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ASSESSMENT OF GREEN BELTS AND EXISTING PLANTATIONS ALONG ROADS IN MULTAN, PAKISTAN: LOCALS' PERSPECTIVES

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ABSTRACT

This study assessed people's awareness and perception regarding green belts and existing plantations in Multan. Three different roads were randomly selected to collect data for this study. A validated and well-structured questionnaire was developed and data were collected from 385 respondents. Descriptive statistics and Chi-square tests were used to analyze the data. The results revealed that dense trees and evergreen shrubs were highly preferred for greenbelts. Preferred facilities included jogging tracks and sitting areas. The responsibility for green belt management and cleanliness was primarily attributed to the government, although private institutions were also recognized for their role in protecting it. Chi-square tests indicated significant associations between demographic factors and awareness of green belts. Age, education, gender, and occupation were significantly related to perceptions of green belts' benefits, such as beautification, pollution reduction, health improvement, infrastructure development, increased land value, and business opportunities. Highly educated and middle-aged respondents showed greater support for green belt awareness. By aligning urban planning and policy decisions with these public preferences and demographic insights, policymakers can enhance the effectiveness and sustainability of green belt projects.

Keywords: Green belt; Environmental pollution; Socio-economic profile; Preferences and responsibilities.
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INTRODUCTION

A greenbelt is an environmentally sustainable open area primarily featuring ornamental trees, shrubs, perennial plants, seasonal flowers, grasses, and ground covers. It is situated along the outer and inner urban boundaries or main roads. The concept of greenbelt encompasses various perspectives, highlighting its importance in urban planning to control the expansion of development and infrastructure into natural landscapes within or near major towns and cities (Basit et al., 2022). Globally, urban policy-makers are progressively examining the connections between urban planning and public health, driven by growing apprehensions about the influence of urban surroundings on health results and the promotion of healthy lifestyles (Douglas et al., 2017). Greenbelts enhance the ability to withstand climate change and environmental disturbances (Adeyela et al., 2016), support the preservation of biodiversity (Dover, 2015),

and enhance overall well-being (Meenakshi, 2012; Derkzen et al., 2017) and contribute towards sustainable development (Bibri, 2018).

The extent to which greening is implemented in cities varies, often influenced by changing societal views and political conditions (Jim, 2004). The well-being of human beings relies on the quality of the physical environment. Alterations in the physical environment lead to changes in social dynamics (Macdonald, 2012; Radford & James, 2013; Derkzen et al., 2017). Green spaces offer a pleasant environment for individuals to briefly escape from technology, noise, and work monotony, contributing to cultural and biological well-being (Jahdi & Khanmohamadi, 2013). It is inherent in human nature to feel a psychological connection to beautiful natural elements, such as impressive greenery (McEwan et al., 2020), instilling pride in citizens and government (Jim, 2004). Therefore, smart and sustainable cities are rapidly becoming a popular approach to urban development, transitioning from theoretical concepts to real-world projects around the globe, especially in environmentally conscious and technologically advanced nations (Bibri, 2018).

There is a dire need for a study that gives insight into people's awareness and preference for green belts in Pakistan. This situation will improve only when society recognizes the value and advantages of maintaining a thriving tree population. When people are aware of the importance of green belts, they will exert pressure on the government to promote green belts in the country (Hussain et al., 2022). But unfortunately, there is a lack of research regarding the assessment of the local people about greenbelts and existing plantation alongside the road. Therefore, the present study is designed to bridge this gap because very few studies (Shafqat & Noor, 2019) have been conducted in Pakistan, but particularly in Multan, this is the first study of its kind.

Understanding locals' perspectives on greenbelts and plantations across the road is valuable for various reasons (Basit, et al. 2022). Firstly, Multan faces environmental challenges due to air pollution, heat stress, and climate change. Green belts and plantations can act as natural filters, improve air quality, and regulate temperature (Tallis et al. 2015; Islam et al., 2012; Raihan, 2023). The study can reveal how much locals value these environmental benefits and their willingness to support green initiatives. Secondly, green spaces provide recreational opportunities, improve mental well-being, and foster a sense of community (Anderson and Cordell, 1988). The study can explore how locals utilize green spaces, their importance for leisure activities, and any concerns regarding safety or accessibility. Thirdly, the success of green belts and plantations hinges on community engagement and support (Shaheen et al. 2002). The study can shed light on locals' perceptions regarding maintenance, potential vandalism, and their willingness to participate in greening efforts. Fourthly, the findings can inform urban planning decisions in Multan. Understanding public opinion on green spaces can help authorities develop policies that promote plantation efforts, optimize green space utilization, and ensure the sustainability of these projects (Jim, 2004; Green et al., 2016). Lastly, Multan's historical and cultural heritage is intertwined with its natural environment. The study can explore how locals perceive the role of green spaces in preserving Multan's unique identity and cultural landscape (Sander & Haight, 2012).

METHODOLOGY

Study Area

The research was conducted in Punjab, Pakistan's district Multan (30.1575°N, 71.5249°E). Multan is Pakistan's fifth-most populous city and is frequently called the "city of saints." It is situated in a corner formed by the convergence of five rivers in central Pakistan. Its dry port and excellent transportation system have helped the city become one of the nation's most important political and economic hubs. Multan district is classified as having a desert climate (BWh) by Köppen-Geiger. The annual precipitation in this area is typically around 175mm, while the average annual temperature hovers around 25.6°C.

Sampling

A random sampling technique is used to collect data. We randomly selected three roads (Kaswar Gardezi Road, Old Shujabad Road, and Muzaffargarh Road) in Multan during the summer of 2023. Figure 1 represents the study area.

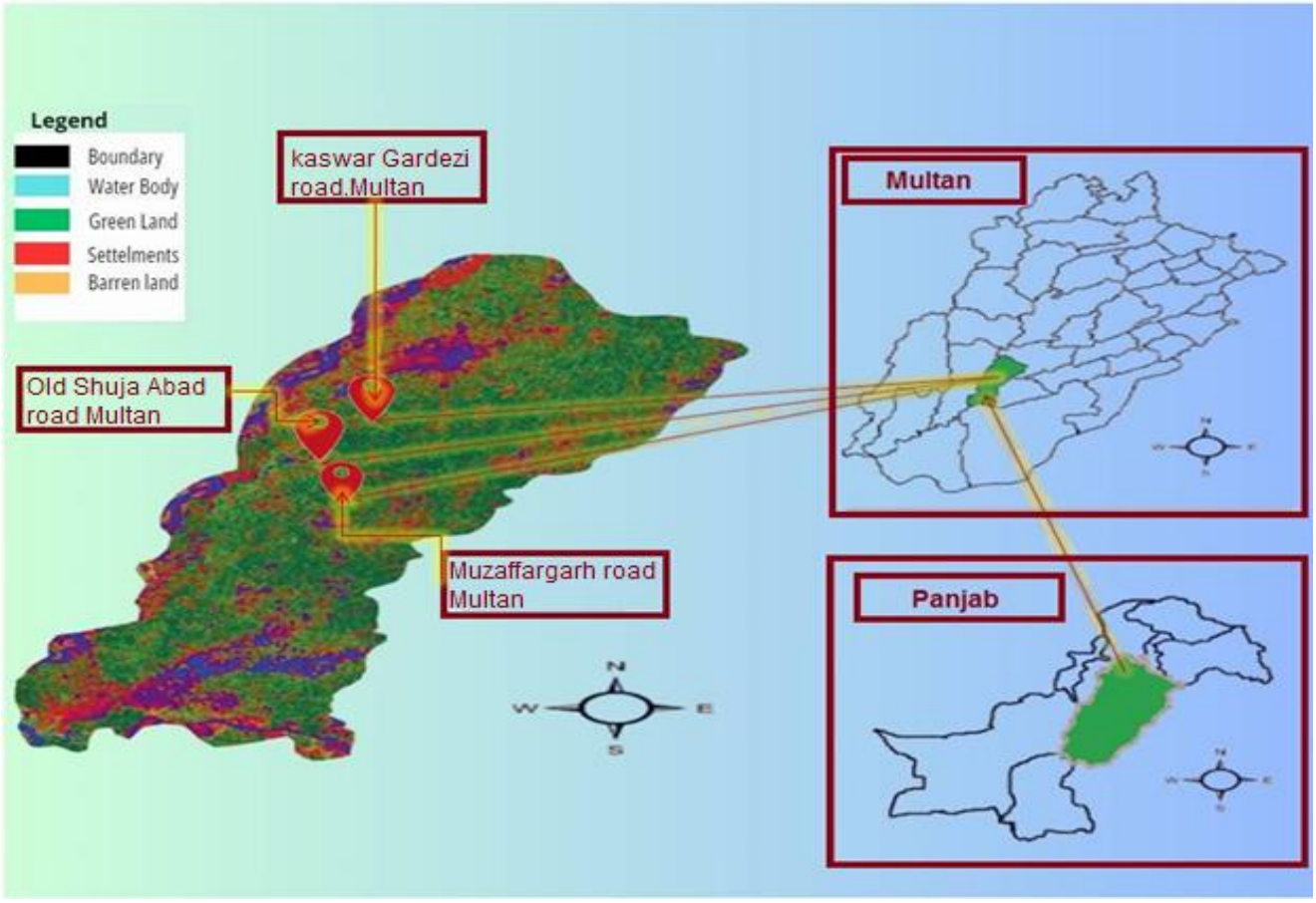

Figure 1. Map of study area.

Data Collection

A validated and well-structured questionnaire was developed for data collection in English but translated into Urdu for the ease of the local respondents. A pilot survey was conducted to check the smoothness of the questionnaire. A final questionnaire was made after minor modifications in the original. The study included a sample size of 385 respondents, which was determined using an online sample size calculator. Then 129 from Kaswar Gardezi Road, 128 from Old Shujabad Road, and 128 from Muzaffargarh Road respondents were randomly selected for the interview.

Data Analysis

A data analysis was performed using Statistical Packages for Social Sciences (SPSS), using both descriptive (frequency, percentage, etc.) and inferential (Chi-square) statistics.

RESULTS AND DISCUSSION

Socio-economic profile of Respondents

The age distribution demonstrated that most participants aged between 25-35 years old (44.3%), followed by those aged 14-24 years old (31.1%). Participants aged 36-55 years old and over 55 years old constituted smaller percentages of 22.7% and 1.9%, respectively. Regarding education, the largest group of participants had an education level of 6-10 years (41.4%), followed by those with 1-5 years of education (28.3%). Participants with higher levels of education (>16 years) were the smallest group, comprising 2.9% of the total. As for gender, most participants were male (98.1%), while females constituted a small percentage (1.9%) of the sample. Regarding occupation, participants were primarily engaged in business (45.5%), followed by other occupations (31.9%), and fewer were involved in job-related activities (17.9%), and agriculture (4.7%).

Table 1. Socio-economic characteristics of respondents.

Scio-economic Variables	Percentage %
Age	
14-24	31.1
25-35	44.3
36-55	22.7
>55	1.9
Education	
1-5	28.3
6-10	41.4
10-16	27.4
>16	2.9
Gender	
Male	98.1
Female	1.9
Occupation	
Agriculture	4.7
Business	45.5
Job	17.9
Other	31.9
Total	100.0

People's Preference for the Type of Trees in Green Belts

Figure 2 illustrates respondents' preferences for different types of trees, Dense Trees, Low Dense Trees, and Big Trees. For Dense Trees, approximately 80% of respondents indicated a preference, while around 20% did not prefer them. This indicates a strong positive preference for dense trees among the respondents. For Low Dense Trees, about 60% of respondents showed a preference, whereas 40% did not. This suggests a moderate preference level for low dense trees, with a significant minority not favoring them. Lastly, for Big Trees, around 65% of respondents expressed a preference, while 35% did not. This shows a generally favorable attitude towards big trees, though not as strong as the preference for dense trees. The results suggest that dense trees are the most preferred, followed by big trees, and then low dense trees. This information can be valuable for urban planners, environmentalists, and policymakers involved in landscaping and afforestation projects, as it reflects public preferences that can guide decision-making processes.

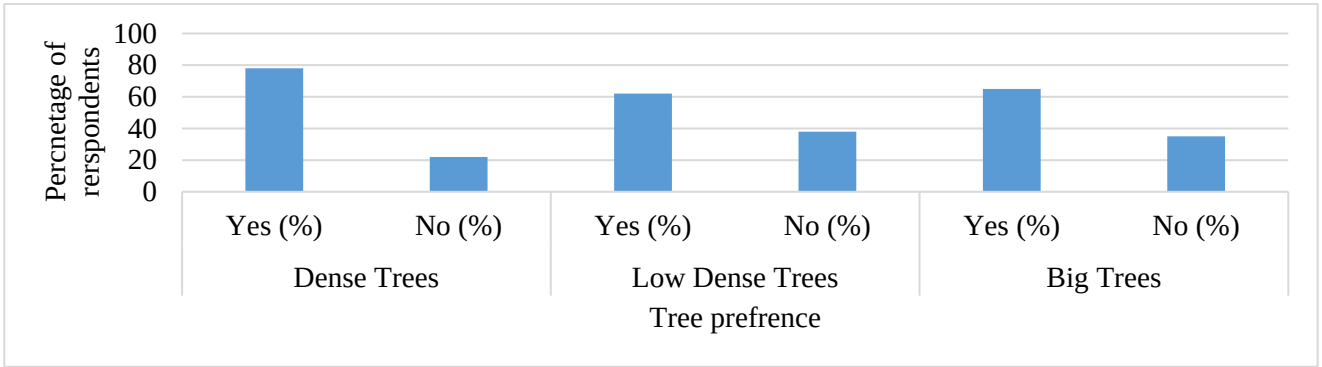

Figure 2. Preference for trees by respondents in the study area.

People's Preference for the Type of Shrubs in Green Belts

Figure 3 illustrates respondents' preferences for different types of shrubs for greenbelts in the study area. The chart displays the percentage of respondents who answered Yes or No for each shrub type preference. For “Evergreen Shrubs”, approximately 80% of the respondents indicated a preference, while around 20% did not prefer them. This indicates a strong positive preference for evergreen shrubs among the respondents. For seasonal shrubs, about 60% of respondents showed a preference, whereas 40% did not. This suggests a moderate preference level for seasonal shrubs, with a significant minority not favoring them. For Fruit-bearing shrubs, around 50% of respondents expressed a preference, while 50% did not. This shows an equal split in opinion, indicating that fruit-bearing shrubs have both a substantial group of supporters and detractors. For flowering plants, approximately 75% of respondents indicated a preference, while 25% did not prefer them. This shows a strong positive attitude towards flowering plants among the respondents. For Other types of shrubs around 65% of respondents showed a preference, whereas 35% did not. This suggests a generally favorable attitude towards other types of shrubs, though not as strong as the preference for evergreen or flowering plants. The data suggests that evergreen shrubs are the most preferred, followed closely by flowering plants. Seasonal shrubs and other types of shrubs have a moderate preference level, while fruit-bearing shrubs have the least preference, with an equal split between those who like and dislike them. The high percentage of "Yes" responses across most shrub types indicates a general positive attitude towards shrubs among the respondents. This information can be valuable for urban planners, environmentalists, and policymakers involved in landscaping and gardening projects, as it reflects public preferences that can guide decision-making processes.

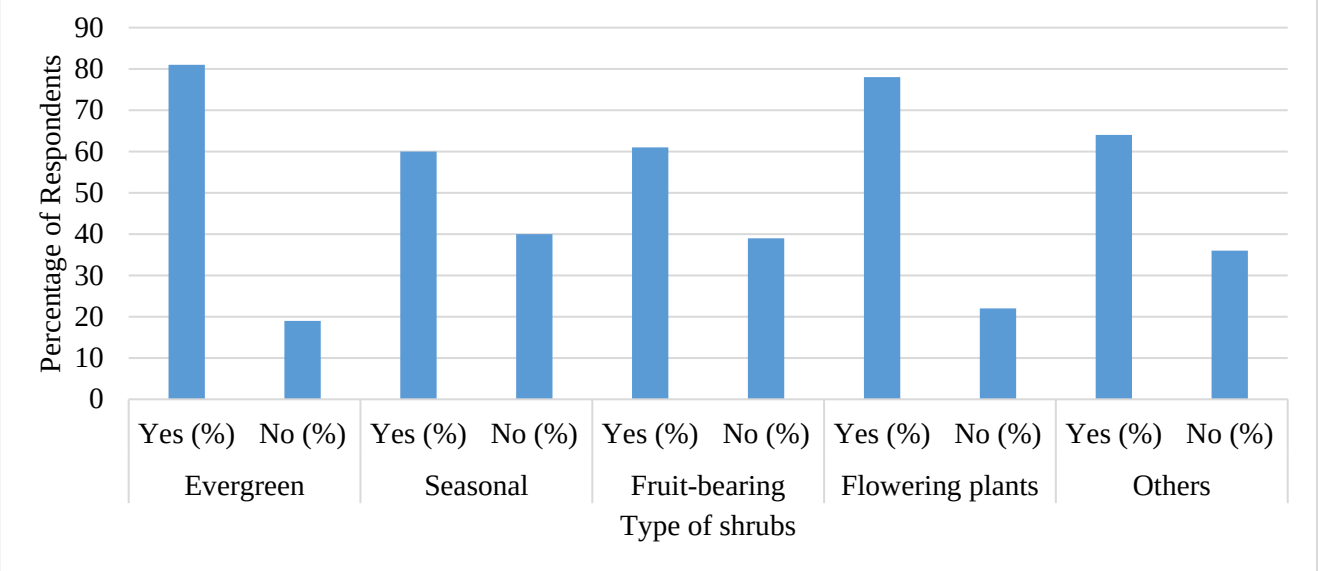

Figure 3. Preference of shrubs by respondents in the study area.

People's Preference for Facilities/Features in Green Belts

Figure 3 illustrates respondents' preferences for various facilities in greenbelts. The chart displays the percentage of respondents who answered "Yes" or "No" for each type of facility. For Fountains, almost 70% of respondents indicated a preference “yes” for fountains and about 30% of respondents did not prefer fountains. This indicates a strong positive preference for fountains among the respondents. Among the total respondents, 65% of respondents stated “yes” for children's play areas, this suggests a generally favorable attitude towards children's play facilities. An overwhelming majority (75%) of the respondents expressed their interest for sitting places, this shows a strong positive preference for sitting areas, making them one of the most favored facilities. A vast majority (80%) of respondents indicated a preference for jogging tracks, which indicates the highest preference among all facilities, highlighting the importance of jogging tracks in greenbelts. A large majority (70%) of the respondents stated that there must be security

measures. Most of the respondents (70%) reported that there must be grassy lawn, this shows a strong positive preference for grassy areas.

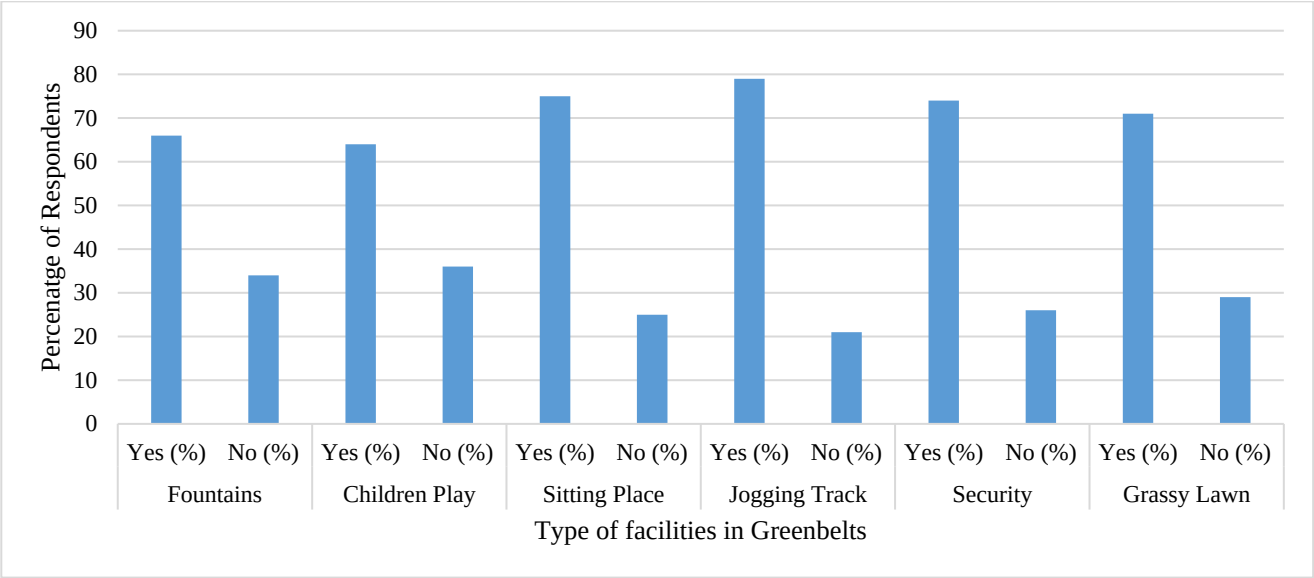

Figure 4. Preference of facilities by respondents in the green belts.

Who is responsible for green belts?

Table 2 lists the responsibilities of various entities for different tasks related to green belts. The entities include private institutions, people living near green belts, NGOs, and the government. The tasks are divided into four categories foundation, protection and management, security, and cleanliness. Responsible for the foundation of green belts in 11 cases, which is 10.4% of the total. People living near green belts were responsible for the foundation in 19 cases or 17.9%. NGOs hold the primary responsibility, with 75 cases, representing 70.8%. Government Responsible in 81 cases, making up 76% of the total. Protection and Management Private Institutions Most frequently held responsible, with 79 cases (74.5%). People Living near Green Belts Responsible in 68 cases (64.2%). NGOs Responsible in 7 cases (6.6%). Government: Responsible in 11 cases (10.4%).

Security Private Institutions rarely held responsible, with only 3 cases (2.8%). People Living near Green Belts Responsible in 1 case (0.9%). NGOs Responsible in 15 cases (14.2%). Government barely held responsible, with only 1 case (0.9%). Cleanliness Private Institutions Responsible in 12 cases (11.3%). People Living near Green Belts Responsible in 17 cases (16%). NGOs Responsible in 8 cases (7.5%). Government is Responsible in 12 cases (11.3%).

Table 2. People perceptions about the responsibility of various tasks of maintaining green belts.

Tasks	Foundation	Protection and Management	Security	Cleanliness
Responsible	Percentage of respondents			
Private Institutions	10.4	74.5	2.8	11.3
People living near green belts	17.9	64.2	.9	16.0
NGOs	70.8	6.6	14.2	7.5
Government	76	10.4	.9	11.3

Association of demographic factors with Awareness about Green Belts

Table 2 presents the results of chi-square tests for different demographic factors and their relationship with various initiatives such as beauty, pollution, health, infrastructure, land value, and business development. The study found that age, education, gender, and occupation are significantly associated with the factors under consideration. An increase in beauty is more significant to the age of people (P=0.001), followed by the education and occupation of respondents (P=0.002) and less significantly related to the gender of respondents Decrease pollution has a more significant relationship with education, gender, and occupation (P=0.001) than age (P=0.003) Better health has a highly significant relationship with age and occupation (P=0.002) followed by education and gender (P=0.003).

Light System Developed is closely associated with the age and education of respondents (P=0.001) followed by the gender of respondents (P=0.002) and less associated with the occupation of respondents (P=0.003). An increase in Land Value is closely associated with the occupation of respondents (P=0.001), followed by education (P=0.003) and less closely associated with age and gender (P=0.004). Develop business is more significant with the age of respondents (P=0.001) followed by education and gender (P=0.002) and less significant with occupation (P=0.004) the variable other is closely associated with occupation (P=0.002) followed by gender (P=0.003) education is less closely related (P=0.004) followed by age (P=0.005).

Table 3. Association of demographic factors with awareness about green belts.

Chi-Square		Increase Beauty		Decrease Pollution		Better Health		Light System Developed		Increase in Land Value		Develop Business		Other	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Age	18-25	32	1	29	4	31	2	25	8	28	5	30	3	26	7
	25-35	41	6	43	4	42	5	34	13	42	5	43	4	34	13
	36-55	22	1	21	2	23	0	16	9	21	2	20	3	20	3
	>55	1	1	2	0	2	0	1	1	2	0	2	0	2	0
	p-value	P=0.001		P=0.003		P=0.002		P=0.001		P=0.004		P=0.001		P=0.005	
Education	1-5	29	1	25	5	28	2	24	6	27	3	28	2	21	9
	6-10	38	5	39	4	41	2	30	13	36	7	36	7	35	8
	10-16	26	3	28	1	27	2	22	7	27	2	28	1	24	5
	>16	3	0	3	0	2	1	0	3	3	0	3	0	2	1
	p-value	P=0.002		P=0.001		P=0.003		P=0.001		P=0.003		P=0.002		P=0.004	
Gender	Male	94	9	93	10	96	7	74	29	91	12	93	10	80	23
	Female	2	0	2	0	2	0	2	0	2	0	2	0	2	0
	p-value	P=0.003		P=0.001		P=0.003		P=0.002		P=0.004		P=0.002		P=0.003	
Occupation	Agriculture	5	0	5	0	4	1	4	1	5	0	5	0	4	1
	Business	42	6	44	4	46	2	35	13	41	7	41	7	38	10
	Job	19	0	15	4	18	1	14	5	15	4	17	2	15	4
	other	30	3	31	2	30	3	23	10	32	1	32	1	25	8
	p-value	P=0.002		P=0.001		P=0.002		P=0.003		P=0.001		P=0.004		P=0.002	

Respondents aged 18-25 and 36-55 are more likely to support the factors describing the awareness of green belts than those aged 25-35 and over 55. Respondents with higher education (>16 years) tend to support the factors describing the awareness of green belts more than those with lower education levels. In the case of gender, males have shown more support for the factors describing the awareness of green belts than females. Respondents having business and job-related occupations have shown a higher level of support for the factors describing the awareness of green belts when compared to agriculture and other occupations.

Discussion

Socio-Economic Profile of Respondents The demographic analysis of the respondents reveals several noteworthy trends. A significant portion of the respondents (44.3%) are aged between 25-35 years, suggesting that the survey engaged a relatively young demographic. The next largest age group was 14-24 years (31.1%), indicating substantial youth participation, while the older age groups were less represented. This age distribution may reflect a higher level of engagement or availability among younger individuals in matters concerning green belts and environmental initiatives. Educationally, the majority of respondents had completed 6-10 years of education (41.4%), followed by those with 1-5 years of education (28.3%). The small percentage of participants with higher education (>16 years) at 2.9% may indicate a need for more targeted outreach to this demographic to increase their participation in environmental surveys. The overwhelming majority of respondents were male (98.1%), which highlights a significant gender imbalance that could influence the survey results and suggests a need for greater inclusion of women in environmental discussions. Occupational data shows that most respondents are engaged in business (45.5%) or other unspecified occupations (31.9%), with fewer participants involved in job-related activities (17.9%) and agriculture (4.7%). This occupational spread suggests that business professionals may have a vested interest in green belts, possibly due to the perceived benefits such as enhanced aesthetics and increased property values that such green spaces provide.

People's Preference for Types of Trees in Green Belts The preferences for different types of trees indicate a strong favorability towards dense trees, with 80% of respondents expressing a preference for them. This preference may stem from the aesthetic and environmental benefits dense trees provide, such as better air quality and shade. Big trees also received a significant positive response (65%), which might be due to their perceived grandeur and environmental benefits. Low dense trees, while still preferred by 60% of respondents, were less popular compared to dense and big trees. This data suggests that urban planners and environmentalists should prioritize planting dense and large trees in green belts to align with public preferences. The strong overall positive attitude towards all tree types underscores the community's recognition of the importance of trees in urban landscapes.

People's Preference for Types of Shrubs in Green Belts Respondents showed a strong preference for evergreen shrubs (80%) and flowering plants (75%), highlighting the importance of year-round greenery and seasonal blooms in enhancing the visual appeal of green belts. Seasonal shrubs (60%) and other types of shrubs (65%) also garnered considerable support, though to a lesser extent. The equal split in preference for fruit-bearing shrubs (50%) suggests that while some respondents appreciate the potential for edible produce, others may have concerns related to maintenance or aesthetics. These preferences indicate that incorporating a mix of evergreen and flowering plants could meet the public's desire for attractive and diverse green spaces. Urban planners should consider these preferences to enhance the appeal and functionality of green belts.

People's Preference for Facilities/Features in Green Belts The preferences for facilities in green belts indicate a strong desire for well-equipped and multifunctional green spaces. Jogging tracks emerged as the most preferred facility (80%), reflecting a high demand for fitness and recreational infrastructure. Sitting places (75%), fountains (70%), and grassy lawns (70%) also received substantial support, indicating that respondents value relaxation and aesthetic features in green belts. Children's play areas (65%) and security measures (70%) were also important to a significant portion of respondents, underscoring the need for family-friendly and safe environments. These preferences suggest that urban planners should prioritize these facilities to enhance the usability and appeal of green belts, making them more attractive and accessible to the community.

Responsibility for Green Belts the distribution of perceived responsibility for green belts highlights the expectation that various stakeholders should be involved in their maintenance and management. The

government was most frequently identified as responsible for foundational tasks (76%) and protection and management (74.5%), indicating a strong belief in the role of public authorities in these areas.

NGOs were also seen as key players, particularly in the foundation of green belts (70.8%). However, the relatively low assignment of responsibility to private institutions and local residents suggests a need for increased awareness and engagement of these groups in green belt initiatives. Enhancing community involvement and fostering public-private partnerships could be beneficial in creating sustainable and well-maintained green spaces.

Association of Demographic Factors with Awareness about Green Belts The chi-square test results reveal significant associations between demographic factors and awareness about green belts. Age, education, gender, and occupation all significantly influenced respondents' perceptions of green belts' benefits, such as beauty, pollution reduction, health improvement, and infrastructure development. Younger respondents (18-25 and 36-55 years) and those with higher education levels showed greater awareness and support for green belt initiatives. Males and individuals engaged in business and job-related occupations were also more supportive. These findings suggest that targeted educational campaigns and engagement strategies are needed to raise awareness among less-represented groups, particularly females and individuals with lower education levels or involved in agriculture.

CONCLUSIONS

The survey data provides valuable insights into the socio-economic profile, preferences, and attitudes of respondents towards green belts. The findings highlight the importance of dense and large trees, evergreen and flowering shrubs, as well as facilities such as jogging tracks and sitting areas, in order to create appealing and practical green spaces. The significant associations between demographic factors and awareness about green belts underscore the need for targeted outreach and engagement strategies to ensure broad-based support for environmental initiatives. By aligning urban planning and policy decisions with these public preferences and demographic insights, policymakers can enhance the effectiveness and sustainability of green belt projects.

REFERENCES

Adeyela, O.I., Oluwarotimi, A. A., & Emmanuel, A. O. (2016). The Significant Role of Horticulture in Environmental Aesthetics and Management. International Journal of Horticulture, 6, 17.

Anderson, L. M., & Cordell, H. K. (1988). Influence of trees on residential property values in Athens, Georgia (USA): A survey based on actual sales prices. Landscape and urban planning, 15(1-2), 153-164.

Basit, A., Amin, N. U., Shah, S. T., & Ahmad, I. (2022). Greenbelt conservation as a component of ecosystem, ecological benefits and management services: evidence from Peshawar City, Pakistan. Environment, Development and Sustainability, 24(9), 11424-11448.

Bibri, S. E. (2018). A foundational framework for smart sustainable city development: Theoretical, disciplinary, and discursive dimensions and their synergies. Sustainable Cities and Society, 38, 758-794.

Derkzen, M. L., van Teeffelen, A. J., Nagendra, H., & Verburg, P. H. (2017). Shifting roles of urban green space in the context of urban development and global change. Current Opinion in Environmental Sustainability, 29, 32-39.

Douglas, O., Lennon, M., & Scott, M. (2017). Green space benefits for health and well-being: A life-course approach for urban planning, design and management. Cities, 66, 53-62.

Dover, J. W. (2015). Green infrastructure: incorporating plants and enhancing biodiversity in buildings and urban environments, Routledge.

Green, O. O., Garmestani, A. S., Albro, S., Ban, N. C., Berland, A., Burkman, C. E., ... & Shuster, W. D. (2016). Adaptive governance to promote ecosystem services in urban green spaces. Urban ecosystems, 19, 77-93.

Hussain, S. B., Khan, S., & Zubair, M. (2022). Carbon Sequestration Potential of Roadside Trees in Southern Punjab, Pakistan. Asian Journal of Research in Agriculture and Forestry, 155-161.

Islam, M. N., Rahman, K. S., Bahar, M. M., Habib, M. A., Ando, K., & Hattori, N. (2012). Pollution attenuation by roadside greenbelt in and around urban areas. Urban forestry & urban greening, 11(4), 460-464.

Jahdi, R., & Khanmohamadi, M. (2013). Residents and urban green spaces: A case study in Rasht (North of Iran). African Journal of Agricultural Research, 8(23), 2918-2923.

Jim, C.Y. (2004). Green-space preservation and allocation for sustainable greening of compact cities. Cities. 21, 311-320.

Macdonald, J. (2012). Environments for health, Routledge.

McEwan, K., Ferguson, F. J., Richardson, M., & Cameron, R. (2020). The good things in urban nature: A thematic framework for optimising urban planning for nature connectedness. Landscape and Urban Planning, 194, 103687.

Meenakshi, P. (2012). Elements of environmental science and engineering, PHI Learning Pvt. Ltd.

Radford, K. G., & James, P. (2013). Changes in the value of ecosystem services along a rural–urban gradient: A case study of Greater Manchester, UK. Landscape and Urban Planning, 109(1), 117-127.

Raihan, A. (2023). A review on the role of green vegetation in improving urban environmental quality. Eco Cities, 4(2), 2387.

Sander, H. A., & Haight, R. G. (2012). Estimating the economic value of cultural ecosystem services in an urbanizing area using hedonic pricing. Journal of Environmental Management, 113, 194-205.

Shafqat, A., & Noor, S. (2019). Distribution and Sustainable Management of Roadside Trees in Bahawalpur, Pakistan. Academia Education, 02, 1-16.

Shaheen, I., Alamgir, M., Gul, M., & Usman, A. (2002). Perception of Community of Madina Town Towards the Underdeveloped Green Space in Madina Town. Journal of Applied Sciences, 2(12), 1099-1101.

Tallis, M. J., Amorim, J. H., Calfapietra, C., Freer-Smith, P., Kotthaus, S., Toscano, P., ... & Grimmond, S. (2015). The impacts of green infrastructure on air quality and temperature. In Handbook on Green Infrastructure (pp. 30-49). Edward Elgar Publishing.