



## Neighbourhood social environments, participation, and park use in Montréal




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- **Co-investigators/authors:**
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## Outline

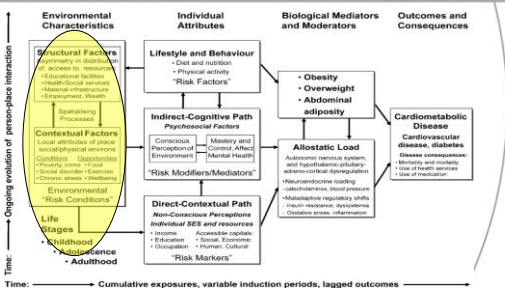
- Background
- Study Details
- Results
- Final Thoughts



## Background




## Conceptual Framework




The diagram illustrates a conceptual framework with four main columns: Environmental Characteristics, Individual Attributes, Biological Mediators and Moderators, and Outcomes and Consequences. 
   
1. **Environmental Characteristics** (left): Includes Structural Factors (access to resources, institutional factors, health/social services, material environment, employment, wealth), Sustainability Processes, Contextual Factors (local attributes of place, sociophysical environment, quality of life, safety, social cohesion, chronic stress, well-being), Environmental "Risk Conditions", and Life Stages (Childhood, Adulthood).
   
2. **Individual Attributes** (middle-left): Includes Lifestyle and Behaviour (Diet and nutrition, Physical activity, "Risk Factors"), Indirect-Cognitive Path (Cognitive Control, Affect, Environment, "Risk Modifiers/Mediators"), and Direct-Contextual Path (Non-Conscious Perceptions, Individual SES and resources like Income, Acculturated values, Education, Social, Economic, Disposition, Human, Cultural, "Risk Markers").
   
3. **Biological Mediators and Moderators** (middle-right): Includes Obesity, Overweight, Abdominal adiposity, and Allostatic Load (Autonomic nervous system, endogenous glucocorticoids, hypothalamic-pituitary-adrenal-cortisol dysregulation, Neuroendocrine loading, cellular/molecular level processes, Maladaptive regulatory shifts, Fluid reservoir, Systemic, Obesity state, inflammation).
   
4. **Outcomes and Consequences** (right): Includes Cardiometsabolic Disease, Cardiovascular disease, diabetes, Disease consequences, Morbidity and mortality, Use of health services, and Use of medication.
   
A vertical arrow on the left indicates "Time: Ongoing evolution of person-place interaction". A horizontal arrow at the bottom indicates "Time: Cumulative exposures, variable induction periods, lagged outcomes".

Daniel, et al., *Health & Place*, 14(2), 2008.



## Park use

- Parks and recreational settings
  - Key neighbourhood resources
- Opportunities for
  - physical activity (Kaczynski & Henderson, 2008)
  - psychological health (Godbey & Blazey, 1983; Orsega-Smith, et al., 2004)
  - and social well-being (Bedimo-Rung, et al., 2005; Cohen et al., 2007).
- Park users tended to report fewer visits to physicians and higher self-reported health than non-users (Ho, Payne, Orsega-Smith, & Godbey, 2003).



## Park use for older adults



- Physical and psychosocial well-being of older adults
  - (Li, Fisher, Brownson, & Bosworth, 2005; Tinsley, Tinsley, & Croskeys, 2002).
- Older adults who lived in areas with more parks had higher levels of walking activity than those who lived in areas with fewer parks Fisher et al.; Li et al.).
- Older adults tend to use parks less

## Environmental influences



- Park density and park area/proximity have been found associated with park-based physical activity among adults between 18-34 years old and 55 years and older
  - Kaczynski, Potwarka, Smale, & Havitz, 2009
- Perceived safety and cohesion may influence a person's use of local physical activity facilities.
  - Corti, Donovan, and Holman (1996)

## Differential vulnerability by age



- “Environmental docility hypothesis”
  - MT Lawton
- Aging processes may reduce competence, increase barriers to use of services, or vulnerability to environmental stressors.
- Aging may result in changes in the patterns of spatial use and cognition

## Neighbourhood age composition



- Distribution of age groups within an areas
  - Contextual property
- Increase in the proportion of older adults in an area was associated with a decrease in reporting poor health.
  - Subramanian, et al., 2006
- Mechanisms
  1. Greater availability, accessibility, and knowledge of services and resources geared toward an older age clientele (e.g., Glass & Balfour, 2003;)
  2. Lower rates of crime and greater feelings of safety and trust (Cagney, 2006)
  3. Greater residential stability and continuity leading to denser social networks and greater social support (Cagney; Glass & Balfour)

## Social participation and older adults



- Participation tends to decline with age
  - (Richard et al., 2009)
- Health benefits of participation for older adults
  - Mortality (Glass, Mendes de Leon, Marottoli, & Berkman, 1999)
  - Cognitive performance (Beland, Zunzunegui, Alvarado, et al., 2005)
  - Depression (Glass, Mendes de Leon, Bassuk, & Berkman, 2006)

## Social participation and park use



- Research on park use has tended to focus on the social activities that occur within parks and the social benefits that may ensue from park use.
  - (Floyd, et al., 2008; Kweon, et al., 1998; Tinsley et al., 2002)
- Is participation all the same?
  - Instrumental versus expressive
    - Instrumental: Higher levels of perceived disorder
    - Expressive: More stable residential patterns
  - Formal versus informal
    - Swaroop and Morenoff, *Social Forces*, 2006
- Are formal forms of participation of greater importance for the park use of older adults?

## Three Questions



- Age declines in park use
- Are declines in park use the same for those who participate in formal expressive and instrumental organizations?
- Are declines in park use the same for those who live in neighbourhoods with younger as opposed to older age compositions?

## Methods



## Montreal Neighbourhood Social and Organizational Environments Study



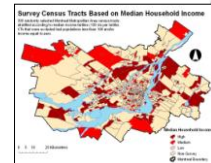
- Neighbourhood environments & health
- Neighbourhood environments & participation/sense of collective efficacy



## Montreal Neighbourhood Social and Organizational Environments Study



- Stratified cluster sampling design
  - Montreal census tracts sampled ( $n_c=300$ )
  - 3 respondents per tract ( $n_r=902$ )
- Household questionnaire
- Organizational questionnaire



## Measuring Park Use



- “Is there a park within walking distance of your home?”
- Perceived park accessibility
- “How often do you visit your local park?”
  - Not at all
  - Occasionally
  - Frequently
- June-July Survey Period
- Dichotomized responses



## Social Participation



- **Formal instrumental participation (0-3)**
  - neighborhood association or neighborhood watch program
  - in environmental groups, labour union groups or political parties
  - school or educational associations
- **Formal expressive participation (0-3)**
  - hobby/social clubs, cultural, arts or music group associations
  - religious groups, including church, synagogue, or mosques
  - ethnic or nationality groups

## Neighbourhood age composition



### Age Structure

- Canada Census Data: % Adults >65 years old

## Study covariates



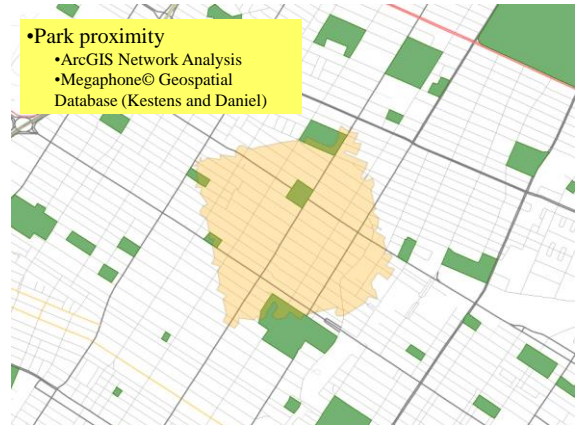
- Socio-demographic
  - Age, income, education, gender, residential duration, and marital status
- Neighbourhood-level covariates
  - Median household income
  - Average education
  - Population density (mirrored park proximity)
- Park proximity

### Montreal Parks



### Park proximity

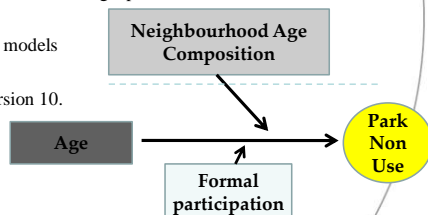
- ArcGIS Network Analysis
- Megaphone© Geospatial Database (Kestens and Daniel)



## Statistical analyses



- Multilevel logistic regression
- Likelihood of not using a park
- Series of models
- Stata, version 10.



## MoNSOE Sample



### Overall response rates

- Response rate (3): 33.8%<sup>†</sup>
- Cooperation rate (3): 73.6%<sup>†</sup>

### Sample overrepresents:

- Females
- Individuals with income <\$50,000/year
- More than a high school degree

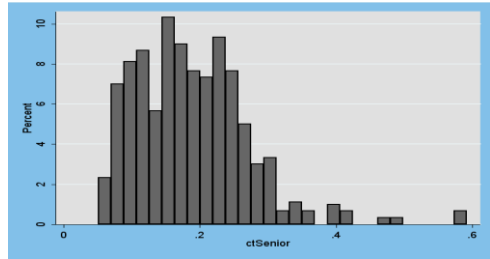
<sup>†</sup> American Association for Public Opinion Research Definitions.

## Park use sample characteristics

- 90% MoNSOE sample reported parks within walking distance ( $n_i=816$ ;  $n_a=300$ ).
- “Not at all” park use: 29.5%
- Average age: 49.9 years old

## Age composition distribution

Percentage residents over 65 years old 18.8%

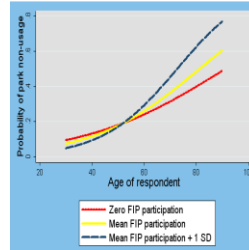


## Adjusted Odds Ratios

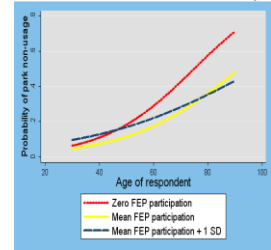
Variable	Odds Ratios	95% CIs
Age	1.08*	(1.04-1.13)
FIP	0.20*	(0.05-0.88)
FIP * Age	1.03*	(1.01-1.06)
FEP	2.88	(0.94-8.79)
FEP * Age	0.98*	(0.96-0.99)
N. Age Structure	1.11*	(1.01-1.21)
N. Age Structure * Age	0.998*	(0.996-0.999)

## Formal participation moderates age-park use association

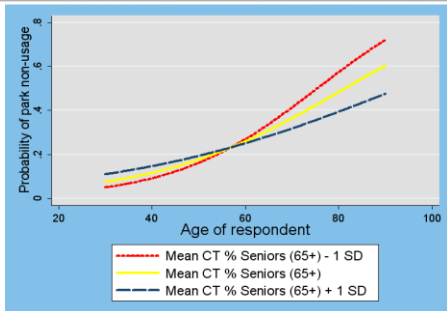
Formal Instrumental



Formal expressive



## Age composition moderates age-park use association



## Final Thoughts

## Neighbourhood environments



- Older adults living in areas with an older age population are more likely to use parks than older adults living in areas with a younger age structure.
- Mechanisms may include overall sense of safety, stronger neighbourhood networks, OR
- Park quality, structures, or amenities that appeal to older adults
- Mobility and amenity concerns on the way to parks



## Participation



- Not all participation is the same in terms of park use.
- Formal expressive participation contributes possibly to greater engagement in 'neighbourhood' based activities, where as formal instrumental takes time away from this engagement.

## Social – built environment feedback



- Proximity matters
  - To those who did and did not perceive a park as accessible
- Recognition of the differential vulnerability of older adults may help in the design of ecological-level interventions able to target both areas and population subgroups to improve physical activity and overall public health.

## Limitations



- THERE ARE LIMITATIONS.
- Park accessibility question
- Definition of neighbourhoods
- Park quality information
- How do people use parks?

THANK YOU.

### “Associations among park visitation, age, social participation, and age composition in Montreal.”

Spencer Moore, Lise Gauvin, Mark Daniel, Yan Kestens, Laurette Dubé, Ulf Bockenholt, Lucie Richard.

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