

Symbols

ρ	density
p	area
t	intersection
b	building floor area footprint

Utilization types of a particular land parcel feature or building

Main categories (codes)

L	living
C	commercial
S	services
I	industrial
T	institutional
R	recreational
O	other (e.g. road space, agricultural area)
W	water (excluded)

Sub-categories (codes)

To allow for mixed land use within a particular land parcel feature or building, e.g. "L-C-S" to code a combined use of living, commercial, and services. Sub-categories formed discrete utilization types and were entered equally into the calculation of indices.

Equations

Pedestrian connectivity of a particular district

$$\rho_t = \frac{t}{p} \quad (1)$$

where

ρ_t	intersection density
t	number of intersections (valence ≥ 3) based on the street, pedestrian, and bicycle networks, while merging all crossings within a straight line radius of 15 meters
p	total land area of a district; water areas excluded

Household density of a particular district

$$\rho_h = \frac{h}{p_l} \quad (2)$$

where:

ρ_h	household density
h	number of households
p_l	area used for living, i.e. land parcel feature coded as living (L) or a sub-category including living (L-C, L-C-S, ...)

Retail floor area ratio of a particular district

$$rFAR = \frac{\sum b_c}{p_c} \quad (3)$$

where

$rFAR$	retail floor area ratio
b_c	floor area footprint of a particular commercial building, i.e. buildings coded as commercial (C) or a sub-category including commerce (L-C, L-C-S, ...)
p_c	area used for commerce, i.e. land parcel feature coded as commercial (C) or a sub-category including commerce (L-C, L-C-S, ...)

Land use mix of a particular district

$$H(S) = \frac{-\sum_{i=1}^k [(p_i) \times (\ln p_i)]}{\ln k} \quad (4)$$

where

$H(S)$ Entropy index (Shannon's index)

p_i area of a particular utilization type (main and sub-categories) over the total land area of a district;
water areas excluded.

k number of applicable utilization types in the particular district

Adapted from: Dobesova, Z.; Krivka, T. Walkability Index in the Urban Planning: A Case Study in Olomouc City. In *Advances in Spatial Planning*; Burian, J., Ed.: InTech: Shanghai, China, 2012, pp. 180–196.