Interreg Europe

Co-funded by the European Union

EMBRACER

Transport & Mobility Forum Cork

What's the right tool for the right job: E-Bikes or E-Cars?

Interreg Europe Policy Learning Platform online workshop on e-mobility

Dr Darren McAdam-O'Connell

Coordinator Cork Transport & Mobility Forum

TMFCork@Gmail.com

10 April 2025 | Cork City Hall

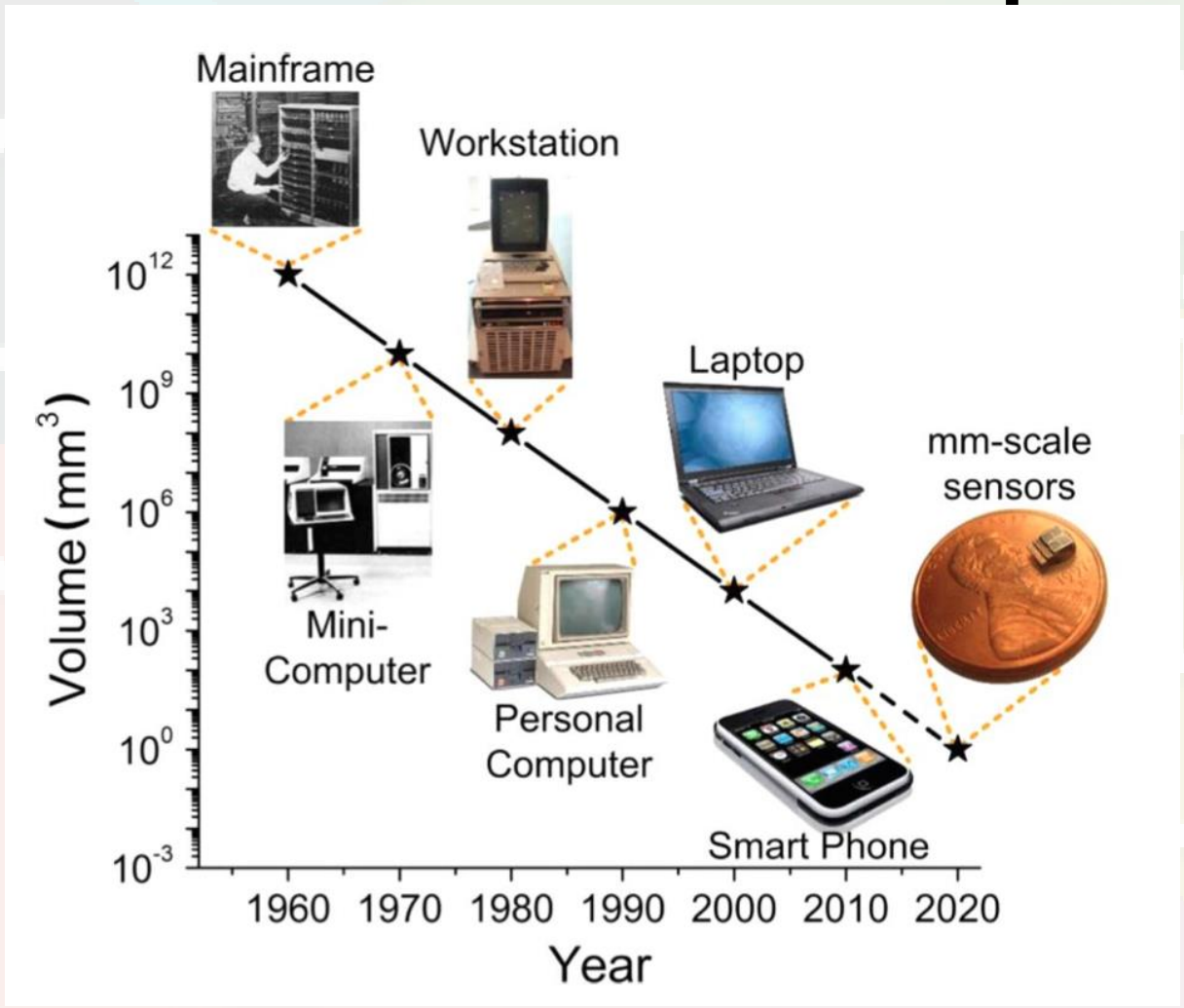
Brief overview of electric mobility Importance of sustainable transportation options

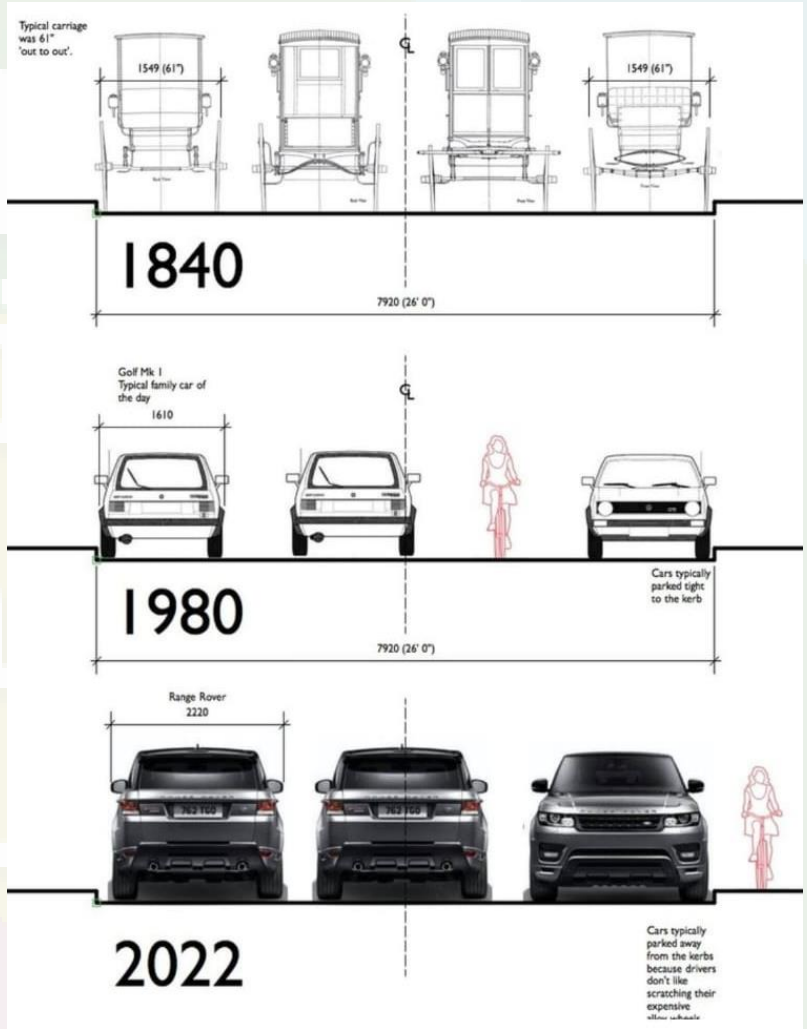
Introduction

www.interregeurope.eu/EMBRACER

CONNECTED

Brief overview of electric mobility Importance of sustainable transportation options





CONNECTED

Definition and types of electric vehicles (EVs)
Advantages of electric mobility
Environmental impact

The Rise of Electric Mobility

www.interregeurope.eu/EMBRACER

CONNECTED

Definition and types of electric vehicles (EVs)
Advantages of electric mobility
Environmental impact

The Rise of Electric Mobility

www.interregeurope.eu/EMBRACER

Advantages of electric mobility over internal combustion

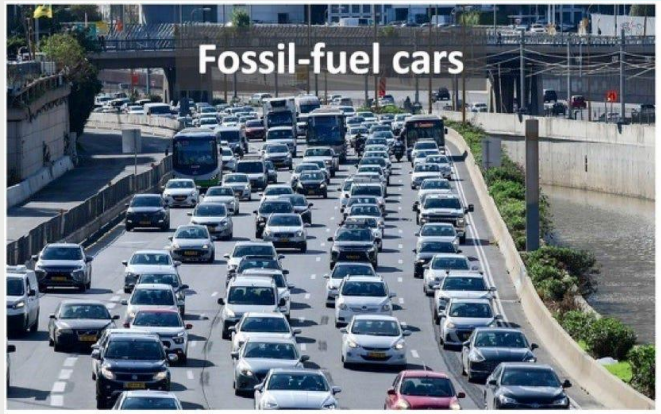
- No tailpipe emissions
- More power efficient
- Cheaper to build & maintain
- CO2 emission free (only if electric generation is)
- Less Noise (only below 30/50 KPH)

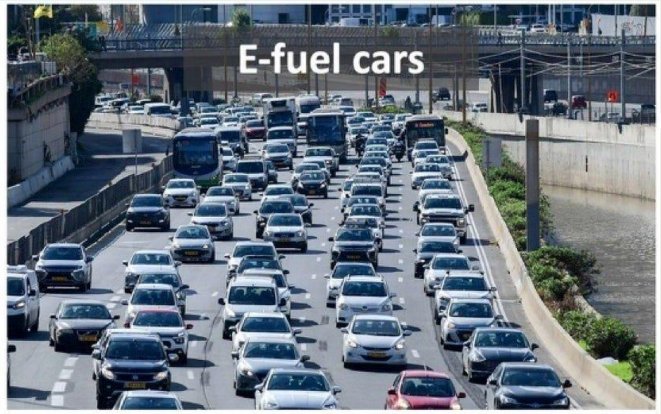
No impact

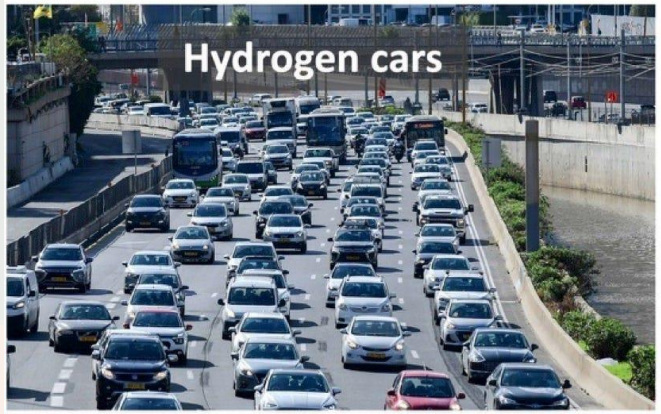
- Congestion & danger to/intimidation of pedestrians
- Friction particulates
- Parking space
- Social isolation

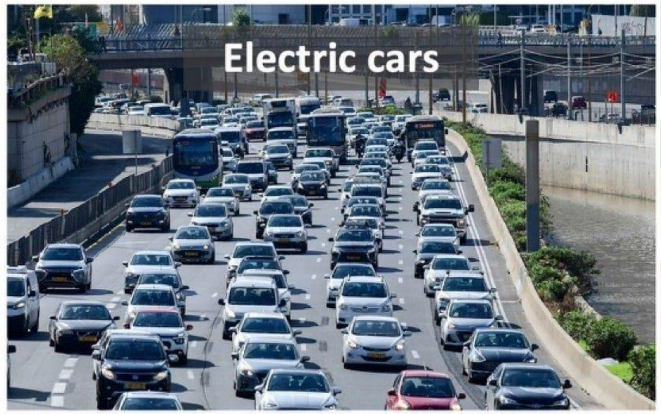
Disadvantages

- Either shorter range or increased weight & cost
- Charging time & demand(only excessively powerful vehicles)

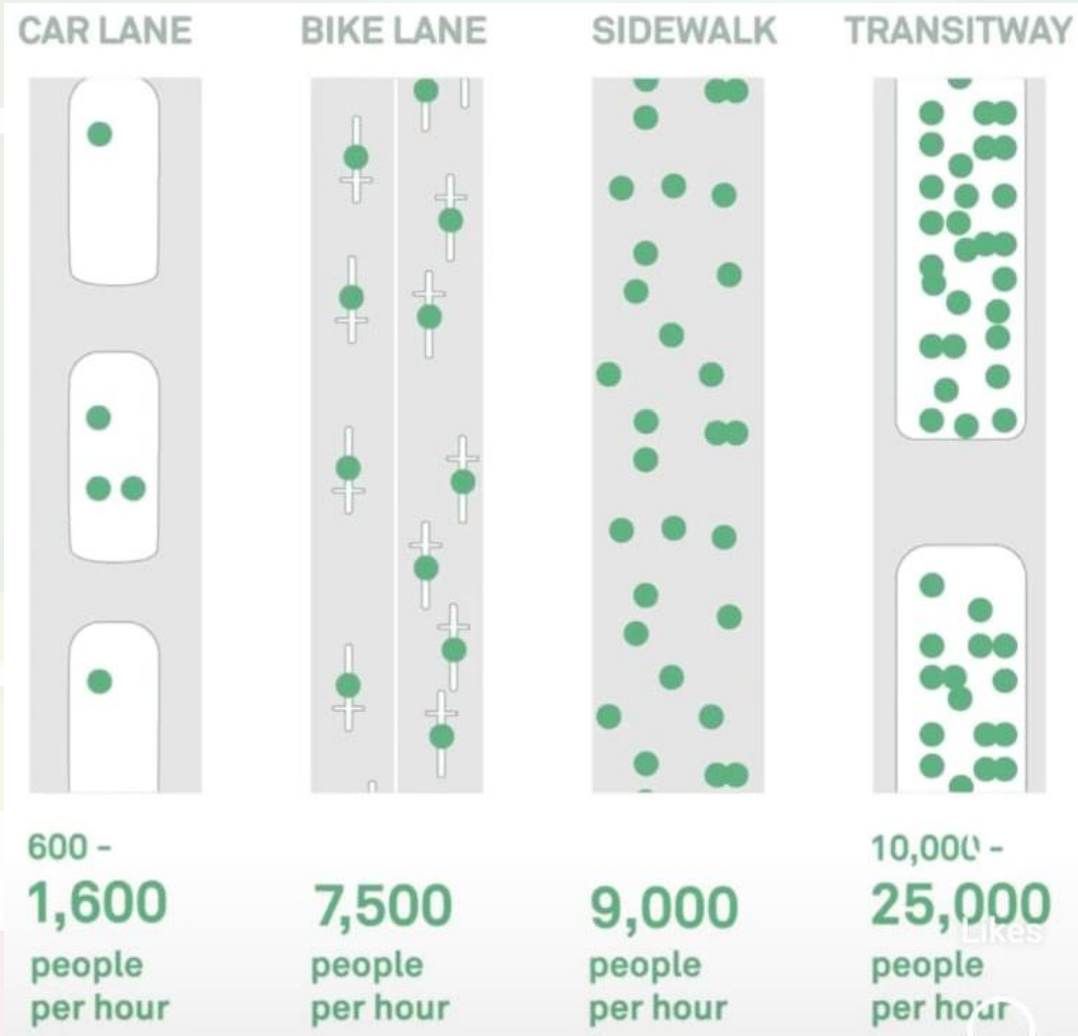

Fossil-fuel cars

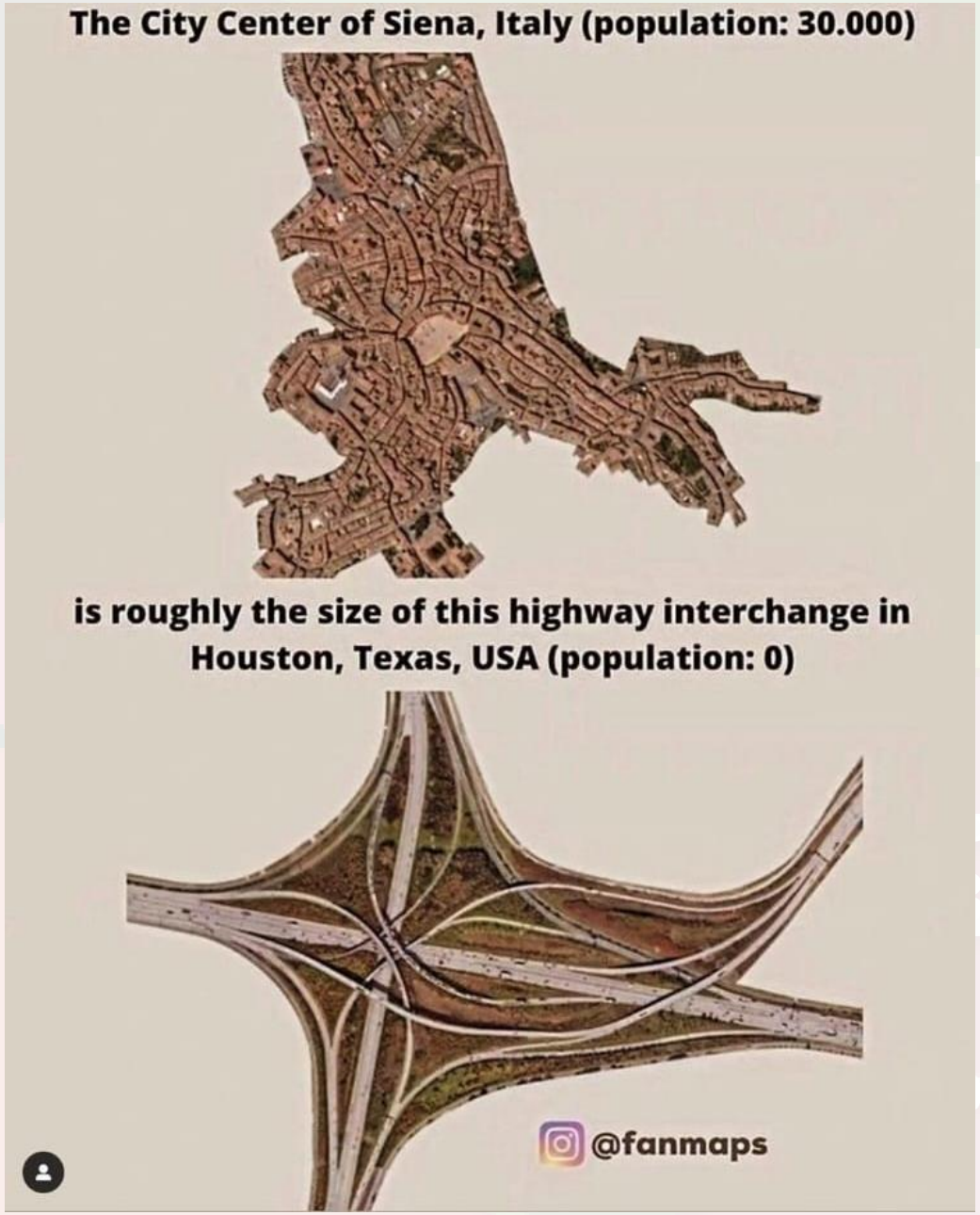

E-fuel cars

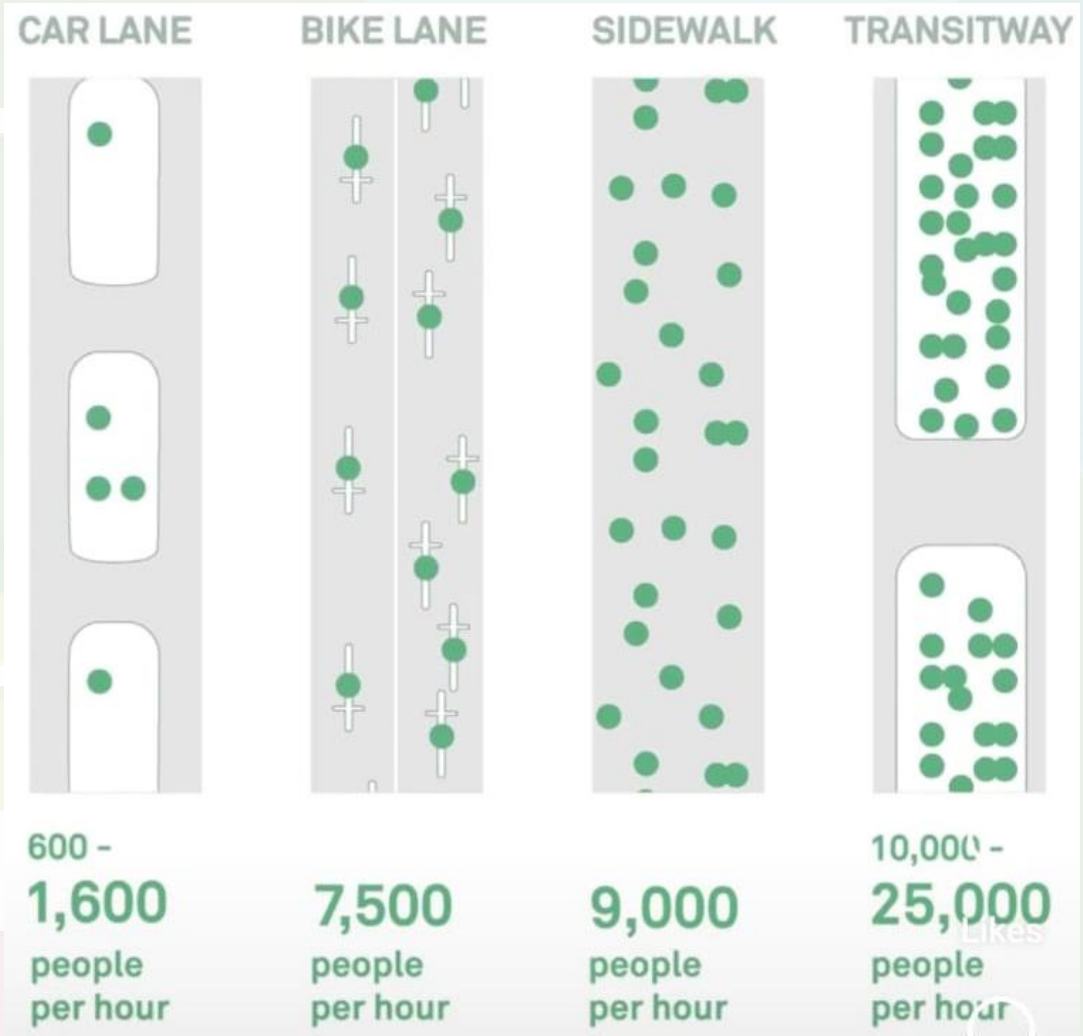

Hydrogen cars


Electric cars

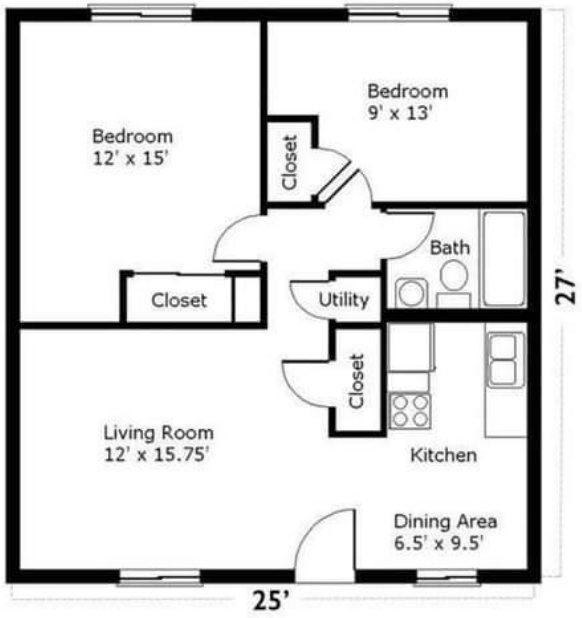
CONNECTED

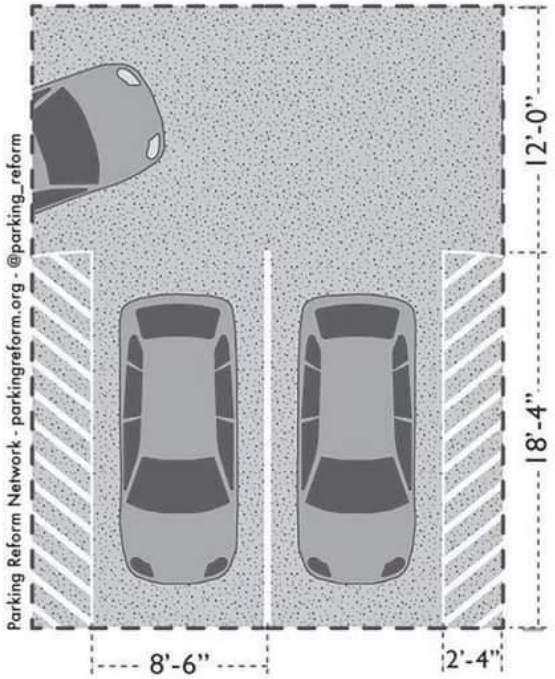

CAR LANE
BIKE LANE
SIDEWALK
TRANSITWAY
600 -
1,600
people
per hour
7,500
people
per hour
9,000
people
per hour
10,000 -
25,000
people
per hour


The City Center of Siena, Italy (population: 30.000)
is roughly the size of this highway interchange in Houston, Texas, USA (population: 0)
@fanmaps


CAR LANE
BIKE LANE
SIDEWALK
TRANSITWAY
600 -
1,600
people
per hour
7,500
people
per hour
9,000
people
per hour
10,000 -
25,000
people
per hour

Living Space Vs. Parking Space





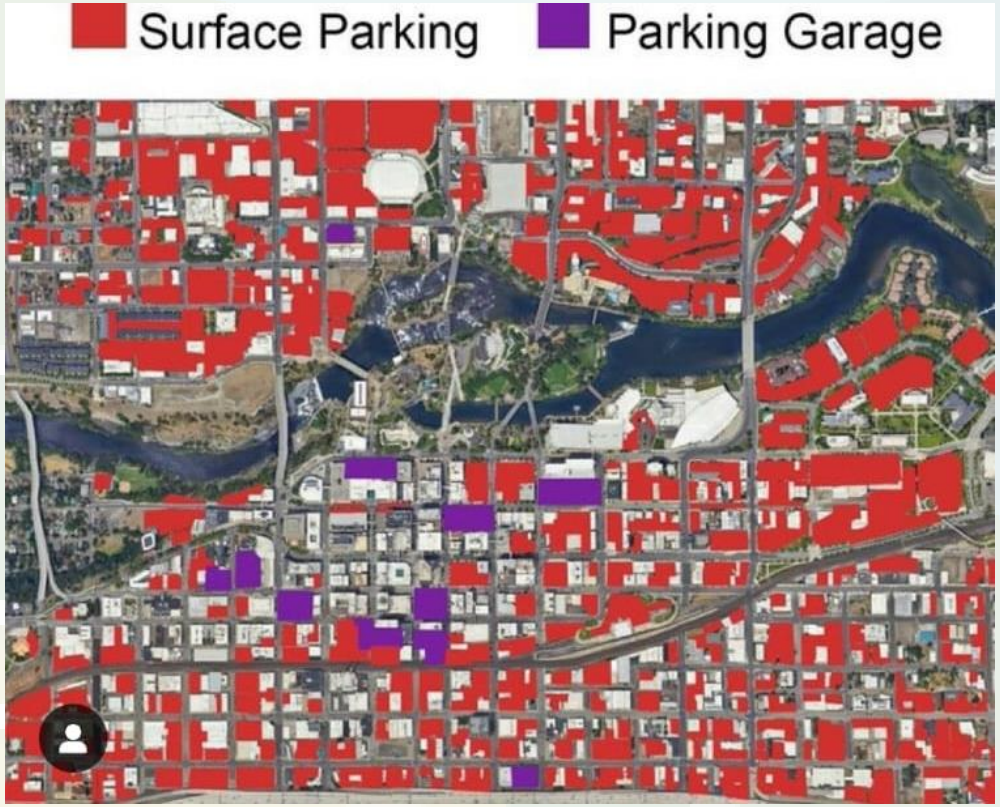
size for 2 bedroom apartment: 675 FT²

size for 2 parking spaces: 650 FT²

Sources: Transportation Cost and Benefit Analysis II – Parking Costs Victoria Transport Policy Institute (www.vtpi.org)

Graphic Adapted from Graphing Parking (https://graphingparking.com/2013/07/23/parking-across-cascadia/)

Image compiled by the Parking Reform Network - https://parkingreform.org/ - @Parking_Reform



CONNECTED

Definition and types of electric vehicles (EVs)
Advantages of electric mobility
Environmental impact

The Rise of Electric Mobility

www.interregeurope.eu/EMBRACER

Advantages of electric mobility

- No tailpipe emissions
- More power efficient
- Cheaper to build & maintain
- CO2 emission free (only if electric generation is)
- Less Noise (only below 30/50 KPH)

No impact

- Congestion & danger to/intimidation of pedestrians
- Friction particulates
- Parking space
- Social isolation

Disadvantages

- Either shorter range or increased weight & cost

Definition and types of electric vehicles (EVs)
Advantages of electric mobility
Environmental impact

	Cost	Power	Range	Battery	Max Speed	Weight	Length	Width	Passengers	Luggage Volume	Charger Power
	Euros	KW	KM	KWh	KPH	Kg	Meters	Meters	Number	Liters	KW
Hyundai Tucson	€ 51,945	169	-	13.8	205	1,700	4.67	1.87	5/2	620/1799	360/11.5
Tesla Model Y	€ 56,085	286	533	81	217	1,998	4.75	1.92	5/2	117/2041	360/11.5
Citroen Ami	€ 9,990	6	75	5.5	45	485	2.41	1.39	2	63	3.6
Urban Arrow	€ 5,599	0.5	50	0.8	50	51	2.6	0.7	3/5	350	0.1
Christiania Classic	€ 3,218	0.45	50	0.69	50	36	2.08	0.87	5/1	513/1283	0.1
Kuma Alpa E	€ 2,999	0.25	100	0.36	70	27	1.9	0.67	3/1	50/250	0.1
Kuma Sum Uco	€ 1,799	0.25	100	0.38	80	26	1.7	0.67	1	100	0.1
Fido C11	€ 899	0.25	90	0.5	80	24.5	1.8	0.67	1	50	0.1

Definition and types of electric vehicles (EVs) Advantages of electric mobility Environmental impact

The Rise of Electric Mobility

www.interregeurope.eu/EMBRACER

	Power draw KW	Total per 1GW (Typical total Irish wind power)	Total per 3GW (Typical total Irish Generation)
Bike Charger	0.1	10,000,000	30,000,000
Domestic Plug Max	3	333,333	1,000,000
Oven/shower/heating Max	5	200,000	600,000
Domestic Max Allowed load	9	111,111	333,333
EV- Charger Min	11.5	86,957	260,870
Domestic Max Capacity	12	83,333	250,000
EV-Fast Charger	360	2,778	8,333

Definition and types of electric vehicles (EVs)
Advantages of electric mobility
Environmental impact

The Rise of Electric Mobility

www.interregeurope.eu/EMBRACER

Advantages of electric mobility over human powered

- More accessible
- Hills/heat removed as an issue
- Greater range
- Greater capacity to carry passengers/cargo
- Faster (in some scenarios)
- Ability to add an enclosure

No impact

- All the existing health & social advantages of cycling
- All the danger and stigmatisation from car culture

Disadvantages

- Increased weight & cost

What is an e-bike?
Functionality of e-bikes
Variety of e-bike models and their purposes

E-Bikes as an Essential Tool

www.interregeurope.eu/EMBRACER

CONNECTED

1

Liked by **cdvb2002** and others

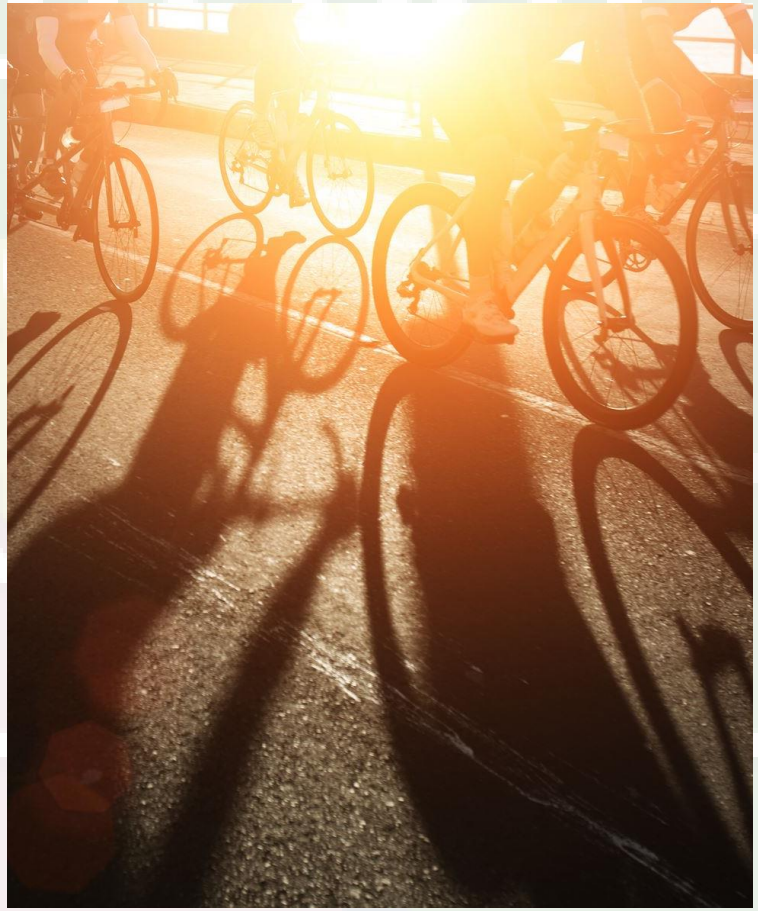
cycling_embassy After losing mobility in her legs, Sanne Simons thought her days as a postwoman were over. But thanks to a customized wheelchair and PostNL's Connect Carrier Cargo pilot, she's back on the job—the first wheelchair-using postwoman at PostNL.

Regular exercise in old age helps stop immune decline and shields people from infections. Scientists tracked 125 long-distance cyclists, some in their 80s, and found their immune systems worked like those of 20-year-olds.

Increased speed and efficiency in congested areas
Greater reliability and resilience
Accessibility and convenience for short commutes
Health and fitness benefits

Benefits in Urban Environments

www.interregeurope.eu/EMBRACER



CONNECTED

Extended range capabilities for longer distances
Improved accessibility to remote areas
Cost-effective alternative to traditional vehicles
Ability to traverse diverse terrains

Advantages for Rural Areas

www.interregeurope.eu/EMBRACER

CONNECTED

Increased productivity in everyday urban environments

Case Studies and Success Stories

www.interregeurope.eu/EMBRACER

Advantages of E-bikes over Driving

- Cheaper to build & maintain
- Faster, more predictable, reliable & resilient
- Parking not an issue
- More accessible & flexible

Advantages of E-bikes over human powered

- Hills/wind not an issue
- Arriving fresh
- Cargo capacity
- Ability to add an enclosure

The use of an e-bike to conduct the SECAD sustainable communities' Sustainable Transport Audit community engagement project in rural areas

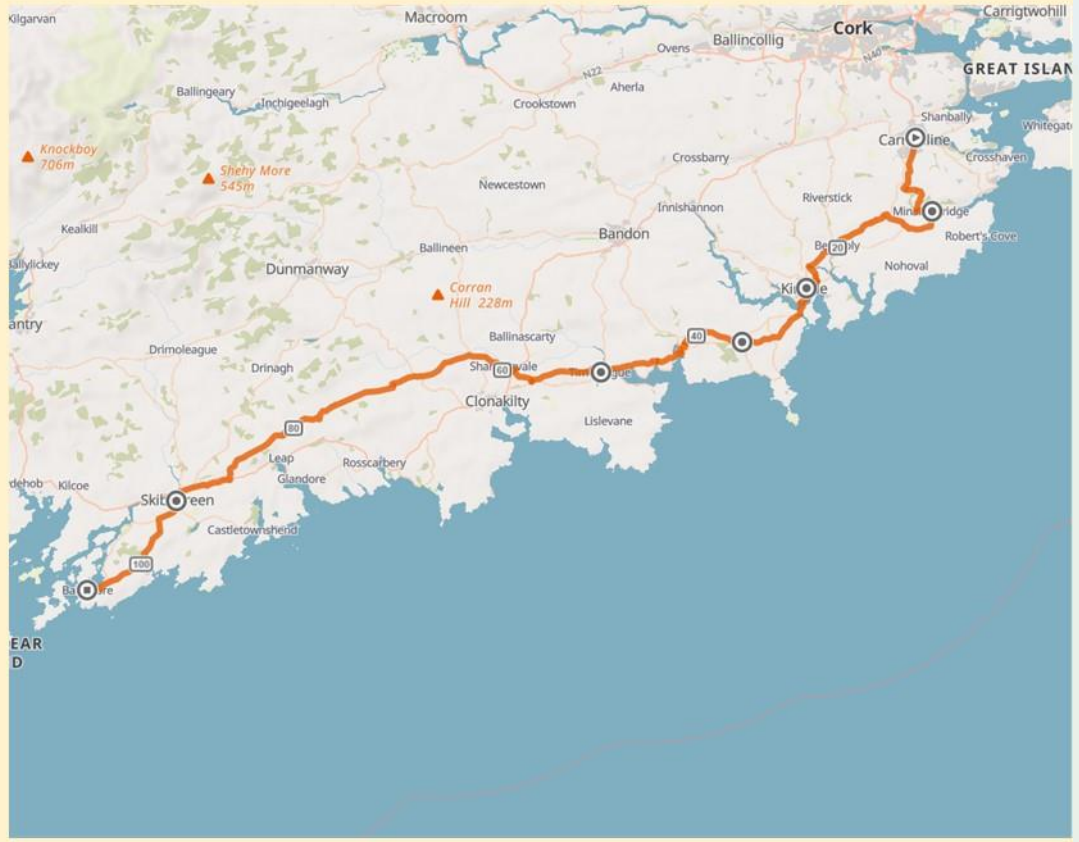
Case Studies and Success Stories

www.interregeurope.eu/EMBRACER

CONNECTED

Communities' location and distance

All communities are to some extent coastal, not all communities are centered on the coast but they all either touch the coast or have no other significant continuity between them and the coast. A network linking these communities would therefore form a linear coastal route rather than a network connecting communities in 2 dimensions. With the exception of Carrigaline and Skibbereen at either end of the project area the focus of transport links in the majority of these communities link usually inland to another larger community towards the major routes connecting to cork



The use of an e-bike for long distance travel Cork-Coimbra staff exchange in the EMBRACER INTERREG project

Case Studies and Success Stories

www.interregeurope.eu/EMBRACER

Cork to Coimbra

CONNECTED

Design and regulatory advancements and innovations
Potential market growth and adoption rates
Government policies and incentives

Future Prospects of E-Bikes in Electric Mobility

www.interregeurope.eu/EMBRACER

- We need a more vehicles that bridge the gap between e-bikes and E-bikes
- We need smaller, lighter, less powerful E-Cars
- We need design standards that optimise/target lower speeds, design speed 100-120 Kph typical speeds 5-50 kph
- We need design standards that limit the weight of batteries, typical journeys 2-50km, range anxiety with 500km range!!!
- Incentives need to be targeted at smallest/cheapest vehicle required not at the largest more expensive
- Incentives need to be targeted at those who most need it, rural, disabled, poor, rather than affluent urban early adopters.

Design and regulatory advancements and innovations
Potential market growth and adoption rates
Government policies and incentives

Future Prospects of E-Bikes in Electric Mobility

www.interregeurope.eu/EMBRACER

	Cost	Passengers	Luggage Volume	Appropriate subsidy	Percent of cost covered	Percent of Population covered
	Euros	Number	Liters	Euros		
Hyundai Tucson	€ 51,945	5/2	620/1799	€ 10,000	19%	5%
Tesla Model Y	€ 56,085	5/2	117/2041	€ 10,000	18%	5%
Citroen Ami	€ 9,990	2	63	€ 2,500	25%	20%
Urban Arrow	€ 5,599	3/5	350	€ 2,500	45%	20%
Christiania Classic	€ 3,218	5/1	513/1283	€ 2,500	78%	20%
Kuma Alpa E	€ 2,999	3/1	50/250	€ 1,500	50%	33%
Kuma Sum Uco	€ 1,799	1	100	€ 1,000	56%	50%
Fido C11	€ 899	1	50	€ 1,000	111%	50%

Design and regulatory advancements and innovations
Potential market growth and adoption rates
Government policies and incentives

Future Prospects of E-Bikes in Electric Mobility

www.interregeurope.eu/EMBRACER

- Prioritise incentives to smaller/cheaper EVs(bikes>cars)
- Much tighter max size & weight for personal vehicles
- Even tighter max size & weight for urban vehicles
- Urgent need to concentrate on qudracycles, a class of vehicles between cars & e-Bikes, Meso-mobility
- We need design standards that assume 30/50 kph optimum speed
- Design streets, roads, parking, whole communities for micro & meso mobility rather than tradition cars

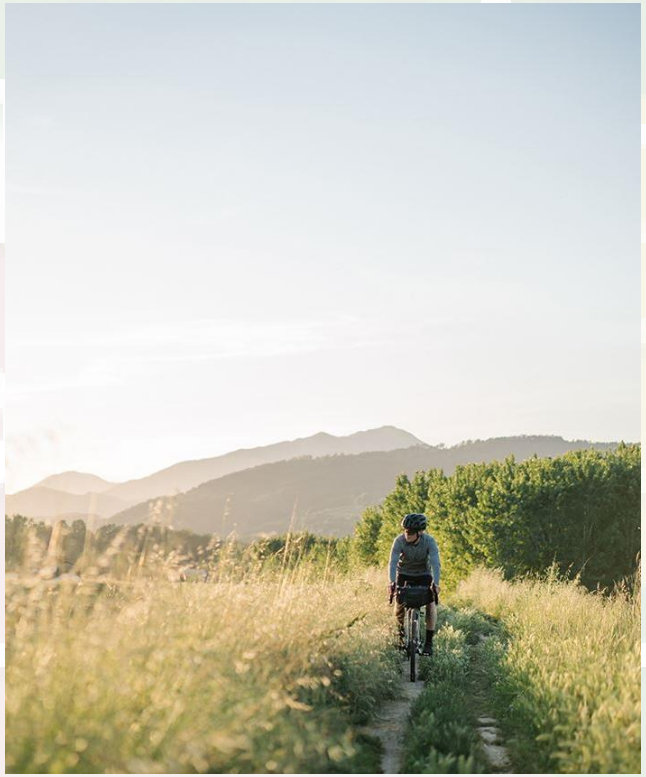
We need to move beyond the hard boundary between car centric thinking, Maro-mobility (full size Public transport, e-Cars Vans etc.) and micro-mobility (e-bikes, bikes, e-soooters etc.) to embrace appropriate meso-mobility solutions

Recap of key points
Encouragement to consider e-bikes as a viable transportation option
Call to action for sustainable mobility solutions

Conclusion

www.interregeurope.eu/EMBRACER

CONNECTED



Time for questions

Thank you!

www.interregeurope.eu/EMBRACER

Interreg Europe

Co-funded by the European Union

EMBRACER

The project EMBRACER is implemented in the framework of the Interreg Europe programme and co-financed by the European Union.

www.interregeurope.eu