THE
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“Measurement of Socioeconomic Position and its Health Implications in Rural Ecuador”

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by
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Abstract

**Background:** Although it is widely accepted in epidemiological research that socio-economic position (SEP) is an important determinant of health outcomes, comparably little evidence exists from the developing world to validate and demonstrate the strength of this correlation. Furthermore, even fewer studies exist that validate measures of appropriate variable selections for SEP in developing countries. This study asks questions of 1) how best to measure SEP based on objective and subjective measures in a rural region of Ecuador, and 2) how best to construct indices of wealth and status in low-income countries in the context of global health disparities research.

**Methods:** Various measures and indices of SEP were constructed by combining qualitative and quantitative data. *Qualitative:* Ethnographic work was conducted in a rural costal area of Ecuador during the summer of 2007 to assess local understandings of status and wealth. Culturally appropriate measures of position were then proposed. *Quantitative:* Surveys were administered by the EcoDeSS research team to all adults (>12 years of age) in the village to measure various aspects of SEP including assets, consumption, income, spending, education level, house characteristics, and employment. A subset of this survey data was extracted from one village between 2005 and 2007. *Index Construction:* Indices were constructed based on local perceptions of status and wealth, assets, factor analysis, and principal component analysis (PCA).

**Results:** *Qualitative:* Local perceptions of wealth indicators included well constructed and furnished houses, ownership of land, ownership of farm animals, ownership of a business, having steady employment (versus seasonal), and not receiving welfare from the state. Perceptions of determinants of status included education outside of the village, professionals who return to the village, leaders of popular groups, working hard for one's family, having a "desire" to ascend economically, and status is lost by wasting money on drink or clothes. *Quantitative:* The ethnographic variables captured the two dimensions of SEP found in the quantitative data, while the World Bank measures only captured one.

**Conclusions:** Despite poor conditions in the region and relatively low wealth levels in the village, gradients in wealth and status were evident from both direct observation and local perspectives. The ethnographic variables captured SEP more accurately and completely than the variables based on convention alone. Cognitive validation of measurement techniques is necessary for measurements to be appropriate within studies that include variables measuring social position. Accurate measures of SEP are especially important in health research to better understand the complex causal mechanisms involved.
Forward and Acknowledgements

This thesis is the academic quest of a premed undergraduate to understand health (and health outcomes) from a very broad perspective and with the tools from various disciplines. From the inception of this work to its completion I have traversed and have become well versed in the disciplines of social epidemiology, anthropology, public health, and index construction rooted in psychology. This experience has solidified my interests in health research, which I will pursue with either an MPH or a PhD, and has furthered my passion for becoming a physician focused on community health and preventive medicine.

I was interested in public health during my early years at Trinity, but it was only while taking Professor Jim Trostle’s Medical Anthropology course, and subsequently becoming his research assistant that I was exposed to and became fascinated with the social determinants of health, the causal mechanisms involved, and how the process of variable creation and selection that is required for this area of inquiry. Professor Trostle has also taught me the importance of paying attention to culture when investigating disease. This anthropological approach to health has helped me understand the complexities of disease patterns, health risks, and health seeking behaviors.

Through this work, which is the result of weekly conversations with Professor Trostle, rewarding exploration of diverse literature, and many late nights in the library, I sought to investigate one of the most commonly used variables in social epidemiology: socioeconomic position. I chose to focus on measurement because accurate causal relationships between health outcomes and social/environmental factors cannot be gleamed without appropriate and valid measures. In essence, this is an investigation of methods within a field that is considered to span a several disciplines in its own right and depends on methods that continue to evolve.

I have learned many theories and techniques in a short period of time, and have produced significant findings that will be submitted to academic journals for publication. In this thesis I present my explorations, experimental methods, and findings; all of which have benefitted from Professor Trostle’s interdisciplinary expertise and his continuous encouragement of a curious undergraduate student. I am deeply grateful for his mentorship, patience, and unending support.

I am also very grateful to my second reader, Professor Alison Draper, who has been a continuous source of support and guidance throughout my four years at Trinity and especially during the time I was writing this thesis. Even during her maternity leave Professor Draper gave feed-back on my thesis and provided expertise in the physical and biological sciences. I am especially grateful for her unending moral support of my work and my academic pursuits.
Additionally, I would like to acknowledge the EcoDeSS field team and the Ecuadorian villages in which I conducted field work. I am grateful to the team for their willingness to work with an undergraduate, and I am especially in debt to Marylin Rodriguez for “showing me the ropes” in Ecuador and for her example as a good student-anthropologist. EcoDeSS not only provided me with the resources and connections in the field that made my work possible, but the project and its creators also provided the theoretical soil in which my research questions were able to take root. Without my experience as Professor Trostle’s research assistant I would not have been exposed to sociocultural epidemiology at this stage in my life, and this thesis certainly would not have been possible. Without the EcoDeSS data from various surveys of household assets, census information, and consumption data, it would also not be possible to quantitatively compare indicators of status and wealth. I am grateful to the people of our study villages for allowing me to live in their communities, to observe their lives, and to ask many questions.

Last, I must thank my family and dear friends for their support of my thesis during this past year. I am especially grateful to my father who has graciously supported and encouraged my every effort and pursuit in life, not least of which is this work.
Chapter 1: Social Determinants of Health

“Historical analyses have indicated that although risk factors for ill health change over time, they tend to cluster disproportionately with the lower ends of the social hierarchy. In other words, the better-off, more educated, more powerful, and wealthier in society have much greater capacity to improve their health than do the less-well off – a pattern than is sustained over time and across place.”

-Whitehead 2001: 5

“No variation in health…is the result of chance; it is the direct result of physical and political conditions in which nations live.”

-Farr, 1866

Although there have been significant advances in health outcomes during the last century in both industrialized and developing nations, discrepancies persist between and within countries in the 21st century. It has been observed in European countries over the past century that life expectancy has risen from below 50 to about 80, and is still rising (Willets et al., 2004). In south Asia between 1970 and 2000, life expectancy increased from 50 to 63 years, while in sub-Saharan Africa during those same years, life expectancy rose four months to reach 46.1 years (UNDP, 2005). Certain regions of the world have achieved significant improvement in health by improving living conditions, working conditions, and medical care, while other regions endure levels of ill-health that are avoidable. Health disparities, however, also exist within high-income and low-income countries, not just between them. In the United States, for example, the country with the largest GDP, a 20-year gap in life expectancy existed in the early 1990’s between black men in downtown Washington D.C. and white men in Montgomery County, Maryland (Murray et al., 1998). Inequalities in health are also present in poorer countries; for example, is South Africa in which infant mortality is five times higher for blacks than it is for whites (Evans et al., 2001). Also, in El Salvador, mothers with no education have an infant death rate of 10% in the infant’s first year of life while mothers with at least a secondary education have an infant death rate of 2.5% (World Bank, 2006). The variance in health outcomes like infant mortality and life expectancy closely follow the nation-wide outlines of social stratification including poverty and ethnic minority status. As health inequities persist between different populations world-wide it has been an important goal of health researchers to measure these systematic disparities in health in order to understand the causes of the causes. Research can then be used by policy makers to confront the inequities and to create a more equal world in which all individuals can flourish to their full potential.
In this first chapter I provide a historical account and theoretical frameworks for the social epidemiology – one of the academic field in which my thesis is rooted. I illustrates the conversations that have taken place in the literature in order to show the reader how any why my research questions in the thesis are particularly relevant in 2008.

**Social Epidemiology**

Social epidemiology is the study of the social determinants of health and disease. According the Krieger 2001, the term “social epidemiology” was first used in an article published in 1950 by Alfred Yankauer, entitled “The relationship of fetal and infant mortality to residential segregation: an inquiry into social epidemiology”. Since that time, substantial growth has been observed in the research and literature examining economic, political, and societal variables upon health outcomes and disease (Kaplan, 2004). Figure 1 shows the increase of the term “social epidemiology” in publication titles, abstracts and keywords between the years of 1966 and 2002. From 1990 to 2000, the number of publications per year doubled from 100 to 200. Then, by 2000, the first textbook entitled “Social Epidemiology” was published by L. Berkman and I. Kawachi, with 19 distinctive contributors, and a forward by S.L. Syme, providing theoretical and methodological overviews supported by some of the publications in Figure 1. Another breakthrough for the field came in 2004 with the publication of Sir Michael Marmot’s book entitled “Status Syndrome”, which was the first publication within social epidemiology that was targeted toward the larger public. This publication along with the 2008 PBS series “Unnatural Causes: Is Inequality Making Us Sick?” were the first attempts from social epidemiologists to communicate with larger audiences, and demonstrate a societal need for health policy reform and power redistribution.

![Figure 1. Publications per year containing “social epidemiology” in the title, abstract, or keywords from 1966-2002. Source: Kaplan, 2004.](image-url)
Researchers in the field have brought to our attention that health and disease are largely impacted via broad social, political, environmental, and cultural factors. There has been a particular focus on community as an entity in itself, an entity more complex than the sum of the individual persons who make it up: one that acts on and through those people to influence the health status of each. It is widely acknowledged that health and disease are influenced by many different factors; therefore, individual pathophysiological risk factors and social risk factors are not necessarily competing explanations for disease patterns. This has led to a view of health that is not solely linked to individual behavior or exposure to risk, but also to the social and economical structure of a society. Recognition of the power of socioeconomic factors as determinants of health came initially from research on health inequalities.

The idea of social forces affecting health is not new in history; however, paying attention to measurement of social forces and understanding the mechanisms linking them to health outcomes is new. Forming a new sub-discipline such as social epidemiology is challenging to researchers because they initially lack sophisticated tools and theories. Thus, social epidemiologists faced the opportunity to create new research methods and appropriate measurements to test theories. Researchers in this field often cross disciplines, incorporate tools from economics, sociology, psychology, and biology into existing methods and theory from epidemiology when appropriate (Krieger, 2001b). Some scientists criticized interdisciplinary research such as social epidemiology because researchers extend into academic areas in which they lack training, though others argue that the encouraged collaboration between disciplines is a strength of the sub-field. Expanding the scope and vantage point of “traditional” epidemiology to include societal factors and additional contexts can further improve health and reduce disease; however, success rests on tested theory and well designed concepts. Interdisciplinary health research is well suited to tackle complex questions of how society systematically affects the health of people.

Epidemiologists study health outcomes and well-being in populations by tracking the distribution of disease within individuals and identifying relevant patterns and risk factors. One example of “traditional epidemiology” that focuses on individual risk factors is John Snow’s historic case in 1854. Since Dr. Snow discovered the pattern of cholera occurrence in several areas in London and traced the outbreak of an epidemic to a contaminated water source, epidemiologists have relied heavily on specific pathogens and the germ theory to identify and explain patterns of communicable disease (Mechanic, 1978). There is still tension today among epidemiologists whether pathogenic risk factors or broad sociocultural risk factors better help us to understand disease and death (Mechanic, 2007). Though Snow and his *Vibrio cholerae* strike people as quintessential epidemiology because there was a clear mechanical vector transmitting the infection, social factors such as poverty and employment that affect health outcomes have also been long implicated and studied throughout the field’s existence. This was the case when public health officials and other researchers in Great Britain and the United States found increased rates of disease among the poor during the nineteenth and early twentieth
centuries (Berkman, 2000). Improvements were subsequently made to sanitation, work and housing conditions, nutrition, and access to immunizations. After a large increase in life-span was observed, it was thought that reductions of major social disparities in health would soon follow suit (Kadushin, 1964). This has not been the case for industrialized countries, however, and even as chronic diseases outnumber infectious diseases in prevalence and incidence, research shows that social inequalities in health have been maintained and are, in fact, growing throughout the years.

**Health-related Effects of Inequality**

The relationship between socioeconomic position and health disparities has been a topic of much interest, discussion, and heated debate in the social epidemiology literature. There are a variety of competing definitions and measurement tools within the literature of social epidemiology. The work in this field is characterized by different theoretical emphases, varying levels of abstraction, and diverse interpretations. This is partly due to the challenges of measuring such a complex idea. The majority of these studies conclude that SEP is negatively correlated with health indicators such as mortality (Rosen, 1993), morbidity (Soobader et al. 1999; Behm, 1980), coronary heart disease (Evans et al. 1994), obesity (Shakamoto, 2001), and infant mortality (Waldmann, 1992).

Specifically, in Latin America, Behm (1980) found that mortality rates were higher for the working class, for certain indigenous groups, and was associated with lower levels of education and income. He also observed that among measures used for SEP (income, and level of education) level of education of the mother was most significantly correlated to child and infant mortality.

**Current Theoretical Frameworks**

During the past half century of research within social epidemiology, three main theoretical frameworks have emerged that either alone or in tandem with the others explain social inequalities in health and disease distribution. According to Krieger (2001), the three current categories are: 1) psychosocial, 2) political economy of health, and 3) multi-level frameworks and ecosocial theory.

**Psychosocial Theory**

Psychosocial theory was defined in large part by J. Cassel’s 1976 publication in the American Journal of Epidemiology, entitled “The contribution of the social environment to host resistance.” In this work, Cassel explains that although exposure to pathogenic agents is very common, vulnerability to disease is largely due to both physical and psychological stress caused by “human interaction” (Cassel, 1976). These stressors, Cassel hypothesized, negatively affect neuroendocrine function, and thus make some groups in society more susceptible to disease than others. Factors in psychosocial theory, according to Cassel, include dominance hierarchies, lack of social organization, rapid
social change, social isolation, marginal status in society, and lack of social support (Cassel, 1976). Psychosocial theory emphasizes “endogenous biological responses to human interactions” (Krieger, 2001).

**Political Economy of Health**

This theoretical framework within epidemiology analyzes political and economic factors determining health outcomes, disease, and well-being, which includes paying attention to structural barriers preventing people from living healthy lives (Doyal, 1979). The political economy of health framework focuses on relationships between capital accumulation, state regulation, and health, in addition to other state policies and priorities and their affects on health. Another focus within this framework is examining which groups of people benefit from and which groups of people are disadvantaged by certain policies. Social inequalities in health, according to this line of thought, arise because of the political and economic decisions made that produce social privilege for certain groups within society (Link, 1996).

**Ecosocial Theory**

Ecology is the study of evolving relationships and interactions between living organisms and non-living entities (matter and energy) in a given space, time, and system. Ecosocial theory, as coined by Krieger in 1994, attempts to integrate social and biological research with a dynamic ecological and historical perspective to ask questions of “who and what is responsible for population patterns of health, disease, and wellbeing, as manifested in present, past, and changing social inequalities in health” (Kreiger, 2001: 668).

Presented below are two figures (Figure 2 and Figure 3) that visually represent the complex causal impacts upon population health. These range from the pathophysiological effects on health, to the social, economic, and political effects on health. Each of these relationships requires specific measures and specific underlying theories. These figures, however, demonstrate the ways in which health is impacted at all levels of influence. These are also known as a life course approach within social epidemiology.
Although slightly different in their presentation, both ecosocial models tie together psychosocial factors with the larger social/economic structure in an attempt to capture all factors affecting health outcomes.
Material Deprivation and Ecosocial Factors versus Psychosocial Factors

When thinking about global health and the interaction between economic growth and health, researchers often refer to the Millennium Preston Curve (Figure 4). This plot shows GDP in PPP $ (purchasing power parity dollar) per person in 2000 on the x-axis and average life expectancy by country on the y-axis. The diameters of the circles (which represent the countries) are proportional to the population size of the country.

This curve is striking and appears to be two separate plots. Below $5000 a strong relationship between national income and life expectancy is observed as suggested by the steep increase in life expectancy. Above $5000 per head, however, the relationship between income and life expectancy becomes much weaker and little relation between the two exists. The USA has the largest GDP, but also has a life expectancy that is similar to that of Cuba and Costa Rica. It is generally understood that below $5000 per head, material deprivation is the largest factor affecting health and provides poor living and working conditions in which people are often susceptible to infectious diseases. Above $5000 per head, countries can provide clean food and water for their people, as well as more stable communities and more employment and educational opportunities. Infectious diseases then become replaced by chronic and noncommunicable diseases.

Sir Michael Marmot suggests in his book *Status Syndrome* (2004) (and in many other publications of his) that past the threshold of material deprivation, that factor that most strongly affects health is the social gradient and the position of the individual within the socioeconomic hierarchy based on income, education, and employment. Marmot argues that relative poverty in rich countries is based on social exclusion in which a person cannot do things that are reasonable to expect in society. For example, in Europe, reasonable things would be taking a vacation away from home, entertaining children’s friends, and purchasing presents for people (Gordon et al., 2000). Psychosocial stress is caused by lacking control of ones life and ultimately leads to worse health.
Sir Marmot presents a unifying theory of social determinants of health and explained that “in rich countries and poor, poverty means not participating fully in society, and having limits on leading the life one has reason to value” (Marmot, 2006: 2086). Although he acknowledges that material deprivation matters up to a point, Sir Marmot makes the point that ideas of “control” and “place in social hierarchy” might affect health not only in rich countries, but in poor ones as well.

It is interesting to think about middle-income countries, like Ecuador, in relation to the Preston Millennium Curve and Sir Marmot’s ideas. Do psychosocial factors affect health in countries that are just above the $5000 per head mark, as they do in countries in countries with large GDPs that have measureable income, employment and education? This is very new question with little research to suggest one framework or another.

Conclusions

To eliminate health inequities both nationally and globally, we must first understand the complex causes (and the causes of the causes) contributing to the health outcomes we measure. Because health inequities are both a social and economic phenomenon, the health research community must be confident in the measurement validity of socioeconomic position. It is only with appropriate measures that we can begin to test existing theories or further, to effectively intervene to correct disparities in health. The current literature addressing issues of measurement are explored in the next chapter.
Chapter 2: Measures and Variables of SEP

“Any pattern of relationships between causes and outcomes is based on an underlying set of assumptions, because assumptions drive the choice of measures that allow the pattern to become visible. The choice of what variables to measure both directs and confines attention.”

–Trostle 2005: 42

Socioeconomic position (SEP) is a commonly utilized concept in epidemiological research – in both developed and developing countries. Proper measurement of SEP is crucial for two major kinds of health studies: 1) social epidemiological studies that examine the effects of SEP on health, and 2) public health studies that wish to control for SEP. Kreiger (2001) observes the lack of theoretical justification for the second category specifically in US public health research.

In this chapter I discuss the variety of ways in which SEP has been defined and measured within the health studies literature. Certain approaches to SEP measurement have gained more popularity than others over the years, and some consensus exists as to which indicators of SEP are most appropriate for developed countries and which are better suited for developing countries. Several researchers suggest that selecting variables based on their connection to underlying theory is significantly more important than selection based on some “gold standard” for societies based on their developmental standings (industrialized versus non-industrialized). I also discuss a few articles of interest that have focused specifically upon cognitive and statistical validation of measurements for SEP.

Definitions of Socioeconomic Position (SEP)

There currently exists a diverse body of literature dedicated to measuring SEP from the perspectives of economists, sociologists, psychologists, political scientists and epidemiologists; however, there exists contention between and even within these disciplines. Definitions of SEP vary, but indicators of this property generally include a person’s physical and social resources as well as their status within a social hierarchy (Kriger, 2001). The existing definitions can be categorized as prestige-based, resource-based, or a combination of the two. Mueller and Parcel defined SEP as “the relative position of a family or individual on a hierarchical social structure, based on their access to or control over wealth, prestige and power” (Mueller et al., 1981). Miech and Hauser have more recently defined it as “a broad concept that refers to the placement of persons, families, households and census tracts or other aggregates with respect to the capacity to create or consume good that are valued in our society” (Miech et al., 2001). Yet others define SEP as an aggregate concept that includes both resource-based (e.g. material,
social, and assets like income, wealth and education) and prestige-based (e.g. rank or status within social hierarchy based on prestige, income, and education level associated with occupation) measures (Krieger et al., 1997). Lynch and Kaplan have defined socioeconomic position as “the social and economic factors that influence what position(s) individuals and groups hold within the structure of society, i.e., what social and economic factors are the best indicators of location in the social structure that may have influences on health” (Lynch et al., 2001). Separate from the definition, there is also much debate among researchers as to the relative importance of the various SEP indicators for health – education, income, and wealth – in relation to one another (Davey Smith et al., 1998).

There exist a set of terms in epidemiological research such as social class, social stratification, social inequality, social status, and socioeconomic status that are similar and related to SEP. Social class, according to Krieger, refers to “social groups arising from interdependent economic relationships among people” (1997, p. 345). As related to social class, socioeconomic position (SEP) is used to refer concisely to the diverse aspects of economic and social well-being; furthermore, it has been argued that the commonly used term of “socioeconomic status” is not completely accurate as it blends together two components of SEP: 1) actual resources with a priori reference points, and 2) status within a hierarchy which is context dependent (Krieger et al. 1997).

Measurements of SEP

The field of epidemiology typically utilizes empirical tests and testable hypotheses and has historically been rooted in biomedical theories of illness causation; therefore, incorporating social and cultural variables has not been eagerly or readily accepted into the field. Additionally, there exists some criticism towards the subfield of social epidemiology for examining social concepts of which most epidemiologists have no formal training or expertise (Zielhuis et al., 2001). Despite these criticisms, epidemiologists use two principle approaches to study the influence of SEP on health. These are the compositional approach, which refers to characteristics attributed to individuals and includes both direct and proxy measurements of SEP, and the contextual approach, which refers to characteristics attributed to environment of the individual (Kaplan, 1999). Both approaches have strengths and weaknesses depending on the study population, the research question, and the underlying theory. Questions of appropriate unit of analysis are related and important to consider for measurements of SEP within the epidemiological research: accurate measurements of socioeconomic position are important for data analysis, especially when identifying limitations of a certain data set.

First, however, it is important to understand the difference between cardinal and ordinal measures of SEP. Cardinal measures are those that convey comparable information about magnitude for individuals, households, or neighborhoods; for example, measures of income in units of dollars or other currencies (O’Donnell, 2007). Another
example is ranking people by the number of school years\(^1\) they have had throughout their life-time. A year is a fixed quantity with an absolute zero, so that it can be said that one person has had twice the amount of school years as another person, and a ratio can be formed. Ordinal measures, on the other hand, provide a ranking system but do not allow for comparisons of magnitude across units. A simple example of a nominal-level measure is occupation, for which everyone falls into a particular category (e.g. chef, academic, gardener, astrophysicist, unemployed, etc.).

**Compositional Approach**

The compositional approach includes variables that are individual characteristics such as occupation, education, income, and wealth, which may be correlated in some cases, but are not interchangeable. Additionally, each of these variables can be either direct or proxy measures and can represent multiple underlying pathways to associated health outcomes. Occupation can affect health outcomes by determining access to resources (e.g. health insurance), presenting psychological risks (e.g. a stressful job or the stress of unemployment) and physical hazards (e.g. exposure to toxic chemicals), and by influences upon lifestyle (e.g. smoking) (Shavers, 2007). Education level greatly controls employment options, leading back to the effects of occupation on health, and income potential. This component of SEP also creates other kinds of opportunities for the individual including better coping capacities, and encouragement of greater investment in the health of the individual and their family (Mechanic, 2007). Education often involves critical thinking skills, thus, higher levels of education allow people to better navigate the health care and bureaucratic systems, in addition to increasing the chance of better psychological and economic conditions (Ross, 1995). Income (the flow of economic resources over a period of time) influences ability to pay for healthcare, nutritional foods, housing, schools, and recreation (Alder, 2002).

Occasionally, multiple compositional measures will be used in the same study resulting in a composite measure (Shavers, 2007). For example, Fotso et al. (2005) created a household wealth index appropriate for developing countries that included household possessions (electricity, radio, TV, refrigerator, bicycle, motorcycle, car, oven, stove and telephone), type of drinking water source, toilet facilities, and flooring material. Issues of multicolinearity and instability of estimated parameters may arise with this approach as different SES (socioeconomic status) indicators may be correlated with one another, and thus, compositional measures may magnify or alter actual socioeconomic position (Campbell et al., 1983; Alder et al., 1993).

**Contextual Approach**

In addition to individual attributes of individuals, the contextual approach pays attention to the environment in which the individual lives and its effect on health outcomes on multiple levels. The levels of social environment are usually broken up into neighborhoods (e.g. ZIP codes, or census tracts) and other geographic areas (e.g.

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\(^1\) An important experimental choice the researcher would have to make is how to define “school years” and whether or not to include informal education and technical training.
counties, regions, states, nations). These define the social and economic conditions affecting people in a particular space (Kaplan, 1999). The benefit of this approach is the potential to see patterns that are not visible from direct or proxy measurements alone. Much literature, however, is dedicated to asking which levels of aggregation are meaningful and what causal pathway might be influencing health outcomes (Krieger et al., 1997). In support of the relative income hypothesis and economic context, researchers have argued that degree of income inequality affects everyone’s health, not just those that are poor (Kawachi et al., 1999). One explanation is that the social environment influences individual susceptibility to diseases, while a competing explanation is that people who are susceptible to poor health share certain qualities and are more commonly found in particular places (Duncan, 1998). Common measures of contextual SES include: average house value, median monthly rental value of housing, percentage of single-parent families, percentage of unemployed persons, per capita income, social class by occupation, poverty areas, working-class neighborhoods by occupation, and wealth (Shavers, 2007).

Measurement Challenges

Accurate measures of SES in health studies are complicated by a) unreliable and imprecise measures, b) individual SES data that is difficult to collect, c) the potential for SES to change over time, d) individuals without employment (e.g. children and retired individuals), e) the lack of correlation between individual SES measures, and f) misleading interpretations of study data (Shavers, 2007; Krieger, 2001).

Including a variable of occupation to measure SEP may become problematic when considering the place of adolescents, stay-at-home parents, late-career changers, and gender-based job discrimination (Daly, 2002). Even with these aspects of education are explained, it is not a simple variable, and as Mechanic observes,

Years of schooling is a crude proxy for the acquisition of skills, knowledge, and personal agency and lacks an indication of content or quality. Attending school does not necessarily ensure that children are exposed to a culture that promotes the types of skills and orientations that we believe are most important to health, and the culture of schools themselves may divert students from values associated with achievement and health…In this sense, as used in the health studies, schooling remains a “black box” that needs deeper investigation. (2007, p. 551)

Additionally, to compound the issue, studies tend to only take formal education into account and potentially miss informal types of training that might affect critical thinking skills and other kinds of knowledge.

Measuring income is potentially problematic for people with unequal access or limited knowledge of their household income (Daly, 2002). Income can also be difficult to measure in communities that rely on bartering or other methods of exchange that do not involve money, which is more typical in the developing world.
One pair of authors (Das et al., 2006) demonstrates the affects of variable selection upon the data. These three graphs show data from seven localities in Dehli and divide people (n=1,621) into a tripartite categorization of rich, middle and poor. The graphs show the difference in position when people are categorized by consumption, assets, and income. This shows that the seven localities have considerable internal variation the demographic characteristics of the three indicators of SEP (consumption, assets, and income). The authors mention that these three indicators are “subject to measurement error” (p. 174), which is why this comparison is necessary. The third of the population in the “rich” grouping remain fairly consistent, while those in the “middle” and “poor” categorizations vary significantly depending on which variable is used.

Figure 1. Sample Households on the Basis of Consumption and Income, Category “Rich.”
Figure 2. Sample Households on the Basis of Consumption and Income, Category “Middle.”

Figure 3. Sample Households on the Basis of Consumption and Income, Category “Poor.”
This variation of peoples’ positions in the above graphs nicely point out that selection choice makes a substantial difference upon the observed outcomes. Local perceptions of position can help researchers come up with underlying theories rooted in a specific discipline, or theory that integrate various disciplines.

**The Importance of Underlying Theories**

Measurements, based on the presumption that some quality can in fact be measured, require variables to measure, and reliable tools with which to measure. Although an underlying theory of not required in the physical or biological sciences, it is often very helpful in the social sciences. Experimental variables in epidemiology exist in the categories of person, place, and time (Trostle, 2005). Qualitative measurement is “a systematic method of assigning numbers to observations” (Stevens, 1946). Experimental choices, both appropriate and inappropriate, are made when deciding two things: 1) which variables to measure and 2) how best to measure those variables. However, how can a scientist be reassured that a selected variable is the most appropriate for examination, and furthermore, that the examination tool itself is appropriate?

Each variable can potentially present several causal pathways to specific outcomes; therefore, explicit theories are necessary if research studies are to be understood and compared. Despite conclusions that link SEP to health, critics point out that studies often lack a discussion of specific causal pathways in which socioeconomic position exerts its influence over health outcomes (Shavers, 2007). Relative absence of discussion of causal pathways is further complicated by the variety of measures and definitions of SES that exist.

Theories help scientists to understand how each variable is “operating” within a study system; furthermore, “auxiliary measurement theory” helps scientists articulate the connection between theories and outcomes and to select appropriate measurement tools (Blalock, 1968). This part of designing any quantitative study is imperative but often receives little attention or discussion (Trostle, 2005). Ubiquitous variables used in epidemiology studies often need to be “unpacked” (Trostle, 2005) to identify their social and cultural components in a particular place for the group of individuals under study. This reassures the scientist that the appropriate variable is measured.

**Measurement of SEP in Developing Countries**

Many studies that explore social determinants of health in developed countries have investigated appropriate measures of socioeconomic position, most often using individual measures such as income, occupation, and education. Less attention has been paid to measuring socioeconomic position in developing nations, and therefore, fewer studies investigating these particular measurements have been published. If a health outcome is to be explored in a developing nation, selection of a socioeconomic position
measure should have a theoretically clear causal pathway, just as measures for developed countries.

Data on household income or expenditures are often considered the “gold standard” approach when estimating household welfare (Worrall et al., 2003). There are several challenges that arise when using income as a measurement for well-being such as analyzing a community that relies heavily on barter rather than monetary exchange. Household expenditure data is thought to fluctuate less than income data, and is therefore a better measure of permanent income.

Several approaches have been used to directly and indirectly measure expenditures and income. Wealth, measured by household ownership of assets, can be used as a proxy for income or expenditures. Another approach is with index construction using multiple assets and principal component analysis to derive weights for each of the variables (Filmer and Pritchett, 2001). Some studies have validated an index against expenditure or income data (Filmer et al., 2001). Validation of an index and of particular variables allows for a more precise and exact measurement, especially when associated the index to health outcomes. Another, less valid, approach is to base choice of assets in an index on their “face validity” (Worrall, 2003). These studies (Hanson et al., 2000; Hanson et al., 2002) run the risk of using less-than-ideal measures in their studies.

Assets commonly included in these indices include items such as TVs, radios, refrigerators, bicycles, motorcycles, cars, and access to utilities like piped water, in-home electricity, and a flushable toilet (Worral, 2003). Challenges arise when using and comparing asset indices across space and time. All assets have attributes of local meaning, and monetary value, which are both subject to vary depending on location (village, town, city), and time (year-to-year).

Cognitive and Statistical Validation of SEP Measures

In disciplines such as anthropology, quantitative variables are often validated by qualitative interviews with parts of the population under study. Only recently has this technique been adopted by some epidemiologists who wish to pay attention to the effects of personal perspective and beliefs.

A study by De Silva et al. (2006) is one (and perhaps the only) study that assesses the cultural validity of social capital tools, in this case the SASCAT, used in developing nations (Peru and Vietnam). Definitions of social capital vary between disciplines, therefore, many tools have been created and few have been tested over long periods of time or large groups of people. Interviews with subjects are crucial to determine what researchers are actually measuring especially in a different culture from which the tool was originally developed. De Silva et al., (2006) examine both structural and cognitive social capital measures by interviewing ~22 people in each developing nation. Results answer the question: “Question interpreted by majority of respondents as intended?” in a “Yes” or “No” manner.
Interviews conducted for my thesis were based on methods in this paper. Portions of my research methods (ethnographies and interviews to validate a social capital tool in a developing nation) are explicitly based on this publication.
Chapter 3: Ethnographic Methods

This section addresses the infrastructure of the EcoDESS research project that supported and nurtured my ethnographic and statistical thesis work—both theoretically and logistically. I initially describe the larger project in great detail for two reasons. Firstly, the research questions of the larger project are presented to help the reader understand my project’s more specific focus of investigation within the broader context, and secondly, the larger EcoDESS project is described to show the reader how and from where the two data-sets (qualitative and quantitative) in this thesis were produced. I will describe the methods that I utilized to gather the ethnographic data within the Ecuadorian villages, and this will be considered the first set of data. The process of establishing contacts and initiating interviews is described in order to enumerate the strengths and the weaknesses of the qualitative data collected. The quantitative survey data I examine in this thesis was produced by the field-team and is considered the second set of data: the selection process used for its inclusion in the thesis and the analysis plan employed to integrate the ethnographic data with the statistical data will be described. My intent in using two sets of data is to illustrate the importance and benefit of combining qualitative and quantitative data to construct culturally appropriate measures of socioeconomic status and position in this interdisciplinary thesis.

EcoDeSS

The study, entitled "Environmental change and diarrheal diseases: A natural experiment", was designed and administrated by collaborating principal investigators at Trinity College, University California Berkeley, University of Michigan and Universidad San Francisco de Quito (Ecuador). It is known as EcoDeSS (Ecología, Desarrollo, Salud y Sociedad – Ecology, Development, Health and Society) in the region and was funded by the National Institutes of Health (Institute of Allergies and Infectious Diseases). The research project is interdisciplinary, incorporating methods and theories from anthropology, public health, microbiology, statistics, and biomedicine. Each principal investigator is able to bring methods and theories from his unique area of expertise to expand data collection and strengthen final conclusions. Furthermore, the study is longitudinal: data has been collected from 2002-2008, and the study appears likely to receive an additional five year renewal.

The principle objective of the EcoDeSS study is to understand how the construction of a new road in a rural and previously roadless part of Ecuador affects the sociocultural climate of the area and the epidemiology of diarrheal diseases over time. This is considered a “natural” experiment because villages could be newly categorized and compared to each other by their distances from the road: villages further from the road could be classified as “remote”, and villages closer to the road could be categorized as “nonremote”. Also, the ecological variable – the construction of the road – was set in motion without influence from the research study. The focus of the study upon diarrheal disease is pertinent because more than 1.5 million children around the world under the
age of five die from this condition each year, mostly in developing nations. Many social and environmental changes occur because of the new roads, often with implications for disease prevalence and incidence. It is precisely these measurable changes in disease and society that the project aims to investigate, with the possibility of applying conclusions to similar rural regions throughout the world.

**Study Area and Participants**

The new road and subsequent secondary roads are located in Ecuador’s province of Esmeraldas in the country’s northeastern coastal corner close to the Colombian border (Figure 1).

![Figure 1. Map of Ecuador](http://www.naturalsciences.org/education/Ecuador/2006/itinerary_2006.html)

Specifically, the study works with 21 of the 120 villages in the cantón of Eloy Alfaro along three rivers: the Rió Cayapas, the Rió Santiago, and the Rió Onzole (Figure 2). This area is in the low lands of the country as compared to the high, mountainous, central region where Quito is located.
The 21 study villages were randomly selected using block randomization to ensure that the villages represented the region’s diversity of population sizes, distances from a main road, and transportation options available to the people (road only, river only, both road and river access). In 2002, only four of the villages were connected by a road, and since that time, the road has continued to reach more distant villages (Eisenberg et al. 2006). The smallest village had a population of 24 individuals in 2003, while the largest had 867 individual inhabitants that same year. Also, to illustrate, the closest community to the larger metropolitan center of Borbón (population: ~5000) is 30 minutes by car, while the furthest village is four hours by motorized canoe. Borbón is noticeably different than the rest of the villages (because of its population size, and direct bus transportation to various large cities in Ecuador) and only 200 of the ~1000 houses were randomly selected for inclusion in the study, whereas all houses in the other communities were included. Borbón is also important because it is there that the EcoDESS project house is located along with the largest hospital of the area. The three rivers flow towards Borbón, which has a much higher population density than the other communities but remains underdeveloped in terms of quality sanitation services, sewage system, and solid waste management system (Eisenberg et al. 2006). The villages included in this study get their water mostly from rivers or rainwater and is usually consumed without prior treatment. A few communities have access to well-water, or water that is piped in from surface sources.
The individuals in this area are mostly Afro-Ecuadorians whose ancestors were transported from Africa by the Spanish in the 15-1600’s. Additionally, there are smaller populations of indigenous people known as Chachis who tend to reside in the more distant villages (Eisenberg et al. 2006).

**EcoDeSS Study Design**

To monitor cases of diarrheal disease, study villages were visited by the field team for 15-day time periods in which stool samples were taken. Additionally, stool samples were taken from three healthy controls. All of the samples were examined in the laboratories of Universidad San Francisco de Quito and UC Berkeley; specific pathogens were identified to be responsible for the infectious disease. Community health workers also helped to take active surveillance health data in the communities when the field team was not in the village. To track movement of people and social changes occurring in the villages, various surveys were conducted in each of the villages throughout the years of study. These surveys include census questions about individuals (age, sex, education, work, house number, village of residence, migration in and out of villages), socioeconomic questions about households (construction of house, possessions, assets, consumption), and social capital questions about individuals (number of contacts in various social webs, participation in community groups). Anthropologic ethnographic research was also carried out in all of the villages to give context and deeper understanding to the quantitative findings of the study. Individual perspectives on social changes and disease were the focus of the anthropologists of the research team.

**Consent: Larger Project**

This research project, wide in scope and long in duration, includes many people from whom consent was needed for inclusion in the study. IRB applications were submitted and approved by Trinity College, University California Berkeley, and University San Francisco de Quito for the larger study.

During the initial phases of the project, all households within the selected villages were recruited, with 98% participation (Eisenberg et al. 2006). Individuals were asked in 2002 (when the EcoDeSS project started) if they were willing to participate in the larger study to monitor diarrheal disease, movement, and social interactions in the 21 study villages in the area. The subjects were asked to answer survey questions, ethnographic questions, and provide stool and blood samples during the course of the project. Those that did not want to participate were not included in any part of the larger study or in any of the student projects. Oral consent from subjects was considered sufficient because much of the population is illiterate and could not provide written consent. Additional community meetings are held every six months to further explain and discuss EcoDeSS. At this time, or at any time throughout the year, people may request to be removed from the study.
Compensation and Justification

To compensate participants for their time and collaboration, clinical services were available by the project to the people in the forms of evaluation by physicians, medications, and community health promoters. Additional services were provided to villages in the form of public health classes on many subjects including water treatment, HIV, family planning, nutrition, and sanitation. I taught a few informal classes in English during my stay in the villages and also helped install printers and computers. Although the participants can never be compensated enough for their cooperation and their willingness to participate, they do receive some benefits from the study. Furthermore, the findings of the research project have the potential to impact disease not only within the 21 study villages, but also all over the world. It is this potential that helps to ethically justify the on-going research study.

Culturally Appropriate Measures of Socioeconomic Status

I became a research assistant for Dr. Trostle (the principal investigator from Trinity College with training in anthropology and public health) in the fall of 2006 and began working on literature searches. In the process of one endeavor on the topic of existing social capital measures, I became fascinated with field of social epidemiology and the research concerned with social determinants of health outcomes as both a national and global phenomenon. I found that most of this research focused on developed nations (like the US and the UK), and there was very little examining these theories in developing nations. After learning about the EcoDeSS project, I began asking questions about the social determinants of health within the project context and I wondered how theories of income inequality, social cohesion, and health held up in our study environment - a remote region of a developing nation. It was with the intention of investigating some of these questions that I entered the field with Professor Trostle.

Field Work: Duration, Location, and Tasks

I entered the project during its fifth year of operation in the summer of 2007 and worked in Esmeraldas for two months (from June to August) in several study villages. I initially traveled with the case-control field team composed of biochemists, technicians,

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2 There exists an inherent power difference between the researchers and the researched in this study (and in most research studies set in the developing world) that cannot be corrected through compensation, or by any realistic and immediate means. Differences in education, wealth, and negotiating power create an asymmetric relationship in which the researcher is privileged and has many advantages. This is not to suggest that the researchers in this study used their advantages inappropriately, but rather my comment is that the amount of compensation provided by researchers to the researched will never be adequate unless it corrects the power difference between people of privilege- the researchers- and the people from developing countries – the researched.

This is an even more pertinent discussion because this thesis deals with differences in socioeconomic status within the research population, and therefore, I feel compelled to briefly point out differences between the research population and those conducting the research.
motorists, village health promoters, graduate students, and another Trinity College research student to help orient myself in the field. Observing life in the villages and helping the field team gave me a deeper understanding of the complex project, and also gave me an initial sense of the socioeconomic similarities and differences across villages. Talking with people from the villages gave me a chance to try out some of the questions I anticipated using in my studies and I conducted several informal interviews. With help from Professor Trostle, it was decided that I should focus the second half of my research time in one village and have this become the focus of my thesis. A village of large size (n=481 in 2004) was selected that was considered a “nonremote village” as it was a 45 minute bus ride from Borbón with access to both the road and the river Santiago. This village did have electricity as well as running water and an elementary school. The large size of the village was important for me to investigate variables like group membership and social status within the village – these would have been more difficult to study within a less populated village.

After the initial meeting with the village’s council president to ask permission for my stay, Professor Trostle and Dr. Cevallos from Universidad San Francisco Quito used their previous knowledge of the people in the village to arrange a place for me to stay for the duration of my visit. I stayed in the home of a 23 year old woman who worked as the community’s council secretary, appointed by the government, who was also daughter of the well-known health promoter in the village.

My other two tasks in the village for the duration of my stay were mapping houses in the village using GPS and administering an antibiotic survey to 30 randomly selected individuals in the village. During these two tasks in which I was conversing with people, often in their homes, I also was able to set up formal interviews (25) with people. If I came across interviewees who seemed receptive to the survey or the mapping and who were receptive to conversing with me, I would ask them if they would agree to a more formal interview at a later date. I additionally took notes on the less formal observations I had of living in and walking through the village: people’s interactions with each other and with me; people’s activities; movement of people in and out of the village on the buses and cars; the observable indicators of status present within the village.

It was inevitable that I became close to the family with whom I was staying. I conducted interviews with several of my host family’s relatives and I participated in activities to which they invited me: for example, attending a Baptist picnic one Sunday, and traveling to Esmeraldas one weekend to see the community college my host attended and the business her family had established. Had I not stayed with this particular family, those observations would not have been available to me.

**Consent: My Project**

A separate IRB protocol was approved by Trinity College on behalf of my project with the specific interview questions I intended to use during my time in the field. I also explained that confidentiality of the subjects would be maintained because no private information recorded during surveys and interviews would be given to any other person.
in the village. Names and house numbers would appear only in the ethnographic notes, which have been password protected and only accessible to the anthropologists of the research team. The village name, names of the participants, and house numbers would not appear in the write-ups to protect the confidentiality of all people in the villages. I explained that once the project has been completed, notes would remain in the ATLAS ti database protected with a password.

Informed consent was obtained in several ways. Approval of my stay in the community was granted by the town council after they were informed of my research intentions. Additionally, at the beginning of each interview with community members, I would explain that I was a member of the EcoDeSS research team and I would briefly explain my project. Then, to gain their consent, I would ask if they wouldn’t mind either simply talking awhile, or doing a more detailed interview. Any person I came in contact with had the option to decline my request for an interview or my request for a conversation. I also asked verbal permission to those people that I tape recorded and of whom I took pictures.

**Selection of Participants and Networks**

Several of the interviews I conducted were with relatives or friends of the women that hosted me in her house. These were people of various ages and of both genders that I would meet either in her home as guests, or while walking around the village with her. These interviews were generally easy for me to secure because we had a mutual contact. Friends and relatives of this kind tend to be in the same social networks, however, and often have similar opinions and views. Fortunately there were several other methods I was able to use to establish interviews.

The individuals selected for the antibiotic surveys were random and a total of 30 people were selected for that purpose. In my task of administering those surveys during the first part of my stay in the village, I would sometimes ask the interviewees that seemed receptive to talking with me if they would be willing to answer some further questions. I was able to set up subsequent interviews with those that were willing. This second set of interviewees was not often connected to the social networks of my host family, and therefore, I was able to capture some diverse perspectives.

A third set of individuals that I interviewed came at the end of my field work. These were people that I felt were not yet well represented among my pool of interviewees based on observable measure of economic status such as house construction and jobs in the community. I interviewed several people by simply stopping by their houses, explaining my project, and asking if they would talk with me for a bit. People in this category included those with stores in the community, and those with small cane houses- both ends of the economic spectrum in the village. These efforts to engage individuals were usually successful because most of them had seen me previously walking around the village. I believe that even this minor level of familiarity allowed people to put some trust in me and made the interviews more comfortable.
Structure of the formal interviews

The structure and goals of my formal interviews had two parts. The first half of the interview was dedicated to validating the survey questions used by the field-team on the sociometric survey. I asked the participant what they were thinking when they answered the survey question (see Appendix “A”). This data set was not used in the thesis, but rather was used to help the EcoDeSS project.

The second half of the survey was dedicated to open ended questions aimed to understand how social status is understood and measured locally within the village. Some responses led me to ask questions that I had not asked other interviewees, but the basic outline of each interview was always similar (see Appendix “B”).

Potential sources of error or bias

As a young, white, woman, researcher with fluent Spanish from the United States, I often wondered how peoples’ perceptions of me would influence the data I collected while speaking with people in the villages. I believe I had an advantage of representing a well-known research project in the area (EcoDeSS) which was well established in the area, but at the same time, I was always viewed as an outsider, existing only briefly in village life. I also had the advantage of living with a family that was well-known in the village- this lent me credibility among people in the village. I can never be sure to what degree my “outsiderness” affected the information people were willing to share with me, a common anthropological issue.

The combination of snowball interviewing (in which I asked interviewed persons to nominate others to interview), and some random-sample interviewing (where chance determined which individuals were selected as in the medications survey) gave me a diverse pool of responses to the interview questions. I perceive this to be one of the strengths of this data set.

Conclusions

Based on my field research, subjective measures and local understandings of social economic status were elucidated. The results of the interviews will be presented in the proceeding chapter and when combined with the quantitative survey data, we will begin to see how the creation of various socioeconomic indices based on perceived status in the village is possible.
APPENDIX: INTERVIEWS

ENGLISH TRANSLATION

Social Capital

1) Do you recall the question “In the last 12 months, have you participated in (or have been member of) some community group or local organization in the village? Which one? How important is the group for you?”
A. What do you do as a member of the group/s you named?
B. How do you participate?
C. How often do you meet?
D. What benefits do you get from the group?
2) Do you recall the question “In this community, can people generally trust one another?”
A. What is meant by “trust”?
B. What were you thinking of when you answered this question?
C. What are some examples of people trusting each other?
D. What are some examples of people not trusting each other?
E. Of whom were you thinking when you answered this question?
3) Do you recall the question “What was your health like this past year?”
A. How is someone with excellent health?
B. How is someone with very good health?
C. How is someone with good health?
D. How is someone with regular health?
E. How is someone with poor health?
F. How do you take care of them?
G. How is someone with excellent health different from someone with good health?

SPANISH VERSION

Capital Social

1) ¿Te acuerdas de las pregunta “En los últimos 12 meses, ¿has participado en (o has sido miembro de) algún grupo comunitario o una organización local en este pueblo? ¿Cuál? ¿Qué tan importante es este grupo para usted?”
A. ¿Qué haces como miembro o participante?
B. ¿Cómo participas?
C. ¿Cada cuanto se reúnen?
D. ¿Cómo benefician de este grupo?
2) ¿Te acuerdas de las pregunta “En esta comunidad, ¿generalmente se puede confiar en la gente?”
A. ¿Qué es confiar en la gente?
B. ¿De qué estabas hablando?
C. ¿Qué son ejemplos de gente confiando entre sí?
D. ¿Qué son ejemplos de gente no confiando entre sí?
E. ¿De quién estabas pensando cuando respondiste de la comunidad en general?
3) ¿Te acuerdas de las pregunta “Pensando en el año pasado, ¿Cuál es tu estado de salud en general?”
A. ¿Cómo es una persona con salud excelente?
B. ¿Cómo es una persona con salud muy buena?
C. ¿Cómo es una persona con salud buena?
D. ¿Cómo es una persona con salud regular?
E. ¿Cómo es una persona con salud mala?
F. ¿Cómo se cuidan?
G. ¿Cómo se diferencia entre salud “muy buena” y excelente?

Contactos Sociales

1) ¿Te acuerdas de la pregunta “En general, aparte de los que viven en su casa, ¿con quienes usted habla sobre asuntos importantes?”
A. ¿Qué son asuntos importantes para usted?
B. ¿Hay personas importantes en tu vida con quienes no puedes hablar sobre asuntos importantes?
2) ¿Te acuerdas de la pregunta “En general, aparte de los que viven en su casa ¿con quienes usted pasa la mayoría de su tiempo?”
A. ¿Cómo defines “la mayoría de su tiempo”?
B. ¿Qué cosas hacen con la mayoría de su tiempo?
3) ¿Te acuerdas de la pregunta “En general, aparte de los que viven en su casa, en caso de que usted necesita conseguir apoyo económico para gastos de una semana como un regalo, préstamo, o crédito ¿a quien lo pedirías usted?”
A. ¿Qué sería apoyo económico?
Estatus Socioeconómico

¿Cómo es una persona pobre del pueblo? ¿Qué son características de una persona así?

¿Cómo es una persona rica del pueblo? ¿Qué son características de una persona así?

¿Cómo se gana respeto en el pueblo?

¿Quiénes son personas quienes te respetas en el pueblo? ¿Por qué?

¿Cómo se gana poder en el pueblo?

¿Son importantes estas cosas para ti?

¿Cómo se aumenta renombre en el pueblo?

¿Quién admiras en el pueblo?

¿Qué metas personales tuene en tu vida?

¿Cómo se cumplen estas metas?

¿Quién te ayuda?

Socioeconomic Status

What is a poor person from the village like? / What are some of their traits?

What is a rich person from the village like? / What are some of their traits?

How does one gain respect in the village?

Who are people that you respect in the village? Why?

How does one gain power in the village?

Are these things important to you?

How does one build up their reputation in the village?

Whom do you admire in the village?

What personal goals do you have in life?

How do you fulfill these goals?

Who do you have can help you with these goals?
Chapter 4: Ecuadorian Perspectives of SEP

It is rare for epidemiological studies to assess the validity of measures of socioeconomic position, and even more rare for them to base their studies on the perceptions of local inhabitants. One study that does pay attention to local perceptions, DeSilva et al. (2005), used cognitive validation of social capital measurement tools in Peru and Vietnam to assess how survey questions were understood in the local context by local people. The interviews indicated that there were discrepancies in both cultural contexts (Peru and Vietnam) between what the researchers had intended their questions to mean, and what was understood by the participants. This mismatch of perspectives illustrates the importance of validating measures of social capital and social status for research purposes.

In this chapter I will present the findings from my ethnographic fieldwork and their translation into quantitative measures. Drawing from the pool of data gathered from the interviews and observations, I will explain local perceptions of indicators of “wealth”, and local perceptions of determinants of “status”. The qualitative ethnographic work presented in this chapter serves as the contextual basis for the quantitative variable selection and index construction of wealth and status, presented in the statistical analysis chapter (Chapter 5). Local perceptions were used to select variables for wealth and status that are appropriate and valid in the cultural context of rural Ecuador. The cognitive validation technique is crucial to this epidemiological work because it adds validity to the variables, to the indices, and ultimately, to the results of comparing socioeconomic position to health outcomes (i.e. self-rated health).

I divide the ethnographic data into two major sections: villagers’ perceptions of indicators of “wealth” and villagers’ perceptions of determinants of “status”. The subsections for each part represent the main categories of wealth and status indicators described by participants during the interviews. For local perceptions of wealth, villagers mentioned the importance of ownership of assets, ownership of farm land and farm animals, ownership of a business (store, salon, pool hall), construction and furnishing of houses, the importance of education, jobs as indicators (steady versus seasonal work, and not receiving welfare), ability to travel, and saving for times of need. For local perceptions of status, villagers mentioned the importance of respect, education, profession, leadership roles, “working hard” for one’s family, having the desire to ascend economically, the role of envy, and other perceptions of status. Although there are some overlapping concepts between indicators of wealth and indicators of status, it is worth qualitatively unpacking each variable individually. Overall it appeared that perceptions of socioeconomic position in the village were based on a combination of asset ownership and educational/occupational prestige.

It is important to note also that the portions of the interviews exploring local perceptions of status and wealth involved open-ended questions (e.g. What is a rich person in the village like?), rather than prompted questions (e.g. Is ownership of land an indicator of wealth in the village?).
Villagers’ Perceptions of Indicators of “Wealth”

Although some people claimed that there were “only poor people in the village”, differences in economic circumstances and social standings became evident during the interviews and from direct observations. Gradients of wealth and status exist within the region despite its relatively poor circumstances both in the national and global context (refer back to Chapter 1). Indicators of “wealth” were understood to be what people owned, what people had the potential to own based on their income, and what opportunities were available to a person (e.g. traveling by bus to other places) based on their income or savings.

Ownership of Assets

One common initial response was that the richer people in the village had plata (money) while the poorer people did not. More specifically, one girl informed me that poorer people do not have many material goods in their houses like TVs, DVDs, or cooking facilities (like a gas stove or refrigerator). The same girl went on to say that rich people could be identified because they would have money, DVDs, nice kitchens, and a lot of food. Another common response was that “richer” households could be identified because they were well-furnished and had all their cositas (things) in them. Along this same vein, another person added that richer people have nice houses, nice clothes, good rooms with beds, a toilets a refrigerator, a TV, and a sound system. One man summed this up by saying that wealthier houses were those in which “no faltaba nada” (nothing else was needed).

In terms of how electronics are valued, the general perspective is that refrigerators are more important to own than TVs because they allow food to be stored longer, while the TV is mostly used for fun. Image 1 depicts a “wealthier” kitchen with lots of pots, a blender, a crock pot, a pressure cooker. Image 2 shows a room with furniture and decorations that are typical for the region.
Assets are a logical indicator of wealth as the region transitions from a barter economy to an economy that relies upon cash flow. In the previous century, villagers relied on trade with each other and with the near-by villages to acquire nutritional and material necessities. Money now matters to people in a way that it couldn’t matter previously, and accordingly, the amount of money people have (demonstrated by how people use their money) indicates their economic status to others in the community. Now that people utilize money in the village to purchase goods, purchasing more cositas indicates that one possesses more money, which indicates a higher wealth status. If a family is able to purchase a TV it is likely that they have already taken care of their basic needs (nutrition, clothes, etc.) and can subsequently invest money into a recreational asset that also grants them access to news programs and a wide variety of new ideas (this region, however, mostly gets Colombian TV stations, so the ideas come from outside the country).

**Ownership of farm land and farm animals**

Another common indicator of wealth that was mentioned in the interviews was ownership of farmland. Different levels of ownership indicate distinct levels of wealth: ownership of any land is considered better than owning no land at all, and the more farm land one has, the more wealth is evident to people in the village. So that, even within ownership of farmland, there were those that have more and have less. Common crops grown in this area were cacao (Image 3), verde (bananas), mangos, and coffee. Additionally, common farm animals in the village included pigs (Image 4), cows, chickens, and guinea pigs. Depending on farmland owned by the family or individual, animals were either raised in close proximity to the house (a backyard area) or in a plot of land that was further away from the house.

Owning farm land is an important indicator of wealth because of its potential source of income to the family or individual. Farm land can be utilized to raise different
crops throughout of the year (most crops are seasonal and are rotated with other crops depending on the season), which can then be consumed by the owner or sold to others for profit. If crops are consumed, the family or individual can then use additional income for other endeavors such as purchasing of material goods, improving the construction of the house, paying for school, or saving it in cash form for a later time.

Owning farm animals is a related indicator of economic status for similar reasons that explain farm land as an indicator of wealth. The family can sell the animals, their offspring, or the animals’ products (e.g. milk, eggs) to earn money. This asset also provides a source of nutrition for the family or individual.

Crops and farm animals have some economic uncertainty, however, as crops have been known to fail, market prices can fluctuate depending on success of the season, and animals can often become ill or produce less than expected. All of these factors affect the total nutrition and/or total profit that is gained by the family from the farm land or from the farm animals. Although these assets have clearly defined ties to wealth, their connection to status in the village is different and will be addressed further on in the chapter.

Ownership of a Business

Owning a business was often mentioned as an identifier of someone who was a little better off. Although no one in the village was incredibly well-off economically, the people with businesses were “mas o menos bien” (more or less fine). Stores tended to be attached to the house in which the family or individual lived. Image 5 gives the reader a sense for a typical village store in the region and Image 6 shows a close up of some goods that are typically sold in the stores.

Someone with a fairly humble store commented that other businesses were much larger than hers and sold things like wood, cane, and even had telephones that could make national and international phone calls (she was referring to the store in Image 7). This indicates that much like ownership of animals and farm land, various levels within ownership exist for the villagers and have implications for economic status. Other businesses like salons and pool halls were also indicators of wealth, especially if they were owned by someone who also had a store.
The store presented in Image 7 is considered the “wealthiest” store in the village because of its variety of products, its large size, and its international and national phone service. There are two entrances to the store: the one to the right is a wooden door that locks with a smaller waist-level metal door which is closed while the other wooden one is open during business hours. One reaches the three phone booths through this door. The other door is on the left, wooden, and has a metal screen with openings large enough to pass goods through. In between is a window with wooden shutters and permanent metal bars through which they also passed bought goods. Many goods are sold in the store such as foods (sweet bread, regular bread, cookies, fruits, vegetables, cold water and milk, sodas, cheese, oil, margarine, rice, beans, eggs); toiletries/beauty products (bathing soap, washing clothes soap, shampoo, razors, synthetic hair, toothpaste, toothbrushes, make-up, lip-gloss, hair-ties, condoms, menthol); and other goods (guadua, cigarettes, skillets, clocks, athletic shirts and shorts). As mentioned earlier, this store also provides calling services and is the only store like it in the village. I assume that the owners installed the metal doors and locks to prevent break-ins and robberies, which shows that they feel the need to protect this kind of wealth in the village.

Stores represent wealth for a variety of reasons such as the ability of the owner to purchase all the goods up-front, and capability of the owner to travel outside of the village to purchase goods. All goods that a store offers (excluding one that were grown by the owner) are items that the owner has previously purchased with cash with hopes of re-selling for a higher price to create a profit. This investment by the owner suggests to the community that the basic needs of the owner are taken care of, and they have money left over to invest into their business. The variety and number of items in a store demonstrates how much free cash the owners have to invest in their business. Larger stores are also more popular in the village because villagers have access to more goods in a single trip to a store. It is also an advantage to offer additional services (e.g. phone
access and housing materials) because villagers are more likely to buy products from that store if they are using one of the additional services. Maintenance of a store additionally indicates the ability of the owner to travel outside of the village to bring back goods with which to replenish the store. This requires at least some funding to pay for the bus fee out of town and cash they can afford to invest.

Stores represent fairly stable incomes for their owners and provide the owners a “cushion” during times of economic hardship as they can consume their own products (assuming they have not run too low on food products). For these reasons, ownership of a business is one of the most important indicators of wealth in the village.

**Construction and Furnishing of Houses**

There are three predominant types of house construction material in the village: cement, wood, and *caña* (cane). Cement houses (Image 8) are more valued than wooden houses (Image 9) because they last longer. Wood is more valued than *caña* (Image 10) because it is more firm and more secure. Also, cement costs more than wood, which costs more than *caña*, therefore, as cost increases, value increases as well. As a family earns more money, they are able to build a better house, according to one source.

![Image 8. A large concrete house in the village](image)
Houses of *hormigón* (concrete) were said to be the absolute best houses. There were none like this in the village, but they were commonly found in the larger cities and the villagers knew that this was the best kind of material to use. Size was also said to play a role in the perceived value of a house. Of the two predominant types of roofs, zinc roofs (present in Images 8 and 9) were said to be more valuable than straw roofs (present on the house on the right of Image 10) because rats could not nest in and make their homes in zinc like they could in straw. Additionally, zinc sheets cost more than straw, and have to be imported from the larger cities by bus, car, or canoe (which all cost money), while straw is available in the village areas themselves.
There were many houses that were in transition states with regard to their construction – both their walls and their roofs. Some houses began as caña and eventually had parts replaced first with wood, and then with concrete as the family saved their earnings and invested them in the house. Image 11 is a good example, as wood is seen at the back of the house (towards the right in the photo). The cement bricks are evident in the middle, and finally, the left of the house is considered to be completely finished and the bricks are covered with a layer of cement. Image 9 is another good example as the three houses are mostly wood, but the lower story in the middle is made of concrete bricks.

I also noticed that the inside furnishing of the houses could not be predicted based on their exteriors. Some very nice houses were bare on the inside, while some of the wooden houses were very well furnished and decorated. Therefore, the two were not necessarily linked as I had initially predicted. Additionally, one woman pointed out that parents with many children had less time and money to fix-up or improve the construction of their houses; and therefore, quality of housing material might be influenced by size of household and other financial obligations and time commitments the family might have (such as feeding and clothing a large number of children).

One woman was of the opinion that the differences in houses and ownership were more indicative of what people chose to spend their money on, rather than an indicator of economic resources. Those with nicer houses did not waste their earnings on alcohol or clothing, but rather, they invested their money in building a nicer house. Therefore, her
point was that nicer houses and nicer things were an indicator that a family was working harder on their farms or however they earned an income and making more of an esfuerzo (effort). She went on to explain that even though it was not an indicator of true “wealth”, nicer houses and nicer things did give you and your family more respect in the village because it was understood you had earned it and you deserved it, and you were making an effort to superar (assend) and also making a sacrifice of some sort. Her explanation for this divide between people who worked hard and had ganas (desire) and those that wasted their money was that some people don’t think about their future or the future of their children, rather, they prefer to have fun day-to-day. She figured this has a lot to do with how a person is raised, but there were other factors like TV (people tend to imitate what they see on TV) and the changing social and economic system in general (where more people are selling their land for money than before). This woman’s comments illustrate that material of house construction and material goods are a status symbol in addition to a symbol of wealth because people have to make an effort and earn money to improve their houses. Nothing is given for free; therefore, what you have in the village is an indicator for how hard you work.

Another explanation she had for the difference in work habits was rooted in the history of the region and its people. She said that before, almost all the houses were made of caña. Now, as things get better and people make the effort, they can get better houses, but it’s not that they “have more”. Her theory about why only some people tried to better their lives was the following: she said that as slaves many years ago they were not allowed to study and they were not allowed to have possessions. The effect of this, she explained was that some people tried to make an effort now to get a better life through education and nicer houses, while others were just content with what they had. She said that before people did not have rights because they were Afro. “No es que nos gusta ser asi, pero porque no hemos tenido otros oportunidades” (“It’s not that we like to be this way. We just have not had other opportunities”). This woman viewed the reality of her community in its full historical context and connected peoples’ observed behaviors with their history as slaves. The clear difference in her mind was that some people choose to work harder, and others choose to be complacent with their situation.

The Importance of Education

Education is viewed as the main strategy of social and economic advancement in the villages and is the route to steady employment either in the village or outside in a larger town. It is a way to advance economically, because you then have access to higher paying and more stable jobs, but education is also an important indicator for status in the village. There is a primary school in the village, after which some children go on to the secondary school in a village that is 30 minutes away by bus. The closest community college is four hours away by bus, which is in Esmeraldas (predominantly an Afro city). To put this in perspective the larger universities in Quito (the capital), however, have almost no Afro-Ecuadorian or indigenous students.

One woman told me that because she has the ability to study at community college in Esmeraldas and to have a good job in the village (in the junta, or town council)
others could be jealous of her, or say she thought she was better than others in the village. Her thoughts on ranking was that everyone was equal in God’s eyes and therefore no one was “better” than any one else. The same woman also explained to me that people could be jealous of nice houses, possession of electronic appliances, having a business, or simply for being popular in the town and getting along with everyone. Her view of status was based on those that have a particular thing (whether that is a good job or a new refrigerator) and those that do not, and are therefore jealous and envious. Education was a way of proving that “you were somebody” in the village, but in addition to gaining respect from the rest of the village, one also received some underlying jealousy, according to one woman.

Those that left town to get an education, who then became professionals and returned to the village also have elevated status, one man explained to me. But another woman explained that this type of return was rare because it is much easier to find professional jobs in the larger cities, rather than in the villages.

Education was also an indicator of economic resources because tuition and books cost money. Additionally, time spent at school, time spent traveling to and from school, and time spent doing school work is all time that could be spent working on a job that potentially would earn the family income. In this sense, education is a kind of economic investment that families hope will pay off when the student gains a well-paid job with a steady income. These tend to be governmental jobs such as working for the town council, the public health sector, the public education sector, or for the larger county government.

**Jobs as Indicators (Steady versus Seasonal Work)**

Occupation in the village was also perceived to be a strong indicator for wealth and status. It is a variable that is closely related to education because a certain amount of schooling is needed for governmental jobs, while other jobs do not require any schooling. “Better jobs” were ones that paid more, and that provided stable employment such as the governmental jobs mentioned above. Employment with the government was perceived as a secure life-long source of income. Also, having a job outside of the village allowed one to gain more money. “Stable employment” is in contrast to seasonal work (such as harvesting certain crops or doing construction work) for which demand changes throughout the year. These seasonal jobs mean that a person is employed on a project-by-project basis, as is the case for construction work, or that the person can only harvest a certain kind of crop during certain times of year, if they have farm land.

Image 12 shows the village’s health center in which the nurse (sitting at the table in white) helps patients. The nurse receives steady employment and income from the government, and she had to complete specified nurse training. Image 13 shows a primary school in one of the villages with students and the teacher. The village teachers are also another example of individuals with steady governmental employment and income.
Another economical distinction between people involving employment was between those that did and did not receive *el bono* (welfare) from the government. One little girl explained that this help was in the form of food or small monetary finds, but it was only for people in dire need. She explained that if you did receive *el bono*, that meant you were “poor” and it was common knowledge in the village who received this help from the government. I was told that three older mentally handicapped people lived in one house and they all received assistance from the government to eat because they could not support themselves economically. They did, however, have relatives in the village who helped them go about their daily lives. On the opposite end of the social ladder, people also mentioned that earning a pension (income after retirement) was an indicator of both wealth and status as the person was viewed to be climbing in life.
**Ability to Travel**

A pervasive theme throughout conversations of wealth and status was the ability for a person to travel outside of the village. One young woman connected higher levels of wealth to the ability to travel frequently (by bus) to Borbon, Esmeraldas, Quito, and Guayaquil. Not only did wealthier people have the financial ability to travel, she explained, but they had access to more material goods while traveling that they could bring back to the village with them. These material goods were seen as valuables in the village and would be much more expensive or simply unavailable in the village. Traveling frequently was also an indicator of wealth because one could not earn money while one was traveling by bus (though, there were people who occasionally sold things like vitamins on buses) and traveling shows that the person does not have to earn money during that time. Additionally, she mentioned that having connections (either family or friends) outside of the village was beneficial to one’s wealth because they often provided goods to the family member or friend. It also gave you access to different foods and clothes, according to one man, which showed others that you had outside connections. Another person added that having connections in larger cities helped you to complete tasks (like going to the bank, or seeking medical treatment) more quickly—“what you had planned to do in three days can be done in one day if you have help from friends or relatives in a larger city” (like Esmeraldas, Quito, or Guayaquil). Another older man mentioned that some people had children in other parts of the country or world who remembered their parents and would send back furniture, money, or other valued gifts. Traveling is also an indicator of wealth because one is spending money on the bus fare in addition to earning no money during that travel time.

Image 14 depicts a beauty salon in one of the larger cities, which was run by the relatives of a woman from the village. The woman would go visit her family in the city often, and they would occasionally return to the village for parties or special occasions. Moreover, the woman went to the town frequently because she attended community college there on the weekends and she would do all of her shopping in town (for things like diapers, yogurt, and tea) which she would then bring back with her to the village.
As mentioned by several informants, this kind of personal connection to a large town is perceived to be valuable because it grants access to assets which are tied to wealth and status back in the village.

**Saving for Times of Need**

Another indicator of wealth was that some people had types of savings, or back-up resources such as valuable jewels or jewelry that could be sold if other sources of income became diminished or eliminated. Although several people mentioned this as a source of wealth, they also mentioned that this was not something that was talked about in the village, and therefore, it was not an outward symbol of wealth. This kind of wealth, however, is important in a newly emerging monetary economy in which neighbors help each other less, most incomes are unstable, and cash can be relied upon to buy food and other immediate necessities.

**Villagers’ Perceptions of Determinants of “Status”**

Although certain indicators overlap in perceptions of wealth and perceptions of status (such as occupation), other indicators of socioeconomic position directly link to status and social standing.

**Earning Respect in the Village**
Respect was said to be gained by being responsible, educated, friendly, and through conversations with people in the village. It was explained to me that social standing is based more on how people act, whereas economic status is demonstrated by the purchasing power of money, and the sources of money available to a person through their work. Reputations are directly related to status in the village and are improved through dialogue within the village and education, according to one man. One woman explained that people who worked harder and made an effort had more status in the village and were seen as “a little better”. Only one interviewee commented that one’s social status in the village was directly tied to one’s economic status; in other words, people with more economic resources received more respect in the village. The general consensus was that hard work earned people respect from others in the village. Another comment from an interviewee was that friends often defended each others’ reputations to individuals who were unfamiliar with them. These concepts of respect and reputation appeared to be important to people, especially because stories spread quickly by word of mouth, and in a village of this size people are familiar with almost everyone in their community; therefore, building up one’s reputation both economically and socially through hard work was a priority in the village.

The Relationship between Power, Education, and Social Standing

One man mentioned that powerful people in the village include the teniente politico (village leader who oversees other villages in the parroquia as well), la junta (the village council), the doctor, and leaders of groups like religious groups. Image 15 shows a baptism being performed by the pastor of the evangelical church in the village. The evangelical group has mass every Sunday, worship gatherings every evening except Sunday, and occasional picnics. The pastor is an example of an individual who is given respect and social standing because of his leadership role in the community.
Leaders in the village often coordinate or lead gatherings, and additionally, they are said to have much influence with others in the village through their actions and words. Because of their influence, they are said to have elevated status.

In addition to power, education was also mentioned by most people as an indicator of both status and wealth. It is an indicator of wealth for reasons described previously. It is an indicator of status because educated people in the village have influence over other individuals, similar to the influence that leaders of groups have. Individuals who have left the village to gain education in a community college or larger college have different ideas about the world and ways in which to view the world. There is an observable difference between the two groups of people: those that have gone outside the village for education, and those that have not. According to one woman, this is a difference that is well understood in the village.

Furthermore, when conducting the interviews inside houses, I noticed that several families had framed diplomas on the walls (Image 16), and photographs of young people in graduation clothes with diplomas also framed and on the walls.

It appeared that diplomas became symbols not only of education and achievement for the people, but also of social standing. There was obviously a lot of pride that went into framing and hanging the diplomas in houses. Furthermore, diplomas and pictures tended to be hung in the main living space in the house in which the family was most likely to have family, friends, or other visitors.
The Relationship between Envy and Status

There exists a concept of envy among villagers that was brought up by several people. Envy is associated with those people who do raise themselves up economically and socially; furthermore, it was a useful way of exploring which differences mattered to people. Some differences were less meaningful to people (for example, the difference in friendliness between people who would greet others in passing, and those that would not), while other differences were more meaningful to people (for example, the difference between more educated people and the less educated people) because people envied those that had the asset, quality, or position. I found that people were envious of meaningful differences and did not feel the same way about less meaningful differences; therefore, it was a useful concept to help me tease apart the two kinds of differences (meaningful versus less meaningful).

In addition to the concept of envy, there is also an idea of *capricho sano* (healthy jealously, or sincere jealousy) that exists to people who look at what other have and then want it themselves. Work, however, need to be performed in order to attain the desired asset or status, and that is why this form of envy is considered healthy. It is favorable for a person to feel “healthy jealousy” towards another person because this kind of envy encourages the person to work hard and make an effort to attain the asset, quality, or position.

“Working Hard” for one’s Family and the Desire to Ascend Economically

Hard work was mentioned by several people as an indicator for status and respect. One man said that the people he respected in the village were the 80 and 90 year olds that still went out into the fields to do work for their families. This is hard work he explained, and they have to strain themselves usually, and be strong enough to still use a machete.

Other Forms of Status

Other understandings of wealth were not related to money or economic status. One woman explained that some people were rich in knowledge and wisdom and this gave them a certain status. These were people with a lot of ideas, either from schooling, or just from life in general. Another kind of wealth was the spiritual and religious kind, the same woman explained. People could be rich in the knowledge of God’s word and could be rich with His spiritual gifts. There was no direct correlations between economic wealth and spiritual wealth, as another woman explained to me, “a person can have house full of furniture, but not have anything in their heads; conversely, they could have a bare house, and be very full of spirituality”.

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Summary and Conclusions

People in the rural Ecuadorian village had clear perceptions of indicators of wealth and status. Although some overlap between the two concepts was observed, unpacking both as separate but related ideas was useful to understand local perceptions of socioeconomic position. Overall it appeared that perceptions of socioeconomic position in the village had two major components: 1) an asset ownership based on material goods and economic assets, and 2) a component of prestige and wealth that was based upon educational/occupational. Table 1 summarizes the perceptions of wealth and status indicators for the village. These findings are the basis to transform the local perceptions of SEP into measureable variables, and to subsequently construct indices of wealth and status (found in Chapter 5).

<table>
<thead>
<tr>
<th>Villagers’ perceptions of indicators of “wealth”:</th>
<th>Villagers’ perceptions of determinants of &quot;status&quot;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Well constructed house</td>
<td>• Education outside of village</td>
</tr>
<tr>
<td>• Well furnished house</td>
<td>• Professionals who return to the village</td>
</tr>
<tr>
<td>• Ownership of land</td>
<td>• Leaders of popular groups</td>
</tr>
<tr>
<td>• Ownership of farm animals</td>
<td>• “Working hard” for one’s family</td>
</tr>
<tr>
<td>• Ownership of a store</td>
<td>• Having a “desire” to ascend economically</td>
</tr>
<tr>
<td>• Ownership of a pool hall or salon</td>
<td>• Lost by wasting money on drink</td>
</tr>
<tr>
<td>• Not receiving “El Bono” from the state (welfare)</td>
<td></td>
</tr>
<tr>
<td>• Steady employment (vs. seasonal work)</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Summary of local perceptions of status and wealth

Translation of Quantitative Data into Quantitative Measures

The next step in this thesis is to convert the local perceptions of SEP into quantitative variables, measureable in house-hold surveys. One approach would be to construct my own survey tool (survey questions) for the village, then implement it in the villages and then collect data over the course of months or years. This would allow me to incorporate all dimensions of wealth and status from the local perceptions into the measures of SEP. The approach I use, however, given the time constraints of this undergraduate thesis, is to rely on previously collected project data from previously constructed survey questions. Access to house-hold survey data is one of the many benefits of working within a larger epidemiological study as an undergraduate. The EcoDeSS project is a large interdisciplinary project (described in Chapter 3), and as such,
has measured many aspects of disease, culture, social capital, and socioeconomic position throughout the six years of its existence. I am familiar with all the measures of the project and have selected the ones that best match the locally perceived indicators of wealth and status. These measures are described in Table 2.

<table>
<thead>
<tr>
<th>Measured Concept</th>
<th>Survey Question</th>
<th>Possible Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>House Construction</td>
<td>What material is used to construct the house?</td>
<td>Cement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mixed cement and wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mixed wood and cane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>What material is used to make the roof of the house?</td>
<td>Zinc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Straw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>What material is used to make the floor of the house?</td>
<td>Dirt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Palm leaves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Economic Assets</td>
<td>Does the family own farm animals?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NR (No Response)</td>
</tr>
<tr>
<td></td>
<td>During the past 12 months has the family cultivated land?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NR</td>
</tr>
<tr>
<td>Material Assets</td>
<td>Does the family own a gas stove?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>Does the family own a refrigerator?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Education/ Employment</td>
<td>How many years of education have you had?</td>
<td>n</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>What are your primary, secondary, and tertiary jobs?</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic Work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Student</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work with Children</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agriculture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wood Cutter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Raising livestock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Artist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Food Gatherer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cook</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Government Worker</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Commerce/Business</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teacher/Professor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

Table 2. Selected measures from the larger project that correspond with local perceptions of wealth and status

These variables will be used to create an index of wealth and status in the next chapter. Additionally, these measures will be compared to conventional measures of assets used by the World Bank in developing countries (Lindelow, 2005), which differ slightly from measures based on local perceptions discussed in this chapter of the thesis. Correlation between all variables will be examined and using Principle Component Analysis I will investigate how many dimensions the variables represent.
Chapter 5: Quantitative Comparison of Status-Related Variables

This chapter describes how the translated qualitative-to-quantitative measures are validated with a statistical approach using methods from psychology and index construction. The process of index construction is described as well as the methodological choices made during the process. The “ethnographic” measures of SEP, both status-based and wealth-based, were compared to “conventional” measures of SEP based on World Bank measures with a series of statistical tests including Cronbach’s alpha, principal component analysis (PCA), and factor analysis (FA). These tests demonstrated how related each variable was to the others, and how many dimensions existed within the variables.

Constructing Indices

All the data used to construct the indices came from the larger (EcoDeSS) project’s surveys. Data were requested from one village (where I had conducted my field-work) for individuals 12 years-old and older (at the time of the survey) from the years 2005-2007. Data from questions in Table 2 from Chapter 4 were received from a total of 557 individuals from four different EcoDeSS surveys: 1) individual census survey with education and occupation questions, 2) house-hold survey about economic indicators, 3) house-hold survey with house construction questions, and 4) individual sociometric survey with questions about group-membership and self-rated health. The 557 individuals had survey information for at least one survey, and not necessarily for all four surveys.

Three groups of available variables were formed based on the conventional World Bank asset-measures of SEP, the ethnographic measures of wealth, and the ethnographic measures of status. Table 1 shows what variables were included into each of the indices. Additional measures were included in the World Bank’s study such as radio, telephone, car, and number of house-hold members per room, but these were not variables the EcoDeSS study had measures, and therefore they could not be incorporated in the “conventional” index of this study.

<table>
<thead>
<tr>
<th>“Conventional” measures, asset-based (Lindelow, 2005)</th>
<th>“Ethnographic” measures, wealth-based</th>
<th>“Ethnographic” measures, status-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has electricity*</td>
<td>Has farm animals</td>
<td>Education</td>
</tr>
<tr>
<td>Has refrigerator</td>
<td>Has farm land</td>
<td>Occupation</td>
</tr>
<tr>
<td>Has TV</td>
<td>Has refrigerator</td>
<td></td>
</tr>
<tr>
<td>Has bicycle</td>
<td>Has gas stove</td>
<td></td>
</tr>
<tr>
<td>Has motorcycle</td>
<td>Construction of house</td>
<td></td>
</tr>
<tr>
<td>Construction of floor</td>
<td>Construction of roof</td>
<td></td>
</tr>
</tbody>
</table>

3 The data from the fourth survey was received, but was not incorporated into the index construction or the statistical analysis.
Table 1. Three indices of SEP

*These two variables were included in the initial design, but were removed from the statistical analysis because variation was not sufficient to carry out PCA.

The variables of ownership (has electricity, has refrigerator, has TV, has bicycle, has motorcycle, has farm animals, has farm land, and has gas stove) were binary: each house-hold either had the asset or did not have the asset. The variables used to capture the quality of the house were all recoded into three categories for each variable.

The original survey categories for construction of house were: cement, wood, cane, mixed wood and cement, and mixed wood and cane. These variables were re-categorized into three categories: 1) cement or mixed wood and cement, 2) wood, and 3) cane or mixed cane and wood. This choice was made based on both the ethnographic data and the descriptive statistics of the survey data. From the ethnographic data, we know that houses are often of mixed construction as families earn and invest more money into their houses. We also know that cement costs more money than wood. Therefore, cement was grouped with mixed cement and wood because having any cement at all is significantly different from having no cement. From the descriptive statistics, we know that separating wood into its own category and grouping cane and mixed cane and wood results in numerically even categories because approximately 1/3 of houses are made of wood alone. This grouping is also logical from an ethnographic perspective because the houses with any cane at all (even if they had some wood construction) were typically the most humble homes in the village.

The original survey categories for construction of roof were: zinc, straw, and mixed zinc and straw. These were regrouped into two categories: 1) zinc, and 2) straw and mixed zinc and straw. This grouping was based on the descriptive statistics of zinc as the largest category and the other two as smaller categories; therefore, grouping the two smaller categories was favorable from a statistical perspective in which an even distribution between categories helps identify correlations and trends between the variables under examination.

The original categories for construction of floor were: cement, wood, dirt, and mixed wood and cement. These were regrouped into two categories: 1) cement or mixed wood and cement, 2) wood, and 3) dirt. The rationale behind this decision was both ethnographically and statistically based. As with construction of house, having any cement at all is a significant difference both in the eyes of villagers and in the distribution of survey data; therefore, cement and mixed cement and wood were grouped together. Wood and dirt were thought to be too distinct to combine into one category, and therefore, were kept as separate categories.

Education was measured in years and ranged from 0-18, with a mean in the village of 3.89 years. This variable was not grouped into categories like the others, but
rather, it was kept as a continuous variable. Occupation was categorized into “stable” and “seasonal”. The significance of “stable” employment is the stable income that it entails. Therefore, of the jobs in the village (none, housework, student, work with kids, farmer, tree cutter, work with live-stock, artist, food gatherer, cook, government employee, business, teacher/professor, and construction worker) government employee and teacher/professor were categorized as “stable” employment because those jobs provide stable and fixed incomes year-round. The remaining occupations, conversely, do not provide a steady, year-long source of income.

**Descriptive Statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Do Possess</th>
<th>Do not Possess</th>
<th>%</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fridge</td>
<td>51</td>
<td>63</td>
<td>4.7</td>
<td>114</td>
</tr>
<tr>
<td>TV</td>
<td>85</td>
<td>29</td>
<td>4.6</td>
<td>114</td>
</tr>
<tr>
<td>Bicycle</td>
<td>7</td>
<td>107</td>
<td>.1</td>
<td>114</td>
</tr>
<tr>
<td>Farm Animals</td>
<td>23</td>
<td>91</td>
<td>0.2</td>
<td>114</td>
</tr>
<tr>
<td>Farm Land</td>
<td>89</td>
<td>25</td>
<td>8.1</td>
<td>114</td>
</tr>
<tr>
<td>Gas Stove</td>
<td>101</td>
<td>13</td>
<td>8.6</td>
<td>114</td>
</tr>
<tr>
<td>Steady Employment</td>
<td>16</td>
<td>424</td>
<td>.6</td>
<td>440</td>
</tr>
</tbody>
</table>

Table 2. Descriptive Statistics for the 7 variables with binary responses “Do Posses” and “Do not Posses”

<table>
<thead>
<tr>
<th>Floor</th>
<th>Dirt or Mix Zinc &amp; Straw</th>
<th>Wood</th>
<th>Cement or Mix Wood &amp; Cement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.9</td>
<td></td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>.7</td>
<td>95</td>
<td></td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>119</td>
<td>6.5</td>
<td></td>
<td>326</td>
</tr>
</tbody>
</table>

Table 3. Descriptive Statistics for Floor Material
<table>
<thead>
<tr>
<th>House</th>
<th>Cane or Mix Wood &amp; Cane</th>
<th>Wood</th>
<th>Cement or Mix Wood &amp; Cement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46</td>
<td>3.4</td>
<td>57</td>
<td>141</td>
</tr>
</tbody>
</table>

Table 4. Descriptive Statistics for House Material

<table>
<thead>
<tr>
<th>Roof</th>
<th>Straw or Mix Zinc &amp; Straw</th>
<th>%</th>
<th>Zinc</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>32</td>
<td>9.4</td>
<td>307</td>
<td>90.6</td>
<td>339</td>
</tr>
</tbody>
</table>

Table 5. Descriptive Statistics for Roof Material

<table>
<thead>
<tr>
<th>Education</th>
<th>Years</th>
<th>Frequency</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>112</td>
<td>25.2</td>
<td>445</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>32</td>
<td>7.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>59</td>
<td>13.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>44</td>
<td>9.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>40</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>16</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>54</td>
<td>12.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>17</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>18</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>15</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>4</td>
<td>.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>4</td>
<td>.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>16</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>4</td>
<td>.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>4</td>
<td>.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1</td>
<td>.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>2</td>
<td>.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>3</td>
<td>.7</td>
<td></td>
</tr>
</tbody>
</table>
Statistical Validation of Variables

Internal consistency was the first statistic of each index to be examined. This coefficient is calculated with Cronbach’s alpha, which is a measure of reliability associated with the variation accounted by the “underlying construct” (Hatcher, 1994). Mathematically, the construct is the variable that is hypothetically measured when Cronbach’s alpha is calculated from dichotomous and/or multi-point measures. Cronbach’s alpha can range from 0 to 1 and is used to describe the reliability of factors extracted from questionnaires or scales. The scale’s reliability increases as the coefficient increases. It is generally thought that 0.7 or above is an acceptable reliability coefficient (Nunnaly, 1978); however, lower thresholds are considered valid in certain scale validations.

This study’s findings for internal consistency are summarized in the table below (Table 2). Alpha values about 0.50 were considered to indicate internal consistence.

<table>
<thead>
<tr>
<th>Index</th>
<th>Alpha Value</th>
<th>Internally Consistent?</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Item Conventional Asset Index</td>
<td>0.54</td>
<td>Yes</td>
</tr>
<tr>
<td>7-Item Ethnographic Index</td>
<td>0.65</td>
<td>Yes</td>
</tr>
<tr>
<td>9-Item Material Asset Index</td>
<td>0.69</td>
<td>Yes</td>
</tr>
<tr>
<td>2-Item Education/Occupation Index</td>
<td>0.62</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 7. Alpha values for the constructed indices of SEP

From these data, we see that both the conventional index and the ethnographic index were internally consistent (meaning that all the variables together measure one construct). This is expected as all the variables in each index measured one kind of SEP. Pooling all the material assets together showed the highest level of internal consistency, while the conventional assets on their own demonstrate the least amount of internal consistency according to Cronbach’s alpha.

Another way to measure dimensions captured by an index is to conduct a principal component analysis (PCA). This is a statistical technique used to “reduce” the data to its principal components. This is accomplished by replacing a set of correlated variables with a set of uncorrelated components (principle components) and this forces the variables to be uncorrelated to each other. Variance in the data is explained by each principle components, which are “linear combinations of the original variables: the weights are derived from the correlation matrix of the data” (Howe et al., 2008). The
following Scree plots were produced for the Conventional Asset-based Index, the Ethnographic Index, and a composite index with all 11 variables pooled together. The components that are separate from the straight line at the bottom represent the dimensions of the data. Scree plots of shown in graphs 1-3.

Graph 1.
Scree Plot for 7 Ethnographic Measures

Graph 2.
While Scree plots in graphs 1 and 2 show single dimensions, the Scree plot in graph 3 clearly shows that two dimensions exist within this data. Further analysis with factor loading demonstrated that variables either loaded onto the first or the second principle component. Variables that loaded (both rotated and unrotated) on the first variable were all the asset variables (refrigerator, TV, bicycle, floor, construction of house, roof, farm animals, farm land, and gas stove), while those that loaded on the second were education and occupation (year of education and steady employment versus seasonal work and work that does not provide a steady income).

**Discussion and Conclusions**

From the statistical analysis, we see that the measures included by the World Bank to measure SEP miss the educational/occupational component that we found to matter in this data. Variables of education and occupation were said to matter by local people, and it turns out that these variables also capture additional part of SEP in the villages, in addition to material assets. Therefore, we can conclude that measures based on local perceptions help capture SEP more accurately and more completely than measures based on social theory alone.
There are several possible explanations for the choice made by the World Bank to exclude measure of education and occupation when attempting to capture SEP; these include 1) difficulty in making international comparisons, 2) intentional focus on one single part of the composite measure that is SEP, or 3) the lack of theoretical basis or less clear ties to causal pathways. Because education opportunities vary dramatically between countries, and even between regions within a country, it is possible that the World Bank has chosen to exclude education as a variable because systematic comparison is impossible. For example, it would be inappropriate to compare a village that contains a school to a very remote village that requires hours or days of travel to reach the nearest school. Almost all children in the first school would receive primary education compared to almost no children in the second village; therefore, a comparison would be too binary to provide accurate differences in status. Another possibility is that the World Bank uses material assets instead of education or occupation because they see material assets as a proxy for educational and occupational status, and therefore, they could be perceived as redundant indicators. A third possibility is the lack of theoretical basis to use education and occupation in developing countries to measure SEP. It is possible that education could be an indicator of governmental attention to a region or village, rather than an indicator of improved social or economic status. Occupation may also represent opportunities available rather than SEP. These statements, however, are hardly valid for all villages and regions throughout the world.
CONCLUSIONS

Social determinants of health and their causal mechanisms have been heavily researched in developed countries. These academic effects have led to several sound and clearly delineated theories regarding health inequalities that rely heavily on ecosocial conditions instead of material hardship. Clear theories that capture the relationship between SEP and health are only possible if valid and appropriate measures of SEP are used, which has been accomplished in developed countries (though, theories do continuously evolve and new connections do emerge over time). Less research on these relationships has been conducted in developing countries, and therefore, the measures of SEP and the theories connecting them to health outcomes are less sophisticated and less thorough. Research of this kind is particularly important in developing countries to decide how best to utilize and distribute resources in a country that aims to improve health.

Through this thesis work, the value and importance of paying attention to measures of socioeconomic position becomes evident. Not only do local perceptions help to select locally valid and culturally appropriate variables of status, but statistical analysis and index construction help identify the dimensions embedded within the data, and therefore, what the data is actually measuring. The qualitative anthropological work of this study was able to guide the quantitative statistical work in the process of selecting measures to include on the wealth and status indices. This method was successful in that the PCA and FA captured the two dimensions that were described by the local residents: wealth (resources) and status (prestige).

Causes of Health Inequality: Material Hardship versus Social Factors

In addition to measuring and distinguishing socioeconomic factors, it is conceptually important to examine the theory underlying the factors that explains how health disparities are mediated. There is some debate about whether health disparities in developing countries are mediated predominantly by material hardship such as lack of sanitation and nutrition or by factors such as “education, employment status and other indicators of social status that are likely to causally precede income and wealth” (Fotfo et al., 2005: 197). The material hardship theory suggests that SEP is correlated to health because of the relation between SEP and “tangible material needs, services, and amenities” (Fotfo et al., 2005: 197). On the other hand, social status is thought to correlate to health inequalities by affecting knowledge and behavior patterns of individuals so that higher social status directly or indirectly leads to a healthier life, while lower status leads to the opposite.

Based on local perceptions in a rural Ecuadorian village, we found that both material goods and social variables and important when thinking about health disparities, at least in a middle-income region that is not destitute or in absolute poverty. Perhaps both theoretical frameworks factor in to some degree, but the strength of each theory may depend on the level of poverty and deprivation that exist in the community. Moving up
The picture becomes even more complex when investigating middle-income countries in which the basic biological needs of the population are met, but the region or country has not developed economically to the point where most people have fixed (and therefore, measurable) incomes and employment. In developing countries, mother’s education and female literacy have been the gold standard to predict infant mortality because higher levels of education translate to more knowledge of healthy maternal behavior such as nutrition, hygiene, and preventive care that benefits the infant. Also, literacy empowers the individual and education allows individuals to enter the labor market and to improve their economic position.

**Locally Valid Measures versus International Comparisons**

The anthropological approach to measuring SEP has been successful in this case, but what if we would like to compare our villages to others in the country or in the world? Even if we could collect local perceptions of wealth and status from regions across the globe, responses may be too varied to make comparisons. One option could be to divide each index into percentiles and compare each region by percentile and then to health outcome. Again the issue of selecting a causal framework arises. Although international comparisons of SEP are desirable because they have the potential to reveal further understanding of the causal mechanisms underlying health disparities, it seems that intricacies of social and material environments should not be sacrificed for the sake of global comparisons because it is particularly these intricacies in which we have interest. Sir Marmot is noble for his attempts to unify all theories of health disparities between and within countries, but I suspect only very abstract ideas are available at such a grand scale.

It depends also on whether the research lies closer to the basic or applied end of the research spectrum. In epidemiology, as in other scientific disciplines, research questions can address very specific and concrete issues, or more broad and theoretical issues. I’m sure most would agree that both approaches are important to creating new knowledge that reduces disease and increases well-being and health.

**World Bank Measures**

The World Bank has conducted extensive global health research in developing countries, and the research organization takes a measurement approach that lends itself to international comparisons, rather than paying attention to local validity and local appropriateness of indicators. Although the organization does recognize the importance of education based on its large efforts to provide children in developing countries with primary schools, it is curious that they do not see education as a valuable variable to include in SEP research. This suggests that the World Bank uses a material hardship theoretical framework more so than a social factors framework in which to think about causal mechanisms of health disparities. Additionally, it is possible that the World Bank
recognizes the strong correlation between maternal literacy rates and infant mortality and is thus aiming to specifically address this inequity by investing resources in primary school for children (girls who will grow up to be mothers).

**Next Steps**

Another aspect to consider when measuring SEP is community socioeconomic factors that may directly affect the social, economic, and physical environment shared by the residents such as a communal water treatment facility or a free primary school. Public services such as education, water, electricity, a sewer system, transportation, health clinics, access to medications, and methods of communication (like telephone access and cell phone coverage) may directly affect the health of the residents by controlling individual risk factors; additionally, they may contribute to the psychosocial factors affecting health. This would be an interesting next step in the villages to develop some kind of community index of socioeconomic standing in conjunction with individual measures of SEP.

Additionally, the index constructed in the thesis and any other indices should be compared to health outcomes to evaluate their predictive validity or simply to see what interesting patterns arise from the comparison.

As Eric Brunner (UCL) told me at a global health course, “when tackling health disparities, there are no easy answers.” The causes of health disparities are very complex for both industrial and developing countries and for this reason, more variable validation is needed to ensure that we are including the most appropriate variables that will reveal existing links between SEP and health outcomes. Additionally, it appears that more collaboration is needed not just among researchers, but also with politicians and global leaders who ultimately have the power (and the responsibility) to create polices that promote health and well-being.
References


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Development Studies; 1-97.


