

Impact of Urban Environments on Youth Health: Scoping Paper

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Objectives of This Scoping Paper

The Canadian Population Health Initiative has commissioned the Social Program Evaluation Group to scope out the state of research knowledge and policy experience related to the impact of urban environments on youth health. This paper will:

- 1) Identify existing research that links urban environments with youth health and provide an overview on the breadth and types of information available relating to the impact of urban environments on youth health and well-being.
- 2) Categorize the findings of the literature search using a broad determinants of health framework and incorporate a life course perspective.
- 3) Scan existing program and policy responses and identify evaluated programs and policies that address the impact of urban environments on youth health.
- 4) Identify and discuss whether the existing literature supports the need for further investigation on the impact of urban environments on youth health and whether there are specific topics that warrant thorough systematic review.
- 5) Identify gaps in the existing research literature and priorities for future policy relevant research.

I. Introduction

a. Life Course and Health of Adolescents

A large proportion of Canadians are in transition from one life stage to another (i.e., children, adolescents, retirees, elderly). A life course perspective on health, adding to the population health view of specific groups of individuals with particular health risks, suggests that the element of time is also important in health. Time-related changes in biological, social and productive capacities across the human lifespan imply a fundamental process of health development, rather than just a fixed series of health states. The health issues affecting those during rapid transition states are inevitably more complex than those experienced at stable times due to the interaction of biological, social and emotional factors.

Adolescence is a time of experimentation as young people begin to exert their independence. During this stage, risk-taking behaviour can be viewed as a vehicle by which youth assert their individuality and begin to make the transition to adult status in various ways. Biologically based theories of development attribute risk-taking behaviour to genetic predispositions and hormonal changes that are mediated through pubertal timing. Psychological theories suggest that sensation seeking, which reflects a need for varied, novel and complex experiences, encourages youth willingness to take physical and social risks. Youth often believe themselves to be invulnerable, a rather optimistic belief that harm will never come to oneself. However, these perceptions and behaviours do not usually occur in isolation and are often associated with peer social group activities, some of which lead to the development of unhealthy social norms.

Developmental models that recognize the dynamic mechanisms of transition may be useful in understanding risk taking during adolescence. Several such models have been identified: cumulative events or simultaneous change, accentuation, and latent/trajectory/pathway models and these will be discussed later.

Utilizing an alternative approach of positive health development, Raphael (1996) presents a set of health goals for adolescents that include:

- (a) Making a successful transition from childhood to adulthood. Transition involves achieving independence, adjusting to sexual maturation, establishing cooperative relationships with peers, preparing for a meaningful vocation, achieving a set of basic beliefs and values, increasing autonomy and industry and participating in community life (Conger, 1991; Peterson, 1988).
- (b) Coping and well-being which involve making healthy choices related to nutrition, exercise, tobacco and alcohol and drug use, and sexuality.
- (c) Absence of physical and mental illness as expressed by mortality and morbidity indicators, for example, physical (obesity) and mental disorders (depression) (Offord, Boyle & Racine, 1989).

- (d) Achieving positive health behaviours, which include health-enhancing and risk-avoidance behaviours, to address the concern that most adolescent health problems are due to injury and violence as well as risk-taking lifestyles that eventually affect health (U.S. Department of Health and Human Services, 1991).

This view of adolescent health includes the concepts of well-being and resiliency, or the ability to cope with the ups and downs in life and to learn from these experiences. However, regardless of what researchers and practitioners use as a model of health development, adolescents create their own definitions. The quality of the relationships which adolescents experience at school, at home and in their communities determines how they feel about themselves, their prospects for the future, and how they cope and adjust to challenges in their lives. Health development, like learning, in adolescents is an expressive, creative process that is connected to youth values, beliefs, experiences, circumstances and locations.

It is generally agreed that there are a number of steps that must be taken to develop a clearer understanding of adolescent health. First, analysis needs to assume a life course perspective that portrays adolescence as a stage between childhood and adulthood that everyone experiences, not as a separate 'population' factor such as gender, race, ethnicity, or social class. Second, analyses need to examine relationships between various dimensions of basic social inequality (SES, gender, ethnicity, disability, sexual orientation) and adolescent behavioural risk and psycho-social resiliency factors; and between these same dimensions of inequality and both adolescent physical and mental health outcomes. Third, the spatial determinants of health inequality (e.g., urban-rural, regional, indigenous reserves) need to be examined for area health effects.

b. Why are Place and Setting Important in Health?

In the 1990's, Canada and other countries began to support a broad 'population health' concept which described the physical, economic, and social determinants that created inequalities in health among an entire population (Evans, Barer & Marmor, 1994). This perspective recognized the role of other factors in addition to genetics, health services and behavioural choices on health, in particular, the influence of the many environments in which we live. Thus, determinants of health are inter-related and include: income and

social status, social support networks, education, employment and working conditions, safe and clean physical environments, biology and genetic make-up, personal health practices and coping skills, childhood development, and health services (Health Canada, 1994). In later years, the 'population inequalities' approach specifically focused attention on those groups most at risk of poor health and thus gender and culture were added to the list of health determinants (Bhatti, 2002). Overall, through the population health movement, there has been a conceptual leap from prevention, which emphasized individual risk reduction, to promotion of health equity in populations with an emphasis on determinants, or structural settings and conditions, that contribute to general health and well-being (Ziglio, Levin, & Bertinato, 1998).

From the focus on physical environments has arisen the suggestion of 'place and setting' as an organizing feature for health studies that might allow both coherent conceptualizations of multiple influences on health, as well as a possible locus of action for policy interventions.

Urbanization is likely the single most important demographic shift worldwide during the past century. At the beginning of the nineteenth century, only 5% of the world's population was living in urban areas. By the end of the twentieth century, about 46% of the world's population was living in urban areas (Brockerhoff, 2000; Guidotti, de Kok, Kjellstrom, & Yassi, 2001). There are now approximately 50,000 urban areas in the world and almost 400 cities containing a population of one million or more people (Satterthwaite, 2002). By 2007, the growth of cities will establish urban dwellers, for the first time, as an absolute majority of the global population. In Canada, an ever larger proportion of the population resides in urban areas. In 2001, there were 913 distinct urban areas¹ (Statistics Canada (a), 2006) which held 79.7% of the population (Statistics Canada (b), 2002), up from 77.9% in 1996 (Statistics Canada (c), 2001). In Canada, population rates of cities are increasing in certain provinces, principally due to external immigration and internal migration. In the western provinces, economic and social-cultural factors attract many people, including youth, from other less fortunate regions.

¹ Urban areas contain at least 1000 people with a population density of no less than 400 people per square kilometre (Statistics Canada (d), 2006).

c. Function, Structure and Dynamics of Cities

Since the earliest origins, urban areas have performed three separate critical functions – the creation of sacred space, the provision of basic security, and as host for a commercial market. But there are two contrasting views on the historical development of these functions, such that cities are suggested either as economically or socio-culturally initiated² (Reader, 2004).

The first view assumes that an economic transformation occurred as farmers, using a variety of seeds in various terrains, began to produce more than they could consume. Certain community members became specialized artisans to provide labour-saving devices, some of which were related to managing domesticated livestock. As food stockpiles grew and labour specialization increased, urbanites had to learn how to coexist and interact with strangers from outside their clan or tribe. This required them to develop new ways to codify behavior, to determine what was commonly acceptable in family life, commerce, and social discourse. Religion is assumed to have arisen to achieve this purpose of social control (and thus included an educational component long before schools began).

But a socio-cultural view of the evidence suggests that the crucial developments in urbanization occurred in reverse order – that is, the cities came first and advances in farming technology came only as a response to the demands of the cities. This second view assumes a profound, mass psychological development when hunter-gatherers initially domesticated certain wild animals and subsequently settled in one location to raise crops and livestock. Around this time, religious beliefs shifted from animistic, nature types of worship to mono-deity types which required a priestly class to pacify the gods who were angry that the ‘natural order’ of life had been breached. Sharing religious practices and beliefs thus necessitated concentrating people together to ensure their proper indoctrination.

From either view, having developed a highly productive agricultural system that kept the cities fed and functioning for thousands of years, the success of cities brought them face to face with a problem: a well-fed population inevitably grows to the limits of

² We draw on Reader (2004) and Kotkin (2005) for their views on cities.

available space and resources. Securing the food supply pushed cities into war and conquest, but also inspired significant advances in farming, transport and government.

In contemporary times, many youth are attracted to cities as an opportunity for personal economic growth. As well, many youth are attracted to cities for social and youth culture contacts. But the functions of modern cities are also in transition. Traditional functions of manufacturing and financial services are evident in some cities. But with global economic growth shifting elsewhere, including moving high-end services to developing countries, some cities in the advanced world increasingly define their role as cultural and entertainment centers – e.g., Las Vegas, Orlando, Venice. Instead of attempting to retain middle-class families and factory jobs in economic competition with the periphery, some urban regions are placing increased focus on such concepts as “trendy”, “hipness,” and “lifestyle” as the keys to their survival – cultural concepts which attract youth in transition. Focused largely on boosting culture and constructing spectacular buildings, such urban governments may neglect more mundane industries, basic education, or infrastructure. This neglect of basic services may impact on youth health by hindering the chances adolescents have of gaining quality employment that leads to affluence, which may affect health outcomes (see Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997).

The traditional geographic definition of an urban area regards population size and density as the key structure dimensions (Glaab & Brown, 1976; Wirth, 1938). However, for other scientists, the most meaningful difference between a village and a city has nothing to do with size. They emphasize the measure of social and economic differentiation, or heterogeneity within the communities instead. Cities are increasingly made up of a cosmopolitan elite and a large class of those who service their needs, usually youth or immigrants at low wages. Traditionally, two-parent families were the basic social unit living in the city, but now, single person, yuppie and communal social units are increasing. Finally, on a global basis, various gender discriminations have skewed the sex ratio, leaving cities with an excess of unattached young males with lots of time on their hands.

Population density and social contact are key parameters of the urban dynamic. Though we may be only vaguely aware of who lives next door, we mingle shoulder-to-shoulder with many strangers on the bus and in the supermarket. The sheer size of a city weakens the constraints of proximity that otherwise control social behaviour. In smaller communities, a web of personal interactions and shared views makes it difficult to offend without sanction, whereas the social rules and regulations of city life are impersonal and easy to defy – another attraction to youth seeking independence.

Transportation is an extremely important factor in the form and character of cities. The area and facilities for moving goods and people around, especially youth who have less money for transport, is a key determinant of youth-friendly cities.

d. Urban Areas and Health

When people initially began to congregate in large communities, infectious diseases could become endemic. Later, migration and trade gave the potential for even wider distribution of disease. Until comparatively recently, every large city in Europe and North America was a potential death trap, with death rates exceeding birth rates by a considerable margin. It was only during the nineteenth century, as medical science and civic planners managed to conquer urban disease, that large cities could sustain numbers and actually begin to generate an increase in population from among their own inhabitants. However, as cities assumed a greater role, population density, numbers of marginalized populations, environmental pollution, and crime frequently increased, resulting in worse health in cities than outside of cities in many countries (Lund, 1999; Sheard & Power, 2000).

More recently, cities have become centres for advanced health care – hospitals have become the ‘cathedrals of the twenty-first century’. Access to certain health services is available only in large cities – thus providing a potential benefit to urban dwellers over rural citizens. For example, aggregate health as measured by life expectancy, all-cause mortality, and many other health indicators, is actually better in many urban areas than it is in non-urban areas (Population Reference Bureau, 2004). Urban areas are also better serviced in terms of emergency response times, which is particularly relevant to youth health given their high rates of risk behaviour and injury (Pickett et al, 2006).

Cities have also become centres for psycho-social health interventions – both curative and preventive, formal and non-formal. However, these interventions often merely help individual people to adapt to urban conditions, rather than change the conditions themselves.

Realizing the overwhelming cost and downstream nature of this approach, some cities are taking a broader 'environmental' view on how to affect health. Recreation, safety measures, urban design, living standards, security, and control of noise and pollution are all assumed to have a 'health benefit' to society and are promoted. An emphasis on 'open, green space' reflects the importance given to healthful, out-of-doors recreation as a counter to the intensity and stress of modern industry and commercial life.

Spaciousness (or non-proximity, which is to some degree a contradiction of the urban definition) has become a key concept in urban health, but requires changes in both city function and density to achieve.

Some have serious concerns that a predominantly urban society, with these biological, psycho-social and environmental constraints on health, may have fundamental limitations. For example, could environmental pollution, economic pressure and the psycho-social stresses of urban life reduce sperm counts, adversely affect ovarian function and generally make it more difficult for people in cities to have children? Some Canadian cities appear to be taking these concerns seriously. In a world-wide study in 2002, Calgary was at the top of the environmental rankings (up from 39th previously), regarding levels of air pollution, the efficiency of waste disposal and sewage systems, transportation and general cleanliness. However, Vancouver dropped from 3rd to 17th overall in the same period.

One assumption in this critique is that urbanization has created health problems, rather than provided a basis for solving them. As John Reader (2004) notes:

There is a tendency in the developed world for people to look upon cities as inherently bad, or at best necessary evils...Admittedly, the city is different in that it was assembled by the conscious direction and effort of people...but who is to say that the complex cooperative behaviour required of people as they construct, inhabit

and maintain cities is not equally instinctive, equally directed to the good of the whole – which in this case means ‘advancing civilization’? (p. 8)

e. Why is it Important for CPHI to Study Urban Adolescent Health?

This Introduction has attempted to link key concepts of life course and urban development. Adolescence is a transitional stage in development – cities are also ‘settings in transition’. For a variety of developmental, economic and socio-cultural reasons, youth are attracted to cities as a setting for the realization of their goals (1;2). At the same time, cities are increasingly relying on youth for their re-vitalization and to increase their capacities to adapt to global influences. Thus, a symbiosis is present that demands nurturing and understanding.

We consider urban health research to be the explicit investigation of the relation between the urban context and population distribution of health and disease. Urban health, then, concerns itself with the determinants of health and diseases in urban areas and with the urban context itself as the exposure of interest. As such, defining the evidence and research direction for urban health requires that researchers and public health professionals pay attention to theories and mechanisms that attempt to explain how the urban context may affect health. As well, research methods that can better illustrate the relation between the urban context and health are needed.

The following table illustrates various urban functions, with potential health outcomes for adolescents.

**Table 1. Urban Systems and their Impact on Youth Health
(adapted from Frug, 1998)**

System	Urban Functions	Health Outcomes for Youth
Schools/ education	Health and physical education, school health services, school safety, food programs, environmental protection	Injuries, chronic disease management, nutritional status, fitness
Social services/human resources	Safety net programs such as public assistance, food and Medicaid, child protection, family support	Health care utilization, nutritional status, family violence, mental health
Police	Prevent interpersonal violence, reduce substance abuse, control community disorder, prevent and control disasters	Injury, homicide, community conflict
Courts/jails/ Probation	Correctional health services, discharge planning, jail-based drug treatment and violence prevention services	Tuberculosis, violence, drug use, use of mental health services
Fire services	Control and prevention of fires, building inspections	Fire-related injuries and deaths, community abandonment,
Housing	Regulate housing conditions, maintain public housing	Lead poisoning, asthma control, hypo and hyperthermia
Homeless services	Shelter and health and social services for homeless	Substance use, infectious diseases, various pediatric conditions
Parks and recreation	Provide access to safe opportunities for exercise and recreation	Physical fitness, obesity, exposure to pollutants, perceptions of community well-being
Sanitation	Remove trash and dispose safely, encourage recycling, control pests	Exposure to pollutants associated with solid waste, perceptions of community well-being
Environmental protection/ water supply	Control and reduce air, water, soil and noise pollution	Exposure to variety of pollutants
Streets and highways/traffic control	Manage traffic, maintain roadways	Injuries and deaths related to motor vehicles, exposure to air and noise pollution
Mass transit	Develop and manage busses, subways, and other modes of transit	Physical activity, motor vehicle injuries and deaths,
Consumer protection	Regulate food and other markets, educate consumers	Food-related illnesses, access to tobacco and alcohol, consumer product injuries or illnesses
Economic development	Increase employment opportunities, manage adverse health effects of development projects	Household income, exposure to project-related pollution

Human rights	Monitor and control discrimination and stigma	Injuries and mental health impact of bias-related attacks, level of social support for marginalized populations
Zoning and urban planning	Siting of undesirable or unhealthy facilities, managing population density	Exposure to facility-related pollutants, perceptions of community well-being

Beyond the relationship of urban systems to general health, adolescent health is also influenced by youth-specific social systems that vary according to their urban/rural context. The following table addresses some social system factors that complement the urban functions.

Table 2. Social Systems and their Impact on Youth Health (McLaren, 2002).

System	Social System Factors	Youth Health and Development Outcomes
Family	Parenting style (warmth, involvement), family structure, conflict resolution style, substance use, marriage stability/post-separation amicability, family income.	Social, academic, emotional, anti-social, interpersonal skills.
Peers	Relationship quality (emotional closeness, victimisation by friends), characteristics of peers (prosocial beliefs/engagement), parental support relative to peer influence, composition of peer groups (i.e. gender).	Academic, coping skills, cognitive skills, loneliness, involvement in pro/anti-social activities.
School	School climate (teacher support for, and expectations of, students, emphasis on progress versus competition), organization (school size, streaming, resources), transitions between schools, balance between study and leisure,	Academic, social, developmental, age at first pregnancy, association with anti-social peers/activities.
Work/Career	Length of schooling, parent education, father's occupation, gender, urban/rural, family income, current enrolment in school.	Financial, psychological, academic, coping skills, substance use, criminal behaviour, family relations.
Neighbourhood /Community	Learning opportunities/experiences, family support, neighbourhood income, occupation of residents, neighbour relations and altruism, diversity, dilapidation/land use.	Academic, emotional, substance use, criminal behaviour, age at first parenthood, stress, association with anti-social peers/activities, /educational career success, sexual risk-taking.

Clearly, there is a need for research on both of these mechanisms, which will increase the likelihood of benefits to both youth and urban authorities.

II. Methodology

In recent years, scoping studies have become a popular method of literature review. Arksey and O'Malley (3) have published the first methodological framework for scoping studies. The authors point out that scoping studies map relevant literature in a field of interest, achieving both in-depth and broad results. Unlike systematic reviews, scoping studies do not assess the quality of included studies nor synthesize evidence or aggregate findings from different studies. Instead, scoping studies present an overview of all reviewed materials, regardless of study design. Aspects of Arksey and O'Malley's approach are used for this scoping paper which reviews programmatic and policy initiatives, as well as research. Findings from this scoping study will be categorized, with some observations drawn, using an urban health framework discussed in detail below.

a. Research Questions

Two key research questions are addressed in this scoping paper: 1) What is known from the existing research literature that links urban environments, in Canada and around the world, with youth health and well-being? 2) What is known of existing program and policy responses, in Canada and elsewhere, that address the impact of the urban environment on youth health? Answering these questions will allow CPHI to identify specific topics requiring further investigation, as well as topics that warrant more thorough systematic review.

b. Definitions

'Adolescence' - The main focus of this scoping paper is young people aged 12 through 18 years. This time period represents the onset of adolescence, the middle years of physical and emotional changes, as well as late adolescence when important career and life decisions are starting to be considered. Sources using other definitions of adolescents are not included in this scoping paper. Additionally, it should be noted that

international sources often use the UN Convention on the Rights of the Child definition of 'child' as those aged 0 – 18 years.

'Health' encompasses all aspects of psychosocial and physical well-being as defined by the World Health Organization (4): "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

Defining the 'urban environment' for this scoping paper is a challenge, as highlighted by Vlahov and Galea (5). There is currently little consensus among international bodies as to what may be referred to as urban. Definitions of urban also differ by country, such that quite different settings are classified as urban or non-urban. This should be kept in mind as sources using different definitions of urban are presented in this paper.

Rural health, urban disaster preparedness, occupational health, community economic development, and healthy weights and related topics are not addressed in this scoping paper.

c. Identifying Relevant Research, Policies and Programs

Existing research, programs and policies linking urban environments with youth health were identified using the following methods: electronic database and index searches, book catalogue searches; reference list reviews; hand searching of key journals; internet searches; and key informant interviews. As acknowledged by Arksey and O'Malley (3), the scoping method is iterative and not linear, requiring researchers to redefine search terms as familiarity with the literature is increased. Various combinations of the keywords "youth," "health," "urban," "environment(s)," and "adolescent" were searched.

Electronic Databases and Indexes

Where available, database-specific controlled vocabulary (i.e. Medical Subject Headings, Emtree) was used, followed by natural language search terms. Foreign language materials were excluded, with the exception of articles with English abstracts, due to the time and cost associated with translating materials. Publications dates were not limited in an attempt to capture all relevant references. Literature sources published up to July 2005 were captured. Searches were conducted on the following databases:

- MEDLINE - health sciences journal literature.
- HealthSTAR - health services, technology, administration, and research.
- CINAHL - nursing, occupational therapy, physical therapy and other allied health fields.
- EMBASE - biomedical sciences.
- PsycINFO - psychology and related disciplines.
- ERIC - education.
- GEOBASE - ecological and social geography.
- Sociological Abstracts - sociology and related disciplines in the social and behavioral sciences.
- Urban Studies Abstracts - urbanization, urban design, land planning, transportation, urban economics, social and public services.
- Cochrane Systematic Reviews (EBM Reviews) - systematic reviews of the effects of healthcare.
- Campbell Collaboration - systematic reviews of studies of the effects of policies and practices in education and the social and behavioral sectors.

Reference List Reviews

Key sources were selected from the above searches. Reference lists from these sources were then reviewed to identify related articles of interest not captured in the above search.

Hand Searching

From the database searches, several key journals emerged: Environmental Quarterly, Adolescent Health, Journal of Adolescence, Environment and Urbanization, and Journal of Urban Health. Hand searching of the electronic table of contents of these journals was conducted to identify relevant articles that may not have been indexed in the electronic databases.

Book Catalogues

Amicus (Library and Archives Canada), The National Library of Medicine, Library of Congress, and the British Library book catalogues were searched to identify relevant publications.

Internet Searches

Gray literature was searched using an on-line internet search engine (Google) and a science-specific search engine (Scirus). As well, Social Care Online (6), a UK database of social care information was also searched.

Key Informants

Research team members contacted Trudy Harpham PhD at the London School of Hygiene and Tropical Medicine, University of London. A world leader in urban health research, Dr. Harpham is an urban geographer whose work focuses on public health with a particular focus on the social determinants of urban health.

d. Resource Selection

The above search strategy generated a total of 722 references. An initial review of these abstracts demonstrated that the search had produced some resources not appropriate for this scoping paper, therefore post hoc inclusion and exclusion criteria were refined. The main inclusion criterion required articles to present a distinct link between youth, health, and urban locations. A group of articles that focused solely on urban youth education, employment, and legal issues, without a direct health link, were thus excluded. A second category of excluded articles focused on issues specific to developing countries, such as access to clean water and sanitation. Following application of these inclusion and exclusion criteria, 106 references remained.³ The findings section of this paper highlights these key articles using a descriptive-analytical approach.

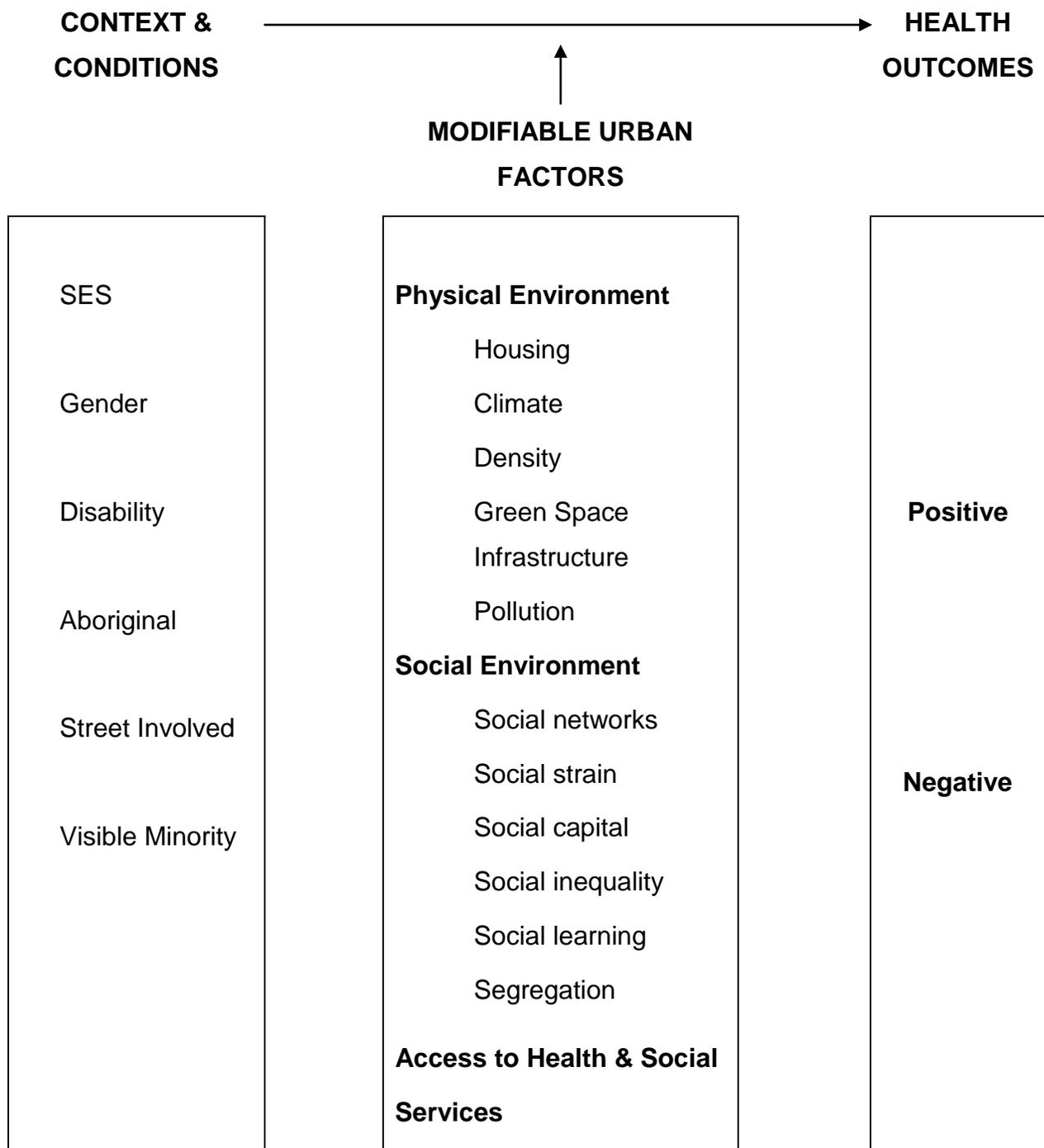
³ Key resources are identified by number and are listed in the appendix (i). General bibliographic references are identified by author – date are also listed in the appendix (x).

e. Urban Health Conceptual Framework

A framework (Figure 1) containing components of Galea & Vlahov's conceptual framework for urban health (7;8) was refined to categorize the research, program, and policy findings for this scoping paper. While other frameworks were utilized (e.g., Schultz et al. 2004) to a lesser degree, Galea & Vlahov's framework was adapted for the general basis for this paper. Developed from a population health perspective, our framework groups key modifiable factors affecting health in the urban environment into three broad categories that generally reflect mechanisms for health development: the physical environment, the social environment, and access to health and social services. Galea and Vlahov (7) view these urban living conditions as the primary modifiable determinants of health for urban dwellers, and thus amenable to targeted interventions by the health sector. The urban physical environment includes the built environment, infrastructure, pollution, access to green space, urban climate and others. The urban social environment includes social networks, social capital, and social support. The urban economic environment (e.g., employment, poverty) is encompassed in the social inequality section⁴. Access to health and social services is categorized as both formal and as informal, such as availability of individual or family resources. (A number of factors in these categories yielded no articles related to youth health.) Contexts (e.g., poverty, street-involved) and conditions (e.g., disability, aboriginal) are addressed for each of the urban characteristics, as well as their direct association with positive or negative health outcomes.

⁴ Although economic development opportunities are clearly key in facilitating health, our mandate was to investigate issues, programs, and policies that principally involved the health sector. For example, programs to deal with poverty-wealth tensions would be of more interest to health authorities than policies intended to attract new investments in the economy.

Figure 1. Urban Youth Health Framework



III. Findings

The vast majority of research, program, and policy literature on this topic conceptualizes the young person in the urban environment as under-privileged and “at risk”(9). This narrowing of the literature by a focus on specific conditions and contexts that are not very modifiable, specifically ethnicity/race and socioeconomic status, is suggested by Lobach (10) to be a pervasive problem in the large body of American literature. Lobach reminds readers that not all disadvantaged young people are urban, and not all urban young people are disadvantaged. Additionally, a great deal of literature merely describes the health status and behaviours of youth in the urban setting rather than investigating the associations, or the mechanisms, between the urban environment and youth health. Furthermore, there is little evaluative research available regarding effectiveness of programs aimed at addressing the specific health needs of urban adolescents. Findings are presented in the following order for each section of our framework: general information on the urban health mechanisms; youth-specific mechanisms; evidence from urban-rural, inter-urban and intra-urban studies; programs and evaluation.

a. Physical Environment

The health mechanisms of the physical environment are relatively straightforward. However, their specific effects on youth health concerns such as those related to independence, are under-researched.

i. Built Environment and Access to Open Space

The human built environment can influence both physical and mental health. Empirical evidence about the relation between the built environment and health conditions includes a focus on asthma and other respiratory conditions, injuries, psychological distress, and child development (Evans, Wells, Chan, & Saltzman, 2000; Krieger & Higgins, 2002; Northridge, Sclar, & Biswas, 2003). Specific features of the built environment, including density of development, mixed land use, scale of streets, aesthetic qualities of place, and connectivity of street networks, may affect physical activity (Handy, Boarnet, Ewing R, & Killingsworth, 2002). In turn, low levels of physical activity are a well-established risk factor for cardiovascular disease and all-cause

mortality in urban areas (Diez-Roux, 2003; Pate, Pratt, Blair, Haskell L, Macera, et al., 1995). Urban design may also affect health behaviors, crime, and violence rates (Berrigan & Troiano, 2002; Newman, 1986; Sampson, Raudenbush, & Earls, 1997), suggesting close interactions between urban physical and social environments. Recent work has shown that living in areas with walkable green spaces, as opposed to living in areas without walkable green spaces, was associated with greater likelihood of physical activity in older Australians (Booth, Owen, Bauman, Clavisi, & Leslie; 2000).

With respect to adolescence, providing opportunities for youth to establish and maintain social networks can be enhanced or detracted by the physical environment. Eubanks Owens (11) surveyed and observed Australian students in grades 9 – 12 to determine their most valued outdoor places. Developed parks were most valued, with outdoor places at their own homes or at a friend's home also being important. The key reason these outdoor places were valued was for social purposes - being with other youth. The authors suggest that city planners and policy developers include places for adolescents to "hang out" with friends in the design of public spaces.

In the book *Urban Sprawl and Public Health*, Frumkin et al. (12) suggest modern suburbs do not allow for the normal development and exploration of older children, i.e. adolescents. Neighbourhoods should promote connectivity and provide safe pedestrian infrastructure, as well as opportunities to interact with many kinds of people. Frumkin suggests that sprawling neighbourhoods limit social capital.

Similar concerns were highlighted in a presentation at the Symposium on Preventing Child Exposure to Environmental Hazards: Research and Policy Issues by Henry Holmes (13) in 1994. Holmes states that transportation and land-use policies are critically important tools in shaping healthy communities and cities for young people.

In April 2005, The Centre for Sustainable Transportation released a report entitled *Child- And Youth-Friendly Land-Use and Transport Planning Guidelines for Ontario* (14). Twenty-seven guidelines were presented for municipalities and other agencies to provide more child- and youth-friendly transport and land-use planning. The report highlighted the associations between transport structures and young people's health: vulnerability to toxins due to young people's size and stage of physical development;

effects of traffic-related poor air quality; traffic related fatalities and injuries; effects on emotional and behavioural development; physical activity and overweight/obesity; and links with land use, i.e. urban sprawl.

Program evaluations

A number of programs and policies have addressed the built environment and open spaces. The Berkeley Youth Alternatives Youth Employment Landscape Program and Community Garden Patch were two programs that involved teens in the planning and maintenance of urban open spaces (15). An evaluation of these programs found that the teens benefited by gaining employment skills, self-esteem and life skills, team building experiences, education, safe outdoor alternatives, and community involvement.

Karen Malone (16) examined public space and city streets as areas where social values are asserted and contested. The author reflected on the failure of two main Australian strategies aimed at limiting the presence of young people in public spaces. In the 1990's, Australians implemented strategies involving negotiating youth space to reduce tension between young people and the public concerning public space. The author concludes that youth-specific spaces do not offer social integration and that youth-negotiated spaces do not accommodate alternative cultures and values in a natural and evolving manner. Malone suggests that streets and public spaces need to be places with multiple perspectives that support and accommodate young people as producers of social capital.

The Norwegian Government adopted a reform in 1989 that was intended to protect the interests of children and adolescents when planning the physical environment (17). Each municipality was required to appoint a person to look after the interests of children and adolescents during public planning. At the time of Wilhelm's 1995 publication describing the initiative, success of the reform was dependent on participation of the local municipal level. Use of the guidelines and the work of the young people's representative depended on political will and concern for the physical environment of young people.

Fitzpatrick et al. (18) presented case studies and focus group data pertaining to young people and urban regeneration in 12 sites throughout the United Kingdom. Youth participation in the regeneration process was limited and difficulties were encountered in promoting youth empowerment. Despite these problems, the authors contend that youth participation projects enhance local social cohesion. In addition, Loretta Lees (19) presented a case study of urban redevelopment in downtown Portland, Maine, specifically focusing on youth.

In Australia, White (20) discussed the nature of conflicts over urban space involving young people, businesses and police. White concluded that attempts to reduce crime through situational and environmental techniques, and exclusions of young people from certain city sites can lead to a criminalization of all young people. The “City Safe” program adopted in Perth in 1989 was reviewed. White suggested that any strategy aimed at reducing conflicts with young people over urban space should address the reality of young people at the structural, situational, and person levels.

It is evident from program evaluations relating to the built environment that specific consideration of youth is beneficial when planning urban space (14). Initiatives that seek to control the activities of youth within urban environments can create conflict instead of the desired positive effects (20). Programs that include youth in the planning and maintenance of urban spaces have positive effects at both the community and personal level (12).

ii. Urban Service Infrastructure, Water, Sanitation, Pollution, and Disaster

A body of literature focuses on the impact of environmental needs, and hazards, on the 0 – 18 age range, i.e. household water security, hygiene and sanitation, air pollution, disease vectors, and chemical hazards as identified by the World Health Organization’s Health Environments for Children’s Alliance (21). This literature is most applicable to developing countries and the majority does not specifically focus on the adolescent age range (22). Other threats to health in cities include hazardous waste landfills, often located in or near urban areas, which may be associated with risks of low birth weight, birth defects, and cancers (Vrijheid, 2000).

Other features of cities, such as population density and social proximity, coupled with vulnerable urban structures, can result in substantial health consequences after disasters in urban areas (Galea, Ahern, Resnick, Kilpatrick, Bucuvalas, et al., 2002; Schlenger, Caddell, Ebert, Jordan, Rourke, et al. 2002). Epidemic heat-related deaths have been particularly pronounced among socioeconomically disadvantaged and socially isolated elderly persons (Kilbourne, Choi, Jones, & Thacker, 1982; Semenza, McCullough, Flanders, McGeehin, & Lumpkin, 1999).

Program evaluations

No programmatic information was found in relation to youth health and such physical environmental conditions and services.

b. Social Environment

The social environment has been broadly defined to include “...occupational structure, labor markets, social and economic processes, wealth, social, human, and health services, power relations, government, race relations, social inequality, cultural practices, the arts, religious institutions and practices, and beliefs about place and community” (Barnett & Casper, 2001). Thus, the social environment involves a number of key mechanisms that are applicable to youth health issues and several of these could be advanced through systematic reviews.

i. Social Networks

Individual social experiences with other persons are important determinants of health. For example, limited social support may predispose persons to poorer coping and adverse health (Kawachi & Berkman, 2001; McLeod & Kessler, 1990). However, scant evidence exists that social connectedness in cities is better, or worse, than in non-urban areas. Informal social ties are an important feature of city living that many ultimately affect social support, social networks, and social cohesion (Fullilove, 1998). Supports in cities are ‘closer’, but may not be as ‘deep’. The closer spatial proximity of one’s immediate social network in cities may well accentuate the role of such networks in shaping health. Social networks are associated, importantly, with a range of health

behaviors (Kafka & London, 1991; Madianos, Gefou-Madianou, Richardson, & Stefanis; 1995).

Assessing the extent to which social network and identity formation progresses differently with age among urban and rural youth, Nurmi et al. (23) had Australian and Finnish young adolescents (13 and 14 years) and older adolescents (16 and 17 years) complete the Exploration and Commitment Questionnaire. Adolescent identity formation progressed differently by age in Australian urban and rural settings, yet not in the Finnish settings. The authors concluded that these findings suggest an age-related increase in identity formation may be associated with sociocultural context, yet replication of the study needs to be conducted in other types of sociocultural contexts.

In 1974, Corder et al. (24) assessed social and psychological characteristics of adolescent suicide attempters in an urban, disadvantaged area of Washington D.C. The authors matched groups of suicidal and non-suicidal adolescents from a clinic population on age, gender, I.Q. and socioeconomic level. Suicidal adolescents were more likely to have a history of absence of identification with any adult in their environment and lack of school connectedness.

Self-reported stress, coping, and behavioural problems among rural and urban adolescents attending school in Newfoundland were assessed by Elgar et al. (25). Levels of stress and coping methods were similar in both the urban and rural settings. Urban males reported more behavioural problems than females and rural males.

Miller & Townsend (26) reported on the development and utility of the Urban Hassles Index that was designed to measure stressors affecting urban adolescents. Findings indicated that daily hassles can negatively affect adolescent mental health. The authors suggest that the Urban Hassles Index can be used by clinical practitioners to rapidly assess events that affect adolescent social functioning.

Breland et al. (27) identified social and environmental variables associated with risk of depression in a clinic based sample of adolescents residing in an American urban centre. The HEADDS (Home, Education, Activity, Drugs and alcohol, Depression, Sexuality) survey was used. Preliminary results presented at the 2005 American Public Health Association meeting indicated that participation in school-related activities

significantly reduced reports of depression. The authors suggest that urban adolescents benefit not only from school-based clinics with mental health services, but also from community programs that foster youth resiliency.

Program evaluations

No evaluations of social network interventions were found.

ii. Social Learning

Social learning theory emphasizes the importance of observing and modeling the behaviors and attitudes of others (Bandura, 1986). In diverse urban settings, social learning can set social norms for both individual and group network behaviors through increased opportunities to ‘interact’ with others. Theories of collective socialization emphasize the influence of the group on the individual (Coleman, 1988; Wilson, 1987). These theories suggest that persons who are in positions of authority, or influence, in specific areas can affect norms and behavior of others in direct and indirect ways. Newer theories include the possibility of contagiousness of ideas and social examples. These theories specify that because concentrated urban populations share common resources (e.g., water, transportation) the practices of one group can affect the health of others. For example, Phillips (1974) suggested that media representations of suicide may have some influence on those exposed to them such that suicide becomes more likely. Several studies have provided empirical evidence to suggest that media representations of suicide could have some influence on adult suicidality (Frei, Schenker, Finzen, Dittmann, Kraeuchi et al., 2003).

Most studies in this area have focused on intra-urban samples. Urban adolescents from five public schools in a northeastern United States city completed a survey to examine personal life events and neighbourhood stress (gang involvement and perceived neighbourhood toughness) as determinants of alcohol use (28). Absenteeism exacerbated the effect of neighbourhood stress on alcohol use while positive outcomes, such as family relations, and internal health locus of control reduced the effects of negative life events on alcohol use.

John Bolland (29) surveyed 2468 inner-city adolescents in southern Alabama to study the association between hopelessness and risk behaviour. Hopelessness predicted violent behaviour, substance use, sexual behaviour, and accidental injury. The author suggests intervention programs aimed at inner-city adolescents should promote skills to help young people overcome the limitations of hopelessness.

Hill et al. (30), followed a “gender balanced, ethnically diverse urban sample of 808 children” across an 11 year span and found that parent engagement in tobacco use predicted not only experimentation with smoking but also onset of daily tobacco use (p 202).

With respect to urban-rural differences in social learning in youth, alcohol related problems experienced by urban and rural adolescents residing in Nova Scotia were assessed by Wayne Mitic in 1989 (31). Data were gathered by questionnaire. Rural students reported greater problems with school, the police, and money compared to urban students who reported more pre-party drinking.

In their report on the health of British Columbia youth, Poon et al. (32) found that youth in Vancouver, the largest urban centre in the province, reported among the lowest levels of physical activity of any region in the province. However, they also reported having low levels of obesity and tobacco use when compared to youth in other regions.

Levine et al. (9) analyzed substance use and sexual risk factor data from the Youth Risk Behaviour Survey conducted in the United States in 1999 with students in grades 9 through 12. No significant differences were found when comparing urban against rural and suburban adolescents. The authors conclude that the urban setting is not itself an independent risk factor. Rather, they suggest that focus should be placed on socioeconomic status and access to health and educational resources to predict adolescent involvement in risk behaviours.

Greene & Foster (33), using data from the United States National Longitudinal Study of Adolescent Health, also found that suburban adolescents engaged in risk behaviours (alcohol, tobacco, illegal drugs, delinquent behaviour) as frequently as urban adolescents.

Program evaluations

No program evaluations of social learning initiatives were found, however, a variety of program principles have been posed. Stewart Fahs et al. (34) published a literature review in 1999 to describe the state of knowledge on adolescent risk behaviours with a particular emphasis on rural, urban, and suburban populations. The authors found the majority of the research to be descriptive in nature. Education alone was insufficient to change behaviour. Successful intervention programs included adolescent interaction with peers and support systems to raise awareness and institute behavioural change. The authors suggest that strategies must be developmentally and culturally appropriate.

Fostering resilience within young people is a key to helping them overcome risk at critical points in their development. Linda Winfield has identified protective mechanisms that develop resilience and provides recommendations for programs and policies in her publication *Developing Resilience in Urban Youth* (35).

Programs intended to reduce the risk behaviours of youth (particularly urban youth) must incorporate peers and support systems in the learning process and cannot rely solely on educational initiatives if behavioural change is to result (34).

iii. Social Strain

In the urban context in particular, the exposure of persons of all social classes to high aspirations that are practically unachievable can produce strain or pressure on these groups. When economic opportunities are less available in cities, people may take advantage of any means to success, even if these means are illegitimate or illegal. Other sources of strain in modern living, including confrontation with unpleasant stimuli such as noise, pollution and confusion, may be associated both with criminal behavior and with poor health (Agnew, 1992; Cohen, Farley, & Mason, 2003). Thus, problems of urban strain are almost inevitable.

Adolescents aged 12 to 18 in the state of Virginia were surveyed by McGee et al. (36) to examine gender differences in exposure to violence, coping strategies, and behavioural problems. Exposure to violence and victimization was associated with externalizing behaviour problems (i.e. delinquency) in males, while females were more likely to

exhibit symptoms related to post-traumatic stress disorder. Females were more likely than males to use problem focused coping strategies such as social support. Similarly, Stevenson (37) found social support to be related to anger suppression in a group of adolescents in high risk environments.

Bowen & Chapman (38) investigated the contribution of neighbourhood danger and social support on individual adaptation (physical health, psychological well-being, and personal adjustment) of 525 young people at risk of school failure. Adaptation was influenced most by the availability of parental social support rather than adolescent perceptions of neighbourhood danger.

Exposure to violence and related negative psychosocial consequences has been well documented (39;40). African-American urban youth ages 9 to 15 were surveyed by Feigelman et al. (41) to determine the relationship among victimization, witnessing, and perpetration of violence. Victim and witness status were associated, as were acts of perpetration and the number of victimization events. Williams et al. (42) found personal defensive actions (carrying a weapon, martial arts training, having a dog) among urban young people to be associated with witnessing crimes and victimization. Mijanovich and Weitzman (43) suggested that fears of victimization and feelings of unsafety were related to factors other than actual victimization. Findings from their survey with urban adolescents ages 10 – 18 years indicated that perceived school disorder was a major factor associated with feelings of unsafeness.

The association between exposure to violence and risk behaviour was assessed by Albus et al (44). Knowledge of violence was associated with substance use and risky sexual behaviour. Witnessing violence was associated with violence involvement, substance use, and increased exercise involvement. Violent victimization was associated with risky sexual behaviours and violence involvement.

Bullying is a social strain that is related to a variety of health outcomes (long term negative affective states such as depression and anxiety, substance use, behavioural problems). However, bullying tends to decrease as youths enter adolescence (Craig, 2004) meaning that studies on bullying generally deal with youths younger than the cutoff age required for inclusion in this paper. Nonetheless, Smokowski and Kopasz

(45) found that programs which alter the psychosocial environment to create warmer settings (characterized by involvement of role models as opposed to authority figures) and consistent non-hostile sanctions for rule violation substantially reduced bullying.

Some studies have addressed intra-urban aspects of social strain. How youth cope with neighbourhood strain was assessed by Rasmussen et al. (46) by surveying adolescents from low, medium, and high crime neighbourhoods in Chicago. In the low and medium crime neighbourhoods, use of confrontative strategies was associated with increased exposure to violence. Coping strategies were related to perceived safety only in high crime neighbourhoods. Using data from a U.S. randomized housing mobility study and juvenile arrest records, Ludwig et al. (47) found that providing families with the opportunity to move from high to low poverty neighbourhoods reduced adolescent violent criminal behaviour.

Few studies have addressed the emerging patterns of social strain experienced in youth political protest that turns violent, such as World Trade Organization demonstrations.

Program evaluations

Programs to reduce urban adolescent violence and crime are numerous. Riner & Flynn (48) describe the Social Ecology Model of Adolescent Interpersonal Violence Prevention as a community tool for identifying and addressing individual, family, social network, and community factors impacting violent behaviours. As well, the CityNet Healthy Cities model is presented as a process for communities to develop antiviolence action groups. Mikalsen et al. (49) presented the evaluation of a program aimed at preventing consequences of exposure to chronic violence (bullying) by implementing a program in a community setting (parks) that was usually offered only at schools. Participants, including children and adolescents, experienced reduced behavioural problems, improved conflict resolution strategies, and higher self-esteem after their exposure to chronic violence. Programs which have not yet been formally evaluated but that have shown positive anecdotal effects in reducing bullying (or improving willingness to report bullying) involve conflict resolution, counseling, and educational skits and are focused on both the victim and offender (45). Smokowski and Kopasz (45) found that successful school-based bullying reduction programs address the psychosocial environment.

McIntyre (50) described participatory action research with disadvantaged young people stressing the importance of collaborating with them to develop programming pertinent to their concerns and their understanding of violence.

iv. Social Inequality

In the urban context, rich and poor populations live in physically proximate neighborhoods. The principal theorists of the relation between income distribution and health suggest that perceived and actual inequity, caused by the discrepancies in income distribution, erode social trust and diminish the social capital that shapes societal well-being and individual health (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997). Similarly, differences in urban areas due to social inequality may be important modifiers in the dynamics of several features of the social environment discussed above.

A number of studies have addressed urban poverty, but without a particular focus on adolescents. For example, Todd (51) examined health inequalities in urban areas; Stephens (52) examined the health and social implications of urban inequality; and Hou and Myles (53) examined neighbourhood inequality, neighbourhood affluence and population health using Canadian national datasets.

Studying urban families and youth in Rochester, New York, Stern et al. (54) assessed the effects of social and economic disadvantage on parent distress, family processes, and adolescent mental health. Longitudinal data were collected in 1988 and 1989 from adolescents and a primary caretaker, in most cases the mother. Structural equation modeling linked stress, isolation, and poverty with parent mood and family functioning, which in turn impacted adolescent mental health.

A few authors have addressed intra-urban impacts of poverty and unemployment. For example, residential characteristics of youth impact their employment. While controlling for individual and family characteristics, O'Regan and Quigley (55) found that urban youth living in areas with fewer employed adults and areas further from jobs were less likely to be employed.

Using the U.S. National Longitudinal Survey of Youth, geo-coded to census tracts, Holloway and Mulherin (56) assessed the effect of adolescent neighborhood poverty on eventual adult employment. Living in a poor neighbourhood during adolescence had a long-term negative impact on adult employment, especially in males. Lack of early work experience was a key cause of labour market disadvantage.

Cauce et al. (57) highlighted research pertaining to adolescent risk and resilience in their 2003 publication *Overcoming the Odds?: Adolescent Development in the Context of Urban Poverty*. The authors suggest that school achievement and behaviour problems are key research outcomes of interest for urban youth as these issues are associated with life in poorer neighbourhoods.

In the book *Youth In Cities: A Cross-National Perspective*, Tienda and Wilson (58) stressed that countries throughout the world are failing to meet the developmental and social needs of their urban youth. Demographic and social changes have altered social support networks and economic restructuring has marginalized and isolated inner-city youth.

Program evaluations

Programs to address social inequality are rare in Canada. In 1993, David Hamburg (59) wrote an action agenda to deal with the urban poverty crisis in the United States. He suggested four main avenues: disease prevention from the time of conception; emphasis on interpersonal and organizational skills, as well as cognitive and technical skills; dependable social support networks (family, friends, and community); and, a structure of opportunity protected by law.

Fauth (60) summarized U.S. neighbourhood poverty research, policies and programs related to children's and adolescents' well-being. Residential mobility programs, school desegregation, and neighbourhood poverty deconcentration efforts were examined.

Prior to implementing an adolescent health promotion program in a low income urban American environment, Clark et al (61) conducted focus groups with young people. Key areas of health promotion identified included violence and gangs, interpersonal conflict,

and pressure to excel. The school environment emerged as the preferential setting for health promotion programming.

v. Social Capital

Social capital effects, including manifestations at the contextual level (e.g., at the level of the whole city or of urban neighborhoods) and at the social network level, are thought to offer both general economic and social support on an ongoing basis and also make specific resources available at times of stress (Kawachi & Berkman, 2001). Social capital is often defined in terms of features of social organization and is associated with lower all-cause mortality (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Skrabski, Kobb, & Kawachi, 2004), reduced violent crime (Kennedy, Kawachi, Prothrow-Stith, Lochner, & Gupta, 1998), and self-reported health (Subramanian, Kim, & Kawachi, 2002).

Using individual- and neighbourhood-level data (urban and rural) from the American National Longitudinal Study of Adolescent Health, Boardman and Saint Onge (62) simultaneously assessed a range of adolescent health outcomes for which neighbourhoods were believed to be an important predictor. The findings suggested that neighbourhood was equally relevant for educational outcomes, engagement in risk behaviours, and integration with family, school, and church. The authors point out that these results also highlight the importance of neighbourhoods for social integration and social connectedness.

McMahon et al. (63) surveyed African American adolescents aged 10 to 15 years to determine positive community and interpersonal predictors of psychological outcomes including self-esteem, empowerment, and non-aggressive behaviours. Better psychological outcomes were predicted by having a role model, being involved in the community, feeling a sense of belonging at school, and church attendance.

Fine et al. (64) surveyed and interviewed youth in New York City to assess attitudes toward, and experiences with, adults in positions of power including police, educators, guards, and social workers. Overall findings suggested that urban youth felt betrayed and mistrusted by adults.

Zeldin conducted several studies focusing on adult beliefs about adolescents and community (65;66). His findings indicated that adults (independent of their socioeconomic background) generally believed that adolescents contributed to their communities (65). Adult beliefs about adolescents were determined by their community experience with adolescents, as well as both adult and adolescent connectedness with the community (66).

How family, peers, and neighbourhood influence the social functioning of urban adolescents was assessed by Rankin and Quane (67) using data from personal interviews. The authors found neighbourhood effects to be modest and these effects operated indirectly through effects on parents and peers. Peer quality and parental monitoring were found to be higher in neighbourhoods with collective efficacy, a form of social capital present in neighbourhoods that have strong networks of mutual trust and willingness to enhance the collective good.

In the publication *How Do Neighborhoods Matter?* Furstenberg et al. (68) explored how urban neighbourhood resources were associated with family management and adolescent success (academic competence, activity involvement, behaviour and emotional problems). Data from The Philadelphia Study, a 1991 survey carried out in five neighbourhoods, suggested that family management practices, social resources, and early adolescent outcomes varied more within neighbourhoods than between them. The neighbourhood factors had little direct impact on the adolescent success outcomes that were measured.

A literature overview focusing on urban youth was recently written as part of *The Ryerson-Wellesley Social Determinants of Health Framework for Urban Youth* (69). Unlike existing determinants of health frameworks, the RW framework conceptualized the human diversity that exists in many urban centres would directly effect socioeconomic status via social exclusion. This framework categorized education, employment, and income status as primary determinants of urban youth health. Secondary determinants of urban youth health included social support, access to health services, transportation, personal health, housing and homelessness, nutrition, social safety net, access to recreation and sports, and early life. A brief description of the literature in each of these categories was presented.

Program evaluations

Dale Blyth (70), in his publication *Community Approaches to Improving Outcomes for Urban Children, Youth, and Families*, discussed the Community Action Framework for Youth Development. Blyth also stressed the importance of systematically evaluating the impact of community based programs aimed at supporting youth.

McLaughlin et al. (71) described six successful American organizations supporting inner city youth. The authors stress the need to keep youth central in program and policy development. Programs can be successful in generating social skills and social capital in poor urban youths which can smooth the transition to adulthood. These are best developed by people who “know what it feels like when siblings are murdered, abuse occurs daily, crime and violence are the norm, and messages of rejection are everywhere” (71) – in other words, people who have grown up in impoverished urban neighbourhoods and are familiar with the intricacies of these areas.

vi. Spatial Segregation

Spatial segregation of different racial/ethnic and socioeconomic groups may also be an important determinant of health in cities. Segregation by race, class and gender impedes ‘social interaction’ and can have multiple effects, including the enforcement of homogeneity in resources and social network ties, and suppression of diversity that may benefit persons of lower socioeconomic status. Persons who live in segregated communities may have disproportionate exposures, susceptibility, and responses to economic and social deprivation, toxic substances, and hazardous conditions (Williams & Collins, 2002). Segregated communities frequently face shortages of health care providers and disproportionately low rates of health insurance coverage; both factors are among the most important predictors of differential access to medical care (Mayberry, Mili, & Ofili, 2000). Thus, segregation results in an uneven distribution of health resources.

Segregated communities may have lower levels of social capital, which, as discussed above, has been associated with poor health (Kawachi, Kennedy, & Glass, 1999). Also, spatial heterogeneity may permit persons of higher socioeconomic status to appreciate the issues faced by others and to use their power, money, and prestige to influence the

development of better distributed health resources. It is also worth noting that spatial segregation, by virtue of keeping persons who are different apart from one another, may serve to minimize social strain (Sampson, 2003).

No articles specifically related to youth segregation or programs were found, although street youth literature comes closest to the topic.

c. Access to Health and Social Services

Most of the literature on this factor is U.S. based. As such, it may not be relevant or comparable to the Canadian context.

In wealthy countries, cities are characterized by a rich array of health and social services (Casey, Thiede Call, & Klingner, 2001; Felt-Lisk, McHugh, & Howell; 2002). Even the poorest urban neighborhood often has dozens of social agencies, each having a distinct mission and providing different services. Many of the health successes in urban areas in the past two decades, including reductions in HIV transmission, teen pregnancy rates, tuberculosis control, and new cases of childhood lead poisoning, have depended in part on the efforts of these agencies (Freudenberg, Silver, Carmona, Kass, Lancaster, et al. 2000). In addition, many urban areas serve as referral centers for surrounding communities, and as such there is often greater availability of health and social services in urban areas.

Health disparities are often associated with differences in the availability and quality of care (Andrulis, 2000; Wan & Gray, 1978). The presence of well-equipped, lucrative practice opportunities decreases the likelihood that service providers will work in lower-paid, public service clinics, particularly when these latter services face limited resources and uncertain political commitment (Franks & Fiscella, 2002). Recent immigrants, homeless people, inmates released from jail or prison, all of whom who are disproportionately represented in urban areas, also face specific obstacles in obtaining health care (Acosta & Toro, 2000; Guttmacher, 1984; Hammett, Gaiter, & Crawford, 1998; Kalet, Gany, & Senter, 2002).

In turn, these populations put a burden on health systems that are inadequately funded or prepared to care for them. Social services for disadvantaged or marginalized populations are often susceptible to changing municipal fiscal realities with resultant

decreases in service frequently coinciding with times of greater need in the urban population (Felt-Lisk, McHugh, & Howell, 2002). In the past few years, for example, the decline in the US national economy and tax revenues has forced many cities and states to reduce services at the very time that unemployment, homelessness, and hunger are increasing.

In 1994, Ginsburg et al. collected qualitative and quantitative data from 2602 urban 9th graders in Philadelphia to develop a framework for adolescent concerns about health care providers (72). Health care providers were defined in the study as “a doctor, nurse, dentist, mental health worker, birth control counselor, or someone who treats patients with sexually transmitted diseases”. Study findings indicated that the students wanted a health care provider with whom they could develop a relationship, feel physically and emotionally safe, and someone they could turn to for counseling. The authors concluded that communication with adolescent patients, including sensitivity when dealing with their needs and fears, should be a standard part of health care provider training.

Similar to Ginsburg et al.'s work, Rosenfeld et al. (73) assessed primary care experiences and preferences of urban youth aged 13 to 21 years of age. Focus groups involving a total of 20 adolescents were conducted to identify influences and issues leading youth to seek out and then return for primary health care. The youth participants were most concerned with being treated well and respected by primary care providers. They expressed that they wanted to be treated with dignity, to be listened to, and have their problems taken seriously.

Prior to the opening of an urban teen clinic for 12 to 18 year old men in Atlanta, Georgia, Levine (74) asked the first 46 enrolled clients to complete a questionnaire. The survey asked whether the clinic should offer specific on-site services, whether they might desire services linked to the community, and if they might use other services such as conflict resolution, mentoring, tutoring, career counseling, job programs, and recreation. Most of the youth felt medical care and free condoms were important and many desired job related services. Half of the youth requested health education related to sexually transmitted infections, as well as general youth support groups.

McManus et al. (75) examined patterns of health services utilization of a nationally representative sample of 15,181 American urban and non-urban adolescents aged 10 to 18. Place of residence was defined as metropolitan if the adolescent resided within the geographical boundaries of a Standard Metropolitan Statistical Area as defined by the United States federal government. The data, collected in 1984, revealed that while the health status of these two groups was similar, metropolitan adolescents made more physician visits and had less delay in seeking physician care. Adolescents in metropolitan areas were also less likely to be hospitalized, but had health insurance, and were more likely to be publicly insured if poor.

A study assessing utilization of ambulatory health services by 191 American urban adolescents aged 12-18 was conducted by Ryan et al. (76) in the mid 1990s. Participants completed surveys about their health status and use of ambulatory health services. Having health insurance and a regular source of care were associated with routine use of medical and dental care. Medical needs and socio-demographic factors were associated with use of illness-related care.

Aten et al. (77) described reported access to health care among 3677 American urban youth aged 12 to 19. A school based survey was used to assess use of health services by grade level, gender, and risk behaviour. Use and awareness of health care was limited for at risk urban youth, especially among males and younger teenagers. The authors suggest that the school setting be used to provide health care information to adolescents.

In the mid 1980s, Van Vliet et al. (78) assessed the health effects of moving one's residence on 244 12 to 18 year olds in the United States. A questionnaire assessing knowledge of medical services was administered at school and supplemented by census and land use data. Residential mobility negatively affected practical knowledge of health-related community services yet within a half year of arrival, many newcomers ameliorated these knowledge deficiencies. Knowledge of medical services by youth was associated with the number of activities shared with others and the number of people known in the community suggesting that social support and networks play a role.

A case for after school social programs for urban school youth has been supported by Shann (79) after assessing student time use. Students in Boston, aged 10 to 17, provided information on 'use of time out of school' as part of a three year study to create and validate indicators of school effectiveness and climate. The vast majority of students did not participate in after-school programs or lessons, but instead watched television and hung out with friends. Shann suggested that school-based programs which provided a combination of recreational, cultural, academic, and life skill activities could provide an oasis during after-school hours.

Program evaluations

Few evaluations of programs designed to increase urban youth access to health and social services were found. Green et al. (80) reported on the City of Oakland's (California) development of an evaluation system for after-school programs that received city funding. A performance logic model was developed to guide evaluation efforts, as well as a performance ranking system to compare levels of service quality across programs.

Pruett et al. (81) documented a comprehensive multi-agency program implemented in an inner city school for at risk youth in which academic assistance, psychosocial development, health care, education, and promotion, mental health, substance abuse, family intervention, job placement and support, parenting, and legal assistance programs were offered. While outcomes related to "increasing multiple youth competencies" could not be assessed at the time of publication, the fact that the vast majority of students utilized at least one of the services was deemed a success (p79).

d. Comprehensive Programs, Policies and Initiatives

Linkages between diverse health factors are always a challenge in research and policy. Whereas certain features of cities may affect specific diseases adversely, other features may offer protection. Interrelationships between features of the urban environment make generalization difficult. In particular, refinements in social strain theory in urban areas includes an understanding that, in urban areas, persons with different socioeconomic status may be differentially faced with stressors and have varying levels of access to resources that may help them cope with stressors. For example, in urban

areas, formal local resources can complement, or substitute for, individual or family resources for transient urban populations such as youth. Thus, the relationship between urban stressors and health is likely to be moderated by resources (e.g., health care, social services) that are often more prevalent in urban compared with non-urban areas (Galea, Factor, Bonner, Foley, Freudenberg, et al., 2002). Although these resources may be available to urban residents, socioeconomic disparities in cities are linked to differential access to these resources, which suggests that persons at different ends of the socioeconomic spectrum may have different opportunities to benefit from the resources available in cities.

A number of comprehensive intervention programs have been developed for youth health concerns. Many of these address multiple urban environment factors and youth health issues. The National Research Council and Institute of Medicine (82) note that there is no standalone approach which will benefit all youth. Rather, they suggest that the most promising programs are “strategies that are comprehensive and interdisciplinary in nature, that are developmentally appropriate and culturally relevant, and that take advantage of the many settings or environments in which children and adolescents grow and develop – e.g., the home, schools, communities, social services, the media, and the business or corporate sector” (p65).

UNICEF’s Child Friendly Cities Initiative (CFCI) (83) was launched in 1996 to improve cities for young people (84;85). Based on the UN Convention on the Rights of the Child, which encompasses ages 0 - 18, the CFCI advocated governance and urban management that promoted the rights of young people. An action framework for building child friendly cities has been developed by UNICEF (86). Corsi (87) has published on the Italian initiative and Rae Bridgman (88) has described the Canadian experience. Valerie Fronczek (89) has also described the development of the Society for Children and Youth of BC, as part of the CFCI. Bartlett (90) reported on a range of CFC initiatives from throughout the world.

Another international effort is UNESCO’s Growing Up in Cities Project (91). This initiative links UNESCO with municipal officials, child advocates, urban experts, and young people themselves to create communities that are better places in which to grow up. Canada has joined this effort (92). Chawla (93) provides a summary of research

underway in the Growing Up in Cities Project as of the last 1990s. In collaboration with the same project, Driskell (94) has published a manual on how to enhance participation of young people in community development. Building on these efforts, *Growing Up in an Urbanising World* (95) highlights the experience of eight countries in their efforts to improve the experience of growing up in low-income neighbourhoods in both industrialized and developing countries. UN Habitat has also encouraged urban governance to enhance involvement of young people (96).

Another project, Inclusive Cities Canada (97), is a national civic initiative aimed at enhancing social inclusion across Canada with a focus on children, youth, and family. The Urban Health Initiative (98) is a collection of campaigns in five large U.S. metropolitan areas aimed at helping cities make sound policy and investment decisions for young people. The Urban Institute (99) is an American economic and social policy organization which focuses on research of young people, as well as other vulnerable urban populations.

The National Adolescent Health Information Centre and Child Trends recently released an assessment of federally funded adolescent health programs and initiatives within the U.S. Department of Health and Human Services (100). The review was intended to provide a better understanding of the types of youth programming available, including the status of program evaluations, in seven content areas: health and well-being, fitness, family and peer, school environment, smoking, alcohol, and violence.

Suzanne Hood (101) used the State of London's Children Reports (SOLCR) to illustrate the value of regular reporting in policy development for and with young people. The SOLCRs have led to a child and young people's strategy which stresses the need to promote equality and reduce social exclusion and poverty for young people. As a Canadian example, the district of West Vancouver has produced a civic youth strategy (102) aimed at developing and promoting initiatives that positively contribute to the lives of youth.

Komro and Stigler (103) have produced a research-based guide to healthy youth development, although not specifically focused on urban youth. As well as the assessment of federally funded adolescent health programs and initiatives within the

U.S. Department of Health and Human Services mentioned previously, Brindis et al. (104) have produced an analysis and synthesis of health policy recommendations aimed at creating a common agenda to improve the health of American adolescents. Many of the policy recommendations are applicable to urban adolescents.

Keim (105) has presented an overview of *The National Children's Study of Children's Health and the Environment*, a U.S. study about to commence that will follow 100,000 children from birth to 21 years. The environment is defined broadly and includes physical surroundings, biological and chemical, geography, and social, educational, family, and cultural influences. While not specifically focusing on urban young people, results will address the issues of the urban adolescent population.

Licari et al. (106) have also produced a document aimed at providing tools for policy makers to achieve youth specific goals set out in the European 2004-2010 Environment and Health Action Plan. Policy actions, graded by effectiveness, plus monitoring and evaluation plans are presented. A broad definition of the physical environment is used including economic, social and psychological factors.

Program evaluations

Overall, there seems to be a dearth of clear evaluations of the actual program components that lead to positive outcomes for urban youth. However, it does appear that active participation of youth in the planning and development of projects aimed at improving the lives of urban youth is an important component of successful programming (95). It is also suggested that lessons learned from the community mental health movement in addressing the needs of individuals with psychiatric disabilities can enhance services provided to at risk urban youth.

IV. Discussion

a. Consensus and Gaps in Urban Youth Health Research

Youth is a time of transition and the dynamics of physical, psychological, social, and vocational changes are complex. Limited attention and resources have been dedicated to developing Canadian, as well as international, health policy and programming for this large and important cohort, despite available research evidence. In particular, available data that illustrate the influences of place on youth health behaviours and outcomes have been under-utilized in the formulation of policy and programming. There is an urgent need to assess the ‘state of the science and policy’ in this area through some focused systematic reviews of existing information.

Although there are some generalizable urban demographic trends (e.g., increasing proportions of immigrants and persons of ethnic origins), there are also city-specific trends that need to be understood before the interaction with health factors can be understood. For example, western Canadian cities may have a higher proportion of aboriginal youth. There may be fewer youth lacking family support in eastern Canada. The proportion of unemployed youth may be lower in Alberta. There may be a greater disparity in wealth among youth in central Canada. Documenting the distribution, conditions and context of youth in cities is important as this will influence priority-setting for health interventions.

Research in this area is really just beginning if one considers the need for a broad determinant of health and life course perspective on urban youth health. Generally, research on urban youth has had a problem orientation, rather than being focused on strengths and resiliency and youth engagement. Delineation of urban health factors has focused mostly on the social environment, but even here there are significant gaps. Very little research has investigated cross-environmental factors. Most interventions have focused on either changing youth or changing services, but rarely both. Nonetheless, the literature presented in this paper reflects critical gaps, and an emerging consensus in a number of areas regarding health programs for urban adolescents.

1) Physical Environment:

Gaps

- Considering the degree to which urban planning has become established in Canada, it is surprising how few research studies on the *Built Environment* include a focus on youth.
- Similarly, few resources exist regarding the relationship between urban infrastructure services, disaster management or pollution and youth health.

Consensus

- Youth-friendly environments should address open space, leisure and entertainment opportunities, alternative school settings (e.g., in malls), transport routings, schedules and affordability.
- City design should address the ‘gathering’ needs of school drop-outs, street-involved, ethnic and sexual orientation diversity. This process should address the concerns of these groups in a positive manner to avoid conflict and the problematisation/criminalisation of youth.
- Provide physical access and pollution control for those with disabilities and chronic health conditions (e.g., asthma, allergies)
- Housing design should consider noise control

2) Social Environment:

Gaps

- Little research addresses specific hypotheses, for example, urban vs. rural, *Social Networks* and support mechanisms.
- There are few studies of in-school versus out-of-school youth networks. This is important due to the increasing number of urban youth enrolled in transitional education programs.

- Urbanicity may not be a factor in *Social Learning*. Studies of socioeconomic status and access to health/social services may be more important factors.
- There are few Canadian studies of urban differences in *Social Strain*. However, there are good basic data from elsewhere and programs should refine the distinction between in and out of school initiatives.
- There is little research focus on *Social Inequalities* that uses adolescent wealth as an indicator, although these measures are available (Boyce, Torsheim, Zambon, & Currie, 2006).
- Links between the *Social Capital* literature and youth empowerment literature are missing.
- Specific research on *Social Segregation* is missing, especially for urban aboriginals, street, and drug-involved youth.

Consensus

- There should be opportunities for social network interaction and heterogeneity in youth-positive environments.
- Social supports should be available for safe experimentation (e.g., non-judgmental provision of sexual health information, condoms, birth control, and drug and alcohol information that does not promote strict abstinence; support of sexual diversity and information for those unsure of their sexuality).
- Exposure to supportive media should be used to change social norms (not glorification of crime/violence, substance use, misogyny, consumerism).
- Use of education or incentives/disincentives approaches can facilitate desired behavioural changes in adolescents.

3) Health and Social Services:

Gaps

- Little research addresses youth-specific rural *Access to Health and Social Services*.
- Very little research is available on urban Canadian access to services.

Consensus

- Provide enhanced supports for law-involved and addiction-involved youth.
- Ensure staff age/background compatibility; sensitivity training
- Provide walk-in, one-stop services for quality care (address multiple mental and physical health issues in a single location)
- Make services accessible through public funding

4) Programs and Policies:

Gaps

- Much of this literature is descriptive and prescriptive, rather than evaluative, since there are many gaps in the supporting research.

Consensus

- Effective, responsive strategies should use coalitions and youth engagement. Interventions that have not actively sought youth input have generally been unsuccessful in improving health outcomes. Youth involvement gives the program a degree of credibility since the issues which the program is seeking to address have been lived and understood by those responsible for designing it.
- Decide whether to promote 'general improvements in conditions' in the hope that all will benefit to some degree (universal programs)...or specific improvements for the most vulnerable (targeted programs).

b. Research Issues in Urban Youth Health – Transition and Place

One of the greatest challenges in the study of urban youth health is the adequate specification of research questions that address how and why the urban context may affect youth health. There are three reasons. First, most urban health research has arisen from different disciplines, using different theoretical frameworks and applying discipline-specific perspectives and definitions. Second, many questions in urban health research do not meaningfully exist in isolation. Understanding how the urban context affects health requires consideration of multiple, often competing, influences. Third, clear specification of a research question rests, at least implicitly, on the acknowledgment of a theoretical framework that suggests how and why the characteristics of interest may affect health. In the case of adolescent health, such a framework depends on one's views of the goals of adolescent development – for example those delineated by Raphael in the Introduction to this paper. In addition, there are two conceptual issues that have fundamental importance for research methodology.

The Problem of Transition

Adolescence is a period of transition and a number of individually-focused developmental models may be useful in understanding health during this time⁵. *Simultaneous change* models of development are based upon the idea that psychological, social and biological changes in adolescence are often happening at the same time. Cumulative events models of development have a similar logic. The accumulation of disadvantage (e.g., poor economic status, poor home and community location, poor life chances due to social networks, community values, and opportunities) can cause a gradient in outcomes (Simmons & Blyth, 1987). An important consequence of the experience of simultaneous or cumulative change in the school and peer environment, in family roles, and pubertal development, is that coping resources are overtaxed. Experiencing multiple and simultaneous events during early adolescence has been linked to depressed affect, lowered self-esteem, and a drop-off

⁵ Other models of youth development (e.g. career, citizenship, family roles) that have non-psychological bases could also be described.

in school performance (Petersen, Sarigiani, & Kennedy, 1991; Simmons, Carlton-Ford, & Blyth, 1987).

According to the *accentuation* model of development, puberty and other times of transition act to accentuate difficulties or reinforce pre-existing behavioural patterns (Block, 1982; Caspi & Moffitt, 1991). In contrast to personality theory which suggests that youth adapt to transitional events by re-organizing their behaviours and even their personalities, the accentuation model suggests young people cope with stresses by assimilating existing patterns and cognitive structures into new risk-taking situations, mainly as a way of minimizing change. For example, early patterns of rough play among boys may lead to increased risk for injury in adolescent males.

The *latent* model suggests that an earlier pre-existing event in a youth's life, such as trauma, may predispose him or her to negative outcomes at a later age in adolescence, when stress occurs. Latency effects can be moderated in a negative (i.e., risk) direction through emotional insecurity, or in a positive (i.e., protective) direction by effective parenting. Similarly, the concept of *trajectories*, or long term influences from the social environment, is used to explain patterns of development during adolescence. For example, the trajectory model suggests that the amount of time that a child associates with older peers at an early age will influence later risk-taking in drinking and sexual behaviours (Stattin & Magnusson, 1990). A *pathway* effect is similar, although it focuses on social determinants, not behaviours. For example, status differences at birth, involving different levels of security, stability, and stimulation may affect risk for poor school outcomes. Both Rutter (1989) and Elder (1985) have discussed the use of trajectories, or long term influences, to delineate developmental patterns across adolescence.

Overall, some progress has been made in developing coherent and testable theories of individual, adolescent development that incorporate determinants, behavioural patterns and positive/negative outcomes. However, this integrative aspect of adolescent health research is still young and lacks sufficient differentiation of risk-taking, health promoting, and independence-seeking behaviours. Longitudinal studies are generally necessary to investigate these new developmental models. Most such designs have principally focused on child-to-adolescent transitions. Even less attention has been given to

developmental theories or study designs that focus on adolescent to adult transitions. Finally, very little attention has been paid to the socio-environmental context, such as the urban environment, of the adolescent.

On another level, the most important unit of analysis might not be the individual. Few studies or behavioural models have conceptualized adolescent behaviours as 'group events' even though adolescent social behaviours such as smoking, drinking, and bullying are often collective in nature. Furthermore, social bonding and identification with a peer group, for example, are strong predictors of smoking onset. Once the influence of a peer group takes hold, the pressures to conform to the normative risk behaviours of the group are almost insurmountable.

The peer group model suggests that youth who participate in health-risk behaviours are doing so collectively and not as social isolates. The need to be accepted as part of a peer group may lead to risk behaviours that are in turn associated with negative health outcomes.

There are additional peer group dynamics that may contribute to risk-taking behaviour. For example, the opportunities that injuries, as crises, provide to the peer group for displays of care giving, bonding, and organization of an emergency response are significant to the maintenance of peer group dynamics. Various group roles are solidified and expanded during the group's response to the injury crisis of one or more of its members. Injury events may provide a unique, and even valued, opportunity for adolescent developmental growth through coping with simultaneous changes. If successfully managed, group responses to injury may provide tangible evidence of maturity and independence. Such opportunities for growth may be rarely available in an environment of parental over-protection but may be more common in an urban environment. The challenge for urban youth health researchers is to conceptualize *how* the urban environment affects youth as individuals and youth as a stage.

The Problem of Place

As noted earlier, cities are complex communities of heterogeneous individuals, and multiple factors may be important determinants of population health. For example, understanding the role that racial/ethnic heterogeneity plays in shaping the health of

urban populations requires an understanding of the role of segregation in restricting access to resources in urban neighborhoods (Acevedo-Garcia, Lochner, Osypuk, & Subramanian, 2003) as well as the potential for greater tolerance of racial/ethnic differences in cities compared with non-urban areas (i.e., segregation, yet tolerance).

Furthermore, cities are characterized by multiple factors (e.g., population density, heterogeneity) that in many ways make each city unique. This may mean that urban characteristics that are important in one city may not be important in other cities, limiting the generalizations that can be drawn about how urban living, in general, influences health. Further complicating this task is the fact that cities change over time, and this change has implications for the relative contribution of different factors in determining health in cities. A newly urbanizing city (e.g., Mississauga) is likely to be under different, and probably more substantial, strains than is a long-established urban area (e.g., central Toronto). As well, policy experiences in a changing environment are likely to have an effect. For example, municipal taxation of alcohol and cigarettes may control consumption by youth in a particular city at a certain time (Grossman, 1989). However, changing social norms around smoking and alcohol use may either negate or reinforce the influence of taxation. Therefore, when considering how cities may affect health it is important for the public health researcher or practitioner to consider both place (the particulars of a given city) and time (the trajectory of urbanization in a particular city).

In general, three types of studies attempt to address somewhat different questions relevant to urban youth health: 1) studies comparing rural and urban communities; 2) studies comparing cities within countries or across countries; and 3) studies examining intra-urban variations in health.

1) To identify general youth health *issues*, urban-rural or urban-suburban comparisons are useful. These can draw attention to particular features of urban areas that may be associated with youth health and that merit further research. However, these studies are limited in their ability to shed light on what these critical features might be, and on how urban factors operate to affect youth health. As well, changing conditions within cities over time and differences in living conditions between cities suggest that these designs provide only a very rough picture of how the mass of urban living conditions at one point in time may affect youth health.

2) To identify more specific urban youth health *factors*, comparison of health between cities can identify urban features that positively or negatively affect youth health. This research could suggest city-level interventions that might improve youth health. Most importantly, these inter-urban studies highlight urban characteristics that may be important determinants of overall population health. However, by considering the city as the unit of analysis, these studies assume that aggregate behaviors or characteristics at the city level are equally important for all residents of those cities.

3) To examine potential urban youth health *mechanisms*, studies can examine how living in particular urban communities is associated with youth health. Most often, these intra-urban studies focus on spatial groupings of individuals in cities. These groupings are usually neighborhoods, although several studies have assessed the contribution of administrative groupings (e.g., health districts) that are not necessarily meaningful to residents. Relatively few studies have considered how membership in other urban communities, particularly social networks across neighbourhoods, may be associated with health (e.g., Latkin & Curry, 2003). Although these studies contribute important insights into urban conditions and their implications for youth health, they may be difficult to generalize to other cities or, more broadly, to urban areas in general.

Thus, different study designs can address different research questions that may be important to urban youth health. Unfortunately, results from these studies are often confused, and important differences in conclusions that can be drawn from different study designs are not used to adequately guide future hypothesis generation. Clear specification of the research question, coupled with the appropriate study design, are necessary to advance both research and interventions in urban youth health.

V. Recommendations for Urban Youth Health Research

The purpose of this work was to address the state of knowledge regarding urban youth health and the effectiveness of programs relating to this issue and to identify areas for future research. Our scoping view indicates that there are significant gaps in relevant research of many levels of our framework. Conducting a systematic review of the urban youth health literature may not be appropriate at this time in the areas of physical environment (lack of literature related to youth) or access to health and social services

(lack of literature related to Canada). Systematic reviews would be feasible, and useful, in the areas of the social environment and policies/programs. In the case of the latter, it would be important to identify a working goal for the review, e.g. preparing a synthesis report to support the National Youth Agenda.

To efficiently advance urban youth health research, CPHI should consider sequencing its calls for research and analysis.

I) First, the lack of Canadian research on urban youth health factors and program evaluations related to this area should be addressed. One needs to consider whether there are specific issues of the Canadian urban context that are related to youth health. Also, international comparative research with a Canadian focus may help to identify the precise issues and best approaches to addressing urban adolescent health concerns. Appropriate specification of the research question of interest is critical. Researchers should focus on identifying youth-relevant urban issues (see Table 1), by working with youth, media, teachers, coaches, etc. Examination of existing databases to detect urban-rural differences could be done. Some of these features may already have been identified elsewhere, but should be replicated in the Canadian context.

II) Second, it is important to consider if factors representing these features are differentially distributed between urban and non-urban areas and within urban areas (e.g., between urban neighborhoods). Such an approach would focus on between-group differences, as characterized by 'place'. In addition, differences in modifiers of urban youth health (between cultural, disability, sexual orientation groups within the same area) should be disaggregated. This might also be done with existing databases if suitable and comparable variables have been used.

III) Third, identifying which characteristics of the urban context, and under which circumstances, are modifiable, should be undertaken as an important theoretical, and empirical, public health question. Researchers should work with youth organizations to focus on action-oriented change in urban features and mechanisms (see Table 2) that are of value to youth. The distinct (yet overlapping) factors identified in this work must be considered. The physical environment, the social environment (including social networks, learning, strain, inequality, social capital, and segregation), and access to

social and health service agencies may all be relevant factors in determining the health of young people in urban areas. However, no known study or program addresses all these factors together. Future research should contribute to the goal of creating a comprehensive interagency initiative to be able to address the specific health needs of urban youths.

Urban Youth Health Key Resource List

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