



International Union for the Scientific Study of Population ■ IUSSP  
Union internationale pour l'étude scientifique de la population ■ UIESP

## Report

### **Atelier de formation**

**Analyse démographique pour la prise de décisions.**

**Tendances et inégalités de mortalité et de fécondité en Afrique francophone :**

**les outils en ligne de l'UNFPA / UIESP pour l'estimation démographique**

*Dakar, Sénégal, 1-5 décembre 2014*

The IUSSP under the auspices of the IUSSP Network on Strengthening Demographic Training in Francophone Africa (FraNet) organized a training workshop on **Demographic analysis for decision making: Trends and inequalities in death and fertility in Francophone Africa** at the *Campus Numerique* of the *Agence Universitaire de la Francophonie (AUF)* in Dakar, Senegal from 1-5 December 2014 with funding from UNFPA and with the collaboration of the *Agence universitaire de la Francophonie (AUF)*, the *Observatoire démographique et statistique de l'espace francophone (ODSEF)*, and the *Institut de Recherche pour le Développement (IRD)* in Senegal.

The workshop provided an opportunity for data analysts from the national statistical offices to work closely with demographers on the analysis of recent census data and make comparisons with data from population observatories and national surveys such as the Demographic and Health Survey. Participants included 24 trainees, mostly analysts based at national statistical offices from 10 countries in the region; six trainers, all demographers with vast experience teaching demographic methods and/or working with census and survey data in the region; and two training assistants.

Documents and presentations used for the workshop can be accessed at: <http://iussp.org/fr/atelier-de-formation-uiesp-sur-lanalyse-d%C3%A9mographique-pour-la-prise-de-d%C3%9Cisions-dakar-1-6-d%C3%A9cembre>.

The objectives of the workshop were to improve:

- the capacity of data analysts in national statistical offices and other organizations to analyze and use census data;
- communication of population data to policy makers and the public using formats that maximize the impact of population data analyses for policy and programmes;
- the use and value of census data, which, because of its exhaustiveness, is particularly suitable for disaggregated analyses of population trends.

The workshop offered a mix of lecture and exercises drawing on demographic estimation methods for use where data is limited or incomplete. These methods are covered in the French translation of the online manual Tools for Demographic Estimation developed by an IUSSP working group with funding from UNFPA that is available on the IUSSP website at <http://demographicestimation.iussp.org/fr>. The workshop focused on child mortality and fertility in Africa demonstrating how demographic methods of estimation can be used to understand population trends and inequalities. Particular attention was paid to the analysis of disaggregated data at the regional level to tease out inequalities in child mortality, life expectancy and fertility by mother's educational status, geographic location, urban or rural residence. The workshop included an introduction to QGIS, an open source data mapping software that enables the spatial representation of data trends, greatly improving the potential impact of population analyses based on census and other population data sources for policy making.

### **Selection of participants:**

Twenty-seven participants were selected to attend the workshop after review of 90 applications received online in response to the workshop announcement. Prerequisites for selection included a university degree in demography, statistics or a related field with some past experience analyzing data from population censuses and surveys or soon to be working on the analysis of recent census data. Applicants responsible for analysis of data were preferred over more senior staff such as agency directors. The trainers selected two

participants from each country in the region to improve the dissemination of the material and the use of methods after the workshop when participants returned to their home institution.

The workshop included participants from Bénin, Burkina Faso, Chad, Côte d'Ivoire, Mali, Mauritania, Niger, Rwanda, Senegal, and Togo (Figure 1). Six participants were included from the host country, Senegal, as the national statistical agency was in the process of analyzing their recent census. Two participants from Guinea were also invited but due to the Ebola epidemic in Guinea and a ban on travel between Senegal and infected countries, they were not able to travel to Senegal. One participant cancelled several days before the workshop for personal reasons.

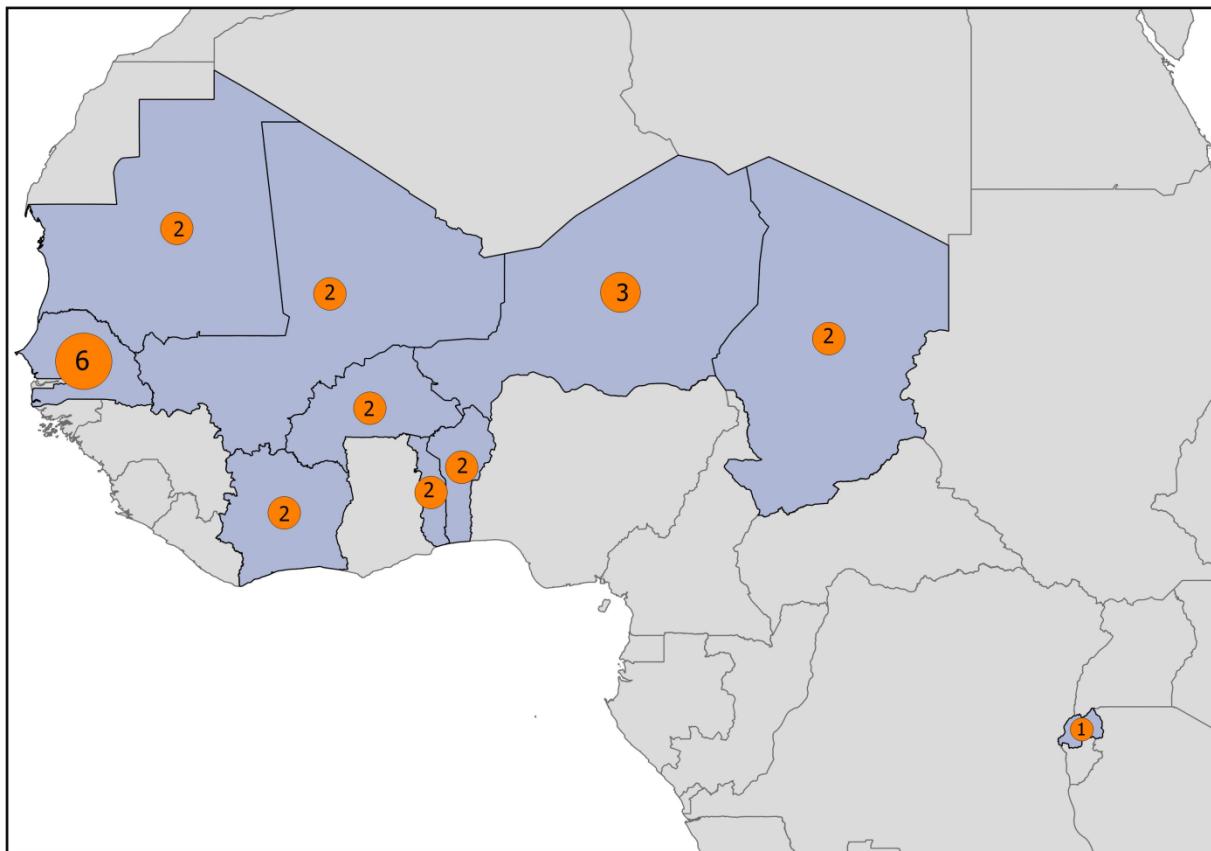


Figure 1 Workshop participants' country with number of participants from each country in orange (QGIS map).

## Instructors

The trainers included Allan Hill (University of Southampton), who, as co-author of Tools for Demographic Estimation and author of the chapters on child mortality estimation, was the lead trainer and organizer for the workshop. Claudine Sauvain-Dugerdil (University of Geneva), Richard Marcoux (ODSEF and University of Laval), Valerie Delauney (IRD-Dakar), Cheikh Mbacké (Independent Consultant -Dakar), and Laurent Richard (QGIS trainer –ODSEF and University of Laval , Canada) volunteered their time to assist in developing the programme, reviewing candidate applications and selecting participants, preparing training material, lecturing and providing personal assistance to the participants during the workshop. Two assistants based in Senegal, Jean Paul Bahoum (Agence National de la Statistique-Senegal) and Laetitia Douillet (PhD student working at the Observatoires de population au Sénégal), provided direct assistance to participants with their analyses and preparation of their final reports during the training.

## Description of workshop sessions and exercises

The first day of the workshop provided an overview of demographic estimation techniques, the types of data available for each country, and the value as well as the limitations of census data. Allan Hill introduced the objectives of the workshop and provided an overview of methods of indirect estimation and models of mortality and fertility with a focus on child mortality. This was followed by a session, presented by Claudine Sauvain-Dugerdil, on the demographics of diversity and inequality at the local and regional level providing a theoretical framework for understanding sources of inequality. In the afternoon, Valerie Delaunay discussed issues of accuracy in census data covering methods in Tools for Demographic Estimation to assure data quality and coherence. She also covered the merits of comparing census data with data from surveys and demographic surveillance sites. The final afternoon session, participants completed exercises using the online excel worksheets for Tools for Demographic Estimation to analyze child mortality by educational level of mother from data in the 2009 Mali census.

The second day of the workshop continued the focus on child mortality and inequalities at the household level using census data from Mali. Abdoul Moumouni Nouhou, workshop participant and doctoral student working with Claudine Sauvain-Dugerdil, explained the construction of an indicator of differential household mortality drawing on methods developed by Tabutin (2000) and Farah and Preston (1982). Participants also applied methods to control for data quality examining the distribution of missing data comparing /validating data with indirect estimations based on life tables. Allan Hill ended the day with a lecture on single census methods to estimate adult mortality and an exercise in which participants applied the Brass Growth Balance Method to analyze deaths reported in the last 12 months from the 2009 Mali census.

Day three focused on Fertility. Cheikh Mbacké presented the principles of indirect fertility estimation comparing the Brass P/F ratio from the UN Manual X with the relational Gompertz model that is the preferred method of estimation presented in Tools for Demographic Estimation. The session also covered the evaluation of fertility data from the census focusing on parity and births reported in the last 12 months, and the use of the el-Badry method to correct for missing and unknown births. Richard Marcoux covered other measures of fertility from census data including an exercise to estimate the child-woman ratio using Mali census data. In the afternoon, Laurent Richard introduced the participants to QGIS software and with Richard Marcoux they showed participants how to use the software to present a spatial analysis of fertility differences within a sub-population and at different geographic levels using Mali census data.

The fourth day was devoted to the application of the different methods and analyses to the participants' country data. Participants worked in country groups with data from the most recently available country census, which each team had been asked to bring with them to the workshop. The trainers and training assistants provided personalized assistance to the individual country groups who requested help with their analyses including: validation and correction of data, the creation of an index of relative child mortality per woman, and other estimations of child mortality and fertility presented or included in the online manual. The participants then entered the results of their analyses in QGIS to map regional variations as well as visually represent differences between genders, education, etc. Prior to the workshop, Laurent Richard had prepared country files in QGIS for each participant's country so that participants could easily and quickly map the results of their analysis.

The final day of the workshop began with a presentation by Allan Hill of life tables and other methods included in Tools for Demographic Estimation. This was followed by a presentation

of longitudinal surveys such as the Indepth Network and the Population observatories in Senegal by Valerie Delaunay (IRD), Cheikh Tidiane Ndiaye and Samba Ndiaye, both with the Agence Nationale de la Statistique et de la Démographie – Sénégal. They led a presentation on the value of DSS sites as sources to detect errors and biases in the census. The rest of the day was devoted to participant presentations of their analyses and maps of results using their most recently available country census data. Each country team prepared and presented a PowerPoint presentation summarizing the results of their analyses and mapping out regional differences in indicators.

### **Planning and onsite logistics**

The staff at the Campus Numerique de l'AUF, took care of all logistic support including arranging and purchasing international air travel for participants, accommodation and local transportation as well as meals during the workshop and coffee breaks. AUF also provided internet access and computers, though most participants preferred to work on their personal laptops. AUF also arranged for press coverage, which was an opportunity to highlight to the Senegalese public the importance of the census and the utility of census data for planning and programmes. Several articles appeared in the Senegalese press.

The IUSSP Secretariat recruited the trainers, prepared and distributed the call for participants and their selection by the trainers, and coordinated the French translation of Tools for Demographic Estimation, and made local arrangements with AUF. IUSSP directly covered trainers and training assistants' travel and accommodation and payments related to their services as well as the services of translators for the French translation of Tools for Demographic Estimation. All course materials are made available on the IUSSP website.

We would like to thank all the trainers. Allan Hill graciously agreed to organize the training at a relatively short notice. Richard Marcoux, Claudine Sauvain-Dugerdil and Valerie Delaunay all readily volunteered their time to assist Allan in developing the workshop programme, reviewing and selecting participants from the region, and giving lectures as well as individual assistance to participants during the workshop. Richard Marcoux used his ODSEF connections to ensure that analysts in the regional statistical offices were made aware of the workshop and also recruited Laurent Richard to provide an introduction to QGIS. We are grateful to Laurent Richard for preparing clear, written user instructions for QGIS which enabled all the participants, with just a single afternoon introduction to QGIS, to be able to map the results of their data analysis--a real feat considering a whole week has been devoted to QGIS training at previous workshops. The staff at AUF is also to be thanked for offering their services in the aftermath of the organization of the *XVe Sommet de la Francophonie* that ended a few days before the workshop.

### **Participant evaluation of workshop:**

After the workshop, the IUSSP Secretariat sent participants a link to an anonymous online survey of the participant's appreciation of the workshop. The questionnaire covers accommodation and working conditions as well as the content, format, and relevance to participants of the training workshop. The results of this survey can be compared to other IUSSP workshop surveys because many of the questions are identical. Some open questions are included, which aim to identify ways of improving the training. The survey, which is written in French, was sent by email using Survey Monkey to the 24 workshop participants on 23 December 2014, followed by a reminder on 6 January 2015. The survey was closed on 8 January, when all participants had responded. With 24 respondents the response rate was 100%.

### **Summary of evaluation results:**

Accommodation and working conditions appear to have well-rated by most participants (in particular accommodation and computer/software). Overall, working conditions were rated “very satisfactory” by 25% of respondents and “satisfactory” by 58%.

Regarding the workshop format, the main finding of this survey is that the duration of the workshop was considered too short (by two-thirds of participants). Similarly, 61% of participants found the time devoted to “practice” too short. In other workshops organized by the IUSSP Francophone Network (FraNet), the duration has been extended to 10 days and this change has been praised by most participants.

The difficulty of the exercises and training appears to have appropriate (for 78% of respondents); trainers appear to have been knowledgeable (for 91% of respondents); explanations were clear (for 65% of respondents); training materials were particularly praised (by 83% of respondents).

Most participants declare that after the training, they understand perfectly and could apply the methods they learned without any assistance (between 80% and 96% of respondents, depending on the method).

The question relating to the usefulness of the French version of the online Tools for Demographic Estimation shows genuine enthusiasm for the materials and intention to use and encourage their colleagues to use of the modules (see Q16, page26).

Overall, the workshop was considered very useful by 82% of participants and 100% would recommend it to their colleagues.

Suggestions for improvement focus on:

- providing more time for group exercises;
- sending the exercises in advance.

### **Recommendations for future workshops:**

Given the number of applicants who applied to attend the workshop as well as the strong evaluations of workshop participants, there appears to be high demand for short, though more likely, 10-day to two week training workshops on demographic estimation methods covered in Tools for Demographic Estimation. Ideally, we would have liked to have involved instructors from the demographic training institutions in the region, but the timing of funding and the workshop did not enable us to collaborate more closely with those institutions (ISSP, IFORD, and ENSEA). A future workshop should include instructors from those institutions so that these workshops can be offered more frequently and ensure that analysts employed in the national statistical agencies and for other organizations are trained in these methods. Most of the participants at the seminar had received their training from IFORD, ISSP or ENSEA.

## **List of Participants**

### **Formateurs**

Allan G. Hill	Professeur, Dept of Social Statistics and Demography, , University of Southampton, UK
Claudine Sauvain-Dugerdil	Professeure, Labodémo, Université de Genève, Suisse
Richard Marcoux	Professeur, Département de sociologie, l'Université Laval, Canada
Valerie Delaunay	Chargée de Recherche Institut de Recherche pour le Développement (IRD)
Chiekh Mbacké	Consultant independent, Dakar, Sénégal
Laurent Richard	Professionnel de recherche, l'Université Laval

### **Assistants de formation**

Jean Pierre Bahoum	Assistant, Agence Nationale de la Statistique et de la Démographie (ANSD)
Laetitia Douillet	Assistant, Observatoires de population au Sénégal

### **IUSSP Representative**

Mary Ellen Zuppan	Executive Director, IUSSP, Paris France
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### **Trainees**

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## Atelier de formation

### Analyse démographique pour la prise de décisions.

**Tendances et inégalités de mortalité et de fécondité en Afrique francophone :  
les outils en ligne de l'UNFPA / UIESP pour l'estimation démographique.**

*Dakar, Sénégal, 1-6 décembre 2014*

*Organisé par:*

*le Réseau pour le renforcement de la formation démographique en Afrique francophone de  
l'Union internationale pour l'étude scientifique de la population (UIESP)*

*en collaboration avec:*

*l'Agence universitaire de la Francophonie (AUF),  
l'Observatoire démographique et statistique de l'espace francophone (ODSEF), et  
l'Institut de Recherche pour le Développement (IRD) au Sénégal.*

## **Programme**

### **Lundi 1<sup>er</sup> décembre**

08:30-9:00    **Inscriptions et distribution des documents** (en salle de réunion).

09:00-10:30    **Introduction aux objectifs de l'atelier: Présentation des animateurs et des participants.** Allan Hill and Richard Marcoux

Contexte et contenu des « Outils pour l'estimation démographique ». Présentation des données disponibles pour chaque pays. Richesses et limites des données de recensement. Questions clefs pour les estimations démographiques. Niveaux d'analyse.

[→ A lire : *Outils pour l'estimation démographique, Chapitre 1*]

10:30-11:00    **Pause-café**

11:00-11:30    **Une démographie des inégalités.** Claudine Sauvain-Dugerdil

Principes et justification pour le focus sur la diversité à l'intérieur de chaque pays. Cadres théoriques pour comprendre les sources des inégalités.

11:30-12:15    **Les "outils": principes et exemples d'utilisation.** Allan Hill

Principes des méthodes d'estimation indirectes. Introduction aux modèles de mortalité et de fécondité. Analyse illustrative: niveaux, tendances et écarts de mortalité aux jeunes âges (5q0) au Mali selon le milieu et le niveau de scolarisation de la mère à partir des données de recensement (historique résumé des naissances).

[→ A lire : *Outils pour l'estimation démographique, Chapitres 15 & 16.*]

*12:15-13:30 Déjeuner*

**13:30-15:00 Fiabilité des données de recensements.** Valerie Delaunay

Méthodes pour assurer la qualité et de la cohérence des données par pays. Comparaisons des recensements avec les enquêtes suivies. Tests de cohérence.

[→ A lire : *Outils pour l'estimation démographique, Chapitre 1*]

*15:00-15:30 Pause-café*

**15:30-17:30 Exercices en groupes par pays.**

Tendances de la mortalité aux jeunes âges selon la scolarisation et le milieu de résidence des mères. Comparaisons avec les données indépendantes (EDS). Commentaires sur les différences entre les pays.  
[→ A lire : *Outils pour l'estimation démographique, Chapitres 15 & 16*.]

*19:00 Diner en groupe au restaurant (à déterminer)*

## **Mardi 2 décembre**

**09:00-10:30 Analyse des inégalités au niveau des ménages avec les données de recensement, application à la mortalité aux jeunes âges.** Abdoul Moumouni Nouhou et Claudine Sauvain-Dugerdil

Identifier les attributs pertinents des ménages tels que mesurés par les recensements, exemple du Mali. Application des "outils": quotients de mortalité selon quelques attributs clés. Exercices en groupes par pays.

*10:30-11:00 Pause-café*

**11:00-12:15 Mesures individuelles de la mortalité** Claudine Sauvain-Dugerdil

Construire un indicateur de mortalité différentielle des ménages (méthode de Farah et Preston et celui de Tabutin partie sur la mortalité).

Exercices en groupes sur le cas du Mali.

[→ A lire : Tabutin (2000) Farah et Preston (1982)]

*12:15-13:30 Déjeuner*

**13:30-15:30 Fiabilité des mesures individuelles de la mortalité.** Allan Hill and Claudine Sauvain-Dugerdil

Contrôles de la qualité des données: a) examen de la distribution des données manquantes ; b) comparaison/validation avec les estimations indirectes basées sur les tables de mortalité.

*15:30-16:00 Pause-café*

**16:00-17:30 Le mortalité des adultes** Allan Hill

Principes : recensement unique ; méthode de Brass. Application aux données sur les décès dans les 12 derniers mois. Différentiel par sous-population.

## **Mercredi 3 décembre**

**09:00-10:30 La fécondité: données et principes** Cheikh Mbacke

Les parités par femme et naissances dans les 12 derniers mois. Valider les données et méthode d'analyse - P/F et Gompertz.

[→ A lire : *Outils pour l'estimation démographique, p 33-59*]

*10:30-11:00 Pause-café*

**11:00-12:15 La fécondité: mesures à partir d'un recensement** Richard Marcoux

Différentes mesures de la fécondité et disparités entre sous-population. Exemple des ratios enfants/femmes.  
[→ A lire : *Desplanques, 1993*]

**Différentiels de fécondité** Richard Marcoux

Données et résultats: Exercice sur les ratios enfants-femmes au Mali.

*12:15-13:30 Déjeuner*

**13:30-15:30 L'outil QGIS** Laurent Richard

Présentation du logiciel et applications simples.

*15:30-16:00 Pause-café*

**15:30-17:30 Analyse spatiale de la fécondité** Richard Marcoux et Laurent Richard

L'exemple de la mesure de la fécondité et disparités entre sous-populations et à différentes échelles géographiques

## **Jeudi 4 décembre Travail en équipe-pays**

**09:00-10:30 Choix des thématiques à traiter à partir des données dont disposent sur place les équipes-pays**

*10:30-11:00 Pause-café*

**11:00-12:15 Exercices en groupes par pays.**

*12:15-13:30 Déjeuner*

**13:30-15:00 Exercices en groupes par pays.**

*15:00-15:30 Pause-café*

**15:30-17:30 Exercices en groupes par pays.**

## **Vendredi 5 décembre**

**09:00-10:30 Survol d'autres outils dans « Outils pour l'Estimation Demographique »**  
Allan Hill.

Tables types de mortalité pour les sous-populations. Présentation des modèles et des standards. Utilisation du système de logits pour sortir les tables de mortalité synthétiques.

*10:30-11:00 Pause-café*

**11:00-12:00 Comparaison avec d'autres sources pour mieux comprendre les erreurs et les biais dans les recensements: enquêtes suivies** Cheikh Tidiane Ndiaye et Valerie Delaunay

Observatoires de population au Sénégal et intérêt pour l'amélioration de la collecte de données en démographie. Présentation par)

**12:00-12:15 Période de préparation des présentations des équipes**

*12:15-14:00 Déjeuner*

**14:00-15:30 Les recensements et l'interprétation des inégalités.**

Présentations de travail en groupes ou par pays.

**15:30-17:30 Séance de synthèse**

Présentation des résultats et propositions pour les analyses approfondis et les publications.

**17:30 Clôture et évaluation suivi par un cocktail.**

## Workshop Photos



