The uses of surveillance in environnemental health

The case of transportation

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February 25th, 2013
Ottawa

Agence de la santé et des services sociaux de Montréal
Québec

Mandate of the Montréal public health department

- Inform the population on such issues as their state of health, priority health problems, vulnerable groups, risk factors and efficient interventions
- Follow the evolution of the public's health and conduct appropriate research
- Ensure that the required preventive measures are adopted by the appropriate authorities
- Act as a teaching center in the field of public health

Who we are
Urban environment and health sector

- Multidisciplinary team of MDs and 20 professionals (epidemiologists, toxicologists, urbanist, nutritionist, hygienist, health promotion practitioner, geographic information system specialist (GIS), evaluation specialist, etc.)
- Focusing on the impact of the built environment on public health and the development of efficient interventions
- Working in collaboration with researchers (UQAM, University of Montréal, McGill University) and in the university hospital research centers

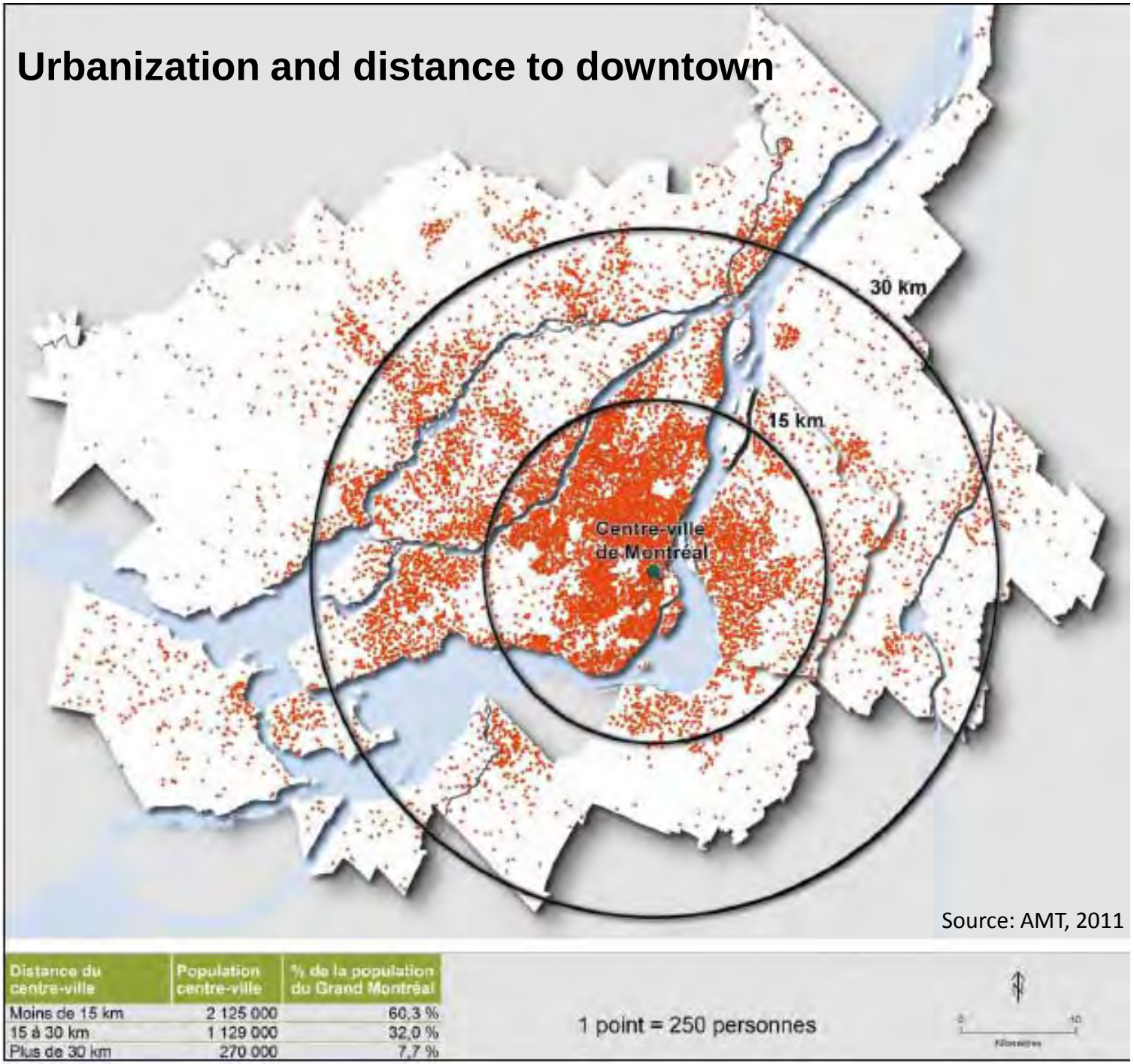
Use of surveillance

- Influence healthy public policies
- Support mobilization of partners
- Evaluate public health impact of interventions

Montreal metropolitan region: Increasing presence of cars 1987-2008

- Trips by automobile (AM peak rush hour): + 39%
- Number of cars: + 49% (+35 000 per year in the past 5 years)
- Population growth: + 19%

Urbanization and distance to downtown



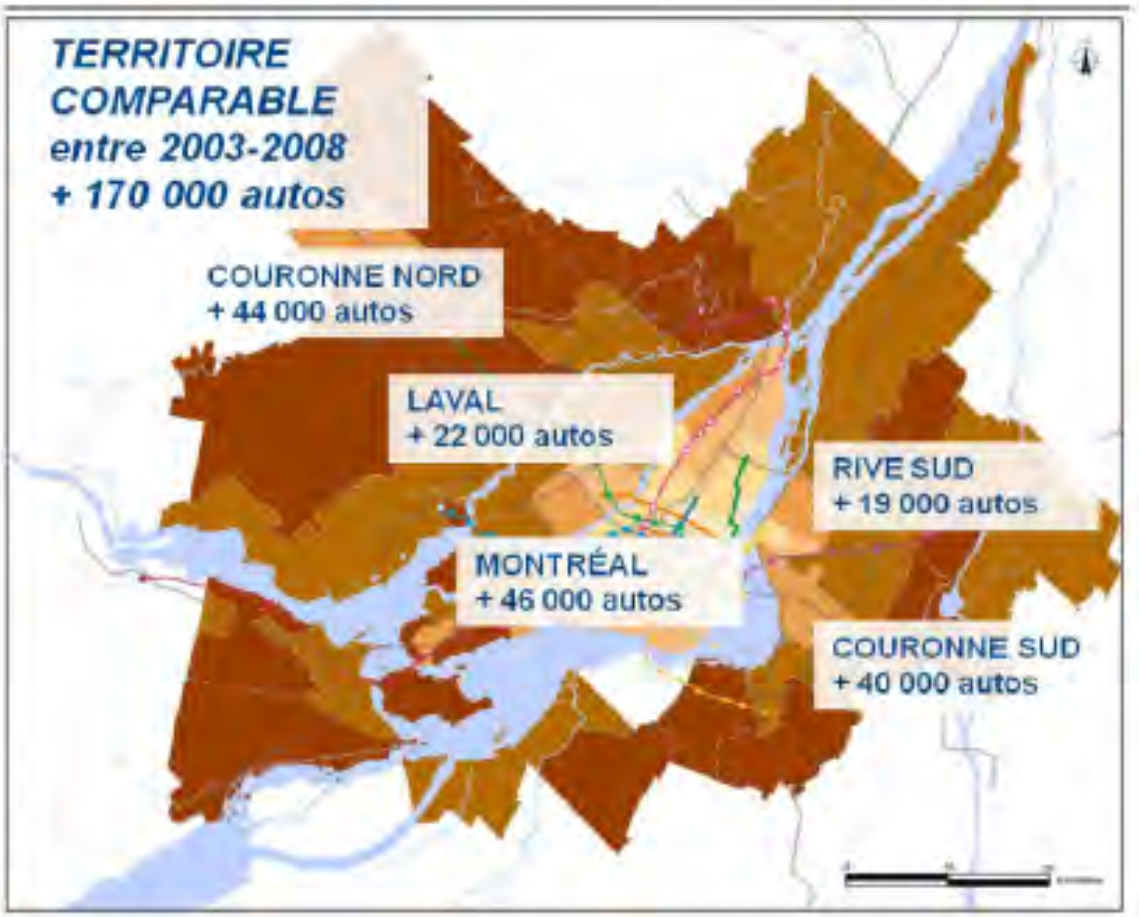
Source: AMT, 2011

Distance du centre-ville	Population centre-ville	% de la population du Grand Montréal
Moins de 15 km	2 125 000	60,3 %
15 à 30 km	1 129 000	32,0 %
Plus de 30 km	270 000	7,7 %

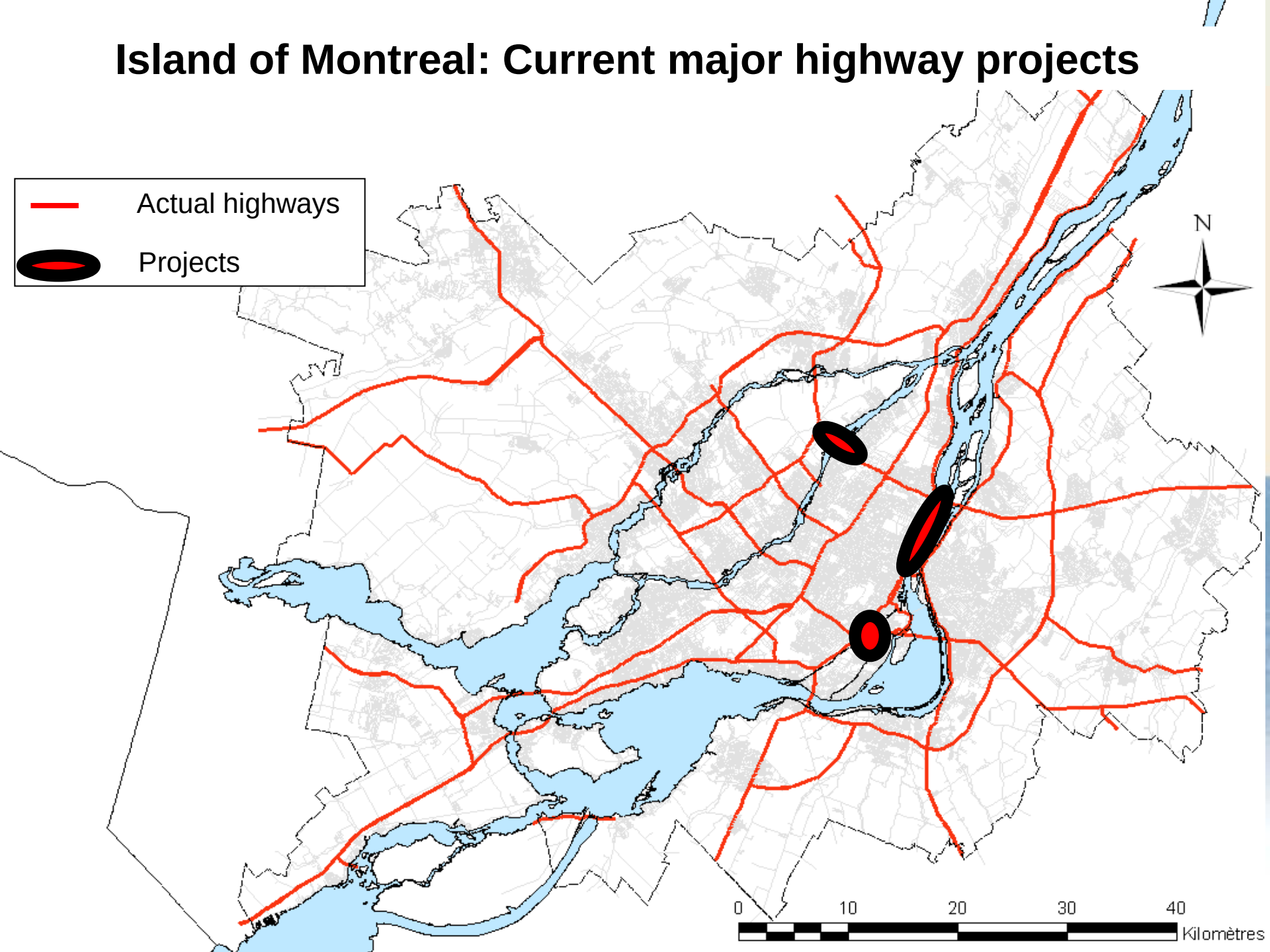
1 point = 250 personnes

Context
Demography and Employment

- Growing population in the metropolitan area
- Significant growth in motorization
- Maintaining the importance of activity centers in the downtown core



Island of Montreal: Current major highway projects



Island of Montreal: Current m

Actual highways

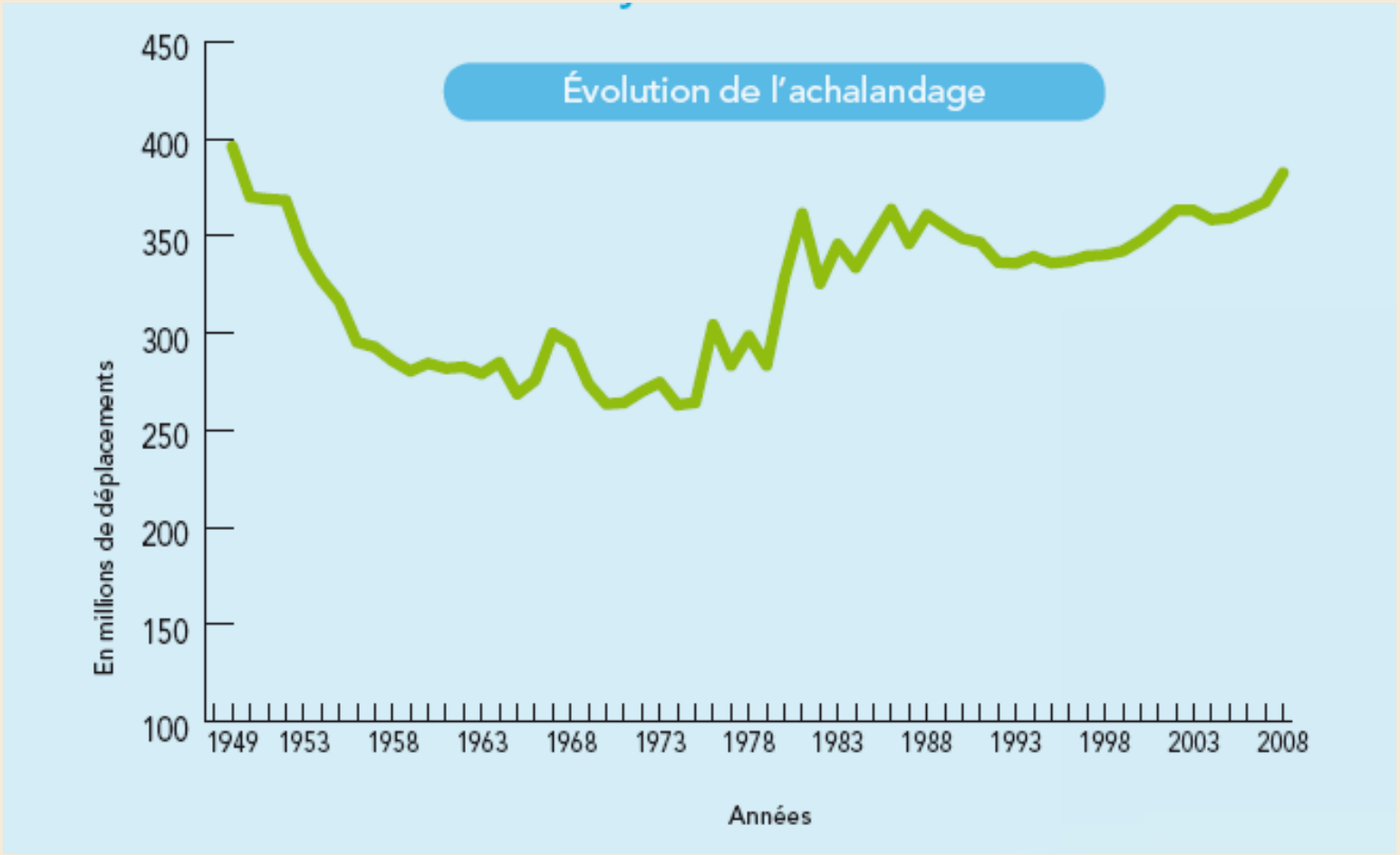
Projects

Tranchée ouverte large de 40m à côté de la carserne Létourneux (source: MTQ-Ville de Montréal 2007)

0 10 20 30 40

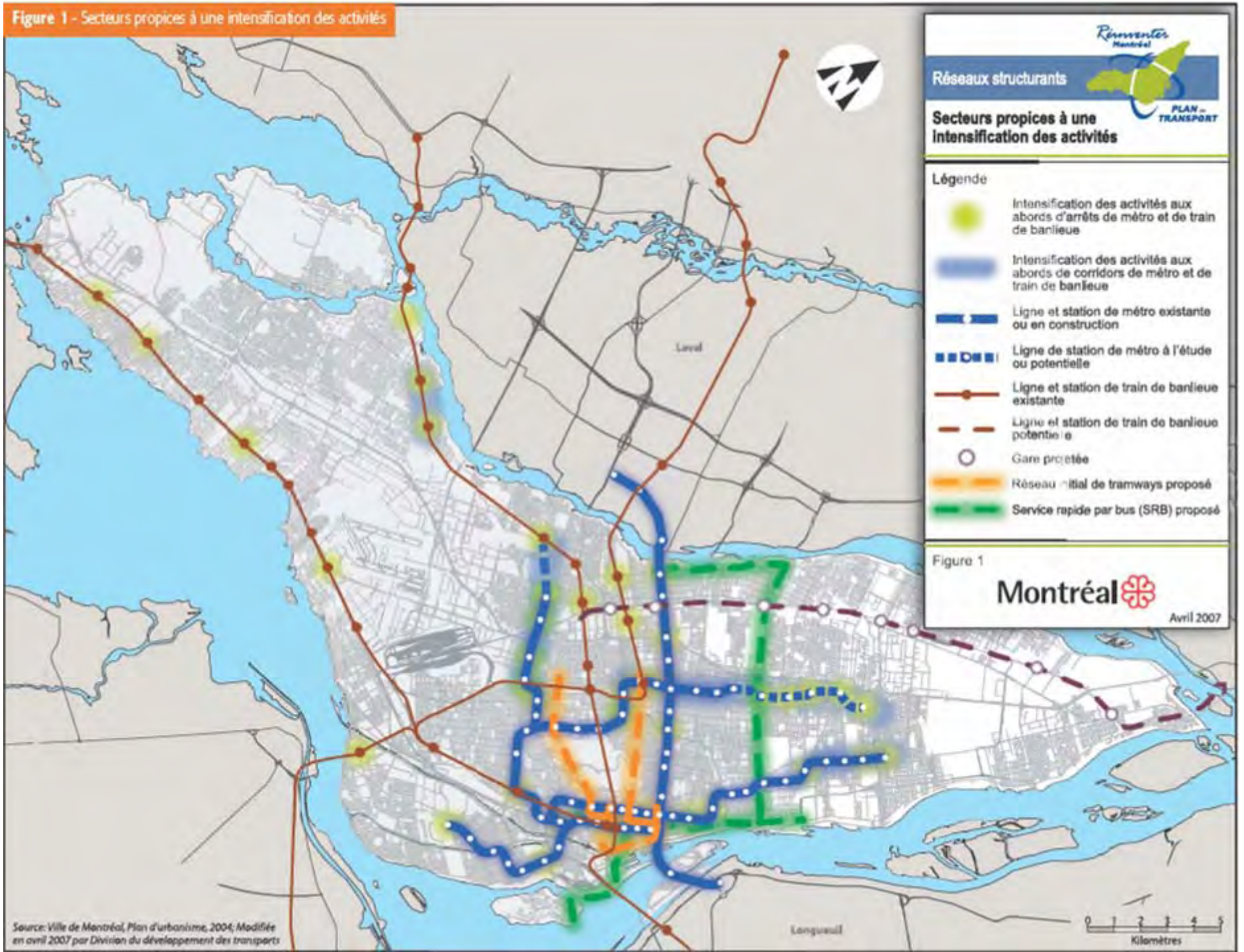
Kilomètres

Evolution of the numbers of passengers using public transportation



Source : STM 2009

Figure 1 - Secteurs propices à une intensification des activités



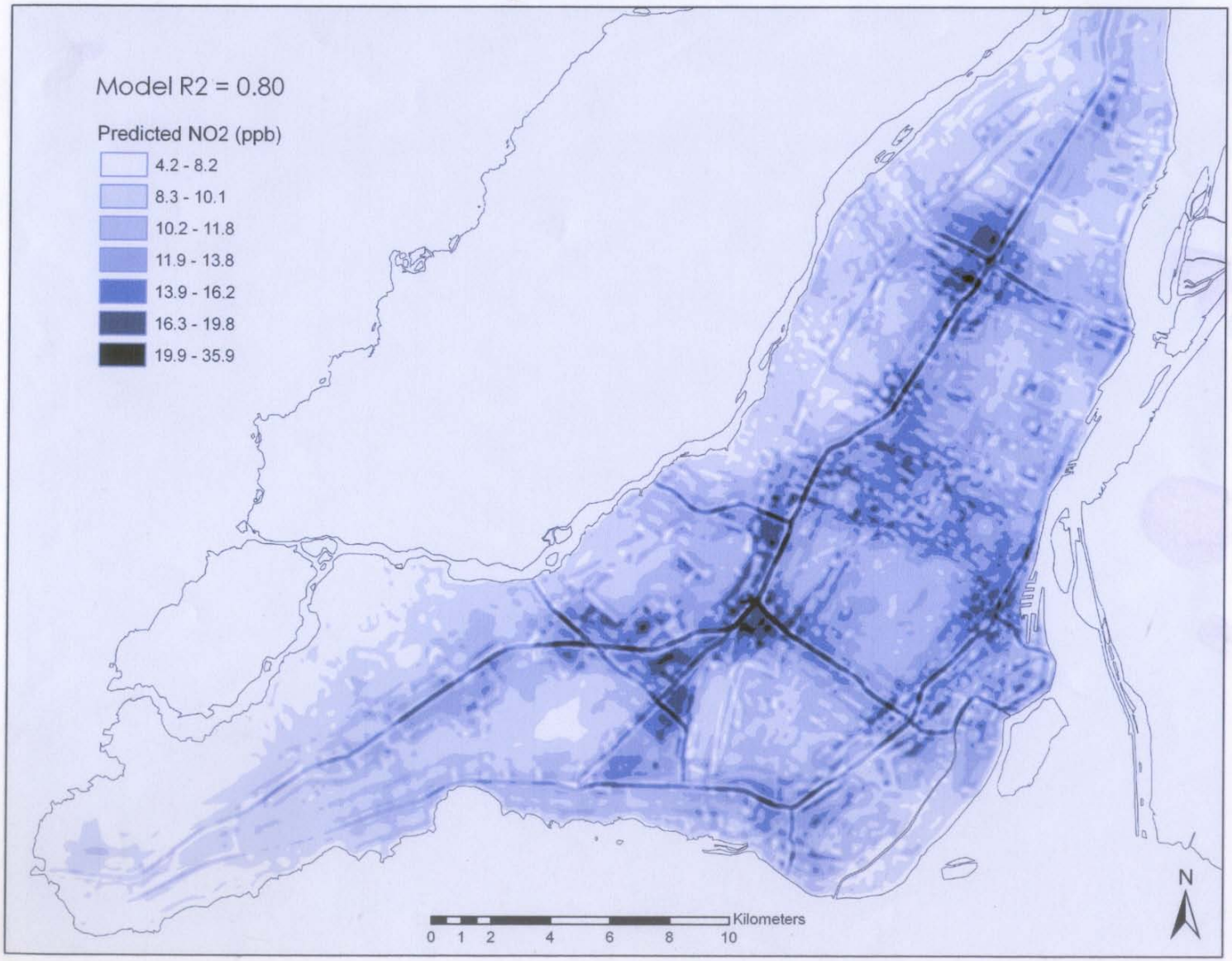
Environmental and health impacts of the transportation system

Environment		**Health**
Air quality	→	*Cardio-respiratory diseases, asthma*
Climate change, heat islands	→	*Cardio-respiratory mortality and morbidity*
Road safety	→	*Road injuries* *Walking and cycling*
Physical activity	→	*Overweight and obesity* *Diabetes*
Noise	→	*Sleep disturbance* *Hypertension*
Mobility, accessibility	→	*Exclusion*

SANTÉ PUBLIQUE

NO_2 à Montréal

Crouse, Goldberg et Ross 2009, soumis

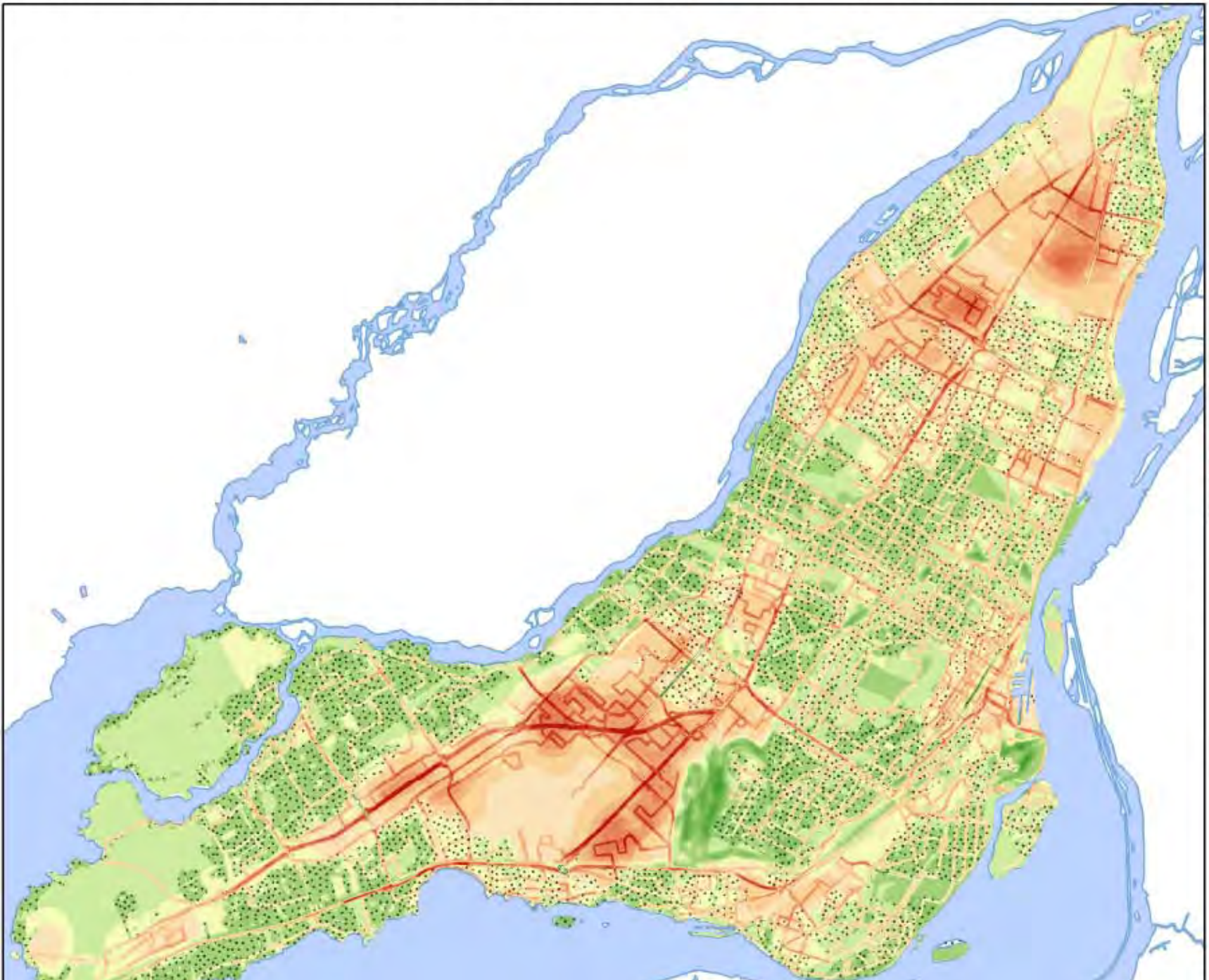


Odds ratio - Hospitalizations for respiratory conditions (over 60 years of age) according to exposure to AM peak traffic

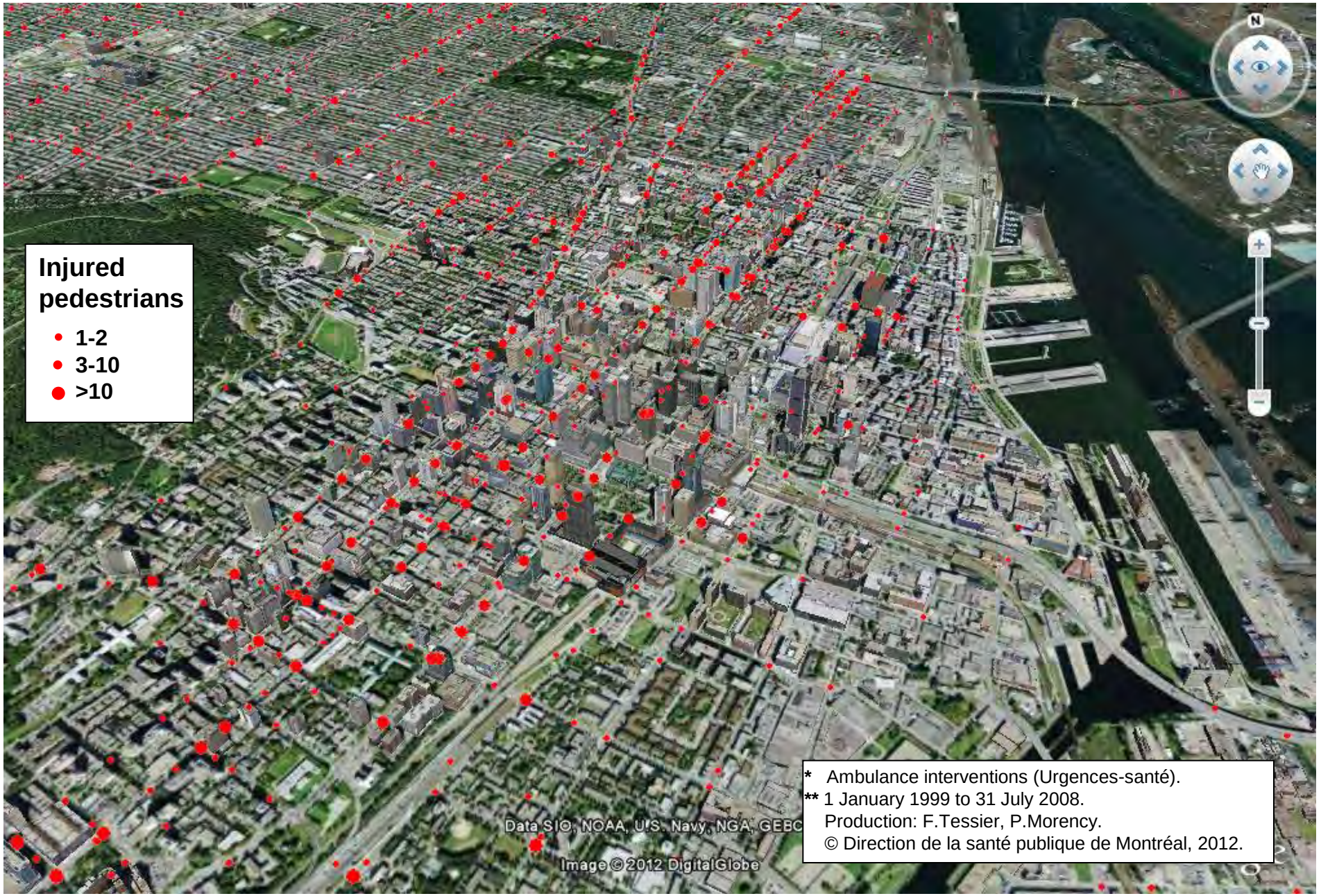
Catégorie de trafic	Nombre de cas (%)	Nombre de témoins (%)	RC (IC95%)	RC ajustés pour le SSE (IC95%)
< 3160 véhicules	5 322 (91,7%)	36 725 (93,5%)	1.00	1.00
3160-7700 véhicules	345 (5,9%)	1 922 (4,9%)	1.24 (1.10-1.39) p<0.001	1.07 (0.95-1.20) p=0.28
>7700 véhicules	138 (2,4%)	613 (1,6%)	**1.55** (1.29-1.87) p<0.001	**1.30** (1.07-1.57) p=0.007

Smargiassi et al., 2005

Estimation des niveaux de bruit le jour par un modèle de type "Land use regression", Montréal, été 2011

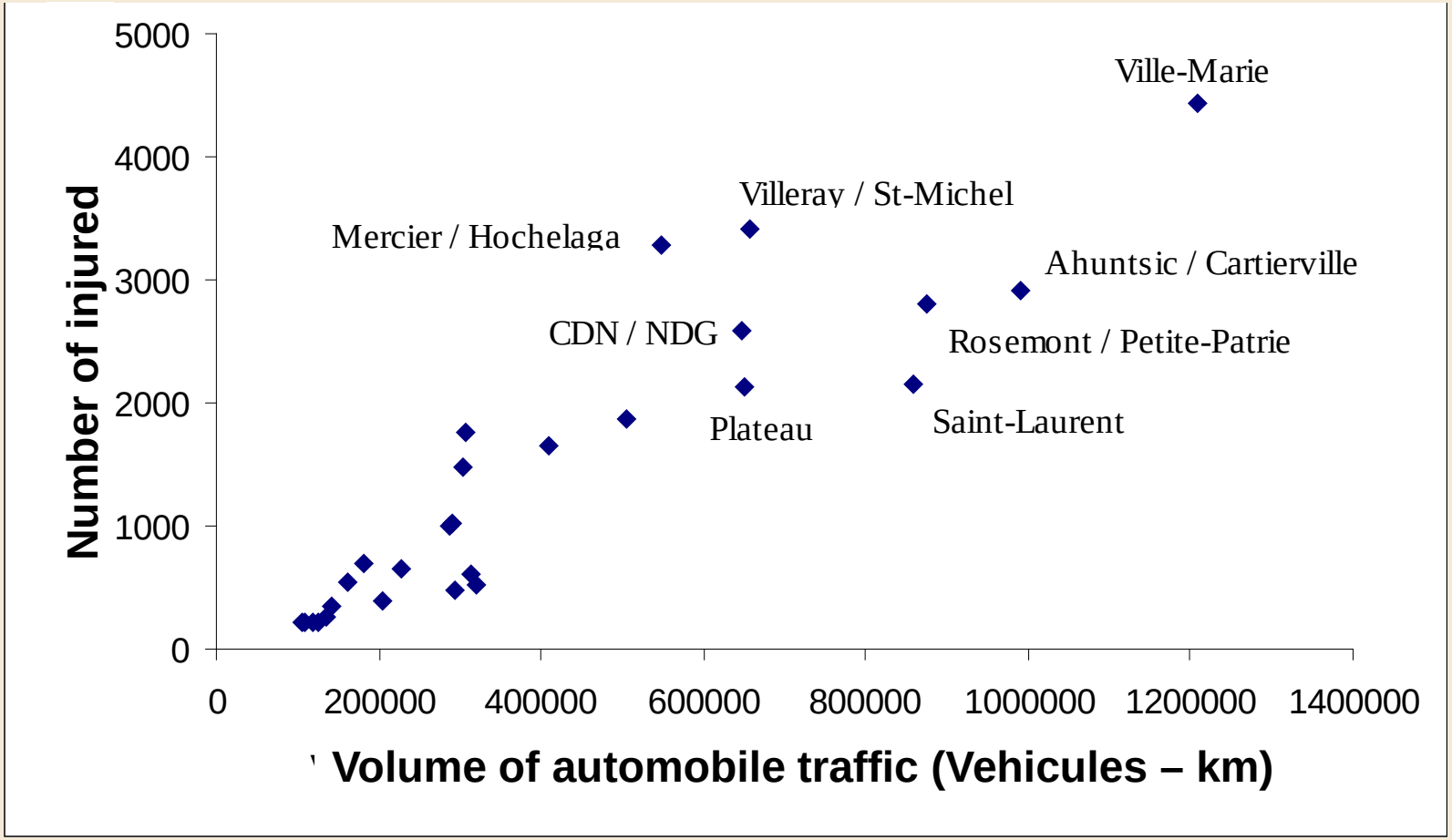


Injured PEDESTRIANS* (Montréal, 1999-2008)



Context

The number of road injuries increases with the volume of traffic



Source : P Morency, MS Cloutier, Urgences-santé 1999-2003; C. Morency. Enquête O-D 1998.

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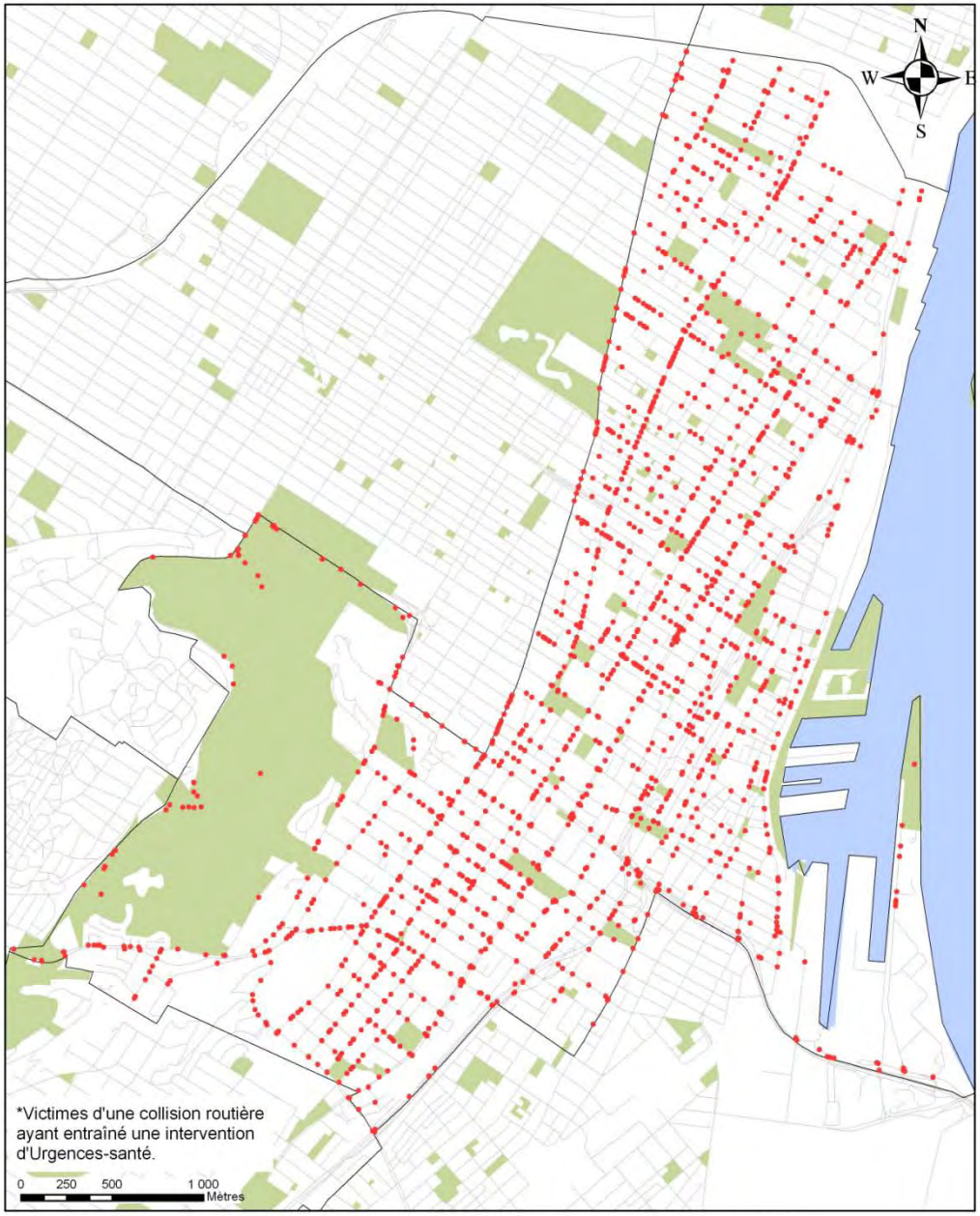
Pedestrians, cyclists, motorcyclists and motor vehicle occupants injured in the borough of Ville-Marie* 01/01/99 to 31/07/2008



Cartographie: Direction de la santé publique de Montréal (EUS), François Tessier/Patrick Morency 2010

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Québec

Major roads, « arteries »

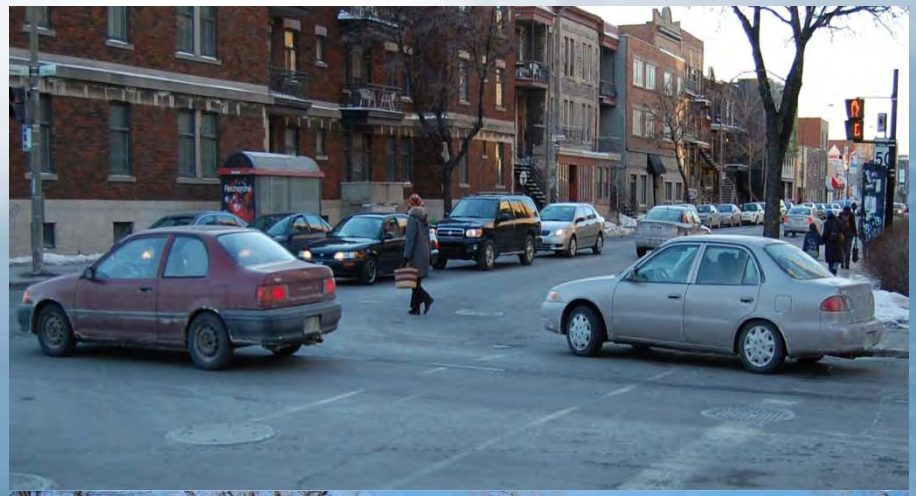
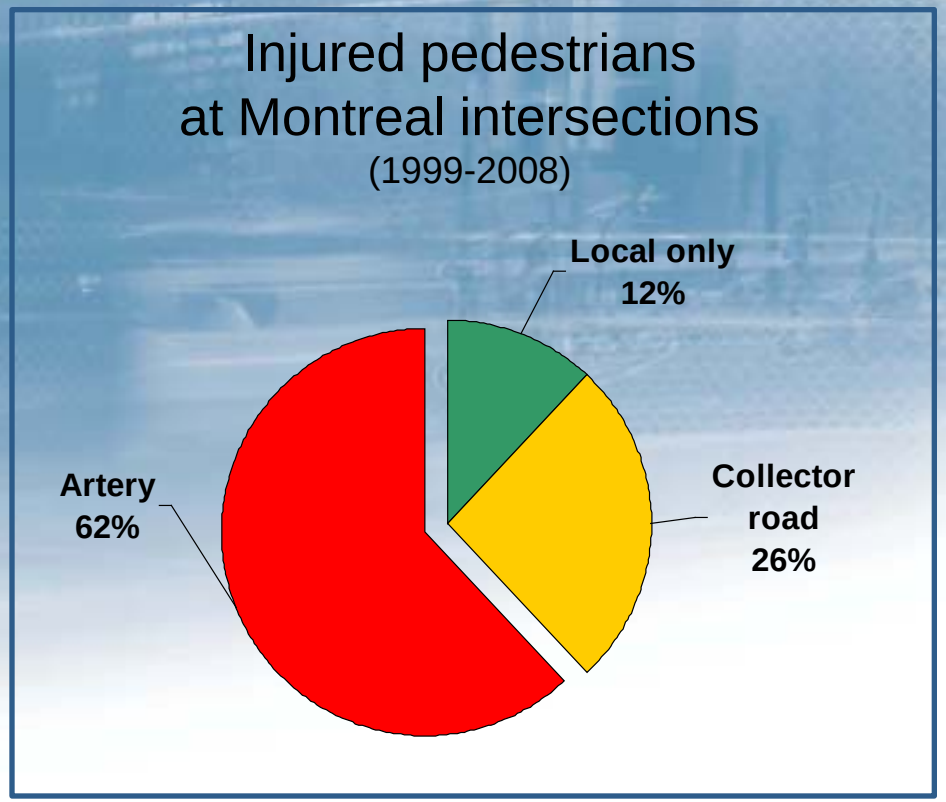


Photo: S. Miaux



Analyses: P. Morency; Data source: Urgences-santé; Ville de Montréal.

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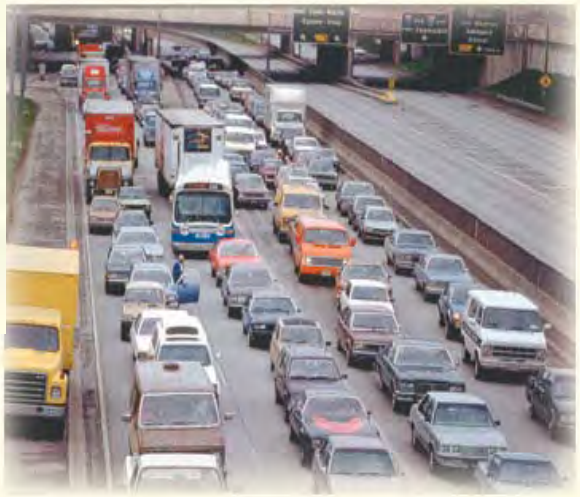
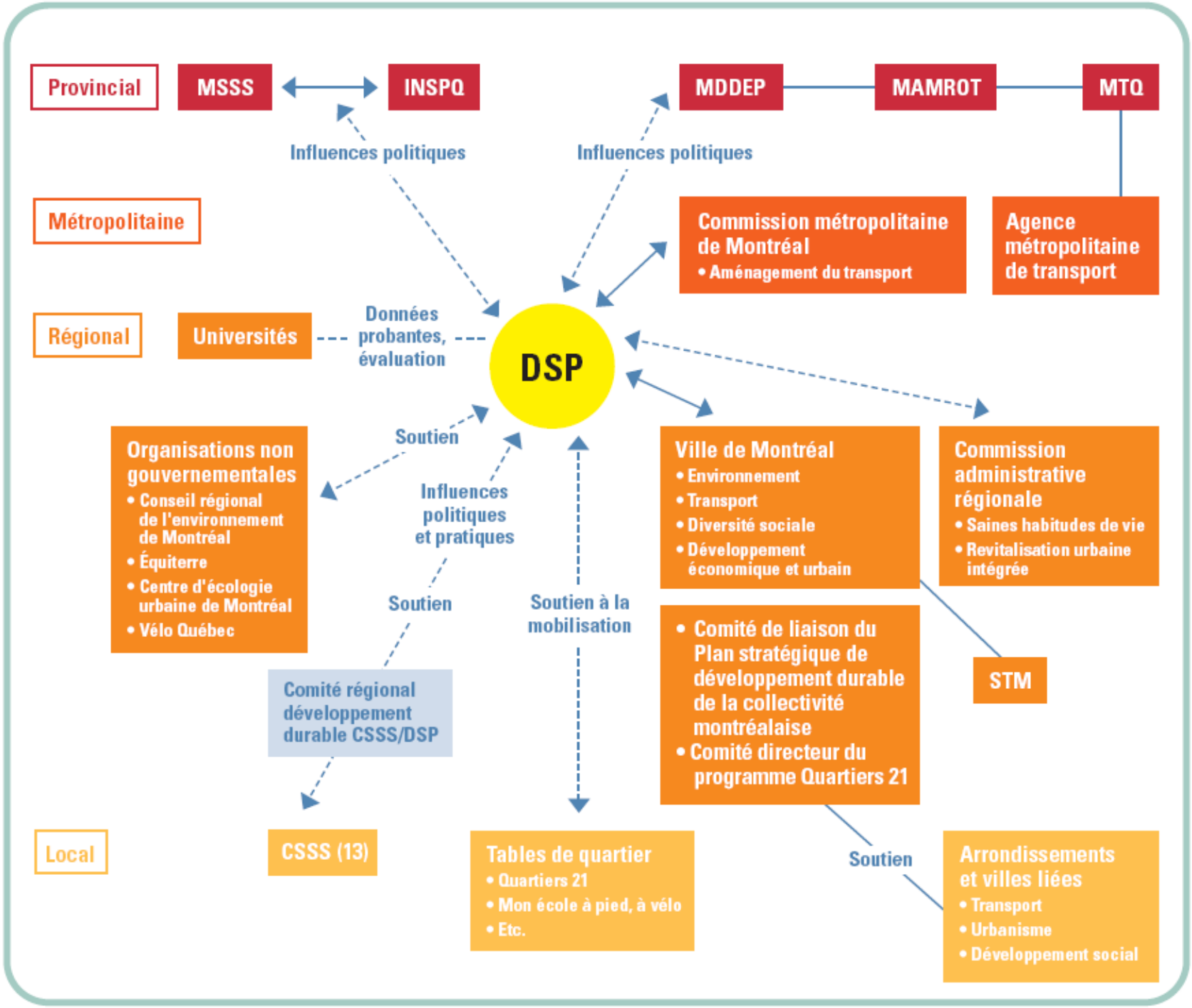
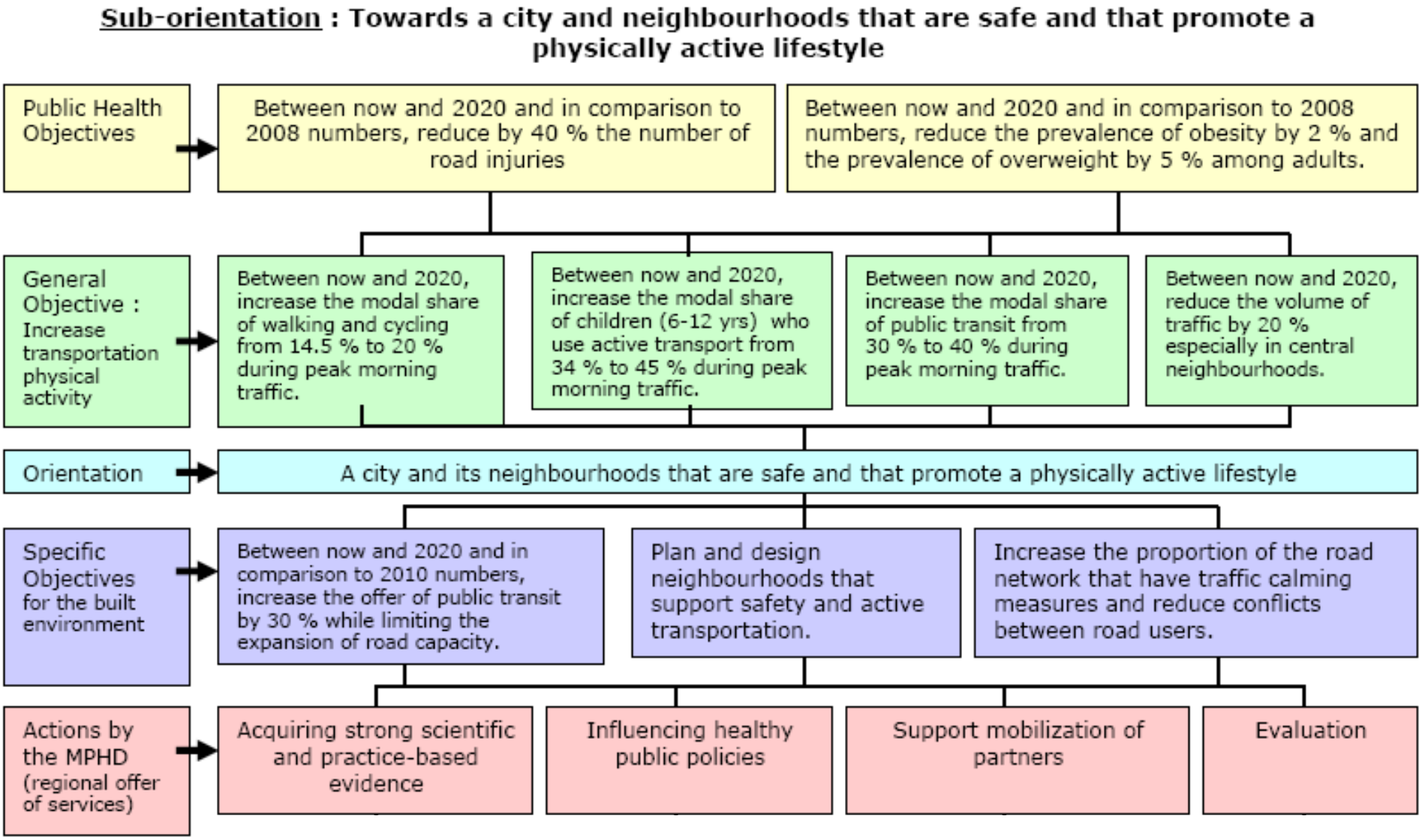
Transportation : Modernize mobility



- Stop increasing road capacity
- Priority to public transit
- Integration of land use & transportation planning (TOD)
- Compact neighbourhood and traffic calming


Provincial
MSSS
INSPQ
MDDEP
MAMROT
MTQ
Influences politiques
Influences politiques
Métropolitaine
Commission métropolitaine de Montréal
• Aménagement du transport
Agence métropolitaine de transport
Régional
Universités
Données probantes, évaluation
DSP
Soutien
Organisations non gouvernementales
• Conseil régional de l'environnement de Montréal
• Équiterre
• Centre d'écologie urbaine de Montréal
• Vélo Québec
Influences politiques et pratiques
Ville de Montréal
• Environnement
• Transport
• Diversité sociale
• Développement économique et urbain
Commission administrative régionale
• Saines habitudes de vie
• Revitalisation urbaine intégrée
Soutien
Soutien à la mobilisation
• Comité de liaison du Plan stratégique de développement durable de la collectivité montréalaise
• Comité directeur du programme Quartiers 21
STM
Comité régional développement durable CSSS/DSP
Local
CSSS (13)
Tables de quartier
• Quartiers 21
• Mon école à pied, à vélo
• Etc.
Soutien
Arrondissements et villes liées
• Transport
• Urbanisme
• Développement social


Sub-orientation : Towards a city and neighbourhoods that are safe and that promote a physically active lifestyle
Public Health Objectives
Between now and 2020 and in comparison to 2008 numbers, reduce by 40 % the number of road injuries
Between now and 2020 and in comparison to 2008 numbers, reduce the prevalence of obesity by 2 % and the prevalence of overweight by 5 % among adults.
General Objective : Increase transportation physical activity
Between now and 2020, increase the modal share of walking and cycling from 14.5 % to 20 % during peak morning traffic.
Between now and 2020, increase the modal share of children (6-12 yrs) who use active transport from 34 % to 45 % during peak morning traffic.
Between now and 2020, increase the modal share of public transit from 30 % to 40 % during peak morning traffic.
Between now and 2020, reduce the volume of traffic by 20 % especially in central neighbourhoods.
Orientation
A city and its neighbourhoods that are safe and that promote a physically active lifestyle
Specific Objectives for the built environment
Between now and 2020 and in comparison to 2010 numbers, increase the offer of public transit by 30 % while limiting the expansion of road capacity.
Plan and design neighbourhoods that support safety and active transportation.
Increase the proportion of the road network that have traffic calming measures and reduce conflicts between road users.
Actions by the MPHD (regional offer of services)
Acquiring strong scientific and practice-based evidence
Influencing healthy public policies
Support mobilization of partners
Evaluation

Appropriate research and surveillance

- Geographic distribution of road injuries
- Research on the impact of traffic volume and road design on public health
- Platform for the quantification of health risks and benefits of transportation and land use planning (local, regional and metropolitan levels)
- Built environment and health observatory
- Diffusion to key stakeholders (media, professionnals, policy makers, NGOs and politicians)

Independent research

ORIGINAL ARTICLE

From targeted ''black spots'' to area-wide pedestrian safety

P Morency, M-S Cloutier

See linked commentary, p 356

Injury Prevention 2006;**12**:360–364. doi: 10.1136/ip.2006.013326

Brief report

Risk of injury for bicycling on cycle tracks versus in the street

Anne C Lusk,[1] Peter G Furth,[2] Patrick Morency,[3,4] Luis F Miranda-Moreno,[5] Walter C Willett,[1,6] Jack T Dennerlein[7,8]

The link between built environment, pedestrian activity and pedestrian–vehicle collision occurrence at signalized intersections

Luis F. Miranda-Moreno[a,*], Patrick Morency[b,1], Ahmed M. El-Geneidy[c,2]

[a] *Department of Civil Engineering and Applied Mechanics, McGill University, Canada*
[b] *Montreal Department of Public Health, Montreal, Canada*
[c] *School of Urban Planning, McGill University, Montreal, Quebec H3A 2K6, Canada*

- Be very active in the public debate at multiple levels to provide public health advisories using health impact assesment data and the best practices
  - Federal (national public transit infrastructure plan)
  - Provincial (a shift from car oriented to transit oriented development)
  - Metropolitan (transit oriented developement plan)
  - Regional (public transit and cyclist infrastructures)
  - Local (compact neighbourhood design, traffic calming and safe pedestrian infrastructure)
- Integrate health impact assesments into economic and environmental impact assesments of specific transport and infrastructure projects (sustainable impact assesment)

Making the diagnosis public

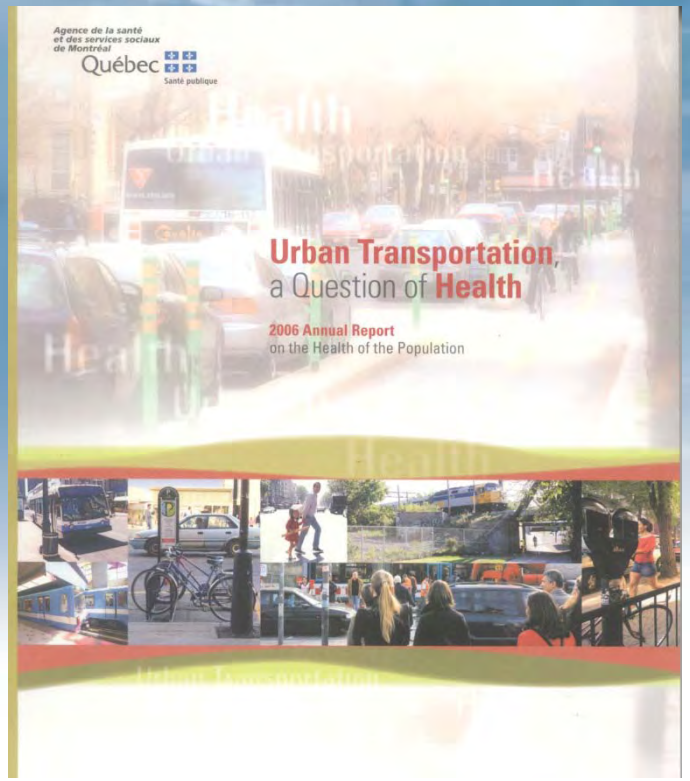
Media coverage


LE MARDI 23 MAI 2006

Montréal victime de l'auto

Les autorités proposent un sérieux coup de barre pour protéger la santé publique

Publications



Public events

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- **Sharing best practices** with NGOs, engineers, urban planners, public health professionnals, politicians, etc. at multiple levels
- **Financial support for NGOs**
  - « Quartier 21 »
  - « Quartiers verts actifs et en santé »
  - Transit coalition (increase financing of public transit)
- **Provide new tools** (ex.: walkability audits) and health data associated with the built environment

Supporting community mobilisation

Citizens

NGOs

Universities

- Bixi bike sharing system
- Community mobilisation: CLASP Project
- Transport Plan at the metropolitan level
- Share the results and recommandations with key stakeholders

Conclusion

- Providing public health data linked with the built environment is crucial to orient decision making process at all levels (ex.: mobility plan)
- Multidisciplinary team and partnership with universities is necessary
- Key stakeholders must be involved in the process
- Communication strategy is a key factor of success

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