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Analysis of Factors Influencing Covid-19 Mortality Rate in Indonesia

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Abstract: Coronavirus disease 2019(Covid-19) which is caused by the SARS-CoV-2 virus, has a major impact on the high death rate. The positive confirmation rate is directly proportional to the Covid-19 death rate. The vaccination program is carried out to reduce the spread, reduce morbidity, mortality and achieve immunity from the SARS-CoV-2 virus. The aim of the research is to determine the effect of positive confirmation rates and vaccination rates on the Covid-19 death rate in Indonesia.The research is an observational study with a cross sectional approach.The population in this study were all patients with confirmed Covid-19. The samples were patients who were confirmed to have Covid-19 from February 2021 to March 2022. The analysis technique used was multiple linear regression. The research results show that the positive confirmation rate (p = 0.000) has a positive effect on the Covid-19 death rate, while the vaccination rate (p =0.278) and the second vaccination rate (p = 0.8619) had no effect on the Covid-19 death rate. It can be concluded that there is a positive and significant relationship between the number of positive confirmations and the Covid-19 death rate. The number of first and second vaccinations is not related to the Covid-19 death rate.

Keywords: Covid 19; Death rate; Positive conformation rate; Vaccine.

Introduction

At the end of December 2019, it was first discovered that the deadly virus called Covid-19 appeared in Wuhan, China. WHO received information about cases of pneumonia in Wuhan on December 31, 2019, and on January 7, 2020, Chinese authorities confirmed that this was a Corona virus similar to SARS and MERS. Cases of Corona virus infection then expanded to more than 2,000 cases in China and outside Hubei Province (Mahase, 2020; Zhou et al., 2020).

In a short time, the number of Covid-19 patients increased to millions and spread to many countries. Outside China, cases jumped 13-fold in 114 countries with a death rate of 4,291 people. Case detection rates may change daily and can be monitored in real-time on websites such as Johns Hopkins University and other official forums (Guan et al., 2020). On January 30 2020, WHO declared that Covid-19 was a global health emergency due to the widespread number of cases and victims throughout the world, requiring world attention (Sohrabi et al., 2020). On August 19 2022, WHO data stated that there were 591,683,619 confirmed cases of Covid-19 globally, with 6,443,306 deaths. More information about the distribution of cases and deaths can be found in the following Figure 1.

If you look at the figure 1, the largest number of confirmed Covid-19 cases occurred on the European continent, namely 245,915,246 cases, and the least occurred in Africa with 9,267,141 cases. The highest number of deaths due to Covid-19 occurred in the Americas, namely 2,806,324 cases, and the least in Africa with 174,140 cases. On March 2 2020, President Joko Widodo announced the first case of Covid-19 in Indonesia, four months after the first case in the Republic of China. Initially, there were two cases in Indonesia which continued to increase every day. In January 2021, daily cases reached 14,000, and in July 2021, the number reached 51,000 per day with 2,000 deaths per day. On October 11, 2021, the number of cases

How to Cite:
Example: Susilawati, S., Doyan, A., Muliyadi, L., & Hakim, S. (2019). Growth of tin oxide thin film by aluminum and fluorine doping using spin coating Sol-Gel techniques. *Jurnal Penelitian Pendidikan IPA, 1*(1), 1-4. https://doi.org/10.29303/jppipa.v1i1.264

reached four million, increasing enormous pressure on the health system due to the rapid growth of critical patients and deaths (Nicola et al., 2020).

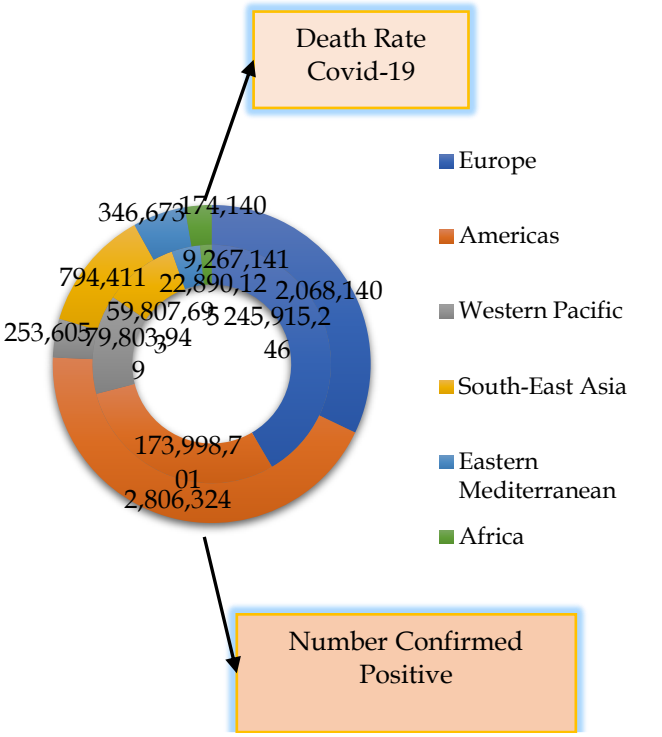

Figure 1. Graph of Covid-19 Incidence Rates by Region as of 19 August 2022

In 2020, the DIY Provincial Government reported that positive cases of Covid-19 continued to increase, in September 2020, the number of positive cases of Covid-19 was reported to have reached 1557 cases. One of the districts in DI Yogyakarta Province which is experiencing an increase in positive Covid-19 cases is Kulonprogo Regency. There were reported positive cases of Covid-19 increasing by 21 new cases within 24 hours. Even in November there was an increase of up to 70% starting from October 2020 (Kusumo, 2021).

The impact of Covid-19, which leads to a high death rate, is apparently because Covid-19 is an infectious disease caused by the SARS-CoV-2 virus. Clinically, people infected with this virus will experience symptoms of mild to severe respiratory illness and can recover without requiring special treatment (Ruan et al., 2020). Older Covid-19 patients with comorbidities have worse outcomes (Kusumo & Primanda, 2022). Patients with severe disease may experience dyspnea and hypoxemia within 1 week of disease onset, which can rapidly progress to acute respiratory distress syndrome (ARDS) or end-organ failure. Death rates correlate with a country's health care resources. However, in many countries, invasive ventilators and intensive care units (ICUs) are far from adequate for the care of critical patients (Lai et al., 2020; Wu et al., 2020). To prevent and slow the spread of Covid-19, people are advised to protect themselves by maintaining a physical distance of at least 1 meter from other people, wearing a mask, and washing their hands or using a hand sanitizer (Bhatraju et al., 2020).

The Covid-19 pandemic has an impact on global health and the economy, including Indonesia, because the economy is very important for meeting daily needs. The severe economic impact is not only caused by the pandemic itself, but also caused by the global response to the pandemic in a synergistic manner (Bauer et al., 2020). Negligence in economic management in the midst of a pandemic can cause stagnation and stop most economic activities (Baum et al., 2020). During the lockdown, people (especially those without formal employment contracts) lost income, unemployment rates increased dramatically, causing a sharp decline in consumer demand that will continue into the post-lockdown period. Thus, during the pandemic, production and distribution activities of all goods and services have stopped (Gautam, 2020).

The Indonesian government is trying to overcome the Covid-19 pandemic with a fiscal deficit policy, tightening PPKM, and work regulations such as WFH and WFO. The essential sector is allowed to work with limited capacity, but this policy is not yet fully effective due to the weakness of 3T (test, trace and treat) in handling cases. The government is also trying a vaccine distribution approach as an additional effort (Xiong et al., 2020). The President issued Presidential Decree Number 18/2020 on September 3 2020, forming a Covid-19 vaccine development team under the supervision of the minister of economy. This was followed by the issuance of a Presidential Regulation (PERPES) regarding the procurement and implementation of a vaccine program to reduce the spread of the SARS-CoV-2 virus and achieve body immunity. The equitable distribution of vaccinations has raised controversy due to doubts over the short development time, around one year, in contrast to other vaccines which take longer, raising concerns about the side effects of the Covid-19 vaccine (Pranita, 2020).

The Covid-19 pandemic has had a very broad impact and changed the social order, law, health sector and economic sector (Angelova et al., 2020). Policies relating to the economy and health tend to be zero-sum games. These two interests seem to interact with each other and influence the level of welfare of a country as indicated by the high death and poverty rates (Purwanto et al., 2020). The aim of this research is to analyze the influence of positive confirmation rates and vaccination rates on the Covid-19 death rate in Indonesia. This research emerges as a response to the pandemic that has transformed the global social, economic, and health

landscape. Factors such as the positive confirmation rate and vaccination have become the primary focus for analyzing their impact on the death rate of Covid-19 in Indonesia. This study is crucial as it can provide a profound understanding of the pandemic dynamics, evaluate government policies, and contribute to preparations for future health crises.

Method

The research is an observational study, with a cross sectional approach. The population in this study were all patients with confirmed Covid-19. The samples were patients who were confirmed to have Covid-19 from February 2021 to March 2022. The research data is secondary data released by the Covid-19 Task Force over a daily period, which includes data on the number of positive confirmations, the number of first and second vaccinations, as well as the death rate covid-19. The data analysis technique used in this research is multiple linear regression.

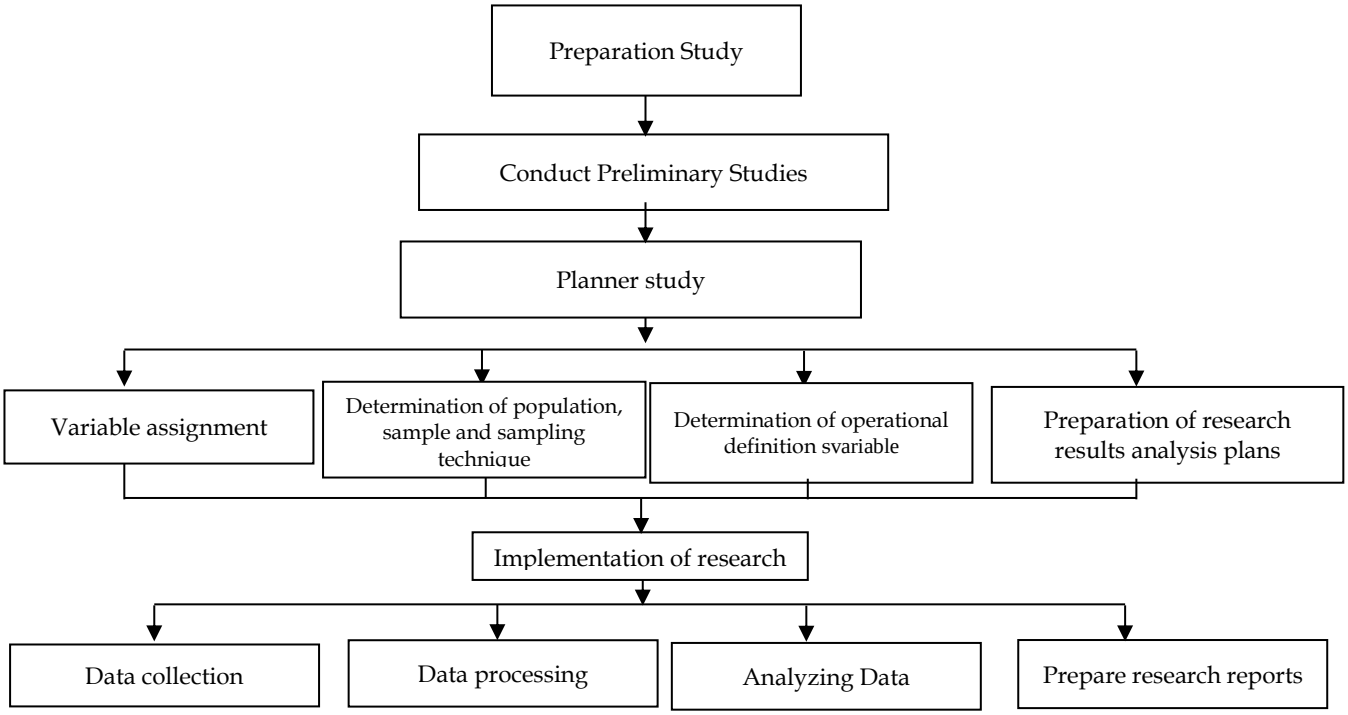

Figure 2. Research Stage

Result and Discussion

The Covid-19 death rate can be described in the following table 1.

Table 1. Description of the Covid-19 Death Rate for the Period February 1–December 19, 2021

Statistics	Mark
Minimum	1
Maximum	2.07
Average	354.05
Standard deviation	468.04

Table 1 shows that the Covid-19 death rate is pperiod1 February to 19 December 2021m the lowest was 1 case and the highest 2,07 cases, with an average of 354.05 and a standard deviation of 468.04. Furthermore, to clarify the pattern of Covid-19 death rate data, it is described in the graph as follows:

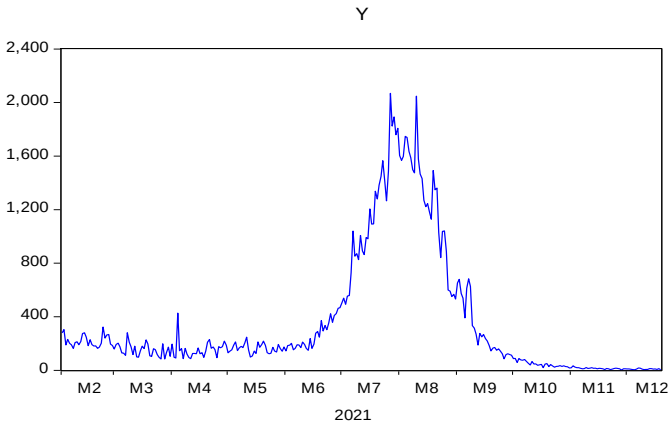

Figure 3. GraphPeriod Covid-19 Death RateFebruary 1–December 19, 2021

If you look at the figure 3, it can be seen that starting in June there was an increase in the Covid-19 death rate and reached a peak in July – August 2021. It then showed a decline and slope from September – December 2021.

The number of positive confirmations for Covid-19 can be described in the table as follows:

Table 2. Description of Covid-19 Positive Confirmation Numbers period February 1–December 19, 2021

Statistics	Mark
Minimum	106
Maximum	56.76
Average	9.883.70
Standard deviation	12.278.08

Table 2 shows that the numbers positive confirmation covid-19 period February 1 to December 19 2021, the lowest was 106 cases and the highest 56,76 cases, with an average of 9,883,70 and a standard deviation of 12.278.08. Next, to clarify the pattern of numerical datapositive confirmationcovid-19, described in the graph as follows:

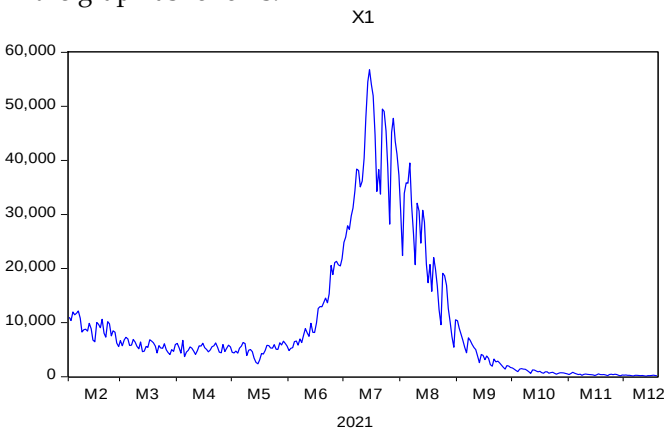

Figure 4. GraphNumber of Positive Confirmations for Covid-19 Period February 1–December 19, 2021

If you look at the figure 4, you can see that starting in June the numbers have increasedpositive confirmationcovid-19 and reached its peak in July – August 2021. It then showed a decline and sloped from September – December 2021. Number administering the first Covid-19 vaccination can be described in the table as follows:

Table 3. Description of Numbers for First Covid-19 Vaccination PeriodFebruary 1–December 19, 2021

Statistics	Mark
Minimum	1.76
Maximum	1.691.11
Average	467.16
Standard deviation	377.28

Table 4 shows that the numbers administering the first Covid-19 vaccinationpperiodFebruary 1 to December 19 2021 the lowest is 1,76 case and highest 1,691,11 cases, with an average of 467.16 and a standard deviation of 377,28. Next, to clarify the pattern of numerical data administering the first vaccination covid-19, described in the graph as follows:

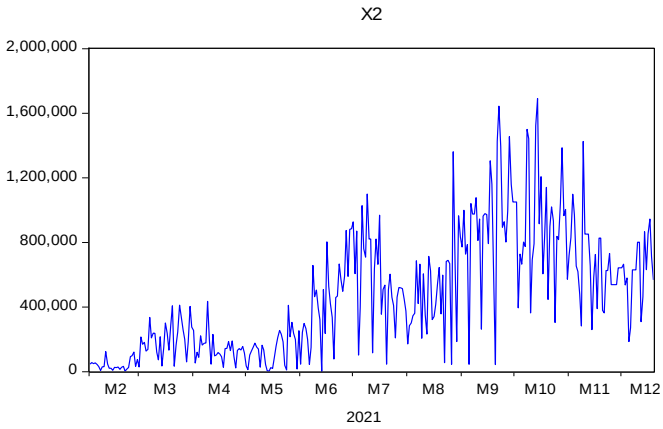

Figure 5. Graph Figures for the First Covid-19 Vaccination Period February 1–December 19, 2021

If you look at the figure 5, it can be seen that although there is fluctuation, there is a tendency to increase the number of first vaccinations until October and then shows a downward trend. In December, there was again a trend towards an increase in the number of first vaccinations.

Table 4. Description of K Vaccination Rates Second Covid-19 Period February 1–December 19, 2021

Statistics	Mark
Minimum	984
Maximum	1.256.74
Average	331.39
Standard deviation	310.28

Table 4 shows that the numbersadministering the second Covid-19 vaccination period February 1 to December 19 2021 the lowest is 984 case and highest 1,256,74 cases, with an average of 331,39 and a standard deviation of 310,28. Next, to clarify the pattern of numerical data administering the second vaccination covid-19, described in the graph as follows:

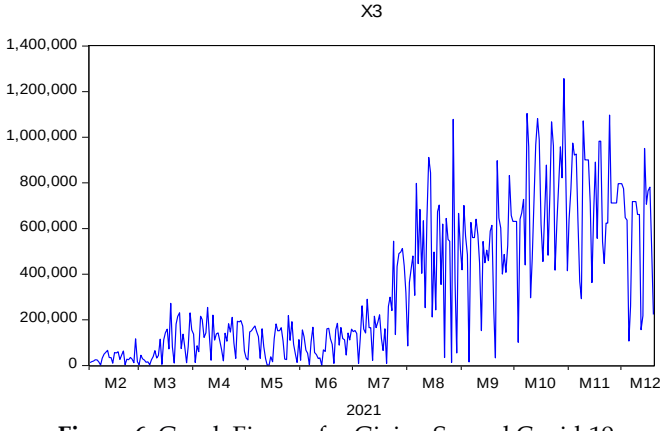

Figure 6. Graph Figures for Giving Second Covid-19 Vaccination Period February 1–December 19, 2021

If you look at the figure 6, it can be seen that although there is fluctuation, there is a trend towards an increase in the number of second vaccinations until October and then shows a downward trend. The results of multiple linear regression testing can be described in the table 5:

The results of the analysis showed that the t-value for the positive confirmation number variable for Covid-19 was 7.54 and p was 0.00 ($p<0.05$), so it was concluded that there was a positive and significant relationship between the positive confirmation number and the Covid death rate - t value -The calculation for the variable number of first vaccinations for Covid-19 is 1.08 and p is 0.27 ($p>0.05$), so it is concluded that there is no relationship between the number of first vaccinations and the Covid-19 death rate. The t-value for the variable number of second Covid-19 vaccinations was -0.17 and p was 0.86 ($P>0.05$), so it was concluded that there was no relationship between the number of first vaccinations and the Covid-19 death rate.

Table 5. Results of Multiple Linear Regression Testing

Model	Coef. Reg.	S.E	t	p
Constant	0.79	0.02	30.34	0.00
Positive confirmation number	5.11	6.78	7.54	0.00
Number of first vaccine administrations	1.40	1.29	1.09	0.27
Number of second vaccine administration	-2.98	1.71	-0.17	0.86
R2 =0.160871				
F =20.25759				0.00

The research results show thatThere is a positive and significant relationship between positive confirmation rates and the Covid-19 death rate. The results of this study support the research result Valev (Valev, 2020). This is becauseCovid-19 is a newly identified disease that is quite deadly (an average of 3-5% deaths among sufferers who are confirmed positive), and there is no drug that is believed to be able to cure Covid-19. Preventive measures are the optimal approach that must be taken by every country to maintain the safety of its population (Muhyiddin, 2020). The absence of a reliable and proven drug capable of treating Covid-19 means that the treatment process cannot be fully effective, thereby increasing the risk of severity and death.

The research results which show a positive relationship between the positive confirmation rate and the Covid 19 death rate, indirectly indicate the success of checking and tracing efforts for people suspected of being infected with the Covid 19 virus due to a history of travel to the Covid 19 Epicentrum center, or a history of contact with other people. who was confirmed positive for Covid-19. This can also be seen from the positive confirmation number graph and the death rate graph which show the same pattern trend.

The research results show thatthat there is no relationship between the number of first and second vaccinations with the Covid-19 death rate. The results of this study contradict the research results Bernal et al. (2021) which provides evidence of the effectiveness of the Pfizer-BioNTech BNT162b2 and Oxford-Asta-Zeneca ChAdOx1-S vaccines against symptomatic covid-19, hospital admissions and deaths in older people in the UK. The results of the study showed that a single dose of the BNT162b2 vaccine was around 60-70% effective in preventing symptomatic disease in adults aged 70 years and over in the UK and two doses were 85-90% effective. Those who were vaccinated and had symptoms had a 44% lower risk of hospitalization and a 51% lower risk of death compared with unvaccinated people. A single dose of ChAdOx1-S vaccine is approximately 60-75% effective against symptomatic disease and provides additional protective effects against hospitalization, but it is too early to assess the effect on mortality.

The vaccination factor can have a significant influence on the Covid-19 death rate, although the relationship is not always direct. The Covid-19 vaccine has been proven effective in preventing severe disease, reducing mortality and reducing the risk of transmission. When more people are vaccinated with first and second doses, in general, death rates tend to decrease. However, several other variables could influence this relationship. For example, new variants that may be more contagious or less responsive to vaccines, vaccination rates in a population, compliance with health protocols, and local health system capacity can influence the impact of vaccination on mortality rates. Vaccination helps protect individuals from severe disease and can potentially save lives, but the role of other factors in the dynamics of viral spread must also be considered (Suleyman et al., 2020; WHO, 2020)

The results of this study also contradict the research resultsJohnson et al. (2022) showed that the COVID-19 vaccine reduces the risk of SARS-CoV-2 infection and associated death COVID-19 during the period of dominance of the Delta variant and the risk of infection during the emergence of the Omikron variant. As for research Fauziah & Sari (2023) obtain evidence that the vaccine has proven effective in reducing the severity of Covid-19.

One of the factors causing the research results which show there is no relationship between the number of first and second vaccines given and the Covid 19

death rate is because herd immunity conditions have not been created. Ramatillah et al. (2020) states that herd immunity, also referred to as population immunity, refers to indirect protection against infectious diseases that occurs when an entire population becomes immune through vaccination or has immunity due to having been previously infected. The World Health Organization (WHO) supports achieving herd immunity through vaccination, not by allowing the disease to spread among a portion of the population, as this can cause unnecessary cases and deaths. Nasir et al. (2021)states that the success rate of herd immunity is highly dependent on the level of malignancy of the disease. In the context of COVID-19, the recommended level of herd immunity is 70%.

Guidelines set by the World Health Organization (WHO) itself emphasize that every individual should receive two injections or two doses of vaccine, to obtain optimal immunity (Larasati & Sulistianingsih, 2021). At the end of the research period, namely December 19 2021, vaccine dose 1 reached 56.15% and dose 2 reached 39.66% (Bernal et al., 2021). If you look at the research results, the number of first vaccine administrations has a positive but not significant effect. This means that the increasing number of first vaccines given is still followed by an increase in the Covid-19 death rate, although the increase is not significant. This condition is caused because the first dose of vaccine is not optimal in forming the body's immunity against the Covid-19 virus, so there is still the potential for infection. This is the reason why the number of first Covid-19 vaccinations which is already quite large (56.15%) is unable to reduce the Covid-19 death rate.

The achievement of administering the second Covid-19 virus was 39.66%. This means that 39.66% of the population targeted for the vaccine have received the first and second doses of the vaccine. Even though the number of people given the second Covid-19 vaccine is still relatively small and not sufficient to achieve herd immunity, research results show that giving the second vaccine has a negative but not significant effect. These results provide evidence that the rate of administration of the second Covid-19 vaccine has influenced the reduction in the Covid-19 death rate, although the results are not yet significant. Herd immunity has not yet been met, causing the spread of the virus in the community to still occur, even though the government has made various prevention efforts, for example through programs Restrictions on Community Activities (PPKM) and Large-Scale Social Restrictions (PSBB) are taking place in several regions in Indonesia, which have been identified as the epicenter of the spread of the Covid-19 virus.

Conclusion

Based on the research results, it can be concluded that there is a positive and significant relationship between the number of positive confirmations and the Covid-19 death rate. The number of first and second vaccinations is not related to the Covid-19 death rate.

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Conceptualization, NN, ME and MH; NN: conduct research, collect data, and write research articles, perform data analysis; NN, ME and MH have read and approved the published version of the manuscript.

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Conflict of interest
The authors declare that all authors have no conflict of interest. Thank You

References

Angelova, M. T., Dimitrova, D. G., Da Silva, B., Marchand, V., Jacquier, C., Achour, C., ... & Carré, C. (2020). TRNA 2′-O-methylation by a duo of TRM7/FTSJ1 proteins modulates small RNA silencing in Drosophila. *Nucleic Acids Research*, *48*(4), 2050–2072. https://doi.org/10.1093/nar/gkaa002

Bauer, D. C., Tay, A. P., Wilson, L. O., Reti, D., Hosking, C., McAuley, A. J., ... & Vasan, S. S. (2020). Supporting pandemic response using genomics and bioinformatics: A case study on the emergent SARS-CoV-2 outbreak. *Transboundary and Emerging Diseases*, *67*(4), 1453–1462. https://doi.org/10.1111/tbed.13588

Baum, A., Fulton, B. O., Wloga, E., Copin, R., Pascal, K. E., Russo, V., ... & Kyratsous, C. A. (2020). Antibody Cocktail to SARS-CoV-2 Spike Protein Prevents Rapid Mutational Escape Seen with Individual Antibodies. *Science*, *369*, 1–7. https://doi.org/10.1126/science.abd0831

Bernal, J. L., Andrews, N., Gower, C., Robertson, C., Stowe, J., Tessier, E., ... & Ramsay, M. (2021). Effectiveness of the Pfizer-BioNTech and Oxford-AstraZeneca Vaccines on Covid-19 Related Symptoms, Hospital Admissions, and Mortality in Older Adults in England: Test Negative Case-Control Study. *The BMJ*, *373*, 1–11. https://doi.org/10.1136/bmj.n1088

Bhatraju, P. K., Ghassemieh, B. J., Nichols, M., Kim, R.,

Jerome, K. R., Nalla, A. K., ... & Mikacenic, C. (2020). Covid-19 in Critically Ill Patients in the Seattle Region — Case Series. *New England Journal of Medicine*, *382*(21), 2012–2022. https://doi.org/10.1056/nejmoa2004500

Fauziah, D. A., & Sari, D. N. (2023). Efektivitas Vaksinasi terhadap Tingkat Keparahan Covid-19. *Jurnal Epidemiologi Kesehatan Indonesia*, *7*(1), 1–5. https://doi.org/10.7454/epidkes.v7i1.6374

Gautam, S. (2020). COVID-19: air pollution remains low as people stay at home. *Air Quality, Atmosphere and Health*, *13*(7), 853–857. https://doi.org/10.1007/s11869-020-00842-6

Guan, W. J., Ni, Z. Y., Hu, Y., Liang, W. H., Ou, C. Q., He, J. X., ... & Zhong, N. S. (2020). Clinical Characteristics of Coronavirus Disease 2019 in China. *New England Journal of Medicine*, *382*(18), 1708–1720. https://doi.org/10.1056/nejmoa2002032

Johnson, A. G. … Scobie, H. M. (2022). COVID-19 Incidence and Death Rates Among Unvaccinated and Fully Vaccinated Adults with and Without Booster Doses During Periods of Delta and Omicron. *MMWR. Morbidity and Mortality Weekly Report*, *71*(4), 132–138. https://doi.org/10.15585/mmwr.mm7104e2.

Kusumo, M. P. (2021). Health behavior education to prevent coronavirus disease-19 in orphanages: Roleplay strategies. *Open Access Macedonian Journal of Medical Sciences, 9*(E), 1480-1484. https://doi.org/10.3889/oamjms.2021.6870

Kusumo, M. P., & Primanda, Y. (2022). Implementation of Diabetes Mellitus and Hypertension Control Program through Whatsapp Media During Covid. *Aksiologiya: Jurnal Pengabdian Kepada Masyarakat, 19*. *6*(3), 475–487. Retrieved from https://journal.um-surabaya.ac.id/index.php/Axiologiya/article/view/14286

Lai, C. C. … Hsueh, P. R. (2020). Global Epidemiology of Coronavirus Disease 2019 (COVID-19): Disease Incidence, Daily Cumulative Index, Mortality, and Their Association With Country Healthcare Resources and Economic Status. *International Journal of Antimicrobial Agents*, *55*, 1–8. https://doi.org/10.1016/j.ijantimicag.2020.105946

Larasati, P. A., & Sulistianingsih, D. (2021). Urgensi Edukasi Program Vaksinasi Covid-19 Berdasarkan Peraturan Menteri Kesehatan Nomor 10 Tahun 2021. *Jurnal Pengabdian Hukum Indonesia*, *4*(1), 99–111. Retrieved from https://journal.unnes.ac.id/sju/index.php/JPHI/article/view/49863

Mahase, E. (2020). China coronavirus: what do we know so far? *BMJ*, m308. https://doi.org/10.1136/bmj.m308

Muhyiddin. (2020). Covid-19, New Normal, dan Perencanaan Pembangunan di Indonesia. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, *4*(2), 240–252. https://doi.org/10.36574/jpp.v4i2.118

Nasir, N. M., Joyosemito, I. S., Boerman, B., & Ismaniah, I. (2021). Kebijakan Vaksinasi COVID-19: Pendekatan Pemodelan Matematika Dinamis pada Efektivitas Dan Dampak Vaksin di Indonesia. *Jurnal ABDIMAS (Pengabdian Kepada Masyarakat) UBJ*, *4*(2), 191–204. https://doi.org/10.31599/jabdimas.v4i2.662

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., ... & Agha, R. (2020). The Socio-Economic Implications of The Coronavirus Pandemic (COVID-19): A Review. *International Journal of Surgery*, *78*, 185–193. https://doi.org/10.1016/j.ijsu.2020.04.018

Pranita, E. (2020). *Umumkan Awal Maret, Ahli: Virus Corona Masuk Indonesia dari Januari*. Kompas.

Purwanto, A., Asbari, M., Fahlevi, M., Mufid, A., Agistiawati, E., Cahyono, Y., & Suryani, P. (2020). Impact of Work From Home (WFH) on Indonesian Teachers Performance During the Covid-19 Pandemic : An Exploratory Study. *International Journal of Advanced Science and Technology*, *29*(5), 6235–6244. Retrieved from http://sersc.org/journals/index.php/IJAST/article/view/15627

Ramatillah, D. L., Ade, A., Anggada, A., Suri, S., Rahayu, R., Shaimatun, S., ... & Dede, D. (2020). Edukasi Mengenai Herd Immunity dan Vaksinasi Covid-19 Kepada Tenaga Kefarmasian di Indonesia. *Jurnal Berdikari*, *3*(2), 1–5. Retrieved from https://journal.uta45jakarta.ac.id/index.php/berdikari/article/view/4553

Ruan, Q., Yang, K., Wang, W., Jiang, L., & Song, J. (2020). Clinical Predictors Of Mortality Due to COVID-19 Based on An Analysis of Data of 150 Patients From Wuhan, China. *Intensive Care Medicine*, *46*(5), 846–848. https://doi.org/10.1007/s00134-020-05991-x

Sohrabi, C., Alsafi, Z., O'neill, N., Khan, M., Kerwan, A., Al-Jabir, A., ... & Agha, R. (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*, *76*, 71–76. https://doi.org/10.1016/j.ijsu.2020.02.034

Valev, D. (2020). Relationships of Total COVID-19 Cases and Deaths With Ten Demographic, Economic and Social Indicators. *MedRxiv Preprint*, 1–18. https://doi.org/10.1101/2020.09.05.20188953

Wu, F., Zhao, S., Yu, B., Chen, Y. M., Wang, W., Song, Z. G., ... & Zhang, Y. Z. (2020). A New Coronavirus Associated with Human Respiratory Disease in China. *Nature*, 1–20.

https://doi.org/10.1038/s41586-020-2008-3

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M., Gill, H., Phan, L., ... & McIntyre, R. S. (2020). Impact of COVID-19 Pandemic on Mental Health in The General Population: A Systematic Review. *Journal of Affective Disorders*, *277*, 55–64. https://doi.org/10.1016/j.jad.2020.08.001

Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., ... & Cao, B. (2020). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The Lancet*, *395*(10229), 1054–1062. https://doi.org/10.1016/S0140-6736(20)30566-3