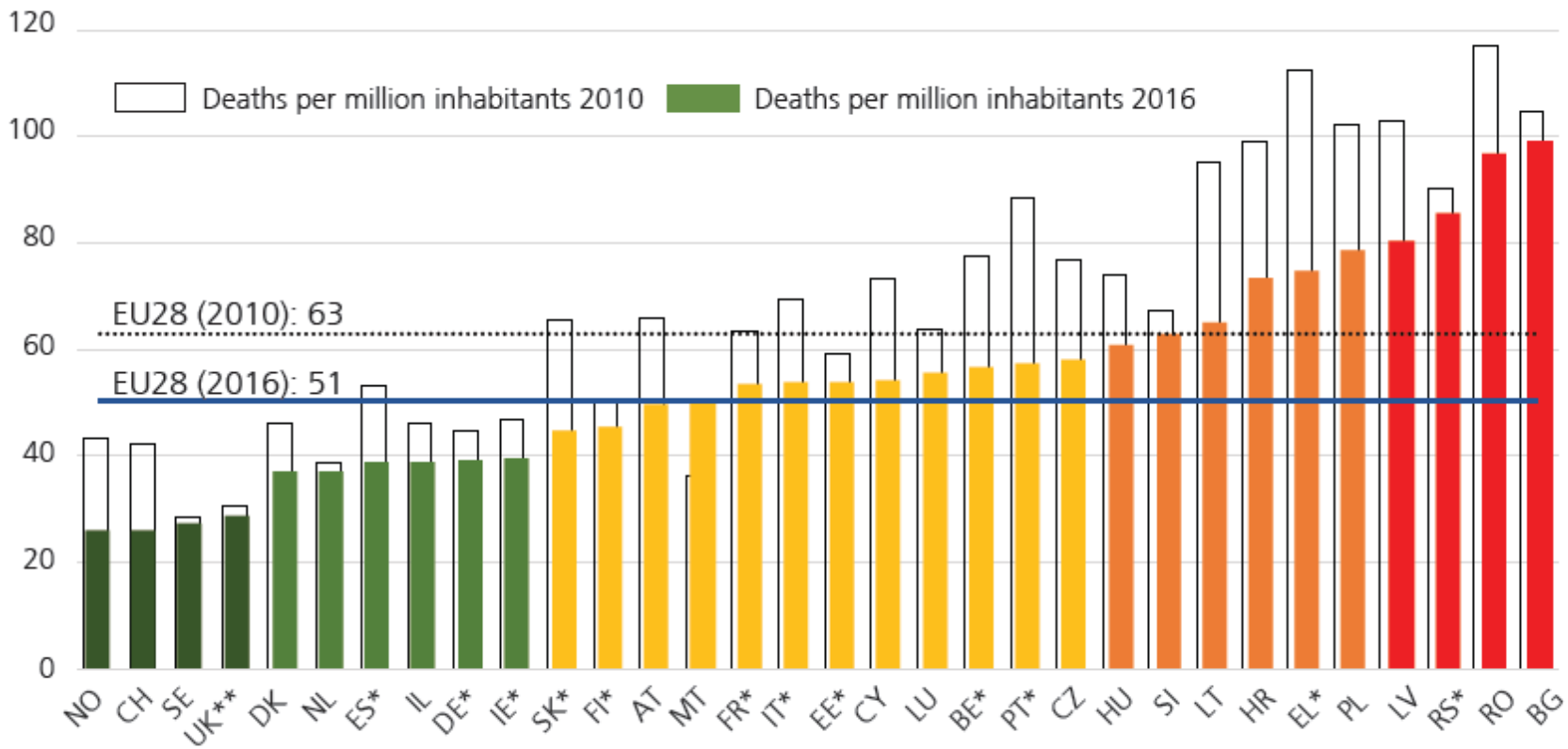
PIN Talk in Romania

Speed enforcement: Roads and users

Pedro Tomás Martínez

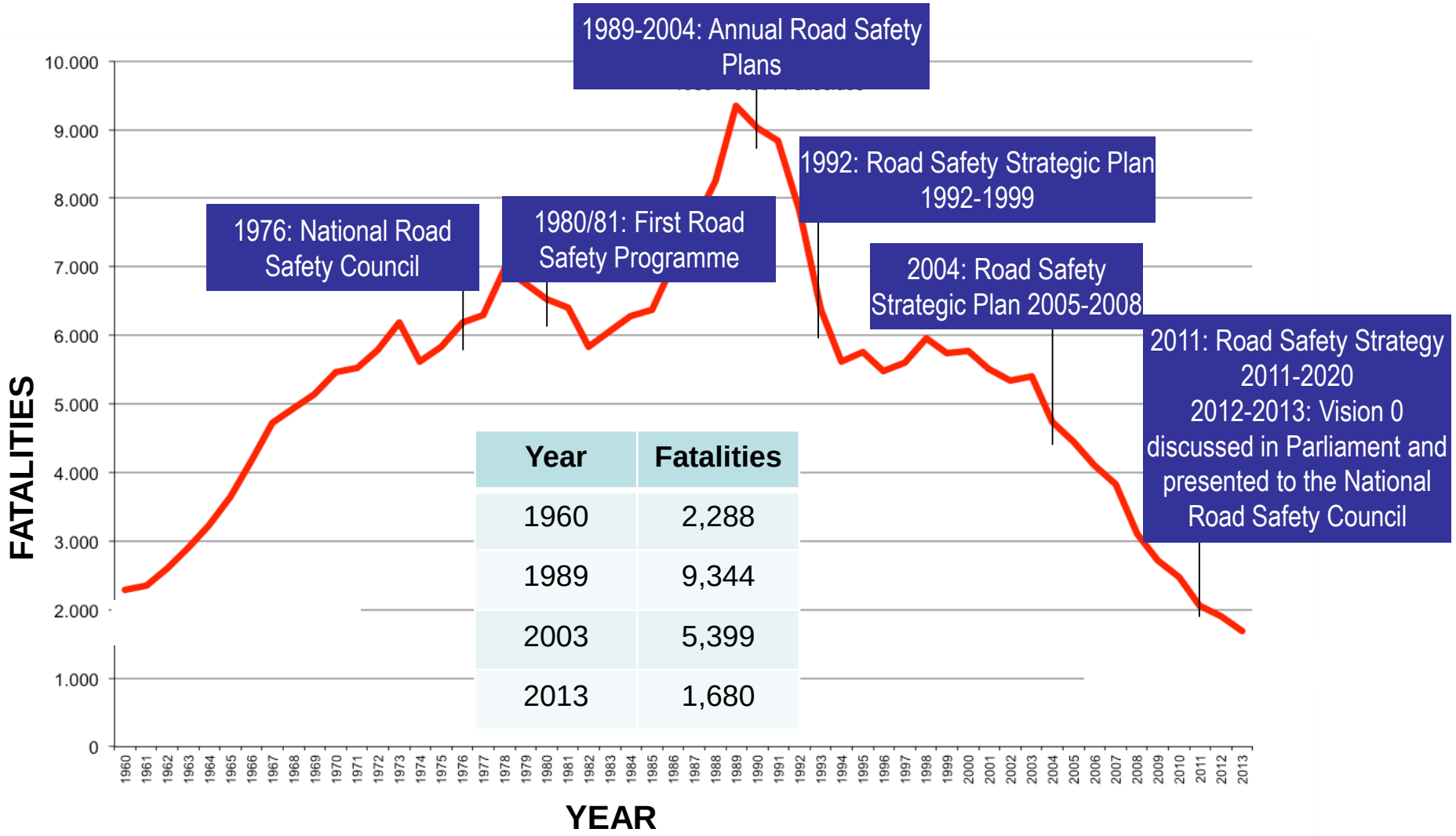
Mobility Management Area Chief

EU Fatalities/million population classification



Mortality (road deaths per million inhabitants) in 2016 (with mortality in 2010 for comparison). *National provisional estimates used for 2016, as the final figures for 2016 are not yet available at the time of going to print. **UK data for 2016 are the provisional total for Great Britain for the year ending September 2016 combined with the total for Northern Ireland for the calendar year 2016. Numbers of deaths in LU and MT are particularly small and are therefore particularly subject to substantial annual fluctuation. Annual numbers of deaths in CY and EE are also relatively small and therefore may be subject to annual fluctuation

Major breaktroughs



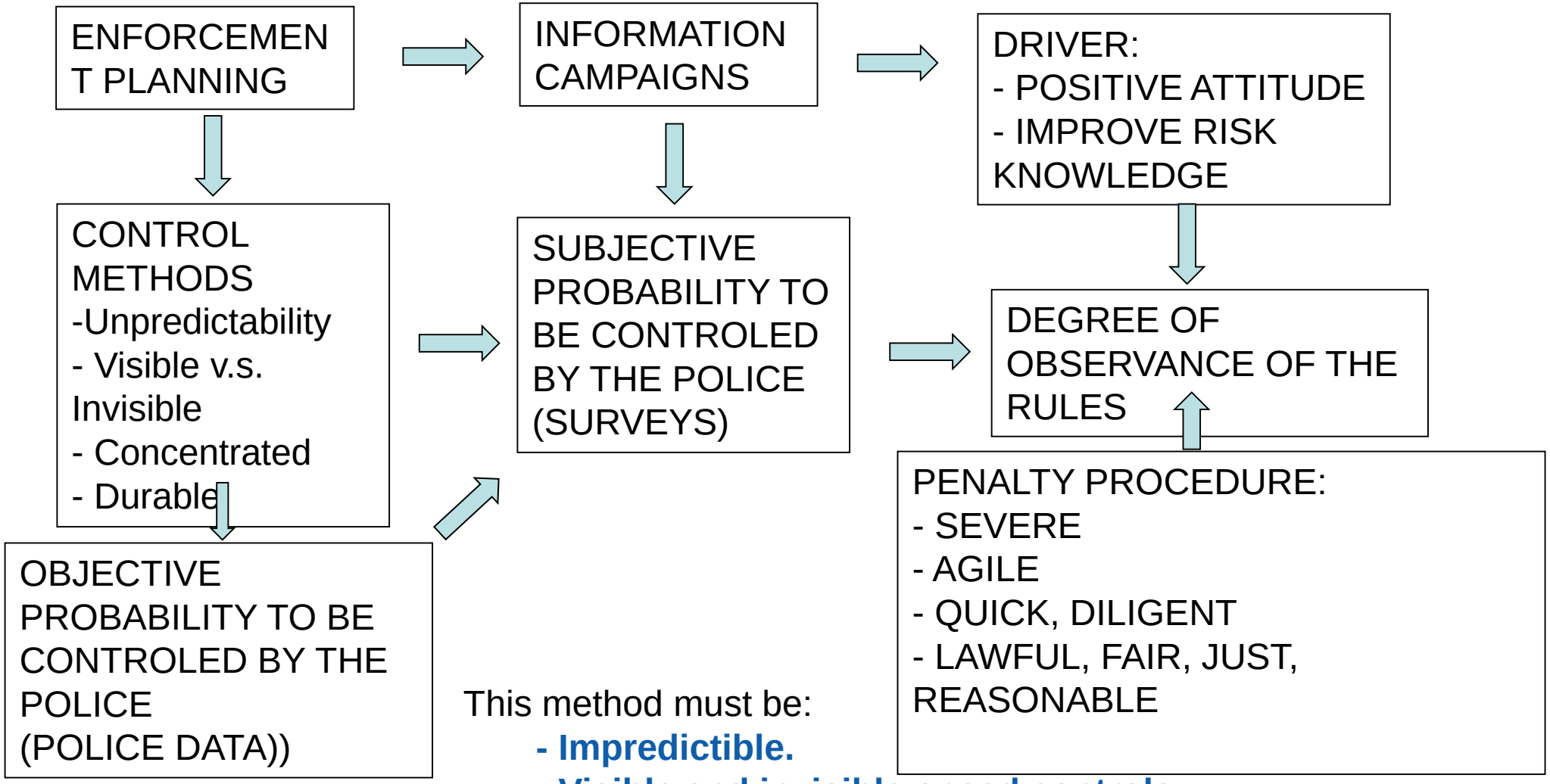
Year	Fatalities
1960	2,288
1989	9,344
2003	5,399
2013	1,680

SARTRE (*Social Attitudes to Road Traffic Risk in Europe)*

- SARTRE 1 (1991-1992)
- SARTRE 2 (1996-1997)
- SARTRE 3 (2002-2003)

	Alcohol	Speed	Seat bealts
Risk behavior	Weekly violators 7.2% (4/23)	21 % feel themselves law breakers (7/23)	82 % uses in motorways (10/23)
Risk knowledge	83 % consider alcohol cause of accidents (2/23)	80 % consider speed cause of accidents(5/23)	24 % do not consider necesary should you drive carefully (9/23)

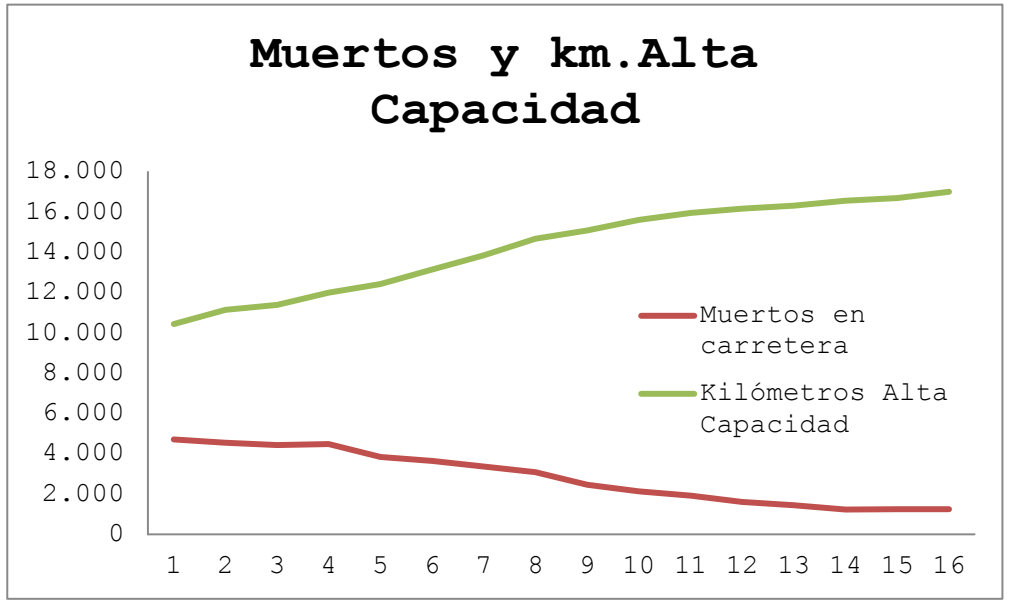
Spain has followed step by step the EU ESCAPE project

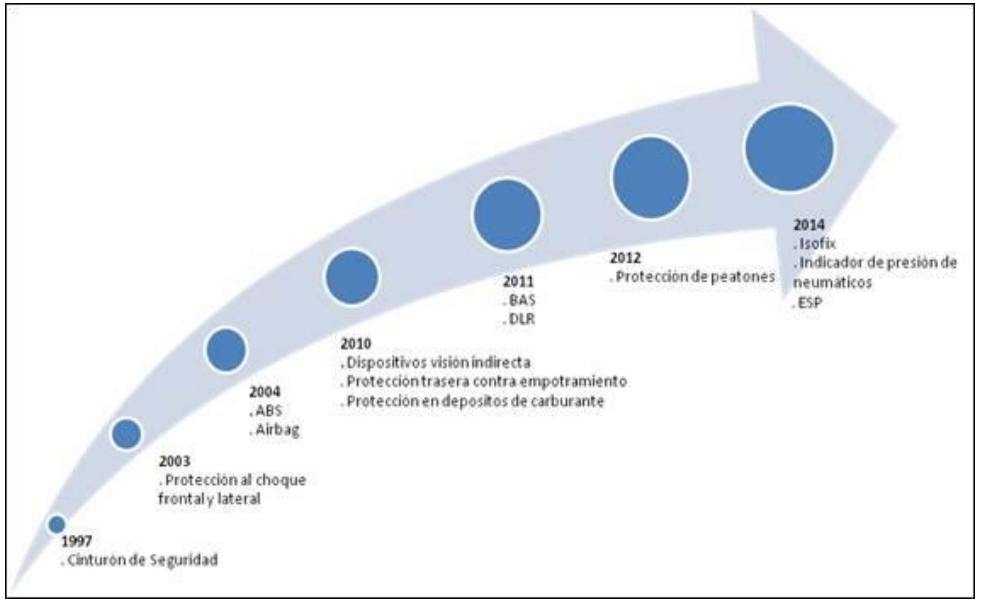


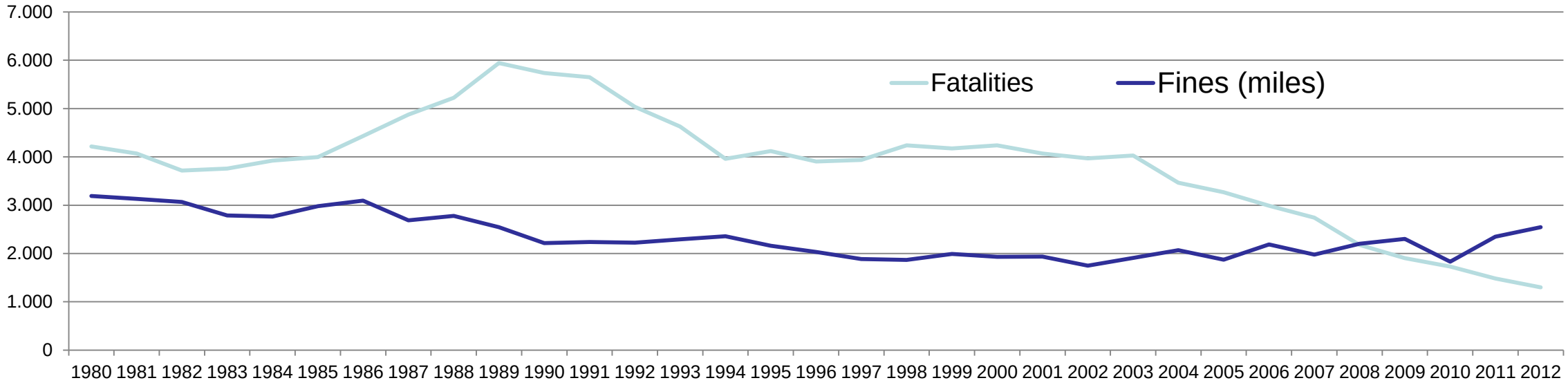
This method must be:

- **Impredictible.**
- **Visible and invisible speed controls.**
- **Constant along time.**
- **Disseminated and concentrated.**
- **Credible speed limits!!**

Fines/Roads/Vehicles v.s. Fatalities







Risks and risks perceptions

Individual risk perception is very low
We think we are not to die on a traffic accident.
Mortality index measures this risk:

- Motorways: 0,29
- Rural roads: 1,27

This means that, for every million of 500km trips, the following figuresresult:

- Motorways: 1,45 fatalities
- Rural roads: 6,35 fatalities

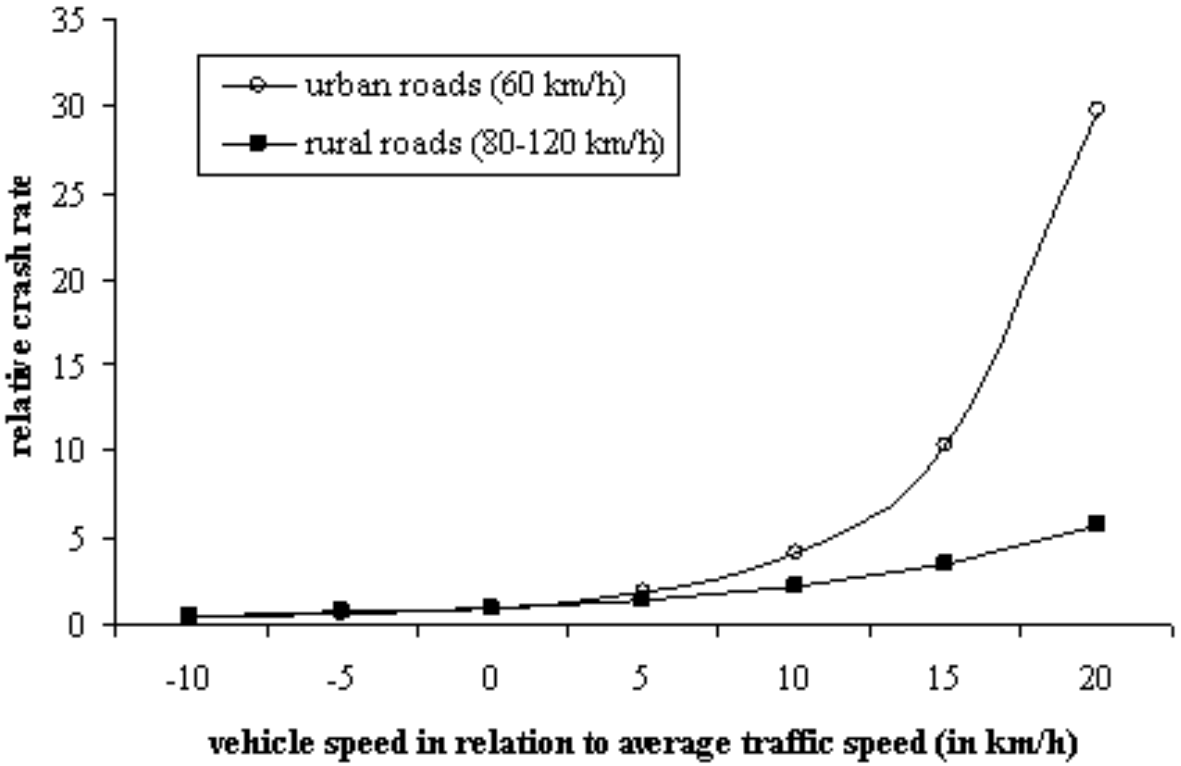
IN SHORT:

- To fulfill this, each person has to travel 500km daily during 2 full lifes.

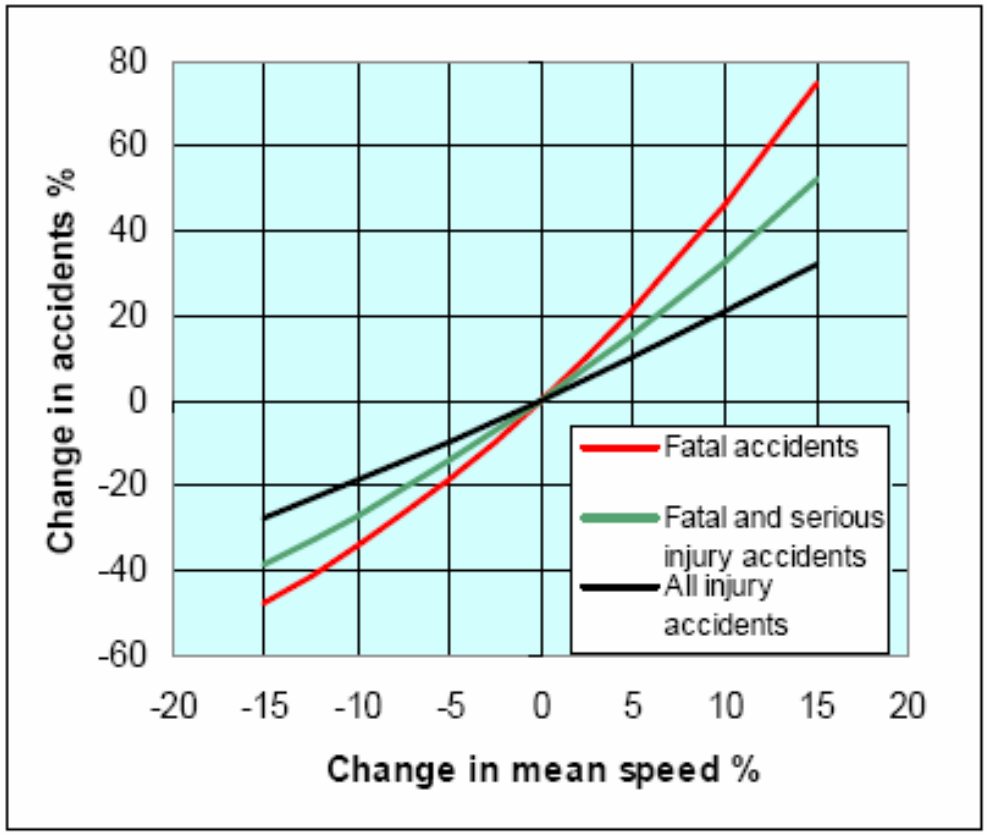
… and so…**INDIVIDUAL RISK PERCEPTION IS EXTREMELY LOW!!!!**

Risks and risks perceptions

Driving faster than the rest increases individual risks. (Kloeden, Ponte y McLean, 2002)



1% mean speed increases result in a 4% fatal accidents increase. (Nilson, 2004)

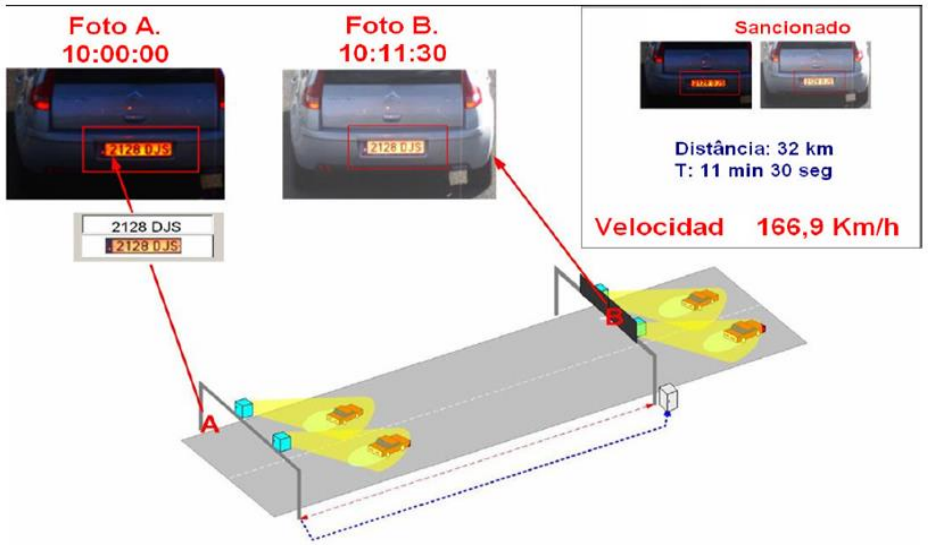


Resources.

641 speed camera boxes → 374 fixed speed cameras

390 portable speed cameras

25 mean speed radars

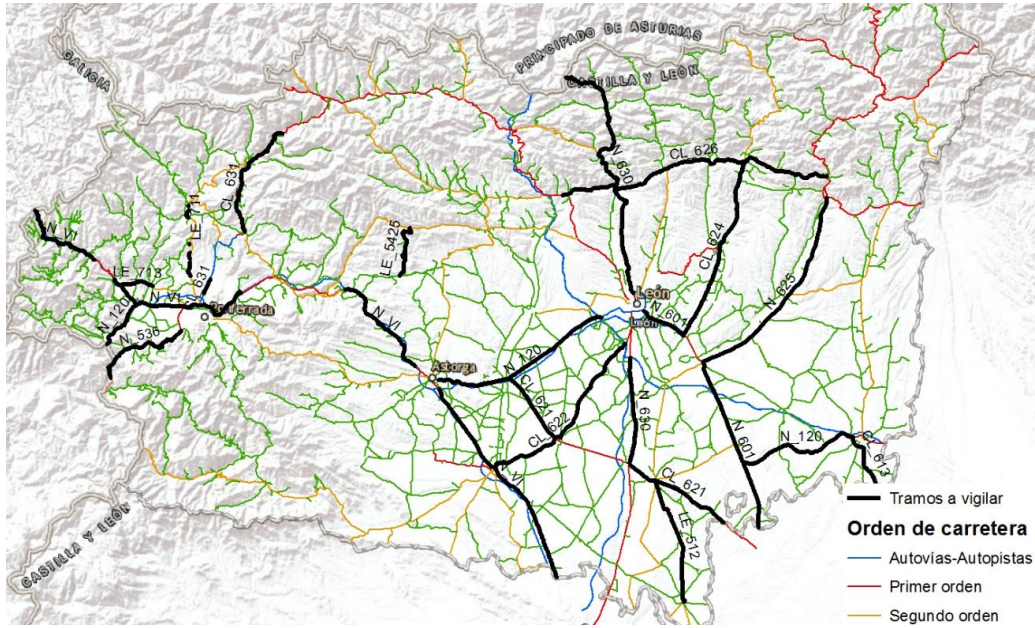


13 helicopter speed cameras

Speed cameras site location criteria

- Concentrated… **where?**
  - EX-POST: Speed excess related traffic accidents.
  - EX-ANTE: High mean speeds profile and high speeds dispersion + Road Design risks factors (FCD + GIS).
- **Local factors** (“black spot management”)
  - Black Spots (new methodology!)
  - T.C.A (Accident concentration stretch – European Directive).
- Global Factors (“network management”)
  - INVIVE
  - EuroRAP
    - Critical areas and risk factors (ie. Overtaking management, rumble strip, etc)
    - Focus on causes VS Focus on statistics
- Big Data and Floating Car Data have allowed for a breakthrough.

INVIVE©. Spanish formula for speed control management.



Speed excess

∑ Accidents +
∑ Serious injuries+
3 · ∑ Deaths

Length of stretch

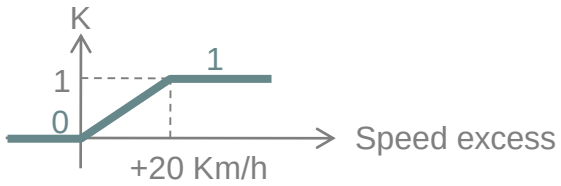
$$INVIVE = \frac{log_2(1+C_{VEL}) + log_3(1+C_{ACC}) + log_{20}(1+C_{Long})}{1+0{,}2\cdot(J-K)}$$

Road hierarchy

0: Motorways
1: Basic dual carriageways.
2: Connectors carriageways.
3: Local carriageways.

INVIVE grows as hierarchy road is higher.

Hierarchy speed excess calculation

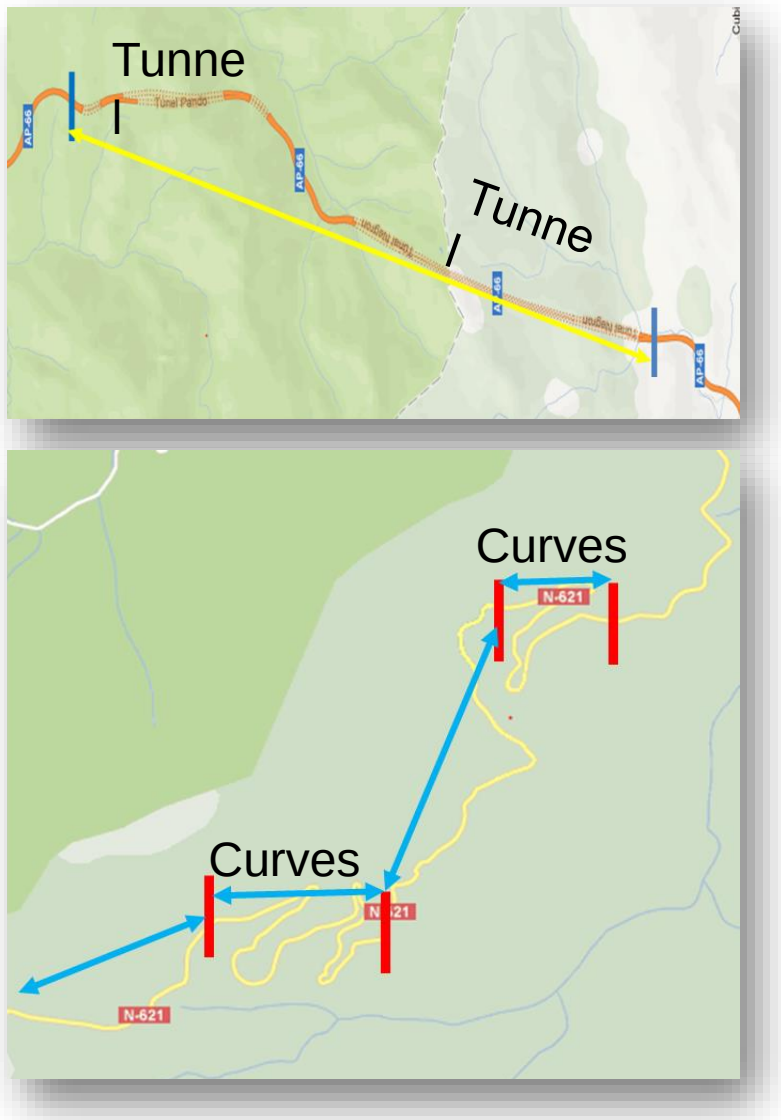


Speed cameras site location criteria

Split a stretch in terms of consistency and homogeneity:

① **Túneles**: Tunnels series or >2km. Tunnel.

② Curves layout and straight allignments.



Speed management: Case studies.

120 > 110
Speed limit temporary modification due to national energy shortage risk.
110km/h on all motorways

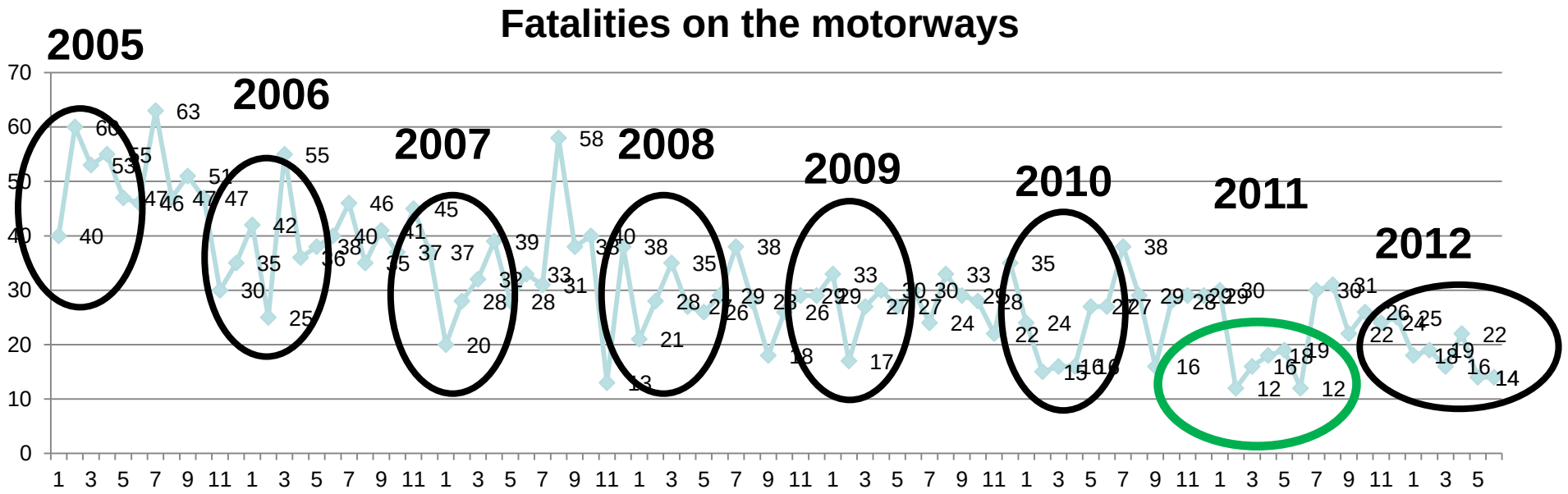
Information infrastructure: VMS
Enforcement methodology: Fixed speed cameras+ Police speed cameras

	RADARS DATA							LOOP DETECTORS DATA		
	2006	2007	2008	2009	2010	2011	2010-2011 Variation	2010	2011	2010-2011 Variation
January	111,08	106,19	102,49	103,24	101,67	101,56	-0,11%	105,6	106,94	1,27%
February	109,05	106,13	102,61	103,02	101,98	100,99	-0,97%	105,98	107,36	1,30%
March	109,39	106,14	103,97	104,48	101,85	**95,64**	**-6,10%**	106,76	101,31	**-5,10%**
April	109,64	105,22	102,4	106,13	103,06	**96,23**	**-6,63%**	107,36	102,32	**-4,69%**
May	108,75	106,65	103,91	105,18	102,99	**97,36**	**-5,47%**	106,87	101,98	**-4,58%**
June	107,16	103,42	103,6	103,74	102,62	**96,19**	**-6,27%**	106,89	100,82	**-5,68%**

400M€ energy consumption savings!!

Speed management: Case studies.

$$\text{Nilson: Number of fatal accidents} = Y_1 = \left(\frac{V_1}{V_0}\right)^4 Y_0$$



120 → 110 km/h (march-june2011)

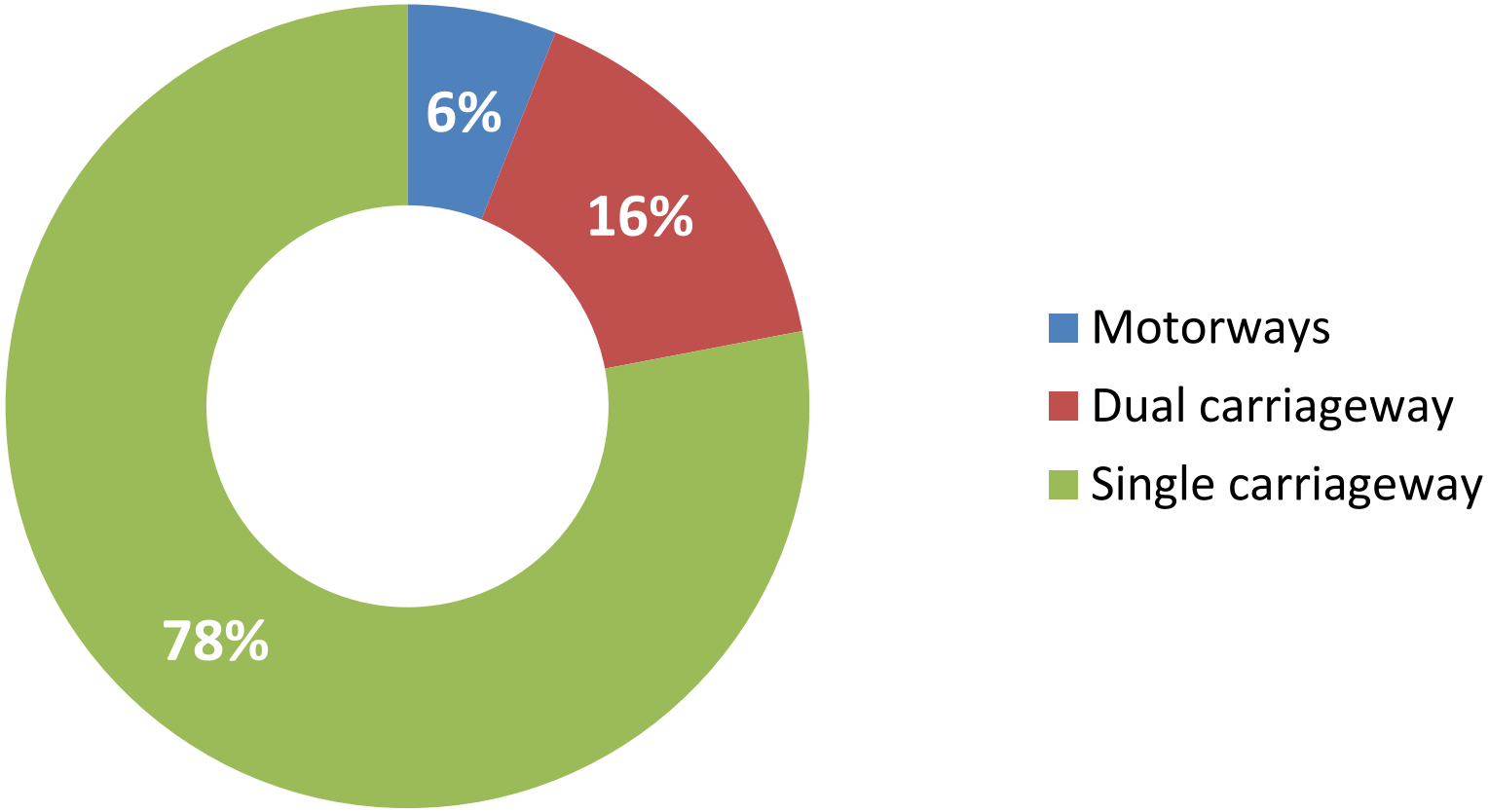
Speed management: Case studies.

Amplifying effects of massive VMS signals of SPEED CONTROLS (disperse)

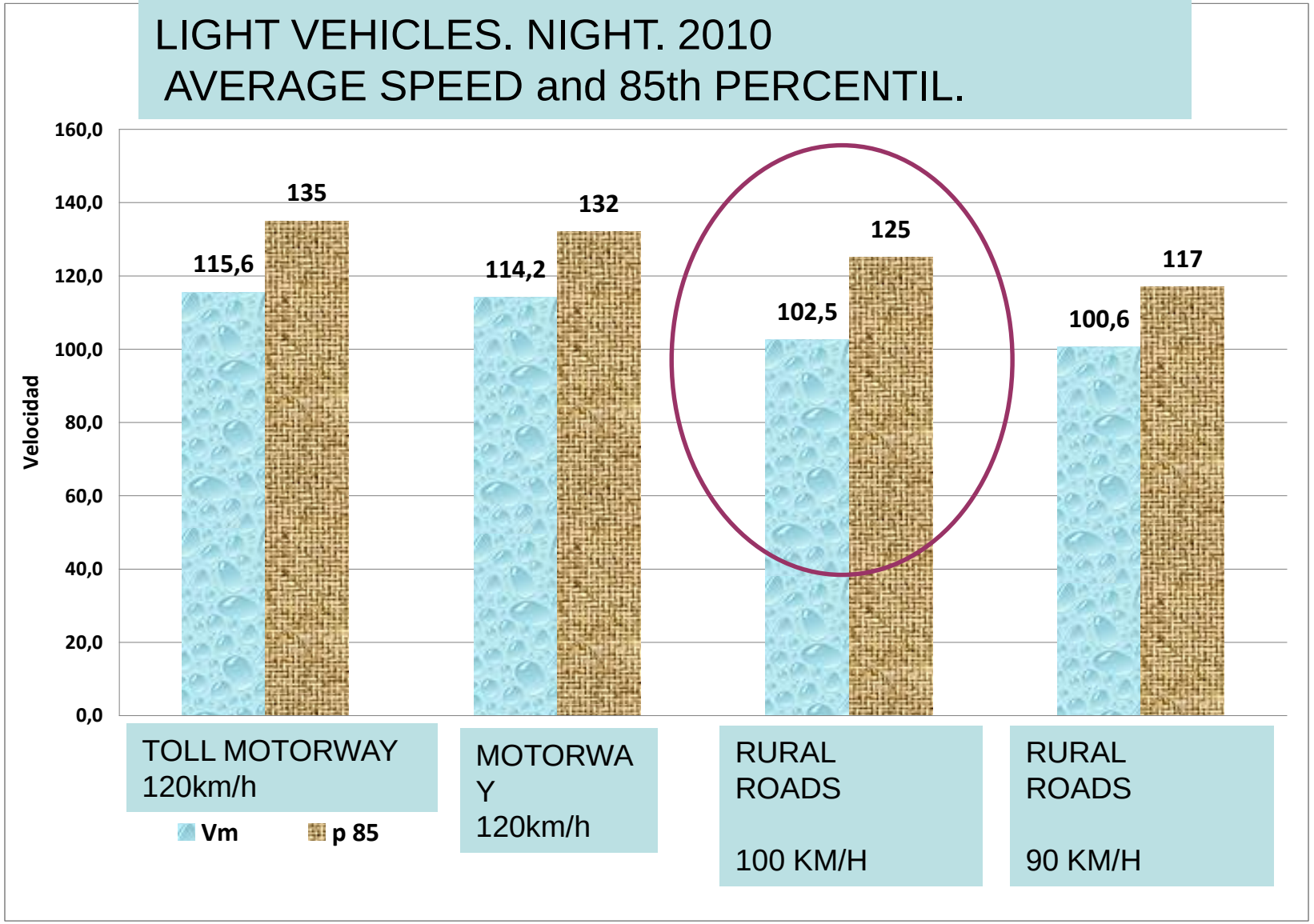
Periodo	Velocidad media	Reducción ACV
2ªq DIC 2013	102,03	408
2ªq DIC 2014	100,92	328
Diferencia	-1,09%	-19,61%
Resto 2013		7484
Resto 2014		7174
Diferencia		-4,14%

Slight intensification of speed controls on motorways >> Big increase of subjective speed control.

WHY RURAL ROADS?



WHY RURAL ROADS?



Where?

Speed excess + Fatalities Or Speed excess + Real risks
After other traffic calming countermeasures were tested
Credible speed limits
Visible speed limits
Geometric Design Inconsistency (Alfredo García et.al RUTAS Journal 160)

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Where?

Speed excess + Fatalities Or Speed excess + Real risks
Associated with interurban traffic calming methods.
Credible speed limits.
Visible speed limits.
Wild fauna.
Intersections.
Vulnerable users (pedestrians and cyclists).
Direct accesses.

VIDEO STOP

Where?

Non-lights regulated intersections.
Speed excess associated on main road.
Existing or potential risk.
Defficient geometric design.
Portable.

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ILLEGAL OVERTAKING CAMERAS

Where?

Non-separated dual carriageways.
Mean-speed cameras.
Real risks.

-21-

Gabinete de Prensa

- Relación con los medios
- Comunicaciones oficiales

Revista

- Dotación de contenidos para vehicularlos en el resto de canales de la organización

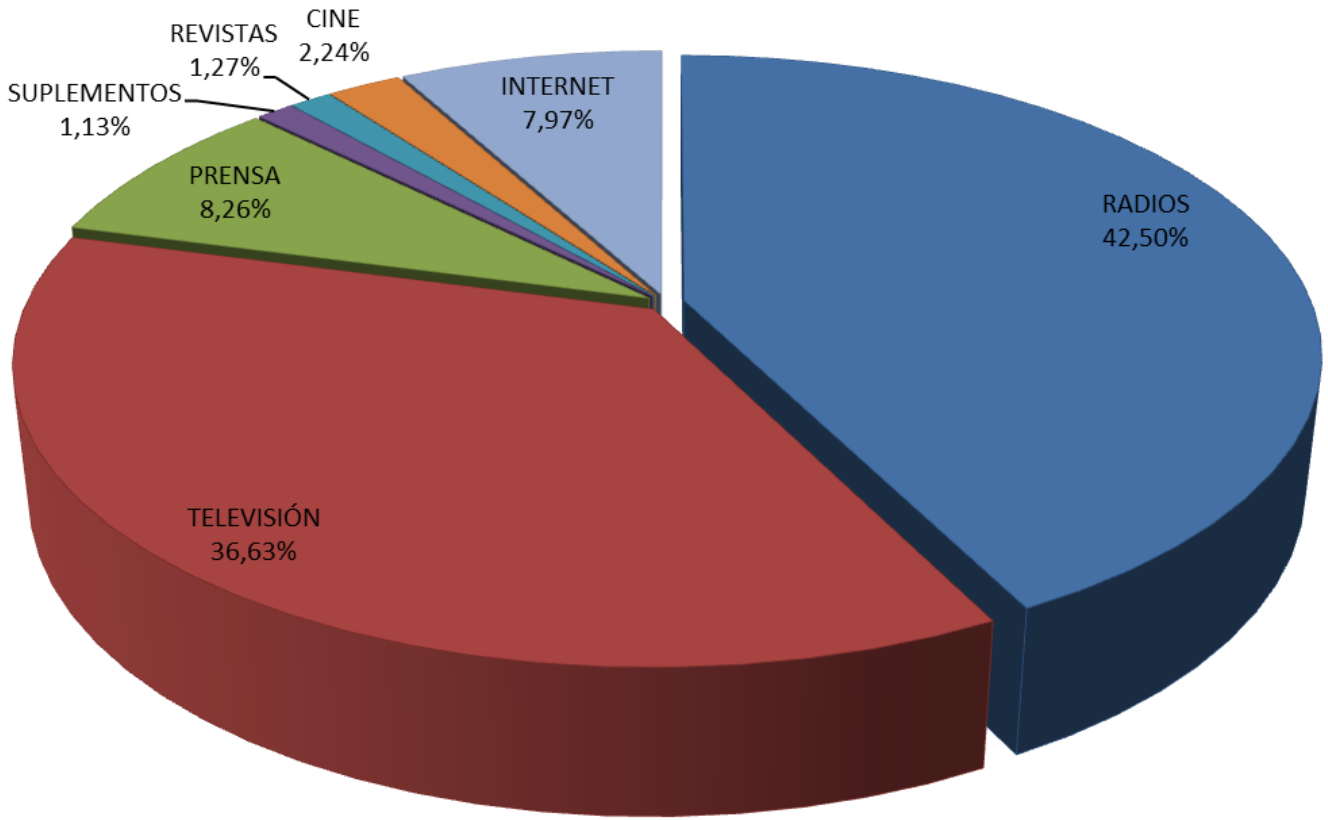
Divulgación

- Campañas
- Acciones de comunicación

Internet

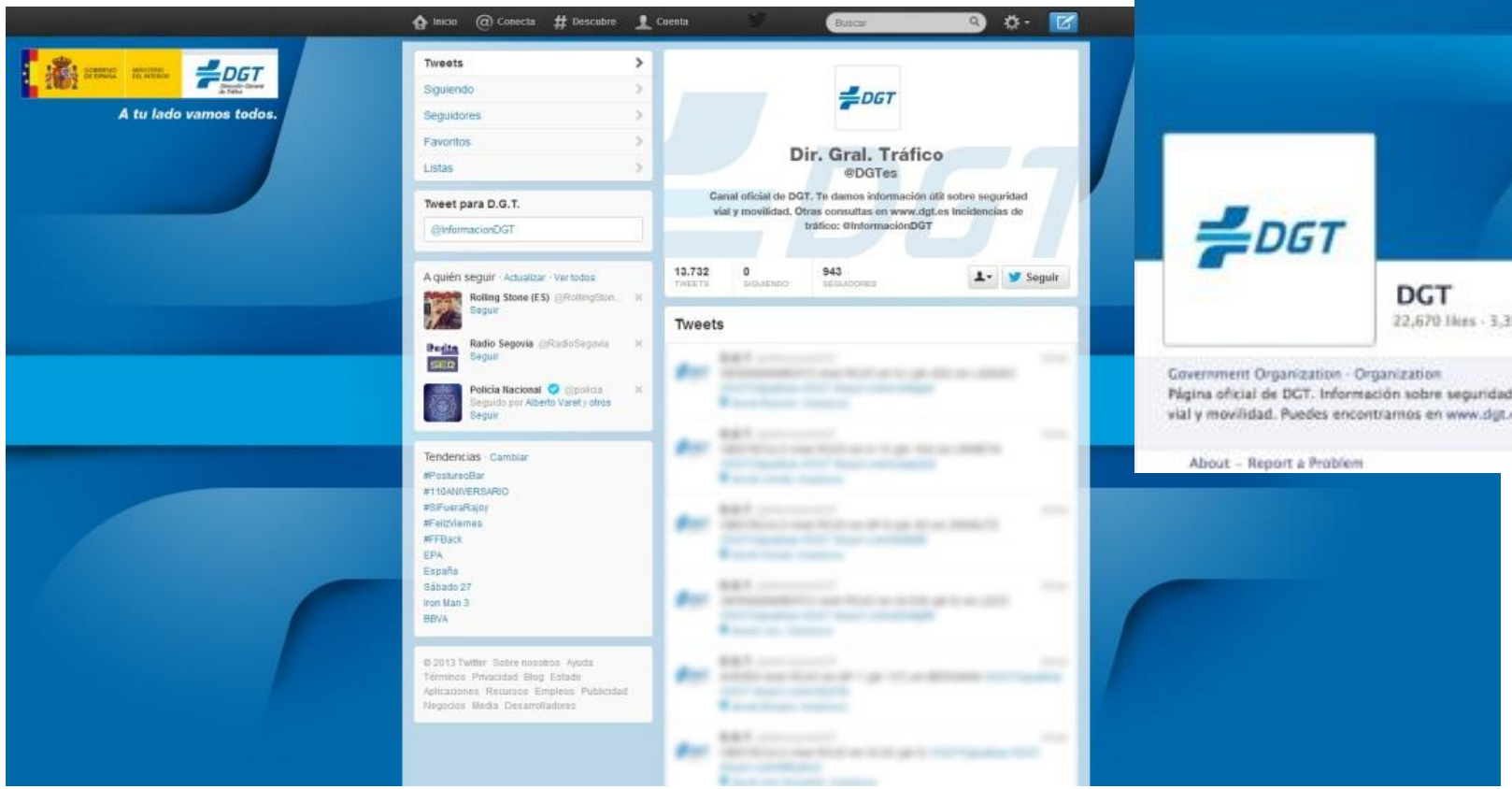
- Web
- Redes Sociales
- Aplicación Móvil

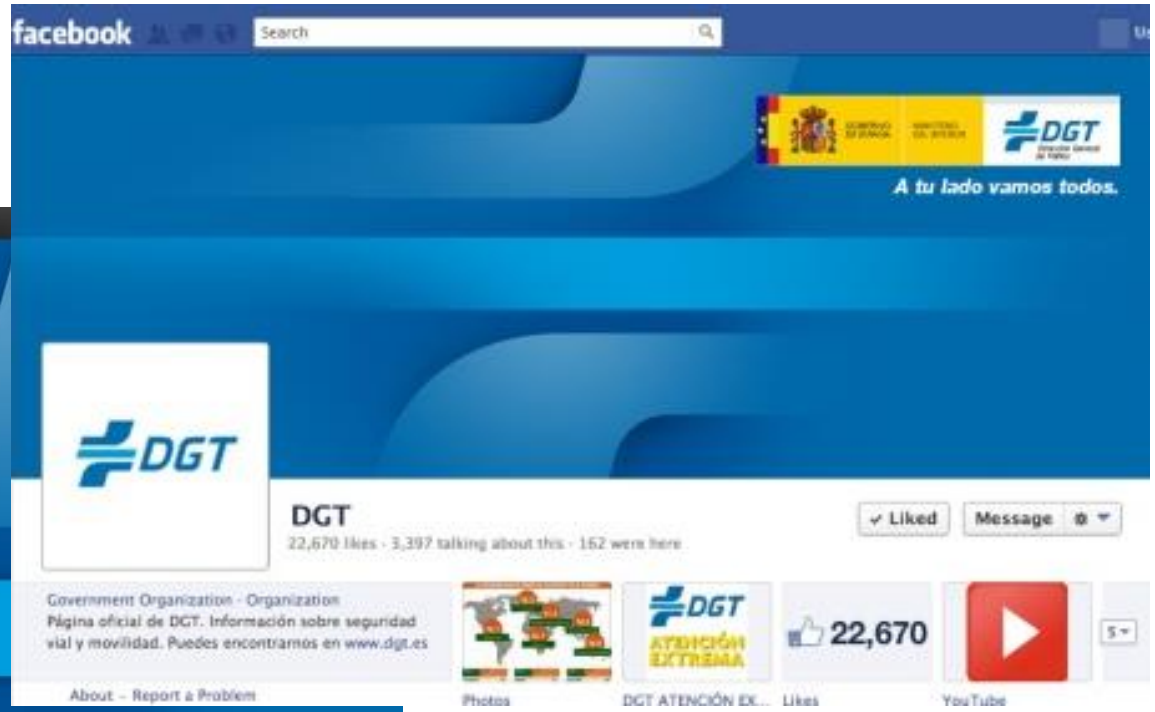
Distribución por medios 2016



Facebook …. 235.000 followers.

Twitter …….. 142.000 followers.





Thank you for your attention

ptomas@dgt.es