



# BigO: Big Data Against Childhood Obesity

## Presenters:

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Commission

Horizon 2020  
European Union funding  
for Research & Innovation

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# Aim

The societal problem of **soaring obesity rates among children** is being tackled by EU-funded project BigO.

**Collecting and analyzing big anonymous data** on children's behavioral patterns and their environment, BigO will extract evidence on **which local factors are involved and how they influence childhood obesity**.

BigO will enable **public health authorities** to plan, develop, and execute effective programs against obesity.



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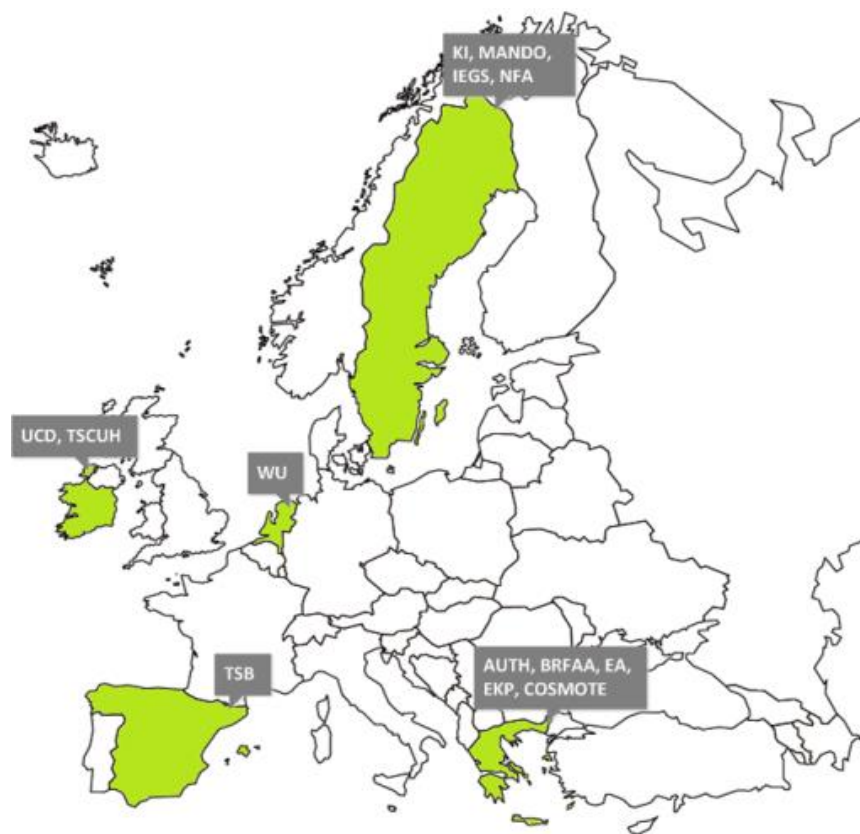
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# Consortium

- Universities
- Schools
- Obesity clinics
- Technical companies
- Telecommunications provider
- Public Health Authorities

Duration: 01/12/2016 - 31/03/2020



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# BigO Approach

- Evidence exists that interventions targeting various elements of children's behavioural patterns, like **what and how they eat**, **how they move** and **how they sleep** and environmental community factors, can have a positive outcome against childhood obesity
- **25 000 school children 9 -18 years old** invited to be part of the BigO Community as "**citizen scientists**" and help with the data collection using mobile phones and smart watches.



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# BigO Outcomes

1/2

- Large scale **data collection**
- Analytics to **extract associations** between obesogenic behaviours and environment
- **Public health stakeholder engagement** to evaluate outcomes
- Teach young European citizens about the principles of **Voluntarism, Citizen Science and Public Participation**



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# BigO Outcomes

2/2

- Increasing the awareness about healthy living, introducing students to the *health-in-all-things* mentality
- Share aggregated evidence with public health authorities and schools to help design and monitor obesity programs
- Share individual behavioural patterns with health professionals to aid childhood obesity



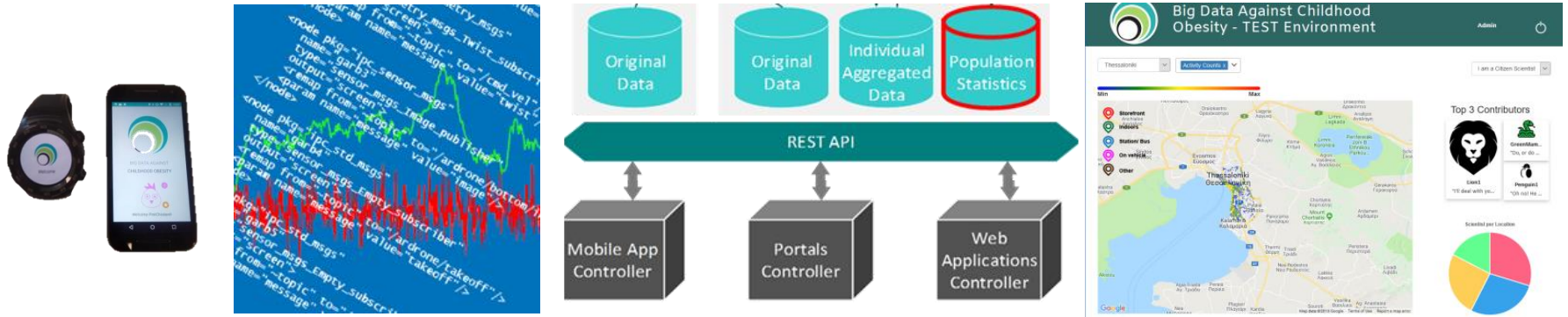
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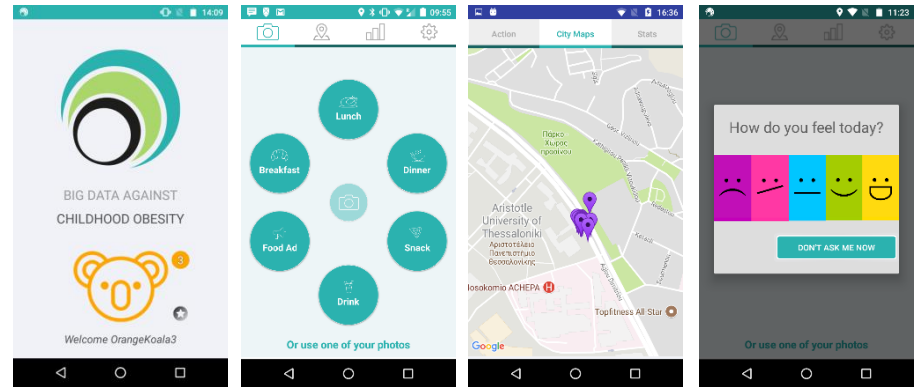
# BigO platform



- ✓ Collects **behaviour** and **local environment** data
- ✓ Develops **intelligent algorithms** to recognize behavioural patterns
- ✓ Visualizes **individual behavioural patterns** for health professionals to help them follow-up obese child patients
- ✓ Visualizes **aggregated evidence** for public health authorities and schools to help them design and monitor programs
- ✓ Extracts **associations** between environment and obesogenic behaviours to investigate causality

# Data collection

- ✓ *myBigO app* records
  - Accelerometry
  - GPS
  - Pictures of meals/food ads taken by the user
  - Answers to questions
- ✓ Connects to *WearOS smartwatches*





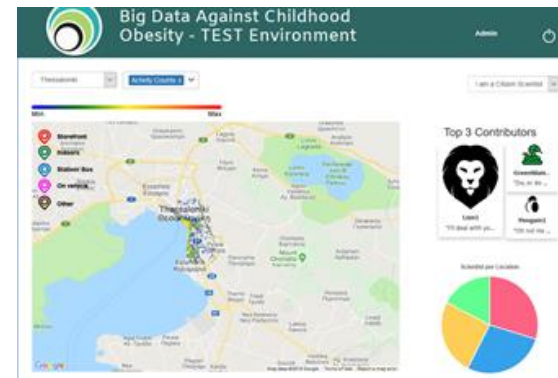
# 5 web portals

To meet the needs of all BigO settings and users:

- students and teachers
- patients and clinicians
- public health experts and policy makers
- general public
- data administrators



Group Name	Teacher	# of students	Status
DS	Kate Riley	17	✓
test Student (Beech)	Kate Riley	1	✓
DS_Beech	Kate Riley	3	✓
DS_LAN-220/2008	Kate Riley	28	✓
DS_15/17/18-2/2/2008	Kate Riley	36	✓
DS_18/2008-2/2/2008	Kate Riley	23	✓
DS_18	Kate Riley	17	✓
DS_18-2008-2008-2008	Kate Riley	22	✓
DS_18-2008-2008-2008	Kate Riley	28	✓



Global Admin



School Admin



Teacher



Clinical Admin



Clinician



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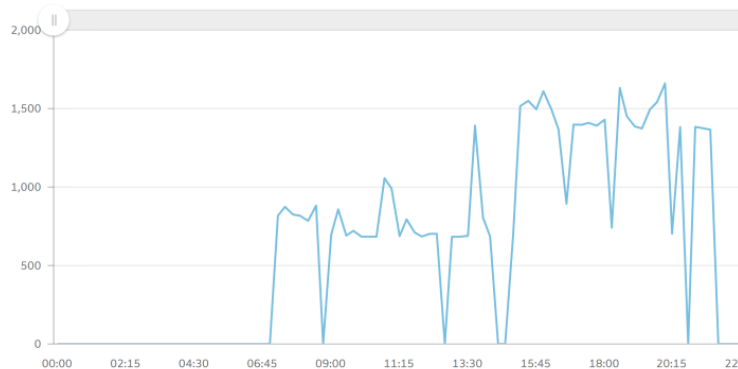
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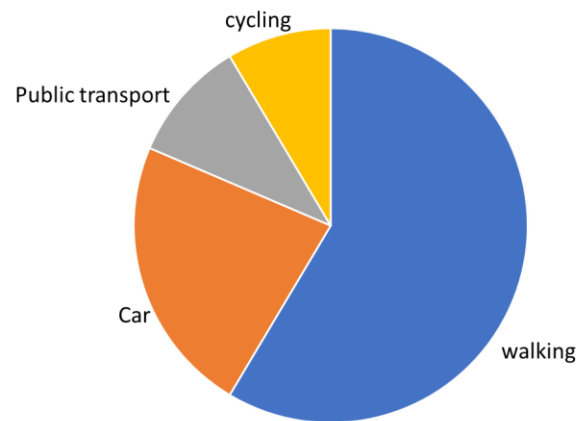
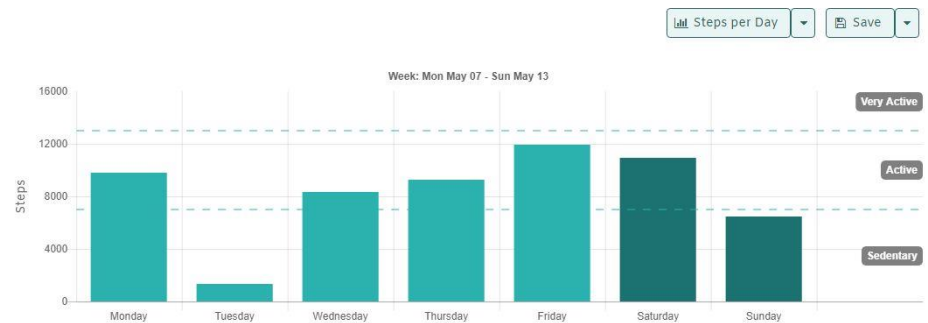
# Behaviour indicators

1/2

Activity Counts From 2018-07-02 to 2018-07-08



Weekly Physical activity : Estimated Steps per Day

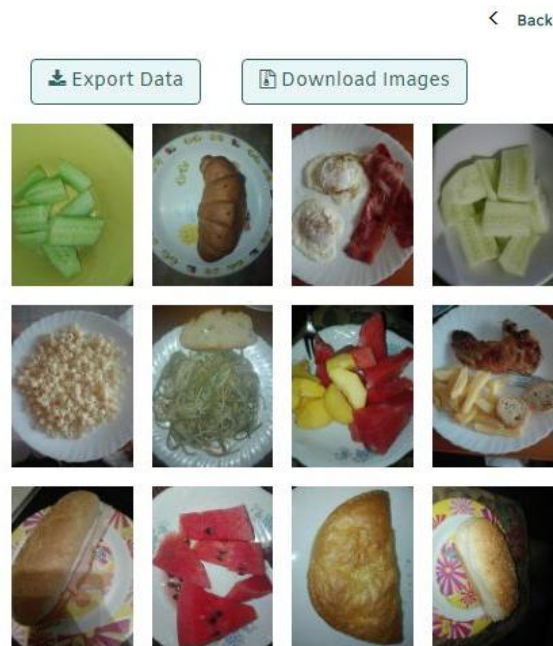


- ✓ Physical activity
- ✓ Transportation
- ✓ Individual and group views

Individual and group views

# Behaviour indicators

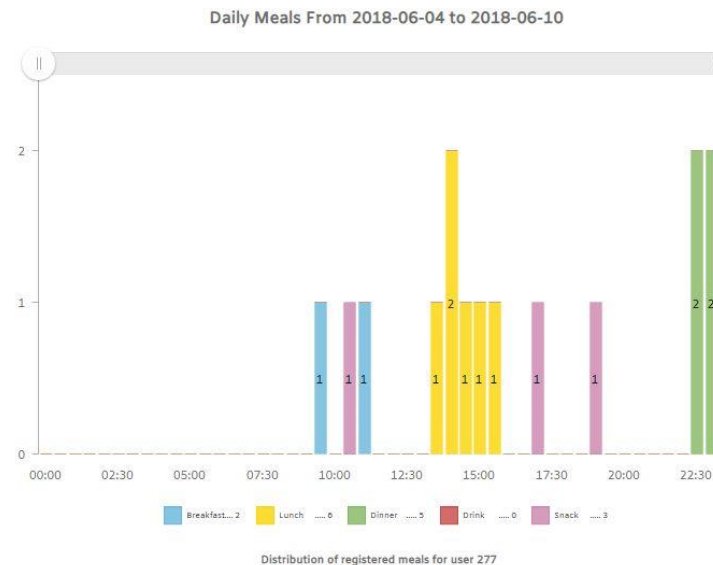
2/2



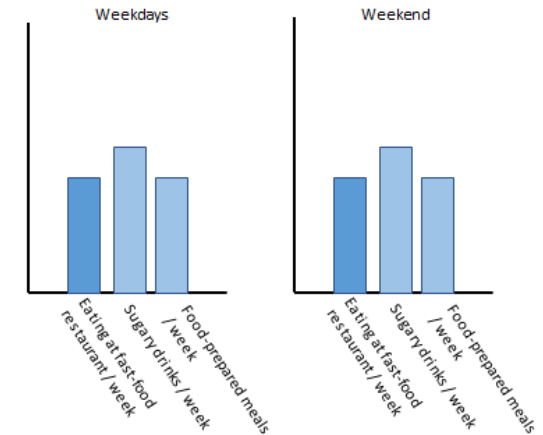
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Export Data

Download Images



Meal content analysis, weekly



- ✓ Time, type of meal
- ✓ Fast food eating
- ✓ Sugary drinks
- ✓ Individual and group views



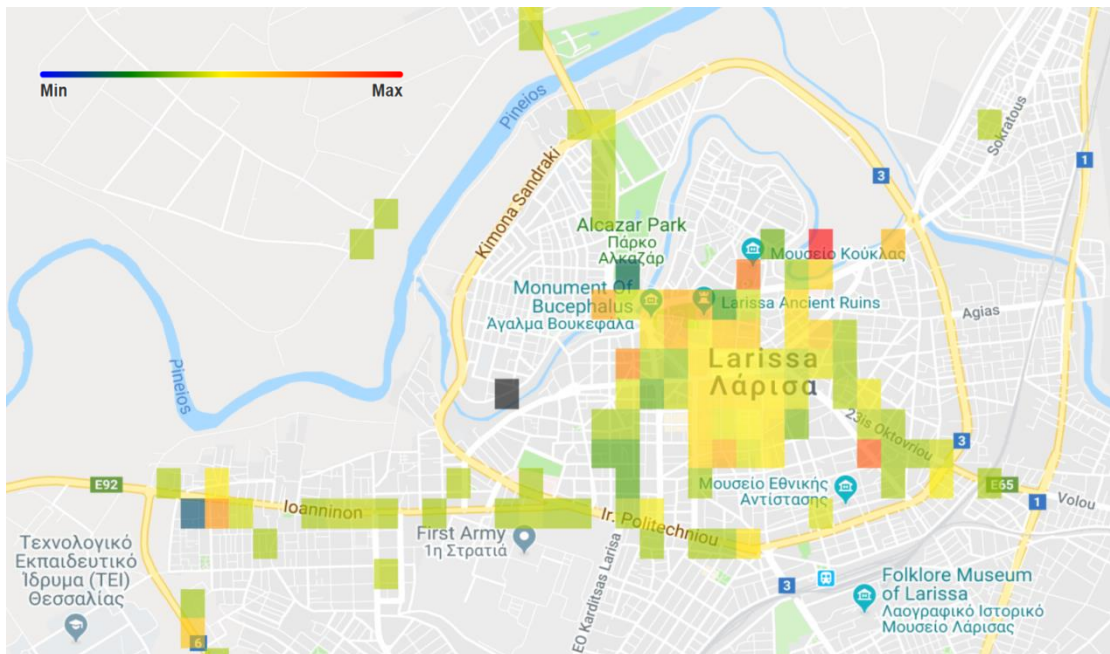
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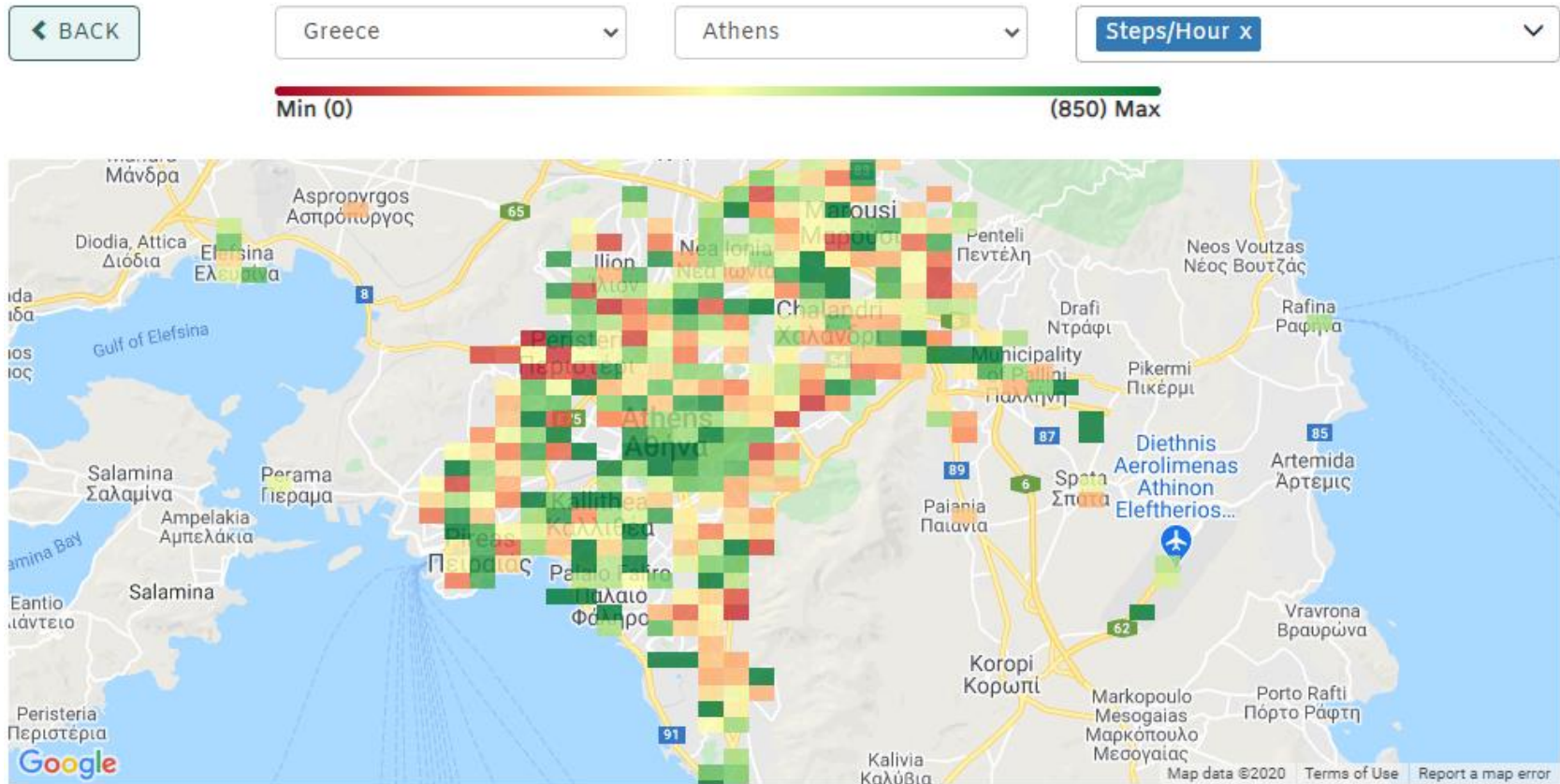
# Physical activity map - Larissa



How much and where do students move in the city of Larissa?

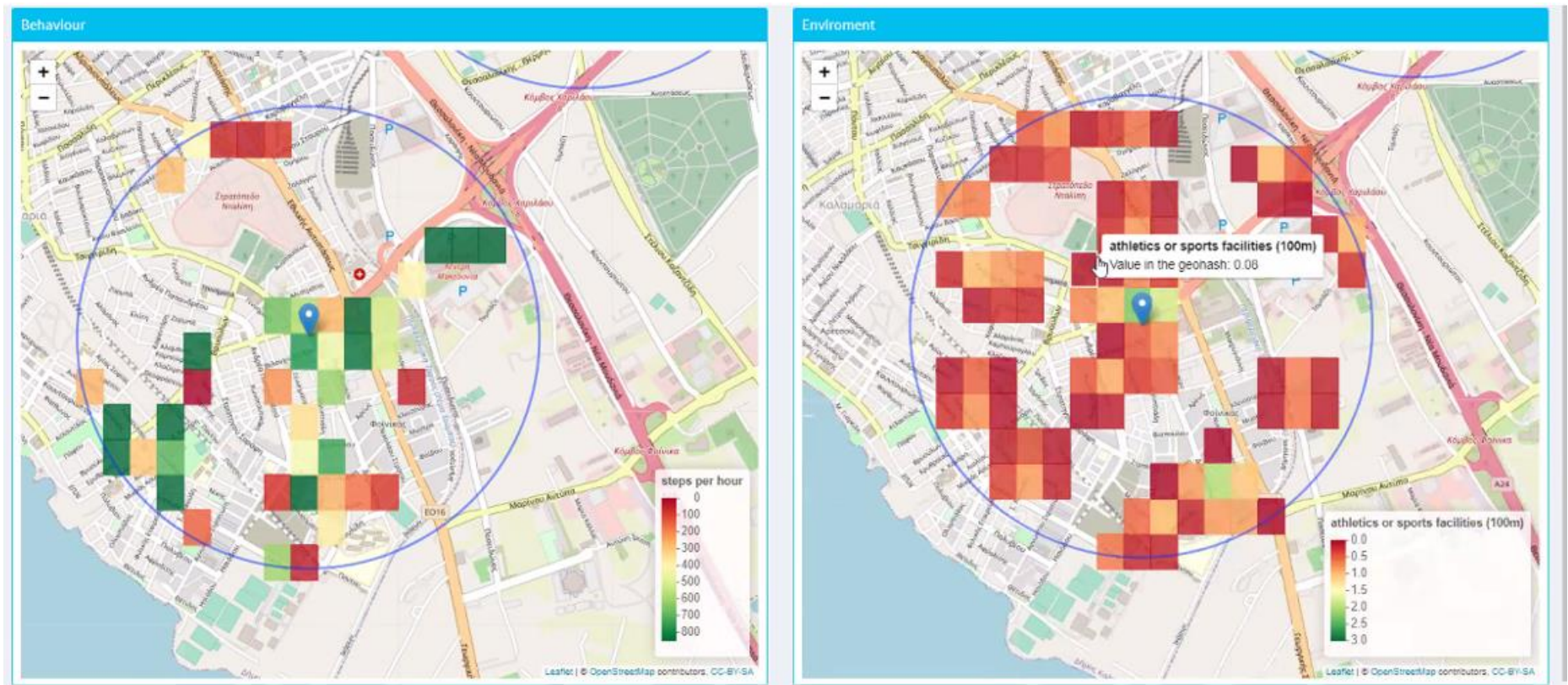
✓ *Privacy aware implementation based on geohash votes and avoiding storing of GPS coordinates of child's location*

# Physical activity map - Athens





# Behavior vs. Environment in Thessaloniki



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# Thank you

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<https://www.researchgate.net/project/BigO-Big-data-against-childhood-Obesity>



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