Local health status is linked to the quantity, quality and proximity of green infrastructure

Penny Cook[1], Matthew Dennis[2], Philip James[1], Phil Wheater[3] and Sarah Lindley[2]

[1]University of Salford

[2]University of Manchester

[3]Manchester Metropolitan University
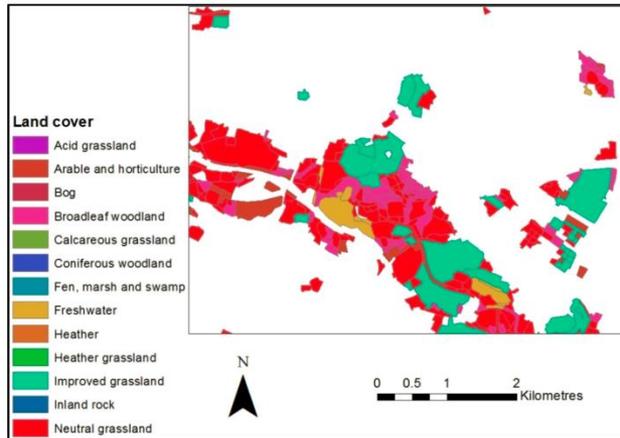
www.ghia.org.uk

@GHIA_VNN

Issues with green urban-rural land-cover characterisation in health studies
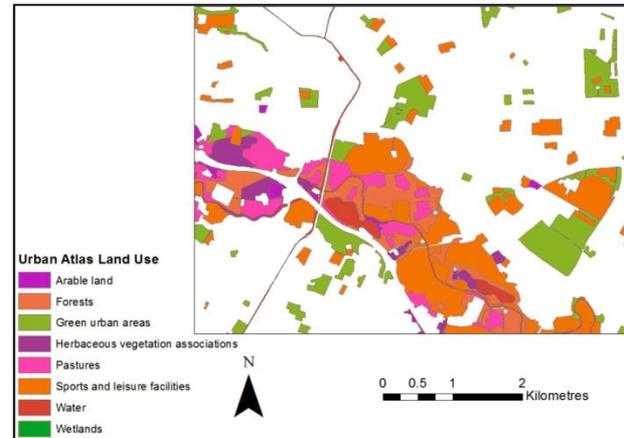
- "green space" as catch-all (though with significant gaps).

- Percentage cover as standard measure

- Little consideration of shape, patch or diversity. E.g. Mitchell & Popham (2007) and Stott et al. (2016) emphasize larger green spaces towards human well-being but do not consider spatial configurations.

- Few studies of multiple green-cover types

- (Street) trees especially under-considered

- Emphasis on mediating socio-economic factors over nuance in terms of landscape content, context or distribution
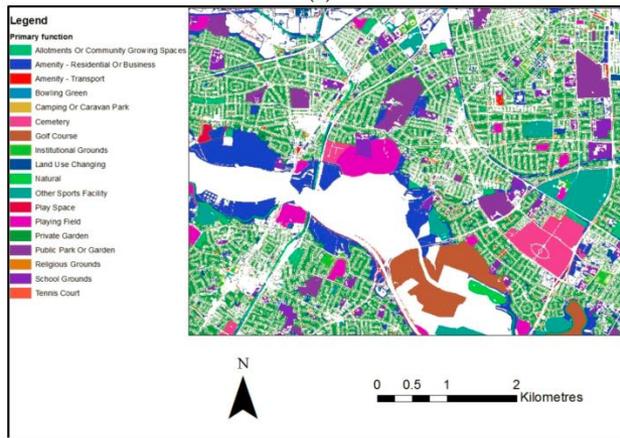
Existing GI datasets a) Land Cover Map 2015, b) Urban Atlas 2012, OS Greenspace Layer: c) land use and d) land cover
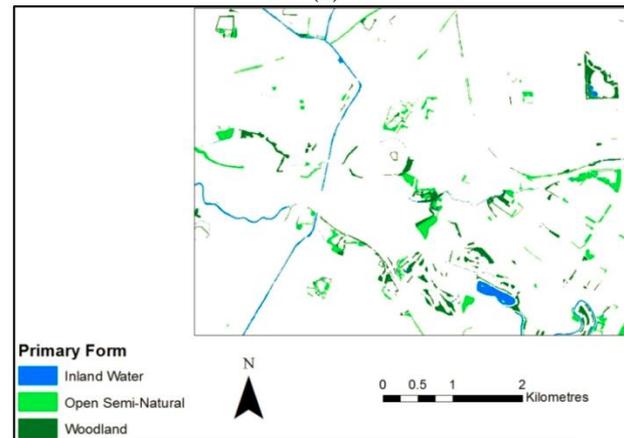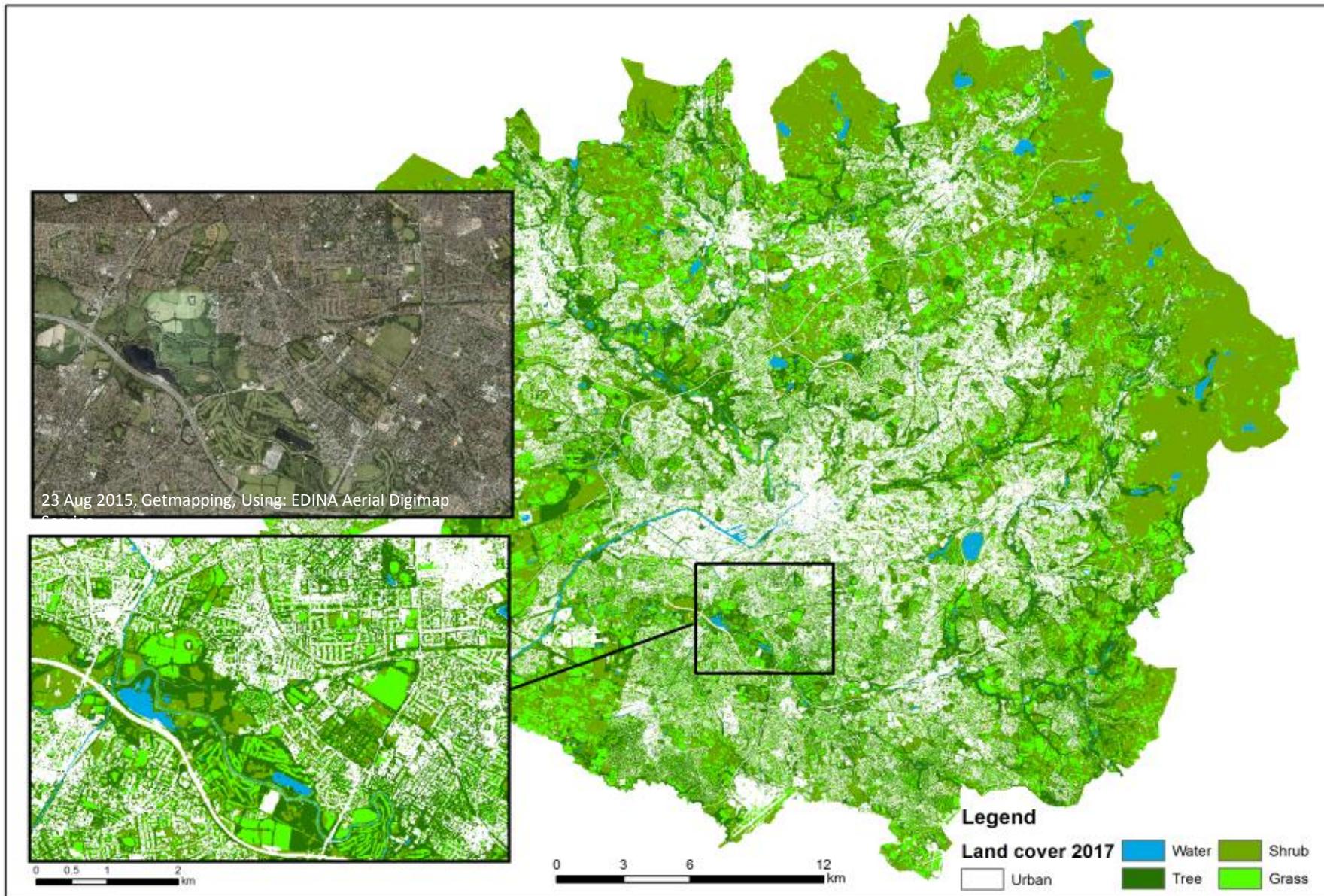

Dennis et al. 2018 *Land*, *7*(1), p.17
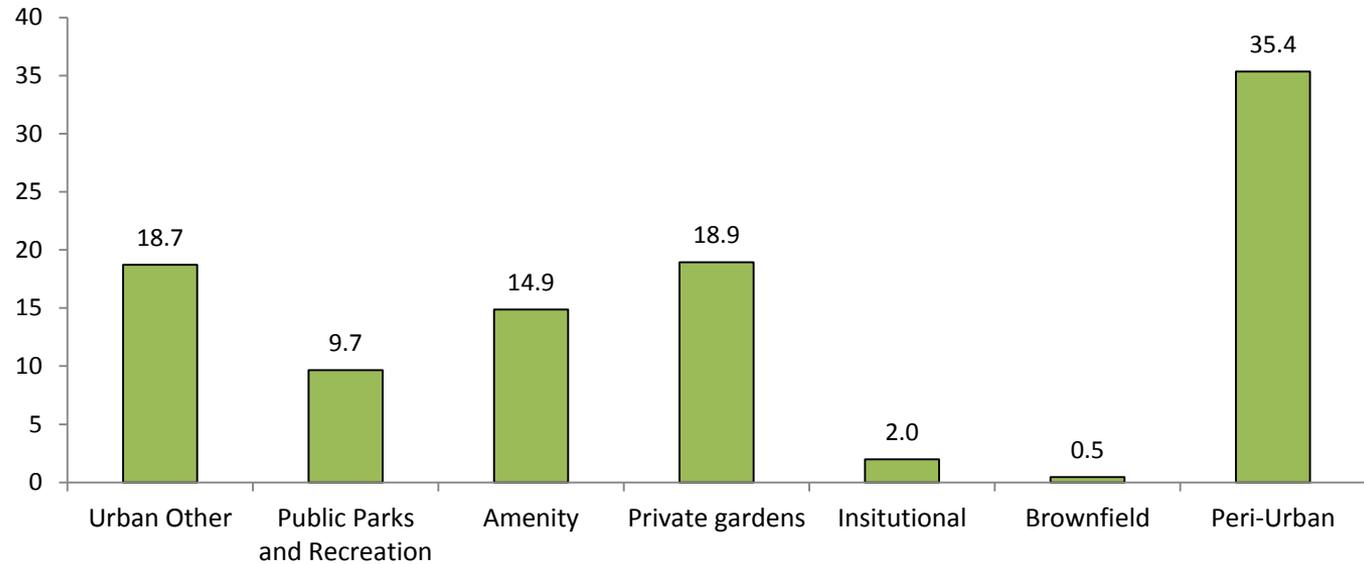
www.ghia.org.uk

23 Aug 2015, Getmapping, Using: EDINA Aerial Digimap Service

Legend				
Land cover 2017	Water		Shrub	
Urban	Tree		Grass	

0 0.5 1 2 km

0 3 6 12 km

www.ghia.org.uk

What does Green Infrastructure in Greater Manchester look like?

% GM associated with each GI type

% Green land-cover by GI type

www.ghia.org.uk
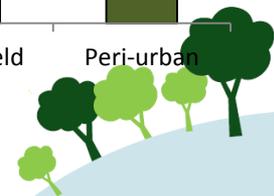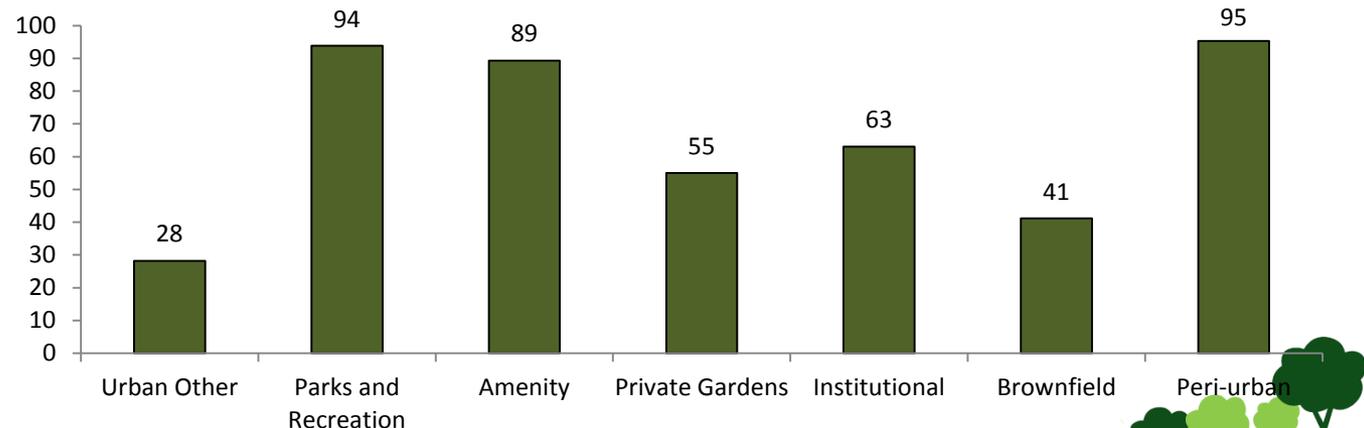
What does GI in GM look like for different groups?

High income

- 1494 m²
- 123 m²
- 58% Green / Grey (pie chart)
- 58% pop within 200m

- Garden size 227 m²
- Park size 2117 m²
- 70% Green / Grey (pie chart)
- 53% pop within 200m

Low income

- 77 m²
- 50% Green / Grey (pie chart)
- 1734 m²
- 72% pop within 200m

- 53% Green / Grey (pie chart)
- Park size 2242 m²
- Garden size 94 m²
- 70% pop within 200m of GS

"Younger"   "Older"

GHA
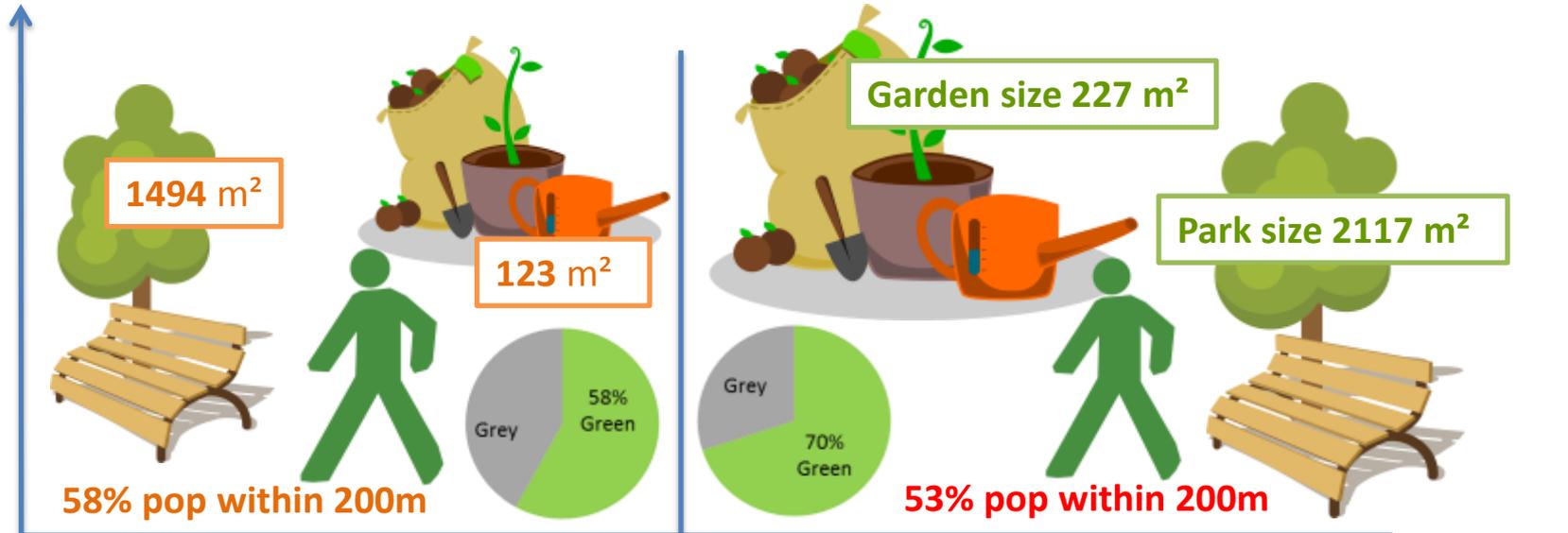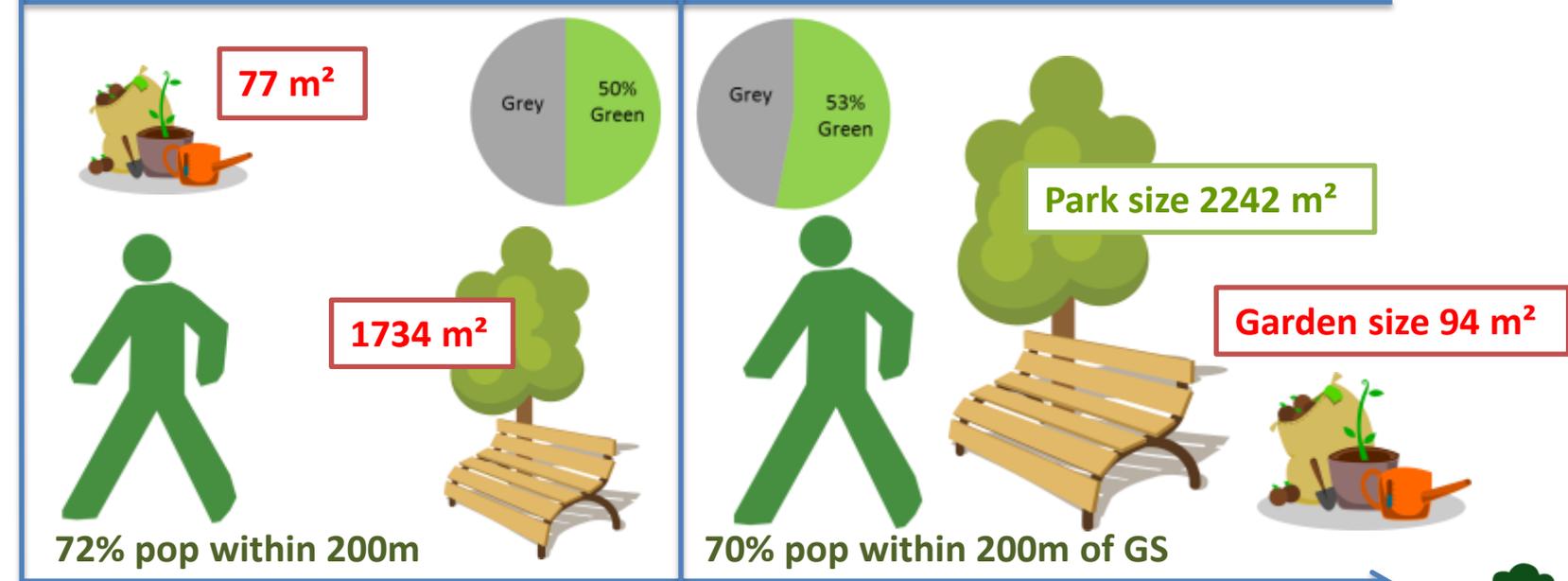
GI associations with population morbidity (comparative Illness and disability ratio) across income and age gradients

HIGH

Income

Green cover in gardens

Informal urban greenery

Lawns/ground flora

Canopy

Patch size

Diversity

Green cover in gardens

Green space quality

Green space quality

≤ 100 m to green space

LOW
~ 10% > 60 yrs

MED
~ 20% > 60 yrs

HIGH
> 30% > 60 yrs

Age
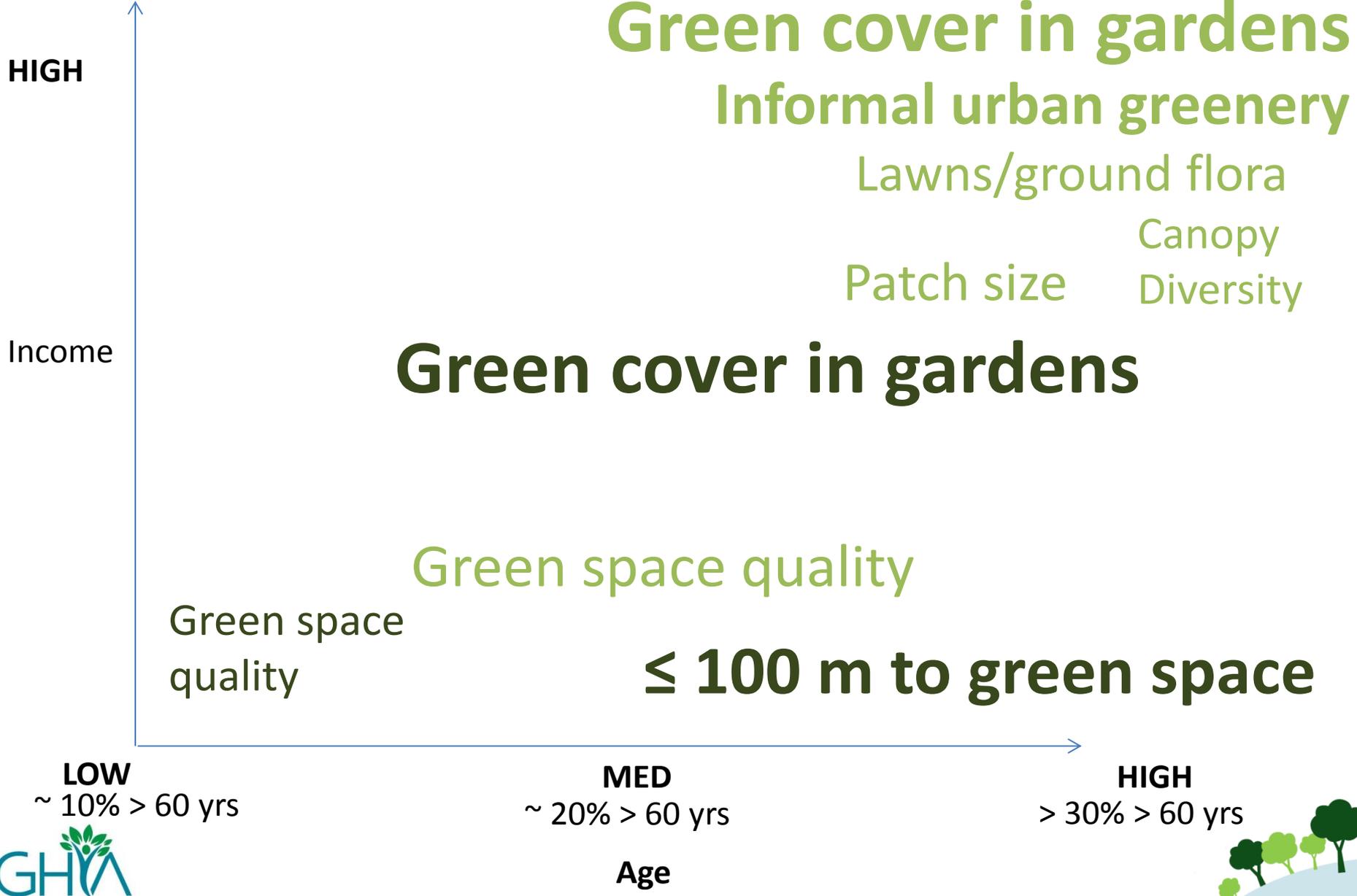
Summary of findings

- Local accessible green spaces significant for health in older age groups with lower income
- Older, wealthier populations benefit if they live in greener areas and have large gardens. Informal urban greenery, patch size and diversity also linked to health
- Gardens appear only to be related to good health if big enough and green enough
- Vegetation quality is a critical variable especially in low income areas and areas with low GI-cover
- Peri-urban land not significant in any of our models—underlines the importance of nearby greenspace within cities

Conclusion

- **Headline**: Relationships between size, quality and proximity of green infrastructure on population morbidity across socio-demographic gradients

- **Novelty**: A comprehensive, integrated appraisal of the social-ecological (physical, spatial, socio-economic and demographic) factors at work within patterns of association between GI and morbidity in Greater Manchester

- **Conclusion:** Strength and type of association between GI characteristics and morbidity vary according socio-demographic status

- **Caution:** these results are correlational. We don't know for sure whether improving access/size/quality etc would impact on health