Capturing patterns of everyday life

- **presentation of the visualization method**
VISUAL-TimePAcTS
with examples

Paper for the IATUR meeting in Copenhagen, August 2006

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1. Problem addressed

There are several problems in the modern society that may be addressed and thoroughly investigated by time use approaches. On a general level there are, for example, studies made on the division of labour between men and women and on differences in time use and daily occupations between generations. On a more specific level there are, for example, studies on specified activities, especially communication activities, both travelling and communicating by using information- and communication technology. Studies on energy-use related to daily activities are coming. Since there now are follow up studies of national time use in many countries, interesting studies of change in time use can be performed.

Most time use studies show mean values (minutes used per individual for various activities) which give broad and general knowledge about the daily time use in groups and populations in focus. Frequency diagrams are also often presented. In these studies it is, however, not possible to look behind this time use pattern of the group, to see the individuals that form the group or population. First, there are great variations even among what is assumed to be a homogenous group. Second, the activities spread over the hours of the day are usually not shown. Third, it is not possible easily to relate the results to real daily life since all time spent for a type of activity is summed up, even though an activity type occurr several times during the day, i e the rythm of the human life is neglected. This can cause problems and the credibility of the results might be put into question if decision makers and others can not relate to the calculated figures – and then time use studies will not be used in arguments, for policies or decision making.

In this paper we will present the latest version of the visualization program we have developed, called VISUAL-TimePAcTS. The program aims at overcoming some of the problems presented above. In VISUAL-TimePAcTS it is possible to locate a specific activity in the context of which it is part, and examine how it contributes to the achievement of the goal of a project. It shows who performs the activity and in what context, how many times, when during the course of the day and for how long in each instance. The geographical location where the activity takes place and the companionship present during the performance of the activity can be integrated into the visualization. The method also includes simple statistics and conventional frequency diagrams.

2. Background

At earlier IATUR meetings fragments of what now is the VISUAL-TimePAcTS method have been presented. In eIJTUR vol 1, no 1 the foundations of the method were presented, but it was not given a label (Ellegård & Cooper 2004). Last year I showed how household members who perform household related projects together can be visualized. It is obvious that many daily life projects are not performed by one individual alone. Rather the performance of projects is divided between household members. My example was the household project "serve meals to the family", including buying food, preparing meals, laying the table and washing the dishes. The project in the example shown is regarded as female gendered and it was shown that both sexes participated in its fulfilling. That kind of complicated arrangements are not easily revealed by mean values from time use studies.

Now we have further developed the application and re-implemented it within a free, portable software framework that does not require expensive commercial software and have renamed it VISUAL-TimePAcTS. The name is an abbreviation which indicates what it is about: *VISUAL* implies that it is a visualization application while *Time-PAcTS* is the name of the specific kind of diaries and categorization scheme that is used in the application. It stands for **T**ime, the time of the performed activity, **P**lace, the geographical location where the activity occurs, **Ac**tivity, the activity itself, **T**echnology, the technologies used for performing the activity, and **S**ocial togetherness, the social context in which the activity is performed, i.e. together with whom.

VISUAL-TimePAcTS has its starting point in the time geographical approach, developed by professor Torsten Hägerstrand. In time geography it is assumed that the individual is indivisible, that time passing can be measured, that each object only can be located at one place at a time, that the individual has a past and a present, that "now" is the steadily ongoing transformation from future to past, and that the individual has a limited number of opportunities to act. Her actions are to a large extent constrained by her geographical location, by rules and conventions and also by her past experiences and knowledge. There are three main types of constraints identified within time geography: coupling, i.e. constraints that call for two or more individuals (or individuals and things) to be at the same place at the same time (or in a specific time sequence), authority constraints, i.e. constraints that imply power in relations, hindering or prohibiting individuals from performing activities and finally, capacity constraints, i.e. constraints that imply that the individual is not in possession of the resources needed to perform an activity (lack of knowledge, experience, money, tools, means of transportation etc). In time geography the daily life of an individual can be described by an individual path (or trajectory) following the individual in the course of the day, from activity to activity, from place to place, from one social companion to another, i e the rythm of daily life is included.

Daily life in a group or a population can be visualized by drawing several individual paths side by side in a box-like configuration. In figure 1 an extremely simplified individual activity path and the principle for showing the time use of a population in terms of individual activity paths are shown. In this paper we will use the opportunity offered by time geography to visualize groups of individuals in order to show patterns of activities within these groups and to show how VISUAL-TimePAcTS work. In this way, it is possible to give more nuances to the average time use figures of the same group.

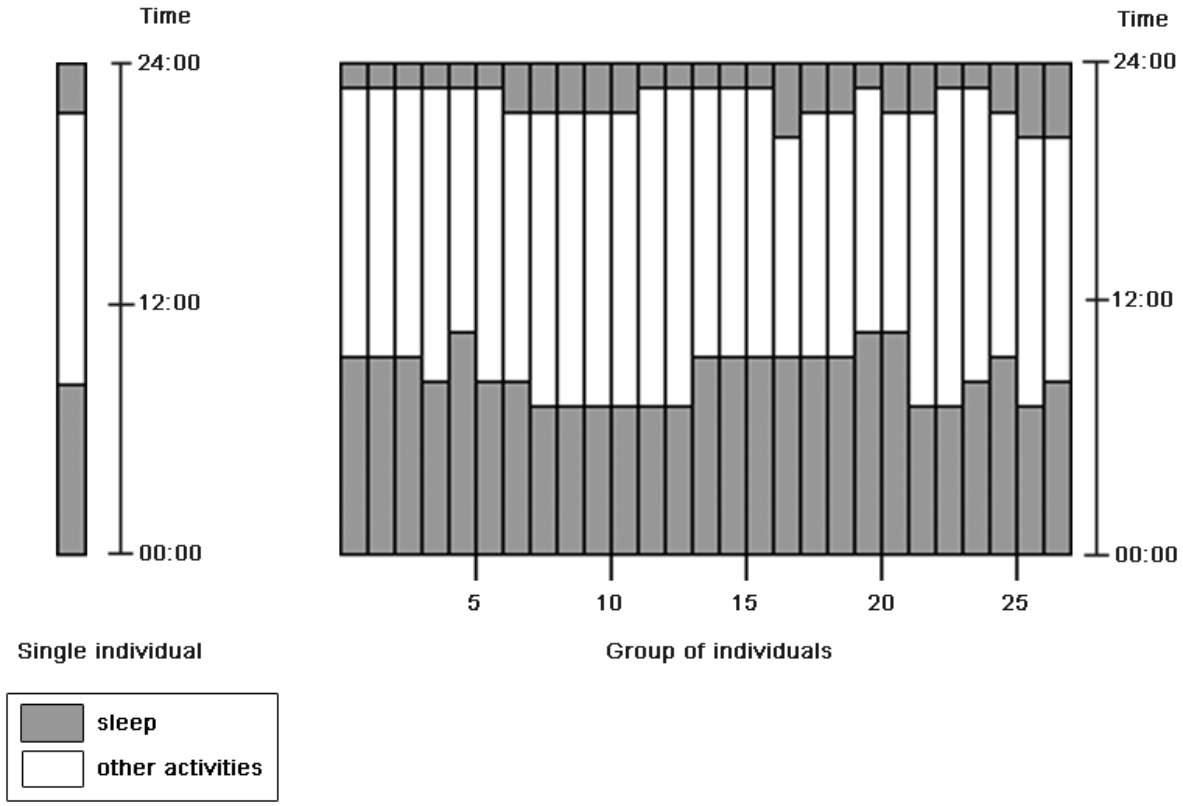


Figure 1. Extremely simpilfied activity oriented individual paths, for one individual (left) and for a group of individuals (right). Sleep is indicated with grey and all other activities in white. There is a pattern of time awake revealed by the illustrations. The variations in the group are of course eliminated if average time use is calculated for.

Figure 1 shows, on one hand, the daily rythm of activities, exemplified by one type activity, sleep, that occurrs twice every day and, on the other, that there are variations between the indiviudals in the group, not only in terms of total time used for sleep , but also in terms of what time the occurrence of the activities start and end.

In VISUAL-TimePAcTS the illustration principle is the same as in figure 1, but it is complemented with functions offering opportunities to

- get into the data to find out background variables of the individuals
- choose any level of aggregation (from a single individual to the total population in the data set)
- analyse the activities performed on five levels of specification (varying from seven main categories on the least detailed level to about 600 categories on the most detailed level)
- analyse which activities in a project are performed by which individuals
- combine dimensions in the same illustration: activity context, geographical context, social context and technological context (for example who performs activity A at home while being alone)
- calculate simple statistics (mean values)
- draw frequency diagrams for activities

We will present some of these features in our paper.

3. Comparing activity patterns of two age groups

3.1 Data and activities chosen

The data we use is Swedish diary data collected by Statistics Sweden in 1996. It consists of more than 900 diaries written by about 460 individuals in about 190 households.[1] Each individual has written one week day and one weekend day diary.

For this paper we have defined two different age groups: first young individuals, children aged from 10 to 12 and, second, individuals aged 61 and over. See table 1 for further details.

	Young group	**Older group**	***Total population***
Age range	10 – 12	61 and over	*10 - 97*
No of individuals	51	45	*463*
Women	24	22	*233*
Men	27	23	*230*
No of diary entries	1346	1520	*15477*
No of types of activities at a detailed level	100	135	*269*

Table 1. Characteristics of the two groups in focus and the total population.

In the two groups there is a slight domination of men, while in the population as a whole there is a slight domination of women. There are more diary entries made during the week day in the older group than in the younger. Since the older group is somewhat smaller the number of entries per person is greater among the older (33,8 entries per person compared to 26,4). There is a larger number of types of activities performed by the older group which indicates that there is a greater variation of activities performed by the older group than the younger. In the older group, each type of activity performed occurred 11,26 times, while in the younger group each type of activity occurred 13,46 times.

The concept activity pattern we use is defined as the occurrence of a specified activity or a number of specific activities in time among the individuals in a group. In figure 1 the activity pattern of sleep is described in principle for one individual (left) and for several individuals in a group (right), revealing variations among the individuals in the group. When visualizing activity patterns it is important that the basic dimensions of the picture are standardized. In VISUAL-TimePAcTS time is always on the same axis and the individuals are ordered in a consistent way all through the comparison. In this paper we have chosen to order the individuals in the groups in the following: men are placed to the left in the group and women

[1] The data was collected by Statistics Sweden in 1996 for a pilot study. It was however not used further and I have got the opportunity to use it for developing methods for visualization and analysing time use data from a time geographic perspective.

to the right and, within the gender sections of the visualizations, the youngest individuals are placed to the right and the older to the left.

We have chosen a specific set of activities in order to show activity patterns and to make comparisons between the age groups and to see if there are gender similarities or differences within these age groups. We have chosen, first, activities related to the project "serve meals" and, second, transportation activities. The transportation activities might be related to more or less any project performed in daily life. The activities concerning serving meals are "buy food" (which corresponds to code 654 in the TimePAcTS categorization scheme), "prepare food" (code 690) and "wash the dishes" (code 700), and the transportation activities are travelling by car (code 556), walking (code 566), riding a bicycle (code 578) and taking the bus, tram or subway (code 588). We have chosen to present data from week days only, in order to avoid complicating the comparisons.

From the visualizations we will be able to tell who performs the activities in the two groups and when, how often, for how long, where and with whom the activities are performed, and we will also have some general information about the everyday context that the activities we have chosen are performed.

The analyses will start with tables giving some general statistics of the group's engagement in the activities analysed in the paper. After that the visualizations and the activity patterns are presented and discussed.

3.2 Activities in the project "serve meals"

The analysis of activity patterns related to serving meals starts with a general statistics presentation, similar to the traditional figures presented in time use studies. See Table 2a and 2b.

Older group (61 and over), number of individuals in the group = 45						
Activity	**Number of individuals**	**Number of Occurrences**	**Max no of individuals performing it at the same time**	**Total time use**	**Time use average (all individuals)**	**Time used per individual performer**
Buy food	16	20	4	450 min	10 min	28,13 min
Prepare for eating	12	19	2	340 min	7,56 min	28,33 min
Prepare food	32	69	4	1275 min	28,33 min	39,84 min
Wash the dishes	33	61	4	1000 min	22,22 min	30,30 min
Total		169		3065 min		

Table 2a. Simple statistics characterizing the time use for serving meals of the older group.

Younger group (10 to 12), number of individuals in the group = 51						
	Number of individuals	**Number of Occurrences**	**Max no of individuals at the same time**	**Total time use**	**Time use average (all individuals)**	**Time used per individual performer**
Buy food	2	2	2	100 min	1,96 min	50 min
Prepare for eating	7	9	2	115 min	2,25 min	16,43 min
Prepare food	4	4	1	90 min	1,76 min	22,5 min
Wash the dishes	4	4	1	50 min	0,98 min	12,5 min
Total		19		355 min		

Table 2b. Simple statistics characterizing the time use for serving meals of the younger group.

The statistics show that there are big differences between the two groups – which is no surprise. Much more time per individual is spent for the "serving meal" activities in the older group than in the younger. The smallest difference is in the activity "prepare for eating" which means to take food from the fridge or cupboard and put in on the table. It may be that the younger people make very simple meals when they prepare something to eat? This question can be investigated by using VISUAL-TimePAcTS, but we will not do it here. The statistics presented above hold information about the number of individuals performing each activity, the number of activity occurrences as well as information about the duration of these activities for each of the two age groups. However, no conclusions can be drawn about the similarities and variations within each age group.

Using VISUAL-TimePAcTS we can visualize the performed activities within the groups by looking at the individuals' activities simultaneously as a group picture, see figures 2 and 3. In figures 2 and 3 all activities performed on week days by the individuals in the groups are presented in order to give an overall picture of the total activity context in which the "serving meals" activities appear as parts. This will be shown later in this section.

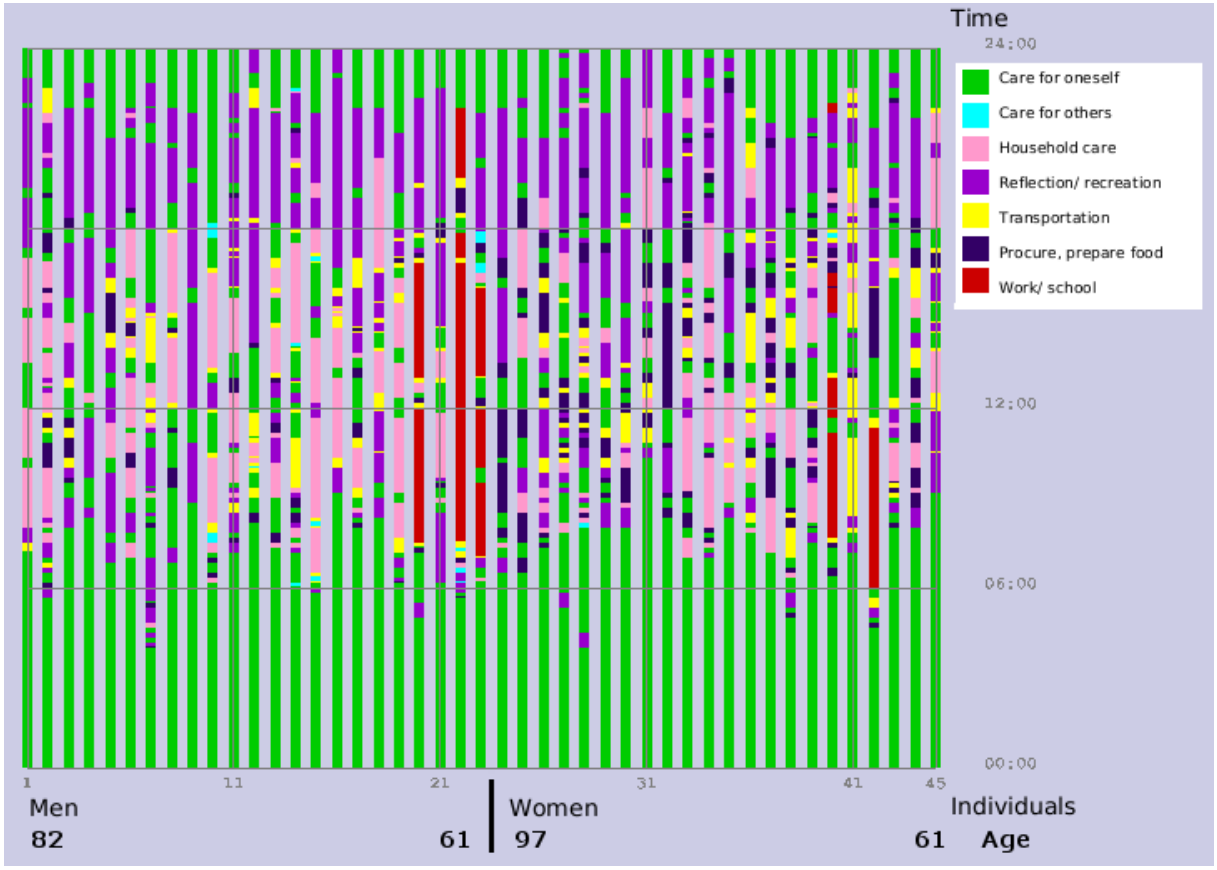


Figure 2. All activities performed during weekdays by the individuals in the older group. The activities related to serve meals are coloured dark blue and most of them are performed by women.

The visualization of the older age group's week day activities shows some patterns, for example the domination of sleep during the night – but there are exceptions: nine individuals wake up before 06.00 and perform other type of activities. In the late evening all but three individuals have gone to sleep. There are five individuals (3 men and 2 women) who do payed work on the week day. Men are more occupied with activities in the household care category. After 18.00 most individuals in the group spend two to three hours for reflection/recreation activities, while transportation activities are spread over the day.

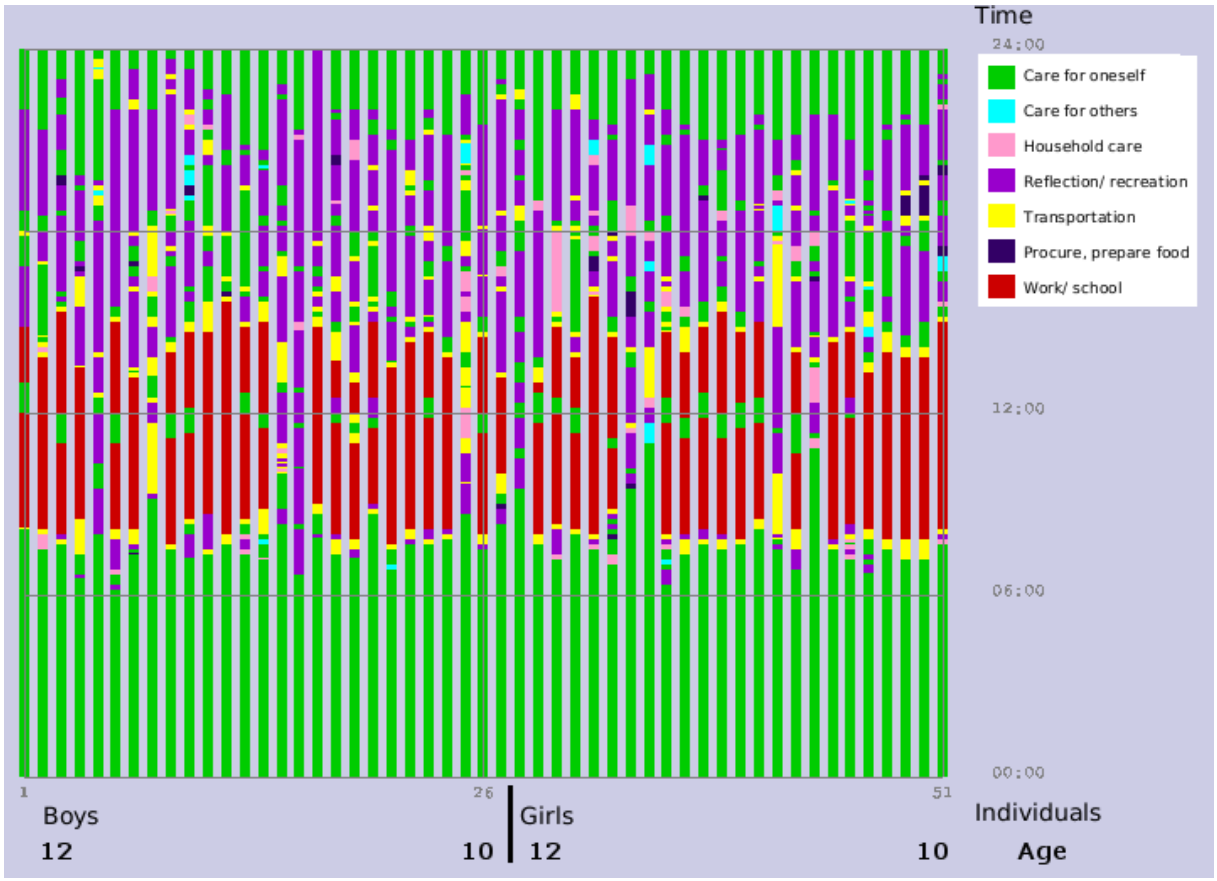


Figure 3. All activities performed during weekdays by the individuals in the younger group. Most of the children go to school during week days. At a general level, the activity patterns for boys and girls respectively show no big differences.

The individuals in the young age group show a more uniform overall activity pattern during the week day than the individuals in the older group. School activities occupy their day from about 8.00 until 14.00/15.00. There are 10 individuals not going to school on their diary day (6 boys and 4 girls). School activities are surrounded with transportation activities (yellow), to and from school. We can see that the time used at school varies a lot. Nobody in the younger age group wakes up before 06.00 and there is just one individual still being awake at 24.00. Most of the afternoon is occupied with reflection/recreation activities. There are quite a lot of transportation activities embedded in the activity pattern during the afternoon and early evening. Many young people go from one place where a reflection/recreation activity is performed to another.

The comparison between the age groups at this very general level shows that the older people wake up earlier in the morning than the younger and that most of the older people are retired from working life. Most of the children go to school, an activity that uniforms their week day. In both groups late afternoon and evening are spent for reflection/recreation activities. The older individuals are engaged in care for themselves during the day more than the younger and the older are also much more occupied by household care activities.

Now, let us concentrate on the activities for serving meals.[2] In order to make it easier to locate who performs the activities chosen for a study and when they do it, there is a function in the VISUAL-TimePAcTS application that allows for specific activities to be picked out and illustrated, see figure 4 and 6 for the two groups respectively. The activities shown are “buy food”, “prepare for eating”, “prepare food” and “wash the dishes”. In figure 5 and 7 the frequency over time of these activities are shown.

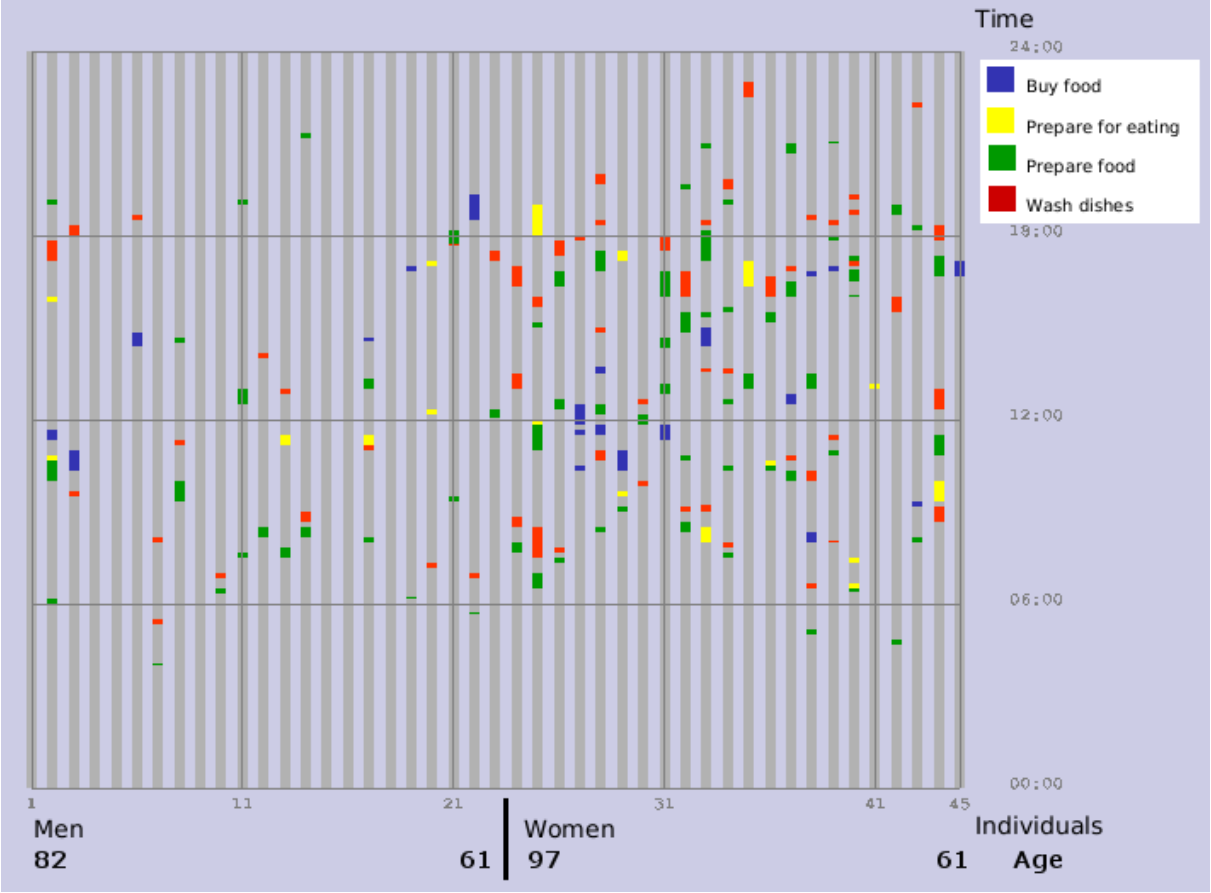


Figure 4. Activities related to serving meals performed by individuals in the older group.

The visualization clearly reveals that most of the activities related to serving food are performed by the women in the older group. There are seven men who do not perform any activity at all related to serving food, while all women do. It is also obvious from the visualization that women perform food related activities frequently in the course of the day. Most of the activities appear between 06.00 and 18.00. Only a few individuals make food before 06.00, three men and two women. One of the men also washes the dishes before 06.00.

The frequency of the activities for serving food is illustrated in figure 5, one curve for each activity. The curves in figure 5 do not show gender differences, but it is of course possible to draw curves for men and women separately.

[2] In Appendix there are some results from the oldest age group (65-84 years) in the Swedish time use survey in 2000/01 as it is presented by Statistics Sweden.

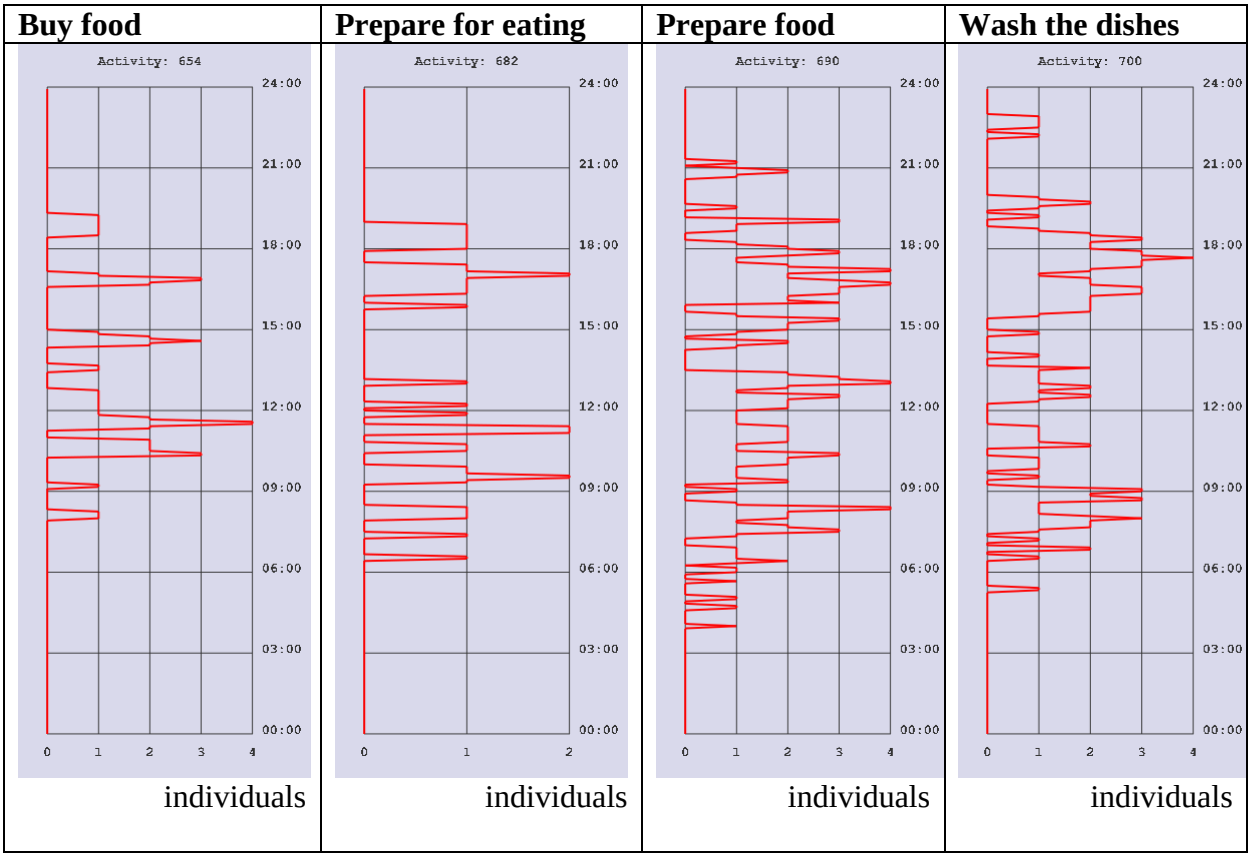


Figure 5. Frequency diagrams for the activities related to serving food among the individuals in the older group (buy food, prepare for eating, prepare food and wash the dishes).

In figure 5 we can see that there are not many individuals in the group performing the same activity at the same time. At most there are four individuals performing the same activity at the same time. Preparing food and wash the dishes are spread over the day, and preparing food starts and ends earlier.

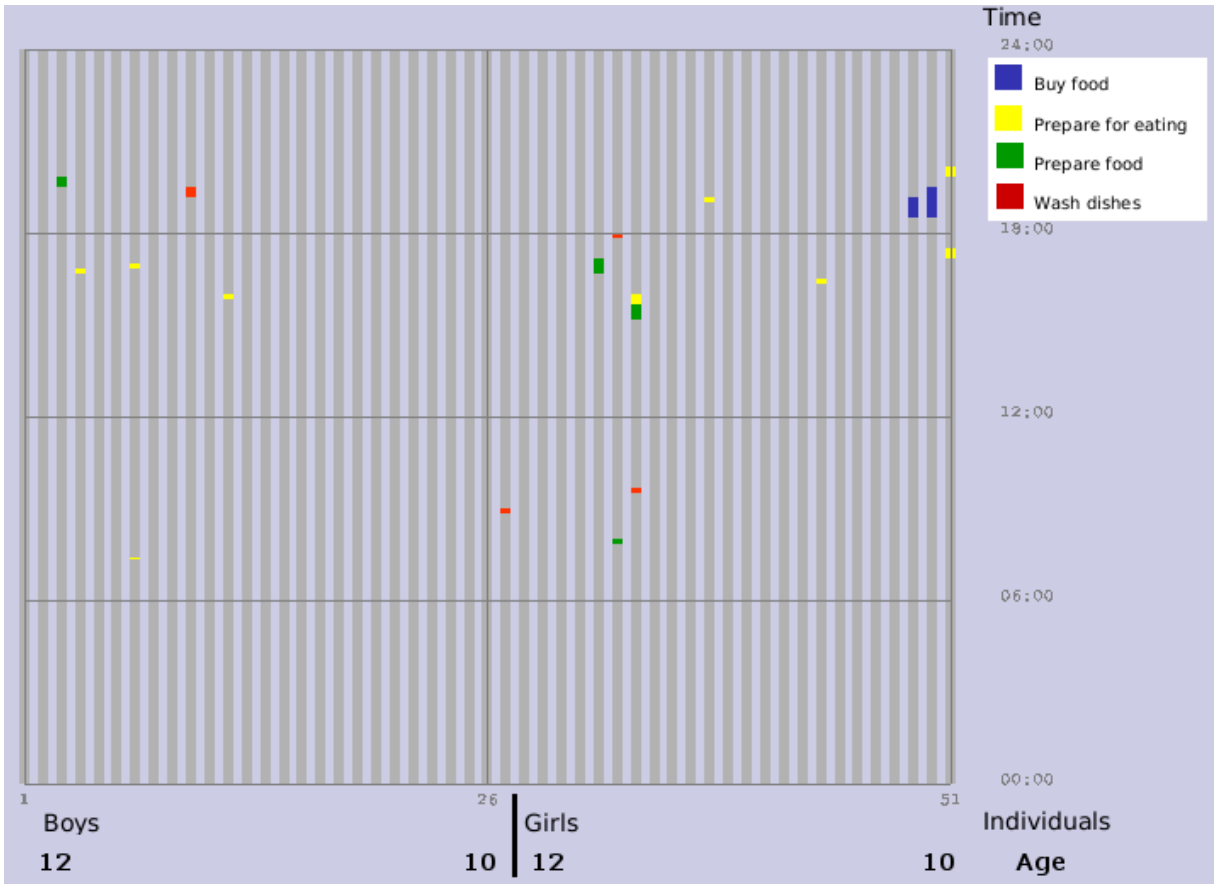


Figure 6. Activities related to serving meals performed by individuals in the young group.

Activities for serving meals are rare in the daily life of the individuals in the young group. In this visualization it is obvious that girls' activities related to serving meals consume more time than the corresponding activities performed by boys. Only one boy prepares food, while three boys prepare for eating and two wash the dishes. No boys buy food. Four girls prepare for eating, three prepare food, two washes the dishes and two buy food.

In figure 7 the activities for serving meals performed by the individuals in the young group are presented as frequency curves. At most there are two individuals active at the same time in the visualized activities.

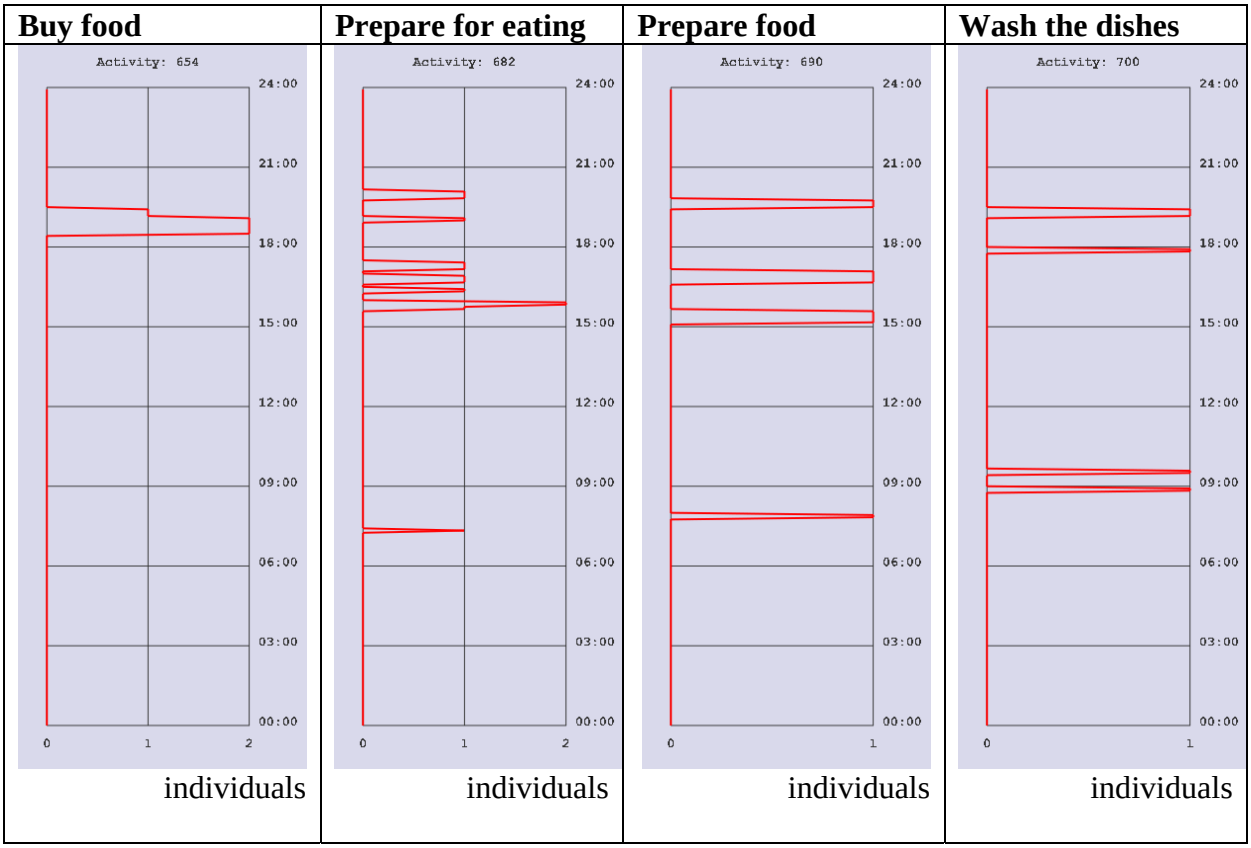


Figure 7. Frequency diagrams for the activities related to serving food among the individuals in the young group (buy food, prepare for eating, prepare food and wash the dishes). At most there are two individuals active at the same time. All activities are rarely appearing during the week day among the young people.

Where are activities related to serving food performed?

When it comes to where activities are performed, home is the most frequented place of all. Sleep is the most time consuming activity, and sleep is mostly performed at home. In the population as a whole time spent at home during week days counts for about 65 % of the week day, and for weekend days the corresponding figure is about 75 %.

From figure 8 and 9 we can see that most activities in the project “serve meals” are performed at home. Since the data is from 1996 and the spread of internet purchases was very limited, the activity “buy food” is performed somewhere else.

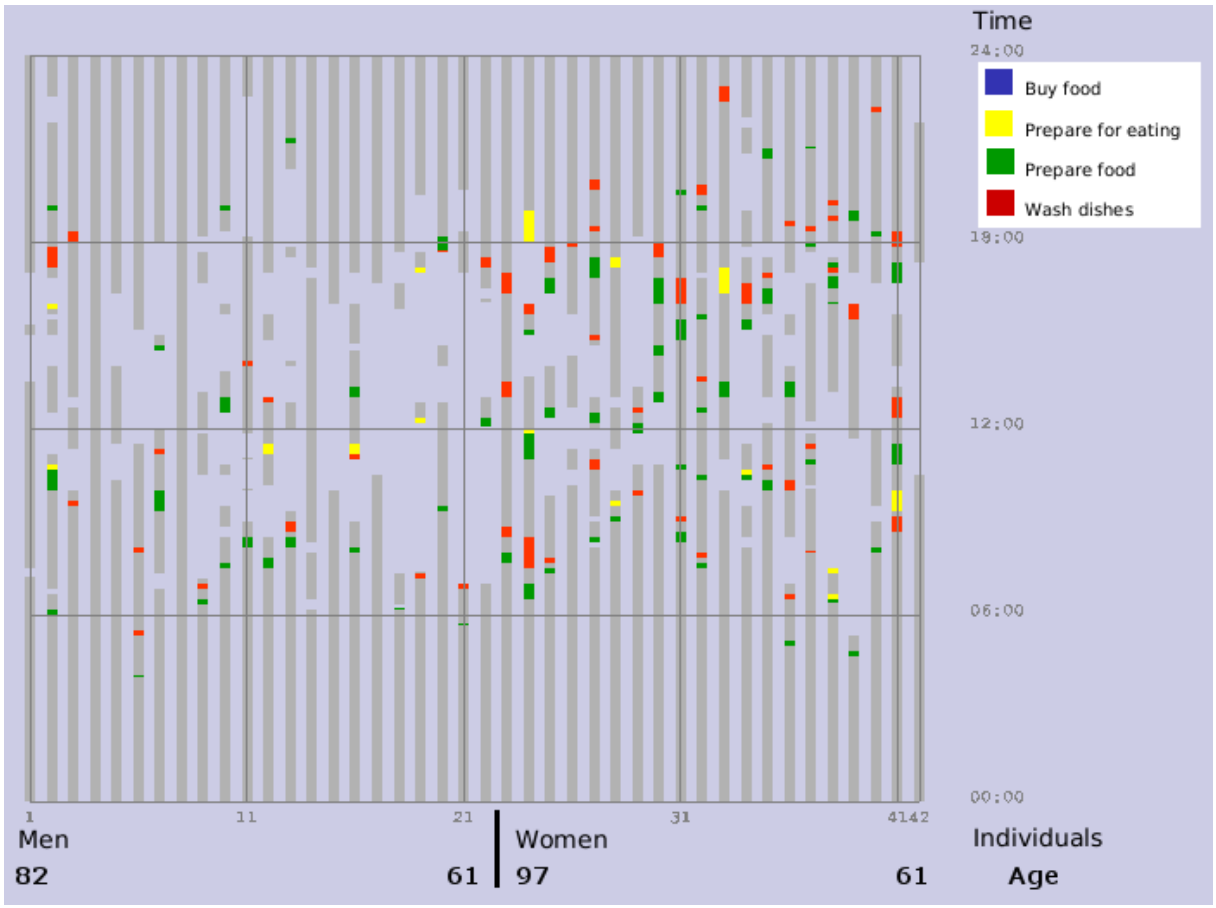


Figure 8. Activities performed by the individuals in the older group at home during week days. The specific activities chosen to show the project serve food are indicated in colours (see colour legend. Note that buy food is not performed at home.) and the rest of the activities performed at home are in grey. The parts of the individual paths that are “empty” indicate that activities are performed on other places or transportation.

The visualization of the older group shows only 42 individuals, while the group consists of 45. The reason is that the individuals are not at home at all during the week day.

The visualization gives the general picture of women being more at home than men (they show smaller portions of “empty” individual activity paths), and that women to a large extent performed activities related to serving food at home.

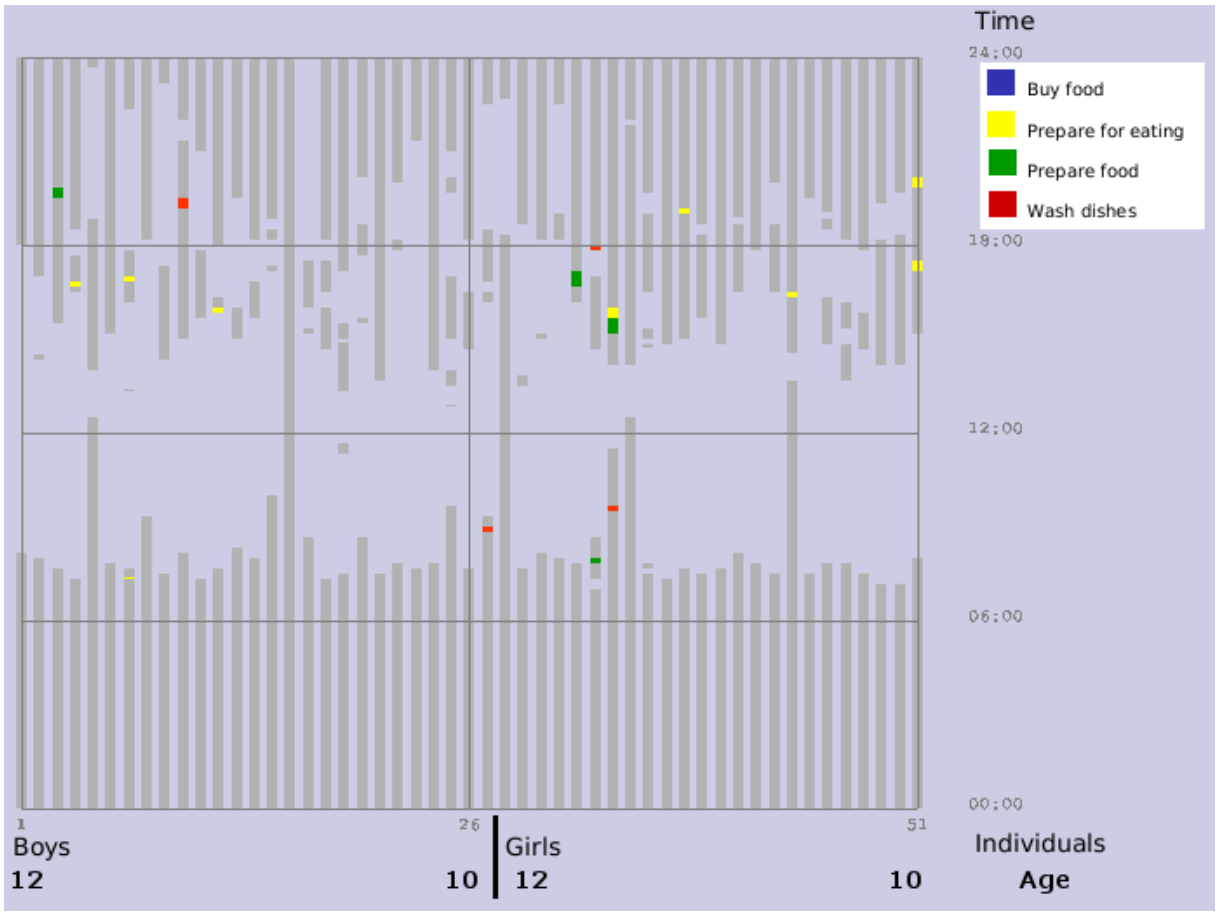


Figure 9. Activities performed by the individuals in the young group at home during week days. The specific activities chosen to show the project serve food are indicated in colours (see colour legend. Note that buy food is not performed at home.) and the rest of the activities performed at home are in grey. The parts of the individual paths that are missing indicate that other places are visited or transportation is performed.

Figuyre 9 shows that girls in the younger group are more at home in the afternoon and evening than boys. This is indicated by smaller portions of “empty” individual activity paths among girls than among boys.

“Serving meals” – with whom?

The data concerning whom the activities are performed with does not allow for making qualified analyses of the companionship of people during the activities. It is possible only to make a simple picture of people being alone. In figure 10 and 11 the activities for serving meals performed by the individuals in the two groups being at home and alone.

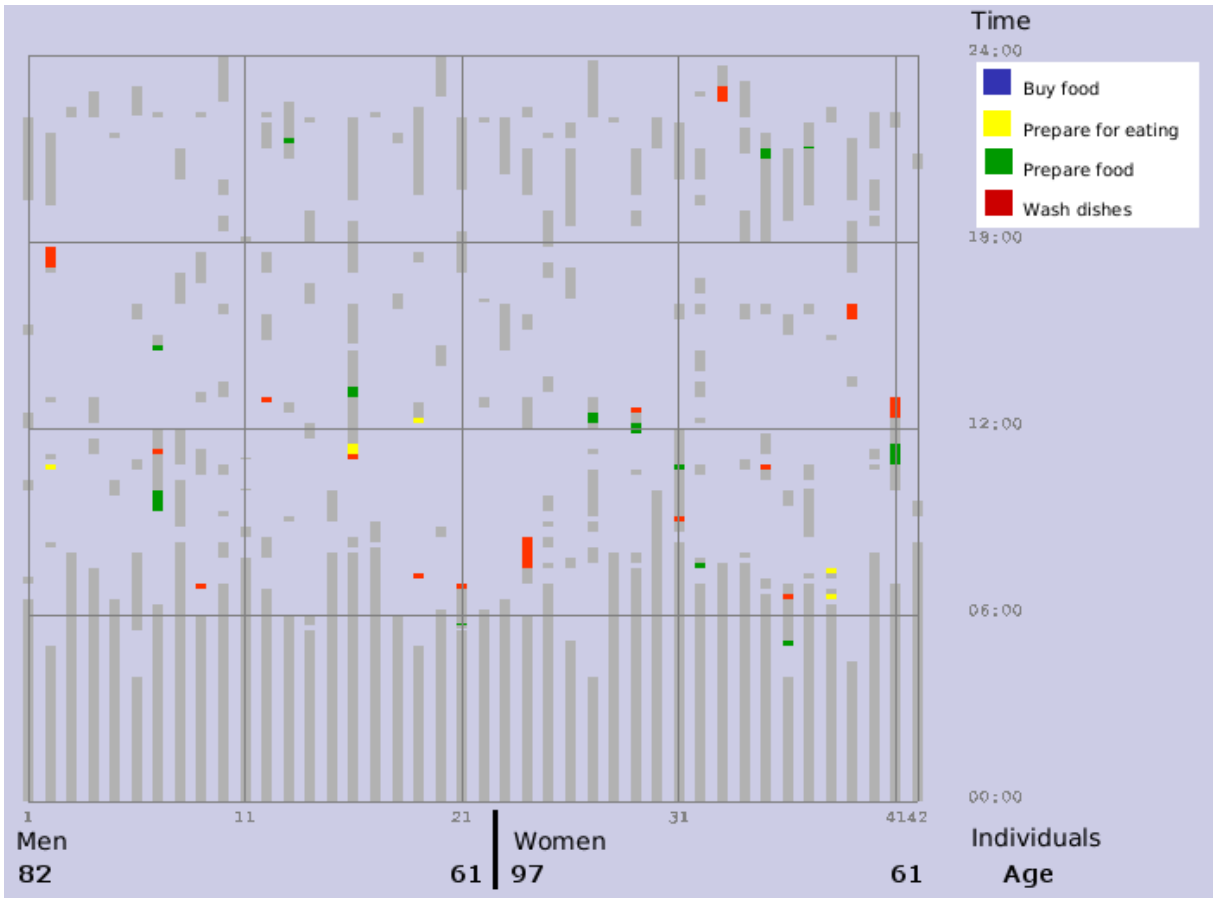


Figure 10. Activities performed at home by the individuals in the older group when they are alone. All activities performed by the individuals in the older group when being alone at home during week days are indicated in grey except the specific activities for serving meals which are indicated in colours (see colour legend. Note that buy food is not performed at home). The parts of the individual paths missing indicate that other places are visited, transportation is performed or the individual being at home but not alone.

When constraining the selection criteria for the project “serve meals” so that only individuals that are alone at home are included in the visualization then not many highlighted activities remain. We can, therefore, conclude that activities for serving meals have a social dimension. There are more women than men who perform activities for serving food at home while being alone. However, since there are many more activities of this kind in the daily lives of women than of men, we may conclude that women are less alone in the kitchen than men are. Preparing for eating is not very frequent to do alone among the older individuals, while washing the dishes and preparing food are more frequent.

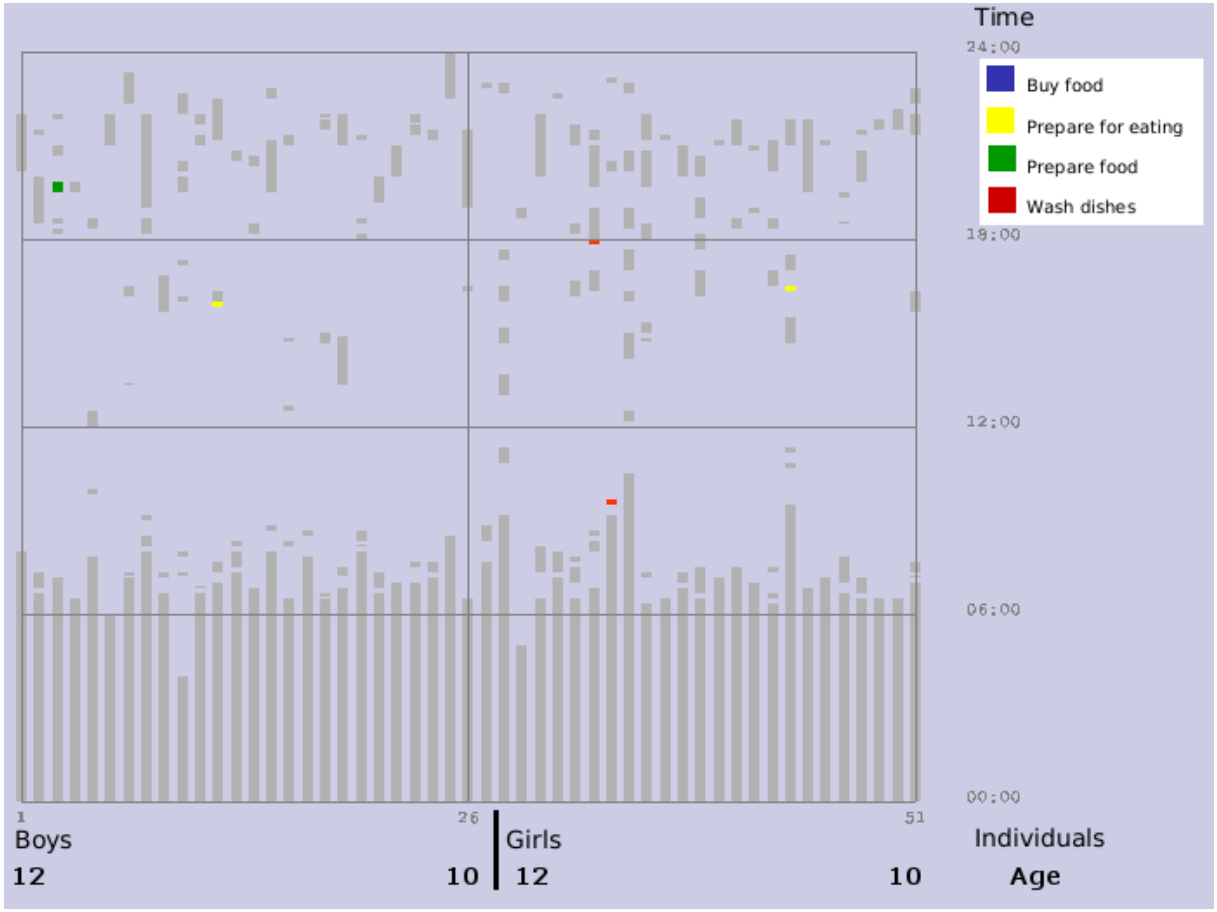


Figure 11. Activities performed at home by the individuals in the young group when they are alone. All individuals in this age group fulfil the criteria of being alone at home during some period of the week day. All activities performed by the individuals in the young group when being alone at home during week days are indicated in grey except the specific activities for serving meals which are indicated in colours (see colour legend. Note that buy food is not performed at home). The parts of the individual paths missing indicate that other places are visited, transportation is performed or the individual being at home but not alone.

Being alone at home performing activities for serving meals are rare among the young individuals. There are only five individuals fulfilling the criteria. The activity context in which the activities for serving meals are embedded is revealed in figures 3 (older group) and 4 (younger group).

A comparison between the activity patterns of the two groups indicates similarities: the activities performed for serving meals are mostly performed at home (except buying food), but not in social isolation. It also shows that girls and older women perform more activities of this kind than boys and men. These activities are most frequently performed between morning and early evening. Most women perform several activities of these kinds on week days, and the duration of each occurrence is longer than that of men.

3.2 Transportation in daily life

The previous section showed that the individuals of the two groups are not at home all the time during week days. What means of transportation are used by the individuals in the groups is therefore an interesting question. Other questions to be asked are: if there are

differences between men and women and between the age groups, as wells as when people move in the course of the day and finally, how they transport themselves in order to buy food, The last question is posed in order to couple the two examples presented in this paper.

First we present the simple statistics for transportations in the two age groups, see table 3a and 3b.

Older group (61 and over), number of individuals in the group = 45						
	Number of individuals	**Number of Occurrences**	**Max no of individuals at the same time**	**Total time use**	**Time use average (all individuals)**	**Time used per individual performer**
By car	26	80	6	975 min	21,67 min	37,5 min
Walking	28	76	8	1465 min	32,56 min	52,32 min
By bike	5	13	1	205 min	4,56 min	41,00 min
By bus/ train/ subway	6	20	3	280 min	6,22 min	46,67 min
Total		189		2925 min		

Table 3a. Simple statistics characterizing the time use for transportation of the older group.

Younger group (10 to 12), number of individuals in the group = 51						
	Number of individuals	**Number of Occurrences**	**Max no of individuals at the same time**	**Total time use**	**Time use average (all individuals)**	**Time used per individual performer**
By car	16	46	4	940 min	18,43 min	58,75 min
Walking	31	86	7	1105 min	21,67 min	35,65 min
By bike	18	47	6	580 min	11,37 min	32,22 min
By bus/ tram/ subway	10	18	5	675 min	13,24 min	13,24 min
Total		197		3300 min		

Table 3b. Simple statistics characterizing the time use for transportation of the younger group.

The figures in table 3 show that the individuals in the younger group use more time to be on the move than the individuals in the older group. The individuals in the older group go, not very surprisingly, by car more than the younger. However, the biggest difference is that the older group uses more time for going by car and for walking. One may therefore ask how the transportation activities spread among the individuals in the groups but also how long the duration of these transportation activities is. In figure 12 and 13 the transportation pattern is shown for the older group and in figure 14 and 15 for the younger group.

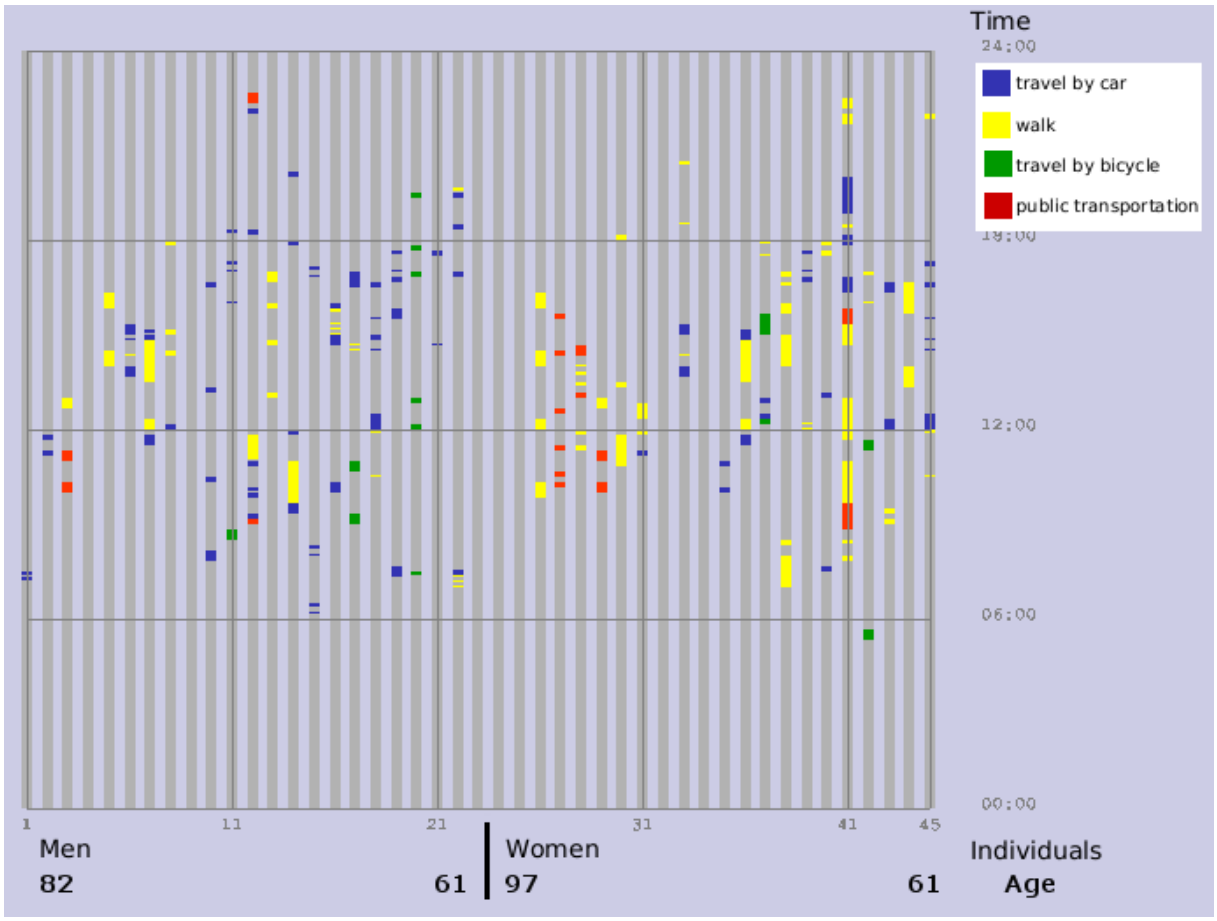


Figure 12. Transportation activities performed by the individuals in the older group.

In the older group there are some individuals who do not perform any transportation at all, four women and three men. For example, the two oldest women, born 1899 and 1914, do not go away from home at all. Travel by car is more common among the old men than the old women and it is much more common among the old women to walk and to go by public transportation means than among the old men. It is not very common to go by bicycle at all in this group. Most of the transportations are performed between 07.00 and 18.00. One woman takes a tour on her bike before 06.00 in the morning. It is quite common among women to take a walk in the evening. The duration of several walks is rather long, especially among women. There is one woman who performed transportation activities more or less during the entire day when she is awake: she uses public transportation twice, she takes eight walks (some with short duration and some longer) and she goes by car three times in the evening. There is another woman who uses by public transportation six times in the middle of the day. Generally most of the car transportation activities do not last very long. In figure 13 frequency curves are presented over the spread of transportation activities in the course of the week day among the individuals in the older group.

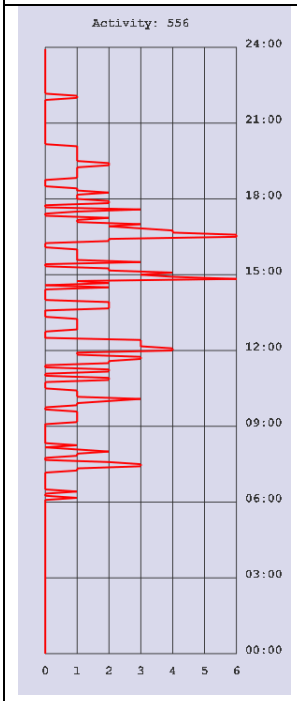
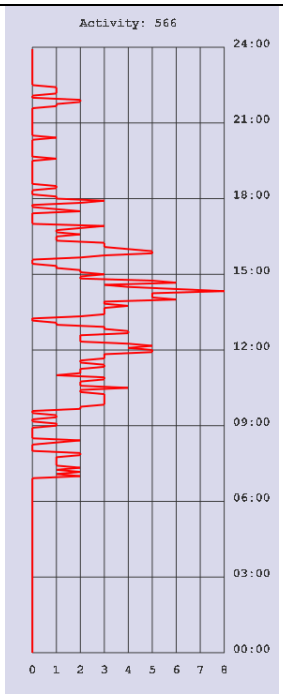
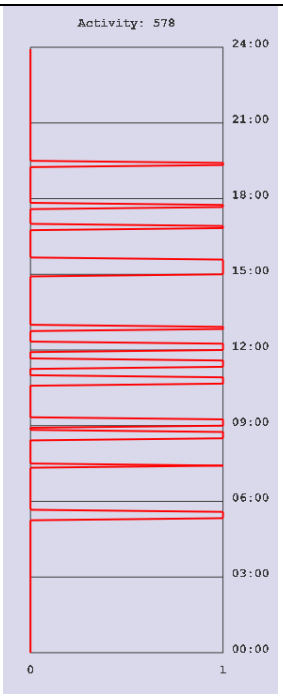
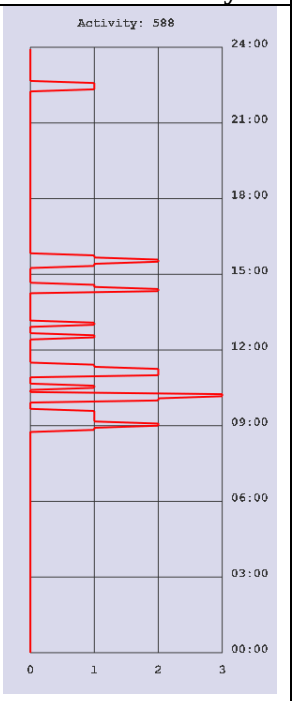
By car	Walking	By bicycle	By bus/tram/subway
 individuals	 individuals	 individuals	 individuals

Figure 13. Frequency diagrams for transportation activities performed by the individuals in the older group.

There were 26 individuals travelling by car at some point during the week day in the older group, however, only six persons travel by car simultaneously (in the afternoon). During the week day, in total 28 individuals were walking, but only eight persons walked at the same time and this occurred in the early afternoon. There is never more than one individual riding a bicycle at a time. Three persons use public transportation means at the same time, before lunch time. Most transportation activities are performed between about 09.00 and 18.00. Walking dominates the time use for transportation.

In figure 14 the transportation activities of the individuals in the younger group are presented.

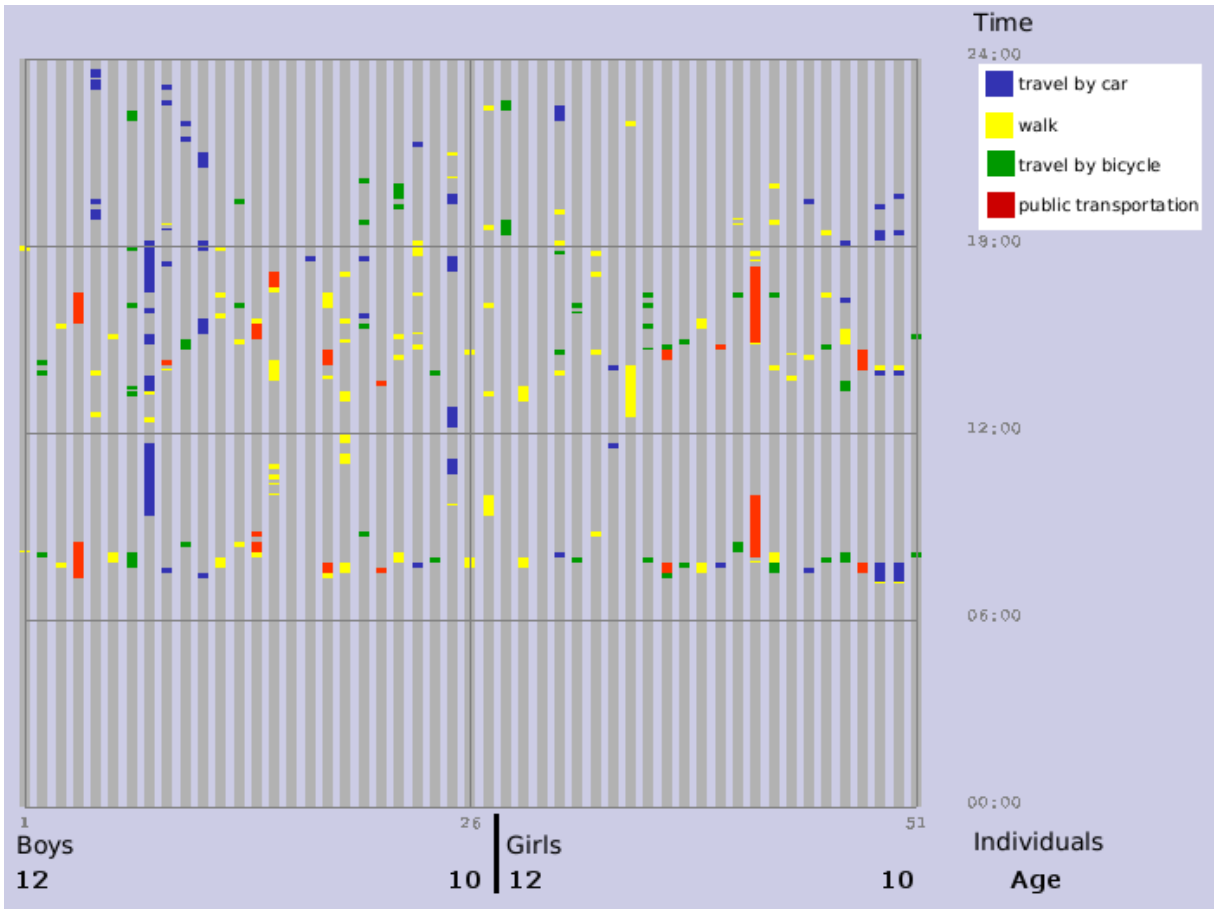


Figure 14 . Transportation activities performed by the individuals in the younger group.

The transportation pattern shown by the individuals in the younger group differ from that of the older group. There is a concentration of transportations in the morning – when the children go to school, and another in the early afternoon – when they go home. After school there are many transportations performed, mostly by foot and by bike. Among the boys it is much more common to go by car than among the girls. Two of the youngest girls, no 49 and 50 in the figure, take a short walk in the morning and then they go by car to school, in the afternoon they go by car and then they take a short walk home. This indicates that they go with someone who lives in their neighbourhood. One of the boys, no 14 in the diagram, takes a walk to the bus station, takes the bus and after one bus tour he has to change to another bus. He is waiting for a while before its departure.

In figure 15 the frequency curves for the different transportation activities are presented.

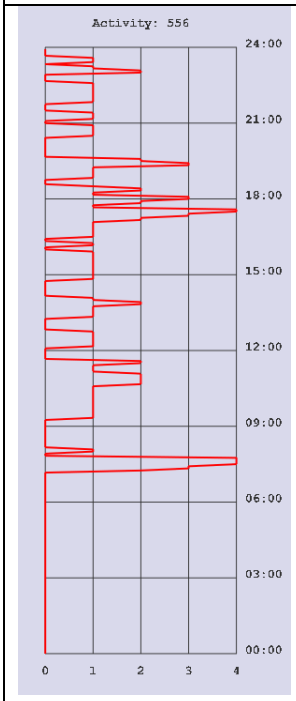
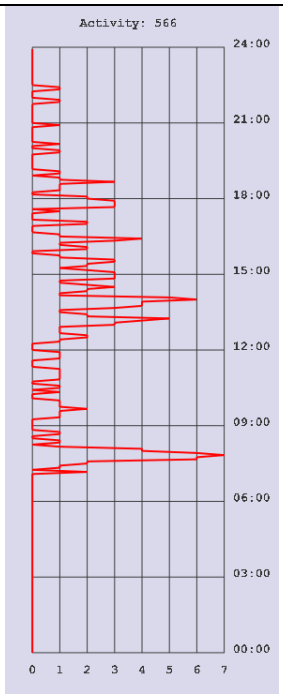
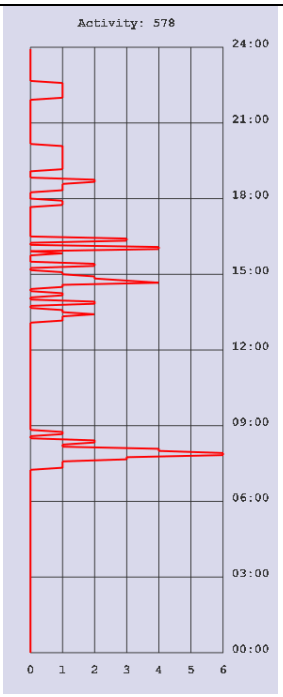
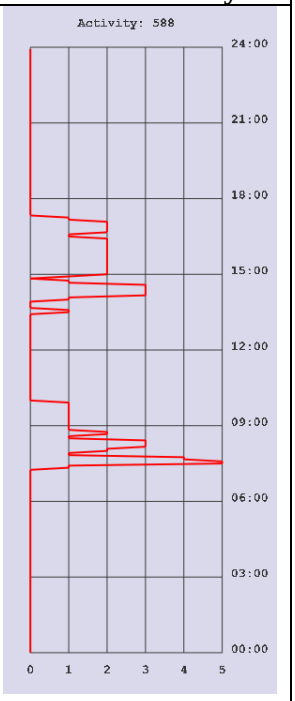
By car	Walking	By bicycle	By bus/tram/subway
 individuals	 individuals	 individuals	 individuals

Figure 15. Frequency diagrams for transportation activities performed by the individuals in the young group.

There were 16 individuals going by car some time during the week day in the young group, but there were not more than four persons go by car at the same time, first in the morning on their way to school and also later in the afternoon, just before 18.00. 31 individuals were walking, but only seven persons walked at the same time, in the morning on their way to school. There were 18 individuals going by bike, at most 6 at the same time, in the morning on their way to school. Ten persons go by public transportation means, at the most five individuals at the same time, on their way to school. There are some peaks in transportation, the first one between about 07.00 and 09.00 in the morning, the second in the early afternoon – both of them embracing the school hours. Transport is also peaking in the afternoon. Walking dominates the time use for transportation.

3.3 Transportations for buying food

Finally, we will combine activities from the two examples, serving meals and transportation, in the same visualization. We could show that buying food was not performed at home and to get from home some kind of transportation is needed. Hence, this section deals with transportations for buying food, see figure 16.

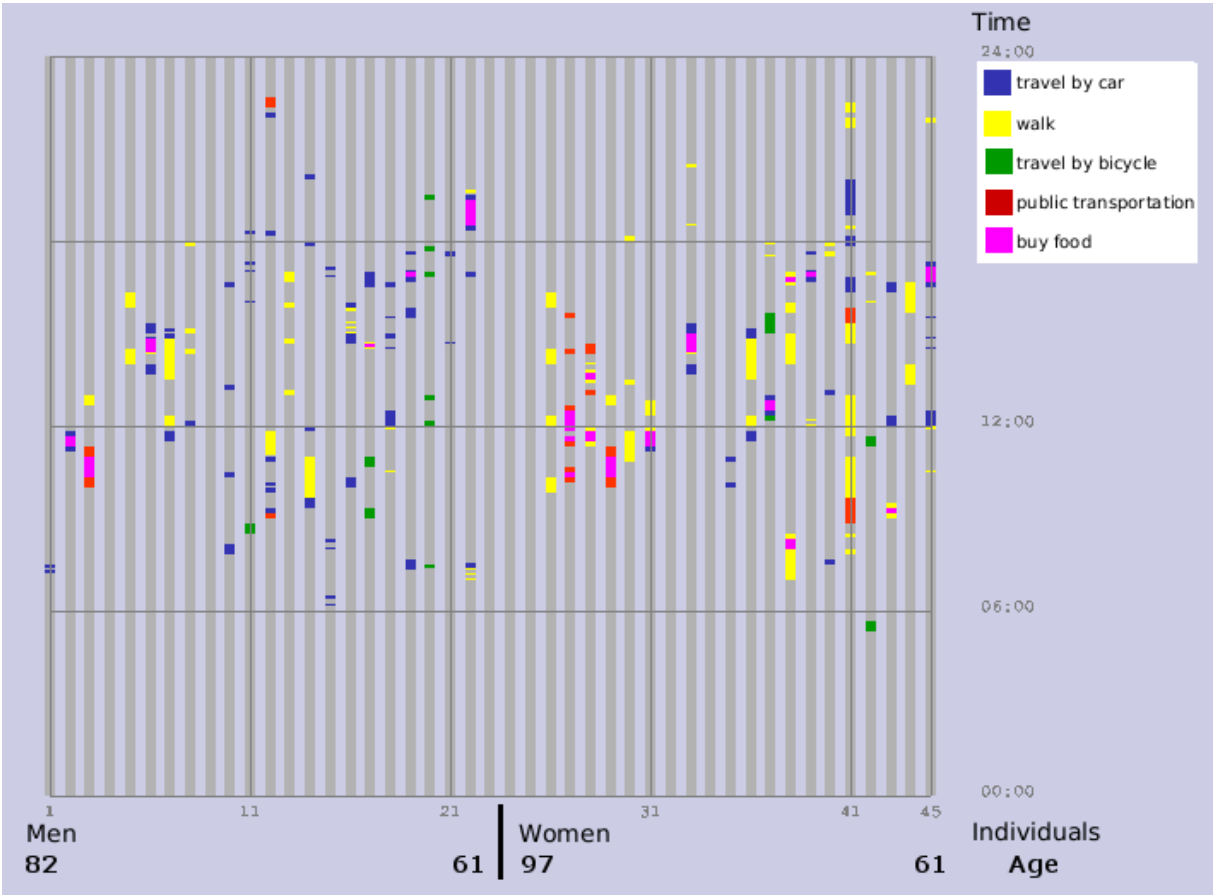


Figure 16. Transportation activities and the activity buy food performed by the individuals in the older group.

The visualization shows how the buying food activities performed by the individuals in the older group are surrounded with transportation activities. There are in total 16 individuals buying food during the week day in the group, 10 women and 6 men. Walking, travelling by car and public transportation are used. Transportation by car dominates when men go buying food (for example man no 2), while walking dominates among women (for example woman no 28). Some women go buying food more than once this week day (for example women no 27). Nobody travels by bike to buy food. In some cases one means of transportation is used for going to the shop and another means for going back (for example woman no 33). Figure 17 shows the same for the individuals in the younger group.

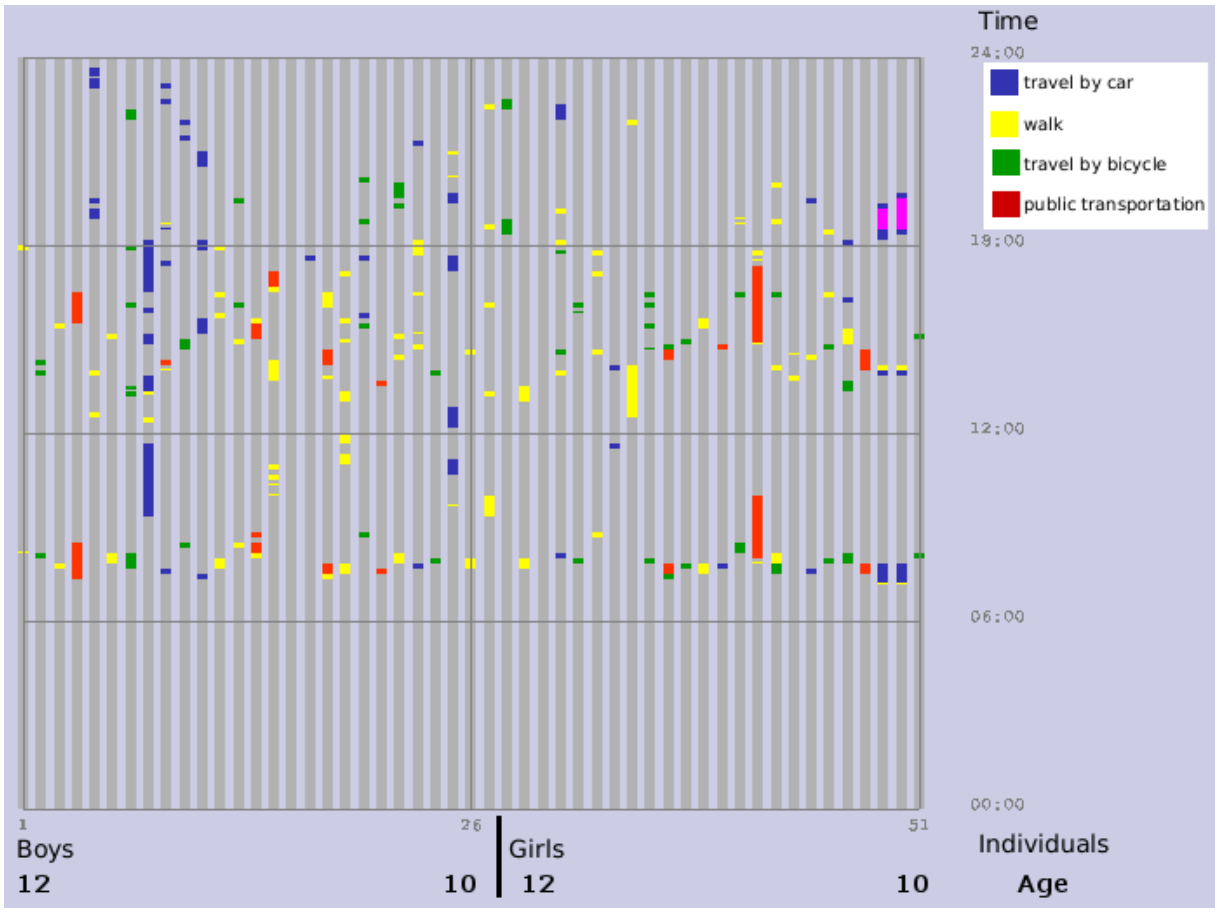


Figure 17. Transportation activities and the activity buy food performed by the individuals in the younger group.

There are only two children buying food, two young girls, number 49 and 50. They go by car in order to perform the activity.

4. Conclusions

In this paper we have presented the visualization method called VISUAL-TimePAcTS and given some examples of how it can be used for illustrating time use by drawing activity maps of the rythm of week days. The individuals constituting a group or population are all seen in the background of that visualization. VISUAL-TimePAcTS offers detailed illustrations of time use that serve as a useful complement to analyses based on general statistics, thus it allows the user to take the analysis further.

The examples used in the paper are taken from two common activities of daily life: serving meals and transportation. The activities were presented one at a time and finally they were related to each other. The visualization allows the user to combine several criteria for selection, for example, which individuals in each group who performed the activities chosen at home while being alone. The two groups chosen were children (aged 10 to 12) and older people (from 61 and over). The visualizations showed that there are big differences between the two groups compared, but also that there are big differences within the groups themselves. Differences appear between men and women in the two groups, and one thing that is obvious is that boys travel much more by car than girls, just like their grandfather generation. Boys also tend to be less active in serving meals activities, also resembling of their grandfather generation. However, there are not many girls active in serving food activities either.

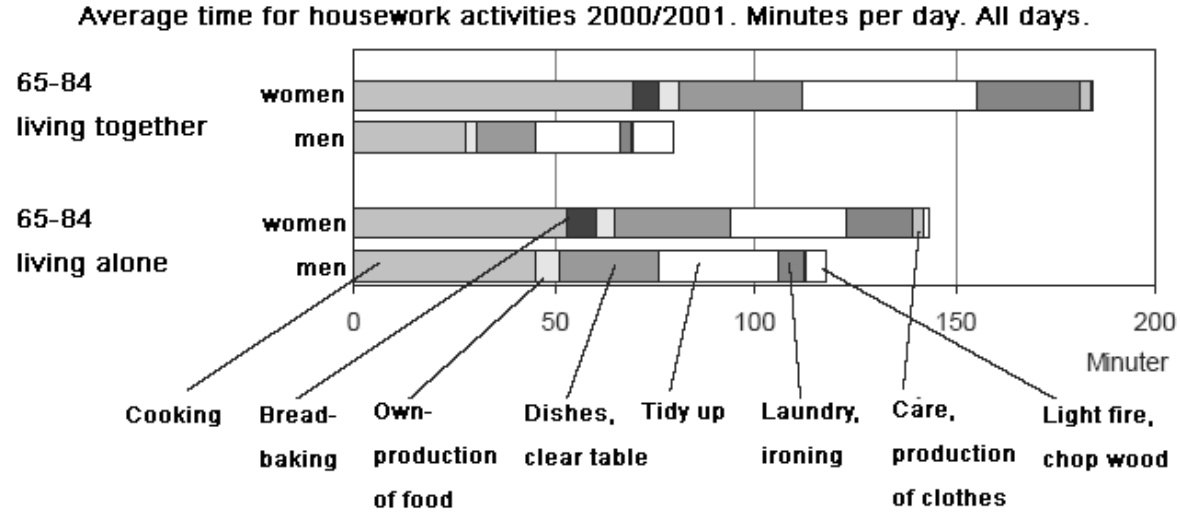
VISUAL-TimePAcTS is useful when the goal is to see similarities and variations within groups and reveal activity patterns allowing the rythm of everyday life to be seen. It is useful when interest is directed to when specific activities are performed in the course of the day and fopr how long they last. It also shows what activity context a specific activity is embedded in.

In addition, VISUAL-TimePAcTS offers a set of simple statistics and diagrams of more conventional type, which serve as a complement to the visualized activity maps.

It will be interesting to use VISUAL-TimePAcTS to study daily life of groups from larger populations than the one we have used here.

Appendix

Results on housework activities performed by the oldest age group (65-84 years) in the Swedish time use survey in 2000/01 made by Statistics Sweden (Rydenstam, Klas: Tid för vardagsliv. Kvinnors och mäns tidsanvändning 1990/91 och 2000/01. Statistiska Centralbyrån. Rapport 99. 2003).



Proportion of activity practitioners on weekdays. Age 65-84. Per cent with a 95% confidence interval.					
		WOMEN		MEN	
		living together	living alone	living together	living alone
Housework		99 ±2	98 ±3	82 ±7	86 ±8
	cooking	97 ±3	93 ±5	64 ±9	78 ±10
	dishes, clear table	84 ±7	81 ±9	46 ±9	60 ±11
	tidying up	82 ±8	72 ±10	53 ±9	57 ±11
	wash clothes, iron	40 ±10	37 ±10	7 ±5	14 ±8

Average time spent on activities on weekdays. Hours and minutes per day with a 95% confidence interval. Age 65-84.					
		WOMEN		MEN	
		living together	living alone	living together	living alone
Housework		3:20 ±0:21	2:33 ±0:17	1:19 ±0:13	1:59 ±0:22
	cooking	1:10 ±0:07	0:54 ±0:07	0:25 ±0:05	0:43 ±0:08
	dishes, clear table	0.32 ±0:05	0.28 ±0:05	0.15 ±0:04	0.23 ±0:06
	tidying up	0:50 ±0:12	0:30 ±0:09	0:21 ±0:07	0:30 ±0:13
	wash clothes, iron	0:31 ±0:11	0:21 ±0:08	...	0:08 ±0:05