DIVISION OF SPATIAL INFORMATION SCIENCE
UNIVERSITY OF TSUKUBA

PopShape GIS:

A GIS Tool for Dasymetric Mapping

Developed by

Ko Ko Lwin

Division of Spatial Information Science
Graduate School of Life and Environmental Sciences
University of Tsukuba

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DATA REQUIREMENT

Two data are required to use this tool.

1 Census tracts with population

2 Building footprints with either number of floors or average building height or total building volume attribute information
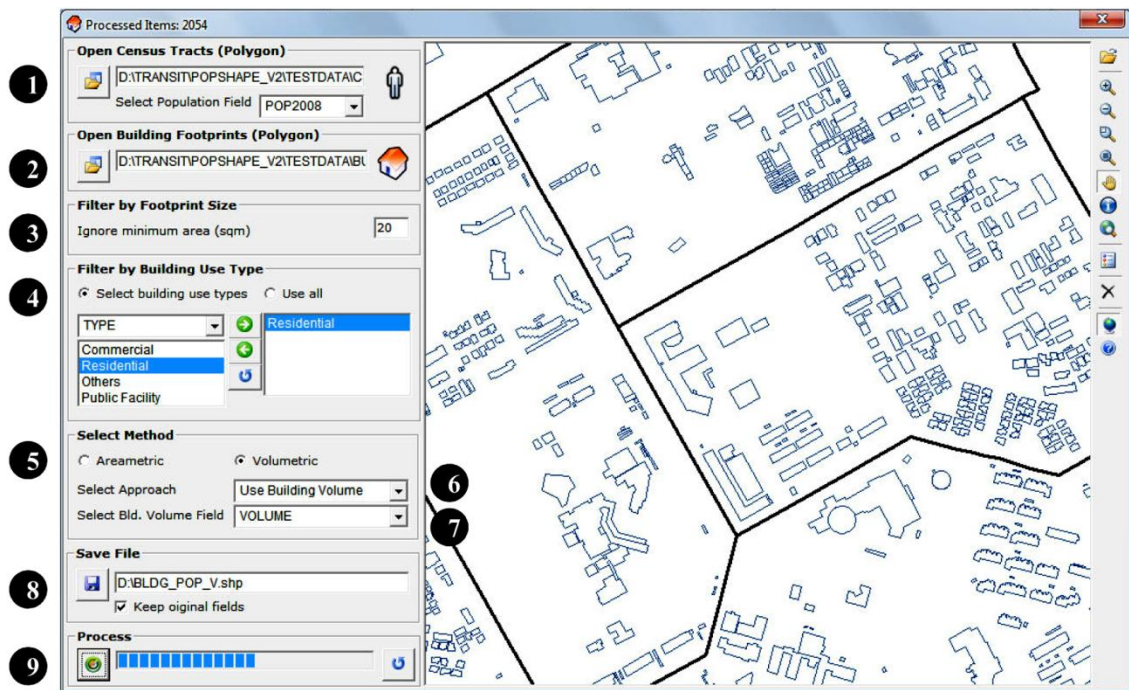
FILE FORMAT

ESRI Shape file

PLATFORM

Any Windows OS

PRE INSTALLATION REQUIREMENT

None (Standalone program)

HOW TO USE?

Operational steps:

1. *Open Census Tracts File (Shape polygon)*
2. *Open Building Footprints File (Shape polygon)*
3. *Filter by Footprint Size*
4. *Filter by Building Use Type*
5. *Select Method (Areametric or Volumetric)*
6. *Select Approach (Use Number of Floors or Use Building Height or Use Building Volume)*
7. *Select Appropriate Field (Floor or Height or Volume attribute field)*
8. *Assign Output File Name*
9. *Start to Process*

HINTS

Extraction of building height and volume attribute information from LIDAR data
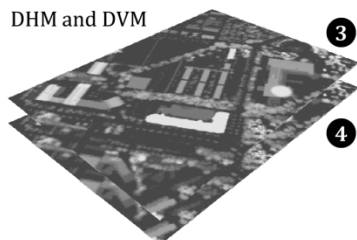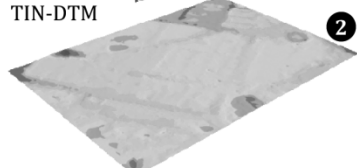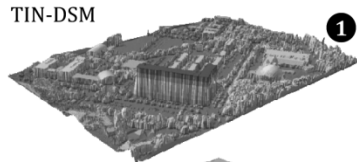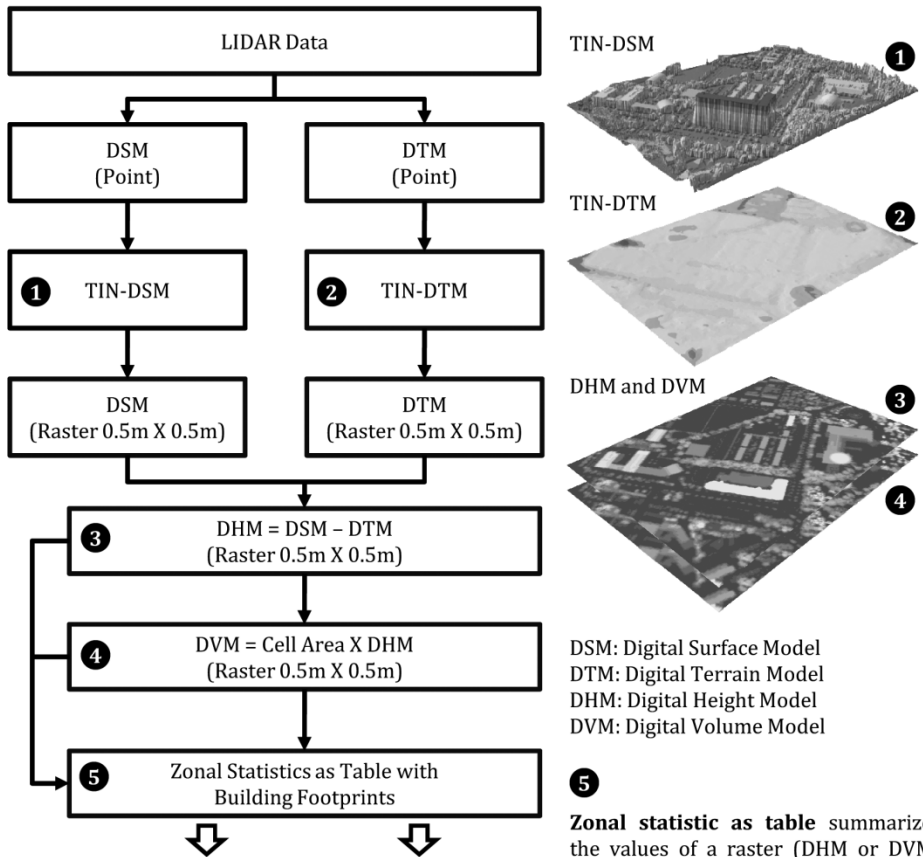

DSM: Digital Surface Model
DTM: Digital Terrain Model
DHM: Digital Height Model
DVM: Digital Volume Model

PID	AREA	H_MEAN	H_SOURCE	H_STD	V_SUM	V_SOURCE
PID_720	174.5978	5.5873	LIDAR	0.9845	972.1980	LIDAR
PID_721	176.9578	6.0804	LIDAR	0.5258	1076.2400	LIDAR
PID_722	188.9076	6.4752	LIDAR	1.5185	1222.2000	LIDAR
PID_724	82.1189	3.9560	LIDAR	1.8953	325.3770	LIDAR
PID_725	43.9445	2.4470	LIDAR	0.5332	107.0560	LIDAR
PID_726	74.8091	2.9327	LIDAR	0.6126	219.2170	LIDAR
PID_727	144.4233	3.2186	LIDAR	1.2545	466.7000	LIDAR
PID_728	17.2848	3.7575	LIDAR	0.8217	64.8162	LIDAR
PID_729	1134.1210	8.4507	LIDAR	4.7853	9585.2002	LIDAR
PID_730	247.4970	5.3646	LIDAR	1.1407	1327.7400	LIDAR
PID_732	144.5287	4.4927	LIDAR	1.8652	650.3230	LIDAR
PID_733	202.2426	6.1844	LIDAR	1.6201	1252.3500	LIDAR
PID_734	125.2634	6.0588	LIDAR	1.5820	761.8950	LIDAR
PID_735	12.0599	2.4802	LIDAR	0.3349	29.7623	LIDAR
PID_736	439.6767	10.4085	LIDAR	3.6050	4579.7500	LIDAR
PID_737	216.5759	5.7869	LIDAR	1.8010	1251.4100	LIDAR

⑤ Zonal statistic as table summarizes the values of a raster (DHM or DVM) within the zones of another dataset (building footprints) and reports the results to a table.
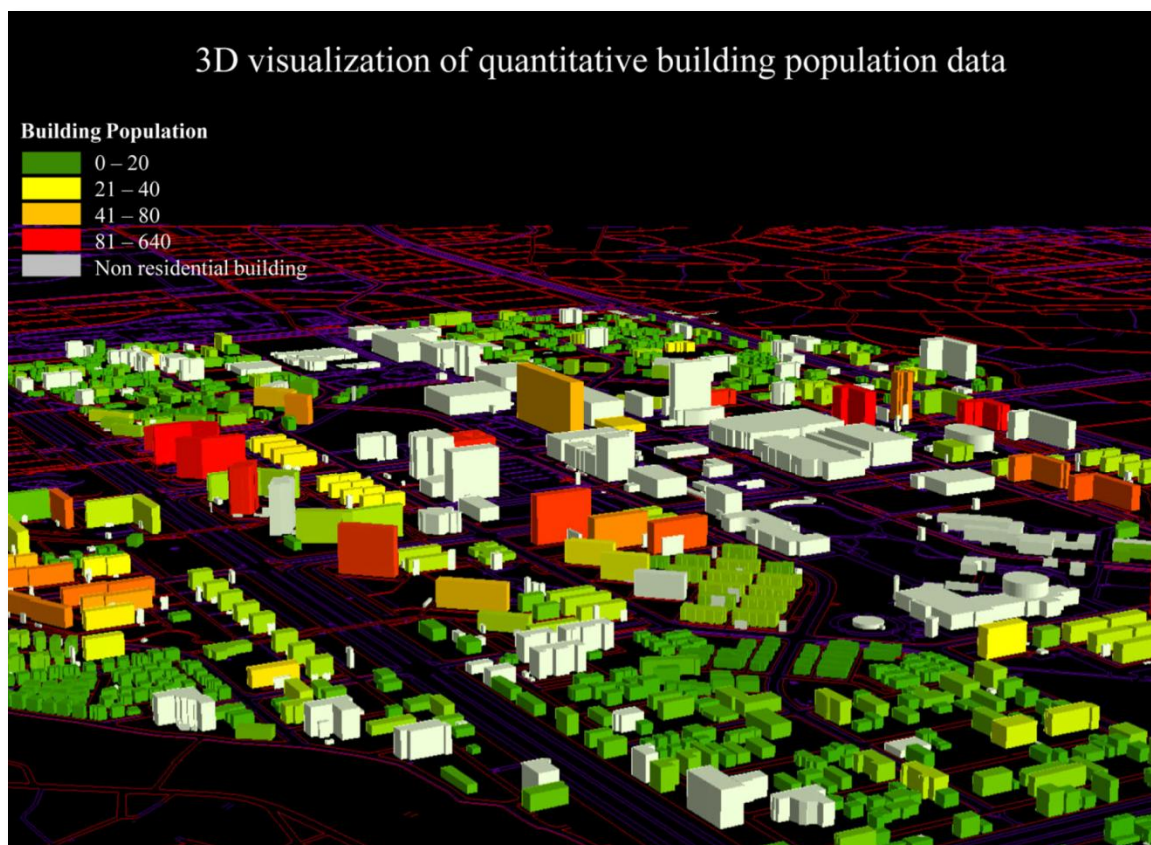
H_MEAN (BH): Average building height
V_SUM (BV): Total building volume
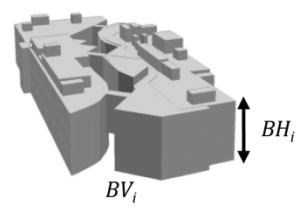
BH_i
BV_i

Source: Lwin, K. K. and Murayama, Y., 2010, Development of GIS tool for dasymetric mapping, *International Journal of Geoinformatics,* 6(1):11-18.
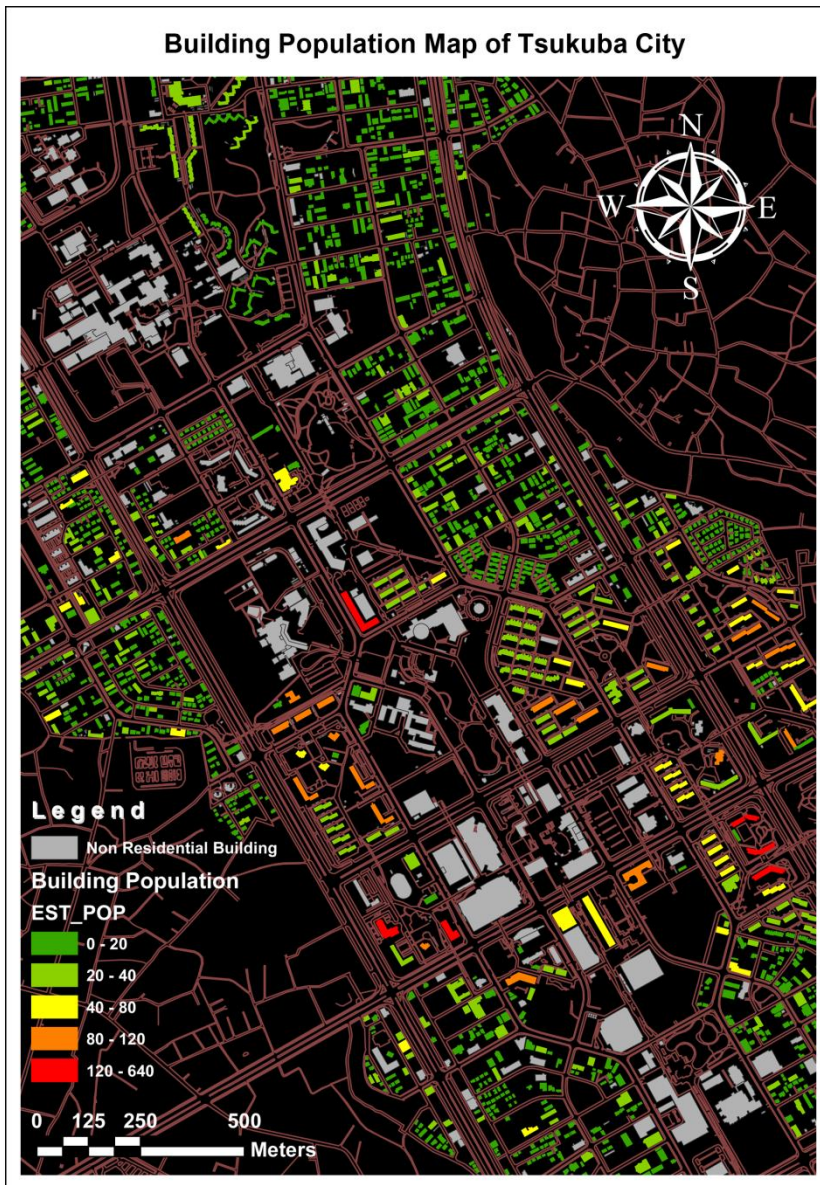
SAMPLE APPLICATION 1

3D visualization of quantitative building population data

Source: Lwin, K. K. and Murayama, Y. 2009. A GIS Approach to Estimation of Building Population for Micro-spatial Analysis. *Transactions in GIS*, 13(4), 401-414.
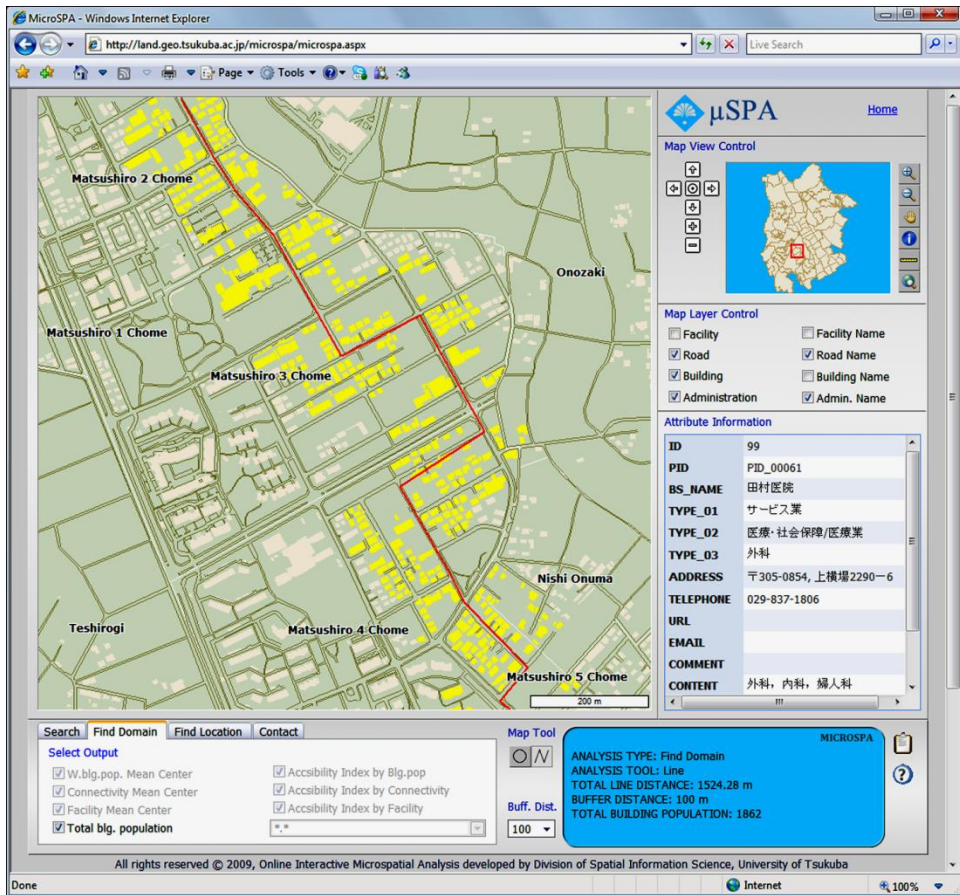
SAMPLE APPLICATION 2

Dasymetric mapping using building population

Source: Lwin, K. K. and Murayama, Y., 2010, Development of GIS tool for dasymetric mapping, *International Journal of Geoinformatics,* 6(1):11-18.

SAMPLE APPLICATION 3

Online Interactive Micro-spatial Population Analysis based on GIS estimated building population

Example of web-based interactive decision-making tool for local community bus route planning based on GIS estimated building population. (determining the shortest route with larger building population within a specified buffer zone)
http://land.geo.tsukuba.ac.jp/microspa/

Source: Lwin, K. K. and Murayama, Y. 2009. A GIS Approach to Estimation of Building Population for Micro-spatial Analysis. *Transactions in GIS*, 13(4), 401-414.

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