

# Depression and daily mobility in the Paris metropolitan area

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The 15<sup>th</sup> Emerging New Researchers in the Geography  
of Health and Impairment Conference

10-11 June 2010 -Paris – France

<http://www.irdes.fr/Enrghi2010>

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# Mental Health Geography

- Health geography literature studying mental health...
  - often accounts for neighbourhoods of residence  
Studies have revealed the effect of :
    - neighbourhood structural features (such as socioeconomic composition or built and services environment)
    - and neighbourhood social processes (such as disorders, social cohesion or perceived violence)  
on depression of inhabitants
  - ... but rarely accounts for daily mobility  
Interesting to consider spatial extent of daily travels when studying spatial determinants of depression ?

# Link between daily mobility and depression ?

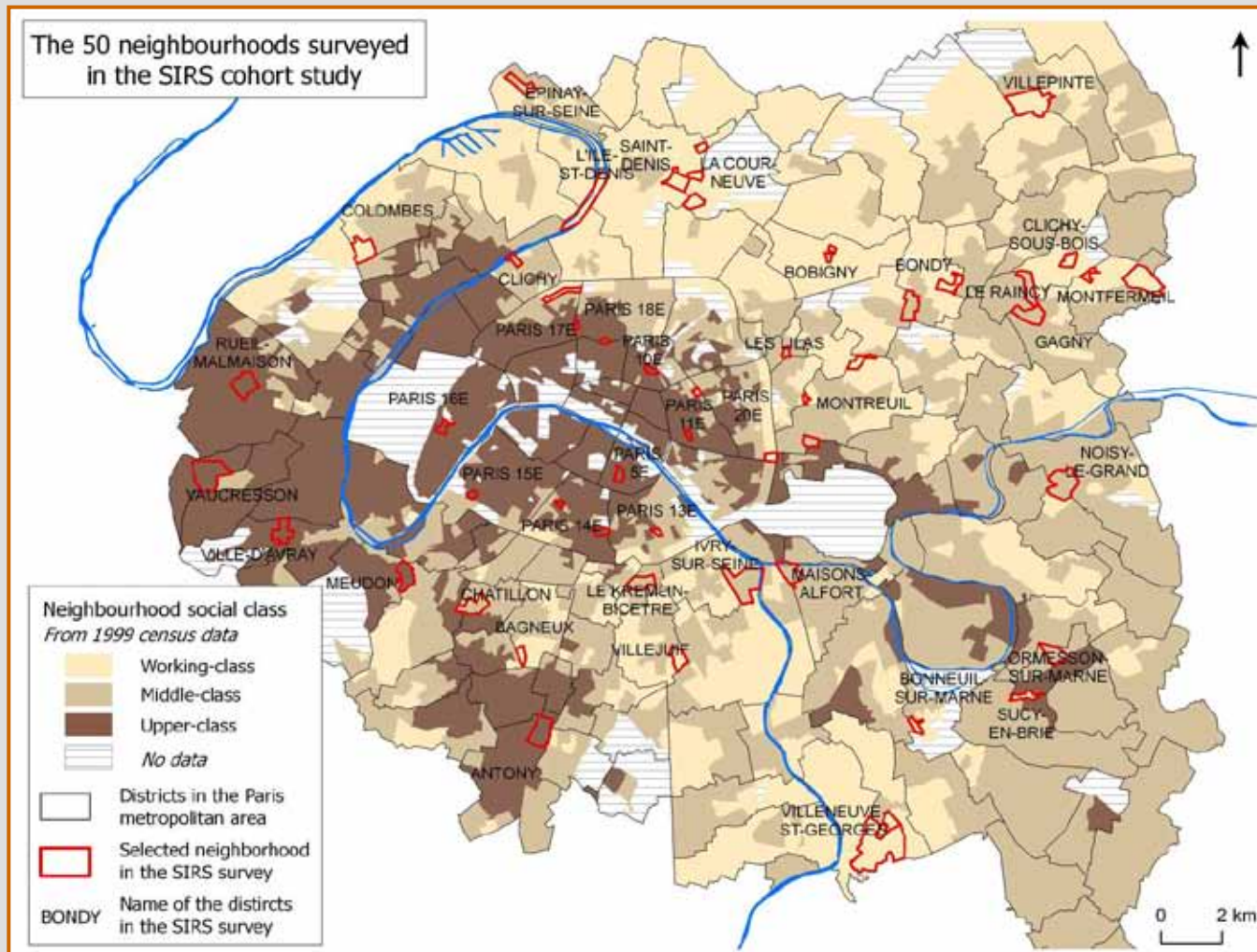
- 2 opposite assumptions :  
A spatially-limited mobility may...
  - (1) ... reflect spatial and social confinement and then be associated with a *higher* risk to be depressed  
or conversely
  - (2) ... reflect a deep attachment to neighbourhood and then be associated with a *lower* risk to be depressed
- My alternative assumption
  - In deprived neighbourhoods, a spatially-limited mobility may be linked with a *higher* risk to be depressed because it reveals a constrained exposure to unpleasant neighbourhoods.
  - In favoured neighbourhoods, a spatially-limited mobility may be linked with a *lower* risk to be depressed because it reveals a deep attachment to pleasant neighbourhoods.

→ Study the combined effect of daily mobility and neighbourhood socioeconomic composition on depression

- Check
  - if there is an association between neighbourhood socioeconomic composition and depression
- Determine
  - if there is a relationship between daily mobility and depression
  - if the relationship between daily mobility and depression varies in an opposite way according to neighbourhood socioeconomic composition

## SIRS Survey

- SIRS: Acronym for Health, Inequalities and Social Ruptures
- carried out in 2005 & 2009
- among a representative sample of 3000 adults
- living in 50 neighbourhoods of the Paris metropolitan area

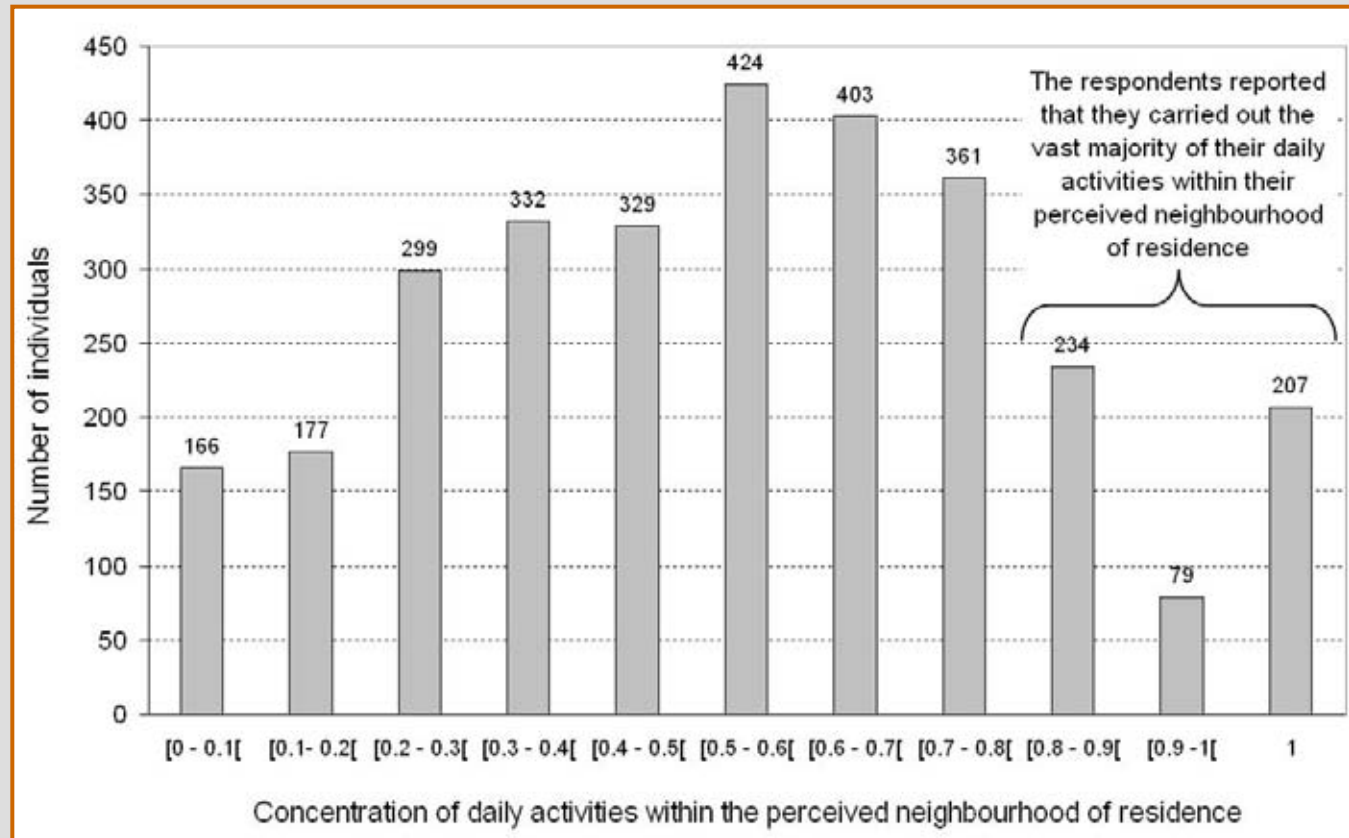


# Measure of Daily Mobility (1)

- Concept of “Activity Space” → The space within which people move about or travel in the course of their daily activities
  - In SIRS survey, people reported where they usually:
    - a) go food shopping
    - b) use services (bank, post office)
    - c) go for a walk
    - d) meet friends
    - e) go for a restaurant or café
- mainly within neighbourhood (value 1)  
- mainly outside neighbourhood (value 0)  
- both within and outside (value 0.5)

*!!! Neighbourhood was not delimited - individual's own perception.*

## Measure of Daily Mobility (2)



- Create a score to measure the concentration of daily activities in perceived neighbourhood
  - Adding values & dividing by the number of reported activities (=5)
  - A score from 0 to 1
  - Then, categorized in two classes



## Others variables

- Mental Health
  - Depression was evaluated by a 10-item questionnaire for measuring the occurrence of depressive symptoms during the last 2 weeks
- Individual characteristics
  - sex
  - age
  - nationality
  - level of education
  - occupational status
  - employment status
  - couple relationship
- Neighbourhood socioeconomic composition
  - From the 1999 census socio-professional data
  - Aggregated by census-block



# Statistical Models

- Bivariate Analysis
- Multilevel logistic regression
  - Adjustment on individual socio-demographic characteristics to control for residual confounding
  - To study
    - 1) association between neighbourhood socioeconomic composition & depression.
    - 2) association between activity space & depression.
    - 3) cross-level interaction between activity space & neighbourhood socioeconomic composition.

# Spatial determinants of depression

## Results (1)

DEPRESSION	Bivariate		Multivariate <i>After adjustment on individual data</i>
	% of depressed people	<i>p</i>	OR (95% CI)
<b>In the whole population</b> (=3,023 adults)	12 %		
<b>According to neighb. socioeconomic composition</b>			
Upper or middle class neighbourhood	10 %	<0.01	1 (Ref.)
Working-class neighbourhood	17 %		<b>1.6 (1.2-2.0)*</b>
<b>According to activity space</b>			
Larger than neighbourhood of residence	11 %	>0.05	1 (Ref.)
Limited to neighbourhood of residence	13 %		1.0 (0.7-1.3)

- Significant association between neighbourhood socioeconomic composition & depression
  - Living in deprived neighb. multiply by 1.6 the risk to be depressed
- No apparent association between activity space & depression (OR≈1)

# Interaction between activity space & neighbourhood

DEPRESSION <i>After adjustment on individual data</i>	People living in ...		Whole population	Interaction Activity space x Neighbourhood socioeconomic composition
	... upper or middle class neighbourhood	... working-class neighbourhood		
Odds Ratio (95% CI)				
<b>Activity space</b>				
Larger than neighbourhood of residence	1 (Ref.)	1 (Ref.)	1 (Ref.)	$p < 0.01$
Limited to neighbourhood of residence	<b>0.7 (0.4-0.9)*</b>	<b>1.6 (1.1-2.5)*</b>	1.0 (0.7-1.3)	

## Significant cross-level interaction

i.e. people with a limited activity space had:

- a significant *lower* risk to be depressed when they lived in upper or middle class neighbourhoods (OR < 1)
- a significant *higher* risk to be depressed when they lived in working class neighbourhoods (OR > 1)

# The combined effect of activity space & neighbourhood on depression

A limited activity space appeared to be :

- a protective factor towards depression for people living in favoured neighbourhoods

*Because spatial confinement within favoured neighbourhoods may result from well-being in these neighbourhoods → a **choice** ?*

- a damageable factor toward depression for people living in deprived neighbourhoods

*Because spatial confinement within deprived neighbourhoods may be due to the symbolic, material and physical difficulties to move outside such neighbourhoods → a **constraint** ?*

# A study based on transversal data (2005)

## Limits (1)

- Analyses can not be discussed in term of causality.  
It remains unknown if:
  - activity space has an influence on depression
  - or depression has an influence on activity space
- Reverse causation may occur if depressed people were particularly inclined to stay in deprived neighbourhood  
→ exposure to neighbourhood characteristic would be a consequence and not a cause of depression
- Next step : Longitudinal analysis from data collected in 2005 and 2009 among the same population

# About measure of activity space

## Limits (2)

- A simplified measure of activity space
  - easy to collect in large sample
  - .... but linked with perceived neighbourhood delimitation
  - Impossible to isolate the real spatial extent of daily mobility from the perceived neighbourhood delimitation
- Unfortunately, in 2005, no information about perceived neighbourhood delimitation :
  - The main limitation of this measure of activity space in 2005
- In 2009 survey, there is information about perceived neighbourhood delimitation. The next step will be to :
  - analyse perceived neighbourhood delimitation for every surveyed inhabitant
  - & compare with activity space

## To conclude...

Take into consideration activity space may help :

- to better understand mechanisms relating neighbourhood of residence and mental health
- to consider how individual's experience of place and degree of mobility may influence well-being
- to improve knowledge about geographic factors involved in mental health



*Thanks for your attention !*

Additional Information

- Vallée J, Cadot E, Grillo F, Parizot I, Chauvin P. 2010. The combined effects of perceived activity space and neighbourhood of residence on participation in preventive health-care activities. The case of cervical screening in the Paris metropolitan area (France). *Health & Place*. In press.

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