Implementing city-wide 30 km/h speed limit

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Outline

1. Key facts about speeding
2. Scientific evidence on 30km/h city-wide schemes
3. Data and Analysis Overview
4. Cost benefit analysis example
5. Conclusion
6. 30 Marathons in 30 months campaign

Objectives

Two published **literature reviews**:

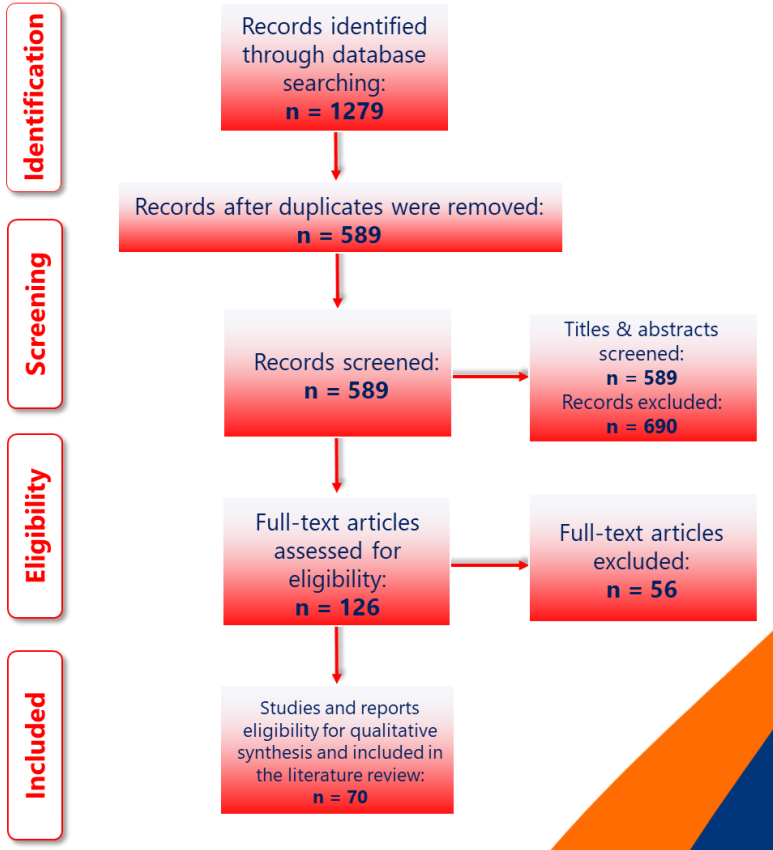
- Assessment of changes **before and after** the implementation of city-wide 30 km/h speed limits in Europe (meta-analyses of 70 studies from 17 cities)
  Yannis, G., & Michelaraki, E. (2024). Review of City-Wide 30 km/h Speed Limit Benefits in Europe Sustainability, 16(11), 4382
- Assessment of the effectiveness of 30 km/h speed limit through **simulation studies** (meta-analyses of 60 studies)
  Yannis, G., & Michelaraki, E. (2024). Effectiveness of 30 km/h speed limit - A literature review. Journal of Safety Research, Vol. 92, November 2024

Safety Emissions Energy Traffic Liveability Health

Methodology

Key search phrase	Search terms	Screened papers	Included papers
30 km/h speed limit	"30 km/h" OR "20 mph" OR "30 km/h speed limit" OR "speed limit" OR "speed limit reduction" OR "maximum speed" OR "reduced speed" AND “traffic calming” AND "mobility" AND “city-wide” AND “cities” AND “implementation modalities” AND "benefits" AND "urban areas"	589	70

- Meta-analyses of 70 studies from 17 cities were reviewed
- Systematic search of relevant scientific and grey literature, according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)
- The inclusion criteria for selecting relevant studies were:
  - ✓ Search term included in title, abstract or key words
  - ✓ Studies published from 1992 and onwards
  - ✓ Studies including information with regards to 30 km/h speed limit in the title or abstract
  - ✓ Source: peer-reviewed journals before peer-reviewed conference papers before scientific papers/articles



The PRISMA flowchart

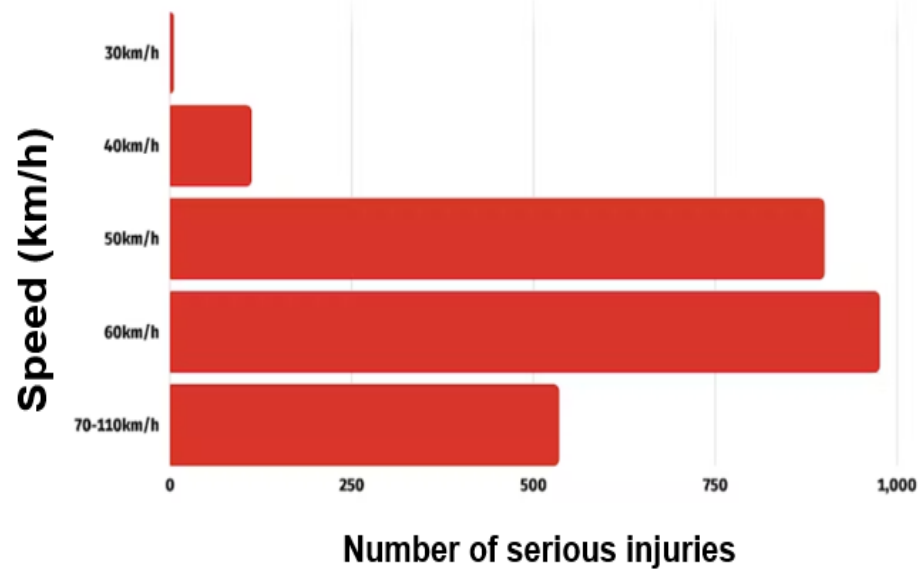
Key Facts about Speeding

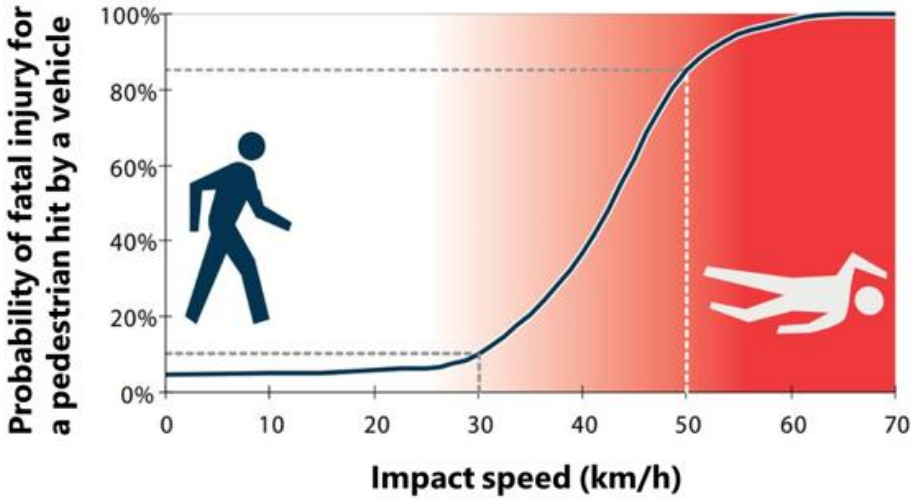
Speeding Kills (1/2)

- Road crashes is a major societal problem worldwide, with 1,19 million road fatalities per year and more than 50 million of road injuries
- Speeding is the number one cause of road crashes worldwide, especially in cities where pedestrians, cyclists and motorcyclists are highly exposed and vulnerable in case of a collision (70% of fatalities in urban areas are VRUs)
- Speed has been found to be a major contributory factor in around 10-15% of total crashes and in around 30% of fatal crashes
- Speed effects the quality of life of urban residents, especially the safe mobility of vulnerable road users

Speeding Kills (2/2)

- When speed increases, the risk of a crash and of its severity increases as well
- A 5% increase in average speed leads to approximately a 10% increase in all injury crashes and a 20% increase in fatal crashes
- The increase in crash risk is usually attributed by the fact that when speed increases, the time to react to traffic situations is shorter and manoeuvrability of a speeding car is limited
- Pedestrian fatalities increase from 10% in 30km/h collisions to 90% in 50km/h collisions



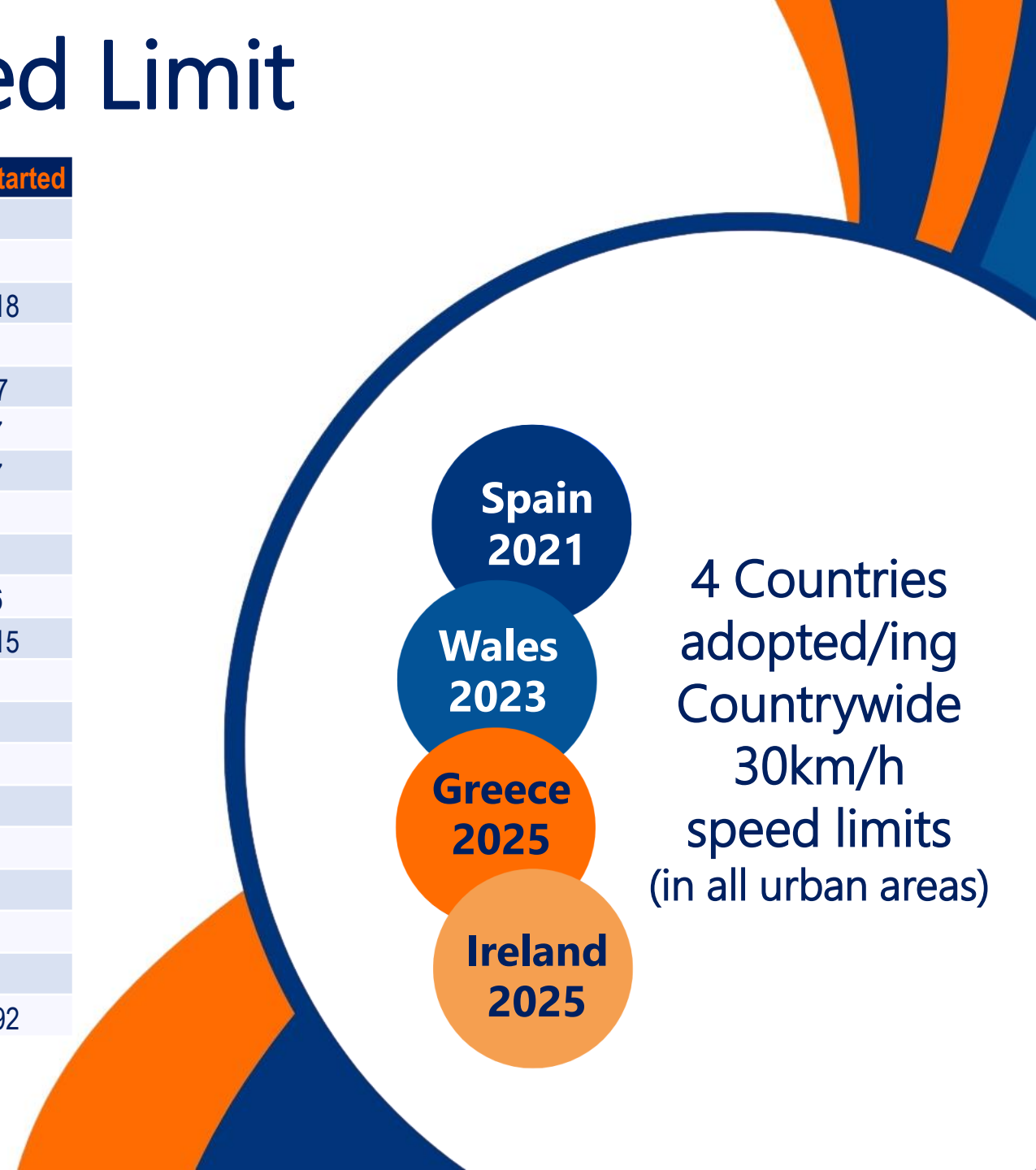


Scientific Evidence on 30km/h City-wide Schemes

Cities with 30 km/h Speed Limit

A/A	City	Implementation Started
40	Amsterdam	December 2023
39	Wales Cities	September 2023
38	Bologna	July 2023
37	Florence	November 2022
36	Copenhagen	June 2022
35	Lyon	March 2022
34	Den Haag	December 2021
33	Zurich	December 2021
32	Toulouse	November 2021
31	Vienna	September 2021
30	Paris	August 2021
29	Montpellier	August 2021
28	Münster	July 2021
27	Valencia	May 2021
26	Leuven	April 2021
25	Brussels	January 2021
24	Nantes	August 2020
23	Glasgow	January 2020
22	Antwerp	January 2020
21	Barcelona	December 2019

A/A	City	Implementation Started
20	Lille	August 2019
19	Helsinki	May 2019
18	Madrid	September 2018
17	Bilbao	June 2018
16	Strasbourg	February 2017
15	Dublin	January 2017
14	Berlin	January 2017
13	Edinburgh	July 2016
12	London	June 2016
11	Grenoble	January 2016
10	Ljubljana	September 2015
9	Luxembourg	August 2015
8	Ghent	April 2015
7	Bristol	2015
6	Munich	2011
5	Brighton	2010
4	Hove	2010
3	Warrington	July 2005
2	Stockholm	2004
1	Graz	September 1992



4 Countries adopted/ing Countrywide 30km/h speed limits (in all urban areas)

30km/h Speed Limit in Cities (1/2)

Yannis, G., & Michelaraki, E. (2024). Review of City-Wide 30 km/h Speed Limit Benefits in Europe Sustainability, 16(11), 4382

City-wide 30km/h speed limits led to average reduction in:
(meta-analyses of 70 studies from 17 cities)

- Fatalities by 37%
- Serious injuries by 38%
- Road crashes by 23%
- Emissions by 18%
- Noise by 2.5 db
- Fuel consumption by 7%
- Traffic congestion by 2%

30km/h Speed Limit in Cities (2/2)

Yannis, G., & Michelaraki, E. (2024). Review of City-Wide 30 km/h Speed Limit Benefits in Europe Sustainability, 16(11), 4382

Fatalities:
- *63% and 55% reduction* in Bristol and Brussels

Serious injuries:
- *72% and 50% reduction* in Münster and Grenoble

Road crashes:
- *46% and 40% reduction* in London and Paris

Emissions:
- *29% and 25% reduction* in Berlin and Graz

Noise:
- *3 db reduction* in Paris and Berlin

Energy:
- *12% and 10% reduction* in Münster and Brussels

Traffic congestion:
- *9% and 2% reduction* in Grenoble and Bilbao

City	Safety			Emissions		Energy	Traffic
	Crashes	Fatalities	Injuries	CO_2, NO_x, PM	Noise	Fuel	Congestion
Bologna	-38%	-33%	-10%	-23%			-3%
Zurich	-16%	-25%	-20%		-1.7 dB		
Paris	-40%		-25%		-3 dB		
Münster			-72%	↓	↓	-12%	
Brussels	-10%	-55%	-37%		-2.5 dB	-10%	
Glasgow		-31%					
Helsinki	-9%		-42%				
Bilbao	-28%			-19%			-2%
Berlin	-10%			-29%	-3 dB		
London	-46%	-25%	-25%	-10%			
Grenoble	↓	↓	-50%				-9%
Edinburgh	-38%	-23%	-33%	-8%			-2.4%
Bristol		-63%					
Brighton			-45%				
Hove			-45%				
Warrington			-43%				
Graz	-12%		-20%	-25%	-2.5 dB		

** grey colour indicates that the impact of the implementation of 30 km/h in this city has not been examined yet*
*** the symbol ↓ indicates that the quantitative effect of this measure has not been provided; only qualitative impact is given*
**** these reductions refer to a comparison period before and after the implementation of 30 km/h speed limits which is not the same among all cities examined*

Effectiveness of 30 km/h Speed Limit

Yannis, G., & Michelaraki, E. (2024). Effectiveness of 30 km/h speed limit – A literature review. Journal of Safety Research, Vol. 92, November 2024

Road safety

- decrease average travel speed
- decrease conflicts with VRUs

Environment

- reduce air pollution
- reduce car dependency

Traffic flow

- reduce traffic volumes
- reduce congestion

Energy

- reduce fuel consumption
- promote smoother eco-driving

Sustainability

- increase Public Transport use
- increase pedestrian, cyclists and e-scooter active mobility

Setting a speed limit of 30 km/h where people and traffic mix, make streets
safer, healthier, greener and more liveable

Data and Analysis Overview

Data Used for the Assessment (1/2)

Speed and traffic data

- Speed measurements before and after implementation
- Traffic volume per day
- Vehicle kilometers travelled (VKT) in the area
- Number of pedestrians or cyclists using the road

Crash, fatality & injury data

- Total number of crashes
- Injury crashes, categorized by severity (minor, serious)
- Fatal crashes
- Crash rates per km traveled or per 1,000 people
- Involvement by road user type (pedestrians, cyclists, motorcyclists)

Environment data

- Air pollution measured using roadside air quality monitors (e.g. NO_2, $PM_{2.5}$ levels)
- Decibel measurements before and after speed reductions
- Vehicle travel times, stop-and-go frequency, intersection delays

Data Used for the Assessment (2/2)

Modal Shift Data

- Pedestrian and bicycle traffic
- Bike-share/Micromobility Data
  (Usage statistics can reflect increased active travel)

Public Perception Surveys

- Residents' sense of safety, comfort, and satisfaction
- Street Audits: Assessments of aesthetics, safety and social use of streets

Street Design Changes

- Introduction of wider sidewalks, parklets, or play streets
- Before-and-after imagery or GIS data showing reclaimed space for people

Health Outcomes

- Lower injury rates, less respiratory illness (linked to air quality)
- Physical activity rates through surveys or apps (e.g. step counts)
- Increased social interaction and lower stress from safer streets

Necessary Key Performance Indicators

- 8 necessary Key Performance Indicators (KPIs) to access the effectiveness of city-wide 30km/h speed limit:

Key Performance Indicator	Description	Collection Method	Data Source	Frequency
Speeding (via cameras)	Percentage of vehicles exceeding 30km/h limit detected via cameras	Speed Cameras	Traffic Police, Speed Cameras	Daily/Monthly
Speed (Average & Instantaneous)	Average and instantaneous speed of vehicles on roads	GPS, Radar, Traffic Sensors	City Traffic Data	Real-time/Daily
Volume (Traffic flow count)	Number of vehicles passing per hour/day	Inductive Loops, Sensors	Traffic Cameras	Real-time
Braking & Acceleration events	Instances of harsh braking or acceleration	Telematics, GPS	Fleet Data, Sensors	Monthly
Use of Helmets (for VRUs)	Percentage of VRUs wearing helmets	Camera Analytics, Surveys	Roadside Observations	Quarterly
Crashes (Crash count & severity)	Number and severity of crashes	Police Reports, Hospitals	Emergency Services	Monthly
Air Quality (NO_2, $PM_{2.5}$, CO_2, O_3)	Concentration levels of key air pollutants	Air Quality Sensors, Environmental Monitoring	Environmental Agencies, Air Quality Monitoring Stations	Real-time/Daily
Driver Feedback	Driver perception and compliance with 30km/h speed limit	Surveys, Feedback Devices, Mobile Apps	Transportation Authorities, Community Reports	Quarterly

Evaluation of Results

- Before-and-After analysis methods without control area

  - Studies with analysis of individual sites (Poisson, X^2, crash difference)
  - Studies with site population analysis (Hauer, Bayes)

- Before-and-After analysis methods with control area

  - Large Control Area
  - Small Control Area

Cost Benefit Analysis Example

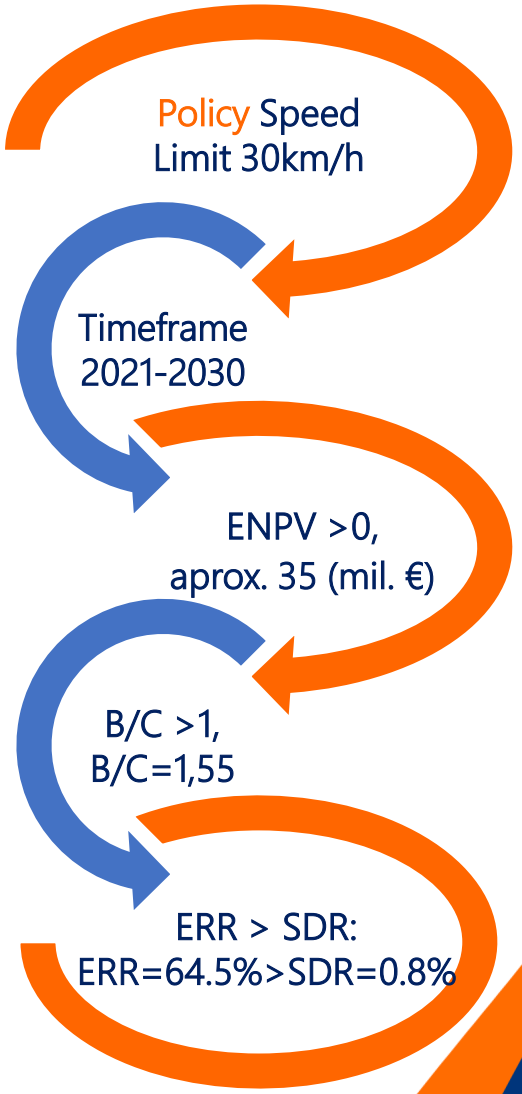
Cost Benefit Analysis Results – Athens (1/2)

Roussou, S., Petraki, V., Deliali, K., Kontaxi, A. & Yannis, G. (2024). Cost benefit analysis of reducing speed limits in Athens to 30 Km/h. Case Studies on Transport Policy, 101289, October 2024

A Cost Benefit Analysis for the City of Athens was implemented till the year 2030, by including all the Costs (Implementation and Operational) and all the Benefits (Road Crashes, Fuel Consumption, Emissions) which concludes to the following results:

- The most important economic benefit arises due to the improvement of road safety through the reduction of fatalities on road crashes:
  - ✓ Expected Net Present Value (ENPV) > €35 million
  - ✓ Benefit-Cost Ratio (B/C) = 1,55
  - ✓ Economic Rate of Return (ERR) = 64.5%
  - ✓ Social Discount Rate (SDR) = 0.8%

- All the examined policies present a positive ENPV and an ERR higher than the SDR, indicating their feasibility over time



Cost Benefit Analysis Results – Athens (2/2)

Roussou, S., Petraki, V., Deliali, K., Kontaxi, A. & Yannis, G. (2024). Cost benefit analysis of reducing speed limits in Athens to 30 Km/h. Case Studies on Transport Policy, 101289, October 2024

- It is estimated that city-wide 30 km/h speed limits on the road network of City of Athens (with the exception of major axes) will save lives annually:
  - 33 fatalities
  - 83 seriously injured and 830 slightly injured
  - fuel consumption by 48 million litres
  - 65.5 thousand tonnes of CO_2, NO_X και PM
- The traffic congestion change is negligible
- The indirect benefits of increasing the use of Public Transport and active travel are also significant

Benefits from Countrywide New Speed Limits

It is estimated that city-wide 30 km/h speed limits on the road network of all cities in Greece (with the exception of major axes) will save lives annually:

- 104 fatalities (out of 635 in Greece)
- 123 seriously injured (out of 636 in Greece)
- 783 slightly injured (out of 12,533 in Greece)

New Greek Road Code - 30km/h speed limit

- 30km/h speed limit is foreseen in all urban areas in Greece
- Under final checking by the Government – expected to be voted before summer 2025
- Foreseen to be in force from 1 November 2025
- Initial prevision for all one-way one lane urban roads
- Accompanied by:
  - a more rational fines system (linked to the severity and the size of the infraction)
  - a large number of speeding monitoring cameras
  - a new digital system for automated processing of fines


30km/h
Speed Limit for
Safer, Healthier and
Greener Cities
30

Conclusion

City-wide 30km/h speed limits: the road safety catalyser

The since-long waited **single road safety measure with such a significant benefit** at such a low cost

Such a **high societal impact** for such a small change in our habits

More than a simple new traffic rule: **a catalyser for a new road safety culture**

Conclusion

More livable cities

Speed limits reduction gaining rapid acceptance across Europe and **more and more European cities** adopting lower speed limits

Significant socio-economic impact

The reduction of speed limits in cities (30km/h) leads to a **significant reduction** in:

- road crashes and casualties
- fuel/energy consumption and air pollution without a significant decrease in travel times

Increase of acceptance

- **Public acceptance** of speed limits reduction tends to improve over time, especially by pedestrians, cyclists and Public Transport passengers
- **Inertia and reactions** from car drivers need to be addressed

Accompanying Measures

- Public consultation and awareness campaigns
- Public transport and active mobility promotion
- Traffic calming measures
- Intelligent transportation systems
- Monitoring and evaluation
- Enforcement and police cooperation

Time for Action at European level

- Speeding, as the key factor for road crashes, must be recognized as a major societal health issue for which action is needed at EU level, as is the case with smoking and alcohol consumption.

- Consequently, the European Union should set the maximum speed limits in all European Roads, and national and local Authorities can only make the necessary adjustments of lower speed limits after specific studies.

- Given its unprecedented benefits, the city-wide 30km/h speed limits should become a European rule (off course with the exception of selected main axes e.g. roads with a median), with the EU assuming thus its fundamental role of protecting its citizens' lives.

30 Marathons in 30 Months

A campaign with high global impact
to actively promote city-wide 30 km/h speed limit

- **26 cities** with Marathon finish
- **10 International Organisations** Allied

- **500.000+ pageviews** per year
- **100.000+ global audience** at social media
- **200 republished posts** from scientific organisations and institutions (with 80.000+ post impressions)
- **40 social media** posts

- **25 interviews** in the electronic media
- **32 newspaper/magazine** articles
- **3 papers** in scientific journals
- **20 presentations** in conferences/webinars

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