

ANALYSIS OF DRINKING WATER, SANITATION, AND HYGIENE (WASH) PUNJAB MICS 2018

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Background

Punjab is the most populous province of Pakistan with approximately 110 million population as per Population Census 2017. Rapid urbanisation and a growing population will continue to increase demands for sector and sub-sector services, as share of urban population is 40 million (36%). The current population growth rate in Punjab is 2.13% compared to 2.4% at national level.

As per the Punjab Multiple Indicator Cluster Survey (MICS) 2018, about 98% of the population have an access to improved source of drinking water – 98.2% in urban areas and 97.9% in rural. Further, 18.8% population of Punjab province has access to tap water (13.7% in premises, and 5.1% Public Stand Point) followed by 37.5% motorised pump and 25.3% hand pumps. Around 14% population has access to Cart with small tanks/drums. The proportion of population having access to tap water as a main supply for drinking water is higher in urban areas, 28.8% as compared to only 12.9% in rural areas. Similarly, nearly 1/4th of urban population (24.9%) are using water made available through Cart with small tank/drums. Additionally, 43% of HHs are using improved water source which is free from E-Coli Contamination in the province. Figure 1 highlights overall distribution of improved water source to HHs in the province.

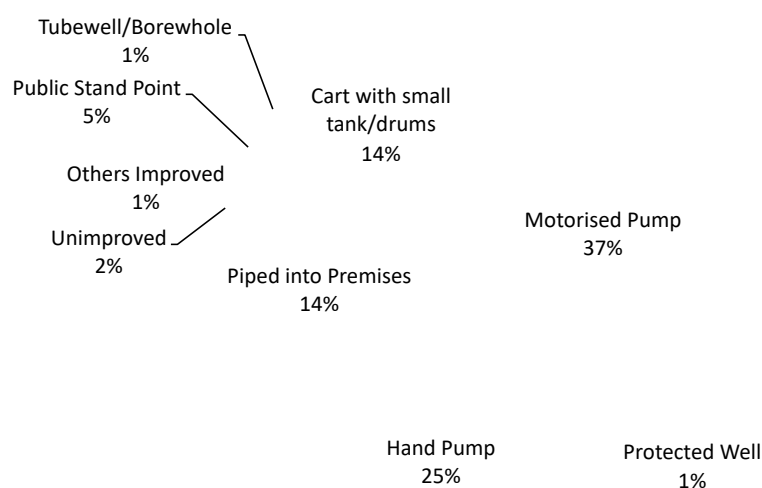


Figure 1: Percent Distribution of Drinking Water at HH Level

As per Punjab MICS 2018, around 80.1% of the population is living in households which use improved sanitation facilities, that is higher in urban (92.8%) as compared to rural areas (72.8%). Figure 2 shows overall distribution of sanitation facilities in the province. Nearly 13% population of the province practices open defecation or is living without toilets.

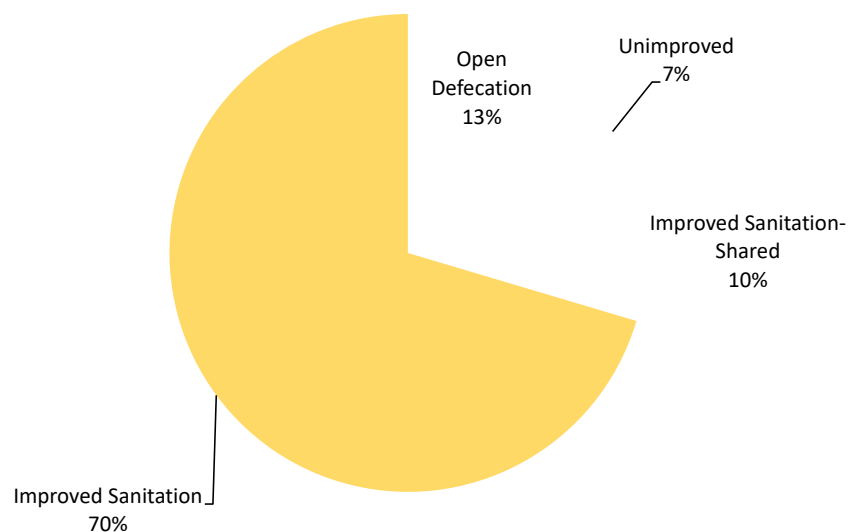


Figure 2: Percent Distribution of Households Use of Sanitation Facilities

The Housing, Urban Development & Public Health Engineering Department (HUD&PHED) and Local Government & Community Development Department (LG&CDD) have the mandates to enhance the access of water supply and sanitation in the province. Community Development Unit (CDU) of HUD&PHED has the responsibility to mobilise and organise communities especially in rural areas for water supply, sanitation and hygiene services. Similar kind of initiative has been taken by the Local Government and Community Development Department of Punjab where it is working with local community-based organizations for water and sanitation initiatives.

The element of disparities and inequities emerged on the scene more vigorously when UNICEF supported the “Mapping of Inequities in Basic Water Supply and Sanitation Services in Pakistan” during 2015. Another draft report of tehsil-based equity mapping of Punjab in September 2015, funded by UNICEF, indicated that there are inequity issues especially in relation to piped water supply and improved sanitation between rural and urban areas as well as income groups. A secondary analysis of MICS 2014 was conducted and report was published in 2016. However, MICS 2014 did not include data of water quality and on-site treatment of human excreta which are basic requirement for defining safely managed water and sanitation services. The Government of Punjab launched Punjab MICS 2018 report in May 2019. A further analysis of MICS 2018 results was desirable to establish the SDG baseline for Punjab along with rural and urban break-up of the districts so relevant stakeholders can make informed choices for respective interventions. This information will be useful to inform the policy makers and politicians to mobilize required resources and advocacy at relevant forums.

Methodology

Datasets for the Study

The MICS is a household survey developed by UNICEF and it is capable of producing statistically sound, internationally comparable estimates of social indicators such as SDG indicators. In Pakistan, Provincial Bureaus of Statistics provide leadership in their respective provinces to conduct the survey along with Planning and Development Departments with support from UNICEF. The latest MICS Punjab 2018 results were announced in May 2019, which are up to the district level. The study used basic raw datasets of MICS 2019 that were obtained directly from the Punjab Bureau of Statistics and UNICEF.

Wealth Quintile

The Wealth Index is a composite measure of a household's cumulative living standard. As used in the MICS 2018 report, the study adopted the Principal Components Analysis (PCA) approach for Wealth Index by using information on the ownership of consumer goods, dwelling characteristics, water and sanitation, and other characteristics that are related to the household's wealth to assign weights (factor scores) to each of the household assets. Each household was then assigned a wealth score based on these weights and the assets owned by that household. The survey household population was then ranked according to the wealth score of the household they are living in, and was finally divided into five equal parts called quintiles. For quintiles, the five categories are: lowest (poorest), second (poor), third (middle), fourth (rich) and highest (richest) – comprising of five groups with an equal number of individuals in each category.

The Wealth Index is particularly more valuable and reliable as there is paucity of reliable data on income and expenditures. The assets used in these calculations were as follows: number of rooms for sleeping per member; material used for floor, roof and wall of dwelling; type of cooking fuel; electricity; gas; radio; television; cable television; mobile and non-mobile phone; computer; internet access; refrigerator; air conditioner; washing machine; cooler; microwave; sewing machine; iron; water filter; motorised pump; watch; bicycle; motorcycle/scooter; animal-drawn cart; car or truck; source of drinking water supply and type of sanitation facility.

The Wealth Index is assumed to capture underlying long-term wealth through information on the household assets, and is intended to produce a ranking of

households by wealth, from poorest to richest. The wealth index does not provide information on absolute poverty, current income or expenditure levels. Wealth scores calculated are applicable for only particular data set they are based on. These assets were used to construct an asset index by using PCA methods described by Filmer and Pritchett¹, Rutstein & Johnson² and Córdova³. Following Filmer and Pritchett, many other studies, especially in the fields of economics and public policy, have been implemented and have recommend use of PCA for estimating wealth effects (Vyass and Kumaranayake⁴; Labonne, Biller and Chase⁵).

Access to Improved Water

MICS 2018 report provides information about categories of water supply sources like piped water into dwellings, compounds, neighbours and public tap/standpipe, hand pump, motorised pump, protected well, etc. MICS report also categorises improved and unimproved water sources as given below:

Piped into dwelling	Improved Water
Piped into compound, yard or plot	Improved Water
Piped to neighbour	Improved Water
Public tap /Standpipe	Improved Water
Tube well	Improved Water
Hand pump (tap)	Improved Water
Motorised pump (donkey/Turbine)	Improved Water
Protected well	Improved Water
Protected spring	Improved Water
Bottled water (mineral)	Improved Water
Tanker-truck	Unimproved Water
Cart with small tank/drum	Unimproved Water
Unprotected well	Unimproved Water
Unprotected spring	Unimproved Water
Pond (toba)	Unimproved Water
Surface water (river, stream, dam, lake)	Unimproved Water
Other	Unimproved Water
Missing	Unimproved Water

¹ Filmer D, Pritchett LH (2001) Estimating wealth effects without expenditure data - or tears: an application to educational enrollments in states of India. *Demography* 38(1): 115–32

² Rutstein SO, Johnson K (2004) DHS Comp. Reports 6: The DHS Wealth Index. Calverton, Maryland: ORC Macro

³ Abby Córdova. Methodological Note: Measuring Relative Wealth using Household Asset Indicators. *Americas Barometer Insights*: 2008 (No.6)

⁴ Vyass, Seema, and Lilani Kumaranayake. "Constructing Socioeconomic Status Indexes: How to Use Principal Component Analysis." *Health Policy and Planning* 21, no. 6 (2006): 459-68

⁵ Labonne, Julien , Dan Biller, and Rob Chase. "Inequality and Relative Wealth: Do They Matter for Trust? Evidence from Poor Communities in the Philippines." In *Social Development Papers, Community Driven Development*, The World Bank, 2007

Access to Improved Sanitation

MICS 2018 report provides information about type of latrines including flush to piped sewer system, flush to septic tank, flush to pit latrine, flush to somewhere, pit latrine, etc. The MICS report 2018 categorises improved and unimproved sanitation as below:

Flush to piped sewer system	Improved Sanitation
Flush to septic tank	Improved Sanitation
Flush to pit (latrine)	Improved Sanitation
Flush to unknown place / not sure / don't know	Improved Sanitation
Ventilated Improved Pit Latrine (VIP)	Improved Sanitation
Pit latrine with slab	Improved Sanitation
Composting toilet	Improved Sanitation
Flush to somewhere else	Unimproved Sanitation
Pit latrine without slab / open pit	Unimproved Sanitation
Bucket	Unimproved Sanitation
No facility, Bush, Field	Unimproved Sanitation
Other	Unimproved Sanitation
Missing	Unimproved Sanitation

Key Findings and Analysis

Key Definitions

Safely Managed Water Drinking water from an improved water source which is located on premises, available when needed and free of faecal and priority contamination	Safely managed Sanitation Services Use of an improved sanitation facility which is not shared with other households and where excreta are safely disposed in situ or transported and treated off-site
Improved Water Sources Improved sources include: piped water, boreholes or tube wells, protected dug wells, protected springs and packaged or delivered water	Improved Sanitation Improved facilities include: flush/ pour flush to piped sewer system, septic tank or pit latrine; ventilated improved pit latrine, composting toilet or pit latrine with slab
Basic Water Basic Drinking water from an improved source provided collection time is not more than 30 minutes for a roundtrip including queuing	Basic Sanitation Use of Improved facilities which are not shared with other households
Limited Water Limited Drinking water from an improved source where collection time exceeds over 30 minutes for a roundtrip to collect water, including queuing	Limited Sanitation Use of improved facilities shared between two or more households
Unimproved Water Unimproved Drinking water from an unprotected dug well or unprotected spring	Unimproved Sanitation Use of pit latrines without a slab or platform, hanging latrines and bucket latrines
Surface Water Surface water Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation channel	Open defecation Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces or with solid waste

Situation Analysis

Access to Drinking Water

As per the Punjab Multiple Indicator Cluster Survey (MICS) 2018, about 98% of the population uses an improved source of drinking water – 98.2% in urban areas and 97.9% in rural. Moreover, 18.7% population of Punjab province has access to tap water followed by 37.5 % motorised pump and 25.3% hand pumps. Table 1 indicates overall distribution of improved water source to households (HHs) in the province.

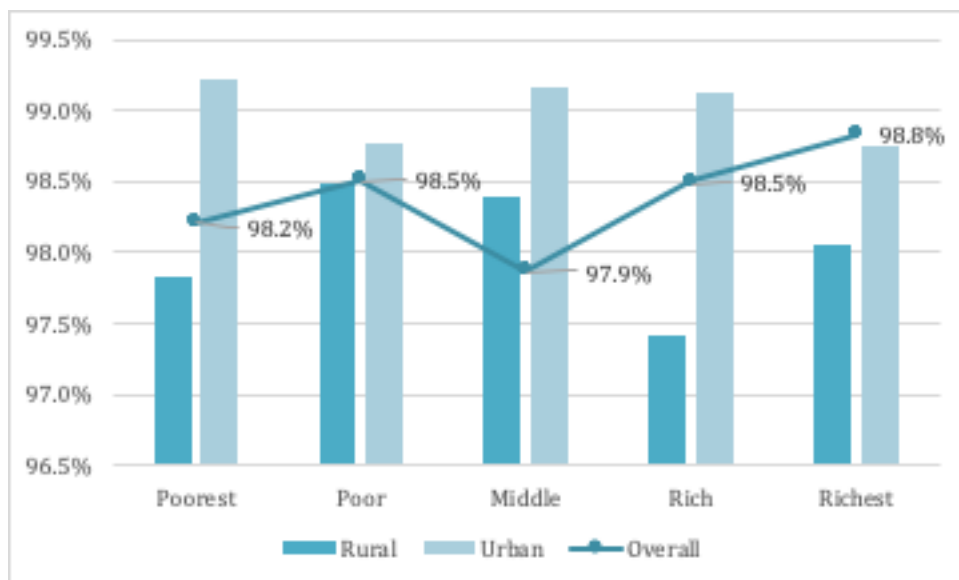
Table 1 - Access to drinking water supply by source in Punjab

	MICS 2017			MICS 2013		
	Urban	Rural	Total	Urban	Rural	Total
<i>All source of drinking water -%</i>						
<i>Piped into dwelling</i>	15.1	3.8	7.9	25.8	4.6	11.6
<i>Piped into compound, yard or plot</i>	4.0	3.9	4.0	1.9	1.7	1.8
<i>Piped to neighbour</i>	1.9	1.7	1.8	1.1	0.8	0.9
<i>Public tap /Standpipe</i>	7.8	3.5	5.1	10.3	2.6	5.1
<i>Tube well</i>	0.9	1.1	1.0	0.9	0.7	0.8
<i>Hand pump (Mechanical)</i>	7.2	35.7	25.3	8.6	41.5	30.6
<i>Motorized pump (donkey/Turbine)</i>	34.1	39.5	37.5	38.2	43.4	41.7
<i>Tanker-truck</i>	0.6	0.2	0.3	0.3	0.1	0.2
<i>Cart with small tank/drum</i>	24.9	7.2	13.6	8.9	1.7	4.1
<i>Protected well</i>	0.5	1.0	0.8	0.5	1.1	0.9
<i>Protected spring</i>	0.1	0.2	0.2	0.1	0.4	0.3
<i>Bottled water (mineral)</i>	1.1	0.1	0.5	1.6	0.1	0.6
<i>Improved Water</i>	98.2	97.9	98.0	89.1	96.8	94.3
<i>Unprotected well</i>	0.1	0.5	0.3	0.0	0.3	0.2
<i>Unprotected spring</i>	0.1	0.2	0.1	0.0	0.2	0.2
<i>Surface water (river, stream, dam, lake, pond)</i>	0.4	0.9	0.7	0.1	0.2	0.1
<i>WATER KIOSK</i>	0.8	0.1	0.4	0.8	0.1	0.4
<i>Other</i>	0.4	0.4	0.4	1.5	0.7	1.0
<i>Unimproved Water</i>	1.8	2.1	2	10.9	3.2	5.8

In MICS 2017/2018, the Carts with small tanks/drums and tanker trucks have been added to improved water source as these were not part of improved water source in MICS 2013. The motorised pumps (donkey/turbine) are the main source of drinking water supply with 37.5% coverage followed by hand pumps 25.3% and piped water supply 18.1%. In rural as well as urban areas, the main source of drinking water supply is motorized pump i.e. 39.5% in rural areas and 34.1% in urban areas. While hand pumps are the second largest source of drinking water in rural areas i.e. 35.7% whereas it is only 7.2% in urban areas. The piped water supply in urban areas is 28.8% while it is only 13% in rural areas showing a wider disparity in terms of rural urban divide. In urban areas, the cart with small tanks /drums risen to nearly one out of every four (24.9%) in 2017 compared to one out of every eleven (8.9%) in 2013. Similarly, the carts with small tanks/drums is now 7.2% in

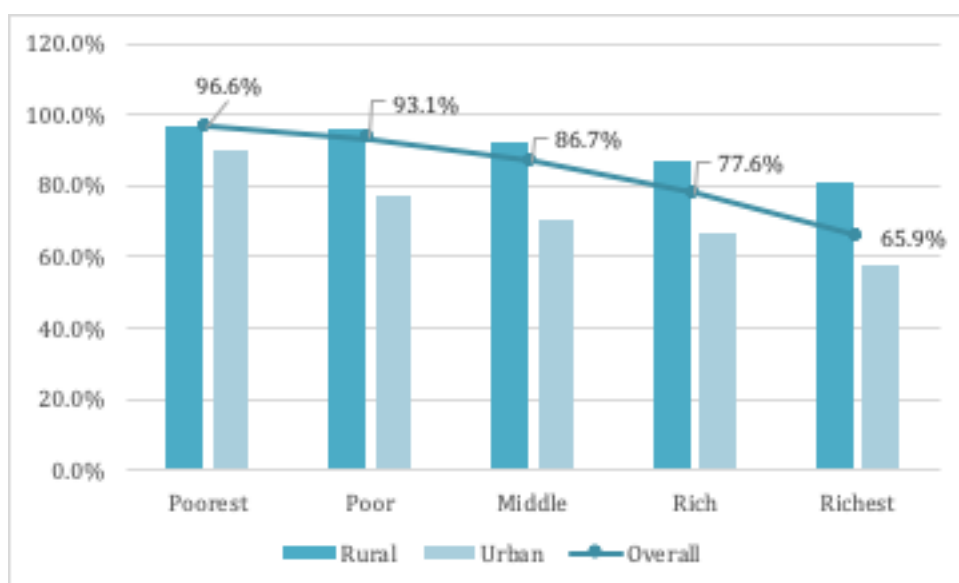
rural areas compared to 1.7% in 2013. Overall piped water reduced from 38.3% in 2013 to 28.8% in 2017. Similarly, motorized pumps in urban areas reduced to 34% in 2017 from 38% in 2013. This gap has been filled largely by Carts with small tanks/drums. A review of access to improved water in different quintiles reveals that there is no significant difference between different quintiles as per new definition of improved water sources used in the MICS report 2018 (Fig 3).

Figure 3 Quintile of Improved Water Sources MICS 2018



Based on the previous definition of improved water sources (that excludes bottled water and carts with small tanks/drums), there are significant disparities between different quintiles, and coverage goes down from the poorest to the richest, and it is more visible in urban areas compared to rural areas (Fig 4).

Figure 4 Quintiles of Improved Water Sources excluding Carts and Bottled Water



In contrast to 97% of the poorest, only 66% of the richest have access to improved water sources. The cart with small tanks/drums, are about 25.8% in urban areas and only 7.3% in rural areas, and the rich and richest groups generally purchase from such kind of sources. There is evidence from districts Sialkot and Faisalabad where 53.8% and 40.6% respectively had water in small carts/tanks by either purchasing the water or fetching it themselves.

The new definition of SDGs encourages location of improved water sources within premises, and to be available when needed. Thus, this information is key to determine the first and second ladder of SDG for safely managed water. Overall, 69.4% of the population has access to improved water sources located at their premises with higher in rural areas (74.6%) compared to urban areas (60.1%) as evident from Table 2. The rich wealth quintiles have low levels of water in premises i.e. 54.9% of richest and 62.1% of rich compared to 79.8% of poorest, 78.9% of poor and 71.1% of middle wealth quintiles. Such wider disparities do not exist across water in sufficient quantities, basic water and improved water sources.

Table 2: Key Water Sources with Quintiles

	Water Sources			Total Improved Water Source	Unimproved Water
	In Premises	Sufficient Quantities	Basic Water		
Poorest	79.8%	92.2%	95.4%	98.2%	1.8%
Second	78.9%	90.7%	96.3%	98.4%	1.5%
Middle	71.1%	91.4%	95.7%	97.7%	2.1%
Fourth	62.1%	89.8%	96.1%	98.5%	1.5%
Richest	54.9%	90.7%	96.2%	98.8%	1.2%
Urban	60.1%	89.6%	96.4%	98.9%	1.0%
Rural	74.6%	91.7%	95.7%	97.9%	2.0%
Total	69.4%	91.0%	95.9%	98.3%	1.7%

The districts having coverage less than 50% with access to improved water sources within premises in Punjab are: Nankana Sahib (38%), Faisalabad (38.6%) and Sialkot (43.4%). The details of district with urban, rural and overall coverage of water in premises, water in sufficient quantities along with overall improved water is given in **Table 3**. Access to improved water sources with Rural -Urban and overall coverage is provide in **Table 04** ahead. The details of district wise coverage of Water Accessible in Premises with quintiles is provided in Table (s) **14, 15 and 16** of Annexure. Similarly, details of district wise coverage of Sufficient Water Quantities with quintiles for overall, rural and urban is given in Table (s) **17, 18 and 19** of Annexure respectively.

Table 3: District wise Percentage of Access to Water within Premises, Sufficient Quantities and overall Improved water

Regions	Water in Premises			Water in Sufficient Quantity			Improved Water Source
	Overall	Urban	Rural	Overall	Urban	Rural	
Punjab	69.4	59.7	74.9	91.4	89.6	91.7	98.3
Bahawalpur	76.4	75.6	76.8	88.0	87.0	88.5	98.8
Bahawalnagar	73.6	62.8	76.4	80.2	75.8	81.3	98.4
RY Khan	73.4	57.5	78.1	93.5	95.0	93.1	98.8
DG Khan	71.8	55.1	75.8	89.0	79.2	91.3	97.8
Layyah	93.6	76.8	96.9	96.2	91.4	97.1	99.8
Muzaffargarh	94.6	89.7	95.5	97.3	99.3	97.0	99.9
Rajanpur	79.3	95.1	76.2	89.9	98.6	88.2	95.6
Faisalabad	38.7	28.6	48.2	88.9	88.2	89.6	95.9
Chiniot	82.1	82.4	82.0	97.0	99.2	95.9	100
Jhang	87.3	80.6	89.1	94.8	98.9	93.7	98.8
TT Singh	71.2	55.0	75.4	87.6	83.5	88.7	98.4
Gujranwala	70.3	68.0	73.5	93.1	95.0	90.5	99.7
Gujrat	59.0	41.5	66.6	88.4	88.2	88.5	99.0
Hafizabad	61.9	46.9	69.9	95.9	96.4	95.5	95.1
Mandi Bahauddin	64.8	49.4	68.7	96.3	93.4	97.0	97.8
Narowal	76.3	62.1	79.1	98.3	96.5	98.6	99.7
Sialkot	43.4	40.1	44.7	88.0	93.9	85.7	99.9
Lahore	59.6	59.6	na	85.9	85.9	na	99.8
Kasur	75.0	64.0	78.6	89.7	92.3	88.8	98.5
Nankana Sahib	38.0	16.2	42.7	94.3	92.3	94.7	91.3
Sheikhupura	64.0	57.7	67.7	89.2	78.0	95.8	96.4
Multan	77.4	70.8	82.5	92.9	90.2	95.0	99.8
Khanewal	89.6	83.0	91.4	96.3	99.0	95.6	99.5
Lodhran	77.8	63.9	80.5	80.9	76.6	81.7	99.5
Vehari	77.3	58.1	81.6	93.5	93.9	93.4	99.2
Rawalpindi	54.3	52.3	56.4	91.3	91.2	91.3	94.6
Attock	79.7	89.6	76.1	97.0	98.6	96.4	93.2
Chakwal	78.8	72.1	80.3	90.8	88.6	91.3	98.0
Jhelum	75.8	76.7	75.5	90.9	89.9	91.2	94.2
Sahiwal	72.1	62.9	74.4	85.9	87.8	85.4	100
Okara	74.5	69.6	76.2	89.0	89.0	89.0	99.6
Pakpattan	81.9	87.9	80.7	88.9	87.1	89.2	99.7
Sargodha	66.4	51.3	72.6	97.1	99.3	96.2	99.7
Bhakkar	98.0	98.7	97.9	98.0	98.6	97.9	99.9
Khushab	56.9	56.3	57.2	85.0	82.1	86.1	94.7
Mianwali	83.3	88.1	82.1	95.5	93.9	96.1	97.8

Access to Basic Water and Limited Water

Basic Drinking water from an improved source provided collection time is not more than 30 minutes for a roundtrip including queuing. The lowest level of the basic water in Punjab province is in Khushab with 89.9% followed by Nankana Sahib (90.1%) and Rawalpindi (91.8%). District Basic Water with urban and rural break-up is provided in **Table 20** of Annexure.

Limited Drinking water from an improved source where collection time exceeds over 30 minutes for a roundtrip to collect water, including queuing. The highest level of limited water is noted in DG Khan (6.8%) followed by Bahawalnagar (6.4%), Lodhran (5.5%) and Khushab (4.8%). The highest level of surface water is reported in Hafizabad (3.9%) and Khushab (3.9%) followed by Faisalabad (3.7%). District wise details of limited water is provided in **Table 20** of Annexure.

Access to Piped Water

Access to piped water supply in Punjab is 19.3%, which is higher in urban areas with 29.3% and lower in rural areas with 13.1%. Compared to MICS 2013, there is downward trend of access to piped water supply in Punjab. Further analysis also shows that poorest have significantly low access (7.5%) to piped water supply compared to richest (28.3%) as shown in **Fig 5**. District wise break up of Piped Water is provided in Table 4. Details of district wise coverage of Piped Water with Quintiles in overall Urban and Rural areas is provided in Table (s) **21, 22 and 23** of Annexure.

Figure 5 Access to Piped Water Supply in Punjab by Quintiles

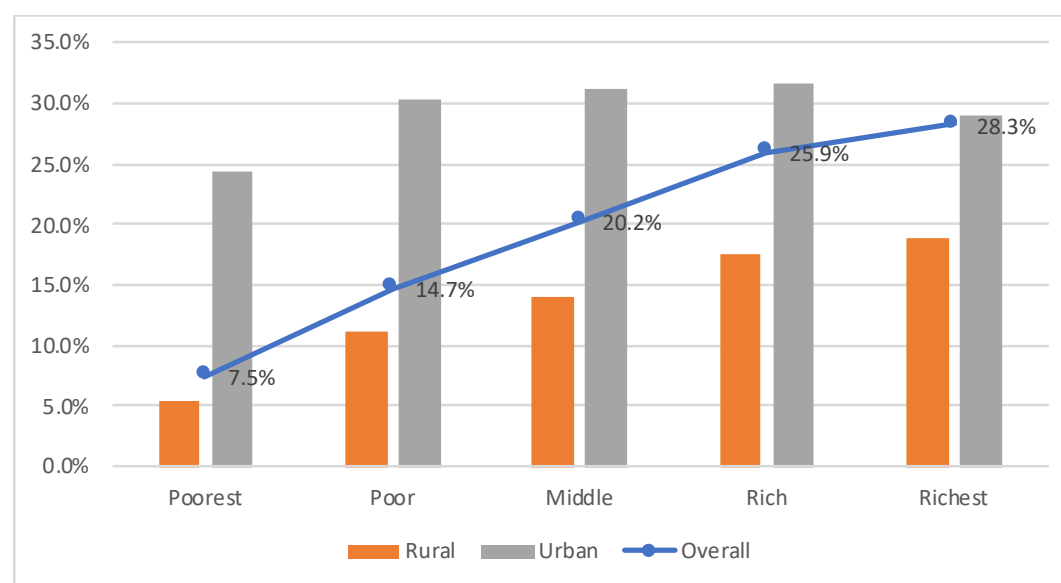


Table 4: District Wise Improved and Piped Water Sources Punjab

Regions	Improved Water Sources			Piped Water Supply All Types		
	Urban	Rural	Overall	Urban	Rural	Overall
Punjab	98.9	97.9	98.3	29.3	13.1	19.2
Bahawalpur	99.7	98.4	98.8	33.6	16.2	22.0
Bahawalnagar	99.6	98.1	98.4	42.4	37.9	38.9
RY Khan	97.1	99.4	98.8	21.8	10.4	13.1
DG Khan	100.0	97.2	97.8	24.2	16.0	17.7
Layyah	99.4	99.9	99.8	4.7	.9	1.5
Muzaffargarh	99.6	100.0	99.9	5.5	1.4	2.0
Rajanpur	100.0	94.6	95.6	9.4	2.5	3.7
Faisalabad	98.4	93.5	95.9	17.4	14.1	15.7
Chiniot	100.0	100.0	100.0	15.4	2.7	6.7
Jhang	99.2	100.0	99.8	37.4	7.3	14.0
TT Singh	98.4	98.3	98.4	52.2	37.2	40.4
Gujranwala	99.7	99.7	99.7	36.5	27.5	32.9
Gujrat	99.4	98.9	99.0	22.0	28.5	26.5
Hafizabad	92.9	96.4	95.1	6.6	6.4	6.5
Mandi Bahauddin	95.3	98.4	97.8	18.6	23.7	22.6
Narowal	100.0	99.7	99.7	17.4	20.0	19.6
Sialkot	99.7	99.9	99.9	20.4	5.1	9.9
Lahore	99.8		99.8	45.8		45.8
Kasur	96.6	99.1	98.5	50.6	14.3	23.6
Nankana Sahib	87.4	92.2	91.3	14.8	17.0	16.6
Sheikhupura	96.2	96.6	96.4	28.2	26.9	27.4
Multan	99.7	99.9	99.8	15.3	5.5	9.8
Khanewal	100.0	99.4	99.5	0.0	3.5	2.8
Lodhran	100.0	99.4	99.5	21.6	17.5	18.2
Vehari	98.6	99.3	99.2	29.0	10.1	13.5
Rawalpindi	97.3	91.5	94.6	24.3	13.4	19.1
Attock	99.7	90.9	93.2	33.4	16.0	20.6
Chakwal	100.0	97.5	98.0	10.9	12.8	12.5
Jhelum	95.2	93.9	94.2	25.5	26.6	26.3
Sahiwal	100.0	100.0	100.0	7.4	6.6	6.8
Okara	100.0	99.5	99.6	3.1	3.3	3.2
Pakpattan	100.0	99.6	99.7	53.6	12.9	19.4
Sargodha	99.1	99.9	99.7	9.2	2.9	4.8
Bhakkar	100.0	99.9	99.9	5.8	2.0	2.6
Khushab	99.5	92.8	94.7	32.8	20.9	24.2
Mianwali	99.3	97.4	97.8	19.5	9.3	11.5

Drinking Water Quality

As per MICS 2018, around 63.8% of households have water sources without E-Coli contamination. This is 66.6% in rural areas and 60.8% in urban areas. Besides, , around 59.6% f households reported using drinking water source without E-Coli with 60% in rural areas and 58.9% in urban areas.

Table 5: Drinking Water Quality and Safely Managed Water

Punjab	Improved sources				Percentage of household members with an improved drinking water source located on premises, free of E. coli and available when needed
	Without E. coli in drinking water source	Without E. coli in drinking water source	With drinking water available in sufficient quantities	Drinking water accessible on premises	
Overall	63.8	59.6	91.4	74.2	43.7
Rural	65.6	60.0	92.3	78.5	48.1
Urban	60.8	58.9	89.8	66.8	36.0

Water quality is directly linked with human survival including incidence of water borne diseases. As per draft National Water Quality Monitoring Report 2015-2016, prepared by PCRWR, around 35% water sources in Punjab are safe for drinking purposes- free from microbiological and chemical contamination (iron, fluoride, nitrates) and physical characteristics (turbidity, hardness, total dissolved solids) compared to 31% in rest of the country. The wealth quintiles of safely managed water are given in **Figure 6** showing richest having low access as compared to the poorest.

Figure 6 Wealth Quintiles of Safely Managed Water



Safely Managed Water

Under Sustainable Development Goals, safely managed water services are defined as: Population using an improved drinking water source, which is: i) Located on premises; ii) Available when needed; iii) and free of faecal and priority chemical contamination. As per Joint Monitoring Program (JMP), of three indicators of the safely managed water, the lowest indicators will be baseline of the defined area. As per MICS 2018, 91.4% population has drinking water available in sufficient quantity when needed, 74.1% have water accessible on premises and 63.8% have drinking water without E-Coli contamination. An overall, 43.7% of household members with an improved drinking water source located on premises, free of *E.Coli* and available when needed access to improved water. The ladder of Safely Managed Water is defined in Figure 7. Safely Managed Water Services in Urban areas is 36% and while it is 48% in rural areas. Furthermore, district wise ladder of Safely Managed Water is given in **Table 6** along with an overall picture of urban and rural safely managed water.

Figure 7 Ladder of Safely Managed Water

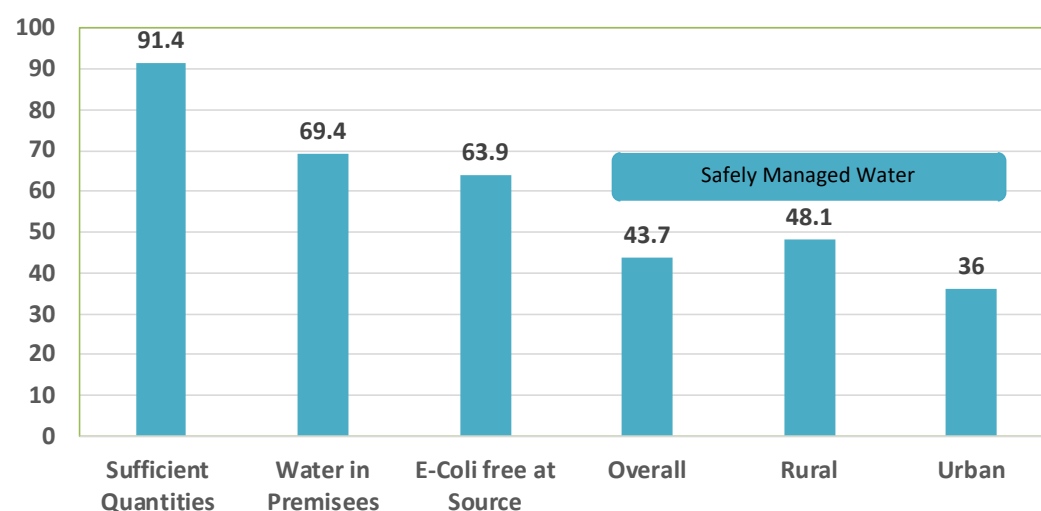


Table 6: Safely Managed Drinking Water Services

	Improved Drinking Water			Safely Managed Water*		
	Available in sufficient quantities	Accessible on premises	Without E. coli in source	Overall	Urban	Rural
Punjab	91.4	69.4	63.9	43.7	36.0	48.1
Bahawalpur	88.0	76.4	74.5	44.3	45.5	43.8
Bahawalnagar	80.2	73.6	32.2	20.9	17.1	22.0
RY Khan	93.5	73.4	75.5	55.5	57.8	54.9
DG Khan	89.0	71.8	65.7	56.8	31.8	62.7
Layyah	96.2	93.6	71.5	63.8	69.4	62.7
Muzaffargarh	97.3	94.6	70.8	62.9	72.4	61.2
Rajanpur	89.9	79.3	56.7	48.8	79.1	43.9
Faisalabad	88.9	38.7	58.6	20.4	15.9	24.5
Chiniot	97.0	82.1	80.0	68.0	72.0	66.3
Jhang	94.8	87.3	67.0	60.0	67.9	57.6
TT Singh	87.6	71.2	57.6	38.8	31.8	40.3
Gujranwala	93.1	70.3	64.3	48.3	50.7	45.0
Gujrat	88.4	59.0	84.0	49.2	38.6	54.1
Hafizabad	95.9	61.9	76.7	52.6	55.3	51.3
M Bahauddin	96.3	64.8	54.5	37.5	12.3	43.6
Narowal	98.3	76.3	92.5	71.9	55.0	75.3
Sialkot	88.0	43.4	71.6	28.1	5.6	37.6
Lahore	85.9	59.6	51.9	27.6	27.6	na
Kasur	89.7	75.0	64.8	48.4	42.4	50.2
Nankana Sahib	94.3	38.0	76.4	23.9	9.3	27.5
Sheikhupura	89.2	64.0	71.9	49.3	33.9	58.0
Multan	92.9	77.4	57.6	46.5	33.2	57.0
Khanewal	96.3	89.6	76.9	69.4	78.8	66.8
Lodhran	80.9	77.8	39.2	23.9	30.1	22.9
Vehari	93.5	77.3	80.0	60.2	44.7	63.3
Rawalpindi	91.3	54.3	42.1	21.0	20.8	21.2
Attock	97.0	79.7	69.3	50.5	53.1	49.4
Chakwal	90.8	78.8	55.5	45.0	55.6	42.5
Jhelum	90.9	75.8	71.4	57.4	66.5	54.0
Sahiwal	85.9	72.1	83.5	52.8	54.2	52.6
Okara	89.0	74.5	67.2	49.8	54.7	48.0
Pakpattan	88.9	81.9	51.7	42.9	31.3	46.2
Sargodha	97.1	66.4	64.1	43.9	47.4	42.3
Bhakkar	98.0	98.0	72.2	70.1	65.8	70.9
Khushab	85.0	56.9	42.2	26.0	32.4	23.8
Mianwali	95.5	83.3	69.7	56.7	68.5	54.1

**Safely Managed Water: Improved drinking water source located on premises, free of E. coli and available when needed*

Access to Sanitation

As per Punjab MICS 2018, total 80.1% of the population are living in households using improved sanitation facilities, which is higher in urban (92.8%) as compared to rural areas (72.8%). Of this, 70.4% HHs have improved sanitation and facilities that are not shared, the ratio of this is 61.8% HH in rural areas and 85.5% in urban areas. Around 13 % population of the province (predominantly living in rural areas) is practicing open defecation compared to 17.5% in 2013, and 23% in 2011. The **Table 7** provides break-up of the sanitation services in the province along with urban and rural division.

Table 7 - Access to sanitation in Punjab

	MICS 2017-%			MICS 2013-%		
All source of Sanitation	Urban	Rural	Total	Urban	Rural	Total
Flush to piped sewer system	56.9	4.9	23.8	56.3	4.1	21.3
Flush to septic tank	32.0	50.0	43.5	33.8	49.1	44.1
Flush to pit (latrine)	2.8	15.4	10.8	1.5	12.2	8.7
Flush to unknown place / not sure	0.6	0.7	0.7	0.3	0.3	0.3
Ventilated improved pit latrine (VIP)	0.2	1.0	0.7	0.1	0.3	0.2
Pit latrine with slab	0.2	0.7	0.5	0.1	0.8	0.6
Improved Sanitation	92.8	72.8	80.1	92.1	66.8	75.1
Flush to Open Drain	5.5	6.6	6.2	6.2	7.2	6.9
Pit latrine without slab / open pit	0.0	0.3	0.2	0.1	0.3	0.2
Bucket	0.0	0.0	0.0	0.0	0.0	0.0
No facility, Bush, Field	1.4	19.7	13.0	1.3	25.4	17.5
Other	0.3	0.5	0.4	0.1	0.3	0.2
Missing	0.0	0.0	0.0	0.3	0.1	0.1
Unimproved Sanitation	7.2	27.2	19.9	7.9	33.2	24.9
Not Shared	85.4	61.8	70.4			
Shared by 5 or less HHs	6.8	10.3	9.0			
Shared by more than 5 HHs	0.4	0.4	0.4			

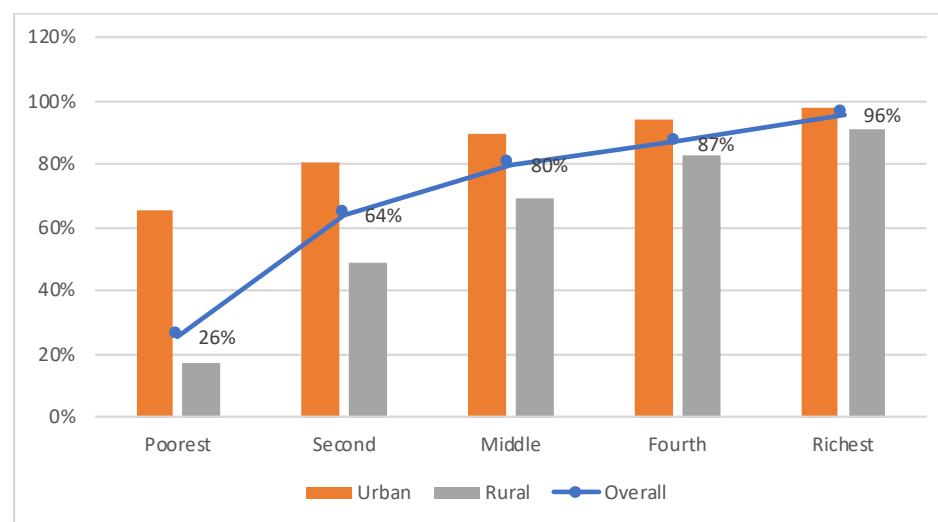
Overall, the toilets connected with septic tanks are the leading type of sanitation system used in Punjab in 43.5%, followed by Flush to Piped Sewer system (23.8%) and then No Facility/Bush/Fields called as open defecation (13%). In urban areas, the leading system of sanitation is flush connected with piped sewer system in 56.9%, followed by flush to septic tank in 32 % and about 5.5% flush connected to somewhere including open drains. In rural areas, the main system of sanitation is flush to septic tank in 50 %, followed by open defecation in 19.7%, flush to pit latrine in 15.4% and flush to piped sewer system in 4.9% Households. Hence, one out of every five persons in rural Punjab is engaged in the practice of open defecation. District-wise break up of sanitation type is given in **Table 8**.

Table 8 Sanitation by Type in Punjab

Districts	Basic service	Limited service	Unimproved	Open defecation	Urban-Basic Services	Rural-Basic Services
Punjab	70.4	9.7	6.9	13.0	85.4	61.8
Bahawalpur	57.7	11.9	9.6	20.8	79.0	47.2
Bahawalnagar	60.7	8.8	8.1	22.4	73.1	57.6
RY Khan	65.5	10.1	4.4	20.0	93.2	57.1
DG Khan	50.0	11.4	4.4	34.1	82.0	42.3
Layyah	64.7	16.9	3.0	15.5	81.4	61.4
Muzaffargarh	47.5	18.4	5.0	29.1	59.8	45.3
Rajanpur	39.5	12.7	9.4	38.4	68.9	33.7
Faisalabad	73.7	11.5	7.2	7.6	84.8	63.2
Chiniot	49.8	9.5	5.5	35.3	71.0	39.8
Jhang	58.1	9.0	2.2	30.7	88.0	49.9
TT Singh	80.3	7.1	3.6	8.9	91.1	77.4
Gujranwala	93.6	4.3	1.3	.8	94.7	92.0
Gujrat	86.0	8.0	1.4	4.6	87.6	85.3
Hafizabad	77.9	7.2	1.1	13.8	87.1	73.0
Mandi Bahauddin	73.2	6.0	1.9	18.9	93.5	68.0
Narowal	80.8	8.8	2.0	8.4	81.6	80.6
Sialkot	73.7	8.6	15.7	2.1	66.5	76.6
Lahore	91.2	5.2	3.0	.5	91.2	0.0
Kasur	61.4	14.8	17.1	6.6	58.9	62.2
Nankana Sahib	69.0	14.2	5.8	11.0	72.4	68.3
Sheikhupura	87.2	8.6	2.0	2.2	92.3	84.1
Multan	53.1	10.1	25.4	11.4	74.2	36.9
Khanewal	61.1	9.9	15.3	13.6	66.5	59.7
Lodhran	46.7	16.0	14.0	23.3	59.0	44.3
Vehari	62.7	7.6	15.9	13.9	82.3	58.2
Rawalpindi	90.2	2.8	2.3	4.7	95.6	84.5
Attock	84.2	2.4	3.3	10.0	90.9	81.8
Chakwal	78.6	7.1	3.0	11.4	85.2	77.1
Jhelum	84.6	7.0	.8	7.6	93.2	81.4
Sahiwal	68.9	9.6	9.0	12.6	90.3	63.3
Okara	62.8	10.2	11.8	15.3	85.9	54.3
Pakpattan	58.3	11.1	12.5	18.1	84.6	53.1
Sargodha	65.4	15.8	1.6	17.2	82.4	58.5
Bhakkar	59.2	16.5	1.5	22.7	82.4	55.4
Khushab	58.6	9.1	2.4	29.9	79.4	50.5
Mianwali	66.5	16.3	3.4	13.9	66.4	66.5

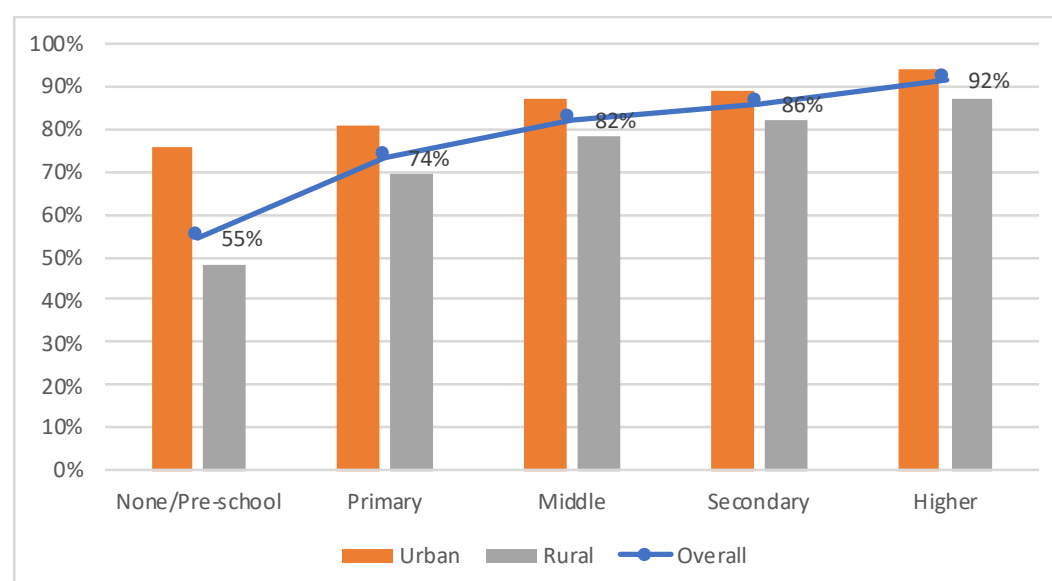
A review of access to improved sanitation with wealth quintiles shows a very proportionate relationship i.e., higher the poverty level, lower is the situation of improved sanitation. Compared to 26% coverage in the poorest, access to improved sanitation in the richest HHs is 96% (**Fig 8**). Similarly, in urban areas, access to improved sanitation in lowest quintile is 65% compared to 96 % in the richest. While in rural areas, access to improved sanitation in lowest quintile is 17% compared to 91% in the richest.

Figure 8 - Access to improved sanitation in Punjab by quintiles



Similarly, there is a wide disparity in terms of access to improved sanitation between mothers with no education or pre-schooling to mothers with higher education. The access to improved sanitation for mothers with no education/pre-schools is 55% compared to mothers with higher education 92%.

Figure 9 - Access to improved sanitation in Punjab by Mother's Education

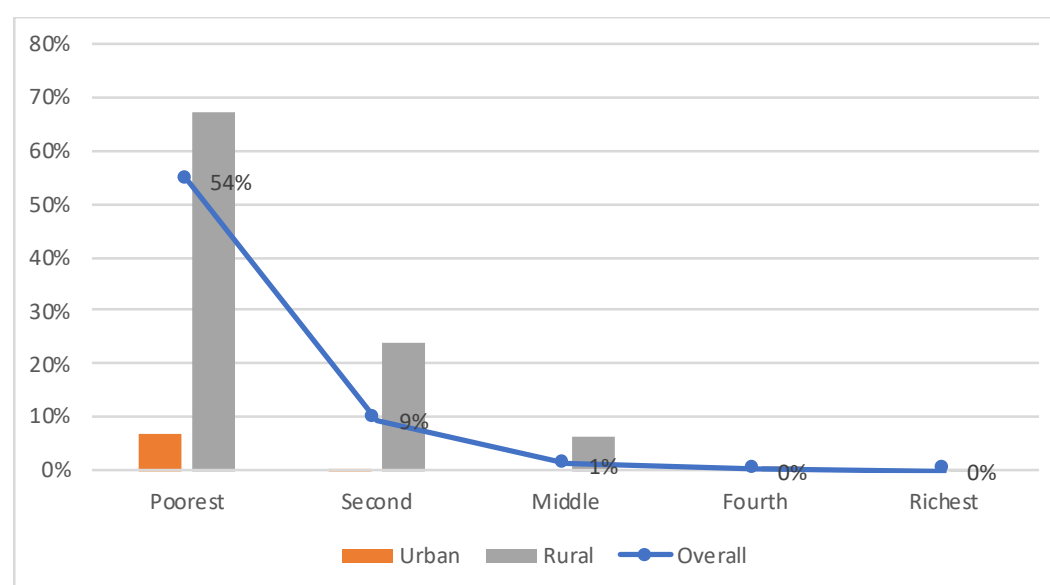


This disparity is not very high in urban areas where access to improved sanitation for mothers with no education/ pre schooling is 76% compared to 94% for mothers with higher education. However, this disparity is very deep in rural areas where access to improved sanitation for mothers with no education/ pre schooling is only 48% compared to 87% for mothers with higher education. The **Table 8** shows district-wise break-up of Basic Sanitation (an improved sanitation without shared facilities- called limited sanitation) covering overall, rural and urban division. Further details of district wise overall, rural and urban improved sanitation with quintiles are given in **Table(s) 27, 28 and 29** in Annexure.

Open Defecation

The overall population practicing open defecation in Punjab is 13%. This includes population without toilet facilities and using fields and bushes for defecation. Compared to only 1.4 % population of urban areas, around 19.6% in rural areas of Punjab are practicing open defecation clearly depicting that open defecation is an issue of rural sanitation. Simply, one out of every five persons in rural areas of Punjab is engaged in open defecation practice. The **figure 10** also shows open defecation is highly skewed towards poverty as 54% of the poorest practice open defecation compared to zero per cent of the richest. Similarly, in rural areas, 67% of the poorest practice open defecation compared to zero per cent of the richest.

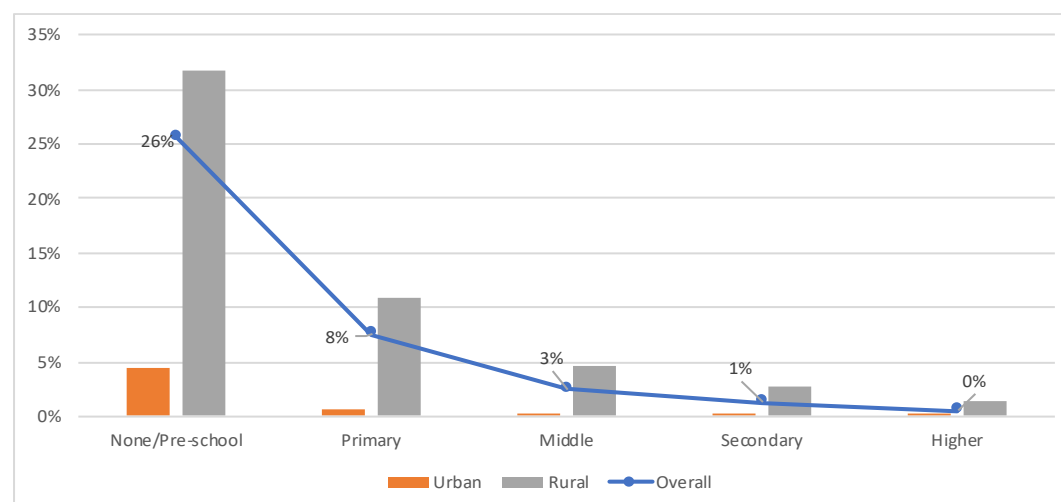
Figure 10 – Open Defecation Practices in Punjab by quintiles



Similarly, the level of open defecations is high in households where mothers have no education or pre schooling (26%) compared to the households where mothers have higher education (0%). 3.7% of HHs in urban areas have been identified where

mothers have no education/pre-schooling, whereas, 32% in rural areas showing a wider disparity of mother education in different geographical locations (**Fig 11**). The district-wise open defecation with urban and rural break-up is given in **Table 9**. Further, district wise wealth quintiles for open defecation are given in **Tables(s) 30, 31 and 32** in the Annexure.

Figure 11 Open Defecation and Mothers Education



Connection with Sewers and Shared Latrines

Overall, 23% of the Households in Punjab reported connection of their latrines with sewers. These include 56.9% in urban areas and only 4.9% in rural areas, portraying high level of geographic disparities. A part from that only 1% of the poorest have access to sewer systems compared to 62% of the richest showing a wider income inequity. The district wise coverage of connection of latrines with sewer is given in **Table 09** with rural and urban break-ups. Besides, district wise wealth quintiles for piped to sewers for overall, rural and urban are given in **Table (s) 33, 34 and 35** in Annexure. Similarly, around 12.7% of latrine are being shared in the province with 15.8% in rural areas and 8.2% in urban areas. In comparison with only 4% of the richest, 2.3% amongst the poorest share latrines. District wise wealth quintiles of shared latrines with overall rural and urban percentages are given **Table (s) 36, 37 and 38** in Annexure.

Table 9 Toilets with Sewers and Open Defecation

Regions	Latrines Connected to Sewers %			Open Defecation %		
	Overall	Urban	Rural	Overall	Urban	Rural
Punjab	24.5	57.5	5.7	13.0	1.4	19.7
Bahawalpur	22.7	58.0	5.4	20.8	3.7	29.2
Bahawalnagar	6.6	25.7	1.7	22.4	4.6	27.0
RY Khan	27.4	83.3	10.5	20.0	.9	25.7
DG Khan	4.7	17.5	1.6	34.1	4.1	41.3
Layyah	10.4	53.7	1.9	15.5	2.1	18.1
Muzaffargarh	1.6	5.0	1.0	29.1	20.8	30.6
Rajapur	3.1	15.0	.8	38.4	7.1	44.5
Faisalabad	41.3	80.6	4.0	7.6	.4	14.4
Chiniot	11.5	32.3	1.8	35.3	3.5	50.1
Jhang	6.6	27.2	.9	30.7	4.2	37.9
TT Singh	13.0	38.9	6.1	8.9	1.2	11.0
Gujranwala	36.1	43.6	25.8	.8	.2	1.6
Gujrat	8.2	18.6	3.6	4.6	1.3	6.1
Hafizabad	10.5	12.3	9.5	13.8	3.4	19.4
Mandi Bahauddin	2.9	5.2	2.3	18.9	1.7	23.4
Narowal	.8	3.7	.3	8.4	0.0	10.1
Sialkot	12.8	35.7	3.5	2.1	0.0	2.9
Lahore	84.1	84.1		.5	.5	
Kasur	6.0	13.5	3.6	6.6	0.0	8.8
Nankana Sahib	9.4	36.6	3.5	11.0	.6	13.2
Sheikhupura	26.7	50.1	13.0	2.2	.4	3.3
Multan	43.0	79.6	14.6	11.4	.3	19.9
Khanewal	12.1	45.4	3.6	13.6	1.7	16.7
Lodhran	14.0	65.6	4.0	23.3	1.6	27.5
Vehari	22.9	72.4	11.6	13.9	0.0	17.0
Rawalpindi	27.2	41.8	11.5	4.7	.4	9.3
Attock	6.3	19.1	1.7	10.0	1.5	13.1
Chakwal	1.6	2.9	1.3	11.4	2.0	13.5
Jhelum	4.4	8.5	2.9	7.6	.2	10.4
Sahiwal	30.6	80.8	17.6	12.6	.4	15.7
Okara	19.3	69.7	.8	15.3	1.3	20.4
Pakpattan	16.8	55.2	9.3	18.1	1.7	21.3
Sargodha	13.5	44.1	1.1	17.2	1.5	23.6
Bhakkar	5.9	38.1	.5	22.7	1.8	26.2
Khushab	9.8	33.6	.6	29.9	6.0	39.1
Mianwali	7.8	26.8	3.3	13.9	4.2	16.2

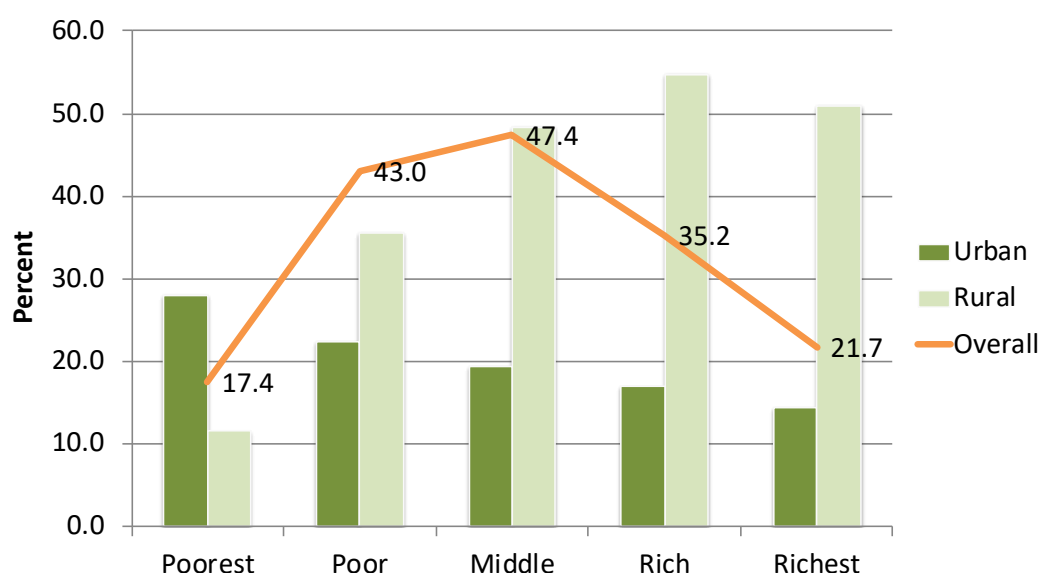
Human Excreta Management

Use of an improved sanitation facility which is not shared with other households and where excreta are safely disposed in situ or transported and treated off-site is categorized as safe management of human excreta. Around 40.7% of HHs reported on-site safe disposal of human excreta i.e., 50.5% in rural areas and 23.4% in urban areas. Whereas, 3.7% are reported as unsafe disposal of excreta from on-site with 4.6% in rural areas and 2.1% in urban areas. Similarly, another 9.3% HHs reported removal of excreta for treatment from on-site sanitation facilities with 9.7% in rural and 8.7% in urban areas.

Table 10: On-Site Safe Disposal at HH level

Punjab	Using improved on-site sanitation systems (including shared)		
	Safe disposal in situ of excreta from on-site sanitation facilities	Unsafe disposal of excreta from on-site sanitation facilities	Removal of excreta for treatment from on-site sanitation facilities [1]
Overall	40.7	3.7	9.3
Rural	50.5	4.6	9.7
Urban	23.4	2.1	8.7

Figure 12 Safely Managed Sanitation



It is interesting that safely managed sanitation is higher in the poorest group of urban areas, on the contrary it is higher amongst the rich group in the rural areas as shown in **fig 12**. This indicates the need to identify the reasons for development of a future course of action. The overall safe disposal in situ of human excreta is given in **Table 11**.

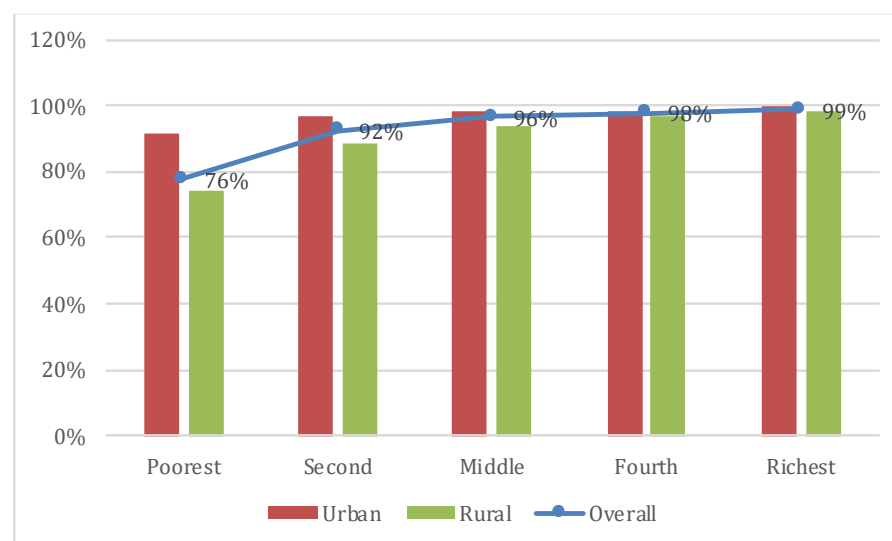
Table 11 Safe Disposal On-Situ and Overall Disposal (including Unsafe approaches)

Regions	Safe disposal in situ of excreta from on-site sanitation facilities-%			Overall disposal of excreta on-site sanitation facilities-%		
	Overall	Urban	Rural	Overall	Urban	Rural
Punjab	40.7	23.4	50.5	53.7	34.2	64.8
Bahawalpur	35.9	20.9	43.2	45.4	28.6	53.7
Bahawalnagar	48.6	39.9	50.8	61.7	57.1	62.8
RY Khan	39.6	13.0	47.6	46.9	14.2	56.8
DG Khan	37.9	46.9	35.8	55.4	75.7	50.6
Layyah	57.4	33.9	62.0	68.2	39.3	73.8
Muzaffargarh	43.5	48.1	42.7	59.6	66.7	58.5
Rajanpur	33.7	39.0	32.7	47.4	60.8	44.7
Faisalabad	27.3	7.8	45.7	42.8	14.6	69.5
Chiniot	36.5	32.9	38.1	46.2	49.2	44.8
Jhang	43.5	40.7	44.3	59.0	66.1	57.1
TT Singh	38.7	29.4	41.2	67.5	53.2	71.3
Gujranwala	32.1	28.7	36.8	58.1	52.9	65.3
Gujrat	69.3	60.4	73.2	82.8	74.9	86.2
Hafizabad	55.4	58.3	53.9	69.0	78.3	64.1
Mandi Bahauddin	57.9	65.3	56.0	73.7	88.1	70.0
Narowal	79.6	69.3	81.6	87.7	85.2	88.2
Sialkot	45.7	20.8	55.8	67.1	34.8	80.2
Lahore	7.3	7.3		12.0	12.0	
Kasur	50.0	37.7	54.0	64.9	48.5	70.3
Nankana Sahib	50.5	24.2	56.1	73.5	49.7	78.7
Sheikhupura	38.1	19.5	49.0	66.5	48.5	77.2
Multan	15.2	3.5	24.2	20.0	5.7	31.1
Khanewal	44.9	22.4	50.7	57.3	28.9	64.5
Lodhran	41.1	12.8	46.6	47.1	15.9	53.2
Vehari	39.1	8.1	46.2	47.0	13.0	54.8
Rawalpindi	54.5	44.7	65.0	65.1	55.4	75.5
Attock	71.6	65.5	73.8	78.9	72.5	81.2
Chakwal	68.5	69.8	68.2	74.7	76.5	74.3
Jhelum	69.2	70.1	68.8	83.9	88.2	82.3
Sahiwal	36.7	12.5	43.0	47.3	17.9	55.0
Okara	36.9	15.3	44.9	51.3	23.3	61.6
Pakpattan	44.4	26.2	48.0	52.1	38.1	54.8
Sargodha	49.9	38.0	54.7	67.4	51.6	73.8
Bhakkar	63.1	52.6	64.8	69.3	58.0	71.2
Khushab	49.1	38.0	53.4	57.6	55.2	58.6
Mianwali	65.5	44.4	70.5	74.3	59.7	77.8

Hygiene Practice

As per MICS 2018, it was observed that about 92.1% of the households had a specific place for hand washing with water and soap (or another cleansing agent), and this was higher in urban (96.7%) as compared to rural areas (89.4%).

Figure 13 – Hand Wash with Soap and Water by Quintiles

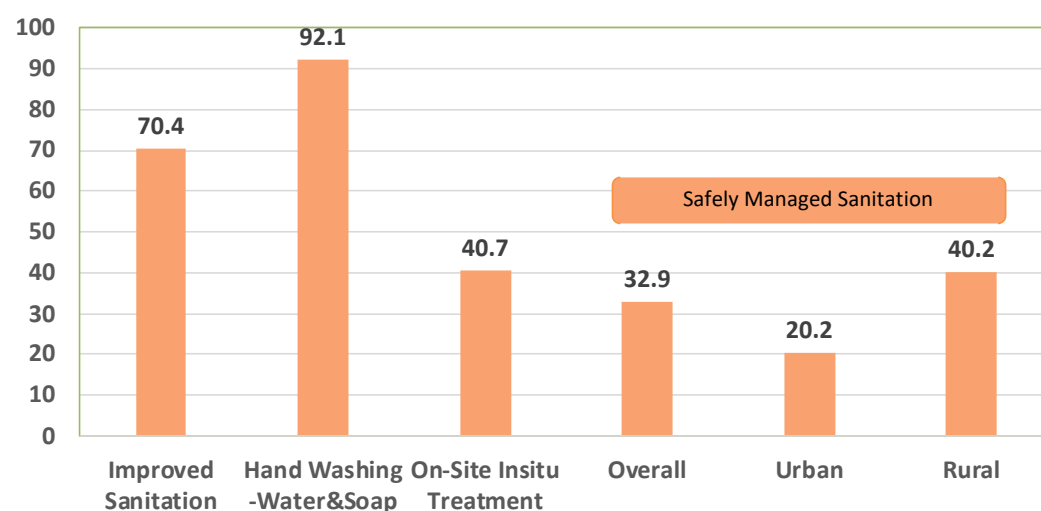


There is a clear disparity between income quintiles as only 76% of the poorest use water and soap for hand washing compared to 99% of the richest. In urban areas, there is less disparity as 92% use water and soap for hand washing compared to 100% of the richest. However, there is a great disparity between the poorest (74%) and the richest (98%) in rural areas for using water and soap for hand washing. The details of Hand Washing with soap and water are in Table(s) 39, 40 and 41 of Annexure.

Safely Managed Sanitation

Under Sustainable Development Goals (SDGs), Safely Managed Sanitation services are defined as: population using an improved sanitation facility (including a hand washing facility with water and soap) that is not shared with other households and where the excreta are safely disposed in situ or transported and treated off-site. Around 70.4% population in Punjab has improved sanitation, which is not shared with others, and around 92.1% population indicated hand washing with soap and water. Around 40.7% of HHs reported on-site safe disposal of human excreta i.e., 50.5% in rural areas and 23.4% in urban areas. However, still there are issues in understanding and reporting the effective faecal sludge management either on-site or off-site with the use /construction of septic tanks or sewer lanes. Based on on-situ treatment, around 32.9% population of Punjab has been categorized under safely managed sanitation with 20.2% in urban areas and 40.2% in rural areas. Overall ladder of Safely Managed Sanitation Services is given in Figure 14 below.

Figure 14 : Ladder of Safely Manged Sanitation



District ladder of Safely Managed Sanitation is given in **Table 12**. Similarly, ladder of Safely Managed Sanitation for Urban and Rural areas is given **Table(s) 42 and 43** in Annexure.

Table 12 Ladder of Safely Managed Sanitation in Percentage

Regions	Improved Sanitation	Hand Washing	Safe disposal in situ	Safely Managed Sanitation		
				Overall	Urban	Rural
Punjab	80.1	91.7	40.7	32.9	20.2	40.2
Urban	92.8	96.2	23.4		20.2	
Rural	72.8	89.2	50.5			40.2
Bahawalpur	69.6	79.8	35.9	24.5	15.1	29.1
Bahawalnagar	69.5	85.2	48.6	38.4	33.0	39.8
RY Khan	75.6	87.8	39.6	31.4	12.2	37.2
DG Khan	61.4	82.7	37.9	28.2	38.2	25.7
Layyah	81.5	94.4	57.4	42.7	24.7	46.2
Muzaffargarh	65.9	92.0	43.5	29.5	36.9	28.3
Rajanpur	52.2	84.1	33.7	23.6	29.7	22.4
Faisalabad	85.2	96.2	27.3	22.3	7.0	36.7
Chiniot	59.3	93.2	36.5	30.9	29.8	31.4
Jhang	67.1	92.2	43.5	36.1	37.3	35.8
TT Singh	87.4	95.2	38.7	34.0	26.1	36.1
Gujranwala	97.9	94.3	32.1	28.5	25.4	32.9
Gujrat	94.0	95.0	69.3	61.1	52.9	64.7
Hafizabad	85.1	93.1	55.4	49.8	52.9	48.1
Mandi Bahauddin	79.2	92.2	57.9	50.9	61.8	48.1
Narowal	89.6	93.3	79.6	68.0	55.1	70.5
Sialkot	82.2	97.4	45.7	40.5	18.7	49.3
Lahore	96.4	95.5	7.3	6.3	6.3	
Kasur	76.2	94.1	50.0	38.2	30.9	40.5
Nankana Sahib	83.2	94.3	50.5	40.6	17.2	45.7
Sheikhupura	95.8	91.6	38.1	31.3	15.9	40.4
Multan	63.2	92.5	15.2	10.7	2.7	16.9
Khanewal	71.0	92.4	44.9	36.4	18.4	41.0
Lodhran	62.7	83.8	41.1	28.4	7.6	32.5
Vehari	70.3	91.2	39.1	31.9	8.1	37.3
Rawalpindi	93.0	91.5	54.5	48.4	42.1	55.2
Attock	86.7	87.1	71.6	63.9	61.0	65.0
Chakwal	85.7	90.6	68.5	58.8	62.0	58.1
Jhelum	91.6	92.4	69.2	59.2	62.1	58.2
Sahiwal	78.5	92.8	36.7	30.3	11.4	35.2
Okara	72.9	91.5	36.9	30.2	12.2	36.8
Pakpattan	69.4	91.7	44.4	34.6	23.1	36.8
Sargodha	81.2	96.7	49.9	39.1	31.4	42.2
Bhakkar	75.7	90.1	63.1	46.1	44.9	46.3
Khushab	67.7	70.4	49.1	33.8	30.4	35.1
Mianwali	82.7	89.5	65.5	48.7	31.8	52.8

Stunting and WASH Trends

The overall stunting under five years children in Punjab province is found to be 31.8% as per MICS 2018 and this is 26.3% in urban areas and 34.39% in rural areas. Simply, three out of every ten children in Punjab is suffering from malnutrition. The prevalence of stunting is slightly less in populations having improved sanitation compared to overall prevalence of stunting. The stunting is high in population with unimproved sanitation. Further, this is significantly high among the population practicing open defecation.

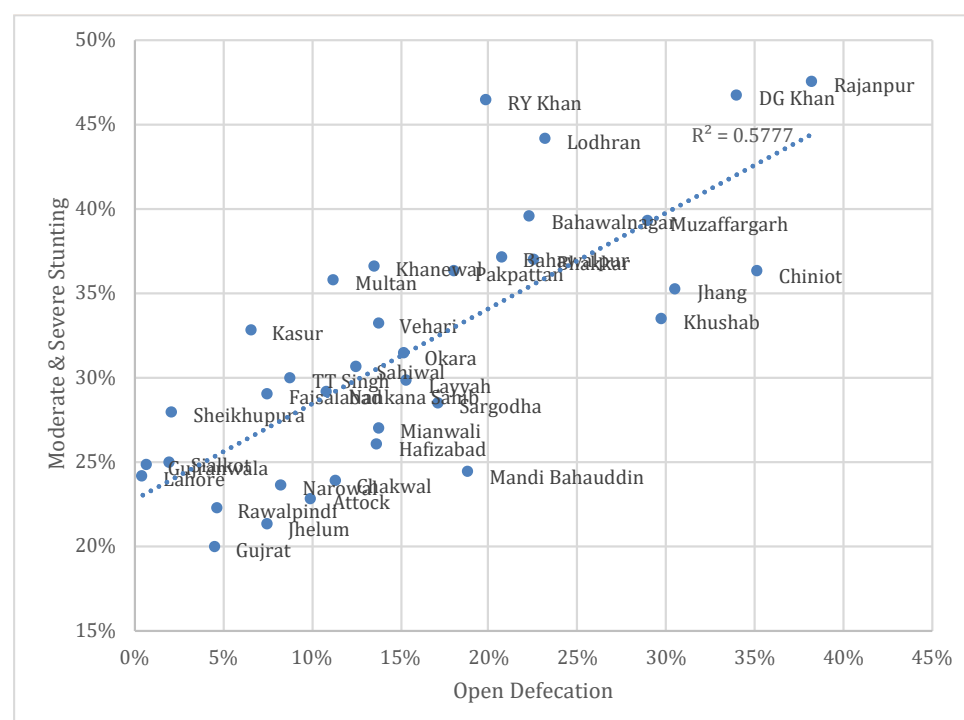
Table 13: Stunting with Types of Sanitation

<i>Regions</i>	Overall Stunting-%	With Improved Sanitation-%	With Unimproved Sanitation-%	With Open Defecation-%
<i>Punjab</i>	31.58	26.87	40.71	47.72
<i>Urban</i>	26.03	24.55	32.99	49.15
<i>Rural</i>	34.39	28.54	42.33	47.66
<i>Bahawalpur</i>	36.95	30.78	43.86	55.04
<i>Bahawalnagar</i>	39.37	32.50	47.62	52.70
<i>RY Khan</i>	46.31	37.83	59.16	65.29
<i>DG Khan</i>	46.55	39.79	52.26	56.50
<i>Layyah</i>	29.64	25.43	35.97	42.06
<i>Muzaffargarh</i>	39.16	33.51	43.43	46.65
<i>Rajanpur</i>	47.34	40.95	50.62	50.42
<i>Faisalabad</i>	28.85	24.74	37.76	50.17
<i>Chiniot</i>	36.11	31.09	40.95	41.50
<i>Jhang</i>	35.13	31.88	38.85	39.26
<i>TT Singh</i>	29.81	26.02	42.13	48.86
<i>Gujranwala</i>	24.68	24.36	28.50	33.80
<i>Gujrat</i>	19.91	18.60	27.60	44.81
<i>Hafizabad</i>	25.87	22.72	34.24	42.18
<i>Mandi Bahauddin</i>	24.26	21.60	30.08	33.77
<i>Narowal</i>	23.49	21.72	30.72	24.75
<i>Sialkot</i>	24.81	23.70	27.82	40.48
<i>Lahore</i>	24.05	23.05	32.42	43.39
<i>Kasur</i>	32.71	31.19	34.50	56.09
<i>Nankana Sahib</i>	28.98	24.68	38.18	43.92
<i>Sheikhupura</i>	27.79	27.37	30.39	28.35
<i>Multan</i>	35.67	32.47	38.87	49.71
<i>Khanewal</i>	36.41	31.61	43.03	50.88
<i>Lodhran</i>	43.96	33.05	51.49	55.72
<i>Vehari</i>	33.08	29.07	38.94	47.33
<i>Rawalpindi</i>	22.17	20.91	31.40	38.87
<i>Attock</i>	22.66	19.91	38.44	44.04
<i>Chakwal</i>	23.70	21.25	31.44	35.03
<i>Jhelum</i>	21.14	19.53	28.88	40.03
<i>Sahiwal</i>	30.44	28.02	35.26	43.85
<i>Okara</i>	31.25	28.45	35.67	41.90
<i>Pakpattan</i>	36.21	29.83	43.66	55.48
<i>Sargodha</i>	28.31	23.23	36.07	36.61
<i>Bhakkar</i>	36.89	31.26	43.53	46.29
<i>Khushab</i>	33.32	30.12	37.00	40.90
<i>Mianwali</i>	26.87	23.66	32.20	31.16

Stunting and Open Defecation

District level data from Punjab for Stunting and Open Defecation showed a very positive correlation evident with an overall value of $R^2 = 0.5777$. The **figure 15** below shows the trends and patterns. The districts with high open defecation had high levels of stunting compared to levels of stunting in districts with low open defecation.

Figure 15: Positive Correlation Between Stunting and Open Defecation in Punjab



District level urban data from Punjab for Stunting and Open Defecation also showed a positive correlation evident with an overall value of $R^2 = 0.1063$. The **figure 16** shows the trend and patterns in urban areas with a positive correlation. Districts with high open defecation have high levels of stunting compared to districts with low levels of stunting projecting low levels of open defecation.

District level rural data from Punjab for Stunting and Open Defecation also showed a positive correlation evident with an overall value of $R^2 = 0.5243$. The **figure 21** shows trend and patterns in rural areas with a positive correlation.

Figure 16: Positive Correlation Between Stunting and Open Defecation- Urban Areas

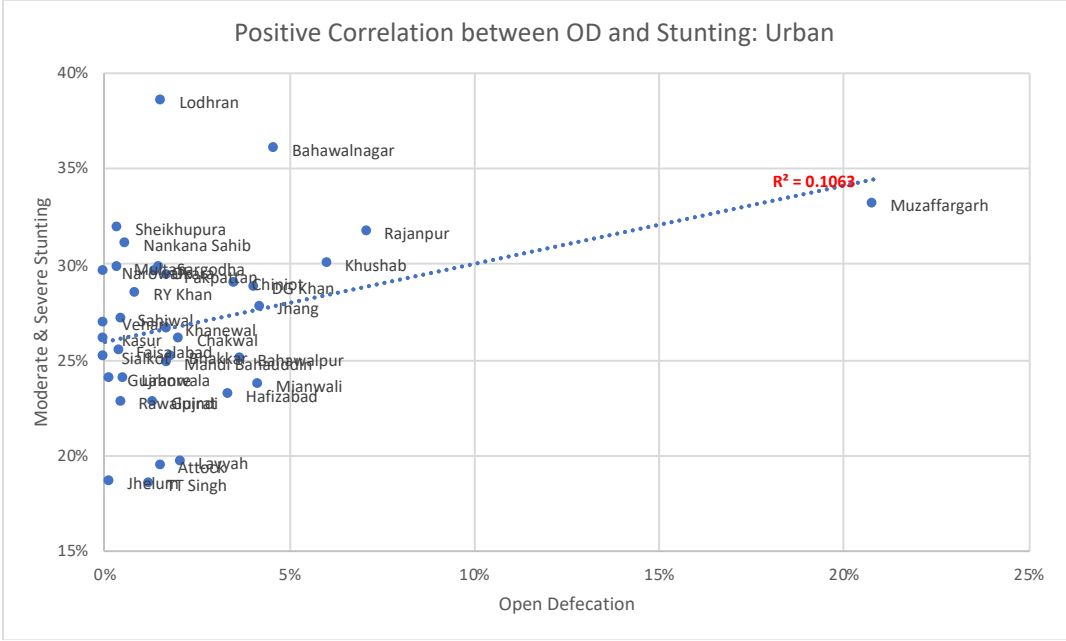
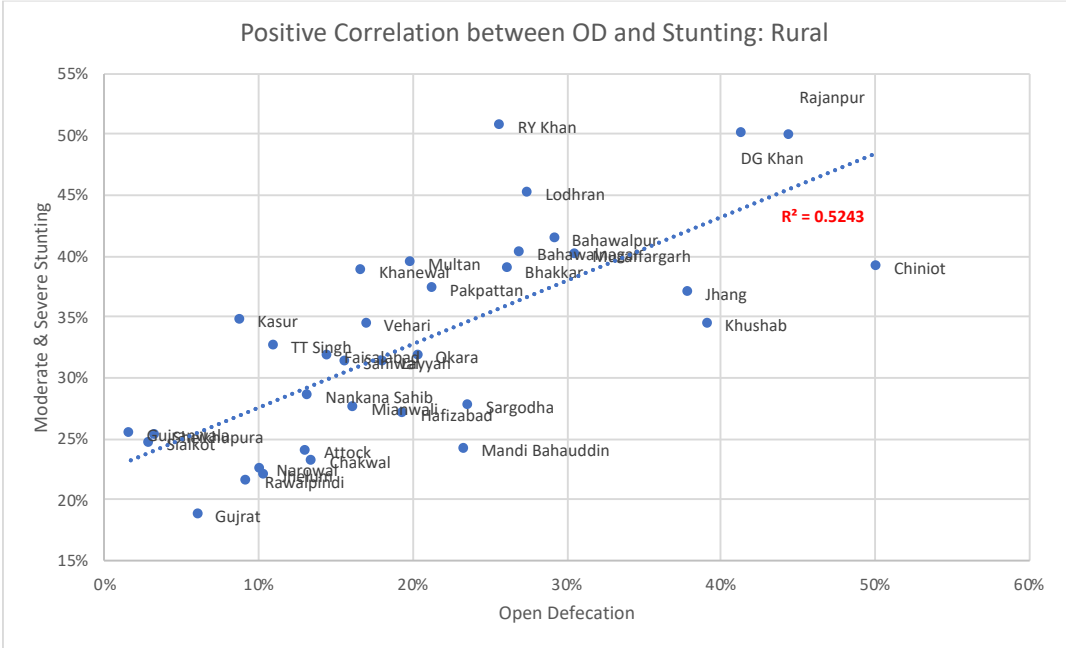


Figure 17 : Positive Correlation Between Stunting and Open Defecation- Rural



Water Quality with Stunting and Diarrhoea

District level data from Punjab for Stunting and Water Quality shows an inverse correlation with a strong linear relationship evident with an overall value of $R^2 = 0.0869$. The **figure 18** below portrays that the districts with high safe water percentages have low levels of stunting compared to districts with low levels of safe water showing high levels of stunting. Similarly, an inverse relationship is visible in case of water quality and diarrhea with value of $R^2 = 0.0084$ in **figure 19**

Figure 18: Correlation Between Water Quality and Stunting -Overall

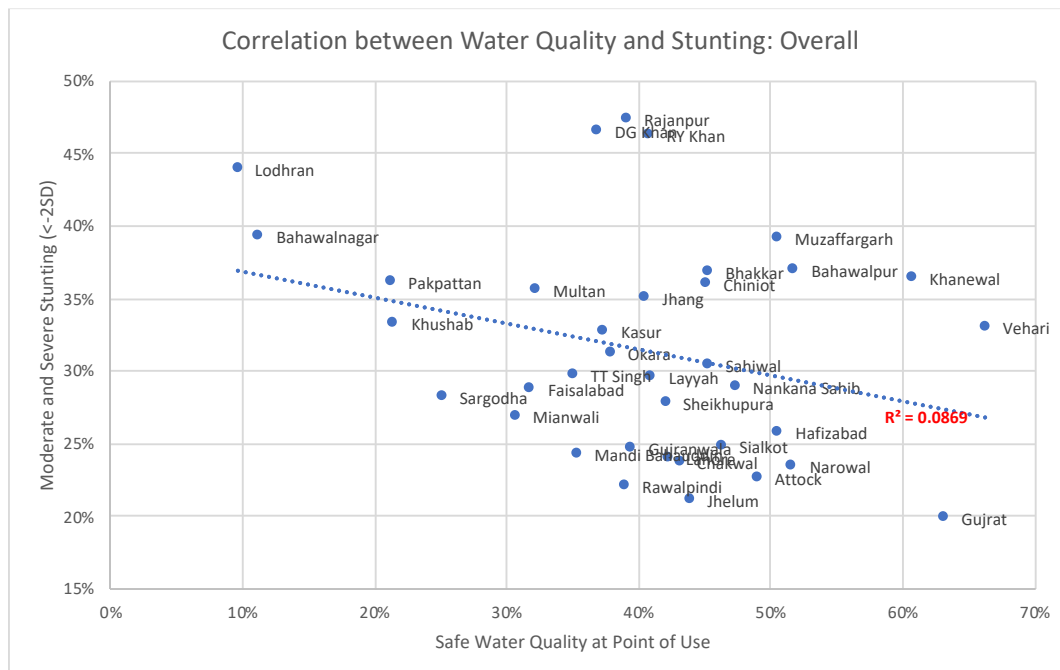
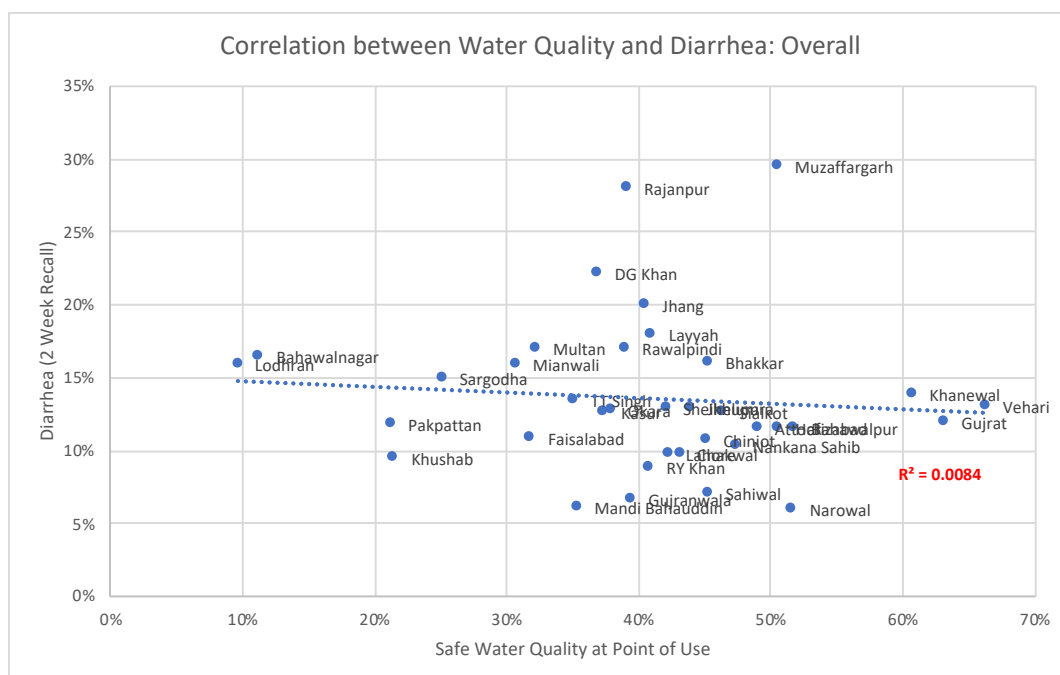


Figure 19 Correlation Between Water Quality and Diarrhoea



Open Defecation and Diarrhoea

District level data from Punjab for Open Defecation and Diarrhoea shows a positive correlation evident with an overall value of $R^2 = 0.2817$. The **figure 20** below shows its trend and patterns. It illustrates that the district with high open defecation have high incidences of Diarrhea compared to districts with low levels of open defecation having low incidences of diarrhea. A similar pattern has been observed in rural areas as shown in **figure 21**

Figure 20: Positive Correlation Between Open Defecation and Diarrhoea

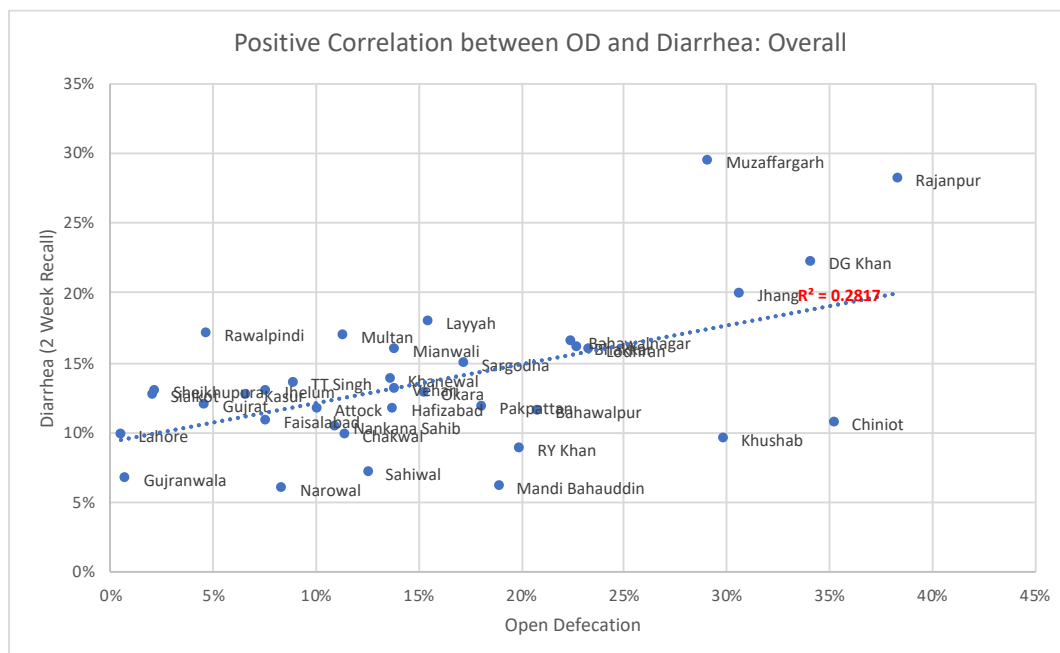
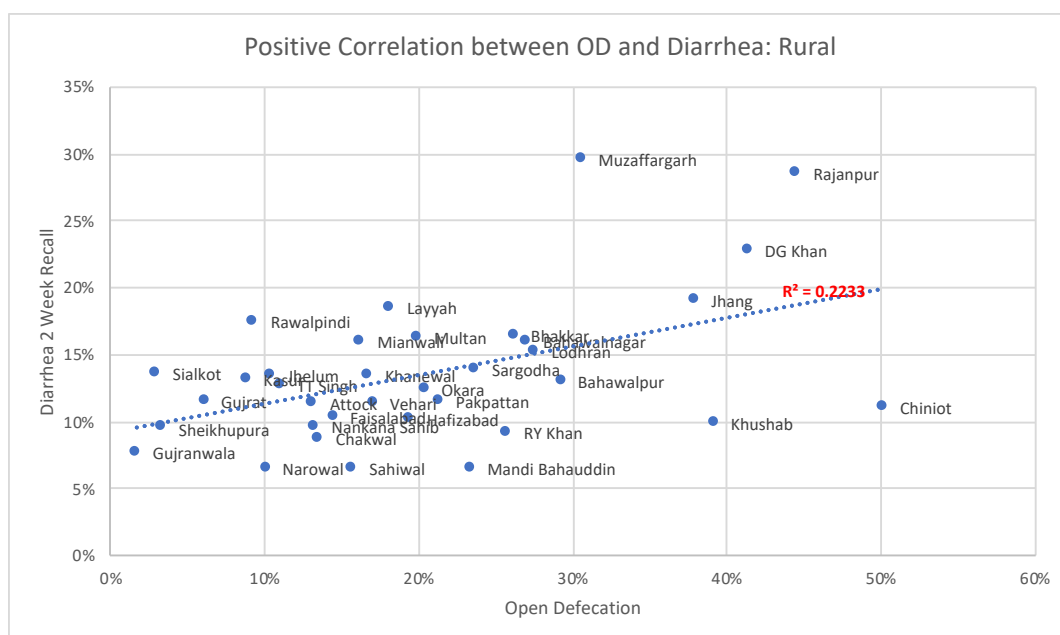


Figure 21: Positive Correlation between Open Defecation and Diarrhoea – Rural



Conclusion

1. Access to improved water sources in Punjab stands at 98.3% with 97.9% in rural areas and 98.2% in urban areas. The poorest groups have more access to improved water resources as compared to the richest. Compared to 97% of poorest, only 66% of the richest have access to improved water sources if we take out cart with tankers and bottled water which are around 24% in the urban areas and 13% overall. In 2013, cart with tankers were not part of the improved water sources.
2. Overall, 69.4% of the population has access to improved water sources located at their premises with higher ratio in rural areas (74.6%) compared to urban areas (60.1%). Access to improved water within premises is higher in the poorest (79.8%) compared to the richest (54.9%) due to high volumes of hand pumps which are cheap to install at shallow levels and easy to operate for drinking and domestic purposes.
3. Water in sufficient quantities is available to 91.4% population of Punjab with 89.6% in urban areas and 91.7% in rural areas. While overall 95.9% population has access to basic water with 96.4% in urban areas and 95.7% in rural areas. There are no wider disparities between rural and urban areas as well as wealth quintiles for water available in sufficient quantities and availability of basic water.
4. In terms of access to piped water supply, there is a significant contrast between urban and rural areas, where about 29.3% of urban areas have access to piped water compared to only 13.1% of rural areas. Within different quintiles, 7.5% of the poorest in contrast to 28.3% of the richest have access to piped water.
5. Drinking water free from E-Coli at source is 63.8% with 65.6% in rural areas and 60.8% in urban areas. Percentage of the population with safely managed drinking water services (Population using an improved drinking water source, which is: located on premises, available when needed, and free from E-Coli) HHs level is 43.7%. This is 36 % in urban areas and 48 % in rural areas.
6. The overall access to improved sanitation is 80.1% as per MICS 2018 compared to 75.1% in MICS 2014. The rate of improved sanitation in urban area is 92.8% compared to rural areas with 72.8%. In comparison to 26% in the poorest,

access to improved sanitation in the richest is 96%. The access to improved sanitation in households having mothers with no education/pre-schools is 55% compared to those where mothers have a higher education level (92%). Around 70.4% population has access to improved sanitation without sharing the latrines. This is 85.4% in urban areas and 61.8% in rural areas. On the other hand, 12.7% of latrines in the province are shared latrines with 15.8% in rural areas and 8.2% in urban areas.

7. The overall population practicing open defecation in Punjab is 13% with 1.4% in urban areas and around 19.6% in rural areas. Around 54% of the poorest practice open defecation compared to zero per cent of the richest. There is high open defecation in HHs with mothers having no education or pre- schooling (37%) compared to the households where mothers have higher education (3.7%).
8. Around 23% population in Punjab has connection of toilets with piped sewer lanes. This is largely skewed toward urban areas (56.9%) compared to very small portion in rural areas (4.9%). Further only 1% of the poorest have access to sewers compared to 62% of the richest in the province.
9. Overall 92.1% population of Punjab has been reported to be using water and soap for personal hygiene and hand wash at critical times with 96.7% in urban areas and 89.4% in rural areas. Whereas, only 76% of the poorest use water and soap for hand washing compared to 99% of the richest.
10. The percentage of the population with safely managed improved sanitation services, including a hand-washing facility with water and soap (population using an improved sanitation facility (including a hand washing facility with water and soap) that is not shared with other households and where the excreta are safely disposed in situ or transported and treated off-site) safely, at HHs level in Punjab is 32.9% with 20.2% in urban areas and 40.2% in rural areas.
11. Overall stunting under five years Children in Punjab is 31.8% with 26.3% in urban areas and 34.39% in rural areas. The stunting is significantly high in population with open defecation (47.72%) compared to improved sanitation (26.87%). The data of MICS 2018 showed a positive correlation between open defecation and stunting. Similarly, there is strong correlation between diarrhoea and open defecation. Data portrayed inverse correlation between water quality with stunting and water quality with diarrhoea respectively.

Recommendations

1. There is need to conduct a research study to determine the reasons for high level of cart with tankers in urban areas as evident in data of MICS 2018. The study should include aspects of willingness to pay to make a comparative assessment between the current billing of piped water versus cart with tanker prices.
2. The water quality data of MICS 2018 only focuses on E-Coli Contamination. Government of Punjab should conduct a comprehensive water quality testing for zoning the areas as per contamination including physical as well as chemical testing. This will be useful to develop appropriate and viable solutions for the different geographical zones and wealth quintiles.
3. Punjab should explore introduction of water safely planning initially at the district levels to the lowest administrative levels especially when more than 70% of drinking water is ground water.
4. Only 13% population in Punjab is practicing open defecation which is largely existing in rural areas of Punjab. The government of Punjab should continue to support Pakistan Approach to Total Sanitation and integrated WASH in stunting growth as data showed a positive correlation between stunting and open defecation as well as open defecation and diarrhoea.
5. As it is evident that households where mothers have little or no education, have higher levels of open defecation, unimproved sanitation and low levels of hand washing with soap, WASH programmes/ partners should engage the Education and Literacy departments in order to create awareness regarding sanitation, basic hygiene, negative impacts of open defecation on health and implications of safe drinking water in order to improve the situation.
6. The findings of MICS should be shared for being used by Clean Green Pakistan Movement for creating behavioural change and climate resilient interventions especially around unhygienic practices, total sanitation and safely managed WASH services.

Annexures

Table 14 District Wealth Quintiles Water Accessible in Premises

	Wealth index quintile- Water Accessible at Premises					Overall
	Poorest	Second	Middle	Fourth	Richest	
Overall	80.0	79.2	71.5	62.2	54.0	69.4
Bahawalpur	72.2	79.8	80.8	74.9	74.5	76.4
Bahawalnagar	67.6	77.5	79.0	84.2	59.7	73.6
RY Khan	81.2	82.7	83.4	70.2	49.5	73.4
DG Khan	69.2	75.8	80.8	79.4	53.7	71.8
Layyah	96.7	96.6	97.3	94.6	82.6	93.6
Muzaffargarh	93.4	97.8	95.7	95.5	90.8	94.6
Rajanpur	69.9	79.8	84.5	80.0	82.2	79.3
Faisalabad	59.4	49.5	37.4	28.8	18.2	38.7
Chiniot	72.7	86.3	86.3	84.2	81.2	82.1
Jhang	82.4	88.3	91.7	93.8	80.1	87.3
TT Singh	77.0	79.9	76.6	65.1	57.1	71.2
Gujranwala	77.8	68.6	66.0	68.7	70.3	70.3
Gujrat	62.9	64.5	53.7	54.6	59.3	59.0
Hafizabad	83.2	65.5	60.7	53.4	46.6	61.9
Mandi Bahauddin	79.4	67.2	67.5	59.2	50.7	64.8
Narowal	79.2	76.8	79.1	78.8	67.4	76.3
Sialkot	48.3	41.9	45.1	37.3	44.2	43.4
Lahore	71.1	63.9	60.6	54.4	48.2	59.6
Kasur	77.0	79.6	81.1	74.8	62.4	75.0
Nankana Sahib	56.2	52.6	38.7	22.1	20.6	38.0
Sheikhupura	79.0	62.6	66.2	58.0	54.1	64.0
Multan	83.8	86.3	81.6	75.7	59.6	77.4
Khanewal	85.8	94.7	92.9	94.1	80.8	89.6
Lodhran	70.4	84.5	85.3	78.5	70.5	77.8
Vehari	81.4	86.9	84.4	75.9	57.6	77.3
Rawalpindi	46.9	54.8	55.4	58.1	56.3	54.3
Attock	57.2	81.7	82.5	86.1	90.8	79.7
Chakwal	65.4	80.1	82.2	85.4	80.9	78.8
Jhelum	63.6	68.7	82.0	84.7	80.0	75.8
Sahiwal	75.3	87.1	77.1	67.8	53.1	72.1
Okara	76.8	81.2	80.1	72.7	61.5	74.5
Pakpattan	64.8	86.1	88.2	87.4	83.0	81.9
Sargodha	82.6	75.6	67.1	60.2	46.8	66.4
Bhakkar	96.3	96.1	98.7	98.9	99.9	98.0
Khushab	57.3	55.7	55.6	64.5	51.6	56.9
Mianwali	71.8	78.4	82.5	88.2	95.6	83.3

Table 15: District Wealth Quintiles-Rural Water Accessible in Premises

Districts	Wealth index quintile- Water Accessible at Premises					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	67.9	76.0	80.8	81.0	78.3	76.8
Bahawalnagar	65.2	77.5	75.9	82.6	80.7	76.4
RY Khan	79.6	84.0	83.0	77.6	66.6	78.1
DG Khan	72.6	70.5	78.9	81.9	75.0	75.8
Layyah	96.6	97.3	96.9	98.0	95.6	96.9
Muzaffargarh	92.7	97.6	95.7	95.2	96.2	95.5
Rajanpur	69.4	73.8	83.3	81.9	72.4	76.2
Faisalabad	61.6	58.1	53.2	39.2	29.1	48.2
Chiniot	71.9	80.6	87.4	85.7	84.4	82.0
Jhang	82.5	86.5	91.3	93.2	91.9	89.1
TT Singh	77.5	80.4	84.0	70.3	64.9	75.4
Gujranwala	81.2	74.5	65.3	67.2	79.2	73.5
Gujrat	66.1	67.9	60.0	64.3	74.9	66.6
Hafizabad	85.5	67.5	70.9	64.1	61.9	69.9
Mandi Bahauddin	79.6	69.0	69.2	63.2	62.7	68.7
Narowal	82.7	72.5	77.8	82.3	80.0	79.1
Sialkot	47.2	47.3	45.0	43.3	40.8	44.7
Kasur	76.5	78.7	81.5	84.3	71.8	78.6
Nankana Sahib	60.3	55.6	43.7	28.3	25.8	42.7
Sheikhupura	80.5	69.5	61.9	69.4	57.2	67.7
Multan	80.1	88.3	85.9	84.9	73.3	82.5
Khanewal	84.2	96.5	92.6	91.2	92.2	91.4
Lodhran	70.8	84.0	82.8	84.9	80.1	80.5
Vehari	79.7	87.3	86.7	80.8	73.6	81.6
Rawalpindi	38.2	54.7	62.1	62.8	64.3	56.4
Attock	54.5	76.6	78.7	83.7	87.2	76.1
Chakwal	67.2	80.5	83.3	83.6	87.0	80.3
Jhelum	64.2	63.2	78.7	86.8	84.4	75.5
Sahiwal	72.6	85.2	80.5	73.4	60.5	74.4
Okara	74.4	80.0	79.3	79.5	68.0	76.2
Pakpattan	63.2	81.5	86.1	90.4	82.5	80.7
Sargodha	86.2	76.5	73.3	67.9	59.2	72.6
Bhakkar	96.8	96.2	98.2	99.1	99.0	97.9
Khushab	54.3	56.1	61.7	56.6	57.1	57.2
Mianwali	71.9	78.0	81.4	88.7	90.8	82.1

Table 16 District Wealth Quintiles- Urban Water Accessible in Premises

	Wealth index quintile- Water Accessible at Premises					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	86.6	76.4	74.7	76.1	64.1	75.6
Bahawalnagar	82.5	77.9	58.7	53.1	41.5	62.8
RY Khan	85.5	70.1	54.1	43.8	34.3	57.5
DG Khan	78.5	76.5	66.5	44.4	10.2	55.1
Layyah	90.0	83.2	64.5	84.4	62.1	76.8
Muzaffargarh	97.1	97.5	97.9	94.8	61.0	89.7
Rajanpur	93.9	96.7	96.2	94.0	94.9	95.1
Faisalabad	46.3	34.6	26.5	19.7	15.8	28.6
Chiniot	87.5	82.0	89.6	83.1	70.1	82.4
Jhang	87.8	95.9	81.5	76.6	61.3	80.6
TT Singh	52.6	57.9	64.9	54.1	45.7	55.0
Gujranwala	74.9	63.1	67.0	66.7	68.1	68.0
Gujrat	46.0	39.4	41.6	29.6	51.0	41.5
Hafizabad	78.6	44.9	44.3	33.1	33.8	46.9
Mandi Bahauddin	66.1	50.7	51.2	42.0	37.1	49.4
Narowal	71.6	63.1	52.5	48.7	75.1	62.1
Sialkot	40.2	42.6	25.0	37.5	55.0	40.1
Lahore	71.1	63.9	60.6	54.4	48.2	59.6
Kasur	77.1	70.4	57.2	56.3	59.4	64.0
Nankana Sahib	30.1	7.3	7.9	17.9	17.9	16.2
Sheikhupura	69.1	63.3	55.2	49.6	51.2	57.7
Multan	82.8	79.1	77.8	62.6	51.8	70.8
Khanewal	94.2	96.3	95.0	68.5	60.7	83.0
Lodhran	78.1	62.7	64.3	65.7	49.1	63.9
Vehari	79.0	63.1	52.1	50.2	45.9	58.1
Rawalpindi	45.0	52.8	56.6	52.0	55.2	52.3
Attock	81.9	89.5	90.8	93.5	92.5	89.6
Chakwal	67.3	73.2	69.7	68.4	81.7	72.1
Jhelum	71.5	74.0	83.8	77.8	76.7	76.7
Sahiwal	91.9	67.6	59.1	58.2	37.7	62.9
Okara	82.7	90.2	73.8	55.9	45.5	69.6
Pakpattan	93.0	89.3	93.7	93.1	70.7	87.9
Sargodha	63.6	52.1	56.7	49.4	34.6	51.3
Bhakkar	95.5	98.4	99.5	100.0	100.0	98.7
Khushab	60.0	55.8	77.5	45.5	42.6	56.3
Mianwali	68.8	80.8	92.6	99.7	98.6	88.1

Table 17 District Wealth Quintiles- Sufficient Water Available

Districts	Wealth index quintile - Sufficient Quantities					Overall
	Poorest	Second	Middle	Fourth	Richest	
Overall	92.2	90.7	91.4	89.8	90.7	91.4
Bahawalpur	90.1	88.3	83.6	85.4	92.7	88.0
Bahawalnagar	82.9	80.0	75.2	81.3	81.4	80.2
RY Khan	92.8	94.6	93.7	93.0	93.6	93.5
DG Khan	88.6	88.2	90.3	90.5	87.2	89.0
Layyah	96.1	96.2	96.2	96.2	96.2	96.2
Muzaffargarh	97.2	98.8	95.3	97.5	97.8	97.3
Rajanpur	84.4	87.7	93.4	89.1	94.9	89.9
Faisalabad	91.4	89.6	87.7	87.1	88.9	88.9
Chiniot	95.3	98.4	94.0	98.9	98.2	97.0
Jhang	92.7	92.6	95.7	95.5	97.7	94.8
TT Singh	92.4	89.1	89.2	80.1	87.2	87.6
Gujranwala	91.8	90.8	94.1	94.1	94.6	93.1
Gujrat	86.6	87.6	89.4	88.1	90.5	88.4
Hafizabad	96.3	96.5	96.6	96.3	93.6	95.9
Mandi Bahauddin	98.1	97.8	95.3	94.6	95.6	96.3
Narowal	97.2	98.4	98.9	99.4	97.5	98.3
Sialkot	83.7	86.8	85.4	91.7	92.7	88.0
Lahore	83.8	83.0	85.7	87.0	89.7	85.9
Kasur	87.6	89.0	89.2	90.1	92.4	89.7
Nankana Sahib	94.5	96.1	95.8	93.7	91.3	94.3
Sheikhupura	95.4	91.6	88.6	88.1	82.3	89.2
Multan	94.4	94.0	94.4	90.3	91.4	92.9
Khanewal	94.6	96.5	96.3	95.3	98.7	96.3
Lodhran	86.8	84.5	80.3	78.2	74.5	80.9
Vehari	93.7	93.9	93.9	92.9	92.8	93.5
Rawalpindi	90.4	92.5	88.9	93.5	91.2	91.3
Attock	93.5	96.3	96.6	98.5	100.0	97.0
Chakwal	88.1	90.1	93.9	88.6	93.5	90.8
Jhelum	87.5	88.9	90.6	92.2	95.2	90.9
Sahiwal	90.3	85.3	84.4	83.2	86.1	85.9
Okara	93.0	90.3	85.5	88.0	88.2	89.0
Pakpattan	83.2	88.9	90.2	87.3	94.8	88.9
Sargodha	97.6	98.8	97.5	95.1	96.4	97.1
Bhakkar	97.1	96.2	99.2	98.2	99.2	98.0
Khushab	90.4	88.6	84.2	83.6	78.3	85.0
Mianwali	95.0	92.9	96.9	95.3	98.3	95.7

Table 18 District Wealth Quintiles - Rural Sufficient Water Available

Districts	Wealth index quintile - Sufficient Quantities					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	88.7	90.2	87.5	84.7	91.6	88.5
Bahawalnagar	83.6	80.1	77.5	78.4	86.8	81.3
RY Khan	91.4	94.6	95.8	93.3	90.4	93.1
DG Khan	91.6	88.1	91.6	90.9	94.3	91.3
Layyah	96.7	98.2	95.3	99.7	95.8	97.1
Muzaffargarh	96.8	98.6	96.2	95.9	97.5	97.0
Rajanpur	84.4	84.6	92.8	88.1	91.1	88.2
Faisalabad	94.1	89.0	89.0	87.4	88.6	89.6
Chiniot	94.1	97.3	97.9	93.6	96.7	95.9
Jhang	91.3	92.4	95.3	96.1	93.4	93.7
TT Singh	93.9	88.8	88.1	87.5	85.1	88.7
Gujranwala	92.3	87.1	87.7	91.2	94.1	90.5
Gujrat	86.0	88.8	91.6	90.3	85.9	88.5
Hafizabad	96.5	96.2	94.5	96.9	93.7	95.5
Mandi Bahauddin	99.1	98.3	94.9	97.4	95.6	97.0
Narowal	97.6	98.5	98.9	99.3	98.7	98.6
Sialkot	81.5	86.3	88.0	84.9	87.7	85.7
Kasur	89.5	85.0	88.0	90.3	91.2	88.8
Nankana Sahib	93.3	96.1	95.5	92.6	96.1	94.7
Sheikhupura	97.7	93.2	97.5	92.5	98.2	95.8
Multan	92.8	95.7	94.5	96.0	95.9	95.0
Khanewal	93.5	95.4	95.6	96.3	97.1	95.6
Lodhran	88.1	86.0	78.8	77.4	78.1	81.7
Vehari	95.2	91.0	94.7	96.0	90.0	93.4
Rawalpindi	88.4	92.5	93.6	90.8	91.2	91.3
Attock	92.9	97.5	94.8	97.8	99.1	96.4
Chakwal	88.9	89.3	93.6	91.5	93.3	91.3
Jhelum	89.4	85.7	95.4	91.6	94.1	91.2
Sahiwal	90.1	85.0	84.0	85.1	82.6	85.4
Okara	91.3	92.9	88.2	81.8	90.9	89.0
Pakpattan	86.0	87.4	92.7	88.1	92.0	89.2
Sargodha	96.6	100.0	96.0	96.7	91.7	96.2
Bhakkar	97.0	96.3	98.0	98.6	99.6	97.9
Khushab	89.8	91.6	86.9	79.4	83.0	86.1
Mianwali	94.7	92.5	97.9	96.5	98.9	96.1

Table 19 District Wealth Quintiles- Urban Sufficient Water Available

Districts	Wealth index quintile - Sufficient Quantities					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	83.3	86.4	81.6	89.4	94.2	87.0
Bahawalnagar	71.7	75.9	79.9	82.8	68.6	75.8
RY Khan	93.2	93.9	98.7	94.9	94.3	95.0
DG Khan	69.3	77.8	77.4	79.7	91.6	79.2
Layyah	80.2	92.9	88.2	100.0	96.0	91.4
Muzaffargarh	100.0	100.0	96.8	100.0	99.4	99.3
Rajanpur	97.3	100.0	100.0	98.4	97.2	98.6
Faisalabad	89.5	86.8	85.2	89.4	90.2	88.2
Chiniot	100.0	100.0	98.9	100.0	97.1	99.2
Jhang	96.6	100.0	100.0	98.4	99.4	98.9
TT Singh	81.2	78.4	84.6	83.8	89.5	83.5
Gujranwala	96.2	94.4	93.5	96.4	94.3	95.0
Gujrat	84.4	82.8	92.9	87.3	93.8	88.2
Hafizabad	98.6	97.7	96.7	95.7	93.4	96.4
Mandi Bahauddin	94.1	85.6	93.9	94.3	99.0	93.4
Narowal	94.7	100.0	91.4	96.5	100.0	96.5
Sialkot	89.5	92.6	97.8	92.4	97.0	93.9
Lahore	83.8	83.0	85.7	87.0	89.7	85.9
Kasur	91.2	91.0	93.9	91.8	93.8	92.3
Nankana Sahib	100.0	91.9	96.3	90.3	82.7	92.3
Sheikhupura	81.0	73.4	82.7	71.6	81.4	78.0
Multan	93.3	86.2	90.2	90.8	90.4	90.2
Khanewal	99.4	98.6	100.0	98.0	98.7	99.0
Lodhran	76.4	89.0	79.3	71.0	67.2	76.6
Vehari	93.6	89.7	93.8	97.5	94.7	93.9
Rawalpindi	90.1	88.6	92.9	94.3	90.3	91.2
Attock	96.6	98.0	98.4	100.0	100.0	98.6
Chakwal	88.0	76.6	97.9	87.0	93.2	88.6
Jhelum	79.0	83.5	94.1	93.4	100.0	89.9
Sahiwal	93.0	83.0	87.6	86.3	88.9	87.8
Okara	91.6	89.3	86.5	90.7	86.7	89.0
Pakpattan	65.5	83.5	92.2	100.0	94.6	87.1
Sargodha	100.0	97.5	100.0	100.0	98.9	99.3
Bhakkar	100.0	100.0	95.9	97.1	100.0	98.6
Khushab	85.1	85.7	86.4	75.1	78.0	82.1
Mianwali	94.8	88.9	90.6	98.0	97.0	93.9

Table 20: District Wise -Basic Water with Urban and Rural Coverage

District	Overall-Basic Water	Limited service	Unimproved	Surface Water	Urban-Basic Water	Rural-Basic Water
Punjab	95.9	2.4	.9	.7	96.4	95.7
Bahawalpur	95.3	3.6	1.0	.1	96.5	94.7
Bahawalnagar	91.9	6.4	.6	1.2	93.7	91.4
RY Khan	96.2	2.8	.8	.1	95.8	96.4
DG Khan	90.9	6.8	.9	1.5	94.1	90.1
Layyah	99.4	.3	.2	.1	98.2	99.7
Muzaffargarh	99.0	1.0	.0	0.0	97.2	99.3
Rajanpur	93.7	2.2	1.6	2.5	100.0	92.5
Faisalabad	92.7	3.2	.4	3.7	96.0	89.6
Chiniot	99.2	.8	0.0	0.0	99.3	99.1
Jhang	99.4	.4	.2	0.0	98.8	99.5
TT Singh	97.0	1.4	.6	1.0	97.1	97.0
Gujranwala	98.7	1.0	.3	0.0	98.9	98.3
Gujrat	97.8	1.2	.7	.3	97.3	97.9
Hafizabad	93.9	1.2	1.0	3.9	91.0	95.5
Mandi Bah.	95.0	2.8	.9	1.2	90.8	96.1
Narowal	99.3	.6	.1	0.0	100.0	99.1
Sialkot	97.3	2.6	.1	0.0	98.1	97.0
Lahore	95.9	3.8	.2	0.0	95.9	0.0
Kasur	96.1	2.4	.7	.7	94.0	96.8
Nankana Sahib	90.1	1.6	2.8	5.5	85.3	91.1
Sheikhupura	93.3	2.7	1.3	2.8	92.5	93.7
Multan	97.5	2.4	.1	0.0	97.6	97.4
Khanewal	99.0	.8	.2	0.0	99.3	98.9
Lodhran	94.2	5.5	.2	.1	93.8	94.2
Vehari	97.8	1.5	.4	.4	97.4	97.9
Rawalpindi	91.8	2.9	5.0	.3	95.0	88.4
Attock	90.9	2.3	6.8	.0	98.9	88.0
Chakwal	95.7	2.1	2.1	.2	97.7	95.2
Jhelum	93.5	.8	5.6	0.0	94.2	93.3
Sahiwal	96.9	3.1	0.0	0.0	97.2	96.8
Okara	97.9	1.8	.2	.1	97.9	97.9
Pakpattan	98.0	1.8	.1	.2	97.8	98.0
Sargodha	98.9	.8	.2	.1	98.3	99.2
Bhakkar	99.9	0.0	0.0	.1	100.0	99.9
Khushab	89.9	4.8	1.4	3.9	97.8	86.8
Mianwali	96.1	1.8	.7	1.4	98.1	95.7

Table 21 District Wealth Quintiles- Piped Water

Region	Poorest	Second	Middle	Fourth	Richest	Total
Punjab	7.5	14.7	20.2	25.9	28.3	19.2
Bahawalpur	7.5	26.0	31.1	34.9	39.9	22.0
Bahawalnagar	28.7	40.8	53.9	41.3	43.1	38.9
RY Khan	6.6	15.5	17.2	22.9	18.0	13.1
DG Khan	14.3	16.4	26.1	29.9	25.3	17.7
Layyah	1.4	2.3	.8	0.0	2.8	1.5
Muzaffargarh	.4	2.0	3.2	9.7	19.8	2.0
Rajanpur	1.8	5.7	9.5	10.2	10.8	3.7
Faisalabad	11.3	16.8	17.8	17.9	12.7	15.7
Chiniot	1.7	5.8	7.5	17.2	12.6	6.7
Jhang	4.0	9.1	21.3	37.1	38.9	14.0
TT Singh	10.6	34.8	48.4	51.4	43.7	40.4
Gujranwala	6.9	23.5	29.3	36.6	33.9	32.9
Gujrat	12.4	26.8	30.5	26.8	24.1	26.5
Hafizabad	3.7	6.3	9.6	7.2	2.9	6.5
Mandi Bahauddin	10.1	23.4	27.1	25.0	18.2	22.6
Narowal	17.0	26.0	19.7	17.8	10.3	19.6
Sialkot	0.0	3.8	7.1	10.4	13.6	9.9
Lahore	36.8	34.0	44.8	48.3	45.7	45.8
Kasur	9.2	18.6	24.6	39.7	33.0	23.6
Nankana Sahib	14.4	19.0	16.1	18.1	11.6	16.6
Sheikhupura	11.5	24.4	30.3	31.0	26.7	27.4
Multan	4.8	6.6	9.1	15.6	14.8	9.8
Khanewal	1.8	3.0	4.8	1.8	1.8	2.8
Lodhran	12.2	19.2	27.2	25.9	27.5	18.2
Vehari	5.7	11.0	18.6	18.2	23.7	13.5
Rawalpindi	8.7	13.0	11.1	18.0	23.7	19.1
Attock	16.2	17.2	19.1	20.0	27.9	20.6
Chakwal	4.9	13.8	12.9	14.2	12.0	12.5
Jhelum	28.1	27.7	31.0	26.9	19.4	26.3
Sahiwal	3.4	7.3	7.2	7.8	9.3	6.8
Okara	3.4	2.3	5.1	2.8	2.4	3.2
Pakpattan	11.1	21.2	25.7	33.5	22.4	19.4
Sargodha	1.3	3.6	4.5	7.5	8.6	4.8
Bhakkar	1.2	2.0	2.6	8.6	9.8	2.6
Khushab	14.0	28.5	33.1	40.0	23.5	24.2
Mianwali	9.0	11.1	15.0	16.0	3.8	11.5

Table 22 District Wealth Quintiles -Piped Water Urban

Region	Poorest	Second	Middle	Fourth	Richest	Total
Punjab	24.3	30.2	31.2	31.7	29.0	29.3
Bahawalpur	26.0	40.0	29.0	41.7	42.0	33.6
Bahawalnagar	47.2	45.5	36.0	40.5	28.2	42.4
RY Khan	20.8	26.0	25.5	18.4	14.3	21.8
DG Khan	18.6	35.5	37.2	8.3	28.3	24.2
Layyah	10.3	0.0	0.0	0.0	0.0	4.7
Muzaffargarh	1.1	6.2	14.3	21.7	28.7	5.5
Rajanpur	9.4	9.7	7.0	24.7	0.0	9.4
Faisalabad	21.2	21.7	18.7	17.9	9.3	17.4
Chiniot	11.7	16.3	19.6	17.3	10.6	15.4
Jhang	33.4	39.9	34.6	38.1	49.9	37.4
TT Singh	62.7	64.1	44.6	40.8	41.4	52.2
Gujranwala	33.4	39.7	36.4	31.3	42.7	36.5
Gujrat	25.9	25.0	19.9	17.0	25.2	22.0
Hafizabad	7.3	11.0	2.3	6.0	0.0	6.6
Mandi Bahauddin	9.0	15.4	22.6	21.2	21.3	18.6
Narowal	15.4	27.8	18.3	5.2	19.3	17.4
Sialkot	21.9	22.8	22.2	20.6	16.5	20.4
Lahore	42.3	45.8	49.5	49.0	41.5	45.8
Kasur	56.7	56.2	50.3	43.0	26.7	50.6
Nankana Sahib	15.7	24.5	8.5	18.8	0.0	14.8
Sheikhupura	29.2	30.3	34.1	22.9	24.3	28.2
Multan	14.3	17.7	16.8	18.2	7.5	15.3
Khanewal	0.0	0.0	0.0	0.0	0.0	0.0
Lodhran	18.1	23.5	23.2	33.9	19.9	21.6
Vehari	34.9	32.2	23.0	20.7	31.0	29.0
Rawalpindi	20.4	18.1	19.7	27.3	26.7	24.3
Attock	42.4	33.2	19.4	34.1	39.3	33.4
Chakwal	11.6	9.5	13.1	13.9	7.1	10.9
Jhelum	35.1	35.6	28.4	20.2	14.8	25.5
Sahiwal	1.9	7.8	4.2	15.8	9.5	7.4
Okara	1.0	9.0	2.5	2.7	0.0	3.1
Pakpattan	67.5	66.2	18.5	27.1	16.2	53.6
Sargodha	8.0	8.9	11.3	10.5	8.5	9.2
Bhakkar	2.9	2.5	14.1	12.2	10.8	5.8
Khushab	27.1	43.1	37.7	43.1	15.3	32.8
Mianwali	24.2	19.8	16.6	0.0	0.0	19.5

Table 23 District Wealth Quintiles- Piped Water Rural

Region	Poorest	Second	Middle	Fourth	Richest	Total
Punjab	5.6	11.1	13.9	17.5	18.8	13.1
Bahawalpur	4.9	15.1	30.4	31.0	29.8	16.2
Bahawalnagar	21.5	40.7	42.3	55.0	53.3	37.9
RY Khan	5.0	12.9	12.5	16.5	16.7	10.4
DG Khan	12.2	20.2	17.0	20.5	32.9	16.0
Layyah	.9	.4	1.4	0.0	5.2	.9
Muzaffargarh	.6	1.4	1.0	2.8	9.8	1.4
Rajanpur	2.2	2.7	3.1	2.7	6.9	2.5
Faisalabad	10.0	17.1	13.1	16.7	12.2	14.1
Chiniot	1.6	3.6	4.7	2.3	0.0	2.7
Jhang	1.6	5.4	10.2	12.3	28.9	7.3
TT Singh	5.0	22.9	33.8	48.0	50.0	37.2
Gujranwala	8.1	8.2	25.0	26.1	31.6	27.5
Gujrat	16.1	18.4	26.6	31.3	29.0	28.5
Hafizabad	2.0	6.7	8.4	9.6	3.6	6.4
Mandi Bahauddin	6.8	20.3	23.7	29.6	24.0	23.7
Narowal	13.9	24.5	24.4	19.6	14.1	20.0
Sialkot	0.0	2.1	2.7	5.4	5.8	5.1
Lahore						
Kasur	3.2	12.4	13.7	16.6	23.1	14.3
Nankana Sahib	13.2	16.9	19.3	15.6	18.0	17.0
Sheikhupura	9.2	16.8	27.9	29.0	31.1	26.9
Multan	5.3	4.6	4.5	4.1	10.9	5.5
Khanewal	.8	4.3	3.3	5.6	4.1	3.5
Lodhran	9.9	17.1	19.1	33.9	28.4	17.5
Vehari	4.3	8.2	10.9	14.3	14.3	10.1
Rawalpindi	4.9	14.1	10.8	9.7	16.1	13.4
Attock	12.4	16.1	18.2	13.5	17.5	16.0
Chakwal	1.3	10.7	13.6	13.7	14.6	12.8
Jhelum	25.3	28.9	28.4	32.4	21.5	26.6
Sahiwal	2.3	6.6	8.7	5.9	8.8	6.6
Okara	4.4	2.0	4.7	3.4	1.1	3.3
Pakpattan	8.0	10.1	15.0	18.1	26.0	12.9
Sargodha	.8	3.4	.8	3.1	6.1	2.9
Bhakkar	1.5	.9	2.8	1.4	9.4	2.0
Khushab	12.3	22.8	26.0	34.7	29.9	20.9
Mianwali	5.9	7.3	11.1	12.2	13.6	9.3

Table 24 District Wealth Quintiles- Water Source Without E-Coli

Districts	Wealth index quintile- E-Coli					Overall
	Poorest	Second	Middle	Fourth	Richest	
Overall	59.1	61.4	70.9	64.3	62.6	63.8
Bahawalpur	63.4	78.8	70.8	76.6	91.4	74.3
Bahawalnagar	19.0	18.0	64.3	52.5	22.9	34.1
RY Khan	71.7	75.6	71.9	81.3	76.5	75.4
DG Khan	72.3	71.4	66.6	62.2	57.3	65.7
Layyah	44.1	90.9	64.8	72.2	88.3	71.9
Muzaffargarh	67.7	71.2	65.5	73.0	75.7	70.8
Rajanpur	60.0	51.9	32.2	85.8	54.1	55.9
Faisalabad	37.9	56.5	62.8	62.3	79.4	58.9
Chiniot	64.1	72.2	82.2	86.9	91.9	80.0
Jhang	52.0	56.1	73.5	73.7	79.1	67.2
TT Singh	44.3	48.1	56.6	63.7	77.0	57.2
Gujranwala	61.2	57.7	64.6	68.0	71.3	64.3
Gujrat	81.0	90.7	82.2	85.4	81.5	84.0
Hafizabad	78.2	72.4	85.4	78.3	61.6	76.2
Mandi Bahauddin	52.7	49.3	67.9	52.1	40.1	53.9
Narowal	95.7	98.5	92.3	85.9	92.5	92.5
Sialkot	82.8	67.1	78.6	66.8	66.3	71.6
Lahore	62.3	39.5	47.5	59.0	52.2	51.8
Kasur	57.4	63.7	60.9	63.8	85.3	65.2
Nankana Sahib	75.3	79.4	82.4	76.5	70.8	76.6
Sheikhupura	70.0	73.3	79.0	72.5	65.4	71.7
Multan	53.4	55.7	81.4	50.6	49.3	57.6
Khanewal	73.4	82.8	57.8	79.8	90.3	76.9
Lodhran	35.6	31.1	34.3	44.1	50.6	39.2
Vehari	75.0	74.1	85.3	83.7	82.3	80.1
Rawalpindi	27.1	44.4	49.9	42.9	39.3	40.9
Attock	63.8	84.0	59.2	76.6	53.8	66.9
Chakwal	28.7	61.9	49.5	73.4	74.9	55.9
Jhelum	48.1	57.9	69.5	86.1	83.2	70.1
Sahiwal	80.3	75.9	83.1	89.1	92.4	83.5
Okara	57.8	66.6	78.4	63.0	69.9	67.4
Pakpattan	39.8	35.6	69.0	68.9	49.1	51.7
Sargodha	54.9	52.8	66.8	74.2	70.7	64.1
Bhakkar	70.9	69.1	81.2	80.9	57.5	72.2
Khushab	37.4	28.0	44.7	51.2	49.1	41.4
Mianwali	81.2	68.9	67.3	70.6	60.3	68.9

Table 25 District Wealth Quintiles- Urban Without E-Coli

Districts	District Level Wealth Categories: Urban					
	Poorest	Poor	Middle	Rich	Richest	Total
Bahawalpur	68.8	67.3	88.7	81.6	100.0	80.4
Bahawalnagar	38.5	0.0	0.0	70.5	0.0	23.3
RY Khan	100.0	76.0	78.1	83.4	100.0	90.0
DG Khan	76.8	46.8	81.0	9.4	42.5	48.3
Layyah	100.0	100.0	69.1	83.0	100.0	90.9
Muzaffargarh	73.6	82.3	79.5	78.2	26.0	73.2
Rajanpur	74.8	100.0	63.2	74.9	100.0	79.1
Faisalabad	42.1	61.5	63.3	72.0	80.6	62.8
Chiniot	85.5	77.9	90.6	100.0	100.0	87.5
Jhang	73.5	100.0	100.0	61.7	73.0	81.3
TT Singh	93.8	58.0	65.4	70.2	70.8	73.2
Gujranwala	45.8	66.5	65.3	75.2	59.8	62.4
Gujrat	94.8	85.8	79.6	71.4	87.3	85.9
Hafizabad	100.0	81.1	54.3	58.8	100.0	75.5
Mandi Bahauddin	10.1	42.0	17.3	35.9	33.5	27.2
Narowal	100.0	100.0	100.0	100.0	na	100.0
Sialkot	28.4	36.0	59.5	57.7	38.0	46.2
Lahore	62.3	39.5	47.5	59.0	52.2	51.8
Kasur	45.8	32.1	85.9	90.1	86.2	62.1
Nankana Sahib	86.9	100.0	44.3	64.3	87.5	79.4
Sheikhupura	100.0	50.6	67.1	69.5	53.6	64.3
Multan	52.0	45.2	35.1	50.4	50.3	47.1
Khanewal	100.0	74.2	100.0	91.9	100.0	94.6
Lodhran	37.9	0.0	48.6	100.0	37.8	46.9
Vehari	87.4	81.4	63.9	83.5	100.0	83.5
Rawalpindi	24.3	56.9	48.7	34.6	39.1	42.2
Attock	42.0	84.4	87.8	54.7	43.0	61.6
Chakwal	39.1	81.6	93.3	68.4	53.6	68.3
Jhelum	77.9	100.0	100.0	57.2	100.0	79.1
Sahiwal	100.0	100.0	86.7	100.0	78.9	93.7
Okara	67.5	59.9	100.0	61.2	81.1	70.5
Pakpattan	35.7	100.0	66.0	27.2	100.0	49.7
Sargodha	64.9	94.1	72.3	72.3	79.6	80.2
Bhakkar	68.6	100.0	100.0	22.7	78.2	65.8
Khushab	54.0	40.4	51.3	42.3	87.9	54.7
Mianwali	100.0	38.5	91.0	63.9	76.8	77.4

Table 26 District Wealth Quintiles- Rural Without E-Coli

District Level Wealth Categories: Rural						Overall
Districts	Poorest	Poor	Middle	Rich	Richest	
Bahawalpur	67.4	65.2	74.9	80.9	70.9	71.6
Bahawalnagar	15.2	15.5	58.2	53.6	64.2	37.3
RY Khan	69.5	73.6	63.4	73.2	75.5	71.4
DG Khan	70.9	73.9	76.5	56.3	73.0	69.9
Layyah	38.7	84.9	67.0	64.0	87.8	67.9
Muzaffargarh	67.3	70.8	56.7	80.1	75.5	70.4
Rajanpur	52.9	51.5	43.9	70.5	37.7	52.2
Faisalabad	37.1	41.9	62.9	78.9	65.1	55.2
Chiniot	59.1	59.8	79.9	84.4	89.1	76.7
Jhang	51.3	57.5	55.1	73.8	77.3	63.0
TT Singh	38.0	47.4	56.2	52.1	76.6	53.8
Gujranwala	51.9	78.6	67.4	60.5	74.5	66.9
Gujrat	82.3	79.0	96.7	79.0	81.4	83.2
Hafizabad	90.9	51.2	87.3	85.5	71.8	76.5
Mandi Bahauddin	59.4	49.0	65.4	69.7	53.9	60.3
Narowal	94.7	98.1	90.9	85.7	89.3	91.0
Sialkot	87.6	82.5	79.6	83.1	80.7	82.4
Kasur	59.5	53.0	58.9	84.1	64.3	66.2
Nankana Sahib	73.5	72.7	80.3	80.6	73.8	75.9
Sheikhupura	71.8	65.4	70.5	88.9	83.2	75.8
Multan	52.0	50.3	65.0	90.2	77.1	65.9
Khanewal	71.9	85.1	47.6	70.7	86.7	72.0
Lodhran	38.4	23.0	40.0	33.3	53.9	37.9
Vehari	72.5	69.6	81.9	91.8	81.3	79.5
Rawalpindi	24.2	38.5	45.6	45.5	38.4	39.5
Attock	57.5	80.2	85.9	48.5	66.0	69.0
Chakwal	29.0	67.1	43.9	60.4	79.0	52.9
Jhelum	48.2	57.2	54.8	72.9	92.1	66.8
Sahiwal	79.9	82.2	82.7	69.6	92.1	81.3
Okara	58.7	71.4	65.9	65.8	68.4	66.3
Pakpattan	43.3	22.5	59.9	67.4	67.1	52.3
Sargodha	56.2	52.6	52.0	59.8	65.7	57.0
Bhakkar	72.9	65.9	92.5	70.1	68.7	73.3
Khushab	38.0	22.6	58.7	38.3	39.2	36.8
Mianwali	84.1	72.5	56.5	66.9	59.0	67.0

Table 27 : District Wealth Quintiles - Improved Sanitation

Area		Wealth index quintile- Improved Sanitation						Overall
District	Urban	Rural	Poorest	Second	Middle	Fourth	Richest	
Overall	92.8	72.8	37.7	79.8	91.1	94.1	97.7	80.1
Bahawalpur	87.8	60.7	25.3	63.2	82.6	84.4	92.5	69.6
Bahawalnagar	83.1	66.0	19.6	61.9	82.5	92.9	90.6	69.5
RY Khan	97.9	68.9	26.7	69.7	89.2	93.7	98.8	75.6
DG Khan	94.7	53.5	16.0	37.5	66.6	88.0	99.1	61.4
Layyah	93.0	79.3	47.1	74.4	91.4	96.7	98.0	81.5
Muzaffargarh	74.7	64.3	24.5	44.1	76.9	86.9	96.9	65.9
Rajanpur	81.7	46.4	8.9	31.1	47.8	80.4	93.1	52.2
Faisalabad	95.4	75.6	54.3	87.3	90.5	95.2	98.9	85.2
Chiniot	82.0	48.6	3.1	34.7	82.0	91.9	84.7	59.3
Jhang	93.6	59.9	9.6	49.1	81.3	97.0	98.6	67.1
TT Singh	95.6	85.3	49.6	92.5	99.4	98.7	97.0	87.4
Gujranwala	98.4	97.2	93.8	98.2	98.6	99.2	99.8	97.9
Gujrat	97.8	92.3	74.9	97.5	98.7	99.3	99.7	94.0
Hafizabad	96.2	79.1	35.0	91.4	98.9	100.0	100.0	85.1
Mandi Bahauddin	96.4	74.8	28.3	75.2	94.2	98.9	99.5	79.2
Narowal	93.4	88.9	59.3	93.7	98.8	98.5	97.6	89.6
Sialkot	73.1	85.9	73.9	80.5	83.5	81.1	92.2	82.2
Lahore	96.4	na	86.2	96.8	99.3	99.8	100.0	96.4
Kasur	67.3	79.1	50.5	80.1	86.8	85.5	78.1	76.2
Nankana Sahib	86.3	82.6	45.7	89.1	94.1	95.2	91.9	83.2
Sheikhupura	99.4	93.6	82.4	98.8	98.2	99.5	100.0	95.8
Multan	85.3	46.2	25.5	52.1	63.8	80.7	94.2	63.2
Khanewal	74.6	70.1	31.0	71.4	80.4	83.3	89.0	71.0
Lodhran	82.3	58.9	20.7	51.6	74.9	82.2	84.3	62.7
Vehari	86.1	66.7	27.9	70.8	76.3	86.3	89.9	70.3
Rawalpindi	97.5	88.2	72.1	96.6	98.1	98.6	99.6	93.0
Attock	92.7	84.5	52.5	90.1	96.6	96.3	97.7	86.7
Chakwal	92.9	84.0	53.6	87.4	93.3	97.2	96.7	85.7
Jhelum	99.4	88.7	62.5	96.1	99.3	100.0	100.0	91.6
Sahiwal	98.7	73.2	31.2	79.0	90.5	94.2	97.5	78.5
Okara	92.9	65.6	22.3	69.9	81.7	91.5	99.2	72.9
Pakpattan	94.2	64.6	25.9	63.4	74.8	89.6	93.4	69.4
Sargodha	95.9	75.2	37.5	78.8	93.5	98.2	97.8	81.2
Bhakkar	97.3	72.2	27.8	67.5	87.1	96.9	99.5	75.7
Khushab	88.8	59.5	20.5	43.7	82.6	95.1	96.8	67.7
Mianwali	86.6	81.8	49.3	78.3	94.6	97.7	93.8	82.7

Table 28 District Wealth Quintiles- Rural Improved Sanitation

Districts	Wealth index quintile- Improved Sanitation					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	20.3	44.6	72.0	81.5	84.8	60.7
Bahawalnagar	15.0	52.9	76.4	91.5	94.3	66.0
RY Khan	20.1	59.2	80.3	92.5	92.6	68.9
DG Khan	14.0	29.8	49.7	79.8	94.0	53.5
Layyah	43.1	69.1	90.8	95.0	98.5	79.3
Muzaffargarh	22.1	42.4	76.8	84.3	96.0	64.3
Rajanpur	6.4	26.9	36.9	72.4	89.8	46.4
Faisalabad	28.2	81.7	87.5	88.9	91.4	75.6
Chiniot	1.9	9.9	51.7	80.9	98.5	48.6
Jhang	4.7	38.7	68.1	89.9	98.2	59.9
TT Singh	42.6	87.3	98.1	99.3	98.9	85.3
Gujranwala	87.7	99.8	99.6	100.0	99.2	97.2
Gujrat	67.5	96.5	99.1	99.0	99.7	92.3
Hafizabad	21.2	78.4	97.1	98.9	100.0	79.1
Mandi Bahauddin	22.5	64.6	89.0	98.4	99.5	74.8
Narowal	53.7	92.9	98.8	100.0	98.8	88.9
Sialkot	73.7	86.3	86.2	91.3	92.2	85.9
Kasur	44.1	77.5	88.2	92.8	93.0	79.1
Nankana Sahib	37.4	85.7	96.5	97.2	96.1	82.6
Sheikhupura	75.6	97.3	98.4	97.4	99.7	93.6
Multan	16.2	36.7	52.9	52.1	73.0	46.2
Khanewal	23.9	66.0	80.8	89.0	90.8	70.1
Lodhran	20.3	38.8	74.9	76.7	83.8	58.9
Vehari	22.4	68.0	72.6	83.1	87.0	66.7
Rawalpindi	54.8	90.7	96.9	99.4	99.3	88.2
Attock	44.5	83.7	97.0	98.3	99.2	84.5
Chakwal	49.1	83.3	95.5	93.6	98.8	84.0
Jhelum	55.9	89.7	98.9	99.1	100.0	88.7
Sahiwal	22.2	73.1	83.4	93.6	93.8	73.2
Okara	14.4	56.1	82.2	84.5	91.0	65.6
Pakpattan	19.9	56.3	74.6	80.7	91.4	64.6
Sargodha	25.5	67.3	87.1	97.3	98.7	75.2
Bhakkar	23.7	60.9	82.3	95.2	98.6	72.2
Khushab	14.4	32.8	63.6	88.3	98.6	59.5
Mianwali	46.6	73.0	92.6	98.4	98.5	81.8

Table 29 District Wealth Quintiles - Urban Improved Sanitation

Districts	Wealth index quintile- Improved Sanitation					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	76.9	84.8	90.2	91.2	96.0	87.8
Bahawalnagar	68.0	81.2	88.7	84.0	93.5	83.1
RY Khan	92.4	98.1	98.9	100.0	100.0	97.9
DG Khan	75.9	97.1	100.0	100.0	100.0	94.7
Layyah	84.7	88.9	93.8	97.5	100.0	93.0
Muzaffargarh	34.9	62.0	83.2	94.9	98.5	74.7
Rajanpur	49.9	69.5	95.6	100.0	93.1	81.7
Faisalabad	88.3	93.9	96.6	98.9	99.5	95.4
Chiniot	73.4	88.1	86.5	81.7	80.0	82.0
Jhang	75.5	95.8	98.4	98.1	100.0	93.6
TT Singh	93.5	100.0	89.0	100.0	95.5	95.6
Gujranwala	96.1	97.1	99.8	99.0	100.0	98.4
Gujrat	93.3	97.1	99.1	100.0	99.6	97.8
Hafizabad	80.8	100.0	100.0	100.0	100.0	96.2
Mandi Bahauddin	85.7	98.7	100.0	98.7	99.0	96.4
Narowal	84.7	90.6	100.0	100.0	91.4	93.4
Sialkot	48.5	65.3	74.3	82.1	95.4	73.1
Lahore	86.2	96.8	99.3	99.8	100.0	96.4
Kasur	61.9	59.6	67.4	63.3	84.9	67.3
Nankana Sahib	85.4	84.8	90.4	84.3	86.5	86.3
Sheikhupura	96.8	100.0	100.0	100.0	100.0	99.4
Multan	69.0	84.3	84.1	91.1	98.1	85.3
Khanewal	67.6	59.1	62.1	87.7	96.4	74.6
Lodhran	63.4	85.2	88.5	91.0	83.3	82.3
Vehari	70.6	82.2	92.0	91.3	94.5	86.1
Rawalpindi	92.9	97.8	97.8	99.5	99.6	97.5
Attock	84.2	90.3	96.2	93.8	98.8	92.7
Chakwal	81.5	97.8	96.4	89.0	100.0	92.9
Jhelum	97.2	100.0	100.0	100.0	100.0	99.4
Sahiwal	97.8	98.2	100.0	97.4	100.0	98.7
Okara	68.9	96.5	100.0	100.0	99.3	92.9
Pakpattan	78.1	93.3	100.0	100.0	100.0	94.2
Sargodha	91.6	97.2	96.6	96.0	98.4	95.9
Bhakkar	88.0	98.4	100.0	100.0	100.0	97.3
Khushab	60.2	94.6	96.1	95.4	96.9	88.8
Mianwali	72.2	92.9	89.6	84.8	93.1	86.6

Table 30: District Wealth Quintiles for Open Defecation

Districts	Wealth index quintile					Overall Open Defecation
	Poorest	Poor	Middle	Rich	Richest	
Overall Punjab	54.4	9.4	1.1	0.1	0.0	13.0
Bahawalpur	69.5	30.6	4.0	0.0	0.0	20.8
Bahawalnagar	74.4	29.2	7.5	1.1	0.0	22.4
RY Khan	71.2	24.0	4.4	.3	0.0	20.0
DG Khan	81.3	56.4	26.3	6.5	.2	34.1
Layyah	50.4	22.6	3.7	.8	0.0	15.5
Muzaffargarh	72.9	46.8	18.2	7.6	.2	29.1
Rajanpur	87.5	56.3	39.8	8.2	0.0	38.4
Faisalabad	37.7	.3	0.0	0.0	0.0	7.6
Chiniot	96.9	63.7	15.1	.5	0.0	35.3
Jhang	89.3	49.1	13.9	1.1	0.0	30.7
TT Singh	40.7	4.0	0.0	0.0	0.0	8.9
Gujranwala	3.6	.3	0.0	0.0	0.0	.8
Gujrat	21.9	1.2	0.0	0.0	0.0	4.6
Hafizabad	62.3	6.9	0.0	0.0	0.0	13.8
Mandi Bahauddin	67.1	22.8	4.2	.5	0.0	18.9
Narowal	37.6	4.5	0.0	0.0	0.0	8.4
Sialkot	10.2	.3	0.0	0.0	0.0	2.1
Lahore	2.6	0.0	0.0	0.0	0.0	.5
Kasur	28.5	4.7	0.0	0.0	0.0	6.6
Nankana Sahib	47.4	6.4	1.3	0.0	0.0	11.0
Sheikhupura	10.6	.6	0.0	0.0	0.0	2.2
Multan	49.2	7.1	.5	0.0	0.0	11.4
Khanewal	57.9	9.6	.6	0.0	0.0	13.6
Lodhran	74.3	31.2	8.3	2.6	0.0	23.3
Vehari	57.9	9.4	2.0	0.0	0.0	13.9
Rawalpindi	22.6	1.0	0.0	0.0	0.0	4.7
Attock	42.4	7.2	.7	0.0	0.0	10.0
Chakwal	42.0	9.6	4.2	1.1	0.0	11.4
Jhelum	34.2	3.9	0.0	0.0	0.0	7.6
Sahiwal	57.9	4.4	.5	0.0	0.0	12.6
Okara	62.8	11.4	2.1	0.0	0.0	15.3
Pakpattan	66.8	19.0	4.8	0.0	0.0	18.1
Sargodha	60.1	19.7	6.2	0.0	.2	17.2
Bhakkar	70.7	30.5	10.3	2.0	0.0	22.7
Khushab	75.8	55.2	15.8	2.5	0.0	29.9
Mianwali	46.9	19.1	3.0	.3	0.0	13.9

Table 31 District Wealth Quintiles for Rural Open Defection

Districts	Wealth index quintile					Overall Open Defecation
	Poorest	Poor	Middle	Rich	Richest	
Bahawalpur	74.3	48.0	19.3	4.6	0.0	29.2
Bahawalnagar	80.1	39.3	12.6	2.5	.4	27.0
RY Khan	77.8	37.2	12.3	1.2	0.0	25.7
DG Khan	82.6	63.5	44.5	12.7	3.4	41.3
Layyah	54.0	28.4	6.7	1.7	0.0	18.1
Muzaffargarh	75.0	47.8	18.9	10.5	.7	30.6
Rajanpur	92.2	62.3	51.7	13.7	2.5	44.5
Faisalabad	64.9	7.1	.3	0.0	0.0	14.4
Chiniot	98.1	90.1	46.2	15.8	.8	50.1
Jhang	94.6	59.0	29.2	6.3	.4	37.9
TT Singh	46.7	7.2	1.1	0.0	0.0	11.0
Gujranwala	8.1	0.0	0.0	0.0	0.0	1.6
Gujrat	28.0	2.3	0.0	0.0	0.0	6.1
Hafizabad	77.1	17.7	2.4	0.0	0.0	19.4
Mandi Bahauddin	74.7	31.4	9.4	1.3	0.0	23.4
Narowal	44.4	5.8	.2	0.0	0.0	10.1
Sialkot	14.3	.4	0.0	0.0	0.0	2.9
Lahore						na
Kasur	37.0	6.1	.9	0.0	0.0	8.8
Nankana Sahib	55.7	8.9	1.6	0.0	0.0	13.2
Sheikhupura	14.9	1.2	.5	0.0	0.0	3.3
Multan	66.7	25.1	6.3	1.4	0.0	19.9
Khanewal	66.6	14.8	2.2	0.0	0.0	16.7
Lodhran	75.3	45.8	10.4	5.9	.3	27.5
Vehari	63.0	17.7	2.9	1.4	0.0	17.0
Rawalpindi	39.8	6.1	.5	0.0	0.0	9.3
Attock	49.0	15.0	1.4	0.0	0.0	13.1
Chakwal	46.8	13.2	3.7	3.1	.5	13.5
Jhelum	41.5	9.3	1.1	0.0	0.0	10.4
Sahiwal	68.0	9.2	1.4	0.0	0.0	15.7
Okara	75.6	21.1	4.5	.5	0.0	20.4
Pakpattan	73.6	25.7	4.9	2.2	0.0	21.3
Sargodha	71.6	31.9	11.7	2.7	.3	23.6
Bhakkar	76.0	36.9	14.5	3.4	.2	26.2
Khushab	84.8	64.2	35.9	10.2	.7	39.1
Mianwali	50.3	24.7	5.5	.1	.2	16.2

Table 32 District Wealth Quintiles for Urban Open Defecation

	Wealth index quintile- Rural					Overall Open Defecation
	Poorest	Poor	Middle	Rich	Richest	
Bahawalpur	18.4	0.0	0.0	0.0	0.0	3.7
Bahawalnagar	23.2	0.0	0.0	0.0	0.0	4.6
RY Khan	4.3	0.0	0.0	0.0	0.0	.9
DG Khan	20.7	0.0	0.0	0.0	0.0	4.1
Layyah	10.2	0.0	0.0	0.0	0.0	2.1
Muzaffargarh	63.9	33.5	6.3	0.0	0.0	20.8
Rajanpur	30.9	4.5	0.0	0.0	0.0	7.1
Faisalabad	2.0	0.0	0.0	0.0	0.0	.4
Chiniot	17.8	0.0	0.0	0.0	0.0	3.5
Jhang	21.1	0.0	0.0	0.0	0.0	4.2
TT Singh	6.0	0.0	0.0	0.0	0.0	1.2
Gujranwala	.3	.5	0.0	0.0	0.0	.2
Gujrat	6.7	0.0	0.0	0.0	0.0	1.3
Hafizabad	16.9	0.0	0.0	0.0	0.0	3.4
Mandi Bahauddin	8.4	0.0	0.0	0.0	0.0	1.7
Narowal	0.0	0.0	0.0	0.0	0.0	0.0
Sialkot	0.0	0.0	0.0	0.0	0.0	0.0
Lahore	2.6	0.0	0.0	0.0	0.0	.5
Kasur	0.0	0.0	0.0	0.0	0.0	0.0
Nankana Sahib	3.0	0.0	0.0	0.0	0.0	.6
Sheikhupura	1.8	0.0	0.0	0.0	0.0	.4
Multan	1.6	0.0	0.0	0.0	0.0	.3
Khanewal	8.7	0.0	0.0	0.0	0.0	1.7
Lodhran	7.9	0.0	0.0	0.0	0.0	1.6
Vehari	0.0	0.0	0.0	0.0	0.0	0.0
Rawalpindi	2.2	0.0	0.0	0.0	0.0	.4
Attock	7.6	0.0	0.0	0.0	0.0	1.5
Chakwal	9.9	0.0	0.0	0.0	0.0	2.0
Jhelum	.8	0.0	0.0	0.0	0.0	.2
Sahiwal	2.2	0.0	0.0	0.0	0.0	.4
Okara	6.7	0.0	0.0	0.0	0.0	1.3
Pakpattan	8.5	0.0	0.0	0.0	0.0	1.7
Sargodha	7.5	0.0	0.0	0.0	0.0	1.5
Bhakkar	7.5	1.6	0.0	0.0	0.0	1.8
Khushab	30.6	0.0	0.0	0.0	0.0	6.0
Mianwali	20.9	0.0	0.0	0.0	0.0	4.2

Table 33 District Wealth Quintiles-Piped to Sewers

Districts	Area		Wealth index quintile- Piped to Sewer					Overall
	URBAN	RURAL	Poorest	Second	Middle	Fourth	Richest	
Overall	56.9	4.9	1.0	6.2	14.2	35.8	61.9	23.8
Bahawalpur	52.8	1.8	0.0	2.2	6.8	20.5	63.6	18.6
Bahawalnagar	23.7	1.0	0.0	.3	3.2	3.9	20.7	5.6
RY Khan	83.3	7.5	1.2	3.7	14.9	31.7	73.9	25.1
DG Khan	17.5	1.4	.6	.4	1.3	1.5	18.7	4.5
Layyah	23.7	1.9	1.7	.6	2.4	4.2	18.6	5.5
Muzaffargarh	5.0	1.0	0.0	0.0	0.0	1.5	6.4	1.6
Rajanpur	15.0	.7	.4	0.0	.3	4.9	9.7	3.0
Faisalabad	80.4	3.7	3.2	12.5	35.9	65.3	88.2	41.0
Chiniot	30.8	1.1	0.0	.6	4.7	13.6	34.1	10.6
Jhang	27.2	.8	0.0	0.0	.5	4.9	26.9	6.4
TT Singh	38.9	5.6	1.3	.5	5.9	16.1	38.6	12.5
Gujranwala	43.5	24.6	21.0	26.5	30.9	40.7	58.9	35.6
Gujrat	18.6	3.5	2.1	4.1	6.0	7.5	20.9	8.1
Hafizabad	12.3	9.2	2.0	10.5	7.7	11.9	19.4	10.3
Mandi Bahauddin	5.2	2.0	.6	3.0	1.8	2.3	5.5	2.6
Narowal	3.7	.3	0.0	0.0	0.0	.3	3.9	.8
Sialkot	34.3	2.6	3.9	4.9	6.9	16.3	26.6	11.7
Lahore	84.1	na	52.8	83.4	92.7	93.8	97.6	84.1
Kasur	13.0	2.3	0.0	1.6	1.9	3.2	18.2	5.0
Nankana Sahib	36.3	3.5	.9	.7	6.8	10.6	27.7	9.4
Sheikhupura	50.0	12.9	3.6	8.2	21.8	41.8	58.1	26.7
Multan	79.0	13.8	1.6	15.8	37.2	68.4	88.3	42.3
Khanewal	45.4	3.0	0.0	4.1	4.6	9.3	40.2	11.7
Lodhran	65.4	2.5	.3	4.0	4.2	16.4	38.7	12.7
Vehari	70.3	10.1	.3	6.6	14.7	24.4	60.6	21.3
Rawalpindi	41.6	11.1	3.5	14.7	29.4	32.4	54.3	26.9
Attock	19.1	1.3	0.0	2.4	2.9	6.7	17.8	6.0
Chakwal	2.3	.7	0.0	.5	0.0	1.9	2.4	1.0
Jhelum	8.5	2.8	.1	.3	1.7	7.2	12.7	4.4
Sahiwal	80.4	16.5	2.2	8.3	19.6	39.8	78.2	29.6
Okara	69.7	.8	2.3	4.3	9.4	20.8	59.6	19.3
Pakpattan	55.2	7.1	2.0	1.5	8.7	11.6	50.9	14.9
Sargodha	43.8	.8	1.6	3.2	9.2	16.1	36.1	13.2
Bhakkar	38.1	.4	0.0	.8	1.1	4.9	22.1	5.8
Khushab	32.7	.5	1.6	1.5	2.0	7.3	35.1	9.5
Mianwali	26.1	3.3	.3	2.9	3.3	4.4	27.5	7.7

Table 34 District Wealth Quintiles- Rural Piped to Sewers

District s	Wealth index quintile- Piped to Sewer					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	0.0	.4	1.7	1.5	5.6	1.8
Bahawalnagar	0.0	.4	0.0	2.2	2.5	1.0
RY Khan	.7	1.1	4.4	9.7	21.8	7.5
DG Khan	.7	.5	1.2	.5	4.0	1.4
Layyah	2.0	0.0	2.7	2.2	2.6	1.9
Muzaffargarh	0.0	0.0	0.0	1.8	3.2	1.0
Rajanpur	.5	0.0	0.0	0.0	2.9	.7
Faisalabad	.1	.6	1.1	1.2	15.4	3.7
Chiniot	0.0	0.0	1.5	2.7	1.4	1.1
Jhang	0.0	0.0	0.0	.3	3.6	.8
TT Singh	.3	1.4	.9	2.4	22.8	5.6
Gujranwala	17.5	26.2	25.2	23.4	30.8	24.6
Gujrat	1.9	1.8	2.9	4.2	6.8	3.5
Hafizabad	1.0	10.7	5.7	13.6	15.1	9.2
Mandi Bahauddin	.3	1.6	3.0	1.9	3.0	2.0
Narowal	0.0	0.0	0.0	.4	1.1	.3
Sialkot	2.9	2.4	2.3	2.6	2.6	2.6
Kasur	0.0	.4	1.2	1.9	8.2	2.3
Nankana Sahib	.5	1.5	2.7	4.7	8.4	3.5
Sheikhupura	1.3	8.4	8.1	12.9	33.9	12.9
Multan	.1	2.2	11.7	11.3	43.7	13.8
Khanewal	0.0	1.9	2.5	.6	10.0	3.0
Lodhran	.4	1.0	2.5	2.7	6.0	2.5
Vehari	0.0	1.4	7.7	18.7	22.9	10.1
Rawalpindi	.4	4.2	4.5	11.4	35.2	11.1
Attock	0.0	1.7	.3	.1	4.3	1.3
Chakwal	0.0	0.0	.6	1.6	1.2	.7
Jhelum	.1	0.0	.4	2.3	11.4	2.8
Sahiwal	.9	4.8	13.7	17.7	45.3	16.5
Okara	0.0	1.2	.4	.8	1.4	.8
Pakpattan	0.0	.8	4.6	7.2	22.9	7.1
Sargodha	0.0	.4	1.0	.7	1.8	.8
Bhakkar	0.0	0.0	.6	.2	1.3	.4
Khushab	0.0	0.0	0.0	1.0	1.2	.5
Mianwali	0.0	1.8	.4	2.1	12.0	3.3

Table 35 District Wealth Quintiles- Urban Piped to Sewers

Districts	Wealth index quintile- Piped to Sewer					Overall
	Poorest	Second	Middle	Fourth	Richest	
Bahawalpur	12.7	36.7	58.7	70.9	85.2	52.8
Bahawalnagar	10.0	13.8	25.7	25.4	43.5	23.7
RY Khan	58.5	85.1	89.7	90.0	93.2	83.3
DG Khan	0.0	4.2	9.8	23.8	49.5	17.5
Layyah	1.3	11.6	22.2	25.5	58.2	23.7
Muzaffargarh	0.0	0.0	0.0	2.8	22.0	5.0
Rajanpur	0.0	21.2	16.8	10.5	27.0	15.0
Faisalabad	52.8	77.4	83.8	92.4	95.7	80.4
Chiniot	13.4	29.3	36.1	37.7	37.5	30.8
Jhang	2.2	19.2	22.5	41.8	50.2	27.2
TT Singh	18.8	35.9	49.6	46.6	43.6	38.9
Gujranwala	25.2	33.5	43.1	49.4	66.2	43.5
Gujrat	8.2	10.4	16.6	18.1	40.0	18.6
Hafizabad	9.1	6.8	8.7	10.0	27.0	12.3
Mandi Bahauddin	2.0	4.7	6.8	3.4	9.4	5.2
Narowal	0.0	0.0	0.0	14.0	4.2	3.7
Sialkot	17.5	29.7	31.5	39.1	53.5	34.3
Lahore	52.8	83.4	92.7	93.8	97.6	84.1
Kasur	3.6	2.8	7.9	12.3	38.7	13.0
Nankana Sahib	0.0	35.8	28.8	43.9	73.0	36.3
Sheikhupura	11.6	48.2	54.7	55.1	80.7	50.0
Multan	56.2	74.2	80.4	89.6	94.8	79.0
Khanewal	15.0	28.9	31.5	70.1	81.6	45.4
Lodhran	24.6	81.9	72.8	69.8	77.2	65.4
Vehari	39.4	72.2	75.2	76.7	88.4	70.3
Rawalpindi	30.5	40.9	36.0	41.1	59.5	41.6
Attock	9.3	22.2	8.8	16.5	39.1	19.1
Chakwal	.4	0.0	5.7	2.8	2.6	2.3
Jhelum	0.0	12.0	6.0	5.4	19.5	8.5
Sahiwal	45.9	83.7	89.9	93.1	89.8	80.4
Okara	41.1	56.3	79.9	88.7	82.4	69.7
Pakpattan	32.2	23.6	43.8	79.4	97.1	55.2
Sargodha	22.4	35.3	52.6	43.7	65.2	43.8
Bhakkar	8.5	28.3	44.7	49.7	58.9	38.1
Khushab	11.2	12.9	27.4	41.9	70.4	32.7
Mianwali	5.4	19.2	15.9	30.4	59.4	26.1

Table 36 District Wealth Quintiles- Shared Latrines

Districts	District Level Wealth Categories					Total
	Poorest	Poor	Middle	Rich	Richest	
Overall	23.3	18.6	13.4	9.4	4.3	12.7
Bahawalpur	47.3	37.6	19.5	9.4	2.9	18.1
Bahawalnagar	26.9	18.8	14.0	7.2	7.5	12.3
RY Khan	31.7	28.1	16.9	7.3	2.2	14.0
DG Khan	42.3	29.0	24.7	18.5	10.6	20.2
Layyah	36.4	36.6	22.1	21.0	2.0	21.4
Muzaffargarh	39.6	38.5	38.9	26.9	14.3	28.9
Rajanpur	34.6	41.0	39.5	24.6	11.3	25.9
Faisalabad	23.4	18.0	15.5	11.0	3.6	13.5
Chiniot	61.6	27.6	22.7	11.3	10.1	16.2
Jhang	26.8	27.2	18.4	10.7	4.4	13.7
TT Singh	16.4	13.6	8.7	9.0	0.0	8.9
Gujranwala	10.9	5.5	4.7	.7	.5	4.4
Gujrat	18.6	12.2	7.0	6.8	2.4	9.0
Hafizabad	22.7	8.9	8.3	10.7	3.6	9.1
Mandi Bahauddin	12.3	13.1	10.9	4.8	2.2	7.8
Narowal	22.1	14.0	7.9	7.3	3.2	9.9
Sialkot	18.4	15.0	6.2	9.5	.7	9.8
Lahore	17.2	6.6	2.3	1.5	1.3	5.7
Kasur	32.0	24.0	19.0	18.0	7.5	19.3
Nankana Sahib	34.3	25.5	15.7	12.3	9.7	17.9
Sheikhupura	20.1	12.1	7.0	6.7	2.2	9.4
Multan	39.5	29.4	15.9	13.3	3.5	18.0
Khanewal	34.2	21.2	14.1	10.6	4.3	14.5
Lodhran	33.1	33.1	25.9	22.5	17.0	24.5
Vehari	26.1	19.9	14.2	6.2	3.1	12.1
Rawalpindi	8.1	5.5	2.8	.6	.3	3.2
Attock	2.8	5.6	3.1	1.9	.8	2.8
Chakwal	14.3	12.1	9.1	5.9	4.3	8.6
Jhelum	19.9	11.0	8.2	5.5	0.0	8.1
Sahiwal	22.6	18.6	13.3	11.3	4.6	12.9
Okara	35.7	19.6	18.5	10.3	2.6	14.5
Pakpattan	28.7	23.6	17.4	11.4	8.2	15.8
Sargodha	54.8	34.0	16.3	9.2	5.9	19.2
Bhakkar	50.5	35.8	21.3	15.3	12.0	22.2
Khushab	33.6	28.3	16.6	10.3	5.2	14.3
Mianwali	35.6	31.4	25.1	11.9	6.7	20.2

Table 37 District Wealth Quintiles- Rural Shared Latrines

Districts	District Level Wealth Categories: Rural					Total
	Poorest	Poor	Middle	Rich	Richest	
Overall	26.3	23.7	17.4	13.2	6.9	15.8
Bahawalpur	43.2	46.8	28.3	17.9	7.3	23.4
Bahawalnagar	27.8	23.2	13.4	10.9	4.6	12.8
RY Khan	27.7	36.2	21.9	11.8	6.4	17.8
DG Khan	37.7	38.5	27.9	20.2	14.1	23.0
Layyah	38.7	39.4	18.0	24.2	9.8	23.5
Muzaffargarh	37.6	42.1	38.0	31.0	15.6	30.4
Rajanpur	35.9	30.3	50.1	24.1	20.8	28.6
Faisalabad	24.3	23.6	15.3	15.4	7.5	16.1
Chiniot	53.3	34.8	31.5	20.5	7.2	18.4
Jhang	38.9	27.9	21.0	16.9	7.8	16.8
TT Singh	17.9	16.7	8.3	6.7	5.1	10.1
Gujranwala	13.3	8.0	3.6	3.1	.2	5.5
Gujrat	15.8	13.2	6.2	5.0	3.5	8.3
Hafizabad	23.5	12.4	7.0	7.8	5.0	8.7
Mandi Bahauddin	10.2	14.2	13.4	6.5	5.0	9.4
Narowal	17.0	10.9	11.7	8.6	1.9	9.3
Sialkot	19.4	17.7	7.6	7.9	2.6	10.8
Kasur	32.6	25.1	22.5	21.1	10.8	21.6
Nankana Sahib	35.7	25.0	19.6	12.2	8.3	18.1
Sheikhupura	26.2	11.6	9.3	6.7	2.4	10.8
Multan	41.7	35.7	27.2	18.3	5.2	22.3
Khanewal	33.3	27.3	15.4	10.4	5.1	15.6
Lodhran	34.1	33.5	27.2	20.8	16.9	24.1
Vehari	28.2	19.0	17.7	9.9	5.8	14.2
Rawalpindi	10.5	6.3	4.0	4.7	.6	4.7
Attock	1.5	7.7	3.0	2.0	1.5	3.2
Chakwal	16.4	13.5	8.2	5.7	3.8	8.7
Jhelum	18.0	12.2	9.0	6.8	1.6	8.7
Sahiwal	20.4	20.6	13.6	13.1	8.3	14.3
Okara	41.9	23.0	22.2	12.7	6.5	17.2
Pakpattan	30.2	24.5	18.6	15.5	8.8	17.2
Sargodha	61.4	42.9	22.0	11.9	5.9	21.9
Bhakkar	54.9	43.5	22.7	15.4	12.7	23.7
Khushab	52.5	31.1	17.3	16.8	2.7	15.8
Mianwali	34.7	33.0	22.1	12.1	6.0	19.3

Table 38- District Wealth Quintiles - Urban Shared Latrines

Districts	District Level Wealth Categories: Urban					Total
	Poorest	Poor	Middle	Rich	Richest	
Overall	18.6	10.5	7.1	3.9	1.6	8.2
Bahawalpur	33.0	9.0	10.2	2.6	0.0	10.2
Bahawalnagar	13.5	14.1	14.3	10.4	3.5	11.1
RY Khan	16.7	3.6	1.6	.8	1.3	4.7
DG Khan	17.3	26.2	11.6	7.9	4.2	13.2
Layyah	35.2	25.3	.9	3.7	0.0	12.5
Muzaffargarh	51.3	15.3	26.3	26.9	2.8	21.0
Rajanpur	47.3	31.6	14.8	1.1	3.6	17.7
Faisalabad	22.8	15.0	12.0	5.5	1.2	11.3
Chiniot	27.5	11.8	13.9	6.1	12.3	13.8
Jhang	8.8	13.1	3.8	3.6	4.1	6.6
TT Singh	9.8	13.5	0.0	0.0	0.0	4.6
Gujranwala	9.3	4.3	3.2	1.1	.5	3.7
Gujrat	23.1	16.8	7.7	2.8	2.3	10.4
Hafizabad	14.7	10.5	14.0	6.0	4.9	9.8
Mandi Bahauddin	12.5	.8	0.0	1.3	1.1	3.0
Narowal	42.2	5.0	10.6	6.7	0.0	12.8
Sialkot	14.1	10.8	9.0	1.8	.8	7.3
Lahore	17.2	6.6	2.3	1.5	1.3	5.7
Kasur	26.6	17.1	12.8	9.3	0.0	13.2
Nankana Sahib	34.9	9.4	19.9	21.8	0.0	17.2
Sheikhupura	17.0	4.8	8.3	4.4	1.1	7.1
Multan	25.7	21.4	12.9	5.1	2.9	13.6
Khanewal	18.2	20.2	10.2	6.0	0.0	10.8
Lodhran	39.0	28.0	27.7	15.0	21.0	25.9
Vehari	14.1	3.1	6.5	0.0	0.0	4.7
Rawalpindi	6.0	2.7	.3	1.0	0.0	2.0
Attock	1.7	5.8	0.0	1.6	0.0	1.8
Chakwal	15.2	9.6	6.5	7.7	2.9	8.3
Jhelum	20.2	7.6	5.5	0.0	0.0	6.7
Sahiwal	15.7	13.9	8.5	1.6	2.1	8.4
Okara	17.6	10.5	11.7	1.6	1.8	8.5
Pakpattan	13.8	18.2	8.0	11.4	0.0	10.2
Sargodha	38.8	10.7	13.8	6.8	2.2	14.2
Bhakkar	15.5	22.5	17.8	16.4	4.3	15.2
Khushab	20.7	16.4	13.4	8.0	3.2	11.8
Mianwali	37.1	49.8	13.2	14.4	6.1	23.6

Table 39 District Wealth Quintiles Hand Washing Water and Soap

Areas	Poorest	Poor	Middle	Rich	Richest	Total
Bahawalpur	46.6	67.8	88.7	96.0	100.0	80.1
Bahawalnagar	60.9	74.3	94.0	96.9	99.7	85.3
RY Khan	67.3	81.9	92.4	97.7	99.8	87.9
DG Khan	65.5	74.6	84.4	92.7	96.5	82.9
Layyah	88.9	90.2	96.7	97.6	98.9	94.4
Muzaffargarh	83.1	89.0	93.1	96.0	99.0	92.3
Rajanpur	59.2	77.4	92.2	93.7	97.9	84.1
Faisalabad	88.2	96.6	98.5	98.3	99.4	96.4
Chiniot	79.5	91.9	95.5	99.1	99.8	93.2
Jhang	80.2	88.9	94.6	98.0	99.2	92.5
TT Singh	85.8	94.7	97.2	98.7	99.6	96.0
Gujranwala	86.3	93.8	94.9	98.4	98.3	94.4
Gujrat	89.0	94.4	96.2	98.6	96.9	95.7
Hafizabad	83.6	88.8	97.2	96.9	99.0	93.3
Mandi Bahauddin	78.1	90.5	95.8	98.8	98.0	92.4
Narowal	82.8	93.4	95.2	98.2	96.9	93.4
Sialkot	92.3	98.2	98.8	99.0	98.9	98.0
Lahore	90.8	95.1	95.3	97.9	98.3	96.6
Kasur	78.2	97.0	97.7	98.2	99.3	94.2
Nankana Sahib	83.4	94.2	94.4	99.8	99.6	94.3
Sheikhupura	81.3	88.5	93.7	97.2	97.3	91.9
Multan	73.9	90.8	98.5	99.5	99.7	92.5
Khanewal	76.4	91.5	95.9	99.0	99.3	92.8
Lodhran	59.6	77.0	88.2	94.1	100.0	83.9
Vehari	71.1	91.5	97.1	97.9	98.4	91.3
Rawalpindi	75.3	91.3	95.2	96.3	99.5	91.9
Attock	64.6	87.0	88.8	98.1	97.0	87.9
Chakwal	73.4	89.4	94.4	97.3	98.4	90.7
Jhelum	80.0	90.2	96.5	96.6	98.9	94.1
Sahiwal	72.6	95.7	96.9	98.5	100.0	92.9
Okara	71.1	91.9	98.0	99.6	97.0	92.2
Pakpattan	72.7	93.0	95.4	98.6	98.9	91.9
Sargodha	90.5	96.1	99.8	99.1	98.3	96.8
Bhakkar	78.2	83.1	94.8	95.0	99.5	90.1
Khushab	44.9	53.6	69.7	89.0	94.7	71.1
Mianwali	75.5	84.3	92.6	95.8	99.5	89.9

Table 40 District Wealth Quintiles Hand Washing Water and Soap-Rural

Areas	Poorest	Poor	Middle	Rich	Richest	Overall
Bahawalpur	43.2	59.7	75.9	87.8	97.3	72.8
Bahawalnagar	59.8	74.0	85.4	95.5	98.7	82.7
RY Khan	68.5	74.5	88.3	94.5	98.8	84.9
DG Khan	65.3	74.6	77.8	91.1	92.6	80.3
Layyah	87.8	89.2	96.8	94.7	100.0	93.7
Muzaffargarh	82.6	87.6	92.6	96.7	97.2	91.3
Rajanpur	56.2	75.9	88.1	95.3	95.5	82.2
Faisalabad	82.3	94.1	97.9	98.8	98.9	94.4
Chiniot	77.0	85.2	95.8	93.4	99.7	90.2
Jhang	79.3	86.0	92.9	97.2	98.8	90.9
TT Singh	83.4	95.0	97.3	98.2	100.0	94.8
Gujranwala	80.5	91.0	95.5	94.0	98.3	91.8
Gujrat	88.1	95.0	95.9	97.0	98.3	94.9
Hafizabad	79.2	85.2	95.5	93.2	97.9	90.2
Mandi Bahauddin	77.8	90.0	93.4	98.3	97.7	91.4
Narowal	81.7	90.8	94.1	98.2	97.5	92.5
Sialkot	91.3	97.7	98.0	98.6	100.0	97.1
Lahore	0.0	0.0	0.0	0.0	0.0	0.0
Kasur	75.1	92.9	98.6	99.0	100.0	93.1
Nankana Sahib	80.6	94.5	94.0	100.0	100.0	93.8
Sheikhupura	80.1	86.0	93.5	95.3	99.7	90.9
Multan	66.8	83.8	93.0	98.7	100.0	88.5
Khanewal	75.3	88.6	94.4	97.8	100.0	91.2
Lodhran	58.1	74.1	88.9	92.0	95.7	81.8
Vehari	67.5	90.5	94.5	97.0	99.2	89.7
Rawalpindi	65.1	86.2	90.2	93.9	97.6	86.6
Attock	61.1	81.9	91.0	93.4	96.4	84.7
Chakwal	71.0	89.0	92.9	95.9	97.0	89.1
Jhelum	79.6	87.7	94.4	94.7	98.8	91.0
Sahiwal	68.5	93.7	96.1	98.0	99.4	91.1
Okara	67.8	89.3	94.2	99.4	98.5	89.8
Pakpattan	70.5	89.1	96.8	97.3	100.0	90.7
Sargodha	89.1	95.6	97.1	99.7	99.0	96.1
Bhakkar	77.7	83.5	91.5	94.3	97.9	89.0
Khushab	45.0	51.9	62.9	70.8	93.7	64.9
Mianwali	73.1	82.2	91.8	92.7	99.8	87.9

Table 41 District Wealth Quintiles Hand Washing Water and Soap -Urban

Areas	Poorest	Poor	Middle	Rich	Richest	Overall
Bahawalpur	74.0	96.7	100.0	100.0	100.0	94.2
Bahawalnagar	76.6	98.7	100.0	100.0	100.0	95.1
RY Khan	87.3	100.0	100.0	100.0	100.0	97.5
DG Khan	77.5	90.5	96.7	100.0	100.0	93.0
Layyah	100.0	97.7	95.1	98.0	100.0	98.2
Muzaffargarh	85.9	97.2	97.5	100.0	100.0	96.1
Rajanpur	81.3	96.1	94.5	100.0	97.2	93.8
Faisalabad	94.8	99.8	97.3	98.5	100.0	98.1
Chiniot	100.0	97.2	100.0	100.0	100.0	99.4
Jhang	86.6	100.0	100.0	98.7	100.0	97.1
TT Singh	92.4	93.8	100.0	100.0	97.9	96.8
Gujranwala	91.9	93.8	97.4	98.9	98.6	96.1
Gujrat	88.5	97.6	97.6	100.0	92.9	95.3
Hafizabad	94.1	100.0	100.0	98.2	100.0	98.5
Mandi Bahauddin	80.7	100.0	100.0	95.7	100.0	95.3
Narowal	95.5	100.0	100.0	92.2	100.0	97.6
Sialkot	98.9	97.2	100.0	98.7	96.4	98.2
Lahore	90.8	95.1	95.3	97.9	98.3	95.5
Kasur	94.2	96.8	95.2	98.8	100.0	97.0
Nankana Sahib	90.5	94.9	98.8	97.5	100.0	96.4
Sheikhupura	82.2	91.4	97.0	93.3	100.0	92.8
Multan	92.4	97.7	98.9	99.4	100.0	97.7
Khanewal	91.0	97.9	98.0	98.5	100.0	97.1
Lodhran	70.7	100.0	100.0	100.0	100.0	94.2
Vehari	98.2	93.7	98.2	99.0	100.0	97.8
Rawalpindi	91.8	95.3	95.0	98.8	99.6	96.1
Attock	80.1	95.0	99.0	95.0	100.0	93.8
Chakwal	89.6	97.7	98.3	100.0	100.0	97.1
Jhelum	90.1	97.3	96.7	97.1	100.0	96.2
Sahiwal	100.0	95.2	100.0	100.0	100.0	99.0
Okara	89.5	99.0	98.5	96.6	97.2	96.2
Pakpattan	95.8	95.4	100.0	92.8	100.0	96.8
Sargodha	97.6	100.0	99.3	100.0	95.0	98.4
Bhakkar	86.9	98.4	100.0	100.0	100.0	97.1
Khushab	49.5	90.4	92.1	92.4	98.0	84.6
Mianwali	94.9	90.3	96.2	100.0	100.0	96.3

Table 42 Ladder of Safely Managed Sanitation- Urban

	Percentage using improved sanitation	Handwashing	Safe disposal in situ of excreta from on-site sanitation facilities	Piped to Sewerage Network	Safely Managed Sanitation]
URBAN	92.8	96.2	23.4	56.9	20.2
Bahawalpur	87.8	94.2	20.9	52.8	15.1
Bahawalnagar	83.1	95.1	39.9	23.7	33.0
RY Khan	97.9	97.5	13.0	83.3	12.2
DG Khan	94.7	93.0	46.9	17.5	38.2
Layyah	93.0	98.2	33.9	23.7	24.7
Muzaffargarh	74.7	96.1	48.1	5.0	36.9
Rajanpur	81.7	93.8	39.0	15.0	29.7
Faisalabad	95.4	98.1	7.8	80.4	7.0
Chiniot	82.0	99.4	32.9	30.8	29.8
Jhang	93.6	97.1	40.7	27.2	37.3
TT Singh	95.6	96.8	29.4	38.9	26.1
Gujranwala	98.4	96.1	28.7	43.5	25.4
Gujrat	97.8	95.3	60.4	18.6	52.9
Hafizabad	96.2	98.5	58.3	12.3	52.9
Mandi Bahauddin	96.4	95.3	65.3	5.2	61.8
Narowal	93.4	97.6	69.3	3.7	55.1
Sialkot	73.1	98.2	20.8	34.3	18.7
Lahore	96.4	95.5	7.3	84.1	6.3
Kasur	67.3	97.0	37.7	13.0	30.9
Nankana Sahib	86.3	96.4	24.2	36.3	17.2
Sheikhupura	99.4	92.8	19.5	50.0	15.9
Multan	85.3	97.7	3.5	79.0	2.7
Khanewal	74.6	97.1	22.4	45.4	18.4
Lodhran	82.3	94.2	12.8	65.4	7.6
Vehari	86.1	97.8	8.1	70.3	8.1
Rawalpindi	97.5	96.1	44.7	41.6	42.1
Attock	92.7	93.8	65.5	19.1	61.0
Chakwal	92.9	97.1	69.8	2.3	62.0
Jhelum	99.4	96.2	70.1	8.5	62.1
Sahiwal	98.7	99.0	12.5	80.4	11.4
Okara	92.9	96.2	15.3	69.7	12.2
Pakpattan	94.2	96.8	26.2	55.2	23.1
Sargodha	95.9	98.4	38.0	43.8	31.4
Bhakkar	97.3	97.1	52.6	38.1	44.9
Khushab	88.8	84.6	38.0	32.7	30.4
Mianwali	86.6	96.3	44.4	26.1	31.8

Table 43 Ladder of Safely Managed Sanitation- Rural

	Percentage using improved sanitation	Handwashing	Safe disposal in situ of excreta from on-site sanitation facilities	Piped to Sewerage Network	Safely Managed Sanitation]
RURAL	72.8	89.2	50.5	4.9	40.2
Bahawalpur	60.7	72.8	43.2	1.8	29.1
Bahawalnagar	66.0	82.7	50.8	1.0	39.8
RY Khan	68.9	84.9	47.6	7.5	37.2
DG Khan	53.5	80.3	35.8	1.4	25.7
Layyah	79.3	93.7	62.0	1.9	46.2
Muzaffargarh	64.3	91.3	42.7	1.0	28.3
Rajanpur	46.4	82.2	32.7	.7	22.4
Faisalabad	75.6	94.4	45.7	3.7	36.7
Chiniot	48.6	90.2	38.1	1.1	31.4
Jhang	59.9	90.9	44.3	.8	35.8
TT Singh	85.3	94.8	41.2	5.6	36.1
Gujranwala	97.2	91.8	36.8	24.6	32.9
Gujrat	92.3	94.9	73.2	3.5	64.7
Hafizabad	79.1	90.2	53.9	9.2	48.1
Mandi Bahauddin	74.8	91.4	56.0	2.0	48.1
Narowal	88.9	92.5	81.6	.3	70.5
Sialkot	85.9	97.1	55.8	2.6	49.3
Lahore					
Kasur	79.1	93.1	54.0	2.3	40.5
Nankana Sahib	82.6	93.8	56.1	3.5	45.7
Sheikhupura	93.6	90.9	49.0	12.9	40.4
Multan	46.2	88.5	24.2	13.8	16.9
Khanewal	70.1	91.2	50.7	3.0	41.0
Lodhran	58.9	81.8	46.6	2.5	32.5
Vehari	66.7	89.7	46.2	10.1	37.3
Rawalpindi	88.2	86.6	65.0	11.1	55.2
Attock	84.5	84.7	73.8	1.3	65.0
Chakwal	84.0	89.1	68.2	.7	58.1
Jhelum	88.7	91.0	68.8	2.8	58.2
Sahiwal	73.2	91.1	43.0	16.5	35.2
Okara	65.6	89.8	44.9	.8	36.8
Pakpattan	64.6	90.7	48.0	7.1	36.8
Sargodha	75.2	96.1	54.7	.8	42.2
Bhakkar	72.2	89.0	64.8	.4	46.3
Khushab	59.5	64.9	53.4	.5	35.1
Mianwali	81.8	87.9	70.5	3.3	52.8