

Energy Conservation Behaviour on Display: The Choice of Yard Equipment in Canada

MRP Project-in-Progress

Lisa Seiler

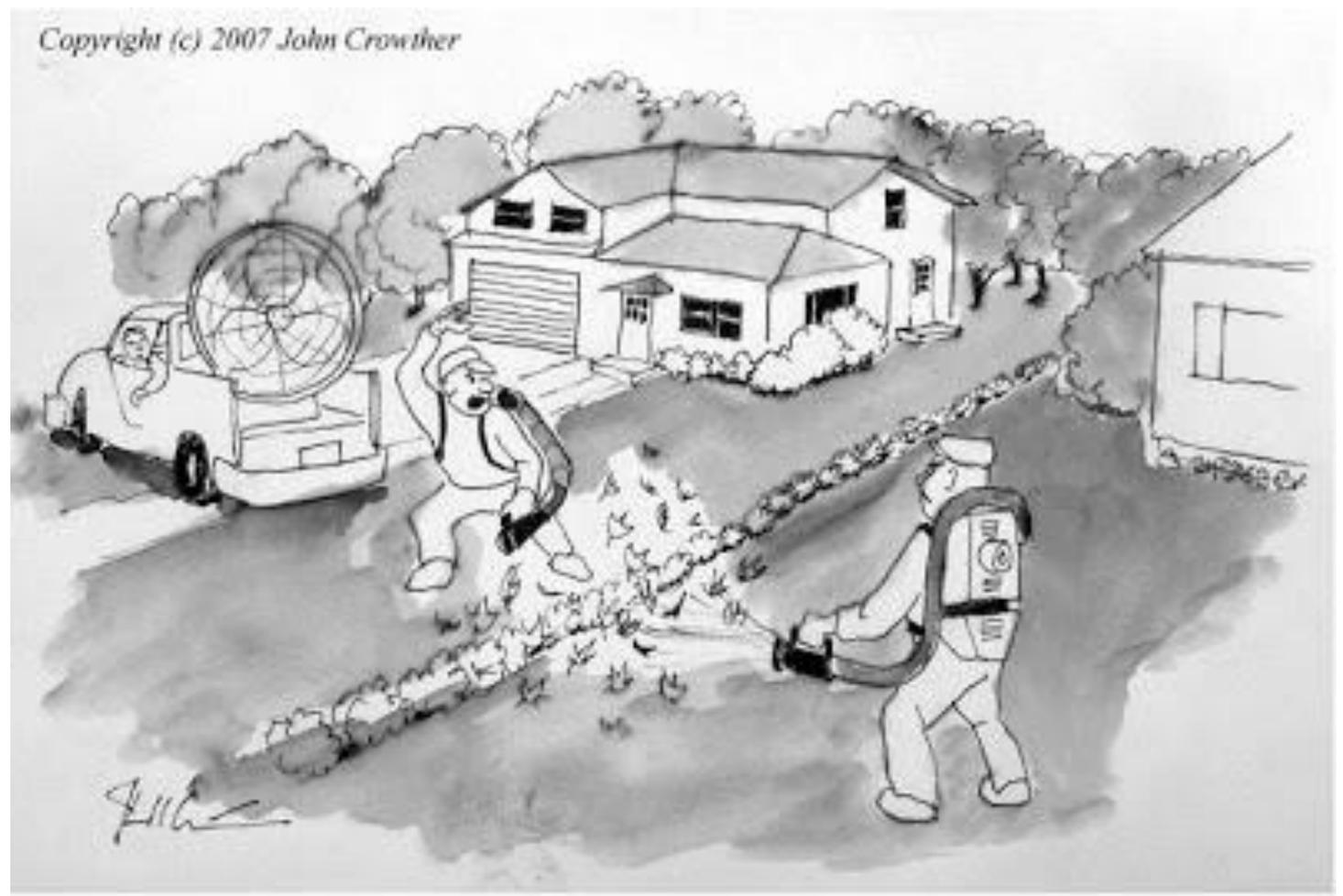
May 22, 2019

RDC Show Case

HE WON'T SPEND FIVE MINUTES SWEEPING THE KITCHEN FLOOR WITH A BRUSH, BUT HE'LL SPEND HOURS SWEEPING THE GARDEN WITH HIS POWER BLOWER.



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"En garde!"



- ODESI (Click to View Categories)
 - Agriculture
 - Business and Financial
 - Census of Population
 - Communications and Information
 - Consumer Surveys
 - Crime and Justice
 - Demographics and Population
 - Education
 - Elections and Politics
 - Geography
 - Government Finances and Economic Indicators
 - Health
 - Labour and Employment
 - Natural Resources and Environment
 - CANADA
 - Department of Fisheries and Oceans
 - Households and the Environment Survey (HES)
 - Human Activity and the Environment
 - Survey on the Importance of Nature to Canadians (SINC)
 - Survey on the Importance of Wildlife to Canadians (SIWC)
 - Toronto E-bike Survey
 - Canadian Nature Survey
 - Public Opinion Polls
 - Social Surveys
 - Trade
 - Travel
 - Agriculture
 - Commerce



**A data portal for researchers, teachers and students;
inspiring, developing and supporting research excellence.**

**Un portail de données à l'intention des chercheurs, professeurs et étudiants, qui vise à
inspirer, à développer et à appuyer l'excellence en matière de recherche.**



Note: In many cases, it is advisable to weight analysis results before reporting them. Correct weighting requires careful consideration, please always consult the weighting procedures of the study before applying the weights. To apply weights, select the Weight icon  and choose the weight variable to be used. All results need careful interpretation. The data collectors and the data producers bear no responsibility for the analysis and interpretation of the data.

Note: Dans la plupart des cas, il est recommandé de pondérer les résultats d'analyse avant d'en rendre compte. Une pondération correcte nécessite une attention particulière, veuillez toujours consulter les procédures de pondération d'une étude avant d'appliquer des pondérations. Pour appliquer les pondérations, sélectionner l'icône de poids  et choisir la variable de pondération qui sera utilisée. Tous les résultats nécessitent une interprétation minutieuse. Les personnes chargées de la collecte et de la production des données ne peuvent être tenues responsables de l'analyse et de l'interprétation des données.

Datasets

- Households and the Environment Survey (HES)
 - Statistics Canada
 - Supplement to Canadian Community Health Survey
 - Biennial since 2007
 - Public-use master file (PUMF) data and RDC master file data
 - 15,000-22,000 households in each iteration

Data Dictionary – Lawnmower Use

Variable Name:	GP_Q02	Length: 1.0	Position: 142
Question Name:	GP_Q02		
Concept:	Used a lawnmower during the past 12 months		
Question Text:	In the past 12 months, did [you/anyone in your household]: ... use a lawnmower?		

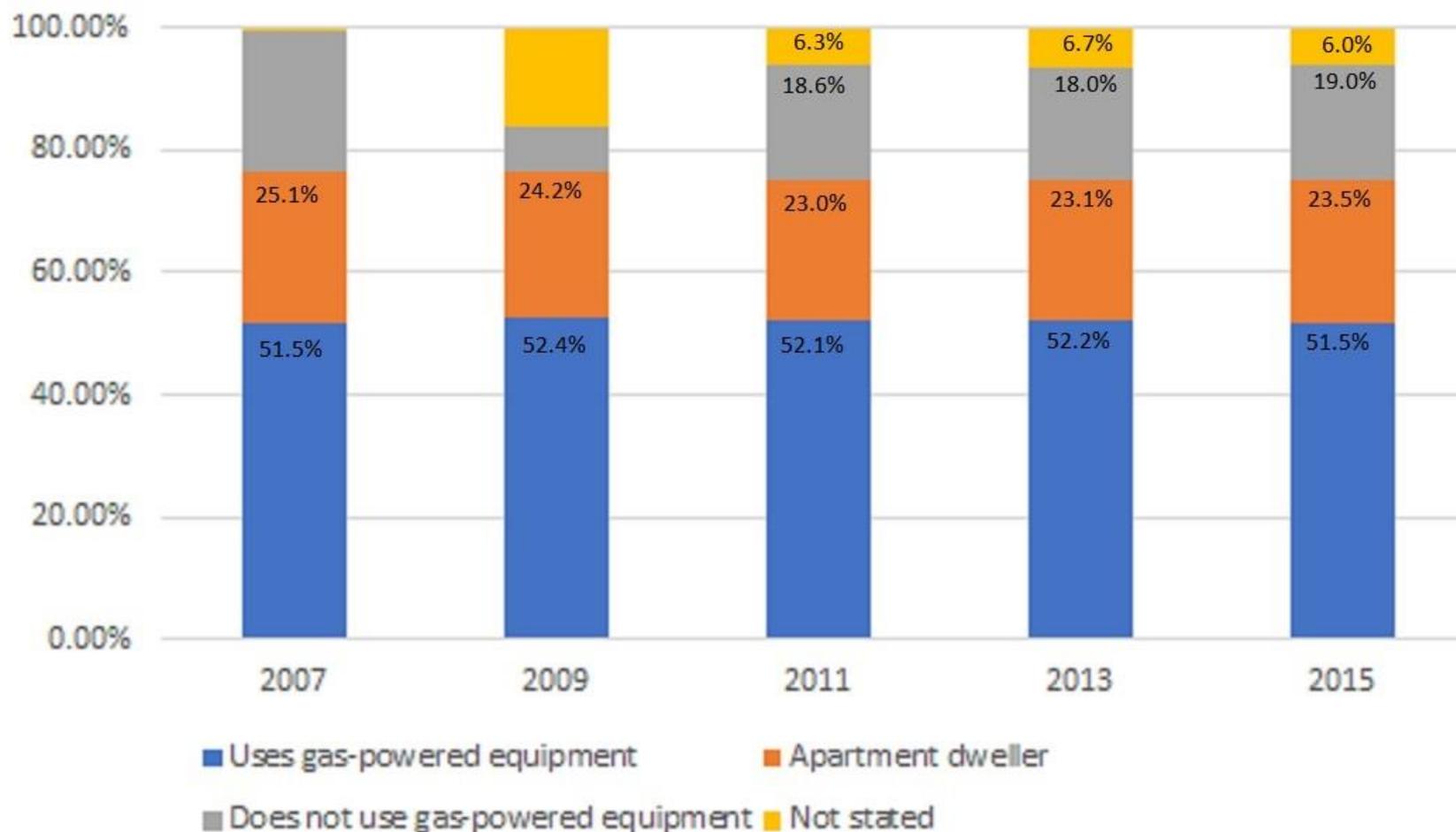
Variable Name:	GP_Q03A	Length: 1.0	Position: 143
Question Name:	GP_Q03		
Concept:	Type of engine - lawnmower - gas		
Question Text:	What type of engine did it have? - Gas		

Variable Name:	GP_Q03B	Length: 1.0	Position: 144
Question Name:	GP_Q03		
Concept:	Type of engine - lawnmower - electric		
Question Text:	What type of engine did it have? - Electric		

Variable Name:	GP_Q03C	Length: 1.0	Position: 145
Question Name:	GP_Q03		
Concept:	Type of engine - lawnmower - manual (push reel)		
Question Text:	What type of engine did it have? - Manual (push reel)		

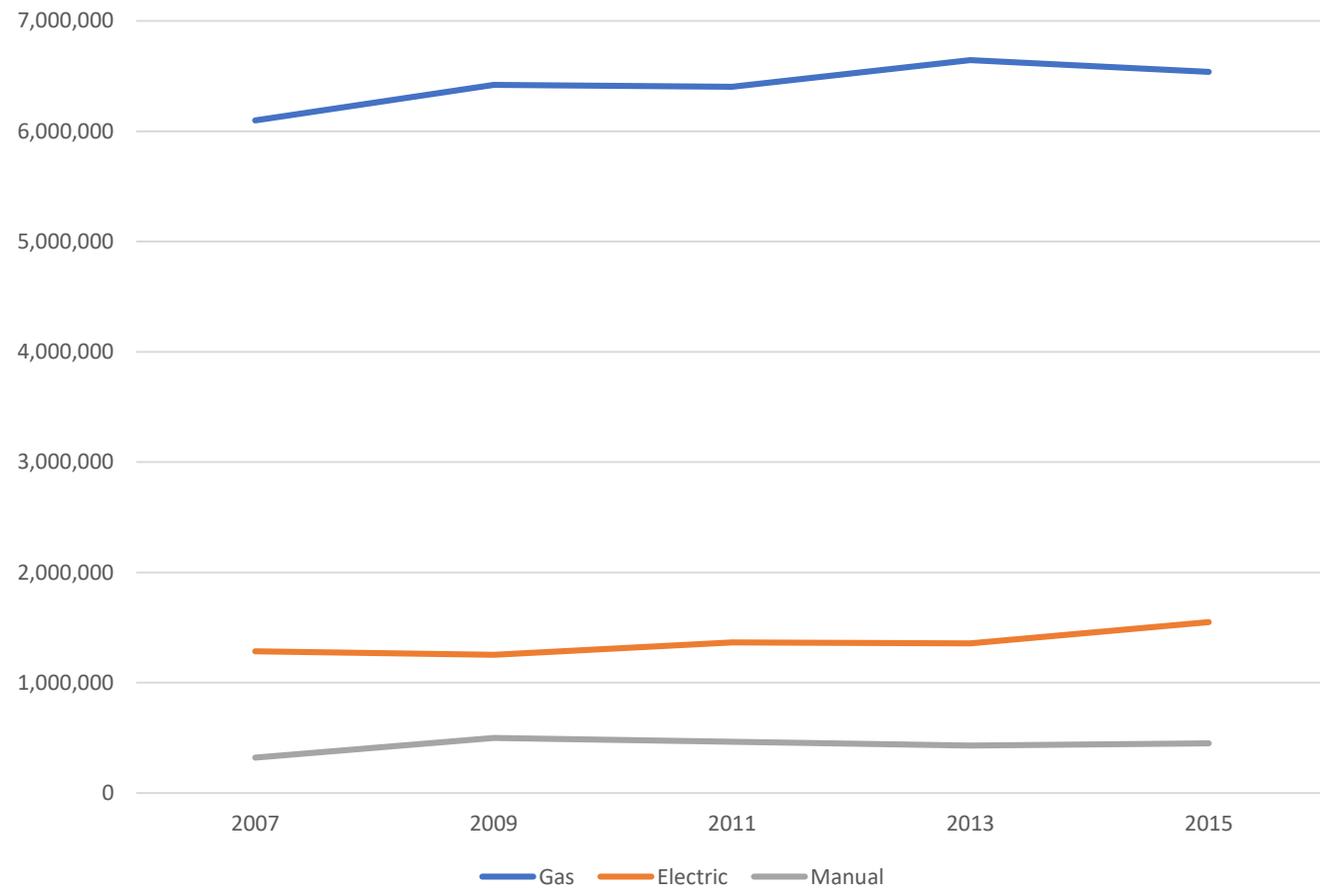
Gas-Powered Yard Equipment Use over Time

[source: Households and the Environment Survey
PUMF weighted data]



Lawn mower usage

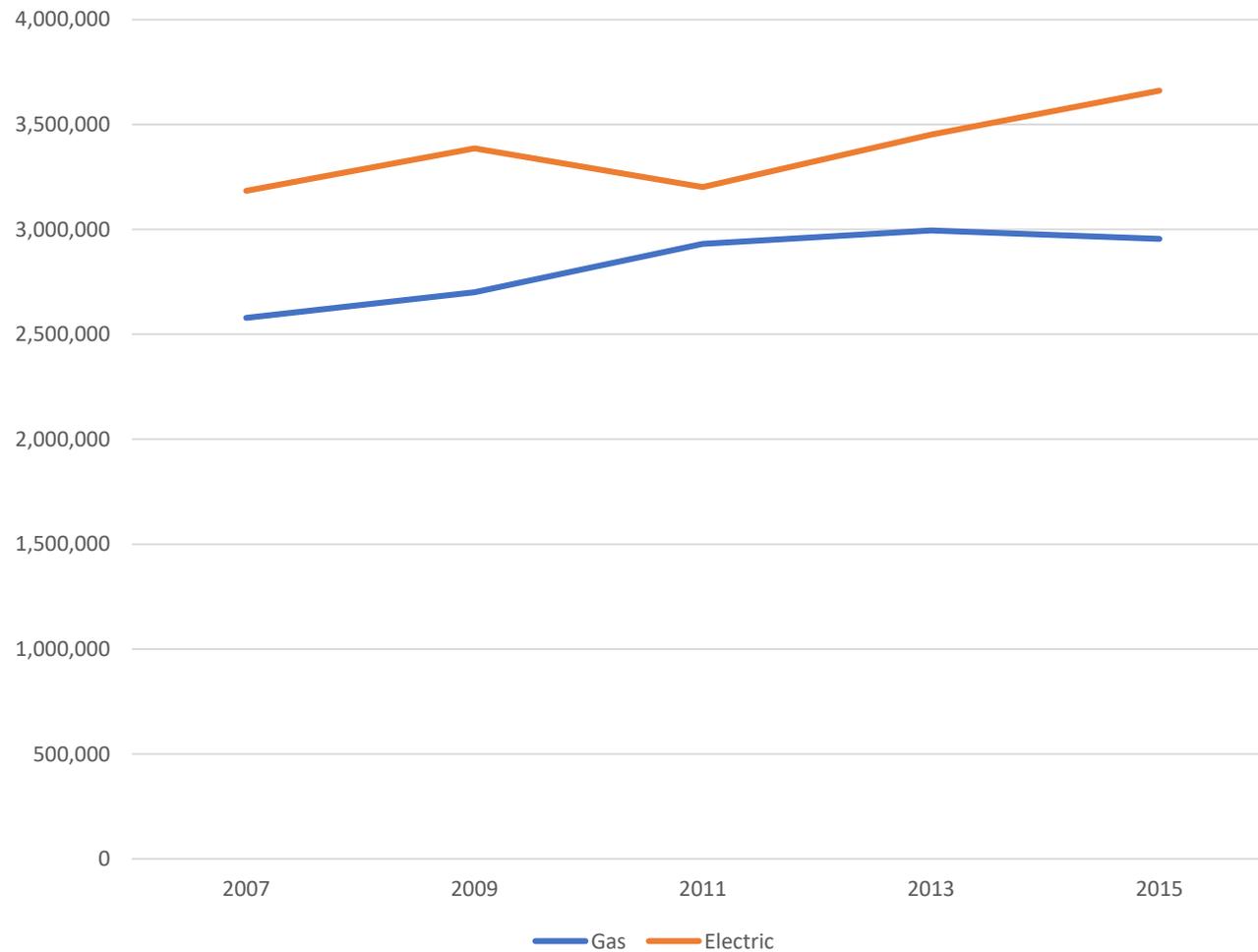
Household Lawnmower Use over Time
[source: Households and the Environment Survey
PUMF weighted data]



Grass trimmer usage

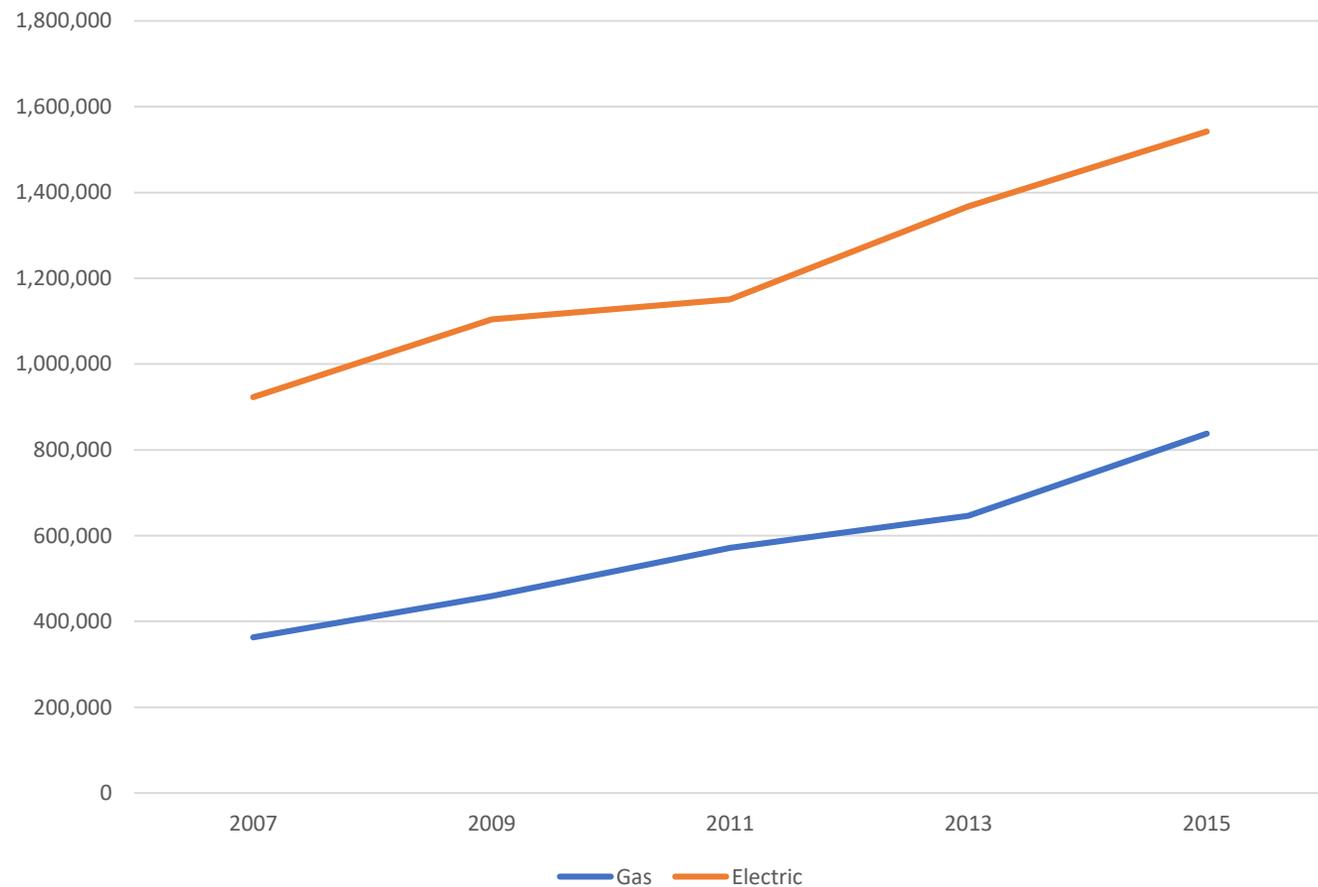
Household Grass Trimmer Use over Time

[source: Households and the Environment Survey
PUMF weighted data]



Leaf blower usage

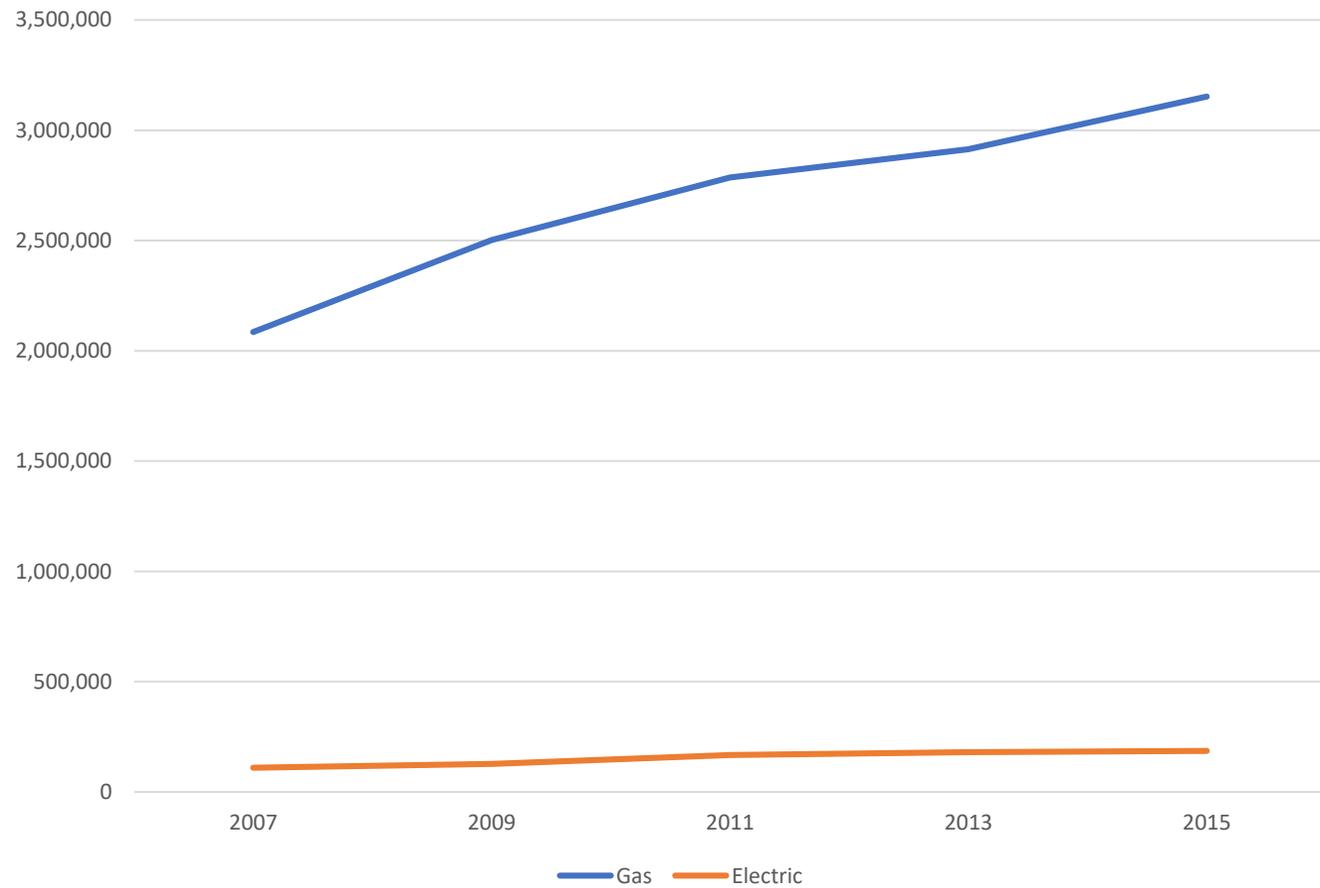
Household Leaf Blower Use over Time
[source: Households and the Environment Survey
PUMF weighted data]



Snow Blower Usage

Household Snow Blower Use over Time

[source: Households and the Environment Survey
PUMF weighted data]



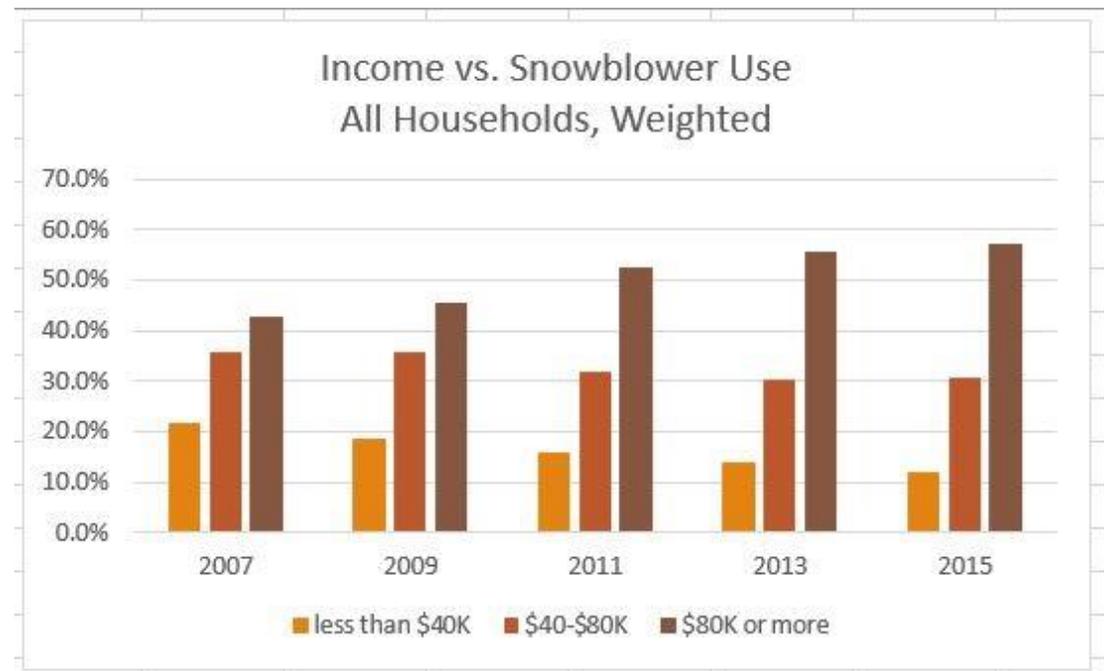
Pud by Steve Nease



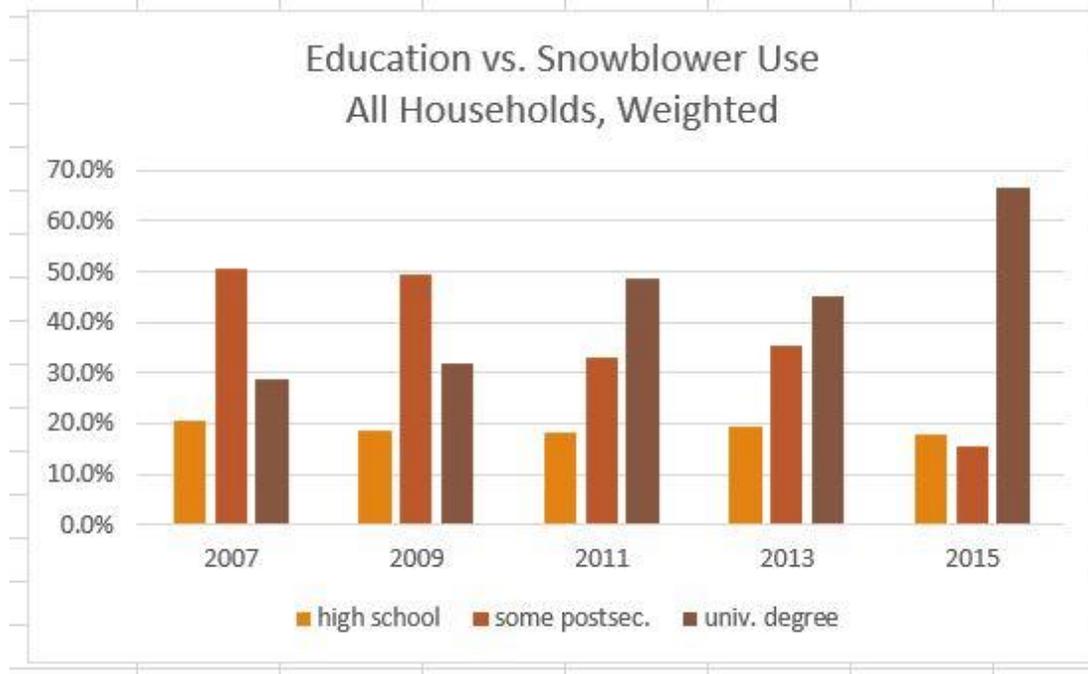
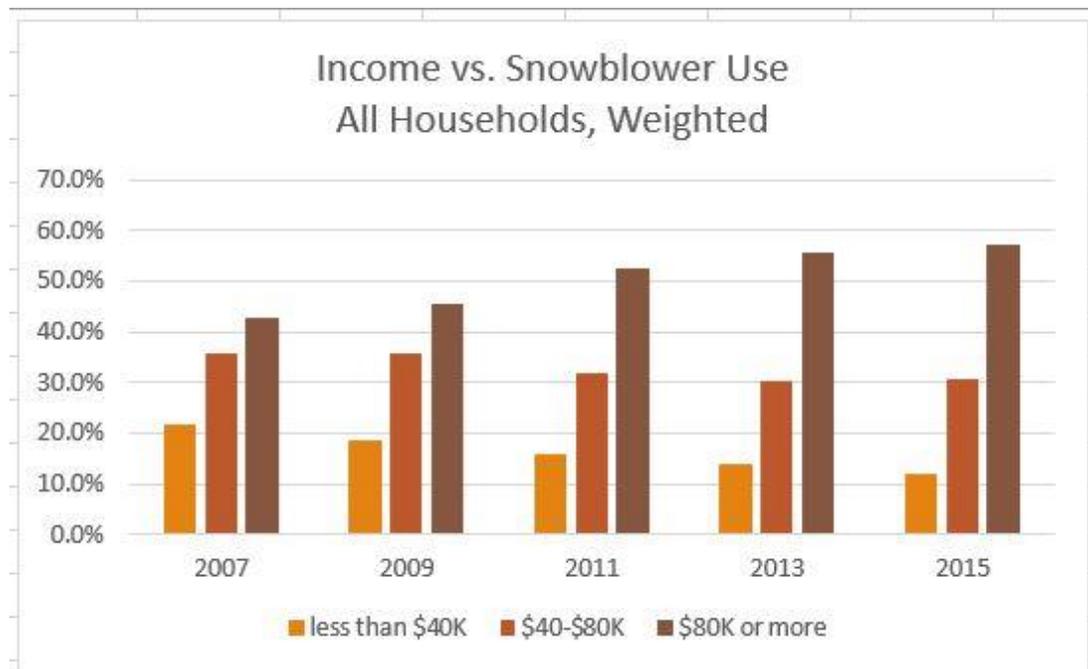
Hypothesis testing – PUMF data

- H_1 : The use of gas-powered yard equipment by Canadian households increases with household income.
- H_2 : The use of gas-powered yard equipment by Canadian households decreases with an increasing level of education of household members.
- Control variables:
 - Province
 - Household size (number of members)
 - Home ownership

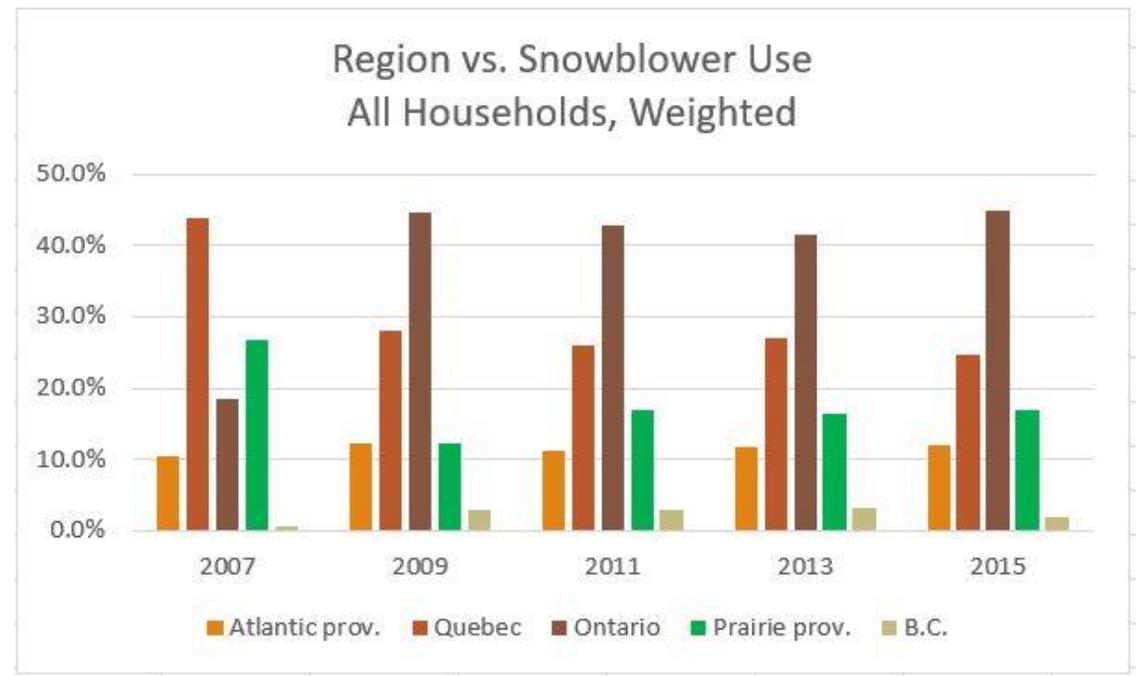
Change in Snowblower Use over Time



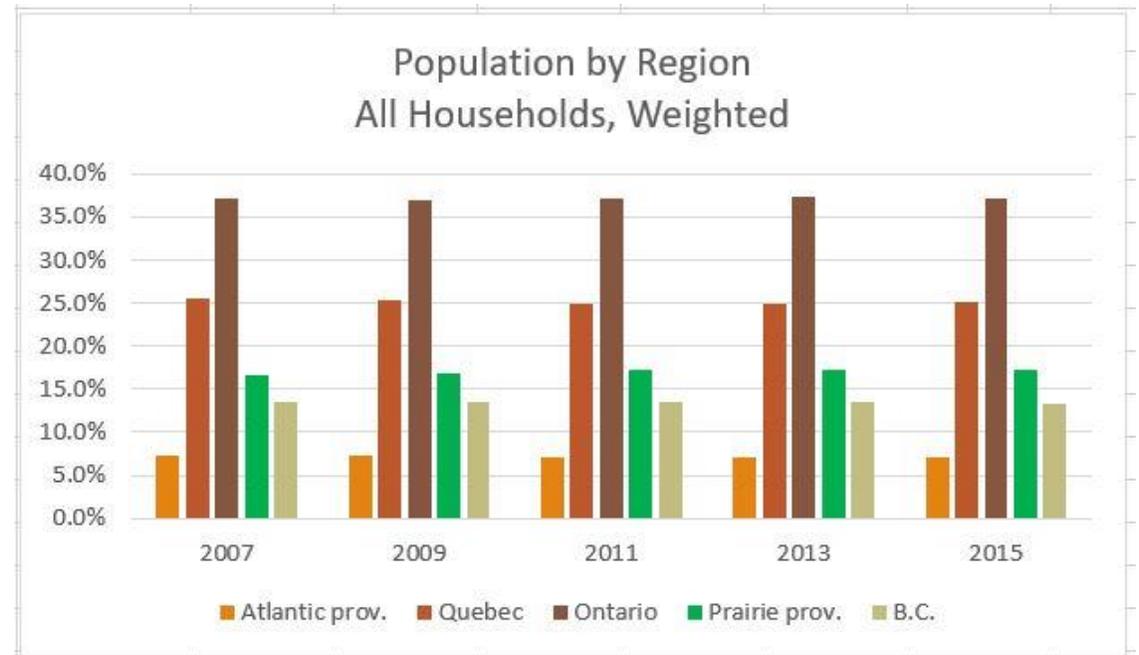
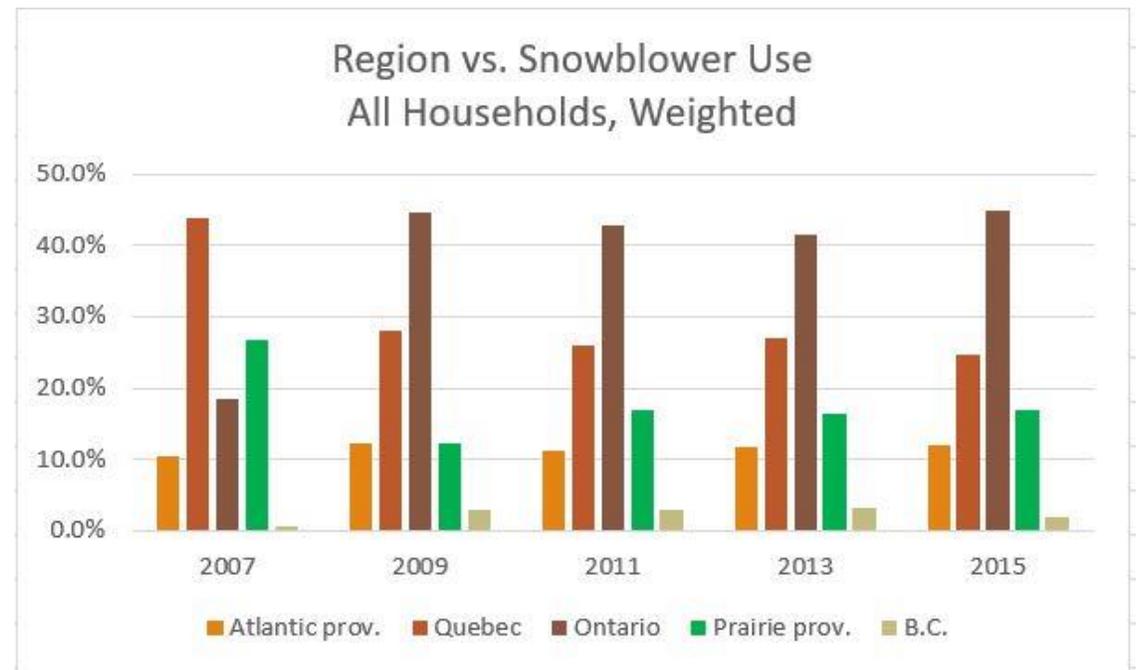
Change in Snowblower Use over Time



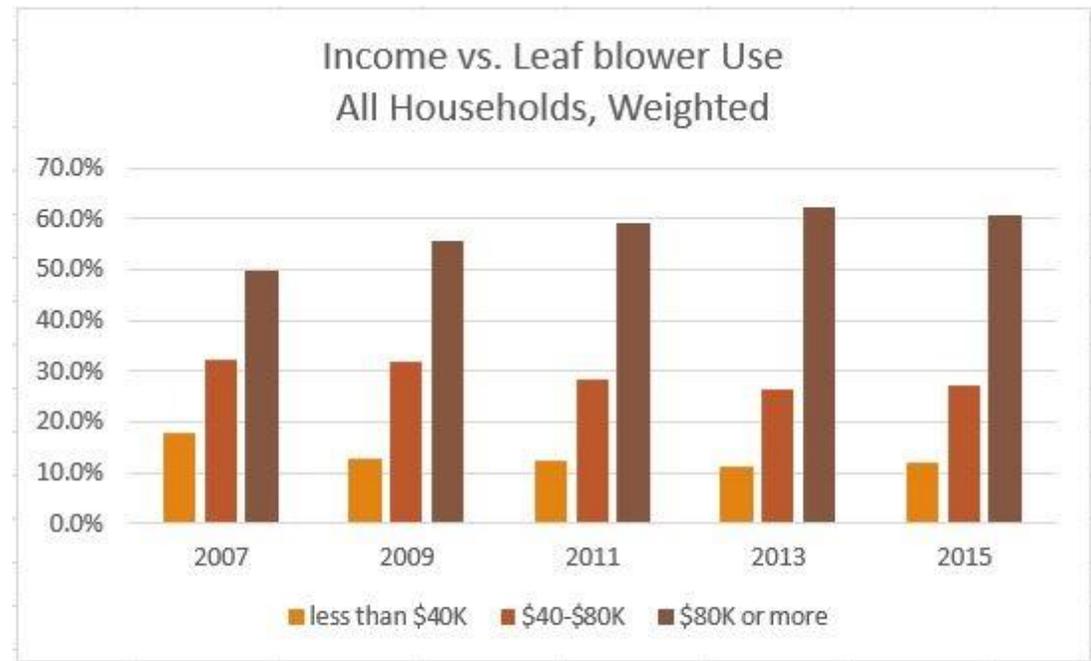
Change in Snowblower Use over Time



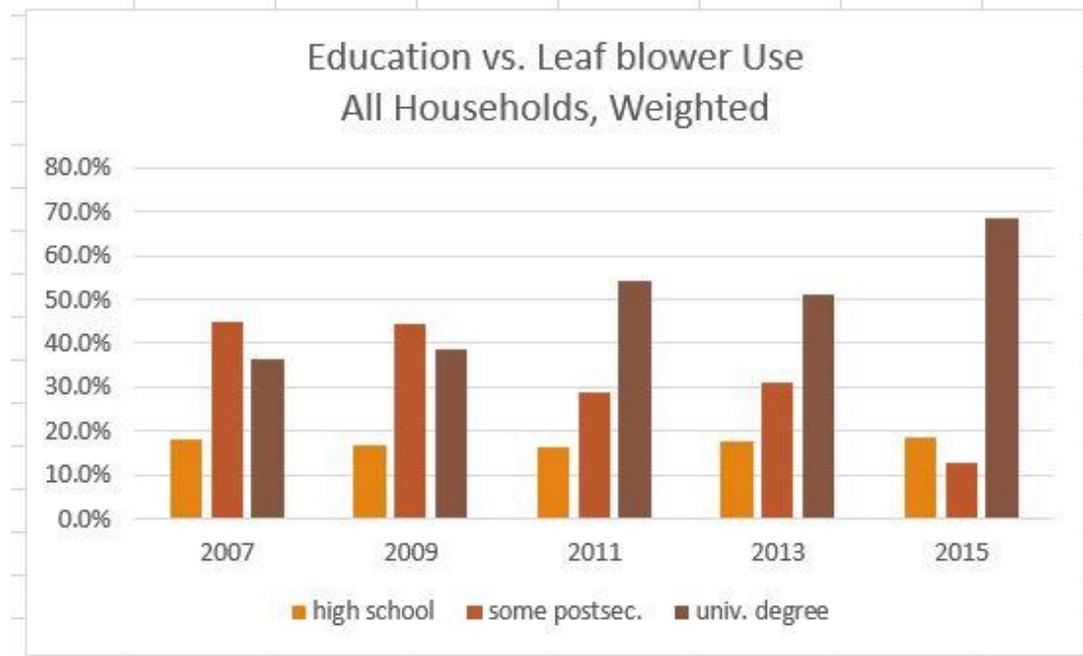
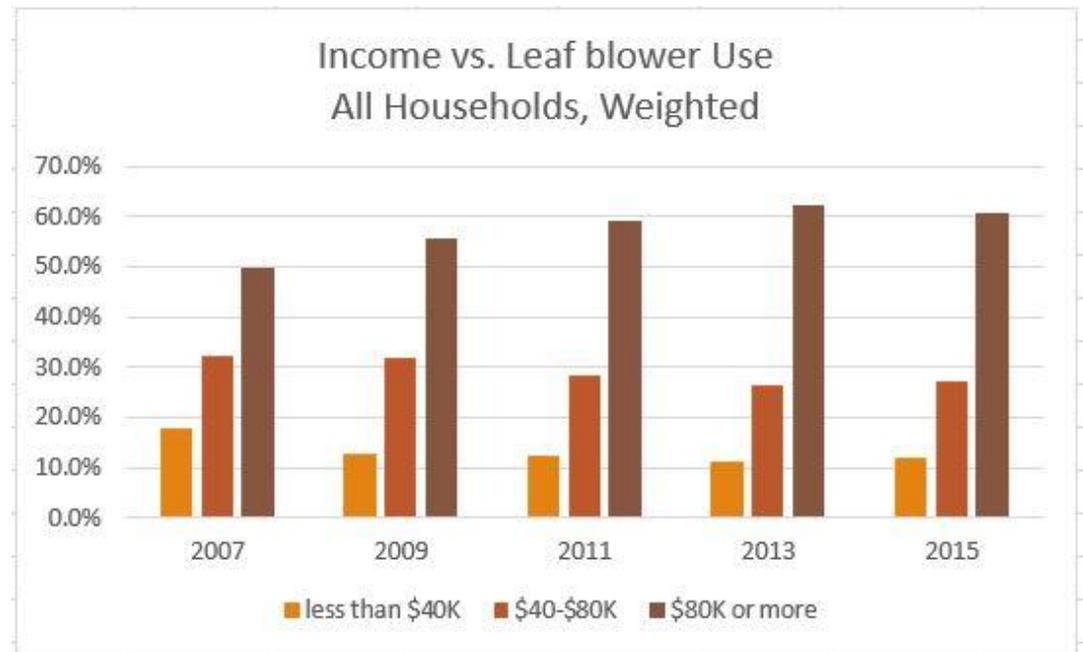
Change in Snowblower Use over Time



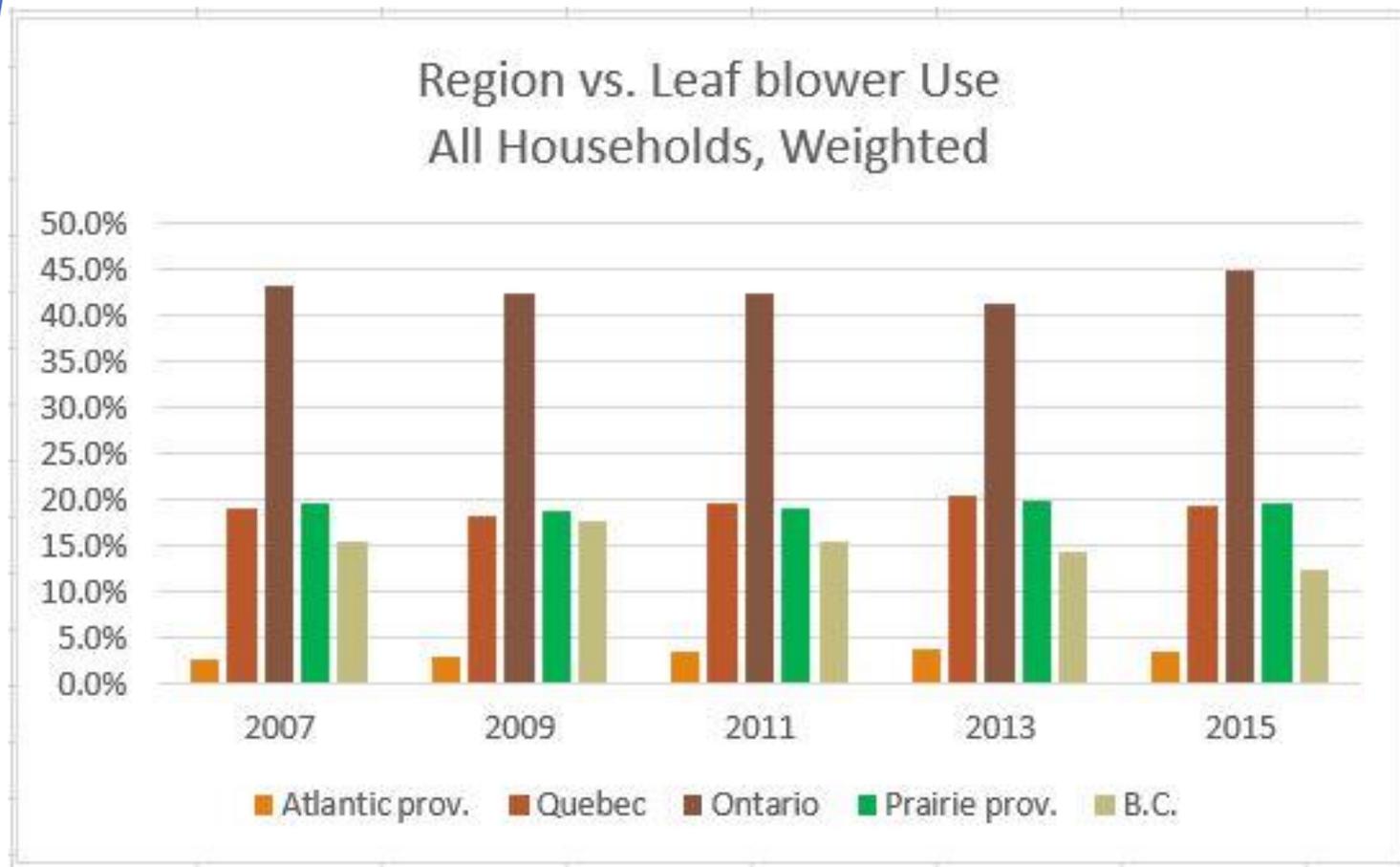
Change in Leaf blower Use over Time



Change in Leaf blower Use over Time



Change in Leaf blower Use over Time



Hypothesis testing – RDC data

- More income categories
- More housing types
- Urban/rural
 - CMA (population 100,000+)
 - CA (population 10,000-100,000)
 - Strongly influenced zone
 - Moderately influenced zone
 - Weakly influenced zone
 - Not influenced zone

Hypothesis testing

- 2007 data
- RDC master file
- Non-rural, non-apartment

	Coefficient	Odds ratios	
Total household income			
under 40K	ref.		
40-60K	0.5084	1.663	***
60-80K	0.4338	1.543	***
80-100K	0.7576	2.133	***
100-150K	0.8074	2.242	***
150K+	0.8530	2.347	***
Highest education level			
High school or less	ref.		
Some post-secondary	0.1655	1.180	*
University degree	-0.6400	0.527	***
Region			
Atlantic provinces	0.9623	2.618	***
Quebec	0.2617	1.299	***
Ontario	ref.		
Prairie provinces	-0.1473	0.863	*
British Columbia	-0.4432	0.642	***
Urban/Rural			
Large urban (100K+)	ref.		
Small urban (10-100K)	0.8868	2.427	***
Strongly influenced	2.0931	8.110	***
Moderately influenced	1.4625	4.317	***
Weakly influenced	1.5535	4.728	***
Ownership			
Owns dwelling	0.3027	1.354	***
Does not own dwelling	ref.		
Type of dwelling			
Single	ref.		
Double	-1.0712	0.343	***
Row/terrace	-1.9222	0.146	***
Duplex	-0.9495	0.387	***
Mobile home	-0.8054	0.447	***
Intercept	0.9279		
-2 log likelihood	10008.608		
df	20		
n=12574			

Motor
vehicle
usage
(2007 HES only)

Types of engine:

- Hybrid gas-electric (1 point)
- 4-cylinder (2 points)
- 6-cylinder (3 points)
- 8-cylinder (4 points)
- Other (omitted)

Number of vehicles (1-4)

Scale: 0-16

e.g. 2 hybrid vehicles = $1+1 = 2$ pts.

hybrid + 4-cyl. + 4-cyl. = $1+2+2 = 5$ pts.

6-cyl. + 8-cyl. = $3+4 = 7$ pts.

Additional hypothesis testing

- H_3 : The use of gas-powered yard equipment by Canadian households is positively correlated with gas-guzzling vehicle use.

Future Work

- Extend correlations with other visible behaviours:
 - Fertilizer and pesticide use
 - Lawn and garden watering
 - Recycling
- Urban vs. suburban
 - Forward sortation area
(first 3 characters of postal code)
- Additional datasets as they are released

Thank you!

- Vivek Jadon – PUMF data
- Statistics Canada – confidential data
- Peter Kitchen and Li Wang – RDC
- Lisa Kaida and Marisa Young
– Sociology Department