

# A Living Wage?

Appendix A:

## The Income Gap in Canada

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Name: \_\_\_\_\_

Date: \_\_\_\_\_

Environics Research released a poll in the fall of 2006 that showed that 76 % of Canadians believe that the gap between rich and poor is growing. In this activity you will analyze income data that will help you assess the results of the poll.

### **Class Discussion:**

*Summarize the class discussion below.*

What do we mean when we talk about the gap between rich and poor?

What kind of data do we need in order to determine if there really is such a gap?

What type of analysis do you think we should do with the data?

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In order to look at this income gap, data has been collected and sorted into two groups. Group A represents the incomes of Canadians who earn the bottom 10% of income, and Group B represents the top 10% of income earners.

Although data covers the years from 1976 to 2004, all amounts have been adjusted to 2004 dollars.

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**Table 1: Median Annual after-tax Income, for families with Children under 18.  
(For all of Canada)**

Year	Group A	Group B
1976	\$16,628.00	\$110,219.00
1977	\$15,656.00	\$107,193.00
1978	\$16,369.00	\$107,070.00
1979	\$15,261.00	\$109,300.00
1980	\$15,963.00	\$106,419.00
1981	\$15,665.00	\$107,420.00
1982	\$15,360.00	\$104,191.00
1983	\$14,966.00	\$102,781.00
1984	\$14,150.00	\$102,518.00
1985	\$14,992.00	\$104,026.00
1986	\$15,841.00	\$105,291.00
1987	\$15,909.00	\$107,569.00
1988	\$16,502.00	\$109,101.00
1989	\$16,930.00	\$111,241.00
1990	\$15,930.00	\$107,135.00
1991	\$15,256.00	\$104,080.00
1992	\$15,650.00	\$104,177.00
1993	\$15,559.00	\$102,358.00
1994	\$15,779.00	\$104,997.00
1995	\$15,794.00	\$104,787.00
1996	\$14,774.00	\$105,550.00
1997	\$14,704.00	\$109,514.00
1998	\$15,516.00	\$112,326.00
1999	\$15,826.00	\$116,480.00
2000	\$16,220.00	\$124,262.00
2001	\$17,212.00	\$128,388.00
2002	\$17,231.00	\$130,681.00
2003	\$16,871.00	\$129,446.00
2004	\$17,574.00	\$135,810.00

- 1) Explain in your own words what is meant by ‘the lowest 10% of earners’ and ‘the highest 10%’.
- 2) What does it mean to say “all amounts have been adjusted to 2004 dollars”?

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## Individual work

We are going to calculate the percentage change *in income* for the groups mentioned above, using 1976 as a base for each year. In other words,

Year	Lowest 10 %	Percentage increase/decrease for the bottom 10%
1976	\$16,628.00	
1977	\$15,656.00	$(15656 \div 16628 - 1) \times 100 = -5.84\%$
1978	\$16,369.00	$(16369 \div 16628 - 1) \times 100 = -1.55\%$

So in 1978, Group A made on average 1.55 % less than they made in 1976.

Doing this by hand is tedious, so you will use technology.

- 3) Using spreadsheet software (eg. Excel) complete the calculations for Group A. You should be able to copy the data in table 1 and paste it into excel. You might have to adjust the column width after you paste it into excel for the data to appear. *Make sure you continuously save your work – you will need to access it later!*
- 4) Using a Line Graph, plot the data above using years for the horizontal x-axis and the change in income for the y-axis. Give the Chart the title: “Change in Income For Group A and Group B” and label the axes appropriately.
- 5) Write down an interval of time when members of Group A were making less than they made in 1976.
- 6) Looking at the graph, explain what happened in the year 2001?
- 7) Perform the same calculations for Group B using 1976 as a base.

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- 8) Graph the change in income for Group B on the same chart above.
- 9) Do you think that the perception of Canadians is correct? Explain your answer.
- 10) Looking at the chart, what changes do you see happening after 1995?

Another way to analyze our data is to look at the ratio of the incomes for each year. For example, using the 1976 data:

$$\frac{110219}{16628} = 6.6$$

What does this ratio mean? It means that in 1976, a family in Group B made on average 6.6 times what a family in Group A made.

- 11) Using spreadsheets, calculate all the income ratios between 1976 and 2004 and using a line graph plot the data using years for the horizontal x-axis and the change in income for the y-axis
- 12) What do you observe? Does this support your conclusion in Question 10?

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Appendix B:

## The Income Gap in Ontario

Today, we are going to do the same analysis we did for income distribution in Canada but looking at Ontario data. The table below contains the mean of the bottom 10 % in income (**Group C**) in Ontario and the mean of the highest 10% (**Group D**) adjusted to 2004 dollars.

**Table 2: Median Annual after-tax Income, for family with Children under 18. (For Ontario)**

Year	Group C	Group D
1976	\$16,319.00	\$110,219.00
1977	\$17,559.00	\$112,816.00
1978	\$17,570.00	\$113,780.00
1979	\$15,748.00	\$112,910.00
1980	\$16,583.00	\$107,972.00
1981	\$16,850.00	\$111,171.00
1982	\$16,257.00	\$107,621.00
1983	\$15,419.00	\$108,753.00
1984	\$14,772.00	\$108,756.00
1985	\$16,784.00	\$112,556.00
1986	\$17,761.00	\$117,121.00
1987	\$19,405.00	\$117,667.00
1988	\$18,427.00	\$121,237.00
1989	\$20,719.00	\$124,242.00
1990	\$17,042.00	\$117,852.00
1991	\$16,322.00	\$110,205.00
1992	\$17,743.00	\$111,657.00
1993	\$17,901.00	\$112,109.00
1994	\$17,655.00	\$116,601.00
1995	\$17,190.00	\$113,001.00
1996	\$16,007.00	\$111,815.00
1997	\$15,754.00	\$118,551.00
1998	\$15,845.00	\$123,937.00
1999	\$16,498.00	\$136,054.00
2000	\$18,727.00	\$144,806.00
2001	\$18,271.00	\$145,968.00
2002	\$18,475.00	\$147,689.00
2003	\$18,171.00	\$143,601.00
2004	\$18,179.00	\$151,791.00

- 1) Calculate the change in income for both groups using 1976 as a base for each year.
- 2) Using a Line Graph, plot both changes using years for the horizontal x-axis and the change in income for the y-axis.
- 3) Is the income gap widening in Ontario? How does it compare to the situation in Canada?

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- 4) Calculate the yearly ratio of incomes and plot it. How does this compare to the data for all of Canada

Now, we are going to look at minimum wage earners in Ontario and compare the change in their income to that of other Ontarians.

The table below contains the minimum wage in Ontario adjusted to inflation using 2004 dollars.

Year	Minimum
1976	\$9.00
1977	\$8.35
1978	\$8.28
1979	\$8.73
1980	\$7.94
1981	\$7.54
1982	\$6.78
1983	\$6.35
1984	\$6.91
1985	\$6.66
1986	\$6.97
1987	\$6.98
1988	\$7.01
1989	\$7.06
1990	\$7.26
1991	\$7.59
1992	\$7.46
1993	\$7.90
1994	\$8.70
1995	\$8.15
1996	\$8.04
1997	\$7.90
1998	\$7.84
1999	\$7.71
2000	\$7.55
2001	\$7.29
2002	\$7.17
2003	\$6.96
2004	\$7.15

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In 1976, the minimum wage in Ontario was actually \$2.65 per hour. The table above adjusts that value to 2004 dollars. You can check the inflation calculator at The Bank of Canada website

[http://www.bankofcanada.ca/en/rates/inflation\\_calc.html](http://www.bankofcanada.ca/en/rates/inflation_calc.html)

- 5) According to the inflation calculator, what should minimum wage have been in 2006, based on the fact that it was \$2.65 in 1976?
  
- 6) Calculate the percentage increase in Minimum Wage for each year, using the 1976 figure as a base (just like you did for the income data earlier.)
  
- 7) Now create a chart that shows all of the following:
  - The percentage change in income for the top 10% of earners in Ontario
  - The percentage change in income for the bottom 10% of earners in Ontario
  - The percentage change in minimum wage in Ontario
  
- 8) How does the change in minimum wage compare to the change in income for the bottom 10% of earners?
  
  
  
  
  
  
  
  
  
- 9) How does the change in minimum wage compare to the change in income for the top 10% of earners?

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Appendix C:

## **“Study: Minimum-wage workers, 2003 “**

**Statistics Canada, The Daily, Friday, March 26, 2004**

Go to <http://www.statcan.gc.ca/daily-quotidien/040326/dq040326c-eng.htm>. Read the article “Study: Minimum-wage workers”.

Answer the following questions:

- 1) What percentage of Canadian employees work at or below the minimum wage set by their province in 2003?
  
  
  
  
  
  
  
  
  
  
- 2) Calculate the percentage of males working at minimum wage and that of women.
  
  
  
  
  
  
  
  
  
  
- 3) What explanation does the article give to the fact that the majority of minimum wage workers are employed by small firms?
  
  
  
  
  
  
  
  
  
  
- 4) The article asserts that 27,000 single parents with children under the age of 18 are working at minimum wage, Discuss the impact of a low minimum wage on those families.



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Appendix D:

## Income in Ontario

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Complete the following:

Minimum Wage (hourly rate) \_\_\_\_\_

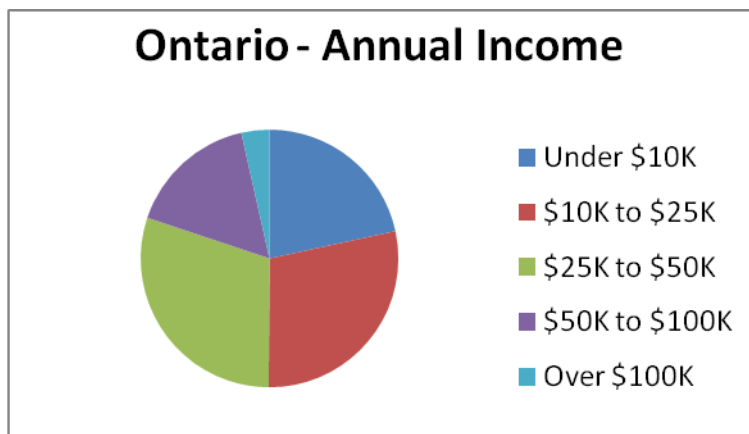
Hours in a typical work week \_\_\_\_\_

Weeks per year \_\_\_\_\_

Calculate the pre-tax annual income of a person earning minimum wage: \_\_\_\_\_

Calculate the pre-tax monthly income of a person earning minimum wage: \_\_\_\_\_

2.



This chart divides income into 5 ranges, and shows what percentage of Ontarians have an income in each division.

a) Use the graph to estimate the percentage represented by each section.

Income under \$10,000	Estimate	Actual
\$10,000 to \$25,000		
\$25,000 to \$50,000		
\$50,000 to \$100,000		
Income over \$100,000		

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b) Use the graph to estimate the median income in Ontario. \_\_\_\_\_

Actual median income in Ontario: \_\_\_\_\_

### 3. Income distribution for other cities.

Complete each table, and then use this data to complete the bar chart on the following page.

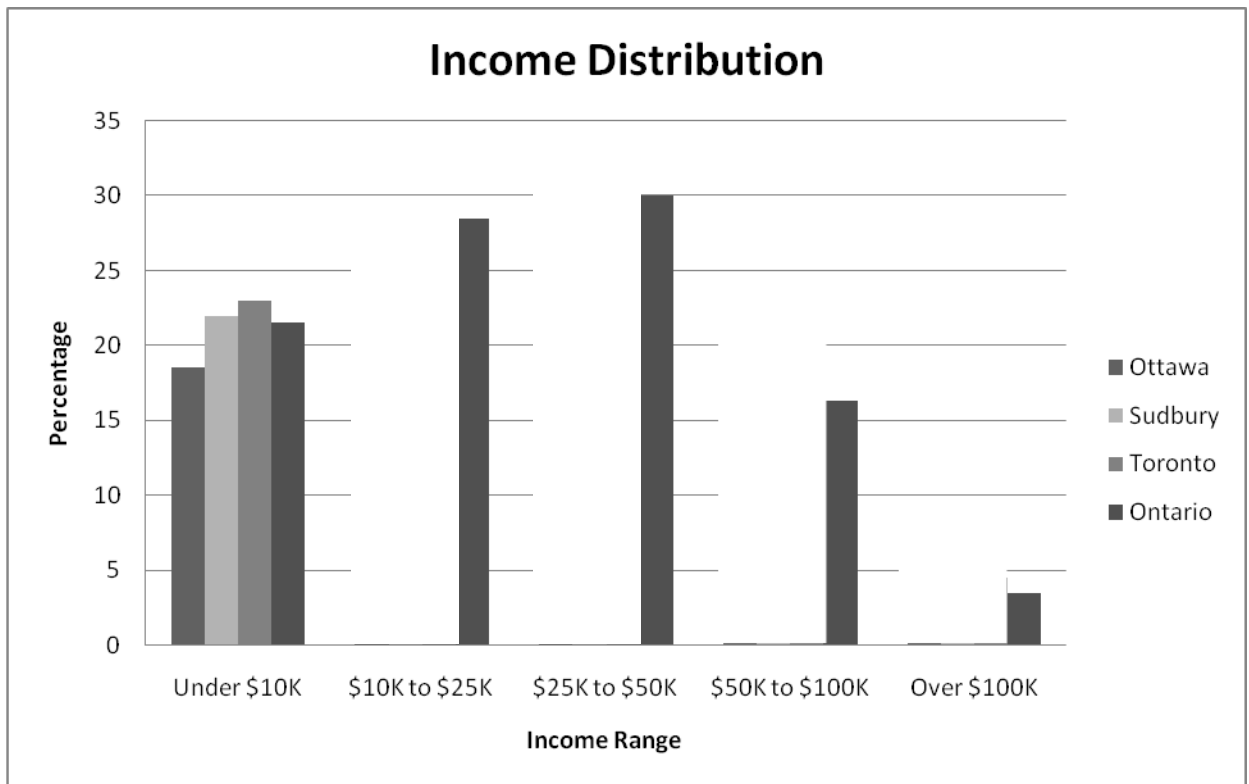
OTTAWA						TOTAL # of PEOPLE EARNING INCOME
	Under \$10K	\$10K to \$25K	\$25K to \$50K	\$50K to \$100K	Over \$100K	
Number of people in each division	111820	145090	176670	132830	35260	
% in each division						100%

SUDBURY						TOTAL # of PEOPLE EARNING INCOME
	Under \$10K	\$10K to \$25K	\$25K to \$50K	\$50K to \$100K	Over \$100K	
Number of people in each division	26100	35090	36320	18990	2260	
% in each division						100%

TORONTO						TOTAL # of PEOPLE EARNING INCOME
	Under \$10K	\$10K to \$25K	\$25K to \$50K	\$50K to \$100K	Over \$100K	
Number of people in each division	810980	952120	1027230	571510	160740	
% in each division						100%

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Use your completed graph above to answer the following questions:

- Which city has the most people earning under \$10,000 per year? Which city has the least?
- Which city has the most people earning more than \$100,000 per year? Which city has the least?
- What are some unique aspects of each city that might account for some of these differences?

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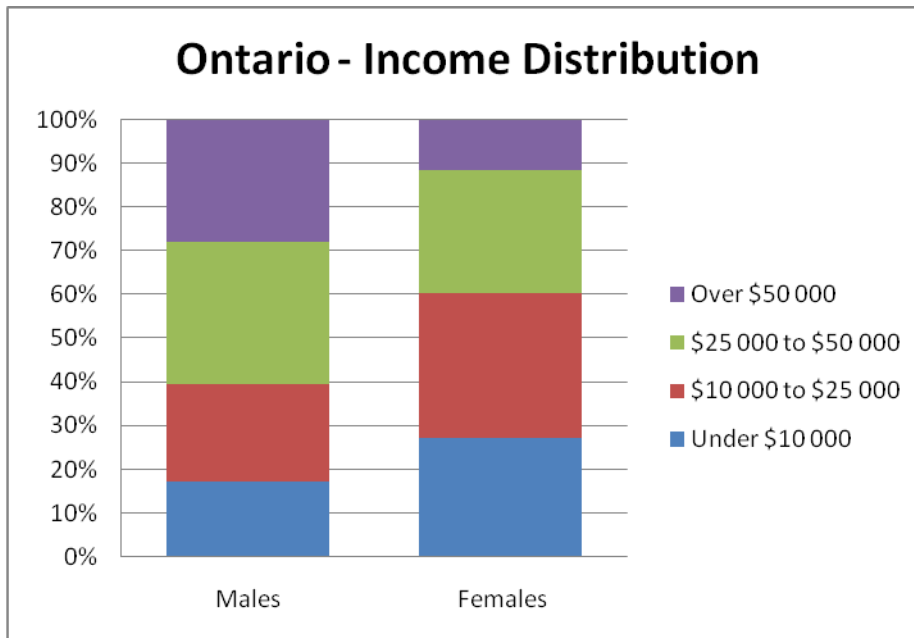
Appendix E:

## Demographics and Income

Name: \_\_\_\_\_

Date: \_\_\_\_\_

The graph below shows Income Distribution in Ontario, split according to gender.



1. Fill in the table below by estimating percentages from the graph.

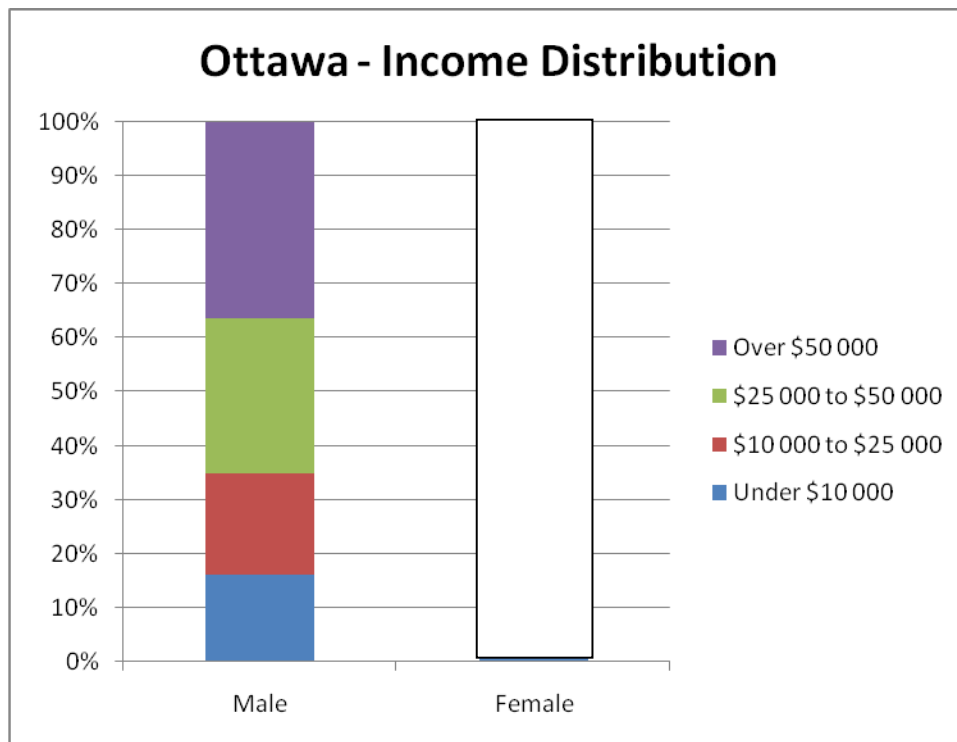
	Males	Females
Under \$10 000		
\$10 000 to \$25 000		
\$25 000 to \$50 000		
\$50 000 or more		

2. What percent of men earn \$25 000 or less? \_\_\_\_\_

3. What percent of women earn \$25 000 or less? \_\_\_\_\_

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4. Look back at the article from last class (“Minimum Wage Workers”). According to the article, women accounted for \_\_\_\_\_ of minimum-wage workers. How does the graph above support this conclusion?
5. Now let’s look at specific cities within Ontario.

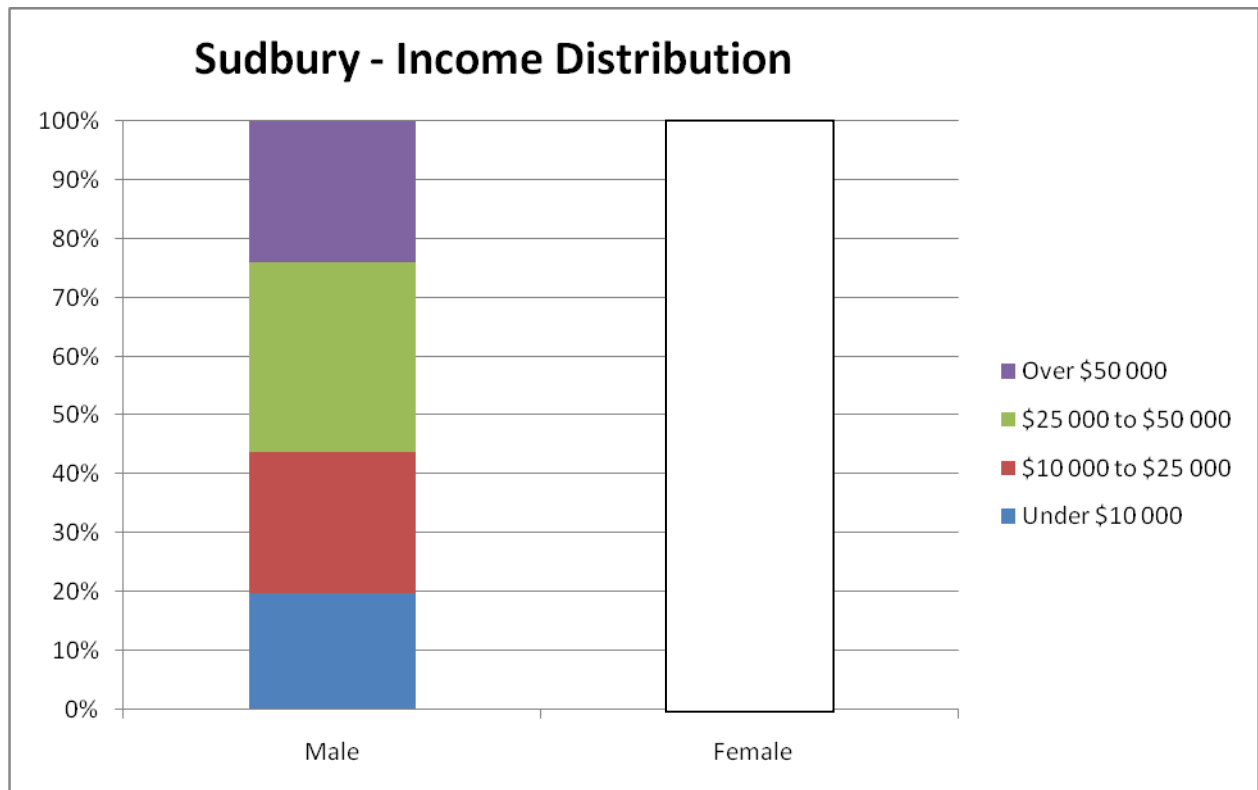


Complete the graph above by using the data in the table below.

FEMALE WAGE EARNERS IN OTTAWA	Number of People	Percentage
Under \$10 000	70925	
\$10 000 to \$25 000	84655	
\$25 000 to \$50 000	90725	
Over \$50 000	55850	
Total number of female wage earners	302150	100%

Compare your finished graph to the corresponding graph for all of Ontario. What gender and income categories are significantly different for this city?

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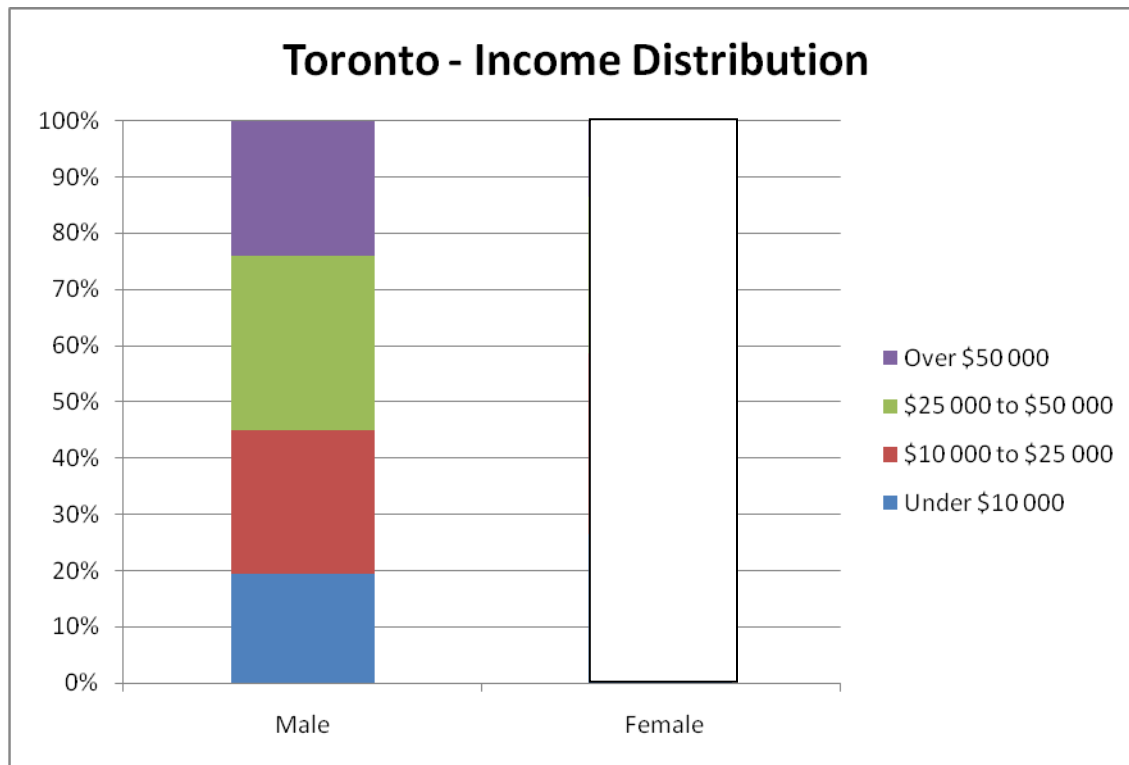
Complete the graph above by using the data in the table below.

FEMALE WAGE EARNERS IN SUDBURY	Number of People	Percentage
Under \$10 000	7380	
\$10 000 to \$25 000	10130	
\$25 000 to \$50 000	8630	
Over \$50 000	2145	
Total number of female wage earners	8135	100%

Compare your finished graph to the corresponding graph for all of Ontario.

What gender and income categories are significantly different for this city?

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Complete the graph above by using the data in the table below.

FEMALE WAGE EARNERS IN TORONTO	Number of People	Percentage
Under \$10 000	260640	
\$10 000 to \$25 000	315875	
\$25 000 to \$50 000	274740	
Over \$50 000	131720	
Total number of female wage earners	982970	100%

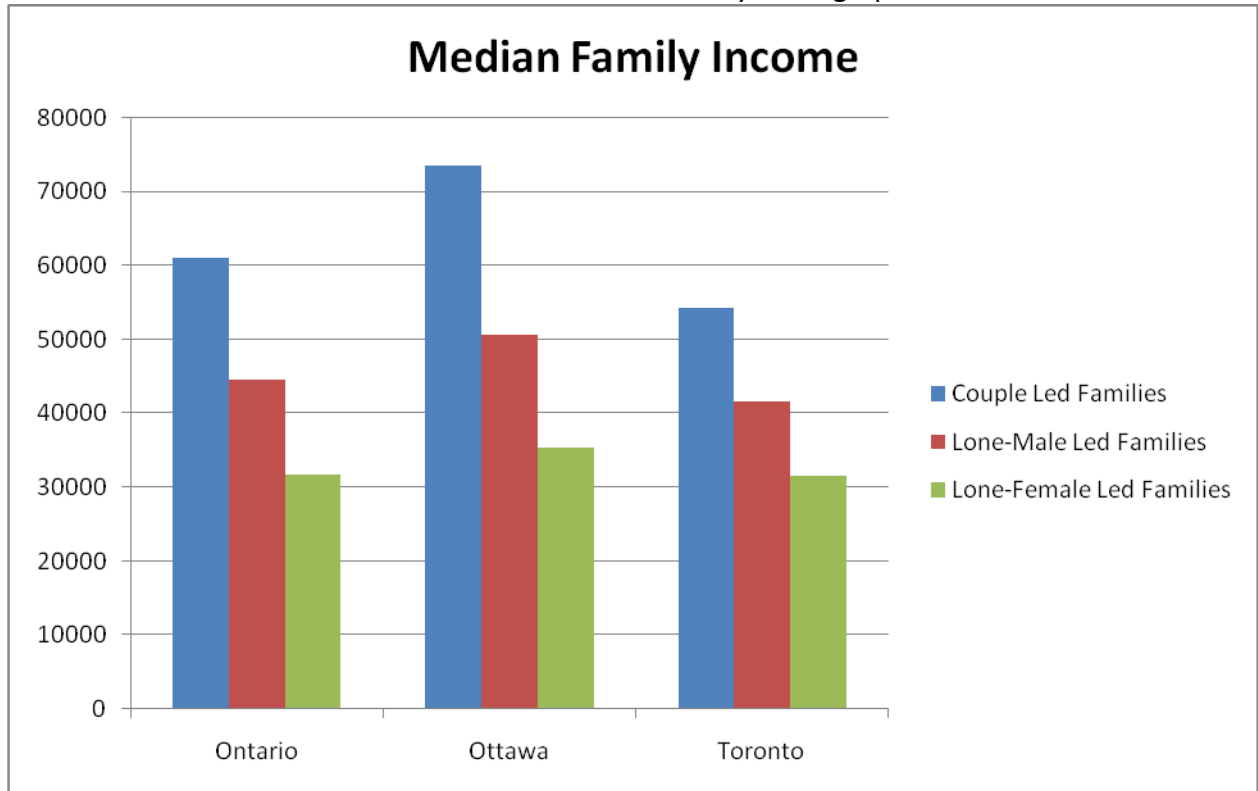
Compare your finished graph to the corresponding graph for all of Ontario.

What gender and income categories are significantly different for this city?

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6. Look back at the article from last class again. The article tells us that \_\_\_\_\_ heads of family with no spouse earn minimum wage or less.

Let's look closer at income and family demographics.



7. How do family incomes compare when looking at two-parent families versus lone-parent families?
8. How do family incomes compare when looking at lone-parent families led by males versus those led by females?



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9. This graph is showing us *median* incomes. With that in mind, complete the following by estimating from the graph:

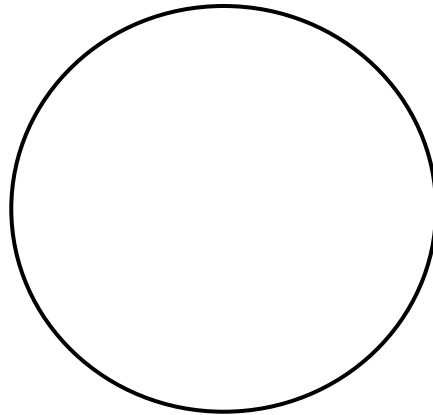
In Ontario, half of all families earn less than \_\_\_\_\_.

In Ontario, half of all male-led lone-parent families earn less than \_\_\_\_\_.

In Ontario, half of all female-led lone-parent families earn less than \_\_\_\_\_.

10. Create a circle graph out of the following data:

Lone Parent Families in Ontario	
Male Led	17%
Female Led	83%



11. Consider both your graph from question 10 and information about income of lone-parent families. What does the data tell us?

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Appendix F:

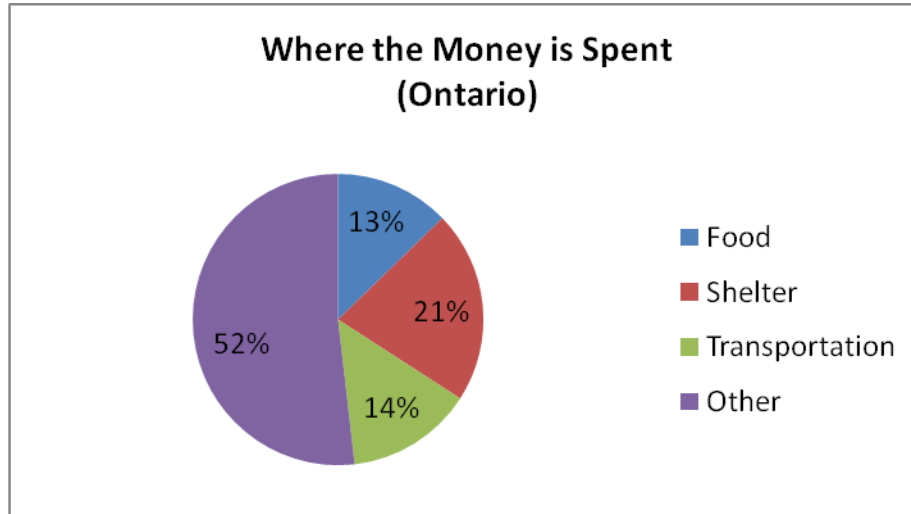
## Budgeting

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Over the last few classes we have looked at income in Ontario. Now we will look at where that money goes, and examine a few sample monthly budgets.

First, look at the graph below.



1. What would be included in Shelter costs?
2. What about Transportation?
3. What type of spending would fall into the "Other" category?

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This pie chart above is the average information for all of Ontario. Let's see how this data differs when we look specifically at two groups: The 20% of people who earn the lowest income, and the 20% who earn the highest income.

4. Complete the table below:

	Bottom 20% (Earning less than \$23 470)	% spent	Top 20% (Earning more than \$88 240)	% spent
Food	\$3,500		\$10,370	
Shelter	\$6,150		\$17,930	
Transportation	\$2,440		\$16,000	
Other	\$8,130		\$75,930	
Total Amount Spent				

5. In which spending categories are these two groups of earners similar?

6. In which spending categories are they different?

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### MAKING A BUDGET: THE “AVERAGE” ONTARIAN.

7. The *mean* annual income in Ontario is \$60 312. That gives us a mean monthly income of \$5026. Use this information to determine how much money the ‘average’ Ontarian spends on shelter, food and transportation in a month.

<b>Mean Monthly Income</b>		<b>\$5026</b>
Shelter	21%	
Food	13%	
Transportation	14%	
Other	52%	

8. The *median* annual income in Ontario is \$24 900. This is very close to the \$23 470 figure that represents the bottom 20% of earners. So we will use budget percentages calculated in question #4 above.

<b>Median Monthly Income</b>	<b>%</b>	<b>\$2075</b>
Shelter		
Food		
Transportation		
Other		

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9. Now let's look at a person working at minimum wage. Calculate the annual income of a person making \$8 per hour, 40 hours a week, for 52 weeks a year. Then divide by 12 to get the monthly income.

<b>Minimum Wage Monthly Income</b>	<b>%</b>	<b>\$</b>
Shelter		
Food		
Transportation		
Other		

### Cost of Living Shelter

The following chart shows us the average shelter costs for certain cities in Ontario. (This includes both the cost of rent and the cost of ownership.)

City	Average Monthly Shelter Costs
Ottawa	\$891
Sudbury	\$602
Toronto	\$967
<b>Average for Ontario:</b>	<b>\$716</b>

10. Compare the average cost of shelter to the amount spent on shelter in the budgets you created. What do you notice?
11. Is it feasible to say that people earning minimum wage should live in cities with cheaper shelter costs?

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Over the past 5 classes, you have used statistical methods to look at minimum wage and the cost of living in Ontario and in a few Ontario cities. Summarize your learning by addressing the following question:

*Should Ontario's minimum wage be increased? If so, by how much?*

Justify your answer by referring to data studied over the past several classes.

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Appendix G:

## Graph for Discussion

