



# STATISTICAL METHODOLOGY AND COMPUTING SERVICE

Report of Activities  
1 September 2015 to 31 August 2016



2015-2016

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# Introduction

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## Introduction

The SMCS has become a diversified service provider and locator in the area of practical statistics. It consists of almost 6 full time equivalents of consulting staff and a network of more than 20 other specialists in data collection, processing, analysis, and interpretation at UCL. The activities include the core services of consultancy, training, and computing support for university researchers, assistance to central services of the university, collaborations in research and service consortia, and a limited involvement in general external consultancy. Efforts to consolidate the personnel base to cover the core activities continue, but at least on a mid-term horizon, the funding of the group is stable.

The current report gives an overview of the evolution of the activities over the past three academic years focusing on 2015-2016. As the corresponding tables show, the yearly work load is stable at around 400 consulting projects and 35 courses attended by about 600 participants for a total of about 1500 person days. Moreover, the statistical computing server has about 100 users. The current work load reflects the current staff capacity whereas the potential demand is still considerably higher as many research institutes will have to upgrade their data collection and analysis capabilities within the future years corresponding to the evolution of a more data-driven research society. The SMCS follows and explores the evolving tendencies to be able to provide guidance, advice, and assistance.

In this context, the new course “Junior Data Analyst” is of particular importance. Its preparation and the association and collaboration with external trainers who are professionals in the fast evolving analytics field allows the SMCS team to discover new methodologies and applications which will be useful in future research consultancy.

Following the recommendations of the users committee, the SMCS continues working on its visibility towards a community of potential users which continuously renews itself as doctoral researchers graduate and new candidates are accepted.

The involvement in the Consortium UCL-CLL-Altissia providing support to the language testing and training of the Erasmus+ Online Linguistic Support (OLS) has continued in 2015/16 and will probably last until 2020/21. The SMCS also continues as a partner in the Metabiose study on metabolomics. Finally, our collaboration with the FOREM continues. Our intervention consists of an intensive course in biostatistics for people with degrees or experience in the biosciences who either lost their jobs or had problems in starting a career and who are looking for additional qualifications.

The challenges for the SMCS in 2016-2017 will be to become more visible and to be able to deal with the additional requests which will come from this increased visibility. Moreover, we have several ongoing or starting projects which are very interesting from a methodological point of view.

Your input, assistance, support, and curiosity will be greatly appreciated.

Enjoy reading,

Christian Ritter

President of the management committee.

## News

### Organization

The management committee (comité de gestion) met twice under the new ROI. We decided to switch from three meetings per year to only two and to give them specific themes. As announced last year, the fall meeting focuses on long term planning whereas the spring meeting concentrates on finances, project accounting, and short term planning. A continuing problem is uniting all the members on these two dates. Since the new ROI specifies that a part of the members of the comité de gestion are institutional (presidents of reference institutes), reconciling the respective agendas has become more difficult and we may have to find a different way of working.

With respect to the users committee, the new format of an afternoon with public presentations of case studies following by the official meeting restricted to the official representatives was very well-received and continued in 2016. Further ideas were gathered to make this event even more attractive to a wider audience.

### Personnel

Sabrina El Bachiri has left UCL as well as Matthieu Van Pachterbeke.

The SMCS hired a new biostatistician, Lieven Desmet, who mainly works, as Sabrina El Bachiri, on projects from health sciences (SSS sector) and help with trainings in the related areas.

The SMCS could count on the help of Corine Lhôte for the Metabiose project.

### Statistical Software

The Big5-Stat initiative is now operated by the central computing service (SGSI) and the SMCS only maintains the role of an observer.

Overall, the initiative seems to work well, even though we sometimes receive reports of unusually long waiting times. Most of these cases can be traced back to misunderstandings or peculiarities of the university organization. In particular, the special status of St Luc as

a hospital whose management is separated from UCL but whose members may also belong to the UCL research institutes of the health sciences sector still too often creates problems with respect to access to appropriate statistical software. We will have to continue working on this issue in collaboration with the central computing services.

### The New University Certificate “Junior Data Analyst”

In collaboration with the LSBA, the SMCS has launched a new certificate called “Junior Data Analyst” (JDA), an intensive course for graduates in humanities in practical data management, analysis, and interpretation. The courses are given from October 2016 to December 2016. The project is sponsored by the FSE “Fonds Social Européen” (EU). In the first year, we received about 50 applications, accepted about half of them, and in the end, 16 people enrolled.

### Promotion, administration, miscellaneous

Marie-Pascale Cosse has joined the SMCS team in September 2016. She is in charge of the promotion of the SMCS activities and quality management. In particular, she works on the promotion of the JDA certificate, promotional materials such as poster, catalogue of all the SMCS services, new website, mailing and newsletter.

# People

## People

### Management and Administration

Director: Nathalie Lefèvre

President of Management Committee: Christian Ritter

Administrative support: Tatiana Regout

### Consultants

**Céline Bugli** (UCL/IMMAQ/SMCS – 0.8 EFT)

Main areas of activity: Medical Sector (SSS), Science and Technology Sector (SST), services for external clients.



Doctor of Sciences – Statistique (UCL, 2006)

Master (DEA) in Statistics (UCL, 2003)

Ingénieur Civil en Mathématiques Appliquées (UCL, 2001)

**Lieven Desmet** (UCL/IMMAQ/SMCS – 0.75 EFT – since August 2016)

Main area of activity: Health Sciences Sector (SSS).



Doctor of Sciences, orientation statistics (KUL, 2009)

Master in Mathematics (VUB 2004)

Master in Applied computer sciences (VUB, 1999)

**Sabrina El Bachiri** (UCL/IMMAQ/SMCS – 1.0 EFT – until April 2016)

Main area of activity: Health Sciences Sector (SSS).

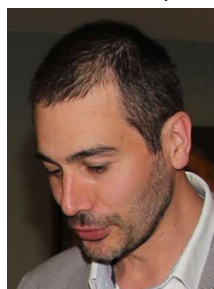


Master en Statistique (UCL, 2013).

Master in Biomedical Sciences (ULg and ULB, 2011).

**Alain Guillet** UCL/IMMAQ/SMCS – 1 EFT)

Main areas of activity: Medical Sector (SSS), and statistical computing.



Master professionnel Sciences, Santé, Technologie, mention Mathématiques et Applications, spécialité Ingénierie Mathématique (Université de Nantes, 2005)  
DEA en informatique (Université de Nantes, 2004)

**Nathalie Lefèvre** (UCL/IMMAQ/SMCS – 0.4 EFT and UCL/IPSY – 0.5 EFT)

Main areas of activity: Humanities Sector (SSH) and University Administration.



Master en Statistique (UCL, 2007)

Doctorat en Sciences psychologiques (UCL, 2003)

Licence en Psychologie et en Sciences de l'Éducation, orientation psychologie expérimentale (UCL, 1992).

# People

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**Corine Lhôte** (UCL/IMMAQ/SMCS – 0.6 EFT – April 2016 – September 2016)

Main areas of activity: Metabiose project



Doctorat en Biologie cellulaire (Limoges, 1993)  
Diplôme d'Etudes Approfondies (DEA) Biomembranes, (Limoges, 1990)  
Maîtrise de Biologie cellulaire (Poitiers, 1989)

**Arnaud Pollaris** (UCL/IMMAQ/SMCS – 1 EFT)

Main areas of activity: Humanities Sector (SSH).



Master en Statistique (UCL, 2011).  
Master en Sciences psychologiques, à finalité spécialisée, (UCL, 2009).

**Catherine Rasse** (UCL/IMMAQ/SMCS – 0.8 EFT)

Main areas of activity: Science and Technology Sector (SST).



Master (DEA) en Statistique (Gembloux, 2007).  
Ingénieur agronome, orientation Génie rural (Gembloux, 2001).

**Matthieu Van Pachterbeke**

(UCL/IMMAQ/SMCS – 0.6 EFT)

Main areas of activity: Humanities Sector (SSH).



Doctorat en Sciences psychologiques (UCL, 2011).  
DEA en Sciences psychologiques et en sciences de l'éducation (UCL, 2007)  
Diplôme de Gestion et administration des entreprises (UCL, 2004)  
Licence en Sciences Psychologiques (UCL, 2003)

## Associated Consultants

Associated consultants are professors or consultants who collaborate with the SMCS on trainings and consulting projects but who are not formally SMCS staff.

## Professors

**Bernadette Govaerts** (UCL/IMMAQ/ISBA)

Main areas of activity: Industrial statistics, bio-informatics.

**Catherine Legrand** (UCL/IMMAQ/ISBA)

Main areas of activity: biostatistics.

**Christian Ritter** (UCL/IMMAQ/LSBA)

Main areas of activity: Industrial statistics, statistical computing.

## Consultants at other institutes

Jonathan Dedonder (UCL/IACCHOS)

Sébastien Fontenay (UCL/IMMAQ)

Nathalie Lefèvre (UCL/IPSY)

Jérôme Ambroise (IREC),

Aline van Maanen (Institut Roi Albert II - Cancérologie et Hématologie)



# People

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## Researchers and Research Assistants

Some researchers and doctoral students of the ISBA participate in the consulting and training activities of the SMCS. This gives them an opportunity to gain valuable experience in practical statistics.

## Interns

Noureddine Ayad, January – March 2016,  
Manon Ceinos, September 2015 – January 2016,  
Séverine Guisset, July – August 2016,  
Corine Lhôte, January – March 2016,  
Leila Nombo, September - October 2015.

## Workshop Instructors

The following list gives the names of the persons who contributed to the training and consulting activities of the SMCS. This includes SMCS and associated consultants, other members of the ISBA, visitors, and external trainers.

Maïlis Amico (ISBA), Aurélie Bertrand (ISBA), Philippe Bocquier (IACCHOS), Céline Bugli (SMCS), Vincent Bremhorst (ISBA), Joris Chau (ISBA), Benjamin Colling (ISBA), Jonathan Dedonder (IACCHOS), Sabrina El Bachiri (SMCS), Sébastien Fontenay (IRES), Bernadette Govaerts (ISBA), Alain Guillet (SMCS), Anna Kiriliouk (ISBA), Nathalie Lefèvre (SMCS), Manon Martin (ISBA), Gildas Mazo (ISBA), Arnaud Pollaris (SMCS), Catherine Rasse (SMCS), Christian Ritter (ISBA), Bruno Schoumaker (IACCHOS), Sylvie Scolas (ISBA), Nathan Uyttendaele (ISBA), Matthieu Van Pachterbeke (SMCS), Sam Waltener (FUSL), SAS Institute trainers.

# Training

## Training

Training is one of our main missions. In general, we focus on hands-on training in practical statistics and the use of statistical software in ways which are not covered by regular university courses.

**Nine new training program** have been proposed, three of them were given on the Woluwe campus.

The SMCS offers the following types of training:

- **Regular SMCS trainings:** 2-3 day courses (once or twice per year) on commonly used statistical and associated software at UCL (SPSS, R, SAS, SAS Enterprise Guide, JMP, Stata, NVivo, Excel, Limesurvey).

Some trainings are organized to respond to the users' requests. For example, the Stata training, "*Panel data analysis using Stata*", May 2016. The SMCS offers now three trainings about Stata, one as an initiation to Stata and two more advanced. Some training organized to respond to user requests become thereafter Regular SMCS trainings.

- **Customized trainings for specific audiences** (UCL and external). Examples: Analyses multivariées avec SPSS (organized in collaboration with IPSY but open to everyone), Data exploration and bases of statistical modeling with JMP (in collaboration with Biophare for GSK)
- **Courses sponsored by the Walloon government agencies in the context of BioWin**, a project to enhance the competitiveness of health related enterprises in the Walloon region. Courses offered within this framework are centrally advertised and course fees are partially subsidized.
- **In partnership: courses taught in collaboration with SAS.** Some annual or special courses qualify for sponsoring from SAS. The course 'Formation SAS: SAS advanced programming' belongs to this category.
- **Lunch sessions (Midis du SMCS):** short (1-3h) informal demonstrations of statistical methods or software of particular practical interest.

- **Seminars:** SMCS is also regularly invited to sessions organized by other entities. For example, Seminar requested by Louvain Bionics, May 9 (C. Rasse)

Table 1 shows that the SMCS taught 38 courses in the academic year 2015-2016 for a total of 108.5 teaching days.

**Table 1. Global statistics on SMCS trainings.**

	2013/14	2014/15	2015/16
Courses	31	37	38
Course Days	95.5	112.5	108.5
Participants UCL	297	450	448
PersonDays UCL	574	837.5	826
Participants Ext	122	164	117
PersonDays Ext	634	619	660.5

Table 2 shows the number of participants from the three sectors.

**Table 2. Number of participants per sector.**

	2013/14	2014/15	2015/16
SSH	135	161	147
SSS	38	115	77
SST	47	60	65
Students	76	112	159
Central services	1	2	0

The observed fluctuations between years and sectors reflect natural variation and the organization of special events. For example, the spike for SSS in 2014/15 corresponds to a special session on sample size calculation.

Table 3 (SSH) shows that the statistics training program reaches the entire sector.

# Training

**Table 3. Origin of participants from the humanities sector (SSH).**

	2013/14	2014/15	2015/16
<b>SSH</b>	<b>174</b>	<b>206</b>	<b>239</b>
IACS-SPLE-ESPO	47	54	53
ILC	15	34	13
ILSM-LSM	18	9	14
IMMAQ	15	8	16
INCAL-FIAL		6	7
IPSY-PSP	34	48	42
JURI-DRT	5	2	1
RSCS-TECO	1		1
Students	39	45	92

Table 4 (SSS) shows that also in the health sciences sector the courses were followed by participants from a wide range of institutes. As explained earlier, the spike in attendance in 2014/15 corresponds to a special session on sample size calculation. Remarks at the users committee and at other occasion suggest a high latent demand among new doctoral students which is not yet sufficiently addressed by the current course offerings. Moreover, many clinical researchers find it difficult to attend longer trainings due to their appointment schedules at the university clinics. We are discussing ways of extending our training services to these communities via integration into the activities of the doctoral schools and an increased use of e-learning resources.

**Table 4. Origin of participants from the health sciences sector (SSS).**

	2013/14	2014/15	2015/16
<b>SSS</b>	<b>40</b>	<b>135</b>	<b>82</b>
ASS	1	1	1
DDUV	2	30	11
IONS	8	17	14
IREC-MEDE-FSM	9	30	22
IRSS-FSP	9	14	11
LDRI-FASB	7	14	15
Cliniques	2	9	3
Students	2	20	5

Table 5 (SST) shows small increase in participation from the institutes ELI as during the last academic year. Other numbers are globally stable.

**Table 5. Origin of participants from the science and technology sector (SST).**

	2013/14	2014/15	2015/16
<b>SST</b>	<b>82</b>	<b>107</b>	<b>127</b>
AGRO	6	6	1
ELI	22	31	39
ICTEAM	6	2	3
IMCN		1	
IMMC		1	4
IRMP			4
ISV	8	7	8
LOCI	1	9	5
SC	4	3	1
Students	35	47	62

Overall, the training activity of the SMCS occupies about 2 full time equivalents of personnel. A bit more than half of this effort is directly oriented towards the UCL research and teaching units, the remainder towards external clients, such as the FOREM and some private enterprises and public administrations.

The trainings given to external clients fulfill three objectives. First, they are a part of our mission of service to society. Second, they allow us to develop new course modules for internal use, such as the FOREM training which allowed us to assemble an entire course cycle in the area of bio-informatics. These course modules can then be offered to members of the life and health sciences groups in either SST and SSH. Third, but not least, they allow us to generate financial resources to have enough funds for our staff who is not financed by UCL. We of course have to be cautious in the choice and management of such trainings to make sure there is a positive return (financial and others).

Finally, members of the SMCS are occasionally participating in sessions of the course on statistical consulting (LSTAT3220) where they tell the students about their career path and their way of working. This is well appreciated by the students who can find out more about what it is like to be a statistician in practice.

# Consulting

## Consulting

Consulting is another of our main missions. We help researchers, administrators, and external clients in collecting meaningful data and in interpreting them.

Whenever possible, we provide methodological assistance to enable our clients to solve their problems by themselves. This can be just a piece of *advice* or a short *assistance*. This type of consultancy is pre-paid by the financial contributions of the sectors.

On occasion, the complexity or the amount of the statistical work requires that the SMCS consultant spends a larger amount of time on a project. The consultancy thereby evolves into a *collaboration*. This requires additional funding by the client. Moreover, if the input of the statistical consultant yields new insight, common publishing rules require that he/she should become a co-author of publications based on the work.

**Table 6. Origin of consulting projects**

Client split	2013/14	2014/15	2015/16
Research	261	318	294
Master's projects	86	87	73
Admin. services	9	12	10
External clients	9	7	10
<b>Total</b>	<b>365</b>	<b>424</b>	<b>387</b>

From 1 September 2015 to 31 August 2016, the SMCS worked on 387 projects of which 377 came from UCL. As expected, most of the projects concerned university research. Some larger projects involving the university administration and external clients are shown in the section called Larger Projects.

The following tables present the breakdown of the origins of the projects in the three university sectors. They show clearly that the SMCS services reach almost all areas of research at UCL.

Table 7 (SSH) shows that the number of request from the humanities sector fluctuates around 130-160 requests per year. As in previous years, the institute and the school of psychology had by large the highest share. This

is why these units employ a 50% statistical advisor (Nathalie Lefèvre, who in the remainder of her time acts as the managing director of the SMCS). Also IACCHOS has an internal specialist for data matters (Jonathan Dedonder) who is associated member of the SMCS. Besides these two subject areas with particularly high activity, requests came from almost all units of the sector, including law and theology. Only the institute for philosophy has not yet requested assistance from the SMCS.

**Table 7. Origin of consulting requests from the humanities sector (SSH).**

	2013/14	2014/15	2015/16
<b>SSH</b>	<b>159</b>	<b>159</b>	<b>131</b>
IACCHOS-ISPOLE-ESPO	28	30	20
ILC-INCAL-FIAL	14	10	11
ILSM-LSM	11	14	7
IMMAQ	4	7	7
IPSY-PSP	97	95	84
JURI-DRT	2		1
RSCS-TECO	3	3	1

Table 8 (SSS) shows that on average there are a bit more than 100 requests per year from the health sciences sector. The areas related to clinical research and the medical school account for about 60% of this, IRSS and IONS for most of the remainder. Requests from the drug research institute and the De Duve institute increased since the SMCS started regular office hours on site.

**Table 8. Origin of consulting requests from the health sciences sector (SSS).**

	2013/14	2014/15	2015/16
<b>SSS</b>	<b>101</b>	<b>139</b>	<b>120</b>
ASS	1	1	1
DDUV-Ludwig Institute	2	12	15
FASB	4		1
IONS	9	28	16
IREC-MEDE-FSM	65	72	69
IRSS-FSP	13	10	7
LDRI	5	9	11
Cliniques - Albert II	2	7	

# Consulting

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Table 9 (SST) shows that the numbers of requests for 2013/14 2014/15 and 2015/16 are increasing.

**Table 9. Origin of consulting requests from the science and technology sector (SST).**

	2013/14	2014/15	2015/16
<b>SST</b>	<b>93</b>	<b>113</b>	<b>124</b>
AGRO	6	13	12
ELI	45	44	66
EPL	1		
ICTEAM	2	2	2
IMCN	3		1
IMMC	1	2	8
ISV	29	43	27
LOCI		5	5
SC	6	4	2
Commission doctorale			1

Our main consultant for the science and technology sector (SST), Catherine Rasse, also continues to be a member of an ethics committee related to experimentation on animals.

Finally, two projects also originated from the central administration.

The statistics shown above do not concern large scale external projects documented in later a section of this report.

# Computing

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## Servers and Statistical Software

The SMCS maintains two servers, a statistical computing server and a software sharing server for smaller or single user. Moreover the SMCS works together with the SGSI and the CISM on several activities to reduce barriers to using appropriate statistical software for university members.

## Statistical Computing Server

The system was renewed one year ago. Our current two performance servers are based on a dual Intel Xeon E5-2667 processor with 128 GB of RAM and an SSD disk for the SAS temp. This server system and its storage are hosted by the CISM (UCL high performance computing platform) who is in charge of the operating system and the user management. The SMCS takes care of the statistical software on these machines. Currently, SAS, R and Stata-MP are available.

The statistical computing server was mainly used by people from IMMAQ, IRSS and ELI (the table on the following page provides more details about the users of the two servers). Users may be divided in two categories: people who want to use SAS for free in the big5-stat project and people in need of a high performance computer mainly for the three installed software packages (large RAM and multi-processors version). The average CPU charge was 12% on smcs3 and 6% on smcs4 with both spikes (100% for smcs3 and 60% for smcs4) occurring when users execute paralleled programs in Stata or R.

More data analysts at UCL should consider using this server system. It offers more performance, storage, and data security than local PC-based systems.

## Software Sharing Server

Our second system is a Windows terminal server which hosts smaller statistical applications like HLM, Lisrel, MPlus and UCINET. The idea behind this service is resource sharing. Some specialized statistical programs are initially purchased and used by single individuals or work groups. However, use may be limited and these programs may also be of interest to other researchers at UCL. So, instead of installing them on local systems we

promote an installation on our terminal server, as long as the license permits it. We can give the main user priority access while allowing others to use the program when it is available. The software sharing server also allows hosting statistical software which is no longer used but which has to be kept for follow up or future work.

Access to the sharing server was opened in late 2010 to people who agreed to experiment with using statistical software on a remote computer. There are now 26 users (20 from SSH, 5 from SSS and 1 from SST). The number of users decreased this year in SSS and in SST but this can be explained by the fact we pushed nQuery and PASS users to migrate to Ucilla since these programs were no more installed on the server. The high number of users from SSH is expected since some of the installed programs come from IPSY.

This server is scheduled for stop in the 2015-16 academic year and will be replaced by Ucilla (see hereunder).

## Ucilla

Ucilla is a service provided by the SGSI that allows somebody who asked an access to it to use software without having it on his computer. It is recommended to do so via an installed client on the computer but it also works through a web browser.

It is possible to add software. Who pays for it will depend on many criteria so you should send an email to [serveurs-smcs@uclouvain.be](mailto:serveurs-smcs@uclouvain.be) to have more details.

## Available Software

Via the Big5-STAT initiative, any UCL member can request the installation of or the access to one or several of the five most used statistical software packages, R, JMP, SAS (via Enterprise Guide), SPSS, and Stata. The request should be made via the central computing service desk 8282 or better via "Catalogue de service" (cf. <https://www.uclouvain.be/477533.html>). 819 UCL members used this service (360 from SSH, 179 from SSS, 86 from SST and 194 for which we don't know the sector).

In case of hardware incompatibility, there is a solution via a web portal (Ucilla).

High performance solutions in SAS, R and Stata (multi-

# Computing

processor) are available on the statistical computing server.

The software sharing server currently hosts HLM, Lisrel, MPlus and UCINET. HLM was paid by IPSY, the others by the SMCS except for UCINET that is free.

Finally, Ucilla already offers the big5-STAT softwares, HLM, JMP, JMP Genomics, Minitab, MPlus, nQuery, PASS, SAS Enterprise Guide, Simca, SPSS, SPSS Premium and Stata. All but Simca are paid by the SGSI; Simca is paid by the professor B. Govaerts.

The access conditions and procedures for the statistical computing server and the software sharing server are available under the Servers tab of our official web page.

## Usage Statistics

**Table 10. Users of the statistical computing server.**

	2013/14	2014/15	2015/16
<b>Total</b>	<b>105</b>	<b>96</b>	<b>125</b>
<b>SSH</b>	<b>50</b>	<b>46</b>	<b>59</b>
IACCHOS- ISPOLE-ESPO	6	7	11
ILC	2	0	1
ILSM-LSM	2	6	7
IMMAQ	34	27	36
IPSY-PSP	6	6	4
<b>SSS</b>	<b>21</b>	<b>23</b>	<b>29</b>
ASS			1
IONS		4	6
IREC-MEDE	6	3	4
IRSS-FSP	15	15	16
LDRI		1	2
<b>SST</b>	<b>34</b>	<b>27</b>	<b>36</b>
ELI	21	13	19
ICTEAM	2	2	3
IMCN	1		2
IMMC	1		1
IRMP	1		
ISV	5	5	4
LOCI	1		
AGRO		4	5
EPL	2	1	
SC		2	2
<b>Central services</b>			<b>1</b>
SGSI			1

**Table 11. Users of the software sharing server.**

	2013/14	2014/15	2015/16
<b>Total</b>	<b>47</b>	<b>33</b>	<b>26</b>
<b>SSH</b>	<b>41</b>	<b>20</b>	<b>20</b>
IACCHOS	4	2	2
ILC		1	
ILSM-LSM	1	2	2
IMMAQ	10	8	2
IPSY-PSP	26	7	14
<b>SSS</b>	<b>6</b>	<b>9</b>	<b>5</b>
IONS		4	2
IREC	2	2	2
IRSS	3	2	
LDRI	1	1	1
<b>SST</b>		<b>4</b>	<b>1</b>
ELI		1	
ICTEAM		1	1
ISV		1	
SC		1	

### Usage of the web portal - Ucilla.

The most used softwares were JMP (443 connections) and SPSS (264) because two courses require the former and students who cannot install the later on their computers have access to SPSS on Ucilla. SAS Enterprise Guide is the third most used (108 connections); it can be explained by the fact it allows Mac users to run SAS who cannot execute it natively on their OS. After these softwares, we find nQuery (58 connections), MPlus (45), SPSS Premium (38), PASS (36), Stata (33) and Minitab (19). The other ones were almost not opened.

## Help for students

Students sometimes need help to install a statistical software package on their own computers to prepare exercises or to make a project. The SMCS helps them to do it since the course assistants or professors don't always know what went wrong during the installation.

In the academic year 2015-2016, the platform helped 212 students of which 203 came for assistance with SPSS. This suggests that the available information for installation may not yet be sufficient.

# Larger Projects

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## Larger Projects

### Survey Support

The Survey Project is an initiative of the humanities sector SSH to facilitate the design and implementation of surveys. It has two components: methodology and infrastructure.

With respect to methodology, the SMCS collaborated with other UCL experts to identify and prepare training material. The resulting training sessions were very well attended and had to be repeated. They will be further adapted to the needs of the public.

Simply the fact that the participants in these courses meet the UCL experts in survey practice is helpful. The participants then know who to ask for help when planning a survey (questionnaire construction, sampling and analysis). It also facilitates the work of our associated consultants in the Humanities Sector who can then anticipate analysis and follow-up needs. The consultants can also alert the participants about training needs and potential statistical pitfalls of the intended survey design or analysis.

Set up with SSH support, the Survey Project now helps SSS and SST sectors as well. It is an example of how a service such as the SMCS can help identify cross disciplinary needs and assist in creating joint approaches for dealing with them.

### Research Project - Erasmus+OLS

In spring 2015, the SMCS became partner in the European project Erasmus+OLS. It is a seven year project to provide on-line language support to several hundred thousand participants of Erasmus+ programs. The language support consists of a testing platform to determine the level in the work language of the host institution at the beginning and the end of the stay and of an on-line learning platform.

Our role in this project is to monitor the performance of a progressive on-line test (a test in which the difficulty of later questions depends on the answers to earlier ones), to assist in the design and realization of customer satisfaction surveys, to facilitate communication of

performance statistics, and to provide expertise to the scientific committee.

During the last months, several consultants and associated consultants were involved in the project. We expect to continue with an average involvement of 0.5 EFT over the duration of the project.

### Research Project - Metabiose

In collaboration with ISBA, the SMCS participates in a research consortium on Metabolomics (Metabiose). In this consortium, a research group at the University of Liège is responsible for the medical and analytical aspects and the ISBA/SMCS works on the data analysis and interpretation methodology. For this purpose, the ISBA/SMCS hired a research assistant to work at the SMCS offices. This arrangement assures that the researcher has a suitable work environment including computing assistance and resources, and that the SMCS can benefit from the acquired know-how with respect to analyzing OMICS data.

### Course Module - FOREM

Since 2011/12, the SMCS provides a course in Bio-Informatics for the Walloon career center, FOREM. This course is aimed at people who have degrees in the bio-sciences but who are having problems in finding a suitable job.

Originally, the course volume was 19 days. It has since then increased to 33 days (corresponding to more than 200 hours of lectures and accompanied exercise sessions).

The results are quite encouraging as most of the former participants are quickly finding interesting work. Since the volume of this course is substantial, we submitted a proposal to associate an accredited certificate with it. Moreover, the course modules developed for this training program will be made available to UCL researchers.



# Larger Projects

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## Course Modules - BioWin

The SMCS is also providing short course modules in the context of the BioWin initiative of the Walloon government. This type of collaboration is currently under revision due to budget constraints. This will probably mean that our trainings will no longer be viable as exclusive sessions for government sponsored job seekers. We will therefore try to open them up to a larger public while reserving a certain number of places for participants sent by BioWin.

## Junior Data Analyst

In collaboration with the LSBA, the SMCS has launched a new certificate called “Junior Data Analyst”, an intensive course for graduates in humanities in practical data management, analysis, and interpretation. The courses are given from October 2016 to December 2016. The project is financed by the FSE “Fonds Social Européen” (EU). The whole SMCS team has been actively involved in the preparation of the course program and the different modules.

## Collaboration with the LSBA

The LSBA has asked to the SMCS to gather documentation as a support for its courses. The information consists on videos, data bases, literature. This collaboration will continue during the coming years.

## Your Project?

As you can see from the above report, we are prepared and ready to become partners in research projects and grant applications. Don't hesitate to contact us.

We can provide an early estimation of the amount of statistical work needed in your project, plan important stages of this work, and give an outline of the statistical methodology which would be employed.

The advantages of involving us in the early stages include a more thorough study design, efficient allocation of resources and methodologies, and data which are easier to analyze and interpret.

The benefits are higher research efficiency and more credibility towards the granting authorities and scientific journals.

# Appendix

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## Appendix

### List of Trainings and Seminars 2015-2016

#### Trainings

- Introduction to R language (in English): 5 demi-journées, du 2 au 4 septembre 2015 de 9h30 à 16h30 (A. Guillet)
- Pratique de la statistique avec SPSS: 5 demi-journées, du 7 au 11 septembre 2015 de 9h30 à 12h30 (N. Lefèvre et J. Dedonder)
- **NEW** - Rappels de statistique de base et contrôle de qualité (en collaboration avec le Forem à destination de Diagenode): 5 jours, entre le 10 et le 28 septembre 2015 (A. Guillet)
- Formation en analyse de données et statistiques pour la recherche et le développement dans la bioindustrie (en collaboration avec le Forem Formation Biotechnologie à destination des demandeurs d'emploi): du 28 septembre 2015 au 12 janvier 2016 + évaluation le 22 janvier
- **NEW** - Introduction au logiciel JMP: 2 demi-journée, le 29 septembre et le 30 septembre 2015 de 13h30 à 17h00 (C. Bugli et S. El Bachiri)
- Initiation au logiciel Nvivo: 3 demi-journées, du 12 au 14 octobre 2015, de 9h30 à 12h30 (J. Dedonder et M. Van Pachterbeke)
- Panorama des statistiques à l'UCL: 2 heures, le 19 octobre 2015, de 13h à 15h (M. Van Pachterbeke)
- Formation SAS : programmation de base, cours le mardi 6 et mardi 20 octobre 2015 de 9h à 17h et TP les mardi 10/11, 24/11 et 08/12: de 10h45 à 12h45 et de 14h à 16h (Formateurs SAS Institute, C. Bugli)
- Data management and analysis using Stata: 5 demi-journées, du 26 au 30 octobre 2015, de 9h30 à 12h30 (S. Fontenay and A. Guillet)
- Réalisation d'enquête par questionnaire: 4 demi-journées, les 9 et 10 novembre 2015, de 9h30 à 17h (M. Van Pachterbeke)
- Data exploration and bases of statistical modeling with JMP (en collaboration avec Biophare à destination de GSK): 4 demi-journées les 19 et 20 novembre 2015, de 9h à 17h (C. Rasse)
- Outils statistiques pour le suivi de la qualité de processus de production de composés, dans le cadre de la Maîtrise complémentaire en transfusion (en collaboration avec la Croix-Rouge de Belgique): 1 demi-journée, le 20 novembre 2015 (B. Govaerts)
- Analyser la médiation, la modération et la médiation modérée avec SPSS: 4 demi-journées, les 26 et 27 Novembre 2015, de 9h30 à 16h30 (A. Pollaris et N. Lefèvre)
- Introduction à la réalisation d'enquêtes en ligne avec LimeSurvey: 2 demi-journées, le 08 décembre 2015, de 9h30 à 16h30 (M. Van Pachterbeke et S. Waltener)
- **NEW** - Formation à l'analyse de survie (à destination de Business & Decision): 2 demi-jours, le 8 juin et le 9 décembre 2015 (A. Bertrand)
- Plans d'expérience avec JMP (en collaboration avec Biophare à destination de Promethera): 6 demi-journées les 10, 11 et 15 décembre 2015, de 9h à 17h (C. Rasse)
- Pratique de la statistique avec SPSS: 5 demi-journées, du 4 au 8 janvier 2016, de 9h30 à 12h30 (N. Lefèvre et J. Dedonder)
- Cours d'initiation au langage R: 5 demi-journées, du 11 au 15 janvier 2016, de 9h30 à 12h30 (A. Guillet et V. Bremhorst)
- Introduction aux modèles multi-niveaux avec SPSS: 5 demi-journées: du 18 janvier au 22 janvier 2016, de 9h à 12h30 (A. Bertrand et M. Amico)
- Exploration de données et modélisation statistique avec JMP (en collaboration avec Biophare): 6 demi-journées, du 25 au 27 janvier 2016, de 9h à 17h (C. Rasse)
- Notions d'échantillonnage 3 demi-journées: le 26 janvier de 9h à 17h et le 27 janvier 2016, de 9h à 12h30 (A. Pollaris)

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- **NEW** - Inférence et modélisation statistiques avec le logiciel JMP: 2 demi-journées, le mardi 26 janvier de 13h30 à 17h, et le mardi 02 février de 13h30 à 17h (C. Bugli et S. El Bachiri)
  - Analyses multivariées en Rcommander: 4 demi-journées, les 01 et 02 février 2016, de 9h30 à 16h30 (M. Van Pachterbeke et M. Martin)
  - Initiation au logiciel NVivo: 3 demi-journées, du 1 au 3 février 2016, de 9h30 à 12h30 (J. Dedonder et N. Lefèvre)
  - Introduction to R language (in English and in Woluwe): 6 half-days, February 9, 11 and 18, from 9:30 to 12:30 and from 13:30 to 16:30 (N. Uyttendaele et J. Chau)
  - Plans d'expérience avec JMP (En collaboration avec Biophare): 6 demi-journées, les 22, 23 et 29 février 2016, de 9h à 17h (B. Govaerts et C. Rasse)
  - Formation SAS : SAS advanced programming: 5 journées, les 16/02, 23/02, 1/03, 8/03 et 22/03
  - Initiation aux modèles d'équations structurales (SEM) avec STATA: 5 demi-journées, du 14 au 18 mars 2016, de 9h30 à 12h30 (A. Pollaris et J. Dedonder)
  - Data management et analyse avec Stata: 5 demi-journées, du 4 au 8 avril 2016, de 9h30 à 12h30 (en français) (S. Fontenay et A. Guillet)
  - **NEW** - Analyses multivariées avec SPSS: 4 demi-journées, les 11 et 12 avril 2016, de 9h30 à 16h30 (M. Van Pachterbeke et N. Lefèvre)
  - Utilisation avancée du logiciel NVivo (niveau II): 2 demi-journées, les 14 et 15 avril 2016 de 9h30 à 12h30 (J. Dedonder)
  - Cours d'initiation à SAS pour les chercheurs: 5 demi-journées, les 18/04 et 19/04 de 9h à 17h et le 20/04 de 14h à 17h (S. El Bachiri)
  - **NEW** - Panel-data analysis using Stata: 2 half-days, 13 May 2016, from 9:30 to 16:30 (in English) (S. Fontenay)
  - Cours d'initiation au langage R: 5 demi-journées, du 6 au 10 juin 2016, de 9h30 à 12h30 (A. Guillet)
  - **NEW** - Introduction à l'analyse de Réseaux Sociaux: 3 demi-journées, du 15 au 17 juin 2016 de 9h30 à 12h30 (J. Dedonder, M. Van Pachterbeke)
  - **NEW** - L'utilisation du logiciel JMP pour l'analyse de données pré-cliniques et cliniques: 2 demi-journées, les 15 et 22 juin 2016, de 13h30 à 17h (C. Bugli)
  - **NEW** - Cours d'introduction à l'analyse quantitative des biographies pour les sciences sociales (organisé par le Centre de recherche en démographie de l'Institut IACCHOS): 2 demi-journées, le 29 juin 2016, de 9h à 17h (Philippe Bocquier, Bruno Schoumaker)

## Seminars

- Séminaire à la demande de Louvain Bionics : le jeudi 19 mai 2016 de 16h00 à 18h00 (C. Rasse)
- Une plate-forme au service de la recherche : le SMCS, séminaire pour les chercheurs de l'IMCN de 12h à 15h le 19 octobre 2015 (C. Rasse) – Matériel préparé mais formation non dispensée du fait de l'absence de participants

# Appendix

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## Publications and Presentations by SMCS members

Although the primary mission of SMCS members is to support other research projects, its members are encouraged to participate in scientific meetings, to make presentations, and to publish.

### Publications

#### Journal Articles

1. Crollen, Virginie; Vanderclausen, Camille; Allaire, Florence; Pollaris, Arnaud; Noël, Marie-Pascale. *Spatial and numerical processing in children with non-verbal learning disabilities*. In: *Research in Developmental Disabilities*, Vol. 47, p. 61-72 (2015). doi:10.1016/j.ridd.2015.08.013. <http://hdl.handle.net/2078.1/167533>
2. Gillet, Philippe; Rapaille, André; Benoît, Anne; Ceinos, Manon; Bertrand, O.; de Bouyalsky, I.; Govaerts, Bernadette; Lambermont, M. *First-time whole blood donation: A critical step for donor safety and retention on first three donations*. In: *Transfusion Clinique et Biologique*, Vol. 22, no.5-6, p. 312-317 (2015). doi:10.1016/j.traccli.2015.09.002. <http://hdl.handle.net/2078.1/171388>
3. Michoux, Nicolas; Guillet, Alain; Rommel, Denis; Mazzamuto, Giosué; Sindic, Christian; Duprez, Thierry; Lenglet, Christophe. *Texture Analysis of T2-Weighted MR Images to Assess Acute Inflammation in Brain MS Lesions*. In: *PLoS One*, Vol. 10, no.12, p. e0145497 (2015). doi:10.1371/journal.pone.0145497. <http://hdl.handle.net/2078.1/170395>
4. Pereira, Benoît; Vandeuren, Aubry; Govaerts, Bernadette; Sonnet, Philippe. *Assessing dataset equivalence and leveling data in geochemical mapping*. In: *Journal of Geochemical Exploration*, Vol. 168, no. 168, p. 36-48 (2016). doi:10.1016/j.gexplo.2016.05.012. <http://hdl.handle.net/2078.1/175190>
5. Scherazad Mekious; Houmani, Zahia; Bruneau, Etienne; Masseaux, Carine; Guillet, Alain; Hance, Thierry. *Caractérisation des miels produits dans la région steppique de Djelfa en Algérie*. In: *Biotechnologie, Agronomie, Société et Environnement*, Vol. 19, no.3, p. 219-229 (2015). <http://hdl.handle.net/2078.1/163778>

#### Conference Papers

1. Larigaldie, Nathanaël; Andres, Michael; Lefèvre, Nathalie; Pesenti, Mauro; Dormal, Valérie. *The Perceptual origin of length and numerosity interaction: Evidence from the Müller-Lyer illusion*. Annual meeting of the Belgian Association of Psychological Sciences (Brussels, Belgium, 28/05/2015). <http://hdl.handle.net/2078.1/169091>
2. Pereira, Benoît; Vandeuren, Aubry; Govaerts, Bernadette; Sonnet, Philippe. *Comment s'assurer de l'absence de biais entre des jeux de données lorsque l'on se base sur plusieurs jeux d'analyses de sol géoréférencées pour cartographier la géochimie des sols?* JES, les 13es journées d'études des sols (Louvain-la-Neuve, Belgique, du 05/07/2016 au 08/07/2016). <http://hdl.handle.net/2078.1/175093>

#### Presentations and applied statistics workshops

Larigaldie, Nathanaël ; Andres, Michael ; Lefèvre, Nathalie ; Pesenti, Mauro ; Dormal, Valérie. *The Perceptual origin of length and numerosity interaction: Evidence from the Müller-Lyer illusion*. Annual meeting of the Belgian Association of Psychological Sciences (Brussels, Belgium, 28/05/2015).

Lefèvre Nathalie, Mahieu Timothée, Tilquin Jonathan, Pollaris Arnaud. *Soyez "Data-thérapeute" : Quand les sciences humaines enrichissent l'interprétation des données...* Soirée-métier animée par Nathalie Lefèvre (Louvain-la-Neuve, le 14 avril 2016).

Christian Ritter. *See and Show and Surfing the Seas of Data* (Louvain-la-Neuve, October 09, 2015).

# Appendix

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## Divers

*Participation à la commission d'éthique en matière d'expérimentation animale du Secteur des sciences et technologies de l'Université catholique de Louvain. Rasse C. (2015-2016).*

*Rencontre et échange de bonnes pratiques avec l'équipe de statistique de l'INED ; Lefèvre N. ; Institut National d'Etudes démographiques in Paris, July 2016.*



2015-2016