




Roinn na Tíreolaíochta
DEPARTMENT OF GEOGRAPHY
UNIVERSITY COLLEGE CORK



Using FOSS4G to meet UN Sustainable Development Goal (SDG) targets

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FOSS4G to support the SDGs
7th September 2023
FOSS4G:UK Local 2023 - Maynooth



SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

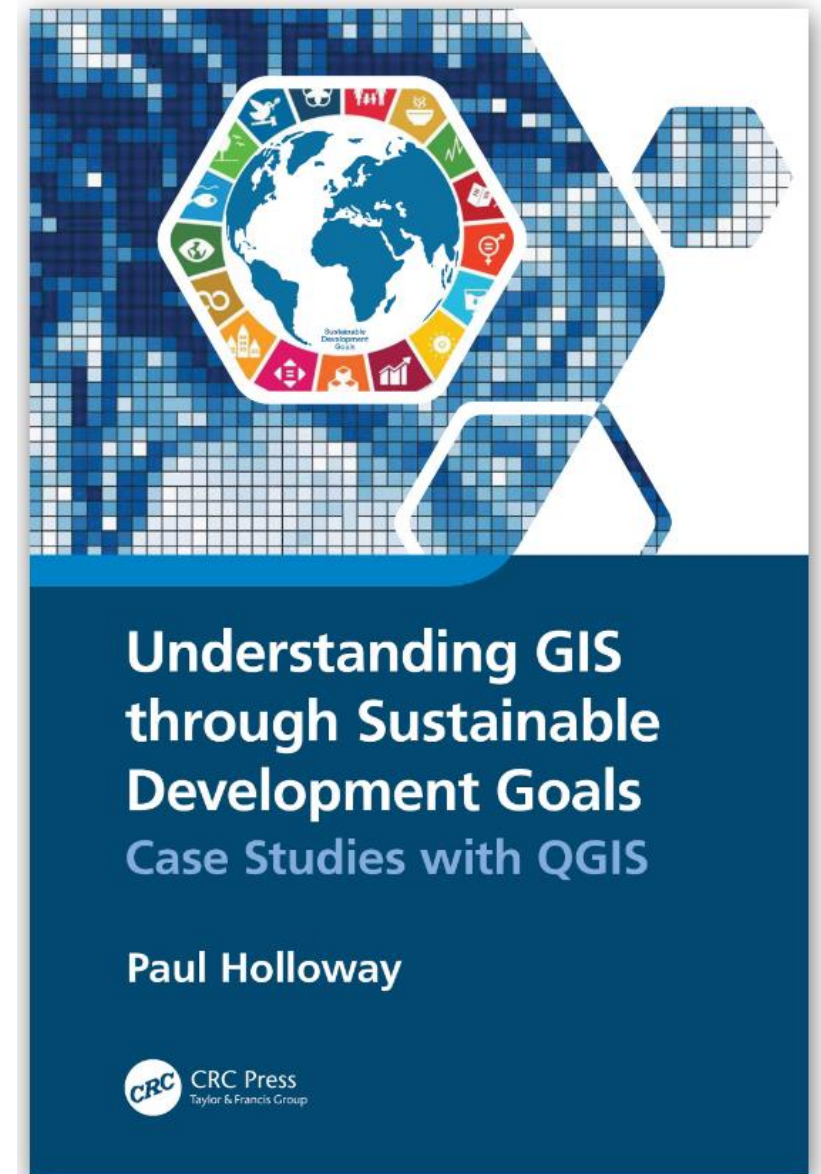
17 PARTNERSHIPS FOR THE GOALS


SUSTAINABLE DEVELOPMENT GOALS

Why FOSS4G?

Linking Research & Teaching

- A focus on learning GIS through 16 real world case studies.
- An introduction to an open-source software that can be used beyond the classroom.
- Analyzes Sustainable Development Goals in a global framework and provides an alternative approach to learning GIS.
- Supports both secondary and tertiary educators and improves GIS education at all levels.
- Contains a holistic range of case studies that extend across several disciplines, from geography education, environmental sciences, geosciences, natural sciences, social sciences, and digital humanities.



Two Case Studies

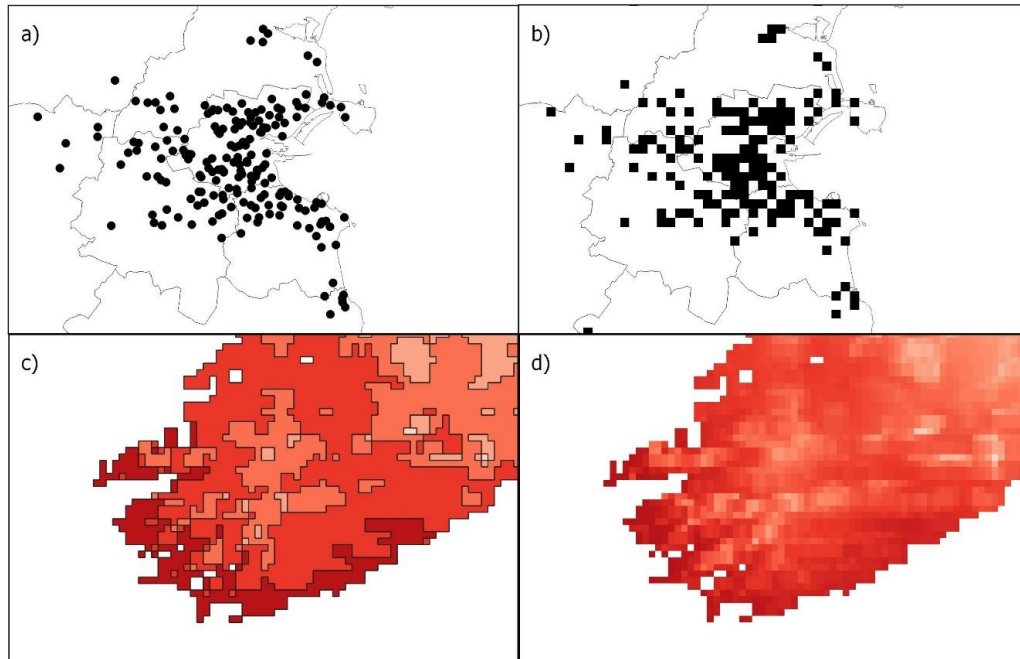
SDG13 proposes urgent action to combat climate change and its impacts, with target 13.3 to improve education, awareness raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.



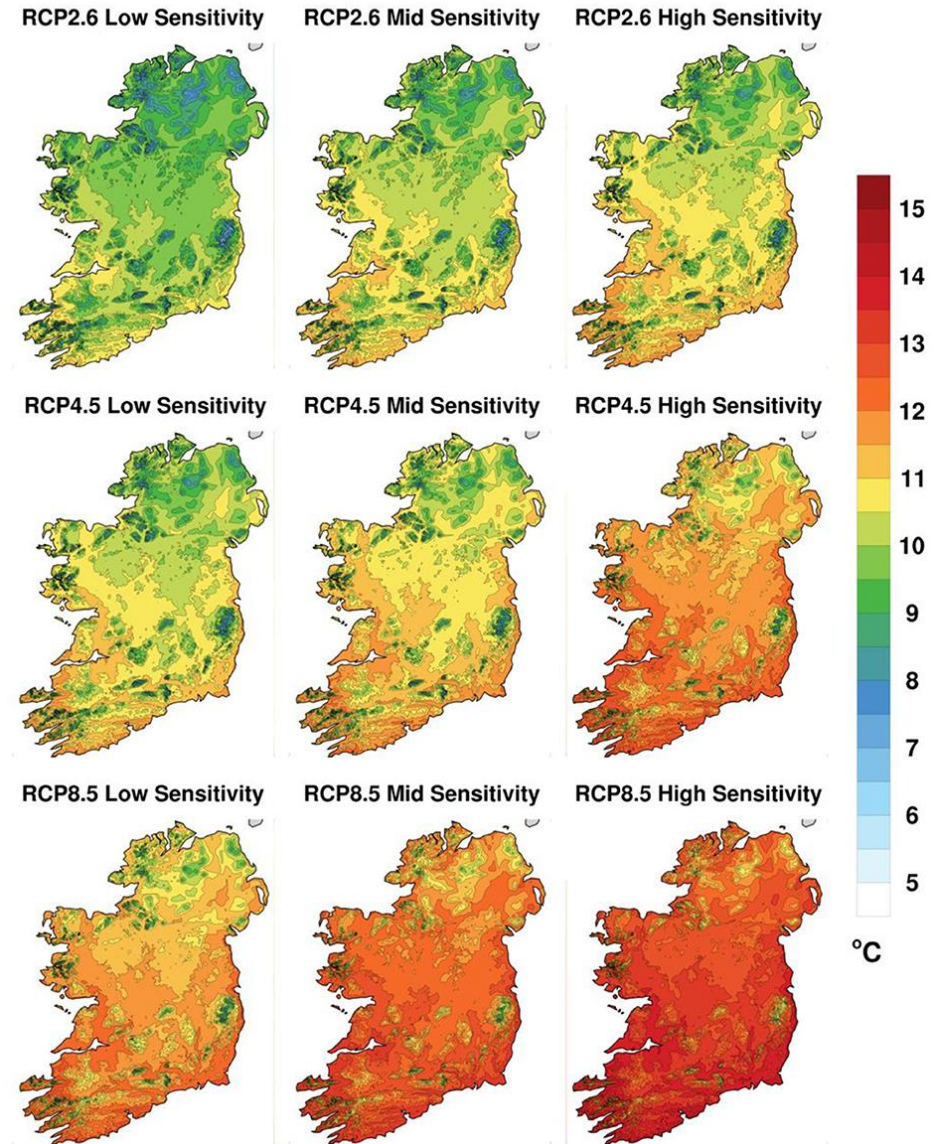
SDG11 proposes to make cities and human settlements inclusive, safe, resilient and sustainable, with target SDG11.2 to provide access to safe, affordable, and sustainable transport systems, with specific attention to the needs of those in vulnerable situations, including women, children, persons with disabilities and older persons.

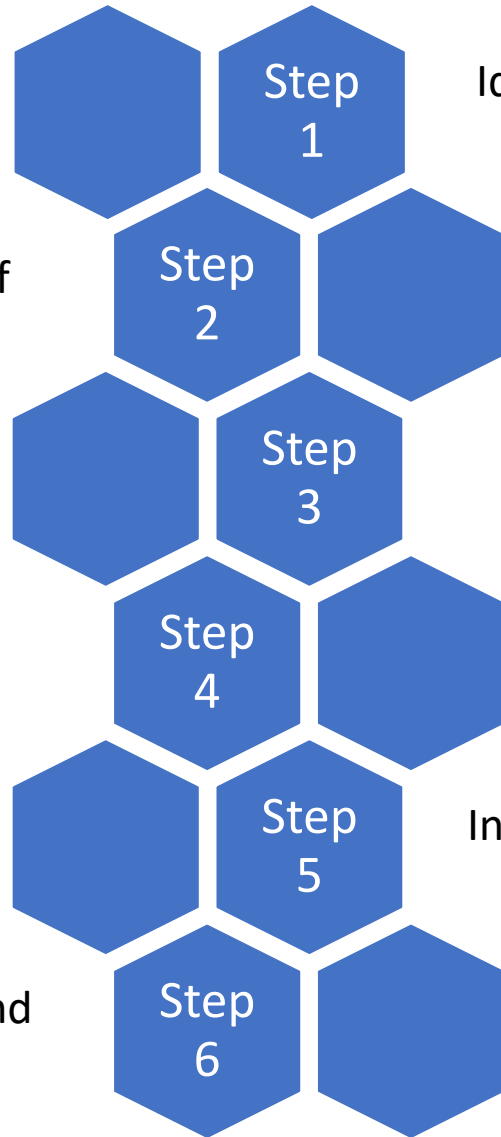
Climate Risk

Met Éireann funded project TRANSLATE, developing new climate projections and open-source methods for quantifying climate risk at a national level



Annual Mean 2m Temperature Projections 2071-2100





Identify & Generate Hazard Indicators
from climate projections

Identify & Source Geospatial Variables of
Exposure and Vulnerability Metrics

Builds the Analytical Grid to
Undertake Risk Analysis

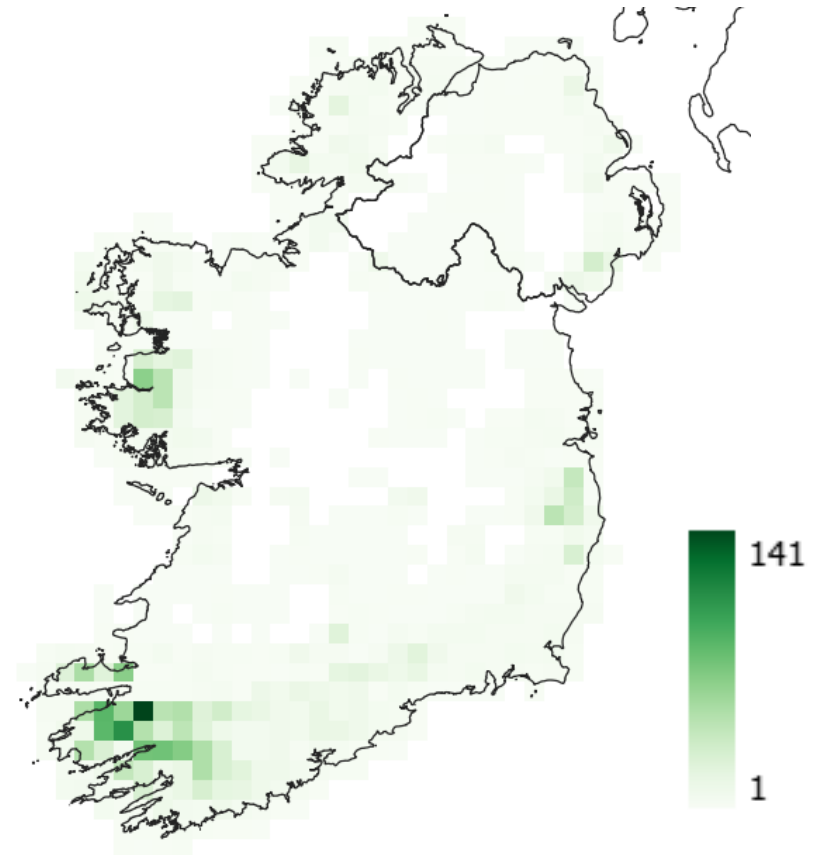
Aggregate the Hazard, Exposure, and
Vulnerability Data to the grid

Index the Hazard, Exposure, and Vulnerability and
Calculate Indicative Risk

Calculate Risk across Climate Scenarios and
Time Scales

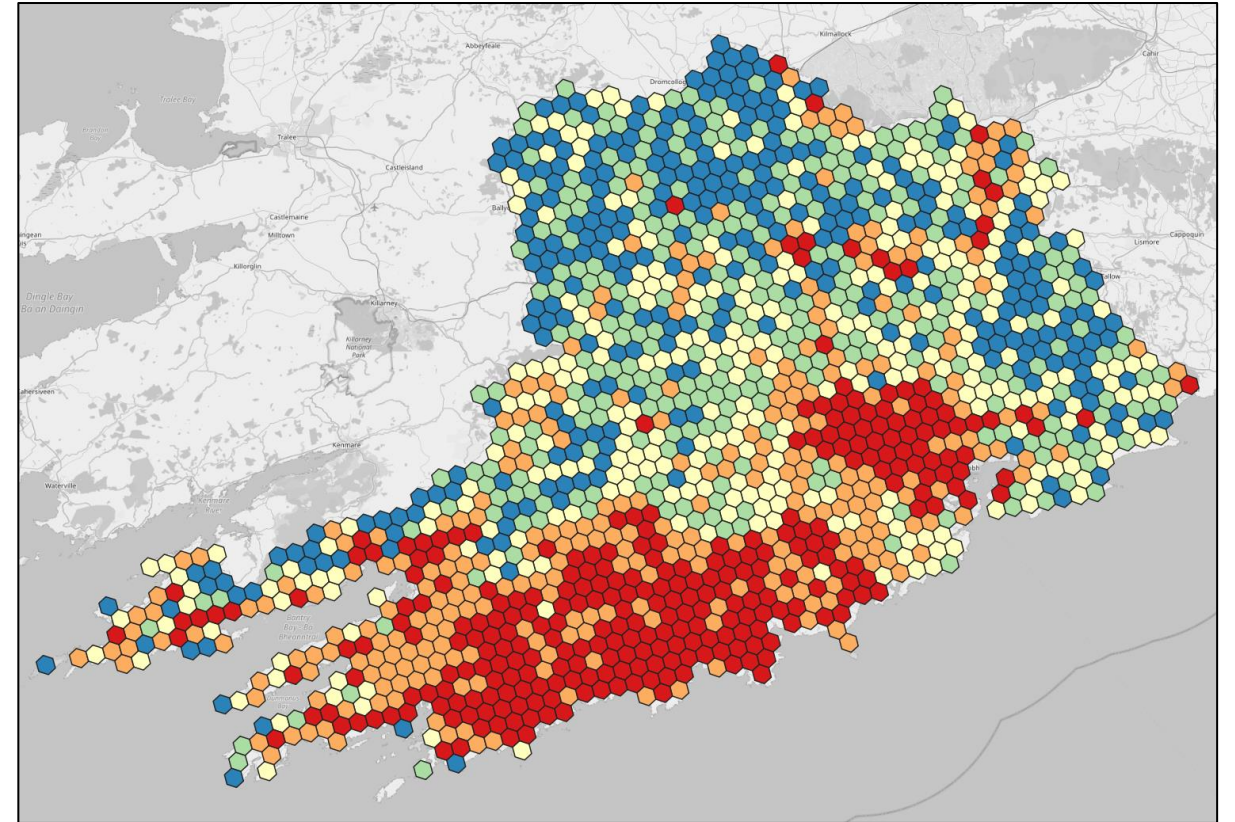
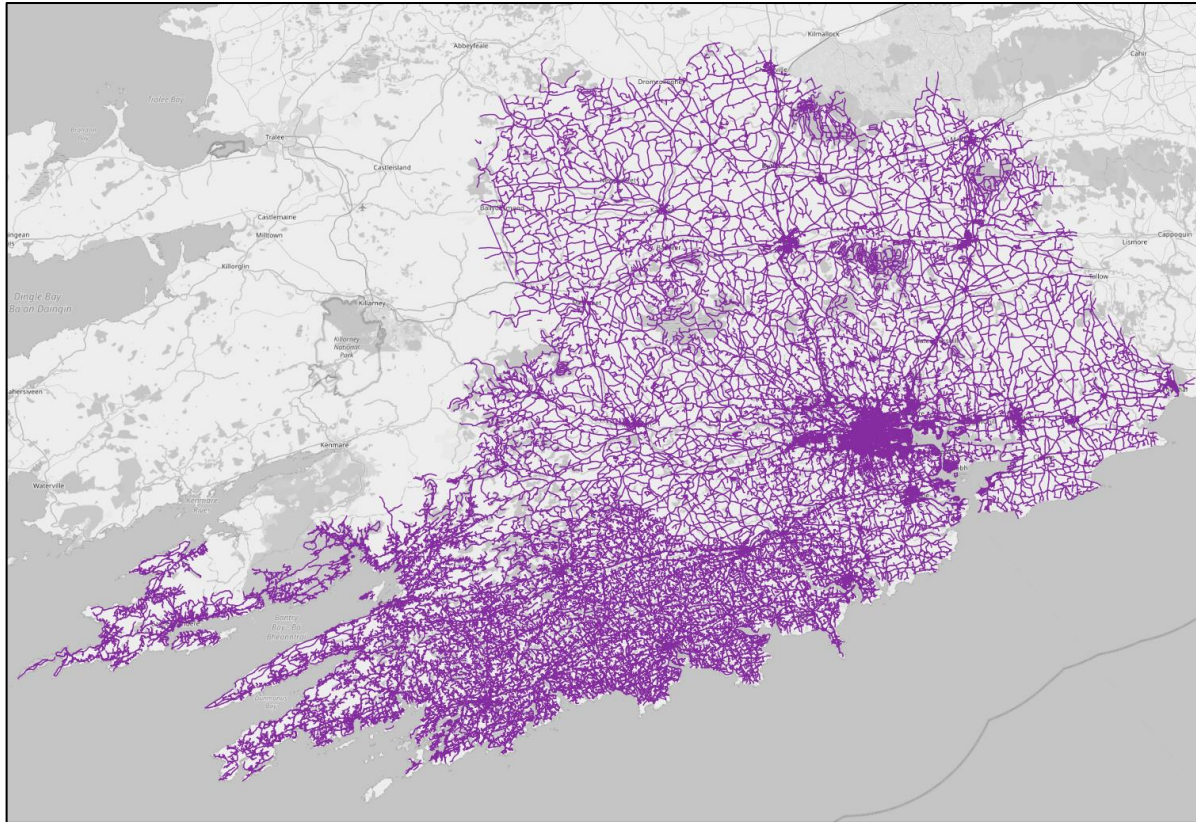
Climate	Hazard Indicator	Derived
Atmospheric	Pressure	
	Ultraviolet radiation levels	
Precipitation	Wet Days	✓
	Very Wet Days	
	Met Éireann Yellow Warning Days-Rain	✓
	Met Éireann Orange Warning Days-Rain	✓
	Met Éireann Red Warning Days-Rain	✓
	Met Éireann Yellow Warning Days - snow	
	Dry periods	✓
	Humidity	
	Met Éireann Drought - Absolute Drought	
	Met Éireann Drought - Partial Drought	
	Agricultural drought risk (SPI)	
	Agricultural drought risk (SPEI)	
	Potential Soil Moisture Deficit	
	Potential evapotranspiration (PET)	
Temperature	Heat-stress Days (Maximum Temp, Days over 30C)	✓
	Met Éireann Yellow Warning Days - Low Temperature/Ice	✓
	Met Éireann Orange Warning Days - Low Temperature/Ice	✓
	Met Éireann Red Warning Days - Low Temperature/Ice	✓
	Variability in temperature	
	Met Éireann Yellow Warning Days - High Temperatures	✓
	Met Éireann Orange Warning Days - High Temperatures	✓
	Met Éireann Red Warning Days - High Temperatures	✓
	Summer days	
	Heat Wave Index	✓
	Heating degree days	
	Met Éireann Drought- dry spells	
	Cooling degree days	
	Tropical nights	
	Growing degree days	✓
	Shade temperatures	
	Shade temperatures	

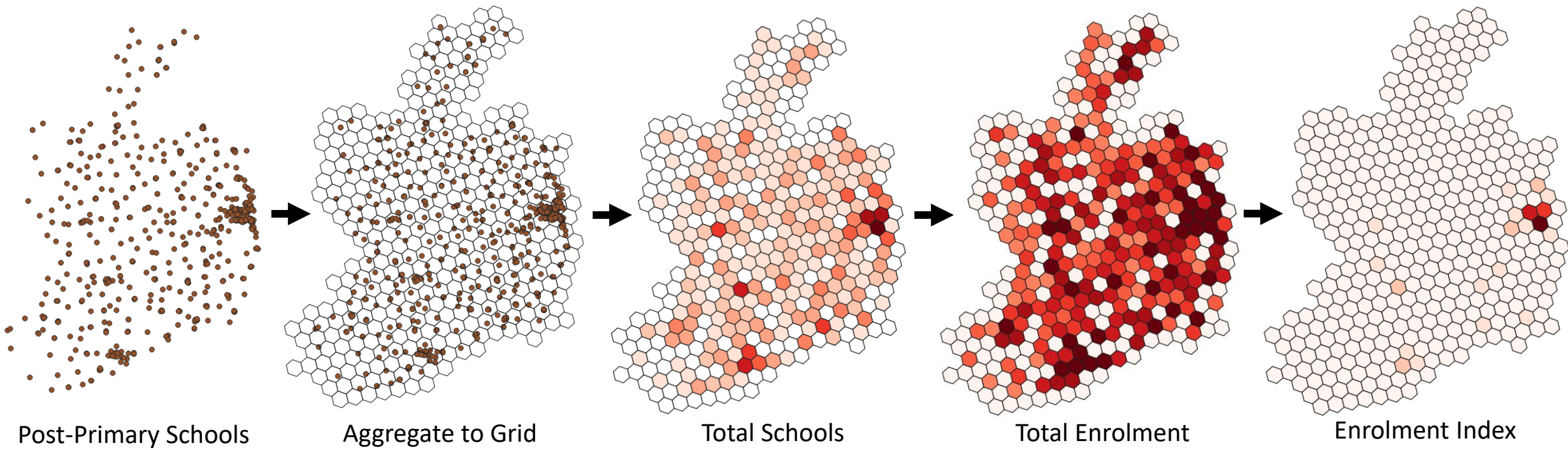
- Code developed in open-source Python code for ~14 climate hazard indicators
- Infrastructure in place to tweak values to sector specific thresholds



Extreme Rain Days 1976-2005

Infrastructure / Tools developed to aggregate zonally any spatial dataset





Post-Primary Schools

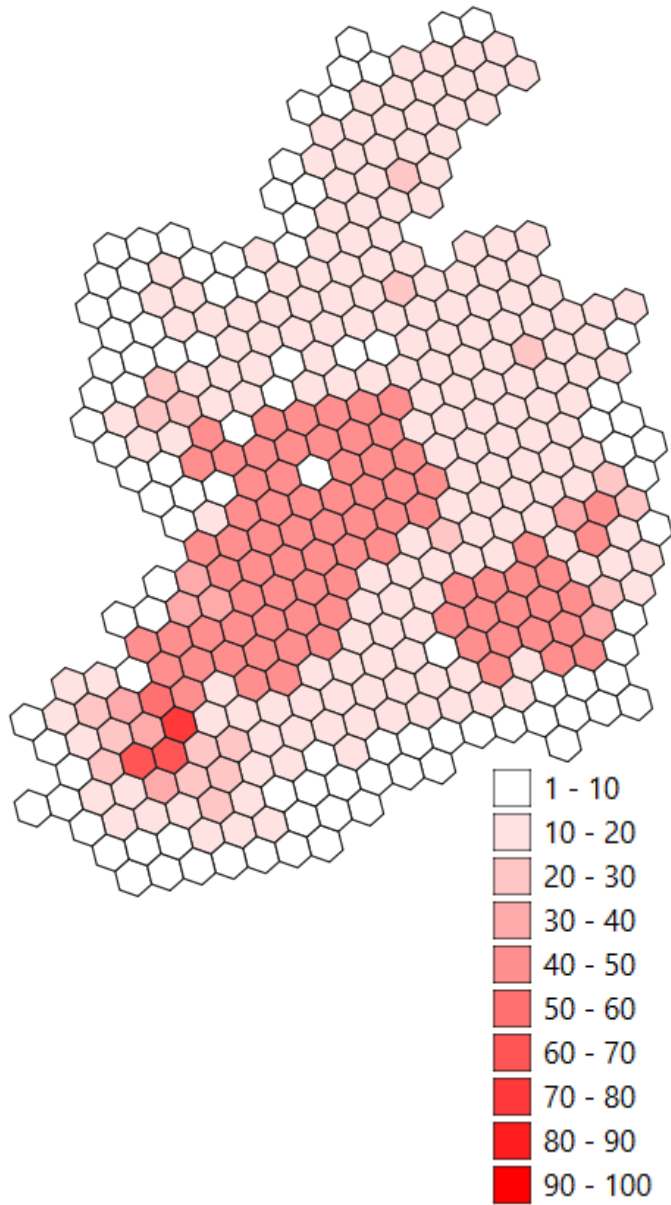
Aggregate to Grid

Total Schools

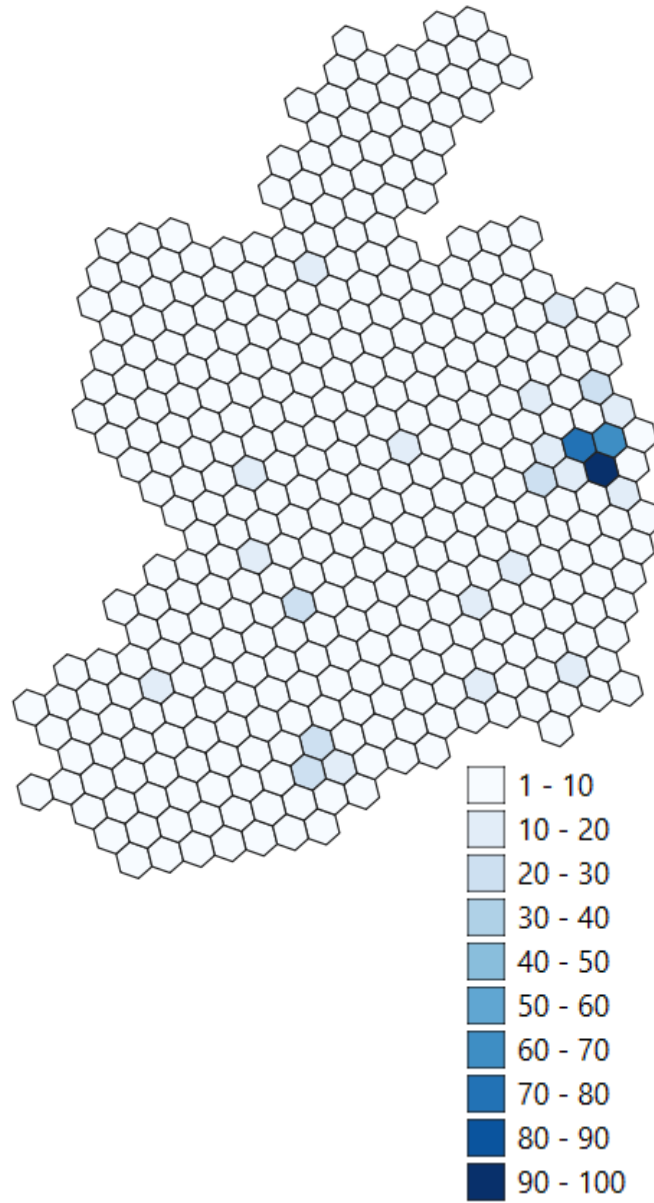
Total Enrolment

Enrolment Index

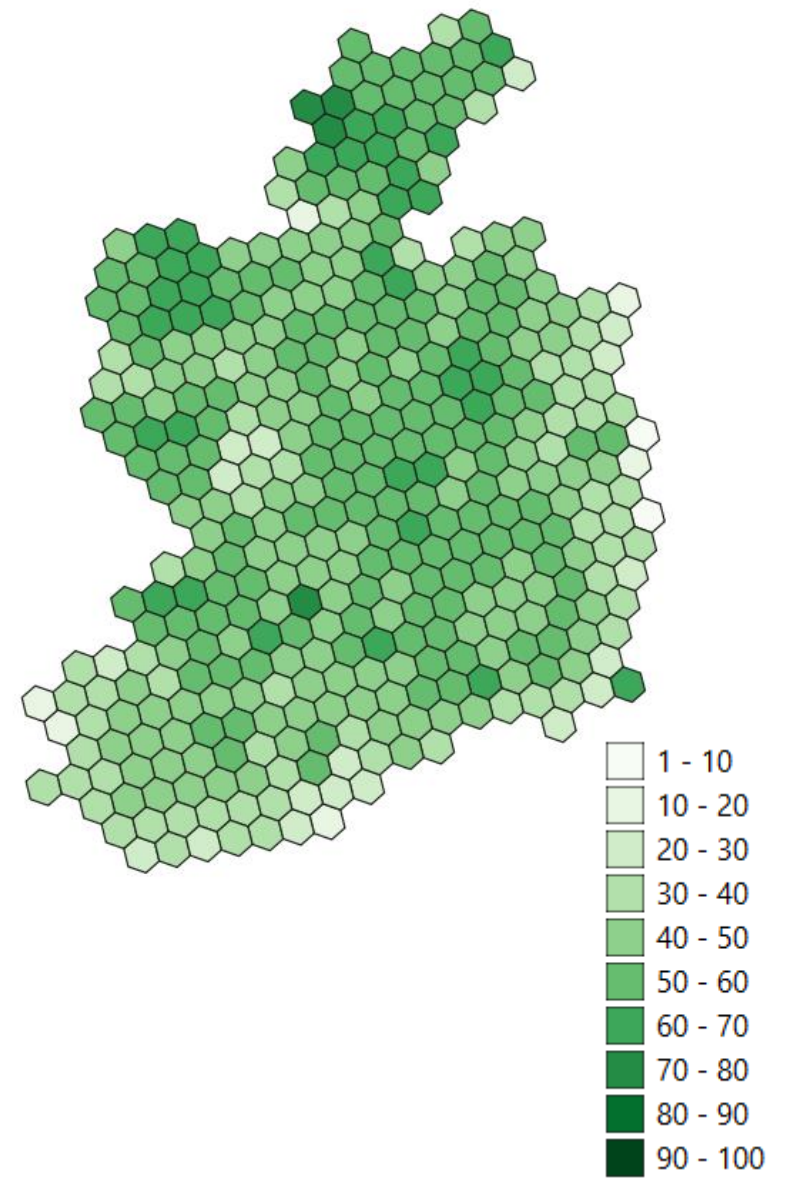
Hazard



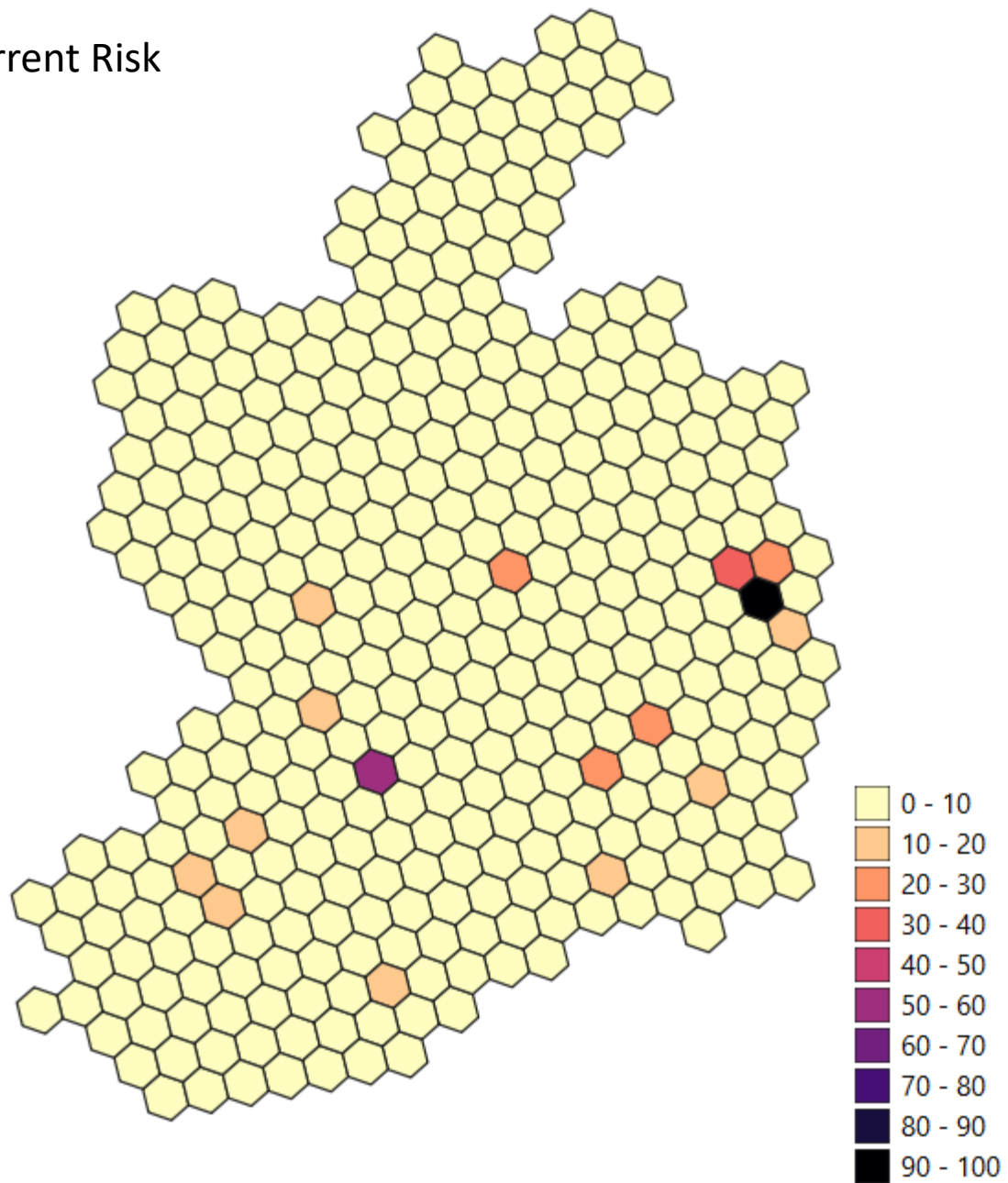
Exposure



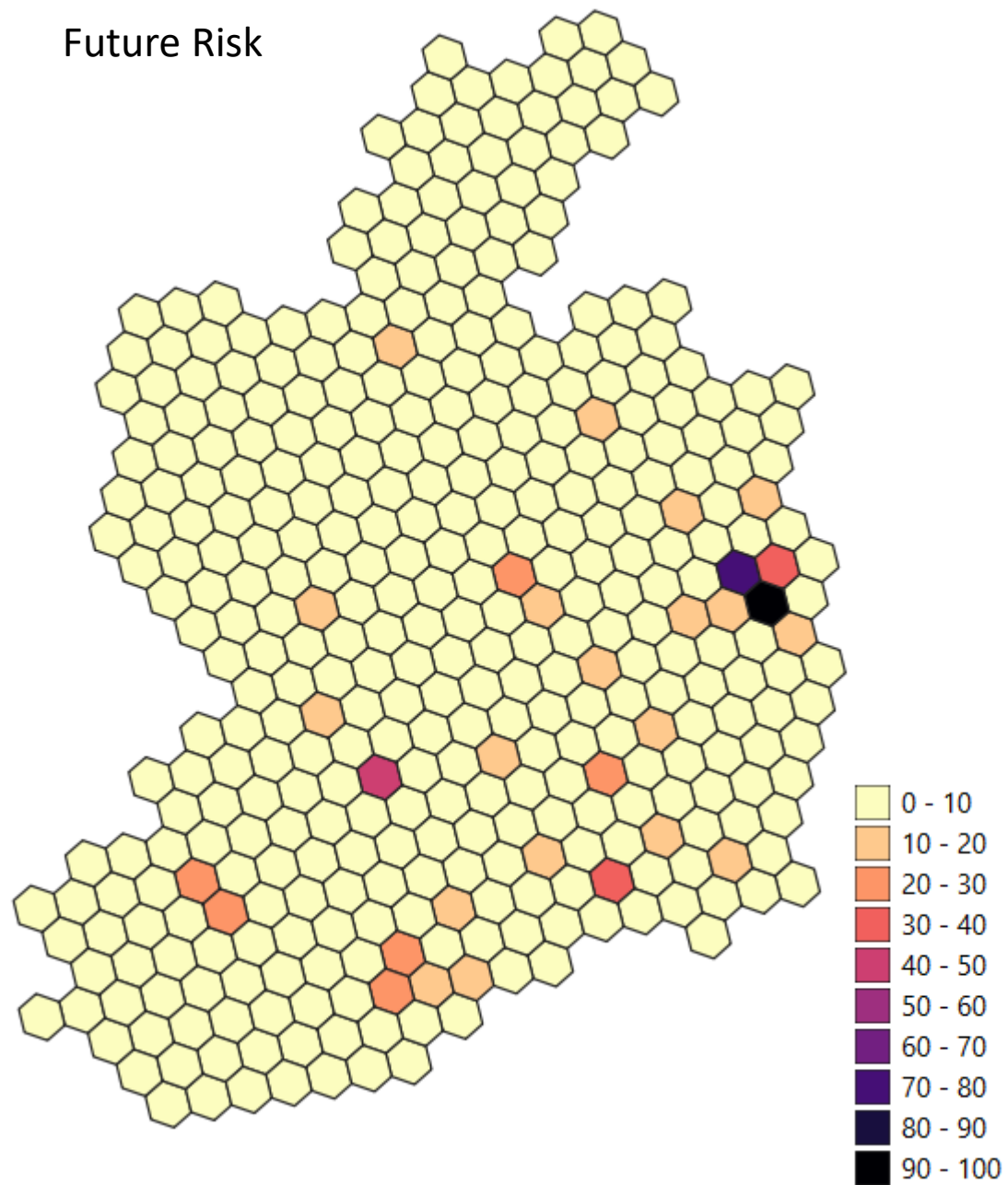
Vulnerability



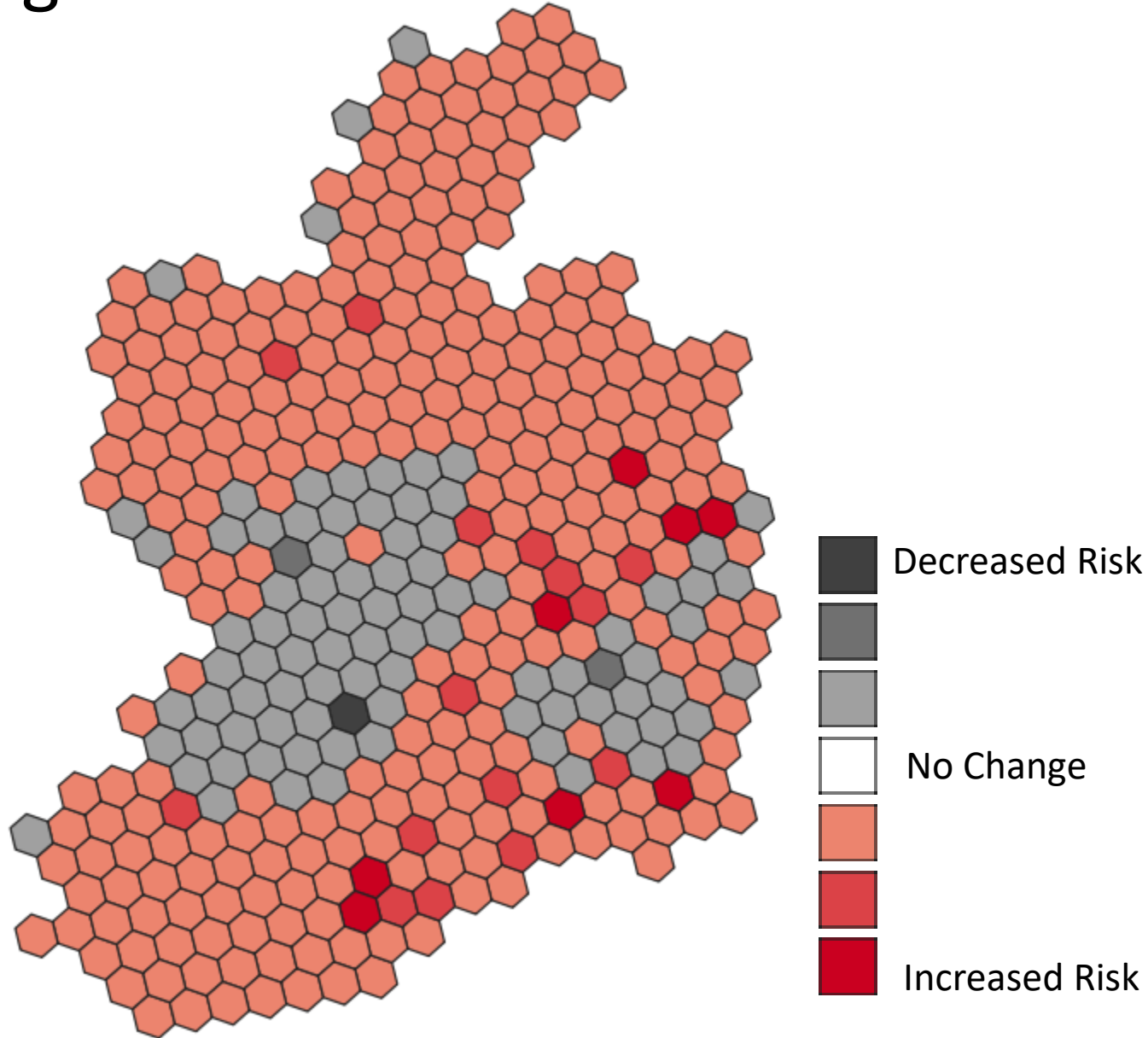
Current Risk



Future Risk

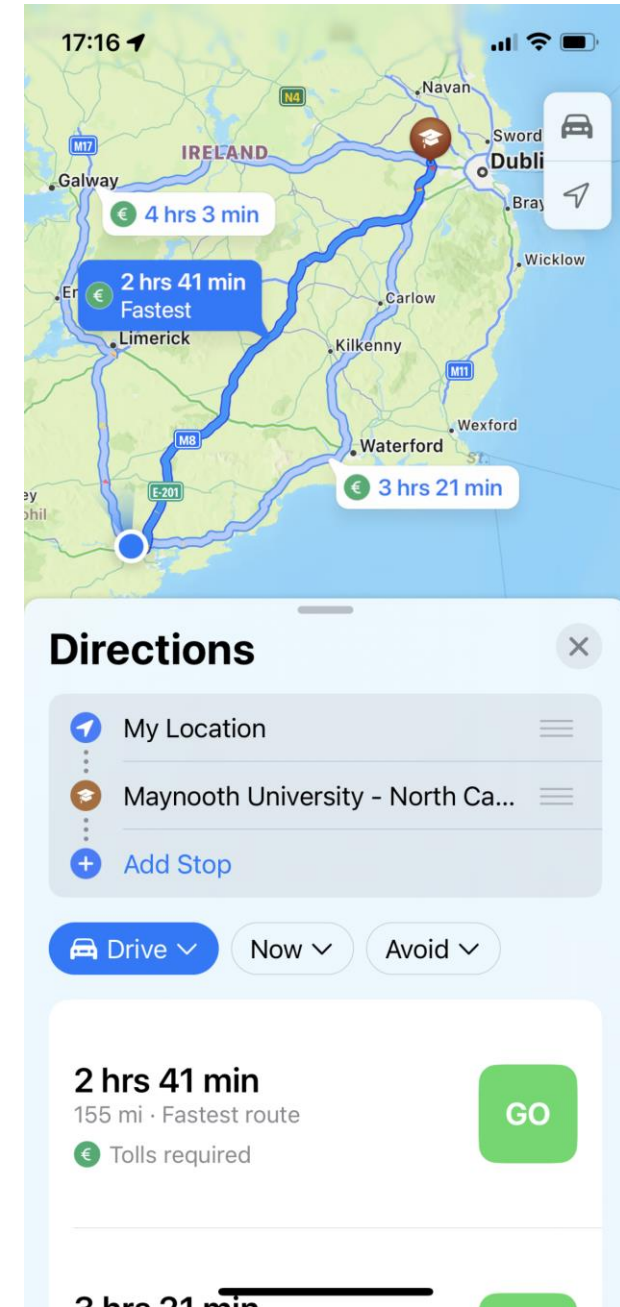


Change in Risk



- Identification of areas where risk of missed education increases or decreases based on changing climate hazards
- Able to identify which schools are projected to have the largest changes under future climate scenarios, which could be used to mitigate the impacts of climate change
- By spatially linking schools to climate risk, we increase awareness of the changes under climate scenarios, supporting SDG13.3
- Focusing on just precipitation, schools in Tralee & Donegal see the highest mm increase in rainfall

What is the best route to take FOSS4G?





'I don't relax until I'm home' Women's fear of violent crime in public space in Cork

Liam Coakley

Department of Geography, Univeristy of Otago, New Zealand

ABSTRACT

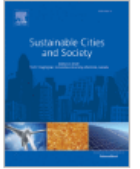
Cork women's fear of violent crime is found to have a strong spatial expression but it is also seen to be variable with social context. Patterns of Fear of Violent Crime (FOVC) in the city centre are outlined and some social complexities are considered. A conceptualisation of passive and reactionary FOVC is not favoured. Rather, following Koskela's (1997) consideration of 'bold women', consideration is given to whether these patterns may point to a more proactive negotiation of such feelings in context.

Key index words: Women, Fear of Violent Crime, Cork.








Sustainable Cities and Society

Volume 67, April 2021, 102691




Towards people-centric smart city development: Investigating the citizens' preferences and perceptions about smart-city services in Taiwan

[Tingting Ji](#)^a , [Jieh-Haur Chen](#)^b , [Hsi-Hsien Wei](#)^a  , [Yu-Ching Su](#)^b 

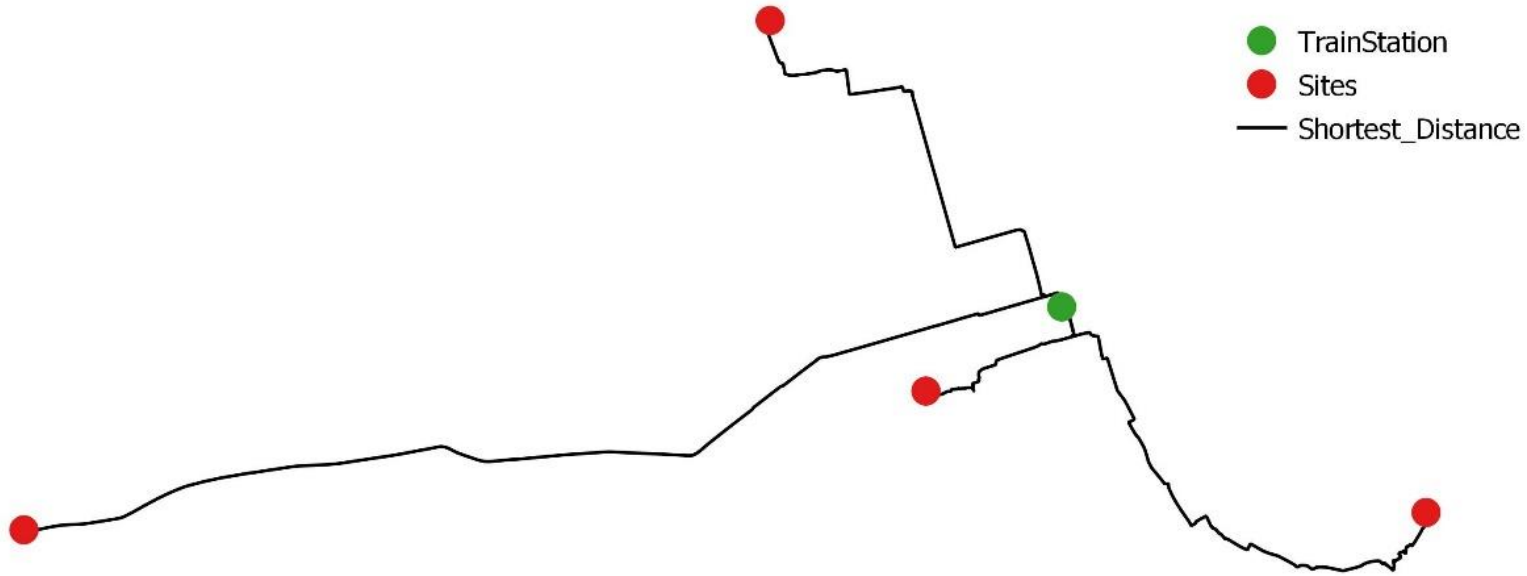
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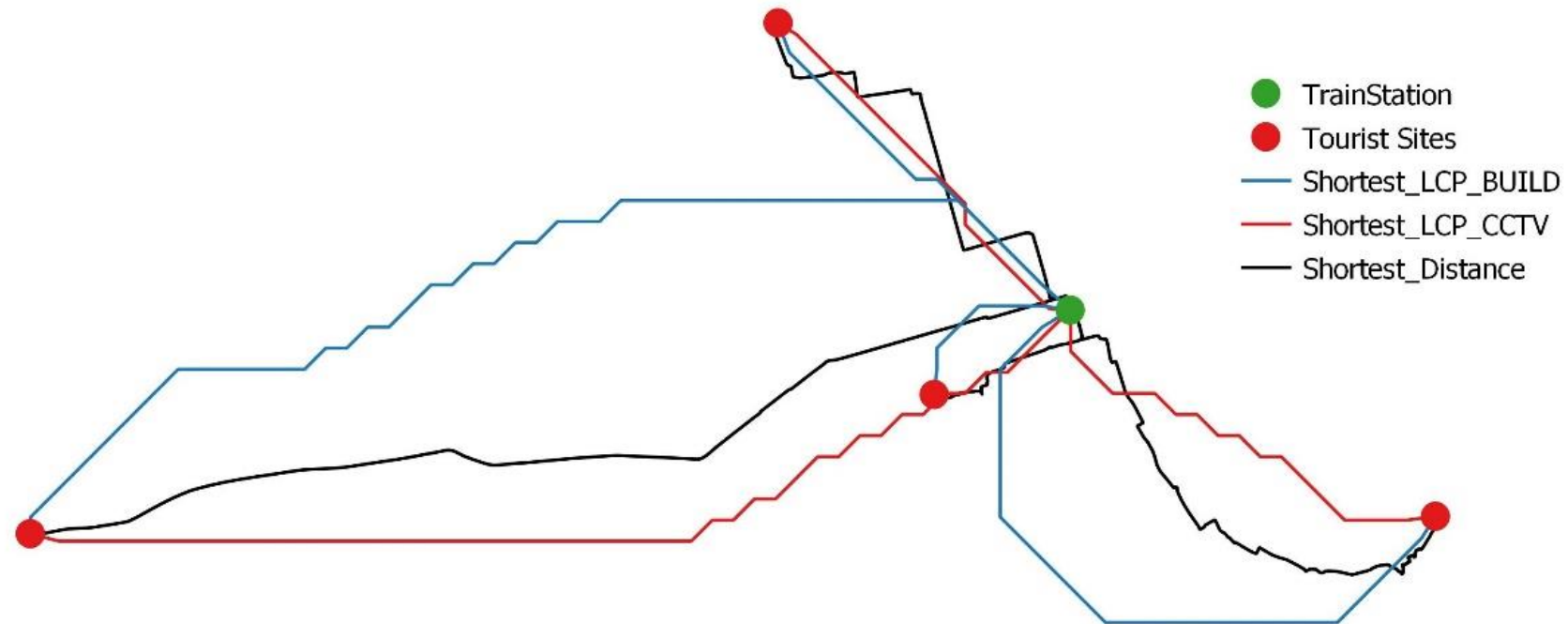
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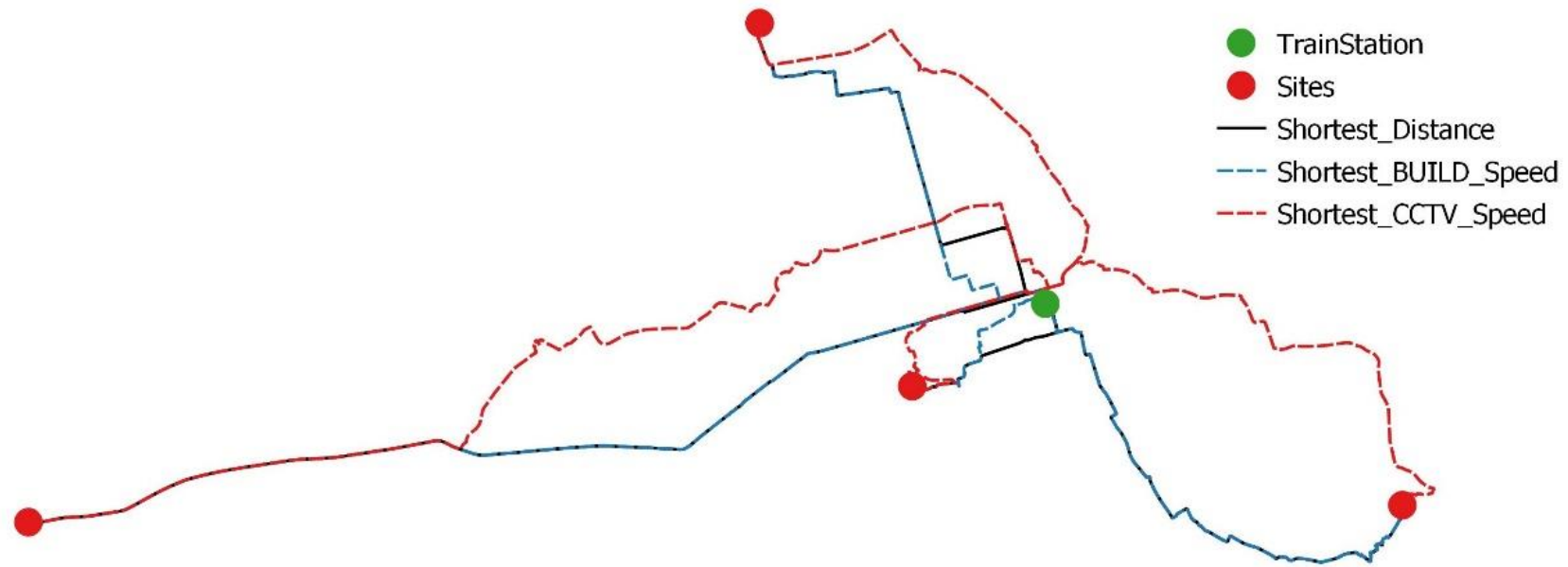
What is the best route to take to the train station in Edinburgh?

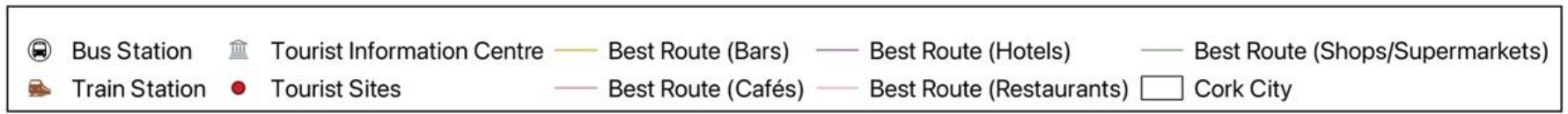
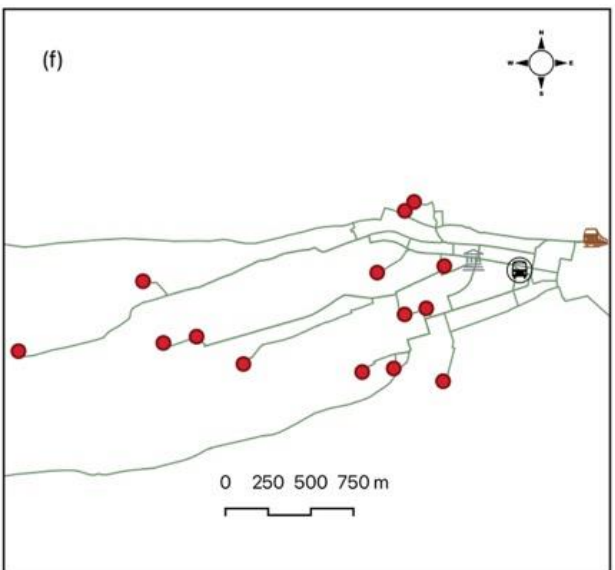
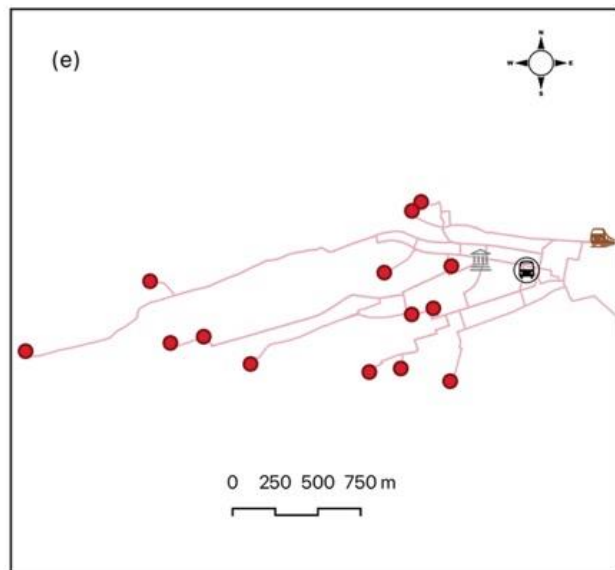
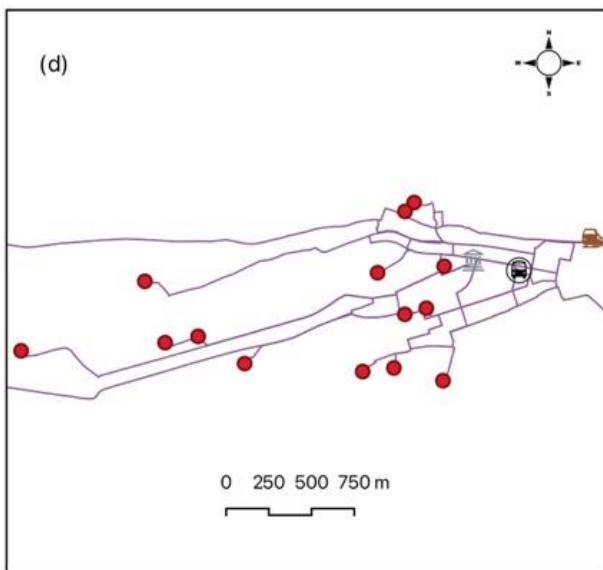
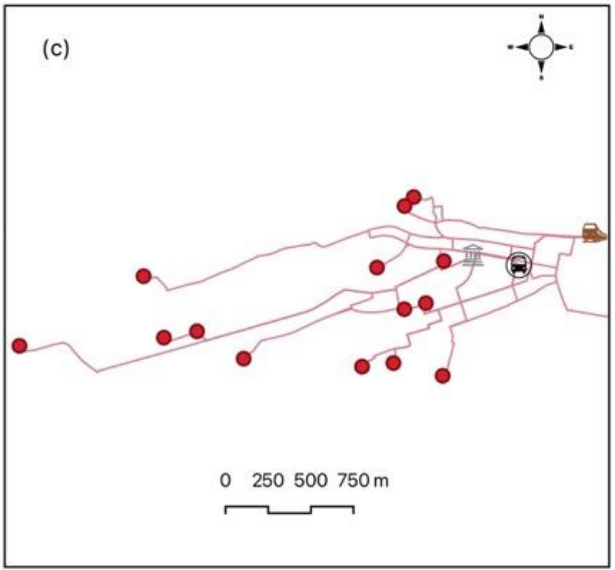
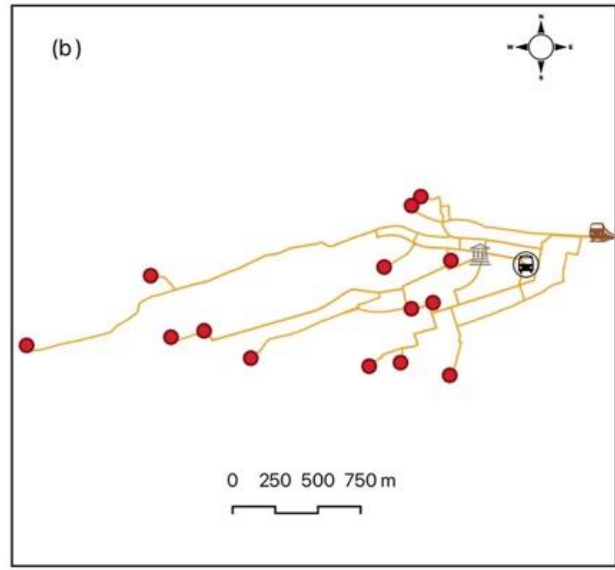
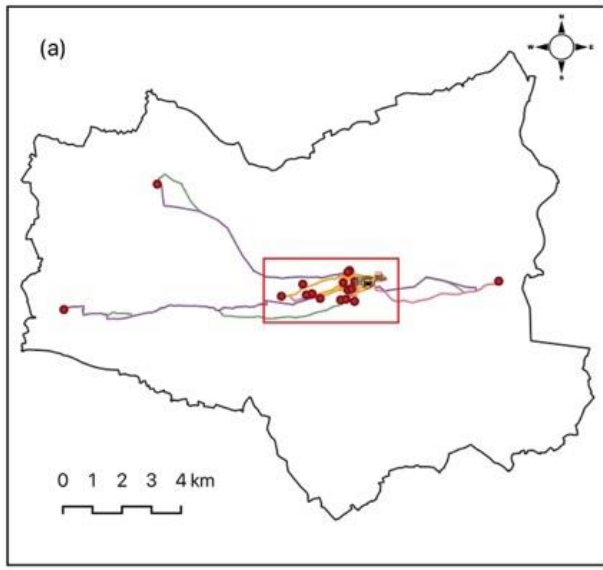


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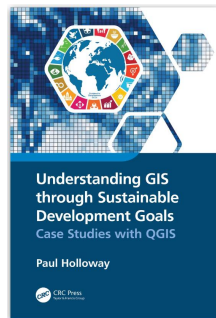




All work represents collaborations with Paraic Ryan, Parvaneh Nowbakht, Chris Phillips, Jingyu Wang, Enda O'Brien, Paul Nolan, Lucky Ikani, Liam Coakley, and James Fitton.



Met Éireann TRANSLATE Project



UCC CACSSS Research Support; Taylor & Francis

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