

RETAIL MARKET ANALYSIS

Why the Numbers Don't Add Up

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Clients are continuing to demand increased analysis of demographic trends in appraisal reports. The reasons are twofold. First is to understand the current state of the market. Even though a developer may control a prime site, a new shopping center may not be justified in an overbuilt market. Second is to assure that probable future occurrences are considered in the analysis process.

This paper addresses data comparability between different vendors. We compared retail data from multiple vendors in order to understand the relative strengths of each vendor's product. The study sounded an alarm that users need to understand.

What we found is that each vendor's products are unique. There is virtually no commonality. Even when similarities exist (i.e., all vendors surveyed describe a "footwear" category) the sales/demand estimates vary widely. Five vendor estimates were evenly spread within a range from \$14.0 to \$31.8 billion in estimated annual footwear demand; and this category is an area of agreement! A conclusion of this paper is that increased standardization in the demographic is needed.

It is clear that when both retail store location and real estate investment decisions are being based on demand factors, a thorough understanding of the factors and data sources is necessary. This paper is a primer.

Demographic/Economic Data Sources

There are numerous sources of demographic information. The primary source is census data. In the latter half of a decade however, this information tends to be stale and unacceptable to most clients without current year estimates. Basic information such as population, household counts and income estimates tend to be readily available, particularly for larger geographic areas such as counties, metropolitan areas and states. The client demand however, is often for extremely targeted analyses, focused on concentric rings, drive times, or geographic polygons.

For larger investments, clients are requiring a full spectrum of up-to-date market research including current year estimates and five-year forecasts. Shopping centers tend to require the most expansive level of research.

Suggested formats and methodologies have been prolific over the last few years. D. Richard Wincott, MAI and Glenn R. Mueller, PhD provided an excellent reference outline in a white paper originally prepared for NCREIF and published in an article titled "Market Analysis in the Appraisal Process."¹ The Appraisal Institute's publication, *Shopping Center Appraisal and Analysis*² provides the methodology with additional insight from the Institute's Technical Report "Real Estate Market Analysis: Supply and Demand Factors."³

Each of these reference sources suggests purchasing secondary census and retail demand data from an established vendor. For shopping centers, it is imperative to develop dollar estimates of retail demand.

This paper focuses on the (1) accuracy, (2) validity and (3) relevance of retail sales and consumer expenditure data purchased from major vendors. An estimate must have a measurable degree of accuracy to be useful. In general, all of the vendors are assumed to be providing accurate data; several questions however, were raised in our study. Validity is more subjective. Was the question posed reasonable or could the answer be skewed by different interpretations? Was the question process and sample properly controlled? The final topic, relevance, is perhaps the most important.

If one vendor bases their estimate on shoes sold in shoe stores, a second uses shoes sold in shoe stores and department stores as an estimate basis, and a third uses a household sampling survey of how many shoes were purchased in the last twelve months, three different answers will likely result. All may be accurate and all may use valid methodology. Only one (or none!) may be truly relevant in a real estate investment decision involving a building leased to a shoe store.

Even if multiple vendors with varying estimates can be used in investment/appraisal analysis; it is apparent that the formulas require modification. Unfortunately, the formulas we use tend to be constant. The computer phrase, "GIGO" (Garbage In, Garbage Out) comes to mind.

For our survey, we utilized data from five vendors. Needless to say, this is but a sample of data sources. The sample was not scientific. The primary reason for not including additional vendors was cost. The vendors utilized were:

- Urban Decision Systems (UDS)
- Equifax National Decision Systems (NDS)
- CACI Marketing Systems (CACI)
- Information Decision Systems (IDS)
- Sales and Marketing Management (SMM)

¹ D. Richard Wincott, MAI and Glen R. Mueller, PhD, "Market Analysis in the Appraisal Process," *The Appraisal Journal* (January 1995): 27-32.

² James D. Vernor, MAI, PhD and Joseph Rabianski, PhD, *Shopping Center Appraisal and Analysis* (Chicago: Appraisal Institute, 1993).

³ Michael Y. Cannon, MAI, SRA et al, "Real Estate Market Analysis: Supply and Demand Factors." Technical Report, Appraisal Institute, 1993.

Type of Report - Semantic Differences

When ordering a report from a vendor, the first question is which report. The vendors generally have two approaches - "Census" or "Consumer Demand" based.

A "Census" based report addresses how much money is spent in specific store categories. The vendors typically base the raw data on the Census of Retail Trade (CRT), completed every five years by the U.S. Department of Commerce, Bureau of the Census in years ending in 2 and 7. The 1992 Census of Retail Trade was published in November 1994. In the interim five year periods (i.e., 1987 to 1992), estimates are made annually by each vendor. The 1992 CRT will be used as the basis for estimates in 1994 through 1999. Thus, even the first estimate is based on two-year old data.

The second approach is a "Consumer Demand" report that addresses how much money consumers spend in typical product categories. These reports tend to be more proprietary to each vendor based on ongoing consumer demand surveys, often completed by tertiary vendors.

As an example, a "Census" report is based on how many shoes are sold in store categories. A "Consumer Demand" report may result from a phone survey. Either report may be accurate but validity questions quickly arise. Did all stores report? Did the consumer survey use appropriate sample size, questions and methodology?

All vendors surveyed provide Consumer Demand reports. Only three of five (UDS, NDS and SMM) provide Census based reports. The following table summarizes report names by vendor.

Table 1

Report Names by Vendor

D:\Bill\c95\NCREIF Retail Market Analysis, 6-95.xls\Tables 1,2

Name	Census of Retail Trade Based	Consumer Demand Based
Census	Census of Retail Trade	Consumer Expenditure Survey
UDS	Retail Sales & Competition	Merchandise Potential: Summary
NDS	Consumer Expenditure Potential	Consumer Demand: Summary
CACI	N/A	Retail Spending
IDS	N/A	Retail Profile
SMM	Retail Sales By Store (aka Survey of Buying Power)	Merchandise Line Sales

The report names are clearly confusing. Two vendors have reports titled "retail" which actually are demand based surveys. NDS has a retail sales based report titled Consumer Expenditure Potential. As the following table indicates, the issues are more than semantic.

Table 2

Comparison of Total Dollars Tracked By Vendor
(1993 Levels, US (000))

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Name	Census of Retail Trade Based	Consumer Demand Based
Census (<i>see note</i>)	\$ 2,018,639,522	N/A
UDS	\$ 2,075,362,875	\$ 1,192,509,160
NDS	\$ 1,804,337,530	\$ 1,103,466,214
CACI	N/A	\$ 1,199,848,263
IDS	N/A	\$ 1,684,367,839
SMM	\$ 2,079,200,651	\$ 710,447,999

Note: Census of Retail Trade Adjusted from reported 1992 level of \$1,894,880,209 by 6.5% to 1993 estimate; with the increase based on Monthly Retail Sales as reported by the Commerce Department.

The demand based reports track only 35% to 60% of the items included in the retail sales survey. In that most appraisers are focused on total sales, versus sales within specific subcategories (i.e., store type or product line), the disparity is significant. Either methodology, if consistently applied, can be appropriate. The ratios utilized to establish retail sales per square foot, market share, etc., will require adjustment depending on the data source.

As an example, if the same denominator is used in calculating sales PSF, the result will vary significantly depending on the choice of numerator.

The following two sections focus on each product type. Census based products are discussed first, followed by Consumer Demand products. The third section presents our conclusions and some additional information.

RETAIL SALE DATA

Retail Sale Based Data Sources - National Estimates

The two advantages of a Census based analysis are (1) data source/methodology consistency and (2) presentation by store groups.

Data source/methodology consistency is because all vendors base their product/format on the Census of Retail Trade. Every five years a new baseline is established via a detailed census process. Presentation by store groups (versus product lines) is salient because this is how shopping centers are leased. The Census of Retail Trade basis is the most often defined method in appraisal literature.

Table 3 presents raw census data from the 1987 and 1992 census' and comparisons with three vendors. All three vendors based their 1993 estimates on 1987 Census data (the 1992 Census was not released until November 1994). Because each vendor reported 1993 estimates, the 1992 Census data was adjusted to a 1993 estimate utilizing the increase in Monthly Retail Sales as tracked by the Commerce Department.

Table 3

Raw Data Comparisons

(1987 and 1992 Census of Retail Trade; 1993 Estimate based on 1992 Census; and
1993 Estimates from Three Vendors Based on 1987 Census (000))

D:\Billc95\NCREIF Retail Market Analysis, 6-95.xls]Tables 3,4,5

Description	1987 Census	1992 Census	1993 Estimate	1993 NDS	1993 UDS	1993 SMM
Bldg Mtls & Garden Supply	\$ 81,486,551	\$ 98,832,146	\$ 105,287,118	\$ 82,592,544	\$ 118,058,271	\$ 112,997,010
General Merchandise	181,147,274	245,329,695	261,352,784	279,071,744	273,859,171	266,511,455
Food Stores	301,846,804	369,198,584	393,311,857	404,672,320	395,905,916	392,206,281
Automotive Dealers	333,419,982	395,147,882	420,955,967	303,781,632	470,201,821	453,307,949
Gasoline Service Stations	101,997,440	134,705,359	143,503,299	161,739,776	138,100,268	135,802,424
Apparel and Accessory	77,390,774	101,714,474	108,357,698	82,784,120	101,881,888	105,961,739
Furniture and Homefurnishings	74,782,502	93,206,043	99,293,560	83,657,656	116,092,493	114,345,139
Eating and Drinking	148,776,497	195,316,992	208,073,628	179,648,544	216,921,506	208,023,302
Drug and Proprietary	53,824,463	77,487,573	82,548,478	66,279,756	81,523,958	81,559,484
Miscellaneous Retail	138,636,472	183,941,461	195,955,133	160,109,438	162,817,583	208,485,868
Total Retail Sales	\$ 1,493,308,759	\$ 1,894,880,209	\$ 2,018,639,522	\$ 1,804,337,530	\$ 2,075,362,875	\$ 2,079,200,651

Note: 1993 Estimate is based on 1992 Census, trended by 6.5%, based on Monthly Retail Sales as reported by the Commerce Department.

Comparison of Total Retail Sales indicates relative consistency with a maximum deviation of 15.2% (\$2,079,200,651/\$1,804,337,530). Two vendors were within a maximum deviation of 3.0% from our 1993 census estimate (\$2,079,200,651/\$2,018,639,522).

Table 4 focuses the analysis by comparing the change from the 1987 census data for each category.

Table 4

Ratios to 1987 Census Data

((1993 Estimates / 1987 Census Data) - 1)

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Description	1993 Estimate	1993 NDS	1993 UDS	1993 SMM
Bldg Mtls & Garden Supply	29.2%	1.4%	44.9%	38.7%
General Merchandise	44.3%	54.1%	51.2%	47.1%
Food Stores	30.3%	34.1%	31.2%	29.9%
Automotive Dealers	26.3%	(8.9%)	41.0%	36.0%
Gasoline Service Stations	40.7%	58.6%	35.4%	33.1%
Apparel and Accessory	40.0%	7.0%	31.6%	36.9%
Furniture and Homefurnishings	32.8%	11.9%	55.2%	52.9%
Eating and Drinking	39.9%	20.8%	45.8%	39.8%
Drug and Proprietary	53.4%	23.1%	51.5%	51.5%
Miscellaneous Retail	41.3%	15.5%	17.4%	50.4%
Total Retail Sales	35.2%	20.8%	39.0%	39.2%

Extreme deviations in vendor estimates begin to appear. NDS indicates a 1.4% increase in Building Materials with a 54.1% increase in General Merchandise sales. Our 1993 census estimate indicates growth of 29.2% and 44.3% from the 1987 census for the same categories.

While NDS indicates the lowest growth (20.8% versus 35.2% to 39.2%), and an apparent low estimate of total sales (\$1.8 trillion versus \$2.0 to \$2.1 trillion), their estimates were highest in 3 out of 10 categories (General Merchandise, Food Stores and Gasoline Service Stations).

Table 5 provides the greatest insight at the national level. It compares the three vendor estimates based on 1987 Census data to the estimate based on 1992 Census data. In essence, it measures each vendor's ability to retain accuracy over a prolonged period; or a report card on how well they estimated.

Table 5

Ratios to 1993 Estimate

((1993 Vendor Estimates Based on 1987 Census / 1993 Estimate Based on 1992 Census) -1)

D:\Billc95\NCREIF Retail Market Analysis, 6-95.xls]Tables 3,4,5

Description	1993 NDS	1993 UDS	1993 SMM
Bldg Mtls & Garden Supply	(21.6%)	12.1%	7.3%
General Merchandise	6.8%	4.8%	2.0%
Food Stores	2.9%	0.7%	(0.3%)
Automotive Dealers	(27.8%)	11.7%	7.7%
Gasoline Service Stations	12.7%	(3.8%)	(5.4%)
Apparel and Accessory	(23.6%)	(6.0%)	(2.2%)
Furniture and Homefurnishings	(15.7%)	16.9%	15.2%
Eating and Drinking	(13.7%)	4.3%	(0.0%)
Drug and Proprietary	(19.7%)	(1.2%)	(1.2%)
Miscellaneous Retail	(18.3%)	(16.9%)	6.4%
Total Retail Sales	(10.6%)	2.8%	3.0%

Two vendors, UDS and SMM, are very close at estimating total retail sales at the national level, deviating by only 2.8% and 3.0%. When the 10 individual categories are compared however, UDS ranges from minus 16.9% to plus 16.9% with SMM ranging from minus 5.4% to plus 15.2%.

Thus, the report card grade for total national level sales is good. For specific store categories, the grade diminishes. One problem is that it is difficult to know, in each store category, which vendor will be "most valid."

The bigger issue however, is the fact that each vendor's estimates may be accurate. All vendors develop estimates based on reasoned formulas and logic. Within these constraints, the estimates are accurate. The issue is validity. While one vendor's historic validity may indicate a better technique, this does not guarantee or even predict the future. Was it simple coincidence? Will the vendors with "less valid" formulas reassess and become superior? If a formula works in one category, why doesn't it work in another? Maybe a vendor was right and the Census was wrong?

Who's to know?

The preceding analysis established that Census based estimates, in total, can be a useful, accurate and valid tool in the appraisal process. The process begins to fail when segregating demand by store type. As the following section illustrates, the process also begins to fail for smaller geographic areas.

Retail Sale Based Data Sources - MSA Estimates

Most clients require a more refined analysis than national scope; including, MSA, County, City and Concentric Rings surrounding a property. All vendors sampled offer these products.

Table 6 (presented on the following page) repeats the preceding analysis using 1993 estimates based on the 1992 Census and estimates from UDS and SMM based on the 1987 Census. The analysis presents data from the six core counties within the Chicago MSA.

Table 6 indicates that accuracy quickly diminishes at the county level. While UDS was within 2.8% for total retail sales at the national level, in the six county core Chicago MSA, they range from 12.4% to 24.4% less than estimates based on the 1992 census. A variance of this magnitude in the third largest MSA means that other significant geographic areas must have compensating differences. When individual categories are reviewed at the county level, UDS indicates a range from minus 48.0% to plus 32.7%.

SMM's data is clearly the most consistent at the county level of the three vendors surveyed. Unfortunately, SMM only reports a total and 6 out of 10 categories at the county level. The range however, still remains high, from minus 35.1% to plus 33.7%.

Table 6

Chicago MSA Retail Sales

(Vendor Comparison to 1993 Estimates (000))

D:\Bill\c95\NCREIF Retail Market Analysis, 6-95.xls\Table 6

Description	Cook	Dupage	Kane	Lake	McHenry	Will	6-Cty MSA	US
1993 Estimate Based on 1992 Census								
Bldg Mtls & Garden Supply	\$ 1,537,176	\$ 430,270	\$ 210,316	\$ 300,710	\$ 113,480	\$ 136,083	\$ 2,728,035	\$ 105,287,118
General Merchandise	4,409,669	1,136,401	339,327	511,581	Withheld	289,160	6,686,138	261,352,784
Food Stores	7,096,879	1,295,793	528,859	867,242	270,195	386,825	10,445,794	393,311,857
Automotive Dealers	7,421,614	2,257,937	521,201	1,609,895	358,500	538,618	12,707,765	420,955,967
Gasoline Service Stations	2,123,984	579,428	205,889	344,237	108,363	283,939	3,645,838	143,503,299
Apparel and Accessory	2,869,799	729,986	144,586	355,150	29,641	66,306	4,195,469	108,357,698
Furniture and Homefurnishings	2,370,783	635,973	150,260	326,640	82,146	101,553	3,667,355	99,293,560
Eating and Drinking	4,724,231	824,980	282,148	482,151	118,284	228,187	6,659,981	208,073,628
Drug and Proprietary	2,418,441	414,405	145,977	246,891	72,992	123,225	3,421,932	82,548,478
Miscellaneous Retail	5,416,300	931,880	261,645	595,229	Withheld	126,009	7,331,064	195,955,133
Total Retail Sales	\$ 40,388,878	\$ 9,237,054	\$ 2,790,208	\$ 5,639,726	\$ 1,390,412	\$ 2,279,904	\$ 61,726,181	\$ 2,018,639,522
1993 Estimates by UDS - Urban Decision Systems								
Bldg Mtls & Garden Supply	\$ 1,551,778	\$ 434,741	\$ 156,214	\$ 286,467	\$ 105,217	\$ 116,877	\$ 2,651,294	\$ 118,058,271
General Merchandise	4,095,932	787,106	450,332	362,189	142,158	213,665	6,051,382	273,859,171
Food Stores	5,791,889	1,133,387	378,308	662,071	194,316	271,282	8,431,253	395,905,916
Automotive Dealers	6,279,197	1,847,707	470,693	1,133,790	319,980	549,072	10,600,439	470,201,821
Gasoline Service Stations	1,352,060	365,233	137,560	234,765	67,740	156,417	2,313,765	138,100,268
Apparel and Accessory	2,166,246	548,602	170,002	262,712	31,109	55,616	3,234,287	101,881,888
Furniture and Homefurnishings	1,845,779	539,772	118,709	312,261	74,693	89,889	2,981,103	116,092,493
Eating and Drinking	3,667,478	676,336	235,377	408,505	94,742	171,799	5,254,237	216,921,506
Drug and Proprietary	2,343,509	320,904	132,312	229,289	55,649	98,931	3,180,594	81,523,958
Miscellaneous Retail	2,816,200	727,288	193,818	372,271	76,236	90,981	4,276,794	162,817,583
Total Retail Sales	\$ 31,910,068	\$ 7,381,076	\$ 2,443,325	\$ 4,264,310	\$ 1,161,840	\$ 1,814,529	\$ 48,975,148	\$ 2,075,362,875
1993 Estimates by SMM - Sales & Marketing Mgmt								
Bldg Mtls & Garden Supply								\$ 112,997,010
General Merchandise	4,117,491	1,346,301	393,227	652,573	118,930	271,072	6,899,594	266,511,455
Food Stores	7,116,373	1,185,901	378,423	743,419	175,405	341,061	9,940,582	392,206,281
Automotive Dealers	8,308,623	2,236,654	544,706	1,660,063	355,457	664,830	13,770,333	453,307,949
Gasoline Service Stations								135,802,424
Apparel and Accessory								105,961,739
Furniture and Homefurnishings	2,722,053	680,358	149,719	424,981	58,930	135,773	4,171,814	114,345,139
Eating and Drinking	5,209,341	1,039,977	259,186	564,722	135,601	228,228	7,437,055	208,023,302
Drug and Proprietary	2,317,336	507,417	151,225	290,913	87,760	150,143	3,504,794	81,559,484
Miscellaneous Retail								208,485,868
Total Items Reported	\$ 29,791,217	\$ 6,996,608	\$ 1,876,486	\$ 4,336,671	\$ 932,083	\$ 1,791,107	\$ 45,724,172	\$ 2,079,200,651
Total Retail Sales	\$ 40,483,853	\$ 11,854,156	\$ 2,641,164	\$ 5,790,002	\$ 1,310,883	\$ 2,510,923	\$ 64,590,981	\$ 2,079,200,651
UDS Ratios to 1993 Estimates								
Bldg Mtls & Garden Supply	0.9%	1.0%	(25.7%)	(4.7%)	(7.3%)	(14.1%)	(2.8%)	12.1%
General Merchandise	(7.1%)	(30.7%)	32.7%	(29.2%)		(26.1%)	(9.5%)	4.8%
Food Stores	(18.4%)	(12.5%)	(28.5%)	(23.7%)	(28.1%)	(29.9%)	(19.3%)	0.7%
Automotive Dealers	(15.4%)	(18.2%)	(9.7%)	(29.6%)	(10.7%)	1.9%	(16.6%)	11.7%
Gasoline Service Stations	(36.3%)	(37.0%)	(33.2%)	(31.8%)	(37.5%)	(44.9%)	(36.5%)	(3.8%)
Apparel and Accessory	(24.5%)	(24.8%)	17.6%	(26.0%)	5.0%	(16.1%)	(22.9%)	(6.0%)
Furniture and Homefurnishings	(22.1%)	(15.1%)	(21.0%)	(4.4%)	(9.1%)	(11.5%)	(18.7%)	16.9%
Eating and Drinking	(22.4%)	(18.0%)	(16.6%)	(15.3%)	(19.9%)	(24.7%)	(21.1%)	4.3%
Drug and Proprietary	(3.1%)	(22.6%)	(9.4%)	(7.1%)	(23.8%)	(19.7%)	(7.1%)	(1.2%)
Miscellaneous Retail	(48.0%)	(22.0%)	(25.9%)	(37.5%)		(27.8%)	(41.7%)	(16.9%)
Total Retail Sales	(21.0%)	(20.1%)	(12.4%)	(24.4%)	(16.4%)	(20.4%)	(20.7%)	2.8%
SMM Ratios to 1993 Estimates								
Bldg Mtls & Garden Supply								7.3%
General Merchandise	(6.6%)	18.5%	15.9%	27.6%		(6.3%)	3.2%	2.0%
Food Stores	0.3%	(8.5%)	(28.4%)	(14.3%)	(35.1%)	(11.8%)	(4.8%)	(0.3%)
Automotive Dealers	12.0%	(0.9%)	4.5%	3.1%	(0.8%)	23.4%	8.4%	7.7%
Gasoline Service Stations								(5.4%)
Apparel and Accessory								(2.2%)
Furniture and Homefurnishings	14.8%	7.0%	(0.4%)	30.1%	(28.3%)	33.7%	13.8%	15.2%
Eating and Drinking	10.3%	26.1%	(8.1%)	17.1%	14.6%	0.0%	11.7%	(0.0%)
Drug and Proprietary	(4.2%)	22.4%	3.6%	17.8%	20.2%	21.8%	2.4%	(1.2%)
Miscellaneous Retail								6.4%
Total Retail Sales	0.2%	28.3%	(5.3%)	2.7%	(5.7%)	10.1%	4.6%	3.0%

Retail Sales - Conclusions

While a retail sales based estimate is potentially meaningful at the national level, it has the clear potential to be significantly skewed at the county level.

A simple extrapolation indicates that when an analyst focuses on a 3 to 10 mile ring around a property, the variances can significantly increase.

With the high potential for variances between vendors, it is easy to see how an analyst using one vendor may reach an entirely different conclusion than another analyst using another vendor. The first could conclude "yes, build" while the second could conclude "no, don't."

Thus, the logical question is "is there a better approach?" Some vendors appear to think so, as evidenced by the increasing market share of survey based versus census based data.

CONSUMER DEMAND DATA

Consumer Demand Survey Based Data Sources

A "Consumer Demand" based report addresses how much money consumers spend in typical product categories. These reports tend to be more proprietary to each vendor based on ongoing consumer demand surveys, often completed by tertiary vendors.

One reason verbally cited by sales agents for several vendors regarding the superiority of this method over the Census of Retail Trade approach is that multi-store chains can end up with all of their sales at the parent's headquarter location. Our understanding is that this is not true. The census surveys each location of a multi-store chain. A quick review of headquarter locations of major retailers confirms this fact.

Each vendor tends to base their data partly on the Consumer Expenditure Survey prepared by the Bureau of Labor Statistics. They also supplement this data with proprietary sources. Their products are described as follows.

UDS describes their Merchandise Potential product as *"This unique database consists of estimates of the average annual household expenditure on 185 separate merchandise lines, completed at the block group level of geography. The original estimates are derived from a series of models based upon the household expenditure patterns as expressed in three years of Consumer Expenditure data and four years of Consumer Expenditure Diary data. These sources provide a combination of large item purchases, along with day-to-day tracking of minor (or frequently purchased) items."*

CACI describes their Retail Spending product as *"Purchase data were collected by Mediamark Research Inc. in a nationally representative survey of U.S. households. This work is comprised of copyrighted and confidential material. Expenditure data in this report are calculated from the Consumer Expenditure Survey, Bureau of Labor Statistics."*

IDS describes their Retail Profile Report as *"This report is based on annualized data from the Consumer Expenditure Survey and the Census of Retail Trade, both conducted by the U.S. Department of Commerce."*

NDS utilizes the largest number of tertiary vendors in compiling their Consumer Demand Reports. They state *"The Consumer Demand Reports are based on information from both the nation's premier market research firms and the government, combined with MicroVision, the most advanced micro-geographic consumer targeting system. We use only the most accurate and comprehensive sources of information to create these reports, assuring you of the highest quality possible. Plus, since each database is updated regularly, you know you are always applying the most current information available."* NDS's data sources include Financial Forum, KSA/The NPD Group, Inc., Footwear Market Insights, Mediamark Research, Inc., The U.S. Department of Labor, Utilities Forum, and CREST.

SMM describes their Merchandise Line Sales report as *"...the dollars spent on specific products purchased from a wide variety of retail sources. These figures are different from those for retail sales by store group, which show sales for a particular type of store rather than a product category sold within that store." "Because merchandise line sales figures are based on a single product category, they tend to provide a more accurate indication of a product's market potential than store group totals, which are not product specific."*

Just from reading the descriptions, it is evident that comparability between different vendors will be difficult. An individual appraiser/firm may use only one vendor, and may be highly

knowledgeable regarding its consistency and limitations. A problem is that clients, including banks, investors, owners, developers and property/asset managers, are likely to receive numerous appraisal reports which use different data sources.

An attempt was made to compare data from the different vendors. The process was difficult. The results are in Table 7 (*presented at the end of this paper due to the 3-page length*). As UDS noted, they track 185 individual items. Other vendors track similar levels. Our analysis focused on each vendor's summary reports.

The single greatest problem in comparing the data is semantic. Two vendors segregate Mens' and Boys' Apparel. A third vendor defines Mens' Apparel but groups Boys' and Girls' Apparel into a Childrens' Apparel Category. A fourth vendor provides only the total for Mens' and Boys' while a fifth vendor totals All Apparel Except Shoes.

Sounds complex? The preceding was only the first 7 out of 108 groupings presented in Table 7.

Table 7 is not intended to be an entirely accurate comparison. It is simply a reasoned attempt to provide comparability. Where data descriptions sounded similar, they were entered under the same group. If not, a new group was created for that vendor. The subtotals and totals are only included where there is some degree of appropriateness. Values with wide deviations were excluded.

Because there is no single common source for the data, there is no direct comparison of accuracy. Where at least three vendors reported in a grouping, a "Maximum/Minimum" range is indicated in the far right column of the table.

The spreads generally range from 1.2 to 2.6 (AKA 20% to 160%; Miscellaneous has a 33.7 Max/Min spread, but this is due to disparate category inclusions by vendors). The mean spread in the 29 groupings within the general range is 1.69.

What may be the most interesting aspect of the comparison - and the most humorous - is that out of 108 groupings identified, all five vendors only describe one grouping using identical verbiage - footwear.

Footwear may well be the most tracked consumer item in the United States. Although exceptionally well tracked, the vendors disagree on how much footwear is sold. The following summarizes consumer demand.

Table 8

Footwear Demand Estimates

D:\Bill\c95\NCREIF Retail Market Analysis, 6-95.xls\Tables 8,9

Vendor	US Demand
UDS	\$ 16,324,000
CACI	\$ 14,047,870
IDS	\$ 25,039,440
NDS	\$ 30,747,519
SMM	\$ 31,836,637
Max/Min Ratio	2.3x

While appraisers regularly deal with varying statistics, i.e. vacancy rates, variances of this magnitude may be unacceptable in forming valuation opinions.

The analysis of Consumer Demand based products was limited to the U.S. as a whole. Many appraisal reports however, are written that utilize this data at the MSA, County, City, Zip Code, Census Tract and Concentric Ring level of geography. It is reasonable to assume, and more scientific comparisons of other data series (CACI has published an excellent brochure on Population estimates) provide support, that error rates significantly increase in tightly defined geographic units.

A salient question is how many site locators, investors or appraisers have ever compared localized data from multiple vendors for a specific project? We expect that the answer is "not many." The time when a second vendors is used is likely when intuition hints that the first is wrong. Or, in other words, the data is thrown out and common sense rules. Judgement, experience and knowledge - the "art" of the valuation process versus the "science" prevail. A second vendor is selected to "prove" the first wrong - and to utilize as a basis in writing the report.

Conclusions - Demand Based Data

The primary attribute of demand based data is it is more current (i.e., ongoing consumer sampling) than estimates based on a dated survey (i.e., the 1987 Census). The precise sampling/surveying methods however, may not be consistent and are not fully disclosed by the vendors as normal procedure. Therefore, it is difficult to asses each method's accuracy. In addition, few appraisers are likely qualified in demographic analysis and statistics to reach such a conclusion. Therefore, users rely upon vendor representation.

Accuracy, Reliability and Confidence are marketing words used by the various vendors surveyed. Thoroughness and Comparability are words that need to be included in order to make the products more useful to appraisers, and no doubt analysts in many other professions.

While Thoroughness may have arguably been enhanced by ordering detailed products (versus summary) from vendors, this is well beyond the cost/benefit in most appraisal assignments.

More salient is that Comparability would likely diminish due to the finer cuts between categories.

The greatest constraint with demand based data is that the appraisal process can fail at this point because appraisal literature tends to focus on consistent methodology. Applying the same methodology to disparate data sources is a problem that must be dealt with by the industry. Is it conceivable that an appraised value of a shoe store could be influenced by which vendor's data was utilized? The Appraisal Institute's "Guide Note 6: Reliance on Reports Prepared by Others," directly addresses this issue. Unfortunately, Guide Note 6 states that "general informational reports usually require limited verification. Most discrepancies are easily clarified." Based on the preceding analysis, this does not appear to be the case. The Addenda amplifies on this topic.

Overall Conclusions and Comments

Our review of localized data indicate that variances of the greatest magnitude tend to occur in transitional areas. In metropolitan Chicago, some of the larger variances occur in DuPage and Lake Counties, both growth markets. In that growth areas tend to be the focus of numerous real estate appraisals - particularly for untested products (i.e., new construction of shopping centers), an analysis that is tied to a skewed data source also has the potential for variance. In essence, the greatest problems in using economic data will occur in markets where it is most needed.

The first step for demographic vendors was to create a market. Demand for their products has grown exponentially in the last several decades and a solid market now exists. There use in appraisal reports as a basis for valuation versus background information remains in its infancy. Thus far, the suppliers have defined the market.

Today, the market needs to be re-defined. The next generation of products and services should be driven by the vendors' clients needs and be developed to industry accepted specifications. In essence, the industry needs product standardization. For appraisers, consistency is of paramount importance so that our clients will understand and appropriately use appraisal services. The data also needs to be directly relevant to real estate with both appraisers and our clients clearly understanding the limitations of available estimates.

At present, the micro-analysis being attempted may be ahead of the data. If this constraint is understood however, the attempts are good; as the process will assist in defining the level of accuracy and consistency in data necessary to achieve the next level.

ADDENDA

Evaluating Population Projections

Only one vendor independently offered to provide an analysis of how their estimates stack up with reality. CACI provided a Paper titled "Evaluating Population Projections." *"This paper compares CACI's 1990 population forecasts to 1990 census counts for states, counties, and census tracts or block numbering areas. Because projections have some characteristics in common, a review of one series, CACI's 1990 forecasts, can serve as a guide to selecting and using population projections in general."*

The following table summarizes the Mean Absolute Percent Error (MAPE) by Level of Geography using CACI's Population estimates and the 1990 Census data. This is the same methodology utilized in our analysis of retail trade at the national level.

Table 9

CACI Comparison of 1990 Forecast with 1990 Census

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Geographic Unit	MAPE
States	1.9%
Counties	4.4%
Census Tracts	14.5%

Census Tracts with 50 or fewer households are excluded

MAPE: Mean Absolute Percent Error

What this data confirms is that error rates or variances increase as geographic areas become more refined. At the Census Tract level, which is comparable to many tightly defined rings used by appraisers, a mean absolute percent error of 14.5% in the tenth year following a census should be expected. With similar variances also occurring in income estimates, combined with even larger variances in retail sales or consumer demand, the micro-applicability of this data requires serious consideration.

As CACI summarizes *"... the smaller the area, the greater the error." ... " Because the pattern of error is somewhat predictable, it can be used to select the best projection series for your use."*

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Table 7a

Comparison of Consumer Demand Data

D:\Billc95\NCREIF Retail Market Analysis, 6-95.xls\Table 7

Description	UDS	CACI	IDS	NDS	SMM	Max/Min
Apparel						
Mens'	\$ 32,256,480	\$ 24,640,058	\$ 36,685,632			1.5
Boys'	\$ 7,170,500		\$ 7,890,145			
<i>Subtotal Mens' and Boys'</i>	\$ 39,426,980		\$ 44,575,777		\$ 59,289,717	1.5
Womens'	\$ 55,696,170	\$ 43,543,123	\$ 64,980,479			1.5
Girls'	\$ 9,125,110		\$ 9,846,085			
<i>Subtotal Womens' and Girls'</i>	\$ 64,821,280		\$ 74,826,564		\$ 121,593,674	1.9
Childrens/Subtotal	\$ 16,295,610	\$ 15,034,079	\$ 17,736,230			1.2
All Apparel Except Shoes				\$ 110,300,946		
Infants'	\$ 6,311,140	\$ 4,346,729	\$ 7,507,449			1.7
Footwear	\$ 16,324,000	\$ 14,047,870	\$ 25,039,440	\$ 30,747,519	\$ 31,836,637	2.3
Repair	\$ 1,344,840					
Dry Cleaning	\$ 14,719,790	\$ 12,048,672				
Jewelry and Access	\$ 20,472,040	\$ 11,785,260	\$ 12,180,821			1.7
Total Apparel	\$ 163,420,070	\$ 125,445,791	\$ 164,130,051	\$ 141,048,465	\$ 212,720,028	1.7
Food and Grocery						
Food	\$ 282,071,970	\$ 323,289,926	\$ 274,199,497		\$ 324,679,012	1.2
Alcoholic	\$ 20,536,640	\$ 14,294,725				
Food and Alcohol Away From Home	\$ 183,766,820	\$ 91,839,971		\$ 159,112,349		2.0
Household Supplies	\$ 47,512,640					
Fast Food			\$ 90,878,210			
Service Restaurant			\$ 106,040,856			
Alcoholic Bev. - Restaurant			\$ 27,303,442			
Total Food & Grocery	\$ 533,888,070	\$ 429,424,622	\$ 498,422,005			1.2
Health and Personal Care						
Drugs and Medical Equip	\$ 38,006,780					
Prescription			\$ 19,081,360			
Non-Prescription			\$ 7,063,324			
<i>Subtotal Drugs</i>	\$ 38,006,780		\$ 26,144,684			
Cosmetics	\$ 10,407,310					
Toiletries & Other Hygiene	\$ 12,588,020					
<i>Subtotal</i>	\$ 22,995,330					
Personal Care Services	\$ 19,514,800	\$ 25,314,731	\$ 21,793,839			1.3
Total Health & Personal Care	\$ 80,516,910		\$ 47,938,523		\$ 101,528,805	2.1
Combined Food and Health	\$ 614,404,980		\$ 546,360,528	\$ 643,342,360		1.2

Table 7b

Comparison of Consumer Demand Data

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Description	UDS	CACI	IDS	NDS	SMM	Max/Min
Household						
Furniture	\$ 43,668,010	\$ 31,207,362				
Living/Dining Room			\$ 17,664,097			
Bedroom			\$ 9,415,813			
Other Furniture			\$ 6,416,207			
<i>Subtotal Home Furnishings</i>	\$ 43,668,010	\$ 31,207,362	\$ 33,496,117		\$ 45,200,431	1.4
Appliances	\$ 18,794,420	\$ 11,673,388				
Refrigerators and Freezers			\$ 4,243,175			
Washers and Dryers			\$ 3,598,349			
Other Major Appliances			\$ 7,069,606			
<i>Subtotal Appliances</i>	\$ 18,794,420	\$ 11,673,388	\$ 14,911,130	\$ 21,025,369	\$ 26,319,723	2.3
Other Home Furnishings	\$ 21,718,020	\$ 16,574,991		\$ 19,993,132		1.3
Housewares			\$ 5,866,544			
Hardware			\$ 6,321,971			
<i>Subtotal Housewares & Hardware</i>	\$ 21,718,020	\$ 16,574,991	\$ 12,188,515	\$ 19,993,132		1.8
Televisions, VCR's Sound Equip	\$ 18,541,900	\$ 16,198,842				
Video Tapes, CD's Tapes	\$ 8,153,190	\$ 3,509,138				
Computer Equipment	\$ 4,568,920	\$ 5,185,146				
Other Household Electronic Equip	\$ 2,257,050					
Radios/TV/Musical Instruments			\$ 48,843,115			
Small Appliances			\$ 1,820,275			
Photo Equipment & Supplies	\$ 7,274,250	\$ 3,286,355	\$ 8,542,982			2.6
<i>Subtotal Electronics</i>	\$ 40,795,310	\$ 28,179,481	\$ 59,206,372	\$ 36,473,233		2.1
Total Household	\$ 124,975,760	\$ 87,635,222	\$ 119,802,134			1.4
Remodeling and Maintenance						
Carpeting and Window Coverings	\$ 13,747,860					
Home/Improvements/Remodel		\$ 110,943,291		\$ 60,922,363		
Remodeling		\$ 48,255,651				
Maintenance & Repair		\$ 42,582,116				
Lawn & Garden		\$ 20,105,524				
Total Remodel & Maintenance		\$ 110,943,291				
Combined House, Rmdl & Maint	\$ 138,723,620	\$ 198,578,513	\$ 119,802,134	\$ 138,414,097		1.7

Table 7c

Comparison of Consumer Demand Data

D:\Billc95\NCREIF Retail Market Analysis, 6-95.xls\Table 7

Description	UDS	CACI	IDS	NDS	SMM	Max/Min
Automotive & Gas						
Repairs and Maintenance	\$ 53,361,790					
Automotive Aftermarket		\$ 35,652,967				
Lube and Oil Change			\$ 3,387,023			
Tires			\$ 9,068,125			
Tune-Ups			\$ 4,857,625			
Clutch/Transmission			\$ 4,195,182			
Brake Repair			\$ 4,599,206			
Other Auto			\$ 18,383,543			
<i>Subtotal Automotive</i>	\$ 53,361,790	\$ 35,652,967	\$ 44,490,704			1.5
Gasoline and Motor Oil	\$ 83,962,190		\$ 107,592,596			
Total Auto and Gas	\$ 137,323,980		\$ 152,083,300			
Entertainment & Recreation						
Entertainment	\$ 23,084,390					
Video Rental		\$ 3,407,108				
Member Dues & Sports Fees		\$ 9,830,451	\$ 16,984,892			
Movie/Theater/Opera/Ballet		\$ 7,040,609	\$ 10,002,922			
Admissions Sports Evens		\$ 2,280,496	\$ 5,038,164			
<i>Subtotal Entertainment</i>	\$ 23,084,390	\$ 22,558,664	\$ 32,025,978			1.4
Recreation and Sporting Equipment	\$ 10,511,060	\$ 9,304,215		\$ 1,975,207		5.3
Sports Participation		\$ 6,165,860				
Other Recreation			\$ 9,637,763			
<i>Subtotal Recreation</i>	\$ 10,511,060	\$ 15,470,075	\$ 9,637,763			1.6
Total Entertainment & Recreation	\$ 33,595,450	\$ 38,028,739	\$ 41,663,741			1.2
Miscellaneous						
Reading Materials	\$ 20,470,080	\$ 16,408,061				
Pet Supplies	\$ 9,421,680	\$ 4,477,665				
Day Care	\$ 13,556,020					
Tobacco	\$ 29,143,980					
Flowers and Gardening	\$ 12,276,770					
Optical Goods	\$ 6,328,750	\$ 5,794,058				
Toys/Hobbies (Incl Video Games)	\$ 13,843,780	\$ 8,942,308		\$ 19,570,736		2.2
Luggage		\$ 725,225				
Film Processing		\$ 2,849,791				
Life Insurance		\$ 36,999,555				
Medical Insurance		\$ 73,074,066				
Physician Care		\$ 48,416,176				
Air Fare		\$ 22,219,323				
Hotels/Motels		\$ 21,338,152				
Rental Cars		\$ 1,248,138				
Homeowners' Insurance		\$ 17,367,077				
Renters' Insurance		\$ 909,130				
Vehicle Insurance		\$ 67,344,748				
Telephone		\$ 60,293,153				
Cable TV		\$ 19,963,972				
Other Retail Sales			\$ 660,328,085			
Total Miscellaneous	\$ 105,041,060	\$ 408,370,598	\$ 660,328,085	\$ 19,570,736		33.7
TOTAL ITEMS TRACKED	\$ 1,192,509,160	\$ 1,199,848,263	\$ 1,684,367,839	\$ 1,103,463,214	\$ 710,447,999	2.4