

# BC Stats: Past, Present and Future

GovInfo Day  
2018-04-20

## About BC Stats

### Who We Are

- The central statistical agency for the Province of British Columbia
- Function in legislation since 1894
- Operate under the legal authority of the *Statistics Act*, which provides a legislative mandate to....

### What We Do

- Collect, analyze, and distribute statistical information on B.C.
- Assist government with their statistical activities
- Co-ordinate statistical activities between the Province of B.C. and Statistics Canada

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The Act also provides statutory protection of the privacy and security of data we collect



## The Integrated Data Division

### BC Stats



Contributes to the National Statistical System and supports core government functions.

### Data BC



Provides the public with open access to the B.C.'s anonymized data sets.

### Data Innovation



Brings de-identified data together for analysis in a safe setting.

### Data Partnerships



Gains insight into B.C.'s most pressing public policy issues and increases cross-government analytic capacity.

BC Stats is also part of the Integrated Data Division, within the Ministry of Jobs, Tourism and Technology.

There are four functions:

- BC Stats
- Data BC (managing the Province's open data portal and other open data assets)
- Data Innovation (a central service that facilitates data linkages for research purposes)
- Data Partnerships (supporting analysis of cross-government priorities)

## BC Stats: What We Do

### *What we do:*

- Still the same

### *How we do it:*

- Has changed
- Will continue to change



The bulk of our work – the collecting, analyzing, and distributing statistical information about B.C., and assisting with statistical activities – is primarily for B.C. government ministries.

We also work closely with Statistics Canada on their statistical programs. We, along with the other provinces and territories, have the opportunity to participate on committees that develop statistical research.

We also work with other public agencies in B.C., such as crown corporations, agencies, and education institutions. We've also done work for and in collaboration with other jurisdictions, such as the Yukon Public Service Commission and the Manitoba Bureau of Statistics

And we also provide access to statistical information to the business community, academic researchers, and the general public.

## So what has brought about this change?

- Tightening budgets
- Technological advances
- Big Data
- Demand for statistics is rapidly increasing
- User's needs are becoming more complex and individualised

Source: OECD Statistics Newsletter, November 2016

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Source:

Anu Peltola, Eoin McCuire, and Peter van de Ven (2016) ["Value of Official Statistics: Convincing our stakeholders, measuring value of statistics"](https://issuu.com/oecd-stat-newsletter/docs/oecd-statistics-newsletter-11-2016/3?e=19272659/40981228), *The OECD Statistics Newsletter*, Issue No.65, November 2016.

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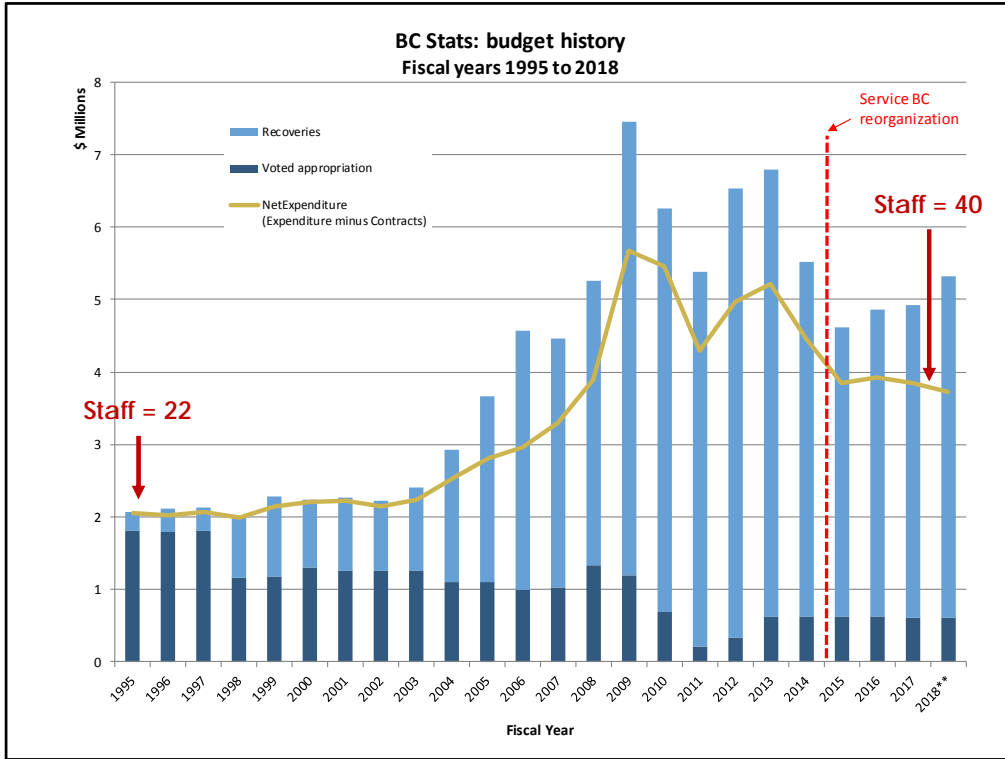
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## BC Stats: Business Model

### *Business model:*

- Transition from voted appropriation to cost recovery
- Internal consulting service

### *Projects 2017/18:*

- 160 projects
- Value between \$1,000 and \$1.2 million
- Median ~\$10,000



The tight budget—the reduction in the voted appropriation—led to BC Stats evolving to a cost-recovery model, where ministries and other public sector agencies pay us directly for the services we provide. In essence, we operate as an internal statistical consulting service.



## BC Stats: Who Are Our Clients?

### *Primary client groups:*

- B.C. government ministries
- Statistics Canada

### *Other client groups:*

- crown corporations
- public agencies and education institutions
- business community & academics
- public



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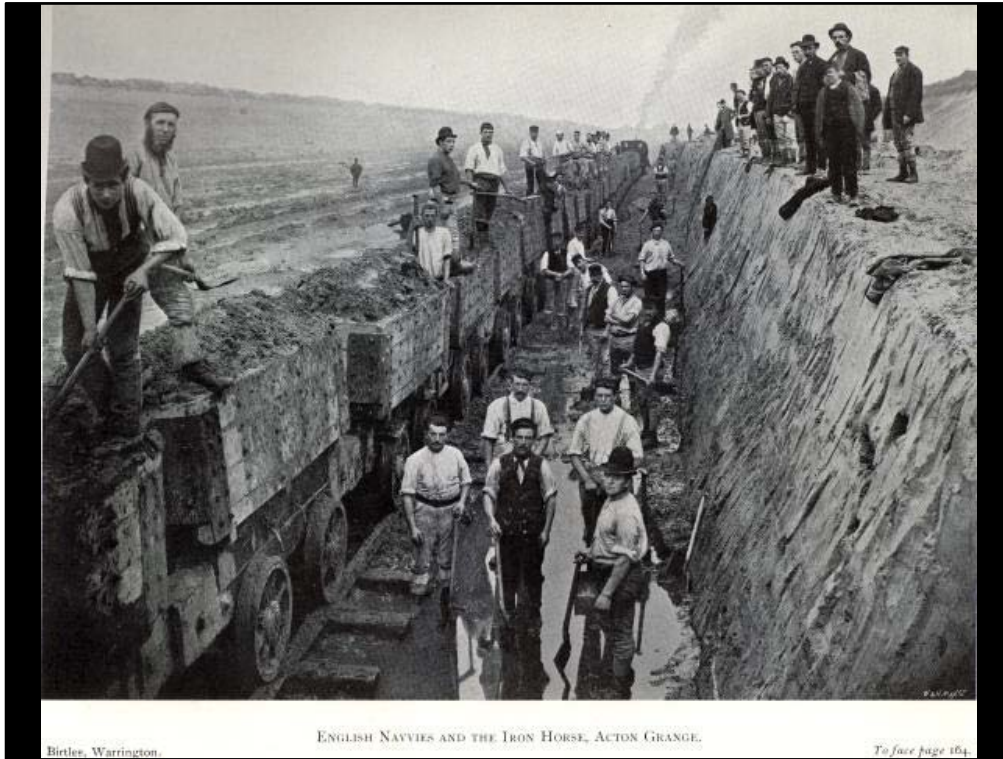
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The impact of technology:

These fellows are “navvies” – the men who dug the canals that criss-cross Britain, which were an important part of the industrial revolution

The idea of canals was an old one, and the use of the steam train to move the dirt was an innovation that helped

## Technology is an accelerator



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But when it came to building the Panama Canal a few years later, human effort was insufficient – and the harnessing of steam power in a new way, with the steam shovel, was the technology that accelerated canal building.

The same is true with information technology – it can be used to accelerate the use of data, but it is not the solution.

### **Jim Collins, Good to Great:**

“Technology as an accelerator, not a creator, of momentum”

“Technology-induced change is nothing new. The real question is not, What is the role of technology? Rather, the real question is, How do good-to-great organizations *think differently* about technology?” [p.147]

On Nucor’s success: “The primary factors ... were the consistency of the company, and our ability to project its philosophies throughout the whole organization, enabled by our lack of layers and bureaucracy.” [p.156]

[Jim Collins, *Good to Great*]

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## The big data deluge



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### The Three Vs of Big Data

- Volume
- Variety
- Velocity

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### THE BIG DATA DELUGE

The UPC bar code was introduced in the 1980s as computerized inventory and point-of-sale scanners were being adopted. This computerization was designed to improve business processes – instead of the clerk at the checkout punching in every price, the scanner did that work. It also allowed stores to better track sales and inventory.

Since then there has been an exponential growth in data collected as part of business process. And similar expansions in how that data is used. The UPC codes have revolutionized supply chain management, and are used by stores to understand consumer behaviour. It's not just "how many bags of chips are on the shelves?" or "how many bags of chips do we need to order?" but "what do shoppers buy along with their chips?"

And retailers are using information about what we buy to try to sell us more stuff – think of Amazon's "frequently bought together" and "customers who viewed this item also viewed" entries.

And simultaneously, we have more accessible technology to work with the data (i.e. powerful desktop computers with lots of storage and networks to share the information)

### IN THE PUBLIC SECTOR CONTEXT

Outside sources: Statistics Canada, etc

Inside sources: administrative data from program areas

Original sources: creating more data to meet information needs (e.g. employee and citizen surveys)



Open data

In parallel with big data

Public agencies are being more transparent by releasing more and more data, and making it available in formats that can be read by any computer. This supports transparency and accountability, and also provides a common good by allowing outside entities to use publically-collected data and information in other applications.

BC Stats is also moving to adopting “open development”, where the code that underlies our analysis is posted to the BC Government’s page on github. A full list of the repositories that BC Stats is maintaining is here:

<https://github.com/bcgov/BCStats>

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Canada

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Statistics Canada encourages the downloading and reuse of its data. Full dataset downloads are available in CANSIM - see the download tab on any CANSIM table. Please note that the high volume harvesting of data using data scraping techniques or automated crawlers which do not conform to industry best practices cannot be supported. When such activity is detected, continued access to our online content will be denied. If you require assistance or for further information please [Contact us](#).

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 All of these words   
[Combine series](#) [Advanced Search](#)

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Subject Survey

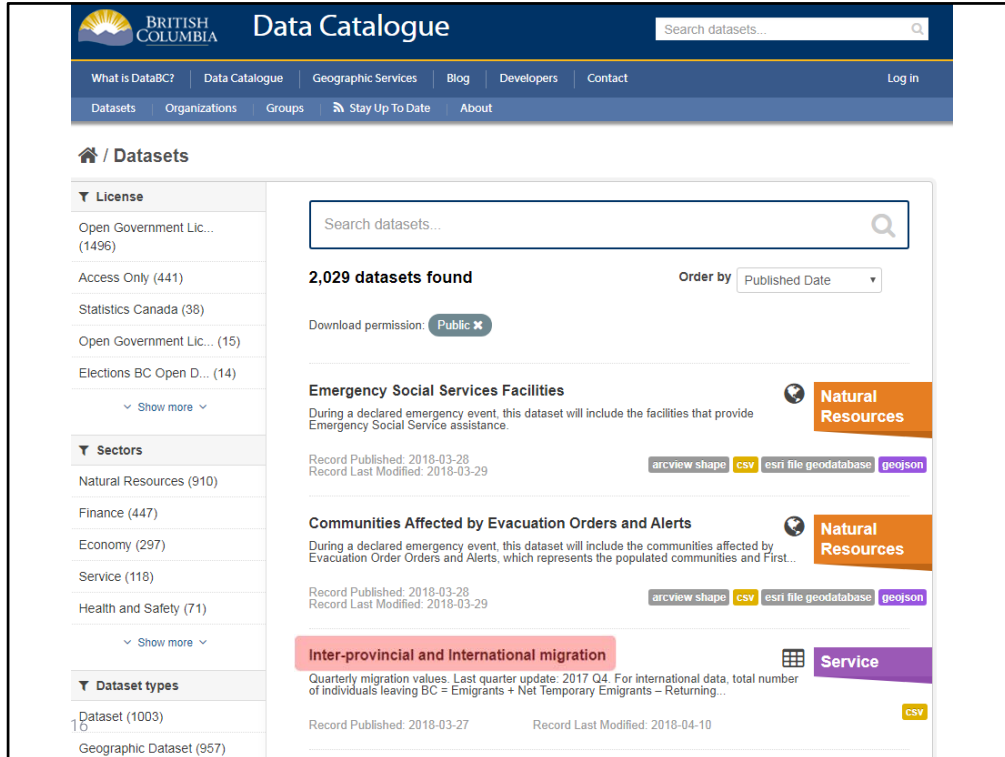
[Aboriginal peoples](#) [Income, pensions, spending and wealth](#)  
[Agriculture](#) [Information and communications technology](#)  
Business, consumer and property services [International trade](#)

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## Open data

Open data has had an impact on BC Stats—data we used to disseminate (e.g. Statistics Canada’s data) is now freely available directly from the source.





## DataBC Catalogue

And the B.C. government's own open data catalogue has freed up a wide range of administrative records

-- Emergency Social Services Facilities

BC Stats is now starting to use the catalogue as a repository for our data sets, AND as a repository for curated sets of Statistics Canada data; i.e. those that are specifically relevant to British Columbia

-- Inter-provincial and international migration

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### The Moneyball effect

“Moneyball” (Michael Lewis’ book and the movie) tells the story of how the Oakland A’s in the early 2000’s used information to compete with other teams with much higher revenues, and the ability to hire star players. The A’s adopted an approach based on information and analysis to identify which players were undervalued in the market. Their use of data analytics gave them a competitive advantage.

This story has been repeatedly used to demonstrate the value of information and analysis in a variety of contexts.

#### Examples:

Ilan Mochari, “The New Moneyball—and Why it Matters for Business”, Inc. magazine  
<http://www.inc.com/ilan-mochari/the-new-moneyball.html>

Harvard Business Review, “Moneyball and the Talent Mismatch Facing Business”  
<https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiWucSAxMTQAhXHgFQKHTpID-kQFggdMAA&url=https%3A%2F%2Fhbr.org%2F2011%2F09%2Fmoneyball-and-the-talent-mismatch&usg=AFQjCNHKhZmbekoYFTBmy5ToxGDMERCrA&sig2=4gSCOqixyvR7SaBeqzBbQ>

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## Expectations

- Easy answers
- Looking for tailored products
- “How do we not have data on this?!”
- “I saw a thing on the web...why don't we have something like that?”

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## 2018 Toronto Blue Jays Select Team ▾

Summary **Stats** Schedule Pitcher Usage Depth Chart

Batting Leaders SP Leaders RP Leaders Fielding Leaders

MLB/MiLB Team Select:  2018 MLB Stats Select Season:

**Batting Stats Leaders**

Name	Age	G	PA	HR	SB	BB%	K%	ISO	BABIP	AVG	OBP	SLG	wOBA	wRC+	BsR	Off	Def	WAR
Yangervis Solarte	30	15	66	4	0	16.7%	12.1%	.278	.279	.296	.409	.574	.418	167	-0.2	5.0	-1.0	0.6
Luke Maile	27	6	25	0	1	16.0%	20.0%	.190	.625	.476	.560	.667	.529	242	0.3	4.4	0.4	0.6
Kevin Pillar	29	17	68	1	3	4.4%	19.1%	.169	.412	.338	.368	.508	.381	142	1.1	4.5	-2.0	0.5
Teoscar Hernandez	25	4	20	1	1	5.0%	25.0%	.421	.538	.421	.450	.842	.545	253	0.2	3.7	-0.2	0.4
Josh Donaldson	32	12	54	3	1	14.8%	25.9%	.217	.276	.239	.352	.457	.352	122	0.5	1.9	0.3	0.4
Curtis Granderson	37	16	51	2	0	13.7%	25.5%	.227	.414	.318	.412	.545	.417	166	-0.5	3.5	-1.3	0.4
Steve Pearce	35	13	41	3	0	7.3%	12.2%	.316	.300	.316	.366	.632	.428	173	0.1	3.6	-1.6	0.3
Justin Smoak	31	17	79	2	0	15.2%	27.8%	.185	.357	.262	.380	.446	.362	129	-0.4	2.3	-1.7	0.3
Aledmys Diaz	27	15	53	4	1	3.8%	17.0%	.280	.216	.240	.283	.520	.341	114	-1.0	-0.1	0.3	0.2

Example of what's driving expectations

[www.fangraphs.com](http://www.fangraphs.com)

2018-04-19

NHL stats:

English:

<http://www.nhl.com/stats/player?aggregate=0&gameType=2&report=skaterssummary&pos=S&reportType=season&seasonFrom=20162017&seasonTo=20162017&filter=gamesPlayed,gte,1&sort=points,goals,assists>

Francais:

<http://www.nhl.com/stats/fr/player?aggregate=0&gameType=2&report=skaterssummary&pos=S&reportType=season&seasonFrom=20162017&seasonTo=20162017&filter=gamesPlay ed,gte,1&sort=points,goals,assists>

## BC Stats: an evolution

### *1995:*

- BC Stats had only data pipe to Statistics Canada
- Statistics Canada printing paper copies of all reports and data tables
- Web sites are new; data tables as PDFs of paper version

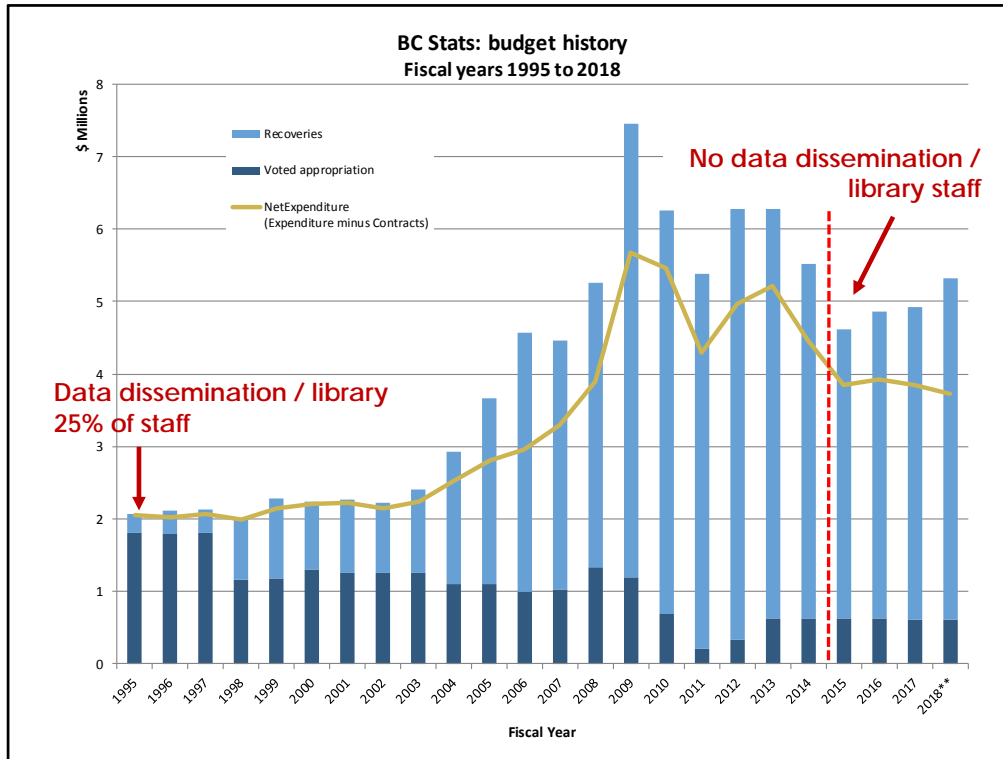
### *2018:*

- Statistics Canada: CANSIM now free and open licence
- Statistics Canada: all electronic publication on web
- B.C. Government has adopted open data
- Analytic and web-based tools are in a state of constant improvement



Final bullet:

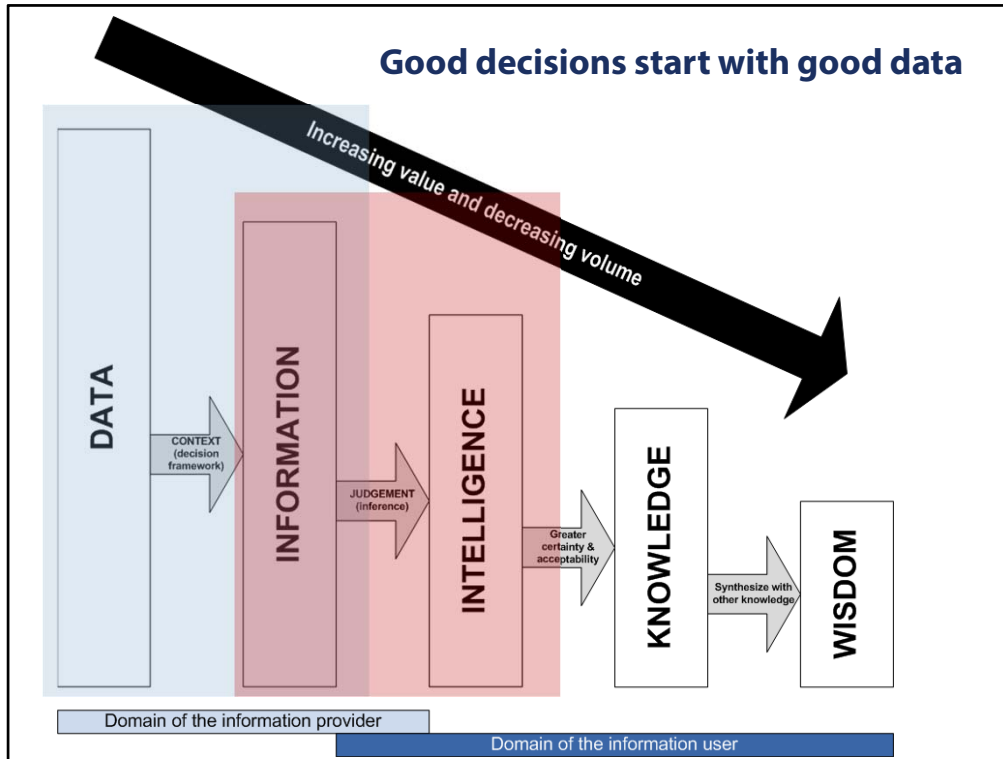
- Open source statistics tools (R) have pushed both what's accessible and what's possible



Back when BC Stats had 22 staff in the mid-nineties, roughly a quarter of the staff were in our data dissemination and library function—handling physical media, responding to queries from other government staff.

With our reorganization in 2015, what remained of the Data Dissemination unit moved to another part of our division, and they took on web-based communication for the entire division (in addition to BC Stats). We continue to disseminate data and information reports, we just do it differently now





## The Value of Statistical Analysis: Data to Wisdom

Source: Modified from V.P. Barabba, "Through a Glass Less Darkly", Presidential Address at the Annual Meeting of the American Statistical Association, Aug. 7, 1990.

All organizations – government, non-profits, businesses – need better data in order to make better decisions. They are on the right—the "information users"

These decisions will lead to better outcomes and more effective use of resources

BC Stats is on the left side of the diagram – the "information provider. We collect data, compile it into information, and add analysis that turns it into intelligence

## What will the future hold?

- Tightening budgets
- Technological advances
- Big Data
- Demand for statistics is rapidly increasing
- User's needs are becoming more complex and individualised

Source: OECD Statistics Newsletter, November 2016

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More of the same!

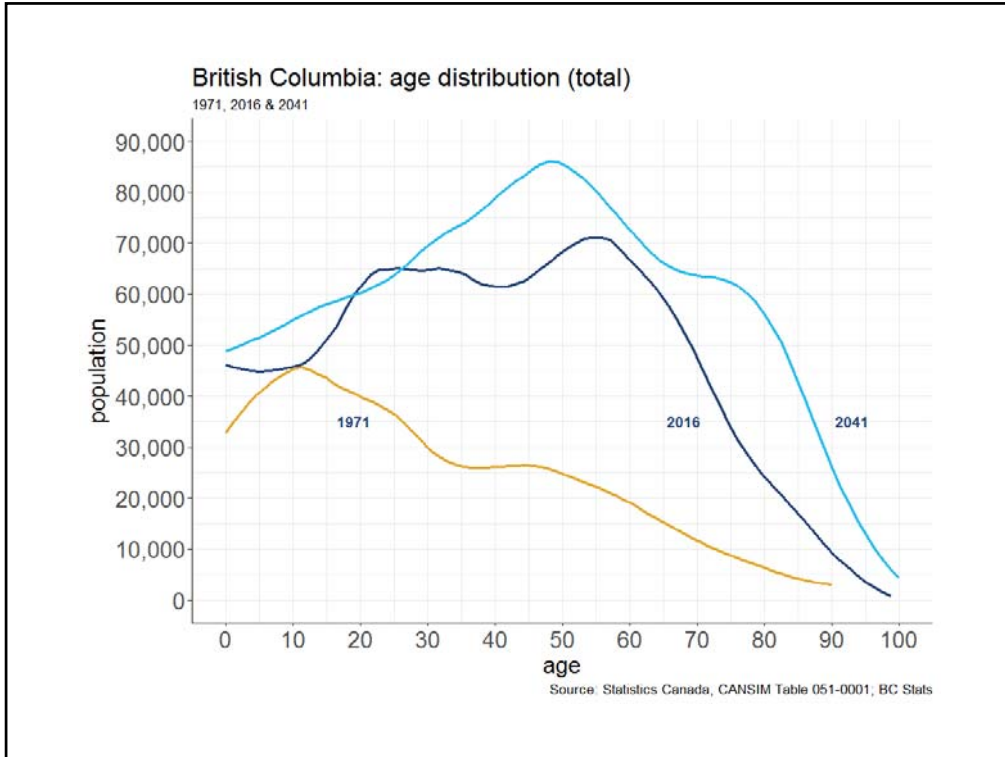
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This chart shows the shape of B.C.'s population, in terms of the distribution of people by age.

Data source: Statistics Canada, BC Stats



Tangible cost savings of using administrative data – our work with Elections BC prior to the 2013 provincial election saved the taxpayers of B.C. \$28 million.

The Legislative Committee responsible had asked the Chief Electoral Officer for an estimate to do a full door-to-door enumeration prior to the general election. The Chief Electoral Officer responded with evidence that BC Stats provided that it would be possible to target particular groups and neighbourhoods where there was a greater probability of finding eligible voters who were not on the list, or whose information was not accurate.

The estimate for a full enumeration was \$35 million, and the targeted enumeration was \$7 million – a difference of \$28 million

For this work, the analysis focussed on specific geographies. This was based on postal codes where there were more than 2 people with different last names at the same address (a sign that perhaps someone has moved out and not changed their address), postal codes with low turnout rates, and Census Tracts with high mobility rates (based on the long-form of the 2006 Census).

**ELECTIONS BC**  
A non-partisan Office of the Legislature

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HOME REGISTER EMPLOYMENT LINKS CONTACT SITE MAP

Home > Resource Centre > Statistics

**Statistics**

Data files on this page are licensed under the Elections BC [Open Data Licence](#).

- [Who heads to the polls? Exploring the demographics of voters in British Columbia - March 2010](#)
- [General Election Statistics in Comparison: 1928-2013](#)
- [Advance Voting Turnout - 1996 to 2013](#)
- [BC Voter Participation: 1983 to 2013](#)
- [Voter Participation by Age Group: 2013](#)
- Summary of Voter Participation Statistics - May 16, 2001 Provincial General Election is available in [pdf format](#) and [Excel](#)
- BC Stats Electoral District Profiles
  - [Electoral District Profiles \(2011 Census\)](#)
  - [Electoral District Profiles \(2006 Census\)](#)
  - [2001 Electoral District Profiles](#)
  - [1996 Electoral District Profiles](#)

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MAPS

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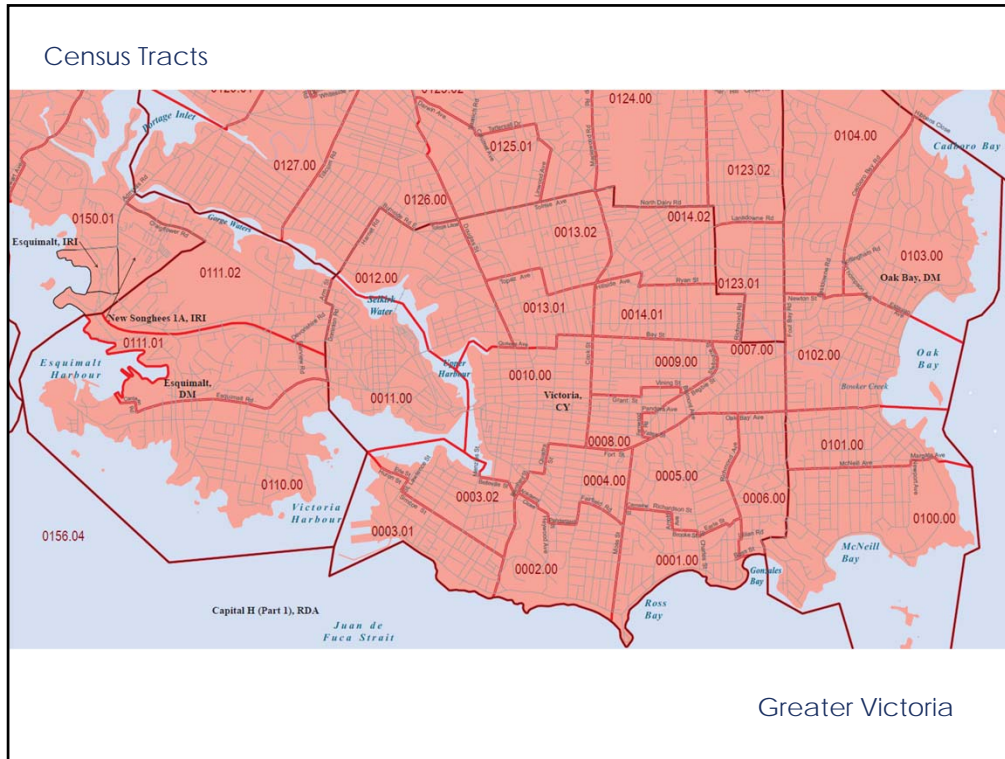
Reports

Statistics

Where our reports live

On our client websites (if they chose to release them)

<http://www.elections.bc.ca/index.php/resource-centre/statistics-and-surveys/>



There are 68 Census Tracts in the Victoria Census Metropolitan Area (basically, the urbanized areas of the CRD – CMA 935).

**Part A - Short definition:**

Area that is small and relatively stable. Census tracts usually have a population between 2,500 and 8,000 persons\*. They are located in census metropolitan areas and in census agglomerations that have a core population of 50,000 or more.

\*average of 4,000

See: Statistics Canada

<http://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo013-eng.cfm>

**Census tract profile for 0003.01 (CT), Victoria (CMA) and British Columbia**

Download table (Help): [CSV](#) [TAB](#)

Select a view:   Or:

All data	Map	Map	Map
	0003.01 (CT)	Victoria (CMA)	British Columbia (PR)
<b>Population and dwelling counts</b>			
Population in 2006 <sup>1</sup>	5,546	330,088 <sup>±</sup>	4,113,487 <sup>±</sup>
Population in 2001 <sup>1</sup>	5,508	311,902 <sup>±</sup>	3,907,738 <sup>±</sup>
2001 to 2006 population change (%)	0.7	5.8	5.3
Total private dwellings <sup>2</sup>	3,601	155,224	1,788,474
Private dwellings occupied by usual residents <sup>3</sup>	3,347	145,388	1,642,715
Population density per square kilometre	5,261.4	474.7	4.4
Land area (square km)	1.05	695.35	924,815.43
<b>Age characteristics  Figure</b>			
Total population <sup>4</sup>	5,545	330,090	4,113,485
0 to 4 years	175	13,960	201,880
5 to 9 years	160	14,970	220,700
10 to 14 years	115	17,535	257,025
15 to 19 years	125	19,890	273,560
20 to 24 years	365	22,910	265,905
25 to 29 years	475	20,065	245,275
30 to 34 years	410	19,000	254,575

Census Tract Profiles

<http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/prof/92-597/index.cfm?Lang=E>

For 0003.01

<http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/prof/92-597/P3.cfm?Lang=E&CTuid=9350003.01>

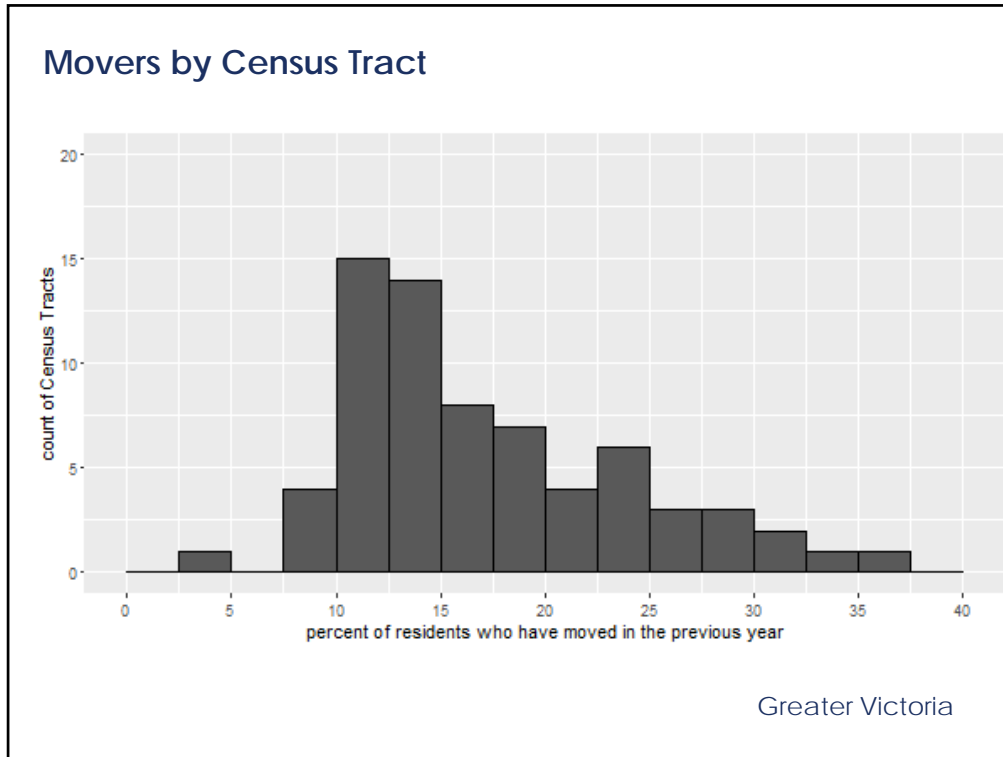
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For more general information derived from the Census:

<http://www12.statcan.gc.ca/census-recensement/2011/as-sa/fogs-spg/Facts-pr-eng.cfm?Lang=Eng&GC=59>

These pages give a good summary overview of what the Census and National Household Survey tell us about a province or territory





There are 68 Census Tracts in the Victoria Census Metropolitan Area (basically, the urbanized areas of the CRD).

This histogram shows the range of mobility status (1 year) of the 68 census tracts.

See: Statistics Canada <http://www12.statcan.ca/census-recensement/2006/rt-td/mm-eng.cfm>

Where did this person live 1 year ago, that is, on May 16, 2005?

- Lived at the same address as now
- Lived at a different address in the same city, town, village, township, municipality or Indian reserve
- Lived in a different city, town, village, township, municipality or Indian reserve in Canada
- Lived outside Canada

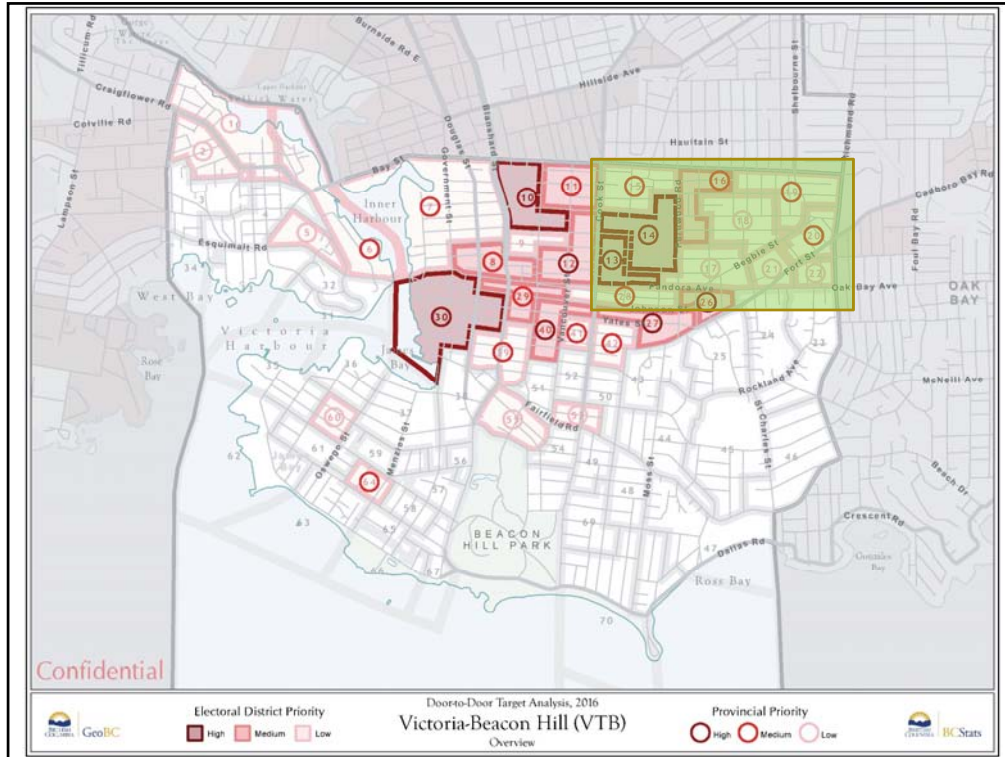
**Non-movers** are persons who, on Census Day, were living at the same address as the one at which they resided one year earlier.

**Movers** are persons who, on Census Day, were living at a different address than the one at which they resided one year earlier.

**Non-migrants** are movers who, on Census Day, were living at a different address, **but** in the same census subdivision (CSD) as the one they lived in one year earlier.

**Migrants** are movers who, on Census Day, were residing in a different CSD one year earlier (**internal migrants**) or who were living outside Canada five years earlier (**external**

migrants).

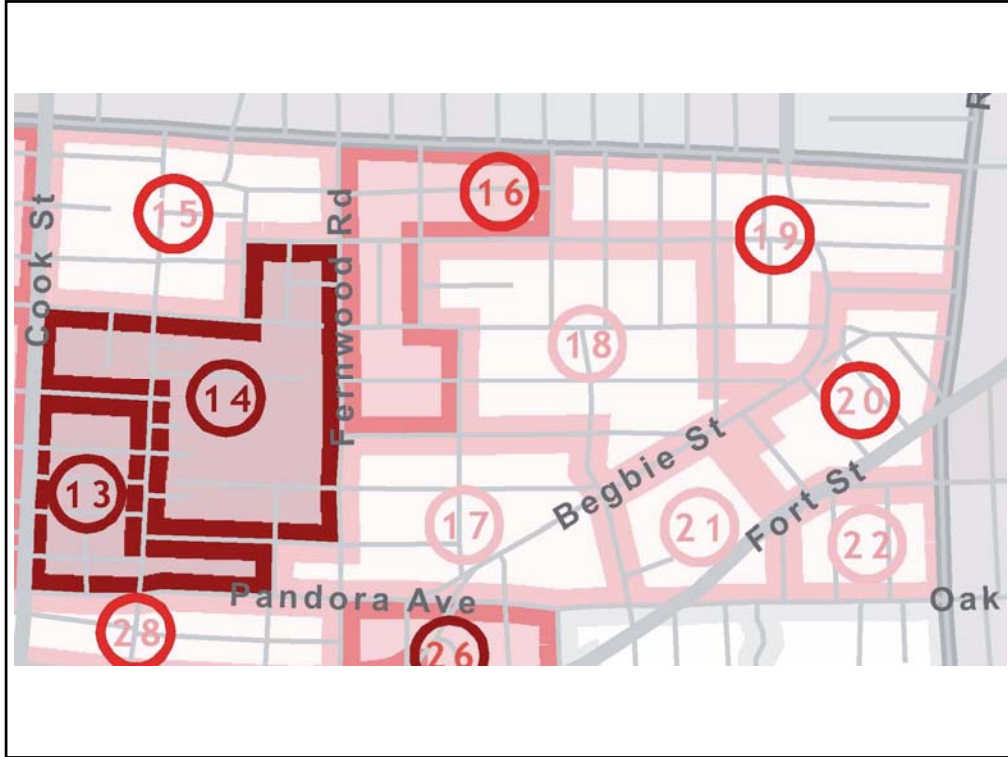


Here's one example, from the riding of Victoria – Beacon Hill

There are 70 voting areas, small administrative units defined by Elections BC.

By stacking the voter list quality estimation, based on the administrative records, with the Census information about mobility and other factors that are associated with turnout, we created maps that highlight the areas where the accuracy of the voters list is the poorest.

Let's focus on the Fernwood neighbourhood (shading) ...



Victoria – Beacon Hill, zoomed in on the Fernwood area.

Here we can see that in a neighbourhood like Fernwood, there are three levels of opportunity—high (13 & 14), medium (16) and low (15, 17+)