

How can you recognise good, reliable, well reported statistics?

- ### A critical view
- Look at:
- Who collected the data (source)
 - Why were they collected
 - How were they collected
 - What was counted
 - When the data were collected
 - How were the data processed after collection (added up, averaged, grouped etc.)
 - How are the data being presented.
 - Always read the footnotes!

- ### Who? - Formal Organizations
- Statistics Canada (National statistical agency)
 - United Nations Statistics Division (national statistics)
 - OECD (NGO)
 - Provincial and Municipal governments
 - Ontario
 - City of Toronto
 - Societies and Associations:
 - Cancer Society; Amnesty International etc.

- ### Sources
- Companies:
 - Sears Canada; Ford etc.
 - Consumer advocacy groups:
 - International Coffee Organization
 - Dairy Farmers of Canada
 - Publications (print and electronic)
 - Annual reports from companies and societies
 - Journal articles, print and electronic
 - Newspapers, print and electronic, such as Toronto Star, Globe and Mail
 - Commercial databases such as Datastream

- ### Sources – Media etc.
- Media
 - Magazines range from National Enquirer to Chatelaine, MacLean's to the Economist
 - Newsfeeds - Reuters to more dubious ones
 - Informal Organizations
 - Wikipedia – variable content
 - User groups – again a range from professional ones to casual ones
 - Blogs, Chatrooms

Good or Quality statistics

- If the figures are from a “reputable” source then usually considered “good”
- But still consider the “Why?” Especially for companies, opinion polls, consumer organizations, advocacy organizations such as Greenpeace, United Way etc.
- Can get question bias
- Can get sample bias

Why were the data collected?

Why were the data collected?

- Government planning at all levels
- Political reasons (good, bad or neutral)
- Academic research
- Commercial reasons (company finances, resellers of data, media, etc.)
- Baseline data (environment, health)
- Advocacy organizations (Greenpeace, Amnesty International, Cancer Society)

How were the data collected?

How were the data collected?

- Census and Statistics Canada surveys: can be considered a “gold standard”
- Academic research
- Companies, product associations
- Media

How - Newspapers, Magazines

- MacLeans University issue
 - “Now in its 16th year, the annual MacLean's rankings assess Canadian universities on a diverse range of factors”
 - “From its inception, Maclean's has consulted with academic experts about the design, composition and methodology of the rankings.”
 - Universities boycotting it now
- Globe and Mail University survey
 - students register themselves therefore self selections
 - More than 32,700 students answered over 100 questions
 - “Our assessment has spread to 49 schools -- up from 37”
- Toronto Life surveys
 - Talk to 100 pedestrians about a topic

What is being Counted?



What is being counted?

Need to be aware of definitions so you can get comparable data over time and place

- If it is a number what does that number represent:
 - a person, a household, a family?
 - Total, single or multiple responses?
 - income or earnings?
 - a weight, kilograms or pounds?
 - a currency, Can\$ or U.S.\$
 - Is it a percentage?
 - Is it in “millions” or does the table have a ‘000 sign?

What is the unit of measurement?

- Is it a rate e.g. Unemployment rate?
- Is it indexed e.g. Consumer price index?
 - What is the base date
 - Has the “basket of goods” changed
- Is it seasonally adjusted?
- Are classifications comparable:
 - NAICS 2000 vs. SIC 1980, definition of pet food may have changed
 - Concordances exist

What is being measured?

Household internet use at home by internet activity

STATISTICS CANADA
CANADA'S NATIONAL STATISTICAL AGENCY

Household Internet use at home by internet activity
(All households)

	1999	2000	2001	2002	2003
	% of all households				
E-mail	26.3	37.4	46.2	49.9	52.1
Electronic banking	8.0	14.7	21.6	26.2	30.8
Purchasing goods and services	5.5	9.6	12.7	15.7	18.6
Medical or health information	15.6	22.9	30.1	32.8	35.6
Formal education/training	9.2	19.0	22.9	24.3	24.9
Search for a job	--	12.2	16.2	18.0	19.6
Travel information/arrangements	--	21.9	27.4	30.4	33.6

... not available for a specific period of time.

Notes: The tables of the Household Internet survey (HUIS) available from 1999 to 2003 are replaced by the tables of the Canadian Internet use survey (CIUS) beginning with 2005. The unit surveyed is now the individual rather than the household, only adults aged 18 years and over were surveyed.

Sources: Statistics Canada, CANSIM, table (for fee) 358-0006 and Catalogue no. 54F00026 (free).

Last modified: 2005-02-18.

Internet use by individuals by type of activity

CANADA'S NATIONAL STATISTICAL AGENCY

Internet use by individuals, by type of activity

	2005	
	All Canadians ¹	Internet users at home ²
	% of individuals	
Internet activity at home		
E-mail	55.6	91.3
Participating in chat groups or using a messenger	23.1	37.9
Searching for information on Canadian municipal, provincial or federal government	31.7	52.0
Communicating with Canadian municipal, provincial or federal government	13.8	22.6
Researching community events	25.0	42.3
General browsing (surfing)	51.2	84.0
Other Internet activity	6.7	10.9

Notes: The Canadian Internet use survey (CIUS) tables beginning with 2005 replace the Household Internet survey (HUIS) tables from 1997 to 2003. The unit surveyed is now the individual rather than the household. Only adults aged 18 years and over were surveyed.

1. Percentage of all individuals, aged 18 years and over.

2. Percentage of all individuals, aged 18 years and over, who responded that they had used the Internet in the previous twelve months for personal non-business use from home.

Sources: Statistics Canada, CANSIM, table (for fee) 358-0130.

Last modified: 2006-11-01.

Find information related to this table (CANSIM tables), Definitions, data sources and methods, The Daily, publications, and related Canadian Statistics tables.

What is the unit of measurement - Geography

- Make sure that if data are from different tables or sources that they are for the same geographic area
 - North America vs. U.S.A.
 - Maritimes vs. Atlantic Canada
 - City of Toronto 1998 and before vs. City of Toronto after amalgamation. In the late 1990's many municipalities amalgamated
 - Prior to 1949 Newfoundland was not part of Canada
 - Nunavut included in the Northwest Territories prior to 1999

Date of the Data!

- Data are often several years old before publication
- There should always be a date that tells you what time period the data are for and the unit of time – monthly, quarterly, annual etc.
- Census data – the income information is always for the previous year so the 2006 census will give income for 2005

Presentation of the data

- Often crucial for the awareness of the value of statistics
- Can be in the form of :
 - Text
 - Tables
 - Graphs and charts
 - Maps

Text: Mackenzie Investments Burn Rate (RRSP season)

The screenshot shows a webpage with a navigation menu on the left containing 'HOME PAGE', 'Can you afford life in 2017?', 'Research', and 'Resources'. The main content area is titled 'What's Your Burn Rate?' and includes a sub-header 'CAN YOU AFFORD to live in 2017?'. A red box highlights the year '2017?' and a blue box highlights the number '41,000' in the text: 'As Canadians move past the statement shock of the holidays and look forward to another year of spending, saving and investing, it's clear that many have money concerns. Is their lifestyle sustainable? Will they be financially comfortable in ten years' time?'. Another red box highlights the text: 'Mackenzie Investments conducted two surveys of 41,000 Canadians in December, to gauge how Canadians spend, save and invest. We found that, while many Canadians think they'll have to cut their spending in the future, there are big, generational differences. In particular, the future looks bright for today's youth!'.

Text: MacKenzie Investments Burn Rate

The research also revealed other interesting points.

1. In ten years' time - will you be able to afford the same lifestyle you enjoy today?

Many respondents don't think so. 37% say they will have to cut back on some of the things they're buying now.

A \$30 bottle of Bordeaux, or a \$15 bottle of Australian shiraz. Both have an aromatic bouquet. Will your brother-in-law really know the difference?

Thirty-two per cent of Canadians do believe they'll have a better lifestyle in ten years, while 24 per cent said they think their lifestyle will be about the same. Furthermore, a large majority (79 per cent) of Canadians think we could face a "consumption crisis" - spending too much and saving too little - if spending habits don't change.

Table: \$ thousands

STATISTICS CANADA
CANADA'S NATIONAL STATISTICAL AGENCY

Radio and television industries, financial and operating statistics (Private conventional television)

	2001	2002	2003	2004	2005
Private conventional television					
\$ thousands					
Total operating revenues	1,910,852	1,900,687	2,152,852	2,122,110	2,207,057
Advertising revenues	1,790,133	1,760,729	1,932,585	1,942,964	2,017,798
Production and other revenues	120,720	140,158	170,218	179,146	189,260
Total operating expenses	1,669,205	1,722,242	1,802,479	1,889,573	1,964,401
Profit before interest and taxes	241,647	178,444	300,324	232,537	242,656
Salaries and benefits	495,270	521,300	542,415	559,006	569,915
number					
Number of employees (weekly average)	7,764	7,868	7,974	8,072	8,202

Notes:
- Private conventional and public and non-commercial television combined equal North American Industry Classification System (NAICS), 2002 - 3122 (television broadcasting).
- This table does not include television channels dedicated to sports, news or movies that are only available to those that subscribe to cable or satellite television. See pay and specialty television table.
Sources: Statistics Canada, CANSIM, table (for fee) 357-0001 and Catalogue no. 56-001-X.

<http://www40.statcan.ca/01/cst01/comm02b.htm>

Table: Weight and Footnote

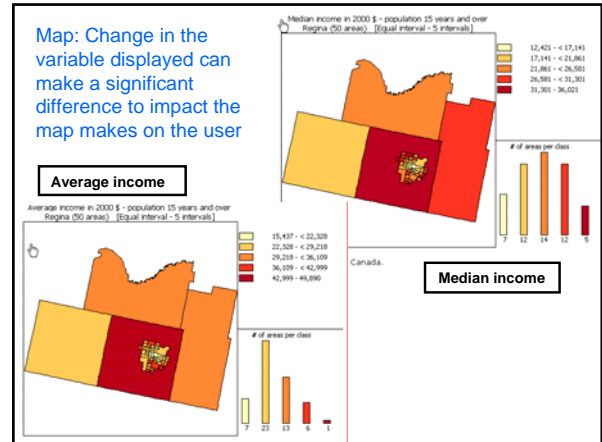
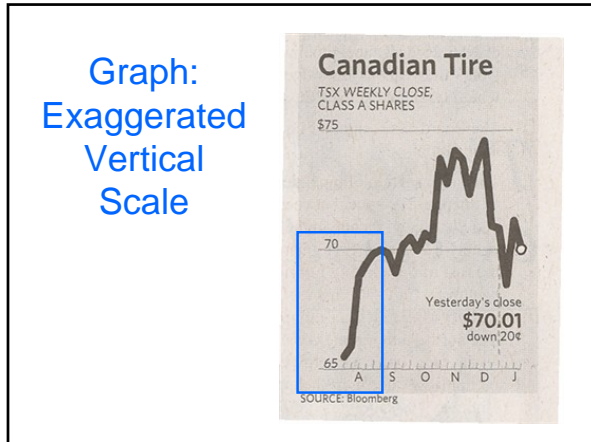
BREAKDOWN OF EXPORTS OF ARABICA AND ROBUSTA FOR COUNTRIES EXPORTING SIGNIFICANT VOLUMES OF BOTH TYPES OF COFFEE NOVEMBER 2005

(in kilo bags)

		Nov-05		Dec-05	
		Nov-05	Nov-05	Nov-05	Nov-05
Brazil	Total	2 980 642	3 745 242	26 634 452	2 242 729
	Other Mids (W)	59 042	118 219	335 550	48 035
	Robusta (D/W)	2 536 224	4 490 180	23 529 511	1 959 334
	Robusta (D/W)	385 377	735 843	2 748 390	243 370
Cameroon	Total	30 000	94 262	767 933	43 746
	Other Mids (W)				0
	Robusta (D/W)				43 746
Congo, Dem. Rep. of	Total	10 000	14 000	132 142	9 823
	Other Mids (W)				8 240
	Robusta (D/W)				1 583
Uganda	Total	250 728	407 741	2 103 966	182 053
	Other Mids (W)				202 769
	Robusta (D/W)				58 284

A blank indicates that the total volume for a W and processed.
D = dry processed.
D/W = dry-wet not processed.
© International Coffee Organization
Next update: 31 January 2007

<http://www.ico.org/prices/m1-a.htm>



HELP!

- See Bibliography
- See Statistics Canada website

Statistics Canada Resources

Statistics Canada Resources

Statistics Canada Resources

Discussion Points

- What are the responsibilities of reference desk staff in evaluating statistics and educating users?
 - Do we review the stats with the user when we direct the user to them or is caveat emptor?
 - Should we direct users to a website or a handout that talks about how to recognize “good” statistics

Discussion points

- What are the chances of people actually reading the necessary information?
- Does our responsibility vary with the type of library we work in?
 - School
 - Public
 - Post secondary

Statistics Canada Resources

The screenshot shows the Statistics Canada website with a navigation menu on the left. The 'Learning Resources' link is circled in red. The main content area is titled 'STATISTICS CANADA CANADA'S NATIONAL STATISTICAL AGENCY' and features a 'Table of Contents' section with links to 'Acknowledgements', 'About Statistics: Power from Data!', and 'Inside the world of Statistics Canada'. Below this is a section for 'Data, information and statistics' with links for 'Definitions', 'Examples', 'Exercise', and 'Answers'. A 'Data collection' link is also present.

<http://www.statcan.ca/english/edu/power/toc/contents.htm>

Statistics Canada Resources

The screenshot shows the 'Definitions, data sources and methods' page on the Statistics Canada website. A red circle highlights the introductory text: 'Our purpose is to provide information that will assist you in interpreting Statistics Canada's published data. The information (also known as metadata) is provided to assist your understanding of the basic concepts that define the data including variables and classifications; the underlying statistical methods and surveys; and key aspects of the data quality. Direct access to questionnaires is also provided.' Below this are sections for 'Surveys and statistical programs' and 'Standard classifications'.

<http://www.statcan.ca/english/concepts/index.htm>

Statistics Canada Resources

The screenshot shows the 'Using the data' page on the Statistics Canada website. A red circle highlights the 'Reading statistical tables' section. The text includes: 'Things to note when reading a table include: Table: Does it reflect the table's actual contents? Time Period: Is the period covered the actual period you require? Column heading: Do you want the total or individual breakdowns? Does the table present various levels of geography? Units: Is it in hundreds, thousands or other? Value Indicator: Is it measured in dollars or volume units or as an index? Are the data seasonally adjusted? Are the data in constant or current dollars? Period, Subject Area Detail: Do you want a single figure, a subtotal or a total? Is it provided? Totals: Are they sums or averages? Be certain you have the figures you want. Quite often, monthly figures are accompanied by year-to-date figures, in which case the December figures may be, in fact, annual totals. And, always check the column headings and the subtitles carefully to be sure you are clear on the units used (the numbers may be in thousands or millions).'

<http://www.statcan.ca/english/freepub/11-533-XIE/2005001/using/reading.htm>

Lies, Damn Lies and Statistics!

(attributed to Disreali 1804-1881)

Scepticism about statistics has been around for a long time – need to be a critical thinker!

What should we look at to get some idea of the validity and reliability of the statistics we or our user have found?

Sources (Who) (adapted from Rice, 2006)

<i>Formal Organizat.</i>	<i>Publications</i>	<i>Media</i>	<i>Informal Organizat.</i>	<i>Individuals</i>
National Govt.	Books	T.V.	Special Interest	Statisticians
Local Govt	Journal Art.	Magazines	E-Mail	Experts
Universities	Reports	Radio	User groups	Teachers
Companies	Newspapers	Newsfeeds	Chatroom	Colleagues
Non-Govt Organizat.	Commercial websites	Open Repositories	Web Pages (Wikipedia)	Librarians
Societies		Opinion Polls	Blogs	Family

How were the data collected?

- Census and Statistics Canada surveys
 - Usually a lengthy user guide that gives you details of the methodology <http://www.statcan.ca>
 - Structured questionnaire with carefully phrased questions e.g. Census form
 - Selected sample – who were selected and why, which populations were over or under sampled e.g. some native communities “opt” out of the census
 - How and when it was carried out – personal interview, telephone survey, web survey. What the follow-up was to get responses from missed respondents.

How were the data collected?

- Academic research
 - Usually can get methodology from researcher
 - May be mentioned in book or article
 - May be web-link to method and data
- Companies, product associations
 - May be somewhere on the website e.g. <http://www.ico.org>
 - May not give much detail
- Media often only give “source” and no details e.g. Statistics Canada

Internet use by individuals by type of activity

CANADA'S NATIONAL STATISTICAL AGENCY

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Lesson 3: whenever possible, go back to the original data collector.