



Recycling in Canada



Teacher's Notes

Objectives

Students will:

- participate in a class survey that includes questions on household environmental practices;
- assess the degree of their household's environmental responsibility;
- analyse Canadian data and information regarding aspects of recycling and environmental responsibility;
- make inferences about the effectiveness of various waste management practices;
- recommend ways in which individuals, industries and governments can encourage better waste management practices;
- communicate the results of the investigation using written and graphic formats.

Answers to student worksheet

Section A

What percentage of households participate in environmentally friendly activities in Canada and in your class?

Answers for your class will be found in your Census at School spreadsheet of class results.

Section B

Use the tables above to answer these questions:

B.1 Which material was being recycled by the greatest percentage of Canadian households in 1994: *Paper* in 2006: *Plastics*

B.2 From 1994 to 2006, what was the increase in the percentage of households that composted: *4%*
used any compact fluorescent bulbs: *39%*

B.3 In which categories is your class:

- a) very similar to the rest of Canada?
- b) more environmentally responsible than the rest of Canada?
- c) less environmentally responsible than the rest of Canada?

Answers will be found in your spreadsheet of class results.

B.4 Based on the data above which of the following statements is most correct:

c) *Over 80% of households recycle some of their metal cans, plastic and paper, some of the time.*

C. Consider the total amount of waste produced by the products we consume.

When households report that they recycle, this does not mean that they are recycling 100% of their recyclable garbage. Consider also that a large proportion of the total waste per person in Canada is created during the production, transportation and packaging of the goods that we buy and use.

In fact, 66% of all waste is generated outside our homes in places such as schools, hospitals, and workplaces and on the street, in malls and in industry.¹ For this reason, we do not have personal control over our portion of the total waste created. We must recycle our own consumer waste and also be aware that manufacturers, wholesalers and retailers are also responsible for recycling the waste created to produce and distribute the goods we consume. Let's try to get a better picture of the total amount of residential waste produced and recycled in Canada.

The following table shows how many kilograms of residential waste were produced per person and how much waste was diverted from landfill sites through recycling in 2006. It also shows the percentage of households that used any type of recycling program in 2006.

¹ Statistics Canada. Table 153-0041 – 2006 Disposal of waste, by source, Canada, provinces and territories, every 2 years (tonnes), CANSIM (database), Using E-STAT (distributor).

Disposal and diversion of residential waste, by province and territory and household use of recycling programs, 2006

| | 1 | 2 | 3 | 4 | 5 |
|---------------------------|--|---|--|----------------|---|
| | Total residential waste disposed ² , per capita | Residential recyclable materials diverted ³ , per capita | Total materials discarded per capita (Column 1 + Column 2) | Diversion rate | Households that used any recycling program in 2006 ⁴ |
| | Kilograms per capita | | | Percent % | |
| Newfoundland and Labrador | 446 | x ⁵ | - | - | 82 |
| Prince Edward | x | x | - | - | 98 |
| Nova Scotia | 181 | 149 | 330 | 45.2 | 95 |
| New Brunswick | 289 | 44 | 333 | 13.2 | 83 |
| Quebec ⁶ | 285 | 122 | 407 | 30.0 | 86 |
| Ontario | 292 | 119 | 411 | 29.0 | 93 |
| Manitoba | 386 | 60 | 446 | 13.5 | 79 |
| Saskatchewan | 300 | 39 | 339 | 11.5 | 87 |
| Alberta | 289 | 98 | 387 | 25.3 | 85 |
| British Columbia | 222 | 145 | 367 | 45.2 | 93 |
| Yukon | 214 | x | - | - | - |
| Northwest Territories | 347 | x | - | - | - |
| Nunavut | x | x | - | - | - |
| Canada | 283 | 115 | 398 | 28.9 | 90 |

Definitions

Waste disposed: waste that is landfilled, incinerated or treated for final disposal (does not include materials destined for recycling and composting).

Recyclable materials diverted: materials diverted from the waste stream and remanufactured into a new product or used as a raw material substitute

Total materials discarded: the combined total amount of waste disposed and recyclable materials diverted

² Waste Management Industry Survey: Business and Government Sectors, 2006, Statistics Canada. Catalogue no. 16F0023X, Text Table 1: Disposal of waste, by source and by province and territory. Residential non-hazardous wastes disposed includes solid waste produced by all residences and includes waste that is picked up by the municipality (either using its own staff or through contracting firms), and waste from residential sources that is self-hauled to depots, transfer stations and disposal facilities.

³ Statistics Canada. Table 153-0042 - Materials prepared for recycling, by source, Canada, provinces and territories, every 2 years (tonnes), CANSIM (database), Using E-STAT (distributor). This information covers only those companies and local waste management organizations that reported non-hazardous recyclable material preparation activities and refers only to that material entering the waste stream and does not cover any waste that may be managed on-site by a company or household. Additionally, these data do not include those materials transported by the generator directly to secondary processors such as pulp and paper mills while bypassing entirely any firm or local government involved in waste management activities.

⁴ Statistics Canada, Households and the Environment Survey, 2006, Text table 3.7

⁵ x means data is suppressed to meet the confidentiality requirements of the Statistics Act.

⁶ Waste diversion and residential sector disposal data are derived from a survey administered by RECYC-QUEBEC.

Use the previous table to answer these questions:

C.1 Which province disposed of the greatest amount of residential waste per person?

Newfoundland and Labrador

C.2 Which provinces recycled the greatest amount of residential materials per person?

Nova Scotia and British Columbia

C.3 For each region, calculate the total amount of materials discarded per capita, including waste disposed and materials recycled.

$$\text{Total materials discarded per capita} = \text{Column 1} + \text{Column 2}$$

Record your answers in column 3 of the table on the previous page.

C.4 For each region, calculate the diversion rate (the amount of residential materials recycled compared to the total amount of residential materials discarded), using the following formula:

$$\text{Diversion rate} = \frac{\text{Column 2}}{\text{Column 3}} \times 100$$

Record your answers in column 4 of the table on the previous page.

C.5 Which province had the highest diversion rate? *Nova Scotia and British Columbia*

C.6 Do you think there is a connection between the diversion rate and the percentage of households that use a recycling program in the provinces and territories? Explain your answer.

Yes. The provinces that have the highest number of households participating in some sort of recycling seem to also have the highest diversion rates.

Examples: Nova Scotia, British Columbia

D. Graph the results and answer the questions

Create a scatter plot below to compare the percentages of households that used a recycling program (column 5 from the table above) with the diversion rates (column 4). Identify each data point by labeling it with the provincial or territorial abbreviation (e.g. MB for Manitoba, NB for New Brunswick).

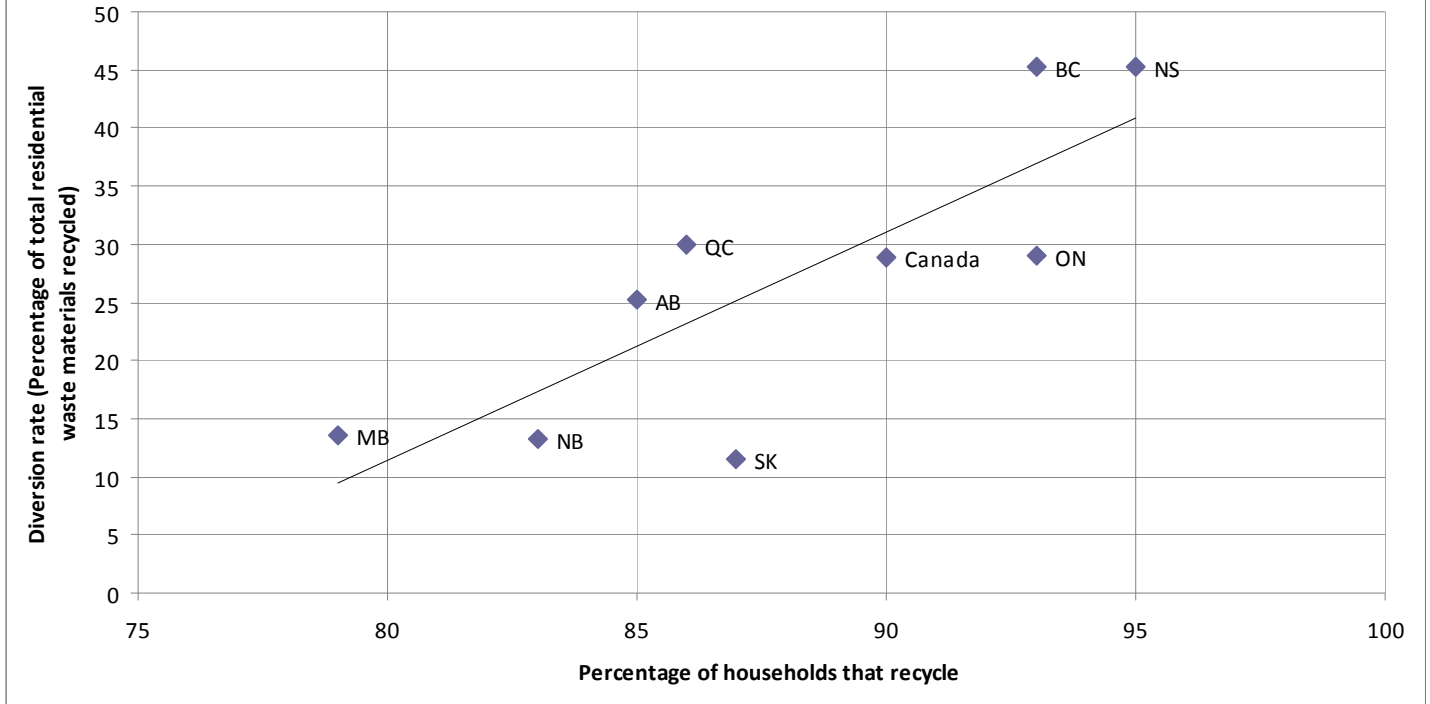
D.1 Draw the line of best fit (the trend line that fits the majority of data points) for the above graph.

(See next page)

D.2 Describe the trend in the graph. Does this match your prediction in question C.6?

There is a strong positive correlation between the percentage of households that recycle and the level of diversion rate. Provinces in which a lower percentage of households participated in some sort of recycling program had a lower diversion rate and those that had a higher participation rate in recycling programs had a higher waste diversion rate. This matched the prediction in question C.6.

Residential recycling and waste diversion rates, by province and territory



D.3 How can you explain the connection between the percentage of households that recycle and the diversion rate?

The more households that recycle within a province, the greater the proportion of waste is diverted from landfills or other disposal sites. As more households participate in recycling programs, less waste is sent to landfills.

D.4 What changes could be made in provinces and territories with lower diversion rates and lower percentages of households involved in recycling in order to improve both of these areas? Consider the responsibilities of governments, industries and individuals in your answer.

Provincial and municipal governments need to provide programs for both residential and industrial recycling. They have a responsibility to provide both incentives to recycle wherever possible and penalties for those who do not reduce the amount of waste they produce. Possible steps that governments could take include: legislation, tax rebates, incentives for using recycled products and investment in recycling facilities. Industries need to incorporate recycling into their production processes and business plans. Individuals need to be active in requesting change from their local businesses and industries. Individuals can incite change through protest, boycotting, letter writing, educating and “being the change they want to see”.

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