



**Safe
Speeds**

26th October 2022

RSA Conference 2022
Tackling speeding – risk factors
and interventions



“Moderating speed on National Roads through engineering solutions”

Alastair de Beer, Head of Road Safety

Dr. Suzanne Meade, Senior Engineer

Presentation Outline

Part 1 TII Role in Road Safety and **Safe Speeds**

Collision Data and Trends (National Roads)

Part 2 Infrastructure interventions

5 TII Safe Speeds Measures

Part 1



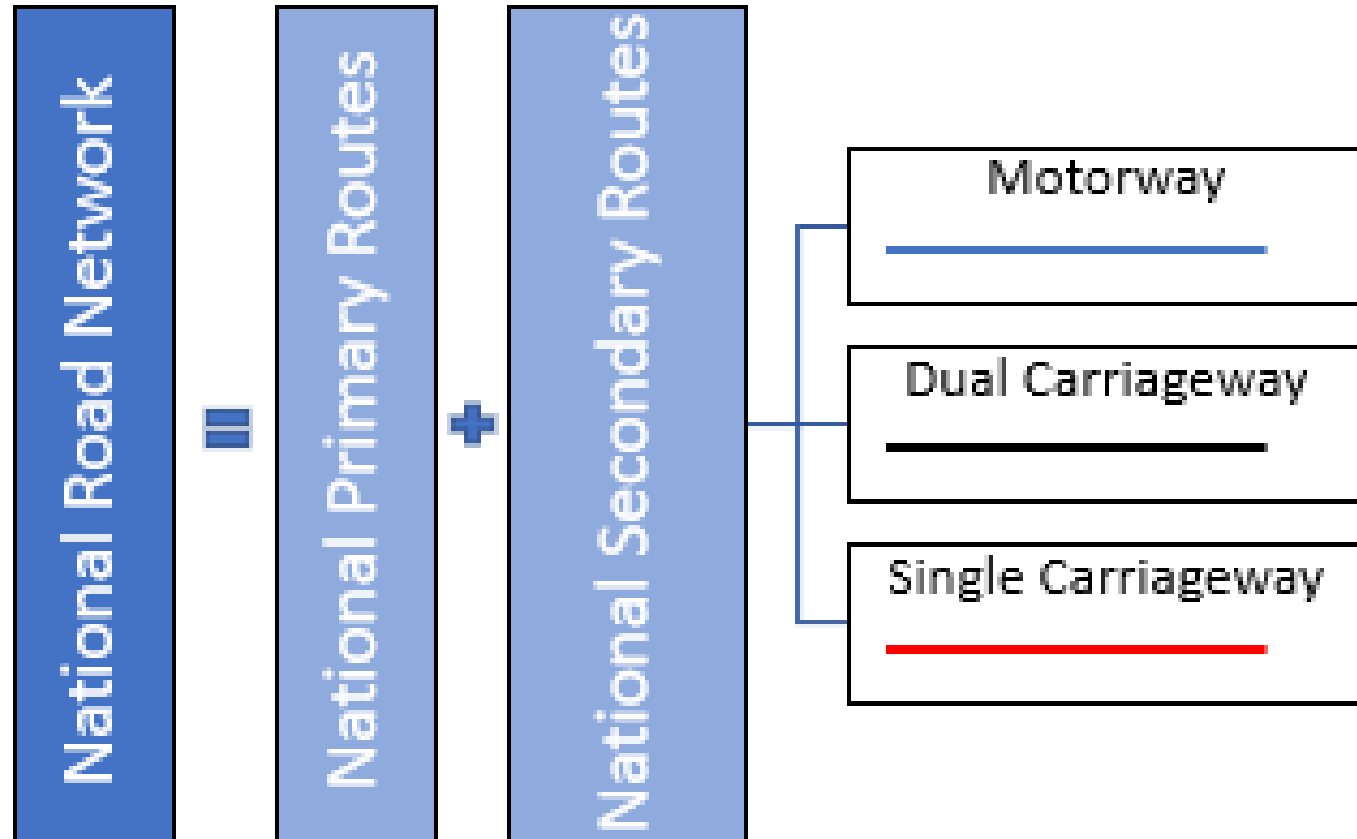
**Safe
Speeds**

*TII Role in Road Safety and
Safe Speeds*

An aerial photograph of a complex road intersection. A multi-lane highway runs vertically through the center, with several lanes in each direction. It intersects with a horizontal road that has a roundabout on the right side. The surrounding area includes residential houses, green fields, and some commercial buildings. The text "TII Role in Road Safety" is overlaid in a semi-transparent blue box across the middle of the image.

TII Role in Road Safety

National Road Network



National Road Network

- Impact

5.3% of all Irish Roads
45% of total traffic
90% of all freight

- Road Safety

37.6 % reported fatal collisions
21.5 % serious injury collisions





M7 Motorway



N4 Clooney to Castle Dual Carriageway



N56 National Secondary Road



N5 Ballaghaderreen Bypass

**Safe
Speeds**



N24 Carrick-On-Suir Urban Street



N71 Legacy Road Network

National Road Network

High Speed



19%



52%



19%



5%



5%



Goals

Strategic Objectives

Safety

Reduce the risk and number of collisions, injuries and deaths on our light rail and road infrastructure.

1. Deliver on TII actions in the Government's Road Safety Strategy.
2. Target investment based on analysis of collision data and a proactive risk-based approach.
3. Continuously improve the safety of workers engaged in operations.
4. Promote new technologies, design standards and networks.
5. Strengthen TII's safety culture through

RSS High Impact Action

Action 8 - Expand speed management measures on National, Regional and Local roads using **Periodic Speed Limits at schools, Vehicle Activated Signs and Average Speed Cameras** in collaboration with An Garda Síochána at appropriate high-risk locations

(RSA, 2020b;Pg 5)



TII Road Safety Section

Aim: Reduce collisions on National Road Network

Legislation and Policy:

- *EU Directive on Road Infrastructure Safety Management (EU RISM), transposed by S.I No. 612 of 2021*
- Government Road Safety Strategy

Role:

- Identifying safety issues through proactive and reactive analysis,
- Funding safety improvement schemes through Local Authorities and MMarC Contractors
- Overseeing Road Safety Audit Team approvals and training
- Other: Data Analysis, Road Safety Impact Assessments, Road Works Portal, Geometric Standards, Research, training.



Seven Pillars – Integrated Approach



**Safe
Roads
and
Roadsides**



**Safe
Speeds**



**Safe
Vehicles**



**Safe
Road Use**



**Post-Crash
Response**



**Safe and
Healthy
Modes
of Travel**



**Safe
Work-
Related
Road Use**



Safe Speeds





TII National Roads Road Safety Performance

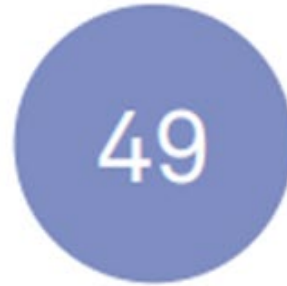
National Roads

Collision Data and Trends

2021

2021 Reported figures for National Roads

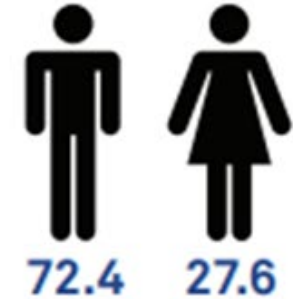
Fatal Collisions



Fatalities



Percentage Fatalities



Percentage of fatalities by Collision Category



Head-On
43.1%



Vehicle to Vehicle
22.4%



Single vehicle
20.7%



Non-motorised
6.9%



All Other
6.9%

Primary Collision Type	Injury Count	MD Count	Count Total	Per Cent Chance of Injury (All NR)
Pedestrian	295	33	328	90%
Cyclist	181	46	227	80%
Head-On	303	243	546	55%

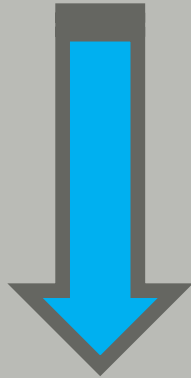
Main Fatal Collision - Head on Collisions

Fatal head-on collisions account for 43% (TII, 2022) of all fatal collisions on national roads

90% of fatal head-on collisions on rural road sections (High Speed)

Example (2016):

Total 27 Fatal Head-On Collisions



71 people injured or killed



31 people died

23 people had serious injuries

17 people minor injuries

(TII Report Findings – Jan 2014 to Dec 2016)

National Roads Collision Data and Trends

Reference Population	Average Collision Rate 2016-2018	
Motorway	1.619	per 100 Million km of Travel
Urban Motorway	3.016	per 100 Million km of Travel
Rural Dual Carriageway	2.539	per 100 Million km of Travel
Urban Dual Carriageway	9.216	per 100 Million km of Travel
Rural Two Lane	7.734	per 100 Million km of Travel
Urban Two Lane	16.638	per 100 Million km of Travel

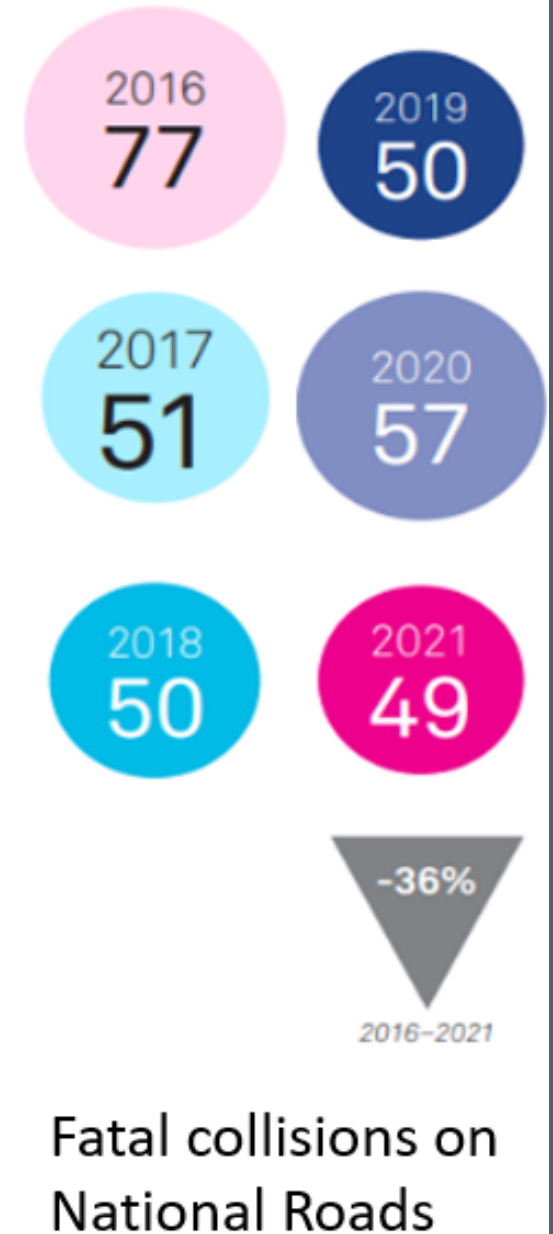
5x safer

3x safer

Which roads are the safest roads?

National Roads Collision Data and Trends

- 2008 to 2021 length of motorways has more than doubled
 - 424 km in 2008 to 995 km in 2021
- Over a similar period fatal road traffic collisions across the national road network have substantially reduced
- Influenced, in part, by trips using the new motorway network
 - 254 fatal collision in 2008 to 136* fatal collisions in 2021



The Challenge



34% of Irish drivers say it's acceptable to exceed 100 km/h speed limits by more than 10 km/h.

An increase from 2014-2019 at 18%.

(RSA, 2020a)



(RSA, 2020a)

HOW is TII meeting this challenge?

- *New Data*
- *New Standards*
- *New Collaborations*
- *New Enforcement*

Safe Speeds - Target Speed Reduction and Speed Management

The WHO (2017) has estimated that a **5% reduction in average speed** could result in a **30% reduction in fatal collisions**.



Part 2



**Safe
Speeds**

Infrastructure Interventions

TII Safe Speeds Measures

TII

Safe Systems Approach

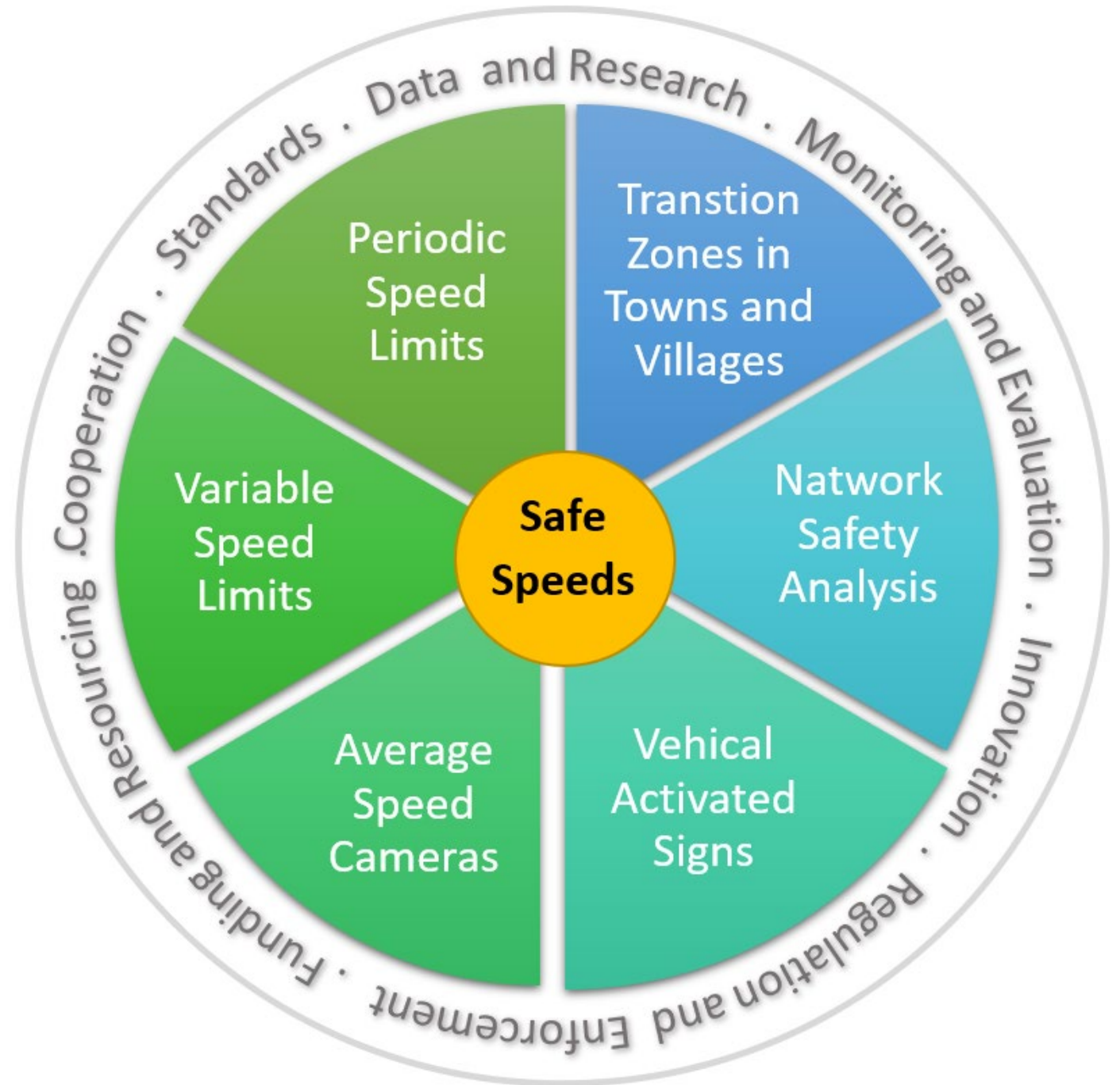
Safety Performance Indicators

(RSA, 2020a; Pg 78)

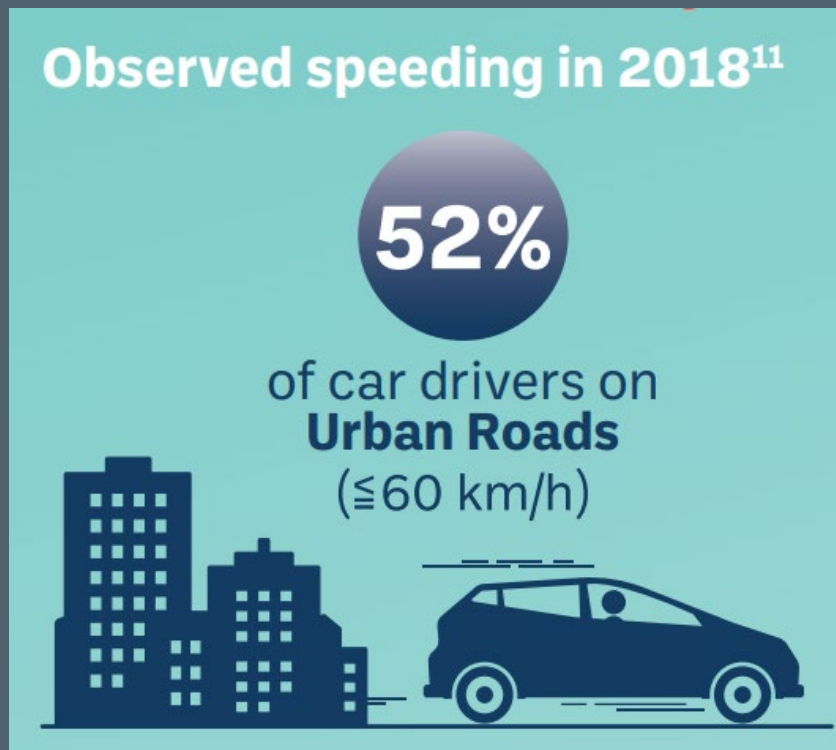
RSS High Impact Action

Action 8 - Expand speed management measures

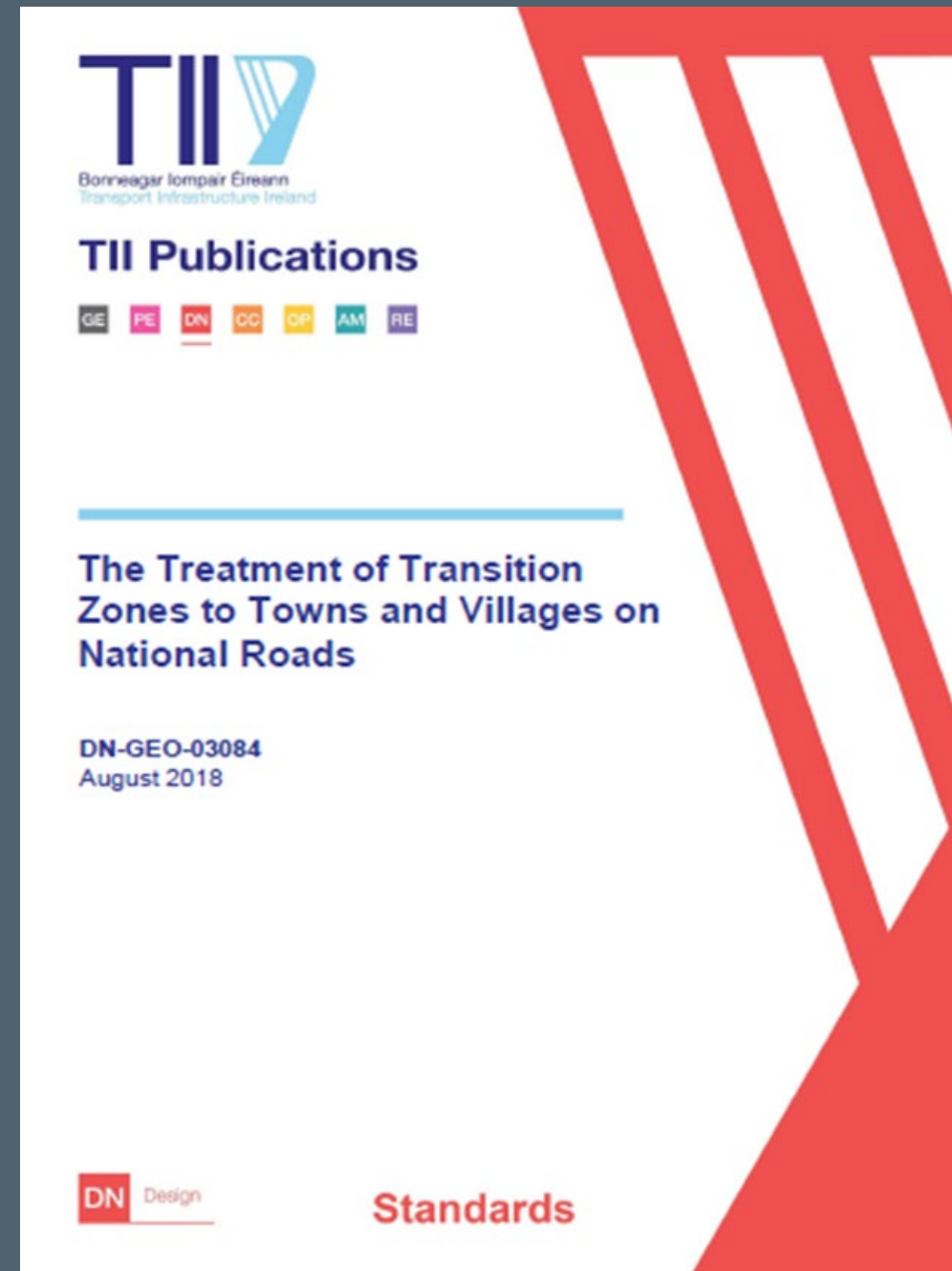
(RSA, 2020b;Pg 5)



Transition Zones in Towns and Villages



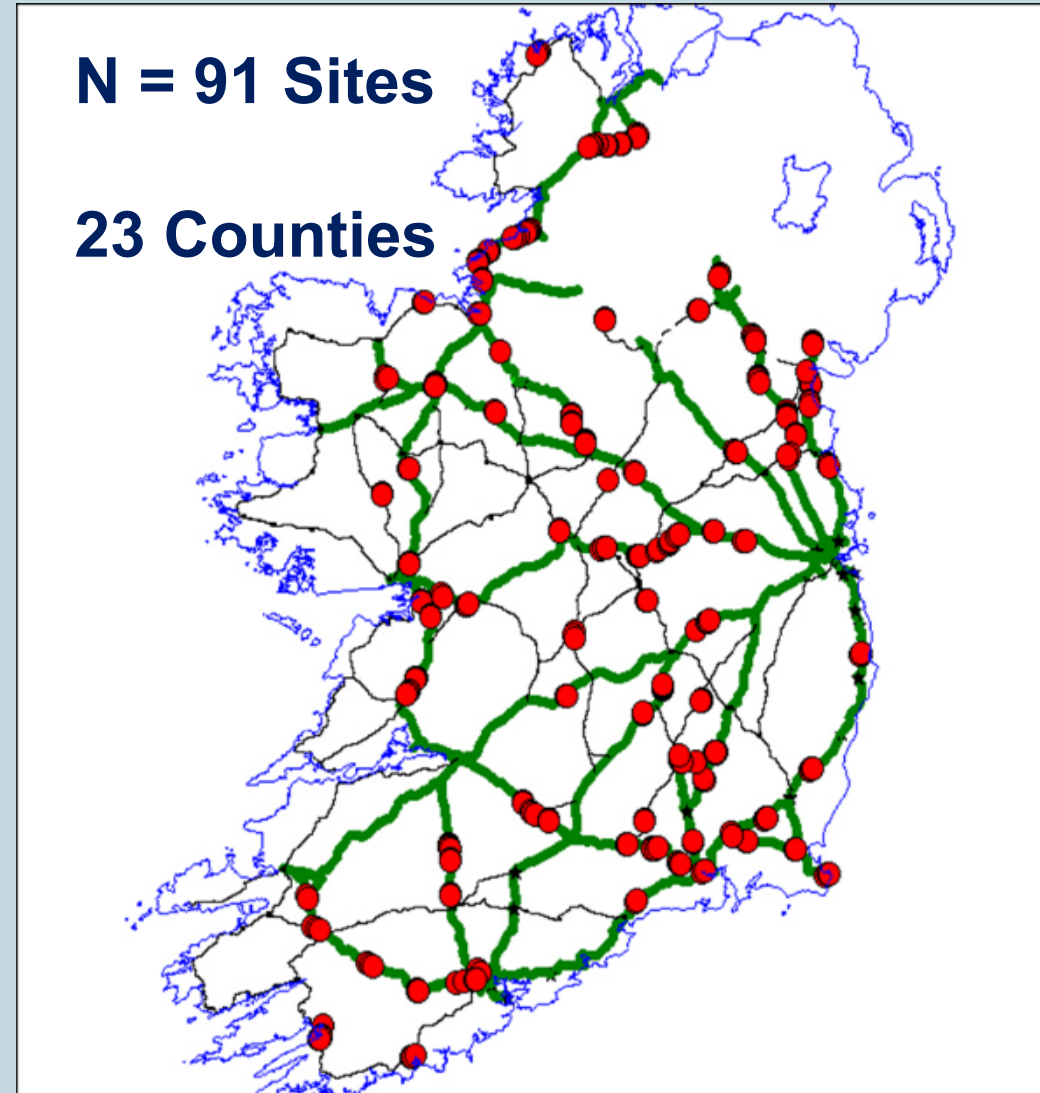
(RSA, 2020a)



(TII, 2018)

Evidence – Reducing Speed via Traffic Calming

Evidence/Results: Frequency and
Severity fell (compared to control sites)

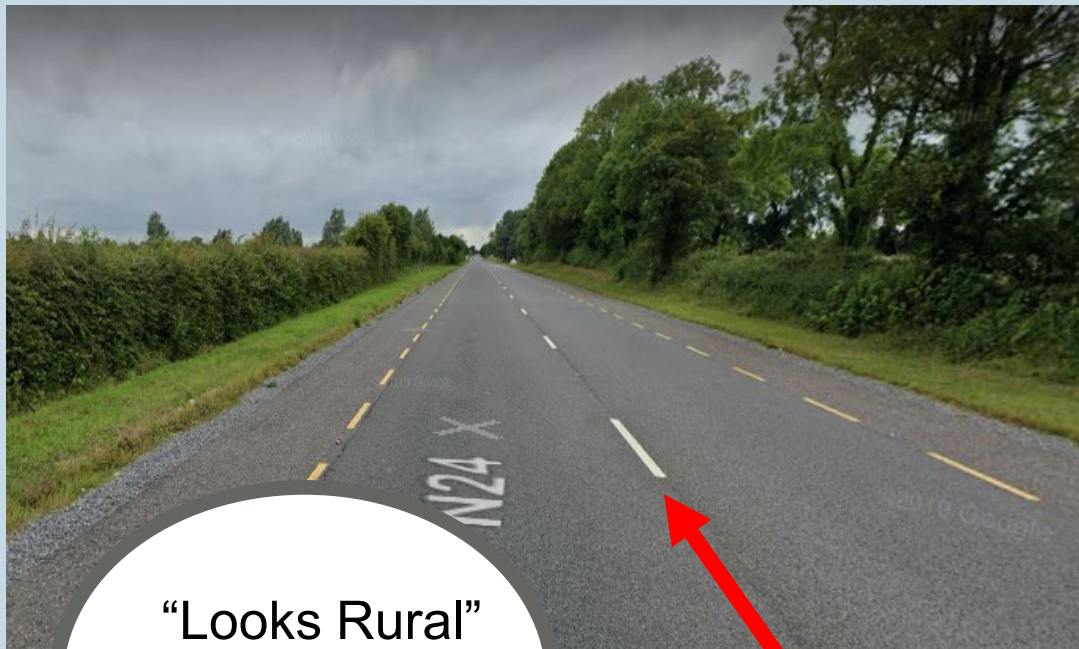


Impact on Collisions

After: Global collision reduction -13%
 Fatal collisions - 52%
 Serious and Minor collisions - 9%

Head On collisions -29% (30 - 40% across network)

Pedestrian collisions -13% (c.14% SI NMU across network)



“Looks Rural”
....no need
to Slow ??



1.0 Introduction

This advice note defines the meaning and function of Gateways and Transition Zones as they apply to the approaches to our towns and villages. It also explains the function of gateways and transition zones in relation to speed reduction/ passive traffic calming, wayfinding and place making. It describes the analytical process required to allow designers identify:

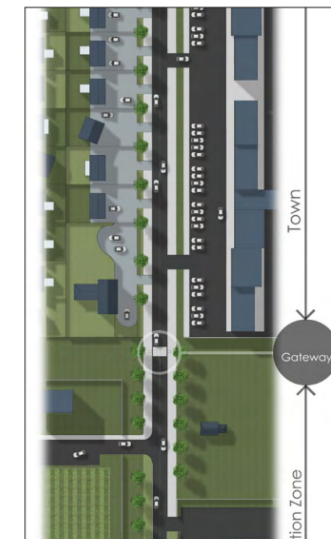
1. the extent of the transition zone, and
2. the optimum position of gateways.

This is followed by guidance on the design of gateways and transition zones.¹

A transition zone is the zone between the rural environment and more urbanised development. It is an area where speed reductions must occur when entering an urban area from a higher speed road (see Figure 1).

Gateway features are easily identifiable elements along the route which signal a change of context. These gateways can be used to influence driver behaviour, wayfinding, and signal an entrance to an urban area.

To identify the extent of a transition zone and suitable locations for gateways, the designer must analyse the street or road to see where the context changes, i.e. where the context transitions from rural to urban.



Transition Zone - Design Tools

1. Reduce the actual width of Carriageways
2. Reduce the perceived width of Carriageways
3. Changes to Surface Materials
4. Introducing Vertical Elements

Design Manual for Urban Roads and Streets



Driver Behaviour

Driving too fast for the conditions

Isolated hazards

Vehicle Activated Signs
(*Pilot Co.Mayo*)



Vehicle Activated Signs

Treated Sites:

5 sites

- N05 Swinford
- N17 Knock
- N59 Bellacorick
- N60 Balla
- N60 Began

Use: Only where there is a defined Hazard

Further sites to be evaluated in collaboration with local authorities



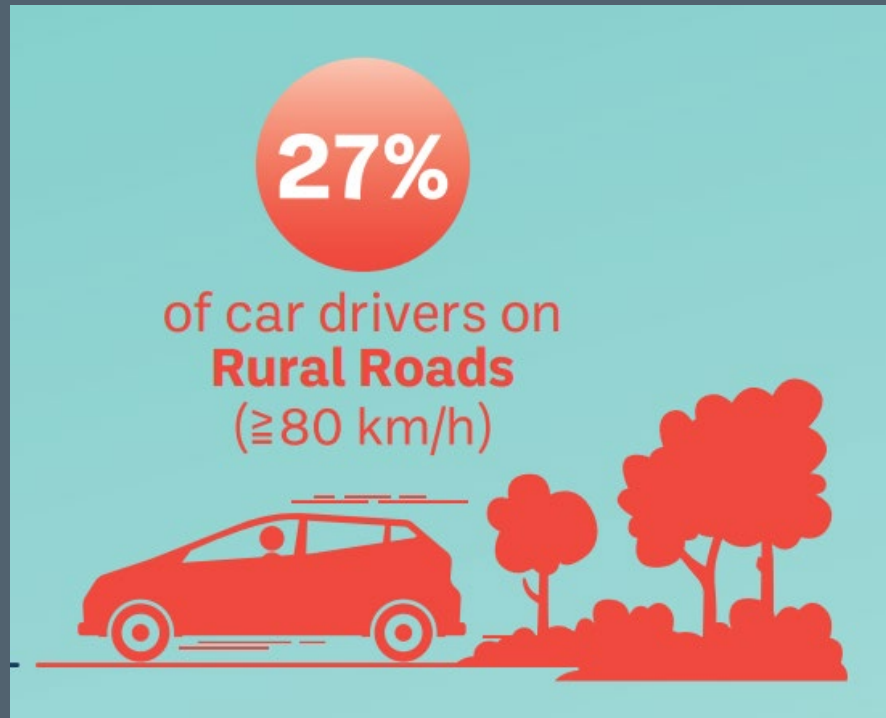
Impact on Safe Speeds

Before: Twice above average collision rate

After: No collisions reported at any of the sites post installation. (2 km per hr reduction in speed)

Limitation: Use only at very specific sites with isolated hazards

Average Speed Cameras



(RSA, 2020a)

Port Tunnel M7



Port Tunnel - Average Speed Cameras

Aim: Encourage drivers to reduce speeds.

Objective: Reduce frequency and severity of collisions in confined space

Added Benefit: Constant speed – less emissions, more sustainable.

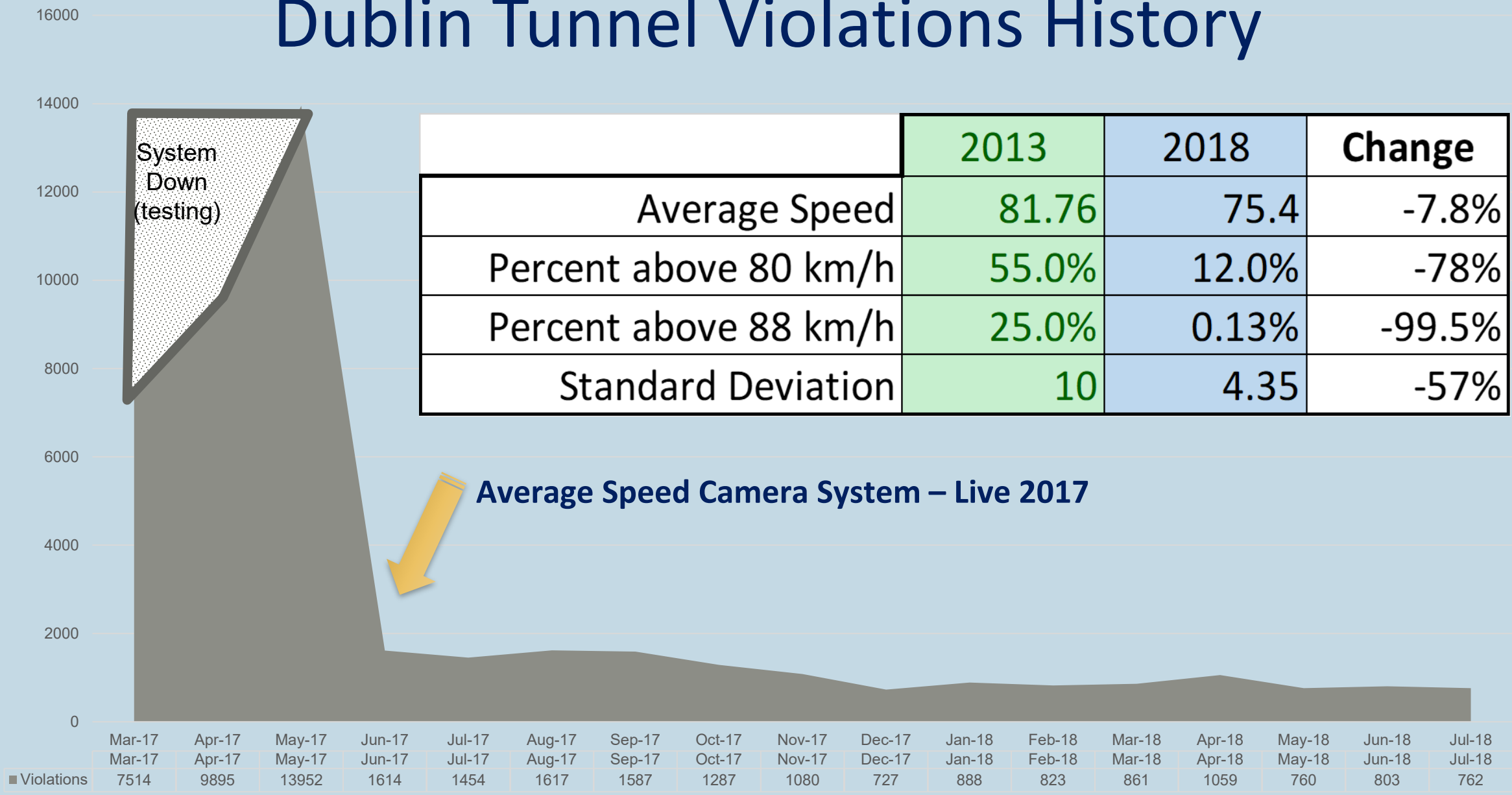
New Systems: New Systems and Collaboration with AGS + '*back office*' systems and Hardware / Software investment + processing to facilitate fines and penalty points



Average Daily Traffic:

21,695

Dublin Tunnel Violations History



	2013	2018	Change
Average Speed	81.76	75.4	-7.8%
Percent above 80 km/h	55.0%	12.0%	-78%
Percent above 88 km/h	25.0%	0.13%	-99.5%
Standard Deviation	10	4.35	-57%

M7- Average Speed Cameras

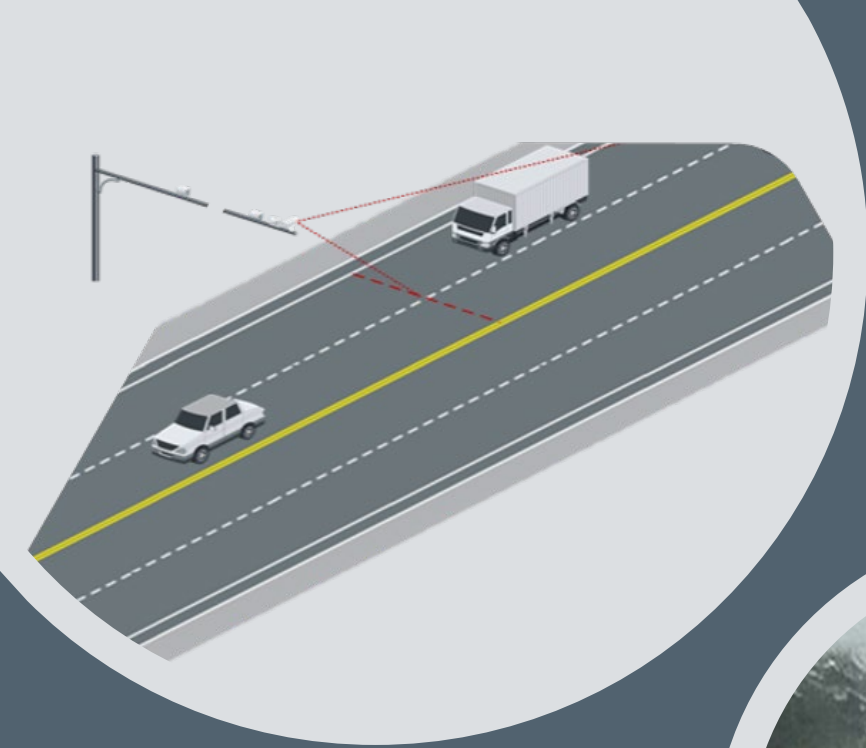
Speed Analysis: 2017 M7 J21-J28 (7 sites), 34.5 million records

Weather Analysis: M7 Nenagh weather station data Temperature, Wind speed, Rain intensity, Water film thickness.

An estimated **40%** of drivers exceed the 120km/h speed limit on some sections.

Excess Speed*(+135Km/h)

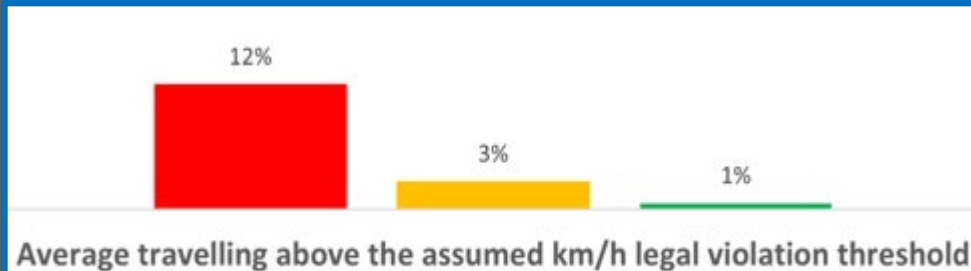
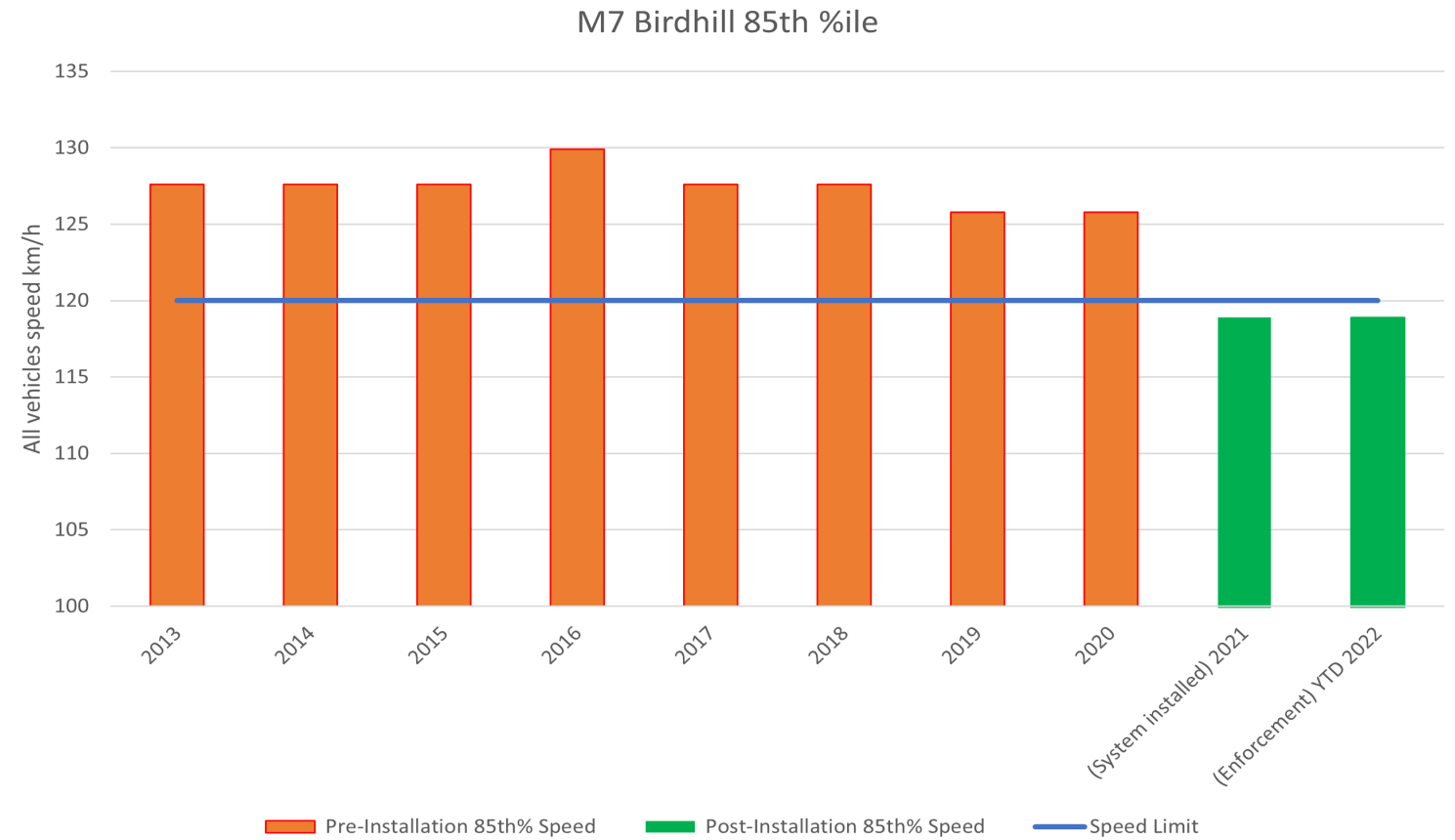
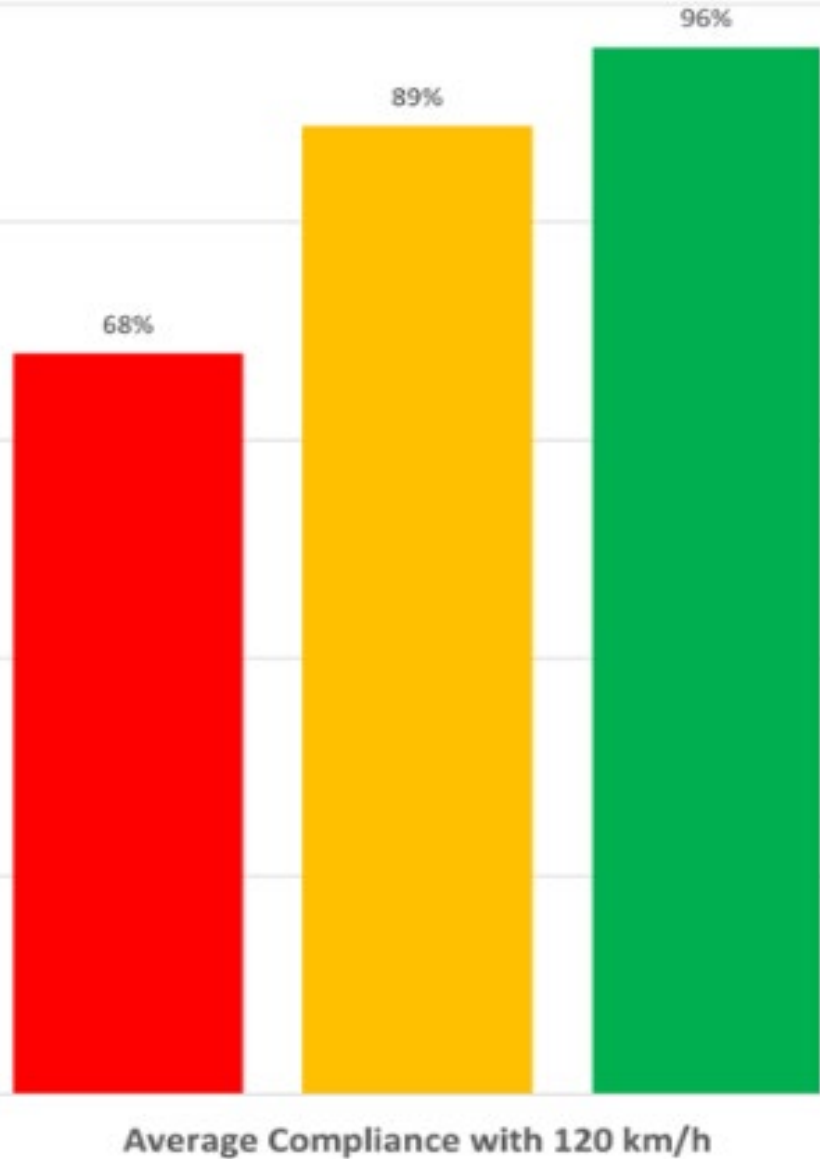
Normal 10% to 11.5%
Heavy Rain 8-9.5%



■ Pre-Installation (up to 8th March)

■ Post Installation (March 2021 - April 24th 2022)

■ In Enforcement (From April 25th 2022)



Junction 26 - Nenagh (West) and Junction 27 - Birdhill, covering both directions Monday April 25 2022

Impact on Safe Speeds

Before - Over half (55%) of all drivers

After – Reduced to 1 in 8 (12%) drivers



Before – About a third (32%) of all drivers

After – Only 4% of drivers (Excessive 1%)

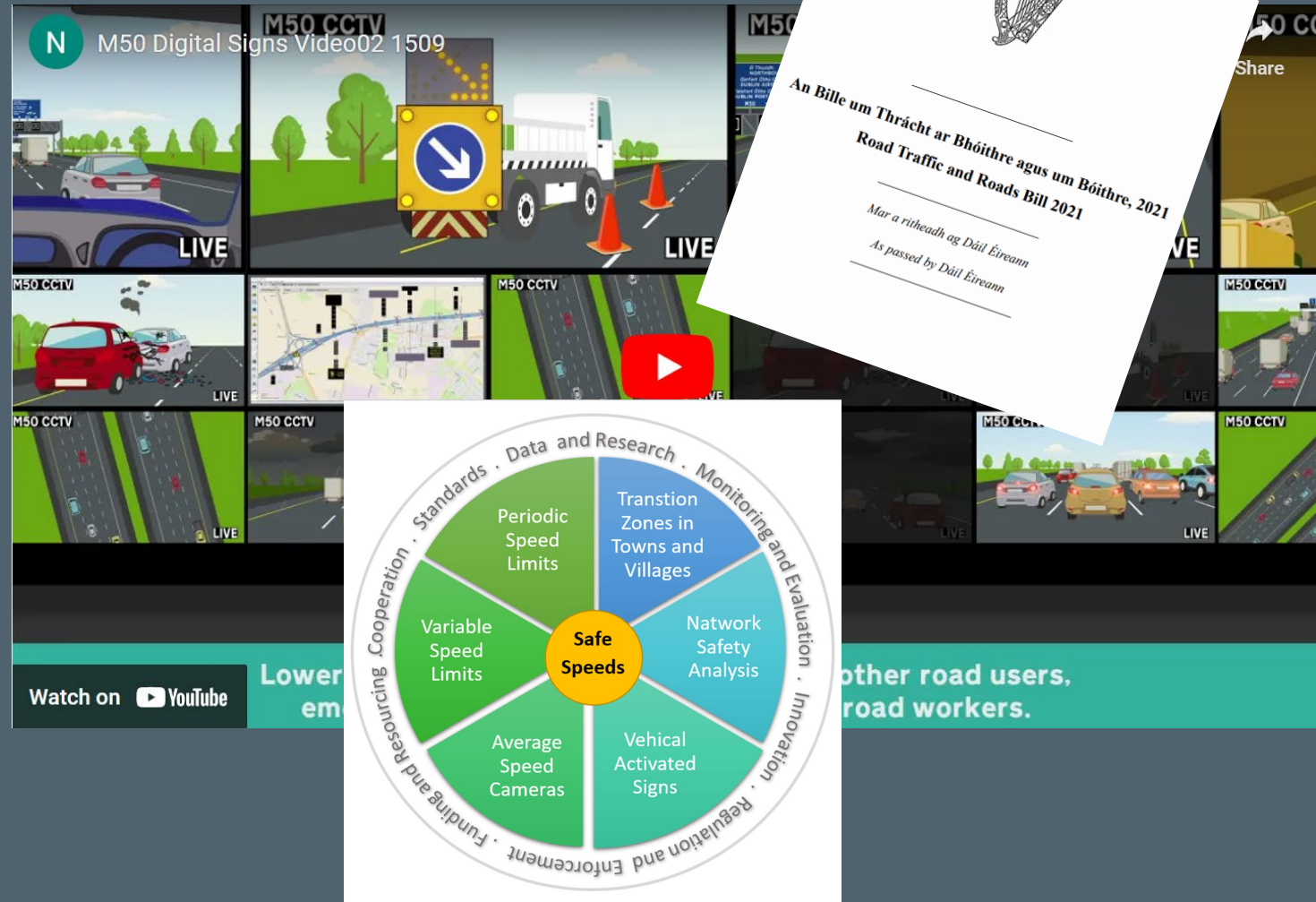


Variable Speed Limits and Lane Control

Road Traffic and Roads Bill 2021 - Legislative basis for traffic management on the M50

The MOS (enhancing motorway operations) programme will deliver a safer, more efficient and sustainable M50

Public Awareness Campaign



Phased Introduction

Expansion of Dublin Tunnel Control Building

Deployment of Intelligent Transportation Systems (ITS)

Lane control signals, variable message signs (VMS) and CCTV coverage.

Overarching Adaptive System for

Last Section 2022 - J14 Sandyford to J17 M11 and J3 M1 to J4 Ballymun



How? (Control Room)

19 new gantries

386 Lane Control Signals

64 Variable Message Signs (VMS)

45 CCTV Cameras

54 Slip Road Signs on the entry points

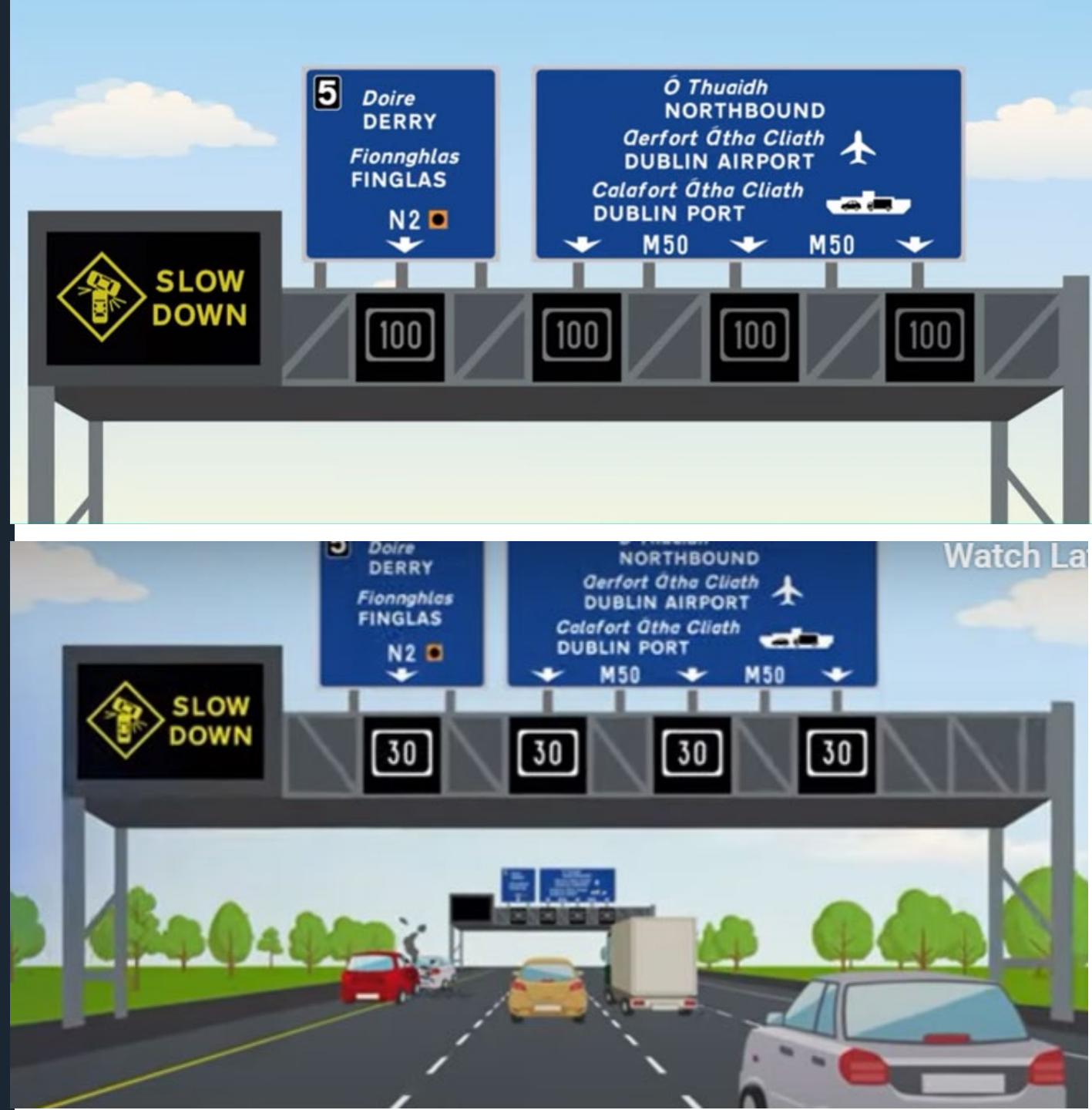
When?

Adverse Weather

Collision

Congestion

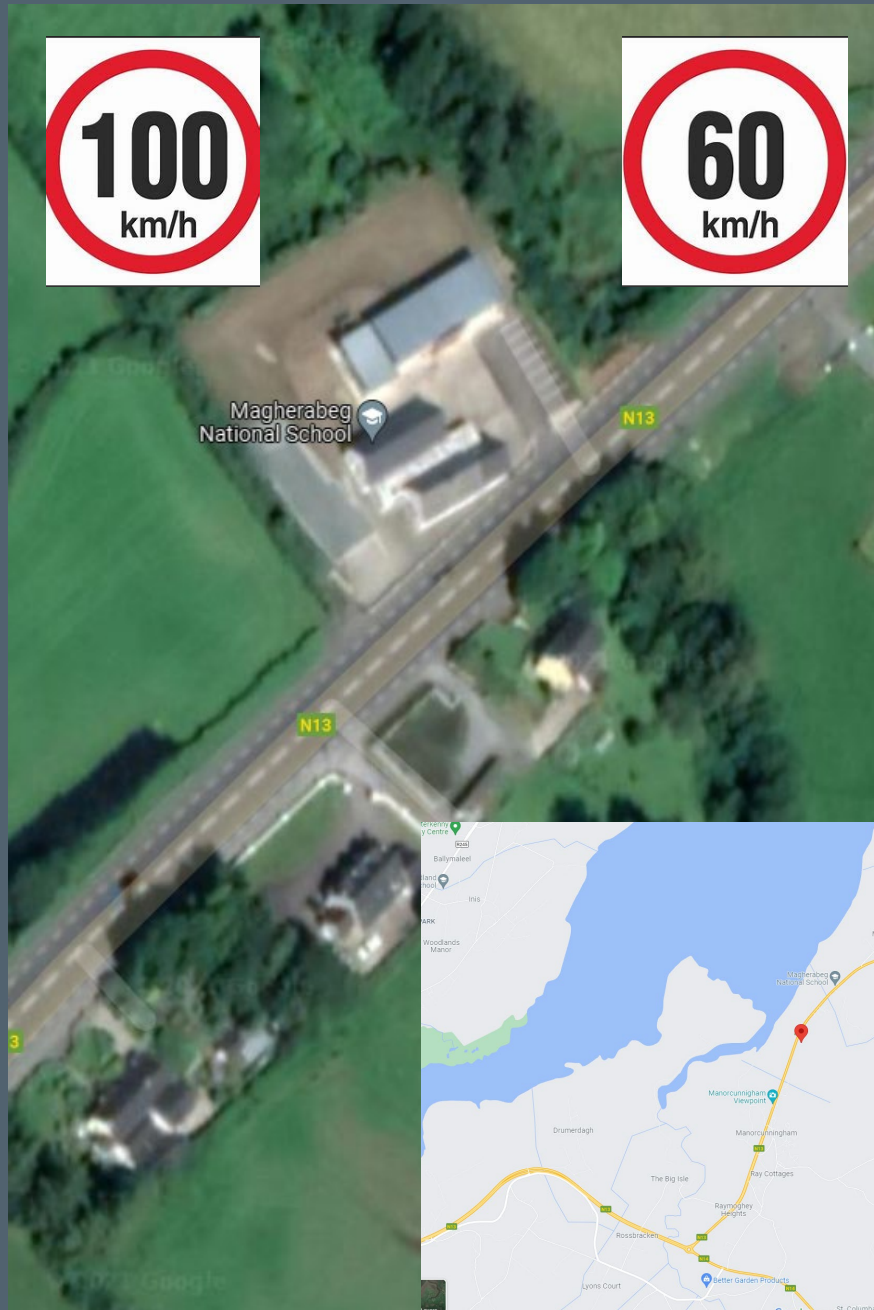
Road Works



Periodic Speed Limits at Schools



Scoil Phroinnseas Naofa (Magherabeg) N13



Rural School on a National Road

**Treatments of School Zones on National
Routes 100kph Speed limit**

**The school building is located within the
clear zone**

AADT 7000 to 8000

Impact on Safe Speeds - 1% reduction



Periodic Speed OFF

8% drivers exceeded 100kph

Max Speed 117km/h

Average 88km/h

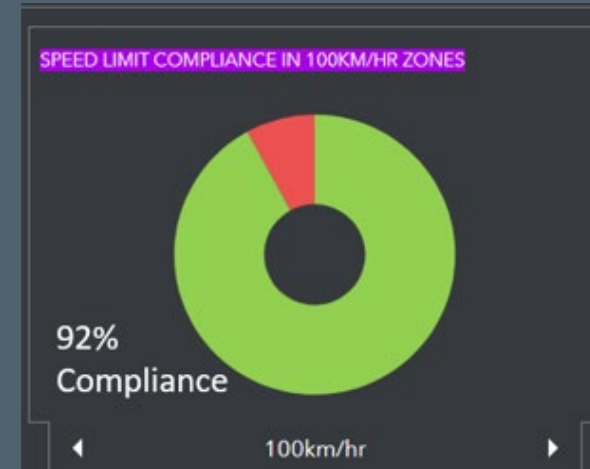


Periodic Speed ON

87% driver exceeded 60kph

Max Speed 120km/h

Average 78km/h



Targeting Speed Challenges



Credible Speed Limits encourage drivers to comply with the posted speed limits

TII Transition Zones and DMURS communicates credible reason for low speeds and drivers self-enforce

Vehicle Activated Signs provide drivers with credible targeted information to encourage drivers to reduce their speed in proximity to a hazardous location

Average Speed Cameras reduces speed violation through enforcement because there is a credible chance their speed will be detected.

Inappropriate and excessive speed were found to persist in poor weather conditions

Reduced speeds lowers the frequency and severity of avoidable injury collisions

New Data / New Standards / New Collaborations and New Enforcement



Thankyou

Contact:

Alastair.debeer@tii.ie

Suzanne.Meade@tii.ie

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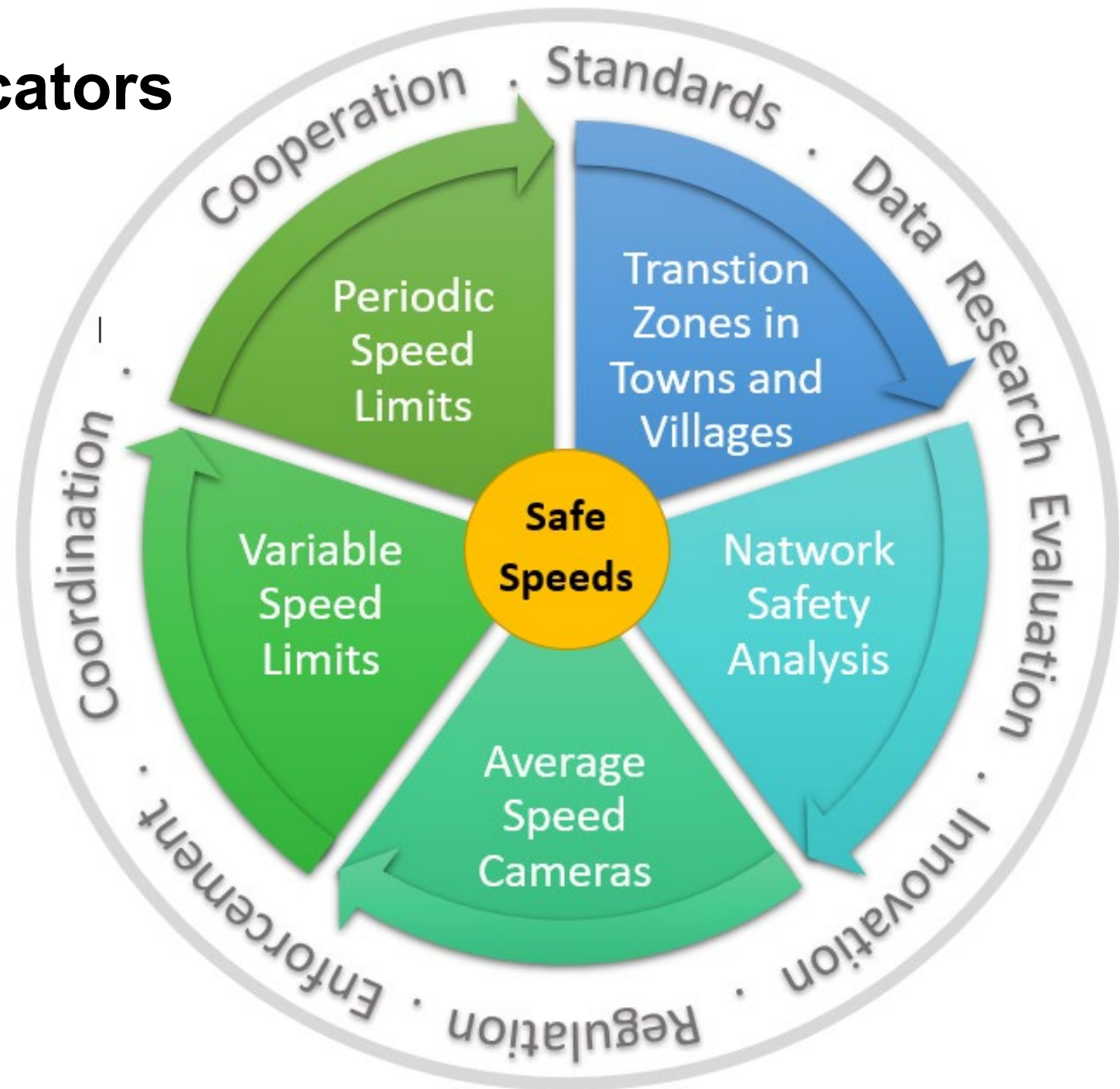
Safety Performance Indicators

(RSA, 2021; Pg 78)

2. % of traffic volume travelled on roads with speed limits of 80 km/h or higher.

5. % of vehicles travelling within the speed limit

3. % of traffic volume within speed limits which are '*safe and credible*'.





Safe Speeds

- Establish a working group to examine and review the framework for the setting of speed limits, including introducing 30km/h limits as the default in urban areas.
- Establish a task force to share data and information on speeding, make recommendations and implement safety measures.
- Expand speed management measures on the road network, e.g., average-speed cameras.
- Review the operation of the mobile safety camera network to maximise its effectiveness.
- Deliver public education on inappropriate and excessive speeding in conjunction with An Garda Síochána (AGS) enforcement activity, with an emphasis on protecting vulnerable road users.

SPEED LIMIT COMPLIANCE IN 60KM/HR ZONES



60km/hr

HIGHEST SPEED IN 60KM/HR ZONES

120km/hr

60km/hr

AVERAGE SPEED IN 60KM/HR ZONES

78km/hr

60km/hr

TOTAL NUMBER OF VEHICLES RECORDED IN 60KM/HR ZONES

 369

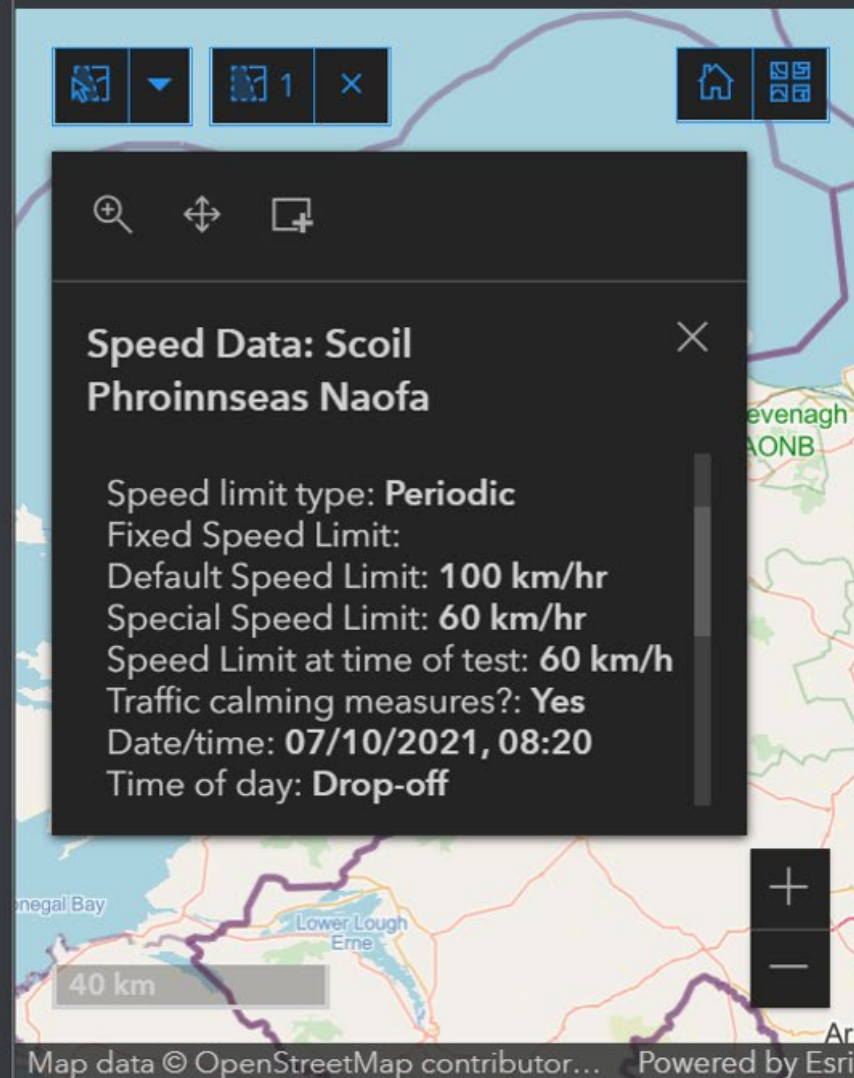
60km/hr

NUMBER OF VEHICLES EXCEEDING SPEED LIMIT IN 60KM/HR ZONES

 322

60km/hr

DISTRIBUTION OF SPEED TESTS CONDUCTED IN 60KM/HR ZONES



60km/hr



Speedweek 2021 Data Breakdown

Select LA (all schools)

All

SPEED LIMIT COMPLIANCE IN 100KM/HR ZONES



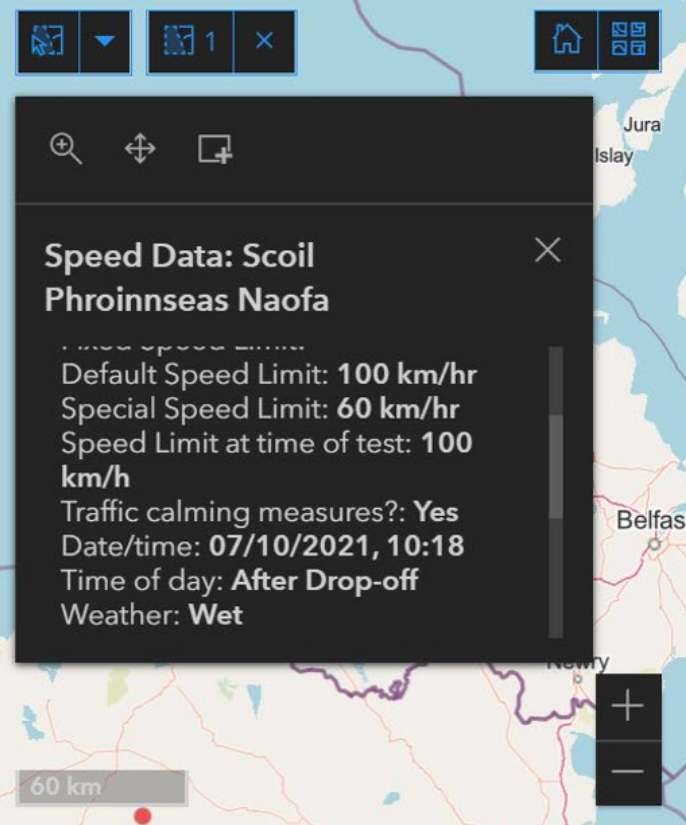
100km/hr

TOTAL NUMBER OF VEHICLES RECORDED IN 100KM/HR ZONES

 313

100km/hr

DISTRIBUTION OF SPEED TESTS CONDUCTED IN 100KM/HR ZONES



Map data © OpenStreetMap contributor... Powered by Esri

HIGHEST SPEED IN 100KM/HR ZONES

117km/hr

100km/hr

NUMBER OF VEHICLES EXCEEDING SPEED LIMIT IN 100KM/HR ZONES

 25

100km/hr

AVERAGE SPEED IN 100KM/HR ZONES

88km/hr

100km/hr

100km/hr



Speedweek 2021 Data Breakdown

Select LA (all schools)

All

SPEED LIMIT COMPLIANCE IN 100KM/HR ZONES



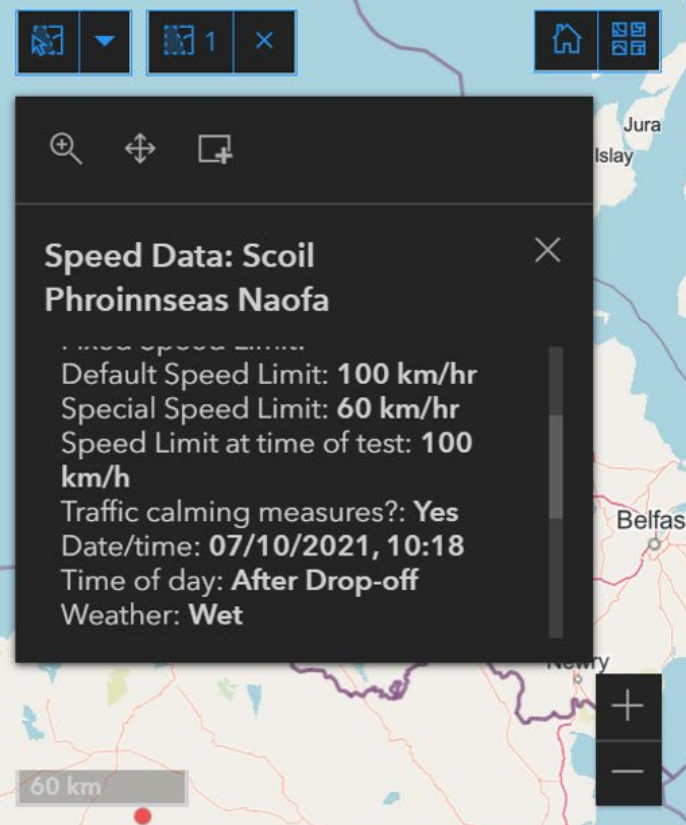
100km/hr

TOTAL NUMBER OF VEHICLES RECORDED IN 100KM/HR ZONES

 313

100km/hr

DISTRIBUTION OF SPEED TESTS CONDUCTED IN 100KM/HR ZONES



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HIGHEST SPEED IN 100KM/HR ZONES

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88km/hr

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School Pick Up

