

THE DIFFERENCES BETWEEN PEOPLE UNDER THE AGE OF 60 AND OVER THE AGE OF 60 IN COVID-19 VACCINATION RATES AND VACCINE BRAND PERCEPTION

D. TOMŠE, R. STRAŠEK, J. TOROŠ

Denis Tomše¹, Rok Strašek², Jani Toroš³

¹ B2 Ljubljana School of Business, Slovenia

<https://orcid.org/0000-0001-6702-2018>, E-mail: denis.tomsel@gmail.com

² University of Primorska, Slovenia

<https://orcid.org/0000-0003-2616-7151>, E-mail: rok.strasek@upr.si

³ B2 – Gea College, Slovenia

<https://orcid.org/0000-0003-0896-9804>, E-mail: jani.ivan.toros@gmail.com

Abstract: *This article deals with differences in users' perception towards COVID-19 vaccination and towards individual COVID-19 vaccine brands. Since COVID-19 is much more dangerous to the elderly population, this article deals with differences between those under the age of 60 and those over the age of 60. The results show that there are some differences between those two groups. For the group of people under the age of 60, the duration of protection is more important (39%), while the brand of vaccine is less important (25%). In contrast, the vaccine brand is of much greater importance (34%) and the duration of protection less important (25%) for the group of people over the age of 60. The study also showed differences in relation to individual brands of COVID-19 vaccines, with both groups preferring Pfizer to other brands, which is not surprising, since there was the least amount of negative media coverage about Pfizer, especially compared to AstraZeneca. The vaccine brand is surprisingly more important to those over the age of 60 than to those under the age of 60, while the effectiveness of the vaccine is equally important for both groups and both groups are equally sensitive to duration and side effects of the vaccine.*

Keywords: *COVID-19, vaccination, perception*

INTRODUCTION

Coronavirus disease 2019 (“Covid – 19,” 2022), also known as the coronavirus, or COVID, is a contagious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Most people (81%) develop mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms (dyspnoea, hypoxia, or - more than 50%-lung involvement on imaging). 5% suffer critical symptoms (respiratory failure, shock, or multiorgan dysfunction) (“Covid – 19,” 2022). More than 704 million cases were confirmed from December 2019 until April 2024 and 7.01 million people died because of the disease, which brings us to 0,99 % mortality (“Mortality Risk of COVID-19,” 2024). In Slovenia, there have been as at 11 April 2024 a total of 1.356.546 confirmed cases of COVID-19, and 7,100 deaths were caused by the disease, which means a 0,52 % mortality (“Slovenia COVID - Coronavirus statistics,” 2024). Within less than a year of the pandemic's outbreak, several successful vaccines have already been announced and approved for use (“Coronavirus (COVID-19) Vaccinations,” 2024). In Slovenia Pfizer, AstraZeneca, Moderna, and Johnson & Johnson (Janssen) vaccines have been approved and used. 59,8% of population in Slovenia

received at least one dose of until July 5 2022 (“Share of people who received at least one dose of COVID-19 vaccine,” 2024).

Even though vaccination is the only way to overcome the COVID-19, there are negative anti-vaccination campaigns going on all over the world, which are nearly identical to the claims made about smallpox immunizations 120 years ago, e.g. the ingredients are toxic and unnatural, the vaccines are insufficiently tested, the scientists who produced them are quacks and profiteers, the cell cultures involved in some shots are an affront to the religious, the authorities working to protect public health are guilty of tyrannical overreach (“Anti-vaxxers Think This Is Their Moment,” 2022), etc. However, the authors believe, that the terms negative publicity and brand perception should also be taken into consideration when discussing beliefs, attitudes, and behaviours towards different brands of vaccines.

The authors believe that in this case, it is not just negative publicity against vaccination in general but negative publicity about individual brands of vaccines. In Slovenia, the National vaccination strategy, which determines the types of vaccines and priority groups for vaccination, is being changed frequently. Thus, in Slovenia it was not allowed to vaccinate elderly consumers with AstraZeneca for some time, then vaccination with AstraZeneca was stopped due to verification of possible connections between the vaccine and blood clots and some other negative side effects. AstraZeneca also has, compared to Pfizer, Moderna, and Johnson & Johnson, more common mild side effects, such as fever, headache, muscle aches, etc., which are otherwise completely harmless and go away in a day or two. It is known although, but not much has been reported in media, that other vaccine brands can also have similar side effects. AstraZeneca has also been faced with several restrictions, especially in terms of who can receive AstraZeneca’s vaccine and under what conditions. The restrictions have changed frequently, which also didn’t have a positive effect on consumers’ trust in the AstraZeneca’s vaccine. This and other similar things brought a great deal of distrust in the AstraZeneca brand as compared to other vaccine brands and led to the result that consumers started to refuse vaccination with AstraZeneca.

The purpose of this study was to determine the differences in vaccine brand perception and vaccination in general between people under the age of 60 and people over the age of 60.

Purpose and objectives of the research

The purpose of this study was to find the differences in vaccine brand perception and vaccination in general between people under the age of 60 and people over the age of 60.

The objectives of this study were to determine whether:

- the vaccine brand is more important to those under the age of 60 or to those over the age of 60
- the vaccine’s effectiveness is equally important for both groups, and
- both groups are equally sensitive on duration and side effects of the vaccine

Literature review and the research hypotheses

A concerted effort to develop effective drugs and vaccines against existing and potential future coronavirus infections and other highly pathogenic virus outbreaks is necessary to reduce overwhelming impacts on human life and worldwide healthcare systems (Liu et. al., 2020). But considerable effort is also needed in communications, to convince people of the benefits of vaccination.

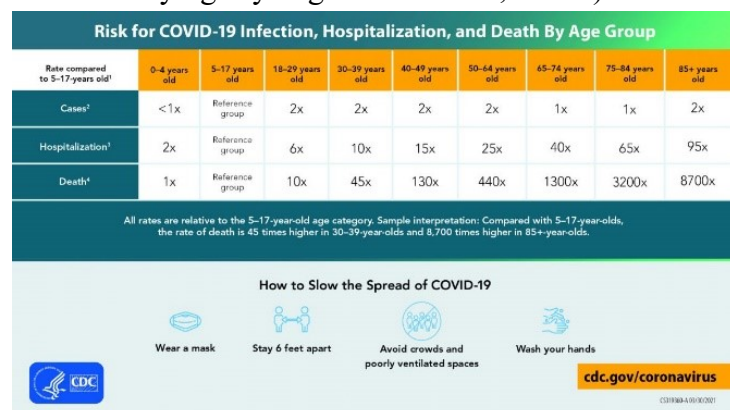
THE DIFFERENCES BETWEEN PEOPLE UNDER THE AGE OF 60 AND OVER THE AGE OF 60 IN COVID-19 VACCINATION RATES AND VACCINE BRAND PERCEPTION

In emergencies, such as an epidemic, people behave differently than in normal times. The authors even believe that we can draw some parallels with states of war. Namely, just like in times of war, when a country’s spending on defence increases significantly, countries in Africa must view the COVID-19 pandemic as a ‘war’ to be won and must be prepared to increase public health spending significantly (Atakuba, 2020). Even the Nazis in World War II were already aware of the important role propaganda plays in achieving goals. Their propaganda employed a range of strategies in its presentation of self and the other, which aimed to increase in-group cohesion and also create fear towards the other (Kohl, 2011). And the side effects of AstraZeneca’s vaccine have been highlighted the most in media, leading those consumers to fear AstraZeneca’s vaccine and to begin refusing vaccination with it. As Staut (2011) mentioned, even before Hitler came to power, he described in Mein Kampf how much the Nazi Party would rely on propaganda. Goebbels and the Reich Ministry of Public Enlightenment and Propaganda (Pro-Mi) expedited Hitler’s rise to power, and Nazi control of all German media ensured near-complete control on what the German people heard and knew about the war and about both national and international affairs (Staut, 2011).

The fear part can be said to have been achieved, as people grew more and more afraid of becoming infected as the pandemic progressed, as people’s perception of the government’s performance in addressing the pandemic worsened and finally, having relatives and loved ones who contracted COVID-19 had a huge impact. The above explanation even led to people’s willingness to pay for a vaccine (Cerdeira & Garcia, 2021). Even more, as became evident, people in general behaved irrationally during the COVID-19 pandemic (Sofi et. al., 2020).

It was found by Sago & Hinnenkamp (2014) that negative corporate news impacts consumers’ behaviour – even towards consumers’ favourite brands. The results of the survey (de Matos & Veiga, 2004) show that the group that received no negative news obtained a higher average (positive) in the three variables (Corporate image, Product image, and Behavioural intention) of the analysis. Younger people follow the modern media, in which there have been frequent announcements about vaccines and their side effects, more often than older people. Older people are also more worried about their health and therefore are not so selective about the brand of vaccine. Besides that, there is the fact that older adults are at greater risk of requiring hospitalization or dying if they contract COVID-19 (“What’s the chance of dying if you get COVID-19,” 2024).

Figure 1. Risk for COVID-19 infection, hospitalization, and death by age group (“What’s the chance of dying if you get COVID-19,” 2024).



As shown in Figure 1, the risk of serious consequences and death due to COVID-19 infection increases with age. Therefore, the authors presume that older people are less sensitive regarding vaccine brand than younger people.

People are now living a greater number of healthy years, but also have an increased risk of illness, which increases the needs for health care. Knowing the foundations of the aging process is such a challenge that each of us wonders what should be done to live as long as possible, but also to live full, active, vital lives to the end of our days (Werntoft et. al., 2005; Milavec Kapun 2011). It was also found that older people care more about their health than do younger ones (“Starejši Bolj Skrbijo Za Svoje Zdravje,” 2024). This is logical, as older people are aware that their quality of life and life expectancy depend on their psychophysical well-being. Therefore, the authors formulated the first hypothesis H1: the vaccine brand is more important to those under the age of 60 than to those over the age of 60.

The Authors also anticipate that both those under the age of 60 and those over the age of 60 want maximum possible vaccination efficacy. Therefore, the Authors formulated the hypothesis H2: the efficacy of vaccination is equally important for both those under the age of 60 and those over the age of 60. However, the Authors anticipate that both those under the age of 60 and those over the age of 60 want as long-lasting protection from COVID-19 and as few side effects as possible. Therefore, the Authors formulated the hypothesis H3: both those under the age of 60 and those over the age of 60 are equally sensitive regarding the vaccine’s duration and its side effects.

Data and research methodology

Conjoint analysis was used in the study, a survey statistical technique that helps determine how people evaluate different characteristics, such as the benefits, functions, and properties that make up a particular product or service. It is used in a variety of market research areas (i.e. healthcare, economics, human resources, computing, machine learning and other tasks (Steiner & Meißner, 2018).

In this case, CBC (conjoint-based conjoint) was used, which has also been the most commonly used method lately. We created a questionnaire in the SSI Web module of the Sawtooth software program (Green & Rao, 1971; Orme 2006)

Based on the question, the respondents chose the most appropriate option, which consisted of four attributes:

Vaccine brand (Pfizer-BioNTech, Modern, Johnson & Johnson, Sputnik, AstraZeneca),

Duration of protection (1 year, 6 months, 3 months),

Efficacy (100%, 80%, 60%), and

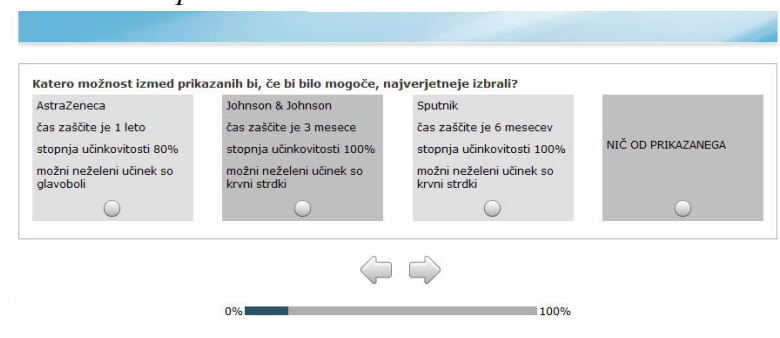
Side effects (blood clots, memory impairment, headache, muscle, and joint pain)

Online question display: **Which option would you most likely choose, if possible?**

It was repeated 10 times for each respondent, but each time with different combinations of features, among which we asked the respondents to individually choose the most preferred one. In each presentation, respondents were shown three computer-generated combinations with different combinations of four attributes (Figure 2).

THE DIFFERENCES BETWEEN PEOPLE UNDER THE AGE OF 60 AND OVER THE AGE OF 60 IN COVID-19 VACCINATION RATES AND VACCINE BRAND PERCEPTION

Figure 2. Presentation of one page of the questionnaire with the given combinations, among which the respondents chose the most suitable one



Respondents had to choose the combination that they felt was most appropriate, and they also had the option to answer with: “**None of the above**”.

The web questionnaire was completed by 369 respondents, of whom 50.7% were female. The educational demographics of the sample was 44% secondary school, 43.5% college degree, and 12.5% master’s degree or doctorate.

To compare the behaviour of the under-60 and over-60 group in vaccination decisions against COVID- 19, the whole sample was divided into two groups. The group of younger people included respondents up to 60 years of age, who make up 183 or about 50% of the total sample. The second group, aged 60 and over, numbered 186 respondents, which is also about 50%. All analyses were continued for both groups and will be described and compared below.

Results and discussion

The relative impact of the individual attribute level was first counted in the display in the table. Counting offers an intuitive measurement of the impact of each attribute level. Counting represents proportions from 0 to 1. For example, counting 0.31 for an attribute level Pfizer-BioNTech means that respondents chose it 31% of the time the Pfizer-BioNTech displayed, including that particular level.

Table 1. The relative impact of the individual attribute level

Vaccine brand	Choice Tasks Included: All Random	
	respondent under 60 years	respondent 60 years and over
	Total	Total
Total Respondents	183	186
Pfizer-BioNTech	0.31	0.47
Moderna	0.23	0.27
Johnson & Johnson	0.20	0.19
Sputnik	0.20	0.14
AstraZeneca	0.20	0.17
Within Att. Chi-Square	45.63	323.74
D.F.	4	4
Significance	p < .01	p < .01

On average, both groups chose Pfizer-BioNTech. However, the probability of choosing this vaccine compared to Moderna was almost twice as high among the elderly, namely 47% for Pfizer-BioNTech and 27% for Moderna. There is a significantly smaller difference for under-60s, 31% versus 23%. In the last place in terms of vaccine popularity in both groups is Astra Zeneca.

Table 2. *Preferences regarding the length of duration*

Duration of protection			
		Total	Total
	Total Respondents	183	186
	1 year	0.36	0.36
	6 months	0.22	0.23
	3 months	0.11	0.15
Within Att. Chi-Square		261.82	170.27
D.F.		2	2
Significance		p < .01	p < .01

Preferences regarding the length of duration is almost identical in both groups of respondents. The range of importance, however, is very linear between the periods of 1 year, 6 months, and 3 months.

Table 3. *Preferences regarding protection efficiency*

Protection efficiency			
		Total	Total
	Total Respondents	183	186
	100%	0.36	0.32
	80%	0.22	0.25
	60%	0.11	0.18
Within Att. Chi-Square		261.82	69.99
D.F.		2	2
Significance		p < .01	p < .01

As expected, the level of protection is an important variable and both groups showed the same order. In most cases, 100% protection was chosen, followed by 80%, and lastly 60% protection. However, there are significant differences in the assessment of materiality between the groups. For younger people, the level of protection is more important, as the ratio of those choosing 100% and 60% protection is about 3 to 1, or 36% of respondents vs. 11%. In the elderly, it is just under 2 to 1, or 32% of respondents to 18%.

Table 4. *Preferences regarding side effects*

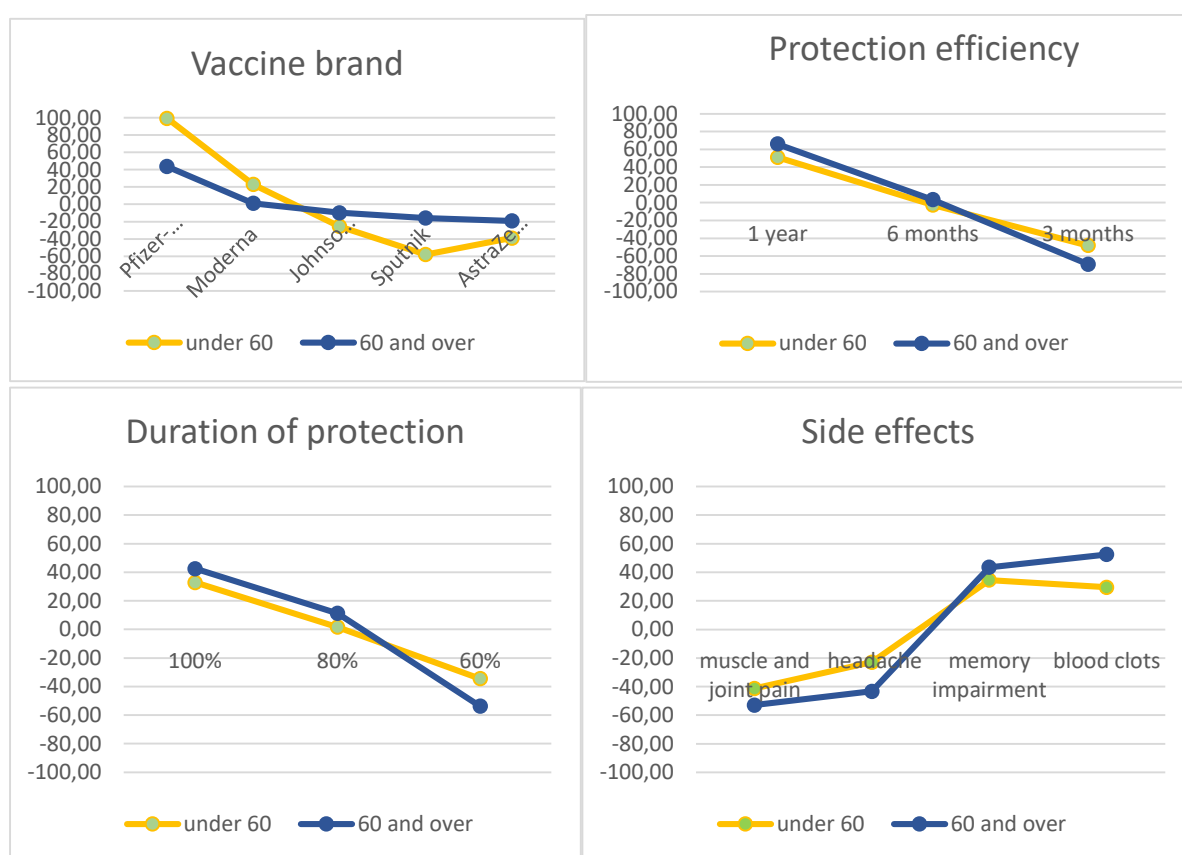
Side effects			
		Total	Total
	Total Respondents	183	186
	muscle and joint pain	0,32	0,30
	headache	0,30	0,32
	memory impairment	0,15	0,20
	blood clots	0,14	0,17
Within Att. Chi-Square		170,24	91,49
D.F.		3	3
Significance		p < .01	p < .01

THE DIFFERENCES BETWEEN PEOPLE UNDER THE AGE OF 60 AND OVER THE AGE OF 60 IN COVID-19 VACCINATION RATES AND VACCINE BRAND PERCEPTION

For adverse reactions, the opposite should be considered, as for the previous variables. A higher percentage means that the level of this attribute was more desirable because they are less afraid of the selected side effect. In both groups, the result is quite similar. Slightly more unpopular are the possible effects of memory loss or blood clots in younger people than in older people.

In the next step of the conjoint analysis, a multinomial logit analysis was performed, and the calculation of the part-worth utilities indicated the preference levels of the individual level of attributes, representing the probability of choice (desirability) if a combination of two levels of attributes was calculated. The results already described in the count analysis are shown as part-worth utilities in the graphs.

Figure 3. *The preference levels of the individual level of attributes*



To calculate the t-value for the first and second attribute, the following equation (1) was used:

$$t = \frac{\beta_{1i} - \beta_{2i}}{\sqrt{\sigma_{1i}^2 + \sigma_{2i}^2}} \quad (1)$$

where β_{1i} / β_{2i} is part-worth utility of the level Pfizer-BioNTech/ Moderna and $\sigma_{1i} / \sigma_{2i}$ is a standard error of part-worth utility of the Pfizer-BioNTech/Moderna.

For the under-60 group, part-worth utility for Pfizer-BioNTech was 76.34 points higher than Moderna. The result proves that the difference is significant ($p < 0.001$), wherefore it could be concluded that the Pfizer-BioNTech vaccine is more preferred than Moderna. In the same way, the t value was calculated for the over-60 group, where Pfizer-BioNTech is by 42.69

utility points more preferable than Moderna, and, as in the previous group, that difference is significant ($p < 0.001$).

The hypothesis H1, which says that the vaccine brand is more important to those under the age of 60 than to those over the age of 60, was rejected.

As regards the duration of protection against infection, the difference between utilities for 1 year and 6 months was 53.69 points for the under-60 group and 62.66 points for the over-60 group in favour of protection. In both cases, the calculation of the t value proves that the difference is significant ($p < 0.001$), so it can be concluded that a longer duration of protection is important to our respondents.

The hypothesis H2, which says that the vaccine's efficacy is equally important for both those under the age of 60 and those over the age of 60, was accepted.

Both the under- and over-60 groups were equally sensitive regarding the vaccine's duration and side effects.

In the final part of the analysis, the relative importance of the attributes was also calculated, predicting which of them is more or less important when respondents decided about their selection of property combinations in assessing vaccination conditions.

The relative importance (RI) of an attribute is calculated according to Equation 2 as the difference between the highest and lowest part-worth utility (most and least preferred level) relative to the sum of these differences across attributes (Equation 2):

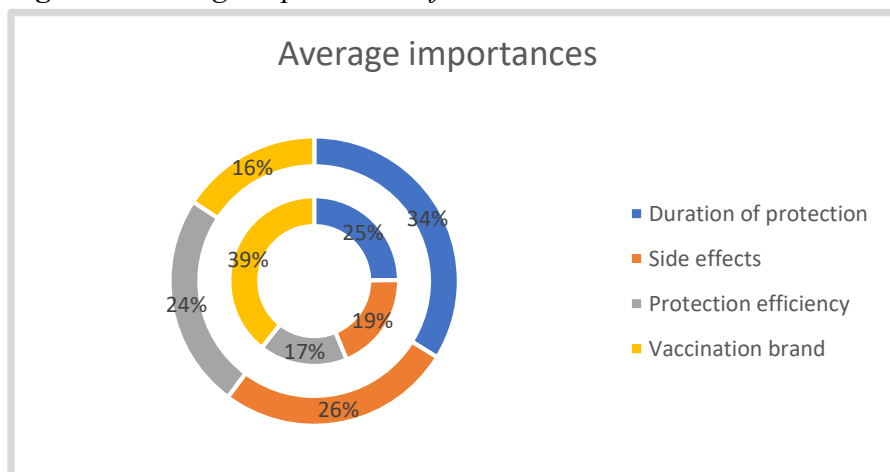
$$RI_i = \frac{\beta_{(max)i} - \beta_{(min)i}}{\sum_{i=1}^n (\beta_{(max)i} - \beta_{(min)i})} \cdot 100 \quad (2)$$

where RI_i is a relative importance of an attribute i , $\beta_{(max)i}/\beta_{(min)i}$ is the highest/lowest part-worth utility of level within attribute i , $\beta_{(max)}/\beta_{(min)}$ is the highest/lowest part-worth utility of a level within any attribute from $i=1$ to n , and n is the number of attributes.

The hypothesis H3, which says that both those under and over the age of 60 should be equally sensitive as regards the vaccine's duration and side effects, was therefore accepted.

In this calculation, we find that certain differences are shown. For the under-60 group, the duration of protection was more important (39%), whereas the brand of vaccine was less important (25%). (Inner circle in the graph). In contrast, the vaccine brand is of much greater importance (34%) although with much shorter duration of protection (25%) for the group of people aged "60 and over", which is evident from the outer circle of the graph.

Figure 4. Average importances of individual attributes



CONCLUSIONS

In professional and lay circles, the COVID-19 virus and related issues are a central topic of conversation. Vaccination has been an especially burning issue in the last six months. While the professional public predominantly advocates the positive effects and necessity of vaccination against COVID-19, several groups have formed that see everything surrounding COVID-19, especially regarding vaccination, as only a conspiracy theory. Those, let us say conspiracy theory groups, are also very loud and they spread their views through all possible media outlets. In the media, the side effects of vaccines are mentioned much more frequently in connection with certain brands of vaccines, especially AstraZeneca.

These facts raise the question of how people perceive individual brands of vaccines. Especially interesting are the differences between the under-60 and over-60, as on the one hand young people are more likely to follow social networks, through which topics about COVID-19 and vaccination against it were widely discussed, and on the other hand, the over-60 group is much more at risk if they become infected with COVID-19. Despite the fact that COVID-19 is a very “popular” topic in all circles, the authors of this study, are according to their knowledge the first ones to investigate the differences in the perception of vaccination between the under-60s and over-60s.

The results of this research clearly show that, on average, both groups chose Pfizer-BioNTech. However, the probability of choosing this vaccine compared to Moderna is almost twice as high among the over-60s, with 47% opting for Pfizer-BioNTech and 27% for Moderna. There is a significantly smaller difference for under-60s, namely 31% versus 23%. In the last place in vaccine popularity for both groups is Astra Zeneca. We can say that this finding is surprising, as the under-60s follow the modern media more and we concluded that they would prefer brands that received more positive opinions in the media, while the over-60 were expected not to place such importance on the brand of vaccine, but rather on getting vaccinated as quickly as possible so as to protect themselves from the possible consequences of the disease.

For the duration of protection and side effects of the vaccine, and also its efficacy, we can conclude based on the results of this research that there are no differences between those under the age of 60 and those over the age of 60, which is not surprising, since it is logical that people want as long a duration as possible, maximum effectiveness, and minimum side effects, regardless of the age.

The main limitation of the paper is the fact that the study was conducted only in one country. The question arises as to whether the results would be the same if the study had been conducted in countries with different political, social, economic, and cultural backgrounds. The second limitation of this paper, as predicted by the authors, is the fact that a relatively small sample was used. Nevertheless, the authors believe that the sample is still big enough to confirm the results and, even more, the authors believe that, had a bigger sample been gathered, would have yielded the same results.

In light of these findings the authors recommend further research in several different countries, as well as extending the research to identifying differences between several different age groups and educational structures.

REFERENCES

1. Anti-vaxxers Think This Is Their Moment. (2022, May 15). In The Atlantic. <https://www.theatlantic.com/ideas/archive/2020/12/campaign-against-vaccines-already-under-way/617443/>
2. Ataguba, J.E. COVID-19 Pandemic, a War to be Won: Understanding its Economic Implications for Africa. *Appl Health Econ Health Policy* 18, (2020) 325–328. <https://doi.org/10.1007/s40258-020-00580-x>
3. Cerda, A.A., García, L.Y. Willingness to Pay for a COVID-19 Vaccine. *Appl Health Econ Health Policy*. 2021 May;19(3):343-351. doi: 10.1007/s40258-021-00644-6. Epub 2021 Feb 23. PMID: 33619688; PMCID: PMC7899739.
4. Coronavirus (COVID-19) Vaccinations. (2024, September 15). In Our World in Data. <https://ourworldindata.org/covid-vaccinations>
5. Covid-19. (2022, May 15). In Wikipedia. <https://en.wikipedia.org/wiki/COVID-19>
6. de Matos, C. A., Veiga, R.T. (2004). The Effects of Negative Publicity and Company Reaction on Consumer Attitudes. *SSRN Electron Journal*. https://www.researchgate.net/publication/228150911_The_Effects_of_Negative_Publicity_and_Company_Reaction_on_Consumer_Attitudes
7. Green, P. E., Rao, V. R. Conjoint Measurement for Quantifying Judgmental Data. *Journal of Marketing Research*, 8(3), (1971) 355–363. <https://doi.org/10.2307/3149575>
8. Kohl, D.M. (2011). The Presentation of "Self" and "Other" in Nazi Propaganda.
9. Liu, C., Zhou, Q., Li, Y., Garner, L. V., Watkins, S.P., Carter, L.J. (2020). Research and Development on Therapeutic Agents and Vaccines for COVID-19 and Related Human Coronavirus Diseases. *ACS Cent. Sci.* 2020, 6, 3, 315–33. https://pubs.acs.org/doi/epdf/10.1021/acscentsci.0c00272?ref=article_openPDF
10. Milavec Kapan, M. Starost in staranje. *Zavod IRC*, 2011. http://www.impletum.zavod-irc.si/docs/Skriti_dokumenti/Starost_in_staranje-Milavec.pdf.
11. Mortality Risk of COVID-19 (2024, September 15). In Statistics and Research – Our World in Data. <https://ourworldindata.org/mortality-risk-covid>
12. Orme, B.K. Getting started with conjoint analysis: strategies for product design and pricing research. *Research Publishers, LLC*, (2006).
13. Sago, B., Hinnenkamp, C. The Impact of Significant Negative News on Consumer Behavior Towards Favorite Brands. *Global Journal of Bussines Research*, (2014) 65–73. https://www.researchgate.net/publication/323643961_The_impact_of_significant_negative_news_on_consumer_behavior_towards_favorite_brands/link/5e0f7be192851c8364b00228/download?tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwic29udGVudCI6ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwic29udGVudCI6ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIn19
14. Share of people who received at least one dose of COVID-19 vaccine. (2024, September 15). <https://ourworldindata.org/grapher/share-people-vaccinated-covid?country=~SVN>
15. Slovenia COVID - Coronavirus statistics. (2024, September 15). In Worldometers. https://www.worldometers.info/coronavirus/country/slovenia/#google_vignette
16. Soofi, M., Najafi, F. & Karami-Matin, B. Using Insights from Behavioral Economics to Mitigate the Spread of COVID-19. *Appl Health Econ Health Policy* 18, (2020) 345–350. <https://doi.org/10.1007/s40258-020-00595-4>
17. Starejši bolj skrbijo za svoje zdravje. (September 15, 2024). In Siol.net <https://siol.net/raziskava-starejsi-bolj-skrbijo-za-svoje-zdravje-223268>
18. Steiner, M., Meißner, M. A. User's guide to the galaxy of conjoint analysis and compositional preference measurement. *Mark Zeitschrift fur Forsch und Prax.* (2018) 3–25.
19. Stout, M. J. "The effectiveness of Nazi propaganda during World War II" (2011). *Master's Theses and Doctoral Dissertations*. 314. <https://commons.emich.edu/theses/314>
20. Werntoft, E., Hallberg, I.R., Elmståhl, S. et al. (2005). Older people's views of prioritization in health care. *Aging Clin Exp Res* 17, 402–411. <https://doi.org/10.1007/BF03324630>
21. What's the chance of dying if you get COVID-19 (September 15, 2024). Smith, E. In COVID-101. <https://covid-101.org/science/whats-the-chance-of-dying-if-you-get-covid-19/>