Report on Interarea Price Levels

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Abstract

This report describes the estimation of differences in price levels across 38 geographic areas in the United States. It is based on prices collected for the 2003 Consumer Price Index (CPI) comprising eight expenditure components: Apparel, Education, Food and Beverages, Housing, Medical Goods and Services, Recreation, Transport and Other Goods and Services. The geographic areas represent large metropolitan areas and combinations of smaller PSUs (primary sampling units) that are urban but not metropolitan, such as Bend in Oregon. This research follows the work of Kokoski, Moulton and Zieschang (1999) on interarea price levels that referred to the year 1989. One difference from the earlier studies is the procedure used in estimating the average prices of detailed items. A second difference is that an overall price level for all goods and services is presented, in addition to the price level for each of the component headings. The third difference is in the aggregation method, a relatively simple and transparent one that has been recently used in the international price comparison literature, the weighted Country Product Dummy (CPD) method [Deaton, Friedman, Alatas (2004), Sergey (2004), Diewert (2002), Rao (2002) and Selvanathan and Rao (1994), Silver (2004)].

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Introduction

The main purpose of this report is to provide a preliminary set of estimates of area price levels in the United States for 2003, some fourteen years after the most recent estimates. Section 1 of the paper discusses the methodology used, Section 2 discusses the underlying price data, and Section 3 presents the two-step process of estimation. The aggregated results are presented in Section 4 followed in Section 5 by a discussion of the sensitivity of the results to changes in model specification. Section 6 focuses on the rent regressions in the Housing component with an example relating price levels and income levels. In the concluding section some directions for further research are suggested.

1. General Methodology

The prices are taken from the research database of the Division of Price and Index Number Research (DPINR) at the Bureau of Labor Statistics (BLS) for the year 2003. Data on Rents are obtained separately from the Housing section of the Consumer Price Index Division, and supplemented by Bureau of Census data at the zip code level. Each price refers to the annual average of a good or service that is uniquely identified by a set of characteristics. These characteristics are organized into various types of specifications known as checklists, and the good or service also has a geographic area and a quote weight associated with it. The latter is an estimate of the representativity[1] of the price in the framework of the probability sample from which it is drawn. In this framework, the exact same good or service will not necessarily be priced in all areas in every survey cycle, but its characteristics and relative importance is recorded and incorporated into the first step of a two-part estimation process.

The first step of the estimation process consists of obtaining price relatives, or parities[2], for each geographic location and each item, where item refers to a specific good or service in the CPI, such as Flour. This is done using a hedonic regression for each item with area, outlet types and item characteristics as independent variables. The second step consists of aggregating the price relatives into major groups such as Food and Beverages, and into an overall price level, using a multilateral procedure called the weighted Country Product Dummy (CPD) approach[3]. The results at the major group level can be compared to the previous study of Kokoski, Moulton and Zieschang (1999).

[1] The term representativity is used in the International Comparison Program (ICP 2004) to denote the relative importance of items that are priced, usually at a level where expenditure weights are not available.

[2] The term price *parity* is commonly used in the international literature and often refers to prices relative to a *numeraire* country currency. The analogue in interarea comparisons is a price expressed relative to one area, or to the average of the areas (as is done in the Euro region).

[3] The area dummy variables in the hedonic regressions in the first step can also be considered multilateral price indexes based on the CPD approach, but generally, the term CPD is used when only the area and the product itself are the explanatory variables.

2. Data

Each price quote is uniquely identified by its outlet, quote code and version, and contains the geographic location and additional characteristics of the good or service, such as size, quantity, packaging, brand and so forth. The exact same good or service may be priced monthly, every other month, or sporadically, so the number of price quotes per year for a good or service will vary.

Table 1 shows the distribution of observations across expenditure groups and the weight of the group in the Consumer Expenditure Survey (CES). There are approximately 1.1 million original price quotes in the 2003 CPI. After averaging these observations over the year, there remain over 230,000 uniquely identified observations (by outlet, quote code and version).

The number of regressions reflect the number of models estimated in each expenditure group, and N refers to the number of observations actually used in these regressions, discussed in ***Section 3***. Just over 8,000 of these (4%) cannot be used in the analysis, and are termed Missing. Most of these 'Missing' observations have no quote weight associated with them, but some may simply not have a specific characteristic that was used in the model. In other words, the level of detail of the model was such that some observations are excluded, and alternative specifications might include them. This is exemplified in ***Section 5***, where a set of very detailed regressions are combined into one and the number of Missing observations drops from 39 to 10.

Table 1. Distribution of Price Observations by Expenditure Group

Expenditure Group	Weight in CES %	Original Obs	Unique Obs	Number of Regressions	Obs in Regressions (N)	Missing Obs	% obs Missing
1 Housing	42%	236,118	82,653	102	79,754	2,899	4%
2 Transportation	17%	118,123	23,083	25	21,907	1176	5%
3 Food and Beverages	15%	380,557	50,662	130	47,978	2,684	5%
4 Education	6%	53,865	8,308	20	7,989	319	4%
5 Recreation	6%	77,029	18,314	29	18,078	236	1%
6 Medical	6%	83,556	10,141	9	9,591	550	5%
7 Apparel	4%	85,673	29,589	34	29,131	458	2%
8 Other	4%	42,908	7,536	24	7,396	140	2%
Total	**100%**	**1,077,829**	**230,286**	**373**	**221,824**	**8,462**	**4%**

Table 2 is an example of a unique price observation in the Food and Beverages group. It is for a five pound bag of all-purpose white flour priced in one of many large

grocery stores in an area[4]. There are three price variables in each observation: ***cppr*** (collected price), ***fepx*** (effective price) and ***fepx_av*** (final average price). The effective price is the collected price standardized to the quantity collected (in this case one ounce of flour), with taxes included. The variable ***yrmn*** (0310) refers to the year and the month in which the last effective price was collected. An effective price for this observation was collected three times during the year (***nobs_yr***) and the final average price (***fepx_av)*** is the arithmetic average of the three effective prices[5].

The ***fepx***'s correspond to the 1.1 million observations in ***Table 1***, while the ***fepx_av***'s to the 230,000 unique observations. Other variables of interest in ***Table 2*** are the ***cv*** (5.04%) indicating the coefficient of variation of the three observed price quotes over the year, and the normalized quote weights (***nqt_wt***), where the normalization is by area and item strata. The quote weights are derived from expenditure weights obtained in the Telephone Point of Purchase Survey (TPOPS) and are used to capture the relative importance of the individual price quote within the sampling framework of the CPI. Areas with larger populations will have larger expenditure values and higher quote weights in general, so the normalized quote weight is used here, in contrast to the previous BLS work that used the actual weights[6].

Table 2. Example of an Observation

Variable	Value
Area	0000
ELI	FA011
Item	FA01
Cluster	01A
Collected Price: cppr	$ 0.97
Collected Quantity: cqty	1
Collected Size: csz	5
Collected Unit of Size: cusz	LB
Tax rate: txud	0
Effective Price: fepx	$ 0.01213
Date of Collection: yrmn	0310
Quote Weight: qt_wt	10691
Computed variables:	
1. Number of Observations per year: nobs_yr	3
2. Final Average Price: fepx_av	$ 0.011
3. Coefficient of Variation: cv	5.036 %

[4] All unique identifiers of location and outlet have been removed to protect the confidentiality of respondents.

[5] Many prices are collected on a six-month rotating cycle (even vs. odd months), so the number of observations per year will equal six.

[6] The use of normalized or percentage share weights is sometimes referred to as 'democratic' weighting, in contrast to plutocratic weighting that assigns greater weight to larger areas. Both have advantages, but the former is preferred in the CPD aggregation because it more closely approximates other index number formulae. Specifically, it provides a second-order local approximation to the Tornqvist price index (Diewert 2002). It is also consistent with the final aggregation procedure used later in this paper.

4. Normalized Quote Wt: nqt_wt	0.0283
Outlet Code	9999999
Outlet City	ZZZ
Outlet State	PA
Outlet ZIP	10000
Outlet type: TP_BSNS	572 (large grocery store)
Characteristics	
1. A	A1 (White all purpose)
2. B	B2 (Not self-rising)
3. C	C1 (Bag)
4. D	D2 (5 pounds)
5. E	E5 (No organic claim)
6. F	F98 (Store brand)
7. G	G2 (Unbleached)
8. H	H1 (Enriched)
9. YY	Y99 (UPC)

Nine characteristics (labeled A through YY) are listed for Flour, but there may be more or less depending on the item specified. In addition, each characteristic may have numerous values. For example, there are eight possible values for the characteristic A (A1-A7, A99) in Type of Flour. But the A characteristics for other items may have less, for example, there are only four values for Type in Men's Shirts (A1-A3, A99).

The example for Flour and Men's Shirts illustrates one of the difficulties in using the CPI systematically for interarea work, namely that variables are specific to each item. In fact, variables are specific to each Entry Level Item (ELI) and Cluster within an item. For example, characteristic A refers to different Types of flour (white all-purpose, wheat, etc.), but A refers to Packaging (individual, six-pack, etc.) for Carbonated Drinks. Thus, hedonic regressions must be run discretely to select specific characteristics such as Type or Packaging. In the previous BLS study by Kokoski, Moulton and Zieschang (1999), the regressions included all the characteristics for all items – a kitchen sink approach that may have led to over-parameterization in some models. In this study, an attempt was made to evaluate each individual regression, and to include the characteristics recommended by the CPI in their checklist documentation[7] in the hope of discarding irrelevant variables and producing more efficient estimates of the area coefficients. An example of the sensitivity of the price levels when different characteristics are included is shown in ***Section 5***.

3. Estimation

a. Step One: Estimating Cluster Price Levels

Cluster Price Levels (CPLs) are derived from the predicted price relatives across geographic areas, where price relatives refer to the predicted dollar value of an item, ELI

[7]Documentation for each ELI and Cluster combination can be obtained from the BLS CPI division.

or Cluster with particular characteristics[8]. For example, the price relative for one ounce of white flour in a one pound bag sold in a supermarket in Philadelphia may be $0.01, and for Honolulu, $0.02. If the average price relative across all areas is $0.015, the CPL for Flour in Philadelphia will be 0.67 and for Honolulu, 1.33.

The price relatives are obtained from a hedonic regression that has the log of the prices as the dependent variable, and the geographic areas, outlet types and product characteristics as independent variables. The coefficients are estimated using a weighted least squares regression where the weights are the quote weights for each price observation[9]. This is shown in Equation (1).

Equation (1)

$$\ln P_{ij} = \sum_{i=1}^{M} \alpha_i A_{ij} + \sum_{n=1}^{N} \sum_{j=1}^{J(n)} \beta_j^n Z_{ij}^n + \varepsilon_{ij}$$

(A_{ij}, Z_{ij}) are two sets of dummy variables with

$i = 1,..., M$ (geographic areas); j=1,...,J(n) (specifications), n=1..., N(characteristics).

Since the equation is overidentified, $\beta_1^n = 0$ (for each n=1,...,N).

The antilogs of the α_is are the price relatives[10] in each area *i*, and the antilogarithms of the $\beta^n{}_j$s equal the factor by which the characteristic of the product changes the base price.

One might expect interaction between some of these characteristics, such as size and packaging, or brand and outlet type. It is beyond the scope of this report to go into the large literature on specifying a hedonic regression to adjust for quality differences across observations, a subject well covered in the OECD handbook by Triplett [2004], especially for adjustments in a time-series context. In the context of both space and time Moch and Triplett [2002] carried out a comparison of computer prices in France and Germany, while Heravi, Heston and Silver [2003] carried out a cross-country comparison using scanner data for TV sets. The general procedure followed here is to keep the specifications simple due to the sheer number of items and characteristics in the CPI. It is described in the next section. In instances when the number of observations for an

[8] Using price relatives or price levels makes no difference to the overall price levels in the aggregate results but the explained variances can be inflated because of the differences in scale – say between Flour with a mean predicted price of less than one dollar and Catered Events in the hundreds of dollars.

[9] Quote weights adjust the individual price observations for the probability sampling procedure of the CPI, and are normalized by area and item strata. The weighted least squares estimates minimize the weighted residual sum of squares of Equation (1). For an extensive discussion of the effects of weights on the CPD, see for example, Case 2, ICP Handbook, Chapter 10 at http://siteresources.worldbank.org/ICPINT/Resources/Ch10.doc.

[10] A correction for mean bias [Goldberger (1968)] is applied to the coefficients. This is equal to adding half the standard error of the estimate to the coefficient before taking its antilog.

item was sufficiently large, such as for airline travel, more complex specifications were tested.

The Cluster as depicted in ***Table 2*** for Flour, is the most detailed level specification available, followed by the ELI and the Item level[11]. In some categories, there is only one Cluster level and one ELI level, so they correspond to the Item, as in Airline travel. In other cases, such as Gardening Tools and Equipment, there are two ELIs: Tools & Equipment and Soil & Supplies, and various Clusters within each ELI: Large versus Small Power Tools, Soil and Mulch versus Plant Bulbs, Insecticides and so forth. The number of price quotes and their distribution across areas often determined whether the Cluster, ELI or the Item was used in the model, with exceptions described below.

In categories with low overall expenditure weights, Item level regressions were used even when some of the ELI-Cluster combinations had enough observations for a more detailed analysis. For example, AF012: Infants and Toddler's Underwear with 1011 observations has two Clusters: (i) Disposable , Cloth Diapers and Diaper Liners with 795 observations and (ii) Underwear other than Diapers, with 216 observations. However, the model used is a single regression with types of outlets and a dummy for each cluster, rather than two separate models with characteristics specific to each cluster. This was rationalized primarily in terms of expediency, with judgment as to the marginal cost of the extra regressions compared to their relative importance as measured by the clusters' weight in the Consumer Expenditure Survey. For example, the weight for both clusters in AF012 is only 0.109% of total expenditures, and still only 2.6% of total Apparel expenditures. In many cases, there are also no area expenditure weights for the ELI-Cluster level except at the regional level, so that arguably, the greater precision in the price estimates is somewhat offset by lesser precision in the weights.

Detailed models were specified for the three most important expenditure categories: Housing, Food and Transport, with a corresponding effort to assign weights at that level of detail according to regional patterns. Aten and Kokoski (2005) contrast the results of a very detailed set of model specifications for Apparel with the ones used here. Additionally, an analysis of the sensitivity of the final price levels to changes in individual model specifications is discussed in the last section.

b. Summary of First Step Estimation Results

A summary of the first step regression models is in ***Table A*** in the Appendix. Each of the 373 rows is an Item or ELI-Cluster combination, and the columns correspond to the following:

1) *Obs*: total number of actual observations, uniquely identified by outlet, quote code and version;

[11] The classification of products in the CPI is organized in a four tier system with increasing detail: Major Group, Expenditure Class, Item Strata and Entry Level Item (ELI), with many ELIs making use of a fifth tier called a Cluster [Research Data Base handbook (last updated 02/07/2003, p.27), maintained by the Division of Price & Index Number Research].

2) *N*: the number of observations used in the regression;
3) *Missing*: the number of observations missing due to zero quote weights, or because they do not have values for one of the characteristic that is included in the model;
4) *Outlets*: the number of types of outlets included;
5) *Characteristics*: the specification of characteristics of the ELI-Cluster included in the model;
6) *Model DF*: the total number of variables included.
Model DF = Area DF + Outlets + number of specifications in Characteristics;
7) *Area DF*: the number of areas for which there are price quotes;
8) *Prob Area*: the probability that the Area Type III sum of squares[12] is significant. It is the Prob > F value where F is the ratio of the mean sum of squares of the area to the mean sum of squares of the error.
9) *RMSE*: the root mean square error (RMSE) of the model;
10) *Weight %*: the expenditure weight of the ELI-Cluster or Item as a percentage of the total across all areas.

The general procedure for choosing a specific model in the table was as follows:

- Begin with the price quotes for a detailed ELI-Cluster combination, and use area dummies and outlet types as the independent variables, adding characteristics recommended in the CPI, such as type, brand and packaging;
- Track the overall fit in terms of the Root Mean Square Error, the variance and standard error of the area coefficients, and the significance of the characteristics for each model, and make a judgment as to the 'best' specification, removing outlet types and/or adding more characteristics;
- If the observations for the ELI-Cluster are spread very thinly across areas, move up one level to the Item level, using the ELI-Clusters themselves as characteristics.

c. Step Two: Estimating Aggregate Price Levels

The goal of the second step is to aggregate all the cluster price levels (CPLs) from the previous step into one Overall price level, and one set of price levels for each of the major groups: Apparel, Education, Food, Housing, Medical, Recreation, Transport and Other goods and services. A weighted least squares regression[13] similar to Equation (1) is shown in Equation (2). The main difference is that it is estimated once, for the overall price level, and then once for each major expenditure group. The expenditure weights are the annual dollar expenditures from the 2001-2001 Consumer Expenditure Survey, which differ from the quote weights used previously.

[12] Type III is the sum of squares that results when that variable is added last to the model. A very small valued for *Prob Area* implies that Area contributes significantly to the model after all other effects are taken into account.

[13] Deaton (pp 5-10, 2004) has a clear discussion of the properties of the weighted CPD price levels derived from Equation (2) in the context of multilateral index number theory.

The expenditure weights do not correspond exactly to the level of detail of the first step regressions, so some adjustment is necessary. There are only Item-level expenditures for the areas, but ELI or Cluster-level expenditure distributions for four regions of the U.S. - the Northeast, Midwest, South and West. These more detailed distributions are applied to the areas where there are more detailed price parities, and the resulting weights are again normalized to the area totals so that inputs to the final aggregation are a set of percentage, or share weights[14].

Equation (2)

$$\underbrace{\ln P_{ij}}_{(\alpha_i)_j} = \sum_{i=1}^{M} \lambda_i A_{ij} + \sum_{j=1}^{N} \delta_j X_{ij} + \varepsilon_{ij}$$

(A_{ij}, X_{ij}) are two sets of dummy variables with

$i = 1,...,M$ (geographic areas); j=1,...,N (eli-clusters).

Since the equation is overidentified, δ_j =0 (for any j).

The dependent variable (P_{ij}) is now the CPL or cluster price level estimated from the previous step, and the independent variables are the area dummies and only a dummy variable for each Item, ELI or Cluster itself. The interpretation of the coefficients is similar to that of the first step: the price relatives in each area are the antilogarithms of the λ_is, and the overall price levels, as well as the aggregates for the component price levels, are the corresponding ratios of λ_is expressed relative to the U.S. average.

In some expenditure groups, there are weights for 'not elsewhere classified' items, the '09' items. For example, the RF09 Item refers to Club Fees and Admission to Sporting and Recreation Events not included in the ELI-Clusters below:

1) RF011-01: Club Membership Dues
2) RF011-02: Fees for Participant Sports
3) RF021-01A: Admission to Movies, Theaters and Concerts
4) RF022-01A: Admission to Sporting Events
5) RF031-01: Fees for Lessons and Instruction

Since there are no direct price observations associated with the '09' items, some imputation is necessary. This is done by using the weighted geometric average of the prices of closely related items. In the example above, price levels for RF09 are obtained as weighted geometric averages of the five CPLs in the group. There are twenty-five such '09' items, totaling 1.13% of the aggregate expenditure weight. These bring the total number of estimated CPLs to 398, the 373 derived from the regression equations plus the 25 '09' items. The results of Equation (2) are discussed below.

[14] Actual rather than share weights are used in some multilateral aggregation procedures, such as the Geary-Khamis system used in the Penn World Tables 6.1 [Heston, Summers, Aten (2002)]

4. Aggregate Price Level Results

Table 3 shows the overall price level and ***Table 3i*** those of the eight expenditure groups: Housing, Transport and Food and Beverages, Education, Recreation, Medical, Apparel and Other Goods and Services.

Areas are listed in roughly regional order: Northeast, Midwest, South and West. The names of the areas have been abbreviated to their main city, but often comprise a number of counties and surrounding areas. For example, DC includes six counties in Maryland, eleven counties and six cities in Virginia, and two counties in West Virginia. There are 31 such cities, plus seven regional area groupings: C areas in the Midwest, South and West, B areas in the Northeast, Midwest and South. The **C** areas are primary sampling units made up of urban, non-metropolitan areas, while the **B** designation consists of medium-size and small areas. There are currently no **C** primary sampling units in the Northeast. A complete list of the areas can be found in the Appendix. ***Table 3*** also lists the areas by descending price level rank.

Table 3. Price Levels 2003: Overall

Area		Overall		*Area*	*Rank*
1 Philadelphia	A102	1.03		***NY suburbs***	1
2 Boston	A103	1.14		***San Francisco***	2
3 Pittsburgh	A104	0.86		***NY city***	3
4 NY city	A109	1.22		***Honolulu***	4
5 NY suburbs	A110	1.27		***NJ suburbs***	5
6 NJ suburbs	A111	1.18		***San Diego***	6
7 Chicago	A207	1.05		***Boston***	7
8 Detroit	A208	0.97		***Los Angeles***	8
9 St. Louis	A209	0.86		***Anchorage***	9
10Cleveland	A210	0.92		***Minneapolis***	10
11Minneapolis	A211	1.06		***Seattle***	11
12Milwaukee	A212	0.95		***Greater LA***	12
13Cincinnati	A213	0.90		***Chicago***	13
14Kansas City	A214	0.87		***Philadelphia***	14
15DC	A312	1.01		***Miami***	15
16Baltimore	A313	0.96		***Denver***	16
17Dallas	A316	0.94		***DC***	17
18Houston	A318	0.90		***Detroit***	18
19Atlanta	A319	0.92		***Baltimore***	19
20Miami	A320	1.03		***Portland***	20
21Tampa	A321	0.94		***Milwaukee***	21
22Los Angeles	A419	1.13		***NE Bs***	22
23Greater LA	A420	1.05		***Dallas***	23
24San Francisco	A422	1.27		***Tampa***	24
25Seattle	A423	1.05		***Phoenix***	25
26San Diego	A424	1.15		***Atlanta***	26
27Portland	A425	0.96		***Cleveland***	27
28Honolulu	A426	1.20		***West Cs***	28

Area		Overall
29Anchorage	A427	1.13
30Phoenix	A429	0.93
31Denver	A433	1.03
32MW Cs	D200	0.83
33South Cs	D300	0.81
34West Cs	D400	0.90
35NE Bs	X100	0.94
36MW Bs	X200	0.87
37South Bs	X300	0.86
38West Bs	X499	0.90
Max		1.27
Min		0.81
Range		0.46
CV		13%
Mean		1.00

Area	*Rank*
West Bs	29
Houston	30
Cincinnati	31
MW Bs	32
Kansas City	33
Pittsburgh	34
St. Louis	35
South Bs	36
MW Cs	37
South Cs	38

Table 3i. Price Levels 2003: Major Groups

Area		Housing	Transport	Food	Education	Recreation	Medical	Apparel	Other
Weight in CES %		42%	17%	15%	6%	6%	6%	4%	4%
1 Philadelphia	A102	1.06	1.01	1.03	0.97	1.05	1.22	0.85	0.98
2 Boston	A103	1.31	0.95	0.96	1.40	1.09	0.75	1.08	1.05
3 Pittsburgh	A104	0.80	0.95	0.88	0.97	0.85	0.80	0.90	0.83
4 NY city	A109	1.319	1.05	1.29	1.32	0.97	1.21	0.99	1.02
5 NY suburbs	A110	1.36	1.10	1.23	1.44	1.16	1.29	0.97	1.17
6 NJ suburbs	A111	1.36	1.05	1.05	0.91	1.12	1.06	0.96	1.20
7 Chicago	A207	1.06	1.00	1.11	0.98	1.22	0.98	1.04	1.01
8 Detroit	A208	0.93	1.00	1.02	0.92	1.07	0.90	1.04	1.06
9 St. Louis	A209	0.78	0.92	0.91	0.97	0.85	1.02	1.03	0.73
10Cleveland	A210	0.91	0.93	0.93	0.80	0.97	0.90	0.95	0.95
11Minneapolis	A211	1.03	1.06	1.06	1.16	0.89	2.08	0.98	1.13
12Milwaukee	A212	0.94	0.95	0.92	1.00	1.06	0.71	1.11	1.09
13Cincinnati	A213	0.82	0.99	0.85	0.98	1.04	1.05	0.98	0.77
14Kansas City	A214	0.80	0.91	0.93	0.94	0.94	0.77	0.95	1.04
15DC	A312	0.96	1.04	1.08	1.07	1.00	1.18	1.10	0.96
16Baltimore	A313	0.93	0.94	1.02	1.10	1.15	0.76	1.03	0.99
17Dallas	A316	0.85	1.04	0.93	1.14	0.96	0.91	1.06	1.05
18Houston	A318	0.84	0.96	0.90	0.85	1.07	0.85	0.99	0.92
19Atlanta	A319	0.89	0.96	0.90	1.11	0.94	0.85	1.03	0.92
20Miami	A320	1.03	1.00	0.97	1.08	1.03	1.06	1.17	1.17
21Tampa	A321	0.88	1.04	0.94	0.82	1.15	0.82	1.07	0.96
22Los Angeles	A419	1.28	1.10	1.07	0.79	0.84	1.05	1.11	1.11
23Greater LA	A420	1.16	1.05	0.95	0.82	0.93	0.93	1.07	0.95
24San Francisco	A422	1.49	1.09	1.11	0.96	1.14	1.16	0.93	1.25
25Seattle	A423	1.01	1.07	1.02	1.03	0.96	1.47	1.31	1.12

Area		Housing	Transport	Food	Education	Recreation	Medical	Apparel	Other
Weight in CES %		42%	17%	15%	6%	6%	6%	4%	4%
26San Diego	A424	1.30	1.05	1.05	0.94	1.02	1.06	1.09	1.05
27Portland	A425	0.93	1.04	0.97	1.00	0.94	0.88	0.93	1.07
28Honolulu	A426	1.24	1.19	1.26	1.10	1.20	1.10	0.97	1.10
29Anchorage	A427	1.24	0.95	1.27	0.87	0.96	1.11	1.12	1.10
30Phoenix	A429	0.85	1.01	0.98	0.86	0.95	1.22	0.94	0.97
31Denver	A433	1.07	1.04	0.97	0.85	1.15	0.75	0.98	1.16
32MW Cs	D200	0.73	0.91	0.91	1.07	0.88	0.75	0.87	0.81
33South Cs	D300	0.70	0.92	0.88	0.85	0.82	0.91	0.85	0.85
34West Cs	D400	0.79	0.96	1.01	1.20	0.94	0.93	0.90	0.88
35NE Bs	X100	0.96	0.91	0.91	1.19	0.97	0.77	0.86	0.97
36MW Bs	X200	0.82	0.90	0.88	0.87	0.94	0.93	0.94	0.88
37South Bs	X300	0.75	0.95	0.92	0.95	0.91	0.94	0.93	0.86
38West Bs	X499	0.89	1.00	0.92	0.75	0.88	0.85	0.90	0.84
Max		1.49	1.19	1.29	1.44	1.22	2.08	1.31	1.25
Min		0.70	0.90	0.85	0.75	0.82	0.71	0.85	0.73
Range		0.79	0.29	0.44	0.68	0.39	1.38	0.46	0.53
CV		21%	7%	11%	16%	11%	25%	10%	13%
Mean		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 4 shows the individual regression statistics for the aggregate results of ***Table 3***. The number of cluster price levels in the first column corresponds to the number of areas times the number of ELI-Clusters used in step one (***ELI-Cluster DF + 1)***. For example, the total number of observations for Transportation is 1102 = 38 areas x 29 ELI-Clusters. However, as seen from ***Table A*** showing the step one results, some ELI-Clusters did not cover all the areas. For example, Boys' Active Sportswear covered only 15 areas, so the entries for the remaining 23 areas in the corresponding ELI-Cluster in Apparel will be missing. In the Medical group, there are an additional four ELI-Clusters for Medical Insurance with weights but no price parities, totaling 152 observations (38 x 4). The CPI does have estimates of prices for medical insurance, but these must be processed separately (in a manner similar to the Rent files) and were not included in this report.

One by-product of this exercise is a tableau of cluster price levels and weights for 398 items and 38 geographic areas that enter into these aggregate results and that could be used for further analysis.

Table 4. Model Statistics Step Two: Aggregate Results

	Cluster Price Levels (CPLs)	N in Regressions	Missing		Model	ELI-Cluster	RMSE	Wt in CES
			No.	%	DF	DF		(%)
Overall*	**15276**	**13372**	**1904**	**12%**	**435**	**397**	**0.016**	100%
Major Groups:								
1 Housing	4028	3199	829	21%	143	105	0.028	42%

	Cluster Price Levels (CPLs)	N in Regressions	Missing		Model	ELI-Cluster	RMSE	Wt in CES
			No.	%	DF	DF		(%)
Overall*	**15276**	**13372**	**1904**	**12%**	**435**	**397**	**0.016**	100%
2 Transportation	1102	1001	101	9%	66	28	0.036	17%
3 Food & Beverages	4940	4503	437	9%	167	129	0.026	15%
4 Education	874	813	61	7%	60	22	0.095	6%
5 Recreation	1330	1238	92	7%	72	34	0.076	6%
6 Medical*	532	374	158	30%	47	9	0.114	6%
7 Apparel	1444	1331	113	8%	75	37	0.047	4%
8 Other	1026	913	113	11%	64	26	0.069	4%

* Includes 152 Missing CPLs in Medical Insurance (4 ELI-Clusters x 38 areas = 152)

5. Sensitivity of Aggregate Price Levels to First-Step Results

The aggregate price levels depend on the cluster price levels for each area, which in turn are based on the individual coefficients of the models. This section looks at the sensitivity of the results to various changes in the regressions – such as combining some ELI-Clusters, using different specifications on some models, and changing two of the most influential regressions - Rents and Owners' Equivalent Rents.

a. Combined Regressions

A closer inspection of ***Table A (Appendix)*** reveals some regressions with very few observations and/or characteristics entering the model, such as the ELI-Cluster HH03 (Household Linens) repeated below in ***Table 5***. The HH03 Item level has a total expenditure weight of 0.24% and the largest ELI-Cluster within these is Quilts and Comforters at 0.027% of total expenditures. There are twelve ELI-Clusters in Household Linens, but only four of them had over 100 observations, with at most Outlet types and one set of characteristics included in the regressions. How much difference does it make to the overall price level if instead of these separate regressions, a single model is specified, combining all twelve ELI-Clusters in Household Linens?

The combined regression for Item level is shown in ***Table 5*** (the twelve separate ELI-Cluster regression statistics are repeated from ***Table A***).

Table 5. Model Differences using Combined versus Separate Regressions

ELI	Cluster	Obs	N	Miss	Outlets	Charac-teristics	Model DF	Area DF	RMSE	ELI-Cluster Description	Wt %
Combined Regression:											
HH03		868	858	10	15	ELI-Clusters	63	37	0.118	Household Linens	0.236%

ELI	Cluster	Obs	N	Miss	Outlets	Charac-teristics	Model DF	Area DF	RMSE	ELI-Cluster Description	Wt %
Separate Regressions:											
HH031	01	129	126	3	9	Item	41	28	0.113	Towels, Wash Cloths & Bath Mats	0.026%
HH031	02	36	35	1	0	-	17	17	0.048	Bath Rugs & Toilet Covers	0.014%
HH031	03	28	28	0	0	-	16	16	0.100	Shower Curtains	0.012%
HH032	01	42	42	0	0	-	18	18	0.052	Bedspreads	0.015%
HH032	02	29	28	1	0	-	19	19	0.031	Electric Blankets	0.018%
HH032	03	71	69	2	0	-	25	25	0.059	Other Blankets	0.018%
HH032	04	109	109	0	10	Type	45	32	0.073	Quilts & Comforters	0.027%
HH032	05	152	124	28	11	Sheet Size	45	30	0.049	Sheets & Pillow Cases	0.026%
HH032	06	109	106	3	10	Size	43	28	0.050	Bed Pillows	0.023%
HH032	07	57	57	0	9	-	30	21	0.031	Other Bedroom Linen	0.019%
HH033	01	50	49	1	0	-	19	19	0.109	Dishcloths & Dishtowels	0.017%
HH033	02	56	56	0	0	-	21	21	0.140	Tablecloths, Placemats, Napkins	0.019%
	Sum	868	829	39							

The parities obtained by separate regressions refer to each ELI-Cluster, and as a results there are many missing values – for example, only 29 areas have parities for HH03101 (Towels, Wash Cloths and Bath Mats) as indicated by the **Area DF** column in ***Table 5.*** However, even with relatively large differences in models and in the distribution of the observations across clusters, the overall differences in price levels for Housing are very small. The summarized percent differences are shown in ***Table 6*** and in more detail in ***Table B*** in the Appendix**.**

Table 6. Effect of Using Combined vs. Separate Regressions on the Aggregate Housing Price Level.

Housing	Price Levels		Difference
	Original Separate HH03	Combined HH03	(as % of original)
Mean	1.00	1.00	0.01%
Max	1.49 San Francisco	1.48 San Francisco	0.32% West C
Min	0.70 South C	0.70 South C	-0.51% Denver
Range	0.79	0.78	0.83%

There is a slight flattening of the range between highest and lowest price levels when the combined regression is used, and the largest differences are 0.32% for the Denver area and –0.51% for the West C areas. These are not the extremes in absolute values – San Francisco is highest and South C areas are lowest in housing price levels, whether the separate or combined regressions are used.

b. Removing an Irrelevant Variable in Medical Services

In this section, the differences in price levels are examined for a model with a larger weight: Physician Services (MC011) which comprises 1.52% of total expenditures,

versus 0.24% for Household Linens. Physician Services are the 11th highest ranked expenditure weight[15].

The original regression for MC011 included characteristic C (Type of Practice), and there were three possible specifications for C: C1 for Individual Practice, C2 for Group Practice and C99 for Other type of practice. The Type III Sum of Squares for C was small, and the F-value only 0.66 with a probability value of 0.5192, and t-values for each C were less than 2.0. It seems reasonable to assume that characteristic C is not a relevant variable, and should be dropped. What difference does removing C make to the Medical price levels and to the overall price level results? In principle, the inclusion of C does not bias the coefficients, but may lead to inefficient estimates of the other variables – their variances were higher than they should have been.

Table 6. Model Differences with and without an Irrelevant Variable:

Item	Obs	N	Miss	Charac-teristics	Model DF	Area DF	RMSE	ELI-Cluster Description	Wt %
C Included									
MC01	1166	1160	6	ELI-Clusters, A, C, D	69	35	0.1713	Physician Services	1.52%
C Excluded:									
MC01	1166	1162	4	ELI-Clusters, A, D	67	35	0.1712	Physician Services	1.52%

There is very little difference in the models, but the resulting Medical price levels differ more significantly, decreasing by nearly 3% for Cincinnati and increasing by 1% in Phoenix. A summary of the differences is shown in ***Table 7***, with more details in ***Table C*** in the Appendix. The root mean square error of the model excluding C is slightly smaller, as are the standard errors of the coefficients (not shown here).

Table 7. Effect of Including and Excluding an Irrelevant Variable on the Aggregate Medical Price Level

Medical	Price Level		Difference
	Original With C in MC01	Excludes C in MC01	(as % of original)
Mean	1.00	1.00	0.002%
Max	2.08 Minneapolis	2.10 Minneapolis	1.02% Phoenix
Min	0.71 Milwaukee	0.71 Milwaukee	-2.84%Cincinnati
Range	1.38	1.39	3.86%

[15] The rank order for the top eleven expenditure categories is: Owners' Equivalent Rent, Rents, New Cars and Trucks, Gasoline, Lodging away from Home, Full and Limited Service meals away from Home, Electricity, Used Cars and Trucks, Motor Vehicle Insurance and Physician Services. Their cumulative weight is 54.3% of total expenditures.

c. Removing Relevant Variables: Rents and Owners' Equivalent Rents

The two rent regressions will be discussed in this section to illustrate the sensitivity of the aggregate results to the introduction (and removal) of additional census information. A separate section will then be devoted to some choices arising in the construction of the rent regressions.

Housing is the largest expenditure group with 42% of total expenditures. Within Housing, the distribution is as follows: Owners' Equivalent Rents 23%, followed by Household Furnishings 13%, and Rents at 6% of total expenditures. The Owners' Equivalent Rents and Rents are observations culled from the same Housing database, and require elaboration.

The Housing observations total nearly 80,000 for the year 2003. They include observations on the same unit priced twice, on a six-month cycle: January and July, February and August, and so forth. Each observation is classified as a Rental or an Owners' Equivalent Rental, as the latter in current BLS practice is not directly observable and must be imputed. The imputation procedure is beyond the scope of this paper (see for example, BLS Handbook of Methods [1992], Lane and Sommers [1984]).

Out of the original 77,223 observations for 2003, there are 54,514 Rent observations, known as 'economic' rents, and 60,683 imputed Owners' Equivalent rents, known as 'pure' rents. Some units are imputed and others may have a zero weight so they are excluded from the sample. We take the geometric mean of the observations for each uniquely identified housing unit, and this reduces the observations to a total of 27,222 for Rents and 30,289 for Owners' Equivalent rents. Out of these, about 3% are new construction units.

In addition to the collection cycle and Rental/Owners' Equivalent classification, numerous housing characteristics are available for most observations, including the type of structure (single, multi-unit, detached, mobile), the number of rooms and bathrooms, the utilities that are included, the availability and type of parking, air conditioning, rent control status, length of occupancy, and approximate age of the unit.

It has been the practice in the BLS to supplement structural information with census information about the neighborhood demographics (see Armknecht, Moulton and Stewart [1994] and Moulton [1995] for example). This has also been done here by merging the housing unit observations with the 1990[16] census information at the zip code level. Note that the census data are not directly tied to individual housing observations, only indirectly at the zip code level. The census information includes counts of persons in the zip code by Race, Age, Educational Attainment and Poverty Status, and counts of housing units by Number of Owners versus Renters, Race of Householder, Units in

[16] The 1990 Census was readily available as a file that could be merged with the Housing Database, but should be updated to 2000. It may also be possible to match addresses at a finer geographic level, such as the track level.

Structure[17], Vehicles Available per Housing Unit and Plumbing Facilities of the Housing Units in the zip code.

The comparison in this section is between the price levels obtained using both the characteristics of the sampled housing units and the merged census data at the zip code level, versus using only the characteristics of the sampled units[18]. Since the two models (Rents and Owners' Equivalent Rents) account for nearly 30% of overall consumer expenditures, model differences will have the largest single impact on the overall price levels. The variables in the two models and the regression statistics are shown in ***Table 8.***

Table 8. Model Differences with and without relevant (Census) Variables

ELI-Cluster	Obs	N	Miss	Characteristics	Model DF	RMSE	Wt in CES %
Original (with Census)							
HA011 Rent	27222	26459	763	Panel (collection cycle), AC, Heat, Sewer, Water, Electricity, TypeStructure*Built_pre90, Bedrooms, Total Rooms, Baths, Length Occupancy, Parking, Respondent Type, Prcuse6 (determines use in Rent vs. Own file) *Census: Total Housing Units, Total Population, Housing Density, %White, %WhiteOccup, %Large Building, %Car2+, %College Education,%LackPlumbing, %UnderPoverty, %School Age, %Age65+*	105	0.0095	6.01%
HC011 Owners' Equivalent	30289	29358	931	Panel (collection cycle), AC, Heat, Sewer, Water, Electricity, TypeStructure*Built_pre90*, Bedrooms, Total rooms, Baths, Length Occupancy, Parking, Respondent Type, Prcuse6 (determines use in Rent vs Own Equivalent file) *Census: Total Housing Units, Total Population, Housing Density, %Renters, %White, %WhiteOccup, %Large Buildings, %Car2+, %College Education, %LackPlumbing, %UnderPoverty, %School Age, %Age65+*	104	0.0095	22.94%
Without Census							
HA011 Rent	27222	27216	6	Panel (collection cycle), AC, Heat, Sewer, Water, Electricity, TypeStructure* Built_pre90, Bedrooms, Total Rooms, Baths, Length Occupancy, Parking, Respondent Type, Prcuse6 (determines use in Rent vs. Own file)	94	0.0102	6.01%
HC011 Owners' Equivalent	30289	30278	11	Panel (collection cycle), AC, Heat, Sewer, Water, Electricity, TypeStructure* Built_pre90, Bedrooms, Total rooms, Baths, Length Occupancy, Parking, Respondent Type, Prcuse6 (determines use in Rent vs Own Equivalent file)	92	0.0106	22.94%

[17] This is a count of the housing units with 50 or more units in the structure, 20-49 units, 10-19 units and so forth, down to single detached housing units.

[18] The 'relevancy' of the Census variables is in terms of their significance in the models used. They may not be relevant by other criteria.

Some sense of the differences on the estimates of the price levels is provided in ***Table 9.*** The price level spread across areas is much wider when no Census data are used, although the highest and lowest areas remain the same (San Francisco and South C respectively). The changes range from a decrease of 13.31% (South C areas) to an increase of 11.47% in Honolulu. More detailed information on the changes for each individual area are shown in ***Table D*** in the Appendix.

Table 9. Effect of Removing Census Variables from Rent Regressions on the Aggregate Housing Price Levels

Housing	Price Level		Difference
	Original With Census	No Census	(as % of original)
Mean	1.00	1.00	-0.87%
Max	1.49 San Francisco	1.62 San Francisco	11.47% Honolulu
Min	0.70 South C	0.61 South C	-13.31% South C
Range	0.79	1.01	24.78%

Before going further into the variables of the housing rent regressions, a summary of the results of the sensitivity of the overall price levels to these three changes in specification are given.

d. Changes in Overall Prices with All Three Modifications to the Original Regressions

Table 10 shows the differences in the aggregate models between the original results and the three modifications described above:

- combining 12 ELI-Clusters in Household Linens,
- removing a variable in Physician Services, and
- removing the Census data from the rent regressions in Housing.

Table 10. Model Differences between Original and Modified Regressions:

Price Parities	N	Missing	% Missing	Model DF	ELI-Cluster DF	RMSE
Original 15276	13372	1904	12%	435	397	0.0161
Modified 14858	13130	1728	12%	424	386	0.0166

There are 11 fewer ELI-Cluster variables due to the combined regressions in Household Linens and therefore 418 (38 x 11) fewer price parities in the modified aggregate regression. The sum of squares of the error and the coefficient of variation in the modified regression increases slightly.

The last table in this section, ***Table 11,*** shows the differences in price levels for each area in the final results when all three modifications are implemented – the aggregations of regressions in Household Linens, albeit an item with relatively low weight, the removal of a variable in Physician Services, an item with a high weight, and the removal of a number of variables in the two Rent regressions, the most important items in the Consumer Expenditure Survey.

Table 11. Effects of all Three Changes (Combined Household Linens, Revised Physician Services and Removal of Census Data on Rents) on Overall Price Levels

Original Rank	Area		Original Overall Price Level	New Rank	New Price Level	Difference as % of original	Change in Rank (New-Original)
1	**NY suburbs**	A110	1.270	2	1.297	2.1%	-1
2	**San Francisco**	A422	1.267	1	1.321	4.3%	1
3	**NY city**	A109	1.220	4	1.259	3.2%	-1
4	**Honolulu**	A426	1.203	3	1.264	5.0%	1
5	**NJ suburbs**	A111	1.175	6	1.178	0.2%	-1
6	**San Diego**	A424	1.147	5	1.186	3.4%	1
7	**Boston**	A103	1.145	7	1.172	2.4%	0
8	**Los Angeles**	A419	1.133	9	1.138	0.4%	-1
9	**Anchorage**	A427	1.126	8	1.163	3.3%	1
10	**Minneapolis**	A211	1.065	10	1.075	0.9%	0
11	**Seattle**	A423	1.053	11	1.070	1.5%	0
12	**Greater LA**	A420	1.053	13	1.050	-0.3%	-1
13	**Chicago**	A207	1.052	12	1.058	0.6%	1
14	**Philadelphia**	A102	1.035	16	1.029	-0.6%	-2
15	**Miami**	A320	1.031	17	0.995	-3.5%	-2
16	**Denver**	A433	1.026	15	1.034	0.8%	1
17	**DC**	A312	1.013	14	1.038	2.5%	3
18	**Detroit**	A208	0.972	19	0.961	-1.2%	-1
19	**Baltimore**	A313	0.963	20	0.959	-0.4%	-1
20	**Portland**	A425	0.961	18	0.971	1.0%	2
21	**Milwaukee**	A212	0.950	21	0.937	-1.4%	0
22	**NE Bs**	X100	0.942	23	0.930	-1.3%	-1
23	**Dallas**	A316	0.936	22	0.935	-0.1%	1
24	**Tampa**	A321	0.935	26	0.911	-2.5%	-2
25	**Phoenix**	A429	0.930	25	0.915	-1.6%	0
26	**Atlanta**	A319	0.922	27	0.905	-1.8%	-1
27	**Cleveland**	A210	0.916	28	0.902	-1.6%	-1
28	**West Cs**	D400	0.905	24	0.917	1.3%	4
29	**West Bs**	X499	0.901	30	0.882	-2.0%	-1
30	**Houston**	A318	0.897	29	0.884	-1.5%	1
31	**Cincinnati**	A213	0.897	31	0.871	-2.9%	0
32	**MW Bs**	X200	0.868	32	0.850	-2.0%	0
33	**Kansas City**	A214	0.867	33	0.850	-1.9%	0
34	**Pittsburgh**	A104	0.861	34	0.844	-2.0%	0

Original Rank	Area		Original Overall Price Level	New Rank	New Price Level	Difference as % of original	Change in Rank (New-Original)
35	**St. Louis**	A209	0.858	35	0.837	-2.5%	0
36	**South Bs**	X300	0.858	36	0.829	-3.4%	0
37	**MW Cs**	D200	0.832	37	0.810	-2.7%	0
38	**South Cs**	D300	0.815	38	0.775	-4.9%	0
	Mean		1.000		1.000	-0.24%	
	Max		1.270		1.321	5.0%	
	Min		0.815		0.775	-4.9%	
	Range		0.455		0.546	9.9%	

The differences in overall price levels mirror those of the Housing price levels, but their absolute levels are mitigated by the other expenditure groups. Honolulu has the highest increase (5.0%), while the South C areas the largest decrease (-4.9%). Again, there is a widening of the range in price levels without the Census variables. The last column in ***Table 11*** shows the change in rank order between the revised regressions and the original price level results.

The three top east coast areas: New York suburbs, New York city and New Jersey suburbs, switch positions with west coast areas – San Francisco, Honolulu and San Diego. In spite of having the largest decrease in price levels, South C remains the area with the lowest price level. DC jumps from 17th to 14th ranked price level, as does the West C areas, from 28th to 24th ranked.

6. Rent Regressions Revisited – Census Variables

How are the census variables influencing the rent regressions, and should they be included in estimating price levels? In this section the variables that were merged with the Housing data are discussed in more detail, and the discussion leads to an illustration of the results with respect to the relationship between interarea price levels and income levels.

a. Census Variables

The census variables used in the rent regressions are listed below, and refer to the zip code of the unit that was sampled.

- *Housing Units*: Total number of housing units
- *Population*: Total population
- *Housing density*: Ratio of housing units to population
- *% Renters*: Ratio of renters to total (renters + owners) (Only in Owners' Equivalent regression)
- *% White*: Proportion of white population

- *% White Occupancy*: Proportion of occupied housing units with white householder
- *% Large Building*: Proportion of housing units with 50 or more units in the structure
- *% Car2+*: Proportion of housing units with 2 or more cars
- *% College Education:* Proportion of population 25 years and older with at least some college education
- *% Under Poverty:* Proportion of population for whom poverty status was determined (in 1989)
- *% Lack of Plumbing*: Proportion of housing units lacking complete plumbing facilities
- *% School Age*: Proportion of population between 6 and 18 years of age
- *% Age65+*: Proportion of population over 65 years of age

Table 12. Census coefficients in Table 8 Regression Models

	Rent HA011		Owners' Equivalent HC011	
Census Variable	**Estimate**	**Std. Err**	**Estimate**	**Std. Err**
Housing Units	-0.30*	0.11*	-0.77*	0.13*
Population	0.14*	0.05*	0.33*	0.05*
Housing Density	-0.34	0.05	-0.24	0.04
% Renters			-0.10	0.02
% White	-0.56	0.08	-0.49	0.08
% White Occupancy	0.62	0.08	0.48	0.09
% Large Buildings	0.24	0.02	0.41	0.03
% Car2+	-0.26	0.03	-0.29	0.04
% College	0.56	0.02	0.62	0.02
% Under Poverty	-0.44	0.03	-0.65	0.04
% Lack of Plumbing	-0.70	0.31	-1.26	0.26
% School Age	-0.66	0.08	-1.37	0.08
% Age 65+	-0.33	0.04	-0.55	0.05
*(x 10^{-5})	N in regressions			
	26459		29358	

All census coefficients are highly significant, with the exception of *% Lack of Plumbing* in the Rent equation, which has the lowest t-value, –2.29 (Pr > |t| = 0.022). There are some obvious correlations among variables, including *% White* and *% White Occupancy*, *% Lack of Plumbing* and *% Under Poverty*, and the latter to income, which is not included explicitly in the models.

Looking closely at the values of these variables in just two areas: Honolulu and South C areas, the reason why they are most sensitive to the removal of the variables becomes more apparent. ***Table 13*** shows their mean values, and the mean across all areas. The ratio of Honolulu to South C is also given.

Table 13. Mean Values of Census Variables

Mean Values of Variable	All Areas	Honolulu A426	South C D300	*Ratio Honolulu/ South C*
Number of Observations	57511	656	2035	*0.32*
Housing Units	11863	14290	8823	*1.62*
Population	29128	41038	221	*1.85*
Housing Density	0.41	0.36	0.40	*0.91*
% Renters	0.40	0.47	0.34	*1.39*
% White	0.81	0.32	0.80	*0.40*
% White Occupancy	0.83	0.36	0.83	*0.44*
% Large Buildings	0.05	0.17	0.01	*21.00*
% Car2+	0.54	0.52	0.57	*0.92*
% College	0.51	0.54	0.36	*1.50*
% Under Poverty	0.12	0.07	0.22	*0.32*
% Lack of Plumbing	0.01	0.01	0.01	*0.44*
% School Age	0.17	0.16	0.19	*0.83*
% Age 65+	0.12	0.12	0.12	*0.99*

The *% Large Buildings* is the most striking difference between the two, with Honolulu having over twenty times the proportion of large buildings relative to the South C areas. There are only five areas with *% Large Buildings* above ten percent: New York at 36%, Miami at 15%, Honolulu at 17% and DC and Houston at 13%. The average for all areas is 5%. These high percentage large building areas tend to have higher rents, and thus the sign of *% Large Buildings* is positive (***Table 12***). If we include this variable, we reduce the differential between the extreme areas of large buildings, lowering Honolulu's and raising South C areas, for example, other things equal.

One argument for including census variables is that they may help explain rent differences across neighborhoods due to unobserved quality differences. But it may not be appropriate to assume that these variables have the same effect across areas as they do across zip codes or neighborhoods. Some variables may be more directly related to quality, such as the proportion of renters (*% Renters)*, if one expects homeowners to maintain their properties better than renters. In an attempt to contrast these effects, and possibly those of race, education and income-related variables, a principal components analysis was done, and is summarized below.

The analysis reveals a bit more about the variation among the interrelated census variables by reducing them to components that are uncorrelated. If the components can be easily interpreted, a few of them could be incorporated into the model instead of the original set of multiple variables. ***Table 14*** shows the first three components for Rents and Owners' Equivalent Rents.

Table 14. Principal Components

Component	1		2		3	
			Rents			
Housing Units	0.31	+	0.18		0.48	+
Population	0.31	+	0.00		0.53	+
Housing Density	0.04		0.49	+	-0.22	
% Renters	-		-		-	
% White	-0.43	-	0.16		-0.00	
% White Occupancy	-0.43	-	0.17		0.01	
% Large Buildings	0.24		0.36		0.05	
% Car2+	-0.41	-	-0.25		0.18	
% College	-0.19		0.27		0.33	
% Under Poverty	0.35	+	-0.14		-0.27	
% Lack of Plumbing	0.22		-0.15		-0.32	-
% School Age	-0.00		-0.53	-	0.04	
% Age 65+	0.02		0.28		-0.36	-
Eigenvalue	3.71		2.82		1.77	
Cumulative % of total variation	31.0%		54.5%		69.2%	

Component	1		2		3	
			Owner			
Housing Units	0.29		0.08		0.48	+
Population	0.26		-0.07		0.52	+
Housing Density	0.13		0.46	+	-0.21	
% Renters	0.39	+	0.14		0.02	
% White	-0.37	-	0.25		-0.00	
% White Occupancy	-0.36	-	0.26		0.00	
% Large Buildings	0.27		0.30		0.07	
% Car2+	-0.42		-0.15		0.18	
% College	-0.12		0.29		0.34	
% Under Poverty	0.33	+	-0.20		-0.26	
% Lack of Plumbing	0.16		-0.21		-0.32	-
% School Age	-0.10		-0.52	-	0.04	
% Age 65+	0.03		0.27		-0.36	-
Eigenvalue	4.25		2.86		1.82	
Cumulative % of total variation	32.7%		54.7%		68.7%	

The first three components account for over two thirds of the standardized variance. The signs next to each variable in each component indicate a coefficient whose absolute value is highest or second highest in that component. For example, in the first principal component for Rents, *Housing Units*, *Population* and *%Under Poverty* have the highest positive values, while *%White, %White Occupancy and %Car2+* have the lowest negative values[19]. For Owners, it is the *%Renters*[20] and *%Under Poverty* that have large positive values while *%White* and *%White Occupancy* have large negative values. This

[19] The sign of the principal component is arbitrary – if every sign is reversed, the variance and orthogonality are unchanged. "The interpretation of the component remains the same, even though the role of 'large' and 'small' are reversed" (Joliffe [2002, p.67]).

[20] Rental occupancy rates were not included in the rent equations and are therefore not included in the principal components analysis for rents.

latter can be interpreted readily as a contrast between income and race, although for Rents, the contrast includes a size factor (housing and population totals).

The second component contrasts *Housing Density* with the % S*chool Age* children. This implies that, after race and income have been accounted for, the main source of variation among the variables is between high-density areas relative to areas with more children, a possible city-suburb contrast. The third component contrasts the large areas (measured by housing and population zip code totals) with older population concentrations (*% Age65+)* and lower incomes (*% Lack of Plumbing, % Under Poverty).* The patterns of all three components are relatively similar for Rents and Owners' Equivalent Rents.

Should the census variables be included or omitted from the rent regressions? If incomes and price levels are highly correlated (as will be seen in the application below), and if we omit the variables that are proxies for income in the census data, the predicted price levels will be higher in areas such as New York, Honolulu and San Francisco and lower in the smaller areas such as the South C areas, and consequently, the range will increase significantly.

The importance of Housing, specifically Rents and Owners' Equivalent Rents, in the overall price level and their sensitivity to changes in model specification, suggests that these regressions require a more sophisticated prediction criteria and more detailed analysis of the source data (see Moulton [1995] for example). Although the results are not inconsistent with the previous study that referred to 1989 prices (Kokoski, Moulton and Zieschang [1999]), the rankings for Washington DC relative to areas such as Chicago, Minneapolis and Denver may be more sensitive to different housing characteristics and to the weights used, than is desirable.

b. Example: Price Levels and Income Levels

Figure 1 is a chart of the price levels from the new regressions (which include all three changes discussed in the previous section) and income data from the IRS[21]. Note that income was <u>not</u> used directly in the models because it raises issues of simultaneity and alternative modeling choices that are not addressed in any depth in this paper. The chart echoes a relationship that has been found at the international level, namely that price levels rise with rising income levels.

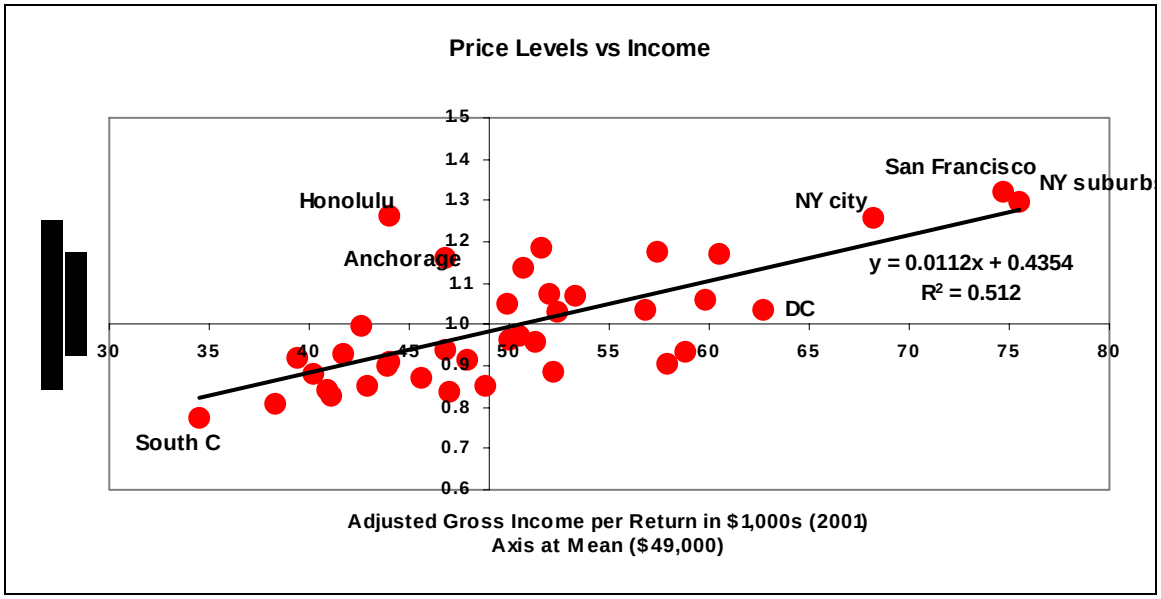
The axes are at the mean levels - $49,000 per return for the adjusted gross income in 2001, and 1.00 for the price level. Areas in the top right quadrant of the graph are areas of higher than average price levels, and higher than average income levels, such as San Francisco and the New York areas. Honolulu and Anchorage are the only two areas in the top left quadrant, indicating areas with high price levels but low incomes relative to the mean.

[21] The income variable is the adjusted gross income per IRS tax return for 2001, summed to the zip code level and kindly provided by Ann Dunbar of the BEA.

Table 15 breaks down the overall price level by goods and services, with Rents in the latter group. There are 305 clusters classified as goods and 85 as services, roughly an eighty to twenty percent split[22]. The relationship between price levels and incomes is much steeper for services (***Figure 3***), than for goods (***Figure 2***), a relationship that also echoes the price levels of tradable and non-tradable goods in international comparisons (Aten [1997]).

In ***Figure 4***, the ratio of the price levels of goods to services is graphed against income. As expected, the ratio varies inversely with income, because the price of goods varies less than the price of services. The same result is reported in Heston, Summers and Nuxoll [1994], namely that low-income countries tend to have lower relative prices for non-tradables, and if tradable goods follow the law of one price, the differential between tradables and non-tradables will be more pronounced in poorer countries. This relationship is associated with the Balassa-Samuelson effect, that some trace back to Ricardo. Bhagwati (1984) provided an alternative explanation of the relative prices of services in poor countries that is also consistent with ***Figure 4.***

Figure 1. Price Levels versus Adjusted Gross Income per Household



[22] The ELI-clusters that are classified as Services are labeled 'y' in a column in ***Table A*** in the Appendix.

Figure 2. Price Levels: Goods

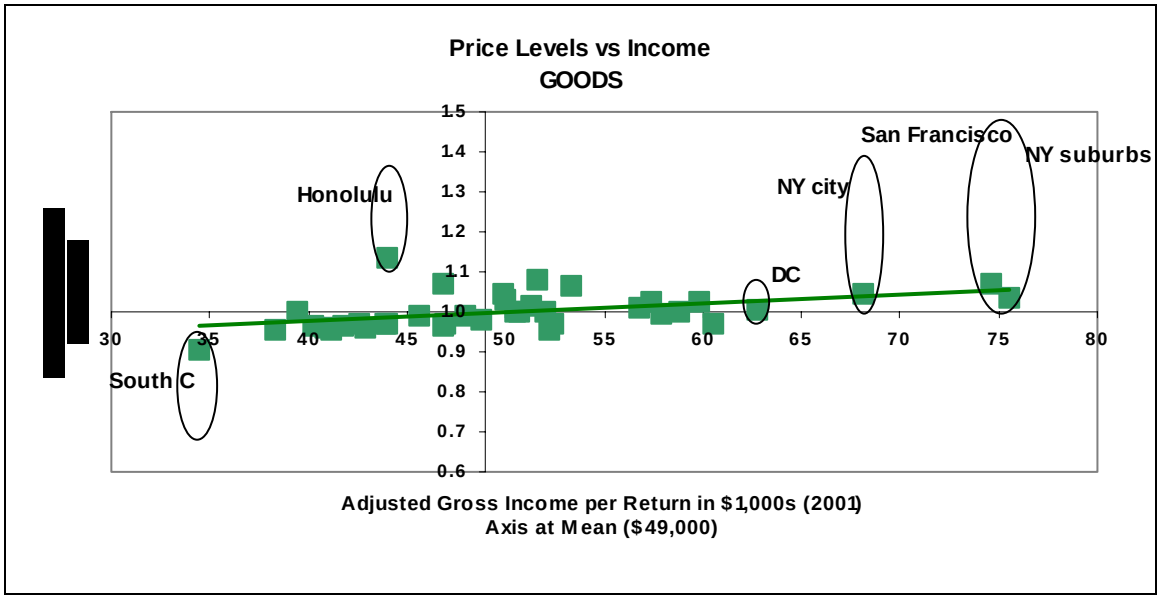


Figure 3. Price Levels: Services

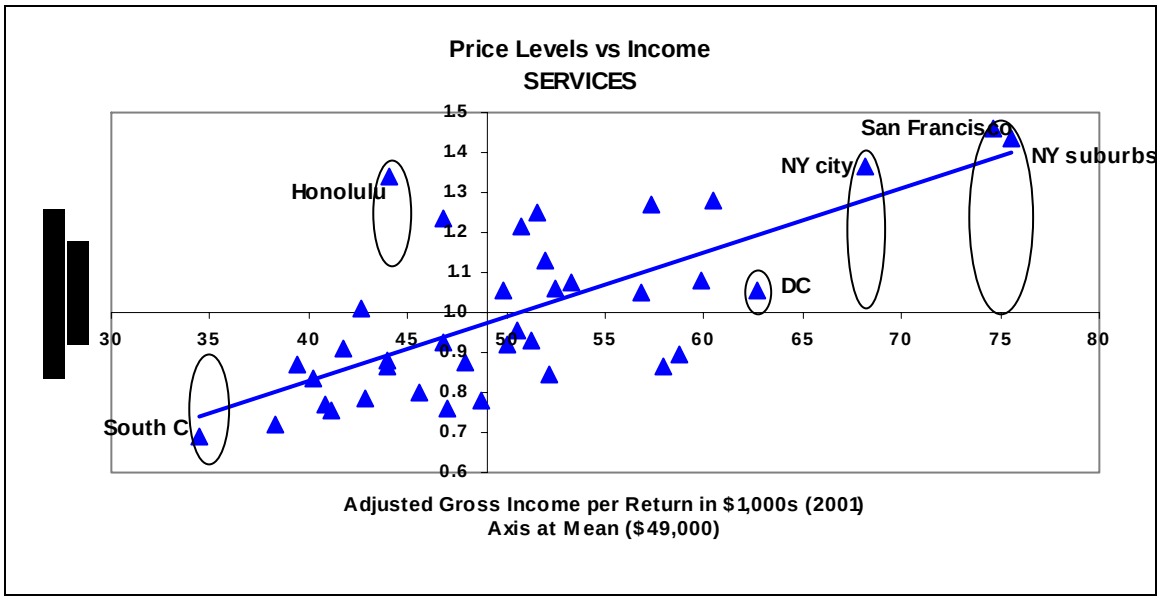
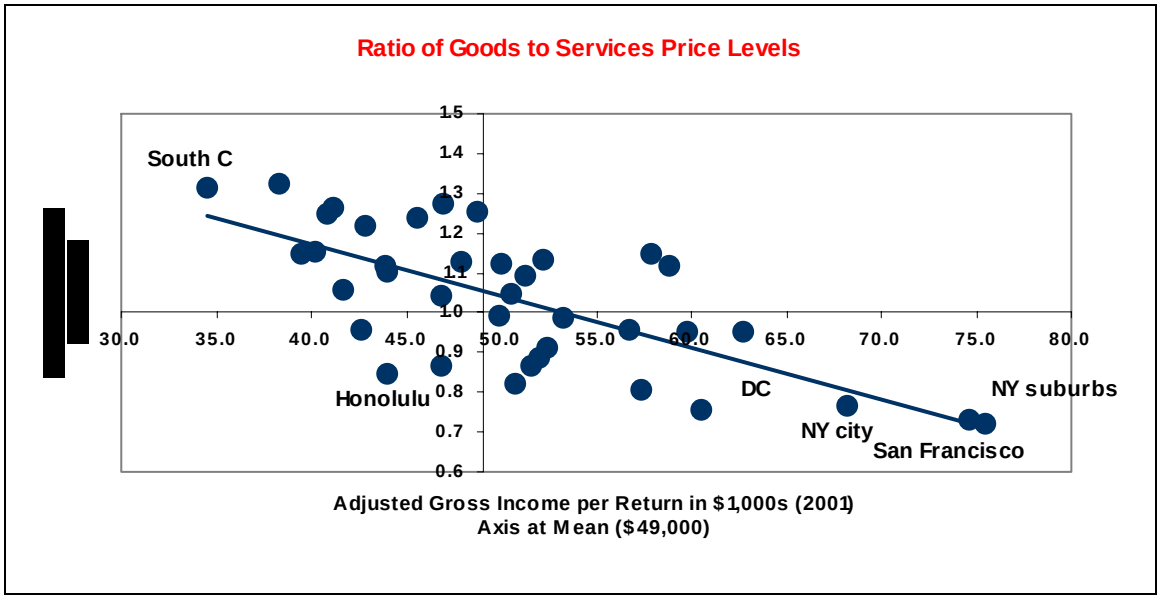


Figure 4. Ratio of Goods to Services Price Levels



The individual values of ***Figure 1-4*** are listed in ***Table 15,*** ranked by adjusted gross income**.**

Table 15. Price Levels vs. Adjusted Gross Income per Return

			Price Levels				
Income Rank	Area		All	Goods	Services	Ratio G/S	Income ($000s)
1	**NY suburbs**	A110	1.30	1.04	1.43	*0.72*	75.5
2	**San Francisco**	A422	1.32	1.07	1.46	*0.73*	74.7
3	**NY city**	A109	1.26	1.04	1.36	*0.77*	68.2
4	**DC**	A312	1.04	1.00	1.06	*0.95*	62.7
5	**Boston**	A103	1.17	0.97	1.28	*0.76*	60.5
6	**Chicago**	A207	1.06	1.03	1.08	*0.95*	59.8
7	**Dallas**	A316	0.94	1.00	0.90	*1.12*	58.8
8	**Atlanta**	A319	0.91	0.99	0.87	*1.15*	57.9
9	**NJ suburbs**	A111	1.18	1.02	1.27	*0.81*	57.4
10	**Denver**	A433	1.03	1.01	1.05	*0.96*	56.8
11	**Seattle**	A423	1.07	1.06	1.08	*0.99*	53.3
12	**Philadelphia**	A102	1.03	0.97	1.06	*0.91*	52.4
13	**Houston**	A318	0.88	0.95	0.84	*1.13*	52.2
14	**Minneapolis**	A211	1.07	1.00	1.13	*0.89*	52.0
15	**San Diego**	A424	1.19	1.08	1.25	*0.87*	51.6
16	**Baltimore**	A313	0.96	1.02	0.93	*1.09*	51.3
17	**Los Angeles**	A419	1.14	1.00	1.22	*0.82*	50.7
18	**Portland**	A425	0.97	1.00	0.96	*1.05*	50.5
19	**Detroit**	A208	0.96	1.03	0.92	*1.12*	50.0
20	**Greater LA**	A420	1.05	1.05	1.05	*0.99*	49.9

Income Rank	Area		Price Levels All	Goods	Services	Ratio G/S	Income ($000s)
21	**Kansas City**	A214	0.85	0.98	0.78	*1.25*	48.8
22	**Phoenix**	A429	0.92	0.99	0.88	*1.13*	47.9
23	**St. Louis**	A209	0.84	0.97	0.76	*1.27*	47.0
24	**Anchorage**	A427	1.16	1.07	1.23	*0.87*	46.8
25	**Milwaukee**	A212	0.94	0.96	0.93	*1.04*	46.8
26	**Cincinnati**	A213	0.87	0.99	0.80	*1.24*	45.6
27	**Honolulu**	A426	1.26	1.13	1.34	*0.85*	44.0
28	**Tampa**	A321	0.91	0.97	0.88	*1.10*	44.0
29	**Cleveland**	A210	0.90	0.97	0.86	*1.12*	43.9
30	**Midwest Bs**	X200	0.85	0.96	0.79	*1.22*	42.9
31	**Miami**	A320	0.99	0.97	1.01	*0.96*	42.6
32	**NE Bs**	X100	0.93	0.96	0.91	*1.06*	41.7
33	**South Bs**	X300	0.83	0.95	0.76	*1.26*	41.1
34	**Pitts**	A104	0.84	0.96	0.77	*1.25*	40.9
35	**West Bs**	X499	0.88	0.96	0.83	*1.15*	40.2
36	**West Cs**	D400	0.92	1.00	0.87	*1.15*	39.4
37	**Midwest Cs**	D200	0.81	0.96	0.72	*1.33*	38.3
38	**South Cs**	D300	0.77	0.91	0.69	*1.31*	34.5
	Mean		**1.00**	**1.00**	**1.00**	***1.03***	**50.6**
	Max		**1.32**	**1.13**	**1.46**	***1.33***	**75.5**
	Min		**0.77**	**0.91**	**0.69**	***0.72***	**34.5**
	Range		**0.55**	**0.23**	**0.77**	***0.60***	**41.0**

Conclusions

This report follows groundbreaking work done at the BLS based on 1989 prices. Changes from previous work include a more tailored approach to each hedonic regression, the use of normalized quote weights, the use of weights at a more detailed level in the first estimation step, and the choice of multilateral aggregation method in the second step. In the previous work, an overall price level was not calculated, partly due to the method of aggregation that was employed.

An attempt was made to keep the process of specifying regressions consistent and transparent for the entire CPI, but there were differences in the treatment of certain categories. For example, more time was spent on the expenditure groups with larger weights, such as Housing, Transport and Food. Care was also taken to look at numerous alternative specifications in some of the more complex items, such as New Cars and Trucks, Personal Computers, Airline Travel and particularly Rents and Owners' Equivalent Rents, but no formal hypothesis tests were done to determine the degree of improvement of one model over another. In some cases, the area coefficients were not significant, for example, for Postage, but were used nonetheless. Thus, the standard errors of the coefficients in the first step varied considerably across items, and further

research is needed on how to incorporate this variation in the second step estimation, where the coefficients enter the model as dependent variables[23].

In principle, one could obtain the aggregate area price levels using just one large regression if it included all price quotes and all the characteristics for each item or ELI-Cluster. Some decision would be needed on how to reconcile the two sets of available weights – the sampling quote weights and the consumer expenditure weights, and how to determine which item characteristics were more important than others. In practice however, the structure of the CPI makes it very difficult to attempt such a one-step process. The advantage of two steps is that it provides flexibility in determining each regression, and the process is similar to current methods for estimating time-to-time price indexes, which also makes individual item level hedonic adjustments, then aggregates them across expenditure groups.

The two-step process is also consistent with the methodology being developed in the International Comparison Program (ICP), whereby participating countries provide average price relatives for a set of overlapping items across broad regions of the world in the first-step of a benchmark comparison. The price relatives are then aggregated to the major expenditure levels of GDP (Gross Domestic Product) using a weighted CPD (country-product-dummy) method similar to the one described here.

There are four directions for analysis that seem to follow directly from this work – the first emerges from the summary statistics in ***Table A*** that point to items with large variations across areas. It would be useful to know if these variations also occur across time periods for the same area.

The second direction is to obtain a 'short-cut' approach, possibly reducing the number of regressions by focusing on the top twenty or fifty items with large weights, or picking the top five or ten items in each expenditure group and doing a more sophisticated first-step estimate for them.

Thirdly, it would be interesting to determine price levels for another 'benchmark' year, say 2004, and to analyze their stability vis-à-vis 2003 levels extrapolated by the CPI. The latter would likely raise consistency and reconciliation issues in time-space comparisons, such as those faced by the OECD in their yearly purchasing power parity comparisons (see for example, Varponen [2001]), but might also shed light on categories of the CPI that warrant further attention for price level estimation.

Lastly, how might these estimates be used by the BEA? One suggestion is to supplement the inter-area variation from the CPI with housing and energy price information that is also available for rural areas, thereby permitting estimation of state

[23] In both steps, one can compute the area least-squares means (the area means adjusted for the covariates), and their standard errors, as well as the probability that each pair of least-square means is significantly different. It is not clear how to obtain the 'joint' two-step standard errors of the areas, or whether this is relevant. Some recent discussions suggest a boot-strapping approach, but others argue that the variation from the first-step is adequately included in the error term of the second-step.

price levels. These in turn could be used for deflation of state product estimates or other economic variables for which spatial price deflation would be appropriate.

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APPENDIX

Table A. Model Statistics in First Step Hedonic Regressions

(see Attached Spreadsheet at the end of the Appendix)

Table B. Sensitivity 1: Effect of Combining Regressions for Household Linens on Aggregate Housing Price Levels

	HOUSING		Price Levels		Difference (as % of original)
			Original: Separate	Combined	
1	Philadelphia	A102	1.056	1.057	0.12%
2	Boston	A103	1.312	1.313	0.07%
3	Pittsburgh	A104	0.796	0.798	0.30%
4	NY city	A109	1.309	1.308	-0.02%
5	NY suburbs	A110	1.364	1.363	-0.08%
6	NJ suburbs	A111	1.361	1.359	-0.11%
7	Chicago	A207	1.057	1.056	-0.05%
8	Detroit	A208	0.925	0.927	0.13%
9	St. Louis	A209	0.776	0.776	-0.04%
10	Cleveland	A210	0.907	0.905	-0.12%
11	Minneapolis	A211	1.032	1.032	0.02%
12	Milwaukee	A212	0.944	0.942	-0.26%
13	Cincinnati	A213	0.818	0.819	0.08%
14	Kansas City	A214	0.797	0.795	-0.29%
15	DC	A312	0.956	0.957	0.09%
16	Baltimore	A313	0.925	0.927	0.13%
17	Dallas	A316	0.846	0.843	-0.26%
18	Houston	A318	0.835	0.835	0.05%
19	Atlanta	A319	0.889	0.889	0.08%
20	Miami	A320	1.028	1.030	0.13%
21	Tampa	A321	0.880	0.881	0.12%
22	Los Angeles	A419	1.280	1.280	0.01%
23	Greater LA	A420	1.157	1.156	-0.02%
24	San Francisco	A422	1.485	1.483	-0.09%
25	Seattle	A423	1.010	1.010	0.03%
26	San Diego	A424	1.295	1.296	0.10%
27	Portland	A425	0.930	0.929	-0.09%
28	Honolulu	A426	1.238	1.240	0.23%
29	Anchorage	A427	1.238	1.235	-0.24%
30	Phoenix	A429	0.852	0.852	0.04%
31	Denver	A433	1.071	1.065	-0.51%
32	MW Cs	D200	0.729	0.730	0.23%
33	South Cs	D300	0.698	0.700	0.30%
34	West Cs	D400	0.789	0.791	0.32%
35	NE Bs	X100	0.962	0.962	-0.09%

	HOUSING		Price Levels		Difference (as % of original)
			Original: Separate	Combined	
36	MW Bs	X200	0.816	0.816	0.00%
37	South Bs	X300	0.753	0.752	-0.08%
38	West Bs	X499	0.888	0.889	0.07%
		Mean	1.000	1.000	**0.01%**
		Max	1.485	1.483	**0.32%**
		Min	0.698	0.700	**-0.51%**
		Range	0.786	0.783	**0.83%**

Table C. Sensitivity 2: Effect of Removing an Irrelevant Variable from Physician Services on the Aggregate Medical Price Levels

	MEDICAL		Price Level		Difference
			Original With C	Excludes C	(as % of original)
1	Philadelphia	A102	1.220	1.211	-0.75%
2	Boston	A103	0.755	0.760	0.77%
3	Pittsburgh	A104	0.803	0.800	-0.46%
4	NY city	A109	1.212	1.199	-1.09%
5	NY suburbs	A110	1.291	1.302	0.84%
6	NJ suburbs	A111	1.060	1.060	-0.07%
7	Chicago	A207	0.980	0.982	0.19%
8	Detroit	A208	0.901	0.906	0.55%
9	St. Louis	A209	1.023	1.015	-0.85%
10	Cleveland	A210	0.900	0.902	0.23%
11	Minneapolis	A211	2.082	2.099	0.80%
12	Milwaukee	A212	0.705	0.705	0.01%
13	Cincinnati	A213	1.052	1.022	-2.84%
14	Kansas City	A214	0.765	0.771	0.80%
15	DC	A312	1.176	1.178	0.22%
16	Baltimore	A313	0.760	0.765	0.60%
17	Dallas	A316	0.908	0.912	0.43%
18	Houston	A318	0.851	0.856	0.56%
19	Atlanta	A319	0.854	0.856	0.31%
20	Miami	A320	1.063	1.065	0.17%
21	Tampa	A321	0.824	0.822	-0.21%
22	Los Angeles	A419	1.054	1.052	-0.21%
23	Greater LA	A420	0.931	0.925	-0.58%
24	San Francisco	A422	1.163	1.154	-0.76%
25	Seattle	A423	1.469	1.468	-0.09%
26	San Diego	A424	1.063	1.069	0.59%
27	Portland	A425	0.875	0.876	0.14%

	MEDICAL		Price Level		Difference
			Original With C	Excludes C	(as % of original)
28	Honolulu	A426	1.095	1.095	-0.01%
29	Anchorage	A427	1.109	1.109	0.00%
30	Phoenix	A429	1.220	1.233	1.02%
31	Denver	A433	0.754	0.759	0.66%
32	MW Cs	D200	0.751	0.752	0.10%
33	South Cs	D300	0.912	0.909	-0.35%
34	West Cs	D400	0.926	0.925	-0.06%
35	NE Bs	X100	0.771	0.771	0.07%
36	MW Bs	X200	0.930	0.925	-0.57%
37	South Bs	X300	0.938	0.936	-0.15%
38	West Bs	X499	0.853	0.853	0.04%
		Mean	1.00	1.00	**0.002%**
		Max	2.08	2.10	**1.02%**
		Min	0.71	0.71	**-2.84%**
		Range	1.38	1.39	**3.86%**

Table D. Sensitivity 3: Effect of Removing Census Variables from Rent Regressions on Aggregate Housing Price Levels

	HOUSING		Price Level		Difference
			Original With Census	No Census	(as % of original)
1	Philadelphia	A102	1.056	1.040	-1.49%
2	Boston	A103	1.312	1.373	4.70%
3	Pittsburgh	A104	0.796	0.752	-5.52%
4	NY city	A109	1.309	1.401	7.05%
5	NY suburbs	A110	1.364	1.419	4.06%
6	NJ suburbs	A111	1.361	1.367	0.41%
7	Chicago	A207	1.057	1.070	1.28%
8	Detroit	A208	0.925	0.896	-3.13%
9	St. Louis	A209	0.776	0.729	-6.09%
10	Cleveland	A210	0.907	0.872	-3.85%
11	Minneapolis	A211	1.032	1.052	1.93%
12	Milwaukee	A212	0.944	0.915	-3.06%
13	Cincinnati	A213	0.818	0.760	-7.10%
14	Kansas City	A214	0.797	0.762	-4.47%
15	DC	A312	0.956	1.005	5.08%
16	Baltimore	A313	0.925	0.915	-1.10%
17	Dallas	A316	0.846	0.844	-0.19%
18	Houston	A318	0.835	0.800	-4.11%

	HOUSING		Price Level		Difference
			Original With Census	No Census	(as % of original)
19	Atlanta	A319	0.889	0.852	-4.15%
20	Miami	A320	1.028	0.943	-8.29%
21	Tampa	A321	0.880	0.827	-6.00%
22	Los Angeles	A419	1.280	1.291	0.84%
23	Greater LA	A420	1.157	1.149	-0.63%
24	San Francisco	A422	1.485	1.617	8.93%
25	Seattle	A423	1.010	1.047	3.68%
26	San Diego	A424	1.295	1.390	7.38%
27	Portland	A425	0.930	0.950	2.12%
28	Honolulu	A426	1.238	1.380	11.47%
29	Anchorage	A427	1.238	1.336	7.93%
30	Phoenix	A429	0.852	0.819	-3.80%
31	Denver	A433	1.071	1.094	2.23%
32	MW Cs	D200	0.729	0.675	-7.42%
33	South Cs	D300	0.698	0.605	-13.31%
34	West Cs	D400	0.789	0.813	3.13%
35	NE Bs	X100	0.962	0.931	-3.29%
36	MW Bs	X200	0.816	0.774	-5.11%
37	South Bs	X300	0.753	0.690	-8.29%
38	West Bs	X499	0.888	0.844	-5.04%
		Mean	1.000	1.000	**-0.87%**
		Max	1.485	1.617	**11.47%**
		Min	0.698	0.605	**-13.31%**
		Range	0.786	1.012	**24.78%**

Table X. List of Geographical Areas

	REGION	AREA	Name	Areas Included
1	Northeast	A102	Philadelphia	Atlantic, Burlington, Cape May, Camden, Cumberland, Gloucester, Salem, NJ; New Castle, DE; Cecil, MD; Bucks, Chester, Delaware, Montgomery, Philadelphia, PA
2		A103	Boston	Windham*, CT; Bristol*, Essex, Hampden*, Middlesex, Norfolk, Plymouth, Suffolk, Worcester*, MA; York*, ME; Hillsborough*, Merrimack*, Rockingham*, Strafford*, NH

	REGION	AREA	Name	Areas Included
3		A104	Pittsburgh	Alleghany, Beaver, Butler, Fayette, Washington, Westmoreland, PA
4		A109	New York city	Bronx, Kings, New York, Queens, Richmond, NY
5		A110	New York suburbs	Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk, Westchester, NY; Fairfield*, Litchfield,*, Middlesex*, New Haven*, CT
6		A111	New Jersey suburbs	Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, Warren, NJ; Pike, PA
7	Midwest	A207	Chicago	Cook, Dekalb, Dupage, Grundy, Kane, Kankakee, Kendall, Lake Mcheny, Will, IL; Lake, Porter, IN; Kenosha, WI
8		A208	Detroit	Genessee, Lapeer, Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, Wayne, MI
9		A209	St. Louis	Clinton, Jersey, Madison, Monroe, St. Clair, IL; Crawford*, Franklin, Jefferson, Lincoln, St. Charles, St. Louis, Warren, St. Louis City, MO
10		A210	Cleveland	Ashtabula, Cuyahoga, Geauga, Lake Lorain, Medina, Portage, Summit, OH
11		A211	Minneapolis	Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherbune, Washington, Wright, MN; Pierce, St. Croix, WI
12		A212	Milwaukee	Milwaukee, Ozaukee, Racine, Washington, Waukesha, WI
13		A213	Cincinnati	Dearborn, Ohio, IN; Boone, Campbell, Gallatin, Grant, Kenton, Pendleton, KY; Brown, Butler, Clermont, Hamilton, Warren, OH
14		A214	Kansas City	Johnson, Leavenworth, Miami, Wyandotte, KS; Cass, Clay, Clinton, Jackson, Lafayette, Platte, Ray, MO
15	South	A312	Washington	Calvert, Charles, Frederick, Montgomery, Price George's, Washington, MD; Arlington, Clarke, Culpepper, Fairfax, Fauquier, King George, Loudoun, Prince William, Spotsylvania, Stafford, Warren, Alexandria City, Fairfax City, Falls Church City, Fredericksburg City, Manassas City, Manassas Park City, VA; Berkeley, Jefferson, WV.
16		A313	Baltimore	Anne Arundel, Baltimore, Carroll, Harford, Howard, Queen Anne's, Baltimore City, MD
17		A316	Dallas	Collin, Dallas, Denton, Ellis, Henderson, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, TX
18		A318	Houston	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller, TX
19		A319	Atlanta	Barrow, Bartow, Carroll, Cherokee, Clayton, Cobb,

	REGION	AREA	Name	Areas Included
				Coweta, Dekalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Pickens, Rockdale, Spalding, Walton, GA
20		A320	Miami	Broward, Dade, FL
21		A321	Tampa	Hernando, Hillsborough, Pasco, Pinellas, FL
22	West	A419	Los Angeles	Los Angeles County, CA
23		A420	Greater LA	Orange, Riverside, San Bernardino, Ventura, CA
24		A422	San Francisco	Alameda, Contra Costa, Marin, Napa, Santa Clara, Santa Cruz, San Francisco, San Mateo, Solano, Sonoma, CA
25		A423	Seattle	Island, King, Kitsap, Pierce, Snohomish, Thurston, WA
26		A424	San Diego	San Diego, CA
27		A425	Portland	Clackamas, Columbia, Marion, Multnomah, Polk, Washington, Yamhill, OR; Clark, WA
28		A426	Honolulu	Honolulu, HI
29		A427	Anchorage	Anchorage, AK
30		A429	Phoenix	Maricopa, Pinal, AZ
31		A433	Denver	Adams, Arapoe, Boulder, Denver, Douglas, Jefferson, Weld, CO
32	Midwest	D200	Midwest C	Urban non-metro – see details in ***Table Xi*** below
33	South	D300	South C	Urban non-metro
34	West	D400	West C	Urban non-metro
35	Northeast	X100	Northeast B	Medium, small
36	Midwest	X200	Midwest B	Medium, small
37	South	X300	South B	Medium, small
38	West	X400	West B	Medium, small

*Only partially included

Table Xi. List of Aggregated Areas (D200-X400)

	Aggregation	AREA		Description
1	Midwest C	D200	C212 Faribault	Urban parts of Rice, MN
			C216 Chanute	Urban parts of Allen, Neosho, KS
			C218 Brookings	Urban parts of Brokings, Lake, Moody, SD
			C222 Mt. Vernon	Urban parts of Jefferson, IL
2	South C	D300	C328 Arcadia	Urban parts of De Soto, Hardee, FL
			C332 Morristown	Urban parts of Hamblen, Jefferson, TN
			C334 Picayune	Urban parts of Pearl River, MS
			C344 Statesboro	Urban parts of Burke, Bulloch, Jenkins, Screven, GA
3	West C	D400	C450 Bend	Urban parts of Deschutes, OR
			C456 Pullman	Pullman, WA
4	Northeast B	X100	B102 Reading	Berks, PA

	Aggregation	AREA		Description
			B104 Syracuse	Cayuga, Madison, Onondaga, Owego, NY
			B106 Buffalo	Erie, Niagara, NY
			B108 Hartford	Hartford*, Litchfield*, Middlesex*, New London*, Tolland*, Windham*, CT
			B110 Burlington	Chittenden*, Franklin*, Grand Isle*, VT
			B112 Sharon	Mercer, PA
			B114 Johnstown	Cambria, Somerset, PA
5	Midwest B	X200	B218 Wausa	Marathon, WI
			B220 Dayton	Clark, Greene, Miami, Montgomery, OH
			B222 Evansville	Posey, Vanderburgh, Warrick, IN; Henderson, KY
			B224 Columbus	Delaware, Fairfield, Franklin, Licking, Madison, Pickaway, OG
			B226 Saginaw	Bay, Midland, Saginaw, MI
			B228 Elkhart	Elkhart, IN
			B230 Decatur	Macon, IL
			B232 Youngstown	Columbiana, Mahoning, Trumbull, OH
			B234 Madison	Dane, WI
			B236 Lincoln	Lancaster, NE
6	South B	X300	B338 Chattanooga	Catoosa, Dade, Walker, GA; Hamilton, TN
			B340 Florence	Florence, SC
			B342 Albany	Dougherty, Lee, GA
			B344 Norfolk	Currituck, NC; Gloucester, Isle of Wight, James City, Mathews, York, Chesapeake City, Hampton City, Newport News City, Norfolk City, Poqouson City, Portsmouth City, Suffolk City, Virginia Beach City, Williamsburg City, VA
			B346 Pine Bluff	Jefferson, AR
			B348 Raleigh	Chatham, Durham, Franklin, Johnstown, Orange, Wake, NC
			B350 Richmond	Charles City, Chesterfield, Dinwiddie, Goochland, Hanover, Henrico, New Kent, Powhatan, Price George, Colonial Heights City, Hopewell City, Petersburg City, Richmond City, VA
			B352 Beaumont	Hardin, Jefferson, Orange, TX
			B354 Brownsville	Cameron, TX
			B356 Florence	Colbert, Lauderdale, AL
			B358 Greenville	Anderson, Cherokee, Greenville, Pickens, Spartanburg, SC
			B360 Fort Myers	Lee, FL
			B362 Birmingham	Blount, Jefferson, St. Clair, Shelby, AL

	Aggregation	AREA		Description
			B364 Melbourne	Brevard, FL
			B366 Lafayette	Acadia, Lafayette, St. Landry, St. Martin, LA
			B368 Ocala	Marion, FL
			B370 Gainesville	Alachua, FL
			B372 Amarillo	Potter, Randall, TX
			B374 San Antonio	Bexar, Comal, Guadalupe, Wilson, TX
			B376 Oklahoma City	Canadian, Cleveland, Logan, Mcclain, Oklahoma, Pottawattamie, OK
			B378 Baton Rouge	East Baton Rouge, Livingston, West Baton Rouge, LA
			B380 Midland	Ector, Midland, TX
7	West B	X400	B482 Chico	Chico, CA
			B484 Provo	Utah, UT
			B486 Modesto	Stanislaus, CA
			B488 Boise City	Ada, Canyon, ID
			B490 Las Vegas	Mohave, AZ; Clark, Nye, NV
			B492 Yuma	Yuma, AZ

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
1	1	AA011	01B	APPAREL	1216	1192	24	11	Fiber Content, Brand/Label, Alterations	57	37	0.000	0.038	Men's Suits		0.072%
2	2	AA012	01A	APPAREL	441	365	76	0	Brand/Label, Handstitching, Country of Origin	46	32	0.000	0.068	Men's Sport Coats and Tailored Jackets		0.060%
3	3	AA013	01	APPAREL	789	786	3	20	Style, Fiber Content, Brand/Label, Length	85	37	0.000	0.065	Men's Outerwear		0.072%
4	4	AA021		APPAREL	376	376	0	16	Underwear, Hosiery, Nightwear	53	35	0.000	0.069	Men's Underwear, Hosiery and Nightware		0.066%
5	5	AA022		APPAREL	370	370	0	19	Plastic Raincoats, Hats & Caps, Gloves & Mittens, Wallets, Handkerchiefs, Belts, Ties, Umbrellas	61	35	0.000	0.094	Men's Accessories		0.068%
6	6	AA023		APPAREL	205	205	0	13	Swimsuits, Exercise & Sports Suits	41	27	0.000	0.098	Men's Active Sportswear		0.059%
7	7	AA031	01A	APPAREL	2158	2126	32	21	Type, Sleeve Length, Fiber, Brand/Label, Fabric Design	78	37	0.000	0.043	Men's Shirts		0.143%
8	8	AA032	01	APPAREL	364	348	16	13	Fiber Content, Brand/Label, Knitting Method, Body Knit	58	30	0.000	0.088	Men's Sweaters and Vests		0.110%
9	9	AA041	01B	APPAREL	1382	1357	25	17	Style, Fiber Content, Leg Bottoms, Brand/Label	71	37	0.000	0.050	Men's Pants and Shorts		0.198%
10	10	AB011	01	APPAREL	155	154	1	10	Style, Brand/Label	41	20	0.001	0.067	Boys' Outerwear		0.039%
11	11	AB012		APPAREL	494	490	4	15	Shirts, Sweaters	45	29	0.000	0.056	Boys Shirts and Sweaters		0.044%
12	12	AB013		APPAREL	191	189	2	14	Underwear, Nightwear, Hosiery, Wallets, Gloves & Mittens, Other Accessories	48	30	0.000	0.061	Boys' Underwear		0.051%
13	13	AB014		APPAREL	359	353	6	14	Suits & Vests, Pants, Sport Coats & Jackets	53	37	0.000	0.045	Boys' Suits		0.057%
14	14	AB015		APPAREL	82	82	0	7	Swimsuits, Exercise & Sports Suits	22	14	0.000	0.100	Boys' Active Sportswear		0.028%
15	15	AC011	01B	APPAREL	2077	1997	80	16	Length, Fiber Content, Lining, Liner, Brand/Label, Size Range, Outerwear Style	90	37	0.000	0.064	Women's Outerwear		0.124%
16	16	AC021	01A	APPAREL	2461	2427	34	12	Type, Pieces, Dress Fiber Content, Brand/Lable, Size Range, Dress Lining, Cleaning Method, Dress Sleeve Length	82	37	0.000	0.062	Women's Dresses		0.161%
17	17	AC031	01	APPAREL	611	600	11	13	Fiber Content, Brand/Label, Closure	70	36	0.000	0.039	Women's Sweaters, Sweater Vests		0.147%
18	18	AC031	02	APPAREL	977	956	21	16	Style, Fiber Content, Brand/Label, Cleaning Method, Neck Style	79	37	0.000	0.035	Women's Shirts, Blouses		0.150%
19	19	AC031	03	APPAREL	281	275	6	11	Fiber Content, Brand/Label, Lining, Cleaning Method	61	32	0.000	0.041	Women's Tailored and Untailored Jackets		0.137%
20	20	AC032	01A	APPAREL	427	418	9	11	Style, Fiber Content, Size Range, Cleaning Method	70	36	0.000	0.042	Women's Skirts		0.148%
21	21	AC032	02A	APPAREL	1010	987	23	15	Style, Fiber Content, Brand/Label, Size Range, Cleaning Method	76	37	0.000	0.039	Women's Pants and Shorts		0.150%
22	22	AC033	01A	APPAREL	397	394	3	8	Composition, Fiber Content, Brand/Label, Lining, Cleaning Method	55	28	0.000	0.070	Women's Suits and Suit Components		0.118%
23	23	AC041		APPAREL	615	615	0	13	Bras/Girdles/Corselets, Panties/Slips/Other, Nightwear	52	37	0.000	0.064	Women's Underwear and Nightwear		0.148%
24	24	AC042		APPAREL	501	501	0	21	Pantyhose/Stockings, Socks, Handbags, Scarfs & Handkerchiefs, Gloves & Mittens, Wallets, Hats, Belts, Umbrellas	62	33	0.000	0.088	Women's Hosiery and Accessories		0.134%
25	25	AC043		APPAREL	242	242	0	14	Swimsuits, Exercise & Sports Suits	44	29	0.000	0.092	Women's Active Sportswear		0.109%
26	26	AD01		APPAREL	2608	2590	18	17	Girls' Outerwear, Dresses, Sweaters, Shirts & Blouses & Tops, Pants & Shorts, Skirts & Culottes, Swimsuits, Exercise & Sports Suits, Underwear, Nightwear, Socks, Hats & Caps, Gloves & Mittens, Handbags & Purses	67	37	0.000	0.053	Girls' Apparel		0.278%
27	27	AE011		APPAREL	916	916	0	20	Dress & Casual Shoes & Boots, Sandals, Athletic Footwear, Waterproof, House Slippers, Work Shoes & Boots	62	37	0.000	0.093	Men's Footwear		0.269%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
28	28	AE021		APPAREL	427	417	10	21	Dress & Casual Shoes & Boots, Sandals, Athletic Footwear, Waterproof, House Slippers	62	37	0.000	0.080	Boys' Footwear		0.093%
29	29	AE022		APPAREL	611	599	12	19	Dress & Casual Shoes & Boots, Sandals, Athletic Shoes, Waterproof, House Slippers	51	33	0.000	0.078	Girls' Footwear		0.082%
30	30	AE031		APPAREL	2558	2558	0	23	Dress & Casual Shoes & Boots & Sandals, Athletic Shoes, Waterproof, House Slippers	64	37	0.000	0.068	Women's Footwear		0.387%
31	31	AF011		APPAREL	1353	1353	0	20	Outerwear, Play & Dresswear, Sleepwear	59	37	0.000	0.070	Infants & Toddlers' Outerwear		0.109%
32	32	AF012		APPAREL	1011	1011	0	15	Disposable, Cloth Diapers, Diaper Liners, Underwear	53	37	0.000	0.029	Infants & Toddlers' Underwear		0.109%
33	33	AG011	01A	APPAREL	819	808	11	0	Type, Attachment Material, Watch Case Material, Country of Origin, Brand, Manufacturer Warranty, Power Source	78	37	0.000	0.140	Watches		0.041%
34	34	AG021	01	APPAREL	1105	1074	31	17	Article, Construction, Stone Material	64	37	0.000	0.196	Jewelry		0.270%
				Group Total	29589	29131	458					Ave	0.070			4.23%
							0.02									
35	1	EA011	01	EDUCATION	528	514	14	11	Book cover, size, pages, features	63	36	0.005	0.084	Books and Supplies		0.192%
36	2	EB011	01	EDUCATION	974	954	20	4	Public/Private, Resident Status, Full/Part time, Degree, Semester	54	37	0.000	0.111	College Tuition and Fixed Fees	y	1.144%
37	3	EB021	01	EDUCATION	691	587	104	6	Student Type, Method of Tuition Charge	48	36	0.000	0.161	Elementary and High School Tuition and Fixed Fees	y	0.323%
38	4	EB031	01	EDUCATION	376	369	7	0	Type, Age of Child	42	36	0.000	0.269	Day care and Nursery School	y	0.745%
39	5	EB041	01A	EDUCATION	318	309	9	13	Public/Private, Attendance, Length of Term Priced	58	37	0.000	0.208	Technical and Business School Tuition and Fixed Fees	y	0.070%
40	6	EC011		EDUCATION	254	254	0	0	First class, Package	39	37	0.222	0.186	Postage		0.168%
41	7	EC021	01A	EDUCATION	263	257	6	8	Number of days, Package Starting Point	53	36	0.000	0.118	Delivery Services	y	0.006%
42	8	ED011		EDUCATION	766	766	0	0	Main Station Charges, Coin Operated	39	37	0.000	0.075	Telephone Services, Local	y	0.877%
43	9	ED021	01	EDUCATION	169	152	17	0	Type of Service	36	33	0.024	0.132	Interstate Telephone Services	y	0.462%
44	10	ED021	02	EDUCATION	190	125	65	0	Type of Call	31	29	0.000	0.289	Intrastate Telephone Services	y	0.447%
45	11	ED031	01	EDUCATION	227	226	1	0	Type of Service Plan	38	36	0.000	0.167	Cellular Telephone Services	y	0.678%
46	12	EE011	01C	EDUCATION	1184	1172	12	15	Type(System, Component)*Configuration (High End, Mainstream, Economy, Entry Level, Notebook)	62	37	0.000	0.088	Personal Computers and Peripherals		0.259%
47	13	EE011	02	EDUCATION	93	93	0	8	Handhelds, Accessories/Modules	29	20	0.000	0.062	Handheld Computers		0.128%
48	14	EE021	01A	EDUCATION	408	390	18	19	Type, Version	59	37	0.000	0.153	Computer Software		0.026%
49	15	EE021	02A	EDUCATION	362	353	9	0	Type (Media, Printer Supplies, Cables, Other)	51	36	0.000	0.113	Computer Accessories		0.026%
50	16	EE031	01	EDUCATION	540	540	0	0	Type (Online, ISP, Local Cable, Telephone, BBS, Other)	42	37	0.000	0.172	Other Information Services	y	0.268%
51	17	EE041	01B	EDUCATION	536	525	11	0	Type (Home,Cell), Brand	58	36	0.000	0.101	Telephones		0.028%
52	18	EE041	02A	EDUCATION	125	125	0	12	Type (Answering Machine, w/ID, ID unite, Pager)	47	32	0.001	0.058	Peripheral equipment		0.026%
53	19	EE041	03A	EDUCATION	190	172	18	0	Type, Warranty	41	32	0.000	0.062	Accessories		0.025%
54	20	EE042	01A	EDUCATION	114	106	8	0	Type, Number of Digits Displayed	32	22	0.005	0.117	Calculators		0.020%
				Group Total	**8308**	**7989**	**319**					**Ave**	**0.136**			**5.92%**
							0.04									

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
55	1	FA011	01A	FOOD (Home)	200	198	2	6	Type, Size, Brand	56	37	0.000	0.04639	Flour		0.022%
56	2	FA011	02A	FOOD (Home)	199	194	5	6	Type, Size, Brand, Packaging	67	36	0.000	0.059	Prepared Baking Mixes		0.032%
57	3	FA021	01A	FOOD (Home)	884	879	5	6	Type, Brand, Packaging	59	37	0.000	0.057	Breakfast Cereal		0.231%
58	4	FA031	01A	FOOD (Home)	229	227	2	8	Type, Variety, Packaging, Preparation, Size	59	36	0.000	0.085	Rice		0.051%
59	5	FA031	02A	FOOD (Home)	265	247	18	11	Type, Status	51	36	0.000	0.083	Pasta		0.061%
60	6	FA031	03A	FOOD (Home)	81	80	1	6	Packaging	33	25	0.000	0.037	Cornmeal		0.016%
61	7	FB011	01	FOOD (Home)	624	622	2	16	Type, Condition, Weight, Brand	68	37	0.000	0.076	White Bread		0.093%
62	8	FB011	02	FOOD (Home)	405	398	7	13	Variety, Brand	59	37	**0.001**	0.093	Bread other than White		0.129%
63	9	FB021	01A	FOOD (Home)	823	571	252	12	Type, Brand, Pricing unit	60	37	0.000	0.107	Fresh Biscuits, Rolls and Muffins		0.108%
64	10	FB031	01A	FOOD (Home)	447	354	93	17	Type, Variety, Brand	61	37	0.000	0.304	Cakes and Cupcakes		0.095%
65	11	FB032	01	FOOD (Home)	596	595	1	22	Type, Packaging, Weight, Brand	73	36	0.000	0.067	Cookies		0.123%
66	12	FB041	01	FOOD (Home)	233	233	0	12	Type, Packaging, Weight	55	35	0.000	0.072	Crackers		0.065%
67	13	FB041	02	FOOD (Home)	85	84	1	4	Type	39	28	**0.005**	0.046	Bread & Cracker Products		0.009%
68	14	FB042	01	FOOD (Home)	305	290	15	13	Packaging, Brand	53	36	0.001	0.089	Sweetrolls, Coffee Cake & Doughnuts		0.069%
69	15	FB043	01	FOOD (Home)	255	235	20	12	Category, Pricing unit	55	33	0.000	0.054	Frozen Bakery Products		0.069%
70	16	FB044	01	FOOD (Home)	200	198	2		-	32	32	0.000	0.113	Pies, Tarts, Turnovers		0.027%
71	17	FC011	01A	FOOD (Home)	883	832	51	12	Source, Fat content, Type, Form, Process state, Packaging	61	37	0.000	0.054	Uncooked Ground Beef		0.229%
72	18	FC021	01A	FOOD (Home)	301	294	7	9	Grade, Bone status, Process state	53	36	0.000	0.023	Chuck roast		0.032%
73	19	FC021	02A	FOOD (Home)	269	267	2	9	-	46	37	0.000	0.025	Round roast		0.028%
74	20	FC021	03A	FOOD (Home)	93	93	0	5	Type	38	27	**0.004**	0.034	Other roast		0.053%
75	21	FC031	01A	FOOD (Home)	342	341	1	10	Type, Bone status	55	36	0.000	0.016	Round steak		0.037%
76	22	FC031	02A	FOOD (Home)	301	297	4	10	Type	53	34	0.000	0.025	Sirloin steak		0.074%
77	23	FC031	03A	FOOD (Home)	502	489	13	11	Primal area, Bone status	52	35	0.000	0.022	Other steak		0.125%
78	24	FC041	01A	FOOD (Home)	499	480	19	10	Primal area, Bone status	56	37	0.000	0.068	Other beef		0.042%
79	25	FC041	02A	FOOD (Home)	110	106	4	6	Cut, Bone status	39	27	**0.009**	0.103	Veal		0.011%
80	26	FD011	01	FOOD (Home)	482	466	16	11	Form, Brand	56	37	0.000	0.073	Bacon and Related Products		0.074%
81	27	FD011	02	FOOD (Home)	310	300	10	9	Form	51	37	0.000	0.056	Breakfast Sausage and Related Products		0.067%
82	28	FD021	01	FOOD (Home)	651	622	29	12	Type, Bone status, Cure status	63	37	0.000	0.081	Ham		0.093%
83	29	FD021	02	FOOD (Home)	85	83	2	6	Origin, Weight	33	22	0.000	0.048	Canned Ham		0.004%
84	30	FD031	01	FOOD (Home)	631	603	28	12	Type, Loin source, Process status	61	37	0.000	0.077	Pork Chops		0.105%
85	31	FD041	01	FOOD (Home)	358	339	19	10	Primal area	50	37	0.000	0.062	Pork roasts		0.049%
86	32	FD041	02	FOOD (Home)	127	123	4	7	-	39	32	0.000	0.058	Picnics		0.015%
87	33	FD041	03	FOOD (Home)	212	206	6	7	Primal area	45	35	0.000	0.084	Other Pork		0.038%
88	34	FE011	01	FOOD (Home)	196	188	8	9	Type, Processing	40	26	0.001	0.072	Frankfurters		0.056%
89	35	FE012	01	FOOD (Home)	413	391	22	13	Processing, Packaging, Pricing unit	76	36	0.000	0.043	Lunchmeats		0.127%
90	36	FE012	02	FOOD (Home)	226	217	9	6	Type	42	34	0.000	0.056	Bologna, liverwurst, salami		0.055%
91	37	FE013	01	FOOD (Home)	39	39	0	5	Type	21	14	0.000	0.087	Lamb and Mutton		0.017%
92	38	FE013	02	FOOD (Home)	54	51	3	5	Type	25	14	0.000	0.027	Organ meats		0.012%
93	39	FF011	01	FOOD (Home)	428	405	23	11	Form, Type, Processing	54	37	0.000	0.027	Fresh Whole chicken		0.087%
94	40	FF011	02	FOOD (Home)	598	524	74	11	Type, Bone status, Brand, Process state	64	37	0.000	0.051	Fresh or frozen chicken parts		0.228%
95	41	FF021	01	FOOD (Home)	541	338	203	8	Type, Features, Size range	55	36	0.000	0.045	Turkey (excluding canned)		0.064%
96	42	FF021	02	FOOD (Home)	158	155	3	7	Type, Form	43	32	**0.007**	0.045	Other Poultry		0.020%
97	43	FG011	01	FOOD (Home)	493	243	250	11	Type, Form, Physical state, Process state	67	36	0.000	0.061	Fresh fish		0.115%
98	44	FG011	02	FOOD (Home)	323	320	3	0	Type, Process state	49	37	**0.005**	0.142	Fresh seafood		0.071%
99	45	FG021	01	FOOD (Home)	395	255	140	8	Type, Form, Pack, Size	60	37	0.000	0.058	Canned Fish and Seafood		0.042%
100	46	FG021	02A	FOOD (Home)	238	238	0	11	Type	60	37	**0.002**	0.077	Processed fish (excluding canned)		0.052%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
101	47	FG021	03A	FOOD (Home)	190	189	1	0	Type, Brand	44	34	0.006	0.079	Processed seafood (excluding canned)		0.039%
102	48	FH011	01	FOOD (Home)	632	629	3	9	Variety, Size, Pricing unit	60	37	0.000	0.072	Eggs in shell		0.079%
103	49	FH011	02	FOOD (Home)	105	105	0	5	Form	36	30	0.000	0.038	Eggs not in shell and egg substitutes		0.012%
104	50	FJ011	01B	FOOD (Home)	295	293	2	13	Organic labeling, Size	54	36	0.000	0.031	Fresh Whole Milk		0.149%
105	51	FJ011	02B	FOOD (Home)	316	313	3	10	Organic labeling, Size	54	36	0.000	0.042	Other fresh milk and milk substitutes		0.162%
106	52	FJ021	01	FOOD (Home)	955	931	24	15	Type, Packaging	67	37	0.000	0.068	Cheese and Cheese Products		0.251%
107	53	FJ031	01	FOOD (Home)	555	546	9	15	Type, Form	64	37	0.000	0.129	Ice Cream and Related Products		0.156%
108	54	FJ041	01A	FOOD (Home)	161	160	1	6	Type	49	36	0.000	0.036	Powdered/Evaporated/Condensed Milk		0.024%
109	55	FJ041	02A	FOOD (Home)	281	268	13	7	Organic labeling	46	37	0.000	0.043	Yogurt (excluding frozen)		0.049%
110	56	FJ041	03A	FOOD (Home)	160	159	1	10	Type	50	36	0.000	0.039	Cream, Half and Half, Milk Shakes and Egg nog		0.032%
111	57	FJ041	04A	FOOD (Home)	114	113	1	5	Packaging, Size	43	32	0.001	0.055	Non-dairy Cream substitutes		0.024%
112	58	FK011	01A	FOOD (Home)	1232	1214	18	8	Variety, Organic certification, Size	58	37	0.000	0.069	Apples		0.085%
113	59	FK021	01A	FOOD (Home)	656	621	35	11	Type, Organic certification	53	36	0.000	0.048	Bananas		0.084%
114	60	FK031	01A	FOOD (Home)	823	817	6	11	Type, Size	56	37	0.000	0.057	Oranges, Mandatins (Tangeringes) and Tangelos		0.053%
115	61	FK031	02A	FOOD (Home)	676	670	6	11	Type, Size	53	37	0.000	0.060	Other Citrus Fruit		0.037%
116	62	FK041	01A	FOOD (Home)	1802	1678	124	9	Type, Organic certification, Size	59	37	0.000	0.063	Other Fresh Fruit		0.199%
117	63	FL011	01	FOOD (Home)	723	719	4	12	Type, Packaging, Size	57	37	0.000	0.063	Potatoes		0.084%
118	64	FL021	01A	FOOD (Home)	808	775	33	10	Type, Organic certification, Packaging, Size	58	37	0.000	0.061	Lettuce		0.058%
119	65	FL031	01A	FOOD (Home)	731	677	54	8	Variety, Organic certification, Packaging, Size	53	37	0.000	0.069	Tomatoes		0.086%
120	66	FL041	01A	FOOD (Home)	824	810	14	10	Type, Organic certification, Packaging, Size	81	37	0.000	0.080	Fresh Vegetables		0.197%
121	67	FL041	02A	FOOD (Home)	108	108	0	6	Type, Packaging, Size	54	33	0.000	0.096	Fresh Herbs		0.029%
122	68	FM011	01	FOOD (Home)	240	217	23	8	Type, Form, Packing medium, Packaging	71	36	0.001	0.056	Canned Fruits		0.040%
123	69	FM011	02	FOOD (Home)	326	324	2	6	Type, Packaging	58	37	0.000	0.076	Canned Vegetables		0.099%
124	70	FM021	01	FOOD (Home)	219	217	2	5	Type, Form	45	36	0.000	0.035	Frozen Fruits		0.007%
125	71	FM021	02	FOOD (Home)	589	578	11	9	Type, Packaging	63	37	0.000	0.095	Frozen Vegetables		0.073%
126	72	FM031	01	FOOD (Home)	157	154	3	7	Type, Packaging	54	33	0.000	0.063	Dried and Processed Fruit		0.016%
127	73	FM031	02	FOOD (Home)	208	208	0	8	Type, Size	50	36	0.000	0.066	Dried Beans, Peas and Lentils		0.016%
128	74	FM031	03	FOOD (Home)	155	154	1	7	Variety	41	30	0.000	0.057	Other Processed Vegetables		0.012%
129	75	FN011	01	FOOD (Home)	648	647	1	13	Packaging, Container construction, Product classification, Container size	68	36	0.000	0.063	Cola drinks		0.217%
130	76	FN011	02	FOOD (Home)	382	368	14	11	Packaging, Container construction, Product classification, Container size, Variety	74	37	0.001	0.053	Carbonated drinks other than cola		0.116%
131	77	FN021	01	FOOD (Home)	582	552	30	11	Juice content, Type of Juice/Flavor, Size, Pricing unit	66	37	0.000	0.056	Frozen non-carbonated Juices and Drinks		0.027%
132	78	FN031	01A	FOOD (Home)	750	729	21	12	Type, Packaging, Container size	71	37	0.000	0.055	Non-frozen non-carbonated Juices and Drinks		0.289%
133	79	FP011	01A	FOOD (Home)	567	564	3	15	Type, Packaging, Brand	67	37	0.000	0.079	Roasted Coffee		0.070%
134	80	FP011	02A	FOOD (Home)	195	194	1	9	Size, Brand, Packaging	60	36	0.000	0.030	Instant and Freeze Dried Coffee		0.037%
135	81	FP021	01	FOOD (Home)	172	152	20	10	Packaging, Variety, Sweetener	44	25	0.000	0.142	Tea		0.042%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
136	82	FP022	01	FOOD (Home)	241	224	17	10	Sweetener, Packaging	53	35	0.042	0.160	Powders, Crystals, Tablets, Mixes and Syrups		0.086%
137	83	FP022	02	FOOD (Home)	144	134	10	9	-	40	31	0.000	0.028	Ice		0.052%
138	84	FR011	01	FOOD (Home)	491	481	10	14	Type, Packaging, Size	61	36	0.000	0.080	Sugar and Artificial Sweeteners		0.054%
139	85	FR021	01	FOOD (Home)	593	467	126	18	Type, Packaging	64	37	0.005	0.129	Candy and Chewing Gum		0.199%
140	86	FR031	01	FOOD (Home)	260	258	2	9	Type, Sweetener content, Size	53	36	0.000	0.072	Jelly, Jam, Prserves, Marmalade, Fruit Butter		0.027%
141	87	FR031	02	FOOD (Home)	162	157	5	0	Type, Size	43	36	0.026	0.104	Molasses, Honey, Syrups		0.018%
142	88	FR031	03	FOOD (Home)	114	114	0	0	Packaging	41	33	0.656	0.125	Fudge mixes, Icings, Marshmallows		0.011%
143	89	FS011	01	FOOD (Home)	257	257	0	8	Packaging, Seasoning, Weight	52	37	0.000	0.052	Butter		0.053%
144	90	FS011	02	FOOD (Home)	248	245	3	8	Type, Packaging, Weight	57	35	0.000	0.094	Margerine		0.028%
145	91	FS021	01	FOOD (Home)	679	675	4	8	Type, Condition, Packaging, Size	53	37	0.000	0.062	Salad Dressings		0.073%
146	92	FS031	01	FOOD (Home)	223	218	5	8	Type, Size	48	34	0.000	0.034	Peanut Butter		0.034%
147	93	FS032	01	FOOD (Home)	153	150	3	6	Type, Packaging, Size	46	33	0.003	0.053	Lard and Shortening		0.017%
148	94	FS032	02	FOOD (Home)	363	345	18	7	Type, Condition, Packaging, Size	59	37	0.000	0.067	Salad and Cooking Oil, Mayonnaise, Sandwich Spreads		0.051%
149	95	FT011	01	FOOD (Home)	491	478	13	8	Type, Brand classification, Packaging	55	37	0.000	0.124	Soups		0.097%
150	96	FT021	01	FOOD (Home)	221	198	23	5	Type, Dietary features	44	36	0.001	0.082	Multiple courses Frozen and Freeze Dried Foods		0.068%
151	97	FT021	02	FOOD (Home)	134	134	0	4	Pricing unit, Size	37	29	0.000	0.042	Frozen meat/fish/poultry pies		0.037%
152	98	FT021	03	FOOD (Home)	133	130	3	5	Pricing unit, Size	42	33	0.000	0.044	Frozen chicken		0.043%
153	99	FT021	04	FOOD (Home)	270	268	2	7	Type, Size	50	37	0.000	0.067	Frozen pizza, pasta, italian, mexican and oriental		0.087%
154	100	FT021	05	FOOD (Home)	74	74	0	4	Pricing unit, Size	36	27	0.003	0.053	Frozen miscellaneous foods		0.024%
155	101	FT031	01	FOOD (Home)	488	479	9	14	Type, Size, Packaging, Pricing unit	67	37	0.000	0.066	Potato Chips and Other snacks		0.197%
156	102	FT031	02	FOOD (Home)	168	166	2	13	Type, Packaging, Size	61	35	0.000	0.060	Nuts		0.064%
157	103	FT041	01	FOOD (Home)	150	138	12	8	Type, Packaging	41	27	0.000	0.266	Salt and Other seasoning and spices		0.056%
158	104	FT042	01	FOOD (Home)	61	52	9	5	Type	24	17	0.001	0.082	Olives, Pickles, Relishes		0.025%
159	105	FT043	01A	FOOD (Home)	273	243	30	7	Type	44	33	0.000	0.146	Sauces and Gravies		0.099%
160	106	FT044	01	FOOD (Home)	98	88	10	5	Type, Packaging	34	17	0.000	0.145	Other Condiments		0.048%
161	107	FT051	01A	FOOD (Home)	793	778	15	9	Form, Variety of formula	60	36	0.000	0.067	Baby Food		0.072%
162	108	FT061	01	FOOD (Home)	99	92	7	6	Type, Packaging	37	20	0.000	0.062	Prepared Salads		0.058%
163	109	FT062	01	FOOD (Home)	111	111	0	6	Type, Packaging	41	30	0.000	0.045	Spanish/Mexican foods		0.044%
164	110	FT062	02	FOOD (Home)	132	131	1	7	Packaging	39	30	0.000	0.055	Prepared Italian foods		0.048%
165	111	FT062	03	FOOD (Home)	65	65	0	5	Type, Packaging	34	25	0.079	0.085	Oriental foods		0.028%
166	112	FT062	04	FOOD (Home)	98	98	0	6	Type	45	33	0.010	0.058	Prepared Meat, poultry and fish dishes		0.034%
167	113	FT062	05	FOOD (Home)	147	147	0	8	Type, Packaging	48	34	0.000	0.075	Boxed pasta and rice dishes		0.067%
168	114	FT062	06	FOOD (Home)	85	84	1	4	Type, Packaging	39	27	0.004	0.089	Miscellaneous desserts		0.028%
169	115	FT062	07	FOOD (Home)	32	32	0	0	-	15	15	0.000	0.071	Other prepared foods		0.010%
170	116	FV011	01	*FOOD (Away)*	1865	1756	109	11	*Source of price data (type of menu), Food & alcoholic beverages (combination, a la carte), Basis of selection (servings)*	66	37	0.000	0.068	*Full Service meals and snacks*	*y*	2.665%
171	117	FV021	01	*FOOD (Away)*	1860	1726	134	20	*Source of price data (type of menu), Food & alcoholic beverages (combination, a la carte), Basis of selection (servings)*	78	37	0.000	0.061	*Limited Service meals and snacks*	*y*	2.639%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model DF	Area DF	Prob Area	RMSE	Eli-Cluster	S	Wt %
172	118	FV031	01	*FOOD (Away)*	1049	904	145		*Menu source, Food & alcoholic beverages (combination, a la carte), Basis of selection*	52	37	0.000	0.070	*Food at Employee Sites and Schools*	*y*	0.293%
173	119	FV041	01	*FOOD (Away)*	414	395	19	42	*Outlet type, Size*	83	36	0.000	0.051	*Candy, gum, crackers, pastries, chips*		0.046%
174	120	FV041	04	*FOOD (Away)*	703	692	11	61	*Item, Size*	104	37	0.000	0.052	*Nonalcoholic beverages*		0.082%
175	121	FV041	05	*FOOD (Away)*	76	76	0	0	-	23	23	0.000	0.060	*Pizza, sandwiches, other items*		0.008%
176	122	FV051	01	*FOOD (Away)*	94	93	1	4	*Payment period, Meal plan coverage, Mandatory meal plan*	25	16	0.000	0.053	*Board*	*y*	0.134%
177	123	FV051	02	*FOOD (Away)*	297	282	15	14	*Event type, Basis of selection*	47	27	0.000	0.396	*Catered Events*	*y*	0.189%
178	124	FW011	01	FOOD (Home)	626	619	7	15	Type, Origin, Unit priced, Size, Container construction	74	37	0.000	0.040	Beer, Ale and other malt beverag		0.328%
179	125	FW021	01	FOOD (Home)	182	182	0	0	Bottling	36	34	**0.003**	0.130	Whiskey		0.041%
180	126	FW021	02	FOOD (Home)	206	201	5	0	Bottling	39	37	0.000	0.117	Distilled spirits (excluding Whiske		0.070%
181	127	FW031	01	FOOD (Home)	749	734	15	14	Class, Origin, Vintage, Size	67	37	0.000	0.114	Wine		0.206%
182	128	FX011	01	*FOOD (Away)*	450	445	5	16	*Time when served, Type, Origin, Serving*	66	34	0.000	0.041	*Beer, Ale, other malt beverages*	*y*	0.126%
183	129	FX011	02	*FOOD (Away)*	293	289	4	10	*Time when served, Class, Origin, Unit served*	56	33	0.000	0.077	*Wine*	*y*	0.060%
184	130	FX011	03	*FOOD (Away)*	321	310	11	11	*Time when served, Type, Serving*	52	35	0.000	0.058	*Distilled spirits*	*y*	0.165%
				Group Total	**50662**	**47978**	**2684**					**Ave**	**0.073**			**15.16%**
							0.0530									
185	1	GA011	01A	OTHER	939	922	17	0	Pricing Unit, Type, Brand, Manufacturer	59	37	0.000	0.031	Cigarettes		0.730%
186	2	GA021	01	OTHER	313	311	2	15	Pricing Unit, Packaging	56	35	0.000	0.135	Cigars		0.027%
187	3	GA021	02	OTHER	333	333	0	15	None	50	35	0.000	0.125	Chewing Tobacco		0.027%
188	4	GB011		OTHER	386	385	1	16	Coloring, Shampoos & Conditioners, Home Kits, Wigs, Pins & Clurler, Brushes & Combs	58	37	0.000	0.112	Products and Non-Electric Articles for Hair		0.141%
189	5	GB012		OTHER	243	226	17	0	Type, Dental Preparations, Nonelectric Toothbrushes, Other Non-Electric Articles, Shaving Preparations, Non-Electric Razors, Razor Blades, Other Non-Electric Shaving	48	33	**0.032**	0.178	Dental and Shaving Products		0.134%
190	6	GB013		OTHER	173	173	0	0	Deodorant, Suntan, Sanitary Supplies, Foot Care Articles, Foot Care Preparations, Shoe Polish, Wig Case and Stand	33	27	**0.014**	0.177	Deodorant/Suntan Preparations, Footcare		0.105%
191	7	GB021		OTHER	714	712	2	21	Make-Up, Skin Care, Make-Up Implements, Soap & Bath, Fragrances, Nail Preparations, Manicure Implements	64	37	0.000	0.234	Cosmetics/Perfume/Bath/Nail care		0.325%
192	8	GC011	01A	OTHER	459	449	10	5	Male/Female, Type	50	37	0.000	0.079	Haircuts	y	0.645%
193	9	GD011	01A	OTHER	472	449	23	0	Type, Person Providing Service, Per hour/Flat fee	54	36	0.000	0.201	Legal Services	y	0.314%
194	10	GD021		OTHER	470	469	1	0	Type, Funeral Service & Caskets, Cemetery Lots & Crypts	45	37	0.000	0.156	Funeral Expenses	y	0.234%
195	11	GD031		OTHER	854	835	19	0	Service Priced, Coin-Operated Laundry and Dry Cleaning (apparel/household), Apparel Laundry, Apparel Dry Cleaning, Household Laundry and Dry-Cleaning	44	37	0.000	0.106	Laundry and Dry Cleaning Services	y	0.334%
196	12	GD041	01	OTHER	77	77	0	0	Type (Men's/Women's)	25	23	0.000	0.158	Shoe Repair and Other Services	y	0.010%
197	13	GD042		OTHER	329	329	0	0	Item type * Women's Alternations/Men's Alterations/Clothing Rental	50	37	0.000	0.103	Clothing Alterations, Rentals and Repaires	y	0.017%
198	14	GD043		OTHER	166	141	25	0	Type*Replacement of Ring Setting/Watch Repair	40	36	**0.004**	0.145	Watch and Jewelry Repair	y	0.016%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
199	15	GD051		OTHER	220	219	1	7	Type*Periodic Checking Account Fees, Cashier's & Certified Checks, Safe Deposit Box, Credit Card Annual Fees	52	35	0.000	0.163	Checking Accounts and Other Bank Services	y	0.117%
200	16	GD052	01	OTHER	246	242	4	5	Type of Service, Type of Preparer, Fee Basis	48	36	0.000	0.122	Tax Return Preparation and Other Accounting Fees	y	0.119%
201	17	GD061	01A	OTHER	191	176	15	0	Payment Basis, Pricing/Time Unit	32	26	0.000	0.260	Care of Invalids, Elderly and Convalescents at Home	y	0.094%
202	18	GE011	01A	OTHER	173	173	0	17	None	47	30	0.000	0.102	Stationery and Paper		0.033%
203	19	GE011	02A	OTHER	115	115	0	16	Item Priced	50	30	0.000	0.052	Gift Wrap		0.033%
204	20	GE011	03A	OTHER	175	173	2	18	Type	53	33	0.004	0.126	Writing Implements/Accessories		0.036%
205	21	GE011	04A	OTHER	98	98	0	0	None	27	27	0.000	0.124	Miscellaneous Stationery Supplies		0.027%
206	22	GE011	05A	OTHER	197	197	0	0	Item Priced (Single/Package)	33	31	0.000	0.084	Greeting Cards		0.032%
207	23	GE012	01A	OTHER	128	127	1	14	Item, Shell or Exterior Material	56	27	0.004	0.104	Luggage		0.029%
208	24	GE013		OTHER	65	65	0	0	Stroller, Bottles, Dishes, Car Seat, Carrier	20	16	0.000	0.183	Infants' Equipment		0.021%
				Group Total	**7536**	**7396**	**140**					**Ave**	**0.136**			**3.60%**
							0.02									
209	1	HA011		HOUSING	27222	26459	763	0	Panel (collection cycle), AC, Heat, Sewer, Water, Electricity, TypeStructure*Built_pre90, Bedrooms, Total Rooms, Baths, Length Occupancy, Parking, Respondent Type, Prcuse (determines use in Rent vs. Own file)Census:Total Housing Units, Total Population, Housing Density, %White, %WhiteOccup, %Large Building, %Car2+, %College Education,%LackPlumbing, %UnderPoverty, %School Age, %Age65+	105	37	0.000	0.009	Rent of Primary Residence	y	6.012%
210	2	HB011	01	HOUSING	709	668	41	0	Size, Board, Time period priced, Resident Status, Public/Private	49	37	0.000	0.078	Housing at School (excluding Board)	y	0.187%
211	3	HB021	01	HOUSING	1587	1334	253	0	Occupancy, Type of Room/Unit, Beds, Time Period, Meals, Type of Outlet	50	37	0.000	0.085	Rental of Lodging Away from Home	y	3.049%
212	4	HC011		HOUSING	30289	29358	931	0	Panel (collection cycle), AC, Heat, Sewer, Water, Electricity, TypeStructure*Built_pre90*, Bedrooms, Total rooms, Baths, Length Occupancy, Parking, Respondent Type, Prcuse determines use in Rent vs Own Equivalent file)Census:Total Housing Units, Total Population, Housing Density, %Renters, %White, %WhiteOccup, %Large Buildings, %Car2+, %College Education, %LackPlumbing, %UnderPoverty, %School Age, %Age65+	104	37	0.000	0.010	Owners' Equivalent Rent of Primary Residence	y	22.940%
213	5	HD011	01	HOUSING	179	169	10	0	Claims Payment (Actual/Replacement)	37	35	0.000	0.172	Tenants' and Household Insurance	y	0.367%
214	6	HE011	01A	HOUSING	275	275	0	0	-	22	22	0.000	0.016	Fuel Oil		0.133%
215	7	HE021	01A	HOUSING	414	359	55	15	Type of Payment	44	26	0.000	0.269	Bottled or Tank Gas		0.040%
216	8	HE021	03A	HOUSING	66	66	0	13	-	25	12	0.011	0.165	Firewood and Kerosene		0.026%
217	9	HF011	01	HOUSING	1603	1592	11	0	User Rate Schedule	42	37	0.000	0.026	Electricity	y	2.541%
218	10	HF021	01	HOUSING	1451	1443	8	3	Original Consumption Measure, User Rate Schedule	47	37	0.000	0.018	Utility Natural Gas Service	y	1.040%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
219	11	HG011	01	HOUSING	1082	1002	80	0	Service Priced, Rate Structure, Consumption/Billing Period, Meter Size	46	36	0.000	0.112	Residential Water and Sewerage Service	y	0.639%
220	12	HG021	01	HOUSING	918	917	1	0	Billing Period	41	34	0.000	0.105	Garbage and Trash Collection	y	0.229%
221	13	HH011	01B	HOUSING	168	168	0	12	Rug Face Yarn	50	34	0.000	0.145	Room Size Rugs		0.011%
222	14	HH011	02B	HOUSING	54	52	2	0	Carpet Construction	21	18	0.002	0.164	Special Purpose Carpet		0.006%
223	15	HH011	03B	HOUSING	126	123	3	11	Face Yarn, Design	56	32	0.000	0.118	Scatter Rugs		0.011%
224	16	HH011	04A	HOUSING	353	352	1	10	Carpet Face Yarn	49	37	0.000	0.389	Installed Wall to Wall Carpeting		0.011%
225	17	HH021	03	HOUSING	370	363	7	21	Tailoring (Ready/Custom made), Fabric Weight	59	36	0.000	0.139	Curtains and Drapes		0.029%
226	18	HH022	01	HOUSING	215	211	4	0	Tailoring	39	35	0.000	0.154	Venetian Blinds		0.027%
227	19	HH022	02	HOUSING	53	51	2	0	Tailoring	21	19	0.000	0.096	Roll-Up and Roman Shades		0.014%
228	20	HH022	03	HOUSING	52	52	0	10	Tailoring	29	18	0.000	0.042	Roller Mounted Window Shades		0.014%
229	21	HH031	01	HOUSING	129	126	3	9	Item	41	28	0.002	0.113	Towels, Wash Cloths and Bath Mats		0.026%
230	22	HH031	02	HOUSING	36	35	1	0	-	17	17	0.000	0.048	Bath Rugs and Toilet Covers		0.014%
231	23	HH031	03	HOUSING	28	28	0	0	-	16	16	0.000	0.100	Shower Curtains		0.012%
232	24	HH032	01	HOUSING	42	42	0	0	-	18	18	0.000	0.052	Bedspreads		0.015%
233	25	HH032	02	HOUSING	29	28	1	0	-	19	19	0.000	0.031	Electric Blankets		0.018%
234	26	HH032	03	HOUSING	71	69	2	0	-	25	25	0.000	0.059	Other Blankets		0.018%
235	27	HH032	04	HOUSING	109	109	0	10	Type (Machine/Hand made)	45	32	0.000	0.073	Quilts and Comforters		0.027%
236	28	HH032	05	HOUSING	152	124	28	11	Sheet Size	45	30	0.000	0.049	Sheets and Pillow Cases		0.026%
237	29	HH032	06	HOUSING	109	106	3	10	Size	43	28	0.000	0.050	Bed Pillows		0.023%
238	30	HH032	07	HOUSING	57	57	0	9	-	30	21	0.000	0.031	Other Bedroom Linen		0.019%
239	31	HH033	01	HOUSING	50	49	1	0	-	19	19	0.000	0.109	Dishcloths and Dishtowels		0.017%
240	32	HH033	02	HOUSING	56	56	0	0	-	21	21	0.000	0.140	Tablecloths, Placemats and Napkins		0.019%
241	33	HJ011	01	HOUSING	446	343	103	8	Piece, Size, Construction	54	36	0.000	0.090	Mattress and Springs		0.103%
242	34	HJ012	01A	HOUSING	225	213	12	5	Item, Frame Material, Drawer Joints, Hardware	52	34	0.000	0.072	Bedroom Case Goods		0.099%
243	35	HJ012	02A	HOUSING	179	121	58	7	Item, Frame Type	44	32	0.000	0.087	Headboard, Footboard, and Frames		0.099%
244	36	HJ021	01	HOUSING	378	361	17	8	Type, Upholstery, Type of Back, Back Construction, Seat Construction, Cushion Filling, Base	65	35	0.000	0.058	Sofas other than Sofa Beds		0.107%
245	37	HJ021	02	HOUSING	76	65	11	4	Type, Upholstery Fabric, Mattress Construction	31	22	0.006	0.053	Sofa Beds		0.075%
246	38	HJ022	01	HOUSING	122	119	3	8	Method of Adjustment	38	27	0.000	0.064	Recliners		0.083%
247	39	HJ022	02	HOUSING	95	91	4	8	Type	43	29	0.000	0.081	Chairs other than Reclineres		0.092%
248	40	HJ023	01	HOUSING	104	102	2	0	Top Material	32	25	0.000	0.142	Living Room Tables		0.083%
249	41	HJ024		HOUSING	258	258	0	10	Piece, Kitchen Table, Chair and Sets, Kitchen Cabinet (Free Standing), Other Kitchen Furniture, Dining Table and Chairs, Dining Room Case Goods	52	33	0.000	0.114	Kitchen and Dining Room Furntiture		0.103%
250	42	HJ031		HOUSING	138	138	0	0	Crib and Mattress, Chest or Dresser, Playpen, Bassinet/Cradle/High Chair, Dressing Table	32	27	0.006	0.138	Infants' Furniture		0.035%
251	43	HJ032		HOUSING	175	175	0	18	Chaise Lounge, Sofa and Chairs, Tables/Benches, Swing, Other	56	34	0.008	0.232	Outdoor Furniture		0.046%
252	44	HJ033	01A	HOUSING	336	316	20	18	Piece, Style, Frame Material, Finish	69	36	0.000	0.067	Entertainment Center/Armoire, Bookcase		0.047%
253	45	HJ033	03A	HOUSING	244	243	1	17	Type	55	33	0.000	0.078	Desks		0.043%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
254	46	HJ033	04A	HOUSING	128	128	0	10	Item	37	25	0.009	0.066	Bar Stool, Ottoman, Hassock, Room Divider		0.036%
255	47	HK011	01A	HOUSING	225	203	22	0	Brand, Style, Total Capacity, KWH/Year, Color	66	31	0.000	0.030	Refrigerators		0.038%
256	48	HK011	02A	HOUSING	53	53	0	0	Total Capacity	23	20	0.000	0.021	Home Freezers		0.027%
257	49	HK012	01A	HOUSING	201	179	22	0	Type, Brand, Capacity, Number of Speeds, Number of Wash/Rinse Combinations, Tub Material, Manufacturer Warranty, Color	57	30	0.000	0.020	Washers		0.038%
258	50	HK012	02A	HOUSING	125	122	3	0	Type, Number of Termperature Settings, Manufacturer Warranty	39	29	0.000	0.028	Dryers		0.037%
259	51	HK013	01	HOUSING	72	70	2	7	Type, Style	29	17	0.000	0.075	Stoves and Ovens excluding Microwave Ovens		0.023%
260	52	HK014	01A	HOUSING	134	131	3	0	Type, Brand, Cavity Cubic Feet, Maximum Watt Cooking Power	44	21	0.000	0.042	Microwave Ovens		0.029%
261	53	HK021	01A	HOUSING	297	296	1	19	Type, Brand	68	32	0.000	0.084	Floor Cleaning Equipment		0.047%
262	54	HK022		HOUSING	302	302	0	20	Type*(Blenders, Toaster Ovens, Electric Pots, Waffle Irons, Toasters, Coffee Makers, Can Openers, Other, Irons)	98	37	0.000	0.082	Small Electric Kitchen Appliances and Irons		0.053%
263	55	HK023		HOUSING	355	355	0	21	Type*(Fans, Humidifiers, Heaters, Window AC, Alarms, Intercoms, Timers)	73	33	0.004	0.081	Other Electric Appliances		0.048%
264	56	HL011		HOUSING	111	108	3	13	Ceiling and Wall Lights, Floor Lamps, Table Lamps	39	23	0.000	0.177	Lamps and Lighting Fixtures		0.059%
265	57	HL012	01	HOUSING	178	175	3	14	Frame	45	30	0.000	0.073	Paintings and Pictures		0.076%
266	58	HL012	02	HOUSING	224	186	38	18	Shape, Frame Design	54	30	0.000	0.068	Mirrors		0.073%
267	59	HL012	03	HOUSING	102	100	2	17	Price Basis (Single, Set)	42	24	0.003	0.136	Figurines		0.067%
268	60	HL012	04	HOUSING	321	316	5	24	Item Priced, Price Basis (Single, Set)	69	35	0.000	0.094	Other Decorative Items		0.084%
269	61	HL012	05	HOUSING	154	151	3	18	Power	54	31	0.000	0.043	Clocks		0.077%
270	62	HL021	01	HOUSING	785	734	51	12	Variety, Material of Pot, Delivery	64	37	0.000	0.113	Indoor Plants		0.074%
271	63	HL021	02	HOUSING	544	518	26	12	Variety, Number of Stems, Features, Delivery	61	35	0.000	0.109	Fresh Cut Flowers		0.068%
272	64	HL031	01	HOUSING	51	49	2	0	-	24	24	0.000	0.068	Plastic Dinnerware		0.011%
273	65	HL031	02	HOUSING	133	127	6	0	Item Priced	31	28	0.000	0.103	China Dinnerware		0.013%
274	66	HL031	03	HOUSING	280	268	12	13	Item Priced	51	36	0.000	0.102	Other Dinnerware		0.017%
275	67	HL031	04	HOUSING	215	212	3	19	-	55	36	0.000	0.117	Glassware		0.017%
276	68	HL031	06	HOUSING	72	72	0	0	-	23	23	0.000	0.113	Serving Pieces other than Silver or Glass		0.012%
277	69	HL032	01	HOUSING	141	140	1	13	Material, Item Priced	39	21	0.011	0.150	Flatware		0.011%
278	70	HL041	01	HOUSING	359	321	38	19	Pricing Unit, Dominant Material, Lid	62	36	0.000	0.156	Non-electric Cookware		0.049%
279	71	HL042	01	HOUSING	647	638	9	21	Item Priced	68	37	0.000	0.090	Tableware and Non-Electric Kitchenware		0.050%
280	72	HM011		HOUSING	30	30	0	0	Paint, Paint Remover, Finishes, Wallpaper, Tools for Painting and Wallpapering	14	9	0.014	0.200	Paint, Wallpaper, Tools and Supplies		0.022%
281	73	HM012		HOUSING	193	193	0	0	Portable Sanding/Polishing Tools, Portable Drills, Portable Saws and Routers, Soldering Tools, Bench Tools, Other	33	28	0.000	0.102	Power Tools		0.046%
282	74	HM013		HOUSING	332	327	5	0	Rope, Ladder, Curtains, Shed, Shelves, Abrasive, Fire Extinguishers, Locks, Sealers, Mailbox, Nails/Bolts/Screws	44	33	0.000	0.144	Miscellaneous Hardware, Supplies and Equipment		0.051%
283	75	HM014	01	HOUSING	62	59	3	11	Type	32	17	0.000	0.087	General Purpose and Auto		0.031%
284	76	HM014	02	HOUSING	38	38	0	0	Type	21	16	0.020	0.130	Lawn and Garden		0.021%
285	77	HM021	01	HOUSING	169	169	0	11	Type, Power Source	59	35	0.000	0.067	Large Equipment, Powered		0.056%
286	78	HM021	02	HOUSING	72	72	0	7	Type, Power Type	37	23	0.000	0.040	Small Equipment, Powered		0.042%
287	79	HM021	03	HOUSING	98	94	4	8	Construction, Grill Material	40	28	0.000	0.079	Barbecue Grill		0.045%
288	80	HM021	04	HOUSING	33	33	0	0	-	17	17	0.000	0.151	Outdoor Decorative Items		0.029%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
289	81	HM022	01	HOUSING	153	153	0	13	-	48	35	0.000	0.089	Fertilizers, Weed Killers, Insecticides		0.055%
290	82	HM022	02	HOUSING	128	126	2	13	Variety	46	31	**0.007**	0.126	Plants, Bulbs, Seeds		0.045%
291	83	HM022	03	HOUSING	133	131	2	11	Type, Size	51	31	0.000	0.060	Soil, Mulch, Other Garden Supplies		0.053%
292	84	HM022	04	HOUSING	52	52	0	0	Size	26	21	**0.097**	0.081	Household Insecticides		0.036%
293	85	HN011	01	HOUSING	369	358	11	11	Type, Form, Size Range	63	37	0.000	0.081	Soaps and Detergents		0.070%
294	86	HN011	02	HOUSING	179	172	7	9	Form, Size	55	36	**0.018**	0.140	Laundry Products		0.068%
295	87	HN011	03	HOUSING	144	128	16	0	Type, Form, Size	53	33	**0.002**	0.045	Other Cleaning Products		0.065%
296	88	HN011	04	HOUSING	105	104	1	0	-	32	32	0.000	0.106	Waxes, Polishes, Upholstery Rug Cleaner		0.060%
297	89	HN011	05	HOUSING	70	69	1	7	Form, Size	38	27	0.000	0.075	Air Fresheners		0.058%
298	90	HN012		HOUSING	89	88	1	0	Utility Pail, Brooms & Brushes, Manual Carpet Sweeper, Mops, Dust Pan, Ironing Board, Ironing Board Cover, Clothes Line, Clothes Pins, Clothes Basket	36	27	0.000	0.166	Laundry and Cleaning Equipment		0.053%
299	91	HN021	01	HOUSING	983	946	37	11	Type, Number, Size (nested by Paper Towels, Toilet Tissue, Napkins, Cleaning Tissue)	71	37	0.000	0.079	Household Paper Products		0.198%
300	92	HN031	01	HOUSING	355	354	1	12	Type	59	35	**0.060**	0.077	Miscellaneous Paper Plastic Foil Products		0.066%
301	93	HN031	02	HOUSING	204	203	1	12	Type, Number	57	36	0.000	0.079	Light Bulbs		0.067%
302	94	HN031	03	HOUSING	116	116	0	9	Item Priced	48	33	**0.013**	0.073	Other Miscellaneous Household Products		0.067%
303	95	HN031	04	HOUSING	196	184	12	13	Type, Number of Volts per Battery, Size	60	36	0.000	0.070	Batteries (other than vehicle and photographic)		0.068%
304	96	HP011	01	HOUSING	198	157	41	0	Rate Basis, Time Worked	28	21	0.000	0.192	Housekeeping Services	y	0.194%
305	97	HP021	01	HOUSING	245	201	44	6	Type of Visit, Number of Applications, Pricing Unit, Reported Charge	47	27	0.000	0.292	Gardening and Lawcare Services	y	0.200%
306	98	HP031	01A	HOUSING	191	185	6	0	Type of Service, Type of Destination, Fee Basis	38	30	**0.002**	0.208	Moving and Freight Charges	y	0.035%
307	99	HP031	02	HOUSING	351	351	0	0	Type of Storage	39	36	0.000	0.226	Storage Expense	y	0.051%
308	100	HP041	01	HOUSING	61	61	0	0	Type of Appliance	27	16	0.000	0.056	Appliance Repair	y	0.017%
309	101	HP042	01A	HOUSING	101	94	7	0	Specific Piece of Furniture, Fiber	42	28	**0.003**	0.057	Reupholstering of Furniture	y	0.022%
310	102	HP043	01	HOUSING	164	164	0	15	-	48	33	0.000	0.303	Inside Home Maintenance and Repair Services	y	0.030%
				Group Total	**82653**	**79754**	**2899**					**Ave**	**0.102**			**41.63%**
							0.04									
311	1	MA011		MEDICAL	1695	1694	1	0	Brand/Generic, Type, Over-the-Counter Status	44	37	0.000	0.117	Prescription Drugs		1.050%
312	2	MB011	01A	MEDICAL	1285	1276	9	19	Pharmaceutical Category, Form, National/Generic Brand	72	37	0.000	0.078	Internal and Respiratory Over-the-Counter Drugs		0.296%
313	3	MB02		MEDICAL	1090	1066	24	17	Topicals/Dressings/First Aid Kits, Contraceptives, Other Medical Equipment, Supportive Medical Equipment, Wheelchairs	69	37	0.000	0.112	Non-Prescription Medical Equipment and Supplies		0.121%
314	4	MC011		MEDICAL	1166	1160	6	0	General, Pediatrics, Obstetrics & Gynecology, Cardiology, Ear/Nose/Throat, Allergy, Surgery, Pshyciatry, Orthopedics, Other, Specialty, Practice Type, Patient Type	69	35	0.000	0.171	Physicians' Services	y	1.518%
315	5	MC021		MEDICAL	991	986	5	0	Prosthodontics, Extractions and Oral Surgery, Restorations, Diagnostic and Preventive, Orthodontic Treatment, Other, Type, Service Priced	60	37	0.000	0.174	Dental Services	y	0.680%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
316	6	MC031	01A	MEDICAL	989	931	58	0	Type of Practitioner, Practice Type, Patient Type, Adult/Child, Service Priced	52	36	0.000	0.094	Eyeglasses and Eye Care	y	0.240%
317	7	MC041		MEDICAL	513	506	7	0	Physical Medicine, Podiatry, Other Practicioners, Hearing Aids & Audiology Services, Type, Patient Type, Typer of Service, T ype of Visit	62	36	0.000	0.146	Services by other Medical Professionals	y	0.245%
318	8	MD011	01A	MEDICAL	1630	1295	335	0	In/Out Patient, General Purpose of Visit, Type of Diagnostic Code, Patient Type, Type of Price Collection, Pricing Unit/Reimbursement Method	88	35	0.000	0.168	Hospital Services	y	1.253%
319	9	MD021	01B	MEDICAL	782	677	105	5	Primary Function of Establishment, Type of Resident, Acuity Level, Type of Room, Pricing Unit	65	37	0.000	0.102	Nursing and Convalescent Home Care	y	0.060%
				Group Total	**10141**	**9591**	**550**					**Ave**	**0.129**			**5.46%**
							0.0542									
320	1	RA011	01	RECREATION	1173	1170	3	12	Screen Size, Aspect Ratio, Display Type, Audio Features, Style, Brand, Major Features: Definition/PIP, Remote Control Type	110	37	0.000	0.052	Televisions		0.212%
321	2	RA021	01A	RECREATION	1123	1080	43	0	Service Type, Service Level, Pricing Method	45	37	0.000	0.051	Community Antenna or Cable TV		0.985%
322	3	RA031		RECREATION	1407	1404	3	17	VCRs, Video Disc Players, Video Cameras, Satellite Video Products, Other	63	37	0.000	0.079	Other Video Equipment		0.069%
323	4	RA04		RECREATION	922	920	2	20	Prerecorded Videotapes and DVDs, Blank Videotapes, Rental of Video Tapes and Discs	66	37	0.000	0.072	Video Cassettes, Discs and Rentals		0.186%
324	5	RA051		RECREATION	1127	1124	3	22	Radios & Phonographs, Components, Audio Equipment for Automobiles, Type	66	37	0.000	0.139	Audio Equipment		0.129%
325	6	RA061		RECREATION	929	929	0	20	Prerecorded Audio/Digital Files/Downloads, Blank Audio Tapes and Discs, Type	66	37	0.000	0.073	Audio Discs and Tapes, Prerecorded and Blank		0.122%
326	7	RB011	01	RECREATION	224	221	3	14	Type, Packaging, Size	61	35	0.000	0.095	Dog Food		0.093%
327	8	RB011	02	RECREATION	147	145	2	10	Type, Packaging, Size	57	35	0.000	0.063	Cat Food		0.090%
328	9	RB011	03	RECREATION	66	65	1	0	Size	30	25	**0.034**	0.107	Other Pet Food		0.072%
329	10	RB012		RECREATION	335	335	0	16	Dogs, Fish, Birds, Cats, Collars, Leashes, Feeding Bowls, Cat Litter, Aquarium and Supplies	61	37	0.000	0.123	Purchase of Pets, Supplies, Accessories		0.097%
330	11	RB021	01A	RECREATION	115	114	1	8	Service	44	33	0.000	0.118	Pet Services	y	0.110%
331	12	RB022	01A	RECREATION	472	452	20	0	Animal Type, Age, Visit Time, Visit Location, Services	58	36	0.000	0.091	Veterinarian Services	y	0.123%
332	13	RC011	03	RECREATION	285	238	47	4	Type, Manufacturer, Hull Material, Number of Engines, Number of Cylinders, Fuel Injection System	48	28	0.000	0.051	Power Boats		0.093%
333	14	RC011		RECREATION	113	113	0	6	Outboard Motors, Electric Trolling Motores, Snowmobiles	32	23	0.000	0.115	Outboard Motors and Powered Sports Vehicles (exc Power Boats)		0.115%
334	15	RC012		RECREATION	251	249	2	13	Unpowered Boats, Unpowered Trailers, Bicycles and Accessories, Type	53	30	0.000	0.098	Unpowered Boats and Trailers		0.129%
335	16	RC02x		RECREATION	1387	1377	10	29	Scuba, Swimming, Other Water, Sleeping Bags, Shelter, Packs, Lighting/Cooking/Heating Equipment, Cutting Implements, Cookingware, Shotguns/Rifles/Handguns, Ammnunition, Decoys, Bows & Arrows, Rods & Fishing Lines	91	37	0.000	0.164	Sports Equipment		0.329%
336	17	RD01x		RECREATION	1248	1246	2	23	Film, Photographic Supplies, Still Cameras, Other Equipment	68	37	0.000	0.125	Photographic Equipment and Supplies		0.117%
337	18	RD02x		RECREATION	722	722	0	15	Photographer's Fees, Film Processing	53	37	0.000	0.196	Photographers and Film Processing	y	0.126%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
338	19	RE01x		RECREATION	1072	1072	0	21	Dolls, Crib Toys, Wheeled Toys, Table Games, Model Kits, Playground Equipment, Video Game Hardware, Video Game Software & Accessories	65	37	0.000	0.146	Toys		0.389%
339	20	RE02x		RECREATION	860	857	3	15	Materials, Yarn, Fabrics for Clothes, Zippers, Buttons, Thread, Fasteners, Bindings, Trim, Scissors, Needles & Pins, Patterns for Clothes, Sewing Machines	64	37	0.000	0.144	Sewing Machines, Fabrics and Supplies		0.065%
340	21	RE03x		RECREATION	679	679	0	13	String, Brass, Woodwind-Reed, Percussion, Keyboard, Other, Music Accessroies	53	34	0.000	0.223	Music Instruments and Accessories		0.061%
341	22	RF011	01	RECREATION	465	456	9	0	Type of Enrollment, Type of Member, Length of Period Covered, Type of Organization	54	37	0.000	0.253	Club Membership Dues	y	0.375%
342	23	RF011	02	RECREATION	131	131	0	0	Type of Sport	31	24	0.000	0.221	Fees for Participant Sports	y	0.233%
343	24	RF021	01A	RECREATION	776	755	21	14	Type of Fee, Time of Day or Week	58	37	0.000	0.086	Admission to Movies, Theaters and Concerts	y	0.374%
344	25	RF022	01A	RECREATION	271	268	3	0	Level of Competition, Admission Type, Seating Location	49	33	0.000	0.175	Admission to Sporting Events	y	0.333%
345	26	RF031	01	RECREATION	519	515	4	19	Type of Class	58	36	0.000	0.206	Fees for Lessons or Instruction	y	0.227%
346	27	RG01x		RECREATION	662	662	0	19	Newspaper/Magazine*(Single Copy, Subscriptions)	69	37	0.000	0.199	Newspapers and Magazines		0.222%
347	28	RG021	01A	RECREATION	103	102	1	0	Type of Selection, Item Selected	20	17	0.000	0.036	Books Purchased through Book Clubs		0.044%
348	29	RG022	01B	RECREATION	730	677	53	17	Item Selected, Subject Category	58	37	0.000	0.071	Books not Purchased through Book Clubs		0.112%
				Group Total	**18314**	**18078**	**236**					**Ave**	**0.1**			**5.63%**
							0.01									
349	1	TA011		TRANSPORT	2975	2857	118	0	Type*Model Year*Make, Drive System, Transmission, Number of Cylinders, Country where Assembled	322	37	0.000	0.014	New Cars and Trucks		5.101%
350	2	TA021	01	TRANSPORT	1102	1094	8	0	Age, Model Year, Make, Size Class, Number of Doors, Body Style, Number of Cylinders, Type of Sound System, Type of Top	100	37	0.000	0.023	Used Cars and Trucks		2.464%
351	3	TA031	01	TRANSPORT	1427	1390	37	0	Make, Drive System, Number of Cylinders, Lease Term	74	36	0.000	0.036	Vehicle Leasing		0.934%
352	4	TA041	01	TRANSPORT	952	925	27	0	Car Type Class, Rate Basis, Pick-Up Point	51	36	0.000	0.088	Automobile Rental	y	0.087%
353	5	TA041	02	TRANSPORT	92	85	7	0	Truck Type, Type of Rental, Rate Basis	31	22	0.001	0.068	Truck Rental	y	0.018%
354	6	TB01x		TRANSPORT	2443	2276	167	0	Regular/Midgrade/Premium, Service, Payment Type, Brand Name	62	37	0.000	0.004	Gasoline (all types)		3.145%
355	7	TB021	01	TRANSPORT	298	274	24	0	Service, Brand Name	54	37	0.000	0.014	Automotive Diesel Fuel		0.029%
356	8	TC011	01	TRANSPORT	918	861	57	0	Performance Category, Number of Tires, Brand	57	37	0.000	0.044	Tires		0.222%
357	9	TC021		TRANSPORT	909	909	0	16	Batteries, Floor Mats & Seat Covers, Tune-Up Parts, Polish & Wax	56	37	0.000	0.098	Vehicle Parts and Equipment		0.128%
358	10	TC022	01	TRANSPORT	237	237	0	20	Pricing Unit	45	23	0.000	0.050	Motor Oil		0.014%
359	11	TC022	02	TRANSPORT	117	117	0	13	Type, Pricing Unit	41	20	0.000	0.044	Coolant, Brake Fluid, Additives		0.012%
360	12	TD011	01A	TRANSPORT	132	125	7	0	Color of Paint Used, Type of Paint, Number of Primer Coats Applied	32	22	0.000	0.046	Painting Entire Motor Vehicle		0.025%
361	13	TD011	02	TRANSPORT	100	100	0	0	Type of Windshield	26	23	0.000	0.069	Remove and Replace Winshield	y	0.023%
362	14	TD011	03	TRANSPORT	954	624	330	5	Part Replaced, Paint	50	36	0.000	0.073	Crash Repair	y	0.035%

		Eli-Cluster		Group	Obs	N	Missing	Outlets	Characteristics included	Model	Area	Prob	RMSE	Eli-Cluster	S	Wt %
										DF	DF	Area				
363	15	TD021		TRANSPORT	1279	1279	0	15	Shock Absorbers, Front End Services, Motor Tune-Up, Lubrication & Oil Change, Tire Repair, Motor Vehicle Inspection, Towing Charges	58	37	0.000	0.082	Motor Vehicle Maintenance and Servicing	y	0.468%
364	16	TD031		TRANSPORT	1416	1391	25	7	Type*(Clutch Repair, Transmission Repair, Drive Axle/Shaft, Brake Systems, Power Steering, Front-End, Cooling System, Air Conditioning, Electrical System, Motor Repair, Exhaust System Repair)	76	37	0.000	0.075	Motor Vehicle Repair	y	0.747%
365	17	TE011	01A	TRANSPORT	1443	1187	256	0	Number of Vehicles*Drivers, Policy Coverage, Physical Damage Coverage, Policy Period, Driver Discounts	60	37	0.000	0.063	Motor Vehicle Insurance	y	2.244%
366	18	TF011		TRANSPORT	408	408	0	0	Type*(State Vehicle Registration, Driver's License)	45	37	0.000	0.132	State Vehicle Registration, License and Fees	y	0.268%
367	19	TF031	01	TRANSPORT	483	477	6	17	Time Period	64	37	0.000	0.156	Parking Fees	y	0.094%
368	20	TF031	02	TRANSPORT	359	359	0	0	Type of Facility, Type of Vehicle	36	27	0.000	0.110	Tolls	y	0.026%
369	21	TF032	01	TRANSPORT	118	118	0	5	Type of Membership, Length of Membership	43	34	**0.008**	0.083	Automobile Service Clubs	y	0.038%
370	22	TG011	01	TRANSPORT	2574	2553	21	0	Type and Class of Fare, Taxes, Arrival Airport Volume, Arrival Region	52	37	0.000	0.071	Airline Fares	y	0.695%
371	23	TG02x		TRANSPORT	1421	1421	0	0	Bus Fare, Train Fare, Ship Fares	39	37	0.000	0.140	Other Intercity Transportation	y	0.156%
372	24	TG031	01	TRANSPORT	709	623	86	0	Type of Transport at Start of Trip, Service Type, Fare Class, Ticket Type	54	36	0.000	0.157	Intracity Mass Transit	y	0.186%
373	25	TG032	01	TRANSPORT	217	217	0	0	Type of Fare (Metered/Zoned/Other)	31	28	0.000	0.144	Taxi Fare	y	0.072%
				Group Total	**23083**	**21907**	**1176**					**Ave**	**0.075**			**17.23%**
							0.0537									
				Grand Total	**230,286**	**221,824**	**8462**				**Grand**	**Ave**	**0.094**			**98.87%**
							0.037							25 items with 09 Eli*Cluster =		1.13%