Constraints, recent change, objective and subjective well-being: urban, rural-nonfarm, and rural-farm households in Poland

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Constraints, recent change, objective and subjective well-being:

Urban, rural-nonfarm, and rural-farm households in Poland

by

Linda S. Vande Lune

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

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Signature was redacted for privacy.

[Major Professor]

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For the Major Program

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For the Graduate College
Dedicated to my mother and my daughters
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This study is in response to the findings of Winter et al. (1999) that in 1994 Poland, compared to urban households, rural households experienced worse domain living conditions yet rated their household situation as better. Using the same data, which were collected in the province of Lublin in Poland from primarily female respondents, 592 households are analyzed.

The relationship between socioeconomic and demographic characteristics of the household (constraints), recent change in the household's situation, conditions (objective well-being), and satisfaction (subjective well-being) is assessed globally and within five specific domains: health, housing, household equipment, food, and transportation. Parallel ordinary least squares regression analyses are performed and total effects are decomposed for urban and rural residents, and further, for rural-nonfarm and rural-farm households. The means of the exogenous and endogenous variables are compared for urban, rural-nonfarm and rural-farm households.

The results of the comparison-of-means procedures indicate that respondents in urban areas tend to have the highest levels of education, and urban households are apt to have the best conditions. Respondents from rural-nonfarm households tend to be the oldest, and rural-farm households are likely to have the most household members, children, and workers.

The findings of the regression analyses and the decomposition of total effects indicate that, of the household characteristics entered into the analyses, age of the respondent,
education of the respondent, and total household income are the most consistent predictors of conditions, and of satisfaction, indirectly through their influence on conditions.

As expected, constraints and recent change affect objective well-being, and constraints, recent change, and objective well-being affect subjective well-being. A finding that was not expected, however, is that recent change, rather than objective well-being, is a more consistent and a stronger predictor of subjective well-being. It is possible that the measures of recent change and conditions are entered into the model in reverse order; rather than reported recent change leading to conditions, it is the perception of recent change that is influenced by current conditions, which, in turn, affects satisfaction. It also is likely that recent change and conditions influence one another, and it is this relationship that affects satisfaction.
CHAPTER 1. SETTING FOR THE STUDY, RURAL HOUSEHOLDS IN POLAND, AND THE IMPORTANCE OF THE STUDY

Purpose of this Study

Ten years ago Poland entered into a period of economic transformation that was launched by a newly-established form of government that displaced 45 years of Communist rule. For the first few years after the political and economic transition, many Polish households suffered the effects of extremely high inflation rates and exorbitant prices for goods and services, and, simultaneously, low wages, underemployment, or unemployment. The data for this study were collected toward the end of this period, at a time when the economy was beginning to improve.

The results of previous research indicate that the effects of the transformation were experienced differently by the people of Poland, and one area of variation has been attributed to whether households lived in rural or urban locations. Specifically, Winter et al. (1999) found that Polish households in rural areas were experiencing lower levels of objective well-being than urban households, yet rural households reported higher levels of subjective well-being than their urban counterparts.

The purpose of this study is to examine, in detail, the relationship between household characteristics, recent change, and objective and subjective well-being as reported primarily by female respondents for urban and rural residents, and, further, for rural households who may or may not be involved in farming. The first step toward this goal was to use ordinary least squares regression to replicate the analysis of Winter et. al (1999). In this phase of the study objective and subjective well-being are assessed with a dichotomous rural-urban measure entered as one of the control variables. The second step in the study is to examine the same relationships, but through parallel models for urban and rural residents, and rural nonfarm and rural farm households. This phase of the study was accomplished through the use of ordinary least squares regression and the decomposition of total effects into direct and indirect effects.
The Setting for the Study

The Polish Situation

The history of Poland sets the stage for understanding the Poland of today. Poles have had to adjust to repeated economic hardships throughout history. From the late 1700s to the early 1900s, Poland ceased to exist as a separate entity as it was partitioned among neighboring countries. After World War I, the Polish people created a government and economic system literally from nothing, only, in turn, to encounter the devastating effects of the Depression and World War II. Throughout much of its history, Poland has experienced few economic peaks and numerous economic valleys.

In 1989, 40 years of resistance to the Communist government’s economic policies came to a head. In April, a “round-table” agreement was signed by Solidarity and the government of the Polish People’s Republic, and the name of the country was changed back to the Republic of Poland (Kojder, 1998). In June, the ruling Communist Party met with defeat in the national elections. Soon after, a nonCommunist leader was selected as prime minister, and changes were implemented to move toward a market economy (Kojder, 1998; Slay, 1994). The Communist Party’s last ditch efforts to appease the people, however, had caused Poland’s economic situation to deteriorate rapidly. “Retail price inflation, which had already begun to accelerate in 1988 to 61.3 percent, climbed to 243.8 percent in 1989” (Slay, 1994, p. 86).

By mid-1989, monthly inflation rates were close to double digits, labor unrest was mounting, the state budget deficit was burgeoning—the result of flagging tax revenues and expenditure overruns—and the external current account was deteriorating sharply. In the face of worsening food shortages, the government decided in August to liberalize prices of most food products. As a result, food prices more than doubled in a single month. (Lane, 1992, p. 10)

Poland was at a peak of hyperinflation. In response, the Polish government decided to stabilize inflation and begin the transformation from a planned economy to a market economy (Lane, 1992). The choice, however, was not to ease the country into the new economic policies through a slow transition; rather, the government decided to act swiftly and to push through numerous economic reforms (Ernst, 1997; Slay, 1994). In what has been
called the “big-bang” or “shock therapy,” the government eliminated “most state controls over production, consumption, prices, and foreign trade” (Ernst, 1997, p. 6), and at the same time wage increases were kept to a minimum (Lipton & Sachs, 1990).

Following this initially abrupt approach to economic reform, government policies “involving institution building, privatization, and enterprise restructuring -- were introduced gradually and are still evolving” (Ernst, 1997, p. 7). Privatization that began in the 1980s was encouraged in the 1990s. By 1992, one out of every three employees was employed in the private sector (Kojder, 1998), and by 1993, over fifty percent of employment was in the private sector (Slay, 1994).

The result of new policies was a decrease in real wages and inflation, and an increase in prices and unemployment (Leven, 1991). Inflation in 1990 was 352.2 percent, in 1991 it was 70.3 percent, and in 1992 it decreased to 43.0 percent. Unemployment in 1990 rose to 6.1 percent, in 1991 it was 11.8 percent, followed by 13.4 percent in 1992 (Slay, 1994), and a record high of over 16 percent in 1993 (Ernst, 1997). By the end of 1991, on average, there were 75 unemployed persons for each job opening (Malinowska, 1995). The economic difficulties of the early 1990s were not exceptions to the rule, but rather, yet one more struggle. A new phenomenon for the Polish people, however, was the onset of unemployment (Slay, 1994). Those Poles living in rural areas, and agriculturists in particular, were affected by these problems, and more.

The Polish Agricultural Situation

The effects of the initial economic policies were felt differently by Polish collective farm workers and private farmers, and by agriculturists and the general population. Collective farm operations were either State controlled or closely tied to the State prior to the transformation. These farms typically were managed inefficiently, with low levels of production; nonetheless, whether there were profits or losses, collective workers continued to receive their paychecks (Galeski, 1987). With economic reform came the beginning of the privatization process of collectives, and many farm workers found themselves unemployed, with few marketable skills and limited mobility (Gorlach, 1995a, 1995b).
The situation for private farmers, who were mainly family farmers (Galeski, 1987; Halamska & Maurel, 1997) who did not hire outside help (Gorlach, 1995b), was different from that of the collective farm workers. Private farmers had enjoyed private land ownership throughout Communist rule, with the added benefit of a government-controlled market (Galeski, 1987; Gorlach, 1995a, 1995b; Morgan, 1992). On the negative side, government market controls limited the private farmer's potential income (Galeski, 1987). On the positive side, the farmers did not have to contend with the uncertainties of a free market (Galeski, 1987; Morgan, 1992). In fact, private farmers were so protected by, and reliant on, the programs of the planned economy, that when the "shock therapy" reforms were implemented, farmers did not have the skills to operate or compete in the new market economy (Gorlach, 1995a). In addition, private farmers suffered the effects of reduced consumer spending: unsold produce (Morgan, 1992), high production costs (Gorlach, 1995b; Morgan 1992), and relatively low prices for their produce (Gorlach, 1995b).

During the first few years after the transformation, farmers experienced a decrease in real income (Ernst, 1997; Gorlach, 1995a) and profitability (Gorlach, 1995b). In 1991, only 10 percent of the private farmers had a positive accumulation in income, 20 percent had close to zero accumulation, and 70 percent had a negative accumulation (Gorlach, 1995a). Morgan (1992) and Gorlach (1995b) contend that the income situation of farmers for this period would have appeared even bleaker, except that farmers countered decreases in income with reductions in expenditures for farm-related operations and improvements. Compounding the initial effects of the transformation on farmers, as the economy of the country as a whole was improving, the agriculture sector experienced slower and smaller gains than the nonagricultural sector (Ernst, 1997).

Initially, private farmers received little to no help from the newly established government; thus, these farmers were left to try to survive in an unknown market economy (Morgan, 1992). Farmers, who were for the first time experiencing the uncertainties associated with trying to make a living at farming in a free market, began to protest publicly and make demands for government interventions (Gorlach, 1995b). The government
conceded and established various types of assistance, such as import tariff quotas (Ernst, 1997) and farm subsides (Kojder, 1998).

**Polish Agricultural Households**

To understand the mindset and the reactions of households involved in agriculture to the political and economic transformations that began in 1989, it is important to place the farmer within a social, political, and historical context. The end of World War II provides an appropriate demarcation to begin this review for two reasons. First, a new set of agricultural policies was established by the government after the war (Galeski, 1987; Kojder, 1998; Slay, 1994), and second, this period of almost 45 years between the war and the transformation encompasses at least one full generation of farmers.

There have been two broad models of agriculture in Europe, "the Danish model, based on private ownership and family farms . . . and the Soviet model, based on collective property and large farms" (Halamska & Maurel, 1997). Variations of these models have occurred within the different countries of Europe, but a unique combination has operated in Poland, from just after World War II until the 1989 demise of the Communist government. Following World War II, the Polish government retained some land for state farms, which operated under a Soviet model, but divided the majority of the available countryside into small- to medium-sized farms for distribution to its people for private farming. Therefore, the majority of Polish agriculture could be seen as functioning under a Danish Model of agriculture. The State maintained such tight control over almost every aspect of private landownership, and over agricultural production and distribution, however, that (in addition to the actual state farms), Poland also operated under a Soviet model (Halamska & Maurel, 1997).

For the nearly 45 years between World War II and the 1989 transformation, there were two main types of agriculture: collective farming and family farms. Statistics from 1980 indicate that approximately two-thirds of agricultural production occurred on family farms, and the remainder took place on state farms, collective farms, or in cooperatives of agricultural circles (Galeski, 1987). Although one-third is a small proportion of Polish
agriculture, and collective agriculture played a relatively small role in Polish agriculture (Ernst, 1997; Galeski, 1987), the distinction between collectivized agricultural approaches and private farming is essential because of the different situations and characteristics associated with each type of farmer.

The term "collectives" has been used in a couple of different ways in the literature. Ernst (1997) and Halamska and Maurel (1997) use the term to include different types of collectivized farming. Ernst's collectives contain state farms, and Halamska describes collectives as both state farms and cooperatives. Galeski (1987), on the other hand, separates collectivized agriculture into three types: state farms, collectives, and cooperatives - each with varying amounts and types of input from the State.

According to Galeski (1987), state farms were essentially all farms operated by the State. The majority of these farms originated in Western Poland on land reclaimed from Germany (Ernst 1997; Galeski, 1987). The government acquired additional land throughout Poland from private farmers through policies of unattainably high taxes or steep production quotas, and through land exchanges for pensions, or from families who had no successor. The state farms were operated like a business with upper and middle management and laborers (Galeski, 1987).

Based on Galeski's (1987) definitions, there were relatively few collectives and cooperatives compared to state farms. Collectives typically were made up of former laborers, of approximately 20 to 30 often-related families, who farmed their individual land but operated as a group. Members of collectives did not consider themselves peasants or farmers, but rather, workers. Compared to state farms and individual family farms, collective workers had more independence, better living conditions, and higher levels of income. In comparison to collectives, cooperatives were formed around a group's ability to buy and share farm machinery that, for many years, was not available to the private farmer (Galeski, 1987).

It is important to be aware of Galeski's (1987) divisions of collectivized agriculture for the purposes of variable selection and interpretation of analyses. Nevertheless, in line with the current literature and for ease of reading, in this paper, the term "collectives," includes state farmers, Galeski's collectives, and cooperatives. Keeping this broad category of farmers
in mind, then, collective farmers were considered - and viewed themselves as - workers or employees. Collective farmers worked for a wage and benefits. Their income was based directly on the type of position they held in the organization and only indirectly was affected by the losses or profits of the farm. Each worker performed a narrow range of specialized tasks and, although social relationships developed within the collective organization, social contacts did not necessarily form beyond this group (Halamska & Maurel, 1997).

The second, and most prominent, type of agriculture in Poland was, and still is, in the hands of private farmers who own and work their own land: the family farm (Ernst, 1997; Galeski, 1987; Gorlach, 1995b; Halamska & Maurel, 1997; Morgan, 1992). Private ownership, however, was not always associated with independence. The Communist government had control over both the size and operation of the family farm and the market. Following World War II, the government parceled out medium-sized farms (10 to 15 hectares) in Western Poland and small farms (3 to 5 hectares) in Central and Eastern Poland (Galeski, 1987). These amounts did not increase over the post-war years (Ernst, 1997; Gorlach, 1995b) because the government maintained control over the sale of private land, established special requirements for inheritance, imposed prohibitive tax penalties on large private farms (Galeski, 1987), and suppressed modernization (Ernst, 1997). The average farm size was, or is, approximately 5 hectares (Gorlach, 1995b) to 6 hectares (Morgan, 1992), with 5 hectares the minimum amount of land necessary to produce beyond a subsistence level (Galeski, 1987). Therefore, there have been a large number of rural households just at or below the amount of land required for mere subsistence. Morgan (1992) reports that 40% of all private farmers farm only part-time. Gorlach (1997) found that almost half of the private farmers he surveyed in 1994 had to seek employment off the family farm to meet their financial needs.

The second area of governmental control over private farming was the market (Galeski, 1987; Morgan, 1992). The government set the cost and managed the distribution of seed and fertilizer, dictated the amount of production expected (quotas), and determined the prices farmers would receive for their produce at the time of sale (Galeski, 1987). For family farmers, the market controls combined with the Communist government’s policies on land
and modernization have led to a lack of desire to increase land holdings (Galeski, 1987; Halamska & Maurel, 1997), low levels of production (Galeski, 1987), and an overall lack of growth or progress in Polish farming since the system was established in the mid-1940s (Ernst, 1997; Ziółkowski, 1998).

Characteristics of the family farmer are related to their connections to their family, community, and land (Halamska & Maurel, 1997). Family farming was either an individual or family effort. If help was needed, assistance would come from family members or possibly neighbors, but rarely from nonrelative hired help (Gorlach, 1997). The purpose of the labor on the family farm was, "to independently generate income ensuring a livelihood to their families and reproduction of their farms" (Halamska & Maurel, 1997, p. 64). Therefore, for family farmers, there were two aspects of work: supporting the family and preserving the family farm. To achieve these goals, farmers had to have the skills to perform a wide range of tasks. Halamska and Maurel (1997) state, "the work of a family farmer has an independent and comprehensive, manual-intellectual character, where management is combined with performance" (p. 64). In addition, farmers needed to be able to establish and maintain a network of social and business connections within the local community (Halamska & Maurel, 1997).

To grasp the importance of the relationship between the family farmer and the community, the classic work of William I. Thomas and Florian Znaniecki, The Polish Peasant in Europe and America is enlightening. (The first two volumes of this work were originally published in 1918, and the last three volumes were published in 1919 and in 1920. The five-volume set was reprinted in 1927 and 1958.) It is conceivable that the make-up of the Polish farm family has not changed since the time of this work; as Ernst (1997) states, "In effect, the prewar structure of small peasant farms was maintained and postwar Western modernization trends bypassed Poland" (p. 29). Thomas and Znaniecki (1927), explained that, on one hand, the Polish peasant family can be thought of as, "including only the married pair with their children . . . termed . . . the 'marriage-group'" (p. 87). Nevertheless, there is also a broader understanding of who is family; or the "family-group," which is "a social group including all the blood- and law-relatives up to a certain variable limit—usually the
fourth degree” (p. 87). Polish peasant marriage-groups are intertwined with family-groups and both groups are integrated members of the local community, which entails expectations and obligations. A family’s connections are not based on personal relationships, but rather on what Thomas and Znaniecki call “familial solidarity,” which “manifests itself both in assistance rendered to, and in control exerted over, any member of the group by any other member representing the group as a whole” (p. 89). The key to family continuity is respect for positions and roles within the family, rather than, emotional bonds, which may or may not occur (Thomas & Znaniecki, 1927).

It also is possible that the overall value system of the family farmer has not changed dramatically. According to Styk (1995), there has been a shift in attitudes regarding the land. At the time of Thomas and Znaniecki’s 1920s Polish Peasant, farmers viewed land from a spiritual standpoint, as created by God and as the giver of life sustaining food for the people. As time passed, however, and the peasants were exposed to education, the collective system, and foreign influences, the values attached to the land became less affective and more economically motivated. Family farming became an “occupation” and the land merely a source of income to support the needs of the family. Nevertheless, Styk (1995) explains that core peasant values, especially those related to the church and the local community, have remained relatively constant.

In summary, it is apparent that, in the worse-case scenario, family farmers may lose their livelihoods and their farms, and because of their strong bonds to the local community they may not want to, or cannot, leave the area. On the other hand, if family farmers are able to hold on to their farms, they have the possibility of supporting their dietary needs through subsistence farming.

The importance of the current study lies in the fact that it adds to the literature in two areas: (1) the relationship between household constraints, recent change, and objective and subjective well-being, and (2) the relationship between location of residence and well-being, specifically, during difficult economic times. An initial step in this study, is to assess the relationship between location of residence and objective and subjective well-being, while controlling for recent change and the socioeconomic and demographic characteristics, to
ascertain whether there are significant relationships and the direction of these relationships. Then, in an attempt to identify how recent change, conditions, and household characteristics affect the well-being of urban and rural residents, and further, rural-nonfarm and rural-farm households, these measures are assessed separately for each of the places of residence within several domains that are related to the quality of life: health, housing, household equipment, food, transportation, and for a global measure.
CHAPTER 2. THEORETICAL FRAMEWORK, PAST RESEARCH, THE CONCEPTUAL MODEL, AND HYPOTHESES

This chapter provides the theoretical framework for this study and a literature review pertaining to well-being, recent change, and rural households. The conceptual model and hypotheses are presented in the final section.

Theoretical Framework

The theoretical framework for this study is the Theory of Adjustment and Adaptation (Morris, 1998; Winter & Morris, 1998). This theory is grounded in the theoretical work of Parsons and Bales (1955), Simon (1957), and Sztompka (1974), and the classic research of LePlay (1855), Engels (1902), Angell (1936), Bakke (1940), Cavan and Ranck (1938), Hill (1949), and Rossi (1955). In addition to these early studies, Winter and Morris (1998) have drawn from more recent social science research conducted in the areas of quality of life, economic well-being, family resource management, residential mobility, family stress, and coping to develop this theory.

Households, as viewed by Winter and Morris (1998), are residential, task-oriented units functioning to provide for their members' needs and desires. Additionally, households are systems in which the members act as a unit toward some commonly-shared end-state or level of well-being. According to Morris (1998), “there are mechanisms through which each household reaches consensus about the existence of problems and potential solutions and chooses individuals to represent the household in articulating and meeting household needs. Such actions result from internal processes of consensus building and decision-making” (pp. 200-201). Therefore, when an event occurs, such as the economic turmoil of the early 1990s in Poland, the household as system, is capable of assessing (a) the human and material resources they have available, (b) the potential costs of certain plans or actions, and (c) what direction they should take to achieve their needs and desires.

The Theory of Adjustment and Adaptation is a causal model, which provides a framework for assessing family processes from the time of an event through an objectively or subjectively motivated behavior implemented to meet an instrumental need or want. Winter
and Morris (1998) concur with the Deacon and Firebaugh (1988) description of events as "pertinent unexpected or low-probability occurrences that require action" (p. 49). Events can have a positive effect, such as an increase in economic resources through lottery winnings, or a negative effect, such as a decrease in finances due to a job loss. The causal chain is initiated by an event, which leads to a change in objective well-being, thus to a change in subjective well-being, which in turn leads to behavioral intentions and subsequent behaviors.

When an event occurs, the family first will attempt adjustment. According to Winter and Morris (1998), "adjustment deals with instrumental behavior in which external objects are manipulated to obtain the goods and services needed to maintain satisfactory levels of living under normal or usual conditions" (p. 35). Adjustments involve regulatory actions that can be undertaken, generally without breaking stride. These actions are more of a shift or an increase or decrease of some behavior that is performed regularly under normal conditions, rather than a full-fledged change. If adjustment measures are not successful in meeting the family's needs (or if the event was too extreme at the onset), the household turns to adaptation, which involves "household actions to make changes in itself (its structure, organization, or orientation to well-being) to meet household needs" (p. 36). Adaptation involves corrective actions that are new or out of the ordinary for the household. For example, if a farmer plants a few more rows of vegetables for household consumption, he or she is adjusting. However, if a farmer plants large quantities of produce for personal consumption in place of a usual cash crop, he or she is adapting.

There are two types of adaptation: needs reduction and constraint reduction. Needs reduction occurs when a household lowers its standards and level of need, or reallocates resources in an attempt to reduce the strain on resources and well-being. For example, a reduction in needs will occur if a household that typically eats meat seven days a week cuts meat consumption to three days a week to make ends meet. Thus, the household needs less money for the purchase of meat. Reallocation would occur if that same household chose to reduce meat consumption, specifically to use the money saved to continue to pay school tuition for a child. Thus, there is a reduction in one domain to reallocate to another. If
households accept a new standard (less meat consumption in this example), well-being should return to its original level.

If needs reduction or reallocation is not sufficient to meet the household’s needs, or the household is not able to accept changed standards, they attempt constraint reduction. The concept of constraints is broad and can include the inhibiting and facilitating aspects of markets, discrimination, household organization, and individual and household characteristics (Morris, 1998). Constraint reduction involves an attempt to increase resources, or to reorganize the household to use resources more efficiently (Winter & Morris, 1998). Efforts to increase resources for daily living in the short term might include dipping into savings, acquiring a loan, getting help from relatives or friends, or adding another wage earner to the household. Attempts to increase resources in the long term could include obtaining an education or training for a household member to enhance earning potential, starting a small business, involvement in the informal market sector, or planting trees that eventually will provide produce for consumption or sale. Reorganizing the household suggests a change in the roles or tasks of the household members to allow for a more efficient or increased use of time or talents. For instance, a farming couple may add to the responsibilities of one of the spouses so that the other spouse can obtain employment off the farm.

This model provides the opportunity to examine, in detail, what households do when an event occurs. The household processes can be assessed with an emphasis on how they attempt to maintain their system as it was prior to the event, or change their system to adapt. In either case, subjective well-being is an indicator of how successful the household has been in meeting unmet needs or in adjusting to a new standard.

The application of the Theory of Adjustment and Adaptation to the present study is a detailed look at the relationship between objective and subjective well-being for urban and rural residents, and, further, for rural nonfarm and rural farm households. It is possible that rural and urban households were affected differently by the transformation: the relative change in standard of living may have been less in rural areas than in urban settings. It also is likely that urban and rural nonfarm and rural farm households were not able to take the same
kinds of regulatory or corrective actions. For example, farming households may have been able to grow a garden, although the lack of land available in cities and towns may not have afforded the same opportunity for urban residents or rural nonfarm households. Although behaviors are not assessed in this study, it can be assumed that households were involved in either adjustment and/or adaptation and that success in these behaviors is reflected in their objective well-being, and in turn there subjective well-being.

Well-Being and Recent Change

Well-Being

The concepts of objective and subjective well-being are key to the framework because they serve to inform the household (a) if there is an unacceptable gap between normative living standards and actual living standards, and (b) whether behaviors to adjust or adapt have been successful. According to Morris (1998), subjective well-being is a function of objective well-being, as indicated by domain living conditions, which is a function of economic well-being as "indicated by income, wealth, and time" (p. 206).

Land (1996) describes the differences between indicators of objective well-being and subjective well-being as, "The former consists of statistics [that] represent social facts independently of personal evaluations, whereas the latter emphasize individuals' experiences and evaluations of social circumstances" (p. 5). Including both types of indicators in a study provides the opportunity to assess the relationship between objective and subjective well-being, and, because measures of objective and subjective well-being are not highly correlated (Campbell, Converse, & Rodgers, 1976), both measures can offer unique information.

Diener and Suh (1997) describe indicators of objective well-being as "quantitative statistics" (p. 192). They state that the objectivity of these indicators means, "agreement about the value of what is measured . . . that the characteristic can be measured with great precision . . . [and] . . . that they do not depend on people's perceptions" (p. 193). Diener and Suh (1997) also point out that there is a subjective aspect to objective measures that lies in the researcher's choice of variables, decisions about measurement, and value judgments pertaining to what is considered good or too little or too much of something. In addition,
Land (1996) explains that, “The construction of objective SI [social indicators] is based on the premises that a societal consensus exists (a) about the dimensions that are relevant for social well-being, (b) about good and bad conditions, and (c) about the direction in which the society should move” (pp. 5-6).

Subjective well-being, as viewed by Diener (1984), has three “hallmarks.” First, subjective well-being does not include objective conditions, and therefore, it is subjective. Second, “subjective well-being includes positive measures. It is not just the absence of negative factors” (p. 543). And, third, “subjective well-being measures typically include a global assessment of all aspects of a person’s life” (p. 544).

Definitions of subjective well-being differ by study but echo similar concepts. Andrews and Withey (1976) define subjective well-being as, “both a cognitive evaluation and some degree of positive or negative feelings, i.e., affect” (p. 18). Campbell, Converse, and Rodgers (1976) define satisfaction, the cognitive aspect of well-being, as, “the perceived discrepancy between aspiration and achievement, ranging from the perception of fulfillment to that of deprivation” (p. 8). Diener (1994) states that, “subjective well-being refers to the global experience of positive reactions to one’s life” (p. 108), and “consists of three interrelates components: life satisfaction, pleasant affect, and unpleasant affect” (Diener & Suh, 1997, p. 200). Land (1996) defines subjective well-being as, “happiness or satisfaction with life-as-a-whole” (p. 7).

The concept of happiness as a trait is discussed by Veenhoven (1994), and in response, by Stones et al. (1995). Based on an analysis of several longitudinal studies, Veenhoven (1994) concludes that happiness is not an individual trait because it is not stable over time, consistent in different situations, nor only caused internally. A person’s happiness can be changed by a positive or negative situation. Stones et al. (1995) agreed with Veenhoven (1994) that happiness is “statelike,” in that an individual’s happiness can be influenced by situational factors. Nevertheless, they emphasize that happiness is “traitlike,” or “happiness is a durable individual difference dimension having limited but significant reactivity to situation” (p. 142).
According to the results of the classic studies of Easterlin (1973) and Duncan (1975), subjective well-being can be influenced by level of comparison. Easterlin (1973), whose study was cited in a March 29, 2000 *New York Times* editorial (Krugman, 2000), analyzed data from 19 countries and found that, at the level of the individual, as income increases so does happiness. Nevertheless, he found that people from richer countries are not necessarily happier than people from poorer countries, and that, as the national income in the U.S. rose from the 1940s to the 1970s, levels of happiness did not rise accordingly. Easterlin (1973) suggests that people are socialized into the social norms of their culture or society, and that “Individuals assess their material well-being, not in terms of the absolute amount of goods they have, but relative to a social norm of what goods they ought to have” (p. 4). Therefore, people who have more than the norm are happier than people operating below the norm.

Duncan (1975) states that his findings regarding level of income and levels of satisfaction with standard of living support Easterlin’s (1973) conclusions. He analyzed data from wives in the Detroit area collected in 1955 and 1971 and found that satisfaction with standard of living was related positively to personal levels of income. However, as income and material living improved as a whole from 1955 to 1971, overall levels of satisfaction with standard of living did not increase accordingly. Duncan (1975) also analyzed the relative income of the respondents in his study, and concluded that “the relevant source of satisfaction with one’s standard of living is having more income than someone else, not just having more income” (p. 273).

Subjective well-being also can be affected by artifacts, individual temperament, personal relationships, and values that change over time (Diener & Suh, 1997). Subjective well-being shows a significant amount of temporal stability, however, (Campbell, Converse, & Rodgers, 1976; Chamberlain & Zika, 1992; Headey & Wearing, 1989) and cross-situational consistency (Diener & Larsen, 1984; Pavot et al., 1991). Additionally, most researchers in the field believe that subjective measures are an integral component in the assessment of economic well-being (Ackerman & Paolucci, 1983; Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976; Cantril, 1965; Diener, 1984; Duncan, 1975; Easterlin, 1973; Strumpel, 1976; Winter, Bivens, & Morris, 1984; Winter, Morris, & Rubio,
Finally, crucial to the study of households, research indicates that individuals can report reliably levels of subjective well-being for people they know well (Pavot & Diener, 1993; Pavot et al., 1991).

Recent Change

In this study, measures of objective and subjective well-being are used to assess current living conditions and attitudes toward those conditions. Changes in objective and subjective well-being may have occurred because of the economic transformation, which was a constant for the population as a whole, but would have varying influences on households. Therefore, recent change variables are included in the study to assess the effects of both positive and negative change.

The results of previous research points to a relationship between reported recent change and well-being. In a study of 1423 individuals from the Upper Midwest, Martinson, Wilkening, and Linn (1985) found a relationship between reported negative life change and overall life satisfaction. Kennedy and Mehra (1985) examined the effects of the “boom and bust” of the oil industry in a community in Western Canada. They found that reported recent change had an effect on overall life satisfaction, although modified by other variables such as family, friends, and health. Strumpel, Curtin, and Schwartz (1976) found a positive relationship between reported increases in income from the previous year and satisfaction with standard of living in a study of 574 American men. In a longitudinal study of college juniors and seniors, Suh, Diener, and Fujita (1996) found that the effects of reported life events on subjective well-being were apparent for only three to six months. They propose that the short period of influence may be because of rapid habituation or adaptation. In addition, they suggest that effects of more extreme events, which were not included in their study, may last longer because of a longer period of adjustment.

The findings of other studies suggest a relationship between recent change and rating of conditions, levels of satisfaction, and expectations of the economic and financial situation in the future. In a study of midwestern households, Winter, Bivens, and Morris (1984) found reported recent change in households’ financial situation related positively to households’
rating of their financial situation, levels of satisfaction, and expectations. When studying farmers in the Midwest, Winter, Morris, and Rubio (1988) found a positive relationship between reported recent economic and financial change and household rating of their current economic and financial situation, levels of satisfaction, and expectations. In an earlier study using the data that are used in this study, Winter et al. (1995) also found a positive relationship between reported recent change in the household’s economic and financial situation and the household’s rating, satisfaction, and expectations about their economic and financial situation.

Rural Conditions and Well-Being

The volatile economic situation brought about by the political and economic transformations in Poland in the 1990s provided the opportunity to assess responses of households to economic hardships. This study focuses on levels of well-being of rural residents, farm and nonfarm in particular, and compares these responses to those of urban residents. Research conducted on the effects of the agricultural crisis of the 1980s in rural America on rural residents helps to set the direction for the current study. Although research on issues directly related to Polish agriculture would have been preferred, to this point such studies are either nonexistent or are available only in Polish and/or Poland. For this reason dependence on U.S. literature is necessary, particularly on studies of the farm crisis of the 1980s, because of similarities to the Polish economic situation in rural areas.

Rural America in the Early 1980s

Barlett (1987) provides a brief but excellent description of the events leading up to and including the turn in the market situation for farmers:

The energy crisis and related international events of the first half of the 1970s set off important changes . . . . Inflation throughout the United States economy was felt keenly by farmers in the costs of their machinery, fuel, fertilizers, chemicals, and seeds. Land values soared, and to finance farm expansion, many families went deeply into debt. Inflation and tax policies encouraged expansion of both farm sizes and equipment. Then, in the late 1970s, the prices farmers received for their crops stagnated or began to fall. Income did not keep up with expenses, and interest rates climbed. (p. 30)
According to Coward and Jackson (1983), the situation for rural households was less than ideal. Compared to urban families, rural families experienced more malnutrition, substandard housing, maternal and infant mortality, and unemployment and underemployment. In addition, in rural areas there was a higher incidence of households living below the poverty line, there was a greater dependency ratio (number of people under age 18 or over 65 who do not contribute financially, divided by the number of middle-aged persons who are employed), and their livelihood was more connected to the uncertainties of the weather than was the livelihood of their urban counterparts. Also, contrary to popular belief, this research did not support the contention that rural families had higher levels of community and family support than urban families that may have buffered these conditions. Also, rural families experienced geographic and social isolation to a greater extent than urban households, and had fewer and more expensive formal services or support systems.

Rural and Urban Living Conditions and Levels of Well-Being

Marans, Dillman, and Keller (1980) examined one regional and three national surveys and found differences in how rural and urban residents rated various domains. They found that rural residents tend to rate their neighborhoods and communities, outdoor-open spaces, quality of schools, housing, free time activities, friendships, and standard of living more positively than urban residents. In comparison, urban residents are more likely to rate local government (street repairs, etc.), police protection, and transportation more highly than rural residents. In addition, rural residents report higher levels of life satisfaction than urban residents. And, specific to farmers, farmers express lower levels of satisfaction with job security, promotions, and wages but higher levels of job satisfaction.

Tremblay, Walker, and Dillman (1983) provide a review of literature regarding differences in rural-urban quality of life that focuses on seven indicators of objective well-being and three indicators of subjective well-being. With regard to objective measures, they conclude that rural households are more likely to suffer from lower levels of economic well-being, education, health services, and housing than urban households, whereas urban households fared worse in the areas of environmental quality (air and noise pollution), crime,
and family well-being (marriage and divorce rates). The authors did not make a conclusion about overall quality of life based on objective indicators as they contend, "no satisfactory means exist for summing them into an overall index" (p. 33).

The results of the studies regarding subjective well-being were mixed when assessing community satisfaction, community preference, and generalized feelings of well-being. Both rural and urban residents experienced domain-specific satisfaction and dissatisfaction. For example, rural households were less satisfied with the economic situation, schools, and other public services, but were more satisfied with interpersonal relations, local taxes, climate, and parks and playgrounds than urban residents. Urban households reported higher levels of satisfaction with the economic situation and public services but lower levels of satisfaction in the areas of crime than their rural counterparts. Nevertheless, studies regarding community preference indicate overwhelmingly that urban households desire to move to rural areas, and that, in general, the opposite is not the case. Finally, overall measures of subjective well-being indicate that rural households are more satisfied than their urban counterparts.

Winter et al. (1999) found similar results pertaining to location and well-being when assessing the relationship between constraints, recent change, domain conditions, and well-being in 1994 Poland. The constraints aspect of the analysis included socioeconomic and demographic characteristics of the household. The recent change and well-being variables were summed indices that measured responses regarding housing, household equipment, food, and transportation. The domain conditions variable was a global measure that contained measures of housing, including persons per room and quality of housing services; household equipment (number of different household appliances and electronic items owned); food (weekly per capita starch intake); and transportation (number of automobiles owned).

In general, the results of the Winter et al. (1999) analyses were not out of the ordinary. Urban households with more workers and higher levels of income, with heads of household who were middle-aged, married, and more highly educated, were more likely to report recent changes for the better and better living conditions than their rural counterparts with opposing characteristics. Also, households with higher levels of income who reported positive changes and better domain conditions in which the head of household had higher levels of education
were more likely to rate their situation as better than households with lower levels of income, negative changes, poorer domain conditions, and headed by individuals with lower levels of education. In addition, and paramount to the current study, is the finding that the domain conditions were worse for rural households than urban households, yet the rural households rated their situation as better than urban households.

In a few studies that focus specifically on the association between location of residence and subjective well-being, no significant relationships were found. Using data from the National Survey of Families and Households, Amato and Zuo (1992) assessed the differences between rural and urban poor. They found that poor African Americans are happier in rural areas and poor whites are happier in urban areas. In addition, rural single males have lower levels of well-being than urban married women without children. The researchers did not find a significant relationship between location and well-being. Mookherjee (1992, 1995) tested data from the National Opinion Research Center’s General Social Survey. In both studies, he found that financial status, marital status, and level of education are the strongest predictors of subjective well-being. According to Mookherjee, metropolitan - nonmetropolitan residency was not related significantly to well-being.

A fourth study that assessed the relationship between location of residence and subjective well-being was conducted by Crider, Willits, and Kanagy (1991), who used three location variables: county, town, and urban residence. These researchers did not find a significant relationship between location of residence and well-being, but similar to the current study, the relationship between the predictor variables and levels of subjective well-being was analyzed separately for each of the location variables. Crider, Willits, and Kanagy (1991) found that, for rural households, the number of friends was the strongest predictor of well-being, and income was the strongest predictor of well-being for urban residents.

**Rural Households in the United States**

To conceptualize the relationship between recent change, adjustment and adaptation, and well-being for urban and rural, and, further, for nonfarm and farm households, it is important to have an understanding of what is considered a rural residence and a farmer.
Once again, available literature in the U.S. provides the framework for definition and description of rural farm and nonfarm households, although these definitions may not be entirely accurate for the Polish situation.

The focus of this review is literature pertaining to definitions and descriptions of rural households in the United States, and responses of these households to the economic hardships prompted by the agricultural crisis of the early to mid-1980s in the Midwest. Rural households include both farmers and nonfarmers, yet much of the literature in this area focuses on the former.

**Definition**

Defining what is to be considered a rural residence, compared to an urban residence, is not straightforward. Based on size, it is obvious that Seattle, Washington, is an urban community and Taintor, Iowa, is a rural community. However, there exists a gray area for the purpose of definition that concerns the communities that fall in between and the surrounding areas (Coward & Jackson, 1983; Hennon & Brubaker, 1988). In the early 1980s, Coward and Jackson (1983) wrote, “More than 50 definitions of rurality are currently established by federal governmental and legislative regulations and at least that many can be identified in the professional research literature” (p. 190). When reviewing the literature, it is important to keep in mind that what is considered rural or urban may not be defined consistently, or at all.

Further problems occur when attempting to distinguish rural nonfarming households from rural farming households. Households who are located in a rural community generally can be identified as nonfarming. However, it can be difficult to classify households living in open country, as these households may be full-time, part-time, or subsistence farmers, or may not be involved in farming at all (Elder, Rudkin, & Conger, 1995).

**Rural Households**

Scholars acknowledge that there are farm and nonfarm households in rural areas, but when describing the characteristics of rural households, many studies do not distinguish between the two types. Furthermore, the bulk of the literature regarding rural households
during the 1980s focused on farm families, with the occasional mention of rural nonfarm families.

Nonetheless, researchers have indicated that households located in a rural area are a diverse group (Elder, Rudkin, & Conger, 1995; Rosenblatt & Anderson, 1981; Swisher et al., 1998). Therefore, control variables should be included in any analysis assessing rural-urban differences, such as total family income (Hennon & Brubaker, 1988; Marans, Dillman, & Keller, 1980; Swisher et al., 1998), employment status (Marans, Dillman, & Keller, 1980), age (Hennon & Brubaker, 1988; Marans, Dillman, & Keller, 1980; Swisher et al., 1998), education (Marans, Dillman, & Keller, 1980; Swisher et al., 1998), marital status (Hennon & Brubaker, 1988; Schumm & Bollman, 1981), and number of children (Swisher et al., 1998; Schumm & Bollman, 1981).

These measures also are an aspect of the Theory of Adjustment and Adaptations; specifically, constraints. Past research suggests the importance of including characteristics of household members, such as, age, race, sex, education, and income in the assessment of well-being (Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976; Martinson, Wilkening, & Linn, 1985; Martinson, Wilkening, & McGranahan, 1984). Nonetheless, according to Morris (1998), “The present model does not seek to demonstrate that household characteristics cause subjective well-being. Rather, they are used to clarify the relationship between objective and subjective well-being” (p. 204).

Rural Farm Households

Farms in the United States have become fewer in number and larger in size since the 1930s, but the majority of farming operations in the 1980s were in the hands of family farmers rather than large commercial enterprises (Wilkening, 1981). Family farming possesses a unique characteristic that may be either a help or a hindrance: the people who perform the farm work and make all of the decisions usually are part of the immediate family, or at least are closely related (Rosenblatt & Anderson, 1981). On the positive side, this close relationship may “potentially enable cooperation, sacrifice, and the exchange of advice, ideas, and skills” (Davis-Brown & Salamon, 1987, p. 369). On the negative side, this closeness can
lead to intergenerational or marital tensions or a situation in which the personal needs of the family compete with the business needs of the farming operation. In other words, the familial aspect of the family farm predisposes a potential to either induce stress or alleviate stress (Davis-Brown & Salamon, 1987; Rosenblatt, 1990; Rosenblatt & Anderson, 1981).

Salamon (1985) created a typology that delineates two ideal types of farm families, "yeoman" farm families and "entrepreneur" farm families, each occupying opposite ends of a continuum. According to Salamon, the key difference between the two types of farm families is their agricultural goals. Yeoman, a term from Richard T. Ely and George S. Wehrwein's (1940) Land Economics, refers to family farmers whose primary purpose is to establish and maintain a farm to pass on to at least one descendant, while providing their family a comfortable standard of living. The primary goal of the entrepreneur farmer, on the other hand, is to maximize profits, with little to no thought of passing the farm along to future generations (Davis-Brown & Salamon, 1987; Salamon, 1985).

Yeoman farmers tend to have smaller and more diversified farms than entrepreneur farmers, they prefer to own the land they work, they rely on family capabilities for expansion, and they have strong ties to the local community and the church. In addition to being typically larger and less diversified than yeoman farmers, entrepreneur farmers tend not just to own the land they work, but they also rent, they may or may not live on or close to their farms, they rely on capital for expansion, and they have weak ties to the community (Davis-Brown & Salamon, 1987; Salamon, 1985).

Polish family farmers would fall toward the yeoman end of the continuum; as Salamon (1985) states, "the yeoman pattern, of course, is well documented ethnographically for peasant societies" (p. 326). It is more difficult to place the Polish collective farmers into the entrepreneur farming category because these farmers are employees of the farming enterprise, not the owners. Nevertheless, collective farm workers do share some similar characteristics with entrepreneur farmers, such as they are in farming for the money and they lack an attachment to the land they work and to the local community.

The importance of this typology and its application to the Polish agricultural situation is that Polish family farmers will be motivated to weather economic difficulties to support
their families, but, more importantly, to save their farms. If families have to reduce spending and consumption, their level of well-being may deteriorate, but this reduction in well-being may be counteracted by being able to hold on to the family farm.

For collective farm workers, economic hardship may be induced by the loss of their jobs and paychecks. Like the entrepreneur farmers, collective farmers can move on to find another source of income with little concern for ties to the local community or without the emotional effects associated with losing the family farm that was intended for future generations.

Rural Households and the Agricultural Crisis of the 1980s

There is little information regarding rural nonfarm households during and following the 1980s farm crisis. Nonetheless, an important finding is that it was this group, not the farm households who were able to keep their farms, that fared the worst during the economic turmoil of the 1980s. It was these households who experienced agriculturally-related plant closings or reduced incomes with few options to improve their situation (Elder, Robertson, & Ardelt, 1994). Elder, Rudkin, and Conger (1995) explain, "full-time farm families are relatively well-off when compared with the typical rural nonfarm family" (p. 36).

The situation for rural farm households was varied. Many farmers lost their farms (Barlett, 1987; Elder, Robertson, & Foster, 1994; Sontag & Bubolz, 1996). Others successfully implemented various strategies. These strategies included tapping into savings or getting a loan (Elder, Robertson, & Ardelt, 1994), putting off creditors (Rosenblatt, 1990), cutting back on expenditures (Elder, Robertson, & Ardelt, 1994; Elder, Robertson, & Foster, 1994; Rosenblatt, 1990), eliminating hired help (Elder, Robertson, & Foster, 1994; Barlett, 1987), working harder to increase production (Rosenblatt, 1990), and adding a wage worker (Barlett, 1987; Elder, Robertson, & Ardelt, 1994; Elder, Robertson, & Foster, 1994; Rosenblatt, 1990).

It is likely that Polish farmers would employ some of these same strategies, and possibly others. The effects of these actions, which can be considered behaviors of
adjustment or adaptation, may have an effect on levels of objective and subjective well-being. From these likely associations come the conceptual model and hypotheses.

**Conceptual Model and Hypotheses**

The conceptual model for this study is depicted in Figure 1. The overall hypotheses derived from the model suggests the following:

1. Objective well-being is a function of recent change and constraints.
2. Subjective well-being is a function of objective well-being, recent change, and constraints.
Figure 1. Conceptual Model
CHAPTER 3. VARIABLES, THE EMPIRICAL HYPOTHESES, AND PLAN OF THE ANALYSIS

The focus of this chapter is on research methods used for the study. A description of the variables, the empirical hypotheses, and an explanation of the analysis are provided.

The Data

The data set for this study is from a research project funded by the National Science Foundation entitled "Household Responses to Macroeconomic Change in Poland." The larger study is a collaborative effort among researchers at Iowa State University, the University of Minnesota, and Warsaw Agricultural University. The data were collected in November and December of 1994 in the province of Lublin. This area of Poland was selected by the Polish investigators because the province has characteristics similar to the country as a whole. (See Winter, et al., 1998 for a comparison between the province of Lublin and the country as a whole.) A probability sample of households was drawn by the Polish Bureau of Statistics. Trained interviewers conducted face-to-face interviews with female heads of households, or male heads of households if there was no adult female. The data collection resulted in 600 interviews, of which 94 percent of the respondents were female. As discussed in the section on variables, data from only 592 households are used in the study.

Exogenous Variables

Descriptions, means, standard deviations, and ranges of the exogenous variables are discussed in this section. Additional information is provided on the urban and rural categories.

Socioeconomic and Demographic Characteristics

The socioeconomic and demographic variables to be included in the analyses were chosen based on the literature, previous analyses of the household data set, and preliminary zero-order correlation analyses. The five household characteristics to be used in the analyses
are age of the respondent (including age of the respondent squared), education of the respondent, marital status, number of workers, and total household income. Age-squared is included because previous analyses (Vande Lune et al., 1999; Winter et al., 1999; Winter et al., 1998; Winter et al., 1995) with this data have indicated consistently curvilinear relationships with regard to age. Variables omitted from the analyses are number of children, household size, home ownership, and employment status. Number of children and household size are omitted from the analyses because household size was used to compute three of the conditions variables. Home ownership is not used because it is so closely associated with the 100 percent land ownership of the private farmers. Employment status is not included because in preliminary analysis it was rarely significant and the standard error of the estimate in all of the regressions was either not or only minimally affected by its removal.

Descriptions of the five socioeconomic and demographic variables are provided, with means, standard deviations, and ranges, in Table 1.

Age of the respondent is assessed as of January 1, 1995, and has a range of 19 to 93 years, with a mean of 52.02. Education of the respondent is the number of years of formal education completed by the respondent, which ranges from 0 to 20, with a mean of 10.50. Marital status is a dichotomous variable coded “1” for currently married and “0” for not currently married, with 70 percent of the households headed by a married couple. Number of workers is a continuous variable that measures the number of full- and part-time workers in the household. The range for this variable is from 0 to 5, with a mean of 1.21 workers.

The last variable to be used in the analyses is total household income (in 100,000 zlotys), which is a measure of income per month from all sources and members in the household. The mean household income is 66.27 (6,627,000 zlotys), with a range from 0 to 311 (0 zlotys per month to 31,100,000 per month). (On January 1, 1995 the Polish government created and issued new zlotys with the last four zeros removed. Around the time of data collection, the exchange rate was 23,000 zlotys per U.S. dollar, making the mean income in this sample equal to about $288 per month.) The natural logarithm of total household income is used in the analyses because the distribution of income is skewed to the right.
Table 1. Means, standard deviations, and ranges for the socioeconomic and demographic variables (N=592).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of respondent</td>
<td>52.02</td>
<td>15.33</td>
<td>19 - 93</td>
</tr>
<tr>
<td>Education of respondent</td>
<td>10.50</td>
<td>3.73</td>
<td>0 - 20</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.70</td>
<td>0.46</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Number of workers</td>
<td>1.21</td>
<td>1.00</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Total household income (000,000 zlotys)</td>
<td>66.27</td>
<td>41.86</td>
<td>0 - 311</td>
</tr>
</tbody>
</table>

The Urban-Rural Categories

The creation of urban and rural categories involved combining residency, occupation, and ownership measures. The first aspect of the categories, the distinction between rural and urban residency, was established by the Polish investigators at the time of data collection. Households were considered rural if they lived in the open-county or in communities of less than 20,000 people. Of the original 600 households, 30 percent are rural residents. The second aspect of the categories is farming status. Occupation and ownership variables for the respondent and the spouse were combined to distinguish farmers who owned their land from other types of farmers (collective workers, laborers, etc.) and from nonfarmers. Seventeen percent of the households are private farmers.

To create the different categories, three dichotomous variables were established that consist of different combinations of residency and farm/nonfarm status: urban-nonfarm (urban), rural-nonfarm, and rural-farm. A small percentage of cases fell into a fourth category, urban-farm. To maintain only the three distinct categories, the urban-farmers were removed from the study, which resulted in 6 fewer cases (N=594). Crosstabulations were performed to ensure that all farmers also were landowners. Two cases were rural farmers but not landowners; these two cases also were removed from the data set, resulting in 592
Table 2. Frequencies and percentages for residence categories (N=592).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban-nonfarm</td>
<td>416</td>
<td>70.3</td>
</tr>
<tr>
<td>Rural-nonfarm</td>
<td>85</td>
<td>14.4</td>
</tr>
<tr>
<td>Rural-farm</td>
<td>91</td>
<td>15.4</td>
</tr>
</tbody>
</table>

remaining households. As depicted in Table 2, 70.3 percent of the households are urban; thus 29.7 percent are rural, and of the rural households 14.4 percent are rural-nonfarm and 15.4 percent are rural-farm.

**Indicators of Recent Change**

The recent change items and indices are measures of the respondent’s subjective assessment of whether his or her household’s situation has improved, remained the same, or deteriorated over the past five years. Recent change was addressed in eight domains: economic and financial, health, housing, furniture, household equipment, food, clothing, and transportation. The respondents were asked, “Has your household’s... (domain)... situation gotten worse, gotten better, stayed about the same over the past five years?” The responses were coded “1” gotten much worse, “2” gotten somewhat worse, “3” stayed the same, “4” gotten somewhat better, and “5” gotten much better.

The potential and actual range (Table 3) for each of these variables is from 1 to 5. The means suggest that the respondents, on average, reported little change to negative changes in their household economic and financial (2.30), health (2.29), food (2.59), clothing (2.63), and transportation (2.92) domains, and little change to positive changes in their household’s housing (3.07), furniture (3.06), and household equipment (3.07) domains.

A global measure of recent change was developed by summing the eight individual items after testing for reliability (alpha = .7712). The global recent change variable has a potential range from 8 to 40, with an actual range from 10 to 38. With a mean of 21.93, it
Table 3. Means, standard deviations, and ranges for the indicators of recent change (N=592).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic and financial</td>
<td>2.30</td>
<td>0.88</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Health</td>
<td>2.29</td>
<td>0.71</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Housing</td>
<td>3.07</td>
<td>0.56</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Furniture</td>
<td>3.06</td>
<td>0.55</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Household equipment</td>
<td>3.07</td>
<td>0.59</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Food</td>
<td>2.59</td>
<td>0.69</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Clothing</td>
<td>2.63</td>
<td>0.68</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.92</td>
<td>0.62</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Global recent change</td>
<td>21.93</td>
<td>3.31</td>
<td>10 - 38</td>
</tr>
</tbody>
</table>

appears that, when taking into account all of the domains, if change occurred for Polish households it tended to be for the worse.

**Endogenous Variables**

The endogenous variables are measures of objective and subjective well-being. Descriptions, means, standard deviations and ranges of these variables are provided in this section.

**Indicators of Objective Well-Being**

In the Winter et al. (1999) study, a multiple-item living conditions variable was used to assess objective well-being, which included summations of individual variables from four different domains: housing, household equipment, food, and transportation. In this study, the
Winter et al. (1999) global measure, the four individual items, and one additional variable - average health - are used to assess, in detail, the differences between living conditions for urban and rural (farm/nonfarm) households.

The average health conditions measure was created by dividing a composite indicator of the health of each household member by the number of people in the household. The respondent was asked, "In your opinion, what is (person's) general state of health?" The responses were coded "1" poor, "2" fair, "3" good, and "4" excellent. The ratings were then summed and divided. Average health has a mean of 2.32, a standard deviation of 0.78, and a range of 1 to 4 (Table 4).

Global conditions are comprised of the housing services, persons per room, household equipment, food, and transportation (number of autos owned) measures, which were standardized and summed. (See Winter et al., 1999 for a complete description of how the variables were created.) As a standardized variable, global conditions has a mean of 0.00, with a standard deviation of 2.63 and a range of -8.05 to 12.02. Of note, average health conditions is not included in the global conditions measure.

The housing conditions variable has two aspects; a measure of housing services and an indicator of persons per room. The housing services portion is comprised of the summation of seven dichotomous variables, for which the value of "0" indicates less modern conveniences, and a value of "1" indicates more modernized conditions. The following variables were included: "1" using gas or electricity for cooking, "0" using wood, coal, or oil for cooking; "1" getting water from a public water system or drilled well with a mechanical pump, "0" getting water from a dug well with a hand pump or carrying it in from someplace away from the residence; and "1" connected to a public sewer system or having a septic tank, "0" having a latrine and disposing of food garbage and waste water outside. The presence of each of the following also was coded "1": hot and cold running water in the kitchen, a telephone, a gas or electric water heater, a complete bathroom with toilet, sink, and shower or tub with hot and cold running water, and "0" for the absence of these amenities. Housing services has a mean of 4.83, a standard deviation of 2.16, and a potential and actual range of 0 to 7.
Table 4. Means, standard deviations, and ranges for the indicators of conditions (N=592).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average health</td>
<td>2.32</td>
<td>0.78</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Global conditions (standardized)</td>
<td>0.00</td>
<td>2.63</td>
<td>-8.05 - 12.02</td>
</tr>
<tr>
<td>Housing conditions (standardized)</td>
<td>0.00</td>
<td>1.64</td>
<td>-7.21 - 2.42</td>
</tr>
<tr>
<td>Housing services</td>
<td>4.83</td>
<td>2.16</td>
<td>0 - 7</td>
</tr>
<tr>
<td>Persons per room</td>
<td>1.00</td>
<td>0.62</td>
<td>0.13 - 4.67</td>
</tr>
<tr>
<td>Household equipment</td>
<td>9.51</td>
<td>2.75</td>
<td>2 - 17</td>
</tr>
<tr>
<td>Food (weekly per capita starch intake in grams)</td>
<td>4054.67</td>
<td>1652.96</td>
<td>1000 - 11250</td>
</tr>
<tr>
<td>Transportation (number of autos)</td>
<td>0.44</td>
<td>0.62</td>
<td>0 - 6</td>
</tr>
<tr>
<td>Transportation (presence of an auto)</td>
<td>0.40</td>
<td>0.49</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

The second part of the housing conditions variable is a measure of persons per room. This variable was created by dividing the number of household members by the number of livable rooms in the residence. The mean for persons per room is 1.00 and the standard deviation is 0.62, with a range of 0.13 to 4.67. A result of these procedures is that large values indicate worse conditions (many people living in a small residence), and small values mean a better situation. To combine this variable with the housing services measure, for which large values indicate the best conditions, a linear transformation of persons per room was performed by adding the largest and smallest scores and then subtracting all of the household scores from this value so that high numbers represent the best conditions. The indicators of persons per room and housing services were standardized and then summed to create the housing conditions measure. The housing conditions variable is standardized; the mean is 0.00, and the standard deviation is 1.64, with a range of -7.21 to 2.42.
Household equipment conditions are the number of different appliances and electronics the household owns. Seventeen items, coded “1” for the presence of and “0” for the absence of the item, were summed to create the measure. Ten appliances were included: refrigerator, gas or electric stove, washing machine, sewing machine, electric coffee pot, food processor, electric blender, electric iron, vacuum cleaner, and microwave oven. Seven electronic items were included: portable radio-cassette player (boom box), compact-disk player, radio not part of a “boom box,” television, VCR, Nintendo, and computer. Household equipment has a mean of 9.51, standard deviation of 2.75, with a potential range of 0 to 17 and an actual range of 2 to 17.

The measure of food conditions is the number of grams of bread and potatoes - starch - that a household consumed the week prior to the interview divided by the number of household members. The mean starch intake is 4054.67 grams, the standard deviation is 1652.96, and the range is 1000 to 11,250. The procedure to obtain this variable resulted in high values meaning poor conditions; therefore, the variable was recoded as was done with the persons per room measure so that large numbers indicate the best food conditions.

Two indicators of transportation conditions are used in this study. The transportation measure used by Winter et al. (1999) is the number of automobiles owned by the household. This variable is used as part of the global measure of conditions; it has a mean of 0.44, a standard deviation of 0.62, and a range of 0 to 6. The second transportation conditions variable is used as the domain measure of conditions. This variable is dichotomous, coded “1” for automobile ownership and “0” if the household does not own an automobile, and it has a mean of 0.40, a standard deviation of 0.62, and a potential and actual range of 0 to 1.

Indicators of Subjective Well-Being

The means, standard deviations, and ranges for the measures of subjective well-being are provided in Table 5. Subjective well-being is assessed through eight measures of satisfaction that correspond with the household recent change variables: economic and financial, health, housing, furniture, household equipment, food, clothing, and transportation. The respondents were asked, “How satisfied or dissatisfied are you with the . . . (domain) . . .
Table 5. Means, standard deviations, and ranges for the indicators of satisfaction (N=592).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic and financial</td>
<td>2.40</td>
<td>0.99</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Health</td>
<td>2.94</td>
<td>1.09</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Housing</td>
<td>3.26</td>
<td>1.09</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Furniture</td>
<td>3.13</td>
<td>0.92</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Household equipment</td>
<td>3.03</td>
<td>0.97</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Food</td>
<td>3.20</td>
<td>0.92</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Clothing</td>
<td>2.94</td>
<td>0.94</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.73</td>
<td>1.10</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Global</td>
<td>23.63</td>
<td>5.04</td>
<td>8 - 39</td>
</tr>
</tbody>
</table>

situation of your household?” The responses were coded “1” very dissatisfied, “2” somewhat dissatisfied, “3” neither dissatisfied or satisfied, “4” somewhat satisfied, and “5” very satisfied. The potential and actual range for each of these variables is from 1 to 5. The means suggest that respondents reported, on average, neutral to lower levels of satisfaction in their economic and financial (2.40), physical health (2.94), clothing (2.94), and transportation (2.73) situations, and neutral to higher levels of satisfaction in their housing (3.26), furniture (3.13), household equipment (3.03), and food (3.20) situations.

A global measure of satisfaction was developed by adding the eight individual items after testing for reliability (alpha = .7792). The global indicator of satisfaction has a potential range from 8 to 40, with an actual range from 8 to 39. With a mean of 23.63, it appears that, when taking into account all of the domains, average levels of satisfaction were fairly neutral.
Empirical Hypotheses

The empirical model illustrated in Figure 2 represents the five domain and the global analyses for urban and rural (farm/nonfarm) households.

It is hypothesized that:

1. Conditions are a function of recent change and the socioeconomic and demographic characteristics of the household.

   Specifically, it is expected that, with other socioeconomic and demographic variables controlled
   a. Households reporting a positive recent change are more likely to have better conditions than households reporting a negative recent change.
   b. Conditions, with the exception of health conditions, will improve with the age of the respondent, up to a point, then conditions will decline or level off. A negative and linear relationship is expected for health conditions.
   c. Households having respondents with higher levels of education are more likely to have better conditions than households having respondents with lower levels of education.
   d. Households having respondents who are married are more likely to have better conditions than households having respondents who are not married.
   e. Households having the most workers are more likely to have better conditions than households having the fewest workers.
   f. Households having the highest levels of total household income are more likely to have better conditions than households having the lowest levels of total household income.
Figure 2. Empirical Model
2. Satisfaction is a function of conditions, recent change, and the socioeconomic and demographic characteristics of the household.

   Specifically, it is expected that, with other socioeconomic and demographic variables controlled

   a. Households having better conditions are more likely to report higher levels of satisfaction than households having worse conditions.

   b. Households reporting a positive recent change are more likely to report higher levels of satisfaction than households reporting a negative recent change.

   c. Households having older respondents, with the exception of health satisfaction, are more likely to report higher levels of satisfaction than households having younger respondents. The opposite relationship is expected for health satisfaction.

   d. Households having respondents with higher levels of education are more likely to report higher levels of satisfaction than households having respondents with lower levels of education.

   e. Households having respondents who are married are more likely to report higher levels of satisfaction than households having respondents who are not married.

   f. Households having the most workers are more likely to report higher levels of satisfaction than households having the fewest workers.

   g. Households having the highest levels of total household income are more likely to report higher levels of satisfaction than households having the lowest levels of total household income.

3. In addition to the hypothesized direct effect that recent change and the socioeconomic and demographic variables have on satisfaction, it is hypothesized that these variables also will have an indirect effect on satisfaction through their influence on conditions.

4. The effects of conditions, recent change, and the socioeconomic and demographic variables will be different for urban and rural households.

5. The effects of conditions, recent change, and the socioeconomic and demographic variables will be different for rural residents as a whole and rural-nonfarm and rural-farm households.
Plan of Analysis

Frequency distributions, crosstabulations (not shown), and zero-order correlation coefficients (see Appendix A) were used for preliminary analyses. Frequency distributions were reviewed to check for missing data, and to recode missing values to the appropriate measure of central tendency. Frequency procedures also provided information on the variance of the variables and descriptions of the indicators such as mean, standard deviation, and range. Crosstabulations were employed to obtain an overview of the relationships between the variables. Zero-order correlations were calculated to assess the strength of the relationships between the independent and dependent variables, and to check for problems of redundancy in the independent measures. If there were strong correlations between independent variables, one of the variables was not included in the analysis to avoid problems with multicollinearity.

Ordinary least squares regression was used to replicate the Winter et al. (1999) study, and, in keeping with this method, for the subsequent analyses to test the relationship between recent change, the household characteristics, and conditions, and the relationship between conditions, recent change, the household characteristics, and satisfaction for urban and rural and rural-nonfarm and rural-farm households. The ordinary least squares method used, simultaneously entered the predictor variables to partial out the contribution of each independent variable in the variance of dependent variables.

Prior to calculating the regressions for each of the residential groups, a comparison-of-means procedure was performed to obtain an understanding of how urban, rural-nonfarm, and rural-farm households differ on the exogenous and endogenous variables included in the study. From the results of the parallel regressions for the residential categories, it seemed likely that several exogenous variables were affecting satisfaction indirectly. Therefore, the total effects of recent change and the socioeconomic and demographic variables on satisfaction were decomposed into direct and indirect effects.
CHAPTER 4. FINDINGS AND DISCUSSION

The findings and discussion of the data analyses are presented in this chapter in the following order. First, the comparative models, which replicate the Winter et al. (1999) analysis using ordinary least squares regression are presented. Second, the comparison of means of the exogenous and endogenous variables for urban, rural-nonfarm, and rural-farm households is reviewed. Third, the results of the ordinary least squares regressions for the residential categories are provided. Fourth, the decomposition of the total effects of the household characteristics and recent change on levels of satisfaction are presented.

Regression of Conditions and Satisfaction: The Comparative Analysis

The replication of the Winter et al. (1999) study is not exact, as some of the variables used in this research are different than those in the original study. Winter et al. (1999) analyzed the relationship between global domain conditions and global household rating of their situation, while controlling for age of the household head, age squared, education of the household head, marital status, number of workers in the household, per capita income, location of residence, and global recent change. In the current study, age is measured as age of the respondent rather than age of the household head, education represents the education of the respondent not the education of the household head, and income is the total household income rather than per capita income. In addition, the global measures used in the Winter et al. (1999) study were indices of four domains: housing, household equipment, food, and transportation. Although the indicator of global conditions is the same in both studies, in the current study the global measures of recent change and satisfaction are composed of items from eight domains: economic and financial situation, health, housing, household equipment, furniture, clothing, food, and transportation. The purpose of using the more inclusive global measures in the comparative study is to maintain consistency with the global measures used in the subsequent analyses. And finally, the present study assesses the household’s level of satisfaction rather than the household’s rating of the current domain conditions. These two measures are highly correlated at $r = 0.742$. Ordinary least squares regression is used for both
analyses, and the findings of the current study are very similar to those of the Winter et al. (1999) analysis.

As in the original study, conditions is the dependent variable in the first analysis, with recent change and six socioeconomic and demographic variables entered as controls. Five of the eight variables (Table 6) have a significant effect and account for more than two-fifths of the variance in conditions (Adj. $R^2 = 0.409$). Age of the respondent (beta = 0.412 and beta = -0.408) clearly has the strongest association with conditions, followed by education of the respondent (beta = 0.305), total household income (beta = 0.270), rural residence (beta = -0.225), and recent change (beta = 0.217). The positive sign for age of the respondent and the negative sign for age squared indicate a curvilinear relationship, with conditions improving with age of the respondent to about age 55 ($-b_1/2b_2$), and then declining or leveling off. The direction of the remaining variables suggests that households in which the respondent has higher levels of education and higher levels of total household income, who live in urban areas, or who report their situation has improved are more likely to have better conditions than households with respondents with lower levels of education and lower levels of total household income who reside in rural areas, and report that their situation has gotten worse.

These findings are similar to the results of the Winter et al. (1999) study. Like the present analysis, in the original study (not shown), age, with the same curvilinear relationship, was the strongest predictor of conditions, followed by education. The betas for recent change and rural residence are alike in strength as in the current study, but reverse in the order of magnitude. Per capita income did not perform as well as total household income. Marital status and number of workers were related significantly to conditions in the Winter et al. (1999) study, but are not significant in the current research. Notable is the negative direction of the relationship between rural residence and conditions in both analyses. Captured again is the finding that households in rural areas report that conditions are worse than households in urban locations.

The second model assesses the relationship between satisfaction and the household characteristics, recent change, and the conditions variable. Fifty percent of the variance (Adj. $R^2 = 0.502$) is explained by five of the eight variables. Recent change (beta = 0.538) and
Table 6. Regressions of domain conditions and satisfaction on recent change and socioeconomic and demographic characteristics of the household.

<table>
<thead>
<tr>
<th></th>
<th>Conditions</th>
<th></th>
<th>Satisfaction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Beta</td>
<td>Sig</td>
<td>B</td>
</tr>
<tr>
<td>Conditions</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.680</td>
</tr>
<tr>
<td>Recent change</td>
<td>0.173</td>
<td>0.217</td>
<td>0.001</td>
<td>0.818</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>0.071</td>
<td>0.412</td>
<td>0.047</td>
<td>0.073</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.000*</td>
<td>-0.408</td>
<td>0.049</td>
<td>-0.000*</td>
</tr>
<tr>
<td>Education of respondent</td>
<td>0.215</td>
<td>0.305</td>
<td>0.001</td>
<td>0.141</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.177</td>
<td>0.031</td>
<td>0.400</td>
<td>-0.023</td>
</tr>
<tr>
<td>Number of workers</td>
<td>-0.064</td>
<td>-0.024</td>
<td>0.563</td>
<td>-0.474</td>
</tr>
<tr>
<td>Total household income</td>
<td>1.037</td>
<td>0.270</td>
<td>0.001</td>
<td>0.107</td>
</tr>
<tr>
<td>Rural residence</td>
<td>-1.292</td>
<td>-0.225</td>
<td>0.001</td>
<td>1.427</td>
</tr>
<tr>
<td>Constant</td>
<td>-11.623</td>
<td>-</td>
<td>0.001</td>
<td>0.564</td>
</tr>
<tr>
<td>R²</td>
<td>0.417</td>
<td></td>
<td></td>
<td>0.510</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>0.409</td>
<td></td>
<td></td>
<td>0.502</td>
</tr>
<tr>
<td>D.F.</td>
<td>8/583</td>
<td></td>
<td></td>
<td>9/582</td>
</tr>
<tr>
<td>F-ratio</td>
<td>52.038</td>
<td>67.296</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig F</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

+ Indicates that the value is less than 0.000
conditions (beta = 0.355) are the best predictors of satisfaction. Rural residence (beta = 0.130), education of the respondent (beta = 0.104), and number of workers (beta = -0.094) also are related significantly. Households who report a positive change in their situation, have better conditions, live in rural areas, have higher levels of education, and more workers are more likely to report higher levels of satisfaction than households who report a negative change in their situation, have worse conditions, live in urban areas, have lower levels of education, and fewer workers.

These results also are similar to the finding of Winter et al. (1999). In the original study, although in a different order, conditions and recent change were the strongest predictors of satisfaction, followed by rural residence and education. Unlike the current study, number of workers also was significant in the earlier research. The key similarity between the two studies, however, is that rural residents report higher levels of subjective well-being than urban residents. This finding, in combination with the negative relationship between rural residence and objective well-being in the previous model, are the basis for this study. The remaining analyses are an attempt to uncover the differential effects that recent change and the socioeconomic and demographic characteristics have on conditions, and that recent change, conditions, and the socioeconomic and demographic characteristics have on satisfaction for urban and rural residents, and, further, for rural-nonfarm and rural-farm households.

**Comparison of Means**

To obtain a portrait of how urban, rural-nonfarm, and rural-farm households differ on the exogenous and endogenous measures included in this study, a comparison of means was performed, including an analysis of variance procedure to test if at least one of the means is significantly different from the others. Multiple comparisons can lead to a Type I error, because the number of comparisons increases the probability of having a significant comparison, even if all the means are equal. Therefore, the Bonferroni procedure (Pedhazur & Pedhazur Schmelkin, 1991) was employed; the level of significance was divided by the number of comparisons, $0.05/33 = 0.002$, which is the level of significance used for all of the
comparisons. Three measures that are not included in the analyses because of redundancy are included in the means comparison procedures because they provided useful information for the interpretation of results. These variables are household size, number of rooms, and number of children. Household size is the number of people living in the dwelling, and it has a mean of 3.25, standard deviation of 1.69, and a range of 1 to 14. Number of rooms is the number of rooms in a dwelling, not including bathrooms or storage rooms, and it has a mean of 3.62, a standard deviation of 1.62, and a range of 1 to 15. Number of children is the number of children in the household age birth through age 18, and it has a mean of 0.96, a standard deviation of 1.24, and a range of 0 to 8. The results of the analyses are presented in Table 7.

Five of the comparisons of the socioeconomic and demographic variables are significant: age of the respondent, education of the respondent, number of workers, household size, and number of children. Respondents in urban areas tend to have the highest levels of education, and they are older than rural-farm but younger than rural-nonfarm respondents. Urban households are the smallest, and they have more workers than rural-nonfarm but fewer than rural-farm households. Respondents in rural-nonfarm households are apt to be the oldest and have the least amount of education of the three groups. Rural-nonfarm households are smaller than rural-farm households but larger than urban households, and they have fewer children than rural-farm households. Rural-farm households have a tendency to have the most household members, children, and workers and the youngest respondents of the three groups, and the rural-farm respondents have higher levels of education than rural-nonfarm but lower levels of education than urban respondents. The means for urban, rural-nonfarm, and rural-farm households and marital status, total household income, and number of rooms do not differ significantly. However, rural-farm households tend to have the highest proportion of married respondents, and rural-nonfarm households tend to have the lowest levels of total household income and the fewest rooms.

Means comparisons were performed on all of the recent change and satisfaction variables that are included in the global measures, although only the health, housing, household equipment, food, and transportation measures are entered in the specific domain
Table 7. Comparison of the means of household characteristics, recent change, conditions, and satisfaction by location of residence.

<table>
<thead>
<tr>
<th></th>
<th>Rural-Nonfarm (N=85)</th>
<th>Rural-Farm (N=91)</th>
<th>Total (N=592)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of respondent</td>
<td>51.61</td>
<td>57.26</td>
<td>49.00</td>
<td>52.02</td>
<td>7.019</td>
</tr>
<tr>
<td>Education of respondent</td>
<td>11.24</td>
<td>8.58</td>
<td>8.89</td>
<td>10.50</td>
<td>30.786</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.68</td>
<td>0.73</td>
<td>0.78</td>
<td>0.70</td>
<td>1.957</td>
</tr>
<tr>
<td>Number of workers</td>
<td>1.08</td>
<td>0.96</td>
<td>1.99</td>
<td>1.21</td>
<td>37.330</td>
</tr>
<tr>
<td>Total household Income</td>
<td>68.11</td>
<td>56.39</td>
<td>67.09</td>
<td>66.27</td>
<td>2.803</td>
</tr>
<tr>
<td>Household size</td>
<td>3.05</td>
<td>3.28</td>
<td>4.10</td>
<td>3.25</td>
<td>14.984</td>
</tr>
<tr>
<td>Number of rooms</td>
<td>3.65</td>
<td>3.44</td>
<td>3.69</td>
<td>3.62</td>
<td>0.695</td>
</tr>
<tr>
<td>Number of children</td>
<td>0.87</td>
<td>0.87</td>
<td>1.43</td>
<td>0.96</td>
<td>8.044</td>
</tr>
</tbody>
</table>

Recent change

<table>
<thead>
<tr>
<th></th>
<th>Rural-Nonfarm (N=85)</th>
<th>Rural-Farm (N=91)</th>
<th>Total (N=592)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic and financial</td>
<td>2.27</td>
<td>2.32</td>
<td>2.41</td>
<td>2.30</td>
<td>0.891</td>
</tr>
<tr>
<td>Health</td>
<td>2.30</td>
<td>2.16</td>
<td>2.37</td>
<td>2.29</td>
<td>1.949</td>
</tr>
<tr>
<td>Housing</td>
<td>3.11</td>
<td>2.96</td>
<td>2.99</td>
<td>3.07</td>
<td>3.433</td>
</tr>
<tr>
<td>Furniture</td>
<td>3.08</td>
<td>3.02</td>
<td>3.04</td>
<td>3.06</td>
<td>0.412</td>
</tr>
<tr>
<td>Household equipment</td>
<td>3.09</td>
<td>3.02</td>
<td>3.03</td>
<td>3.07</td>
<td>0.775</td>
</tr>
<tr>
<td>Food</td>
<td>2.57</td>
<td>2.60</td>
<td>2.65</td>
<td>2.59</td>
<td>0.470</td>
</tr>
<tr>
<td>Clothing</td>
<td>2.60</td>
<td>2.67</td>
<td>2.77</td>
<td>2.63</td>
<td>2.579</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.90</td>
<td>2.87</td>
<td>3.03</td>
<td>2.92</td>
<td>2.022</td>
</tr>
<tr>
<td>Global</td>
<td>21.91</td>
<td>21.64</td>
<td>22.30</td>
<td>21.93</td>
<td>0.899</td>
</tr>
</tbody>
</table>

Satisfaction

<table>
<thead>
<tr>
<th></th>
<th>Rural-Nonfarm (N=85)</th>
<th>Rural-Farm (N=91)</th>
<th>Total (N=592)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic and financial</td>
<td>2.39</td>
<td>2.36</td>
<td>2.46</td>
<td>2.40</td>
<td>0.260</td>
</tr>
</tbody>
</table>
Table 7. (continued)

<table>
<thead>
<tr>
<th></th>
<th>Urban (N=416)</th>
<th>Rural-Nonfarm (N=85)</th>
<th>Rural-Farm (N=91)</th>
<th>Total (N=592)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2.94</td>
<td>2.74</td>
<td>3.12</td>
<td>2.94</td>
<td>2.700</td>
<td>0.068</td>
</tr>
<tr>
<td>Housing</td>
<td>3.31</td>
<td>3.19</td>
<td>3.11</td>
<td>3.26</td>
<td>1.456</td>
<td>0.234</td>
</tr>
<tr>
<td>Furniture</td>
<td>3.14</td>
<td>3.19</td>
<td>3.02</td>
<td>3.13</td>
<td>0.854</td>
<td>0.426</td>
</tr>
<tr>
<td>Household equipment</td>
<td>3.13</td>
<td>2.93</td>
<td>2.68</td>
<td>3.03</td>
<td>8.786</td>
<td>0.001*</td>
</tr>
<tr>
<td>Food</td>
<td>3.19</td>
<td>3.25</td>
<td>3.20</td>
<td>3.20</td>
<td>0.146</td>
<td>0.864</td>
</tr>
<tr>
<td>Clothing</td>
<td>2.88</td>
<td>3.09</td>
<td>3.03</td>
<td>2.94</td>
<td>2.307</td>
<td>0.100</td>
</tr>
<tr>
<td>Transportation</td>
<td>2.73</td>
<td>2.64</td>
<td>2.84</td>
<td>2.73</td>
<td>0.727</td>
<td>0.484</td>
</tr>
<tr>
<td>Global</td>
<td>23.71</td>
<td>23.39</td>
<td>23.46</td>
<td>23.63</td>
<td>0.199</td>
<td>0.819</td>
</tr>
</tbody>
</table>

Conditions

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average health</td>
<td>2.33</td>
<td>2.09</td>
<td>2.50</td>
<td>2.32</td>
<td>6.114</td>
<td>0.002</td>
</tr>
<tr>
<td>Global conditions</td>
<td>0.58</td>
<td>-1.06</td>
<td>-1.56</td>
<td>0.00</td>
<td>36.832</td>
<td>0.001*</td>
</tr>
<tr>
<td>(standardized)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing conditions</td>
<td>0.44</td>
<td>-0.89</td>
<td>-1.15</td>
<td>0.00</td>
<td>60.491</td>
<td>0.001*</td>
</tr>
<tr>
<td>(standardized)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household equipment</td>
<td>9.90</td>
<td>8.46</td>
<td>8.70</td>
<td>9.51</td>
<td>14.862</td>
<td>0.001*</td>
</tr>
<tr>
<td>Food (weekly per capita starch intake in grams)</td>
<td>3827.02</td>
<td>4316.15</td>
<td>4851.14</td>
<td>4054.67</td>
<td>16.383</td>
<td>0.001*</td>
</tr>
<tr>
<td>Transportation</td>
<td>0.45</td>
<td>0.45</td>
<td>0.38</td>
<td>0.44</td>
<td>0.423</td>
<td>0.656</td>
</tr>
<tr>
<td>(number of autos)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td>0.43</td>
<td>0.33</td>
<td>0.34</td>
<td>0.40</td>
<td>2.117</td>
<td>0.121</td>
</tr>
<tr>
<td>(presence of an auto)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p<0.002 meets Bonferroni criteria
analyses. Interestingly, urban, rural-nonfarm, and rural-farm households do not differ on the measures of recent change. Also, the only difference among the three residential categories in levels of satisfaction is in the area of household equipment. Urban households report the highest levels of household equipment satisfaction, followed by rural-nonfarm and then rural-farm households.

There are considerably more significant mean comparisons among the indicators of conditions than there were for the measures of recent change and satisfaction; only the means for average health and the two measures of automobile ownership, which are the indicators of transportation conditions, are not significantly different for urban, rural-nonfarm, and rural-farm households. In all of the significant comparisons, better conditions are found among urban residents. The results for the global conditions measure, which is composed of housing, household equipment, food, and transportation (number of autos owned) conditions, indicate that the best overall conditions are apt to be in urban areas, followed by rural-nonfarm, and then rural-farm households. In addition to the consistently better conditions for urban residents, it is interesting to note that the order in which the size of the means falls for the rural-nonfarm and rural-farm households varies. Housing and food conditions are better for rural-nonfarm than rural-farm households, but rural-farm households have better household equipment conditions than rural-nonfarm households.

In summary, respondents in urban areas tend to have the highest levels of education, and it is the urban households who are apt to have the best conditions. Respondents from rural-nonfarm households tend to be the oldest, and rural-farm households are likely to have the most household members, children, and workers. Remarkably, total household income is not significantly different across these three categories.

There are three key findings that can be drawn from the comparison of means. First, the findings for the conditions measures are not surprising as they support the results of the initial analyses with the binomial rural/urban variable entered as a control; conditions are the best for urban residents. Nonetheless, the results for rural-nonfarm and rural-farm households suggest that conditions are not consistently better or worse for either rural category. Second, the absence of significance for the comparison of recent change suggests that the effects of
the transformation as measured by recent change at the household level, were felt similarly by urban, rural-nonfarm, and rural-farm household across all of the domains. Third, levels of satisfaction did not vary much across the three residential categories, except with regard to household equipment. The theoretical underpinnings of this research suggest that subjective well-being, as measured by satisfaction, is a function of objective well-being, as measured by conditions. Typically one would expect better conditions to lead to higher levels of satisfaction and worse conditions to lead to lower levels of satisfaction. Nevertheless, in the initial regressions the opposite relationship was found for urban and rural households, but the point to be made is that objective and subjective well-being are, in fact, related. The comparison of means indicates that, although conditions are always worse for rural-nonfarm and rural-farm households, these two groups and urban residents rarely differ on levels of satisfaction. In addition, when the means are significantly different for these three categories, unlike the initial regressions, levels of satisfaction, in this case household equipment satisfaction, are better for urban, not rural, households.

**Regressions of Conditions and Satisfaction**

Parallel regressions for urban, rural, rural-nonfarm, and rural-farm households were conducted to assess the relationship between the exogenous variables, objective well-being (conditions) and subject well-being (satisfaction) for five specific domains and a global measure. The five specific domains are health, housing, household equipment, food, and transportation; for these models, the variables assessing recent change, conditions, and satisfaction are domain-specific measures.

The global analyses are included in the study to compare findings between the initial global analyses with the binomial urban/rural variable, and the results of the global analyses for each of the residential categories. In the global analyses, multiple-item scales are used to assess conditions, satisfaction, and recent change. The global conditions indicator includes measures of housing, household equipment, food, and transportation conditions. The global indicators of recent change and satisfaction include measures assessing the same four domains, and four additional domains: health, economic and financial, furniture, clothing.
Reporting the findings of each of the ensuing 24 individual regressions separately makes cross model comparisons very difficult. Therefore, the results of the individual regressions, which are provided in Appendix B for reference, are combined into four tables; two (Tables 8 and 10) to display the adjusted R-squared values and two (Tables 9 and 11) to present the variables that are related significantly to the conditions and satisfaction measures. In the latter tables, the shaded areas indicate the relationships that are related significantly to either conditions or satisfaction at \( p<0.05 \), and the positive and negative signs show the direction of the relationships. The letters in the horizontal heading are \( U = \) urban and \( R = \) rural, and under the separate rural category, \( N = \) rural-nonfarm, and \( F = \) rural-farm. When making comparisons of the number of significant relationships across the residential categories, it is important to keep in mind the differences in sample sizes: 416 urban, 85 rural-nonfarm, and 91 rural-farm households. It is likely that more significant relationships occur in the urban models compared to the analyses for the two rural categories because the urban group contains almost four times as many cases as the other two.

Findings of Conditions Analyses

The adjusted R-squared values for the conditions regressions are presented in Table 8. As indicated by the magnitude of the adjusted R-squares, the ability to predict conditions is best for the health and household equipment models, followed by the global and transportation regressions. The weakest analyses are for food and housing conditions. In fact, the F-ratio is not significant for the rural-farm food analysis. Excluding the housing and food regressions, the adjusted R-squared values are all relatively large, ranging from 0.266 to 0.648, with approximately half accounting for over 40 percent of the variance in the dependent variable.

Four overall findings emerge from Table 9. First, recent change is a fairly consistent predictor of conditions for all residential categories, except for housing and food conditions. Second, recent change and the socioeconomic and demographic variables perform differently according to the specific domain. Third, the socioeconomic and demographic variables perform differently in the urban and rural regressions. Fourth, the socioeconomic and
Table 8. Adjusted R-square values for conditions regressions.

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Housing</th>
<th>Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>0.458</td>
<td>0.117</td>
<td>0.395</td>
<td>0.083</td>
<td>0.282</td>
<td>0.324</td>
</tr>
<tr>
<td>Rural</td>
<td>0.517</td>
<td>0.103</td>
<td>0.459</td>
<td>0.050</td>
<td>0.266</td>
<td>0.398</td>
</tr>
<tr>
<td>Rural-Nonfarm</td>
<td>0.576</td>
<td>0.117</td>
<td>0.648</td>
<td>0.105</td>
<td>0.278</td>
<td>0.467</td>
</tr>
<tr>
<td>Rural-Farm</td>
<td>0.440</td>
<td>0.130</td>
<td>0.301</td>
<td></td>
<td>0.341</td>
<td>0.415</td>
</tr>
</tbody>
</table>

◆ Indicates that the F-ratio is not significant at p<0.05.

demographic variables perform differently in the rural, rural-nonfarm and rural-farm analyses.

Recent change, which is actually six different variables, one for each domain and a global measure, is a consistent predictor of conditions for health, household equipment, transportation, and the global measure. Therefore, whether located in an urban or a rural area, households who report a positive recent change are likely to have the best health, household equipment, transportation, and global conditions. For housing conditions, recent change has an effect in urban areas, but not in rural locations, whether assessed as a whole or when broken down into nonfarm and farm categories. In urban areas, households who report a positive recent change are likely to have the best housing conditions. Recent change has no effect on food conditions in any of the models.

The findings for age of the respondent and age squared vary across domains and locations. In general, age of the respondent is significant in at least one model for each domain, but there are no effects of age in the global analysis. For health conditions, there is a convex curvilinear relationship for age of the respondent in the urban model, but age of the respondent is not significant in the overall rural regression. But, when dividing rural households into nonfarm and farm groups, age of the respondent is related negatively to health conditions among rural-nonfarm households, and there is a concave curvilinear
Table 9. Regression of conditions on recent change and socioeconomic and demographic characteristics of the household.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Health</th>
<th>Housing</th>
<th>Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Recent change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of respondent</td>
<td>-</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age squared</td>
<td>-</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education of respondent</td>
<td>-</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total household income</td>
<td>-</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shaded areas indicate a significant relationship at $p<0.05$. Symbols indicate the direction of the relationship.
relationship between age of the respondent and health conditions for rural-farm households. Of note, this curvilinear relationship is opposite to the one for urban households. In urban areas, health conditions deteriorate with the age of the respondent to about age 78, and then health conditions improve or level off, probably the latter. Within the rural-farm households, health conditions improve with the age of the respondent to about age 45, and then health conditions decline or level off. And for rural-nonfarm households it is the older respondents who are likely to have the worst health conditions.

For housing conditions, there is a concave curvilinear relationship with age of the respondent in the urban model, and a positive and linear relationship with age of the respondent in the rural regression. In urban locations, housing conditions get better with the age of the respondent up to about age 70, and then housing conditions worsen or level off. Among rural residents, households with older respondents are likely to have the best housing conditions. Nevertheless, when separating rural households into the two categories, a different pattern emerges. The relationship between age of the respondent and housing conditions within the rural-nonfarm group has the same curvilinear association that is found in the urban analysis (except that the inflection point is lower, at age 56), but, in the rural-farm regression, housing conditions are not a function of age of the respondent.

In the urban analysis for household equipment conditions, age of the respondent is not a factor in the prediction of conditions, but there is a significant and concave curvilinear effect in the rural regression. Nevertheless, when analyzing the two categories of rural households separately, the relationship found for rural households only holds for rural-nonfarm, not for rural-farm households. Therefore, among rural-nonfarm households, household equipment conditions improve with the age of the respondent to about age 41, and then household equipment conditions become worse or level off.

The relationship between age of the respondent and food conditions is significant and convex curvilinear for urban households, but there is no effect for rural households. Separate analysis of the rural divisions, however, reveals the same curvilinear relationship for rural-nonfarm households that is found in the urban analysis. Among urban households and within the rural-nonfarm category, food conditions become worse with the age of the respondent to
about age 50 and 58 respectively, and then food conditions become better or level off. In the transportation conditions regressions, age of the respondent is significant in the urban model only, and the relationship is concave curvilinear. In urban areas, transportation conditions improve with the age of the respondent to about age 50, and then transportation conditions decline or level off. Finally, for global conditions, age of the respondent has no effect in any of the regressions.

Conditions are a function of education of the respondent in all of the urban regressions and in four out of the six rural analyses. The relationship between education of the respondent and the conditions variables is always positive. Education of the respondent is significant in the urban and the rural regressions assessing health, housing, household equipment, and global conditions. Notably, however, when analyzing the rural-nonfarm and rural-farm categories separately, education of the respondent has an effect on health, household equipment, and global conditions for farm households but not for nonfarm households. Food and transportation conditions are a function of education of the respondent in urban areas but not in rural locations. Therefore, for both urban and rural locations, households in which the respondent has high levels of education are likely to have the best health, housing, household equipment, and global conditions. However, the results for health, household equipment, and global conditions hold true only for rural-farm households and not for rural-nonfarm households. And finally, for urban dwellers only, households with a respondent with high levels of education are likely to have the best food and transportation conditions.

Marital status is significant in only three of the regressions. Marital status is related positively to household equipment and transportation conditions for urban households only, and it is related negatively to health conditions for rural-farm households only. In urban areas, households in which the respondent is married are likely to have the best household equipment and transportation conditions, but among farmers, households with a married respondent are likely to have the poorest health conditions.

Health, housing, and household equipment conditions are a function of the number of workers in urban areas, although the direction of the relationships varies. Number of workers
is related positively to health and household equipment conditions, but it is related negatively to housing conditions. In urban areas, households with the most workers are likely to have the best health and household equipment conditions, although households with the most workers also are likely to have the poorest housing conditions. Number of workers is significant in one rural analysis, health conditions, but, after separate analyses of the two rural divisions it appears that this relationship only applies to nonfarm households. For the rural-nonfarm category, households with the most workers are likely to have the best health conditions. Number of workers is not significant in the rural transportation regression, but it does have an effect in the rural-nonfarm analysis. Number of workers is related significantly and negatively in the rural-farm transportation conditions analysis, indicating that, among farmers, households with the most workers are likely to have the poorest transportation conditions.

Conditions are a function of total household income in four of the urban regressions and four of the rural analyses and the relationship for total household income is always positive. Among urban households, health, household equipment, food, and global conditions are a function of total household income. In urban locations, households with high levels of total household income are likely to have the best health, household equipment, food, and global conditions. Total household income has an effect on housing, household equipment, transportation, and global conditions for rural households. The results for the separate analyses for the nonfarm and farm categories, however, suggest that total household income has an effect on housing and transportation for rural-farm households only. Therefore, in rural areas, households with high levels of total household income are likely to have the best household equipment and global conditions, and within the rural-farm division, households with high levels of total household income are likely to have the best housing and transportation conditions.

Discussion of Conditions Analyses

It is apparent that, except for the rural housing regressions and all of the food models, conditions are a function of recent change. Interestingly, a recent change has an effect on housing conditions for urban dwellers but not for rural residents. This finding may suggest
the possibility of change through the availability of more modern housing services in urban areas compared with rural locations. And, rural-farm households are tied to the house on their land so the possibility of change may not exist. The absence of an effect for recent change on food conditions, or starch intake, for rural-farm households makes sense because farmers may have food from previous harvests stored or may be able to produce more food for personal consumption. The same absence of significant relationships for urban and rural-nonfarm households is, nevertheless, surprising. It may be that, if households have limited funds, they cut back on other types of spending so that their food consumption patterns are not modified.

Age of the respondent, education of the respondent, and total household income also are fairly consistent predictors of conditions. The relationships for age of the respondent are usually curvilinear; nevertheless, the direction of the association varies according to domain. The curvilinear relationships for housing, household equipment, and transportation conditions are concave, the curvilinear relationship for food conditions is convex, and for health conditions, the direction of the curvilinear relationship is opposite for urban and rural-farm households. Among urban households, the older the respondent, up to a point, the worse the average health of the household and the greater the consumption of bread and potatoes. These findings could very well be related because large quantities of starch in a household's diet may mean inferior nutritional intake, which could lead to poor health (Bakken et al., 1999). The relationship between age of the respondent and health conditions also may be related to life cycle factors. The measure of age is that of the respondent, but the measure of health is the average health of all household members. It is likely that, as the respondent ages, the greater the likelihood that other household members are older as well. The natural aging process generally has a negative influence on health conditions.

For rural-nonfarm households, the relationship for age of the respondent to average household health is negative and linear; households with older respondents have the worst average health, which, once again, probably can be attributed to the natural aging process. For rural-farm households, age of the respondent has a concave curvilinear effect on the average health of the household, but age of the respondent has no influence on starch consumption. The latter finding is not surprising because both young and old farmers can produce food for
personal consumption; therefore, age may not affect food conditions. The opposite results for the effects of age of the respondent on average health may be attributed to the different inflection points in the urban and rural-farm analyses, 78 and 45 respectively. Among urban residents, the average health of the household continues to deteriorate over a number of decades, then improves or, more probably, levels off. For rural residents the average health of the household initially improves but only up to about age 45; then the average health of the household declines or levels off. It is likely that the end result for both urban and rural-nonfarm household is the same: the worst health conditions occur at the older ages.

Education of the respondent and total household income are significant within all of the domains and in the global analysis, and the direction of the relationship is always positive. Level of education, however, has no effect on food or transportation conditions among rural residents, and total household income has no effect on health and food conditions in rural locations or housing conditions in urban areas.

When interpreting the findings for education of the respondent and total household income, it is important to keep in mind that these measures are not highly correlated ($r = 0.228$; see Appendix A). The positive relationship between education of the respondent and conditions may be due to the benefits or the advantages attached to higher levels of education. In the area of health, respondents with high levels of education and their spouses, if married, may have safer and less strenuous jobs, and they may be able to provide their families with a better standard of living than respondents with lower levels of education, which could lead to higher levels of average health conditions for the household. In the case of housing, household equipment, food, transportation, and global conditions, higher levels of education could lead to exposure to new or more modern products or a variety of foods on the market and to the desire to obtain these preferred or possibly status items. In addition, prior to the transformation, more money was available to make purchases, but many of the products were not available. Individuals with higher levels of education may have had better connections with those with access to hard-to-get items such as modern household products, different types of appliances and electronics, automobiles, and fruits, vegetables, and meat, so that sheer availability enabled these households to improve their conditions.
Likewise, this explanation also could apply to the global measure of conditions. Notably, however, education of the respondent does not affect food or transportation conditions in rural areas. For farmers, level of education may not influence the amount of bread and potatoes consumed, because education probably would not have an impact on a farmer's ability to produce food for personal consumption in the labor-intensive, low-technology form of agriculture in Poland. For rural-nonfarm households, education may not affect the amount of starch consumed because small rural communities that are situated in the midst of agricultural activity may have access to a variety of produce beyond bread and potatoes. And, the lack of effect between education of the respondent and automobile ownership for rural residents may be an indication that, no matter the level of education, owning an automobile may be out of a household's financial reach, or the need or desire for automobile ownership is not an issue.

The positive relationship for total household income, of course, suggests the ability to purchase different products. Additionally, for health and food conditions in urban areas, higher levels of income could mean more of an ability to pay for medical care and nutritious food in addition to bread and potatoes, which could lead to better conditions. Total household income does not have an effect on health conditions for rural residents. As mentioned in the literature review, people in rural areas may have only minimal access to medical care; therefore, total household income might not have an effect on health conditions, as related to medical care, if medical services are not readily available for purchase. Total household income also does not have an effect on food conditions in rural areas. For rural-nonfarm households, this result may be because of the variety of food available at lower costs in agricultural areas. For rural-farm households, growing a variety of food for personal consumption would suggest that income would not make as much of a difference as in urban areas. Total household income does not have an effect on housing conditions in urban areas. This finding may be because of the limited housing available in Poland. Households may not be able to move to a new residence with more amenities or have household members move out to reduce the number of persons per room, no matter how much their total household income because housing is not always available. Transportation conditions also are not a
function of total household income in urban areas. This result may be because of the availability of bus transportation, shared rides, or the ability to walk to shopping areas and to work. Whether or not a household has enough money to purchase an automobile is not an issue if household members have no need or desire to do so.

Number of workers, and especially marital status, contribute the least to the models. The direction of the relationships is positive, except for marital status and health conditions among rural-farm households, number of workers and housing conditions among urban residents, and number of workers and transportation conditions for rural-farm households. The negative relationship between marital status and health conditions in the rural-farm analysis indicates that, for households in which the respondent is not married, the average health of the household is better than the average health of those households in which the respondent is married. No obvious explanation for this finding comes to mind. The findings for marital status and household equipment and transportation conditions, nevertheless, could be an issue of needs and wants of a larger household. Married respondents are by definition at least a two-person household, and it is possible that they have children (59% of urban married respondents have children). Having a larger household could lead to a need or a desire for more types of appliances and electronics or an automobile. Overall, the general lack of effect for marital status may suggest that it is not a very effective measure of constraints in this study.

In the health conditions model, number of workers could indicate that just the act of being employed suggests a certain level of health. In addition, health care benefits may be more available to the employed than the unemployed. Employment also could raise the general standard of living for all household members, all of which could lead to better average health conditions for the household. For housing conditions, the negative relationship would suggest either unemployment or retirement as the average number of workers for urban and rural-nonfarm households is one, and retired households certainly could have improved their housing conditions over their working years. The positive relationship for household equipment conditions could be a function of household size: more people might lead to more needs, wants, and purchases. And, the negative relationship between number of
workers and transportation conditions may be related to the fact that there may be more workers in the household (the average is two workers per households in rural-nonfarm households), yet there is no greater need, desire, or ability to own an automobile.

Comparing the effects of recent change and the socioeconomic variables on conditions for urban and rural households, it is apparent that recent change behaves similarly, and the household characteristics perform differently according to the location of the residence. The relationship for recent change is the same for rural and urban residents, except in the housing conditions regressions where recent change is significant in the urban but not the rural analyses. For health, food, and transportation conditions, age of the respondent is significant in the urban but not the rural regressions. The opposite is the case in the household equipment analyses. In addition, the direction of the relationship for housing conditions differs across models. In the urban analysis, the relationship is concave curvilinear, and it is positive and linear in the rural regression. Further, education of the respondent is significant in the urban food and transportation analyses but not the rural regressions. Marital status has an effect on household equipment and transportation conditions for urban but not rural households. Number of workers is related significantly to housing and household equipment conditions for urban but not rural residents. Total household income has an effect on health and food conditions for urban but not rural households, and on housing and transportation conditions for rural but not urban dwellers.

Comparing the effects of recent change and the household characteristics on conditions for rural households to the same relationships for the rural-nonfarm and rural-farm categories, different findings emerge. The effects of recent change in all of the models is the same for rural-nonfarm and rural-farm households. The same is the case for the effects of total household income on household equipment and global conditions. However, the relationships between the other exogenous variables and conditions are different for rural-nonfarm and rural-farm households. Age of the respondent is not significant in the rural health and food conditions regressions, but age of the respondent is related significantly to health for both of the rural categories and to food conditions for rural-nonfarm households. Education of the respondent is related significantly to health, housing, household equipment,
and global conditions in the rural regressions, but the effects for the two rural categories are not similar. The same holds for the relationship for number of workers and health conditions. And, although number of workers is not significant in the rural transportation regression, number of workers is related significantly in the rural-farm analysis. Total household income has the same significant relationships for household equipment and global conditions. Nevertheless, the significant findings for total household income and housing and transportation conditions only hold for rural-farm and not rural-nonfarm households. According to the review of literature, the differential findings for rural-nonfarm and rural-farm households may be because the transformation affected farmers and nonfarmers differently. Further, these two groups may have different personal and community resources from which to draw.

Findings of the Satisfaction Analyses

The satisfaction regressions were the next step in understanding the relationship between recent change, the socioeconomic and demographic variables, objective well-being (conditions), and subjective well-being (satisfaction). The previous regressions provided information on how recent change and the socioeconomic and demographic variables are related to conditions. Now, the conditions variables are entered into the satisfaction models to test the relationship between conditions and satisfaction, while controlling for recent change and household characteristics.

The adjusted R-squared values for the satisfaction analyses are presented in Table 10. Most of the values are relatively large. The strongest analyses are health and global satisfaction, with transportation a close third. Unlike the results for the conditions analyses, in which the adjusted R-squared values for household equipment were strong, the household equipment regressions for satisfaction are some of the weakest. Also, the adjusted R-squared values for the food satisfaction regressions are some of the smallest, yet they are larger than they were for the conditions analyses. Finally, the relative strength of the adjusted R-squared values indicates that the regressions perform much better in the prediction of housing satisfaction than in predicting housing conditions.
Table 10. Adjusted R-square values for satisfaction regressions

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Housing</th>
<th>Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>0.567</td>
<td>0.255</td>
<td>0.183</td>
<td>0.376</td>
<td>0.416</td>
<td>0.478</td>
</tr>
<tr>
<td>Rural</td>
<td>0.539</td>
<td>0.354</td>
<td>0.303</td>
<td>0.254</td>
<td>0.389</td>
<td>0.550</td>
</tr>
<tr>
<td>Rural-Nonfarm</td>
<td>0.562</td>
<td>0.439</td>
<td>0.208</td>
<td>0.251</td>
<td>0.459</td>
<td>0.566</td>
</tr>
<tr>
<td>Rural-Farm</td>
<td>0.464</td>
<td>0.346</td>
<td>0.342</td>
<td>0.247</td>
<td>0.351</td>
<td>0.529</td>
</tr>
</tbody>
</table>

Reviewing the satisfaction regressions, four overall findings can be drawn from the results, the shaded areas, presented in Table 11. First, conditions and recent change are fairly consistent predictors of satisfaction for all residential categories, except for food satisfaction. Second, although the socioeconomic and demographic variables have little direct effect on satisfaction, these measures perform differently according to the specific domain. Third, the socioeconomic and demographic variables perform differently in the rural, urban and rural regressions. Fourth, the socioeconomic and demographic variables perform differently in the rural-nonfarm, and rural-farm analyses.

The conditions variables, five domain-specific measures and a global measure, are consistent predictors in all of the regressions, except for food satisfaction. In urban and rural areas, households with the best conditions are likely to have the highest levels of health, housing, household equipment, transportation, and global satisfaction. For food satisfaction, conditions are significant only in the urban analyses. In urban locations, households with the best food conditions are likely to have the highest levels of satisfaction with their food situation.

The recent change variables also perform very well as predictors of satisfaction. Satisfaction is a function of recent change in all of the regressions, except for two of the rural-farm models: housing and transportation satisfaction. The latter findings suggest that the relationship between recent change and housing and transportation satisfaction among
### Table 11. Regression of satisfaction on recent change and socioeconomic and demographic characteristics of the household.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Health</th>
<th>Housing</th>
<th>Household Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Age squared</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Education of respondent</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Marital status</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Number of workers</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total household income</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Shaded areas indicate a significant relationship at p<0.05. Symbols indicate the direction of the relationship.
rural residents applies to rural-nonfarm households only. Therefore, in both urban and rural areas, households who report a positive recent change are likely to have the highest levels of health, housing, household equipment, food, transportation, and global satisfaction, with the exception of housing and transportation satisfaction among rural-farm households.

Housing satisfaction is a function of age of the respondent in both urban and rural locations, and food satisfaction is a function of age of the respondent in urban areas only. For housing satisfaction, the relationship is positive and linear in the urban regression and negative and linear in the rural analysis. In urban areas, households in which the respondent is older are likely to have the highest levels of satisfaction with housing, yet in rural areas, households with older respondents are likely to have the lowest levels of housing satisfaction. Nevertheless, when assessing the two categories of rural households, there is no significant relationship for age of the respondent in the rural-nonfarm analysis, and the relationship for age of the respondent is convex curvilinear in the rural-farm model. Within the rural-farm category, housing satisfaction decreases with the age of the respondent to about age 52, then housing satisfaction increases or levels off. The same curvilinear relationship is found for food satisfaction in urban areas. Among urban residents, food satisfaction declines with the age of the respondent to about age 45, then food satisfaction improves or levels off.

Education of the respondent is not significant in any of the rural models, but in four of the six urban regressions, education of the respondent has a significant and positive effect on satisfaction. In urban areas, households in which the respondent has high levels of education are likely to have the highest levels of satisfaction with their health, household equipment, food, and global situations. Housing and transportation satisfaction are not a function of education of the respondent.

There are six significant relationships for number of workers and all are negative. Number of workers is related significantly to household equipment, food, and global satisfaction in the urban regressions. Number of workers also has an effect on household equipment satisfaction among rural households, housing satisfaction for rural-nonfarm households, and food satisfaction for rural-farm households. Therefore, in urban areas,
households with the fewest workers are likely to have the highest levels of satisfaction with their global situation. In either urban or rural areas, households with the fewest workers are likely to have the highest levels of household equipment satisfaction. Among rural-nonfarm households and urban residents, households with the fewest workers are likely to have the highest levels of satisfaction with their food situation. And, within the rural-nonfarm category, households with the fewest workers are likely to have the highest levels of housing satisfaction.

The only domain in which total household income is significant is food satisfaction. The relationship is significant and positive for both urban and rural-farm households. Among rural-farm households or in urban locations, households with high levels of income are likely to have the highest levels of satisfaction with their food situation.

Discussion of Satisfaction Analyses

Satisfaction is a function of conditions and recent change in all of the models, except the relationship between conditions and food satisfaction is not significant for rural residents, and a recent change in the household’s housing or transportation situation does not affect satisfaction for rural-farm households. The findings for conditions and recent change support the theoretical framework for this study; satisfaction is a function of conditions and recent change. The exceptions are all in the rural analyses. For rural-nonfarm and rural-farm households, level of starch consumption is not an effective predictor of satisfaction with the household’s food situation. This finding may be due to the availability of a variety of foods in rural areas, which, in essence, creates a situation where the relationship between the amount of starch consumed and levels of food satisfaction is a nonissue. The absence of a relationship between recent change and housing satisfaction for rural-farm households probably suggests that no change occurred, as recent change did not influence housing conditions, therefore, there is no differing effect on housing satisfaction. The lack of effect of recent change for rural-farm households in the transportation regression may indicate that, even if a change did occur, it was not enough to influence satisfaction with their transportation situation.
Except for the urban food conditions regression, most of the variance accounted for in the satisfaction measures was explained by the conditions and recent change variables, and not by household characteristics. Nevertheless, for housing satisfaction, the relationship is positive in the urban housing regression, negative in the rural model, and curvilinear when assessing just rural-farm households. Of interest is that, for urban residents, housing satisfaction continues to get better with age, but for rural-farm households, housing satisfaction initially declines as the respondent gets older, then at a certain age satisfaction with housing improves or levels off.

These findings may be due to household size. Urban dwellers tend to have fewer children than rural households; therefore, in urban areas, as children are added to the household and as they mature, there is apt to be relatively little overcrowding in urban households and levels of satisfaction continue to rise. For rural households, however, the addition of a greater number of children to the household could cause cramped conditions that peak before children begin to leave home, which might have led to the convex curvilinear relationship between age of the respondent and housing satisfaction. In addition, urban residents perhaps were able to improve their housing conditions more so than rural households, which could positively influence housing satisfaction. The same curvilinear relationship occurs in the urban food regression, and it also may be related to household size.

Although urban households tend to have fewer children than rural households, as urban respondents marry and have children, the grocery needs increase accordingly, which might cause lower levels of satisfaction with their food situation. Nevertheless, when children move on to their own residences, the household’s food needs decrease and food satisfaction could then rise or level off.

Level of education affects health, household equipment, food, and global satisfaction for urban households only. Keeping in mind that higher levels of education also positively affected conditions in these areas, the benefits of higher education could lead to more knowledge about health and nutrition, which, in turn, could lead to better and varied food choices and healthy living, and thus higher levels of satisfaction with the household’s food and health situations. The effects for education of the respondent on household equipment
satisfaction also may be one of increased knowledge or awareness of appliances or electronics and purchase of these items, resulting in higher levels of satisfaction with the household's equipment situation. This explanation also could be extended to the results for global satisfaction.

Number of workers always is related negatively to satisfaction. This result could be a function of household size. Fewer workers might lead to less cramped living arrangements, more access to appliances and electronic equipment, and larger portions of food, which could cause higher levels of satisfaction with these domains. Fewer workers also could indicate unemployment or retirement and the possible effects of reduced or no income. Total household income is related significantly to food satisfaction in the urban and rural-farm regressions. This finding is probably related to the ability to purchase a variety of food, or in the case of farmers, food that they do not produce on their farms, which could lead to higher levels of food satisfaction.

Comparing the effects of conditions, recent change, and the socioeconomic and demographic variables on satisfaction for urban and rural households, it is apparent that conditions and recent change behave similarly and the household characteristics perform differently according to the location of the residence. For housing satisfaction, age of the respondent is significant in both the urban and rural regressions but the direction of the relationship is positive and linear for urban and negative and linear for rural households. For food satisfaction, age of the respondent is significant in the urban but not the rural analysis. Additionally, health, household equipment, food, and global satisfaction are a function of education of the respondent for urban but not rural residents, number of workers affects food and global satisfaction for urban but not rural households, and food satisfaction is a function of total household income for urban but not rural dwellers.

The findings in the rural, rural-nonfarm, and rural-farm analyses also are not always similar. Overall, the effects of conditions and recent change are the same, except that housing and transportation satisfaction are a function of recent change in the rural and rural-nonfarm analyses but not the rural-farm regressions. The relationship for age of the respondent in the housing satisfaction model is negative for rural and rural-farm households but not significant.
for the rural-nonfarm category. Number of workers is significant in the housing satisfaction rural-nonfarm model, the household equipment satisfaction rural regression, and the food satisfaction rural-farm model but not for the corresponding category analyses. There is a significant relationship between total household income and food satisfaction in the rural-farm analysis, but not in the rural or rural-nonfarm regressions. As discussed previously in regard to the results of the conditions regression, the transformation may have affected rural-nonfarm and rural-farm households differently, and these households may have different personal and community resources from which to draw. These factors could cause the household characteristics to have a different influence on levels of satisfaction for farmers and nonfarmers in rural areas.

The Decomposition of Effects for the Satisfaction Regressions

The next step of the analysis was to decompose the total effects of the satisfaction regressions into direct and indirect effects. This phase of the analysis was included in the study because, in several of the regressions, the socioeconomic and demographic characteristics are related significantly to conditions, but they are not related to satisfaction, suggesting, that they may be, in fact, affecting satisfaction indirectly through conditions. The rural variable is not used in the assessment of the indirect effects because, based on the results of the regressions, it is clear that rural households are not a homogenous group. Therefore, the indirect effects of the exogenous variables on satisfaction for rural-nonfarm and rural-farm households are of interest, not whether the results vary for the two rural categories compared to the rural measure.

The decomposition of effects for the satisfaction models was achieved by using the method described by Alwin and Hauser (1975). To obtain indirect effects, the standardized coefficients from Model I (see Appendix B), which include the socioeconomic and demographic variables as exogenous measures, were subtracted from the standardized coefficients of Model III, which include the socioeconomic and demographic variables and conditions as exogenous measures. To ascertain whether the indirect effects are significant, a
significance test delineated by Kline (1998) was employed. This test was accomplished through three steps:

1. Multiply the unstandardized coefficients of the exogenous variables for Model I (see Appendix B) by the unstandardized coefficient for the conditions variable in Model II to obtain the estimate of the indirect effects of the exogenous variables on satisfaction through conditions.

2. Calculate the standard error of the estimate of the indirect effect using the following formula:

\[ SE_{ab} = (b^2SE_a^2 + a^2SE_b^2 + SE_a^2SE_b^2)^{1/2} \]

where

- \( a \) = the path coefficient from Model I, the direct effects of the exogenous variables on conditions
- \( b \) = the path coefficient from Model III, the direct effect of conditions on satisfaction
- \( SE_a \) = the standard error of the exogenous variables in Model I, and
- \( SE_b \) = the standard error of conditions in Model III.

3. Divide the product of the path coefficients from Model I and Model III (ab) by the standard error of the same variables (\( SE_{ab} \)) to obtain a value that can be interpreted as a z statistic, “which means that the indirect effect is significant at the .05 level (two-tailed) if its absolute value exceeds 1.96” (Kline, 1998, p. 150).

The findings for the indirect effects are displayed in Table 12 in the same format as the previous two tables. The actual values for the total, direct, and indirect effects of the exogenous variables on satisfaction are provided in Appendix C. The actual values for the total, indirect, and direct effects of recent change and the total effects of conditions on satisfaction also are provided in Table 14. The regression coefficients in the satisfaction models and direct effects are synonymous, therefore, the shaded areas in Table 11 represent the significant direct effects on satisfaction.
Table 12. Indirect effects of recent change and socioeconomic and demographic characteristics of the household on satisfaction.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Health</th>
<th>Housing</th>
<th>Household Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
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<tr>
<td>Variables</td>
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<td>N</td>
<td>F</td>
<td>U</td>
<td>N</td>
<td>F</td>
</tr>
<tr>
<td>Recent change</td>
<td></td>
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<td></td>
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<tr>
<td>Age of respondent</td>
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<td></td>
<td></td>
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<tr>
<td>Age squared</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Education of respondent</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Marital status</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total household income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Shaded areas indicate a significant relationship at p<0.05. Symbols indicate the direction of the relationship.
It becomes readily apparent by the number of significant relationships in Table 12 that indirect effects are an important aspect of this study. Delineating the indirect effects adds to the understanding of the relationships between the socioeconomic and demographic variables and recent change, and levels of satisfaction. Specifically, decomposing total effects into direct and indirect effects provides information on 39 additional significant relationships that otherwise would have been overlooked. Satisfaction is affected indirectly through the influence of the mediating indicators of conditions. Satisfaction is a function of conditions, and conditions are a function of recent change and the socioeconomic and demographic variables.

Findings of Analyses of Indirect Effects

Four main findings can be drawn from Table 12. First, recent change is a somewhat consistent predictor of levels of satisfaction through the influence of conditions. Second, recent change and the socioeconomic and demographic variables perform differently according to domain. Third, recent change and the socioeconomic and demographic variables perform differently in the urban models compared to rural-nonfarm and rural-farm analyses. Fourth, the socioeconomic and demographic variables perform differently in the rural-nonfarm and rural-farm analyses.

Significant indirect effects are present in all of the models. In addition to the measure of recent change, age of the respondent, education of the respondent, and total household income account for the largest portion of the indirect effects on satisfaction through their influence on conditions. All of these variables, plus number of workers, are at work within the health domain.

In the health models indirect effects for recent change are significant in the urban model and for each of the rural categories. In the urban model, age of the respondent and age squared, education of the respondent, number of workers, and total household income also are related significantly. The relationship for age is convex curvilinear. The relationships for the other significant variables are positive. There are no indirect effects for any of the household characteristics in the rural-nonfarm regression, but age of the respondent and age
squared and education of the respondent have an effect in the rural-farm analysis. Once again, the relationship for age is curvilinear; however, the direction of the relationship is opposite of the one for urban households, and the effect of education of the respondent is positive.

For housing there is an indirect effect for recent change in the urban regression but not in the rural analyses. Housing satisfaction also is indirectly a function of age of the respondent and age squared, education of the respondent, and number of workers through their influence on housing conditions. The relationship for age of the respondent is concave curvilinear, education of the respondent is related positively, and number of workers is related negatively. In the rural-nonfarm analysis, the only household characteristic that is significant is age of the respondent and it is related positively. Total household income is the only significant household characteristic in the rural-farm analysis and the relationship is positive.

Recent change is related to household equipment satisfaction through its effect on household equipment conditions in the urban model but not the rural analysis. Education of the respondent, number of workers, and total household income also are related significantly and positively. For both categories in the rural analyses, only total household income has a significant indirect effect.

There are no indirect effects for recent change within the food domain. In the urban analysis, age of the respondent and age squared, education of the respondent, and total household income have an indirect effect on food satisfaction though their influence on food conditions. The relationship for age of the respondent is convex curvilinear and education of the respondent and total household income are related positively. Only age of the respondent and age squared are significant in the rural-nonfarm model and the same curvilinear relationship occurs as in the urban model. In the rural-farm analysis, total household income is the only variable that has an indirect effect, and the relationship is positive.

There are indirect effects for recent change in the urban and rural-nonfarm transportation analyses but not in the rural-farm model. In the urban analysis, transportation satisfaction also is indirectly a function of age of the respondent and age squared, education of the respondent, and marital status. The relationship for age is concave curvilinear, and the
relationships for education of the respondent and marital status are positive. Their are no indirect effects for any of the household characteristics in the rural-nonfarm model; only total household income is significant in the rural-farm analysis, and the relationship is positive.

In the global models, the indirect effects for recent change are significant in the urban and rural-nonfarm models but not in the rural-farm analysis. In the urban analysis, education of the respondent and total household income also are significant, and both are related positively. In the rural-nonfarm model, only total household income is significant, and in the rural-farm analysis, education of the respondent and total household income are significant, and the relationships are always positive.

Discussion of Analyses of Indirect Effects

Recent change is a somewhat consistent predictor of satisfaction through its influence on conditions among urban residents but much less so for rural residents. Nonetheless, recent change is not significant in any of the food models and only in the urban analyses for housing and household equipment satisfaction.

Of the socioeconomic and demographic variables, age of the respondent, education of the respondent, and total household income are the most frequent predictors of satisfaction through their influence on conditions. The relationship for age of the respondent is most often curvilinear, but the direction of the curve varies by domain. For housing and transportation satisfaction, the indirect effects for age of the respondent suggest that both improve with the age of the respondent, up to a point, but, for food satisfaction, the opposite is found. For health satisfaction, the curvilinear relationship for age of the respondent is convex for urban residents and concave for rural-farm households. Education of the respondent is significant within each of the domains and the global analyses, primarily for urban residents however, and the direction of the relationship is always positive. The direction of the relationship for total household income also is always positive, and it has an effect within each domain and the global analyses, but not consistently for urban, rural-nonfarm, or rural-farm households. Number of workers, and especially marital status, contribute the least to the analyses. Marital status is significant in the urban transportation model. Number of workers has a positive
effect on health and household equipment satisfaction and a negative effect on housing satisfaction through their influence of conditions for urban residents.

Satisfaction is indirectly a function of recent change and far more of the socioeconomic and demographic characteristics through their influence on conditions among urban dwellers compared with the rural categories. Recent change is significant in the urban housing, household equipment, transportation and global analyses and in the rural-nonfarm transportation and global models, but not in the corresponding rural-farm analyses. For health satisfaction, age of the respondent is significant in the urban and rural-farm but not the rural-nonfarm analyses, and the direction of the curvilinear relationships is opposite. For housing satisfaction, age of the respondent is significant in the urban and rural-nonfarm but not the rural-farm analysis, and, for urban households, the direction of the relationship is concave curvilinear but for rural-nonfarm households it is positive and linear. For food satisfaction, age of the respondent is related significantly in the urban and rural-nonfarm but not the rural-farm analysis. And, transportation satisfaction is indirectly a function of age of the respondent for urban households only.

Further, for housing, household equipment, food, and transportation satisfaction, education of the respondent is significant in the urban analyses only. Education of the respondent indirectly affects health and global satisfaction in the urban and rural-farm analyses but not the rural-nonfarm analysis. Marital status is significant only once and this relationship occurs in the urban transportation model. Health, housing, and household equipment satisfaction are affected indirectly by number of workers for urban households only. And, for health satisfaction, total household income is significant for urban households only; for housing and transportation satisfaction it is significant for rural-farm households only, and for food satisfaction total household income has an indirect effect for urban and rural-farm but not rural-nonfarm households.

It is apparent that many of the findings for rural-nonfarm and rural-farm are different. Recent change is significant in the rural-nonfarm transportation and global satisfaction analyses but not in the rural-farm model. None of the household characteristics indirectly predict housing satisfaction in the rural-nonfarm health analysis, but age of the respondent
and education of the respondent have an effect in the rural-farm category. Housing satisfaction is indirectly a function of age of the respondent for rural-nonfarm households and of total household income for rural-farm households. Age of the respondent indirectly affects food satisfaction in the rural-nonfarm analysis, and total household income indirectly affects food satisfaction in the rural-farm model. None of the household characteristics is significant in the rural-nonfarm transportation model, but transportation satisfaction is indirectly affected by total household income in the rural-farm analysis. And, global satisfaction is indirectly a function of total household income for rural-nonfarm households, and indirectly a function of education of the respondent and total household income for rural-farm households.

Intuitively, all of the relationships that are found significant as indirect effects would also have been found significant as direct effects in the conditions regressions. For example, if recent change indirectly effects satisfaction through its influence of conditions, then a significant relationship between recent change and conditions must exist. Therefore, all of the variables that have significant indirect effects in this phase of the study also had significant direct effects in the conditions regressions (Table 9), and the discussion of the results is the same. (The significant effect between total household income and food conditions for rural-farm households was not included in the findings for the conditions regressions because the overall model was not significant.)

Discussion of Total, Direct, and Indirect Effects

In Table 13, both the direct and the indirect effects on satisfaction are presented. The shaded areas indicate the direct effects, and the boxes depict the indirect effects. For both the direct and indirect analyses, the direction of the relationships for each of the variables is the same, except that in the urban household equipment model, the direct effect for number of workers is negative and the indirect effect is positive (Total Effect beta = -0.113 less Direct Effect beta = -0.145 equals Indirect Effect beta = 0.032).

Clearly, for the socioeconomic and demographic variables there are more indirect than direct effects. Age of the respondent, education of the respondent, and total household income, which are frequent predictors of conditions, did not perform well in the satisfaction
Table 13. Direct and indirect effects of recent change and socioeconomic and demographic characteristics of the household on satisfaction.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Health</th>
<th>Housing</th>
<th>Household Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td>Recent change</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>-</td>
<td>+</td>
<td>F</td>
<td>F</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Age squared</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>F</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Education of respondent</td>
<td>F</td>
<td>+</td>
<td>+</td>
<td>F</td>
<td>+</td>
<td>F</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Number of workers</td>
<td>+</td>
<td>-</td>
<td>F</td>
<td>F</td>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Total household income</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
</tbody>
</table>

Shaded areas indicate a significant direct effect at $p<0.05$. Boxes indicate a significant indirect effect at $p<0.05$. Symbols indicate the direction of the relationship (• indicates that the relationship is opposite for direct and indirect effects).
regressions (Table 11). When assessing indirect effects, it is apparent that there is a relationship between these three measures and satisfaction, but that the relationship is mediated by the indicators of conditions.

Recent change, on the other hand, consistently has a direct effect on satisfaction, and, in addition, frequently has an indirect effect through its influence on conditions. As recent change and conditions are key aspects of the empirical model, a closer look at the effect of these measures is warranted. The coefficients for the total, direct, and indirect effects of recent change and the total effects of conditions on satisfaction are provided in Table 14.

As discussed previously, recent change is significant in all of the satisfaction regressions except for the rural-farm housing and transportation models. In all of the analyses that the direct effects for recent change are significant, the coefficients are stronger for the direct effects than the indirect effects. Thus, these findings suggest that, if households perceive that their situation has improved, then their conditions are likely to be better, which, in turn, leads to higher levels of satisfaction. And most often, it is just the perception that the household's situation has improved that leads to higher levels of satisfaction. For health satisfaction, it may be that, in addition to actual health conditions, if the household members are feeling better, they are more satisfied with their health situation. In the case of household equipment, food, and overall global conditions, it may be that the household has made minimal gains that are not yet noticeable in conditions, or that they have made great gains, but their conditions were so bad to begin with that their current level of conditions are still low.

A second observation from Table 14, is that, based on the magnitude of the betas for total effects, recent change rather than conditions is the strongest predictor of health, household equipment, food, and global satisfaction within all three residential categories, and of transportation satisfaction among rural-nonfarm households. A break in this consistent pattern occurs in the housing analyses for all three residential groups and in the transportation models for urban and rural-farm households. Apparently, except for housing and transportation, it is the household's perception of whether or not their situation has gotten better, more so than their actual conditions, that influences satisfaction.
Table 14. Total, direct, and indirect effects of conditions and recent change on satisfaction.

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Housing</th>
<th>Household Equipment</th>
<th>Food</th>
<th>Transportation</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recent Change</td>
<td>Recent Change</td>
<td>Recent Change</td>
<td>Recent Change</td>
<td>Recent Change</td>
<td>Recent Change</td>
</tr>
<tr>
<td></td>
<td>Condtns</td>
<td>Condtns</td>
<td>Condtns</td>
<td>Condtns</td>
<td>Condtns</td>
<td>Condtns</td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.511*</td>
<td>0.363*</td>
<td>0.355*</td>
<td>0.377*</td>
<td>0.320*</td>
<td>0.261*</td>
</tr>
<tr>
<td>Direct</td>
<td>0.373*</td>
<td>0.363*</td>
<td>0.302*</td>
<td>0.377*</td>
<td>0.269*</td>
<td>0.261*</td>
</tr>
<tr>
<td>Indirect</td>
<td>0.138*</td>
<td>--</td>
<td>0.053*</td>
<td>--</td>
<td>0.051*</td>
<td>--</td>
</tr>
<tr>
<td>Rural-Nonfarm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.386*</td>
<td>0.361*</td>
<td>0.367*</td>
<td>0.573*</td>
<td>0.447*</td>
<td>0.435*</td>
</tr>
<tr>
<td>Direct</td>
<td>0.269*</td>
<td>0.361*</td>
<td>0.301*</td>
<td>0.573*</td>
<td>0.380*</td>
<td>0.435*</td>
</tr>
<tr>
<td>Indirect</td>
<td>0.117*</td>
<td>--</td>
<td>0.066</td>
<td>--</td>
<td>0.067</td>
<td>--</td>
</tr>
<tr>
<td>Rural-Farm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.419*</td>
<td>0.378*</td>
<td>0.161</td>
<td>0.547*</td>
<td>0.463*</td>
<td>0.276*</td>
</tr>
<tr>
<td>Direct</td>
<td>0.272*</td>
<td>0.378*</td>
<td>0.095</td>
<td>0.547*</td>
<td>0.406*</td>
<td>0.276*</td>
</tr>
<tr>
<td>Indirect</td>
<td>0.147*</td>
<td>--</td>
<td>0.066</td>
<td>--</td>
<td>0.057</td>
<td>--</td>
</tr>
</tbody>
</table>

* Significant, p<0.05
Specific to the results for housing and transportation satisfaction, however, actual conditions make more of a difference in satisfaction than recent change; in fact, in the rural-farm model, recent change is not even significant in the equation. For housing and transportation, these findings may be because the ability to make changes in housing and transportation is not as immediate as in the other domains. There can be ups and downs in health, and the purchasing of equipment and food, but changes in housing or the purchase of a vehicle would require much more of a financial outlay and a long term commitment. Additionally for housing, the household's dwelling is such a prominent aspect of daily living. If residences are crowded or there are few modern amenities, it would be difficult to perceive that there were improvements when there are constant reminders that there has been no change for the better. For rural-farm households, the lack of effect for recent change is probably an indication that there has not been any change in housing. Farming households are tied to the house on their land, and they reside in the open country where many modern household services, such as a public water or sewer system, are not available. It is likely that, even if they considered making improvements, they could not.

Overall, it appears that the effects of the socioeconomic and demographic characteristics on satisfaction, in general, are working indirectly through their influence on conditions. Direct effects of recent change on satisfaction, however, are almost always significant, and frequently so are indirect effects. And finally, the magnitude of the betas of the total effects of recent change and conditions on satisfaction, indicates that recent change is a better predictor of satisfaction than is conditions.

Summary of the Findings

Attempts were made to find differences between urban and rural residents, and, further, between rural-nonfarm and rural-farm households to try to explain the findings of the Winter et al. (1999) study and of the initial regression analysis in this research; that rural households had lower levels of objective well-being and higher levels of subjective well-being, than urban households who had higher levels of objective well-being and lower levels.
of subjective well-being. Nevertheless, based on the measures used in this study, overall, these household groups are more similar than different.

The results of the mean comparison procedures indicate that the means of age of the respondent, education of the respondent, number of workers, household size, number of children, and the conditions variables, except for health and transportation, are significantly different for urban, rural-nonfarm, and rural-farm households. The findings of the parallel regressions and the decomposition of total effects suggest that, of the socioeconomic and demographic variables that were entered into the analyses, age of the respondent, education of the respondent, and total household income are the most frequent predictors of conditions, and of satisfaction indirectly through conditions. As expected, frequently the effects of the socioeconomic and demographic variables are different for urban and rural residents, and further, for rural-nonfarm and rural-farm households. Unexpectedly, the results of the regressions also indicate that the effects of recent change on conditions, and of recent change and conditions on satisfaction, are, in general, similar for all household groups. However, it became apparent through the review of direct and indirect effects of recent change on satisfaction that the direct effects occur more frequently and are consistently stronger than indirect effects of recent change on satisfaction through the influence on conditions. In addition, the total effects of recent change and conditions on satisfaction indicate that recent change is a stronger predictor of satisfaction than conditions. It may be that these findings are the key to answering the original question.

Discussion of the Findings

The findings of the initial regressions, although with slightly different measures, are similar to the results of Winter et al. (1999). An important difference, however, may be that unlike the current study, in Winter et al. (1999) conditions were a stronger predictor of subjective well-being than recent change. Interestingly, the results of the comparison of means indicate that urban dwellers tend to have better conditions than rural residents, but urban, rural-nonfarm, and rural-farm households do not differ on recent change or satisfaction. Although there is no apparent difference between recent change and satisfaction,
the findings suggest that urban and rural households experience recent change and satisfaction on different levels. Both may have experienced recent change, but, based on the results for the comparisons of conditions, it is possible that urban and rural households had different starting points: worse for rural and better for urban residents. Regarding satisfaction, it is probable that both residential groups have adjusted to their current level of conditions. As proposed by the Theory of Adjustment and Adaptation, households attempt to adjust or adapt through corrective behaviors, and, if households succeed, their level of satisfaction returns to levels previous to the event. If, however, households are not successful, it is possible that they learn to accept their new standard; then prior levels of satisfaction return. Therefore, even though there seems to be a disparity in conditions between rural and urban households, they both may be satisfied.

The results of the parallel regressions and the decomposition of total effects did not produce the differences in rural and urban households that were anticipated. The effects of the socioeconomic and demographic variables on well-being vary across domains and for urban and rural residents, and, further, for rural-nonfarm and rural-farm households, but no clear patterns emerge that might help to explain the findings of the initial regressions. The same can be said for the effects of recent change on conditions, and of recent change and conditions on satisfaction. Except for the housing and food models, the findings for the residential categories are very similar. Therefore, in general, the results for urban, rural-nonfarm, and rural-farm households seem to support the conceptual model; subjective well-being is a function objective well-being, recent change, and constraints, and, objective well-being is a function of recent change and constraints.

Nevertheless, it became apparent in the final table of total, direct, and indirect effects that recent change is a consistently stronger predictor of satisfaction than conditions. And, although in the Winter et al. (1999) study, conditions were a better predictor of rating of the household's situation than recent change, it is possible that the household's level of subjective well-being is not based as much on conditions as it is on the experience of recent change. Rural households who perceive that the household's situation is getting better, in spite of conditions, may be more likely to have higher levels of satisfaction.
This conclusion leads to two possibilities. First, for this analysis, the recent change and conditions variables may be in the model in the reverse order. As the indicators of recent change that are used in this study are reported, and therefore are measures of perceptual rather than actual change, it is possible that the perception of a recent change can predict conditions, as tested, but it may be that current conditions can lead to reported recent change. In the latter case, satisfaction would be a function of recent change, conditions, and household characteristics, and recent change would be a function of conditions and household characteristics. A second possibility is that there is a reciprocal relationship between recent change and conditions, indicating that these measures influence each other and satisfaction. In either case, further analyses are needed to test the model.
CHAPTER 5. SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The Setting for the Study

The setting for this study was Lublin, a province in Poland with characteristics similar to the country as a whole. At the time of the data collection it had been approximately four years since the Communist Party was defeated in the national elections and the country was moving from a planned economy to a market economy. In urban areas, Polish households were experiencing the effects of a decrease in real wages and an increase in prices and unemployment. In the agricultural sector, private farmers were experiencing high production costs and lower prices for their produce in an uncertain market.

The Purpose and Importance of the Study

The results of previous research indicated that, in 1994, rural and urban households had relatively disparate domain conditions, and that they rated their current situations differently (Winter et al., 1999). The purpose of this study was to assess the relationship between recent change, household characteristics, and objective and subjective well-being for urban and rural residents, and, further for rural-nonfarm and rural-farm households. One goal was to ascertain the effects of reported recent change in the household’s situation and household characteristics on objective and subjective well-being, and the effects of reported recent change in the household’s situation, household characteristics, and objective well-being on subjective well-being. A second objective was to discover whether the relationships differed between urban and rural residents, and further, between rural-nonfarm and rural-farm households.

The importance of this study lies in the fact that it adds to the literature regarding the relationship between household constraints, recent change, and objective and subjective well-being, particularly during difficult economic times. Additionally, this research adds to the literature regarding the relationship between place of residence and well-being.
Methods

The sample for the analysis was 592 households of the original 600 households interviewed for the larger study, of which 94 percent of the respondents were female. There were two classes of variables: (1) exogenous variables, which included six socioeconomic and demographics measures, five domain-specific indicators of reported recent change and a global measure of recent change, and six measures of living conditions that parallel the indicators of recent change, and (2) endogenous variables, which included five domain-specific and a global measure of conditions to assess objective well-being, and five domain-specific indicators and a global measure of satisfaction to assess subjective well-being. Parallel regressions were used to assess the relationship between the exogenous and endogenous variables for 416 urban and 176 rural households, and further for 85 rural-nonfarm and 91 rural-farm households. Total effects for the satisfaction models were decomposed into direct and indirect effects for urban, rural-nonfarm, and rural-farm households for a more complete understanding of the relationship between recent change, household characteristics, and objective and subjective well-being.

Testing the Hypotheses

In this section, the empirical hypotheses are listed, followed by the major findings of the regression analyses and the decomposition of effects.

It was hypothesized that:

1. Conditions are a function of recent change and the socioeconomic and demographic characteristics of the household.

   Specifically, it was expected that, with other socioeconomic and demographic variables controlled
   a. Households reporting a positive recent change are more likely to have better
      conditions than households reporting a negative recent change.
   b. Conditions, with the exception of health conditions, will improve with the age of the respondent, up to a point, then conditions will decline or level off. A negative and linear relationship is expected for health conditions.
c. Households having respondents with higher levels of education are more likely to have better conditions than households having respondents with lower levels of education.

d. Households having respondents who are married are more likely to have better conditions than households having respondents who are not married.

e. Households having the most workers are more likely to have better conditions than households having the fewest workers.

f. Households having the highest levels of total household income are more likely to have better conditions than households having the lowest levels of total household income.

The results of the conditions regressions indicated that:

1a. The hypothesized relationship for recent change was supported in the urban, rural, rural-nonfarm, and rural-farm health, household equipment, transportation, and global conditions regressions, and in the urban housing conditions regression.

1b. The hypothesized relationship for age of the respondent was supported in the urban health conditions model, the urban and rural-nonfarm housing conditions regressions, the rural and rural-nonfarm household equipment conditions analyses, and the urban transportation conditions regressions.

1c. The hypothesized relationship for education of the respondent was supported in the urban, rural, and rural-farm health conditions analyses, the urban and rural housing models, the urban, rural, and rural-farm household equipment conditions regressions, the urban food and transportation conditions analyses, and the urban, rural, and rural-farm global conditions regressions.

1d. The hypothesized relationship for marital status was supported in the urban household equipment and transportation conditions regressions.

1e. The hypothesized relationship for numbers of workers was supported in the urban, rural, and rural-nonfarm health conditions analyses and the urban household equipment conditions regressions.
1f. The hypothesized relationship for total household income was supported in the urban, rural, rural-nonfarm, and rural-farm household equipment and global conditions analyses, the urban health and food conditions models, and the rural and rural-farm housing and transportation conditions regressions.

2. Satisfaction is a function of conditions, recent change, and the socioeconomic and demographic characteristics of the household.

   Specifically, it was expected that, with other socioeconomic and demographic variables controlled

   a. Households having better conditions are more likely to report higher levels of satisfaction than households having worse conditions.

   b. Households reporting a positive recent change are more likely to report higher levels of satisfaction than households reporting a negative recent change.

   c. Households having older respondents, with the exception of health satisfaction, are more likely to report higher levels of satisfaction than households having younger respondents. The opposite relationship is expected for health satisfaction.

   d. Households having respondents with higher levels of education are more likely to report higher levels of satisfaction than households having respondents with lower levels of education.

   e. Households having respondents who are married are more likely to report higher levels of satisfaction than households having respondents who are not married.

   f. Households having the most workers are more likely to report higher levels of satisfaction than households having the fewest workers.

   g. Households having the highest levels of total household income are more likely to report higher levels of satisfaction than households having the lowest levels of total household income.

The results of the satisfaction regressions indicated that:

2a. The hypothesized relationship for conditions was supported in the urban, rural, rural-nonfarm, and rural-farm health, housing, household equipment, transportation, and global conditions analyses, and the urban food satisfaction regressions.
2b. The hypothesized relationship for recent change was supported in the urban, rural, rural-nonfarm, and rural-farm health, household equipment, food, and global satisfaction analyses, and the urban, rural, and rural-nonfarm housing and transportation satisfaction regressions.

2c. The hypothesized relationship for age of the respondent was supported in the urban housing satisfaction regression.

2d. The hypothesized relationship for education of the respondent was supported in the urban health, household equipment, food, and global satisfaction regressions.

2e. The hypothesized relationship for marital status was not supported.

2f. The hypothesized relationship for number of workers was not supported.

2g. The hypothesized relationship for total household income was supported in the urban and rural-farm food satisfaction regressions.

3. In addition to the hypothesized direct effect that recent change and the socioeconomic and demographic variables have on satisfaction, it was hypothesized that these variables also will have an indirect effect on satisfaction through their influence on conditions. The results of the decomposition of effects indicated that there were nine significant indirect effects for recent change, seven for age of the respondent, eight for education of the respondent, one for marital status, three for number of workers, and eleven for total household income. Therefore, the hypothesized relationship for indirect effects was supported 39 times.

4. The effects of conditions, recent change, and the socioeconomic and demographic variables will be different for urban and rural households. The results of the conditions regressions indicated that the findings for urban and rural households were different 16 out of 27 times that an exogenous variable was significant in either an urban or rural regression or both. The results of the satisfaction regressions indicated that the findings for urban and rural households were different 10 out of 22 times that an exogenous variable was significant in either an urban or rural regression or both. And, the results of the decomposition analyses indicated that the findings for urban, and rural-nonfarm and rural-farm households (rural households were not included in the analyses as a separate group)
were different 22 out of 25 times that an exogenous variable was significant within at least one of the analyses for urban, rural-nonfarm, rural-farm households. Therefore, the hypothesized difference in relationships for urban and rural (or rural-nonfarm and rural-farm) households was supported 48 out of 74 times that at least one significant relationship for an exogenous variable occurred in an urban, rural (or rural-nonfarm and rural-farm) analysis. These findings indicate that, overall, the effects of conditions, recent change, and the socioeconomic and demographic variables are not consistently different for urban and rural households.

5. The effects of conditions, recent change, and the socioeconomic and demographic variables were hypothesized to be different for rural residents as a whole and rural-nonfarm and rural-farm households. The results of the conditions regressions indicated that the findings for rural, rural-nonfarm, and rural-farm households were different 13 out of 19 times that an exogenous variable was significant within at least one of the rural regressions. The results of the satisfaction regressions indicated that the findings for rural, rural-nonfarm, and rural-farm households were different 8 out of 17 times that an exogenous variable was significant within at least one of the rural regressions. The results of the decomposition analyses indicated that the findings for rural-nonfarm and rural-farm households (rural households were not included in the analyses as a separate group) were different 11 out of 14 times that an exogenous variable was significant within at least one of the rural regressions. Therefore, the hypothesized difference in relationships was supported 32 out of 50 times that at least one significant relationship for an exogenous variable occurred in a rural analysis. These results indicate that, overall, the effects of conditions, recent change, and the socioeconomic and demographic variables are not consistently different for rural residents as a whole and rural-nonfarm and rural-farm households.

**Major Findings**

The results of the analyses indicate that a recent change in a household’s situation is a fairly consistent predictor of the household’s objective well-being. Also, a recent change in a
household’s situation and their level of objective well-being are fairly consistent predictors of a household’s level of subjective well-being. Households who report that their situation has improved are likely to have the highest levels of objective and subjective well-being. Households who have the highest levels of objective well-being are likely to report the highest levels of subjective well-being. Nonetheless, the findings also indicate that recent change always has a stronger direct effect than indirect effect on satisfaction, and that the total effects of recent change are almost always stronger than the total effects of conditions on satisfaction. So, although, in general, it appears that the data fit the model, the strength of the relationship between recent change and satisfaction may also suggest that the ordering of the recent change and conditions variables in the model may be reversed, or that recent change and conditions influence each other and that it is this reciprocal relationship that affects satisfaction.

The findings for the socioeconomic and demographic variables vary, but in general, of the variables that were included in this study, age of the respondent, education of the respondent, and total household income were the most consistent predictors of a household’s objective well-being, and of a household’s subjective well-being through their influence on objective well-being. Notably, the majority of the effects of the household characteristics on subjective well-being were not direct, but indirect through mediating indicators of objective well-being.

As predicated, the relationship between education of the respondent and total household income and objective and subjective well-being was positive, indicating that higher levels of education and income lead to the highest levels of objective and subjective well-being. The findings for age of the respondent were not as straightforward. The direction of the relationship varied according to domain, the location of the residence, and whether or not the household was involved in farming. Relationships for the age of the respondent were found to be concave and convex curvilinear, and both negative and positive linear. In addition, the inflection points for the curvilinear relationships varied considerably. Overall, it appears that these three measure play a salient role in affecting a household’s level of well-being.
Conclusions

This study was founded in the Theory of Adjustment and Adaptation. This framework proposes that an event will lead to a change in a household’s objective well-being, and in turn to a change in the household’s subjective well-being, which are influenced by household constraints and household behaviors to adjust or adapt. In the case of this research, the event was the economic transformation of early 1990s Poland. A measure of reported recent change was included in this study as an indicator of the effects of the transformation at the level of the household, and socioeconomic and demographic variables were entered as measures of facilitating or inhibiting household constraints. The results of this study clearly suggest that there is a relationship between household characteristics, a reported recent change in a household’s situation, and objective and subjective well-being. The order in which the indicators of recent change and conditions should be entered into the model, however, remains unresolved.

Additionally, the results of this research indicate that the effects of household characteristics and recent change on subjective and objective well-being vary according to domain, and the effects of household characteristics and recent change on subjective and objective well-being vary for urban and rural residents, and further, for rural-nonfarm and rural-farm households.

Implications

In general, it is apparent from the number of significant relationships for the domain-specific and global indicators of recent change, that the recent change measures perform very well as predictors of objective and subjective well-being. The indicators of objective well-being also are consistent predictors of subjective well-being, although, the magnitude of the betas for recent change are almost always larger than those for the measures of objective well-being. It is possible that objective well-being plays less of a role in the prediction of subjective well-being than recent change for reasons similar to those proposed by Easterlin (1973) and Duncan (1975). Easterlin (1973) suggests that people do not assess their material well-being based on what they actually have, but rather on whether what they have is less or
more than what they ought to have based on social norms. Duncan (1975) proposes that satisfaction with standard of living is not just a matter of having more income, but rather more than someone else. Therefore, rural households may be comparing their conditions with those of their neighbors, not to urban households, and, because of similar circumstances, there is not as strong a relationship with subjective well-being as with the household's perception that its situation is improving.

The unexpected results for the relative strength of the relationships between recent change and subjective well-being, and objective well-being and subjective well-being bring to mind Festinger's (1963) concepts of cognitive dissonance and dissonance reduction. According to Festinger (1963), cognitive dissonance occurs when there is a disagreement between an individual's opinions of what ought to be done and actions that are actually taken, or in this scenario, there is a difference between the household's opinion of how its conditions ought to be and its actual situation. Festinger (1963) proposes that individuals and households initiate responses designed to reduce the amount of dissonance between an action/situation, and disagreement with that action/situation through justification or changing one's opinion of what ought to be. In essence, therefore, Polish rural households may have come to terms with their conditions through dissonance reduction, thus reducing the effects of objective well-being on subjective well-being.

Of the socioeconomic and demographic variables that were included in the analyses, age of the respondent, education of the respondent, and total household income also were frequent predictors of objective well-being, and of subjective well-being through their influence on objective well-being. The findings are a strong indicator that, for future research, these measures will be effective in assessing household well-being.

The results of this study also suggest the importance of using a measure of residency that goes beyond a binomial urban/rural variable when assessing household well-being. Future research could benefit from testing models using both a dichotomous location measure, and a typology that includes at a minimum urban, rural-nonfarm, and rural-farm categories, to ascertain which measure is the most informative.
Specifically, in future testing of the model, the results of two methods could be compared to ascertain which method fits the data better. First, in keeping with the original research, ordinary least squares regression could be performed, but the ordering of the variables could be modified. Rather than entering reported recent change as a predictor of conditions (Figure 3a), conditions could be posited as the predictor of reported recent change (Figure 3b). In other words, having or achieving high-quality objective well-being is the cause of reporting that the situation has improved rather than the reverse, as was tested in the present study. It is likely that controlling for levels of objective well-being might provide results that indicate that rural households who report a positive recent change, in spite of their relatively worse conditions in comparison to urban households, might report higher levels of subjective well-being.

In a second study, a nonrecursive structural equation model (Figure 3c) could be used to enter recent change and conditions into the analysis simultaneously to test the relationship between these measures and to ascertain the strength of the relationship between these indicator and satisfaction. Perhaps recent change and conditions covary, and that it is this relationship that affects satisfaction, or subjective well-being.

Along with testing the model, for future research, emphasis could be directed at the separate domains. For this study, in-depth analysis of each domain was not possible because variable selection had to be broad enough to fit all of the domains. Separate analyses could allow for the addition of more domain-specific variables. For example, within the food domain, measures of household food production and indicators of protein and dairy consumption could be included.
Figure 3. Original and Potential Models

(a) RECENT CHANGE → OBJECTIVE WELL-BEING → SUBJECTIVE WELL-BEING

(b) OBJECTIVE WELL-BEING → RECENT CHANGE → SUBJECTIVE WELL-BEING

(c) RECENT CHANGE
   ↓
OBJECTIVE WELL-BEING → SUBJECTIVE WELL-BEING
APPENDIX A.
CORRELATION MATRIX
Table A1. Correlation matrix

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* Indicates that the correlation is significant at the 0.05 level (2-tailed)
Table A1. (continued)

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APPENDIX B.
REGRESSION ANALYSES
Table B1. Urban regressions of average health conditions and satisfaction with health situation on recent change in health situation and socioeconomic and demographic characteristics of the household.

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* Significant, p<0.05
+ Less than 0.000
Table B2. Rural regressions of average health conditions and satisfaction with health situation on recent change in health situation and socioeconomic and demographic characteristics of the household.

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* Significant, p<0.05
+ Less than 0.000
Table B3. Rural-nonfarm regressions of average health conditions and satisfaction with health situation on recent change in health situation and socioeconomic and demographic characteristics of the household.

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* Significant, p<0.05  
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R²: 0.483
Adj. R²: 0.440
D. F.: 7/83

F-ratio: 11.095*

• Significant, p<0.05
+ Less than 0.000
Table B5. Urban regressions of housing conditions and satisfaction with housing situation on recent change in housing situation and socioeconomic and demographic characteristics of the household.

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<th>Model III Satisfaction</th>
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<td>-0.632*</td>
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<td>-0.100</td>
</tr>
<tr>
<td>Number of workers</td>
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</tr>
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<td>0.082</td>
</tr>
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* Significant, p<0.05
+ Less than 0.000
Table B6. Rural regressions of housing conditions and satisfaction with housing situation on recent change in housing situation and socioeconomic and demographic characteristics of the household.

<table>
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<th>Beta</th>
<th>B</th>
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<th>Beta</th>
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<td>0.166*</td>
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<td>0.000*</td>
<td>0.000</td>
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<td>0.157</td>
<td>0.039</td>
<td>0.124</td>
<td>0.023</td>
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<td>1.089</td>
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* Significant, \(p<0.05\)
† Less than 0.000
Table B7. Rural-nonfarm regressions of housing conditions and satisfaction with housing situation on recent change in housing situation and socioeconomic and demographic characteristics of the household.

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<th>Model II Satisfaction</th>
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<th>Model III Satisfaction</th>
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<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
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<td>-</td>
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</tr>
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<td>0.643</td>
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<td>0.367*</td>
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<tr>
<td>Age of respondent</td>
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<td>1.930*</td>
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<td>0.053</td>
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<td>0.001</td>
<td>-1.953*</td>
<td>-0.000*</td>
<td>0.000</td>
<td>-1.018</td>
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<tr>
<td>Education of respondent</td>
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<td>0.252</td>
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<td>0.057</td>
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<td>-0.281*</td>
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<td>Number of workers</td>
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<td>0.291</td>
<td>-0.024</td>
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<td>0.157</td>
<td>0.439</td>
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<td>7/77</td>
<td>8/76</td>
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<td>3.240*</td>
<td>9.231*</td>
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* Significant, $p<0.05$
+ Less than 0.000
Table B8. Rural-farm regressions of housing conditions and satisfaction with housing situation on recent change in housing situation and socioeconomic and demographic characteristics of the household.

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<th>Model I Conditions</th>
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<th>Model III Satisfaction</th>
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<td>0.001</td>
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<td>0.189</td>
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<td>Marital status</td>
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<td>0.056</td>
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<td>Number of workers</td>
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<td>-0.157</td>
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* Significant, p<0.05
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Table B9. Urban regressions of household equipment conditions and satisfaction with household equipment situation on recent change in household equipment situation and socioeconomic and demographic characteristics of the household.

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<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
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* Significant, p<0.05
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Table B10. Rural regressions of household equipment conditions and satisfaction with household equipment situation on recent change in household equipment situation and socioeconomic and demographic characteristics of the household.

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<th>Model III Satisfaction</th>
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* Significant, p<0.05  
+ Less than 0.000
Table B11. Rural-nonfarm regressions of household equipment conditions and satisfaction with household equipment situation on recent change in household equipment situation and socioeconomic and demographic characteristics of the household.

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<th>Model III Satisfaction</th>
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<td>Beta</td>
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* Significant, p<0.05
+ Less than 0.000
Table B12. Rural-farm regressions of household equipment conditions and satisfaction with household equipment situation on recent change in household equipment situation and socioeconomic and demographic characteristics of the household.

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<th>Model III Satisfaction</th>
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</tr>
<tr>
<td>Conditions</td>
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<td>0.315*</td>
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<tr>
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<td>7/83</td>
<td>8/82</td>
</tr>
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<td>F-ratio</td>
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<td>6.426*</td>
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* Significant, $p<0.05$
+ Less than 0.000
Table B13. Urban regressions of food conditions and satisfaction with food situation on recent change in food situation and socioeconomic and demographic characteristics of the household.

<table>
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<tr>
<th>Variable</th>
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<td>0.665</td>
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<td>-80.043</td>
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<td>-0.754*</td>
<td>-0.036</td>
<td>0.015</td>
<td>-0.591*</td>
</tr>
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<td>Age squared</td>
<td>0.797</td>
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<td>0.807*</td>
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<td>80.231</td>
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<td>Number of workers</td>
<td>68.940</td>
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<td>-0.103</td>
<td>0.052</td>
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<td>Total household income</td>
<td>425.913</td>
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<td>0.184*</td>
<td>0.283</td>
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<td>0.214*</td>
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<td>7220.069*</td>
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<td>8/407</td>
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<td>F-ratio</td>
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* Significant, p<0.05
+1.ess than 0.000
Table B14. Rural regressions of food conditions and satisfaction with food situation on recent change in food situation and socioeconomic and demographic characteristics of the household.

<table>
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<tr>
<th>Variable</th>
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<th>Model II Satisfaction</th>
<th>Model III Satisfaction</th>
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<td>Beta</td>
</tr>
<tr>
<td>Conditions</td>
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<td>-</td>
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</tr>
<tr>
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<td>124.786</td>
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<tr>
<td>Age of respondent</td>
<td>-84.389</td>
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<td>-0.814</td>
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<tr>
<td>Age squared</td>
<td>0.906</td>
<td>0.462</td>
<td>0.980*</td>
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<td>Constant</td>
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<td>Adj. R²</td>
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<td>D. F.</td>
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<td>7/168</td>
<td>8/167</td>
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<tr>
<td>F-ratio</td>
<td>2.321*</td>
<td>9.526*</td>
<td>8.453*</td>
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</table>

* Significant, p<0.05
+ Less than 0.000
Table B15. Rural-nonfarm regressions of food conditions and satisfaction with food situation on recent change in food situation and socioeconomic and demographic characteristics of the household.

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<td>Age of respondent</td>
<td>-220.875</td>
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<td>Age squared</td>
<td>1.911</td>
<td>0.663</td>
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<td>Number of workers</td>
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<td>118.220</td>
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* Significant, p<0.05
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Table B16. Rural-farm regressions of food conditions and satisfaction with food situation on recent change in food situation and socioeconomic and demographic characteristics of the household.

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<td>Std. Error</td>
<td>Beta</td>
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<td>0.713</td>
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<td>0.101</td>
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<td>4.682*</td>
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* Significant, p<0.05
+ Less than 0.000
Table B17. Urban regressions of transportation conditions and satisfaction with transportation situation on recent change in transportation situation and socioeconomic and demographic characteristics of the household.

<table>
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<td>0.210*</td>
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<td>0.073</td>
<td>0.227*</td>
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<td>0.145</td>
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<tr>
<td>Age squared</td>
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<td>-0.000*</td>
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<td>-0.353</td>
<td>0.000</td>
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* Significant, p<0.05  
+ Less than 0.000
Table B18. Rural regressions of transportation conditions and satisfaction with transportation situation on recent change in transportation situation and socioeconomic and demographic characteristics of the household.

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<th>Model III Satisfaction</th>
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* Significant, p<0.05
+ Less than 0.000
Table B19. Rural-nonfarm regressions of transportation conditions and satisfaction with transportation situation on recent change in transportation situation and socioeconomic and demographic characteristics of the household.

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<th>Model III Satisfaction</th>
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<td>Std. Error</td>
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<td>-</td>
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<td>0.433*</td>
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<td>0.063</td>
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<td>0.927</td>
<td>0.148</td>
<td>0.605*</td>
<td>0.734</td>
<td>0.140</td>
<td>0.479*</td>
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<td>0.044</td>
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<tr>
<td>Age squared</td>
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<td>-0.072</td>
<td>-0.000*</td>
<td>0.000</td>
<td>-0.422</td>
<td>-0.000*</td>
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<td>6.913*</td>
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* Significant, \( p<0.05 \)
† Less than 0.000
Table B20. Rural-farm regressions of transportation conditions and satisfaction with transportation situation on recent change in transportation situation and socioeconomic and demographic characteristics of the household.

<table>
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<th>Variable</th>
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<th>Beta</th>
<th>Model III Satisfaction</th>
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<th>Beta</th>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>0.153</td>
<td>0.074</td>
<td>0.182*</td>
<td>0.494</td>
<td>0.183</td>
<td>0.268*</td>
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<td>-0.006</td>
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<td>-0.070</td>
<td>0.027</td>
<td>0.049</td>
<td>0.322</td>
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<td>0.000*</td>
<td>0.001</td>
<td>0.217</td>
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<td>0.019</td>
<td>0.105</td>
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<td>0.045</td>
<td>-0.005</td>
<td>0.042</td>
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<td>-0.020</td>
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<td>0.258</td>
<td>0.128</td>
<td>0.351</td>
<td>0.226</td>
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<td>Number of workers</td>
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<td>0.127</td>
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<td>0.080</td>
<td>0.502*</td>
<td>0.510</td>
<td>0.198</td>
<td>0.267*</td>
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<tr>
<td>$R^2$</td>
<td>0.392</td>
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<td>1.747</td>
<td>0.409</td>
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<td>0.154</td>
<td>0.552</td>
<td>0.351</td>
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<tr>
<td>D. F.</td>
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<td>7/83</td>
<td>8/82</td>
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</tr>
<tr>
<td>F-ratio</td>
<td>7.654*</td>
<td>3.344*</td>
<td>7.082*</td>
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* Significant, p<0.05
+ Less than 0.000
Table B21. Urban regressions of global conditions and satisfaction with global situation on recent change in global situation and socioeconomic and demographic characteristics of the household.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model I Conditions</th>
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<th>Std. Error</th>
<th>Beta</th>
<th>Model II Satisfaction</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>Model III Satisfaction</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
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<tbody>
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<td>Conditions</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.705</td>
<td>0.094</td>
<td>0.326*</td>
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<td>0.136</td>
<td>0.033</td>
<td>0.190*</td>
<td>0.925</td>
<td>0.067</td>
<td>0.596*</td>
<td>0.829</td>
<td>0.064</td>
<td>0.534*</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>0.040</td>
<td>0.406</td>
<td>0.128</td>
<td>0.080</td>
<td>0.396</td>
<td>0.085</td>
<td>0.076</td>
<td>0.264</td>
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<td></td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.000*</td>
<td>0.000</td>
<td>-0.392</td>
<td>-0.000*</td>
<td>0.001</td>
<td>-0.189</td>
<td>-0.000*</td>
<td>0.001</td>
<td>-0.061</td>
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<td>Education of respondent</td>
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<td>0.062</td>
<td>0.214*</td>
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<td>0.110*</td>
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<td>0.456</td>
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<td>-0.499</td>
<td>0.250</td>
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<td>Total household income</td>
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<td>0.209*</td>
<td>0.719</td>
<td>0.369</td>
<td>0.102*</td>
<td>0.240</td>
<td>0.352</td>
<td>0.034</td>
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</tr>
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<td></td>
<td></td>
<td>7/408</td>
<td>8/407</td>
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<td></td>
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* Significant, p<0.05
+ Less than 0.000
Table B22. Rural regressions of global conditions and satisfaction with global situation on recent change in global situation and socioeconomic and demographic characteristics of the household.

<table>
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<tr>
<th>Variable</th>
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<th>Model II Satisfaction</th>
<th></th>
<th>Model III Satisfaction</th>
<th></th>
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<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
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<td>-</td>
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<td>-</td>
<td>-</td>
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</tr>
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<td>-0.000*</td>
<td>0.001</td>
<td>-0.197</td>
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* Significant, p<0.05
+ Less than 0.000
Table B23. Rural-nonfarm regressions of global conditions and satisfaction with global situation on recent change in global situation and socioeconomic and demographic characteristics of the household.

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<th>Model II Satisfaction</th>
<th>Model III Satisfaction</th>
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<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>Conditions</td>
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* Significant, p<0.05
+ Less than 0.000
Table B24. Rural-farm regressions of global conditions and satisfaction with global situation on recent change in global situation and socioeconomic and demographic characteristics of the household.

<table>
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<th>Model III Satisfaction</th>
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<td>Beta</td>
</tr>
<tr>
<td>Conditions</td>
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<td>-</td>
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</tr>
<tr>
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<tr>
<td>Number of workers</td>
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<tr>
<td>Total household income</td>
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<td>F-ratio</td>
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* Significant, p<0.05
† Less than 0.000
APPENDIX C.
DECOMPOSITION OF EFFECTS
Table C1. The total, direct, and indirect effects of conditions, recent change, and the socioeconomic and demographic variables on health satisfaction.

<table>
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<th>Location of Residence</th>
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<th>Total Effect</th>
<th>Indirect Effect</th>
<th>Direct Effect</th>
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<td>0.138</td>
<td>0.373</td>
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* Significant indirect effect, p<0.05
Table C2. The total, direct, and indirect effects of conditions, recent change, and the socioeconomic and demographic variables on housing satisfaction.

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<th>Direct Effect</th>
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<td>0.124*</td>
<td>0.039</td>
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<td>0.110</td>
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<td>0.066</td>
<td>0.095</td>
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<td>-0.182</td>
<td>-1.422</td>
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<td>0.030</td>
<td>-0.067</td>
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* Significant indirect effect, \( p<0.05 \)
Table C3. The total, direct, and indirect effects of conditions, recent change, and the socioeconomic and demographic variables on household equipment satisfaction.

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<th>Total Effect</th>
<th>Indirect Effect</th>
<th>Direct Effect</th>
</tr>
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<td>0.261</td>
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<td></td>
<td>Recent change</td>
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<tr>
<td></td>
<td>Age of respondent</td>
<td>0.052</td>
<td>0.085</td>
<td>-0.033</td>
</tr>
<tr>
<td></td>
<td>Age squared</td>
<td>0.144</td>
<td>-0.118</td>
<td>0.262</td>
</tr>
<tr>
<td></td>
<td>Education of respondent</td>
<td>0.214</td>
<td>0.047*</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td>Marital status</td>
<td>0.029</td>
<td>0.026</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>Number of workers</td>
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<td>0.032*</td>
<td>-0.145</td>
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<tr>
<td></td>
<td>Total household income</td>
<td>0.152</td>
<td>0.063*</td>
<td>0.089</td>
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</table>

| **Rural-Nonfarm**     | Conditions          | 0.435        | 0.435          |              |
|                       | Recent change       | 0.447        | 0.067          | 0.380        |
|                       | Age of respondent   | -0.469       | 0.500          | -0.969       |
|                       | Age squared         | 0.315        | -0.710         | 1.025        |
|                       | Education of respondent | -0.066 | -0.028         | -0.038       |
|                       | Marital status      | -0.099       | -0.029         | -0.070       |
|                       | Number of workers   | -0.192       | 0.084          | -0.276       |
|                       | Total household income | 0.200    | 0.158*         | 0.042        |

| **Rural-Farm**        | Conditions          | 0.276        | 0.276          |              |
|                       | Recent change       | 0.463        | 0.057          | 0.406        |
|                       | Age of respondent   | 0.625        | 0.070          | 0.555        |
|                       | Age squared         | -0.443       | -0.081         | -0.362       |
|                       | Education of respondent | 0.243   | 0.087          | 0.156        |
|                       | Marital status      | 0.006        | 0.019          | -0.013       |
|                       | Number of workers   | -0.123       | -0.009         | -0.114       |
|                       | Total household income | 0.207    | 0.087*         | 0.120        |

* Significant indirect effect, p<0.05
Table C4. The total, direct, and indirect effects of conditions, recent change, and the socioeconomic and demographic variables on food satisfaction.

<table>
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<th>Exogenous Variables</th>
<th>Total Effect</th>
<th>Indirect Effect</th>
<th>Direct Effect</th>
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</tr>
<tr>
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<td>Conditions</td>
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<td>0.093</td>
<td></td>
</tr>
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<td></td>
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<td>0.006</td>
<td>0.487</td>
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<td>Age squared</td>
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<td>0.016*</td>
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</tr>
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<td>Marital status</td>
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<td>-0.002</td>
<td>0.030</td>
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<td>Number of workers</td>
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<td>0.003</td>
<td>-0.108</td>
</tr>
<tr>
<td></td>
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<td>0.017*</td>
<td>0.197</td>
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<td>0.077</td>
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<td>-0.080</td>
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* Significant indirect effect, \( p < 0.05 \)
Table C5. The total, direct, and indirect effects of conditions, recent change, and the socioeconomic and demographic variables on transportation satisfaction.

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* Significant indirect effect, p<0.05
Table C6. The total, direct, and indirect effects of conditions, recent change, and the socioeconomic and demographic variables on global satisfaction.

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<th>Indirect Effect</th>
<th>Direct Effect</th>
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<td>0.094</td>
</tr>
<tr>
<td></td>
<td>Age squared</td>
<td>-0.511</td>
<td>-0.447</td>
<td>-0.064</td>
</tr>
<tr>
<td></td>
<td>Education of respondent</td>
<td>0.062</td>
<td>0.064</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>Marital status</td>
<td>-0.114</td>
<td>-0.047</td>
<td>-0.067</td>
</tr>
<tr>
<td></td>
<td>Number of workers</td>
<td>-0.132</td>
<td>0.057</td>
<td>-0.189</td>
</tr>
<tr>
<td></td>
<td>Total household income</td>
<td>0.032</td>
<td>0.129*</td>
<td>-0.097</td>
</tr>
<tr>
<td>Rural-Farm</td>
<td>Conditions</td>
<td>0.373</td>
<td>0.373</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recent change</td>
<td>0.536</td>
<td>0.072</td>
<td>0.464</td>
</tr>
<tr>
<td></td>
<td>Age of respondent</td>
<td>-0.107</td>
<td>-0.070</td>
<td>-0.037</td>
</tr>
<tr>
<td></td>
<td>Age squared</td>
<td>0.264</td>
<td>0.133</td>
<td>0.131</td>
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<td></td>
<td>Education of respondent</td>
<td>0.183</td>
<td>0.103*</td>
<td>0.080</td>
</tr>
<tr>
<td></td>
<td>Marital status</td>
<td>0.008</td>
<td>0.044</td>
<td>-0.036</td>
</tr>
<tr>
<td></td>
<td>Number of workers</td>
<td>-0.119</td>
<td>-0.054</td>
<td>-0.065</td>
</tr>
<tr>
<td></td>
<td>Total household income</td>
<td>0.222</td>
<td>0.186*</td>
<td>0.036</td>
</tr>
</tbody>
</table>

* Significant indirect effect, p<0.05
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