METROPOLITAN

FORM · DENSITY · TRANSPORTATION

DATA SOURCES

URBANIZED AREA DEFINITION

The urbanized area for each city is generated from government data sources. For the U.S., Australian, and Canadian cities, the definition is based on the urban area definitions employed by each country's census bureau, a combination of population density measured within census geographic units, and the contiguity of those census units. Some alterations were made to the Canadian urbanized area shapes to make them more comparable in area and extent to the U.S. and Australia. For the European cities, the definition is based primarily on maps of land uses that constitute the built-up urban fabric of a region. More details on urban area definitions are provided below.

United States

The urbanized area extent for the U.S. cities is based on the "urbanized area" as defined by the U.S. Bureau of Census (USBC) (see 2000 Urban Area Criteria). The urban area criterion includes contiguous census block groups having 3.8 persons per hectare or more. An eight-page document produced by the USBC details the method used to define urban areas which includes rules about "hops and jumps" that allow the inclusion of intervening census block groups containing as few as 1.65 persons per hectare. The urbanized area definition for the U.S. cities was used as the standard that the urban area definitions for the other cities on the Metropolitan poster attempted to match.

DATA SOURCES:

U.S. Metropolitan Statistical Area, U.S. Bureau of Census 2000 urban area criteria: 2000 Urban Area Criteria, Federal Register, Volume 67, 51, March 15, 2002, U.S. Bureau of Census and Department of Commerce
http://www.census.gov/population/www/estimates/metroarea.html
http://www.census.gov/geo/www/ua/uafedreg031502.pdf.

Australia

The urbanized area extent for the Australian cities is based on the "urban centre" as defined by the Australian Bureau of Statistics (see 2001 Urban Centre ¬– Locality Structure). The initial density threshold used is 2 persons per hectare, which is comparable to the minimum density used in the U.S. These "urban centre" areas were not altered, since other density thresholds and fine-grained census units employed in the rule base were comparable to the U.S. designation.

DATA SOURCE:

2001 Urban Centre – Locality Structure, Australian Standard Geographical Classification, Australian Bureau of Statistics
http://www.abs.gov.au/AUSSTATS/abs@.nsf//%20web+pages/Census+Data.
http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/AA73DF0A91A3F71BCA256AD500017147/$File/12160_jul2001.pdf

Canada

The urbanized area extent for the Canadian cities is based on the "urban area" as defined by Statistics Canada (see 2001 Urban Area, 2001 Census Dictionary). This "urban area" was used as a base, and large, designated green spaces and agriculture reserve land at the edge were removed using local data sources, to make the Canadian definition more consistent with the U.S. and Australia.

DATA SOURCES:

2001 Urban Area, 2001 Census Dictionary, Statistics Canada
http://www12.statcan.ca/english/census01/Products/Reference/dict/appendices/92-378-XIE02002.pdf
Green Belt Plan Area, Ministry of Municipal Affairs and Housing, 2005
http://www.mah.gov.on.ca/userfiles/page_attachments/Library/1/560105_Schedule1_Tabloid_Greenbelt_Plan__Area.pdf
Green Zone, map in Greater Vancouver Regional District Livable Region Strategic Plan
http://www.gvrd.bc.ca/growth/pdfs/GreenZoneMap.pdf
Vacant and urbanized spaces and decreed agricultural zones, map 5 in Planning Framework and Government Orientation for Montreal Metropolitan Region, 2001
http://www.mamr.gouv.qc.ca/publications/amenagement/cmm_cadre_eng.pdf

Europe

The urbanized area extent for the European cities is based on the "urban morphological zones" (UMZ) as defined in the 2000 Corine land cover seamless vector database (CLC2000).

In their original form, the UMZs do have population numbers associated with them, but they are not based on small area census geography, and they extend much further into the hinterland than the urbanized area as defined in the North America and Australian censuses. To make the European cities compatible, the urbanized area was defined through a two-stage process. The first stage isolates those contiguous municipalities within each city's Large Urban Zone (LUZ) that have a population density greater than or equal to 4 persons per hectare (comparable to the U.S. threshold). The second phase is to select the UMZs that intersect the municipalities identified in the first stage. This new UMZ selection defines the urbanized area extent for each European city and the tabular information associated with the UMZ selection defines the area, population and population density.

The urbanized area for Berlin was created in a slightly different way because reliable population at the municipality level was not available. In this case, the UMZ population was first apportioned to the municipal level, proportional to area. Then the municipalities containing a population density of 4 or more persons per hectare could be isolated. The remainder of the Berlin urbanized area extent definition process was the same as for the other European cities.

DATA SOURCES:

Corine land cover 2000 seamless vector database (CLC2000) in the form of Urban Morphological Zones (UMZ) with associated area and population data, European Environment Agency,
http://dataservice.eea.europa.eu/dataservice/metadetails.asp?id=950
Large Urban Zone (LUZ) boundaries: Urban Audit, Eurostat, European Commission,
http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090,30070682,1090_33076576&_dad=portal&_schema=PORTAL.
Municipality boundaries: GfK MACON, http://www.gfk-geomarketing.com/digital_maps.htm
Population for Austria: Gfk Geomarketing,
http://www.gfk.geomarketing.com/kundenservice/download/ew_fldaten/download_daten_overview.htm.
Population for Stockholm: Statistical Yearbook of Sweden, http://www.scb.se/templates/Product____30937.asp.
Population for Copenhagen: Danmarks statistik, Statistikbanken, http://www.dst.dk/
Population for Madrid: INEbase, http://www.ine.es/
Population statistics for Stockholm, Copenhagen, and Madrid are also provided through the University of Toronto Data Library.

EXPRESSWAYS

The alignments of expressways shown are taken from digital sources and checked against both paper maps and satellite photography on Google Maps.

Canadian Cities

DIGITAL SOURCE:

National Road Network, Statistics Canada, http://www.statcan.ca/english/mapsgeo/index2.htm

PAPER MAPS:

2006 MapArt maps for each city.

U.S. Cities

DIGITAL SOURCE:

Road Network, Highways, U.S. Bureau of Census (USBC), http://www.census.gov/geo/www/maps/

PAPER MAPS:

Chicago, Denver: AAA Road Atlas 2001.
Atlanta: B&B City Streets Atlanta (Berndtson & Berndtson) 2000.
Houston: Rand McNally Houston Central (Rand McNally) 1991.
Phoenix: Phoenix, Peoria, Glendale & Sun City, Arizona StreetMap (Universal Map) 2002.
Washington: AAA Road Atlas 2001.

European Cities

DIGITAL SOURCE:

Road Network, Motorways and federal highways, GfK MACON, http://www.gfk-geomarketing.com/digital_maps.htm

PAPER MAPS:

Madrid: Mapa 1:100,000 de la Comunidad, Hoja 3, Madrid (Comunidad de Madrid, Servicio Cartográfico Regional) 1992.
Berlin: Berlin (ADAC Verlag) 2002.
Copenhagen: København (Falk Plan) 1979.
Vienna: Wien Stadtplan (Geografa Verlags and Vertriebsgesellschaft m.b.H. und Co KG) 1985.
Stockholm: Stockholm (Lantmäteriet/KartCentrum) 1991.

Australian Cities

DIGITAL SOURCE:

Sydney: http://rta.nsw.gov.au/constructionmaintenance/completedprojects/m5east/aboutthem5east/aboutm5eastsydorbnetwork.html

PAPER MAPS:

Sydney: Australia Road Atlas (Hema Maps) 2003; consultation with local contact.
Melbourne: Australia Road Atlas (Hema Maps) 2003; consultation with local contact.