

# SENEGAL - Niakhar HDSS INDEPTH Core Dataset 1984-2014 (Release 2017)

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## Overview

### Identification

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**ID NUMBER**

INDEPTH.SN013.CMD2014.v1

### Version

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**VERSION DESCRIPTION**

CMD2014.v1

**PRODUCTION DATE**

2017-05-20

### Overview

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**ABSTRACT**

The Health and Demographic Surveillance System (HDSS) in Niakhar, a rural area of Senegal, is located 135 km east of Dakar. This HDSS has been set up in 1962 by the Institut de Recherche pour le Dveloppement (IRD) to face the shortcomings of the civil registration system and provide demographic indicators.

Some 65 villages were followed annually in the Niakhar area from 1962 to 1969. The study zone was reduced to eight villages from 1969 to 1983, and from then on the HDSS was extended to include 22 other villages, covering a total of 30 villages for a population estimated at 45,000 in December 2013. Thus 8 villages have been under demographic surveillance for almost 50 years and 30 villages for 30years.

Vital events, migrations, marital changes, pregnancies, immunization are routinely recorded (every four months). The database also includes epidemiological, economic and environmental information coming from specific surveys. Data were collected through annual rounds from 1962 to 1987; rounds became weekly from 1987 to 1997; routine visits were conducted every three months between 1997and 2007 and every four months since then.

The current objectives are 1) to obtain a long-term assessment of demographic and socio-economic indicators necessary for bio-medical and social sciences research, 2) to keep up epidemiological and environmental monitoring, 3) to provide a research platform for clinical and interdisciplinary research (medical, social and environmental sciences). Research projects during the last 5 years are listed in Table 2. The Niakhar HDSS has institutional affiliation with the Institut de Recherche pour le Dveloppement (IRD, formerly ORSTOM).

**KIND OF DATA**

Event history data

**UNITS OF ANALYSIS**

Individual

### Scope

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**NOTES**

This study represents only a portion of the total data associated with the complet Niakhar demographic surveillance as described in the study abstract.

It specifically only includes the events defining the resident exposure of individuals under surveillance as well as the delivery events of resident women. Each type of event contains minimal attributes describing the event:

Attributes common to each event:

Event Type,

Event Date

Observation date

Migration:

Origin & Destination

Delivery:

Live born and Still born counts

**TOPICS**

Topic	Vocabulary	URI
Demography [N01.224]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Age Distribution [N01.224.033]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Emigration and Immigration [N01.224.625.350]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Residential Mobility [N01.224.791.700]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Sex Distribution [N01.224.803]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Vital Statistics [N01.224.935]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Life Expectancy [N01.224.935.464]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Mortality [N01.224.935.698]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Birth Rate [N01.224.935.849.500]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Rural Population [N01.600.725]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Maternal Age [N06.850.490.250.550]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Parity [N06.850.490.812.600]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>
Survival Analysis [N06.850.520.830.998]	MeSH	<a href="http://www.ncbi.nlm.nih.gov/mesh">http://www.ncbi.nlm.nih.gov/mesh</a>

**KEYWORDS**

Migration, Mortality, Fertility, Population

Coverage

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**GEOGRAPHIC COVERAGE**

The study zone of Niakhar is located in Senegal, 14.5N Latitude and 16.5W Longitude in the department of Fatick (Sine-Saloum), 135 km east of Dakar. The Niakhar study zone covers 203 square kilometres and is located in the continental Sahelian-Sudanese climatic zone. For thirty years the region has suffered from drought. The average annual rainfall has decreased from 800 mm in the 1950s to 500 mm in the 1980s. Increasing amounts of precipitation have been observed since the mid-2000s with an average annual rainfall of 600 mm between 2005 and 2010.

The area is 203 square kilometers.

**UNIVERSE**

Members of households reside within the demographic surveillance area. Inmigrants are defined by intention to become resident, but actual residence episodes of less than 180 days are censored. Outmigrants are defined by intention to become resident elsewhere, but actual periods of non-residence less than 180 days are censored, except seasonal work migrants, worker with a wife resident, pupils or students. Children born to resident women are considered resident by default, irrespective of actual place of birth.

The dataset contains the events of all individuals ever resident during the study period (1 Jan 1990 to 31 Dec 2013).

The Niakhar HDSS collects for each resident the following basic data: individual, household and compound identifying information, mother and father identification, relationship to the head of household and spousal relationship. From 1983 to

2007, the HDSS routinely monitored deaths, pregnancies, births, miscarriages, stillbirths, weaning, migrations, changes of marital status, immunizations, and cases of measles and whooping cough. For the last 5 years, the HDSS only recorded demographic events related to each resident including cause of death. Verbal autopsies have been conducted after all deaths except for those that occurred between 1999 and 2004 where only deaths for people aged 0-55 years were investigated. The Niakhar HDSS also registers visitors as well as all the demographic events related to them in case of in-migration. Household characteristics (living conditions, domestic equipment, etc.) were collected in 1998 and 2003, and community equipment (schools, boreholes, etc.) in 2003. Economic and environmental data will be collected in 2013. Table 3 presents further details on the data items collected. The Niakhar HDSS interviewers collect data with tablet PCs that are loaded with the last updated database linked to a user-friendly interface indicating the household members and the questionnaire. Daily backups are performed on an external hard drive and weekly synchronizations are scheduled during the round, helping to update the database and check data consistency (i.e. residential moves within the study area or marriages). Applications are Developed in Visual Basic.Net and the database is managed with Microsoft Access.

## Producers and Sponsors

### PRIMARY INVESTIGATOR(S)

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### OTHER PRODUCER(S)

Name	Affiliation	Role
Mouhamadou Baba SOW	Institut de Recherche pour le Dveloppement (IRD)	Data Manager
Emilie VOLPI	Institut de Recherche pour le Dveloppement (IRD)	Data Manager
Adiouma FAYE	Institut de Recherche pour le Dveloppement (IRD)	Data collector
All staff Data Collection	Institut de Recherche pour le Dveloppement (IRD)	Data collectors

### FUNDING

Name	Abbreviation	Role
Institut de Recherche pour le Dveloppement	IRD	Current funder

### OTHER ACKNOWLEDGEMENTS

Name	Affiliation	Role
Paul SENGHOR	Institut de Recherche pour le Dveloppement (IRD)	Verbal Autopsy Interviewer
Emilie NDIAYE	Institut de Recherche pour le Dveloppement (IRD)	Referencies Manager
Prosper NDIAYE	Institut de Recherche pour le Dveloppement (IRD)	Administrative Manager
Malick TOURE	Institut de Recherche pour le Dveloppement (IRD)	Logistics Manager

## Metadata Production

### METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
ISHARE2Technical TEAM	isTT	INDEPTH Network	Documentation of the study
INDEPTH Network	int.indpth	INDEPTH Network	agency
Mouhamadou Baba SOW	MBS	Institut de Recherche pour le Dveloppement(IRD)	Data Manager

**DATE OF METADATA PRODUCTION**

2017-05-20

**DDI DOCUMENT VERSION**

CMD2014.V1:2017-05-20

**DDI DOCUMENT ID**

DDI.INDEPTH.SN013.CMD2014.v1

## Sampling

### Sampling Procedure

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This dataset is not based on a sample but contains information from the complete demographic surveillance area

### Deviations from Sample Design

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None

### Response Rate

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On an average the response rate is about 99% over the years for each round

### Weighting

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Not applicable

# Questionnaires

## Overview

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List of questionnaires:

Compound Registration or update Form

Houshold Registration or update Form

Household Membership Registration or update Form

External Migration Registration Form

Internal Migration Registration Form

Individual Registration Form

Birth Registration Form

Death Registration Form

## Data Collection

### Data Collection Dates

Start	End	Cycle
1984-01-01	2014-12-31	Release coverage

### Time Periods

Start	End	Cycle
2008-03-27		Round1
2008-07-22		Round2
2009-02-18		Round3
2009-08-06		Round4
2009-11-17		Round5
2010-02-24		Round6
2010-06-26		Round7
2011-03-14		Round8
2011-10-05		Round9
2012-02-06		Round10
2012-06-11		Round11
2012-10-16		Round12
2013-04-08		Round13
2013-10-05		Round14
2015-04-05		Round15
2015-10-05		Round16

### Data Collection Mode

Proxy Respondent [proxy]

#### DATA COLLECTION NOTES

Interviewer were trained immediately prior to the baseline data collection and then refresher training was conducted for 1 day between each surveillance round.  
new fieldworkers received a star

### Data Collectors

Name	Abbreviation	Affiliation
NIAKHAR for Health and Population Studies	SN013	Institut de Recherche pour le Developpement (IRD)

#### SUPERVISION

Fiedworkers operated in teams of 4 Fiedworkers and 1 Fiedworkers supervisor who supervises fieldWorkers. they conduct supervised visits and quality control visits and review Fiedworkers data collection.



## Data Processing

### Data Editing

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On data entry data consistency and plausibility were checked by 455 data validation rules at database level. If data validation failure was due to a data collection error, the questionnaire was referred back to the field for revisit and correction. If the error was due to data inconsistencies that could not be directly traced to a data collection error, the record was referred to the data quality team under the supervision of the senior database scientist. This could request further field level investigation by a team of trackers or could correct the inconsistency directly at database level.

No imputations were done on the resulting micro data set, except for:

- a. If an out-migration (OMG) event is followed by a homestead entry event (ENT) and the gap between OMG event and ENT event is greater than 180 days, the ENT event was changed to an in-migration event (IMG).
- b. If an out-migration (OMG) event is followed by a homestead entry event (ENT) and the gap between OMG event and ENT event is less than 180 days, the OMG event was changed to an homestead exit event (EXT) and the ENT event date changed to the day following the original OMG event.
- c. If a homestead exit event (EXT) is followed by an in-migration event (IMG) and the gap between the EXT event and the IMG event is greater than 180 days, the EXT event was changed to an out-migration event (OMG).
- d. If a homestead exit event (EXT) is followed by an in-migration event (IMG) and the gap between the EXT event and the IMG event is less than 180 days, the IMG event was changed to an homestead entry event (ENT) with a date equal to the day following the EXT event.
- e. If the last recorded event for an individual is homestead exit (EXT) and this event is more than 180 days prior to the end of the surveillance period, then the EXT event is changed to an out-migration event (OMG)

In the case of the village that was added (enumerated) in 2006, some individuals may have outmigrated from the original surveillance area and settled in the the new village prior to the first enumeration. Where the records of such individuals have been linked, and individual can legitimately have and outmigration event (OMG) followed by and enumeration event (ENU). In a few cases a homestead exit event (EXT) was followed by an enumeration event in these cases. In these instances the EXT events were changed to an out-migration event (OMG).

## Data Appraisal

### Estimates of Sampling Error

Not Applicable

### Other forms of Data Appraisal

CentreId	MetricTable	QMetric	Illegal	Legal	Total	Metric	RunDate	
SN013	MicroDataCleaned	Starts	86883	2017-05-19	15:12			
SN013	MicroDataCleaned	Transitions	241970	241970	0	2017-05-19	15:12	
SN013	MicroDataCleaned	Ends	86883	2017-05-19	15:12			
SN013	MicroDataCleaned	SexValues	32	241938	241970	0	2017-05-19	15:12
SN013	MicroDataCleaned	DoBValues	241970	2017-05-19	15:12			

# File Description

# Variable List

## SN013.CMD2014.v1

Content	Event History Micro Data Set of Niakhar HDSS
Cases	302585
Variable(s)	14
Structure	Type: Keys: ()
Version	CMD2014.v1
Producer	Niakhar HDSS
Missing Data	

## Variables

ID	Name	Label	Type	Format	Question
V1	RecNr	RecNr	contin	numeric	
V2	CountryId	CountryId	discrete	numeric	
V3	CentrelId	CentrelId	discrete	character	
V4	IndividualId	IndividualId	contin	numeric	
V5	Sex	Sex	discrete	numeric	
V6	DoB	DoB	discrete	character	
V7	EventCount	EventCount	discrete	numeric	
V8	EventNr	EventNr	discrete	numeric	
V9	EventCode	EventCode	discrete	character	
V10	EventDate	EventDate	discrete	character	
V11	ObservationDate	ObservationDate	discrete	character	
V12	LocationId	LocationId	contin	numeric	
V13	MotherId	MotherId	contin	numeric	
V14	DeliveryId	DeliveryId	contin	numeric	



**RecNr (RecNr)**

File: SN013.CMD2014.v1

**Overview**

Type: Continuous	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	Minimum: 1
Range: 1-244965	Maximum: 302585
	Mean: 151293
	Standard deviation: 87348.9

**Description**

A sequential number uniquely identifying each record in the data file

**CountryId (CountryId)**

File: SN013.CMD2014.v1

**Overview**

Type: Discrete	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	
Range: 686-686	

**Description**

ISO 3166-1 numeric code of the country in which the surveillance site is situated

**CentreId (CentreId)**

File: SN013.CMD2014.v1

**Overview**

Type: Discrete	Valid cases: 302585
Format: character	Invalid: 0
Width: 5	

**Description**

An identifier issued by INDEPTH to each member centre of the format CCCSS, where CCC is a sequential centre identifier and SSS is a sequential identifier of the site within the centre in the case of multiple site centre

**IndividualId (IndividualId)**

File: SN013.CMD2014.v1

**Overview**

Type: Continuous	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	Minimum: 1
Range: 1-81696	Maximum: 88568
	Mean: 41529.4
	Standard deviation: 23935.6

**Description**

a number uniquely identifying all the record belonging to a specific individual in the data file. This number is not be the same as the identifier used a contributing centre to identify the individual.

**Sex (Sex)**

File: SN013.CMD2014.v1

## Sex (Sex)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	
Range: 0-2	

### Description

Sex of the individual.

## DoB (DoB)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 302585
Format: character	Minimum: NaN
	Maximum: NaN

### Description

The date of birth of the individual. Format: YYYY/MM/DD.

## EventCount (EventCount)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	
Range: 2-20	

### Description

The Total number of events associated this this individual in this data Set.

## EventNr (EventNr)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	
Range: 1-20	

### Description

A number increasing from 1 to EventCount for each event record in order of event occurrence.

## EventCode (EventCode)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 302585
Format: character	Invalid: 0
Width: 3	

### Description

A code identifying the type of event that has occurred.



## EventDate (EventDate)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 302585
Format: character	Minimum: NaN
	Maximum: NaN

### Description

The date on which the event occurred. Format: YYYY/MM/DD

## ObservationDate (ObservationDate)

File: SN013.CMD2014.v1

### Overview

Type: Discrete	Valid cases: 184463
Format: character	Minimum: NaN
	Maximum: NaN

### Description

Date on which the event was observed (recorded), also known as surveillance visit date. Format: YYYY/MM/DD

## LocationId (LocationId)

File: SN013.CMD2014.v1

### Overview

Type: Continuous	Valid cases: 302585
Format: numeric	Invalid: 0
Decimals: 0	Minimum: 1
Range: 1-7449	Maximum: 7733
	Mean: 3717
	Standard deviation: 2175.4

### Description

Unique identifier associated with a residential unit within the site and is the location where the individual was or became resident when the event occurred. This identifier is not the same as the identifier use internally by the contributing centre.

## MotherId (MotherId)

File: SN013.CMD2014.v1

### Overview

Type: Continuous	Valid cases: 80331
Format: numeric	Invalid: 222254
Decimals: 0	Minimum: 9
Range: 9-81688	Maximum: 87748
	Mean: 42095.1
	Standard deviation: 24227

### Description

The IndividualId of the Mother. Only Provided for Birth events.

## DeliveryId (DeliveryId)

File: SN013.CMD2014.v1

### Overview

## **DeliveryId (DeliveryId)**

File: SN013.CMD2014.v1

Type: Continuous  
Format: numeric  
Decimals: 0  
Range: 1-49521

Valid cases: 80331  
Invalid: 222254  
Minimum: 1  
Maximum: 45209  
Mean: 22616.4  
Standard deviation: 12890.4

### **Description**

The RecNr of the delivery event associated with this birth.

