

## Behaviour patterns of Muslim congregants during the Covid-19 Pandemic at the great Mosque of Al-Ukhuwwah-Bandung, West Java

William Kevin, Indri Astrina Fitria Indrarani Wirakusumah\*, Aldyfra Luhulima Lukman, Sahid 

Department of Architecture, Faculty of Engineering, Universitas Katolik Parahyangan  
Jl. Ciumbuleuit, no. 94, Bandung, Indonesia



ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Received December 13, 2022 Received in revised form Jan. 31, 2023 Accepted March 09, 2023 Available online April 01, 2023</p> <p><i>Keywords:</i> Behaviour mapping Behaviour pattern Interpersonal space Mosque Omicron pandemic</p> <p>*Corresponding author: Indri Astrina Fitria Indrarani Wirakusumah Department of Architecture, Faculty of Engineering, Universitas Katolik Parahyangan, Indonesia Email: <a href="mailto:indri_astrina@unpar.ac.id">indri_astrina@unpar.ac.id</a></p>	<p><i>During the pandemic in early 2022, some Muslim congregants chose to close ranks while others kept their distance during prayers and non-ritual activities. Therefore, the aim of this research is to determine the behavior patterns of congregants during the COVID-19 pandemic, specifically at the Great Mosque of Al-Ukhuwwah-Bandung in West Java. The method used involves (1) mapping techniques to observe the congregants' behavior, (2) distributing questionnaires to validate their comfort level with interpersonal space and adherence to health protocols, (3) analyzing the questionnaire results, and (4) drawing conclusions based on the observed behavior patterns and questionnaire analysis results. The research shows that during the Omicron period, the congregants tended to revert to their pre-pandemic behavior patterns, with intimate and personal distance being dominant during ritual and non-ritual activities, respectively. However, the questionnaire results suggest that congregants still adhere to social distancing protocols during activities in the mosque, despite implementing health protocols.</i></p>

### Introduction

The Mosque is crucial in enabling Muslims to perform congregational prayers, making it an essential architectural element (Adiputra and Salura 2021). Additionally, within the mosque, there are various activities, including both ritual and non-ritual activities, such as listening to sermons, performing *i'tikaf*, and praying (Huldiansyah and Subroto 2020). The primary ritual activity is obligatory prayer, which has specific rules and procedures, such as to straighten and align the prayer lines (Widodo and Artiningrum 2022). According to *hadith*, this process involves shoulder-to-shoulder and heel-to-heel contact among congregants (Paramitha and Salura 2020; Bello et al. 2023). Even though non-ritual activities also require closeness, there

are no strict guidelines governing this aspect (Arita, Budi Yuwono, and Saliya 2021; Mintaredja, Salura, and Fauzy 2021).

However, with the inception of the Covid-19 pandemic, it is imperative for the procedures and rituals of praying, including all associated components, to now adapt to the global policy. The first Covid-19 case in Indonesia was recorded on March 2, 2020 (Nuraini 2020), leading the government at all levels to issue new policies due to the pandemic's severity. On March 16, 2020, the government implemented social distancing measures, which later evolved into Large-Scale Social Restrictions (LSSR) on March 31, 2020, as stated in Government Regulation No. 21 of 2020 (Pemerintah Pusat Indonesia 2020).

The arrival of the new Omicron variant on November 27, 2021, led to a surge in Covid-19



cases in Indonesia (Widyawati 2021). To address the management of Muslim worship during the pandemic, the Ministry of Religious Affairs and civil society organizations like the Indonesian Ulema Council issued Fatwa Number 14 of 2020, which provides guidelines for organizing worship during the outbreak (muidigital 2020).

The pandemic has posed a difficulty for communal worship activities, including congregational prayer, due to the need to adhere to physical distancing protocols. However, the principle of *hifz al-nafs* (protection of life) allows for the continuation of ritual prayer while following health regulations (Dahlan et al. 2021). The pandemic has also impacted people's comfort levels with personal space, which affects their movement within a given area (Dahlan et al. 2021). In the context of worship activities, personal space also affects the comfort level in the Mosque (Nizar and Setyowati 2021; Zahra and Raidi 2021; Rohman et al. 2020; Hidayatullah et al. 2021; Wikananda and Syafii 2022).

On March 10, 2022, the Indonesian Ulema Council issued Fatwa Kep-28/DP-MUI/III/2022, which allowed congregants to stand shoulder to shoulder during prayer. However, despite this permission, some people still chose to maintain physical distance, indicating that individuals have different levels of comfort with interpersonal space during congregational prayer. This dualistic behavior can be attributed to the fact that humans have varying standards for personal space, privacy, and territoriality, as outlined by Hall (1990). Therefore, there may be differing perspectives among congregants on how close or far apart they prefer to be while performing their prayers (I. A. F. I. Wirakusumah 2022).

Currently, no research has been conducted that focuses on the behavior of congregants in mosques concerning personal space during the Omicron period, encompassing both ritual and non-ritual activities. Meanwhile, research by Hidayatullah et al. (2021) have examined the behavior of Muslim communities and religious activities related to the Indonesian Ulema Council Fatwa during the pandemic, they have not specifically delved into the behavior patterns of congregants in mosques. On the other hand, Rohman et al. (2020) and Zahra and Raidi (2021) have explored the comfort and practice of worship in mosques during the pandemic.

The objective of this research is to investigate and analyze the interpersonal space preferences of

congregants by observing their behavior patterns during both ritual and non-ritual activities in mosques during the pandemic. Questionnaires will be distributed to validate the level of comfort that congregants feel with interpersonal space during congregational prayer in the Omicron period.

To obtain comprehensive data from a diverse range of congregants, mosques were selected based on three criteria: (1) located in the city center, (2) situated near active government offices, and (3) still active and accommodate both congregational and non-ritual activities. Based on these criteria, the case research analyzed is Al-Ukhuwwah Mosque located on Jalan Wastukencana in Bandung, West Java, Indonesia, which is close to Bandung City Hall, as shown in figure 1.



The location of Al-Ukhuwwah Mosque



The façade of Al-Ukhuwwah Mosque

**Figure 1.** Al-Ukhuwwah Mosque Wastukencana Street Bandung – West Java

## Research Method

The operational steps being taken include: (1) Conducting behavior mapping to observe the behavior patterns of congregants during congregational prayer. (2) Distributing questionnaires to explore the perceptions of

congregants regarding their comfort with interpersonal space and the implementation of health protocols. (3) Processing questionnaire results using Likert scale calculations. (4) Validating the empirical observation results of behavior mapping with questionnaire results. (5) Drawing conclusions on the congregants' perceptions of interpersonal distance during ritual and non-ritual worship.

The research was conducted from March to May 2022 to observe congregants' behaviour patterns during Ramadan. The variables include observing behaviour patterns in the following activities: (1) Ritual activities, namely the five obligatory prayers strengthened by Friday and Tarawih prayers that are only performed during Ramadan. (2) Non-ritual activities including preaching and *i'tikaf* activities, which only take place during Ramadan and occur from after the Isha prayer until dawn.

#### Behaviour pattern mapping

Behaviour mapping is a survey technique used to identify behaviour patterns related to respondents' memory, knowledge, beliefs, values, and perceptions (Proshansky 1970). According to Ittelson, the behaviour mapping process involves five aspects, including (1) creating a basic sketch of the observed area, (2) defining the observed behaviour patterns, describing and diagramming them, (3) providing a clear observation time plan, (4) following systematic procedures during observation, and (5) using efficient marking or notation systems during observation (Proshansky 1970).

Furthermore, Sommer and Sommer (2001) divided behaviour mapping techniques into two types, namely "place-centered" and "person-centered." Place-centered maps involve recording behavior patterns and the position of actors in each space using still scene images, while person-centered maps emphasize following the activities of actors and are more suitable for identifying pathways taken (Klein et al. 2018). Based on this description, the behaviour mapping method used in this research is a place-centered maps approach because congregants' behaviour patterns are mapped in a space used for worship in the mosque. Additionally, this is related to researching behaviour patterns focused on congregants that perform worship in the mosque during the pandemic. Therefore, tracking individual behaviour with this method will provide behaviour-mapping results.

Validation of congregants' perception with questionnaire distribution

After completing the behavior mapping process, the next step is to investigate how congregants perceive comfort while engaging in both ritual and non-ritual worship. The method used to validate behaviour patterns with congregants' perception of interpersonal space comfort is through distributing a questionnaire, the results of which are processed using the Likert Scale.

The Likert scale measurement method was first introduced in 1932 through the article "A Technique for the Measurement of Attitudes" (Likert 1932). The questionnaire questions relate to comfort with (1) ritual prayer activities, (2) non-ritual activities, and (3) the implementation of health protocols while in the Mosque.

Table 1 shows the answer scale and the corresponding value.

**Table 1.** Scale and score of answers related to questionnaire questions

No.	Answer scale	Description	Number of respondents	Scale value
1	Strongly disagree /not distant at all	SD/ NDAA	30	1
2	Disagree/under one meter	D/UOM	30	2
3	Agree/within one and one and a half meters	A/WOOH M	30	3
4	Strongly agree/more than one and a half meters	SA/MTOH M	30	4

The purpose of providing a classification of the answer scale values is to obtain criterion scores, which result in the discovery of the answer results percentage. The criterion scores are obtained by multiplying the number of respondents who choose a particular answer by the predetermined scale value in table 1.

Furthermore, it is important to determine the rating scale or interval. The way to obtain the rating scale or interval is by dividing 100 by the

number of answer scales of four, resulting in a range of assessments per 25. The final result is obtained by calculating the percentage result by

adding the four criterion scores from the four answer scales. The formula to calculate the result in the questionnaire result table is as follows:

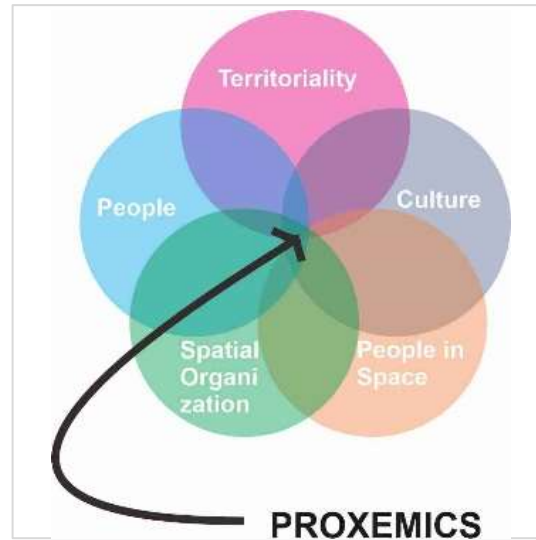
$$\text{Result} = \frac{\text{Score SS} + \text{Score S} + \text{Score TS} + \text{Score STS}}{\text{highest scale value (there are 4 scale answers)} \times \text{number of respondent (30)}} \times 100$$

### Theoretical framework

Worship in Islam extends beyond performing ritual prayers and encompasses all non-ritual activities. The relationship between fundamental beliefs and their connection to the pandemic situation certainly has an impact on the behaviour patterns of congregants in mosque spaces.

Islam's approach to worship is holistic and inclusive of diverse practices. Architecturally, mosque spaces need to accommodate the behavior of congregants during worship, as this often involves gestures and movements that are inherent to living beings (Ven 1978).

The beauty and grandeur of a built environment that is designed to meet ergonomic demands and anthropometric approaches may not necessarily translate into comfort for all of its users (Hall 1990). This is particularly true when considering interpersonal space, as each user has their own unique standard for territorial, private, or personal spaces. Interpersonal space is critical because it impacts one's ability to perform activities comfortably within an architectural space. This concept refers to the virtual boundaries that exist between users in a space, influenced by territoriality, culture, spatial organization, and the people within the space. Some people are allowed to enter the surrounding area, while others are not, as shown in figure 2.



**Figure 2.** Proxemics, interrelation of various theories on human culture and actions  
 Source: (Hall 1990)

### Privacy space, and territory

Privacy and territory are fundamental human needs that are closely related to their sense of security. The concept of privacy is emphasized by an individual or group's ability to control visual, auditory, and olfactory power when interacting with others (Hadinugroho 2002).

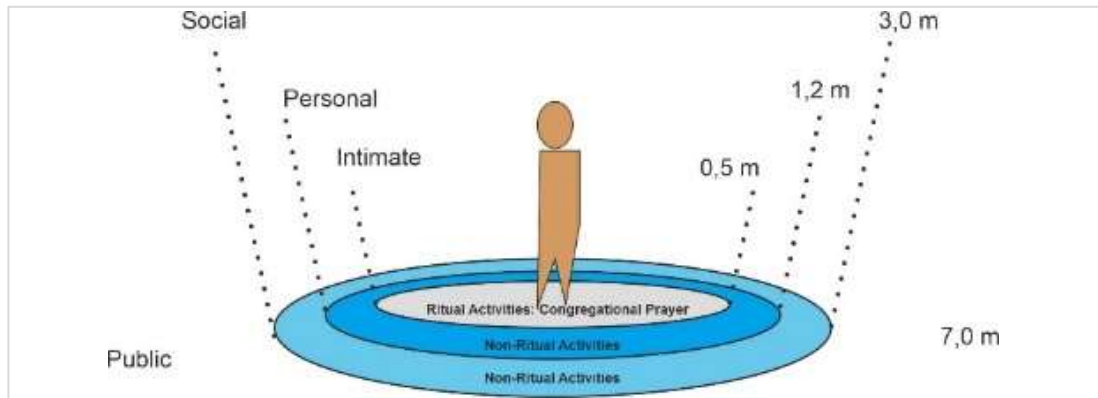
Interpersonal distance and personal space are two closely related concepts that are important to consider in user experience, specifically when discussing congregational prayer activities during the pandemic. The experience of personal space involves understanding an individual's perception of a safe distance in social situations. Interpersonal distance can be categorized into two types: Objective Interpersonal Distance (OIPD) and Perceived Interpersonal Distance (PIPD) (Gifford 1983). Gifford also emphasizes that a crucial part of personal space is an individual's own estimation of the distance they feel comfortable maintaining between themselves and others.

Edward T. Hall (1990) proposed four zones related to personal space: (1) Intimate space (0-18 inches or less than 0.5 meters), reserved for

individuals who have close or intimate relationships. (2) Personal space (18 inches to 4 feet or approximately 0.5 to 1.2 meters), an interaction distance typically indicative of a close friend. (3) Social space (4 feet to 10 feet or 1.2 to 3 meters), known as psychological distance, where an individual may feel anxious when someone else enters their boundary. (4) Public space (10 feet to unlimited or approximately 3 meters to unlimited), generally for individuals who are unfamiliar with one another and where

there is little likelihood of verbal communication (Hall 1990).

The guidelines for performing ritual prayer in a mosque call for congregants to maintain an intimate space distance from one another. This means that individuals should keep a certain distance from each other during prayer to adhere to Islamic rules. However, for other non-ritual activities, the Personal space to social space classification can be used, allowing for a closer proximity, as shown in figure 3.



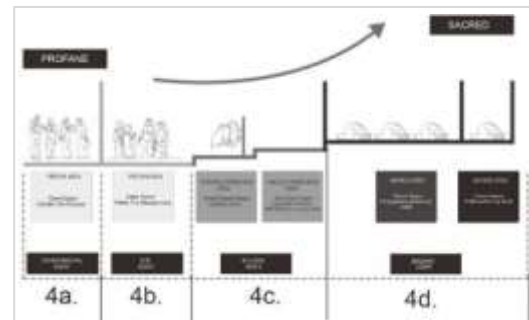
**Figure 3.** Illustration of personal space according to Hall's classification elaborated with interpersonal space during ritual and non-ritual worship in the Mosque

Individuals' personal space comprises not only the physical distance between them but also cognitive elements (Meisels and Canter 1970). Furthermore, Gifford (1983) explained that this cognitive component is related to feeling comfortable or uncomfortable with the personally determined distance category that is too close or far. Based on this opinion, the exploration of interpersonal space needs to involve questionnaire distribution methods to the mosque congregants.

#### Stages of activity and their relation to the space hierarchy in the Mosque

Muslims are obligated to perform five daily prayers as part of their religious duty, along with the Friday congregational prayer, which is mandatory for Muslim men. The Friday prayer is a *farḍhu'ain*, which means highly recommended. The hierarchical stages of prayer activities are characterized by a transition from profane to sacred, which is the manifestation of spatial needs and its scope. The profane activities include (1) Going to the mosque located within the environment's scope (figure 4a). (2) Entering the mosque area is within the scope of the site (figure

4b). (3) Performing ablution and waiting for prayer time in a clean state, which signify the transition from profane to sacred within the building's scope (figure 4c). (4) The highest order is the sacred activity of ritual prayer, which takes place within the building's scope (figure 4d) (I. A. Wirakusumah, Antariksa, and Salura 2021).



**Figure 4.** Elaboration of the relationship diagram of prayer ritual activity stages with zoning division  
Source: (Wirakusumah 2021)

Based on the identification of profane-transitional-sacred activities in the mosque, research related to ritual and non-ritual activities will prioritize the congregation's activity patterns

in the sacred space. In general, the relationship between the stages of prayer ritual activities, spatial hierarchy, types of activities, and the anatomy of architecture is shown in table 2.

**Table 2.** Classification of space based on prayer ritual activities

Activity stages	Activity form	Scope of architectural anatomy
<b>Profane area</b>		
<b>Entering the mosque area</b>	On foot, using a motorized vehicle, or public transportation	Environmental scope
<b>Profane-transition area</b>		
Straighten intentions, purify oneself or perform ablution	Carrying out the washing procession according to the six fardhu ablutions	Site scope-building scope
<b>Sacred-transition area</b>		
Straighten intention and preparation for prayer	Entering the main prayer room or transitional room to wait for the prayer time	Building scope
<b>Sacred area</b>		
Entering the prayer room after hearing the <i>Adhan</i>	Prepare the prayer line	Building scope
<i>Iqomah's</i> appeal	Tidying up and closing the prayer <i>saf</i>	Building scope-main area
Prayer procession	Performing ritual prayers	Building scope-main area

Meanwhile, non-ritual activities emphasize lectures, tadarus (reading the Qur'an) and special *i'tikaf* in the month of Ramadan. Non-ritual activities are centered in the main hall which is sacred in nature with occasional expansion into the transitional-sacred area, as shown in table 3.

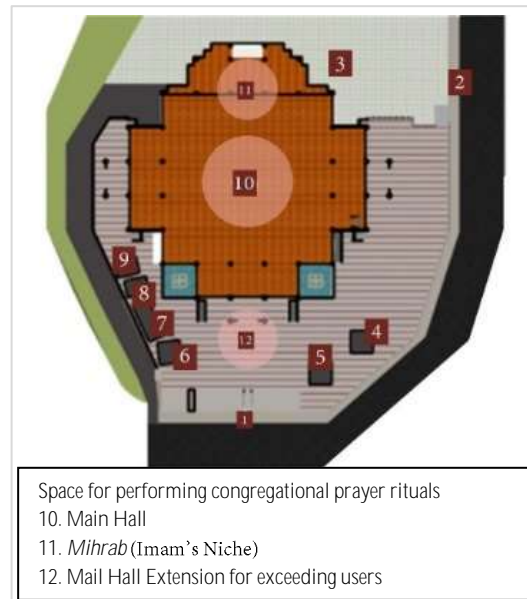
**Table 3.** Classification of space based on non-ritual activities

Activity stages	Activity form	Scope of architectural anatomy
<b>Sacred area</b>		
<b>Recitation/ preaching/ religious discussion</b>	Listen to one-way information from a religious leader	Building scope-main area
<b>Tadarus</b>	Read, study and learn the Quran	Building scope-main area

Activity stages	Activity form	Scope of architectural anatomy
<b>Sacred area of sacred-transition area</b>		
<i>I'tikaf</i>	Pray, reading Quran	Building scope-main area-transition area

## Results and Discussion

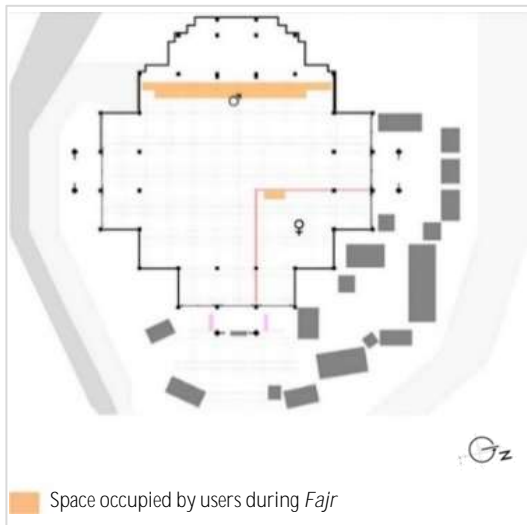
Observation of ritual and non-ritual activities is focused on area 10, namely the Main Hall. Al-Ukhuwwah Mosque has a main room configuration, as shown in figure 5.



**Figure 5.** Main space for performing salat rituals in Al-Ukhuwwah Mosque

### Behaviour mapping during *fajr*

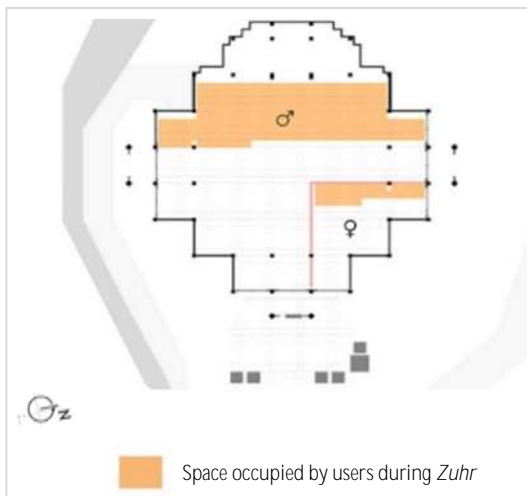
The observation was conducted during the *fajr* prayer from 4:31-4:55 AM. The behaviour mapping diagram in the men's area showed a tight and neat *saf* configuration. The starting point to fill the row is from the center, thereby the second row has a balanced pattern between the left and right sides. In the women's area, the number of congregants was much smaller, with only five individuals making up the tight *saf* configuration. figure 6 is a description of behaviour mapping during the *fajr* prayer.



**Figure 6.** The user's pattern during *fajr*

#### Behaviour mapping during *zuhr*

Observation during the *zuhr* prayer was carried out from 11:58-12:17 PM. The use of space was dominated in the front area with the mihrab, in addition to the number of row lines going back for the men's area without any distance (neat and straight rows). As for the women's area, there was no distance between rows (neat and straight rows). [Figure 7](#) shows that both the men's and women's areas applied for a tight and non-distanced row position.



**Figure 7.** The user's pattern during *zuhr*

#### Behaviour mapping during *ashr*

Observation during the *Ashr* prayer was conducted from 3:15-3:27 PM. The main area was filled with men without any distance. However,

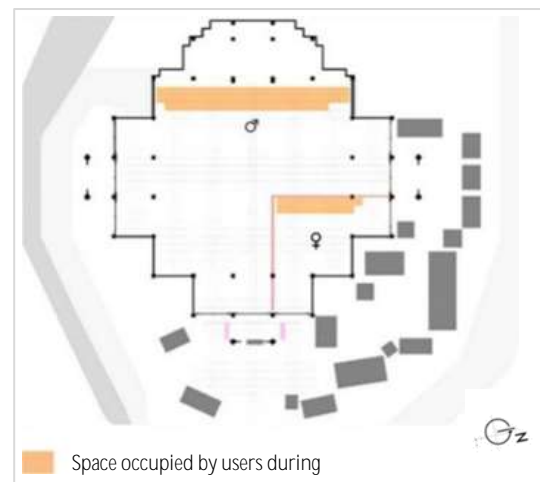
there was an anomaly, were two worshipers separated themselves from the row line, as shown in the behavior mapping diagram. The same thing happened in the women's area, where four people separated themselves from the main row and kept a distance, as illustrated in [figure 8](#).



**Figure 8.** The user's pattern during *ashr*

#### Behaviour mapping during *maghrib*

Observation during the *Maghrib* prayer was conducted from 6:00-6:18 PM. During this process, the main area was used by men, while the women were located behind, separated by a continuous field in the form of a curtain marked with a pink line consisting of two *saf*. Both areas have neat and non-distanced row lines. [Figure 9](#) is a behaviour mapping diagram during the *Maghrib* prayer.



**Figure 9.** The user's pattern during *maghrib*

#### Behaviour mapping during *isha*

Observation during the Isha prayer was conducted from 7:10-7:19 PM. Both areas, for men and women, had a neat and tight *saf* pattern, as shown in figure 10.

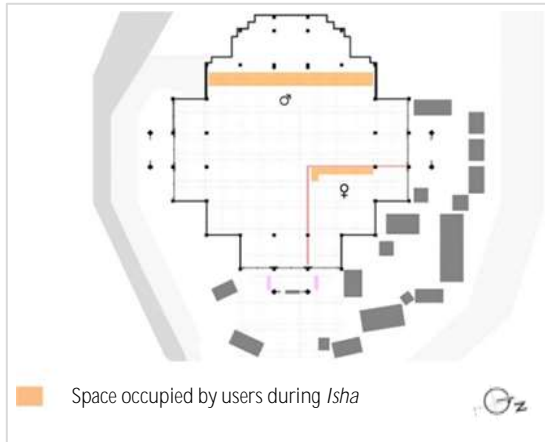


Figure 10. The user's pattern during *isha*

#### Behaviour Mapping during *friday* prayer

The observation was conducted during Friday prayer from 11.58-12.30 PM. Male congregants started entering the area through the main door on the ground floor. They filled the available space until their laid-out prayer rugs reached the transition area and on the mezzanine floor. Figure 11, shows the neat and straight row without any distance. This is related to the imam's command to gather the *saf* tightly when starting the main prayer activity.

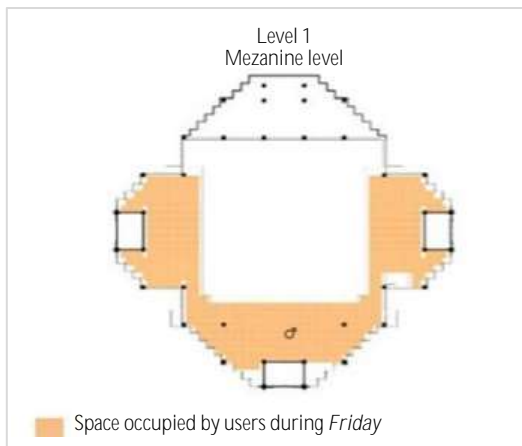


Figure 11. The user's pattern during Friday prayer (male only)

#### Behaviour mapping during *taraweeh*

The *taraweeh* prayer was initiated at 7.37-8.07 PM immediately after the conclusion of the sermon. A single congregant was observed performing the prayer on the side of the room below the left mezzanine from the vantage point of the men's area. In the women's area, a row comprising of two congregants was formed at the back near the main entrance, as shown in figure 12.

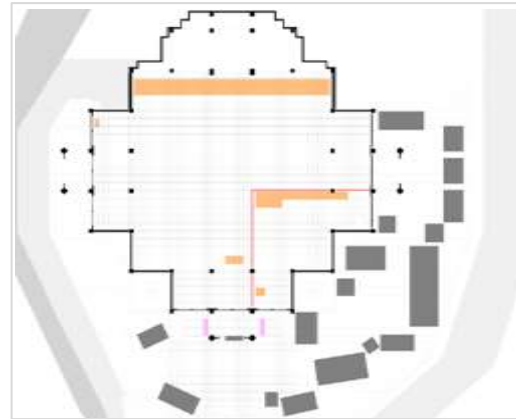


Figure 12. The user's pattern during *taraweeh*

#### Behaviour mapping during religious sermon

During the religious lecture or sermon, which started at 10:19 AM and ended at 10:34 AM WIB, female worshippers were observed to be in close proximity to each other, with a distance of less than one meter between them. Figure 13 is a description of the behaviour mapping diagram.

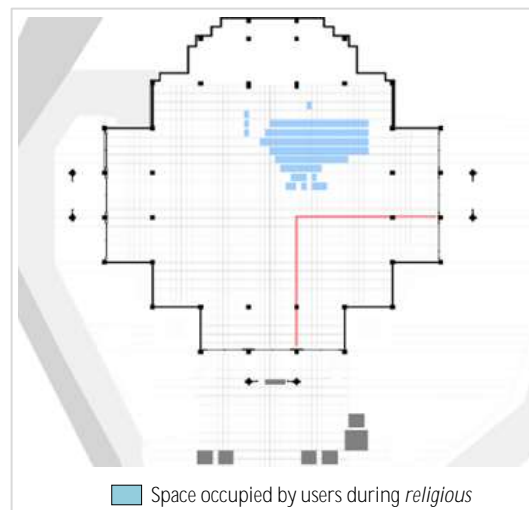


Figure 13. The user's pattern during religious *sermon*

Behaviour mapping during *i'tikaf* (during Ramadhan)

The observation was conducted in April 2022 during Ramadan from 00:26-00:35 AM. The *i'tikaf* worship has a diverse activity pattern that is not monotonous to a particular activity. Based on observations, *i'tikaf* activities are dominated by sleeping and sitting while conducting *dhikr*. When viewed from the distance between individuals during sleeping posture, it can be concluded that it is not close, but ranges from 0.6 to 1.5 meters.

Furthermore, the dominant area in the male section is the front side near the mihrab and spreads to the back at faraway distances. However, there are a few worshipers who still stick close to each other. A similar situation is also seen in the female section, where some worshipers still stick to each other. Figure 14 depicts the situation and conditions of various recorded activities in the same period and space.

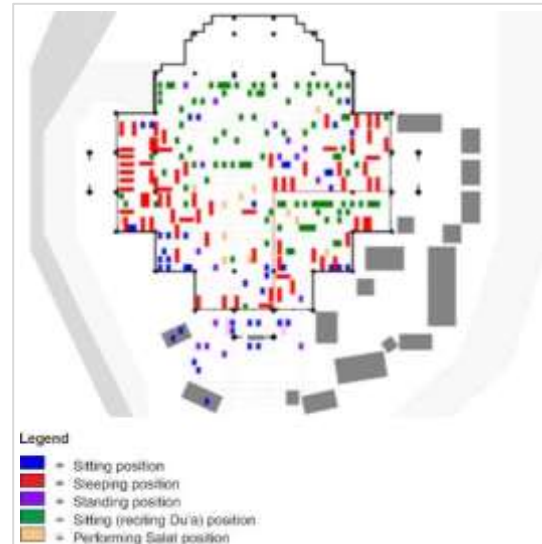


Figure 14. The user's pattern during *i'tikaf*

It is apparent that the dominant behaviour pattern of congregants has returned to the beginning of the pandemic even though it has not ended. Furthermore, the results were validated through a questionnaire distributed among the worshipers of Masjid Al-Ukhuwwah. Tables 4 and 5 show that the worshipers still choose to perform ritual prayers and non-ritual activities while maintaining a distance less than 1 meter based on personal interpretation.

Moreover, the congregants' activities in Masjid Al-Ukhuwwah during the Covid-19 pandemic showed a high awareness regarding the implementation of health protocols. This has apparently helped boost the congregants' confidence as shown in table 6.

Table 4. Congregants' perception questionnaire on the convenience of distance when performing congregational prayer rituals

No	Statement	Number of respondents				Criteria score				Rating scale (%)				Result	Conclusion
		SD/ND/AA	D/UO/M	A/W/OO/HM	SA/MT/OH/M	SD/ND/AA	D/UO/M	A/W/OO/HM	SA/MT/OH/M	SD/ND/AA	D/UO/M	A/W/OO/HM	SA/MT/OH/M		
1	Currently, in 2022, it is agreed that congregants must keep their distance when carrying out congregational prayer services.	1	12	14	3	1	24	42	12	1-25	26-50	51-75	76-100	65,8	Agree
2	Currently, in 2022, the ideal distance for the implementation of the health program in congregational prayer services.	13	10	7	0	13	20	21	0	1-25	26-50	51-75	76-100	45	Distance, but under 1 meter

No.	Statement	Number of Respondent				Conclusion
		Self Interpretation	Instructions of Religious Leaders	Government Instructions	Other	
1	Currently, in 2022, what is the consideration of the congregants' opinion regarding the distance during congregational prayer services?	19	7	4	0	Self Interpretation

**Table 5.** Questionnaire results of congregant perceptions on the convenience of distance when performing non-ritual worship

No	Statement	Number of respondents				Criteria score				Rating scale (%)				Result	Conclusion
		SD/ND AA	D/ UO M	A/W OO HM	SA/MT OH M	SD/ND AA	D/ UO M	A/W OO HM	SA/MT OH M	SD/ND AA	D/ UO M	A/W OO HM	SA/MT OH M		
1	Currently, in 2022, it is agreed that congregants must maintain their distance when carrying out activities at the mosque other than prayers, such as listening to preaching, tadarus together, discussions, and <i>i'tikaf</i> .	1	12	14	3	1	24	42	12	1-25	26-50	51-75	76-100	65,8	Agree
2	Currently, in 2022, the ideal distance for implementing health protocols in activities at mosques other than prayers	14	10	6	0	14	20	18	0	1-25	26-50	51-75	76-100	43,3	Distance, but under 1 meter

No.	Statement	Number of Respondent				Conclusion
		Self Interpretation	Instructions of Religious Leaders	Government Instructions	Other	
1	Currently, in 2022, what are the considerations of congregants' opinions regarding distance in non-ritual activities at the mosque?	24	1	5	0	Self Interpretation

**Table 6.** Questionnaire results of congregant perceptions on the implementation of health programs related to the convenience of worship

No	Statement	Number of respondents				Criteria score				Rating scale (%)				Result	Conclusion
		SD/ND AA	D/ UO M	A/W OO HM	SA/MT OH M	SD/ND AA	D/ UO M	A/W OO HM	SA/MT OH M	SD/ND AA	D/ UO M	A/W OO HM	SA/MT OH M		
1	Currently, in 2022, congregants feel that implementing health protocols needs to be applied to all mosque activities.	0	2	22	6	0	4	66	24	1-25	26-50	51-75	76-100	78,33	Strongly agree
2	Currently, in 2022, congregants always wear masks when carrying out activities at the mosque.	1	4	9	16	1	8	27	64	1-25	26-50	51-75	76-100	83,33	Always
3	Currently, in 2022, congregants consider it necessary to wash their hands before carrying out activities in the mosque.	0	1	7	22	0	2	21	88	1-25	26-50	51-75	76-100	92,50	Always

Findings from observation results (behaviour mapping)

Basically, the rule of maintaining distance within the scope of Masjid Al-Ukhuwwah has not been applied with a standard rule since the beginning of 2022. This is indicated by the absence of markings on the physical environment of the main prayer room. Furthermore, the prayer leader instructed the congregants to return to a tight and neat *saf*, following the tradition of prayer in the mosque before the pandemic.



Anomalies were found during some prayer times, such as *asr* and *tarawih* prayers because some congregants separated themselves from the main *saf*.

The interpersonal distance that occurred during prayer was dominantly in the range of intimate space, where the shoulders were almost touching. Some people implemented social distance, marked by the use of a separate distance of two prayer mat grids (130 cm), three grids (195 cm), and up to four grids (260 cm). This indicates that some congregants feel uncomfortable when in contact with many people.

Findings from interviews and questionnaires

To obtain a comprehensive understanding of congregants' perceptions of interpersonal distance during both ritual and non-ritual activities, as well as their attitudes towards adhering to health protocols within the mosque, a questionnaire-based approach was utilized. The findings obtained from the questionnaires were compared and contrasted with those obtained from behavior mapping, allowing for a more complete analysis of congregants' behavior and perceptions within the mosque. The interviews and questionnaires revealed that, despite observations indicating otherwise, congregants feel more comfortable being in close proximity to each other, within a distance of less than 1 meter. A summary of the congregants' responses indicates that the highest percentage of respondents reported feeling comfortable with this level of interpersonal space. Additionally, table 8 provides an overview of how the application of health protocols affects congregants' comfort levels.

**Table 7.** Synthesis of questionnaire and interview results related to interpersonal space


No	Statement	Percentage result (%)	Respondent opinion	Perception of interpersonal space distance
<b>Prayer activity</b>				
1	Currently, in 2022, the ideal distance for implementing health protocols in congregational prayer services	45.00	Distance, but under 1 meter	 Personal distance
<b>Activities apart from prayer (non-ritual)</b>				
2	Currently, in 2022, the ideal distance for the implementation of health programs in activities at the mosque other than prayer	43.33	Distance, but under 1 meter	 Personal distance

Congregants feel comfortable with implementing the health protocol when carrying out activities at the mosque, although this does not

affect their desire to maintain a distance of at least under 1 meter.

**Table 8.** Synthesis of questionnaire results in interviews related to the implementation of health protocols in Mosques

No	Statement	Percentage result (%)	Answer scale	Perception of interpersonal space distance
<b>Implementation of health protocols during activities at the Al-Ukhuwwah Mosque</b>				
1	Currently, in 2022, the importance of implementing health protocols in all mosque activities	78,33	Strongly agree	

No	Statement	Percentage result (%)	Answer scale	Perception of interpersonal space distance
<b>Implementation of health protocols during activities at the Al-Ukhuwwah Mosque</b>				
2	<b>Currently</b> , in 2022, wearing a mask when doing all activities in the mosque	83,33	Always	 Personal distance
3	<b>Currently</b> , in 2022, carrying out hand washing activities before carrying out all activities in the mosque	92,50	Always	

## Conclusion

Based on the behavior mapping diagram, most worshippers have resumed their traditional practice of standing in a neat and straight line during the ritual prayer activity. The diagram also indicates that there has been no significant change in the interpersonal distance between congregants during the 2022 prayer activities, suggesting that the pre-pandemic norms have been followed.

Meanwhile, the behaviour mapping results for non-ritual activities show that the congregants' majority is in the personal space distance. This is in line with the questionnaire and interview results, which are dominated by the congregants' desire to maintain personal space.

The correlation between the behaviour mapping and the questionnaire results showed differences in the congregants' perception of comfort regarding interpersonal space in the mosque compared to the actual situation. The congregants are currently more inclined to adhere to the basic religious rules of closing ranks during the ritual prayer, therefore the interpersonal distance of the congregants remain within the intimate space range. However, the questionnaire and interview results indicate that the desire based on personal interpretation is still to maintain a distance of at least less than 1 meter or in the personal space category. The desire to maintain a distance is still present even though the congregants have implemented strict health protocols.

The Indonesian Ulema Council has been effective in managing the pandemic situation, resulting in a relaxation of distancing regulations during mosque activities. Meanwhile, congregants strive to adhere to religious guidelines, the majority remain cautious about the spread of the Omicron virus at the start of 2022. As a result, many congregants wish to continue to prioritize their comfort and safety during worship by maintaining a distance from others.

## References

- Adiputra, Muhammad Rusdi, and Purnama Salura. 2021. 'The Signs and Symbolic Markers of Sacral Orientation in Mosque Architecture'. *ARTEKS: Jurnal Teknik Arsitektur* 6 (2): 157–64. <https://doi.org/10.30822/arteks.v6i2.360>.
- Arita, Hartanto Budi Yuwono, and Yuswadi Saliya. 2021. 'Acculturation of Local and Non-Local Architecture on the Scoping Elements of the Merah Panjunan Mosque Building in Cirebon'. *ARTEKS: Jurnal Teknik Arsitektur* 6 (2): 295–304. <https://doi.org/10.30822/arteks.v6i2.755>.
- Bello, M. M., Adekoyejo Babatunde Jolaoso, N. A. Umaru, and S. T. Adamu. 2023. 'Hausa Vernacular Architectural Style of Early Mosque Buildings: A Case Study of Yandoka Street Mosque, JOS'. *ARTEKS: Jurnal Teknik Arsitektur* 8 (1): 159–70. <https://doi.org/10.30822/arteks.v8i1.2193>.
- Dahlan, Moh, Mohammad Reevany Bustami, Makmur, and Siti Mas'ulah. 2021. 'The Islamic Principle of Hifz Al-Nafs (Protection of Life) and COVID-19 in Indonesia: A Case Study of Nurul Iman Mosque of Bengkulu City'. *Heliyon* 7 (7): e07541. <https://doi.org/10.1016/j.heliyon.2021.e07541>.
- Gifford, Robert. 1983. 'The Experience of Personal Space: Perception of Interpersonal Distance'. *Journal of Nonverbal Behavior* 7 (3): 170–78. <https://doi.org/10.1007/BF00986947>.
- Hadinugroho, Dwi Lindarto. 2002. 'Ruang Dan Perilaku: Suatu Kajian Arsitektural'. Sumatera Utara. <https://dupakdosen.usu.ac.id/bitstream/handle>

- /123456789/1307/arsitektur-dwi3.pdf?sequence=1.
- Hall, Edward T. 1990. *The Hidden Dimension*. New York: Anchor Press.
- Hidayatullah, Mohammad, Husamah Husamah, Sudarman Sudarman, Fitri Yanti, and Ita Rahmania Kusumawati. 2021. 'Religious Behavior of Indonesian Muslims as Responses to the Covid-19 Pandemic'. *Al-Adabiya: Jurnal Kebudayaan Dan Keagamaan* 16 (1): 1–14. <https://doi.org/10.37680/adabiya.v16i1.704>.
- Huldiansyah, Denny, and Tarcicius Yoyok Wahyu Subroto. 2020. 'Konsistensi Ruang Pangimaman, Liwan, Dan Pawestren Di Masjid Pathok Negara Ad-Darojat Babadan, Bantul, Yogyakarta (1970-2019)'. *ARTEKS: Jurnal Teknik Arsitektur* 5 (2). <https://doi.org/10.30822/arteks.v5i2.248>.
- Klein, Camila, Ariane Kuhnen, Maíra L. Felipe, and Bertiele B. Silveira. 2018. 'Place-Centered or Person-Centered? Considerations about the Behavioral Mapping Approach'. *Temas Em Psicologia* 26 (2): 605–16. <https://doi.org/10.9788/TP2018.2-03En>.
- Likert, Rensis. 1932. 'A Technique for the Measurement of Attitudes'. Columbia University.
- Meisels, Murray, and Francis M. Canter. 1970. 'Personal Space and Personality Characteristics: A Non-Confirmation'. *Psychological Reports* 27 (2): 287–90. <https://doi.org/10.2466/pr0.1970.27.2.287>.
- Mintaredja, Roza Rahmadjasa, Purnama Salura, and Bachtiar Fauzy. 2021. 'The Meaning of the Relationship between Bale Nyungcung Roof and Inner Room in Architectural Design of Mosques at Sunda Tatar'. *ARTEKS: Jurnal Teknik Arsitektur* 6 (1): 25–34. <https://doi.org/10.30822/arteks.v6i1.538>.
- muidigital. 2020. 'Fatwa No. 14 Tahun 2020 - Penyelenggaraan Ibadah Dalam Situasi Terjadi Wabah Covid-19'. Mui.or.Id. 2020. <https://mui.or.id/berita/27674/fatwa-penyelenggaraan-ibadah-dalam-situasi-terjadi-wabah-covid-19/>.
- Nizar, Fariz, and Erni Setyowati. 2021. 'Pengaruh Perilaku Pengunjung Terhadap Personal Space Di Masjid Al Haddad Pamanukan Pada Masa Pandemi Covid 19'. *Jurnal Arsitektur ARCADE* 5 (1): 82. <https://doi.org/10.31848/arcade.v5i1.664>.
- Nuraini, Ratna. 2020. 'Kasus Covid-19 Pertama, Masyarakat Jangan Panik'. Indonesia.Go.Id. 2020. <https://www.indonesia.go.id/narasi/indonesia-dalam-angka/ekonomi/kasus-covid-19-pertama-masyarakat-jangan-panik>.
- Paramitha, Nadya Wicitra, and Purnama Salura. 2020. 'Relasi Antara Sakralitas Ritual Peribadatan Berjamaah Dengan Konfigurasi Spasial Arsitektur Masjid Sulthoni Plosokuning'. *ARTEKS: Jurnal Teknik Arsitektur* 5 (2). <https://doi.org/10.30822/arteks.v5i2.103>.
- Pemerintah Pusat Indonesia. 2020. *Pembatasan Sosial Berskala Besar Dalam Rangka Percepatan Penanganan Corona Virus Disease 2019 (COVID-19)*. Indonesia: LN.2020/NO.91, TLN NO.6487, JDIH.SETNEG.GO.ID. <https://peraturan.bpk.go.id/Home/Details/135059/pp-no-21-tahun-2020>.
- Proshansky, Harold M. 1970. *Environmental Psychology: Man and His Physical Setting*. New York: Holt, Rinehart and Winston.
- Rohman, Holilur, Vina Azizatur Rachmaniyah, Agil Burhan Satia, Dewanti Fitriani Putri, and Lukman Hakim. 2020. *Praktek Ibadah Pada Masa Pandemi Virus Covid-19*. Edited by Moh. Afandi. Pamekasa: CV. Duta Media. <http://repository.uinsa.ac.id/id/eprint/1002/1/HolilurRohmandkkPraktekIbadahpadaMasaPandemiVirusCovid19.pdf>.
- Sommer, Robert, and Barbara Sommer. 2001. *A Practical Guide to Behavioral Research: Tools and Techniques*. Oxford, England: Oxford University Press.
- Ven, Cornelis Van De. 1978. *Space in Architecture: The Evolution of a New Idea in the Theory and History of Modern Movements*. Assen: Van Gorcum: Neth.
- Widodo, Taufiq, and Primi Artiningrum. 2022. 'The Semiotics Study of Al-Ahdhar Mosque Architecture Using the Trichotomy of Charles Sanders Peirce'. *ARTEKS: Jurnal Teknik Arsitektur* 7 (2): 259–68. <https://doi.org/10.30822/arteks.v7i2.1827>.
- Widyawati. 2021. 'Kasus Pertama Omicron Di Indonesia Diduga Dari WNI Yang Datang Dari Nigeria'. Sehatnegeriku.Kemkes.Go.Id. 2021. <https://sehatnegeriku.kemkes.go.id/baca/rilis-media/20211219/5339013/kasus-pertama-omicron-di-indonesia-diduga-dari-wni-yang-datang-dari-nigeria/>.
- Wikananda, Triska Prakasa, and Nedyomukti Imam Syafii. 2022. 'Visibility Intervention of

- Circulation Path Configuration of Alun-Alun Merdeka Malang City as Covid-19 Resilient Space'. *ARTEKS : Jurnal Teknik Arsitektur* 7 (2): 241–48. <https://doi.org/10.30822/arteks.v7i2.1693>.
- Wirakusumah, Indri Astrina Fitria Indrarani. 2021. 'Dinamika Makna Kebutuhan Dan Keinginan Pada Fungsi Dan Bentuk Arsitektur Masjid Di Jawa Barat'. Universitas Katolik Parahyangan.
- Wirakusumah, Indri Astrina, Antariksa Antariksa, and Purnama Salura. 2021. 'Needs and Wants in Mosque Architecture'. *Linguistics and Culture Review* 5 (S3): 381–95. <https://doi.org/10.21744/lingcure.v5ns3.1535>.
- Wirakusumah, Indri Astrina Fitria Indrarani. 2022. 'The Dynamics of Meaning in Mosque Architecture: A Case Study of Old and Modern Mosques in West Java Indonesia'. *ARTEKS : Jurnal Teknik Arsitektur* 7 (1): 143–54. <https://doi.org/10.30822/arteks.v7i1.1457>.
- Zahra, Ridha Salma, and Syamsudin Raidi. 2021. 'Pengaruh Perubahan Tata Ruang Ibadah Saat Pandemi Terhadap Kenyamanan Jamaah'. In *Seminar Ilmiah Arsitektur II*. Surakarta: Universitas Muhammadiyah Surakarta. [https://publikasiilmiah.ums.ac.id/xmlui/bitstream/handle/11617/12591/31.Ridha 247-256.pdf?sequence=1&isAllowed=y](https://publikasiilmiah.ums.ac.id/xmlui/bitstream/handle/11617/12591/31.Ridha%20247-256.pdf?sequence=1&isAllowed=y).

#### **Author(s) contribution**

**William Kevin** contributed to the research concepts preparation, methodologies, investigations, data analysis, visualization, articles drafting and revisions.

**Indri Astrina Wirakusuma** contribute to the research concepts preparation and literature reviews, data analysis, of article drafts preparation and validation.

**Aldyfra Luhulima Lukman** contribute to methodology, supervision, and validation.

**Sahid** contribute to methodology, supervision, and validation.