Index

action spaces 301
acute respiratory infections (ARIs) 66
Adickes, Franz 20
ageing 12, 29, 278, 296
  of pulmonary tissue 71
agglomeration economies 126–7
aggressive behaviour 60
Akaike information criterion 252
Albania 70
anxiety 49, 60, 74, 305–6
  in elderly population 324
  sources of 78
  symptoms of 304
  work-related 54
ArcGIS 212
  Network Analyst 218
  Spatial Analyst 244
asbestos
  use of 70–71
asthma 60, 63, 65–6, 68–9
  aggravation of 71
  chronic 54
Atherosclerosis Risk in Communities (ARIC) Study 110
atomistic/individualistic fallacy 86–7
attention deficit disorder 60
Australia 1, 117
  Adelaide 106, 118
  Perth 102
  Queensland 104
  South Wales 8, 123
Australian Bureau of Statistics 121
bacteriology 16
Bay Area Travel Survey (BATS)
  (1990–91) 92
Bayesian information criterion (BIC) 252
Behavioural Risk Factor Surveillance System 110
Belgian Environmental Physical Activity Study (BEPAS) 122
Belgium 60, 117
  Brussels 104
  Ghent 118
benefits 4–7
  locational 55
betweenness 259–60
  measurement of 228–30, 271
  route 299
biomedicine 49
biophysical reductionism 30
birth rates 22
  decline in 24
Booth, Charles 2, 20–21
Buckingham, James 18
built environment (BE) 3, 8, 10, 47–8, 93–4, 98, 123–6, 214, 285, 303, 334, 339
epidemiology of 43, 56
  impact on physical health 279–80
  miasma of 36
  micro-scale variable 92
  morphometrics 9, 282–3, 289, 297
  retail floor area ratio (FAR) 103
topography 283–4
urban 90
Built Environment Assessment Tool (BEAT) 123
Built Environment Site Survey Checklist (BESSC) 123
Cadbury brothers 18
Caerphilly Prospective Study (CaPS)
  Phase III 284
  Phase V 272
  respondents of 285
  selective migration in 296
Cambridge University 8
Canada
   Calgary 76
   Edmonton 76
   Toronto 99
   Vancouver 99
Canadian Community Health Survey 193, 277–8
Canadian Overcrowding Index 64
cancer
   leukaemia 69
capital
   social 322
carbon dioxide (CO$_2$) 65
   sequestration 104
carbon monoxide (CO) 66
carcinogens 68
   Radon 69–70
Cardiff University 8
   School of Planning and Geography 235
census collection districts (CCDs) 121
   commercial/industrial 103
   high-walkability 122
   low-walkability 122
   recreational 102–3
   residential 102
Centers for Disease Control and Prevention (CDC)
   active community environments (ACEs) 38
Chadwick, Edwin 14
Chartered Institution of Building Services Engineers 72
children 5, 21, 45, 71, 73–4, 76–7, 105
   adolescents 77, 79, 100, 103, 107, 110, 113–14, 277
   cognitive development of 74–5
   health problems faced by 63, 65, 68–9
   impact of noise on 74
   impact of overcrowding on 27, 82–3
   mental health of 81
   overweight 278
   pre-school 83
Chile
   Santiago 123
China 2–3
   GDP per capita 327
   Hong Kong 76
   cholera 14–15
chronic obstructive pulmonary disease (COPD) 66
city planning 2, 8–10, 14, 39, 223
   healthy 19, 48–9, 338
   coalesced niche 46
Colombia
   Bogotá 106
   complex adaptive systems (CAS) models 58
   contextual health variations
   accessibility to health-promoting community resources 211–12
cylinders of integrated planning 48–9
Cyprus 70
Czech Republic 70
deficiency disease 21
Demoralization Index of the Psychiatric Epidemiological Research Instrument (PERI) 79–80
Denmark 117
   Copenhagen 104
differentials 32, 88, 337
   accessibility 303, 324, 333
   mortality 86
   population-level health 33
diphtheria 15
disability-adjusted life-years (DALYs) 66
   impact of obesity on 277
diseases 11, 15, 32
   cardiac 27
   cardiovascular 27, 60, 62
   causation 30–31, 33
   chronic 11, 27, 40, 55–6, 329
   communicable 13
   contagious 15
   crowd 22
   infectious 11, 16, 329
   non-pathogenic 16
   pulmonary 60
   respiratory 27, 66
dissimilarity index 95, 99, 101
Doll, Richard 27
Eberstadt, Rudolf 20
eco-epidemiologic paradigm 34–5
eco-social epidemiologic theory 34
Index

ecological fallacy 86–7
ecological niche 42
economic development 3
employment 18, 22–3
residential 59
entropy index 99
environmental cognition 210
environmental quality 23
environmental tobacco smoke (ETS) 66, 68, 70
epidemiology 10, 26–7, 34, 36, 41, 49, 59, 89, 328, 334, 337
chronic disease 27
gene–behaviour–environment 30–31
molecular 30–31
natural environment 43, 56
risk factor 29–31
social 32, 41, 56
Estonia 70
Europe 1, 12–14, 17, 70, 117, 298
public transit systems of 115–16
seasonal mortality in 62
European Community Household Panel 60
Farr, William 14
Finland 70
France 19, 60
Frost, Wade Hampton 22, 32
Funk, Casimir 21

General Health Questionnaire (GHQ-30) 79, 213, 257, 260–61, 272, 274, 323, 331–2
scores of 262–3
genome-wide association studies (GWAS) 335
germ theory 15–16, 328
specific-cause 29
Germany 76
Berlin 20
Frankfurt am Main 20
Hamburg 20
Munich 20
Nuremberg 20
Stuttgart 20
Goldberger, Joseph 21, 32
graph theory 90, 222–3, 259
Graunt, John 2
Greenwood, Major 22, 32

Hanson, Julienne 222
health care 3, 126, 278, 326, 328
facilities 4, 7, 55, 95, 102, 212, 218, 220, 282, 299, 305
primary 7
services 4, 338
supply of 6
systems 127
health costs 2, 5–7, 116
annual 277
direct 36
indirect 36
health niche 42, 45, 53
healthy city model 62
meso-environmental factors of 54
neighbourhood-level 46
health outcomes 3, 8, 56, 98
impact of natural environment on 244
individual 127
mental 257
health planning 41, 48–9
holistic 45, 276
public 9, 12, 56, 276
health promoting 9, 19, 36, 55, 90, 102, 211–12, 234, 256, 276, 279, 301–3, 325, 331
benefits 109
capital 37, 272, 274, 324, 333
collective 49
physical activity 117
services 57
healthy city model 47–9, 53, 57–8
health niche-based 62
heart disease 29, 212, 297
cardiac 98
coronary (CHD) 29, 32–3, 43, 63, 74, 85, 88, 110
ischaemic (IHD) 68, 86
rheumatic 27
Henle, Jacob 15
Pathologische Untersuchingen (1840) 15
Herfindahl–Hirschman Index (HHI) 95, 99
uses of 101
Hill, Bradford 27
Hillier, Bill 210–11, 222, 283
Hospital Anxiety and Depression Scale (HADS) 213, 304, 323
anxiety (HADS-A) component item 304, 307, 315, 321–3
depression (HADS-D) component item 304, 307, 315, 321, 323
household–neighbourhood–city (HNC) system 48
housing units (residential) 59–60, 75–7, 79, 84
air quality 65–6, 68–71
damp 63, 76
lighting 72
multi-family 77
multi-storeied 76
multi-unit 76
noise 73–5
overcrowding 64, 81–3
owner-occupied 78
pests 64–5
sub-standard 64–5
temperature 62–3
Howard, Ebenezer
Tomorrow: A Peaceful Path to Social Reform 18
human immunodeficiency virus (HIV) 34
Hungary 70
hydrogen chloride (HCl) 71–2
hypertension 2, 33, 71
Illuminating Engineering Society 72
Imperial Germany (Prussia) 13
India 2, 54
Mumbai 5
Surat 5
industrial 19–20, 23, 55, 103, 273, 275, 328
degradation 18
economy 14
land uses 20
industrialization 13, 16, 328
deindustrialization 26
information entropy 96–7
insomnia 73
Integrated Transport Network (ITN) 9
intrinsic health niche 42, 53
Koch, Robert 15
labour 7, 18, 21, 328
costs 3, 6
division of 3
human 17
Lancet Commission 39
land use mix (LUM) 95, 97, 214, 218, 259, 261–2, 285, 298, 304, 321, 332
commercial/industrial 103
density 218, 221
developments 95–6
enhanced 96
horizontal mixing 98
morphometrics 282
relationship with physical health 98, 101
vertical mixing 98
Le Corbusier 19
learned helplessness 74
leprosy 15
Lever brothers 19
life expectancy 13, 117
improvement in 27
low socio-economic status (SES) 125
population 94
lower super output area (LSOA) 111, 244, 262, 270, 289, 297, 332–3
affluent 315
census-defined 260, 281, 284
definitions of 245
deprivation 305, 315
education deprivation in 275
lung cancer 27, 29, 60
causes of 68–70
deaths 70
Luxembourg 70
Macintyre, Sally
black box of contextual determinants of health 90
malnutrition 21
in infants 11
Markov Chain Monte Carlo (MCMC) simulation 306
McCollum, E.V. 21
McKeown, Thomas 27
Mellanby, E. 21
mental health 7, 27, 80, 89, 107, 123, 253, 255–7, 259, 262, 270–71, 275–6, 278, 322, 324–5, 330, 338
association with inadequate housing conditions 60
safe environment 120
metabolic syndrome (METS)  
relationship with neighbourhood environment 110–11  
miasma 13–14, 90  
social 89  
migrants 5  
migration effects 47–8  
Mitchell, Robert E. 76  
mixed residential zones 5  
morbidity 13–14, 76, 86, 278, 298  
aggregated 85  
increased rates of 62  
psychiatric 89  
vascular 285  
Morris, Jeremy 27  
mortality 2, 12–14, 33, 63, 80, 87–9, 106, 328  
aggregated 85  
all-cause 86, 88, 106  
cancer 88  
cardiovascular 88  
child 27  
coronary 86  
infant 86  
obesity 278  
premature 85  
seasonal 62  

National Civic League  
Healthy Communities Initiative 38  
National Health and Nutrition Examination Survey (NHANES) I 88  
National Household Travel Survey (NHTS) 116  
National Personal Transportation (1995)  
findings of 84  
natural environment 48, 260  
epidemiology of 43, 56  
impact on health outcomes 244  
recreational value of 108–9  
neighbourhood 303, 330  
aesthetic factors 119  
community organization domain 302  
crime 119–21  
definitions of 92–4  
economic domain 302  
green spaces 104–7, 220  
institutional domain 302  
local food environments 109–11  
local sociability domain 302  
opportunity space 302  
physical activity (PA)/recreational facility access 107–9, 220, 299  
public transit networks 115–17  
retail 102–3  
satisfaction 100  
sense of community (SofC) 99  
Neighbourhood Environment  
Walkability Scale (NEWS) 121  
neighbourhood walkability 91–2, 99, 114, 120–22, 254, 256, 276, 280, 296  
physical activity 110–11, 116–18  
relationship with bicycle use 118  
Netherlands 70, 117  
New Zealand 1  
Nigeria  
Lagos 5  
nitric acid (HNO$_3$) 71–2  
nitrogen dioxide (NO$_2$) 66  
nitrous acid (NHO$_2$) 71  
Normalized Difference Vegetation Index (NDVI) 105, 244, 260, 262, 265, 271  
decline in significance 270  
satellite-derived 331  
noise-induced hearing loss (NIHL) 73  
obesity 2, 27, 99, 117–18, 278, 280–81  
impact of urban form on 100–101, 279  
impact on DALYs 277  
increase in 277  
increase in LUM 98  
moderate to vigorous physical activity (MVPA) 107–8, 115  
relation to proximity of green space 105–6  
relation to proximity of public transit networks 117  
risk factor 297  
sarcopenic obesity 278  
occupational health hazards 46, 54  
ozone (O$_3$) 71–2
### Healthy cities

- **Parker, Barry**
- **Pasteur, Louis**
- **pellagra**
- **social epidemiology of**
- **peptic ulcer**
- **Perry, Clarence**
  - **New York Regional Plan**
- **Petty, William**
- **Philippines**
  - **Metro Manila**
- **physical activity**
  - **behaviour**
  - **daily**
  - **facilities**
  - **moderate to vigorous (MVPA)**
- **outcomes**
- **promotion of**
- **role in countering obesity**
- **Physical Activity in Localities and Community Environments (PLACE) (2007)**
- **physiological health**
  - **measurement of**
- **pollution**
  - **airborne**
  - **indoor**
  - **noise**
  - **traffic-related**
- **population-level**
  - **health differentials**
  - **processes**
  - **socio-economic factors**
- **poverty**
  - **causes of**
  - **definitions of**
  - **fuel**
  - **income**
  - **service**
  - **urban**
- **psychiatric disorders**
  - **support for**
- **psychological health/disorders**

---

- **depression**
  - **99, 102–3, 123, 252, 255–6, 272–3, 303, 305**
- **geriatric**
- **relationship with higher regional-level street movement**
- **relationship with proximity to green space**
- **public health**
  - **1, 6, 11–12, 15–16, 18, 20, 23–4, 26–7, 35–6, 49, 253, 326–8**
  - **infrastructure resources for**
  - **long-term**
  - **planning**
  - **public health organizations**
- **public housing**
  - **single-family**
  - **social value of**
- **public welfare**
  - **Puget Sound Transportation Panel**
  - **91–2, 97**
  - **quality of life**
  - **markets**
  - **value**
  - **regional cities**
  - **Reid, Donald**
  - **Republic of Ireland**
  - **respiratory tract infection**
  - **risk factors**
  - **vascular**
  - **Russian Federation**
  - **Schelling, Thomas**
  - **tipping model of urban social mix**
Index

seasonal affective disorder (SAD) 72–3
summer 72
winter 72
Second World War (1939–45) 23, 26, 329
semi-volatile organic compounds (SVOCs) 66
concept of 68–9
sick building syndrome 62, 71
single-occupant vehicles (SOVs) 91, 97
Slovakia
Bratislava 104
slum 2–3, 18, 59
clearance 327–8
rehabilitation 24
smallpox 15
Snow, John 14
On Continuous Molecular Changes, More Particular in Their Relation to Epidemic Diseases (1853) 15
social
deprivation 85
hygiene 20
medicine 14, 20
social environment
psychosocial factors 32
social health 49
social networks 55, 76, 100, 119
South Africa 81
South Korea
Seoul 5
space syntax 222, 227, 232, 259, 273, 300
angular segment analysis (ASA) 223–5, 227–9
dwelling-level morphometrics 246–7, 252
integration 229
measurement of syntactic accessibility 222–3
path overlap index 230
pull effects 230
route choice 230
spatial Design Network Analysis (sDNA) 235, 237, 239, 244, 253
Spain
Malaga 83
spatial Design Network Analysis for Urban Health (sDNA-UH) 212, 214, 254, 257–9, 282, 304, 327, 330, 332, 334, 339
use of OSM ITN 322
spatial planning 57
Sport England 38
Stein, Clarence 19
street networks 19–20, 210, 237
accessibility 220–11, 274, 282–3
configuration of 212
connectivity 112, 114–15
distance 218, 225, 227, 304–5
morphology 111–12
network effects 225
subsidized public sector housing 80–81
involuntary relocation 81
suburban villages 23–4
Sweden 70, 108
Sydenstricker, Edgar 21, 32
taxation 6
local 24
temporal dynamism 9, 40, 329
Thailand
Bangkok 82
town planning 11, 19, 35, 328
traffic 17, 19–20, 117, 123, 259–60, 274, 276, 279, 283, 299, 323, 329
analysis zones (TAZs) 100
flows 55, 235
noise 73–5, 119
pollution 102, 119
safety 121, 273
speed limits 80, 118
volume 77, 280
tuberculosis 11, 13, 15, 64, 66
typhoid 15
UK Biobank 57, 336, 338–9
cohort members 327
UK Economic and Social Research Council 57
UK Office of National Statistics 245
UK Ordnance Survey MasterMap (OSM) 214, 335
Address Layer 2 213–14, 218, 239
data layers 8, 213, 331
Healthy cities

Topography Layer 213, 218, 239
UK Ordnance Survey road centreline map 232

Ukraine
Kiev 104
unemployment 18, 88
benefits 275

United Kingdom (UK) 1, 5, 18, 22–3, 27, 57, 60, 62, 70, 84, 89, 118, 328
Birmingham 18
Bourneville 18
British Household Panel Survey 79
Cardiff 322
District health authorities (DHAs) 86

English Births and Deaths Registration Act (1836) 14
Glasgow 24, 79, 104, 113, 300
Great Smog (1952) 17
Letchworth 19
Liverpool 24
London 2, 6, 14, 16–17, 19, 21, 24, 81, 123, 222
Manchester 14, 24
Ministry of Town and Country Planning 36
Municipal Corporations Act (1835) 14
National Health Service (NHS) 6, 277
New Towns Act (1946) 23
Office of Population Censuses and Surveys (OPCS) 85
Poor Law Amendment Act (1834) 14
Port Sunlight 19
Reform Bill (1832) 14
Registrar General’s Office 2, 14, 21, 262, 281, 305
Welwyn Garden City 19

United Nations (UN)
Human Settlement Programme (UN-Habitat) 59
Scientific Committee on the Effects of Atomic Radiation 70

United States of America (USA) 1, 14, 18, 25–6, 29, 112, 114
Atlanta 101
Baltimore 121
Census Bureau 92
Chicago 17
Department of Health and Human Services 38
Detroit 17
Environmental Protection Agency (USEPA) 69–70
Los Angeles 20
New York 17, 19–20, 80, 100–101, 111, 116
Philadelphia 17
Salt Lake City 116
San Francisco Bay Area 91, 95
Seattle 121
St Louis 17
state economic area (SEAs) 86
Washington, DC 121

University College London faculty of
University of Hong Kong 8
University of Liverpool
Department of Civic Design 16
University of Miami Built Environment Coding System (UMBECS) 123–4

Unwin, Raymond 19
urban
costs 3
decay 75
development 2–3
expansion 11, 16–17
growth 3, 32
individual 39
morphology 8, 57, 222, 326
morphometrics 3, 8–9
penalty 13
population 13, 59
sprawl 95, 122
transportation 59

UrbanBuzz
i-V ALUL 232
urban health niche paradigm 39, 43, 45, 48, 56–7, 211, 326, 329, 336
coalesced 46–7, 337
holistic 334–5
individual 46–7
Index

urban health systems 41–2
urban hierarchy cone 48
urban places 302
urban planning 1, 3, 6–8, 12, 16, 35, 38, 41, 49, 56–7, 276, 337–8
density 93–5, 97, 259
health-related 42
relationship with public health initiatives 300
research 36
urban space 259
axial map 223, 227
configured 210
continuous 210, 283
convex space 211, 283, 302
districts 210
linear space 210–11
linear subspace 302
urban theory 49
urbanization 2, 6, 9, 11, 13, 16–17, 24–6, 40, 302, 328
multi-scale 221
suburbanization 18, 26

variance inflation factors (VIFs) 252, 306
vitamin 21

volatile organic compounds (VOCs) 66
concept of 68–9
Walkable and Bikeable Communities Project 122–3
wealth 3, 5, 55
inequality in 18
well-being 11, 49, 35–6, 49, 62, 78
emotional 72
mental 12, 256
psychological 72, 81–2, 255, 273
social 12
Welsh Index of Multiple Deprivation (WIMD) 244, 260, 273, 305–6, 321, 323
structure of 245–6
Working Group on Health Inequalities Black Report (1980) 84
World Health Organization (WHO) 11–12, 49, 66, 255
European Healthy Cities Network (WHO-EHCN) 37, 104
European Healthy Cities Project 37–8
Regional Office for Europe 37
Zagreb Declaration 37
Wright, Frank Lloyd
Broadacre City 17