Best Wastes and Resources Management Presentation at Environ 2022

Winner Anna Claire O'Regan, University College Cork, MaREI & Environmental Research Institute

Sustainable, Healthy and Liveable Future Cities

Urbanisation is occurring at a rapid rate worldwide. Approximately 55% of the world's population currently reside in urban areas, which is set to increase to 70% by 2050. This trend poses major problems relating to urban sustainability including an increase in air pollution. This poses a number of health risks to urban citizens including, respiratory illness, and cardiovascular illness while air pollution is also attributed to 1,300 premature deaths in Ireland. There is tremendous potential to minimise urban air pollution and its associated health risks with positive access and exposure to urban greenspace.

This research focuses on employing state-of-the-art technologies and methodologies to quantify and investigate the associations between environmental and health metrics. Street-level greenspace was quantified in high-spatial resolution for Dublin, Cork and Galway cities. The greenspace datasets were created by automatically downloading and processing Google Street View Images along the road network of each city. Self-reported health and socio-economic data, including income and education were acquired from the Irish census. Additionally, focusing on Cork City, high-spatial and temporal resolution air quality data was obtained for Cork City's PurpleAir sensor network.

This research found strong associations between greenspace and health while also identifying links between higher levels of greenspace and lower levels of air pollution. As the population of cities continues to grow, the development of greenspace will become increasingly contested. The findings of this research highlight the environmental and health benefits of incorporating greenspace into future developments. This will help create sustainable, healthy and liveable future cities.

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Dublin
Street-level Greenspace 13.86%

Cork
Street-level Greenspace 20.37%

Galway
Street-level Greenspace 17.46%

Read the *'Biophilic Cities'* research paper: O'Regan, A. C., Hunter, R. F. & Nyhan, M. M. (2021). "Biophilic Cities": Quantifying the Impact of Google Street View-Derived Greenspace Exposures on Socioeconomic Factors and Self-Reported Health. *Environmental Science and Technology*, 55(13), 9063-9073. https://doi.org/10.1021/acs.est.1c01326

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