

# *State and Provincial Ratio Study Practices: Results of 2008 Survey*

**BY THE TECHNICAL STANDARDS COMMITTEE,  
INTERNATIONAL ASSOCIATION OF ASSESSING OFFICERS**

**P**eriodically over the last 20 years, prevalent practices and issues in ratio studies have been explored by comparing U.S. states, Canadian provinces and territories, and a few local jurisdictions in terms of frequency of studies, standards used to evaluate results, and final use of results. Surveys were conducted in 1989, 1992, 1994, 1997, and 2003, and the results reported by Dornfest (1993, 1995, 1997) and Dornfest and Thompson (2004). The latest survey was conducted by the IAAO Technical Standards Committee in 2008. This article discusses responses and some trends since 1989, focusing on the most recent changes, and presents tables showing key findings, tabulated responses and the individual responses from each jurisdiction, questions

altered for the 2008 survey, and methods used for detecting sales chasing.

Note that the 1999 version of the IAAO Standard on Ratio Studies was used as the basis for comparison, because when the survey was conducted in the spring of 2008, the 2007 version of the standard had not been sufficiently exposed for broad adoption by jurisdictions.

## **Introduction**

Historically, little written material was available to provide a basis for standardization of ratio studies. By the late 1970s, IAAO was providing guidance through materials, including the *Improving Real Property Assessment* textbook. Shortly thereafter, the first IAAO Standard on

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*The International Association of Assessing Officers (IAAO) Technical Standards Committee develops and maintains technical standards of professional practice in assessment administration, tax policy, and mass appraisal. The committee also provides input into technical assistance programs and projects regarding property tax administration, policy, and valuation of property. Among the committee's recent work was revision of the Standard on Digital Cadastral Maps and Parcel Identifiers (approved April 2009), the Standard on Mass Appraisal of Real Property (approved January 2008), and the Standard on Ratio Studies (adopted July 2007).*

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*Ratio Studies* was published in 1980. By 1990, the IAAO *Property Appraisal and Assessment Administration* text and an updated *Standard on Ratio Studies* were available and in wide circulation. These materials have been updated, and there is now a 2007 version of the *Standard on Ratio Studies* and a 1999 textbook, *Mass Appraisal of Real Property*.

Although these materials present many unified themes for ratio study practices, disparities in use and terminology still exist, thus making interpretation of survey responses somewhat subjective. Reports on previous ratio study survey results (Dornfest 1993, 1995, and 1997; Dornfest and Thompson 2004) noted a great deal of confusion about ratio study terminology, techniques, standards, and use. A certain amount of this is probably unavoidable, resulting from longstanding practices and local statutory guidelines, both of which are difficult to change. The committee attempted to address this problem by personal follow-up contacts with many of the participants in the survey.

In addition to exploring U.S. state and Canadian provincial and territorial practices, this survey, because of its continuing nature, makes it possible to report on the incorporation of professionally accepted best practices. Results from this latest survey show a continuation of trends noted in 2003. However, while prior ratio study surveys indicated an increasing number of jurisdictions were adopting major points addressed in the IAAO *Standard on Ratio Studies*, this trend was not apparent when results were compared with those from 2003.

The intent of this analysis is to continue to search for clarification of technical issues by exploring and reviewing state, provincial, and territorial level ratio study practices throughout the United States and Canada. Responses are interpreted in an attempt to provide meaningful comparisons with previous surveys.

Hawaii and Delaware are unique in that they do not provide state oversight

for local assessments. Responses for these states were from local jurisdictions and were either compiled into composite views that incorporate the prevailing practices or reported separately.

### **Survey Development and Organization**

The 2008 survey is the first to be conducted by the Technical Standards Committee. Prior surveys in the series were conducted by Alan Dornfest, AAS, of the Idaho State Tax Commission, along with staff from his office. Prior to 1989, surveys on ratio studies were conducted by Robert Gloudemans when he was employed by the Arizona Department of Revenue. It is expected that Web tools, which were used for the first time in 2008, will enable the committee to conduct this survey more frequently in the future.

The committee reviewed the format and verbiage used in the 2003 survey. Some of the questions were reordered to better reflect real and personal property distinctions, but the majority of questions were rewritten. The committee attempted to retain the theme of each topic while adding clarity. Although many prior questions were retained to permit longitudinal comparisons, a few areas needed clarification or are of greater importance today and therefore were updated or expanded. After initial development, the draft survey was reviewed by Tim Wooten of the Texas Comptroller's Office.

The current survey was conducted as an online survey over the Web by using the Zoomerang<sup>®</sup> survey tool. Although this greatly facilitated completion, shortened turnaround time, and broadened participation, design limitations in some instances restricted answers for a few questions, which then required additional follow-up for clarification.

An invitation to participate in the survey, along with a printable PDF version of the 104-question survey, was sent via e-mail to designated contacts in the states, provinces, and territories. Respondents were asked to pre-answer

the survey questions on a printed version and then go to a link to the IAAO Web site to complete it in one sitting. A text version of the online survey, showing the original questions in their entirety, is provided in Appendix A.

Responses were received from every Canadian province; the Northwest Territory of Canada (the territories of Nunavut and Yukon do not conduct ratio studies); all U.S. states; the of Columbia; and two counties within Hawaii (the counties of Hawaii and Honolulu). Some of the responses did not fit neatly into a particular category and may be shown more than once in the tabulation of responses. This is particularly true when responses for different categories of property are expected to vary, as in coefficient of dispersion (COD) standards for residential, commercial, vacant land, and other types of property. For this reason, the tabulations do not always add to the total number of responses.

### Survey Limitations

After reviewing responses and clarifying feedback, the committee noted the following limitations that can affect interpretation of trends among surveys.

- In many cases, the theme of the questions was the same or similar; however, the entire survey was rewritten, and therefore the answers may not exactly correspond. Questions that have been

substantively altered for the 2008 survey are shown in table 1.

- Because the survey did not provide a definition of the terms *base year* and *reliability*, there were various interpretations. Therefore, for consistency in interpreting responses, the following definitions were used:
  - *Base year* means assessments are uniform as of any year or date prior to the current year (2008). Cyclic assessment systems (e.g., all property reassessed once every five years with no interim adjustment) that tend to be uniform statewide or those in which some jurisdictions make interim adjustments were not considered to be base year assessments.
  - *Reliability* means use of confidence intervals and similar statistics for testing appraisal level and compliance with standards. States and provinces indicating they judge reliability by use of frequency distributions, coefficient of dispersion (COD), coefficient of variation (COV), and similar statistics were not included as using reliability statistics.

**Table 1.** Questions from the 2003 survey substantively altered for the 2008 survey

2003 Question Number	2008 Question Number	Summary of Change
7, 7b	11–13	Q11 is new in 2008. In 2003, Q7 asked if audits of appraisal procedures were done for any class or category of property.  In 2008, Q12 asked about such audits with respect to local assessment practices in general.  Q13 was more vague in 2003.
16	63	In 2003, the question asked whether any nonagricultural properties were appraised at current market value. In 2008, the question was whether local jurisdictions annually valued categories of property other than agricultural or timberland at current market value. The issue is whether respondents interpret the terms <i>appraised</i> and <i>valued</i> as synonymous.

- Responses have been categorized to indicate state-mandated or state-wide-implemented procedures to the extent possible. In some cases it is possible to differentiate between these two possibilities. For example, if a state's laws permit ordering adjustments to locally determined assessments but the state has not utilized this provision, that can be discerned from the answers. However, in the case of reassessment and reappraisal cycles, states have been categorized based on statutory requirements when there are multiple local systems in use (i.e., current market value, base years, regular cycles, and the like).
- The survey questions were re-ordered in 2008 to better group questions related to real versus personal property. This re-ordering may have resulted in respondents assuming that certain questions related only to real property, when the questions could relate to real or personal property. (See, for example, question 12 [Appendix A] regarding procedural audits.)
- Questions about reliability and confidence intervals were not divided into direct and indirect equalization uses. This diminishes the accuracy of responses to this set of questions when states or provinces used point estimates for one type of equalization but not for another.
- Some questions were expanded to allow additional choices. This shifted the tabulated numeric responses so they may not be directly comparable with previous survey results. (e.g., Appendix B, 2008 question number 8)
- Use of adjustments to sale prices distinguished between authority and actual use
- Authority to order reappraisals or to order adjustments to locally determined assessments indicated how often such actions had been taken in the past three years
- Measures of level used for direct equalization distinguished from measures of level used for indirect equalization
- Use of lower limit of COD as indicator of possible sales chasing
- Use of specific outlier trimming procedures identified
- Specific actions taken if level standards are based on confidence intervals, but point estimates continue to be out of compliance for several years
- Existence of nonstatutory requirements to test for sales chasing
- Use of specific techniques to detect sales chasing
- Use of expanded procedural audits.

In addition, the following questions were deleted because the topics were considered to be of limited interest or importance:

- Whether a 90% or a 95% level of confidence was used
- Sample stratification issues
- Legal penalties for failure to disclose correct sales information.

Table 2 is a summary of key findings for U.S. and Canadian responses to major survey issues. Major ratio study practices and trends in states since 1989 can be compared in this table. Trends in Canadian provinces and territories are discernable beginning in 1994. Because of the larger number of Canadian respondents since 1997, comparison with previous provincial surveys may be misleading.

Appendix B presents more detailed tabulations of U.S. and Canadian responses. This

## Responses from U.S. States and Canadian Provinces and Territories

New or expanded areas explored with the 2008 survey were as follows:

**Table 2. Key findings**

			UNITED STATES					CANADA					
			Numbers of Responses					Numbers of Responses					
2003	2008	Survey Year >	1989	1992	1994	1997	2003	2008	1994	1997	2003	2008	Note
Q#	Q#	Topic	Total Responses >										
			48	47	46	51	51	51	7	11	12	11	(a)
2	3	Annual ratio study	35	37	35	41	41	44	1	6	8	8	(b)
3	4	Conducted by state/province/territory	29	24	26	29	38	44	6	3	7	10	(c)
4	5	Only sales used in ratio studies	19	15	20	23	25	31	5	8	8	10	
5a	94	Personal property ratio study	6	10	9	8	7	6	0	0	0	0	
6a	100	Intangible personal property exemption		32	25	32	37	40	3	4	6	3	
7	12	Procedural audits in lieu of ratio study		11	19	17	22	2	2	3	3	1	
n/a	11	Procedural audits used						32				6	
8a	16	Full disclosure of sale prices	24	33	30	35	37	36	6	9	11	11	(d)
<i>Sales Price Adjustments:</i>													
9	26	Time	11	13	14	15	18	21	4	9	4	6	
9	26	Financing	13	10	16	16	15	11	3	8	5	4	
9	26	Personal property	28	26	31	32	26	30	6	9	4	7	
<i>Equalization Adjustments (Authority):</i>													
11c	30	Order reappraisal	12	20	22	31	30	28	2	1	1	0	
12	34	Trend by category	18	16	11	14	13	16	1	2	1	0	
12c	34	Give local officials a grace period to comply			2	12	3	12	0	2	1	0	
12d	34	Other			11	4	10	12	6	3	0	0	
13a	48	<i>Uniformity Standards for COD/COV:</i>	24	26	32	34	38	40	2	8	9	8	(e)
13a	48	More stringent than the IAAO 1999 standard	3	1	6	1	5	6	1	1	4	2	
13a	48	Less stringent than the IAAO 1999 standard	18	9	21	23	21	11	3	6	3	0	
13a	48	No standard	23	20	18	17	13	13	2	3	3	3	
13a	48	IAAO 1999 standard for one or more types					23	23			5	6	
13b	55	<i>Vertical Equity Standards for PRD:</i>			11	18	22	27	2	4	6	6	
13b	57	IAAO standard: PRD = 0.98 to 1.03		2	8	12	17	23	2	2	5	5	
13b	57	PRD standard of ranges different from IAAO			3	4	5	4	1	1	1	1	
13b	57	No standard			35	34	28	25	4	7	6	5	
14a	35	<i>Testing Assessment Level:</i>											
14a	35	Statutory ±10%	17	10	11	15	16	16	1	4	1	3	
14a	35	Statutory ± 5%	6	5	5	6	6	4	2	2	2	2	
16	70	<i>Assessment (Residential) 100% of MV:</i>	14	27	17	22	23	26	6	6	8	9	

Notes

- (a) 1994 Canadian survey response rate was 7/12 or 58%.  
1997 Canadian survey response rate was 11/12 or 92%.  
2003 Canadian survey response rate was 12/13 or 92%.  
2008 Canadian survey response rate was 11/13 or 85%.  
1989 U.S. survey response rate was 48/51 or 94%.  
1992 U.S. survey response rate was 47/51 or 92%.  
1994 U.S. survey response rate was 46/51 or 90%.  
1997 U.S. survey response rate was 51/51 or 100%, includes District of Columbia plus a composite of 2 of 4 Hawaiian counties.  
2003 U.S. survey response rate was 51/51 or 100%, includes District of Columbia plus a composite of all 4 Hawaiian counties.  
2008 U.S. survey response rate was 51/51 or 100%, includes District of Columbia plus a composite of 2 of 4 Hawaiian counties.
- (b) Two Hawaiian respondents were counted once in some instances and twice in others where applicable.
- (c) Includes Colorado and Mississippi which contract out study
- (d) The 2008 total reflects addition of Delaware, loss of disclosure in South Carolina, and proper classification of Nevada.
- (e) Results correspond to questions 48–52 in 2008 survey.

table allows comparison among responses from the 1994, 1997, and 2003 surveys.

From these tables, it appears that the *typical* ratio study program includes the following features:

- An annual ratio study of real property is conducted by the state, province, or territory.
- Sales or a mix of sales and appraisals of real property is used to develop the ratio study.
- There is statutory authority requiring disclosure of sale prices to administrative jurisdictions by means of mandatory disclosure and transfer fees.
- Adjustments to sale prices are made primarily for personal property included in the sale price and, secondarily, for financing and time.
- U.S. ratio study results are used primarily to equalize funding, advise local officials of assessment conditions, and determine the need for reappraisal
  - Secondary uses are adjusting locally determined values, equalizing assessments of centrally assessed properties, and approving tax rolls.

Canadian results are used primarily in an advisory capacity.

- Level and uniformity standards are used for gauging performance or compliance; these are often similar to IAAO ratio study standards.
- Results are calculated on the basis of samples for which there is generally no predetermined minimum size.
- Reliability is tested frequently, and, in some cases, confidence intervals are used to determine compliance with standards or other requirements.

Detailed responses received from each U.S. state are found in appendix C and from each Canadian province or territory in appendix D. These tables provide a complete rendition of the responses, except where it became evident from the responses that the wording of a few questions may have caused confusion. In these few instances, the responses are judged as not meaningful and are not reported in the tables.

Detailed counts from the newly expanded questions about methods used to detect sales chasing are provided in appendix E.

### **Recent Trends—United States**

Within the limitations already noted, the questions in the 2008 survey and the respondents are similar to those in previous ratio study surveys. While respecting the constraints and other concerns noted, it is often possible to compare changes in U.S. ratio study practices over time.

### **General Trends**

The number of states performing annual ratio studies increased from 41 in 2003 to 44 in 2008. Although many states combine sales and appraisals, there appears to be a continuing tendency toward the use of sales only. This tendency may be related to resources needed for high-quality appraisals that are USPAP-compliant, a requirement that had not been specified in IAAO standards prior to 1999. Only California still bases its ratio study exclusively on appraisals. In this state, the close ties between sale price and assessed value reduce the applicability of traditional sales-based studies.

While the number of states performing personal property ratio studies increased from six to ten from 1989 to 1992, this indicator has been steadily decreasing. Only six states are performing ratio studies on personal property in 2008, and these studies are based solely on appraisals.

A large number of states are now conducting procedure audits. Because of the rewording of this series of questions, it appears that very few states conduct such audits in lieu of ratio studies, but more states are using procedural audits of local assessment practices.

Such studies typically are performed to provide information about selected property categories for which there is little market activity or when use value and other constraints not directly related to the market are in place. The results of procedural audits can be used to determine compliance.

### **Disclosure of Sale Price**

There are three means of disclosure: full mandatory sale price disclosure, transfer fees, and mandatory recordation of any transfer instrument. Seven states do not have any means of disclosure as state-wide policy: Alaska, Idaho, Louisiana, Mississippi, Missouri, Texas, and Utah. However, the limitation is not as severe in Missouri because several major local jurisdictions have full disclosure, so only parts of the state are without sale price disclosure requirements.

Many states have transfer taxes based on sale price; some of these states also have full disclosure. Since 2003, Delaware has gained disclosure requirements and has been added to this list. Nevada and South Carolina lost disclosure requirements but retained transfer taxes related to sale price.

Disclosure typically occurs when a sale price statement is filed as deeds are processed. More states indicated that disclosed sale prices are confidential; this number increased from five in 2003 to nine in 2008.

### **Intangible Property**

The number of states reporting intangibles as exempt continued to increase. There were 25 states reporting such a statutory exemption in 1994, 32 in 1997, 37 in 2003, and 40 in 2008. Appendix B

delineates the number of states exempting various specific intangibles.

### **Adjustments to Sales Prices**

An increasing number of states are adjusting sale prices, particularly for time, personal property, and intangibles.

As in 1997 and 2003, three states still use overall adjustments. Of these, only two, Florida and Arizona, make significant overall adjustments and the substance of these has not changed for many years. Washington makes a nominal 1% adjustment for personal property presumed to be included in each sale price.

### **Use of Ratio Studies**

The ratio study has traditionally been used in an *advise and assist* role. In 2008, there was a small reduction in the number of states using ratio studies for advisory purposes and a significant reduction in the number using ratio studies to assist mass appraisal programs. The number of states indicating other major uses tended to decrease slightly.

Twenty states can order adjustments to locally determined assessed values. There was some increase in the number of these that can order adjustments by class or category of property. However, only 16 actually issued any adjustment orders during the last three years. Previous surveys showed the number of states that would apply trends to individual categories of property has varied considerably over time.

The pattern of states indicating use of a grace period before ordering adjustments has fluctuated since 1994.

Of the 28 states that have authority to use ratio studies to order reappraisal, only 20 actually did so in the last three years.

### **Uniformity Standards**

The number of states adopting uniformity standards has leveled since 2003. All but 12 states now have such standards. As in 2003, 23 states have established stan-

dards similar to those recommended by the 1999 IAAO *Standard on Ratio Studies*. General uniformity standards are based predominantly on COD.

The number of states that have developed price-related differential (PRD) standards has continued to increase, with 27 states using these standards in 2008. It is noteworthy that the number of states using the specific guidelines in the IAAO *Standard on Ratio Studies* has continued to increase, with 23 states using this standard in 2008.

Thirty states can initiate action on the basis of poor uniformity. The most typical action is ordering reappraisal, which can be done in 23 of these states.

Twenty-one states test the reliability of the COD. Fourteen test the reliability of the PRD. Eleven states take reliability into account when making decisions or determining compliance with uniformity standards.

### **Level Standards**

A level standard is defined as some range of acceptability around the statutorily required assessment ratio. Such ranges can be provided by statute but more frequently are established by administrative or oversight agency authority. Many states have established ranges of this type, but the number of states with *no allowable variance* standard for assessment level has decreased slightly, to 15 in 2008. The IAAO *Standard on Ratio Studies* recommends  $\pm 10\%$  for direct equalization of locally determined values and  $\pm 5\%$  for indirect equalization of funding distributions. The number of states using the  $\pm 10\%$  parameter remained at 16, while the number using  $\pm 5\%$  decreased to 4 in 2008.

### **Reliability**

Employing the principles of statistical sampling error, ratio studies tend to be more reliable when large, uniform samples are used and less reliable when these conditions are not met. The number of states testing reliability and using this

information for compliance purposes appears to have decreased in 2008. However, there was considerable confusion about this concept, and it is not clear whether long-term comparisons are valid.

The 2008 survey examined two special situations in which lower levels of confidence or point estimates might be appropriate, as described in the IAAO *Standard on Ratio Studies*. In the first scenario, the survey asked whether a decision based on reliability statistics could be based on point estimates or lower levels of confidence given longstanding noncomplying point estimates. Three states indicated they would lower levels of confidence in this situation. No state currently using confidence intervals would substitute point estimates. For the second scenario, the survey asked whether the response would change if the COD also showed poor uniformity. In this case, 3 states would use lower levels of confidence, but 20 states would substitute point estimates. The 1999 *Standard on Ratio Studies* recommends such lower degrees of confidence “when independent samples show long-term appraisal inequity as evidenced by poor level and uniformity statistics for at least three consecutive years....”

### **Market Value**

While it appears the number of states appraising non-agricultural property at current market value has increased, with 32 states reporting this system for 2008, this question was reworded; hence, comparison with responses in previous surveys is questionable. Some states appraise non-agricultural property at current market value, but have fractional assessment ratios to determine taxable value. This distinction must be taken into account when comparing 2003 with 2008 responses. For example, for residential property, 26 states appraise at market value and do *not* use fractional assessment ratios below 100%. Some states set market value as an appraisal goal but restrict the meaning of this term somewhat by establishing base



years. Typically, a base year represents the point in time when an assessment is frozen or subject to limited increases. The number of states using a base year decreased slightly, to 10 in 2008.

The number of states adjusting values during interim years between reappraisals decreased from 14 to 6. States with uniform assessment cycles (e.g., all property is assessed at market value once every four years) in which appraisals are to reflect 100% of market value when property reaches its reassessment time in the cycle were included as assessing at 100% of market value. In such cyclic systems, this will not be true of all property each year.

### **Measures of Assessment Level**

States typically compute three measures of level: the mean, the median, and the weighted mean. Although these statistics are computed by similar numbers of states, either the median or weighted mean predominates for equalization purposes.

The 2008 survey further differentiated between statistics used for direct and indirect equalization. The median is the dominant statistic used for direct equalization, with 25 states using this measure, while the weighted mean is used by a few more states than the median for indirect equalization (15 states versus 12 states, respectively). The 1999 *Standard on Ratio Studies* differentiates between direct (parcels) and indirect (funding) equalization, suggesting that the median is more appropriate for the former and the weighted mean for the latter.

### **Outliers**

The number of states identifying outliers was similar in 2003 and 2008. In 2008, the survey was expanded to explore methods of outlier identification. Despite considerable treatment of this subject in the *Standard on Ratio Studies*, no particular method prevails in practice.

### **Sales Chasing**

In 2008, 27 states reviewed samples to determine whether sales chasing was

distorting results. This question was expanded in 2008 to enable states to indicate which technique was most often used to identify potential sales chasing. The most commonly used technique is comparison of average value changes on sold and unsold parcels. Nebraska establishes a lower limit on the COD as a possible indicator of sales chasing. A detailed report of the preferred techniques states use to detect sales chasing is presented in appendix E.

### **Sample Size and Representativeness**

Uncertainty continues about the minimum sample size standard that should be used to evaluate assessment performance based on a ratio study. There is considerable variance among jurisdictions and no significant change from 2003 to 2008.

The number of states testing samples for representativeness decreased from 32 in 2003 to 21 in 2008. Stratification questions were deleted for the 2008 survey.

### **Legal Action**

Fewer states indicated that a ratio study could result in outside legal action. Although 37 states in 2003 indicated this could occur, only 28 states indicated this was a possibility in 2008.

### **Recent Trends—Canada**

The 2008 survey includes responses from all Canadian provinces and the Northwest Territories. Except for the Yukon Territory, which did not respond in 2008, the same provinces and territories responded as in 2003. There were fewer responding in 1994, making comparisons with that year difficult. In a few cases, significant trends are apparent and are stated. In other cases, the general nature of Canadian ratio studies is discussed and some comparison with U.S. practices is offered.

### **General**

The number of provinces or territories performing annual ratio studies has remained unchanged at eight since 2003.

However, in an increasing number of provinces or territories, the ratio study is performed at the provincial or territorial level, rather than by local jurisdictions.

As in 2003, only one province, Alberta, adds appraisals to sales samples. In 2003, Northwest Territories indicated it relied strictly on appraisals for its ratio study. This jurisdiction has now switched to using sales only, so there no longer are any Canadian provinces or territories using appraisals only.

Personal property is exempt in all but two provinces. None of the provinces performs personal property ratio studies.

Procedural audits are used by six provinces, but they substitute for ratio studies only in the Northwest Territories.

### **Disclosure of Sale Price**

All 11 of the responding jurisdictions have full disclosure as well as transfer fees. In 2003, all but the Yukon Territory, which did not respond in 2008, had full disclosure.

### **Intangible Property**

The number of provinces and territories reporting a statutory exemption for intangible personal property decreased from six in 2003 to three in 2008.

### **Adjustments to Sales Prices**

Adjustments for time, personal property, and financing are the most common and appear at about the same relative frequency as in the United States. No Canadian jurisdiction makes overall adjustments at this time.

### **Use of Ratio Studies**

The predominant use of ratio studies is as a tool to advise local jurisdictions or to assist mass appraisal programs. Only one province (New Brunswick) uses its ratio study to adjust locally determined values, and in two provinces, it can be used to equalize funding. No province uses the study to order reappraisal, although Saskatchewan indicated this use in 2003. As has been the case since

1997, none uses the study to adjust utility (centrally assessed) values. Regardless of authority, no province has actually ordered adjustments to locally determined values or ordered reappraisal in the past three years.

### **Standards—Level and Uniformity**

Use of uniformity standards is similar to that reported in 2003, with eight provinces using such standards. Most of the reporting provinces use standards similar to those found in the IAAO *Standard on Ratio Studies*.

Six provinces continue to report use of PRD standards, and five of these cite the range found in the IAAO *Standard on Ratio Studies*.

Five provinces can initiate action based on uniformity. This number is down from seven reporting such a possibility in both 1997 and 2003.

The number of provinces using allowable variance ranges for assessment level grew from five in 2003 to eight in 2008. Three of these provinces use a  $\pm 10\%$  range for this purpose, while only one used this range in 2003. Two continue to use a tighter  $\pm 5\%$  range.

### **Reliability**

In five provinces, confidence intervals are computed and could influence a determination of compliance with assessment level standards. Five provinces can review level measures or use additional information to make decisions if the COD indicates poor uniformity. In the Northwest Territories, compliance could be based on point estimates if attainment has been based only on confidence intervals for several years.

The number of provinces testing the reliability of the COD and PRD increased from four and two in 2003 to five and four, respectively, in 2008.

### **Market Value**

Although full value assessment had been more prevalent in Canada than in the United States, the number of provinces

reporting annually updated current residential market value decreased from 2003 to 2008 (from eight in 2003 to four in 2008). During the same period, the number reporting use of base years increased (six in 2008 versus five in 2003).

### **Measures of Assessment Level**

Canadian use of the various measures of assessment level is similar to that in the United States. However, no Canadian province uses the weighted mean for equalization, while two used this statistic in 2003. Five provinces test normality of the data distribution.

### **Outliers**

Seven provinces test for outliers; this is a decrease from nine in 2003. Two provinces place limits on the number of sales that can be trimmed.

### **Sales Chasing**

No province has statutes requiring testing for sales chasing. Two provinces (Alberta and Newfoundland) use the comparison of average value change technique to test for sales chasing. Additional details on sales-chasing detection methods are provided in appendix E.

### **Sample Size and Representativeness**

Sample size quotas are used only by Prince Edward Island Province. Minimum sample size requirements generally are similar to those in the United States. Four provinces test samples for representativeness.

### **Legal Action**

Only in Alberta can legal action be taken as a result of ratio studies.

### **Conclusions**

Ratio studies remain critical ways for measuring, evaluating, and working toward the improvement of assessment practices in most places. A degree of order in the development and use of these studies has been brought about by the use and availability of the IAAO

*Standard on Ratio Studies*. However, aside from isolated instances, there does not appear to be any clear continuing trend for states and provinces to adopt more features of this IAAO standard.

The report on the 2003 ratio study survey indicated that a growing number of states and provinces were basing assessment level compliance on confidence intervals and suggested that a major change in practice related to this issue was emerging. However, such a trend is not supported by the results of the 2008 survey, which shows similar or diminishing numbers of jurisdictions using reliability tests in such decision making. Even more troubling, inconsistencies among answers to multiple questions on this subject lead this committee to conclude that the degree of understanding of statistical reliability measures is deficient. We now believe that previous conclusions on trends of use of such statistics may have been dubious at best. As a corollary in support of this conclusion, few states and provinces or territories appear to have responded to the recommendation first found in the 1999 *Standard on Ratio Studies* to lower the level of confidence when long-term inequities are apparent. The lack of response in this area suggests a lack of understanding of the underlying statistical measures.

On a more positive note, many states and some provinces are using the methods outlined in the IAAO standard for identifying outliers and for detecting sales chasing. Even the observed versus expected distribution of ratios test, first introduced in the 1999 standard, is being used and is the method of first choice by six states. In future surveys, follow-up questions could explore issues of resolution once sales chasing is identified.

The 1999 IAAO *Standard on Ratio Studies* continues the tradition of providing valuable guidance and assistance and is widely cited and used. It is hoped this survey will provide focus for U.S. states and for Canadian provinces and territories attempting to evaluate their ratio study

systems and work toward internationally recognized guidelines. It is also hoped states will use the survey results as an impetus to become more knowledgeable about technical aspects of ratio studies they have not yet incorporated into their practices.

### Authors Note

The survey questionnaire and the detailed compilations of survey results found in the appendix are available online at the IAAO Web site, [www.iaao.org](http://www.iaao.org), in the Topics of Interest area.

### References

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## *Appendix A. 2008 Ratio Study Practices Questionnaire*

**Q1: Enter your full contact information.** Name/Title/Jurisdiction/Agency name/Country/E-mail address/Phone

**Q2: What is your jurisdiction type?**  State agency  Provincial agency  Territory  Local  Other, describe (50 char. limit):

**Q3: How often is your jurisdiction required to conduct ratio studies?** Indicate if annual or explain other variations.

**Q4: Who conducts your ratio study? (check all that apply)**  State/province/territory officials  Local officials  Contracted service provider (university or private company)  Other, specify (50 char. limit):

**Q5: Which of the following does your real property ratio study include?**  Sales only  Independent appraisals only  Both sales and independent appraisals

**Q6: If you use both sales and independent appraisals, can they be combined in order to study one type or category of property?**  No  Yes, comments (50 char. limit):

**Q7: If sales are used in the ratio study, which jurisdiction performs the sample selection?**  State or province  Local  Both  Other, specify (50 char. limit):

**Q8: Which jurisdiction conducts the sales validation (screening)?**  State/provincial agency  Local  Contracted service provider  Other, specify (50 char. limit):

**Q9: If the state/provincial agency does NOT conduct the sales validation, does the agency perform an audit of the sales validation process?** Yes/No

**Q10: If an audit of sales is performed by the oversight agency, briefly summarize your audit policy:**

**Q11: Does your agency perform procedural audits of local assessment procedures/practices?** Yes/No

**Q12: If your agency performs a procedural audit of local assessment procedures/practices, is the audit used INSTEAD OF a ratio study?** Yes/No Additional comment:

**Q13: If your agency performs a procedural audit of local assessment procedures/practices, is it used IN ADDITION TO ratio study information?** Yes/No

**Q14: If your agency performs a procedural audit of local assessment procedures/practices, is it used SOLELY to advise or assist local appraisal offices?** Yes/No Additional comment:

**Q15: Can equalization or a reappraisal be ordered as a result of such audits?**  No  Yes, describe authorized actions (50 char. limit):

**Q16: Regarding sales price disclosure: Does your jurisdiction have a law requiring disclosure of real estate sales prices to assessment officials?**  Yes, disclosure made to state/province/territory officials  Yes, disclosure made to local assessors  Yes, disclosure made to both  No

**Q17: When does the sale price disclosure occur?**  During deed recording  Other (e.g., 30 days or other statutory period)

**Q18: Is a method in place to track a disclosure document for every recorded sale?** Yes/No

**Q19: If a method is in place to track a disclosure document for every recorded sale, describe the method:**

**Q20: What type of disclosure document is used?**  Sale price statement  Comprehensive questionnaire  Both  Other, describe (50 char. limit):

**Q21: What office is responsible for initially accepting the disclosure document?**  Recorder/registrar  Local assessor  State office  Other, describe (50 char. limit):

**Q22: Are disclosed sale prices confidential?** Yes/No Explain:

**Q23: Is a value-related fee charged (e.g., transfer tax, deed stamp) for real property transfers?**  No  Yes, provide the rate(s) (50 char. limit):

**Q24: Does your jurisdiction have a law making recordation/registration mandatory for real property transfers?** Yes/No

**Q25: Regarding sales price adjustments: Which of the following adjustments to sale price do you have authority to implement in your ratio studies? (check all that apply)**  No authority to implement adjustments  Time  Financing  Personal property  Closing costs  Brokerage fees  Intangible personal property  Delinquent taxes  Other, describe (50 char. limit):

**Q26: Which of the following adjustments to sale price do you actually use in your ratio studies? (check all that apply)**  Time  Financing  Personal property  Closing costs  Brokerage fees  Intangible personal property  Delinquent taxes  Other, describe (50 char. limit):

**Q27: Are blanket or global adjustments made to sales prices prior to computing ratios? (For example, some jurisdictions adjust all prices down by 1% in an attempt to adjust for personal property that is difficult to isolate sale by sale; others might adjust all sales by 10% for financing considerations.)** Yes/No

**Q28: If blanket or global adjustments are made to sale prices prior to computing ratios, describe the types of adjustments and indicate the maximum percentage adjustment generally permitted by this procedure:**

**Q29: Are there any court cases in your jurisdiction affirming or disallowing these blanket or global adjustments?**  No  Yes, provide citation (50 char. limit):

**Q30: How is your ratio study used? (check all that apply)**  To order adjustments to locally determined assessed values  To equalize state or provincial funding of local jurisdictions  To order local jurisdictions to reappraise  To advise provincial, state, or local jurisdictions of assessment conditions  To assist mass appraisal programs  To approve tax assessment roll  To adjust or equalize centrally determined assessed values (such as utilities)  Other, describe (50 char. limit):

**Q31: Do you or another oversight agency have authority to order adjustments to, or a reappraisal of, locally determined values?** Yes/No

**Q32: How many local jurisdictions have been issued orders to ADJUST values in the past three years?** (50 char. limit)

**Q33: How many local jurisdictions have been issued orders to REAPPRAISE values in the past three years?** (50 char. limit)

**Q34: If you order adjustments to locally determined assessed or appraised values, which of the following procedures are used? (check all that apply)**  Order local officials to apply trending factors to individual classes or categories of property  Trend all types of property equally, based on a jurisdiction-wide adjustment factor  Give local officials a compliance grace period to apply indicated factors  Give local officials a grace period to recalibrate mass appraisal models  Other, describe (50 char. limit):

**Q35: Do you have an appraisal level standard that allows some variance from your statutorily required appraisal level?**  Yes, 0.90–1.10  No  Yes, other level standard (describe variance):

**Q36: If yes to Q35, is the appraisal level variance set by statute?**  Yes  No  If no, describe (50 char. limit):

**Q37: If you use your ratio study to test appraisal level compliance, are allowances made for sample reliability using statistical tests, such as confidence intervals?**  Yes  No  Not applicable—appraisal level compliance is not tested

**Q38: If you use your ratio study to test appraisal level compliance, describe the reliability tests used:**

**Q39: Check each measure of level that you calculate and indicate if it is used for direct and/or indirect equalization.**  ARITHMETIC MEAN  Used for direct equalization  Used for indirect equalization;  MEDIAN  Used for direct equalization  Used for indirect equalization;  WEIGHTED MEAN  Used for direct equalization  Used for indirect equalization;  GEOMETRIC MEAN  Used for direct equalization  Used for indirect equalization  OTHER  Used for direct equalization  Used for indirect equalization  If other measure of level, specify (50 char. limit):

**Q40: Do you test the distribution of ratios to see if it is statistically normal?** Yes/No

**Q41: If you test the distribution of ratios to see if it is statistically normal, how does this determination affect the measure(s) of level used for testing compliance or equalization? Describe:**

**Q42: Have you incorporated portions of the IAAO *Standard on Ratio Studies* in your statutes or rules and regulations?** Yes/No

**Q43: When testing reliability for level of appraisal, which of the following is used to determine statistical compliance with standards for appraisal level?**  Point estimates  Confidence intervals  Both point estimates and confidence intervals

**Q44: Hypothetical situation: There is a legal requirement for appraisals to fall between 90 and 110% of market value as measured by the ratio study sample median. An equalization order could be issued if the requirement is not met. A study sample has a median ratio of 85%, and has a 95% confidence interval that falls in the range of 76 to 94%. Would your agency rule this result to be in compliance with statutory appraisal level requirements?**  Yes, the confidence interval overlaps the threshold for compliance.  No, only the point estimates are used to make inferences about compliance.  No, the confidence interval fails to overlap 100%.

**Q45: Hypothetical (cont.):** If the confidence interval overlaps the threshold for compliance and the situation (median ratio point estimate is out of compliance) continues for several years, which actions would your agency take? (check all that apply)  Lower the level of confidence and reevaluate  Base the compliance decision on point estimates  Continue to find the jurisdiction in compliance  Other

**Q46:** If you checked “Other” in Q45, describe here:

**Q47: Hypothetical (cont.):** How would your response differ if the sample COD (or other measure of uniformity) also showed very poor uniformity? (check all that apply)  No influence on decisions regarding level of confidence  Lower the level of confidence  Use the point estimate only to evaluate level  Review level measures from previous years  Use additional information, such as sample size, to make a final determination about level compliance

**Q48: Regarding assessment uniformity:** Do you have specific standards or requirements for assessment uniformity as measured by the COD (coefficient of dispersion)? (These may be statutory or procedural, but in either case would be used to find jurisdictions in or out of compliance.) Yes/No

**Q49: For improved residential property (single-family homes, condominiums, manufactured housing, 2–4 family units), if you have specific standards or requirements for assessment uniformity as measured by the COD, enter any differences from the following standards. (50 char. limit in each field)** COD 10.0 or less for very large jurisdictions/densely populated/newer properties/active markets; COD 15.0 or less for large to mid-sized jurisdictions/older and newer properties/less active markets; COD 20.0 or less for rural or small jurisdictions/older properties/depressed market areas. Some other standard/requirement, specify:

**Q50: For income-producing properties (commercial, industrial, apartments), if you have specific standards or requirements for assessment uniformity as measured by the COD, enter any differences from the following standards. (50 char. limit in each field)** COD 15.0 or less for very large jurisdictions/densely populated/newer properties/active markets; COD 20.0 or less for large to mid-sized jurisdictions/slower development/less active markets; COD 25.0 or less for rural or small jurisdictions/older properties/depressed market areas. Some other standard/requirement, specify:

**Q51: For residential vacant land, if you have specific standards or requirements for assessment uniformity as measured by the COD, enter any differences from the following standards. (50 char. limit in each field)** COD 15.0 or less for very large jurisdictions/rapid development/active markets; COD 20.0 or less for large to mid-sized jurisdictions/slower development/less active markets; COD 25.0 or less for rural or small jurisdictions/little development/depressed markets; Some other standard/requirement, specify:

**Q52: For other vacant land (non-agricultural), if you have specific standards or requirements for assessment uniformity as measured by the COD, enter any differences from the following standards. (50 char. limit in each field)** COD 20.0 or less for very large jurisdictions/rapid development/active markets; COD 25.0 or less for large to mid-sized jurisdictions/slower development/less active markets; COD 30.0 or less for rural or small jurisdictions/little development/depressed markets. Some other standard/requirement, specify:



**Q53: If you do not use the COD, what uniformity measure is used?**  No uniformity measure is used  Other, describe measure and standard (50 char. limit):

**Q54: Has a lower limit on the COD been established as an indicator of possible sales chasing?**  No  Yes, describe lower limit that you use (50 char. limit):

**Q55: Do you have standards for price-related bias (vertical inequity) as measured by the PRD (price-related differential) or other statistical tests?** Yes/No

**Q56: If, in addition to or as an alternative to the PRD, you use another statistical test for price-related bias (vertical inequity), describe:**

**Q57: If you have standards for price-related bias (vertical inequity), which do you use?**  PRD 0.98–1.03  Other, describe (50 char. limit):

**Q58: Can your agency initiate any action as a result of assessment uniformity (e.g., COD, PRD, etc.) conditions?** Yes/No

**Q59: What actions can your agency initiate as a result of assessment uniformity conditions? (check all that apply)**  Order a reappraisal  Withhold funding (e.g., revenue sharing)  Other

**Q60: If you answered “Other” to Q59, describe what actions your agency can initiate:**

**Q61: Do you calculate reliability measures, such as confidence intervals, on uniformity statistics around the:**  COD  PRD  Both  Neither

**Q62: If you initiate action as a result of assessment uniformity conditions, what indicator is action dependent upon?**  Point estimates  Confidence intervals  Not applicable  Other, describe (50 char. limit):

**Q63: Are local jurisdictions required to annually value categories of property (other than agricultural or timberland) at 100% of current market value (full cash value)?** Yes/No

**Q64: Is property that is not required to be appraised during a given year required to have its value updated during the interim year or years?** Yes/No

**Q65: Is property appraised at a uniform base year (e.g., 2001)?**  No  Yes, indicate most recent base year used (50 char. limit):

**Q66: Describe property classes associated with the base year:**

**Q67: Describe how your appraisal and valuation update cycles work:**

**Q68: Is there a uniform fractional assessment ratio for each category of property in every local assessment jurisdiction?**  Yes, but ratios may differ by category  No, they can be established by each local jurisdiction  Other, every category of real property is required to be at 100%

**Q69: If there is a uniform fractional assessment ratio for each category of property, how are the rates set?**  Statute  Constitution

**Q70: For residential properties, is the required assessment ratio set at 100% of market value?**  Yes  No, enter your assessment ratio (50 char. limit):

**Q71: For farmland, ranchland, and timberland, is the required assessment ratio set at 100% of market value?**  Yes  No, enter your ratio percentage (50 char. limit):

**Q72: For commercial property, is the required assessment ratio set at 100% of market value?**  Yes  No, enter your ratio percentage (50 char. limit):

**Q73: For industrial property, is the required assessment ratio set at 100% of market value?**  Yes  No, enter your ratio percentage (50 char. limit):

**Q74: For public utilities, is the required assessment ratio set at 100% of market value?**  Yes  No, enter your ratio percentage (50 char. limit):

**Q75: For railroads, is the required assessment ratio set at 100% of market value?**  Yes  No, enter your ratio percentage (50 char. limit):

**Q76: For other real property types, is the required assessment ratio set at 100% of market value?** Yes/No

**Q77: For personal property (chattel [tangible PP]), is the statutorily set and/or mandated (ordinance, regulations, etc.) assessment ratio 100% of market value?**  Yes  No, enter your ratio percentage (50 char. limit):

**Q78: How is farmland/ranchland assessed in relation to market value?**  100% of productivity value or legislated value  100% of market value  Other % of productivity/legislated value (50 char. limit):

**Q79: How is timberland assessed in relation to market value?**  100% of productivity value or legislated value  100% of market value  Other % of productivity/legislated value (50 char. limit):

**Q80: Regarding sample size, what is the smallest sample you will use to evaluate any category of property?**  Less than 5 observations  5 to 9 observations  10 to 19 observations  20 to 30 observations  More than 30 observations  Other, describe (50 char. limit):

**Q81: Do you establish sample size quotas or goals (e.g., 3% of parcels in a category or a number based on a statistical sample size formula)?** Yes/No

**Q82: If you establish sample size quotas or goals, describe how they are established:**

**Q83: Do you identify and trim outlier ratios?** Yes/No

**Q84: If outliers are trimmed, what procedure do you use? (check all that apply)**  1.5 \* interquartile range  3.0 \* interquartile range  Beyond 2 standard deviations  Fixed symmetric points (e.g., remove ratios < .50 or > 1.50)  Fixed asymmetric points (e.g., remove ratios < .30 or > 2.00)  Good judgment  Other, describe (50 char. limit):

**Q85: Is there a limit on the maximum percentage of sales that can be trimmed out of a sample? (e.g., 20%)**  No  Yes, indicate percentage (50 char. limit):

**Q86: Do you attempt to determine sample representativeness?** Yes/No

**Q87: If you attempt to determine sample representativeness, what is your procedure?** Describe:

**Q88: Do you have statutory requirements to check for sales chasing?**  Yes  No  Nonstatutory requirement

**Q89: Do you test for sales chasing?** Yes/No

**Q90: If you test for sales chasing, what techniques do you use? (check all that apply in order of use: 1 = Not used; 2 = First choice ... 7= Sixth choice)** Comparison of average value changes; Comparison of average unit values; Split sample technique; Comparison of observed vs. expected distribution of ratios; Mass appraisal techniques; Other

**Q91: If you test for sales chasing and you said “Other” for techniques used, describe the technique(s):**

**Q92: Can a taxing district or third party initiate legal action as a result of your ratio study? Yes/No**

**Q93: Are business or commercial machinery and equipment considered taxable personal property? Yes/No**

**Q94: If business or commercial machinery and equipment are considered taxable personal property, is a ratio study conducted for this personal property? Yes/No**

**Q95: If a ratio study is conducted for commercial machinery and equipment, which of the following does the study use?  Sales only  Appraisals only  Both sales and appraisals**

**Q96: If you use both sales and appraisals for your personal property ratio study, do you combine them in studying one type or category (e.g., vehicles, machinery) of property? Yes/No**

**Q97: If you use appraisals for your personal property ratio study, what appraisal technique(s) do you use? (check all that apply)  Depreciation or economic life tables  Iowa curves  Other**

**Q98: If you use other personal property ratio study appraisal techniques, list the techniques:**

**Q99: Describe how the results of your personal property ratio study are used:**

**Q100: Do you have a statutory exemption for intangible personal property? Yes/No**

**Q101: If you have a statutory exemption for intangible personal property, which types of property would receive this exemption? (check all that apply)  Capital stock  Bonds  Deposits  Contracts and contract rights  Copyrights  Goodwill  Customer lists  Custom computer programs  Licenses  Patents  Rights-of-way  Trademarks  Trade secrets  Other, specify (50 char. limit):**

**Q102: Please provide comments about your ratio study practices that were not covered by this survey:**

**Q103: Please share any comments you may have about this survey:**

**Q104: Your time and expertise in completing this survey are greatly appreciated and the IAAO Technical Standards Committee thanks you. Would you like a copy (Adobe Acrobat PDF format) of the final report sent to your e-mail address?  Yes  No  Enter alternate e-mail address here if preferred:**

## Appendix B. Tabulation of comparable responses

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note		
						Numbers of Responses				Numbers of Responses						
						1994	1997	2003	2008	1994	1997	2003	2008			
2	2	2	3	Frequency of ratio studies	Annual	35	41	41	44	1	6	8	8	(a)		
					1 per 2 years	5	4	2	2	0	0	0	0			
					1 per 3 years	1	0	0	1	1	1	1	1			
					1 per 4 years	5	7	1	1	5	4	2	2			
					Other	5	7	7	3	0	1	1	0			
3	3	3	4	Who does study?	State or Province/ Territory	26	29	38	44	6	3	7	10			
					Local only	4	7	7	7	0	3	1	0		(b)	
					Contracted to others	14	14	4	2	1	4	2	1		(c)	
					Both state and local	n/a	n/a	n/a	11	n/a	n/a	n/a	0			
					Other	2	2	2	0	0	1	3	0			
4	4	4	5	What does study include?	Sales only	20	23	25	31	5	8	8	10			
					Appraisals only	5	4	2	1	0	0	1	0			
					Both sales and appraisals	21	25	24	19	2	3	1	1			
4a	4a	4a	6	If both, combined?	Yes			24	17			0	1			
4b	4b	4b	7	Who selects samples?	State or Province/ Territory				35	22			6	7		
					Local				14	12				5	2	
					Both					16					0	
					Private contractor					1					1	
4c	4c	4c	8	Who validates sales?	State or Province/ Territory				23	16			3	5		
					Local				24	24				3	3	
					Both					10				1	1	
					Contracted and other					0				1	1	
			9	Audit of sales validation?					23				3			
5	5	5	93	Personal property (PP) taxable?	Yes	37	40	40	39	3	6	3	2			
5a	5a	5a	94	PP ratio study conducted?	Yes	9	8	7	6	0	0	0	0			
5b	5b	5b	95	For PP ratio study, do you use sales, appraisals, or both?	Sales only				0	0						
					Appraisals only	7	8	7	6							
					Both sales and appraisals	1	0	0	0							
		5c	96	PP ratio study: if both, combine?												
5c	5c	5d	99	How is PP ratio study used?												
		5e	97	PP appraisal techniques	Depreciation or economic life tables			7	4							
					Iowa curves			2	1							
					Other			1	1							

Key to cell shading is located on page 55.

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note	
						Numbers of Responses				Numbers of Responses					
						1994	1997	2003	2008	1994	1997	2003	2008		
		6	100	Intangible personal property											
8	6	6a	100	Statutory exemption?	Yes	25	32	37	40	3	4	6	3		
					No	17	15	9	12	4	4	6	8		
		6b	101	Exempt intangible personal property	Capital stock			32	33			3	1		
					Bonds			33	31			3	1		
					Deposits			33	30			3	1		
					Contracts and contract rights			34	30			3	1		
					Copyrights			35	31			3	1		
					Goodwill			30	28			3	1		
					Customer lists			34	29			3	1		
					Custom computer programs			29	30			3	1		
					Licenses			34	30			3	1		
					Patents			35	31			3	1		
					Rights-of-way			22	20			2	1		
					Trademarks			35	31			3	1		
					Trade secrets			35	29			3	1		
Other			6	2			1	0							
6	7	7	12	Procedural audit in lieu of ratio study?	Yes	19	17	22	2	2	3	3	1		
					No	n/a	n/a	n/a	30	n/a	n/a	n/a	5		
	7a	n/a	11	Procedural audit on any category?	Yes				32				6		
					No				19				5		
			14	Is procedural audit advisory?	Yes				14				4		
					No				17				1		
	7c	7b	13	Is procedural audit in addition to ratio studies?	Yes		25	26	26		4	5	4		
					No				5				2		
	7b	7c	15	Can equalization or reappraisal be ordered from audits?	Yes	11	14	15	12	2	5	4	4		
					No	n/a	n/a	n/a	16	n/a	n/a	n/a	2		
7	8a	8a	16	Disclosure	Yes										
					No										
7a	8a	8a	16	Legal requirement?	Yes	30	35	37	36	6	9	11	11	(d)	
					State or Province/Territory only			2	6				11	7	
					Local assessors only			8	8				2	2	
		8b	17	Disclosure occurs when?	At deed recording			35	33			11	11		
					Within statutory time period			4	1			0	0		
					Other			3	2			0	0		
		8c	18	Are documents tracked?	Yes			31	29			8	11		

Appendix B. Tabulation of comparable responses (continued)

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note
						Numbers of Responses				Numbers of Responses				
						1994	1997	2003	2008	1994	1997	2003	2008	
		8d	20	Type of disclosure document?	Sale price statement			17	10			10	5	
					Comprehensive questionnaire			7	10			0	0	
					Both			7	9			1	3	
					Other			8	7			0	3	
7a	8a	8e	22	Is disclosure confidential?	Yes	9	6	5	9	3	4	4	2	
					No			39	29	4	7	8	9	
7b	8b	8f	23	Value-related fee?	Yes	30	36	34	35	5	10	10	11	
7c	8c	8g	24	Mandatory recordation?	Yes	28	25	26	27	5	8	10	10	
		8g	n/a	If yes, recordation occurs at what jurisdictional level?	State or Province/Territory			10	n/a			6	n/a	
					Local			14	n/a			1	n/a	
					Both			3	n/a			0	n/a	
		8h	n/a	Legal penalties for falsifying?	Yes			35	n/a			9	n/a	
					No			8	n/a			2	n/a	
				No element of disclosure?		3	4	2	7	0	0	0	0	
9	9	9	26	Verified sales prices adjusted? Adjust for:	Yes	33	34	32	40	6	9	9	8	
					Time	14	15	18	21	4	9	4	6	
					Financing	16	16	15	11	3	8	5	4	
					Personal property	31	32	26	30	6	9	4	7	
					Closing costs	0	5	2	6	0	1	1	1	
					Brokerage fees	1	4	0	2	0	0	1	1	
					Intangibles	5	11	11	16	3	1	3	3	
					Other	7	4	4	7	0	2	3	2	
10	10	10	27	Blanket or global adjustments?	Yes	8	3	3	3	1	0	0	0	
					No	36	45	47	49	6	10	12	11	
10a	10a	10a	28	Describe adjustments.										
10b	10b	10b	29	Court cases?	Yes			1	1					
11	11	11	30	Purposes of ratio study?	Order adjustments	22	27	26	20	3	4	2	1	
					Equalize funding	30	31	31	28	1	3	2	2	
					Order reappraisal	22	31	30	28	2	1	1	0	
					Advise local jurisdictions	35	35	43	39	7	9	5	7	
					Assist mass appraisal			31	22			9	4	
					Adjust or equalize centrally assessed property	13	18	19	17	0	0	0	0	
					Approve tax roll	0	0	5	13	0	0	3	3	
			32	How many states issued orders to adjust?				16				0		

Key to cell shading is located on page 55.

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note	
						Numbers of Responses				Numbers of Responses					
						1994	1997	2003	2008	1994	1997	2003	2008		
			33	How many states issued orders to reappraise?				20				0			
12	12	12	34	Adjustment procedures?	Order trend by class/ category	11	14	13	16	1	2	1	0		
					Trend jurisdiction-wide	5	3	3	7	1	1	0	0		
					Grace period	2	12	3	12	0	2	1	0		
					Other	11	4	10	12	6	3	0	0		
13	13	13	48	Assessment uniformity											
13a	13a	13a	48	Statute/standard for COD/ COV?	Yes	32	34	38	40	2	8	9	8		
					No	18	17	13	13	2	3	3	3		
		13a	48	Comparison to IAAO standard	IAAO 1999 standard			23	23			5	6		
					More stringent	6	1	5	6	1	1	4	2		
					Less stringent	21	23	21	11	3	6	3	0		
13b	13b	13b	55/57	Price-related bias/PRD standard?	Yes	11	18	22	27	2	4	6	6		
					No	35	34	28	25	4	7	6	5		
					IAAO standard 0.98–1.03	8	12	17	23	2	2	5	5		
13c	13c	13c	58/59/ 60	Initiate action re: uniformity?	Yes	30	34	34	30	4	7	7	5		
					If so, which actions?	Order reappraisal			23	23			4	3	
						Withhold funding			9	5			0	0	
						Other action			10	11			3	1	
		13d	61	If yes, reliability measures?	COD			24	21			4	5		
					PRD			12	14			2	4		
					Both (added into above totals)										
		13e	62	Action dependent upon:	Point estimates			17	12			4	2		
					Confidence intervals			8	11			0	1		
14	14	14	35	Testing assessment level:											
14a	14a	14a	35	Allowable variance?	Yes	33	34	34	37	5	7	5	8		
					No	13	18	17	15	2	4	7	3	(e)	
				Variance permitted:	± 10%	11	15	16	16	1	4	1	3		
					± 5%	5	6	6	4	2	2	2	2	(f)	
					Other	17	17	9	17	2	1	1	2		
14b	14b	14b	36	If yes, variance set by statute?	Yes	15	18	19	18	0	1	3	2		
					No	17	15	18	18	3	3	2	6		
				If no, legal authority?	Administrative rule			8	7			1	0		
					Other			7	11			0	5		

Appendix B. Tabulation of comparable responses (continued)

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note	
						Numbers of Responses				Numbers of Responses					
						1994	1997	2003	2008	1994	1997	2003	2008		
14e	14d	14d	39	Measures of level: Calculate	Arithmetic mean	32	39	36	32	5	8	8	5		
					Median	38	43	38	39	6	10	9	8		
					Weighted (aggregate) mean	35	40	39	32	4	6	7	3		
					Geometric mean	4	2	5	6	0	2	1	0		
					Other	4	1	2	6	0	0	0	1		
				Measures of level: Equalization	Arithmetic mean	5	11	7	18	0	2	1	1		
					Median	19	33	30	37	0	4	2	2		
					Weighted (aggregate) mean	19	21	19	25	1	3	2	0		
					Geometric mean			1	3			1	0		
					Other			0	2			0	1		
			39	Measures of level: Direct equalization	Arithmetic mean				9				1		
					Median				25				0		
					Weighted (aggregate) mean				10				0		
					Geometric mean				1				0		
					Other				1				0		
			39	Measures of level: Indirect equalization	Arithmetic mean				9				1		
					Median				12				1		
					Weighted (aggregate) mean				15				0		
					Geometric mean				2				0		
					Other				1				0		
	14e	14e	40	Test for statistical normality?	Yes		13	13	16		4	4	5		
14c	15	15	43	Testing reliability											
		14c	37	Allowance made for sample reliability tests for appraisal level compliance?	Yes				15					5	
					No				32					3	
					N/A—level compliance not tested				5					3	
14d	15a	15a	43	What is compliance based upon?	Point estimates only		26	19	27		5	3	2		
					Confidence intervals	13	18	20	6		1	6	3		
					Both	n/a	n/a	n/a	11	n/a	n/a	n/a	2		
		15b	n/a	If yes, which test?	95% confidence level			17	n/a			4	n/a		
					90% confidence level			5	n/a			2	n/a		
					Other confidence level			0	n/a			0	n/a		
14d	15b	15c	44	Is a sample mean ratio of 85%, with a 95% confidence interval (CI) between 75 and 94%, in compliance?	Yes, confidence interval overlaps		11	13	11			2	4		
					No, only point estimates used			28	30		1	5	2		
					No, CI fails to overlap 100%				5				1		

Key to cell shading is located on page 55.



1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note
						Numbers of Responses				Numbers of Responses				
						1994	1997	2003	2008	1994	1997	2003	2008	
			45	If CI overlaps, but the median continues to be out of compliance for several years, what actions?	Lower confidence level and reevaluate				3				2	
					Base the compliance decision on point estimates				0				1	
					Continue to find in compliance				6				2	
					Other				6				2	
	15c	15d	47	Revise if COD showed poor uniformity?	No change		33	16	7		1	0	2	
					May lower level of confidence			2	3			0	1	
					May use point estimate only			3	20			0	1	
					May review level measures			7	10			0	5	
					May use additional information			16	17			0	5	
15	16	16	63	Residential property appraised annually at 100% of current market value?	Yes	17	22	23	32	6	6	8	4	(g)
15a	16a	16a	64/65	Property appraised as of a constant base year?	Yes	5	13	13	10	2	5	5	6	
	16b			Are property values updated during an interim year?	Yes		18	14	6		5	5	3	
		16b	68	Can local jurisdictions establish different assessment ratios?	Yes			10	16			0	0	
15b	16c	16c	70-77	Statutorily set ratios	Residential @ 100% of MV			23	26			8	9	
					Farmland @ 100% of MV			12	4			7	4	
					Commercial @ 100% of MV			30	28			10	9	
					Industrial @ 100% of MV			30	28			10	9	
					Utilities @ 100% of MV			29	30			5	9	
					Railroads @ 100% of MV			23	26			3	2	
					Personal property @ 100% of MV			18	19			0	1	
17	17	17	80	Ratio study samples										

Appendix B. Tabulation of comparable responses (continued)

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note	
						Numbers of Responses				Numbers of Responses					
						1994	1997	2003	2008	1994	1997	2003	2008		
	17a	17a	n/a	Stratification	Range of values		11	18	n/a			4	n/a		
					Geographic neighborhood		20	16	n/a			9	n/a		
					School district		4	8	n/a			1	n/a		
					City (Municipality)		1	12	n/a			4	n/a		
					County			25	n/a			2	n/a		
					Other factors			12	n/a			4	n/a		
16a	17b	17b	80	Smallest sample	Less than 5	4	8	7	10	1	2	3	1		
					5 to 9	7	8	10	10	2	1	1	3		
					10 to 19	3	4	10	6	2	1	3	2		
					20 to 30	9	13	5	7	0	3	1	2		
					Greater than 30	4	3	10	6	0	1	2	0		
					Other	19	16	9	9	2	3	1	2		
	17c	17c	81	Sample size quotas or goals?	Yes	12	11	20	13	0	2	1	1		
	17d	17d	83	Do you identify outlier ratios?	Yes		26	35	35		6	9	7		
			84	Method of outlier identification?	1.5 * interquartile range				5				2		
					3.0 * interquartile range				4				1		
					Beyond 2 standard deviations				6				2		
					Fixed symmetric pts. <.5 or >1.5				4				1		
					Fixed symmetric pts. <.3 or >2.0				6				1		
					Good judgment				10				5		
	17e	17e	n/a	If outliers, what action taken?											
	17f	17f	86	Determine representativeness?	Yes		21	32	21		4	5	4		
	17a			If yes, which apply?	Stratify by geographic area		21	21	n/a		7	4	n/a		
				Stratify by property class		most	29	n/a		5	4	n/a			
				Stratify by value range		11	16	n/a		5	3	n/a			
				Other			6	n/a			2	n/a			
		17g	87	Fixed trim points remove outliers?	Yes		16	9			3	2			
		17h	85	Limit on trimmed sales?	Yes		10	5			3	0			
	18	18	88	Statutes for sales chasing?	No, nonstatutory			n/a	12			n/a	0		
					Yes			10	3		1	0	(h)		
			89	Test for sales chasing?	Yes				27			5			

1994 Question Number	1997 Question Number	2003 Question Number	2008 Question Number	Topic	Response	UNITED STATES				CANADA				Note
						Numbers of Responses				Numbers of Responses				
						1994	1997	2003	2008	1994	1997	2003	2008	
			90	Procedure for sales chasing?	Compare average value changes				20				3	(i)
					Compare average unit values				6				3	
					Split sample technique				5				3	
					Compare observed vs. expected distributions				14				4	
					Mass appraisal techniques				17				3	
			42	Incorporate IAAO standards in statutes or rules?	Yes				33				5	
					No				16				6	
17	19	19	92	Legal action re: ratio study?	Yes	30	32	37	28	1	4	3	1	
<b>Legend</b>														
	= These questions are changed from previous surveys													
	= These questions are new to that year's survey													
	= Question was not asked on survey or responses were not tabulated in those years													

- Notes
- (a) Two Hawaiian respondents were counted once in some instances and twice in others where applicable.
  - (b) Includes District of Columbia and the two Hawaiian local respondents; does not include local respondent from Delaware which does not conduct ratio studies
  - (c) For U.S., the contracted totals are also included in the state count.
  - (d) The 2008 total reflects addition of Delaware and loss of disclosure in South Carolina and the corrected classification for Nevada.  
The U.S. total for 1997 was revised to reflect an error in tabulating Oregon's response, which should have been counted as a "Yes."  
The U.S. total for 2003 includes the addition of Pennsylvania and, effective July 2003, New Mexico.
  - (e) Allowable variance: Not shown are responses to the 1992 survey, which total 19 "No" U.S. answers to this portion of the question.
  - (f) A ± 5% variance: Not shown are responses to the 1985 survey, which totaled 7 U.S. responses to this portion of the question.
  - (g) 2003 Question 16, Assessments = 100% of MV: U.S. responses were edited so that "Yes" count reflects only those jurisdictions whose assessment level equals 100% of current (2002 or 2003) market value for all residential properties.
  - (h) Question 18, Sales chasing: The 1997 responses to this question were not compiled for either U.S. or Canada.
  - (i) See appendix E for most popular choices of sales-chasing techniques.

## Appendix C. United States 2008 Survey Results

Question No. >		Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q11	Q12
State	Abbreviation	How often does your jurisdiction conduct ratio studies?	Who conducts your ratio study?	Does your study include sales or appraisals or both?	If your study includes both, do you combine?	Who performs the sales sample selection?	Who conducts the sales validation (screening)?	If state does not conduct the validation, does the state audit the process?	Do you perform procedural audits of local assessment procedures/practices?	Is the procedural audit used instead of a ratio study?
Alabama	AL	annually	state	sales		both	state		no	
Alaska	AK	annually	local only	sales		local	local	yes	yes	no
Arizona	AZ	annually	state	sales		both	both	yes	no	
Arkansas	AR	annually	state	both	yes	state	local	yes	yes	no
California	CA	other	state	appraisals		n/a	n/a	n/a	no	
Colorado	CO	annually	state/con	both	yes	local	local	yes	yes	no
Connecticut	CT	annually	state	sales		state	state		no	
Delaware	DE	none	n/a	n/a		n/a	n/a	no	no	
District of Columbia	DC	annually	local only	sales		local	local	no	no	
Florida	FL	annually	state	both	yes	state	local	yes	yes	no
Georgia	GA	annually	state	both	yes	state	state			
Hawaii, County of	HI CO	annually	local only	sales		local	local	no	no	
Hawaii-Honolulu Cty.	HN CO	annually	local only	sales		local	local	no	yes	no
Idaho	ID	annually	state	sales		both	local	no	no	
Illinois	IL	annually	state	sales		state	state		no	
Indiana	IN	annually	local only	sales		local	local	no	no	
Iowa	IA	annually	state	both	yes	state	both	no	no	
Kansas	KS	annually	state	sales		state	state		yes	no
Kentucky	KY	annually	state	both	yes	both	local	yes	yes	no
Louisiana	LA	annually	state	both	yes	state	state		no	
Maine	ME	annually	both	both	yes	state	state		no	
Maryland	MD	annually	state	sales		state	both	yes	yes	no
Massachusetts	MA	every 3 yrs.	both	both	yes	both	local	yes	yes	no
Michigan	MI	annually	local only	both	yes	local	both	yes	yes	no
Minnesota	MN	annually	both	sales		both	both	yes	yes	no
Mississippi	MS	every 4 yrs.	both/con	sales		both/con	both	yes	yes	no
Missouri	MO	every 2 yrs.	state	both	yes	both	local	yes	yes	no
Montana	MT	other	state	sales		state	state		yes	no
Nebraska	NE	annually	state	sales		local	local	yes	yes	no
Nevada	NV	annually	state	both		state	local	yes	yes	no
New Hampshire	NH	annually	state	sales		state	state		yes	no
New Jersey	NJ	annually	both	sales		state	state		yes	no
New Mexico	NM	annually	state	sales		state	local	no	yes	no
New York	NY	annually	state	both	yes	state	both	no	yes	yes
North Carolina	NC	annually	both	sales		both	local	yes	yes	no
North Dakota	ND	annually	both	both	yes	both	local	no	no	
Ohio	OH	every 0.5 yr.	state	sales		state	state		no	
Oklahoma	OK	annually	state	sales		state	state		yes	no
Oregon	OR	annually	local only	sales		local	local	yes	yes	no
Pennsylvania	PA	annually	state	both		state	state		yes	no
Rhode Island	RI	annually	state	sales		both	state		no	
South Carolina	SC	annually	state	sales		local	local	no	yes	no
South Dakota	SD	annually	state	sales			both	yes	no	
Tennessee	TN	every 2 yrs.	state	sales		both	local	yes	yes	no
Texas	TX	annually	state	both	yes	state	state		yes	no
Utah	UT	annually	both	sales		both	both	yes	yes	no
Vermont	VT	annually	state	both	yes	both	local	yes	no	
Virginia	VA	annually	both	sales		both	state		no	
Washington	WA	annually	state	both	yes	state	local	yes	yes	no
West Virginia	WV	annually	state	sales		state	local	yes	yes	no
Wisconsin	WI	annually	both	both	yes	both	both	yes	yes	yes
Wyoming	WY	annually	both	sales		local	local	yes	yes	no

Question No. >	Q13	Q14	Q15	Q16	Q17	Q18	Q20	Q21	
State	Is the procedural audit used in addition to ratio study information?	Is the procedural audit used solely to advise or assist the local appraisal offices?	Can equalization or reappraisal be ordered as a result of procedural audits?	Do you have a disclosure law?	Is disclosure made to state or local or both?	Is disclosure made during deed recording?	Is a method in place to track a disclosure document for every recorded sale?	For disclosure, do you use a sale price statement, questionnaire, or both?	What office is responsible for initially accepting the disclosure document?
AL				no					
AK	yes	yes	yes	no					
AZ				yes	both	yes	no	both recorder	
AR	no	no	yes	no					
CA				yes	state	yes		both recorder	
CO	yes	no	yes	yes	local	yes	yes	questionnaire recorder	
CT				yes	both	yes	yes	statement recorder	
DE				yes	local	yes	no	statement recorder	
DC				yes	local	yes	yes	statement recorder	
FL	yes	no	no	yes	both	yes	no	other recorder	
GA				yes	both	yes	yes	other recorder	
HI CO						yes	yes	statement state	
HN CO	yes	yes	no	yes	local	yes	yes	recorder	
ID				no					
IL				yes	both	yes	no	questionnaire recorder	
IN				yes	both	yes	no	questionnaire assessor	
IA				yes	both	yes	yes	statement recorder	
KS	yes	no		yes	both	yes	yes	questionnaire recorder	
KY	yes	no		yes	local	yes	yes	other county clerk	
LA				no					
ME				yes	both	yes	yes	questionnaire recorder	
MD	yes	no	no	yes	state	yes	yes	other state	
MA	yes	no	yes	yes	both	yes	yes	other recorder	
MI	yes	no	yes	yes	both	no	no	other assessor	
MN	yes	yes	yes	yes	both	yes	yes	questionnaire county auditor	
MS	yes	yes	yes	no			no		
MO	yes	yes	no	no					
MT			yes	yes	state	yes	yes	both recorder	
NE	yes	no	yes	yes	both	yes	yes	both recorder	
NV	yes	no	no	no					
NH	no	yes	no	yes	both	yes	yes	other recorder	
NJ	yes	yes		yes	both	yes	yes	statement recorder	
NM	yes	yes	yes	yes	local	no	no	statement assessor	
NY	no	no	no	yes	both	yes	yes	questionnaire recorder	
NC	yes	yes	no	no					
ND				yes	both	yes	yes	both recorder	
OH				yes	both	no	yes	other assessor	
OK	yes	no	yes	no					
OR	yes	no	yes	yes	both	yes	yes	statement recorder	
PA	yes	no	no	yes	both	yes	yes	questionnaire recorder	
RI				no					
SC	no	yes	no	no					
SD				yes	local	yes	yes	questionnaire recorder	
TN	yes	no	no	no					
TX	no	yes	no	no					
UT	yes	yes	no	no					
VT				yes	state	yes	yes	questionnaire recorder	
VA				yes	state	yes	yes	statement recorder	
WA	yes	no	no	yes	both	yes	yes	statement recorder	
WV	yes	yes		yes	state	yes	yes	recorder	
WI	yes	no	no	yes	both	yes	yes	other recorder	
WY	yes	yes	no	yes	local	yes	yes	both recorder	

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q22	Q23	Q24	Q25							
State	Are disclosed sale prices confidential?	Do you have a transfer tax or deed stamp?	Do you have a mandatory recordation law?	Do you have authority to adjust sale prices? If yes, for:	TIME?	FINANCING?	PERSONAL PROPERTY?	CLOSING COSTS?	BROKERAGE FEES?	INTANGIBLE PERSONAL PROPERTY?	OTHER?
AL		yes	yes	yes	yes	yes	yes			yes	
AK		no	no	yes	yes	yes	yes				
AZ	no	no	yes	yes							yes
AR		yes	no	yes	yes	yes	yes			yes	
CA	yes	yes	no	no							
CO	no	yes	yes	yes	yes	yes	yes			yes	
CT	no	yes	yes	no							
DE	no	yes	no	yes							
DC	yes	yes	yes	yes							
FL	no	yes	no	yes	yes	yes	yes	yes	yes	yes	
GA	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes
HI CO	no	yes	no	yes							
HN CO	no	yes	yes	yes	yes	yes	yes	yes			yes
ID		no	no	yes	yes		yes				
IL	no	yes	yes	yes	yes		yes				
IN	no	no	yes	yes	yes		yes			yes	
IA	no	yes	no	yes			yes				
KS	yes	no	no	yes	yes	yes	yes	yes		yes	yes
KY	no		no	yes	yes						
LA				yes	yes						
ME	no	yes	no	no							
MD	no	yes	yes	yes							
MA	no	yes	yes	yes	yes						
MI	yes	yes	no	yes		yes	yes			yes	yes
MN	no	yes	yes	yes	yes	yes	yes	yes		yes	
MS	no	no	no	no							
MO		no	no	yes	yes	yes	yes	yes	yes	yes	yes
MT	yes	no	yes	yes			yes				
NE	no	yes	no	yes	yes	yes	yes			yes	
NV		yes	yes	no							
NH	yes	yes	no	yes	yes		yes				
NJ	no	yes	yes	no							
NM	yes	no	yes	no							
NY	no	yes	yes	yes	yes		yes			yes	
NC		yes	yes	yes			yes				
ND	yes	no	no	yes			yes				
OH	no	yes	yes	yes	yes	yes	yes				
OK		yes	yes	yes			yes				
OR	no	no	yes	yes	yes	yes	yes				yes
PA	no	yes	yes	no							
RI		yes	yes	yes	yes		yes			yes	
SC		yes	no	no							
SD	no	yes	no	yes		yes	yes			yes	
TN		yes	no	no							
TX		no	no	yes	yes	yes	yes	yes	yes	yes	yes
UT		no	no	yes	yes	yes	yes	yes			
VT	no	yes	yes	yes			yes	yes			
VA	no	yes	yes	no							
WA	no	yes	yes	yes			yes				
WV	no		yes	no							
WI	no	yes	yes	yes			yes			yes	
WY	yes	no	no	yes	yes	yes	yes			yes	

Question No. >	Q26								Q27
State	Do you make adjustments to sales prices? If yes, do you adjust for:	TIME?	FINANCING?	PERSONAL PROPERTY?	CLOSING COSTS?	BROKERAGE FEES?	INTANGIBLE PERSONAL PROPERTY?	OTHER?	Do you make blanket or global adjustments to sales prices?
AL	yes	yes		yes			yes		no
AK	yes	yes	yes	yes			yes		no
AZ	yes	yes						yes	yes
AR	yes	yes		yes					no
CA	no								no
CO	yes	yes	yes	yes			yes		no
CT	no								no
DE	n/a								no
DC	no								no
FL	yes		yes	yes	yes	yes	yes		yes
GA	yes	yes		yes			yes	yes	no
HI CO	yes			yes					no
HN CO	no								no
ID	yes	yes		yes					no
IL	yes	yes		yes					no
IN	yes	yes		yes			yes		no
IA	yes			yes					no
KS	yes	yes	yes	yes	yes		yes	yes	no
KY	yes	yes							no
LA	yes	yes							no
ME	no								no
MD	no								no
MA	yes	yes							no
MI	yes			yes			yes	yes	no
MN	yes	yes	yes	yes	yes		yes		no
MS	no								no
MO	yes	yes	yes	yes	yes		yes	yes	no
MT	yes			yes					no
NE	yes						yes		no
NV	no								no
NH	yes	yes		yes					no
NJ	no								no
NM	no								no
NY	yes	yes		yes			yes		no
NC	yes			yes					no
ND	yes			yes					no
OH	yes			yes					no
OK	yes			yes					no
OR	yes	yes	yes	yes				yes	no
PA	no								yes
RI	no								no
SC	no								no
SD	yes		yes	yes			yes		no
TN	no								no
TX	yes	yes	yes	yes	yes	yes	yes	yes	no
UT	yes	yes	yes	yes					no
VT	yes			yes	yes				no
VA	no								no
WA	yes			yes					no
WV	no								no
WI	yes			yes			yes		no
WY	yes	yes	yes	yes			yes		no

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q30							Q31
State	Is your ratio study used to order adjustments to locally determined assessed values?	Is your ratio study used to equalize state funding of local jurisdictions?	Is your ratio study used to order local jurisdictions to reappraise?	Is your ratio study used to advise state or local jurisdictions of assessment conditions?	Is your ratio study used to assist mass appraisal programs?	Is your ratio study used to approve tax assessment roll?	Is your ratio study used to adjust or equalize centrally determined assessed values?	Do you have authority to order adjustments to, or reappraisal of, locally determined values?
AL	yes		yes	yes	yes		yes	yes
AK		yes	yes	yes				yes
AZ	yes		yes	yes	yes	yes		yes
AR			yes	yes		yes	yes	yes
CA								no
CO		yes	yes					yes
CT		yes		yes				no
DE								no
DC					yes			no
FL		yes	yes	yes	yes	yes		yes
GA		yes		yes		yes		no
HI CO					yes	yes		yes
HN CO				yes	yes			no
ID	yes	yes		yes				yes
IL	yes	yes		yes				yes
IN	yes	yes	yes	yes			yes	yes
IA	yes	yes	yes	yes				yes
KS				yes	yes		yes	yes
KY			yes	yes		yes		yes
LA			yes	yes				yes
ME		yes	yes	yes	yes			yes
MD				yes	yes			no
MA		yes				yes		yes
MI	yes		yes	yes	yes			yes
MN	yes	yes	yes	yes	yes		yes	yes
MS			yes	yes	yes	yes		yes
MO	yes		yes	yes	yes			yes
MT				yes			yes	no
NE	yes	yes	yes	yes	yes		yes	yes
NV	yes		yes					yes
NH		yes		yes				yes
NJ	yes	yes	yes	yes	yes	yes	yes	yes
NM	yes		yes	yes				yes
NY		yes					yes	no
NC				yes	yes		yes	no
ND	yes		yes	yes				yes
OH	yes		yes			yes		yes
OK	yes	yes	yes	yes	yes			yes
OR	yes		yes	yes	yes	yes	yes	yes
PA		yes		yes				no
RI		yes		yes	yes			no
SC		yes						no
SD		yes		yes				yes
TN	yes	yes	yes	yes	yes		yes	yes
TX		yes						no
UT	yes	yes	yes	yes	yes	yes	yes	yes
VT		yes	yes	yes			yes	yes
VA		yes					yes	no
WA		yes		yes			yes	no
WV				yes	yes			yes
WI		yes	yes	yes			yes	yes
WY	yes		yes			yes		yes



Question No. >	Q32	Q33	Q34			
State	How many local jurisdictions have been issued orders to adjust values in the past three years?	How many local jurisdictions have been issued orders to reappraise values in the past three years?	Do you order local officials to apply trending factors to individual classes of property?	Do you trend all types of property equally, based on a jurisdiction-wide adjustment factor?	Do you give local officials a compliance grace period to apply indicated factors?	Do you give local officials a grace period to recalibrate mass appraisal models?
AL	67	37	yes		yes	
AK	0	1		yes	yes	yes
AZ	2	0			yes	yes
AR	4	4			yes	yes
CA						
CO	1	1			yes	yes
CT						
DE						
DC						
FL	0	0				yes
GA						
HI CO	n/a	n/a				
HN CO						
ID	1	0	yes		yes	yes
IL	0	0		yes		
IN	0	21	yes			
IA	77	0	yes			
KS	0	0				yes
KY	0	0				
LA	0	7				
ME	0	0				
MD						
MA	0	1				
MI	0	25	yes			
MN	350	0	yes	yes	yes	yes
MS	0	6				
MO	23	23	yes		yes	yes
MT						
NE	30	2				
NV	0	0			yes	
NH	0	4				
NJ	150	150	yes	yes	yes	yes
NM	0	1	yes	yes	yes	yes
NY						
NC						
ND	10	3	yes			
OH	1	88	yes			
OK	3	6	yes			
OR	0	0	yes		yes	yes
PA						
RI						
SC						
SD	0	0		yes		
TN	12	0	yes			
TX						
UT	5	2	yes	yes		
VT	0	126				
VA						
WA						
WV	0	0				
WI	0	5				
WY	1	0	yes			

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q35		Q36	Q37	Q39		
State	What is your appraisal level standard?	Do you have an appraisal level standard that allows some variance from your statutorily required appraisal level?	If yes, is the appraisal level variance set by statute?	Are allowances made for sample reliability using statistical tests, such as confidence intervals?	Do you calculate the ARITHMETIC MEAN as measure of a level?	Is the arithmetic mean used for direct equalization?	Is the arithmetic mean used for indirect equalization?
AL	0.98-1.02	yes	no	no			
AK	0.90-1.10	yes	no	no	yes		
AZ	0.74-0.90	yes	yes	yes			
AR	0.90-1.10	yes	yes	yes	yes		
CA		no	n/a	yes			yes
CO	0.95-1.10	yes	no	no			
CT		no	n/a	n/a	yes		yes
DE		no	n/a	no			
DC		no	n/a	no	yes		
FL		yes	no	yes	yes		
GA	0.90-1.10	yes	yes	yes			
HI CO	0.90-1.10	yes	no	n/a	yes	yes	yes
HN CO	0.90-1.10	yes	yes	no	yes		
ID	0.90-1.10	yes	no	yes	yes		
IL		no	n/a	no	yes		yes
IN	0.90-1.10	yes	yes	no			
IA	0.95-1.05	yes	yes	no	yes	yes	
KS	0.90-1.10	yes	no	yes	yes		
KY	0.90-1.10	yes	no	yes			
LA	0.90-1.10	yes	yes	no			
ME	0.70-1.10	yes	yes	no			
MD		no	n/a	no	yes		
MA	0.90-1.10	yes	no	no	yes		
MI	0.49-0.50	yes	no	no			
MN	0.90-1.05	yes	yes	no	yes		
MS	0.75-1.25	yes	yes	no	yes		yes
MO	0.90-1.10	yes	no	yes	yes		
MT	0.90-1.10	yes	no	yes	yes	yes	
NE	0.92-1.00	yes	yes	yes	yes	yes	yes
NV	0.32-0.36	yes	yes	no			
NH		no	n/a	yes	yes		yes
NJ		yes	no	yes	yes		yes
NM	0.85-1.00	yes	no	n/a		yes	
NY		no	n/a	yes			
NC		no	n/a	no			
ND	0.95-1.05	yes	no	no	yes		
OH	0.90-1.10	yes	no	no	yes	yes	
OK	0.11-.135	yes	no	no	yes		
OR	0.95-1.05	yes	yes	no	yes	yes	
PA		no	n/a	no	yes	yes	
RI		no	n/a	n/a	yes		yes
SC	0.80-1.05	yes	yes	no	yes		
SD	0.85-1.00	yes	yes	no	yes		
TN		no	n/a	no	yes		
TX		no	n/a	n/a			
UT	0.90-1.10	yes	yes	yes	yes	yes	
VT	0.80-1.00	yes	yes	no			
VA		no	n/a	no	yes		
WA		no	n/a	no			
WV	0.90-1.10	yes	no	no			
WI		yes	yes	no	yes		yes
WY	0.95-1.05	yes	no	no			

Question No. >	Q39 (continued)									Q40
State	Do you calculate the MEDIAN as measure of a level?	Is the median used for direct equalization?	Is the median used for indirect equalization?	Do you calculate the WEIGHTED MEAN as measure of a level?	Is the weighted mean used for direct equalization?	Is the weighted mean used for indirect equalization?	Do you calculate the GEOMETRIC MEAN as measure of a level?	Is the geometric mean used for direct equalization?	Is the geometric mean used for indirect equalization?	Do you test the distribution of ratios to see if it is statistically normal?
AL		yes								no
AK	yes			yes		yes				no
AZ	yes	yes								no
AR	yes			yes						no
CA										no
CO	yes	yes		yes		yes				no
CT	yes	yes		yes		yes				yes
DE										no
DC	yes	yes		yes						no
FL	yes			yes						yes
GA	yes	yes	yes							no
HI CO	yes	yes	yes	yes	yes	yes				no
HN CO	yes					yes				no
ID	yes	yes		yes		yes	yes			yes
IL		yes				yes				yes
IN	yes	yes	yes							no
IA	yes	yes		yes						no
KS	yes			yes			yes			yes
KY	yes									yes
LA	yes									yes
ME							yes		yes	no
MD	yes			yes						no
MA	yes			yes	yes					no
MI										no
MN	yes	yes	yes	yes						no
MS	yes		yes	yes		yes				no
MO	yes	yes		yes			yes			no
MT	yes	yes		yes	yes					yes
NE	yes	yes	yes	yes	yes	yes				yes
NV	yes		yes	yes						no
NH	yes		yes	yes		yes	yes		yes	yes
NJ	yes		yes	yes		yes				yes
NM		yes			yes					no
NY						yes				no
NC	yes	yes								no
ND	yes	yes								no
OH	yes	yes		yes	yes					no
OK	yes	yes	yes	yes						no
OR	yes	yes		yes	yes		yes	yes		no
PA				yes	yes					yes
RI	yes		yes	yes		yes				no
SC	yes									yes
SD	yes	yes		yes						yes
TN	yes		yes	yes		yes				no
TX				yes						no
UT	yes	yes								yes
VT				yes		yes				no
VA	yes			yes						no
WA				yes	yes	yes				no
WV	yes	yes		yes	yes					no
WI	yes		yes			yes				yes
WY		yes								yes

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q42	Q43	Q44	Q45
State	Are portions of the IAAO Standard on Ratio Studies in your statutes or rules?	When testing reliability for level of appraisal, which is used to determine compliance?	Hypothetical: Legal requirement to fall between 90 and 110%. If a sample has a median ratio of 85%, with a 95% confidence interval (CI) that falls in the range of 76 to 94%, would your agency rule this result to be in compliance with statutory appraisal level requirements?	Hypothetical (cont.): If the CI overlaps but the median continues out of compliance for several years, what action would you take? Lower the CI and reevaluate; Base compliance decision on the point estimate; Continue to find in compliance; Other (check all that apply)
AL	yes		No, only point estimate used	
AK	yes	point estimate	No, only point estimate used	other
AZ	no	both	No, only point estimate used	
AR	yes	both	Yes, the CI overlaps	continue to find in compliance
CA		point estimate	No, only point estimate used	
CO	yes	point estimate	No, only point estimate used	
CT	yes			
DE	no		No, CI fails to overlap 100%	
DC	yes	point estimate	No, only point estimate used	
FL		both	No, CI fails to overlap 100%	
GA	yes	confidence interval	Yes, the CI overlaps	
HI CO	yes	point estimate		
HN CO	no	point estimate	No, only point estimate used	
ID	yes	confidence interval	Yes, the CI overlaps	lower level of confidence
IL	yes	point estimate	No, only point estimate used	
IN	yes	point estimate	No, only point estimate used	
IA	yes	point estimate	No, only point estimate used	
KS	yes	both	Yes, the CI overlaps	continue to find in compliance
KY	yes	confidence interval	Yes, the CI overlaps	lower level of confidence
LA		point estimate	No, only point estimate used	
ME	no		No, only point estimate used	
MD	no	point estimate	No, only point estimate used	
MA	yes		No, only point estimate used	
MI	no	point estimate	No, only point estimate used	
MN	yes	point estimate	No, only point estimate used	
MS	no	point estimate	No, only point estimate used	other
MO	yes	both	Yes, the CI overlaps	continue to find in compliance
MT	yes	both	Yes, the CI overlaps	
NE	yes	both	Yes, the CI overlaps	other
NV	no	point estimate	No, only point estimate used	continue to find in compliance
NH	no	both	Yes, the CI overlaps	continue to find in compliance
NJ	yes	both	Yes, the CI overlaps	other
NM	yes			lower level of confidence
NY	yes	both	No, CI fails to overlap 100%	
NC	yes	point estimate	No, only point estimate used	
ND	no	point estimate	No, only point estimate used	
OH	yes	point estimate	No, only point estimate used	
OK	yes	point estimate	No, only point estimate used	
OR	yes	point estimate	No, only point estimate used	
PA	no	confidence interval	No, CI fails to overlap 100%	other
RI	no			
SC	no	confidence interval	No, only point estimate used	
SD	yes			continue to find in compliance
TN	yes	point estimate	No, only point estimate used	
TX	yes	confidence interval	Yes, the CI overlaps	other
UT	yes	both	No, CI fails to overlap 100%	
VT	yes	point estimate	No, only point estimate used	
VA	no	point estimate	No, only point estimate used	
WA	no			
WV	yes	point estimate	No, only point estimate used	
WI	yes	point estimate	No, only point estimate used	
WY	no	point estimate	No, only point estimate used	

Question No. >	Q47					Q48	
State	Hypothetical (cont.): How would your response differ if the sample COD (or other measure of uniformity) also showed very poor uniformity? No change; May lower level of confidence; May use point estimate (PE) only to evaluate level; May review previous years' level measures; May use additional information, e.g., sample size					Do you have specific standards or requirements for assessment uniformity as measured by the COD?	Is your COD standard the same or less stringent or more stringent than the IAAO 1999 standard?
AL						yes	same
AK					may use	yes	same
AZ			may use PE			yes	less
AR					may use	yes	less
CA						no	n/a
CO			may use PE			yes	same
CT						yes	same
DE						no	n/a
DC			may use PE			yes	same
FL		may lower	may use PE		may use	yes	same
GA			may use PE	may review		yes	same
HI CO			may use PE			yes	less
HN CO			may use PE	may review	may use	yes	more
ID	no change					yes	less
IL					may use	yes	less
IN					may use	yes	same
IA			may use PE			yes	less
KS	no change					yes	less
KY				may review	may use	yes	less
LA			may use PE			yes	same
ME					may use	yes	same
MD						no	n/a
MA						yes	same
MI					may use	yes	less
MN		may lower	may use PE	may review	may use	yes	same
MS	no change					yes	same
MO			may use PE			yes	less
MT					may use	yes	same
NE				may review		no	same
NV	no change					no	n/a
NH	no change					yes	same
NJ			may use PE	may review	may use	yes	more
NM				may review	may use	yes	more
NY					may use	yes	more
NC			may use PE			yes	more
ND			may use PE		may use	no	n/a
OH					may use	no	n/a
OK			may use PE			yes	same
OR			may use PE			yes	same
PA				may review		yes	same
RI						no	n/a
SC		may lower				yes	more
SD	no change					yes	less
TN			may use PE			no	n/a
TX					may use	no	n/a
UT				may review		yes	same
VT			may use PE			yes	same
VA	no change					no	n/a
WA					may use	no	n/a
WV			may use PE			yes	same
WI			may use PE			no	n/a
WY				may review		yes	same

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q53	Q54	Q55	Q57	Q58	Q59		
State	If you do not use the COD, what uniformity measure is used?	Has a lower limit on the COD been established as an indicator of possible sales chasing?	Do you have standards for price-related bias as measured by the PRD or other statistical tests?	If you have standards for price-related bias, which do you use?	Can your agency initiate any action as a result of assessment uniformity?	What actions can your agency initiate as a result of assessment uniformity conditions? Order reappraisal; Withhold funding; Other		
AL		no	yes	0.98–1.03	yes	order reappraisal		
AK		no	yes	0.98–1.03	yes			other
AZ		no	no		yes			other
AR		no	no		yes	order reappraisal	withhold	
CA		n/a	no		no			
CO		no	yes	0.98–1.03	yes	order reappraisal		
CT		no	yes	0.98–1.03	no			
DE	none	no	no		no			
DC		no	yes	0.98–1.03	no			
FL		no	yes	0.98–1.03	yes			other
GA		no	yes	0.95–1.10	no			
HI CO		no	yes	0.98–1.03	yes			other
HN CO		no	yes	0.98–1.03	no			
ID		no	yes	0.98–1.03	no			
IL		no	yes	0.98–1.03	yes	order reappraisal		
IN		no	yes	0.98–1.03	yes	order reappraisal		other
IA		no	yes	0.90–1.10	yes	order reappraisal		
KS		no	yes	0.98–1.03	yes	order reappraisal	withhold	other
KY		no	no		yes	order reappraisal		
LA		no	no		yes	order reappraisal		
ME		no	no		yes	order reappraisal		
MD		n/a	no		yes			other
MA		no	no		yes	order reappraisal		
MI		no	yes	0.95–1.05	yes	order reappraisal		
MN		no	yes	0.98–1.03	yes	order reappraisal		
MS		no	yes	0.92–1.08	yes	order reappraisal	withhold	
MO		no	yes	0.98–1.03	no			
MT		no	yes	0.98–1.03	yes			other
NE		yes	yes	0.98–1.03	yes	order reappraisal		
NV	COV	n/a	no		no			
NH		no	no		yes	order reappraisal		other
NJ		no	yes	0.98–1.03	yes	order reappraisal		
NM		no	yes	0.98–1.03	yes	order reappraisal	withhold	
NY		no	yes	0.98–1.03	no			
NC		no	no		no			
ND	none	n/a	no		yes	order reappraisal		
OH		n/a	yes	0.98–1.03	no			
OK		no	no		no			
OR		no	yes	0.98–1.03	yes	order reappraisal	withhold	
PA		no	no		no			
RI	none	no	no		no			
SC		no	no		no			
SD		no	no		no			
TN	none	n/a	no		no			
TX	none	n/a	no		no			
UT		no	yes	0.98–1.03	yes	order reappraisal		
VT		no	no		yes	order reappraisal		
VA	none	n/a	no		no			
WA	none	n/a	no		no			
WV		no	no		yes			other
WI	none	n/a	no		no			
WY		no	yes	0.98–1.03	yes	order reappraisal		other

Question No. >	Q61	Q62	Q63	Q64	Q65	
State	Do you calculate reliability measures on uniformity statistics around the COD, PRD, both, neither?	If you initiate action as a result of assessment uniformity conditions, what indicator is action dependent upon?	Are you required to annually value categories of property at 100% of current market value?	Is property not required to be appraised during a given year required to have its value updated in interim years?	Is property appraised at a uniform base year (e.g., 2001)?	If yes, indicate most recent base year used.
AL	neither		yes			
AK	neither	point estimate	yes	yes		
AZ	COD	confidence interval	yes			
AR	COD	confidence interval	no	no	no	
CA			no		no	
CO	COD	point estimate	yes			
CT	neither	n/a	no	no	no	
DE			no	no	yes	1987
DC	neither	n/a	yes			
FL	neither	other	yes			
GA	neither	n/a	yes			
HI CO	both	confidence interval	yes			
HN CO	neither	n/a	yes			
ID	COD	n/a	yes			
IL	both	point estimate	no	yes	no	
IN	neither	point estimate	yes			
IA	both	confidence interval	yes			
KS	both	confidence interval	yes			
KY	COD		no	no	no	
LA	neither	point estimate	no	no	yes	2007
ME	COD	n/a	no	no	no	
MD	neither	n/a	no	no	no	
MA	neither	n/a	yes			
MI	neither	n/a	no	yes	yes	
MN	both	confidence interval	yes			
MS			yes		yes	
MO	neither	n/a	no	no	yes	2007
MT	both	n/a	no	no	yes	2002
NE	both	point estimate	yes			
NV	COD	n/a	no	yes	no	
NH	both	confidence interval	yes			
NJ	both	confidence interval	yes			
NM	neither	n/a	yes			
NY	neither	n/a	no	no	no	
NC	neither	confidence interval	no	no	yes	
ND	neither	point estimate	yes			
OH	neither		no	yes	no	
OK	neither	other	yes			
OR	neither	point estimate	yes			
PA	both	point estimate	yes			
RI	neither		no	no	yes	
SC	neither	point estimate	yes			
SD	neither	n/a	yes			
TN	neither	n/a	no	no	yes	
TX	neither	n/a	yes			
UT	neither	point estimate	yes			
VT	neither	n/a	yes			
VA	both	n/a	yes			
WA	neither		yes			
WV	COD	point estimate	no	yes	yes	
WI	both	point estimate	no	no	yes	
WY	both	confidence interval	yes			

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q68	Q69	Q70	
	Is there a uniform fractional assessment ratio for each category of property in every local assessment jurisdiction?	If there is a uniform fractional assessment ratio for each category of property, how are the rates set?	For residential properties, is the required assessment ratio set at 100% of market value?	If no, what is your assessment ratio
State				
AL	Yes, but ratios may differ by category	constitution	no	10%
AK	Other, required to be at 100%		yes	
AZ	Yes, but ratios may differ by category	statute	no	10%
AR	Other, required to be at 100%		no	20%
CA	Other, required to be at 100%		no	
CO	Yes, but ratios may differ by category	constitution	no	7.96%
CT	Yes, but ratios may differ by category	statute	no	70%
DE	No, established by each locality		no	60%
DC	Other, required to be at 100%		yes	
FL	Other, required to be at 100%		no	
GA	Yes, but ratios may differ by category	statute	no	40%
HI CO	Other, required to be at 100%			
HN CO	No, established by each locality		yes	
ID	Other, required to be at 100%		yes	
IL	No, established by each locality		no	33.33%
IN	Other, required to be at 100%		yes	
IA	Other, required to be at 100%		no	45%
KS	Yes, but ratios may differ by category	constitution	no	11.5%
KY	Other, required to be at 100%		yes	
LA	Yes, but ratios may differ by category	various	no	10%
ME	No, established by each locality		yes	
MD	Other, required to be at 100%		yes	
MA	Other, required to be at 100%		yes	
MI	Other, required to be at 100%		no	50%
MN	Other, required to be at 100%		no	varies
MS	Yes, but ratios may differ by category	statute	no	10%–15%
MO	Yes, but ratios may differ by category	statute	no	19%
MT	Yes, but ratios may differ by category	statute	no	
NE	Yes, but ratios may differ by category	statute	yes	
NV	Other, required to be at 100%		no	35%
NH	Other, required to be at 100%		yes	
NJ	Other, required to be at 100%		yes	
NM	Other, required to be at 100%		yes	
NY	No, established by each locality	various	no	varies
NC	Other, required to be at 100%		yes	
ND	Other, required to be at 100%		yes	
OH	Other, required to be at 100%		yes	
OK	Other, required to be at 100%		no	11%–13.5%
OR	Yes, but ratios may differ by category	constitution	no	
PA	No, established by each locality		yes	
RI	Other, required to be at 100%		yes	
SC	Yes, but ratios may differ by category	constitution	no	4%
SD	Other, required to be at 100%		yes	
TN	Yes, but ratios may differ by category	statute	no	25%
TX	Other, required to be at 100%		yes	
UT	Other, required to be at 100%		yes	
VT	Other, required to be at 100%		yes	
VA	Other, required to be at 100%		yes	
WA	Other, required to be at 100%		yes	
WV	Other, required to be at 100%		yes	
WI	Yes, but ratios may differ by category	statute	yes	
WY	Yes, but ratios may differ by category	statute	no	9.5%



Question No. >	Q71		Q72		Q73		Q74	
State	For farmland, ranchland, and timberland, is the required assessment ratio set at 100% of market value?	If no, what is your farmland ratio?	For commercial property, is the required assessment ratio set at 100% of market value?	If no, what is your commercial ratio?	For industrial property, is the required assessment ratio set at 100% of market value?	If no, what is your industrial ratio?	For public utilities, is the required assessment ratio set at 100% of market value?	If no, what is your public utility ratio?
AL	no	10%	no	20%	no	20%	no	30%
AK	no		yes		yes		yes	
AZ	no	16%	no	23%	no	23%	no	23%
AR	no	20%	no	20%	no	20%	no	20%
CA	no							
CO	no	29%	no	29%	no	29%	no	29%
CT	no	70%	no	70%	no	70%	no	70%
DE	no	60%	no	60%	no	60%	no	60%
DC	no		yes		yes		yes	
FL	no		yes		yes		yes	
GA	no	40%	no	40%	no	40%	no	
HI CO	yes		yes		yes		yes	
HN CO	yes		yes		yes		yes	
ID	no		yes		yes		yes	
IL	no	33.33%	no	33.33%	no	33.33%	no	33.33%
IN	no		yes		yes		yes	
IA	no		yes		yes		yes	
KS	no	30%	no	25%	no	25%	no	30%
KY	no		yes		yes		yes	
LA	no		no	15%	no	15%		
ME	no		no		no		no	
MD	no		yes		yes		yes	
MA	no		yes		yes		yes	
MI	no	50%	no	50%	no	50%	no	50%
MN	no		yes		yes		yes	
MS	no	15%	no	15%	no	15%	no	30%
MO	no	12%	no	32%	no	32%	no	32%
MT	no		no		no		no	
NE	no	75%	yes		yes		yes	
NV	no	35%	no	35%	no	35%	no	35%
NH	no		yes		yes		yes	
NJ	no		yes		yes		yes	
NM	no		yes		yes		yes	
NY	no	varies	no	varies	no	varies	no	varies
NC	no		yes		yes		yes	
ND	no		yes		yes		yes	
OH	no		yes		yes		yes	
OK	no	11%–13.5%	no	11%–13.5%	no	11%–13.5%	no	12%–23%
OR	no		no		no		no	
PA	yes		yes		yes		yes	
RI	no		yes		yes		yes	
SC	no		no	6%	no	10.5%	no	10.5%
SD	yes		yes		yes		yes	
TN	no	25%	no	40%	no	40%	no	55%
TX	no		yes		yes		yes	
UT	no		yes		yes		yes	
VT	no		yes		yes		yes	
VA	yes		yes		yes		yes	
WA	no		yes		yes		yes	
WV	no		yes		yes		yes	
WI	no		yes		yes		no	
WY	no		no	9.5%	no	11.5%	no	11.5%

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q75		Q76	Q77		Q78	
State	For railroads, is the required assessment ratio set at 100% of market value?	If no, what is your railroad ratio?	For other real property, is the required assessment ratio set at 100% of market value?	For personal property, is the required assessment ratio set at 100% of market value?	If no, what is your personal property ratio?	For farmland, do you assess at 100% of productivity or legislated value?	For farmland, do you assess at some other % of productivity value or legislated value?
AL	no	20%	no	no	20%	no	10%
AK	yes		yes	yes			
AZ	no	21%	no	no	23%	yes	16%
AR	no	20%	no	no	20%	no	20%
CA							
CO	no	29%	no	no	29%	yes	
CT	no	70%	no				
DE	no	60%	no	no			
DC	yes		yes	no			
FL	yes		yes	yes		yes	
GA	no		no	no	40%	no	40%
HI CO	no		yes			yes	
HN CO	no		yes	no			
ID	yes		yes	yes		yes	
IL	no	33.33%	no			yes	
IN	yes		yes	yes		yes	
IA	yes		yes	no		yes	
KS	no	25%	no	no	30%	no	30%
KY	yes		yes	yes			
LA			no			yes	
ME	no		no	no		yes	
MD	yes		yes	yes		yes	
MA	yes		yes	yes			
MI	no	50%	no	no	50%	no	50% market value
MN	yes		yes	yes		yes	
MS	no	30%	no	no	15%	yes	
MO	no	32%	no	no	33.33%	no	12% market value
MT	no		no	no	3.00%	yes	
NE	yes		yes	no		no	75% market value
NV	no	35%	no	no		no	35% taxable value
NH	yes		yes	no			varies
NJ	yes		yes	yes		yes	
NM	yes		yes	no		yes	
NY	no	varies	no			yes	
NC	yes		yes	yes		yes	
ND	yes		yes	no		yes	
OH	yes		yes	no		yes	
OK	no	11.84%	no	no	10%–15%	no	11%–13.5%
OR	no		no	yes		yes	
PA	yes		yes	yes			
RI	yes		yes	no		yes	
SC	no	9.5%	no	no	10.5%	yes	
SD	yes		yes	no			
TN	no	55%	no	no	30%	no	25%
TX	yes		yes	yes		yes	
UT	yes		yes	yes		yes	
VT	yes		yes	yes		yes	
VA	yes		yes	yes			
WA	yes		yes	yes		yes	
WV	yes		yes	no	60%		
WI	no		yes	yes		yes	
WY	no		no	yes		yes	

Question No. >	Q79		Q80	Q81	Q83	Q85
State	For timberland, do you assess at 100% of productivity value or legislated value?	For timberland, do you assess at some other % of productivity value or legislated value?	Regarding sample size, what is the smallest sample you will use to evaluate any category of property?	Do you establish sample size quotas or goals?	Do you identify and trim outlier ratios?	Is there a limit on the maximum % of sales that can be trimmed out of a sample?
AL		10%		yes	no	
AK	yes		less than 5	no	yes	no
AZ	no	23%	20 to 30	no	yes	no
AR	no	20%	more than 30	no	yes	no
CA				yes	yes	
CO			30 or more	no	yes	no
CT			less than 5	no	no	
DE				no	no	
DC			20 to 30	no	no	
FL	yes		20 to 30	yes	yes	no
GA	no	40%	10 to 19	no	yes	no
HI CO	yes		5 to 9	no	yes	no
HN CO			5 to 9	no	no	
ID	yes		5 to 9	no	yes	no
IL	yes		20 to 30	no	yes	no
IN	yes		5 to 9	no	no	
IA	yes		2% or 10	yes	no	
KS	no	30%	less than 5	yes	yes	20%
KY			20 to 30	no	yes	no
LA	yes			no	yes	no
ME	yes		10 to 19	no	yes	no
MD	yes		no set limit	no	yes	no
MA			5 or more	yes	no	
MI	no	50% market value	10 to 19	no	yes	no
MN	yes		5 to 9	no	yes	5%
MS	no	15%	5 to 9	no		
MO	yes		more than 30	no	no	
MT	yes		20 to 30	no	yes	no
NE	no	75% market value	no set limit	no	no	
NV	no	35% taxable value	5 to 9	yes	no	
NH		varies	5 to 9	yes	yes	no
NJ	yes		less than 5	no	no	
NM			more than 30	no	yes	no
NY	yes		less than 5	no	yes	no
NC	yes		more than 30	yes	no	
ND			30 or 10%	yes	no	
OH	yes		20 to 30	no	yes	no
OK	no	11%–13.5%	10 to 19	yes	yes	
OR			varies	no	yes	no
PA			more than 30	yes	yes	15%
RI	yes		less than 5	no	yes	no
SC	yes		less than 5	no	yes	no
SD			10 to 19	no	no	
TN	no	25% market value	less than 5	no	yes	no
TX	yes		5 to 9	yes	yes	
UT	yes		10 to 19	no	no	
VT	yes		less than 5	no	yes	no
VA			5 to 9	no	yes	no
WA	yes		5 to 9	no	yes	5%
WV			3	no	yes	
WI			less than 5	no	yes	no
WY	yes		varies	no	yes	5%

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q86	Q88	Q89	Q92	Q93
State	Do you attempt to determine sample representativeness?	Do you have statutory requirements to check for sales chasing? Note if you have a nonstatutory requirement.	Do you test for sales chasing?	Can a taxing district or third party initiate legal action as a result of your ratio study?	Is commercial machinery and equipment considered taxable personal property?
AL	yes	no	yes	no	yes
AK	no	no	no	no	yes
AZ	no	no	no	yes	yes
AR	no	nonstatutory	yes	yes	yes
CA	no		no		yes
CO	no	nonstatutory	yes	no	yes
CT	no	no	no	yes	yes
DE	no	no	no		no
DC	no	no	no	no	no
FL	yes	no	yes	yes	yes
GA	yes	no	yes	yes	yes
HI CO	no	no	yes	no	no
HN CO	yes	no	yes	no	no
ID	yes	nonstatutory	yes	no	yes
IL	no	no	no	yes	no
IN	no	nonstatutory	no	yes	yes
IA	no	no	no	yes	no
KS	yes	no	no	no	yes
KY	yes	nonstatutory	no	no	yes
LA	yes	no	yes		yes
ME	yes	no	yes	yes	yes
MD	no	no	no	no	yes
MA	no	no	no		yes
MI	yes	nonstatutory	yes	yes	yes
MN	yes	yes	yes	yes	no
MS	no	no	yes	no	yes
MO	no	no	yes	no	yes
MT	no	no	yes	no	yes
NE	yes	no	yes	yes	yes
NV	yes	no	no	no	yes
NH	no	no	no	no	no
NJ	no	no	no	yes	yes
NM	no	no	yes	no	yes
NY	no	no	yes	yes	no
NC	no	yes	yes	yes	yes
ND	no	no	no	no	no
OH	no	no	yes	yes	no
OK	no	no	no	no	no
OR	yes	nonstatutory	no	yes	no
PA	yes	nonstatutory	yes	yes	yes
RI	no	no	no	yes	yes
SC	no	no	no	yes	yes
SD	no	nonstatutory	yes	yes	no
TN	yes	nonstatutory	yes	yes	yes
TX	yes	yes	yes	yes	yes
UT	no	no	yes	yes	yes
VT	no	no	no	yes	yes
VA	yes	no	no	yes	yes
WA	yes	no	no	no	yes
WV	no	nonstatutory	yes		yes
WI	yes	no	yes	yes	yes
WY	yes	nonstatutory	yes	yes	yes

Question No. >	Q94	Q95	Q97	Q100
State	Is a ratio study conducted for personal property?	Does the ratio study for personal property use sales, appraisals, or both?	For your appraisals, what techniques do you use: Depreciation or economic life tables; Iowa curves; Other?	Do you have a statutory exemption for intangible personal property?
AL	no			yes
AK	no			yes
AZ	no			no
AR	yes	appraisals	tables	yes
CA	yes	appraisals		yes
CO	yes	appraisals	table; curves	yes
CT	no			no
DE				yes
DC				no
FL	no			yes
GA	no			yes
HI CO				no
HN CO				no
ID	no			yes
IL				yes
IN	no			yes
IA				yes
KS	no			no
KY	no			yes
LA	no			no
ME	no			yes
MD	no			yes
MA	no			yes
MI	no			yes
MN				yes
MS	no			no
MO	no			yes
MT	no			yes
NE	no			yes
NV	yes	appraisals	tables	yes
NH				yes
NJ	no			no
NM	no			yes
NY				yes
NC	no			yes
ND				yes
OH				yes
OK	no			yes
OR				yes
PA	no			no
RI	no			yes
SC	no			yes
SD				yes
TN	no			yes
TX	yes	appraisals	other	yes
UT	no			no
VT	no			yes
VA	no			no
WA	yes	appraisals	tables	yes
WV	no			yes
WI	no			yes
WY	no			yes

Appendix C. United States 2008 Survey Results (continued)

Question No. >	Q101													
State	CAPITAL STOCK EXEMPT?	BONDS EXEMPT?	DEPOSITS EXEMPT?	CONTRACTS AND CONTRACT RIGHTS EXEMPT?	COPYRIGHTS EXEMPT?	GOODWILL EXEMPT?	CUSTOMER LISTS EXEMPT?	CUSTOM COMPUTER PROGRAMS EXEMPT?	LICENSES EXEMPT?	PATENTS EXEMPT?	RIGHTS-OF-WAY EXEMPT?	TRADEMARKS EXEMPT?	TRADE SECRETS EXEMPT?	OTHER EXEMPT?
AL														
AK	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		
AZ														
AR	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
CA														
CO	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
CT														
DE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
DC														
FL	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
GA	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
HI CO														
HN CO														
ID	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
IL	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
IN	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes
IA	yes	yes	yes	yes	yes		yes	yes	yes	yes		yes	yes	
KS														
KY														
LA														
ME														
MD	yes	yes						yes						
MA	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
MI														
MN	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
MS														
MO														
MT	yes	yes	yes	yes	yes		yes	yes	yes	yes		yes	yes	
NE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
NV	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
NH	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
NJ														
NM	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes
NY	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
NC	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
ND	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes
OH	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	
OK	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
OR	yes	yes	yes	yes	yes	yes	yes	yes		yes		yes	yes	
PA														
RI	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	
SC	yes	yes	yes	yes	yes	yes	yes		yes	yes		yes	yes	
SD	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes
TN	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes	yes	
TX	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
UT														
VT														
VA														
WA	yes	yes	yes	yes	yes	yes			yes	yes		yes		
WV	yes	yes												
WI	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	
WY	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

## Appendix D. Canadian 2008 Survey Results

Question No. >		Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q11
Province/Territory	Abbreviation	How often does your jurisdiction conduct ratio studies?	Who conducts your ratio study?	Does your study include sales or appraisals or both?	If your study includes both, do you combine?	Who performs the sales sample selection?	Who conducts the sales validation (screening)?	If province does not conduct the validation, does it audit the process?	Do you perform procedural audits of local assessment procedures/practices?
Alberta	AB	annually	province	both	yes	local	local	yes	yes
British Columbia	BC	annually	province	sales	n/a	province	province		yes
Manitoba	MB	annually	province	sales	n/a	province	local	yes	yes
New Brunswick	NB	annually	province	sales	n/a	province	n/a	yes	yes
Newfoundland	NL	every 3 yrs.	province	sales	n/a	province	province		no
Northwest Territories	NT	every 4 yrs.	contracted	sales	n/a	contractor	contracted service provider	no	yes
Nova Scotia	NS	annually	province	sales	n/a	province	province		no
Ontario	ON	every 4 yrs.	province	sales	n/a	province	province		yes
Prince Edward Island	PEI	annually	province	sales	n/a	province	province		no
Quebec	QC	annually	province	sales	n/a	local	local	no	no
Saskatchewan	SK	annually	province	sales	n/a	both	both	no	no

Question No. >		Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q20	
Province/Territory		Is the procedural audit used instead of a ratio study?	Is the procedural audit used in addition to ratio study information?	Is the procedural audit used solely to advise or assist the local appraisal offices?	Can equalization or reappraisal be ordered as a result of procedural audits?	Do you have a disclosure law?	Is disclosure made to province or local or both?	Is disclosure made during deed recording?	Is a method in place to track a disclosure document for every recorded sale?	For disclosure, do you use a sale price statement, questionnaire, or both?
AB		no	yes	yes	yes	yes	both	yes	yes	statement
BC		no	no	yes	yes	yes	province	yes	yes	both
MB		no	yes	yes	yes	yes	province	yes	yes	statement
NB		no	yes	no	yes	yes	local	yes	yes	other
NL						yes	province	yes	yes	other
NT		yes	no	yes	no	yes	territory	yes	yes	statement
NS						yes	local	yes	yes	statement
ON		no	yes		no	yes	province	yes	yes	both
PEI						yes	province	yes	yes	other
QC						yes	province	yes	yes	statement
SK						yes	both	yes	yes	both

Question No. >		Q21	Q22	Q23	Q24	Q25							
Province/Territory		What office is responsible for initially accepting the disclosure document?	Are disclosed sale prices confidential?	Do you have a transfer tax or deed stamp?	Do you have a mandatory recordation law?	Do you have authority to adjust sale prices? If yes, for:	TIME?	FINANCING?	PERSONAL PROPERTY?	CLOSING COSTS?	BROKERAGE FEES?	INTANGIBLE PERSONAL PROPERTY?	OTHER?
AB		recorder	no	yes	yes	yes	yes	yes	yes				yes
BC		recorder	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
MB		recorder		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
NB		recorder	yes	yes	yes	no							
NL		recorder	no	yes	yes	yes	yes	yes	yes				
NT		recorder	no	yes	yes	no							
NS		recorder	yes	yes	yes	yes	yes	yes	yes				
ON		recorder	no	yes	yes	yes							
PEI		recorder	no	yes	no	yes	yes						
QC		recorder	no	yes	yes	yes	yes		yes			yes	
SK		recorder	no	yes	yes	no							

Appendix D. Canadian 2008 Survey Results (continued)

Question No. >	Q26								Q27
Province/ Territory	Do you make adjustments to sales prices? If yes, do you adjust for:	TIME?	FINANCING?	PERSONAL PROPERTY?	CLOSING COSTS?	BROKERAGE FEES?	INTANGIBLE PERSONAL PROPERTY?	OTHER?	Do you make blanket or global adjustments to sales prices?
AB	yes	yes	yes	yes				yes	no
BC	yes	yes	yes	yes			yes		no
MB	yes		yes	yes	yes	yes	yes	yes	no
NB									no
NL	yes	yes		yes					no
NT									no
NS	yes		yes	yes					no
ON	yes	yes		yes					no
PEI	yes	yes							no
QC	yes	yes		yes			yes		no
SK									no

Question No. >	Q30							Q31
Province/ Territory	Is your ratio study used to order adjustments to locally determined assessed values?	Is your ratio study used to equalize provincial funding of local jurisdictions?	Is your ratio study used to order local jurisdictions to reappraise?	Is your ratio study used to advise provincial or local jurisdictions of assessment conditions?	Is your ratio study used to assist mass appraisal programs?	Is your ratio study used to approve tax assessment roll?	Is your ratio study used to adjust or equalize centrally determined assessed values?	Do you have authority to order adjustments to, or reappraisal of, locally determined values?
AB		yes						yes
BC				yes	yes			yes
MB				yes	yes			yes
NB	yes	yes		yes				no
NL					yes			yes
NT				yes				no
NS						yes		no
ON				yes				no
PEI				yes	yes			no
QC						yes		no
SK				yes		yes		no

Question No. >	Q32	Q33	Q35		Q36	Q37
Province/ Territory	How many local jurisdictions have been issued orders to adjust values in the past three years?	How many local jurisdictions have been issued orders to reappraise values in the past three years?	What is your appraisal level standard?	Do you have an appraisal level standard that allows some variance from your statutorily required appraisal level?	If yes, is the appraisal level variance set by statute?	Are allowances made for sample reliability using statistical tests, such as confidence intervals?
AB	0	0	0.95–1.05	yes	yes	no
BC	0	0	0.90–1.10	yes	yes	yes
MB	0	0	0.90–1.10	yes	yes	yes
NB				no	n/a	n/a
NL	0	0	0.90–1.10	yes	yes	yes
NT				no	n/a	no
NS			0.90–1.10	yes	yes	no
ON				no	n/a	n/a
PEI			1.00	no	yes	yes
QC			0.95–1.05	yes	yes	yes
SK			0.98–1.02	yes	yes	no



Question No. >	<b>Q39</b>								
Province/ Territory	Do you calculate the ARITHMETIC MEAN as measure of a level?	Is the arithmetic mean used for direct equalization?	Is the arithmetic mean used for indirect equalization?	Do you calculate the MEDIAN as measure of a level?	Is the median used for direct equalization?	Is the median used for indirect equalization?	Do you calculate the WEIGHTED MEAN as measure of a level?	Is the weighted mean used for direct equalization?	Is the weighted mean used for indirect equalization?
AB				yes		yes			
BC				yes					
MB	yes			yes			yes		
NB									
NL	yes			yes			yes		
NT	yes		yes						
NS	yes			yes			yes		
ON									
PEI	yes			yes					
QC				yes	yes				
SK				yes					

Question No. >	<b>Q39 (continued)</b>			<b>Q40</b>	<b>Q42</b>	<b>Q43</b>
Province/ Territory	Do you calculate the GEOMETRIC MEAN as measure of a level?	Is the geometric mean used for direct equalization?	Is the geometric mean used for indirect equalization?	Do you test the distribution of ratios to see if it is statistically normal?	Have you incorporated portions of the IAAO <i>Standard on Ratio Studies</i> in your statutes or rules?	When testing reliability for level of appraisal, which is used to determine compliance?
AB				no	yes	point estimate
BC				yes	no	both
MB				yes	no	both
NB				no	yes	point estimate
NL				no	yes	confidence interval
NT				no	no	
NS				yes	no	
ON				yes	yes	
PEI				yes	no	confidence interval
QC				yes	yes	confidence interval
SK				no	no	

Question No. >	<b>Q44</b>	<b>Q45</b>			
Province/ Territory	Hypothetical: Legal requirement to fall between 90 and 110%. If a sample has a median ratio of 85%, with a 95% confidence interval (CI) that falls in the range of 76 to 94%, would your agency rule this result to be in compliance with statutory appraisal level requirements?	Hypothetical (cont.): If the CI overlaps but the median continues out of compliance for several years, what action would you take? Lower the CI and reevaluate; Base compliance decision on the point estimate (PE); Continue to find in compliance; Other (check all that apply)			
AB	No, only point estimate used				
BC	Yes, the confidence interval overlaps				
MB	No, confidence interval fails to overlap 100%				
NB	No, only point estimate used				
NL	Yes, the confidence interval overlaps				other
NT		lower			
NS	Yes, the confidence interval overlaps				
ON				continue	
PEI	Yes, the confidence interval overlaps	lower	PE	continue	other
QC	Yes, the confidence interval overlaps				
SK					

Appendix D. Canadian 2008 Survey Results (continued)

Question No. >	Q47				Q48		Q53
Province/ Territory	Hypothetical (cont.): How would your response differ if the sample COD (or other measure of uniformity) also showed very poor uniformity? No change; May lower level of confidence; May use point estimate only to evaluate level; May review previous years' level measures; May use additional information, e.g., sample size				Do you have specific standards or requirements for assessment uniformity as measured by the COD?	Is your COD standard the same or less stringent or more stringent than the IAAO 1999 standard?	If you do not use the COD, what uniformity measure is used?
AB				may use	yes	same	
BC		may lower			yes	same	
MB				may use	yes	same	
NB				may use	yes	same	
NL				may use	yes	same	
NT	no change				no	n/a	no measure
NS				may use	yes	more	
ON	no change				yes	more	
PEI			may review	may use	yes	same	
QC			may use PE		no	n/a	
SK					no	n/a	no measure

Question No. >	Q54	Q55	Q57	Q58	Q59		Q61
Province/ Territory	Has a lower limit on the COD been established as an indicator of possible sales chasing?	Do you have standards for price-related bias as measured by the PRD or other statistical tests?	If you have standards for price-related bias, which do you use?	Can your agency initiate any action as a result of assessment uniformity?	What actions can your agency initiate as a result of assessment uniformity conditions? Order reappraisal; Withhold funding; Other		Do you calculate reliability measures on uniformity statistics around the COD, PRD, both, neither?
AB	no	no		yes		other	neither
BC	no	yes	0.98–1.03	no			both
MB	no	yes	0.98–1.03	no			both
NB	no	yes	0.98–1.03	yes	order reap.		neither
NL	no	yes	0.98–1.03	yes	order reap.		both
NT	n/a	no		no			neither
NS	no	yes	0.95–1.05	no			neither
ON	no	yes	0.98–1.03	yes			COD
PEI	no	no		yes	order reap.		both
QC	n/a	no		no			neither
SK	n/a	no		no			neither

Question No. >	Q62	Q63	Q64	Q65		Q68
Province/ Territory	If you initiate action as a result of assessment uniformity conditions, what indicator is action dependent upon?	Are local jurisdictions required to annually value categories of property at 100% of current market value?	Is property not required to be appraised during a given year required to have its value updated in interim years?	Is property appraised at a uniform base year (e.g., 2001)?	If yes, indicate most recent base year used.	Is there a uniform fractional assessment ratio for each category of property in every local assessment jurisdiction?
AB	n/a	yes				Other, required to be at 100%
BC		no	no	yes	2007	Other, required to be at 100%
MB	n/a	no	yes	yes	2003	Other, required to be at 100%
NB	point estimate	yes				Other, required to be at 100%
NL	confidence interval	yes				Other, required to be at 100%
NT		no	no	yes	2007	No, established by each locality
NS		yes				Other, required to be at 100%
ON	confidence interval	no	yes	yes	2005	Other, required to be at 100%
PEI	confidence interval	no	yes	yes	1979	No, established by each locality
QC	point estimate	no	no	no		No, established by each locality
SK	n/a	no	no	yes	2002	Other, required to be at 100%

Question No. >	Q70		Q71		Q72		Q73	
Province/ Territory	For residential properties, is the required assessment ratio set at 100% of market value?	If no, what is your assessment ratio	For farmland, ranchland, and timberland, is the required assessment ratio set at 100% of market value?	If no, what is your farmland ratio?	For commercial property, is the required assessment ratio set at 100% of market value?	If no, what is your commercial ratio?	For industrial property, is the required assessment ratio set at 100% of market value?	If no, what is your industrial ratio?
AB	yes		no		yes		yes	
BC	yes		no		yes		yes	
MB	yes		yes		yes		yes	
NB	yes		no		yes		yes	
NL	yes		yes		yes		yes	
NT	yes		no		yes		yes	
NS	yes		yes		yes		yes	
ON	yes		no		yes		yes	
PEI	no		no		no		no	
QC	yes		yes		yes		yes	
SK								

Question No. >	Q74		Q75		Q76	Q77	
Province/ Territory	For public utilities, is the required assessment ratio set at 100% of market value?	If no, what is your public utility ratio?	For railroads, is the required assessment ratio set at 100% of market value?	If no, what is your railroad ratio?	For other real property, is the required assessment ratio set at 100% of market value?	For personal property, is the required assessment ratio set at 100% of market value?	If no, what is your personal property ratio?
AB	yes		yes		yes	no	
BC	yes		yes		yes	no	
MB	yes		yes		yes	yes	
NB	yes		yes		yes	no	
NL	yes		yes		yes	no	
NT	yes		yes		yes	no	
NS	yes		yes		yes	no	
ON	yes		yes		yes	no	
PEI	no		no		no	no	
QC	yes		yes		yes		
SK							

Question No. >	Q78		Q79		Q80	Q81	Q83
Province/ Territory	For farmland, do you assess at 100% of productivity value or legislated value?	For farmland, do you assess at some other % of productivity value or legislated value?	For timberland, do you assess at 100% of productivity value or legislated value?	For timberland, do you assess at some other % of productivity value or legislated value?	Regarding sample size, what is the smallest sample you will use to evaluate any category of property?	Do you establish sample size quotas or goals?	Do you identify and trim outlier ratios?
AB	no	regulated rates			15	no	no
BC	yes		yes		20 to 30	no	yes
MB					5 to 9	no	yes
NB			no	\$100/acre	less than 5	no	yes
NL					10 to 19	no	yes
NT	yes		yes		10 to 19	no	yes
NS					5 to 9	no	no
ON	yes		yes		5 to 9	no	yes
PEI	no	flat rates	no	flat rate	flexible	yes	yes
QC					20 to 30	no	no
SK	no	productivity	no	pasture		no	no

Appendix D. Canadian 2008 Survey Results (continued)

Question No. >	Q86	Q88	Q89	Q92	Q93	Q94
Province/ Territory	Do you attempt to determine sample representativeness?	Do you have statutory requirements to check for sales chasing? Note if you have a nonstatutory requirement.	Do you test for sales chasing?	Can a taxing district or third party initiate legal action as a result of your ratio study?	Are business or commercial machinery and equipment considered taxable personal property?	Is a ratio study conducted for personal property?
AB	no	no	yes	yes	yes	no
BC	yes	no	yes	no	no	
MB	yes	no	yes	no	no	
NB	no	no	no	no	no	
NL	no	no	yes	no	no	
NT	yes	no	no	no	no	
NS	no	no	no	no	no	
ON	no	no	yes	no	no	
PEI	yes	no	no	no	no	
QC	no	no	no	no	no	
SK	no	no	no	no	yes	no

Question No. >	Q100	Q101					
Province/ Territory	Do you have a statutory exemption for intangible personal property?	CAPITAL STOCK EXEMPT?	BONDS EXEMPT?	DEPOSITS EXEMPT?	CONTRACTS AND CONTRACT RIGHTS EXEMPT?	COPYRIGHTS EXEMPT?	GOODWILL EXEMPT?
AB	yes						
BC							
MB							
NB							
NL							
NT		yes	yes	yes	yes	yes	yes
NS							
ON	yes						
PEI							
QC							
SK							

Question No. >	Q101 (continued)							
Province/ Territory	CUSTOMER LISTS EXEMPT?	CUSTOM COMPUTER PROGRAMS EXEMPT?	LICENSES EXEMPT?	PATENTS EXEMPT?	RIGHTS-OF-WAY EXEMPT?	TRADEMARKS EXEMPT?	TRADE SECRETS EXEMPT?	OTHER EXEMPT?
AB								
BC								
MB								
NB								
NL								
NT	yes	yes	yes	yes	yes	yes	yes	
NS								
ON								
PEI								
QC								
SK								

*Appendix E. Techniques used to detect sales chasing:  
United States and Canada, 2008*

	Not Used		First Choice		Second Choice		Third Choice		Fourth Choice	
	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada	U.S.	Canada
Comparison of average value changes	3	2	13	2	7	0	0	0	0	1
Comparison of observed vs. expected distribution ratios	6	0	6	0	0	3	7	1	1	0
Use of mass appraisal techniques	8	1	3	1	2	1	3	1	1	0
Comparison of average unit values	11	1	2	1	3	1	1	1	0	0
Use of split sample technique	9	1	1	1	4	2	0	0	0	0

