

# Characteristics of neighborhood urban form and dog-walking among adults\*

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## Background

Dog-walking is positively associated with physical activity and with healthy bodyweight.<sup>1,2</sup> Owners may also accrue physical and mental health benefits from positive social interactions catalyzed by their dogs.<sup>3</sup> Nevertheless, many dogs are not regularly walked.

Preliminary evidence suggests potential correlates of dog-walking include dog breed, dog temperament, social norms, perceived safety of streets and parks, proximity of parks, and dog-related amenities, such as litter disposal facilities, signage and designated off-leash areas.<sup>1,2,4,5</sup>

## Study Aim

To examine whether proximity to parks designated by municipal ordinance for off-leash use and neighborhood street pattern correlate with participation in and frequency of dog-walking among dog-owners.

## Method

### Sample

N=479 dog owners with complete data who had participated in a Calgary (Canada) cross-sectional telephone survey (July-October, 2007 and January-April, 2008) and follow-up postal survey.<sup>6</sup>

### Survey variables

#### Socio-demographic characteristics

Gender, age (18-39, 40-59, or ≥60 years), highest education (≤high school, college/technical college, or university), housing type (detached/semi-detached or attached), and dependents <18 years of age at home (none or ≥1 child).

#### Health

Self-reported weight status (BMI: healthy weight, overweight, or obese) and self-rated health status (fair/poor, good, or very good/excellent).

#### Dog-walking

Number of times owner walked or jogged with their dog(s) in a usual week. Dog-walking outcomes examined:

- 1) Participation (none vs. some dog-walking) and
- 2) Frequency (among those reporting dog-walking only).

#### Built environment variables

Respondent's six digit postal code was geocoded and used as a proxy for household addresses. A 1.6km line-based network buffer was estimated for each household.

#### Street pattern

Respondent neighborhoods were coded based on their street pattern: grid, warped grid, or curvilinear (Figures 1-3).<sup>7</sup>

#### Access to off-leash areas

Using publicly-available addresses of Calgary parks (<http://www.calgary.ca>) the presence or absence of a park with an off-leash area was determined for each buffer.

## Statistical Analysis

Participation in dog-walking was regressed onto socio-demographic, health, and neighborhood environment characteristics using a Generalized Linear Mixed Model (distribution: binomial; link: logit).

Frequency of dog-walking was regressed onto the same covariates using a Generalized Linear Mixed Model (distribution: gamma; link: identity) for those respondents who reported some dog-walking in a usual week.



Fig. 1 – A typical Calgary curvilinear street pattern (lines represent roads and polygons represent building)



Fig. 2 – A typical Calgary warped-grid street pattern (lines represent roads and polygons represent building)

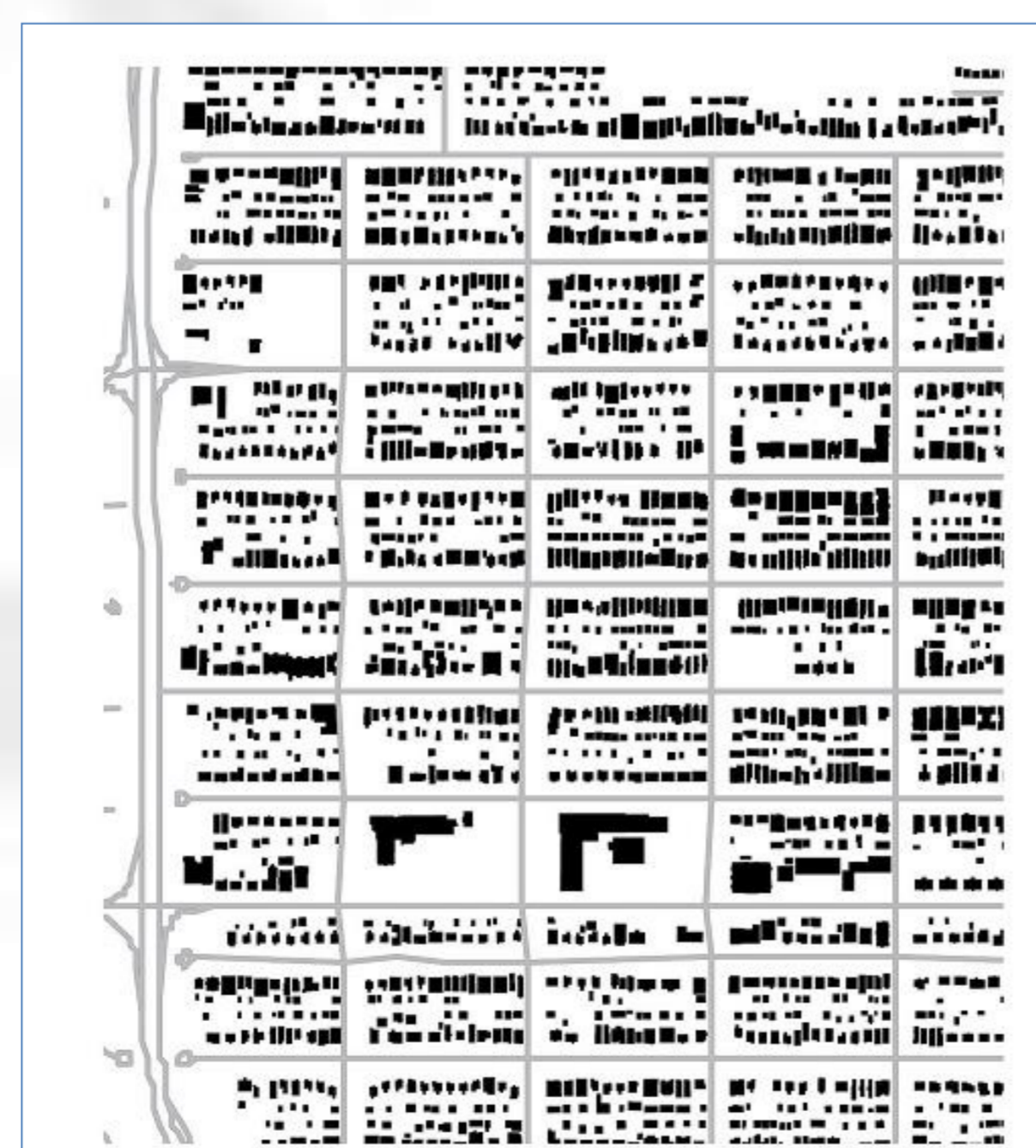


Fig. 3 – A typical Calgary grid street pattern (lines represent roads and polygons represent building)

## Results

Respondents, on average, owned 1.57±2.40 dogs. The majority of owners (83.9%) reported at least some dog-walking in a usual week

Higher among owners 40-59 years of age, university educated, in very good or excellent health or of healthy weight, without an off-leash park within 1.6km of home, and resident in a grid-like neighborhood (Table 1).

Socio-demographic characteristics	N respondents	% Dog-owners / non-dog walkers	% Dog-owners / dog walkers
<b>Age in years<sup>†</sup></b>			
18 to 39	123	17.1	82.9
40 to 59	273	12.1	87.9
≥60	83	27.7	72.3
<b>Gender</b>			
Women	325	14.8	85.2
Men	154	18.8	81.2
<b>Education completed<sup>†</sup></b>			
High school or less	160	25.0	75.0
Technical college/school	128	14.8	85.2
University	191	8.4	90.6
<b>Housing type</b>			
Detached or semi-detached	419	16.2	83.8
Attached (including townhouses/condominiums/bachelor suite/apartments)	60	15.0	85.0
<b>Dependents &lt;18 years at home</b>			
At least one dependent	274	17.2	82.8
No dependents	205	14.6	85.4
<b>Health characteristics</b>			
<b>Self-rated health<sup>†</sup></b>			
Poor or fair	85	23.5	76.5
Good	195	17.4	82.6
Very good or excellent	199	11.6	88.7
<b>Body mass index<sup>†</sup></b>			
Healthy weight (BMI<25)	221	12.7	87.3
Overweight (BMI 25-30)	180	15.0	85.0
Obese (BMI >30)	78	28.2	71.8
<b>Neighborhood environment</b>			
<b>Off-leash parks<sup>†</sup></b>			
None	389	13.3	86.4
At least one	90	26.7	73.3
<b>Street pattern<sup>†</sup></b>			
Grid	254	10.7	89.3
Warped grid	150	22.0	78.0
Curvilinear	75	14.2	85.8

<sup>†</sup> Statistically significant difference (p<.05) between owner non-dog walkers and owner dog-walkers

### Correlates of dog-walking participation

Adjusting for all other correlates, owners who resided within 1.6km of an off-leash area or who resided in a warped-grid neighborhood were least likely to walk with their dog at least once in a usual week (Figure 4).

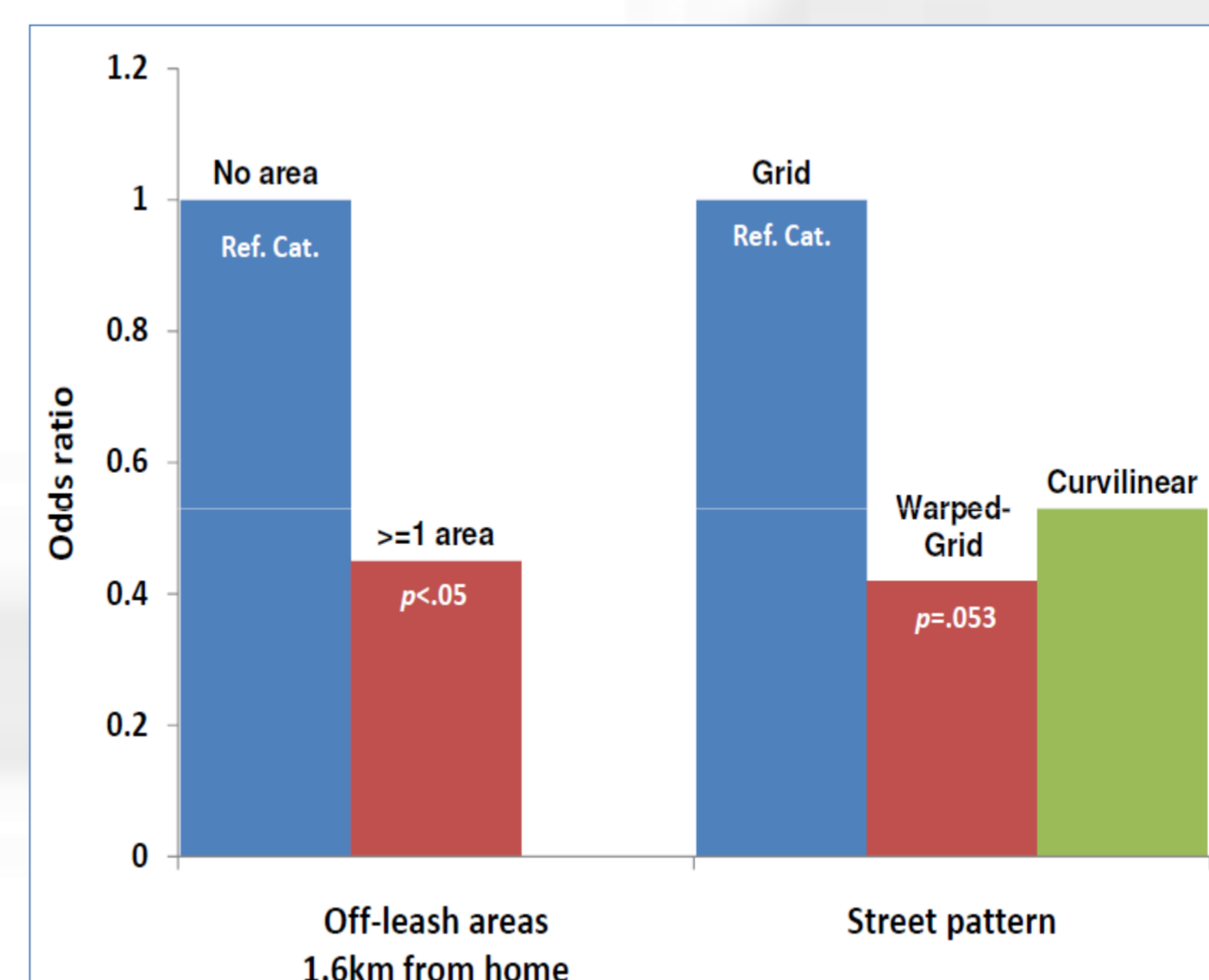


Fig. 4 – Dog walking participation and access to off-leash areas and street pattern

### Correlates of dog-walking frequency

Adjusting for all other correlates, dog-walking frequency was higher among respondents who resided within 1.6km of an off-leash area (Figure 5).



Fig. 5 – Dog walking frequency and access to off-leash areas and street pattern

## Conclusions

Environmental attributes that support the initiation of dog-walking may differ from those that determine frequency of dog-walking, once the behavior has been initiated.

Presence of an off-leash area within 1.6km of home was negatively associated with undertaking some dog-walking in a usual week, but positively associated with dog-walking frequency.

The built neighborhood environment including availability of off-leash areas and street layout appears to be important for encouraging and discouraging dog-walking behavior among owners.

More intervention-oriented research is needed on initiating, sustaining and increasing dog-walking including research that focuses on the built environment determinants.



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