The Social Environment and Children's Health and Development.

Overview

I. Introduction

The social environment in which a child is raised has a profound influence on his or her health and development. The social environment sometimes affects child health directly, and sometimes indirectly through influencing children's exposures to the physical and biological environments. The characteristics of a child's family affect the quality of care giving and level of material resources (including nutrition, housing, and medical care) available to the child. Family resources and behaviors are in turn affected by the characteristics and social norms of people in the child's community and the family's social networks. Formal institutions, such as childcare services, schools, health services, religious organizations, social service agencies, and even the media, are also important. Some of these institutions directly affect the quality of care children receive, whereas others affect the knowledge and behaviors of the child and his or her family members. Finally, the resources available to families and communities are affected by policies and programs—such as health insurance programs, income support programs, and housing policies—in place where the child lives.

The Social Environment Working Group has prepared a series of eight proposals for core hypotheses that are concerned with the social environment. Six of these proposals are structured around different aspects of the social environment. The topics of these six proposals are: family structure and parenting; socioeconomic status; neighborhoods and communities; social networks; formal institutions; and public policy. The last two are integrative proposals on asthma and obesity. These illustrate how all of the different aspects of the social environment combine to influence specific health outcomes in childhood. Although the eight proposals are on different topics, they share many common elements. They rely on an overlapping set of measures of the social environment, and many issues related to methodology, measurement, and sampling needs are common across the proposals.

This document provides an overview and synthesis of the eight proposals. Section II defines the different elements of social environment, discusses their public health significance, and summarizes the hypotheses in the eight proposals. Section III turns to measurement issues, and discusses different mechanisms for data collection, sampling needs, and measures of different aspects of the social environment. It includes a summary table of measures of the social environment that we believe are critical to the success of this study.

II. The definition and public health significance of the social environment

A. <u>What is the social environment?</u>

The "social environment" is defined broadly, to include demographic, economic, political, legal, organizational, cultural, and familial factors that affect the resources available to children and their experiences as they develop. We have categorized the social environment into six inter-related domains: families and households; socioeconomic status; social

networks and social support; neighborhoods and communities; formal institutions; and public policy:

Families and households: Family structure, family resources, and family processes are all important for child health and development. For example, the presence or absence of fathers or father figures, and the availability of supportive extended family members—influences both the quality of care children receive and the economic resources available to children. A key family process is parenting. Parents have a profound influence on their children through their knowledge of and ability to implement health behaviors—such as the provision of appropriate medical care and a healthy environment—as well as their ability to provide their children with secure attachments and an emotionally supportive environment.

Socioeconomic Status: Socioeconomic status includes income, education, employment opportunities, and job characteristics. A family's financial status affects its ability to live in a safe and healthy environment, and to provide children with a variety of goods and services—including medical care, nutrition, and childcare—that affect their health and development. The education levels of adults in a family are related to health knowledge (for example, the ability to follow medical protocols) and behaviors (for example, smoking and drug use) that affect children's health. The characteristics of parents' jobs, for example the degree of stress or uncertainty produced by jobs, may have indirect effects on child wellbeing.

Social networks and social supports: Social networks are defined as a web of social ties that connect people to others. Social networks provide individuals and their families with social support that may come in the form of emotional support that buffers individuals from poor physical or mental health, or in the form of information or instrumental help that can be used to maintain or improve health. Social networks and social support may affect children indirectly by affecting the knowledge and behaviors of their parents. Children's own social networks become increasingly important as they grow older. For example, the choice of peer groups may affect children's propensities to use drugs and alcohol or to adopt other risky behaviors.

Neighborhoods and communities: Neighborhoods and communities provide resources that are important to children. These resources include the level of income in the community, and the quality of community organizations such as schools, recreational facilities, commercial outlets, public services, religious organizations, and employment opportunities. Communities are characterized by social processes that determine the degree of social interaction, crime levels, and political activity. There is a close connection between the physical and social environments in neighborhoods and communities. For example, communities that have higher incomes and more effective community and political organizations may be better positioned to create and maintain physically healthy environments. Structural characteristics of neighborhoods, such as age, racial and ethnic composition, population density, and housing stocks, have an impact on social processes and the resources available to neighborhood residents.

Formal institutions: Formal institutions include schools, childcare facilities, youth development programs, organized recreational activities, law enforcement and justice programs, social services, religious institutions, and the media. Many of these formal institutions, in particular childcare facilities and schools, directly influence the quality of care children receive and their social and cognitive development. Other institutions operate indirectly, by influencing the way caregivers and other individuals interact with children, or by shaping important neighborhood or community characteristics that impinge on children's development.

Public policy: Virtually every aspect of the social environment is influenced by public policy. We focus on policies that diminish or buffer risks to health and development. These include income support and safety net programs, including both cash and in kind benefits, food stamps, WIC, and medical insurance; child care and education policies; housing; and transportation. These policies affect the level and nature of resources availability to families or to their communities.

Another aspect of the social environment that cuts across all of these domains is the shared meanings and norms associated with racial or ethnic identity. In families, neighborhoods, and institutions, whether minority status is viewed as a disadvantage and/or a source of strength matters for children's development. When public policies or institutions discriminate against racial or ethnic minorities, and when communities are divided by racial tensions, all residents, including children, are affected.

B. Public Health Significance

The importance of the social environment is best illustrated by the disparities in children's health and development across socioeconomic groups within the United States. By nearly any measure, disadvantaged children have worse health and developmental outcomes than do others. Poorer children are more likely to develop a variety of serious chronic health problems, including heart conditions, vision and hearing disorders, and diabetes (Newacheck, 1994); to have more hospitalization episodes; to experience accidental injuries and accidental deaths; to develop obesity in adolescence; to develop emotional problems, such as depression; and to adopt "risky" behaviors, such as smoking, drug and alcohol use, and early sexual activity, in adolescence.

These disparities are not simply the result of children in poverty being at heightened risk of poor outcomes relative to all other children. Instead, there is a clear income gradient: for many outcomes, health and development improve continuously as socioeconomic status improves. This is illustrated in the following table, which shows a set of selected health outcomes for children at different levels of family income:

Income quintile	Fraction in excellent or very good health	Average annual hospital episodes (ages 1-17)	Percent with asthma	Percent with heart condition	Percent with hearing problem	Percent with mental retardation	Percent 5.5 lbs or less at birth
1 (poorest)	0.66	0.048	7.2	2.3	2.1	2.2	9.6
2	0.77	0.039	5.9	2.3	1.9	1.4	7.8
3	0.84	0.034	5.6	1.9	1.8	0.9	6.5
4	0.87	0.032	6.0	2.0	1.6	0.9	5.4
5 (richest)	0.90	0.025	6.4	1.7	1.3	0.7	4.8

Notes: The first 6 columns are based on samples of children from the 1986-1995 NHIS. The children are aged 0-17 unless otherwise noted. The information on birth weight is from the 1988 Child Health supplement of the NHIS, which collected information on one child aged 0 to 17 in each household with children.

Similar patterns are seen if children are categorized by measures of the social environment other than income. For example, children are more likely to be in excellent or very good health if their mothers have more education and if they live in two-parent households. There are also pronounced differences in health outcomes for children across racial and ethnic groups. Although these bivariate relationships do not provide information on the underlying causal mechanisms that relate various aspects of the social environment to children's health and development, they underscore the importance of the social environment.

Children's health varies over geographic space as well as along socioeconomic gradients. The table below illustrates substantial variation in indicators of infant, child, and adolescent health among four states and four large cities, chosen on the basis of their diversity with respect to the percent of children living in poverty. All of the indicators show substantial variation by place. In some cases, this variation parallels variation in child poverty but in others it does not. For example, Miami has the highest rate of child poverty of the four cities, but the lowest infant mortality rate and a moderate proportion of youth who fail to wear seatbelts. Like the statistics on income gradients above, these data cannot speak to why place matters for child health, and it cannot disentangle the effects of place from the effects of population characteristics such as race, ethnicity, and income. They do tell us that children across the United States experience different levels of health depending on where they live.

Indicator	UT	Four States DE	MO	MI
% of children in poverty	12.0	15.0	21.0	30.0
Infant mortality rate	5.8	7.8	6.9	10.6
Child death rate	27.0	25.0	32.0	36.0
% high school students:				
current cigarette use	8.3	24.2	28.5	23.6
rarely/never wear seatbelts	7.5	14.9	19.8	24.5
		Four Cities		
	San Francisco	Dallas	Philadelphia	Miami
% of children in poverty	18.0	27.0	30.0	44.0
Infant mortality rate	6.8	10.9	14.5	5.3
% high school students:				
current cigarette use	13.3	17.8	15.8	16.9
rarely/never wear seatbelts	8.7	8.5	34.5	18.1

Notes: Data on % in poverty, infant mortality rate, child death rate from Annie E. Casey Foundation, Kids Count Data Book 2000 and City Kids Count. Data on high schools students from Centers for Disease Control and Prevention, MMWR 51(SS-4), Youth Risk Behavior Surveillance - United States, 2001. States and cities chosen on the basis of data availability and to provide a distribution of areas with respect to the % of children living in poverty.

Rural-urban differences are also consequential for health. In general, children from suburban areas enjoy better health than children living in the inner cities of metropolitan areas. Relatively little is known about the influence of urban vs. rural residence on child health and development in the contemporary United States, because most research has been conducted in urban areas. However, national data reveals important differences (see table below). Adolescents living in rural areas are most likely to smoke while those living in the central cities of large metropolitan areas are least likely. Infant mortality rates are lowest in the fringe counties of large metropolitan areas. Death rates for children and young adults are highest in rural counties. Homicide rates are highest in central cities while death rates for suicide and unintentional injuries are highest in rural areas.

	Metropolitan counties			Nonmetropolitan counties	
	Large central	Large fringe	Small	With city >=10,000	No city >=10,000
Infant mortality rate	7.5	6.1	7.5	7.7	7.7
Death rate, persons 1-24	44.5	35.4	41.7	46.2	58.5
% smoking, youth12-17	11.0	15.9	16.1	15.2	18.9
Homicide rates	11.5	3.9	6.4	5.2	5.4
Suicide rates	13.2	12.6	15.2	16.5	18.0
Death rates, unintentional injuries	31.2	29.1	36.5	44.6	54.1

Source: Eberhardt, et al. , 2001

The Case of Asthma: Asthma, the third-ranking cause of hospitalization among U.S. children under 15 years of age, provides a useful example of the role of the social environment in health. Although, as shown in a previous table, the reported overall prevalence of asthma does not uniformly decrease with income, the prevalence of severe asthma does decrease with income. Asthma death rates are highest in areas with higher concentrations of poor people and minority residents (particularly African Americans). Racial differences in asthma are independent of socioeconomic status. Asthma mortality and hospitalizations vary across regions, cities, and even within cities. Rates of asthma are high in central urban areas, but evidence indicates that rates are nearly as high in some rural areas.

How does the social environment contribute to differences in children's asthma outcomes across locations, income groups and ethnic groups? The observed patterns of outcomes are likely the result of complex interactions between genetic predispositions, aspects of the physical environment, and characteristics of the social environment. Socioeconomic status may affect whether children live in areas where they are exposed to environmental risk factors such as air pollutants or allergens; whether they have access to medical care for asthma treatment; and whether their families are equipped to follow medical protocols for asthma. The expression and severity of asthma may also be affected by psychosocial stress experienced by children and their families. (For example, both wheeze and asthma among children has been related to parenting problems and family stress.) Stress that exacerbates asthma may be increased by living in violent or poor communities or having unstable sources of income, and may be ameliorated by public policies that address these situations.

The complex mechanisms though which the social environment affects asthma are also likely to affect other childhood health outcomes. Existing research on childhood obesity, for example, highlights the "causal web" of social factors, including parenting, peer influences, food pricing and availability, and opportunities for physical activity that, together with genetic predispositions, affect a child's chance of becoming obese.

C. Hypotheses

The Social Environment Working Group has developed six proposals that contain testable hypotheses on how different aspects of the social environment affect children's health, and two "integrative" proposals that illustrate how the interplay of different aspects of the social environment affect two important childhood health problems, asthma and obesity. The hypotheses contained in these proposals are summarized as follows:

1. Family and Households

Pathways to specific child health and development outcomes are directly influenced, mediated, and/or moderated by family characteristics, patterns of family interaction, and parenting behaviors that support the healthy functioning and development of children's biological regulatory systems and healthy psychosocial functioning (emotion regulation and social competence) and that meet their basic nutritional, health, and safety needs.

- Changes in family structures, including parental unions, household composition, and living arrangements can facilitate or inhibit healthy child outcomes. Multiple changes, over time, in any of these domains compromise children's physical and mental health.

- The racial/ethnic status of families differentially impacts children's access to health care and parent's access to health care knowledge. Racial/ethnic minority families and their children are likely to have higher morbidity and mortality than whites from the same conditions, in part because they experience greater disparities in health care and acquiring health knowledge. Cultural risk or protective factors associated with minority status (e.g., supports for health-protective behaviors among first-generation immigrants, knowledge and use of alternative medical practices, norms supporting antisocial behaviors or delay of appropriate health care) will contribute to variability in the health experiences of racial/ethnic minorities.

- The quantity, quality, and allocation of family resources (e.g, income, human capital) influence the health and development of children. *(See also the Income, Socioeconomic Status hypotheses.)*

- The mental and physical health of parents affect the quality of parenting that their children receive as well as the parents' abilities to acquire resources (e.g., hold a job) on their children's behalf. Children with less healthy parents are more likely to be less healthy themselves, in part because of shared genetic predispositions but also because of poorer quality parenting and compromised access to resources. In addition to the parents, the more household family members (e.g., siblings) that are in poor health and require substantial family resources, the more likely a child is to experience physical and mental health problems.

- Children who experience family violence via child maltreatment or witnessing domestic violence are more likely to be victims of severe injury or death and have mental health problems.

- Families' social networks may have positive or negative influences on child health and development by providing access to instrumental and/or emotional support, placing demands on parents' time for helping others, providing access to information and health-supportive resources, exposing children to positive or abusive relationships, or supporting healthy or unhealthy norms for health-related behaviors. (*See also the Social Networks hypotheses.)*

- Families' interactions with and engagement of their children in community institutions, including child care, schools, and religious organizations, influence children's health and development both directly, and indirectly through the formation of supportive social networks. (*See also the Formal Institutions hypotheses.)*

- Parents' differential health behavior socialization of boys and girls will be

associated with gender differences in children's injuries, identification and reporting of illnesses, health care seeking behavior, and treatment compliance across the life course.

- Parental monitoring of and sensitivity to children's activities will influence the prevalence and severity of children's injuries and illnesses.

- Parental investments in health advocacy and help-seeking behaviors on behalf of their children contribute to better physical and mental health outcomes in children.

- Parenting styles will differentially impact the health and development of children. Harsher parenting styles will be associated with less positive outcomes for children. However, the variability in outcomes associated with certain parenting styles will be a function of the family's race/ethnicity/culture.

2. Income, Socioeconomic Status

Socioeconomic gradients in child health and developmental outcomes may be explained by multiple pathways involving health behaviors, parenting, social resources, stress, and the reciprocal effects of health on socioeconomic status:

- More highly-educated parents may make better use of medical information that protects their children's health, or may be more able to follow medical protocols.

- Higher incomes may enable parents to choose less-hazardous living environments; to provide their children with better nutrition; or to access and purchase a greater quantity and higher quality of medical care.

- Stress associated with low income, low job status, unemployment, and social inequality may undermine parenting behaviors that promote children's health and development.

- Higher socioeconomic status may facilitate access to social resources (e.g., diverse social networks, family stability, and "social capital") that provide access to health information and services, buffer stress, and improve material well-being.

- The association between parents' socioeconomic status and children's health may arise because of common genetic or environmental influences linked to both poor health and status.

- Poor childhood health may adversely affect family economic status.

3. Social Networks

Social connections are associated with a broad range of child health outcomes via social support (emotional, instrumental, informational), social engagement, and social influence.

- Social ties that provide instrumental and/or emotional support to families and children help to prevent the onset of asthma and other chronic childhood health problems and to facilitate their management.
- Social relationships that are abusive contribute to the onset of depression and other mental health problems.
- Close-knit social networks that share and support healthy norms for physical activity, dietary habits, and other behaviors reduce the prevalence of obesity, infant mortality, and other outcomes. This mechanism explains, in part, the favorable health profiles of first generation and more recent Mexican immigrants.
- Weak ties and diverse social ties result in greater access to information, and other resources relevant to promoting health.

4. Community and Neighborhoods

Where one lives affects exposure to social, physical, psychological, and environmental factors that increase the risk of developing health problems such as asthma and decreased access to protective resources.

- Neighborhood and community characteristics that negatively influence the health of the mother during pregnancy – including poverty, poor housing quality, poor health care access, norms and policies that encourage smoking, and low levels of social interaction and support – increase the likelihood that the fetus will develop characteristics that predispose it to heightened susceptibility to health problems later in life.

- Neighborhood and community characteristics that contribute to environmental hazards– including poverty, poor housing quality, norms and policies that encourage smoking, low levels of political mobilization or collective efficacy, and high levels of crime and violence – increase the incidence and severity of childhood health problems, such as asthma, and complicate their management.

- Neighborhood and community characteristics that contribute to stress – including stressors such as poverty, unemployment, crime and violence, and poor housing quality, and the absence of stress-buffering resources such as social supports and access to health care and other institutions– increase the incidence and severity of childhood health problems, such as asthma, and complicate their management.

- Collective efficacy in neighborhoods reduces the incidence of high risk behaviors among children and adolescents, such as smoking, drinking, and drug use.

5. Formal Institutions

The interactions between children and families and the formal institutions in their communities influence children's health and development.

- The physical and social environments of non-parental child care settings influence child health and cognitive and social functioning. Variations in the quality of child care affect child outcomes. Child care influences are mediated through family influences.

- Children's participation in schools affect social, emotional, and physical development. Provision of health services and of curricula and programs targeted toward health promotion directly impact on children's health and mental health outcomes. Child, family, and community factors interact with structural and functional aspects of schools to shape child development.

- Family participation in religious organizations during early and middle childhood (ages 3-10) results in better emotional health and fewer health-compromising behaviors during middle adolescence (ages 14-15). These effects are stronger in female children, ethnic minority and immigrant families, and impoverished areas, and when the religious organizations provide effective mechanisms for integrating adolescents into the life of the religious community.

6. Policy

Public policy directly affects child health and development by providing access to resources and facilities and indirectly by its influence on other social environmental variables.

- Policies and programs that buffer families from risks, instability, and hardship have positive effects on child health/development.

- Variations in policies and programs by state and by size of community contribute to child health differentials across place.

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7. Obesity

Economic, cultural, social, and policy characteristics of the social environment, along with characteristics of the physical environment, influence the development of obesity from conception to adulthood. These factors operate largely through influences on family and social network resources and processes that affect behaviors related to energy balance (diet, activity, and inactivity).

- Programs that connect low-income women to early prenatal care and social environmental influences that support the management of maternal hyperglycemia

during pregnancy reduce the risk of accelerated fetal growth and the child's subsequent risk of childhood obesity.

- Support for breastfeeding in the work environment and kin/nonkin networks of new mothers will contribute to lower rates of obesity through increasing the probability of breastfeeding and the duration of breastfeeding. These factors partially mediate the influence of socioeconomic status on breastfeeding and obesity.

- Parenting behaviors influence the timing of adiposity rebound and changes in adiposity during childhood through their effects on children's diet and physical activity/inactivity. Parenting behaviors are a function of the family's food and physical environments, family resources (structure, parental education and income), and norms and beliefs supported through kin and nonkin networks.

- The influence on obesity of non-family factors, including peer and media norms for thinness or body shape, access to and promotion of energy-dense foods, and opportunities for physical activity in schools and communities, increases with increasing age and intensifies after puberty. Social interaction with peers influences physical activity/inactivity and diet, and is in turn adversely influenced by obesity in children and adolescents. Sociocultural influences on diet and physical activity differ by race, ethnicity, and gender.

8. Asthma

Disparities in the prevalence, severity, and effective management of asthma by race and socioeconomic status are explained, in part, by social environmental factors and processes that influence exposure to physical environmental risk factors, psychosocial stress, and health-related behaviors.

- The relationship between socioeconomic status, race/ethnicity, and asthma incidence and morbidity is explained, in part, by socially determined differential exposure to physical environmental risk factors (i.e., diesel-related air pollutants, allergens) and psychosocial stress. These effects are moderated by policies and programs that buffer the effects of economic disadvantage on families.

- Economic, cultural, and social features of the local area influence: (1) exposure to stressful life conditions and events; (2) the availability of social ties that provide informational, emotional and instrumental resources to individuals and families; and (3) shared norms influencing health behaviors. These, in turn, influence outcomes including immunological functioning in the child, the likelihood that the child will develop asthma, and asthma severity and management.

III. Measuring the social environment

A. Methods of data collection

Social scientists employ a variety of data sources and data collection techniques in measuring the social environment. Specific measurement approaches adopted in any study depend on the constructs to be measured, the populations and geographic areas under study, required precision, and the resources available to the study. Data collection methods employed in existing studies of social environmental influence include:

Household surveys

Household surveys are the most common data collection method for measuring many aspects of the social environment. Household surveys can be used to obtain information on household structure and demographics; income, employment, and other socioeconomic characteristics; characteristics of social networks in which the children's parents and the child are engaged; household members' perceptions of community and neighborhood characteristics; the family's engagement with different formal institutions; and the family's knowledge and use of different publicly-provided programs. Much of this information can be obtained through telephone surveys. However, some information on the family or household—for example, the quality of parenting, or characteristics of the physical environment in the child's home—require in-home visits.

Several important design issues related to the use of household surveys in longitudinal studies require attention:

- *Definition of household*. Data from the 2000 Census highlight the increasing diversity and complexity of households. The fraction of "unmarried partner" households rose from 3.5% to 5.2% from 1990 to 2000. The fraction of households headed by unmarried females rose from 6.6% to 7.2% over this time period. The fraction of households that are multi-generational (either grandparent-parent-child or grandparent-child) households was 3.7% in 2000 (no figures from 1990 are available in recent reports.) Children's living arrangements reflect this complexity: only about 70% of children under 18 lived with two parents in 2000, and of these, an estimated 2 out of 5 no longer lived with biological parents who were married to each other. Household surveys must capture this complexity, by collecting information on the complete set of individuals living in a child's household rather than just the child's biological parents. At the same time, adults who do not live in the household—for example, absent fathers and grandparents—are often important to the child's health and development, and it is important to collect information on their contact and relationship with the child, and the degree to which they provide financial or other support.

- *Choice of respondent*. No one family member is the best source of information on all survey items, and different family members may give systematically different information. For example, data from the National Health Interview Surveys indicates that, on average, fathers report their children as being in better health and having fewer doctors' visits than do mothers. Most child health surveys collect information from the child's "primary caregiver", typically the mother. However, if

the child's primary caregiver is not the primary earner in the family, or if the household contains multiple earners, the primary caregiver may not provide accurate or comprehensive information on the family's economic status. Similarly, the mother may not be able to report accurately on the father's or other family members' relationship with the child. We recommend collecting information on income, employment, and job characteristics from each of the adult household members, and on family relationships and processes from all family members significantly involved in caregiving. At a minimum, the child's mother and father should be surveyed separately. If a significant caregiver is not present in the household, efforts should be made to locate him or her and collect relevant information. The focal child should be included in providing data at a developmentally appropriate stage.

Administrative data on individuals

Administrative data sources can be used to supplement the information obtained in household surveys, and are useful for information that is difficult for family members to remember accurately (for example, use of medical care services, or earnings histories), or may be difficult for family members to discuss (for example, involvement with child protective services or the juvenile justice system.) Gathering administrative data can be difficult: it requires the agreement of the respondents as well as the cooperation of agencies that hold data, and also requires carefully-constructed safeguards for the confidentiality of the respondents. However, several large studies have developed methods for merging administrative data with household survey data, and making these combined data sources available to researchers in a way that protects confidentiality.

Existing data on state and local characteristics

The collection of regional and local information at various levels of aggregation is critical to studying the effects of the social environment. Although the household-level survey will collect information on perceptions of the local environment and the respondent's participation in programs, it will not necessarily capture true neighborhood characteristics or actual program availability. Relying on reports of household members can result in erroneous conclusions. One problem is that the knowledge and use of programs may be endogenous to children's health—so that, for example, parents of sick children are more likely to know about or use local health services. If so, it would not be surprising to find that health and the availability of health services *as reported by the parent* are negatively correlated, even if health services have beneficial effects on the population. A related problem is that respondent's perceptions of their neighborhoods may be colored by their own health—so that, for example, depressed parents may be more likely to report their neighborhoods to lack cohesion or to produce stress. In this case, the effects of parental depression on child wellbeing may be incorrectly attributed to neighborhood characteristics.

Information on local areas is available from a variety of existing sources, detailed below. Measures vary in the type and size of geographic unit for which they are available (e.g.,

states, metropolitan areas, school districts, census block groups). Where possible, the unit and level of aggregation should be selected based on theory. For example, many policies are formulated at the state level and should be measured at the state level; however the processes that produce criminal activity and the effects of crime on individuals mainly occur within smaller areal units such as the local neighborhood and its surrounding areas. Some constructs should be measured at multiple levels of aggregation. For example, the economic well-being of the population influences resources available for programs and public services at the state and county levels, as well as norms and social processes within neighborhoods. Thus, measures of areal income should be collected at the state, county, census tract and block group level.

Sources of information on local areas:

Policy and program information. Many policies that affect children's lives are implemented at the state level (even if they are fully or partially federally funded.) These include: TANF rules, including generosity of payments, time limits, and work requirements; Medicaid and SCHIP generosity and eligibility rules; child support enforcement provisions; and laws surrounding definitions of and reporting requirements for child abuse and neglect, and policies that affect the disposition of child maltreatment cases. Information on policies and programs can be collected from states. In some cases (e.g., TANF, tobacco-related policies) existing databases summarize current policy and policy changes.

- *Census data*. Many characteristics, such as income levels, racial and ethnic diversity, neighborhood segregation, proportion of single parent families, and housing characteristics, can be constructed from decennial Census data for block groups, census tracts, counties, metropolitan areas, and states. These data cannot be used to follow changes in neighborhood characteristics over short periods of times. However, plans to replace the 2010 Census Long Form with an ongoing survey (the American Community Survey) will provide more frequent small area estimates at the county and census tract levels, but will provide no data at the block group level.

- *Administrative and other data for geographic areas*. Some data sources, such as crime reports, can be obtained at the county level. School characteristics are collected at the level of the school district, which are usually but not always within counties. Data on the size, (other characteristics) of specific schools are available through an existing data base collected by Quality Education Data, Inc., (QED), and the National Center for Education Statistics provides individual school-level information on many variables in their Common Core of Data. Data on health care facilities and utilization are also available at the local level. Others, such as characteristics of medical services, are available at the level Data on religious adherence is available from nongovernmental organizations. The number and characteristics of businesses and social service organizations is available from InfoUSA and the locations of these are often available in GIS databases. Real estate and rental prices are available from real estate data bases. A wealth of data from administrative and other sources is available in many communities, but

additional research is necessary to identify potential gaps in these information sources and issues that might arise in accessing them. The SEWG will propose a pilot study to conduct this research.

Linking this diverse set of areal information to the child- and family-level data is no small task. A basic requirement is to obtain specific information on the geographic location of the child, ideally through use of a geographic positioning system (GPS) device that provides exact geographic coordinates for the child's residence. Existing data on defined areal units can be linked by matching geographic coordinates. In addition, alternative approaches can be adopted that are not based on pre-defined geographic units. For example, the number of recreational sites or health care facilities within a given radius of the individual's home can be coded.

Most existing studies create datasets that combine measures of state and local characteristics linked to survey data on individual respondents. An alternative approach is to *not* attempt to collect the information on local areas, but instead to provide researchers with individual respondents' geographic identifiers and allow them to collect and link appropriate areal data. However, this approach has several serious shortcomings. The first is that the provision of geographic identifiers compromises confidentiality. The second is that, because different researchers will inevitably use different measures and methods of merging, the ability to compare results across studies is compromised. Providing a standard set of contextual data requires more work on the part of the organization conducting the study, but avoids these problems. A "middle ground" approach is to provide a basic set of contextual measures to all researchers, and set up a secure procedure that investigators may use to link other contextual measures to the individual survey data without compromising confidentiality.

Direct observation

Another innovative approach employed by recent studies of neighborhood and community effects has been to collect systematic data on area characteristics through the use of inventories completed by trained observers (Pebley, 2002) and through a technique, called systematic social observation (Sampson and Raudenbush, 1999) based on videotaping and coding the characteristics of public spaces. These techniques permit the assessment of characteristics that are not available, or unreliably measured, in existing records. For example, they have been used to measure the physical condition of neighborhoods (conditions of streets, traffic, presence of trash and garbage, land use, condition of buildings, graffiti) and social characteristics (loitering, gang activity, presence of prostitutes, homeless, or drug dealers, public intoxication, presence of children, police, use of multiple languages).

Other observational studies include studies that assess child developmental outcomes through direct observation, observation of interactions between children and caretakers, and direct observation of the physical and social characteristics of schools, day-care centers, and medical facilities.

Community ethnography, observation, and other methods

Ethnography is a set of methods used to provide an in-depth understanding of the cultural understandings that pattern individual behaviors and experiences in daily life in the context of historical, social, economic, and physical opportunities and constraints. Culture, as a model "of and for reality" (Geertz, 1973) operates in the background of daily life and behavior, and so is difficult to study directly. The methods of ethnography are flexible and varied, and may include direct observation, in-depth interviews, key informant interviews, textual analysis, focus groups, and surveys. The essence of ethnography is in this flexibility, and in the commitment to go beyond the collection of individual facts about individual lives to get at the shared understandings, expectations, and values that profoundly influence individuals' view of the world (and therefore their behavior) and the social dynamics of communities or groups.

Ethnography is expensive, and necessarily undertaken mainly in small-scale studies. However, it can provide invaluable insights when properly integrated into larger-scale studies. The flexibility of ethnographic approaches permits the discovery of new facts and relationships that investigators may miss altogether if they rely solely on pre-designed measurement protocols. Insights derived from ethnography may clarify the interpretation of study findings by clarifying the meaning of events to individuals. Ethnography can also provide direct measurement of hard-to-measure constructs such as cultural norms.

Furthermore, ethnographic methods can often be employed selectively to address specific measurement needs. For example, independently conducted community surveys might collect data on local attitudes and values and the extent and quality of social interaction and political participation among area residents (e.g., PHDCN). [In some studies, local area estimates of such measures are derived by aggregating the responses of the primary study participants; however the aggregate measures thus derived are not truly independent of the study participants and may give misleading results for the reasons given above.] Key informants in community institutions (religious organizations, day care centers) may be asked to provide information about the ways in which their institutions function (e.g., Laumann et al), or teams can be sent to observe the operation of these institutions (e.g., NICHD Day Care Study). In-depth interviews can be conducted with a subsample of families. Local media outlets can be monitored for content that could influence health (e.g., advertising of alcohol or tobacco, news stories about physician malpractice or side effects of drugs, etc.). Mapping, using geographic information system (GIS) data, can be used to examine how individual's daily lives unfold over physical space.

A three-tiered approach: Household surveys, existing state and local data, and selected in-depth local studies

The Social Environment Working Group believes that an ideal approach to measuring the social environment would consist of three "tiers" of measurements. The first tier is survey data on the child, household, and key family members as well as family resources and process, social support networks, ties to community institutions, and knowledge/use of

social programs and public policy. The second is the collection and integration of existing information on the local areas in which study participants live (states, counties, neighborhoods, etc.). This tier of measurement should include as much data as possible that is relevant to the goals of the study, and the set of identifiers collected by the study should include the geographic coordinates of participants' residence.

The third tier of measurement should include a small sample of local communities selected for intensive measurement. The goals of the study should guide the criteria for selecting these communities; illustrative criteria might include diversity by rural/urban status, racial and ethnic composition, income levels, and the presence or absence of environmental hazards. Participants in these communities would follow identical protocols to participants in the overall study (the two tiers of data described above) but a variety of additional measurement strategies would be implemented as well to provide greater depth and coverage in the measurement of the social (and perhaps physical) environment. These measurement strategies could include:

- Community surveys of values, attitudes, and social processes
- Observational studies of schools, religious organizations, and day care centers
- In-depth studies of the implementation of public policies and programs, and the enforcement of laws (housing violations, child welfare systems)
- Geographic mapping of participants' social, work, and institutional contacts and resources
- Monitoring of media content for health-related influences
- Measurement of global social networks in schools at selected grades
- In-depth interviews with families and extended family members; in-home observation of family process

These intensive measurement strategies are necessary for testing some of the Working Group's hypotheses, and highly desirable for others. For example, to adequately test hypotheses about the impact of child care quality on child outcomes, observation of provider-child interaction among children in child care would be conducted to measure dimensions of quality of care that cannot be adequately captured by other means. Measuring the influence of peers on children's behavior cannot be accomplished without assessment of global social networks, because ego-centered reports on peers are biased by the child's own attitudes and behaviors. The most important influence of public policies on asthma etiology and severity may reside in policy implementation (e.g., of housing codes and housing subsidies), which may not be adequately documented in available administrative records.

B. Longitudinal Design

1.Need for a longitudinal study

An important feature of the social environment is that it is not static. Many children will experience changes in family structure over their lives, as their parents' marital status and/or living arrangements change. Children who move experience changes in their neighborhoods; and, for those who do not move, neighborhood characteristics may change

over time. Economic status changes due to changes in economic cycles, employment, family structure, and life cycle stage. And, characteristics of the institutions and policies that affect children vary over time.

It is also likely that the effects of different aspects of the social environment vary at different ages—so, for example, neighborhood characteristics may become increasingly important as children grow older—and may have cumulative effects on children over time. For example, evidence indicates that health disparities between poorer and better-off children become increasingly large as children become older. Some social environmental effects may be most important during specific critical periods, for example, care-giving during infancy, and may have latent effects that express themselves at a later stage of development.

For these reasons, longitudinal data collection is essential for research on the effects of the social environment on the health and development of children. Many if not most features of the social environment cannot be reliably reported retrospectively. Longitudinal data are needed to track changes in the social and family environment, and variation across children in their "exposures" to different aspects of the social environment over time.

Longitudinal data are also required because the relationship between many social environmental factors and health and development is *reciprocal.* For example, ill health can result in a change in availability of social support, and lack of social support can undermine health. Preserving the correct temporal sequence between exposure and outcomes is essential for inferring causality, and for understanding the ways in which health and social factors influence each other over the course of development.

2. Periodicity of measurement

Because the social environment changes over time, surveys need to be administered at multiple points over the course of childhood. The frequency and timing of measurements depend on the independent variables and the hypothesized timing of critical exposures and effects. We recommend developing a comprehensive "baseline" data collection to measure family, household, and area characteristics. Household survey data should be updated in a series of annual or bi-annual surveys that gather information on items (such as parental employment status, income, use of social and medical services, social networks, and family process) that vary across years and for which subjects can be expected to have poor recall over longer frequencies. Neighborhood, community, and policy characteristics should also be updated on a regular basis. Specific requirements for periodicity by measure require further study by the Social Environment Working Group.

C. Sampling and Design Requirements

1. *Probabilistic sampling of a nationally-representative population*

The Social and Environment Working Group strongly supports the use of a probability sampling to obtain data that are representative of a cohort of US children (including children born on US military bases and children born to incarcerated or homeless mothers). One approach is to follow the lead of the Early Childhood Longitudinal Study – Birth Cohort study, which implemented a national probability sample of births based on vital registration. Recruitment of a probability sample of mothers giving birth in hospitals and birthing centers is another alternative (though at the cost of slightly less population coverage), one that has been used successfully in a current NICHD study.

Biases resulting from reliance on nonprobability sampling would undermine the validity of the study in a number of ways:

- The descriptive findings of the study would not be generalizable to any known population, and in fact the sample may systematically underrepresent individuals most at risk for adverse outcomes. This would be true if, for example, participants are selected from the population of women who receive prenatal care.
- The substantive findings of the study, e.g., measuring the impact of exposure A on outcome X, could be seriously compromised. One potential problem is failure to find effects due to insufficient range in either the dependent or independent variables (because participants have been systematically excluded in ways correlated with those variables); another is the potential for failing to identify, and account for, important conditional effects. For example, if A influences X in some groups or under some conditions but not others, then the relative representation of the groups/conditions in the study population will influence the overall estimate of the effect.
- Other major data sources on health, such as the National Health Interview Study, the Medical Expenditure Panel Study, and the NHANES, are based on nationally representative probability samples. The comparability of results across studies requires the use of similar sampling methods.

We recognize that a sample drawn from the population of births rather than from a population of pregnant women will make it difficult to study the effects of the pre-natal environment on birth outcomes and later childhood health. If it were feasible, the ideal sampling method would be to randomly sample women of child-bearing age, and track them into and through pregnancy. However, no complete list currently exists that could provide a sampling frame for a probability sample of soon-to-be-pregnant women. Such a frame could be constructed by starting with an area probability sample, screening to select a sample of women, and monitoring them until they become pregnant. The sample of women could be selected to maximize the potential yield of pregnancies by oversampling those women with characteristics associated with an impending pregnancy (there is a solid literature on such characteristics in the field of demography). However, this method would be costly. While it would be less costly to construct a frame of service providers that would yield a sample of pregnant women, such a frame would systematically exclude women who fail to have contact with providers. Many women, primarily young, single, and poor, identify pregnancy late and have contact with health or social services even later.

Those who are late in recognizing pregnancy and getting care are systematically different than those who are early with regard to important social and psychological factors.

An alternative would be to combine methods, e.g., combine a sample of births with an area sample of women screened for the likelihood of impending pregnancy; combine an area sample with a probability sample based on a provider frame; or other similar combinations. The key is to base at least some substantial portion of the sampling plan on probability methods and a comprehensive sampling frame.

2. *Stratification and clustering*

A simple random sample of the population, in which all children have equal probability of being sampled, will result in relatively small groups of children from some types of communities and ethnic groups, making it difficult to study health problems in these populations. It will undoubtedly be desirable to oversample some types of communities and populations. Rural communities are generally not adequately represented in national probability samples. It will be important to oversample diverse types of rural communities that pose special risks to child health and development. These include agricultural communities (because of pesticide use and other occupational safety issues); impoverished rural communities (because of poor access to health care and other social services, high incidence of high risk factors like obesity and diabetes, and siting of environmental contaminants); and perhaps high growth rural communities in recreation and leisure (because these are places of future growth and development). Impoverished communities generally and minority, immigrant, and migrant labor populations are other likely targets for oversampling. All decisions on oversampling should be made with an eye to the adverse impact of weights on statistical precision.

A related issue is the need to have an adequate number of U.S. states represented in the sample. The working group has several hypotheses regarding the effects of variations in state-level public policies on child outcomes. Measuring the effects of these policies requires variation in the policy environment, something that can only be achieved by having a large number of states with variation in the policy environment.

A final issue is the need to design the sample to optimize the modeling of multi-level effects on health. There are a variety of sampling issues in the design of datasets that will be used to identify neighborhood and community effects. The degree of clustering within neighborhoods, and stratification to ensure adequate variability in the independent variables are two such issues.

3. Changes over time

The collection of a longitudinal cohort study poses special challenges. A major difficulty is keeping track of research subjects after they have moved. Although it is costly to track movers, the Working Group strongly recommends that movers be followed wherever they go. There are two reasons for tracking subjects who change location. First, those who move are not a random sample of the population of interest and, by restricting the sample to those who do not move the sample will become less and less representative of the underlying

population over time. Second, a growing body of literature is documenting that residential mobility is consequential for children's health and development. Data from the Current Population Survey show that one in five U.S. children under 6, and one in three poor children, change residences annually. On the one hand, movement from harmful to safer environments has been shown to improve child health and behaviors; on the other hand, high levels of residential instability disrupt social ties and contribute to poorer developmental outcomes. Further, issues of residence and mobility are central to the goal of estimating the effects of environmental influences on health outcomes. The risk of exposure to toxins, bad schools, or high-crime neighborhoods is confounded with the social and economic disadvantage that limits residential choice for many residents of inner cities and poor rural communities. The study will need to address the selection processes that result in people living where they live in order to accurately measure the impact of these exposures.

Another issue concerns changes in the population of children due to international migration. Data from the 2000 Census indicate that 3.9% of children (those aged 17 or less) were not native born, i.e. were born outside of the United States. Immigrant children have special health concerns, and this study will be unable to measure or analyze health problems among immigrant children if it is based solely on a sample of births. One way to deal with this problem is to add, at regular intervals, "refresher" samples of immigrant children who are of the same age as those in the original sample, so that the sample continues to be representative of all children in the U.S. who are members of the same birth cohort.

A final issue concerns the use of a single cohort of children who were born around the same time. In a single cohort study, period effects (e.g., a recession, a change in social policy) are experienced at the same time by all participants. Changes in outcomes that follow such "shocks" cannot be distinguished from maturational effects unless another cohort born at a different time period is available for comparison. The working groups recommends consideration of a multi-cohort design to enable analysts to distinguish the effects of maturation from period change. This could be accomplished by introducing new cohorts to the study at regular (e.g. 5-year) intervals or (less ideally) by recruiting the sample from multiple cohorts over a shorter time interval.

4. Sample size

The Social Environment Working Group has not yet conducted formal power analyses to identify required sample sizes for the proposed hypotheses. However, the requirement for a large sample follows from many features of the hypotheses and the general character of social environmental effects.

- Testing the *multi-level* nature of social environmental effects demands a hierarchical data structure with sufficient numbers of observations at each different level (e.g., community, neighborhood, family, child) to allow analysts to appropriately model contextual influences. Moreover, there must be sufficient variability at higher levels (e.g., geographic, environmental, economic, cultural, and

policy variability) and within levels to adequately power hypotheses concerning multi-level effects.

- Studying *multiple pathways* involving the social environment, community and family processes, and child development patterns require a large, diverse sample that can represent different types of family and household structures, care-giving patterns, community characteristics, and children who have different developmental and health experiences (i.e., low birth weight; physical and mental disability; temperament; turbulent family experiences; etc.).

- Socioenvironmental effects on child health are often multidimensional, that is, not reducible to the effect of a single dimension or factor. For example, different dimensions of socioeconomic status—indexed by the education, labor force status, source-specific incomes, and other attributes of one or both parents—may vary in the relative strength of their effects, both over time and across population subgroups. A large sample is essential to estimate these complex effects. Similarly, examining multiple, *overlapping* exposures (e.g., family social support versus peer group social support; neighborhood income vs. access to recreational facilities; policies that support family income vs. provide health care) requires a sufficiently large sample size to power such analyses.

- Testing interactions (e.g., cross-level interactions between community characteristics and individual characteristics; or gene-environment interactions) demands a large sample size. Such interactions are likely to be extremely common in social environmental pathways. For example, research suggests that early prenatal care may have less influence on birth outcomes in poor neighborhoods; job programs will have differential effects depending on the availability of child care subsidies; peer influence will have a different effect on weight-control patterns in African American and white adolescents. Examining the differential impacts of social environmental factors on population subgroups (e.g., women, Mexican immigrants, low SES groups, rural families) requires a large enough sample to represent these groups.

- Many important aspects of the social environment require large samples by virtue of their own characteristics or because of the outcomes they influence. For example, use of social welfare programs tends to be episodic, affects only a small proportion of the population at any given point in time, and varies greatly by social, spatial, and demographic characteristics. Only a very large sample will have sufficient power to enable investigation of small incidence of program use across different social groups in different locations. Many of the health conditions that are associated with economic status in childhood are rare. Data from the National Health Interview Study indicate that epilepsy, diabetes, and kidney disease are all associated with low income, but affect only a very small fraction (1% or less) of children. Even relatively “common” conditions such as asthma and obesity affect small enough fractions of children that large samples are required for analyses that involve separating children into groups classified by race, region, or gender.

Whatever samples sizes are required to evaluate the hypotheses presented by the Working Group, it is still necessary to collect valid and thorough measures of social environmental influences on health and development in the National Children's Study. Social environmental effects and the effects of rare exposures in the physical environment are not independent of each other. In an observational study, analysts will be unable to disentangle the causal effects of physical environmental hazards on children's health without complete measurement of correlated social environmental effects. As we hope this document and the accompanying hypotheses illustrate, these effects are complex and not easily captured in a few simple measures. Furthermore, the effects of physical environmental hazards will be affected by the ways in which families, neighborhoods, and policy-makers respond to them. Measurement of the social environment is necessary to a complete and valid discovery of the influence of physical threats to children's health.

D. Measures

The following tables provide *preliminary* lists of variables that are required to test the Working Group's hypotheses. The first table contains information that can be obtained from household surveys. The second contains information that can be obtained from administrative and other data sources. We do not include measures of the child's health here, since we anticipate that health measurement will be the focus of many of the other working groups. The Working Group will supply additional detail on how and how often these variables are to be collected after initial discussions with the NCSAC.

Table 1: Measures from Household Surveys

Variable/scale
Child and family characteristics
Demographic variables: age, gender, marital status, relationship to child of each household member (family structure)
Race, ethnicity, and migration: race, ethnicity, place of birth, migration history (including residence 5 years prior to initial interview), legal immigration status (if born outside of the U.S.); language spoken.
Religious affiliation, beliefs, attitudes, practices
Education levels of household members: Highest grade attained, whether currently in school or a job training program.
Employment status of household members
Job characteristics of household members: work hours, annual earnings and bonuses, occupation, industry, benefits (health insurance, maternity/paternity leave, breastfeeding supports, child care, flextime), perceptions of job stress.

Household division of labor, time use (time spent in child care, meal preparation, housekeeping, outdoor maintenance, etc. by primary caretakers of child)
Characteristics of parents living out of the household: age, gender, education, employment status, job characteristics, frequency and nature of contact with child
Unearned income of each household member: cash and in-kind public transfers (TANF, WIC, food stamps), child support receipt, other private transfers (gifts from relatives and friends), asset income, other income.
Food Expenditure (Panel Study of income Dynamics measure)
Housing Expenditure. Monthly expenditures on owned or rented housing and utilities.
Medical Care Expenditure. Out-of-pocket expenses for medical and dental care.
Child Care Expenditure. Monthly expenditure on child care for sample child and other children in the household.
Assets: Financial assets, home equity, ownership of major durables
Housing characteristics: Type of structure (single-family, duplex, townhouse, apartment, trailer); number of rooms; quality of housing (safety of environment for children, crowding, noise levels, cleanliness of home); whether publicly provided or subsidized housing.
Mobility: Number of moves during past year; reasons for moves; locations of places lived in the past year.
Economic stress: Utility shut-offs; debt problems and bankruptcy; food security (CPS measure).
Current mental health of household members: stress, depression and anxiety, drug and alcohol use
Mental health history of household members:: history of mental health disorders, drug and alcohol use.

Current physical health of household members: body weight and height, current self-assessed health status, reports of current physical health problems and chronic conditions; current pregnancy
Physical health history of household members: history of health problems and onset of chronic conditions.
Family Process
Relationships among household adults: domestic violence and measures of family conflict.
Parental discipline: Conflict tactics scale (???)
Monitoring and supervision
Cognitive stimulation: selected items from HOME and other scales.
Family warmth, closeness
Family meal environments: meals eaten at home or away from home; parenting practices directed at eating; child feeding questionnaire (Birch, et al., 2001)
Breastfeeding practices: Frequency, problems with.
Parenting practices related to physical activity: Frequency of television viewing, video and computer use, outdoor play.
Health behaviors: Whether child receives regular medical checkups; whether child receives proper dental care (checkups, toothbrushing, put to bed with bottle); use of age-appropriate car restraints (seat belts or car seats); exposure to second-hand smoke; put to sleep on back (for infants)
Social ties
Parents' social networks and social support: Some subset of the following scales: the Social Network Index (Berkman and Syme, 1979); New Haven EPESE Network Assessment (Seeman and Berkman, 1988), Glass et. Al. 1997); Social support scale (Lin et.al. 1979); Perceived Social Support Scale (Blumenthal et.al. 1987); Medical Outcomes Study Social Support (Sherbourne and Stewart, 1991); Interpersonal Support Evaluation List (Cohen and Hoberman, 1983).
Children's social networks (ego-centered)

Social Institutions
Parent's knowledge of social services: Knowledge about local social service programs (visiting nurse programs, breastfeeding support programs, parenting programs, nutrition counseling.) Knowledge of eligibility for WIC, Medicaid and SCHIP, TANF.
Use of local programs: Use of local social service programs (visiting nurse programs, breastfeeding support programs, parenting programs, nutrition counseling.)
Participation with local institutions: Affiliation and participation with religious institutions, religious education programs, voluntary associations (e.g., PTA, civic groups).
Child Care: Frequency and duration of time child spends in child care, by setting. Kinds of child care used (care provided by relatives, friends, in a home-based or center-based daycare) over the past year. Child care expenses; use of public subsidies.
Neighborhood Characteristics
Social capital: Some subset of the following scales: the Collective Efficiacy scale (Sampson et.al, 1997); Community Social Capital Benchmark Survey (Putnam, 2001); Australian Social Capital Assessment Tool (Bullen and Onyx, 1998); and the World Bank Social Capital Assessment Tool (Krishna and Shrader, 1999). These measure the extent of social ties within the local area that can be used to achieve common ends.
Norms and attitudes (e.g., relevant to behavior, upkeep of housing, parenting)
Perceptions of neighborhood: crime, safety, helpful neighbors, etc.
Geographic location of residence using GPS device.

Table 2: Information from Administrative and Other Data Sources

Administrative Data on Families and Individuals
Medicaid/SCHIP Records: number of visits, health conditions treated
Social Security earnings records—earnings history of primary income earners in child's family
Child Protective Services records: Whether the child or any family members have been reported to child protective services. If so, disposition of the report.
Death records: Date and cause of death for children and family members who are deceased.

Local Characteristics
Housing quality (age of structures, structural soundness, maintenance deficiencies, safety, space and crowding, privacy, affordability, tenure [own vs. rent])
Economic structure (percent of jobs in service, manufacturing sectors, etc.)
Land use
Population density
Transportation systems (availability of public transportation, street conditions, traffic)
Problem conditions (safety hazards, noise, odors, pollution)
Socioeconomic status (education, income, occupation of neighborhood residents)
Racial/ethnic composition and residential segregation
Health status of population (presence of infectious agents, % disabled)
Employment opportunities
Voting and political participation
Crime rates
Direct observation of community physical and social characteristics, using LAFANS Inventory or Systematic Social Observation
Local Institutions
Community organizations: Presence, location, and quality of organizations, including health services, schools, recreational facilities, and religious institutions.
Commercial establishments: Presence and accessibility of grocery stores, pharmacies, fast food restaurants, other.

School characteristics, including structural features (makeup of student population, staffing, teacher pupil ratio, funding per pupil, average class size) and functional features (peer norms, school climate, instructional focus, extracurricular activities); school climate (student engagement and attachment to school, achievement, motivational influences, peer interactions, aspirations); school facilities, including exposure to hazardous conditions.
Health-related characteristics of schools: availability of health and mental health personnel; formal linkages between schools and community health providers; health promotion curricula, programs and policies; access to healthy and unhealthy foods, requirements for and availability of physical education classes.
Day care availability (number and types of providers, number of center slots per child)
Day care quality: facilities, group size, staffing ratios, staff qualifications. Through direct observation in intensive sites: relationships and interactions between caregivers and children, continuity in relationships, curriculum, attitudes and values of staff .
Religious institutions: size, teaching, policies, social cohesion, activities for youth (intensive sites)
Social Networks and Social Processes
Global social network measures in schools (intensive sites)
Community social processes – direct observation (intensive sites)
Family process, parenting, community norms - ethnographic study of (intensive sites)
Policies and Programs
TANF, Food Stamps (state eligibility policies and regulations)
Medicaid, SCHIP, WIC (state eligibility policies and regulations)
Child support: policies and enforcement
Health policies: policies directed toward tobacco control and other health and environmental concerns
Housing-related policies, e.g., zoning, housing codes, public housing programs
Child care: subsidies and subsidized services; regulation
School health programs and school policies
Local and state governmental expenditures on education, health, welfare, transportation, housing.

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