



<https://www.sae.org/shared-mobility/>

# CAMMM-PDG Research Data and Analysis Grid

Concordia University  
Université de Montréal  
August 2019

**Researchers:**

Dr. Carmela Cucuzzella (PI)

Prof. Anne Cormier

Dr. Caroline Hatch

Dr. Pierre Gauthier

Dr. Zachary Patterson

**Researcher Assistants:**

Morteza Hazbei

Amelie Tremblant

Omar Ortiz Meraz

Firdous Nizar

Sherif Goubran

In the context of climate change and other environmental crises, what are the main initiatives, strategies and policies aimed at reducing car dependency and foster active and collective transportation used by exemplar cities?

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

# Demographics

Metropolitan population

Density of population per square kilometer

Gross domestic product (GDP) in \$USBM

Median age by country

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

# Physical territory

- Climate (Koppen-Geiger classification)
- Topography (Maximum range in altitude in meters)
- Yearly precipitations
- Urban form (grid, by neighborhood, concentric, **other**?)
- Obstacles (body of water, infrastructure, mountain, other?)
  - » Require circumvention, permeable, car friendly, bicycle friendly, pedestrian freindly?

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

# Built environment

- Average height of buildings in city center (low-rise, mid-rise, high-rise) on Google Maps
- Average height of buildings outside city center (low-rise, mid-rise, high-rise) on Google Maps
- Average width of streets by number of lanes (narrow, medium, wide) on Google Maps
- Streets lines with trees (1 to 5) compared to Montreal (3) on Google Maps
- Streets lined with parking spaces (1 to 5) compared to Montreal (3) on Google Maps
- Streets lined with benches (1 to 5) Difficult to look for so far

Demographics

# Modal share

- % of people cycling

Physical territory

- % of people using public transit

Built environment

- % of people using a private car

Modal share

- % of people walking

Cost to own a car

- Major transit authority

Infrastructure in place

- Number of registered cars per person

Electric vehicles

- Road safety (how can we measure it? number of casualties per year?)

Strategies

- Consumer satisfaction in public transit (not available for every city so far)

Policies

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in  
place

Electric vehicles

Strategies

Policies

# Cost to own a car

- Parking spot price per hour in city center (in \$US)
- Car registration fee (in \$US)
- Gas price per liter (in \$US)
- Monthly subscription to public transport cost for an adult (in \$US)



# Infrastructure in place

- Tram (yes/no) (length of system?)

- Metro (yes/no) (length of system?)

- Bus (yes/no) (length of system?)

- Ferries (yes/no)

- Mobility hubs (yes/no)

- Autonomous vehicles

- Kilometers of bicycle paths (not always available)

- Car sharing (Number of vehicles? Number of companies? Number of subscribers?)

- Bike sharing (Number of vehicles? Number of companies? Number of subscribers?)

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

# Electric vehicles

- Number of electric cars
- Number of charging points
- Electric bicycles available for rent (yes/no)
- Electric scooters available for rent (yes/no)

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies

# Strategies

- New public transit infrastructure (new lines, new stations, other ?)
- Land use incentives (how to cummulate the data : quantitative? list?)
- Technical development. ex : replacing buses for electric ones (how to cummulate the data : quantitative? list of each measure?)
- Bicycle path extension (in kilometers)
- Creation of protected bike paths (in kilometers)
- Number of bicycle parking spots provided by the city

# Policies

- Governing body structure (Ministry of transport, etc)
- Related to Green House Gas emissions (how to cumulate the data : quantitative? list of each measure?) (how to present it?)
- Modal share targets (in % for each option)
- Safety targets (number of casualties per year)
- Public transport funding (municipal, federal, etc)

Demographics

Physical territory

Built environment

Modal share

Cost to own a car

Infrastructure in place

Electric vehicles

Strategies

Policies