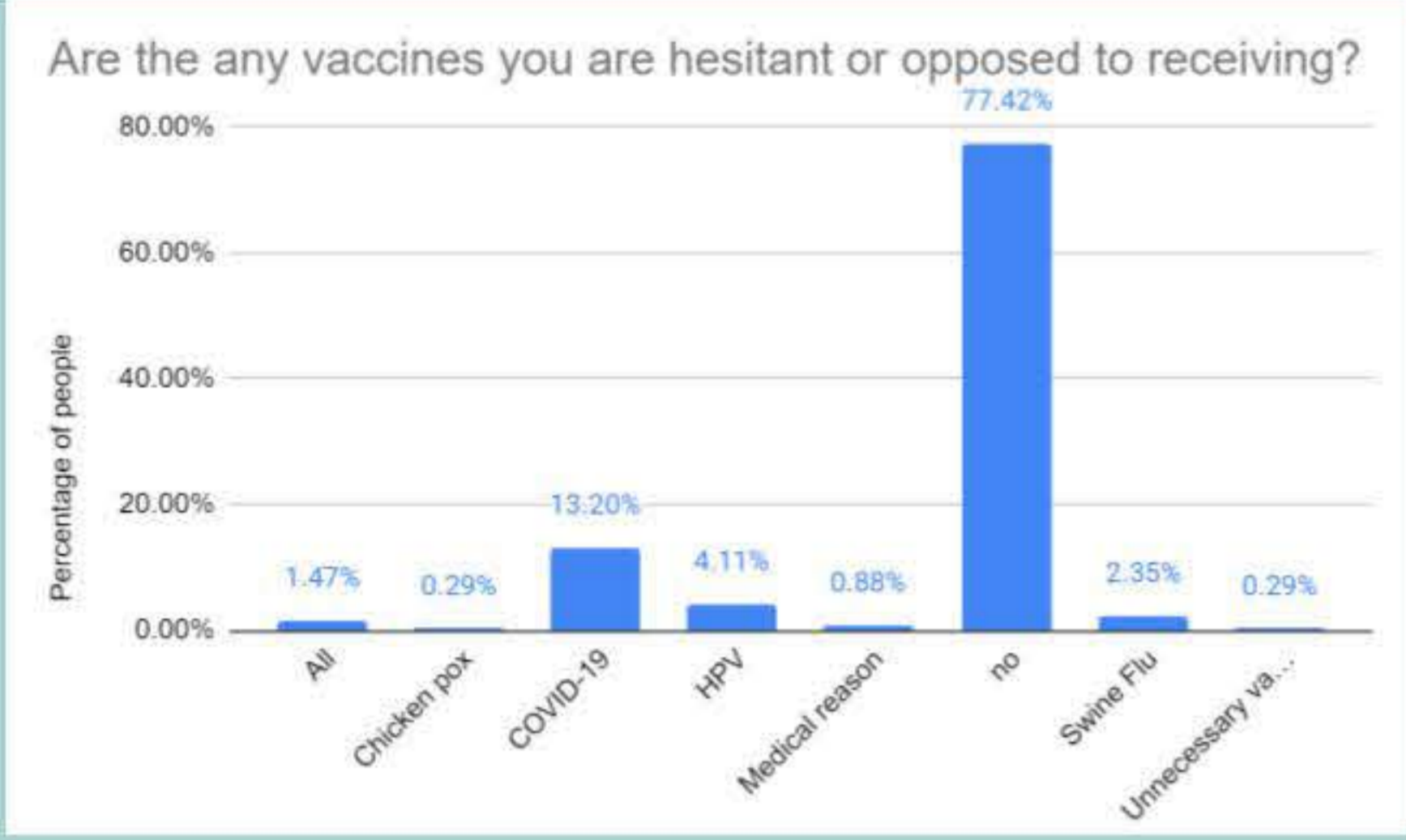


Summary

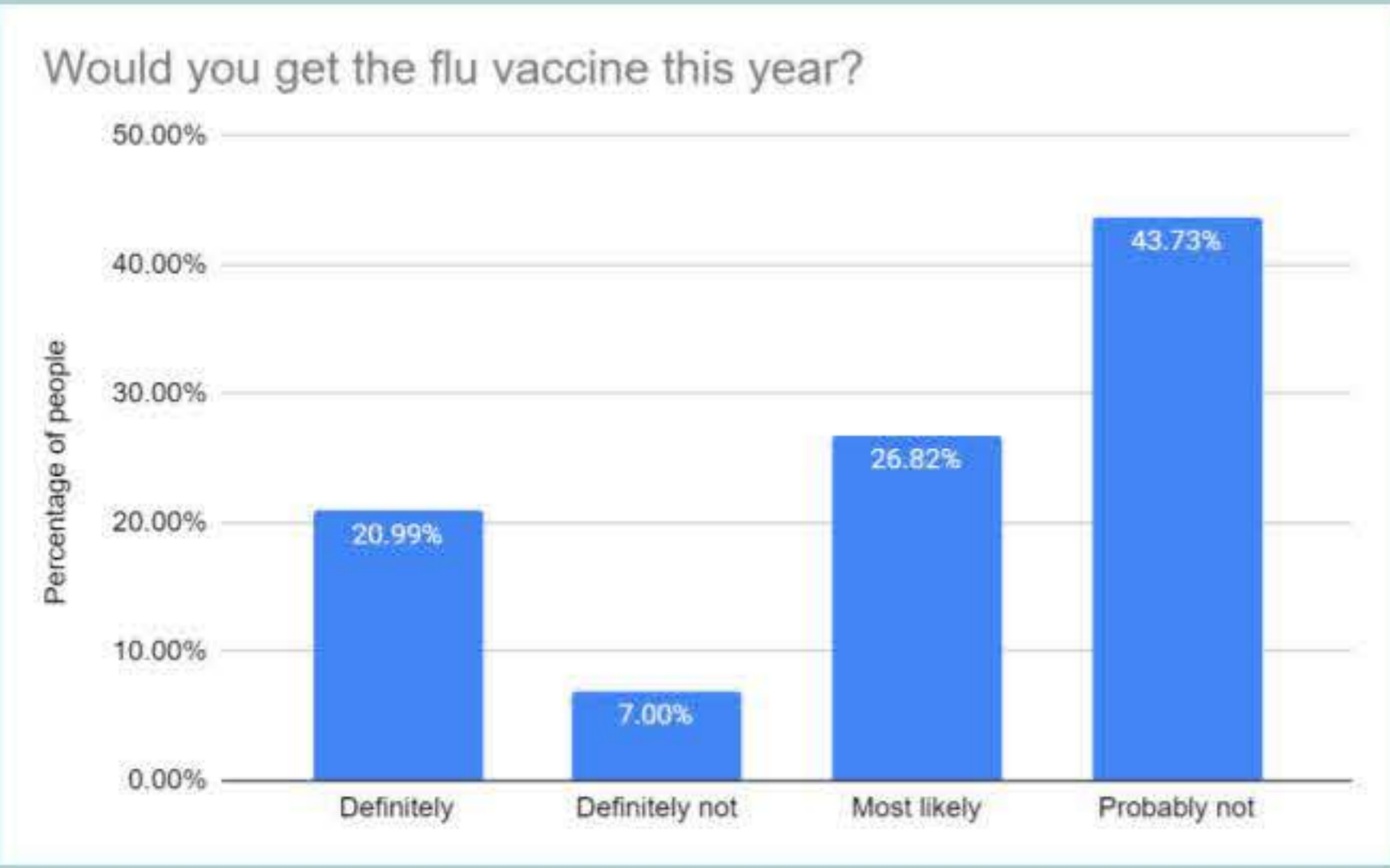
Our project is to study the effect that portraying information through a virtual interactive story (VIS) has on people's attitudes towards vaccination compared with the methods of text and video. This was achieved by analysing the variation of attitudes towards vaccination between a pre and post-survey taken before and after exposure to one of three treatments (Text, Video, VIS).

Our sample was selected based on pre-survey responses. Ultimately, there was no significant difference in people's attitudes towards vaccination between the three treatments. Inspiration came from a study that was conducted on the effects of virtual reality on vaccine avoidant people between the ages of 18-49 concerning the influenza virus.



Selection of Vaccine Hesitant Individuals

A presurvey was constructed to select our test groups (n=343). The survey consisted of questions regarding a person's likelihood to vaccinate for diseases; Flu, MMR, HPV and COVID-19. People were deemed vaccine hesitant primarily on their answer to the question: "Are there any vaccinations you are hesitant or opposed to taking?" People who answered "Yes" were automatically selected. A considerable amount said they probably wouldn't or definitely wouldn't receive the flu vaccine this year. A further group answered that they likely wouldn't or definitely wouldn't receive the COVID-19 vaccine. This left a group of 203 vaccine-hesitant individuals.

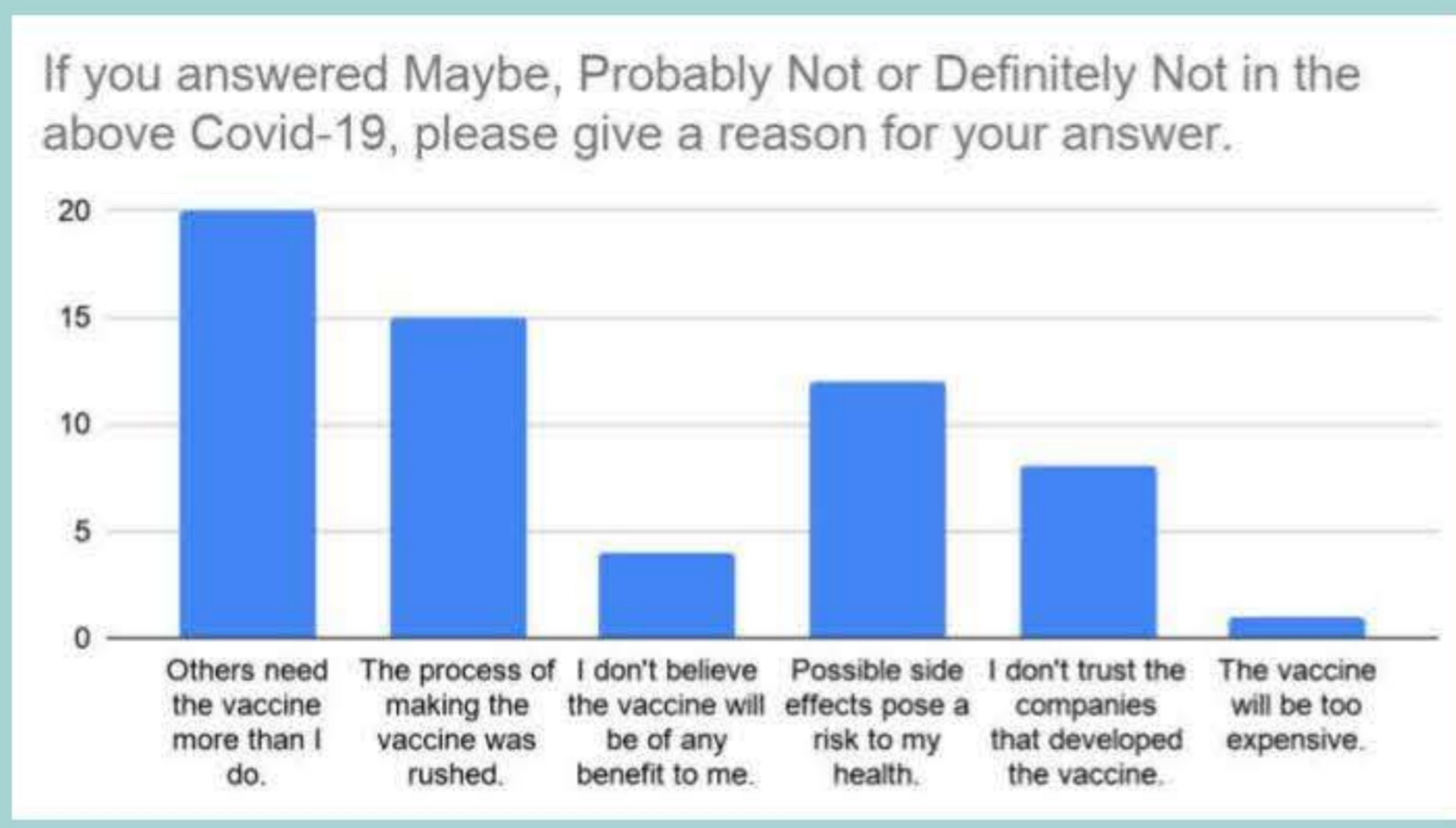


Would displaying information through a virtual interactive story affect how people perceive information relating to immunisation?

Experimental Methods

There were three treatments: Text, Video and VIS. Vaccine hesitant individuals were randomly assigned to either groups 1, 2 or 3 respectively (approximately 60 per group). A random number generator was used to sort the sample individuals. All groups were sent their treatment, to which a post-survey was attached.

Each treatment displayed a code at the end which was required for the post-survey as proof of their participation. Similar questions were asked to the pre-survey regarding likelihood to take the flu, HPV, possible COVID-19 and MMR vaccines. Questions regarding empathy and responsibility regarding the contraction and spreading of diseases were also included. Most of the question, were to be answered on a five-point scale for ease in the analysis portion.



Results and Analysis

The most commonly answered reasons as to why people were apprehensive or against receiving the COVID 19 vaccine as shown in the bar chart above were:

Others would require it more than the individual itself (29/59), the process of making the vaccine was rushed (15/59), and the possible side effects may pose potential health risks (12/59).

A potential explanation for the high number of participants responding that "others require the vaccine more than the individual itself" (20/59) may be due to the fact that the majority (83%) of participants being under the age of 22 and less likely to develop severe symptoms from the virus as oppose to older/immunocompromised individuals.

statistically significant effect on vaccine hesitant individual's attitude towards vaccination (e.g. p value = 0.41) when compared with the Video and Text control groups. If the investigation were to be repeated, a sample size that is **undecided or moderately opposed to vaccination** would be obtained. Making the selection more attainable and increasing the sample size, possibly influencing a greater number of people.

* = No statistically significant difference, where p > 0.05.

The Kruskal Wallis test was used to analyse the post-survey responses as it compares two or more independent samples with data that is not normally distributed. All categories were given numerical values,

ranging from 1 (Definitely) to 5 (Definitely Not). The average responses of each treatment group to each individual question was compared using the Kruskal-Wallis One Way Analysis of Variance test displayed in the table above. All p-values are above the alpha = 0.05, therefore there was no significant difference between the treatments. We can accept the null hypothesis that VIS does not impact the way people perceive immunisation.

Kruskal-Wallis One-Way Analysis of Variance of the 3 treatment groups.

Question	p-Value
Will you get the flu vaccine this year?	0.43*
Would you get the HPV vaccine?	0.86*
Would you get the MMR vaccine?	0.71*
Would you get a possible Covid-19 vaccine?	0.09*
How would you rate your concern of passing contagious diseases on to other people?	0.6*

Observed Values - Would you get the flu vaccine this year?

	Definitely	Most likely	Probably Not	Definitely not	
12-21	52 (18%)	76 (27%)	137 (48%)	20 (7%)	285
22+	20 (34%)	17 (29%)	15 (26%)	6 (10%)	58
	72	93	152	26	343
Chi-Squared	12.248	DF	3	Critical Value	7.815
p-Value	0.006658				

The final set of data analysed was whether age is a factor in attitudes towards vaccination. The Chi-Squared test shown above was used to analyse the data of 4 questions in the pre-survey that had the probability for the existence of an association between two variables. It was determined that age and vaccine hesitancy are associated, with a greater proportion of individuals in the younger age bracket than the older age bracket. For example, 48% of people in the 12-21 age bracket said that they would *probably not* get the flu vaccine this year as oppose to the 22+ bracket.

As the p-value is less than 0.05, the probability that the association is due to random chance is less than 5%. We can reject the null hypothesis that there is no association between these age brackets and the likelihood of getting the flu vaccine. This may have implications for underage individuals to be vaccinated when their parent/guardian shares similar views. After the Chi-Square test was conducted, **one** of the 4 questions (Would you get the flu vaccine?) showed a significant difference between the two age-groups.

Conclusions and recommendations

The initial hypothesis has been rejected. VIS **does not** have a statistically significant effect on vaccine hesitant individual's attitude towards vaccination (e.g. p value = 0.41) when compared with the Video and Text control groups. If the investigation were to be repeated, a sample size that is **undecided or moderately opposed to vaccination** would be obtained. Making the selection more attainable and increasing the sample size, possibly influencing a greater number of people.