

**INTER DISTRICT ANALYSIS OF HEALTH EQUITY IN  
PUNJAB EVIDENCE FROM MULTIPLE INDICATOR  
CLUSTER SURVEYS**



**By**  
**Muhammad Zaid**  
Registration No. 20/PIDE/M.Phil

**Supervised By**  
**Prof. Atiya Yasmin Javid**  
**Chairperson**  
**Department of Economics**  
**PIDE Islamabad**

**PIDE School of Public Policy**  
**Pakistan Institute of Development Economics**  
**Islamabad, Pakistan**



Pakistan Institute of Development Economics, Islamabad  
*PIDE School of Public Policy*



**CERTIFICATE**

This is to certify that this thesis entitled: *“Inter District Analysis of Health Equity in Punjab Evidence from Multiple Indicator Cluster Survey (MICS)”* submitted by Mr. Muhammad Zaid is accepted in its present form by the School of Public Policy, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Public Policy.

Supervisor:

Dr. Attiya Yasmin Javid,  
Professor,  
Department of Economics,  
Pakistan Institute of Development Economics,  
(PIDE) Islamabad.

Co-Supervisor:

Dr. Rana Ejaz Ali Khan,  
Chairman,  
Department of Economics, IUB,  
Bahawalpur.

External Examiner:

Dr. Sajid Amrin Javed  
Research Fellow,  
Sustainable Development Policy Institute, (SDPI),  
Islamabad.

Head,  
PIDE School of Public Policy:

Dr. Talat Anwar  
Professor,  
Pakistan Institute of Development Economics,  
Islamabad.

**IN THE NAME OF**

**ALLAH**

**The Most Beneficent**

**The Most Merciful**

“To Allah belongs whatever is in the heavens and whatever is in the earth. Whether you show what is within yourselves or conceal it, Allah will bring you to account for it. Then He will forgive whom He wills and punish whom He wills, and Allah is over all things competent.”

Al-Baqarah, 2:284

**GOLDEN SAYING OF**

**THE HOLY PROPHET**

**Peace and Blessings of Allah be Upon Him**

“The Prophet Muhammad peace is upon him said: "If anyone travels on a road in search of knowledge, Allah will cause him to travel on one of the roads of Paradise. The angels will lower their wings in their great pleasure with one who seeks knowledge. The inhabitants of the heavens and the Earth and even the fish in the deep waters will ask forgiveness for the learned man. The superiority of the learned over the devout is like that of the moon, on the night when it is full, over the rest of the stars. The learned are the heirs of the Prophets, and the Prophets leave no monetary inheritance, they leave only knowledge, and he who takes it takes an abundant portion”.

Sunan of Abu-Dawood, Hadith 1631

## **Declaration**

I, Muhammad Zaid solemnly declare and affirm on oath that, I attended this M.Phil. Thesis with my own work and means and have not used any further means but those which are explicitly mentioned in this research. All the items which are copied from internet or other written sources have been properly mentioned in quotation mark and with a reference to the source of citation.

**Muhammad Zaid**

## **Dedication**

Dedicated to my beloved

*Grand Parents*

And

*Parents*

*Whom prayers for me, were what sustained for me*

## ACKNOWLEDGEMENT

First of all, a special gratitude and special appreciation goes to **ALLAH** almighty; without His blessings I would not be able to think of completing this work. After that, I offer my admirations and respect from the core of my heart to the Holy Prophet Muhammad Peace be upon him who urge his followers to “Seek knowledge from cradle to grave. I would also like to pay my humble thank to my beloved *father*, who is a noble man and always encouraged me and guide me in a proper way and advise me not to lose heart.

Being a fresh researcher and a student in the field of Public Policy, this dissertation would not have been possible without the help, provision and patience of my dedicated supervisor, **Doctor. Atiya Yasmin**, Professor, PIDE, Islamabad, who supported me and guided me right from the first day of my research. Both of them made valuable and fruitful comments that helped me to improve my research. I deeply appreciate and recognize all that I have received from them.

**Muhammad Zaid**

## TABLE OF CONTENTS

<b>Chapter 1</b>	<b>1</b>
<b>INTRODUCTION</b>	<b>1</b>
1.1 Objectives of Research	2
1.2 Research Question	2
1.3 Significance of Study	2
1.5 Structure of the Study	3
1.6 Problem Statement	3
1.7 Significance of Study	3
1.8 Conclusion	4
<b>Chapter 2</b>	<b>5</b>
<b>LITERATURE REVIEW</b>	<b>5</b>
Pre Devolution	5
Post Devolution	7
<b>Chapter 3</b>	<b>16</b>
<b>METHODOLOGY AND DATA</b>	<b>16</b>
3.1 Selection of Indicators	16
3.2 Mother Health Indicators	16
3.2.1 Antenatal Care by Doctor	16
3.2.2 Antenatal Care by Nurse, Midwife and Lady Health Visitors	17
3.2.3 Skilled Birth Attendants	17
3.3 Child Health Indicators	17
3.3.1 Child health	17
3.3.2 Child Birth Weight	18
3.4 Child Malnutrition	18
3.5 Child Health Care Indicators	19
3.6 BCG Vaccination	19
3.7 Measles Vaccine	19
3.8 Equity Analyses	19
3.9 Data and Sample	20
<b>Chapter 4</b>	<b>21</b>
<b>EMPIRICAL RESULTS (Pre Devolution)</b>	<b>21</b>
4.1 Mother Health MICS 2007	21



<b>EMPIRICAL RESULTS (POST DEVOLUTION MOTHER AND CHILD HEALTH SERVICES)</b>	<b>23</b>
4.2    Mother Health MICS 2011	23
4.3    Child Health Care MICS 2011	23
4.4    Child Nutritional Status MICS 2011	24
4.5    Mother Health MICS 2014	24
4.6    Health Care MICS 2014	25
4.7    Child Nutritional status MICS 2014	25
<b>Chapter 5</b>	<b>27</b>
<b>CONCLUSION AND POLICY RECOMMENDATIONS</b>	<b>27</b>
5.1    Implications for Policy and Practice	29
<b>ANNEXURE</b>	<b>30</b>
<b>REFERENCES</b>	<b>67</b>

## LIST OF TABLES

Table 4.1: Magnitude of inequalities in mother health districts of Punjab for year 2007	21
Table 4.2: Magnitude of inequalities in child malnutrition in districts of Punjab for year 2007	22
Table 4.3: Magnitude of inequalities in mother health districts of Punjab for Year 2011	23
Table 4.4: Magnitude of inequalities in child care in districts of Punjab for Year 2011	23
Table 4.5: Magnitude of inequalities in child malnutrition in districts of Punjab for Year 2011	24
Table 4.6: Magnitude of inequalities in mother health in districts of Punjab MICS to 2014	24
Table 4.7: Magnitude of inequalities in child malnutrition in districts of Punjab MICS to 2014	25
Table 4.8: Magnitude of inequalities in child malnutrition in districts of Punjab MICS to 2014	25

## ABSTRACT

The study is an effort to observe status of health equity among thirty-six districts of Punjab. To measure the equity, we have used eight indicators of mother and child health from Multiple Indicator Cluster Surveys MICS 2007, 2011 and 2014. We have calculated health equality by help of two inequality indexes absolute inequality index ratio of maximum and minimum income quintile (Q5:Q1) and relative inequality index concentration index and difference of maximum and minimum income quintiles (Q5-Q1) to measure inequality existing between highest income quintile and lowest income quintile. According to results obtained after analysis, a huge disparity among districts of Punjab was observed with respect to provision of publicly provided mother and child health. According to these results and in light of MICS 2007 in skilled antenatal care Q1 (minimum income persons) coverage percentage ranges from 54% minimum in any district and up to 75.5% maximum, where as in Q5 income quintile the same overall coverage percentage is 98% to 100%. In light of relative inequality index, we can see 4% to 11% chances exist for masses of Q5 to avail the facility of Skilled birth attendants. If we observe absolute inequality, we can see Q5 can receive services of skilled birth attendants 71 times more than mothers of Q1 (minimum income quintile) income quintile. If we observe real condition of health inequalities in 2011 we can see that four out of the seven indicators, mean overall coverage ranges above 50% maximum, like skilled birth attendants, four antenatal visits, BCG vaccination and underweight child, out of these four indicators three indicators Skilled birth attendants, four antenatal visits and BCG vaccination lies above 60%. Analyses of MICS 2014 show the values of coverage percentage and two health equity indices for the 36 districts of Punjab. Mean overall coverage ranges above 33% minimum and 97% maximum, like skilled birth attendants, four antenatal visits, Bacillus Calmette–Guérin BCG vaccination and Measles 1 vaccination, out of these eight indicators two indicators low birth weight of infants and underweight infants' vaccination lies above 30%. These results lead to implication that health polices lead to better outcome when health services are equally distributed among population.

# Chapter 1

## INTRODUCTION

Pakistan is a kaleidoscope of hope and despair, and obscurantism stymieing progress, frequently manifests in the courageous faces of young people who want change. Though there is a history with several periods of centralized and decentralized services delivery systems to mother and child, but in both times it was not easy to deliver health services to mothers, infants and children. There was not only financial crisis that the provincial management was facing but there was crisis of institutional management as well. High cost of health services energy deficiency, and rising population was major hurdles. After the 18th Constitutional Amendment to devolve education, health, the provinces have created an opportunity to reform governance and improve accountability in many sectors including health. Because of the huge challenges resulting from the differentials and inequities in Pakistan, the focus on universal health access should cover financial support and the achievement of equity for the country's diverse population in terms of sex, ethnic origin, and Socio-Economic classes. We recommend six objectives for policy and action that the federation and the provinces should focus on over the next decade.

By health equity we mean that everyone has a fair opportunity to live a long, healthy life. It implies that health should not be compromised or disadvantaged because of an individual's or population group's race, ethnicity, gender, income, sexual orientation, neighborhood or other social condition. To achieve the health equity fair opportunities for health are required. It also requires that professionals to look in solutions of mother and child health services (MNCHS) outside of the system, such as in the transportation or housing sectors, to improve the opportunities for health in communities. Health equity is concerned with ensuring the social determinants of health. Equity in health implies that ideally everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that no one should be disadvantaged from achieving this potential if it can be avoided (Chang, 2002).

Lot of difference exists in concept of health disparities as health inequalities. Such difference is due to presence of disease, health outcomes, or access to health care between population groups. Health inequities are differences in health that are unnecessary. Health inequities are rooted in social injustices that make some population groups more vulnerable to poor health than other groups.

We have used eight different indicators to measure equity of health services provided to mothers and children health. We have constructed these indicators separately, like in case of

health services provided to mothers by doctors we have converted the all others care providers to zero and one for services provided by doctors, same process was followed for other services providers each of them were converted in one against zero for other care providers. In next step we have extracted the values for each district of Punjab of each indicator converted one against zero others. In third step values of five income quintiles were generated against the indicator converted in to one, separately for each district of Punjab.

It is clear from our research that people living in poverty receive less than a proportional share of mother and child health services (MNCHS) funding relative to those who are better off. It is clear from literature review of this research. Discrimination based on gender, sexuality, race and ethnicity contribute significantly to inequities in health and in access to health care services.

### **1.1 Objectives of Research**

- The prescribed objectives of the study are
- To examine the nature of health equity among the districts of Punjab.
- To examine the child health equity among the districts of Punjab taking the child health indicators of

### **1.2 Research Question**

On the basis of the objective of the study the research question is:

Whether publicly provided health services are concentrated towards richer households or not?

### **1.3 Significance of Study**

Research oriented towards reducing Mother and Child Health (MNCH) inequity in Punjab has until recently focused on what might be called the “problem space.” Building on the foundation of research evidence about causal processes, it is also important to design research that specifically addresses what might be called the “solution space”.

Over the short term, more emphasis is needed on evaluation methodologies that capture contextual and other critical influences, to understand not only how interventions work, but also why they work. Because policies that affect health are often made by finance ministries and not by health ministries, health impact assessments (HIAs) that specifically incorporate equity analysis and apply to policies outside the health system offer a useful basis for integrating the distribution of health outcomes into governmental decision-making. To

evaluate impact, a key question is: Whether publicly provided health services are concentrated towards richer households or not?

Answering this question requires improved baseline data on health outcomes and social conditions, linked databases, and study designs that enable understanding of complex causality, coupled with research on how policies that do not explicitly target health outcomes affect social determinants of health. Such research, in turn, must rely on a plurality of evaluation methodologies and a broader range of knowledge producers.

### **1.5 Structure of the Study**

The thesis consists of five main parts, as follows:

First chapter includes the introduction, objectives, significance and structure of this study. It also includes the definition of key terms along with description of MICS. In second chapter we come across the review of literature which discusses the importance for measuring equity in provision of mother and child health services. Different scales and indexes are over viewed which are used to measure the equity of health services around the globe. Our third chapter is composed of research methodology along with the indexes used to measure equity of health and selection of indicators. This chapter also answers the research questions of this study as well as significant discussions of results and outcomes of analyzed data have discussed in detail. In This chapter the outcomes of study has been discussed and policy recommendations are provided in the light of outcomes of analyzed data.

### **1.6 Problem Statement**

There is a tremendous need for provision of health services to mothers and children in Punjab on equity bases among districts, avoiding discrimination of gender, wealth, caste and ethnic bases. We are in way to clear the picture which may show us the real face of health services provided to the mothers and children in Punjab and the distribution pattern among districts. We are also targeting the intensity of diseases among infants and children through concentration index, so next time while designing health policy we may be able to deliver better health services to mothers and children on bases of equity among districts of Punjab.

### **1.7 Significance of Study**

This research project makes a significant contribution to our understanding of reform process, for health care provision to mothers, infants and children and the politics underlying reform adoption in Punjab. The research study makes an empirical contribution by mapping health

sector reforms in Punjab at the primary and secondary level health facilities. The study responds to an empirical gap in the literature on public sector reforms in case of mothers and child health sector reforms particularly on equity bases among districts of Punjab. In this research mother and child health sector reforms in Punjab are mapped from 2007 till 2014, consisted of three data waves of MICS by using three equity indices approach to measure not only the equity of services distribution but also to judge reform process by looking at drivers, reform strategies and how they were implemented. The research reported in the thesis leads us to the following empirical findings about health sector reforms in Punjab. Health sector reforms are shaped by domestic conditions, institutional dynamics and global pressure. These reforms bear resemblance to the common NPM rhetoric, but act as policy instruments for the elite to secure financial assistance from multilateral and bilateral lending agencies. The reforms do not threaten the pro-state and pro-bureaucracy model of public administration, which is reminiscent of the colonial legacy. Reforms have donned the NPM fabric but weak links between policy-making and implementation have failed to change the pre-existing political and administrative interests' and institutions. Reforms have been politically motivated e.g. decentralization of social services, and half-hearted implementation efforts by succeeding governments have failed to consolidate the system.

## **1.8 Conclusion**

We can see that in 2007 the overall coverage against skilled antenatal care is at top, which is due to high coverage in Q1 (minimum income population) income quintile and Q5 income quintile as well. The lowest coverage is observed in antenatal through lady health Visitors which is due to geographical location of most remote areas of Punjab especially south Punjab like DG khan, Rajanpur and Layyah. On the other hand in 2011 we can see that 8% chances exist for masses of Q5 to avail the facility of four antenatal visits and 22% chances for infants of Q5 to be stunted.

If we observe absolute inequality we can see negative sign with values against skilled birth attendants. The skilled antenatal care is most covered health service among other services of antenatal care. Argument is supported by three indexes of health equity, which is due to multiple reasons like campaign of antenatal care by government and NGOs have initiated lot of times but they are not fruitful due to lack of institutional structure and awareness.

## **Chapter 2**

### **LITERATURE REVIEW**

#### **Pre Devolution**

Large numbers of research articles are available, which aim to address equity in provision of public health. In these research articles impact of health policy on horizontal health equity has focused. In the light of these articles we come to know that the concept of health equity is also known as distributive justice of health facilities which means distribution of health facilities without any discrimination. By these research articles we also came to know that Health system of country should be based on a framework which should be capable to address issues of equity in health and health care system. Following are some current studies which show trend of health equity around the globe, and different scales or indexes to measure the health equity.

Javed et al, (2007) the results show that decentralization has not led to any real improvement in the provision or the quality of these services. Our initial premise was that Pakistan's social development has suffered due to accountability failures, and that since LGO 2001 explicitly sought to address these. Nepotism was observed where nazims along with other elected representatives were only focusing those areas where they were expecting strong vote bank. It appears that in the case of targeted services having a strong representation on the union council, or at least a resident nazim, makes the difference.

Besley et al, (2004) this research has focused towards union nazims tempted to concentrate all benefits within their own villages. These factions are also not inclusive of a wide cross section of the village population as they are formed on the basis of biraderi alliances, so that nazims are more prone to provide services that can be targeted to specific groups, that are tangible and visible, and that are directly attributable to them. This allows them to reward their own factions and to appear to prioritize them over all others in order to retain their support. This is not possible in the case of universal services, improvements which are not only less visible and obvious, but also cannot be easily targeted to specific groups. Therefore, while the delivery of targeted services has increased under the new decentralized system, delivery of universal services has not increased because electoral accountability of the local influentials has not increased. Citizens are as yet unable to hold local level service providers accountable, either indirectly through their representatives or directly through participation in citizen monitoring and oversight bodies. as mechanisms of oversight and accountability. In



contrast was the union nazim's view, that biraderi and/or factional divisions within the villages were played

Nishtar et al, (2013) in local government system social upheaval, economic hardships, and drastic changes place in Punjab's institutional and organizational systems, it is believed by the researchers that health should be included in a nation building agenda. More broadly, the agenda also includes a future vision of universal health access and narrowing of inequity as its goals. Universal health access is hugely challenging in case of Punjab's financial situation and its current tax-to-GDP ratio. International experiences also shows that reform of universal health access is usually dependent on major change including, political transitions, cataclysmic events, disasters, and solutions to special over-riding problems.

Collins et al, (2002) the paper reviews proposals focusing on the need to build on experiences and learning lessons from pilot projects, reform continuity, developing consultation and involvement and policy analysis. The analysis indicates that the importance of developing more in-depth policy analysis around the role of the central organization, the form of decentralization and the purchaser-provider separation. It was therefore concluded that by underlining the need to ensure that political strategy and in-depth policy are appropriately coordinated in the policy process.

Waters et al, (2000) the aim of study is to develop two concepts: 1 measure distribution equity to access publicly provided mother and child health; and secondly to measure the impact of health insurance programs on equity. Two indicators used for measuring equity in terms of access to health care are concentration coefficient derived from the Gini coefficient and second is Atkinson distributional measure along with weighted Utilitarian social welfare function for overall levels of access. 1995 Ecuador's Living Standards Measurement Survey data has used for analysis. Researchers have concluded that GHI program increases overall access to health care, with negative impact on distribution of health services.

Victora et al, (2003) the aim of study is to measure the Gaps in child mortality between rich and poor countries. The gaps were measured between wealthy and poor children within these countries. The data was obtained by UNICEF and World Bank. It was observed by the scholars that in high-income countries, six of every 1000 children die before their 5th birthday. In the developing world, the rate is 88 per 1000, and in the world's poorest countries, the rate is a staggering 120 per 1000.

Gender disparities in health and education are higher in south Asia than anywhere else in the world. A girl in India is greater than 40% more likely to die between her 1st and 5th birthdays than is a boy. Child mortality would drop by 20% if girls had the same mortality rate as boys

between the ages of 1 month and 5 years. The reasons for this inequity in sex are both environmental and behavioral. Such as effective targeting or strong implementations of universal coverage—are introduced at time point 2 and contribute to closing the gap over time.

### **Post Devolution**

This part of research examines the literature to come across the reality of health equity in Punjab after devolution, which is clear through the degree of accessibility (difference of Q5 and Q1). The picture clears the situation of output produced by expenditures patterns of local governments and their sectoral priorities, and the extent to which local governments are focused on patronage, or providing targeted benefits to a few as opposed to providing public goods.

Srivastava et al, (2008) the purpose of this study is to judge the impact of integrated nutrition and health program the newborn health. A quasi-experimental design was used by the scholars for evaluation of the program. No doubt that reduction of neonatal mortality was observed there. It was due to interventions in district, that the rise in frequency of prenatal services delivered to the pregnant women at home by visits of community-based workers has increased by ratio of from 16% to 56% in case of antenatal care and from 3% to 39% and in case of postnatal periods which has Positive impact on the condition.

On the other hand no improvement was observed in case of behavioral change of the population who preferred to save money not to emergency medical treatment. Only Neonatal care and mortality rates were increased. It was concluded by the scholars that limited program was not enough for neonatal mortality to decrease; a campaign of awareness is required to teach the masses about importance of good health. S et al., (2009) to measure the equity in terms of distribution of measles vaccine at district Lasbela Mantel-Haenszel stratification analysis was done by the scholars by help of data collected from interview of random sample of 23 rural and 9 urban communities of Lasbela.

To examine the role of inequities in vaccination uptake 2479 mothers were provided information about their 4007 children of 10 to 59 months of age. with and without adjustment for clustering, clarified determinants of measles vaccination in urban and rural areas. It was observed that coverage of Measles immunization in Lasbela is very low; children with age of 12-23 months old only one half of them were vaccinated.

The mothers of Lasbela somehow consider it an illness which is vaccine preventable disease. The role of equity in determining vaccination uptake in Lasbela has also been highlighted by

the study. In both urban and even in rural areas, people of Lasbela have less or no access to a publicly provision of vaccination, which is a key factor affecting equity. Data source of analysis is a random multi-stage cluster sample of 1080 individuals.

The results are output of bivariate analysis based on chi-square test along with Fisher's exact test. Multivariate logistic regression was used to obtain adjusted odds ratio OR with 95% confidence interval. It has been suggested by scholars at the end that the main constraints in utilization of the public health facilities were poor; the poor were more likely to use public hospitals. Alam et al, (2010) has compared the four provinces of Pakistan, to measure the impact of wealth status on health outcomes in Pakistan. Data of Pakistan Demographic and Health Survey PDHS 2006-2007 was used for analysis. It was assessed by the scholars that Baluchistan was at highest level of inequality. The researchers have noticed a pro poor behavior of government to provide health services; the situation was poor in services utilization as well. Irfan et al, (2011) in this study the scholars has compared the quality of provision of services of healthcare provided publicly and privately in Pakistan. Using five different dimensions of quality like empathy, tangibles, assurance, timeliness and assurance was used for analysis. After analysis of data it was clear that private health provision was successfully delivering a better quality of health care hospitals in comparison with public hospitals.

Barros et al, (2012) the aim of study was to measure health coverage interventions in 54 different countries. Two indices of equality absolute and relative inequality indexes and time series data of 54 countries from 2000 to 2008 was used for analysis.

After analysis they have observed that the most equitable indicator was early initiation of breast feeding and this specific case most inequitable countries were Chad, Nigeria, Somalia, Ethiopia, Laos, and Niger where the interventions were examined; In the case of Community-based inequities countries like Madagascar, Pakistan, and India were most equitable.

Singh (2013) the main objective of study is to measure trends in child immunization across geographical regions in India. Data source for analysis was based on National Family Health Survey NFHS conducted during 1992–93, 1998–99 and 2005–06. By help of Bivariate analyses, urban-rural and gender inequality ratios were analyzed.

To examine the trends and patterns of inequalities over time multivariate-pooled logistic regression model was used. The analysis of 1992–2006 data shows considerable variations in child immunization coverage across six geographical regions in India, along with a decline in urban-rural and gender differences over time. Girls were found disadvantaged in any immunization or other health initiative.

Jaffrey et al, (2013) the objective of study was to measure Socio-Economic status index for each district. Data source was consisted of multiple data sources like National Nutrition Surveys for 1987, 2001, 2011, 2012 based on different Multiple indicator Cluster Surveys (MICS) and PDHS surveys. To measure Socio-Economic status index for each district several variables were estimated. The scholars have concluded that unsatisfactory progress in achieving Millennium Development Goals MDG 4 and goal 5 has cleared the picture of reproductive, maternal and child health. Though economy is in stable form and situation of demographic dividends of a young population is favorable too. It was observed that huge disparities exist in case of health and development indicators. It was also observed that specific and targeted strategies are required to remove disparities for targeted population poor and communities. By the help of Lady Health Worker Program, the functional primary care and secondary care facilities should improve in Pakistan.

H. B et al, (2014) while investigating the feasibility to deliver a package of improved prenatal care by the help of lady health workers LHWs in rural Pakistan, the scholars have studied the case of LHWs interventions and their training which was conducted by the community based educational groups sessions.

After observing the situation, the researchers have proposed to avail the facility of locally trained Dais. It was observed that due to provision of such facilities risks to mother and new born health has declined from baseline in stillbirth from 65.9 to 43.1 per 1000 births,  $P < 0.001$  and neonatal mortality rates from 57.3 to 41.3 per 1000 live births,  $P < 0.001$ . There was rise in ratio of skilled attendants' deliveries conducted at public sector facilities whose proportion has risen up to 18% at baseline to 30%, against declined proportion of delivery at home from 79% to 65%.

Majrooh et al, (2014) The study is an effort to observe the coverage and quality of prenatal care provided in Punjab through primary health care facilities in Researchers have used both the Quantitative and Qualitative methods along with multistage sampling technique, focus group discussions and in-depth interviews to obtain data for analysis. After analysis researchers were clear that 55.9% mothers were enrolled in the public health facilities of prenatal care and drop out ratio was nearly 32.9%.

Poor Quality of services for treatment and counseling was observed too. For such issues the researchers consider the distant location of facilities as reason, Along with deficiency of resources and lack of staff.

Mumtaz et al, (2014)the communal factors are focus of study to approach the mother's health care by women in Pakistan. The analysis of time series data of various villages of Punjab shows that there was awareness among people for labor problems and handling possibilities, but there were lack of financial resources.

People with superior caste were able to receive services easily than other non-superior castes, to receive monetary cash or loans constrained for women were observed too. To overcome the issue the researchers have proposed the idea of special attention while designing health policy.

Malqvist et al, (2017) World Health Organization WHO has compared different immunization coverage programs of Nepal. To measure equity for distribution of such coverage programs WHO has used the technique of mean of infant population who were facilitated by vaccine of bacille Calmette–Guérin BCG, polio vaccine, diphtheria–pertussis–tetanus DPT and measles. For analysis slope index of inequality SII and relative index of inequality RII were used.

The result after analysis made it clear that the proportion for poorest wealth quintile has improved from 58% to 77.9% who were provided vaccination, while this proportion for wealthiest quintile has jumped very low 84.8% to 86.0%. Elgar et al., 2015the objective of study was to measure the adolescents' mental and physical health in high-income countries. Slope of index inequality and relative index inequality is used to analyze time-series data 2002, 2006, and 2010 from 34NorthAmerican and European countries including participation of Health School-aged Children.

After analysis the researchers have found rise in Socio-Economic differences 2002 to 2010 in case of adolescents' mental and physical health in high-income countries.

Mathew and J (2012) the objective of study was to measure health equity in vaccination. Coverage in India using the concentration curve and Lorenz curve health equity was measured. Through the analysis of time series data obtained by the official source of Ministry of health and family welfare of India it was clear that a considerable inequity exists in case of vaccination coverage with in different states of India.

These discriminations existed due to multiple factors like gender, birth order, housing, income level, parental care, education, demography religion, caste and ease of access to health-care.

Andoctorade et al, (2015) the objective of study is to measure social sector reforms for poverty alleviation in many Latin American countries to control the rise in Socio-Economic inequalities by improving health outcomes, and provide financial risk protection in late 1980s, social sector reforms for poverty alleviation was started in many Latin American countries to control the rise in Socio-Economic inequalities.

A distinct approach to universal health coverage was used in Latin America, health-system for reforms. They introduced supply side intervention by government financing so expansion in insurance coverage may take place. In some countries like Brazil and Cuba tax-financed universal health systems were introduced. The effective feature of such health-system required to strengthening the health coverage.

Tavares and Zantomio (2017) In Southern European countries authorities have reduced public health spending, while ignoring the monitoring of distributional aspects of system. Study was conducted on the bases of survey data of Health, Aging and Retirement in Europe SHARE, the target was older people. Using the Horizontal Inequity indexes Socio-Economic inequities in older people's access to secondary health care was observed in all three countries.

It was Portugal, where budget cut and user charges also apply to GP visits health care budget, even access to primary care exhibits a significant pro-rich concentration. If reducing inequities in older people's access to health care remains a policy objective, austerity measures maybe pulling the Olive belt countries further away from achieving it.

Hosseinpour et al, (2015) the aim of study is to highlight the WHO initiatives which are related to monitoring the health inequity at the global and national level. The researchers have observed how expansion can be possible in the WHO idea to establish the viable and strong health disparity observing systems for number of health issues at the global level. In an effort to evaluate the availability of quality medical services for prenatal care and the basic health facilities in fifteen major health care centers which were randomly selected from nine districts of Punjab, clear us that in case of antenatal care the enrollment on average was raised and drop out ratio decreased in successive visits.

Due to some Socio-Economic reasons like distant location of facilitation centers, insufficient health facility provision of services and non-availability of the skilled or unskilled staff, along with quality services quality was found poor.

Devaux (2015) to examine inequities which are related to income of masses their visit to doctor in 18 different pre-selected OECD countries. To observe inequalities and inequities data of 2006–2009 and indirect standardization procedure the need-adjusted HCSU and

concentration indexes are derived. Inequities were observed by researchers in HCSU remain present in OECD countries.

In most high-income countries higher incomes are more significant to consult doctor health care needs as compare to people with lower incomes. Inequalities in dental visits were found Pro-rich. It was suggested that in order to assess whether districts of Punjab health policy and its objectives are achieved there should be mechanism to monitor the inequalities.

Ozawa (2016) the objective of study is to measure the immunization programs in the middle income and poorest countries around the globe. The data was provided by UNICEF.

A full income approach was used for analysis of investment to expand the immunization programs in the middle income and poorest countries around the globe. Against diseases of ten antigens, investment was easy project for achieving the goal to cover the levels for vaccinations. It was also observed by the scholars that the projected immunization will hopefully give sixteen percent greater return in comparison to its cost. Researchers were clear, that lives were longer and healthier, in case of antigens; gross output was more than net costs. Scholars agreed for essential investments that governments and donor institutions should provide.

World Health Organization (2018) the aim of research is to measure inequality in developing countries like Bangladesh, Pakistan and Nepal. Using horizontal inequity index by decomposing the concentration index different social determinants are analyzed to measure wealth-related inequality. By the help of different data waves of demographic and health surveys like BDHS 2014, PDHS 2012-13 and NDHS 2010-11 researchers have concluded that pro-rich inequality exists in these countries but in the use of facility delivery services. It was also confirmed by the researchers that the utilization was solely based on need factors.

There is need to develop the effective delivery system of public health care in Punjab. Data of three rounds of National Family Health Survey NFHS during 1992–2006, it has been analyzed that the trends and patterns in utilization of prenatal care PNC in first trimester with four or more antenatal care visits and skilled birth attendance SBA among poor and no poor mothers are equally distributed or not?

The roles of salient Socio-Economic, demographic and cultural factors in influencing the outcome were also examined. Using technique of concentration curve and concentration index, along with logistic regression and multinomial logistic regression models are the trends, patterns and predictors of the two outcome variables were assessed. Poor progress was observed in utilization of antenatal care and skilled birth attendants in India and some selected provinces during 1992–2006. A riff et al., (2010) the study aims evaluation of health

workforce competence in maternal and neonatal issues in public health sector of Pakistan. Study is based on needs assessment of training in the public health sector of Pakistan, to recognize gaps in the processes and quality of MNCH care provided.

Knowledge, Attitude, and Practices of health care Providers have also been assessed. Data was collected by interviews of LHVs, LHWs and doctors at different tehsils, Taluqa and BHUs, through quantitative estimation tools across various domains of knowledge and skills; it was found that the performance of LHWs in knowledge of MNCH was good with 30% scoring more than 70%. The Medical officers MOs, in comparison, performed poorly in their knowledge of MNCH with only 6% scoring more than 70%. The MOs performed far better in counseling skills compare to the LHWs. Saxena et al., (2013) the objective of study is to review the framework developed by the Commission on Social Determinants of Health (CSDH) which is used to categorize and explain determinants of inequity in maternal and reproductive health in India. The study is based on review of published literature using the electronic databases.

After analysis five main structural determinants were emerged to understand the equity in India: economic status, gender, education, social status registered caste or tribe, and age adolescents. Mitchell et al, (2009) to observe the coverage percentage of vaccinated infants against measles is the objective of this cross-sectional study of 23 rural and 9 urban communities in the Lasbela district. To collect the data in-depth interviews were conducted including 2479 mothers to get information about 4007 children aged 10 to 59 months. After analysis it was clear that in Pakistan, large number of Pakistani children have no access to the vaccination against measles though the government has initiated many programs to eradicate the measles.

The reason was the distance between vaccination centers and their homes.

Bugvi et al, (2014) the aim of this paper is to determine the factors associated with incomplete immunization among children aged 12-23 months in Pakistan. Data source is the Pakistan Demographic and Health Survey, 2006-07. The proportion of incompletely immunized children in Pakistan varies from 37-58%, data was limited to ever-married mothers and only those mothers who had delivered their last child during the 23 months. Technique of unadjusted and adjusted odds ratios AOR has used along with multi-variable binary logistic regression.

After analysis it was clear to the researchers that despite governmental efforts to increase rates of immunization against childhood diseases nearly 66% of children were incompletely immunized against seven preventable childhood diseases. It is suggested by scholars that



targeted interventions are needed need to concentrate on people with low Socio-Economic and educational status in order to improve their knowledge and to raise immunization rates in Pakistan. Pasha et al, (2015) this study aims to compare the rates of maternal mortality, stillbirth and newborn mortality and levels of putative risk factors between Pakistan and in other countries.

Using time series data from the Global Network's Maternal Newborn Health Registry MNHR from 2010 to 2013 from different countries including Pakistan, India, Kenya, Zambia, Guatemala and Argentina it was found that despite global improvements in maternal and newborn health MNH like other countries maternal and newborn mortality rates in Pakistan remain stagnant. Malik et al, (2017) in this study the impact of allocation of resources to the 'Reproductive, Maternal, New born and Child Health sector RMNCH' in Pakistan have been studied. Using data of Demographic and health survey of Pakistan and in light of use of the public health facilities for the RMNCH services the researchers have evaluated the comparative expenditures for the RMNCH sector and impact of public expenditures has been analyzed. In light of analysis it was observed that after newly started and some existing programs the status of Millennium Development Goals MDGs 4 and 5 remained unachieved. Maternal mortality ratio was reduced at an annual reduction rate of 3.6% 1990–2013, but the less than five mortality rate was reduced to 81 per 1000 live births by 2015. Rise of 181% PKR 628.79 billion US\$9.67 billion in expenditure of RMNCH for time of 2000 to 2010 was observed.

It is concluded that overall condition of RMNCH was very worse beside all expenses and government initiatives.

Corburn et al, (2017) objective of this quantitative study is to observe the determinants to reduce health inequities experienced by the poor masses of urban slum. The study has proposed that effort is the basic need for slum upgrading projects. It should be limited to multiple criteria for health recognized by the WHO findings on the social determinants of health. It must be acknowledged that due to financing or donor requirements slum upgrading projects and related evaluations may intentionally be narrowed.

It has been suggested that qualitative methods harder to measure environmental and social determinants, mixed-methods evaluations are required for that purpose including, in-depth interviews, focus group discussions, spatial mapping, and longitudinal cohort surveys. Huda et al, (2018) the objective of study is to examine the horizontal inequity and social determinants of inequality in facility delivery services in three South Asian countries. The

study has also observed the pattern of utilization of maternal health care services in many developing countries along with wealth-related inequalities in use of maternal services.

to measure horizontal inequity the household and women data from demographic and health surveys of Bangladesh BDHS 2014, Pakistan PDHS 2012-13 and Nepal NDHS 2010-11 and horizontal inequity index is used. To assess the contribution of different social determinants towards the wealth-related inequality decomposition of concentration index method has used. The results of three data sets made it clear that pro-rich inequality exists in use and delivery of facility services. Household Socio-Economic condition, parental education, place of residence and parity emerged as the most important factors.

J. P et al, (2018) the main our objective of the research was to determine differences in scientific productivity, promotions and retentions, and leadership attainment among faculty applicants to this national minority faculty development program. To support academic physicians from historically disadvantaged a model program for promoting faculty diversity and health equity, the Harold Amos Medical Faculty Development Program AMFDP, a national program of the Robert Wood Johnson Foundation is an example. Final-round interview applicants from 2003 to 2008 were selected. By the help of Semi structured interviews conducted to identify factors that facilitated and hindered academic success and differences in publications, grants, promotions/retentions, and leadership positions were part of data used for analysis. Interviews and analysis had covered the comparison between funded scholars and unfunded non scholars. The conclusion of Participants endorsed to mentor, the funding to scholars and non scholars. However, people who were part of interview were in favor to endorse and attain leadership positions.

## Chapter 3

### METHODOLOGY AND DATA

Three data waves of Multiple Indicators Clusters Survey MICS are used to measure the health equity in Punjab 2007, 2011 and 2014. The data is not only consisted of mother health indicators but child health indicators are part of analysis too. As main sampling strata urban and rural areas within each district were identified. The point to note is that eight large cities in this data set (Lahore, Faisalabad, Rawalpindi, Gujranwala, Multan, Sargodha, Sialkot and Bahawalpur) were also treated as separate strata within their respective districts; from each area further 20 households were drawn in each sample enumeration area.

The question is that why have we preferred the data of MICS on PDHS? The answer is very simple it's very clear that MICS provides the data of social indicators up to the grass root level of society. If we observe the data it is not only covering nine divisions of Punjab but it is covering 36 districts along with their tehsils and towns even. It should also be noted that MICS provides the data in accordance to ground realities and definitions provided by institutions like Punjab Bureau of Statistics (PBS).

#### 3.1 Selection of Indicators

The selection of indicators for mother and infant health has done on the bases of `intervention coverage distribution among income quintiles and their nature for mother and infant health. Because Chiniot was not a district in 2007 so analysis for that particular district is missing, only in analysis of MICS 2007.

#### 3.2 Mother Health Indicators

##### 3.2.1 Antenatal Care by Doctor

It is important to receive antenatal care by specialized skilled person like doctor or gynecologist. In the light of data provided by MICS it is possible to assess the data of women who have access to a qualified doctor. There are some technical issues which need to resolve for provision of specialized antenatal care by specialized doctor. We have selected the category of 'Doctor' because it is declared as standard across countries. It has high probability for the women who receive antenatal care from a skilled provider to have a normal and healthy delivery.

We have constructed these indicators separately, like in case of health services provided to mothers by doctors we have converted the all the other care providers to zero only for service provided by doctors, same process was followed for other service providers each of them

were converted in one against zero for other care providers. In next step we have extracted the values for each district of Punjab, each indicator converted in to one against zero others. In third step values of five income quintiles were generated against the indicator converted in to one, separate for each district of Punjab.

Sochael et al, (2002) purpose of this qualitative study was to provide a description of LHVs and their practice in Pakistan. For this study the qualitative technique of interviewing was used, consisted of interviews by 52 LHVs who were located in both rural and urban areas of the four provinces in Pakistan including the Northern Areas. According to the discussion in article Lady Health visitors LHVs, are specified for health care provider. To urban and rural communities, a variety of health services are available including basic nursing care, maternal child health services, along with training of community workers as well. These LHVs aligned their practice with medicine and they are always registered with the Pakistan Nursing Council and had 1 year of midwifery training. LHVs differentiate their practice from nursing by demarcating the role of registered nurses RNs to the hospital.

### **3.2.2 Antenatal Care by Nurse, Midwife and Lady Health Visitors**

World Health Organization 2003 Nurse or, indeed, lower-level health care workers such as midwives, primary health care workers and community health visitors, are those persons who have the necessary training, equipment and supplies and are appropriately supervised.

We have constructed these indicators separately, like in case of health services provided to mothers by trained paramedical staff, we have converted the all others care providers to zero and one for services provided by trained paramedical staff, same process was followed for other service providers each of them were converted in one against zero for other care providers. In next step we have extracted the values for each district of Punjab of each indicator converted one against zero others. In third step values of five income quintiles were generated against the indicator converted in to one, separate for each district of Punjab.

### **3.2.3 Skilled Birth Attendants**

World Health Organization 2003 By report of WHO the term ‘skilled attendant’ includes people who are either midwife or doctor or a nurse and they have been trained and skilled for to manage normal deliveries and complications of pregnancy.

## **3.3 Child Health Indicators**

### **3.3.1 Child health**

We have included the proportion of children aged 12–23 months who received a dose of BCG vaccine in the index and measles one and two but assess them separately. We calculated

all indicators from the original survey data, where data was available. Due to non-availability of data immunization coverage was not added in MICS to 2007 analysis. The district Chiniot is not part of analysis of 2007 because Chiniot was declared as district in 2009

### **3.3.2 Child Birth Weight**

Sachdev et al, (2001) According to the report of WHO the newborns with birth weight less than 2500 g fall in the low birth weight LBW category. In these children proportion of prenatal and neonatal morbidity and mortality risks increases more than other children. It also affects their substandard growth and development in their later life.

We have constructed these indicators separately, like in case of child weight, we have converted the normal weighing children zero and one for low birth weight children In next step we have extracted the values for each district of Punjab or each indicator converted one against zero others. In third step values of five income quintiles were generated against the indicator converted in to one, separate for each district of Punjab.

### **3.4 Child Malnutrition**

It has three types stunted, wasted and underweight.

#### **Underweight, weight for age WAZ:**

Is define it as an infant whose, weight for age is less than  $-2$  standard deviations SD of the median of WHO Child Growth Standards.

We have constructed these indicators seperatly, like in case of malnutrition measured for a child we have converted other forms of malnutrition like wasted and stunted to zero and one for under weight, same process was followed to measure wasted and stunted children each of them were converted in one against zero for other care providers. In next step we have extracted the values for each district of Punjab of each indicator converted one against zero others. In third step value of five income quintiles were generated against the indicator converted in to one, separate for each district of Punjab.

#### **Stunting, height for age HAZ:**

Is define it as an infant whose height for age with less than,  $-2$  SD of the median of WHO Child Growth Standards.

We have constructed these indicators separately, like in case of malnutrition measured for a child we have converted them in forms of malnutrition like wasted and underweight to zero and one for stunted, same process was followed to measure wasted and underweight children each of them were converted in one against zero for other care providers. In next step we have extracted the values for each district of Punjab of each indicator converted one against

zero others. In third step values of five income quintiles were generated against the indicator converted in to one, separate for each district of Punjab.

### **Wasting, weight for height WHZ:**

By definition an infant whose, weight for height is less than  $-2$  SD of the median of WHO Child Growth standards

Stunted Children 'Low Height for Age HAZ

Stunting, height for age HAZ:

Is define it as an infant whose height for age with less than,  $-2$  SD of the median of WHO Child Growth Standards of the WHO.

### **3.5 Child Health Care Indicators**

World Health Organization 2015 in light of this report of WHO a process to create resistance in a human against any infectious disease is known as immunization. Vaccination is a method to inject such germs in a body so body may create antigens against them.

We have constructed these indicators separately, like in case of malnutrition measured for a child we have converted the all other forms of malnutrition like wasted and underweight to zero and one for stunted, same process was followed to measure wasted and underweight children each of them were converted in one against zero for other care providers. In next step we have extracted the values for each district of Punjab of each indicator converted one against zero others. In third step values of five income quintiles were generated against the indicator converted in to one, separate for each district of Punjab.

### **3.6 BCG Vaccination**

The percentage of children with age of one-year and they have provided one dose of acilli Calmette-Guérin BCG vaccine to be immune from TB in a year.

### **3.7 Measles Vaccine**

Every human being should be provided with the first routine dose of MCV1, along with routine dose of MCV2 at the age of 9 months, and between 15-18 months. The minimum interval between MCV1 and MCV2 is 4 weeks.

### **3.8 Equity Analyses**

We have used two indices to measure health inequity by three MICS surveys. These indexes are absolute inequality indices and relative inequality index. Absolute and relative inequality

index is a way to conflict findings. These indices are consisted of difference and ratio of income quintiles Q1 (low income persons) and Q5 which are considered as simple measures. In addition, with this income quintile we have the concentration indexes which are considered as complex indices, to measure inequality we have used three of them, but our main target is relative inequality with the concentration index.

### **3.9 Data and Sample**

After World Summit for Children Declaration (1990) MICS was developed. The data collected by MICS is aim to monitor the social indicators specially related to the well-being of women and children. MICS Punjab is consisted of more than 100 indicators. It covers whole province, area of residence cities (urban and rural), 9 divisions, and 36 districts including 150tehsils/towns. The sample size of this largest survey is consisted of 6,368 PSUs and 91,280 households in 2007, 102,545 households in 2011 and covering 38,405 households in 2014.

## Chapter 4

### EMPIRICAL RESULTS (Pre Devolution)

This chapter presents empirical results and discussion.

#### Inter District Analysis of Health Equity for Districts of Punjab

After analysis of MICS data for year 2007 we came across the real picture of health equity in Punjab. We can observe different trends against each indicator according to indexes of equality. All mother and infant health indicators are separately discussed in the tables and discussions given below.

#### 4.1 Mother Health MICS 2007

**Table 4.1: Magnitude of inequalities in mother health districts of Punjab for year 2007**

Health	Number of	Overall	Q1	Q5	Difference Q5-Q1 %	Ratio Q5:Q1	Concentration Index%
Indicators	Districts	Coverage %	Coverage %	Coverage %	Absolute Inequality	Relative inequality	Relative inequality
Antenatal care by doctor	35	17.3 to 70.3	0 to 30	23 to 91	3 to 81	1.8 to ∞	0.02 to 0.3
Antenatal care by midwife	35	0.8 to 37	0 to 29	0 to 11.66	-27 to 5	-16 to 6	0 to ∞
Antenatal care by lady health visitors	35	1.7 to 18.7	0 to 20	0 to 100	-14 to 100	-14 to 100	10 to ∞

According to the table 4.1 in case of antenatal care provided by doctor the overall coverage percentage is 17.3 to 70 percent. We can see that only 30 percent of poor population was provided such services, however more than 90 percent of mothers of highest income quintile (Q5) was provided such services. As we come to the antenatal care provision by the doctor/ or medical specialist we can see most covered population is poor or belonging to lowest income quintile. In the same case we can see that mothers who belong to the highest income quintile coverage not so high which is alarming situation, but the care provided by lady health visitors 100 percent mothers were provided such services.

In the result of absolute inequality, it appears 3% of poor population and 81% of rich population is availing services of antenatal care provided by doctor, whereas midwife were mostly available to only 5% of poor population against 27% of rich population. In result of relative inequality indexes we can see a pro-rich trend of antenatal care services were provided.



**Table 4.2: Magnitude of inequalities in child malnutrition in districts of Punjab for year 2007**

Health	Number of	Overall	Q1	Q5	Difference Q5-Q1 %	Ratio Q5:Q1	Concentration Index%
Indicators	Districts	Coverage %	Coverage %	Coverage %	Absolute Inequality	Relative inequality	Relative inequality
stunted child	35	22 to 56	21.71 to 60	10 to 59	-36 to 33	32 to 233	-0.13 to 39
Wasted child	35	5 to 29	4.1 to 33.61	0 to 26.58	-10.04 to 8.3	0 to 185	-0.14 to 0.098
under weight	35	16.5 to 43.2	17.2 to 53.7	8 to 41.4	-38.12 to -1.64	30 to 97	-0.14 to 0

Table 4.2 shows values of coverage percentage and two health equity indices for the 36 districts of Punjab. If we observe the table, we can see that mean overall percentage for all indicators is high in stunted infant case where underweight infants are at second position.

According to the table, we came to know that in case of child nutritional status stunted, wasted and underweight are ranked accordingly on rank one, two and three. Children who were suffering of stunted growth were ranging from 22 to 56 percent in number whereas rests of two were less than 50 percent.

For absolute inequality (Q5–Q1 difference), stunted, wasted and underweight are ranked accordingly on rank one, two and three. For relative inequality (Q5:Q1 ratio) same results and ranks were shown by the indicators. More ratio of poor children exists, who were suffering of malnutrition, which means poor population which is major part of our urban and rural population are unable to provide proper diet to their children so they may grow up to normal body weight and height.

We can also see that mean overall coverage for all inductors is high in stunted infant case where underweight infants are at second position. Most of our Punjab is agricultural area, due to some issues our agricultural yield is declining day by day. We are unable to meet our needs and imported food or fruit items are not affordable for people especially at south Punjab. Low rate of literacy is also a reason of this disparity where people are not aware of nutritional importance of food. One can easily observe that no sound policy has provided by any government so far for provision of nutritionists in hospital nor a campaign has ever been run by our policy executors.

## EMPIRICAL RESULTS (POST DEVOLUTION MOTHER AND CHILD HEALTH SERVICES)

### 4.2 Mother Health MICS 2011

**Table 4.3: Magnitude of inequalities in mother health districts of Punjab for Year 2011**

Health	Number of	Overall	Q1	Q5	Difference Q5-Q1 %	Ratio Q5:Q1	Concentration Index%
Indicators	districts	Coverage %	Coverage %	Coverage %	Absolute Inequality	Relative inequality	Relative inequality
skilled ANC	36	39 to 89	54 to 75.55	98 to 100	4.2 to 24.4	31 to 70	122 to 250
Antenatal care by doctor	36	36 to 1285	20 to 49	10 to 90	40 to 70	27 to 74	140 to 1142
Antenatal care by midwife	36	15 to 91	0 to 70	0 to 20	-57 to 0.91	-30 to 0	0 to ∞
Antenatal care by LHV	36	1.2 to 9.9	0 to 20	0 to 10	-0 to 0.07	-189 to 55	0 to ∞
Anc 4 visits	36	10 to 71.3	10 to 50	50 to 90	40 to 80	20 to 70	140 to 800

Table 4.3 shows values of coverage percentage and two health equity indices for the 36 districts of Punjab. If we observe the table, we can see that mean overall coverage for all indicators is high in Antenatal care by doctor, whereas Antenatal care by midwives, Antenatal care by skilled persons, and four Antenatal care visits are placed second, third, fourth and fifth ranks.

For absolute inequality (Q5–Q1 difference), Antenatal care by either type of person the services are easily accessible to the rich 20% of population (Q5). Relative inequality index confirm the output of absolute inequality index, we can see that 20% of most poor population who get 31% skilled antenatal care was unable to compete the 70% of most rich mothers (Q5) who were provided any type of skilled antenatal care.

### 4.3 Child Health Care MICS 2011

**Table 4.4: Magnitude of inequalities in child care in districts of Punjab for Year 2011**

Health	Number of	Overall	Q1	Q5	Difference Q5-Q1 %	Ratio Q5:Q1	Concentration Index%
Indicators	districts	Coverage %	Coverage %	Coverage %	Absolute Inequality	Relative inequality	Relative inequality
BCG vaccine	36	12.5 to 69	13 to 20	14 to 19	-3.3 to 3.6	79 to 124	-0.1 to 0.1

Table 4.4 shows values of coverage percentage and two health equity indices for the 36 districts of Punjab. We have not included other vaccinations due to unavailability of data. If we observe table we can see that mean overall coverage for BCG vaccinated children is not high. Only 69% from Q1 poorest 20% and 19% Q5 rich 20% were successfully provided BCG vaccination..

For absolute inequality (Q5–Q1 difference), and for relative inequality (concentration index ranked and Q5:Q1 ratio) BCG vaccination was not provided on equality bases.

#### 4.4 Child Nutritional Status MICS 2011

**Table 4.5: Magnitude of inequalities in child malnutrition in districts of Punjab for Year 2011**

Health	Number of districts	Overall Coverage %	Q1 Coverage %	Q5 Coverage %	Difference Q5-Q1 %	Ratio Q5:Q1	Concentration Index%
Indicators					Absolute Inequality	Relative inequality	Relative inequality
Low B. weight	36	6 to 38	0 to 48.5	1.76 to 48.5	-38.67 to 38.92	17 to ∞	7.0 to ∞
stunted growth	36	10 to 26	6.5 to 33	5 to 27	6 to -13	-16 to 9	-0.02 to 0.67
wasted child	36	9 to 26	0.1 to 33	0 to 28	-22 to 9	20 to 31	-0.6 to -6
under weight	36	21.4 to 100	16 to 60	14 to 25	16 to -40	19 to 60	-18.3-5.9

Table 4.5 shows that in case of child malnutrition the overall coverage percentage is high for underweight children even up to 700%. We can see that more than 30% poor population was facing issues of malnutrition and low birth weight. We can observe that over all percentage of malnutrition indicators is 6 to 38%.

In case of any type of indicators of child malnutrition or birth weight we can see that 33 to 60% of low income population (Q5) was suffering of malnutrition in any shape ( stunted, wasted, underweight), whereas 0–48% of children belonging to highest income persons (Q5) were facing malnutrition in either shape.

#### 4.5 Mother Health MICS 2014

**Table 4.6: Magnitude of inequalities in mother health in districts of Punjab MICS to 2014**

Health	Number of districts	Overall Coverage %	Q1 Coverage %	Q5 Coverage %	Difference Q5-Q1 %	Ratio Q5:Q1	Concentration Index%
Indicators					Absolute Inequality	Relative inequality	Relative inequality
Anc by doctor	36	45 to 84	0.3 to 0.55	0.8 to 1	32 to 135	-50 to 11	0.1 to 0.2
Anc by midwife	36	0 to 18	0 to 0.6	0 to 0.13	-20 to 0	0 to ∞	-0.41 to -0.2
Anc by LHV	36	0 to 11	0 to 0.101	0 to 0.1	-10 to 10	0 to ∞	-0 to 10
Anc by skilled	36	54 to 97	49 to 100	66 to 100	7 to 51	1.8 to 2.3	1 to 14
Anc 4 visits	36	19.1 to 73	0.1 to 0.4	0.2 to 1	20 to 80	133 to 800	0.1 to 0.4

Table 4.6 shows that in case of antenatal care coverage provided by skilled person the overall coverage percentage is 54 to 97%. For absolute inequality (Q5–Q1 difference), Antenatal care by doctor was ranked one and least for relative inequality (concentration index ranked

and Q5:Q1 ratio). Antenatal care four visits, skilled birth attendant, LHVs and midwives was ranked second, third, fourth and fifth most inequitable intervention in case of relative inequality.

#### 4.6 Health Care MICS 2014

**Table 4.7: Magnitude of inequalities in child malnutrition in districts of Punjab MICS to 2014**

Health Indicators	Number of districts	Overall Coverage %	Q1 Coverage %	Q5 Coverage %	Difference Q5-Q1 % Absolute Inequality	Ratio Q5:Q1 Relative inequality	Concentration Index% Relative inequality
BCG vaccine	36	33 to 97	1.5 to 2	1.4 to 1.7	-9 to 0.9	-16 to 55	-0.02 to 1
Measles I vaccine	36	40.67 to 97	70 to 100	30 to 100	-7 to 0	80 to 100	0.002 to 0.2089
Measles II vaccine	36	8 to 65	0 to 58	0 to 70	-23 to 52	0 to ∞	-0.069 to 0.29

Table 4.7 shows values of coverage percentage and two health equity indices for the 36 districts of Punjab. If we observe table we can see that mean overall coverage for all indicators is high in measles 1 vaccination case, whereas BCG vaccination is at second position. We came to know that in case of measles II vaccination, coverage percentage is 8 to 65 percent.

For absolute inequality (Q5–Q1 difference), we can see that provision of three vaccinations and their percentage against absolute inequality is just equal to 0 even less than 0, but only in case of Measles II it is up to 52 percent. This means that only Measles II was provided to the poorest 20% population while provision of other two vaccinations is just 0. (Concentration index ranked and Q5:Q1 ratio) only Measles I vaccination is most inequitable intervention in case of absolute inequality.

#### 4.7 Child Nutritional status MICS 2014

**Table 4.8: Magnitude of inequalities in child malnutrition in districts of Punjab MICS to 2014**

Health Indicators	Number of districts	Overall Coverage %	Q1 Coverage %	Q5 Coverage %	Difference Q5-Q1 % Absolute Inequality	Ratio Q5:Q1 Relative inequality	Concentration Index% Relative inequality
Low B . Weight	36	14 to 35.0	12.0 to 68	0 to 44	-14 to 31		-0 to -0.29
Stunting	36	11-24	1.74 to 24	0 to 25.4	0 to -23.1	21.69	0.01 to -0.15
Wasting	36	11-24	0 to 30	0 to 19	4.33 to -20	0.78 to 5.5	0.009 to -0.12
under weight	36	0 to 43.2	37 to 34	20 to 8.35	-9 to -4	0.1 to -0.1	0.4 to 0.5

Table 4.8 shows values of coverage percentage and two health equity indices for the 36 districts of Punjab. If we observe table we can see that very less coverage percentage in both quintile and a severe inequality among Q1 and Q5 quintile. It's not only due to the impact of inflation where people can't afford food and essential nutrients, but also due to their attitude towards medical facilities which is more or less due to lack of awareness. The detail of determinants and condition of equity is discussed in the following tables and description.

In case of underweight children the overall coverage percentage is up to 43%. At second number we can see low birth weight children are up to 35%. Other than these two, other indicators of malnutrition are less than 30% of overall coverage percentage. If we observe equality indexes we can see that:

For absolute inequality (Q5–Q1 difference), Birth Weight of children was ranked one and second for wasted growth of children. In case of absolute inequality -23 to 10 means tending towards pro poor distribution of services. If we observe relative inequality (concentration index ranked and Q5:Q1 ratio) we can see that 21.69 percent more chances exist for people of Q5 quintile to suffer of stunted growth, whereas 0.78 to 5.5 chances exist for children of Q5 quintile to suffer with issue of wasted growth.

## Chapter 5

### CONCLUSION AND POLICY RECOMMENDATIONS

This chapter concludes and examines as to what extent the research objectives have been achieved and how well the research questions has been addressed. Based on the findings from this research, few recommendations are also being proposed for further study in developing countries.

The contribution is presented empirically and theoretically through the study of the health sector reforms along with the application of public management theories and concepts to the understanding of them in relation to reforms undertaken in health sector during 2007 till 2014. Mapping the health sector reform in Punjab across reform drivers, strategies, and their implementation addresses the empirical gap identified in the literature review.

The 18<sup>th</sup> constitutional amendment has brought several changes in the governance system of Pakistan by influencing relations between federal and provincial institutions. While this has led to a widespread change and caused distribution in the power structure, it is however not mature to an extent where people can fully benefit from it. To that end, we believe that health should be given a major preference in the nation-building agenda. Among many targets of this broad agenda, we envision that it must proceed towards a universal health access while bridging inequalities at various levels (as identified in this work). While promising in nature, universal health-care system can be challenging in terms of economic conditions that set its underpinnings. The current economic system in Pakistan is not structured to support health and social sectors. However, keeping in view the changing dynamics, it might be rational to hope that these much needed changes might happen soon. Recently, Pakistan government has taken initiatives to construct shelters for homeless, and provide free health care to those who cannot afford it. Therefore, we hope that these incremental steps might eventually culminate into a substantial policy that may help build a large-scale health-care system for people of all socio-economic backgrounds.

If we go through the health policy of Punjab we can see that governance is target, institutional reforms are a goal but on other hand we have horrifying situation, like we have 48000 lady health workers in Punjab, but unfortunately, we have no service structure for them. We are paying the huge amount of our health budget to these health workers but output is clear through results. It is also a notable point that these LHWs are not even trained enough to cope with complications of maternal and newborn health. Instead of LHWs we have better

option of LHVs, because LHVs complete their training session at proper nursing school, they hold diplomas and certifications to deal with maternal and infant's health complications.

Significant reduction in incidence of disease and better patient management, is a dream in Punjab we can see that how the administration and policy executors along with street bureaucrats were fighting with dengue fever in Punjab where 300 people dead in 2011 due to this disease because we were unable to handle these issues due to lack of incidence handling capability. Our planners' never plan for any unexpected situation in future as we were not prepared to handle the Congo fever where 26 has been preyed by this disease. This is the secret behind the claim of better health management systems of Punjab.

According to the data sets of MICS 2007, 2011 and 2014 we can observe, in case of antenatal care provided by doctor the overall coverage percentage is 17.3 to 70 percent. We can see that only 30 percent of poor population was provided such services, however more than 90 percent of mothers of highest income quintile (Q5) was provided such services. As we come to the antenatal care provision by the doctor/ or medical specialist we can see most covered population is poor or belonging to lowest income quintile. In the same case we can see that mothers who belong to the highest income quintile coverage not so high which is alarming situation, but the care provided by lady health visitors 100 percent mothers were provided such services.

In the result of absolute inequality, it appears 3% of poor population and 81% of rich population is availing services of antenatal care provided by doctor, whereas midwife were mostly available to only 5% of poor population against 27% of rich population. In result of relative inequality indexes we can see a pro-rich trend of antenatal care services were provided. If we compare data of 2007 and 2011 means pre devolution era and post devolution era we can find that situation is getting worse in 2007 more poor mothers were provided antenatal care by specialized health care provider whereas in 2011 this scenario was reversed but there was not fare distribution of antenatal care services. In case of child malnutrition in 2011 the condition was observed as worse as it was in 2007, poorer was suffered with higher percentage of malnutrition.

## **5.1 Implications for Policy and Practice**

Following are the policy implications that emerged from this research study:

- Unless the effective and efficient local government representatives are involved, the state of public health services for mother and child at local level will not change.
- The local government representatives need to have a long-term agenda, clearly marked benchmarks and detailed work plan for the improvement of situation.
- The focus should be the easy access and availability of quality health services for mother and child on equity baes.
- Sufficient budget should be allocated for training of pramedical staff, with proper service structure
- Doctors should be capable enough to deal with any kind of emergency services.



## Annexure

### Ranking of districts according to concentration index of antenatal care by doctor MICS-2007

Districts	Rank	Freq	percent	co index	P, value	Q1	Q2	Q5	Q4	Q5	Q5-Q1	Q5:Q1
Bahawalpur	14	1065.07	35.7	0.264158	0	20	30	48	65	83	63	4.15
Bahawalnagar	6	1003.18	32.7	0.331	0	10	30	49	63	74	64	7.4
RY khan	7	1639.8	32.4	0.322674	0	20	30	41	64	84	64	4.2
DG khan	8	636.173	33.7	0.316765	0	10	30	35	47	80	70	8
Layyah	2	510.924	29.3	0.368618	0	10	30	44	60	91	81	9.1
M. garb	23	1208.87	39.7	0.195757	0	30	40	63	67	73	43	2.4333333
Rajanpur	10	468.698	33.9	0.30456	0	20	40	53	74	86	66	4.3
Faisalabad	20	2218.6	50.9	0.230118	0	20	30	40	55	74	54	3.7
Jhang	11	1215.38	28	0.298015	0	20	20	34	46	67	47	3.35
IT Singh	22	652.211	42.8	0.209913	0	20	30	41	50	77	57	3.85
Gujranwala	21	1,294	46	0.210466	0	0	20	26	43	64	64	∞
Gujarat	30	765.297	70	0.105727	0	30	40	43	47	54	24	1.8
Hafizabad	24	337.741	48.4	0.189127	0	20	40	40	61	73	53	3.65
M. Bahauddin	15	417.516	39.9	0.263681	0	20	20	39	51	73	53	3.65
Narowal	25	547.569	41.8	0.181894	0	10	30	44	61	81	71	8.1
Sialkot	9	783.283	39	0.306021	0	10	10	22	29	61	51	6.1
Lahore	26	2165.31	64.3	0.163736	0	20	20	32	48	81	61	4.05
Kasur	33	1324.98	21.6	0.035707	0	10	10	30	48	68	58	6.8
N. sahib	5	521.754	33.6	0.340547	0	10	20	33	49	61	51	6.1
Sheikhupura	19	858.32	45	0.246472	0	20	20	36	51	65	45	3.25
Multan	3	901.763	35.1	0.364133	0	10	20	30	61	82	72	8.2
Khanewal	16	845.692	33.5	0.261272	0	20	30	36	53	77	57	3.85
Lodhran	17	566.237	39.9	0.255758	0	20	30	47	73	86	66	4.3
Vehari	35	748.718	29.8	0.029587	0	20	20	24	38	23	3	1.15
Sahiwal	34	876.162	39.5	0.029628	0	20	40	35	58	82	62	4.1
Pakpattan	32	588.168	28.5	0.039115	0	20	20	23	55	65	45	3.25
Okara	13	1058.21	23.8	0.291552	0	10	10	17	43	62	52	6.2
Rawalpindi	31	1100.68	70.3	0.096657	0	30	40	45	50	67	37	2.2333333
Attock	28	378.47	50.8	0.145194	0	10	40	51	60	71	61	7.1
Chakwal	27	376.823	52.2	0.148798	0	30	40	52	66	81	51	2.7
Jhelum	29	329.802	65.6	0.131816	0	30	40	47	59	83	53	2.7666667
Sargodha	12	1160.56	41.9	0.296504	0	20	30	38	61	87	67	4.35
Bhakkar	1	398.765	17.3	0.41924	0	10	20	25	51	77	67	7.7
Khushab	18	322.627	43.4	0.249068	0	20	30	40	57	88	68	4.4
Mianwali	4	409.34	24.9	0.34521	0	10	20	34	58	75	65	7.5

## Ranking of districts according to concentration index of Antenatal Care by Lady Health

### Visitor MICS-2007

Districts	Rank	per	Freq	P, v	Con index	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	30	1.7	1065	0.2	15	0	3	3	2	100	100	∞
Bwg	34	1.7	1003	0.09	18	0	3	2	2	4	4	∞
RY khan	35	3.4	1640	0	24	0	3	5	9	4	4	∞
DG khan	18	8.9	636.2	0.96	0	10	10	16	19	5	-5	50
Layyah	32	6	510.9	0.04	17	0	8	8	10	3	3	∞
M. garh	31	2.8	1209	0.06	16	0	5	4	7	3	3	∞
Rajanpur	6	2.4	468.7	0.16	-20	0	2	4	1	0	0	∞
Faisalabad	11	4.2	2219	0.12	-10	10	5	4	4	3	-7	30
Jhang	28	6.8	1215	0.04	13	10	4	9	11	7	-3	70
TTsingh	10	4.2	652.2	0.29	-10	10	4	5	3	5	-5	50
Gujranwala	17	5.6	1,294	0.97	0	0	3	7	6	5	5	∞
Gujarat	5	8.5	765.3	0	-20	10	14	10	9	4	-6	40
Hafizabad	19	6	337.7	0.73	4	10	4	6	8	4	-6	40
M. Bahauddin	9	14.2	417.5	0.05	-10	10	20	17	13	5	-5	50
Narowal	21	8.8	547.6	0.57	5	20	6	10	10	6	-14	30
Sialkot	22	13.7	783.3	0.46	5	0	16	10	18	11	11	∞
Lahore	1	2.3	2165	0	-50	10	11	5	3	1	-9	10
Kasur	25	2.9	1325	0.31	10	0	1	3	5	1	1	∞
N. sahib	13	2.9	521.8	0.51	-10	10	3	1	3	3	-7	30
Sheikhupura	14	2.4	858.3	0.51	-10	0	5	3	3	2	2	∞
Multan	27	3.7	901.8	0.18	13	0	5	6	7	4	4	∞
Khanewal	16	7.6	845.7	0.57	0	10	8	7	6	6	-4	60
Lodhran	2	2	566.2	0.02	-40	0	3	1	0	0	0	∞
Vehari	26	3.6	748.7	0.38	11	0	2	4	2	2	2	∞
Sahiwal	15	7.4	876.2	0.65	-10	10	1	4	21	0	-10	0
Pakpattan	24	2.9	588.2	0.56	9	0	5	2	4	2	2	∞
Okara		3	1058	0.15	17	0	4	3	3	5	5	∞
Rawalpindi	8	2.3	1101	0.18	-10	0	3	5	3	2	2	∞
Attock	29	5.2	378.5	0.13	14	0	2	5	6	7	7	∞
Chakwal	12	7.5	376.8	0.29	-10	0	10	7	7	8	8	∞
Jhelum	4	4.8	329.8	0.02	-20	0	10	9	4	3	3	∞
Sargodha	7	3	1161	0.08	-10	0	3	4	2	1	1	∞
Bhakkar	23	18.7	398.8	0.12	7	20	22	18	21	17	-3	85
Khushab	3	4.5	322.6	0.02	-30	10	3	4	2	0	-10	0
Mianwali	20	17.2	409.3	0.41	4	10	19	26	15	5	-5	50

## Magnitude of inequalities in child malnutrition in districts of Punjab for year 2007

Districts	per	freq	Rank	co index	PV	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	5.9	1065	27	0.077146	0.2296	4.9234	5.7546	9.3386	5.06218	6.0589	1.1355	123.0633
Bahawalnagar	4	1003	30	0.098214	0.1784	2.9397	5.999	2.6607	4.1485	8.3815	5.4418	285.1141
RY khan	4.6	1640	17	-0.04002	0.5334	4.0202	6.1159	6.4038	4.0176	0	-4.0202	0
DG khan	0.8	636	10	-0.12045	0.6187	0.6341	0	2.9893	0	0	-0.6341	0
Layyah	2.3	511	3	-0.22548	0.23	2.6083	2.2825	0	0	0	-2.6083	0
M. garh	1.9	1209	33	0.278081	0.0102	0.8633	3.2455	1.1997	4.2712	3.4609	2.5976	400.8919
Rajanpur	0.8	469	35	0.309191	0.0258	0.3921	1.4638	0.5068	4.6767	0	-0.3921	0
Faisalabad	6.2	2219	4	-0.20795	0.0001	6.2512	10.6122	6.5921	5.68772	2.7761	-3.4751	44.40907
Jhang	4.8	1215	29	0.092492	0.2555	3.4814	5.7143	6.1642	5.3751	2.4922	-0.9892	71.58614
TTsingh	9.8	652	8	-0.14795	0.0261	14.1641	10.7273	10.7287	8.554	3.2468	-10.9173	22.92274
Gujranwala	17.6	1,294	13	-0.10158	0.0043	27.8212	15.0348	20.4334	18.1516	11.6638	-16.1574	41.92414
Gujarat	6.5	765	9	-0.13894	0.2522	2.9291	6.0661	3.0198	2.65324	1.8581	-1.071	63.43587
Hafizabad	1.6	338	2	-0.2579	0.2222	3.7674	1.0025	0.9178	2.2987	0	-3.7674	0
M. Bahauddin	5.3	418	32	0.239796	0.0127	4.448	2.2832	4.0071	7.5917	10.0987	5.6507	227.0391
Narowal	13.7	548	12	-0.11153	0.1946	3.3906	8.9886	10.3992	4.9098	0	-3.3906	0
Sialkot	15.2	783	6	-0.16365	0.0051	12.7538	25.7666	15.6763	15.5369	8.7073	-4.0465	68.2722
Lahore	67	2165	1	-0.27162	0	0	8.4805	12.0181	11.4341	3.7045	3.7045	∞
Kasur	11.9	1325	24	0.056738	0.2565	3.4689	12.5031	17.2589	17.38817	2.9454	-0.5235	84.90876
N. sahib	13.8	522	16	-0.06934	0.2101	11.8921	14.2616	14.6	11.4072	5.1614	-6.7307	43.40192
Sheikhupura	15.5	858	15	-0.08992	0.0418	13.3307	17.0562	16.2995	13.2909	5.6797	-7.651	42.60616
Multan	4.8	902	21	0.031544	0.7397	3.4887	6.3328	4.4522	5.6973	3.18	-0.3087	91.15143
Khanewal	3.1	846	23	0.038635	0.6974	2.1328	2.9908	4.6885	4.78947	0	-2.1328	0
Lodhran	3.9	566	28	0.084724	0.4827	2.1621	3.6474	6.8276	3.909	0	-2.1621	0
Vehari	6	749	25	0.057833	0.5571	2.8775	5.4691	4.5319	5.7222	2.1973	-0.6802	76.36142
Sahiwal	5.6	876	22	0.037062	0.7059	3.4212	6.0793	9.6329	5.0196	0	-3.4212	0
Pakpattan	4.8	588	19	0.019516	0.8707	3.5492	5.6114	6.3539	4.76556	0	-3.5492	0
Okara	7.3	1058	31	0.156432	0.0264	4.8601	3.803	13.2974	9.2828	4.7414	-0.1187	97.55766
Rawalpindi	2.1	1101	20	0.029105	0.81	0	0	3.009	1.3123	1.437	1.437	∞
Attock	1.9	378	26	0.066105	0.679	0	2.3049	2.5925	0.956	2.9106	2.9106	∞
Chakwal	3.2	377	18	-0.03178	0.8286	8.7727	0.492	4.1508	1.8977	5.8807	-2.892	67.03409
Jhelum	5.1	330	7	-0.1501	0.2067	29.364	4.9135	2.5247	5.8288	2.0918	-27.2722	7.12369
Sargodha	9.2	1161	14	-0.09686	0.0672	6.1009	11.193	12.223	7.0188	0.5388	-5.5621	8.83148
Bhakkar	2.6	399	34	0.285818	0.0516	0.476	3.4144	5.3215	1.3268	0	-0.476	0
Khushab	1.9	323	11	-0.11816	0.6356	0.9779	4.006	0	2.5381	0	-0.9779	0

**Ranking of districts according to concentration index of malnourished stunted infantsMICS-2007**

Districts	co index	Rank	freq	percent	P, Value	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	-0.057	18	2,649.45	33.27	0	35	40.3	28.8	25.3	29.7	-5.3	84.857143
Bahawalnagar	-0.081	26	2,490.16	40.37	0	44	43.8	39.4	29.7	21.1	-22.9	47.954545
RY khan	-0.023	6	3,849.87	35.22	0.1	38	34.6	31.3	33.2	44.1	6.1	116.05263
<b>DG khan</b>	-0.01	4	1,437.88	45.75	0.5	48	41.9	42.6	45.8	28.7	-19.3	59.791667
Layyah	-0.093	30	1,215.93	48.33	0	54	43.2	45.5	42.1	17.3	-36.7	32.037037
M. garh	-0.04	14	2,794.70	56.25	0	59	54.8	55.3	40.1	34.1	-24.9	57.796661
Rajapur	-0.044	15	1,150.45	30.19	0	32	28.5	29.9	24	9.96	-22.04	31.125
<b>Faisalabad</b>	-0.06	19	4,915.35	41.69	0	50	44.6	45.4	37.5	37.7	-12.3	75.4
Chiniot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jhang	-0.08	25	2,840.33	49.29	0	57	48.2	40.7	45	21.8	-35.2	38.245614
TTsingh	-0.09	29	1,502.37	40.58	0	58	44.3	37.3	34.9	32.7	-25.3	56.37931
<b>Gujranwala</b>	-0.034	12	3,042.78	34.52	0	36	34.5	35.7	37.8	30.2	-5.8	83.888889
Gujarat	-0.084	27	1,723.67	31.12	0	41	44.9	33.1	32.8	23.7	-17.3	57.804878
Hafizabad	-0.026	9	757.17	36.69	0.3	42	39.1	36.7	31.2	31.9	-10.1	75.952381
M. Bahauddin	-0.017	5	1,038.68	23.5	0.5	25	24.1	24.4	22	58.4	33.4	233.6
Narowal	-0.053	16	1,131.32	44.91	0	47	50.8	42	41.9	31	-16	65.957447
Sialkot	-0.101	32	1,925.65	52.43	0	51	60.9	61.2	54.7	38.5	-12.5	75.490196
Lahore	-0.068	24	4,893.67	32.76	0	43	38.1	42.9	36.6	28.7	-14.3	66.744186
Kasur	-0.061	21	3,021.55	42.93	0	58	39.7	37.5	36.4	30.5	-27.5	52.586207
N. sahib	-0.067	22	1160.8	33.64	0	41	33.7	35.6	27.3	21.8	-19.2	53.170732
Sheikhupura	-0.039	13	2,064.90	30.71	0	39	32.5	32.2	28.7	28.4	-10.6	72.820513
<b>Multan</b>	-0.107	33	2,191.63	52.32	0	60	58.3	56.4	45.2	36.2	-23.8	60.333333
Khanewal	-0.028	10	2,079.95	39.86	0	42	41.9	39.3	34.5	35.9	-6.1	85.47619
Lodhran	-0.109	34	1368.8	46.75	0	55	47.4	46.1	30.1	23.1	-31.9	42
Vehari	-0.024	7	1,655.30	56.62	0	57	60.4	53.4	52.8	58.4	1.4	102.45614
<b>Sahiwal</b>	-0.055	17	1,905.38	38.31	0	38	46.2	34.1	35.7	28.4	-9.6	74.736842
Pakpattan	-0.135	35	1,138.77	47.2	0	58	49.4	48.5	31	22.4	-35.6	38.62069
Okara	-0.1	31	2,430.89	40.27	0	48	45.9	37.1	33.7	21.8	-26.2	45.416667
<b>Rawalpindi</b>	-0.025	8	2,463.63	28.43	0.1	43	31.4	31.7	25.2	27.9	-15.1	64.883721
Attock	-0.067	23	905.56	32.98	0	38	36.8	36.6	28.8	28.8	-9.2	75.789474
Chakwal	-0.034	11	709.18	32.16	0.2	49	35.4	34.7	28.4	44.7	-4.3	91.22449
Jhelum	0.005	3	795.46	29.23	0.8	36	31.7	28	29.5	22	-14	61.111111
<b>Sargodha</b>	-0.061	20	2,600.65	37.26	0	46	37	32.4	30.5	44.7	-1.3	97.173913
Bhakkar	-0.086	28	806.75	35.97	0	42	35.9	34.6	22.2	23	-19	54.761905
Khushab	0.099	1	881.35	22.72	0	34	25	33.3	39.3	29.7	-4.3	87.352941
Mianwali	0.03	2	649.94	32.83	0.3	22	21.7	27.7	18.3	50.4	28.4	229.09091

**Ranking of districts according to concentration index of malnourished wasted infants  
MICS-2007**

District	co index	Rank	freq	percent	pvalue	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	-0.03	2	2,647.63	6.05	0.43	6.463	6.3558	5.703	4.5627	5.423	-1.04	83.908402
Bahawalnagar	0.04	25	2,490.16	10.91	0.16	11.76	9.8441	11.25	10.652	8.764	-2.996	74.52381
RY khan	0.032	12	3,849.87	8.85	0.26	8.237	10.476	8.149	6.8249	11.2	2.963	135.97183
<b>DG khan</b>	0.013	17	1,436.97	9.48	0.75	10.42	7.6833	4.746	11.297	15.97	5.55	153.26296
Layyah	0.07	20	1,210.12	10.2	0.15	10.94	11.22	6.056	9.5826	10.69	-0.25	97.714808
M. garh	-0.04	10	2,791.95	8.71	0.19	9.982	6.5916	5.34	8.9317	14	4.018	140.25245
Rajanpur	0.034	1	1,150.45	5	0.46	4.694	4.1061	8.741	3.3173	6.864	2.17	146.22923
<b>Faisalabad</b>	-0.06	18	4,913.23	9.49	0.02	12.15	11.112	8.54	10.116	7.694	-4.456	63.325103
Chiniot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jhang	0.06	11	2,840.33	8.83	0.08	9.624	10.176	4.688	10.338	5.505	-4.119	57.200748
TTsingh	0.02	26	1,502.37	11.06	0.61	12.47	10.321	10.44	10.839	13.18	0.71	105.69366
<b>Gujranwala</b>	-0.015	5	3,035.01	7.37	0.69	4.614	6.2074	7.657	7.7197	7.394	2.78	160.25141
Gujarat	-0.02	19	1,723.67	9.87	0.69	11.96	9.5679	9.597	10.93	8.911	-3.049	74.506689
Hafizabad	0.098	6	757.167	7.56	0.14	4.112	6.5187	12.23	6.971	7.391	3.279	179.74222
Mandi Bahauddin	0.062	16	1,033.42	9.35	0.19	8.085	8.7191	9.053	11.722	6.788	-1.297	83.957947
Narowal	-0.14	4	1,126.90	7.14	0.04	13.74	8.8596	5.926	3.588	13.16	-0.58	95.778748
Sialkot	0.022	15	1,918.53	9.27	0.65	15.24	5.0119	8.849	11.929	8.039	-7.201	52.749344
<b>Lahore</b>	0.007	21	4,891.13	10.35	0.82	10.13	9.2761	16.29	7.2825	10.34	0.21	102.07305
Kasur	0.04	13	3,021.55	8.88	0.31	5.47	11.511	9.536	9.3689	9.816	4.346	179.45155
N. sahib	-0.06	3	1,160.79	7	0.21	7.645	7.2356	7.234	5.0917	8.175	0.53	106.93264
Sheikhupura	0.042	7	2,064.90	7.6	0.26	6.379	7.3523	10.57	6.0843	6.95	0.571	108.95125
<b>Multan</b>	0.098	32	2,190.20	12.78	0	11.02	12.064	12.01	12.259	17.58	6.56	159.52813
Khanewal	0.051	23	2,078.14	10.58	0.12	9.234	9.7932	13.13	11.562	10.65	1.416	115.33463
Lodhran	-0.08	30	1,368.84	12.02	0.04	14.41	9.5965	12.98	11.55	4.363	-10.047	30.277585
Vehari	0.089	24	1,654.77	10.64	0.03	9.785	10.067	10.13	12.352	18.12	8.335	185.1814
<b>Sahiwal</b>	0.079	22	1,905.38	10.47	0.11	7.819	10.18	8.58	18.545	5.074	-2.745	64.893209
Pakpattan	0.052	31	1,138.77	12.47	0.33	10.7	12.554	12.47	14.779	14.86	4.16	138.8785
Okara	0.03	28	2,430.89	11.4	0.41	12.68	8.9947	11.67	11.399	14.13	1.45	111.43533
<b>Rawalpindi</b>	0	27	2,462.68	11.12	0.89	19.49	10.785	10.4	11.902	10.83	-8.66	55.566957
Attock	0.05	35	905.564	28.85	0.04	33.61	34.12	28.24	26.273	26.58	-7.03	79.083606
Chakwal	0.07	34	709.175	13.88	0.15	10.55	13.753	17.82	12.207	11.08	0.53	105.0237
Jhelum	0.01	33	795.464	13.39	0.76	16.4	12.427	13.92	17.385	9.259	-7.141	56.457317
<b>Sargodha</b>	0.018	14	2,591.23	9.1	0.62	10.66	6.8302	11.19	8.8018	7.959	-2.701	74.662289
Bhakkar	0.05	29	806.75	11.62	0.22	15.11	8.5706	10.02	9.2642	13.1	-2.01	86.697551
Khushab	0.05	8	649.935	8.36	0.5	7.558	11.219	8.922	4.3179	6.083	-1.475	80.484255
Mianwali	0.03	9	882.048	8.47	0.6	9.621	8.0333	10.36	5.0655	0	-9.621	0

**Ranking of districts according to concentration index of malnourished under weight infants MICS-2007**

Districts	Rank	co index	p value	Q1	Q2	Q5	Q4	Q5	perc	freq	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	7	-0.04	0	26.86	34.03	22.4	18	18.5	26.2	2,649.31	-8.36	68.875652
Bahawalnagar	19	-0.09	0	39.09	37.39	31.4	29	17.8	35.1	2,490.65	-21.29	45.535943
RY khan	17	-0.08	0	33.36	33.81	25	22	20.2	30.1	3,855.15	-13.16	60.551559
<b>DG khan</b>	14	-0.07	0	32.85	26.14	16.9	28	27.3	28.7	1,436.97	-5.55	83.105023
Layyah	28	-0.1	0	33.7	27.82	27	20	11.2	29.8	1,210.76	-22.5	33.234421
M. garh	8	-0.05	0	42.29	39.91	37.1	33	25.7	40.3	2,792.96	-16.59	60.770868
Rajanpur	11	-0.06	0	20.72	15.27	20.4	12	7.42	18.8	1,150.45	-13.3	35.810811
<b>Faisalabad</b>	30	-0.11	0	42.18	35.76	28.5	26	23.1	29.1	4,918.80	-19.08	54.765292
Chiniot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jhang	18	-0.09	0	40.13	34.23	28.9	32	13.3	34.3	2,840.33	-26.83	33.142288
TTsingh	13	-0.07	0	44.2	36.8	28.1	28	32.5	32.6	1,502.95	-11.7	73.529412
<b>Gujranwala</b>	33	-0.13	0	28.55	23.87	27.3	26	13.3	21.8	3,036.15	-15.25	46.584939
Gujrat	29	-0.11	0	28.24	29.61	27.5	24	16.9	22.9	1,724.20	-11.34	59.844193
Hafizabad	10	-0.05	0.2	21.14	19.95	28.7	14	13	19.8	758.629	-8.14	61.494797
M. Bahauddin	1	0	1	17.2	15.32	18.1	18	11.4	16.5	1,034.29	-5.8	66.27907
Narowal	20	-0.09	0	31.33	29.05	23.5	21	14.6	25	1,128.70	-16.73	46.600702
Sialkot	34	-0.13	0	41.23	33.66	45.1	35	20.2	33	1,918.53	-21.03	48.993451
<b>Lahore</b>	15	-0.07	0	40.03	29.43	38.9	24	22.4	25.3	4,893.01	-17.63	55.958031
Kasur	26	-0.09	0	40.01	30.09	25.6	25	14.1	29.7	3,021.55	-25.91	35.24119
N. sahib	24	-0.09	0	30.04	25.72	21.6	19	13.4	23.3	1,161.31	-16.64	44.60719
Sheikhupura	12	-0.06	0	29.87	21.64	26.6	20	16.4	22.4	2,065.55	-13.47	54.904587
<b>Multan</b>	27	-0.1	0	41.75	39.89	35	24	29.2	35.3	2,190.20	-12.55	69.94012
Khanewal	6	-0.04	0	30.7	33.35	32.7	26	19.1	30.4	2,080.04	-11.6	62.214984
Lodhran	35	-0.14	0	53.72	42.58	39.1	32	15.6	43.2	1,369.71	-38.12	29.039464
Vehari	4	-0.04	0	43.04	44.36	36.7	35	41.4	40.7	1,654.77	-1.64	96.189591
<b>Sahiwal</b>	5	-0.04	0.2	30.59	28.31	25.8	26	17.8	27.2	1,905.38	-12.79	58.188951
Pakpattan	32	-0.13	0	43.44	34.9	37.2	20	25.7	34.8	1,138.77	-17.74	59.162063
Okara	23	-0.09	0	42.1	37.42	32.7	29	21.5	34.9	2,432.03	-20.6	51.068884
<b>Rawalpindi</b>	16	-0.07	0	42.92	28.12	28.3	20	21	23	2,464.12	-21.92	48.928239
Attock	21	-0.09	0	48.27	46.5	40.9	34	31	38.7	905.564	-17.27	64.222084
Chakwal	9	-0.05	0.1	29.3	24.25	27.8	24	20	24.9	709.457	-9.3	68.259386
Jhelum	22	-0.09	0	19.34	26.46	30.2	32	12.7	25.1	796.184	-6.64	65.667011
<b>Sargodha</b>	25	-0.09	0	37.73	31.05	27.1	22	27.1	29.3	2,593.94	-10.63	71.826133
Bhakkar	31	-0.11	0	41.67	28.17	27.7	24	17.3	32.6	806.75	-24.37	41.516679
Khushab	2	-0	1	31.55	31.45	29.5	22	28	29.2	649.321	-3.55	88.748019
Mianwali	3	-0.02	0.6	19.25	19.78	22.5	13	9.65	19.2	883.116	-9.6	50.12987

**Ranking of districts according to concentration index of Four Visits of Antenatal Care  
MICS-2011**

District	co index	Rank	freq	percent	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	0.3	9	854.9164	23	0	10	20	30	40	60	50	600
Bahawalnagar	0.3	8	811.4167	27	0	10	20	30	60	70	60	700
RY khan	0.4	1	1,155.76	18.2	0	10	10	20	40	60	50	600
<b>DG khan</b>	0.4	1	608.3143	19.9	0	10	30	30	40	60	50	600
Layyah	0.3	3	624.0425	22.4	0	10	30	30	50	60	50	600
M. garh	0.3	2	1,405.72	22.9	0	20	30	30	40	50	30	250
Rajanpur	0.4	1	443.5817	9.91	0	10	10	30	40	70	60	700
<b>Faisalabad</b>	0.2	3	1,833.96	54.9	0	20	30	40	60	80	60	400
Chiniot	0.3	2	384.2248	28.2	0	20	30	30	40	60	40	300
Jhang	0.3	2	856.5305	23.4	0	20	20	30	40	80	60	400
<b>Gujranwala</b>	0.3	2	556.1893	48.1	0	10	20	50	70	80	70	800
TTsingh	0.2	3	1,284.26	57.5	0	40	30	40	60	70	30	175
Gujarat	0.2	3	724.5798	57.8	0	30	20	40	60	80	50	266.6667
Hafizabad	0.3	2	295.2238	31	0	10	20	30	50	70	60	700
M. Bahauddin	0.3	2	409.3566	34.1	0	20	30	20	50	80	60	400
Narowal	0.2	3	408.9182	28.7	0	20	10	30	40	50	30	250
Sialkot	0.2	3	858.5187	46.8	0	20	20	40	50	70	50	350
Lahore	0.2	3	2,103.33	69.2	0	20	10	40	60	80	60	400
Kasur	0.3	2	799.732	27.1	0	10	20	30	40	80	70	800
N. sahib	0.2	3	337.9731	41.9	0	20	40	40	60	80	60	400
Sheikhupura	0.2	3	658.0874	54.9	0	50	30	40	60	70	20	140
<b>Multan</b>	0.2	3	1,205.82	52.1	0	30	40	50	60	80	50	266.6667
Khanewal	0.3	2	711.4743	21	0	10	20	20	30	60	50	600
Lodhran	0.1	4	348.6827	35.3	0	30	40	40	50	60	30	200
Vehari	0.2	3	759.5784	31.5	0	20	20	30	50	80	60	400
<b>Sahiwal</b>	0.2	3	575.6147	44.1	0	30	20	50	70	70	40	233.3333
Pakpattan	0.3	2	502.6152	27.1	0	10	20	40	40	80	70	800
Okara	0.2	3	1,045.76	30.6	0	20	30	30	40	70	50	350
<b>Rawalpindi</b>	0.1	4	1,045.52	71.3	0	40	40	50	60	90	50	225
Attock	0.2	3	395.3458	48.1	0	30	30	30	50	70	40	233.3333
Chakwal	0	5	297.056	59.6	1	50	50	60	70	70	20	140
Jhelum	0.1	4	342.8153	60.5	0	20	50	50	70	80	60	400
<b>Sargodha</b>	0.2	3	918.559	43.6	0	20	40	50	60	80	60	400
Bhakkar	0.4	1	360.1588	15.9	0	10	10	30	50	50	40	500
Khushab	0.3	2	282.7863	35.3	0	10	30	40	60	80	70	800
Mianwali	0.3	2	279.3056	25.1	0	10	20	30	50	50	40	500

**Ranking of districts according to concentration index of Skilled Birth attendants MICS-2011**

District	co index	Rank	perc	frequency	P,v	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	11	13	69.21	854.916	0	54	69.2	73.5	90.14	97.83	43.83	181.166667
Bahawalnagar	9.98	16	69.99	811.417	0	58	64.3	79.3	90.06	93.12	35.12	160.551724
RY khan	15.4	6	60.31	1,155.76	0	41	58.9	75.3	79.35	93.91	52.91	229.04878
DG khan	20.1	2	50.2	608.314	0	38	56.7	71.8	77.7	95.35	57.35	250.921053
Layyah	13.6	9	55.45	624.043	0	43	63.8	69.2	81.36	77.73	34.73	180.767442
M. garh	9.8	17	62.1	1,405.72	0	55	66.9	73.4	86.48	85.56	30.56	155.563636
Rajapur	22.2	1	38.2	443.582	0	29	46.7	69.2	83.92	100	71	344.827586
Faisalabad	7.2	27	79.91	1,833.96	0	56	65.3	79.8	82.29	94.29	38.29	168.375
Chiniot	15.9	4	65.37	384.225	0	46	63	76.3	88.04	98.25	52.25	213.586957
Jhang	13.7	8	62.19	856.531	0	48	65.4	76.6	88.02	97.6	49.6	203.333333
TTsingh	9.42	22	79.84	556.189	0	58	57.5	90.1	88.79	98.31	40.31	169.5
Guiranjwala	4.76	32	84.36	1,284.26	0	76	74.1	75.6	80.57	92.93	16.93	122.276316
Gujarat	3.75	33	89.27	724.58	0	73	83.4	84	89.96	96	23	131.506849
Hafizabad	9.71	18	73.8	295.224	0	52	65.5	78	88.99	89.8	37.8	172.692308
M. Bahauddin	11.3	11	70.06	409.357	0	41	64.8	64.4	85.32	96.09	55.09	234.365854
Narawal	5.38	31	83.47	408.918	0	51	75	86.9	91.86	92.16	41.16	180.705882
Sialkot	7.68	25	81.32	858.519	0	43	66.3	73.9	82.1	97.48	54.48	226.697674
Lahore	9.15	23	85.64	2,103.33	0	41	36.3	68.4	79.4	93.26	52.26	227.463415
Kasur	15.6	5	51.19	799.732	0	23	45.9	60.8	61.62	89.12	66.12	387.478261
N. sahib	6.3	28	77.12	337.973	0	61	69.1	81.9	87.76	90.05	29.05	147.622951
Sheikhupura	7.34	26	80.92	658.087	0	55	70.3	73.9	87.91	93.14	38.14	169.345455
Multan	10.5	14	73.29	1,205.82	0	54	61.6	76.7	79.77	90.88	36.88	168.296296
Khanewal	14.8	7	58.08	711.474	0	41	44.5	59.2	83.5	87.47	46.47	213.341463
Lodhran	6.22	29	72.75	348.683	0	65	71.4	84.5	81.86	85.27	20.27	131.184615
Vehari	9.65	19	68.61	759.578	0	55	58.8	78.3	80.99	91.29	36.29	165.981818
Sahiwal	8.69	24	74.97	575.615	0	56	69.6	83.2	83.22	95.12	39.12	169.857143
Pakpattan	10.3	15	69.53	502.615	0	47	69.7	80.3	87.12	90.64	43.64	192.851064
Okara	13.1	10	62.18	1,045.76	0	51	58.5	71	77.79	84.89	33.89	166.45098
Rawalpindi	3.58	34	88.14	1,045.52	0	72	79.5	79.2	83.32	95.12	23.12	132.111111
Attock	5.81	30	79.19	395.346	0	63	74.6	73.3	80.07	92.42	29.42	146.698413
Chakwal	2.46	36	84.99	297.056	0	68	74.9	85.7	95.66	92.64	24.64	136.235294
Jhelum	3.53	35	89.67	342.815	0	68	83	90.5	88.51	98.46	30.46	144.794118
Sargodha	9.51	21	78.43	918.559	0	58	70.3	85.5	90.97	97.16	39.16	167.517241
Bhakkar	18.1	3	50.65	360.159	0	35	52.1	67.1	89.95	72.74	37.74	207.828571
Khushab	9.59	20	74.14	282.786	0	57	69.5	77.2	96.44	94.71	37.71	166.157895
Mianwali	11	12	60.06	279.306	0	44	56.6	57.6	78.74	93.03	49.03	211.431818



**Ranking of districts according to concentration index of antenatal care by doctor  
MICS-2011**

District	Rank	per	freq	ci	pv	Q1	Q2	Q3	Q4	Q5	(Q5-Q1)	Q5/Q1
Bahawalpur	29	63.77	854.91638	0.1	0	49	60	70	90	100	51	204.081633
Bahawalnagar	19	56.4	811.41665	0.1	0	43	50	70	80	90	47	209.302326
RY khan	4	46.3	1,155.76	0.2	0	26	40	60	70	90	64	346.153846
DG khan	2	42.25	608.31432	0.2	0	31	50	60	70	90	59	290.322581
Layyah	13	47.68	624.0425	0.2	0	35	60	50	80	80	45	228.571429
M. garh	25	56.3	1,405.72	0.1	0	49	60	70	90	90	41	183.673469
Rajanpur	3	36.78	443.5817	0.2	0	28	40	70	80	100	72	357.142857
Faisalabad	22	63.55	1,833.96	0.1	0	41	40	60	70	90	49	219.512195
Chiniot	12	58.86	384.22479	0.2	0	38	60	70	80	90	52	236.842105
Jhang	10	48.56	856.53053	0.2	0	38	50	50	80	90	52	236.842105
Gujranwala	14	66.9	556.18927	0.2	0	34	40	70	90	100	66	294.117647
TTsingh	8	78.27	1,284.26	0.2	0	7	30	30	50	80	73	1142.85714
Gujarat	32	1,285.00	724.57975	0.1	0	59	60	70	80	90	31	152.542373
Hafizabad	11	49.84	295.22382	0.2	0	25	40	50	60	80	55	320
M. Bahauddin	7	45.83	409.35656	0.2	0	17	40	30	70	90	73	529.411765
Narowal	21	36.01	408.91824	0.1	0	7	30	30	40	70	63	1000
Sialkot	6	49.87	858.51873	0.2	0	10	30	30	50	80	70	800
Lahore	28	79.41	2,103.33	0.1	0	16	30	60	70	90	74	562.5
Kasur	1	34.13	799.73202	0.3	0	8	30	40	50	80	72	1000
N. sahib	31	49.43	337.97307	0.1	0	34	40	50	60	70	36	205.882353
Sheikhupura	20	63.13	658.08744	0.1	0	29	50	50	70	80	51	275.862069
Multan	15	63.06	1,205.82	0.2	0	40	50	60	70	90	50	225
Khanewal	30	53.47	711.47434	0.1	0	39	40	50	80	80	41	205.128205
Lodhran	26	56.25	348.6827	0.1	0	47	50	80	70	80	33	170.212766
Vehari	17	56.32	759.57836	0.2	0	41	40	60	80	90	49	219.512195
Sahiwal	24	64.8	575.61469	0.1	0	41	60	70	80	90	49	219.512195
Pakpattan	18	50.7	502.61524	0.1	0	40	40	50	70	90	50	225
Okara	9	40.16	1,045.76	0.2	0	35	30	50	50	80	45	228.571429
Rawalpindi	34	86.04	1,045.52	0.1	0	61	70	70	80	90	29	147.540984
Attock	33	75.11	395.34582	0.1	0	63	70	70	80	90	27	142.857143
Chakwal	35	78.35	297.05605	0.1	0	48	60	80	90	90	42	187.5
Jhelum	36	86.57	342.81533	0	0	68	80	90	90	100	32	147.058824
Sargodha	23	69.17	918.55902	0.1	0	47	60	80	80	90	43	191.489362
Bhakkar	5	44.28	360.15885	0.2	0	26	50	60	90	70	44	269.230769
Khushab	27	67.42	282.7863	0.1	0	50	60	70	100	90	40	180
Mianwali	16	50.7	279.30564	0.2	0	38	40	50	80	90	52	236.842105

**Ranking of districts according to concentration index of Antenatal Care by Lady Health Visitor MICS-2011**

Districts	ci	Rank	per	freq	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	-31	<b>28</b>	<b>1.2</b>	854.91638	0.05	12	18.8	19.4	0	0	-12	0
Bahawalnagar	-1.7	11	1.3	811.41665	0.92	0	33.8	18.6	2.83	0	0	∞
RY khan	-20	21	2.2	1,155.76	0.09	22	34.9	24.1	7.96	0	-22	0
<b>DG khan</b>	19.3	<b>4</b>	<b>1.3</b>	608.31432	0.04	5	12.3	72.8	0	24	19	480
Layyah	14.1	5	4.6	624.0425	0.1	38	40.2	66.1	72.73	93	55	244.7368
M. garh	-11	17	2.2	1,405.72	0.13	12	40.2	44.9	6.48	15	3	125
Rajanpur	3.13	9	9.9	443.5817	0.71	110	69	86.1	18.11	0	-110	0
<b>Faisalabad</b>	-37	<b>29</b>	<b>2.5</b>	1,833.96	0.03	0	7.7	38.4	47.66	6	6	∞
Chiniot	-23	23	2.6	384.22479	0.05	36	42.3	18	0	0	-36	0
Jhang	12.6	6	4.4	856.53053	0.7	77	17	15.7	2.67	0	-77	0
TTsingh	-22	22	3.8	1,284.26	0	20	42.3	64.7	61.38	9	-11	45
Gujrat	-0.1	10	3.5	724.57975	1	200	46.7	35	39.09	11	-189	5.5
Hafizabad	-30	26	1.5	295.22382	0.02	21	0	20.3	29.99	0	-21	0
M. Bahauddin	-43	32	5	409.35656	0.08	130	68.5	42	27.67	14	-116	10.76923
Narowal	11.8	7	1	408.91824	0.57	71	9.2	4.9	6.95	0	-71	0
Kasur	-14	18	3.6	799.73202	0.21	32	40.9	46.3	23.88	0	-32	0
N. sahib	29	3	1.1	337.97307	0.1	0	14.9	0	20.77	29	29	∞
<b>Multan</b>	-18	20	8.4	1,205.82	0	87	112	98.8	89.73	90	3	103.4483
Khanewal	-5.1	12	6	711.47434	0.52	56	54	92.7	37.64	32	-24	57.14286
Lodhran	-5.9	13	2.1	348.6827	0.71	14	30.1	28.1	8.67	20	6	142.8571
Vehari	-10	16	3.8	759.57836	0.39	16	70.9	22.3	36.36	14	-2	87.5
<b>Sahiwal</b>	11.4	8	3.2	575.61469	0.44	11	18.2	53.6	65.4	13	2	118.1818
Pakpattan	-28	25	2.21	502.61524	0.16	35	3.4	39.4	19.5	0	-35	0
Okara	36.7	2	1	1,045.76	0.03	4	9.1	3.4	9.18	79	75	1975
Attock	-40	30	1.7	395.34582	0.03	100	22.3	21	5.34	3	-97	3
Chakwal	40.9	1	1.9	297.05605	0.03	0	0	34.6	1.97	41	41	∞
Jhelum	-25	24	1.6	342.81533	0.19	42	9	23.9	22.86	0	-42	0
<b>Sargodha</b>	-31	27	2.5	918.55902	0	37	52.8	14.2	2.43	3	-34	8.108108
Bhakkar	-9.3	15	1.2	360.15885	0.13	130	148	75	56	66	-64	50.76923
Khushab	-15	19	6.5	282.7863	0.16	85	77.8	69.2	0	53	-32	62.35294
Mianwali	-6.7	14	1.7	279.30564	0.35	240	163	173	169.6	51	-189	21.25

**Ranking of districts according to concentration index of Antenatal Care by Midwife  
MICS-2011**

Districts	Rank	ci	pv	perc	freq	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	Q5/Q1
<b>Bahawalpur</b>	3	0.1	0.4	4.3	854.916	0	10	10	0	0	0	∞
Bahawalnagar	11	-0.1	0	13.6	811.417	20	10	10	10	0	-20	0
RY khan	20	-0.2	0.2	13.8	1,155.76	20	20	10	10	0	-20	0
<b>DG khan</b>	13	-0.1	0	7	608.314	10	10	10	10	0	-10	0
Layyah	22	-0.2	0	7.2	624.043	10	10	10	0	0	-10	0
M. garh	30	-0.3	0	5.5	1,405.72	10	10	0	0	0	-10	0
Rajanpur	16	-0.1	0.4	0.9	443.582	0	0	0	0	0	0	∞
<b>Faisalabad</b>	23	-0.2	0	15.6	1,833.96	20	20	20	10	10	-10	50
Chiniot	10	-0.1	0.2	6.5	384.225	10	10	10	0	0	-10	0
Jhang	9	-0.1	0.1	12.8	856.531	10	20	20	10	0	-10	0
<b>Gujranwala</b>	33	-0.4	0	12.5	556.189	20	20	20	0	0	-20	0
TTsingh	31	-0.3	0	24.5	1,284.26	70	40	40	30	10	-60	14.28571
Gujrat	32	-0.3	0	9.1	724.58	0	20	10	10	0	0	∞
Hafizabad	12	-0.1	0	23.3	295.224	30	30	20	20	10	-20	33.33333
M. Bahauddin	25	-0.2	0	23.3	409.357	20	30	30	20	0	-20	0
Narowal	4	-0	0.5	44.6	408.918	40	40	50	50	20	-20	50
Sialkot	19	-0.2	0	27.7	858.519	30	30	40	30	10	-20	33.33333
Lahore	29	-0.3	0	5.8	2,103.33	30	0	10	10	0	-30	0
Kasur	7	-0.1	0.2	15.7	799.732	10	20	20	10	10	0	100
N. sahib	6	-0	0.3	25.2	337.973	20	30	30	20	20	0	100
Sheikhupura	15	-0.1	0	15.8	658.087	20	10	20	10	10	-10	50
<b>Multan</b>	27	-0.2	0	9.5	1,205.82	10	10	10	10	0	-10	0
Khanewal	1	0.4	0	3.8	711.474	0	0	0	10	10	10	∞
Lodhran	28	-0.2	0	15.5	348.683	20	20	10	10	0	-20	0
Vehari	26	-0.2	0	11.4	759.578	10	10	20	0	0	-10	0
<b>Sahiwal</b>	24	-0.2	0	10.1	575.615	20	10	10	10	0	-20	0
Pakpattan	5	-0	0.5	18.7	502.615	10	30	30	20	0	-10	0
Okara	18	-0.2	0	21.4	1,045.76	20	30	20	30	0	-20	0
<b>Rawalpindi</b>	35	-0.5	0	1.5	1,045.52	10	0	0	0	0	-10	0
Attock	34	-0.4	0	3.6	395.346	0	10	0	0	0	0	∞
Chakwal	36	-0.5	0	5.3	297.056	20	10	0	0	0	-20	0
Jhelum	2	0.1	0.5	2.7	342.815	0	0	0	0	0	0	∞
<b>Sargodha</b>	14	-0.1	0	8.6	918.559	10	10	10	10	0	-10	0
Bhakkar	17	-0.2	0.1	6.1	360.159	10	0	10	0	0	-10	0
Khushab	21	-0.2	0.1	5.1	282.786	10	10	10	0	0	-10	0
Mianwali	8	-0.1	0.4	8.6	279.306	10	10	10	0	0	-10	0

## Ranking of districts according to concentration index of BCG Vaccination MICS-2011

Districts	Rank	co index	freq	percentage	P, value	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	35	-0	404	33.9	0	17.9	16.5	16.6	14.6	14.3	-3.6	79.888268
Bahawalnagar	15	-0	388	40.7	0	16.4	16.4	14.9	15.8	14.9	-1.5	90.853659
RY khan	12	-0	546	31.1	0	17.6	16.6	16.1	16.7	16.5	-1.1	93.75
<b>DG khan</b>	23	-0	281	12.5	0	19.2	18.8	18.5	16.3	17.5	-1.7	91.145833
Layyah	17	-0	285	50.4	0	15	15.8	14.1	14.5	12.7	-2.3	84.666667
M. garh	22	-0	639	15.6	0	18.9	18.5	17.8	15.9	15.8	-3.1	83.597884
Rajampur	25	-0	224	6.35	0	19.8	19.1	19	15.5	19	-0.8	95.959596
<b>Faisalabad</b>	32	-0	909	39.4	0	18.2	17.2	16.3	15.9	14.9	-3.3	81.868132
Chiniot	34	-0	182	25	0	18.8	17.2	16.7	16.4	15.5	-3.3	82.446809
Jhang	33	-0	409	18.8	0	18.3	18.5	19.1	15.9	14.7	-3.6	80.327869
TT Singh	28	-0	271	47.6	0	18.3	15.2	15.7	13.8	15	-3.3	81.967213
<b>Gujranwala</b>	4	-0	628	43.7	0	13.2	14	16	15.8	15.7	2.5	118.93939
Gujarat	11	-0	351	68.8	0	14.6	14.5	13.2	12.7	13.2	-1.4	90.410959
Hafizabad	36	-0.1	132	37.6	0	18.9	16.6	16.2	14.9	13.4	-5.5	70.899471
M. Bahauddin	6	-0	175	45.9	1	15.5	16.7	15.3	14.1	16.6	1.1	107.09677
Narowal	19	-0	193	38.4	0	16.8	17.2	16.2	15.3	16.1	-0.7	95.833333
Sialkot	2	-0	411	47.1	0	16.7	14.6	14.5	15.3	16.1	-0.6	96.407186
<b>Lahore</b>	14	-0	1060	27.8	0	20	18.6	17.7	17.5	16.9	-3.1	84.5
Kasur	9	-0	333	71.9	0	18.2	17	17.2	16	18.2	0	100
N. sahib	27	-0	164	45.6	0	16	16	15.3	15.1	14.3	-1.7	89.375
Sheikhupura	18	-0	326	43.5	0	15.8	16.9	15.5	15.6	15	-0.8	94.936709
<b>Multan</b>	21	-0	555	37.5	0	17.9	16.2	15.7	16.2	15.6	-2.3	87.150838
Khanewal	30	-0	369	13.8	0	19.5	19.2	18.4	18	16.4	-3.1	84.102564
Lodhran	29	-0	161	13.3	0	18.6	19.5	17.9	17.4	17.3	-1.3	93.010753
Vehari	31	-0	355	24	0	18.4	18.5	16.7	16.9	16.7	-1.7	90.76087
<b>Sahiwal</b>	24	-0	284	22.3	0	19.1	18.1	18.1	15.7	17.4	-1.7	91.099476
Pakpattan	7	-0	221	20.5	1	18.7	17.6	18.3	17.4	17.5	-1.2	93.582888
Okara	20	-0	465	29.9	0	19.1	14	17.8	17	17.7	-1.4	92.670157
<b>Rawalpindi</b>	16	0	487	45.9	0	16	16.2	16	14.9	15.3	-0.7	95.625
Attock	5	0	191	57.4	1	14.7	14.2	14.9	13.8	14.2	-0.5	96.598639
Chakwal	1	-0	149	37.9	0	16.8	16.4	16.2	15.3	17.7	0.9	105.35714
Jhelum	26	-0	151	58.3	0	19	16.2	13.6	12.9	14	-5	73.684211
<b>Sargodha</b>	10	-0	439	46	0	16.2	15.7	14.6	15.3	15.5	-0.7	95.679012
Bhakkar	9	0	175	33.3	0	17.4	15.8	16.2	17.7	16.2	-1.2	93.103448
Khushab	3	-0	137	49.4	0	13.4	16.2	15.2	13.9	16.7	3.3	124.62687
Mianwali	13	-0	137	44.3	0	16.5	15.9	14.1	15.5	15	-1.5	90.909091

**Ranking of districts according to concentration index of Birth Weight of Infants MICS-2011**

Districts	Rank	co index	percentage	freq	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
<b>Bahawalpur</b>	29	-13.8	24.06	852.55724	28.45	29.47	23	15.95	4.86	-23.59	17.082601
Bahawalnagar	22	-8.4	23.87	808.46567	26.03	26.68	21.1	18.93	17.2	-8.83	66.077603
RY khan	23	-8.9	24.34	1,148.20	28.45	26.52	16.8	22.26	16.6	-11.85	58.347979
<b>DG khan</b>	26	-11.5	23.67	605.81561	26.69	19.17	15.4	21.23	24	-2.69	89.921319
Layyah	10	-4.9	25.06	605.81561	26.69	19.17	15.4	21.23	24	-2.69	89.921319
M. garh	15	-6.17	29.13	1,394.70	28.58	33.69	27.4	22.88	13.1	-15.48	45.836249
Rajanpur	1	12	16.66	401.83989	13.58	19.17	31.5	23.81	44.5	30.92	327.68778
<b>Faisalabad</b>	4	3.06	18.51	1,811.97	19.82	31.01	15.4	19.16	12.9	-6.92	65.085772
Chiniot	14	-5.9	6	619.07859	23.14	28.59	31.6	19.57	11	-12.14	47.536733
Jhang	6	-4.01	11.11	852.55	9.709	16.89	7.62	13.86	7.85	-1.859	80.852817
TTsingh	28	-13.4	15.08	556.18927	24.15	20.94	13.5	11.16	10.4	-13.75	43.064182
<b>Gujranwala</b>	25	-9.69	11	1,245.80	29.03	20.88	9.06	10.14	9.56	-19.47	32.93145
Gujarat	16	-6.24	10.53	712.46964	4.977	18.32	9.38	10.4	12.8	7.823	257.18304
Hafizabad	17	-6.47	18.36	286.29	24.84	14.66	20.5	18.43	1.76	-23.08	7.0853462
M. Bahauddin	35	-29.1	12.36	399.87277	27.61	18.77	10.2	7.676	5.31	-22.3	19.232162
Narowal	30	-16.2	15.54	403.24	2.866	9.761	4.76	3.89	10.8	7.934	376.83182
Sialkot	27	-13.3	12.64	755.90911	17.13	23.06	10.8	11.13	12	-5.13	70.052539
Lahore	7	-4.03	13.74	1,976.17	0	21.29	13.5	17.18	12	12	∞
Kasur	34	-18.8	17.12	795.15047	23.91	20.63	16.9	4.28	10.8	-13.11	45.169385
N. sahib	18	-6.91	12.33	312.18	20.39	13.95	53.3	13.45	13	-7.39	63.756744
Sheikhupura	8	-4.42	13.72	610.97756	8.562	16.53	17.8	9.783	13.9	5.338	162.34525
<b>Multan</b>	11	-5.62	18.17	1,182.52	13.82	24.38	23.4	16.6	13.6	-0.22	98.408104
Khanewal	5	-1.11	10.53	401.83989	13.58	19.17	31.5	23.81	44.5	30.92	327.68778
Lodhran	2	7.58	13.42	343.3	11.76	14	15.8	10.75	18.8	7.04	159.86395
Vehari	21	-7.76	18.94	748.47899	14.3	24.96	20.5	15.51	5.76	-8.54	40.27972
<b>Sahiwal</b>	19	-7.68	20.17	572.17	14.46	27.22	21.5	16.18	16	1.54	110.65007
Pakpattan	36	-67.6	21.13	498.72941	25.02	19.78	20.2	21.44	11.1	-13.92	44.364508
Okara	33	-18.1	10.55	983.99	10.78	12.98	10.5	6.764	5.2	-5.58	48.237477
<b>Rawalpindi</b>	13	-5.68	14.61	1,025.07	27.21	16.74	13.8	16.59	13	-14.21	47.776553
Attock	9	-4.8	23.33	387.92	9.398	27.41	28.5	20.44	22.1	12.702	235.15642
Chakwal	32	-17.7	25.41	293.51	38.15	31.67	25.8	22.63	9.02	-29.13	23.643512
Jhelum	31	-17	20.16	340.69	48.5	27.84	19.4	21.1	9.83	-38.67	20.268041
<b>Sargodha</b>	12	-5.64	19.36	917.02	18.97	21.33	18.6	20.33	15.5	-3.47	81.70796
Bhakkar	24	-9.52	37.56	357.54	44.29	38.61	23.7	26.37	41.9	-2.39	94.603748
Khushab	20	-7.75	32.68	269.75	38.73	34.84	26.2	39.69	16.8	-21.93	43.377227
Mianwali	3	5.36	29.3	239.62	46.71	28.95	26.6	23.66	13.7	-33.01	29.329908

## Ranking of districts according to concentration index of malnourished stunted infants

### MICS-2011

Districts	co index	Rank	percentage	frequency	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	-0.041	11	15	2,087.35	0	18	16	12	10.7	12	-6	66.666667
Bahawalnagar	-0.015	7	17	1,851.46	0	19	17	15	15.5	11	-8	57.894737
RY khan	-0.04	10	20	2,799.60	0	22	20	17	15.7	18	-4	81.818182
DG khan	-0.074	20	19	1,528.30	0	23	14	16	17.9	9.9	-13.1	43.043478
Layyah	-0.099	27	14	1,478.55	0.5	14	16	14	12.1	13	-1	92.857143
M. garh	-0.2	36	17	3,320.96	0.3	18	16	12	16.7	14	-4	77.777778
Rajanpur	-0.06	17	14	1,262.37	0.2	13	17	16	17	11	-2	84.615385
Faisalabad	0.008	5	14	4,593.34	0	21	17	13	14.1	13	-8	61.904762
Chiniot	-0.006	6	15	916.561	0	19	16	11	8.77	9.4	-9.6	49.473684
Jhang	-0.092	23	14	2,097.98	0	9	22	13	18.7	18	9	200
TTsingh	-0.101	29	16	1,410.35	0	21	18	14	17	11	-10	52.380952
Gujranwala	-0.046	13	13	3,262.56	0.1	22	10	17	12.8	12	-10	54.545455
Gujarat	-0.098	26	9	1,663.28	0	20	10	14	7.57	5.6	-14.4	28
Hafizabad	-0.08	21	15	676.94	0	16	18	16	10.5	12	-4	75
M. Bahauddin	-0.102	30	9.6	1,184.87	0.2	18	11	6.9	9.79	9.8	-8.2	54.444444
Narowal	0.076	1	12	1,070.17	0.9	9.9	11	12	11.1	11	1.1	111.111111
Sialkot	0.041	3	12	2,156.03	0.6	19	11	13	11.2	11	-8	57.894737
Lahore	0.043	2	14	4,905.52	0	6.5	14	20	17.8	12	5.5	184.61538
Kasur	-0.059	16	21	1,896.12	0	23	25	22	14.2	17	-6	73.913043
N. sahib	-0.101	28	14	790.899	0.7	17	13	14	15.7	13	-4	76.470588
Sheikhupura	-0.025	8	14	1,538.10	0.1	13	14	16	13	11	-2	84.615385
Multan	-0.063	18	20	2,772.06	0	24	23	19	21.2	12	-12	50
Khanewal	-0.155	35	22	1,716.84	0.1	23	22	23	19	17	-6	73.913043
Lodhran	-0.094	25	19	768.944	0	21	21	18	9.5	14	-7	66.666667
Vehari	-0.042	12	23	1,775.68	0	29	24	22	18.3	21	-8	72.413793
Sahiwal	-0.152	34	19	1,296.63	0.2	21	22	14	18	15	-6	71.428571
Pakpattan	-0.084	22	20	1,162.82	0.8	20	19	20	16.9	27	7	135
Okara	-0.115	32	22	2,345.93	0	28	19	21	19.7	16	-12	57.142857
Rawalpindi	-0.093	24	13	2,314.27	0.2	13	12	13	13.6	13	0	100
Attock	-0.064	19	13	826.458	0.2	12	13	13	14.3	10	-2	83.333333
Chakwal	-0.053	15	11	667.318	0	22	17	8.5	8.73	6.5	-15.5	29.545455
Jhelum	-0.118	33	13	732.383	0	18	17	13	12.7	8.7	-9.3	48.333333
Sargodha	0.016	4	12	2,169.13	0	18	12	10	7.5	11	-7	61.111111
Bhakkar	-0.028	9	26	868.203	0	33	21	23	17.7	19	-14	57.575758
Khushab	-0.113	31	13	700.432	0.1	16	16	11	8.88	11	-5	68.75
Mianwali	-0.051	14	21	641.96	0.9	23	19	23	22.5	17	-6	73.913043

## Ranking of districts according to concentration index of malnourished wasted infants

### MICS-2011

Districts	Rank	co index	percentage	P, value	Q1	Q2	Q5	Q4	Q5	freq	(Q5-Q1)	(Q5:Q1)
Bahawalpur	21	-5.9476	14.9	0.02	17.6	16.2	11.8	10.72	11.73	2,087.35	-5.87	66.647727
Bahawalnagar	24	-6.2833	16.7	0.03	18.7	16.9	14.8	15.49	10.65	1,851.46	-8.05	56.951872
RY khan	23	-5.9893	19.7	0	22	20	16.5	15.7	18.03	2,799.60	-3.97	81.954545
DG khan	28	-11.776	19.2	0	22.5	14.4	15.9	17.88	9.869	1,528.30	-12.631	43.862222
Layyah	16	-2.4791	14.3	0.47	13.1	16.3	14.2	12.12	13.18	1,478.55	0.08	100.61069
M. garh	25	-2.849	16.9	0.27	18.1	15.8	12.1	16.65	14.48	3,320.96	-3.62	80
Rajanpur	14	4.27416	14	0.17	13.1	17.4	16.3	16.98	11.5	1,262.37	-1.6	87.78626
Faisalabad	18	-8.0057	14.5	0	20.7	16.5	12.6	14.08	12.81	4,593.34	-7.89	61.884058
Chiniot	19	-15.199	14.8	0	19.5	16.2	10.8	8.772	9.14	916.5607	-10.36	46.871795
Jhang	13	-7.62798	13.6	0.01	8.95	22	12.6	18.65	17.72	2,097.98	8.77	197.98883
TTsingh	22	-9.4436	16.1	0.01	21.1	17.8	13.6	17	11.14	1,410.35	-9.96	52.796209
Gujranwala	9	-4.2109	13.1	0.07	19.8	10.1	13.8	7.573	5.56	1,663.28	-14.24	28.080808
Gujarat	1	-19.979	9.03	0	19.8	10.1	13.8	7.573	5.56	1,663.28	-14.24	28.080808
Hafizabad	20	-11.346	14.8	0.02	15.8	18.1	15.7	10.47	11.92	676.9411	-3.88	75.443038
Mandi Bahaiddin	2	-6.3778	9.56	0.16	17.7	10.9	6.94	9.788	10.28	1,184.87	-7.42	58.079096
Narowal	4	-0.5842	11.5	0.87	9.9	11	12.4	11.14	0	1,070.17	-9.9	0
Sialkot	6	-3.1394	12	0.64	18.5	11.4	13.4	11.16	11.27	2,156.03	-7.23	60.918919
Lahore	15	-8.4415	14.2	0	6.5	14.2	19.9	17.75	12.16	4,905.52	5.66	187.07692
Kasur	32	-10.226	21.4	0	22.8	25.1	21.7	14.15	17.4	1,896.12	-5.4	76.315789
N. sahib	17	1.56063	14.4	0.66	16.5	13.2	13.6	15.67	12.56	790.8993	-3.94	76.121212
Sheikhupura	12	-5.0949	13.6	0.11	12.7	13.9	16.2	12.99	11.48	2,772.06	-1.22	90.393701
Multan	30	-9.8872	19.9	0	23.8	23.1	19.5	21.25	11.86	1,538.10	-11.94	49.831933
Khanewal	33	-4.0109	21.5	0.09	23.3	21.8	22.9	19	17.13	1,716.84	-6.17	73.519313
Lodhran	27	-10.123	18.8	0.02	20.7	20.8	18.3	9.503	13.61	768.9444	-7.09	65.748792
Vehari	35	-9.2647	23.4	0	28.9	23.9	22	18.33	20.75	1,775.68	-8.15	71.799308
Sahiwal	26	-4.5661	18.8	0.2	21	22.2	14.4	18.33	20.75	1,296.63	-0.25	98.809524
Pakpattan	29	0.83571	19.7	0.8	20	18.9	20.2	16.9	27.45	1,162.82	7.45	137.25
Okara	34	-7.4077	22.3	0.01	27.8	18.6	20.8	19.72	15.6	2,345.93	-12.2	56.115108
Rawalpindi	10	-4.081	13.1	0.2	13.2	11.9	12.9	13.51	13.01	2,314.27	-0.19	98.560606
Attock	7	-5.3463	12.5	0.2	11.7	12.8	12.5	14.32	9.995	826.4584	-1.705	85.42735
Chakwal	3	-15.538	11.2	0	22.5	17.5	4.49	8.73	6.483	667.3177	-16.017	28.813333
Jhelum	8	-10.121	12.7	0.02	17.8	11.7	10.2	7.499	11.32	732.3829	-6.48	63.595506
Sargodha	5	-11.55	11.7	0	17.8	11.7	10.2	7.499	18.97	2,169.13	1.17	106.57303
Bhakkar	36	-9.8459	26	0	32.6	20.7	23.3	17.7	11.32	868.2032	-21.28	34.723926
Khushab	11	-9.2089	13.4	0.06	15.7	15.7	11.2	8.882	18.97	700.4323	3.27	120.82803
Mianwali	31	-0.5977	20.8	0.88	22.6	19.1	22.7	22.49	16.67	641.9597	-5.93	73.761062

**Ranking of districts according to concentration index of malnourished under weight infants MICS-2011**

Districts	Rank	co index	Pvalue	percent	freq	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	27	-14.7	0	34.3	2,091.92	36.51	26.16	22.2	24.9	19.93	-16.58	54.587784
Bahawalnagar	16	-12.1	0	38	1,814.88	48.05	38.5	30.9	27.6	16.1	-31.95	33.506764
RY khan	12	-11.5	0	42.7	2,792.41	49.22	43.9	37.8	35.5	24.7	-24.52	50.182852
DG khan	21	-13.2	0	53.3	1,500.32	59.56	50.9	45.9	39.5	23.7	-35.86	39.791807
Layyah	18	-12.3	0	33.9	1,483.14	59.56	50.9	45.9	39.5	23.7	-35.86	39.791807
M. garh	14	-11.9	0	44.5	3,049.36	49.93	38.1	39.8	27.5	20.9	-29.03	41.858602
Rajanpur	1	-4.08	0.02	35.9	1,154.00	34.05	51.13	39.9	18.4	9.773	-24.277	28.701909
Faisalabad	25	-14.6	0	30.3	4,618.37	41.12	40.91	30.5	28.6	21.59	-19.53	52.504864
Chiniot	10	-11.2	0	38	918.1766	44.76	39.8	37.3	32	20.8	-23.96	46.470063
Jhang	6	-9.55	0	36.8	2,111.19	39.84	41.52	28.3	33.2	12.52	-27.32	31.425703
TT Singh	19	-12.4	0	31.6	1,414.55	45.11	41.92	35.4	32.1	22.74	-22.37	50.410109
Gujranwala	13	-11.9	0	23.9	3,283.80	54.57	33.85	23.5	17.2	14.02	-40.55	25.691772
Gujarat	36	-21	0	21.4	1,684.85	38.35	34.1	28	20.2	10.9	-27.45	28.422425
Hafizabad	26	-14.6	0	28.5	649.957	34.07	39.5	21.5	25.3	15.9	-18.17	46.668623
M. Bahauddin	30	-16	0	25.4	1,184.41	33.79	23.7	30.6	17.3	12.7	-21.09	37.585084
Narowal	4	-8.07	0	21.6	1,078.63	35.4	29.33	31.6	22.4	16.25	-19.15	45.903955
Sialkot	31	-16.4	0	23.7	2,157.57	44.17	34.5	28.9	23.7	12.7	-31.47	28.752547
Lahore	24	-14.2	0	26.2	4,704.04	34.31	27.15	45.1	34.8	20.49	-13.82	59.720198
Kasur	15	-12	0	35.3	1,792.87	38	39.9	38.1	24.1	21.3	-16.7	56.052632
N. sahib	17	-12.2	0	32.8	814.8977	49.42	37.92	26.5	24.5	24.56	-24.86	49.696479
Sheikhupura	9	-11.2	0	31.2	1,557.42	41.81	37.57	36.1	28.6	21.54	-20.27	51.518775
Multan	29	-15.7	0	38.4	2,796.17	52.14	46.86	36.2	35.3	21.7	-30.44	41.618719
Khanewal	3	-6.17	0	33.8	1,759.20	40.66	35.46	32.7	32.3	19.7	-20.96	48.450566
Lodhran	33	-18.3	0	42.4	750.8303	53.1	45.83	37.6	16.6	18.81	-34.29	35.423729
Vehari	20	-13	0	41.7	1,767.26	53.66	47.99	36.5	28.8	24.85	-28.81	46.310101
Sahiwal	22	-13.6	0	31.9	1,322.64	41.41	37.46	22	29.1	20.28	-21.13	48.973678
Pakpattan	5	-9.15	0	38.6	1,145.77	43.13	40.7	38.3	28.5	18	-25.13	41.734292
Okara	11	-11.3	0	39.7	2,342.73	45.11	41.9	35.4	32.1	22.7	-22.41	50.321436
Rawalpindi	2	-5.9	0.01	22.4	2,285.13	36.51	26.2	22.2	24.9	19.9	-16.61	54.505615
Attock	23	-14.1	0	25.4	829.16	44.76	39.8	37.3	32	20.75	-24.01	46.358356
Chakwal	35	-20.1	0	25.6	667.4316	54.57	33.8	23.5	18.5	16.73	-37.84	30.657871
Jhelum	28	-14.7	0	22.7	738.7181	39.41	33.7	23.5	18.5	16.7	-22.71	42.375032
Sargodha	34	-19.9	0	28.7	2,185.10	44.38	31.82	28.3	16.5	11.63	-32.75	26.205498
Bhakkar	8	-10.3	0	38.1	869.4386	45.96	34.73	33.5	21	16.18	-29.78	35.204526
Khushab	32	-17.6	0	30.9	710.055	42.23	36.94	26.4	15.4	8.353	-33.877	19.779777
Mianwali	7	-9.57	0	35.4	657.6558	46.76	30.43	41.6	29.3	17.46	-29.3	37.339607



**Ranking of districts according to concentration index of Four Visits of Antenatal Care  
MICS-2014**

District	Rank	Per	Co index	freq	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	4	33	39	342.1	0	10	20	40	60	80	70	800
Bahawalnagar	5	28	38	253.9	0	10	20	50	60	90	80	900
RY khan	3	22	40	472.2	0	10	20	20	40	70	60	700
DG khan	1	23	45	361.3	0	10	30	50	60	70	60	700
Layyah	16	22	20	182.3	0	20	20	20	70	20	0	100
M. garh	7	29	37	414.2	0	20	40	40	80	80	60	400
Rajanpur	2	19	44	223.2	0	10	40	30	60	70	60	700
Faisalabad	29	66	20	691.8	0	30	50	50	80	90	60	300
Chiniot	18	46	20	122.6	0	30	30	60	70	90	60	300
Jhang	24	42	20	237.2	0	30	40	50	60	90	60	300
Gujranwala	17	46	20	185.5	0	20	30	40	70	80	60	400
TT Singh	32	58	10	481.4	0	30	40	50	60	70	40	233.33333
Gujarat	36	74	10	258	0	60	50	60	80	80	20	133.33333
Hafizabad	27	50	20	128.9	0	30	30	60	60	90	60	300
M. Bahauddin	26	46	20	172.6	0	20	30	60	50	80	60	400
Narowal	19	42	20	200.4	0	30	30	50	50	70	40	233.33333
Sialkot	23	57	20	336.4	0	0	30	30	70	80	80	∞
Lahore	30	73	20	988	0	20	20	50	60	90	70	450
Kasur	13	37	30	376	0	20	20	40	60	70	50	350
N. sahib	21	54	20	181.5	0	20	30	50	70	90	70	450
Sheikhupura	26	56	20	368.7	0	20	40	40	60	80	60	400
Multan	28	55	20	464.8	0	30	50	60	70	80	50	266.66667
Khanewal	14	37	20	289.4	0	20	30	40	60	80	60	400
Lodhran	9	32	35	176.3	0	20	20	40	50	80	60	400
Vehari	20	43	20	231.9	0	20	30	50	60	80	60	400
Sahiwal	6	44	38	261.3	0	20	20	50	70	100	80	500
Pakpattan	15	40	20	221.5	0	30	30	50	80	90	60	300
Okara	11	40	30	344.2	0	20	30	40	50	90	70	450
Rawalpindi	36	73	10	496.3	0	60	50	70	70	80	20	133.33333
Attock	31	59	10	168.2	0	20	50	60	70	80	60	400
Chakwal	35	74	10	119.9	0	50	50	70	80	90	40	180
Jhelum	32	72	10	97.19	0	50	40	70	80	90	40	180
Sargodha	12	44	30	319.3	0	10	40	40	70	80	70	800
Bhakkar	10	29	30	173.7	0	20	30	40	70	100	80	500
Khushab	22	39	20	127.3	0	20	40	40	60	100	80	500
Mianwali	8	38	36	183.8	0	20	30	60	80	70	50	350

**Ranking of districts according to concentration index of Skilled Birth attendants  
Antenatal Care-2014**

District	Rank	co index	perc	freq	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	3	14.18	66.1	342.08	0	49	62.1	72.1	86.5	100	51.02034	2.04
Bahawalnagar	6	12.39	64.5	253.93	0	50.6	64.5	76.5	97.8	100	49.42709	1.98
RY khan	1	18.94	53.6	472.25	0	37.8	51.3	61.6	84.3	86.9	49.07247	2.3
DG khan	2	14.25	57	361.33	0	46.8	62	73.3	74.4	92.1	45.2474	1.97
Layyah	13	8.442	69.2	182.31	0	57.9	77.4	82.8	92.5	65.8	7.90548	1.14
M. garh	4	13.04	66.2	414.2	0	53.8	75.3	85.9	100	97.1	43.36407	1.81
Rajanpur	9	9.223	57.9	223.2	0	51.1	65.1	71	90.2	85.3	34.22021	1.67
Faisalabad	24	6.33	90.1	691.76	0	54.6	83.5	87.2	97.6	100	45.42696	1.83
Chiniot	31	4.978	90.1	122.62	0	75.5	94.6	94.5	94.1	100	24.49778	1.32
Jhang	7	11.84	68.6	237.21	0	47.7	76.2	85.9	75.1	100	52.33092	2.1
TTsingh	12	8.497	83.5	185.48	0	55.5	71.7	90.8	98	96.7	41.24121	1.74
Gujranwala	14	8.19	76.7	481.39	0	44.8	56.7	68.8	81	88.9	44.08526	1.98
Gujarat	35	1.702	91.1	257.98	0.08	77.6	84.4	90	90.1	94.8	17.21165	1.22
Hafizabad	29	5.255	93.2	128.89	0	74.3	76.2	80.6	90.7	100	25.66249	1.35
M. Bahauddin	10	8.877	80.3	172.56	0	55.2	73.3	89.7	90.6	95.3	40.06578	1.73
Narowal	34	2.642	93.2	200.37	0	78.8	90.7	96.3	96.6	97.4	18.63228	1.24
Sialkot	36	0.824	97.3	336.41	0.15	100	95.2	94.6	98.1	99.1	-0.90215	0.99
Lahore	18	7.1	87.9	988	0	39.9	49.2	74.3	86.1	96.4	56.48315	2.41
Kasur	5	12.71	66.9	375.99	0	39.7	54.9	71.8	85.8	97.7	57.98064	2.46
N. sahib	20	6.832	84.6	181.54	0	64.1	74.2	88.6	95	95.1	30.96124	1.48
Sheikhupura	17	7.215	80.6	368.71	0	41.6	70	81.8	86	91.4	49.86774	2.2
Multan	16	7.31	79.8	464.8	0	63	76.9	88.4	90.7	88.9	25.85139	1.41
Khanewal	21	6.756	82.4	289.38	0	75.1	72.4	89.9	98.6	100	24.8544	1.33
Lodhran	8	10.33	70.2	176.29	0	56.8	61.6	80.5	91.8	96.8	39.95679	1.7
Vehari	28	5.481	83.9	231.93	0	67.9	81.6	86.8	94.4	100	32.08802	1.47
Sahiwal	23	6.544	85.7	261.31	0	70.6	79.1	92.6	97.7	97.8	27.24133	1.39
Pakpattan	22	6.577	83.3	221.45	0	72.5	80	88.8	100	100	27.49743	1.38
Okara	11	8.567	74.5	344.23	0	58.2	71.2	78.3	82.2	98	39.75529	1.68
Rawalpindi	33	3.753	89.2	496.25	0	63.3	76.2	87	92.6	92.7	29.39013	1.46
Attock	30	5.066	85.2	168.22	0	65.9	78.2	90.9	86.2	94.1	28.25522	1.43
Chakwal	32	4.618	89.2	119.88	0	74.1	80.9	89.3	90.7	98.6	24.48838	1.33
Jhelum	25	6.066	88.3	97.191	0	58.4	81.9	85.9	94.1	100	41.61035	1.71
Sargodha	26	5.957	80.6	319.28	0	64.7	82.8	82.3	89.4	93.3	28.62259	1.44
Bhakkar	15	7.601	76.5	173.69	0	67.7	77	96.7	97.4	100	32.30951	1.48
Khushab	27	5.66	84.5	127.34	0	74.5	85.1	87.5	100	100	25.5335	1.34
Mianwali	19	6.877	84.7	183.79	0	71.4	84.7	98.7	96	100	28.58438	1.4

**Ranking of districts according to concentration index of antenatal care by doctor  
MICS-2014**

Districts	Rank	perc	freq	pv	ci	Q1	Q2	Q5	Q4	Q5	(Q5:Q1)	(Q5-Q1)
Bahawalpur	5	59.2	342	0	0.2	43	49	70	80	53	123.25581	10
Bahawalnagar	12	57.9	254	0	0.1	44	59	70	90	56	127.27273	12
RY khan	3	52.2	472	0	0.2	36	50	60	80	49	136.11111	13
DG khan	2	44.3	361	0	0.2	31	52	60	70	57	183.87097	26
Layyah	9	52.5	182	0	0.1	40	57	70	90	25	62.5	-15
M. garh	4	56.5	414	0	0.2	44	59	80	100	53	120.45455	9
Rajanpur	13	45	223	0	0.1	38	48	70	80	47	123.68421	9
Faisalabad	11	73	692	0	0.1	27	56	70	80	68	251.85185	41
Chiniot	30	68	123	0	0.1	56	67	60	80	39	69.642857	-17
Jhang	6	58	237	0	0.2	67	66	70	70	33	49.253731	-34
Gujranwala	19	71	185	0	0.1	44	58	80	80	51	115.90909	7
TTsingh	17	63	481	0	0.1	32	42	50	70	47	146.875	15
Gujrat	35	79	258	0	0	49	77	70	80	41	83.673469	-8
Hafizabad	28	71	129	0	0.1	55	65	70	80	45	81.818182	-10
M. Bahauddin	21	67	173	0	0.1	42	58	80	80	43	102.38095	1
Narowal	14	58	200	0	0.1	44	43	60	70	38	86.363636	-6
Sialkot	20	77	336	0	0.1	37	49	60	80	57	154.05405	20
Lahore	25	84	988	0	0.1	40	35	60	80	54	135	14
Kasur	1	48	376	0	0.2	19	36	50	70	79	415.78947	60
N. sahib	8	66	182	0	0.2	30	45	70	80	56	186.66667	26
Sheikhupura	16	66	369	0	0.1	36	57	50	70	52	144.44444	16
Multan	22	62	465	0	0.1	50	54	70	70	29	58	-21
Khanewal	23	67	289	0	0.1	61	60	70	90	37	60.655738	-24
Lodhran	7	62	176	0	0.2	43	56	70	90	50	116.27907	7
Vehari	29	72	232	0	0.1	55	64	80	80	33	60	-22
Sahiwal	27	73	261	0	0.1	57	69	80	90	36	63.157895	-21
Pakpattan	15	64	221	0	0.1	44	63	70	90	56	127.27273	12
Okara	10	59	344	0	0.1	43	49	60	70	47	109.30233	4
Rawalpindi	36	88	496	0	0	57	76	80	90	36	63.157895	-21
Attock	33	84	168	0	0.1	66	77	90	90	28	42.424242	-38
Chakwal	34	86	120	0	0.1	74	72	90	80	24	32.432432	-50
Jhelum	31	81	97	0	0.1	43	82	80	90	54	125.5814	11
Sargodha	24	69	319	0	0.1	50	69	70	80	39	78	-11
Bhakkar	18	60	174	0	0.1	67	56	80	90	33	49.253731	-34
Khushab	32	79	127	0	0.1	62	81	80	100	30	48.387097	-32
Mianwali	26	77	184	0	0.1	75	96	90	0	25	33.333333	-50

**Ranking of districts according to concentration index of Antenatal Care by Lady Health Visitor MICS-2014**

Districts	Rank	ci	per	freq	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	11	0.04	1.52	342.08	0.88	0	3	4	0	0	0	∞
Bahawalnagar	20	-0.2	1.46	253.93	0.54	1.2	4	0	0	0	-1.2	0
RY khan	0	0	0	0	0	0	0	0	0	0	0	∞
DG khan	21	-0.2	8.24	361.33	0.03	11	6	4	0	0	-11	0
Layyah	19	-0.2	10.5	182.31	0.11	12	12	8	0	0	-12	0
M. garh	15	0	7.57	414.2	0.64	7.5	13	2	0	0	-7.5	0
Rajanpur	16	-0.1	9.37	223.2	0.27	10.1	11	0	10	0	-10.1	0
Faisalabad	24	-0.3	2.83	691.76	0.09	10	5	2	0	0	-10	0
Chiniot	0	0	0	0	0	0	0	0	0	0	0	∞
Jhang	23	-0.2	3.86	237.21	0.34	3.4	4	8	0	0	-3.4	0
Gujranwala	14	0	2.45	185.48	0.9	0	5	0	0	0	0	∞
TTsingh	25	-0.3	1.97	481.39	0.28	0	0	4	0	0	0	∞
Gujrat	3	0.58	1.38	257.98	0.3	0	4	0	0	0	0	∞
Hafizabad	22	-0.2	0.28	128.89	0.34	0	0	0	0	0	0	∞
M. Bahauddin	2	0.9	3.52	172.56	0.11	7.6	4	2	0	0	-7.6	0
Narowal	0	0	0	0	0	0	0	0	0	0	0	∞
Sialkot	0	0	0	0	0	0	0	0	0	0	0	∞
Lahore	6	0.25	0	988	0.65	0	0	0	0	0	0	∞
Kasur	5	0.27	3.34	375.99	0.03	0	2	7	0	0	0	∞
N. sahib	28	-0.4	2.3	181.54	0.01	0	2	2	10	0	0	∞
Sheikhupura	26	-0.3	0.24	368.71	0.22	0	0	0	0	0	0	∞
Multan	4	0.41	5.52	464.8	0.15	0	4	8	20	0	0	∞
Khanewal	9	0.13	6.66	289.38	0.75	8.7	8	8	0	0	-8.7	0
Lodhran	10	0.08	1.78	176.29	0.79	3.3	1	2	0	0	-3.3	0
Vehari	8	0.16	1.36	231.93	0.53	0	1	0	0	0	0	∞
Sahiwal	30	-0.7	0.53	261.31	0.02	0	0	2	0	0	0	∞
Pakpattan	29	-0.6	0.87	221.45	0.28	0	2	0	0	0	0	∞
Okara	7	0.24	1.43	344.23	0.54	0	3	1	0	0	0	∞
Rawalpindi	27	-0.4	0.8	496.25	0.5	6	0	4	0	0	-6	0
Attock	18	-0.1	0.38	168.22	0.4	0	2	0	0	0	0	∞
Chakwal	17	-0.1	1.85	119.88	0.37	0	0	0	10	0	0	∞
Jhelum	1	0.94	0.67	97.191	0.09	0	0	2	0	0	0	∞
Sargodha	13	0.01	5.18	319.28	0.98	4	8	4	0	0	-4	0
Bhakkar	16	-0.1	6.89	173.69	0.37	6.7	12	5	0	0	-6.7	0
Khushab	13	0	0.32	127.34	0	0	0	0	0	10	10	∞
Mianwali	12	0.01	1.16	183.79	0.98	1.8	1	0	0	0	-1.8	0

**Ranking of districts according to concentration index of Antenatal Care by Midwife  
MICS-2014**

District	Rank	ci	perc	feq	pv	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	18	-0.17	5.5	342	0.2165	10	9	3	3	4	-6	40
Bahawalnagar	3	-0.03	5.2	254	0.8654	10	2	8	6	0	-10	0
RY khan	29	-0.29	1	472	0.3621	0	0	1	0	0	0	∞
DG khan	5	-0.05	4.4	361	0.6996	0	5	8	3	0	0	∞
Layyah	7	-0.07	6.2	182	0.5894	10	9	7	0	0	-10	0
M. garh	25	-0.24	2.2	414	0.1234	0	3	0	0	0	0	∞
Rajanpur	6	-0.07	3.5	223	0.642	0	6	6	0	0	0	∞
Faisalabad	27	-0.27	14	692	0	20	23	17	13	4	-16	20
Chiniot	4	-0.05	22	123	0.5598	20	27	31	18	5	-15	25
Jhang	12	-0.13	7.8	237	0.2541	10	7	11	4	0	-10	0
Gujranwala	8	-0.08	9.8	185	0.4483	10	9	7	19	2	-8	20
TTsingh	13	-0.13	11	481	0.0784	10	15	11	12	8	-2	80
Gujrat	22	-0.2	9.9	258	0.0448	30	4	18	9	5	-25	16.666667
Hafizabad	14	-0.15	12	129	0.1468	20	11	14	8	0	-20	0
M. Bahauddin	2	0.05	9.8	173	0.6128	10	11	11	11	10	0	100
Narowal	17	-0.16	35	200	0.0004	30	48	34	27	13	-17	43.333333
Sialkot	33	-0.41	20	336	0	60	46	30	17	5	-55	8.3333333
Lahore	34	-0.43	4	988	0.0001	0	15	12	3	2	2	∞
Kasur	21	-0.19	15	376	0.0077	20	17	15	14	0	-20	0
N. sahib	31	-0.34	16	182	0.0001	30	27	12	4	9	-21	30
Sheikhupura	19	-0.17	14	369	0.0273	10	13	27	12	4	-6	40
Multan	20	-0.18	12	465	0.0256	10	19	12	8	7	-3	70
Khanewal	1	0.07	7.9	289	0.5631	10	5	15	9	2	-8	20
Lodhran	30	-0.31	5.6	176	0.027	10	5	4	0	3	-7	30
Vehari	24	-0.23	10	232	0.0374	10	16	4	6	9	-1	90
Sahiwal	11	-0.12	12	261	0.1883	10	10	15	11	4	-6	40
Pakpattan	16	-0.16	18	221	0.0317	30	16	21	13	0	-30	0
Okara	23	-0.21	14	344	0.0087	10	19	14	9	5	-5	50
Rawalpindi	35	-0.58	0.4	496	0.2847	10	19	14	9	5	-5	50
Attock	15	-0.15	0.6	168	0.7839	0	0	3	0	0	0	∞
Chakwal	36	-0.76	1.3	120	0.0549	0	0	21	0	0	0	∞
Jhelum	9	-0.09	6.4	97	0.6251	0	9	0	0	0	0	∞
Sargodha	28	-0.27	5.9	319	0.0331	10	0	6	8	3	-7	30
Bhakkar	10	-0.09	9.5	174	0.3816	10	3	7	7	0	-10	0
Khushab	32	-0.41	4.5	127	0.0499	10	9	7	4	0	-10	0
Mianwali	26	-0.24	5.9	184	0.081	10	4	0	0	0	-10	0

## Ranking of districts according to concentration index of BCG Vaccination MICS-2014

Districts	Rank	conindex	P, value	freq	percent	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	12	-0.01	0.72	165.23	93	14.7	14	13	13.5	14	-0.7	95.238095
Bahawalnagr	33	-0.04	0.03	119.89	87.25	16.4	16	14	13.5	15	-1.4	91.463415
RY khan	35	-0.04	0	258.59	88.15	18.2	15	15	14.3	16	-2.2	87.912088
DG khan	15	-0.01	0.39	174.11	36.45	16.5	16	15	17.6	14	-2.5	84.848485
Layyah	21	-0.02	0.3	94.59	60.09	14.5	14	14	11.1	13	-1.5	89.655172
M. garh	33	-0.04	0.01	184.15	45.83	16.7	14	14	13.4	16	-0.7	95.808383
Rajapur	25	-0.02	0.05	103.75	32.06	17.1	16	18	15.4	17	-0.1	99.415205
Faisalabad	22	-0.02	0.16	353.14	64.82	15.1	14	14	12.6	13	-2.1	86.092715
Chiniot	29	-0.03	0.14	61.662	94.07	17.2	15	16	14.2	15	-2.2	87.209302
Jhang	34	-0.04	0	112.55	86.95	17.8	17	13	15.1	14	-3.8	78.651685
IT Singh	16	-0.01	0.55	90.079	96.77	13.7	13	13	12.8	13	-0.7	94.890511
Gujranwala	10	-0	0.71	278.05	92.42	14.9	13	14	13.5	13	-1.9	87.248322
Gujarat	9	-0	0.79	139.93	85.6	20	10	12	11.5	11	-9	55
Hafizabad	19	-0.02	0.45	71.171	67.09	15	13	12	13.8	13	-2	86.666667
M. Bahauddin	11	-0.01	0.75	91.023	72.52	14.3	13	12	11.9	13	-1.3	90.909091
Narowal	24	-0.02	0.14	96.499	81.52	12.6	12	12	11.4	12	-0.6	95.238095
Sialkot	14	-0.01	0.02	173.87	63.9	20	14	14	12.7	14	-6	70
Lahore	1	0.635	0.35	462.09	50.58	20	16	16	15.4	14	-6	70
Kasur	27	-0.03	0.96	159.12	49.43	18.2	14	15	14.8	14	-4.2	76.923077
N. sahib	18	-0.01	0.7	90.129	76.69	12.4	13	12	13.2	12	-0.4	96.774194
Sheikhupura	7	0.0001	0.65	175.16	60.04	14	14	14	13.7	14	0	100
Multan	13	-0.01	0.46	222.39	62.28	13.9	14	13	14	14	0.1	100.71942
Khanewal	17	-0.01	0.16	150.08	51.35	15.7	15	13	15.9	15	-0.7	95.541401
Lodhran	23	-0.02	0.72	82.327	36.5	17	17	15	15.6	15	-2	88.235294
Vehari	5	0.006	0.29	126.43	71.45	12.8	13	13	13.3	13	0.2	101.5625
Sahiwal	20	-0.02	0.03	131.79	65.52	14.9	14	12	11.3	15	0.1	100.67114
Pakpattan	31	-0.03	0.03	116.35	73.89	14.8	12	12	11.8	13	-1.8	87.837838
Okara	30	-0.03	0.96	184.97	70.37	14.6	12	13	12.7	11	-3.6	75.342466
Rawalpindi	8	0.0007	0.09	235.67	61.36	12.6	14	13	14.7	13	0.4	103.1746
Attock	2	0.034	0.58	74.804	70.47	11.2	11	13	13.6	14	2.8	125
Chakwal	3	0.012	0.2	55.946	68.17	14.1	13	14	11.8	15	0.9	106.38298
Jhelum	28	-0.03	0.57	55.552	68.97	17	12	14	12.6	12	-5	70.588235
Sargodha	4	0.009	0	180.13	62.38	13	14	14	14.6	13	0	100
Bhakkar	36	-0.07	0.26	81.573	58.15	16.1	13	11	12	15	-1.1	93.167702
Khushab	26	-0.02	0.93	52.891	66.38	12.7	15	13	10.6	10	-2.7	78.740157
Mianwali	6	0.002	0	93.538	69.42	13.7	12	13	12.6	16	2.3	116.78832

**Ranking of districts according to concentration index of Measles 1 Vaccination MICS-2014**

Districts	Rank	Con index	percent	freq	P, value	Q1	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	7	0.00209	74.93	165.2	0.4	6	8	-2	181.6667
Bahawalnagar	4	0.00375	40.67	119.9	0	3	10	-7	596.6667
RY khan	19	0.00576	45.57	258.6	0	3	8	-5	720
DG khan	10	0.00668	55.63	174.1	0	4	7	-3	532.5
Layyah	3	0.00704	61.54	94.59	0	4	8	-4	90.25
M. garh	6	0.00899	62.35	184.1	0	5	8	-3	101.8
Rajapur	18	0.01292	62.71	103.7	0	5	7	-2	0
Faisalabad	24	0.01419	64.91	353.1	0	5	9	-4	336
Chiniot	34	0.0214	71.13	61.66	0.9	5	8	-3	404
Jhang	5	0.02156	75.34	112.6	0	5	9	-4	246
TTsingh	2	0.02193	75.37	90.08	0.2	5	9	-4	444
Gujranwala	23	0.02485	76.72	278	0.5	6	8	-2	253.3333
Gujarat	8	0.02526	76.95	139.9	0.2	6	10	-4	186.6667
Hafizabad	25	0.02703	77.5	71.17	0.8	6	9	-3	270
M. Bahauddin	36	0.02741	77.66	91.02	0.3	7	9	-2	198.5714
Narowal	35	0.03099	79.82	96.5	0.1	7	10	-3	188.5714
Sialkot	21	0.03113	80.17	173.9	0.5	7	10	-3	237.1429
Lahore	22	0.03121	80.73	462.1	0	7	8	-1	295.7143
Kasur	30	0.03207	81.45	159.1	0	7	9	-2	367.1429
N. sahib	26	0.04011	82.9	90.13	0.6	7	10	-3	161.4286
Sheikhupura	27	0.04056	83.05	175.2	0.1	7	9	-2	268.5714
Multan	11	0.04375	83.36	222.4	0.2	8	8	0	277.5
Khanewal	33	0.05663	84.79	150.1	0	8	9	-1	197.5
Lodhran	29	0.06194	84.94	82.33	0	8	9	-1	422.5
Vehari	32	0.07259	86.24	126.4	0	8	9	-1	285
Sahiwal	16	0.09253	86.36	131.8	0.1	8	10	-2	157.5
Pakpattan	1	0.09423	87.7	116.3	0.2	8	9	-1	103
Okara	15	0.1029	87.94	185	0.7	8	9	-1	198.75
Rawalpindi	31	0.10379	89.04	235.7	0.2	8	8	0	178.75
Attock	12	0.10453	89.95	74.8	0.2	8	9	-1	150
Chakwal	13	0.10456	91.37	55.95	0.6	8	9	-1	114.875
Jhelum	20	0.12205	92.08	55.55	0.2	9	10	-1	174.4444
Sargodha	17	0.13401	92.53	180.1	0.1	10	9	1	257
Bhakkar	28	0.13584	93.74	81.57	0	10	10	0	229
Khushab	14	0.14963	94.79	52.89	0.1	10	10	0	162
Mianwali	9	0.20896	97.6	93.54	0	10	10	0	47.6

**Ranking of districts according to concentration index of Measles 2 Vaccination MICS-2014**

District	con index	Rank	per	freq	P, value	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	0.126	11	27	177.4721	0.1	17	28	37	38	17	0	1
Bahawalnagar	0.189	5	28	148.1701	0	13	38	45	23	34	21	2.6153846
RY khan	0.256	3	13	284.0588	0	7	11	21	32	15	8	2.1428571
DG khan	0.212	4	10	164.9446	0.1	8	12	16	5	23	15	2.875
Layyah	0.098	12	32	106.6702	0.1	26	33	41	45	60	34	2.3076923
M. garh	0.258	2	11	215.785	0	6	18	29	3	0	-6	0
Rajampur	0.155	8	8	116.9056	0.2	7	5	21	14	0	-7	0
Faisalabad	0.068	16	30	343.2714	0.2	33	20	29	30	37	4	1.1212121
Chiniot	0.293	1	28	52.88636	0	9	25	34	40	61	52	6.7777778
Jhang	0.023	25	17	123.2823	0.8	18	13	18	15	28	10	1.5555556
TT Singh	0.052	18	30	90.34472	0.5	12	27	39	32	35	23	2.9166667
Gujranwala	0.032	22	39	210.1464	0.5	0	39	35	38	44	44	∞
Gujarat	-0.015	31	65	152.4318	0.7	41	83	69	64	60	19	1.4634146
Hafizabad	-0.011	30	49	54.60376	0.9	51	37	51	32	70	19	1.372549
M. Bahauddin	-0.067	35	39	69.39755	0.3	46	58	24	40	34	-12	0.7391304
Narowal	0.046	19	55	114.502	0.3	55	56	45	64	68	13	1.2363636
Sialkot	-0.059	34	45	177.1673	0.2	0	33	63	50	35	35	∞
Lahore	0.175	6	22	486	0	0	20	2	20	26	26	∞
Kasur	0.153	9	23	173	0	0	22	23	34	33	33	∞
N. sahib	0.027	23	42	87	0.7	44	41	40	35	70	26	1.5909091
Sheikhupura	0.023	24	28	169.5332	0.8	20	37	20	31	28	8	1.4
Multan	0.079	14	26	230.1609	0.3	26	15	32	24	35	9	1.3461538
Khanewal	0.173	7	22	148.3797	0	13	20	28	32	21	8	1.6153846
Lodhran	0.061	17	18	82.67333	0.6	11	22	26	24	0	-11	0
Vehari	0.013	26	43	132.7114	0.8	42	35	56	40	41	-1	0.9761905
Sahiwal	0.002	28	56	133.0287	1	58	41	68	59	52	-6	0.8965517
Pakpattan	0.136	10	32	100.2407	0	16	36	32	31	57	41	3.5625
Okara	0.003	27	43	159.3438	1	35	47	44	47	37	2	1.0571429
Rawalpindi	0.038	20	32	214.6844	0.5	53	27	30	32	30	-23	0.5660377
Attock	-0.021	33	48	88.79722	0.7	41	55	41	56	44	3	1.0731707
Chakwal	-0.003	29	48	65.00274	1	37	52	48	53	34	-3	0.9189189
Jhelum	-0.069	36	51	48.57388	0.3	41	76	42	62	18	-23	0.4390244
Sargodha	-0.017	32	39	178.4139	0.8	36	41	46	42	21	-15	0.5833333
Bhakkar	0.083	13	24	72.24455	0.3	21	32	8	41	0	-21	0
Khushab	0.035	21	42	59.81035	0.6	36	46	52	49	36	0	1
Mianwali	0.068	15	37	94.82834	0.3	20	40	53	30	34	14	1.7



## Ranking of districts according to concentration index of malnourished stunted infants

MICS-2014

Districts	Rank	co index	per	freq	P, value	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	8	-0.02	19	870.736	0.7	20	20	20	20	12	-8	60
Bahawalnagar	11	-0.03	22	713.249	0.5	20	20	20	20	19	-1	95
RY khan	25	-0.11	22	1,347.91	0	20	30	20	20	7	-13	35
DG khan	10	-0.03	21	853.1	0.4	20	20	20	20	25	5	125
Layyah	35	-0.15	19	493.949	0	20	10	20	0	4	-16	20
M. garh	16	-0.05	18	1,071.19	0.1	20	10	20	20	9	-11	45
Rajanpur	18	-0.06	16	598.983	0.2	20	20	10	10	5	-15	25
Faisalabad	22	-0.1	22	1,746.25	0	30	20	30	20	15	-15	50
Chiniot	23	-0.1	24	327.86	0	30	30	20	20	12	-18	40
Jhang	9	-0.03	20	605.97	0.5	20	20	30	20	15	-5	75
TTsingh	33	-0.14	21	493.26	0	40	20	20	20	14	-26	35
Gujranwala	27	-0.11	12	1,174.35	0	0	20	10	10	10	10	∞
Gujarat	12	-0.04	12	735.79	0.5	0	20	10	10	9	9	∞
Hafizabad	31	-0.12	11	298.48	0.1	10	20	10	10	7	-3	70
M. Bahauddin	7	-0.01	11	384.779	0.9	10	10	10	10	8	-2	80
Narowal	17	-0.05	15	520.003	0.3	20	20	20	10	12	-8	60
Sialkot	3	0.01	18	870.861	0.8	20	20	20	20	17	-3	85
Lahore	21	-0.09	14	2,351.16	0	10	10	20	20	12	2	120
Kasur	30	-0.12	18	853.156	0	20	20	20	10	7	-13	35
N. sahib	19	-0.06	17	402.102	0.3	20	20	20	20	4	-16	20
Sheikhupura	24	-0.11	16	858.181	0	30	20	20	20	10	-20	33.3333
Multan	6	-0.01	23	1,117.30	0.7	20	20	20	20	18	-2	90
Khanewal	34	-0.15	20	698.126	0	30	20	20	10	16	-14	53.3333
Lodhran	5	-0.01	17	425.935	0.8	20	10	10	20	24	4	120
Vehari	4	-0.01	19	636.39	0.9	30	20	20	20	23	-7	76.6667
Sahiwal	26	-0.11	19	613.183	0	20	20	20	20	9	-11	45
Pakpattan	28	-0.12	18	510.051	0	20	20	20	10	12	-8	60
Okara	14	-0.05	19	853.836	0.2	20	20	20	20	11	-9	55
Rawalpindi	15	-0.05	14	1,123.09	0.3	20	10	20	10	13	-7	65
Attock	32	-0.12	14	413.105	0.1	20	20	10	10	8	-12	40
Chakwal	1	0.03	13	305.612	0.7	0	10	20	10	10	10	∞
Jhelum	36	-0.15	12	233.749	0	10	10	10	10	3	-7	30
Sargodha	20	-0.08	21	794.221	0	30	20	20	10	15	-15	50
Bhakkar	29	-0.12	20	397.348	0	20	20	20	10	0	-20	0
Khushab	2	0.01	17	311.348	0.9	20	10	20	20	13	-7	65
Mianwali	13	-0.05	0.06	15	0	13	10	20	10	10	-3	76.9231

## Ranking of districts according to concentration index of malnourished wasted infants

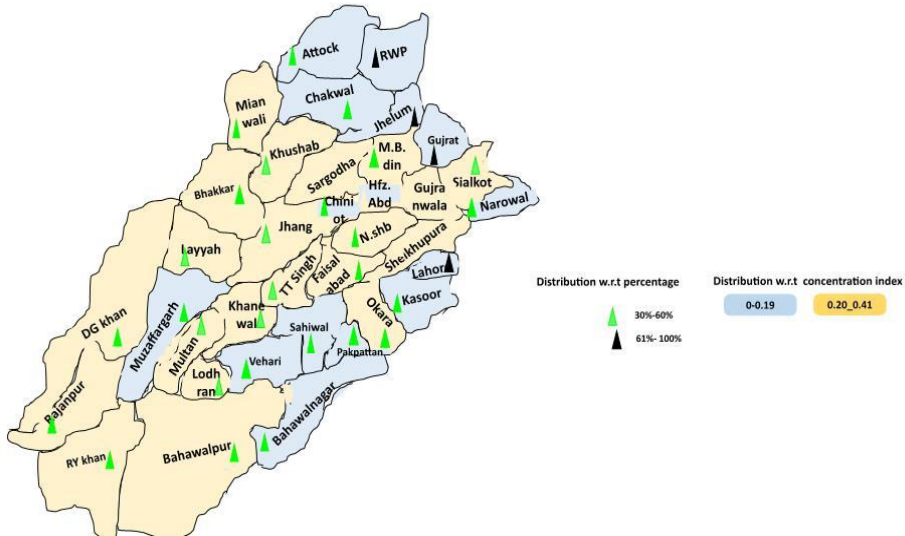
### MICS-2014

District	Rank	co index	percentage	P, value	freq	Q1	Q2	Q5	Q4	Q5	(Q5-Q1)	(Q5:Q1)
Bahawalpur	8	-0.02	19	0.7	870.736	22	17.7	21.1	15.5	12	-10	54.5455
Bahawalnagar	11	-0.03	21	0.5	713.2493	23.9	20.6	17.6	23.8	19	-4.9	79.4979
RY khan	25	-0.11	21	0	1347.914	23.8	25.6	21.3	17.4	7.1	-16.7	29.8319
DG khan	10	-0.03	21	0.4	853.1004	21.7	21.6	16.4	21.5	25	3.3	115.2074
Layyah	35	-0.15	18	0	493.949	23.5	13.4	17	3.2	3.7	-19.8	15.7447
M. garh	16	-0.05	18	0.1	1,071.19	20.7	12.4	21.8	16	8.6	-12.1	41.5459
Rajanpur	18	-0.06	16	0.2	598.9828	16.6	18.6	14.6	11.1	4.9	-11.7	29.5181
Faisalabad	22	-0.1	21	0	1,746.25	29.9	21.8	26.4	21.5	15	-14.9	50.1672
Chiniot	23	-0.1	23	0	327.8569	26.9	27.9	17.9	19.5	12	-14.9	44.6097
Jhang	9	-0.03	19	0.5	605.9702	19.4	15.4	27.1	18.7	15	-4.4	77.3196
TT Singh	33	-0.14	21	0	493.259	35.6	22	20.4	17.6	14	-21.6	39.3258
Gujranwala	26	-0.11	12	0	1,174.35	3.43	18.2	14.9	11.1	9.6	6.17	279.8834
Gujarat	12	-0.04	11	0.5	735.7881	0	21.6	10.8	13.2	9.4	9.4	∞
Hafizabad	31	-0.12	11	0.1	298.483	13.6	21.3	7.97	7.48	7	-6.6	51.4706
Mandi Bahauddin	17	-0.05	10	0.3	384.7788	11.7	9.01	10.5	13.7	8.4	-3.3	71.7949
Narowal	7	-0.01	14	0.3	520.0034	17.1	15.6	15.5	12.2	12	-5.1	70.1754
Sialkot	3	0.01	17	0.8	870.8613	16.9	17.8	17	18.7	17	0.1	100.5917
Lahore	21	-0.09	13	0	2,351.16	7.85	14.7	20.8	15.2	12	4.15	152.8662
Kasur	30	-0.12	18	0	853.1557	18.3	20.9	22	11.4	7.4	-10.9	40.4372
N. sahib	19	-0.06	17	0.3	402.1023	16.3	18.7	18.5	19.5	4	-12.3	24.5399
Sheikhupura	24	-0.11	16	0	858.1813	25.4	18.5	18	16.7	9.5	-15.9	37.4016
Multan	6	-0.01	13	0.7	1,117.30	24.4	22.6	24.5	23.7	18	-6.4	73.7705
Khanewal	34	-0.15	23	0	698.1262	26.7	16.3	19.8	13.9	16	-10.7	59.9251
Lodhran	5	-0.01	20	0.8	425.9346	21.9	13.5	11.2	21.9	24	2.1	109.589
Vehari	4	-0.01	17	0.9	636.3899	25.3	19.6	16.5	15.6	23	-2.3	90.9091
Sahiwal	27	-0.11	19	0	613.1832	23.8	18.6	20.8	16.6	9.3	-14.5	39.0756
Pakpattan	28	-0.12	19	0	510.0512	22.2	19.9	16.1	9.13	12	-10.2	54.0541
Okara	14	-0.05	17	0.2	853.8355	18	21.2	18.4	20.7	11	-7	61.1111
Rawalpindi	15	-0.05	19	0.3	1,123.09	20.9	10.7	17.6	13.9	13	-7.9	62.201
Attock	32	-0.12	14	0.1	413.1045	22.6	19.5	11.5	12.6	8.2	-14.4	36.2832
Chakwal	1	0.03	14	0.7	305.6119	1.75	13.3	15.6	15	9.6	7.85	548.5714
Jhelum	36	-0.15	11	0	233.7492	14	14.6	12.6	12.7	3.4	-10.6	24.2857
Sargodha	20	-0.08	20	0	794.2208	25.6	21.2	23.5	13.3	15	-10.6	58.5938
Bhakkar	29	-0.12	20	0	397.3477	23.1	16.7	19	9.56	0	-23.1	0
Khushab	2	0.01	17	0.9	311.3477	17.2	14.1	18.9	18.3	13	-4.2	75.5814
Mianwali	13	-0.05	16	0.4	416.1591	14.7	19.5	11.5	14.8	6.4	-8.3	43.5374

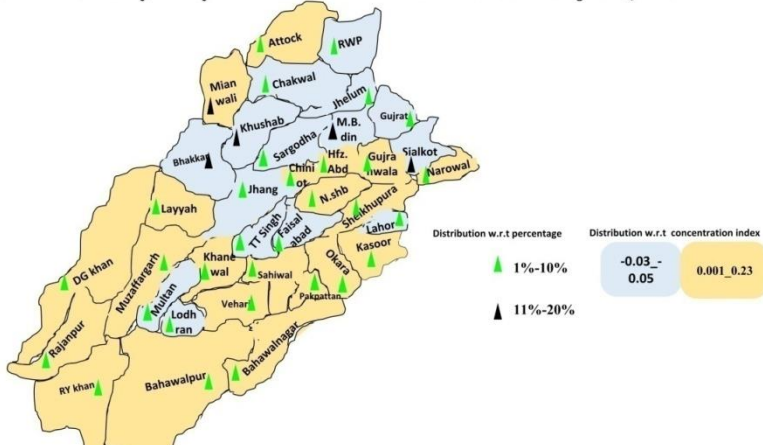
**Ranking of districts according to concentration index of malnourished under weight infants MICS-2014**

Districts	co index	Freq	percent	Rank	P, value	Q1	Q2	Q5	Q4	Q5	Q5-Q1	Q5:Q1
Bahawalpur	-16.9	866	36	30	0	48	38.49	28.48	23.19	10.9	-37.1	22.7083
Bahawalnagar	-9.71	721	43	5	0	51	40.81	34.64	38.1	17.9	-33.1	35.098
RY khan	-12	1,351.00	47	12	0	53	51.22	43.63	35.11	21.6	-31.4	40.7547
DG khan	-12.8	837	49.1	17	0	57	46.42	22.86	36.21	21.3	-35.7	37.3684
Layyah	-10.1	496	37.4	6	0	42	32.45	38.24	18.77	3.61	-38.39	8.5952
M. garh	-14.1	1,078.87	42.7	19	0	51	33.36	30.6	29.72	5.09	-45.91	9.9804
Rajanpur	-12.5	600.0844	45.9	15	0	49	49.16	36.31	16.17	0	-49	0
Faisalabad	-16.1	1,761.93	31.2	28	0	48	37.57	35.25	32.72	16.8	-31.2	35
Chiniot	-9.35	3334.185	39.4	3	0	47	36.63	39.42	36.05	20.2	-26.8	42.9787
Jhang	-15.1	6140.914	37.6	22	0	47	32.85	34.58	28.29	12.3	-34.7	26.1702
TTsingh	-16.1	5007.275	37.5	27	0	70	37.34	30.78	35.43	22.2	-47.8	31.7143
Gujranwala	-14.7	1,176.07	23	21	0	33	29.94	31.56	20.93	15.2	-17.8	46.0606
Gujrat	-19.5	7385.194	21.9	34	0	39	33.39	30.47	23.8	11.2	-27.8	28.7179
Hafizabad	-19.1	299.9148	30.3	32	0	46	41.23	29.71	17.01	16.2	-29.8	35.2174
M. Bahauddin	-10.7	392.1792	23.7	10	0.01	30	29.38	18.33	25.4	13.9	-16.1	46.3333
Narowal	-10.4	519.4329	29.3	9	0	47	28.74	30.16	24.58	13.2	-33.8	28.0851
Sialkot	-16.2	879.4235	24.7	29	0	77	39.33	29.15	20.72	16.6	-60.4	21.5584
Lahore	-14.6	2,341.01	28.5	20	0	23	33.33	44.47	37.98	20.7	-2.3	90
Kasur	-8.76	855.7767	36.5	2	0	37	44.14	35.34	29.84	25.7	-11.3	69.4595
N. sahib	-21.4	405.9269	35.1	36	0	48	53.11	31.7	24.04	11.3	-36.7	23.5417
Sheikhupura	-14	848.8589	32.7	18	0	55	39.58	34.2	32.64	18.8	-36.2	34.1818
Multan	-12.1	1,120.27	38.4	13	0	49	42.91	33.72	35.5	22.2	-26.8	45.3061
Khanewal	-12.7	692.525	36.6	16	0	43	38.52	33.16	31.88	15.8	-27.2	36.7442
Lodhran	-12	429.9381	35.8	11	0	45	38.53	28.02	18.15	33.8	-11.2	75.1111
Vehari	-12.1	641.4961	36.9	14	0	48	41.57	31.66	30.02	22.8	-25.2	47.5
Sahiwal	-17.7	616.081	34.2	31	0	50	36.81	31.05	28.35	12.6	-37.4	25.2
Pakpattan	-19.3	515.6463	38.1	33	0	49	44.41	35.03	12.71	8.24	-40.76	16.8163
Okara	-16	848.4426	36.3	25	0	45	45.23	33.73	27.43	15.9	-29.1	35.3333
Rawalpindi	-15.7	1,118.06	18.8	24	0	34	21.2	21.32	22.11	14.3	-19.7	42.0588
Attock	-9.69	415.091	24.7	4	0.03	24	32.62	22.57	32.4	12	-12	50
Chakwal	-15.4	308.5383	25.5	23	0	30	37.83	28.95	21.58	9.19	-20.81	30.6333
Jhelum	-20.2	237.5502	25	35	0	36	41.97	24.65	19.6	15.7	-20.3	43.6111
Sargodha	-10.2	791.3303	36.8	7	0	45	39.34	40.62	22.65	25.7	-19.3	57.1111
Bhakkar	-10.4	404.8075	36.5	8	0	41	36.38	25.96	22.2	22.9	-18.1	55.8537
Khushab	-8.59	311.7992	36	1	0.02	40	37.86	35.7	30.75	16.2	-23.8	40.5
Mianwali	-16	419.2867	30	26	0	40	32.05	20	22.56	4.76	-35.24	11.9

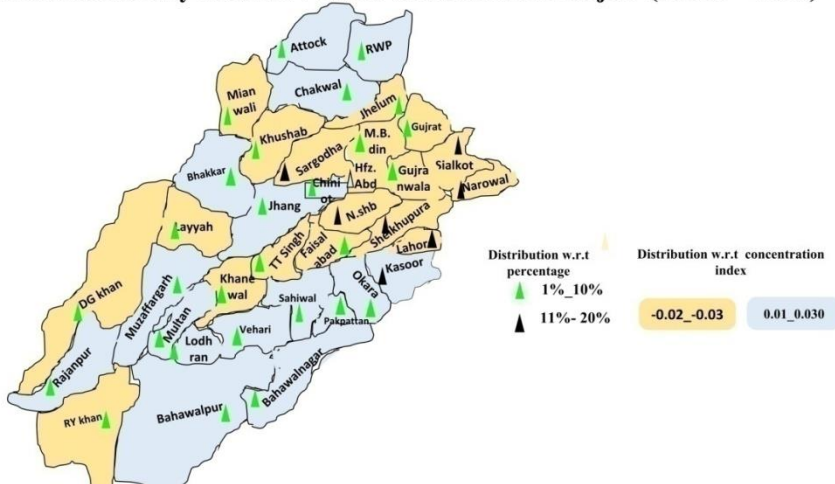
Antenatal Care by Doctor in districts of Punjab (MICS – 2007)



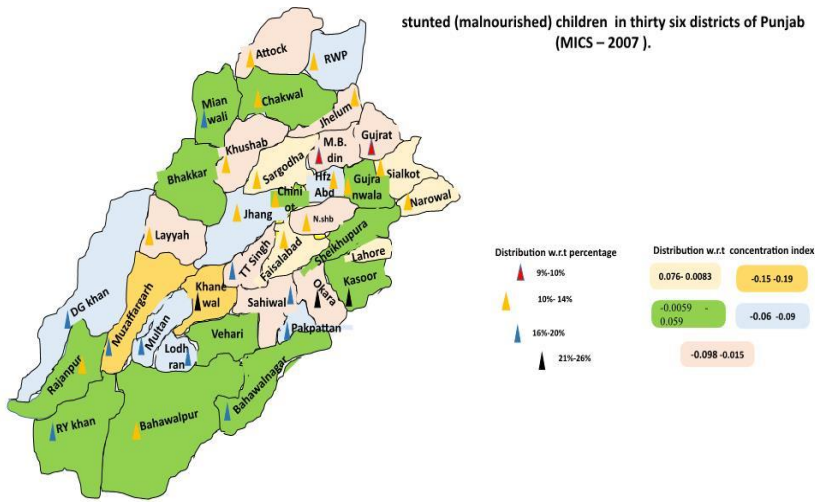
Antenatal Care by Lady Health Visitors in districts of Punjab (MICS – 2007)



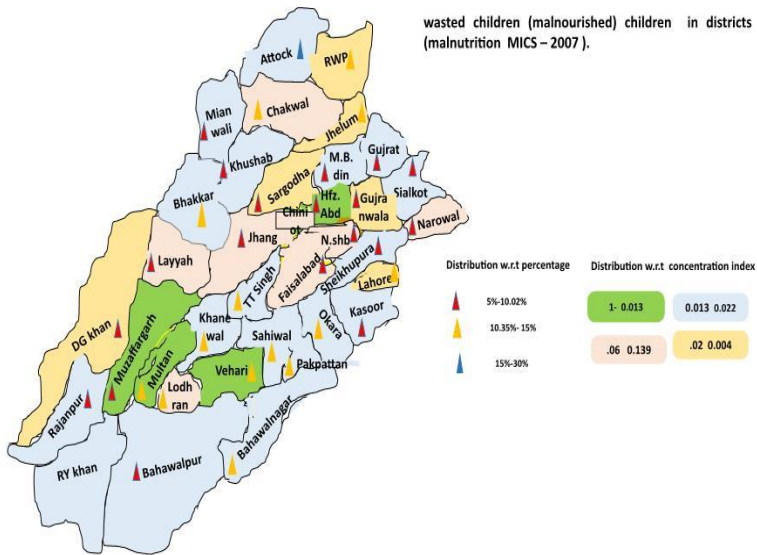
Antenatal Care by Midwife / Nurse in districts of Punjab (MICS – 2007)



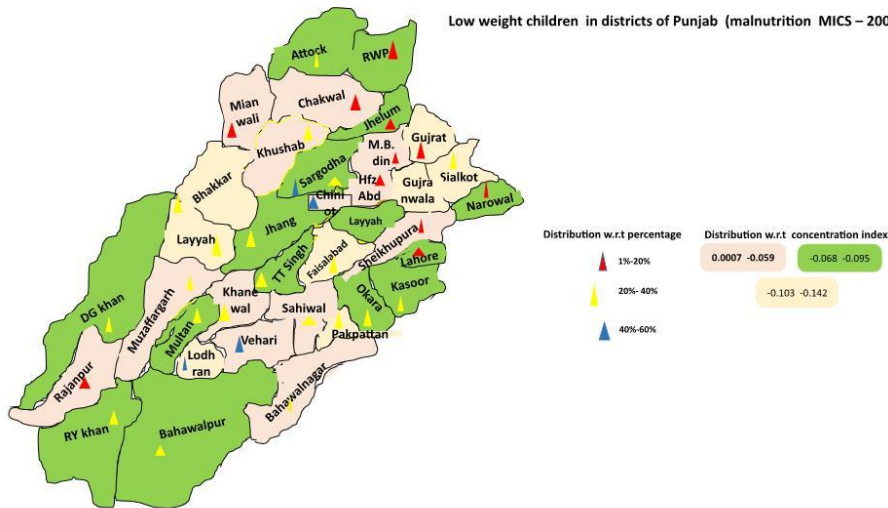
stunted (malnourished) children in thirty six districts of Punjab (MICS – 2007 ).



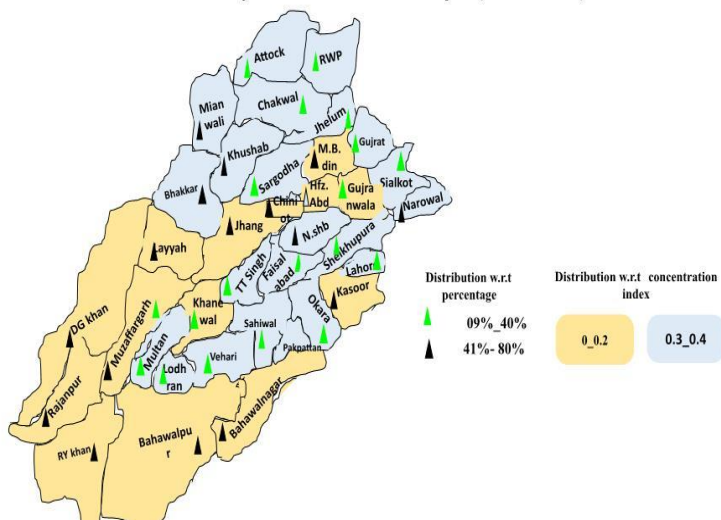
wasted children (malnourished) children in districts of Punjab (malnutrition MICS – 2007 ).



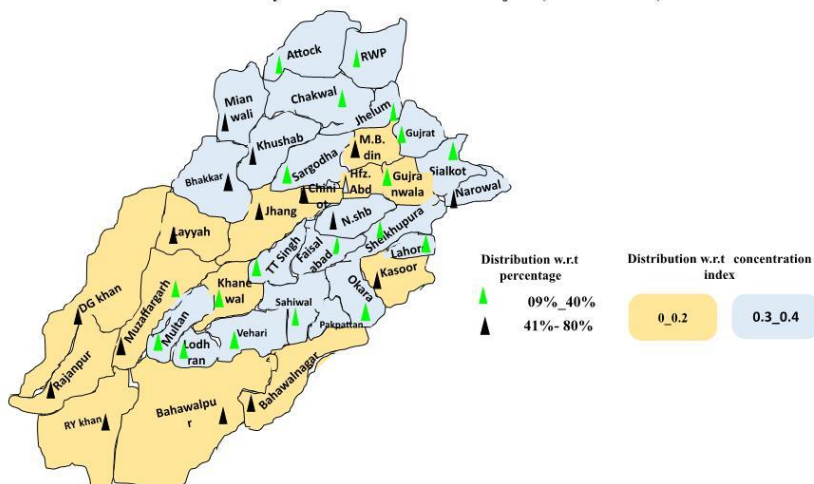
Low weight children in districts of Punjab (malnutrition MICS – 2007 )



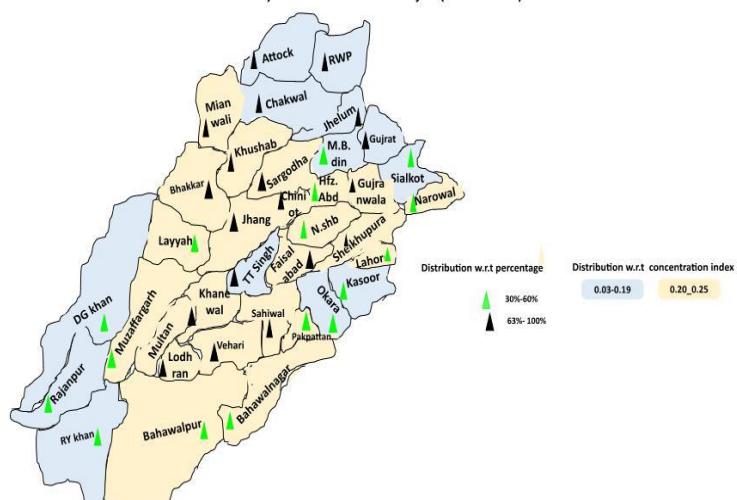
Four Antenatal Care by Midwife in districts of Punjab (MICS – 2011)



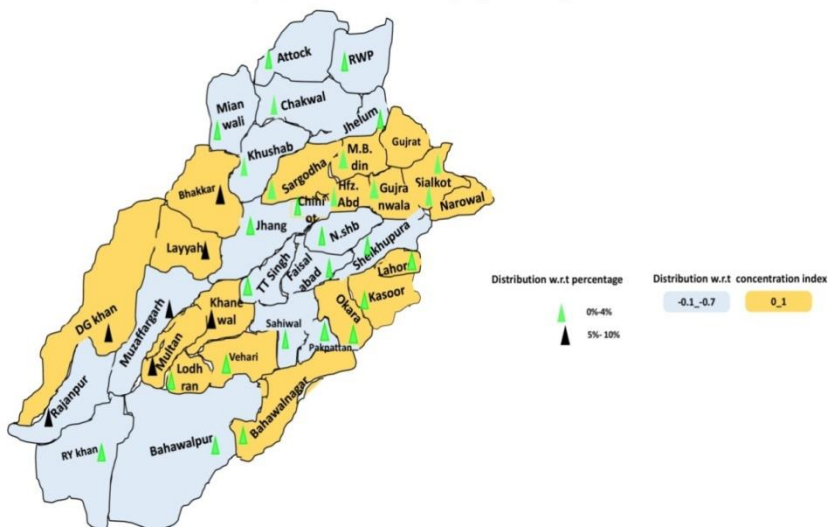
Four Antenatal Care by Midwife in districts of Punjab (MICS – 2011)



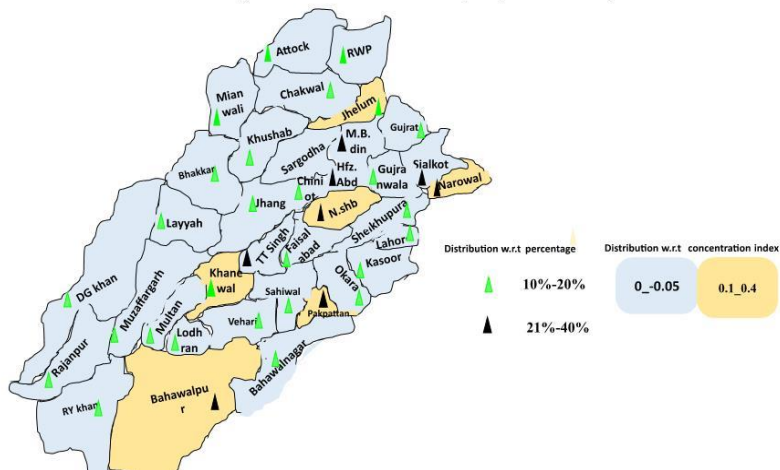
Antenatal Care by Doctor in districts of Punjab (MICS – 2011)



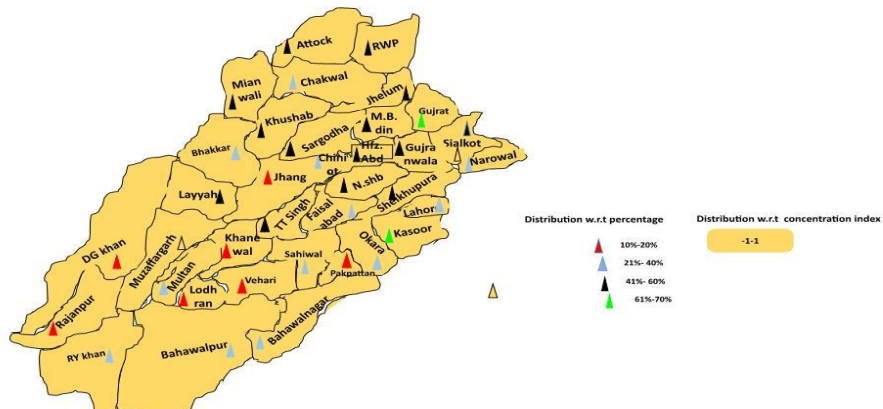
Lady Health Visitor in districts of Punjab (MICS – 2011)

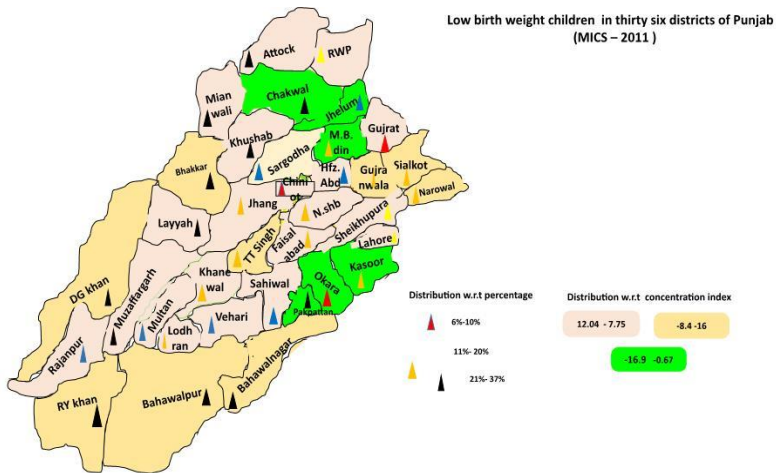
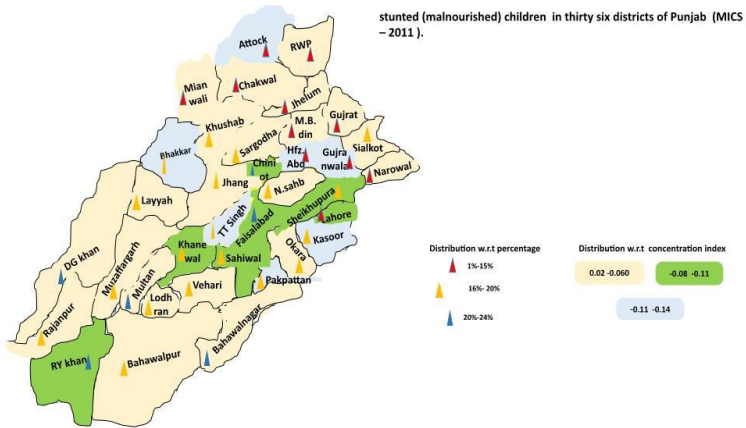


Antenatal Care by Midwife in districts of Punjab (MICS – 2011)

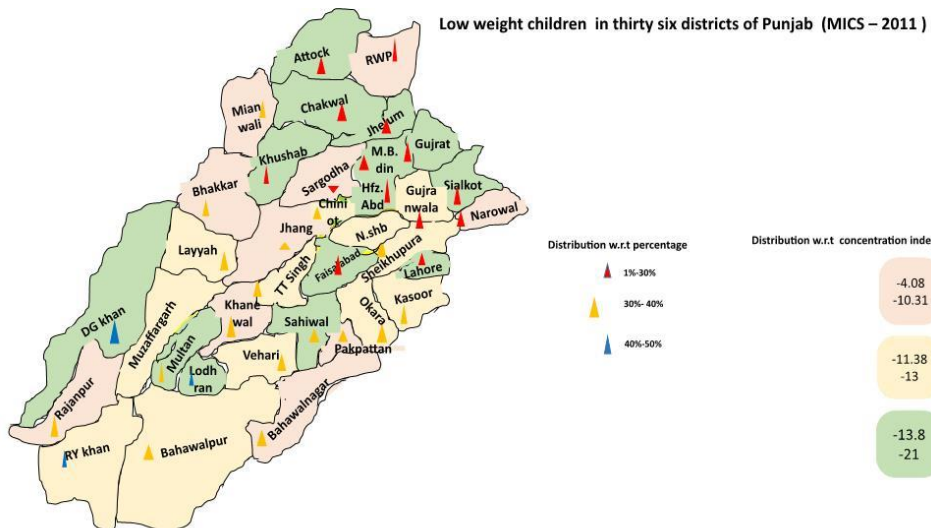
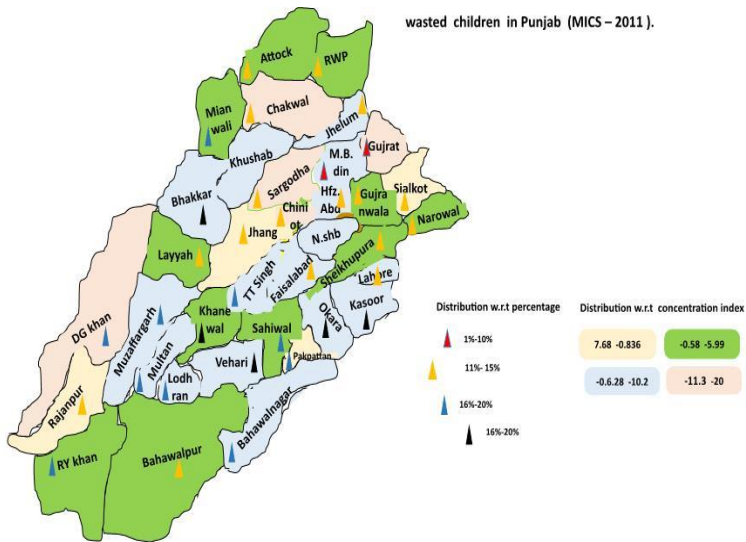


BCG immunization provision in districts of Punjab (MICS – 2011)

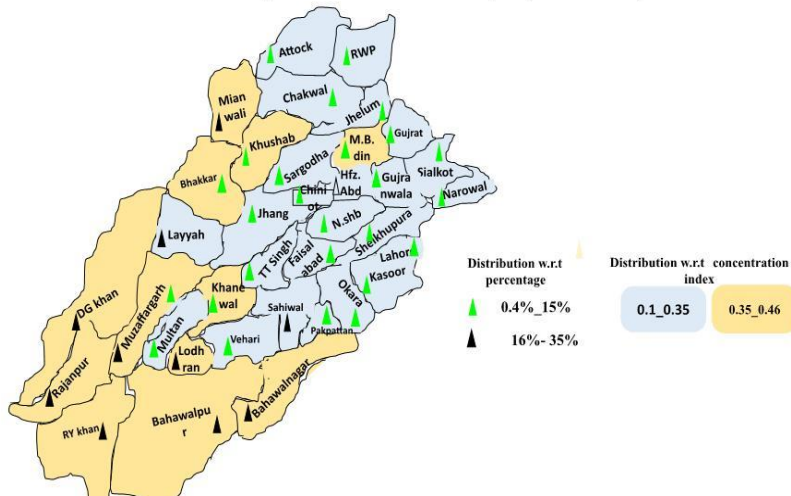




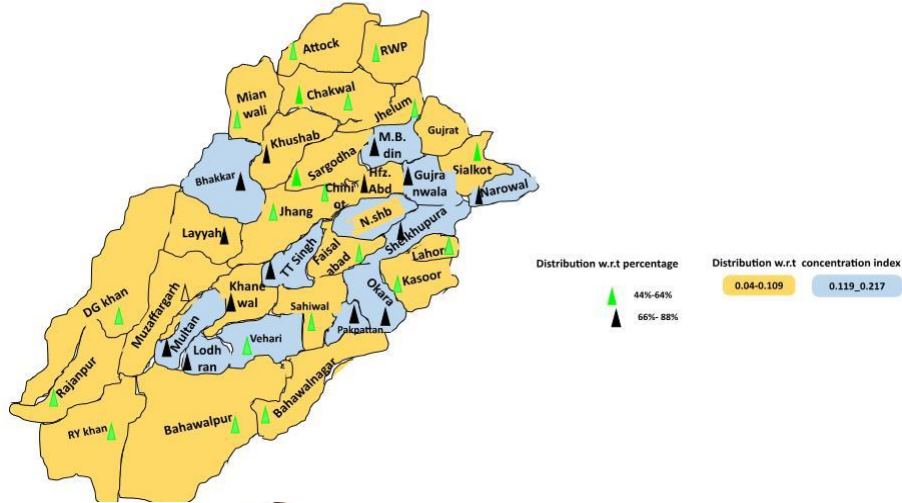




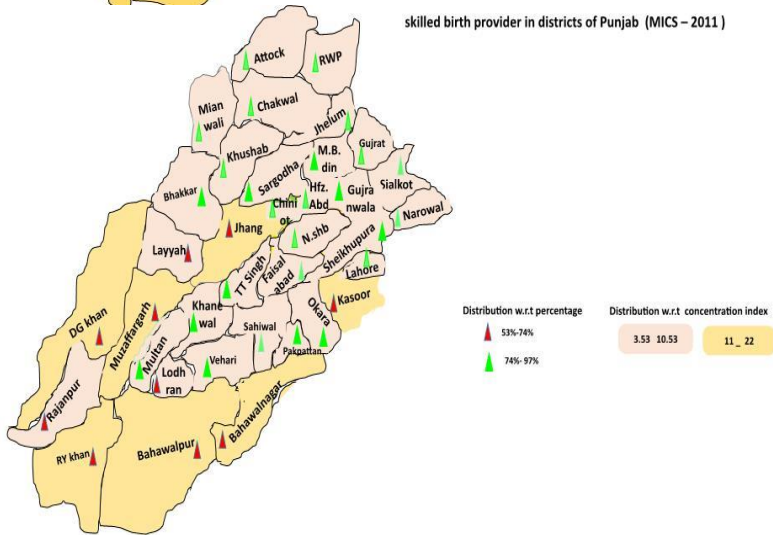
Four Antenatal Care by Midwife in districts of Punjab (MICS – 2014)



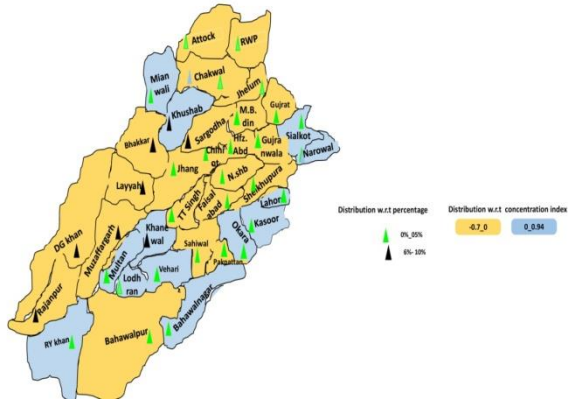
Antenatal Care by Doctor in districts of Punjab (MICS – 2014 )



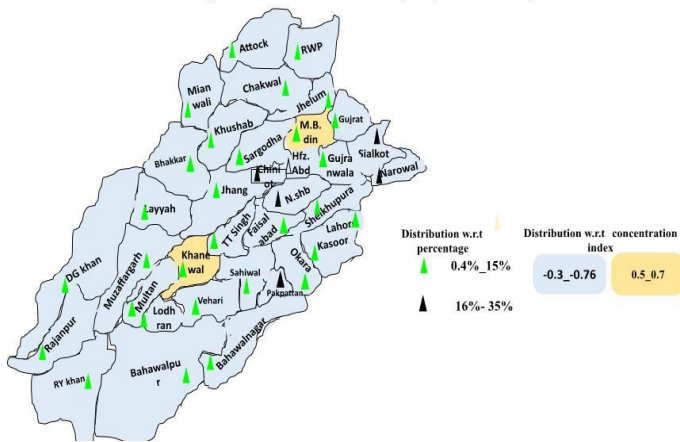
skilled birth provider in districts of Punjab (MICS – 2011 )



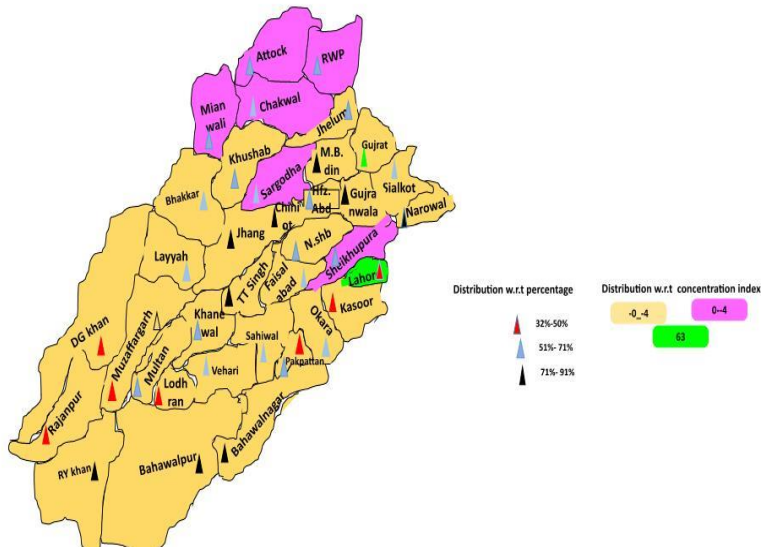
Lady Health Visitor in districts of Punjab (MICS – 2014)



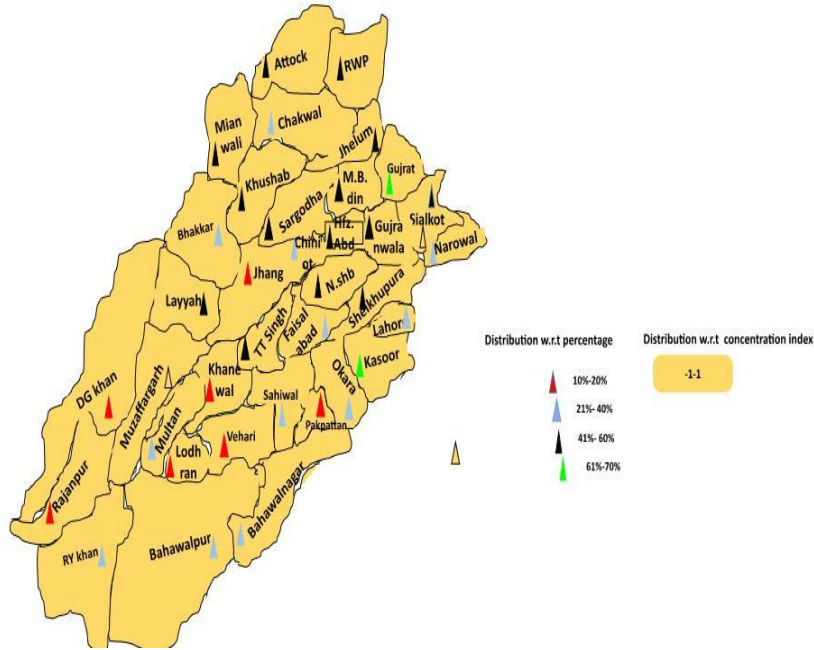
Antenatal Care by Midwife in districts of Punjab (MICS – 2014)



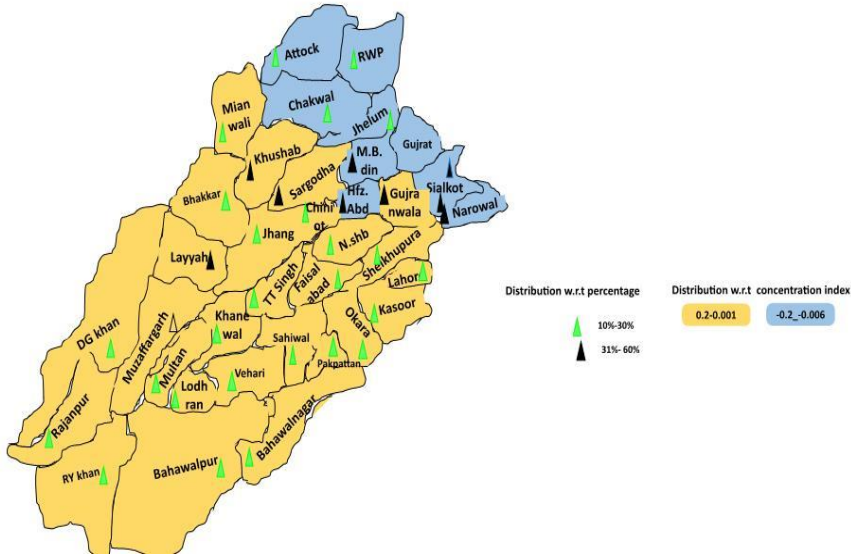
BCG immunization provision in districts of Punjab (MICS – 2014)

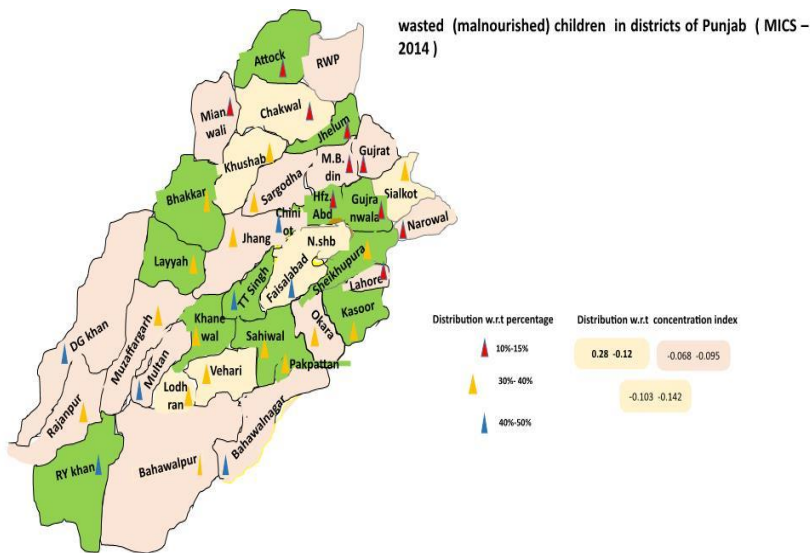
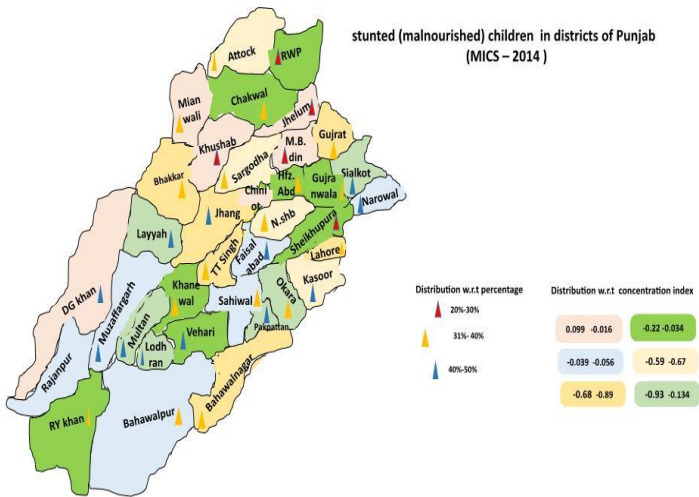


Measles 1 immunization provision in districts of Punjab (MICS – 2014)

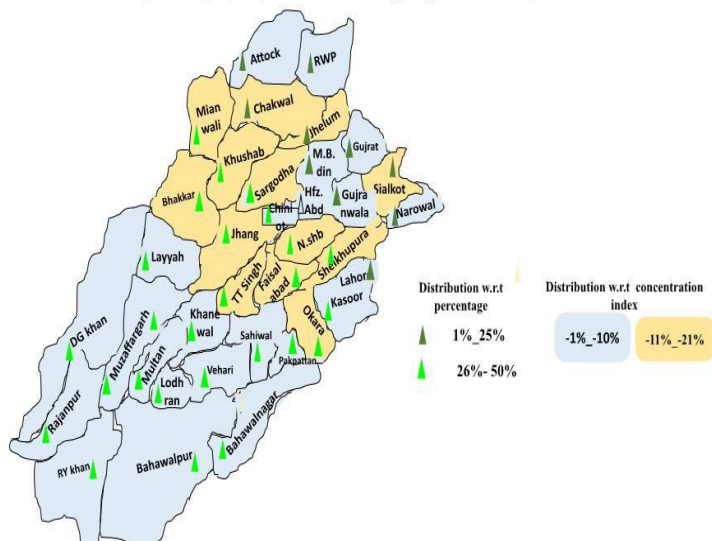


Measles 2 immunization provision in districts of Punjab (MICS – 2014)





Weight for Age (WAZ) in districts of Punjab (MICS – 2014)



## REFERENCES

- A. 2015 Promoting health equity: WHO health inequality monitoring at global and national levels *Global health action*, 81, 29034
- Abou-Zahr, C. L., Wardlaw, T. M., & World Health Organization.2003. Antenatal care in developing countries: promises, achievements and missed opportunities: an analysis of trends, levels and differentials, 1990-2001.
- Adams, A. M., Rabbani, A., Ahmed, S., Mahmood, S. S., Al-Sabir, A., Rashid, S. F., & Evans, T. G.2013 Explaining equity gains in child survival in Bangladesh: scale, speed, and selectivity in health and development *The Lancet*, 3829909, 2027-2037.
- Agha, S., & Carton, T. W.2011.Determinants of institutional delivery in rural Jhang, Pakistan.
- Agha, S., & Carton, T. W.2011.Determinants of institutional delivery in rural Jhang, Pakistan. *International journal for equity in health*, 101, 31.
- Alam, A. Y., Nishtar, S., Amjad, S., & Bile, K. M. 2010. Impact of wealth status on health outcomes in Pakistan *Eastern Mediterranean Health Journal*, 16, S152
- Ali, M., Bhatti, M. A., &Kuroiwa, C.2008.Challenges in access to and utilization of reproductive health care in Pakistan. *J Ayub Med Coll Abbottabad*, 204, 3-7.
- Althabe, F., Bergel, E., Cafferata, M. L., Gibbons, L., Ciapponi, A., Alemán, A., ...& Palacios, A. R. 2008. Strategies for improving the quality of health care in maternal and child health in low-and middle-income countries: an overview of systematic reviews. *Paediatric and perinatal epidemiology*, 22, 42-60.
- Anwar, M., Green, J., & Norris, P.2012. Health-seeking behaviour in Pakistan: A narrative review of the existing literature. *Public Health*, 1266, 507-517.
- Arif, G. M., Farooq, S., Nazir, S., &Satti, M. 2014. Child malnutrition and poverty: the case of Pakistan. *The Pakistan Development Review*, 532, 99-118.
- Ariff, S., Soofi, S. B., Sadiq, K., Feroze, A. B., Khan, S., Jafarey, S. N., ...&Bhutta, Z. A. 2010. Evaluation of health workforce competence in maternal and neonatal issues in public health sector of Pakistan: an assessment of their training needs. *BMC health services research*, 101, 319.
- Atun, R., De Andoctorade, L. O. M., Almeida, G., Cotlear, D., Dmytraczenko, T., Frenz, P& De Paula, J. B.2015 Health-system reform and universal health coverage in Latin America *The Lancet*, 3859974, 1230-1247

- Balarajan, Y., Selvaraj, S., & Subramanian, S. V. 2011. Health care and equity in India. *The Lancet*, 3779764, 505-515.
- Baqui, A., Williams, E. K., Rosecrans, A. M., Agrawal, P. K., Ahmed, S., Darmstadt, G. L., ...& Srivastava, V. K. 2008. Impact of an integrated nutrition and health programme on neonatal mortality in rural northern India *Bulletin of the World Health Organization*, 8610, 796-804A
- Barros, A. J., Ronsmans, C., Axelson, H., Loaiza, E., Bertoldi, A. D., França, G. V., ...& Victora, C. G. 2012. Equity in maternal, newborn, and child health interventions in Countdown to 2015: a retrospective review of survey data from 54 countries. *The Lancet*, 3799822, 1225-1233.
- Bashir, M. K., Schilizzi, S., & Pandit, R. 2012. *The determinants of rural household food security in the Punjab, Pakistan: an econometric analysis* No. 122526.
- Bashir, M. K., Schilizzi, S., & Pandit, R. 2012. *The determinants of rural household food security in the Punjab, Pakistan: an econometric analysis* No. 122526.
- Bhutta, Z. A., Hafeez, A., Rizvi, A., Ali, N., Khan, A., Ahmad, F&Jafarey, S. N. 2013. Reproductive, maternal, newborn, and child health in Pakistan: challenges and opportunities. *The Lancet*, 3819884, 2207-2218.
- Bhutta, Z. A., Memon, Z. A., Soofi, S., Salat, M. S., Cousens, S., & Martines, J. 2008. *Bulletin of the World Health Organization Bulletin of the World Health Organization*, 86, 452-459.
- Braveman, P. 2014. What are health disparities and health equity? We need to be clear. *Public Health Reports*, 1291 to suppl2, 5-8.
- Braveman, P. A., Kumanyika, S., Fielding, J., LaVeist, T., Borrell, L. N., Manderscheid, R., & Troutman, A. 2011. Health disparities and health equity: the issue is justice. *American journal of public health*, 101S1, S149-S155.
- Braveman, P., & Gruskin, S. 2003. Defining equity in health *Journal of Epidemiology & Community Health*, 574, 254-258
- Brown, C., Harrison, D., Burns, H., & Ziglio, E. 2013. *Governance for health equity*. WHO Regional Office for Europe.
- Bugyi, A. S., Rahat, R., Zakar, R., Zakar, M. Z., Fischer, F., Nasrullah, M., & Manawar, R. 2014. Factors associated with non-utilization of child immunization in Pakistan: evidence from the Demographic and Health Survey 2006-07. *BMC public health*, 141, 232.

- Çalışkan, Z., Kılıç, D., Öztürk, S., & Atılğan, E. 2015 Equity in maternal health care service utilization: a systematic review for developing countries. *International journal of public health*, 607, 815-825.
- Chan, M. 2013. Linking child survival and child development for health, equity, and sustainable development *The Lancet*, 3819877, 1514-1515
- Collins, S., Dent, N., Binns, P., Bahwere, P., Sadler, K., & Hallam, A. 2006 Management of severe acute malnutrition in children *The lancet*, 3689551, 1992-2000
- Devaux, M. 2015. Income-related inequalities and inequities in health care services utilisation in 18 selected OECD countries *The European Journal of Health Economics*, 161, 21-33
- Economic inequalities in maternal health care: prenatal care and skilled birth attendance in India, 1992–2006. *PloS one*, 510, e13593.
- Elgar, F. J., Pfortner, T. K., Moor, I., De Clercq, B., Stevens, G. W., & Currie, C. 2015 Socio-Economic inequalities in adolescent health 2002–2010: a time-series analysis of 34 countries participating in the Health Behaviour in School-aged Children study. *The Lancet*, 3859982, 2088-2095.
- Giné, X., Khalid, S., & Mansuri, G. 2018. *The impact of social mobilization on health service delivery and health outcomes: evidence from rural Pakistan*. The World Bank.
- Guevara, J. P., Wright, M., Fishman, N. W., Krol, D. M., & Johnson, J. 2018. The Harold Amos Medical Faculty Development Program: Evaluation of a National Program to Promote Faculty Diversity and Health Equity. *Health Equity*, 21, 7-14.
- Huda, T. M., Hayes, A., & Dibley, M. J. Examining horizontal inequity and social determinants of inequality in facility delivery services in three South Asian countries.
- Hyder, A. A., Merritt, M., Ali, J., Tran, N. T., Subramaniam, K., & Akhtar, T. 2008. Integrating ethics, health policy and health systems in low-and middle-income countries: case studies from Malaysia and Pakistan. *Bulletin of the World Health Organization*, 868, 606-611.
- Irfan, S. M., & Ijaz, A. 2011 Comparison of service quality between private and public hospitals: Empirical evidences from Pakistan. *Journal of Quality and Technology Management*, 71, 1-22.
- Kc, A., Nelin, V., Raaijmakers, H., Kim, H. J., Singh, C., & Målqvist, M. 2017 Increased immunization coverage addoctoresses the equity gap in Nepal. *Bulletin of the World Health Organization*, 954, 261-269.



Mackenbach, J. P., Stirbu, I., Roskam, A. J. R., Schaap, M. M., Menvielle, G., Leinsalu, M., & Kunst, A. E. 2008. Socio-Economic inequalities in health in 22 European countries *New England Journal of Medicine*, 35823, 2468-2481

Majrooh, M. A., Hasnain, S., Akram, J., Siddiqui, A., & Memon, Z. A. 2014. Coverage and quality of antenatal care provided at primary health care facilities in the 'Punjab' province of 'Pakistan'. *Plos one*, 911, e113390

Majrooh, M. A., Hasnain, S., Akram, J., Siddiqui, A., Shah, F., & Memon, Z. 2013. Accessibility of antenatal services at primary healthcare facilities in Punjab, Pakistan. *Journal of Pakistan medical association*, 634, 60.

Majrooh, Muhammad Ashraf, Seema Hasnain, Javaid Akram, and Arif Siddiqui. "Core Research Team."

Makdissi, P., & Yazbeck, M. 2014. Measuring Socio-Economic health inequalities in presence of multiple categorical information *Journal of Health Economics*, 34, 84-95

Malik, S. M., & Ashraf, N. 2016. Equity in the use of publicly provided mother and child health for mother and newborn child health care in Pakistan: a utilization incidence analysis. *International journal for equity in health*, 151, 120.

Mathew, J. L. 2012. Inequity in childhood immunization in India: a systematic review. *Indian pediatrics*, 493, 203-223.

Mazhar, M. A., & Shaikh, B. T. 2016. CONSTITUTIONAL REFORMS IN PAKISTAN: TURNING AROUND THE PICTURE OF HEALTH SECTOR IN PUNJAB PROVINCE. *Journal of Ayub Medical College Abbottabad*,

Mitchell, S., Andersson, N., Ansari, N. M., Omer, K., Soberanis, J. L., & Cockcroft, A. 2009. Equity and vaccine uptake: a cross-sectional study of measles vaccination in Lasbela District, Pakistan. *BMC International Health and Human Rights*, 91, S7.

Mitchell, S., Andersson, N., Ansari, N. M., Omer, K., Soberanis, J. L., & Cockcroft, A. 2009. Equity and vaccine uptake: a cross-sectional study of measles vaccination in Lasbela District, Pakistan. *BMC International Health and Human Rights*, 91, S7.

Mumtaz, Z., & Salway, S. M. 2007. Gender, pregnancy and the uptake of antenatal care services in Pakistan. *Sociology of health & illness*, 291, 1-26.

Mumtaz, Z., Levay, A., Bhatti, A., & Salway, S. 2015. Good on paper: the gap between programme theory and real-world context in Pakistan's Community Midwife programme. *BJOG: An International Journal of Obstetrics & Gynaecology*, 1222, 249-258.

Mumtaz, Z., Salway, S., Bhatti, A., Shanner, L., Zaman, S., Laing, L., & Ellison, G. T. 2014. Improving maternal health in Pakistan: toward a deeper understanding of the social

determinants of poor women's access to maternal health services. *American journal of public health*, 104S1, S17-S24

Mushtaq, M. U., Gull, S., Shad, M. A., & Akram, J. 2011. Socio-demographic correlates of the health-seeking behaviours in two districts of Pakistan's Punjab province. *JPMA-Journal of the Pakistan Medical Association*, 6112, 1205.

Mushtaq, M. U., Majrooh, M. A., Ahmad, W., Rizwan, M., Luqman, M. Q., Aslam, M. J., ...& Shad, M. A. 2010. Knowledge, attitudes and practices regarding tuberculosis in two districts of Punjab, Pakistan. *The international journal of tuberculosis and lung disease*, 143, 303-310.

Nishtar, S., Bhutta, Z. A., Jafar, T. H., Ghaffar, A., Akhtar, T., Bengali, K., ...& Rahim, E. 2013. Health reform in Pakistan: a call to action. *The Lancet*, 381(9885), 2291-2297

Nishtar, S., Bhutta, Z. A., Jafar, T. H., Ghaffar, A., Akhtar, T., Bengali, K., ... & Rahim, E. (2013). Health reform in Pakistan: a call to action. *The Lancet*, 381(9885), 2291-2297.

Nishtar, S., Boerma, T., Amjad, S., Alam, A. Y., Khalid, F., ul Haq, I., & Mirza, Y. A. 2013. Pakistan's health system: performance and prospects after the 18th Constitutional Amendment *The Lancet*, 381(9884), 2193-2206.

Nishtar, S. 2010. Health and the 18th amendment: Retaining national functions in devolution. *Heartfile, Islamabad*.

Ozawa, S., Clark, S., Portnoy, A., Grewal, S., Brenzel, L., & Walker, D. G. 2016. Return on investment from childhood immunization in low-and middle-income countries, 2011–20. *Health Affairs*, 352, 199-207.

Penman-Aguilar, A., Talih, M., Huang, D., Moonesinghe, R., Bouye, K., & Beckles, G. 2016. Measurement of health disparities, health inequities, and social determinants of health to support the advancement of health equity *Journal of Public Health Management and Practice*, 22, S33-S42

Perry, H. B., Zulliger, R., & Rogers, M. M. 2014. Community health workers in low-, middle-, and high-income countries: an overview of their history, recent evolution, and current effectiveness. *Annual review of public health*, 35, 399-421.

Qadeer, E., Fatima, R., Yaqoob, A., Tahseen, S., Haq, M. U., Ghafoor, A., ...& Tiemersma, E. W. 2016. Population based national tuberculosis prevalence survey among adults > 15 years in Pakistan, 2010–2011. *PloS one*, 112, e0148293.

Ravindooran, T. S. 2010. Privatisation in reproductive health services in Pakistan: three case studies. *Reproductive health matters*, 1836, 13-24.

Ravindooran, T. S. 2010. Privatisation in reproductive health services in Pakistan: three case studies. *Reproductive health matters*, 1836, 13-24.

Sachdev, H. P. S. 2001. Low birth weight in South Asia. *Int J Diab Dev Countries*, 211, 13-33.

Sarfraz, M., & Hamid, S. 2014. Challenges in delivery of skilled maternal care-experiences of community midwives in Pakistan.

Saxena, D., Vangani, R., Mavalankar, D., & Thomsen, S. 2013. Inequity in maternal health care service utilization in Gujarat: analyses of district-level health survey data. *Global health action*, 61, 19652.

Siddiqi, S., Haq, I. U., Ghaffar, A., Akhtar, T., & Mahaini, R. 2004. Pakistan's maternal and child health policy: analysis, lessons and the way forward *Health policy*, 691, 117-130

Singh, P. K. 2013. Trends in child immunization across geographical regions in India: focus on urban-rural and gender differentials. *PloS one*, 89, e73102.

Smith, L. C., & Haddad, L. J. 2000. *Explaining child malnutrition in developing countries: A cross-country analysis* Vol. 111. Intl Food Policy Res Inst.

Tariq, J., Sajjad, A., Zakar, R., Zakar, M. Z., & Fischer, F. 2018. Factors Associated with Undernutrition in Children under the Age of Two Years: Secondary Data Analysis Based on the Pakistan Demographic and Health Survey 2012–2013. *Nutrients*, 106, 676.

Tavares, L. P., & Zantomio, F. 2017. Inequity in healthcare use among older people after 2008: The case of Southern European Countries. *Health Policy*, 12110, 1063-1071.

Upvall, M. J., Sochael, S., & Gonsalves, A. 2002. Behind the mud walls: The role and practice of lady health visitors in Pakistan. *Health care for women international*, 235, 432-441.

Victora, C. G., Wagstaff, A., Schellenberg, J. A., Gwatkin, D., Claeson, M., & Habicht, J. P. 2003. Applying an equity lens to child health and mortality: more of the same is not enough *The Lancet*, 3629379, 233-241.

Waters, H. R. 2000. Measuring equity in access to health care. *Social Science & Medicine*, 514, 599-612.

Wazir, M. S., Shaikh, B. T., & Ahmed, A. 2013. National program for family planning and primary health care Pakistan: a SWOT analysis. *Reproductive health*, 101, 60.

Whitehead, M. 1991. The concepts and principles of equity and health. *Health promotion international*, 63, 217-228.

World Health Organization 2011 Strategic directions for improving adolescent health in South-East Asia Region Hosseinpoor, A. R., Bergen, N., & Schlottheuber,

World Health Organization 2011 Strategic directions for improving adolescent health in South-East Asia Region

World Health Organization 2018 Explorations of inequality: childhood immunization.

World Health Organization.2015. Measles vaccination has saved an estimated 17.1 million lives since 2000. *Saudi Medical Journal*, 36(12), 1507-1508.

World Health Organization.Violence, Injury Prevention, & World Health Organization.2009. *Global status report on road safety: time for action*. World Health Organization.

Yaya, S., Uthman, O. A., Amouzou, A., Ekholuenetale, M., & Bishwajit, G.2018. Inequalities in maternal health care utilization in Benin: a population based cross-sectional study. *BMC pregnancy and childbirth*, 18(1), 194.

Zaidi, S., Riaz, A., Rabbani, F., Azam, S. I., Imran, S. N., Pradhan, N. A., & Khan, G. N. 2015. Can contracted out health facilities improve access, equity, and quality of maternal and newborn health services? Evidence from Pakistan. *Health research policy and systems*, 13(1), S54.