

Physical Distancing Visual Communication for Congregational Prayers as an Implementation of Health Protocols

Muhammad Kholif Lir Widyoputro¹

¹ Department of Architecture, Faculty of Civil Engineering and Planning, Universitas Islam Indonesia

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Abstract

Mosques are a place for physical activity that has great potential to become a cluster for the spread of the COVID-19 virus. At the beginning of the pandemic, mosques were prohibited from operating to carry out various Islamic religious activities, especially congregational prayers. Mosque administrators play a role in communicating the importance of maintaining a safe distance between prayers to contain the spread of the virus. Visual communication with distance markers between worshipers is an efficient way of implementing social distancing in the prayer room. The method used in this research is descriptive qualitative for secondary data. The approach used is desk research. This research finds that there is no standard signage for physical distancing as an implementation of health protocol in the mosque. This is indicated by various signage configurations and approaches. There is a need for congregation prayer physical distancing visual signage standardization on a regional or national scale.

Keywords: *architectural visual communication, Covid-19, physical distancing, proximity*

Introduction

COVID-19 was designated a pandemic by the World Health Organization (WHO) on March 11, citing approximately 118,000 instances of coronavirus disease in over 110 nations and territories around the world, as well as the ongoing risk of global spread (Ducharme, 2020). Implementing physical distancing rules is one of the most effective policy measures in preventing the spread of the virus in public spaces during the pandemic (Wilder-Smith & Freedman, 2020). However, physical distancing is challenging to implement in public spaces (Elsayed, 2020).

For many individuals, staying at home is unsustainable or impracticable, thus public spaces must be prepared for those who remain

and those who return (Nesler, 2020). For some people who have a high social culture among family and relatives, maintaining physical distancing is harder (Elsayed, 2020). Preventative measures to slow the COVID-19 transmission such as physical distancing, self-quarantine, or community-wide lockdowns, are almost impossible to implement in these overcrowded areas, and even the most basic hygiene measures are difficult to implement because water and soap are frequently unavailable for washing hands (United Nation Human Settlements Programme, 2020).

Law enforcement is required in almost every situation. As a result, such restricted initiatives should be confined to the true level of community danger (Wilder-Smith & Freedman, 2020). Rethinking how public space architecture can protect and promote planetary health will be required to address the COVID-19 crisis. Only committed communities of practice can achieve this. Throughout this crisis and beyond, planners and public health

Correspondence: Muhammad Kholif Lir Widyoputro
Department of Architecture, Faculty of Civil Engineering
and Planning, Universitas Islam Indonesia
E-mail: kholif@uii.ac.id

specialists must collaborate to create healthier cities (Honey-Rosés et al., 2020). Amid the emergence of the COVID-19 outbreak that hit the world, the government issued encouraging policy schemes to minimize the impact of the pandemic (Novrizaldi, 2021).

The Council of Indonesian Ulama (MUI) is the highest Islamic institution belonging to the Indonesian government. The government cooperates with the MUI Fatwa Commission to determine the pandemic issue, which is a polemic in the community. This collaboration has issued a fatwa related to the call to pray together at home or keep a distance in the congregational prayer rows (saf).

The fatwa also calls for the suspension of Friday prayers as part of efforts to break the chain of the spread of the coronavirus. However, the fatwa did not immediately receive a positive response from the Indonesian Muslim community. Many regretted and even criticized the MUI fatwa. Though ideally, we should follow the government's considerations as Islamic jurisprudence in a situation like this.

Issue

The call to keep a distance will be an obstacle for mosque administrators if it is carried out every prayer time. So mosques install signage with stickers to make it easy for worshipers to follow. There are no standards regarding the procedure for installing markers and the configuration of the safety distance of this row, which makes prayer tend to violate and be untidy in the rows of prayer. An untidy distance between worshipers has the possibility of not being fulfilled by health protocols as an effort to prevent the transmission of infectious diseases, especially during a pandemic.

Research Purposes

The number of COVID-19 cases had peaked, which was balanced with the community, who increasingly did not care about health protocols. As the institution in charge of this public facility, this situation makes the mosque management continue to intensify the importance of maintaining a safe distance. This study aims to identify how to implement the health protocol, particularly the configuration of safe distance markers for congregational prayers.

The worrying number of cases due to the COVID-19 pandemic is caused by people

who increasingly don't pay attention to health protocols. This circumstance makes mosque management, who is in charge of these public facilities, need to be facilitated with visual communication knowledge to encourage the success of health protocols in the new normal era.

Literature Review

Physical Distancing according to WHO

The World Health Organization (WHO) has begun referring to "physical distancing" rather than "social distancing" as a means of preventing the spread of the new coronavirus from person to person, a move that experts have hailed as a "step in the right direction" (Aziz, 2020). The change in terms was made to clarify the context that has been circulating in the broader community, namely the appeal to stay at home during the coronavirus pandemic. The term "physical distancing" is better used than "social distancing." This is because physical distancing refers to taking care of yourself with other people physically and staying connected socially, while social distancing refers more to limiting social interaction between people (Gupta & Dhamija, 2020).

According to WHO, the definition of physical distancing is the limitation of physical distance between humans. The difference between physical distancing and social distancing is quite clear. Because physical distancing is only physically apart and doesn't mean breaking kinship or social relations. This means that residents can keep their distance from each other by staying in their respective homes, but kinship and kinship relationships can still be done on social media. This is different from social distancing, which means that you have to be distanced socially or stay away from the social relationship itself. With physical distancing, humans are not socially isolated and away from each other. The public is asked to continue carrying out social interactions as usual, but this time may be in different ways that do not require direct physical presence, such as utilizing information technology and social media (Aziz, 2020).

The use of face masks and eye protection, as well as a physical distance of one meter or more, was linked to a lower risk of infection (Chu et al., 2020). Even wider physical distances are

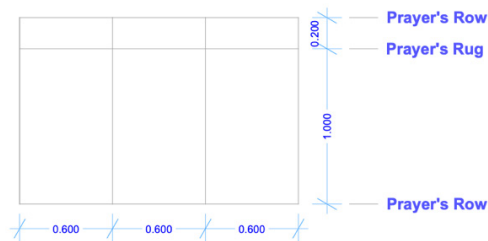
expected to provide further benefits (e.g., Two meters or more) (Chu et al., 2020). Indonesia's COVID-19 Task Force defines physical distancing as maintaining a distance of more than one meter from anyone. In other words, not being close together and not gathering (Satuan Tugas Penanganan COVID-19, 2020). Due to the COVID-19 pandemic, workspace policies focus on the safety and health of workers, therefore physical distancing is an essential aspect of space planning (Schwartz, 2021).

Physical Distancing in Prayer Rows According to Islamic Law

As part of congregational prayers, rows (saf) are formed and appropriately straightened. The rows can be physically joined or implied in cases where individuals must stand at a distance, such as when praying inside and outside the prayer hall. The most crucial thing is to maintain good discipline while praying in rows. There should not be any gaps between the rows. It is, nevertheless, permitted in the event of inevitability. An unnecessary gap is classified as a "Tahrim Taklifi" (Badshah & Rahman, 2020).

Figure 1. Prayer Area Requirement

Source: Adapted from Mosque Seminar Papers (MUI, 1981)



The need for a place to pray is determined by the large number of worshipers that will be accommodated. Under normal conditions, the way of praying with straight and tight rows is required. The standard area is $\pm 0.60\text{m}$ wide with a distance of $\pm 1.20\text{m}$ between rows (Badshah & Rahman, 2020; MUI, 1981).

The following three statements are the legal provisions for stretching the saf for congregational prayers based on Fatwa Number 31 Year 2020 concerning the Implementation of Friday and Congregational Prayers to Prevent the Transmission of the COVID-19 Outbreak (Organizing Friday and Congregational Prayer

to Prevent the Transmission of Covid-19, 2020). First, straightening and tightening rows in congregational prayer is the virtue and perfection of the congregation. Second, congregational prayers with rows that are not straight and not legal are still valid but lose the virtue and perfection of the congregation. Third, to prevent the transmission of the COVID-19 outbreak, the application of physical distancing during congregational prayers by stretching the legal rows is permissible. The prayers are valid and do not lose the virtue of being in the congregation because this condition is a *syar'iyah* intention.

Based on Islamic law, the application of physical distancing to prevent the transmission of the Covid-19 outbreak during congregational prayers by stretching the legal rows is permissible, legal and does not lose the virtue of being in the congregation because of this condition is an emergency (Nasir, 2020). Therefore, the mosques try to communicate the importance of this protocol to mosque congregations' prayers to maintain a distance between them.

Physical Distancing and Proxemics

Proxemics theory is used to test a person's compliance with physical distancing rules depending on the spatial configuration setting and the number of people involved. The study highlights the importance of spatial quality and the surrounding space (Cristani et al., 2020). The study of how people unconsciously construct the area around them is termed proxemics. Every culture does have its own way of structuring things. When interacting with strangers or casual acquaintances, North Americans, for example, maintain a protective "body bubble" of around 2 feet in diameter around them. Intruders in that space are considered intruders, making the person defensive (Rakel & Rakel, 2016).

The maintenance of specific zones that individuals perceive as meaningful is an inherent element of social contact routines (Danesi, 2006). The COVID-19 epidemic would have an impact on the future of architecture and urban design, as well as aid in the development of new design characteristics (Alhusban et al., 2022). Therefore, architects need to understand the changes in design thinking in the future.

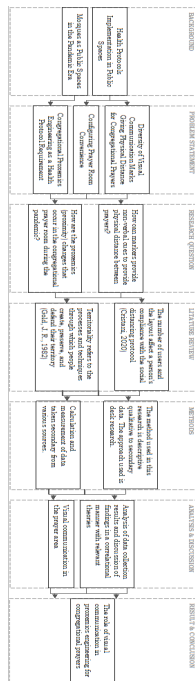
Visual Markers as Communication Accelerators

Participants in the study should have been able to communicate about vision the most easily, followed by sounds, such as loud and quiet; textures, such as smooth and rough; taste, such as sweet and sour; and smell, such as chocolate and coffee, if the commonly accepted hierarchy of the senses were true (University of York, 2018). Visual signage has a significant influence on the five human senses. Visual signage, such as pictograms, are illustrations or symbols created by designers to clarify and accelerate communication without words or writing (Abdullah & Hübner, 2006).

Methodology

The method used in this research is descriptive qualitative for secondary data. The approach used is desk research. We saw the development of conditions experiencing the COVID-19 pandemic. Moreover, there is currently a second wave, especially in Indonesia, with a delta variant. So the approach used is desk research to minimize the mobility of researchers and avoid the spread of the virus.

Figure 2. Research Methodology
 Source: Author



The data is taken from various journals of reliable news documentation sources published during the pandemic period starting to this day. Data were taken from the internet and multiple

journals to find and describe the configuration of safe distance markers for congregational prayers during the pandemic.

This study also conducted indirect observations to review various documents, photographs, and artifacts. In this case, the researcher uses qualitative research methods. This research approach uses a descriptive method, namely, drawing the actual phenomena found at the time of data collection and analyzing them after evaluating the findings. In line with that, researchers will examine aspects of visual communication in the application of health protocols in the prayer room.

The data collection aims to find and describe the configuration of safe distance markers for congregational prayers during the pandemic. The sample taken is the grand mosque or equivalent in each province to show the representation of the implementation of health protocols during the COVID-19 pandemic at mosques in Indonesia. The data includes a visual communication strategy for safe physical distancing in the prayer area in the application of health protocols as an effort to prevent the spread of the virus among worshippers.

Result and Discussion

The data taken includes the grand mosques of all provinces and big cities in Indonesia. The mosques are registered and have a mosque identity number in the mosque information system (SIMAS) Directorate of Islamic Religious Affairs and Sharia Development Directorate General of Islamic Community Guidance, Ministry of Religious Affairs of the Republic of Indonesia.

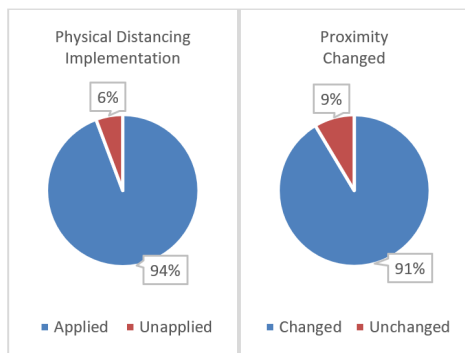
Figure 3. Physical Distancing Implementation in Indonesia's Great Mosques
 Source: Adapted from various source



Figure 3 depicts mosques around Indonesia, with a total of 35 photographs presented in chronological order from left to right and top to bottom (see the complete list of mosques in Table 1). Physical distance is being implemented at Indonesia's biggest mosques, as seen in this set of pictures. The selected documentation was taken during the 2020-2021 COVID-19 pandemic.

The list of mosques listed in Table 1 is included in the classification of great mosques or equivalent based on SIMAS of the Ministry of Religious Affairs of the Republic of Indonesia. The author adds one national mosque as a sample of this study, the Istiqlal National Mosque in Central Jakarta.

Figure 4. Prayer Room's Physical Distancing and its Proximity Changes
Source: Author



As many as 33 of the 35 (94.29%) mosques have implemented physical distancing. One of the mosques did not implement physical distancing during the Eid prayer in the area outside the mosque. One of the mosques was found not to implement physical distancing, even though it had provided a visual marker which meant that it was implementing the health protocol.

Figure 5. Prayers' Changes in Distance
Source: Author

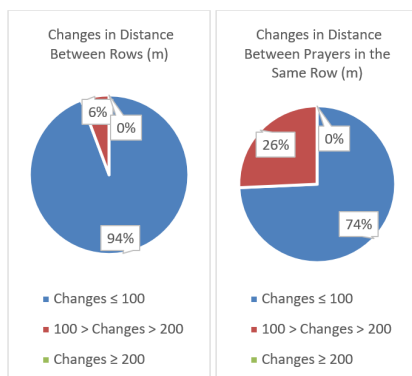


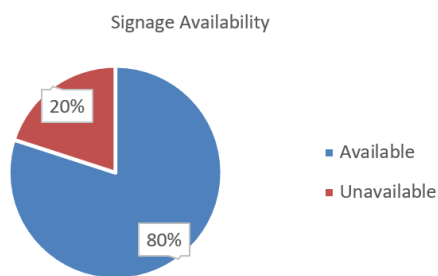
Table 1. Indonesia Province's Great Mosque

No	Province	City	Mosque Name
1	Aceh	Banda Aceh	Baiturrahman
2	Sumatra Utara	Medan	Al-Makshum
3	Sumatra Barat	Padang	Raya Sumatera Barat
4	Riau	Pekanbaru	An-Nur
5	Kepulauan Riau	Tanjung Pinang	Agung Batam
6	Jambi	Jambi	Agung Al-Falah
7	Bengkulu	Bengkulu	Baitul Izzah
8	Sumatra Selatan	Palembang	Raya Taqwa
9	Kepulauan Bangka Belitung	Pangkal Pinang	Raya Tuatunu
10	Lampung	Bandar Lampung	Agung Al Furqon
11	DKI Jakarta	Jakarta Pusat	Istiqlal
12	DKI Jakarta	Jakarta Barat	Raya KH. Hasyim Asy'ari Jakarta
13	Banten	Serang	Al-Bantani
14	Jawa Barat	Bandung	Raya Bandung
15	Jawa Tengah	Semarang	Raya Baiturrahman
16	Daerah Istimewa Yogyakarta	Yogyakarta	Gedhe Kauman
17	Jawa Timur	Surabaya	Al-Akbar
18	Bali	Denpasar	Raya Ukhuwah
19	Nusa Tenggara Barat	Mataram	Hubbul Wathan Islamic Center
20	Nusa Tenggara Timur	Kupang	Nurussa'adah
21	Kalimantan Barat	Pontianak	Mujahidin
22	Kalimantan Tengah	Palangka Raya	Darussalam
23	Kalimantan Selatan	Banjarmasin	Sabilal Muhtadin
24	Kalimantan Timur	Samarinda	Islamic Center Samarinda
25	Kalimantan Utara	Tanjung Selor	Agung Sultan Kasimuddin
26	Sulawesi Utara	Manado	Ahmad Yani
27	Gorontalo	Gorontalo	Agung Baiturrahim
28	Sulawesi Tengah	Palu	Agung Darussalam
29	Sulawesi Barat	Mamuju	Baitul Anwar
30	Sulawesi Selatan	Makassar	Raya Makassar
31	Sulawesi Tenggara	Kendari	Al-Kautsar
32	Maluku Utara	Sofifi	Al-Munawwar
33	Maluku	Ambon	Al-Fatah
34	Papua Barat	Manokwari	Al-Akbar
35	Papua	Jayapura	Raya Baiturrahim

Source: Adapted from SIMAS

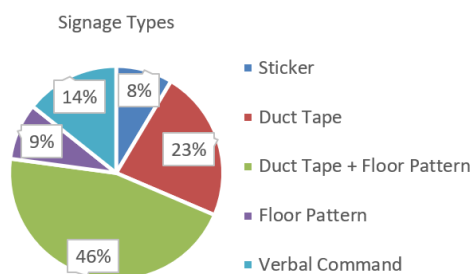
The implementation of physical distancing is shown by how much the distance changes between each row and prayer. At least one meter is the minimum requirement for physical distancing. In particular conditions, a distance of 2 meters is preferable. Changes in the space between rows indicate that 2 of the 35 (5.71%) mosques have changed the distance between rows by 1-2 meters. The distance changes between the rows are not a problem because it has a distance of 1.2 meters if it meets the standard. However, 26 of the 35 mosques still provide a distance between prayers in one row of less than 1 meter. This shows that the minimum requirements for physical distancing have not been met.

Figure 6. Physical Distancing Signage Availability
 Source: Author



Although only two mosques did not implement physical distancing protocols, it was found that 7 out of 35 (20%) mosques did not provide physical distancing markers. Even though the congregation's prayers have been seen to implement physical distancing, the unavailability of this marker has an impact on the undisciplined untidiness of the congregation's prayers in making rows

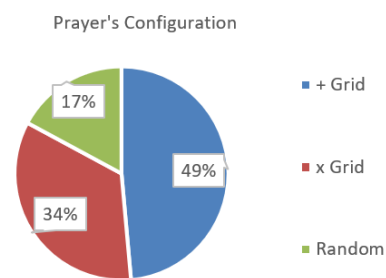
Figure 7. Signage Types
 Source: Author



There are five types of media that are used to apply physical distancing markers on the prayer lines. The media include stickers (8.57%), duct tape (22.86%), duct tape + floor patterns (45,71%), floor patterns (8.57%),

and verbal command (14.29%). The most effective signage is a sticker or duct tape that is integrated with the floor pattern. Meanwhile, verbal command only is the least effective medium of delivery because it is considered not to provide a concrete and firm distance guide for congregational prayers.

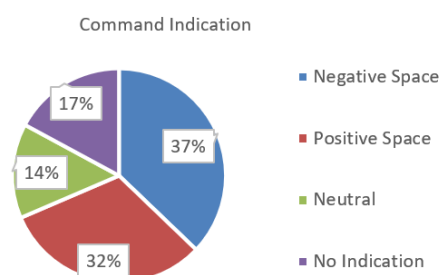
Figure 8. Congregational Prayer Configuration
 Source: Author



The application of physical distancing forms three patterns of congregational configuration patterns. Prayers that are perpendicular to other prayers at 0-90-180-270 degrees of direction are called "+ Grid" configuration patterns. At the same time, prayers that are perpendicular to other prayers at 45-135-225-315 degrees of direction are called the "x Grid" configuration pattern. The configuration pattern outside of both configurations above is called "random."

This categorization shows the diversity of the application of physical distancing in the prayer room. Seventeen mosques apply "+ Grid" (48.57%), 12 mosques that apply "x Grid" (34.29%), and 6 mosques that apply "random" configuration (17.14%). This research has not determined which configuration pattern is the best among "+ Grid" or "x Grid." However, the "random" configuration pattern indicates that the physical application has not been effective; some are still using verbal advice in the delivery medium.

Figure 10. Physical Distancing Signage Command Indication
 Source: Author



The command indication is the meaning of the rules of a physical distancing signage system. For example, a marker that instructs a prayer to occupy a marker is called a "positive space" command indication. On the other hand, a marker that instructs a prayer to avoid a marker is called a "negative space" command indication. A "neutral" indication is when a marker conveys no express command. If the mosque does not put up a marker, it is called "no indication."

It was found that the congregation was confused about understanding the markers installed by the mosque management. This is found by worshipers who sit at the x mark and avoid the x in one room of the mosque (see mosques numbers 06 and 30 in Table 1. Indonesia Province's Great Mosque). This is probably due to failed non-verbal communication factors. There are no rules about whether prayers should take up positive or negative space.

This research finds that there is no standard signage for physical distancing as an implementation of health protocol in mosques. This is indicated by various signage configurations and approaches used to communicate to prayer to maintain their physical distance. Even though they have installed markers, not all great mosques in Indonesia have implemented the WHO-recommended physical distance of 1 meter. Application of Visual Markers as a Communication Tool: Advice to Keep Your Distance.

Not all mosques have installed visual distancing markers, either in the main prayer room, foyer, or outside the mosque. There is no standard for visual markers regulated by the central and local governments. We can know this from the diversity of designs and materials used by the Mosque Prosperity Council (DKM) in every major mosque in Indonesia.

The results of this study indicate that the design of the mosque floor pattern does not fully implement the *nirmana dwimatra* design principle. This can be seen from the need for plastic tape to arrange the mosque rows. The size of the floor material module does not comply with the standard size of the prayer rows. The rows are too small (which causes discomfort when performing prostration movements in prayer) or too large (which causes the non-optimal area of the prayer room).

Recommendation

There is a need for congregation prayer physical distancing visual signage standardization on a regional or national scale. This will make it easier for DKM mosques to carry out their program in every region and throughout Indonesia. This standardized marker will guarantee that the required safety distances are reached.

Pictogram designs (shape, color, dimensions), placement combinations, and materials are all examples of visual marker standards (interior and exterior applications). Finding guidelines for the use of safe distance visual communication during prayer that are consistent with Islamic religious science and applicable health procedures.

The congregation needs to be advised to straighten the rows through visual communication of the row markers. As a result, even if they are far away, Muslims who participate in congregational prayers reap some of the benefits. Get the finest configuration to help mosque managers create a safe prayer distance marker. So that a safe distance requirement can be achieved while adhering to the standards established in the Qur'an and Sunnah.

Conclusion

The application of physical distancing in the prayer room shows that proximity can be engineered. Proximity that was previously intangible can become tangible with the installation of markers, floor patterns, and verbal commands. However, further studies are needed on how this engineering is applied on a broader scale, such as in settlements or cities.

References

- Abdullah, R., & Hübner, R. (2006). *Pictograms, Icons & Signs: A Guide to Information Graphics*. Thames & Hudson.
<https://thamesandhudson.com/pictograms-icons-signs-a-guide-to-information-graphics-9780500286357>
- Alhusban, A. A., Alhusban, S. A., & Alhusban, M. A. (2022). How the COVID 19 pandemic would change the future of architectural design. *Journal of Engineering, Design and*

- Technology*, 20(1), 339–357. <https://doi.org/10.1108/JEDT-03-2021-0148/FULL/XML>
- Aziz, S. (2020, March 30). *Why 'physical distancing' is better than 'social distancing' | Coronavirus pandemic News | Al Jazeera*. Al Jazeera Media Network. <https://www.aljazeera.com/news/2020/3/30/why-physical-distancing-is-better-than-social-distancing>
- Badshah, S. N., & Rahman, A. ur. (2020). A Research Analysis If Making Rows (Saf) for The Congregational Prayer with Reference to COVID-19. *The Scholar Islamic Academic Research Journal*, 6(1). <https://doi.org/10.29370/SIARJ/ISSUE10AR17>
- Chu, D. K., Akl, E. A., Duda, S., Solo, K., Yaacoub, S., Schünemann, H. J., El-harakeh, A., Bognanni, A., Lotfi, T., Loeb, M., Hajizadeh, A., Bak, A., Izcovich, A., Cuello-Garcia, C. A., Chen, C., Harris, D. J., Borowiack, E., Chamseddine, F., Schünemann, F., ... Reinap, M. (2020). Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *The Lancet*, 395(10242), 1973–1987. [https://doi.org/10.1016/S0140-6736\(20\)31142-9](https://doi.org/10.1016/S0140-6736(20)31142-9)
- Cristani, M., Bue, A. del, Murino, V., Setti, F., & Vinciarelli, A. (2020). The Visual Social Distancing Problem. *IEEE Access*, 8, 126876–126886. <https://doi.org/10.1109/ACCESS.2020.3008370>
- Danesi, M. (2006). Proxemics. *Encyclopedia of Language & Linguistics*, 241–243. <https://doi.org/10.1016/B0-08-044854-2/01441-3>
- Ducharme, J. (2020, March 11). *The WHO Just Declared Coronavirus COVID-19 a Pandemic*. Time. <https://time.com/5791661/who-coronavirus-pandemic-declaration/>
- Elsayed, E. N. (2020). *The Effect of Social Distancing on the Utilization of Open Spaces Case Study: "Open Social Spaces at Smash Academy Club"*.
- Gupta, R., & Dhamija, R. K. (2020). Covid-19: social distancing or social isolation? *BMJ*, 369. <https://doi.org/10.1136/BMJ.M2399>
- Honey-Rosés, J., Anguelovski, I., Chireh, V. K., Daher, C., Konijnendijk van den Bosch, C., Litt, J. S., Mawani, V., McCall, M. K., Orellana, A., Oscilowicz, E., Sánchez, U., Senbel, M., Tan, X., Villagomez, E., Zapata, O., & Nieuwenhuijsen, M. J. (2020). The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions and inequities. *Cities & Health*, 1–17. <https://doi.org/10.1080/23748834.2020.1780074>
- MUI. (1981). *Makalah Seminar Masjid*. Kementerian Agama Republik Indonesia. <https://getliner.com/file/pdf/7KRV2MYBXW2AFZ1FV3B9VMCZTQ>
- Organizing Friday and Congregational Prayer to Prevent the Transmission of Covid-19*, (2020) (testimony of MUI). <https://mui.or.id/produk/fatwa/28161/fatwa-mui-nomor-31-tahun-2020-tentang-penyelenggaraan-shalat-jumat-dan-jamaah-untuk-mencegah-penularan-covid-19/>
- Nasir, A. (2020). Social Distancing dalam Saf Salat Berjamaah; Perbandingan Ulama dalam Mazhab. *Mazahibuna: Jurnal Perbandingan Mazhab*, 2(1), 29–36. <https://doi.org/10.24252/MH.V2I1.14281>
- Nesler, C. (2020, October 13). *This is how public buildings can serve this crisis and be ready for the next one*. World Economic Forum. <https://www.weforum.org/agenda/2020/10/this-is-how-public-buildings-can-serve-this-crisis-and-get-ready-for-the-next-one/>
- Novrizaldi. (2021, August 6). *Penanganan Pandemi Covid-19 perlu Sinergi dan Gotong Royong Semua Pihak | Kementerian Koordinator Bidang Pembangunan Manusia dan Kebudayaan*. Kementerian Koordinator Bidang Pembangunan Manusia Dan Kebudayaan Republik Indonesia. <https://www.kemenkopmk.go.id/penanganan-pandemi-covid-19-perlu-sinergi-dan-gotong-royong-semua-pihak>
- Rakel, R. E., & Rakel, D. P. (2016). Textbook of Family Medicine. In *Textbook of Family Medicine (Ninth)*. Elsevier. <https://www.sciencedirect.com/topics/medicine-and-dentistry/proxemics>
- Satuan Tugas Penanganan COVID-19. (2020, August 17). *Apa dan bagaimana cara physical distancing?* <https://covid19.go.id/artikel/2020/08/17/apa-dan-bagaimana-cara-physical-distancing>
- Schwartz, K. (2021). *Relationship Between Physical Distancing and Space Planning*. loffice + SpacelQ. <https://spaceiq.com/blog/physical-distancing-and-space-planning/>
- United Nation Human Settlements Programme. (2020). *UN-Habitat COVID-19 Response Plan*. https://unhabitat.org/sites/default/files/2020/04/final_un-habitat_covid-19_response_plan.pdf

- University of York. (2018, October). *Is there a universal hierarchy of human senses?* -- *ScienceDaily*. ScienceDaily. <https://www.sciencedaily.com/releases/2018/11/181105160852.htm>
- Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, 27(2). <https://doi.org/10.1093/JTM/TAAA020>