

# Does Relative Accessibility to Service Facilities Impact Residents’ Satisfaction? Socio-Spatial Analysis to Determine Deprivation and Location Attachment

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## 1. INTRODUCTION

- Developing countries such as Pakistan have built housing schemes on a large scale for low-income people at locations with low proximity to service facilities.
- This study in is conducted in response to the high demand for **Rawalpindi-Islamabad Metropolitan Area (RIMA)** affordable housing units and associated service facilities to meet the needs of disadvantaged groups.
- Compares the spatial access to service facilities between city core, mid-urban and suburban residents by measuring the distance from the residential parcel to facilities.
- Highlights the association of service facilities with residential areas to determine relative accessibility deprivation.
- The main findings can expand the literature on accessibility deprivation in urban areas.

## 2. METHODOLOGY

- ArcGIS 10.5.1: Spatial Analysis;*
  - Measuring distance:** Residence to service facilities;
  - Create accessibility score; visualize that score in color grading;
  - Data source:** Google Earth and Open street map
  - Geocoding Sites;** service facilities in RIMA;
  - Creating residential parcels to measure distance to public facilities;
  - Running model to obtain distance for further analysis/interpretation;*
- SPSS 26v: Statistical analysis;*
  - Accessibility Score;

Accessibility measures	Level of accessibility				
	Very Good	Good	Normal	Bad	Very Bad
Euclidean distance to facilities (meters)	≤ 300	300-600	600-1200	1200-1800	> 1800
Accessibility score to each facility	100	80	60	40	20

## 3. STUDY SITES

- Male** respondents dominated all three groups,
- Age** and **Marital Status** were almost equally distributed,
- Low-income** and **large Number of Family Members** were reported high in *City Core*;
- Number of travelers** were high within *Mid-Urban* group,
- Working adults** was not significantly different.

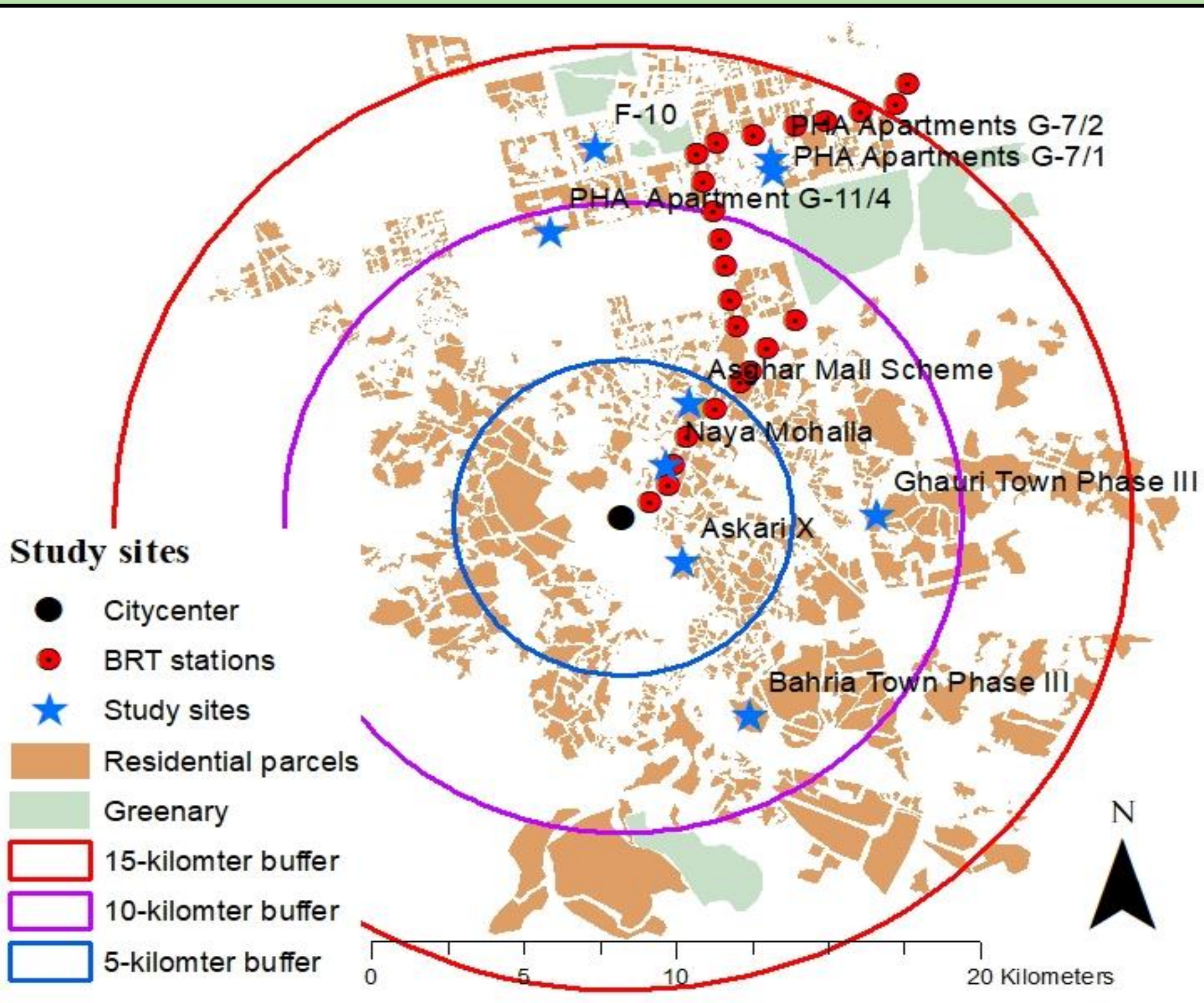
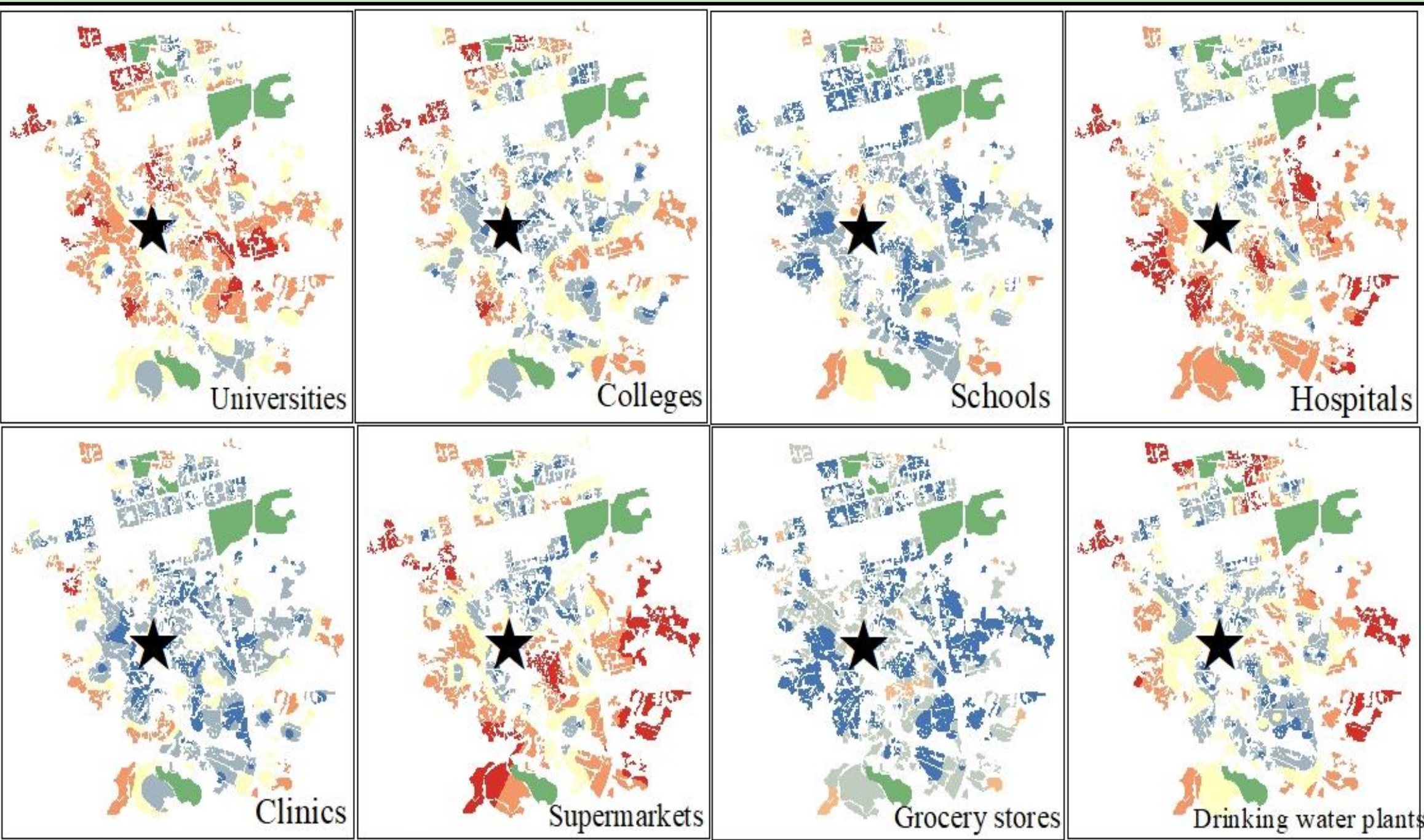


Figure 1 Geographical location of study sites in Rawalpindi-Islamabad

Study Sites	Names of Study Areas	Distance to city center (km)	Development type	Sample size
<i>City core</i>				
1	Asghar Mall Scheme	0 - 5	Informal Self	48
2	Naya Mohalla	0 - 5	Informal Self	49
3	Askari 10	0 - 5	Formal Private	50
<i>Mid urban</i>				
4	Bahria Town	5-10	Formal Private	51
5	Ghauri Town	5-10	Formal Private	52
6	PHA Apt. G-11/4	5-10	Public	40
<i>Suburban</i>				
7	PHA Apt. G-7/1	10-15	Public	60
8	PHA Apt. G-7/2	10-15	Public	40
9	Sector F-10	10-15	Formal Self	45

## RESULTS



Spatial pattern of accessibility to service facilities

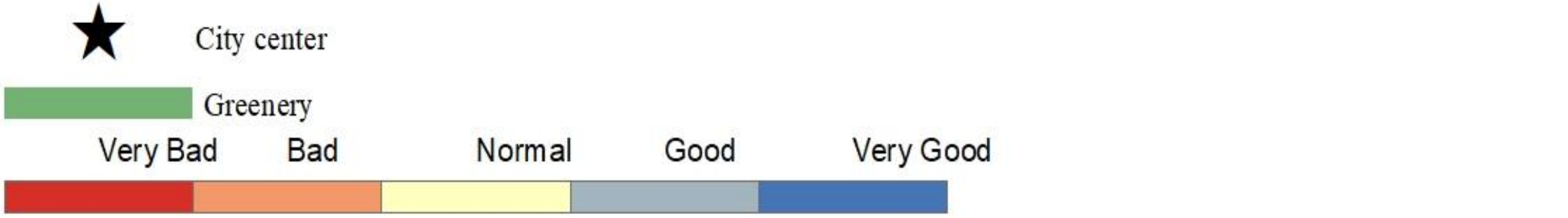


Figure 2 Spatial distribution of accessibility score of service facilities in RIMA

- Education:** Higher-level= Universities, Medium-level= Colleges, Lower-level= Schools
- Health:** Higher-level= Hospitals, Lower-level= Clinics
- Shopping:** Higher-level= Supermarkets, Lower-level= Grocery stores
- Drinking water and Bus rapid transit:** Stays as it is

Table 2 Mean accessibility scores of service facilities in RIMA

Service facilities	City Core		Mid-urban		Suburban	
	Mean	St. D.	Mean	St. D.	Mean	St. D.
<i>Education</i>	<b>56.57</b>		<b>54.01</b>		<b>50.25</b>	
Universities	36.98	19.60	38.02	22.00	41.26	22.63
Colleges	68.04	21.04	54.49	22.47	42.61	25.12
Schools	64.69	18.97	69.52	20.22	66.88	22.63
<i>Health</i>	<b>64.19</b>		<b>50.08</b>		<b>58.27</b>	
Hospitals	49.94	22.47	38.82	21.29	51.37	24.29
Clinics	78.44	17.41	61.34	23.83	65.17	23.08
<i>Shopping</i>	<b>65.31</b>		<b>61.44</b>		<b>63.75</b>	
Super markets	52.63	25.69	43.53	24.86	49.12	24.94
Grocery stores	77.99	16.02	79.36	17.19	78.38	17.89
<i>Drinking water</i>	<b>63.13</b>	18.82	<b>53.80</b>	22.92	<b>41.62</b>	24.66
<i>BRT</i>	<b>35.42</b>	20.53	<b>25.24</b>	13.98	<b>28.90</b>	17.40

Note:

1. St. D. = Standard deviation.

## CONCLUSION

- City Core region is relatively well-equipped with various service facilities, providing better access to the mixed-income groups.
- Low-income households in City Core may feel deprived of opportunities away from the convenient distance;
  - Low access to frequently used service facilities impacts poor people due to a significant increase in transportation costs.
- Less number of services in one region while existing in abundance in other areas;
  - Household dynamics in this study’s survey showed that a large proportion of respondents in the City Core are low-income, with three to five adult travelers in one family.
  - Highly dependent on public transportation such as BRT.
- Around 53% of the mid-urban and 48.3% of the suburban group earn more than PKR 150,000,
  - Affordable to bear the transportation expenses every day.

## POLICY RECOMMENDATION

- Social and Economic Opportunities:** Public and private developers must not only aim to ensure adequate housing units but also focus on providing opportunities, such as education, health, transportation and clear water, to disadvantaged groups.
- Financial aid:** Local officials must provide attractive incentives to encourage social workers and property developers to establish public transportation, supermarkets and clean water plants for the relocated residents to the newly-built affordable units.
- Consulting Residents’ Opinions:** Public opinions are one of the critical elements to build desired style of housing units based on family size, and services like hospitals, universities and shopping facilities to ensure good quality of life.