

# **The Observer XT 9.0**

## **Description of Sample Projects**

**Psychology/Usability/Ergonomics**

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Documentation: Fabrizio Grieco, Leanne Loijens, Patrick Zimmerman, Andrew Spink.

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**Noldus Information Technology b.v.**

International headquarters

Wageningen, The Netherlands

**Phone** +31-317-473300

**Fax** +31-317-424496

**E-mail** [info@noldus.nl](mailto:info@noldus.nl)

For addresses of our other offices and support, please see our web site [www.noldus.com](http://www.noldus.com)

# Description of The Observer XT Sample Projects

The Sample Projects DVD contains a folder **Projects backup** with backup files (\*.vpb) of the following sample projects:

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Associated media files are stored in the **Media** folder on the Sample Project DVD. Before opening any of the sample projects, make sure to copy all media files to the default **Media** folder of The Observer XT:

**Windows XP** – C:\Documents and Settings\All Users\ (Shared) Documents\Noldus\The Observer XT\Media.

**Windows Vista** – C:\Users\Public\Public Documents\Noldus\The Observer XT\Media.

Open the backup file from the DVD (see chapter 12 "File Management" of The Observer XT Reference Manual). If, after opening of one of the backup files, you get the message in The Observer XT that the associated media file cannot be found, you either locate it in the Observer XT default **Media** folder (you can find the name of this folder under **File, Preferences**, in the **Files** tab, in The Observer XT) or add it to the project using the **Independent Variable List** (please refer to chapter 4 "Setting up your Project" of The Observer XT Reference Manual for a description of how to add media files).

## Analysis Results

All Projects contain archived Analysis Results. To open these Analysis Results do one of the following:

From the **Analyze** menu, select the Analysis type, select **Open Archive** and open an \*.arx file.

In the **Project Explorer**, under one of the Analysis items, click an archived Analysis Result.

## A bad day in the office XT90

In this project we see an office worker suffering from a badly designed system, which leads to frustration, and in his case, aggression. It is meant as an illustration of the importance of user-centered design, a design methodology that places the needs of the user in the center of the system design process.

Observation: A bad day in the office  
Media file: Office.mpg

### Analysis results

**Behavior Analysis Result** 'Bad day in the office', with the statistics **Total number** and **Total Duration** statistics in separate sheets.

**Lag Sequential Analysis Result.**

Source: User-Centered Design Works. CD published by IOP Human Machine Interaction, Senter, The Hague, 2002

## Greeting rituals XT90

In this sample project we are observing people greeting each other in the arrivals hall of an international airport.

Observations: Greeting\_1, Greeting\_2, Greeting\_3, Greeting\_4  
Media files: Greeting\_1.mpg, Greeting\_2.mpg, Greeting\_3.mpg, Greeting\_4.mpg

The coding scheme includes three behavioral groups: *Locomotion*, *Emotions* (facial expressions) and *Gestures* (shaking hands, hugging, kissing, etc.).

Subjects are divided into two groups: subjects who are arriving, and subjects who are waiting. Given that you can enter the gender of these subjects as independent variables, this project allows you to analyze how greeting behavior differs between men and women.

Four video clips are included, which provide different behaviors of a variation of individuals and ethnic groups. This sample project includes four observations (Greeting\_1 through Greeting\_4) scored from these four video clips.

The independent variables you need to enter are:

**Name of observer.**

**Date of video recording** (you can type any date).

**Date of scoring** (you can type any date, but logically it should be later than **Date of video recording**).

**Kids arriving** (specify whether the arriving people include children). Choose **Yes** or **No**.

**Nationality or ethnic group (guessed)**. You can choose between **European** and **Indian**.

**Gender of Arriving Subject 1.**

**Gender of Arriving Subject 2.**

**Gender of Waiting Subject 1.**

**Gender of Waiting Subject 2.**

## Data profiles

**Arriving Subjects.** In this data profile, in the Start box, the four observations are grouped in the All Observations group and the arriving Subjects are grouped in the Arriving Subjects group. Next, the Arriving Subjects are filtered.

Default Data Profile that includes all the data.

**Ethnic differences in gestures.** In this data profile the data is first filtered to select all behaviors (except **Other**) from the behavioral group **Gestures**. Next, the data are filtered for the two ethnic groups resulting in two different **Result** containers, **European** and **Indian**.

**Gender differences in gestures.** in this data profile the data is first filtered to select all behaviors (except **Other**) from the behavioral group **Gestures**. Next, the Waiting Subjects and Arriving Subjects are divided into **Male** and **Female**, resulting in four different **Result** containers.

## Analysis results

**Behavior Analysis Result 'Ethnic differences in gestures'**, based on the data profile with the same name. It shows the statistics **Total number**, **Total duration** and **Mean** in separate sheets.

**Behavior Analysis Result 'Gender differences in gestures'**, based on the data profile with the same name. It shows the statistics **Total number**, **Total duration** and **Mean** in separate sheets.

**Lag Sequential Analysis Result** with the four observations displayed in separate sheets.

The Behavior Analysis Results shows that females show more 'touching' gestures than males. Subjects that were assessed as European showed more 'touching' behavior than subjects with an Indian ethnic background.

## Kids at play XT90

This sample project concerns the behavior of two children, Suzanne and Erin. The project contains two MPEG files and five observations:

Suzanne & Erin on sidewalk, showing the children at the age of two and three when they are playing on the sidewalk.

Suzanne & Erin in sandpit, showing the children two years later when they are playing in a sandpit.

The observation **Erin 3 years old** contains fictitious Polar heart rate data. When you open this observation, the **Visualize data** window shows the heart rate data. The observation Erin 3 years old\_edited is used for comparison with the original Erin 3 years old in Reliability Analysis.

Observations: Erin 3 years old (Erin 3 years old\_edited), Erin 5 years old, Suzanne 2 years old, Suzanne 4 years old.

Media files: Suzanne and Erin on sidewalk.mpg, Suzanne and Erin in sandpit.mpg

## Data profiles

**Default Data Profile:** includes all the data.

**Gaze** in which only **Gaze** behavior is selected.

**Observations grouped** in which all four observations are grouped.

**Play behavior** in which only **Play** behavior is selected.

**Verbal behavior** in which only **Verbal** behavior is selected.

## Analysis results

**Behavior Analysis Result 'Gaze'**, with the statistics **Total number** and **Total duration** of **Gaze** behavior in separate sheets.

**Behavior Analysis Result 'Play behavior'**, with the statistics **Total number** and **Total duration** of **Play** behavior in separate sheets.

**Behavior Analysis Result 'Verbal behavior'**, with the statistics **Total number** of **Verbal behavior**.

**Lag Sequential Analysis Result** with the four observations displayed in separate sheets.

**Reliability Analysis Result 'Erin 3 years old'**, based on the data profile **Play behavior** in which the observations Erin 3 years old and Erin 3 years old\_edited were compared.

# Parent-child interaction XT90

This sample project shows the interaction between a 6-year old girl, Suzanne, and her father. Suzanne is offered a chest of drawers full of toys. Her behavior is videotaped and her heart rate is measured using a Polar heart rate monitor.

Observation: 23 May 2006

Media file: Parent-child interaction.avi

## Data profiles

**Default Data Profile:** includes all the data of the observation "23 May 2006".

**Nest over Talk to self** in which behaviors are nested over the behavior **Talk to self** to find out what Suzanne is doing when she talks to herself.

**Own intent or parent's direction** to calculate how many times behaviors were initiated by Suzanne and how many times she follows her father's directions.

**Play behavior** in which only the behavioral group **Play behavior** is selected.

**Verbal behavior** in which only the behavioral group **Verbal behavior** is selected.

## Analysis Results

**Behavior Analysis Result 'Behavior when talking to self':** when does Suzanne talk to herself: when she is playing or when she is doing something else? And what toy does she play with when she talks to herself?

**Behavior Analysis Result 'Own intent or parent's direction',** with the **Total number** of times that behaviors were initiated by Suzanne and the **Total number** of times that Suzanne follows her father's directions. The result shows that all behaviors were initiated by Suzanne.

**Behavior Analysis Result 'Play behavior',** with the **Total number** and **Total Duration** of **Play behavior** in separate sheets.

**Behavior Analysis Result 'Verbal behavior',** with the **Total number** and **Total Duration** of **Verbal behavior** in separate sheets.

**Lag Sequential Analysis Result.**

## Discussion XT90

This sample projects shows a conversation between an employee and her boss discussing how to best deal with a personal problem of the employee. The body language (both body postures and gestures) of both the boss and the employee has been coded in detail.

Observation: Transcription

Media file: Discussion.mpg

## Data Profiles

**Default Data Profile:** includes all the data of the observation: 'Transcription'.

**Gestures:** includes all behaviors from the Behavior group **Gestures**.

**Posture:** includes all behaviors from the behavior group **Posture**.

**Looking away:** includes behavior **Looking away** from the Behavior group **Gaze**.

## Analysis result

**Behavior Analysis Result 'Looking away'**, with statistics of behavior Looking away for both the boss and the employee. The employee is clearly more looking away than her boss.

## RSI Research XT90

This sample project illustrates the use of detailed video analysis for the study of complex and rapid behaviors. The case study concerns an experimental setup designed for systematic observation of movements of wrist, elbow and shoulder joints that are liable to cause repetitive strain injury (RSI).

Observations: ELBOW, ELB\_SH, ELB\_SH\_W, TASK1  
Media file: Car assembly.mpg

The setup was developed by researchers at the Department of Ergonomics, University of Lisbon, Portugal. The subjects under observation were workers in a car assembly plant, for hours on end performing cyclic production tasks, every task lasting on average 11 s. For more details about the study design and rationale, refer to Noldus et al. (2000).

The video file contains 11 complete task cycles. One of those (for which event logging started at 00:00:13.64) has been coded in detail. The coding was done during subsequent passes through the video material, separately for elbow, shoulder and wrist joint movements. This is reflected in the data files included, each of which refers to the same time episode. First the elbow movements were coded (resulting in data file ELBOW), the shoulder movements were added (ELB\_SH), and next the wrist movements were inserted (ELB\_SH\_W). The file TASK1 contains all data of Task 1, including the hand movements.

A few suggestions for use of this sample project:

Try to code Task 2 (starting at  $\pm$  0:00:14.000 elapsed time in the Video window) and subsequent episodes of the video file.

Visualize the data.

Create data profiles, using states in one group to create intervals of interest as a filter for the events in another group.

## Data profiles

**Default Data Profile** in which all the data are selected.

**Only TASK1** in which only observation **TASK1** is selected.

## Analysis results

**Behavior Analysis Result 'TASK1 only'**, based on the data profile with the same name, showing the statistics **Total number**, **Total duration**, **Mean** and **Rate per minute** in columns.

**Lag Sequential Analysis Result 'TASK1 only**, based on the data profile with the same name.

Acknowledgments: configuration and data collection by Rudie Trienes, Anabele Simoés, José Carvalhais, Florentino Serranheiro, Madalena Magalhães and Carlos Fujão (April 1998).

Reference:

Noldus, L.P.J.J.; Trienes, R.J.H.; Hendriksen, A.H.M.; Jansen, H.; Jansen, R.G. (2000). The Observer Video-Pro: new software for the collection, management and presentation of time-structured data from videotapes and digital media files. Behavior Research Methods, Instruments & Computers, 32, 197-206.

## Chat application XT90

This sample project consists of a simulated usability test of the software applications Windows Messenger and Skype. The movie file shows the captured image of the participant's computer, with a close-up of the participant's face displayed in an insert window. The screen capture was produced with the Screen Capture Module, a software-based tool that generates a digital media file directly from the screen display. uLog was used to log keyboard-related behaviors.

Observations: Testing MSN Messenger, Testing Skype.



The observations contain two event logs each: one (Event log0001) with the participant's actions, the other one (uLog) with logged data from uLog. To open one of the event logs, in the Project Explorer, click on an observation to open it, expand **Event Files**, and click the event log to open it.

Media file: Chat application - testing messenger.mpg, Chat application - testing Skype.mpg



For technical reasons the uLog data in this project have been edited.

The coding scheme includes four behavior groups:

**Tasks:** a list of steps defined by the test leader.

**Usability issues:** all usability-related events that may occur during the test.

**Behavior 1:** imported uLog events.

**Behavior 2:** imported uLog event.

### Data profiles

**Task completion** time, with all behaviors from the behavior group **Tasks**.

**Usability issues only**, in which only behaviors from the behavior group **Usability issues** are selected.

**uLog data**, in which only behaviors from the behavior groups Behavior 1 and 2 are filtered.

## Analysis results:

**Behavior Analysis Result 'Task completion time'**, based on the data profile with the same name.

**Behavior Analysis Result 'Usability issues only'**, based on the data profile with the same name.

**Behavior Analysis Result 'uLog data'**, based on the data profile with the same name.

**Lag Sequential Analysis Result**, based on the data profile **uLog data**.

## Episode selections

**Episode selection 001:** All instances of User remarks and questions. **Episode 1** refers to MNS Messenger, **Episode 2** to Skype.

**Episode selection 002:** All instances of *Make connection*, *Colleague lookup*, *Invite colleague*, *Communicate*. **Episode 1** refers to MNS Messenger, **Episode 2** to Skype.

# Usability testing of cars XT90

This project illustrates how you can use The Observer XT to code and analyze the behavior of a driver. The accompanying video footage has been taken from a camera and an eye-tracking device that the driver was wearing during the test. The gaze point of the driver was then superimposed on the video image to help the observer record manually where the driver is looking at. This way one can combine gazing behavior with route characteristics, driving behavior and other data like car speed that can be imported in The Observer.

Observations: Test at day, Test at night.



The Observation 'Test at day' contains two event logs, one named 'Events' with the typical event data, and the other named 'Speed data' containing the speed values recorded with a separate device and imported as observational data. Speed values are stored as numerical modifiers.

Media files: Usability testing of cars - Day.mpg, Usability testing of cars - Night.mpg.

## External data

In this project, speed data have been imported in two ways: (a) As observational data (stored in a separate event log, see above) and (b) as external data (just like physiological data). The data set is the same, but the way they are displayed and analyzed is different. In (a) you can analyze speed with the Numerical Modifier Analysis. In (b), you can visualize the data in a graph (From the **Analyze** menu select **Visualize Data**).

The coding scheme includes the following behavior groups:

**Turns:** To mark turns along the route.

**Driver's gaze:** To score the object the driver is looking at, indicated by the cross symbol moving over the video image.

**Car movement:** To mark the sections of the video when the car is moving or not moving.

**Behavior:** Contains **Speed** (this is necessary to import the speed data as numerical modifiers; Modifiers only make sense if they are attached to a behavior) and **Roundabout** (to mark the points of the video where the car enters a roundabout).

## Data profiles

**All data:** Includes all events and imported data in the observations.

**At the roundabout:** Selects the events scored when the state Roundabout is active.

**Car in motion:** Selects the events and the speed data of the observation 'Test at day' when the car was in motion.

**Car in motion - Mirrors data grouped:** like the previous profile, but the behaviors describing gazing at a mirror (left, right, rearview) have been grouped (Click **Grouping** and select the **Behaviors** tab).

**Gaze at mirrors - For LSA:** Filters behaviors of the 'gaze at mirror type' and 'turns', and ignores the others. This helps you analyze the temporal relation between turns and gazing at a mirror (see Lag Sequential Analysis below).

**Interval with speed data:** Three Free Intervals are defined to analyze the part of the observation with speed data (up to 2'13") in three equal sections. An additional interval is defined for when the car enters a roundabout. The four intervals are analyzed independently.

**Test duration split in 3 sections:** An example of data profile with *Time bins*. Some gazing behaviors are analyzed in three equal sections of one observation.

## Analysis results

**Behavior Analysis Result 'Attention data'**, based on the data profile 'Test duration split in 3 sections'. This result compares the behavior 'Gaze at road' with 'Gaze at other objects' in different sections of the test route.

**Behavior Analysis Result 'Driver's gaze statistics'**: based on the data profile 'Car in motion'.

**Behavior Analysis Result 'Driver's gaze statistics - At any mirror'** based on the data profile 'Car in motion - Mirrors data grouped'.

**Numerical Analysis Result 'Speed statistics'**, based on the data profile 'Interval with speed data'.

**Lag Sequential Analysis Result 'Gaze at mirrors at turns'**, based on the data profile 'Gaze at mirrors - For LSA'. This results shows how often turning (on the rows) is associated to looking at a mirror within one second.

## Car race game XT90

This project is an example of the use of The Observer in gaming research. It focuses on quantifying performance of computer game players in relation to for example their gaming experience or age. Each player was asked to play an online car race game a number of times. The observer could score data from two video files, one showing the computer screen with a close-up of the participant's face displayed in an insert window, and the other displaying the gaze point recorded with a eye-tracking device. Computer events like key presses were also recorded with uLog, and imported as separate event logs within the observation. Furthermore, ECG was measured from each player, so it is possible to relate player's behavior to changes in ECG activity.

The coding scheme includes the following behavior groups:

**uLog events** – Behavior group with uLog elements *Logging started*, *Key pressed*, etc. A number of modifiers specify the coordinates of the mouse position and the object clicked.

**Game actions** – Behavior group with elements *Race* (marking the start and end of a race), and various events (*Crash*, *Overtake opponent* etc.)

**Areas of Interest** – Behavior group imported from the Eye-tracker software. The elements indicate the position of the gaze point (*Track*, *Menu and score*, *Bonus overview* etc.).

**Fixations** – Behavior group imported from the Eye-tracker software, with three mutually-exclusive states, *Fixation*, *Non fixation* and *Fixation Undetermined*.

**Behavior group** – Contains *End result* which marks the position of the player's car at the end of each race (a numerical modifier from 1 to 4 is attached to this event) and *Touch wall* which marks the time the car is touching the wall. *Touch wall* has been placed outside the **Game actions** group because it is a state event occurring when *Race* is active.

Observations: Participant 1 test 1 to Participant 4 test 3.



All observations but one (namely, Participant 1 test 1) contain three event logs:

**Coded events [observation name]** – Contains events scored manually (*Game actions*, *End result*, *Touch wall*).

**Data from uLog [observation name]** – Contains *uLog events*.

**Eye-tracker data [observation name]** – Contains *Fixations* and *Areas of interest*.

Media files: Car race screen 01... 09.avi, Car race eye-tracker 01...09.avi.

In order to play the video files in this project, you must have a recent DivX codec. You can download a DivX codec from the website [www.divx.com](http://www.divx.com).



If you are using The Observer XT on a Vista operating system, you may get a firewall warning when opening this project. Download first a DivX codec and then re-open the project.

To save disk space, the video files have been reduced in quality relative to the original screen captures.

## Data profiles

**All data** – Includes all data in all observations.

**Crash and other events** – This data profile helps answering the question: 'How likely is the event *Crash* preceded by a specific event?'. Events like *Crash*, *Acceleration*, *Overtake opponent* are considered for analysis. A **Nest** function ensures that only the time that the participant is actually playing in a race is analyzed.

**End results per Gaming experience** – This data profile helps you relate gaming experience and the final position reached by the player. Observations have been grouped by player's experience. The behavior *End result* and its numerical modifier are considered for analysis.

**End results within Participant** – This data profile allows you to compare the player's performance between observations. For example, to establish whether the player obtained better results in test 2 relative to test 1. In order to do this, observations have been considered separately unlike in the previous profile. The behavior *End result* and its numerical modifier are considered for analysis.

**Eye-tracker data** – This data profile allows you to analyze fixations and where the participant looks at during any race. Observations have been grouped according to the *Participant* name. Only the event logs imported from the Eye-tracking software are considered for analysis. Furthermore, a **Nest** function allows to analyze the time that the participant is actually playing in a race. To do so, *Race* is selected with any value of *Track number*.

**Key pressed data** – This profile allows you to focus on the *Key pressed* data acquired with uLog. You can calculate for example the number of times each player pressed a key and the rate of key pressing.

**Performance per Task and Participant** – With this data profile you can easily analyze performance of each participant in relation to the type of task. For example, you may want to see whether Track 3 is more difficult for certain players. Observations are grouped according to the *Participant* name. Nesting conditions specify the task (*Track number*) to analyze. Results are shown for each *Race*, separately.

**Touch wall data** – This data profile focuses on the event *Touch wall*, which is expected to correlate with the player's dexterity. Observations are grouped according to the *Participant* name. If you activate this data profile, you can analyze *Touch wall* per participant.

## Analysis results

**Behavior Analysis Result 'Eye-tracker results'** – Based on the data profile 'Eye-tracker data'. In this result you can see that participants differ greatly in their gazing behavior. See for example the statistics for Fixation. The participant Ivo fixates much more often than the others. The two participants with higher gaming experience, namely Ivo and Martijn, show very different fixation statistics. Compared to Ivo, Martijn fixates less often but fixations are on average longer. The same pattern is also apparent when comparing fixation on the track (see the *Track* row). This suggests that there could be different strategies resulting in high performance in this game.

**Behavior Analysis Result 'Key pressed results'** – Based on the data profile 'Key pressed data'.

**Behavior Analysis Result 'Performance per Task and Participant'** – Based on the data profile 'Performance per Task and Participant'. In this result you can compare performance of different players at similar conditions (track number and game action).



You can also compare performance of the same player between different tracks. To make comparison easier, start a new Behavior Analysis. In the **Layout** page of the window that appears, click **Observations** and click the **Up** button a few times to move **Observations** above **Result containers** (which specifies the Track number; see the corresponding data profile). This way the results are sorted first by observation group (participant), then by track number.

**Behavioral Analysis Result 'Touch wall results'** – Based on the data profile 'Touch wall data'. In this result you can see that the more experienced the player (see the column **Gaming experience**), the less he/she touches the wall (see the various statistics).

**Numerical Analysis Result 'End results per Gaming experience'** – Based on the data profile 'End results per Gaming experience'. In this result you can see a clear correlation between gaming experience and the average end position of the car. Since the observations have been grouped by *Gaming experience*, the **Observations** column lists the names of those groups (Very high, High etc.).

**Numerical Analysis Result 'End results within Participant'** – Based on the data profile 'End results within Participant'. Each row refers to an observation because observations were not grouped in the data profile. The **Test number** column (which refers to the corresponding independent variable) helps you compare results between tests for each player. In this result, you can see that the average end position decreases from test 1 to test 2, but only for those players with above-average experience.

**Lag Sequential Analysis Result 'Events preceding Crash'** – Based on the data profile 'Crash and other events'. This *time lag* sequential analysis calculates how often the event *Crash* was preceded by other behaviors in the previous five seconds. For each observation, please focus on the row **Crash**. The numbers in the cells are the probabilities that *Crash* was preceded by the corresponding event on the columns in the previous five seconds.

## Consumer behavior XT90

The *Consumer behavior* sample project is an example of a study carried out in the Restaurant of the Future. The Restaurant of the Future is a facility for research on food-related behavior in Wageningen (The Netherlands). The restaurant is part of the campus of Wageningen University and looks like a normal restaurant but is equipped with 18 cameras mounted in the ceiling.

In the sample project, thirty consumers were observed while choosing their lunch from a buffet in the restaurant. The buffet contained three chicken burgers (schnitzel-like products) that were labeled as either 'healthy', 'welfare friendly' and 'new'. Other products in the buffet were: french fries, vegetables, salad, tomatoes, cucumber, hamburger buns, onions, mayonnaise, ketchup, mustard, mineral water and Coca Cola.

The coding scheme lists all the food items that were available (including the three types of schnitzels) plus a group of behaviors. The consumers were defined as subject 1-29.

The Independent Variable List includes the independent variable 'gender'. The variable is used in the analysis to group the subjects and assess the differences between male and female subjects.

Observation: Observation0001

Media file: Consumer behavior.mpg

## Data profiles

**Default Data Profile** – Data profile without any filtering, nesting or grouping.

**Behavior at buffet** – Data profile in which only the consumers' behaviors are selected ('choosing', 'reading food descriptions' and 'other behavior'). The subjects have been grouped in 'male' and 'female' subjects.

**Healthy - welfare friendly - new** – Data profile in which only the three chicken burgers are selected. In this profile the subjects have again been grouped according to gender.

**Other products chosen** – Data profile in which all the food items have been selected, except the chicken burgers which are filtered in the profile above. Again two groups of subjects have been created: a 'male' and a 'female' group.

## Analysis results

**Behavior at buffet** – Based on the data profile with the same name. In this analysis result you can see that men and women behave differently when choosing their meal from the buffet. Women spend more time reading the chicken burger descriptions and choosing their meal.

**Healthy - welfare friendly - new** – The welfare-friendly chicken burger was the most popular meat type, both among women and men. 'Healthy' and 'new' burgers were equally often chosen.

**Other products chosen** – In this analysis result you can see what other products were chosen together with the chicken burgers.