Health in Glasgow
Life expectancy at birth is an estimate of the average number of years a new born baby would survive if he/she experienced the particular area’s age specific mortality rates for that time period throughout his/her life. The figures quoted are a five year mean.
Low Birth Weight Infants as a Percentage of All Live Births in Glasgow

% Low Birth Weight
- 0
- 1-3
- 4-6
- 7-10
- 11-20

SIMD: Worst 15% Datazones

Glasgow Vacant and Derelict Land
Cancer Hospitalization Rates per 100,000 by Glasgow Datazones

- Green Belt
- Cancer Hospitalization Rates per 100,000
  - 0 - 1223
  - 1224 - 2041
  - 2042 - 3034
  - 3035 - 4282
  - 4283 - 12519

Glasgow Vacant and Derelict Land
Cluster Analysis (Moran's I) of Cancer Hospitalization Rates per 100,000 by Glasgow Datazones
Rather than one global regression for all of Glasgow City that creates a linear relationship between the variables that has to consistently fit the entire city, a GWR runs many local regressions, accounting for local variation. Based on the relationships between the variables, the model makes predictions (estimates) about the values of the dependent variable - in this case, cancer rates - and then compares them to the actual values for cancer rates for each datazone. The difference between the observed values and the predicted is called the **Residual**, and after the residual is standardized and mapped, it can tell us some important information about the data.
The results as shown on the map can be interpreted as follows: the darker red colors represent areas where the observed data - in other words, the actual conditions, the cancer rates – are higher than what the model would predict/estimate. The grey-blue areas are those where the observed was lower than the predicted, and the yellow areas are what we would expect, given the regression relationship between deprivation and cancer. The deeper the color, the more divergent from the model’s prediction are those areas. The GWR model produces a fairly good fit, performing less well in greenbelt areas, where there are likely to be low populations.
Descriptive Statistics of Health and Vacant Land in Glasgow

Multiple Deprivation Index (SIMD)
Proximity to Vacant and Derelict Land (VDL)
Respiratory Hospitalization Rates (RESP)
Cancer Hospitalization Rates (CANCER)
% Low Birth Weight Infants (LBW)
Male Life Expectancy (MLE)
Data Zones of High, Medium, and Low Deprivation, Based on SIMD Rank

- SIMD Low Deprivation
- SIMD Medium Deprivation
- SIMD High Deprivation
- SIMD: Worst 15% Datazones
<table>
<thead>
<tr>
<th>SIMD Data Zones</th>
<th># Data Zones</th>
<th>Population</th>
<th>Vacant &amp; Derelict Hectares per 1,000 Pop</th>
<th>% Total Vacant &amp; Derelict Hectares</th>
<th>Cancer Hospitalization Rates/100,000</th>
<th>Respiratory Hospitalization Rates/100,000</th>
<th>% Low Birth Weight of Total Live Births</th>
<th>MLE by IDZ</th>
<th>Male Life Expectancy Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Deprivation</td>
<td>375</td>
<td>298,224</td>
<td>3.7</td>
<td>69</td>
<td>3,807</td>
<td>2,571</td>
<td>3.55</td>
<td>66.5</td>
<td>62.5-74.7</td>
</tr>
<tr>
<td>Medium Deprivation</td>
<td>180</td>
<td>139,325</td>
<td>2.5</td>
<td>23</td>
<td>2,852</td>
<td>1,637</td>
<td>2.87</td>
<td>73.2</td>
<td>67.4-77.4</td>
</tr>
<tr>
<td>Low Deprivation</td>
<td>139</td>
<td>99,775</td>
<td>1.2</td>
<td>8</td>
<td>2,781</td>
<td>999</td>
<td>1.55</td>
<td>75.8</td>
<td>69.9-80.0</td>
</tr>
<tr>
<td>TOTAL/AVERAGE</td>
<td>694</td>
<td>537,324</td>
<td>2.4 Mean</td>
<td>100%</td>
<td>2,872 Mean</td>
<td>2,014 Mean</td>
<td>2.9 Mean</td>
<td>71.3 Mean</td>
<td>62.3-80.0</td>
</tr>
</tbody>
</table>
% Vacant and Derelict Land

- High Deprivation: 69%
- Medium Deprivation: 23%
- Low Deprivation: 8%
Hospitalization Rates per 100,000 for Cancer and Respiratory Diseases

- **High Deprivation**
  - Cancer: 4,000
  - Respiratory: 2,500

- **Medium Deprivation**
  - Cancer: 3,000
  - Respiratory: 1,500

- **Low Deprivation**
  - Cancer: 2,000
  - Respiratory: 1,000
Male Life Expectancy in Years

- High Deprivation
- Medium Deprivation
- Low Deprivation
% Low Birth Weight Infants

- High Deprivation: 3.5%
- Medium Deprivation: 3.0%
- Low Deprivation: 1.5%
ODDS RATIOS

Reliable data and correct interpretations thereof will help move global health interventions in the right direction. Interventions need to be evidence-based.

Hunches, anecdotes, gut feelings, premonitions, and even guesses about health issues need to be proven before we make incorrect conclusions resulting in wasted time, effort, and money on techniques that are not scientifically sound.

Odds ratios are a surprisingly simple, yet powerful way to show statistical associations in health. They are particularly helpful in demonstrating health inequalities.
Odds Ratios for Glasgow Adverse Health Outcomes

OR for Respiratory Hospitalizations = 5.5
Relative Risk = 5.1

OR for Cancer Hospitalizations = 1.3
Relative Risk = 1.3

OR for Low Birth Weight Infants = 1.6
Relative Risk = 1.5

Analysis of Risk Factors for unfavourable health outcomes is based on a comparison between cases and non-cases in High Deprivation Areas and those not in High Deprivation Areas.

All results are at the 95% Confidence Level, with p = < 0.0001
Open Space in Glasgow
Open Space Annual Audit 2010 and Other Open Space and Conservation Initiatives

Map Legend Appears on Next Layout
## Open Space Annual Audit

<table>
<thead>
<tr>
<th>6.1 - Parks and Gardens</th>
<th>6.55 - Sports Areas - other</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2 - Private Gardens or Grounds</td>
<td>6.56 - Kickabout/Multi Games Court</td>
</tr>
<tr>
<td>6.24 - Communal Gardens</td>
<td>6.61 - Green Corridors - green access routes</td>
</tr>
<tr>
<td>6.3 - Amenity Greenspace</td>
<td>6.62 - Green Corridors - Riparian routes</td>
</tr>
<tr>
<td>6.31 - Amenity Greenspace - Housing</td>
<td>6.71 - Natural/Semi-natural greenspace - woodland</td>
</tr>
<tr>
<td>6.33 - Amenity Greenspace - Transport</td>
<td>6.73 - Natural/Semi-natural greenspace - Open water</td>
</tr>
<tr>
<td>6.4 - Playspace - children / teenagers</td>
<td>6.81 - Other functional greenspaces - Allotments</td>
</tr>
<tr>
<td>6.5 - Sports Areas</td>
<td>6.82 - Other functional greenspaces - Churchyards</td>
</tr>
<tr>
<td>6.52 - Sports Areas - Golf courses</td>
<td>6.9 - Civic space</td>
</tr>
<tr>
<td>6.53 - Sports Areas - Tennis courts</td>
<td>97 - Housing Land Supply containing possible protected open space</td>
</tr>
<tr>
<td>6.54 - Sports Areas - Bowling greens</td>
<td>98 - Review (Potential Housing/V&amp;Dland/Industry /CommercialBulsness)/etc.</td>
</tr>
</tbody>
</table>

## Other Open Space Designations

- Local Nature Reserves
- Location of Tree Preservation Orders
- Conservation Area
- Green Corridors
- Historic Gardens and Designed Landscapes
- Sites of Special Landscape Importance
- Ancient, Long-Established or Semi-Natural Woodland
Percentage Greenspace in Ward

Only 20 of the 119 Glasgow wards have less than 20% of their area in greenspace. The average ward has 38% greenspace.

Data Source: Richardson EA, Mitchell R, Shortt NK, Pearce J, Dawson TP. 2010. Developing summary measures of health-related multiple physical environmental deprivation for epidemiological research, Environment and Planning A.
Networks for People Outputs, Showing Connectedness to Green Network

NOTE: The lower the NfP score, the more disconnected that 100m cell is from the Green Network.
(Data created by Glasgow and Clyde Valley Green Network Partnership).
Vacant and Derelict Land (VDL) in Public and Private Ownership, TRA's, Stalled Spaces Initiatives, Community Growth Areas, and Flagship Areas

Data Sources: Scottish Government's Vacant and Derelict Land Survey, 2012; Glasgow Development and Regeneration Services; Glasgow & Clyde Valley Green Network Partnership.
Creation of an Index to Help Determine Priority Areas for Reuse of Vacant and Derelict Land in Glasgow

Multiple Deprivation Index (SIMD)
Proximity to Vacant and Derelict Land (VDL)
Respiratory Hospitalization Rates (RESP)
Cancer Hospitalization Rates (CANCER)
% Low Birth Weight Infants (LBW)
Male Life Expectancy (MLE)
Rank each variable into 3 Classes by Std. Dev.
1 = Best
3 = Worst

Rank into 3 Classes by Jenks Optimization
1 = Best
3 = Worst

Add Scores for PARDLI Index

Rank PARDLI into 3 Classes

Acronyms
SIMD = Scottish Index of Multiple Deprivation;
MLE = Male Life Expectancy;
RESP = Respiratory Hospitalization Rate per 100,000;
CANCER = Cancer Hospitalization Rate per 100,000;
LBW = Low Birth Weight Babies as a Percentage of Live Births;
VDL = Proximity to Vacant or Derelict Land.

Creation of Priority Areas for Reuse of Derelict Land Index (PARDLI) Scores, by Data Zones

Rank into 2 Binary Classes
0 = No VDL within 100 m
3 = VDL within 100 m
Data Zones of High, Medium, and Low Deprivation, Based on SIMD Rank
Vacant and Derelict Land (VDL) showing 100 meter exposure areas with SIMD.

Priority Areas for Reuse of Derelict Land Index (PARDLI)
Vacant and Derelict Land (VDL) showing 100 meter exposure areas with PARDLI Score

Priority Areas for Reuse of Derelict Land Index (PARDLI)

Priority Areas: (from west to east)
- Drumchapel South
- Govan/Linthouse
- Possil Park
- Calton/Gallowgate/Bridgeton
- Old Shettleston/Parkhead North
Detailed Look at a Priority Area for Reuse of Derelict Land (PARDLI)
Glasgow, Showing Extent of Detail - Govan Area

- Population by Data Zone
- 1 Dot = 20
- Vacant and Derelict Land
Priority Areas Analysis to take into account:

- Historic Land Uses
- More Detailed Health Data from Surveys
- Quality Assessment of Open Space and Parks
- Existing and Proposed Development Initiatives
- Community Organizations and Activities
Suggestions for Possible Policy and Implementation Strategies
Suggestions for Possible Policy and Implementation Strategies

Create a database of publicly-owned vacant sites that are accessible from a street.

Develop a signage program for each of these sites advising community members who to call to discuss community-led use of the site.

Image from the “596 Acres” organization’s website, a Brooklyn-based non-profit focusing on the 596 acres of vacant, publicly-owned land in Brooklyn. The sign reads “This lot is public land, owned by NYC Housing Authority. It’s very likely that they would let you and your neighbors do something nice here — maybe a farm or an outdoor movie theater.”
Suggestions for Possible Policy and Implementation Strategies

This lot is owned by a NYC agency. They aren't doing anything with it right now. It's very likely that they would let you and your neighbors use it for something nice - a small farm? A garden with a meditation labyrinth? An outdoor bowling alley? You can call HPD directly to ask about this lot: (212) 663-8667. You can also call GreenThumb to find out about NYC Community Gardens: (212) 788 8840.

This is Brooklyn Block 2436, Lot 10. This 96 acres.

We're here to help along the way if you need us.
Suggestions for Possible Policy and Implementation Strategies

Establish a standard protocol for leasing the land to a community group, and have a small support team within government to help with logistics of community-led use of the vacant land.

Community uses could be urban agriculture, passive or active recreation spaces, market spaces for weekly “flea” markets or farmers’ markets, and cleaned up natural areas that might connect with other open space networks.
Consider small grants of money for community-led groups to create containerized gardening on sites that may be contaminated, and that can be moved to another vacant site if the gardening site is eventually required for housing development.
Use the land temporarily for urban forestation projects. These urban forestry plantings could help clean up contamination through phyto-remediation or phyto-stabilization, help restore endangered tree species, and create economic benefit, while leaving land available for future housing development or other community use.

Images from Eadha Enterprises, *Proposal for Aspen Arboretum at Toryglen Park*
As in Glasgow, much of NYC’s vacant land is located in the poorer neighborhoods. A major issue in NYC with re-use of vacant and derelict land for development is the displacement of poor people through gentrification. Ironically, this has often occurred in areas where community gardens have improved property values sufficiently to interest developers in investing in the neighborhood, whereby the community rightfully feels as though their hard work has sown the seeds of their own destruction. Policies must be in place for community-led improvements in vacant and derelict land to benefit the community and not punish them.

Photo from the Museum of Reclaimed Urban Space (MORUS)
Actively promoting the re-use of vacant and derelict land in high deprivation areas with vulnerable populations will have long-term beneficial use to the residents, and is an important step in combating health inequities and environmental injustice in these communities.
This 1844 study relates to the fever epidemic which struck Glasgow in the previous year. Written by Robert Perry of the Glasgow Royal Infirmary, it uses local medical reports, statistical tables, and a color-coded map of the city to highlight the link between poor sanitation, poverty, and poor health.
Acknowledgements – Support and Assistance from the Following Agencies and Institutions:

**Glasgow Research:**
- Fulbright Commission
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- The Glasgow School of Art
- Glasgow Centre for Population Health
- gcv green network
- Central Scotland Green Network
- Forestry Commission Scotland
- Glasgow City Council

**New York City Research:**
- NIEHS National Institute of Environmental Health Sciences
- Urban GISc Laboratory, Lehman College, CUNY
- NYC CGC
- Brownfield Partnership
- US Department of Commerce, NOAA
- United States Environmental Protection Agency, USEPA
- Albert Einstein College of Medicine of Yeshiva University
- Bronx CREED
- Montefiore
- Grow NYC
- Garden, Teach, Recycle, Greenmarket
- Department of Health and Human Services, National Center on Minority Health and Health Disparities (NCMHHD)
Environmental Justice – Some Outcomes of the Research

- Identification of environmental health justice issues;
- Demonstration and quantification of issues;
- Facilitate and encourage community organizations’ involvement in project scoping, problem identification, and participation in environmental inventories, analysis, and evaluation of research design and results;
- Conduct comprehensive inventory of select environmental conditions in NYC;
- Bring issues and research results to the attention of the media, resulting in newspaper articles, TV segments, etc., which in turn brings pressure to bear on local policy- and decision-makers;
- Help community groups to work with local officials to present their concerns with professional-grade documentation, and enact positive changes;
- Work with city, state, and federal agencies and entities to evaluate and change regulatory and planning processes;
- Direct action, as necessary, to undertake advocacy and political resistance in preventing the siting of noxious facilities, expansion or intensification of industrial zoning, or other policy and planning decisions that would have an adverse impact on health;
- Collaborate with urban planning authorities to pro-actively plan for sustainable and environmentally just communities;
- Giving expert advice and technical guidance to communities wishing to formulate their own community plans.