

# Environmental Risk Factors

**WORLD HEALTH SURVEY**  
**SAUDI ARABIA (KSAWHS)**

**Published 2021**

## FOREWORD

This report takes the overall findings of 2019 World Health Survey of Saudi Arabia further into details specifically around environmental risk factors.

Within environmental risk factors we will be looking into two broad areas including use of tobacco in any form and household level factors such as air, water, sanitation.

Firstly, we have explored the use of tobacco by the individuals whether in the form of smoked tobacco, smokeless tobacco or electronic cigarettes. Smoking is one of the main risk factors for many diseases, death and disability. It has long-term effects on many body organs, leading to cancer, cardiovascular disease, respiratory disease and other health problems. Secondhand smoke also has a detrimental effect on health. We have looked into and provide key statistics around smoking frequency and average daily consumption, according to age, gender, nationality, marital status, education and region and identified demographics that are more at risk due to their high tobacco consumption habits.

Secondly, we looked into three key main areas at household level that are related to risk factors, including air pollution, drinking water and sanitation facilities. Household air pollution includes use of solid fuel for cooking and using incense. Household drinking water refers to source of drinking water and methods used to treat drinking water. And lastly, household sanitation refers to type of toilet facilities and their distribution by location.

We believe the report provides an important summary on the key environmental risk factors at both individual and household level in Saudi Arabia.

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# 1. SURVEY BACKGROUND

## 1.1 OBJECTIVES

A second round of WHS+ was implemented in 2019. The Saudi Arabian Ministry of Health (MoH) implemented the survey during 2019 in collaboration with the General Authority for Statistics (GASTAT) and the Saudi Health Council.

The main objective of the Kingdom of Saudi Arabia World Health Survey (KSAWHS 2019) is to provide up-to-date, timely and relevant information on SDGs health-related indicators and WHO indicators, framework programmatic indicators, and socio-demographic stratifies.

## 1.2 METHODOLOGY

The 2019 Kingdom of Saudi Arabia World Health Survey (KSAWHS 2019) was implemented by the MoH and designed to provide up-to-date and reliable

measurement of priority health-related indicators at national level by urban and rural residence, and for each of the 13 administrative areas. The Master Sample Frame (MSF) used for the 2019 KSAWHS was based on the Population and Housing Census of the Kingdom, which was conducted in 2010 by the General Authority of Statistics (GASTAT).

A nationally representative sample of completed interviews with 9,339 households was conducted from the 13 administrative regions according to population size. The KSAWHS 2019 followed a stratified three-stage sample design with a probability proportional to population size, as follows: sampling PSUs at the first stage, then a systematic sampling of households of a fixed size of eight households per PSU at the second stage, and at the third stage, an adult member of the household aged 15+ was selected using a random number generated by the tablet computer at the end of the household interview. A total of 8,912 individual interviews were conducted as a result of stage 3 selection.

All analyses were performed using the survey design and the normalized weights of the households and individuals, so that the results would be representative at the national level as well as the domain level.

Two questionnaires were used in this survey: household, and individual. The questionnaires were based on the WHO's World Health Survey (WHS) questionnaires and the Tunisian 2015 WHS questionnaires (4, 5). Survey indicators were mapped to the Sustainable Development Goals (SDGs) and the WHO Global Reference List of 100 Core Health Indicators, and the questionnaires were further adopted to cover further indicators to meet national priorities.

Field supervisors and interviewers were recruited based on the following criteria: 1-Being a physician or nurse (i.e. having a bachelor's degree or above in medicine or nursing); 2-Being proficient in English and Arabic; 3-Having knowledge of the dialects of the region where they will work.

The household questionnaire was administered to the head of the household or the most knowledgeable person of the house if the head of the household was not present at the time of the interview.

Use of tablets/CAPI helped reduce errors and prevent missing data, remove the manual data entry steps and allow for timely monitoring of the quality of the data.

## 1.3 REPORT INDICATORS

### Statistically Significant Differences

Wherever applicable, we have indicated the measures that are significantly different from overall result.

 Significantly above overall

 Significantly below overall

Significance is measured on a 95% level of confidence for sample bases of  $\geq 30$ .

### Regional Aggregates

We have clubbed regions into mega regions for further analysis as well as a summary information on a broader basis. As such below categorization was used.

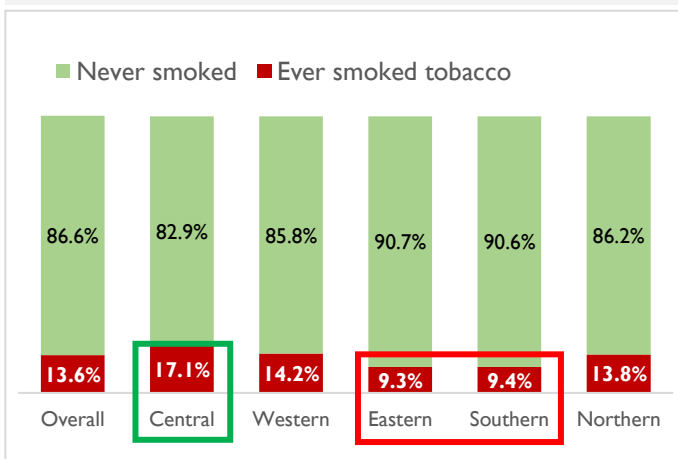
- Central includes Riyadh and Qassim
- Western includes Makkah and Madina
- Eastern includes Eastern Provinces
- Southern includes Asir, Jazan, Najran and Bahah
- Northern includes Tabuk, Hail, Jawf and Northern Borders

## 2. INDIVIDUAL LEVEL RISK FACTORS

### 2.1 TOBACCO USAGE

Majority of 87% respondents mentioned that they have never smoked a tobacco (excluding smokeless tobacco). Tobacco smoking usage is significantly higher in Central region at 17.1% compared to the overall average of 13.6% in Saudi Arabia. And the usage is significantly lower in Eastern and Southern regions at below 10%.

Exhibit 1: Tobacco Consumption by Region



### 2.2 EVER SMOKED BY DEMOGRAPHICS

Certain demographic segments have extremely high incidence of ever smoking when compared to the overall average. Some with very high incidence of 20% and above is separated/divorced, Masters or Doctorate level education, Egyptians, Pakistanis, Filipino, Employed and across certain occupations.

Table 2.1		Ever Smoked %
<b>Overall</b>		13.7%
<b>Marital status</b>		
Never married		14.0%
Currently married		13.5%
Separated/ Divorced		23.9%
Widowed		4.5%
<b>Highest educational level</b>		
Cannot read and write		5.1%
Can read and write		7.6%
Less than primary		11.2%
Primary completed		14.7%
Intermediate completed		8.4%
Secondary completed		11.9%
Diploma/formation completed		19.3%
Univeristy completed		16.2%
Masters/high diploma completed		20.4%
Doctorate completed		23.6%
<b>Nationality</b>		
Saudi		13.0%
Indian		16.5%
Bangladeshi		10.4%
Yemeni		14.5%
Egyptian		22.4%
Syrian		13.6%
Pakistani		33.3%
Filipino		26.7%
Other		17.3%
<b>Employment status</b>		
Yes		22.3%
No		8.6%
Never worked before		2.9%
<b>Main occupation-main job</b>		
Managers and business managers		27.4%
Specialists in scientific, technical occupations		16.9%
Technicians in scientific, technical occupations		21.3%
Clerical occupations		23.8%
Basic engineering professions		30.8%
Sales occupations		22.3%
Service occupations		18.1%
Agriculture, hunting and animal		25.4%
Industrial/chemical processes		28.6%
Armed forces/military occupation		24.8%
Other		13.5%

Higher than overall average Lower than overall average

## 2.3 TOBACCO FORMS

Amongst tobacco smokers, Manufactured cigarette is the main form of tobacco being used followed by pipefuls of tobacco. Incidence of other forms are low in usage such as 14% use Cigars once or more per day, 11% use hand-rolled cigarettes once ore more per day and 6% mentioned using Water pipe.

**Table 2.2**  
**AT OVERALL LEVEL**

### DAILY USE OF DIFFERENT TOBACCO FORMS

	Do not use	Once a day	More than once a day
Manufactured cigarettes	18%	39%	43%
Hand-rolled cigarettes	89%	7%	4%
Water pipe	94%	3%	3%
Cigars, cheroots, cigarillos, bidis	86%	7%	7%
Pipefuls of tobacco	61%	22%	17%
Other	96%	2%	2%

### Tobacco form use by region

As shown in Table 2.3, amongst the Tobacco smokers, we can see the higher than average use of Manufactured Cigarettes of once or more than once is in Central, Southern and Northern regions. Similarly, differences across regions can be seen by the type of tobacco form used on a daily basis. Highest usage of tobacco form after manufactured cigarettes, is that of Pipefuls of tobacco which is highest in Central region.

### Tobacco form use by age

As shown in Table 2.4, amongst the Tobacco smokers, highest usage of manufactured cigarettes is amongst 41-50 year old. On the other hand, use of pipefuls of tobacco is higher amongst younger age groups of 40 or less.

### DAILY USE OF TOBACCO FORMS ACROSS AGE

Table 2.4. Tobacco forms across Age groups	Less than 31	31-40 year	41-50 year	51 or above years
Manufactured cigarettes	79%	83%	86%	82%
Hand-rolled cigarettes	9%	13%	11%	7%
Water pipe	5%	6%	7%	6%
Cigars, cheroots, cigarillos, bidis	9%	16%	15%	11%
Pipefuls of tobacco	44%	40%	32%	29%
Others	4%	3%	3%	10%

## 2.4 SMOKELESS TOBACCO

Smokeless tobacco products are placed in the mouth and nose and include chewing tobacco, snuff and answer. Incidence of smokeless tobacco is very small with 1.4% respondents mentioning they have ever used smokeless tobacco and only 0.7% say they either use it daily or occasionally. Sample base of smokeless tobacco users is very small to carry out any further statistical analysis.

## 2.5 ELECTRONIC CIGARETTE

Electronic cigarette or E-cigarettes are battery-powered devices that usually contain liquid nicotine, and don't produce smoke. Their Incidence is very small with 1.4% respondents mentioning they have ever used e-cigarette and only 0.5% mentioned they either use it daily or occasionally. Sample base of e-cigarette users is very small to carry out any further statistical analysis.

### DAILY USE OF DIFFERENT TOBACCO FORMS ACROSS REGIONS

Table 2.3	Overall	Central	Western	Eastern	Southern	Northern
Manufactured cigarettes	82%	90%	78%	52%	86%	89%
Hand-rolled cigarettes	11%	14%	8%	5%	14%	6%
Water pipe	6%	7%	5%	3%	3%	7%
Cigars, cheroots, cigarillos, bidis	14%	16%	11%	18%	15%	6%
Pipefuls of tobacco	39%	49%	35%	35%	28%	23%
Other	4%	1%	5%	13%	3%	4%

 Higher than overall average  Lower than overall average

## 3. HOUSEHOLD LEVEL RISK FACTORS

### 3.1 INDOOR AIR POLLUTION

All households in Saudi Arabia use clean fuel for cooking and almost all (99.7%) cook their food at home. However, in 92% of households, someone smokes in the house (32% daily and 42% monthly). The use of incense occurs in 23% of households.

6 out of 10 households heat their house when it is cold where majority of 84% households use electricity for the heating.

#### Incense Use by Region

Table 3.1 shows the daily use of incense by region and it is significantly above average in Southern region, while 'never' use is significantly higher in Western and Northern regions.

	Overall	Central	Western	Eastern	Southern	Northern
Daily	32.4%	33.4%	24.7%	31.1%	46.1%	35.2%
Weekly	41.7%	43.4%	43.2%	39.2%	37.1%	41.8%
Monthly	11.4%	13.4%	12.9%	12.1%	5.3%	8.7%
Less often	6.3%	4.1%	9.9%	8.7%	2.7%	3.6%
Never	8.2%	5.7%	9.4%	8.9%	8.8%	10.7%

Significantly higher than overall

#### Smoking Inside House by Region

Table 3.2 shows that smoking cigarette, waterpipe etc inside the house on a daily basis is significantly higher in the Northern region. Overall, 18.6% of households mentioned that someone in their household smokes inside the house on a daily basis.

	Overall	Central	Western	Eastern	Southern	Northern
Daily	18.6%	20.0%	18.9%	18.6%	12.5%	23.9%
Weekly	2.9%	3.9%	3.2%	2.3%	1.6%	1.7%
Monthly	0.7%	0.3%	1.5%	0.5%	0.3%	0.1%
Less often	1.0%	1.0%	1.0%	1.3%	0.8%	0.6%
Never	76.7%	74.7%	75.4%	77.3%	84.8%	73.6%

Significantly higher than overall

Table 3.3 shows that incense use is significantly higher in Villa or Story in a villa. Smoking inside the house by someone on a daily basis is significantly higher for Apartment type of house.

	Incense Use		Smoking Inside	
	Daily	Weekly	Daily	Weekly
Overall	32.4%	41.7%	18.6%	2.9%
Traditional house	32.0%	34.2%	14.3%	2.0%
Villa	42.7%	44.3%	18.4%	2.7%
Story in villa	38.5%	48.8%	12.3%	3.5%
Apartment	28.5%	41.9%	20.7%	3.1%
Other, specify	20.4%	15.5%	16.5%	3.9%



## 3.2 DRINKING WATER

Access to safe and clean drinking water and sanitation is a human right and is essential for good public health. Contaminated water and poor sanitation lead to the transmission of diseases such as cholera, diarrhea and typhoid. Improved drinking water sources are used by 99% of households. The percentage of households with basic water services is 93%, limited drinking water services 6% and unimproved water sources 1%.

There are clear differences in the sources of drinking water across Urban and Rural dwellings. Use of piped into dwelling is significantly higher for Urban dwellings as a drinking source of water, while Rural is significantly higher for Bottled Water and Water tanker trucks.

	URBAN	RURAL
Piped into dwelling	45.0	21.0
Bottled water	44.2	59.0
Water tanker trucks	8.1	15.1
Other improved sources	1.9	4.9
Other (unimproved)	0.8	0.0

### Sources of drinking water by region

As shown in Table 3.5, clearly there are regional differences in terms of sources of drinking water. Central and Northern are significantly higher than overall in piped dwelling as well as water tankers. Bottled water usage is higher than overall average in Western, Eastern and Southern regions.

	Piped into dwelling	Bottled water	Water tanker trucks
Overall	42%	46%	9%
Central	52%	32%	13%
Western	43%	51%	4%
Eastern	33%	55%	11%
Southern	18%	72%	9%
Northern	55%	20%	13%

 Significantly higher than overall

## 3.3 SANITATION FACILITIES

Improved sanitation services are used by nearly 100% of households. Ninety- six percent of household have basic sanitation services while 4% have limited sanitation services.

In Saudi Arabia, 99.8% of households use improved sanitation facilities. Flush toilets that flush to piped sewer water are the most common type (77% in urban households and 46% in rural households). Use of flush to septic tanks is higher in Rural areas compared to Urban.

	URBAN	RURAL
Flush to piped sewer system	77.3	45.6
Flush to septic tank	21.7	50.1
Others	1	4.3

When asked whether the household shares toilet facilities with other households, overall 4.3% mentioned they do share. And this sharing is significantly higher than overall average in Southern region (9.8%).

### Sanitation facilities by region

As shown in Table 3.7, Flush to piped sewer system is significantly higher in Central, Western and Eastern regions. Flush to septic tank is significantly higher for Southern and Northern regions. Incidence of other methods such as flush to unknown, pit latrine, bucket etc) is very low at 1% overall.

	Flush to piped sewer system	Flush to septic tank	Others
Overall	73%	26%	1%
Central	78%	22%	0%
Western	81%	17%	2%
Eastern	95%	5%	0%
Southern	37%	60%	3%
Northern	55%	42%	2%

# LIST OF TABLES

For more information on environmental risk factors, see the following tables:

Table 1: Use of tobacco

Table 2: Use of smokeless tobacco

Table 3: Use of electronic cigarettes

Table 4: Household air pollution

Table 5: Household drinking water

Table 6: Household sanitation facilities

**Table 1: Use of tobacco**  
**Tobacco use, percent distribution by smoking frequency and average daily consumption, according to age, sex, nationality, residence, marital status, education, wealth and region [Saudi Arabia, 2019].**

BACKGROUND CHARACTERISTIC	TOBACCO CONSUMPTION			NEVER SMOKER <sub>2</sub>	TOTAL	NUMBER OF RESPONDENTS	MEDIAN DAILY TOBACCO CONSUMPTION	
	DAILY	OCCASIONAL <sub>1</sub>	NOT CURRENT				MEDIAN	NUMBER OF RESPONDENTS <sub>3</sub>
<b>Age</b>								
15-29	6.9	1.8	1.9	89.4	100.0	3,353	4	288
30-44	12.2	2.8	1.7	83.3	100.0	3,755	3	551
45-59	10.1	1.9	2.2	85.8	100.0	1,256	5	146
60-69	6.2	0.8	5.3	87.7	100.0	362	5	23
70-79	1.6	1.7	3.5	93.1	100.0	135	2	4
80+	0.8	3.2	0.0	96.0	100.0	52	50	2
<b>Sex</b>								
Male	17.1	3.3	2.9	76.7	100.0	4,694	4	933
Female	0.9	1.0	1.0	97.1	100.0	4,218	3	79
<b>Nationality</b>								
Saudi	9.0	2.2	1.7	87.0	100.0	7,777	4	850
Non-Saudi	12.3	2.3	3.6	81.8	100.0	1,135	3	165
<b>Residence</b>								
Urban	9.8	2.4	1.8	86.0	100.0	7,687	4	913
Rural	7.2	1.3	3.1	88.3	100.0	1,225	4	102
<b>Marital Status</b>								
Never married	9.5	2.8	1.6	86.1	100.0	2,250	4	272
Currently married	9.3	2.0	2.2	86.5	100.0	5,982	4	658
Formerly married	10.2	2.7	1.3	85.8	100.0	680	4	85
<b>Education</b>								
No formal education	3.7	0.8	1.1	94.4	100.0	490	8	21
Less than secondary school	7.3	0.8	2.3	89.6	100.0	1,338	5	101
Secondary school	9.7	1.4	1.8	87.1	100.0	3,449	5	377
More than secondary school	10.8	3.7	2.2	83.4	100.0	3,635	3	516
<b>Wealth Quintile</b>								
Lowest	11.7	1.6	1.7	84.9	100.0	2,169	5	283
Second	9.8	1.8	1.4	87.0	100.0	1,918	3	215
Middle	9.9	2.1	2.6	85.4	100.0	1,694	5	198
Fourth	7.1	2.2	2.2	88.5	100.0	1,626	4	148
Highest	7.7	3.8	2.1	86.4	100.0	1,505	3	171
<b>Region</b>								
Riyadh	13.2	3.5	2.0	81.3	100.0	2,345	3	389
Makkah	9.2	2.9	3.5	84.4	100.0	2,257	8	263
Madinah	7.2	1.6	0.9	90.3	100.0	664	10	57
Qasim	3.5	0.4	2.8	93.3	100.0	364	14	14
Eastern Province	6.6	1.6	1.1	90.7	100.0	1,149	4	84
Asir	8.4	0.9	0.9	89.7	100.0	644	2	59
Tabuk	11.0	1.1	0.6	87.3	100.0	300	1	36
Hail	12.6	0.2	2.4	84.8	100.0	179	1	23
Northern Borders	8.2	1.4	0.9	89.5	100.0	87	26	8
Jizan	7.4	1.0	1.1	90.5	100.0	410	5	34
Najran	1.2	2.3	1.3	95.2	100.0	194	15	7
Bahah	9.6	0.1	1.4	89.0	100.0	153	6	15
Jawf	14.6	1.2	0.3	83.9	100.0	165	15	26
<b>Total</b>	<b>9.4</b>	<b>2.2</b>	<b>2.0</b>	<b>86.4</b>	<b>100.0</b>	<b>8,912</b>	<b>4</b>	<b>1,015</b>

1. Occasional refers to less than daily use
2. Includes categories missing, "I do not know" and "refused"
3. Excludes respondents that reported "I do not know" or zero units

**Table 2: Use of smokeless tobacco**  
**Smokeless tobacco use, percentage distribution by frequency of use and average daily consumption, according to age, sex, nationality, residence, marital status, education, wealth and region [Saudi Arabia, 2019].**

BACKGROUND CHARACTERISTIC	SMOKELESS TOBACCO CONSUMPTION			NEVER USED <sup>2</sup>	TOTAL	NUMBER OF RESPONDENTS	MEDIAN DAILY TOBACCO CONSUMPTION	
	DAILY	OCCASIONAL <sup>1</sup>	NOT CURRENT				MEDIAN	NUMBER OF RESPONDENTS <sup>3</sup>
<b>Age</b>								
15-29	0.1	0.4	0.8	98.8	100.0	3,353	3	5
30-44	0.8	0.3	0.7	98.2	100.0	3,755	1	20
45-59	0.3	0.3	0.4	99.0	100.0	1,256	2	4
60-69	0.3	0.0	1.7	98.1	100.0	362	1	1
70-79	0.0	0.0	0.0	100.0	100.0	135	0	0
80+	0.0	0.0	0.0	100.0	100.0	52	0	0
<b>Sex</b>								
Male	0.8	0.5	1.2	97.6	100.0	4,694	1	30
Female	0.0	0.1	0.2	99.7	100.0	4,218	1	0
<b>Nationality</b>								
Saudi	0.3	0.3	0.5	99.0	100.0	7,777	1	19
Non-Saudi	1.0	0.6	2.5	95.8	100.0	1,135	1	11
<b>Residence</b>								
Urban	0.4	0.3	0.6	98.6	100.0	7,687	1	25
Rural	0.2	0.2	1.4	98.2	100.0	1,225	1	5
<b>Marital Status</b>								
Never married	0.3	0.5	1.0	98.3	100.0	2,250	2	2
Currently married	0.4	0.2	0.5	98.9	100.0	5,982	1	19
Formerly married	0.7	0.7	1.6	97.0	100.0	680	1	8
<b>Education</b>								
No formal education	0.4	0.8	1.2	97.6	100.0	490	1	5
Less than secondary school	0.4	0.1	0.8	98.7	100.0	1,338	2	2
Secondary school	0.4	0.4	0.7	98.5	100.0	3,449	2	13
More than secondary school	0.5	0.2	0.7	98.7	100.0	3,635	1	10
<b>Wealth Quintile</b>								
Lowest	0.8	0.5	0.7	97.9	100.0	2,169	1	15
Second	0.2	0.1	1.2	98.5	100.0	1,918	2	2
Middle	0.6	0.5	0.6	98.2	100.0	1,694	1	9
Fourth	0.2	0.3	0.8	98.7	100.0	1,626	3	3
Highest	0.0	0.0	0.1	99.8	100.0	1,505	17	1
<b>Region</b>								
Riyadh	0.2	0.4	1.1	98.3	100.0	2,345	1	9
Makkah	0.3	0.4	0.7	98.5	100.0	2,257	1	3
Madinah	0.8	0.0	1.4	97.8	100.0	664	7	2
Qasim	0.0	0.0	0.0	100.0	100.0	364	0	0
Eastern Province	0.1	0.1	0.0	99.8	100.0	1,149	0	0
Asir	1.5	0.8	0.7	97.0	100.0	644	1	8
Tabuk	0.8	0.2	0.6	98.4	100.0	300	3	3
Hail	0.3	0.0	0.0	99.7	100.0	179	0	0
Northern Borders	0.0	0.4	1.6	98.0	100.0	87	1	0
Jizan	1.2	0.2	1.0	97.6	100.0	410	1	4
Najran	0.0	0.2	0.5	99.3	100.0	194	2	0
Bahah	0.0	0.0	0.0	100.0	100.0	153	0	0
Jawf	0.0	0.0	0.0	100.0	100.0	165	0	0
<b>Total</b>	<b>0.4</b>	<b>0.3</b>	<b>0.7</b>	<b>98.6</b>	<b>100.0</b>	<b>8,912</b>	<b>1</b>	<b>30</b>

1. Occasional refers to less than daily use
2. Includes categories missing, "I do not know" and "refused"
3. Excludes respondents that reported "I do not know" or zero units

Table 3: Use of electronic cigarettes

Electronic cigarette use and percentage distribution by frequency of use, according to age, sex, nationality, residence, marital status, education, wealth and region [Saudi Arabia, 2019].

BACKGROUND CHARACTERISTIC	ELECTRONIC CIGARETTE CONSUMPTION			NEVER USE D <sub>2</sub>	TOTAL	NUMBER OF RESPONDENTS
	DAILY	OCCASIONAL <sub>1</sub>	NOT CURRENT			
<b>Age</b>						
15-29	0.2	0.4	0.7	98.7	100.0	3,353
30-44	0.2	0.4	1.3	98.1	100.0	3,755
45-59	0.1	0.0	0.5	99.3	100.0	1,256
60-69	0.0	0.0	0.0	100.0	100.0	362
70-79	0.0	0.0	0.0	100.0	100.0	135
80+	0.0	0.0	0.0	100.0	100.0	52
<b>Sex</b>						
Male	0.3	0.4	1.4	97.8	100.0	4,694
Female	0.0	0.3	0.2	99.5	100.0	4,218
<b>Nationality</b>						
Saudi	0.2	0.4	0.8	98.6	100.0	7,777
Non-Saudi	0.1	0.0	1.3	98.6	100.0	1,135
<b>Residence</b>						
Urban	0.2	0.4	0.9	98.6	100.0	7,687
Rural	0.1	0.0	0.9	99.0	100.0	1,225
<b>Marital Status</b>						
Never married	0.2	0.5	1.0	98.2	100.0	2,250
Currently married	0.1	0.2	0.8	98.8	100.0	5,982
Formerly married	0.3	1.0	0.6	98.2	100.0	680
<b>Education</b>						
No formal education	0.0	0.0	0.0	100.0	100.0	490
Less than secondary school	0.0	0.0	0.3	99.7	100.0	1,338
Secondary school	0.3	0.4	0.6	98.7	100.0	3,449
More than secondary school	0.2	0.5	1.4	97.9	100.0	3,635
<b>Wealth Quintile</b>						
Lowest	0.2	0.3	0.6	99.0	100.0	2,169
Second	0.2	0.3	0.6	98.9	100.0	1,918
Middle	0.3	0.5	1.6	97.7	100.0	1,694
Fourth	0.2	0.1	1.1	98.5	100.0	1,626
Highest	0.0	0.5	0.6	98.8	100.0	1,505
<b>Region</b>						
Riyadh	0.0	0.1	1.3	98.5	100.0	2,345
Makkah	0.1	1.0	1.4	97.5	100.0	2,257
Madinah	0.2	0.0	0.8	99.0	100.0	664
Qasim	0.1	0.5	0.2	99.2	100.0	364
Eastern Province	0.6	0.2	0.3	98.8	100.0	1,149
Asir	0.3	0.1	0.3	99.3	100.0	644
Tabuk	0.0	0.0	0.3	99.7	100.0	300
Hail	0.5	0.0	0.0	99.5	100.0	179
Northern Borders	0.0	0.0	1.2	98.8	100.0	87
Jizan	0.0	0.0	0.1	99.9	100.0	410
Najran	0.0	0.0	0.0	100.0	100.0	194
Bahah	0.0	0.0	0.0	100.0	100.0	153
Jawf	0.0	0.0	0.0	100.0	100.0	165
<b>Total</b>	<b>0.2</b>	<b>0.3</b>	<b>0.9</b>	<b>98.6</b>	<b>100.0</b>	<b>8,912</b>

Table 4: Household air pollution

Percentage distribution of households using solid fuel for cooking and percentage distribution by frequency of smoking and using incense in the home, according to residence and wealth [Saudi Arabia, 2019].

HOUSING CHARACTERISTIC	RESIDENCE		WEALTH QUINTILE					TOTAL
	URBAN	RURAL	LOWEST	SECOND	MIDDLE	FOURTH	HIGHEST	
<b>Cooking fuel</b>								
Gas	83.8	91.6	86.2	85.4	84.1	85.2	82.8	84.9
Electricity	16.1	8.2	13.7	14.6	15.7	14.6	16.9	15.0
Kerosene	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Coal/Charcoal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.1	0.1	0.1	0.0	0.1	0.3	0.2	0.1
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage using solid fuel for cooking <sup>1</sup>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentage using clean fuel for cooking <sup>2</sup>	99.9	99.8	99.9	100.0	99.9	99.7	99.8	99.9
<b>Place for cooking</b>								
In the house	99.6	99.9	99.3	100.0	99.8	99.7	99.6	99.7
In a separate building	0.3	0.0	0.2	0.0	0.2	0.3	0.4	0.2
Outdoors	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Other	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.1
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Frequency of smoking in the home</b>								
Daily	31.5	38.0	21.3	29.2	35.8	35.7	45.0	32.4
Weekly	41.5	42.5	36.8	43.0	42.3	44.4	43.4	41.7
Monthly	12.0	8.1	12.2	13.4	11.6	12.0	6.8	11.4
Less often than once a month	6.4	5.7	8.6	8.2	5.3	4.8	3.3	6.3
Never	8.6	5.7	21.1	6.1	4.9	3.1	1.4	8.2
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Frequency of using incense in the home</b>								
Daily	19.4	14.1	19.2	18.2	17.3	16.7	22.0	18.6
Weekly	3.1	2.0	2.3	2.5	4.0	2.3	3.8	2.9
Monthly	0.8	0.2	0.5	0.9	0.5	0.9	0.8	0.7
Less often than once a month	1.0	1.1	1.0	1.1	1.3	0.8	0.7	1.0
Never	75.8	82.6	77.0	77.2	77.0	79.3	72.7	76.7
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of households	8,027	1,312	2,266	2,014	1,784	1,699	1,575	9,339

Includes coal/charcoal  
 •Includes gas and electricity

Table 5: Household drinking water

Percentage distribution of households by source of drinking water, percentage using various methods to treat drinking water and percentage using an appropriate treatment method, according to residence and wealth [Saudi Arabia, 2019].

CHARACTERISTIC	RESIDENCE		WEALTH QUINTILE					TOTAL
	URBAN	RURAL	LOWEST	SECOND	MIDDLE	FOURTH	HIGHEST	
<b>Source of drinking water</b>								
Improved source								
Piped into dwelling	45.0	21.0	37.4	37.7	38.5	42.9	55.1	41.6
Piped into yard/plot	0.4	0.2	0.9	0.2	0.3	0.1	0.0	0.4
Public tap/standpipe	0.9	3.4	0.7	0.9	1.5	2.8	0.6	1.3
Tubewell/borehole	0.1	0.5	0.5	0.0	0.0	0.0	0.1	0.1
Protected well	0.2	0.8	0.7	0.3	0.3	0.1	0.0	0.3
Protected spring	0.3	0.0	0.1	0.1	0.2	0.7	0.2	0.3
Bottled water	44.2	59.0	46.7	50.0	48.9	45.7	38.9	46.3
Water tanker trucks	8.1	15.1	12.9	10.0	9.0	7.1	4.5	9.1
Rainwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other (unimproved)	0.8	0.0	0.1	0.9	1.3	0.6	0.7	0.7
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage with improved drinking water	99.2	100.0	99.9	99.1	98.7	99.4	99.3	99.3
<b>Water treatment method<sup>1</sup></b>								
Boil	3.2	2.3	1.5	2.6	3.8	3.9	4.1	3.0
Add bleach/chlorine	0.7	2.0	0.9	0.5	1.0	0.9	1.0	0.9
Strain through a cloth	0.3	0.5	0.4	0.4	0.2	0.3	0.5	0.3
Use water filter (ceramic, sand, composite)	21.5	12.9	12.6	19.1	17.9	23.5	32.2	20.3
Solar disinfection	0.2	0.0	0.2	0.2	0.2	0.1	0.1	0.2
Let it stand and settle	0.3	0.5	0.4	0.1	0.4	0.2	0.5	0.3
Other	0.6	0.6	0.8	0.7	0.5	0.2	0.5	0.6
Percentage using an appropriate treatment method <sup>2</sup>	23.9	14.5	13.7	21.0	20.9	26.4	35.1	22.5
Percentage with basic drinking water services <sup>3</sup>	94.2	86.1	93.5	93.1	92.4	90.6	95.6	93.0
<b>Percentage with limited drinking water services<sup>4</sup></b>	5.0	13.9	6.4	6.1	6.3	8.8	3.8	6.3
Number of households	8,027	1,312	2,266	2,014	1,784	1,699	1,575	9,339

1. For households that reported using any source of drinking water except bottled water and that reported using a method to make drinking water safe. Households may report multiple treatment methods, so the sum of treatment methods may exceed 100%
2. Appropriate water treatment methods include boiling, filtering and solar disinfection
3. Defined as drinking water from an improved source provided water is on the premises (NOTE: this excludes drinking water that is not on the premises but for which collection time does not exceed 30 minutes)
4. Defined as drinking water from an improved source that is not on the premises (NOTE: this includes drinking water that is not on the premises but for which collection time does not exceed 30 minutes)

**Table 6: Household sanitation facilities**  
**Percentage distribution of household by type of toilet/latrine facilities and percentage distribution with a toilet/latrine facility by location of the facility, according to residence [Saudi Arabia, 2019].**

TYPE OF TOILET/ LATRINE FACILITY	RESIDENCE		WEALTH QUINTILE					TOTAL
	URBAN	RURAL	LOWEST	SECOND	MIDDLE	FOURTH	HIGHEST	
<b>Improved sanitation facility</b>								
Flush to piped sewer system	77.3	45.6	61.5	65.9	74.6	82.6	85.6	72.9
Flush to septic tank	21.7	50.1	35.0	32.8	24.4	16.7	14.4	25.7
Flush to pit latrine	0.7	2.2	2.9	0.6	0.5	0.0	0.0	0.9
Flush to unknown	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1
Ventilated improved pit (VIP) latrine	0.0	0.8	0.2	0.3	0.1	0.0	0.0	0.1
Pit latrine with slab	0.0	0.9	0.1	0.2	0.4	0.1	0.0	0.2
<b>Unimproved sanitation facility</b>								
Flush to somewhere else	0.2	0.2	0.2	0.2	0.0	0.4	0.0	0.2
Bucket	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage with improved sanitation facility	99.8	99.7	99.7	99.8	100.0	99.5	100.0	99.8
Percentage with basic sanitation services <sup>1</sup>	96.0	92.3	92.6	95.7	97.4	96.7	95.8	95.5
Percentage with limited sanitation services <sup>2</sup>	3.8	7.5	7.2	4.1	2.6	2.8	4.2	4.3
Number of households	8,027	1,312	2,266	2,014	1,784	1,699	1,575	9,339

1. Defined as use of improved facilities that are not shared with other households  
2. Defined as use of improved facilities that are shared by two or more households





وزارة الصحة  
Ministry of Health