

Scientific Literature Report

Topic: Community Facility Standards
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1 Overview of topic

- The search included 8,484 papers, corresponding to all papers published over the period 2008-2018, in the top 11 Urban Planning academic journals (full list of Journals in Section 4).
- The search produced 25 papers containing standards for the provision of community facilities.
- Most papers discuss standards for open space (20). Fewer papers include standards for other facility types: general (6), sports and recreation (5), schools (4), medical (2), and cultural and religious (1). Standards for many other notable facilities (i.e. libraries, police stations, postal office, community halls, men's sheds, business incubators) are lacking in the sampled literature.
- The standards found relate to the following attributes:
 - access (walking distance, % of people living within walking distance from facility)
 - provision (total, per capita, % of city size)
 - size (minimum, average and maximum facility sizes), and
 - use mix (recommended distance between incompatible uses).
- The single most mentioned item is the definition of 'walkable distance' to community facilities, which ranges between 220m (recommended distance to kindergarten-age children parks) and 1500m (maximum walking distance to secondary schools).
- Although some papers referred to aspects of community facilities such as quality (i.e. park features), design, access fees, management, use/overcrowding, and so on, none was accompanied by the formulation of standards.
- In all cases, the standards found were taken from external sources, including existing policy, and/or previous literature. In other words, none of the papers was concerned with establishing new or modifying existing standards. Instead, most papers were concerned with evaluating the performance of various cities/regions/countries against those standards, and/or the application of standards to evaluate issues related to public health (i.e. influence on physical activity), governance (i.e. trust in government), resident satisfaction (i.e. quality of facilities, impacts on visitation and property price), and social equity and environmental justice (i.e. differences in access to urban parks among different socioeconomic or ethnic groups).
- A significant number of papers discuss *relative* differences in the provision of community facilities (i.e. across neighbourhoods, cities, countries) using scoring systems or indexes (i.e. WalkScore, ParkScore, other custom systems), avoiding altogether the definition of *absolute* standards.

2 Standards

Open space

Desired or mandated standards

Facility	Measure	Source	Total papers
Access – Distance from residence (m)			
Green area, children's/small/local park	200-500m	a,b,c,e,i,j,k,	7
	501-1000m	e,g,j,m	4
Local park, neighbourhood park	250-300m	a,d,e,f,h,i	6
	800-1000m	b,c	2
District park	650m	a	1
	1000-2000m	a,d,f,h, i	5
City/metro/regional park	10Km	c,d,h,i,	4
Water / blue space	1Km	b	1
Provision – size (m2) per capita			
Green area, children's/small/local park	0.2m2/child	a	1
Local park, neighbourhood park	2.5m2/capita	a	1
	30m2/capita	b	1
District park	2m2/capita	a	1
	50m2/capita	b	1
Open space (general, other)	8.3-16m2/capita	b,g,r	3
	40-60m2/capita	n,e	2
Provision – size as % of city area			
Open space as % of total neighbourhood area	2.5-5%	u	1
Size – size (ha) per facility type			
Small/local park	0.4-1ha	c	1
Neighbourhood park	2-5ha	c,d,h,i	4
District park	15-20ha	d,h,i	3
City/metro/regional park	15-100ha	d,h,i	3

Actual / existing benchmark

Actual / existing benchmark				
Facility	Place	Measure	Type	Source
Access – Distance from residence (m)				
Green area, children's/small/local park	Germany	181m	Average	e
		500m	Majority	e
	Denver (US)	323m	Best locality	n
		1827m	Worst locality	n
Access – Percentage (%) of population living within walking distance				
Within 300-500m from small/local park	Leicester (UK)	10.3%	Total	d
	Western Australia (Australia)	95%	Total	c
	Germany	92.8%	Total	e
Within 800m from open space	United States (various localities)	100%	Best locality	m
		27%	Worst locality	m
		67%	Total	m
	Tehran (Iran)	87.5%	Total	q
Within 800-2000m from open space	Curitiba (Brazil)	57%	Total	p
	Leicester (UK)	60.1%	Total	d
	Tehran (Iran)	12.5%	Total	q
Provision – size (m2) per capita				
Green area, children's/small/local park	Shanghai (China)	7-13m2/capita	Total	h,o,s
District park	Shanghai (China)	25.38m2/capita	Best locality	s
		1.58m2/capita	Worst locality	s

Facility	Place	Measure	Type	Source
Open space (general)	Curitiba (Brazil)	76m ² /capita	Total	g
	Leicester (UK)	35m ² /capita	Total	d
	New South Wales (Australia)	28.3m ² /capita	Total	c
	Denver, CO (US)	25m ² /capita	Total	n
	Montreal (Canada)	12m ² /capita	Total	r
	Germany	8.1m ² /capita	Total	e
		36.3m ² /capita	Best locality	e
		2.5m ² /capita	Worst locality	e
	Tainan (Taiwan)	0.1-1m ² /capita	Total	t
Provision – size as % of city area				
Open space	Anchorage, AK (US)	84%	Best locality	m
	Leicester (UK)	25%	Total	d
	United Kingdom	12-14%	Average	d,m
	Western Australia (Australia)	10%	Best locality	c
		8%	Worst locality	c
	Victoria (Australia)	10%	Average	c
	Hialeah, FL (US)	1%	Worst locality	m
	Curitiba (Brazil)	5%	Total	p
Provision – size as % of neighbourhood area				
Open space	Guangzhou (China)	23.8%	Best locality	v
	Guangzhou (China)	43.5%	Best locality	v

Sport and recreation

Desired or mandated standards

Facility	Measure	Source	Total papers
Access – Distance from residence (m)			
Local facility	300-1000m	a,v	2
District facility	1,500-3,000m	a	1
Provision – size (m²) per capita			
Local recreational facility	0.3-0.6m ² /capita	a,v	2
	10-12m ² /capita	c	1
District recreational facility	0.25-1m ² /capita	a,v	2
	10-14m ² /capita	c	1
City/metro recreational facility	0.21m ² /capita	v	1
Local sporting facility	8-10m ² /capita	c	1
District sporting facility	10-14m ² /capita	c	1

Actual / existing benchmark

Facility	Place	Measure	Type	Source
Provision – size (m²) per capita				
Sports (local)	Queensland (Australia)	8-10m ² /capita	Range	c
Sports (district)	Queensland (Australia)	1-14m ² /capita	Range	c
Recreation (local)	Queensland (Australia)	10-12m ² /capita	Range	c
Recreation (district)	Queensland (Australia)	1-14m ² /capita	Range	c
General	Guangzhou (China)	2.38m ² /capita	Total	v
Provision – bicycle network density (Km/Km²)				
Bicycle infrastructure	United States	1.2Km/Km ²	Average	w
	Fort Collins, CO (United States)	2.41Km/Km ²	Best locality	w
	Weld County, CO (United States)	0.04Km/Km ²	Worst locality	w
	Curitiba (Brazil)	0.28Km/Km ²	Total	g

Schools

Desired or mandated standards

Facility	Measure	Source	Total papers
Access – Distance from residence (m)			
Kindergarten	300-500m	a	1
Elementary/Primary school	400-800m	a,x	2
Middle/Secondary/High school	800-1,600m	a,x	2
Provision – size (m2) per student			
Kindergarten	8m2/student	a	1
Elementary/Primary school	9m2/student	a	1
Middle/Secondary/High school	11m2/student	a	1
Size – size (ha) per facility type			
Elementary/Primary school	2-8ha	x	1
Middle/Secondary/High school	7-32ha	x	1
Setbacks/Buffers – distance from incompatible uses			
Major roadway	120-760m	y	1
Industrial facility	150-600m	y	1
Other incompatible uses	150-300m	y	1

Actual / existing benchmark

Facility	Place	Measure	Type	Source
Size – size (ha) per facility type				
Elementary/Primary school	Maryland (US)	7ha	Average	x
	Virginia (US)	6ha	Average	x
Middle/Secondary/High school	Virginia (US)	12.6-26.7ha	Range	x
	Maryland (US)	8.6-21.8ha	Range	x
Provision – size (m2) per student				
Elementary/Primary school	Maryland (US)	115m2/student	Average	x
	Virginia (US)	80m2/student	Average	x
Middle/Secondary/High school	Virginia (US)	133-174m2/student	Range	x
	Maryland (US)	126-128m2/student	Range	x

Other facilities

Desired or mandated standards

Facility	Measure	Source	Total papers
Access – Distance from residence (m)			
Cultural facility (local)	500-1000	a	1
Cultural facility (district)	1000-2000m	a	1
Religious facility (local)	800-2000m	a	1
Religious facility (district)	1500-3000m	a	1
Medical facility (local)	300-500m	a	1
Medical facility (district)	650-1500m	a	1
Provision – size (m2) per capita			
Cultural (local)	0.2m2/capita	a	1
Cultural (district)	0.2m2/capita	a	1
Religious facility (local)	0.3m2/capita	a	1
Religious facility (district)	0.2m2/capita	a	1
Medical facility (local)	0.6m2/capita	a	1
Medical facility (district)	0.3m2/capita	a	1

Source list

Ref	Publication
a	Taleai M., Sliuzas R., Flacke J. (2014) An integrated framework to evaluate the equity of urban public facilities using spatial multi-criteria analysis, <i>Cities</i> , DOI: 10.1016/j.cities.2014.04.006
b	Xing L., Liu Y., Liu X., Wei X., Mao Y. (2018) Spatio-temporal disparity between demand and supply of park green space service in urban area of Wuhan from 2000 to 2014, <i>Habitat International</i> , DOI: 2-s2.0-85034441176
c	Hooper P., Boruff B., Beesley B., Badland H., Giles-Corti B. (2018) Testing spatial measures of public open space planning standards with walking and physical activity health outcomes: Findings from the Australian national liveability study, <i>Landscape and Urban Planning</i> , DOI: 2-s2.0-85037814304
d	Comber A., Brunsdon C., Green E. (2008) Using a GIS-based network analysis to determine urban greenspace accessibility for different ethnic and religious groups, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2008.01.002
e	Wüstemann H., Kalisch D., Kolbe J. (2017) Access to urban green space and environmental inequalities in Germany, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2017.04.002
f	Dony C.C., Delmelle E.M., Delmelle E.C. (2015) Re-conceptualizing accessibility to parks in multi-modal cities: A Variable-width Floating Catchment Area (VFCA) method, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2015.06.011
g	Macedo J., Haddad M.A. (2016) Equitable distribution of open space: Using spatial analysis to evaluate urban parks in Curitiba, Brazil, <i>Environment and Planning B: Planning and Design</i> , DOI: 10.1177/0265813515603369
h	Fan P., Xu L., Yue W., Chen J. (2017) Accessibility of public urban green space in an urban periphery: The case of Shanghai, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2016.11.007
i	Chen J., Chang Z. (2015) Rethinking urban green space accessibility: Evaluating and optimizing public transportation system through social network analysis in megacities, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2015.07.007
j	Rigolon A. (2016) A complex landscape of inequity in access to urban parks: A literature review, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2016.05.017
k	Koohsari M.J., Badland H., Giles-Corti B. (2013) (Re)Designing the built environment to support physical activity: Bringing public health back into urban design and planning, <i>Cities</i> , DOI: 10.1016/j.cities.2013.07.001
l	Shanahan D.F., Lin B.B., Gaston K.J., Bush R., Fuller R.A. (2014) Socio-economic inequalities in access to nature on public and private lands: A case study from Brisbane, Australia, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2014.06.005
m	Rigolon A., Browning M., Jennings V. (2018) Inequities in the quality of urban park systems: An environmental justice investigation of cities in the United States, <i>Landscape and Urban Planning</i> , DOI: 2-s2.0-85048419847
n	Rigolon A. (2017) Parks and young people: An environmental justice study of park proximity, acreage, and quality in Denver, Colorado, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2017.05.007
o	Xiao Y., Wang Z., Li Z., Tang Z. (2017) An assessment of urban park access in Shanghai – Implications for the social equity in urban China, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2016.08.007
p	Macedo J., Haddad M.A. (2016) Equitable distribution of open space: Using spatial analysis to evaluate urban parks in Curitiba, Brazil, <i>Environment and Planning B: Planning and Design</i> , DOI: 10.1177/0265813515603369
q	Lofti S., Koohsari M.J. (2009) Measuring objective accessibility to neighborhood facilities in the city (A case study: Zone 6 in Tehran, Iran), <i>Cities</i> , DOI: 10.1016/j.cities.2009.02.006
r	Reyes M., Pérez A., Morency C. (2014) Walking accessibility to urban parks by children: A case study of Montreal, <i>Landscape and Urban Planning</i> , DOI: 10.1016/j.landurbplan.2014.02.002
s	Liang H., Zhang Q. (2018) Assessing the public transport service to urban parks on the basis of spatial accessibility for citizens in the compact megacity of Shanghai, China, <i>Urban Studies</i> , DOI: 2-s2.0-85033482510

Ref	Publication
t	Chang H.-S., Liao C.-H. (2011) Exploring an integrated method for measuring the relative spatial equity in public facilities in the context of urban parks, Cities, DOI: 10.1016/j.cities.2011.04.002
u	Chitrakar R.M., Baker D.C., Guaralda M. (2016) Urban growth and development of contemporary neighbourhood public space in Kathmandu Valley, Nepal, Habitat International, DOI: 10.1016/j.habitatint.2015.11.006
v	Chen T., Hui E.C.-M., Lang W., Tao L. (2016) People, recreational facility and physical activity: New-type urbanization planning for the healthy communities in China, Habitat International, DOI: 10.1016/j.habitatint.2016.09.001
w	McAndrews C., Tabatabaie S., Litt J.S. (2018) Motivations and Strategies for Bicycle Planning in Rural, Suburban, and Low-Density Communities: The Need for New Best Practices, Journal of the American Planning Association, DOI: 2-s2.0-85045097967
x	McDonald N.C. (2010) School siting, Journal of the American Planning Association, DOI: 10.1080/01944361003595991
y	Kweon B.-S., Mohai P., Lee S., Sametshaw A.M. (2018) Proximity of public schools to major highways and industrial facilities, and students' school performance and health hazards, Environment and Planning B: Urban Analytics and City Science, DOI: 2-s2.0-85044144392

3 Comments and recommended reading

- Currently, researchers appear to be following practitioners and policy-makers in relation to community facility standards, as opposed leading the way.
- Policy documents, international guidelines, and alike, are more likely (than scientific literature) to provide a foundation for the formulation of community facility standards (i.e. complete features, more facility types).
- The scientific literature may be, however, an important source of actual/existing benchmarks, from the wealth of case studies.
- In addition to the sources listed above, the following publications may also be of interest:
 - **A systematic literature review of the issues surrounding open space provision.** Boulton C., Dedekorkut-Howes A., Byrne J. (2018) Factors shaping urban greenspace provision: A systematic review of the literature, Landscape and Urban Planning, DOI: 2-s2.0-85048552306
 - **A comprehensive list of demographic, technological and cultural trends that to consider, with a focus on regional challenges and opportunities.** Moseley M.J., Owen S. (2008) The future of services in rural England: The drivers of change and a scenario for 2015, Progress in Planning, DOI: 10.1016/j.progress.2007.12.002

4 Journal sample

This report covers all papers published over the 2008-2018 period, in the following journals (top 11 by H-Index):

- Urban Studies
- Landscape and Urban Planning
- Journal of the American Planning Association
- Environment & Planning B
- Cities
- Journal of Planning Education and Research
- Journal of Environmental Planning and Management
- Habitat International
- Journal of Planning Literature
- Planning Theory
- Progress in Planning.