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**Taking action to
improve health for all**



Introducing proximity care in healthcare equity and sustainability: insights from the unfair distance index

VERA BENEDETTO, NICOLA SPEZIA, SABINA NUTI

JUNE 6, 2025

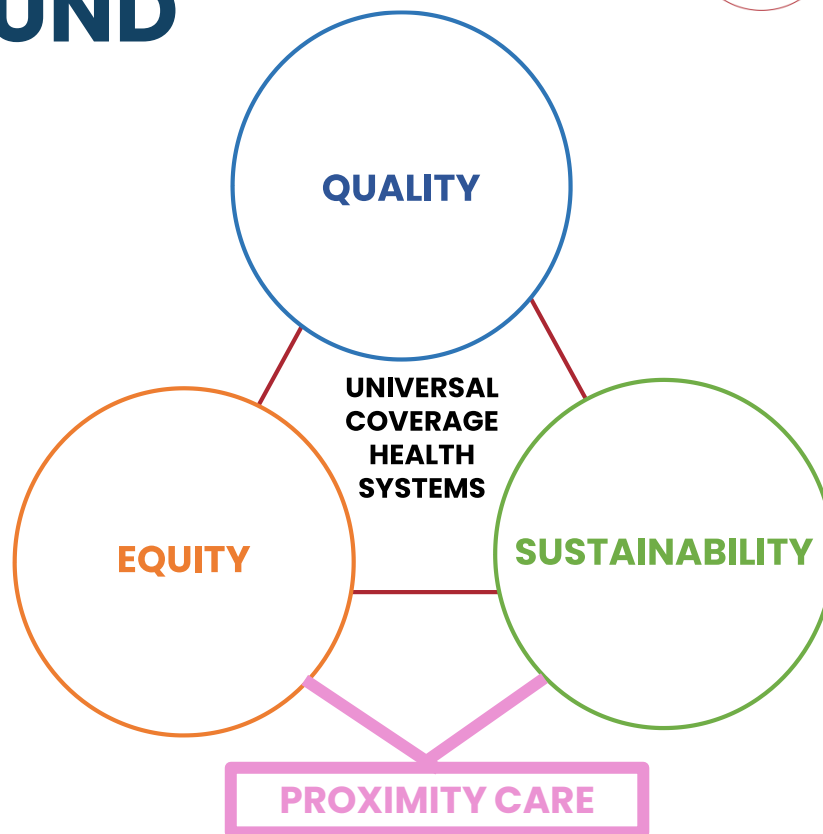
EQUITY AND ACCESS: ADDRESSING CHALLENGES ACROSS POPULATION

#EHMA2025

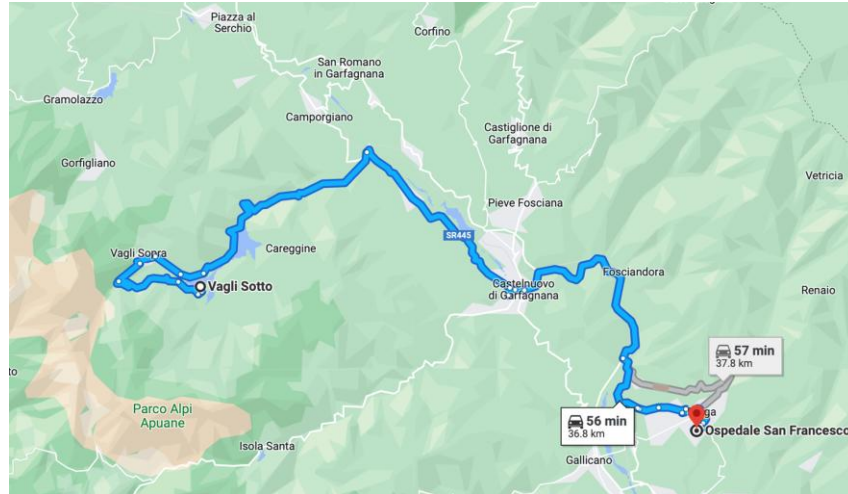
BACKGROUND



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OBJECTIVES



This study introduces health service **proximity** as a dimension of **equity** and **environmental sustainability**, presenting a new metric to quantify **inequitable travel distances** for outpatient visits.

METHODOLOGY

Data collection (municipality level, Tuscany):

- **Data source:** 2023 dermatology (first contact and follow-up) outpatient visit data (323,433 visits);



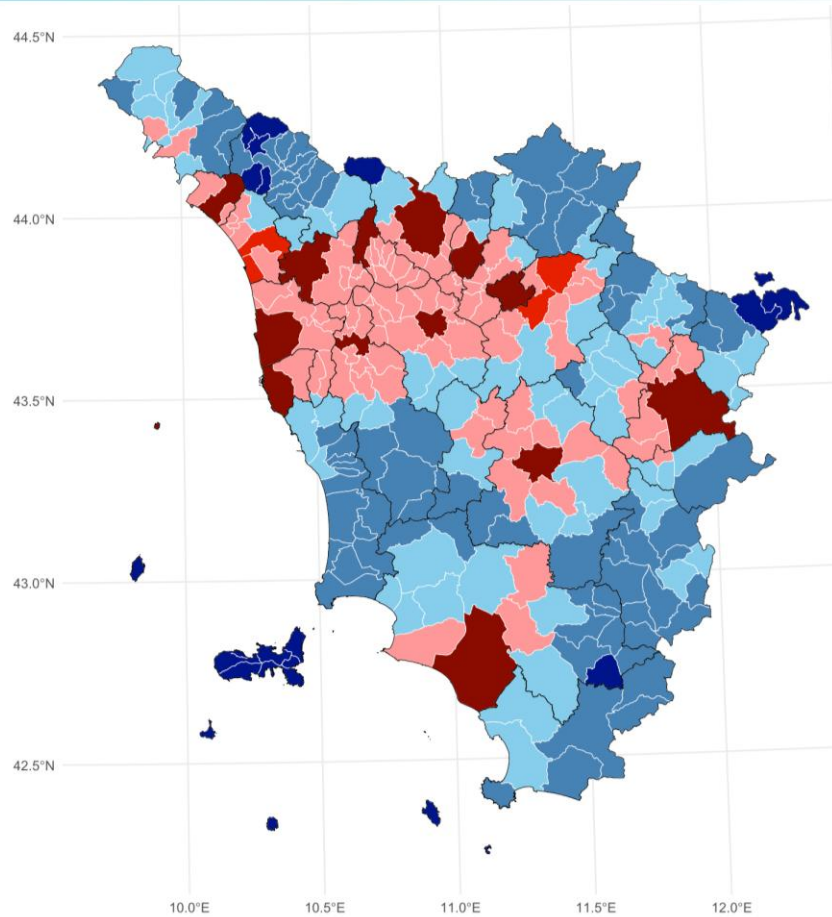
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METHODOLOGY

Data collection (municipality level, Tuscany):

- **Data source:** 2023 dermatology (first contact and follow-up) outpatient visit data (323,433 visits);
- **Classification:** Each municipality was categorised into urban or rural areas (SNAI inner area classification);



SNAI inner area Classification

- A - Polo
- B - Polo intercomunale
- C - Cintura
- D - Intermedio
- E - Periferico
- F - Ultraperiferico

Data source: Shapefiles dei limiti amministrativi comunali, provinciali e regionali della Regione Toscana, in coordinate Gauss-Boaga fuso Ovest (EPSG:3003).

METHODOLOGY

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- **Classification:** Each municipality was categorised into urban or rural areas, (SNAI) classification;
- **Travel times:** for each visit, distance and travel time between municipality of residence and healthcare facility (Google Distance Matrix APIs, fastest route option);

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Data collection (municipality level, Tuscany):

- **Data source:** 2023 dermatology (first contact and follow-up) outpatient visit data (323,433 visits);
- **Classification:** Each municipality was categorised into urban or rural areas, (SNAI) classification;
- **Travel times:** for each visit, distance and travel time between municipality of residence and healthcare facility (Google Distance Matrix APIs, fastest route option);
- **Environmental Impact:** CO₂ equivalent emissions calculated using a 0.17148 kg CO₂ eq/km conversion factor.

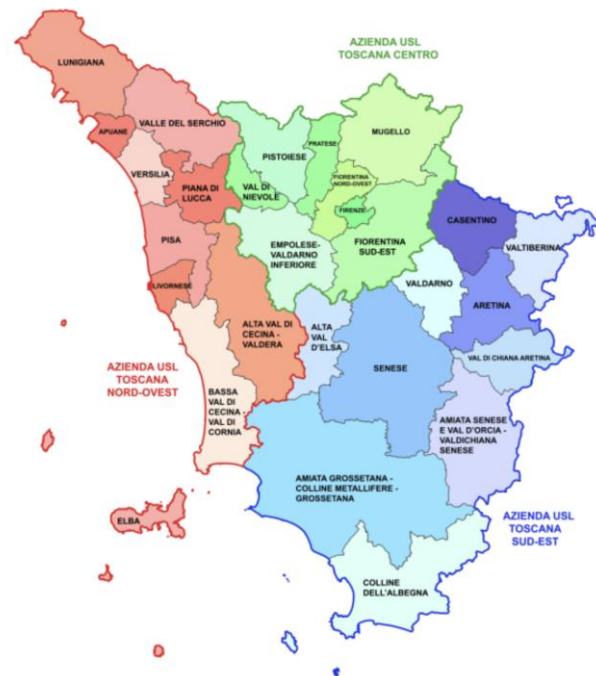
METHODOLOGY

Analysis Approach: Three-dimensional matrix integrating for each local health district (28 districts):

- Utilisation rates;
- Waiting times;
- Travel times: weighted average based on the number of visits.



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RESULTS

Waiting times, travel times and std rate per 1000 residents - dermatology visits

Local health districts, year 2023



RESULTS: ENVIRONMENTAL IMPACT OF PATIENT TRAVEL

Total CO₂ eq emissions (Tuscany Region, 2023)
=
1.8 tons (10,588,233 Km)

1.8 tons of CO₂eq emissions



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1.8 tons of CO₂eq emissions



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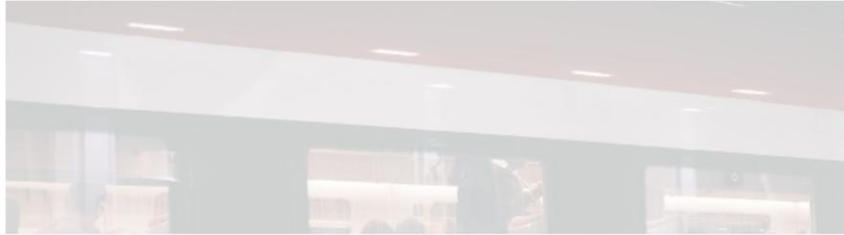
KGs OF CO₂ EMITTED WHILE TRAVELING
40,179 KM
BY HIGH-SPEED TRAIN



1.8 tons of CO₂eq emissions



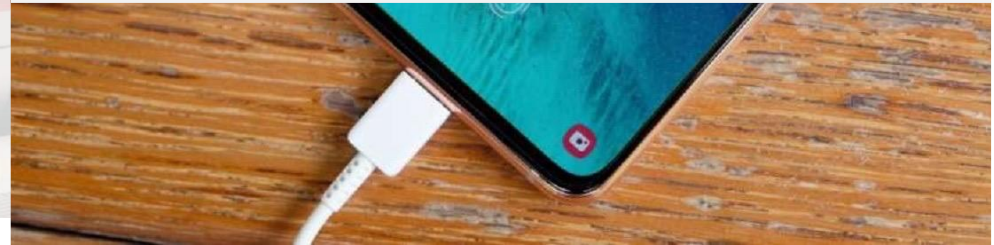
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KGs OF CO₂ EMITTED WHILE TRAVELING
40,179 KM
BY HIGH-SPEED TRAIN



KGs OF CO₂ EMITTED TO PRODUCE ENERGY FOR CHARGING
225,000 SMARTPHONES



1.8 tons of CO₂eq emissions



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KGs OF CO₂ E

BY H



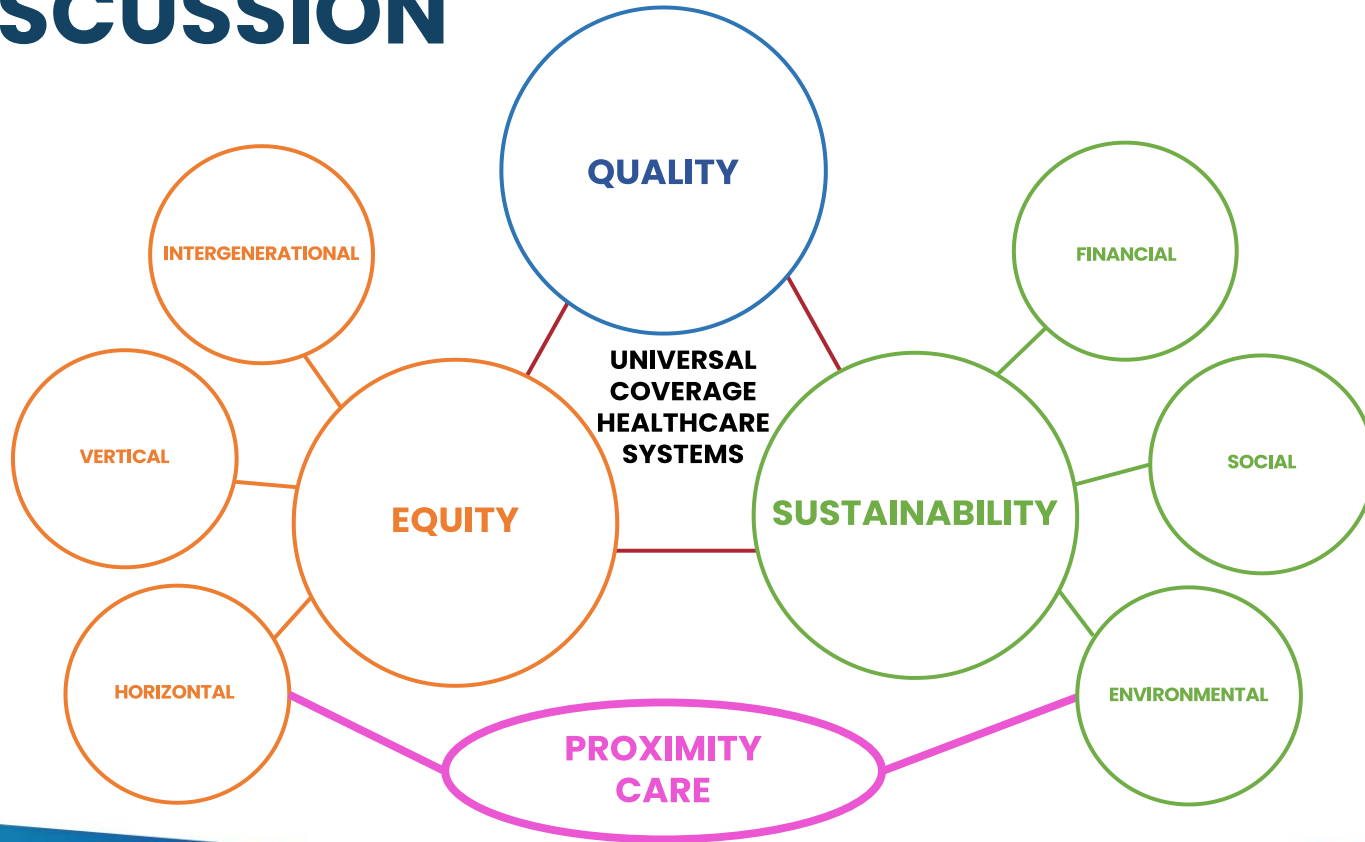
**KG OF CO₂ ABSORBED IN ONE YEAR BY
240 TREES**



ENERGY FOR CHARGING
ONES



DISCUSSION





THANK YOU

Questions and feedback?

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