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## Modeling the role of institutional trust to improve vaccine confidence: The New Zealand case

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### ABSTRACT

This study explores how institutional trust influences vaccine confidence during public health crises, using New Zealand’s COVID-19 response as a high-trust case study. Applying the Stakeholder Relationship Management (SRM) framework, the research investigates how demographic, value-based, health, institutional, and informational factors shape vaccine attitudes across varying levels of institutional trust. Results demonstrate that institutional trust is a critical predictor of both vaccine confidence and skepticism, with trust in science and reliance on official sources driving confidence, and social media reliance correlating with skepticism. Segmenting participants by trust levels revealed distinct patterns, highlighting the importance of tailoring communication strategies to trust-based subgroups. The findings reposition vaccine hesitancy as a crisis and risk communication challenge—rooted not solely in individual traits but in institutional relationships and the complex information environment. The study advocates for integrating strategic communication principles into public health risk communication, emphasizing long-term trust-building, credibility, and message alignment across platforms. This research offers a model for cross-contextual testing and underscores the need for governments and health authorities to engage low-trust communities more effectively, particularly through strategic use of social media during health emergencies.

### KEYWORDS

Vaccination hesitancy; vaccine confidence; strategic communication; institutional trust; source credibility; information consumption; stakeholder relationship model; New Zealand

The COVID-19 pandemic has re-centered global attention on vaccine hesitancy, a long-standing public health concern exacerbated by the complexity of contemporary information environments. Even before the pandemic, the World Health Organization (WHO) identified vaccine hesitancy and the accompanying “infodemic” as top global health threats (Ghebreyesus, 2020; WHO, 2019). During COVID-19, reducing vaccine hesitancy through effective risk communication and community engagement was identified as mission critical in the pandemic response (Palamenghi et al., 2020; WHO, 2022b). Yet, resistance to vaccines is not a new phenomenon. Since the advent of vaccinations for diseases such as rubella and smallpox, vocal minority opposition—often politicized—has persisted (Blume, 2006; Smith et al., 2022; Willrich, 2011). What is new, however, is the scale and speed of mis(dis)information in today’s digital media environment, which complicates public

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engagement during crises and undermines institutional messaging (de Vries et al., 2022; Kricorian et al., 2022).

This shift elevates vaccine hesitancy from a purely behavioral concern to a communication challenge—specifically, one rooted in the dynamics of strategic and crisis communication. As Zerfass et al. (2020) define it, strategic communication is the purposeful use of communication by institutions to advance goals through dialogue with stakeholders. In a public health emergency, success hinges on the ability of institutions to persuade public to adopt self-protective behaviors (WHO, 2022b). Thus, vaccine confidence becomes not only a function of risk perception but also a function of institutional trust and the credibility of information sources (Jacob et al., 2023; Lee & Li, 2021).

Importantly, vaccine hesitancy should not be conflated with anti-vaccination ideology. The former includes individuals who are uncertain or skeptical about specific vaccines due to concerns over safety, efficacy, or rapid development (Kricorian et al., 2022; MacDonald, 2015; Mesch & Schwirian, 2015). The latter reflects entrenched ideological opposition, often rooted in conspiracy theories and institutional mistrust (Allington et al., 2021; Featherstone & Zhang, 2020; Jennings et al., 2021; Sallam et al., 2021). Conflating these groups diminishes our ability to design effective communication interventions. Instead, a more productive approach is to understand vaccine hesitancy through the lens of confidence—shaped by trust in institutions, belief in health efficacy, and perceptions of risk and uncertainty (Breakwell et al., 2021; While, 2021).

While global vaccine attitude research often relies on identity-based explanations such as gender, ethnicity, and socioeconomic status (Poltorak et al., 2005; Robertson et al., 2021), these factors offer limited predictive power across contexts. Instead, research increasingly points to institutional trust, attitudes toward science, and trusted sources of information as stronger indicators of vaccine behavior (Cataldi & O’Leary, 2021; Larson et al., 2016; Wagner et al., 2019). However, few studies systematically test these relationships within a crisis communication framework. The current study addresses this gap by using the Stakeholder Relationship Management (SRM) framework (Diers-Lawson et al., 2021) to examine the drivers of vaccine confidence during a health crisis. It positions strategic communication—not merely messaging, but stakeholder engagement and trust-building—as a central function in effective risk communication (Volk & Zerfass, 2020).

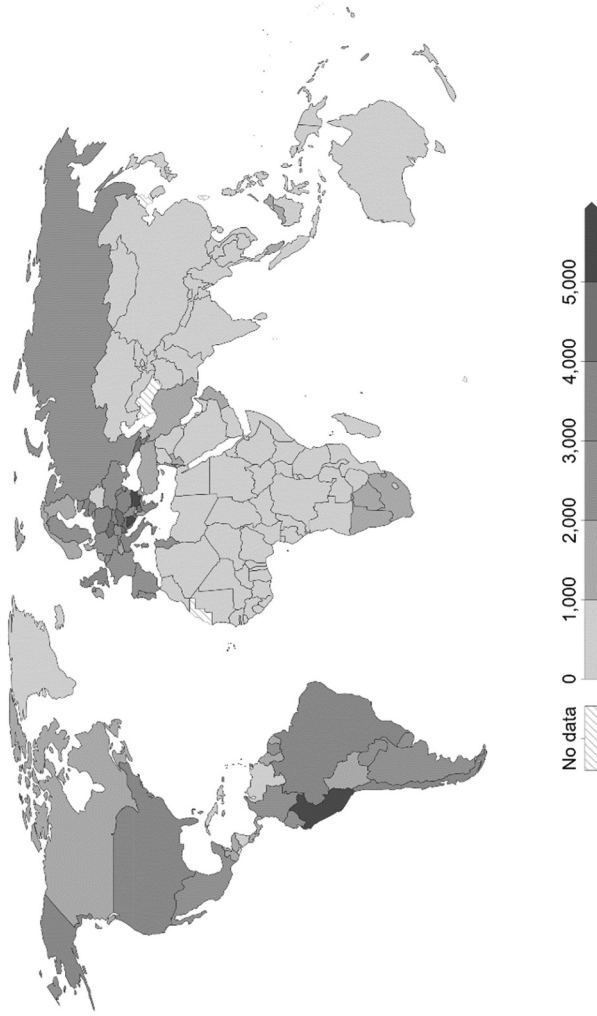
Therefore, this research will evaluate the factors influencing vaccine attitudes during a public health emergency to identify how these interrelationships between organizational and stakeholder factors influence the potential for strategic communication success to: (1) evaluate the degree vaccination confidence or skepticism is tied to institutional trust and (2) evaluate the degree to which static factors like “identity” influences vaccine attitudes compared to fluid factors like institutional attitudes, values, or information sources.

## The New Zealand case

New Zealand provides an interesting context for evaluating institutional trust and recommendations for self-protective behaviors during a public health emergency in the context of COVID-19 and vaccination because it represents an example of a country that has both one of the lowest rates of death per million during COVID-19 (see Figure 1) and also a high vaccination rate for COVID-19 (see Figure 2), so it is reasonable to suggest New Zealand has a good communication environment to promote self-protective behavior. For example,

Our World  
in Data

**Cumulative confirmed COVID-19 deaths per million people, Jun 14, 2023**  
 Due to varying protocols and challenges in the attribution of the cause of death, the number of confirmed deaths may not accurately represent the true number of deaths caused by COVID-19.



**Figure 1.** Map of global COVID-19 deaths per million people.



Our World  
in Data

### Share of people who completed the initial COVID-19 vaccination protocol, Jun 17, 2023

Total number of people who received all doses prescribed by the initial vaccination protocol, divided by the total population of the country.

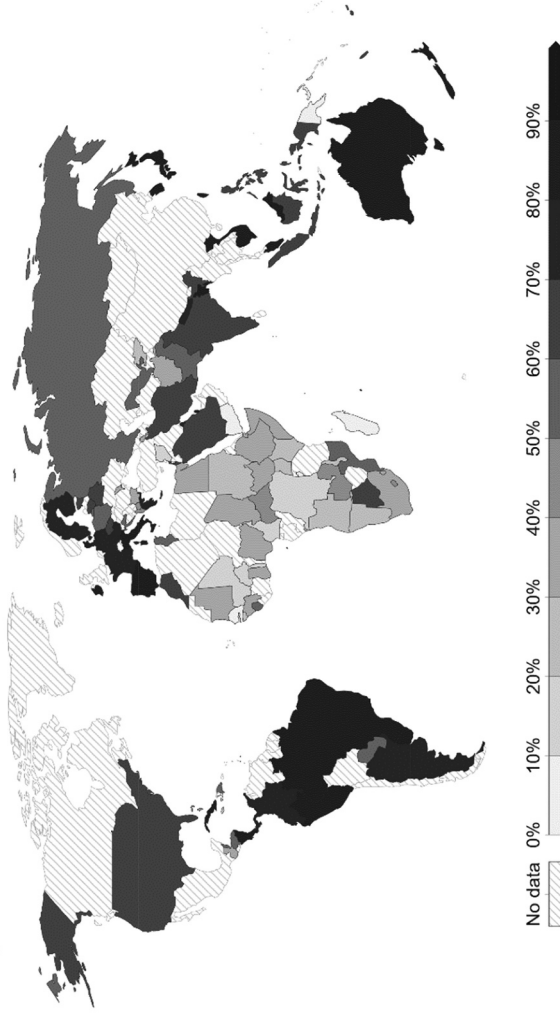


Figure 2. Map of global vaccination rates per million people.

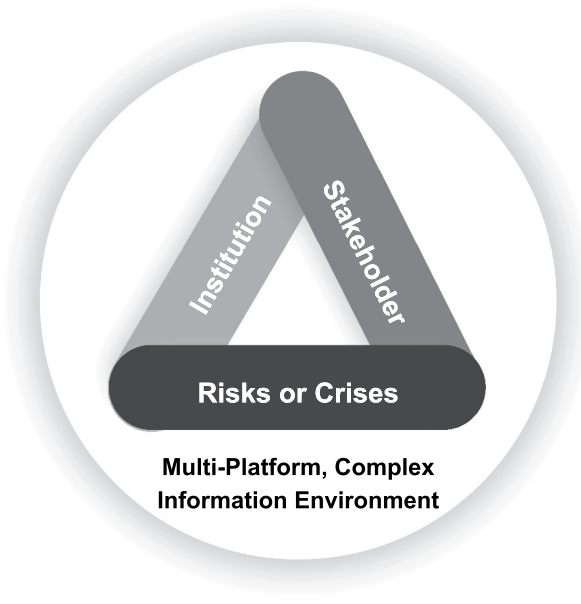
in New Zealand and trust in scientists is quite high with the Acumen Edelman Trust Barometer (Edelman, 2022) survey finding trust in scientists at 77%, trust in national health authorities at 68%. Trust in government leaders was lower at 50%. In addition, the 2019 World Values Survey found that over 70% of New Zealand respondents felt that science made their lives healthier, easier, and more comfortable as well as the belief that science would provide more opportunities for future generations (Haerpfer et al., 2022).

Positive illustrations like New Zealand contrast against the more common studies of countries like the UK where there was a good vaccination rate but a very high death rate, or countries like Hungary both with high death rates and low vaccination rates. By looking for models of countries, we can then begin to compare high/high performers against those with several types of outcomes to build a better understanding of the factors driving risk communication and community engagement during health emergencies.

New Zealand is also an interesting case study both because its immunization rate for COVID-19 is similar to its routine vaccination rate and because it has worked to improve its vaccination rates over the years (Turner & Vardey, 2012) by targeting high-risk groups and vaccine-hesitant populations (Nguyen et al., 2021). Currently in New Zealand, the percentage of age-appropriate immunizations completed by age two years is 82.2% and 82.3% by five years (Health, 2022). Similarly, about 81% of New Zealanders are fully vaccinated for COVID-19, despite Nguyen et al.'s (2021) review of literature finding vaccine hesitancy rates at about 30% suggesting that despite hesitancy, people were still vaccinated. Thus, the New Zealand case may offer critical insights into the factors driving vaccine confidence versus skepticism to improve vaccine confidence in New Zealand and other countries.

### **Framework: Stakeholder relationship management**

In an analysis of the scholarly research on crisis communication from 1953–2015, Diers-Lawson (2020) found that more than 100 different frameworks and theories had been applied to risk and crisis communication contexts. Though the common narrative about crisis communication often focuses on a very narrow set of theories, the reality is that risk and crisis communication frameworks span across disciplines like communication, management, public health, sociology, and social psychology. They also typically focus on one of three perspectives—the institution, the message, or the stakeholder. Frameworks focusing on the institution are predominantly interested in protecting or developing the institution's interest(s) and reputation. Those exploring risk and crisis messages highlight the construction of messages and message channels (e.g., social media, interpersonal interventions, mass media, etc.) that different types of groups find compelling enough to change behaviors. Finally, stakeholder-focused frameworks explore the convergence of situation, institution, and message. As such, the literature analyzing government and NGO strategic communication objectives supports the need to consider communication from a stakeholder perspective to evaluate the potential for strategic communication success. Therefore, this paper emphasizes the stakeholder relationship management (SRM) framework (Diers-Lawson et al., 2021) because it draws on the recognized need for alignment between institutions, public interest, and pandemic-related issues that directly affect government and public health's ability to be successful when engaging about vaccination (see e.g., Volk & Zeffass, 2020; see Figure 3).



**Figure 3.** Stakeholder relationship model. *Notes.* Adapted from Diers-Lawson (2020).

However, the SRM framework also recognizes that these interactions occur within a complex multi-platform information environment (e.g., social media, legacy media, and face-to-face communication) where there are often contradictory messages and different actors competing for citizen attention (Diers-Lawson, 2020). SRM, therefore, addresses both the complicated personal factors (e.g., political ideology, identity, or existing experiences) in considering the stakeholders-related attitudes but also the broader organizational context, as well as how the relationships between institutions, people, and crises like COVID-19 are influenced by challenges like disinformation or politicizing health issues (Diers-Lawson, 2020).

### **Stakeholder factors**

Across the study of vaccine attitudes, demographics that contribute to explaining or predicting vaccine hesitancy have been broadly inconclusive though there have been a few clear patterns emerging over time (Larson et al., 2016). For example, Ebrahimi et al. (2021) found that parents with children under 18 and those choosing to consume more information from unmonitored media platforms were more likely to be vaccine-hesitant, whereas education and age did not influence vaccine hesitancy. Yet in recent studies, other factors like whether people work in healthcare (Vergara et al., 2021) or have experience with other vaccines, like the flu vaccine, emerged as important predictors of vaccine confidence (Soares et al., 2021). Additionally, in most countries, people from lower socio-economic status or who were economically unstable because of the pandemic were much more likely to be vaccine-hesitant (Bendau et al., 2021; Deml et al., 2019; Kricorian et al., 2022; Soares et al., 2021; Wagner et al., 2019). What is not clear is whether there are more readily grounded

theoretical explanations for which identity-based factors might be the most relevant at different moments.

### ***Values and identities***

Political and religious attitudes have a great level of variance by culture and country and are often difficult to equate and measure (Froese & Bader, 2008). Therefore, as we previously discussed, exploring ideological attitudes underlying political and religious attitudes may be a more useful way of exploring attitudes toward vaccination (Wollebæk et al., 2022). Therefore, measuring values (see Schwartz, 2012) directly may provide a stronger causal connection to vaccine attitudes than other measures of political and religious ideology.

### ***Health attitudes***

Health attitudes have also been found to influence vaccine attitudes where those who have a lower level of anxiety about disease, believe they have a higher level of natural immunity, or have lower levels of health efficacy (i.e., their belief in their ability to take action to improve or protect their health) are more likely hesitant to be vaccinated (Cataldi & O’Leary, 2021; de Vries et al., 2022; Ebrahimi et al., 2021). These findings are consistent with other research related to COVID-19, which suggests that vaccine hesitancy is reduced when people are more anxious about the disease and more generally health-related fears (Bendau et al., 2021) but increased when people have lower levels of health anxiety (Deml et al., 2019). For these reasons, health attitudes should be considered related to vaccine confidence.

### ***Institutional factors***

Overall, when key institutions like governments and health authorities are viewed as highly trustworthy, then people are more confident in vaccination (Ebrahimi et al., 2021; Gilkey et al., 2014; Kennedy, 2019; Mesch & Schwirian, 2015; Raude et al., 2016; Troiano & Nardi, 2021). One of the barriers to vaccination globally during COVID-19 has been perceptions that the vaccination development and approval process has been rushed (Troiano & Nardi, 2021; Wollebæk et al., 2022). As such, institutional trustworthiness needs to be seen within the broader context of science communication and how attitudes about “science,” as an institution, influence vaccine attitudes. For example, recent findings suggest that the more effectively the science behind vaccination recommendations is translated for people; it not only improves vaccine confidence but also increases trust in science and compliance with scientifically based recommendations (Goldenberg, 2016; Ihlen, 2020; Palamenghi et al., 2020; Poltorak et al., 2005; Xu et al., 2021).

### ***Source credibility and selection***

It is clear globally that information quality and credibility are also key influencers of vaccine attitudes (Bíró-Nagy & Szászi, 2022; Šiđanin et al., 2021). This is the case for a host of reasons including: mis(dis)information lingering in people’s memories (Pluviano et al., 2017); the refutational process surrounding correcting mis(dis)information creating emotional reactions (Featherstone & Zhang, 2020; Gehrau et al., 2021; Sun et al., 2020), and leading to the conclusion that social media consumption is a significant predictor of vaccine hesitancy (de Vries et al., 2022; Jennings et al., 2021). While the literature distinguishes

between mis and disinformation based on intention to spread false information (Hansson et al., 2021), in this study, we do not differentiate them because previous research does not differentiate between the two in behavioral outcomes, just in the intention to spread false information. However, one of the challenges is that crises cause uncertainty, which heightens information consumption, so while people may try to consume information from credible sources, they may also look for any information possible (Diers-Lawson, 2020; Puri et al., 2020). Therefore, exploring trusted sources of information is likely critical to understanding vaccine attitudes.

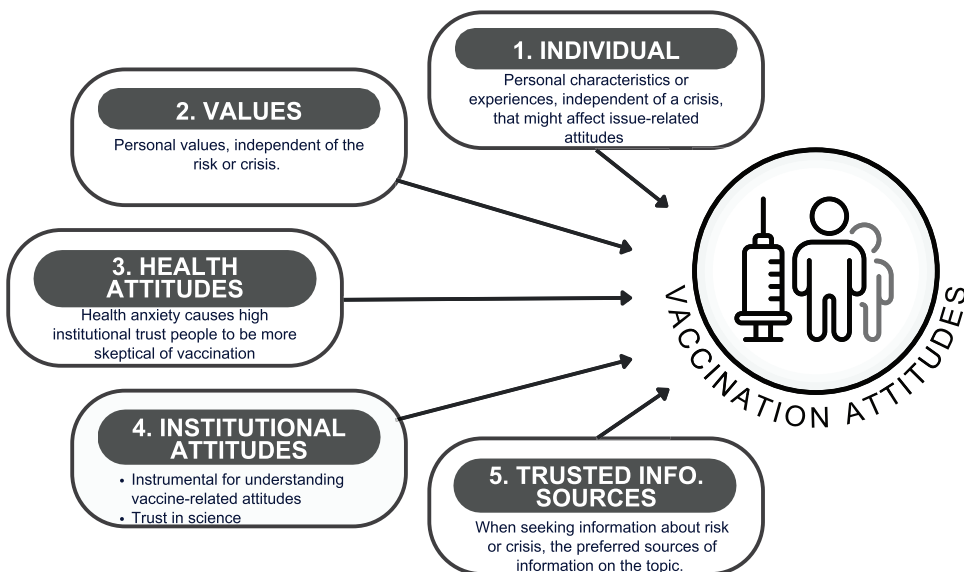
While it appears, New Zealanders have strong trust in science, health institutions and some information sources how these attitudes combine and relate to vaccination hesitancy in the New Zealand context has not been investigated. Without understanding the relationship between these factors and vaccine attitudes, communication strategies to increase vaccination may not be as effective as hoped. Therefore, this study aims to improve the theoretical groundwork for understanding the relationships between vaccination during health emergencies, institutional trust, and people's attitudes. Based on the state of research on vaccine attitudes, we propose the following conceptual model for this study (see Figure 4):

The research aims and this model lead to the following research questions:

**RQ1:** What factors influence vaccine confidence in New Zealand?

**RQ1A:** To what extent do demographic variables (e.g., age, gender, education, etc) influence vaccine confidence in New Zealand?

**RQ1B:** To what extent do values and identifications influence vaccine confidence in New Zealand?



**Figure 4.** Study conceptual model.

**RQ1C:** To what extent do health attitudes influence vaccine confidence in New Zealand?

**RQ1D:** To what extent do institutional attitudes (e.g., trust in science) influence vaccine confidence in New Zealand?

**RQ1E:** How do trusted sources of information influence vaccine confidence in New Zealand?

**RQ2:** Does the relative level of institutional trust change factors that influence vaccine confidence in New Zealand?

## Methods

To answer these research questions in a New Zealand context and apply the SRM, we operationalize three classes of individual factors (identities, values, and health attitudes), two classes of institutional trust (institutional trust and trust in science), and trusted sources of information about vaccination. This section explains how each of these factors was operationalized and measured. Then it outlines the method of data collection, sample description and data analysis methods.

### *Variable operationalization*

The literature review identified several central findings and gaps for each of the variables explored in this study. [Table 1](#) summarizes the operationalization of the variables and the reliability of each. We measured the following identity factors: gender, age, income, education, whether people work in healthcare or a related industry, and whether they had direct experience with childhood vaccination. Second, we measure values using Schwartz's (2012) theory of basic values to operationalize values in the study. Third, health attitudes driving vaccine confidence are often focussed on people's belief that vaccines are safe and effective; therefore, we have operationalized health attitudes using Bandura's (2006) measures for efficacy to measure health attitudes. The exploratory factor analysis with varimax rotation (See [Table 1](#)) revealed that health efficacy and health anxiety are viewed as distinctive constructs by New Zealanders.

Institutional trust was measured using Diers-Lawson's (2020) scale for institutional trustworthiness (See [Table 1](#)). However, because New Zealand already has high trust in institutions, we would expect our results to have less significant variance on the institutional trust measure, which was reflected by the mean for institutional trustworthiness of 3.31, demonstrating a positive skew in the data. Therefore, to better analyze the data, we analyzed institutional trust as an overall measure, but have discretized the variable to categorize high, medium and low trust individuals based on identifying the median of 3.34 and then grouping responses based on the quartiles range to produce a low institutional trust group ( $N = 80$ ) between 1 and 2.85, a neutral institutional trust group between 2.851 and 3.34 ( $N = 178$ ), and a high institutional trust group between 3.341 and 5 ( $N = 92$ ). Therefore, analyses were run using the overall sample, then for each of the groups individually as

**Table 1.** Operationalization of study variables.

Variable	Questions	Author(s)	Eigen- value	Variance Explained	Factor Loading	Alpha
Values-Collectivist	Preventing pollution, protecting natural resources	Schwartz (2012)	4.77	39.75	.84	.88
	Equality, equal opportunity for all				.71	
	Protecting the environment, preserving nature				.85	
	Unity with nature, fitting into nature				.64	
	Helpfulness, working for the welfare of others				.67	
	Social justice, correcting injustice, care for the weak				.71	
	Peace, a world free of war and conflict				.72	
	Respecting the earth, harmony with other species				.72	
	Authority, the right to lead or command				.85	
	Values-Power/ Dominance					
Institutional Trustworthiness	Social power, control over others	Diers- Lawson (2020)	5.08	46.19	.80	.94
	Influence, having an impact on people & events				.67	
	Wealth—material possessions, money				.67	
	... are transparent				.81	
	... provide all of the latest information with the public				.84	
	... share information freely with the public				.84	
	... give me a feeling of trust				.86	
	... demonstrate they are dedicated to being good				.83	
	... are typically truthful				.86	
	... give me a trustworthy impression				.87	
Trust in Science	... can solve nearly any problem	Roberts et al. (2013)	3.18	45.79	.80	.71
	... most environmental problems can be solved using technology				.86	
	... Science is very effective in dealing with diseases				.64	
Health Anxiety	I often have anxiety about m/my family's health	Bandura (1982)	2.72	30.18	.75	.76
	Given the state of the world, I worry about my/my family's health regularly				.81	
	I often worry that I/my family will get sick out in public.				.79	
	I feel as though there's little I can do to positively affect my health on a daily basis				.68	
Health Efficacy	I try to live a generally healthy life.	Bandura (1982)	1.69	18.83	.85	.66
	I encourage my friends/family to live a health life.				.76	
	When it comes to making decisions about healthcare, I am confident in my ability to make the right decision.				.66	
Source Trust: Social Media	People on social media/social media networks		3.18	39.70	.91	.90
	Social Media Influencers				.89	
Source Trust: Official Sources	Public Health Service		1.63	20.34	.80	.65
	My local GP				.76	
Vaccine Confidence	Government	Gilkey et al. (2014)	3.86	48.27	.60	.86
	Vaccines are necessary to protect public health.				.82	
	Vaccines do a good job in preventing the intended diseases.				.84	
	Vaccines are safe.				.76	

*(Continued)*

**Table 1.** (Continued).

Variable	Questions	Author(s)	Eigen- value	Variance Explained	Factor Loading	Alpha
Vaccine Skepticism	If I don't vaccinate my child, s/he may get a disease & cause others to also get the disease.				.72	
	In general, medical professionals in charge of vaccinations have people's best interests at heart.				.77	
	I have a good relationship with my GP. People receive too many vaccinations	Gilkey et al. (2014)	1.30	16.27	.64	.71
	If my child were to get a vaccination s/he may have serious side effects.				.87	

points of comparison. We also operationalized institutional trust in terms of trust in science and used Roberts et al.'s (2013) measure for trust in science.

To explore trusted information sources, we asked participants about a number of information sources they relied on for information about vaccination. The factor analysis (see Table 1) demonstrates there is a clear delineation in the use of "official" sources and advocacy or influencer sources of information about vaccines. No other sources of information were analytically relevant nor grouped together in the factor analysis (e.g., interpersonal sources).

Finally, vaccine attitudes were measured in terms of Gilkey et al.'s (2014) vaccination confidence scale. The factor analysis (see Table 1) identified that New Zealanders consider vaccine confidence as being distinctive from skepticism, so even when reverse-coded the negative attitudes did not group with the confidence measures.

### **Data collection and sample**

Data were collected from a paid panel of participants in New Zealand using Qualtrics, a paid survey panel, in quarter 3 2020, before the COVID-19 vaccine was available. This yielded a total of 350 participants who were adequately representative of the New Zealand population. There were a relatively even number of men ( $N = 168$ ) and women ( $N = 179$ ). Participants range in age from 31 to 80 with a Median age of 58. However, the median age in New Zealand is 38, so our sample was a generation older than would have been expected (Worldometer, 2023). The average income in the same was NZ\$60,000–69,999, which is aligned with the national average of just over NZ\$61,000 (Shores, 2023). Additionally, the average level of education was some level of tertiary education, which is also aligned with the average New Zealander (OEDC, 2022). Therefore, the sample should be considered reasonably representative of the New Zealand population with only an age sample bias.

### **Data analysis**

Test data were analyzed in SPSS using correlation to establish that a relationship existed between independent and dependent variables. To minimize multicollinearity problems,

correlations were run so that only independent variables with significant correlations were incorporated into the regression models. Pearson correlations between independent variables. Moreover, because grouping or combining conceptually linked and potentially correlated independent variables into composite variables can reduce multicollinearity in hierarchical regression, this procedure was followed. To analyze the low, neutral, and high-trust respondents, the same analytic procedure was used but with only those participants selected whose institutional trust scores were in those categories.

## Results

Together, these data provide a strong answer to research question 1 addressing the factors influencing vaccine confidence in New Zealand because they provide insights into what factors matter more and less in evaluating vaccine confidence and skepticism. They demonstrate that vaccine confidence and vaccine skepticism are complex multi-layered phenomena and that segmenting a population based on levels of institutional trust reveals meaningfully different operational models for message adaptation. However, these findings also very clearly demonstrate that vaccination confidence and skepticism should be defined as communication problems—more specifically, infodemic problems. Yet the findings related to research question 2—that the relative level of institutional trust predicts vaccine attitudes—also provide guidance to improve vaccine confidence. The ANOVA test for both vaccine confidence ( $F(2, 349) = 3.31; p < .05$ ) and vaccine skepticism ( $F(2, 349) = 3.38; p < .05$ ) indicate that there are significant differences in the means based on level of institutional trust (Confidence—Low = 4.00, Neutral = 4.10, High = 4.21; Skepticism—Low = 2.58, Neutral = 2.68, High = 2.90). These findings validate the approach described in the methods to discretize the findings based on institutional trust to answer RQ2.

Additionally, the correlations for vaccine confidence (see Table 2) and vaccine skepticism (see Table 3) indicate that the initial model proposed based on the literature identifying five factors (i.e., demographics, values, health attitudes, institutional attitudes, and trusted information sources) is a valid conceptualization. While not all of the individual variables measured are significant, the conceptual factors all influence confidence and skepticism in the

**Table 2.** Significant correlations for vaccine confidence.

Independent Variables	Vaccine Confidence			
	Overall	Low Trust	Neutral Trust	High Trust
<b>Demographics</b>				
Age	NS	NS	NS	NS
Gender	.15***	NS	.18*	NS
Income	NS	NS	NS	NS
Work in HC	NS	.31***	NS	NS
Vaccinated as child	-.16***	NS	-.16*	-.26**
<b>Values</b>				
Collectivist	.23***	NS	.21**	.29**
Power/Dominance	NS	NS	NS	NS
<b>Health Attitudes</b>				
Health Efficacy	.21***	NS	.22**	NS
<b>Institutional Attitudes</b>				
Institutional Trustworthiness	.16***	—	—	—
Trust in Science	.27***	.38***	.24***	NS
<b>Trusted Information Sources</b>				
Official or Institutional	.41***	.27*	.55***	.36***
Social Media	-.21***	-.34***	-.33***	NS

Notes: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

**Table 3.** Significant correlations for vaccine skepticism.

Independent Variables	Vaccine Skepticism			
	Overall	Low Trust	Neutral Trust	High Trust
<b>Demographics</b>				
Age	-.11*	NS	NS	-.24*
Gender	NS	NS	NS	NS
Income	NS	NS	NS	NS
Work in HC	-.14**	NS	NS	NS
Vaccinated as child	NS	NS	.21**	NS
<b>Values</b>				
Collectivist	NS	NS	NS	NS
Power/Dominance	.31***	NS	.30***	.52***
<b>Health Attitudes</b>				
Health Efficacy	NS	NS	NS	.23*
Health Anxiety	.25***	NS	.20**	.50***
<b>Institutional Attitudes</b>				
Institutional Trustworthiness	.11*	–	–	–
Trust in Science	NS	-.34***	NS	.24*
<b>Trusted Information Sources</b>				
Official or Institutional	NS	NS	-.22**	NS
Social Media	.43***	NS	.47***	.54***

Notes: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

sample. However, when the sample is segmented based on levels of institutional trust, these data tell a more complicated story.

## Factors shaping vaccine confidence

### Overall vaccine confidence

The data for the overall confidence in vaccines converged in a significant five-model hierarchical regression  $F(9, 318) = 18.58$ ;  $p < .001$  with an overall adjusted  $R^2$  of .33 (see Figure 5) with all models significantly contributing to the adjusted  $R^2$ . However, in the final model, women were more likely to have confidence in vaccines  $t(318) = 2.07$ ;  $p < .05$ ,  $\beta = .09$ . Moreover, whether people: were vaccinated as a child  $t(318) = -2.80$ ;  $p < .01$ ,  $\beta = -.13$ ; have trust in science  $t(318) = 2.95$ ;  $p < .001$ ,  $\beta = .16$ ; rely on official or institutional sources of information about vaccination  $t(318) = 6.19$ ;  $p < .001$ ,  $\beta = .38$ ; and distrust of social media as a source of information  $t(318) = -6.54$ ;  $p < .001$ ,  $\beta = -.34$  were also significant predictors of vaccine confidence.

### Low institutional trust participants

When it comes to participants who are low trust, confidence in vaccines converged in a significant three-model hierarchical regression  $F(4, 79) = 10.28$ ;  $p < .001$  with an overall adjusted  $R^2$  of .32 (see Figure 5) with all models significantly contributing to the adjusted  $R^2$ . In the final model, experience working in health care  $t(79) = 2.60$ ;  $p < .05$ ,  $\beta = .25$ ; trust in science  $t(79) = 2.93$ ;  $p < .01$ ,  $\beta = .28$ ; relying on official or institutional sources of information about vaccination  $t(79) = 2.69$ ;  $p < .01$ ,  $\beta = .26$ ; and distrust of social media as a source of information  $t(79) = -3.02$ ;  $p < .01$ ,  $\beta = -.29$  were significant predictors of vaccine confidence.

### Neutral institutional trust participants

Alternatively, for participants who were neutral in their trust rating neutral trust, confidence in vaccines converged in a significant five-model hierarchical regression  $F(7, 175) = 15.97$ ;

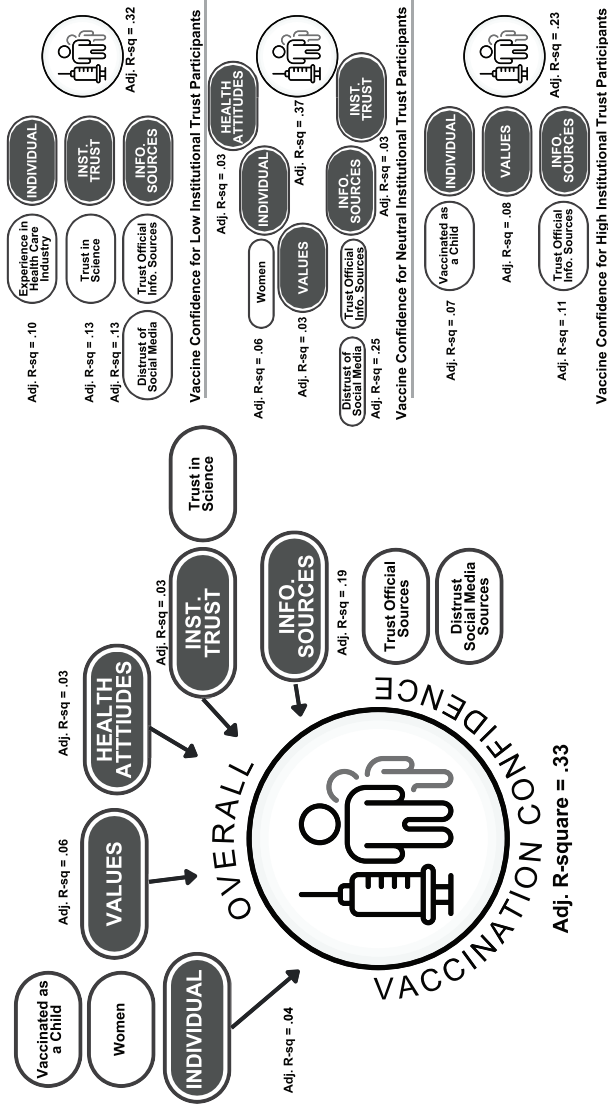


Figure 5. Summary of vaccination confidence results.

$p < .001$  with an overall adjusted  $R^2$  of .37 (see Figure 5) with all models significantly contributing to the adjusted  $R^2$ . However, in the final model, women were more likely to have confidence in vaccines  $t(175) = 2.63$ ;  $p < .01$ ,  $\beta = .17$ . Moreover, whether people rely on official or institutional sources of information about vaccination  $t(175) = 6.22$ ;  $p < .001$ ,  $\beta = .342$ ; and distrust of social media as a source of information  $t(175) = -3.68$ ;  $p < .001$ ,  $\beta = -.23$  were significant predictors of vaccine confidence.

### **High institutional trust participants**

However, for high trust participants, confidence in vaccines converged in a significant three-model hierarchical regression  $F(3, 91) = 9.83$ ;  $p < .001$  with an overall adjusted  $R^2$  of .23 (see Figure 5) with all models significantly contributing to the adjusted  $R^2$ . In the final model, being vaccinated as a child  $t(91) = -3.22$ ;  $p < .01$ ,  $\beta = -.30$  and relying on official or institutional sources of information about vaccination  $t(79) = 2.69$ ;  $p < .01$ ,  $\beta = .26$  were significant predictors of vaccine confidence.

### **Vaccine skepticism**

#### **Overall**

The data for the overall skepticism in vaccines converged in a significant five-model hierarchical regression  $F(6, 349) = 15.41$ ;  $p < .001$  with an overall adjusted  $R^2$  of .20 (see Figure 6) with all models significantly contributing to the adjusted  $R^2$  aside from institutional trust. However, in the final model only two factors accounted for the variance in levels of vaccine skepticism: values that favor power and dominance  $t(349) = 2.43$ ;  $p < .05$ ,  $\beta = .14$  and trust of social media as a source of information  $t(349) = 5.99$ ;  $p < .001$ ,  $\beta = .36$  were significant predictors of vaccine skepticism.

#### **Low institutional trust participants**

Low trust participant skepticism in vaccines resulted in a significant simple regression  $F(1, 79) = 10.30$ ;  $p < .01$  with an overall adjusted  $R^2$  of .11 (see Figure 6). The lower the trust in science, the more likely low institutional trust participants were to be skeptical of vaccination  $t(79) = -3.21$ ;  $p < .01$ ,  $\beta = -.34$ .

#### **Neutral institutional trust participants**

Neutral trust participant skepticism in vaccines converged in a significant four-model hierarchical regression  $F(5, 177) = 13.87$ ;  $p < .001$  with an overall adjusted  $R^2$  of .27 (see Figure 6) with all models significantly contributing to the adjusted  $R^2$ . In the final model, participants who did not receive childhood vaccinations were more likely to be skeptical  $t(177) = 2.67$ ;  $p < .01$ ,  $\beta = .17$ ; valued power and dominance  $t(177) = 2.24$ ;  $p < .05$ ,  $\beta = .08$ ; and trust of social media as a source of information  $t(177) = 4.76$ ;  $p < .001$ ,  $\beta = .35$  were significant predictors of vaccine skepticism.

#### **High institutional trust participants**

Finally, high trust skepticism in vaccines converged in a significant five-model hierarchical regression  $F(6, 91) = 8.87$ ;  $p < .001$  with an overall adjusted  $R^2$  of .34 (see Figure 6) with all models significantly contributing to the adjusted  $R^2$  aside from the health attitudes model. However, in the final model only three factors accounted for the variance in levels of vaccine

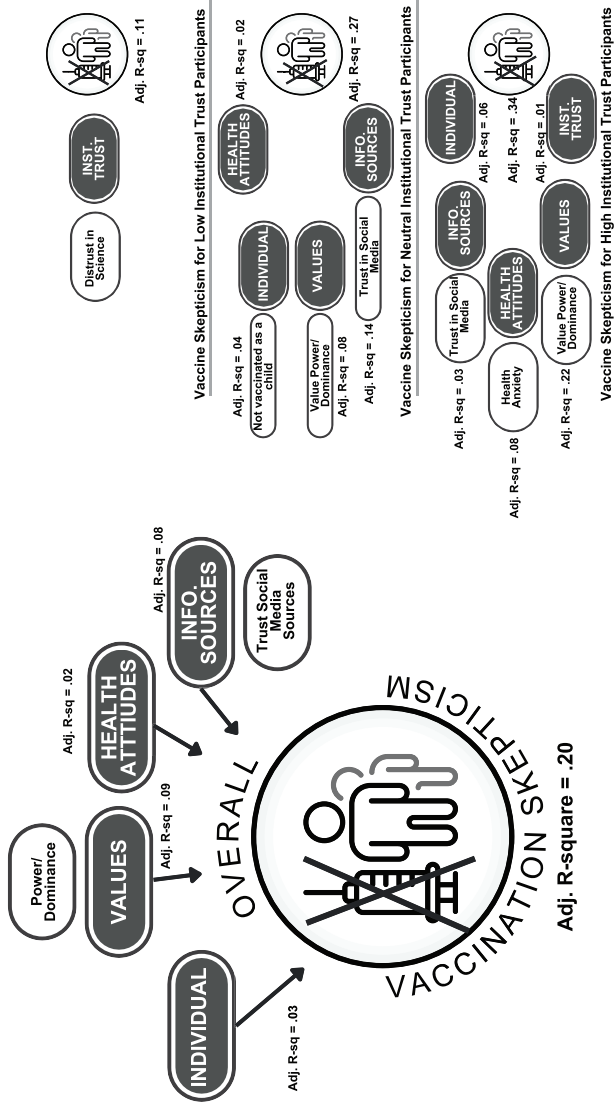


Figure 6. Summary of vaccination skepticism results.

skepticism: values that favor power and dominance  $t(91) = 2.04$ ;  $p < .05$ ,  $\beta = .26$ , health anxiety  $t(91) = 2.61$ ;  $p < .01$ ,  $\beta = .28$ , and trust of social media as a source of information  $t(91) = 2.14$ ;  $p < .05$ ,  $\beta = .26$  were significant predictors of vaccine skepticism.

## Discussion and conclusions

This study reframes vaccine hesitancy not simply as an issue of individual belief or demographic identity, but as a strategic communication challenge embedded within broader institutional trust dynamics and crisis communication contexts (see Figure 7). By applying the Stakeholder Relationship Management (SRM) framework (Diers-Lawson, 2020), we demonstrate that institutional trust functions as a gatekeeping variable for vaccine attitudes, shaping both the content and credibility of public health messaging during crises. We should note that the factors measured in this study are used in many different ways in a number of theories (e.g., EPPM, or the IDEA model); however, what makes this framework distinctive is that it highlights the relationships between institutions, stakeholders/publics, and specific issues in complex multimodal information environments. Most traditional theories used in risk and crisis communication or persuasion provide limited insights about the role of institutional relationships between publics and issues. In this approach, we have used institutional relationships as the critical factor to define differences between core issue-oriented beliefs. The findings then provide important insights into how risk communicators may better engage with risk bearers based on simply segmenting the public based on levels of institutional trust—that is, the relationship between the public and public health/governmental authorities. SRM is not a communication theory; instead, SRM tries to better understand the factors behind communication acts to better inform the strategic choices that communicators make to engage different stakeholders. This allows communication theories—like the IDEA model—to improve internalization, distribution,

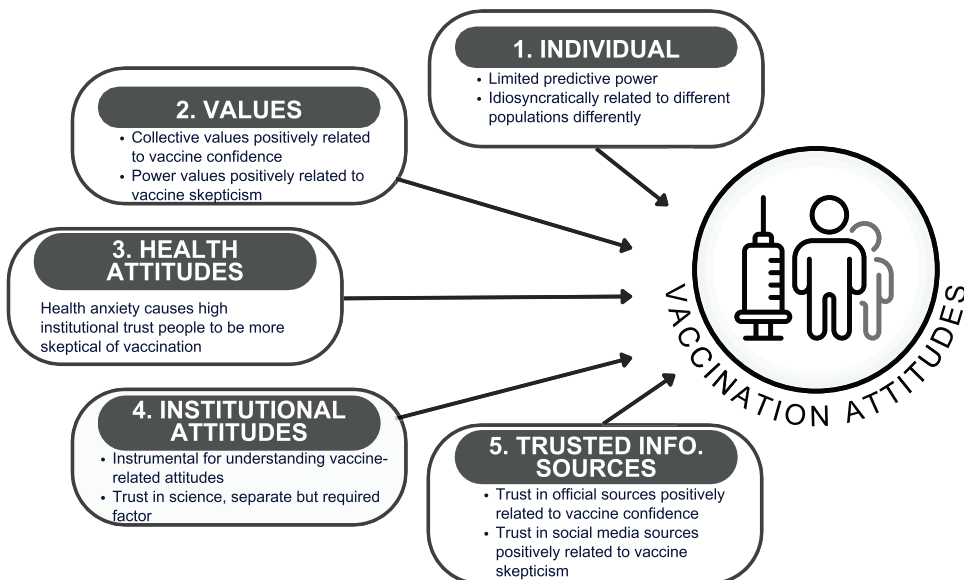


Figure 7. Modeling vaccine confidence and skepticism.

explanation, and/or action based on a deeper understanding of the relationships enabling or inhibiting message acceptance. Aside from moving beyond demographics as unstable predictors of attitudes and behavioral intention, which is common in vaccination research, this conceptual shift offers an important contribution to crisis and risk communication theory by highlighting the co-dependence of institutional trust, message credibility, and stakeholder engagement—particularly within infodemic-rich environments (Gehrau et al., 2021; Sun et al., 2022).

Our findings validate institutional trust as a robust predictor of vaccine confidence across varying population segments, even in a high-trust society like New Zealand. Trust in science and reliance on official sources were positively associated with vaccine confidence, while trust in social media and endorsement of power-dominant values correlated with skepticism. These patterns underscore the need to extend risk communication frameworks to incorporate strategic communication principles such as reputation management, credibility signaling, and long-term trust-building (Jacob et al., 2023; Volk & Zerfass, 2020). This would represent a significant change in the practice of risk communication from a public health perspective since the public health community actively avoids using the terms “strategic” and “crisis communication” because they are viewed as corporate (WHO, 2022a, 2022b).

Collectively, these predictions suggest that we should expect to see significantly different attitudes about vaccination and other potentially controversial health interventions recommended by governments and public health based on the levels of institutional trust. In the long-term, if these institutions focus on developing strategic communication initiatives to build trust and better community engagement—particularly with low-trust or disenfranchised communities—during times of crisis, communication interventions designed to inform public about health risks and encourage self-protective behaviors will be more successful (Jørgensen et al., 2021; Kieweg et al., 2021; Kojan et al., 2022; Lee & Li, 2021).

In practice, this suggests that effective crisis communication in public health must evolve beyond the traditional “information deficit” model. Instead, it should prioritize audience segmentation by institutional trust levels and tailor message strategies accordingly. For low-trust populations, engaging trusted intermediaries—such as influencers or community leaders—on social media platforms may enhance message receptivity and counteract misinformation (Diers-Lawson et al., 2022; Puri et al., 2020). This is particularly urgent given our finding that individuals with low institutional trust disproportionately rely on social media, increasing their exposure to potentially contradictory or false information (Jennings et al., 2021; Qerimi & Gërguri, 2022).

These findings carry strong implications for public health organizations, especially in crisis scenarios where the rapid adoption of self-protective behaviors is critical. Building and maintaining institutional trust should not be viewed as a secondary concern, but as a core component of risk communication planning. This includes consistent transparency, evidence-based messaging, and clear articulation of institutional values and objectives (Goldenberg, 2016; Lee & Li, 2021).

In a high-trust environment, like New Zealand, we would have expected little variation in people’s attitudes; however, in this high-trust environment, these data have revealed that this is not the case—that institutional trust is a “gatekeeping” variable to tapping into vaccination attitudes. While the study is limited to a single high-trust context, the results suggest the SRM model is well-positioned for cross-national validation. Yet even in a research context where there should be less attitude variation in institutional trust, we still found that institutional

trust was more than just a significant predictor of vaccination attitudes; institutional trust was a fundamental driver of different models for vaccination confidence and vaccination skepticism. Not only does this call into question typical research into vaccination attitudes that focus on individual demographic factors like gender, socio-economic status, or even political attitudes, but it also highlights that while many of these studies offer lip-service to the importance of institutional trust in their limitations section, few of them test institutional trust and source credibility. However, this is because much of the research on vaccination attitudes is conducted within an epidemiological context. This is why the WHO has emphasized that risk communication should be placed alongside medical interventions (WHO, 2022a, 2022b); however, in the public health arena, there has been a hesitancy to acknowledge the importance of strategic and crisis communication because they are perceived to be too corporate-focused. Therefore, future research should examine its applicability in lower-trust environments to further explore how institutional and communication variables interact in shaping public responses during health emergencies.

In sum, this study bridges theoretical gaps in crisis and risk communication by empirically demonstrating the centrality of institutional trust in shaping vaccine attitudes. It calls for a reconceptualization of public health communication as a form of strategic crisis engagement—one that demands tailored, trust-sensitive approaches to achieve effective and equitable public health outcomes.

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