
Income, Health and Disease in Canada:
Current State of Knowledge, Information Gaps, and
Areas of Needed Inquiry

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Table of Contents	Page #
Summary	1
Executive summary	2
Introduction	5
Background	5
Context within which the NGOA was conducted	5
Summary of systematic literature review	5
The research team	6
Advisory group/structure used to guide the project	6
Main body of report	6
Methodological approach to structured environmental scan	6
Collaborative stakeholder consultation process	7
Presentation of needs, gaps, opportunities findings & prioritization of results	8
Section 1: Conceptualizing the income and health relationship	8
Section 2: Theorizing the mechanisms that mediate the income and health relationship	9
Section 3: How is income or its proxies measured?	11
Section 4: What health outcomes are measured?	15
Section 5: Who is being studied and what data sets are being used?	16
Section 6: Identifying the pathways by which income comes to impact health	21
Section 7: Research design	23
Section 8: Implications for policy development	25
Section 9: Virtual news mini-study	26
Prioritization of needs, gaps and opportunities and prioritization of results	27
Conclusions and recommendations	31
Appendices	
Appendix A - Advisory committee members (East, Central and West) and terms of reference	35
Appendix B - Canadian national and provincial, and Finnish institutions searched	39
Appendix C - Document search strategy	51
Appendix D - Eight categorical taxonomies - Inclusion criteria	52
Appendix E - Bibliography of Canadian, Finnish and British studies reviewed	58
Appendix F - Journals and institutions producing the Canadian studies reviewed	80
Appendix G - Interview guide	83
Appendix H - Consent form	86
Appendix I - Data tables	87
Appendix J – Revised prioritization criteria and Gaps and Needs Rating Tool	95
References	102

Summary

Background: The goal of this research project was to identify and evaluate gaps in Canadian knowledge and research activity concerning the role that income and its distribution play in Canadians' population health. Such a process would help set priorities for future research, suggest funding approaches, and identify means by which findings could be applied to ongoing policy analyses to improve Canada's population health. The study consisted of an environmental scan of current research in Canada, the UK, and Finland, an analysis of media stories in Canada on income and health, and key informant interviews.

Findings: The 321 studies on income and health that were reviewed were considered along eight categorical taxonomies. These were: one, conceptualization of income and its proxies; two, theoretical underpinning of the study; three, income distribution measures; four, outcome measures; five, who/what was studied, (unit of analysis, data sets used, characteristics of the population sample); six, pathways used to show the relationship between income and health and complexity in use of pathways; seven, research design; and, eight, implications for policy.

Few Canadian studies make explicit their conceptualizations of income and its relationship to health. Many Canadian researchers however consider structural mechanisms that mediate the income and health relationship. Few Canadian studies use mortality outcome measures, more often using social/community level measures and morbidity measures. The majority of studies use an individual level of analysis. Over half of Canadian studies are using provincial or regional sample frame, with only 40% using national population data. Two-thirds of studies look at an adult population.

Thirty percent of Canadian studies do not explicate any pathways to show how income influences health. Of those that do, researchers usually use materialist, psychosocial, or behavioral pathways, with a good number looking at political-economic analysis. However, very few offered a sophisticated analysis of pathways. In regards to research design, most Canadian studies use cross-sectional designs. Only 10% of the sample of studies used qualitative designs. Most studies that did explicate policy implications of their study findings identified the need to address social determinants.

Conclusions: This Needs, Gaps, and Opportunities Analysis identified numerous areas to enhance the Canadian research concerning the role that income and its distribution plays in population health. The particular areas of weakness are in:

- Conceptualization of how income and its distribution contribute to population health,
- Lack of longitudinal studies of the impact of income-related issues upon health across the life-span,
- Lack of linked data bases that would allow complex analyses of how income and related issues contribute to health and well-being, and
- Lack of interdisciplinary work in the areas of pathways that mediate the income and health relationship, and specifically, the biological pathways by which issues such as income and its distribution get 'under the skin' to influence health.

There is a need to bring broader conceptualizations of income and its relationship to health into population health activities that consider income and its distribution as relevant variables. Findings of this NGOA should be made available to those who are involved in health studies but also to researchers from related disciplines. The Institute of Population Health (IPPH) could support the production of user and public-friendly materials from this and other NGOAs to facilitate this knowledge transfer to the thirteen institutes of the CIHR and the public.

Executive Summary

Background, Rationale and Process: The goal of this research project was to identify and evaluate gaps in Canadian knowledge and research activity concerning the role that income and its distribution play in Canadians' population health. An important purpose of this was to prioritize future research directions. To do so, we carried out an environmental scan of current research activity and capacity in Canada related to income and health. We conducted a carefully organized process of consultation with interested researchers and stakeholders across Canada. We also examined key research activities in the United Kingdom and Finland related to income and health.

Why Income: Income is a key determinant within the population health models outlined by the Canadian Institute for Advanced Research (Health Canada, 1998) and the World Health Organization (1986). Canada has been recognized as a world leader in developing health promotion and population health concepts that consider the role that income and its distribution play in promoting health inequities (Restrepo, 1996). Many federal, provincial and public health association documents outline the importance of income for health but there is a profound gap between this stated importance and actual knowledge available concerning the income-health relationship as it directly affects Canadians. This deficiency applies to both research activity and to conceptualizations of the income and health relationship.

The process of engaging stakeholders in this process ensured an accurate perception of the gaps and needs in the area of income and health research. Stakeholders consisted of members of three advisory committees (Atlantic, central, and western Canada) and twelve prominent researchers in the income-health field in Canada, the UK and Finland. Committee members included active researchers, representatives of the traditional health care and public health sectors, social development and social welfare sectors, and advocacy and social justice organizations.

The environmental scan consisted of two phases, a compilation and analysis of 321 publications that included peer-reviewed empirical research from journals, and research papers from national and provincial research, policy and funding institutions (241 Canadian, 40 British, and 40 Finnish studies). We also performed a mini-study of Canadian newspaper stories, using the Virtual News database, to determine extent and quality (depth) of coverage of income-health research. The second phase saw the interviewing of 12 key informants in order to complement the findings of the environmental scan and develop an accurate picture of needs and supports for researchers.

Research Findings: The research was classified according to eight taxonomies: one, conceptualization of income and its proxies; two, theoretical underpinning of the study; three, income distribution measures; four, study outcome measures; five, who/what was studied, (unit of analysis, data sets used, characteristics of the population sample); six, pathways used to explain the relationship between income and health and complexity in use of pathways; seven, research design; eight, implications for policy.

Researchers differ in how they conceptualize income and its relationship to health. At one end of the spectrum, health researchers simply note the association between income and health measures in their studies without providing any explicit rationale for including income as a relevant variable. At the other end of the spectrum, health researchers develop complex models that provide an extensive rationale as to why income is important to health. About two thirds of the Canadian studies had no explicit theoretical conceptualization of income as an influence on health.

Researchers theorize the mechanisms that mediate the income and health relationship. Individualistic analyses focus upon the income-related characteristics of individuals and how

these are associated with health. Structural approaches consider the societal structures that mediate the income and health relationship. About a quarter of the Canadian studies take an individual perspective in their theorization of the relationship between income or its proxies and health. This is compared to 27% of Finnish studies and virtually none of the British studies that do so. Forty percent of the Canadian studies examined take an explicitly structural theorization of the income health relationship.

In regards to income measures used in research, studies fit into one or more of three categories: overall distribution of income at a population level (income inequality measures), individual level, and aggregate measures. A small number of Canadian studies apply overall measures of the distribution of resources – usually income -- within a population. Seventy-two percent use individual level measures. Eighteen percent use aggregate measures. The remaining 7% use a combination of these measures. In regards to poverty measures, often researchers use an absolute adjusted measure (Statistics Canada's Low-Income Cut-Off) at the individual level and most often in combination with other income measures

Within both individual and aggregate level measures there are what we have termed 'other group' measures. This primarily includes measures of socioeconomic status (SES), educational level, and occupational level, amongst many more. The most common Canadian approach to studying income-health relationship is to group individuals on the basis of absolute income, membership in income groups such as deciles, quintiles, or quartiles or other such measures (e.g. high versus low income). However, frequently researchers combine income with additional measures of SES. The UK studies rarely focus upon income alone; they usually use social class or occupational group membership.

A variety of health outcome measures is used: social/community, mental and physical morbidity, mortality, health care utilization, and lifestyle/behaviours. Canadian researchers make greater use of multiple measures than their UK and Finnish counterparts. Although the majority of Canadian studies use physical morbidity measures, more frequently they are also using social measures¹, mental morbidity, health care utilization, and lifestyle -- or a combination of these -- than their British and Finnish counterparts. The studies from Finland and the UK most often use physical morbidity measures. However, researchers in the UK more frequently use mortality measures than Canadian and Finnish researchers.

Both data availability and how the income-health relationship is conceptualized are reflected in the unit of analysis used within a study. The availability of carefully collected data sets allows for the analysis of the income and health relationship at the individual level. Studies at the household level usually focus on child health, and look at income or occupational status of the family as a determinant of child health and development outcomes. Canadian researchers use household measures more often than the other countries. Canadian researchers also engage in more neighbourhood level studies, and more frequently use a provincial level of analysis.

A larger number of Canadian studies draw upon national data sets. Fifty-two percent of studies use national data sets, and 25% use provincial data sets. About a fifth of the studies examined, use multiple data sets. Finnish researchers have access to national registries that provide social status and health related information on the entire population of Finland. British researchers most often draw upon national longitudinal data sets, particularly life course cohorts.

Regionally, many studies on income and health are located in Ontario and Manitoba. From the lack of studies doing inter-provincial analyses, it appears as though there is regional

¹ Social measures include outcomes of community belonging, employment patterns, family functioning, family status, child behavior/development, food in/security, literacy, access to resources, socio-cultural effects, literacy, quality of life.

disparity in data sharing and access. The Canadian studies were also examined for various characteristics of the population sampled, i.e. age, gender, condition/disease status, ethnicity, and low-income status. About 10% of studies focussed on women's health relative to income. Several studies examined adults and children in relation to a specific disease or mental condition. A hand-full of studies looked at lone parents, five on immigrant populations, and eight on Aboriginal people. Eight percent of Canadian studies focus on low-income populations that live below the Low-Income Cut-Off (LICO), in poverty, on social assistance or welfare, or simply labeled as disadvantaged.

In regards to pathways -- how income gets 'under the skin' -- the studies were categorized according to whether they used biological, materialist, social class, psychosocial, psychosocial comparison, behavioral, gender analysis, political-economic analysis, selection, or no explication of pathways. As well, the degree of complexity in which researchers applied the pathways was rated. Canadian researchers tend to favour materialist, psychosocial, and behavioral pathways, applying these in about 30% of studies. Approximately a third of the Canadian studies use a political/ economic analysis to consider the relationship between income and health. In terms of sophistication of use of pathways, close to half of the Canadian studies were ranked as intermediate, and only 20% as sophisticated, compared to two-thirds of the British studies being ranked as sophisticated in their use of pathways.

In regards to research design, more British studies more often used longitudinal designs over Canadian or Finnish studies. Canadian and Finnish studies most frequently used contemporary designs (cross-sectional). A small number of studies were qualitative; they allow for research that yields a more in-depth understanding of the lived experience of the participants.

Almost two thirds of the Canadian studies provide policy implications of their findings. Canadian researchers more frequently make policy implications that relate to health care services and lifestyle issues than Finnish and British researchers. The majority of policy implications addressed social determinants, such as education, social inclusion, social services, housing, etc.

Conclusions and recommendations: This Needs, Gaps, and Opportunities Analysis identified particular areas of weakness. Weaknesses concern: conceptualization of how income and its distribution contribute to population health, the lack of longitudinal studies of the effects of income-related issues upon health across the life-span, and the lack of linked data bases. Linked data-bases would allow complex analyses of how income and related issues contribute to health and well-being. There is also a lack of interdisciplinary work in the areas of pathways that mediate the income and health relationship, including the biological pathways by which issues such as income get 'under the skin' to influence health.

Little work has considered policy implications of the income and health relationship to improve population health. Advantage and disadvantage clearly accumulate across the life-span, yet to date very little Canadian research considers this. Canadian researchers are limited by the lack of linked data-bases that allow for linking of data from the census, disease registries, and health and other surveys. A particularly important area that has seen some Canadian work is in the issue of how income and its distribution interacts with the presence of social infrastructure such as social and health services to influence health. Health research that incorporates social science into conceptualizations and analysis appears more likely to consider the effects of vertical and horizontal structures on population health.

There is a need to bring these conceptualizations into population health activities. Findings of this NGOA should not only be made available to those who are involved in these activities, but to researchers from all disciplines implicated. IPPH could support the production of user and public-friendly materials from this and other NGOAs to facilitate this knowledge transfer to the thirteen institutes of the CIHR and the public.

Introduction/Purpose

The goal of our research was to identify and evaluate gaps in Canadian knowledge and research activity concerning the role that income and its distribution play in Canadians' population health. This activity would help prioritize the direction that future research could take. To do so, we carried out an environmental scan of current research activity and capacity in Canada related to income and health. We conducted a careful process of consultation with interested researchers and stakeholders across Canada. We also examined key research activities in the United Kingdom (UK) and Finland related to income and health. These nations appeared to have advanced research programs and systematic policy processes in place to apply research findings. To further enrich these analyses, interviews with a selected sample of renowned population health researchers in the Canada, the UK, and Finland provided further information about research needs, opportunities and gaps. The project aimed to inform the CIHR Institute of Population and Public Health's priority area *The Influence of Various Contexts on Health*.

Background

Rationale for Project

Income was chosen as the contextual variable of interest since it is a prime health determinant in itself and one that affects the presence and quality of many other determinants of health. Income is a key determinant within the population health models outlined by the Canadian Institute for Advanced Research (Health Canada, 1998) and the World Health Organization (1986). Indeed, any list of social determinants of health usually lists income or its proxy, socioeconomic status (SES), first (Marmot & Wilkinson, 2000; Wilkinson & Marmot, 1999). Income and its distribution appears to be a major determinant of health among citizens of industrialized nations such as Canada (Kawachi, Kennedy, & Wilkinson, 1999) as well as globally (Deaton, 2001). Since income appears to be such a strong determinant of health, further understanding of its role has the potential to both improve the health of Canadians and reduce differentials in health that currently exist in a variety of areas between Canadians of varying income levels.

Context Within Which the NGOA was Conducted

Canada has been recognized as a world leader in developing health promotion and population health concepts that consider the role that income and its distribution play in promoting health inequities (Restrepo, 1996). Many federal, provincial and public health association documents outline the importance of income for health but there is a profound gap between this stated importance and actual knowledge available concerning the income-health relationship as it directly affects Canadians. In contrast to the statistical and conceptual knowledge that is becoming available from research programs in other nations, upon which most Canadian policy statements rely, Canadian efforts in identifying and explaining how income and its distribution affects health and illness is undeveloped. This deficiency applies to both research activity and to conceptualizations of the income and health relationship.

Summary of Systematic Literature Review

Sixteen hundred conceptual, empirical, and policy papers concerned with the relationship of income and health were collected from databases, journals, research institutes, and policy organizations across Canada, the UK, and Finland. These were entered into an Endnote library database. Of these, 241 Canadian, 40 UK, and 40 Finnish representative empirical studies were carefully reviewed and classified as to their conceptualizations and theorizations of the income and

health relationship, their research approaches and designs, and their explications of policy implications. Twelve prominent researchers in the field participated in key informant interviews. The Environmental Scan results provide the findings of this literature review.

The Research Team

The research team operated from three Canadian regions: Atlantic, Central and Western. The Atlantic region team consisted of Ronald Colman and Karen Hayward of Genuine Progress Index (GPI) Atlantic. Nova Scotia investigator Ronald Colman is director of GPI Atlantic, a research group that is constructing an index of well being and sustainable development for Nova Scotia and Canada. The Central region team included Dennis Raphael and Jennifer Macdonald of the School of Health Policy and Management at York University. Ontario investigator Dennis Raphael is an associate professor, at the School of Health Policy and Management. The Western region team included Ronald Labonte, Renee Torgerson, Allison Williams, Nazeem Muhajarine, and Bonnie Jeffery Saskatchewan Population Health Evaluation and Research Unit (SPHERU). Saskatchewan, investigator Ronald Labonte is Director of SPHERU, and a Professor in Community Health and Epidemiology, University of Saskatchewan, and in the Faculty of Kinesiology and Health Studies, University of Regina.

Advisory Group/structure Used to Guide the Project

An integral part of the project was to bring together three advisory committees from the three research sites. Members of the advisory committees included individuals from a variety of sectors concerned with income distribution and income-related health issues. The committees covered the Atlantic, Central, and Western regions of Canada. Committee members included active researchers, representatives of the traditional health care and public health sectors, social development and social welfare sectors, and advocacy and social justice organizations. See Appendix A for a list of advisory committee members, and their terms of reference.

Main Body of Report

Methodological Approach to Structured Environmental Scan

This environmental scan involved two phases; phase one was a review of all relevant Canadian literature produced since 1995, and phase two was a series of key informant interviews with key Canadian, British and Finnish researchers in the field.

Phase I -- Literature Review: The first phase of the scan involved compiling health-related Canadian research and related documents that included income and/or its distribution as relevant variables into an Endnote citation library. The Canadian citations compiled included peer-reviewed empirical research from journals, and research and policy documents collected from national and provincial research, policy and funding institutions. National funding institutes were contacted for their publications lists and current funded research. For a complete list of institutions searched, see Appendix B. We contacted institutions and individual researchers in order to identify health-related research that included income and its distribution as variables. Research in the fields of community health, economics, medicine, nursing, political science, population health, psychology, public health, social policy, social work, sociology of health, and social work were reviewed. See Appendix C for details concerning the document search strategy. This search was restricted to publications in the past seven years, and was aided by use of existing syntheses of recent literature undertaken, for example, by the *Synthesis and Knowledge Dissemination Unit* of the former *National Health Research and Development Program*. Finally, a mini-review of Canadian newspaper stories using the Virtual News database was performed. It was performed in

order to determine extent and quality (depth) of coverage of income - health research.

Analysis of the Empirical Studies: The second phase of the scan saw the development of a series of taxonomies against which the research was analyzed (See Appendix D for eight taxonomies). An Excel template was used to delineate numerous dimensions on which each study was classified. These included both methodological aspects of the study as well as the conceptualizations applied to income and how the income relationship was understood. Drafts of the template and taxonomies were reviewed during a first meeting with the three regional Advisory Committees, yielding a more complete process guiding analysis. This review also represents a face validation of the template and its theoretical framework. Three hundred twenty one (241 Canadian, 40 Finnish, and 40 British) empirical research pieces were compared against the template for analysis. Research pieces were selected for review on the basis that they were empirical and included health, or health related outcome measures. The information gathered from these 321 empirical studies, organized according to the taxonomies, constitutes the main findings from the environmental scan of research on income and health. The bibliography of the 321 studies reviewed appears in Appendix E. Appendix F provides a list of journals and institutions from where the 241 Canadian studies were published.

Research articles from the UK and Finland related to income and health were analyzed. The process was not as exhaustive an analysis as that done for the Canadian work but focused on typical research identified through a literature search. Findings from the literature review were organized against the same template used to assess Canadian research.

An inter-coder rating system was devised and performed to ensure rater reliability for coding and classifying the studies in a consistent manner across the three sites. Overall there was 75% agreement of two raters across a 25% sample of the research papers. The principal investigator resolved disagreements. The sources of these disagreements were identified and the lessons learned applied to the other 75% of the studies contained within the review.

Phase II -- Key Informant Interviews: Eight Canadian, six British and six Finnish prominent researchers in the income and health field were contacted with an email request to participate in a key informant interview. Six Canadian, three British and three Finnish researchers agreed to participate in a confidential non-attribution telephone interview. All were sent an interview guide and a letter of consent to be signed and returned to the central region, research site (see Appendix G & H).

All interviews were audio-taped and notes were taken during the interview. All researchers were given the option to receive a copy of the interview notes taken during their interview, and to review what they said during the interview. A content analysis was performed on the interview notes for the revelation of gaps, opportunities and needs in the area of income and health research. Information gathered from the key informant interviews is interspersed throughout the section reporting on the results of the environmental scan.

Collaborative Stakeholder Consultation Process

The collaborative stakeholder consultation process was applied through the advisory committee component. Each committee met three times. The first meeting with committee members consisted of their naming, from their experiences, the important areas of income and health research to be pursued in an environmental scan. At the second meeting, committee members reviewed some preliminary findings of the environmental scan and added their views on current gaps, opportunities and needs. During the third meeting, advisory committee members prioritized the gaps and needs compiled during the research.

There have been beneficial unanticipated outcomes of the collaborative stakeholder process. One 'spin-off' is the encouragement to pursue funding to establish a 'Centre for the Study of Income and Health'. Another spin-off from this project was the national conference on social determinants of health that was held at York University November 2002. A potential spin-off is voiced by committee members is to have the literature and findings become publicly accessible to further research efforts in this field. A vehicle for public access could be via the creation of a virtual library of sources used in the review that can be searched using terms used in the taxonomies we developed.

A major challenge to the process was the varying levels of knowledge held by committee members and the significant time demands made upon members' meeting their organizations' needs. A solution to both of these challenges is to provide monetary support to organizations. This would facilitate committee members' ability to spend the necessary time to update their knowledge of the literature facilitating their participation. There were varying degrees of participation and in every instance this collaboration was useful.

Presentation of Needs, Gaps, Opportunities & Prioritization of Results

Presentation of Results

The results of the scan are divided into eight sections. These sections detail how Canadian researchers conceptualize, theorize, and measure income, outcome measures used, focus of the studies, data sets used, pathways and mechanisms, research design, and implications for policy. These findings are compared to that which is done by researchers in Finland and UK.

Section 1: Conceptualizing the Income and Health Relationship

We observed a spectrum of approaches towards specifying the income and health relationship, ranging from narrow and simple approaches to the broad and complex. At one end of the spectrum, health researchers simply note the association between income and health measures in their studies without providing any explicit rationale for including income as a relevant variable. At the other end of the spectrum, health researchers develop complex models that provide an extensive rationale as to why income is important to health. These latter models conceptualize the means by which income comes to be associated with health, frequently providing causative models. One Canadian researcher interviewed suggested that social theory in income and health research is common among those with a social science background, rather than those with a health orientation. Another Canadian researcher interviewed argued that theory is important to use as it allows one to understand the 'why,' rather than the 'what' in income and its relation to health. There are three dominant causative models, or theories, for understanding the 'why' of the income and health relationship: materialist, neo-materialist, and social comparison; and a fourth that combines elements of all three.

Interviewees identified several forms of theory that guides their work:

Marxism
Weberian
Dialectical materialism
Fabianism
Critical social science
Social exclusion
Radical feminism
Illich
Foucault
Political reductionism

A. Materialist models -- Individual income as a determinant of health: The materialist explanation for the income and health relationship is that individuals of differing incomes are exposed to varying degrees of positive and negative exposures to health risk factors/conditions over the course of their lifetimes. These exposures accumulate to produce positive or negative health outcomes. The findings of steeped differences among social classes and incomes groups results

since: "[T]he social structure is characterized by a finely graded scale of advantage and disadvantage, with individuals differing in terms of the length and level of their exposure to a particular factor and in terms of the number of factors to which they are exposed" (Shaw, Dorling, Gordon, & Smith, 1999).

B. Neo-materialist approach -- Individual income and social infrastructure as determinants of health: Many jurisdictions with inequitable income distributions show poorer population health. These jurisdictions have both greater numbers of people with low incomes and also invest less resources in public infrastructure (Lynch, J. W., Smith, Kaplan, & House, 2000), in addition to the greater incidence of poverty that is typical of unequal jurisdictions: "[T]he effect of income inequality on health reflects a combination of negative exposures [to risk factors/conditions] and lack of resources held by individuals, along with systematic under investment across a wide range of human, physical, health, and social infrastructure."

C. Social comparison approach -- Hierarchy and social distance as determinants of health: In this approach health effects related to income are not primarily due to material deprivation, but rather to citizens' interpretations of their standings in the social hierarchy (Kawachi & Kennedy, 2002). For individuals, psychosocial effects of perceived position in the hierarchy produces stress and poor health. These perceptions also lead to overspending, additional employment responsibilities that threaten health, and coping behaviours such as overeating and use of alcohol and tobacco. At the communal level, the widening and strengthening of hierarchy weakens social capital and social cohesion. Increasing distrust and suspicion of others weakens support for communal structures such as education and social service systems, thereby weakening population health.

D. Materialist/social comparison approaches -- Combinations of social comparison and materialist theorizations: A small number researchers draw upon all three sets of conceptualisations in their work.

Findings: It should be noted that of the 241 Canadian studies reviewed, approximately two thirds had no explicit theoretical conceptualization of income as an influence on health. Of those that do make explicit their theoretical basis for using income as part of their study, materialist and neo-material conceptualizations were most common. This lack of conceptualization and use of materialist and neo-materialist concepts was also the case among the Finnish studies. In contrast, UK researchers frequently apply materialist explanations.

Very few researchers in general apply complex materialist/social comparison or social comparison conceptualizations in their income and health research. Table 1 (in Appendix I) shows the distribution of Canadian, UK, and Finnish studies along this spectrum.

Section 2: Theorizing the Mechanisms that Mediate the Income and Health Relationship

A related theorization of the income-health relationship is how researchers identify specific mechanisms which income and health come to be related. Individualistic analyses focus upon the income-related characteristics of individuals and how these are associated with health. These individual characteristics also include educational levels, occupational classification, individual control and

Interviewees identified the need to examine:

- The very fabric of Canadian society,
- The context of societies and communities in which people live,
- Political decisions of the past decades,
- How social policy in Canada is complex because of the make-up of the federation,
- Why egalitarian countries seem to be healthier,
- What it is about a system that may buffer the effects of recession,
- The distribution of resources, health services, and eventually health outcomes.

by

empowerment, or attitudes and values.

Structural approaches are concerned with how societal structures mediate the income and health relationship. A concern with horizontal structures, for example, might focus on how neighbourhood characteristics and structures interact with an individual's income to influence health. Income may also be related to an individual's ability to access quality employment, (through access to a telephone or appropriate interview clothes) or other neighbourhood resources. Similarly, a neighbourhood with many low-income people may have low levels of social capital or community psychosocial resources.

Studies that focus on distal macro-level issues may identify vertical structures. A concern with vertical structures will focus on the political, economic, and social forces that determine how income and other resources are distributed to individuals. Focus on employment, training, income, social welfare or tax policies within a jurisdiction would constitute such an analysis. Studies may focus on both kinds of structures. Table 2 shows how Canadian, UK, and Finnish researchers theorize the mechanisms mediating the income and health relationship. An *implicit structural approach* is where structural factors are discussed in a broad, but diffuse way.

An individual perspective is typical of studies that only consider individual behavioral risk factors for disease with the assumption that these factors are modifiable by the individual. In one study on heart disease, the authors posit that "[M]any people may eventually develop heart disease because they have medical and lifestyle risk factors that have been related to cardiovascular problems" (Johansen, Nargundkar, Nair, Taylor, & ElSaadany, 1998, p. 19). Travers describes the limitations of such an approach:

Individualism assumes that the current social system provides sufficient and equal opportunity for individuals to move within the social system according to their abilities. Within this ideological construct, poverty results from the individual's failure to seize the opportunity or to work sufficiently hard within the current social structure; it is not a reflection of inadequacies and inequities within that social order (Travers, 1996, p.551).

Many Canadian studies offer a structural theorization of the income health relationshipⁱⁱ. In a study of factors contributing to heart disease it is noted that women may have higher rates of heart disease due to the 'double-day' and the stress that working and keeping the household in order can cause (Johansen, 1999). Studies that limit their focus on an individual perspective often do not critically examine the interrelationships between behaviours and structural issues such as working conditions, employment status, cultural norms, family conditions, and or housing conditions or amenities.

A British researcher who was interviewed stated "It is very rare -- and in health inequality [research] it is almost non-existent -- that someone explicates the theories they are using. If you're a

ⁱⁱ An example of combined use of horizontal and vertical structures theorization is found in Dachner and Tarasuk (2002), who qualitatively examine food security issues concerning street youth of Toronto. In their research they demonstrate that vertical structures such as resource allocations to social services impact the horizontal community structures that allow youth to find a place to sleep, food to eat, and to feel safe.

Jackson, Roberts and Harman (2001) provide another example of complex conceptualization of the income and health relationship. They premise their study on recreation and youth on the interconnectedness of vertical and horizontal structures, with the hypothesis that the absence of structured recreation negatively affects socio-emotional human development over the long term. Since significant numbers of youth are not participating in recreation at a sufficient level, human development and future civic competence are in peril.

Marxist academic, you don't make a huge thing about it. It is not a very sensible thing to do. A lot of the best ideas that people who pretend not to be Marxist academics, actually come from Marx" (UK Interview). Research into health inequalities is not value free. Atheoretical approaches may result in understanding what the issues are but when combined with insights from theory, one can come to understand why the issues are this way and what is to be done about them.

Findings: In a number of studies, no theoretical construct was evident (CA, 18%, n=43; FI, 8%, n=3; and UK 20%, n=7). Approximately a quarter (n=50) of the Canadian studies take an individual perspective in their theorization of the relationship between income or its proxies and health. This is compared to 27% (n=8) of Finnish studies and only 2% (n=1) of British studies that take an individual perspective. Less than half of the Canadian studies (40%, n=98) take an explicitly structural theorization of the income health relationship. However, the Finnish studies lean more towards vertical analysis. The British studies show an approximately even division between the differing structural approaches. Table 2 (in Appendix I) shows the distribution of Canadian, UK, and Finnish studies along this spectrum.

Section 3: How is Income or Its Proxies Measured?

How income is measured reflects the theoretical frameworks within which the income and health relationship is conceptualized and researched. There are numerous research traditions that consider income within the context of issues such as occupational status or classification, social class, or levels of education. The following sections provide details concerning how income or these proxies are measured and the relationship of these measures to various theoretical formulations of the income and health relationship.

Overall Distribution of Income at a Population Level: Some studies apply overall measures of the distribution of resources – usually income -- within a population. These indicators identify degree of inequality within a jurisdiction e.g. a nation, state/province, region, city, or community (in Canada, often defined as census tract boundaries). Some of these are the Gini coefficient, and indices such as the Theil indexⁱⁱⁱ and the Robin Hood Index^{iv}. Researchers also may choose to calculate the percentage of income attained by a particular proportion of the population, e.g., lowest 50%. The focus on these indicators was stimulated by the income inequality hypothesis advanced by Wilkinson that argued that income inequality within a jurisdiction, at least in economically advanced countries, was a key determinant of population health. Some question these conclusions, and active debate continues.

Three schools of thought explain why this might be (see Section 1 above). The materialist school argues that these jurisdictions have more poor people and therefore show overall poorer population health. The neo-materialist school argues that these jurisdictions not only have greater numbers of poor people, but also invest less in social infrastructure thereby creating poorer population health. The social comparison school argues that the primary issues are hierarchy and

ⁱⁱⁱ The Gini coefficient and the Theil measure are both objective measures of economic inequality, that provide, a number summarizing the dispersion of the distribution of income among individuals. The Theil is a series of summary measures, and the Gini is a single summary measure of inequality. (Conceição & Ferreira, 2000). The Gini coefficient is calculated as area A divided by the sum of areas A and B. If income is distributed completely equally, then, the Gini coefficient is zero; if only one individual owns all income, it is one (Coudouel & Hentschel, 2000). (For complete definitions see glossary at <http://www.adb.org/Statistics/Poverty/G.asp>)

^{iv} The Robin Hood index is the distance between the wealth shares and a 45 line. This value approximates the share of total income that would have to be taken from those above the mean and transferred to those below the mean to achieve equality in the distribution of incomes. The higher the value of the index, the less egalitarian is the distribution of income (Kennedy, Kawachi, & Prothrow-Stith, 1996).

lack of social cohesion. In these jurisdictions, one's perceived lower position in the hierarchy creates health-threatening responses and creates environments that weaken social cohesion and social support.

Why use this type of measure? It is hypothesized that population level measures of health (mortality, life expectancy) are more closely associated with distribution of income within developed countries, than an absolute measure of an individual's income. This approach has proven useful in a variety of analyses at the city, state/province and national levels, particularly within the US.

Ecological or Aggregate Area-Level Measures: Here, income or its proxies are treated as area measures. Measures include neighbourhood/metropolitan median income, gross domestic product per capita, area unemployment rates, average education level attained, average occupational class, average number of owner occupied dwellings, among others. These measures can include area poverty indicators. Poverty is frequently defined internationally as having income that is less than 50% of the jurisdictions' median income. This has been used to calculate child poverty rates in various nations across the world. It can be used to calculate the percentage of the population living in poverty in states/provinces/regions, cities, and local communities. Other means of calculating poverty rates are also used to provide area poverty rates. In all these instances, analysis examines the relationship between these measures and health status at the ecologic or group level.

Why use this type of measure? Ecological measures are useful for assessing both large (national, or state/provincial), medium (cities, metropolitan areas) and small area (neighbourhood or census tracts) variations in health status. They allow for identification of contextual effects that accrue in addition to effects associated with individual characteristics. Sometimes, use of aggregate measures occurs out of necessity rather than preference, as individual-level data on these issues is not available.

Individual Assessment of Income: In this approach, income of individuals – or their families – is the focus of measurement. Individuals are classified into groups based on their income levels, and then examination is made of their health status in comparison to other income groups. Sometimes, individuals are classified according to some absolute criteria such as income less than \$10,000, \$11-15,000, 16,000-20,000, etc. Other times, individuals are placed into groups based on income quintiles, deciles, or other indicator such as high, medium, or low income, where the "cut-offs" have been set by the researcher. The determination of income level can be based on a variety of approaches: individual income or household income, market income, pretax income, or post-tax transfer income. Distinction may be made as to the source of income, e.g. employment, transfers, etc.

Why use this type of measure? This is a simple way to partition a population according to members' market based, employment income, or other type of income. Pre- and post-tax comparisons provide data on the effects of government policies concerning the redistribution of market income. It is a one-time snapshot of differences in income and health status among a population. However, it is not used

In regards to measuring income or its proxies, interviewees cautioned:

- Measure income comprehensively, relative to what it can buy [country/place context].
- Income has to do with resources- education has something to do with the social position,
- Ideally, one wants to measure income more than once to gain a broader perspective,
- Education may be a good predictor of life-time income than current income,
- It may do more harm than good to revisit or change poverty measures in Canada

easily to compare areas as the standard of living differs from place to place, depending on the local context.

Individual Assessment on a Non-Income but Related Indicator: Individuals are also the focus of measurement here. However in this case, individuals are classified based on a non-income category such as social class, occupational grouping, employment status, or education level. Health status is then assessed as a function of the group to which the individual has been allocated. These alternative measures sometimes serve as proxies for income but in many cases provides a more complex conceptualization of issues related to income such as social class structure or the role of education in creating better remunerated employment opportunities.

Why use this measure? *Using these other measures allows for consideration of the contextual aspects within which income differences are embedded. They provide the possibility of considering issues such as the class structure of a society, how this structure effects income and health status, and the macro-level forces that act through social class pathways.*

Individual Poverty Measures – Relative and Absolute: Internationally, poverty is usually defined as income less than 50% of a jurisdiction's median income. Those so classified have their health status compared to others. A Canadian example of a relative measure of poverty is the Statistics Canada Low Income Measure (LIM) which is calculated as 50% of median family adjusted for family size and composition (Norman, 2000, p. 2).

Why use this measure? *These measures apply Townsend's view that poverty is the situation within which individuals are unable to participate in the activities normally expected of those within a society. Individuals earning less than half the median income would appear to fit into that category. These approaches also direct attention to those living within the most difficult circumstances within society.*

The *Statistics Canada Low Income Cut-Off (LICO)*^v measure is a measure of adjusted absolute poverty. It defines poverty in terms of living in "straitened circumstances" rather than not having bare minimum requirements for survival. Many refer to the LICO as a poverty line -- though Statistics Canada argues against such use. HRDC's *Market Basket Measure* is also an absolute measure of poverty and assigns costs to a basket of goods and services -- including food, shelter, clothing, and transportation -- and incorporates a multiplier to cover other necessities.

Why use this measure? *Targeted population studies reveal more detailed information on the impacts of poverty on a low-income group (i.e. lowest income decile). It allows one to see the health effects or health outcomes of a particular group more clearly as it is separated from a broad picture of an entire population; poverty measures are linked to minimum standards of income, health, and the ability to engage as full citizens of a society (Lee & Klein, 1999). Researchers using qualitative methods often use this measure to define the sample frame.*

Findings: Table 3 (in Appendix I) shows how Canadian, UK, and Finnish researchers measure income and its proxies.

Income distribution: Only a few Canadian studies examine the distribution of income within an area. The UK had a somewhat higher rate^{vi}.

^v "LICOs look first at the percentage of income an average family spends on necessities—that is, food, clothing, and shelter. A family is said to be below the LICO if its level of income is such that a typical family with that income would spend 20 percentage points or more than the average family spends on necessities as a proportion of income (adjusted for family and community size)" (Norman, 2000).

^{vi} As an illustration, Canadian researcher, Ross and colleagues, use income captured by the lower 50% of the population as an indicator of income inequality. The researchers' stated rationale for using this measure is that: "the indicator has recently been used in similar studies on inequality and mortality, and thus allowed for comparability of results. Moreover, tests with a range of other measures of inequality and polarization suggested that this choice did not

Ecological measures. About a fifth of Canadian studies use ecological measures either alone or in combination with other measures. Ecological measures of income are not used as frequently in the Finnish and UK literature. Within these ecological Canadian studies, average income or its proxy (e.g. socioeconomic status, education levels, etc.) is more frequently applied than ecological poverty measures of individuals living below LICOs. The finding that somewhat more Canadian studies rely on ecological measures than those in the UK and Finland may reflect a lack of data sets that can link income and other socioeconomic measures to individual mortality and morbidity data.

Income group measures: The most common Canadian approach to studying income-health relationship is to group individuals on the basis of absolute income into groups such as deciles, quintiles, or quartiles or other such measures (e.g. high versus low income). Ten percent of Canadian and no UK or Finnish studies used income as the only variable of interest. More frequently studies combine income with additional measures of SES. A Canadian interviewee stated that it is ideal to measure income as a longer-term measure of accumulated wealth in relation to need and the cost of living by using housing costs, as it varies across the country.

A majority of the Finnish studies operationalize income by developing three main income groups such as low, middle, and high. The Finnish studies also used other means of measuring income. For instance, six of the 40 studies use the OECD Equivalence Scale in which disposable income is adjusted for family size. Here, the first adult of a family is weighted as 1.0, other adults 0.7 and children < 18 years old 0.5. UK studies rarely focus upon income alone but usually use social class or occupational group membership.

Other group measures: Other group measures such as social class, or SES measures (i.e. educational level, occupational group, employment status, housing tenure), are more frequently the single income-related variable of interest in the UK and Finland. These usually involve occupational status or employment grade. One Finnish example of this (Pukkala & Weiderpass, 1999) sees individuals classified as either: I - managers and other higher administrative or clerical employees, farmers owning more than 50 hectares of land; II - lower administrative or clerical employees, small-scale entrepreneurs, farmers owning 15 to 49.9 hectares of land; III - skilled and specialized workers, farmers owning 5 to 14.9 hectares of land; or IV - labourers, farm and forestry workers, institutions' inmates, farmers owning less than 5 hectares of land, pensioners whose former occupation is unknown.

One reason for including additional SES measures to income is that it provides a more complete picture of the income earning potential of the population studied. For example, use of only income leads to the temporarily unemployed, and homemakers being lumped into a low-income category, ignoring their income earning potential. This may not be the case if household (family) income is used. As one Finnish researcher interviewed stated: "Income has to do with resources, education has to do with social position" (Finnish interview). Here, the interviewee is referring to an individual's social status.

Including occupation status as a measure of SES also

Interviewees mention several issues related to income that are not captured by measuring income alone:

- Wealth
- How universally funded programs redistribute wealth
- Cost of healthy living / effort it takes to meet basic needs
- Sense of control/ powerlessness
- Debt credit and reserve
- Quality of housing and childcare

substantially affect the results" (Ross, N, Wolfson, Dunn, Berthelot, Kaplan, & Lynch, 2000b, p. 899). Wilkins, Berthelot and Ng (2002) provide mortality data as a function of neighbourhoods classified into income quintiles on the basis of average income.

allows for consideration of issues such as self-perceived control at work, and place in the hierarchy. Duncan, Daly, McDonough, and Williams (2002) suggest that use of household income measures may miss issues of unequal distribution or access to income within households related to female disadvantage. Finnish researchers, Auvinen, Karjalainen, and Pukkala (1995), state that “income is clearly related to Weber’s class concept, whereas the latter descriptors [occupation and education] represent the status domain. Classification of occupation can be based on prestige, salary, educational requirements, or position in the hierarchy” (p. 1090).

One important issue that revolves around social class in the Finnish literature is the categorization of women’s occupational class. When occupation is used to indicate social class, there is almost inevitably a discussion about women’s occupational standing, particularly if they are house wives (Auvinen et al., 1995). For instance, Makela, Valkonen, and Martelin (1997) classify housewives as economically inactive and thus use the occupation of their husbands to denote the woman’s occupational standing. This is also an ongoing issue in UK research, but less obvious in Canadian research where occupational classification is rarely used.

Poverty measures: About one quarter of Canadian studies look at low-income populations, and most use adjusted absolute measures of poverty. The LICO is an adjusted absolute measure of poverty, in that it is adjusted for family size, area and costs of basic necessities for health. The LICO’s emphasis on basic necessities is similar to UK researchers approaching poverty/health studies, by examining how people in the lowest income decile access amenities and resources deemed socially necessary to compete in the economy.

For example, researchers from the Universities of Bristol, Loughborough, York and Heriot studied public perception of adult necessities in order to examine poverty and social exclusion (Rahman, Palmer, Kenway, & Howarth, 2000). A Canadian researcher stated that: “You have to be able to explain poverty measures” which is problematic as LICO is a complex measure. Several Canadian interviewees suggested that whether individuals fall below or above half of the average income and the degree to which they are below or above is easy to understand. Although Canadian researchers often use poverty measures, little research is done on how best to define or measure poverty and what the choice might mean for policy. Phipps and Curtis comment (2000):

It should be noted that there is no consensus even within Canada that this [the LICO] is the ‘best’ or ‘only’ way to measure poverty. For example, a Federal/ Provincial/ Territorial Working Group on Social Development Research and Information has been established by the HRDC to develop a ‘market-basket measure’ of poverty (Cotton, et al. as cited in Phipps & Curtis). If we move outside the Canadian context, there are many alternatives to the LICO in use (no other country of which we are aware uses precisely the LICO approach) (p. 4).

Section 4: What Health Outcomes are Measured?

In studies of the relationship between income and health, various measures of health are used. The first element of the outcome taxonomy -- social/community outcomes -- includes measures such as quality of life, community belonging, employment patterns, family functioning and family status, child behaviour and child development, and access to personal and community resources such as nutritious food, literacy, and other positive environment conditions.

Morbidity measures concern the incidence of expert-identified illness and disease. A distinction is made between mental health and physical health outcome measures. Mortality measures are concerned with death rates. Numerous studies are concerned with health utilization

among groups of differing incomes.

Findings: Canadian researchers make greater use of multiple measures than their UK and Finnish counterparts. Although the majority of Canadian studies use physical morbidity measures, more frequently they are also using social measures^{vii}, mental morbidity, health care utilization, and lifestyle -- some combination of these. More Canadian studies use health care utilization outcome measures, social measures, and lifestyles measures than the British and Finnish studies. The studies from Finland and the UK most often use physical morbidity measures. Out of the three countries, the UK most often uses mortality measures. One Canadian interviewee stated that: "If you confine yourself to mortality, you really limit the range of questions. Unfortunately at international comparison level we still don't have much credible data beyond mortality". Concerning other indicators, both Canadian and Finnish researchers are more likely to look at health-related behaviours as being way stations on the way to health and illness. Table 4 (in Appendix I) shows the use of these health measures in the Canadian, UK, and Finnish studies.

Morbidity vs. Mortality: What the interviewees had to say:

- In Canada, we seldom have socio-economic variables attached to mortality records,
- Morbidity measures are superior,
- Can't compare morbidity rates internationally,
- Infant mortality is sensitive, but deaths at older ages are less sensitive, but are clear and easy to interpret,
- Other measures, i.e. a program's effect on self-esteem, are rarely acknowledged as worthwhile measures,
- If you confine yourself to mortality, you really limit the range of questions

Section 5: Who is Being Studied and What Data Sets are Being Used?

In this section, we consider the unit of analysis, availability and use of data sets, and the population samples studied in Canadian empirical research on the income-health relationship.

Section 5.1 - Unit of Analysis

Both data availability and how the income-health relationship is conceptualized are reflected in the unit of analysis used within a study. The availability of carefully collected data sets allows for the analysis of the income and health relationship at the individual level. When such data are not available, reliance may be upon area-level ecological analyses of measures such as income, SES, or employment levels collected from census data.

Those interested in macro-level issues may actually prefer to look at data sets from larger political and geographical areas. Generally, individualistic conceptualizations tend to examine individual issues independent of contextual considerations. Those focused on more macro-level issues will be more interested in data sets associated with larger geographical and political areas that provide contextual indicators.

When the unit of comparison is individuals, concerns data collected either through surveys (such as the National Population Health Survey (NPHS) in Canada) or administrative data sets (such as hospital, physician or vital statistics registries). Studies at the household level usually focus on child health, and look at income or occupational status of the parents/family as a determinant of child health and development outcomes.

Findings: The most common unit of analysis for research from the three countries is the individual level. Canadian research is more diverse in using varying units of analysis. Canadian

^{vii} Social measures include outcomes of community belonging, employment patterns, family functioning, family status, child behavior/development, food in/security, literacy, access to resources, socio-cultural effects, literacy, quality of life.

researchers use household measures more often than the other countries^{viii}. This may be a result of influence from the CIAR; they have recently emphasized the importance of early childhood development on later life health outcomes.

Canadian researchers also engage in relatively more neighbourhood level studies. These include comparative ecological studies that use individual level data aggregated to neighbourhoods and collected from census data. For instance, Hardwick and Patychuck (1999) use geographic mapping to demonstrate the need for targeted public health programming. Jerrett et al. use area-based studies to explore issues of environmental pollution equity (Jerrett, Eyles, Cole, & Reader, 1997). Glazier et al. use this kind of study to demonstrate patterns of hospital use in low-income census tracts (Glazier, Badley, Gilbert, & Rothman, 2000).

In the UJ, an example of use of neighbourhood unit of analysis research is an historical study by Dorling et al. (Dorling, Mitchell, Shaw, Orford, & Davey Smith, 2000) in which they examine mortality (due to a variety of diseases) outcome measures, while looking at deprivation in early life across inner city London wards. They found that mortality rates were similar in the same wards where poverty has remained over time.

Canadian researchers frequently use a provincial level of analysis. At the provincial/regional level, Dunlop et al. performed provincial comparisons of visits to physicians' offices (Dunlop, Coyte, & McIsaac, 2000). They use individual level income and SES measures as independent variables to assess the extent to which Canada's universal health care system has eliminated socio-economic barriers in the use of physician services. This study is an example of a provincial comparison that is not an ecological comparison; they are not looking at province wide characteristics to evaluate provincial differences in access to health care services. Some of the other studies that used a provincial level of comparison employ ecological or income distribution measures across the population of a province to compare child poverty and literacy rates. One used ecological income and SES measures (Willms, 1997) to compare mortality rates between provinces (Laporte & Ferguson, 2002).

Finnish researchers undertake large-scale regionally based research agendas such as the Kuopio Ischemic Heart Disease (IHD) Risk Factor Study. This study was designed to investigate previously unestablished risk factors for (IHD) and carotid atherosclerosis in a population-based sample of eastern Finnish men (Lynch, J., Kaplan, Salonen, & Salonen, 1997). The FIN-MONICA Myocardial Infarction (MI) Register Study provides detailed information on the incidence, mortality rates, and treatment of acute MI events in Finland (Salomaa, Niemela, Miettinen, Ketonen, Immonen-Raiha, Koskinen, Mahonen, Lehto, Vuorenmaa, Palomaki, Mustaniemi, Kaarsalo, Arstila, Torppa, Kuulasmaa, Puska, Pyorala, & Tuomilehto, 2000). The MONICA study is an inter-national study that compares several different international regions' MI rates; Halifax is one of the locations in which the MONICA study takes place.

There are three examples in the Canadian research where the nation is the sole unit of analysis. Alegria (2000), and Blendon et al (2002) do international comparisons of health care utilization. These studies use individual level group income indicators to classify the income level of individuals and their frequency and type of use of health care services. Phipps and Curtis (2000) also use individual level income measures to examine the differences in the associations between

^{viii} An example of a study that uses a household level of comparison is the Family Mosaic project in Nova Scotia, which is a longitudinal research project on child development. The study has followed the lives of 500 Nova Scotian families from 1978 through 1999. The results of this research provide a wealth of information on the educational attainment, employment profiles, income, health and well being of mothers and children in both one and two-parent families.

poverty and child health and well-being between Canada and the US.

The UK provides a number of national level comparative studies. Two of the three studies use income distribution measures. Gravelle (2002) uses these measures to determine what can be learned from aggregate data in the relationship between income inequality and health. Diderichsen et al. examines the impact of the policy context on inequities in health between Britain and Sweden (Diderichsen, Whitehead, Burstrom, & Aberg, 2001). Aberg-Yngwe et al use individual level measures of income to examine social inequalities in self-rated health (Aberg-Yngwe.M., Diderichsen, Whitehead, Holland, & Burstrom, 2001).

A few Canadian studies use more than one unit of analysis. One example of this kind of research comes from Statistics Canada researchers (Ross, N., Nobrega, & Dunn, 2001; Ross, N, Wolfson, Berthelot, & Dunn, 2000a; Ross, N et al., 2000b). Their studies compare inequality measures in Canada to those in the US, Canadian provinces to US states, and Canadian and US major cities. They apply a political economy theorization on the differences in levels of inequality between the two countries. For example, the degree of association that income inequality has to health within a spatial area depends contextually on the distribution of resources. This distribution is affected by government redistributive policies through taxes and transfers to individuals, as well as through spending on social programs and other public infrastructure.

One UK study used more than one unit of analysis. A study by Stafford et al. (Stafford, Bartley, Mitchell, & Marmot, 2001) compared characteristics of individuals in the Whitehall II population sample to that of area level measures in two regions of Glasgow. From our sample of UK and Finnish studies, we did not find any instances of simultaneous use a national and lower level units, as this was in several cases in the sample of Canadian studies. This was likely due to that fact that the UK and Finland do not have the same type of geo-political division system as in Canada. Table 5.1 (in Appendix I) shows the distribution of the use a variety of units of measurement in Canadian, UK, and Finnish research studies of the income and health relationship.

Section 5.2 - Data Sets Used

Canadian Data Sets: Many Canadian studies draw upon national data sets. These often involve census or vital statistics provided by Statistics Canada, the National Longitudinal Survey of Children and Youth, and the National Population Health Survey. Fifty-two percent of studies use national data sets, and 25% use provincial data sets and ten percent a combination of both. About a fifth of the studies use multiple data sets. A Canadian researchers interviewed suggested that the Canada Survey of Consumer Finance be blended with health information to make it more useful. See Table 5.2 (in Appendix I) for a detailed count of how often various Canadian data sets were used.

Interviewees commented on data needs in Canada:

- SES measures,
- Surveillance data on nutrition and physical activity,
- Blend health information into the Survey of Consumer Finance,
- Assets and wealth
- How people spend their money.

Finnish Data Sets: Finnish researchers generally use nationally based data sets -- especially the Finnish census and Statistics Finland surveys. Finnish researchers have access to national registries that provide social status and health related information on the entire population of Finland and more than two thirds of the Finnish studies used these for their data. However, one Finnish researcher interviewed stated that: "[There] are not that many birth cohort studies, and they are regionally based, or are of a specific subset of the population, that is, people working for a certain company. Also there are no nationally representative longitudinal studies in Finland either. Vut the registration base can provide that for us. We just have to invest in the follow up" (Finnish interviewee).

UK Data Sets: UK researchers commonly draw upon the British General Household Survey, longitudinal data from the Office for National Statistics' Longitudinal Study, and the British Household Panel Survey. They also use data from the Whitehall studies, the West of Scotland Collaborative study, and the 1958 cohort study. Most of the income-related studies draw upon national data sources.

Section 5.3 - Whose Health is Being Reported Upon in Canada?

The Canadian studies were classified by geographical focus: national, inter-provincial/inter-regional, and provincial. Inter-regional / inter-provincial populations involved data from two or more regions i.e. Atlantic, Maritime, Prairie or from two or more provinces.

Table 5.3: Geographic Location of Population Sample used in 241 Canadian Studies

Canadian Populations being Studied and Reported	n=241	%
National population data	93	39
Inter-regional or inter-provincial samples	13	6
Provincial or within, population sample	129	53
Other country or not-specified/not applicable	6	2

Table 5.4: Geographic Location used in 129 Canadian Studies that use Province-Specific Population Samples

Provincial Base from Which the Study Population is Sampled	n=129	%^{ix}
British Columbia	12	5
Alberta	10	4
Saskatchewan	4	2
Manitoba	23	10
Ontario	48	20
Quebec	17	7
New Brunswick	2	1
Nova Scotia	6	2.5
Prince Edward Island	1	0.5
Newfoundland & Labrador	4	2
Territorial/Arctic	2	1

Regionally, many studies on income and health are located in Ontario and Manitoba suggesting access to and availability of provincial data sets. Ontario has the Ontario Health Survey and the Ontario Child Health Survey. The latter has a longitudinal component. Quebec has its frequently used Quebec Health Survey. Manitoba's Centre for Health Policy and Evaluation has created a data repository system.

In regards to cross-provincial sharing of data, Kephart (2001) used health data records from five provinces to examine differences in health outcomes. Use of such data sets is hampered by provincial diversity in legislation, policies, and procedures to ensure privacy and confidentiality of personal health information. There is at present, little support for data sharing between provinces.

^{ix} Percentage is a percentage of entire sample of Canadian studies examined, n=241

Our analysis finds that few studies use population samples from more than one province. Two Canadian researchers interviewed commented on provincial data sets. One mentioned that there is a need to establish a repository or system so that data sets can be accessed and shared. The other mentioned that: “Some provinces are extremely reticent to approve any linkages. While other provinces have managed to get their 'act-in-gear' in terms of coming up with procedures and comfort level and are being careful with the wealth of info” (Canadian interviewee).

Section 5.4 - Characteristics of the Population Samples

The Canadian studies were examined for various characteristics of the population sampled, i.e. age, gender, condition/disease status, ethnicity, and low-income status. Some studies specifically targeted selected populations.

Findings: Approximately a quarter of the studies focused on children and youth. Two-thirds focused on adults and seniors (6% focusing solely on seniors). About 10% looked specifically at the whole population, comprising mostly area-based studies. Table 5.5 (in Appendix I) provides a breakdown of the age categories.

Children: Of the 54 studies that examined children and adolescents, 15 looked at specific populations. Two studies focused on specific physical health conditions, two on immigrant children and behavioral outcomes, seven on children from a lone parent family, and four on children and adolescents living on a low income.

Adult and senior: Of the 160 studies that focused on an adult population, 30 examined women’s health relative to income, and 37 studied adults with a wide range of physical health issues. (For a complete list of disease-oriented studies, see Table 5.6 in Appendix I). Fourteen focused on low-income people, seven studied lone parents, five immigrant populations, and eight on Aboriginals. Many of the qualitative studies focused on women. Studies on women also generally dealt with specific female-related health issues such as pregnancy or childbirth. One Canadian interviewee stated that: “Focusing on diseases one at a time negates the fact that there are common precursors to many diseases”. Another stated that: “There is a huge infrastructure, advocacy-base of diseases that are enmeshed deeply within society. This infrastructure can effect changes into prescriptive practices in health to advocate for policy changes that aren't disease oriented, and to the extent that you can translate the impact of socioeconomic inequalities and difference in income through the diseases” (Canadian interviewee).

Targeted on low-income individual: Eight percent (n=20) of Canadian studies focus on low-income populations that either live below the cutoff, live in poverty, are on social assistance or welfare, or simply labeled as disadvantaged. There are benefits to focusing on the lower end of the income gradient. Most Canadian interviewees state that we need to look at both the lower end and the entire distribution of income. The studies focused on the lower income groups allow us to see the lived experiences of a particular group. The entire distribution studies show that: “There is no clear thresholds in relation to the way in which socioeconomic and psychosocial developmental forces influence health and well-being” (Canadian interviewee).

Whole population versus targeted studies?

Five interviewees sided with whole population studies, five argued that both are important, and two sided with targeted studies:

- Whole population studies result in a lot of potential benefit for everyone.
- Targeted studies help in understanding behaviours and why people do things like smoke cigarettes, over eating healthy food.
- For the eradication of poverty need to spend time on targeted studies.
- Both whole and targeted, because you have to show mechanisms as well as associations,
- If you're interested in aetiology, then whole population studies.

Section 6: Identifying the Pathways by Which Income Comes to Impact Health

How does income get 'under the skin' to influence health? How does income come to be related to health? How do income differences come about in the first place? These are questions about the pathways between cause and effect. Biological pathways are the mechanisms that researchers use to show how income gets 'under the skin' to influence health. Materialist analyses are about how differences in income lead to differential exposures to health damaging or health enhancing elements in living and working conditions, both positive and negative aspects of the world. Psychosocial pathways are the explanations related to either a) the experience of belonging to a particular social class or b) the experiences of stress of living associated with differing levels of income and how these come to be related to health.

Behavioural/cultural explanations are about how health-related behaviours are associated with particular income levels. Gender analyses focus on the role gender plays in mediating the income and health relationship. Political economic analysis is concerned with the political, economic, and social forces that influence income and income distribution and the societal structures that mediate the income and health relationship. Finally, selection explanations see the income and health relationship as inverted, i.e. poor health leads to low income.

Findings: Close to a third of Canadian studies and one fifth of Finnish studies do not explicate any pathways. Virtually all UK studies explicate the pathways they are researching. The most common pathways in Canadian studies are psychosocial, materialist and behavioural. Psychosocial examples include Bailis and Segall (2001) who argue that the relationship between socioeconomic factors and self-rated health is mediated by self-perceived control.

A materialist example is from a study by Dunn and Hayes (2000) who argue that the subjective meaning people give to their housing is an important element in determining health status. Another materialist example is from both Starkey et al. (1998) and Vozoris et al. (2002) who consider income as providing differential access to nutritious food. Almost 30% of Canadian studies apply behavioral pathways to link income or SES to outcomes. Cairney and Arnold (1998), study lifestyle variables (e.g. smoking, drinking, weight, and physical activity) to determine their contribution to the income and health status relationship.

More than one in ten Canadian studies apply some form of gendered analysis focused on division of labour in the workforce and the home. Chen et al. (Chen, Breithaupt, & Muhajarine, 2000) examine how men have greater exposure to environmental factors through work places while women face the double work day. Denton and Walters ask: "Do different features in the lives of men and women influence their physical and mental health?" (Denton & Walters, 1999, p. 1223) and conclude:

For women, social structural factors appear to play a more important role in determining health. Being in the highest income category, working full-time and caring for a family and having social support are more important predictors of good health for women than men. Smoking and alcohol consumption are more important

Is there a role in income/health studies to consider psychological comparisons of income adequacy?

This area of research was said by most interview respondents to be poorly defined for the income-health field. Some argued that it best be left to psychologists. While many Canadian researchers claim it is an important area in which to consider adult exposure to relative and absolute deprivation. Some of the UK researchers argue that delving into this type of research question gets into the area of direction of causality -- poor health can lead to people feeling miserable about their life situations; life situation can often lead up to poor health and it is difficult to tell which came first.

determinants of health status for men than women, while body weight and being physically inactive are more important for women than men. Our findings suggest the value of models which include a wide range of structural and behavioral variables and affirm the importance of looking more closely at gender differences in the determinants of health (p. 1223).

Finally, almost a third of Canadian studies use a political/economic analysis to consider the relationship between income and health. Pahlke et al. (2001), and Park and Nelson (1998) examine policy changes and economic restructuring as factors that help explain the pattern of health outcomes. Duxbury et al. (Duxbury, Higgins, & Johnson, 1999) premise their research around the notion that macroeconomic factors are important in determining overall worker health:

The confluence of globalization, mounting competitive pressures, skills shortages, downsizing, restructuring and rapid technology growth have contributed to an unprecedented rate of organizational change, often without adequate support for the employees most affected by this change (Cooper et al., 1996 as cited in Duxbury et al., 1999). Accordingly, heavy work demands, long hours and job insecurity have become widespread features of the workplace. Pressures are mounting on the home front as well, as the workforce becomes increasingly diverse, and employees face a 'double day' seeing to the needs of the family when their paid work is through (p. 89).

Finnish researchers use a variety of biological, materialist, selection, and psychosocial pathways within their analysis. None took a gendered approach. The most common pathway used in Finnish research – though still not constituting a majority of studies -- is the political-economic. Many Finnish researchers locate their research within a backdrop of macroeconomic restructuring and recession. For instance, Valkonen et al. (2000) point out how: "This study looks at how social class differences in mortality changed in Finland during 1981-1995, a period which saw drastic economic fluctuations" (p. 274). British researches are likely to use biological, psychosocial, psychosocial comparison, materialist and behavioural pathways as explanation for the income and health relationship. Table 6.1 (in Appendix I) shows how Canadian, UK, and Finnish researchers use a variety of pathways to explain the income and health relationship.

Complexity of Identified Pathways: The research team provided a rating to each study as to the study's degree of sophistication in its specification of pathways. Sophisticated ratings were for studies that drew upon the latest developments in income and health research, and specified the complex inter-connected nature of the pathways. Undeveloped ratings were for those studies that simply noted the relationship with virtually no explication of the means by which income leads to health outcomes. Intermediate ratings were for those studies that noted the relationship and provided a cursory explication of pathways.

Findings: Close to half of Canadian studies were ranked as being of intermediate complexity in their explication of pathways meaning they simply noted the connection between a pathway (e.g. people with little education have worse health than those with higher education) and offered little insight into causal factors or interconnections of pathways. A third were undeveloped, and only 20 % were considered sophisticated. See Table 6.2 (in Appendix I) for ranking data.

UK conceptualizations were more likely to be judged as being sophisticated than was the case for Canadian and Finnish studies. For example, many UK researchers make the psychosocial and material connections between poor housing and poor human health. They also apply more

complex life span conceptualizations to their understanding of income and its effects on health across the life span. As well, they described how the accumulation of disadvantage leads to poor health.

Section 7: Research Design

Research design is about the structure that is applied for collecting data related to a research question. It has both methodological as well as conceptual components. A key element of research design is the temporal dimension. Longitudinal designs follow individuals over a period of time. There may be other longer term studies that may not necessarily follow the same individuals over time but do contain a temporal dimension that allows for tracking of changes over time such as sequential cross-sectional or historical time lag designs. Sequential cross-sectional design for example, take snap-shots of an age group -- senior's morbidity rates over time i.e. every 20 years -- to identify historical effects of time or place. These designs can also consider the health effects of governmental policymaking or economic functioning at various historical periods. Studies focusing on the present collect data at a single point in time.

Related to these different designs is the conceptualization of the income and health relationship. Longitudinal studies can be concerned with one stage of an individual's life, the overall life course, or even the course of generations. Inter-generational studies consider how socioeconomic issues in childhood can influence the health status of individuals in later life.

Other types of designs studied were methodological, and qualitative. Methodological studies were those that identified and tested a number of research or measurement approaches. Qualitative studies used ethnographic and other qualitative approaches to the study of the lived experience, or perceptions of a group of people. A closer examination of qualitative studies takes place in the section following this exploration of quantitative designs.

Findings on Quantitative Research Designs

Longitudinal studies: Only recently have Canadians had access to well-developed health-related longitudinal data (e.g. National Longitudinal Survey of Children and Youth, the longitudinal subsample of the National Population Health Survey). Canadian quantitative and qualitative researchers rarely draw upon studies that are longer term. Approximately 10% of quantitative studies used longitudinal designs. Only one study was explicitly life course. When longitudinal studies are carried out, they usually focus on one stage of life, i.e. children, seniors. In their interviews all of the Canadian researchers listed the many benefits to studying the issue longitudinally: understand latent effects, social context around the life course, make clear recommendations for policy, clearer temporal, causal pathways, and better able to understand gender effects.

About a quarter of Finnish studies used a life course perspective. For instance, Gissler, Rahkonen and Hemminki (1998) use a cohort study of children born in 1987 to study social class differences in child health. Here, they followed a national birth cohort of all children born in 1987 using national administrative registers up to the age of seven years old. Similar studies look at a birth cohort of men born in 1934-1944 (Barker, Forsen, Uutela, Osmond, & Eriksson, 2001) to

What do longitudinal designs offer that other designs don't or can't? Longitudinally designed studies can show:

- the temporality of events,
 - social context,
 - historical effects -- effects of policy over time,
 - cumulative effects of exposure to various circumstances throughout the life course,
 - effects of movement into and out of poverty,
 - command of resources over time and the change in health status over time,
 - the at risk population is clearer.
- They are better placed for showing causality – crucial for evidence based policy making.

study the effects of size at birth and subsequent resilience to the effects of poor living conditions in adult life. Clearly, Finnish researchers are able to draw upon long-term data sets.

The UK is a leader in longitudinal research design. A majority of the UK studies reviewed accessed longitudinal data sets. Such access clearly assists in their developing life course conceptualizations of the role that income and other socioeconomic factors play in health. Researchers in the UK have studied inequalities in health in since the early 1800s, providing UK researchers with training in and a history of research using an historical perspective. Most of the UK longitudinal research, in fact, is inter-generational. British researchers applauded longitudinal designs and pointed out that use of longitudinal design makes a study stronger for the purposes of removing confounds.

However, a Canadian interviewee stated that intergenerational studies are flawed in that variables collected 30 years ago may not make sense today, and one can't add questions retrospectively. Despite this criticism, another Canadian researcher suggested that intergenerational studies are important for making a strong case for child health; as long as, we don't do any more intergenerational victim-blaming such as blaming mothers for poor health behaviours affecting the growth and development of the unborn child.

Longer-term studies: Longer-term design studies are not used with great frequency in the Canadian studies. An example of a Canadian longer term study is a study by Prus (2000) who uses sequential cross-sectional to examine income inequality as a cohort ages. The researcher created a 'synthetic' cohort by taking every fifth cross-sectional file, starting in 1973, a of the Survey of Consumer Finances selecting years in which labour market conditions (measured by national unemployment rates) are similar. Longer-term studies, however, are used with more frequency in the UK studies, and with even great frequency in the Finnish studies. A Finnish study by Hinitikka Saarinen and Viinamaki (1999) used data collected in a sequential cross-sectional design to examine how national suicide mortality, unemployment, divorce rate and mean alcohol consumption was related to an economic cycle over a number of years in Finland.

Contemporary studies: The majority of Canadian studies collected data at a single point in time. The great majority are cross-sectional and a few were retrospective. Proportionally fewer Finnish studies were cross-sectional and even fewer UK studies were of these kind.

Though Canadian researchers do not use longitudinal approaches, many feel that such studies are necessary. In their implications for future research sections of their studies, Canadian researchers often identify the use of longitudinal research as a necessary 'next step' for research. Beiser, Hou, Hyman and Tousignant (2002) outline the limitations of cross-sectional research:

The cross-sectional data imposes a second limitation. Information that is based only on the first wave of NLSCY survey results cannot fully address the potential effects of acculturation on immigrant parents and their children, nor can these data answer questions of sequencing. Exploration of the apparent association between increased length of stay in Canada and increased risk of developing mental health problems will require longitudinal data. Hypothesized unidirectional relationships must be subjected to empirical testing with longitudinal data (p. 225-226).

Findings on Qualitative Research Designs

A small proportion of the studies reviewed used qualitative and mixed method designs (20 and 3 respectively). These studies had approximately equal representation across ethnographic, phenomenological, participatory action, case study, grounded theory, and more complex designs

(See Table 7.3 in Appendix I). Qualitative studies can be used to examine change over time, but only one of the twenty-three qualitatively designed studies was longitudinal. None explored changes in income over time or the cycling into and out of poverty. Qualitative research undertaken by Canadian scholars include research on Aboriginal communities and diabetes, access to recreation, fishing crisis in the Atlantic provinces, food insecurity among housing insecure youth, among others. Most qualitative studies examined the income and health relationship of specific populations such as females, aboriginals, immigrants, people with diabetes, smokers, those living in poverty or on a low income.

These researchers often conceptualize income and its relation to health using a neo-materialist approach. They incorporate the impacts of broader distribution of resources such as government spending on welfare payments or programs and services for low-income individuals. They consider impacts of these issues on the lives of people living on low incomes or in poverty. Half of these studies apply theorizations that incorporate vertical and horizontal structures.

Only one of the British studies examined used qualitative methods. It was a mixed-method study using a case study design, to investigate explanations for mortality patterns, and housing issues. The researchers performed key informant interviews professionals working in health and housing in Oxford. The majority of qualitative research is done by social scientists who may be more likely to have been trained in more complex theoretical traditions.

Section 8: Implications for Policy Development

An important part of this scan was determining the extent to which research findings are being applied to policy development. These include a need to address the social determinants of health, focus on political and economic issues, as well as influencing the delivery of health services and modifying individual lifestyle behaviours. A first step in such analysis is ascertaining the extent to which researchers in their studies are outlining such applications. The literature review element of this scan helps uncover this first step. A second step is to find out what types of studies and how to publicize findings so that intervention and change can occur in reference to the study's findings. The interviews with the key informants in the second phase of this scan provided some insights.

Findings: Almost two thirds of the Canadian studies provide policy implications of findings. Canadian researchers were more inclined than their Finnish or UK counterparts to make policy implications related to specific social determinants of health such as education, literacy, social inclusion, social and health services, housing, and access to food. British researchers are more inclined to the political-economic type of policy implication. Canadian researchers also are likely to identify policy implications relate to health care services and lifestyle issues. Also, about one fifth of Canadian studies discuss more than one type of policy implication in relation to their

Supports and Barriers to translating empirical research findings into policy action

Barriers:

- people become overwhelmed into immobility with the findings
- no one study leads to policy recommendations
- not really the role of researcher to determine policy outcomes
- can bias the research if one appears sided towards a particular view with policy recommendations
- advocacy groups operate on a shoestring budget
- political leaning of the government

Supports:

- valuing advocacy in academia
- interdisciplinary team participating in project
- receptivity in Canadian society, for population health thinking

findings^x. Table 8 provides frequency of usage of each of these types of policy implications.

In regards to making policy implications from one's research, one Canadian interviewee and two Finnish interviewees stated that it is not the researcher's role to find or make policy implications in one's own research. It is the researcher's role to be neutral. In regards to the kinds of studies that are best for translation into policy, most of the Canadian interviewees mentioned international comparative studies. One interviewee mentioned experimental designs to examine people's living conditions, and another said longitudinal and participatory action research projects. The most common thread amongst the interviewees is that it takes several different types of designs that ask the same research question to show causality, and therefore provide evidence for policy implications. One British researcher suggested doing ecological research by electoral ward in order to grab the attention of the members of parliament of the wards in which there are poorer health, or health disparities.

Others stated that it is not the design that helps with translation into policy so much as how one presents one's findings. One Canadian interviewee stated that presenting findings on extreme situations is more likely to grab the media's attention. A few interviewees spoke of engaging people with data displays using maps with colour coding showing spread of diseases in relation to income bracket across time. Some interviewees emphasized that working through the media is the best method for policy action on their research findings. Others stated that working directly with politicians is the best way to ensure policy decision-makers consider one's findings.

Section 9: Virtual News Mini-Study

Thirty articles were retrieved from the *Virtual News* data base that were concerned with either "income and health" or "poverty and health" from November 2002 to March 2003. Of these, eight (27%) covered reports or press conferences presented by social development or anti-poverty groups about the issue of poverty and how this condition affects health. Seven pieces (23%) were by columnists who explicitly discussed the relationship between low income and poverty and health, and three more (10%) were similar pieces offered by op-ed writers.

Five articles (17%) discussed how poverty and poor health were increasing but did not make the link between the two. Three articles (10%) discussed how low income people required greater health services and two discussed how poverty and poor health were linked among aboriginal people. Only two articles (7%) specifically reported on findings reported in a health journal and both of these were concerned with a study by Dr. Lynn McIntyre of the link between poverty and food insecurity in the Maritimes. The incidence of 30 stories related to these issues was swamped by the number of biomedical and lifestyle oriented stories during that same period. There were literally thousands of such stories in the numerous newspapers surveyed.

Since the findings from this "mini-study" of media coverage are consistent with the long-term experiences of the investigators, more extensive collection of studies was not necessary. The role of income and other social determinants of health is rarely covered by the print or other media

^x An example of a Canadian study that makes reference to several types of policy implications is from Williamson and fast (1998). In their study on poverty and access to medical treatment they state, in regards to policy that:

Despite the principles of the Canada Health Act, access to medical treatment is not based solely on need, but is tied, in part, to income. There is a need for health care, social, and economic policies that aim to reduce the barriers that limit access to physician services and prescription medications by people living in poverty. The universal provision of medically necessary prescription drugs would reduce many barriers related to the lack of comprehensive health care insurance. Moreover, the development of economic policies that effectively increase the number of Canadians employed in jobs that allow them to escape from poverty would reduce the barriers to medical treatment services that are faced by people living in poor families (p 182).

and when it is, usually involves pieces covering activities by the social development and anti-poverty sectors or columns by progressively minded columnists and editorial boards. There is virtually no reporting of scientific findings that originate in the health sciences and health services field on the important links between income and health. There is little if any reporting in the media of health care workers or public health units raising these kinds of issues.

Prioritization of Needs, Gaps and Opportunities

The Process: Needs, gaps and opportunities were identified from the literature review, interviews with key informants, advisory committee members, as well as the research team throughout the process of research. Slightly different processes for prioritizing the needs and gaps occurred in each of the three advisory committee meetings. Needs and gaps were combined.

At the third and final advisory committee meeting of the central region, the members realigned the CIHR criteria presented and this arrangement was agreed to by the other regions creating the health systems category. The central committee members also decided to assign priority rankings to the groups of criteria. See Appendix J for the revision of the prioritization criteria and the 'needs/gaps' ranking tool used by advisory committee members.

Members of all the advisory committees were asked to rate all 31 gaps/needs for each of the prioritization areas using a 1 (not important) to 5 (very important) scheme. So Need/Gap 1 was rated as to its importance for Immediate Relevance to the Health of Canadians, Health Care and Public Health Systems, Contributions to Science, Strategic Importance for Developing Research Capacity, and CIHR Organizational Arrangements. Scores are presented to reflect the amalgamated ratings from each region. The Centre and East did not feel qualified to assign a rating for the final prioritization area, CIHR Organizational Arrangements.

The results of the rating process are presented according to the five CIHR prioritization areas and an overall rating across these priority areas. (For complete ranking see Appendix J)

Ranking of Priority Areas. To provide a further prioritization of gaps, members of the Central Advisory Committee ranked the five priority areas according to what they perceived as the immediate population health issues facing Canada.

Ranking of Priority Areas

1. Issues of Immediate Relevance to Population Health
2. Issues Related to Health Care and Public Health Systems
3. Issues Related to Advancing Science (tie)
3. Issues Related to Strategic Development of Research Capacity (tie)
5. Issues Related to CIHR Organizational Issues

Reporting of Highest Ranked Items According to Specific Priority Area

A. Issues of Immediate relevance

#	Need/Gap	Score
13	Need for participatory action research (PAR) projects that seek to address poverty related issues (where participants are involved in the research)	4.08
25	Need to know what macroeconomic and policy interventions maximize reductions in poverty and income inequality, e.g. -How do certain policies influence the incidence of poverty but also the effect of poverty on health?	4.07

- Track how changes in tax policy entitlement to public programs and social goods actually change people's real income rather than command over resources

3	Need people who work in the health sector to incorporate addressing poverty and income inequality into practice	4.03
10	Need more regional/sub regional analysis, e.g., taking advantage of the new health region analysis available in the CCHS to expose health differentials	3.83
12	Need to do more research of the lived experience of people on low incomes and how income affects other social determinants of health	3.70
	- This includes more qualitative research uncovering shared social values and using more subjective information	

B. Issues Related to Health Care and Public Health Systems

#	Need/Gap	Score
3	Need people who work in the health sector to incorporate addressing poverty and income inequality into practice	4.10
20	Need to investigate the disconnect between research and health policy (e.g. informing recent initiatives in chronic disease, federal strategies to support "Healthy Living," heart health work, diabetes strategy, etc.)	3.65
23	Need for critical policy analysis that systematically addresses the context, process and content of policies.	3.43
	- to understand the health impact of public policy process.	
	- to understand political social and economic forces that influence policy development	
26	Need for longitudinal data and systems for collecting these data	3.40
21	Need attitudinal research on policymakers: How do they react to such research, when/how the research has had some impact	3.23

C. Issues Related to Advancing Science

#	Need/Gap	Score
4	Need for longitudinal data and systems for collecting these data	4.50
1	Need for training in advanced conceptualizations, critical perspectives, and interdisciplinary work	4.38
5	Measures of socioeconomic status including education and occupational status need to be incorporated into all health research data collection, e.g.	4.37
	- This would include routine primary data collection related to births, deaths and hospitalizations	
	- Need measures of accumulated wealth	
25	Need to know what macroeconomic and policy interventions maximize reductions in poverty and income inequality, e.g. (see above)	4.28
6	Data linkages, e.g.	4.23
	- Need to routinely link from health related data sets such as census and surveys	
	- Data sharing across provinces is needed	
	- Need to blend Statistics Canada survey of Consumer Finance with available health information	

D. Issues Related to Strategic Development of Research Capacity

#	Need/Gap	Score
6	Data linkages, e.g. (see above)	4.03
26	Need for longitudinal data and systems for collecting these data	3.77
25	Need for participatory action research (PAR) projects that seek to address poverty related issues (where participants are involved in the research)	3.68
27	Measures of socioeconomic status including education and occupational status need to be incorporated into all health research data collection, e.g. - This would include routine primary data collection related to births, deaths and hospitalizations - Need measures of accumulated wealth	3.55
28	Need to understand what is the character of societies that are and are not able to buffer the relationship between low income and poor health? -E.g. Little is known about how social formations (groups, organizations, mobilizations, networks, unions) that buffer poverty/inequality negative impacts on health/quality of life even in the absence of macroeconomic or policy changes (what makes life healthier for the poor, even if we don't necessarily provide them with more income?)	3.48

E. Issues Related to CIHR Organizational Issues (only four very highly rated items included)

#	Need/Gap	Score
1	Need for training in advanced conceptualizations, critical perspectives, and interdisciplinary work	5
6	Data linkages, e.g. (see above)	5
11	Need to develop broader understanding of the structural determinants of health	5
25	Need to know what macroeconomic and policy interventions maximize reductions in poverty and income inequality, e.g. (see above)	5

Part 3. Reporting of Highest Ranked Items based on Ratings Across All Five Priority Areas

The following is a list of the top 10 rated needs based on their average ratings across the five CIHR priority areas. To illustrate, item 25 achieved an average rating close to four across all the CIHR priority areas indicating that addressing this need would meet all the CIHR priorities.

#	Need/ Gap	Score
25	Need to know what macroeconomic and policy interventions maximize reductions in poverty and income inequality, e.g. -How do certain policies influence the incidence of poverty but also the effect of poverty on health? -Track how changes in tax policy entitlement to public programs and social goods actually change people's real income rather than command over resources?	3.94
6	Data linkages, e.g. - Need to routinely link from health related data sets such as census and surveys - Data sharing across provinces is needed - Need to blend Statistics Canada survey of Consumer Finance with available health information	3.86

4	Need for longitudinal data and systems for collecting these data	3.66
13	Need for participatory action research (PAR) projects that seek to address poverty related issues (where participants are involved in the research).	3.61
5	Measures of socioeconomic status including education and occupational status need to be incorporated into all health research data collection, e.g. - This would include routine primary data collection related to births, deaths and hospitalizations - Need measures of accumulated wealth	3.51
1	Need for training in advanced conceptualizations, critical perspectives, and interdisciplinary work	3.51
26	Need a better understanding role of non-income transfers (tax-funded welfare benefits such as universal health care, education, recreation, etc.) on poverty/health and income inequality/health relationship. Why is income inequality in Canada and other OECD countries not show the same gradient with mortality as it does in US, buffered by non-income benefits). e.g. - In terms of different income security programs in different countries, what effect do they have on health outcomes across countries/jurisdictions - Looking at the associations between measures of income and measures of health at the individual level, and how that association differs between countries	3.50
20	Need to investigate the disconnect between research and health policy (e.g. informing recent initiatives in chronic disease, federal strategies to support "Healthy Living," heart health work, diabetes strategy, etc.)	3.46
21	Need attitudinal research on policymakers: How do they react to such research, when/how the research has had some impact	3.45
11	Need to develop broader understanding of the structural determinants of health	3.41

The following is a list of opportunities which were reviewed by the advisory committee members. Opportunities were not rated but are simply noted as follows:

1. There is increasing attention being paid to economic and policy measures affecting inequalities (e.g. an Ottawa conference in Ottawa in Jan 2000 co-hosted by Centre for Living Standards). There is increased attention from the Multilateral Development Banks (e.g. World Bank, UNCTAD, UNDP and others on impacts of macroeconomic adjustment policies and trade/investment liberalization on poverty and inequality).
2. There is increasing recognition of deteriorating policy environment in Canada by policymakers, the media, and health researchers.
3. Recent reports on health care reform have directed attention to the social determinants of health
4. There are shifting policy environments related to globalization that draw attention to the relationship of aspects of the welfare-state to the social determinants of health including income.
5. There is increasing recognition of the failure of traditional health promotion approaches to improving population health.
6. The federal government is leading new strategies for addressing healthy living and chronic disease prevention that could benefit from advanced conceptualization of the role income plays in population health.
7. A critical mass is developing that is able to carry out interdisciplinary work.
8. CIHR is supporting the establishment of centres to study these kinds of issues.

9. CIHR – at least IPPH -- appears to be more open to the benefits of studying socio-structural determinants of health.
10. The CPHI is funding researchers such as Ross, Dunn, and Wolfson for this kind of work.
11. The media may be becoming more receptive to addressing these kinds of issues.

Conclusions and Recommendations

This Needs, Gaps, and Opportunities Analysis identified numerous areas in which Canadian research on the role that income and its distribution plays in population health could be enhanced. The particular areas of weakness are: conceptualization of how income and its distribution contribute to population health, the lack of longitudinal studies of the impact of income-related issues upon health across the life-span, and the lack of linked data bases that would allow complex analyses of how income and related issues contribute to health and well-being. There is also a lack of interdisciplinary work that examines the political and economic forces that influence how income is distributed among Canadians. A lack of interdisciplinary work also exists in the areas of the pathways that mediate the income and health relationship, and specifically, the biological pathways by which issues such as income and its distribution get 'under the skin' to influence health. Little work has considered policy implications of the income and health relationship to improve population health. Indeed, present Canadian policy directions that emphasize individual lifestyle choice and behavioural changes are profoundly at odds with findings of how income and other social determinants of health influence population health.

Comparison of the state of Canadian research to that conducted in the UK and Finland helped highlight some of these weaknesses. Work in the UK for example is characterized by extensive use of materialist and life-span perspectives, many longitudinal studies, and extensive policy analyses. UK work has led the world in identifying the pathways between economic and psychosocial variables and threats to population health such as cardiovascular disease and diabetes for instance. Finnish work is sensitive to macro-level issues, makes use of extensive linked data bases and benefits from having government agencies that are receptive to concepts that link income and other social determinants of health to the health of citizens.

In contrast, much of the Canadian work that considers income has little if any conceptualization of why it is included, lacks identification of pathways from income to its health effects, and relies upon simple rather uninformative cross-sectional designs. Much of it uses behavioural lifestyle risk factor approaches as the explanatory mechanisms that mediate the income and health relationship. Such approaches are clearly not cutting-edge, as they deal primarily with proximate triggers of health and disease, rather than with root causes.

The findings from this NGOA are reflected in the preparation of applications to CIHR, SSHRC, and the Canadian Diabetes Association. For example, an application was made to CIHR to study the influences upon the management of diabetes among low-income populations as part of the Vulnerable Populations initiative. A letter of intent to develop a Centre for the Study of Income and Health was given to the Institute of Population Health (IPPH) and was also accepted. A letter of intent was also accepted by the SSHRC to develop a Community University Research Alliance to consider related issues with the Association of Ontario Health Centres. An application to study the lived experiences of low-income people with diabetes to the Canadian Diabetes Associations also drew upon findings from this NGOA.

Special Areas of Need

Need for Better Conceptualization of Non-Market Economic Resources and How These Factors Interact with Market Income to Influence Health over the Life-Span. Income is important because it provides opportunities to meet basic needs and participate in activities normally expected of members within a society. Societies and jurisdictions differ in the extent to which these needs and participation opportunities are dependent on income alone. To illustrate, when housing availability and affordability are determined solely by the marketplace, income will be an especially important determinant of housing insecurity as well as a number of other determinants of health such as food security, early childhood development, etc. When the state intervenes to provide such basic needs to citizens, income may be less of a determinant of individual and population health.

These conceptualizations need to adopt a life-span perspective. Advantage and disadvantage clearly accumulate across the life-span, yet to date very little Canadian research considers this. Canadian researchers are limited by the lack of linked data-bases that allow for linking of data from the census, disease registries, and health and other surveys. Means should be developed to allow the linking of data to those participating in various national surveys that are already being carried out by many agencies of the federal and provincial governments. Life-span conceptualizations of health and its determinants draw attention to macro-level issues such as the importance to health of forms of the welfare state in western societies. Raphael has recently drawn upon the political economy literature to suggest that the welfare state may be an important determinant of health in developed nations (Raphael, in press). This issue is explicitly discussed by many Finnish researchers but rarely if ever mentioned by Canadian ones.

When income and its distribution are recognized as key factors influencing health, the UK/Finnish studies are more likely to recognize income itself as a product of deeper structural and systemic influences (e.g. the nature of capitalist society), while the Canadian studies tend to see income as cause. In other words, several UK/Finnish studies go further upstream than comparable Canadian studies. Political economy perspectives would be an especially fruitful area of research as it would require interdisciplinarity activities and would provide clear implications for policy development. Focus on the welfare state would help direct discussions in population health to more upstream influences than is presently the case in Canada.

Development of Neo-Materialist Perspectives. A particularly important area that has seen some Canadian work is in the issue of how income and its distribution interacts with the presence of social infrastructure such as social and health services to influence health. Most of this work is in the conceptualization stage with little empirical work on these issues. Such work would have a strong spatial component and the work by medical geographers. This would be one area that would be especially ripe for interdisciplinary work, it would involve analysis of horizontal and vertical structures influencing health that could benefit from the contributions of medical geographers, political scientists and political economists. These would be assisted by support of participatory and other qualitative research approaches.

This work would consider the role that vertical societal structures play in directly supporting population health. As well, this work should support the development of more proximal horizontal structures such as the presence of local social infrastructure, social capital, and other immediate influences upon health such as social support. Such work -- especially more qualitative research -- would explore how macro-level factors influence health by examining the immediate lived experiences of Canadians in various spatial environments. This work would further understanding of how immediate contexts interact with the provision of income and non-income resources within jurisdictional contexts such as cities, neighbourhoods, and provinces.

Establish Linked Data Bases. Discussion with CIHI and the federal and provincial governments should be undertaken to help establish a framework for developing linked data bases that will allow application of a life-span approach to considering the development of chronic disease in Canada. Our review of the UK and Finnish work indicates the clear importance of such a perspective for understanding and potentially reducing the burden of illness in Canada. In these nations, researchers are able to produce robust findings of the influences upon health of factors such as income and its distribution across the life-span. Canadian researchers are overly reliant upon cross-sectional studies that make such advanced conceptualizations of the causes of illness and disease difficult. Included in these discussions should be the need to increase inter-provincial sharing and co-ordination of data bases, keeping in mind provinces differing privacy laws.

Supporting These Research Themes. The most obvious means of supporting these themes would be direct targeting of requests for research proposals by IPPH to address these issues. Also possible would be a requirement by other CIHR institutes for researchers to consider the role that income, its distribution, and other social determinants of health play in the development, and progression of numerous diseases in Canada. There is extensive evidence that income and its distribution play a role in the genesis of diseases such as diabetes, arthritis, cancer, heart disease, respiratory disease and others yet researchers in these fields rarely if ever consider these issues. Research is needed into why this is the case in Canada but not elsewhere.

To leave these research questions solely to the IPPH and have the other CIHR institutes not consider these is not productive in the long term. IPPH must lobby to raise these issues with the other institutes and support funding by these other institutes to raise these issues. Collaborative RFP's (amongst CIHR institutes) would be one means of furthering this agenda.

Health research that incorporates social science into conceptualizations and analysis appears more likely to consider these kinds of issues. There is a need to bring these conceptualizations into population health activities that consider income and its distribution as relevant variables. Such participation could be made a requirement in future RFP's issued by the IPPH as well as other CIHR institutes. Collaborations with SSHRC would support this as well.

Dissemination of Report Findings. While Canada has been a leader in conceptualizing the importance of factors such as income and its distribution to health, there is ample evidence that governments and policymakers are retreating from using and applying these concepts. The recent Romanow, Manzankowski, and Kirby reports all acknowledge the importance of income and its distribution and related concepts but fail to develop the policy implications of these findings. Similarly, the new Healthy Living Initiative of the federal and provincial governments and the Chronic Disease Alliance of Canada are retreats from advanced conceptualization of the influences upon population health to simplistic lifestyle approaches that stress the making of healthy choices. These policy directions should be informed by the findings of these NGOAs.

It is important that the findings of this NGOA be made available to those who are involved in these activities through well-developed and accessible materials. IPPH could support the production of user and public-friendly materials from this and other NGOAs to facilitate this knowledge transfer. This would also be facilitated by support to disseminate the substantive content of the articles that were reviewed in this NGOA. Findings from the hundreds of studies reviewed showed that income and its distribution have a strong and direct effect upon individual and population health, this NGOA project and its report focussed on the structure of research activities and conceptualizations rather than the substantive findings from the review.

The media need to be sensitive to these findings. A review of newspaper stories found that stories that consider income and poverty issues in health are usually not based on reporting studies

from scientific journals. Rather they involve coverage of activities by social development or poverty groups that raise the issue in their press releases or press conferences. This is in stark contrast to newspaper stories that report on a daily basis latest journal findings of how behavioural factors such as diet, physical activity, and tobacco use influence health and disease. IPPH should consider an initiative similar to the WHO-EURO's *Social Determinants of Health: The Solid Facts* campaign. IPPH should urge *ISUMA*, *Policy Options* and other policy-related journals offer special issues to report finding from these NGOAs. This would facilitate dissemination of findings and raise the profile of contextual factors upon population health.

Appendix A - Advisory Committee Members

Atlantic Advisory Committee:

Dr. Carol Amaratunga,
Executive Director, Atlantic Centre of Excellence for Women's Health

Dr. Richard Gould,
Medical Officer of Health, Nova Scotia Department of Health Public Health Services

Dr. Andrew S. Harvey,
Director, Time-Use Research Program, St. Mary's University

Dr. George Kephart,
Director, Population Health Research Unit, Dept. of Community Health and Epidemiology,
Dalhousie University

Dr. Deborah Kiceniuk,
Research Coordinator, Healthy Balance Research Program, Nova Scotia Advisory Council on the
Status of Women / Atlantic Center of Excellence for Women's Health

Ms. Joanna LaTulippe-Rochon,
Director, Cape Breton Family Place Resource Centre

Ms. Stacey Lewis,
Director, Cape Breton Wellness Centre

Dr. Peter MacIntyre,
Associate Professor of Psychology, Department of Behavioural and Life Sciences, University
College of Cape Breton

Mr. Michael Pennock,
Research Director, Population Health Research Unit, Dept of Community Health and
Epidemiology, Dalhousie University

Mr. Malcolm Shookner,
Regional Development Coordinator, Atlantic Health Promotion Research Centre

Dr. Merv Ungurain,
Visiting Fellow, Population Health and Chronic Disease Prevention Unit, Dept of Community
Health and Epidemiology, Dalhousie University

Central Advisory Committee:

Dianne Patychuck,
Social Epidemiologist, Toronto Public Health, (formerly, Betty Burcher)

Ms. Connie Clement,
Executive Director, Ontario Prevention Clearinghouse (OPC)

Michael Cushing,
Executive Director, Ontario Social Development Council

Jackie Choiniere,
Director of Policy & Research, Registered Nurses Association of Ontario (RNAO)

David Langille,
Co-Director, Centre for Social Justice (CSJ)

Jack Lee,
Executive Director (Acting), Ontario Public Health Association (OPHA)

Gary O'Connor,
Executive Director, Association of Ontario Health Centres (AOHC)

Laurel Rothman,
National Coordinator, Campaign 2000 & Director, Community Building and Social Reform, Family Services Association of Toronto

Katherine Scott,
Senior Policy Associate, Canadian Council on Social Development (CCSD) (formerly Andrew Jackson)

Western Advisory Committee:

Dr. Raymond Blake,
Director, Saskatchewan Institute for Public Policy, University of Regina

Ms. Joan Feather,
Research Scientist and Coordinator, Department of Community Health and Epidemiology,
University of Saskatchewan

Ms. Louise Simard,
CEO and President, Saskatchewan Association of Health Organizations

Mr. Bill Werry,
Executive Director, Human Services Integration Forum, Government of Saskatchewan

Dr. Nazeem Muhajarine,
Research Faculty/Associate Professor, Department of Community Health and
Epidemiology/SPHERU, University of Saskatchewan

Dr. David Rosenbluth,
Director, Research and Evaluation, Saskatchewan Department of Social Services

Dr. Allison Williams,
Research Faculty/Assistant Professor, Department of Geography/SPHERU, University of
Saskatchewan

Dr. Bonnie Jeffery,
Research Faculty, Faculty of Social Work/SPHERU, University of Regina

Dr. George Maslany,
Director, Social Policy Research Unit, Faculty of Social Work, University of Regina

Dr. Michael Polanyi,
Professor, University of Regina

Advisory Committee Terms of Reference

While Terms of Reference of Advisory Committee members must be finalized by members during their first meeting, the investigators envision the following tasks for the Committees:

1. Assist in identification of research and conceptual activity on issues related to income and health, its public dissemination and its policy uptake. Review preliminary and contribute to finalization of evaluative template for Phase Two assessment of gaps and areas of needed inquiry.
2. Review preliminary descriptive report and contribute to design of questionnaire for Canadian, UK and Finnish researchers; structure of internet conference and identification of other individuals or groups that should be invited to participate in the conference.
3. Review and contribute to final report.
Each activity is associated with a single meeting tentatively scheduled as follows:

1. Early June, 2002;
2. Early December, 2002 ;
3. Early February, 2003.

Appendix B - Canadian National and Provincial Institutions Searched

Canadian National Policy Institutes

C.D. Howe Institute

<http://www.cdhowe.org/>

Caledon Institute on Social Policy (CISP)

<http://www.caledoninst.org/>

Canada West Foundation (CWF)

<http://www.cwf.ca/>

Canadian Centre for Policy Alternatives (CCPA)

<http://www.policyalternatives.ca/>

Canadian Council on Social Development (CCSD)

<http://www.ccsd.ca>

Canadian Institute for Child Health (CIHI)

<http://www.cich.ca/>

Canadian Policy Research Networks (CPRN)

<http://www.cprn.com/>

Canadian Public Health Association (CPHA)

<http://www.cpha.ca/>

Conference Board of Canada

<http://www.conferenceboard.ca/who.htm>

Council of Canadians

http://www.canadians.org/index2.htm?COC_token=024UU24

Federation of Canadian Municipalities (FCM)

<http://www.fcm.ca/>

Fraser Institute

<http://www.fraserinstitute.ca/>

Health Transitions Fund (HTF) Health Policy and Communications Branch, Health Canada,

<http://www.hc-sc.gc.ca/htf-fass/english/>

Institute for Research on Public Policy (IRPP)

<http://www.irpp.org>

Public Policy Forum

<http://www.ppforum.com/>

Policy Research Initiative (PRI)

<http://policyresearch.gc.ca/page.asp?pagenm=root>

Policy.ca

<http://www.policy.ca/>

Canadian National Research and Funding Institutes

Association for Canadian Studies (ACS)

http://www.acs-aec.ca/e_home.html

Canadian Economics Association (CEA)

<http://economics.ca/>

Centres of Excellence for Women's Health (CEWH)

<http://www.cewh-cesf.ca/en/index.html>

Centre for Health Economics and Policy Analysis (CHEPA)

<http://www.chepa.org>

The Canada Foundation for Innovation (CFI)

<http://www.innovation.ca/index.cfm>

Canadian Association for Nursing Research (CANR)

Canadian Health Economics Research Association (CHERA)

<http://www.chera.ca/cgi-bin/WebObjects/chera>

Canadian Health Network (CHN)

<http://www.canadian-health-network.ca>

Canadian Health Services Research Foundation (CHSRF) includes Nursing Research fund (NRF)

http://www.chsrf.ca/index_e.shtml

Canadian Institute for Advanced Research (CIAR)

<http://www.ciar.ca/>

Canadian Institute for Health Information (CIHI)

<http://www.cihi.ca>

-Canadian Population Health Initiative (housed at CIHI) (CPHI)

http://secure.cihi.ca/cihiweb/disPage.jsp?cw_page=cphi_e

Canadian Institutes of Health Research (CIHR)

<http://www.cihr-irsc.gc.ca>

-National Health Research and Development Program (NHRDP)

<http://www.cihr-irsc.gc.ca>

Canadian Labour Organization

Canadian Medical Association (CMA)

<http://www.cma.ca/cma/common/linkNavigate.do?skin=130>

Canadian Public Health Association (CPHA)

<http://www.cpha.ca>

Canadian Research Institute for the Advancement of Women (CRIAOW)

<http://www.criaw-icref.ca/index-e.htm>

Centre for Health Evidence

<http://www.cche.net/che/home.asp>

Centre for Research and Information on Canada (CRIC)

http://www.cric.ca/en_html/cric.html

Centre for the Study of Living Standards (CSLS)

<http://www.csls.ca/>

Coalition for Biomedical and Health Research (CBHR)

<http://www.cbhr.ca/home.htm>

Donner Canadian Foundation

Health Canada

<http://www.hc-sc.gc.ca/english/index.html>

-Applied Research and Analysis Directorate (ARAD)

<http://www.hc-sc.gc.ca/iacb-dgiac/arad-draa/english/arad/aradindex1.html>

-First Nations and Inuit Health Branch (FNIHB)

<http://www.hc-sc.gc.ca/fnihb-dgspni/fnihb/index.htm>

-Health Policy and Communications Branch

Health Transitions Fund

Women's Health Bureau which includes: CWHN & CEWH

- <http://www.hc-sc.gc.ca/english/search/branches.html>;
- Health Policy Research Program (HPRP), Research Management and Dissemination Division, Information, Analysis and Connectivity Branch)
- Mental Health
 - <http://www.hc-sc.gc.ca/hppb/mentalhealth>
- National Advisory Council on Aging (NACA)
- Population Health Fund (PHF)
 - <http://www.hc-sc.gc.ca/pphb-dgspsp>
- Populations and Public Health Branch (PPHB)
 - http://www.hc-sc.gc.ca/pphb-dgspsp/new_e.html
- Centre for Health Surveillance Coordination
 - http://www.hc-sc.gc.ca/pphb-dgspsp/csc-ccs/skills_e.html
- Centre for Healthy Human Development
 - <http://www.voices4children.org/bulletin/archive.htm>
- Bureau of Reproduction and Child Health
- Division of Childhood and Adolescents
- Division of Aging and Seniors
- Healthy Communities Division
- Office of Rural Health
- Canadian Health Network
- Women's Health Bureau (WHB)
 - <http://www.hc-sc.gc.ca/english/women/index.html>
- Human Resources Development Canada (HRDC)
 - <http://www.hrdc-drhc.gc.ca/common/home.shtml>
- Humanities and Social Sciences Federation of Canada (HSSFC)
 - <http://www.hssfc.ca>
- Informetrica
 - <http://www.informetrica.com/>
- International Development Research Canada (IDRC)
 - <http://www.idrc.ca/>
- Institute of Health Economics (IHE)
 - <http://www.ihe.ab.ca>
- Institute for Work and Health (IWH)
 - <http://www.iwh.on.ca>
- Medical Technology & Practice Patterns Institute (MTPPI)
 - <http://www.mtpi.org/frameset.asp?Pg=?PHPSESSID=18bf4bba66108bbfbc241522de991ad1&MI=1>
- Metropolis Project
 - http://canada.metropolis.net/frameset_e.html
- National Action Committee on the Status of Women (NACSW)
- National Clearinghouse on Family Violence (NCFV)
- National Council of Welfare (NCW) (advisory body of the Minister of HRDC)
 - <http://www.ncwcnbes.net/>
- National Research Council (NRC)
 - <http://www.nrc.ca/corporate/english/index.html>
- Social Research and Demonstration Corporation (SRDC)

<http://www.srdc.org>
Social Sciences and Humanities Research Council of Canada (SSHRC)
<http://www.sshrc.ca/>
Statistics Canada (Stats Can)
<http://www.statscan.ca>
Status of Women Canada (SWC) (Policy Research Fund)
<http://www.swc-cfc.gc.ca/direct.html>
The Vanier Institute of the Family
<http://www.vifamily.ca/>

Provincial and Territorial Research, Policy and Funding Institutes

Yukon

Department of Health and Social Services (Policy) Government of Yukon
<http://www.hss.gov.yk.ca/>

North West Territories

NWT Dept. of Health and Social Services
<http://www.hlthss.gov.nt.ca/>

British Columbia

BC Centre of Excellence for Women's Health
<http://www.bccewh.bc.ca/>

BC Research Institute for Children's & Women's Health Centre
http://www.cw.bc.ca/about_research.asp

Centre for Community Health and Health Evaluation Research
Gerontology Research Centre
<http://www.harbour.sfu.ca/gero/>

Ministry of Health Services (Policy)
<http://www.gov.bc.ca/healthservices/>

Okanagan University College
-Centre for Population and Health Services Research
<http://www.ouc.bc.ca/health/cphsr/>

Social Planning and Research Council of British Columbia (SPARC BC) (Policy)
<http://www.sparc.bc.ca/>

University of British Columbia
-Centre for Health Services and Policy Research (CHSPR)
<http://www.chspr.ubc.ca>
-Centre for Research on Economic and Social Policy (CRESP)
<http://www.arts.ubc.ca/econ/cresp.htm>
-Department of Health Care and Epidemiology
<http://www.healthcare.ubc.ca/>
-Institute of Health Promotion Research
<http://www.ihpr.ubc.ca/>
-Institute for Aboriginal Health
<http://www.health-sciences.ubc.ca/iah/>
-UBC Child & Family Project, Department of Educational and Counseling Psychology, and
Special Education, Faculty of Education
<http://www.educ.ubc.ca/research/childandfamily/aboutus.htm>

-Western Regional Training Centre for Health Services Research
<http://www.healthcare.ubc.ca/hcep/WRTC/html/wrtc.html>
University of Victoria

- Centre on Aging
- Community Health Promotion Coalition
<http://web.uvic.ca/~chpc/about.htm>
- Health Information Science
<http://hinf.uvic.ca/>

University of Northern British Columbia

- Child Welfare Research Centre – defunct as of June, 2002
http://www.unbc.ca/cwrc_page/home.htm
- Institute for Social Research and Evaluation
<http://web.unbc.ca/isre/index.html>
- Northern FIRE: The Centre for Women's Health Research
<http://www.unbc.ca/northernfire>
- Rural and Remote Health Research
<http://www.unbc.ca/ruralhealth/>

Women's Health Bureau – Province of British Columbia (Policy)
<http://www.hlth.gov.bc.ca/whb/>

Alberta

Alberta Children's Hospital Foundation (Funding)
<http://www.childrenshospital.ab.ca/contactus.asp>

Alberta Consortium for Health Promotion Research and Education
<http://www.health-in-action.org/new/Consort/consort.shtml>

Alberta Health and Wellness (Policy), Government of Alberta
<http://www.health.gov.ab.ca/>

Alberta Heritage Foundation for Medical Research (Funding)
<http://www.ahfmr.ab.ca/>

Edmonton Social Planning Council (Policy)
<http://www.edmspc.com/index.html>

Health Innovation Fund (Funding)
<http://www.health.gov.ab.ca/key/Abstracts.pdf>

Waln Foundation for Families and Children (Funding)
http://www.visions.ab.ca/health/project_funding/walnproposals.htm

Institute of Health Economics
<http://www.ihe.ca/>

University of Alberta

- Alberta Research Center for Child Health Evidence
<http://www.ualberta.ca/ARCHE/>
- Centre for health Promotion Studies
http://www.chps.ualberta.ca/research/faculty_research.htm
- Centre for Health Evidence
<http://www.cche.net/che/about1.asp>
- Dept of Public Health Sciences, Faculty of Medicine & Dentistry
<http://www.phs.ualberta.ca/>

-Epidemiology Coordinating and Research Centre (Epicore)

<http://www.epicore.ualberta.ca/>

-Healthy Human Development Research Group, Department of Nursing

<http://www.nursing.ualberta.ca/homepage.nsf/website/Research+Excellence+-+Healthy+Human+Development>

-Social Support Research Program, Edmonton

<http://www.ssrp.ualberta.ca/>

University of Calgary

-Centre for Advancement of Health

<http://www.ucalgary.ca/md/CAH/research/index.html>

-Centre for Health Policy Studies, Dept. of Community Health Sciences, (CHAPS)

<http://www.ucalgary.ca/md/CHS/rc/research2000.html>

-Department of Community Health Sciences

<http://www.ucalgary.ca/md/CHS/>

- Health Promotion Research Group, Department of Community Health Sciences

<http://www.ucalgary.ca/~hprguc/html/activities.html>

-Perinatal Research Centre

<http://www.ualberta.ca/PERINATAL/>

-Women's Health Research Group,

<http://www.acs.ucalgary.ca/~whrguc/>

University of Lethbridge

-School of Health Sciences

<http://home.uleth.ca/hlsc/>

Saskatchewan

Health Services Utilization and Research Commission (Research & Funding)

<http://www.hsurc.sk.ca/about/index.php3>

Saskatchewan Health - Policy and Planning (Policy)

http://www.health.gov.sk.ca/ph_dept_and_branches.html

University of Regina

-Saskatchewan Institute of Public Policy (Policy)

<http://www.uregina.ca/sipp/>

-SIPP research

<http://www.uregina.ca/sipp/research.htm>

-Social Policy Research Unit, Faculty of Social Work

<http://www.uregina.ca/spru/index2.html>

University of Saskatchewan

-Department of Community Health and Epidemiology, College of Medicine

<http://www.usask.ca/healthsci/che/index.html>

-Health Services Utilization and Research Commission

http://www.hsurc.sk.ca/research_studies/research.php3?rstatus=3

-Prairie Region Health Promotion Research Centre

<http://www.usask.ca/healthsci/che/prhprc/>

- Saskatchewan Population Health and Evaluation Research Unit (SPHERU)

<http://www.spheru.ca/>

Manitoba

Brandon University

- Rural Health Research Group
<http://rhrh.brandonu.ca>
- Centre of Excellence for Child and Youth Centred Prairie Communities
<http://www.communityresearch.ca>
- Manitoba Institute of Child Health(MICH) (funding)(A Division of The Children's Hospital Foundation)
<http://www.kidsresearch.mb.ca>
- Manitoba Public Health
<http://www.gov.mb.ca/health/publichealth/role.html>
- Manitoba Public Health Association
<http://www.cpha.ca/english/inside/branches/man/mpha.htm>
- Prairie Women's Health Centre of Excellence
<http://www.pwhce.ca/index.htm>
- Social Planning Council of Winnipeg
<http://www.spcw.mb.ca/index.html>
- University of Manitoba
 - Department of Community Health Sciences
<http://www.umanitoba.ca/>
 - Manitoba Centre For Health Policy and Evaluation (MCHPE)
<http://www.umanitoba.ca/academic/centres/mchp/1mchp.htm>
 - Manitoba Health Research Council(funding)
http://www.umanitoba.ca/academic_support/MHRC/
- Winnipeg Women's Health Clinic (WHC)
<http://www.womenshealthclinic.org/>
- Ontario
- Arthritis Community Research and Evaluation Unit
<http://www.acreu.ca/>
- Atkinson Foundation
<http://www.atkinsonfdn.on.ca/>
- Institute for Clinical Evaluative Sciences (ICES)
<http://www.ices.on.ca/index.asp>
- Carleton University
 - School of Public Affairs
<http://www.carleton.ca/spa/>
- Centre for Excellence for Research on Immigration and Settlement (CERIS)
<http://ceris.metropolis.net/>
- Centre for Social Justice Foundation for Research and Education
<http://www.socialjustice.org>
- Community Social Planning Council of Toronto
<http://www.socialplanningtoronto.org/Index3.htm>
- Laidlaw Foundation
<http://www.laidlawfdn.org>
- Laurentian University
 - Centre for Rural and Northern Health Research (CRaNHR)
<http://laurentian.ca/www/CRANHR/INDEX.HTML>
- Maytree Foundation

<http://www.maytree.com/>

McMaster University

- Canadian International Labour Network (CILN)
<http://labour.ciln.mcmaster.ca>
- Health Evidence Application and Linkage Net (HEALNET)
<http://hiru.mcmaster.ca/nce/default.htm>
- Health Information Research Unit
<http://hiru.mcmaster.ca/>
- Health Utilities Group / Health Utilities Index and Quality-Of-Life
<http://www.fhs.mcmaster.ca/hug/index.htm>
- Nursing Effectiveness Utilization and Outcomes Research Unit
<http://www.fhs.mcmaster.ca/nru/>
- Program in Policy Decision-Making
<http://www.researchtopolicy.ca/default.asp>

Ontario Ministry of Health and Long Term Care

<http://www.gov.on.ca/MOH/>

Ontario Public Health Association (OPHA)

<http://www.opha.on.ca/>

Ontario Social Development Council

<http://www.osdc.org/>

Queen's University

- Centre for Health Services and Policy Research (CHSPR)
<http://chspr.queensu.ca/>
- School of Policy Studies
<http://qsilver.queensu.ca/sps/>

Social Planning and Research Council of Hamilton

<http://www.sprc.hamilton.on.ca/index.htm>

Social Planning Council of Ottawa

<http://www.spcottawa.on.ca/>

Trillium Foundation

<http://www.trilliumfoundation.org/>

University of Toronto

- Centre for Addiction and Mental Health, Clarke and Addiction Research Foundation Sites -
Health Systems Research & Consulting Unit
<http://www.utpsychiatry.com/noframes/hs.html>
- Centre for Health Promotion
<http://www.utoronto.ca/chp/>
- Institute for Policy Analysis (IPA)
<http://www.chass.utoronto.ca:8080/ipa/>
- Home and Community Care Evaluation and Research Centre

University of Waterloo

- Centre for Applied Health Research CAHR
<http://www.ahs.uwaterloo.ca/~cahr/>

York University

- Atkinson faculty of Liberal and Professional Studies, Health Policy and Management
<http://www.atkinson.yorku.ca/>

Quebec

Direction de la Santé Publique de Montréal-Centre

<http://www.santepub-mtl.qc.ca/>

McGill University

-McGill Institute for the Study of Canada

<http://www.arts.mcgill.ca/programs/misc/>

Montreal Economic Institute (MIE)

http://www.iedm.org/home_en.html

Quebec Dept. of Health and Social Services

<http://www.msss.gouv.qc.ca/f/index.htm>

Université Laval

-Groupe de recherche sur les interventions gouvernementales (GRIG)

<http://www.grig.ulaval.ca>

-Le Groupe de Recherche et d'Intervention en Promotion de la Santé (GRIPSUL)

<http://www.ulaval.ca/fsi/gripsul.html>

Université du Montreal

-Groupe de Recherche sur les Aspects Sociaux de la Santé-Sécurité du Travail (GRASP)

http://www.grasp.umontreal.ca/grasp_ang.html

-Groupe de Recherche Interdisciplinaire en Sante (GRIS)

<http://www.gris.umontreal.ca/>

New Brunswick

Medical Research Fund of NB, Dept. of Health and Community Services (Funding) (MRFNB)

NB Department of Health and Wellness (Policy)

-Health and Medical Services Division

-Epidemiology Service

-Department of Family and Community Services

NB Status of Women (Policy)

NB/PEI Branch, Canadian Health Promotion Association (Policy)

NB Regional Research Development Program (NBRRD)

Office of the Premier, Premier's Health Quality Council (Policy)

University of Moncton

-Canadian Institute for Research on Regional Development

<http://www.umoncton.ca/icrdr/>

University of New Brunswick

-Canadian Institute for Research on Regional Development

-Canadian Research Institute for Social Policy, (CRISP)

-Department of Sociology

-Faculty of Graduate Studies and Research

-University Research Fund

Nova Scotia

Atlantic Canada Opportunities Agency (ACOA)

Atlantic Centre of Excellence for Women's Health (ACEWH)

Atlantic Institute for Market Studies (AIMS)

<http://www.aims.ca/>

Dalhousie University

-Atlantic Health Promotion Research Centre (AHPRC)

- <http://www.medicine.dal.ca/ahprc/>
 - Community Health and Epidemiology
 - Faculty of Medicine
 - Population and Health Research Unit (PHRU)
 - <http://www.medicine.dal.ca/che/phru/>
 - Population Health and Chronic Disease Prevention Unit
 - School of Public Administration
 - <http://www.mgmt.dal.ca/spa/>
- Genuine Progress Index Atlantic (GPI)
 - <http://www.gpiatlantic.org/>
- Mount Saint Vincent University
 - Nova Scotia Centre on Aging
- NS Advisory Council on the Status of Women (NSACSW) (Policy)
- NS Department of Community Services (Policy)
 - Family Mosaic Research Project
- NS Department of Health (Policy)
 - Public Health Services
 - NS Provincial Health Council
- NS Health Research Fund (NSHRF)
- Population Public Health Branch, Atlantic Region (PPHB Atlantic), Health Canada
- Public Health Association of Nova Scotia (PHAofNS) (Policy)
- Saint Mary's University
 - Gorsebrook Institute for Atlantic Canada Studies
 - International Assoc. for Time Use Research (IATUR)
 - Time Use Research Program (TURP)
- Prince Edward Island
- Atlantic Centre for the Study of Human Health (ACSHH)
 - Inter-Ministerial Women's Secretariat (Policy)
- PEI Advisory Council on the Status of Women (PEIACSW) (Policy)
- PEI Dept. of Health and Social Services (Policy)
 - Public Health and Evaluation Division
 - Epidemiology Unit
- PEI Dept. of Community and Cultural Affairs (Policy)
 - Healthy Child Development Strategy (Policy)
- PEI Dept. of Law and Justice (Policy)
- PEI Health Research Program (PEISRF)
- PEI Premier's Office (Policy)
- University of Prince Edward Island
 - PEI Health Research Institute
 - Centre Study of Health and Aging
- Newfoundland and Labrador
- Community Health Information (NLCHI) (Policy)
- Memorial University of Newfoundland
 - Dept. of Clinical Epidemiology
 - Dept. of Community Health, Faculty of Medicine

- Health and Medical Care Research Group (HMCRCG)
- Health Research Unit
- Institute for Social and Economic Research (ISER)
- Newfoundland and Labrador Centre for Applied Health Research, (NLCAHR) (Funding)
- Nursing Research Unit, School of Nursing
- Policy Research Unit, Faculty of Arts
- Rural Health Research Centre, Division of Family Medicine
- Newfoundland and Labrador Health Research Unit (Division of Community Health) (NLHRU)
- Public Policy Research Centre (Policy & Research)
- Newfoundland and Labrador Department of Health and Community Services (Policy)
- Medical Services Division, Disease Control & Epidemiology
- Programs and Policy Division
- Government and Agency Division
- Newfoundland & Labrador Public Health Association (NLPHA) (Policy)
- Provincial Advisory Council on the Status of Women (PACSW) (Policy)

Finnish Research Programs and Institutes Searched

Social and Health Administration, University of Vaasa
The Finnish Centre for Interdisciplinary Gerontology
The Social Insurance Institute of Finland, Research and Development Centre
Population Research Institute
Population Research Unit
Department of Sociology, University of Helsinki, Finland
National Public Health Institute <<http://www.ktl.fi/>>
UKK Institute for Health Promotion Research
Finnish Research Programme on Environmental Health (SYTTY)
Finnish Centre for Health Promotion (FCHP)
Department of Social Policy
University of Turku
Rehabilitation Foundation, Research and Development
The Research Institute of the Finnish Economy
University of Oulu, Dept of Public Health
Department of Public Health and General Practice, University of Kuopio
Tampere School of Public Health
Department of Health Sciences, University of Jyväskylä
Department of Social Policy
University of Helsinki
University of Helsinki, Dept of Public Health
National Research and Development Centre for Welfare and Health (STAKES)

Finnish Funding Bodies

Academy of Finland
Finnish National Fund for Research and Development Sitra

Policy Oriented Institutes

Ministry of Social Affairs and Health

Specific Projects and Databases

Finbalt Health Monitor

FINMONICA

Finnish Contact

Health and Other Welfare Differences between Population Groups

Health for citizens of Turku 2000 and beyond

EXPOLIS

Socioeconomic Position in Childhood and Adult Cardiovascular Mortality in 1971-98 in Finland

Register-Based Follow-Up Study of a Large Sample from the 1950 Census

Appendix C - Document search strategy

The search strategy involved a search for Canadian Journals using CISTI and the Internet was searched for Canadian journal databases. Search terms included the following keywords: "income", "poverty", "inequality", "social class", "socioeconomic", "socio-economic", "socioeconomic status", "health", "illness", "cancer", "pregnancy", "well-being", "disease", "cardiac", "morbidity", "mortality", "dental", "health care", "hospitalization", "hospital", "physician", "medical", "medicine", "depression", "mental", "asthma", "diabetes", "Canada", "Canadian", "UK", "United Kindom", "Britain", "British", "England", "Finland", and "Finnish". The search included a perusal of Webspirs, Publine, and Elsevier. Databanks searched under Webspirs include: Geography, Medline, Pais International, Psycinfo, Social Work Abstracts, and Sociological Abstracts. Also, specific searches of the *British Medical Journal*, *International Journal of Epidemiology* and *Journal of Epidemiology and Community Health* were performed.

A search by researcher name in Webspirs and Publine for research in non-Canadian journals and by internet (department) was performed. An internet search of national and provincial research institutes and university research units for relevant current research and past publications was also performed. These included the following university departments: sociology, women's studies, psychology, epidemiology, geography, political science). Their publications list and current research were retrieved. A list of these institutes is available in Appendix B. Researchers were contacted by e-mail if their documents were not available in an electronic format on-line or in hard-copy published journals available in the libraries of York University, Dalhousie University, and University of Saskatchewan. Provincial and national funding agencies were asked for a list of funded research since 1995. National and provincial policy departments and agencies were searched via web search and email contact for relevant research and policy initiatives. A list of these institutes is available in Appendix B.

For the collection of the Finnish studies, Webspirs and Publine and the Internet were searched using the keywords noted above. Finnish researchers were emailed for information (and to obtain research documents if needed). An internet search of Finnish academic departments, research institutes, and policy institutes for income/health related documents was performed. A list of these institutes is available in Appendix B. For the collection of British studies an electronic search of Elsevier Journal database as well as specific electronic journal searchers of British Medical Journal, Social Science and Medicine, International Journal of Epidemiology, Journal of Epidemiology and Community health, and International Journal of Health Services was performed. Pinnacle government and UK research institute documents such as the Acheson inquiry into health inequalities were gathered. A less exhaustive search of British research was performed compared to that taken in searching for Finnish studies because a large number of British studies had previously been gathered by one of the principle investigators. All relevant documents found were entered into an Endnote citation library, used for sorting and specifying which empirical studies were to be reviewed.

Appendix D – Eight Categorical Taxonomies

Taxonomy 1: Conceptualization of Income, Income Distribution and Income Inequality

Term	Inclusion Criteria
Social Comparison	Hierarchical, social comparison
Materialist I	Socioeconomic indicators such as income, wealth, educational attainment and occupational group serve as indicators of material advantage that accumulate over the life-span
Materialist II	Degree of income inequality at a specified geographic level is related to health via <i>inter alia</i> expenditure on public goods such as health insurance, social welfare, supports for the unemployed and those with disabilities.
Complex Interpretive	Combination of materialist and interpretive conceptualizations/explanations of income
No Concept	

Taxonomy 2: Theoretical Framework

Term	Inclusion Criteria	
Structural/ Organizational	Theory relates to exogenous social forces (external to the individual)	Horizontal and vertical structures: studies that theorize community issues within a vertical (broader social) framework.
		Horizontal structures: e.g., community issues / local structures /cohesion/ social capital
		Vertical structures: government policies, resource allocation, income distribution, political ideology, policies related to unions, etc.
		Theory is exogenous but general and implicit
Individualistic	Theory relates to endogenous factors (internal to the individual – e.g. behaviors, genetics). This could also include research on “risk groups” – e.g. people who smoke.	
No Theory	Empiricist, offers no theoretical construct	

Taxonomy 3: Measurement of Income, Income Distribution and Income Inequality

Term	Inclusion Criteria	
Individual Group Membership Measures	Income group only	Income of individuals is the focus of measurement. Income is measured as income groupings such as quintiles, deciles, or other grouping such as high medium or low income.
	Other group Only	According to where individuals fall within various social class groupings, such as: employment grade, employment status, occupational class, educational level and housing tenure.
	Group Poverty Measure	Relative poverty measure used to identify individuals
		Adjusted absolute measure used to identify individuals
	Individual combo	Combination of both individual income and other group measure
	Selection Variable	Income used as a selection variable to study aspects of health and wellbeing. e.g.
Ecologic or Aggregate Measures	Income Distribution Measures	Overall distribution of income at a population level: These are overall measures that describe the distribution of resources among a population within a jurisdiction, i.e. nations, states/provinces/regions, cities, communities, neighbourhood/metropolitan area. Includes measures of inequality, using the Gini co-efficient, ore indices as Robin Hood, or Theil measure. Also includes a calculation of the percentage of income attained by a particular proportion of the population, e.g., lowest 50% of population received 18% of overall income.
	Ecologic Income Group Only	Income is measured as an area measure. It may be the median or average income within an area or jurisdiction, i.e. nations, states/provinces/ regions, cities, communities, neighbourhood/ metropolitan area, postal code sorting area, census tract. It can also involve jurisdictions classified along a distribution such as income quintile/ decile/other arbitrary grouping such as high medium or low income. Finally, it can refer to the percentage of residents meeting a certain criterion within a jurisdiction such as percentage living in poverty, or another such measure.
	Ecologic Other Group Only	Another measure rather than income is used to as an area measure. Includes median or average and/or percentage of individuals residing within a jurisdiction (see above) with particular levels of education, occupational class, housing tenure rates within an area, gross domestic product per capita, economic recession, unemployment rates, the economy of a region
	Ecologic Poverty Measures Only	Relative poverty measure: Where poverty is defined as having income that is less than 50% of the jurisdiction's (see above) median income. Includes Statistics Canada Income Adequacy and Low Income Measure (LIM) e.g. % < 50% median income
		Adjusted absolute measure The Statistics Canada Low Income Cut-Off (LICO) measure is a measure of adjusted absolute poverty. That poverty should be defined more than simply the bare minimum requirements to meet necessities for survival (i.e. adequate food and shelter). e.g. % < LICO
Combinations	Ecologic Combo	Ecologic measures of both income and other group measure
	Individual income and poverty group measures	
	Ecological income and poverty measures	
	Ecological and individual income	
	Income distribution and other measure	

Taxonomy 4: Outcome Measures

Term	Inclusion Criteria	
Health Status	Social / community	E.g., community belonging, employment patterns, family functioning / family status (lone or two parent), child behaviour/development (school performance social impairment), access to resources / food insecurity / literacy , environment, socio-cultural effects, quality of life
	Morbidity A	Chronic mental health conditions / psychological well being, social support, social isolation, depression, affective, relational and cognitive, emotional, work related stress, suicide rates/survival time after suicide, eating disorders
	Morbidity B	E.g., years of life lost, chronic illness, disease state, reported symptoms, measures of restricted activities, physical functioning, self assessed health
	Mortality	E.g., life expectancy, premature mortality, SMRs, infant mortality
Health Care Utilization	Equity and access to services, utilization of hospitals, physician, specialist services, insurance, prescription drugs	
Other	methodology; health economics, selection/inverse, population health strategies	
Lifestyle / behaviour	Prerequisites believe, attitudes, behaviours for positive health behaviour change – “Health Work”	
	Diet, alcohol, physical activity, smoking...	

Taxonomy 5: Unit of Analysis

U of A	Inclusion Criteria
Individual	Studies that look at only individuals.
Household	Family level - examines the family as units of comparison. i.e. one or more respondent provides information on the family as a totality. Does not imply a household unit of analysis if household income measures are used, i.e. house hold income. E.g. studies that examine child health by comparing difference characteristics of their family,
Neighbourhood Community	Ecologic studies Census tracts Enumeration areas Municipal areas -CMAs Parliamentary districts (UK)
Province	Province wide comparisons, not simply provincial data sets
Nation	Nation wide comparisons, not simply national data sets

Taxonomy 6.a: Pathways

Pathway	Inclusion Criteria
Biological	Make up of the individual / genetics, age, sex, precondition, family history.
Materialist	Elements of the individual's environment e.g. hazards at work, housing quality, exposure to environmental pollutants or the impact that unemployment or employment status has on ability to purchase consumer durables.
Social class	Social class / group, ethnicity, educational attainment, occupational group
Psychosocial stress	Stress, depression, anxiety, child conduct behaviors that can lead to disease or outcome.
Psychosocial comparison	Emotional response caused by individual comparison Relative deprivation.
Behavioural/cultural	Smoking, drinking, exercise, general lifestyle; and how a culture can influence behaviours in an individual or group of people
Gender analysis	A description of why or how an individual's gender, influences their health status, usually but not always oriented to females.
Political-economic analysis	Capitalism/neo-liberalism/ global economy, racism, welfare state decline/privatization, sexism, lack of access to education. An analysis based on the point of view that it is the societal structures that cause inequalities
Selection	Health outcome causes poverty or low income – AKA health selection, reverse causation, or for economists endogeneity (Brunner, 1999, p.18). 'Healthy immigrant effect'

Taxonomy 6.b: Sophistication of Pathways

Level	Inclusion Criteria
Sophisticated	Sees causal relationships, interconnectedness of pathways, explicit conceptualizations
Intermediate	Looks at pathways but has little to no explanation of interconnectedness or causes
Undeveloped	No theoretical constructs or pathways

Taxonomy 7.a: Research Method

Method	Paradigmatic Definition	Inclusion Criteria
Mixed Method	Critical realist: What exists cannot be ascertained simply through empirical research but requires explicit and reflective use of social theory.	Includes both Qualitative and Quantitative Methods.
Qualitative (uses words, themes)	Naturalist world view, that "reality exists in textured and dynamic detail in the natural environment of the social world" (Gubrium & Holstein, 1997, p 19).	Includes only qualitative methods: Ethnography, case study, interpretive discourse analysis, grounded theory, phenomenological, and action research (participatory or not). With such methods of data gathering as focus groups, interviews, participant observation, document analysis etc. The focus is on design and procedures to gain authentic (and valid) rich accounts.
Quantitative (uses numerical analysis)	Positivist world view, that "realities are single, tangible, and fragmentable" (source unknown) ^{xi}	Includes only quantitative methods: experiments, surveys questionnaire. The focus is on design and procedures to ensure accuracy and (and reliable) reliability.

^{xi} Paradigmatic (epistemological) commitment is *associated* with different methods, but not invariably; so one can have positivist qualitative researchers and naturalist quantitative researchers.

Taxonomy 7.b: Quantitative Research Design and Temporal

Temporality		Research Design	Inclusion Criteria	
A	Longer term - Longitudinal	Longitudinal (social sciences term) / Prospective (epidemiological term) follows the same cohort over time	Life course	Data collection over time concerning same set of individual characteristics or attributes. Includes inter-generational component.
				Data collection over time concerning individual characteristics or attributes from birth to death e.g. the 1958 British cohort.
			Limited Duration	Data collection over time, follows same cohort over a long term, but of limited duration, e.g. 10 or 20 years or from beginning of illness to a definite end point such as becoming well or death.
B	Longer term - Cross sectional	Sequential cross-sectional	Repeated measurements over time with different cohorts of people but with the same characteristics. i.e. looking at 20 year old, 40 year old, and 60 year old women with breast cancer in 1960 and examining if a different set of 20, 40 and 60 yr olds have cancer in 1980.	
		Historical - time lag/ time series or time sequential	Data collection over time concerning historical effects on one age group, (several different cohorts e.g. 80 yr olds in 1960, 80 yr olds in 1980, and 80 yr olds in 2000).	
C	Present	Retrospective	Case control Case = those with condition Control = those without condition	<ul style="list-style-type: none"> - Extent to which individual will have variable X leading up to /or before disease. - Look at people in outcome i.e. in jail, to see how they got there by examining school records or asking them about their past. - Asking individuals how many fruits and vegetables they ate in last five years.
			Cross-sectional / Contemporaneous	Data is collected at one point in time with single or multiple samples and multiple cohorts and age groups.
		Present		Experimental - to determine whether treatment given had any real effect – did treatment function as a cause.
D	Other	Methodological	Studies that compare methodologies to determine which provides better results (e.g. to weight or not to weight the data) or that test or develop of indices.	

Taxonomy 7.c: Qualitative Research Designs

Qualitative Research Design	Inclusion Criteria
Ethnographic	A written description of the implicit rules and traditions of a group or intact cultural group, where the researcher is involved with the community or group of interest. By the researcher's involvement with the group, s/he can provide an interpretation of the experiences of a group of people from their own perspective.
Phenomenological	A study in which human experiences are examined through detailed descriptions of the people being studied. Understanding the lived experiences.
Case study	A detailed account of an individual or small group of individuals. A study of one or more communities. A study of a social group (e.g. families, occupational group). A study of events, roles and relationships
Grounded theory	A study in which the researcher attempts to derive a theory.
Participatory methods	A study in which at some point the participants, or group being studies, participate in an element of the research process. By participating, the participants can gain some control over how the research affects their group or situation and can result in the participants becoming developing a greater understanding of their position or situation.

Taxonomy 8: Policy Implications

Term	Inclusion Criteria
Political-economic structural systemic	Globalization, political and economic governmental policies, e.g. welfare, taxation, general redistribution of wealth, work programs, etc.
Social determinants (governmental and non-governmental)	Education, literacy, employment, social inclusion, child issues, parent practices, sexual equality, food banks and nutrition, housing, access to services, racial and ethnic issues, community service groups, community awareness, etc. Medicare, privatization, two tier system, public service provision.
Health Care Services	Medical model. Health care practices and policies (e.g. physician behaviour and skills). Access to services.
Lifestyle (individual level)	Health promotion initiatives and prevention strategies aimed at healthy lifestyles i.e. laws such as restriction of smoking in public buildings; or educating people about healthy eating without taking socio-economic – political situation into consideration.
No policy	No recommendations provided

Appendix E - Bibliography

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Appendix F - Journals and Institutions Producing the Canadian Studies Reviewed

Reference Type of the 241 Canadian Empirical Pieces

Reference Type	#	%
Study reports from journals	189	78
Study reports from research/policy institutes (reports, conference Proceedings, and book sections)	52	22

List of Canadian Institutions Producing Studies Included in the Review

Institution	# of Studies
Applied Research Branch, Human Resources Development Canada (HRDC)	7
Arthritis Community Research and Evaluation Unit	1
Canadian Council on Social Development (CCSD)	2
Canadian Health Services Research Foundation (CHSRF), Centre for Health Promotion Studies, University of Alberta	1
Canadian Health Economics Research Association (CHERA)	2
Canadian Institute for Advanced Research (CIAR)	2
Canadian Institute on Children's Health (CICH)	1
Canadian International Labour Network (CILN), Dalhousie University	2
Canadian Public Health Association (CPHA)	1
Canadian Research Institute for Social Policy (CRISP)	1
Centre for Addiction and Mental Health, Culture, Community and Health Studies	1
Centre for Health Evaluation and Outcome Sciences	1
Centre for Health Promotion, University of Toronto	1
Centre for the Study of Living Standards	1
Genuine Progress Index Atlantic (GPI Atlantic)	1
Health Canada (1 PPHB) (2 HTF)	5
Manitoba Centre for Health Policy (MCHP)	3
Maritime Centre of Excellence for Women's Health	1
McMaster University	4
Memorial University, Health and Medical Care Research Group	1
National Advisory Council on Aging	1
National Health Research and Development Program (NHRDP)	1
National Literacy Secretariat, Human Resources Development Canada	1
Nova Scotia Department of Community Services	1
Prairie Women's Health Centre of Excellence (PWHCE)	2
Social Research and Demonstration Corporation	1
University of British Columbia	1
University of New Brunswick, Economics Department	1
University of Manitoba	2
University of Waterloo	1
Winnipeg Women's Health Clinic	1
Total	52

List of Journals Publishing Canadian Income-Health Studies

Journal Title (Alphabetical)	# of Studies
American Journal of Epidemiology	3
American Journal of Gastroenterology	2
American Journal of Public Health	3
British Medical Journal	2
Canadian Journal of Psychiatry	4
Canadian Journal of Public Health	31
Canadian Medical Association Journal	9
Canadian Public Policy	2
Chest	2
Chronic Diseases in Canada (Health Canada)	5
Environment and Planning	2
GeoJournal	2
Health and Place	2
Health Reports (Statistics Canada)	23
International Journal of Epidemiology	2
Journal of Clinical Epidemiology	2
Journal of Epidemiology and Community Health	2
Journal of Health Services Research and Policy	2
Journal of the Canadian Dental Association	2
Medical Care	2
Social Psychiatry and Psychiatric Epidemiology	2
Social Science and Medicine	22
Other - where only one study was found (see list below)	61

List of Journal Titles from which only one study was examined:

Addiction
Ageing and Society
Aging and Mental Health
AIDS
American Journal of Respiratory and Critical Care Medicine
Annals of Epidemiology
Archives of General Psychiatry
Arctic Medical Research
Canadian Journal of Cardiology
Canadian Journal of Dietetic Practice and Research
Canadian Journal of Human Sexuality
Canadian Journal of Neurological Sciences
Canadian Journal of Nursing Research
Canadian Journal of Oncology
Canadian Journal of Public Policy
Canadian Journal of Sexuality
Canadian Journal on Aging

Canadian Respiratory Journal
The Canadian Review of Sociology and Anthropology
Canadian Studies in Population
Cancer Prevention and Control
Child Development
Development and Psychopathology
Diabetes Care
Diabetologia
European Journal of Epidemiology
Health Affairs
Health Economics
Health Education and Behaviour
International Journal of Circumpolar Health
International Journal of Health Services
International Journal of Obesity and Related Metabolic Disorders
International Journal of Radiation Oncology-Biology-Physics
Journal of Canadian Dental Association
Journal of Clinical Oncology
Journal of Community Health Nursing
Journal of Consulting and Clinical Psychology
Journal of Evaluation in Clinical Practice
Journal of Health and Social Behavior
Journal of Health Psychology
The Journal of Nutrition
Journal of Public Health Dentistry
Journal of the American Academy of Child and Adolescent Psychiatry
Journal of the Canadian Chiropractic Association
Journal of Women's Health Research
Lancet
Millbank Quarterly
New England Journal of Medicine
Obstetrics and Gynecology
Paediatric and Perinatal Epidemiology
Policy Brief (CRISP)
Policy Options (CRISP)
Public Health Nursing
Research in Nursing and Health
Scandinavian Journal of Work, Environment and Health
Sexually Transmitted Diseases
Sleep
Sozial und Praventivmedizin
Stroke
Thorax
Women and Health

Appendix G Interview guide

GENERAL

1. What are the income/health questions that you are currently excited about asking and answering? Why?
2. What would you say are the important income/health questions that remain unanswered? Why?

RESEARCH DESIGN

3. The Finnish and UK researchers rely more heavily than Canadian researchers on longitudinal studies of income and health.
 - a. Should Canadian research emphasize development of similar longitudinal studies?
 - b. What additional knowledge about the income/health relationship would such studies reveal that we don't already know?
 - c. Would you be interested in designing and/or using the data from such studies? If, so, what types of questions would you seek to answer from such a data set?
4. Finnish and UK researchers rely more heavily than Canadian researchers on longitudinal studies of income and health.
 - a. What types of information do you think your use of such studies provides that other research designs cannot?
 - b. What greater insights into the income/health relationship do longitudinal studies reveal?
 - c. How do these insights affect the policy environment differently than evidence from non-longitudinal studies?
 - d. Overall, do you think the costs of mounting such studies are worth the benefits of knowledge gained?
5. What research designs best facilitate policy action, media attention and/or community mobilization and action? Why?

SUPPORTS AND BARRIERS TO INCOME/HEALTH RESEARCH

6. As an income/health researcher in Canada: Why have you chosen to study this relationship? What in your immediate research environment (institution) has allowed you to study these relationships? What has hindered it? What in the funding environment has allowed you to study these relationships? What has hindered it? What three changes in the Canadian research community (from colleagues, to funding, to publications, to networks) would enable your research to develop in ways that you think would yield more substantive and important findings?

POLICY INTERFACE

7. How should income/health researchers engage in policy analyses of the implications of their findings? What are the supports for such engagement? What are the barriers? How have you engaged in policy analyses of the implications of your income/health findings? With what impacts?
8. What social theories have you used to guide your policy analyses? How analytically deep should policy analyses of income/health findings be?

INCOME MEASURES

9. What measures or indicators of income do you favour using in your studies (e.g. absolute or relative income measures, relative poverty measures, poverty over time, % of income from population mean or median; or for social class, use if occupational or educational, social class groupings)? Why? Should there be a more standardized set of income measures in Canadian research? Why? What would this look like?
10. What is the more important priority in income/health research: whole population studies revealing “gradients” or targeted population studies revealing more detailed information on the impacts of poverty on the lower 20% to 40%? Why?
11. What other important measures of material inequality *are not* adequately encompassed by studies relying on income measures alone? Why are they important? How can, or should, income/health studies incorporate these?
12. Is there a role in income/health studies to locate income within a broader context of policy variables that might condition material inequalities, i.e. public services such as education, health care, housing, childcare and so on?
13. Is there a role in income/health studies to consider psychological comparisons of income adequacy, i.e. evaluations of income status relative to others, or other subjective experiences of social rank?

HEALTH MEASURES

14. Much of the income/health research uses mortality data. What health measures have you used in your income/health research? Why? Do you use or view other measures as more sensitive measures (including morbidity data) that should be used? Why? What would be needed in Canadian research infrastructure (i.e. data sets and access) that would facilitate this?
15. Much of the disease (morbidity-based) income/health research focuses on specific diseases. What are the strengths of such an approach? What are the weaknesses?

Should future income/health studies focus more on the health outcomes that are affected, or on the income and non-income material pathways that are associated with many different health outcomes? Why?

PATHWAYS

16. How important is it to develop inter-generational studies of income/health, e.g. to study the impacts of material deprivations, environmental deprivations, habits/behaviours and hazardous exposures on the health of children over their lifespan that would be associated with the lives of their parents? How might this be done in Canada? What would be required to undertake such studies?
17. For the Canadian researchers: Our analysis shows that British and Finnish income and health researchers tend to focus more than Canadians on more deeply embedded socio-structural concepts, such as social class, to context their findings, and to incorporate more of a political-economic analysis in interpreting their findings. Is this a productive area for Canadian income/health research to pursue? Why?
18. For the Finnish and UK researchers: Our analysis shows that British and Finnish income and health researchers tend to focus more than Canadians on more deeply embedded socio-structural concepts, such as social class, to context their findings, and to incorporate more of a political-economic analysis in interpreting their findings. How have you uses socio-structural concepts in your research? What types of political-economic analyses have you used in interpreting your findings? How do you think this has improved the quality of the research?

Appendix H - CONSENT FORM



School of Health
Policy and
Management,

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Liberal and
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Research Project Title: Income Health and Disease in Canada, Gaps, Needs
and Opportunities Assessment (CIHR funded)

Principal Investigators: Dennis Raphael (main PI), PhD, Professor,
Undergraduate Programme Director, School of Health
Policy and Management, Atkinson Faculty of Liberal
and Professional Studies, York University
Ron Colman, PhD. Genuine Progress Index Atlantic
Ron Labonte, PhD. Director and Professor, Community
Health and Epidemiology, University of
Saskatchewan; and Professor, Faculty of Physical
Activity Studies, University of Regina.

I understand that Dennis Raphael, PhD, Professor at the School of Health
Policy and Management, Atkinson Faculty of Liberal and Professional Studies,
York University, is conducting a study on the relationship between income,
health, and disease in Canada. I understand that this study is being carried
out as a gaps, needs and opportunities assessment to identify the
conceptualizations of individual and ecologic income dynamics and their
relation to population health in order to identify areas of needed inquiry
to further the field of study in Canada.

I further understand that I will participate in a telephone one-on-one in-
depth interview (approximately 1 hour). I understand that the interview will
be conducted by research assistant, Jennifer Macdonald. I also understand
that the interview will be tape-recorded, and that the tapes will be kept in
a safe and secure place in a locked file cabinet for five years in the
principal investigator's office. I understand that only the main principal
investigator and the research assistant will be privy to the notes taken
from my interview and they will share the notes taken from my interview with
me so I may review the interview. I agree to have selected comments from my
interview communication, with no attribution, used in the final report and
subsequent papers related to this project on gaps, needs and opportunities
in the research area of income and health. If I choose to withdraw from the
study, I understand that I have the opportunity to dispose of the tapes and
transcripts if I so choose.

Any questions I have asked about the study have been answered to my
satisfaction. I understand that, while there are no anticipated direct
benefits to me as a participant, my responses will help improve the
understanding of the gaps, needs and opportunities for the study of income
and health in Canada. I understand that I may ask now, or in the future, any
questions that I have about the study and the nature of my participation. I
have been assured that no information will be released or printed that would
disclose my personal identity, or the institution within which I work, and
that my responses will be confidential.

I understand that my participation in the study is completely voluntary, and
that my decision either to participate or not to participate will have no
effect on me in any way. I further understand that I may withdraw my
participation from this study at any time.

I hereby consent to participate in the study.

Signature of Participant

Print Name

Signature of Witness

Print Name

Appendix I - Data Tables

Table 1: How Income is Conceptualized by Canadian, UK, and Finnish Health Studies that Include Income or Its Proxy as Relevant Variables.

Conceptualization of Income and Its Proxies	Canada		Finland		United Kingdom	
	n=241	%	n=40	%	n=40	%
<i>No conceptualization of income</i>	154	64	25	63	2	5
Materialist – Individual exposures	46	19	9	22	32	80
Neo-Materialist – Social infrastructure	29	12	6	15	2	5
Social comparison	2	1	0	0	2	5
Combined conceptualization: Materialist/social comparison	10	4	0	0	2	5

Table 2: How Canadian, UK, and Finnish Health Studies Theorize the Individual and Structural Mechanisms that Mediate the Income and Health Relationship.

Theorizing of Mechanisms Mediating the Income and Health Relationship		Canada		Finland		United Kingdom	
		n=241	%	n=40	%	n=40	%
<i>No theorization</i>		43	18	3	8	7	18
Individualistic		50	21	8	27	1	2
Structural	Implicit structural approach	50	21	13	33	12	30
	Horizontal structures explicitly presented	40	16	3	8	4	10
	Vertical structures explicitly presented	24	10	10	25	8	20
	Horizontal & vertical structures both explicitly presented	34	14	0	0	8	20

Table 3: Measurement of Income, Income Distribution and Income Inequality, and Income Proxies among Canadian, UK, and Finnish Studies.

Measures of Income and Its Proxies			Canada		Finland		United Kingdom	
			n=241	%	n=40	%	n=40	%
Individual Measurements	Individual Group membership	Income	24	10	1	3	0	0
		Other group	7	3	11	28	18	46
		Combined	90	37	21	52	5	13
	Relative poverty measure		0	0	1	3	0	0
	Absolute adjusted poverty measures		4	1	0	0	0	0
	Income/poverty used as a selection variable		32	13	0	0	0	0
Distribution and Area Measurements	Income distribution		7	3	0	0	3	5
	Ecological	Income	16	7	0	0	0	0
		Other group	3	1	1	3	3	8
		Combined	15	6	0	0	0	0
	Ecological relative poverty measure		0	0	0	0	0	0
	Ecological absolute adjusted poverty measure		3	1	0	0	0	0
Studies Using a Combination of Measurement Approaches	Individual income and poverty group measures		18	8	1	3	5	13
	Ecological income and poverty measures		6	3	0	0	3	8
	Ecological and individual income		13	6	3	8	2	5
	Income distribution and other measure		3	1	0	0	1	2

Table 4: Frequency of Use of Outcome Measures Used in Income and Health Studies by Canadian, UK, and Finnish Researchers.

Outcome Measures		Canada		Finland		United Kingdom	
		n=241	%	n=40	%	n=40	%
Health Status	a) Social/community	47	20	3	7	5	10
	b) Morbidity: mental	39	16	3	7	6	13
	b) Morbidity: physical	84	35	17	43	22	53
	c) Mortality	28	12	12	3	19	45
Health Care Utilization		63	26	6	15	1	3
Health not an outcome measure		23	10	0	0	1	3
Life style	a) health-related beliefs, attitudes, and values	8	3	0	0	2	5
	b) diet, smoking, exercise, etc	36	15	7	18	2	5
Study uses more than one outcome measure		52	22	6	15	8	20
Total number of health outcomes ^{xii}		328	--	45	--	52	--

Table 5.1: The Primary Unit of Comparison Used in Income and Health Studies in Canada, Finland and the UK.

Unit of Comparison	Canada		Finland		United Kingdom	
	n=241	%	n=40	%	n=40	%
Individual	150	62	33	82	27	67
Household/Family	26	11	1	3	0	0
Neighbourhood/community	38	16	0	0	5	13
Province/region	11	4	2	5	0	0
Nation (inter-national)	3	1	4	10	4	10
More than one unit used	15	6	0	0	4	10

^{xii} Table 4 presents an event count, it therefore can not present percentages that sum to 100, as these percentages represent a percentage of studies that use a particular outcome measure either alone or in combination with others.

Table 5.2: Canadian National and Provincial Data Sets.

Name and Type of Data Set Used in 241 Canadian Studies		Frequency of usage
Canada Health Survey (CHS)		2
Canadian Community Health Survey (CCHS)		6
Canadian Institute of Health Information (CIHI) Hospital Use and Expenditures Databases		6
Canadian Study on Health and Aging (CSHA)		2
General Social Survey on Health (GSSH)		8
Labour Force Survey (LFS)		2
National Longitudinal Survey of Children and Youth (NLSCY)		29
National Population Health Survey (NPHS)		52
Survey of Consumer Finance (SCF)		2
Statistics Canada CANSIM		2
Statistics Canada Vital Statistics		18
Statistics Canada Census		39
Other Canadian national data sets, used once (see below)		22
Data sets from other countries		16
Collected own primary data / used data collected for another study		81
Province / Territory specific data sets	British Columbia	2
	Manitoba	19
	Ontario	29
	Quebec	6
	New Brunswick	2
	Nova Scotia	1
	North West Territory	5
Total count		343

Other Canadian National Data Sets Occurring Once in the Review:

Canada Health Monitor Survey (CHM)
 Canadian Cancer Registry
 Canadian Centre for Justice Statistics - Service statistics, 1989-1993
 Department of Indian Affairs and Northern Development - Basic Departmental Data
 Health and Activity Limitation Survey (HALS)
 Health Planning System (HELPS)
 Health Promotion Survey (HPS)
 International Adult Literacy Survey (IALS), 1994
 Motor-Vehicles Administration database
 National Council of Welfare - Poverty Profile, 1996
 National Enhanced Cancer Surveillance System (NECSS)
 National Pollutant Release Inventory, 1993
 National Survey of Personal Health Practices and Consequences
 Reportable Disease Information System (RDIS)
 Revenue Canada - Taxation Data (Bureau of Statistics)

Statistics Canada

-Survey of Labour and Income Dynamics

-Health Statistics, 1995

-Mental Health Statistics, 1993-94

-Income distribution data - Income Trends in Canada, 2000

Statistical Report on the Health of Canadians (ACPH), Toward a Healthy Future: Second Report on the Health of Canadians, 1999

Student Lung Health Survey, 1995-1996

Survey of Work Arrangements, 1991 and 1995

Table 5.5: Age of the Population Samples in 241 Canadian Studies.

Age	#	%	Break down	n=241	%
Children and Youth (age 0-20)	54	23	Infants (age 0-1)	6	2
			Infants through children (age 0-11)	1	0.5
			Children from age 2-11	20	8
			Adolescents/young adults (age 12-20)	10	4
			Children through to adolescents (age 5-20)	10	4
			Children through adult (age 5-65)	1	0.5
			Children with parents	6	2
Adults and Seniors (age 15+)	160	66	Adolescents/adults/seniors (age 15+)	33	14
			Working age adults (age 15-65)	83	34
			Adults and seniors (age 18+)	30	13
			Seniors (age 65 +)	14	6
Whole Population	26	10.5	Comprises mostly area based studies	26	11
Not Applicable	1	0.5	This study is a methodological appraisal of indices	1	0.5

Table 5.6: Physical and Mental Conditions.

A number of Canadian studies examine a sample populations with specific physical conditions (18%, n=42), and mental conditions (3%, n=7). The physical conditions specified are:

- pregnancy /birth related (n=9),
- myocardial infarction/heart disease (n=5),
- STDs (n=5) (HIV/AIDS, chlamydia),
- cancer (n=4) (cancer in general, lung, prostate, and breast),
- asthma/spirometry (n=4),
- crohn's (n=3),
- diabetes (n=3),
- disability status/ epileptic (n=2),
- stroke (n=1),
- hepatitis C (n=1),

-chiropractic (n=1), and
-ADHD (n=1).

Four of these studies are specific to children (Asthma, and ADHD). Twelve of these studies are specific to women (pregnancy, STDs, and Breast cancer), and one to men (prostate cancer). Two of these studies are specific to Aboriginal people (diabetes). For mental conditions, the conditions specified are: Mental health disorder in general (n=5), depression (n=1), and suicide attempt (n=1); three of these were specific to use of mental health services. One of these studies is specific to a senior population. Studies that specified behaviours were: smoking (n=2) (specific to disadvantaged women), and breastfeeding (n=1) (specific to immigrant and Aboriginal sample populations). Studies that specified populations with a specific situation were: employed (n=3) (one specific to men), employed as sawmill workers (n=1), and adult learners (n=1). Two studies that looked at populations with a physical condition are qualitative studies; however, no qualitative studies looked at populations with mental conditions.

Table 6.1: Pathways Explicated by Canadian, UK, and Finnish Researchers to Explain How Income Influences Health.

Pathways	Canada		Finland		United Kingdom	
	n=241	%	n=40	%	n=40	%
<i>No pathways identified</i>	69	29	6	15	3	7
Biological pathways	24	10	6	15	9	22
Materialist pathways	79	33	12	30	13	32
Social class-related	70	29	11	28	14	35
Psychosocial stress	54	22	3	7	4	10
Psychosocial comparison	9	4	1	2	2	5
Behavioral/cultural	67	28	14	35	7	18
Gender analysis	31	13	3	7	4	10
Political economic analysis	54	22	13	33	5	12
Selection explanation	19	8	2	5	2	5
Total pathways count ^{xiii}	407	--	65	--	60	--

Table 6.2: Summary Judgments of the Sophistication of Pathways Identified by Canadian, UK, and Finnish Researchers in their Studies of Income and Health.

Complexity of pathways	Canada		Finland		United Kingdom	
	n=241	%	n=40	%	n=40	%
Sophisticated	48	20	10	25	23	57
Intermediate	109	45	23	58	14	35
Undeveloped	84	35	7	18	3	8

^{xiii} Table 6.1 presents an event count, it therefore can not present percentages that sum to 100, as these percentages represent a percentage of studies that use a particular outcome measure either alone or in combination with others.

Table 7.1 Quantitative Research Designs used in Canadian, UK, and Finnish Studies of the Income and Health Relationship.

Temporal	Research Design ^{xiv}	Canada		Finland		United Kingdom	
		n=241	%	n=40	%	n=40	%
Longitudinal	Lifecourse (inter-generational)	0	0	0		12	31
	Lifecourse	1	0.5	3	7	6	15
	One Life-course stage	25	11	6	15	1	2
	<i>Total longitudinal</i>	<i>26</i>	<i>11.5</i>	<i>9</i>	<i>22</i>	<i>19</i>	<i>48</i>
Longer-term	Sequential cross-sectional	10	4	12	30	4	10
	Historical/ Time-lag	3	1	1	2	3	8
	<i>Total longer-term</i>	<i>13</i>	<i>5</i>	<i>13</i>	<i>32</i>	<i>7</i>	<i>18</i>
Present/Contemporary	Retrospective	10	4	2	5	1	2
	Cross sectional	139	58	15	37	7	18
	Experimental	2	1	0		0	0
	<i>Total present</i>	<i>151</i>	<i>63</i>	<i>17</i>	<i>42</i>	<i>8</i>	<i>20</i>
More than one quantitative design		11	5	1	2	3	8
Methodological Study (tests a number of research methods)		14	6	0	0	3	7
Qualitative (see Table 7.2)		23		0	0	0	0
Mixed Qualitative/Quantitative		3	1	0	0	1	2

Table 7.2: Qualitative Research Designs Used by the Qualitative and Mixed Methods Studies.

Research Design of Qualitative and Mixed Method Research Design	n=23	Canada		Finland n=40	United Kingdom n=40
		% of 23	% of 241		
Ethnographic	3	13	1	0	0
Phenomenological	9	39	3	0	0
Case Study	11	48	5	0	1
Exploratory/Grounded Theory	0	0	0	0	0
Total	23	100	9	0	0
Also uses Participatory Methods	7	30	3	0	0

^{xiv} See Taxonomy 7 b in appendix C for a description of research designs.

Table 8: Type of Policy Implications Made by Researchers in Canadian, Finnish and British Income- Health Studies, in Relation to their Findings.

Policy Implications	Canada		Finland		United Kingdom	
	n=241	%	n=34	%	n=39	%
<i>No policy implications provided</i>	86	36	21	53	18	45
Political-economic / structural / systemic change	48	20	6	15	11	28
Address social determinants	96	40	6	15	13	33
Reform health care services	43	18	3	8	3	8
Focus on lifestyle issues	40	17	5	13	2	5
Total Types of Implications ^{xv}	227	--	20	--	29	--
More than one type used	47	20	2	0.5	7	18

^{xv} Table 8 presents an event count, it therefore can not present percentages that sum to 100, as these percentages represent a percentage of studies that use a particular outcome measure either alone or in combination with others.

Appendix J – Revised Prioritization Criteria and Gaps and Needs Rating Tool and Ratings

Attention Advisory Committee Members:

Yesterday, we had a very fruitful discussion of the gaps and needs at the advisory committee meeting. Members who reviewed the gaps and needs that we (the project team) developed from the environmental scan. The members present also reviewed, revised, and weighted the prioritization criteria on which you were asked to rank the gaps and needs. The members decided that it is important to weight the prioritization criteria based on what is perceived to be most influential to the area of research on income and its relationship to population health. Weighting implies that we will multiply your rank score by the assigned weight number. The gaps and needs will then be presented to the CIHR, as you've ranked them in terms of importance to each of the four prioritization criteria areas, after averaging of your compiled scores has been complete.

Below you will find:

- Instructions
- The CIHR prioritization criteria, which you will use to rank the importance of the gaps and needs, their relative weighting.
- A word template to facilitate your ranking.
- The list of opportunities (to be reviewed)

Instructions:

Please review these gaps and needs, while keeping in mind the prioritization criteria below. Using the word template, rank on a scale of 1-5 each gap/need. One means least important. Five means most important. Note each area is weighted in terms of its importance to the field of income and health; implying your scores will be multiplied by its relative weight. You do not need to do this multiplication yourself. We will do that to save confusion.

Area 1, Science: has been given a rank of 2

Area 2, Pertinence: has been given a rank of 5

Area 3, Health Care System: has been given a rank of 4

Area 4, Strategic Importance: has been given a rank of 2

Area 5, Organizational arrangements: has been given a rank of 1 (Members uncertain of the value in ranking this area, because of lack of knowledge about the CIHR, its 13 institutes, and their CIHR investigator competitions; it therefore will not be ranked. There is no column for it on the word template).

CIHR Prioritization Criteria: In Five Clusters

Area 1 - Science (rank of 2)

- a) Potential to illuminate broader processes/principles (generalizability)
- b) Potential for significant scientific advance

Area 2 - Pertinence / of Immediate Relevance (rank of 5)

- a) Potential to improve the health of Canadians – related both to attributable "burden of suffering" and the likelihood of its substantial future reduction as a result of the research
- b) Potential to reduce current inequalities in health status - regional/ethnic/gender-related, etc

Area 3 - Health Care System (rank of 4)

- a) Potential to improve the effectiveness, efficiency and equity of the Canadian health care system
- b) Tackles emergent or increasing public health or health care system problem

Area 4 - Strategic Importance / of Longer Term Relevance (rank of 2)

- a) National competitive advantage/niche
- b) Contribution to capacity building in Canada

Area 5 - Organizational Arrangements (rank of 1) - Not rated by central and Atlantic committees

- a) Bridges across institutes and themes
- b) Unlikely to be funded through CIHR investigator-initiated competitions, given current Canadian research capacity

Gaps and Needs <i>Rank on a scale of 1-5 the importance of each gap/need corresponding to each of the five prioritization areas.</i> <i>One = least important. Five = most important</i>		CIHR Prioritization Areas					
		Imme- diate	Health Care	Science	Strategic	CIHR Organiz- ation	Overall
Training/ Capacity Building	1. Need for training in advanced conceptualizations, critical perspectives, and interdisciplinary work.	2.97	2.80	4.38	3.15	5	3.51
	2. Need a common language, to conceptualize values that can strengthen the political will to action	2.48	2.38	3.00	3.05		2.73
	3. Need people who work in the health sector to incorporate addressing poverty and income inequality into practice.	4.03	4.10	1.88	3.38		3.34
Data and Measures needs:	4. Need for longitudinal data and systems for collecting these data.	3.60	3.00	4.50	3.22	4	3.66
	5. Measures of socioeconomic status including education and occupational status need to be incorporated into all health research data collection. - This would include routine primary data collection related to births, deaths and hospitalizations. - Need measures of accumulated wealth.	3.63	2.90	4.37	3.12	3	3.51
	6. Data linkages - Need to routinely link from health related data sets such as census and surveys. - Data sharing across provinces is needed. - Need to blend Statistics Canada survey of Consumer Finance with available health information.	3.67	2.75	4.23	4.03	5	3.86
	7. Need to resolve problem associated with privacy, confidentiality, to assure access to basic information.	2.53	2.05	3.50	2.63		2.68
	8. Need to research the performance of measures such as self reported health and other measures used in the SF36 (an international health survey).	2.00	2.00	2.33	1.83	2	2.05

Gaps and Needs <i>Rank on a scale of 1-5 the importance of each gap/need corresponding to each of the five prioritization areas.</i> <i>One = least important. Five = most important</i>		CIHR Prioritization Areas					
		Imme-diate	Health Care	Science	Strategic	CIHR Organiz- ation	Overall
<i>Data & Measures:</i>	9. Need to collect more surveillance data on health in relation to income and social status.	2.90	2.40	3.53	2.80		2.91
	10. Need more regional and sub regional analysis, for example taking advantage of the new health region analysis available in the CCHS to expose health differentials.	3.83	2.75	3.38	3.12		3.32
<i>Research Areas of Needed Inquiry:</i>	11. Need to develop broader understanding of the structural determinants of health.	3.27	3.15	3.42	3.20	5	3.41
	12. Need to do more research of the lived experience of people on low incomes and how income affects other social determinants of health. - This includes more qualitative research uncovering shared social values and using more subjective information.	3.70	2.90	3.32	3.28	4	3.39
	13. Need for participatory action research (PAR) projects that seek to address poverty related issues (where participants are involved in the research).	4.08	3.05	3.68	3.32	4	3.61
	14. Need to research intervention studies. - i.e. what would happen if we increased people's incomes?; or - i.e. what is the impact of intervention x on population y ?	3.47	2.68	3.62	2.97	3	3.21
	15. Need to perform more research on neighbourhood structure and how it interacts with income and availability of resources for social infrastructure to influence health. - e.g. social capital, and strengthening communities.	3.12	2.53	3.62	2.87		3.08
	16. Need for interdisciplinary research involving economists and population health researchers, amongst many other disciplines.	3.40	2.25	2.97	2.73		2.91
	17. Need more information on ethnoracial communities developed with community participation; linguistically and culturally appropriate measures, survey tools and indices; and integration of alternate cultural paradigms (beyond eurocentric approaches)	3.45	3.00	3.77	2.70	3	3.23

Gaps and Needs <i>Rank on a scale of 1-5 the importance of each gap/need corresponding to each of the five prioritization areas.</i> <i>One = least important. Five = most important</i>		CIHR Prioritization Areas					
		Imme-diate	Health Care	Science	Strategic	CIHR Organiz- ation	Overall
<i>Research Areas:</i>	18. Need for cost-benefit analysis to explaining how poverty effects health status and how it is costly to the health care system.	3.38	3.18	3.23	2.67		3.11
	19. Need for attitudinal research; how do the general public (people who are not poor) view poverty and health? This in turn affects the way public and professional interact with people who live in poverty, and the way services are delivered.	2.32	2.33	2.30	2.10		2.27
<i>Policy Areas of Needed Inquiry:</i>	20. Need to investigate the disconnect between research and health policy (e.g. informing recent initiatives in chronic disease, federal strategies to support “Healthy Living,” heart health work, diabetes strategy, etc.)	3.65	3.65	3.32	3.20		3.46
	21. Need attitudinal research on policymakers: How do they react to such research, when/how the research has had some impact,	3.65	3.23	3.18	3.47	4	3.45
	22. Need to investigate the thresholds for poverty? - How can we develop policy interventions without understanding the impact of the different dimensions of poverty more broadly? - What do people need to feel as though they can meaningfully participate in society?	2.03	2.33	2.10	1.80	1	1.95
	23. Need for critical policy analysis that systematically addresses the context, process and content of policies. - to understand the health impact of public policy process. - to understand political social and economic forces that influence policy development.	3.13	3.43	3.10	2.80		3.11
	24. Need a better understanding of role of media discourses on poverty, inequality and health on public understandings of, support for, ameliorative policies.	2.25	2.20	2.17	2.15	2	2.18

Gaps and Needs <i>Rank on a scale of 1-5 the importance of each gap/need corresponding to each of the five prioritization areas.</i> <i>One = least important. Five = most important</i>		CIHR Prioritization Areas					
		Imme- diate	Health Care	Science	Strategic	CIHR Organiz- ation	Overall
<i>Policy Areas of Needed Inquiry:</i>	25. Need to know what macroeconomic and policy interventions maximize reductions in poverty and income inequality? -How do certain policies influence the incidence of poverty but also the effect of poverty on health? -Track how changes in tax policy entitlement to public programs and social goods actually change people's real income rather than command over resources?	4.07	3.10	4.28	3.68	5	3.94
	26. Need a better understanding role of non-income transfers (tax-funded welfare benefits such as universal health care, education, recreation, etc.) on poverty/health and income inequality/health relationship. Why is income inequality in Canada and other OECD countries not show the same gradient with mortality as it does in US, buffered by non-income benefits). e.g. - In terms of different income security programs in different countries, what effect do they have on health outcomes across countries/jurisdictions? - Looking at the associations between measures of income and measures of health at the individual level, and how that association differs between countries.	3.42	3.40	3.57	3.77	3	3.50
<i>Pathways / Mechanisms Knowledge Gaps:</i>	27. Need to come up with a way to sort out the process of which income and SES variables are associated with health i.e. how behavioral and SES risk factors work together to impact health outcomes?	3.42	2.70	3.60	3.55	3.3	3.37
	28. Need to understand what is the character of societies that are and are not able to buffer the relationship between low income and poor health? -E.g. Little is known about how social formations (groups, organizations, mobilizations, networks, unions) that buffer poverty/inequality negative impacts on health/quality of life even in the absence of macroeconomic or policy changes (what makes life healthier for the poor, even if we don't necessarily provide them with more income?)	3.37	2.95	3.70	3.48	2.5	3.34

Gaps and Needs <i>Rank on a scale of 1-5 the importance of each gap/need corresponding to each of the five prioritization areas.</i> <i>One = least important. Five = most important</i>		CIHR Prioritization Areas					
		Imme-diate	Health Care	Science	Strategic	CIHR Organiz- a-tion	Overall
<i>Pathways / Mechanisms Knowledge Gaps:</i>	29. Need to understand how much does the poverty cycle create habitual behaviours and how much of it is responsive to monetary changes?	2.92	2.43	2.57	2.43	2	2.55
	30. Need more information on the effects of people's movement in and out of poverty and the effects of poverty over time.	2.48	2.33	2.98	2.43		2.55
	31. Need to better theorize pathways, develop different research methodologies to do so. -What are the mechanisms that influence how income influences health? Is it material deprivation or a kind of bio-psycho social process / mediated through, psychological comparison, social capital/cohesion, social inclusion/exclusion -- i.e. psychosocial experiences of inequality may negatively affect health (and does it negatively affect quality of life) separate from other pathways through which income inequality or poverty “gets under the skin.” -What is the relative contribution of life course factors vs. current factors to produce the gradient?	3.35	2.58	4.10	3.38	2.6	3.35

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