

Barcelona Rethinking models of mobility and public space

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Barcelona In Summary.....

Population	N=1.6 million (≥20 years N=1.3 million)
Area	100 km ² (high population density = 16,000 p/ km ²)
Climate	18 °C mean temperature, hot summers, mild winters, low precipitation
Vehicle fleet	500,000 cars and 300,000 motorcycles + large daily suburban commuter fleet (highest traffic density in Europe)
Urban design	Narrow street canyons Dense construction of semi-tall buildings (5-6 stories)
Mobility	6.8 million trips per day. 7 out of 10 within the city.
Green spaces	7 m ² per resident

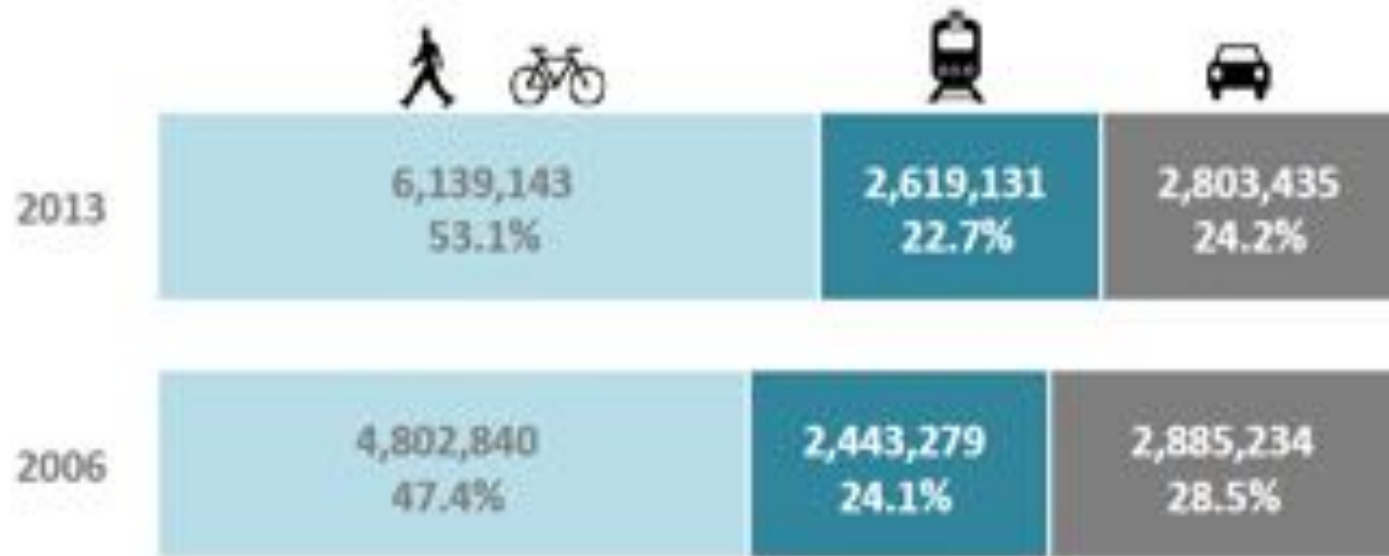
Challenges

- Urban green space deficit: 1,85 m² per inhabitant (Eixample District).
- High levels of pollution: 3,500 premature deaths per year in the Metropolitan Area of Barcelona.
- High road accident: more than 11,000 injured in traffic accidents (2015).
- Sedentary lifestyle: 1 in 5 children between 0 and 18 years presents overweight.
- Noise pollution: 57.5% of the population is exposed to levels above 65 dBA noise during the day.

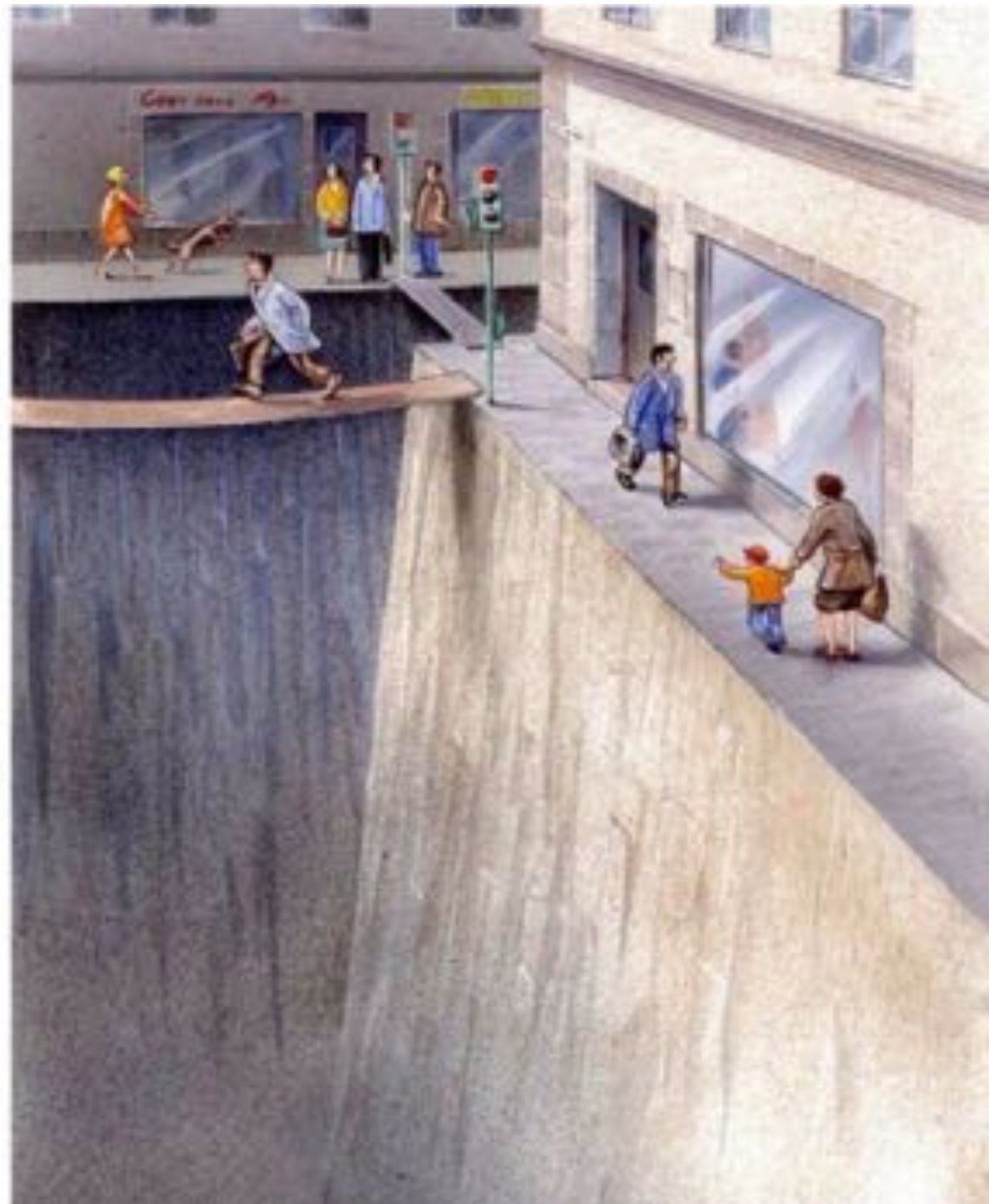


Mobility

Metro area transport modes

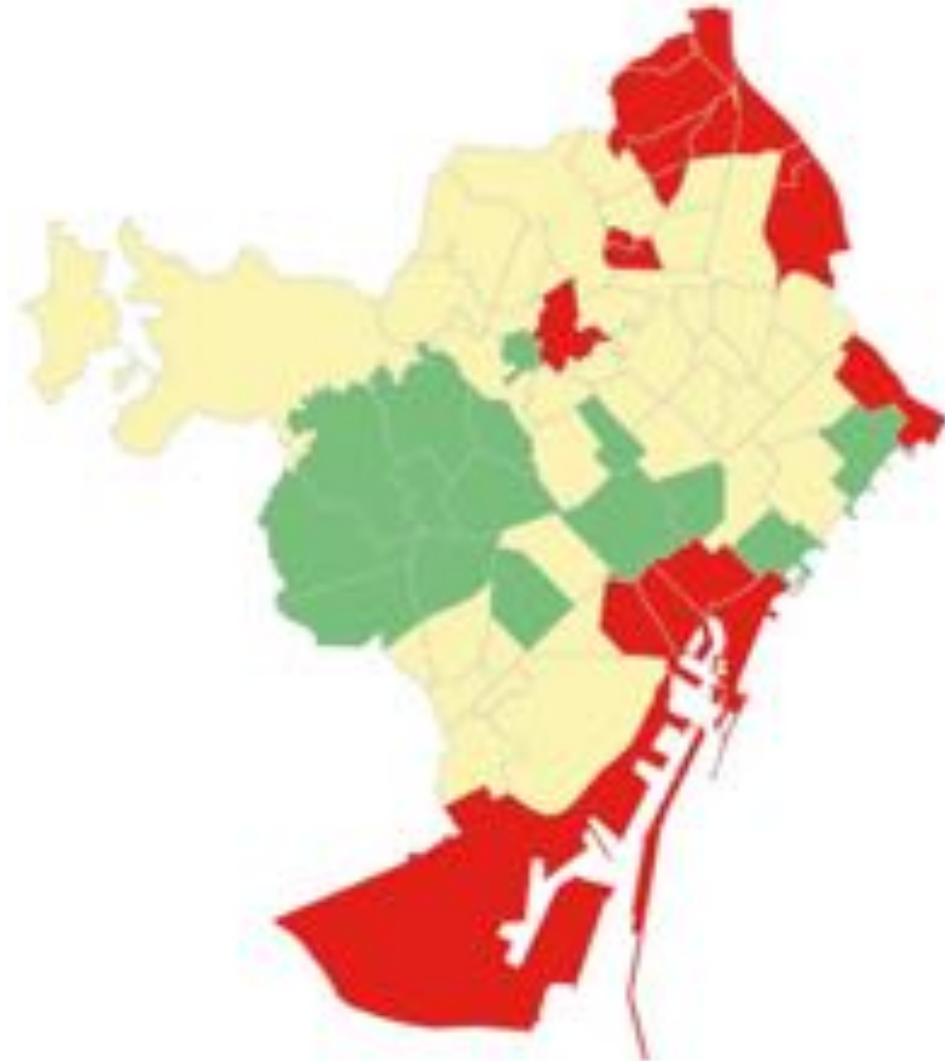


Pedestrians. CURRENT SITUATION



Karl Jilg, for the Swedish Road
Administration

Urban Heart Analysis Barcelona 2015



Health Outcomes By Neighborhood

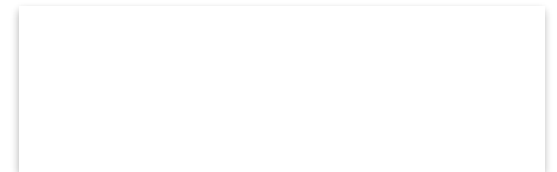


Source: Barcelona Public
Health Agency

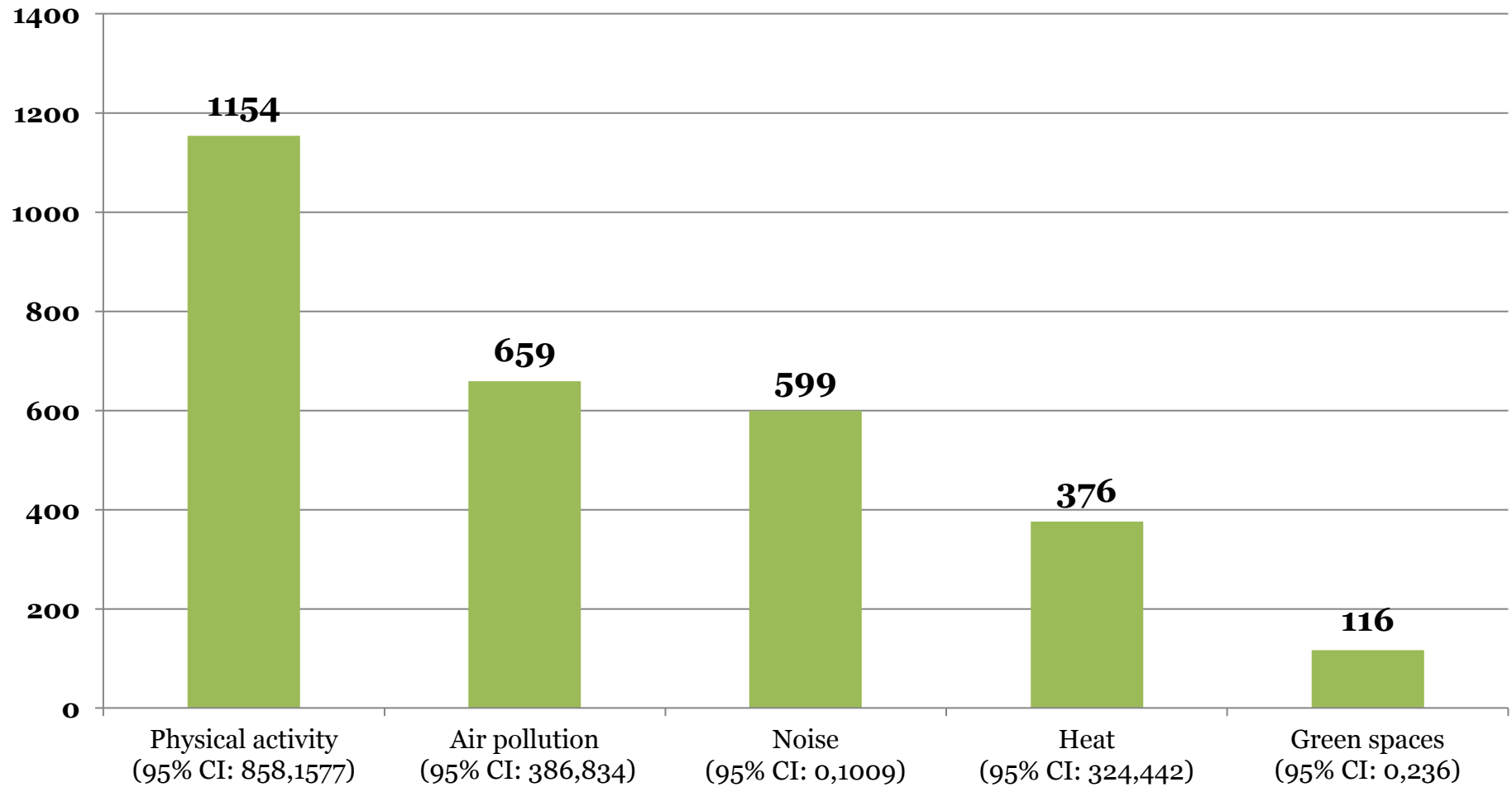


What is Barcelona doing?

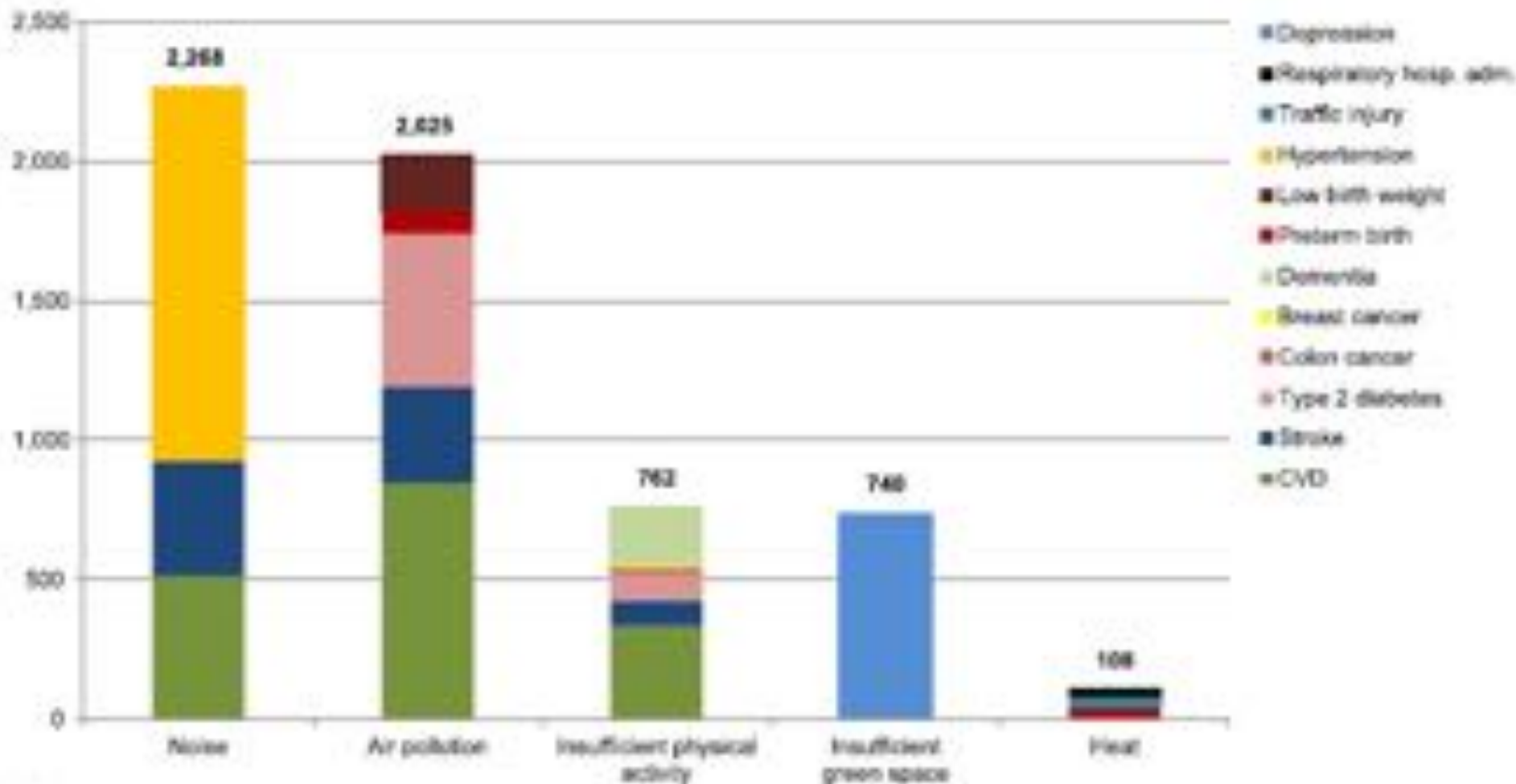
- Estimating health burdens (e.g. air pollution)
- Using health impact assessment to quantify health impacts of interventions
- Developing health indicators to monitor impacts of interventions



~20% premature deaths in Barcelona avoided
by compliance with recommendations



Morbidity attributable to non-compliance with recommendations



CVD=cardiovascular disease, hosp.adm=hospital admissions

Noise-related annoyance and sleep disturbance (i.e. 179,773 persons and 99,602 persons, respectively) are not considered.

Changes in Health Following Housing Improvement in a Vulnerable Population in Spain: A Follow-up Study

Ana M. Novoa^{1,2}, Jordi Amat¹, Davide Malmusi^{1,2,5},
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Objective:

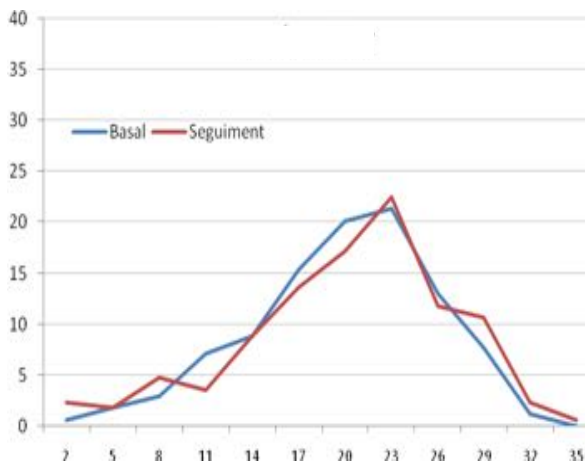
To compare changes in health among a sample of families living in substandard dwellings or with housing affordability problems assisted by Caritas Diocesana de Barcelona, according to the improvement of their socioeconomic and housing situation during the study period.

Methods:

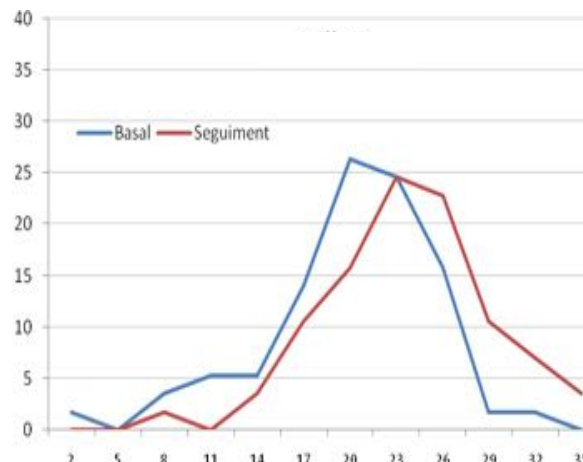
A quasi-experimental study was performed, including 232 families assisted by Caritas who were interviewed in 2012 and one year later.

Participants could have received a set of interventions, including relocation and different types of economic subsidies.

Changes in mental health status according to housing affordability status before and after the follow-up



People with an equal or greater probability of losing their dwelling after follow-up



People with less probability of losing their dwelling after follow-up

Main results:

Mental health improved among participants **with a reduction in the perceived risk of losing their house.**

The study shows that health gains can derive from improvements in housing conditions, **especially those related to housing affordability.**

Propostes PMMN



1. ZONES DE BAIXES EMISSIONS

- 1.1. Implantació de la Zona de Baixes Emissions Metropolitana (ZBEM)
- 1.2. Implantació de la Zona de Baixes Emissions Urbana – Interior a Rondes (ZBEU)
- 1.3. Implantació de les Zones Urbanes d'Atmosfera Protegida (ZUAP)

2. APARCAMENT

- 2.1. Coordinació metropolitana de la regulació de l'aparcament
- 2.2. Coordinació metropolitana dels incentius per a la gestió sostenible de l'aparcament



3. VIANANTS

- 3.2. Ampliació i millora de la pacificació urbana als municipis metropolitans



4. BICICLETA

- 4.1. Creació dels grans eixos cívics i cíclics metropolitans
- 4.2. Millora dels serveis associats a la bicicleta

5. TRANSPORT PÚBLIC

- 5.1. Bus Metropolità d'Altes Prestacions
- 5.2. Programa d'ajuts per a la millora de la velocitat comercial del transport públic de superfície
- 5.3. Introducció de criteris ambientals en la tarificació del transport públic



6. TAXI

- 6.1. Augmentar l'eficiència dels desplaçaments en taxi: pla de parades i gestió intel·ligent
- 6.2. Ambientalització de la flota metropolitana de taxis



7. INTERMODALITAT

- 7. Ampliació i implantació d'un model metropolità d'aparcaments d'intercanvi



8. AMBIENTALITZACIÓ FLOTES

- 8.1. Increment de l'ambientalització de la flota metropolitana d'autobusos
- 8.2. Increment de l'ambientalització de les flotes corporatives de vehicles de l'AMB i dels ajuntaments

9. AMBIENTALITZACIÓ PARC VEHICLES

- 9.1. Programa d'ajudes per a l'adquisició de vehicles menys contaminants
- 9.2. Coordinació metropolitana per incentivar la mobilitat en vehicles menys contaminants
- 9.3. Ampliació dels punts de recàrrega per a vehicles elèctrics



10. MERCADERIES

- 10.1. Coordinació metropolitana de la regulació de la distribució urbana de mercaderies
- 10.2. Disseny i implantació de nous models per a la distribució urbana de les mercaderies urbanes

11. URBANISME

- 11. Integració de la mobilitat sostenible en la planificació urbanística metropolitana



12. MOBILITAT URBANA

- 12. Coordinació metropolitana i suport en l'execució d'actuacions de mobilitat urbana

13. MOBILITAT LABORAL

- 13. Programa d'incentius per a la mobilitat sostenible als centres de treball



14. INFRAESTRUCTURES

- 14.1. Infraestructures de transport prioritàries per l'àrea metropolitana
- 14.2. Infraestructures prioritàries per al transport de mercaderies



15. CONTROL AMBIENTAL

- 15. Creació del centre metropolità de control de la contaminació atmosfèrica

Practica el bicing



Table 2| **Main results from health impact assessment of Bicing initiative in Barcelona**

Variables	Relative risk*	AF _{ex} †	Deaths/year
Road traffic injury	1.0007	0.0007	0.03
Air pollution (particulate matter <2.5 µm)	1.002	0.002	0.13
Physical activity	0.89	-0.23	-12.46
Carbon dioxide emissions saved (kg/year)‡	—	—	9 062 344

*Relative risk of death during cycling compared with travel by car.

†Attributable fraction of mortality among exposed (Bicing users).

‡Calculated for Barcelona vehicle fleet, reported in 2008 by Spanish traffic department.

Conclusions Public bicycle sharing initiatives such as Bicing in Barcelona have greater benefits than risks to health and reduce carbon dioxide emissions.



Super Block



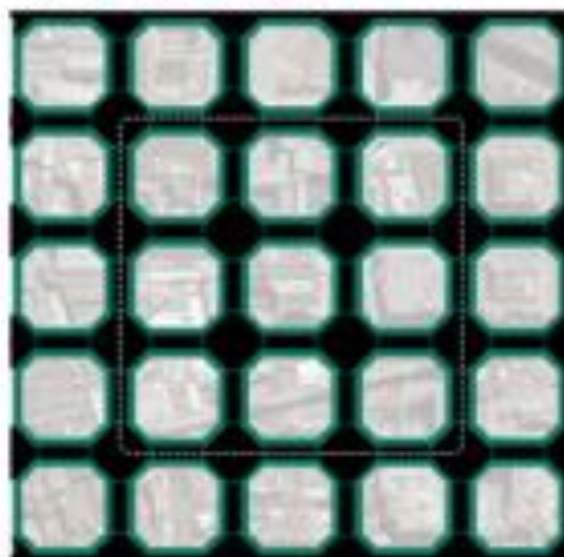
Goal



Barcelona wants to establish a new way to organize the city to reverse the current distribution of public space between vehicles and people, giving priority to the citizen in order to improve environmental conditions and quality of life.

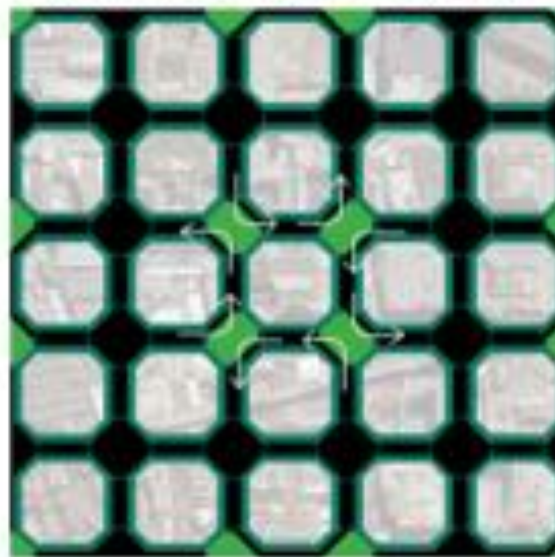
Pedestrians

CURRENT SITUATION



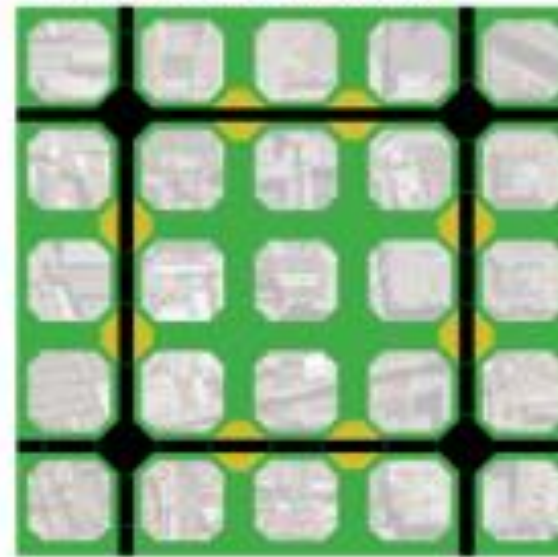
40 %

PHASE 1. FUNCTIONAL SUPERBLOCKS



53 %

PHASE 2. URBAN SUPERBLOCKS



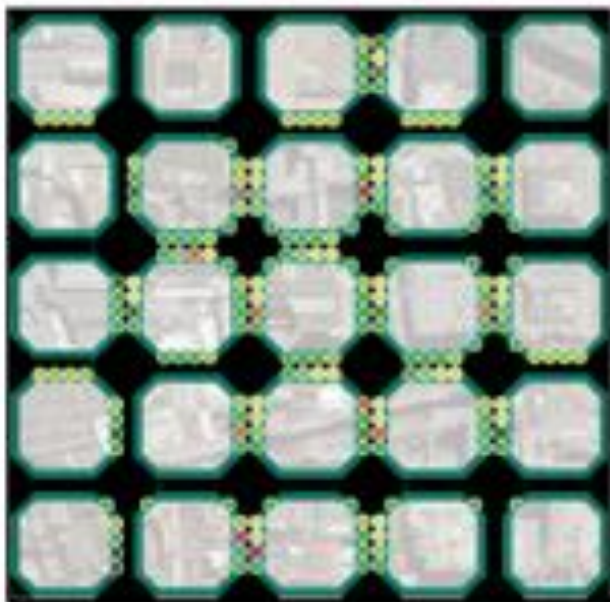
94 %



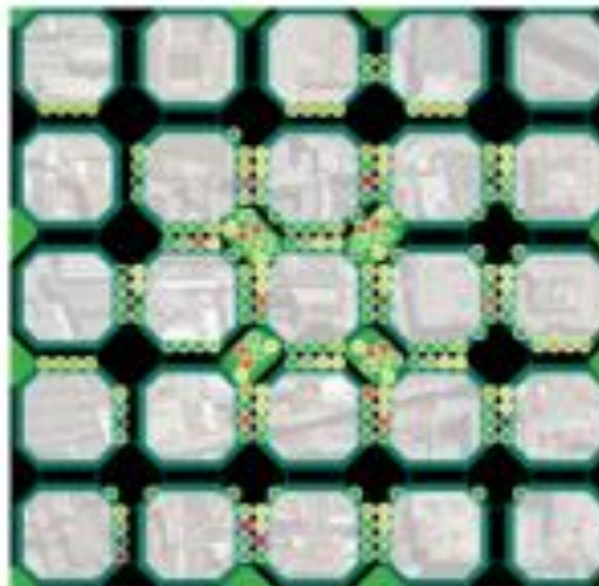
- Pedestrian space
Sidewalks, pedestrian priority streets, boulevards, promenades
- Accessible citizen space
- Services area
Mixed area for parking, loading and unloading and pedestrian traffic

Urban green space

CURRENT SITUATION



PHASE 1. FUNCTIONAL SUPERBLOCKS



PHASE 2. URBAN SUPERBLOCKS



- Street trees
- Green space potential (permeable)
- ⌘ Urban garden
- ⌘ Green roof
- ⌘ Green wall

One Activity: Mobility



Mobility

5 Rights in urban context: Multiple activities







Rethinking urban public space:
moving from linear and uni-purpose to dynamic spaces with
diverse uses

Impacts and Benefits



Air Quality

(population exposed to acceptable levels)

Current situation



Future scenario with new Superblock



Acoustic comfort

(population exposed to acceptable levels)

Current situation



Future scenario with new Superblock



Pedestrian road space (vs. motorized)

Current situation



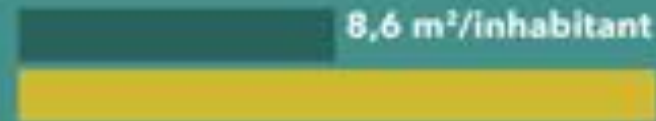
Future scenario with new Superblock



Staying space

(m²/ inhabitant)

Current situation



Future scenario with new Superblock



Spain's crash landlords: empty houses spawn black housing market

A Section 508-compliant HTML version of this article is available at <http://dx.doi.org/10.1289/EHP220>.

Urban and Transport Planning Related Exposures and Mortality: A Health Impact Assessment for Cities

Natalie Mueller,^{1,2,3} David Rojas-Rueda,^{1,2,3} Xavier Basagaña,^{1,2,3} Marta Cirach,^{1,2,3} Tom Cole-Hunter,^{1,2,3} Payam Dadvand,^{1,2,3} David Donaire-Gonzalez,^{1,2,3,4} Maria Foraster,^{5,6} Mireia Gascon,^{1,2,3} David Martinez,^{1,2,3} Cathryn Tonne,^{1,2,3} Margarita Triguero-Mas,^{1,2,3} Antònia Valentin,^{1,2,3} and Mark Nieuwenhuijsen^{1,2,3}

¹ISGlobal, Centre for Research in Environmental Epidemiology (CREAL), Barcelona, Spain; ²Universitat Pompeu Fabra (UPF), Barcelona, Spain; ³CIBER Epidemiología y Salud Pública (CIBERESP), Madrid, Spain; ⁴Physical Activity and Sports Science Blanquerna, Barcelona, Spain; ⁵Swiss Tropical and Public Health Institute, Basel, Switzerland; ⁶University of Basel

BACKGROUND: By 2050, nearly 70% of the global population is projected to live in urban areas. Because the environments we inhabit affect our health, urban and transport designs that promote healthy living are needed.

OBJECTIVE: We estimated the number of premature deaths preventable under compliance with international exposure recommendations for physical activity (PA), air pollution, noise, heat, and access to green spaces.

METHODS: We developed and applied the Urban and Transport Planning Health Impact Assessment (UTOPHIA) tool to Barcelona, Spain. Exposure estimates and mortality data were available for 1,357,361 residents. We compared recommended with current exposure levels. We quantified the associations between exposures and mortality and calculated population attributable fractions to estimate the number of premature deaths preventable. We also modeled life-expectancy and economic impacts.

RESULTS: We estimated that annually, nearly 20% of mortality could be prevented if international recommendations for performance of PA; exposure to air pollution, noise, and heat; and access to green space were followed. Estimations showed that the greatest portion of preventable deaths was attributable to increases in PA, followed by reductions of exposure to air pollution, traffic noise, and heat. Access to green spaces had smaller effects on mortality. Compliance was estimated to increase the average life expectancy by 360 (95% CI: 219, 493) days and result in economic savings of 9.3 (95% CI: 4.9, 13.2) billion EUR/year.

CONCLUSIONS: PA factors and environmental exposures can be modified by changes in urban and transport planning. We emphasize the need for a) the reduction of motorized traffic through the promotion of active and public transport and b) the provision of green infrastructure, both of which are suggested to provide opportunities for PA and for mitigation of air pollution, noise, and heat.

CITATION: Mueller N, Rojas-Rueda D, Basagaña X, Cirach M, Cole-Hunter T, Dadvand P, Donaire-Gonzalez D, Foraster M, Gascon M, Martinez D, Tonne C, Triguero-Mas M, Valentin A, Nieuwenhuijsen M. 2017. Urban and transport planning related exposures and mortality: a health impact assessment for cities. *Environ Health Perspect* 125:89–96; <http://dx.doi.org/10.1289/EHP220>

For this purpose, and TransPort Assessment (U) conducted a health impact assessment for Barcelona, Spain of meeting the international recommendations for performance of physical activity, noise and heat on preventable mortality, and economic impacts.

Methods

Study Setting

As of 2012, Barcelona northeastern coast inhabitants living in Barcelona City (has a Mediterranean mean temperature winters and hot, 1 City Council 20 densely inhabits be ≤ 8°C higher e surrounding areas island effect (M pollution and no highest in Europe population and tr

BMJ

BMJ 2011;343:d4521 doi: 10.1136/bmj.d4521

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RESEARCH

The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study

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¹Center for Research in Environmental Epidemiology, C Doctor Aiguader, 88, 08003 Barcelona, Spain; ²Systems Research Institute, Polish Academy of Sciences, Newelska 6, 01-447 Warsaw, Poland; and Department of Environmental Health, National Institute for Health and Welfare, Kuopio, Finland

Abstract

Objective To estimate the risks and benefits to health of travel by bicycle, using a bicycle sharing scheme, compared with travel by car in an urban environment.

Design Health impact assessment study.

Setting Public bicycle sharing initiative, Bicing, in Barcelona, Spain.

Paris (2007), Toulouse (2007), Hangzhou (2008), Milan (2008), Brussels (2009), Montreal (2009), Mexico City (2010), London (2010), and Guangzhou (2010). In the United States, such large scale initiatives are being considered for Los Angeles and New York. The general impetus for these policies is more often the reduction of traffic congestion than the promotion of health. Motivated by the growing challenges of global obesity and



QUITO
IMPLEMENTATION
PLAN FOR
THE NEW
URBAN AGENDA

Next Steps for research....

- Spatially-resolved data for cities including health, behaviours, environment, socioeconomics
- City-level burden of disease estimates
- Consideration of distributional aspects
- Coordination across local authorities with metro and regional
- Practical tools to support evidence-based decision making, generate public support, political will

**Understanding Governance
& Political Cycles**

**Climate Change and
natural disasters**

**The role of citizen
science**

Mass Tourism

**Flexibility of Academic
Structures**

**Electric & Autonomous
Vehicles**

**Academic vs political
timelines**

Safety

**Breaking down silos
& creating common
agendas**

Big data & privacy

Maio
Arquitecte-a





THANK YOU

HEALTH IMPACT ASSESSMENT

