



HORIZONS

P O L I C Y R E S E A R C H I N I T I A T I V E

Data for Policy

Data are part of the daily business of all institutions, public or private, pre-occupied with basing strategic decisions on facts and evidence. In government, data, and the analyses they underpin, are an intrinsic part of the policy-making process. As national challenges continue to evolve, so also does the need for the statistical information that supports both the rigorous assessment of emerging issues and the design of effective government policies and programs.

This issue of *Horizons* is about data. The Government of Canada devotes significant resources to the development of national surveys, data collection and analysis, and the management of large administrative records. There are constant pressures to devote more resources to these data-related activities to keep up with

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ISSN 1487-7090
Poste-publications - Publications Mail
Customer no 7000274





HORIZONS

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The Policy Research Initiative produces *Horizons* as a liaison publication for the federal government policy research community. The primary objective of the PRI is to deepen, collect, and integrate research on crosscutting issues that are highly relevant to the Government of Canada's medium-term policy agenda. *Horizons* highlights the work of policy researchers from across federal departments, and from external experts, on issues that relate closely to PRI horizontal research projects and activities. For more information on the Initiative or to consult previous issues of *Horizons*, please visit <www.policyresearch.gc.ca>.

All web sites referred to in this issue were confirmed as of May 24, 2005.

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The views expressed herein reflect solely those of the authors, and do not necessarily represent the views of any organization with which the authors or *Horizons* are affiliated.

INTRODUCTION (CONTINUED)

the emergence of new issues and the advancement of science and new technologies, and for Canada to remain competitive internationally. In the knowledge and information era, how can it be otherwise?

On the other hand, resources are limited and constraints on government spending are numerous. A major, and

accomplished over the last seven years, and describes some of the challenges ahead in meeting the needs of the research community.

Next, Philip Smith discusses the potential for broadening the scope of Canada's already impressive National Accounts system to include all types of production and assets,

What becomes clear is that data and the understanding that they can yield become increasingly important as the challenges to policy development become increasingly complex.

entirely appropriate, concern for government is maximizing the utility of any data investment. This means that technologies or innovative techniques that allow the collection, treatment, and analysis of data in less time and with fewer resources have to be fully explored. It also implies that policies, processes, and practices have to be developed to ensure maximum return on investment, that is, data have to be crunched and analyzed thoroughly by analysts and researchers to extract the policy-relevant or otherwise useful information. This is the focus of this issue of *Horizons*, with articles covering a wide range of data-related issues, including future data development activities, non-traditional ways of collecting data, data access, and data use.

The issue starts with a review of the Data Gaps Initiative, established in 1997 to support the Canadian government's horizontal policy needs. The article takes stock of what has been

including environmental assets and household production. Garnett Picot and Maryanne Webber, on the other hand, believe it is time to reflect on the benefits and shortcomings of longitudinal surveys, and given their high cost relative to cross-sectional surveys, make informed decisions regarding their future.

Surveys are the traditional means for collecting social and economic statistical data. However, John Greenwood argues that there is more to data than surveys. Social experiments can generate datasets that are extraordinarily rich for estimating program impacts, performing subgroup analyses, and conducting benefit-cost analyses.

Michael Wolfson draws attention to the increasing complexity of emerging policy issues, superior computing technologies, and sophisticated modeling methods that have all served to increase the demand for data and the potential for its supply. He shows how

modern computing is enabling simulation modelling in health and social policy development, a technique that, until recently, was primarily limited to the field of macro-economics.

A publication on data issues would be incomplete without capturing the perceptions and perspectives of data users. Cliff Halliwell, while acknowledging the risk to the integrity of the system of actual or perceived disclosure of personal information, airs the frustrations of researchers attempting to access data for policy analysis and performance reporting. Raymond Currie underscores the huge difference the Research Data Centres have made in improving academic researchers' access to Statistics Canada's database; Byron Spencer advances some suggestions for improving this initiative.

Data are also used to report back to Canadians on progress made. Tim Wilson shows how the Treasury Board Secretariat uses data in reporting on the state of the nation, and identifies areas where new data would be particularly welcome for this type of reporting function.

Knowledge is power, and Albert Simard describes a new policy at Natural Resources Canada's Canadian Forest Service for ensuring knowledge is captured and made available to those who need it, in a timely fashion.

The Research Briefs and Eyewitness Reports in this issue illustrate very well how the PRI's crosscutting policy research projects inevitably lead to data development considerations. Last June, the PRI was a partner in the organization of the National Symposium on Financial Capability, which was followed by a workshop on data sources (see the eyewitness report by Stuart Sykes). The PRI is preparing to release a series of concluding publications from the Social Capital as a Public Policy Tool project. One of these, authored by Sandra Franke, is solely devoted to the measurement of social capital. A research brief by Fidèle Ndayisenga and Doug Blair describes the recently launched Regulatory Data Development and Analysis Project, which is aimed at improving regulatory management within the federal government. Ian Campbell reports on two recent work-

shops that explored how data and expertise can be made easier to access and use in local decision making involving environmental or other science-based information.

What becomes clear is that, whether it is about social, economic, or environmental systems, data and the understanding that they can yield become increasingly important as the challenges to policy development become increasingly complex.

The Data Gaps Initiative at a Crossroad

Jean-Pierre Voyer
Policy Research Initiative

Canada is used to excellence in national surveys and data collection, thanks to a statistical agency that has earned an international reputation for quality and innovation. A key element of the overall performance of our national statistical system is its capacity to bring new information and insights to bear on emerging questions and policy issues. This capacity is currently challenged, though, in that the federal government's central mechanism for identifying and supporting new data requirements is no longer performing adequately, and is thus in need of serious review.

Addressing Emerging Data Gaps

Two decades ago, policy discussions did not involve questions regarding determinants of healthy child development, the economic integration of new immigrants, or the consequences of an aging population. Many of these types of questions could not have been addressed properly within the envelope of national surveys existing at that time. It was necessary to develop new surveys to better understand these trends and challenges.

Considerable expertise within Statistics Canada, federal government departments, and the broader Canadian research community can be brought to bear in identifying information gaps and the statistical instruments needed to address them. This expertise is tapped regularly through various advisory bodies gravitating around the chief statistician and senior analysts and researchers within Statistics Canada and federal departments.

Know-how availability is not the issue. Rather, the biggest challenge to addressing data gaps lies with finding the financial resources required to develop and implement new surveys.

The federal government uses two main approaches to address funding requirements for emerging data gaps. The first one is simply to treat data needs like any other new program or policy initiative. That is, the minister responsible for the area of activities recommends to his Cabinet colleagues to devote public resources to the need identified and, from that point, the proposal follows the approval process used for any new government initiative.

Proposals for public investment in new surveys are almost never addressed in isolation. They are usually part of a package of investment or expenditures introduced to address a new policy pressure. When Cabinet ministers are presented with a policy proposal, they also receive extensive background information on what is known about the issue under review. Through this process, information gaps are made more visible, and ministers are in a better position to appreciate whether new investments in data collection are required; hence, the logic in tying the data funding needs to specific new policy or program proposals.

There are instances, however, when the emerging data gaps do not necessarily fall in the sole domain of responsibility of a particular minister. Several departments may share responsibility or interests. Information needs related to the growth of the social economy, the determinants of produc-

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Policy Research Data Group.

tivity in the workplace, or the economic consequences of a brain drain of university graduates are examples of issues in this category. There are also situations where the data gap occurs in the context of an identified mid-term pressure or development when it is important to collect more information, even though it may be too early for government to take action. Changing retirement patterns over the last few years provide one example. For such cases, a different mechanism is required to ensure that appropriate action is taken concerning the collection of data. For almost a decade now, the Data Gap Initiative has been the key vehicle and approach used within the federal government to address these types of data gaps.

The Origins of the Data Gaps Initiative

The Data Gaps Initiative is an internal federal government fund supporting the collection and dissemination of data deemed important for policy and program development.

The genesis of the Data Gaps Initiative is inextricably linked to the establishment of the Policy Research Initiative. In the mid-1990s, there was a widespread view in Ottawa that policy research capacity had declined in the federal government, while policy issues had become increasingly complex and interrelated. To address these concerns, the Clerk of the Privy Council launched a federal interdepartmental process in July 1996 to identify future policy challenges of major significance to Canadian society, and make recommendations

regarding an interdepartmental research agenda and work program to address identified gaps in knowledge. Departments were asked to work collaboratively under the Policy Research Committee (PRC), which subsequently became the Policy Research Initiative, whose mandate and activities have been evolving since then.

The Data Gaps Initiative was created shortly thereafter to support the PRC program of policy research. The initiative was allocated \$20 million per year to be added to Statistics Canada's budget. The criteria and instructions governing the allocation required that an appropriate review process be put in place, including an advisory committee under the auspices of the PRC. The committee, named the Policy Research Data Group, was established in early 1998, and has been chaired by the Executive Director of the PRI since then.

The Policy Research Data Group (PRDG)

The PRDG was mandated to make recommendations on the priority of data projects to be funded, and to help validate collaboration among relevant departments and Statistics Canada. In addition, it was asked to play a consultative role, examining a number of additional data issues regarding data dissemination and data access.

An overriding consideration of the PRDG in setting funding priorities has been to address information needs for policy issues that cut across several departmental mandates. The rationale is that data development needs for horizontal issues may not have natural

champions, whereas, data gaps identified by one or two departments can usually be dealt with through departmental funds.

The Data Gaps Initiative has resulted in a wealth of new data. More important, these data lead to useful research that is being applied to policy decision making in various ways. From the impact of information and communications technology on workplace productivity to the experiences of Canadians as victims of crime, these projects fill a real need for federal policy makers seeking to better understand how they can make a difference in the lives of Canadians. (See the accompanying description of PRDG projects.)

Although directing the Data Gaps Initiative funds has been a central activity, it has not been the PRDG's only accomplishment. While the Group started small, it now includes some 25 federal departments and agencies. Representatives from these organizations meet regularly to share research work plans, discuss data access issues, and co-ordinate their data collection and analysis activities. The PRDG has evolved into a much-needed discussion forum and co-ordinating body for the federal government's data collection and analysis efforts, a function that did not exist prior to the Data Gaps Initiative.

The Data Gaps Initiative at a Crossroad

The Data Gaps Initiative has now reached a crossroad as the project line-up has stabilized. The number of projects originally funded by the

initiative has been reduced from 23 to 13 over the years. Two major reviews resulted in savings intended for new projects, but these savings were, in large part, absorbed by the 2003 federal government reallocation exercise. The effects of inflation, plus the increase in funding required for original core projects, have resulted in the fund having lost almost all its flexibility. The net result is that there is no longer any room to address new data gaps and fund new projects.

For the last few years, the PRDG has turned more intensively to the main federal departmental users of the respective Data Gaps Initiative surveys as an alternate source of funding. Departments, though, have been facing significant budgetary pressures of their own, and research budgets in particular have suffered. In addition, attempts to use a direct funding approach by way of Cabinet proposals have failed due to a lack of co-ordination and confusion within central agencies about the role of the PRDG and the Data Gap Initiative. Such proposals never even reached ministers.

The upshot is that it has become increasingly difficult to fund new data activities. Regular reviews and reprioritization exercises can get rid of products that are of temporary value or have proved less meaningful than originally envisaged, but good products tend to accumulate over time, and end up occupying all the funding space available. Without new funds, overall improvement and sustained progress become impossible. Indeed, it is totally unrealistic to expect that emerging data needs will forever be

addressed through a process of reprioritization of ongoing activities. Emerging needs keep coming, and once a data gap has been identified as worthy of investment, it may stay with us for a long time. It is hard to imagine, for instance, that governments in Canada will lose interest in the means to encourage human capital development and improve productivity; thus, the need for regular national surveys

Emerging needs keep coming, and once a data gap has been identified as worthy of investment, it may stay with us for a long time.

on the literacy performance of Canadians or access to post-secondary education will not disappear anytime soon. Furthermore, most survey activities entail a series of developmental data collection and processing steps that spread over cycles of three to five years. By the time a cycle concludes, it is time to repeat the data collection for a new wave of respondents or, in the case of a longitudinal survey, to go back to the original participants to see how the situation evolved. Otherwise, it is impossible to determine if government policies and programs need to be maintained or modified.

A variety of futures can be envisaged. The simplest one is a top-up of the Data Gaps Initiative fund to allow for consideration of new initiatives. Other scenarios may see the Data Gaps fund being replaced, totally or partially, by another mechanism that would put more responsibility on individual departments to champion new investments to address data

gap needs. The risk, of course, in any approach that relies too heavily on the leadership of individual departments is the loss of capacity to carry out projects that cut across the mandates of several departments or those aimed at longer-term needs.

In contemplating various scenarios, several considerations should be kept in mind. First, it would be wise to capitalize on the success of the PRDG

as a centre of expertise for the evaluation of new data proposals, and to continue, and perhaps expand, its role in co-ordinating data discussions throughout the federal government. For example, central agencies could make better use of the PRDG's expertise by seeking its advice on all departmental requests for funding surveys proposed as part of new government initiatives. Second, the implementation and development of new surveys is only one part of a knowledge development process that includes other crucial steps. Data are not of much use if the research community does not exploit them to their full potential. Any process that supports the introduction of new surveys should also include plans on how to involve, in sufficient numbers, federal government researchers and external research community researchers in the design and use of the survey. Third, access and costs can remain important barriers to data exploitation. Significant progress has been made in this respect

over the last few years, but the federal research community must continue to develop improvements that provide easier access to data, while respecting the requirements of the *Statistics Act* and other legislation protecting privacy.¹

In summary, the Data Gaps Initiative has achieved its stated purpose, funding a number of high-priority data projects, most of which are now integral parts of the national statistical

system. Over the past seven years, the PRDG has continually adjusted its modus operandi concerning the Data Gaps Initiative in response to changing needs and growing budgetary constraints. However, flexibility is now gone and, as a consequence, discussions and decisions around emerging data gaps are basically stalled. This will not have much visible impact on the quality of what government does today. There exists,

though, a significant risk that the capacity to support the policy needs of tomorrow will be undermined. For this reason, we are faced with an immediate challenge regarding the ongoing purpose and funding of the Data Gaps Initiative.

Note

- 1 See the articles by Halliwell and by Currie and Spencer in this issue of *Horizons*.

Data Gaps Initiative Projects

The Data Gaps Initiative funds 13 data projects. These projects cover a broad range of policy issues related to economic growth, development of human capital, social well-being, and sustainable development.

Information System for Science and Technology (ISST)

The ISST encompasses a diverse set of activities including conducting surveys, developing indicators of science and technology activities, linkages and outcomes, organizing international workshops, and preparing analytical reports. The project's data are being used in various government reports, such as the Canada Innovation Strategy's Achieving Excellence, and Key Small Business Statistics.

Socio-Economic Indicators of Connectedness

The project surveys households and firms to develop indicators of the penetration and uses of information and communication technologies including Internet and e-commerce, and expands on measures of telecommunications, cable broadcasting, and computer services. It has supported policies addressing the deployment of broadband communication, the digital divide, electronic commerce, government online, foreign ownership review of telecommunications, and competition in telecommunications markets.

Post-Secondary Transition Surveys (PTS)

The National Graduates Survey, the Post-Secondary Education Participation Survey, and the Survey of Earned Doctorates highlight factors that influence access to postsecondary education, integration of postsecondary graduates into the labour market, and the supply of highly qualified and skilled workers. Survey data have been used to study the brain drain issue, and to support the Canada Student Loans program, the Canadian Millennium Scholarship Foundation, and the Canada Occupational Projections System.

Adult Literacy and Lifeskills Survey Program (ALLS)

The ALLS assesses the performance of adults in the areas of literacy, numeracy, and problem solving, and establishes links between the skill sets of individuals and their education, occupation, and wages. The ALLS informs human resource development programs and a wide range of labour market, social, and educational policies such as immigrant settlement, economic integration, and adult learning.

Enhanced Student Information System (ESIS)

This data project integrates detailed administrative data from universities, community colleges, and trade and vocational programs into a coherent information system.

The ESIS is used for accountability reporting, as well as policy development and planning in the areas of educational investment, labour market development, and trade.

Environmental Statistics Program (ESP)

The ESP comprises a set of environmental accounts and indicators, a set of environmental surveys, a spatial data infrastructure, and a yearly reference compendium entitled Human Activity and the Environment, one of Statistic Canada's flagship reports. Data are used to develop national environmental statistics for use by government and non-governmental organizations, to meet information requirements of the *Canadian Environment Protection Act*, to estimate greenhouse gas emissions from land use change, and model greenhouse gas emissions scenarios.

General Social Survey (GSS)

The GSS monitors social trends including changes in the living conditions and the well-being of Canadians over time, and provides timely information on specific social policy issues of current or emerging interest. The GSS has supported policy development in homecare, spousal violence, Internet use, and retirement planning. It led to the creation of the compassionate care benefit administered under the Employment Insurance Program.

Longitudinal Survey of Immigrants to Canada (LSIC)

The LSIC interviews the same immigrants at three points in time: six months, two years, and four years after landing. In addition to improving our understanding of the settlement process, including the relationship between skill acquisition in Canada and individual economic and social outcomes, this survey is used to determine what kinds of government interventions are needed to support new immigrants.

Workplace and Employee Survey (WES)

The WES is an annual longitudinal survey collecting information from Canadian establishments in the non-agricultural business sector and from the paid workers they employ. The data are used in designing a wide range of labour market, social, and educational policies aimed at assisting employers and workers to adapt to change.

Changing LifePaths and Time Allocation Patterns

This dynamic longitudinal, micro-simulation model uses alternative scenarios to analyze, develop, and cost government programs and policies from a life-course perspective, at the individual or family level over time. It has supported the PRI's research efforts in this area by determining labour market, social, and distributional consequences associated with an aging population, and by evaluating policies that could be introduced to reduce any negative social and economic impacts arising from population aging.

Canadian Segment of the World Values Survey (WVS)

The WVS is an international collaborative survey carried out at five-year intervals in almost 70 countries. The Data Gaps Initiative funds the Canadian segment of this survey. Data have been used in studies on political participation, civic engagement, trust, confidence, tolerance, national pride, sustainable development, workplace motivations, and social cohesion.

Survey of Financial Security (SFS)

The SFS is an occasional household survey that collects information on the assets and debts of Canadians, as well as on their income, pension benefits, education, employment, and expenditures. Human Resources and Skills Development Canada, Canada Mortgage and Housing Corporation, Finance Canada, and the Bank of Canada all use the data to study the relationship of household assets and debts to variables of their respective interests.

Exporter Registry

The exporter registry uses administrative data to estimate the number of exporting establishments and the value of exports by industry group, province of residence, destination of exports, and exporter size. These data help develop policies to meet the federal government's objective of increasing the number of small and medium enterprise exporters and inform trade policy development.



Housing Policy and Practice in the Context of Poverty and Exclusion: Synthesis Report

Housing challenges often play a role in poverty and exclusion as both a determinant and an outcome. Following a PRI-SSHRC Policy Research Roundtable on this topic and subsequent research by the PRI, this paper explores these connections, outlines the situation in Canada, and assesses ways to improve housing and poverty outcomes.



NAFTA Rules of Origin: Discussion Paper

NAFTA rules of origin, although intended to distinguish between NAFTA originating goods and non-originating goods, can result in unexpected consequences and economic costs. In this study, we examine the empirical evidence addressing key issues related to the use of NAFTA rules of origin in Canada-US bilateral trade. Moreover, we examine the factors that influence importers' decisions regarding the choice between using NAFTA and MFN status, and provide supporting econometric evidence.



What We Need to Know About the Social Economy: A Guide for Policy Research

The guide provides background on the social economy, identifies research issues whose examination would support the development of policies and programs, provides suggestions for how this research might be conducted, and points to some useful information sources.



Integrated Landscape Management Modelling: Workshop Report

Integrated Landscape Management Modelling (ILMM) is a powerful tool for bringing a wide range of specialist expertise to bear on land-use decisions and environmental impact assessments. This report shows how a national capacity for ILMM could be developed in Canada.



Canadian Water Resources Journal

Published by the Canadian Water Resources Association, this special issue of the *Canadian Water Resources Journal* has 9 papers on various aspects of the use of economic instruments for water demand management. Based on the PRI symposium on *Economic Instruments for Water Demand Management* held in June, 2004, the papers in this issue range from the Australian experience with water markets to the concept of water Soft Paths.



Policy Implications of a Canada-US Customs Union: Discussion Paper

Prepared by the Centre for Trade Policy and Law, this discussion paper examines a range of challenging policy issues related to a potential Canada-US customs union. The authors explore the principle elements of a customs union and find that, through a process of policy convergence, Canada could enter a customs union with a modest increase in the level of obligations already inherent in current trade agreements.

Broadening the Scope of Canada's National Accounts

Philip Smith
Statistics Canada

Philip Smith is Assistant Chief Statistician of National Accounts and Analytical Studies Field at Statistics Canada.

Introduction

Canada's National Accounts database provides an accurate and timely depiction of the national and provincial/territorial economies in their many different dimensions. From the system one can obtain information about the composition of, trends in, and inter-relationships among production, consumption, saving, investment, trade, prices, incomes, and financial transactions throughout the economy. The database is critical to federal and provincial government policy making, and is used for many other purposes by private sector and academic economists.

The National Accounts are a dynamic system. They have changed and grown substantially over the postwar period, in line with Canada's evolving needs. The system has undergone major expansion and improvement over the past 10 years, and now is perhaps a good time to pause and consider what the next important directions might be for further development.

Background

While some elements of the National Accounts had their origins early in the 20th century – notably the balance of payments and the index of industrial production, which emerged in the 1920s and 30s – the income and expenditure accounts and the summary gross national product measure were developed in the 1940s and early '50s. The context in those days included the ideas of John Maynard Keynes, the Bretton Woods agreement, and a worldwide determination to avoid falling back into a 1930s-like depression.

The 1960s and 1970s saw the expansion of Canada's National Accounts to include annual national input-output tables, industry estimates of gross domestic product (GDP) and labour productivity, and financial flow and balance sheet accounts. In the 1980s and early 1990s, the provincial income and expenditure accounts were developed, and the first work on satellite accounts – flexible extensions of the basic system – began.

Then, in the late 1990s and the first years of the present decade, Canada's National Accounts were broadened to include annual input-output tables for each of the provinces and territories individually, complete with estimates of interprovincial commodity trade flows. No other country in the world has detailed annual regional statistics of this nature. In addition, the conceptual framework and the statistical estimates were adjusted in line with the international standard System of National Accounts (SNA) that had been adopted jointly by five international institutions – the United Nations, the Organization for Economic Co-operation and Development, the World Bank, the International Monetary Fund, and the Commission of the European Communities – in 1993. Among other changes, SNA-93 brought a switch from Laspeyres volume and Paasche price indexes to chain-linked Fisher indexes.

International Discussions

Canada has always believed it to be important that its National Accounts statistics line up as closely as possible, in terms of their conceptual and definitional framework, with those of other countries. This makes the

statistics far more valuable, because they can be compared with those of other nations. Toward this end, Canada has participated and continues to participate actively in various international forums. In particular, Canada has a representative on the Advisory Expert Group making the final recommendations for change to the United Nations Statistical Commission.

Possible New Directions

So where to go from here? In what directions might Canadians want and need their National Accounts statistics to be further developed in the decade ahead? There are many possibilities, some of which are discussed below.

Environmental Accounts

Despite modest efforts in recent years to integrate environmental considerations into the National Accounts system, they remain largely outside of its boundaries today. As a result, the Accounts give an incomplete and in some ways distorted view of national wealth and savings, and the long-term prospects for economic growth. Canadians understand more than ever that the environment plays a key role in ensuring their well-being. Many believe the National Accounts should also reflect this reality.

Comprehensive treatment of the environment in the National Accounts would best be done through creation of a distinct, but fully integrated, set of environmental accounts focused in three areas.

First, the quantity and quality of Canada's natural capital – its natural resources, land, and ecosystems – would be measured in a set of envi-

ronmental asset accounts. These accounts would provide estimates of the extent of Canada's key natural capital stocks and their evolution over time in physical and, to the extent possible, monetary terms. Monetary estimates, even if sometimes imprecise, are essential to providing a full assessment of national wealth and savings.

While measuring the extent of Canada's natural capital is necessary to assess sustainability, it is not sufficient. Information is also needed about how these stocks change over time and what forces are driving the changes. A set of material and energy flow accounts would address these questions. By recording the extraction of resources from the environment, and the disposal of pollutants back into the environment, these accounts would reveal the forces behind changes in natural capital stocks. Their framework would be rich in detail, offering the possibility to study material and energy flows for each industry in the economy, and for households and governments. This same framework is found at the core of many economic models, meaning that researchers would be able to integrate environmental data into their work as never before. This would allow, for example, estimation of productivity measures including natural capital.

The final focus of the environmental accounts would be activities aimed at the protection of the environment. Governments, businesses, and households all undertake activities with the intent of reducing or reversing environmental damage. To the extent that they involve market expenditures,

these activities are already measured implicitly in the existing National Accounts. Making them explicit would reveal information useful in addressing a number of issues. It would help assess the relative burden that environmental regulations place on businesses. It would allow measurement of the responsiveness of the growing Canadian environmental industry to the opportunity presented by the demand for environmentally friendly products.

It is worth noting that there would be no change in the core measure of GDP in the development of such a set of environmental accounts. The GDP as it stands is a proven, widely used measure of market income. Changing it to correct for environmental costs would require questionable imputations and would not shed much light on environmental issues. Rather, our view is that the focus should be on a measure of wealth adjusted to include natural assets. Regular production of such a measure would help refocus attention on the factors that support income generation in the long term.

The implementation of a full program of environmental accounting would take substantial commitment and resources. Should Statistics Canada give priority to this direction?

Household Production

Production is an activity or process, organized and managed by some economic unit, in which inputs are transformed into useful outputs. Traditionally, the National Accounts have focused on those kinds of productive activities that are capable of being organized within the market

economy. It must be possible for some or all of the inputs and outputs to be traded.

However, production also occurs within the household, although the resulting output may or may not be channelled through the market. When members of a household own and operate an unincorporated market enterprise, such as a farm or retail shop, a significant portion of the household's production may flow into the market. At the same time, households may also engage in "own account" production, that is, production for use by the household itself. Households may produce consumption goods, such as vegetables, bread and cakes, preserved food, cooked meals or clothing. They also produce a range of services for their own consumption, for example, the cleaning and maintenance of household equipment and the dwelling, the care and education of children, or care of the sick or infirm.

The goods and services produced for own consumption within households can make a major contribution to the well-being of Canadians. However, this part of national production is not recognized in the traditional, market-based National Accounts. Due to the difficulties involved in assigning a value, the National Accounts exclude, by convention, the production of virtually all household services for own use. Statistics Canada has conducted special studies of household sector production, which aim to assign an imputed value to these products and services (see, for example, Statistics Canada, 1995).

Should such studies be conducted more frequently and their results be incorporated in the regular annual flow of satellite account products?

Trade in Services and Foreign Direct Investment

Globalization has led to other demands for improvements in existing components of the economic accounts. Two of the most important

The emergence of certain developing countries as major players in global production, such as India and China, is leading to calls for more detail and improved quality in the measures of trade in services and foreign direct investment.

are international trade in services and foreign direct investment. The emergence of certain developing countries as major players in global production, such as India and China, is leading to calls for more detail and improved quality in the measures of these accounts, including more bilateral statistics. Statistics on trade in services, and on foreign direct investment inflows and outflows, are increasingly important in understanding how global production is being reorganized and what this means for national economic policies. What priority should the National Accounts devote to this domain?

Knowledge Capital

Knowledge investments create assets that are considerably less tangible than, say, machinery or plants. Such assets include acquired knowledge that will enhance the efficiency of the production process. At the base, are

expenditures on research and development (R&D). They may also involve expenditures on engineering, patents, and training needed to make good use of new equipment.

In the public sector, educational expenditures include an investment component that will yield benefits to a country for years into the future after the expenditures have been made.

While the SNA framework (UN et al., 1993) recognizes that R&D expenditures provide future benefits, and therefore constitute a type of investment, it raises several issues that need to be resolved before implementing a regime that treats R&D expenditures as investment rather than as intermediate inputs. The first is the establishment of clearly definable criteria outlining what expenditures should be classed as R&D; the second is the specification of assets to be included according to these criteria; the third is to provide R&D valuations that are economically meaningful; and the fourth is the determination of the rate of depreciation to be applied to R&D investments.

How much effort should Statistics Canada invest in developing broader measures of investment expenditure that involve the acquisition of not just tangible, but also intangible assets of this kind?

Government Output

In most countries, including Canada, the output of the government sector is measured by the value of the inputs used by government. By extension, the volume of output has been measured by the volume of inputs. With output growth thereby defined as proportional to input growth, productivity growth in the government sector is implicitly assumed to be zero.

Since government productivity probably does, in fact, grow, the growth rate of government output is being understated, and hence, so is the overall growth rate of GDP. Countries with relatively large public sectors, such as Canada, will on this account tend to have lower relative growth rates, other things being equal, than countries with smaller public sectors, such as the United States. A few countries, notably Australia and the United Kingdom, have adopted an approach where government output is not assumed proportional to inputs used in government production. In these cases, the growth rate will tend to appear higher than in countries which assume there is no productivity growth in the government sector. International comparisons are thus distorted.

Should Canada, like some other countries, invest more effort in measuring the real output and productivity of the government sector despite the great difficulties and arbitrary elements involved in doing so? Changes in this direction offer potential improvements in the sense that government output would no longer be assumed to equal

measured inputs, but there should be no underestimating the daunting challenges involved in such an endeavour.

Productivity Measurement

Productivity, a key indicator of technological and organizational efficiency, can be measured in different ways. Labour productivity measures output per hour worked; multifactor productivity, a broader indicator, measures the productive efficiency of labour, capital, and other inputs in combination. Productivity estimates are important because, over time, the productivity growth rate influences how fast real incomes can rise.

There have long been concerns about possible underestimation of productivity growth rates in the business and personal services sectors of the economy. Commentators have wondered why productivity in services has not grown nearly as rapidly as productivity in manufacturing, particularly in light of anecdotal indications of dramatic innovations in several types of services.

Allocating additional resources to address measurement problems with regard to the value of services sector output and price indexes for that output, with a view toward improving measures of productivity change, is seen as very important for Statistics Canada. Is this assignment of priorities correct?

Strengthening Time Series Continuity

One particular strength of Canada's National Accounts is their emphasis on continuous time series. Lengthy time series provide valuable context for the interpretation of current eco-

nomical events, and are put to good use by economic model builders and forecasters. Canada's annual income and expenditure accounts begin in 1926, and the quarterly accounts in 1947.

However, developments in recent years, such as the adoption of the North American Industrial Classification System (NAICS) and the switch to SNA-93 (including the chain Fisher price and volume index formula), have broken the continuity of some National Accounts time series. A reasonably complete record exists from 1961 to date both annually and quarterly. Resources could be allocated to derive consistent time series further back for major aggregates and/or provide methodologies to link current time series to historical ones depending on the purpose.

Other Changes in Assets Accounts

While the Canadian National Accounts already provide a complete set of accounts in terms of all transactions in the economy that relate to productive activity, transfers, and the accumulation of wealth, a substantial part of the change in net national worth is not due to transactions as such. This includes revaluations of assets and liabilities due to changes in their prices, or changes in the volume of assets due to discoveries of new resources, or the destruction of assets due to catastrophic events. The international standard for national accounting, SNA-93, includes another changes in assets account, but Canada's National Accounts system does not presently include this account. Statistics Canada is consid-

ering the development of such an account, to complete the system and thereby shed valuable new light on the role of windfall gains and losses within the economy. For example, recent changes in the value of the Canadian dollar have implied significant capital gains and losses

defined benefit and defined contribution plans), individual saving plans, social security and so on – to derive a comprehensive measure of the stock of wealth available specifically for retirement purposes. Second, inflows and outflows (contributions, investment income, transfers, and

Efficient financial markets in which players can operate with confidence are important for all sectors of the economy. In this respect, monetary authorities increasingly want to conduct more detailed studies of specific aspects of financial markets and how they affect the real side of the macro economy. (See, for example, O'Reilly and Haymes, 2004.) They are perhaps more keenly aware than ever of the cascading consequences that can reverberate through the world economy when shocks occur in a particular sector or region.

There is increasing need for greater detail, including distributional information, in the financial flow and national balance sheet accounts, and the financial account of the balance of international payments.

in different parts of the economy. What priority should be attached to this undertaking?

Pension Satellite Account

The saving rate is a key economic indicator, and the long-term decline in this measure has two key driving factors: asset revaluation and an aging population. However, some flows related to changes in the saving rate are not as explicit as they could be in the National Accounts. Combined with the need to improve understanding of household behaviour are emerging demands to assess the sustainability of retirement saving and related programs.

To address these questions, Statistics Canada has been considering the possible development of a pension satellite account. Such an account would supplement and expand existing information on pensions. First, a time series would be constructed for pension assets by type – various types of funded and unfunded employer-sponsored pension plans (covering

withdrawals) would be articulated as a means to help explain the National Accounts saving rate estimates. Third, gains and losses in pension wealth would be estimated to supplement the saving estimates. These stocks and flows would be integrated into a coherent framework capable of shedding light on pension wealth accumulation as well as dis-saving. Should this be a key priority for the years immediately ahead?

Financial Statistics for the Global Economy

Financial markets have become increasingly open and global in nature, which means financial shocks, such as those that resulted from the Asian crisis in the 1990s or the Enron scandal more recently, can travel rapidly across countries. The transmission mechanisms have become more complex. Moreover, the delineation between the financial and non-financial sectors of the economy is becoming less well defined as multinational firms, in particular, increasingly have large in-house financial operations.

The international community is working to develop macro-economic financial stability indicators, and the National Accounts framework provides a natural foundation for this development. In this regard, there is increasing need for greater detail, including distributional information, in the financial flow and national balance sheet accounts, and the financial account of the balance of international payments. These accounts presently provide relatively little detailed information about the liquidity, profits, and debt structures of individual industries within the non-financial corporate sector. Should this be a priority area for National Accounts expansion in the next few years?

Sub-Annual Provincial and Territorial Accounts

Canada's National Accounts already include what is probably the most detailed and complete sub-system of regional accounts available anywhere in the world. However, these regional accounts are strictly annual. From time to time, Statistics Canada hears

proposals to augment them with corresponding sub-annual estimates. More timely (e.g., quarterly) provincial and territorial statistics would be useful to the provincial and territorial economies in the same way that quarterly National Accounts statistics are invaluable to the national economy.

Technological and organizational innovations in recent years have made it increasingly feasible to exploit detailed administrative data sources for National Accounts estimation purposes. Data flows associated with the Goods and Services Tax and personal income tax payroll remittance system are particularly relevant with respect to the regional dimension. It is possible the future will see a gradual move in the direction of sub-annual provincial and territorial accounts statistics.

Conclusions

Canada's National Accounts have a long history. They have grown and changed over many decades, and their evolution continues in the present millennium. Where are they headed in the coming years? This brief paper has outlined some, but by no means all of the likely directions.

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Making the Most of Canada's Health Data

Canada is recognized internationally for its collection and research use of administrative data related to health care services, and Canadian researchers are considered innovators in using research findings in policy development. The full potential of Canada's wealth of population health and health services data has yet to be realized however due to the lack of a centralized, co-ordinated inventory for accessing data and a standardized method for compiling it.

The Canadian Policy Research Networks and the Centre for Health Services and Policy Research present research findings and 10 recommendations for improving access to and use of Canadian data in the areas of population health and health services research. The recommendations are based on interview results, information on current inventory and data activities in Canada and around the world, literature review results on resolving issues of privacy and access, best practices for building inventories of data, and a prototype data collection tool they developed.

Black, Charlyn, Kimberlyn McGrail, Cathy Fooks, Patricia Baranek, and Lisa Maslove. 2005. *Data, Data, Everywhere: Improving Access to Population Health and Health Services Research Data in Canada*. Paper prepared by Canadian Policy Research Networks in collaboration with the Centre for Health Services and Policy Research at the University of British Columbia. April 2005. 148 pp.

Taking Stock The Future of Longitudinal Surveys

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The 1990s was the decade of longitudinal surveys in Canada. During that period, when contemplating a new survey, one almost required a justification not to make it longitudinal. The focus was squarely on the benefits that could be derived from the increased analytical power of a longitudinal survey. Early in that decade, Statistics Canada started work on three major longitudinal surveys, funded by Data Gaps I and policy departments. The surveys were developed with policy needs in mind.

At about the same time, computer-assisted interviewing came on the scene. The computer could guide the interview efficiently through complex sequences of questions, thereby allowing far more in-depth probing of important phenomena than was possible in the past. Simultaneously, the demand for empirical analyses to support policy development was on the rise. Interest in issues that only longitudinal surveys could address, such as job creation in firms, the extent and correlates of persistent poverty, and the determinants of various types of disease, resulted in rising demand for these surveys. Canadian researchers, familiar with advancements to research made possible with longitudinal data from other nations, were also a driving force behind the development of longitudinal surveys in Canada.

Over the decade, several other longitudinal household surveys were initiated. Added to these were a pioneering longitudinal establishment survey and initiatives to create longitudinal data sets from administrative data. (An outline of longitudinal surveys by Statistics Canada appears at the end

of this article.) The investment in longitudinal surveys is large relative to cross-sectional surveys, and after a decade or more of investment it is, perhaps, time to reflect on what we have learned about their benefits and shortcomings.

Or is it? It takes time to realize the potential value of these surveys. There are at least two reasons for this. First, researchers must be willing to make the relatively large initial investment needed to become familiar with these complex surveys. For this reason, it takes time to develop a critical mass of users of a complex survey, particularly in a smaller country, such as Canada, with a limited research capacity. Second, the number of issues that can be addressed with longitudinal data increases as the length of the panel increases.

Still, it is over a decade since the launch of the first three of Statistics Canada's major longitudinal surveys. We are therefore interested in reviewing this experience.

What Are Longitudinal Surveys All About?

Many policy departments and academic researchers strongly support and are, indeed, the drivers, of this new generation of surveys. Why? For one thing, these surveys provide a more robust foundation for the analysis of the determinants of various outcomes than their cross-sectional or "snapshot" cousins. Only by tracking the same person or firm through time can one determine the prevalence and characteristics of important outcomes (e.g., persistent poverty, job creation in firms, the onset of disease), and the

factors associated with such outcomes (e.g., divorce or job loss in a family, the innovation practices of the firm, and health-related behaviours, such as smoking and obesity). Traditional cross-sectional surveys are incapable of addressing such issues. They do not follow the same firm or person through time and, hence, cannot associate change in the behaviour or characteristics with specific outcomes. Longitudinal surveys offer the potential for rich analyses of phenomena important to policy.

Substantive Insights

Given the unique analytical strengths of longitudinal surveys, a review of the substantive insights generated by this analytical power is an obvious starting point.

For example, through longitudinal surveys we now know that it is not only job loss that triggers a descent into poverty, but that family formation and dissolution play a major role in the movement into and out of low income. We also now know that the majority of low-income spells are short-term and transient in nature – an observation that directed the focus of policy analysts to the persistently poor. Moreover, the longitudinal surveys informed us that these people are concentrated in five groups, again focusing the attention of policy analysts. Together these groups account for only one quarter of the population, but almost two thirds of persistent low income. Such insights have changed the way policy analysts think about poverty.

Longitudinal data have also taught us that the intergenerational transmission of poverty, while important, may

not be as high as we once thought. Children from poorer families are more likely to be poor as adults than those from richer families, but this outcome is anything but certain. Furthermore, the likelihood of moving from poverty as a child to higher income levels as an adult is greater in Canada

Key to any review of longitudinal surveys is an exploration of the significant insights generated in a wide range of areas including health, workplace practices, low income and social assistance, firm dynamics, and child development.

than in the United States or the United Kingdom. In this regard, we more closely resemble the Scandinavian countries. Canada seems to have developed a set of institutions and practices (e.g., the education system, labour market institutions affecting income inequality, early childhood development practices) that are conducive to greater equality of opportunity.

Knowledge such as this is important to advance “evidence-based” policy designed to combat persistent low-income, and ensure that children in low-income families continue to have an equal opportunity to lead productive lives. Institutions change, and the more longitudinal data teach us about poverty determinants and transmission, the better we are, as a nation, in promoting the outcomes we desire.

Insights are, of course, not restricted to poverty dynamics. In firm dynamics, people have asked why some firms grow faster than others. The important role of product and process innovation has been highlighted through the use of longitudinal surveys. Similarly, the

role of “creative destruction” – the death of less productive firms, to be replaced by the more productive – in a country’s productivity growth is now much better understood due to longitudinal studies. A nation’s productivity growth is not only driven by existing firms “working smarter.” A substantial

share of the growth can be ascribed to creative destruction – an important insight for analysts concerned with the sources of economic growth.

Tracking health outcomes of Canadians has led to significant results as well. A recent study focused on the tendency of immigrants to be in better health than Canadians when they arrive in Canada. Tracking the health of immigrants and Canadian-born individuals from 1994 to 2003, the study found that this “healthy immigrant effect” tends to diminish, as their health status converges with that of the general population. This more rapid deterioration in health was particularly strong among non-European immigrants, as they were twice as likely to report some deterioration in their health as Canadians. An increase in their body mass index (weight gain) was associated with this deterioration in health, which led to more visits to doctors.

Key to any review of longitudinal surveys is an exploration of the significant insights generated in a wide range of areas including health, workplace practices, low income and social

assistance dynamics, firm dynamics, and child development. Are we satisfied with the knowledge benefits generated, and are we well positioned to support future research? As data sources improve and accommodate the testing and development of new theories, researchers examine social and economic phenomena in a more complex manner. For example, both the causes and consequences of poverty are multi-faceted, involving health outcomes, labour market events, family formation and dissolution, access to education and training, early childhood development issues, and the design of the social transfer system. With the advancement of longitudinal data sources, researchers now contemplate empirically testing new and complex hypotheses regarding the causes and consequences of poverty. Are the longitudinal surveys as they are currently structured up to the task, or are changes required? This focus on poverty issues is demonstrative only. The discussion regarding knowledge gained, and our readiness for future advancements, applies to all domains touched by longitudinal surveys.

Integration of the Insights into the Policy Community

Funders of longitudinal surveys seek a balance between their use to support policy development and their role in more fundamental academic research. These interests are not inherently in conflict. The issue is often one of the integration of academic research into the policy community, and knowledge of policy concerns among the academic researchers. There are many efforts underway to close the circle between academic researchers, policy analysts, and survey statisticians. Are they

working? Or does this issue remain unresolved to the point where it affects the value of the longitudinal surveys in the eyes of the funders?

Research Capacity

If important and relevant insights are to be generated through longitudinal data, it will be by skilled researchers. If insufficient research capacity is brought to bear on longitudinal surveys, a shortfall of relevant findings will result. This issue is of importance in Canada for at least three reasons. First,

If important and relevant insights are to be generated through longitudinal data, it will be by skilled researchers. If insufficient research capacity is brought to bear on longitudinal surveys, a shortfall of relevant findings will result.

we are a small country with relatively few empirical researchers in most disciplines compared, for example, to the United States. These Canadian researchers have more or less the same data infrastructure at their disposal as their US counterparts and, hence, intensity of use for any particular data source will be less. Second, the analytical techniques used to address many issues are, along with increases in the complexity of the data, becoming themselves more complex. This can limit the segment of the research community that chooses to embark on the use of the surveys unless education and training are implemented to match the rise in methodological complexity. Third, the data are complex and require a considerable up-front investment for use. Not all qualified researchers are willing to make such an investment. These factors all affect the research capacity

available to exploit the longitudinal data, and are fair game in any “stock-taking” discussion.

Complexity

Without a doubt, longitudinal surveys are complex. Their very analytical power is a handicap to ease of use. In-depth data on durations and flows (of unemployment spells, low income spells, etc.) are not user friendly. Are we decreasing the utility of longitudinal data by designing surveys that are so complex that their use may be

restricted to a relatively few specialists? There is a trade-off between richness of content and ease of use. Have we got the trade-off right?

Sample design is an important aspect of this question. Some surveys are multi-level, including information on the workers and their firms, or on the children, families, and schools. These greatly enrich analytical potential, while increasing complexity for researchers.

There is also a link between complexity and timeliness. Timeliness issues for longitudinal surveys are of a different character from those associated with snapshot surveys. Snapshot surveys are generally designed to provide current economic or social “intelligence.” The longer it takes to release the data, the less useful they are, because they no longer reflect the current reality. In the case of longitudinal surveys, the

objective is not generally one of monitoring current conditions, but of understanding underlying relationships. The latest wiggle in the line is not the primary concern. Nonetheless, delays in finalizing and releasing the data lead to delays in the research process, particularly in the early years of a longitudinal data set when relatively few years of data are available. The complexity of the file (the number of derived variables, the edit and imputation process, the number of weights, and so on) adds to the time required to finalize a data set.

Another design complexity relates to the simultaneous production of cross-sectional and longitudinal estimates, something implemented in a number of surveys, in part to mitigate costs. This approach is obviously an efficient use of resources if it can be done without undue negative consequences for the timeliness, quality, and relevance of both the cross-sectional and longitudinal data.

Panel Length and Quality

A perfect longitudinal survey would follow the same people (or establishments), if not indefinitely, at least for a very long time. But these are voluntary surveys and, unfortunately, sample attrition is not completely random. So longitudinal surveys limit the length of time each panel stays in the survey.

The subject matter of a longitudinal survey may inherently force a design that follows the same people for a very long time (e.g., the National Longitudinal Survey of Children and Youth). Other surveys may be able to make do with shorter observation periods. Panel length and quality are linked

in two conflicting ways. First, if the observation period is too short, it impairs what the survey can tell us about the association between potential determinants and outcomes, or key transitions. For example, in economic longitudinal surveys, the position in the business cycle potentially influences outcomes. Hence, one requires data over at least one full cycle, typically a decade, to determine if outcomes are not simply the result of the position in the economic cycle (recession or expansion). Data over two business cycles are even better.

One of the longest running longitudinal survey, the Panel Study of Income Dynamics in the United States, is now capable of addressing important inter-generational issues thanks to the fact that the panel has remained in place for over 30 years. The transmission of poverty, welfare use, and marital instability patterns from one generation to the next are among the potential and realized studies that can result from these data. Such considerations argue for longer, rather than shorter, panel lengths. But there is a trade-off. As the panel length increases, so does response burden, and the risks of sample attrition. Doubts about the representative nature of the data and the validity of the findings start to grow. Furthermore, attempts to trace respondents contribute significantly to survey cost increases. Given the trade-offs, are the current panel lengths appropriate?

International Comparability

Our knowledge of complex social and economic processes can be enormously improved through international comparative studies. In the field of income

analysis, for example, a blossoming of studies based on comparable, multinational, cross-sectional data assembled by the Luxembourg Income Study has contributed significantly to our understanding of income maintenance and social assistance policies. In firm dynamics, the availability of comparable longitudinal surveys of manufacturing establishments has allowed for international comparative studies of firm growth, and job creation and destruction. Similar opportunities based on other longitudinal surveys could be exploited if internationally comparable data sources were created. But most longitudinal surveys have been developed in isolation. What would it take to develop international coherence in our longitudinal survey program? Should this become a strategic priority for Canada?

Access to Data

With cross-sectional surveys, it is usually possible to produce a micro-data file that is screened for confidentiality and can be released for public use without fear of disclosing the identity of respondents. In the case of longitudinal surveys, this is almost never true. These surveys contain such rich information on the characteristics and behaviour of respondents that the risk of disclosure rises exponentially with each successive wave of data. Paradoxically, the rise in information content needed by so many researchers and policy analysts has itself created barriers to access to this information.¹

Statistics Canada, the Social Sciences and Humanities Research Council and other organizations have attempted to reduce these barriers, and improve data access while

protecting confidentiality. As a result, a network of research data centres is flourishing. These centres provide access in controlled facilities for pre-defined, peer-reviewed research that cannot be completed without access to unscreened micro-data. This program has significantly improved the access by researchers to longitudinal data files.

In the challenge to increase access to micro-data, one thought should remain paramount: the willingness of respondents to provide information is highly dependent on the promise of confidentiality.

Another mode of access, important to research, is indirect access. Researchers have access to a dummy data file. They write a program to extract data. The program is submitted to Statistics Canada and executed against the master file. It is checked for confidentiality and the results are returned to the researcher. This approach may be viewed negatively in some quarters, because slow turnaround impedes the research process, but it can work very well if turnaround is rapid. Rapid turnaround depends entirely on funding.

In the challenge to increase access to micro-data, one thought should remain paramount: the willingness of respondents to provide information is highly dependent on the promise of confidentiality. Whatever is done, that assurance of confidentiality needs to

be protected and respected. Within this context, what can be done to further improve data access?

Is This the Right Time to Question the Usefulness of Longitudinal Surveys?

Around the world, there are quite a few examples of long-running longitu-

dinal surveys. The US Panel Study for Income Dynamics (PSID) is one such example, in existence long enough to be interviewing the adult children of the youth first drawn into the sample. The PSID is perhaps an illustration of the panel length and longevity needed to derive real benefits from longitudinal surveys. They do not come overnight. Relatively new longitudinal surveys are perhaps better seen as “sleepers,” requiring patience and long-term investments to yield dividends.

Striving for Equilibrium

In the 1990s, longitudinal survey development was at the forefront among statisticians, policy analysts, and empirical researchers alike. As we evaluate longitudinal surveys, we

should guard against over-reaction, either in our enthusiasm for their analytical potential (while perhaps down-playing practical issues), or through a potentially premature perception that they have not delivered the goods. The challenge is to assess more accurately what extra analytical benefit can realistically be derived from longitudinality, and weigh this against the costs and limits imposed by respondents’ willingness and ability to answer our questions year after year.

We are perhaps now entering a period where a realistic assessment of the benefits and shortcomings of longitudinal surveys can be developed. Any such assessment should, at a minimum, address the questions posed here.

Note

- 1 See the article by C. Halliwell in this issue discussing this topic.

An Overview of Statistics Canada's Longitudinal Surveys

The following list provides a thumbnail sketch of major longitudinal surveys and data sets produced by Statistics Canada.

National Population Health Survey

The National Population Health Survey (NPHS) started in 1994-1995, with funding from Data Gaps I. The Survey is conducted every two years and has a longitudinal sample of 17,000 persons of all ages. The objectives are to examine:

- the level, trend and distribution of the health status of the population;
- the determinants of health;
- the economic, social, demographic, occupational, and environmental correlates of health;
- the relationship between health status and health care utilization; and
- the dynamic process of health and illness.

The NPHS was also designed to serve as a platform for supplementary content or sample, and to be linked to routinely collected administrative data, such as vital statistics, environmental measures, community variables, and health services utilization.

Survey of Labour and Income Dynamics

Also funded from Data Gaps I, the Survey of Labour and Income Dynamics (SLID) examines changes experienced by individuals over time in terms of their labour market activities and income. At the heart of the Survey's objectives is the understanding of the economic well-being of Canadians: what economic shifts do individuals and families live through, and how do they vary with changes in their paid work, family make-up, receipt of government transfers, or other factors?

As the first Canadian household survey to provide national data on the fluctuations in income that a typical family or individual experiences over time, SLID gives greater insight on the nature and extent of poverty in Canada.

The SLID sample is composed of two panels. Each panel includes roughly 15,000 households. A panel is surveyed for six years. A new panel is introduced every three years. Thus two panels always overlap. Annual interviews are conducted for all household members aged 15 and over; and respondents have the option of authorizing access to tax data instead of completing income questions.

National Longitudinal Survey of Children and Youth

The National Longitudinal Survey of Children and Youth (NLSCY) is a study of Canadian children that follows their development and well-being from birth to early adulthood. The NLSCY began in 1994 and is jointly conducted by Statistics Canada and Social Development Canada.

The study collects information about factors influencing a child's social, emotional, and behavioural development, and monitors the impact of these factors on the child's development over time. The survey covers a comprehensive range of topics including the health of children, information on their physical development, learning, and behaviour, as well as data on their social environment (family, friends, schools, and communities). It is complex, because there are data at the child, family, and school levels.

The NLSCY looks at the non-institutionalized population (aged 0 to 11 at the time of their selection) in Canada's 10 provinces. Interviews are conducted every two years, so five cycles of data have now been collected.

Workplace and Employee Survey

The Workplace and Employee Survey (WES) is a Data Gaps survey to explore a broad range of issues relating to

employers and their employees. The Survey aims to shed light on the relationships among competitiveness, innovation, technology use, and human resource management on the employer side, and technology use, training, job stability, and earnings on the employee side.

The Survey is unique in that employers and employees are linked at the micro-data level: employees are selected from within sampled workplaces. Thus, information from both the supply and demand sides of the labour market is available.

Some 6,000 business locations are surveyed. The initial sample selected in 1999 is followed over time and is supplemented at two-year intervals with a sample of births selected from units added to the Business Register since the last survey occasion. Business locations are in the WES sample for six years. A sample of about 20,000 employees in these firms is followed for two years.

Youth in Transition Survey

The Youth in Transition Survey (YITS) examines major transitions in young people's lives. Funded by Human Resources and Skills Development Canada, YITS measures virtually all formal educational experiences and most labour market experiences, achievement, aspirations and expectations, and employment experiences. The Survey covers two cohorts: youth aged 15 and those 18 to 20 in 2000. Interviews are conducted every two years.

The 15-year-old cohort was selected from schools. The sample of 30,000 young people also completed the Programme for International Student Assessment, which offers internationally comparable direct measures of skills in reading, mathematics, and science. The Assessment was conducted in over 30 countries.

National Graduate Survey and Survey of Earned Doctorates

The National Graduate Survey (NGS) and Survey of Earned Doctorates (SED) examine the labour market outcomes of post-secondary graduates two and five years after graduation. The samples are drawn from post-secondary institutions and include an over-sample of masters' graduates and a census of doctoral graduates. The NGS is a long-standing survey, originally funded by Human Resources Development Canada. It is currently funded under Data Gaps II.

The NGS covers graduates' job and career satisfaction, the rates of under-employment and unemployment, the type of employment obtained related to career expectations and qualification requirements, and the influence of post-secondary education on occupational achievement.

The NGS is conducted about every five years, the last cohort being the Class of 2000.

Recently, the SED has been added to the program. It collects information on the plans of doctoral graduates at the point of graduation, including plans for further study, migration, and work.

Longitudinal Administrative Dataset

The Longitudinal Administrative Dataset (LAD) is a longitudinal file designed as a research tool on income and demographics. It comprises a 20 percent sample of the annual T1 Family File and the Longitudinal Immigration Data Base. Variables have been harmonized where possible and individuals can be linked year to year starting with the 1982 data. The file is augmented annually with new data.

The longitudinal file contains a few key annual demographic variables about the individuals represented and annual income information for both the individual and their census family in that year. For immigrants landed since 1980, the file also contains certain key characteristics observed at landing.

The longitudinal nature of the LAD permits custom-tailored research into dynamic phenomena, as well as representative cross-sectional patterns. Data are used to evaluate government programs and support policy recommendations, and for analyses of socio-economic conditions.

Longitudinal Immigration Database

The Longitudinal Immigration Database (IMDB) combines immigration and taxation records. It covers the immigration landing years since 1980 and is updated with tax information annually for 16 years. The IMDB offers data on the economic behaviour of immigrant tax filers, and is the only source that provides a direct link between immigration policy levers and the economic performance of immigrants. The database is managed by Statistics Canada on behalf of a federal-provincial consortium led by Citizenship and

Immigration Canada. The database covers persons who obtained their landed immigrant status since 1980 and filed at least one tax return after becoming a landed immigrant.

The IMDB supports analysis of labour market outcomes of different categories of immigrants, along with immigrant characteristics, such as education and knowledge of French or English. It also supports research on the role of social assistance as well as secondary interprovincial and inter-urban migration.

Longitudinal Survey of Immigrants to Canada

The Longitudinal Survey of Immigrants to Canada (LSIC) was launched in 2001 to meet a growing need for information on recent immigrants. While integration may take many years, the LSIC examines the first four years of settlement, a time when newcomers establish economic, social, and cultural ties.

Survey objectives are twofold: to study how new immigrants adjust to life in Canada over time and to provide information on the factors that facilitate or hinder this adjustment.

Topics covered in the survey include language proficiency, housing, education, foreign credential recognition, employment, health, values and attitudes, the development and use of social networks, income, and perceptions of settlement in Canada.

The target population for the survey consists of immigrants who have arrived in Canada between October 2000 and September 2001, were 15 years of age or older at the time of arrival, and landed from abroad as permanent residents. This means they must have applied for admission to Canada through a Canadian Mission abroad.

All individuals who applied within Canada have been excluded from the Survey as these people may have been in Canada for a considerable time before being granted permanent resident status, and would likely demonstrate different adaptation characteristics from those recently arrived in Canada.

Social Economy in Canada

Horizons, volume 8, number 2
December 2005

The Government of Canada's recent interest in the social economy raises important questions about balancing the interests of individuals, groups, and society as a whole. The next issue of *Horizons* features experts from the fields of social economy and community economic development who explore some of the principal challenges inherent to this subject: governance models that involve the state, the market and the third sector; effectiveness of existing legislative arrangements; areas of concern in present public policy; and directions for further research on the social economy. Articles also examine the role of government in the development of this sector.

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A Rich Platform for Data Collection

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Survey data or administrative records data? What if you could have both and more? Social experiments provide an opportunity to obtain extraordinarily rich data from a variety of sources on study participants.

Since 1991, the Social Research and Demonstration Corporation (SRDC) has been promoting the use of social experiments – or demonstration projects in social policy – as a way of testing promising policy innovations. During that time, the SRDC has been involved in the random assignment of more than 30,000 people, including single parents on welfare, displaced workers, low-income individuals in urban areas, the long-term unemployed in a disadvantaged region and, most recently, students entering high school. These experiments have tested employment incentives, savings incentives, and measures to increase participation in post-secondary education. Although the projects vary in terms of the characteristics of those who take part and the programs being tested, they share a common feature – the rich data sets that form the basis for estimating program impacts, performing sub-group analyses, and conducting benefit-cost analyses.

For example, the Self-Sufficiency Project (SSP), the first and longest-lasting of the experiments conducted by SRDC, administered a baseline and three follow-up surveys that, for at least some study participants, covered a period of up to 72 months after enrolment. The SSP also obtained data from Employment Insurance, provincial income assistance, and Canada Revenue Agency administrative files

that covered a period of up to three years prior and eight years after enrolment. For the members of the program group, the project compiled detailed data that monitored and tracked the amount and pattern of use of SSP's services over the life of the project. Furthermore, at the mid-point of the study, the SSP collected data on some of the children of those who took part in the study, and the children's data are linked to those of their parents. The SSP enrolled almost 9,500 lone parents who had been receiving welfare for at least a year in British Columbia and New Brunswick between November 1992 and May 1995. The random selection of potentially eligible participants from the welfare files and the high rate of voluntary participation in the project meant the research sample was broadly representative of the target population for this study.

The SSP and experiments like it can generate incredibly rich sets of linked micro data. This is possible, because of the rigorous informed consent process that forms an integral element of participant enrolment. Since these social experiments are conducted for research purposes, those who enroll in the study agree to participate in surveys, and allow members of the research team to obtain data from specified administrative records and link the data from all these sources for research purposes.

Data on members of the control group in an experiment portray the experiences of a particular population of interest. Data on members of the program group portray the experiences of a similar population that is exposed to the intervention being tested. The

experiment typically generates four data sets: longitudinal survey data on members of both the program group and the control group, and longitudinal administrative data sets on each of the two groups. Each data set has the strengths and weaknesses associated with any data derived from longitudinal surveys and from administrative records. A stand-alone survey can be helpful in finding out about a particular population and the issues affecting it. If the survey is longitudinal, multi-

or are in preparation. The data can also be used in micro-simulation models, which attempt to estimate the effects of different programs on target populations. However, micro-simulation models are “data hungry.” They need extensive amounts of micro data to simulate behavioural responses at the level of the individual, and then to aggregate those responses across the target population based on the characteristics of the individuals who make up that population. Experimental

motivations, and diversity of the people whose behaviour the policy is designed to affect.

Collecting qualitative data, using methods such as field observations, focus groups, and interviews allows researchers to gather information from those who are the focus of the intervention and from other stakeholders that goes beyond what can be obtained from quantitative data sources. In addition, by using an inductive analysis approach, these qualitative data provide an opportunity to explore how a policy intervention is experienced by individuals. By helping to reveal why and how people make specific choices, these data provide context for interpreting the quantitative data on outcomes. This integrated approach to data collection and analysis helps policy makers better understand how people will react to a new initiative, including how those responses differ across groups with different characteristics. For program practitioners, such an understanding is invaluable in efforts to adjust program theory and service delivery to increase the likelihood that the program will reach the intended population and be aligned with the real needs.

Like all data sources, however, social experiments have their limitations. Data can only be obtained and used in accordance with the consent given by participants (although other forms of data collection also face constraints: witness the increasing restrictions on the use of administrative records data for research purposes). Asking for too much may deter people from participating at all, and undermine the experiment. Therefore, research ambi-

However, a demonstration project also provides an opportunity to explore the “hows” and “whys” of the observed effects.

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ple waves of data are collected from the same people allowing important changes and transitions to be examined over time. Administrative records data can provide information about the take-up of a program by various groups of clients, and about the nature and duration of service use.

The unique power of an experiment comes from its ability to combine these data sets. Comparing data on members of the program group with those in the control group yields the causal effect of the program: it permits the behavioural responses to a particular intervention to be examined, including how those responses play out over time.

However, these data can be used for analysis that extends well beyond the estimation of program impacts. So far, 26 research papers, all using SSP data to explore a wide variety of topics, have been written by academic authors

results can also be used in instrumental variables analysis. For example, if a program was found to increase employment, program group status could be used as an instrument to study the effect of employment on a variety of other outcomes (e.g., health outcomes or impacts on children).

The principal goal of a social experiment is to determine whether a policy works – whether it produces effects on outcomes of interest. However, a demonstration project also provides an opportunity to explore the “hows” and “whys” of the observed effects. Demonstrations attempt to replicate the implementation of a program in a real-world setting. The ongoing interactions of the research team with project participants for an extended period of time, sometimes several years, presents an opportunity to achieve a more nuanced understanding of the experiences, circumstances,

tion may have to be tempered by this practical consideration. Also, the data are obtained only from those who enrolled in the experiment, and the research sample may not be fully representative of the target population. Selection bias can occur (due to, for example, unwillingness to be part of an experiment) when recruiting from a known population (e.g., the welfare caseloads for the SSP).

Other projects may rely on a convenience sample. For *learn\$ave*, an experimental evaluation of matched savings accounts for low-income individuals, study participants were recruited through referrals from service delivery

agencies and by advertisements (e.g., flyers distributed throughout low-income neighbourhoods and on transit systems). The characteristics of the recruited sample can be compared to other available data on low-income populations but, ultimately, it is not clear what population the *learn\$ave* sample is representative of, if any.

Recruitment methods will certainly influence the probability of certain individuals being enrolled, and those who consider the services being offered most attractive relative to their needs will be overrepresented in the sample. These biases may limit the kinds of analyses that can be done

with the data. Finally, mounting an experiment may be an expensive proposition compared to fielding a survey, since the costs of implementing and operating the test program can be substantially more than the data collection costs.

Even with their limitations, however, social experiments represent tremendous data-generating opportunities. The main limitation is that there are not enough experiments being conducted. That will only change if there is increased investment in producing the evidence to support evidence-based policy making.

Evidence-Based Public Policy

New Tools from Experimental Economics

October 24–25, 2005
Chateau Cartier, Aylmer, Quebec

Visit the PRI web site for the latest program and registration information.

Experimental economics is fast becoming an accepted approach to innovative evidence-based policy, due in large part to the work of Vernon Smith and Daniel Kahneman, co-winners of the 2002 Nobel Prize in Economics.

Join the PRI and CIRANO (Center for Interuniversity Research and Analysis on Organizations) for a 1 1/2-day conference on the policy applications of experimental research. The event is intended for policy researchers and policy makers interested in the potential of this powerful methodology to inform policy decisions in areas as diverse as healthcare, education and training, social policy, industrial and regulatory policy, energy and the environment, and fiscal policy. Specifically, the conference sets out to:

- Highlight specific examples of research undertaken by experimentalists in a variety of policy fields.
- Explore, through discussion and interactive demonstration, why experimental data are different and valuable in a policy context.
- Encourage policy analysts and policy makers to consider experimental work as a resource in policy decision making.

Economic and behavioural experiments represent a promising set of tools for testing human behaviour in various real-life settings, with application to a range of practical public policy and programming problems. They can be used, for example, to test how target populations will respond to new tax incentives or participate in new government programs. Experiments offer a controlled setting, a consistent methodology, are far less expensive than many other data collection efforts, and can help avoid costly policy mistakes.

Data Are Not Enough

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Canada is very fortunate to have a wealth of socio-economic data, much produced by the national statistical agency, Statistics Canada. These data provide the foundations for a wide range of activities. Monthly and quarterly reports on key aspects of the economy, such as the unemployment, gross domestic product (GDP) growth, and inflation rates, are fundamental to macro-economic policy. Annual results on such diverse items as divorce rates, life expectancy, prevalence of low income, and patterns of household spending provide the fact base for innumerable discussions across the country, including both the popular media and policy debates, as well as family conversations around the dinner table. Other data, such as earnings by occupation, influence individual choices like field of study in post-secondary education.

Underlying all these key summary statistics are various data sets, such as the population census with detailed occupational data and earnings, and the Canadian Mortality Database with information on cause of death. These data sets enable researchers to pursue a wide range of more in-depth studies, such as, in the case of the mortality database, the contribution to increased life expectancy from the decline in deaths from heart disease. Yet more complex data sets are also available, especially longitudinal surveys. These data sets give information about representative samples of individuals or firms at a point in time and provide repeated observations of the same entities over time. Because of their longitudinal character, these surveys allow analysts to begin to understand the underlying dynamics of health, child development, and labour market behaviour in Canada.¹

Notwithstanding this wealth of data, there are still major empirical policy and research questions where data alone are not enough to provide answers. There are two main reasons. First, many important policy questions require a range of information that is broader than that contained in any one data set. This is well understood in macro-economic policy, where assembling the National Accounts and its summary measure, GDP, requires the synthesis of literally hundreds of diverse data sets. Second, policy deliberations typically include “what do we expect” and “what if” kinds of questions. Again in macro-economics, these questions are answered by large-scale econometric simulation models, closely tied to the underlying conceptual framework and data of the National Accounts.

While these ideas of data synthesis and conceptually linked simulation models are well established in macro-economic policy, they are still very novel in the broader domains of health and socio-economic policy. Several examples illustrate that data synthesis and simulation models need to be more broadly applied, and show their feasibility.

Before discussing these examples, it is reasonable to ask: If these are such good ideas, and they have been well accepted in macro-economic policy for almost half a century, why have they not yet been widely accepted in other areas, such as health and socio-economic policy? The main answer is computers. The key methodological ideas were formulated decades ago. However, it is only with the advent of modern high speed computing that the large scale, highly multivariate surveys and other data sets that provide the feed stocks for sophisticated data

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synthesis have been possible. Ditto for the needed, but more complex, kinds of statistical analysis of the data; and ditto for modern micro (as opposed to macro) simulation models.

The first example, Statistics Canada's Social Policy Simulation Database and Model (SPSD/M) is about 20 years old. (Related models date back to the Carter Royal Commission on tax reform in the 1960s in Canada, and similar models to the SPSPD/M were in use more than 30 years ago in the United States.) The SPSPD is an example of data synthesis, while the SPSM allows users to pose and carefully answer "what if" policy-oriented questions.

The genesis of the SPSPD/M was tied in part to the McDonald Royal Commission, where one key recommendation was a guaranteed annual income. The serious consideration of a guaranteed annual income also goes back to the mid-1970s with the Lalonde Orange Paper on social security reform. This type of policy proposal is very wide ranging, touching many existing government programs as well as the income tax system. Therefore, to analyze what would happen if Canada were to adopt such a proposal, it was necessary to have a database that included all the main elements, determining both how status quo programs functioned and how the new program would determine eligibility and benefit levels. In addition to family composition, this included data on incomes from various sources, weekly earnings in the terms used by the unemployment insurance system, and deductions needed to compute income tax liabilities.

Unfortunately, no single database contained all the needed information. The data did exist, but spread among

a number of different data sets. As a result, the Social Policy Simulation Database (SPSD) was created through an exercise in data synthesis – similar in spirit to what was well accepted in

In the case of the the LifePaths model, we need to weave together demographic and labour market transition dynamics, as well as disability dynamics, time use patterns, and private savings arrangements.

the National Accounts, but radically different and more challenging in that the data had to be coherent at the level of individuals, families, and households, not just for broad sectors of the economy.

A similar challenge arose a few years later with the discussions in the late 1980s leading up to the Goods and Services Tax (GST). One element was a refundable GST credit in the income tax system designed to offset the otherwise regressive impact of the GST itself. However, determining the joint distributional impact on households at different income levels of a commodity tax change on the spending side of the ledger and a refundable tax credit on the income tax side requires individual and household level data on both spending patterns and incomes. The SPSPD is unique in Canada in providing a synthesis of data sets designed precisely to enable such analysis. Moreover, the SPSM is intimately tied to the architecture of the SPSPD to allow analysts – with their own PCs – to try any number of policy scenarios and assess both their fiscal and distributional impacts.

More recently, journalists occasionally contract with Statistics Canada to run simulations using the SPSPD/M of the key elements in the campaign

platforms of major political parties, the general results of which are then published in daily newspapers. The SPSPD/M is available free of charge to university-based researchers. It is also

available for sale, and is used by a number of federal and provincial government departments, as well as by policy think-tanks.

The second example is Statistics Canada's LifePaths model. This model was born with the 1983 Special Parliamentary Committee on Pension Reform, where the hot policy issue was homemakers' pensions. Like guaranteed annual incomes and the GST, this was a large policy question in both political and fiscal terms, as well as analytically challenging. The homemaker pension proposal depended on three quite different kinds of socio-economic characteristics: marital status, earnings of both spouses, and fertility. Moreover, this was inherently dynamic or longitudinal. The issue was what impact marital and fertility status, combined with earnings patterns at ages from 20 to 40 would have on pension entitlements after age 65. Such longitudinal data did not exist. Moreover, even if we had such longitudinal surveys in the past, the question was about the costs and benefits in the future.

The only way to meet these analytical challenges was a combination of data synthesis and micro-simulation modelling. In this case, though, the data synthesis was much trickier as it

had to involve statistical representations of dynamics. What were the probabilities of getting married at different ages? How did these probabilities depend on education and labour market experience? What about the reciprocal influences of fertility on marriage, and marriage on fertility?

As one example of the benefits of this richer approach, several years ago, LifePaths was used to examine questions of generational equity. During the 1990s, concerns about national government deficits were broadened to consider the accumulated debt as well. In particular, some US analysts developed a methodology called generational accounting, with which they argued that the accumulated debt was an unfair burden on future generations. However, the underlying methods were quite simplistic, for example using only an average person or representative agent for each generation, leaving out important history, such as the experiences of those birth cohorts who lived through the Great Depression of the 1930s, and positing constant growth rates indefinitely into the future. LifePaths, in contrast, generates realistic birth cohorts that reflect actual historical and projected patterns, and incorporate the heterogeneities of varying marriage and fertility behaviours over the life course. These realistic birth cohorts experience different labour market earnings, with consequential impacts on personal income tax liabilities and transfer payments, such as old age pensions and Canada and Quebec Pension Plan benefits.

When the generational accounting exercise was repeated within the richer and more accurately representative context of LifePaths' overlapping birth cohorts, the story that emerged was very different. Breaking out the

representative agent to reflect realistic variations in earnings levels among men and women of successive birth cohorts, both at given ages and over the life course, showed that there was far more redistribution within each generation via Canada's tax and transfer system than between generations. LifePaths' analysis therefore highlights the limitations of the conventional academic economic analysis of generational accounting. It also illustrates the tremendous potential for analysis of a range of important policy questions including not just the fiscal sustainability of Canada's public pension system in the face of population aging, but also income adequacy for future elderly.

More recently, the LifePaths model has been central to work on the Policy Research Initiative project on Population Aging and Life-Course Flexibility. One of the project's central policy questions is the extent to which the aging baby boom and its impending retirement from the paid labour force will result in labour shortages and/or excessive fiscal strains. In this case, we need to weave together the kinds of demographic and labour market transition dynamics that were central to the homemaker pension proposal, as well as disability dynamics, time use patterns, and private savings arrangements. Again, data in these many areas exist, sometimes in longitudinal data sets, which are critical for generating statistical descriptions of transition dynamics. However, they do not all exist in any one data set. So the first task is one of data synthesis – observing and distilling a systematic network of nuggets of empirical regularity from different surveys, and then building a computer simulation framework that takes these statistical

descriptions of how people's characteristics evolve over time, and uses them to generate realistic but synthetic biographies for large samples of hypothetical individuals.

In turn, key aspects of behaviour, such as patterns of retirement and women's patterns of labour force participation, can then be varied to explore the impacts over coming decades of the size of Canada's paid labour force relative to its population of retirees. Based on these kinds of scenarios, further questions can focus on possible changes in public policies, such as regulations influencing the incentive structure of private pension plans, or supports for parental leave and child care.

A third example is in the health domain. Statistics Canada has developed a sister model to LifePaths called POHEM for POpulation HEalth Model. Methodologically, the issues are very similar. There are many areas where we need to know how changes in a behaviour affect subsequent health status. The main difference between LifePaths and POHEM is that POHEM focuses on the dynamics of risk factors like smoking and obesity, cancers and heart disease, and health status attributes like mobility and pain, although it builds on LifePaths by also incorporating detailed transition dynamics information on fertility, nuptiality, education, and labour market behaviour (though not details of government tax and transfer programs).

One recent application of POHEM was a project with Health Canada to assess the potential impact of screening for colorectal cancer. A number of randomized, controlled trials were available from the published research literature on the efficacy of one or

other kind of screening (e.g., fecal occult blood and sigmoidoscopy), but these were based on relatively non-representative populations. With POHEM, it was possible to weave these study results, especially their false-positive and false-negative detection rates, together with detailed cancer incidence data from the cancer registry maintained by Statistics Canada, and a comprehensive cost model for colorectal cancer, to estimate for the Canadian population the costs and benefits of various scenarios for the periodicity (e.g., biennial), applicable age ranges (e.g., 50 to 69), and participation rates. The results of the POHEM simulations were then used by a panel of expert clinicians assembled by Health Canada to agree on and publish consensus guidelines for colorectal cancer screening.

Another current application of POHEM, in partnership with the new Public Health Agency of Canada, is to assess and project interactions among “healthy living” behaviours like physical activity, proximal effects like obesity, and further effects like diabetes and heart disease. The goal in this case is to create an analytical framework within which the prospective impact on Canadians’ health of various interventions with regard to, for example, exercise or diet, can be projected.

One recent application of POHEM dealt with the difficult clinical question of the appropriateness of prescribing a drug with known benefits, but also known harms. The most recent high profile example of this issue is Cox-2 inhibitors which have benefits for musculo-skeletal pain, but also risks for cardiovascular disease. A few years ago, a similar example was

Tamoxifen, used in a new way as a primary preventive for breast cancer in otherwise healthy women, but who were judged to be at elevated risk, for example, because a sister or mother had breast cancer.

In this latter case, a major clinical trial had just found that Tamoxifen was highly successful in preventing incident breast cancer – so successful in fact that the trial was stopped early, on the grounds that it was unethical to deny the drug to those (high risk) women who were taking the placebo. However, the published results clearly showed that preventive Tamoxifen also had a number of adverse side effects such that, overall, there was no difference in mortality between the two arms of the trial. Moreover, the population enrolled in the trial was mostly from the United States, and did not necessarily represent the women who would be taking the drug were it to be approved in Canada.

The POHEM was used to answer the question: What if Tamoxifen were rolled out in Canada in the manner approved in the United States by the Food and Drug Administration? This was a complex analysis, again requiring an extensive amount of data synthesis. For example, the analysis drew on detailed age-specific breast cancer incidence and survival rates from the national cancer registry. Other factors influencing breast cancer incidence and their correlations were derived from the Canadian National Breast Screening Study. The results of this analysis were sobering. When full account was taken of the adverse side effects, including the sometimes large error bars around them, as well as the beneficial effects of Tamoxifen

for breast cancer incidence, the net effect was a clear possibility of no net improvement in life expectancy for these Canadian women.

This Tamoxifen analysis highlights the tremendous potential of this kind of analysis, for example, as part of the evidence base that could be created for use by Health Canada, the Canadian Coordinating Office for Health Technology Assessment, and provincial drug formularies.

These examples show that modern computing has opened up a new and powerful range of analytical tools. Not only has the computer enabled Statistics Canada to undertake much more complex and detailed surveys, including longitudinal surveys, it has also opened up much richer kinds of statistical analysis, in particular, the use of micro-simulation models. As a result, Statistics Canada has entered a new phase of providing computer-based analytical tools enabling the more sophisticated users to pose and answer a new class of “what if” questions. These simulation model-based results show that data alone are no longer enough; they are becoming an indispensable part of the broader fact base for national discourse.

Note

- 1 See the article by Picot and Webber in this issue for an extended discussion of longitudinal surveys.

Desperately Seeking Data

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Introduction

Imagine you are a quantitative researcher who has just returned to Canada, after a quarter century on another planet. You would quickly be presented with an apparent paradox.

On the one hand, your fellow researchers would seem endowed with data beyond your wildest dreams. They have benefited from an explosion of rich data sets, including the longitudinal and administrative data that were largely only dreamed of 25 years earlier.

On the other hand, they are complaining endlessly about the lack of data or the lack of access to the data that are there.

Why this paradox?

The Explosion in Demand

It is partly what an econometrician would call an identification problem. What you observe is a substantial increase in data supply, one that in and of itself is very impressive with hundreds of researchers now having access to hitherto unavailable micro data. What you do not directly observe is an even larger increase in demand.

That increase in demand reflects many factors.

First, governments are asking for greater performance measurement and reporting, as part of a push for greater accountability to the public for money spent and results obtained. To meet that demand, we now publish a plethora of performance reports. This demand can only grow as, currently, these reports are still in their infancy, showing only indicators of intermediate and ultimate outcomes.

When (or if) they mature, they will have to report on attribution: the difference in those outcomes that is a consequence of public policy and programs. This will be a data-hungry activity (surveys and administrative data, often longitudinal), as it requires rigorous evaluations.

Second, governments and their officials are also asking for greater evidence-based decision making, a term that may not have even been in widespread use when you left the planet a quarter century ago.² This may reflect the well-known erosion of trust in society's elites, so "trust us" is no longer a sufficient rationale for public policy. It may also reflect the need to respect budget constraints, which forces harder choices on governments.

Third, the kinds of issues governments want researchers to look at are more complex than a quarter century ago. Now, we are much more interested in the antecedents of things we observe, such as the socio-economic factors that result in some people being healthier than others, or the consequences of things we observe, such as the impact of quality care in infancy on subsequent educational and workplace performance. In many cases, the things we look at – the purported causes and the purported effects – are separated not just by a few years, but by decades.

Fourth, we also want to look at individuals and distributions. The representative household or representative agent is still a useful starting point for some forms of analysis, but only a starting point. Too often, it merely hides the phenomena that we seek – phenomena that operate at the level of the individual.

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As a result of these factors, we routinely want to use large micro data sets and structure them to reflect what is happening to individual Canadians, their families, and their households, over much of their life course. We now routinely build huge micro-simulation models that have an appetite for data that can never be satisfied by any single data set, pushing us into the domain of data linkage.³ Once these Canadians are statistically encapsulated in micro-simulation models, we then get to poke and prod them with simulated policy instruments to see how they respond. In particular, we can look at the distribution questions that should always preoccupy a polity with interests in both economic efficiency and equity.

As a result, our data demands have grown, and faster than the data supply has grown.

The Growth in Data Protection

The second explanation for the paradox of plenty of data and plenty of complaints stems from constraints on data access originating in privacy issues.⁴

The data that meet the needs described above are data about individual Canadians and their life courses. In some sense, of course, we have always used data about individuals. But we often put it into aggregate time series or in bins with cross-tabulations. Now, we want the individual data. And, the data about individual Canadians are – by definition – personal information. These data are thus protected under various statutes, notably the *Privacy*

Public Willingness to Share Data with Researchers

Health Canada has always had access to personal information from two surveys of key interest to that department: the National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS). In both, respondents are asked whether they would permit their responses to be shared with Health Canada for statistical purposes only. In both cases, around 95 percent of respondents agree. In both surveys, respondents are also asked if their own provincial administrative personal health records can be linked by Statistics Canada researchers for statistical purposes. Over 90 percent agree. Respondents to Statistics Canada surveys also routinely acquiesce to letting Statistics Canada get its income data from the Canada Revenue Agency.

Act, the *Statistics Act*, and the legislation governing the use and sharing of data captured in the course of program administration, such as the *Income Tax Act*. As a result, the data are not easy to access.

Of course, there are enormous benefits to the protection of personal information within a statistical system. First, as a principle, Canadians have a strong right to their privacy. Second, as data users, we want Canadians to have a strong incentive to be truthful in providing statistical information. Statistics Canada's desire to be an effective protector of personal information stems from the recognition that Canadians can either withhold the information – through non-response – or hide it – through inaccurate response.

We often forget, though, how willing Canadians are to share their information with government when they trust government (see accompanying textbox).

At any rate, much of the data researchers now want exists, but is not in the public domain. That is the second explanation for the apparent paradox of complaints amidst plenty.

The Failure to Do Risk Assessment

How did we end up here? First, we failed to assess risk. Second, we adhered to practices put in place before the new sources of data and information management technologies began to multiply, practices that assume these new sources are more a threat than an opportunity for better government.

In almost every field where governments face issues of risk, they are being asked to assess the extent of risk, which is a combination of the probability, consequences, and reversibility of a potential problem. They are then asked to devote efforts to either risk reduction or mitigation proportionate

to that risk. There is one exception: the protection of personal information. Here the responses are not scaled to the risk.

Why not? Because the *Privacy Act* and the *Statistics Act* refer to “identifiable” information, making no distinction between the ease of or difficulty of actually identifying a person and her/his information in some data source. Thus, an administrative data file containing the medical history of individuals, such as Manitoba health insurance records, is treated exactly the same as the Manitoba component of the Canadian Community Health Survey (CCHS), even though the latter has no names, addresses, or specific identifiers, such as a social insurance number (SIN), and covers only a sample of the Manitoba population. But, the CCHS has enough information that one might potentially come across a record and realize to whom it pertains.

To assess risk properly, a distinction needs to be made among identified data, masked data, and anonymized or non-identifiable data.

The first item, also known as unmasked data or data with direct identifiers, is data that have, for example, names, addresses, and other identifiers such as a SIN.

Masked or anonymous data, do not have direct identifiers, but are potentially identifiable data. For example, you could be perusing the micro data and see a record for a female physician in her late 40s living on your side of the street.⁵ You could reasonably presume that is your neighbour, Nancy. Now you can learn more about her,

(e.g., what she earns), than she wants you to know. This is known as residual identification or attribute disclosure: it is not so much that you know the data belong to a specific individual, but that they probably do, to a greater or lesser degree.

Anonymized data are generalized to such a point that one cannot ever identify an individual. This is typically done by rolling up categories, such as age into age groups or, especially, providing less-precise locational information.⁶ The net result, when there is no potential for identifying an individual, is an unidentifiable file. Under the *Privacy Act*, it no longer contains personal information. When Statistics Canada releases an unidentifiable file it is called a Public Use Micro File (PUMF).

The problem is that any one means of rolling up the data may be appropriate for one project, but damages the data for another. As a result, creation of a PUMF is difficult for Statistics Canada (certainly the first time): it is not easy to figure out which data roll-ups do the least damage to the usefulness of the data set for the general research community. The resultant PUMF is also often frustrating for users, as the roll-ups limit the usefulness to many users.

A consequence of this approach is that there are now no Public Use Micro Files (PUMFs) for Statistics Canada’s longitudinal surveys. This is because Statistics Canada methodologists have determined that there is no way to create a useful PUMF from longitudinal data, while meeting the strict standards of no risk of revelation of personal information.

Finally, even when PUMFs can be done, they are released long after Statistics Canada has published the data and even published its own research using the data. Indeed, the delays are so long as to make doing a PUMF appear an afterthought.⁷

Researchers almost never use the first category of data, unmasked personal data (with the direct identifiers).⁸ There is no need. They often wish to use the second, the masked data in which there is some (larger or smaller) risk of (residual) identification of individuals. They want it not to know about individuals as individuals per se, but as the micro unit at which behaviour takes place. The risks of data leakage are miniscule, and there have never been known episodes of a violation of personal privacy through the kinds of data sets researchers normally use. In many respects, this is a theoretical risk rather than a real risk.

Nevertheless, risk is the product of probability and extent of harm. Thus, greater exposure to small probability events still raises the risk. And the record does confirm that even minor failures to protect privacy get enormous publicity and can result in considerable perceived harm. Statistics Canada is right to worry about what this means for response rates on surveys.

That said, public perception of the degree of risk often originates in a failure to make distinctions in the types of data being used, in particular the difference between unmasked and masked data. The public generally thinks researchers have easy access to the unmasked data (i.e.,

full of personal information linked to their names). This is not the case; researchers can generally access only masked data.

The Work-Arounds

Statistics Canada and other data holders have, of course, developed procedures to work around some of these problems of access to potentially identifiable data.

One way is for Statistics Canada to do the research with the data. In some respects, we are now in a world where the largest single effort at Government of Canada policy-relevant research is not in any policy department, it is in Statistics Canada. Some of this is necessary. Statistics Canada cannot attain the quality of data that we want if it is purely a “data factory.” It must research the data to ensure they are appropriate for the intended research. But, nothing says the research using the data can only be done at Statistics Canada. Only the researchers have relatively unfettered access to the data though, so by default, they are the only ones able to do much of the research.

This is not good. Statistics Canada should not get preferential access to the data, either in absolute terms or in timeliness. It cannot do policy research on real policy issues, such as work that amounts to Cabinet confidences: it is not in the Department’s mandate. Yet, those who are so mandated don’t have the same access.

Another is via “share files,” where a survey instrument asks respondents if their (masked) record can be shared with a department for specified

research and evaluation purposes. This has worked for a single department, such as Health Canada with the National Population Health Survey (NPHS) and the CCHS. It is less clear that it will work with a collection of departments, and, if share rates (i.e., the percentage of survey respondents who agree) are low, then the department has serious problems. Its own share file is useless, and it is unable to access the master file under any circumstances, as many respondents have explicitly refused to share the data with that department.

There are other ways to get access, but via procedures that are, at best, inconvenient and, at times, onerous.

One such approach is where researchers get indirect access: they get Statistics Canada to retrieve the data for them, aggregating it up to the point that it is not identifiable personal information before releasing it to the researcher. This takes resources and often does not meet the timeliness requirement of a deputy minister needing the information immediately. And, Statistics Canada may charge for this service.

HRSDC’s Procedures to Protect Administrative Personal Data for Research

- The longitudinal data used for research do not have any personal identifiers.
- The approved data for a project are limited to that needed to address specific approved research or evaluation questions. So, if not needed, geographic data or age data are aggregated into large groups.
- Quite often, we only work with a sample of the data (quite often only 10 percent), meaning that, for example, there is only a one-in-ten chance that a specific individual is even in the dataset.
- The data are provided in a database file that can only be understood by knowing the file format. That format is only divulged to the approved researchers.
- The data are encrypted. Only the approved researchers get the decryption key, and it is provided separately. As a result, even if a data CD is lost, it is useless to anyone who finds it.
- The researcher is made very aware of the onus to protect personal information.
- The researcher can only hold the data for the duration of the project. It must then be returned. Some data are destroyed on return, while some are kept under lock and key for a fixed (and previously approved) duration of time after the project, in case further analysis is needed (which would also have to be approved).

Researchers, both academic and Government of Canada, can also get direct access to Statistics Canada master data files. But this requires that a researcher become a deemed employee of Statistics Canada and perform some form of duty for Statistics Canada, such as jointly publishing the research results. Again, becoming a deemed employee of Statistics Canada is not a simple thing: it takes resources and time. For example, the Social Sciences and Humanities Research Council has to have a peer review process approve a project, including forming views on the worth of the project, even for federal government researchers!⁹ This sort of process is often not appropriate for key policy research, where the research cannot always be put in the public domain, at least in the run-up to Cabinet decisions.

As well, when Statistics Canada (or other providers, such as the Canadian Institute for Health Information) think of enhancing access to researchers, they too often only think of them as the academic research community. Statistics Canada had already put in place quite a few academic Research Data Centres (where approved researchers can become deemed employees of Statistics Canada and access master data files under supervision) before it put the Federal Research Data Centre (FRDC) in Ottawa for analysts and policy researchers within federal departments. There were many ad hoc procedures for federal employee access before, but there was considerable lack of uniformity in access. Some got it; others did not.

Life is worse outside government. The Research Data Centres are run by their sponsoring institutions and will often

charge researchers from non-affiliated universities, non-profit organizations, or think-tanks. Many of those researchers can only get access by paying Statistics Canada for data runs, or awaiting the eventual PUMF.

The current system allows only answers to questions developed without seeing the data, thus limiting serendipitous discovery.

We cannot bemoan the lack of use of data in public policy discourse when we prevent the data from being used.

Using internal administrative data for research and evaluation purposes faces similar hurdles, even though it too is masked for those uses. Inside most government departments,¹⁰ there are elaborate procedures to protect the personal administrative data used for research and evaluation. The accompanying textbox enumerates how Human Resources and Skills Development Canada (HRSDC) protects such data.

In some respects, the procedures for access to this masked data are more onerous than for those with direct access to the underlying, identified, administrative data, despite the risk of revelation of personal information being orders of magnitude smaller.

Protective procedures are necessary, as privacy protection is important. But, they are costly, in two ways. First is the resource cost of administering the processes. Second, and likely worse, may well be the loss of free-form exploration of the data.

At present, researchers must specify the kinds of hypotheses they have, and sometimes even the specific data elements they need for testing these

prior hypotheses. They often can no longer simply explore the data by running cross-tabulations or regressions with numerous regressors, as ideas occur. This is now seen as a bad thing, and is called data fishing. The

researchers must queue up their jobs and let someone else run them. It reminds me of the days of punch cards and overnight batch runs, somewhat revealing of my age, but reminding me how uncreative that modus operandi was.

When examining raw data, unexpected relationships can often be observed by chance. The current system allows only answers to questions developed without seeing the data, thus limiting serendipitous discovery.

Possible Solutions

To date, solutions are cobbled together to make the problem partly go away but, sometimes, at a high overhead cost.

The problem is, too often, that we think in terms of trying to prevent access rather than trying to prevent inappropriate use.

An example of the former is simply denying access. Inappropriate use is prevented. So is appropriate use. An example of the latter is to have penalties for inappropriate use. Both the *Statistics Act* and the HRSDC enabling legislation (Bill C-23, presently before the House of Commons) prescribe serious penalties for the inappropriate use of information about individuals

that one could run across during the course of one's business. Such penalties, coupled with awareness raising and periodic verification of appropriate protection policies, should suffice within organizations that can apply such enforcement and penalties (such as a department of the Government of Canada).

We must move to a risk-based approach to protecting the de-identified data sets researchers use, especially inside government departments.

Another example related to access is not releasing data sets that contain potentially identifiable personal information, from whence originates the aforementioned PUMF.

Yet, I could imagine a world in which Statistics Canada master data sets are accessible to HRSDC researchers through a tool that incorporates filters that do on-the-fly suppression of personal information (e.g., cells that show a small number of observations). No cells would be released that did not pass the test.

The astute reader might notice that the missing information can be filled in by making multiple retrievals. But, that can be prevented – at least inside organizations with appropriate privacy protection procedures – by forbidding this, and having appropriate penalties. That is one reason why the HRSDC research community supports having a penalty regime inside the privacy code in the pending HRSDC enabling legis-

lation (Bill C-23): it might open up data access by moving from a one cannot system to a one shall not system.

First, the *Privacy Act* could allow a distinction in the extent of protection afforded between data that are unmasked or identified and that which are masked but still potentially

identifiable. The *Privacy Act* cannot be expected to enumerate the continuum of risks inherent here, nor prescribe the appropriate responses, but it could note the difference between masked and unmasked data, and allow a risk-based approach, where protection is at least somewhat scaled to risk. Data users would then have legal cover to set up procedures, in concert with their privacy authorities (such as the federal Office of the Privacy Commissioner), that reflect underlying risk. Currently, no such distinction can even be considered.

Second, the *Statistics Act* could be amended to permit the use of masked, but potentially identifiable, Statistics Canada micro data by other Government of Canada departments for research and evaluation purposes as an appropriate use for the data, rather than the current system, which requires researchers to become deemed employees of Statistics Canada doing work for Statistics Canada.

Statistics Canada certainly needs to act as a contracted purveyor of custom data to client departments when it is those departments that are funding the data collection. There should be mechanisms and protocols that allow the departments to access that data for policy analysis as if it were the department's own data, while respecting all the necessary and legitimate privacy and confidentiality requirements (such as not using it for administrative purposes). This could be conditional on the department having a privacy regime that met standards approved by the Office of the Privacy Commissioner, including even a penalty regime.

Now, there is no doubt that opening legal frameworks is a risky proposition. The legislative process is such that one can never be sure a step toward somewhat better research access does not end up becoming a step backward. This is certainly true when even the simplest understandings, such as the distinction between unmasked data and masked data, often escape those who are discussing data privacy issues.

The Dangers of Not Finding Solutions

Statistics Canada is working with federal data-using departments to improve data access further. This is a tightrope walk for them. On the one hand, the main danger of increasing access to potentially identifiable data is increasing the risk of some form of perceived disclosure. This can adversely affect the entire statistical system.

On the other hand, the main danger of not finding a solution is the impact on the rate of return from the data. The kind of data with which we are dealing – the data that encompass individual Canadians and their life paths – is more expensive to acquire. Yet, it is useful only if it is used.

I have often said that the relationship between data and research is like the relationship between fuel and a motor: neither is particularly useful without the other. Yet, my analogy is inappropriate in one key respect: the motor uses up the fuel.

Analysis and research never use up the data. In that sense, in principle, a finite amount of data can fuel a vast amount of research. That is, the potential rate of return is quite high.

But, that is not happening. Canada's data are under-utilized. Much of that under-utilization stems from factors beyond this discussion, such as resources actually devoted to true policy research either within government or academia. But, a significant part of it stems from impeded access, because of these privacy constraints.

Again, as one who has been working hard to build the business cases for investing in a deeper statistical foundation for evidence-based decision making, previously at Health Canada and now at HRSDC, I worry that I am now overselling the rates of return on those proposed investments. I worry that millions of dollars worth of data are being used for hundreds of

thousands of dollars worth of analysis. I worry that if that is all the return we can muster, perhaps the investment is not worth it.

All that said, if we can improve data access, the investment should be made as, ultimately, the decisions we want to influence are worth billions. But, the data have to be used for that to happen. To enhance use, we must move to a risk-based approach to protecting the de-identified data sets researchers use, especially inside government departments.

the release of a PUMF, with the only exception being the rapid release of the Labour Force Survey. Thanks are due to Deirdre Gillieson of HRSDC for collecting this record for me.

- 8 The unmasked data are used by the few authorized to do data extractions or linkages.
- 9 But, not for Statistics Canada researchers, a curious asymmetry in treatment.
- 10 Especially those with privacy-issue scars, such as the former Human Resources Development Canada.

Notes

- 1 Thanks are due to George Jaremek and David Wallace (HRSDC), Elizabeth Ruddick and Claude Langlois (Citizenship and Immigration Canada), and Jeanine Bustros (Health Canada) for their comments. The views expressed here are those of the author and should not be seen as an official position of HRSDC.
- 2 Although you may be forgiven for assuming we were always supposed to do this and should not have needed to invent a term for it.
- 3 Whether via individual identifiers or via the cruder tool of statistical data merges.
- 4 There are also financial constraints that result from cost-recovery policies in Canada's statistical world.
- 5 Which you know because you get a six-digit postal code that identifies a specific half of a street block.
- 6 Such as using a three-digit postal code only, which starts to encompass a lot of geography.
- 7 A review of the record for data sets of interest to HRSDC shows gaps in a range of a half year to a year and a half between data released in *The Daily* and

Research Data Centres A Quantum Leap Forward in Social Science Research Capabilities

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R. Currie authored the descriptive article on the Research Data Centres.

B. Spencer provided the reflection on the RDC program from the users' perspective.

This year is the 10th anniversary of the Data Liberation Initiative (DLI). The provocative title accurately describes the substantially increased availability of public use files from Statistics Canada to social science researchers at universities across the country. The initiative was brought about by the leadership and co-operation of Statistics Canada, the Social Sciences and Humanities Research Council (SSHRC), The Federation of Humanities and Social Sciences, as well as contributions from several ministries in the federal government. When the DLI was launched in 1995, it was expected to attract about 30 universities. Virtually all in Canada signed up. In 2000, a second major social science initiative in data dissemination was launched, the Research Data Centres (RDCs), complementing the DLI and dramatically extending the social science research capabilities in Canada. A third, promising development is the recent SSHRC support for Strategic Research Clusters.

A consortium of six lead universities (with more than 20 universities involved altogether) applied to the Canada Foundation for Innovation for a major grant to establish a national system of RDCs. The goal was to transfer copies of databases from Statistics Canada headquarters to secure locations, near researchers, while meeting the confidentiality requirements of Statistics Canada. Both longitudinal and detailed cross-sectional master files of the data would be made available.

The Goals of Research Data Centres

The RDC Network is a response to the work of the 1999 Bernard National Task Force on the future of social

science research in Canada. It identified three significant barriers:

- the lack of trained researchers in significant numbers;
- the lack of access to detailed micro-data; and
- weak links between the work of social scientists and the potential users of the knowledge they generate.

The RDCs are actively dealing with all these issues, by way of creating three networks:

- a local network within each Centre, which is interdisciplinary and includes representation from regional partners and other interested parties;
- the national network of RDCs, called the RDC National Coordinating Committee (RDCNCC); and
- an extensive external network that includes Statistics Canada, the SSHRC, the Canadian Institutes of Health Research (CIHR), and a large number of other organizations involved in the social science enterprise in Canada.

The RDC Network now serves over 1,200 researchers, involving over 600 approved projects, with new researchers and projects arriving in the Centres on a regular basis.

Training New Researchers and Developing Research Methodologies

The training of the next generation of quantitative social science researchers is well underway and the RDCs are playing a lead role. Over 350 of the researchers in the Centres are students, of which a third are principal investigators of their own projects. Important

methodological and statistical advances are being made in carrying out longitudinal and multi-level data analysis. In addition to the day-to-day learning in the Centres, workshops are held at each Centre throughout the year, and the SSHRC supports regional workshops. Graduate courses for students who are able to use the RDCs are also underway in a pilot project.

Students who choose this path of training are likely to be lifelong researchers in this kind of advanced data analysis. This training therefore represents a huge commitment by these students and their advisers, and we must be sure the RDC Network develops in an adequate way to support them in the long term.

The development of RDCs has created a network of RDC analysts, all of whom are employees of Statistics Canada working in the RDCs. They meet bi-weekly (by conference call) under the supervision of Dr. Gustave Goldmann at Statistics Canada, who is the manager of the RDC project. The analysts discuss methodological issues, such as data documentation, statistical packages, technical issues, and derived variables, many of which are raised by researchers working in the Centres. Two technical bulletins have been published, with many more expected.

It is important to note that the scientific directors of the RDCs are themselves outstanding researchers who have agreed to take on this role, because they believe so deeply in the importance of social science research development in Canada.

Increasing Access to Canadian Data

The RDCs serve an important social function by substantially reducing the costs to researchers of working with

Major Focus of Current Research in RDCs

Of the data sets common to all the Centres, most of the analytical activity focuses on the National Longitudinal Survey of Children and Youth, the Canadian Community Health Survey, the National Population Health Survey, and two economic surveys, the Survey of Labour and Income Dynamics and the Workplace and Employee Survey. Together, these five surveys account for over 80 percent of the current projects in the Centres. To date, 274 papers have been written, as well as numerous books, national and international conference presentations, published proceedings, reports to government agencies and 24 completed masters and doctoral theses. The output will increase exponentially as more projects conclude, and new projects and researchers continue to come to the Centres.

It is also important to note that the extensive substantive research being carried out in the Centres informs Statistics Canada in its development of new surveys and the refinement of existing surveys. Some further opportunities are also developing. In the Strategic Research Clusters competition the SSHRC is supporting, at least four projects are relevant in that they will rely on RDCs to carry out the research they propose. Furthermore, the Longitudinal and Lifecourse Cluster being undertaken by a team led by Paul Bernard, and which includes several directors of RDCs, will be a logical step in the further development of new longitudinal data in the social sciences.

Canadian data. Canadian researchers can easily obtain access to such data as the US Panel Study of Income Dynamics (PSID) or the British Household Panel Survey (BHPS) simply by downloading the data from a web site. The RDC Network has also eliminated or reduced a number of previous barriers to similar Canadian data and increased the likelihood of these data being used.

There are strong pressures in academia to publish in the so-called top journals in the profession. These journals are often based in the United States, and to a lesser extent in the United Kingdom. The views of editors and referees about what are important problems are influenced by what they are most familiar with – the social problems of their country. However, some of our data, now available through the RDCs, are unique in the world, and some

kinds of analysis are unavailable elsewhere. This substantially strengthens our international publishing opportunities, and fosters the development of world recognition for Canadian social science research.

Increasing Links Between Social Science Research and Policy

The third challenge described in the proposal for the development of RDCs was to strengthen the weak link between the work of social scientists and potential users of the knowledge they generate. Opportunities include reporting research results to policy makers and working to include policy makers in the very delineation of projects to be undertaken in the Centres.

The national network is achieving goals in this area well beyond what

could have been achieved if the Centres acted alone. The RDCNCC functions as a living research infrastructure, transcending disciplines as well as research topics. It is helping to develop teams of the most sophisticated quantitative social science researchers in Canada with the goal of becoming one of the leading networks of this kind in the world. The dissemination of research results is accelerating. The RDCNCC has sponsored three national conferences, one at McMaster University (on economic issues), a second at the University of Calgary (on health policy issues), and the third at the Université de Montréal (Families Under Pressure). A fourth is planned for the University of British Columbia (Education, Training and the Evolving Workplace). In each case, there is a concerted effort to include policy makers in the deliberations. The Network has agreed on a common annual reporting form that allows us to track the research output from all the Centres.

The RDCs can and want to be of service to government, policy groups, think-tanks, non-governmental organizations, and other research groups that tend to focus on specific research and policy issues. While there are rarely magic bullets in public policy arising directly from social science research, Caroline Pestieau (2003) has suggested the most productive use of such research findings may lead to a gradual change in framing and understanding an issue. The development of a stronger relationship between researchers and policy makers is one of the highest priorities of the RDC Network.

Challenges and Opportunities for the Future

The RDC Network is so new that several challenges remain. One is the expansion of the Network to the point where the appropriate number of Centres and Branches exist that allow researchers in all parts of the country reasonable access in terms of cost and time.

A second major challenge is the long-term financial health of the Centres. The RDCNCC has submitted a grant request jointly to the SSHRC and CIHR for funds that would permit a sharing of expenses between the universities and the two granting councils.

We are also beginning to move beyond the publication of discrete papers toward a synthesis of findings by topic. That will be one important way to highlight the most significant findings of the research.

Finally, on the policy front, the Centres have not yet reached their potential in terms of needed co-operation with lawmakers and policy analysts.

The key to the success of the RDC program is that researchers are able to analyze micro-data in a secure environment that conforms to the requirements of the *Statistics Act*. This ensures that the privacy of respondents and the confidentiality of the data are respected. With the establishment of the DLI, the RDC Network, and more recently the Research Clusters, expertise, data gathering and data analysis in quantitative social science research has a very promising future in Canada.

A Users' Perspective

**Byron G. Spencer,
McMaster University**

This note is written at the request of the PRI, to describe what it is like to be a user of an RDC. As it happens, I am also an academic director – of the McMaster RDC – and have taken this opportunity to speak with several users and other academic directors. The remarks that follow reflect their thoughts and concerns, as well as my own.

What is it like to work in an RDC? Some inconvenience has to be acknowledged, and measures that are imposed to protect the confidentiality of the data are sometimes seen as indicating a lack of trust. It is unquestionably irritating to feel not trusted. Also, it rankles university-based researchers not to have the survey data files as readily available as any other library resource (or as survey files from abroad!).

Gaining access to an RDC has its own non-trivial costs. A SSHRC application must spell out the nature of the proposed research, the methodology to be used, the data set(s) to be accessed, and why it is necessary to work with master files. (Speaking with an RDC Analyst helps to avoid pitfalls and save time.) On average applications are now processed in 17 working days, less if the work has already been peer-reviewed (e.g., it has SSHRC or CIHR funding).

Working in the RDC has proved generally to be a good experience. It goes more smoothly for those who are already familiar with the software to

be used and have some prior exposure to working with large data files. Even so, many have learned in the RDCs. (It is often possible to work outside the RDCs with public use micro-data files or synthetic files that correspond to the master files.) Within the RDCs, working files from one session are readily available at the next. Extended hours have been introduced, where possible, to accommodate users. Intermediate output can be printed as desired, but for use only in the RDC. Any output to be removed from the RDC goes through a disclosure avoidance analysis conducted by the analyst; its purpose is to ensure that individual records are not inadvertently released. In practice the procedure typically takes no more than three days at McMaster, and less time if only model output is to be released. Urgent cases (e.g., output that is to be presented tomorrow at a conference) get urgent attention.

The analysts are knowledgeable about the software packages in the Centres, and expert in one or more of the survey files. They also have ready access to the network of analysts, and can help researchers over most difficulties in short order. Analysts can also guide researchers in the procedures for matching longitudinal data sets, help to incorporate census-based area-level information in the files to be analyzed, provide assistance in dealing with what are sometimes complicated methodological issues (including weighting procedures), and so on.

Let me conclude with my wish list – a few things I would like to see happen in the RDCs in the next year or two.

I'd like to see the barriers to entry reduced as much as possible. The goal is to facilitate the move from research ideas worth exploring to completed manuscripts. The academic directors of the RDCs together with representatives from the SSHRC and Statistics Canada form the National Coordinating Committee. It continues in its efforts to streamline the application process, to minimize the difficulties experienced in disclosure analysis and elsewhere, but further work is needed. Suggestions for improvements are welcome.

I'd like to see even more graduate students using the RDCs. A pilot course was offered at McMaster in the last academic year, and judged successful by the National Coordinating Committee. All Centres will now be able to mount their own RDC-based graduate courses, and use the RDCs more effectively to train future researchers.

I'd like to see administrative data of research and policy interest available to researchers in the RDCs. As one example, it is widely recognized that more intensive analysis of provincial health records (visits to physicians, hospital stays, use of prescription drugs, etc.) would help to inform public policy, but only rarely do researchers have access to such data. If that data could be placed in the RDCs, its confidentiality would be protected under the *Statistics Act* and, at the same time, it would become available for analysis. Similar comments apply to education, judicial, and other records. (A pilot project is now under way to see how this would work in practice.) Extending the range of data holdings would make the RDCs even more attractive to the research community.

I'd like to see notable improvements in the electronic documentation of the data files, to take advantage of recent software developments and expedite data discovery. Many of the survey files are exceedingly complex. Enriched documentation would make it easier to understand each file individually, and also facilitate comparisons across files. Again, a pilot project is under way; the results are promising.

Finally, *I'd like to have realistic synthetic or dummy files corresponding to the master files* that can be used outside the RDCs. That would allow researchers much greater flexibility in terms of where and when they do their work.

In sum, the RDCs provide a very supportive environment for both experienced and novice users. As one user in the former category commented: "I would prefer to have the data available in my office, of course. It is true, however, that on more than one occasion I have picked up useful information about a data set or statistical software via a conversation that might well not have been overheard or entered into had I not been in the RDC. Quite a bit of cross-fertilization takes place, some of which might not occur otherwise."

Indeed, while there are undoubtedly some challenges associated with the RDCs, an increasing number of researchers are using them, are finding that they work, and are adding materially to our knowledge of Canadian society.

Reference

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Societal Indicators and Government-Wide Reporting

Tim Wilson
Treasury Board Secretariat

Abstract

From the perspective of the Government's management board (the Treasury Board and its Secretariat), key societal indicators can be useful for government-wide analysis to achieve a deeper understanding of broad societal trends to guide policy and planning, and provide a context within which government performance can be assessed. The Government's initial explorations of this possibility have led to the production of an annual report, Canada's Performance. It fulfils the latter of these purposes; that is, it provides a context for assessing government performance. However, the explicit link to the planning process is not there yet. This paper outlines the background of the approach to reporting on societal indicators used in the report as well as possible future directions for this type of reporting, namely, the use of societal indicators in conjunction with a government-wide planning process.¹

The Management Board Perspective

The perspective of the Treasury Board Secretariat on societal indicators is not that of the pure technician or statistician. As the Government's "management board," the Treasury Board and its Secretariat see reporting on key societal indicators as a primary means of providing a government-wide context for priority planning and performance assessment. In addition, such reporting is a way in which the Government is accountable to Parliament and to Canadians for the results achieved with the resources allotted.

This paper outlines the experience of the Government of Canada with respect to the use of societal indicators from this management board perspective, that is, for the purposes of government-wide reporting. More particularly, the paper outlines:

- the background of the concept – the roots of the idea of using societal indicators for government-wide reporting and the objectives this type of reporting is to serve;
- where we are now – the Government's current vehicle for societal indicator reporting from a government-wide perspective, Canada's Performance (Treasury Board, 2003b); and
- possible future directions – the use of societal indicators in conjunction with a government-wide planning process and corresponding report.

Background

Beginning in the mid-1990s, a number of interrelated forces coalesced to form a foundation for societal indicator reporting from a government-wide perspective, namely, projects undertaken to "improve reporting to Parliament," the emergence of the Government's commitment to "results-based management," the increasing promotion of and reporting on collaborative or "horizontal" arrangements, and the resurgence of research in "societal or quality of life indicators."

Improved Reporting to Parliament: Strengthening accountability to Parliament and to Canadians is a fundamental and ongoing commitment of the Government of Canada. Providing Parliament and Canadians

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with high-quality and timely information about the plans and achievements of the Government “is key to implementing a citizen-focused agenda, since it allows Canadians to engage more effectively in understanding and shaping public policy” (Treasury Board, 2000b: 31).

This ongoing commitment to improve reporting has led to calls for the use of key societal indicators in government reporting. Parliamentarians, for instance, have pointed out that because the outcomes of government efforts are often “borderless,” the performance information from individual departments and agencies can be better interpreted if objective context information is also available. In 2001, for example, a series of seminars, *Measuring Quality of Life: The Use of Societal Outcomes* by Parliamentarians, took place, bringing together parliamentarians, senior public servants, and members of the policy community. The seminars concluded that societal outcome reporting could more effectively plug parliamentarians and citizens into the policy process, lay the foundation of a better working relationship between parliamentarians and the public service and provide a “whole-of-government perspective” (Bennett et al., 2001).

For this higher-level reporting to be linked to government program and policy objectives, however, public service managers must plan for, monitor, and report on the results of their policies and programs. Results-based management provides the foundation of an improved, comprehensive reporting structure.

Results-Based Management:

Results-based management is enshrined in the Government’s modern management framework, *Results for Canadians*. At the heart of this framework are commitments to focus on citizens, to adopt a clear set of values, to manage for results, and to ensure responsible spending. While governments have historically focused on inputs, activities, and outputs, the Government committed itself to a modern management agenda that focuses on actual results. Managing for results involves rethinking the life cycle of a program or policy. “It means clearly defining the results to be achieved, delivering the program or service, measuring and evaluating performance and making adjustments to improve both efficiency and effectiveness. It also means reporting on performance in ways that make sense to Canadians” (Treasury Board, 2000b: 11). Reporting in ways that make sense to Canadians means taking a citizen focus to reporting. Just as a citizen focus in service delivery means moving beyond the traditional, “inside out” approach – beyond the traditional approach of reflecting government organizations more than the needs and priorities of citizens – so too does citizen-focused reporting mean providing information on the outcomes of government efforts at a higher level than that of the department or program. This is another reason, that reporting on key societal indicators is important. This is also one reason the Government has explored ways of planning for, monitoring, and reporting “horizontal” results.

Horizontality: The social and economic outcomes measured by key societal indicators that form the goals of government activity go beyond individual organizations and involve more than one department or jurisdiction, as well as other partners (Treasury Board, 1996: 2). Since the mid-1990s, there has been an increased concern with the business of getting this horizontal dimension of government right. It is an open question as to whether or not “horizontality” in the public sector is a new phenomenon or not. It could be said that “Canadian governments have been preoccupied since Confederation with the age-old quest for ‘co-ordinated government.’” However, the case can also be made that over the last decade the complexity of the issue, as well as the awareness of the issue, has increased markedly (Bakvis and Juillet, 2004).

The above-mentioned focus on results, as part of the new public management more generally, has certainly been one driver for this concern with horizontality. Among the other drivers, one would certainly have to cite the commitment to provide seamless, single-window service delivery to Canadians as well as the development of communications technologies, which facilitate the spontaneous generation of policy and program delivery networks.

Societal Indicator Research: Over the past decade or so, the standard measures of our progress as a society – such as gross domestic product (GDP) per capita – have been challenged as insufficient for fully capturing our quality of life. The resurgence of societal indicator research is fundamentally

tied to this effort to reconceptualize quality of life. Within this context, quality of life is distinguished from standard of living – the latter being generally understood as a quantitative assessment of economic well-being solely. “For example, someone may have a high standard of living but be working odd hours, have no job security and suffer from life-threateningly high levels of stress. These will not be reflected in his or her standard of living” (Bennett et al., 2001: 13; see also Treasury Board, 2000a: 3).

In Canada, the renewed interest in societal indicator research has manifested itself in efforts to develop quality of life frameworks for research and reporting at the community, provincial, and national levels. National-level research and reporting is not the exclusive domain of the federal government, however. For instance, the Quality of Life Indicator Project led by the Canadian Policy Research Networks, a private non-profit corporation, undertook the task of creating a prototype set of national quality of life indicators, to reflect the range of issues that truly matter to citizens. After engaging citizens to determine the appropriate indicators, in 2002 they released the report *Quality of Life in Canada: A Citizen's Report Card* (CPRN, 2002). The difference between efforts such as this by non-governmental organizations and those of the Government of Canada can be summed up basically as follows: the former are designed to inform broad policy processes (Legowski, 2000: iv), whereas the efforts of the federal government are designed to

link such reporting to priority setting and the assessment of government performance.

Where We Are Now

All these factors – improved reporting to Parliament, results-based management, horizontality, and the resurgence of societal indicator research – seemed to align in the mid-1990s and point to a common goal: government-wide reporting on social outcomes and indicators – the “objective being to achieve a deeper and shared understanding of broad societal trends to guide policy and planning, and to provide a context within which government performance can be assessed” (Treasury Board, 1997: 17). This section of the paper describes the Government's current vehicle for societal indicator reporting from a government-wide perspective.

A Comprehensive Reporting Framework:

In 1999, the work on societal indicators and on horizontal results bore fruit in the form of the Comprehensive Reporting Framework. Basically, it calls for a more holistic approach to reporting, consisting of three elements:

- “departmental reporting” on their priorities, plans and achievements – as typically found in their Departmental Report on Plans and Priorities and in departmental performance reports;²
- “horizontal reporting” on outcomes that go beyond the efforts of any one department, jurisdiction, or sector; and
- reporting on “societal indicators.”

“The framework suggests that (quality of life) reporting be considered as part of an integrated and comprehensive performance measurement report that would offer Canadians a comprehensive synthesis of performance in areas of interest to citizens – improvement in our quality of life, the achievement of shared societal goals, and the specific results achieved by national programs and services.”³

Canada's Performance Report:

Beginning in 2001, Treasury Board Secretariat (TBS) took up the suggestion first broached during the construction of the Comprehensive Reporting Framework: to produce a public report, preferably tabled in Parliament, using societal indicators. The first such report is entitled *Canada's Performance 2001*. The President of the Treasury Board first tabled it in Parliament on December 6, 2001; it has been tabled annually in the fall since then.

The reports provide information on a core set of societal indicators grouped into themes. Trend information, international comparisons, and disaggregations are provided, when applicable, for all the indicators.

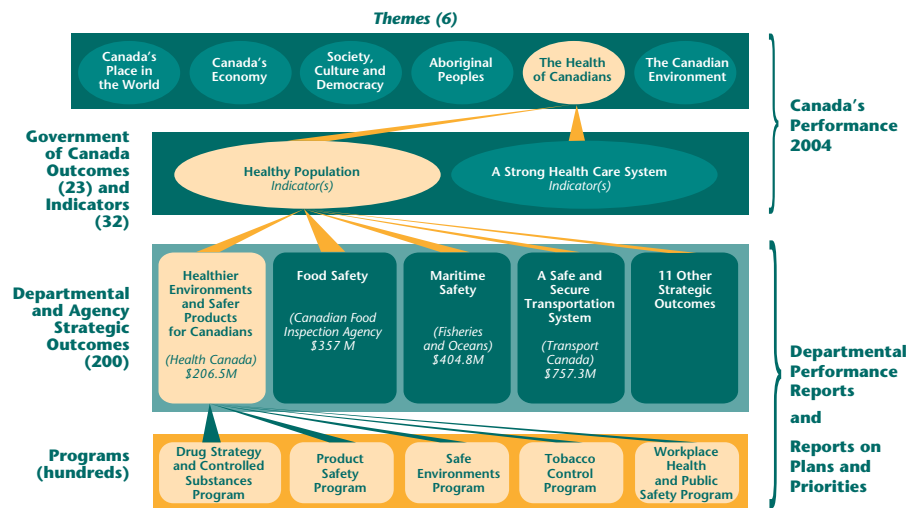
The reports also provide information on certain key governmental programs that contribute to improving the quality of life of Canadians. In doing so, the reports contribute to several of the modern management objectives described earlier:

- supporting parliamentarians who require a context for reviewing the results achieved by individual departments and agencies;

- enhancing the government's citizen focus by serving as a vehicle to engage Canadians in discussion of future policy developments;
- advancing results-based management in the federal government and improving the quality of program performance information available to Canadians and parliamentarians over time;
- supporting horizontal management and policy development by providing an overview of the connections between various issues and between the responses to these issues by different departments and agencies; and
- contributing to the transparency of the federal government's plans and achievements, as well as its accountability to Canadians and parliamentarians.

After tabling *Canada's Performance 2001*, the TBS consulted with Canadians, think-tanks, parliamentarians, governments, and other partners on the approach adopted in the report. The consultations and engagement strategies focused on such issues as selecting indicators that give a more comprehensive view of the economy, health, environment, and communities; presenting information in a manner that best helps Canadians contribute to the shaping of government policy; using the report to promote a growing culture of learning about how to manage for and by results, and engaging Canadians in the identification of themes and indicators that reflect their values and the range of issues that matter to them.

FIGURE 1:
The Whole of Government Framework



Basically, there are three lenses through which to view the indicators in a government-wide report such as this: in terms of government priorities, in terms of the concerns of Canadians and in terms of the accuracy and relevance of the data (Treasury Board, 2000a: 6). More particularly, consultations with Canadians, think-tanks, parliamentarians, governments, and other partners confirmed the following set of criteria with respect to the indicators and measures selected for inclusion in the report.

- Information must be **relevant**; indicators must reflect Canadian values.
- Information must be **temporal**; data must highlight trends over time and show progress toward goals.

- Information must be **available**; data must be easily accessible.
- Information must be **comparable**; it must be possible to compare with data from other countries.
- Information must be **understandable**; data must be easily grasped by various audiences.

There are a few other important reporting principles which the Canada's Performance reports hold as sacred: balance (presenting both good and bad news), disaggregations to sub-groups or regional data (primarily through the electronic version) (Treasury Board, 2000a: 6), and the inclusion of both subjective and objective indicators (for e.g., self-rated health status in addition to life expectancy) (Treasury Board, 2000a: 3).

A key development, starting with the 2002 report, has been the construction of a whole-of-government framework to support the societal-level information (see Figure 1). The framework provides a logic model for the Government of Canada – mapping the contributions of government programs and departments to horizontal (or, Government of Canada) outcomes and ultimately to the societal-level theme in question (e.g., health). If the framework is the logic model, the

or if it is to be rigidly linked to a government-wide planning process. As a result, a possible future direction for the Government of Canada would be to clarify this by making the report more closely aligned with government planning and priority setting.

This move would take place in the context of the current government's commitment to reallocate continually from low to high priority issues. The links made would have to show, then,

result in a corresponding government-wide report on plans to act as the bookend to the Canada's Performance report. In its 2004-05 Report on Plans and Priorities, the TBS made public its plan to explore the "development of a whole-of-government planning report that would express the government's targets and provide a clearer basis for reporting on Canada's performance over the medium term" (Treasury Board, 2004: 29).

As the potential of linking the reporting framework presented in Canada's Performance to a whole-of-government planning process is pursued, a number of issues will need to be addressed.

Knowledge gaps: There are areas in which data are spotty. Economic indicators garner, for the most part, general support for being sound; however, the social indicators need work. We lack, for instance, consistent survey data on "cultural participation" and "perceptions of racism" or "personal tolerance" in Canada. So too, the current data on Aboriginal peoples often do not support disaggregations between First Nations, Inuit, and Métis or between on reserve and off reserve. Similarly, the available information on international investments is weak: often measuring merely an activity or output (such as Official Development Assistance), rather than the outcome the output is intended to achieve (such as, "the resolution of developmental issues").

Targets: Many jurisdictions are beginning to set and report on societal-level targets in their budgets and planning and performance documents. While

We lack consistent survey data on "cultural participation" and "perceptions of racism" or "personal tolerance" in Canada.

report itself provides the performance story. The meat of the framework, so to speak, is provided in the electronic version of the report, which allows the reader to drill down to the more specific department and program-level information provided in each departmental report on plans and priorities as well as the performance reports.

Possible Future Directions: Government-Wide Planning

During the construction of the Comprehensive Reporting Framework, two general purposes for this type of reporting were discerned. "In particular, the government would need to distinguish between using such reporting to 'inform' broad policy processes and making an explicit linkage between QOL [quality of life] reporting and priority setting" (Treasury Board, 2000a: 4). As it stands, it is not entirely clear whether Canada's Performance is seen as something to inform policy

how this type of reporting could drive not only priority setting but planning in the context of reallocation, perhaps via use of such a report by Treasury Board and cabinet ministers when reviewing allocation and reallocation proposals. A short-term step that could be taken would be to include financials in the report: how much is Canada spending on the environment, or more particularly, on reducing the effects of climate change? This step is also in keeping with the example provided by Alberta's Measuring Up reports, which includes the Alberta government's consolidated financial statements.

This would also require a formalization of the government-wide planning process in accordance with the thematic areas (or "Government of Canada Outcome" areas) included in the Canada's Performance framework. If formalized, this planning process could

often seen as useful for achieving a certain focus for activity, this practice has raised concerns in some quarters: “There are allegations of cheating, perverse consequences and distortions in pursuit of targets, along with unfair pressure on professionals” (Briscoe, 2004-2005: 33). The Government will need to explore further the pros and cons of targets as it develops options for whole-of-government reporting.

Attribution: The idea that the federal government should report on broad social and economic outcomes in relation to its own department-level plans and performance, and that it could, perhaps, set targets for these broad social and economic outcomes, also raises questions of accountability and attribution: can a government be held accountable for societal-level performance?

It is recognized that single governments cannot be held uniquely accountable (in the strictest sense) for the performance of an economy or society. “Given the difficulty in attributing changes in these kinds of indicators to specific government actions, this type of reporting cannot be considered an instrument for holding governments accountable, although some may seek to use it in this way” (Treasury Board, 2000a: 2). Despite these issues of attribution, such reporting is relevant for an analysis of the contributions a government makes (Mayne, 1999). Furthermore, while the societal-level goals that are tracked and reported on in Canada’s Performance are beyond what government is solely responsible for (either

in terms of what one can attribute as the effects of government action or in terms of the narrowly defined constitutional obligations of a government) they are, nevertheless, areas where government has a significant role (Treasury Board, 1998: 22).

Conclusion

From the perspective of the Government’s management board, key societal indicators can be useful for government-wide analysis. They can be used to achieve a deeper understanding of broad societal trends to guide policy and planning, and to provide a context within which government performance can be assessed. The Government’s initial explorations of this possibility have led to the production of an annual report, Canada’s Performance. The annual report certainly fulfils the latter of these purposes; namely, it provides a context for assessing government performance. However, the explicit link to the planning process is not there yet.

The TBS plans to explore the development of a whole-of-government planning report; that report could complement the Canada’s Performance reports and make the link between societal indicator reporting and government-wide planning more explicit. If pursued to its logical end, this report on Canada’s Plans (along with the existing report on Canada’s Performance) would be a realization of the comprehensive reporting framework: with departmental planning and performance information (in the individual departmental reports, accessible

through the electronic versions of the government-wide reports), societal-level outcome information (in the annual, government-wide planning and performance reports themselves), and planning and performance reporting around horizontal or Government of Canada outcomes.

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Notes

- 1 A version of this paper will be published as part of the proceedings of the OECD World Forum on Key Indicators, Palermo, November 10-13 2004.
- 2 Every year, as part of the documentation produced to support the appropriation of funds from Parliament, the government tables two sets of departmental reports in Parliament. In the spring, each department and agency produces its Report on Plans and Priorities for the coming fiscal year. In the fall, they provide parliamentarians with their departmental performance reports indicating achievements attained over the previous fiscal year.
- 3 Treasury Board (2000: 9). The Framework was tabled in Parliament in the President's Annual Report.

Natural Disaster Hotspots

"The triggers may be natural, but responsibility for the impacts of disasters belongs to all of us."

There is a growing recognition that natural disasters risk should be managed as a development planning issue rather than strictly as one of after-the-fact humanitarian assistance. A new report from the World Bank, *Natural Disaster Hotspots*, aims to better inform development policy and decision making by showing where the risk from natural disasters of different types is greatest. Primarily, it shows areas where there is risk of more than one type of natural disaster, including earthquakes, landslides, volcanoes, droughts, floods, and cyclones.

Among the findings of the global analysis are that almost one fifth of the Earth's land area and more than half of the world's population are highly exposed to at least one hazard. In the United States, for example, more than one third of the population lives in hazard-prone areas but only one percent of its land area ranks high in mortality risk. Canada, however, shows as low risk perhaps, in part, because wildfire and ice storms were not included in the analysis. At greatest risk: Taiwan and China, with 73 percent of their area and population exposed to three or more hazards.

Arnold, M., R. Chen, M. Dilley, U. Deichmann, and A. Lerner-Lam. 2005. *Natural Disaster Hotspots: A Global Risk Analysis*. Published by World Bank. The report is available at <<http://publications.worldbank.org/ecommerce>>.

In Search of Data Beyond Traditional Measures

Gilles Rhéaume
Conference Board of Canada

The Conference Board of Canada releases many reports every year, including economic forecasts that rely on Statistics Canada data, and benchmarking studies that often use secondary sources, such as the OECD and Statistics Canada. While traditional economic and labour statistics are well developed and used frequently, increasingly we are noticing major data gaps as we examine areas critical to Canada's well-being, such as health, education, environment, innovation and commercialization. To put it in context, let us examine a few examples.

Since 1999, the Conference Board has been producing annual reports on connectedness, comparing Canada to other OECD countries. Connectedness is the availability and use of information and communication technologies and associated services to facilitate communications, interactions, and transactions. We developed a framework to measure performance, based on the value chain approach, guided by a blue ribbon advisory group. While data availability has improved over the last five years, we still find that, although we have rich data on infrastructure and access to it, we have major data gaps in measuring the use of those technologies. We also have major challenges in assessing outcomes and impacts of connectedness beyond the purely anecdotal.

In June 2004, the Conference Board released a report, *Exploring Canada's Innovation Character, Benchmarking Against Global Best*, comparing Canada's performance against leading OECD countries. This was an assessment of performance and progress based on the federal government's innovation strategy. This strategy had

10 goals, 15 targets, and 18 recommendations. But did we have the data to assess whether these were being met? In some cases yes, but in others, there was no reliable information. While we had good data on traditional measures, such as research and development intensity, triadic patent families, and human resources in science and technology occupations, we found virtually no data, for example, on community-based innovation and commercialization, two key priorities of the federal government. There was also no data on Canada's workforce capacity in terms of skills that are essential for innovation. This brings me to the education and learning area.

We have good information on high school and post-secondary school attainment, and participation in continuing education. We also know how much we invest in public education, and we have some information on workplace training, but little on outcomes and impacts. Do we know anything about the level of competencies and knowledge gained through education and learning? Do we have data on the impacts that investments in this area have on organizational performance, productivity or socio-economic well-being? The answers are not encouraging, but there are occasions where special surveys have helped.

For example, a few years ago Canada participated with other countries in the International Adult Literacy Survey that led to the development of good literacy data with population characteristics. Based on these data, the Conference Board was able to assess the economic benefits of improving literacy. This was a breakthrough report that was referenced

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by the OECD, and led to the US federal government asking us to do a similar study for their country. We eventually went beyond that for our US client by interviewing employers and employees who had undertaken basic skills training to better assess the full benefits of literacy improvements. We found that ameliorating literacy skills had many benefits for employers as well as for employees and their families.

The Conference Board produces every year a flagship report entitled *Performance and Potential*. One key chapter benchmarks Canada to the other OECD countries using available data. The challenge is to look at performance measures that help assess factors that affect quality of life, and ensuring that these data are compatible for all OECD countries that we examine. Last year we reported on 110 indicators in six categories for the OECD countries. We have a lot of data, but once again, we found that there are important gaps beyond those mentioned above regarding innovation and education. In health, for example, we have indicators of a country's

health status and outcomes, the level of spending on health care, and the number of physicians and nurses. But we do not have measures of the performance of the health care system. This is a critical issue given the importance of this sector.

Overall, statistics have evolved over the years and have improved significantly. But more will need to be done as governments and research organizations like the Conference Board need to assess performance beyond traditional measures to capture the broader economic, environmental, and social determinants to a sustainable high quality of life. Given the priorities of governments, as well as their need for greater accountability and assessment of results in areas, such as education and learning, health care, and innovation and commercialization, there needs to be more resources spent on gathering the necessary data. We often know how much we spend and resources used in delivering services, but we rarely have good measures of their outcomes and impacts.

Work and Retirement: Encouraging Choice

This project report, from the PRI's Population Aging and Life-Course Flexibility team, analyses the economic risk to society posed generally by population aging, and specifically by the imminent retirement of the baby boom generation. The report emphasizes a need to maintain a healthy economy and fiscal prudence, while respecting opportunities for people to exercise choice in the best interests of themselves, their families, and society. The authors explore how older workers could be enabled and encouraged to extend their working lives for both their own benefit and that of the economy.

PRI. September 2005. *Encouraging Choice in Work and Retirement*. Ottawa: Policy Research Initiative.

Access to Knowledge Policy

From Intelligent People to Intelligent Organizations

Albert Simard
Natural Resources Canada

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Science-based government departments generate large amounts of data, information, and knowledge. This paper outlines the need for an access-to-knowledge policy to manage this content. The Canadian Forest Service (CFS) at Natural Resources Canada (NRCan) has recently adopted such a policy.

Need for a Policy

The importance of the knowledge economy to Canada has been reflected in no fewer than four recent speeches from the Throne. These are not just fine words: the Government of Canada spends a substantial amount of money on science and technology, totalling \$8.6 billion in 2003-04 (Statistics Canada, 2003). To realize a return on or to leverage this considerable investment in knowledge creation requires that the knowledge be used for the benefit of Canadians.

Making knowledge more widely available allows others to derive value from it more readily. This is, in fact, the main purpose of many government data collection activities. For example, publishing geological data allows exploration companies to locate, more readily, potentially exploitable deposits of metals, gemstones, and fossil fuels. It also allows land use planners to better identify areas at risk from geological hazards such as earthquakes and landslides.

Access policies are generally in place for data intended to be shared from the outset. However, the publish or perish culture found in the realm of scientific research makes many scientists possessive and protective of “their” data. New policies are needed where the primary motivation for collecting scientific data is to better

understand something and to share that new understanding (not the data) in the form of a scientific publication. The scientific value of the data investment is that new understanding. However, the value embedded in intellectual capital - data, information, and knowledge - can often be leveraged through use beyond the original research. Much like any other capital investment, the longer the data remain unused, the greater the likelihood that they become obsolete and the full potential of the investment will not be realized.

In the United States, various organizations allow researchers one to two years of privileged use of their data before they must make it freely available to the world. The National Institutes of Health, for example, requires that all data developed through its research funding be deposited in a public access database within one year.

In Canada, a number of departments with a significant science component, including the Department of National Defence, National Research Council, and Environment Canada are considering or have developed policies related to some aspects of knowledge management. There have also been discussions at an interdepartmental level through groups, such as the Interdepartmental Knowledge Management Forum and the National Consultation on Access to Scientific Research Data.

The Canadian Forest Service Policy

Transforming a science-based organization of intelligent people into an intelligent organization requires new policies to promote a fundamental cultural migration from controlling

knowledge to sharing it. This is the key business driver underlying development of the Access to Knowledge (A2K) Policy for the Canadian Forest Service.

The policy articulates a clear rationale for different levels of access to organizational knowledge assets. It balances incentives to publish with incentives to share, respects the confidentiality of certain types of information, and allows for special circumstances. The policy establishes classification criteria and guidelines for privileges extended to CFS employees regarding their use of data. Finally, it defines rights and responsibilities for all employees with respect to knowledge assets (NRCan, 2005).

The CFS A2K Policy has three objectives:

- foster the migration of the CFS toward providing free, open access to its knowledge assets, while recognizing the need for cost recovery and access restrictions in some cases;
- provide a framework for consistently classifying CFS's diverse knowledge assets within a cost and accessibility matrix; and
- begin managing knowledge created and owned by the CFS as an asset.

Policy Implementation

Guidelines explain what is included and excluded from the policy. The policy applies to all knowledge assets created solely by the CFS. For partnerships, assets with a majority CFS interest should be included, while assets with minority CFS interests may be excluded. Specified exclusions include assets created on behalf of

CFS A2K Policy Directives

The objectives are embodied in nine directives.

1. Knowledge assets that have been created through public funding are publicly owned, through the CFS on behalf of the Crown.
2. Employees of the CFS who collect data for research are allowed privileged use of those data for a period of up to two years. Exceptions may be provided on a case-by-case basis.
3. When knowledge assets are created through multi-party agreements, ownership and use rights, and responsibilities will be negotiated in advance to minimize divergence from the A2K Policy.
4. The CFS provides clear statements of rights and responsibilities to its employees, clients, partners, and stakeholders.
5. The CFS provides unrestricted access to its knowledge assets whenever possible. When access is restricted, the CFS tries to ease the restriction as circumstances allow.
6. The CFS intends to have the characteristics of its knowledge assets match those requested by most users.
7. The CFS alerts users to access limitations and tries to overcome these limitations on a casebycase basis.
8. The CFS provides service that is consistent with generally accepted best practices.
9. The CFS intends to provide access to its knowledge assets at little or no cost. When a fee is charged, the CFS will provide an explanation.

another party, assets acquired through purchase, assets protected through legislation, classified assets, and published material.

In keeping with the complex nature of knowledge, the guidelines emphasize common sense and judgment rather than prescriptive rules and practices. The resulting framework supports reasonably consistent interpretation and application. These guidelines also provide recommendations and suggestions, coupled with explanations and examples of how knowledge assets

should be classified. The thrust is to let managers manage and expect them to do so.

An organization cannot manage what it knows unless it knows what it knows. Therefore, a knowledge assets inventory was developed to administer the A2K policy. The inventory includes an Intranet interface to enter information about knowledge assets; a searchable database to capture and store the information; and an interface to allow all CFS employees to search the database. A process was established to monitor population of the inventory.

Looking Forward

The A2K Policy is intended to increase the relevance of the NRCan–Canadian Forest Service in the emerging knowledge-based economy. Its nine directives include considerations of ownership, use, responsibilities, access, and service to clients (see accompanying textbox). It couples a framework for consistent interpretation with broad discretionary authority.

A number of steps have been taken to begin implementing the Policy. It is well understood, however, that the road ahead is paved with challenges, and that a substantial cultural transformation will not be easily or quickly accomplished. But we have taken the first step of promoting the evolution of a science culture from an organization of intelligent people to an intelligent organization.

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Economic Instruments for Water Demand Management in an Integrated Water Resources Management Framework: Synthesis Report

Based in part on an Experts Symposium held in June of 2004, the report reviews the use of economic instruments for water demand management, such as pricing and markets.



Exploring New Approaches to Social Policy: Synthesis Report

In December 2004, the PRI held a highly successful conference dealing with a number of significant social policy developments: the aging population, the role of the social economy, social capital as a policy tool, and new approaches to addressing poverty and exclusion.

The conference provided a forum to present and, to some extent, validate research findings. It also featured many stimulating presentations from international experts, allowing comparisons as to how social policies evolve in other industrialized countries.



A Life-Course Approach to Social Policy Analysis: A Proposed Framework

This paper proposes a framework to describe the goals and results of social policies. It suggests that a life-course approach, focusing on the trajectories of individuals through life, may be the proper foundation to build this framework. At a minimum, the proposed framework provides a way of conceptualizing the relationships between individuals and society that is consistent with emerging thinking about social policy. It could also be a practical policy tool, leading to the real beginning of evidence-driven social policy.

Measuring Social Capital Within the Context of Public Policy Research, Development and Evaluation

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Policy Research Initiative

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As the Social Capital as a Public Policy Tool project comes to a conclusion, the PRI is publishing a series of documents that demonstrate that social capital is a useful and appropriate concept within the context of federal government policy research, development, and evaluation. The PRI work outlines how this concept permits a fresh and innovative look at how public actions can capitalize on social ties to meet program and policy objectives. It describes how it is possible – and why it is desirable – to consider more systematically relationship dynamics and networks of co-operation that occur at different levels and in diverse fields linked to public policy.

Among the documents being released in September 2005, *Measurement of Social Capital: Reference Document for Public Policy Research, Development, and Evaluation* explores several ways in which a government can empirically concretize the social capital concept.

It is not easy to capture the presence, manifestations, and operations of social capital. Several public organizations have stepped up their efforts to measure the social capital dimension of populations, but the type of data generated by this approach cannot always inform public policy. This situation contributes to the scepticism that continues to plague the concept.

Participation as a Dependent Variable: A Limited Approach to Social Capital

In the autumn of 2004, Statistics Canada published the results of its first major survey on social capital. Cycle 17 of the General Social Survey (GSS) on social engagement was the first

cycle to integrate several of the major dimensions linked to social capital in the literature, namely the level of social and civic participation, degree of trust, typology of mutual aid and reciprocity, safety, and sense of belonging. The statistical agency's methodology aimed to document, in detail, the major determining factors or sources of social capital within various segments of Canadian society. In this regard, the concept was approached as a dependent variable. From an analytical perspective, the data lead one to study social capital as an end in itself, that is, as an attribute of populations. A cluster analysis allows one to describe which types of people do or do not have social capital. We must note, however, that technical considerations (namely duration of the survey and respondent burden, reliability, and simplicity of questions, comparability with other surveys) favoured the inclusion of variables related to the participation element of social capital, hence the survey title "social engagement." This choice of content, inevitably made to the detriment of other variables, restricts the possibilities for investigating relational dynamics that play out in other circumstances, notably in social networks, which are poorly documented.

From a public policy standpoint, the GSS allows us to pursue our research on the institutional conditions of social participation and cohesion. Why do certain types of individuals participate (or not) in a specific aspect of civic life? The Survey does not, however, allow us to investigate the contribution of social capital as an explanatory variable, that is, as a factor explaining some important outcomes: why do individuals who participate

in a specific aspect of civic life find it easier to overcome certain difficulties in their personal lives? The survey contains a limited number of variables more directly related to the social, economic, and health outcomes pertinent to public policy.

Social Networks as an Explanatory Variable

As part of its project, the PRI explored an alternative approach to social capital, focusing on the concept's strategic role in the achievement of particular socio-economic or health outcomes of importance to public policy. In other words, the project focused on social capital as a variable explaining other social phenomena. In addition, the PRI adopted a social capital perspective centred on the "social networks that give access to resources and support." A focus on networks fosters an understanding of the relationship component of various spheres of life, such as family relationships, wider social relationships, work relationships, community relations, networks of contacts, business networks, local networks, co-operation networks, partnerships, and joint ventures.

From an empirical perspective, such an approach suggests that we must research variables that differ noticeably from those that have interested social capital researchers until now. More precisely, it is the characteristics of networks of relationships among individuals and groups, as well as their dynamics, that become the objects of social capital measurement.

A network-based approach to social capital helps to dissipate the current confusion surrounding the unit of analysis of social capital measurement.

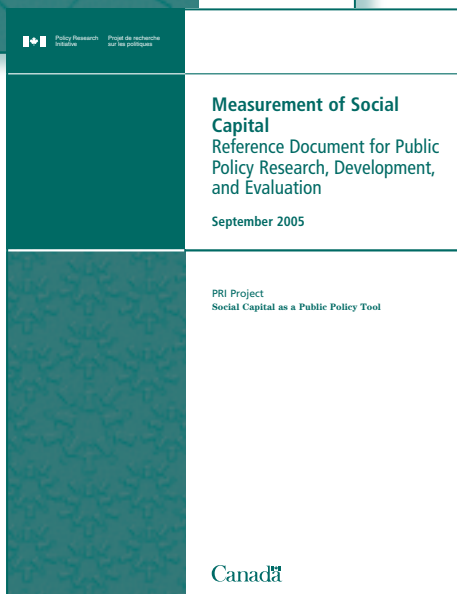
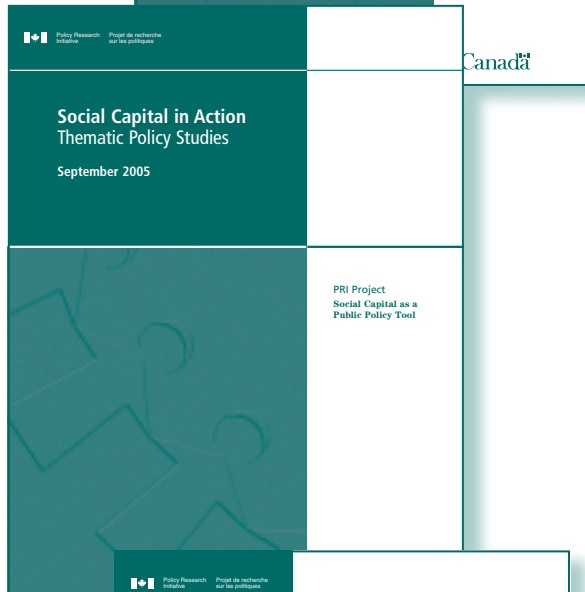
Instead of engaging in endless debates on the relevance of aggregating data collected at the individual level to characterize a community or country's social capital, the network approach allows researchers to consider individual social capital and collective social capital as two distinct but interrelated areas of research. At the individual level, social capital refers to the benefits that individuals derive from their networks of social relations. In contrast, collective social capital refers to the benefits that the community derives from associational dynamics connecting groups and associations. The subject of analysis, namely the relationship, is measured the same way regardless of the type of network in question. Consequently, the size of an individual's network (the number of relationships the individual has with various people) is of as much analytical importance as the size of the network of a community group (in this instance, the number of other organizations with which this group interacts).

Measuring the Intangible

Developed for public policy researchers, the reference document on the measurement of social capital uses this approach to evaluate the various ways of studying social capital, be it individual or collective. Borrowing on the concepts and research tools used in the analysis of social networks, the document proposes a series of social capital indicators and several measurement tools for examining network structures (the characteristics of networks, their members, and their social ties) or their specific dynamics (conditions underlying the creation and mobilization of networks in

specific contexts). It also describes relatively simple and proven techniques to measure several network aspects. Notably, generators (name, position, resource, and context) represent a collection of techniques that, used alone or collectively, can generate a host of data with which to paint a portrait of networks and understand their dynamics. A generator is made up of a series of questions of the type "Name the individuals from/with whom you ...", which allows researchers to develop a matrix of social relationships for further analysis.

The reference document also touches on the advantages and disadvantages of various methodological strategies, both qualitative and quantitative, for the investigation of social capital in a Canadian public policy context: compilation of statistical data, development of indicators, special surveys, standardized statistical modules, case studies, meta analysis, observation, analytic lenses, social experimentation, etc. It describes how such strategies can be implemented at various stages of the policy and program development, from research and development to implementation and evaluation. Finally, the document proposes more concrete directions for investigating the role of social networks within the three policy areas where social capital is particularly relevant, namely assisting populations at risk of social inclusion, supporting major life transitions, and promoting community development efforts.



SEPTEMBER 2005
Social Capital as a Public Policy Tool: *Project Report*

This report provides a synthesis of the key findings from the PRI social capital project in the areas of conceptualization, implications for public policy, and measurement efforts.

SEPTEMBER 2005
Social Capital in Action: *Thematic Policy Studies*

The project established interdepartmental working groups to oversee the development of a series of thematic policy studies by experts on the best available evidence in areas of strategic importance to the Government of Canada. Eight specific policy and program areas are examined in a Canadian context: poverty reduction, healthy aging, settlement of new immigrants, educational outcomes of Aboriginal youth, youth civic engagement, community crime prevention, policing in First Nations communities, and the role of local associations in community development.

SEPTEMBER 2005
Measurement of Social Capital: *Reference Document for Public Policy Research, Development, and Evaluation*

This report provides an analysis of efforts to measure social capital and concludes with key recommendations for future measurement efforts in a public policy context.

The Scarcity of Regulatory Research and Data in Canada

Fidèle Ndayisenga
Doug Blair
Policy Research Initiative

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A broad consensus is developing within Canada's regulatory community to the effect that there is no coherent, systematic, and integrated information system about the cost of regulating or the impacts of regulations on regulated sectors. Related to this issue is the relative paucity of regulatory research and analysis in Canada compared to other developed countries, such as the United States and United Kingdom.

A recent scan of work being done by research institutions in Canada confirms a relative weakness in the Canadian regulatory research and analysis infrastructure, a finding that both the External Advisory Committee on Smart Regulation and the PRI have independently verified. This is a potentially significant impediment to Canada's ability to regulate efficiently and understand the effects of regulations on the economic and social well-being of Canadians.¹

To address this scarcity of research and data, the PRI and the Privy Council Office's Regulatory Affairs Division have launched the Regulatory Data Development and Analysis Project. Participants include experts from the Treasury Board Secretariat, Statistics Canada, and other departments. The project focuses on taking incremental steps toward building a regulatory knowledge base, on the premise that a concerted effort to collect and organize various regulatory data and information in a systematic and integrated framework, conjoined with a deliberate strategy to build up the regulatory research and analysis infrastructure, will make a vital contribution to Canada's ongoing efforts to improve regulatory management and quality.

We know little about the resources expended by the federal government in the execution of its regulatory function, and we know even less about the cost of compliance to regulated entities. While there have been a few attempts to measure the federal government's expenditures on regulations, these approaches have been ad hoc and opaque in their methodologies. Indeed, it is currently not possible to determine, with any degree of certainty, Canada's regulatory expenditures, the size of the regulatory labour force, nor how these resources are distributed across various areas of regulatory endeavour.

This lack of knowledge is due, in part, to the fact that regulatory reforms to date have tended to concentrate on process management issues, not on the costs and benefits of regulation. Further, the government's expenditure reporting systems and public accounts have not been designed to provide detailed information on the cost to the federal government of fulfilling its regulatory function.²

In the short term, the objective of the research is to develop a sound methodology to estimate federal government regulatory expenditures from existing data sources. The proposed methodology will take advantage of the government's existing method of capturing departmental expenditures, the Program Activity Architecture system, at its most disaggregated level (both in terms of budget and activity description) to refine the estimates.

The initial building blocks for a regulatory knowledge base exist. While changes to existing departmental reporting mechanisms are not anticipated, the challenge will be to

reorganize the various sources of data now dispersed across the Treasury Board Secretariat, Statistics Canada, and regulatory departments into a coherent regulatory information system. The project will require significant initial investment by its interdepartmental working group to address complex methodological and data collection issues, as well as ongoing input and co-operation of departments.

The development of a regulatory knowledge base will allow the government to assess regulatory capacity in the system. It will also provide a tool for interacting with the regulatory research and policy community both within and outside government. This, in turn, should increase the likelihood of regulatory innovation, and provide data and information to support evidence-based regulatory policy.

The PRI is preparing a detailed working paper on this subject. Preliminary results from the project will be available in the fall of 2005.

Notes

- 1 Canada is not alone in this regard. In 1997, the OECD reported that regulatory costs are the least controlled and least accountable of government costs. The relevant article stated that many governments have no idea how much of their national wealth they are spending through regulation. (OECD Public Management Service. 1997. "Issues and Developments in Public Management: Survey 1996-1997." OECD, Paris.)
- 2 Government concerns about the on-budget costs of regulating have been minimal, except in the case where user fees are charged for regulatory services. Even in this area, determining the on-budget costs to government of delivering regulatory services for the purposes of charging fees has been fraught with problems (as observed by both the Standing Committee on Finance and the Auditor General). Indeed, the organization of fees for regulatory services had by 2004 become so problematic that Parliament passed new legislation, the *User Fees Act*, to bring more discipline to user charging.

Cross-Border Regions Leadership Survey

The PRI is conducting an important research project on the emergence of cross-border regions between Canada and the United States. To advance the knowledge of cross-border regions, we are, in partnership with EKOS Research Associates Inc., conducting a survey of Canadian and US leaders in various government jurisdictions, chambers of commerce, cross-border associations, non-governmental organizations, and research institutions.

The survey results will be presented at regional roundtables in the fall of 2005. Organizations participating in the roundtable exercise include the Atlantic Canada Opportunities Agency, Canada Economic Development for Quebec Regions, and Western Economic Diversification Canada.

For additional information, contact Christian Boucher, Senior Policy Research Officer, at 613 943.8412, or André Downs, Senior Project Director, at 613 995.3655.

Beyond Analysis Bringing Data and Knowledge to the Decision Makers

**Integrated Landscape
Management Modelling
February 28 –
March 1, 2005**

**Knowledge for Canadians:
Transforming Public S&T
Services
May 11–12, 2005**

**Ian Campbell
Policy Research Initiative**

Ian Campbell
is a Senior Project Director
with the Policy Research Initiative.

Data are collected for the purpose of making decisions. However, data alone are rarely sufficient. The data must be interpreted, organized, stored, and made available to users. There is a further step, however, which is not always acknowledged: enabling or empowering decision makers, whether expert or generalist, to use that which is made available effectively. Two recent meetings focused on different aspects of that final step in using data.

A small workshop, run by the PRI in co-operation with Environment Canada, explored integrated landscape management modelling (ILMM) as one way to bring place-based data and knowledge to bear on decision making. Held February 28–March 1, 2005 this event brought together about 60 professionals from across Canada and around the world to develop the beginnings of a vision for a national ILMM capacity for Canada. A workshop report and two briefing notes on ILMM can be found by following the Publications link at <www.policyresearch.gc.ca>.

A second workshop, held by Natural Resources Canada (NRCan) in collaboration with the Treasury Board Secretariat on May 11-12, focused on transforming public science and technology services. With about 70 participants, half from NRCan and half from other federal departments, this meeting aimed to develop a consensus on what public knowledge services are, and what actions science-based departments and agencies can take to improve them. Both meetings shared a common theme: making data, information, and expertise more useful by making it easier to access and easier to use.

At the NRCan workshop, Fred Gault (Statistics Canada) defined a knowledge service as one that conveys knowledge and a capacity for action, meaning that the service has to be designed to take into account the absorptive capacity of the recipient. Most of the services discussed at this workshop related to new opportunities presented by digital information technologies, particularly the Internet. At the higher end, conversation turned to ILMM and similar “understanding added” knowledge services. Bernard Dumouchel (Canada Institute for Scientific and Technical Information) discussed new partnership models for exploiting scientific information within the federal government and with external stakeholders. The workshop also showcased innovative programs, from new approaches to combining diverse data sets for public access, to developing specialized decision-support tools integrating information and knowledge from a range of disciplines for renewable energy and land-use planning decision making.

The ILMM meeting developed a suite of visions for a national capacity for ILMM. These visions range from the minimalist improvement of data access and sharing, to common standards and a full-fledged multi-centre national institute for ILMM. Presentations by the US Army Corps of Engineers and others involved in large ILMM efforts helped define the challenges and opportunities that will come with developing a national ILMM capacity.

Together, these workshops reinforced the importance of going beyond data collection and analysis, to reach the decision maker and stakeholders. Without that final step, the data collection effort may well be largely wasted.

Integrated Landscape Management Modelling

Integrated landscape management modelling uses sophisticated process and statistical models to turn data and knowledge about an area into scenarios for decision makers. Often compared to the popular game SimCity, ILMM allows stakeholders and decision makers to explore the implications of data and knowledge without needing to develop a personal understanding of the intricate relationships between disparate variables, such as highway construction, urban sprawl, and greenhouse gas emissions. As such, it may represent the apex in knowledge services, making knowledge acquired by others useable without it needing to be understood.

The ILMM approaches could be particularly useful in areas where trade-offs are required, for example, in environmental impact assessments of large projects. By combining social, economic, and environmental models into a single package, ILMM approaches allow users to test different management scenarios, to refine their decisions to provide the optimum balance of outcomes. This not only helps decision makers make the right choices, it allows stakeholders to verify for themselves that the decision makers are getting it right – potentially greatly reducing conflict between stakeholders.



While today's ILMM developers focus largely on a single issue at a time (such as urban sprawl or forestry operations), they are rapidly reaching – perhaps have already reached – the point where these models could be made mandatory for large projects. Certainly, in other jurisdictions around the world, this is starting to be the case, with such models being a normal part of the US Army Corps of engineers project evaluation, and with models also being recommended for evaluating all new government policies, programs, and projects in the United Kingdom. To do this in Canada would, however, require a national ILMM capacity that we do not yet have, even though Canadians lead the world in many areas of ILMM development.

A number of barriers stand in the way of developing such a national capacity. These include the ubiquitous jurisdictional and thematic silos in which most research and decision making are carried out, the lack of co-ordination in data policies and, perhaps most important, a degree of “early-adopter anxiety” on the part of decision makers reluctant to be the first to use these new tools. With federal leadership, however, these barriers could be overcome.

Sustainable Development Briefing Notes

The Sustainable Development Project publishes Briefing Notes – 4 page essays – providing a rapid orientation to various issues in freshwater management and sustainable development. Topics so far range from Integrated Water Resource Management to Exporting Canada's Water.

Wet Industry: An Opportunity for Strategic Municipal Water Demand Management
June 2005

Towards a National Capacity for Integrated Landscape Management Modelling
May 2005

Do European Water Abstraction Taxes Affect Competitiveness?
March 2005

Federal Commitments to Freshwater: Three Generations of Sustainable Development Strategies
March 2005

Market-Based Instruments for Water Demand Management I: The Use of Pricing and Taxes
February 2005

Market-Based Instruments for Water Demand Management II: Water Markets
February 2005

Integrated Landscape Management Models for Sustainable Development Policy Making
January 2005

Exporting Canada's Water I: Outside of NAFTA
January 2005

Integrated Water Resource Management
June 2004

Canadians and Their Money

A National Symposium on Financial Capability

June 9–10, 2005
Ottawa, Ontario

Stuart Sykes
Policy Research Initiative

Stuart Sykes
is a Policy Research Officer
with the Policy Research Initiative.

The ability to understand personal and broader financial matters, and to apply this knowledge toward sound financial decisions, has recently been associated in Canada with a variety of positive outcomes, from increased social and economic inclusion to greater asset accumulation. Research suggests that financially capable people are better able to participate in mainstream financial services and to take full advantage of public benefits and programs.

A recent review of Canadian and international research, policy and practice, found little agreement on a conceptual framework for financial capability in Canada, even as evidence indicated that disadvantaged subgroups are often seriously underserved. In response, Social and Enterprise Development Innovations (SEDI), the Policy Research Initiative (PRI), and the Financial Consumer Agency of Canada (FCAC) convened this national policy symposium to explore the need for a financial capability agenda in Canada. As the symposium progressed, it became apparent that participants strongly believe that such a need exists.

Somewhat surprisingly, there was little debate regarding the definition of financial capability. While Paul Worrall, Basic Skills Agency (United Kingdom), identified a number of different definitions that varied fundamentally in how knowledge and behaviour related to one another, he, like most other participants, preferred to focus on a concept of financial capability that emphasized not just knowledge, but also a comfort with the subject matter that permitted confident, prudent decision making. This position is reflected in polls in the United States,

where a vast majority (97 percent) believe financial education should be a core component of K-12 education curricula, although this consensus breaks down somewhat when discussions focus on what specifically should be taught and how.

In short, it was apparent at the symposium that there is a common understanding of what this basic skill set is intended to accomplish, even if agreement on the specific components of the skill set (e.g., numeracy, literacy, familiarity with key aspects of the economic system, etc.) is still to come. This may reflect general agreement with the assertion of Garry Rabbior, Canadian Foundation for Economic Education, that it is a responsibility of a free society to ensure that individuals have the knowledge, skills, and opportunities to utilize effectively the freedom and individual empowerment on which these societies are based. Opportunities are of little value if people are unequipped to take advantage of them.

While financial capability has not figured prominently on the policy research agenda in Canada, significant information on this issue has been collected through various initiatives and projects. The Adult Literacy and Life Skills (ALL), International Adult Literacy (IALS), and Program for International Student Assessment (PISA) surveys tell us a great deal about the basic skills, particularly literacy and numeracy, that underpin financial capability. These studies indicate that while Canada's initial education system effectively provides the skills needed to rate near the top of world standings, overall indicators of numeracy and literacy specifically place Canada ahead of only about two thirds of the nations surveyed. It is

Canadians and Their Money

This national symposium on financial capability brought together 150 researchers, analysts, policy makers, and service providers from government, the private sector, voluntary organizations, and other social actors to work toward a financial capability agenda in Canada. Presenters and participants came from Canada, the United States, and Europe.

Organized by SEDI (Social and Enterprise Development Innovations), the Policy Research Initiative and the Financial Consumer Agency of Canada, the Canada School of Public Service managed the event. Co-sponsors included Canada Deposit Insurance Corporation, Human Resources and Skills Development Canada, Statistics Canada, the Investor Education Fund, Social Development Canada, the Canada Mortgage and Housing Corporation, and the National Homelessness Secretariat.

The financial capability background paper, as well as presentations made at the event, can be found the PRI web site.

also noteworthy that significant variations exist among the provinces, with Alberta consistently scoring among the best in the world.

Other data on how individuals learn, and on the relationship between knowledge and behaviours, have been developed in the United States, the United Kingdom, and Canada. Of particular note were observations by Professor Eldar Shafir, Princeton University, regarding the relationship between human reasoning and economic decision making. Drawing on work by economists, sociologists, psychologists, and experts from other fields, Dr. Shafir argued that decisions are frequently made to conform with environmental standards and expectations in the immediate term. Thus, even when available evidence suggests a decision may not be wise in the long term, an individual may choose a suboptimal course of action. Jeanne Hogarth, Federal Reserve Board (United States) and Terri Williams, Investor Education Fund, made similar

observations and discussed how their organizations attempt to respond to these findings. Many of these findings regarding behaviours are universal enough that they can be applied in the Canadian context with some confidence, at least until more domestic-based research is available.

In light of research findings and observations from participants, it became clear as the conference developed that the issue of financial capability needs to be considered within the context of two separate population segments within the market. The first segment is that of the majority of Canadians. Within this market environment, Canadians with “decent” earnings and assets appear to be served effectively by mainstream financial institutions and supports (although concern continues to be expressed about investor knowledge, particularly regarding retirement decisions). Through organizations, such as the Investor Education Fund and the Canadian Bankers Association, research is being conducted, lessons learned, and support provided.

The second population segment appears to be much more poorly served. Unfortunately, it is within this segment that those already on the fringes of Canadian society frequently must pursue their financial activities. Mainstream financial institutions offer far fewer services to these individuals compared to those enjoyed by mainstream society. Outreach activities to marginalized communities are similarly sparse. According to Sue Lott, Public Interest Advocacy Centre, these decisions have caused excluded groups to turn away from mainstream services toward alternative service providers, such as payday loan operations, that are perceived as being more responsive to day-to-day income needs, and as being more welcoming of their business. With effective annual interest rates of more than 500 percent for many small loans, these decisions, often made on mistaken premises (if for understandable reasons pertaining to day-to-day expenses), can significantly undermine efforts to improve socio-economic inclusion. There was strong support at the symposium for regulatory reforms and initiatives that would curtail these practices.

While participants agreed that policy must address financial capability challenges, concern was continually expressed that these new efforts should not detract from the need to improve the responsiveness of mainstream financial services and the effectiveness of traditional income support programs. For example, while acknowledging the importance of the significant support being offered to those with “decent” earnings, assets, and inclusion, participants asserted that mainstream financial providers must improve their services for low-income communities and develop programs to compete with those of

Post-Symposium Workshop: Data Sources for Research on Financial Capability

Following a day and a half of symposium deliberations, Statistics Canada researchers and about 50 participants attended a post-symposium workshop. Using various data sources, the researchers presented analyses that related behaviour, savings, and expenditures, providing clear illustrations of the kind of work that can be done to illuminate issues related to financial capability.

The session began with an examination of savings behaviour for children's future education. Sophie Lefebvre used the 2002 Survey of Approaches to Educational Planning to explore the factors associated with savings by parents for their child's post-secondary education. As expected, mortgages, income levels, and expectations (both for the child and of future financial support) affected savings rates. Awareness of government programs, such as the Canada Education Savings Grant, and other supports also positively affected savings rates.

Raj K. Chawla examined the differences between "spenders" and "savers" between 1982 and 2001 using data from the Survey of Household Spending.¹ In his presentation, Chawla explored the issues of rising indebtedness and stagnant incomes, and compared them against personal characteristics over the life course. He

found that spenders and savers were distinguished more by expenditure patterns than by differences in income. In particular, spenders were more likely to expend additional resources on transportation, particularly automobiles, than savers. This effectively demonstrated the important role behaviour (and by extension knowledge and capacity) plays in household expenditures and debt load.

Beyond behaviour, household income levels are obviously important in determining whether saving occurs. Through the use of tax data, Geneviève Clavet outlined how those who maximize their Registered Retirement Savings Plans (RRSPs) were typically older (aged 45-54), married, and had higher family incomes. This strong correlation leaves little room for behavioural differences, though it might indicate how successful past efforts have been in educating the public about the general benefits of saving for retirement: those who can, do save.

Although people may be trying to save money in their RRSPs, there is no guarantee that they are receiving sound financial advice. Using the General Social Survey, as well as data from the 1981 and 2001 censuses, Grant

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fringe financial services in the area of "small loans" (which can be used to address a wide variety of day-to-day expenses, such as car repairs or replacing a refrigerator). Richard Shillington's critique of existing government welfare programs was also well received. He argued that programs are frequently so complex that it is difficult for individuals to identify financial implications for their earnings and savings. Similarly, Shillington's demonstration of how interactions between federal and provincial programs targeting the poor can result in effective tax rates exceeding 100 percent made clear that financial

capability alone is not the answer – aspects of existing government and private sector supports must be made more rational.

Overall, Canada appears to lag in the development of a financial capability agenda. Presentations by Gill Hind, Financial Services Authority (United Kingdom) and Dan Iannicola, Department of the Treasury (United States), on their respective government's financial education programming indicates international movement on developing such agendas. An OECD research project on cataloguing and evaluating financial education initia-

tives around the world further highlights an emerging international consensus regarding the importance of this policy issue.

There is sufficient research on this issue from both Canada and other countries to begin to put in place the key pillars of a financial capability agenda. It is clear that financial capability is a policy issue that both directly contributes to economic inclusion and supports other efforts toward this goal, such as asset accumulation. Solutions will require a co-ordinated approach built on collaboration between various agencies and actors. Where research is

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Schellenberg found that immigration status, having low education, and low household income are all correlated with the likelihood of not getting financial advice.

One theme that resonated throughout the symposium concerned the role financial capability can play in determining the take-up of various government programs and benefits. Preston Poon used the Survey of Financial Security to explore the take-up of the Guaranteed Income Supplement, finding that only four in ten seniors who were eligible to apply for the support did so. Social Development Canada has since taken measures to use tax data to identify those eligible to apply and inform them of the availability of the benefit.

All these findings are significant and effectively demonstrate what can be done with existing data sources to pursue policy-relevant research on financial capability. In addition to the Statistics Canada presentations, Richard Shillington (Tristat Resources) took a few minutes to outline the kinds of information one would ideally have available to address issues related to financial capability. In particular, better information is needed in regards to what Shillington described as the complex terrain of social benefits that Canadians may access. Although challenging from a data collection perspective, more needs to be done to understand the web of benefits (income-tested, asset-tested, and other forms of support) that people access and their various interdependencies. Moreover, this information would ideally be collected using the family or household as the unit of analysis, to better understand the complex dynamics at work and to better co-ordinate policies and programs.

Shillington also remarked on the challenges faced by researchers outside of government and academia in obtaining access to Statistics Canada data sources. This spurred some animated discussion, although participants ultimately agreed that the issue was beyond the scope of the workshop.

needed on this issue, it is primarily in the area of indicators, so benchmarks can be established and progress measured. This issue and others will be discussed in greater detail in a report prepared jointly by the symposium organizers, scheduled for release in September 2005. Thoughtful comments by the Honourable Claudette Bradshaw, Minister of State (Human Resources Development), on how

policy research needs to keep in touch with communities and people on the ground also suggest avenues for future work.

Note

- 1 "Spenders" are defined as those households whose current consumption outstrips their annual household income, while "savers" are those who spend less than their earned and other income.

Financial Capability: Report on Policy Research Findings

How well do Canadians understand financial matters, apply their knowledge, and take responsibility for financial decisions? What does this mean for policy makers? To address these questions and others, the PRI, SEDI, and the FCAC have been studying the increasingly important topic of the financial capability of Canadians. Building on national and international research, as well as input from academics, government officials, and representatives from the private and non-profit sectors, a forthcoming synthesis report will serve as an effective resource and reference for future work on this topic.

The report will be published in the fall of 2005. In the meantime, readers can visit the PRI web site for the program, presentations, and background paper from Canadians and Their Money: A National Symposium on Financial Capability.