



**HOW CAN YOU BRING YOUR  
VISION ZERO TO LIFE?**

# A COMPREHENSIVE TOOL FOR THE ANALYSIS OF CRASH DATA



With 1.24 million traffic fatalities per year, road accidents are among the most frequent causes of death worldwide. This according to figures from the United Nations (UN). Many countries have therefore taken on the task of improving traffic safety. Their goal: Vision Zero – the number of fatal road accidents should be reduced to zero in the long term.

PTV Visum Safety is the tool for analysing crash data. Now it is possible to integrate aspects of traffic safety into strategic transport planning decisions from the very beginning. The software clearly visualises the crash data collected by the police and identifies black spots and high-risk sections. Detailed information about each individual crash allows users to find similarities and contributing factors to draw conclusions about causes and develop, plan and optimise effective and cost-efficient mitigation measures.

# 5 GOOD REASONS

## FOR PTV VISUM SAFETY

### BENEFITS



#### PLANNING RELIABILITY FOR TRAFFIC SAFETY

Create a paradigm change in transport planning by considering the traffic safety component in your strategic decision-making from the very beginning. Based on crash data normally collected by the police, which can be imported and analysed easily in PTV Visum Safety, you can derive long-term, effective strategies for reducing the number of crashes at high risk sections and black spots, analyse multi-modal crash relations and thereby derive custom-tailored measures for individual road users - especially for vulnerable road users such as cyclists and pedestrians.



#### COLLABORATIVE WORK

Make transport planning measures more effective by collaborating with organisations which normally work independently of one another, such as police authorities, local road authorities and transport planners. When used together, PTV Euska, a tool for crash data collection and validation, the strategic transport planning software PTV Visum and the traffic safety planning tool PTV Visum Safety are designed to provide perfectly coordinated assessment and planning stages which fulfil the goal of safe, sustainable mobility.



#### USER-FRIENDLINESS & EFFICIENCY

Perform analyses to assess traffic safety in your network with just a few steps: Import crash data from various sources, including databases, MS Excel and text files, into PTV Visum Safety with a click of a button. PTV Visum Safety then visualises individual crashes or dangerous intersections and high-risk sections using clear and easy-to-understand heat maps. Filter individual crashes or crash clusters according to their characteristics and compare their development across different time periods. Last but not least, use PTV Visum Safety's sophisticated reporting functions to generate interactive statistics and road safety reports.



#### SCIENTIFIC APPROACH

Rely on software which is based on decades of intensive research, close cooperation with police authorities, accident commissions as well as numerous NGOs, and which has been enhanced constantly. You thus have a stable analysis tool which always incorporates the latest scientific and practical insights and sets new standards.



#### STRONG SERVICE

Become a member of our large international user community. Benefit from our skilled and dedicated support team, our professional services, detailed documentation and tutorials, extensive training programmes and user group meetings, ensuring a high level of knowledge exchange.

# USE CASES

## BLACK SPOT MANAGEMENT (BSM)

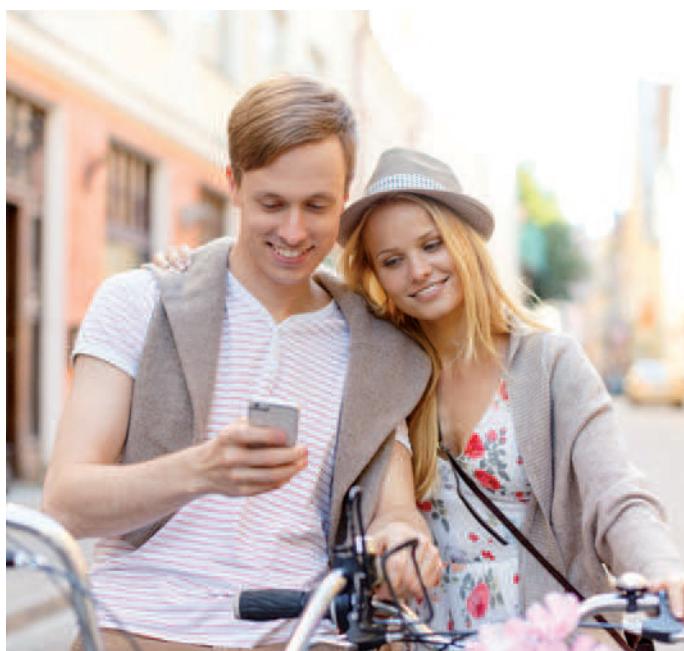
Road safety experts estimate that 50% of all crash costs occur on just about 10% of the network. But where do these crashes occur? And what causes them? PTV Visum Safety gives planners and safety experts a tool they can use for Black Spot Management; that is, to perform all tasks for detecting, editing and analysing crash clusters. The basis for this is historic crash data collected by the police and analysed electronically. If there is no high-performance system for crash data recording in use already, PTV Euska is a solid tool for recording high-quality crash data. The PTV Group developed this software in cooperation with insurers' accident research for joint work with the police and municipal authorities to support their collaboration with accident committees, and it is used by German police authorities to analyse crash data in eleven federal states.

By importing this data recorded by the police PTV Visum Safety can identify black spots visually using heat maps or algorithms for the automatic search and generation of black spots with user-defined parameters. Individual crashes can be filtered according to their attributes and thus visualised and analysed in mere seconds. In particular, the graphic display of noteworthy crash cluster areas, sets of meaningful symbols for individual crashes and carefully-prepared reporting variants ensure that the results are displayed plausibly for both technically-versed users and decision-makers without a traffic planning background. This guarantees an optimal decision making process based on solid data, detailed technical insight and well prepared decision facts.

In order to make possible causes of crashes more tangible, the software offers users a series of detailed key information stored for each crash recorded; if necessary, additional properties can be added. These include the vehicle types which were involved in the crash; the injury rate and attendant circumstances. By linking crashes to the transport model it is possible to relate more information such as number of lanes, crossings and signals as well as speed data. Country-specific features and standard features of the region can also be added to the crash data structure in the software.

When using the BSM approach, the focus is on the systematic detection of crash clusters with the same noteworthy features. If, for example, a high number of crashes occur at intersections with high traffic volumes, this may indicate problems with the right of way of signalisation. If this suspicion proves correct, appropriate measures can be planned and their effect on traffic evaluated in a model-based fashion. The subsequent occurrence of crashes can be monitored.

Crash analyses based on a macroscopic transport model are thus optimally suited for urban and regional settings. PTV Visum Safety can be used in urban areas to visually emphasise and analyse crash clusters at intersections or in corridors of the inner urban street network, but also supports studies in non-urban areas where routes and route sections of the regional network are in the focus.



## NETWORK SAFETY MANAGEMENT (NSM)

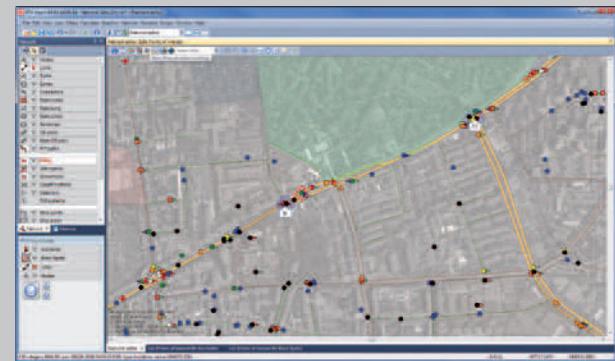
While Black Spot Management is one of the reactive approaches within the discipline of traffic safety, Network Safety Management (NSM) is becoming a proactive component, which is generally used for planning cycles every two to four years. The special feature of PTV Visum Safety is that it provides efficient, automatic and incremental processes for referencing crashes to the digital street network. This way, crash data can be blended with traffic volumes from traffic counts or ideally from a transport model. Planners and road safety analysts are therefore in a position to assess the most critical points in the network according to their traffic significance, identifying these using coloured route markers and interactive tables and creating a priority ranking. However the software also allows planners leeway for the assessment of the safety potential - measures can be prioritised according to severity of crashes, classified according to the type of road users or any other criteria. Transport planners and traffic operators of the road network can assess the development of crash occurrence across different time periods in the past or to develop and plan possible interventions into the infrastructure when looking ahead.

Last but not least, with PTV Visum Safety, it is possible to derive the safety potential and urgency of a measure in the infrastructure on the noteworthy network segments and to put a number to the crash costs which can be avoided. The safety potential and calculated costs of construction or traffic-technical measures form the basis for an economic assessment, which is generally performed as a cost-benefit analysis. This is why only the NSM methodology described offers all necessary information for an objective assessment of traffic safety as well as the establishment of a ranking of segments for further analysis and treatment. This way, limited financial resources can be prioritised according to their effect on traffic safety.

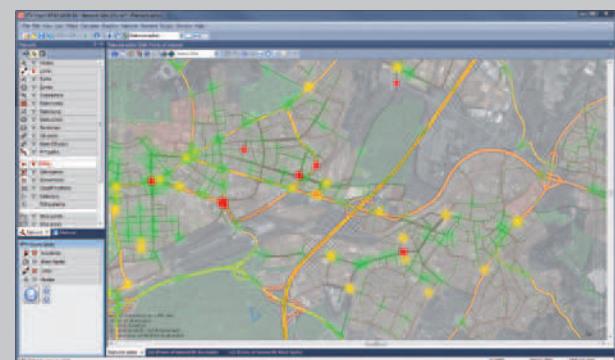
## ROAD SAFETY IMPACT ASSESSMENT (RIA)

Road Safety Impact Assessment (RIA) goes one step further, in that it allows a risk assessment of existing and future infrastructure. Even today, in their transport models, transport planners are examining the economic and environmental effects of planning variants in their infrastructure projects. With PTV Visum Safety's RIA feature they can expand their examinations to include questions of road safety. On the tool side, simple crash prediction models for different road types are incorporated into PTV Visum Safety. By blending these with traffic volumes from the transport model, transport planners can take stock of the predicted crash occurrence for individual streets or the complete network and examine as well as compare various scenarios. In the future, RIA will play an ever more important role, for anyone who can model crash occurrence with foresight will be able to prevent crashes most effectively by selecting the safest planning variant.

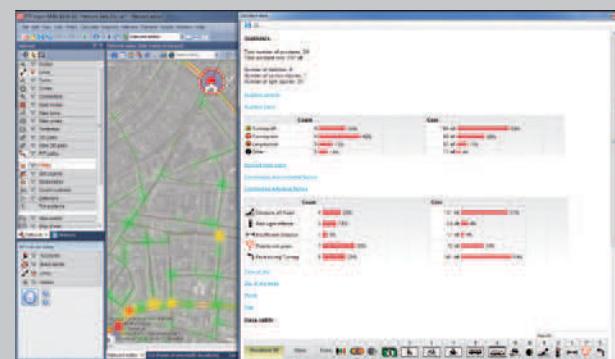
PTV Visum Safety offers possibilities for use with an included crash prediction model (e.g. based on the current Swiss standard), the application of other already-defined crash prediction models or the development of custom crash prediction models.



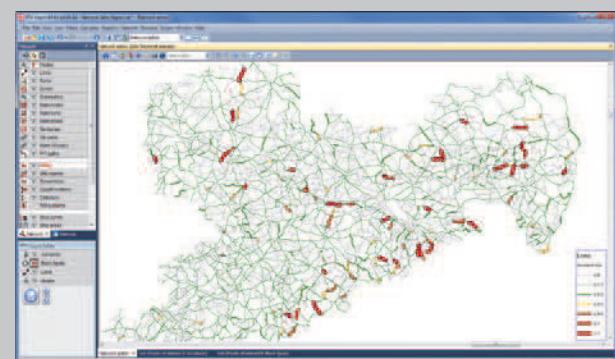
PTV Visum Safety integrates crash data and identifies black spots in the road network of the PTV Visum transport model.



Heat maps display high frequency crash locations of different types.



Interactive statistics and reports show details to individual crashes, black spots or any other user defined clusters of crashes.



PTV Visum Safety's network safety management functionalities allow for an analysis of network wide crash rates or densities.

# OUR COMMITMENT IN THE EUROPEAN

## ROAD SAFETY CHARTER



The European Road Safety Charter, led by the European Commission, is the largest civil society platform on road safety. Next to more than 2,300 signatories from public and private entities, also the PTV Group joined the road safety community in order to proactively implement measures helping to reduce road fatalities.

### SPECIFICALLY, THE CHARTER AIMS TO:

- ▶ encourage and support European associations, schools, universities, companies of all types and sizes, and local authorities to take actions for road safety in Europe
- ▶ acknowledge contributions by civil society to road safety
- ▶ facilitate civil society members in acquiring and sharing knowledge on road safety issues in the European Union
- ▶ facilitate true dialogue for the transfer of road safety experiences and practices at all levels of governance in the European Union

[www.erscharter.eu](http://www.erscharter.eu)

**PTV GROUP**  
Haid-und-Neu-Str. 15  
76131 Karlsruhe  
Germany

+49 (0) 721 96 51-300  
[info@vision.ptvgroup.com](mailto:info@vision.ptvgroup.com)

[vision-traffic.ptvgroup.com](http://vision-traffic.ptvgroup.com)  
[youtube.com/ptvvision](http://youtube.com/ptvvision)