ImpactScan

Safe routes to school in Saxony

What impact can investment in safe routes to school in Saxony have?

4.65 : 1

Every euro invested is associated with EUR 4.65 in avoided societal accident costs.

Key finding for investment in 50 accident hotspots with an estimated investment volume of EUR 6.25 million.

Updated August 2026

Summary

Saxony incurs high societal costs from road traffic accidents. The public summary of the reply to minor interpellation, parliamentary paper 8/6924, reported accident costs of around EUR 1.46 billion for 2025. The accompanying parliamentary motion, paper 8/6592, calls for a state programme involving structural improvements to transport infrastructure and a political target for reducing serious accidents. This study examines the potential societal benefits of targeted treatment of accident hotspots with particularly high accident costs near schools in Saxony.

Indicator	Finding
Analytically identified hotspots near schools	400
Recorded injury accidents at these sites, 2021–2025	4,027
Conservatively modelled societal accident costs	EUR 199.93 million
Share of costs at the 100 highest-cost hotspots	49.3%

Key portfolio results

Portfolio	Investment	Benefit PV	BCR
Top 25	EUR 3.13m	EUR 18.66m	5.97
Top 50	EUR 6.25m	EUR 29.07m	4.65
Top 100	EUR 12.50m	EUR 44.95m	3.60
All 400	EUR 50.00m	EUR 91.22m	1.82

Core finding

Under the central model assumptions, potentially avoided societal accident costs exceed investment costs. The ratio is most favourable when planning and investment resources are initially concentrated on the sites with the highest accident costs.

Interpretation: the analysis prioritises sites for assessment and evaluates portfolios. It identifies neither actual school-travel accidents nor a reliable individual ROI or immediate budget savings.

1. Background

Road safety is also an economic and societal investment issue. Accident consequences cause medical and rehabilitation costs, lost production, property damage and other welfare losses. The publicly reported accident costs of around EUR 1.46 billion in Saxony in 2025 illustrate the scale. This figure is used solely as context; it is not apportioned to children, school travel or the identified hotspots.

The national trend also highlights the need for action: in 2025, 29,199 children under 15 were injured in road traffic accidents, compared with 27,208 in 2024. For children aged 6 to 14, official analysis also shows a clear concentration on weekday mornings; in 2024 the most frequent period was between 7 and 8 a.m.

Saxon parliamentary motion 8/6592 links this need to specific political instruments: safe crossings, unobstructed sightlines, continuous footpaths and cycle routes, school travel plans and a state-wide funding programme. It also sets the political target of reducing the number of serious accidents by at least 50% by 2030.

The decision question is therefore: what societal benefits can be expected if additional infrastructure funds are initially directed to accident hotspots near schools where particularly high accident costs have occurred in the past?

Subject of analysis	Definition
Intervention	Suitable road safety interventions at prioritised hotspots
Spatial unit	Specific accident site or short road section, not the school
Counterfactual	Status quo without additional investment; annual baseline equals the historical 2021–2025 average
Benefit perspective	Avoided societal accident costs for all road users at the treated site

The connection to school travel is used to select relevant road areas. Making a road area safer can benefit children as well as adults, pedestrians, cyclists, car users and other road users. The study therefore includes all injury accidents at an identified hotspot, including those that did not trigger the morning school-travel filter.

2. Methodology

2.1 Identifying accident hotspots

The analysis uses georeferenced Accident Atlas data from the Statistical Offices of the Federation and the Länder for Saxony in 2021–2025. These data are based on police road traffic accident statistics and contain injury accidents, including coordinates, time, accident category, accident type and road-user involvement. Property-damage-only accidents are excluded.

School locations come from the Saxony school database. Schools are spatial reference points; the potential intervention unit is the specific accident site.

Step	Rule
1. Data	Accident events 2021–2025 and school locations
2. School surroundings	Within 500 m; at least one event on a weekday during hour 6, 7 or 8
3. Accident site	25-metre clusters; each event assigned to a single site
4. Hotspot	At least 5 accidents within a rolling 3-year window
5. Portfolio	Prioritisation by historical monetised accident costs

A site initially qualifies as relevant if it has at least two injury accidents during the observation period and at least one event meets the temporal and spatial school-travel assumption. A hotspot is a relevant 25-metre accident site with at least five injury accidents in at least one of the windows 2021–2023, 2022–2024 or 2023–2025. The 400 sites are analytically identified hotspots drawing on accident commission methodology. They are not officially designated accident blackspots. The temporal and spatial filter also does not establish the actual journey purpose of any individual accident.

2.2 Monetising accident consequences

Accident categories describe the severity of the event: UK1 denotes a fatal accident, UK2 an accident with serious injuries and UK3 an accident with slight injuries.

The study uses the BASt cost values for 2021 documented in the BMV-published research report. Because the Accident Atlas does not provide the full casualty count for each event, the conservative model assumes at least one person in the most severe reported injury category plus the associated property damage for each accident event.

Category	Model rule per event	2026 model value
UK1	One fatality + property damage	EUR 1,608,000
UK2	One seriously injured person + property damage	EUR 183,000
UK3	One slightly injured person + property damage	EUR 24,000

The 2021 values are approximately adjusted to June 2026 prices using the consumer price index. The inputs are the 2021 annual average of 103.1 and the June 2026 index of 124.6, with base 2020 = 100. These are BASt-based, CPI-adjusted model values, not official BASt accident cost rates for 2026.

2.3 Impact, cost and appraisal assumptions

The study does not automatically assign a specific intervention to any hotspot. The BASt MaKaU catalogue shows that appropriate intervention selection must consider accident type alongside location, road characteristics, traffic management, speed, visibility, signal control and existing infrastructure. On-site assessment, such as a route safety check, remains essential.

The portfolio analysis uses transparent averages and transfer values. The central assumption of 25% lies within the range of controlled evaluations (19 to 28%). The Münster figure of 24% is not adjusted for random fluctuation.

The central cost rate is derived from an actual Berlin intervention programme: around 40 crossing interventions with investment of approximately EUR 3.5 million imply EUR 87,500 per intervention at 2021 prices. Adjustment to 2026 using the official road construction price index yields a rounded EUR 125,000 per treated hotspot.

Parameter	Central	Sensitivity / stress test	Interpretation
Impact	25%	20% / 30%	Portfolio transfer; not a site-level forecast
Costs	EUR 125,000	OSM-based cost structure stress test	Portfolio average; not a site-specific estimate
Appraisal period	10 years	5 / 15 years	Appraisal horizon; not a uniform technical service life

Parameter	Central	Sensitivity / stress test	Interpretation
Discount rate	1.7% real	Unchanged in the main model	Social reference rate from BMV-commissioned research

The BMV-published research report proposes retaining a social discount rate of 1.7% for future applications of the Federal Transport Infrastructure Plan appraisal methodology. This rate is transferred to the potential calculation as an economy-wide reference rate.

Calculation logic

Annual historical accident costs × impact × present value factor = present value of benefits. Investment costs = number of treated hotspots × EUR 125,000. The benefit–cost ratio is the present value of benefits divided by investment costs.

The main calculation assumes that historical annual accident costs persist without additional investment. It models neither a general accident trend nor already planned site-specific interventions. Regression to the mean is treated separately as a stress test; a methodologically stronger Empirical Bayes approach would require additional reference and exposure data.

3. Results

3.1 Accident patterns, costs and concentration

At the 400 hotspots, 4,027 injury accidents were recorded between 2021 and 2025: 11 UK1 events, 540 UK2 events and 3,476 UK3 events. Annual counts were 641 in 2021, 882 in 2022, 893 in 2023, 860 in 2024 and 751 in 2025.

The accident pattern is dominated by entering/crossing accidents (1,449) and turning accidents (1,183), which together account for around 65% of all events. This distribution describes the conflict pattern but is not used to automatically assign a specific intervention.

The stated monetisation rule yields modelled societal accident costs of EUR 199.93 million over five years. This averages just under EUR 500,000 per hotspot over five years, or around EUR 100,000 per hotspot per year.

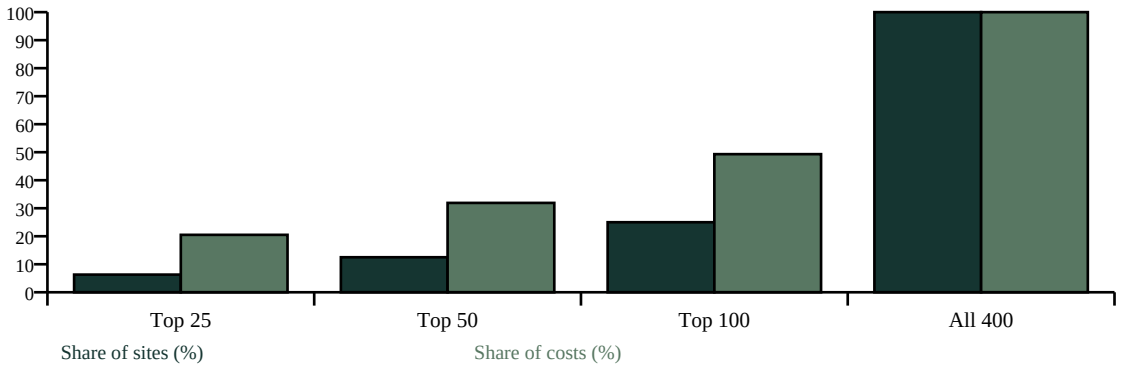


Figure 1: Share of prioritised hotspots and their share of modelled accident costs. Source: own calculations, Excel v2.0.

Portfolio	Share of sites	Historical costs	Share of costs
Top 25	6.3%	EUR 40.89m	20.5%
Top 50	12.5%	EUR 63.72m	31.9%
Top 100	25.0%	EUR 98.51m	49.3%
All 400	100.0%	EUR 199.93m	100.0%

Central finding: one quarter of hotspots accounts for almost half of modelled accident costs. Selecting which sites to assess first is therefore itself a major variable affecting programme impact.

3.2 Societal benefits and benefit–cost ratio

The main calculation below uses a ten-year appraisal period, an average accident reduction of 25%, a real discount rate of 1.7% and average costs of EUR 125,000 per treated hotspot.

Portfolio	Historical costs	Investment	Benefit PV	BCR
Top 25	EUR 40.89m	EUR 3.13m	EUR 18.66m	5.97
Top 50	EUR 63.72m	EUR 6.25m	EUR 29.07m	4.65
Top 100	EUR 98.51m	EUR 12.50m	EUR 44.95m	3.60
All 400	EUR 199.93m	EUR 50.00m	EUR 91.22m	1.82

Interpreting the top-50 portfolio

A modelled investment of EUR 6.25 million yields a present value of benefits of EUR 29.07 million. Every euro invested is therefore associated with EUR 4.65 in avoided societal accident costs.

The results support a staged programme approach. Sites with particularly high accident costs should first undergo technical assessment. The specific investment sequence can be determined once suitable interventions and reliable costs have been established. Prioritisation by accident costs does not replace feasibility, road infrastructure responsibility, legal or planning assessments.

3.3 Robustness and conclusions

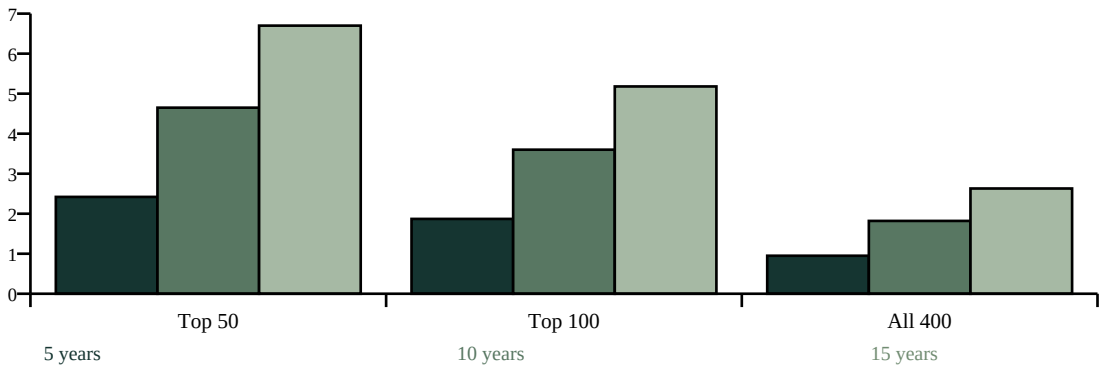


Figure 2: Benefit–cost ratio for 5, 10 and 15 years. Source: own calculations, Excel v2.0.

Portfolio	5 years	10 years	15 years	20% impact / RTM stress	Cost stress
Top 50	2.42	4.65	6.70	3.72	3.54
Top 100	1.87	3.60	5.18	2.88	2.83
All 400	0.95	1.82	2.63	1.46	1.60

The focused portfolios remain well above a benefit–cost ratio of 1 in all sensitivities shown. The broadest option, covering all 400 hotspots, depends more strongly on the appraisal period and, at only five years, is slightly below 1 at 0.95. The 20% baseline reduction for regression to the mean is a stress test, not an empirically calibrated correction for Saxony.

Conclusion for a state programme

The study supports a risk-based approach: (1) assess the top 50 to top 100 sites on site, (2) determine suitable interventions and actual costs, (3) prioritise feasible projects by safety impact and cost effectiveness, and (4) systematically evaluate impact after implementation.

Under the central model assumptions, targeted investment in safe routes to school has high potential societal benefits. The strongest and most robust finding is the clear concentration of accident costs, rather than any single point estimate. Limited planning and investment resources can initially focus on a manageable number of particularly affected road areas.

The analysis thus provides a sound basis for the next stage of decision-making. It does not replace site-specific planning, but transparently identifies where more detailed assessment promises particularly substantial opportunities for societal prevention.

Methodological appendix and sources

A. Calculation logic and definitions

Step	Formula / rule
Historical accident costs	Sum of monetised UK1, UK2 and UK3 events, 2021–2025
Annual baseline	Historical five-year accident costs / 5
Annual avoidable accident costs	Annual baseline × assumed impact
Present value of benefits	Annual avoidable accident costs × present value factor
Investment costs	Number of treated hotspots × EUR 125,000
Benefit–cost ratio	Present value of benefits / investment costs

Term	Definition
School	Spatial reference point; not an intervention unit
School surroundings	Search area within 500 metres of a school location
Accident site	Spatial concentration of accident events within 25 metres
Hotspot	Relevant accident site with at least five injury accidents in at least one rolling three-year window
School-travel connection	Temporal and spatial analysis assumption; not official evidence of journey purpose
BCR	Present value of modelled avoided societal accident costs divided by investment costs

B. Central uncertainties and limits on interpretation

Issue	Limit of the finding
Data coverage	Accident Atlas includes police-recorded injury accidents; property-damage-only accidents are excluded.
Journey purpose	The actual school-travel purpose of an individual event is unknown.
Monetisation	The accident category does not contain the full casualty count; the model rule is conservative.
Impact	25% is a portfolio transfer value, not guaranteed impact at every site.
Costs	EUR 125,000 is a portfolio average, not a site-specific estimate.
Feasibility	Not every hotspot allows a suitable or additional intervention.
Regression to the mean	Historically high accident counts may partly decline even without intervention.
Appraisal period	Actual impact duration depends on the intervention and implementation.

C. Sources and notes

1. Alliance 90/The Greens parliamentary group in the Saxon State Parliament, press release of 12 June 2026 on the State Government's reply to minor interpellation 8/6924: total accident costs in 2025 of EUR 1,460,947,000. Used solely as context. Online source

2. Saxon State Parliament, parliamentary paper 8/6592, motion “Improving road safety for children and young people – preventing serious accidents”, received 2 April 2026. Political background; not a numerical model input. Online source

3. Federal Statistical Office, injured children under 15 in 2024/2025 and press release on road-user involvement and temporal distribution of accidents among children aged 6 to 14. Online source | Supplementary source

4. Statistical Offices of the Federation and the Länder, Accident Atlas / Open Data, georeferenced injury accidents 2021–2025. Online source

5. Free State of Saxony, Saxony school database, school location data export. Online source

6. Federal Ministry of Transport, research project “Updating the cost and valuation parameters of the Federal Transport Infrastructure Plan”, updated version. Uses BASt-based accident costs for 2021 and chapter 3, table 3-6 and pp. 24–25 on the social discount rate of 1.7%. The report proposes retaining this rate for future applications. Online source

7. Federal Statistical Office, consumer price index: annual average 2021 = 103.1; June 2026 = 124.6; base 2020 = 100. Online source | Supplementary source

8. Federal Highway Research Institute, MaKaU – catalogue of measures to address accident clusters. Technical reference for the need for site-specific conflict and intervention assessment. Online source

9. German Insurers Accident Research (UDV), “Road safety in Münster” evaluation. 24% fewer injury accidents at all 63 accident blackspots, not adjusted for regression to the mean. Controlled studies 19 to 28% (Vias 2024, Trafikksikkerhetshåndboken). Online source

10. State of Berlin, “Construction of pedestrian crossing facilities”: first programme with around 40 individual interventions and investment of around EUR 3.5 million. Online source

11. Federal Statistical Office, road construction price index: Q1 2026 = 142.9, base 2021 = 100. Used to adjust the Berlin cost reference. Online source

12. Federal Highway Administration, “Project Evaluation Using Empirical Bayes”. Methodological reference for regression to the mean; no Empirical Bayes method is implemented in the main model. Online source

Data and calculation version: Excel working file ImpactScan_Hotspots_Potenzial_2026_v2.0_extern.xlsx; data basis 2021–2025; 2026 prices; central real discount rate 1.7%. Rounding differences are possible.

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