

Select the Basic Design Characteristic of Seating Zone in Outdoor Spaces in Mosul, Iraq as a Case Study



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ABSTRACT

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This study examines the many variables that went into developing outdoor seats in Mosul City, combining cultural heritage, sustainability, and health. To determine what consumers appreciated about outdoor sitting settings, the study included an extensive questionnaire and other methods. The survey considered ergonomic comfort, safety features, appearance, durability, accessibility, and compatibility with the environment. The poll findings, from a diverse group, reveal how outdoor sitting is functioning in Mosul. The results suggest that consumers appreciate seat designs that showcase Mosul's rich cultural heritage and are modern, comfy, and eco-friendly. Modern design is popular, but the results show that people want it to fit the city's history and culture. The study also indicates how seating improves mental and physical wellness. This indicates a growing awareness of urban furniture's public health benefits. However, the study demonstrates that these design components do not necessarily improve outdoor sitting. This difference indicates that planned designs and actual implementations differ. This emphasizes the necessity for detailed, user-centered urban planning. The study advises a more concentrated and all-encompassing.

1. INTRODUCTION

The intricate interaction between urban planning and the cultural landscapes of Mosul, Iraq, renders outdoor seating areas a multidimensional topic of investigation, particularly in comprehending the impact of these designs on the socio-cultural framework of this historically significant metropolis [1].

The city of Mosul was characterized by its ancient culture and history [2], so it emerged the need to look for the causes of repeated neglect in outdoor public spaces, especially in the literature on urban planning [3]. Many studies are concerned with the development of public spaces in Arab cities, which has some historical similarities with Mosul, such as the modernity of the Ottoman Empire and the European colonization of some Arab cities [4, 5]. The role of extreme weather that defines cities in the Middle East in designing public spaces [6] will be discussed, focusing on public seats only in outdoor areas, especially for events and social interactions occurring there [7]. In addition to the physical effects of the durability and quality of the furniture used in it, as indicated [8]. Some studies have touched on the role of outdoor spaces after the epidemic and people's perception of them, focusing on specific points, including endowments and the quality of materials used in them, especially parks [9, 10].

This study uses multiple methodologies to evaluate how cultural, aesthetic, and environmental factors affect outdoor seating in war-torn Mosul City. It fills a research need by studying Arab cities' public spaces and global urban park

design trends. The study employs surveys to test three hypotheses: how to incorporate Mosul's history into seating designs, how modern design affects user experience, and how to promote community and environmental health. It inspires new city designs in old places by reflecting Mosul's uniqueness and current city needs.

Public sitting in Mosul is analyzed to better understand its historical, cultural, and societal impact on the city's image. Residents were encouraged to participate in outdoor activities to recoup from their sufferings and honor the founding city. Mosul was chosen for this study due of its historical, urban, and contemporary relevance. ISIS devastated the city's public and recreational spaces. These regions are rejuvenating due to societal-induced psychological trauma, supporting physical, psychological, and social recovery. This study examines Mosul's public seating areas in light of recent suffering. Our design suggestions will match the city's architecture.

2. LITERATURE REVIEW

A lot of research has been done on the historical and societal importance of outdoor seating in the Middle East. Several works [11, 12] look at how Islamic traditions have affected the design of public places. That is why Nooruddin's research is mostly about looking into the idea of "al-Fina" as a key factor in shaping the way Islamic towns are built. Furthermore, study [13] gives a more thorough look at this idea in the United Arab Emirates (UAE), where creating public spaces is seen to boost

social interaction and promote community health. This article [14] adds to the previous discussion by looking at Southeast Asia and focusing on the welcoming urban design and planning features connected with the idea of Islamic public space. These works show the importance that public spaces and outdoor seating have been in the Middle East through history and local design.

The evolution and application of social spaces have changed over time, reflecting the societal frameworks and cultural practices that were dominant during different eras. Cafes in Baghdad have historically served as important social spaces for fostering interpersonal connections, acquiring knowledge, and collaboratively resolving challenges [15].

As mentioned [16], the courtyard was in Ottoman mosques that operated as places for people to gather and focused on creating a nice environment in which the introduction of caravans to the landscape helped to radically change the concept of public seats in those places during the Middle Ages precisely as stated as places for sale and purchase [17]. This change in function has served various purposes achieved by seating seats in sophisticated cities as in the urban arrangement of stone-made seats in the city of Florence [17].

The Netherlands has made advancements in creating outdoor meeting spaces specifically designed for the elderly, as documented [5]. Additionally, research [18] highlights the growing appeal of traditional Persian gardens as communal gathering areas. The design of outdoor rest chairs in coastal sites, such as those in Mosul, can enhance public areas and foster social interaction [19].

Diverse cultures' public spaces should represent their social, cultural, and economic aspects [4, 20]. People's mobility and sitting habits greatly affect a city's public spaces. As seen in Figure 1. The city's outdoor seating arrangements have historical significance owing to its mixed population and its status as a hub for Sunni Muslims, namely Kurds and Turkmen [21, 22]. Kelsey [23] found in 2018 that outdoor sitting improves urban living. Outdoor seating allows people to understand their surroundings and encourages socializing [22, 23].

According to reports, individuals in these environments engage in activities such as engaging in conversations, monitoring each other, indicating neighboring structures, and seeing street performers [23].

The enhanced efficiency of these regions is attributed to many design elements. Incorporating youth development activities into these environments is a crucial component of the equation [24]. Hence it can be said that the process of mixing permanent architectural elements with flexible furniture can be involved in increasing opportunities for community participation [25].

The main objective in these places is to focus on an important element, namely the comfort and varied levels of

people living in the outdoors, whether it be planned or designed for those places. Shade is one of the most important elements to consider when designing for outdoors and its integration with plants in the same location with air and water quality, as these ingredients are considered to have a very significant effect in improving thermal comfort in such places [26]. They have emerged in tropics as semi-outdoor education environments by providing protected seats and beautiful adjacent areas as affecting individuals and their preferences [27]. Furthermore, reference should be made to the role of cultural and social elements in the arrangement and design of these sites, as stated [22]. Having outdoor spaces that are thoughtfully designed with adequate amenities increases social communication and motivates people to stay somewhat longer and establishes connections between individuals and vice versa functioning poorly designed environments [28].

Architects and designers play a vital role in shaping and influencing these physical settings. According to study [28], the designs have a notable influence on both the aesthetic attractiveness of the space and the characteristics of social interactions that take place within it. According to study [29], the furniture discovered in these locations, such as benches, offers a combination of adaptability and coziness. The seating components are adjustable, enabling different configurations to accommodate various functional situations. The introduction of outdoor seating has substantial psychological effects on individuals' well-being and mental state. Asserts that the configuration of these settings in public places has the power to affect social interaction and behavior [22]. The subject of inquiry concerns the notion of community development and its relationship with social engagement. Outdoor seating areas in urban settings are essential for fostering social relationships and encouraging active participation in civic matters.

Bench seating in urban locations promotes community participation and social relationships [30]. Environmental influences are crucial in all industries. This examines how green seating zones may promote urban sustainability from an environmental perspective. Green sitting zones in metropolitan areas have been shown to improve several aspects of the environment [31]. These factors encompass the improvement of air quality, reduction of urban heat islands, and promotion of urban biodiversity.

Many studies have been done on outdoor seats, but none have addressed Mosul. Urban design studies didn't include Mosul's rich cultural background or its post-war surroundings, especially when creating outdoor spaces. The contrast suggests that additional research is needed to combine generic design concepts with the conductor's specific cultural and historical elements to create the finest city solutions as shown in Table 1.

Table 1. Overview of the key metrics derived from literature review

	Impact of Region on Public Spaces	How Sociocultural Matters	Features of the Design and Comfort	The Cultural and Social Arrangement	Psychological and Well-Being Effects	Making Friends and Building Communities	Environmental Considerations
[7]			√				
[27]			√				
[9]			√				
[31]							√
[4]	√						
[10]			√				

[32]					✓
[33]					✓
[22]			✓	✓	
[25]		✓			
[28]				✓	
[30]					✓
[26]		✓			
[5]	✓				
[34]		✓			

3. METHODOLOGY

This systematic study examines how integrating environments affects Mosul's outdoor seating places. Combining qualitative and quantitative methodologies, we used a survey and questionnaire to test our hypothesis. Previous investigations prompted the queries. Use field scanning to capture varied photos or social media platforms that accidentally incorporate images.

Systematic and detailed research was used in this Mosul outdoor seating study. The methodology begins with a systematic understanding of outdoor seat design variables. Using a well-designed research-based questionnaire permits this. The method is organized around three hypotheses.H1: examines cultural, historical, and social influences on seating design. H2: examines how modern design affects comfort, safety, and beauty. H3: Integrates environmental and health concerns. Independent variables (IV) include design and environment, whereas dependent factors (DV) include public engagement, comfort, safety, and aesthetics.

3.1 Design questionnaire

The questionnaire had three themes with ten questions each. These themes explored many outdoor features.

3.1.1 Question indicator

First hypothesis:

Asserts the initial hypothesis with confidence: "The arrangement and utilization of seating in open-air environments are impacted by cultural, historical, and social circumstances" as shown in Table 2.

Second hypothesis

"The design elements incorporated in the seating areas of the conductor's outdoor spaces offer comfort, security, and aesthetic appeal" as shown in Table 3.

Third hypothesis

The third hypothesis is confidently stated "Outdoor seating places in Mosul are designed to Integrates environmental and health concerns" as shown in Table 4.

Table 2. Overview of the key metrics derived from literature review for H1

Design Characteristics	Independent Variables (IV)	Design Characteristics	
Integrating Culture and Heritage	Level of cultural and heritage assimilation in design	Local Motifs	Traditional motifs, decorations, or workmanship
		Historical Themes	Components to honor the location
Socializing	How design fosters socialization	Interactive Setups	Group interaction and discussion
Reflecting Social and Cultural Values	Examines Mosul's design culture and social values	Community Areas	Group activities, socializing & events
Promoting Community Gatherings	Assess community meeting promotion.	Identity Value	Mosul-specific design
Notable Historical Themes	Evaluation of Mosul's history	Event-Friendly Accessibility	Local values and ideals in design
		Utilizing Materials	Easy to access
Impact on Social Interactions	Seating layout affects social interactions	Bricks, stones, lumber, and wooden furniture	Arrangement
		Interactive Plans	Flexible design
Outdoor gatherings' frequency (Out Meet)	Cultural influences on design and user preferences	Versatile, Inclusive Design	Universal
		Adaptability to Events	conversation-friendly clusters
preferences Historical and cultural (HeriSeat)	Explores foreign heritage designs.	Long-Term Comfort	semi-circular seats
		Historic Beauty	Community seats
Attending Public Events (Event Go)	Measures how seating affects public event attendance.	Meaning in Culture	Different-sized groups can engage
		Best Viewing Design	Modular seating can handle everything from small get-togethers to large community
		Fast and Easy Access	Covered regions for sun and rain protection
			Weather-resistant cushioning for comfort
			Ergonomic designs with enough support
			Using traditional materials, colors, and styles in the seating design that are based on historical times or cultural heritage.
			Telling stories with ethnic symbols or patterns
			Installing seats in historical sites
			Tiered or amphitheater seating provides clear sightlines from all seats
			At events, wide aisles, well-marked paths, and distinct entrances and exits control crowd flow

Seating for various social activities (Seat Mix)	Different Seating Options for Different Events	Flexibility in seating Interactive, inclusive spaces	It can be used for quiet reading or group discussions with benches, seats, and bigger communal seating Circular seating promotes group engagement, while distinct seating areas meet diverse social needs
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Table 3. Overview of the key metrics derived from literature review for H2

Design Aspects Indicator	Independent Variables (IV)	Design Characteristics				
Comfort	Comfort-focused seats	Ergonomic Support	Body-contoured seats	Tilttable backrest	Very resilient padding	Having armrests
Safety	Safety-focused seating	Structure stable	Anti-tipping designs	Strong anchoring	Reinforced joints	
Aesthetic	Beautiful Seating Design	Light and Visibility	Reflective materials for nighttime visibility	Landscape- and architecture-matched colors, textures, and shapes	Custom seats with local motifs that can be art	Seating and pathways with attentive lighting
Maintenance and Cleanliness	Simply Clean and Low-Maintenance	Materials Need Little Upkeep	Weather- and stain-resistant composite polymers	Treated metals	Weatherproofed wood and composite polymers resist stains.	Drainage holes and smooth
Durability	Seating Made from Durable Materials	Easy to clean	Crack-free seats	UV-resistant	Waterproof finishes	
Accessibility	Add things to help disabled sit	Weatherproofing	Rust-proof fasteners and coatings.	Reinforced seats	Strong frame	
Inclusiveness	Accepts diverse ages, talents, and tastes	Integrity of Structure	Unified Access Design	Wheelchair-friendly seats, ramps, and handrails. Correct seating height for exit	Level, well-lit, obstacle-free paths. Delicious blind or low-vision pavement	
Lighting	Seating design should include useful, secure, and evocative lighting	Different Seating Options	Socially inclusive layout	Chairs and wheelchair-accessible seats fit all ages and tastes	Round or half-circle seating encourages socializing and seclusion	
Protection environment	Make seats that block sunshine, strong winds, and rain. Environment protection	Ambient Lighting	Low-level bollard lighting for walkways	Solar light	LED lights	
Natural Integration	Outside, use natural materials and build eco-friendly structures	Functional lighting	enough light to identify elevation changes or threats	Safe and efficient motion sensor lights	Directed	Brighter
		Sustainable materials	Eco-friendly materials	Repurposed wood	Recycled plastics	
		Nature-Inbuilt Design	Designs that help local wildlife.	Native plants around seating	Few changes to the environment	
		Using Organic Materials	Eco-friendly bamboo, stone, or wood that matches the terrain			
		Landscape Design Complementary	Seating with views or natural shade	Natural elements	Seats with shapes, colors, and textures that look like	

Table 4. Overview of the key metrics derived from literature review for H3

Design Aspects Indicator	Independent Variables (IV)	Design Characteristics			
Seating Areas' Effects on the Neighborhood	Environmental impact of Mosul's outdoor seating design and placement	Use of Sustainable Materials(wood)	Have recyclable (plastic)	Sustainable (eco-friendly)	Low environmental impact
The influence of outdoor seating on physical well-being	Seating outside to encourage people to be active	Nature-Friendly Design	Comfortable and attractive	Ergonomic seats with comfortable materials	Attractive outdoor environments increase park attendance
Consider air quality	Features in the external seat design may improve air quality	Accessibility and Active Zone Proximity	Air-purifying plant incorporation	Putting air-cleaning plants in built-in pots or green walls near places to sit	
		Non-Emitting Materials	To increase air quality, use natural, non-toxic seating		

Sitting near pollution sources	Assesses outdoor seating near pollution sources	Places with low pollution. Protection with Natural Barriers Natural Elements Integration	Safely placing outdoor chairs away from roads and factories Use dense shrubbery or trees around sitting as natural filters [35] Earth berms and green walls can shield or minimize pollution [36] Seating near grassy areas, trees, and water basins to engage with nature [37]
Access to natural spaces	Sitting near grass, trees, and waterways has risen	Natural seating areas with accessible paths	Making roadways accessible to everyone, including those with mobility difficulties, while reducing environmental effect
Noise pollution protection	Seating protects consumers from noise pollution	Barriers soundproof Natural Noise Reduction using Vegetation	Blocking urban noise with walls or obstacles [38] Plant lush, leafy plants, and shrubs around dining rooms to reduce noise. Sitting in green spaces that reduce urban noise [39]
Incorporating green spaces	Combining outdoor sitting with nearby greenery and landscapes	Various Plants Around Seating Well-Designed Seating	Plant species carefully. Place flower beds, bushes, and trees near sitting to blend it with green spaces and views [40] Natural-inspired seating feels natural. Stone, wood, and natural patterns create outdoor harmony [41]
Design for heat reduction	Designing chairs to reduce heat and maintain lower temperatures	Heat-resistant goods Structures shading Water Coolers	Choose light-colored woods, metals with reflecting coatings, or solar-cool composites Natural tree canopies, climbing plant pergolas, and large umbrellas reduce heat Water embellishments like fountains or misters near seating
Support for mental well-being	Outdoor seating design and placement boost mental health Planning and	Relaxation-Driven Design	use of soothing colours. Planters and water feature calm urban tension [42]
Encouraging physical activity	positioning outside seats stimulate walking, jogging, and exercise	Near Activity Paths Seating	Near trails or gyms, people walk, jog, or workout. Location of corridor seats for visibility and access



Parked seat [43]



Wood seat [43]



Figure 1. Polymorphic seat [43]

3.2 Sample technique

We used stratified random "cocktail" sampling. Diverse volunteers from the city's demographics and culture were chosen. In the poll, this strategy matched age, gender, career, and Mosul visitor frequencies.

3.3 Getting and distributing

To increase reach and convenience for participants, surveys Distribution occurred in popular outdoor locations and online via social media and local community apps. A random and unbiased sample of all experiences and opinions was obtained by approaching individuals at different times and days of the week. Acquisition and distribution.

4. SURVEY

4.1 Structured public spaces

Designed seating places, such gazebos, and benches, take use of riverfront vistas, promoting relaxation and social interaction. Figure 2 well-defined pedestrian walkways reflect a purposeful effort to create multifunctional areas for leisure and cultural interaction. Lighting and concrete pathways indicate these spaces are used at night, extending their use. Although well-intentioned, seating arrangements are generally sparse and lack a consistent design language, resulting in a lack of a sense of place. Formal seating is limited and does not fully realize the potential for establishing more welcoming common spaces that encourage longer stays.

4.2 Informal seating areas

Include resourcefulness and adaptability, as seen using readily available materials. Informal settings allow spaces to be rapidly repurposed or changed for community needs or social events. Lack of a consistent design approach clutters the space and may reduce its functionality. Unorganized furnishings and poor user experience can discourage

continuous use. These informal spaces lack safety and comfort, with exposed electrical outlets and uneven seating shown in Figure 3.

Both groups provide outdoor sitting in Mosul, but their implementation and commitment to design principles that

support the assumptions differ. Group 1 is more thoughtful, although it might use better planning and design to improve use and aesthetics. Group 2 is adaptable and sensitive to community requirements, but it lacks strategic design to improve safety, comfort, and appeal.

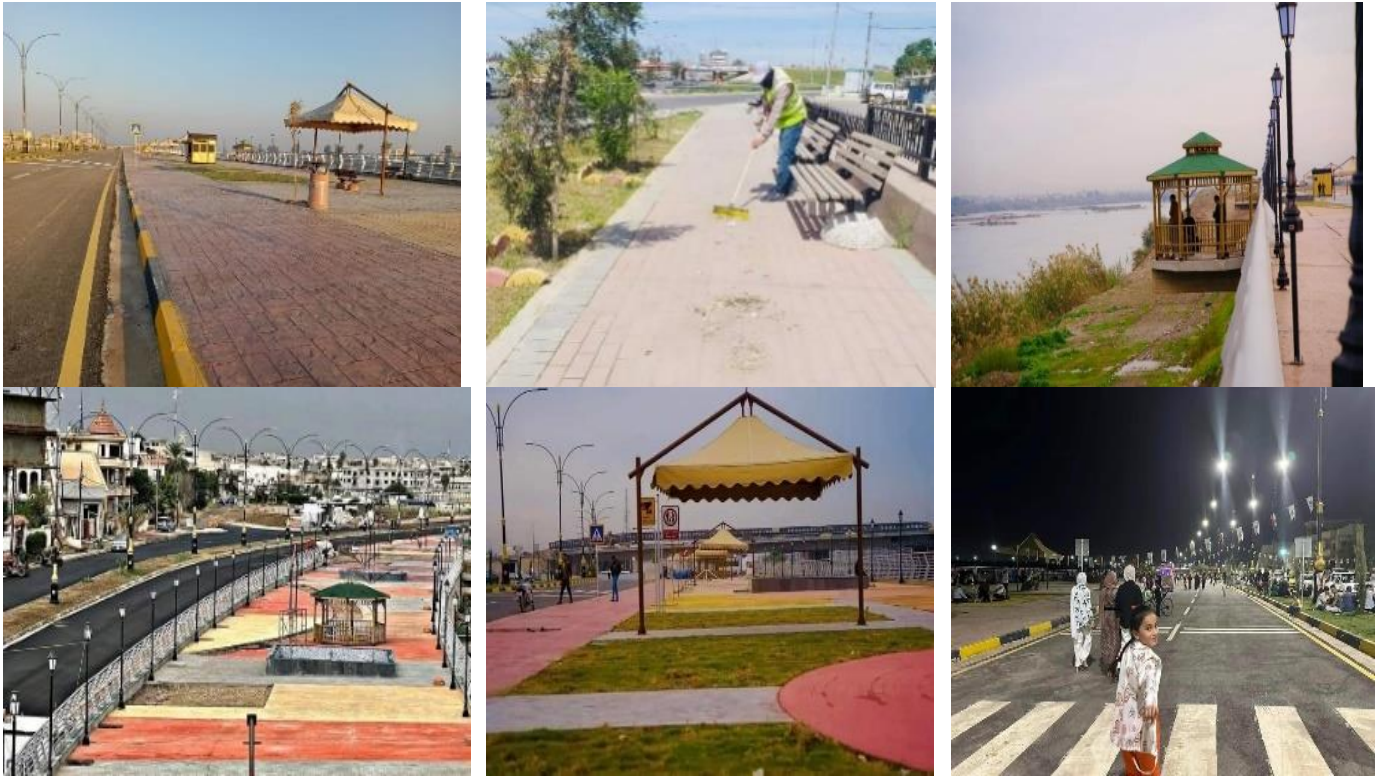


Figure 2. Structured public spaces



Figure 3. Informal public seating spaces

5. LIMITATIONS OF THE STUDY

Our Mosul exterior seat design study involves sample selection and research technique constraints.

First, despite our efforts to obtain a diverse and representative sample of the community, the sample may not accurately reflect all 50 people, especially in less accessible areas or groups less likely to participate in questionnaires, such as the city's indigenous residents. Similarly, the sample did not include all age groups' views randomly.

Second, photos and surveys provide useful indications but have limitations for research techniques. Image-based interpretations are subjective and may not cover all space usage. Based on participants' experiences and perspectives, questionnaires may include biases or inaccuracies.

6. DATA COLLECTION ANALYSIS

Data was collected over a set interval to give participants time to think before responding. About 50 individuals were surveyed to determine their motivation to participate. Several declined participations. The data was then analyzed using chi-square values and significant sentiments, which are nominal markers of respondents' responses.

6.1 Data analysis H1

"The arrangement and utilization of seating in open-air environments are impacted by cultural, historical, and social circumstances."

To validate this hypothesis, a thorough questionnaire has been created, including various aspects. This questionnaire is based on past research and aims to confirm the first hypothesis, as indicated in Table 5.

Data will be collected from random user questionnaires and outdoor seating images of outdoor seating in Mosul City. The aim was to document seat designs and study user preferences and behavior based on cultural, historical, and social influences. To identify patterns that link seating arrangements to the social and cultural background of the conductor, focusing on contextual design in outdoor spaces.

6.1.1 Cultural and historical significance

19/50 respondents insulted historic outdoor seating. Eight responders mentioned Mosul's history and culture. Cultural and historical features should be included in seat designs. The value of the chi-square coefficient was 5.52, and the level of significance was 0.137, which is greater than 0.05.

6.1.2 Societal benefit

25 respondents loved to sit social outdoors. Nine said community activities were necessary, while twelve said they were informal meeting places. Despite their widespread use of society and informal gathering, four interviewees felt that these sites did not increase social interaction. The value of the chi-square coefficient was 6.029, and the importance level was 0.110, which is greater than 0.05.

6.1.3 Contemplation on Social Values

Six showed high social values reflection, 23 moderates, 12 negative, and 9 none. These show many ways Mosul sitting spaces mirrored culture. The value of the chi-square coefficient was 13.2, and the level of significance was 0.004, less than 0.05.

6.1.4 Promote community gatherings

Opinions varied. Most of the 25 participants supported community gatherings moderately. Due to the spacious and inviting designs, 12 participants voiced significant support. However, numerous participants reported infrequent support due to poor design or seating arrangement.

The value of the chi-square coefficient was 19.28, and the SIG level was 0.000, less than 0.05.

6.1.5 Historical themes

Seat designs reflected history differently. 12 respondents felt historical integration was moderate, 11 crucial, 10 highly valued, 9 not considered, and 8 irrelevant and rarely incorporated. The value of the chi-square coefficient was 1.00, and the level of significance was 0.910, which is greater than 0.05.

6.1.6 Effect on social activities

19 people reported major and somewhat pleasant results, 10 claimed minor improvement, and 2 stated it hindered social activities. The value of the chi-square coefficient was 16.080, and the SIG level was 0.001, 19 people reported major and somewhat pleasant results, 10 claimed minor improvement, and 2 stated it hindered social activities. The value of the chi-square coefficient was 16.080, and the SIG level was 0.001 less than 0.05.

6.1.7 Meeting frequency

24 respondents met occasionally, 13 met many times per week, 9 rarely or never used the seating, and 4 met daily with family and friends. The value of the chi-square coefficient was 17.360, and the SIG level was 0.001, less than 0.05.

6.1.8 Cultural and historical preferences

19 respondents liked classic patterns, 15 didn't care, 11 liked statues or art installations, and 5 liked informative inscriptions or placards. The value of the chi-square coefficient was 8.560, and the SIG level was 0.036, less than 0.05.

6.1.9 Attendance at public events

Seating affected 22 respondents' event and festival attendance. Eight respondents didn't think seating arrangements affected them, while thirteen did. 7 people skipped these events regardless of seating. The value of the chi-square coefficient was 11.280, and the SIG level was 0.01, less than 0.05.

6.1.10 Variety in social activities

Some 18 respondents noted seating variety but thought it might be better. Variety disappointed 12 respondents, while 10 liked it. Ten additional respondents saw no diversity. The value of the chi-square coefficient was 3.440, and the SIG level was 0.329, which is greater than 0.05.

Table 5. A summary of the replies, Chi-Square values, and SIG levels for the data collection and analysis

Design Characteristics	Chi-Square Sig	Responses			
Integrating culture and Heritage	Chi 5.520 Sig 0.137	Mosul's history and culture are reflected in design	Seating areas have cultural or historical design elements	Local culture and history are not reflected in design	Seat designs are generic and unrelated to culture or history
Socializing	Chi 19.28 Sig 0.000	As central gathering points for events and celebrations	As unofficial meeting sites for friends and family	As comfort zones sometimes promote interactions	Do not significantly promote social interactions
Reflecting Social and Cultural Values	Chi 13.2 Sig 0.004	Reflects strongly -seat design aligns with Mosul community values	Reflects moderately - there is an attempt to align with the values of society	Reflects poorly -there is little regard for society's values	Does not reflect - seat design does not take into account the values of society at all
Promoting Community Gatherings	Chi 18.640 Sig 0.000	Strongly encourages	Encourage moderately	Rarely encourages	Discourage at all
Notable Historical Themes	Chi 1.0 Sig 0.910	of great importance— historical themes occupy ...	Somewhat important:	Historical elements listed but not centralized	Insignificant historical topics are rarely included in...
Impact on Social Interactions	Chi 16.080 Sig 0.001	Significantly enhances social activities by providing comfortable and accessible spaces	Somewhat enhanced by providing enough space, although improvements can be made	Rarely improves due to lack of features that promote social communication	Social activities are hampered by poor design and maintenance
Outdoor gatherings frequency (Out Meet)	Chi 17.360 Sig 0.001	Daily	Several times a week	From time to time	Rarely or never
Preference Historical and cultural (HeriSeat)	Chi 8.560 Sig 0.036	Use traditional patterns and ornaments that reflect Mosul's heritage	Existence of statues or art installations related to local history and culture	The existence of paintings or media signs describing the city's historical significance	It has no preference for cultural or historical features
Attending Public Events (Event Go)	Chi 11.280 Sig 0.01	The seating arrangement greatly enhances my participation in these events.	Sitting has some impact on my participation in those events, but it's not decisive	Seating arrangements have little impact on my participation	I do not participate in public events or festivals regardless of seats
Seating for various social activities (Seat Mix)	Chi 3.44 Sig 0.329	There is an excellent variety of seats that meet all social activities	There is some diversity, but more is needed to meet various activities	Diversity is minimal and does not well meet different activities	There is no diversity - most seating areas are similar and do not lead to different activities

6.2 Data analysis H2

A 50-person assessment of Mosul City's outdoor sitting. Contemporary Design Elements Improve Comfort, Safety, and

Aesthetics. To validate this hypothesis, a thorough questionnaire has been created, including various aspects. This questionnaire is based on past research and aims to confirm the second hypothesis, as indicated in Table 6.

Hypothesis 2 will be tested using outdoor seating images in the conductor with random questionnaires. The aim is to visually document the design aspects with emphasis on the user getting them comfort and security while using their aesthetic views of the place. The expected result is a preference for well-designed seating spaces, with emphasis on the value of integrated design in outdoor spaces.

6.2.1 Comfort

Mosul's outdoor seats are good, since only two people liked them. Ten of the subjects said they felt basic comfort. An unsettled score of 28.10 meant that the person was comfortable enough. The value of the chi-square coefficient was 29.040, and the SIG level was 0.000, less than 0.05.

This changing pleasure means that the design doesn't meet the comfort needs of the community, which means that an open design is needed. According to the feedback, we should look again at functional, material, and environmental design factors to make urban design users feel better and improve their experience.

6.2.2 Safety in places to sit

Eight of the people who answered felt very safe, which means they had a lot of faith in the design's safety; fifteen felt secure, which means they were mostly happy with the safety measures; 23 felt somewhat safe, which meant they were mostly happy with the safety measures but had some concerns or ideas for how to make them better; and four felt unsafe. Also - The value of the chi-square coefficient was 16.720, and the SIG level was 0.001, less than 0.05.

This means that even though a lot of people use the sitting areas and think they are safe, a big chunk of them is worried about their safety. This shows that safety measures, better lighting, visibility, or general changes to the way the space is designed are needed to make public spaces safer.

6.2.3 Aesthetic value

Only two Mosul respondents liked the sitting, showing little audience interest. Design pleased 10. 29 thought the site pleasant but unremarkable. The value of the chi-square coefficient was 32.080, and the SIG level was 0.000, less than 0.05.

Though appealing, creative design, environmental interaction, or artistic or culturally significant components could make seats more visually appealing and attract more consumers.

6.2.4 Maintenance and cleanliness

Debate surrounds Mosul seating cleanup. Four clear patches. Twenty-one said it was good, meeting most expectations but inconsistent; eighteen said it was bad, displaying severe neglect; and twenty-one said it was poor. Poor upkeep worries many. The value of the chi-square coefficient was 14.320, and the SIG level was 0.003, less than 0.05. This shows that seating areas need more frequent and thorough cleaning to stay clean, functional, and attractive. Public space use and perceptions will improve.

6.2.5 Seating and durability materials

The weatherproofing and durability of Mosul's chairs are assessed from many angles: Twenty-six Fairly durable and weather-resistant and durable respondents suggested material improvements. Three rejoiced. Likeable yet brittle materials. The value of the chi-square coefficient was 29.2, and the SIG

level was 0.000, less than 0.05. Stronger, waterproof materials should be used in outdoor seating area design and upkeep.

6.2.6 Seating area accessibility

Mosul controls sitting. Five respondents found few chairs convenient. 16 respondents indicated the sites were accessible, indicating minor obstacles. In the largest group, 23 respondents found sitting accessible but wanted improvement. Finally, 6 respondents found the locations inaccessible. The value of the chi-square coefficient was 17.680, and the SIG level was 0.001, less than 0.05.

So, raising worries about disabled, elderly, and young children using public spaces. Several propose making sitting easier. Better roads, signs, and design simplify navigation.

6.2.7 Seat design inclusivity

The Mosul seat design fails seniors, children, and disabled travelers. One respondent saying the design addressed all their needs indicates exclusion. The design satisfies user needs but might be improved, stated 14 respondents. The majority, 19, found the design difficult. In addition, 16 respondents judged the design undesirable, indicating serious concern. The value of the chi-square coefficient was 15.12, and the SIG level was 0.002, less than 0.05.

These remarks suggest a more inclusive design strategy that supports more physical abilities and preferences. This setup should make public chairs pleasant, accessible, and universal.

6.2.8 Lighting in seating areas

Mosul nighttime seated lighting mixed delight. One person enjoyed the lights. Most 31 respondents stated the lighting was fine, suggesting it may not improve mood or safety. 14 respondents identified major lighting issues that could compromise evening usability, safety, and comfort. Four respondents reported complete darkness, indicating insufficient illumination. The value of the chi-square coefficient was 43.920, and the SIG level was 0.000, less than 0.05.

These comments demonstrate that most facilities have good illumination but many seating areas don't. Many public places need better nighttime illumination for safety, use, and experience.

6.2.9 Protection environment

Environmentally, Mosul sitting spaces varies. Only 2 responders claimed full sun, wind, and rain protection, suggesting it's rare. 6 said some sitting is safe. Most (27 responders) indicated basic but inconsistent protection. 15 respondents reported no protection. The value of the chi-square coefficient was 29.52, and the SIG level was 0.000, less than 0.05.

So, this shows many seated spaces lack environmental shielding. Different viewpoints emphasize the necessity for stronger design and infrastructure to protect and use outdoor seating areas year-round.

6.2.10 Natural integration

People have varying opinions regarding the geographical location of Mosul. Three individuals stated that the act of sitting diminishes in frequency when in natural surroundings. A moderate number of participants (19) observed that certain places were relatively integrated, suggesting a sense of harmony with nature and the potential for development. A group consisting of 22 participants said that the seating was

not integrated, hence illustrating the incongruity between public spaces and natural surroundings. Six individuals observed a lack of congruence between the design and nature, as well as insufficient integration. The value of the chi-square

coefficient was 21.20, and the SIG level was 0.000, less than 0.05.

So, Effective urban design should incorporate environmentally sustainable outdoor seats.

Table 6. A summary of the replies, Chi-Square values, and SIG levels for the data collection and analysis

Design Aspects Indicator	Chi-Square Sig	Responses			
Comfort	Chi 29.040	Very comfortable	Comfortable	Fairly comfortable	Absolutely uncomfortable
	Sig 0.000	2	10	28	10
Safety	Chi 16.720	Very safe	Security:	Somewhat secure	Absolutely unsafe
	Sig 0.001	8	15	23	4
Aesthetic	Chi 32.080	The aesthetic value of seating areas	Very attractive	Attractive	Fairly attractive
	Sig 0.000	2	10	29	9
Maintenance and Cleanliness	Chi 14.320	Very good maintenance	Good maintenance	Poor maintenance	Not preserved at all
	Sig 0.003	4	20	18	8
Durability	Chi 29.2	Very durable and weather-resistant	Fairly durable and weather-resistant	Not durable or weather-resistant	At all-weather-resistant, it is not durable or...
	Sig 0.000	3	26	17	4
Accessibility	Chi 17.68	Easily accessible	Accessible	Fairly accessible	Inaccessible
	Sig 0.001	5	16	23	6
Inclusiveness	Chi 15.12	Fully meets diverse needs	Meeting Some Diverse Needs	Hardly meets diverse needs	Do not meet the diverse needs at all
	Sig 0.002	1	14	19	16
Lighting	Chi 43.92	The lighting is Goodenough.	Enough lighting	Badly lit	Not Lit
	Sig 0.000	1	31	14	4
Protection environment	Chi 29.52	Full Protection	Adequate protection	There's some protection.	No protection whatsoever
	Sig 0.000	2	6	27	15
Natural integration	Chi 21.2	Very integrated	Fairly integrated	Not well integrated	Totally incomplete
	Sig 0.000	3	19	22	6

6.3 Data analysis H3

A total of 50 individuals evaluated the soundness of the third hypothesis, which posits that "Outdoor seating places in Mosul are designed to Integrates environmental and health concerns" considerations. A survey comprising 10 questions, derived from previous studies, was devised to validate, or refute the third hypothesis, as indicated in Table 7.

Similar methods will be used to test the above two hypotheses using visual document images and random user questionnaires. The design elements of these outdoor seating spaces will be assessed for environmental and health sustainability. Existing seat designs must match the user's environmental and health concerns, demonstrating the importance of landscape design in public health and the environment.

6.3.1 Seating areas effects on the neighborhood

Mosul residents praised the "impact Seating Areas Effects

on the Neighborhood ". Indeed, 23 of 50 respondents found it useful. These numbers show that most individuals think these firms benefit the community. However, 14 people indicated it had effect is neutral, suggesting they didn't know about the environmental benefits, or the plans don't address it. two person's perspective or environment clashing generates unfavorable reaction. The value of the chi-square coefficient was 18.00, and the SIG level was 0.000, less than 0.05.

These replies favor eco-friendly outdoor seating. Urban planning needs environmental awareness and progress, they say.

6.3.2 The influence of outdoor seating on physical well-being

Polls in Mosul vary on their health benefits. 35/50 Great, of them mention it's Significant contribution 17, 18 Contribution to some extent. Most participants felt there were good outdoor seats to expand and improve park and outdoor activities. Comfortable outdoor seats that are accessible encourage longer visits and greater exercise. 5 say it Do not contribute at

all, 10 say hardly contributing. The value of the chi-square coefficient was 9.040, and the SIG level was 0.029, less than 0.05.

Inactivity, respondent seating, and hobbies may explain this. Most comments show that external seats in Mosul increase physical activity, but some show no health benefits. Outdoor seats are great, but design, location, and preferences are important.

6.3.3 Consider air quality

Mosul outdoor seating area design survey respondents want to know how design may improve air quality. 39 of 50 respondents strongly agree (15) or agree (24) that plant- or healthy-material seats improve air quality. Outdoor green seats. 11 respondents eight disagreeing and three strongly disagreeing are skeptical of chair air quality measures.

The value of the chi-square coefficient was 19.92, and the SIG level was 0.000, less than 0.05.

Urban design's environmental impact is crucial; however, many don't think these methods work.

6.3.4 Pollution proximity

The Mosul outdoor seating questionnaire suggests pollution issues. Most participants (27) think seating locations are far from pollution sources, implying that they were chosen in clean, unpolluted areas. This choice may improve users' and overall health. However, 16 respondents indicated seating areas were rarely cleaned and 3 said they were never cleaned, suggesting maintenance issues. Four non-polluted participants set a modest aim to ameliorate the situation, whereas a few recommended relocating chairs.

The value of the chi-square coefficient was 30.80, and the SIG level was 0.000, less than 0.05.

These remarks suggest that the location of seats for pollution is becoming increasingly significant and that public seating locations should be cleaned and maintained regularly to encourage positive use.

6.3.5 Access to natural spaces

Chi-square's calculated value was 32.08. The level of importance (sig) is 0.000, indicating significant statistical differences in access to landscape seats. These differences reflect different views on how these areas affect accessibility. While noting that this category has greatly increased its potential, (5) firmly believes in facilitating access to chairs in the surrounding areas, while recognizing its importance in improving mobility and accessibility. Most of the 29 people think it is possible to get landscape seats, though it is less common than the first group. This group claims that the availability of the seat does not affect the enjoyment, accessibility, or usability of the viewing. This perspective is neutral about the immediate consequences of these sites. Some say that practical obstacles or ideas about their use can limit access to natural environments, but a small minority say only four people can.

Collective differences in access to seats in outdoors, landscapes and landscapes are not due to chance but to real inequalities. This underscores the need to protect and preserve natural areas in urban planning and environmental design to improve quality of life and accessibility.

6.3.6 Seating noise

Only a small number of participants (3) perceive a substantial level of noise protection, while a modest number

of individuals (10) are adequately shielded. However, many participants (23) believe that the chairs do not offer adequate protection, and a large portion (14 people) feel completely exposed.

The value of the chi-square coefficient was 16.72, and the SIG level was 0.001, less than 0.05.

These findings highlight the necessity of improving the design and placement of outdoor seating areas to mitigate the impact of noise pollution. It is crucial to utilize barriers to minimize noise and improve the overall quality of the urban surroundings.

6.3.7 Incorporating green spaces

Mosul citizens differ in determining the complementary relationship between seating areas and green spaces. Five out of 50 said it was highly integrated with green spaces and good for sitting. There is the benefit of trees and plants from sitting. Many (19) claimed this integration exists but on neutrality the integration between seating areas and green spaces works and exists. But integration may vary by seating location or does not affect green space because 18 respondents have not decided. Lack of color or style may have prevented nature-inspired and better-suited designs. There are also those who have indicated that they are not 8.

The chi-squared coefficient is 11.92 and the SIG level is 0.800, which is below 0. Seating in Mosul's green spaces is important due to statistical discrepancies.

This suggests that this integration improves community life and public spaces by increasing people's perception and use of green spaces. These findings underscore the need to incorporate nature into urban development to make cities greener.

6.3.8 Design for heat reduction

Only 4 out of 50 participants identified patterns that contribute to decreased temperature, such as seeking covered areas or utilizing parachutes to mitigate cold and heat. 10 additional subjects reported the presence of these features, although in a feeble manner. However, 36 individuals assert that these attributes either do not exist or are not adequately efficient, suggesting that the design of climate-responsive outdoor areas need enhancement.

Participants have varied judgments about the heat reduction efficacy of exterior seating seats in Mosul, according to Kai squared analysis (Chi: 11.76) and level of indication (Sig: 0.008) less than 0.05.

These findings emphasize the need for climate-responsive outdoors architecture, especially in high-temperature locations like the conductor. To make outdoor seats more comfortable, utilize umbrellas, plants, or heat-diffusing materials. Low indicative values highlight moral statistical discrepancies supporting these results, emphasizing the need to adapt external designs for climate change.

6.3.9 Support for mental well-being

Six participants said peaceful, well-designed venues help mental wellness. Support from twelve participants suggests psychological calm improved slightly. Thirteen people found support effective, while 19 thought seating areas did not promote mental health.

Chi's analysis shows a squared of 6.80 and an indicative level of 0.079, above 0.50, about Mosul's open seating seats' mental health advantages, contrasting perspectives.

Various perspectives from participants show how design

and peace in public spaces effect people differently. Urban planning and public space design can improve psychological well-being by considering the mental health benefits of peaceful, well-designed settings of seats.

6.3.10 Encouraging physical activity

Outdoor seating may help Mosul people exercise, but opinions vary. Thirteen respondents indicated sitting strongly enhances movement, indicating it works to encourage people moving and exercising. Fifteen found it promising, suggesting it may increase exercise. Thirteen respondents don't think it encourages activity, while nine say it hinders it.

The value of the chi-square coefficient was 1.52, and the SIG level was 0.678, which is greater than 0.05.

There are no ethical statistical differences indicating that

outdoor seating seats motivate the conductor to exercise. This means that this hypothesis has not been proven and we can say that outside seats do not enhance society's physical activity.

Participants' opinions illustrate how urban architecture influences customs and practices. Some people may rest and regenerate in outdoor chairs, encouraging them to stay out for longer and exercise more, while others may consider it the promotion of unwanted behaviors such as sitting for long periods without moving.

These findings emphasize the need for further research to understand how the urban environment and public spaces affect physical activity, public health, and the design of public spaces to encourage mobility and activity rather than negativity and inactivity.

Table 7. A summary of the replies, Chi-Square values, and SIG levels for the data collection and analysis

Design Aspects Indicator	Chi-Square		Responses			
	Chi	Sig				
Seating Areas Effects on the Neighborhood	18.00		Very positive effect	Its effect is fairly positive	Its effect is neutral	Negative effect
	0.000		11	23	14	2
The influence of outdoor seating on physical well-being	9.040		Significant contribution	Contribution to some extent	Hardly contributing	Do not contribute at all
	0.029		17	18	10	5
Consider air quality	19.920		strongly agree	agree	disagree	strongly disagree
	0.000		15	24	8	3
Sitting near pollution sources	30.8		rarely away from pollution sources	agree sitting is far from pollution	always prefer to avoid pollution	never
	0.000		16	27	4	3
Access to natural spaces	32.08		greatly enhances accessibility	Enhances Accessibility	Does not affect accessibility	Impedes accessibility
	0.000		5	29	12	4
Noise pollution protection	16.72		Highly effectively protected	Fairly protected	Not effectively protected	Absolutely unprotected
	0.001		3	10	23	14
Incorporating green spaces	11.92		Largely integrated	Fairly integrated	Neutral	Not integrated at all
	0.008		5	19	18	8
Design for heat reduction	11.76		Possess these features and many more.	Possess a moderate percentage.	Possess a slight proportion	The existence of these design features was not considered.
	0.008		4	10	20	16
Support for mental well-being	6.800		Significantly supports mental well-being	Support mental well-being in an average way	Somewhat	Don't support at all
	0.079		6	12	13	19
Encouraging physical activity	1.52		Strongly encouragement	Medium size encouragement	A little boost	Not encouragement
	0.678		13	15	13	9

7. DISCUSSION

The idea was that sitting outdoors in Mosul was of cultural,

historical, social and health interest and benefits, considering its basic design elements. The survey results partially confirm this. Some respondents noted that there was complementarity

between these characteristics, but that the majority did not, noting that this design element was not as visible or successful as it could be. Many perspectives on integration require designers of public spaces to evaluate elements that affect people culturally, historically, socially, environmentally, and healthily in the light of diverse human experiences and expectations.

The results of the questionnaire indicated that outdoor seating in the city of Mosul is planned to struggle to create public spaces of cultural and historical importance. The nature and privacy of the Mosul community have been taken advantage of with priority given to them in the design of those places.

They only support theoretical results, but also reveal that the overall perception of the project differs from the designers' goals, underscoring the need for more comprehensive and targeted urban planning. These studies guide urban planning talks on social, cultural, and historical issues by reflecting regional patterns and the unique urban fabric of the conductor.

The results of the outdoor seating questionnaire were divided into modern Mosul. Although most people like seats, their environment can be improved. Safety precautions must be tightened because places are diverse and different, many of them comfortable. Although its design may be better, most critics appreciate it. I want to clean up. Despite its durability, many consider the material inferior. As most users have found an accessibility exhibition, a more comprehensive design is needed to meet diverse needs. Demographics and needs are ignored in seat design. A little like lights, some fear darkness. Most people believe that the seating environment needs weather-resistant designs. Sitting lacks natural integration; Therefore, harmonic design works. Modern outdoor seats in the conductor may increase comfort, inclusivity, durability, visual integration, and effectiveness.

The results partly support the hypothesis. Data shows that modern design improves comfort, security, and attractiveness. Most reviews say that a "relatively comfortable, relatively safe and very cool" design may fail. Due to poor physical care, durability, weather resistance and natural environmental factors as well as design problems that are assumed to be safe, gentle, and self-attractive. Taste and experience affect reactions. The result here may not be commensurate with Mosul's culture, environment, or economy. Here the future design must be complex and solvent for all problems including considering the quality, resistance and durability of materials while ensuring their continuous maintenance.

The second premise of outdoor seating in the conductor shows that modern design not only improves comfort, safety, or beauty, but must include comfortable design safety features to stabilize and minimize risk with appropriate aesthetic appeal as well as the effects of durability and environmental resistance on the life of the product. The design should also accommodate all users. The connector needs a design that simulates and integrates natural elements and includes adequate evening lighting design, environmental protection, and easy maintenance.

The third hypothesis, that Mosul residents consider their health and surroundings when sitting outside, has many explanations. Most people believe that green spaces are healthy for the environment, and some progress has been made in adding them, but there are still large gaps. These include insufficient noise protection, refrigeration options, fitness support and mental health. The extent of protection from pollution sources and the proximity of seating places varies.

It's hard to make a one-size-fits-all plan. The premise is fairly confirmed by eco-friendly seats. However, health, comfort and well-being need more work, and therefore it is completely unacceptable. Thus, more needs to be done to create healthy and environmentally friendly exterior seating designs.

Results showed the necessity for environmentally friendly materials, moderate use of natural seats, and heat reduction feature improvements. Recognition of air quality improvement projects displays environmental consciousness. Activity and mental health improve with sitting. Views to reduce noise and proximity to pollution sources necessitate cautious location. In conclusion, outdoor seating should evaluate environmental impact, customer satisfaction, and improvement opportunities.

8. CONCLUSION

A field survey and thorough questionnaires on outdoor seating in Mosul revealed the community's desires. The photos demonstrated the big differences between designed and undesigned seats. Designed spaces preferred culturally relevant and useful seating integrated into the fabric for aesthetic and practicality. Undesigned spaces lacked comfort, accessibility, and cultural expression. The study found that Mosul residents and visitors seek inclusive, practical, and attractive outdoor seating, reflecting a shared vision for public spaces that foster interaction, showcase cultural history, and meet diverse needs. This research guides design interventions to transform Mosul's outdoor seating into community-enhancing areas that reflect its identity.

9. RECOMMENDATION

Outdoor seating in Mosul can be improved with culture-relevant design and durable, maintenance-friendly materials. The design should be accessible to all people, and it should use natural shade and flora for comfort and the environment. Community spaces should suit users' requirements and encourage ownership and upkeep. These places need safety and welcome assessments. Flexible, multipurpose public spaces should promote Mosul residents' and tourists' health and socialization.

After reviewing the questionnaire, the study suggests the following adjustments to Mosul's outdoor seating:

1. Promotion of cultural and historical identity: - Design of public spaces to reflect Mosul's identity to give residents pride in their rich city and heritage.
2. The design guidelines should emphasize sustainability and reduce environmental impact by using sustainable materials, supporting green spaces, and avoiding areas with pollution, while considering designs that have the potential to reduce their adverse impact.
3. Improving overall well-being: - Creating walking trails and meditation sites for exercise or children's games close to sitting places while improving mental health.
4. Improving security and accessibility: making public spaces safe for all, especially the elderly and the disabled.
5. Community participation: - Planning and establishment of public spaces commensurate with Mosul City's local needs and preferences and privacy.
6. Use high quality materials and safety inspection designs in seat designs to improve user comfort and safety.

7. Interest in the aesthetic of seating places: the design of elegant and unique seating areas.

8. Emphasize hygiene and maintenance to keep them always.

9. Prioritize durability: emphasize the quality of manufactured materials, including outdoor seating using water-resistant materials, sunlight, and environmental conditions.

10. Improve inclusivity and lighting: - Design seating designed for varied combinations, setting and varied ages while ensuring appropriate lighting and safety at night.

11. Environmental protection: Provide ample protection from sun, rain, and wind for user comfort under different weather conditions such as parachutes or projections of varied sizes and shapes.

12. Integration with natural surroundings: - Incorporate green spaces and natural elements into seat designs.

13. Emphasize the need for further research on how age groups influence the design and use of outdoor seats.

These ideas can make Mosul's outdoor seating areas more attractive, secure, and comfortable, improving public life and the health of city residents.

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