

**Final Report:
Is it Just Food? Geographic Differences in the Cost of Living**

Food Assistance and Nutrition Research Small Grant.
Southern Rural Development Center, Economic Research Service, USDA.

Julie N. Zimmerman
Associate Professor
Department of Community and Leadership Development, University of Kentucky

Sunny (Seonok) Ham
Associate Professor
Department of Nutrition and Food Science, University of Kentucky
and
Sarah Michelle Frank
Ph.D. Student
Department of Sociology, University of Kentucky

This research was made possible through support provided by USDA Economic Research Service through Mississippi State University under the terms of Agreement No. 43-3AEM-5-80100 and through a Research Activity Award from the College of Agriculture at the University of Kentucky.

Contact Information:

Julie N. Zimmerman
Associate Professor
Department of Community and Leadership Development
500 Garrigus
University of Kentucky
Lexington, KY 40546-0215
859-257-7583
859-257-4354 fax
jzimm@uky.edu

Abstract

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Julie N. Zimmerman, Sunny (Seonok) Ham, and Sarah Michelle Frank
University of Kentucky

Two key features of food assistance programs' ability to meet local food needs are access and the cost of food. The familiar assumption is that it costs less to live in a rural area. However, research indicates higher food prices in rural areas. Absent a national database containing rural prices, experiments to adjust the poverty threshold rely on housing costs to account for geographic differences in the cost of living. The resulting measures would lower poverty rates for rural areas, and for the South. If housing cost differences do not accurately reflect all geographic differences in costs of living, adjustments to the current poverty threshold would disproportionately affect rural areas and the families living there, especially in the South.

This research provides results from Kentucky examining the question: If a person made the same purchases in an urban and a rural area, would they encounter the same prices? Replicating the same methods used in a national study, local prices were collected from eight rural counties and compared with urban counties participating in the national project. As price data alone do not capture externalities such as distance and availability, contextual data on these factors were also collected.

The results did not indicate a consistent pattern of lower prices across all rural places in the study. Instead, this research found that given the diversity of rural places, while some items had higher prices in urban areas, other items were lower priced. Likewise, while some of the rural counties were overall lower priced, others were higher than the urban areas. In addition to the price comparisons, for the eight rural counties, there were additional costs not incurred in the urban areas. Had these been able to be included, it would have raised the prices associated with living in the rural counties.

While the popular perception is that it costs less to live in a rural area, a much more complex picture emerged. Instead, the diversity of rural areas means that there is no simple answer to the generalized question of whether it costs less to live in a rural area. While high-priced urban places such as San Francisco, Los Angeles, or New York City are not representative of all urban areas, likewise, neither are all rural areas the same. Consequently, while it may cost less to live in some rural areas, this was not generalizable to all of the rural areas in this study.

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Introduction

Two key features of food security and the ability of food assistance programs to meet local food needs are access (c.f. Bitto *et al.*, 2003) and the cost of food (c.f. Kaufman *et al.*, 1997; Morris *et al.*, 1992). For instance, can a rural resident purchase the same quantity of food as an urban resident with the same amount of money? In relation to food assistance, the question becomes; can a rural recipient purchase the same amount of food with the same amount of benefits as an urban recipient?

There is a commonly held assumption that it costs less to live in a rural area. The implications of the assumption can be seen in the discussion and research on adjusting the current poverty thresholds over the past decade (Citro and Michael, 1995; GAO 1995; 1997; Jolliffe, 2003; 2004; Nord and Cook, 1995; Ruggles, 1990; Short, 2001; Short *et al.*, 2002; Short and Garner, 2002a). One of the issues raised is how to account for geographic differences in the cost of living.² The concern is that in areas with higher costs of living, the current poverty measure understates actual need while in areas with lower costs of living, need is overstated. Consequently, the argument is that poverty standards should be downwardly adjusted for areas with lower costs and upwardly adjusted for those with higher costs.

Experiments to adjust poverty thresholds have sought to modify the standard for a variety of factors, one of which is the geographic differences in the cost of living. Because of a lack of national data, these experiments have relied on housing to estimate differences in all costs. However, if housing costs do not reflect all costs, adjustments to the current poverty threshold would be inaccurate. For instance, research had indicated higher food prices in rural areas (c.f. Kaufman *et al.*, 1997), particularly persistent poverty areas (Morris *et al.*, 1992). This research examines results from Kentucky examining the question: If the a person made the same

¹ This research was made possible through support provided by USDA Economic Research Service through Mississippi State University under the terms of Agreement No. 43-3AEM-5-80100 and through a Research Activity Award from the College of Agriculture at the University of Kentucky. The authors wish to express their gratitude to ACCRA for permission to replicate their methodology and especially to Erol Yildirim and Ed Sturgeon for their assistance throughout the project.

² Others issues were also raised such as the inclusion of medical expenses (c.f. Short and Garner, 2002b). To see a reprint of the recommendations, see Appendix 1 in GAO (1997).

purchases in an urban and a rural area, would they encounter the same prices? Since price data alone do not capture externalities such as distance and availability, contextual data on these factors are also examined.

Estimating Geographic Differences in the Cost of Living

There are several ways in which geographic differences in the local cost of living have been assessed. One approach that has been used in relation to low income families is to develop a hypothetical budget for a specific family type(s) and price its component categories (Boushey *et al.*, 2001; Pearce *et al.*, 2001; Renwick and Bergman, 1993, Zimmerman *et al.*, 2000; Zimmerman and Garkovich, 1998a; 1998b; 2002). In this approach two ingredients are key. First, a variety of assumptions are made regarding consumption patterns and income allocation for the hypothetical family. These assumptions can be very detailed. For example, in constructing the housing portion of their Basic Needs Budget, Renwick and Bergman write “Generally, in the United States, the children in a two-parent family are expected to sleep in a room separate from their parents, presumably to provide privacy for sexual relations between the parents.” They go on to ask “Does a single parent also need this privacy?” (1993:6). Another issue has to do with data collection. Most often, these studies rely on national or statewide data in creating budgets for counties within the state. Because of the availability of HUD data on Fair Market Rents, it is not uncommon for housing costs to be the only category to vary from place to place (c.f. Boushey *et al.*, 2001; Pearce *et al.*, 2001).

A different approach to examining geographic differences in local costs of living has been to compare expenditures of rural and urban households using data such as the Consumer Expenditure Survey (c.f. Banta, 1989; Jekanowski and Binkley, 2000; Rogers, 1988). These studies have long shown that rural household spending and expenditure patterns differ from those in urban settings. For example, results from the Consumer Expenditure Study (Bureau of Labor Statistics, 2003) indicate that rural households, where incomes are lower, spend a higher proportion of their income on utilities, food at home, transportation, and healthcare. By contrast, urban households, where incomes are also higher, spend larger shares on shelter, apparel and service, and cash contributions. Some of these differences may be in part due to different prices, but they may also reflect income level differences as expenditures tend to expand to fill income

available. Indeed, one Gallup poll indicated that the higher one's income, the higher the minimum income the respondent thought was needed for a family "to get along" (O'Hare, 1990).

Different expenditure patterns can also result from different household decision-making regarding resource allocation, rather than local price differences. In other words, lower household expenditures may be due to economizing practices, not because the prices are lower. For example, Leibtag and Kaufman found that low-income shoppers economize on food purchases "by purchasing random-weight products on sale, purchasing a greater proportion of private-label (fixed-weight) products, and purchasing less expensive meats, fruits, and vegetables" (2003:7). This leaves open the question, if the cost to a household is lower due to household behavior such as economizing and not due to lower prices, then is the cost of living in a given place really lower?

A primary challenge faced by efforts to estimate geographic differences in the cost of living is that there is no national database on price differences that includes rural areas. For instance, the Consumer Price Index (CPI) which is used in making cost of living adjustments and inflation indicators, is based only on metropolitan price data. Absent a national price database, the National Academy of Science (NAS) argued for using housing cost differences in the experimental poverty measures stating that its inclusion would be one step towards accounting for geographical differences in the cost of living (Citro and Michael, 1995; Nelson, 2004).³ While initial efforts relied on data from the Census, they produced spurious results for the Northeast. Subsequent experiments relied on Fair Market Rent data from the U.S. Department of Housing and Urban Development (HUD) (c.f. Nelson, 2004; Short, 2001; Short and Garner, 2002b).

These experiments indicate that the resulting adjusted poverty thresholds would bring important changes to the rates and distribution of poverty across the country, lowering them particularly for rural areas and the South (c.f. Nelson, 2004). For example, Nord and Cook used the NAS data and methodology⁴ to examine differences for rural and urban areas (1995). They found that the resulting poverty threshold for rural areas would be three percentage points lower

³ Earlier discussions on adjusting poverty thresholds for geographic differences in the cost of living concluded that while differences may exist, the lack of data and conceptual challenges such as spatial differences in consumption patterns, defining boundaries, and other issues precluded the ability to accurately include such differences in poverty measures (U.S. Department of Health, Education, and Welfare, 1976).

⁴ The NAS methodology included other adjustments such as family size and composition, but relied on housing to reflect geographic differences in costs of living (Citro and Michael, 1995).

and for urban areas would be one percentage point higher (Nord and Cook, 1995). They also found that the emergent rural/urban differences in the resulting poverty rates were “almost entirely” a result of adjustments made for the cost of housing.

Jolliffe (2004; 2006) builds on this extending the experimental price index under consideration by the Bureau of Labor Statistics⁵ and used Fair Market Rents (FMR) data from the U.S. Department of Housing and Urban Development (HUD). Using these data and methods, Jolliffe found that in contrast to the current poverty thresholds, poverty rates in metro areas would be “greater than nonmetro poverty in terms of incidence, depth and severity” (2004:2).⁶

Another approach to estimating local costs of living relies on private sector cost of living measures such as the former American Chamber of Commerce Research Association (ACCRA) or other sources. As the data focus predominantly on urban areas, the approach use relies on the existing data from the urban areas in order to calculate statistical estimates for areas not included (Cebula, 1989; Cebula, Alexander, and Koch, 1992; McMahon, 1991; McMahon and Melton, 1978; Walden, 1997).⁷

Kurre (2003) and Walden (1998) developed methodologies to specifically extend indices from sampled urban areas to non-sampled rural areas within a state. Kurre (2003) used data on 303 urban areas included in the ACCRA COLI to estimate cost of living differences for counties across Pennsylvania. Walden (1998) used a slightly different methodology and included only urban areas within the state to estimate geographic difference in cost of living for all counties in North Carolina. Because of issues concerning the availability of data, both methodologies rely heavily on housing in estimating geographic differences in the cost of living.⁸

Relying on housing to estimate difference in the cost of living can be problematic in that it makes two key assumptions. First, there is the assumption that housing cost differences accurately reflect differences in housing. Second, is the assumption that housing costs differences reflect differences in all costs (c.f. Nord, 2000).

⁵ The experimental work conducted by the BLS is for metropolitan areas only and does not include nonmetropolitan areas.

⁶ See also, Ulimwengu and Kraybill (2004).

⁷ Earlier research relied on the now discontinued budget data from the Bureau of Labor Statistics (c.f. McMahon and Melton, 1978).

⁸ The GAO conducted an expert review of possible methodologies for determining geographic differences (1995). No consensus regarding a potential methodology was found.

Across places and even within localities, housing is highly variable and as a result, similar costs do not necessarily ensure similar housing. For instance, housing costs alone do not account for the quality of housing (Nord, 2000). While housing in one place may cost less, it may also be of lower quality. Older homes and apartments typically contain less insulation, older windows, and older appliances such as the furnace. Consequently, while the cost of shelter may be lower, the unit would also have higher heating or cooling costs. On the other hand, newer homes and apartment complexes may have higher costs in part due to amenities such as covered parking spaces, private access garage, a community room, workout space or even a pool. Moreover, homeowners and renters incur very different kinds of costs (Citro and Michael, 1995) and the variability of local housing markets further means that the higher the overall incomes in a place, the more likely there will be higher priced housing (Ghelfi, 1988).

Rural homeowners also face distinct housing differences.⁹ First, not only are there higher rates of home ownership, in rural areas residents are also more likely to have paid off mortgages (Ghelfi, 1988). This can affect apparent aggregate differences in costs in national data sources. For rural homeowners, especially those with low incomes, there is the additional issue of being more likely to own mobile or manufactured homes. These homes are not considered real estate and so do not qualify for mortgages. Consequently, they are typically financed with personal property loans at much higher interest rates with shorter terms (HAC, 2002:26). And, in contrast to real estate, this type of housing depreciates in value. Over one-third of rural residents who live in mobile homes are in units that are more than 20 years old (HAC, 2002:26).

Another area of concern lies in relying on only a single factor when estimating geographic differences in the cost of living. Solely relying on housing costs in order to estimate geographic differences in all costs assumes that all costs vary in direct relationship to housing. However, should housing costs vary inversely with non-housing costs, the differences could either negate the housing costs differences, or render them much smaller than would be accounted for when using only housing cost differences (Nord, 2000:105; Ghelfi, 1988). For example, using food security and hunger measures, Nord found some support for using housing as an adjustor for poverty thresholds, but he also cautioned that “the NAS adjustors systematically understate the

⁹ While issues of plumbing and other facilities have improved, an analysis of 2000 Census found that “while rural homes comprise a little over one-fifth of the nation’s occupied housing units, they account for over 30 percent of units without adequate plumbing” (HAC, 2002:26).

cost of living in nonmetro areas and in small metro areas, and overstate the cost of living in large metro areas” (2000:123).

Sector-specific price research suggests that all costs in an area may not vary in direct relationship to housing. Instead, there is evidence that beyond housing, rural residents may face higher prices for similar goods and services. This has already been found to be the case in relation to food. For instance, Ambrose found that “retail prices of groceries in rural areas are higher than the prices of inner city or suburban groceries” by an average of 4.8 percent (1979:100).¹⁰ He further found that “prices at small independent groceries were greater than the prices of any other type of store in either inner city or suburban locations” (1979:100). Similar results were found by Cude and Walker with average costs ranging from 3 percent to 28 percent higher in rural stores and rural consumers finding fewer generic and store brands (1983:23).¹¹

Morris *et al.* (1992) also found differences in both food prices and access. Comparing lowest priced food items regardless of brand or size, they found that “In persistently poor rural America, the cost was significantly higher than the USDA’s defined cost” (1992:55). They further found that “rural poor households have fewer store choices and travel farther to supermarkets than do their urban counterparts... Persistently poor rural America has even fewer supermarkets per county and greater distances to travel” (1992:55).

Kaufman *et al.* (1997) similarly found that those living in rural areas face higher food prices. Part of this is due to store type and part is due to location. Small stores charged an average of 10 percent more than the supermarkets largely due to difference in economies of scale, ability to offer larger quantity options of the same item, and the ability to offer generic or store brands. Location further affected food prices across the same type of stores with higher business costs and lower competition resulting in higher prices.¹²

Research comparing rural/urban prices for nonfood goods and services is more limited. One study found that rural households may pay higher mortgage rates. In 2002, rural mortgages were 6 points higher than those in urban areas (ERS, 2003). Other research found that of those

¹⁰ The extent of the higher prices varied by food stuff category with the largest differences in meat and dairy products (Ambrose, 1979:101).

¹¹ Mantovani and Daft (1996) also found that prices in rural areas averaged 3.9 percent higher than in urban areas and 2.3 percent higher than in mixed or suburban areas (Cited in Kaufman, MacDonald, Lutz and Smallwood, 1997).

¹² See also Kaufman and Lutz (1997) and Kaufman (1998).

homeowners who had a mortgage, of those in nonmetro areas, nearly twice had mortgages that were at interest rates of 10 percent or more compared to metro areas (HAC, 2002:32).

Rural residents may also face differences in energy prices. Results from the Residential Energy Consumption Survey suggest that rural households face higher prices per BTU for their energy needs than urban households (U.S. Department of Energy, 2001a). Prices for electricity can also be higher due to the higher operating costs of rural electric cooperatives compared with investor owned utilities (Newman, 2002).

Health care related costs also display spatial differences. When comparing health insurance, rural residents paid higher premiums, had less coverage of paid expenses, and higher deductibles, among other differences (Gabel *et al.*, 2006). Moreover, since more rural employers are small or are low wage employers, they are less likely to offer health insurance (Larson and Hill, 2005; Kaiser Commission *et al.*, 2003; Ormond *et al.*, 2000). As a result, access to employer-provided health insurance is less available in rural areas, often leaving residents to face higher rates in the individual and small group market (NRHA, 2004) or to go without. Even when prices are the same in rural and urban areas, since incomes are lower in rural areas, rural residents can pay a higher proportion of their income for the same goods or services. The National Rural Health Association found this to be the case for health insurance (NRHA, 2004).

Prices alone do not capture externalities faced by rural residents such as availability. In other words, the price of a particular item may be irrelevant if the good or service is not available locally. For example, a rural case study in Kentucky found that regardless of the price, after hours childcare was limited to a single provider in the eight county rural area, and waiting periods for public housing could be as long as two years (Zimmerman *et al.*, 2000).

Limited local availability also means traveling greater distances to access the same good or service. Since nearly 80 percent of rural counties have no public bus service (compared to only 2 percent of metropolitan counties), rural residents have a much higher reliance on personal vehicles and consequently face higher costs associated with car ownership and maintenance. On average rural households cover 38 percent more miles per person per day than urban households and that car trip were 40 percent longer (Pucher and Renne, 2004:5) The greatest difference is among the poor where the rural poor cover 59% more miles per day than their urban counterparts (Pucher and Renne, 2004:5). The effect of increased distances combined with the quality and

nature of rural roads (narrow lanes, limited shoulders, sharp curves, steep drop-offs, etc) is evident in fatality rates two and a half times greater than that for all other roads (TRIP, 2005).

Increased distances needed to access the same service can result in hidden costs, increasing the net cost of any particular item. For instance, Cude and Walker (1983) examined not only rural and urban differences in food prices, but also compared the relative savings with the costs of transportation from rural areas in order to access lower prices. The results indicated that under most circumstances, the increased cost of transportation was not offset by the lower prices in the larger setting, an issue likely worsening given high gasoline prices. The impact of distance on prices is the case not only for consumers, but for retailers as well. One impact of longer distances from urban centers means that rural retailers face higher shipment costs for their stock affecting their resulting prices (Kaufman and Lutz, 1997:9).

Methods

To investigate geographic differences in prices, this research examined the question: If a person made the same purchase in an urban and rural area, would they encounter the same price? A key challenge facing this line of research is data availability. While there is no national source of price data, there are two private sources of geographically specific price data: ACCRA and Runzheimer.¹³ ACCRA-the Council for Community and Economic Research (formerly known as the American Chamber of Commerce Research Association) is a nonprofit community and economic research organization. ACCRA has conducted their Cost of Living Index research quarterly since 1968 and utilize a national advisory group to keep abreast of packaging and other changes that could affect the index (ACCRA 2005). While data from larger micropolitan areas are often included in those participating in the ACCRA Cost of Living Index program, the focus is on urban places.¹⁴

¹³ Runzheimer, Intl., is a private company that collects and sells cost of living indices. However, their methodology is proprietary and the places priced are dependent upon those who request them.

¹⁴ Small rural places are excluded from participating in the ACCRA study. As the manual states, small rural places “are qualitatively different from urban areas, and they simply don’t support the kind of urban life-style embodied in the ACCRA Cost of Living Index” (2005:1.3). In 1990s, because small places are “qualitatively different” from urban areas, and cannot support the “urban lifestyle” embodied in the study, it was decided to restrict participation to metro areas and nonmetro counties with a county population of more than 50,000 and if the city population is more than 35,000. Small areas were grandfathered in unless they failed to maintain regular participation from before the rule change.

To conduct this study, permission was obtained from ACCRA to extend their methodology in rural areas of Kentucky. Partnering with Cooperative Extension, local prices were gathered in eight counties across Kentucky for the same market basket of goods and services and specifications used by ACCRA, using the same methods, and prices data were collected on the same dates. Following the same methods used by ACCRA for small areas, local prices were collected from three businesses for each of the 57 items including groceries, housing, utilities, and miscellaneous goods and services. Additional items were also included to capture hidden costs. This resulted in a total list of 65 items.

Data were collected by working with local community groups. To facilitate data collection, members were able to draw upon their knowledge of local shopping patterns. This local knowledge was essential given the high rate of out-shopping common in rural areas (eg. Morton *et al.*, 2004; Miller and Kean, 1997; Sullivan *et al.*, 2002; Sullivan and Savit, 1997). To capture out-shopping, data were collected from establishments both within the county as well as those outside the county frequented by local residents. Moreover, since price data alone do not capture externalities such as distance, the time traveled and distance in miles from the county seat were also recorded.

Eight counties from across the state were selected for participation in the study. The counties were chosen to reflect the diverse range of rural places in the state.¹⁵ Counties 1 and 2 were in western Kentucky, counties 3, 4, and 5 are in central Kentucky, and counties 6, 7, and 8 are in eastern Kentucky. For an overview of the eight counties' characteristics, see Tables 1 and 2. Local prices were collected in the eight rural counties for the 2nd quarter of 2006. The urban areas in Kentucky that participated in the ACCRA COLI for the 2nd quarter were Lexington, Louisville, Bowling Green, and Covington/Northern Kentucky which is part of the Cincinnati, Ohio metropolitan area.

¹⁵ While some micropolitan areas participate in ACCRA, their participation in any particular quarter varies. Therefore, we included a micropolitan county to ensure the diversity of rural places represented in the sample.

Table 1. Descriptive Characteristics of Sample Counties

County	2003 Urban Influence Code	2003 Rural/Urban Continuum	Descriptive Characteristics and ERS Economic Type
County 1	8 - Micropolitan not adjacent to a metro area	9 - Nonmetro county completely rural or less than 2,500 urban population, not adj. to metro area	While part of the Paducah micropolitan CBSA, completely rural. Mining dependent.
County 2	9 - Noncore adjacent to micro area and contains a town of 2,500- 9,999 residents	7 - Nonmetro county with urban population of 2,500-19,999, not adjacent to a metro area	Tourism destination, next to large lake. Manufacturing dependent.
County 3	6 - Noncore adjacent to a small metro with town of at least 2,500 residents	6 - Nonmetro county with urban population of 2,500-19,999, adjacent to a metro area	Part bedroom community, part retirement destination with homes on the lake. Manufacturing dependent.
County 4	9 - Noncore adjacent to micro area and contains a town of 2,500- 9,999 residents	7 - Nonmetro county with urban population of 2,500-19,999, not adjacent to a metro area	Completely rural. Services-dependent. Regional health services center and small private college.
County 5	5 - Micropolitan adjacent to a small metro area	6 - Nonmetro county with urban population of 2,500-19,999, adjacent to a metro area	Micropolitan. Foothills of Appalachia. Manufacturing dependent
County 6	9 - Noncore adjacent to micro area and contains a town of 2,500- 9,999 residents	7 - Nonmetro county with urban population of 2,500-19,999, not adjacent to a metro area	Regional University. Persistent poverty, Federal/State government dependent.
County 7	11 - Noncore not adjacent to a metro/micro area and contains a town of 2,500 or more residents	7 - Nonmetro county with urban population of 2,500-19,999, not adjacent to a metro area	Non-specialized, small regional retail center in Appalachia. Persistent poverty, low employment
County 8	12 - Noncore not adjacent to a metro/micro area and does not contain a town of at least 2,500 residents	9 - Nonmetro county completely rural or less than 2,500 urban population, not adj. to metro area	Completely rural. Coal mining dependent. Heart of Appalachia. High poverty.

The items priced were grouped into the same six categories used by ACCRA: Grocery, Goods and Services, Health Care, Transportation, Utilities, and Housing. In order to assess rural/urban differences in

the prices, several analyses were conducted.

First, the average price for each item was examined. In order to assess the relative price differences, the same techniques as ACCRA

Table 2. Selected Socio-Economic and Demographic Characteristics of Participating Counties.

County	Total Population, 2000	Percent Change in Total Population, 1990-2000	Median Household Income, 2003	Poverty Rate, 2003	Percent of Population under 150% of Poverty, 2000	Annual Average Unemployment Rate, 2004
County 1	9,804	8.2%	\$33,530	11.6%	21.0%	6.0%
County 2	30,125	10.7%	\$37,065	10.9%	18.4%	6.4%
County 3	17,800	21.7%	\$33,759	14.8%	29.2%	6.2%
County 4	17,244	12.3%	\$25,205	20.0%	38.3%	5.0%
County 5	22,554	15.3%	\$34,341	14.5%	26.2%	6.2%
County 6	22,094	8.6%	\$30,397	18.7%	34.0%	4.6%
County 7	23,445	0.8%	\$27,736	21.0%	37.5%	6.4%
County 8	25,277	-6.4%	\$24,804	21.8%	44.0%	7.1%

were employed constructing the index for each category as well as an overall index. For both, the mean of the urban areas was used for comparison. For each category index, individual items were weighted for their contribution to the index based on expenditure differences within the category. To construct the overall index, the index for each category was weighted to reflect their relative contribution to the overall index. All weights are based largely on the Consumer Expenditure Survey and are the same as those used by ACCRA. When interpreting the resulting

index scores and in order to account for error, the same threshold used by ACCRA was employed: a 5% difference for the category indexes and a 3% difference for the overall index.

Results

Grocery

The grocery index category consisted of 26 items including meats, vegetables, staples such as milk and margarine, and prepared foods.¹⁶ For the majority of items included in the grocery category (20 of the 26 items or 77%) the rural average price was higher than the urban average price. The unweighted sum of all the average prices for the rural counties was \$61.51 compared with \$59.37 for the urban counties. This means that the unweighted sum was 3.6% higher in the rural counties compared to the urban. This result is similar to that found in the previous food price research which also found higher rural food prices (eg. Ambrose, 1979; Cude and Walker, 1983; Morris *et al.*, 1992; Kaufman *et al.*, 1997).

In order to assess the prices in the rural counties relative to that found in the urban counties, the category index score was calculated using the average urban price for comparison. In these results, 100 equals the average for all participating urban areas in Kentucky.

All of the eight rural counties had a Grocery index score above 100, the average for all urban counties. Using the suggested 5% difference before interpreting a real difference in local prices, four of the eight rural counties had Grocery index scores 5% or higher compared to the average found in the urban Kentucky areas; ranging from 5.1% higher to 15.6% higher (see Table 3).

County 7	115.6
County 3	105.9
County 6	105.5
County 1	105.1
County 4	104.0
County 8	102.3
County 5	101.1
County 2	100.9

Goods and Services

The Goods and Services index category consisted of 19 items including fast food, seeing a movie, services such as haircuts, appliance repair and veterinary care, as well as clothing and necessities such as toothpaste and shampoo. For most of items included in the Goods and Services category (10 of the 19 items or 53%) the rural average price was higher compared to the urban average price. Of the items with higher average prices, most were retail goods bought off the shelf such as toothpaste or clothing. Newspaper subscription rates were higher in the rural

¹⁶ Exact standards for size and brand from ACCRA were followed. For two items, the size specified by ACCRA was not available. Following the same procedures followed by ACCRA, these two items were prorated to the standard size.

counties mainly because of the common rural practice of subscribing to both the local weekly paper as well as a daily paper from a nearby micropolitan or metropolitan area.¹⁷ Even still, in some cases the price of rural home delivery of a nearby daily paper can still be higher than if the same paper were delivered to a residence in the paper's home city.

In contrast to goods which could be bought off the shelf, the rural average prices for services were more often lower. The one exception was the price for home appliance repair. In this case the rural average price was higher. This could be because the service requires a trip to the resident's house which could be a considerable distance in the rural counties.

Distance is also a factor in comparing the retail prices for alcohol. Not only was the average rural price higher compared to the urban, but only one of the counties was a wet county. Five of the 8 rural counties

County 2	113.4
County 5	113.4
County 6	106.8
County 1	105.7
County 8	102.9
County 3	102.9
County 4	99.5
County 7	99.1

included in this study were "dry counties." This means that the sale of alcohol is illegal within the county. One county was "moist" in that the county was dry, but not the county seat. Another county is classified as "limited" in that the sale of alcohol is restricted to sales by the glass and in only certain restaurants based on size and sale of food. As a result, in addition to the shelf price of the alcohol, a resident in these counties would have to drive beyond their county in order to purchase it. In the participating counties where these items could not be purchased legally, residents would have to drive 15 to 54 miles to purchase the alcohol, depending upon the county.

In order to assess the prices in the rural counties relative to that found in the urban counties, a category index score was calculated using the mean for all of the urban areas. As before, 100 equals the average for all urban counties in the state that participated in ACCRA.

For Goods and Services, 6 of the 8 rural counties had index scores above 100, the average for all urban counties. Using the suggested 5% difference before interpreting a real difference in local prices, 4 of the 8 rural counties had higher index scores for Goods and Services compared to the urban average. The index scores for these counties ranged from 5.7% higher to as much as 13.4% higher (see Table 4).

¹⁷ We consulted ACCRA as to how to deal with this issue. Since the common practice was for rural residents to subscribe to the two papers, ACCRA recommended adding both prices.

Health Care

The Health Care index category consisted of 5 items: office visits for a dentist and a general practitioner, an eye exam at an optometrist, as well as a prescription and a nonprescription medication. The rural average price of both the prescription medication and nonprescription pain reliever were slightly higher than the urban average. Similar to the services in the Goods and Services category, the rural average price of an office visit for a doctor or dentist was lower than the urban average price. By contrast the rural average price for an eye exam at an optometrist was higher than the urban average price. This could be because in addition to providing a service, optometrists also tend to stock eyeglasses.

County 2	96.8
County 6	95.8
County 7	91.0
County 3	89.1
County 1	88.3
County 8	87.1
County 4	86.5
County 5	82.9

Because the rural average prices for the doctor and dentist were so much lower than the urban, all of the 8 rural counties had index scores below 100, the average for all urban counties. Using the suggested 5% difference before interpreting a real difference in local prices, six rural counties had lower index scores for health care prices compared to the urban average. The Health Care Index scores for these counties ranged from 9% to 17.1% lower (see Table 5).

Transportation

The Transportation index category consisted of only 2 items: auto maintenance (computer balance of one front wheel) and the price of unleaded gasoline. As found with other services, the average rural price of the wheel balance was lower than the urban.

In relation to Transportation, 3 of the 8 rural counties had component index scores above 100, the average for all urban counties. Using the suggested 5% difference before interpreting a real difference in local prices, one of these had an index score more than 5% higher than the urban average. Five rural counties had category index scores below 100, the average for all urban counties. Of these, four were more than 5% lower than 100. The index scores for these counties ranged from 5.3 % lower to as much as 27.3% lower (see Table 6).

County 4	112.1
County 1	103.9
County 2	103.4
County 6	95.3
County 5	94.7
County 3	90.7
County 8	88.7
County 7	88.4

Utilities

Using the same specifications as that used in for housing, the utilities index uses prices for electricity and natural gas¹⁸ as well as basic telephone service. The same computer model as ACCRA was used to estimate the monthly cost based on location¹⁹ and relative use of each utility. For instance, the usage of electricity would be higher if both the furnace and water heater are electric than if only the furnace were electric. For the rural counties in this study, natural gas was available only in the county seats. Since outside the county seat was where a new home conforming to the type specified would be built, these homes would typically be all electric.²⁰

The average rural price for home energy was lower than the urban. This was not expected because, as Newman (2002) indicates, prices for rural electric cooperatives tend to be higher than for investor owned utilities. This industry pattern was also found across the electric companies priced in the rural counties. Instead, the rural/urban energy difference could be a result of the relative use of electricity and natural gas. While the homes in the rural counties were modeled as all electric, the homes in the urban areas were a combination of electricity and natural gas. Since natural gas prices have seen the recent increases in price, this could be affecting the overall price differences between the rural and urban areas.

For phone service, while the rural average price was slightly lower than the urban, an important caveat is necessary. While the rural average price was slightly lower, in order to be comparable across places, only basic local phone service is priced. While this may provide for comparable service across urban areas where local service most often provides access to the entire city, for rural communities, local phone service may include only a few nearby towns. Consequently, to access the places frequented in the area, it is necessary for rural residents to purchase expanded local area service at an additional cost. Since these packages varied greatly, there was no way to compare the relative prices except that their inclusion would have raised the price of phone service for the rural communities.

County 5	105.8
County 2	89.2
County 8	88.0
County 3	85.5
County 7	82.8
County 4	79.7
County 6	78.7
County 1	72.7

¹⁸ Liquid propane is common in many rural areas, but pricing was not possible for this study.

¹⁹ The model used by ACCRA accounts for weather differences across the country.

²⁰ When natural gas access extends just beyond the municipality, it is not uncommon for the price to be higher than in the county seat itself.

Of the 8 counties, seven had Utilities Index scores below 100, the average for all urban counties. Using the suggested 5% difference before interpreting a real difference in local prices, all seven of these counties had index scores 5% or lower compared to the average found in the urban Kentucky areas. By contrast, one rural county had a Utilities Index score above 100, the average for all urban counties (see Table 7).

Housing

The Housing category consisted of three items: the price of a newly constructed semi-custom home, the price of a 30 year fixed rate mortgage, and apartment rent for a professional couple. Of these, there were important differences in the availability of apartments in the rural counties. In several counties, there were no comparable apartments. In the few instance when apartments were available, the size was often times smaller and the buildings were older than the standards used by ACCRA. In addition, it was not clear that a professional/managerial person would be a typical renter in these units. Since it was not clear that the few apartments priced in the rural counties would be comparable to those priced in the urban areas and the lack of apartments in others, the same procedure was implemented that is used by ACCRA in similar circumstances and the home price and mortgage data were used for the rural counties.

The newly constructed semi-custom home priced in the rural counties followed the same detailed specifications as that used by ACCRA. In determining the overall price (home and lot) the specifications used indicate that the home's lot includes electricity, city water, and sewer. However, in many rural communities, lots for new homes would not necessarily include these.²¹ For instance, in one of the eight rural counties, public sewer was available to only 23% of the county's population and only 30% had access to public water. The remaining residents relied on septic systems, wells for water, or other means (Water Resources Development Commission, 2000; 1999). As a result, the local price for the purchase and installation of a septic system were included it in the price of the home. This added \$3-7,000 to the price of the home depending upon the location.

²¹ In addition to the items specified by ACCRA, data were also collected for digging a well and installing a pump as well as the price of providing electricity to a new home lot. Unfortunately, the manner in which these are priced varied from builder to builder and so we could not consistently include it in the home price. Of those that were comparable, the price of digging a well ranged from \$350 to \$5,000. The variation reflects the geologic differences across the state. The price of the pump was sometimes included in the price of the well. When it was not, the price ranged from an additional \$350 to \$1,200. For electricity, the price depended upon how many feet were needed to reach the house and how many electricity poles would be needed. In a few instances, typical overall prices were given which ranged from \$200 to \$1,200.

In addition to the price of a septic system is the issue of lot size. In order to provide sufficient room for the septic system drain field, the specified 8,000 square foot lot would be too small. Given this, results were calculated using lot prices for both a ¼ and ½ acre lot.²² Since the difference in lot size did not affect the overall results, we report the results using the still conservative ½ acre lot.²³

Overall, the rural average price of the newly constructed semi-custom home was slightly higher compared to the urban. Among the rural home prices, there was great variability, depending upon the county. The difference between the highest and lowest average price was 188% across the rural areas compared to only a 11% difference across the urban areas. This is not surprising considering the diverse range of rural areas included in the study and the real estate adage of location, location, location.

County 6	121.5
County 5	118.2
County 7	104.6
County 8	102.3
County 2	101.1
County 3	97.2
County 4	95.9
County 1	92.3

In order to calculate the monthly payment used in the Housing Index, mortgage rates (including discount points and origination fees) were collected. The average rural mortgage rate was nearly the same as the urban average. However, again, there was a great deal more variability across the rural than the urban areas with a 18% difference between the highest and lowest interest rates compared to a 2% difference across the urban areas.

The Housing Index uses the average home price and mortgage rates to calculate a monthly mortgage payment. Using this and the option of renting in the urban areas, five of the eight rural counties had scores higher than 100, the average for the urban areas. Using the suggested 5% threshold, two counties had index scores more than 18% higher than the urban average. In contrast, one rural county was more than 5% lower than the urban average (see Table 8).

Overall Index

In order to assess the overall price differences, the index scores for each category are combined into an overall index. Using the same methods as ACCRA, each category index score was weighted to reflect the relative expenditures represented in each category and a 3% difference threshold was used. As before, 100 equals the average for all of the urban areas.

²² ¼ acre = 10,890 sq feet.

²³ The amount of land needed for a septic system is highly variable due to the geologic features across the state and from place to place within a county and can be 1 acre or greater.

Of the eight rural counties participating in this study, the resulting overall index scores were both higher and lower than the urban average. Three counties had overall index scores higher than 100 and all three were greater than 3% higher than the Kentucky urban average. Five rural counties were lower than 100, the urban mean. None of these were greater than 3% lower (see Table 9).

County	Overall Index
County 5	109.3
County 6	106.3
County 2	104.2
County 7	99.8
County 8	99.1
County 3	98.2
County 4	97.8
County 1	97.7

Mileage

In order to assess the distance needed to access the market basket of goods and services, distance needed to travel was documented for each item. Since it is also necessary to travel to businesses in an urban area, any business in the county seat was coded as zero miles. The remaining mileage was averaged for all items in each county. The results indicate that as a number of the items were not available in the county seat, in the eight rural counties, on average, the residents in these rural

counties must drive 14.1 miles one way to purchase the items (see Table 10). Using the IRS reimbursement rate, this would add an additional \$12.56 round trip to the cost of purchasing these items. Due to the high degree of combining shopping trips, it was not possible to add this additional cost to the prices of the items included in this study.

Table 10. Mileage

	Average Miles beyond County Seat (one way)	IRS Reimbursement Rate (one way)	Round Trip
County 1	25.4	\$11.29	\$22.58
County 8	18.5	\$8.22	\$16.44
County 4	17.7	\$7.90	\$15.80
County 2	15.7	\$6.98	\$13.96
County 7	14.6	\$6.51	\$13.02
County 3	10.6	\$4.74	\$9.48
County 6	5.2	\$2.29	\$4.58
County 5	5.1	\$2.28	\$4.56
Average	14.1	\$6.28	\$12.56

Conclusion

While the popular perception is that it costs less to live in a rural area, this research suggests a much more complex picture. Overall, when comparing the prices of the same products and services, while some rural places and prices were lower, there was no consistent pattern of lower prices across all rural places in the study. Instead, this research found that the diversity of rural places meant that while some items had higher prices in urban areas, others were lower.

Likewise, while some rural areas were overall lower priced, others were higher than the urban areas. In the end, just as high priced urban places such as San Francisco, Los Angeles, or New York City are not representative of all urban places, neither are all rural areas the same.

One important difference between the rural and urban areas in this study was the role of hidden costs. While it was not possible to add the cost of distance to the prices of the items included, other hidden costs were identified and discussed. Any price differences between the rural and urban areas may have been greater had more of the hidden costs (e.g. expanded phone service, digging a well, installing a pump, and providing electricity to the newly built home, and mileage) been able to be incorporated.

While previous research has relied on housing cost differences as a proxy for all price differences, this research found that all prices do not covary with housing. Instead it suggests a much more complex landscape of differences across rural places. And, because of the great range of rural places that exist, possibly a much greater range in prices across rural places than across the urban places.

The research reported is not a budget approach nor are all of the items relevant to low income families. However, given the lack of national data with rural prices, and by replicating a national approach to primary data collection, comparisons could be made. With contemporary work experimenting with adjusting the poverty threshold for spatial differences in cost of living, it is important to be able to accurately answer the question: “does it cost less to live in a rural area?” The results found in this research suggest that all rural areas do not have lower prices compared with urban areas, and that spatial differences in cost of living is a much more complex landscape than a rural/urban dichotomy reveals.

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