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Relationship of Residential Location Choice with Commute Travels and Socioeconomics in the Small Towns of South Asia: The Case of Hafizabad, Pakistan

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Abstract: The existing literature of emerging markets fails to provide evidence to clarify if people choose their residential location based on commuting to work or other socioeconomic or household factors. The present paper seeks to provide such evidence in South Asia using the case study of a small city in Pakistan. This exploratory study was facilitated by primary data collected from 365 adults in Hafizabad, Pakistan, using face-to-face interviews in 2018. Two research questions were answered: (1) with what socioeconomic or mobility-related variables are the residential self-selections correlated? (2) how strong is the possible association of commuting to work to residential location choices compared to other factors, including social, economic, and family-related issues? The results of Chi-square tests and Proportional Reduction in Error analyses show that the three variables of neighborhood place, gender, and housing tenure type are associated with residential location choices. These findings are partly in line with studies on high-income countries, but gender and housing tenure are more specific to developing countries. Moreover, results of a Binary Logistic model show that marital status and house ownership of other household members define whether people choose their living place based on commuting rather than other socioeconomic and household issues. The finding of the latter variable contrasts with behaviors in high-income countries, whereas the former variable has some similarities. These findings highlight some contextual differences between house location selection in South Asia and other regions.

Keywords: residential location choice; urban transportation planning; commuting; housing; Pakistan



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1. Introduction

The correlations between residential location choices of the inhabitants of urban areas in high-income countries with different behaviors such as urban mobility choices are important for urban transportation researchers because they can influence the correlations between urban travel behaviors and the built environment. In other words, if residential self-selections meaningfully affect the mobility behaviors such as mode choice and travel distances, including commuting lengths, then it would be difficult to claim that the built environment can influence mobility behaviors and decisions. This may be true, particularly in relation to selecting residential places near the workplace to shorten the commuting distance. It is possible to hypothesize the commuting preferences and attributes of such people. Therefore, it is important to understand residential location choices which define their commuting characteristics.

The relationship between residential self-selection and travel behavior is complex, and the built environment plays a significant role in determining it [1–3]. Other important determinants that explain the relationship between residential choices and travel behavior are life choices in other relevant domains such as health and environment [4,5], decision-making arrangement at the household level, and commuting distance [6]. Cao and Yang (2017) found that the built environment has a significant effect on the commuting patterns even after controlling the effect of the residential self-selection [7]. However, the above evidence on the correlations between residential self-selections and commuting is mostly related to high-income countries. A very large part of the world's regions, including emerging markets and developing countries, represent a small proportion of the evidence. Due to the close relationship between mobility behaviors and decisions, on the one hand, and culture and climate, on the other hand, it can be hypothesized that context can have an undeniable role; however, because there is limited empirical evidence, it often cannot be claimed that several issues in urban planning and mobility planning can only be concluded based on evidence related to high-income countries. As a result, such conclusions are not valid to be the basis of mobility planning in emerging markets.

The present paper aims to understand the relationship between socioeconomic conditions and mobility patterns with residential location choices and preferences. It hypothesizes that the residential location choices in the developing countries are less affected by the commuting to work pattern as compared to the developed countries. Moreover, the correlates of some of the household-related variables such as household size are different in developing countries as compared to the same factors in high-income countries. These hypothetical differences have roots in the cultural differences and lifestyles of people in South Asia. To test these hypotheses, the small cities of the South Asian region are focused, exemplified by the city of Hafizabad, Pakistan, as a case study.

The paper continues with a short literature review on the correlates of residential self-selection. Then, the methods applied for testing the hypotheses of this study and its case study area, Hafizabad, Pakistan, are introduced. Then, the findings of the general correlations of residential location choices and different socioeconomic and mobility-related factors are presented. Finally, the findings of the South Asian context are compared with those of the existing literature, the majority of which come from high-income countries.

2. Correlates of Residential Location Choices

Travel behavior studies recognize residential location choices or self-selection as an integral part of understanding land use and transportation interactions [8]. It is being extensively used for launching relevant policy interventions for a sustainable transport system [9]. The public choices in choosing a residential location are primarily based on their travel options and priorities [10]. Numerous variables have been used in past studies to understand the correlations and determinants of residential location choices. Schirmer et al. (2014) classified these location variables within the categories of the built environment, socioeconomic environment, points of interest, and accessibility [3]. Frenkel et al. (2013) found socioeconomic, commuting time, and housing affordability as the primary factors of the residential location choice [11]. Orvin and Fatmi (2021) identified life-cycle events, accessibility, and socio-demographics as the key factors in determining the residential location choice [12]. Morency and Verreault (2020) found that a well-considered residential location choice can considerably reduce the commuting distances and as a result could also cause increasing walking, cycling, and public transport trips [13]. In some of the studies conducted in the developed world, social interactions and neighbors with similar socioeconomic backgrounds have also been a significant factor in residential location choices [14]. Other important determinants of residential location choices have been reported as the quality of schools [15], accessibility to services and jobs [16,17], mobility attitudes, the built environment [18–22], and the affordability and neighborhood characteristics [23,24].

Although numerous studies have been done in developed countries, travel behavior varies among different populations and regions due to socioeconomic conditions, hous-

ing types, norms, and attitudes [25]. Therefore, it is imperative to understand residential location choices for developing countries, specifically the South Asian region. There are limited studies on residential choices and self-selection in developing countries. Masoumi (2019) observed that residential location choices play a vital role in mode choice selection in Tehran, Istanbul, and Cairo [26]. In one of his recent studies for the same case study areas, Masoumi (2021) identified neighborhood characteristics, accessibility, commuting distance, public transit trips, and individual characteristics such as age and driving license that affect the residential location choice [27]. Masoumi (2013) also found a significant role of socioeconomics in determining the residential location choices in Tehran, Iran [28]. In another study conducted in Alexandria, Masoumi et al. (2021) identified neighborhood characteristics, availability of transportation modes, and affordability as the strongest determinants of the residential location choices [29]. Ibrahim (2017) also found the availability of transportation modes as the leading determinant of the residential location choices in Alexandria [30]. Albayrak et al. (2019) argued that housing affordability and travel behavior shapes the housing choices of the residents of the mono-centered city. In contrast, the situation in a poly-centered city like Istanbul is complex. Several factors such as individual preferences, job location, accessibility, and sociocultural factors determine housing location choices [31]. Salihoglu and Turkoglu (2019) also highlighted various factors such as housing and neighborhood characteristics, accessibility, and residential satisfaction that affect residential location preferences in Istanbul [32]. Ghazali et al. (2020) studied residential location choices in the city of Elmina, Malaysia, by conceiving a broader frame of the migration-related push-pull-mooring model. The study concluded that pull factors such as affordability and socioeconomic factors are responsible for residential location choices at the destination places. Certain push factors, such as the origin place, dissatisfaction, and high housing costs, also play a significant role in residential location choices [33]. Jiang and Zhang (2021) found that neighborhood characteristics, housing price, accessibility to transportation, and entertainment places are important determinants of location choices for housing purchase in Anyue County, China [34]. Aung and Vichiensan (2019) identified housing characteristics, neighborhood quality, commuting time, and ethnicity as significant factors affecting the residential location preferences in Myanmar [35]. Many other studies in the developing world have found similar determinants of residential location choices such as accessibility and travel behavior [7,36], neighborhood and socioeconomic characteristics [37], affordability and security [38], convenience and comfort [39], and religious factors [40].

A study by Munshi (2016) observed that residential location choice is important to be considered for determining mode choice in Rajkot, India [41]. Pandya and Maind (2017) found distance to the central business district, housing affordability, and family income to be significant factors that affect residential location choice in the Mumbai Metropolitan Region [42]. Aslam et al. (2019) conducted a study on a similar topic in the same small city of Hafizabad, Pakistan, and, through descriptive analysis, found affordability and availability of utility services to be the leading factors of residential location choices [43]. De and Vupru (2017) found socioeconomics, accessibility to the workplace, and amenity facilities to be important factors in determining housing location choice and the rental values of the residents of a small city of Dimapur Town in Nagaland, India [44]. Digambar et al. (2010) found housing ownership and housing type to be significant factors affecting the residential location choices of high- and middle-income groups in Nagpur, India [45]. Rehman and Jamil (2021) reported commuting cost and housing rent to be the determinants of residential location choice in the twin cities of Rawalpindi and Islamabad [46]. Some other studies have also revealed the importance of socioeconomics in shaping housing location choices in the South Asian region [47]. For example, Choudhury and Ayaz (2015) found the quality of educational institutions and house rents as the leading determinants of residential location choices in Bangladesh [48]. Shawal and Ferdous (2014) did a similar study with workers of garment factories in Dhaka, Bangladesh. They found a range of factors, including socioeconomics, affordability, accessibility to services, and commuting distance, which affected residential location choices [49]. Thus, it is imperative to understand the residential location choices in other South Asian cities for improving land-use transportation dynamics.

3. Materials and Methods

Based on the literature review and the knowledge gaps, the current study seeks to answer the following research questions: (1) with what socioeconomic or mobility-related variables are the residential self-selections correlated? (2) how strong is the possible association of commuting to work to residential location choices compared to other factors, including social, economic, and family-related issues? This study hypothesizes that unlike some studies conducted in Western countries, residential location choices in South Asian countries are less influenced by commuting to work. Thus, it is easier to study the correlations between urban travel behaviors and the built environment in that context. This is because if the hypothesis is tested to be true, residential location choices in the South Asian context would work more as a constant than a variable to cause changes in other domains, most importantly, the travel behavior and the characteristics of the built environment.

A small city of Hafizabad located in the upper central Punjab region of Pakistan was chosen to conduct this study as the monocentric character of the city offered some advantages for reliably concluding this study with a smaller sample size. The population of Hafizabad, according to the 2017 Census, has been reported as 245,784. Furthermore, there were 37,270 housing units in Hafizabad with a household size of 6.6 persons—slightly higher than the national average of 6.5 [50]. Despite being a small city, it is well connected with other urban places in the surroundings. Gujranwala, the fifth largest city in Pakistan with a population of 2.03 million [50], is located only around 55 km away in the East, enabling traveling between these two cities [51]. The urban fabric of the city consisted of many layers dating back to the Mughal dynasty, followed by the British empire, which exercised Victorian architecture during the colonial times. Since the independence of Pakistan in 1947, post-partitioned time urban layers have also been added to the urban landscape of Hafizabad.

This study is based on a survey undertaken in Hafizabad in 2018, which led to a validated sample of 365 residents. Cochran's (1963) formula was applied in determining the sample size and confidence interval for conducting this study. A two-stage sampling technique was used where in the first stage, four neighborhoods were selected based on their distinct land use and built environment characteristics. The calculated sample was equally distributed among the selected neighborhoods. In the second stage, a probabilistic random sampling technique was used to complete the sample size for ensuring its representativeness for the overall population. The random sampling offered an opportunity to handle the cases of refusals as the field surveyors moved to the next respondents in all such cases [52]. The survey method was face-to-face interviews in the four case study neighborhoods of the study, which contained a combined population of 19,042 inhabitants. The survey resulted in individual and household response rates of 1.92% and 12.65% and confidence levels of $\pm 5.08\%$ and $\pm 4.79\%$ for individual and household questions. The overall data collection was performed as an exploratory survey. The response rates and confidence levels of each neighborhood have been summarized in Table 1. The full details of the data collection have already been published by Aslam et al. (2019) [43].

The most important factors in connection with residential self-selections were selected to be applied in statistical analyses. The neighborhood was applied to the tests because it is an indirect index of socioeconomic status. As an example of the difference in the economic levels of the neighborhoods, house prices can be raised. The cheapest houses are found in Hassan Town (29%), whereas the most expensive houses are in Nawab Colony (16%). Personal variables include age, gender, marital status, and employment. For cultural reasons, gender was only designated as two categories, making up a dummy variable. Household variables include vehicle ownership (bike and car), type of housing, previous relocation, time of relocation, house ownership of other members, the present status of housing, and the actual price of a house. Finally, two variables represent mobility habits: travel time and mode choice. All of these data were designed as categorical (and binary) variables, the frequencies shown in Table 2.

Table 1. The survey characteristics [43].

Neighborhoods	Projected Population	Number of Households	Number of Interviewed Subjects	Neighborhood-Level Validated Sample Size (n)	Response Ratio for Individual Variables (%)	Response Ratio for Household Variables (%)	Confidence Interval for Individual Variables	Confidence Interval for Household Variables (%)
Muhallah Hassan Town	7.861	1.191	100	100	1.27	8.40	9.74	9.38
Muhallah Shareef Pura	3.298	500	100	100	3.03	20.00	9.65	8.77
Gali Haji Miraaj Din	3.584	543	100	100	2.79	18.42	9.66	8.86
Nawab Colony	4.299	651	98	65	1.51	9.98	12.06	11.54
Total	19.042	2.885	398	365	1.92	12.65	5.08	4.79

Table 2. The frequencies of independent and explanatory variables of this study.

Category	Sub-Category	Frequency	Percent	Category	Sub-Category	Frequency	Percent
Residential Location Choice	Commuting	61	16.7	Age	Between 21–35	128	35.1
	Other Factors	304	83.3		Between 36–45	164	44.9
					46 and above	72	19.7
Neighborhood (Socioeconomic Status)	Gali Haji Miraaj Din	100	27.4	Gender	Male	308	84.4
	Shareef Pura	100	27.4		Female	57	15.6
	Hassan Town	100	27.4	Car and Bike Ownership	No car	83	22.7
	Nawab Colony	65	17.8		One car	17	4.7
			No bike		50	13.7	
Marital Status	Single	44	12.1	One bike	205	56.2	
	Engaged	14	3.8	Two bikes	7	1.9	
	Married	299	81.9	More than two bikes	3	0.8	
	Widow	7	1.9	Other Types of Housing (tenure)	Owned	321	87.9
Employment	Full-time job	286	78.4		Rent	44	12.1
	Part-time job	40	11.0				
	Work at home	24	6.6				
	Searching for a job	8	2.2				
	Retired	7	1.9				

Table 2. Cont.

Category	Sub-Category	Frequency	Percent	Category	Sub-Category	Frequency	Percent
Type of House	Private apartment	1	0.3	Travel Time	Less than 30 Min	260	71.2
	Self-built house	317	86.8		Between 30–60 min	51	14.0
	Others	47	12.9		Between 61–90 min	3	0.8
Residential Location Choice-Categorical	I afford this house	52	14.2		90 min, or more	3	0.8
	Proximity to work	49	13.4		I work outside Hafizabad	39	10.7
	Family's asset	149	40.8		Mode of Transportation	Missing	23
	Availability of transportation	12	3.3	Walking		147	40.3
	Nice neighborhood	57	15.6	Private car		9	2.5
	Proximity to family/relatives	35	9.6	Bus or minibus		19	5.2
	Nearby downtown	8	2.2	Train or tram		3	0.8
Social standing of the area	3	0.8	Taxi	5		1.4	
Previous House Relocation	Yes	126	34.5	Ride in a friend's Car		9	2.5
	No	239	65.5	Transport facility offered by the company	4	1.1	
Last Relocation Time	Less than 2 years	34	9.3	Motorcycle	146	40.0	
	From 2 to 10 Years	54	14.8	House Ownership of Other Household Members	1	56	15.3
	More than 10 Years	40	11.0		2	7	1.9
Present Status of Housing Units owned by other members	300	82.2	4		2	0.5	
	Missing	34	9.3	Actual Price of House	Less than PKR * 1.5 million	55	15.1
	Vacant	31	8.5		Between PKR 1.5–3.0 million	180	49.3
	Occupied	34	9.3		Between PKR 3.0–4.5 million	59	16.2
	31	8.5	PKR 4.5 million and above		31	8.5	

* 1 PKR = 0.0057 USD (Source: <https://www.forex.pk/currency-converter.php> dated 7 February 2022).

To answer the first research question of this study, the residential location choice variable produced by the questionnaire was applied in categorical form. The choices included eight categories of “I afford this house”, “proximity to work”, “family’s assets”, “availability of transportation”, “nice neighborhood”, “proximity to family/relatives”, “nearby downtown”, and “social standing of the area”. These options were the results of open-ended questions in previous pilot studies in other developing countries. The correlations between this variable and ten other household, socioeconomic, spatial, and mobility-related variables were tested by the Chi-square test of independence on a univariate basis. The null hypothesis was that there was no association between the two variables. This hypothesis was rejected by a p -value of less than 0.05. Since the Chi-square test of independence does not show the strength of associations, the Proportional Reduction in Error (PRE) method was applied to analyze the strength of associations. The variables of this analysis were all nominal, so the Cramer’s V measure was estimated for the tests between each pair of variables according to Formula (1).

$$V = \sqrt{\chi^2 / (N)(\min r - 1, c - 1)} \quad (1)$$

where χ^2 is the value of Chi-square measure, N is the number of the subjects in the sample, and $(\min r - 1, c - 1)$ is the minimum value of either the number of residential location choice $- 1$ or the number of the other variable $- 1$. When χ^2 produced insignificant values ($p > 0.05$), it was concluded that the two variables were associated; thus, their PRE strength was estimated by the Cramer’s V using the following thresholds:

$0 < V < 0.10$: weak association between variables; $0.1 < V < 0.30$: moderate association between variables; and $V > 0.30$: strong association between the variables.

To answer the second research question, the categorical variable of residential location choice was transformed into a binary variable with reasons related to commuting to work, including proximity to work and availability of transportation infrastructure versus other factors including affordability, family’s asset, nice neighborhood, proximity to family/relatives, near to downtown, and social standing of the neighborhood. This dummy variable is assumed to represent choosing the living location homogeneously in response to commuting needs, e.g., the mode of commuting does not influence the residential self-selection. Then, the dummy variable was taken as the dependent variable of a Binary Logistic (BL) model, and the potentially most effective variables were applied as explanatory variables. Modeling was repeated nine times, during which transport mode, the average area of a house, type of house, gender, age, vehicle ownership, employment, and travel time were eliminated from the model, respectively.

4. Results

According to the approach explained in the methodology section, the categorical variable of residential location choice (including eight choices) was tested against ten variables (neighborhood, age, gender, marital status, employment, car and bike ownership, type of house, travel time, mode of transportation, and house ownership of other household members). Where an association is found, the Cramer’s V value indicates the strength. The results of these univariate hypothesis testing are listed in Table 3. The p -values of three variables of “neighborhood”, “gender”, and “type of house (tenure)” show highly significant or significant association with a residential location choice. This indicates that knowing where the people live, their gender, or what type of tenure they have can help us predict the reasons behind their house location choice. The value of Cramer’s V shows the strength of these correlations; however, these results do not reflect the pattern of the associated variables. The distribution patterns of residential self-selections versus the three variables can be found in Figure 1, equivalent to contingency tables of each pair of variables.

Table 3. The Chi-square test results and Proportional Reduction in Error (PRE) analysis for residential location choice with socioeconomics and mobility variables in Hafizabad.

Variable	Pearson Chi-Square Value	Df	p-Value	Cramer's V
Neighborhood	50.73	21	<0.001	0.215
Age	17.49	14	0.231	0.155
Gender	14.49	7	0.043	0.199
Marital status	22.71	21	0.359	0.144
Employment	25.06	28	0.625	0.131
Car and bike ownership	30.05	35	0.706	0.128
Type of house	54.04	14	<0.001	0.272
Travel time	30.96	28	0.319	0.147
Mode of transportation	53.15	56	0.583	0.144
House ownership of other household members	10.89	7	0.143	0.173

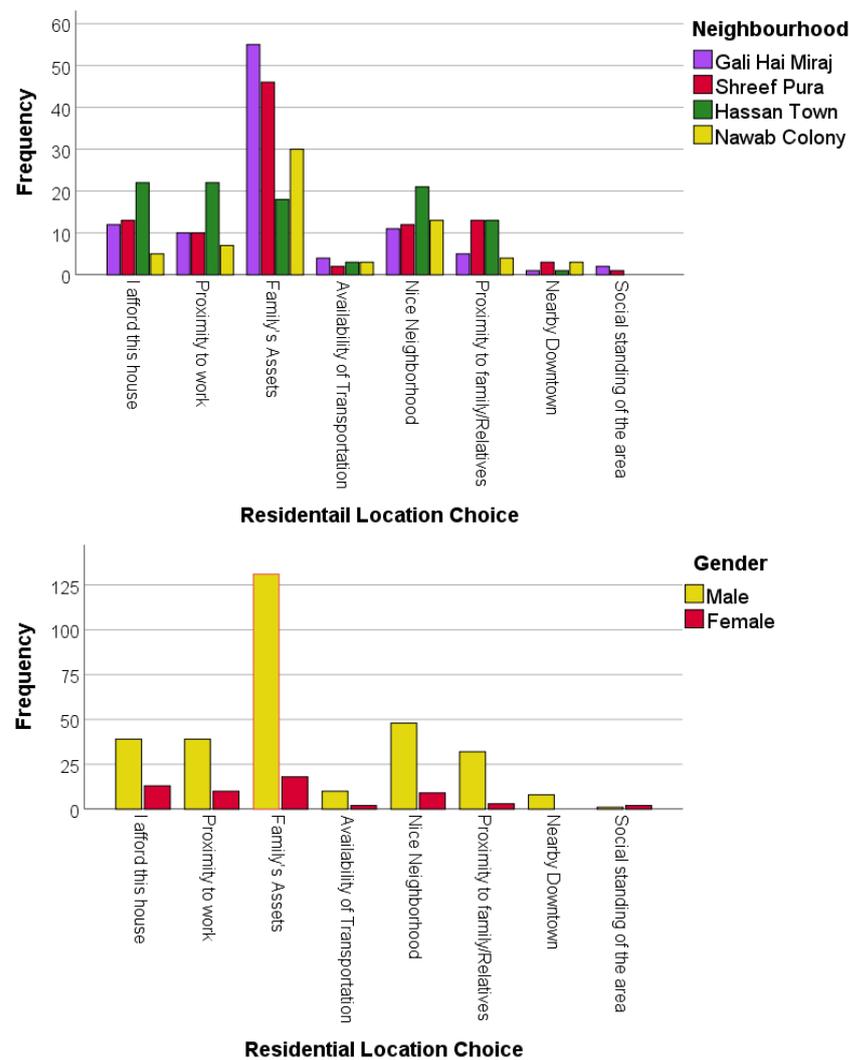


Figure 1. The pattern of frequencies of residential location choice and two correlated variables in Hafizabad, Pakistan.

According to these findings, the null hypothesis of no association between house location choices and the location of the neighborhoods of the respondents has been rejected ($p < 0.001$). Residential location choices are highly significantly associated with the neighborhood in which the respondents live. In other words, the distribution pattern

of the responses about house location choices is in accordance with the frequency of the district of the city in which the respondents live. This strength of this association is moderate (Cramer's $V = 0.215$). The frequencies of location choices in different neighborhoods (Figure 1) show that the reasons follow almost the same pattern in all areas. A relative exception is Hassan Town, a full-grid newly developed area (post-2000) compared to other selected neighborhoods of this study. However, the small deviances of Hassan Town seen in Figure 1 have not had any significant effect on the results of the hypothesis testing.

Gender is a variable that was proved by the findings to have a significant association with residential location choice ($p = 0.043$). The strength of this correlation is also moderate (Cramer's $V = 0.199$). Figure 1 shows how males and females have similar patterns of residential self-selection. This is understandable through the cultural atmosphere and lifestyles in a small town in Pakistan, where household members live together, and the decisions are taken centrally by senior members. This contrasts with individual decisions made by small household units in Western societies.

Finally, type of tenure is the last associated variable with residential locations choices. This association is also highly significant ($p < 0.001$) and has a moderate strength (Cramer's $V = 0.272$) (Table 3). The distribution patterns indicate that whether the houses are owned or rented, the residential self-selections have the same pattern and distribution. In other words, the location choices are not under the influence of renting or buying the living unit. People's way of thinking is the same regarding choosing their living location when they plan to buy or rent a house.

The final form of the BL model can help us investigate the relationship between residential self-selection and commuting to work. Two variables of marital status and house ownership of other household members are associated with deciding to buy or rent a house because of making commuting easier against other reasons for location choice (Table 4).

Table 4. Binary logistic model for residential location choices in Hafizabad (commuting vs. other factors).

Variable	B	S.E.	Wald	df	<i>p</i>	β
Marital Status = Single	3.446	1.084	10.100	1	0.001	31.379
Marital Status = Engaged	2.465	1.142	4.659	1	0.031	11.767
Marital status = Married	1.479	0.449	10.850	1	0.001	4.388
House ownership of other household members = 1	−0.743	0.386	3.703	1	0.054	0.476
Actual price of house in real estate market	0.156	0.190	0.670	1	0.413	1.169

The first important variable, all categories significantly associated with choosing house location based on commuting, is marital status. The reference category of this variable is "widow", which per se is not an important category, but taking this category as a reference helps understand the relationship between other categories, particularly single and married people. Single and married groups are highly significant in the model ($p = 0.001$). The proportion of the β values of the two categories indicates that single respondents of the sample are 7.15 times more likely to choose their house place based on commuting to work rather than other factors like socioeconomics, etc. Similarly, single people are 2.66 times more likely to select their house location in ease of commuting compared to engaged people. Finally, engaged people are 2.68 times more likely than married people. These findings emphasize the importance and effectiveness of life course events like marriage, having children, etc., in behaviors related to mobility.

The other significant factor in the model is related to house ownership by other household members. People living in a household in which one of the other members, like siblings, have one house are 48% more likely to choose their house location based on commuting than people living in families in which other members have four houses.

Although this relationship is marginally significant ($p = 0.054$), it shows that having more available houses directly by the household members may be in relation to the selection of new houses by other family members based on commuting or other factors. This relation seems to be linked with complex cultural issues found in contexts with more traditional central families, where the household sizes are large, and there is a close relationship between household members.

Finally, the last variable in the model, the actual price of a house in the real estate market, is not significant ($p = 0.413$). Still, it was kept in the model to increase the validity results of the model, and at the same time, it functions as a control variable. In other words, when the house price is controlled for (it is fixed), the marital status and house ownership of other household members will be significant in relation to choosing a house location based on commuting versus other issues.

The results of the model validity tests can be seen in Table 5. The Nagelkerke R^2 equals 0.604, which means the model can predict 60.4% of the variance of house location choices chosen from commuting to work against other reasons. Although this is not a bad R^2 , more complex and detailed data can help get better results in future models. The results of the Omnibus Test ($p < 0.001$) and Hosmer and Lemeshow Test show that the model is valid and performs well (Table 5).

Table 5. The model validation test results of the binary logistic model of residential location choice in Hafizabad.

Model Summary	−2 Log Likelihood 253.82	Cox & Snell R^2 0.453	Nagelkerke R^2 0.604
Omnibus Tests of Model Coefficients	Chi-square 195.33	Df 5	p <0.001
Hosmer and Lemeshow Test	Chi-square 7.83	Df 5	p 0.165

5. Discussion

The results identified three main variables, i.e., neighborhood, gender, and housing tenure, as the correlates of residential self-selection in Hafizabad. In contrast, all other investigated variables did not show any significant association. This shows the importance of social life maintained through various networks at the neighborhood level, neighborhood characteristics, demographic structuring of households with respect to decision-making arrangements, and owner-occupied housing tenures for residential location choices of the people residing in smaller cities of the South Asia region. These findings have some similarities and differences with the results emerging from the developed countries. The variables of neighborhood-related attributes such as nice neighborhood [3,18,24], presence of family, social contacts, and people having similar socioeconomic status [14], etc., have also been reported as a significant determinant of residential location choices in the developed world. However, the role of gender and housing tenure in deciding the residential self-selection in developing countries is different than the results surfacing from the studies conducted in the developed world.

The majority of the respondents (84.4%) of this study were male, and the Chi-square test results imply that they were the main actors choosing the residential locations for their families. This reflects the dominantly patriarchal character of Pakistani society, where male heads of the households make the key decisions [53]. A study found gender to be a significant factor of residential location choices in Alexandria, Egypt [29]. In Nigeria, a study found low involvement of women in deciding residential locations [31]. Generally, these findings are context-specific to the developing countries, and finding comparable results for the developed countries is difficult. A rare study conducted in a high-income country found significant gender-based differences in choosing the residential locations in Tel Aviv [54]. In many other studies conducted in the developed world, both males

and females decide together for their residential locations [55]. Housing tenure was also found to be another significant variable that determines the residential location choices of the residents of Hafizabad, Pakistan, which is mainly shaped up by the majority type of owner-occupied housing tenure (87.9%). In the absence of sufficient social safety nets for the masses, owning a house is generally an asset accumulation strategy of the people, which gives them a feeling of security and protection in times of need. Another study also found owner-occupation of housing units in the shape of family assets as determinants of residential location choices in Alexandria, Egypt [29]. However, this finding has not surfaced as such for the cases of developed countries where the ratio of owner-occupied housing units was found less than many developing countries.

The life events such as marriages, having children, and relocation to new places also have significant impacts on mobility behaviors. The tested model in this study provided evidence of a strong association of marital status with the residential location choices based on commuting patterns. This finding conforms with some of the results coming from the developed world. A study identified marital status to significantly affect the residential relocation and associated travel behavior in the Metro Vancouver region [56]. However, there are studies from the developed world that do not provide evidence for similar findings. Some studies identified residential relocation and related changes in the built environment to affect travel patterns and car ownership in Cologne significantly [17,21]. Researchers also found similar findings for German cities; however, they argued that residential relocation affects travel behavior differently across varying scales [57,58]. Such studies did not mention the important life event of marriage as an affecting factor for residential location choices based on travel behavior. Another variable that emerged as having a significant association with residential location choices based on commuting behavior was house ownership by other household members. This is an interesting context-specific finding which has not been reported in the studies conducted in the developed world. A joint family system and larger household sizes in the developing world could be the reasons which result in having more than one household living in one house in many cases. As per the last Census activity in Pakistan, the average household size is 6.39 [50] higher than the household sizes in many developed countries. However, such higher household sizes and joint living arrangements encourage some household members to own other house/s for possible residential relocation in future times due to larger individual household size. The only evidence available from the studies done in the developed world is the differentiation between the individual preferences and joint decision making within households for residential location choices such as [59].

These findings would have a significant bearing on urban planning practices if integrated with the policy formulation to efficiently plan and manage the urban places along with the sustainability principles, particularly in developing countries. The neighborhood unit is an important scale that significantly affects the residential location choices of the residents of the urban places. However, many urban planning instruments operate on a city-scale without understanding varying dynamics across different neighborhoods. This necessitates integrating neighborhoods as an important unit of analysis while devising urban planning responses and service delivery mechanisms for addressing the urban housing issues. Additionally, to promote an inclusive urban planning paradigm, many urban planning initiatives for housing delivery need to be based on gender-sensitive planning. Owner-occupied housing tenure has also been found out an important determinant of residential location choices as the family asset is generally kept on transferring to the next generations. A policy response may be devised to discourage the change of land uses of such owner-occupied housing units typically located within the central parts of the city to make them available for residential activity. This will be an important planning intervention to keep the job–housing balance right within the central parts to promote the balanced growth of the urban places. This planning intervention has also been extensively applied in the central parts of Freiburg, Germany, to serve the same purpose as stated above [60]. The life events of the peoples' biography are also essential to understand their residential

location choices and associated travel behavior. This study reports marriage leads to an increased number of households and larger family sizes within the same housing units as a significant predictor of peoples' residential location choices based on commuting behavior. This warrants the consideration of marriages and the increased number of households as the basis for estimating housing shortage and demand forecasting, which will shape up the required urban housing policy response in a meaningful way. This finding is also essential for urban transport planners. If taken into account, this may result in an effective transport planning response aiming at shorter commuting distances and promoting active modes of travel.

As the study premise was a small city with a mono-centric character located in a developing country of South Asia, the findings of this study are very much context-specific. This means generalizing to portray the situation of larger cities of the same region based on these findings would not be possible as larger cities with poly-centric characteristics are much more complex. Additionally, the data was collected pre-COVID-19 times, so the results may not be an accurate depiction of the situation of current post-COVID-19 times as the COVID-19 pandemic has largely affected the transportation and mobility behavior of the people across the globe [61–64].

6. Conclusions

This study mainly addresses the two key research questions about residential location choices in relation to commuting behavior and other socioeconomic factors in the small city of Hafizabad, Pakistan. The study concludes that the factors of the neighborhood, gender, and housing tenure are associated with the residential location choices of the people. Apart from the variable of the neighborhood, other reported variables are not like those which are reported in the developed world. Additionally, two significant variables of marital status and house ownership of other household members have been surfaced as associated with the residential location choices based on commuting behavior. This finding draws lesser similarities and more differences with the studies conducted in the developed world. Overall, the study concludes that the residential location choices of the people in relation to the commute travel and socioeconomics in the developing countries have lesser similarities and more differences with the people behaviors in these domains in the developed countries. These findings bear important implications for urban planning interventions by relevant actors to promote sustainable urban development and mobility.

Similar studies also need to be done in the larger cities of the Global South. Considering the complexities and the scale of the problems faced by the larger urban places in the developing countries, such studies will be even more important from an effective policy formulation point of view. However, such studies need to incorporate the COVID-19 factor while designing the research methodology, as it is still an ongoing phenomenon. Some studies might also be needed to report on the mental mapping to understand the peoples' perception with respect to their residential location preferences. Findings of such studies may help the relevant actors formulate a policy response aiming to steer the revealed preferences towards more favorable and sustainable housing supply solutions.

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