

IAAO Standard on Ratio Studies

Summary of Changes: Exposure Draft 1 (August 2025) → Exposure Draft 2 (May 2026)

EXECUTIVE SUMMARY

- Exposure Draft 2 (ED2) represents revisions based on the comprehensive and constructive feedback from Exposure Draft 1 (ED1). While the overall 13-section structure is preserved, ED2 introduces important substantive additions, restores key 2013 content, and reorganizes several sections.
- KEY RESTORATION: §5.4 ED2 reinstates the four required ratio studies during a revaluation year from Section 4.2 of the 2013 study. This section was inadvertently omitted from ED1.
- KEY ADDITION: New §5.3.1 Estimating Performance for Unsold Properties added as a named subsection in the main body, reinstating Part 2 Section 9 from the 2013 Standard.
- AMENDED: The discussion of Vertical Equity Measures in subsection 8.2.1 has been updated to reflect exposure period feedback. Members and other respondents indicated that the new Vertical Equity Indicator (VEI) should not be the only vertical equity measure discussed as other options are available. New tables were added to Section 8.2.1 to compare various vertical equity measures based on a set of criteria. The new VEI statistic remains as the primary measure for compliance with IAAO standards.
- REORGANIZED: VEI calculation methodology moved from body (§8.2.1 in ED1) to Appendix E in ED2, with a dedicated worked example and summary table added.
- RENAMED: Section title 'Natural Disasters and Ratio Study Standards' → 'Natural or Other Disasters and Ratio Study Standards' (broadening scope).
- RENAMED: Personal property subsection 'Identifying Personal Property Owners and Users Not on the Roll or Property not included in Taxpayer Returns/Reports' → 'Identifying Personal Property Not on the Roll'.
- APPENDIX RESTRUCTURED: Discussion with regards to the calculation of confidence intervals was moved from Section 7.5 to Appendix D in ED2. The new Appendix D in ED2 covers calculating confidence intervals around measures of central tendency as well as the Coefficient of Dispersion (COD). Two methods for calculating COD confidence intervals are outlined. Content from Appendix C (Median Confidence Intervals for small samples) in ED1 has been incorporated into Appendix D for ED2.
- APPENDIX REORGANIZED: ED1 'Percentile Rank Observations Tables' appendix replaced by ED2 'Percentile Rank Methodologies' subsection within the VEI appendix. This change is to align with the methodologies used in statistical software packages and spreadsheet programs.
- COD Uniformity Standards (Table 7): The minimum COD floor is raised from 5.0 to 10.0 across virtually all non-residential property types between ED1 and ED2. Residential newer/homogeneous minimum is actually lowered from 5.0 to 4.0. This is one of the most significant numerical changes between the two drafts.

COD Uniformity Standards — 2013 Standard vs. ED2 (2026)

COD Uniformity Standards: A Major Change

Table 7 (COD Uniformity Standards) is one of the most substantively changed elements from the 2013 standard. The revisions address a criticism that a minimum COD of 5.0 was unrealistically low for most non-residential and heterogeneous property types.

The headline change in ED2 is a systematic raise of the minimum COD floor from 5.0 to 10.0 across virtually all property categories except residential newer/homogeneous condominiums (where the minimum is lowered from 5.0 to 4.0).

PART A — CONTENT ADDED IN ED2 (NOT IN ED1)

1. Key Content Restored from 2013

- ▶ **Section 5.4 — Four Required Ratio Studies During Revaluation (RESTORED)** — ED2 §5.4 reinstates the 2013 requirement verbatim: 'When there is a revaluation, assessors should conduct at least four ratio studies to establish the following: (1) a baseline of current appraisal performance; (2) preliminary values so that any major deficiency can be corrected; (3) values used in assessment notices sent to taxpayers; (4) final values after completion of the first, informal phase of the appeals process.' This was absent from ED1.
- ▶ **Section 5.3.1 — Estimating Performance for Unsold Properties (RESTORED as named subsection)** — ED2 adds §5.3.1 covering what to do when sales chasing is confirmed: redo the ratio study, select a sample period that precludes chasing, use post-appraisal-date sales when lien date is January 1. This content was in 2013 Part 2 §9 but absent from ED1 as a named section.

2. New Structural Subsections

- ▶ **Section 8.2.1 — Vertical Equity Measures (new named subsection)** — ED2 creates a named subsection §8.2.1 with a formal comparison table (Table 4) summarizing Vertical Equity Indicator (VEI), Price Related Bias (PRB), Modified Kakwani Index (MKI), and Price Related Differential (PRD) across three dimensions: Quantifiable, Compliance Testing, and Visualization. ED1 discussed these measures in running prose focusing mainly on the VEI. Table 5 provides a summary for each measure. Of note, is the inclusion of the historical PRD range as part of its description.
- ▶ **Section 11.2 — Valuation Uniformity (named section with purpose statement)** — ED2 opens Section 11.2 with an explicit purpose statement: 'The purpose of this section is to establish performance standards for valuation uniformity...' ED1 went directly into the uniformity standards without this framing.
- ▶ **Section 11.2.2 — Uniformity within Strata (new named subsection)** — ED2 creates §11.2.2 as a named subsection for horizontal equity/within-strata uniformity. In ED1 this was embedded in a single uniformity section.
- ▶ **Section 11.3 — Natural or Other Disasters (renamed and expanded)** — ED2 renames 'Natural Disasters' to 'Natural or Other Disasters' (broadening scope beyond natural causes) and restructures the list of impacts.
- ▶ **Section 12.2.3 — Personal Property Escaping Assessment — subsection renamed** — ED2 renames the subsection from 'Identifying Personal Property Owners and Users Not on the Roll or Property not included in Taxpayer Returns/Reports' (one combined subsection in ED1) to 'Identifying Personal Property Not on the Roll' (separate subsection, simpler title).

3. New Appendix Content

- ▶ **Appendix D — Confidence Interval Calculations (new comprehensive appendix)** — ED2 creates a full appendix covering: Mean CI calculation steps and formula, Median CI, Weighted Mean CI, Median CI for small sample sizes (replacing the standalone ED1 Appendix C tables), critical values for t-distribution, COD confidence intervals (Bonett-Seier method), a COD CI sample calculation, and simple alternatives to bootstrap methods. ED1 had only three confidence interval subsections in the body and a separate Appendix C with just the median CI tables.
- ▶ **Appendix E — VEI Appendix: Percentile Rank Methodologies, Sample VEI Calculation, Summary Table (new subsections)** — ED2 adds within the VEI appendix: a 'Percentile Rank Methodologies' subsection explaining two of the nine NIST methods for calculating percentile rank; a 'Sample VEI Calculation' with worked example using the demonstration data; and a 'Summary' table showing VEI outcome scenarios. ED1's Appendix E contained 'Further Analysis' and 'Example' but not these structured subsections.
- ▶ **Appendix F — Additional Tests for Vertical Equity (repositioned from ED1)** — ED1 had this as Appendix F with the legal aspects. ED2 reorganizes: Additional Tests for Vertical Equity becomes Appendix F and Legal Aspects moves to the end as Appendix G.

PART B — CONTENT IN ED1 NOT IN ED2 (REMOVED OR RESTRUCTURED)

4. Sections Removed or Restructured

- ▶ **Vertical Equity Indicator — detailed calculation in body text (§8.2.1 of ED1)** — ED1 placed the full VEI calculation procedure (six numbered steps, VEI formula, VEI Significance formula, CI overlap test) in the main body at §8.2.1. ED2 moves this to Appendix E, keeping only the conceptual description in the body and adding a reference to the appendix.
- ▶ **'Further Analysis' and 'Example' subsections within VEI body (ED1 §8.2.1)** — ED1 had named 'Further Analysis' and 'Example' subsections within the VEI body section. ED2 removes these from the body and relocates the example to Appendix E.
- ▶ **'Additional Vertical Equity Measures' as named body subsection (ED1)** — ED1 had a named subsection 'Additional Vertical Equity Measures' in the body text with a summary of the 2023 IAAO Statistical Tools and Measures Task Force work. ED2 renames and restructures this as part of the Vertical Equity Measures comparison table.
- ▶ **'Appraisal Uniformity' named subsection heading (ED1 §11.2)** — ED1 had a named 'Appraisal Uniformity' subsection at the start of §11.2. ED2 restructures this under 'Valuation Uniformity' with a new purpose statement.
- ▶ **'Natural Disasters' terminology (replaced by 'Natural or Other Disasters')** — The section title and associated framing specific to natural disasters only is replaced by broader language in ED2.
- ▶ **Percentile Rank Observations Tables as standalone appendix (ED1 Appendix F)** — ED1 had a standalone appendix titled 'Percentile Rank Observations Tables' with step-by-step tables for Two Groups, Four Groups, and Ten Groups. ED2 integrates this content into the VEI appendix as 'Percentile Rank Methodologies' with the NIST methodological context added.
- ▶ **Mean, Median, and Weighted Mean Confidence Interval subsections (ED1 §7.5.2–7.5.4)** — ED1 had three named CI subsections in the body (§7.5.2 Mean CI, §7.5.3 Median CI, §7.5.4 Weighted Mean CI). ED2 consolidates CI guidance into a single §7.5.1 'Confidence Intervals' in the body and moves the detailed calculations to Appendix D.
- ▶ **Median Confidence Interval Tables for Small Samples as standalone Appendix C (ED1)** — ED1 Appendix C had the standalone small-sample median CI tables. ED2 integrates these into the new comprehensive Appendix D.
- ▶ **'Identifying Personal Property Owners and Users Not on the Roll or Property not included in Taxpayer Returns/Reports' — combined subsection title (ED1)** — Replaced in ED2 with the simpler 'Identifying Personal Property Not on the Roll.'

5. Changes to Standards and Thresholds

- ▶ **COD uniformity table — confidence interval footnote changed from 95% to 90%** — ED1 footnoted COD standards as based on 'a 90% level of confidence.' Verify against ED2 footnote — ED2 uses 90% two-tailed throughout.
- ▶ **Demonstration report confidence intervals — 95% two-tailed in ED1** — The demo report in ED1 showed 95% two-tailed CIs. ED2 uses 90% two-tailed consistent with the rest of the standard.

† Note: Both ED1 and ED2 are exposure drafts subject to IAAO member comment and Board of Directors approval. ED2 is dated May 2026.