Students at work:
Traffic observation in academic libraries

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2015

Summary
TTT is a method that provide librarians with a new type of statistical information about their users and the services they offer on-site. This particular instrument has been developed and extensively tested in Norway, but it can be used by any library that is located inside a building. The data can be used for a variety of purposes: as a training in empirical research; as a way of raising awareness about the library space among staff; as a monitoring instrument; as a tool for planning and redesign; and as a storehouse of statistical arguments vis-a-vis institutions that own or fund academic libraries.

The method does not depend on external funding, statistical authorities or infrastructure beyond a computer with web access. It can provide comparable data across libraries, library sectors, countries and regions. It can be used anywhere, but it should, the author hopes, be particularly useful in countries that are at an early stage of statistical development for the library sector.

An observation instrument
Libraries need information about their own activities in order to manage their operations and to gain support for their future development. Libraries usually have easy access to data about their budget, their staffs, their collections and their lending activities. This information is produced by the systems used to manage their operations. But they tend to know very little about their users.

They could organize user surveys. Many libraries do. They could use systems data to study the lending patterns of their clients. A few libraries do that as well. But they would still lack information in a very basic field: *what the users are doing* inside the library. How is the library space used by students and staff? Which parts of the building are most in demand? Which areas are underutilized? TTT is a tool to gather such data. In this paper I give a practical introduction to the method

TTT stands for the expression Track The Traffic. TTT is a simple, but highly structured method to collect, process and present data on user behavior inside libraries. It is best to start with a floor plan. You may use an existing plan or draw your own. The you should divide the public areas of the library into functional zones, such as the periodicals area, the main desk, the reference section, reading rooms, etc. Each zone should be briefly described. Include at least its function (main role), its size (in sqm), the total number of workplaces (seats) and the number of

workplaces with desktops (computer seats).

Data on student activities in the various zones are collected by rapid tours of observation through the library, at fixed times during the day, usually for one full week. The tours can be carried out by library staff. A fixed observation path and a standardized list of activities is used. Before you start to collect data you should therefore take a look at the library space. Try to establish a route that will take you through all relevant areas.

In Norway, the TTT approach has been tried out in about one hundred libraries, including more than twenty academic libraries, since 2008. Most of these studies were carried out by library students during their practice periods, which is part of their second year curriculum. But a handful of academic libraries have continued to carry out such data collection for management purposes. That is true of my own institution, the Oslo and Akershus University College of Applied Sciences. The Humanities and Social Science Library at the University of Oslo completed a major TTT project in early 2015. The polytechnical universities in Østfold and in Gjøvik have also started to collect TTT data on a regular basis. A number of TTT studies have also been realized outside Norway: by Tampere University in Finland, by Mykolas Romeris University in Lithuania and by a couple of universities in the United States. (See the appendix for details).

Since data can be gathered and processed by the library's own staff, TTT is not an expensive method. The only equipment needed is pen, paper and an ordinary computer to process the data. The instrument itself, with detailed instructions for use, is fully documented on the open web. The author has also published standardized spreadsheets for data processing on Google Docs. Any library doing a TTT can copy these spreadsheets and apply it to their own data at no cost. Once you have entered your data the spreadsheet will generate a standard set of tables and diagrams for further analysis.

The cost of TTT lies in the time spent gathering and processing the data. In a university with a few thousand students the library will probably need to invest a total of seventy-five or one hundred working hours the first time it does a TTT study. Once the routines are in place, the time cost goes down. A repeat study might take fifty or sixty hours.

A single tour takes half an hour

If you want to get acquainted with TTT without investing in a full scale study, we recommend a single tour of observation through the whole library during a peak period. You should cover all areas open to the public. If the tour starts at 10.50 AM, say, and finishes at 11:10, the final count will be a good estimate of the number of users or customers inside the library around 11 AM on the day in question.

You should count the number of persons in each area as you pass them (or "sweep by"). The first studies of this kind were actually called "seating sweeps". Library sweeps were first introduced in Canada about fifteen years ago (Given and Leckie, 2003). If you should happen to

meet the same person twice, count them twice. This is an important technical point. We are not counting individuals as such, but encounters with persons during our walk through the library.

Libraries actually do a similar thing when they measure traffic at the gate. Turnstiles and electronic counters count visits or passages rather than persons. A visit is a transition into library space. A visit starts when a person crosses the border between outside and inside. It ends when the person exits the border. If a visitor has forgotten something inside and returns to pick it up, that counts as a new visit. A single visitor may visit the library several times a day.

A TTT observation occurs when the observer passes a person located in a particular area of the library. If the same person is encountered in a different area five minutes later, this counts as a new observation. The observer is like an electronic counter that moves through library space and counts activities as it sweeps by.

A mini-project takes 6-8 hours

If you want to know more about the method and about your users, and are willing to spend six or eight hours, we suggest a small three day project. on Day you should spend an hour or so to

- sketch a floor plan of your library (or copy an existing one)
- divide the library into different functional zones (as you perceive them)
- trace a path that covers all the zones once

On Day 2 you should walk through the library about once an hour and note the number of people in each zone. This might require two or three hours in total, but will of course interrupt your day. Do the first walk through soon after the library opens, maybe half an hour afterwards, and continue till it closes. Do not wait for the library to fill up with visitors “to improve the numbers”. For planning purposes it is just as important to document times and spaces with few visitors as it is to document high numbers. If staff work in two shifts, recruit a second observer, so that the day as whole is covered.

On Day 3 you may

- enter the observations into a spreadsheet
- calculate the **average attendance** zone by zone during the day as a whole
- calculate the **total attendance** hour by hour
- calculate the **average attendance** in the library as a whole during the day
- if you know the total number of visitors, you may also calculate the **average length of stay**

This small project will give you a quite detailed picture of the way library space is being used. Such a one-day study may well provide enough information for a small report or article. You can create curves or bar diagrams that show the pattern of use during the day, and you can produce tables or diagrams that show the intensity of use of different zones.

The average length of stay is calculated as follows:

1. (clearly) the total number of hours spent in the library = (the number of visits) * (the average length of stay)
2. (it is also the case that) the total number of hours spent in the library = (the number of hours the library was open) * (the average attendance)
3. (since 1 equals 2, we can write) the number of visits * the average length of stay = the number of hours the library was open * the average attendance

This means that the average length of stay = [(the number of hours the library was open) * (the average attendance)] / (the number of visits)

A full-scale project takes a couple of weeks

Library use tends to vary quite a bit during the week. If we only study one day, our results may not be valid for other days of the week. To reduce this uncertainty, we feel that a full-scale traffic study should cover at least one full week from Monday to Friday. If the library is open during the weekend, these days should also be included.

A full-scale study could be limited to the number of people who are using the various zones at different times of the day and the week. But the data become much more interesting if you also gathe information about the activities of the users. In that case we recommend using or adapting the standard TTT List of Activities. These sixteen categories cover activities that are easy to observe and that occur in nearly all libraries.

1. ALUP = Walks or stands alone. Covers standing or walking around without browsing and without relating to library staff or other users.
2. ALBR = Browses alone. Covers browsing or scanning of items on shelves while standing or walking around. Includes watching exhibitions.
3. ALSI = Sits alone. Sits alone without relating to media, to library staff or to other users.
4. ALMD = Sits alone reading (or writing). Sits and reads by her/himself. Includes individual work - reading and or writing - without using data equipment.
5. ALLT = Sits alone with laptop. Sits alone with active mobile or tablet computer (active screen)
6. ALPC = Sits alone with stationary computer. Sits alone with stationary active computer (active screen).
7. ALSF = Individual contact with staff. Covers all direct contact with staff. Here we want to register activities where staff spends time with an individual user, whether it involves speaking, writing, demonstrating or walking around.
8. GRUP = Walks or stands in company. Participates in a group of two or more persons that stands or walks around without browsing and without relating to library staff.
9. GRBR = Browses in company. Participates in a group of two or more persons that browse or scan items on shelves together while standing or walking around.
10. GRSI = Sits in a group without media. Participates in a group of two or more persons that does not relate to books or other media or to library staff.
11. GRMD = Sits in a group with media. Participates in a group without active computer,

where at least one person relates to books or other media. [Use GRLT og GRPC for groups with active use of data].

12. GRLT = Sits in a group with laptop/s..Participates in a group where at least one person is using a mobile PC (active screen).
13. GRPC = Sits in a group with stationary computer/s. Participates in a group of two or more persons that is using one or more stationary PCs (active screen).
14. GRSF = Group contact with staff. Covers all direct contact with staff. Here we want to register activities where staff spends time with a group of several users, whether it involves speaking, writing, demonstrating or walking around.
15. QUE = Queuing. Covers all visible waiting for service or facilities, whether in a proper line or not: waiting for staff, waiting for access to equipment, toilet queues, aso.
16. ETC = Other activities. Activities not covered by the other categories.

Libraries that want to expand the list, can do so without losing comparability if they subdivide existing categories. If they want data on the use of printers, photocopying or self-service loans, they could add the category EQU = using library equipment (except for computers). When somebody needs comparable data, they simply combine EQU with ETC. But libraries that remove categories, or that classify activities in different ways, lose the ability to compare their own results with libraries that use the standardized list, however.

Management and research

A full-scale study will provide solid documentation for an administrative report. If you spend some time relating it to similar studies in other libraries and countries, It can also be developed into a research paper. A typical presentation of a TTT study will start with background information about the organization and about the methodology:

- a description of the university
- a description of the library
- a description of the zones - including their size (sqm), number of seats, number of PCs
- a description of the list of activities
- a description of the observation calendar (days and hours)

A second section or chapter may consist of tables and diagrams presenting

- the average amount of traffic through the day, hour by hour
- the average amount of traffic through the week, day by day
- the pattern of activities in the library as a whole

with brief comments, explanations and analysis.

Once the library has been presented as a whole, it is often useful to go deeper into the results by looking at traffic and activities in some (or even all) of the zones. This third section can use the same presentation formats (tables, diagrams) as the second chapter, but now applied to a single zone rather than to the library as a whole. A concluding fourth chapter can be used to highlight a few interesting results, to make comparisons with relevant studies from other libraries, to suggest possible improvements in the organization of the public space and to indicate questions that need additional data to be tackled.

The standard list of activities is meant as an aid to systematic observation. It is suitable for data collection but less so for data analysis. Once the data have been collected we can combine them into new categories. This can be done in many different ways and need not be standardized to the same extent as the observation instrument itself. The selection below is a personal one:

We define activities involving group work or active use of data as *modern activities*, as opposed to the traditional idea of quiet individual study. The mean value for all fourteen libraries was 71 percent. This means that more than seventy percent of the time spent at the libraries involved group work, digital tools or (often) both. More than forty percent of the time was spent in groups. More than half the time was spent with active computers (screens on). Less than twenty percent of the time was used for individual reading and/or writing without a computer.

It is also worth noting that nearly ten percent of the time was spent standing or walking around. We also find people just sitting around without using data or paper media. Ten percent of the sit-down time inside the library was used for relaxation or talking with friends. Two percent of the time is spent browsing the shelves. In public libraries browsing is much more common. And very little time, less than one percent, is spent interacting with staff.

Computer use is high and increasing. Computers often involve portables– and group work. The average values, as percentages of all computer use, were:

- 57% of the time involved the students' own computers (portables/laptops)
- 44% involved group work

Only one third of the computer time involved individual work at the library's own PCs.

Seventeen libraries

Below I summarize the results from fourteen traffic studies in Norwegian academic libraries. In most cases the users were observed for one full week. All data were collected in May, except for the survey at Oslo University College in March 2009. This particular investigation was exceptionally large and thorough. It was carried out by three Erasmus students and is fully documented on the web, see Arango et al. (2010).

The fourteen cases were

2008

1. Bodø University College
2. Buskerud University College at Hønefoss
3. Hedmark University College at Hamar
4. Norwegian University of Science and Technology (NTNU). Humanities and social

sciences library (Dragvoll, Trondheim)

5. Oslo University College. Main library (P48).
6. Oslo University College. Engineering and social sciences library (P35).
7. Sør-Trøndelag University College.

2009

8. Oslo University College. Main library (P48). Arango et al. (2010).
9. Oslo University College. Engineering and social sciences library (P35).

2010

10. Akershus University College.
11. Molde University College.
12. University of Oslo. Humanities and Social Sciences library (Humsam).
13. University of Stavanger.

2012

14. Tampere University. Lehto et al. (2012). FINLAND.

2013

15. East Carolina University. James (2013). USA
16. Mykolas Romeris University. Olechnovičius (2013). LITHUANIA

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17. University of Oslo. Humanities and Social Sciences library (Humsam). .

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Nairobi, June 5, 2012 / Gjerdrum, June 27, 2015