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Enhancing Policymakers' Understanding of Disparities: Relevant Data from an Information-Rich Environment

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Context: Information-rich environments, with access and funding provided by government, make it possible to organize longitudinal administrative data to support analyses of policy-relevant questions. This paper describes insights into children's well-being and social equity obtained from data available in Manitoba, Canada, and highlights findings that have engaged policymakers.

Methods: Analyses draw on Manitoba-linked data providing information over time (going back to 1970 in some files) and across space (with residential location documented every six months) for each provincial resident. Routinely collected data from the Ministries of Health, Education, and Family Services and Consumer Affairs have been integrated with a population registry.

Findings: Identifying risk factors and presenting outcomes by social groups and by local communities capture the attention of policymakers. Linking an individual's area of residence to census and health data has led to developing measures of population health status and socioeconomic status. These measures focus on whether delivery patterns track health and educational needs, and a population registry makes it possible to describe who is (and is not) served by each program.

Conclusions: The nature of health and social research has been changed by the development of information-rich environments. Many findings in Manitoba could not be replicated without a population registry. Engaging decision makers through effective presentations can ensure continuing support for diverse

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efforts based on these environments, and this article suggests ways of better communicating with policymakers.

Keywords: Administrative data, registry, population health, policy analysis.

A cluster of innovations—the Internet, powerful computers and programming languages, new statistical methods, and electronic data collection—have facilitated the development in Canada and elsewhere of "information-rich environments": routinely collected population-based longitudinal data that can support work across a range of policy-relevant and disciplinary questions.

Such environments, constructed with strict attention to privacy and confidentiality, were originally built around health information but have recently expanded to include education, justice, housing, and social assistance data (Roos et al. 2008). There is considerable activity across Canada. In British Columbia, health, education, and social datasets (Population Health BC) were gathered together and cover several provincial universities. Nine Alberta ministries sponsored the Child and Youth Data Laboratory to link data to child development issues, and several years ago, the Manitoba Centre for Health Policy, a university-based research unit with substantial funding from the provincial government, connected education, income assistance, and child welfare system data to health data and the health registry.

Australia committed $62 million (Aus$) to expand its administrative health data infrastructure into the Population Health Research Network. Western Australia's record linkage is the most developed, but units have also been established in New South Wales, Queensland, South Australia, and the Northern Territory, with a number of government departments actively participating (Fuller 2008; Holman et al. 2008). Finally, with the recent development of the International Health Data Linkage Network (IHDLN) to support collaborative projects showing the value of data linkage applications or improving the quality of data and linkage methods, information-rich environments in Canada, Australia, England, and Scotland are increasingly sharing their experiences.

Over the last twenty years, the Manitoba Centre for Health Policy has carried out many analyses using routinely collected administrative data. With the addition of education, income assistance, and child welfare

system data to the health repository, the Centre has begun a new series of analyses focusing on the well-being of children. Even though its findings have been published in academic journals, such papers are not normally read by those with responsibilities affecting social equity (Jutte et al. 2010; Roos et al. 2006). Nonetheless, the deputy ministers of health, education, family services and consumer affairs, and the secretary of the treasury board regularly attend the Centre's advisory board meetings and hear presentations from its researchers. Over the last five years we have reached those who can make a difference.

This article addresses the questions, What are the key insights relating to children's health and well-being obtained from working across health, education, and family services data sets? and What are the images and findings that have engaged policymakers? We discuss both the relevance of this information to government and other policymakers and how the research has been applied.

Manitoba as a Representative of Canada

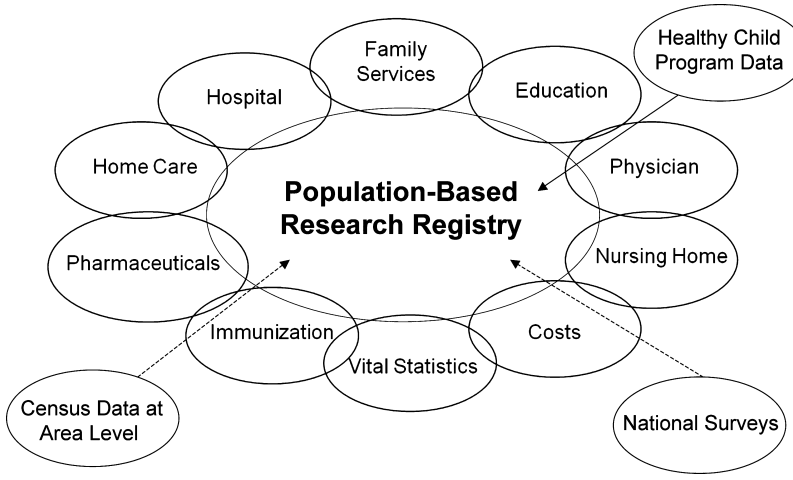
The province of Manitoba is reasonably representative of Canada as a whole (Roos et al. 2008). As of June 2009, its population was 1.2 million, with more than half the population living in the capital, Winnipeg, the ninth-largest city in Canada. Urban census dissemination areas (most of which were in Winnipeg) reflect the economic diversity of Manitoba neighborhoods. Those areas in the lowest-income quintile averaged $28,737 per household in 2001, and the mean income for families living in the highest quintile areas was $96,571. Within Canada, Manitoba has generally ranked in the midrange on a series of indicators of health status, health care expenditures, and educational achievement (Oreopoulos et al. 2008; Shanahan and Gousseau 1999). For example, Manitobans score very near the Canadian average on standardized literacy tests administered internationally (and Canadians score better than Americans) (Willms 2004).

Database

Linked data in Manitoba provide information over time (going back to 1970 in some files), across space (with residential location documented

every six months by the Ministry of Health using six-digit postal codes), for each family (with changes in family structure recorded), and for each resident individual. The Manitoba Population Health Research Data Repository is located at the University of Manitoba and obtains routinely collected, province-wide data from the Ministries of Health, Education, and Family Services and Consumer Affairs. Individual-level data (from which names and street addresses have been removed) and small-area census information are linked across files and over time using encrypted personal health identification numbers. Both the data as a whole and specific checks on validity have been described in detail elsewhere; here, the database is shown in figure 1 (Roos et al. 2008; Roos and Nicol 1999).

The population-based research registry, which was created from periodic updates of the provincial health registry and coordinated with vital statistics files, has been a critical resource. The relevant information for each individual includes when he or she first took up residence in the province and when he or she left, as well as deaths, births, and other key familial characteristics. Almost all provincial births can be found in the registry, although because the families of military personnel and members of the Royal Canadian Mounted Police are insured federally, they are not included. The registry generally includes about 99 percent of births found in the vital statistics files.



Note: Key health databases start in 1970.

FIGURE 1. Manitoba Centre for Health Policy Research Repository.

Updates of residential location are provided by government mailouts and on contact with the health care system (at the time of hospital admission or visit to a physician). The registry records about 2.7 percent more children (newborn to age fourteen) than did the 2006 Canadian census. The difference seems to be largely due to a delay in recording out-of-province migration; that is, in order to maintain coverage, individuals must report migration to another province within three months. Although migration out of country may be missed for some time, almost all migration is recorded within a year of the move (Roos and Nicol 1999).

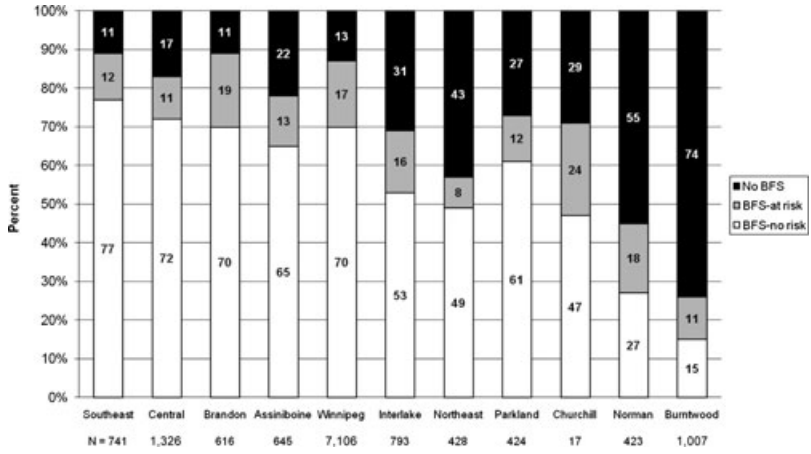
Record linkage has enabled us to examine the distribution of risks and services across large populations. As we will show, a registry combined with universal services files (education enrollment, health contacts) gives policymakers otherwise unavailable information about whom their programs do not reach.

What Resonates with Policymakers?

Who Is and Who Is Not in a Program

A population registry shows who is served by any given program and, sometimes more important, who is not. For example, Manitoba created Families First (formerly BabyFirst), a targeted, multiyear, home-visiting program for families with newborns living under conditions of risk. Because the prevention of child maltreatment is an important goal, public health nurses try to screen throughout the province every family with a newborn using a brief measure of biological, social, and demographic risk factors to determine the need for a more detailed family assessment. This assessment in turn is used to identify those families to be invited to participate in Families First. Paraprofessional home visitors (supervised by public health nurses) visit these families to promote child health and safety and to facilitate parental problem solving, encourage positive parent-child interaction, and make referrals to health or social services in the community.

Because every birth is recorded in the hospital discharge file, we were able to examine the comprehensiveness of the screening process: the percentage of families whose newborns were screened and the characteristics of those mothers and families who were not screened. Since the repository also included, from the Ministry of Family Services and



Note: These data are from Manitoba children born in 2002.

FIGURE 2. Percentage of Infants Given the BabyFirst Screen (BFS) by Regional Health Authority.

Consumer Affairs, the records of those children taken into foster care or receiving protection services in their homes, we could also find out how many mothers whose children were taken into care had not been screened and, for those who were screened, the predictive power of the screening tool.

Figure 2 (organized by the regional residents' relative health, with the healthiest regional health authority, Southeast, on the left) shows that almost one in four provincial births was not screened. In the least healthy remote regions (Norman and Burntwood), between half and three-quarters of the screens were never completed. Some of the mothers at highest risk had particularly low rates of screening, and almost half the adolescent mothers aged seventeen and under were not screened. More than 3 percent (1,407) of all babies born between 2000 and 2002 were taken into foster care at some point before the end of March 2004. Of those 1,407 in care, 585 (42 percent) had not been screened (Brownell et al. 2007).

Those delivering programs are so focused on delivery that they often do not ask the kinds of questions that interest academics. Because the Manitoba Centre brings together files that typically are collected by different agencies and are not routinely analyzed or linked, we often suggest and undertake work that the ministry staff cannot.

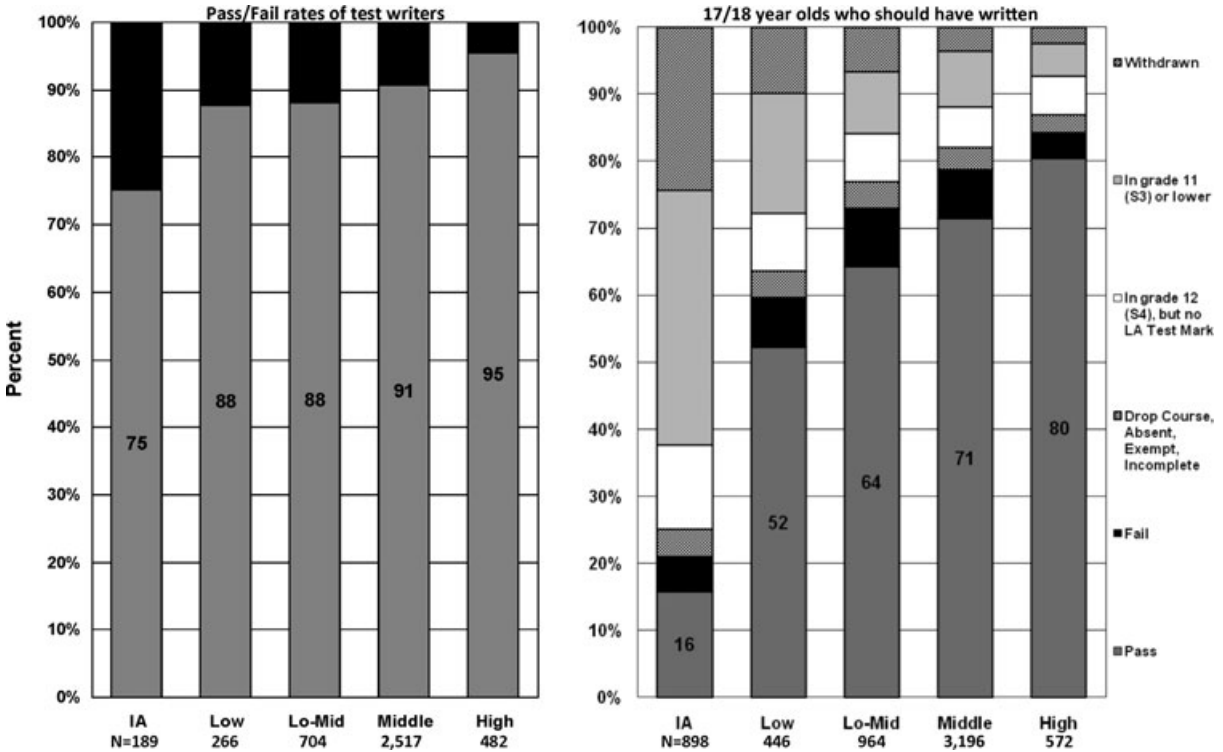
Putting together the data from these different sources gave us previously unavailable insights, leading managers to explore different ways of extending their programs' coverage, including emphasizing communication among the regional health authorities, improving the training of public health nurses to enable them to visit all families, and looking at administrative reasons why postpartum referrals do not always reach public health nurses (without referrals, the nurses have no name and address for scheduling a visit).

Who Is and Who Is Not in School

Comparisons of educational test performance across schools are common, but testing tells only the story of those in school on the day of the test. Combining the data of many files, however, shows that education test results dramatically underestimate the relationship between socioeconomic status and educational outcomes. Schools have little information about what happens to children who stop attending. Have they enrolled in another school, left the region, or dropped out?

Combining health data (all births that occurred in the province in the previous seventeen years) and education data (enrollment information and grade 12 testing results) enabled us to follow entire birth cohorts through the school system: Were the children who should have taken the grade 12 test in a given year (a test that contributes 30 percent to students' final course grade) still with their classmates, or had some been held behind one or more years or dropped out? The population registry allowed us to distinguish between those children who had left the province and those who remained but were not enrolled in school (Roos et al. 2006).

Figure 3 highlights differences in performance on the grade 12 Language Arts Standards Tests by the students' socioeconomic status. Those from the poorest families (those receiving income assistance from the province of Manitoba in the recent past) are on the left, and those who had not received income assistance are classified by the relative affluence of area of residence, with the students living in the most advantaged areas on the right. The left side of figure 3 shows what schools see when reviewing students' test-taking performance: 75 percent of those children in families who had at some point received income assistance (IA) passed the test, compared with 95 percent of the students residing



Note: These data are from Winnipeg residents born in Manitoba in 1984; they should have been in grade 12 in the school year 2001/2002. IA designates family receipt of income assistance, and these children were designated as being of the lowest socioeconomic status. Neighborhoods are divided into quartiles according to median income of 2001 census enumeration area.

FIGURE 3. Grade 12 Performance by Socioeconomic Status: Language Arts Standards Test, 2001/2002.

in the city's highest-income neighborhoods. The differences across the groups are relatively modest.

The graph on the left reports the results only for those who were in school that day and took the test. The right-hand side of figure 3 demonstrates the power of population-based data, focusing on who *should be* taking the grade 12 test, assuming an on-time completion of all prior years of schooling. The school enrollment file allowed us to determine where entire birth cohorts of children were in the school system during what should have been their final year in high school. By elimination, we could identify those who had withdrawn from school (i.e., those who were still living in the province but were not enrolled in school). Linking these data gave us considerable insight, as the on-time pass rate proved to be dramatically higher among students living in the more affluent areas (80 percent compared with 16 percent of those children from income-assisted families). More than 24 percent of those from the poorest families had withdrawn from school by the time the grade 12 test was given, and another 38 percent of the cohort had not yet reached grade 12.

When presenting this information to local audiences, we discuss the requirements of the twenty-first-century workforce, including such facts as "45 percent of newly created jobs require sixteen years of education." We also emphasize the changing age structure of our population. Because people are living longer, the proportion of the population that has left the labor force is growing while at the same time the birthrate of the most highly trained sector of the population is falling. To retain a workforce that can support the aging population, policymakers have two alternatives: they can either import skilled workers or turn the province's at-risk children into a skilled, productive, taxpaying labor force. The Business Council, the United Way, many school board members, and Education Ministry officials who have seen these results quickly understand that investing in the second alternative would reduce the number of welfare-dependent young and increase the size of the productive population.

We have similarly analyzed other vulnerable groups: children who were at some point in the child welfare system (in foster care or receiving protection services) and children of teen mothers and of mothers with a history of teen birth, that is, children of prior teen moms. (We found that the children of prior teen moms face an increased risk of poor health, and educational and social outcomes nearly equal to those of children of teen mothers [Jutte et al., forthcoming].) The results on the Language

Arts Test for the children in these vulnerable groups were quite similar to those for the children in families receiving income assistance.

After several presentations of our work (to which his assistant deputies were usually invited), the deputy minister of education made it clear that he found the evidence on the disadvantaged children startling. Although knowledge of the association between low income and educational achievement was widespread, department officials had not understood the strength of the relationship in their own community. Their first reaction was "it can't be this bad," but after six months of pestering them with questions pertinent to working with the data, these officials also understood how careful we had been to get the results "right." Our work had an impact in part because we had taken the time to develop ties with the ministry staff, since building a relationship of trust and mutual respect was critical. The more than fifty presentations by Centre researchers to school boards, superintendents, ministry staff, and others explaining the approach and the findings were helpful as well.

The deputy minister confirmed that the Centre reports showing the very poor performance of at-risk kids facilitated the implementation of the Community Schools Initiative and a low-income community education strategy. Foundations have underwritten more aid (including mentoring) to inner-city teachers. Student teachers have been funded to help at-risk students get through middle school and high school. Some schools have begun programs to support homework activities for substantial numbers of high-risk students, and several communities are experimenting with summer literacy camps. We also were asked to supply baseline data to inner-city school principals before programs to keep high-risk kids in school were implemented. Finally, the CEO of Manitoba's Business Council described how the statistics relating educational achievement to socioeconomic status led the Business Council to a social policy agenda and to his accepting the co-chairmanship of the Poverty Reduction Council.

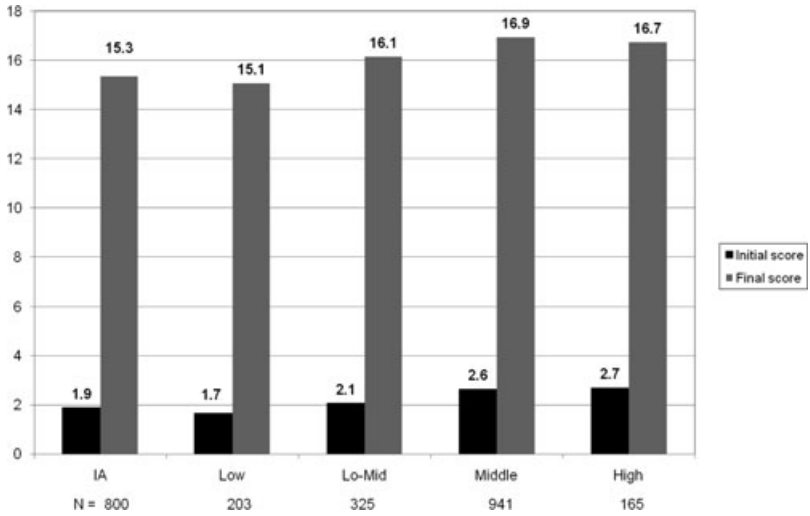
Poor Outcomes for High-Risk Groups Are Not Inevitable

Good-news stories help convince policymakers that outcomes can be changed. We used information about grade 12 examinations (figure 3) and additional work on high school graduation rates to show that at-risk

kids who stayed in school and were not held back (retained) were almost as likely to graduate as other children were (Brownell et al. 2006).

Policymakers also were impressed by analyses demonstrating that children from high-risk groups who did so poorly in school were remarkably similar at birth (in birth weight, gestational age, and Apgar scores) to other children. While we found the expected higher rate of low-birth-weight infants born to low–socioeconomic status (SES) mothers (7 percent versus 5 percent in their high-SES counterparts), the overwhelming majority of children in the highest-risk groups (i.e., children of teen mothers and prior teen mothers, those in families who had received income assistance, and those in foster care or protection), almost none of whom went on to graduate, scored normal/healthy on all the birth indicators.

Figure 4 reveals why and/or how some children succeed despite their being at risk. To enhance early literacy skills, the province supplies limited funding to schools for grade 1 students. Some schools use the Reading Recovery program, which provides daily, individual lessons to



Note: These data are from Winnipeg children in grades 1 or 2 during the three school years: 2001/2002, 2002/2003, and 2003/2004. IA designates family receipt of income assistance and these children were designated as being of the lowest socioeconomic status. Neighborhoods are divided into quartiles according to median income of 2001 census enumeration area.

FIGURE 4. Mean Reading Level at Start and End of Literacy Training by Winnipeg Socioeconomic Status.

students judged by their teachers to be behind in literacy skills. Figure 4 groups the children in the program according to their socioeconomic status. Those students whose families had received income assistance (IA) from the province at some point between when the children were born and they reached age six, regardless of where in the city of Winnipeg they lived, are on the left. As in figure 3, those whose families had not received income assistance were placed into one of four groups according to the relative affluence of their area of residence, with the students from the most advantaged areas on the right. The low bars show the reading level of participants selected for the Reading Recovery program (with the children living in higher-SES areas averaging a reading level score of 2.7 and those children in low-SES areas or whose family had received income assistance averaging a score of just under 2). The high bars show the children's reading level scores at the end of the Reading Recovery program or at the end of grade 1. Our assessment is imperfect, however, as a final reading score was missing for 23 percent of those from the poorest families and lowest-income area and for 10 percent from the highest-income area. Nonetheless, the reading scores in every group improved dramatically. At the end of the program, those from the poorest families and lowest-income neighborhoods had achieved reading scores (15.1 to 15.3) just slightly below those achieved by children from the more affluent areas (17.6 to 16.9). Although scores for children not selected for the program were not available, children reading close to a score of 16 are at an appropriate level for the end of grade 1 (Clay 2005; Fountas and Pinnell 2006).

Multiple Years of "Exposure" Data Provide a Different Perspective

When a new database is added to the repository, the Manitoba Centre routinely requests all years of electronically recorded data, and annual updates add the most recent twelve months of data. Thus, information about the use of hospitals and physicians goes back to 1970, and the education and family services information, to the mid-1990s. Ministries typically count annually the numbers of individuals they "treat" or "serve."

While in a given year, only 7 percent of Manitoba children have contact with the Ministry of Family Services, over time a considerably higher proportion of children become the responsibility of this agency. The ten years of data available showed that 17 percent of Manitoba children between the ages of eight and seventeen became the official responsibility

of the Family Services Ministry for some period of time, and this percentage would be even higher if contact during the younger ages were added. Emphasizing the much higher percentage of children for whom the province was at some point "responsible" brought a new sense of urgency to policy discussions. These data helped supply a more compelling rationale for preventive programs in the core area, so these neighborhoods have become the focus for the Poverty Reduction Council's efforts. The province also has committed to the All Aboard Strategy, which includes a $2.4-million project to help youth make the transition from foster care to independent living (see http://www.gov.mb.ca/fs/allaboard/).

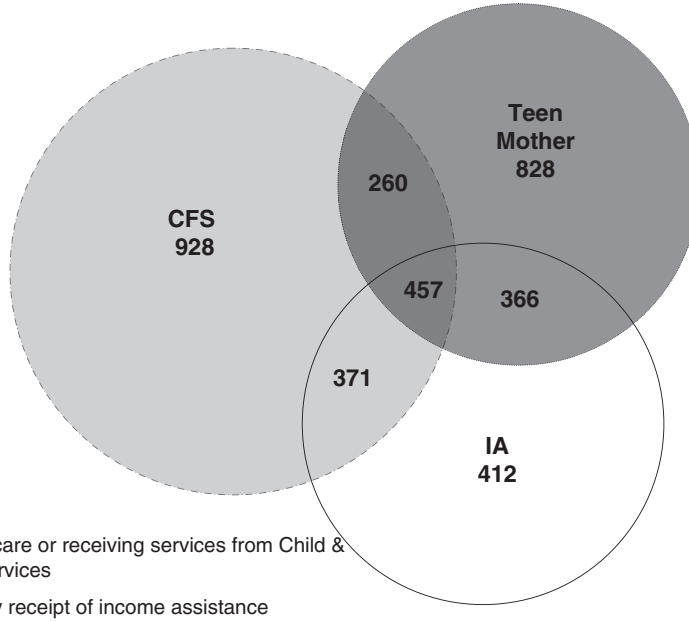
How Much Overlap Is There across High-Risk Groups?

As we stated earlier, we identified three types of at-risk children by using data from ministry datasets: children whose families had received income assistance at some time, children who for some period were in the child welfare system, and children of teen and prior teen mothers. Without these data, those in government, the United Way, and the Business Council tended to assume that their services were being duplicated and that a small group of high-risk children were being served by several different agencies.

The actual data told a more complicated story. Remarkably, fully 31 percent (3,622 of 11,703) of Winnipeg youths in the birth cohorts we reviewed had one or more of the three risk factors, and figure 5 shows how they overlap. Many of these children had more than one risk factor, and 75 percent of those receiving income assistance either had teen mothers or prior teen mothers or were in the child welfare system. Only 4 percent of the children in the two birth cohorts we examined (457 of 11,703) had three risk factors; 9 percent had two risk factors; and 19 percent had one risk factor. We then investigated where these at-risk children lived and what proportion of the children in each neighborhood they represented.

Ranking Communities by Socioeconomic Status Focuses Attention

Local information makes it more difficult for policymakers to dismiss certain issues as "not relevant here." When presenting neighborhood

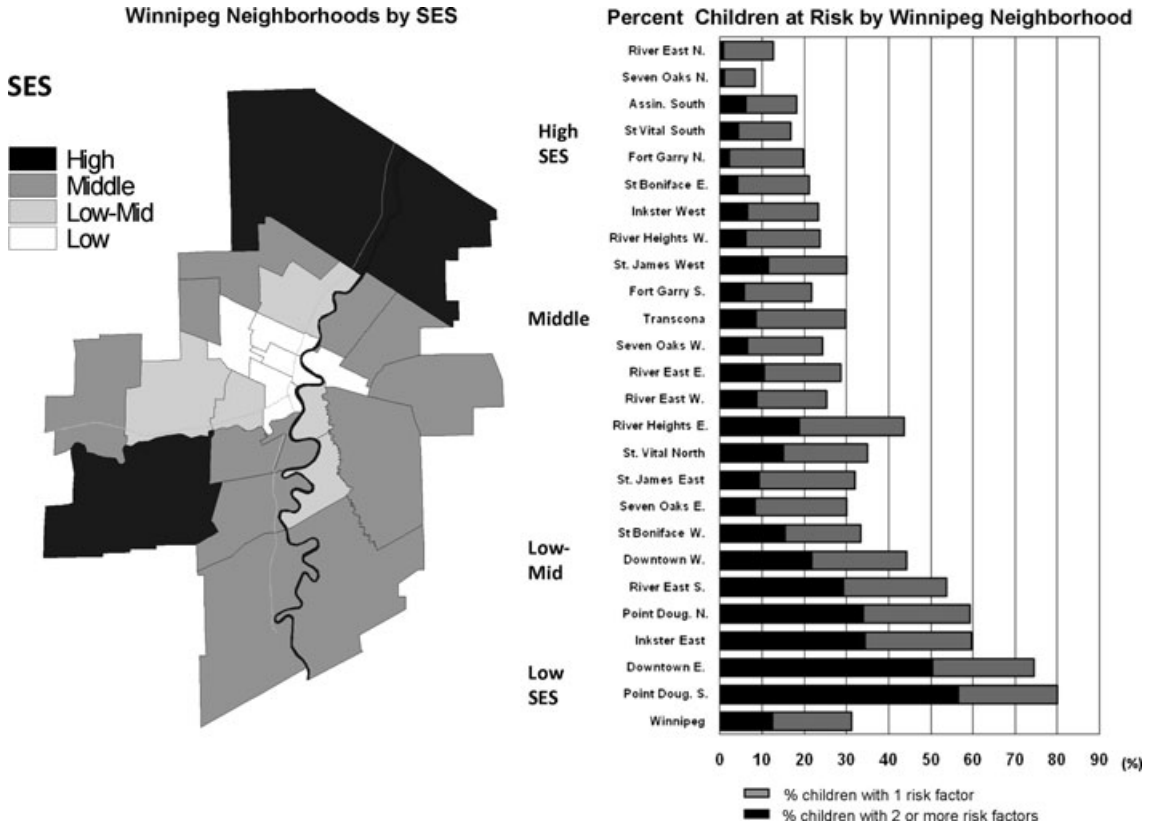


Note: These data are from children born in 1984 or 1985. 3,622/11,703 of the children (31%) have one or more risk factors.

FIGURE 5. Overlap of Three Risk Factors for Winnipeg Children.

data, we organize the areas by their residents' socioeconomic status or health (in fact, the rankings are usually almost identical). We often preface our talks highlighting at-risk children with a slide stating "None of what you're about to see is surprising, yet you'll be 'surprised'" or "Sometimes the role of research is to attach numbers to the obvious, to make it undeniable."

Our presentations to policymakers and local audiences typically attach specific numbers to issues of which the viewers are generally aware. For example, figure 6 shows the percentage of children living in each area that has one, versus two or more, of the risk characteristics just cited. We used the same ranking for the percentage of teenagers who graduated from high school within six years of entering grade 9 (which ranged from 85 percent or higher in the neighborhoods of high socioeconomic status to 30 to 35 percent of those in the two neighborhoods of lowest socioeconomic status), the percentage of teenage girls who became mothers, and so forth. In this figure, neighborhood socioeconomic status is assigned



Note: These data are from children born in 1984 or 1985 and followed until the age of 18. The Winnipeg neighborhoods are determined by the child's residence at age 18. Neighborhood Socioeconomic Status (SES) was assigned using Socioeconomic Factor scores derived from the 2001 Census.

FIGURE 6. Children at Risk by Winnipeg Neighborhoods.

using the Socioeconomic Factor Index, a factor score based on average household income, the percentage of single-parent households, unemployment rate, and high school education rate (Martens et al. 2002).

Our talks typically produce strong reactions. Members of the audience often contact us with the name of another group or organization that "must" see the evidence. The presentation by geographic residence of the child, not by school attended, has shown the critical relationship between socioeconomic status and children's educational outcomes. Because specific schools are not "blamed," schools, teachers' unions, and superintendents' associations have been supportive of the work—not defensive.

We have used this evidence to argue compellingly for new programming. The Community School program and support for summer enrichment, as well as the Low Income Neighborhoods program for inner-city schools, all were launched after high school drop-out rates for inner-city schools were shown to be three times those of high-income neighborhoods. These efforts subsequently were expanded substantially with provincial funding.

"Area ranked" graphs also highlight the lack of resources available to high-risk children. For example, since the Family Services files identify all spaces in subsidized day care/child care across the province, we developed graphs showing the child care spaces per one thousand children available in each Winnipeg neighborhood. Despite the very high rate of at-risk children in the poorer areas, these neighborhoods had no more provincially subsidized child care spaces per one thousand children than did the more affluent neighborhoods, with many fewer at-risk children. The provincially subsidized child care program was originally designed to serve working mothers and depends largely on community groups to set up and run the centers, so at one level, our findings were not surprising. Before we presented our findings to the ministry, the province had funded an additional 5,024 child care spaces across Manitoba. But as we were able to show subsequently, without targeting, there were actually fewer at-risk children receiving subsidies in 2006 (at the end of the expansion) than in 2001.

Our presenting these data in multiple policy forums has led to a rethinking of the program and a commitment to create new capacity in the high-need areas of Winnipeg. The Government's Family Choices Agenda (2008–2013) has led to a further commitment to provide additional nursery school spaces, which is beginning to address the gaps they now recognize, and a new subsidy has been introduced for low-income

families to help them enroll their children. No daily fee is now charged to families qualifying for a full subsidy.

Discussion

Information-rich environments built from routinely collected administrative data can transform research efforts over time. It took Manitoba twenty years to fully develop and access population health information and another ten years to fully use education and family services data. Our working with the Ministry of Education data represented a particular watershed in demonstrating the advantage of merging files across multiple ministries. The data's potential compares favorably with that of the Panel Study in Income Dynamics, the only social science research named by the National Science Foundation as one of its fifty most significant projects of the twentieth century (Duncan 2002; Roos et al. 2008). Despite progress elsewhere, we know of no jurisdiction that currently carries out these analyses of child development. Other ministries now are working closely with the Manitoba Centre, and both Manitoba Housing and the Ministry of Justice have committed to incorporating their data in the repository over the next several years.

Success Factors

This article concentrated on the findings that policymakers have found most persuasive. As stressed elsewhere, research findings are more likely to be accepted when the evidence is converted into meaningful messages (Gold 2009). Our work emphasizes the power of demonstrating that a problem exists, by "giving examples of the impacts of policies on people and organizations" (Gold 2009, 1114).

Our experience has led to several suggestions for researchers interested in having their work influence the policy process:

1. Pursue opportunities for an ongoing dialogue with policymakers, business organizations, and nongovernmental organizations so that they understand, trust, and mutually reinforce your results.
2. Present local data organized by the socioeconomic status of the area's residents. This highlights the pervasive influence of socioeconomic status and makes the impact of social inequities more difficult to ignore.

3. Focus on the educational impacts of inequities to develop a broader constituency for taking action. This helps bring business concerns into the policy process.
4. Make it clear that poor outcomes for the disadvantaged are not inevitable. This provides a strong rationale for action.

The Manitoba Centre for Health Policy's ongoing relationship with government has encouraged an evolving process of decision making and implementation in which research can play a continuing role. The Centre's provincial funding specifies that five negotiated deliverables are to be produced annually, which provide "an organizational linkage between knowledge generator (the research center) and user" (Gold 2009, 1116). One key has been multiyear funding (five-year contracts) renewed every three years, as this takes some of the pressure (if the new contract is delayed) off the research organization. We have tried to maintain contact with the party out of power, as well as ties with all levels of the public sector. A change of provincial government (from Conservative to New Democrats) was particularly challenging, as is the movement of ministers and other key liaisons, which often leads to new priorities for deliverables. Our reporting relationships at the minister and/or deputy minister level, however, have provided support and some protection from changes in the rest of the bureaucracy. Our efforts represent a large time commitment for the Centre's director and key staff, one not always recognized at the university's highest levels. Finally, the credibility of the Manitoba Centre for Health Policy has been reinforced by external research awards received by its academics.

Sustaining Research

The need to engage policymakers is vital to maintaining funding for research in today's uncertain economic environment. Multiyear programs of research are especially difficult to sustain, and even scholars with distinguished track records are subject to burnout from the pressures of fund-raising to support major research organizations over time (Duncan 2002; Schindler 2002). Applied research and policy analysis must obtain support from not only universities but also the broader social and political environment (House et al. 2004). This is particularly true in Canada, where most provinces have populations, incomes, and university

endowments below those of many American states. Canadian researchers' work on issues pertaining to social equity does benefit from their audiences' interest in these topics. Although Canada's safety net ranks only in the middle group of wealthy countries, "the country's policies provide better social support, including health services, than is the case in the United States" (Starfield 2010, 1035; UNICEF 2007). Our research has highlighted the fact that since the affluent take disproportionate advantage of worthwhile programs, the government's active effort to help the poor take advantage of these services is desirable (Ceci and Papierno 2005; Gupta et al. 2003; Link et al. 1998). Manitobans are familiar with such government involvement and are aware that major differences in opportunity remain in their province.

Using linked data to influence policymakers is only part of the story. A large number of published papers have come from Canadian, Australian, British, and Scandinavian centers built around record linkage (Roos, Menec, and Currie 2004). The academic standards for "good" research have been raised; sibling and twin designs using large numbers of cases and long time periods are now possible in some information-rich environments (Bjorklund, Jantti, and Solon 2005; Oreopoulos et al. 2008). The future should see more sibling/parent designs linking parental histories to child histories to assess the effects of conditions like maternal depression (Ray, Croen, and Habel 2009; Silberg, Maes, and Eaves 2010). These approaches are increasingly popular in health services research, population health, and economics.

Bringing the results of sophisticated research into the policy arena will require continued efforts to translate this knowledge. Clear presentations building on the unique resources generated by cross-ministry collaborations and long-term relationships will be essential to enacting policies that promote social equity. Our insights regarding child development, coupled with effective communications, have led to investments targeted to correct inequality. The engagement of policymakers can ensure support for both ongoing and innovative efforts.

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