"Exploring the potential for fertility change: A ranking of districts based on socio-demographic conduciveness to family planning"

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Table of Contents

List of Tables

List of Figures

Abbreviations

AJK   Azad Jammu and Kashmir

CPR   Contraceptive prevalence rate

FATA   Federally Administered Tribal Area

FPI   Family Planning Index

GB   Gilgit-Baltistan

KP   Khyber Pakhtunkhwa

MICS   Multiple Indicator Cluster Survey

PDHS   Pakistan Demographic and Health Survey

PSLMS   Pakistan Social and Living Standards Measurement Survey

TFR   Total fertility rate

1   Introduction

Pakistan's population is growing faster than that of most other countries in the region. It grew at 2.4% per year between the censuses of 1998 and 2017 and is projected to reach 285 million by 2030. The country also has one of the highest fertility rates in the region with an average of 3.6 births per woman. The contraceptive prevalence rate (CPR) among married women in the country has been stagnant at around 34% over the last five years, with only 25% of women using modern contraceptive methods. Contraception is one of the strongest proximate determinants of fertility—an increase in its use effects fertility decline—and as would be expected from the stagnation in CPR growth, no major change has occurred in fertility during the recent period (NIPS 2019).

Notably, there are significant differences in both the total fertility rate (TFR) and the CPR across provinces and regions within Pakistan. According to the 2017-18 Pakistan Demographic and Health Survey (PDHS), the TFR is lowest in Islamabad (3.0) and highest in Gilgit-Baltistan (4.7), followed by Khyber Pakhtunkhwa and Balochistan (4.0); while the CPR is highest in Islamabad (35%) and lowest in Balochistan (14%) (NIPS 2019). These variations are even greater at the district level; for instance, the Multiple Indicator Cluster Survey (MICS) 2017-18 shows that in Punjab the CPR varies from 49% in district Multan to only 17% in district Gujranwala (Government of Punjab 2019). Similar variations are found across districts in other provinces.

The current study aims to contribute to a clearer understanding of the differences in fertility rates and contraceptive prevalence in different parts of the country by ranking its provinces and districts based on indicators of family planning. A simple way to do this would be to rank the provinces and districts according to their CPRs. However, this would only convey the current status of contraceptive prevalence and not explain why it varies so much across districts or indicate the type of interventions needed to improve contraceptive prevalence within each district. To arrive at a ranking that also helps explain these differences, it is necessary to take into account the social dynamics and socio-demographic factors associated with family planning.

A large body of literature exists globally on the determinants or factors related to the adoption and use of family planning. Research from Pakistan indicates that social disapproval is among the major barriers women face in adopting family planning (Jabbar et al. 2015; Mir 2019; MacQuarrie and Aziz 2020). Other commonly reported factors include the number of living children, region of residence (rural/urban), education and employment status of women, household income, religious or cultural constraints, and quality of family planning services. A recent study, based on all four rounds of the PDHS (1990, 2006-07, 2012-13 and 2017-18), found a positive correlation between traditional and modern contraceptive use with women's education, household affluence, and residence in urban areas (MacQuarrie and Aziz, 2020). Fear of side effects is also a commonly reported reason for low use of some contraceptive methods in Pakistan (Nishtar et al. 2013; Asif and Pervaiz 2019).

Desire for more children, linked with high child mortality in Pakistan, is also reported as a major reason why people do not use contraceptives. In many South Asian countries, and particularly in Pakistan, household health expenditures are borne by families themselves rather than public health facilities or a state welfare system. Financial pressures lead people to avail poor quality reproductive health care

services, such as those provided by traditional birth attendants (*dais*) and even quacks; this situation is largely responsible for the low CPR (Punjani 2018).

After reviewing the determinants associated with unmet need for family planning in Pakistan, Punjani (2018) emphasizes the need for a broader approach:

> In order to highlight the unmet need for family planning in today's pluralistic health care system, determinants such as social and cultural constraints, geographical factors, economical and physical access to the health care facilities, gender biases, girls' education, women's position in society, and limited access to family planning services, and other factors related to larger society need to be explored. Moreover, there is a need to make a more receptive and gender-sensitive health care system. If the family planning program assisted most women with unmet need, a significant demographic influence would be seen, with a considerable decrease in fertility and a reduction in population growth. This has become, chiefly, the important requirement for poverty reduction along with social and economic development of Pakistan.

A quick review of data from Pakistan also indicates a great deal of variation in socio-demographic factors associated with the adoption of family planning services across the provinces, regions and districts. For instance, women's literacy and use of maternal health care services are much lower in the southern districts of Punjab than in other districts of the province, according to the 2017-18 MICS Punjab (Government of Punjab 2019). Such variations provide a strong basis for analyzing indicators of socio-economic conduciveness to family planning to understand differences in fertility rates and contraceptive prevalence at the subnational level in Pakistan.

1.1   Objectives

This study aims to contribute to a better understanding of variations across provinces and districts in the conditions that affect use of family planning in Pakistan, so that more targeted strategies can be designed to increase contraceptive prevalence. The specific objectives of the study are to:

- Develop a Family Planning Index (FPI) incorporating indicators related to family planning demand as well as the associated socio-demographic characteristics; and

- Rank the provinces/regions[1] and districts of Pakistan according to the FPI.

1.2   Data Sources Used

Three main sources provide data on population and health in Pakistan: The Population and Housing Census, the Pakistan Demographic and Health Survey, and the Multiple Indicators Cluster Survey

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[1] Pakistan consists of seven major administrative regions, including four provinces—Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan—and three regions, namely Islamabad Capital Territory, Gilgit-Baltistan, and Azad Jammu and Kashmir. Until recently, the Federally Administered Tribal Areas (FATA) comprised an eighth region, but it has recently been merged with Khyber Pakhtunkhwa (KP). In view of the often large differences in development and socio-demographic indicators between KP and FATA, the latter is treated as a separate (i.e., eighth) region in this analysis.

(MICS). Each source has unique strengths and limitations that were taken into consideration in developing a methodologically sound Family Planning Index applicable at both district and province levels. Census data offer the advantage of complete population coverage. However, they are very limited in terms of the number of relevant variables available. The PDHS, owing to its primary focus, is a good data source for an index like the FPI at the provincial/regional level. However, it does not provide micro-data that is representative at the district level. On the other hand, the MICS does provide micro-data on population and health issues that are representative at the district level. However, it is a subnational initiative that has been carried out at different times in each province/region. The MICS for the 2019-2020 period is under way in all four provinces and Gilgit-Baltistan (GB), but again, launch and completion timelines are different across the regions, and the data are not yet available. Due to this difference in timings, the provincial MICS datasets cannot be used to develop a uniform index at the national, provincial, and regional levels.

In view of these strengths and weaknesses, this report has used the latest available MICS datasets to develop the FPI for the district level, and the 2017–18 PDHS for the provincial and regional comparison. The Census has not been used.

The MICS datasets used include the 2017-18 MICS for Punjab; the 2014 MICS for Sindh; and the 2016-17 MICS for KP. While the 2010 MICS for Balochistan is available, statistics based on it are unlikely to be consistent or reliable due to the following reasons:

- Data on two key indicators, unmet need and fertility desire (occurrence of unwanted pregnancy during last two years), is not included in the survey;

- At the district level, the number of cases is small, making it difficult to obtain reliable estimates; and

- The survey was conducted ten years ago, and the data are too old to be representative of the current situation.

For these reasons, the 2010 MICS for Balochistan has not been used and the province is excluded from the district-level ranking in this study. However, it is included in the PDHS-based provincial and regional comparison.

In addition to the above sources, the 2014-15 Pakistan Social and Living Standards Measurement Survey (PSLMS) has been used for district-level data on one indicator—the proportion of economically active women—which is not available from the MICS datasets. The PSLMS 2014-15 offers the latest available data representative at the district level.

Further details of the data sources used in the FPI are provided in Box 1.

Box 1: Data Sources for the Family Planning Index (FPI)

Pakistan Demographic and Health Survey 2017-18: The PDHS was implemented by the National Institute of Population Studies (NIPS) under the aegis of the Ministry of National Health Services, Regulations and Coordination. This PDHS is the fourth to be conducted in Pakistan, and is preceded by surveys conducted in 1990-91, 2006-07, and 2012-13. Data collection took place from 22 November 2017 to 30 April 2018. The results of the 2017-18 PDHS are representative at the national level, and urban and rural areas separately. The survey estimates are also representative of the four provinces—Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan—and the four regions—Islamabad Capital Territory (ICT), FATA, AJK, and Gilgit- Baltistan (GB)—with a total of 13 second-level survey domains. The 2017-18 PDHS followed a stratified two-stage sample design. The first stage involved selecting sample points (clusters) consisting of enumeration blocks. The second stage involved systematic sampling of households. The total sample size of the 2017-18 PDHS was 16,240 households (NIPS 2019).

Multiple Indicator Cluster Survey: The MICS is carried out by the Bureau of Statistics, Planning and Development Department of provincial governments in Pakistan. Financial support is provided through the Annual Development Programme and technical support by the United Nations Children's Fund (UNICEF).

MICS Punjab 2017-18: The sample for the MICS Punjab 2017-18 was designed to provide estimates at the provincial level, for urban and rural areas, and for all 36 districts of Punjab. The urban and rural areas within each district were identified as the main sampling strata, and the sample of households was selected in two stages. Within each stratum, a specified number of census enumeration areas were selected systematically with probability proportional to size. The total sample size was 53,840 households. Fieldwork for the survey was conducted from December 2017 to March 2018 (Government of Punjab 2019).

MICS Sindh 2014: The MICS Sindh 2014 was also designed to provide estimates for a large number of indicators at the provincial level, for urban and rural areas, and for all 28 districts of Sindh. Urban and rural areas within each district were identified as the main sampling strata, and the sample of households was selected in two stages. In the first stage, within each stratum, a specified number of census enumeration areas were selected systematically with probability proportional to size. In the second stage, households were selected randomly within the selected enumeration areas or block. The total sample size was 17,014 households. The survey was carried in July-August 2014.

MICS Khyber Pakhtunkhwa 2016-17: The 2016-17 MICS Khyber Pakhtunkhwa was carried out in December 2016-May 2017, covering 20,995 households. A two-stage sampling strategy was adopted. The first stage involved selecting sample points (clusters) consisting of enumeration blocks. The second stage involved systematic sampling of households. The survey provides data representative at the provincial level as well as for all 25 districts of the province.

1.3 Structure of the Report

Section 2 of this report describes in detail the Family Planning Index developed in this study. The FPI was applied for ranking both provinces/regions and districts: the provincial/regional ranking is presented in Section 3, while Sections 4, 5, and 6 present the results of district ranking within the provinces of Punjab, Sindh, and Khyber Pakhtunkhwa, respectively. Finally, Section 7 provides brief concluding remarks.

2 Framework of the Family Planning Index (FPI)

The Family Planning Index was developed to rank the districts and regions of Pakistan in terms of conduciveness to family planning use. To keep the index simple and meaningful, the number of indicators it comprises was restricted to 14. The components and indicators of the FPI represent some of the key factors affecting the use of family planning services in Pakistan, as identified in relevant literature. Overall, the FPI shows the relative position of each region/province, and of districts within each province, in terms of the socio-demographic factors that promote small family norms and use of family planning services. The framework or scheme for the FPI is shown in Table 1.

Table 1: Framework of the FPI: Components, indicators, and weights

Components	Indicator	Indicator weight	Component weight
A. Exposure, fertility desire, and child survival	Proportion (%) of unmarried women (ages 15-29)	8.33%	25%
	Proportion (%) of women (ages 15-49) with 3 or more children who had an unwanted pregnancy in the last 2 years	8.33%	
	Proportion (%) of ever married women who did not experience child mortality	8.33%	
B. Deliberate and natural fertility control	Proportion (%) of women (ages 15-49) using contraception (current users)	8.33%	25%
	Proportion (%) of women with unmet need[a]	8.33%	
	Proportion (%) of women (ages 15-49) reporting exclusive breastfeeding of last-born child for 0-5 months	8.33%	
C. Women's empowerment and maternal health care	Proportion (%) of literate women	6.25%	25%
	Proportion (%) of economically active women	6.25%	
	Proportion (%) of women (ages 15-49) who had 4 or more antenatal care visits during last pregnancy	6.25%	
	Proportion (%) of women (ages 15-49) who delivered last birth at a health facility	6.25%	
D. Socio-economic development and access to services	Share of urban areas (%) in total population	6.25%	25%
	Net primary school enrolment rate	6.25%	
	Number of Lady Health Workers (LHWs) per 250 households	6.25%	
	Proportion (%) of households with improved sanitation (all types of flush toilets)	6.25%	

[a] This refers to the total unmet need for contraception, which is the sum of unmet need for spacing and unmet need for limiting. Unmet need for spacing is defined as the percentage of women who are not using a method of contraception and are i) not pregnant, ii) not post-partum amenorrheic, and iii) fecund, and say they want to wait two or more years for their next birth OR are i) not pregnant, ii) not post-partum amenorrheic, and iii) fecund, and unsure whether they want another child OR are pregnant, and say that pregnancy was mistimed (would have wanted to wait) OR are post-partum amenorrheic and say that the birth was mistimed (would have wanted to wait). Unmet need for limiting is defined as percentage of women

who are married and are not using a method of contraception and are i) not pregnant, ii) not post-partum amenorrheic, and iii) fecund, and say they do not want any more children OR are pregnant and say they did not want to have a child OR are post-partum amenorrheic and say that they did not want the birth (Government of Punjab 2019).

2.1 Components and Indicators

As shown in Table 1, the FPI has four components:

A. Exposure, fertility desire, and child survival;
B. Deliberate and natural fertility control;
C. Women's empowerment and maternal health care; and
D. Socio-economic development and access to services.

Below, we outline the relevance of the indicators comprising each component to family planning use and fertility norms.

A. Exposure, fertility desire and child survival

- *Proportion of unmarried women (ages 15-29):* This variable measures the proportion of young women who were unmarried at the time of the survey, precluding their exposure to childbearing.

- *Proportion of women (ages 15–49) with three or more children who experienced an unwanted pregnancy in the last two years:* These women have a desire for a small family and are likely to use contraception to avoid unwanted pregnancies in the future.

- *Proportion of ever-married women who did not experience child death:* This variable indicates the relationship between child survival, fertility, and use of contraception. These women are likely to use contraceptives when they reach their desired family size.

B. Deliberate and natural fertility control

- *Proportion of women using contraception (current users):* Any deliberate practice undertaken to reduce the risk of conception, including abstention, sterilization, and use of contraceptive methods, is considered contraception. Women who are current users of contraceptives are likely to continue it in the future and could play a role in promoting small family norms in their communities.

- *Proportion of women with unmet need:* Women who have unmet need for family planning are more likely to adopt it if their access to services is improved.

- *Proportion of women reporting exclusive breastfeeding to last-born child*: Following a pregnancy, a woman remains infecundable (i.e., unable to conceive) until the normal pattern of ovulation and menstruation is restored. The duration of the period of infecundity is a function of the duration and intensity of lactation. Exclusive breastfeeding is a natural method of birth control, referred to the Lactational Amenorrhea Method (Labbok 2008).

C. Women's empowerment and maternal health care

- *Proportion of literate women:* Globally, literacy is an effective indicator of preference for small families and use of contraception.

- *Proportion of economically active women:* This indicator represents women in the workforce, i.e., those who are working or looking for work. Women's participation in the labor market is one of the key indicators of their empowerment and an enabling factor in use of family planning services.

- *Proportion of women reporting four antenatal care visits during last pregnancy and proportion of women reporting last delivery at a health facility:* Utilization of health services during pregnancy and childbirth is important for the survival and wellbeing of the mother and the infant (NIPS 2019). Women who use these services are more likely than non-users to adopt family planning services.

D. Socio-economic development and access to services

The role of development as a factor in fertility decline is well-established, and the four indicators included in this component all reflect socioeconomic characteristics associated positively with small family norms and family planning use.

- *Proportion of population residing in urban areas:* An urban-rural divide is reported very frequently in TFR, CPR, and child mortality, with urban areas typically having lower TFR and child mortality, and higher CPR than rural areas.

- *Net primary school enrolment:* School enrolment shows that parents recognize that the 'quality'—and not just quantity—of their children is important and are willing to invest in their children. Households that enroll children in school are more likely to adopt family planning so they can invest adequately in each child.

- *Number of LHWs per 250 households:* LHWs are a source of family planning and other health services, and contribute to improved levels of contraceptive use, antenatal care, hygiene, growth monitoring of children, and counseling for vaccination of mothers and children (NIPS 2019).

- *Proportion of households with improved sanitation (all types of flush toilets):* Access to improved sanitation is likely to be positively associated with adoption of family planning through improved health status, particularly child survival.

All 14 indicators included in the FPI contribute to lowering fertility, increasing desire for fewer children, and encouraging use family planning. Therefore, a higher FPI value denotes greater conduciveness as well as potential in the population to adopt family planning services. The share of each component in the FPI indicates areas of strength and weakness in each domain, with implications for the nature of policy interventions required.

2.2   Weights

The FPI is a district-level index. In other words, each indicator of the index is aggregated at the district level using micro-data from a representative sample survey. While this also makes aggregation possible at the provincial and national level, as mentioned earlier, it is currently not possible to generate comparable statistics with existing provincial MICS datasets, since they were developed in different years. This is why PDHS data are used to rank provinces and regions. MICS datasets have been used to rank districts within each province.

Table 1 shows that each component of the index is assigned an equal weight of 25%, and this is equally divided among the indicators comprising it. Accordingly, in the first two components, i.e.,

Exposure, fertility desire and child survival and *Deliberate and natural fertility control*, each indicator has a weight of 8.33%. In the third and fourth components—*Women's empowerment and maternal health care* and *Socio-economic development and access to services*—comprising four indicators each, each variable is assigned a weight of 6.25%.

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3 FPI Ranking of Provinces and Regions

As explained in Section 1, micro and secondary data of the PDHS 2017-18 were used to construct the FPI at the regional level, i.e., for the four provinces—Punjab, Sindh, KP, and Balochistan—and the regions, including Islamabad, Azad Jammu and Kashmir (AJK), Gilgit-Baltistan (GB), and FATA. The results are presented below. We begin with summary statistics for the 14 indicators of the FPI for the eight regions, to provide context. The FPI ranking of the regions is then discussed, including a brief comparison with regional levels of contraceptive prevalence and unmet need, and analysis of the share of each index component in the FPI value for each region.

3.1 Review of Indicators

Table 2 presents a summary of statistics against the 14 FPI indicators for the eight regions. Data for each of the four components are briefly discussed below.

Component A – Exposure, fertility desire and child survival

More than half of young women (15-29) were unmarried at the time of the survey. The proportion of unmarried women ranges from 41% in AJK to 59% in Islamabad. It is higher in Balochistan (58%) and Punjab (55%) than in Sindh (52%) and KP (49%). The data indicate that marriages at younger ages are not uncommon, particularly in AJK and KP. According to the 2017-18 PDHS, 5% of women aged 15-19 experienced childbearing (NIPS 2019).

There is a large variation in fertility desire, measured as the percentage of women with 3 or more children, who did not want the last pregnancy which occurred in the last two years. This is considerably higher in four regions of the country, namely, Islamabad (33%), AJK (33%), GB (30%), and Punjab (27%), compared to Sindh (12%), KP (12%) and Balochistan (9%), reflecting a major difference in demographic behavior across the regions.

Table 2: Summary statistics of FPI indicators, by component and province/region

Province/region	Component A: Exposure, fertility desire, and child survival			Component B: Deliberate and natural fertility control			Component C: Women's empowerment and maternal health care				Component D: Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never suffered child mortality	Proportion (%) of women (15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women who exclusively breastfed their last born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (15-49) who delivered last birth at a health facility	Share (%) of urban areas in the total population of a district	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Punjab	54.9	27.0	74.8	38.3	15.8	36.6	62.2	19.7	56.2	68.9	36.71	64.4	0.65	74.3
Sindh	52.4	14.4	79.0	30.9	17.7	58.0	43.5	21.3	54.1	71.8	52.02	55.4	0.63	60.1
KP	48.7	12.2	77.5	30.9	20.5	64.3	34.8	7.4	44.6	61.8	18.77	56.6	0.87	68.3
Balochistan	57.9	8.5	78.6	19.8	21.6	56.6	15.9	10.1	23.1	34.6	27.55	38.7	0.94	65.3
Islamabad	59.0	33.4	87.1	45.7	17.3	35.2	73.9	15.8	80.2	84.0	50.58	74.1	0.23	94.1
FATA	51.6	3.2	84.5	21.8	17.0	62.0	9.0	0.9	25.6	49.1	2.84	40.1	1.16	46.2
AJK	40.5	33.2	78.2	27.6	21.9	44.1	63.8	11.3	46.5	62.3	17.12	70.7	1.17	77.8
GB	55.2	29.5	72.7	39.0	26.0	69.4	43.8	7.5	34.9	62.3	16.14	58.3	1.48	62.3
Total	**55.9**	**20.0**	**76.7**	34.2	17.3	47.5	50.4	17.3	51.4	66.2	36.38	58.3	0.73	69.4

Source: Computed from PDHS 2017-18.

Child survival, measured as the proportion of ever married women (15-49) who never suffered the death of a child, varies only narrowly across the provinces and regions, from 87% in Islamabad to 73% in GB.

Component B – Deliberate and natural fertility control

The CPR ranges from 20% in Balochistan to 46% in Islamabad. The rate is close to 40% in GB and Punjab and 31% in Sindh and KP. The proportion of women with unmet need is lowest in Punjab (16%) and highest in GB (26%). It is lower in Sindh than in KP and Balochistan.

The regions also vary considerably in the proportion of women practicing exclusive breastfeeding, which is highest (68%) in GB and lowest (35%) in Islamabad. The corresponding value for Punjab (37%) is close to Islamabad while it is on the higher side, nearly 60%, in Sindh, KP, and Balochistan.

Component C – Women's empowerment and maternal health care

The data indicate a great variation across regions and provinces in the proportion of literate women, from 74% in Islamabad to only 16% in Balochistan. Female literacy is considerably higher in Punjab (62%) than in Sindh (44%) and KP (35%). Regional variation is also evident in the proportion of economically active women, which ranges from only 7% in KP to around 20% in Sindh and Punjab. The proportion of economically active women in Islamabad is only 16%. The relatively higher participation rate of women in Punjab and Sindh could be due to the engagement of women in the agriculture sector, mainly as unpaid family helpers.

On the two indicators of maternal health care—proportion of women (15-49) who had 4 ANC visits during their last pregnancy, and proportion of women whose last birth took place at a health facility—also varies across regions and provinces. Overall, utilization of maternal health care appears to be relatively better in Islamabad, Punjab, and Sindh than in the other regions.

Component D – Socio-economic development and access to services

Around half of the population of Sindh and Islamabad live in urban areas. The corresponding proportion in Punjab and Balochistan is 37% and 28% respectively, while it is low, only 19%, in KP. The net primary-level school enrolment rate has a huge range from over 70% in AJK and Islamabad to only 39% in Balochistan. In Punjab, this rate is 64%, while in GB, KP, and Sindh, it is 58%, 57% and 55%, respectively. The ratio of LHWs to households is considerably higher in GB, AJK, and FATA than in other regions of the country. Amongst the four provinces, it is higher in Balochistan and KP than in Punjab and Sindh. Finally, access to improved sanitation (all types of flush toilets) is universal in Islamabad (94%). Among the other regions, access is relatively better in AJK (78%) and Punjab (74%), than in KP (68%), Balochistan (65%), and Sindh (60%).

3.2   FPI Ranking

Figure 1 presents the FPI values for Pakistan and the eight provinces and regions. As explained in Section 2, the FPI values indicate the relative position of the regions in terms of the socio-demographic factors that promote both small family norms and the use of family planning services. A higher value denotes better prospects for uptake and use of family planning.

Figure 1: FPI ranking of provinces and regions of Pakistan
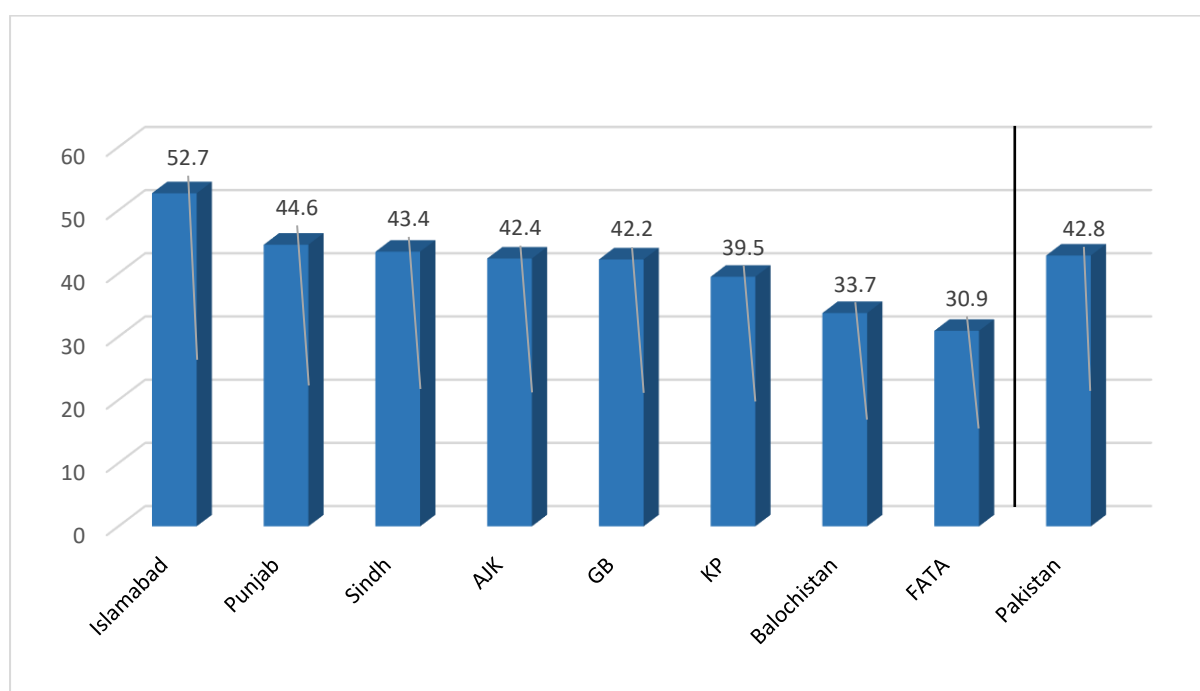
Source: Computed from PDHS 2017-18

The FPI value at the national level is 42.8. At the regional level, Islamabad ranks highest among the eight regions with an FPI of 53. Punjab ranks second with an FPI of 45. It is followed in the ranking by Sindh, AJK, GB, KP, Balochistan, and finally, FATA.

Interestingly, the FPI value varies only slightly for Punjab, Sindh, KP, AJK, and GB, from 40 for KP to 45 for Punjab. The real difference is between Balochistan and the other three provinces.

A comparison of FPI with the CPR and unmet need is appropriate here since a positive association might be expected between FPI and CPR, while regions with relatively lower values of FPI are likely to have higher unmet need. The relevant statistics are presented in Table 3. The highest CPR, 46%, is found for Islamabad, which also ranks first under the FPI. GB and Punjab are close to Islamabad in CPR, but GB is quite low in the FPI ranking. The other regions with relatively high FPI, e.g., Sindh and AJK, have lower contraceptive prevalence. In Balochistan, the CPR is only 20%, approximately half the rate in Islamabad, GB, and Punjab. Unmet need is highest (26%) in GB and lowest in Punjab, 16%. It is estimated at 22% and 21% in Balochistan and KP respectively. Except FATA, the regions with relatively low FPI have generally higher unmet need.

Table 3: FPI ranking, CPR, and unmet need, by region

	FPI	FPI-based ranking	CPR	Unmet need
Islamabad	52.7	1	45.7	17.3
Punjab	44.6	2	38.3	15.8
Sindh	43.4	3	30.9	17.7
AJK	42.4	4	27.6	21.9
GB	42.2	5	39.0	26.0
KP	39.5	6	30.9	20.5
Balochistan	33.7	7	19.8	21.6
FATA	30.9	8	21.8	17.0
Pakistan	42.8	-	34.2	17.3

Source: Computed from PDHS 2017-18

3.3   Component Shares in FPI Scores

Table 4 and Figure 2 show the contribution of each index component to the FPI value for each region. The analysis of contribution is primarily provided for comparison across the regions and does not necessarily demonstrate the importance of any component in the overall FPI. It may be noted that in Components A and B—*Exposure, fertility desire and child survival* and *Deliberate and natural fertility control*—there is not much variation across the regions, although the score for Islamabad is higher. However, scores for Components C and D, i.e., *Women's empowerment and maternal health care* and *Socio-economic development and access to services*, respectively—vary significantly across regions. For example, the weighted value or score of Balochistan for Component C is less than a third of the corresponding value for Islamabad, and less than half of that of Punjab, indicating lower empowerment of women. Punjab has the second highest values under Components C and D after Islamabad.

Figure 2 shows the percentage contribution of each component to the FPI for each region. The pattern is similar in Islamabad, Punjab, AJK and Sindh in terms of the greater contribution of Components A, C, and D to the FPI value. KP shows a different pattern, with nearly equal contribution from all four components to the FPI, and only a slightly higher share of Component A. Balochistan differs from the other provinces and regions in terms of the relatively low contribution of Component C.

Table 4: Contribution of each component in FPI, by region

	A. Exposure, fertility desire and child survival	B. Deliberate and natural fertility control	C. Women's empowerment and maternal health care	D. Socio-economic development and access to services	Overall FPI (weighted)
Punjab	13.1	7.6	12.9	11.0	44.6
Sindh	12.1	8.9	11.9	10.5	43.4
KP	11.5	9.6	9.3	9.0	39.5
Balochistan	12.1	8.2	5.2	8.3	33.7
Islamabad	15.0	8.2	15.9	13.7	52.7
FATA	11.6	8.4	5.3	5.6	30.9
AJK	12.7	7.8	11.5	10.4	42.4
GB	13.1	11.2	9.3	8.6	42.2
Pakistan	12.7	8.2	11.6	10.3	42.8

Source: Computed from PDHS 2017-18

Figure 2: Percentage share of each component in FPI, by region
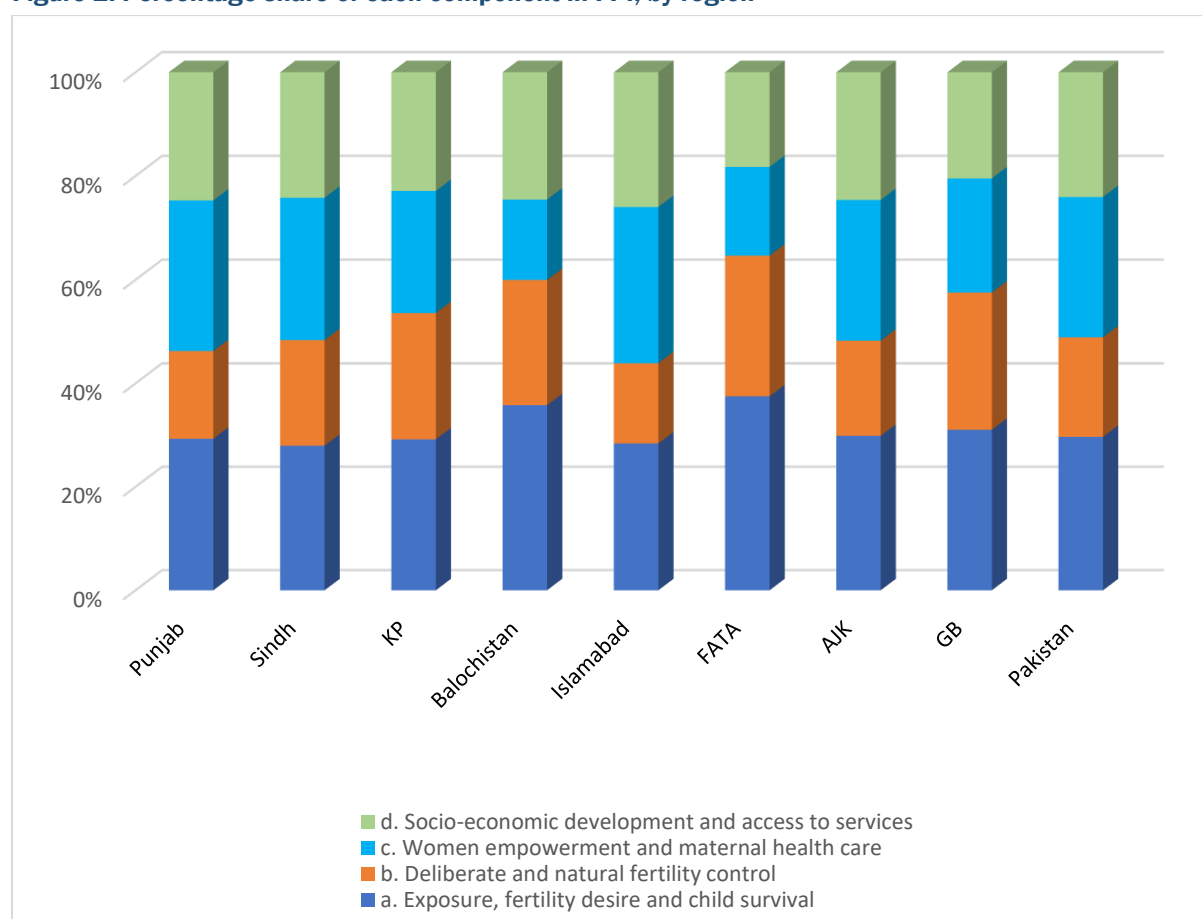
Source: Computed from PDHS 2017-18

An overall conclusion from these results is that in order to promote family planning, a more balanced but region-specific approach is required, focusing on promotion of small family norms,

child survival, female education, and women's employment, in addition to access to family planning and reproductive health services. KP and Balochistan, which have a relatively lower value of FPI, have high unmet need. Assistance to women with unmet need would significantly influence fertility levels in these provinces. However, the assistance in unmet need would be fruitful when it is supported with effective programs for child survival, maternal health care, and empowerment of women.

4 FPI Ranking of Districts in Punjab

The Punjab MICS 2017–18 dataset was used to construct the FPI for the 36 districts of Punjab. Below, we present a brief description of the districts' position against the 14 indicators of the FPI— this provides a context for understanding their FPI scores and ranking, which are presented next. Contributions of index components to the district-level FPI are also discussed.

4.1 Review of Indicators

Summary statistics of the 36 districts for the 14 indicators of the FPI are presented in Appendix 1. Key findings are briefly described below for each component.

Component A – Exposure, fertility desire and child survival

The proportion of unmarried young women (ages 15-29) varies from 41% in DG Khan to 66% in Gujrat. Four districts of South Punjab—DG Khan, Rajanpur, Muzaffargarh, and Lodhran—have the lowest proportion of unmarried women, ranging from 41% to 50%, while the corresponding percentages are over 60% in some of the districts located in central and north Punjab, including Sialkot, Gujranwala, Lahore, Narowal, Rawalpindi, Jhelum and Chakwal. Desire for lower fertility— measured as the percentage of women with 3 or more children who did not want the last pregnancy which occurred in the last two years—is also lower in the southern districts of Punjab compared to the northern or central districts. For example, compared to only 9%, 10%, and 12% of women in Multan, Lodhran, and Bahawalpur districts respectively, about one-third of married women with 3 or more children did not want their last pregnancy in Rawalpindi, Lahore and Sheikhupura districts. Thus, incidence of unwanted pregnancies was relatively lower in South Punjab.

However, child mortality varies relatively less across the districts of Punjab (Appendix 1).

Component B – Deliberate and natural fertility control

The CPR varies considerably across the districts, from only 16% in Gujranwala to about 50% in Multan. However, there is no regional pattern within the province; in some districts in southern Punjab, like Multan and Bahawalpur, the CPR is much higher than the provincial average of 34%; on the other hand, the CPR is lower than the provincial average in the northern districts of Jhelum, Gujrat and Narowal. Unmet need also varies across the districts of Punjab, from 11% in TT Singh and Bahawalpur, to 28% and 27% in Mandi (M) Bahauddin and Gujranwala respectively. The districts of Punjab also vary considerably when it comes to exclusive breastfeeding, from only 28% in TT Singh to more than 50% in Attock, DG Khan, Jhelum, Okara, Rahim Yar (RY) Khan, and Sialkot.

Component C – Women's empowerment and maternal health care

Female literacy is more than 70% in Rawalpindi, Gujrat, Gujranwala, Jhelum, Lahore and Narowal, while in some districts of south Punjab, such as DG Khan, Bhakkar, Layyah, Rajanpur, and Muzaffargarh, it is around 40% or less. In Rajanpur, only 26% of women are literate. The proportion of economically active women is higher in districts of southern Punjab than in other parts of the province, probably because of their participation in agricultural activities. Against the two indicators of maternal health care, the performance of districts in central and northern Punjab is generally better than that of the southern districts (Appendix 1).

Component D – Socio-economic development and access to services

Compared to only 27% and 31% respectively in the southern districts of Rajanpur and Rahim Yar Khan, 81% and 75% of the population of Jhelum and Rawalpindi, both northern districts, live in urban areas. Net school enrolment at the primary level is more than 75% in Gujrat, Rawalpindi, Chakwal and Jhelum, while it is less than 50% in Rajanpur, Rahim Yar Khan, and DG Khan. Similarly, the coverage of LHWs is relatively lower in the southern districts of the province. Finally, access to improved sanitation is universal (more than 90%) in Gujrat, Hafizabad, Jhelum, Lahore and Rawalpindi while it is only 52% in Rajanpur and 59% in Chiniot.

4.2   FPI Ranking

Table 5 presents the FPI and ranking of the 36 districts of Punjab. The ranking is illustrated in descending order in Figure 3. There is a large variation in FPI across the province: Jhelum ranks first, with an FPI of 55, while Rajanpur is ranked at the lowest position, with an FPI of 33.5.

Notably, of the five highest-ranked districts, i.e., Jhelum, Lahore, Rawalpindi, Sialkot and Chakwal, three are situated in northern Punjab and two in central Punjab. On the other hand, the five lowest ranking districts—Rajanpur, Muzaffargarh, DG Khan, Lodhran and Bhakkar—are all located in southern Punjab.

Looking at the FPI from the perspective of "divisions" confirms this pattern. Punjab is administratively divided into nine divisions: Rawalpindi division in the north; Lahore, Faisalabad, and Gujranwala divisions in the center; and Multan, Bahawalpur, and DG Khan divisions in the south; with Sargodha and Sahiwal divisions straddling south and central Punjab. Most of the districts under the administrative control of the southern divisions, Multan, Bahawalpur and DG Khan, have relatively low FPI values. On the other hand, districts under the northern and central divisions score higher. The value of FPI in districts under the control of Sahiwal and Sargodha Divisions are largely somewhere between the FPI values of districts in south Punjab and districts in central Punjab.

The FPI score varies between 33.5 (Rajanpur) and 55 (Jhelum). The nine districts scoring more than 50 include Jhelum, Lahore, Rawalpindi, Sialkot, Chakwal, Gujrat, Sheikhupura, Narowal, and Attock, and they are all located in northern and central Punjab. The score of ten districts is between 45 and 49.9—Gujranwala, Faisalabad, Nankana Sahib, Mandi Bahauddin, Sahiwal, TT Singh, Vehari, Sargodha, Hafizabad and Kasur. The FPI score of 17 districts is less than 45; all districts of South Punjab, except Vehari, are in this lower-score category. It appears that there is a geographical divide in Punjab in terms of the socio-demographic factors that promote (or depress) both small family norms and use of family planning services.

Table 5: FPI and ranking, CPR, and unmet need for family planning in districts of Punjab

District	FPI	FPI ranking	CPR	Unmet need
Jhelum	55.197	1	30.2	20.2
Lahore	54.162	2	40.0	18.6
Rawalpindi	53.586	3	33.9	21.4
Sialkot	52.784	4	36.3	21.4
Chakwal	52.751	5	31.1	19.5
Gujrat	52.224	6	31.0	17.7
Sheikhupura	50.719	7	27.7	22.7
Narowal	50.469	8	32.8	19.9
Attock	50.008	9	25.9	24.4
Gujranwala	49.871	10	16.7	26.9
Faisalabad	49.729	11	45.8	11.7
Nankana Sahib	47.731	12	39.2	14.2
Mandi Bahauddin	47.706	13	19.9	27.9
Sahiwal	47.623	14	39.9	12.2
TT Singh	47.291	15	43.4	10.7
Vehari	45.799	16	37.0	12.8
Sargodha	45.536	17	34.3	17.5
Hafizabad	45.392	18	27.5	22.6
Kasur	45.229	19	41.3	17.0
Multan	44.989	20	49.6	10.5
Layyah	44.583	21	40.0	16.0
Khanewal	44.508	22	39.8	13.5
Pakpattan	44.373	23	37.5	15.8
Okara	44.340	24	28.4	17.4
Mianwali	43.583	25	24.8	21.0
Bahawalnagar	43.008	26	43.8	12.7
Chiniot	42.666	27	25.8	18.4
Khushab	42.532	28	28.5	23.6
Jhang	42.497	29	25.1	21.7
RY Khan	42.215	30	36.1	17.8
Bahawalpur	42.151	31	37.8	11.0
Bhakkar	40.726	32	33.5	15.0
Lodhran	40.261	33	31.0	11.4
DG Khan	38.453	34	20.6	21.2
Muzaffargarh	37.789	35	24.7	23.5
Rajanpur	33.486	36	20.3	19.5

Source: Computed from Punjab MICS 2017-18

Figure 3: Family Planning Index ranking of districts of Punjab
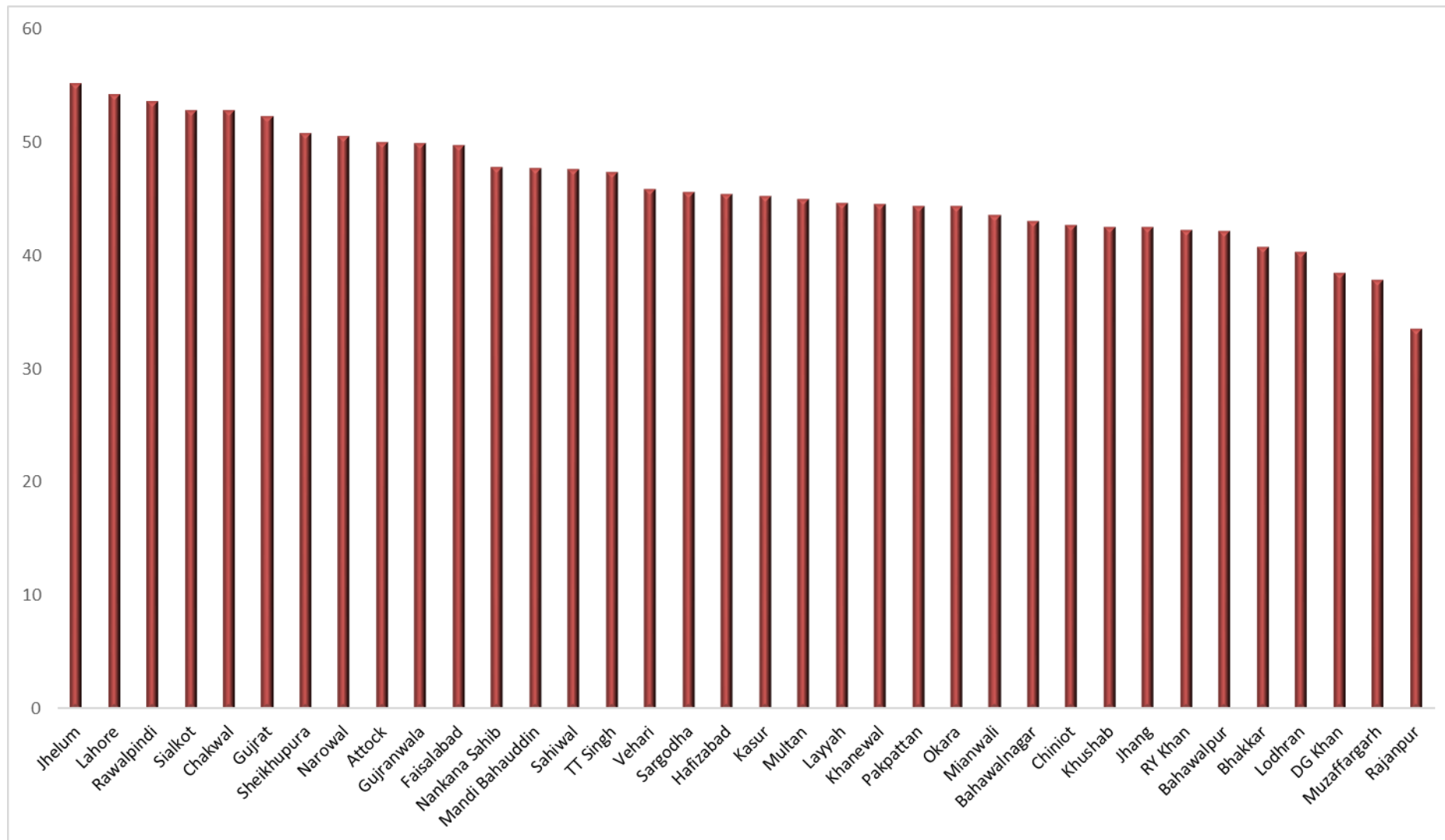
Source: Computed from Punjab MICS 2017-18

Table 5 also shows CPR and unmet need at district level. It is interesting to compare these measures with the FPI. Although some districts in southern Punjab, such as Rajanpur, Muzaffargarh and D.G. Khan, that score low on the FPI also have the lowest CPR in Punjab, we do not find as clear a geographical divide in contraceptive prevalence as in the case of the FPI. Districts where the CPR is 40% or higher include Multan, Lahore, Bahawalnagar, Layyah, Kasur, TT Singh, Faisalabad, and Lahore; these are widely spread across the province.

Unmet need in 13 districts is 20% or higher, including Jhelum, Rawalpindi, Sialkot, Sheikhupura, Attock, Gujranwala, Mandi Bahauddin, Hafizabad, Mianwali, Khushab, Jhang, DG Khan and Muzaffargarh. The number of districts with lower unmet need is higher in southern Punjab than in central or northern parts of the province. Lower unmet need in the south Punjab could mean that there is a lack of desire among women to use family planning.

It is evident from the district-level FPI that the dynamics of social relations and social organizations that shape norms around family size and use of family planning services vary significantly within Punjab. The socio-economic status of districts appears to be the decisive factor, as their ranking on the basis of the FPI is not very different from the results of multidimensional poverty index (MPI) comparison. The MPI includes indicators related to education, health, and standard of living (GoP, nd). The districts where the MPI headcount is very high—Bahawalpur, Bahawalnagar, Bhakkar, DG Khan, Layyah, Lodhran, Mianwali, Muzaffargarh, Rahim Yar Khan and Rajanpur—also score low on FPI. This implies that social exclusion or multidimensional poverty could be the main barrier in use of social and health care services, including contraception.

4.3 Component Shares in FPI Scores

Table 6 shows the share of each index component in the FPI score of each of the 36 districts. With regard to Component A, *Exposure, fertility desire and child survival*, there is a large variation across the districts. The computed score for some districts in northern and central Punjab is higher than other districts of the province. For example, Rawalpindi, Lahore, Sialkot, Attock, Chakwal, Jhelum, Gujrat, Narowal and Gujranwala score 25–40% higher on this component compared to districts in South Punjab, particularly Rajanpur, Lodhran, and Muzaffargarh. This reinforces the fact that the desire for the number of children or family size varies across the districts.

Inter-district variation is low against Component B, *Deliberate and natural fertility control*, but widens for Component C, *Women's empowerment and maternal health care*, with the score ranging from only 9 in Rajanpur to 16.2 in Jhelum. Other districts in South Punjab, including DG Khan, Bhakkar, Muzaffargarh, and Rahim Yar Khan, also score low on the empowerment component.

The inter-district gap is quite large against Component D, *Socio-economic development and access to services*: the score for Rajanpur, for example, is half that of Lahore, Rawalpindi, and Jhelum. The development score for other districts of South Punjab, such as Bahawalpur, DG Khan, Lodhran, Muzaffargarh, and Rahim Yar Khan, is also relatively low.

Table 6: Share of index components in FPI scores of districts of Punjab

District	Value					Percentage				
	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to	Overall (weighted)	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to	Total
Attock	14.7	8.6	13.0	13.7	50.0	29.4	17.1	26.0	27.4	100
Bahawalnagar	13.0	7.3	12.1	10.7	43.0	30.3	16.9	28.1	24.8	100
Bahawalpur	12.6	7.7	12.1	9.7	42.2	29.9	18.3	28.7	23.1	100
Bhakkar	13.3	6.5	10.2	10.6	40.7	32.8	16.1	25.0	26.1	100
Chakwal	14.7	7.5	15.6	14.9	52.8	27.9	14.2	29.5	28.3	100
Chiniot	12.2	7.4	12.2	10.8	42.7	28.7	17.4	28.5	25.4	100
DG Khan	11.8	8.3	9.5	8.8	38.5	30.8	21.5	24.7	22.9	100
Faisalabad	13.9	7.9	13.9	14.0	49.7	28.0	15.9	28.0	28.1	100
Gujranwala	14.9	6.6	13.9	14.5	49.9	29.8	13.3	27.8	29.1	100
Gujrat	14.6	7.0	15.4	15.3	52.2	27.9	13.5	29.4	29.3	100
Hafizabad	13.8	7.9	11.4	12.3	45.4	30.4	17.5	25.0	27.1	100
Jhang	11.3	7.4	12.8	11.0	42.5	26.7	17.3	30.1	25.9	100
Jhelum	14.6	8.7	16.2	15.6	55.2	26.5	15.7	29.4	28.3	100
Kasur	13.4	8.7	11.7	11.4	45.2	29.6	19.3	25.8	25.2	100
Khanewal	12.5	7.5	13.2	11.3	44.5	28.1	16.8	29.7	25.4	100
Khushab	13.6	8.0	10.5	10.6	42.5	31.9	18.7	24.6	24.8	100
Lahore	15.1	8.4	15.6	15.1	54.2	27.9	15.6	28.7	27.8	100
Layyah	12.5	7.3	12.7	12.0	44.6	28.1	16.5	28.5	26.9	100
Lodhran	10.8	7.5	12.5	9.5	40.3	26.8	18.7	31.0	23.6	100
M. Bahauddin	14.2	7.5	12.7	13.4	47.7	29.7	15.6	26.5	28.2	100
Mianwali	12.0	6.6	12.2	12.8	43.6	27.6	15.2	27.9	29.3	100
Multan	11.4	7.9	14.0	11.7	45.0	25.3	17.6	31.1	26.0	100

Table 6: Share of index components in FPI scores of districts of Punjab, Continued

Muzaffargarh	11.2	6.7	10.2	9.8	37.8	29.5	17.7	26.9	25.9	100
Nankana Sahib	12.8	8.0	13.4	13.6	47.7	26.8	16.7	28.1	28.4	100
Narowal	14.0	7.6	14.6	14.3	50.5	27.7	15.0	28.9	28.4	100
Okara	12.1	8.5	12.2	11.6	44.3	27.3	19.1	27.5	26.1	100
Pakpattan	13.1	8.5	11.8	11.0	44.4	29.6	19.1	26.6	24.8	100
RY Khan	12.8	9.1	10.7	9.6	42.2	30.4	21.5	25.4	22.6	100
Rajanpur	10.9	6.0	9.0	7.6	33.5	32.6	17.8	26.8	22.8	100
Rawalpindi	15.1	7.7	15.7	15.1	53.6	28.1	14.4	29.2	28.2	100
Sahiwal	13.3	7.6	14.0	12.6	47.6	28.0	16.0	29.4	26.5	100
Sargodha	13.0	7.5	12.4	12.7	45.5	28.6	16.4	27.1	27.9	100
Sheikhupura	14.8	8.1	13.7	14.1	50.7	29.1	16.0	27.0	27.9	100
Sialkot	14.5	9.4	15.0	13.8	52.8	27.5	17.8	28.5	26.2	100
TT Singh	13.4	6.8	13.9	13.2	47.3	28.3	14.5	29.4	27.9	100
Vehari	12.7	8.6	13.2	11.3	45.8	27.7	18.9	28.8	24.6	100

Source: Computed from Punjab MICS 2017-18

5   FPI Ranking of Districts in Sindh

This section presents the results of our analysis for the 28 districts of Sindh. As in the previous section, we begin with an overview of summary statistics against the 14 FPI indicators. The districts' FPI scores and ranking are then presented, with along with a brief comparison with district-level CPRs and unmet need for family planning. Finally, the share of the four index components in the total FPI scores of districts is analyzed.

5.1 Review of Indicators

Summary statistics against the 14 FPI indicators for the 28 districts of Sindh are presented in Appendix 2. The main observations for each component are outlined below.

Component A – Exposure, Fertility Desire, and Child Survival

The proportion of unmarried women (ages 15-29) varies from only 28% in district Kashmore to 63% in Karachi Central. It is more than 50% in Larkana, Naushero Feroze, Shaheed Benazirabad, Jamshoro, Hyderabad, Matiari, Thatta, Malir (Karachi), Karachi East, Karachi West and Karachi South. In the rest of the districts in the province, it is below 50%, but higher than 40%.

The data indicate that about a third of women in four districts—Malir, Karachi Central, Tando Muhammad Khan, and Hyderabad—did not want the last pregnancy which occurred in the last two years. The corresponding value is less than 10% in Sukkur, Dadu, and Jamshoro.

There is also a considerable variation across the districts in child mortality rates (Appendix 3). In eight districts, i.e., all districts of Karachi, except Malir; Hyderabad; Jamshoro; Sujawal; and Tharparker, more than 70% of women did not report the death of a child during the childbearing period. But the corresponding proportion is less than 60% in Shikarpur, Ghotki, and Noushero Feroze. It is around 60% in Jacobabad, Shaheed Benazirabad and Tando Muhammad Khan (Appendix 2).

Component B – Deliberate and natural fertility control

The CPR is 40% or above in Karachi South, Malir, and Karachi East (39.7%). However, it is only 11% and 12%, respectively, in Shikarpur and Tharparker districts. The CPR is below the national average of 34% in the remaining districts, except in Karachi Central (36%). In 23 out of 28 districts, unmet need is reported to be more than 20%, and is as high as 31% in Tharparker.

More than 40% of women in Jacobabad, Hyderabad, Thatta, Mirpurkha and Tharparker report exclusive breastfeeding for their last child. In other districts of Sindh, this proportion is less than 40%, and in eight districts, it dips below 20% (Appendix 2).

Component C – Women's empowerment and maternal health care

Female literacy is very low in Sindh, except in the five districts of Karachi and in Hyderabad. It is lowest in Kashmore where only 10% of women are literate. Female literacy is less than 20% in Badin, Sujawal, Umerkot, and Tharparker.

On the other hand, the proportion of economically active women is quite high in Mirpurkhas (53%), Umerkot (66%), Badin (40%) and Tharparker (48%). More than a third of the women are also

economically active in Kashmore, Jacobabad, Shikarpur, Matiari, Tando Allah Yar, and Tando Muhammad Khan. However, this proportion is very low—less than 10%—in Karachi, Thatta, Sujawal and Khairpur.

Against the two indicators of maternal health care, the five districts of Karachi and Hyderabad perform better than other districts (Appendix 2).

Component D – Socio-economic development and access to services

Four districts of Karachi (other than Malir) are completely urbanized. More than 80% of the population in Hyderabad district also lives in urban areas. Sukkur, Larkana and Jamshoro are the other districts where more than 40% of the population live in urban areas. The level of urbanization is quite low in other districts, particularly Tharparker, Thatta, and Sujawal. Across the districts, there is a close and positive association between urbanization and access to improved sanitation (Appendix 2).

Net primary school enrolment is not satisfactory, even in Karachi and Hyderabad, where it is less than 70%. It is much lower in other districts of the province, for example 24% in Kashmore and 25% in Tharparker. The data indicate a good ratio of LHWs to households in all districts of the province, except Tharparker and Ghotki.

5.2   FPI Ranking

Table 7 presents the FPI scores and ranking of the 28 districts of Sindh. The ranking is illustrated in Figure 4. Karachi Central ranks first, with an FPI of 56.5, while Kashmore is ranked at the lowest position, with an FPI of 27.2.

The five districts of Karachi and Hyderabad are the only districts in the province where the FPI is over 40. In seven districts—Sujawal, Shikarpur, Ghotki, Umerkot, Tharparker, and Kashmore, the FPI score is lower than 30. The FPI score for other districts ranges between 30 and 40.

Table 7 also shows district-wise data on CPR and unmet need for family planning. There seems to be a positive association between the FPI and CPR across the districts; the higher the CPR, the higher the FPI in general. The reverse seems to be case for unmet need; districts with lower FPI seem to have a higher unmet need (e.g., Tharparker and Kashmore). This is a different pattern from that seen in Punjab, discussed in Section 4.

5.3   Component Shares in FPI Scores

Table 8 presents data on the share of each index component in the FPI for the 28 districts of Sindh. In Component A, *Exposure, fertility desire and child survival*, Kashmore, Jacobabad, Shikarpur, and Umerkot score much lower than the five districts of Karachi and Hyderabad. There is less inter-district variation in Component B, *Deliberate and natural fertility control*, with scores ranging from 5 for Kamber Shahdadkot and Ghotki to 8 and 8.2, respectively, for Hyderabad and Mirpurkhas. The range widens again in Component C, *Women's empowerment and maternal health care*, with the five districts of Karachi and Hyderabad scoring much higher than other districts of the province. The case is similar under Component D, *Socio-economic development and access to services*, with the five districts of Karachi, Hyderabad and Sukkur scoring higher than other districts. Overall, there seems to be an urban-rural divide in the Sindh FPI.

Table 7: FPI and ranking, CPR, and unmet need for family planning in districts of Sindh

District	FPI	Rank	CPR	Unmet need
Karachi Central	56.5	1	36.4	21.1
Karachi South	54.0	2	47.2	13.2
Karachi East	51.6	3	39.7	20.9
Hyderabad	49.9	4	33.3	17.5
Karachi West	46.8	5	32.9	26.6
Karachi Malir	46.3	6	40.2	19.6
Sukkur	37.2	7	27.2	20.9
Mirpurkhas	36.5	8	24.5	23.9
Tando Allahyar	36.4	9	28.8	21.4
Matiari	35.7	10	32.4	19.3
Larkana	35.2	11	26.7	20.6
Jamshoro	33.7	12	21.9	20.7
Sanghar	33.6	13	26.2	21.7
Shaheed Benazirabad	32.4	14	23.9	22.8
Khairpur	32.2	15	19.7	22.4
Badin	32.1	16	30.2	17.9
Tando Muhammad Khan	31.6	17	28.5	21.2
Thatta	30.9	18	19.7	22.6
Jacobabad	30.8	19	19.9	22.8
Naushahro Feroze	30.5	20	20.7	21.7
Dadu	30.2	21	19.7	21.8
Kamber Shahdadkot	29.5	22	18.4	25.8
Sujawal	29.3	23	15.9	26.2
Shikarpur	28.9	24	11.3	26.9
Ghotki	28.9	25	22.2	24.5
Umerkot	28.1	26	19.2	22.4
Tharparkar	27.8	27	12.1	30.9
Kashmore	27.2	28	16.0	26.1

Source: Computed from Sindh MICS 2014

Figure 4: Family Planning Index ranking of districts of Sindh
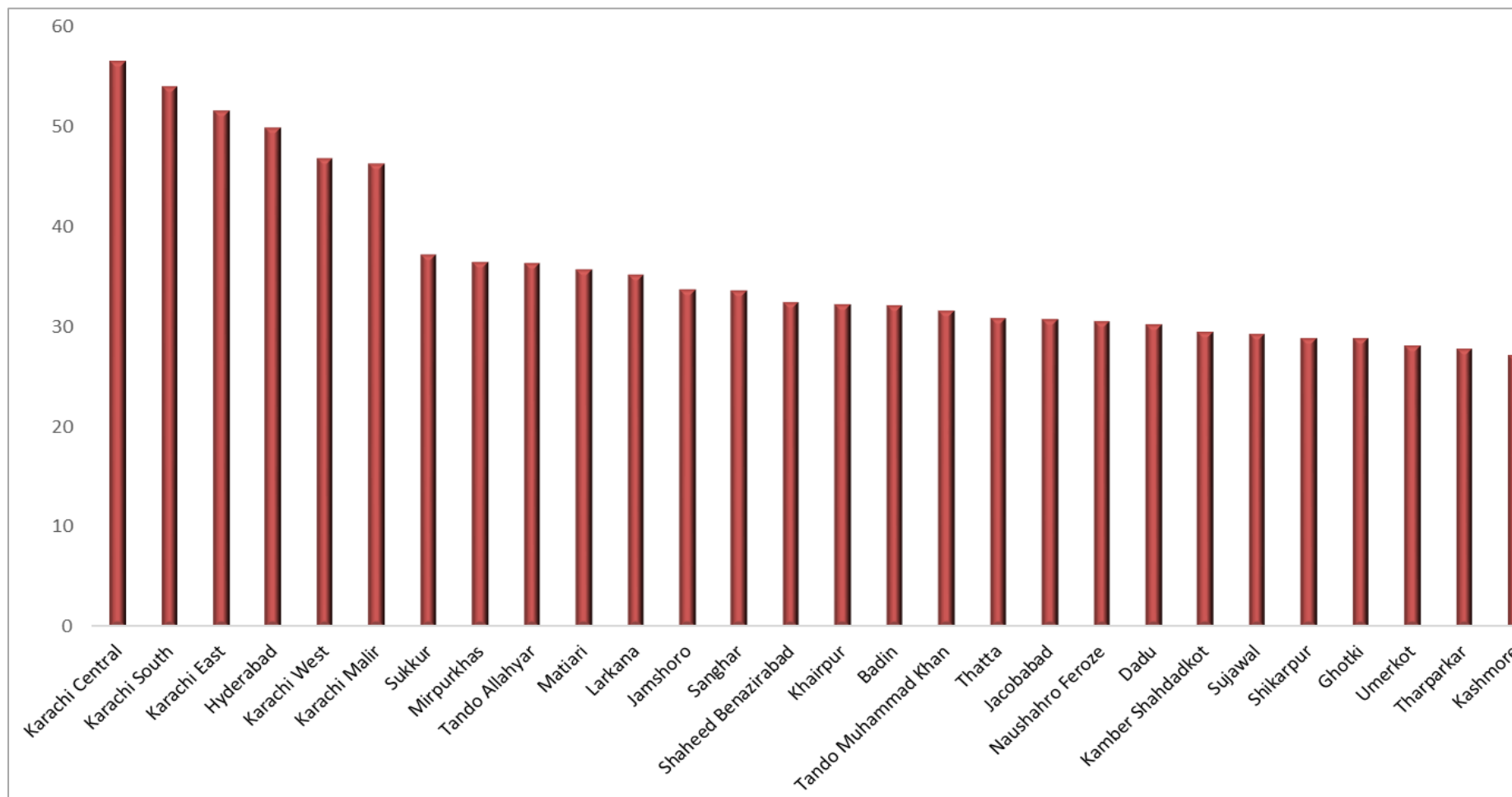
Source: Computed from Sindh MICS 2014

Table 8: Share of index components in FPI scores of districts in Sindh

District	Values					Percentage				
	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to services	Overall (weighted)	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to services	Total
Kashmore	8.8	6.5	6.4	5.5	27.2	32.3	23.9	23.6	20.2	100
Jacobabad	9.6	6.9	8.2	6.1	30.8	31.0	22.4	26.7	19.8	100
Kamber Shahdadkot	10.4	5.0	7.7	6.4	29.5	35.3	17.0	26.0	21.7	100
Larkana	11.6	6.7	7.8	9.1	35.2	33.0	18.9	22.2	26.0	100
Shikarpur	9.3	5.1	8.2	6.3	28.9	32.3	17.5	28.4	21.8	100
Ghotki	10.5	5.0	7.7	5.8	28.9	36.1	17.1	26.7	20.1	100
Sukkur	10.4	7.1	10.1	9.6	37.2	27.9	19.0	27.2	25.9	100
Khairpur	11.3	5.1	7.7	8.1	32.2	35.2	15.8	23.8	25.2	100
Naushahro Feroze	10.1	4.9	8.2	7.2	30.5	33.3	16.1	27.0	23.7	100
Shaheed Benazirabad	10.4	5.3	8.4	8.3	32.4	32.1	16.3	26.1	25.5	100
Dadu	10.4	4.9	7.1	7.8	30.2	34.4	16.2	23.6	25.8	100
Jamshoro	11.3	5.9	7.2	9.2	33.7	33.5	17.6	21.5	27.4	100
Hyderabad	14.1	8.0	14.3	13.5	49.9	28.2	16.1	28.8	27.0	100
Matiari	11.0	7.2	10.6	6.9	35.7	30.8	20.2	29.8	19.3	100
Tando Allahyar	11.0	7.4	10.5	7.7	36.4	30.1	20.2	28.7	21.0	100
Tando Muhammad Khan	11.5	5.8	10.3	4.2	31.6	36.2	18.2	32.4	13.2	100
Badin	10.7	6.8	9.1	5.5	32.1	33.5	21.1	28.4	17.0	100
Sujawal	12.4	6.2	5.9	4.8	29.3	42.5	21.1	20.0	16.4	100
Thatta	12.1	7.3	6.4	5.1	30.9	39.2	23.5	20.8	16.5	100
Sanghar	10.4	7.1	8.4	7.8	33.6	30.8	21.2	24.9	23.1	100

Table 8: Share of index components in FPI scores of districts in Sindh, Continued

District	Values					Percentage				
	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to services	Overall (weighted)	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to services	Total
Mirpurkhas	11.4	8.2	9.9	7.0	36.5	31.3	22.5	27.0	19.2	100
Umerkot	9.5	5.0	7.9	5.8	28.1	33.7	17.7	27.9	20.7	100
Tharparkar	11.1	7.8	5.6	3.3	27.8	39.9	28.1	20.2	11.8	100
Karachi Malir	13.4	7.1	13.2	12.7	46.3	28.8	15.3	28.4	27.4	100
Karachi East	13.5	6.9	14.9	16.2	51.6	26.3	13.4	29.0	31.4	100
Karachi Central	15.1	7.6	17.0	16.9	56.5	26.7	13.4	30.0	29.9	100
Karachi West	12.1	7.4	12.5	14.8	46.8	25.8	15.8	26.7	31.7	100
Karachi South	13.6	7.4	16.4	16.5	54.0	25.3	13.8	30.5	30.5	100
Sindh	**11.9**	**6.6**	**10.8**	**10.2**	**39.5**	**30.1**	**16.8**	**27.4**	**25.7**	**100**

Source: Computed from Sindh MICS 2014

6   FPI Comparison of Districts in Khyber Pakhtunkhwa

This section presents the results of the analysis for the 25 districts of Khyber Pakhtunkhwa.[2] As in the previous three sections, the discussion begins with a review of summary statistics for the 14 FPI indicators, followed by FPI scores and ranking, and finally a closer look at the contribution of the four index components to FPI scores across the districts.

The analysis is based primarily on data from the Khyber Pakhtunkhwa MICS 2016–17. Data for one indicator, the proportion of economically active women, is derived from the PSLMS 2014–15.

6.1   Review of Indicators

Summary statistics against the 14 FPI indicators for the 25 districts of KP are presented in Appendix 3. Key observations are outlined below.

Component A – Exposure, fertility desire and child survival

The proportion of unmarried women (ages 15-29) varies from 29% in Kohat to 61% in Lakki Marwat. It is more than 50% in Abbottabad, Charsadda, Karak, Kohat, Nowshera, and Swabi, but less than 40% in Shangla, Tor Ghar, and Batagram. Desire for lower fertility, measured as the percentage of women, with 3 or more children, who did not want the last pregnancy which occurred in the last two years, is higher in Karak (27%), Abbottabad (15%), Swabi (16%), and Haripur (14%). It is very low, less than 5%, in DI Khan, Kohistan, Lower Dir, Shangla, and Tor Ghar, denoting higher fertility desire in these districts. However, variation in child mortality across the districts in KP seems to be relatively lower (Appendix 3).

Component B – Deliberate and natural fertility control

The CPR is only 2% and 6% in Kohistan and Tor Ghar respectively, whereas the highest CPR is reported for Peshawar (48%), followed by Malakand (46%), Charsadda (43%), Swabi (40%), Swat (40%), and Chitral (38%). In 16 districts of KP, the CPR is well below the national average of 34%. Unmet need also varies across the districts of KP, from 29% in Tank to 38% in Kohistan. There is also considerable variation in the proportion of women reporting exclusive breastfeeding, from only 31% in Bannu to 80% in Buner and Shangla. This figure is more than 60% in Batagram, Chitral, Kohistan, Lower Dir, Peshawar, Mardan, Nowshera, Tor Ghar, and Upper Dir (Appendix 3).

Component C – Women's empowerment and maternal health care

Almost all women in Kohistan, Shangla, and Tor Ghar districts are illiterate. Female literacy is relatively high in Abbottabad (70%), Haripur (65%), Chitral (53%), and Mansehra (59%) but less than 25% in Batagram, Buner, DI Khan, Kohistan, Lakki Marwat, Shangla, and Tor Ghar. The proportion of economically active women is very low, less than 10%, in 17 out of the total 25 districts of KP, but relatively higher in Kohistan, Tor Ghar, and Upper Dir. Against the two indicators of maternal health care, Abbottabad, Buner, Charsadda, Hangu, Karak, Kohat, Malakand, Nowshera and Peshawar perform better than other districts (Appendix 3).

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[2] The analysis excludes districts comprising the FATA region.

Component D – Socio-economic development and access to services

Five districts in KP—Batagram, Buner, Kohistan, Shangla and Tor Ghar—have no urban locality. Urban areas house less than 10% of the population in six districts, including Bannu, Karak, Lower Dir, Malakand, Mansehra, and Upper Dir. The highest urban share is reported in Peshawar (46%), followed by Swat (30%). Only four other districts have an urban share of more than 20%—these include Nowshera, Abbottabad, DI Khan, and Kohat.

Net primary school enrolment in seven districts—Abbotabad, Chitral, Haripur, Karak, Kohat, Malakand and Mansehra—is over 70%. However, it is less than 40% in DI Khan, Kohistan, and Tor Ghar. The coverage of LHWs is also lowest in Kohistan and Tor Ghar, but appears to be satisfactory in most other districts, ranging from 0.4 to 1.9 LHW per 250 households. Finally, access to improved sanitation is universal (more than 90%) in Abbottabad, Charsadda, and Chitral. Other districts also fare relatively well in this respect (Appendix 3).

6.2 FPI Ranking

Table 9 presents the FPI scores and ranking of the 25 districts in KP. The ranking is illustrated in Figure 5. Peshawar ranks first, with an FPI of 46, while Kohistan is ranked at the lowest position, with an FPI of 27.9.

The five top-ranking districts are Peshawar, Abbottabad, Chitral, Nowshera, and Haripur, while Shangla, Tank, DI Khan, Tor Garh and Kohistan are the five lowest ranked districts.

Other districts with FPI scores of 40 or above include Karak, Malakand, Swabi, Mardan, Swat, Charsadda, Lower Dir, Upper Dir, and Kohat. Eleven districts score less than 40. It appears that the FPI is higher in the Peshawar, Mardan, Malakand and Hazara divisions than in Bannu and DI Khan divisions.

Table 9 also shows the CPR and level of unmet need in each district. We do not find the consistent positive association of FPI and CPR observed in Sindh. However, Peshawar, which is ranked first against the FPI does have the highest CPR, 49%, and similarly, in the two districts ranked lowest against the FPI second, Tor Garh and Kohistan, the CPR is negligible at only 6% and 2% respectively. Unmet need ranges from 14% in Peshawar to 38% in Kohistan.

6.3 Component Shares in FPI Scores

Table 10 shows the share of each index component in the district FPI scores. No large variation is seen across the districts in Component A, *Exposure, fertility desire and child survival*. However, for Component B, *Deliberate and natural fertility control*, the range of scores is wider, from 6 for DI Khan to 12 for Buner and Shangla. Variation in Component C, *Women's empowerment and maternal health care,* is also quite substantial, with the score ranging from only 4 for Kohistan and Shangla to 13 for Abbottabad. Empowerment scores are also low in districts comprising the Bannu and DI Khan divisions. The inter-district variation is also large for Component D, *Socio-economic development and access to services*, with Tor Ghar's score about three times lower than that of Abbottabad and Peshawar.

Table 9: FPI and ranking, CPR, and unmet need for family planning in districts of Khyber Pakhtunkhwa

District	FPI	Rank	CPR	Unmet need
Peshawar	46.3	1	48.7	13.6
Abbottabad	45.7	2	26.7	25.7
Chitral	44.9	3	37.7	24.1
Nowshera	44.9	4	31.7	23.8
Haripur	44.8	5	27.6	21.0
Karak	43.5	6	21.5	31.6
Malakand	42.5	7	46.3	15.9
Swabi	42.3	8	39.9	20.3
Mardan	42.2	9	35.4	18.5
Swat	42.1	10	39.9	15.9
Charsadda	41.3	11	42.6	15.0
Lower Dir	40.9	12	21.4	28.7
Upper Dir	40.2	13	20.7	27.2
Kohat	40.0	14	30.8	19.9
Buner	39.0	15	31.7	22.6
Mansehra	39.0	16	32.2	15.5
Hangu	36.3	17	31.5	19.5
Batagram	34.0	18	19.2	28.2
Lakki Marwat	33.7	19	28.8	22.0
Bannu	33.2	20	27.4	26.1
Shangla	31.9	21	30.6	24.8
Tank	31.6	22	18.3	19.5
DI Khan	31.2	23	19.1	22.0
Tor Ghar	30.3	24	5.5	29.5
Kohistan	27.9	25	2.0	37.5

Source: Computed from KP MICS 2016-17

Figure 5: Family Planning Index ranking of districts in Khyber Pakhtunkhwa
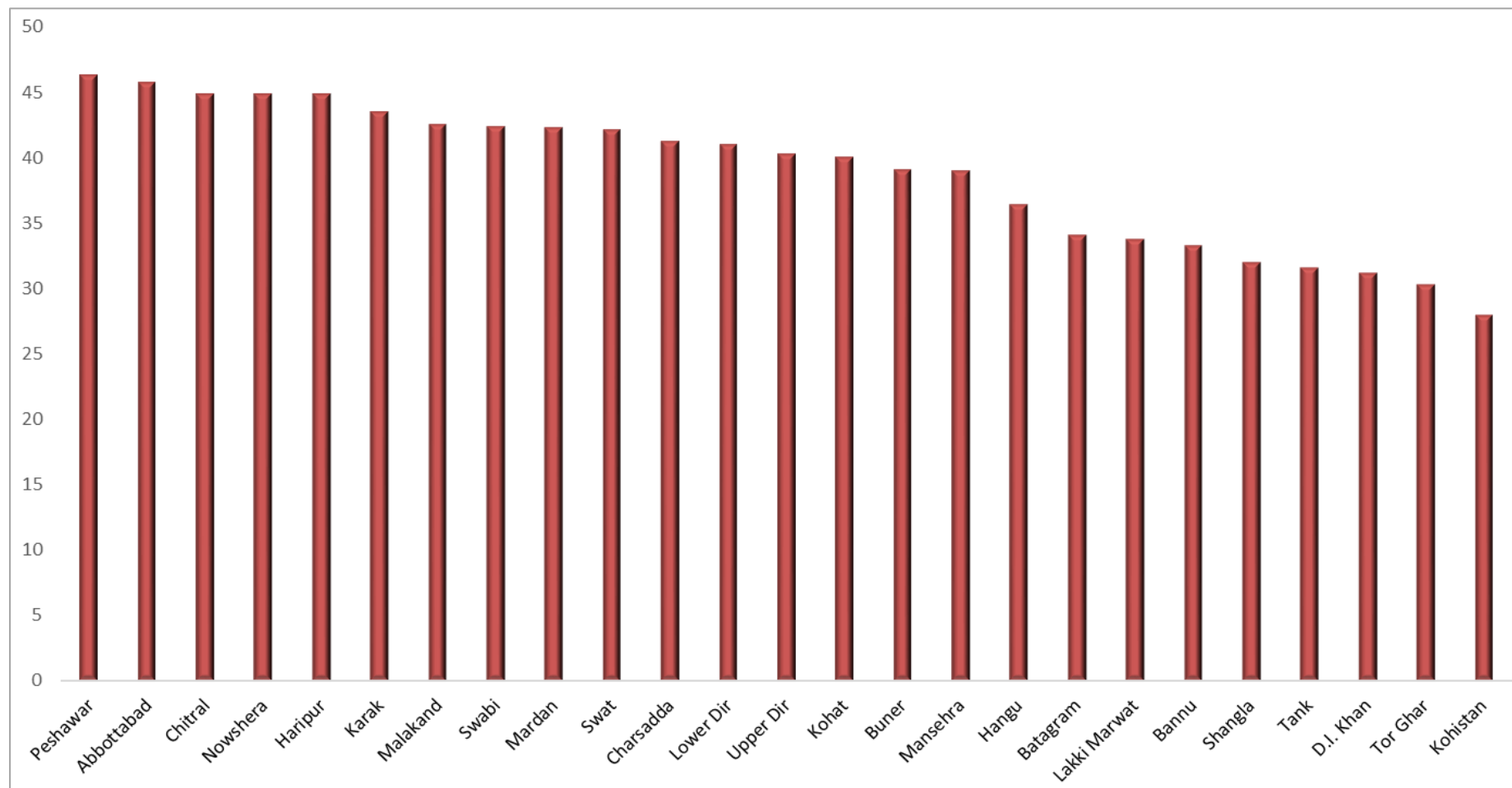
Source: Computed from KP MICS 2016-17

Table 10: Share of index components in FPI scores of districts in Khyber Pakhtunkhwa

District	Values					Percentage				
	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to services	Overall (weighted)	a. Exposure, fertility desire and child survival	b. Deliberate and natural fertility control	c. Women's empowerment and maternal health care	d. Socio-economic development and access to services	Total
Abbottabad	13.0	7.5	13.2	12.0	45.7	28.4	16.4	28.8	26.3	100
Bannu	10.5	7.1	7.1	8.5	33.2	31.6	21.3	21.4	25.7	100
Batagram	9.5	9.3	8.7	6.5	34.0	27.9	27.3	25.6	19.2	100
Buner	11.4	11.7	8.8	7.2	39.0	29.2	29.9	22.5	18.4	100
Charsadda	12.3	8.8	9.3	10.9	41.3	29.8	21.2	22.6	26.4	100
Chitral	11.7	11.1	10.4	11.6	44.9	26.2	24.8	23.2	25.8	100
DI Khan	10.4	6.1	6.1	8.6	31.2	33.3	19.6	19.6	27.6	100
Hangu	11.2	6.8	9.7	8.7	36.3	30.7	18.7	26.6	24.0	100
Haripur	12.2	8.9	12.8	11.0	44.8	27.3	19.8	28.5	24.5	100
Karak	13.6	8.7	11.1	10.2	43.5	31.2	19.9	25.6	23.4	100
Kohat	11.9	7.8	10.1	10.3	40.0	29.6	19.4	25.3	25.6	100
Kohistan	8.9	9.4	4.2	5.4	27.9	31.8	33.6	15.2	19.4	100
Lakki Marwat	12.0	8.0	5.7	8.0	33.7	35.5	23.8	17.0	23.7	100
Lower Dir	11.6	9.3	11.3	8.6	40.9	28.4	22.8	27.7	21.1	100
Malakand	11.9	9.1	10.9	10.6	42.5	28.1	21.5	25.5	24.9	100
Mansehra	12.0	8.1	9.6	9.3	39.0	30.7	20.8	24.6	23.9	100
Mardan	11.2	10.9	9.7	10.4	42.2	26.6	25.9	23.0	24.6	100
Nowshera	12.3	10.5	11.3	10.8	44.9	27.3	23.3	25.2	24.1	100
Peshawar	12.4	10.5	11.4	12.0	46.3	26.7	22.8	24.6	25.9	100
Shangla	9.9	11.6	4.0	6.4	31.9	31.1	36.2	12.6	20.1	100
Swabi	12.6	9.9	9.8	10.0	42.3	29.7	23.4	23.2	23.7	100
Swat	11.1	10.4	10.7	9.8	42.1	26.5	24.8	25.4	23.4	100
Tank	10.6	7.1	4.8	9.1	31.6	33.4	22.4	15.3	28.9	100
Tor Ghar	10.4	8.9	6.1	4.8	30.3	34.5	29.3	20.3	15.9	100
Upper Dir	11.4	10.2	11.2	7.4	40.2	28.4	25.4	27.7	18.5	100
KP	11.6	9.2	9.8	9.7	40.3	28.9	22.8	24.3	24.1	100

Source: Computed from KP MICS 2016-17

7 Conclusions

The FPI developed in this study shows the relative position of a district or region in terms of the socio-demographic factors associated with the use of family planning services. All the 14 indicators included in the FPI also contribute to the desire for fewer children and a lower fertility rate. At the regional level, Islamabad has the highest FPI score, followed by Punjab. Balochistan ranks seventh, just above FATA.

The FPI-based ranking of districts in Punjab, Sindh, and KP illustrates that districts within a province vary considerably in terms of both the FPI and its four components, i.e., (i) exposure, fertility desire and child survival; (ii) deliberate and natural fertility control; (iii) women's empowerment and maternal health care; and (iv) socio-economic development and access to services.

The factors underlying this inter-district variation appear to be different across the provinces. In Punjab, for example, the divide in FPI is primarily geographical, i.e., between the southern, northern, and central parts of the province. The index and its components are relatively weak in the southern part of the province, where poverty has also been prevalent for a long time.

On the other hand, the critical factor explaining variations in the FPI across the districts of Sindh appears to be the urban-rural divide. In general, in Karachi, Hyderabad, and Sukkur (also Larkana to some extent), where urbanization is high, the FPI score is also high. Thus, development seems to play a key role in promoting the small family norms and adoption of family planning in Sindh.

In KP, the variation in FPI seems most affected by which division a district is part of. The population of districts located in Peshawar, Mardan, Hazara, and Malakand divisions appears to be more conducive to adopting family planning than the population of Bannu and DI Khan divisions, although some of the weakest districts are also part of the Hazara division. The question is what factors make some divisions or districts more conducive to family planning than others? In this regard, the key factors could be geographical remoteness and dominance of tribal culture. More research would enhance our understanding.

It appears from the district rankings that the dynamics of social relations and social organization in some parts of the country, or districts more specifically, do not encourage the use of family planning services. A large proportion of the population of these districts is probably socially excluded. Both social exclusion and persistence of a high rate of poverty affect demographic outcomes through their influence on fertility desires and the demand for health and social care services.

Geographical differences in demographic behavior can be addressed by addressing economic and social disparities across and within the provinces and regions of Pakistan. A multi-sectoral approach, which addresses unmet need, child survival, maternal health care services, women's empowerment, and better educational opportunities for children, including universal enrolment, would bring about a positive change in the demographic behavior of the population.

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Appendix 1: Summary statistics of FPI indicators for districts in Punjab

Districts	Component A: Exposure, fertility desire and child survival			Component B: Deliberate and natural fertility control			Component C: Women's empowerment and maternal health care				Component D: Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (ages 15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (ages 15-49) who delivered last birth at a health facility	Share (%) of urban areas in total population	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Attock	55.8	37.2	83.7	25.9	24.4	52.6	51.8	19.5	60.1	76.6	60.1	72.1	0.575	86.7
Bahawalnagar	63.3	14.1	78.8	43.8	12.7	30.7	47.1	39.9	40.0	66.1	40.0	60.6	0.528	69.5
Bahawalpur	53.1	18.9	79.1	37.8	11.0	43.8	46.4	54.2	34.4	58.7	34.4	51.4	0.512	69.6
Bhakkar	58.5	25.5	76.2	33.5	15.0	30.0	41.0	20.3	34.3	67.6	34.3	59.5	0.772	75.7
Chakwal	60.1	28.8	87.8	31.1	19.5	39.6	69.2	23.6	71.7	84.7	71.7	80.8	0.892	85.7
Chiniot	47.7	22.1	77.0	25.8	18.4	45.0	45.1	24.1	47.6	77.9	47.6	66.1	0.420	59.3
DG Khan	40.6	26.0	75.6	20.6	21.2	57.5	35.3	39.7	36.0	41.2	36.0	43.3	0.481	61.4
Faisalabad	61.1	26.1	79.8	45.8	11.7	37.4	66.6	12.6	64.1	79.8	64.1	73.6	0.597	85.2
Gujranwala	63.8	29.7	84.8	16.7	26.9	36.0	72.8	10.9	58.3	80.1	58.3	75.5	0.408	97.9
Gujrat	65.5	26.0	83.3	31.0	17.7	35.7	78.3	9.1	69.5	88.8	69.5	80.2	0.720	94.0
Hafizabad	60.1	35.9	69.5	27.5	22.6	45.1	53.9	10.2	43.0	74.8	43.0	68.1	0.708	85.1
Jhang	47.4	12.0	76.8	25.1	21.7	41.6	41.3	50.6	42.3	70.4	42.3	66.1	0.497	67.1

Districts	Component A: Exposure, fertility desire and child survival			Component B: Deliberate and natural fertility control			Component C: Women's empowerment and maternal health care				Component D: Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (ages 15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (ages 15-49) who delivered last birth at a health facility	Share (%) of urban areas in total population	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Jhelum	63.7	28.0	84.1	30.2	20.2	53.7	73.5	15.4	81.0	90.0	81.0	76.6	1.000	91.6
Kasur	59.0	26.3	75.6	41.3	17.0	46.5	49.9	30.4	41.8	64.9	41.8	63.9	0.637	76.2
Khanewal	54.4	24.2	71.6	39.8	13.5	36.4	51.7	44.8	43.9	70.8	43.9	65.5	0.786	71.0
Khushab	59.2	25.0	78.7	28.5	23.6	43.4	43.3	13.8	38.7	71.5	38.7	61.5	0.915	67.7
Lahore	62.2	32.4	86.9	40.0	18.6	42.6	75.3	13.0	75.0	85.6	75.0	69.4	0.102	96.4
Layyah	52.1	19.9	78.3	40.0	16.0	32.1	45.9	51.4	44.5	61.8	44.5	65.4	0.583	81.5
Lodhran	49.8	10.2	69.4	31.0	11.4	48.0	38.4	54.3	36.2	70.6	36.2	52.2	0.623	62.7
Mandi Bahauddin	62.5	26.7	80.9	19.9	27.9	41.7	61.2	9.4	57.6	74.2	57.6	77.1	1.008	79.2
Mianwali	55.2	12.6	76.4	24.8	21.0	33.8	43.2	20.2	53.4	78.0	53.4	67.4	0.742	82.7
Multan	50.5	9.2	76.9	49.6	10.5	34.7	57.1	33.2	56.8	77.1	56.8	66.6	0.613	63.2
Muzaffargarh	43.4	19.6	71.0	24.7	23.5	32.0	33.1	41.4	37.5	50.7	37.5	52.4	0.642	65.9
Nankana Sahib	56.8	21.6	75.3	39.2	14.2	42.3	54.6	14.6	61.6	83.7	61.6	71.4	0.602	83.2
Narowal	63.2	26.6	78.0	32.8	19.9	38.3	73.8	17.5	59.4	82.3	59.4	79.6	0.980	89.6

Districts	Component A: Exposure, fertility desire and child survival			Component B: Deliberate and natural fertility control			Component C: Women's empowerment and maternal health care				Component D: Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (ages 15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (ages 15-49) who delivered last birth at a health facility	Share (%) of urban areas in total population	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Okara	52.3	19.7	73.4	28.4	17.4	55.9	45.8	31.9	46.5	70.6	46.5	65.3	0.611	72.9
Pakpattan	57.2	22.8	77.5	37.5	15.8	48.2	41.2	40.5	38.3	68.6	38.3	67.8	0.671	69.4
RY Khan	51.3	24.4	78.4	36.1	17.8	55.1	41.3	37.9	30.7	62.0	30.7	46.3	0.288	75.6
Rajanpur	41.6	17.0	72.6	20.3	19.5	31.7	26.1	53.0	27.2	37.2	27.2	42.3	0.424	52.2
Rawalpindi	60.1	34.0	86.8	33.9	21.4	37.6	77.2	12.1	74.9	86.3	74.9	73.7	0.354	93.0
Sahiwal	60.6	20.9	78.5	39.9	12.2	39.6	54.6	30.4	59.0	80.2	59.0	64.1	0.696	78.5
Sargodha	56.7	23.9	75.5	34.3	17.5	38.1	56.1	11.9	48.6	81.2	48.6	72.5	0.614	81.2
Sheikhupura	55.9	38.2	83.3	27.7	22.7	47.1	63.1	13.2	62.0	80.5	62.0	68.1	0.409	95.8
Sialkot	64.7	28.8	80.9	36.3	21.4	55.0	78.1	15.8	63.2	83.4	63.2	75.4	0.593	82.2
TT Singh	60.9	21.9	77.6	43.4	10.7	28.1	63.9	33.0	50.9	74.4	50.9	71.8	1.012	87.4
Vehari	56.1	21.5	74.7	37.0	12.8	54.0	47.4	44.6	44.8	74.3	44.8	64.7	0.551	70.3
Punjab	57.1	24.2	79.3	34.4	17.8	42.1	57.9	26.8	52.5	73.3	36.7	65.4	0.546	80.1

Source: Computed from Punjab MICS 2017-18. Data for proportion of economically active women was derived from PSLMS 2014-15.

Appendix 2: Summary statistics of FPI indicators for districts in Sindh

Districts	a. Exposure, fertility desire and child survival			b. Deliberate and natural fertility control			c. Women's empowerment and maternal health care				d. Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (15-49) delivered last birth at a health facility	Share (%) of urban areas in the total population of a district	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Kashmore	27.8	10.9	66.6	16.0	26.1	35.7	9.6	37.9	19.4	35.8	23.3	23.7	0.667	40.0
Jacobabad	42.5	12.3	60.1	19.9	22.8	40.2	20.6	37.7	21.7	51.9	29.5	28.2	0.838	39.2
Kamber Shahdadkot	47.2	13.9	64.1	18.4	25.8	15.9	23.4	26.7	21.6	51.1	29.6	32.1	0.903	39.9
Larkana	53.9	21.6	63.9	26.7	20.6	32.7	30.1	14.0	28.0	52.8	46.0	43.1	0.926	56.3
Shikarpur	39.2	14.9	57.9	11.3	26.9	22.4	19.5	38.8	24.1	49.1	24.6	30.6	0.932	44.9
Ghotki	46.3	19.8	59.3	22.2	24.5	12.8	23.0	30.8	28.3	41.4	24.5	33.4	0.587	34.7
Sukkur	49.5	9.8	65.3	27.2	20.9	36.9	38.1	12.5	41.2	70.3	48.4	50.1	1.056	54.4
Khairpur	47.0	23.3	65.7	19.7	22.4	19.1	32.6	8.4	27.3	54.2	32.3	48.1	0.945	48.7
Naushahro Feroze	51.9	13.1	56.8	20.7	21.7	16.3	31.2	15.9	32.2	52.1	23.6	44.9	1.177	45.9
Shaheed Benazirabad	51.5	10.7	62.4	23.9	22.8	16.8	27.1	15.4	28.9	63.6	30.3	47.1	0.992	53.8
Dadu	48.9	5.3	70.8	19.7	21.8	17.3	21.6	22.1	21.7	48.8	24.7	41.3	0.957	57.7

Appendix 2: Summary statistics of FPI indicators for districts in Sindh, Continued

Districts	a. Exposure, fertility desire and child survival			b. Deliberate and natural fertility control			c. Women's empowerment and maternal health care				d. Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (15-49) delivered last birth at a health facility	Share (%) of urban areas in the total population of a district	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Jamshoro	51.5	8.4	75.7	21.9	20.7	28.7	22.9	14.7	21.2	57.0	43.7	29.8	0.630	73.7
Hyderabad	58.8	31.7	78.2	33.3	17.5	45.5	62.5	17.1	63.8	86.1	83.3	52.5	0.579	78.8
Matiari	52.8	10.5	68.7	32.4	19.3	34.6	31.9	35.7	36.9	65.3	23.7	37.7	0.764	47.7
Tando Allahyar	46.6	14.2	70.7	28.8	21.4	38.3	35.7	35.5	29.1	66.9	31.3	39.9	0.789	50.7
Tando Muhammad Khan	41.8	32.8	63.0	28.5	21.2	19.3	23.0	39.4	30.8	71.0	21.0	27.4	0.751	17.7
Badin	44.9	15.8	68.1	30.2	17.9	33.2	17.0	40.2	26.4	62.0	21.6	32.2	0.722	32.9
Sujawal	44.1	23.2	81.8	15.9	26.2	32.1	12.8	9.8	19.3	51.7	11.0	27.9	0.330	37.7
Thatta	51.7	23.5	70.4	19.7	22.6	44.9	12.3	6.6	24.6	59.5	18.0	36.7	0.502	26.4
Sanghar	41.8	14.5	67.9	26.2	21.7	37.4	30.9	23.7	27.1	52.2	28.6	43.7	0.733	51.1
Mirpurkhas	51.0	13.5	72.7	24.5	23.9	50.4	32.3	52.9	20.9	51.5	28.3	39.8	0.763	43.1
Umerkot	35.9	12.1	65.8	19.2	22.4	18.2	14.4	66.4	11.2	33.6	22.7	41.5	0.605	28.6
Tharparkar	31.0	23.5	78.8	12.1	30.9	50.8	16.3	47.6	7.3	18.9	8.0	25.3	0.523	18.9
Karachi Malir	55.0	31.9	73.5	40.2	19.6	25.5	66.6	5.4	54.4	84.5	57.3	52.7	0.475	92.6

Appendix 2: Summary statistics of FPI indicators for districts in Sindh, Continued

Districts	a. Exposure, fertility desire and child survival			b. Deliberate and natural fertility control			c. Women's empowerment and maternal health care				d. Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last 2 years	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (15-49) delivered last birth at a health facility	Share (%) of urban areas in the total population of a district	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Karachi East	60.1	22.6	79.9	39.7	20.9	22.4	78.3	5.4	70.2	85.1	100.0	61.2	0.177	97.4
Karachi Central	62.5	32.6	86.3	36.4	21.1	33.2	88.1	5.4	85.3	92.4	100.0	72.5	0.190	98.0
Karachi West	53.0	16.2	75.5	32.9	26.6	29.4	65.3	5.4	56.1	72.9	92.8	50.8	0.249	93.2
Karachi South	57.6	23.0	83.1	47.2	13.2	28.9	80.0	5.4	82.9	94.6	100.0	68.8	0.159	94.3
Karachi All	58.1	24.9	80.3	39.0	20.5	28.1	77.1	5.4	70.0	85.4	92.9	61.2	0.230	95.5
Sindh	51.4	18.6	72.5	29.0	21.7	28.9	48.0	20.1	40.9	64.0	52.0	45.2	0.602	64.6

Source: Computed from Sindh MICS 2014. Data for proportion of economically active women was derived from PSLMS 2014-15.

Note: While the current study includes separate analyses for the five districts of Karachi division, i.e., Malir, Karachi South, Karachi Central, Karachi West, and Karachi East, these districts are treated as one entity, Karachi, in the PSLMS. The proportion of economically active women reported for Karachi as a whole in the PSLMS has been assigned to all five districts of Karachi in this analysis.

Appendix 3: Summary statistics of FPI indicators for districts in Khyber Pakhtunkhwa

Districts	a. Exposure, fertility desire and child survival			b. Deliberate and natural fertility control			c. Women's empowerment and maternal health care				d. Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (ages 15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (ages 15-49) delivered last birth at a health facility	Share (%) of urban areas in total population	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Abbottabad	59.1	14.6	82.4	26.7	25.7	37.7	70.2	11.5	58.3	70.8	22.0	77.5	0.983	91.8
Bannu	46.0	6.6	73.6	27.4	26.1	31.3	27.8	3.9	26.1	56.0	4.3	45.4	0.973	86.0
Batagram	34.1	9.2	70.6	19.2	28.2	64.1	16.7	44.2	27.7	51.0	-	42.4	0.611	61.7
Buner	45.6	10.4	80.6	31.7	22.6	85.7	22.2	1.3	44.3	73.0	-	49.2	0.709	65.2
Charsadda	52.4	11.8	83.2	42.6	15.0	47.5	32.6	5.0	38.8	73.0	16.7	65.2	1.077	91.1
Chitral	47.8	6.0	87.2	37.7	24.1	71.9	52.8	8.7	44.9	60.4	11.1	76.1	1.935	95.8
D.I. Khan	45.2	2.7	76.6	19.1	22.0	32.1	23.0	6.1	17.3	51.1	22.3	39.7	0.894	74.7
Hangu	47.4	6.9	79.8	31.5	19.5	30.4	22.4	1.2	45.3	85.9	19.7	53.8	0.533	65.5
Haripur	51.9	14.2	80.8	27.6	21.0	57.8	65.4	28.2	49.2	61.3	12.6	78.0	1.041	83.9
Karak	57.1	26.6	79.0	21.5	31.6	51.0	47.9	7.4	50.4	72.2	7.2	74.1	1.562	79.7
Kohat	53.0	6.9	82.4	30.8	19.9	42.6	39.7	2.8	44.0	75.4	27.2	71.3	0.420	65.2
Kohistan	29.0	2.1	75.4	2.0	37.5	73.1	1.4	53.8	2.0	10.6	-	27.3	0.049	59.2
Lakki Marwat	61.3	7.9	74.5	28.8	22.0	45.7	22.5	2.9	16.6	49.9	10.2	45.8	1.311	70.4

Appendix 3: Summary statistics of FPI indicators for districts in Khyber Pakhtunkhwa, Continued

Districts	a. Exposure, fertility desire and child survival			b. Deliberate and natural fertility control			c. Women's empowerment and maternal health care				d. Socio-economic development and access to services			
	Proportion (%) of unmarried women (ages 15-29)	Proportion (%) of women with 3 or more children who had an unwanted pregnancy in the last	Proportion (%) of ever married women who never experienced child mortality	Proportion (%) of women (ages 15-49) using contraception (current users)	Proportion (%) of women with unmet need for family planning	Proportion (%) of women (ages 15-49) who exclusively breastfed their last-born child for 0-5 months	Proportion (%) of literate women	Proportion (%) of economically active women	Proportion (%) of women (ages 15-49) who had four or more ANC visits during last pregnancy	Proportion (%) of women (ages 15-49) delivered last birth at a health facility	Share (%) of urban areas in total population	Net primary school enrolment rate	Number of LHWs per 250 households	Proportion (%) of households with improved sanitation (all types of flush toilets)
Lower Dir	48.2	3.6	87.9	21.4	28.7	62.0	38.3	6.0	59.3	77.9	2.8	61.2	0.761	73.3
Malakand	47.1	11.1	85.0	46.3	15.9	47.5	47.4	4.7	41.4	80.2	9.5	72.5	1.564	86.2
Mansehra	48.3	18.3	77.0	32.2	15.5	49.5	54.4	18.8	37.9	42.6	9.3	70.3	0.889	68.5
Mardan	48.1	7.9	78.6	35.4	18.5	77.4	41.4	2.3	49.3	62.3	18.5	70.3	1.037	76.2
Nowshera	51.5	12.6	83.0	31.7	23.8	70.0	43.5	2.7	62.2	72.7	22.3	68.3	0.938	81.7
Peshawar	57.2	6.4	84.9	48.7	13.6	64.3	38.3	3.8	60.8	79.7	46.1	58.1	0.440	87.2
Shangla	31.6	3.1	84.5	30.6	24.8	83.3	6.7	13.8	9.7	34.4	-	33.6	0.764	68.4
Swabi	55.6	15.5	79.9	39.9	20.3	58.7	44.0	0.8	50.6	61.6	17.0	69.1	0.865	73.8
Swat	42.5	11.6	79.6	39.9	15.9	69.2	34.9	1.6	55.8	78.5	30.1	52.7	1.062	73.7
Tank	46.3	1.2	79.3	18.3	19.5	47.1	23.4	3.2	11.4	39.1	12.0	51.1	0.940	82.1
Tor Ghar	38.6	4.9	81.9	5.5	29.5	71.5	2.0	58.3	10.7	27.3	-	33.0	0.038	44.0
Upper Dir	47.7	6.9	82.6	20.7	27.2	74.8	26.4	57.5	39.1	55.5	4.7	44.7	0.620	69.2
KP	49.8	9.2	80.8	32.5	20.8	57.2	37.8	10.8	43.5	64.5	18.8	57.8	0.867	77.8

Source: Computed from KP MICS 2016-17. Data for proportion of economically active women was derived from PSLMS 2014-15.

Appendix 4: List of Administrative Units in Pakistan - 2017

Province	Division	District
Khyber Pakhtunkhwa	Bannu	Bannu
Khyber Pakhtunkhwa	Bannu	Lakki Marwat
Khyber Pakhtunkhwa	Dera Ismail Khan	Tank
Khyber Pakhtunkhwa	Dera Ismail Khan	Dera Ismail Khan
Khyber Pakhtunkhwa	Hazara	Torghar
Khyber Pakhtunkhwa	Hazara	Kohistan
Khyber Pakhtunkhwa	Hazara	Mansehra
Khyber Pakhtunkhwa	Hazara	Haripur
Khyber Pakhtunkhwa	Hazara	Batagram
Khyber Pakhtunkhwa	Hazara	Abbottabad
Khyber Pakhtunkhwa	Kohat	Hangu
Khyber Pakhtunkhwa	Kohat	Karak
Khyber Pakhtunkhwa	Kohat	Kohat
Khyber Pakhtunkhwa	Mardan	Swabi
Khyber Pakhtunkhwa	Mardan	Mardan
Khyber Pakhtunkhwa	Peshawar	Peshawar
Khyber Pakhtunkhwa	Peshawar	Charsadda
Khyber Pakhtunkhwa	Peshawar	Nowshera
Khyber Pakhtunkhwa	Malakand	Lower Dir
Khyber Pakhtunkhwa	Malakand	Swat
Khyber Pakhtunkhwa	Malakand	Chitral
Khyber Pakhtunkhwa	Malakand	Shangla
Khyber Pakhtunkhwa	Malakand	Upper Dir
Khyber Pakhtunkhwa	Malakand	Buner
Khyber Pakhtunkhwa	Malakand	Malakand Protected Area
Punjab	Rawalpindi	Jhelum
Punjab	Rawalpindi	Attock
Punjab	Rawalpindi	Rawalpindi
Punjab	Rawalpindi	Chakwal
Punjab	Sargodha	Sargodha
Punjab	Sargodha	Bhakkar
Punjab	Sargodha	Mianwali
Punjab	Sargodha	Khushab

Appendix 4: List of Administrative Units in Pakistan – 2017, Continued

Province	Division	District
Punjab	Gujranwala	Mandi Bahauddin
Punjab	Gujranwala	Narowal
Punjab	Gujranwala	Gujranwala
Punjab	Gujranwala	Hafizabad
Punjab	Gujranwala	Gujrat
Punjab	Gujranwala	Sialkot
Punjab	Lahore	Sheikhupura
Punjab	Lahore	Lahore
Punjab	Lahore	Nankana Sahib
Punjab	Lahore	Kasur
Punjab	Faisalabad	Toba Tek Singh
Punjab	Faisalabad	Chiniot
Punjab	Faisalabad	Faisalabad
Punjab	Faisalabad	Jhang
Punjab	Sahiwal	Pakpattan
Punjab	Sahiwal	Sahiwal
Punjab	Sahiwal	Okara
Punjab	Bahawalpur	Rahim Yar Khan
Punjab	Bahawalpur	Bahawalpur
Punjab	Bahawalpur	Bahawalnagar
Punjab	Dera Ghazi Khan	Dera ghazi khan
Punjab	Dera Ghazi Khan	Rajanpur
Punjab	Dera Ghazi Khan	Muzaffargarh
Punjab	Dera Ghazi Khan	Layyah
Punjab	Multan	Vehari
Punjab	Multan	Lodhran
Punjab	Multan	Multan
Punjab	Multan	Khanewal
Sindh	Larkana	Larkana
Sindh	Larkana	Shikarpur
Sindh	Larkana	Kashmor
Sindh	Larkana	Jacobabad
Sindh	Larkana	Kambar Shahdad Kot
Sindh	Sukkur	Khairpur
Sindh	Sukkur	Ghotki
Sindh	Sukkur	Sukkur
Sindh	Hyderabad	Tando Allahyar

Appendix 4: List of Administrative Units in Pakistan – 2017, Continued

Province	Division	District
Sindh	Hyderabad	Tando Muhammad Khan
Sindh	Hyderabad	Hyderabad
Sindh	Hyderabad	Dadu
Sindh	Hyderabad	Thatta
Sindh	Hyderabad	Matiari
Sindh	Hyderabad	Jamshoro
Sindh	Hyderabad	Sujawal
Sindh	Hyderabad	Badin
Sindh	Karachi	Malir
Sindh	Karachi	Karachi Central
Sindh	Karachi	Karachi West
Sindh	Karachi	Karachi East
Sindh	Karachi	Korangi
Sindh	Karachi	Karachi South
Sindh	Mirpur Khas	Umer Kot
Sindh	Mirpur Khas	Mirpur Khas
Sindh	Mirpur Khas	Tharparkar
Sindh	Shaheed Benazirabad	Sanghar
Sindh	Shaheed Benazirabad	Shaheed Benazirabad
Sindh	Shaheed Benazirabad	Naushahro Feroze

Source: Pakistan Population and Housing Census 2017