



# Data analysis and digital tools: a step towards vision zero

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Claudia Di Loreto, Associate, WSP

Jon Noble, Head of Digital for Local Government, WSP



## WHO WE ARE

**Claudia Di Loreto, Associate, WSP**  [claudia.diloreto@wsp.com](mailto:claudia.diloreto@wsp.com)

- Team Lead for Safety Audits (150+ RSAs), Member of SoRSA & CertComp
- Project manager of portfolio of Vision Zero projects

**Jon Noble, Head of Digital for Local Government, WSP**  [jon.noble@wsp.com](mailto:jon.noble@wsp.com)

- Team Lead for Safety Audits (1000+ RSAs, 20 years), Member of SoRSA
- Project manager of large infrastructure projects & digital expert

- WSP Award for Innovation (Feb 2023)
- Shortlisted for the CIHT Road Safety Awards 2023



# TODAY ' S PRESENTATION

- Vision Zero – Overview
- Vision Zero – Our approach
- Vision Zero – Our tools
- Lessons learned / future opportunities

# VISION ZERO – OVERVIEW

“Not all collisions are preventable, but serious and fatal injuries are.”

Most Severe Injury Type	Casualty Severity
Deceased	Killed
Broken neck or back	Very Serious
Internal injuries	Very Serious
Multiple severe injuries, unconscious	Very Serious
Severe chest injury	Very Serious
Severe head injury, unconscious	Very Serious
Deep penetrating wound	Moderately Serious
Fractured pelvis or upper leg	Moderately Serious
Loss of arm or leg (or part)	Moderately Serious
Multiple severe injuries, conscious	Moderately Serious
Other chest injury, not bruising	Moderately Serious
Deep cuts, lacerations	Less Serious
Fractured arm, collarbone, hand	Less Serious
Fractured lower leg, ankle, foot	Less Serious
Other head injury	Less Serious



Bruising	Slight
Shallow cuts/lacerations/abrasions	Slight
Shock	Slight
Sprains and strains	Slight
Whiplash or neck pain	Slight

## Impacts of KSIs

A *severe* collision can lead to **life-changing consequences** for an individual.

It can have a ripple effect, also impacting:

- family members
- friends
- colleagues
- employers
- etc.

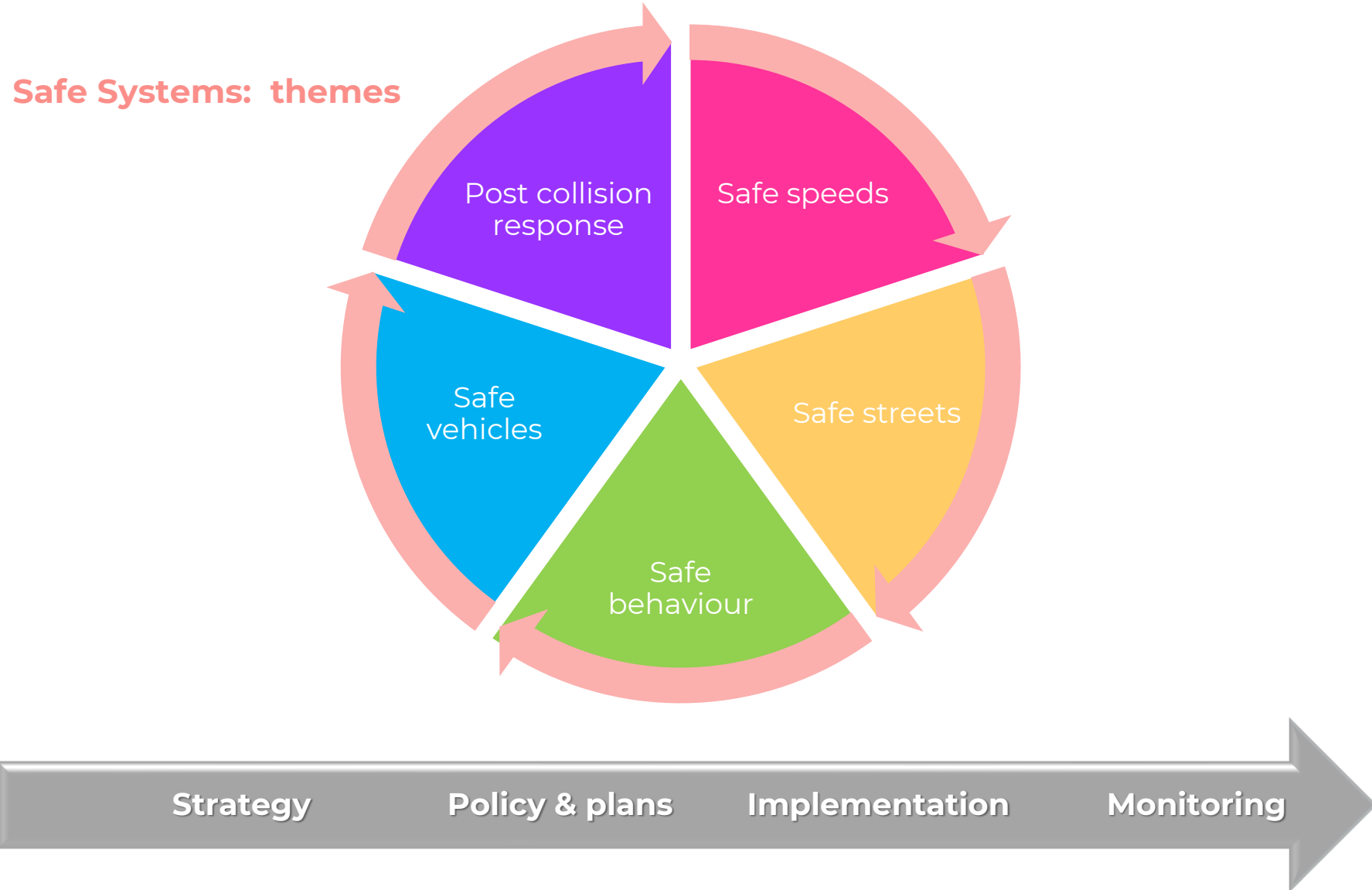
A severe collision cause stress people in multiple ways:

- Physical burden
- Grief and other emotional responses
- Financial troubles



# VISION ZERO – OVERVIEW

“Not all collisions are preventable, but serious and fatal injuries are.”



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Intelligent Transport

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### Greater Manchester commits to Vision Zero road safety

Dame Sarah Storey announces the city region's commitment to Vision Zero, aiming to eliminate all road fatalities and serious injuries, with the potential to prevent 3,800 deaths and injuries on Greater Manchester's roads by 2040.



OXFORDSHIRE COUNTY COUNCIL

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Ambition to eliminate all road deaths and serious injuries by 2050

22 June 2022

### Ambition to eliminate all road deaths and serious injuries by 2050

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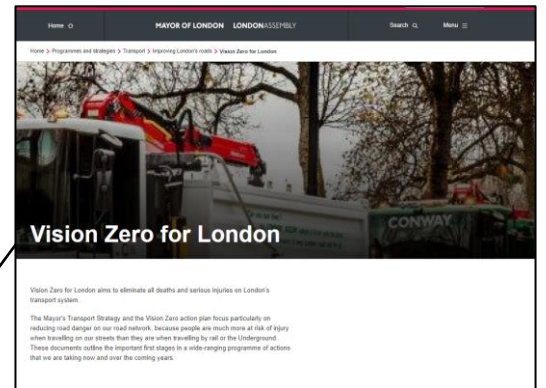


LEEDS.GOV.UK

Home / Plans and strategies / Vision Zero 2040 strategy

## Leeds Vision Zero 2040 Strategy

No one should be killed or seriously hurt in road crashes in Leeds. People must be able to walk, scoot, wheel, cycle, ride or drive safely through, in and around our city.



MAYOR OF LONDON | LONDON ASSEMBLY

### Vision Zero for London

Vision Zero for London aims to eliminate all deaths and serious injuries on London's transport system.

The Mayor's Transport Strategy and the Vision Zero action plan focus particularly on reducing road danger on the road network, because people are much more at risk of injury when travelling on our streets than they are when travelling by rail or the Underground. These documents outline the important first stages in a wide ranging programme of actions that we are taking now and over the coming years.



Kent County Council

Ukraine - support for Ukrainian nationals  
Kent Together - cost of living support

Home > Roads and travel > Road safety >

## Vision Zero Road Safety Strategy

There are on average just over 45 deaths on Kent's roads each year. Kent County Council (KCC) is setting the target of zero, or as close as possible, fatalities and life-changing injuries by 2050 with a 50% reduction by 2030 and a target of no more than 30 traffic fatalities by 2026. Vision Zero is not just about focussing on the date we achieve zero, but the recognition that deaths on the road are not an acceptable price to pay for mobility.

We will follow the Safe System Approach which understands that people make mistakes and aims to ensure these mistakes do not cause a death or a life-changing injury. The Safe System Approach consists of:

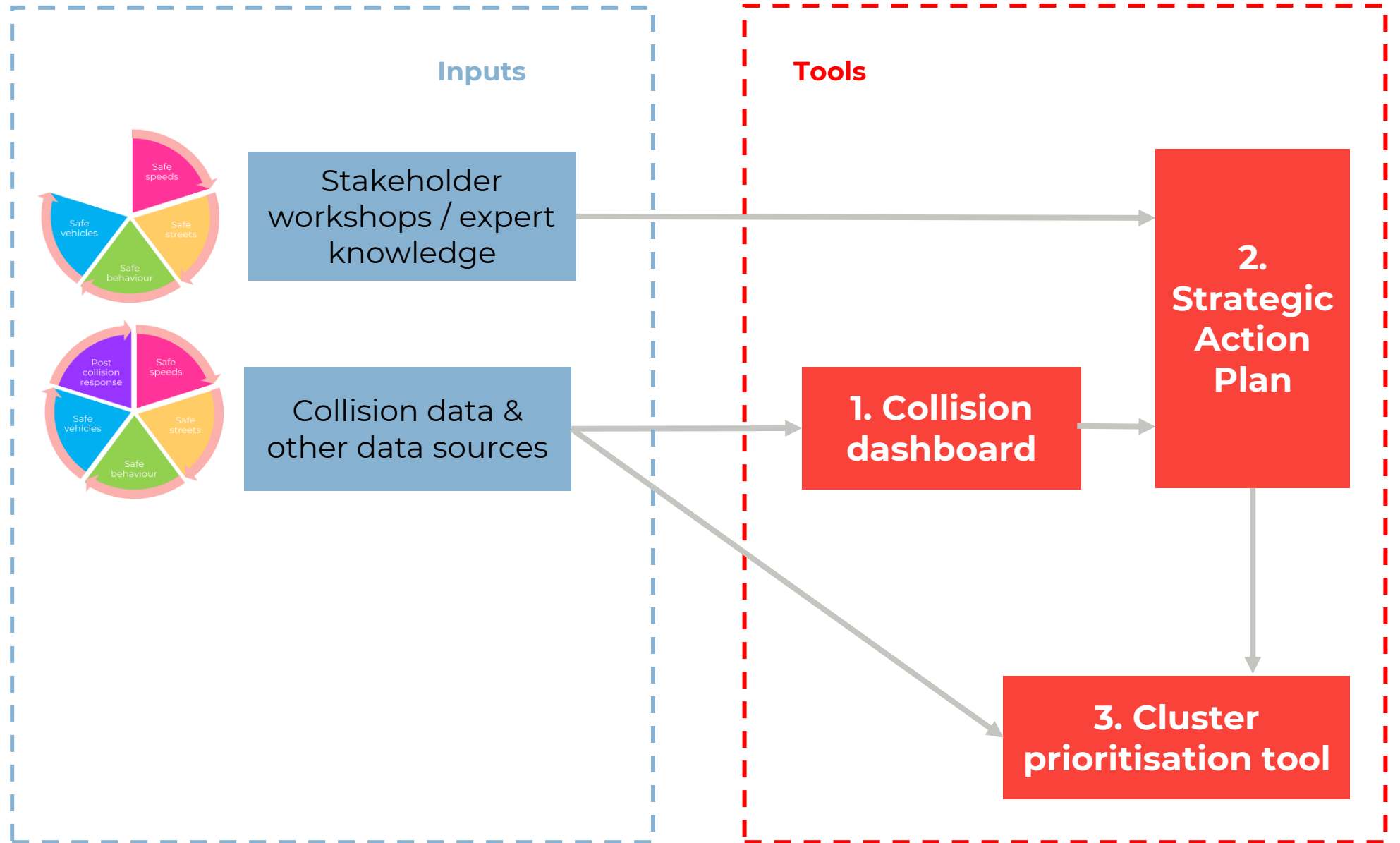
- safe roads and streets
- safe speed
- safe behaviour
- safe vehicles
- post collision response.

Read our strategy

[Vision Zero Road Safety Strategy for Kent \(PDF, 1.1 MB\)](#)



# VISION ZERO – OUR APPROACH



Collision data &  
other data sources

# VISION ZERO – OUR APPROACH

## Collect

- Collision data: STATS19 (4 separate excel files)
- Other national data: Census - Index multiple deprivation
- Local data: Schools

## Clean

- Field titles often vary
- Some fields include characters that cause issues
- Dates are often be a problem
- Files can become corrupt as transferred



## Store

- Cloud (Azure)
- SharePoint
- SQL Database

## Analyse

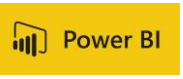
- Power Bi is excellent for maps, charts & tables
- Excel provides good static data

## Report

- Direct from Power Bi – requires Pro licence (or sending files)
- Excel enables auditing and simplifies the reporting process
- Static reports for externals

Software used: widely  
available Microsoft products  
so tools can easily be  
updated and shared

## 1. Collision dashboard



## 2. Strategic Action Plan



## 3. Cluster prioritisation tool







## 1. Collision dashboard

# VISION ZERO – OUR TOOLS

- Analysis (borough/county wide, corridor & localised)
- Monitoring
- Reporting

### DEMO

#### Questions:

- **Key collision trends**
- **Funding for collisions involving children e.g. school streets**
- **Age group most at risk**
- **Best time to visit National Gallery**
- **Pedestrian desire lines not catered for on in the West End**
- **HGV vs ped collisions (e.g. reversing)**
- **Ped/cycle serious collisions clusters**
- **Monitoring a scheme**
- **Evidence of lower speed limits reducing KSIs**
- **Deprivation vs Casualties – is there a link?**



## 2. Strategic Action Plan

# VISION ZERO – OUR TOOLS

1. Define potential actions across the 5 Vision Zero themes
2. Record stakeholders
3. Score actions by their potential to reduce KSIs and their cost
4. Prioritise actions
5. Inform a strategy and make decisions

City of London - Vision Zero Actions (Speeds)

Ref	Type	Action	Group positively affected (based on evidence)	Maximum potential KSIs reduction %	Likely magnitude of change	Evidence (where relevant) & Rationale	Likely annual cost for CoL	Capital (C) or Operating (O) Expenditure	Partners	Priority
Sp-1	Safe Streets	15mph & lower speed limits Continue to explore and progress the commitment to introduce 15mph and lower speed limits and review whether lower advisory limits may be required particularly at high footfall locations	All	about 30%	Med	Lower speeds are proven to reduce KSIs	Med	O & C	DTF	High
Sp-2	Safe Streets	Keep promoting compliance through Street Design 1) designing the street to be self-enforcing, with the look and feel of a low-speed environment such as by creating a Vision Zero Checklist/Toolkit (based on existing and in-development design principles) to help designers ensure their schemes help reduce serious/fatal road casualties. 2) Utilise TfL's Achieving Lower Speeds toolkit in street design and requiring the same of TfL roads in the City 3) Lobby TfL to redesign streets on the TfLRN with a lower design speed/self-enforcing limit	All	about 12%	Med	Lower speeds are proven to reduce KSIs	High	C	TfL	Med
Sp-3	Safe Streets	Intelligent Speed Assistance & Technology 1) Continue to use new and emerging technologies to reduce speeds and reduce the likelihood and severity of collisions 2) Consider the use of speed indication devices or Variable Message Signage (VMS), particularly at high footfall locations 3) Engage large service operators to introduce /mandate the use of telematics/black box recorders to discourage speeding 4) Lobby central government for speed restrictions on privately owned e-scooters, should they be legalised and regulated for use on public highway	All	about 18%	Med	Lower speeds are proven to reduce KSIs	Low	O & C	Operators, Central Government	High
Sp-4	Safe Streets	Enforcement 1) Work with the City of London Police to review levels of speed enforcement at locations / times where / when compliance is believed to be low. 2) Discuss with TfL and CoL Police the potential for speed cameras to enforce lower limits - particularly dynamic area based speed enforcement areas 3) Investigate designation of police traffic enforcement powers to police community support officers	All	about 18%	Med	Lower speeds are proven to reduce KSIs	Low	O	CoLP	High
Sp-5	Safe Streets	Engagement Education, campaigns and training opportunities to raise awareness of the risks posed by speeding and promote appropriate speed culture amongst all road users	All	about 12%	Low	Lower speeds are proven to reduce KSIs	Med	O	Various	Med

DEMO

WSP



### 3. Cluster prioritisation tool

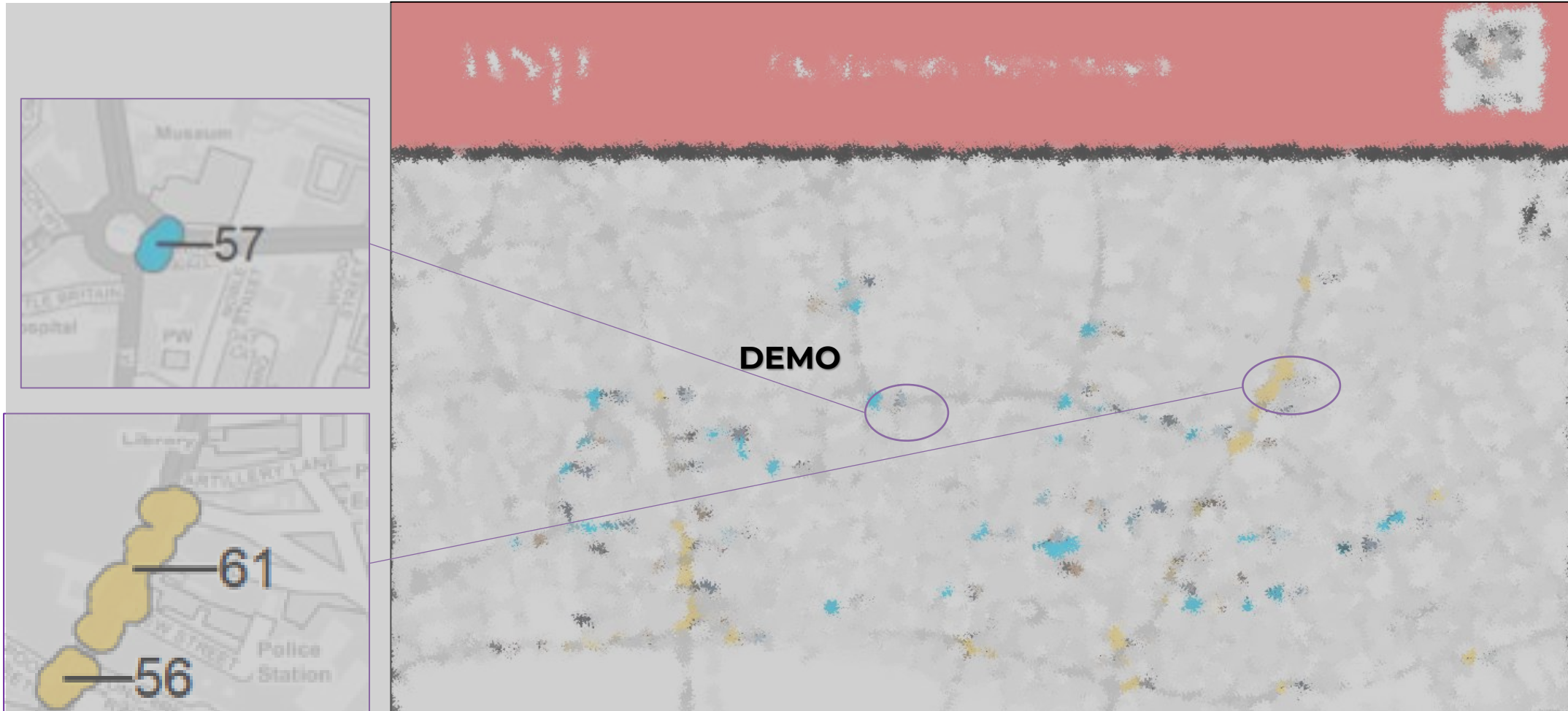
## VISION ZERO – OUR TOOLS

Track and audit the decision making process

1. Define clusters in a “smart” way
2. Compare clusters to each other and to county/borough averages.

3. Data-led sifting exercise

4. Report detailed engineering assessment
5. Undertake a clear Benefit to Cost Ratio (BCR) & Prioritise clusters





# LESSONS LEARNED / FUTURE OPPORTUNITIES

Key highway authority challenges

Understanding local road safety issues

Spending money efficiently

Justifying and tracking decision-making

Providing access to relevant information within the organisation

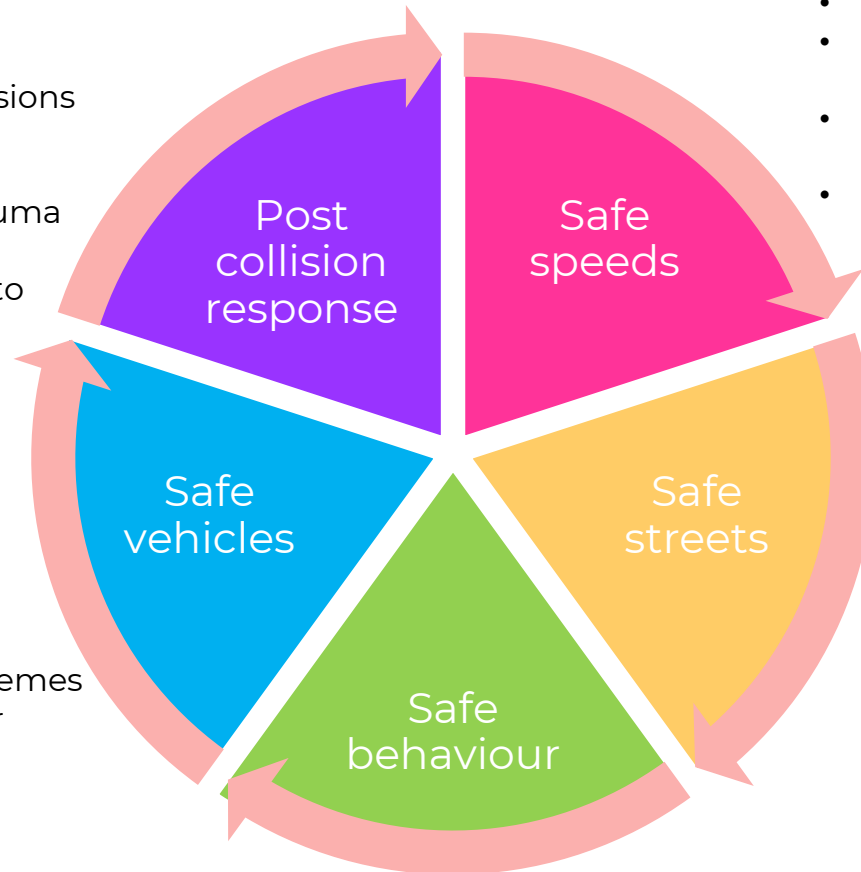
## How our tools address these challenges

- Understand **complex collision data** to allow for statistical and spatial analysis and relate it to **other relevant datasets**
- **Clear outputs** which can be **understood by all** stakeholders involved and for different purposes (e.g. analysis, decision making, reporting both internal & external)
- **Reduce the time** needed to prepare, interrogate and analyse the data, and make decisions.
- **Spend money more effectively**, by prioritising interventions which have the best chance of contributing to Vision Zero
- Decision are **evidence-led** and based on **cost-benefit analysis**
- Ability to **rapidly respond to queries** with robust evidence when challenged
- Improved ability for **people with different roles within an organisation** to interrogate the data and get up to speed with a stream of work

# LESSONS LEARNED / FUTURE OPPORTUNITIES

## Actions which can be applied widely

- Prioritise **emergency vehicles**
- **Investigate** and act on serious collisions
- Undertake further **data analysis** to understand risk on our streets
- **Support** those affected by road trauma
- Improve **data collection** to build understanding of key contributors to road danger
- **Reduce** the number of motorised vehicles that pose a danger to others & encourage other modes
- Review **parking** provision
- Review **micro-mobility** roll-out
- Encourage **fleet accreditation** schemes
- Engage with **stakeholders** on safer buses and taxis
- Work with **vehicle manufacturers**
- Run **cycle maintenance** events
- **Collaborate** on connected and autonomous vehicles



- **Lower** speed limits
- Keep promoting compliance through street **design**
- Identify locations where **speed limit compliance is poor**
- Explore Intelligent Speed Assistance & **Technology** Enforcement

- Maximise opportunities to improve road safety within non-safety related **existing & future projects**
- Build a Vision Zero **culture**
- Undertake collision data analysis and identify **mitigation schemes**
- **Collect and collate** more data
- Expand schemes targeted at most at risk road users
- **Engage** with user groups

- Promote and create safe driving **campaigns**
- Promote **training** for specific road users
- Target enforcement as relevant
- **Engage** with user groups



# LESSONS LEARNED / FUTURE OPPORTUNITIES

## What other datasets could we integrate in the tools?

- Traffic flows
- Air quality
- Asset management
- Lighting levels
- Incidents
- Emergency services data (e.g. time to get to the collision, hospital admissions)
- Live data (e.g. from vehicles, parking, smart cities)
- Cycle facilities
- Shared use areas
- Etc.

## What other decision making process could the tools be adapted for?

- Low traffic neighbourhoods
- Active travel schemes
- Asset management
- School street schemes
- Workplace travel plans
- Etc.





# CONCLUSION

## Vision Zero roll-out

- Embed Vision Zero into **policy and strategy**
- Provide Vision Zero **guidance** for all design & build projects
- Roll out Vision Zero **training and awareness campaigns** within your organisation & outside of it
- Work in **partnership** with stakeholders
- **Develop tools** to help with analysis & decision making



## How you could move forward to create Vision Zero tools

- What software/digital expertise do you have available in your organisation?
- What do you want to be able to do? E.g. analysis, scheme/action comparison, monitoring, reporting.
- What data is available/ useful to integrate with collision data?

