

# KENYA - Air Pollution and its effect on mortality and pregnancy outcomes in Nairobi's slums, na

**African Population and Health Research Center - APHRC**

Report generated on: November 16, 2020

Visit our data catalog at: <http://microdataportal.aphrc.org/index.php>

## Overview

### Identification

#### ID NUMBER

DDI-KEN-APHRC-AIRPOLLUTION-2014-v01.

### Version

#### VERSION DESCRIPTION

#### PRODUCTION DATE

2020-10-05

#### NOTES

na

## Overview

#### ABSTRACT

Air pollution (both outdoor and indoor) is an important public health challenge especially in the developing world where legislation on emissions control is either weak or non-existent. With these countries preparing for industrial take off, outdoor air pollution will continue to remain important as it concerns the health consequences, owing to possibly higher levels of emissions. In these countries, majority of households rely on biomass derived fuels for cooking and heating that have been classified as highly polluting and have been shown to have deleterious effects on human health. Studies have documented the negative effects of both outdoor and indoor air pollution on health; however, there have been very few studies in Africa. The objectives of this study are to assess the perceptions and attitudes of people living in two informal settlements in Nairobi regarding their exposure to air pollution; estimate the effect of indoor air pollution on pregnancy outcomes and model the effect of air pollution on mortality in the two settlements. The study shall use mixed methods approach where a qualitative study will be done to look at the perceptions and attitudes of residents regarding air pollution. In addition to this, a panel study measuring levels of outdoor air pollutants shall be done. This will be done in such a way that seasonal variations are accounted for. To assess the effect of air pollution on pregnancy outcomes, a follow up study of pregnant women will be done and measurements of indoor air pollution levels will be done in their homes. The study is expected to take 12 months.

#### UNITS OF ANALYSIS

The households.

## Coverage

#### GEOGRAPHIC COVERAGE

Nairobi's slums (Korogocho and Viwandani)

#### UNIVERSE

Indoor air data covered households with pregnant women while outdoor air data was collected from various villages in each of the slum

## Producers and Sponsors

#### PRIMARY INVESTIGATOR(S)

Name	Affiliation
------	-------------

Name	Affiliation
African Population and Health Research Center	APHRC

## OTHER PRODUCER(S)

Name	Affiliation	Role
Thaddaeus Egondi	African Population and Health Research Center	To oversee the overall activities of the proposed project and ensure the success of the whole project
Kanyiva Muindi	African Population and Health Research Center	Conducting the indoor air monitoring alongside the research team in the field. In addition, I will be in charge of quality control which involves visiting the teams and randomly spot-checking their work to ensure it is done ethically and correctly.

## FUNDING

Name	Abbreviation	Role
African Population and Health Research Center		
Umea University		

## Metadata Production

## METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
African Population and Health Research Center	APHRC		Documentation of the DDI

## DATE OF METADATA PRODUCTION

2020-10-05

## DDI DOCUMENT VERSION

Version 1.0 (October 2020)

## DDI DOCUMENT ID

DDI-KEN-APHRC-AIRPOLLUTION-2014-v01.

## Sampling

### Sampling Procedure

---

The qualitative study involved a total of eight focus group discussions with men and women living in Korogocho and Viwandani. In addition to this, outdoor air pollution was measured as panel data to ensure seasonal variations are accounted for. This part of the study involved assessment by the measurement team who were carrying the measuring equipment. The study on indoor air pollution and pregnancy outcomes was a prospective study of a cohort of pregnant women recruited during their first or early second trimester. They were followed up until they delivered and the birth weight of the newborn was taken. Measurement of indoor air pollution levels was done and other information on fuel and stove types used in the household collected. The study was nested on an ongoing intervention study following up 600 pregnant women and providing nutritional counseling pre- and post-pregnancy for optimal child health.

### Deviations from Sample Design

---

na

### Response Rate

---

na

### Weighting

---

na

# Questionnaires

## Overview

---

Qualitative guide into the enquiry of people's perceptions of exposure to air pollution

1. Understand the perceptions, attitudes and beliefs of individuals regarding air pollution.
2. Assess the communities' understanding of the health risks associated with air pollution.

Questionnaire on IAP and pregnancy outcomes

## Data Collection

### Data Collection Dates

---

Start	End	Cycle
2014-05-05	2014-10-17	N/A

### Data Collection Mode

---

Face-to-face [f2f]

### Questionnaires

---

Qualitative guide into the enquiry of people's perceptions of exposure to air pollution

1. Understand the perceptions, attitudes and beliefs of individuals regarding air pollution.
2. Assess the communities' understanding of the health risks associated with air pollution.

Questionnaire on IAP and pregnancy outcomes

### Supervision

---

The study shall had three teams based on the three components: the qualitative team had two moderators and two note-takers with either taking the role of team leader during the period when the focus groups was convened.

In the outdoor air pollution component, two field staff made up the team and they were supervised by the two investigators who acted as the team leaders.

The indoor air pollution component had two teams each having 8 interviewers and under the leadership of a supervisor. The research assistant on the larger study on which this component is nested provided coordination of the teams. The two investigators oversee the placement and retrieval of IAP monitors as well as uploading of data from the monitors.

## Data Processing

### Data Editing

---

Data collection for the quantitative study was done electronically using netbooks. This removed the need for data entry and therefore once data had been collected, the investigators obtained it for cleaning and analysis using Stata software. Descriptive analysis and multivariable regression analysis was applied as appropriate. Qualitative data was transcribed by the investigators and coded and thematic analysis conducted using Nvivo software.

### Other Processing

---

na

## Data Appraisal

### **Estimates of Sampling Error**

na



## File Description

## Variable List

## air\_pollution\_data

Content	The file contains indoor PM2.5 data
Cases	45153
Variable(s)	23
Structure	Type: Keys: ()
Version	Version(1.0)
Producer	AFrican population and health research center (APHRC)
Missing Data	na

## Variables

ID	Name	Label	Type	Format	Question
V1	id	Id	contin	numeric	na
V2	start_date	Start_date	discrete	character	na
V3	start_time	Start_time	discrete	character	na
V4	time_sec	Time_sec	contin	numeric	na
V5	mass	Mass [mg/m3]	contin	numeric	na
V6	pm	PM25 levels	contin	numeric	na
V7	alarms	Alarms	discrete	character	na
V8	time	Time	discrete	character	na
V9	mainfuel	Main fuel	discrete	character	na
V10	otherfuel	Other fuel	discrete	character	na
V11	lighting	main source of light	discrete	character	na
V12	slum	slum	discrete	character	na
V13	monddate	monitor date	discrete	character	na
V14	montime	monitor time	contin	numeric	na
V15	starttime	monitor start time	contin	numeric	na
V16	endtime	monitor end time	contin	numeric	na
V18	fuel	Main fuel	discrete	numeric	na
V19	othfuel	Other fuel	discrete	numeric	na
V20	light	main source of light	discrete	numeric	na
V21	ctime	cooking time	contin	numeric	na
V22	cooktime	meal prep time	discrete	numeric	na
V23	time_hr	hourly monitoring intervals	discrete	numeric	na
V24	duration	monitoring duration	contin	numeric	na

## Koch\_gps\_pm\_activities

Content	This file contains outdoor PM2.5 data with GPS coordinates from Korogocho.
Cases	6076
Variable(s)	10
Structure	Type: Keys: ()
Version	Version(1.0)
Producer	AFrican population and health research center (APHRC)
Missing Data	na

## Variables

ID	Name	Label	Type	Format	Question
V46	date	Date of measurement	discrete	character	na
V47	site	Study site:Korogocho=1;Viwandani=2	discrete	numeric	na
V48	pm25	The pm2.5 concentration	contin	numeric	na
V49	hh	Hours	discrete	numeric	na
V50	mm	Minutes	contin	numeric	na
V51	lat	lat	contin	numeric	na
V52	lon	lon	contin	numeric	na
V53	area	area	discrete	character	na
V54	location	location	discrete	character	na
V55	activity	activity	discrete	character	na

## Viwa\_gps\_pm\_activities

Content	This file contains outdoor PM2.5 data with GPS coordinates from Viwandani.
Cases	2844
Variable(s)	10
Structure	Type: Keys: ()
Version	Version(1.0)
Producer	AFrican population and health research center (APHRC)
Missing Data	na

## Variables

ID	Name	Label	Type	Format	Question
V56	date	Date of measurement	discrete	character	na
V57	site	Study site:Korogocho=1;Viwandani=2	discrete	numeric	na
V58	pm25	The pm2.5 concentration	contin	numeric	na
V59	hh	Hours	discrete	numeric	na
V60	mm	Minutes	contin	numeric	na
V61	lat	lat	contin	numeric	na
V62	lon	lon	contin	numeric	na
V63	area	Site	discrete	character	na
V64	location	location	discrete	character	na
V65	activity	activity	discrete	character	na



Id (id)

File: air\_pollution\_data

**Overview**

Type: Continuous	Valid cases: 45153
Format: numeric	Invalid: 0
Width: 9	Minimum: 1
Decimals: 0	Maximum: 31091
Range: 1-31091	Mean: 12984.8
	Standard deviation: 8627.4

**Description**

Record ID

**Universe**

The households

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

Start\_date (start\_date)

File: air\_pollution\_data

**Overview**

Type: Discrete	Valid cases: 45153
Format: character	Invalid: 0
Width: 10	

**Description**

The starting date for the recording.

**Universe**

The households

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

Start\_time (start\_time)

File: air\_pollution\_data

**Overview**

## Start\_time (start\_time)

### File: air\_pollution\_data

Type: Discrete  
Format: character  
Width: 11

Valid cases: 45153  
Invalid: 0

#### Description

The start time for recording

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## Time\_sec (time\_sec)

### File: air\_pollution\_data

#### Overview

Type: Continuous  
Format: numeric  
Width: 10  
Decimals: 0  
Range: 60-256740

Valid cases: 45153  
Invalid: 0  
Minimum: 60  
Maximum: 256740  
Mean: 18238.8  
Standard deviation: 11507.4

#### Description

Recording time in seconds

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## Mass [mg/m3] (mass)

### File: air\_pollution\_data

#### Overview



## Mass [mg/m3] (mass)

File: air\_pollution\_data

Type: Continuous  
 Format: numeric  
 Width: 10  
 Decimals: 0  
 Range: 4-64800

Valid cases: 45153  
 Invalid: 0  
 Minimum: 4  
 Maximum: 64800  
 Mean: 263.1  
 Standard deviation: 1111.7

**Description**

The mass

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## PM25 levels (pm)

File: air\_pollution\_data

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 9  
 Decimals: 0  
 Range: 1-20088

Valid cases: 45153  
 Invalid: 0  
 Minimum: 1  
 Maximum: 20088  
 Mean: 81.1  
 Standard deviation: 344.7

**Description**

The PM25 levels

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## Alarms (alarms)

File: air\_pollution\_data

**Overview**

## Alarms (alarms)

File: air\_pollution\_data

Type: Discrete

Format: character

Width: 6

Valid cases: 0

Invalid: 0

### Description

The alrms

### Universe

Indoor air data covered households with pregnant women

### Source of information

The recordings

### Pre question

na

### Literal question

na

### Post question

na

### Interviewer instructions

na

## Time (time)

File: air\_pollution\_data

### Overview

Type: Discrete

Format: character

Width: 8

Valid cases: 45153

Invalid: 0

### Description

The time

### Universe

Indoor air data covered households with pregnant women

### Source of information

The recordings

### Pre question

na

### Literal question

na

### Post question

na

### Interviewer instructions

na

## Main fuel (mainfuel)

File: air\_pollution\_data

### Overview

Type: Discrete

Format: character

Width: 12

Valid cases: 28306

Invalid: 0

### Description

The main fuel used by the household

## Main fuel (mainfuel)

### File: air\_pollution\_data

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## Other fuel (otherfuel)

### File: air\_pollution\_data

#### Overview

Type: Discrete  
Format: character  
Width: 12

Valid cases: 3157  
Invalid: 0

#### Description

The other fuel used by the household

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## main source of light (lighting)

### File: air\_pollution\_data

#### Overview

Type: Discrete  
Format: character  
Width: 11

Valid cases: 11365  
Invalid: 0

#### Description

the main source of light in the household

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

main source of light (lighting)

File: air\_pollution\_data

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

slum (slum)

File: air\_pollution\_data

**Overview**

Type: Discrete

Format: character

Width: 1

Valid cases: 45153

Invalid: 0

**Description**

The slum where the household is located

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

monitor date (mondate)

File: air\_pollution\_data

**Overview**

Type: Discrete

Format: character

Width: 11

Valid cases: 45153

Minimum: NaN

Maximum: NaN

**Description**

The household monitoring date

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

## monitor date (mondate)

File: air\_pollution\_data

**Post question**

na

**Interviewer instructions**

na

## monitor time (montime)

File: air\_pollution\_data

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 11  
 Decimals: 0  
 Range: 6180000-85800000

Valid cases: 45153  
 Invalid: 0  
 Minimum: 6180000  
 Maximum: 85800000  
 Mean: 53048961.5  
 Standard deviation: 12567553.7

**Description**

The household monitoring time

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## monitor start time (starttime)

File: air\_pollution\_data

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 11  
 Decimals: 0  
 Range: 6120000-52500000

Valid cases: 45153  
 Invalid: 0  
 Minimum: 6120000  
 Maximum: 52500000  
 Mean: 34097400.7  
 Standard deviation: 6721451.6

**Description**

The household monitoring start time

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

monitor start time (starttime)

File: air\_pollution\_data

**Post question**

na

**Interviewer instructions**

na

monitor end time (endtime)

File: air\_pollution\_data

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 11  
 Decimals: 0  
 Range: 38160000-85800000

Valid cases: 45153  
 Invalid: 0  
 Minimum: 38160000  
 Maximum: 85800000  
 Mean: 72130152.1  
 Standard deviation: 6904805.7

**Description**

The household monitoring end time

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

Main fuel (fuel)

File: air\_pollution\_data

**Overview**

Type: Discrete  
 Format: numeric  
 Width: 12  
 Decimals: 0  
 Range: 1-4

Valid cases: 28306  
 Invalid: 16847

**Description**

The main fuel used by the household

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

## Main fuel (fuel)

File: air\_pollution\_data

na

**Interviewer instructions**

na

## Other fuel (othfuel)

File: air\_pollution\_data

Overview	
Type: Discrete	Valid cases: 3157
Format: numeric	Invalid: 41996
Width: 12	
Decimals: 0	
Range: 1-3	
Description	
The other fuel used by the household	
Universe	
Indoor air data covered households with pregnant women	
Source of information	
The recordings	
Pre question	
na	
Literal question	
na	
Post question	
na	
Interviewer instructions	
na	

## main source of light (light)

File: air\_pollution\_data

Overview	
Type: Discrete	Valid cases: 3798
Format: numeric	Invalid: 41355
Width: 8	
Decimals: 0	
Range: 1-2	
Description	
The main source of light in the household	
Universe	
Indoor air data covered households with pregnant women	
Source of information	
The recordings	
Pre question	
na	
Literal question	
na	
Post question	
na	

main source of light (light)

File: air\_pollution\_data

#### Interviewer instructions

na

cooking time (ctime)

File: air\_pollution\_data

#### Overview

Type: Continuous	Valid cases: 29421
Format: numeric	Invalid: 15732
Width: 10	Minimum: 20
Decimals: 0	Maximum: 2350
Range: 20-2350	Mean: 1247.8
	Standard deviation: 586.1

#### Description

The cooking time

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

meal prep time (cooktime)

File: air\_pollution\_data

#### Overview

Type: Discrete	Valid cases: 45153
Format: numeric	Invalid: 0
Width: 16	
Decimals: 0	
Range: 1-4	

#### Description

The meal preparation time

#### Universe

Indoor air data covered households with pregnant women

#### Source of information

The recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions



meal prep time (cooktime)

File: air\_pollution\_data

na

hourly monitoring intervals (time\_hr)

File: air\_pollution\_data

**Overview**

Type: Discrete  
 Format: numeric  
 Width: 9  
 Decimals: 0  
 Range: 1-19

Valid cases: 4484  
 Invalid: 40669

**Description**

The hourly monitoring intervals

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

monitoring duration (duration)

File: air\_pollution\_data

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 9  
 Decimals: 0  
 Range: 7.28333330154419-19.2999973297119

Valid cases: 45153  
 Invalid: 0  
 Minimum: 7.3  
 Maximum: 19.3  
 Mean: 11.2  
 Standard deviation: 2.7

**Description**

The monitoring duration

**Universe**

Indoor air data covered households with pregnant women

**Source of information**

The recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na



Date of measurement (date)

File: Koch\_gps\_pm\_activities

#### Overview

Type: Discrete  
Format: character  
Width: 11

Valid cases: 6076  
Minimum: NaN  
Maximum: NaN

#### Description

The date when the measurement was conducted.

#### Universe

Outdoor air data collected from various villages in each of the slum

#### Source of information

Recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

Study site:Korogocho=1;Viwandani=2 (site)

File: Koch\_gps\_pm\_activities

#### Overview

Type: Discrete  
Format: numeric  
Width: 9  
Decimals: 0  
Range: 1-2

Valid cases: 6076  
Invalid: 0

#### Description

The site where the measurement was conducted from.

#### Universe

Outdoor air data collected from various villages in each of the slum

#### Source of information

Recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

The pm2.5 concentration (pm25)

File: Koch\_gps\_pm\_activities

#### Overview

## The pm2.5 concentration (pm25)

### File: Koch\_gps\_pm\_activities

Type: Continuous	Valid cases: 6076
Format: numeric	Invalid: 0
Width: 10	Minimum: 2.8
Decimals: 0	Maximum: 13237
Range: 2.79-13237	Mean: 145.1
	Standard deviation: 510.3

#### Description

The pm2.5 concentration

#### Universe

Outdoor air data collected from various villages in each of the slum

#### Source of information

Recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## Hours (hh)

### File: Koch\_gps\_pm\_activities

Overview	
Type: Discrete	Valid cases: 6076
Format: numeric	Invalid: 0
Width: 9	
Decimals: 0	
Range: 7-20	
Description	
Hours	
Universe	
Outdoor air data collected from various villages in each of the slum	
Source of information	
Recordings	
Pre question	
na	
Literal question	
na	
Post question	
na	
Interviewer instructions	
na	

## Minutes (mm)

### File: Koch\_gps\_pm\_activities

Overview
----------

Minutes (mm)

File: Koch\_gps\_pm\_activities

Type: Continuous  
 Format: numeric  
 Width: 9  
 Decimals: 0  
 Range: 0-59

Valid cases: 6076  
 Invalid: 0  
 Minimum: 0  
 Maximum: 59  
 Mean: 31.1  
 Standard deviation: 17.3

**Description**

Minutes

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

lat (lat)

File: Koch\_gps\_pm\_activities

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 10  
 Decimals: 0  
 Range: -1.25601666666667--1.24696666666667

Valid cases: 6076  
 Invalid: 0  
 Minimum: -1.3  
 Maximum: -1.2  
 Mean: -1.3  
 Standard deviation: 0

**Description**

The latitudes of the location

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

lon (lon)

File: Koch\_gps\_pm\_activities

**Overview**

lon (lon)

File: Koch\_gps\_pm\_activities

Type: Continuous  
 Format: numeric  
 Width: 10  
 Decimals: 0  
 Range: 36.88538333333333-36.89275

Valid cases: 6076  
 Invalid: 0  
 Minimum: 36.9  
 Maximum: 36.9  
 Mean: 36.9  
 Standard deviation: 0

**Description**

The longitude of the location

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

area (area)

File: Koch\_gps\_pm\_activities

**Overview**

Type: Discrete  
 Format: character  
 Width: 17

Valid cases: 6076  
 Invalid: 0

**Description**

The exact area in the site where the measurements were taken from

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

location (location)

File: Koch\_gps\_pm\_activities

**Overview**

Type: Discrete  
 Format: character  
 Width: 12

Valid cases: 6076  
 Invalid: 0

## location (location)

## File: Koch\_gps\_pm\_activities

**Description**

The geographical location

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## activity (activity)

## File: Koch\_gps\_pm\_activities

**Overview**

Type: Discrete

Format: character

Width: 23

Valid cases: 6076

Invalid: 0

**Description**

The activity that was in progress.

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## Date of measurement (date)

### File: Viwa\_gps\_pm\_activities

#### Overview

Type: Discrete	Valid cases: 2844
Format: character	Minimum: NaN
Width: 11	Maximum: NaN

#### Description

The date when the measurement was conducted.

#### Universe

Outdoor air data collected from various villages in each of the slum

#### Source of information

Recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## Study site:Korogocho=1;Viwandani=2 (site)

### File: Viwa\_gps\_pm\_activities

#### Overview

Type: Discrete	Valid cases: 2844
Format: numeric	Invalid: 0
Width: 9	
Decimals: 0	
Range: 1-2	

#### Description

The site where the measurement was conducted from.

#### Universe

Outdoor air data collected from various villages in each of the slum

#### Source of information

Recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## The pm2.5 concentration (pm25)

### File: Viwa\_gps\_pm\_activities

#### Overview



## The pm2.5 concentration (pm25)

### File: Viwa\_gps\_pm\_activities

Type: Continuous	Valid cases: 2844
Format: numeric	Invalid: 0
Width: 10	Minimum: 3.7
Decimals: 0	Maximum: 694.4
Range: 3.72-694.4	Mean: 52.4
	Standard deviation: 75.6

#### Description

The pm2.5 concentration

#### Universe

Outdoor air data collected from various villages in each of the slum

#### Source of information

Recordings

#### Pre question

na

#### Literal question

na

#### Post question

na

#### Interviewer instructions

na

## Hours (hh)

### File: Viwa\_gps\_pm\_activities

Overview	
Type: Discrete	Valid cases: 2844
Format: numeric	Invalid: 0
Width: 9	
Decimals: 0	
Range: 8-20	
Description	
Hours	
Universe	
Outdoor air data collected from various villages in each of the slum	
Source of information	
Recordings	
Pre question	
na	
Literal question	
na	
Post question	
na	
Interviewer instructions	
na	

## Minutes (mm)

### File: Viwa\_gps\_pm\_activities

Overview
----------

Minutes (mm)

File: Viwa\_gps\_pm\_activities

Type: Continuous  
 Format: numeric  
 Width: 9  
 Decimals: 0  
 Range: 0-59

Valid cases: 2844  
 Invalid: 0  
 Minimum: 0  
 Maximum: 59  
 Mean: 28  
 Standard deviation: 17.2

**Description**

Minutes

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

lat (lat)

File: Viwa\_gps\_pm\_activities

**Overview**

Type: Continuous  
 Format: numeric  
 Width: 10  
 Decimals: 0  
 Range: -1.31361666666667--1.30135

Valid cases: 2844  
 Invalid: 0  
 Minimum: -1.3  
 Maximum: -1.3  
 Mean: -1.3  
 Standard deviation: 0

**Description**

The latitudes of the location

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

lon (lon)

File: Viwa\_gps\_pm\_activities

**Overview**

lon (lon)

File: Viwa\_gps\_pm\_activities

Type: Continuous  
 Format: numeric  
 Width: 10  
 Decimals: 0  
 Range: 36.862833333333-36.887533333333

Valid cases: 2844  
 Invalid: 0  
 Minimum: 36.9  
 Maximum: 36.9  
 Mean: 36.9  
 Standard deviation: 0

**Description**

The longitude of the location

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

Site (area)

File: Viwa\_gps\_pm\_activities

**Overview**

Type: Discrete  
 Format: character  
 Width: 14

Valid cases: 2844  
 Invalid: 0

**Description**

The exact area in the site where the measurements were taken from

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

location (location)

File: Viwa\_gps\_pm\_activities

**Overview**

Type: Discrete  
 Format: character  
 Width: 21

Valid cases: 2844  
 Invalid: 0

## location (location)

## File: Viwa\_gps\_pm\_activities

**Description**

The geographical location

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## activity (activity)

## File: Viwa\_gps\_pm\_activities

**Overview**

Type: Discrete

Format: character

Width: 23

Valid cases: 2844

Invalid: 0

**Description**

The activity that was in progress.

**Universe**

Outdoor air data collected from various villages in each of the slum

**Source of information**

Recordings

**Pre question**

na

**Literal question**

na

**Post question**

na

**Interviewer instructions**

na

## Related Materials

### Other materials

#### Approval Letter

---

Title Approval Letter  
Author(s) APHRC  
Date 2012  
Country Kenya  
Language English  
Filename Approval Letter.pdf

---

#### Exposure to Outdoor Particles

---

Title Exposure to Outdoor Particles  
Author(s) APHRC  
Date 2012  
Country Kenya  
Language English  
Filename Exposure to Outdoor Particles (PM2.5) and Associated Child Morbidity and Mortality in Socially Deprived Neighborhoods of Nairobi, Kenya. Atmosphere 2018, 9, 351.pdf

---