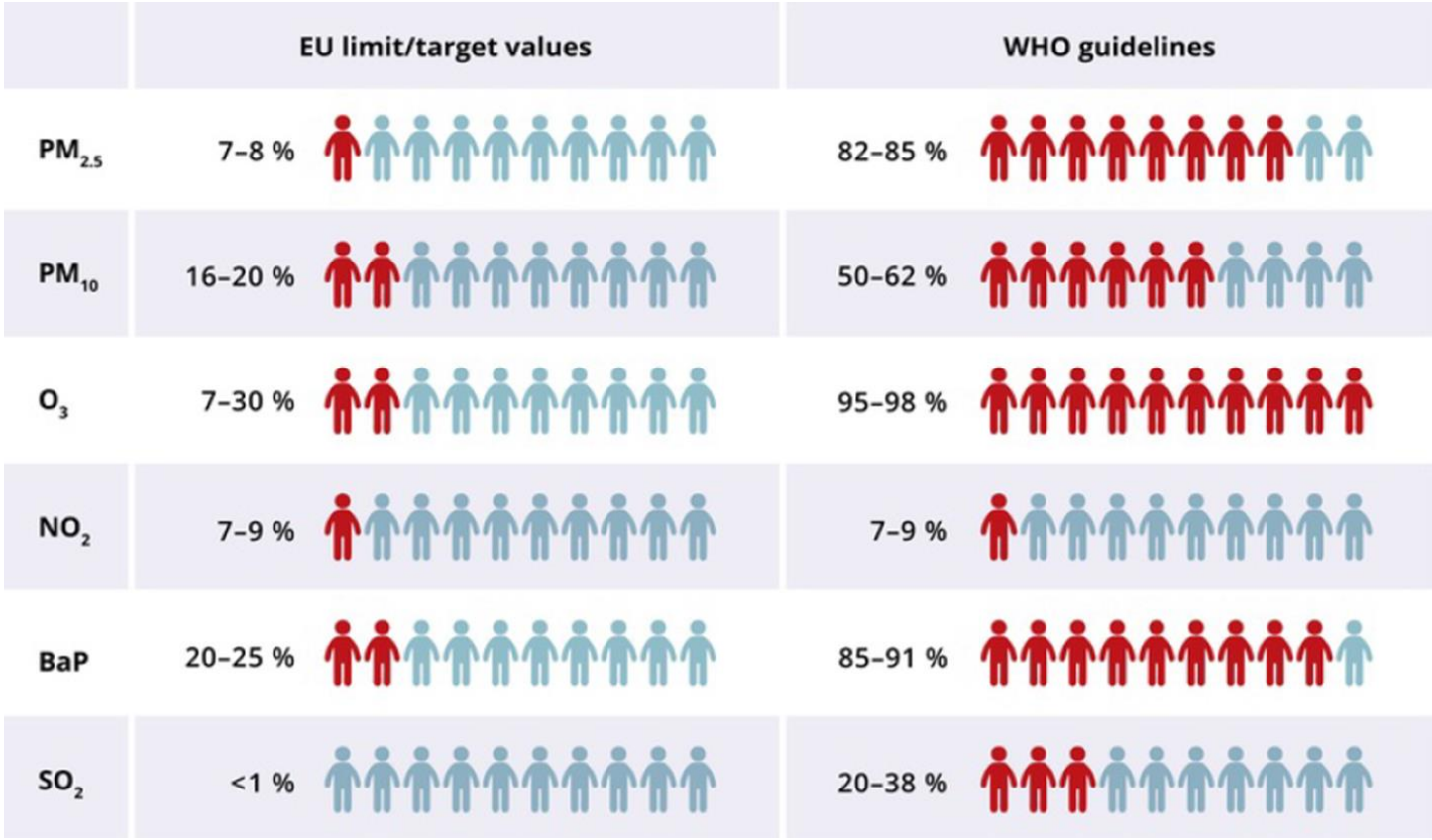
LIFE INDEX-AIR:
Development of an Integrated Exposure – Dose Management Tool for Reduction of Particulate Matter in Air

LIFE15 ENV/PT/000674

"LIFE ENVIRONMENT AND NATURE CONSERVATION TRAINING" organised by LIFE14 CAP/HU/000010 - LIFECapHUN
28th November 2018
Budapest, Hungary

Motivation

EU urban population exposed to harmful levels of air pollution in 2013-2015

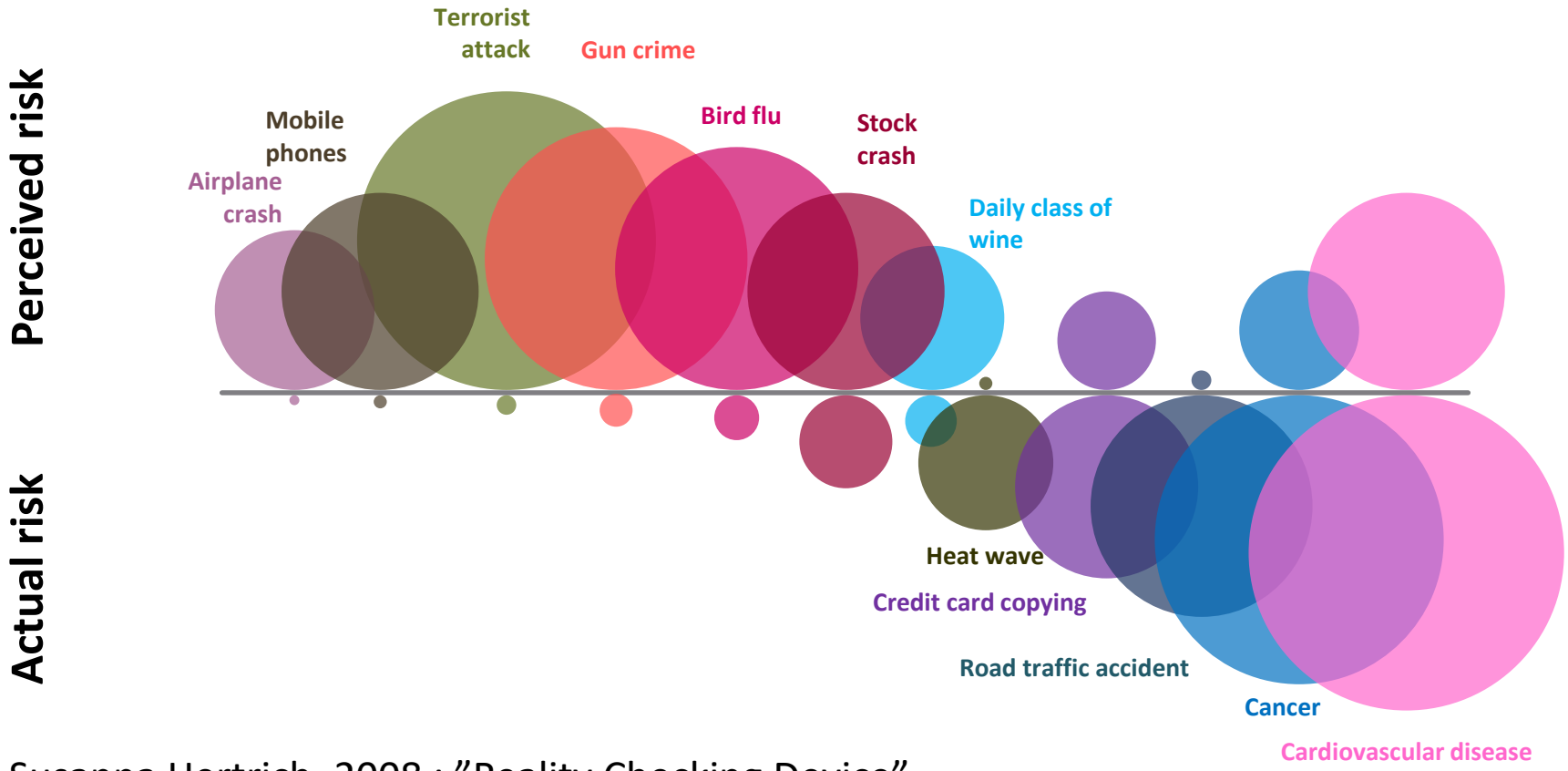


Round 90 % of Europeans living in cities are exposed to levels of air pollutants deemed damaging to health by the World Health Organization's more stringent guidelines.

Air Quality in Europe – 2017 Report
EEA Report | No 13/2017

Motivation

About perception



Susanna Hertrich, 2008 : ”Reality Checking Device”

Motivation

No. premature deaths in Portugal during 2014 attributed to:

Exposure to atmospheric pollutants

PM2.5 – 5170

NO_2 – 150

O_3 – 420

Other causes

Car accident – 518

Work accident– 160

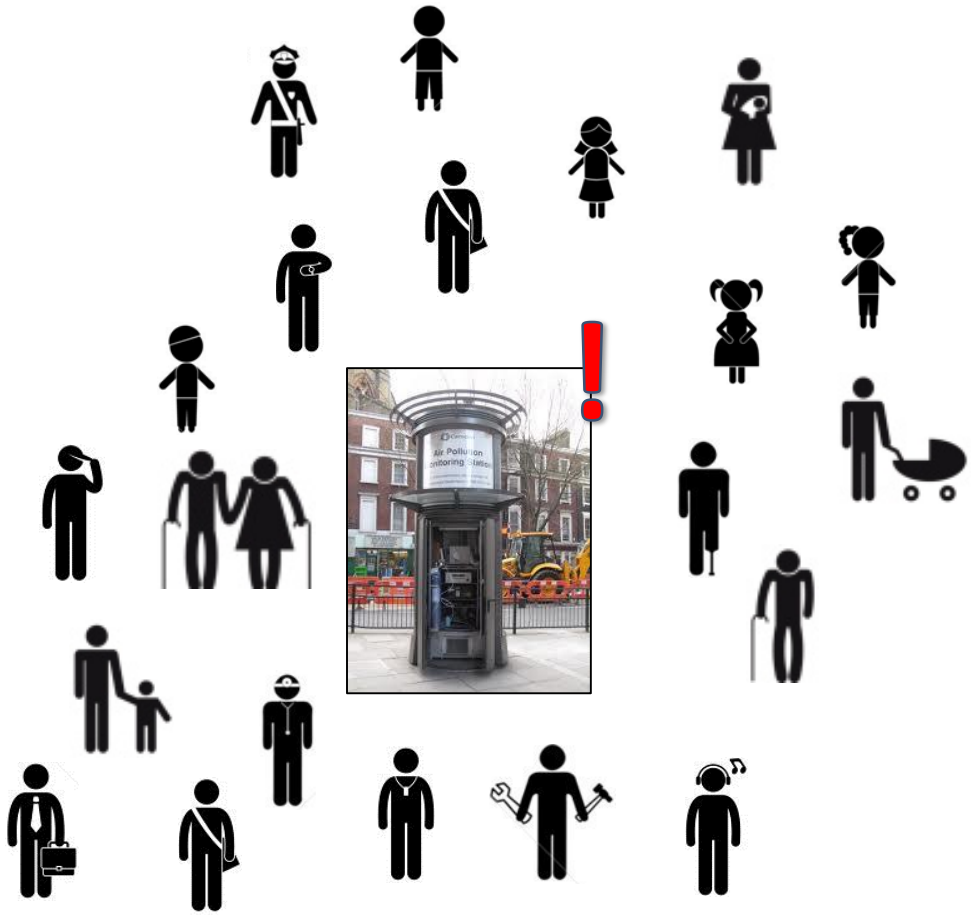
Air Quality in Europe – 2017 Report
EEA Report | No 13/2017

Motivation

Assessment of human exposure to air pollutants

Measuring outdoor levels of particles at **fixed** ambient air quality **monitoring sites** has been the **traditional** way of **evaluating** urban air quality

This fixed monitoring stations are **supposed to assess** the exposure of all the population to particles



However, this approach **fails** to account for **all components** of exposure

1st There is a huge **heterogeneity** in the **concentrations** of pollutants within the city

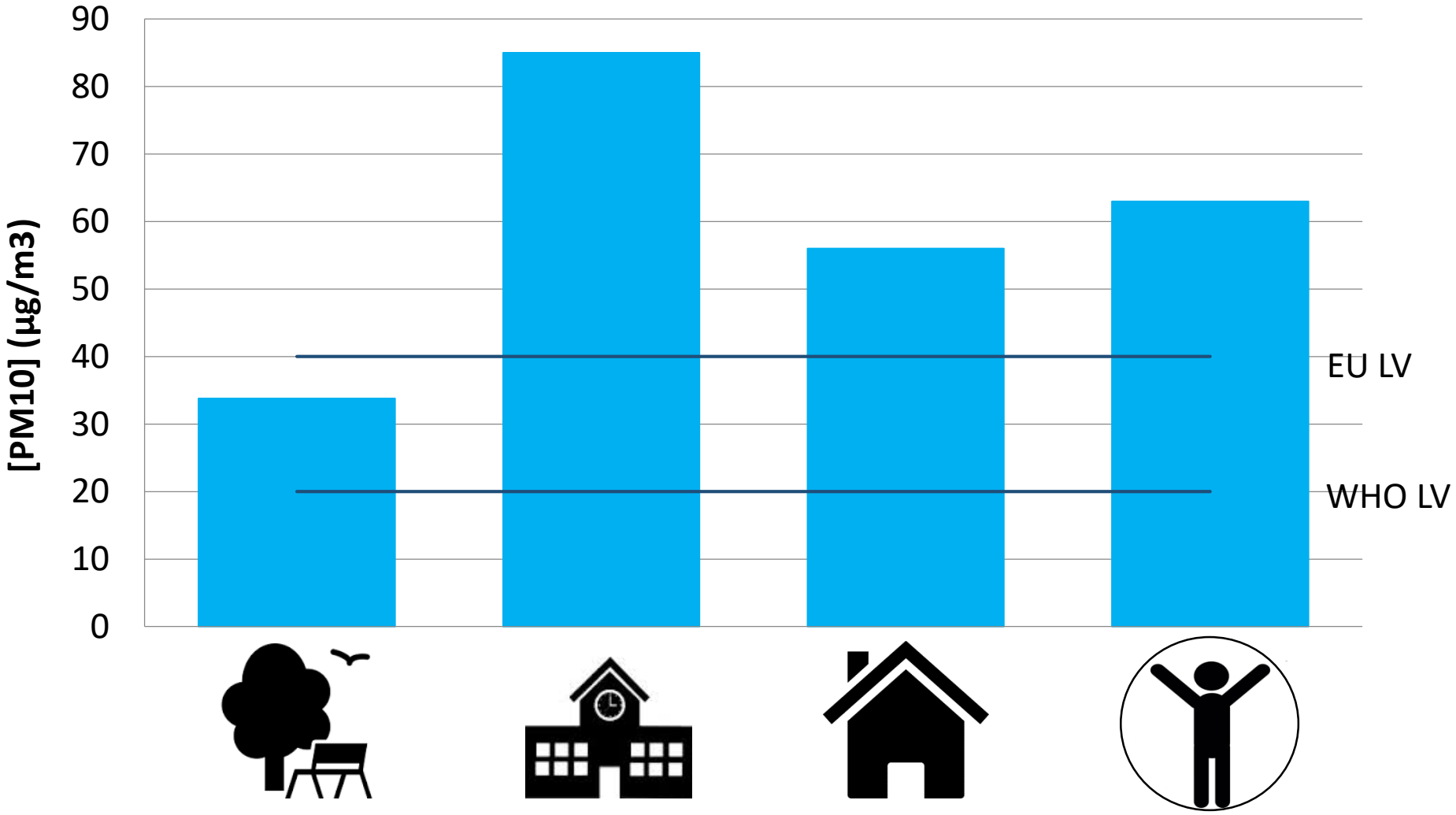
2nd People spend more than **90% of the time indoors**

3rd There is a huge **heterogeneity** in **time** activity patterns of the population

Motivation

Assessment of human exposure to air pollutants

PM10 levels

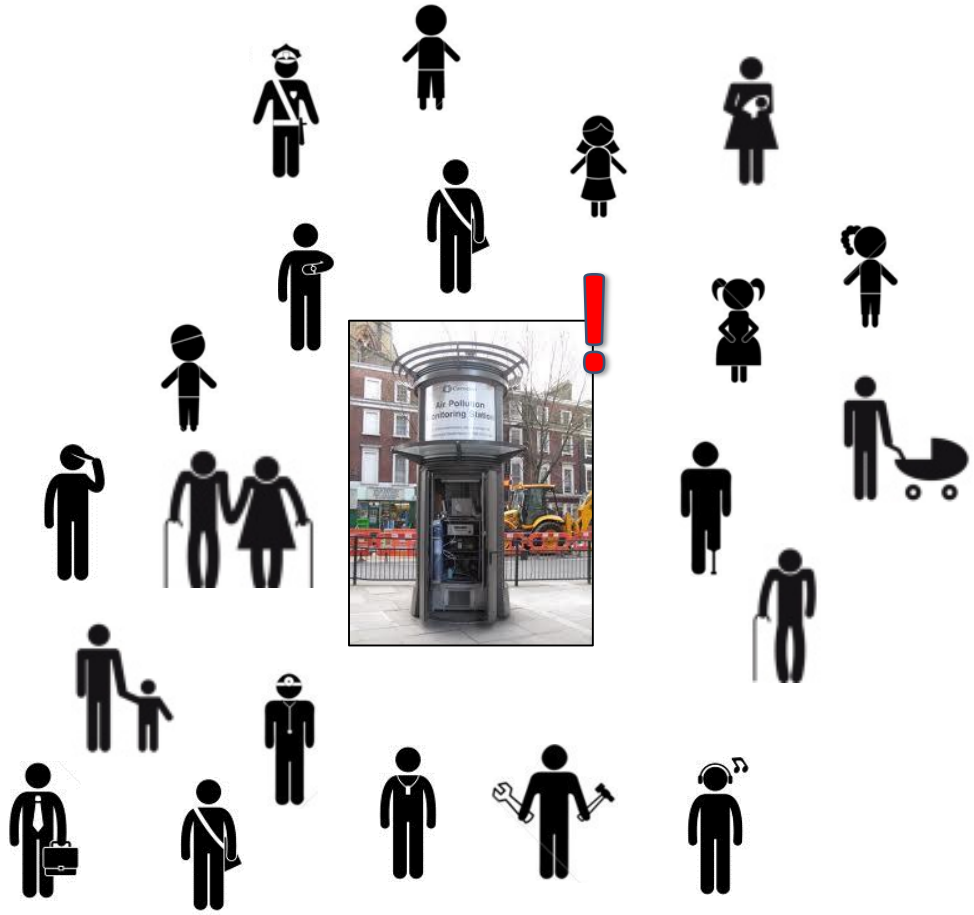


Motivation

Assessment of human exposure to air pollutants

Measuring outdoor levels of particles at **fixed** ambient air quality **monitoring sites** has been the **traditional** way of **evaluating** urban air quality

This fixed monitoring stations are **supposed to assess** the exposure of all the population to particles



However, this approach **fails** to account for **all components** of exposure

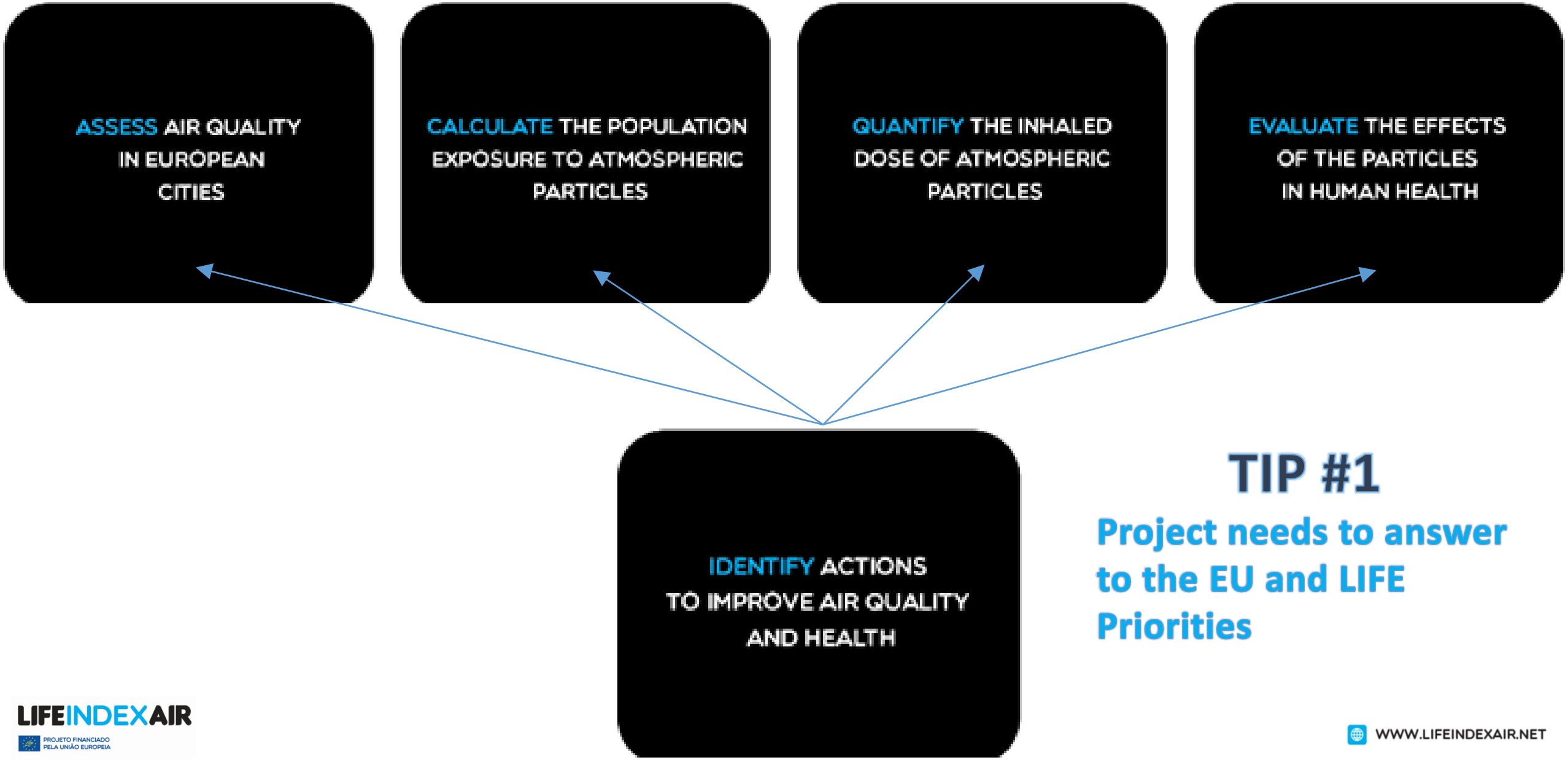
1st There is a huge **heterogeneity** in the **concentrations** of pollutants within the city

2nd People spend more than **90% of the time indoors**

3rd There is a huge **heterogeneity** in **time** activity patterns of the population

This brings the considerable importance of assessing the **personal integrated exposure** to particles as it is the key determinant of the **dose received by an individual** and thus directly influences the **health impacts.**

Motivation



TIP #1

Project needs to answer to the EU and LIFE Priorities

LIFE Index –Air team

TIP #2

Characteristics of the team:

- Complementarity / Added value
- Chemistry between members
- Advisory board
- Consider the long term sustainability of the project results
- Avoid exceeding number of beneficiaries
  - Commitment of the stakeholders and end users

LIFEINDEXAIR
PROJETO FINANCIADO PELA UNIÃO EUROPEIA

WHAT IS THE LIFE INDEX-AIR PROJECT?

LIFE Index-Air project aims to develop an innovative and versatile **decision support tool for policy makers** that will help them identify measures to improve air quality and quantitatively assess their impact on the health and well-being of the population.

PM10 ● PM2.5 ● Pb ● Ni ● As ● Cd ● BaP ● Elemental Carbon ● Organic Carbon

€	€		
1.369	**792**	**October 2016**	**Environment**
Milions euros	**Thousand euros**	**March 2020**	**Resource**
Global Budget	**EU Funding**		**Efficiency**

LIFEINDEXAIR
PROJETO FINANCIADO PELA UNIÃO EUROPEIA

WWW.LIFEINDEXAIR.NET

EMISSIONS ▶ DISPERSION ▶ INFILTRATION ▶ PHISICAL ACTIVITY ▶ DOSE ▶ HEALTH EFFECTS

SOURCES → AIR QUALITY MODULE → EXPOSURE MODULE → DOSIMETRY MODULE → BURDEN DISEASE MODULE

IDENTIFY ACTIONS TO IMPROVE AIR QUALITY AND HEALTH

ASSESS AIR QUALITY IN EUROPEAN CITIES

CALCULATE THE POPULATION EXPOSURE TO ATMOSPHERIC PARTICLES

QUANTIFY THE INHALED DOSE OF ATMOSPHERIC PARTICLES

EVALUATE THE EFFECTS OF THE PARTICLES IN HUMAN HEALTH

IMPLEMENTATION OF THE TOOL IN 5 EUROPEAN CITIES
LISBON, OPORTO, ATHENS, KUOPIO AND TREVISO

DEVELOPMENT OF GUIDELINES FOR ACTION PLANS FORMULATION

TIP #3

Important characteristics of the project:

- Transnational (!)
- Replicability

POLICY IMPLICATIONS

LIFE INDEX-AIR project will:

- Support the **implementation of the Directive 2008/50/EC** on Ambient Air Quality;

- Contribute for the implementation of the 3rd thematic priority objective defined by the **7th Environment Action Programme to 2020** "to safeguard the Union's citizens from environment-related pressures and risk to health and well-being";

- Improve the understanding about the environmental factors and levels of exposure which affect human health and the environment in order to **allow preventive policy actions to be taken**;

- Stimulate the **allocation of European funds** for the implementation of new mitigation strategies;

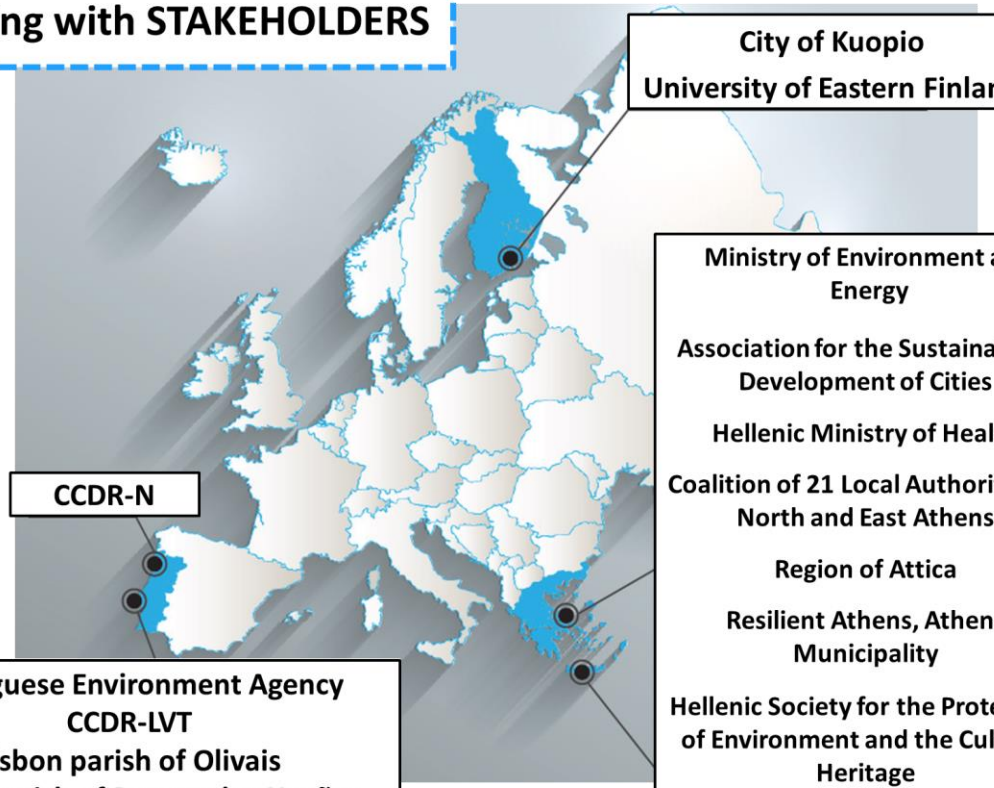
- Enable the **exchange of experiences and knowledge between Member States**, increasing the effectiveness of measures;

- Supply the decision makers in EU with a valuable **tool for environmental planning**;

- Be in line with the **EC White Paper – Together for Health**, the **Europe 2020 – A strategy for smart, sustainable and inclusive** and the **2020 Package**

Networking with stakeholders

Networking with STAKEHOLDERS



City of Kuopio
University of Eastern Finland

Ministry of Environment and Energy

Association for the Sustainability Development of Cities

Hellenic Ministry of Health

Coalition of 21 Local Authorities of North and East Athens

Region of Attica

Resilient Athens, Athens Municipality

Hellenic Society for the Protection of Environment and the Cultural Heritage

mSensis S.A.

CCDR-N

Portuguese Environment Agency
CCDR-LVT
Lisbon parish of Olivais
Lisbon parish of Parque das Nações

TIP #4

Important characteristics of the project:

- Transferability

Networking with other projects

TIP #5

Important characteristics of the project:

- Uptake

Sustentabilis Olivais
Lisbon, Portugal

19 May

Coffee Conversations – The Agenda of Sustainability
Lisbon, Portugal

25-26 May

5 June

World Environment Day
Loures, Portugal

Ciência2017
Lisbon, Portugal

3-5 July

3-6 July

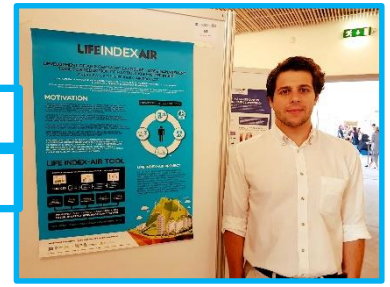
RICTA'17
Barcelona, Spain

EAC2017
Zürich, Switzerland

27 Aug 1 Sept

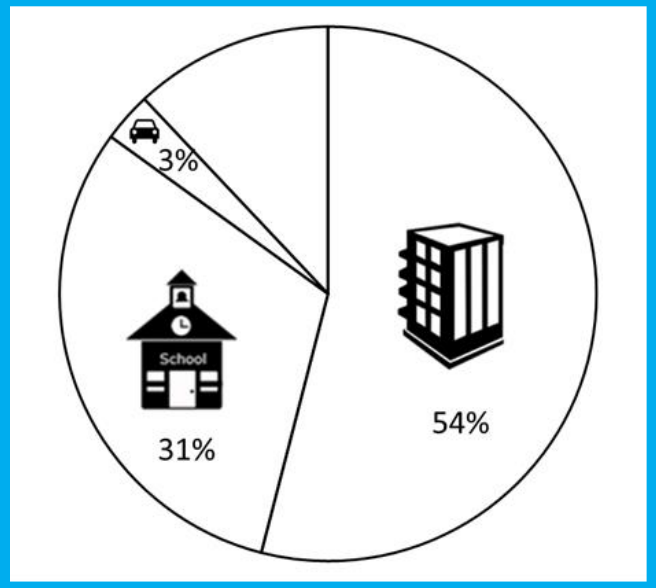
26-29 Sept

ICUH2017
Coimbra, Portugal



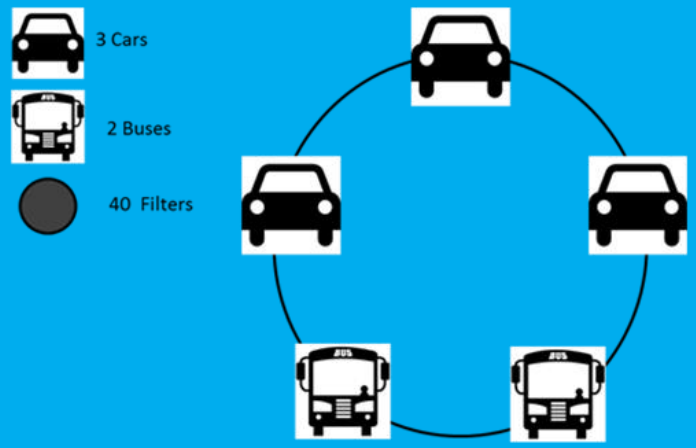
LIFE Index-Air Database

1. Time Activity Pattern



2. Concentrations of PM in schools and homes

3. Concentrations of PM in transports



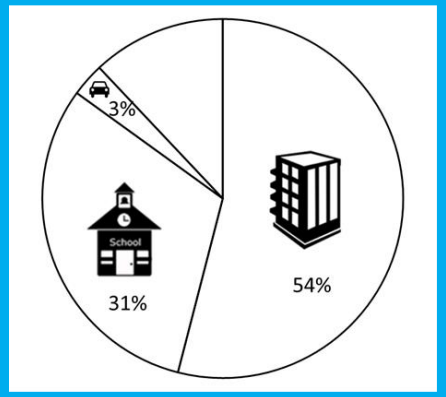
PM2.5 + PM10 + Elements (As + Cd + Ni + Pb) + PAHs (BaP) + EC/OC

LIFEINDEXAIR
PROJETO FINANCIADO PELA UNIÃO EUROPEIA

WWW.LIFEINDEXAIR.NET

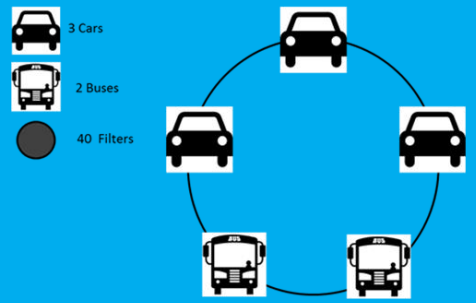
LIFE Index-Air Database

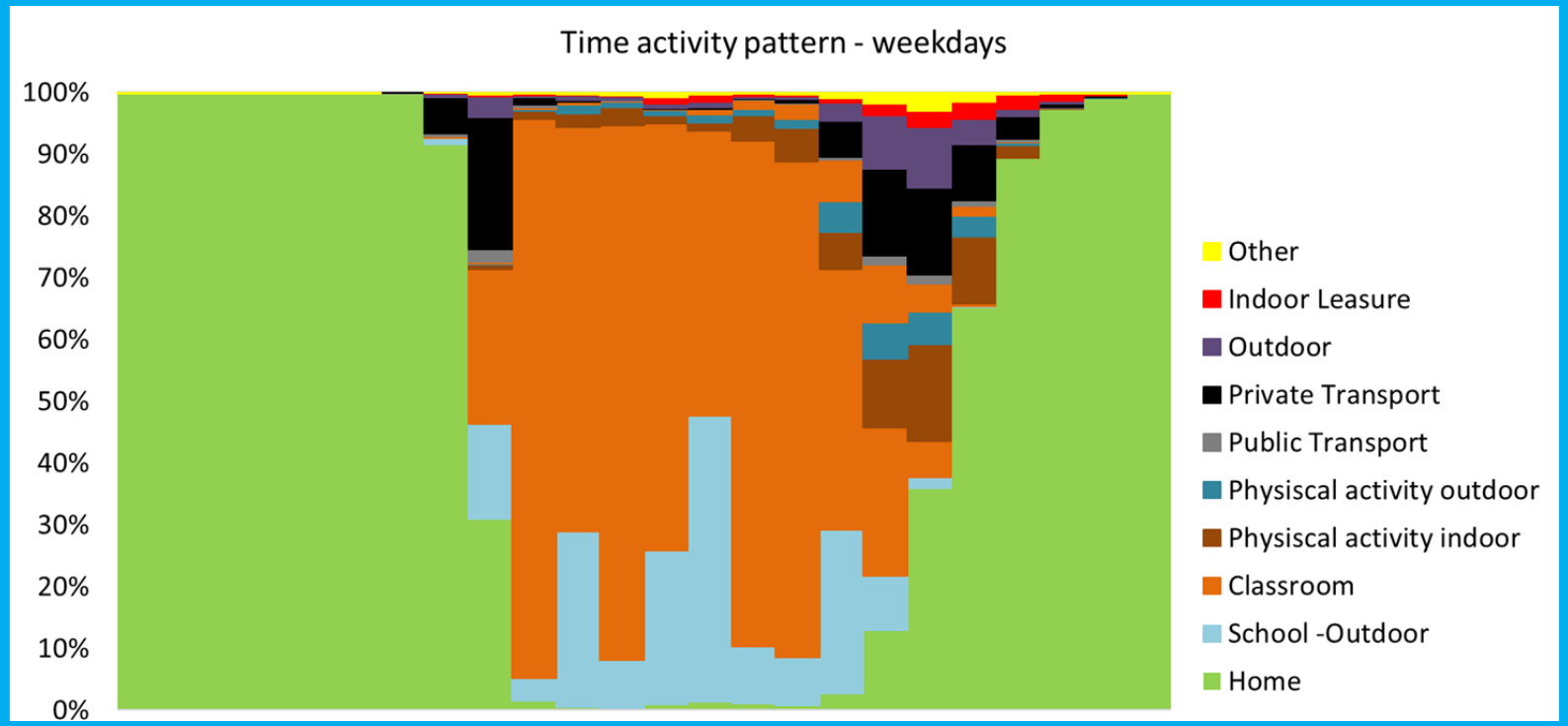
1. Time Activity Pattern



2. Concentrations of PM in schools and homes

3. Concentrations of PM in transports

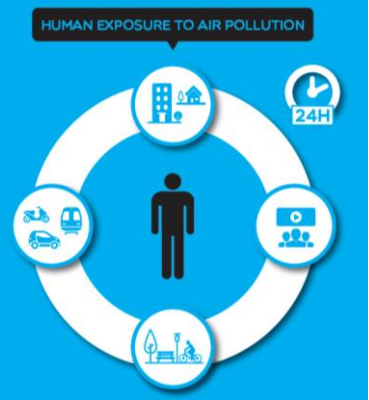




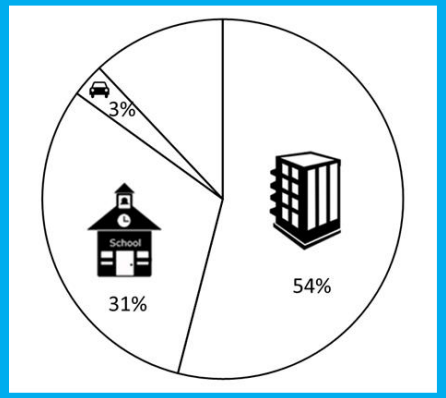
LIFEINDEXAIR
PROJETO FINANCIADO PELA UNIÃO EUROPEIA

WWW.LIFEINDEXAIR.NET

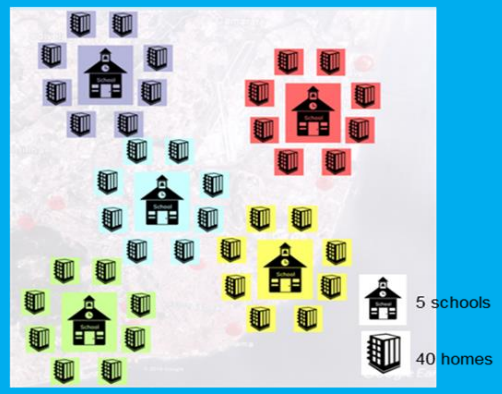
LIFE Index-Air Database



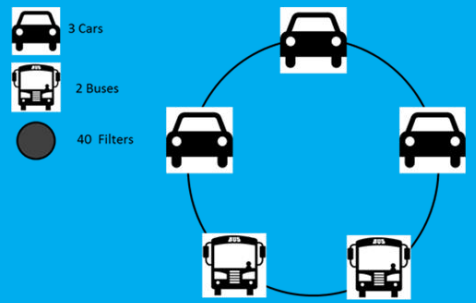
1. Time Activity Pattern



2. Concentrations of PM in schools and homes



3. Concentrations of PM in transports



LIFEINDEXAIR
PROJETO FINANCIADO PELA UNIÃO EUROPEIA

WWW.LIFEINDEXAIR.NET

LIFE Index-Air: helping citizens to get involved

LISBON ENGAGEMENT IN NUMBERS

NUMBER OF SCHOOLS 26

NUMBER OF AWARENESS SESSIONS 60

TOTAL NUMBER OF STUDENTS 3796

TOTAL NUMBER OF TEACHERS 165

STREET EVENT DAYS 5

TIP #6

Important characteristics of the project:

- Awareness
- Capacity building

Why LIFE Programme?

- LIFE Index-Air is not a research project
- Uptake of knowledge from previous project
- Transferability of knowledge to stakeholders and general population
- Replicability of the methodology in several European cities
- Aligned with EU and LIFE priorities

LIFE Programme

- Difficulties of the planning
  - Preparation of the proposal is complex:
    - ✓ It is time-consuming. Consider at least 3 months to prepare the proposal;
    - ✓ Applicants need to read very well all the guidelines;
    - ✓ Team should be complementary (try to involve a partner that has already participated in a LIFE project);
    - ✓ Focus should be given to the EU and LIFE priorities (not only to our institution or research priorities);
    - ✓ Implementation and transferability are important keywords;
    - ✓ Stakeholders and end-users should be involved since the beginning;
    - ✓ Letters of support are needed.

- Constraints in the budget difficult to overcome:
    - ✓ 2% rule for public beneficiaries;
    - ✓ 40% own contribution.

- % of projects approved

LIFE Programme

- Support in the development of the proposal
- Platform to submit the proposal is user-friendly
- Documents supporting the preparation of the project are helpful
- Implementation of knowledge generated in previous research projects
- Interaction between research and end-users/stakeholders
- Project size

KEEP IN TOUCH

FACEBOOK WWW.FACEBOOK.COM/LIFEINDEXAIR
TWITTER HTTPS://TWITTER.COM/LIFEINDEXAIR
INSTAGRAM WWW.INSTAGRAM.COM/LIFE.INDEX.AIR
RESEARCHGATE WWW.RESEARCHGATE.NET/PROJECT/LIFE-INDEX-AIR

WWW.LIFEINDEXAIR.NET

LIFE INDEX AIR

IMPROVING OUR LIFE

PROJECT FUNDED BY EUROPEAN UNION