Inter-District Inequalities in Social Service Delivery:
A Rationalized Approach towards Funds Disbursement

Muhammad Usman Sikander[1] and Syed Ahsan Ahmad Shah[2]

[1] Teaching and Research Fellow at Center for Research in Economics and Business, Lahore School of Economics. Address: Intersection Main Boulevard Phase VI DHA and Burki Road 53200 Lahore, Pakistan.
E-mail Address: usmans@lahoreschool.edu.pk   &   usman.sikander@hotmail.com

[2] Research Associate at Center for Research in Economics and Business, Lahore School of Economics. Address: Intersection Main Boulevard Phase VI DHA and Burki Road 53200 Lahore, Pakistan.
E-mail Address: syedshah@lahoreschool.edu.pk   &   syedahsanshah4@gmail.com

Abstract

Social sector development in Pakistan has been the focus of researchers over past decades but coverage of these services still remains limited. Although, considerable amount of resources have been allocated for social service delivery, people at large have suffered from existing inequalities in delivery of these services. Utilizing the MICS 2007-08[3] dataset, we look at the prevailing inequalities in access to education, health, physical infrastructure and social safety nets across the districts of Punjab. We highlight the weaknesses of public institutions in providing social services and acknowledge the contribution of the private sector in improving access to these services. The paper emphasizes the need for an adequate allocation of resources from the provincial government to the districts in order to remove the growing inequalities within districts and between districts. An effective approach for funds disbursement from the provinces to the districts should be based upon the current level of access to social services. This paper attempts to establish a rationalized methodology for funds distribution at the district level, so that a larger population has access to basic services. The outcome of declining inequality in social service delivery will help the lot of lagging districts, and may limit inter-district migration to some extent.

Keywords: Social Sector, Safety nets, Inequality, Punjab

Introduction

For a less developed country, Pakistan has experienced a relatively high average per capita growth rate of 2.2%, for the period 1950-99 (Easterly, 2001). Unfortunately, high growth rates have not trickled down sufficiently and the living condition of the general populace leaves a lot to be desired. The UNDPøs Human Development Index (HDI) report released in 2010, ranked Pakistan at 144th on the HDI, out of 178 countries (Wasif, 2010). The HDI conceptualizes poverty to be a multi-dimensional construct and considers adult literacy and life expectancy to be key indicators of the quality of life. Given, that Pakistan has experienced high growth rates but ranks so poorly on the HDI, clearly indicates that despite economic growth, the country faces serious challenges in social service delivery.

The coverage of social services is limited and varies across different regions of the country. Easterly (2001) points out that in terms of adult literacy there is a huge variation across provinces and female literacy is only 3% in rural Baluchistan and NWFP whereas it is 41% in urban Sindh. The variation is not only across provinces but it is considerably large within provinces also. Cheema et. al (2008) show that within districts of the Punjab province there are stark differences in terms of the severity of poverty. The severity of poverty was considerably higher in South Punjab relative to North Punjab (53% vs. 19%). Moreover, the percentage of boys (aged 15-17) never enrolled in school was only 6% in North Punjab whereas it was 26% in South Punjab. It is likely that the growth process has been structured in such a way that it creates inequality and leaves certain areas behind. Economic growth has not taken place uniformly and some areas are performing relatively worse than others, both in terms of social service delivery and economic growth.

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[3] The authors are grateful to the Bureau of Statistics, Planning and Development Department, Government of Punjab for providing access to the primary level MICS 2007-08 data.

Over the last two decades, rural to urban migration has been relatively higher with people from remote and socially excluded areas migrating to the provincial capitals, metropolitans and city centers. On the other hand, a rapid transformation of rural areas into urban societies, housing schemes and residential arcades has raised concerns for policy-makers towards this upcoming phenomenon of high urban congestion. Keeping in view the above trend, the main objective of this research study is to highlight and discuss the prevailing inequalities in public service delivery within the districts of Punjab.

Researchers believe that public institutions which are supposed to serve the common man have failed in most areas of service delivery such as health, education and physical infrastructure (Ismail, 1999). In this paper, we address the important issue of inequitable access to social service delivery, which has left certain regions of Pakistan lagging behind others. We try to develop a methodology which will allow the Government to use its limited resources effectively in targeting areas, which have limited access to basic services such as health, education and physical infrastructure.

The paper is going to be divided into four sections. In the first section, we wish to establish theoretically, a positive relationship between social service delivery and poverty reduction. The second section encompasses the different methodologies employed for our work, along with a brief note on the data used for this study. The third section will calculate the inequality in access to social services at the district level for Punjab and ascertain which districts have very limited access. The contribution of the private sector in reducing inequality in access to basic services will be discussed. Furthermore, we will analyze how the provision of these services varies as the distance from the provincial capital is increased. The final section will discuss the policy implications of our study.

Literature Review:

1.1 The illusion of a tradeoff

In this section, we will try to analyze, why is it important for the Government to step in and provide social services such as health and education. We will investigate how equality of access to these services facilitates economic growth and poverty reduction. Previous research has focused on the relationship between income inequality (or asset inequality) and economic growth. Banerjee and Newman (1993) show that the pattern of occupational choice in an economy can depend on the initial distribution of wealth. They propose that initial wealth levels will decide what occupation an individual enters, and can lead to differences in talent over time. Given that bequests are also possible, poverty and inequality can continue for generations and credit market imperfections coupled with differences in initial wealth endowments could restrain the poor from acquiring the skills they need to escape from poverty.

If the poor cannot easily access credit markets, the historically impoverished may not have the necessary wealth to acquire human capital. Nor, can they place their returns from human capital as collateral ex-ante, for formal and informal lenders would be unwilling to accept this exchange (Ray, 1986). Occupational diversification would then become even more difficult for the poorer segments, and they could be caught in low return occupations.

Similarly the poorest in rural areas, are extremely vulnerable to exogenous shocks and a bad crop or lower food prices could lead to a withdrawal of a child from school or a drop in the health status of children. There is also empirical evidence supporting the proposition that higher wealth levels increase the ability to smooth consumption and income in rural areas (Morduch, 1995). Therefore, initial inequality in asset holdings prevents the poor from insuring themselves and they could plunge into further poverty without external intervention.

The above arguments link income inequality with the probability of being poor. If some groups are extremely poor to begin with, then in all likelihood they will remain so. We do not question this proposition but investigate the channel through which this is likely to happen. We argue that the poor are unable to break away from a poverty trap because they do not have access to certain markets and services. Due to lack of access to social services, groups that are inherently poor have limited opportunities to escape from a vicious poverty cycle. If they have the opportunity to access certain services such as education, then they could occupationally diversify and enter jobs with higher returns. Our paper is based on the premise that access to public goods is the key to climbing up the income ladder.

Public goods play an extremely important role in building the capabilities of individuals and promoting economic development. The role of health and education in helping individuals pursue a more purposeful life is well recognized in economic literature (Dreze and Sen, 1995). Provision of these services becomes even more critical as the rich may have the option to use private medical and education facilities, while the impoverished, because of their wealth levels are unlikely to have this choice (Besley and Ghattak, 2004). For Pakistan, Ghaus et. al (1996) empirically demonstrate that social services such as education are strongly correlated with the overall development of a region. Consequently, an equitable access to these services should not affect growth negatively through the channels discussed above. In fact, a more equal and greater access to these services will result in a breakdown of the tradeoff between equity and growth.

The provision of public goods is dependent on the allocation of Government expenditures. In a poor country with malnutrition and an illiterate population, the marginal benefits from a unit of education and health are far likely to exceed that on military. For instance, if provision of health services was easily and cheaply available and an earning member of the family got sick, the poor would access those services and the loss in income would be relatively less. Subsequently, under-provision of these social services will contribute deeply to poverty and human deprivation.

The destitute rely on the state for utilizing these basic services. The State can offer them services such as health, education, physical infrastructure and safety nets to shield them from the adverse effects of negative shocks to their income. Easy access to education can serve as a means for the poor to acquire the necessary human capital and move up the income ladder. Pasha et. al (2000) posit that safety nets in Pakistan are primarily designed to protect disabled and vulnerable groups from negative shocks in income.

Article 37 of the Constitution of Pakistan states that it is the responsibility of the State to *promote with special care the educational and economic interest of backward classes or areas* and Article 38 goes even a step further in making it obligatory for the State, to provide *"basic necessities such as food, clothing, housing, education and medical relief for all such citizens irrespective of sex, caste, creed or race"*. Clearly, the State has acknowledged and recognized its duty to provide broad-

based public goods, without discrimination. Unfortunately, the Pakistani Government has failed in this obligatory duty and access to basic services such as health and education is not that widespread. It has been shown that the social indicators of the country vary across provinces and within provinces also.

For this paper, we will scrutinize the unequal access to basic services, for the Punjab province. As a result of the recent signing of the 7th National Finance Commission (NFC) award, provinces are now getting a larger share from the Centre. The provincial share has increased from approximately 48% to 56% and Punjab is receiving nearly 51% of the total funds (Akhtar, 2010). It is of grave importance to consider how these funds are allocated and whether they are allocated efficiently to the poorest districts of the Punjab province. Efficient coverage would imply that these limited funds are reaching those who need them the most and the populace of those regions is provided with easy access to social services.

This research study is going to analyze access to four services that lie under the public domain; education, health, physical infrastructure and safety nets. The poor cannot occupationally diversify and cannot move to high return occupations because they lack the necessary human capital. Provision of physical infrastructure such as solid waste disposal and quality fuel for cooking, reduces the probability of a family member getting ill and will reduce the health costs incurred by a poor family. Safety nets serve as an insurance mechanism for the poorest and protect them from the adverse effects of exogenous shocks. Thus, the destitute and poor are heavily reliant on the State to provide them with these services and in the following section, we will setup the methodology for our study.

Methodology

This section will describe the data sources and variables used for this study. We will detail the methodology used and will relate it to the research objectives.

2.1 Data Sources

The analysis of the study is based on micro-level household data, collected by the Bureau of Statistics, Government of Punjab. The study utilizes Multiple Indicator Cluster Survey 2007-08 (MICS 2007-08) dataset for measuring inequality in access to public service provision in all the districts of Punjab.

With an overall sample size of 91,280, the average sample collected from each district of Punjab is 2,608 households per district. The overall sample design for the MICS 2007-08 has been developed by the Federal Bureau of Statistics (FBS) using a two stage sampling technique (Government of the Punjab, 2009). MICS 2007-08 was administered by the Government of Punjab and is representative at the Tehsil level and furthermore at the sub-classifications of ‒major cities∅, ‒other urban∅ and ‒rural∅ within each such Tehsil.

At the first stage, FBS selected within 273 domains (defined as the combination of all these ‒major cities∅, ‒other urban∅ and, ‒rural∅ locations), 6,368 enumeration blocks with probability proportional to size. A total of 12 households from an urban enumeration block and 16 from a rural enumeration block were selected at the second stage using systematic sampling approach (Government of the Punjab, 2009).

Throughout the paper, we frequently use the word õcommunityö, which refers to the enumeration block represented by the sampled 12 households in the urban areas and 16

households in the rural areas. Thus an enumeration block is a community and MICS 2007-08 represents this community with data on 12 households in urban areas and 16 households in rural areas.

We have utilized the following indicators for calculation of the Gini Coefficients.

TABLE 1: Description of Variables

VARIABLE NAME	DESCRIPTION OF THE VARIABLE
HEALTH (Total 6 Indicators)	
IMMUNIZE	Proportion of Children and Infants who received immunization
VITAMIN	Proportion of Children and Infants who received Vitamin-A Dosage
IANC	Proportion of Women who received Pre-Natal Care from Improved sources (Doctor, Nurse/midwife, LHW, LHV)
IASST_BIRTH	Proportion of Women who received Assistance during birth from Improved sources (Doctor, Nurse/midwife, LHW,
IPNC	Proportion of Women who received Post-Natal Care from Improved sources (Doctor, Nurse/midwife, LHW, LHV)
G_HEALTH	Proportion of population with access to **Government** health Facility
HEALTH	Proportion of population with access to any health facility (public or private)
EDUCATION (Total 10 Indicators)	
G_PRIMARY	Proportion of Children (age 5 to 9) with access to **Government** Primary School
PRIMARY	Proportion of Children (age 5 to 9) with access to Any Primary School (public or private)
GSEC_B	Proportion of boys (age 10 to 13) with access to **Government** Secondary School
SEC_B	Proportion of boys (age 10 to 13) with access to Any Secondary School (public or private)
GSEC_G	Proportion of girls (age 10 to 13) with access to **Government** Secondary School
SEC_G	Proportion of girls of age 10 to 13 with access to Any Secondary School (public or private)
GHIGH_B	Proportion of boys (age 14 to 16) with access to **Government** High School
HIGH_B	Proportion of boys (age 14 to 16) with access to Any High School (public or private)
GHIGH_G	Proportion of girls (age 14 to 16) with access to **Government** High School
HIGH_G	Proportion of girls (age 14 to 16) with access to Any High School (public or private)
SOCIAL SAFETY NET (Total 2 Indicators)	
GSNET	Proportion of population with access to **Government** provided Safety Nets (Provided through Pakistan Bait-al-
SNET	Proportion of population with access to all types of Safety Nets (public or private)
SANITATION (Total 2 Indicators)	
GSWASTE	Proportion of population with access to **Government** provided access to solid waste collection and disposal
SWASTE	Proportion of population with access to solid waste collection and disposal (public or private)
INFORMATION (Total 2 Indicators)	
MEDIA	Proportion of population with access to media (Possession of TV, Cable TV, Radio)
TELEPHONE	Proportion of population with access to telephony (Possession of telephone, mobile, internet)
OTHERS (Total 3 Indicators)	
UTILITY_STR	Proportion of population with access to Utility Stores
GC_FUEL	Proportion of population with access to **Government** provided fuel for cooking (Electricity and Natural Gas)
C_FUEL	Proportion of population using Good Fuel for Cooking (Electricity, LPG, Natural Gas and Bio Gas)

The Gini coefficient is a measure of inequality within the values 0 to 1, both inclusive. The Gini coefficient is frequently used for measuring income inequality amongst households. The closer the value is to 0, the lesser the income inequality. We are going to calculate the Gini coefficient for public service delivery at the district level.

2.2 Gini Coefficient Calculation

We calculate the Gini coefficient for our data using the below formula

$$G = \frac{2}{n^2 \bar{x}} \sum_{i=1}^{n} \left(\left(i - \frac{n+1}{2} \right) x_i \right) \qquad \qquad Where \; \bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

x_i = Information of ith ordered Community observation

n = Number of communities in a district

Gini coefficients were calculated at the district level, for all the variables listed in Table 1 above.

2.3 Public and Private Sector linkage

Public-private sector partnership has recently gained importance in policy formulation. Private sector investments in public sector projects coupled with project supervision, technical assistance and human capital provision have improved the efficacy of the public sector. By making such investments more targeted and need oriented the private sector can by and large improve the level of access to basic services.

For Pakistan, especially in the rural parts of the country where almost one third of the whole population resides, access to education and health through state funded institutions is limited. However, through the participation of private sector, access to these services has improved. A recent study shows that the number of private schools has increased from 32,000 to 47,000 within the time period 2000-2005 and *"one in every 3 enrolled children at the primary level was studying in a private school"* (LEAPS, 2008). We would like to ascertain the contribution the private sector has made in reducing unequal access to these basic services.

Using the MICS 2007-08 dataset, we can assess the state's contribution towards social service provision and the overall provision by both the public and private sector. The difference between the two reflects the contribution of the private sector in reducing inequalities in social service delivery. For example, first we have calculated the Gini coefficient for access to primary schooling through state funded (public) institutions only. Then we compare this value with the Gini coefficient calculated for access to primary schooling through any type of institution (either private or public). In this way, the simple comparison can reveal the contribution made by the private sector. Thus, higher the absolute difference of the Gini coefficients, the greater the effectiveness of the private sector in lowering inequalities in access to such services.

2.4 Inequality and the Distance from the Provincial Capital (Lahore)

Another objective of the study is to relate the inequality measurements with the distance from the provincial capital, Lahore. Due to unavailability of any published data, we tried to calculate the distance between Lahore and other districts of Punjab using the software Google Earth[TM]. For all the districts, we located the value of latitude and longitude[4] and used the haversine formula for calculating the distance using the longitude and latitude of the two different locations[5].

For any two points (lat1, long1) and (lat2, long2) such that lat represents the latitude and long represents the longitude for each point, we can calculate the distance between the two using the haversine formula (Montavont & Noel, June 2006).

$$haver\sin\left(\frac{d}{R}\right) = haver\sin(\Delta_{lat}) + \cos(lat_1) \times \cos(lat_2) \times haver\sin(\Delta_{long})$$

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[4] For most districts, the district name is synonymous with that of a key city e.g. there is a Faisalabad city within Faisalabad district. We have found the latitude and longitude of this city for each district and calculated the distance of that city from Lahore.

[5] District Data with respective values of longitude and latitude can be provided upon request.

And the Haversine function is given by $haver\sin(\delta) = \sin^2\left(\dfrac{\delta}{2}\right)$

So $\quad d = R \times haver\sin^{-1}(h) = 2R \times \arcsin\left(\sqrt{h}\right)$

Such that R is the radius of the earth and has the constant value of 6371 i.e. $R = 6371$ km.

2.5 Composite Index formulation

For the present study, we have calculated the Gini coefficients for a total of 18 different indicators given in Table 2, below. These indicators represent overall access to these services, irrespective of whether a public or private institution provides them. We can group these variables in six different public service categories namely health, education, social safety nets, sanitation, information and others. From these variables we will be constructing a composite index.

TABLE 2: Indicators Used For Composite Index Formulation

HEALTH	IMMUNIZE, VITAMIN, IANC, IASST_BIRTH, IPNC, HEALTH
EDUCATION	PRIMARY, SEC_B, SEC_G, HIGH_B, HIGH_G
SAFETY NET	SNET
SANITATION	SWASTE
INFORMATION	MEDIA, TELEPHONE
OTHERS	UTILITY_STR, CFUEL

In order to see if there is any relationship between inequality and the distance of these districts from Lahore, we used composite indices, created from the variables given in Table 2. Following the approach used by (Adelman & Dalton, 1971), (Pasha, Ghaus, & Ghaus, 1996) and (Jamal & Khan, 2003), we use Factor Analysis (FA) technique for data reduction and convert several variables into a composite index[6]. The Factor analysis helps reduce the number of possible relationships by either grouping the variables or clustering the variables. It considers the variables exhibiting high correlation with each other and converts them into one factor or component. So a Factor Analysis model can be described as follows:

$$X_i = a_{i1}F_1 + a_{i2}F_2 + a_{i3}F_3 + \ldots\ldots + a_{ij}F_j$$

Where

X_i is the ith Indicator

a_{ij} is the proportion of the variation in X_i accounted for by the jth factor (It is also called factor loading)

F_j is the jth factor or component.

For any number of variables, Factor Analysis generates components. These components are produced in a descending order of importance so the first component explains the maximum amount of variation in the data and the last component, the minimum. However, the total number of extracted factors for any dataset cannot exceed the total number of variables in the dataset [see (Jamal & Khan, 2003) for details].

2.6 District ranking criteria

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[6] See (Adelman & Dalton, 1971) and (Jamal & Khan, 2003) for details on the methodology.

Using the weights generated by running Factor Analysis, we turn inequality indices into a composite index. A higher value of the index implies greater inequality of public service provision in that particular district and vice versa. This index should help us in identifying the regions, which require the Punjab Government's help most urgently and provides a sound basis for effective disbursement of limited development funds amongst the different districts of the province. This new approach for development funds disbursement can help reduce the prevailing levels of inequality by increasing access of public services for the masses.

Results and Discussion

3.1 Gini Coefficient

Using the MICS 2007-08 data, we try to highlight the problem of inequality in public services offered by the government. We use community-level data and calculate Gini coefficients to indicate the prevailing inequality in access to social services, across districts.

First, we identified the list of important variables available in the survey questionnaire relevant to our topic of social service delivery. Second, we calculated the community level access to these services in the form of a percentage. Finally, we considered all the communities in a district to calculate the Gini coefficient for that district. For the present analysis, the Gini coefficient does not represent income inequality; in fact it represents inequality in access to education, health, safety nets and physical infrastructure.

3.2 Health

We have divided access to health services into three sub-categories; child health, mother's health and access to overall health services. According to the available data, public services that can affect child health positively are, whether a child gets Vitamin A intake and Bacillus Calmette-Guérin (BCG) injections. Similarly, mother's health will be influenced by access to pre and post-natal care and the presence of a skilled attendant at birth[7]. The third measure is looking at overall access to any health facility. This third measure i.e. inequality of access to medical facility has turned out to be relatively higher for southern Punjab whereas the level of inequality in Lahore and adjacent areas is very low (See Table 3, Column 2). However, the three indicators of maternal health namely improved access to pre-natal care, post-natal care and assistance during the time of birth show relatively higher levels of inequality even in the districts where access to medical facility is very equitable (See Table 3, Column 5, 6 & 8). This result could mean that either mothers' prefer not to access these services in case of pregnancy[8] or the staff at the health facility does not have the necessary skills and training to deal with maternal health issues.

Regarding child health, there is hardly any inequality, in terms of Vitamin A intake and most districts seem to have easy access to this service. But, BCG injections, used to prevent tuberculosis, exhibit huge variation across districts. The level of absolute inequality in access to this service is very high but there is no geographical pattern in terms of the lack of access.

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[7] For this variable, improved access to pre-natal, post-natal and presence of a skilled attendant at birth implies that the individual used the services provided by a doctor, nurse or lady health worker (LHW) etc.

[8] In rural areas, it is common for pregnancies to take place at home, with the help of a traditional mid-wife.

We should mention the district of Gujrat specifically as it seems to have relatively easier access to general health and maternal health facilities, than even Lahore. One possible explanation for this phenomenon could be that the Chief Minister from 2003-2008 belonged to the same district and may have been allocating provincial resources to gain political patronage.

TABLE 3: Inequality in Access to Social Services

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DISTRICT	CFUEL	Health	HIGH_B	HIGH_G	IANC	IASST_BIRTH	IMMUNIZE	IPNC	MEDIA	PRIMARY	SEC_B	SEC_G	SNET	SWASTE	TELEPHONE	UTILITY STORES	VITAMIN	COMPOSITE INDEX
Muzaffargarh	0.85	0.31	0.59	0.61	0.34	0.52	0.38	0.54	0.25	0.12	0.52	0.55	0.67	0.91	0.22	0.72	0.02	0.50
Rajanpur	0.84	0.40	0.53	0.58	0.40	0.64	0.53	0.65	0.27	0.16	0.46	0.49	0.82	0.93	0.20	0.75	0.01	0.53
Jhang	0.79	0.25	0.61	0.64	0.41	0.45	0.66	0.46	0.27	0.07	0.47	0.49	0.59	0.88	0.19	0.77	0.01	0.49
RY Khan	0.76	0.36	0.54	0.57	0.37	0.46	0.49	0.48	0.17	0.09	0.42	0.46	0.78	0.85	0.16	0.59	0.03	0.46
Bahawalpur	0.82	0.29	0.56	0.57	0.41	0.52	0.58	0.54	0.22	0.10	0.46	0.45	0.71	0.86	0.19	0.65	0.04	0.48
Bhakkar	0.85	0.30	0.42	0.51	0.42	0.44	0.64	0.45	0.20	0.08	0.41	0.45	0.55	0.89	0.16	0.57	0.03	0.44
Bahawalnagar	0.82	0.41	0.56	0.61	0.43	0.51	0.56	0.51	0.22	0.03	0.50	0.44	0.74	0.85	0.19	0.61	0.02	0.49
Layyah	0.80	0.34	0.54	0.55	0.40	0.50	0.59	0.50	0.26	0.13	0.41	0.44	0.76	0.89	0.19	0.56	0.08	0.48
DG Khan	0.74	0.27	0.53	0.51	0.35	0.54	0.42	0.55	0.26	0.14	0.38	0.43	0.81	0.91	0.18	0.66	0.02	0.47
Mianwali	0.82	0.28	0.52	0.58	0.34	0.47	0.75	0.50	0.14	0.07	0.36	0.41	0.51	0.86	0.10	0.49	0.04	0.43
Okara	0.74	0.25	0.52	0.59	0.39	0.39	0.57	0.40	0.16	0.05	0.41	0.41	0.39	0.87	0.16	0.75	0.02	0.43
Khushab	0.83	0.13	0.48	0.57	0.39	0.46	0.68	0.46	0.18	0.06	0.28	0.39	0.73	0.91	0.13	0.64	0.02	0.44
Khanewal	0.73	0.24	0.51	0.56	0.34	0.39	0.51	0.38	0.23	0.03	0.34	0.37	0.49	0.86	0.16	0.69	0.02	0.41
Pakpattan	0.77	0.42	0.48	0.50	0.40	0.45	0.64	0.47	0.18	0.02	0.36	0.37	0.52	0.88	0.19	0.86	0.01	0.45
Lodhran	0.79	0.29	0.47	0.50	0.31	0.42	0.46	0.42	0.20	0.07	0.37	0.37	0.61	0.79	0.15	0.62	0.05	0.42
Kasur	0.72	0.25	0.47	0.51	0.35	0.42	0.60	0.42	0.19	0.08	0.40	0.37	0.53	0.84	0.16	0.84	0.01	0.43
Vehari	0.85	0.17	0.48	0.49	0.40	0.47	0.59	0.48	0.19	0.01	0.40	0.33	0.38	0.85	0.16	0.74	0.00	0.42
Nankana Sahib	0.75	0.17	0.49	0.49	0.29	0.34	0.76	0.34	0.13	0.02	0.34	0.32	0.50	0.85	0.13	0.81	0.03	0.40
Hafizabad	0.69	0.08	0.55	0.50	0.28	0.35	0.65	0.37	0.15	0.02	0.34	0.32	0.67	0.86	0.12	0.64	0.02	0.40
Sahiwal	0.74	0.10	0.48	0.51	0.33	0.34	0.79	0.34	0.18	0.05	0.32	0.24	0.48	0.82	0.16	0.64	0.02	0.39
Sargodha	0.75	0.09	0.43	0.51	0.32	0.39	0.54	0.39	0.13	0.02	0.24	0.24	0.52	0.87	0.13	0.53	0.04	0.37
Sheikhupura	0.61	0.21	0.39	0.41	0.25	0.32	0.60	0.33	0.11	0.03	0.26	0.24	0.65	0.80	0.12	0.67	0.02	0.36
Multan	0.40	0.19	0.34	0.35	0.40	0.46	0.80	0.46	0.16	0.05	0.23	0.23	0.55	0.54	0.19	0.56	0.01	0.35
Narowal	0.75	0.07	0.29	0.28	0.20	0.36	0.45	0.35	0.11	0.02	0.26	0.22	0.50	0.87	0.08	0.74	0.01	0.33
TT Singh	0.68	0.26	0.54	0.52	0.28	0.36	0.57	0.38	0.12	0.02	0.29	0.22	0.75	0.84	0.11	0.56	0.01	0.39
Jhelum	0.54	0.11	0.33	0.33	0.17	0.26	0.83	0.28	0.08	0.02	0.24	0.22	0.53	0.82	0.08	0.42	0.01	0.30
Chakwal	0.52	0.15	0.30	0.39	0.25	0.28	0.80	0.28	0.08	0.05	0.19	0.20	0.79	0.89	0.08	0.35	0.01	0.32
Attock	0.53	0.30	0.27	0.32	0.34	0.42	0.90	0.44	0.12	0.02	0.16	0.20	0.73	0.86	0.10	0.46	0.01	0.36
Faisalabad	0.52	0.08	0.33	0.32	0.26	0.30	0.63	0.33	0.11	0.01	0.22	0.20	0.53	0.66	0.12	0.62	0.02	0.31
Mandi Bahauddin	0.69	0.17	0.35	0.35	0.29	0.45	0.67	0.45	0.12	0.01	0.20	0.17	0.73	0.85	0.09	0.50	0.01	0.36
Rawalpindi	0.29	0.15	0.18	0.21	0.19	0.25	0.88	0.25	0.06	0.03	0.13	0.14	0.83	0.62	0.07	0.42	0.02	0.26
Gujrat	0.46	0.05	0.27	0.26	0.11	0.20	0.86	0.20	0.06	0.01	0.13	0.14	0.59	0.86	0.06	0.35	0.01	0.26
Sialkot	0.46	0.13	0.22	0.15	0.23	0.33	0.83	0.36	0.06	0.01	0.10	0.07	0.60	0.79	0.09	0.71	0.01	0.29
Gujranwala	0.37	0.03	0.11	0.09	0.21	0.25	0.56	0.33	0.08	0.00	0.04	0.04	0.64	0.68	0.07	0.54	0.03	0.23
Lahore	0.14	0.08	0.11	0.10	0.17	0.22	0.79	0.22	0.04	0.00	0.03	0.04	0.40	0.32	0.07	0.50	0.01	0.18

3.3 Education

From the available data, we have estimated the inequality of access to schools at primary, secondary and higher level. We separately consider access to secondary schooling for girls and boys and undertake a similar comparison for higher level schooling. Access to primary education was analyzed without differentiating between boys and girls. We did not make this distinction at the primary level because nearly all private schools enroll both girls and boys and so do some public schools. The results show very low levels of inequality in access to primary schools across all districts of Punjab[9]. However, access becomes more difficult at the secondary level for both boys and girls; districts such as Muzaffargarh, Rajanpur, Jhang and RahimYar Khan being the worse-off districts[10]. The inequality of access to secondary schooling is relatively lower for Lahore, Gujranwala, Gujrat, Sialkot and Rawalpindi. A similar geographical pattern is observed for access to high schools also[11]. It is worth mentioning that boys have greater access to secondary schooling than girls but the difference in access is considerably low.

TABLE 4: Overall Access to Public Goods

	1	2	3	4	5	6	7
District	Composite Index	Health Index	Education Index	Information Index	Safety Net Index	Solid Waste Index	Others Index
Lahore	0.18	0.24	0.06	0.06	0.40	0.32	0.32
Gujranwala	0.23	0.25	0.06	0.08	0.64	0.68	0.46
Gujrat	0.26	0.22	0.17	0.06	0.59	0.86	0.41
Rawalpindi	0.26	0.28	0.15	0.06	0.83	0.62	0.36
Sialkot	0.29	0.33	0.12	0.08	0.60	0.79	0.59
Jhelum	0.31	0.28	0.24	0.08	0.53	0.82	0.48
Faisalabad	0.31	0.29	0.23	0.11	0.53	0.66	0.57
Chakwal	0.32	0.30	0.24	0.08	0.79	0.89	0.44
Narowal	0.33	0.28	0.23	0.09	0.50	0.87	0.75
Multan	0.35	0.43	0.26	0.17	0.55	0.54	0.48
Attock	0.36	0.43	0.21	0.11	0.73	0.86	0.50
Sheikhupura	0.36	0.32	0.28	0.12	0.65	0.80	0.64
Mandi Bahauddin	0.36	0.38	0.23	0.10	0.73	0.85	0.60
Sargodha	0.37	0.33	0.31	0.13	0.52	0.87	0.64
Sahiwal	0.39	0.34	0.34	0.17	0.48	0.82	0.69
TT Singh	0.39	0.35	0.34	0.12	0.75	0.84	0.62
Hafizabad	0.40	0.32	0.37	0.14	0.67	0.86	0.66
Nankana Sahib	0.40	0.34	0.36	0.13	0.50	0.86	0.78
Khanewal	0.41	0.36	0.39	0.19	0.49	0.86	0.71
Lodhran	0.42	0.38	0.38	0.17	0.62	0.79	0.70
Vehari	0.42	0.41	0.37	0.17	0.38	0.85	0.79
Okara	0.43	0.38	0.42	0.16	0.39	0.87	0.74
Kasur	0.43	0.39	0.39	0.17	0.53	0.84	0.78
Mianwali	0.43	0.44	0.41	0.12	0.51	0.86	0.66
Khushab	0.44	0.40	0.38	0.16	0.73	0.91	0.73
Bhakkar	0.44	0.43	0.40	0.18	0.55	0.89	0.71
Pakpattan	0.45	0.46	0.37	0.19	0.52	0.88	0.82
RY Khan	0.46	0.43	0.44	0.17	0.78	0.85	0.68
DG Khan	0.47	0.44	0.42	0.22	0.81	0.91	0.70
Layyah	0.48	0.46	0.44	0.22	0.76	0.89	0.68
Bahawalpur	0.49	0.47	0.46	0.20	0.71	0.86	0.74
Jhang	0.49	0.43	0.49	0.23	0.59	0.88	0.78
Bahawalnagar	0.49	0.48	0.46	0.20	0.74	0.85	0.72
Muzaffargarh	0.50	0.43	0.51	0.23	0.67	0.91	0.79
Rajanpur	0.53	0.53	0.47	0.23	0.82	0.93	0.80

3.4 Physical Infrastructure, Safety Nets, Information and Others

Overall, access to solid waste collection and disposal seems to be a major problem across districts. Table 3 (Column 14) shows that the districts of Muzaffargarh, Rajanpur and Khushab have very unequal access to solid waste collection and disposal facilities. Furthermore, these districts also have unequal access to good fuel for cooking and these

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[9] Refer to Table 3 (Column10).

[10] Refer to Table 3 (Column 11 & 12).

[11] Refer to Table 3 (Column 3 & Column 4).

results evince that the population of these districts is highly vulnerable to health shocks. Safety nets could serve as a protection mechanism from exogenous shocks. Unfortunately, overall access to safety nets is very unequal in the districts of Rajanpur, DG Khan and RahimYar Khan.

The level of absolute inequality is extremely low for access to information (access to TV, phone etc.) and implies that most of the general population has easy access to media information through televisions and phones. This result means that the general populace is likely to be well-informed through these media sources, about the effectiveness of Government in responding to the needs of its people.

The first column of Table 4 shows overall inequality in access to all social services. The district with greatest access to public services is given at the top. Districts such as Jhang, Bahawalnagar, Muzaffargarh and Rajanpur have extremely unequal access to public services whereas Lahore, Gujranwala, Gujrat and Rawalpindi districts have relatively easier access to public services.

3.5 Distance from Lahore and Inequality in Access to Services

For all the social services discussed above, we look at how access to these services is linked to the distance from the capital of Punjab, Lahore. Lahore is the most developed city of the province and is home to many migrants from poorer districts. In Figure 1 to Figure 4, we have plotted the distance of a district from Lahore against the composite index of each social service[12].

The results demonstrate that as the distance of a district from Lahore increases, the composite inequality index for a district is likely to be higher. This shows that a district which is farther from the provincial capital is less likely to have access to basic services. In fact, most districts which are at a distance of more than 200 kilometers from Lahore rank very poorly in terms of the composite index for all services. DG Khan, RahimYar Khan, Bahawalpur, Rajanpur are amongst the poorest performing districts. This shows that resources and services are not being devolved effectively to poorer and backward areas and are concentrated at the core of the province, instead of the periphery.

3.6 Public-Private Partnership

Using the methodology discussed in Section 2.3, we will try to ascertain the contribution of the private sector in meeting the demand for social services. For Figure 5 to Figure 13, we compare the composite index for both public and private provision with the composite index for public provision only. The gap between the two reflects the contribution of the private sector for various social services across districts.

For instance, in Figure 5, we can clearly see that the inclusion of the private sector reduces inequality in access to health services considerably. The gap between the two indices is considerable for certain districts, especially Gujranwala, Sargodha and Faisalabad. Our results show that the private sector is making a notable contribution in reducing inequalities in access to health services.

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[12] The composite index for each social service is given in Table 4. The methodology for calculating the distance of each district from Lahore has been discussed in Section 2.4.

From Figure 6 to Figure 10, we scrutinize the role of the private sector in overcoming inequalities in access to schooling for both boys and girls, at the secondary and higher level. For primary schooling (Figure 6) the difference between the two indices is relatively less than Figure 5. Furthermore, for Figure 6, the level of absolute inequality is significantly lower than that of health services. Even then, in some districts such as Faisalabad, Mianwali and Narowal the private sector plays a crucial role in providing primary education to both boys and girls. At the secondary and higher level, overall access is limited and the private sector seems constrained in meeting the demand for higher levels of education. However, there are cases where the private sector makes a significant contribution. For example, access to secondary schooling for girls is more widespread once private schools are considered for the districts of Gujranwala and Faisalabad.

Figure 11 to Figure 13 which concern access to safety nets and physical infrastructure, demonstrate that the provision of these services is exclusively in the public domain. The level of absolute inequality for all these services is higher than the inequality for other services, discussed above. The private sector is yet to undertake, significant provision of these services and the gap between the two indices is minimal. This result is understandable as we expect the State to mostly provide fuel for cooking, solid waste collection and disposal and safety nets for the poor.

4. CONCLUSION AND RECOMMENDATIONS:

Lack of access to basic services such as health, education and physical infrastructure makes it unlikely for the poor to break away from a vicious poverty cycle. The poor lack access to these markets and are unable to occupationally diversify and protect themselves from exogenous shocks.

The current scenario clearly reflects that, as the distance of a district from the provincial capital increases, inequality in access to basic services increases. This result shows that resources are not being devolved effectively from the core to the periphery. The Punjab Government needs to develop a more holistic methodology for providing funds, where they are needed the most. Our research identifies the districts that have poor access to public services. Furthermore, we also ascertain the social service (health, education, safety nets, physical infrastructure) which is sub-optimally provided in a district. Therefore, the Government, not only knows which districts have poor access but also the social service which is provided inadequately.

The paper also acknowledges the role of the private sector in meeting the demand for some of these social services and identifies the districts where the private sector has been relatively successful. However, the role of the private sector is limited and the poor and destitute rely on the State to provide them with most of the social services discussed in this paper. To meet their needs, the State needs to ensure that scarce resources are allocated to districts which require them the most. Moreover for efficient coverage, the Government must provide the social service that is currently under-provided in that district. We have tried to develop a methodology, which will allow the Government to use its limited resources effectively in targeting currently poor and backward areas, which have limited access to basic services such as health, education and physical infrastructure.

BIBLIOGRAPHY

Adelman, I., & Dalton, G. (1971). A Factor Analysis of Modernisation in Village India. *The Economic Journal* , 563 - 579.

Akhtar, T. (2010). NFC Award: National Finance Commission Award Of Pakistan. Retrieved from http://www.einfopedia.com/nfc-award-national-finance-commission-award-of-pakistan.php.

Andrabi, T., Das, J., Khwaja, A. I., Vishwanath, T., & Zajonc, T. (2007). *Learning and Education Achievements in Punjab Schools (LEAPS): Insights to inform the education policy debate.* Washington DC: The World Bank.

Banerjee, Abhijit V., and Andrew F. Newman (1993). Occupational Choice and the Process of Development. *The Journal of Political Economy*, 101 274-298.

Besley, Timothy, and Maitreesh Ghattak (2004). *Public Goods and Economic Development.* Policies for Poverty Alleviation (ed.) Abhijit Banerjee, Roland Benabou, and Dilip Mookherjee.

Cheema, A., Khalid, L., & Patnam, M. (2008). The Geography of Poverty: Evidence from the Punjab. *The Lahore Journal of Economics* .

Dreze, Jean, and Amartya Sen (1995). *India: Economic Development and Social Opportunity*. Oxford University Press.

Ghaus, A. A., Pasha, H. A., & Ghaus, R. (1996). Social Development Ranking of Districts of Pakistan. *The Pakistan Development Review* .

Government of the Punjab. (2009). *Multiple Indicator Cluster Survey (MICS) Punjab 2007-08: Provincial Report.* Lahore.

Jamal, H., & Khan, A. J. (2003). The Changing Profile of Regional Inequality. *The Pakistan Development Review* , 113 - 123.

Montavont, J., & Noel, T. (2006). IEEE 802.11 Handovers Assisted by GPS. *IEEE International Conference on Wireless and Mobile Computing, Networking and Communications, 2006. (WiMob'2006)*, (pp. 166 - 172).

Morduch, Jonathan (1995): "Income Smoothing and Consumption Smoothing." *The Jounal of Economic Perspectives*, 9, 103-114.

Pasha, H. A., Ghaus, R., & Ghaus, A. F. (1996). Social Development Ranking of Districts of Pakistan. *The Pakistan Development Review* , 593 - 914.

Pasha, H. A., Jafarey, S., & Lohano, H. R. (2000). *Evaluation Of Social Safety Nets In Pakistan.*

Ray, Debraj (1998). *Development Economics*. New Jersey: Princeton University Press.

The constitution of the Islamic Republic of Pakistan. (n.d.). Retrieved from http://www.mofa.gov.pk/Publications/constitution.pdf

W. Easterly (2003). *The Political Economy of Growth without Development: A Case Study of Pakistan*. In Search of Prosperity (ed.) D. Rodrick. Princeton University Press.

Wasif, S. (2010). *Pakistan ranks 144th in UNDP's human development index.* Retrieved from http://inwent-iij-lab.org/Weblog/2010/02/23/pakistan-ranks-144th-in-undps-human-development-index/

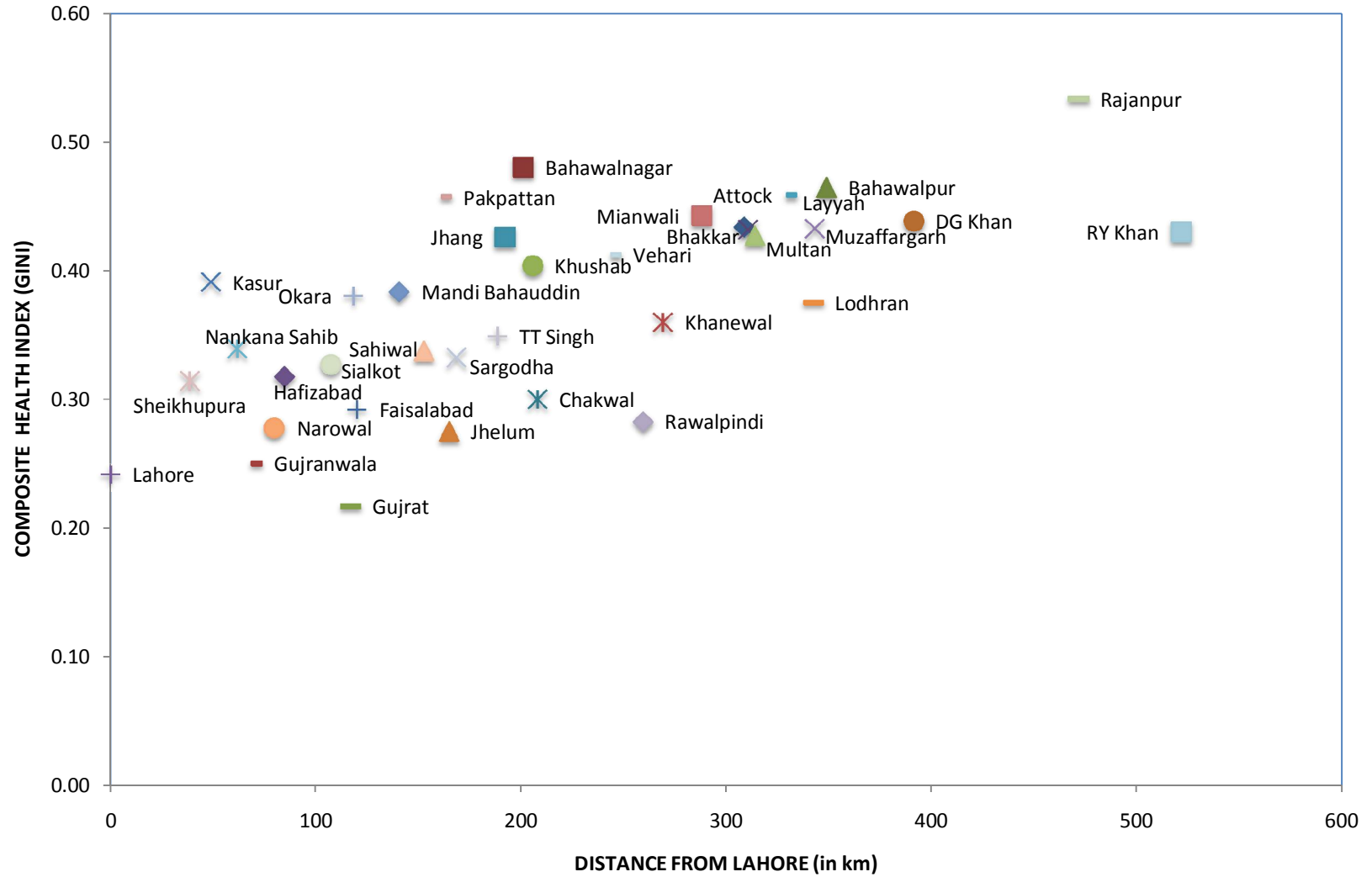**Figure 1: Inequality in Access to Different Health Services (Index) vs. Distance from Lahore**

Figure 2: Inequality in Access to Different Levels of Educational Institutions vs. Distance from Lahore
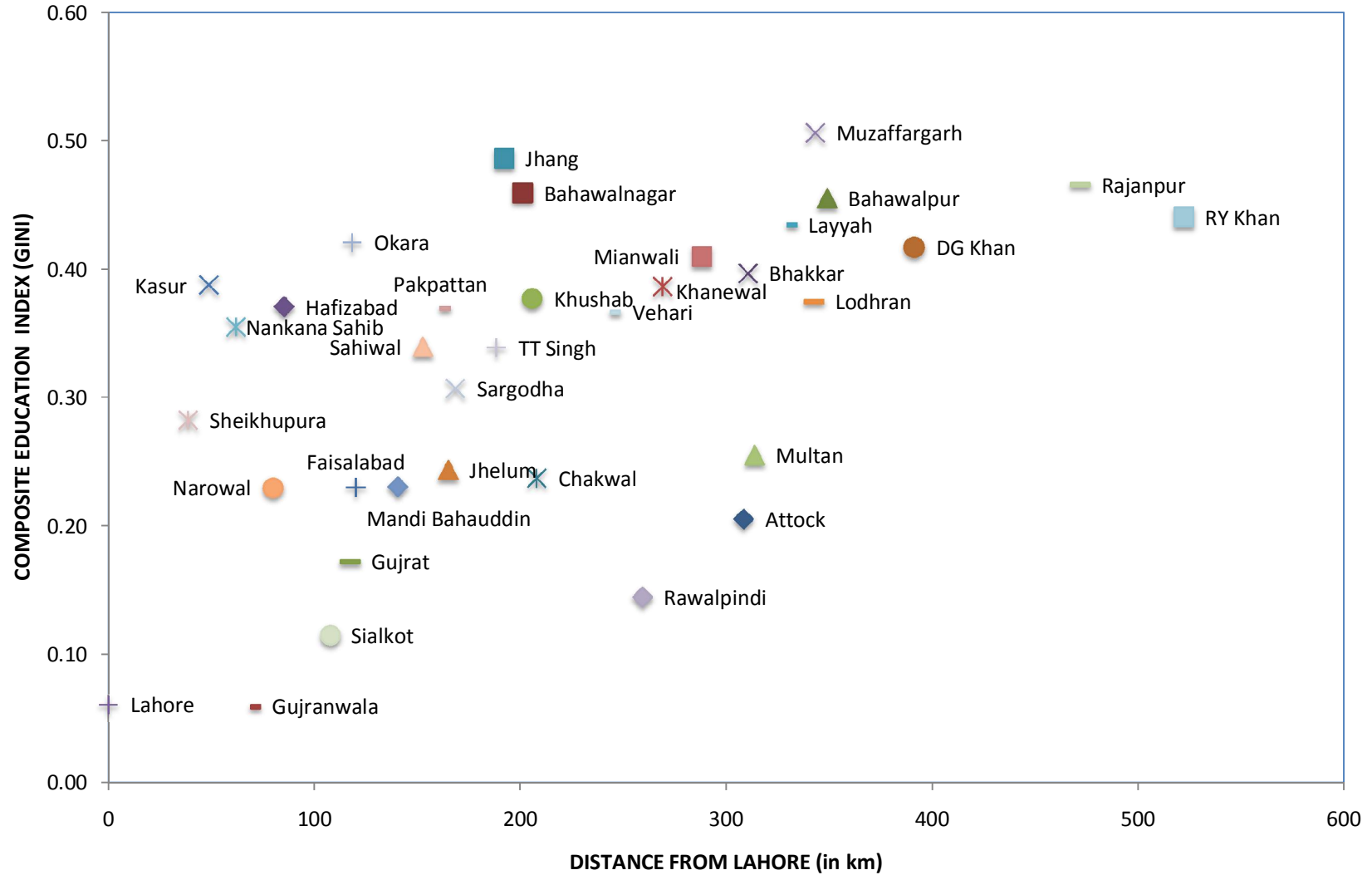
Figure 3: Inequality in Access to Information (Media and Telephony) (Index) vs. Distance from Lahore
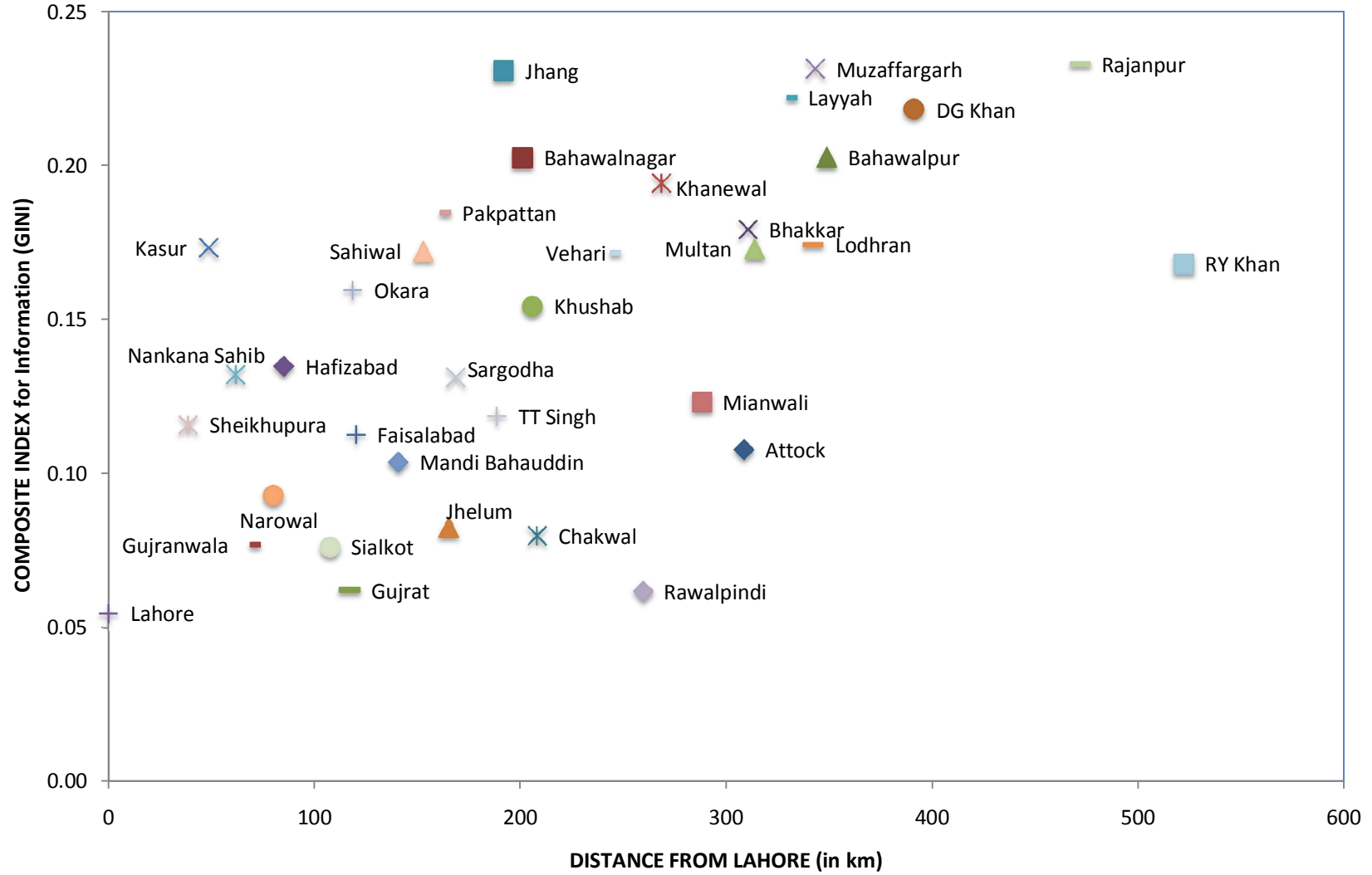
Figure 4: Inequality in Access to Quality Cooking Fuel and Utility Stores (Index) vs. Distance from Lahore
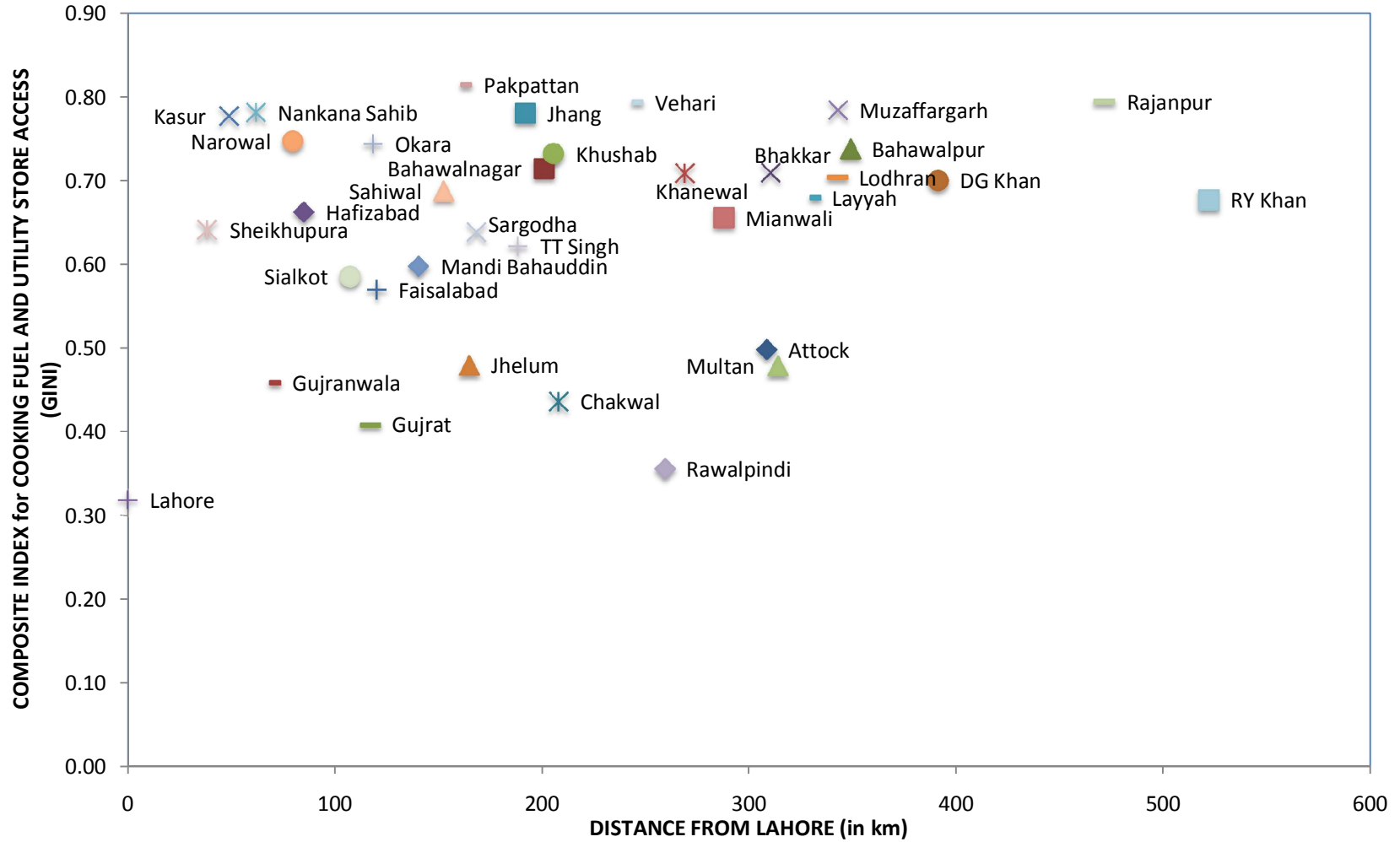
Figure 5: Access to any Health Facility (both public and private) vs. Access to a Public Health Facility Only
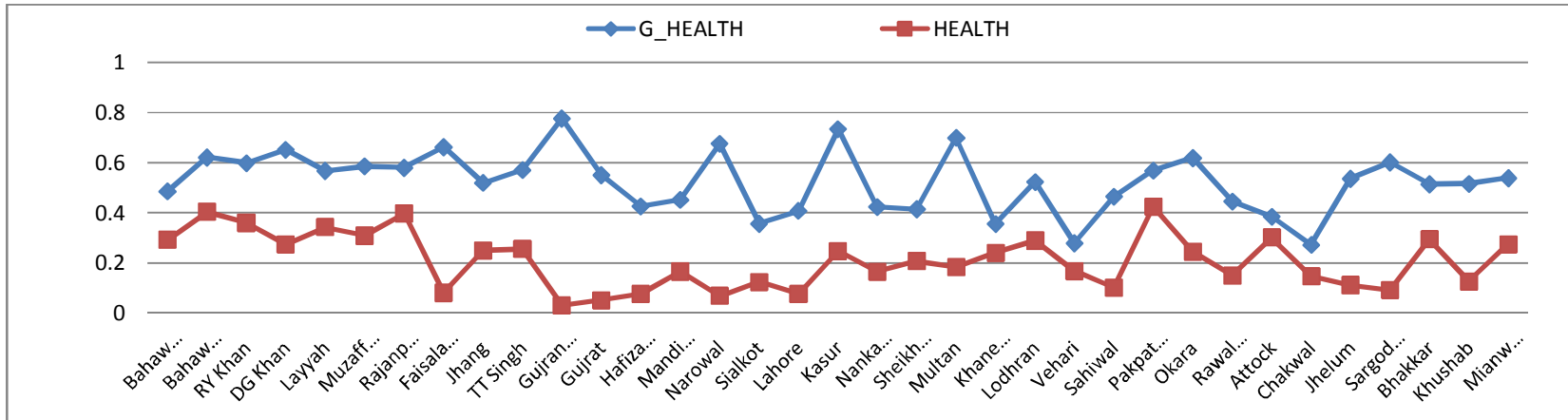
Figure 6: Access to any Primary School (both public and private) vs. Access to a Public Primary School Only
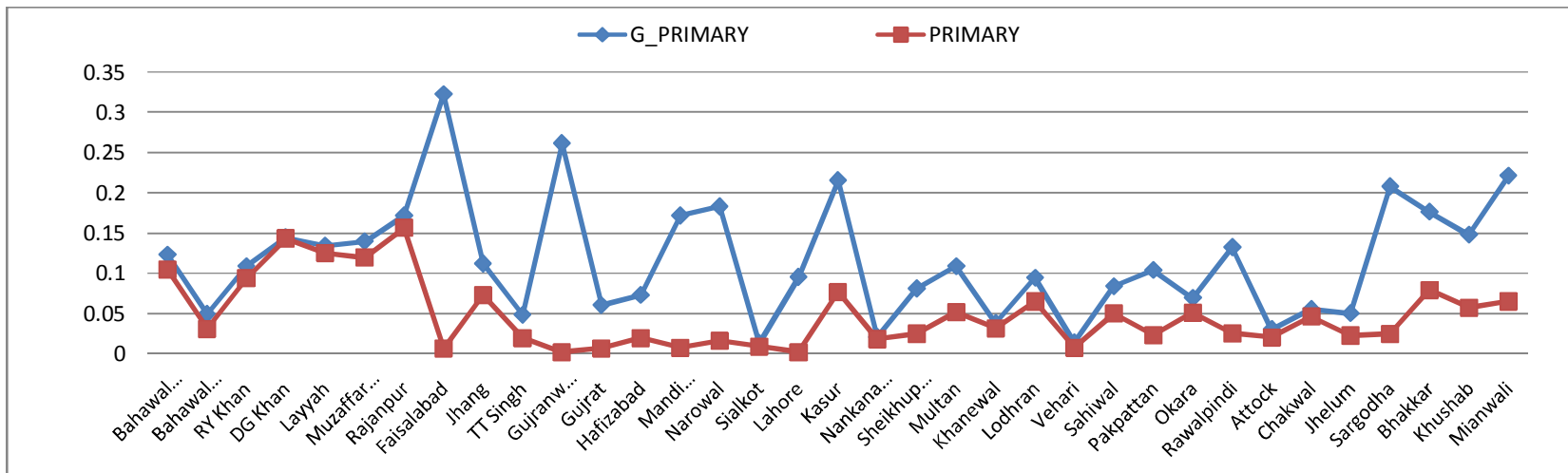
Figure 7: Access to a Boy's Secondary School (both public and private) vs. Access to a Boy's Secondary Public School Only
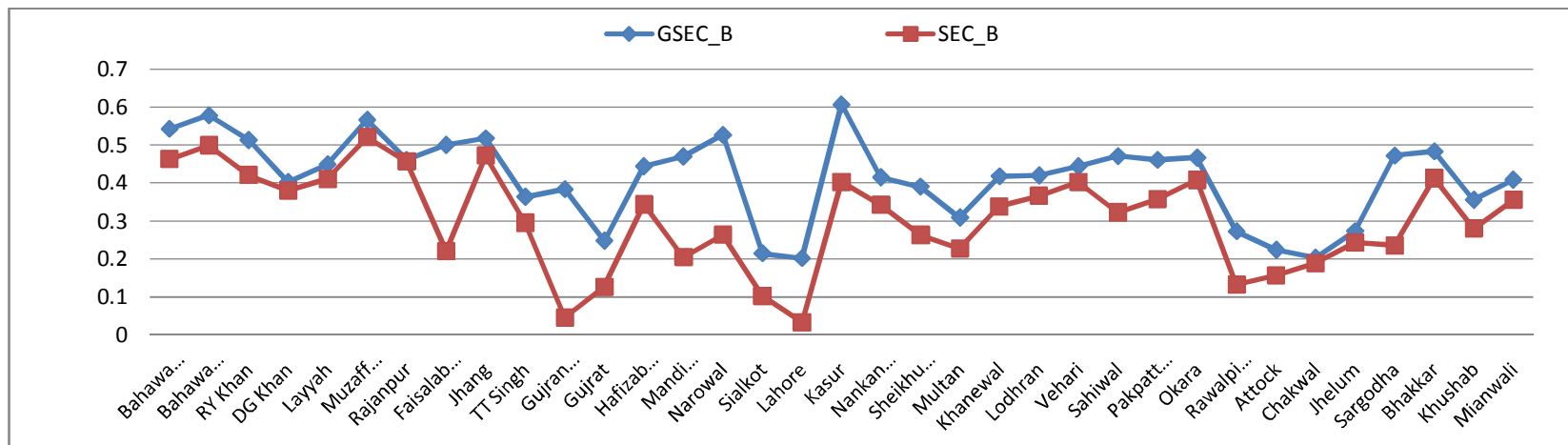
Figure 8: Access to a Girls' Secondary School (both public and private) vs. Access to a Girls' Secondary Public School Only
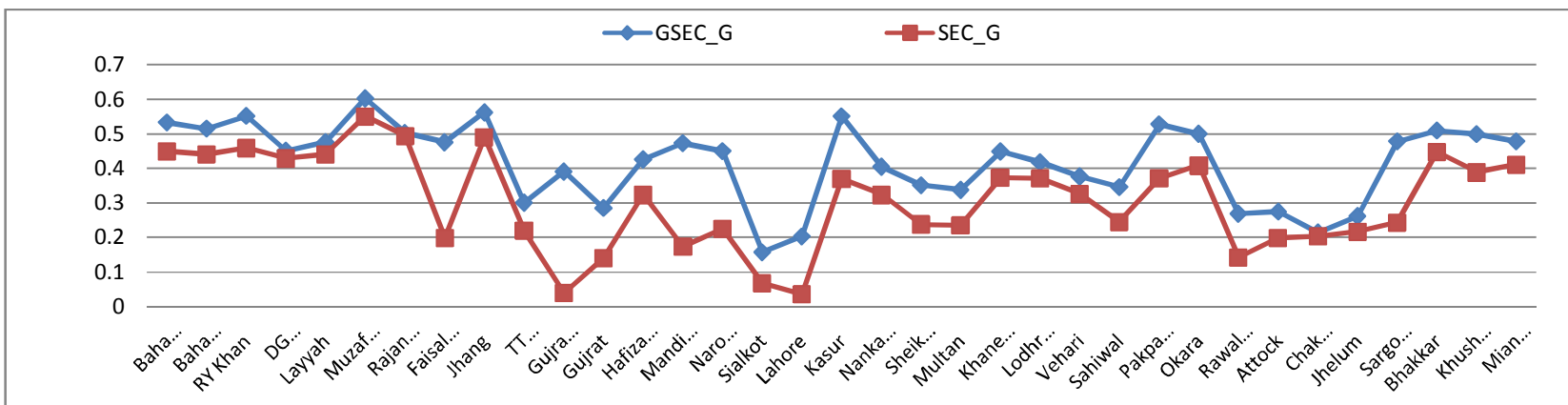
Figure 9: Access to a Boy's High School (both public and private) vs. Access to a Boy's Public High School
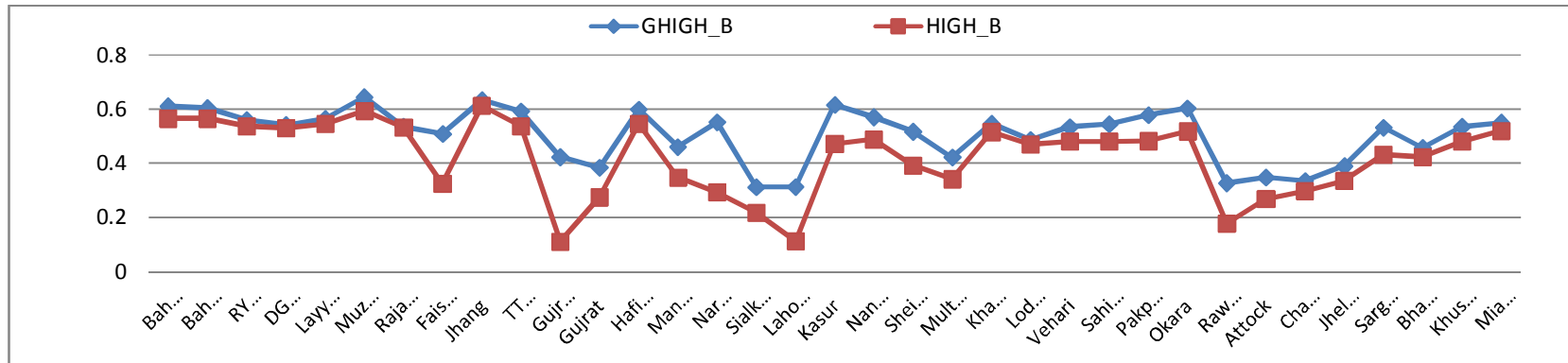
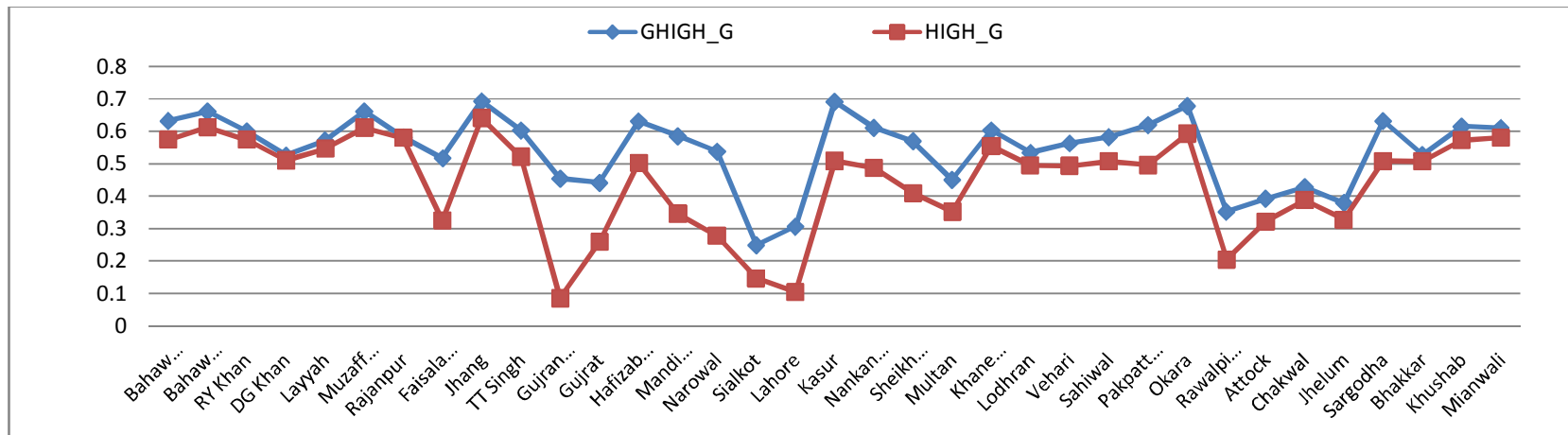**Figure 10: Access to a Girls' High School (both public and private) vs. Access to a Girls' Public High School**

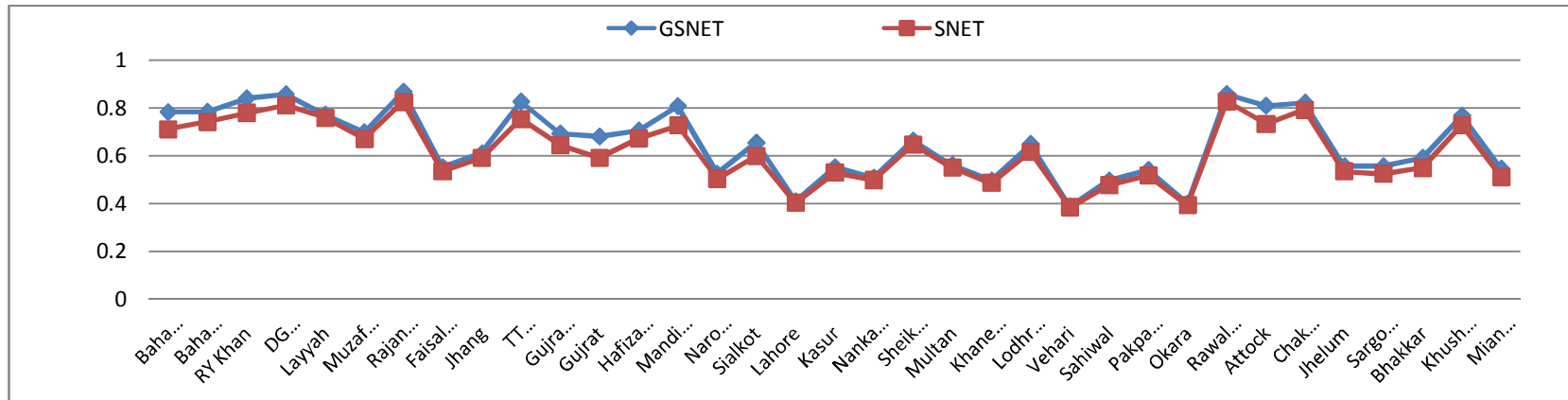**Figure 11: Access to Safety Nets (both public and private) vs. Access to Publicly Provided Safety Nets**

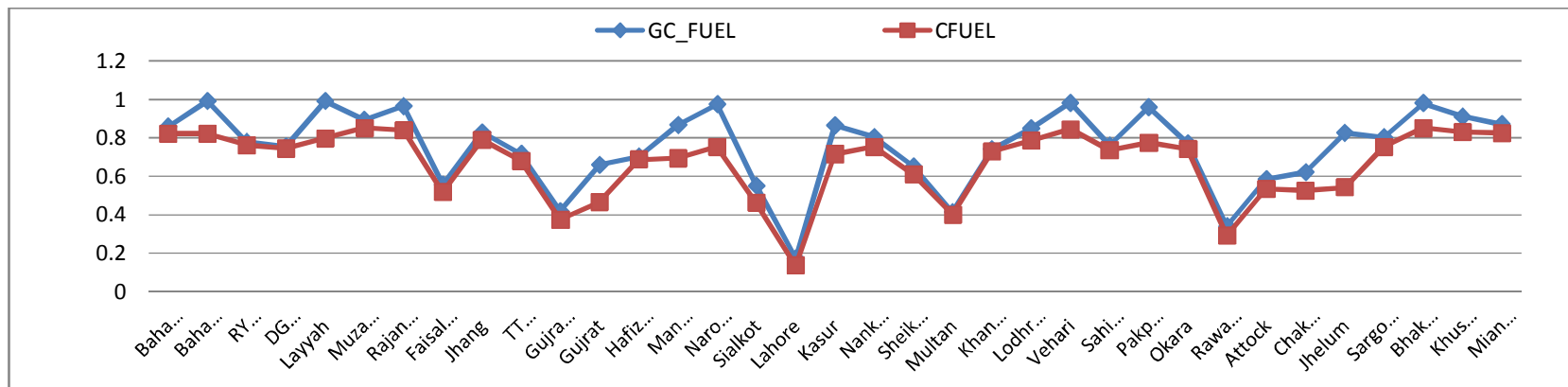**Figure 12: Access to Fuel for Cooking vs. State provided fuel for Cooking**

Figure 13: Access to Solid Waste Collection and Disposal vs. State provided Access