

# Labour Flow Analysis



## 1. Introduction:

There are two versions of the Labour Flow Analysis tool...one for lower tier and single tier municipalities (Census Sub-Divisions or csds) and one for upper-tier municipalities (Census Divisions or cds). These are in separate files on the Compact Disc provided.



## 2. What is labour flow analysis?



Labour Flow Analysis provides a picture of the movement of labour in and out of a municipality. It compares the number of jobs in each sector held by local residents (who may work outside the community) with the number of jobs in the same sectors held by people working in the community (some of whom may live outside the community). This analysis also includes a measurement of the relative concentration of employment in each sector, based on the resident employed labour force and the workforce employed by local establishments.



## 3. How to use the tool:

When you open the Labour Flow Analysis file, you will be in the main worksheet that is marked “LQ CSD” or “LQ CD” on the tab at the bottom of the sheet. The other three worksheets are labelled “2006 resid”, “2006 work” and “GRAPH”. Please do not try to change anything in these worksheets, such as labels or headings, since the tool may not work properly if you do!

At the top of the main worksheet, you will see the name of the selected community at the top right, and buttons for selecting communities, clearing filters and formatting the chart for printing.

Microsoft Excel - CSD Labour Flow Analysis March 22, 2004.xls

File Edit View Insert Format Tools Data Window Help

B C E F G J M

Ontario Hanover T

Select Community Clear Filters Format Chart for Printing

Hanover T: Economic Profile ..... Jobs versus Labour Force, 2001

**LABOUR FLOW ANALYSIS (CSD)**

Sectors (NAICS classification)	# employed in Ontario	Jobs in Hanover T	Employed Resident Labour Force Hanover T	Net export (-) or import (+) of labour	Location Quotient (LQ) Local Jobs	L.Q. Jobs in Hanover T- Level
<b>11 Agriculture, forestry, fishing and hunting (Sector)</b>	<b>109,910</b>	<b>230</b>	<b>110</b>	<b>120</b>	<b>2.33</b>	<b>High</b>
111-112 Farms	100,890	185	85	100	2.04	High
113 Forestry and logging	4,175	15	0	15	4.00	High
114 Fishing hunting and trapping	780	0	0	0	0.00	-
115 Support activities for agriculture and forestry	4,065	30	25	5	8.21	Very High
<b>21 Mining and oil and gas extraction (Sector)</b>	<b>18,210</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>-</b>	<b>0.00</b>
211 Oil and gas extraction	475	0	0	0	0.00	-
212 Mining (except oil and gas)	14,885	0	0	0	0.00	-
213 Support activities for mining and oil and gas extraction	2,305	0	0	0	0.00	-
219 Mining - unspecified	445	0	0	0	0.00	-
<b>22 Utilities (Sector)</b>	<b>41,970</b>	<b>0</b>	<b>45</b>	<b>-45</b>	<b>0.00</b>	<b>-</b>
221 Utilities	41,970	0	45	-45	0.00	-
<b>23 Construction (Sector)</b>	<b>162,845</b>	<b>175</b>	<b>215</b>	<b>-40</b>	<b>1.20</b>	<b>Med.</b>
231 Prime contracting	86,915	85	100	-15	1.41	High
232 Trade contracting	95,930	90	115	-25	1.04	Med.
<b>31-33 Manufacturing (Sector)</b>	<b>909,700</b>	<b>1,000</b>	<b>845</b>	<b>155</b>	<b>1.22</b>	<b>Med.</b>
311 Food manufacturing	77,555	350	145	205	5.02	Very High
312 Beverage and tobacco product manufacturing	12,590	0	0	0	0.00	-
313 Textile mills	7,050	0	0	0	0.00	-
314 Textile product mills	7,945	0	0	0	0.00	-
315 Clothing manufacturing	26,855	155	50	105	6.42	Very High
316 Leather and allied product manufacturing	3,340	0	0	0	0.00	-
321 Wood product manufacturing	29,495	25	150	-125	0.94	Med.
322 Paper manufacturing	32,520	0	0	0	0.00	-

The Labour Flow Analysis chart has several columns that reflect different dimensions of employment by sector in the local economy. From left to right in the chart, the headings are:

**Sectors (NAICS<sup>1</sup> Classification):** names of individual sectors/industries. The LFA tool for csds and cds has up to 4 digit NAICS

**# Employed in Ontario:** total employment for the resident labour force in Ontario, for all industries combined

**Jobs in (Selected Community/Region):** number of people employed by local industries; workers may or may not be local residents

**Employed Resident Labour Force:** number of local residents employed in the sector, whether or not they work in the community/region

1 The North American Industry Classification System (NAICS) is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. Created against the background of the North American Free Trade Agreement, it is designed to provide common definitions of the industrial structure of the three countries. It has a hierarchical structure. At the highest level, it divides the economy into 20 sectors. At lower levels, it further distinguishes the different economic activities in which businesses are engaged.



**Net Export (-) or Import (+) of Labour:** indicator of the extent to which labour is flowing out of or into the community to work in a sector

**LQ Jobs in (Selected Community/Region):** location quotient or level of employment concentration for local jobs in the sector

**LQ Jobs – Level:** LQs are *Very High* if over 5.0, *High* if between 1.25 and 5.00, *Medium* if 0.75 to 1.25 and *Low* if less than 0.75.



**LQ Employed Resident Labour Force:** location quotient or level of employment concentration for the resident labour force working in the sector



**LQ Employment Resident Labour Force – Level:** low, medium, high or very high

*The **key indicator** in this analysis is the “Net Export (-) or Import (+) of Labour”, which shows the pattern of labour flow in and out of the community/region to jobs in the sector. This information should be compared to local knowledge about commuting patterns and the distance/destination that local residents are traveling to outside jobs.*



## Step #1: Select Community & Generate Results

Click on the box marked **“Select Community”**, or **“Select County”**, which will take you to a pick list of all municipalities in the province. The list organizes municipalities by their geographic location in the province, but you can see an alphabetical list by clicking on the “filter button” (small inverted triangle) at the top of the column.

To select a municipality/region, click on its name and then click on the box at the top of the sheet, as indicated. The results for the municipality will be automatically generated and you will be taken back to the main sheet.

## Step #2: Adjust Tabular results

You can manipulate the table in many ways, depending on the type of information desired. Two of the main functions you will likely find useful are:

- **Sorting / Filtering Columns:** at the top of each column are small boxes with inverted arrows that enable you to filter out information. If you click on one

of these buttons, you will see a pick list that has at the top “All”, then “Top Ten”, then “Custom”. “All” is the default and gives you the values for every industry and sub-sector. “Top Ten” gives you the option of selecting the top ten, or bottom ten. You can even change the number from 10 to any desired number. “Custom” lets you select parameters for any of the variables (i.e. column heading). This would include choices as specific as “*LQ is greater than 1.0*”.

nting (Sector)	# employed i
	10
	100,8
	4,1
	7

**Filter Button** at the top of every column for selecting “top ten” (or any number), for custom filtering (e.g. you choose parameters) and for selecting an individual value or variable in a column; **Clear the filter** by clicking on the button again and selecting “all” from the top of the pick list; or click on the “clear filters” box, if available.

- **EXAMPLE:** You can use this feature for reducing the number of sectors shown to only higher-level major groups or Sectors. Click on the inverted triangle at the top of the *Sector* column. Select “custom” then change “equals” to “contains” from the scroll down pick list in the left hand window and then type in “Sector” in the right hand window. The program would then only show the industry Sectors, like manufacturing and construction.
- **Clear Filters:** when you want to return to the original table with all rows included, you can click on the box at the top of the sheet marked “clear filters”. You can also clear filters by clicking on the filter button (inverted triangle) at the top of the column you filtered, and then select “all”.

### Step #3: Printing

The print area has been set for you to print the table. If you would like fewer columns, you can “hide” columns as explained above.

### Step #4 (Optional): GRAPH

A graph has been included in the LFA tool. The source of data is the Place of Work and Place of Residence employment numbers for the selected area. The graph will show both values. If all sectors are showing in the main worksheet, the graph will be hard to read. You will need to filter the “sector” column so that only



the highest level industries are showing, as explained above under Step #2.

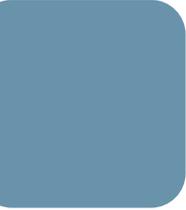
#### 4. Data Source:

Labour Flow Analysis (LFA) uses customized employment data by sector, from the 2001 Statistics Canada Census of Population. LFA uses two types of employment data:

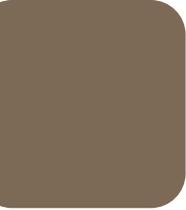
- **“Place of Residence”**, which reflects the employed resident labour force and
- **“Place of Work”**, which reflects the workforce employed by local establishments.



#### 5. Formula:



The only formula used in this analysis is for location quotients:


$$\text{LOCATION QUOTIENT} = \frac{\% \text{ of local employment in sector } A}{\% \text{ of provincial (Ontario) employment in sector } A}$$

The formula used here compares local % employment to **provincial** % employment, because it assumes that the province is a *complete economy*, with every sector represented. It is therefore a good standard to which the local economy is compared.

The calculation for **Net Export or Import of Labour** is simple:

$$\# \text{ of Local Jobs in Sector} - \# \text{ Employed Resident Labour}$$

## 6. Interpretation:

### 6.1 Import /Export of Labour

Interpreting the import/export of labour is straightforward. If a *negative* number appears in this column, it means that the size of the resident employed labour force is larger than the number of jobs available in the sector in the municipality or region. Therefore, it indicates that people are commuting out of the municipality to work in this sector, or the municipality is “**exporting**” labour.

Conversely, if the number is *positive*, there are more local jobs in the sector than the resident labour force employed in the sector. Therefore, it indicates that people are commuting into the area to work in the sector, or the area is “**importing**” labour.

The limitation of this analysis is that we can't tell where the imported workers are coming from or to which locations local residents are commuting. This would depend on knowledge of the area and the surrounding communities and businesses. However, it does provide a quantitative measure of the volume of in and out flows of labour.

It also might suggest opportunities for developing local businesses in the same sector as those that are exporting labour to other areas. It would be advisable to supplement this analysis with an assessment of the skills and qualifications of local residents, starting with a review of Census data on occupations and fields of study for post-secondary graduates.

### 5.2 Location quotients

Interpreting a location quotient starts with seeing where it fits into the following ranges:

**LQs < 0.75** (“low”) indicate that local needs are not being met by the sector and the municipality is importing goods and services in that sector.

**LQs between 0.75 and 1.25** (“medium”) indicate the community is self-sufficient in that sector. LQs of 1.0 result if local % employment is equal to provincial % employment in the sector.

**LQs > 1.25** (“high”) indicate that the sector is serving needs that extend beyond the boundaries of the municipality. The sector is likely “exporting” goods and services.

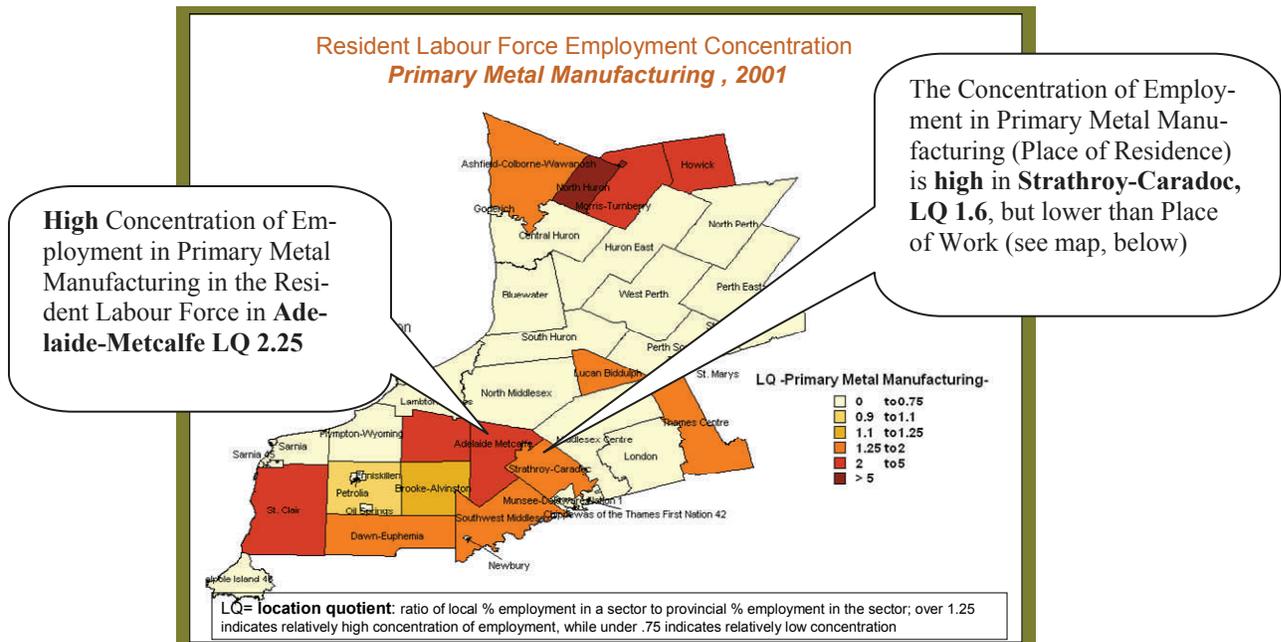
**LQs of 5 and over** are very high and suggest a high level of local dependence on the sector.

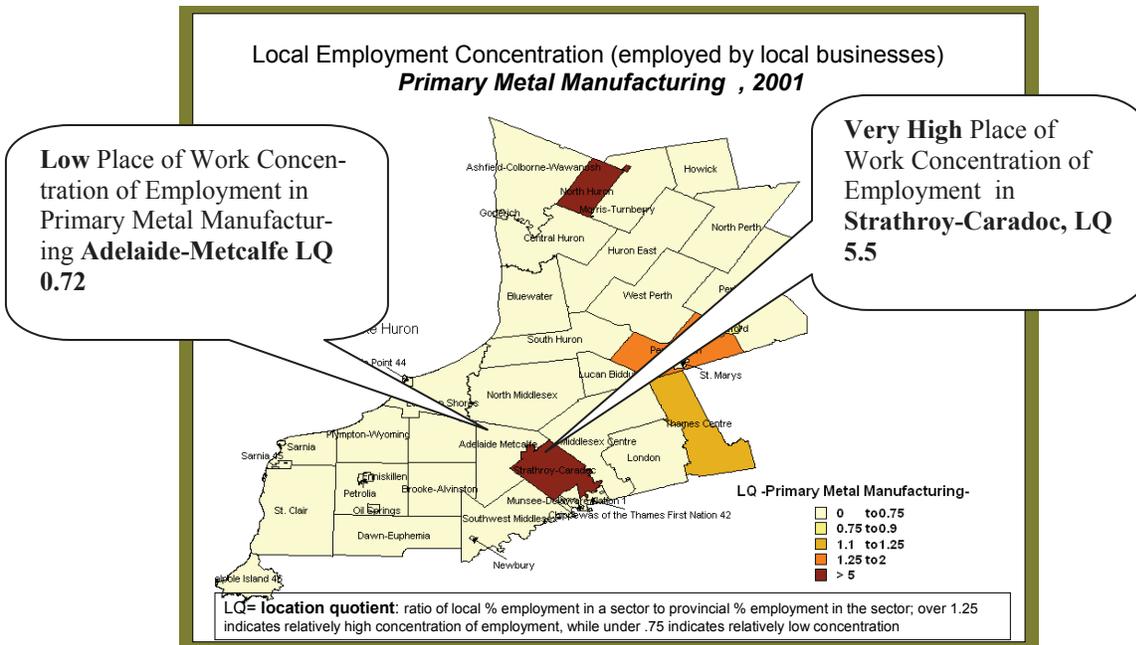
Your interpretation should include looking at the LQs for the industry “Sector” (highest level – 1 digit), “Major Group/Sector” (2 digit) and specific “industry” (3-4 digit NAICS). You may find, for example, that manufacturing has a relatively low location quotient, since it does not represent a high percentage of local employment. Meanwhile, however, you may find that some manufacturing sub-sectors (e.g. wood products manufacturing) have high location quotients, since the percentage they represent of local employment is high compared to the average for the province, suggesting a specialization in that type of manufacturing for the community.

### LQ for Place of Work vs. LQ for Place of Residence

Basically, the difference between an LQ for Place of Work and an LQ for Place of Residence, is that the first indicates the level of specialization of local businesses/sectors, while the latter indicates the level of specialization of the local, resident labour force.

It is interesting to map location quotients for a region and for a specific sector, using first Place of Residence data, then Place of Work data. The maps, below illustrate how the location quotients can indicate where there are concentrations of businesses in a sector and where there are concentrations of labour for those businesses.





### Limitations of LQs:

**A Location Quotient is not “Rocket Science”:** LQs tell us about the mix and relative significance of local sectors using Census employment values as indicators of productive capacity. No indicator is perfect, however, and it’s important to understand the limitations of using Census employment data:

- First, employment is not necessarily a good indicator of productivity. A local sector may have relatively high employment, but be quite inefficient compared to its provincial counterparts. Similarly, another local sector may employ very few people, simply because it uses a highly efficient and capital-intensive production process.
- Second, the Census employment data is based on Census respondents’ subjective answer about their employment on the long questionnaire that only 1 in 5 Canadians have to fill in. In other words, the employment figures should not be assumed to be totally accurate.

**Don’t Jump to Conclusions!:** Sometimes you will hear people suggest that if a location quotient for a particular sector is low, that the community should invest in that sector because it represents a “gap” in the local economy. However, it is important to recognize that it is unrealistic, especially in smaller communities, to have every sector represented. This is particularly so when looking at specific sub-sectors, such as 3 or 4 digit manufacturing sectors (e.g. 258 coffin and casket industry).



However, every community should have a **balanced** mix of sectors, and should not be overly dependent on one or two sectors. To identify sectors that it would make sense to develop, decision makers need to consider the existing sector mix and “driving” sectors. If the community is importing goods that are used as inputs for local “driving” sectors, it would be good to explore opportunities for “import-substitution” through investment attraction targeted at companies that produce the same inputs and might consider locating in the community.

