lam, Anthony Hedley, and Gabriel Leung. 2005. Avian influenza risk perception, Hong Kong. *Emerging Infectious Diseases* 11: 677–82. [CrossRef]
- Freimuth, Vicki, Don Musa, Karen Hilyard, Sandra Crouse Quinn, and Kevin Kim. 2014. Trust during the early stages of the 2009 H1N1 pandemic. *Journal of Health Communication* 19: 321–39. [CrossRef] [PubMed]
- Geirdal, Amy stertun, Mary Ruffolo, Janni Leung, Hilde Thygesen, Daicia Price, Tore Bonsaksen, and Mariyana Schoultz. 2021. Mental health, quality of life, wellbeing, loneliness and use of social media in a time of social distancing during the COVID-19 outbreak: A cross-country comparative study. *Journal of Mental Health*. in press. [CrossRef] [PubMed]
- Goldfinch, Shaun, Ross Taplin, and Robin Gauld. 2021. Trust in government increased during the COVID-19 pandemic in Australia and New Zealand. *Australian Journal of Public Administration* 80: 3–11. [CrossRef]
- Gozgor, Giray. 2021. Global evidence on the determinants of public trust in governments during the COVID-19. *Applied Research in Quality of Life*, 1–20. [CrossRef]
- Guillon, Marlène, and Pauline Kergall. 2020. Attitudes and opinions on quarantine and support for a contact-tracing application in France during the COVID-19 outbreak. *Public Health (London)* 188: 21–31. [CrossRef]
- Hale, Thomas, Anna Petherick, Toby Phillips, and Samuel Webster. 2020. *Variation in Government Responses to COVID-19*. Oxford: Oxford University.
- Hanfling, Dan, Bruce Altevogt, Kristin Viswanathan, and Lawrence Gostin. 2012. *Committee on Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations. Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response*. Washington, DC: Institute of Medicine, National Academies Press.
- Haselhuhn, Michael, Jessica Kennedy, Laura Kray, Alex Van Zant, and Maurice Schweitzer. 2015. Gender differences in trust dynamics: Women trust more than men following a trust violation. *Journal of Experimental Social Psychology* 56: 104–09. [CrossRef]
- Huang, Peter. 2020. *Pandemic Emotions, Public Health, Financial Economics, Law, and Leadership*. University of Colorado Law Legal Studies Research Paper No. 20–14. Available online: https://papers-ssrn-com.proxy.lib.umich.edu/sol3/papers.cfm?abstract_id=3575101 (accessed on 12 September 2021).
- Jakovljevic, Miro, Sarah Bedov, Filip Mustac, and Ivan Jakovljevic. 2020. COVID-19 infodemic and public trust from the perspective of public and global mental health. *Psychiatria Danubina* 32: 449–57. [CrossRef]
- Keele, Luke. 2007. Social capital and the dynamics of trust in government. *American Journal of Political Science* 51: 241–54. [CrossRef]
- Kim, Do Kyun David, and Gary Kreps. 2020. An analysis of government communication in the United States during the COVID-19 pandemic: Recommendations for effective government health risk communication. *World Medical and Health Policy* 12: 398–412. [CrossRef] [PubMed]
- Kreps, Gary, Kenneth Alibek, Linda Neuhauser, Katherine Rowan, and Lisa Sparks. 2005. Emergency/risk communication to promote public health and respond to biological threats. In *Global Public Health Communications: Challenges, Perspectives, and Strategies*. Edited by Muhiuddin Haider. Sudbury: Jones & Bartlett Publishers, pp. 349–62.
- Levi, Margaret, and Laura Stoker. 2000. Political trust and trustworthiness. *Annual Review of Political Science* 3: 475–507. [CrossRef]
- Liu, Brooke Fisher, J. Suzanne Horsley, and Kaifeng Yang. 2012. Overcoming negative media coverage: Does government communication matter? *Journal of Public Administration Research and Theory* 22: 597–621. [CrossRef]
- McDermott, Monika L., and David R. Jones. 2020. Gender, sex, and trust in government. *Politics & Gender*, 1–24. [CrossRef]
- Newton, Kenneth. 2020. Government communications, political trust and compliant social behaviour: The politics of COVID-19 in Britain. *The Political Quarterly* 91: 502–13. [CrossRef] [PubMed]
- OECD. 2013. Trust in government, policy effectiveness and the governance agenda. In *Government at a Glance*. Paris: OECD Publishing. [CrossRef]
- Oude Groeniger, Joost, Kjell Noordzij, Jeroen Van Der Waal, and Willem De Koster. 2021. Dutch COVID-19 lockdown measures increased trust in government and trust in science: A difference-in-differences analysis. *Social Science & Medicine* 275: 113819. Available online: <https://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/> (accessed on 12 September 2021).
- Pak, Anton, Emma McBryde, and Oyelola A. Adegboye. 2021. Does high public trust amplify compliance with stringent covid-19 government health guidelines? A multi-country analysis using data from 102,627 individuals. *Risk Management and Healthcare Policy* 14: 293–302. [CrossRef]
- Pew Research Center. 2019. *Trust and Distrust in America*. Washington, DC: Pew Research Center, July 22, Available online: <https://www.pewresearch.org/politics/2019/07/22/trust-and-distrust-in-america/> (accessed on 12 September 2021).

- Reinhardt, G. 2015. First-hand experience and second-hand information: Changing trust across three levels of government. *The Review of Policy Research* 32: 345–64. [[CrossRef](#)]
- Ruffolo, Mary, Daicia Price, M. Schoultz, Janni Leung, Tore Bonsaksen, Hilde Thygesen, and Amy Østertun Geirdal. 2021. Employment uncertainty and mental health during the COVID-19 pandemic initial social distancing implementation: A cross-national study. *Global Social Welfare*. [[CrossRef](#)]
- Schwerter, Frederik, and Florian Zimmermann. 2020. Determinants of trust: The role of personal experiences. *Games and Economic Behavior* 122: 413–25. [[CrossRef](#)]
- Seeger, Matthew, Laura Pechta, Simani Price, Keri Lubell, Dale Rose, Saloni Sapru, Melanie Chansky, and Belinda Smith. 2018. A conceptual model for evaluating emergency risk communication in public health. *Health Security* 16: 193–203. [[CrossRef](#)]
- Skidmore, Max J. 2016. *Presidents, Pandemics, and Politics*. New York: Palgrave Macmillan.
- Smith, Maxwell J., and Diego S. Silva. 2015. Ethics for pandemics beyond influenza: Ebola, drug-resistant tuberculosis, and anticipating future ethical challenges in pandemic preparedness and response. *Monash Bioethics Review* 33: 130–47. [[CrossRef](#)] [[PubMed](#)]
- Trumbo, Craig W., and Katherine A. McComas. 2003. The function of credibility in information processing for risk perception. *Risk Analysis: An International Journal* 23: 343–53. [[CrossRef](#)] [[PubMed](#)]
- Wachinger, Gisela, Ortwin Renn, Chloe Begg, and Christian Kuhlicke. 2013. The risk perception paradox—Implications for governance and communication of natural hazards. *Risk Analysis: An International Journal* 33: 1049–65. [[CrossRef](#)] [[PubMed](#)]
- Wong, Catherine Mei Ling, and Olivia Jensen. 2020. The paradox of trust: Perceived risk and public compliance during the COVID-19 pandemic in Singapore. *Journal of Risk Research* 23: 1021–30. [[CrossRef](#)]