



## Spatial Planning of Green Space as a Local Intervention Aimed at Tackling Social Health Inequalities: Adverse Pregnancy Issues

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### Abstract

Empirical support for the potential of green space to play a role in reducing the risk of adverse pregnancy outcomes (including infant mortality) has now been documented. Uneven proximity and/or access to green space thus contribute to health inequalities. Therefore, each intervention or strategy performed by local policy and aimed at promoting universal access to (and/or use of) green space regardless of social group could promote birth health - and thus tackle social health inequalities. To orient local programs or initiatives targeting health inequalities by acting on the equitable distribution of green spaces, today's geospatial tools may be of assistance to the policy maker. Our above discussion describes the evidence of the health benefit of urban green space, and how this factor contributes to health inequalities in pregnancy issues. Given that birth health is recognized as a key indicator of the health status of a population as well as a predictor of long-term outcomes, this suggestive evidence should encourage the planning and evaluation of local green space intervention aimed at promoting health and tackling health inequalities.

### Keywords

Green space; Adverse pregnancy outcome; Local intervention; Tackling social health inequalities; Geographic Information System (GIS)

### Evidence of Health Inequalities

In spite of a succession of high profile reports based on scientific studies that demonstrate links between social determinants and several health outcomes, health inequalities remain a major public health challenge [1-3]. However, it is now acknowledged across the European Union and beyond that it is time to move away from researching health disparity risk factors and towards actions aimed at reducing them. One challenge faced by European

ministries is “tackling health inequalities”- and this cannot be successfully addressed by sector alone. Successful interventions aimed at reducing health inequalities suggest that it is essential that health equity be placed at the heart of every policy, rather than left to health (or health-related) organizations.

Local policies - such as land use planning, transport, educational services, and amenities (including leisure centers, libraries and parks) must play a role in reducing health inequalities. In order to do so effectively, ‘health’ needs to be a central focus across all local planning, design and landscape management. Today, the use of outdoor space (and green space land use in particular) for health is an important local intervention - as well as a potential tool for reducing health inequalities.

### Inequalities in Green Space Health Benefits

There is significant and growing evidence of the health benefits of living close to/ having access to green spaces. However, proximity/ access to green spaces varies between population groups according to socioeconomic status, and this could contribute to rising health inequalities; people living in deprived neighborhoods are less likely to make use of green spaces - either because they lack access to green space (too far from home), or because they do not perceive any need to use it [4,5].

Recent epidemiological studies conducted at individual level have found significant associations between small for gestational age babies and surrounding tree canopy [6], as well as the risk of low birth weight and greenness [7-9]. Using the spatial clustering approach, a cluster of high infant mortality risk was detected in the Lyon Metropolitan area (eastern France), which could be partially explained by both greenness and socioeconomic deprivation [10]; a conceptual framework published in 2013 has documented three hypothetical pathways through which green spaces may have a beneficial effect on pregnancy outcomes [10]. Thus, interventions or actions performed by local policy aimed at restoring equitable distribution and use of green spaces across urban territories could promote birth health and thus tackle social health inequalities.

### Usefulness of the Geospatial Tool in Public Health

Today, geospatial tools (such as Kulldorff's Scan method used in the French study [10]) can be used to identify, for example, an area that combines poor use of green space proximity with a high level of socioeconomic deprivation. This can assist policymakers in

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tackling the social gradient in health and in planning, by applying the “proportionate universalism” strategy described by Marmot in 2010 [11] – so that actions or interventions will be performed for the whole population, but with a scale and intensity that is proportionate to the need [11].

More precisely, the combination of geospatial tools with a GIS allows us to gain local knowledge and understanding of neighborhood characteristics including: i) location of green space, attractiveness of public transport, availability and presence of a leisure center and ii) the socio-demographic characteristics of the people within the clusters. This local diagnosis conducted at fine spatial scale can assist policy makers in focusing the scope of prevention/intervention programs and making changes to the availability of green space - thus providing more effective intervention in response to individual needs, as well as more efficient distribution of green space.

### Targeted Interventions to Reduce Health Inequalities

Policy makers can target interventions, choosing an appropriate direction from one of two broad approaches to action aimed at reducing health inequalities:

- The first addresses the population’s level of education, aiming to improve understanding of the health benefit of using green spaces; policymakers may, for example, use programs that raise education levels in a bid to increase engagement with, and use of, green spaces - such as the teaching of social skills.

The second focuses on the quantity of green space for socio-economically deprived areas. Here, policymakers may, for instance, pursue the creation of more green space areas and improve the quality and accessibility of existing green spaces.

### Conclusion

Our above discussion describes evidence of the health benefit of urban green space, as well as its contribution to health inequalities in pregnancy issues. Given that health at birth is recognized as both a key indicator of the health status of a population and a predictor of long-term outcomes, this suggestive evidence should encourage the planning and evaluation of local green space land intervention, in order to promote health and tackle health inequalities.

### References

1. Judge K, Platt S, Costongs C, Jurczak K (2006) Health inequalities: a Challenge for Europe. Discussion Paper London: UK Presidency of the EU.
2. Sheiham A (2009) Closing the gap in a generation: health equity through action on the social determinants of health. A report of the WHO Commission on Social Determinants of Health (CSDH) 2008. *Community Dent Health* 26: 02-03.

3. Marmot M, Allen J, Bell R, Bloomer E, Goldblatt P (2012) WHO European review of social determinants of health and the health divide. *Lancet* 380: 1011-1029.
4. Takano T, Nakamura K, Watanabe M (2002) Urban residential environments and senior citizens’ longevity in megacity areas: the importance of walkable green spaces. *J Epidemiol Community Health* 56: 913-918.
5. Jones A, Hillsdon M, Coombes E (2009) Greenspace access, use, and physical activity: understanding the effects of area deprivation. *Prev Med* 49: 500-505.
6. Donovan GH, Michael YL, Butry DT, Sullivan AD and Chase JM (2011) Urban trees and the risk of poor birth outcomes. *Health Place* 17: 390-393.
7. Davvand P, de Nazelle A, Figueras F, Basagaña X, Su J, et al. (2012) Green space, health inequality and pregnancy. *Environ Int* 40: 110-115.
8. Davvand P, de Nazelle A, Triguero-Mas M, Schembari A, Cirach M, et al. (2012) Surrounding greenness and exposure to air pollution during pregnancy: an analysis of personal monitoring data. *Environ Health Perspect* 120: 1286-1290.
9. Davvand P, Sunyer J, Basagaña X, Ballester F, Lertxundi A, et al. (2012) Surrounding greenness and pregnancy outcomes in four spanish birth cohorts. *Environ Health Perspect* 120: 1481-1487.
10. Kihal-Talantikite W, Padilla CM, Lalloué B, Gelormini M, Zmirou-Navier D, et al. (2013) Green space, social inequalities and neonatal mortality in France. *BMC Pregnancy Childbirth* 13: 191.
11. Marmot M (2010) Fair Society, Healthy Lives: Strategic review of health inequalities in England post, Marmot Review, London, UK.

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