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Norms, Trust, and Increasing Vaccine Registration in Malaysia - Preliminary Results

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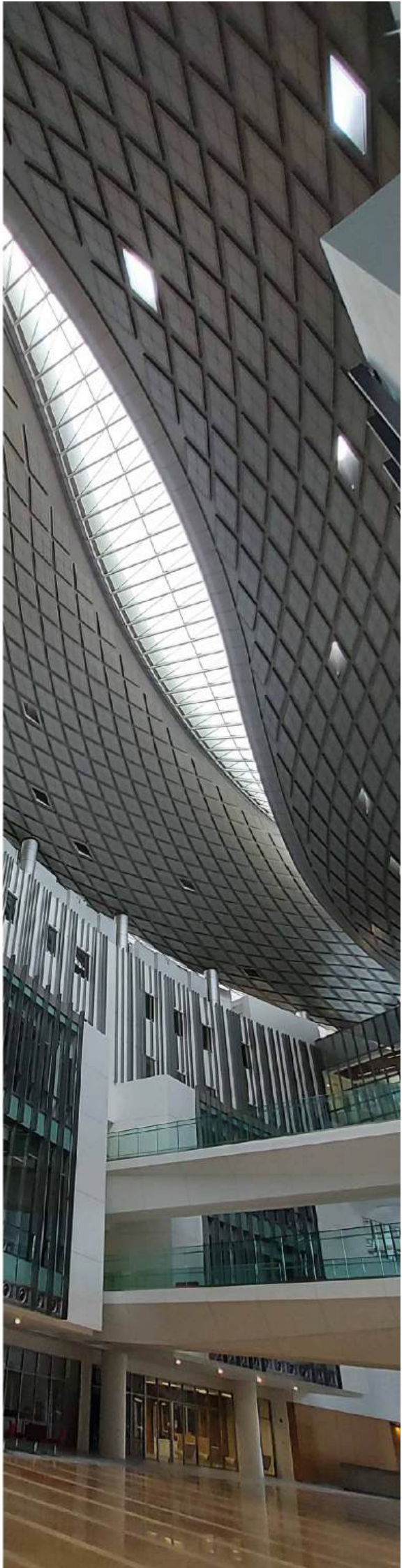
24 August 2021



ASB-ARC001 | 24 August 2021

EXECUTIVE SUMMARY:

This report summarizes preliminary findings from a survey experiment with 1307 Malaysian respondents. We study 1) trust levels in institutions and norms surrounding the choice to get vaccinated in this country, 2) perceptions on state "carrots" versus "sticks" in incentivizing vaccinations, and 3) whether a cash lottery of RM 500 is an effective intervention to increase the number of registrations for vaccinations. Although our sample is not representative of the entire Malaysian society, they are suggestive and can provide some insights on incentivizing pro-social behaviour with regards to vaccination. Specifically, we found that incentives can encourage vaccine registration. When the cash lottery of RM 500 was offered to the treatment group in our small randomized controlled trial, almost all individuals in this group registered to get the vaccine (83.7%) compared to the control group (62.16%). This difference was statistically significant at p=0.1. Furthermore, through a randomized vignette analysis where respondents are asked to predict the behavior of someone like them in a hypothetical scenario, we found that a punishment of having to self-pay for PCR COVID-19 tests every two weeks was more effective at promoting vaccinations compared to an incentive of being enrolled in a lottery with one large cash prize of RM 1 million.

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Acknowledgments: The authors wish to thank all participants in this study for or their valuable insights. We would also like to especially thank Fathin Rusliza, the Program Coordinator for the ASB Research Centers. All mistakes are our own. The author affiliations are as follows:

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Citation: Please cite the work as follows: Abdul Aziz, N.I., Flanders, S., Nungsari, M., Chin K.Y., Chua, S., F.N. Jamalolail, and Tan Z.G. ASB Working Paper ASB-ARC001. 24 August 2021. **Trust, Norms, and Increasing COVID-19 Vaccination Registration in Malaysia – Preliminary Results.** Asia School of Business, Kuala Lumpur, Malaysia.

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Introduction

Malaysia was able to contain the COVID-19 pandemic during the start of 2020, but the number of detected cases in the country has risen to more than 20,000 cases per day since the beginning of August 2021 (Salim, 2021). As the world has yet to discover effective treatments for COVID-19, vaccines are widely considered as the best option to protect individuals and control the spread (Centers For Disease Control and Prevention, 2021; OECD, 2021). Vaccination is also a collective action with strong positive externalities – i.e., it is an action taken by individuals that have positive society-wide effects, both in terms of protecting other vaccinated individuals but also minors who cannot yet be vaccinated.

Our study investigates the influence of *empirical* and *normative expectations* on vaccination decision-making and belief in achieving herd immunity, where empirical expectations are expectations on how other people will behave in specific situations, and normative expectations are expectations on what others believe is the right thing to do. Past research has indicated that social norms can influence an individual's actions (Bicchieri et al., 2021; Bicchieri & Xiao, 2009; Krupka & Weber, 2009; Oraby et al., 2014). Bicchieri et al. (2021) argued that both empirical and normative expectations play a significant role in compliance to public health measures while Oraby et al. (2014) found that social norms may influence vaccination uptake either positively or negatively. Data from Bicchieri and Xiao (2009) suggests that people tend to act in a way that they think others would do in the same situation despite knowing their behaviour would not be accepted. Krupka and Weber (2009) found that having people to think of how others are likely to behave and observe more people acting pro-socially increases the frequency of pro-social behaviour.

We also explore the role of public trust in institutions such as government, health officials, and law enforcement in internalizing social norms, such as the norm to get vaccinated. We do this by looking at correlations between trust levels towards different groups and expectations of achieving herd immunity. Studies show that positive public trust in the healthcare system and government are key factors that encourage vaccine uptake (Al-Mohaithef & B.K. Padhi, 2020; Bicchieri et al., 2021; Dabla-Norris et al., 2021; Gurwitz, 2021; Soares et al., 2021; Tran et al., 2021). Soares et al. (2021) found that low confidence in the health service response during the pandemic and negative perception of regulations implemented by the government results in vaccine hesitancy and refusal. Tran et al. (2021) and Al-Mohaithef and B.K. Padhi (2020) reported the significance of trust in health system and perceived risk of contracting the virus in explaining the uptake of COVID-19 vaccine in their studies. Both studies found that participants with a higher trust in the health system are more likely to get vaccinated. Gurwitz (2021) argued that government coercion to get vaccinated could erode public trust in the vaccination program. Bicchieri et al. (2021) and Dabla-Norris et al. (2021) found that high levels of trust in government increase the likelihood of compliance to public health guidelines and likelihood to get vaccinated.

Finally, we also try to understand what kind of interventions could potentially change the behaviour of individuals who are hesitating to get the COVID-19 vaccine. We do this by experimentally studying one type of intervention: providing a cash lottery to induce individuals who haven't registered to do so. Despite the fact that governments across the world and the World Health Organization have been actively encouraging people to get vaccinated to achieve global herd immunity and reduce virus transmission, vaccine hesitancy and refusal have been identified as an impediment to improving vaccination rates (Feleszko et al., 2021; Graeber et al., 2021; OECD, 2021). Past studies have revealed that factors of vaccine hesitancy and refusal range widely from concerns about side-effects, efficacy and safety to personal beliefs and perception towards others.[1]

This report provides a summary of a select number of preliminary findings from this study. We are currently analysing the data in more detail separately, and will be sending the full paper and analysis to a reputable peer-reviewed journal for review. The paper and the in-depth findings will be shared at a later time.

[1] See the following references: Alabdulla et al., 2021; Bono et al., 2021; Ditekemena et al., 2021; El-Elimat et al., 2021; Harapan et al., 2020; Oraby et al., 2014; Soares et al., 2021; Syed Alwi et al., 2021; Tran et al., 2021.

Study Design and Methodology

This study builds on Bicchieri et al. (2021) and investigates the effects of empirical and normative expectations on voluntary compliance through behavioural responses in a survey experiment. We explore 1) the extent to which expectations and trust towards social groups may influence one's vaccination decision-making, 2) the role of trust and perceptions towards public institutions and its policies in normalizing vaccination in Malaysian society, and 3) perceptions on state carrot (positive incentive) and stick (negative incentive) scenarios. We study individuals' perceptions towards the effectiveness of state carrots and sticks using a survey treatment, in which individuals are randomly allocated to one of 4 vignettes as seen in Appendix 1. The 4 vignettes that were assigned vary on two dimensions – the first being the number of people who have already signed up for the vaccine in their state of residence (low or high), the second being the policy intervention to encourage sign-ups (carrot or stick). We chose specific scenarios of carrot and stick that are not in conflict with current government policy. The carrot policy used was enrolment into a lottery to win RM 1 million and the stick policy was mandating the public to internalize the cost of vaccine refusal by requiring them to take COVID-19 test every fortnight.

The survey, created using Qualtrics, was available in English, Malay, and Mandarin and took an estimated 10 minutes to complete. It was open to all residents, including non-citizens, aged 18 and above in Malaysia. It contained 4 segments: demographics, expectations on herd immunity and its policies, vaccine registration status and motivations, and the vignettes described above. Apart from eliciting beliefs & expectations from participants, we tested the effectiveness of monetary incentives to encourage vaccination sign-up. A subsample of individuals that consented to provide their personal details and were yet to register with the National COVID-19 Programme (PICK) were channelled to another survey experiment. Participants in this experiment were randomized into a control or treatment group. In the treatment group, participants were informed that they are qualified to enter RM500 ringgit lucky draw if they registered with the PICK within a certain period after the survey. A visual chart of the survey path can be found in Appendix 1.

The survey took place from June 21st to July 5th, 2021, after being approved by the Institutional Review Board at ASB. Participants were recruited through ASB's social media platforms and circulated amongst business and personal messaging networks such as email and WhatsApp. A lucky draw of 10 cash prizes worth RM100 each was advertised as an additional incentive.[2] We also pro-actively engaged with key opinion leaders and non-governmental organizations to increase the survey participation rate.

Summary of Respondents

The survey was completed by 1307 respondents—1017 in English, 203 in Malay, and 87 in Mandarin.[3] Filtering and consolidating survey data leads to 1297 respondents. All respondents are 18 and above, and the mean age is 38.31. Most respondents come from Selangor (582) and Kuala Lumpur (381), but the survey also includes respondents from all other states in Malaysia. Respondents live in cities, towns, villages, and new villages, and come from various income, educational, and religious backgrounds. A more detailed breakdown of respondents is attached at Appendix 2. Given that our sample is not representative of the overall Malaysian population, our detailed analysis will include a weighing for each participant based on two dimensions – state of residence and registration date – to help mitigate some of the selection issues. Based on preliminary analyses, the nature of the results for both the weighted and unweighted sample, though differing in magnitudes, is qualitatively the same. The most important difference between our sample and the Malaysian population is that pro-vax Malaysians were more likely to answer the survey and are overrepresented, as seen below.

[2] We rephrased the term "lottery" as "lucky draw" in our survey to avoid the concept of gambling that may be considered inappropriate in some religious contexts. All lottery winners were selected randomly and were contacted and paid by July 8th, 2021. This included the winner from the treatment group.
[3] For the full survey utilized in this study, please visit https://www.melatinungsari.com/research.html.

Preliminary Findings

Vaccine Registration

92% of our respondents were registered with PICK, while only 50% of Malaysians were registered by June 2021. 63% of those registered with PICK had already received at least the first dose of the vaccine, while the rest were still waiting for their turn. From the 8% of participants that reported that they had not registered with PICK, 52% were assigned to the cash lottery experiment.

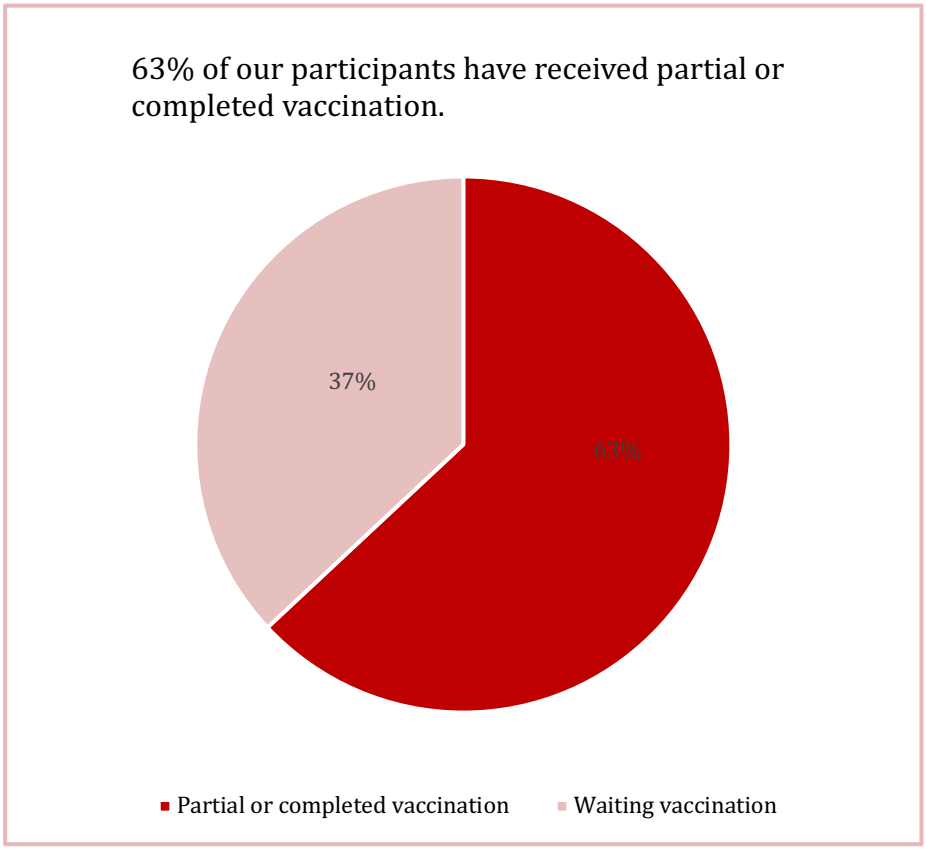

Figure 1: Vaccination demographics

We acknowledge that our recruitment process did not entice enough vaccine-hesitant individuals to participate. Nonetheless, the data that we gathered from individuals that have been vaccinated are able to inform us on beliefs and expectations by vaccinated (or would-be-vaccinated individuals) on the appropriate norms with respect to COVID-19 vaccinations and related government policies.

Beliefs, Expectations and Norms

Individuals internalize and normalize vaccinations through the beliefs and expectations that other individuals in their reference group also normalize vaccination. We asked our participants to estimate the percentage of vaccination registrations of individuals in their social and economic circles.

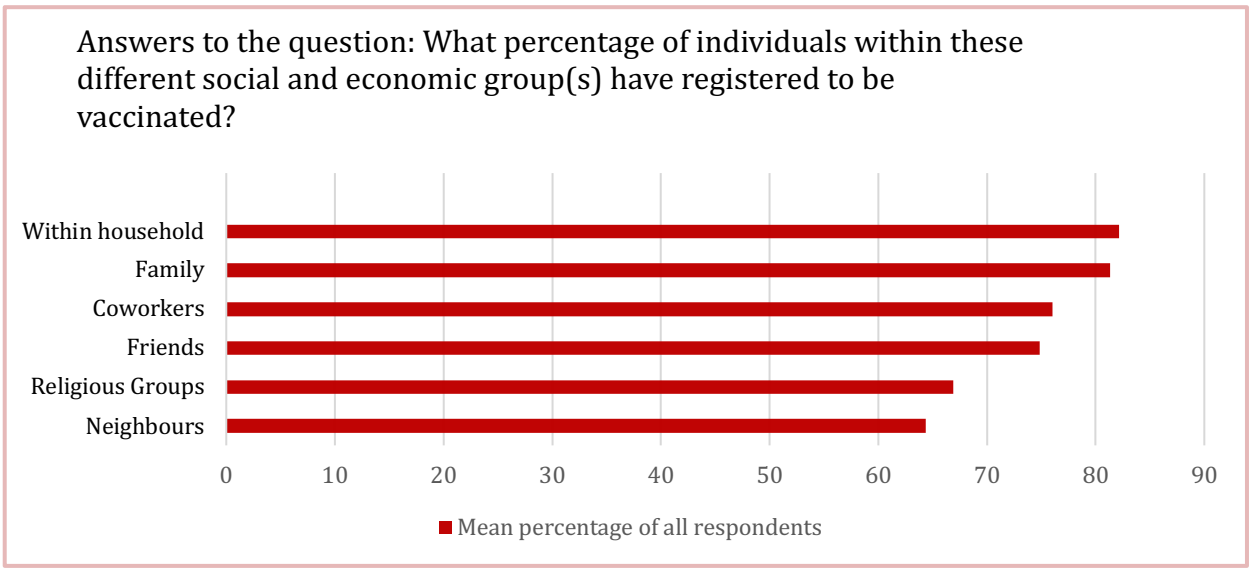

Figure 2: Beliefs on vaccine registration

On average, our participants held varying beliefs on vaccination registration. As vaccination decision-making is likely to be made together within a household or amongst family members, it is consistent that these social groups are highly believed to have registered for vaccination. While there is variation in vaccination beliefs across social groups, the majority of our participants reported that there were no outright refusals to vaccinate amongst there groups.

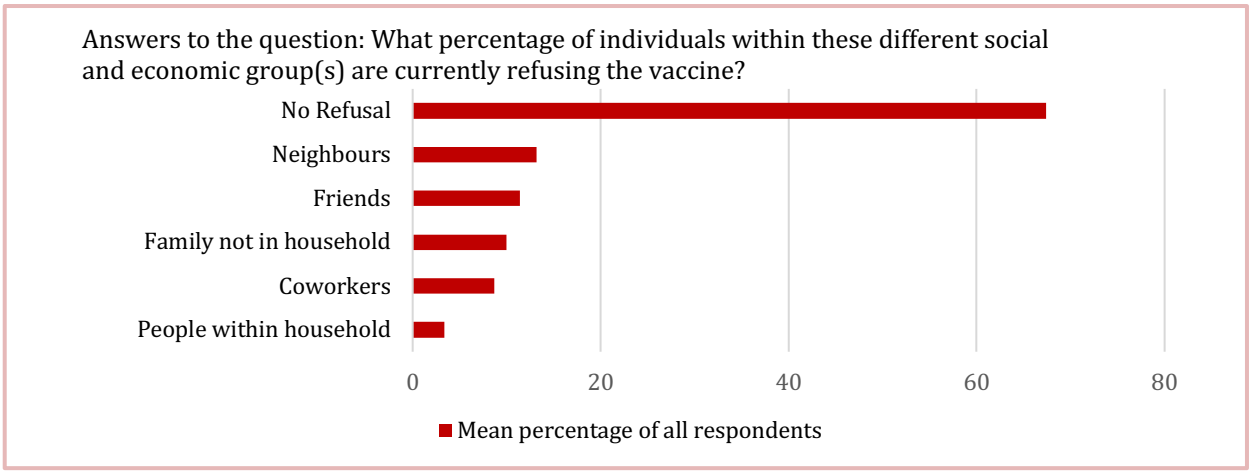

Figure 3: Beliefs on vaccine refusal

Our findings highlighted the role of social and economic groups in normalizing vaccination among its members. For example, the lower vaccination expectations in groups like co-workers, friends, neighbours and religious groups presented opportunities for not only our respondents but also their employers, neighbourhood groups, and religious figures to exert social pressure to normalize vaccination.

We also found that the majority of our participants believes that others around them will benefit from vaccination. We elicited the costs that participants are willing to incur if they are to face individuals that knowingly refuse to be vaccinated. The majority of the participants expressed a willingness to engage in personally costly behaviour despite being vaccinated, such as keeping up with mask-wearing or avoiding unvaccinated individuals all together.

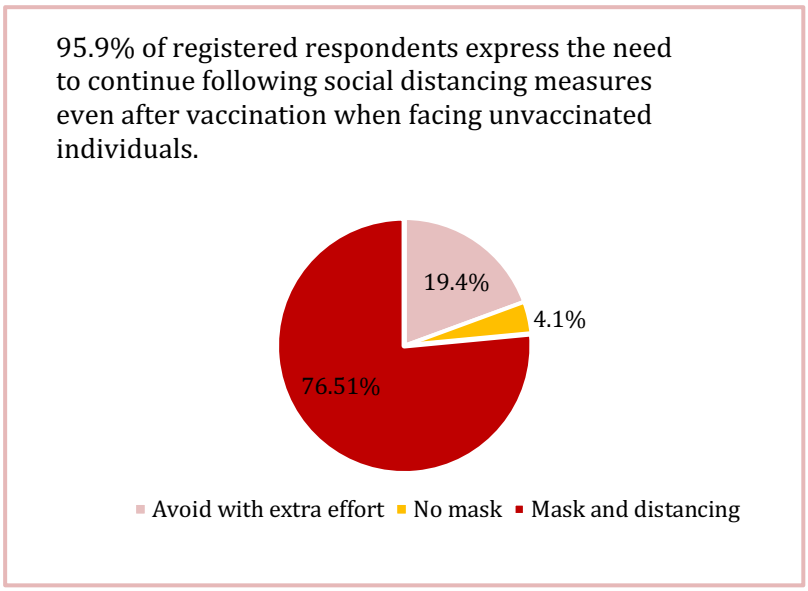

Figure 4: Post-vaccination concerns

Trust and Vaccine Delivery

Communicating and persuading others to vaccinate can be linked to trust and government capacity to deliver enough vaccines for the public. Individuals embedded in groups that have high levels of trust towards pro-vaccination actors (such as family members, co-workers, government) are more likely to be vaccinated. We found that participants do not trust others in general, but their directed trust varied according to different groups and actors. For example, many participants trusted their family members completely while a majority of them only "somewhat trusted" the Malaysian Ministry of Health. We can infer that those individuals are more likely to trust information provided by those closest to them as opposed to the Ministry of Health. It is also possible that individuals who are embedded in vaccine-hesitant or sceptic groups do not receive any social pressure to get vaccinated, therefore allowing factually incorrect medical advice from family members to spread.

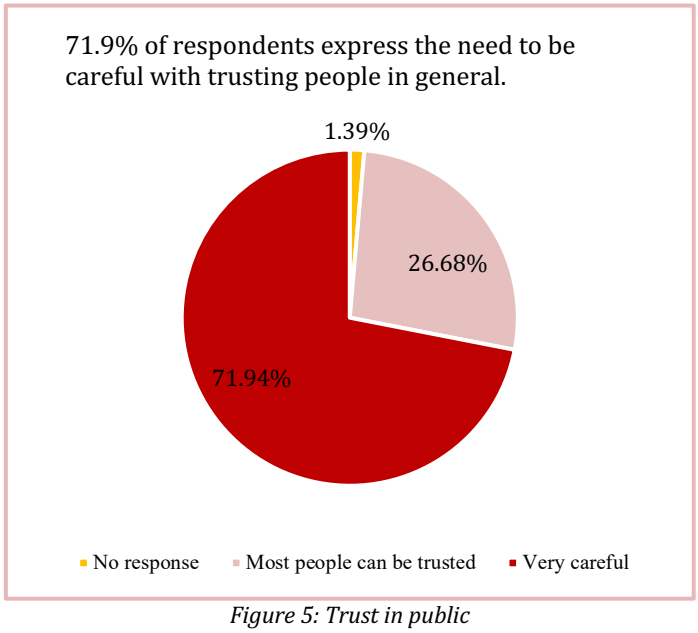

Figure 5: Trust in public

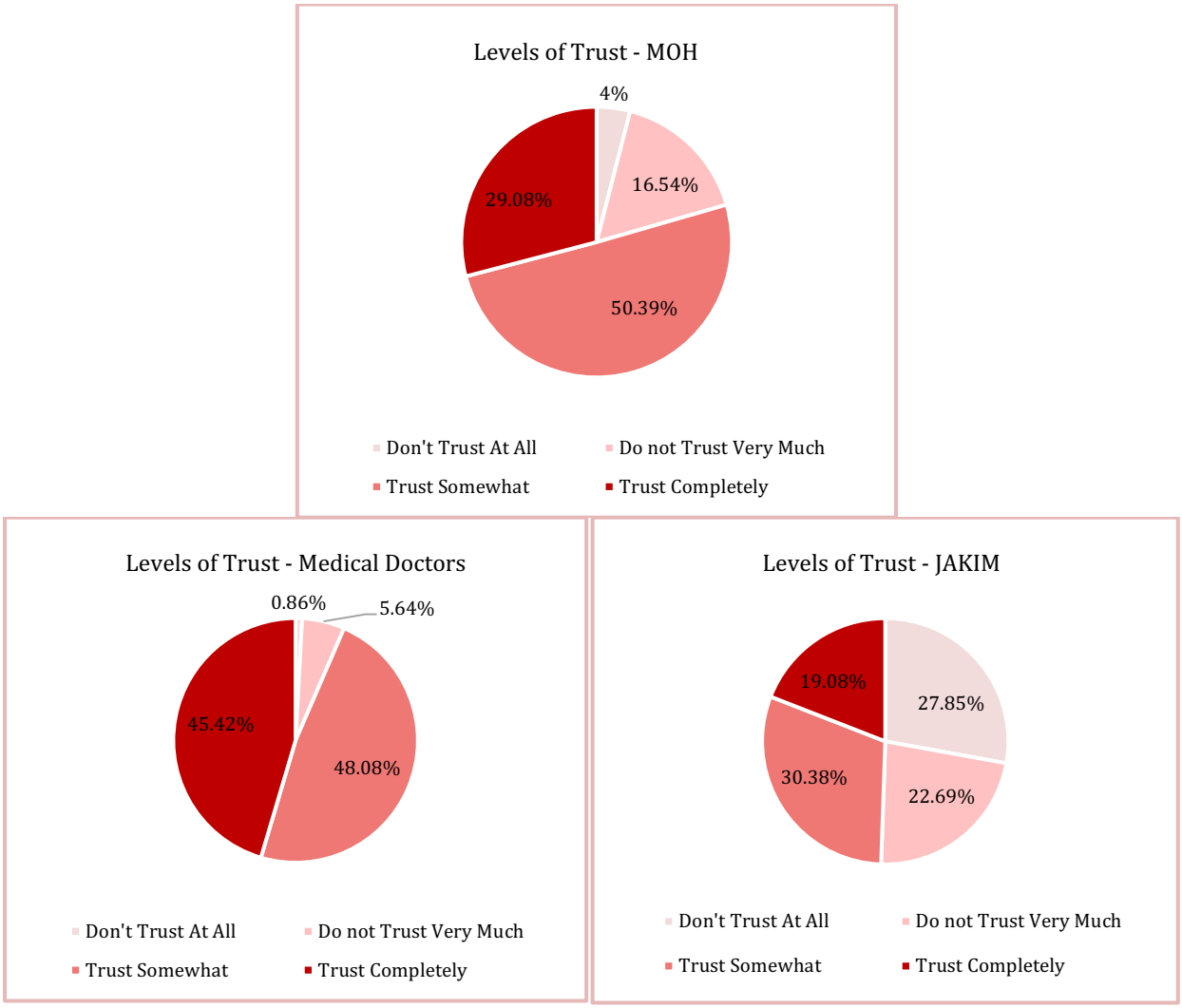

Figure 6: Trust Levels in Public Institutions

While trust plays a moderating factor in individuals' choices to vaccinate, beliefs towards state capacity to effectively deliver vaccines to people could also play a role in shaping individuals' expectations and normalization of vaccination.

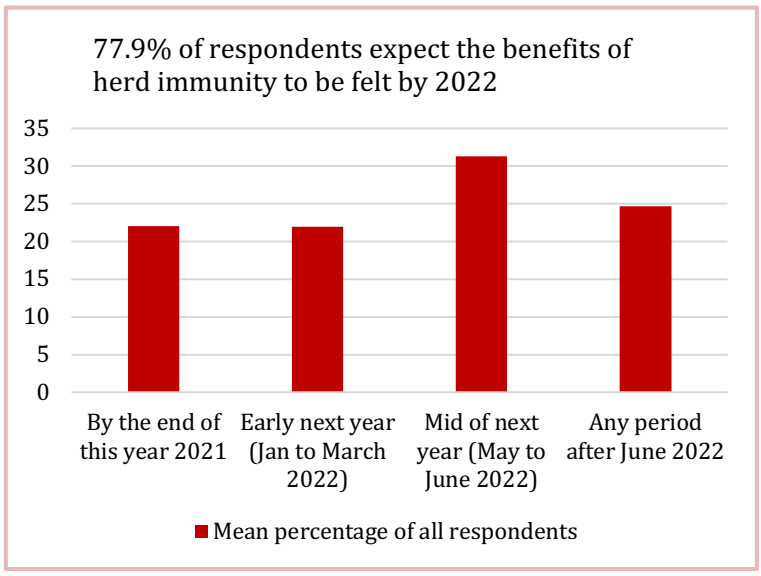

Figure 7: Expectations of Herd Immunity Benefits

The Role of Government in Encourage Registration & Take-Up of Vaccinations: A Small Experimental Study on Cash Lotteries

Despite the fact that our participants reported perceived benefits from vaccination and their willingness to incur personal costs when dealing with unvaccinated people, our findings also showed that the government can introduce small policies that could increase the likelihood of vaccination registration and take-up.

In our study, we assigned individuals that self-reported to not have signed up yet for PICK to a survey experiment that provided monetary incentive as a nudge to register. Individuals were randomly assigned to either a control or treatment group. Individuals in the control group received a thank you note for participating (no nudge) while those in treated group were told that if they registered for vaccination before July 5th 2021, they would be eligible for a lucky draw (i.e. lottery) with a cash prize of RM500. After the survey, almost all lottery participants registered – only 16.63% of the treated group on average remain unregistered. When compared to the control group, which has 37.84% unregistered respondents, the treatment effect of the lottery incentive is quite large, convincing about half of those who wouldn't register to do so. However, the small sample size means that the results are only somewhat statistically significant—they are significant at the 10% level but not the 5% level.

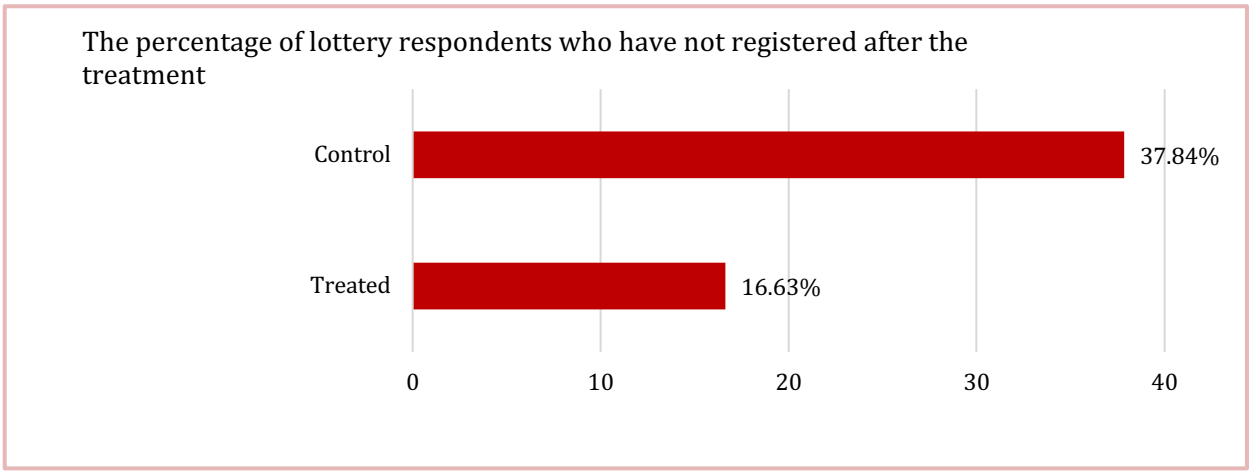

Figure 8: Lottery results

Boschloo exact test (1-tail) on the difference between the two groups = 0.05615462

Analysis of Carrots, Sticks, and Social Pressures to Improve Vaccination Rates

In the vignette scenarios, respondents answered one of four randomized scenarios: carrot and low social pressure; carrot and high social pressure, stick and low social pressure; stick and high social pressure. In each question, they chose a response from 1 to 5. For the first question, 1-5 corresponded to "strongly disagree", disagree", "neutral", "agree", and "strongly agree". For the second and third questions, 1-5 correspond to "extremely unlikely", "unlikely", "neutral", "likely", and "extremely likely". Respondents' belief in the stick approach—the state requiring that non-vaccinated residents pay for PCR Covid tests every 14 days in order to work in person—in encouraging compliance of the national vaccination programme is higher than the carrot approach, the national lucky draw for RM 1 million in cash. Requiring non-vaccinated residents to pay for tests seems to be a significantly stronger incentive than a lottery.

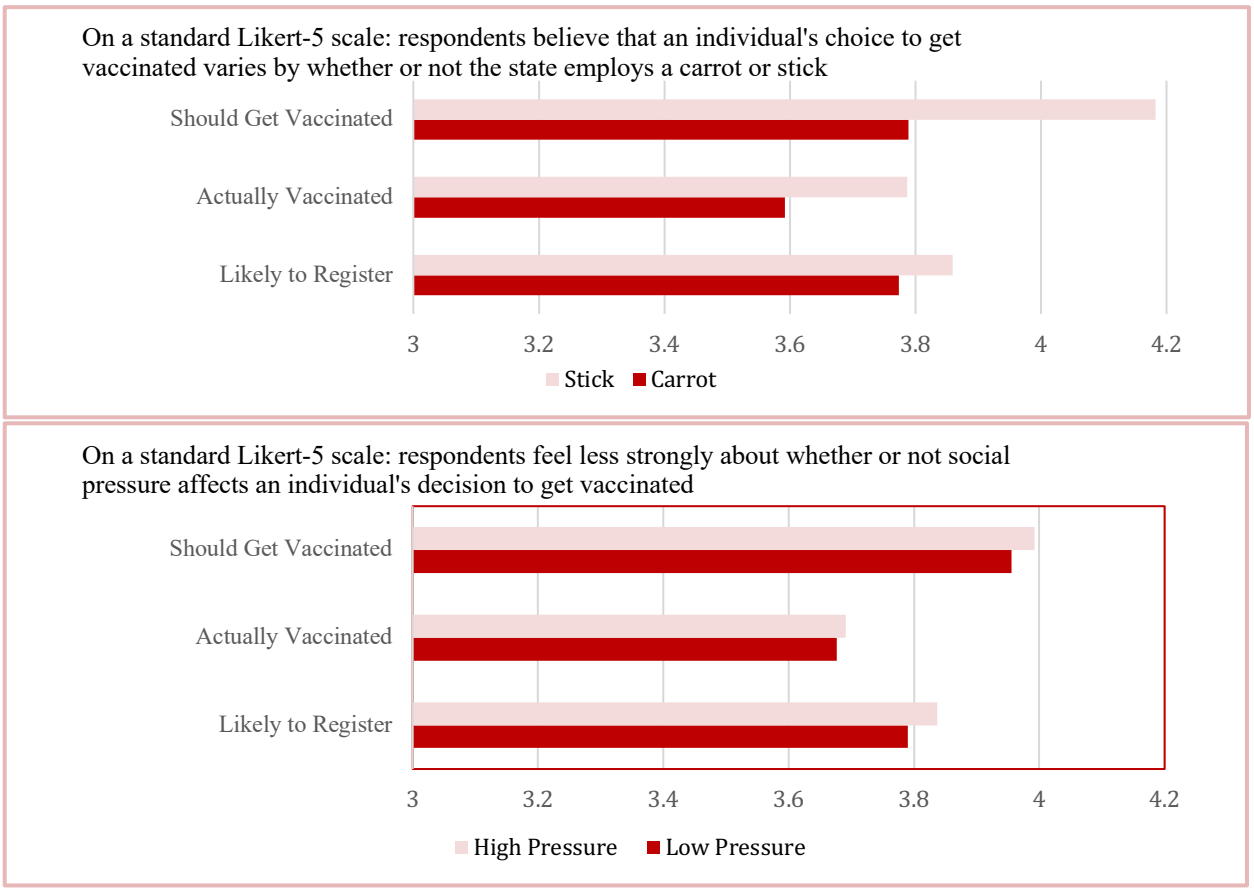

Figure 9: Vignette responses

Respondents don't seem to be strongly affected by social pressure, though. The high pressure scenario, where most residents have registered for the vaccine, has a tiny and barely statistically significant positive effect on compliance in the hypothetical scenario compared to the low pressure scenario where most have refused vaccination.

Policy discussion and Recommendations

Incentives (i.e., carrots) to encourage vaccination registration work

This study suggests that a carrot – a positive incentive to encourage vaccine registration—can be effective. When the lucky draw of RM500 was offered to the treatment group, more than 80% of them registered, far more than in the control group. The carrot approach is not unique as it is currently implemented elsewhere as well. In the US for example, President Joe Biden has urged local governments to offer a $100 (RM424) incentive to the newly vaccinated, specifically to state employees and to some extent an additional $25 (RM106) if the spouse do the same (CNN, 2021). A research by the UCLA Covid-19 Health and Politics Project found that such incentive is effective as a third of unvaccinated American said that the cash payment would make them more likely to get the vaccine (The New York Times, 2021). Besides that, California specifically devised a $116.6 (RM492 mil) million plan where thirty people have received their $50,000 (RM213k) prizes and another 10 citizens in line for a $1.5mil (RM6.3 mil) pay out (Thomson Reuters Foundation News, 2021). In Moscow on the other hand, those who have been vaccinated are entered into a lucky draw that allows the citizen to win free cars worth of 1 million roubles (RM57,316) (Reuters, 2021). Much of the incentives given in Malaysia are driven by private companies and retailers' initiatives such as discounted takeaway meals or coffees although the government recently announced the ease of movement restriction for those who have been fully vaccinated. Given that the public has endured a persistent lockdown since early 2021, the positive behavioural nudge of ease of restriction seems to be highly welcomed.

Carrots work, but sticks are perceived to be more effective

As academics, we cannot punish participants in our research, so we only did a real-world implementation for the carrot strategy. However, our hypothetical vignette experiment showed that the stick strategy was statistically significantly more effective: respondents said a person like them was more likely to get registered and vaccinated given the threat of having to pay for PCR COVID-19 tests every 14 days if unvaccinated than when offered a lucky draw. This punishment is similar to the stick used in Singapore, where unvaccinated staff in sectors like malls, supermarkets, and food delivery will be tested twice a week (Begum, 2021). Based on Bicchieri and Xiao (2009), people tend to adhere to empirical expectations as in a natural occurring environment, those who behave differently from the majority would be punished, and this will instil fear to avoid that course of action. The vignette experiment in this study indicates that the attitude towards the vaccine is not highly driven by social pressure but is significantly affected by the likelihood of being punished.

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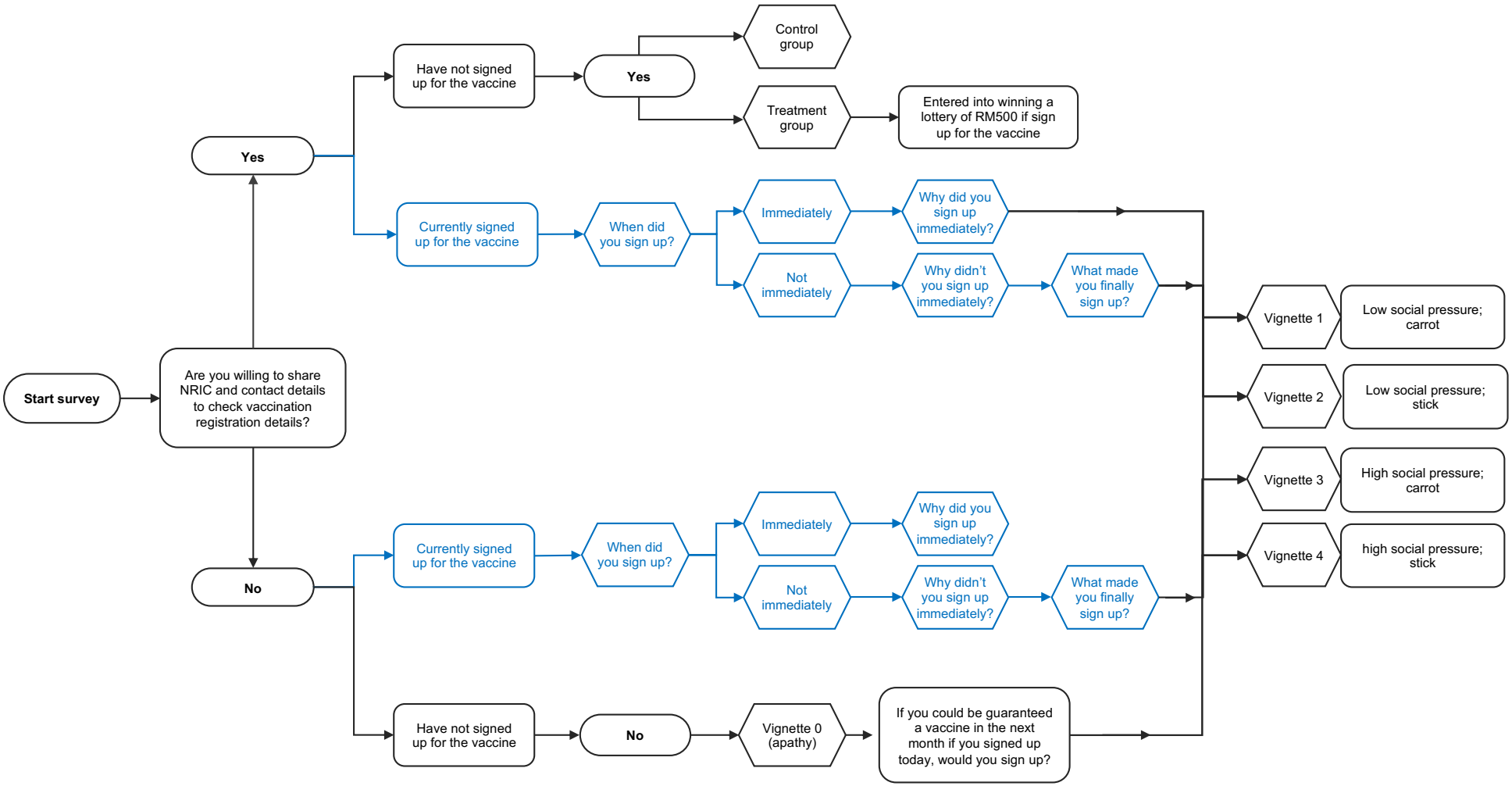
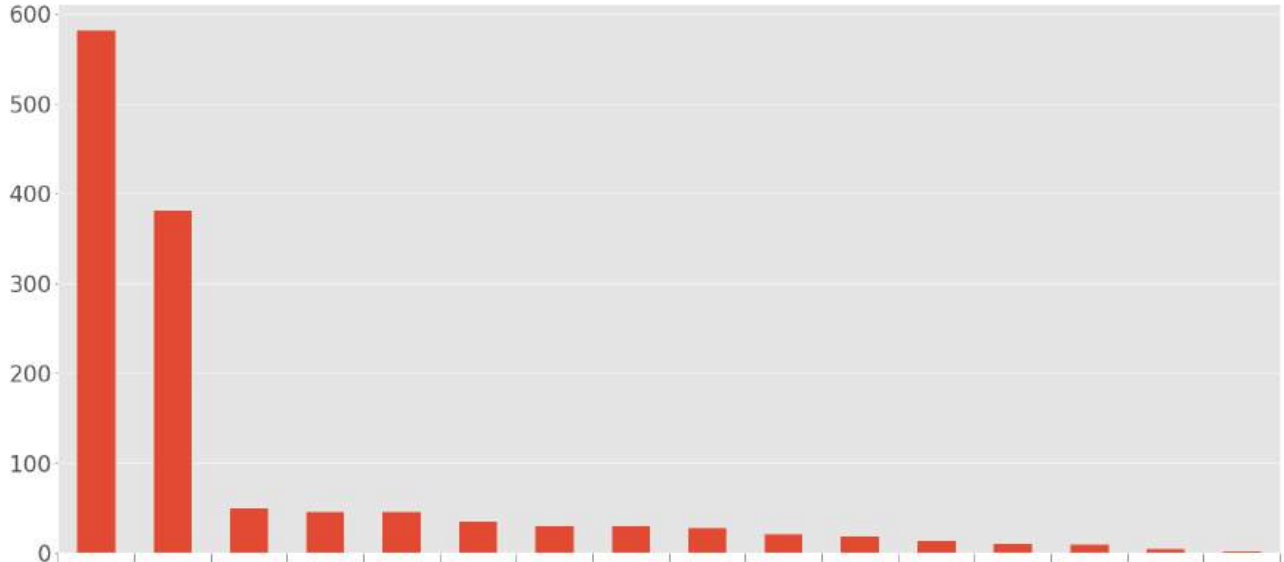
Appendix 1: Chart of Survey Path

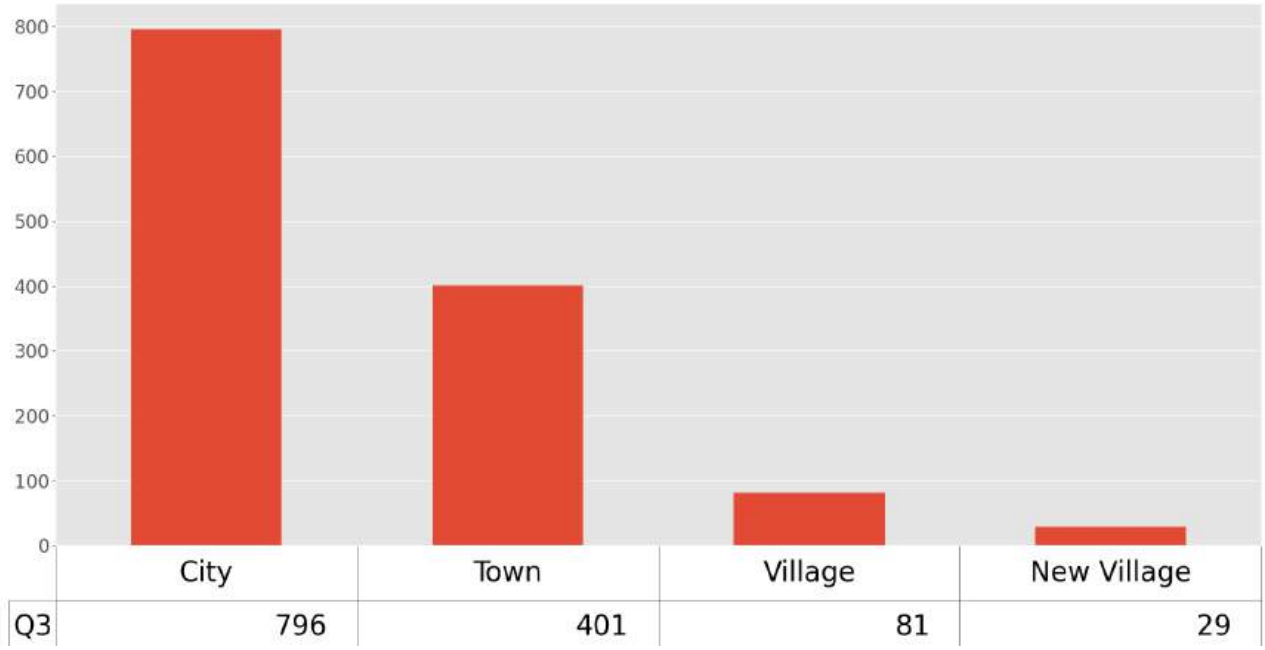


Appendix 2: Breakdown of Respondent Profiles (Unweighted and Unfiltered)

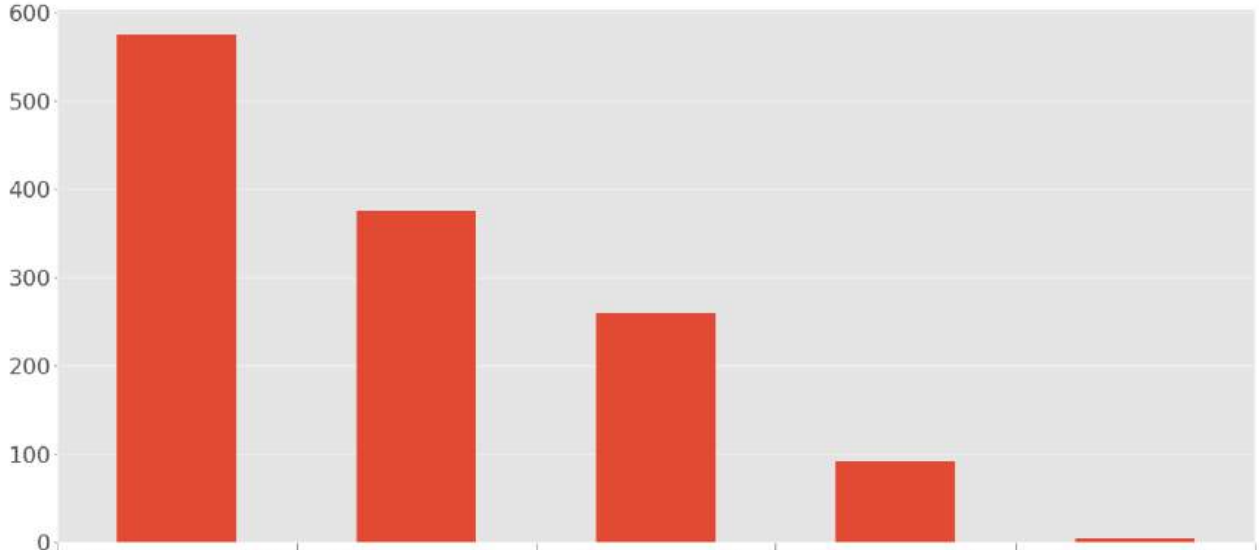
State



Residential Areas

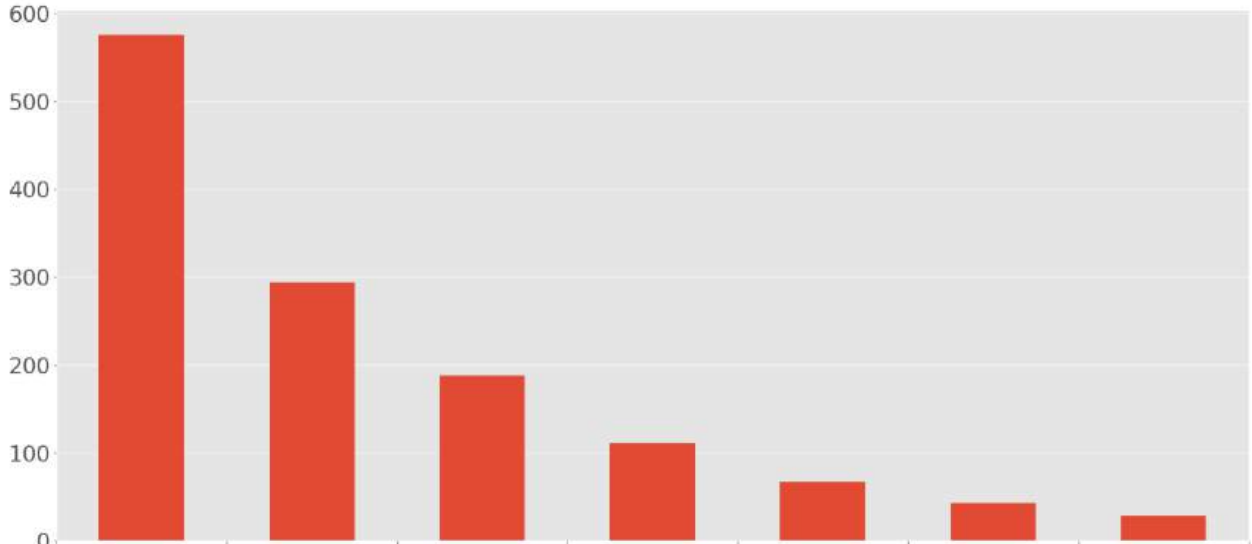


Age



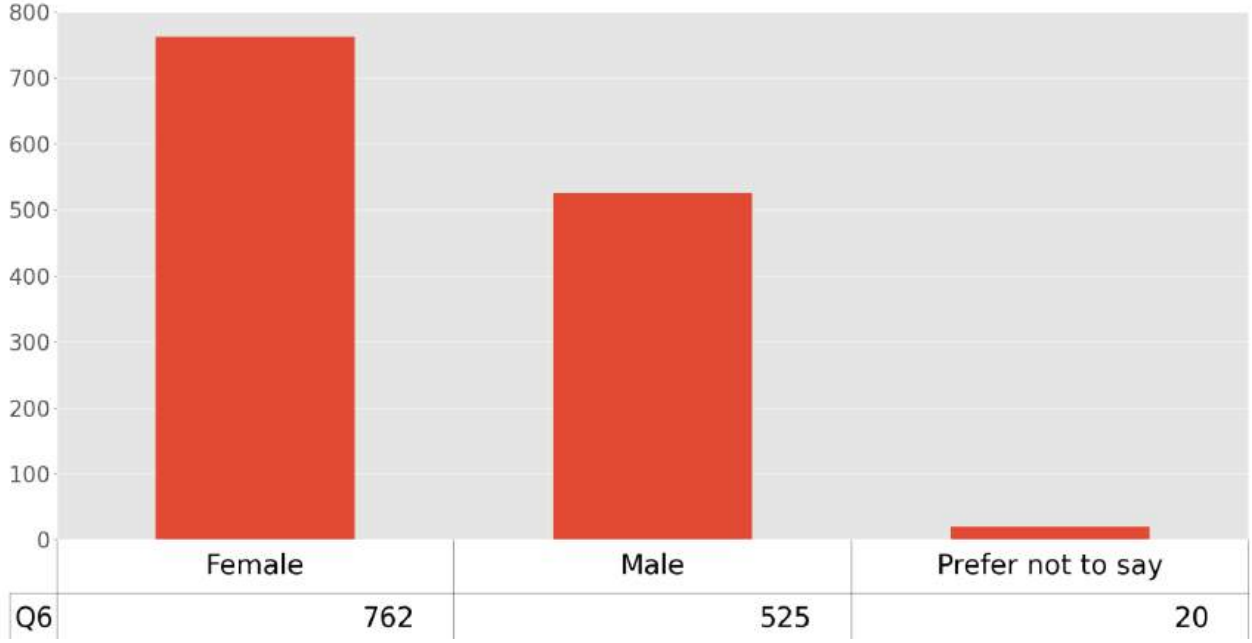
	(17.927, 32.4]	(32.4, 46.8]	(46.8, 61.2]	(61.2, 75.6]	(75.6, 90.0]
Q4	575	375	260	92	5

Religion

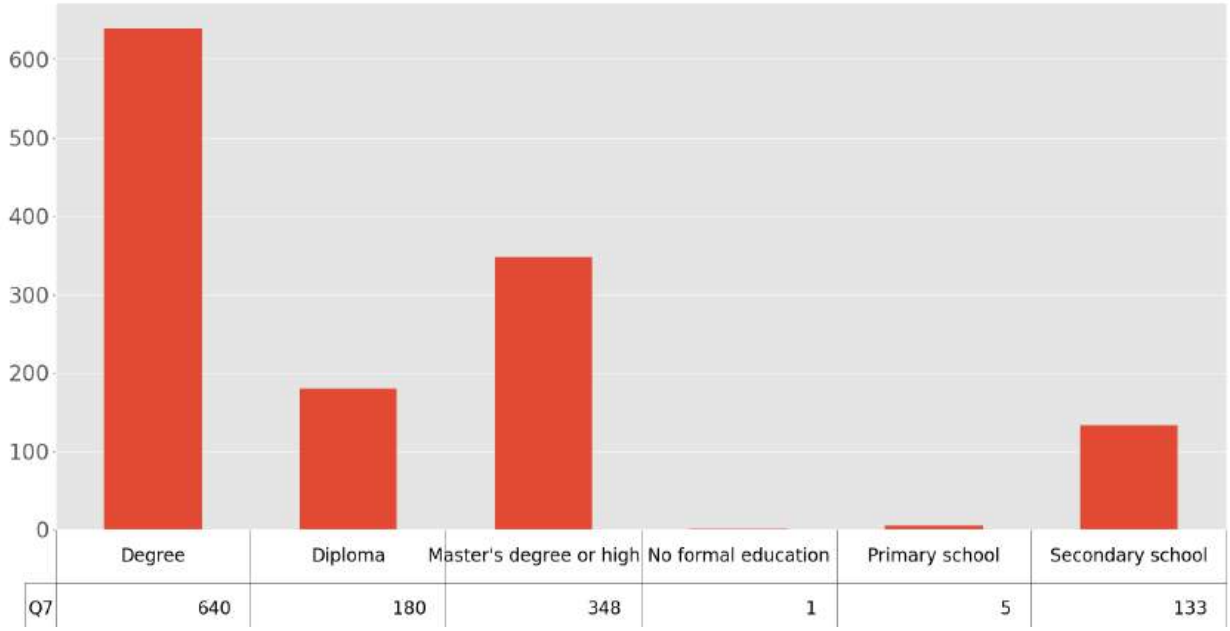


	Islam	Buddhism	Christianity	None	Hinduism	Taoism	Other
Q5	575	294	188	111	67	43	29

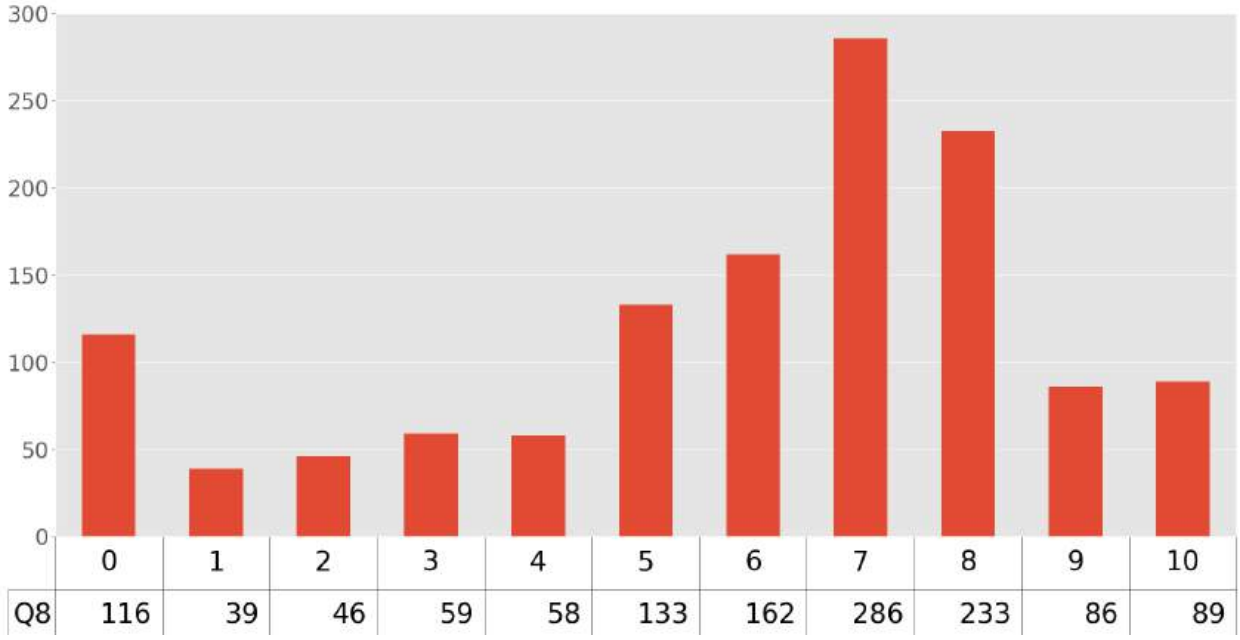
Gender



Education Level



Income scale on which 0 indicates the lowest and 10 the highest median monthly salaries and wages of employees in your country. As a reference, an individual's monthly salaries and wages in group 5 is RM2,442 in Malaysia. (Source: Department of Statistics Malaysia, 2020)



	0	1	2	3	4	5	6	7	8	9	10
Q8	116	39	46	59	58	133	162	286	233	86	89

Appendix 3: Tabulation of Data Findings

This is a list of 6 groups that have social and economic interactions with you. Provide the % that you think and believe has been registered to be vaccinated within each group.

Groups	Mean %
Live together with	82.1362
Family	81.3058
Friends	74.8627
Coworkers	76.04878
Neighbours	64.39214
Religious groups	66.91863

Do you believe that the majority of the individuals in the group listed below are currently refusing the COVID-19 vaccine? Pick multiple groups if it applies.

Groups	Mean %
No Refusal	67.38628
People who live with you	3.392444
Family who do not live with you	9.946029
Coworkers	8.712413
Friends	11.41095
Neighbours	13.18427

Do you believe that you and those in your social and economic circles benefit from vaccinations?

Response	Mean %
Yes	97.455667
No	2.544333

Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?

Response	Mean %
No response	1.387818
Most people can be trusted	26.67695
Need to be very careful in dealing with people	71.93524

Have you been registered for vaccination?

Response	Mean %
Yes	92.212799
No	7.787201

[Registered respondents only] Given current policies, do you believe that the nation is on track to achieving herd immunity?

Response	Mean %
Yes	51.5052
No	48.49498

[Registered respondents only] When do you expect the benefit of herd immunity can be felt?

Response	Frequency	Percentage (%)
By the end of this year 2021	264	22.07358
Early next year (Jan to March 2022)	263	21.98997
Mid of next year (May to June 2022)	374	31.2709
Any period after June 2022	295	24.66555

[Registered respondents only] Suppose that there are individuals from your social and economic circles who refuse to be vaccinated. Knowing this, what are your responses if you have to deal with them once the MCO restrictions have loosened and you've already been vaccinated?

Response	Frequency	Percentage (%)
Engage in extra effort to avoid these individuals like eating alone OR avoid sharing a bathroom with them OR avoid sending my kids to schools/kindergarten if they have kids in the same place.	232	19.39799331
I feel confident to not wear a mask around them.	49	4.096989967
Maintain social distancing and mask	915	76.50501672

Respondent's expectation of state vaccination

Response	Mean %
Please estimate the percentage of COVID-19 vaccination registration rate in your state now.	57.4549
Please estimate the percentage of the population in your state that is refusing to register for the COVID-19 vaccination.	26.07728
Please estimate the percentage of the population in your state that needs to be vaccinated to achieve herd immunity.	81.43716