



*Misinformation, Disinformation, and Vaccine Hesitancy in the Asia Pacific*

# Complex Landscape of Vaccine Hesitancy in Japan: A Public Health Challenge

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## Abstract

In Japan, the public health system has evolved since World War II into a sophisticated framework offering comprehensive health services, including vaccination, supported by a universal health insurance system. This evolution has significantly contributed to Japan's status among the nations with the highest longevity and health standards worldwide. However, vaccine hesitancy in Japan presents a complex challenge, influenced by historical, cultural, demographic, psychological, and economic factors. Despite a history of vaccination contributing to public health improvements, incidents of vaccine-related adverse effects and public mistrust toward public health authorities have occasionally led to hesitancy. This hesitancy was notably highlighted during the COVID-19 pandemic, despite the government's efforts to promote vaccination through various policies and programs aimed at preventing and managing infectious diseases. The pandemic has underscored the importance of addressing vaccine hesitancy through a multifaceted approach, considering the intricate interplay of misinformation, societal values, and the media environment. Misinformation and distrust in vaccines have been propagated through a diverse array of media channels, posing significant public health challenges. Studies have indicated a correlation between social media use and vaccine hesitancy, highlighting the role of digital and media literacy in combating misinformation. The Japanese government's vaccine communication strategies during the pandemic, emphasizing transparency, consistency, and engagement, have been critical in addressing hesitancy and misinformation. Lessons learned underscore the importance of targeted communication strategies, prioritizing evidence-based policies, and enhancing digital and media literacy to navigate future public health crises effectively. These strategies, while specific to Japan, offer valuable insights for global public health policy formulation and crisis management, advocating for an integrated approach to fostering trust and addressing vaccine hesitancy amidst the challenges posed by misinformation and the evolving media landscape.

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## The Context of Public Health and Vaccine Hesitancy in Japan

The evolution of Japan's public health system, beginning with the introduction of modern clinical medicine during the Meiji era and further developing through economic growth and societal changes after World War II, has positioned Japan among the nations with the highest life expectancy and health standards globally.<sup>1</sup> This system, characterized by advanced public health services and universal health insurance, has significantly contributed to enhancing population health through accessible health services. Comprehensive community-based health services, including vaccination, health screenings, health education, and disease prevention, are provided affordably through the public insurance system. These services are tailored to meet the diverse needs and backgrounds of the population, incorporating cultural factors, family structures, religious beliefs, and social values, which are crucial in shaping health behaviors and influencing service utilization.

The Japanese government plays an essential role in public health advancement, including the implementation of vaccination programs, striving to prevent and manage infectious diseases through various policies and initiatives. Public acceptance of vaccines is closely linked to general trust in public health authorities and medical professionals, as people are more likely to accept and adhere to vaccination recommendations when they have faith in the competence and integrity of the institutions and individuals responsible for developing and administering vaccines.<sup>2</sup> Yet vaccine hesitancy and skepticism are influenced by cultural, demographic, psychological, and economic factors.<sup>3</sup> For instance, cultural beliefs about health and illness, religious convictions, age, education level, perceived risk of disease, and concerns about vaccine costs can all impact an individual's decision to vaccinate. The history of vaccines in Japan dates back to the 19th century with the introduction of the smallpox vaccine, considerably improving public health.<sup>4</sup> Despite the advancements in vaccination coverage since the early 20th century, including the implementation of mandatory smallpox vaccination and temporary compulsory cholera vaccination, concerns about vaccine safety have periodically influenced public health campaigns. The variable application of vaccine mandates suggests that public health authorities recognized that the necessity of vaccinations may fluctuate over time and in response to the severity of the viral threat. However, this inconsistent approach to compulsory vaccination could exacerbate vaccine hesitancy and resistance when requirements are lifted and later reinstated.

The history of vaccine hesitancy in Japan is marked by social movements related to adverse events following immunization and the resulting expansion of vaccine distrust.<sup>5</sup> Notable incidents, such as the health damages caused by the poor quality of diphtheria vaccines in the postwar period (i.e., the 1948 Kyoto-Shimane diphtheria tragedy, in which 84 deaths occurred due to the use of unsafe diphtheria vaccines),<sup>6</sup> fostered distrust toward vaccines, especially when related to adverse effects from specific vaccines such as pertussis, polio, and the combined measles, mumps, and rubella (MMR) vaccine.<sup>7</sup> A prime example of this distrust was the government's suspension of proactive recommendations for the human papillomavirus (HPV) vaccine in 2013, following media reports of adverse reactions, which led to a dramatic decline in HPV vaccination rates from approximately 70% to less than 1%.<sup>8</sup> Over the subsequent decade, the coverage remained below 1%<sup>9</sup> despite efforts by health professional associations and academic societies to overturn the suspension.<sup>10</sup> Finally, in 2022, after ongoing safety assessments by the ministry's advisory panel, which consistently found the vaccine safe and its benefits to substantially outweigh the risks of side effects, proactive recommendations for the HPV vaccine were reinstated.<sup>11</sup> Since then, a gradual increase in public awareness and understanding of cervical cancer and vaccination efforts led to a recovery of vaccination rates among the primary target population for HPV vaccination, namely girls aged 12–16,<sup>12</sup> to 2.8%–16.2% in 2022.<sup>13</sup> This case exemplifies how the government's vaccination policy decisions matter to restore public vaccine uptake and trust.

The legal basis for vaccination in Japan has continued to evolve, starting with the enactment of the Vaccination Law in 1948, followed by revisions in 1977 and significant amendments in 1994. These changes included a shift from mandatory to voluntary vaccination and the establishment of a compensation system for health damages caused by vaccines.<sup>14</sup>

Before the COVID-19 pandemic, Japan was ranked among the nations with the lowest levels of vaccine confidence, based on a multinational study conducted across 149 countries.<sup>15</sup> The diminished confidence can be traced back to safety concerns surrounding the HPV vaccine that surfaced in 2013. However, this lack of trust did not spread immediately from those directly affected by vaccine-related injuries to the general populace. Examples from Japanese history, such as social movements during polio epidemics advocating for the importation and administration of vaccines, indicate a period when vaccines were well-received and sought after in Japan. Furthermore, the vaccination rates for routine vaccines mandated by law (e.g., DPT, BCG, and measles) remain among the highest globally—close to 100%.<sup>16</sup>

The COVID-19 pandemic significantly changed public perceptions of vaccines, with many recognizing the importance and urgency of vaccination. Despite this, vaccine hesitancy persists among certain groups, partly driven by misinformation and uncertainties. Research indicates that younger individuals, women, those with lower educational attainment, and individuals with lower incomes exhibit greater reluctance or opposition to receiving the COVID-19 vaccine.<sup>17</sup> As described above, Japan exemplifies the fluctuating acceptance and resistance to vaccines, demonstrating how historical, cultural, and social factors intricately shape attitudes toward vaccination.<sup>18</sup> Understanding and addressing vaccine hesitancy requires considering these multifaceted factors, posing a critical challenge in the design of public health policies and communication strategies.

## Information, Misinformation, and the Media Environment Surrounding Vaccine Hesitancy in Japan

The discourse on vaccines in Japan unfolds through a complex interplay between information and misinformation, posing significant challenges from a public health perspective. The prolific diversity and accessibility of channels and platforms with health information play a juxtaposing role in facilitating the dissemination of information while also increasing the risk of spreading misinformation and disinformation. From traditional media, such as television and newspapers, to social media and online forums, various sources contribute to the spread of health-related knowledge. However, these platforms can also quickly propagate claims lacking scientific basis.

The Broadcasting Law in Japan serves an important role in ensuring the accuracy and fairness of information, setting standards for the provision of health information by public media to protect public health. However, regulation of misinformation on private internet media remains insufficient in Japan. The absence of a media monitoring body and relatively lenient laws on defamation allow both traditional media and social networks to circulate unverified posts about vaccines and slander medical professionals and organizations that are promoting vaccines.<sup>19</sup>

Despite the government's active role in communicating health policies through traditional and new media, promoting the public acceptance of vaccination during the COVID-19 pandemic was a significant challenge. Niu et al. (2022) observed a notable surge in the volume of daily tweets following the initiation of mass vaccination campaigns in Japan, revealing that approximately 85% of tweets on X (formerly Twitter) from August 1, 2020, to June 30, 2021, maintained a neutral stance toward vaccination, while the remainder exhibited a predominance of negative sentiments over positive ones.<sup>20</sup> The spread of misinformation and disinformation, particularly on platforms such as social media, has been highlighted as a contributing factor to vaccine hesitancy.<sup>21</sup> For instance, research by Toriumi et al. analyzed characteristics of individuals who became opposed to vaccines for the first time during the pandemic, revealing that conspiracy theories and spirituality served as gateways to antivaccine attitudes.<sup>22</sup> Addressing this issue requires identifying the main actors behind misinformation and understanding their motivations. Additionally, dispelling vaccine-related misinformation and disinformation, encompassing medical, scientific, political, religious, and technological claims, necessitates the provision of accurate information based on scientific evidence.<sup>23</sup>

Nomura et al. and Ghaznavi et al. have demonstrated that high trust in information obtained from YouTube was associated with vaccine hesitancy in Japan.<sup>24</sup> Many pieces of information distributed through social media platforms, including YouTube, are unverified, and there is a potential abundance of vaccine misinformation.<sup>25</sup> In contrast, the use of X in Japan was associated with maintaining the intent to receive the COVID-19 vaccine.<sup>26</sup> X hosts a strong presence of medical and public health professionals (e.g., #MedTwitter). Therefore, despite some level of misinformation, X may also contain a significant amount of accurate vaccine-related information. The same analogy applies to magazines and newspapers: magazines may be more prone to sensationalism and misinformation, whereas public health messaging might target newspapers as a more reliable medium.

Health information provided by community leaders, experts, and public health institutions is among the most trusted and readily accepted by the public,<sup>27</sup> playing a vital role in combating misinformation and disinformation. To dispel the most persistent myths and misconceptions about vaccines, it is essential to implement evidence-based information campaigns and educational programs<sup>28</sup> and enhance the credibility of information provided by medical professionals and public health institutions.

## Vaccine Communication by the Japanese Government During the COVID-19 Pandemic

The effectiveness of Japan's government policies and practices can be observed in the public's acceptance of vaccination and the changing perceptions toward misinformation and disinformation. Various methods, such as regular press releases, information provision through online platforms, and information campaigns involving medical professionals and celebrities, have been employed, highlighting the importance of consistent messaging. The goal of these efforts is to emphasize the importance of vaccination among the public by providing accurate information from reliable sources, thereby enhancing resilience against misinformation and disinformation.

The vaccine communication strategies of the Japanese government and local authorities are planned and implemented based on the "Basic Plan for Vaccination," as stipulated by the Vaccination Law.<sup>29</sup> This plan underscores the necessity for national, prefectural, and municipal governments and medical institutions to communicate from their respective standpoints (see Appendix).<sup>30</sup>

Most notable here is the division of roles between the national government and local municipalities in Japan.<sup>31</sup> Municipalities are primarily responsible for administering routine vaccinations.<sup>32</sup> In regular vaccine communication, the national government develops guidelines and brochures for public information and provides these to the municipalities, which then handle the practical, on-the-ground work of disseminating information to residents based on national policies. Municipalities also often send pre-vaccination screening forms to the targeted recipients. This direct mailing to households is believed to contribute to improving vaccination rates to some extent, as paper-based communication remains heavily employed in Japan and is rooted in Japanese cultural norms relative to digital methods.

In medical institutions, not only displaying informative posters but also distributing leaflets have been instrumental in promoting awareness and adherence to vaccination protocols. Furthermore, emphasis has been placed on facilitating informed consent procedures for individuals seeking vaccination.

Accordingly, stakeholders have utilized various tools and platforms tailored to the types of vaccines and the characteristics of the target recipients, aiming to effectively disseminate information and foster a well-informed public.

During the COVID-19 pandemic, given the vaccine was newly developed for a novel infectious disease that attracted high public interest, misinformation, such as claims that "many people are dying due to the vaccine," spread within Japan.<sup>33</sup> Consequently, a certain degree of COVID-19 vaccine hesitancy existed among the public in Japan, especially at the beginning of the pandemic. A survey conducted in 15 countries in January 2021 indicated that 36% of surveyed Japanese adults disagreed with being

vaccinated against COVID-19, which was higher than that in the other surveyed countries.<sup>34</sup> Despite relatively low public acceptance of the new vaccines, Japan achieved approximately 80% coverage for the primary two doses of COVID-19 vaccines.<sup>35</sup> This discrepancy could be attributed to the government's effective communication strategies, the public's trust in the health authorities, and the collective sense of responsibility to protect the community's health, commonly known as prosocial behavior.<sup>36</sup>

How did Japanese society successfully address COVID-19 vaccine hesitancy during the pandemic? The Japanese government, eager to avoid the setbacks encountered during the HPV vaccine campaign,<sup>37</sup> carefully formulated and implemented COVID-19-specific communication strategies to combat hesitancy and the circulation of misinformation. One of the keys to the success was the expansion of the national government's role in vaccine communication. They took the initiative to foster transparent and consistent communication on COVID-19 vaccines beyond the conventional division of roles between the national and local governments. For example, it established dedicated Q&A websites to explain vaccine efficacy and side effects in collaboration with experts and addressed scientifically inaccurate information by providing correct insights through websites and social media.<sup>38</sup> Although vaccine information was typically provided in an offline paper-based format, in which municipalities mail prevaccination screening forms and relevant documents to targeted recipients, the government proactively used online platforms during the pandemic.<sup>39</sup> Particularly in Japan, where social movements by victims of vaccine injury have historically influenced public sentiment toward vaccination,<sup>40</sup> the government meticulously collected and evaluated adverse event data during the pandemic.<sup>41</sup>

Additionally, the government customized the COVID-19 vaccine information resources for different population segments. This included multimedia campaigns, such as a video message from the Prime Minister encouraging young people to receive booster shots,<sup>42</sup> and multilingual information leaflets aimed at immigrants.<sup>43</sup> Efforts were also made to adapt the vaccination program for vulnerable groups, such as those experiencing homelessness and disability, involving stakeholders in these tailored approaches.<sup>44</sup>

Another key factor of Japan's success has been the involvement of community groups in promoting more equitable access to vaccine information. For example, one initiative, led by healthcare professionals and researchers, aimed to provide the public with accurate scientific data about COVID-19 and its vaccines. This initiative sought to enhance public understanding of the virus and vaccine strategies by using multiple communication platforms, such as social media, websites, television, radio, and other digital media outlets. It also sought to broaden access to information offline by producing and distributing educational materials such as leaflets, comics, and ads in public transport systems. Similarly, a messaging tool created by a group of tech-savvy youths utilized a popular messaging application to share vaccine-related information. This tool aimed to reach a wide audience by using both online and offline methods, as well as leveraging a commonly used app, to help improve the fairness of information dissemination about vaccines. These measures may have contributed to the two-dose vaccination rate against COVID-19 exceeding 80%.<sup>45</sup>

As the pandemic progressed, both local and national governments in Japan aptly coordinated policies and practices in vaccine communication. On the basis of initial challenges and responses, improvements were made in several areas, including vaccine supply logistics, reservation systems, and methods of communication and information provision. In particular, tracking vaccination progress and providing transparent information to the public were recognized as key for building trust. Public trust in government messaging is essential for promoting effective health behaviors, and prior to the COVID-19 pandemic, the trust in the government and public health institutions in Japan was not considered low.<sup>46</sup> However, reports suggest that trust in science and the government in Japan was lower than that in other countries before the pandemic.<sup>47</sup> Despite this underlying mistrust, Japan achieved a high vaccination rate possibly through a combination of factors. These include the government's communication strategies, which likely focused on transparency and consistency, tailoring resources to combat misinformation; the involvement of community groups in promoting equitable access to vaccine information; and the cultural norm of prosocial behavior. This tendency to consider the welfare of others may have facilitated broad participation in vaccination efforts, aimed at protecting both individual and



community health.<sup>48</sup> The increasing mistrust toward health authorities can be attributed to repeated historical incidents, such as contaminated blood transfusions with HIV, and various drug and environmental scandals, which have amplified skepticism toward health authorities.<sup>49</sup> These historical contexts might explain the government's cautious stance toward expanding vaccination immediately after the development of the COVID-19 vaccine globally and the relatively high percentage of people questioning the new mRNA vaccines among the general populace.

In future pandemic responses, a lack of transparency and the proliferation of confusing information could damage trust in the government. Continuous efforts are required to maintain consistency and accuracy in information. For instance, during the early periods of the COVID-19 pandemic, when there was insufficient consensus on how to combat the new threat of the virus, the general public tended to seek information through alternative media sources, which lacked a rigorous review process or information verification.<sup>50</sup>

Increased vaccination rates and the reduction of misunderstandings and concerns about vaccines can serve as a partial indicator of the effectiveness of government communication. For instance, the use of information from local governments, such as prefectures and municipalities, has been associated with a lower likelihood of being unvaccinated against COVID-19 in Japan.<sup>51</sup> Similar studies in the US have reported that high trust in government agencies correlates with fewer changes of heart among previously vaccine-willing groups.<sup>52</sup> However, to address ongoing challenges such as hesitancy and the spread of misinformation among specific demographic groups, the government needs to continue public dialogue and deepen trust by adopting more personalized communication methods, such as tailored messages based on demographic characteristics or concerns.

The lessons learned through the pandemic offer valuable insights for future crisis management and public health campaigns. The knowledge gained about government communication strategies, methods of public engagement, and combating misinformation provides important guidance for addressing similar public health challenges in the future. These experiences underscore the importance of effective communication, not only in delivering information but also in understanding the psychological and cultural backgrounds of the audience to adopt an appropriate approach accordingly.<sup>53</sup> Furthermore, building and maintaining a trusting relationship with the public has been shown to require transparency, consistency, and ongoing dialogue.<sup>54</sup>

## Identifying the Path Forward: Policy Recommendations in Japan

The lessons and best practices derived from the Japanese government's approach toward vaccine communication in the context of the COVID-19 pandemic offer valuable insights for designing response measures for future public health crises, as well as for refining policies to address vaccine hesitancy, misinformation, and disinformation. Key elements such as enhancing digital and media literacy, maintaining transparent and consistent communication, strengthening public-private partnerships, implementing targeted communication strategies, and prioritizing science-based policies are essential for effective public health measures.

1. **Enhancing Digital and Media Literacy:** Promoting digital and media literacy is crucial for enabling the public to critically evaluate information and distinguish between misinformation and disinformation. Research indicates that educational programs can reduce the impact of misinformation and increase receptivity to public health messages.<sup>55</sup>
2. **Transparent and Consistent Communication:** Transparent and consistent communication is important for building public trust and facilitating informed decision-making based on accurate information.<sup>56</sup> Studies during the pandemic have demonstrated that transparent communication plays a significant role in vaccine decision-making.<sup>57</sup>

3. **Implementing Targeted Communication Strategies:** Developing and implementing targeted communication strategies is essential to address the needs of different demographic groups and communities.<sup>58</sup> Specific groups may have unique information needs and factors influencing health behaviors. Therefore, customized approaches can effectively reduce vaccine hesitancy.
4. **Prioritizing Science-Based Policies:** Prioritizing science-based approaches in policymaking is essential. Continuous research and data analysis are recommended to evaluate and adjust policies and practices related to vaccination as necessary, allowing for the implementation of effective and flexible public health measures.

These strategies are useful not only within Japan but also when formulating international public health policies. The COVID-19 pandemic requires international cooperation and information sharing, and Japan's experiences can serve as a valuable resource for addressing future public health challenges.

## Conclusions

Japan's experience with public health and vaccine hesitancy, especially in the context of the COVID-19 pandemic, highlights the complexity of addressing vaccine hesitancy through public communication and policymaking. The country's historical context, marked by periods of vaccine skepticism due to adverse events and a fluctuating trust in public health authorities, may present unique challenges in promoting vaccine acceptance. The interplay between information, misinformation, and the media environment further complicates efforts to enhance vaccine confidence. The Japanese government's approach, characterized by targeted communication strategies, collaboration with various stakeholders, and efforts to combat misinformation, underscores the importance of transparent, consistent, and science-based policies. These efforts, aimed at improving public understanding and trust in vaccines, provide valuable insights for both national and international public health strategies. As Japan continues to navigate the complexities of vaccine hesitancy and misinformation, the lessons learned offer valuable guidance for future public health campaigns and crisis management, emphasizing the need for ongoing dialogue, education, and engagement with the public to foster a well-informed and health-conscious society.

## Appendix: Vaccine Communication Measures by the Government, Local Authorities, and Healthcare Facilities

Implementation Body	Methods
<b>National Government-Website (information on vaccination, efficacy, and safety)</b>	<ul style="list-style-type: none"> <li>• Website (information on vaccination, efficacy, and safety)</li> <li>• Special pages and Q&amp;A sites (for COVID-19 vaccines) for information provision</li> <li>• Provision of public relations materials</li> <li>• Administrative communication, guidance, etc.</li> <li>• Social media (X, Facebook, LINE) for public information dissemination</li> <li>• Briefings and training for municipal staff</li> <li>• Briefings for medical institutions</li> <li>• Videos for doctors (on vaccination system, vaccination methods)</li> </ul>
<b>Prefectures</b>	<ul style="list-style-type: none"> <li>• Website (information on vaccination, efficacy, and safety)</li> <li>• Information provision for residents</li> <li>• Broad information provision with a focus on specific target audiences such as the youth</li> <li>• Coordination and communication with medical institutions</li> <li>• Establishment of consultation services</li> </ul>
<b>Municipalities</b>	<ul style="list-style-type: none"> <li>• Sending of pre-screening forms to vaccination recipients</li> <li>• Public magazines and websites (information on vaccination)</li> <li>• Information provision for citizens</li> <li>• Setting up and distributing posters and leaflets</li> <li>• Coordination and communication with medical institutions</li> <li>• Establishment of consultation services</li> </ul>
<b>Medical Institutions</b>	<ul style="list-style-type: none"> <li>• Informed consent for individuals wishing to be vaccinated</li> <li>• Display of posters within the institution</li> <li>• Setting up and distributing leaflets</li> </ul>

Note: This information is derived from documents of the Health Science Council’s Subcommittee on Immunization and Vaccination, under the Ministry of Health, Labour and Welfare.<sup>59</sup>



## Endnotes

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- <sup>1</sup> Naoki Ikegami et al., "Japanese Universal Health Coverage: Evolution, Achievements, and Challenges," *Lancet* 378, no.9796 (2011): 1106–15.
- <sup>2</sup> Shuhei Nomura et al., "Reasons for Being Unsure or Unwilling Regarding Intention to take COVID-19 Vaccine Among Japanese People: A Large Cross-Sectional National Survey," *Lancet Reg Health West Pac* 14 (2021): 100223; John Romate et al., "What Contributes to COVID-19 Vaccine Hesitancy? A Systematic Review of the Psychological Factors Associated with COVID-19 Vaccine Hesitancy," *Vaccines (Basel)* 10, no. 11 (2022).
- <sup>3</sup> Nomura et al., "Reasons for Being Unsure"; Ryo Okubo et al., "COVID-19 Vaccine Hesitancy and Its Associated Factors in Japan," *Vaccines (Basel)* 9, no. 6 (2021).
- <sup>4</sup> Amr Saleh et al., "Vaccine Development Throughout History," *Cureus* 13, no. 7 (2021): e16635.
- <sup>5</sup> Andrew Gordon, and Michael R. Reich, "The Puzzle of Vaccine Hesitancy in Japan," *The Journal of Japanese Studies* 47, no.2 (2021): 411–36.
- <sup>6</sup> Takashi Nakano, "Changes in Vaccination Administration in Japan," *Vaccine* 41, no. 16 (2023): 2723–8.
- <sup>7</sup> Gordon and Reich, "The Puzzle of Vaccine Hesitancy in Japan"; Nakano, "Changes in Vaccination Administration in Japan."
- <sup>8</sup> Keiko Kunitoki, "Access to HPV Vaccination in Japan: Increasing Social Trust to Regain Vaccine Confidence," *Vaccine* 39, no. 41 (2021): 6104–10.
- <sup>9</sup> Ueda Y, "Study on HPV vaccination status" [in Japanese], accessed April 24, 2024, <https://www.mhlw.go.jp/content/10601000/001198130.pdf>.
- <sup>10</sup> Heidi J. Larson, "Why Trust in Doctors Isn't Enough to Change People's Minds: The Case of HPV Vaccination in Japan" *The BMJ Opinion* (2020).
- <sup>11</sup> Mugen Ujiie, "Resumption of Active Recommendation of the Human Papillomavirus Vaccine in Japan and Future Challenges for the National Immunization Program" *Human Vaccines & Immunotherapeutics* 18, no. 6 (2022): 2090777.
- <sup>12</sup> "The Number of Those Who Received the National Routine Vaccines in Japan" [In Japanese] Ministry of Health, Labour and Welfare, accessed August 9, 2023, <https://www.mhlw.go.jp/topics/bcg/other/5.html>.
- <sup>13</sup> Ueda Y, "Study on HPV vaccination status."
- <sup>14</sup> Nakano, "Changes in Vaccination Administration in Japan."
- <sup>15</sup> Alexandre de Figueiredo et al., "Mapping Global Trends in Vaccine Confidence and Investigating Barriers to Vaccine Uptake: A Large-Scale Retrospective Temporal Modelling Study," *Lancet* 396, no. 10255 (2020): 898–908.
- <sup>16</sup> Nakano, "Changes in Vaccination Administration in Japan"; World Health Organization, "Immunization dashboard – Japan," accessed March 3, 2024, <https://immunizationdata.who.int/pages/profiles/jpn.html>.

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- <sup>17</sup> Nomura et al., "Reasons for Being Unsure."
- <sup>18</sup> Gordon and Reich, "The Puzzle of Vaccine Hesitancy in Japan."
- <sup>19</sup> Heidi J. Larson et al., "Tracking the Global Spread of Vaccine Sentiments: The Global Response to Japan's Suspension of its HPV Vaccine Recommendation," *Human Vaccines & Immunotherapeutics* 10, no. 9 (2014): 2543–50.
- <sup>20</sup> Qian Niu et al., "Public Opinion and Sentiment Before and at the Beginning of COVID-19 Vaccinations in Japan: Twitter Analysis," *JMIR Infodemiology* 2, no. 1 (2022): e32335.
- <sup>21</sup> Heidi J. Larson, "Understanding Vaccine Hesitancy Around Vaccines and Vaccination from a Global Perspective: A Systematic Review of Published Literature, 2007-2012," *Vaccine* 32, no. 19 (2014): 2150–9; Sarah Lane et al., "Vaccine Hesitancy Around the Globe: Analysis of Three Years of WHO/UNICEF Joint Reporting Form Data-2015-2017," *Vaccine* 36, no. 26 (2018): 3861–7; Junjie Aw et al., "COVID-19 Vaccine Hesitancy-A Scoping Review of Literature in High-Income Countries," *Vaccines (Basel)* 9, no. 8 (2021).
- <sup>22</sup> Fujio Toriumi et al., "Anti-Vaccine Rabbit Hole Leads to Political Representation: The Case of Twitter in Japan," *Journal of Computational Social Science* (2024).
- <sup>23</sup> Jeffrey V. Lazarus et al., "A Global Survey of Potential Acceptance of a COVID-19 Vaccine," *Nature Medicine* 27, no. 2 (2021): 225–8.
- <sup>24</sup> Nomura et al., "Reasons for Being Unsure"; Cyrus Ghaznavi et al., "Factors Associated with Reversals of COVID-19 Vaccination Willingness: Results from Two Longitudinal, National Surveys in Japan 2021-2022," *Lancet Regional Health West Pacific* 27 (2022): 100540.
- <sup>25</sup> Daisuke Yoneoka et al., "Identification of Optimum Combinations of Media Channels for Approaching COVID-19 Vaccine Unsure and Unwilling Groups in Japan," *Lancet Regional Health West Pacific* 18 (2022): 100330.
- <sup>26</sup> Ghaznavi et al., "Factors Associated with Reversals"
- <sup>27</sup> Nomura et al., "Reasons for Being Unsure."
- <sup>28</sup> Hannah S. Whitehead et al., "A Systematic Review of Communication Interventions for Countering Vaccine Misinformation," *Vaccine* 41, no. 5 (2023): 1018–34.
- <sup>29</sup> "Basic Plan for Vaccination" [in Japanese] Ministry of Health, Labour and Welfare, accessed March 1, 2024, [https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou\\_iryuu/kenkou/kekkaku-kansenshou/kihonteki\\_keikaku/](https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryuu/kenkou/kekkaku-kansenshou/kihonteki_keikaku/).
- <sup>30</sup> "Communication Strategies in Vaccination Programs" [in Japanese] Ministry of Health, Labour and Welfare, 2023, accessed March 1, 2024, [https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou\\_iryuu/kenkou/kekkaku-kansenshou/kihonteki\\_keikaku/](https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryuu/kenkou/kekkaku-kansenshou/kihonteki_keikaku/).
- <sup>31</sup> "Division of roles among stakeholders involved in vaccination programs" [In Japanese] Ministry of Health, Labour and Welfare, 2010, accessed March 1, 2024, [https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou\\_iryuu/kenkou/kekkaku-kansenshou/kihonteki\\_keikaku/](https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryuu/kenkou/kekkaku-kansenshou/kihonteki_keikaku/).
- <sup>32</sup> Kunitoki, "Access to HPV Vaccination in Japan."
- <sup>33</sup> Ministry of Health, Labour, and Welfare, "Communication Strategies."

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<sup>34</sup> Ipsos, “Global attitudes on a COVID-19 vaccine: Ipsos survey for The World Economic Forum,” January 2021, <https://www.ipsos.com/sites/default/files/Global-attitudes-on-a-COVID-19-Vaccine-January-2021-report%20.pdf>.

<sup>35</sup> Our World in Data. “Coronavirus (COVID-19) Vaccinations,” accessed March 1, 2024, <https://ourworldindata.org/covid-vaccinations>.

<sup>36</sup> Jeffrey D. Sachs et al., “The Lancet Commission on Lessons for the Future From the COVID-19 Pandemic,” *The Lancet* 400, no. 10359 (2022): 1224–80, [https://doi.org/10.1016/s0140-6736\(22\)01585-9](https://doi.org/10.1016/s0140-6736(22)01585-9); Shuhei Nomura et al., “Characterising Reasons for Reversals of COVID-19 Vaccination Hesitancy Among Japanese People: One-Year Follow-Up Survey,” *Lancet Regional Health - Western Pacific* 27 (July 2022): 100541, <https://doi.org/10.1016/j.lanwpc.2022.100541>.

<sup>37</sup> Kunitoki, “Access to HPV Vaccination in Japan”; Larson, “Why Trust in Doctors Isn’t Enough.”

<sup>38</sup> Ministry of Health, Labour, and Welfare, “Communication Strategies.”

<sup>39</sup> Ministry of Health, Labour and Welfare, “Division of roles among stakeholders.”

<sup>40</sup> Gordon and Reich, “The Puzzle of Vaccine Hesitancy in Japan.”

<sup>41</sup> Mengyuan Ma et al., “Comparison of COVID-19 Vaccine Policies and Their Effectiveness in Korea, Japan, and Singapore,” *Int J Equity Health* 22, no. 1 (2023): 224.

<sup>42</sup> “[Measures against COVID-19: the ‘Vaccination of Young People’ edition” Cabinet Office, Government of Japan, May 13, 2022. <https://www.gov-online.go.jp/prg/prg24394.html>.

<sup>43</sup> Immigration Services Agency of Japan. FRESC multilingual vaccination support. 2021. [https://www.moj.go.jp/isa/vaccine\\_covid19.html?hl=en](https://www.moj.go.jp/isa/vaccine_covid19.html?hl=en) (accessed May 1, 2024)

<sup>44</sup> “Information Sharing on COVID-19 Vaccination for the Homeless” [in Japanese] Ministry of Health, Labour and Welfare of Japan, accessed May 1, 2024, <https://www.mhlw.go.jp/content/000775868.pdf>; “[COVID-19 Vaccination for Those with Disabilities” [in Japanese] Ministry of Health, Labour and Welfare of Japan, accessed May 1, 2024, <https://www.mhlw.go.jp/content/000743490.pdf>.

<sup>45</sup> Our World in Data. Coronavirus (COVID-19) Vaccinations.

<sup>46</sup> COVID-19 National Preparedness Collaborators, “Pandemic Preparedness and COVID-19: An Exploratory Analysis of Infection and Fatality Rates, and Contextual Factors Associated with Preparedness in 177 Countries, from Jan 1, 2020, to Sept 30, 2021,” *Lancet* 399, no. 10334 (2022): 1489–512.

<sup>47</sup> Larson, “Why Trust in Doctors Isn’t Enough.”

<sup>48</sup> Masaki Machida et al., “Acceptance of a COVID-19 Vaccine in Japan During the COVID-19 Pandemic,” *Vaccines* 9, no. 3 (March 3, 2021): 210, <https://doi.org/10.3390/vaccines9030210>; Nomura et al., “Characterising Reasons for Reversals.”

<sup>49</sup> Gordon and Reich, “The Puzzle of Vaccine Hesitancy in Japan.”

<sup>50</sup> Shadi Shahsavari et al., “Conspiracy in the Time of Corona: Automatic Detection of Emerging COVID-19 Conspiracy Theories in Social Media and the News,” *Journal of Computational Social Science* 3, no. 2 (2020): 279–317.

<sup>51</sup> Ghaznavi et al., “Factors Associated with Reversals.”

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- <sup>52</sup> Dawn M. Ehde et al., "COVID-19 Vaccine Hesitancy in Adults with Multiple Sclerosis in the United States: A Follow Up Survey During the Initial Vaccine Rollout in 2021," *Multiple Sclerosis and Related Disorders* 54 (2021): 103163.
- <sup>53</sup> Bara' Abdallah AlShurman et al., "What Demographic, Social, and Contextual Factors Influence the Intention to Use COVID-19 Vaccines: A Scoping Review," *International Journal of Environmental Research and Public Health* 18, no. 17 (2021).
- <sup>54</sup> Jane Tuckerman, Jessica Kaufman, and Margie Danchin, "Effective Approaches to Combat Vaccine Hesitancy," *Pediatric Infectious Disease Journal* 41, no. 5 (2022): e243–5.
- <sup>55</sup> Orkan Okan et al., "Coronavirus-Related Health Literacy: A Cross-Sectional Study in Adults during the COVID-19 Infodemic in Germany," *International Journal Environmental Research Public Health* 17, no. 15 (2020); Prem Singh et al., Strategies to Overcome Vaccine Hesitancy: A Systematic Review. *Systematic Reviews* 11, no. 1 (2022): 78.
- <sup>56</sup> AlShurman et al., "What Demographic, Social, and Contextual Factors"; Francesco Chirico, and Jaime A Teixeira da Silva, "Evidence-Based Policies in Public Health to Address COVID-19 Vaccine Hesitancy," *Future Virology* 18, no. 4 (2023).
- <sup>57</sup> Odette Wegwarth et al., "The Impact of Nontransparent Health Communication During the COVID-19 Pandemic on Vaccine-Hesitant People's Perception of Vaccines," *Frontiers in Public Health* 11 (January 8, 2024): 1256829, <https://doi.org/10.3389/fpubh.2023.1256829>.
- <sup>58</sup> Tuckerman, Kaufman, and Danchin, "Effective Approaches to Combat Vaccine Hesitancy."
- <sup>59</sup> Ministry of Health, Labour, and Welfare, "Communication Strategies."