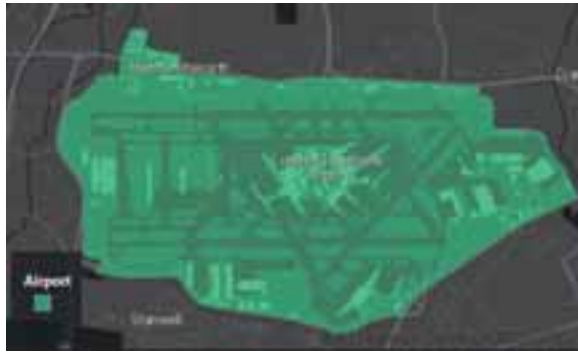


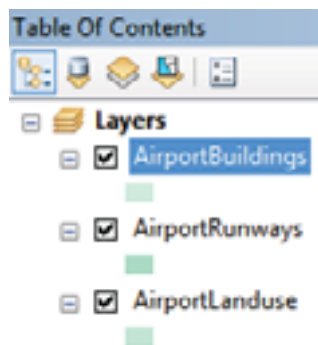
# Airports

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The airports map uses landuse data, runways and buildings to show which areas in the city serve the aviation community.



The data loading tool creates these layers:



## Data required

- 1) Landuse boundaries, ideally with attribute field to help identify land designated for airport use
- 2) Runway and taxiway boundaries
- 3) Building footprints

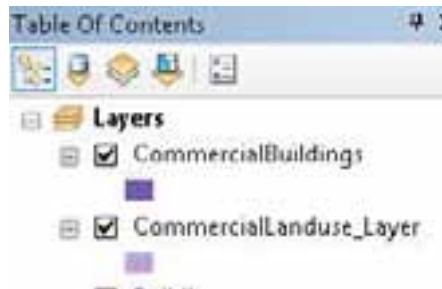
# Commercial Landuse

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This map shows areas dedicated to commercial landuse.



The data loading tool creates these layers:



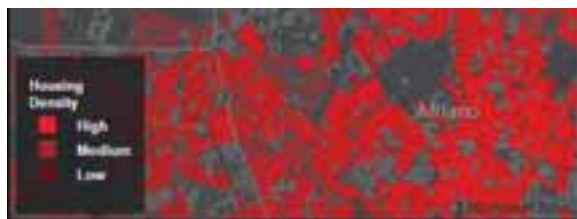
## Data required

- 1) Landuse boundaries of all areas designated for commercial landuse, added to ArcMap as a layer.
- 2) Building footprints

# Housing Density

The housing density map uses landuse data to give a general idea of which areas in the city contain high density for housing units (e.g. high-rise apartment buildings), medium density, and low density (e.g. suburban).

Housing density is divided into three categories: high, medium, low. For example, in Perth, high density is defined as 150 square meters of land area per dwelling or less. Low density is defined as 350 square meters of land area per dwelling or more. Medium density is 151 - 349 square meters of land area per dwelling.



The map legend uses the following range of values for its housing density classes:



Some cities already have classified their landuse data as high/medium/low density, as in the example below. Others have not, and can use this tool as an opportunity to do so.

Housing Density				
OBJECTID	Shape	ShapeID	Density	Housing Density class
1	Polygon W	1111	Residential medium density	High
2	Polygon W	1111	Residential medium density	High
3	Polygon W	1112	Residential medium density	Low
4	Polygon W	1111	Residential medium density	High
5	Polygon W	1120	Residential medium density	Low
6	Polygon W	1120	Residential medium density	Low
7	Polygon W	1120	Residential medium density	Low
8	Polygon W	1112	Residential medium density	Medium
9	Polygon W	1120	Residential medium density	Low

## Data required

- 1) Landuse boundaries, ideally with attribute field to help identify high/medium/low density housing.
- 2) Building footprints

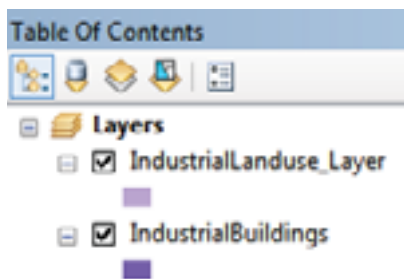
# Industrial Landuse

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This map shows areas dedicated to industrial landuse.



The data loading tool creates these layers:



## Data required

- 1) Landuse boundaries of all areas designated for industrial landuse, added to ArcMap as a layer.
- 2) Building footprints

# New Development

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This map shows areas of new development in the city over a specified time period, typically covering the most recent 10 years (but not limited to that specific time period).

The Lincoln Land Institute categorizes development in relation to its proximity to open space in and around the city. [Click here for details](#). The three categories are:

**Infill:** all new development that occurred between two time periods within all the open spaces in the city footprint of the earlier period excluding exterior open space;

**Extension:** all new development that occurred between two time periods in contiguous clusters that contained exterior open space in the earlier period and that were not infill.

**Leapfrog:** all new development that occurred between two time periods entirely outside the exterior open space of the earlier period.



The data loading tool creates these layers:



## Data required

- 1) This data loading tool requires a layer that already indicates which polygons represent new development that occurred any time during the start/end years.
- 2) Once you have defined which areas had any development, the next step is to categorize the development using the Lincoln Land Institute categories listed at left. Add a text field to the data called "category".
- 3) Use spatial selection to identify areas that developed within the city, areas that extended its footprint, and areas that leapfrogged the city's footprint entirely.

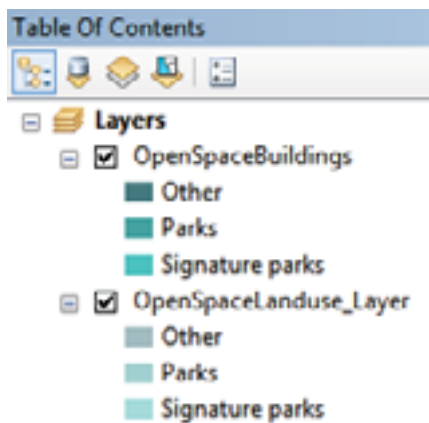
# Open Space

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The parks and open space are visible on this map, giving a visual indication of how much open space exists in the city. The map calls out one or more signature parks that are part of the identity of the city. Open space is defined as developed or natural areas that are available for public use within the city.



The data loading tool asks you to query a landuse layer for all open spaces, all parks, and one or more signature parks. From that, it creates these layers:



## Data required

- 1) Landuse boundaries, ideally with attribute field to help identify high/medium/low density housing.
- 2) Building footprints







# Population Density

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The population density map uses small area boundaries, such as postal codes or census enumeration areas, to show how many people reside per square kilometer in each small area. The total population is provided by the national census agency or other source. The area of each feature is calculated in square kilometers using a Cylindrical Equal Area projection of the source data.



The map legend uses the following range of values (persons per square kilometer) for its population density classes:

Symbol	Range	Label
	30000.000001 - 150000.000000	Highest
	7000.000001 - 30000.000000	Very high
	5200.000001 - 7000.000000	High
	3300.000001 - 5200.000000	Low
	1500.000001 - 3300.000000	Very low
	0.000000 - 1500.000000	Lowest

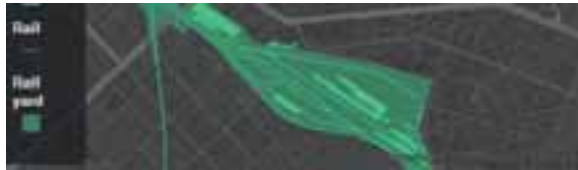
## Data required

- 1) Small area boundaries, with attribute field containing total population
- 2) Building footprints

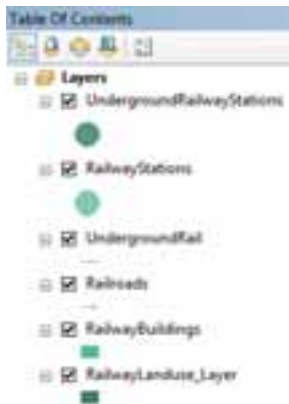
# Railroads

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The railroads map uses landuse data, buildings and railroad lines to show the areas dedicated to rail use in and around the city.



The map legend uses the following range of values for its housing density classes:



## Data required

- 1) Landuse boundaries to identify land dedicated to rail use.
- 2) Railway lines, including metro and underground rail.
- 3) Building footprints



# Roadspeed

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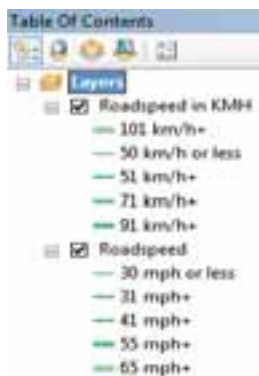
The roadspeed map shows the city's roads, classified by posted speed limits. Common speed limits around the world were reviewed to determine a set of speed classifications that emphasize high-speed roads, one or two mid-speed road classes, and residential roads.



Speeds are shown either in km/h or mph depending on what is used in each country. For comparison across cities, the equivalent class breaks are as close as possible and rounded to commonly posted speed limits.

The values for the speed class break points used in the final map's layers are as follows:

High speed	101+ km/h	65+ mph
Arterials	91–100 km/h	55–64 mph
Connectors	71–90 km/h	41–54 mph
Connectors	51–70 km/h	31–40 mph
Residential	50 km/h or less	30 mph or less



The geoprocessing tool creates both sets of class break points.

If posted speed limits are not available for each road segment, other attributes such as road class or type can be used to infer the posted speed limit.

## Data required

- 1) Road network with posted speed limits and/or road class or type.

# Youth and Senior Population

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This data loading tool creates layers to support two maps, one for youth population and one for senior population.

The map layers show a dot distribution to represent the population, where each dot represents a number of people in that area. The dot values are adjusted by scale to get the best representation of the distribution. The value of each dot is roughly halved with each increase in scale, from 100 persons per dot at city-wide scales, to 3 persons per dot at neighborhood scale.



The Youth Population map above uses dot density renderers, and a layer whose definition query filters to highlight areas with more than 33% youth population.



The Senior Population map uses dot density renderers, and a layer whose definition query filters to highlight areas with more than 10% senior population.

## Data required

- 1) Small area boundaries, with attribute field containing total population
- 2) Building footprints