Department of ASSESSMENTS AND TAXATION

2011 Ratio Report

State of Maryland

DEPARTMENT OF ASSESSMENTS AND TAXATION

Office of the Director

MARTIN O'MALLEY
Governor

ROBERT E. YOUNG
Director

April 16, 2012

The Honorable Martin O'Malley
And
The General Assembly of Maryland

As required by Section 2-202 of the Tax-Property Article of the Annotated Code of Maryland, I am pleased to submit the Department of Assessments and Taxation's 2011 Assessment Ratio Report. This report measures the quality of real property assessments in each of Maryland's 24 jurisdictions.

Uniform and accurate assessments are the foundation of fair property taxation. Maryland's Constitution requires that all real property subject to property taxation be assessed uniformly. State law requires that assessments be based on the fair market value of the property. Therefore, uniformity and market value are the standards used to measure the quality of the assessment work performed by the Department.

This report measures assessment quality by looking at the most recent reassessment program and comparing the results of the effort to actual market conditions. Because state law requires that one-third of all real property be reassessed each year, the Department's program resulted in 739,764 reassessment notices being issued in late December of 2010. These reassessments reflected our estimates of property values as of January 1, 2011. To provide an objective quality measure of that work, this report tests those reappraisal results against property sales for the 12 month period of July 1, 2010 to June 30, 2011.

The Department has adopted the national standards for measuring property assessment quality as outlined by the International Association of Assessing Officers. Those national standards, as well as our compliance with those standards, are discussed in the body of this report. Statewide, the Department has met the IAAO standard for coefficient of dispersion indicating an overall uniformity of assessments.

I hope that you find this report useful and informative. Please feel free to share with me any suggestions that you may have to improve this report or the assessment process in Maryland.

Sincerely,

Robert E. Young

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Director

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2011 ASSESSMENT RATIO REPORT

SECTION I – OVERVIEW

The Department of Assessments and Taxation appraises real property for the purposes of property taxation. Properties are valued using the three approaches to value generally recognized by the appraisal profession: cost, sales comparison, and (when applicable) income.

Residential property characteristics include type of structure, size, quality and type of construction, condition of structure, and any new improvements. Commercial properties are reviewed for type of structure, size, type and quality of construction, condition of structure, current use of the property, any new improvements, types of tenants, and vacancy.

This year we valued over 739,764 properties, which require the use of mass appraisal techniques. While a fee appraiser is concerned with valuing one property at a time, an assessor is valuing whole neighborhoods. To accomplish this, special mass appraisal procedures are used. The assessor will review the data and calculate replacement costs for improvements much like a fee appraiser. The assessor will then review the sales from the area. In Maryland, the local assessment office, except in Baltimore City, receives a copy of all deeds and property sales prices as the deed transferring the property is recorded with the clerk of the court. In Baltimore City, the Department of Public Works does the data entry and provides the data to the Department. In the assessor's review and analysis of the sales, the assessor will develop land rates, depreciation tables, and sales analysis reports. After completing the analysis, the assessor applies the factors uniformly throughout the neighborhood to value all comparable properties in a uniform manner. Rental rates, vacancy and collection loss, expense ratios and capitalization rates are analyzed, and uniformly applied for comparable income producing properties.

The Department's work is reviewed by legislative auditors and is often scrutinized by individual property owners. We are continually striving for higher quality in assessment uniformity. Our quality control program begins with the individual assessor and the assessor's immediate supervisor. As work is completed, each assessor's supervisor reviews the analysis, makes recommendations, and approves the work. When the assessor completes the revaluation, the supervisor makes a random check using procedural and data editing checks. Following the completion of the revaluation, various computer edits are made to assure good valuation quality.

A measurement of quality is the assessed value/sale price ratio. A ratio is the relationship of two numbers, in this case assessed value and sale price. It measures how closely our values compare to the actual sales prices. The average assessed value/sale price ratio indicates a typical level of value. Because the marketplace is not perfect, there will always be properties that sell for more or less than can be anticipated due to factors such as buyers willing to pay extra for a unique property or declining values in a buyer's market.

In mass appraisal and assessment ratio studies, we are not only concerned with average assessed value/sale price levels (ratios) but also with the degree of spread (variation) from the typical ratio. The measurement of variation is called the coefficient of dispersion (COD). The lower the COD, the more uniform the assessment level.

In the balance of this report, Section II will give a more detailed explanation of the statistical terms as applied to assessment administration and quality control. Section III explains the International Association of Assessing Officers' Standard of Performance for ratio studies. Section IV gives an overview of statewide appraisal quality for the most recent valuation of triennial Group 2, performed in December 2010.

SECTION II – RATIO STATISTICS

The purpose of this ratio study is to test the quality of the assessment product. The quality of the assessment product is examined from both an assessment level and assessment uniformity standpoint. Assessment level examines the degree to which the assessments are performed based upon the statutory requirement of full market value. Assessment uniformity measures the degree to which different properties are assessed at equal percentages of their market values. From our most recent valuation, we perform many ratio studies examining neighborhoods, types of structures, age of structures, etc.

We use as a performance gauge several measures of central tendency. Each measure of central tendency is affected differently by outliers. A ratio of assessed value to sale price is calculated for each property. The average ratio is the total of all ratios divided by the number of sales. The average (mean) ratio has a natural upward bias. This would indicate a higher level of assessment than has actually occurred. The median is the midpoint of any data listed from lowest to highest. The median ratio is the point where half the ratios fall above and half ratios fall below. The median ratio counts each ratio equally. It is less biased by extreme ratios (outliers) or by individual property values. The weighted ratio is the total of all assessed values divided by the total of all sale prices. Since the weighted ratio counts each dollar equally, it is swayed by higher priced properties.

In addition to the general level of assessments, we are also concerned with the relative spread or variation that individual ratios fall from the typical. There are two measurements of variability: coefficient of dispersion and coefficient of variation. These statistics measure horizontal inequities, or the dispersion of ratios regardless of the value of the individual properties. The coefficient of dispersion is calculated by dividing the average absolute deviation by the median ratio. The average absolute deviation is calculated by subtracting the median ratio from each ratio, adding all the results but ignoring positive and negative signs, and dividing by the number of ratios. Acceptable coefficients of dispersion depend on property type but should typically be 20% or less. Coefficient of variation is calculated by dividing the standard deviation by the mean or average ratio and multiplying by 100. The variance is calculated by subtracting the mean from each ratio, squaring the differences, summing the squared differences, dividing by the total number of ratios less one. The standard deviation is calculated by taking the square root of the variance. The coefficient of dispersion is the preferable measure of variance unless a sample is normally distributed. In a normal distribution situation, coefficient of variation is the preferable measure of variance.

Another statistical measure used to gauge assessment uniformity is the Price Related Differential (PRD). The PRD tests to see if higher or lower valued properties are assessed at the same level. It is calculated by dividing the average ratio by the weighted ratio. This statistic measures vertical inequities. When low-value properties are valued at a higher percentage of their market

value, the property taxes levied against these assessments would be considered regressive. Conversely, if high-value properties are valued at a higher percentage of their market value, property taxes levied against these assessments would be considered progressive. Typically, PRDs have an upward bias because higher priced properties are more unique. PRDs should range between 0.98 and 1.03, except for very small samples. For example, a PRD of 1.03 indicates under valuation of high priced properties, while a PRD of .98 shows an under valuation of low priced properties.

Other descriptive statistical methods that may be used to analyze the assessment product are histograms, frequency distributions, and scatter diagrams. Due to the scope of this report, we have not examined them here. For further information on statistics relating to assessments, please refer to the International Association of Assessing Officers' publication "Improving Real Property Assessment".

Table I is the Fiscal Year 2012 Real Property Base/Ratio by Subdivision with assessment ratios expressed relative to full value. Table II is a history of weighted assessment ratios converted to full value (100% levels) that allows for comparison between years by adjusting for statutory changes in the assessment level. Table III displays examples of the statistical calculations used in this report.

Tables IV and V show the residential and commercial 2011 Ratio Study data by jurisdiction at assessed full market value level for the area most recently assessed. Following the ratio study is Table VI of the report detailing issues of assessment and appraisal quality that are summarized in Section IV.

SECTION III – RATIO STUDY STANDARDS VALUES TO SALE PRICES

The International Association of Assessing Officers (IAAO) is a professional organization of assessing officials which provides educational programs, assessment administration standards, and research on appraisal and tax policy issues. IAAO has developed numerous standards and texts on appraisal and assessment administration. Additionally, the organization is a founding member of the national Appraisal Foundation which developed the Uniform Standards of Professional Appraisal Practice (USPAP).

IAAO's Standard on Ratio Studies was first published in September 1980 and was revised in January 2010. The Standard is advisory in nature. This Standard provides guidance to those performing ratio studies in the mass appraisal field regarding the design, statistics, performance measures and other issues related to such studies. The Maryland Department of Assessments and Taxation uses the fundamental ratio statistical measures of the Standard and has adopted IAAO's Assessment Ratio Performance Standard as the criteria to judge the performance of Maryland revaluations.

The IAAO Ratio Performance Standards are:

Ratio Study Uniformity Standards Indicating Acceptable General Quality*

General Property Class	Jurisdiction Size /Profile /Market Activity	Max COD
Residential improved (single family dwellings, condominiums, manuf. housing, 2-4 family units)	Very large jurisdictions / densely populated / newer properties / active markets	5.0 to 10.0
	Large to mid-sized jurisdictions / older & newer properties / less active markets	5.0 to 15.0
	Rural or small jurisdictions / older properties / depressed market areas	5.0 to 20.0
Income-producing properties (commercial, industrial, apartments,)	Very large jurisdictions / densely populated / newer properties / active markets	5.0 to 15.0
	Large to mid-sized jurisdictions / older & newer properties / less active markets	5.0 to 20.0
	Rural or small jurisdictions / older properties / depressed market areas	5.0 to 25.0
Residential vacant land	Very large jurisdictions / rapid development / active markets	5.0 to 15.0
	Large to mid-sized jurisdictions / slower development / less active markets	5.0 to 20.0
	Rural or small jurisdictions/ little development / depressed markets	5.0 to 25.0
Other (non-agricultural) vacant land	Very large jurisdictions / rapid development / active markets	5.0 to 20.0
	Large to mid-sized jurisdictions / slower development / less active markets	5.0 to 25.0
	Rural or small jurisdictions/ little development / depressed markets	5.0 to 30.0

These types of property are provided for general guidance only and may not represent jurisdictional requirements.
**The COD performance recommendations are based upon representative and adequate sample sizes, with outliers trimmed and a 95% level of confidence.*
**Appraisal level recommendation for each type of property shown should be between 0.90 and 1.10.*
**PRD's for each type of property should be between 0.98 and 1.03 to demonstrate vertical equity.*
PRD standards are not absolute and may be less meaningful when samples are small or when wide variation in prices exist. In such cases, statistical tests of vertical equity hypotheses should be substituted.
**CODs lower than 5.0 may indicate sales chasing or non-representative samples.*

Source: Standard on Ratio Studies; International Association of Assessing Officers; Kansas City, MO; January 2010; pg 33.

Ratio studies may be performed for various reasons including appraisal accuracy and assessment equity studies, to judge the need for management of a reappraisal, to identify problems with appraisal procedures, to assist in market analysis, and to adjust appraised values. Many ratio study design issues must be considered depending on the purpose of the ratio study.

This study considers unadjusted sales price data six months prior to and six months after the date of finality (date of valuation, January 1st) for which assessments have become effective so that an unbiased estimate of assessment performance can be obtained. Sales that are arms-length transactions between willing and informed buyers and sellers are used in this study. Maryland's ratio performance is good and conforms to the IAAO Standard.

While several measures of central tendency are calculated (average, median, and weighted ratios), the median is less affected by extreme ratios. The IAAO observes in its Standard that the median is generally the preferred measure of central tendency for monitoring appraisal performance. For this reason, median ratios are used in this study to measure compliance with IAAO standards.

As a proxy for time adjustments, this report uses sales from six months before the date of finality to six months after the date of finality. Under normal circumstances, with steadily changing property values, these sales will balance. In unusual circumstances, when property values are rapidly changing, this will affect the ratio statistics.

On average, the residential values in this group have decreased by 22%, while commercial property values decreased by 1%.

Property value changes varied by region in the state since the last triennial revaluation in January, 2008. The largest percentage of decrease in residential property was in Charles, Dorchester, Frederick, Prince George's, and Wicomico Counties.

Statewide, the Department met the IAAO standard for coefficient of dispersion indicating an overall uniformity of assessments.

Commercial properties are generally less similar than residential properties. Many commercial properties are income producing and are valued using the income approach to value. Most commercial uses are cyclical in nature. Various segments of the commercial real estate market may be ascending in value as a class, while others may be declining in market popularity. Because of the uniqueness of commercial and industrial properties, measures of central tendency tend to vary more widely than with residential properties.

The number of commercial properties is small compared to the number of residential properties. In several jurisdictions, the number of commercial properties which have sold is so small that the statistical measures are prone to bias. Allegany, Calvert, Caroline, Carroll, Cecil, Charles Dorchester, Garrett, Harford, Kent, Queen Anne's, St. Mary's, Somerset, Talbot, Wicomico and Worcester Counties all had fewer than 10 arms-length commercial transfers for Group 2. In those jurisdictions, individual statistical measures would be unreliable due to sample size.

The number of commercial sales increased from 207 statewide in the 2010 Ratio Report to 303 statewide in the 2011 Ratio Report.

SECTION IV – STATEWIDE COMPARISON OF DEPARTMENT'S VALUES TO SALE PRICE

Quality is the degree of excellence of a product or service; the extent to which it measures up to certain standards. In this case, a measure of quality is the ratio study measuring whether the assessor appraised properties uniformly at market value. The ratio study conducted in this report is based upon sales data occurring, for the most part, after the time period of sales used by the assessor in the group of properties being reassessed.

Assuming the assessor applied the mass appraisal model uniformly to all properties, this ratio study should show uniformity of assessment. This ratio study is a cross check by Department management to assure quality of the mass appraisal work product. The ratio statistics for each county in Table IV was conducted on 13,853 improved residential property sales from July 1, 2010 to June 30, 2011 and compares the Department's valuations to sale prices.

The frequency distribution in Table VI and statistics following present a statewide ratio analysis of improved residential property sales from July 1, 2010 to June 30, 2011 comparing the Department's values to sales prices. The measures of central tendency indicate that properties are valued at approximately 93% of sale price and that on average all other properties have very similar ratios as indicated by the 9.69 Coefficient of Dispersion. Additionally, higher valued properties are assessed at a similar level to lower valued properties as indicated by a Price Related Differential statistic of 1.02. A price related differential of 1.00 indicates vertical uniformity across all strata of property values.

The analysis from Table VI and the following descriptive statistics indicates that values determined by assessors for the most recent triennial Group 2 valuation attained a uniform and appropriate level of value. At the time of valuation, the assessments were close to the sale price.

In summary, the data shows that properties throughout the State are assessed uniformly as required by law.

Table I

Fiscal Year 2012 Real Property Tax Base/Ratio by Jurisdiction

This table shows the taxable assessable base and ratios of real property used for different purposes. Ratios shown are median ratios of arms-length sales of properties in Group 2 that were sold between July 1, 2010 and June 30, 2011, compared with the Department's January 1, 2011 assessed value. In jurisdictions with fewer than 10 commercial sales, the statewide ratio is used (see Table V). A ratio of 100% is used for property not assessed on market value.

	Properties	Base	Ratio	Base	Ratio	Base	Ratio	Base	Ratio	Base	Ratio
Allegany	38,528	2,681,846,693	88.6%	852,463,495	95.1%	121,618,580	88.6%	0	100.0%	3,655,928,768	90.0%
Anne Arundel	196,483	61,490,373,421	91.0%	15,540,700,904	84.9%	558,082,271	91.0%	20,950,247	100.0%	77,610,106,843	89.7%
Baltimore City	217,677	25,655,210,060	88.4%	13,012,387,396	97.6%	0	88.4%	0	100.0%	38,667,597,456	91.3%
Baltimore	275,568	61,404,138,536	91.7%	20,262,814,087	100.0%	1,064,703,316	91.7%	35,467,200	100.0%	82,767,123,139	93.6%
Calvert	40,601	10,817,456,644	91.3%	1,308,314,286	95.1%	314,478,167	91.3%	1,841,093	100.0%	12,442,090,190	91.7%
Caroline	15,956	2,059,490,916	97.6%	390,474,633	95.1%	401,063,565	97.6%	576,670	100.0%	2,851,605,784	97.2%
Carroll	63,480	15,706,092,616	92.9%	2,366,141,435	95.1%	1,046,818,260	92.9%	11,626,300	100.0%	19,130,678,611	93.2%
Cecil	44,818	7,682,905,130	85.5%	1,952,981,591	95.1%	539,244,741	85.5%	9,800	100.0%	10,175,141,262	87.2%
Charles	59,047	13,229,900,153	91.6%	2,927,359,899	95.1%	476,496,977	91.6%	17,206,750	100.0%	16,650,963,779	92.2%
Dorchester	21,929	2,311,183,912	90.4%	558,866,059	95.1%	334,430,133	90.4%	9,357,400	100.0%	3,213,837,504	91.2%
Frederick	89,617	20,495,654,805	92.4%	5,014,002,365	95.9%	1,350,577,760	92.4%	27,093,001	100.0%	26,887,327,931	93.0%
Garrett	27,894	4,140,540,239	98.4%	468,396,022	95.1%	224,003,519	98.4%	0	100.0%	4,832,939,780	98.1%
Harford	93,465	21,189,995,083	90.5%	4,408,222,711	95.1%	825,028,566	90.5%	0	100.0%	26,423,246,360	91.2%
Howard	95,332	34,361,867,159	89.8%	8,567,028,543	88.5%	408,003,006	89.8%	0	100.0%	43,336,898,708	89.6%
Kent	12,797	2,299,177,620	94.7%	421,300,602	95.1%	407,546,630	94.7%	515,800	100.0%	3,128,540,652	94.8%
Montgomery	312,323	130,793,092,220	91.3%	33,421,143,360	99.7%	686,973,817	91.3%	104,896,566	100.0%	165,006,105,963	92.9%
Prince George's	273,350	60,376,169,833	91.2%	22,720,159,122	97.3%	32,719,853	91.2%	28,630,486	100.0%	83,157,679,294	92.8%
Queen Anne's	24,803	6,734,279,014	93.4%	936,770,403	95.1%	814,628,754	93.4%	1,138,790	100.0%	8,486,816,961	93.6%
St. Mary's	45,539	10,047,149,744	94.4%	1,583,082,710	95.1%	642,024,791	94.4%	11,177,537	100.0%	12,283,434,782	94.5%
Somerset	16,045	1,175,378,405	90.8%	269,067,164	95.1%	165,988,884	90.8%	1,320,950	100.0%	1,611,755,403	91.5%
Talbot	20,377	7,538,824,835	98.0%	1,039,365,053	95.1%	1,103,513,354	98.0%	4,355,300	100.0%	9,686,058,542	97.7%
Washington	55,738	8,740,923,535	94.6%	3,318,401,937	97.8%	644,602,120	94.6%	12,015,967	100.0%	12,715,943,559	95.4%
Wicomico	44,356	4,870,312,381	89.5%	1,429,961,067	95.1%	322,093,137	89.5%	3,415,620	100.0%	6,625,782,205	90.6%
Worcester	64,371	14,290,473,380	88.6%	2,624,015,813	95.1%	305,570,023	88.6%	106,300	100.0%	17,220,165,516	89.5%
Statewide	2,150,094	530,092,436,334	91.2%	145,393,420,657	95.1%	12,790,210,224	91.2%	291,701,777	100.0%	688,567,768,992	92.0%

Table II

Assessment Levels

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Allegany	95.3	95.0	96.8	92.6	95.6	96.4	98.5	93.4	99.9	95.2	95.0	93.0	89.6	90.1	90.0
Anne Arundel	93.9	96.1	93.0	90.9	90.6	89.8	87.4	84.4	84.5	85.6	96.0	95.2	95.1	90.3	89.7
Baltimore City	97.0	92.5	92.8	90.5	94.7	94.3	94.9	95.0	74.3	85.2	92.0	94.7	91.6	91.4	91.3
Baltimore	95.9	96.3	92.9	94.1	93.0	91.3	92.7	86.5	88.5	83.5	94.0	94.6	94.8	91.5	93.6
Calvert	94.2	94.7	94.2	93.6	92.4	90.4	87.3	82.1	82.3	85.6	95.0	95.4	96.0	94.0	91.7
Caroline	97.0	95.9	96.2	94.3	92.7	92.2	88.3	87.3	81.7	88.9	95.0	95.3	92.8	95.7	97.2
Carroll	95.9	96.7	95.3	94.0	92.1	92.0	89.5	86.6	85.9	89.7	96.0	97.1	94.0	89.5	93.2
Cecil	94.7	95.9	88.4	94.0	93.1	92.0	91.8	88.9	86.0	91.0	94.0	94.9	94.9	91.6	87.2
Charles	96.6	94.6	95.1	94.3	92.6	92.0	88.6	88.9	87.1	88.0	94.0	96.4	93.4	92.1	92.2
Dorchester	91.3	93.3	93.4	94.3	92.9	89.1	89.3	85.4	67.0	79.3	91.0	96.9	90.2	95.3	91.2
Frederick	96.2	93.6	95.0	92.8	89.0	90.2	87.4	88.9	83.7	90.9	96.0	98.2	95.6	89.2	93.0
Garrett	98.6	87.5	96.2	93.4	94.6	93.7	83.8	91.6	88.6	91.8	95.0	92.7	91.0	89.9	98.1
Harford	94.3	93.4	93.1	92.2	92.6	89.1	88.2	85.0	85.5	85.0	93.0	96.1	92.8	91.6	91.2
Howard	93.5	94.3	93.9	95.1	92.0	92.2	90.1	88.2	89.8	92.5	97.0	96.5	93.1	88.2	89.6
Kent	95.6	94.3	95.8	91.4	91.0	92.0	92.6	87.3	86.0	83.9	94.0	95.2	91.0	90.8	94.8
Montgomery	98.4	97.6	95.7	93.8	92.1	88.2	91.0	93.3	93.2	95.5	98.0	96.4	95.4	88.4	92.9
Prince George's	94.4	94.9	96.2	94.7	94.0	91.0	90.5	83.8	83.0	85.1	91.0	98.2	96.4	95.3	92.8
Queen Anne's	93.2	94.0	98.2	91.5	92.6	93.8	90.5	86.8	88.7	87.9	96.0	96.4	91.1	90.6	93.6
St. Mary's	96.8	95.0	96.1	95.3	93.7	93.1	89.5	83.8	80.4	88.2	95.0	97.9	96.6	93.3	94.5
Somerset	91.9	95.8	97.2	94.0	93.6	94.5	94.5	85.2	85.5	86.2	86.0	92.5	89.3	85.0	91.5
Talbot	93.0	96.3	92.2	93.1	89.7	84.4	87.4	89.6	83.3	88.7	96.0	98.0	93.9	93.8	97.7
Washington	96.0	95.3	95.8	90.9	93.7	92.6	89.1	91.1	87.4	90.0	97.0	97.2	91.8	92.9	95.4
Wicomico	93.9	94.3	94.3	93.4	91.8	91.8	89.8	90.6	84.0	82.9	89.0	90.3	88.9	89.1	90.6
Worcester	94.8	90.4	90.7	89.5	84.5	89.4	76.8	86.8	83.2	89.2	97.0	93.9	93.9	92.2	89.5
Statewide	96.0	95.5	94.4	93.3	92.1	90.5	90.0	88.2	86.0	89.7	96.0	95.7	94.0	91.0	92.0

Table III

Illustrated Ratio Study Statistics

	(1.) Property Number	(2.) Sale Price	(3.) Assessed Value	(4.) Ratio A/S %	(5.) Absolute Deviation from Median
	1	28,000	22,400	80%	20%
	2	22,000	19,250	88%	12%
	3	63,500	55,575	88%	12%
	4	55,900	51,700	92%	7%
	5	20,000	19,000	95%	5%
	6	21,000	20,475	98%	2%
	7	80,000	80,000	100%	0%
	8	40,000	40,000	100%	0%
	9	33,000	33,300	101%	1%
	10	45,000	46,125	103%	3%
	11	24,000	25,200	105%	5%
	12	39,000	41,925	108%	8%
	13	37,000	41,625	113%	13%
	14	40,300	45,800	114%	14%
	15	51,000	59,925	118%	18%
	TOTAL	599,700	602,300	1500%	120%

Average Ratio	=	Total of Ratios (4.)	÷	Number of Sales (1.)		
		1500%	÷	15	=	100%
Weighted Ratio	=	Total of Assessed Values (3.)	÷	Total of Sale Prices (2.)		
		602,300	÷	599,700	=	100%
Average Deviation	=	Total Deviations (5.)	÷	Number of Sales (1.)		
		120%	÷	15	=	8%
Median Ratio	=	Middle Value of Data Array 100% (i.e. property #8)			=	100%
Coefficient of Dispersion	=	Average Deviation (5.)	÷	Median Ratio (4.)		
		8%	÷	100%	=	7.98
Price Related Differential	=	Average Ratio (4.)	÷	Weighted Ratio		
		100%	÷	100%	=	1.00

Table IV

2011 Residential Ratio Study

This table shows arms-length sales of improved residential and condominium properties in Group 2 from July 1, 2010, through June 30, 2011. Ratios compare the Department's January 1, 2011 value to the actual sale price.

	Number of Sales	Average Ratio	Median Ratio	Weighted Ratio	Average Deviation	Coefficient of Dispersion	Price Related Differential	Standard Deviation	Coefficient of Variation	Median Sale Price
Allegany	94	89.2%	88.6%	88.7%	5.2%	5.85	1.01	0.07	7.45	$113,250
Anne Arundel	2,102	92.5%	91.0%	91.1%	8.9%	9.76	1.02	0.13	13.78	$282,863
Baltimore City	891	92.9%	88.4%	88.8%	17.8%	20.11	1.05	0.24	25.43	$140,000
Baltimore	1,862	92.8%	91.7%	91.2%	9.1%	9.87	1.02	0.12	13.23	$298,111
Calvert	212	91.9%	91.3%	91.4%	5.4%	5.88	1.01	0.07	8.09	$350,510
Caroline	32	99.0%	97.6%	98.2%	13.4%	13.70	1.01	0.10	9.98	$204,500
Carroll	236	93.6%	92.9%	93.3%	7.3%	7.82	1.00	0.09	9.93	$293,950
Cecil	187	87.5%	85.5%	86.9%	7.5%	8.76	1.01	0.10	10.93	$256,000
Charles	304	92.7%	91.6%	91.6%	7.2%	7.87	1.01	0.11	11.96	$336,592
Dorchester	66	91.8%	90.4%	92.1%	11.2%	12.40	1.00	0.14	15.34	$178,000
Frederick	736	93.1%	92.4%	91.8%	7.9%	8.54	1.01	0.11	11.43	$245,000
Garrett	144	98.1%	98.4%	97.6%	10.2%	10.36	1.00	0.14	14.20	$330,000
Harford	857	91.3%	90.5%	90.2%	6.5%	7.15	1.01	0.09	9.94	$297,000
Howard	1,034	90.6%	89.8%	90.1%	5.5%	6.16	1.01	0.08	8.48	$450,000
Kent	58	96.0%	94.7%	95.3%	8.8%	9.25	1.01	0.13	13.47	$258,500
Montgomery	2,473	92.0%	91.3%	89.4%	8.2%	8.95	1.03	0.11	12.45	$439,000
Prince George's	1,507	92.5%	91.2%	90.4%	8.9%	9.71	1.02	0.12	12.78	$280,000
Queen Anne's	17	95.3%	93.4%	94.0%	7.1%	7.60	1.01	0.09	9.63	$220,000
St. Mary's	417	97.0%	94.4%	95.6%	7.3%	7.76	1.02	0.12	12.27	$317,874
Somerset	23	96.9%	90.8%	94.3%	14.4%	15.81	1.03	0.20	21.02	$110,000
Talbot	95	99.0%	98.0%	95.9%	9.1%	9.27	1.03	0.13	12.85	$480,000
Washington	212	95.3%	94.6%	94.1%	9.5%	10.07	1.01	0.13	13.63	$164,500
Wicomico	166	90.5%	89.5%	89.1%	9.4%	10.47	1.02	0.13	13.88	$169,000
Worcester	128	89.0%	88.6%	88.5%	8.1%	9.12	1.01	0.12	13.65	$218,500
Statewide	13,853	92.5%	91.2%	90.7%	8.8%	9.69	1.02	0.13	13.67	$299,000

Table IV-B

Statewide Residential Ratio Study Frequency Statistics

Average Ratio

Total of Ratios Number of Sales	=	12812.01 13,853	=	92.49%

Weighted Ratio

Total Assessed Values Total Sales Prices	=	4,653,964,400 5,133,748,994	=	90.65%

Average Deviation

Total Deviations Number of Sales	=	1,224 13,853	=	8.84%

Coefficient of Dispersion

Average Absolute Deviation Median Ratio / 100	=	0.0884 91%	=	9.69

Price Related Differential

Average Ratio Weighted Ratio	=	92.50% 90.65%	=	1.02

Table V

Commercial Ratio Study 2011

The table below shows statistics on arms-length sales between July 1, 2010 and June 30, 2011 of commercial property in assessment Group 2. Ratios compare the Department's January 1, 2011 value to the actual sale price.

Ratio statistics are shown for all jurisdictions, even where the number of sales is so small that there is not a sufficient sample to provide accurate statistics. In cases where there are fewer than 10 sales, the ratio statistics are not used to calculate the base (Table I).

	Number of Sales	Total Assessed Values	Total Sales Prices	Weighted Ratio	Average Ratio	Median Ratio
Allegany	2	378,400	415,000	91.2%	91.6%	91.6%
Anne Arundel	46	117,730,100	162,765,088	72.3%	84.6%	84.9%
Baltimore City	58	70,604,300	76,631,338	92.1%	97.0%	97.6%
Baltimore County	29	74,694,900	79,782,145	93.6%	101.5%	100.0%
Calvert	7	2,335,400	2,656,000	87.9%	93.8%	90.0%
Caroline	1	225,500	225,000	100.2%	100.2%	100.2%
Carroll	7	1,171,300	1,184,733	98.9%	101.6%	99.6%
Cecil	4	1,457,000	1,460,000	99.8%	101.7%	96.2%
Charles	0	N/A	N/A	N/A	N/A	N/A
Dorchester	5	4,275,100	6,957,500	61.4%	86.1%	86.8%
Frederick	18	22,632,900	26,640,418	85.0%	97.3%	95.9%
Garrett	1	84,600	90,000	94.0%	94.0%	94.0%
Harford	6	5,599,500	6,287,300	89.1%	92.9%	94.6%
Howard	21	52,712,900	56,435,750	93.4%	89.5%	88.5%
Kent	1	273,800	220,000	124.5%	124.5%	124.5%
Montgomery	21	176,356,000	177,740,768	99.2%	98.3%	99.7%
Prince George's	33	89,831,600	103,588,141	86.7%	93.6%	97.3%
Queen Anne's	3	1,143,000	1,095,000	107.1%	112.3%	112.3%
St. Mary's	3	1,350,800	1,340,000	100.8%	101.3%	106.8%
Somerset	0	N/A	N/A	N/A	N/A	N/A
Talbot	2	1,820,300	2,020,000	90.1%	91.6%	91.6%
Washington	21	13,417,000	14,522,582	92.4%	96.6%	97.8%
Wicomico	6	4,365,100	5,298,750	82.4%	80.6%	80.8%
Worcester	8	2,266,900	2,385,000	95.0%	96.2%	96.1%
Statewide	**303**	**$644,726,400**	**$729,740,513**	**88.4%**	**94.4%**	**95.1%**

Table VI

Number of Residential Sales Sorted by Ratio

The chart below compares the number of improved residential sales for July 1, 2010 to June 30, 2011 to their ratio of assessed value to sale price.