



Overview

Hesse State Office of Criminal Investigation

Ad hoc analyses of extensive statistical data.

Requirement

Analyses of additional information for police crime statistics (PCS).

Solution

Relationships between database attributes and their properties are made visible through visualization.

Uses

InfoZoom helps to quickly recognize tendencies and interrelations in statistical data.

Analysis software clears the fog in police crime statistics

"Over 2.4 million data sets have to be analyzed for the annual publication of the police crime statistics (PCS) for Hesse, Germany. Until 2006, many statistical interrelations and results remained hidden in the PCS database of the Hesse State Office of Criminal Investigation. This all changed when a new analysis tool was implemented, which allowed even large quantities of data to be analyzed ad hoc and displayed transparently."

Harald Talarczyk, specialized journalist, Bonn

For today's police management, the police crime statistics (PCS) that are published once a year are an indispensable tool for tracing developments in criminality. The analysis of large quantities of data that is necessary for this is only possible using the latest software solutions. At the Hesse State Office of Criminal Investigation in Wiesbaden, Germany, a new tool called InfoZoom makes it possible to analyze data which previously could not be analyzed in this quantity. This makes it possible to gain information about criminality in Hesse today, which would not have been available before 2006.



"Previously inaccessible additional information can be analyzed intuitively."



► Expanding statistical analysis options

At the Hesse State Office of Criminal Investigation, data from the operative computer search system, Polas (version 5), forms the basis for police crime statistics in the state of Hesse. After the system changeover to Polas in 2001, the data from Polas for the State Office of Criminal Investigation was reflected in a second database, albeit in anonymized form, to protect the identity of certain persons. The 30 standard tables contained in this police crime statistics database still constitute the backbone of police crime statistics in Hesse today. The police crime statistics database also includes extensive additional information, for example, on how crimes are committed and crime weapons. An unsuccessful attempt was made to statistically analyze this additional information using an analysis and reporting tool that was already available. Until 2005, PCS relied exclusively on predefined standard tables. Until 2006, it was therefore impossible to determine certain interrelations between the type of damage (e.g., shoplifting), the extent of the damage, and the groups of persons responsible.

In 2005, the persons responsible for software procurement for the state of Hesse were introduced to a data analysis tool called InfoZoom. After evaluating the software, licenses for it were purchased in 2005. According to Christian Dreyer, the person responsible at the Hesse State Office of Criminal Investigation, there were several critical factors behind this decision:

"Firstly, we discovered from our tests that we were able to use the software to analyze additional information from the police crime statistics database that had previously been inaccessible. Secondly, we were impressed by the ability to easily and intuitively analyze large quantities of data ad hoc. This means that I can recognize the first tendencies immediately when the selected and combined database attributes change."

For analyses with InfoZoom, the existing data set is displayed on the screen in a graphically compressed form. The software displays the column markings in a database (or Excel table) in the form of lines and makes it possible to relate these attributes to each other in every way, together with the accompanying properties. In this way, the users at the Hesse State Office of Criminal Investigation say that they quickly receive information about special features of large data sets, which would not be traceable using other tools.

► Adaptation without programming knowledge

When InfoZoom was introduced, the necessary adaptations were made. Staff say they were able to do this themselves without help.

"Data transfer from the PCS database to InfoZoom was possible without programming from the very beginning. This meant we were able to start implementing the program and making evaluations quickly. Even without training, we were able to obtain the information we required from the documentation," says Christian Dreyer.

► Recognizing interrelations ad hoc

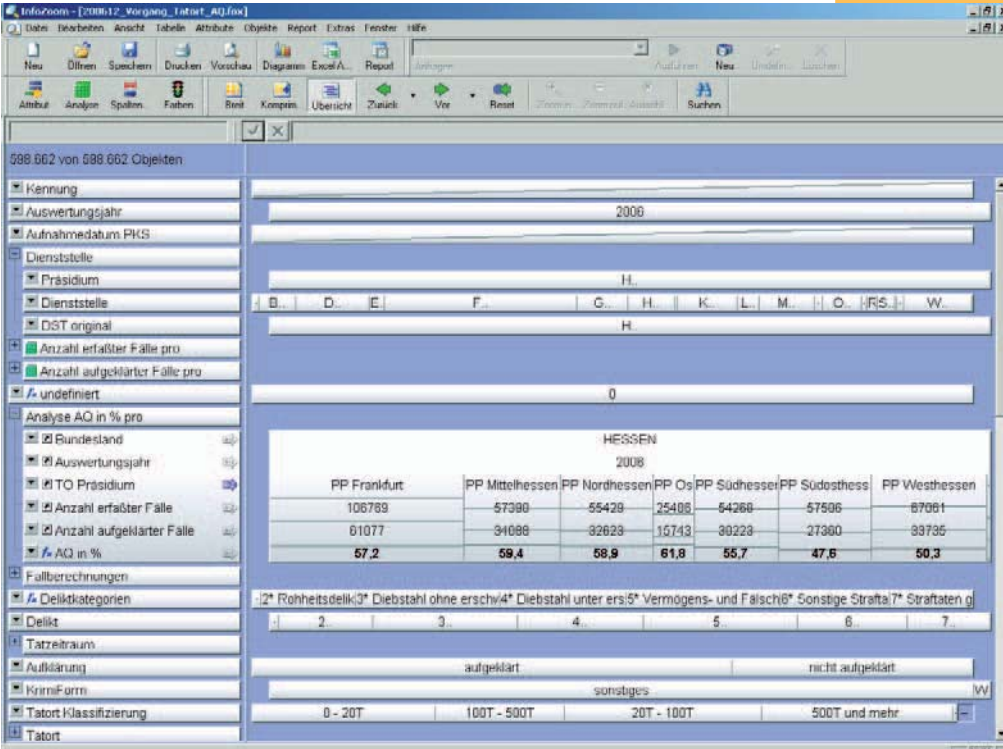
For staff in Wiesbaden, a deciding factor in favor of the software is that they can detect interrelations exploratively, which would not be possible without visualization from InfoZoom. Depending on the type of analysis, the properties of the database attributes sorted into rows can be greatly compressed or decompressed. With just a few mouse clicks, users therefore immediately receive a clear picture of how attributes (e.g., different crimes) differ from each other in their various properties (e.g., time of the crime) in terms of value. It is possible to see from the size of the cells whether a certain property has a particularly high or low value compared to the total number. All attributes and their properties can be combined with each other in any way. In this way, with just a few mouse clicks, the software transparently displays how many brutal crimes have been committed in a certain crime scene location in Hesse in the selected period and how many of them have been solved.



Christian Dreyer,
Hesse State Office
of Criminal
Investigation

"Interrelations between analysis attributes and their properties can be recognized quickly."

PCS 2006
Hesse



The screenshot shows the InfoZoom software interface with a data table for Hesse in 2008. The table displays the number of cases and the percentage of solved cases (AQ in %) for various police districts (PP) across different crime categories (Delikt).

HESSEN 2008							
	PP Frankfurt	PP Mittelhessen	PP Nordhessen	PP Os	PP Südhessen	PP Südosthessen	PP Westhessen
Anzahl erfaßter Fälle	106769	57390	55429	25408	54268	57596	87061
Anzahl aufgeklärter Fälle	61077	34088	32623	15743	30223	27360	33735
AQ in %	57.2	59.4	58.9	61.8	55.7	47.6	50.3

Legend for Delikt categories:

- 1* Rohheitsdelikt
- 2* Diebstahl ohne erschv
- 3* Diebstahl unter erschv
- 4* Vermögens- und Fälschb
- 5* Sonstige Straftat
- 6* Straftaten g

► Theft and violence in the focus of statistics

Example: Navigation systems: Using InfoZoom it was possible to reveal the statistic development in thefts of these items in Hesse, focusing on region and time. It was also possible to determine how many navigation systems had been stolen from cars in particular localities. The development of »violence in schools in Hesse« was also analyzed for several years:

"In our data selection using InfoZoom, we restricted ourselves to private and state schools as crime scenes and were able to quickly determine the relationships between the numbers of crimes committed there, e.g. bodily harm, coercion, property damage, and graffiti," says Christian Dreyer.

In 2006, property damage was in first place, far above grievous bodily harm. Actual figures about the crime suspects were extracted, as well as special interrogations at the police headquarters in East Hesse.

► Expanding the use of the software

In the future, staff in Wiesbaden want to make it simpler to process large files and data quantities. For this purpose, the process files and additional files saved each year are to be summarized and edited in an individual InfoZoom file. This is to save the time and effort required to extract and combine process data and additional data.

So far, statistical reports and studies from police headquarters have been created by easily converting the results extracted with InfoZoom into MS Excel and further processing them there. In the future, the reporting functions that InfoZoom provides will also be used for this purpose. These make it possible to display analysis results with just a few mouse clicks in the form of tabular reports, diagrams, and 3D models. This is supposed to save the time required for unnecessary data transfer between the programs.



Uses for InfoZoom

- New findings on the development of criminality
- Simple and intuitive ad hoc analysis of extensive statistical data
- Independent adaptation to individual requirements by every department
- Analysis of additional information that was previously impossible
- Explorative detection of interrelations between database attributes and their properties
- Visualization of analysis results

Further information

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