Population Projections for Community Members

PART 1: Why provide an easy to understand method based on open data to create verifiable population projections ?

(by Warren Munroe, June 17, 2013)

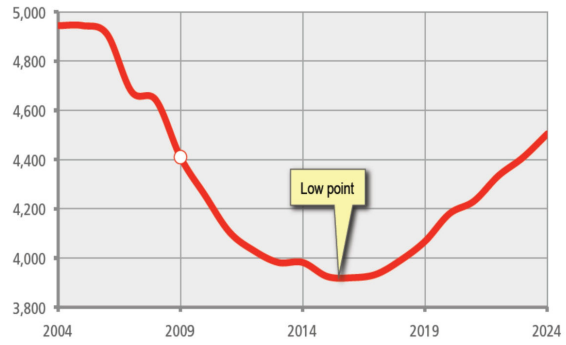
On Thursday, June 6, 2013, I made a presentation entitled "Population Projections for Community Members" at the 2013 Congress of Humanities and Social Sciences, held in Victoria BC as part of the Methods for Projections session hosted by the Canadian Population Society.

The following is a summary of the introduction describing why the Population Projection Project was developed, namely to address questions posed by community members about how projections of declining enrolment (used to justify public school closures) were created.

The introduction describes the results of searches for 1) the historical estimates and 2) the projection methods used to create population numbers that were in turn used to justify the recommendation to permanently close the only high school in the Town of Qualicum Beach.

Here is the chart representing the enrolment with a forecast for the Qualicum School District shown to community members in the Town of Qualicum Beach on October 2, 2010.

FIGURE 1. Qualicum School District Enrolment Chart provided by consultant

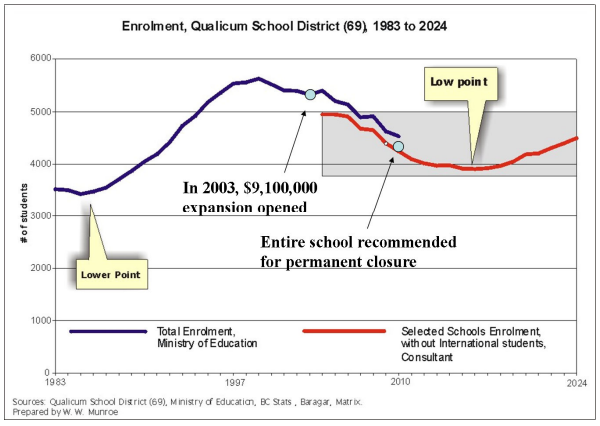


It looks as though the enrolment will be dropping to less than half, less than a quarter, maybe less than 20% of its former high.

Taking a closer look you will notice that the vertical axis starts at 3,800 students. Also, the historical enrolment is provided for the years 2004 to 2009; therefore, I asked for the historical enrolment numbers at least as far back as when the high school was first opened.

The historical enrolment numbers from the Ministry of Education and the School District administration staff are shown in the following chart. Notice that the enrolment was lower when the High School was first opened than the forecast low.

FIGURE 2: Qualicum SD Enrolment 1983 to 2024



The difference between the red and blue line is because two small schools and the international students were not included in the consultant's report.

Also, 7 years prior to the recommendation to close the high school, the same high school had a $9.1 million expansion open.

FIGURE 3: $9.1 million expansion opened 7 years prior to closure recommendation

You can see the importance of examining population/enrolment numbers. Now let's take a look at the project methods, including the methods used to estimate population since the last census.

The consultant's report referred readers to BC Statistics website for post censal population estimation methods. In October 2010, BC Statistics website provided to the public, population estimation methods published in1998.

> "1998 Generalized Estimation System (GES) Small Area Population Estimation Methodology" (BC Stats website, October 2010)

I asked the new Executive Director of BC Statistics about the changes to the methods that had been made since 1998. The new Executive Director replied:

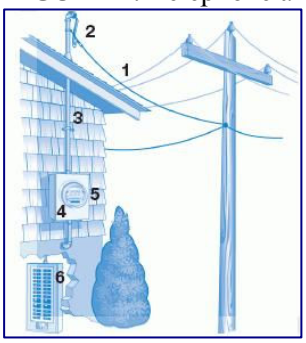
> "An updated (long overdue) GES methodology paper is scheduled for release at the end of August." (Executive Director, A. Cocco, August 8, 2011)

In the updated 2011 GES methods paper, many of the changes since 1998 were described including the use of telephone lines to be used along with electrical lines as indicators of population change:

> "After extensive analyses it was later determined that telephone line data (Telus) was a suitable indicator and was subsequently added to the model in 2000."
>
> (GENERALIZATION ESTIMATION SYSTEM (GES) Small Area Population Estimation, Method and Error Evaluation, August 2011, (GES 2011), P. 8)

The analysis of telephone line data was "extensive"? Why did BC Statistics decide not to share the "extensive analyses"? What was BC Statistics' reasoning for not updating the GES methods to show Telus data was a suitable indicator and subsequently added to the model?

FIGURE 4: Telephone and Electrical line hookups are not independent



As you know, (speaking to an audience of population projection methods people many of whom teach statistical methods) multivariable regressions require that the *independent* indicators be *independent*. Telephone and electrical lines are not independent indicators; therefore, they should not have been used together to estimate population change. Also, the rapid increase in the use of cell phone in the 1990s, particularly among young urban adults, made this an unsuitable indicator.

FIGURE 5: BC Statistics' "extensive analyses" and use of telephone lines missed young adults

Other changes, some of which were included in the 2011 GES methods paper were: splitting municipalities into two groups (2002); running separate regressions; applying compound growth to one group (until 2004); removal of Old Age Security data (2003), telephone data were not used after 2008.

Concerns about BC Statistics changing the methods many times without informing the public, as well as concerns about the use of telephone along with electrical line hookups to estimate population were raised with community members, the School District admin staff, the elected Member of the Legislative Assembly, as well as the Minister responsible for BC Statistics, Margaret MacDiarmid, Minister of Labour, Citizens' Services, and Open Government.

On November 22, 2011, the Assistant Deputy Ministry replied quoting "a 2005 feasibility study by Statistics Canada" to assert the "integrity" of BC Statistics.

> "The integrity and objectivity of the population estimation procedures and methods are guarded by BC Stats, and the quality of the resulting estimates is unparalleled. Statistics Canada, Canada's national statistics agency, holds in high regard the methodology and estimates produced by BC Stats:

> In a 2005 feasibility study prepared by Statistics Canada (STC) for Finance Canada, the agency concluded that:
>
> "…population estimates produced by British Columbia were found to be of better quality when compared with Statistics Canada's methods.""
>
> (Betty Jo Hughes, Assistant Deputy Minister, Ministry of Labour, Citizens' Services, and Open Government, November 22, 2011)

How could the use of telephone and electrical landline hookups be better than Statistics Canada's methods? This should be interesting.

I requested a copy of the 2005 feasibility study or at least the title of the study, many times. In May 2012, having not received any reply, I made a request through Freedom of Information for the citation for the quote used to assert BC Statistics' "integrity". The request was denied June 22, 2012:

> "Please be advised the records [title / copy of feasibility study] you requested are withheld in their entirety pursuant to section 16 (Disclosure harmful to intergovernmental relations or negotiations) of FOIPPA."
>
> (Cindy Elbahir, Manager, Central Agency Team, Information Access Operations, June 22, 2012)

FIGURE 6: Statistics? Reference to reality or…

What? There is obviously a difference between the Ministry's definition of "integrity" and the dictionary definition. Integrity means "the quality or state of being complete or undivided". Complete means "having all necessary parts, elements, or steps; brought to an end : concluded" Not only is a necessary element, (the reference for the quote) missing, but the need to address "integrity" is not concluded.

Four days prior to being informed that disclosure of the citation for the quote used to assert the "integrity" of BC Statistics is "harmful", Statistics Canada provided the 2005 feasibility study, titled "The Equalization Program and the Property Tax Base: Feasibility Study Conducted by Statistics Canada". Of course, the people working at Statistics Canada wanted to know more about the use of telephone along with electrical lines as well. The 2005 feasibility study (conducted from September 2004 to February 2005) states:

> "BC Stats produces its CSD-level population estimates using regression methods with specific symptomatic indicators (number of residential electrical connections and Old Age Security (OAS) recipients). For more details on the methodology, see Generalized Estimation System (GES), Small Area Population Estimation Methodology published by BC Stats in 1998 and available on their website."
>
> ("The Equalization Program and the Property Tax Base: Feasibility Study Conducted by Statistics Canada", February 28, 2005 (study conducted Sept. 23, 2004 to Feb. 28, 2005) received June 18, 2012)

BC Statistics did not tell Statistics Canada the truth about telephone, along with electrical, line data being used to estimate population.

Now we know why Statistics Canada stated that BC Statistics methods are better than Statistics Canada's methods. Now we know why the disclosure of Statistics Canada's "assessment" of methods is considered "harmful" to intergovernmental relations and negotiations.

It is reasonable to consider that BC Statistics, and the Ministry did not want Statistics Canada to find out that BC Statistics was using telephone along with electrical line data to estimate population

because if Statistics Canada were told the truth, Statistics Canada's would know that BC Statistics' methods were not as good as Statistics Canada's.

It is also reasonable to consider that BC Statistics, and the Ministry did not want Community Members to find out that BC Statistics was using telephone along with electrical line data to estimate population because if Community Members were told the truth, Community Members have to reject BC Statistics findings.

Nonetheless, the fact remains, Community Members addressing public school closures, as well as Statistics Canada addressing methods for equalization payments were given incorrect methods to accompany population numbers.

The Population Projection Project was developed and designed to provide population projections for community members, using an easy to understand method referring to open data, to create verifiable population projections. This project provides community members with an opportunity to understand the strengths and weaknesses of methods used to create population projections.

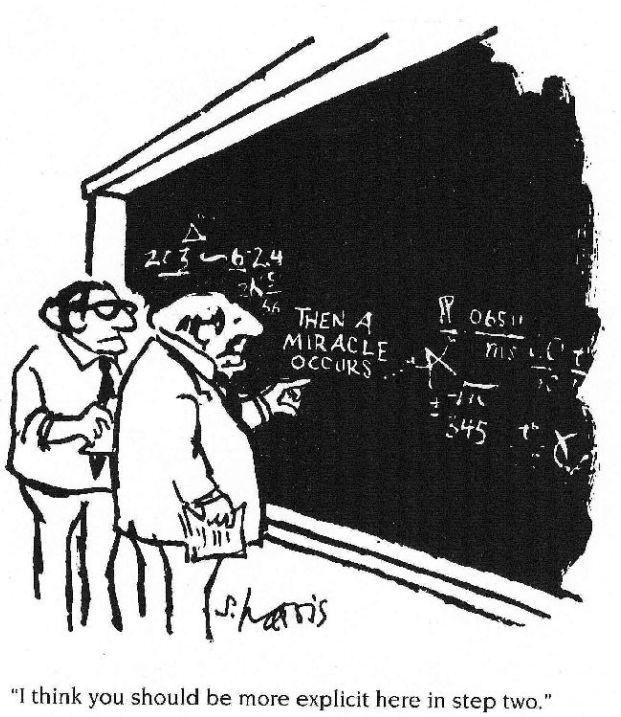
Addendum: as time was limited the following was not presented

Now we also know why the Population Analyst, who raised concerns about "non-statistical and substandard methods" in 2004 and 2005 was dismissed for insubordination.

Now we know why the Ministry of Labour, Citizens' Services, and Open Government continues to block mediation and arbitration to address the real matters in dispute, namely the real methods used by BC Statistics to create population numbers.

Instead of correcting the methods, the people who took over positions in BC Statistics and the Ministry decided to discredit the Population Analyst who asked to see the "extensive analyses" and who insisted that the changes to the methods be published.

Post script: The same people from BC Statistics who provided false methods to Community Members and Statistics Canada and who accused the Population Analyst of having a "behavioural problem" resulting in dismissal for insubordination were in the audience at this presentation.



"I think you should be more explicit here in step two."

During the revelation that BC Statistics provided false methods to Community Members and Statistics Canada, the people from BC Statistics who sent the false methods to Statistics Canada turned darker and darker shades of red, shifting nervously side to side. They did not object nor say anything to the presenter or the rest of the audience even during the question period.

I think all reasonable people will agree that citations accompany quotes and the true methods accompany findings. The Minister of Labour, Citizen Services', and Open Government has the authority to remove the block imposed on further disclosure of the real methods used by BC Statistics used to create population numbers.