IRF INTERNATIONAL ROAD FEDERATION | WORLD CONGRESS 2024

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Assessing the effectiveness of 30km/h speed limit in cities

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Outline

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

Objectives

- Critical assessment of the effectiveness of city-wide 30 km/h speed limit in order to enhance urban sustainability

- Identification of changes before and after the implementation of city-wide 30 km/h speed limits in terms of:

Safety Emissions Energy Traffic Liveability Health

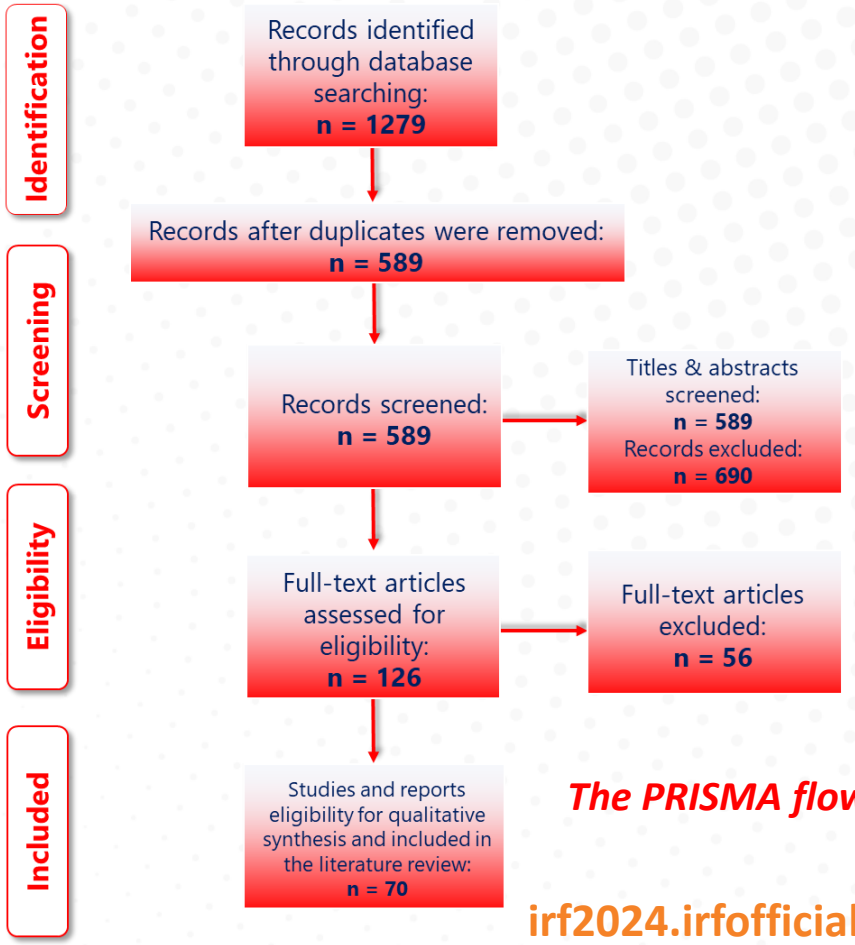
Methodology

- **Meta-analyses from 17 cities and 70 studies** 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

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



The PRISMA flowchart

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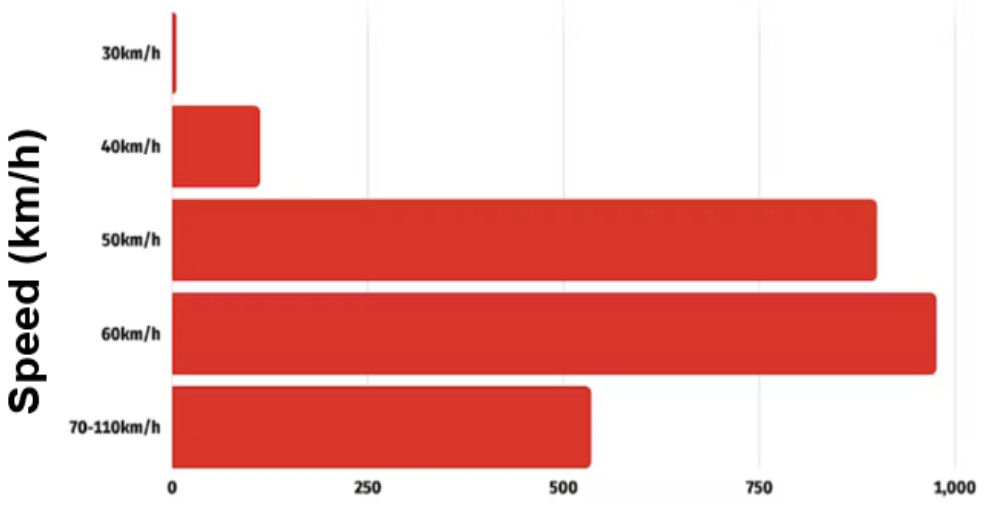
Key Facts about Speeding

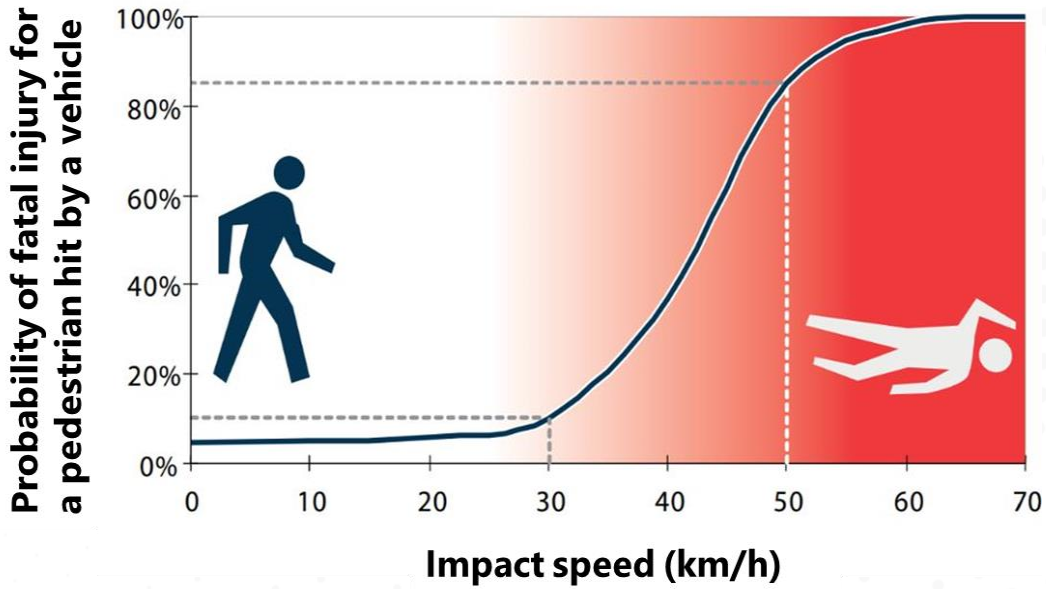
Speeding Kills (1/2)

- 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

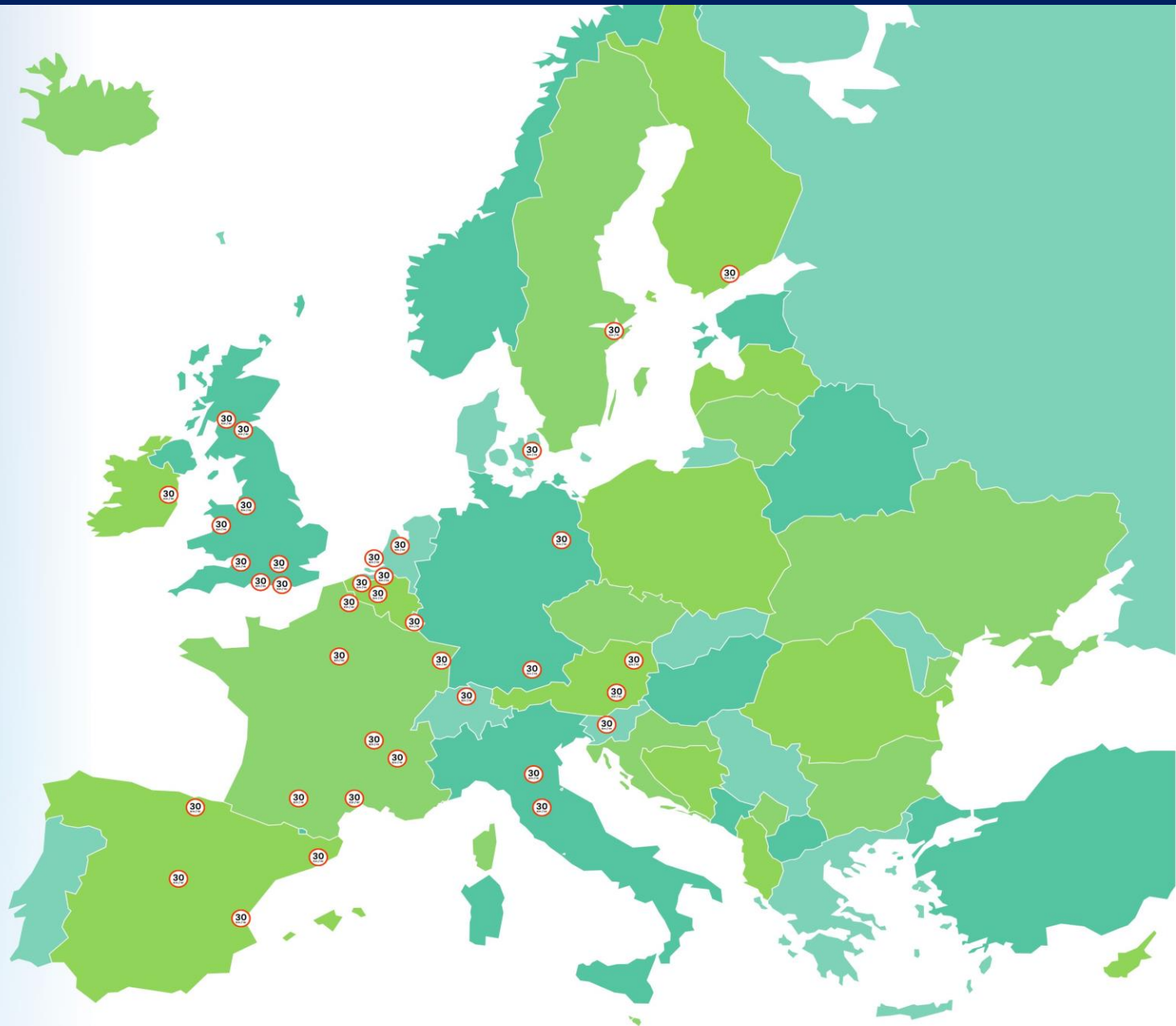
Speeding Kills (2/2)

- 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



Benefits from 30km/h Speed Limit (1/2)

according to international literature

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

Road crashes reduction

- Reductions in speed limits are intended to improve road safety by **decreasing travelling speed** and thus reducing the risk of crashes occurring and the severity of crashes that do occur
- The risk of death is almost **five times higher** in collisions between a car and a pedestrian at 50 km/h compared to the same type of collisions at 30 km/h

Air pollution reduction

- Streets that promote safe walking and cycling can **reduce car dependency** and harmful vehicle emissions that contribute to climate change
- City-wide 30 km/h speed limit reduce carbon dioxide and nitrous oxide emissions from diesel cars, and particulate matter emission from both diesel and petrol cars, thus **reducing air pollution**

Benefits from 30km/h Speed Limit (2/2)

according to international literature

Fuel consumption reduction

- Lower speeds lead to **lower fuel consumption**
- **Smoother traffic flow** leads to additional fuel economy (eco-driving)

Traffic flow improvement

- **Motor traffic volumes decrease**, since slower speeds encourage active, sustainable and shared travel
- Reducing the speed limit at 30km/h improves traffic flow, **reduces congestion** and improves travel times as there is less stop/start traffic movement

Sustainable improvement

- Calm driving in lower speeds is a mean of **healthier living** for all road users; and especially children and the elderly walk more freely
- Significant increase (in the mid-term) of **pedestrian, cyclists and e-scooter active mobility** and Public Transport passengers

Cities with 30 km/h Speed Limit

A/A	City	Implementation Started
40	Amsterdam	December 2023
39	Wales	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

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 from 17 cities and 70 studies)

- 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*

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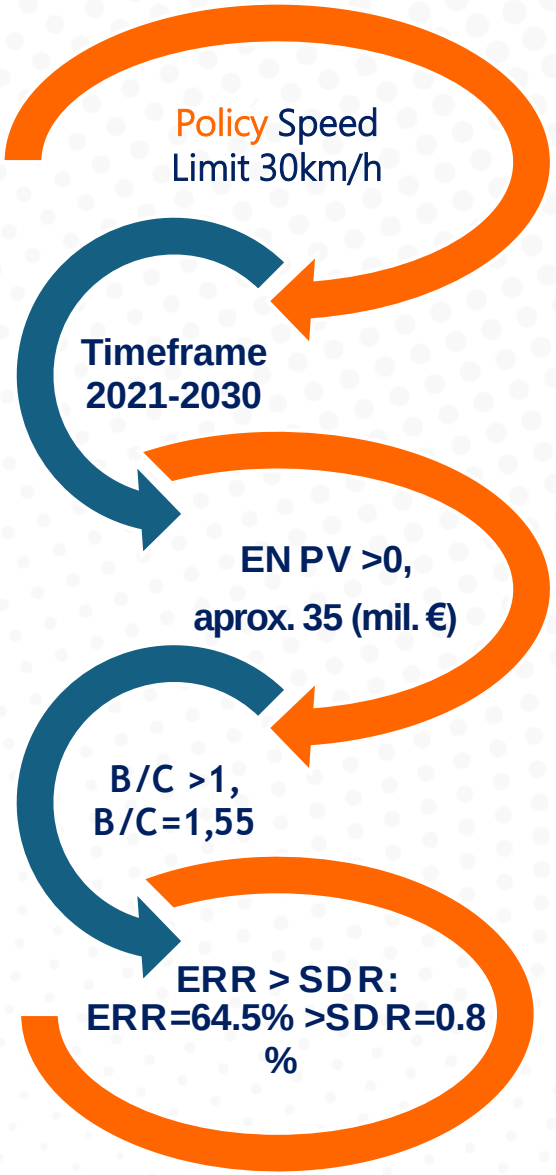
Cost Benefit Analysis Example

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**:

- In the case of the reduction of the speed limit to 30 km/h in the city center, the **society benefits** from a reduction in road casualties amount to **€130 million** over a 10-year period
- All the examined policies present a **positive ENPV** and an ERR higher than the Social Discount Rate (0.8%), indicating their feasibility over time
- The most important economic benefit arises due to the improvement of **road safety** through the reduction of fatalities on road crashes



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

Cost Benefit Analysis Results – Greece

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 all of Greece)
- 123 **seriously injured** (out of 636 in all of Greece)
- 783 **slightly injured** (out of 12,533 in all of Greece)

Conclusion


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

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:

- fuel/energy consumption and air pollution
- road crashes and congestion

  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

The road safety catalyser

The implementation
of city-wide 30km/h speed limit
is the since-long waited,
single road safety measure
with such a significant improvement
at such a low cost

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

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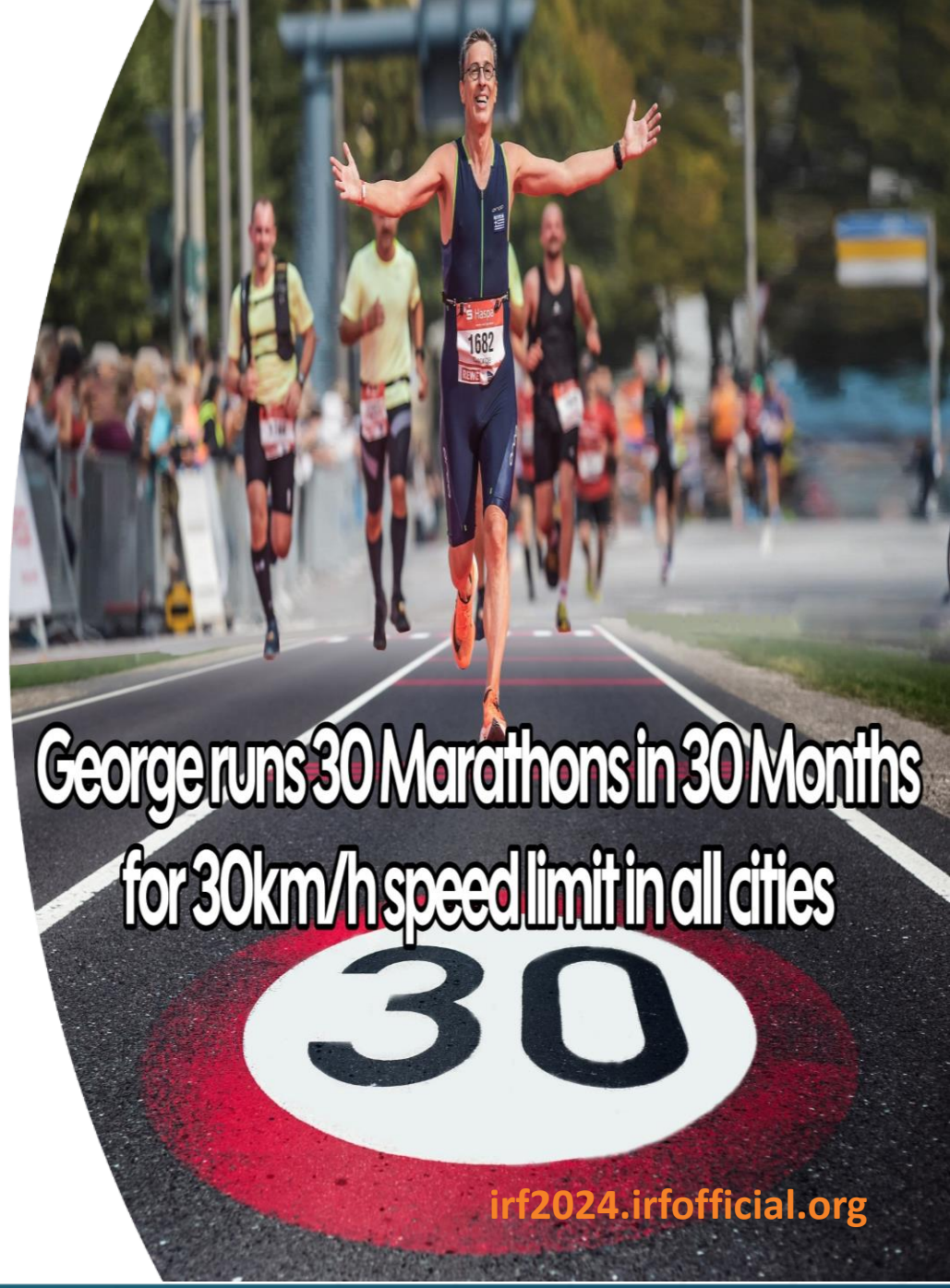
Accompanying Measures

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

30 Marathons Campaign

- Despite the blatant scientific evidence, the discussion and introduction of city-wide 30 km/h speed limit faces strong reactions and rigid inertia, whereas supporters' voices are often **weak and inefficient** resulting in hesitant politicians and Authorities

- After more than 30 years of dedication to road safety science and several Marathon races, **Prof. George Yannis** decided to step beyond the traditional scientific pleas and combine both passions for a cause: to run **30 Marathons in 30 months** to actively promote the adoption of city-wide 30km/h speed limit in as many cities as possible worldwide



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Zagori - Jul 2022

Helsinki - Aug 2022


Antwerp - Sep 2022


London - Oct 2022


Athens - Nov 2022


Valencia - Dec 2022


Malta - Feb 2023

Rome - Mar 2023

Paris - Apr 2023

Belgrade - Apr 2023

Copenhagen - May 2023

Stockholm - Jun 2023

Apeldoorn - Jul 2023

Tallinn - Sep 2023

Brussels - Oct 2023

Lyon - Oct 2023

Athens - Nov 2023

Florence - Nov 2023

Nicosia - Dec 2023

Dubai - Jan 2024

Sevilla - Feb 2024

Barcelona - Mar 2024

Paris - Apr 2024

Zurich - Apr 2024

Utrecht - May 2024

Torhout - Jun 2024

Paris - Aug 2024

Warsaw - Sep 2024

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