

## SHEDDING LIGHT ON HEALTH POLICY ISSUES USING STATISTICS CANADA'S LONGITUDINAL SURVEY DATA

Jane F. Gentleman<sup>1</sup> and Gary Catlin<sup>2</sup>

### ABSTRACT

According to the Chief Statistician of Canada, "Without any doubt the single most important role of statistical agencies is to assist the public policy process... It is at the heart of our challenges to try to develop the new types of statistical systems that are needed to inform public policy discussions in key fields." To this end, two longitudinal household surveys—the National Population Health Survey and the National Longitudinal Survey of Children and Youth—are providing data whose analysis can shed light on health policy issues. Longitudinal data have a major advantage over cross-sectional data in that they are able to provide information on outcomes of events and situations. This talk gives examples of how data from the two surveys are being used to provide information of use to health policy makers.

KEY WORDS: Health policy; Longitudinal survey data.

### RÉSUMÉ

Selon le statisticien en chef du Canada, "Sans aucun doute, le rôle le plus important des agences statistiques est de contribuer au processus politique public... Le développement de nouveaux types de systèmes statistiques nécessaires aux discussions d'ordre public dans des secteurs importants sont au coeur de nos défis." À cet effet, deux enquêtes-ménage longitudinales — l'Enquête nationale sur la santé de la population et l'Enquête longitudinale nationale sur les enfants et la jeunesse — fournissent les données dont l'analyse peut faire la lumière sur les politiques concernant la santé. Les données longitudinales ont un avantage important par rapport aux données transversales dû au fait qu'elles peuvent fournir de l'information sur des résultats d'événements et de situations. Cette présentation fournit des exemples sur la façon dont les données des deux enquêtes sont utilisées pour fournir des informations utiles aux développeurs de politique concernant la santé.

MOTS CLÉS : Politique concernant la santé; données d'enquête longitudinale.

### 1. INTRODUCTION

Data releases and journal articles published at Statistics Canada are expected to "illuminate issues" and not present unmotivated, uninterpreted data. "Elevator statistics" (e.g., "the rates went up during the next five years, peaked in 1990, decreased for four years, reached a minimum in 1994, and have been

increasing ever since...") are discouraged. Analytic projects are planned so as to be of use to a number of audiences, including public policy makers. A key goal at the agency is to produce policy-relevant data and analyses. This is illustrated by the remarks of the Chief Statistician (Fellegi, 1997 and 1998), quoted in the Abstract above.

---

<sup>1</sup> Jane F. Gentleman, Statistics Canada, Health Statistics Division, Coats Building, Ottawa, Ontario, Canada K1A 0T6, and National Center for Health Statistics, Division of Health Interview Statistics, 6525 Belcrest Road, Hyattsville, Maryland, U.S.A. 20782

<sup>2</sup> Gary Catlin, Statistics Canada, Health Statistics Division, Coats Building, Ottawa, Ontario, Canada K1A 0T6

Three major longitudinal surveys initiated at Statistics Canada in recent years are now producing extremely relevant and useful data, partly because of the careful design of the survey questions and coverage, and partly because of the longitudinal nature of the surveys, which permits outcomes of events to be studied. These three surveys are the National Population Health Survey, the National Longitudinal Survey of Children and Youth, and the Survey of Labour and Income Dynamics. This paper will give examples of how data from the first two surveys are being used to provide information of use to health policy makers.

## **2. ABOUT THE NATIONAL POPULATION HEALTH SURVEY**

The general goals of the National Population Health Survey (NPHS) are to measure the health status of Canadians and to expand knowledge of determinants of health. The survey is longitudinal, conducted by Statistics Canada every two years. In the first cycle (1994/95), over 17,000 individuals were interviewed for the household component of the NPHS. Also, the institutional component of the NPHS collects data about 2,500 residents of long term health care institutions.

The specific goals of the NPHS are: to aid in the development of public policy by providing measures of the health status of the population; to provide data that will assist in understanding the determinants of health; to collect data on the economic, social, demographic, occupational, and environmental correlates of health; to increase understanding of the relationship between health status and health care utilization; and to provide information on the dynamic process of health and illness.

The core of the NCHS, which is repeated every year, contains questions on health status, disability, health care utilization, health problems, the family situation, and labour market participation or other major activity. In addition to the core, cycle-specific topics are included. Cycle 1 covered mental health. Cycle 2 covered access to health services, use of disease prevention services, use of emergency services, and reasons for which services were received or not received.

For more information on the NPHS, see Tambay and Catlin (1995) and Swain and Catlin (1999).

## **3. ABOUT THE NATIONAL LONGITUDINAL SURVEY OF CHILDREN AND YOUTH**

The general goal of the National Longitudinal Survey of Children and Youth (NLSCY) is to increase our understanding of the key influences that lead to the development of productive and happy members of society. The survey is longitudinal, conducted every two years by Statistics Canada, in partnership with Human Resources Development Canada. The survey is following a representative sample of Canadian children, aged 0-11 in Cycle 1, into adulthood. The first cycle (1994/95) had 23,180 respondents. In addition to the originally-sampled children, who were aged 2-13 at the time of Cycle 2, a new sample of 0-1-year olds was added to Cycle 2 to permit calculation of cross-sectional estimates.

The specific goals of the NLSCY are: to determine the prevalence of various biological, social and economic characteristics and risk factors among children and youth; to support understanding of the determinants of child development and well-being and of the pathways of their influence on child outcomes; and to provide this information to policy and program officials for use in developing effective policies and strategies to help young people live healthy, active, and rewarding lives.

The NLSCY contains questions on factors thought to influence child growth and development. Data are collected about the child's family (the child, parents, and other family members), and from the child's school. Topics covered include the child's health, development, temperament, behaviour, and relationships; child care and school experiences; participation in activities; family and custody history; information on the child's parent(s); information on other family members; information on characteristics of the family; and information from the child's school.

For more information on the NLSCY, see Human Resources Development Canada and Statistics Canada (1996).

#### 4. EXAMPLES OF ANALYSES OF NPHS DATA

Much research and analysis has been generated during the relatively short existence of the NPHS. New methods are being developed for conducting complex longitudinal surveys and for analyzing their data, and results of analyses of longitudinal data are being produced. Some brief examples follow of analytic results of particular use to policy makers.

- Between Cycle 1 and Cycle 2, incidence rates of major chronic diseases (emphysema, high blood pressure, and stomach ulcers, etc.) were higher for those with low household income in Cycle 1 than for those with higher incomes in Cycle 1.
- People with low income were also more likely to begin receiving home care over the two years, reflecting their poorer health and greater loss of self-sufficiency.
- Low income was predictive of premature death. People under 75 in the low income group in 1994/95 had twice the odds of dying during the next two years as those in the middle or higher income groups (adjusted for sex, presence of chronic diseases, smoking habit, etc.).
- The prevalence of smoking among people aged 15 and older decreased from 31% in Cycle 1 to 29% in Cycle 2. Among the people who were not current smokers at the time of Cycle 1, 6% had started smoking for the first time or had become relapsed former smokers by Cycle 2. In contrast, 14% of Cycle 1 smokers had quit by Cycle 2.
- A study of the health effects of leisure-time physical activity (Chen and Millar, 1999) identified more than 7,000 Cycle 1 respondents who were healthy and free of heart disease. Figure 1 shows the incidence of heart disease during the next two years (between Cycle 1 and Cycle 2) for Canadians represented by these respondents, based on the level and frequency of leisure physical activity. The rate of heart disease increases as the amount of

leisure physical activity decreases. Results such as these indicate that it is worthwhile to encourage the public to engage in moderate or occasional physical activity, not just strenuous activity.

#### 5. EXAMPLES OF ANALYSES OF NLSCY DATA

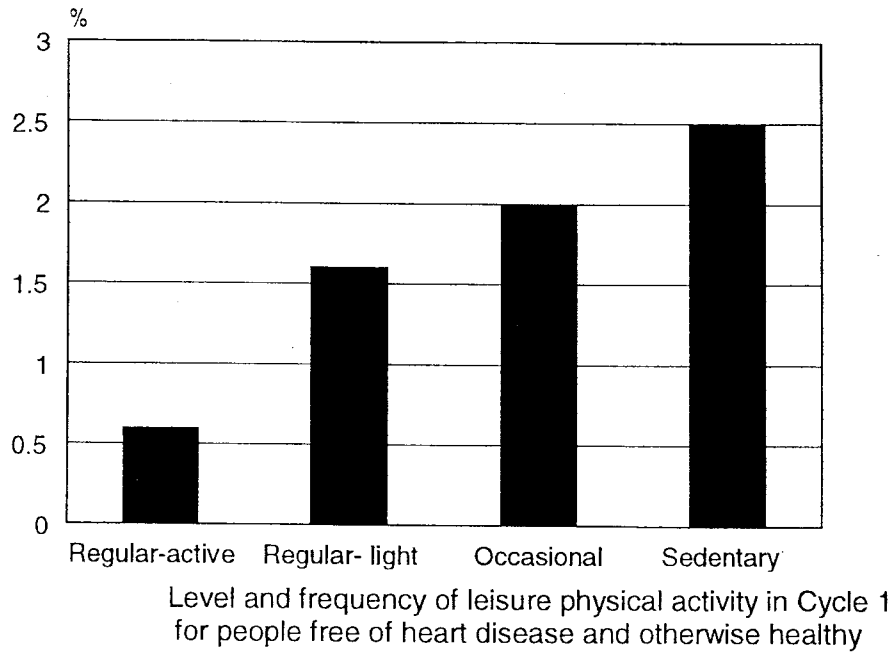
Some brief examples follow of analytic results from NLSCY data.

- Children living in lone-parent households exhibited on average poorer developmental outcomes (Ross et al., 1998). For example, lone-parent children fared relatively poorly in terms of hyperactivity, physical aggression, emotional disorder, getting along with friends and parents, and repeating a grade in school. Authors suggested that lone parenthood be used as a marker or guide for focusing policy initiatives.
- Heavy maternal drinking was associated with the mother having health problems and poor parenting skills, and with her children having behavioural and emotional problems (Pihl et al., 1998). E.g., teachers rated children of heavy-drinking mothers as having a higher degree of conduct disorder and aggression. Authors suggested that the effect of heavy maternal drinking on the developing child is a cost that needs to be included in the litany of negative outcomes associated with this behaviour.
- The data patterns demonstrated the well-known "healthy immigrant effect:" New immigrant children aged 4-11 had lower rates of mental health problems than children in the national population (Beiser et al., 1998). Table 1 shows the prevalence of emotional disorder, hyperactivity, and conduct disorder for children in all of Canada and for new immigrant children.

## REFERENCES

- Beiser, M.; Hou, F.; Hyman, I.; and Tousignant, M. (1998). Growing up Canadian - A study of new immigrant children. *Working Paper W-98-24E*. Human Resources Development Canada, Applied Research Branch, Strategic Policy. Ottawa.
- Chen, Jiajian. and Millar, Wayne. J. (1999). Health effects of physical activity. *Health Reports*, 11(1), 21-30.
- Fellegi, Ivan P (1997 and 1998). Statistical Services – Preparing for the future. Lecture delivered to the 1997 UK Statistics Users Conference in London, England; and 1997 SSC Gold Medal Address delivered at the 1998 annual meeting of the Statistical Society of Canada in Sherbrooke, Canada.
- Human Resources Development Canada and Statistics Canada (1996). *Growing up in Canada. National Longitudinal Survey of Children and Youth*. Minister of Industry. Ottawa.
- Pihl, R.O.; McDuff, P.; Strickler, W.; Assaad, J-M.; Dubreuil, É.; and Tremblay, R. (1998). Alcohol and parenting: The effects of maternal heavy drinking. *Working Paper W-98-27E*. Human Resources Development Canada, Applied Research Branch, Strategic Policy. Ottawa.
- Ross, D. P.; Roberts, P. A.; and Scott, K. (1998). Variations in child development outcomes among children living in lone-parent families. *Working Paper W-98-7E*. Human Resources Development Canada, Applied Research Branch, Strategic Policy. Ottawa.
- Swain, L. and Catlin, G. (1999). The National Population Health Survey—its longitudinal nature. *Health Reports*, 10(4), 69-82.
- Tambay, J-L. and Catlin, G. (1995). Sample design of the National Population Health Survey. *Health Reports*, 7(1), 29-38.

**Figure 1. Two-year incidence of heart disease by physical activity, population aged 20+**



Data source: National Population Health Survey

**Table 1. Prevalence of mental health outcomes among new immigrants and in the national population, children aged 4-11**

Mental health outcome	Rate for new immigrants	Rate for the national population
Hyperactivity	3.8%	10.8%
Emotional Disorder	5.3%	9.4%
Conduct Disorder	6.7%	13.2%

Data source: National Longitudinal Survey of Children and Youth