

# EpiData Software for Operations Research in Tuberculosis Control

A course developed by EpiData Promoters\* in collaboration with the EpiData Association and the International Union Against Tuberculosis and Lung Disease



**\* EpiData Promoters:**

Hans L **Rieder**, Kirchlintach, Switzerland

**Chiang** Chen-Yuan, Taipei, Taiwan

Sven Gudmund **Hinderaker**, Bergen, Norway

Achilles **Katamba**, Kampala, Uganda

Ajay M V **Kumar**, Bangalore, India

Nguyen Binh **Hoa**, Hanoi, Vietnam

Marcel **Zwahlen**, Berne, Switzerland

Zaw Myo **Tun**, Mandalay, Myanmar

Hans L Rieder for the EpiData Promoters

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**Note on versions of EpiData software:** Always use the most recent release version of EpiData software which can be obtained freely from the EpiData website <http://www.epidata.dk>. The course is updated at least whenever a new version requires adaptation or following an in-class course, whichever comes earlier.

## Course content

### Part A: EpiData Entry

- Exercise 1 A simple questionnaire
- Exercise 2 The QES-REC-CHK triplet
- Exercise 3 Using Labelblocks instead of legal values
- Exercise 4 Adding field labels and value labels
- Exercise 5 Data entry and validation
- Exercise 6 Data safety
- Exercise 7 Using an external file for Labelblocks
- Exercise 8 Dealing with incomplete dates
- Exercise 9 Keeping track of data entry time

### Part B: EpiData Analysis

- Exercise 1 A basic program
- Exercise 2 Appending and making new REC files
- Exercise 3 Creating a string variable
- Exercise 4 Aggregating data

### Part C: Operations research

- Exercise 1: Creating a working dataset
- Exercise 2: Variability in serial smears
- Exercise 3: Incremental yield from serial smears
- Exercise 4: Confirmatory results in serial smears

### Part D: More on EpiData software

- Exercise 1: Relational database and aggregating vs from “Long-to-wide”
- Exercise 2: A statistical process control chart
- Exercise 3: A simplified survival analysis
- Exercise 4: Creating a menu for standard reports

## Introduction

In the 1980ies, the United States Centers for Disease Control and Prevention (CDC) developed public health software for its Epidemic Intelligence Service. The software package was called Epi Info and experienced an unprecedented spread throughout the world's public health community and was actively supported by the World Health Organization.

The initiative to make EpiData was taken by Jens M Lauritsen from Denmark. Initially it was conceived of as part of the "Initiative for Accident Prevention" at Funen County. Why was it necessary to develop a new data entry program, if Epi Info version 6 had all that was needed in terms of control of data entry and simplicity? With the development of the Windows<sup>®</sup> operating system the majority of current computer users found it increasingly harder to cope with the DOS<sup>®</sup> operating system of working in Epi Info. Furthermore, with the change in the operating system of computers to newer versions of the Windows<sup>®</sup> operating system, the Epi Info 6.04d based on the DOS<sup>®</sup> operating system is eventually becoming obsolete. Nevertheless, the principles underlying Epi Info were fundamentally sound and needed to be preserved for the new generation of public health practitioners grown up with the Windows<sup>®</sup> operating system.

On the Epi Info discussion list there were some discussions on strategies around 1997-1998, when the Epi Info team at CDC in USA decided to make an updated Epi Info version 2000. The updated Epi Info applies a different strategy in using a completely new way of working and basing it on the Microsoft Access<sup>®</sup> database format instead of simple text files (ASCII).

Commercially available proprietary software is not focused on documentation, simplicity of use and validation of double-entered data. EpiData Entry is a program with a focus on data entry. The ambition of EpiData Entry was to create a simple to use independent application, which would not interfere with or require any special database system drivers (dll-based routines) shared with or interfering with other applications.

EpiData software consists now of two modules, EpiData Entry and EpiData Analysis. In this course you will be learning the use of both EpiData Entry (Part A) and EpiData Analysis (Part B), and to apply them to operations research (Part C), starting with its very basic functionality to increasing sophistication, and finally extend your programming skills in EpiData Analysis (Part D).

### Course Objective:

Acquire the skills to capture research study data of high quality, supported by thorough documentation of every procedure, conduct basic analyses, and apply them to operations research

## History of the course

The data for the original course were collected in a study simultaneously conducted in Benin, Malawi, Nicaragua, and Senegal.

The persons who collaborated in study design, data collection, analysis, and writing of a report were Séverin **Anagonou** (Benin), Thuridur **Arnadottir** (The Union), Fatoumata **Ba** (Senegal), Awa Héléne **Diop** (Senegal), Donald A **Enarson** (The Union), Martin **Gninafon** (Benin), A C **Kasalika** (Malawi), Hans L **Rieder** (The Union), Tone **Ringdal** (The Union), Felix L M **Salaniponi** (Malawi), Alejandro A **Tardencilla Gutierrez** (Nicaragua) and Arnaud **Trébucq** (The Union).

Utilizing the data generated in this collaborative research project, **three courses** of two weeks duration each **from 1997 to 1999** with a total of 18 participants were conducted in Paris by The Union. Subsidies to defray costs of these three courses were borne by the United States Centers for Disease Control and Prevention, the Coopération Française, the Norwegian Heart and Lung Association, the International Organization for Migration, and the Korean Institute of Tuberculosis.

The **first course** was held in **April 1997** in Paris, France. The participants were Francis **Adatu-Engwau** (Uganda), Nora **Bonso-Bruce** (Ghana), Awa Héléne **Diop** (Senegal), Asma **Elsony** (Sudan), and Amina **Jindani** (The Union). The facilitators were Thuridur **Arnadottir**, Eric **Brenner** (USA), Lawrence J **Geiter** (The Union), Hans L **Rieder** (The Union), and Arnaud **Trébucq** (The Union).

The **second course** was held in **April 1998** in Paris, France. The participants were Mohammed **Akhtar** (Pakistan), Maurice **Andriamiandrisoa** (Madagascar), Manfred **Danilovits** (Estonia), Lew Woo Jin (Korea, Republic of), **Nguyen** Phuong Hoa (Vietnam), Shanta Bahadur **Pande** (Nepal), and Alejandro A **Tardencilla Gutierrez** (Nicaragua). The facilitators were Thuridur **Arnadottir** (The Union), Eric **Brenner** (USA), Lawrence J **Geiter** (The Union), Hans L **Rieder** (The Union), and Arnaud **Trébucq** (The Union).

The **third course** was held in **April 1999** in Paris, France. The participants were Ademir **de Albuquerque Gomes** (Brazil), Fatoumata **Ba** (Senegal), Ferdinand **Kassa** (Benin), Pushpa **Malla** (Nepal), **Tieng** Sivanna (Cambodia), and Wang Jie-Siu (China), and. The facilitators were Thuridur **Arnadottir** (The Union), Eric **Brenner** (USA), Lawrence J **Geiter** (The Union), Hans L **Rieder** (The Union), and Arnaud **Trébucq** (The Union).

Because of the large costs associated with conducting the course, the course content and format was tested through interactive distance learning during the year 2000 by email. We are particularly indebted to Panganai **Dhliwayo** (Zimbabwe) and Robert **Makombe** (Zimbabwe) who went through this course in their free time. This helped in clarifying ambiguities and removing errors and uploading the course in September 2000 to the Internet (<http://www.tbrieder.org>).

The **fourth course** was held in Addis Ababa, Ethiopia, in **April 2001**. The participants were Ahmed **Abdurehman** (Ethiopia), Jemal **Aliy** (Ethiopia), Mekdes Gebeyehu **Ayicheh** (Ethiopia), Abebe **Habte** (Ethiopia), Yohannes **Mengistu** (Ethiopia), Moustapha **Ndir** (Senegal), Serkalem **Tadesse** (Ethiopia), Betru **Tekle** (Ethiopia), Mohammed Ahmed **Yassin** (Ethiopia), and Getachew Eyob **Yitelelu** (Ethiopia). The facilitators were Nils E **Billo** (The Union), Panganai **Dhliwayo** (Zimbabwe), and Hans L **Rieder** (The Union).

In 2002, the course material was once more revised to replace Epi Info 6 with EpiData Entry for questionnaire design, data checks, data entry, and data validation. The analysis of the data was continued to be done with the 6.04d DOS version of Epi Info.

The **fifth course** was held in Paris, France, in **January 2003**. The participants were Nadia **Aït-Khaled** (The Union), Kya Jai Maug **Aung** (Bangladesh), **Chiang** Chen-Yuan (Taiwan), Paula I **Fujiwara** (The Union), Achilles **Katamba** (Uganda), **Kim** HeeJin (Korea, Republic of), Dumitru **Laticevschi** (Moldova), Jones **Michongwe** (Malawi) and Jotam G **Pasipanodya** (Zimbabwe). The facilitators were Panganai **Dhliwayo** (Zimbabwe), Robert **Makombe** (Zimbabwe), and Hans L **Rieder** (The Union).

The **sixth course** was held in Yangon, Myanmar, in **December 2003**. The participants were Nyein Nyein **Aye** (Myanmar), May Yee **Chan** (Myanmar), Tin Mi Mi **Khaing** (Myanmar), Thandar **Lwin** (Myanmar), Htar Htar **Oo** (Myanmar), Saw **Thein** (Myanmar), Ti **Ti** (Myanmar), Myo **Zaw** (Myanmar), and Thin Thin **Yee** (Myanmar). The facilitators were **Chiang** Chen-Yuan (The Union), Hans L **Rieder** (The Union), and Ira D **Rusen** (Canada). In all previous courses the hypothesis was to test whether The Union's assumption that ten suspects needed to be examined to identify one case of tuberculosis was applicable to the study area. During the course it emerged, however, that even refutation of the hypothesis had relatively little programmatic implication. It was thus decided to integrate the previously supplementary exercises (dealing with variability of positive findings, patterns of recorded results, and potential incremental yield) into one single hypothesis addressing the critical value of the number of smear examinations that may be justified to identify one additional case or failure on the third diagnostic or the second follow-up smear examination, respectively.

The **seventh course** was held in Paris, France, in **January 2004**. The participants were Wafaa Hassan **Ali Taha** (Sudan), Goar **Balasanants** (Russia), Nulda **Beyers** (South Africa), Kathy **Lawrence** (South Africa), Biggie **Mabaera** (Zimbabwe), Nymadawaa **Naranbat** (Mongolia), Mahshid **Nasehi** (Iran), Mauro **Occhi** (Mozambique), Yevgeniy **Shubin** (Russia), and Abigail **Wright** (World Health Organization). The facilitators were Panganai **Dhliwayo** (Zimbabwe), Jens M **Lauritsen** (EpiData Association, Denmark), Robert **Makombe** (Zimbabwe), and Hans L **Rieder** (The Union).

The **eighth course** was held in Berne, Switzerland, in **July 2004**. The participants were Sondhja **Bitter** (Switzerland), Eva **Blozik** (Switzerland), Lorenz **Borer** (Switzerland), Michael **Endrich** (Switzerland), Karin **Imoberdorf-Baumgartner** (Switzerland), Caroline **Keller** (Switzerland), Hansjörg **Lüthy** (Switzerland), Christoph **Pammer** (Austria), Sabine **Recker** (Switzerland), Kurt **Schmidlin** (Switzerland), Jan **Wagner** (Switzerland), Sabine **Walser** (Austria), and Mark **Witschi** (Benin). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland). The curriculum of this course was changed in two important aspects from the previous courses. First, a core curriculum was developed to allow the conduct of the course within five working days without loss of any relevant course aspects. Refinements of specific aspects were offered in addenda independent of each other. This allowed course completion within one week (core curriculum) or eight days (core and extended curriculum). Second, the Epi Info Analysis component was replaced by the trial and testing version of EpiData Analysis which proved to be working smoothly without any glitches.

The **ninth course** was held in Paris, France, in **January 2005**. The participants were Anneke **Hesseling** (South Africa), **Hu** Dongmei (China), Zanele **Hwalima** (Zimbabwe), **Liu** Zhentian (China), Henri **Luwaga** (Uganda), **Nguyen** Thien Huong (Vietnam), John **Osho** (Nigeria), **Tran** Ngoc Buu (Vietnam), Nevin **Wilson** (The Union), and **Yao** Hongyan (China). The facilitators were Panganai **Dhliwayo** (The Union), Jens M **Lauritsen** (EpiData Association, Denmark), Robert **Makombe** (Zimbabwe), and Hans L **Rieder** (The Union). In this course, only free public domain software was used. Data management and analysis were done with

EpiData and EpiData Analysis, supplemented where needed with spreadsheet functions of OpenOffice.

The **tenth course** was held in Berne, Switzerland, in **July 2005**. The participants were Thomas **Bart** (Switzerland), Lisanne **Christen** (Switzerland), Stephanie **Christensen** (Switzerland), Michael **Flück** (Switzerland), Yvonne **Jansen** (Switzerland), Irène **Marty** (Switzerland), Jeanne **Moser** (Switzerland), Christoph **Napierala** (Switzerland), Barbara **Prokup** (Germany), Martin **Raab** (Switzerland), Franziska **Rabenschlag-Trösch** (Switzerland), Claudia **Sauerborn** (Switzerland), and Yasemin **Yüksel** (Switzerland). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland). This course used the same software as the January 2005 course with the latest pre-release version of EpiData Analysis (Version 0.9, Release 5, Build 26). Input from the participants and faculty led to further streamlining of some exercises.

The **eleventh course** was conducted in Paris, in **January 2006**. The participants were **Chay Sokun** (Cambodia), Andrew D R C **Dimba** (Malawi), Elhafiz **Hussein Ibrahim** (Sudan), Akramul **Islam** (Bangladesh), Suksont **Jittimane** (Thailand), **Le Van Duc** (Vietnam), **Nguyen Binh Hoa** (Vietnam), Helmuth **Reuter** (South Africa), Ezra **Shimeles** (The Union), and **Xu Min** (China). The facilitators were Achilles **Katamba** (Uganda), Jens M **Lauritsen** (EpiData Association, Denmark), and Hans L **Rieder** (The Union). In September 2005, the EpiData Association released the stable EpiData Analysis Version 1.0. Between release and course commencement, the EpiData Association released upgrade Version 1.1 which added the last functionality (aggregate command) that had been possible previously only in Epi Info DOS Version 6.

During 2005 and 2006 the structure of the course was changed into three parts (EpiData Entry, EpiData Analysis, and Operations Research.). Parts A (EpiData Entry) and B (EpiData Analysis) were stripped of the operations research component for the benefit of those who do not have sufficient time available or who wish to familiarize themselves solely with the software. Conversely, Part C (Operations research) was stripped of components now introduced in Parts A and B, concentrating on the application of the latter to the example research project.

In July 2006, the **twelfth course** was conducted in Berne, Switzerland, for Master of Public Health students and other interested participants. These were Martin **Adam** (Switzerland), Edith **Betschart** (Switzerland), Tobias **Eckert** (Switzerland), Denise **Felber Dietrich** (Switzerland), T John **Kessler-Teuscher** (Switzerland), Esther **Kolb** (Switzerland), Brigitte **Kuenzle** (Switzerland), Sonia **Menéndez-González** (Switzerland), Stefan **Neuner-Jehle** (Switzerland), Christoph Paul **Röder** (Switzerland), and Hildebrand **Schwab** (Switzerland). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In August 2006, the **thirteenth course** was given in Changsha, Hunan Province, China. All participants were from China. They were 范月玲 (**Fan Yueling**), 贾忠彬 (**Jia Zhongbin**), 阚晓宏 (**Kan Xiaohong**), 李晓凤 (**Li Xiaofeng**), 林岩 (**Lin Yan**), 邱柏红 (**Qiu Baihong**), 谭振 (**Tan Zhen**), 王铂 (**Wang Bo**), 汪清雅 (**Wang Qingya**), 张恩溥 (**Zhang Enpu**), 张宏伟 (**Zhang Hongwei**), 张会民 (**Zhang Huimin**), and 赵丁源 (**Zhao Dingyuan**). Facilitators were **Chiang Chen-Yuan** (The Union) and Hans L **Rieder** (The Union).

In December 2006, the **fourteenth** and **fifteenth courses** were given sequentially in Beijing, China. All participants were from China. In the thirteenth course the participants were 陈慧娟 (**Chen Huijuan**), 陈静 (**Chen Jing**), 陈伟 (**Chen Wei**), 房宏霞 (**Fang Hongxia**), 胡嘉 (**Hu Jia**), 梁路 (**Liang Lu**), 刘二勇 (**Liu Eryong**), 马斌忠 (**Ma Binzhong**), 王丹霞 (**Wang Danxia**), 吴顶峰 (**Wu**

Dingfeng), 于宝柱 (**Yu Baozhu**), and 张慧 (**Zhang Hui**). In the fourteenth course, the participants were 陈广华 (**Chen Guanghua**), 孔霞 (**Kong Xia**), 李曙光 (**Li Shuguang**), 罗丹 (**Luo Dan**), 马艳 (**Ma Yan**), 庞学文 (**Pang Xuewen**), 司马雅云 (**Sima Yayun**), 徐吉英 (**Xu Jiyin**), 依帕尔 (**Yi Pa'er**), 张广恩 (**Zhang Guang'en**), 赵津 (**Zhao Jin**), and 周扬 (**Zhou Yang**). Facilitators were Jens M **Lauritsen** (EpiData Association, Denmark), Biggie **Mabaera** (University of Zimbabwe, Zimbabwe), and Hans L **Rieder** (The Union), with the assistance of 胡冬梅 (**Hu Dongmei**), 徐敏 (**Xu Min**), and 张慧 (**Zhang Hui**).

In June 2007, the **sixteenth course** was given in Khartoum, Sudan. Two major changes were made to the course curriculum. The first change was that the database for Part C was changed to the utilization of the dataset collected as a course project of the January 2003 and 2004 courses (data courtesy: Dumitru **Laticevschi**, Moldova; Nymadawaa **Naranbat**, Mongolia; Achilles **Katamba**, Uganda; Biggie **Mabaera**, Zimbabwe). The second change was to use the test version 2.0 of EpiData Analysis. All participants were from Sudan. The participants were خديجة ادم محمد (Khadiga **Adam** Mohammed), اسرار محمد عبدالسلام (Asrar M A/Salam **Elegail**), معاذ سرالختم اسماعيل (Maaz Sier Elkhatim Ismail), حباب خالد الخير (Habab Khalid **Elkheir** Omer), امل السمانى اسماعيل (Amel Elsammani Mohamed Ahmed **Elmuozamil**), مناضل حسن محمد علي (Monadil **Hassan** Mohamed Ali), سيد محمد همت (Sayed Mohammed Shareef **Himat**), ثويبة عمر علي محقر (Thoeiba Omer Ali **Muhagger**), عبدالمجيد عثمان موسى (Abdelmageed Osman **Musa**), علا محمود رحمة الله (Olla Mahmoud **Rahamtalla**) and عزمي عبدالرحمن عمارة (Azmi **Omara**). The coordinator was لوران علي زين العابدين (Louran **Zein Abdin Ali**, National Tuberculosis Programme Sudan), and facilitators were الحافظ حسين ابراهيم (Elhafiz Hussein **Ibrahim**, Epi-Lab, Sudan), and Hans L Rieder (The Union).

In July 2007, the **seventeenth course** was given in Berne, Switzerland, for Master of Public Health students and other interested participants. These were Nicole **Bender-Oser** (Switzerland), Bettina **Bringolf-Isler** (Switzerland), Sabina **Büttner** (Switzerland), Christian **Frei** (Switzerland), Florian **Gutzwiller** (Switzerland), Peter **Heri** (Switzerland), Kerstin **Hug** (Switzerland), André B **Kind** (Switzerland), Dimitri **Korol** (Switzerland), Cornelia **Marti** (Switzerland), Anne **Spaar** (Switzerland), and Françoise **Teuscher** (Switzerland). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In November 2007, the course material was updated to make minor changes to Part A and to accommodate the changes introduced with the release Version 2.0 of EpiData Analysis.

In April 2008, the **eighteenth course** was given in Chisinau, Moldova. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 132) was utilized. The participants were Əlixanova Natəvan (**Alikhanova** Natavan), Azerbaijan; uCa nanava (Ucha **Nanava**), Georgia; maia qavTaraZe (Maia **Kavtaradze**), Georgia; Otilia **Scutelnicu**, Moldova; Angela **Capcelea**, Moldova; Rita **Seicas**, Moldova; Viorel **Soltan** Moldova; Ştefan **Savin**, Moldova; nino lomTaZe (Nino **Lomtadze**), Georgia; Constantin Dan **Nicolaiciu**, Romania; Iuliana **Husar**, Romania; Richard **Oleko** (Sudan). Facilitators were Jens M **Lauritsen** (EpiData Association, Denmark), Biggie **Mabaera** (Temporary Consultant to The Union, Lesotho), and Hans L **Rieder** (The Union).

In June 2008, the **nineteenth course** was given in Ulaanbaatar, Mongolia. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 132) were utilized. The participants were Пүрэвдагва Анузаяа (**Anuzaya** Purevdagva), Цолмон Билэгтсайхан (**Bilegtsaikhan** Tsolmon), Бүрнээбаатар Буянхишиг (Burneebaatar **Buyankhishig**), Бүдбазар Энхтуяа (Budbazar **Enkhtuya**), Довдон Хандаасүрэн (Dovdon **Khandaasuren**), N **Naranbold** (Н. Наранболд), Baatarxuu **Oyuntuya** (Баатархүү Оюунтуяа), Dorj **Otgontsetseg** (Дорж Отгонцэцэг), Demberelsuren **Sodbayar**

(Дэмбэрэлсүрэн **Содбаяр**), Sandagdorj **Tuvshingerel** (Сандагдорж **Түвшингэрэл**), Luvsansharav **Ulzii-Orshikh** (Лувсаншарав **Өлзий-Орших**). Hans L Rieder (The Union) was the facilitator. Following are the names of Nymadawa **Naranbat**, who organized the course, and the eleven participants written in the traditional Mongolian alphabet.



In June / July 2008, the **twentieth** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 132) were utilized. All participants were from Switzerland. They were Caroline **Bähler-Baumgartner**, Daniela **Dyntar**, Martin **egger**, Carola A **Huber**, Ursula **Kälin-Keller**, Annette **Koller Doser**, Andrea **Merkel-Hoek**, Eric **Odenheimer**, Helen **Prytherch**, Anna **Späth**, and Melinda **Spiesshofer**). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In October 2008, the **twenty-first** course was given in Kampala, Uganda. Course I was given during this five-day course. It was specifically designed to fit this 5-day course, also incorporating the previously existing brief overview of EpiData software. EpiData Entry Version 3.1 (Build 270108) and EpiData Analysis Version 2.0 (Pre-release 2.1 Test Build 141) were utilized. The participants were Raymond **Asiimwe** (Uganda), Bernard Ssentalo **Bagaya** (Uganda), Freddy **Bwanga** (Uganda), Henry **Byabajungu** (Uganda), Basra Esmail **Doulla** (Tanzania), Nicholas **Ezati** (Uganda), Fred **Kangave** (Uganda), George **Lukyamuzi** (Uganda), Diana **Nagunga** (Uganda), and Raymond **Shirima** (Tanzania). Francis **Adatu-Engwau** (Uganda) was a guest participant, and formerly a participant in the first course. The facilitator was Hans L **Rieder** (The Union), supported in part by Achilles **Katamba** (Makerere University, Uganda, and The Union Country Office, Uganda).

In February 2009, the **twenty-second** course was given in Kampala, Uganda. Course II, Part B (EpiData Analysis) and Part C (Operations research) were given during this five-day course, although some exercises had to be skipped due to the brief duration of the course. EpiData Analysis Version 2.1 (Test Build 159) was utilized. The participants were Francis **Adatu-Engwau** (Uganda), Bernard Ssentalo **Bagaya** (Uganda), Freddy **Bwanga** (Uganda), Basra Esmail **Doulla** (Tanzania), Fred **Kangave** (Uganda), Diana **Nagunga** (Uganda), and Raymond **Shirima** (Tanzania). The facilitator was Hans L **Rieder** (The Union), supported in part by Achilles **Katamba** (Makerere University, Uganda, and The Union Country Office, Uganda).

In July 2009, the **twenty-third** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2 (Build 169) were utilized. All but one participant from the principality of Liechtenstein were residents of Switzerland. They were Aline **Barbir**, Rita

**Born, Mazda Farshad, Oliver Fuchs, Juliette Gerber, Gerti Kitting Gaillard, Meltem Kutlar Joss, Teresa Leisebach Minder, Elisabeth Oberfeld, Anna Plym, Corinna Rüegg, Dino Schlamp, Eliane Siegenthaler, Federico Soldati, and Esther Walser** (Principality of Liechtenstein). The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In October 2009, the **twenty-fourth** course was given in Paris, France, for fellows and participants in the training module 2 offered by the Centre for Operational Research of The Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Dawit **Assefa Lemma** (Ethiopia), Walter Kizito **Kibango** (Kenya), Proscovia Namuwenge **Mukonzo** (Uganda), Mweete Debra **Nglazi** (South Africa), **Nguyen Binh Hoa** (Viet Nam), Mahfuza **Rifat** (Bangladesh), Srinath **Satyanarayana** (India), Zaw Myo **Tun** (Myanmar), Hannock Mukoma **Tweya** (Malawi) and Susanna Sophia **Van Wyk** (South Africa). The facilitators were Hans L Rieder (The Union) and Anthony D Harries (The Union), assisted by **Nguyen Binh Hoa** (Fellow, Viet Nam).

In March 2010, the **twenty-fifth** course was given in Paris, France, for three selected fellows and participants in the training module 2 offered by the Centre for Operational Research of The Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The course focused on Parts C (Operations Research) and D (More on EpiData software). The participants **Nguyen Binh Hoa** (Viet Nam), Zaw Myo **Tun** (Myanmar), and Hannock Mukoma **Tweya** (Malawi). The facilitators were Hans L **Rieder** (The Union) and Jens M **Laurtisen** (EpiData Association).

In July 2010, the **twenty-sixth** course was given in Berne, Switzerland, for Master of Public Health students and other interested participants. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2 (Build 171) were utilized. All participants were residents of Switzerland. They were Brigitte **Brunner**, Adrian **Businger**, Elisabeth **Maurer Schild**, Rebecca **Osterwalder**, Alexandra **Rauch**, Charles **Senessie**, Ulf **Tölle**, and Roco **Umbescheidt**. The facilitators were Hans L **Rieder** (The Union) and Marcel **Zwahlen** (University of Berne, Switzerland).

In October 2010, the **twenty-seventh** course was given in Paris, France, for fellows and participants in the training module 2 offered by the Centre for Operational Research of The Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Felix **Afutu** (Ghana), Sarabjit Singh **Chadha** (India), Karen **Du Preez** (South Africa), Razia **Fatima** (Pakistan), Oliver **Gadabu** (Malawi), Lucy **Guluka-Gawa** (Malawi), Mohammed **Kogali** (Sudan), Rose Jepchumba **Kosgei** (Kenya), Ajay Kumar **Madhugiri Venkatachalaiah** (India), Tonderayi Clive **Murimwa** (Zimbabwe), Mauro **Niskier Sanchez** (Brazil), and Kudakwashe Collin **Takarinda** (Zimbabwe). The facilitators were Hans L **Rieder** (The Union), **Nguyen Binh Hoa** (Viet Nam), Zaw Myo **Tun** (Myanmar), and Sven Gudmund **Hinderaker** (The Union).

In May 2011, the **twenty-eighth** course was given in Paris, France, for two selected fellows from the training module 2 offered by the Centre for Operational Research of The Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The course focused on Parts C (Operations Research) and D (More on EpiData software). The participants Karen **Du Preez** (South Africa) and Ajay **Kumar Madhugiri Venkatachalaiah** (India). The facilitators were Hans L **Rieder** (The Union), Jens M **Laurtisen** (EpiData Association), and Hannock Mukoma **Tweya** (Malawi).

In November 2011, the **twenty-ninth** course was given in Paris, France for fellows and participants in the training module 2 offered by the Centre for Operational Research of The

Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Henry Shadreck **Kanyerere** (Malawi), Nicholas **Kirui** (Kenya), Pranay **Lal** (India), Sharath Bugurina **Nagaraja** (India), Sharan **Ram** (Fiji), Carlos Alberto **Mendoza-Ticona** (Peru), Emmanuel **Singogo** (Malawi), Nelda **van Soelen** (South Africa), Kerry **Viney** (New Caledonia), and Aung Naing **Win** (Myanmar). The facilitators were Hans L **Rieder** (The Union), Sarabjit **Chadha** (The Union), and Ajay **Kumar** (India).

In February 2012, the **thirtieth** course was given in Kathmandu, Nepal for fellows and participants in the training module 1b offered by the Centre for Operational Research of South East Asia office of The Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.171 were utilized. The participants were Tshering **Jamtsho** (Bhutan), Tashi **Denup** (Bhutan), Shyla **Islam** (Bangladesh), Wasantha **Jayakodi** (Sri Lanka), Swati **Srivastava** (India), Suresh **Shastri** (India), Ramya **Ananthakrishna** (India), Rajendra **Basnet** (Nepal), Caetano **Gusmao** (Timor Leste), Sokhan **Khann** (Cambodia), Sarwat **Shah** (Pakistan), Iwayan **Artwan** (Indonesia). The facilitators were Ajay M V **Kumar** (The Union, India) and Srinath **Satyanarayana** (The Union, India).

In April 2012, the **thirty-first** course was given in Paris, France, for three selected fellows from the training module 2 offered by the Centre for Operational Research of The Union. EpiData Version 3.1 (Build 270108) and EpiData Analysis Version 2.2.1.178 were utilized. The course focused on Parts C (Operations Research) and D (More on EpiData software). The participants were Sarabjit Singh **Chadha** (India), Sharath **Burugina Nagaraja** (India), and Nicholas **Kirui** (Kenya). The facilitators were Hans L **Rieder** (The Union), Ajay M V **Kumar** (The Union, India), and Jens M **Laurtisen** (EpiData Association).

## Preparatory steps before you begin

We will be using solely legal and free software, which you are free to distribute further. The software we are going to use is:

Acrobat Reader

EpiData

EpiData Analysis

### Installation of Acrobat Reader™

All module texts are \*.PDF (**P**ortable **D**ocument **F**ormat) files which you can only read with the freely available Acrobat Reader™. If you have an Internet connection, you should visit the website of Adobe company:

[www.adobe.com](http://www.adobe.com)

to obtain the most recent version. If you do not have such a connection, you will find the software in the “Software” section of this website / CD-ROM.

Click on “Acrobat Reader” in the “Software” section, save it (not open) it to a directory of your choice. From within Windows Explorer, double-click the downloaded file, and follow the instructions.

### If the course comes on a CD-ROM

If your course is on a CD-ROM, it might be easiest to copy its entire content, i.e., the folder containing the course, to your computer hard disk. One level below the folder, you will see a file:

index.html

It is a commonly used convention that the opening page (the “home page”) of a Web site is given this name. The course material is organized like a Web site. If you double-click on this file name (INDEX.HTML), the Web opens. For fastest access to the Web you might wish to make a short-cut to this opening page on your desktop and then drag it down to quick launch task bar. This will always give you visible access with a single click.

### Installation of EpiData Entry and EpiData Analysis

EpiData Entry is a very small executable file. Although it is Windows-based, it does not interfere with your Windows set-up: all files are placed in a single directory without leaving any trace of it anywhere else on your system (no \*.dll files).

### If you have administrator’s rights to install software on your computer

Save the file from the Internet or from the CD-ROM if you are in an in-class course by going to the home page and look for the icon **Software** on the navigation panel on the left and click on the icon. In the page that opens, look for **EpiData Entry** and click on the link. In the **File**

**download** window that opens, click **Save** (not “Open”). Select your directory of choice click **Save**. Repeat the same procedure for **EpiData Analysis**.

In your file manager (Windows Explorer® or an alternative), find now the EpiData Entry setup file:

```
c:\yourfolder\setup_epidata.exe
```

and double-click the file. You will be offered the default installation folder:

```
c:\Program files\EpiData
```

While this is perfectly fine we recommend nevertheless to install it instead in the root:

```
c:\epidata
```

typing over the default that is offered and continue to follow the instructions. Of course, you may install EpiData Entry in the default folder `c:\program files\epidata`, but if you work in a place where installation of software is strictly controlled, this might be precisely the folder that is checked for non-approved program files.

The files will be extracted in a breeze. Among the files you see one named EpiData.exe with the EpiData icon:

 EpiData.exe

**Right-click** on this file, go to **Send To** and **Desktop (create shortcut)** and click the latter. Drag the icon from the desktop down to the task bar. This allows it to be visible from within each program, being just a single click away.

Similarly, install the EpiData Analysis file in the same folder:

```
c:\epidata
```

following the instructions and create a short-cut.

### Accessing the EpiData Entry Help file

Windows has changed the way how Help files are being accessed but the necessary plug-in is not part of the operating system in which this change came into effect. As a result, users of Windows Vista or Windows 7 cannot directly access the EpiData Entry Help file and must first visit the Internet, validate that their Windows version is genuine and then download and install the appropriate plug-in for either 32-bit or 64-bit machines. The starting web site is:

<http://support.microsoft.com/kb/917607>

### If you do not have administrator’s rights to install software on your computer

Because EpiData software is not interlinked in anyway with the Windows operating system, an actual installation is not really required. You can download the zip file from the EpiData website, and follow the instructions in the `readme.txt` file or ask your facilitator for assistance.

### Making a working directory

In order to permit a coordinated activity, all work will be done in one directory / folder.  
Create the following folder:

`c:\epidata_course`

You are now ready to begin the course.

Very handy is to have in addition a temporary folder, such as:

`c:\temp`