ANSI

American National Standards Institute

Security Evaluation Work Group
Baseline & Formative Self-Report Findings

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SEWG Background

- Work Group formed to address test security concerns arising from the CPFM exam under ANSI CFP certification
- Dr. Ford asked to design and conduct evaluation study of past, current and future test security breaches and remedies
- Evaluation proceeds in three stages:
  1. Baseline study of the 2009-10 year to pilot test self-report data collection and establish a pre-assessment point from which to measure progress
  2. Interim study of the 2012-13 year to assess progress in addressing test security issues
  3. Post-assessment of the 2013-14 year and future years to measure progress and track trends in CPFM test security

Evaluation Methodology

Single Group Pre-Post Design

M_1 → I → M_2

M = measurement (1 = Pre, 2 = Post) I = Interventions

- Self-reporting via questionnaire
- Data aggregated and reported as single group only (no within-group comparisons)
- Time Periods:
  - Baseline (Pre) – July 2009 – June 2010
  - Pilot (Formative) – July 2012 – June 2013
  - Post (Summative) - July 2013 – June 2014
  - Trending – Annually after 2014 as part of ANSI surveillance

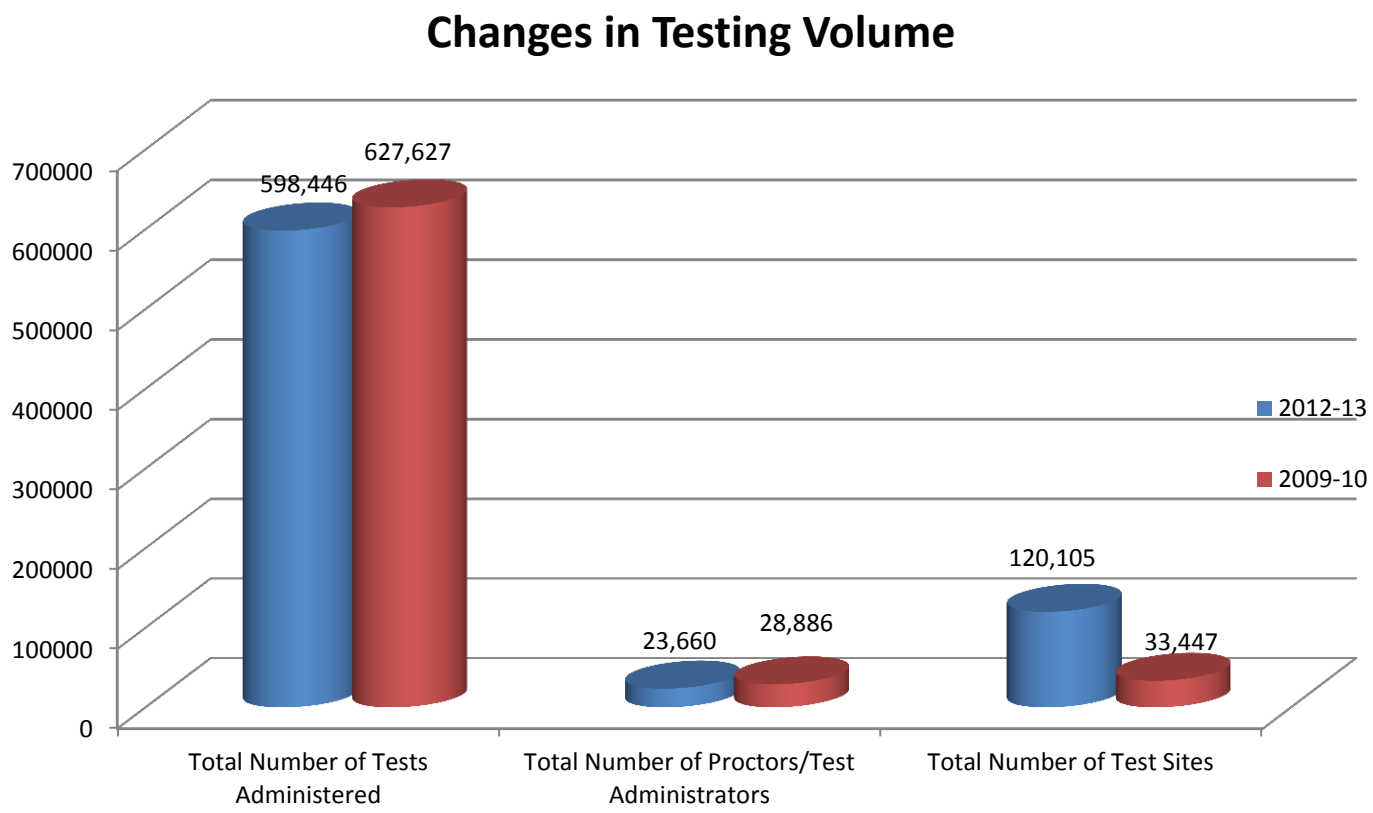
Summary of Evaluation Findings

- Small number of test security violations, but once is one too many
  - Widely publicized cheating incident costly to test integrity
- About 6% of proctors/administrators are disciplinary problems
  - Better screening, selection, retraining and discipline needed
- Test administration and shipping irregularities are problematic
  - Better tracking and enforcement of existing rules needed

Summary of Evaluation Findings (cont'd)

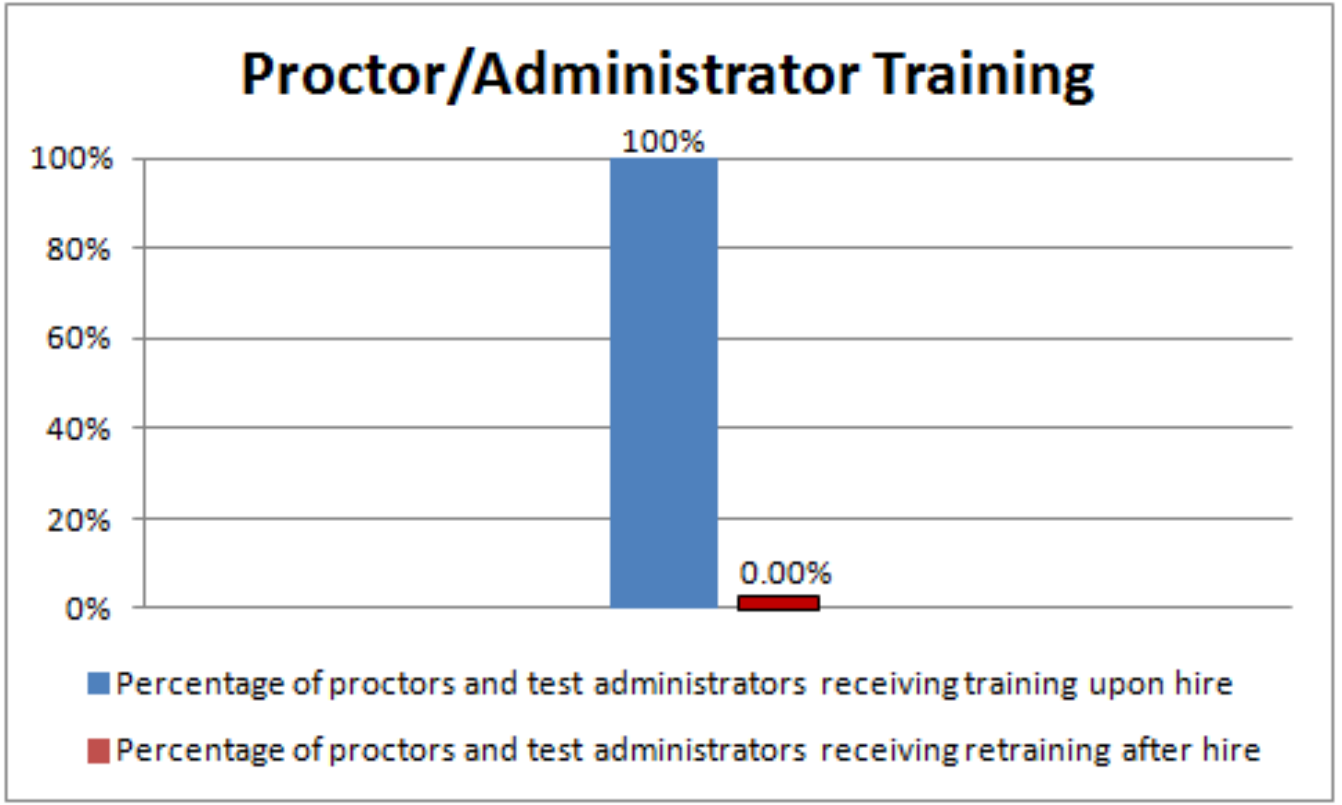
- Significant efforts being made to prevent test security breaches
  - Best practices should be disseminated to all providers
- Management QA System fully implemented in 2012-13
  - After full implementation, number of breaches should decline

Changes in Testing Volume



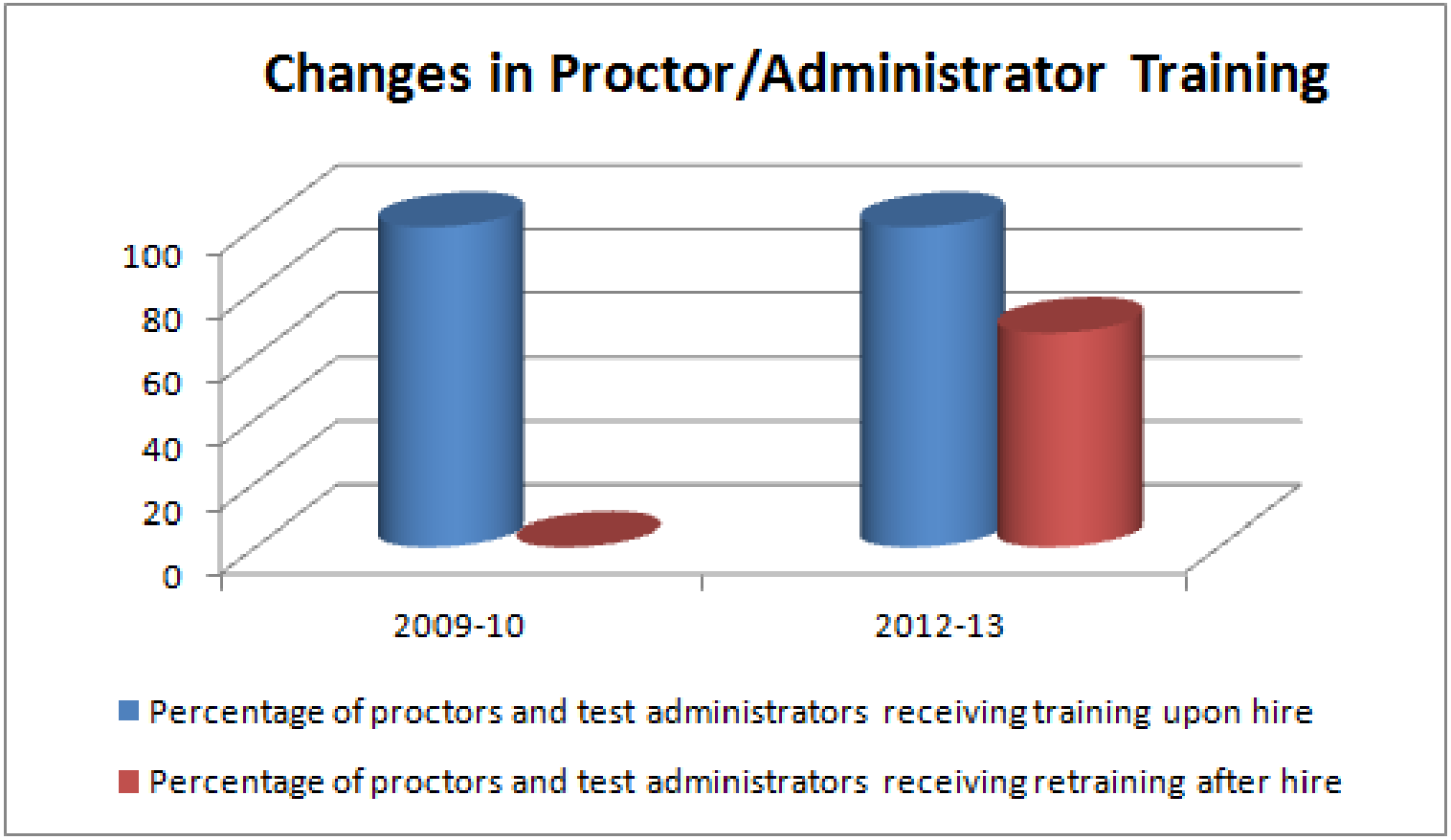
- Total tests and proctors are decreasing, while test sites are increasing.

Goal One: Provide Training for Proctors/Administrators



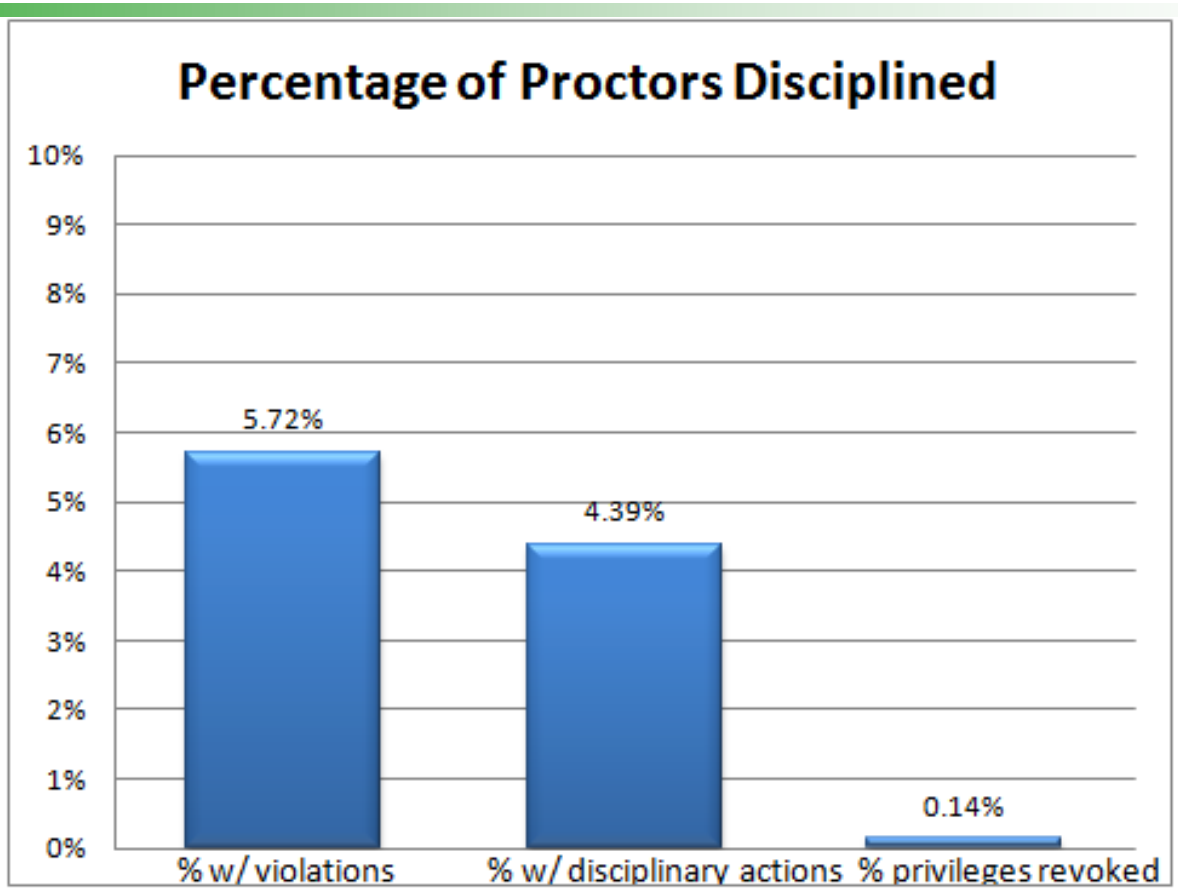
- No retraining required or done in 2009-10

Change in Retraining



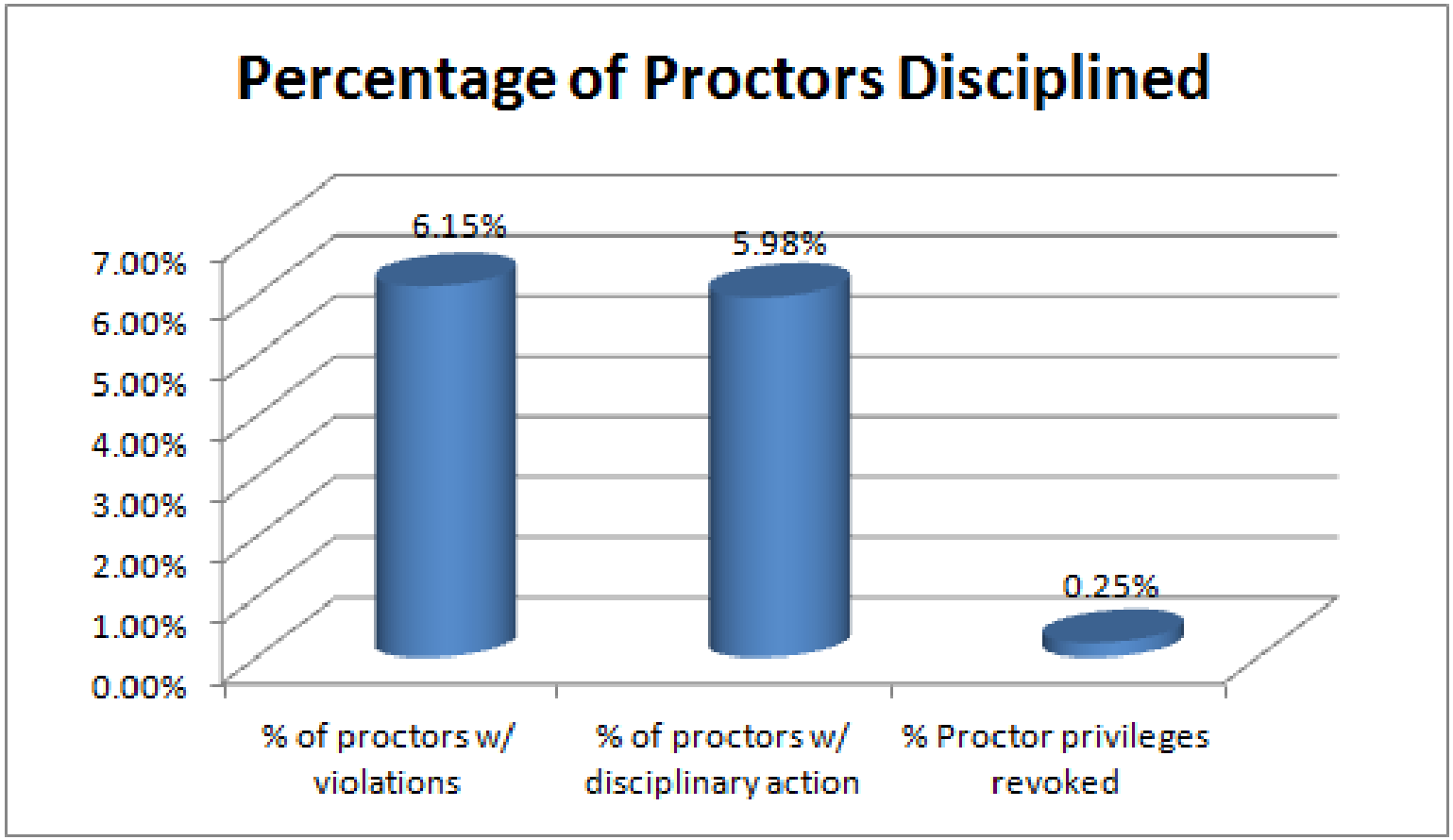
- Retraining underway in 2012-13. Will be completed by 2014.

Goal One: Enforce Proctor/Administrator Disciplinary Actions



- In 2009-10, though nearly 6% had violations, only 3% of violators were removed.

Changes in Proctor/Administrator Disciplinary Actions



- In 2012-13, violations up slightly, % of violators removed nearly doubled.

Primary Reasons for Violations

1. Not returning materials via traceable carrier within 24 hours of administering the exam.
2. Using regular mail to return tests instead of traceable mail
3. Missing exam booklets/completed answer sheets
4. Returned materials included improper staggering of exam versions or class rosters completed inaccurately
5. Failure to grade online examination
6. Exam irregularities, including review of examination booklet by someone other than examinee
7. Failure to monitor exam / examinees allowed to talk in foreign language
8. Not signing and returning a non-disclosure agreement
9. Proctor collusion in cheating

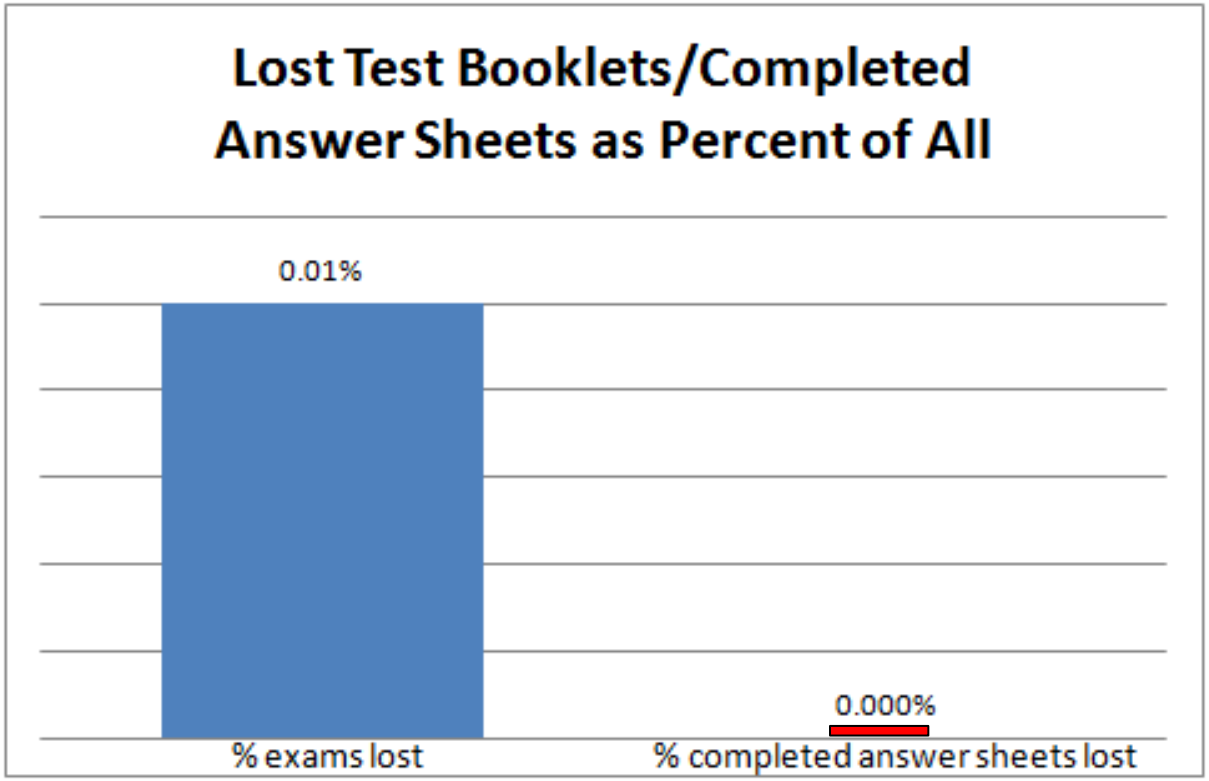
Most Common Disciplinary Actions

1. One year probation period, violation is issued and recorded in the proctor's file (after 3 such violations, proctor is suspended)
2. Exam Security Survey sent to Proctor. One-year Probation period. Warning - if extenuating circumstances, Revocation for repeat offenders
3. Violation is issued and recorded in file for 1st violation, Revocation after 3 violations
4. Warning on first offense, Second offense: one year probation, repeat offenders: permanent probation
5. One-year Probation period for 1st offense, Revocation for Proctor if severe or repeated
6. One year Probation period and Examinees required to re-test
7. Proctor is made inactive and not allowed to conduct testing until forms/ booklets are returned
8. Warning for 1st offense, suspension for repeated offenses

Most Frequent Reasons for Revocation/ Suspension of Proctors

1. Confirmed case of cheating with proctor/administrator collusion, such as providing answers/coaching
2. Allowed examinees to use notes during exam
3. Repeated violations of 24 hour exam return policy
4. Missing exams, rosters or answer sheets upon return of test materials
5. Repeated complaints about proctor/administrator behavior
6. Public food health officials created unauthorized independent businesses to offer food safety training and certification
7. Failure to grade online examinations
8. Failure to cooperate with test security investigation

Goal Two: Reduce Exam Packaging and Shipping Irregularities

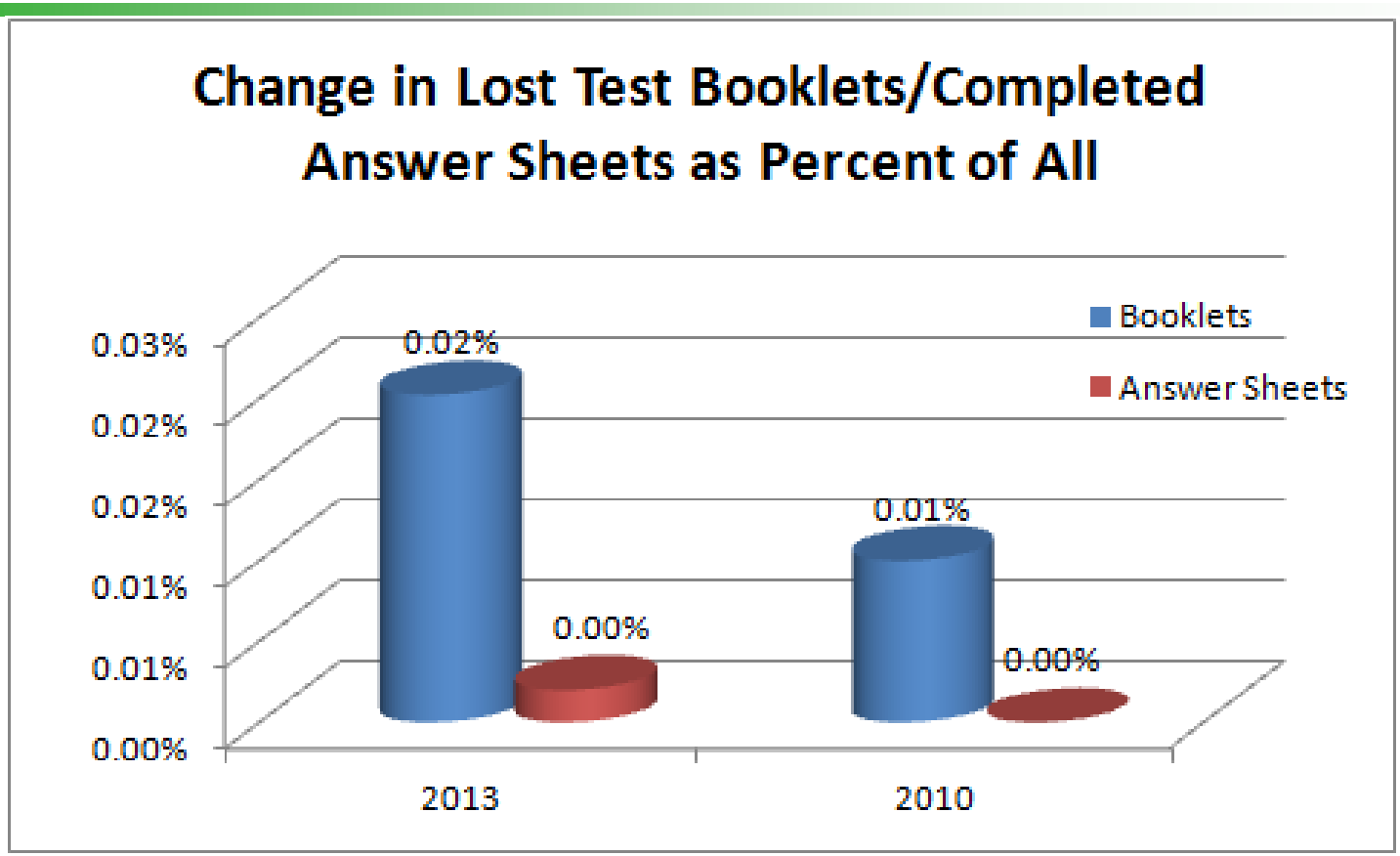


- In 2010, 1 out of 10,000 exams lost, compromising test security and causing frequent test revisions

Most Frequent Reasons for Lost Exams/ Answer Sheets

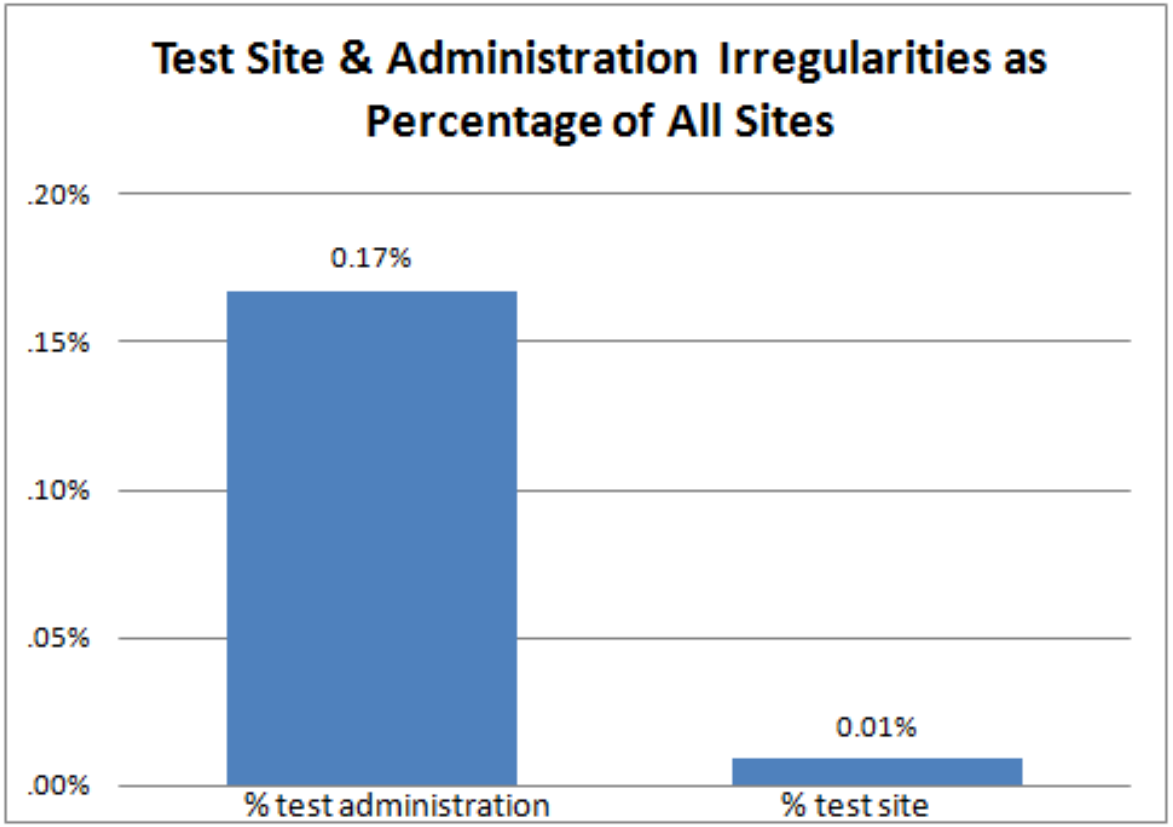
1. Proctors improperly disposed of unused exams – shredding, trashing, or stealing
2. Carrier lost the package
   - Regular mail is not reliable
   - Even traceable carriers lose packages sometimes
3. Proctors lost extra exams/answer sheets

Changes in Lost Materials



- Increase in reported lost materials from 2010 to 2013, Most likely due to increased detection & reporting.

Goal Three: Reduce Test Site Irregularities



- Administration problems are much more numerous than test site problems

Most Frequent Reasons for Test Administration Irregularities

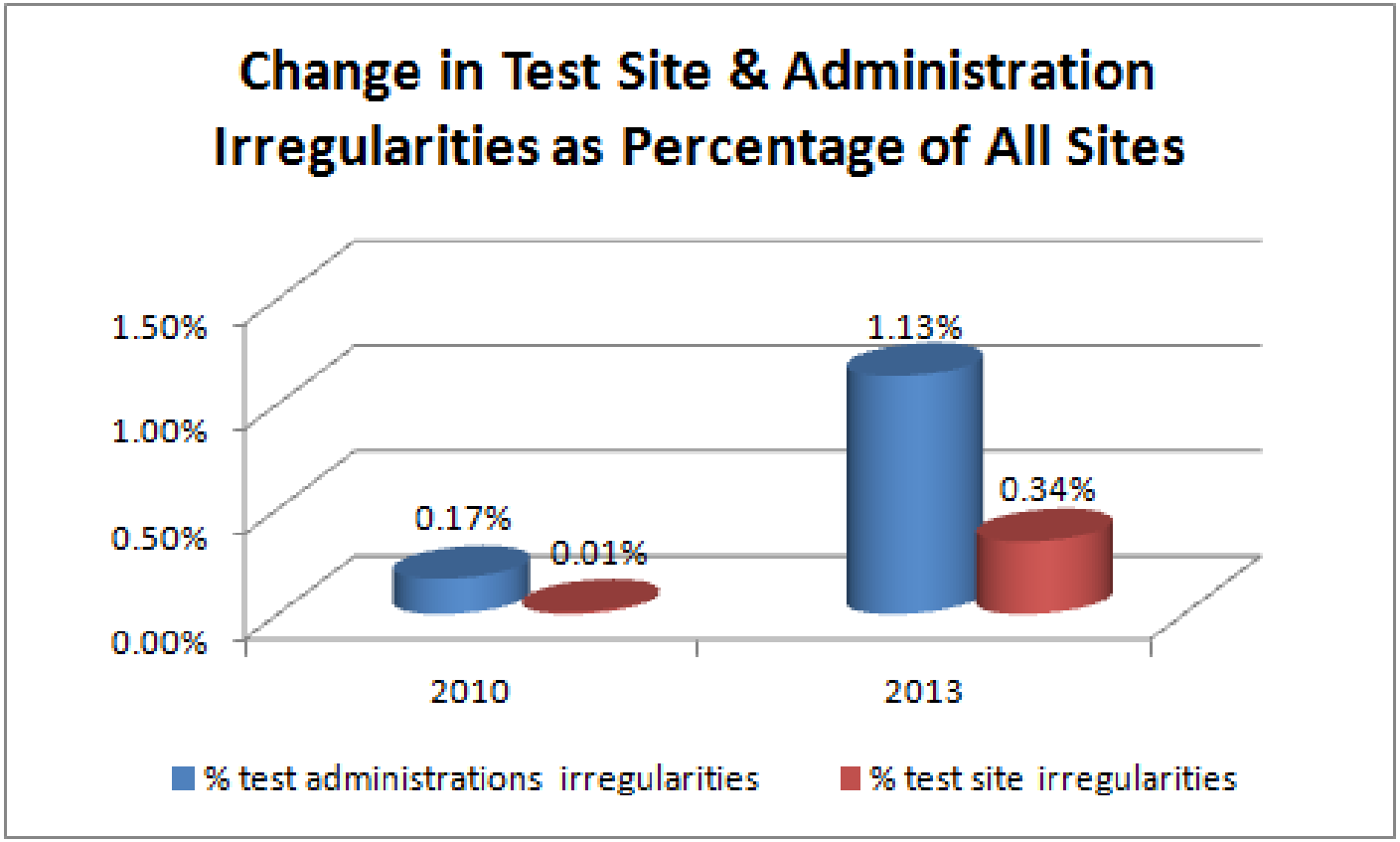
1. Failure to follow shipping policies
2. Failure to follow policies and procedures for proctoring
3. Cell phones or electronic devices were allowed into the exam room.
4. 2 candidates taking the same form of the exam were seated next to each other.
5. Candidates were allowed to talk in a foreign language during the exam

Most Frequent Reasons for Test Site Irregularities in 2010*

1. Exam was given in a restaurant during service
2. Examinees were allowed to sit too close together
3. Testing site interrupted by outsiders/noise

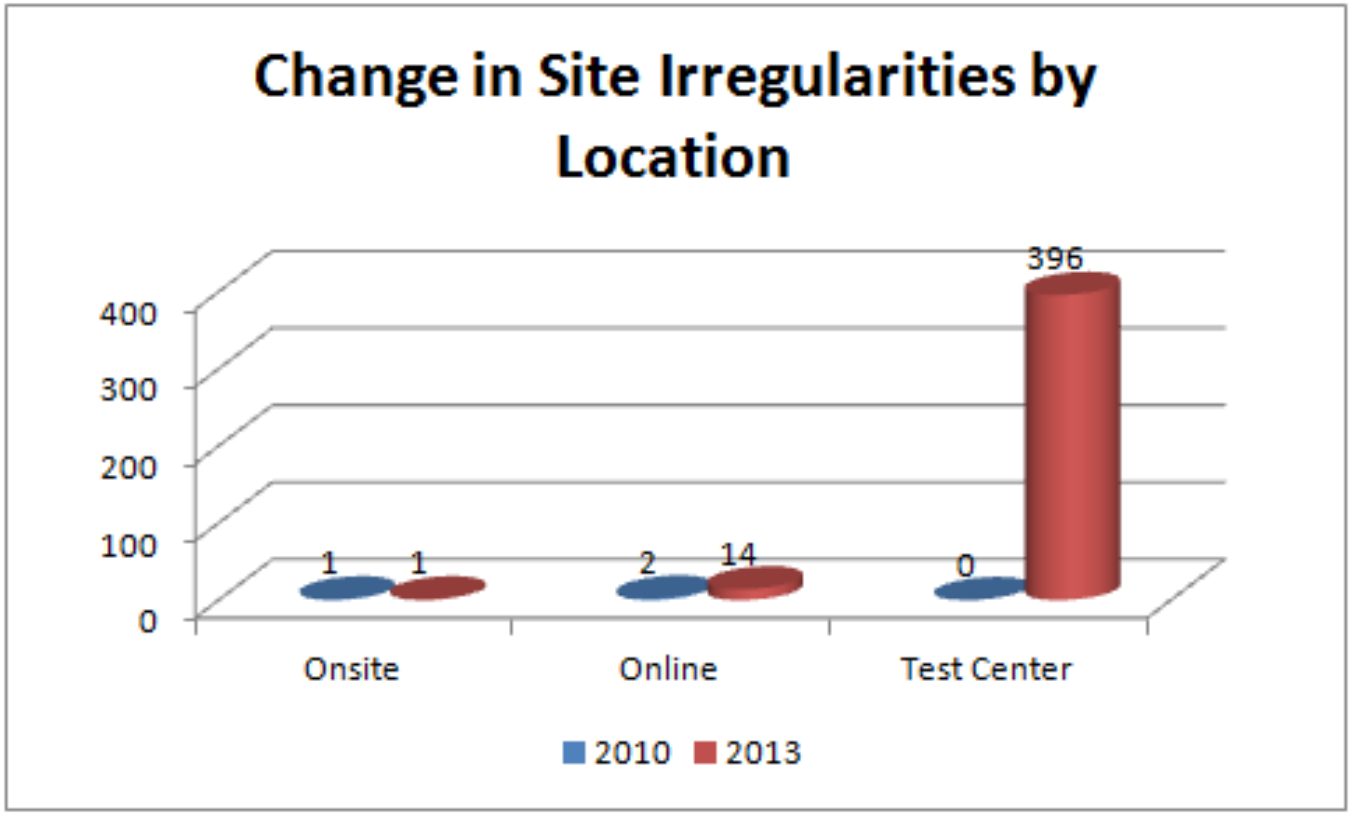
*One provider could not report data on site irregularities in 2010

Changes in Test Irregularities



- Increase in reported irregularities probably due to increased detection

Where Test Site Irregularities Occur

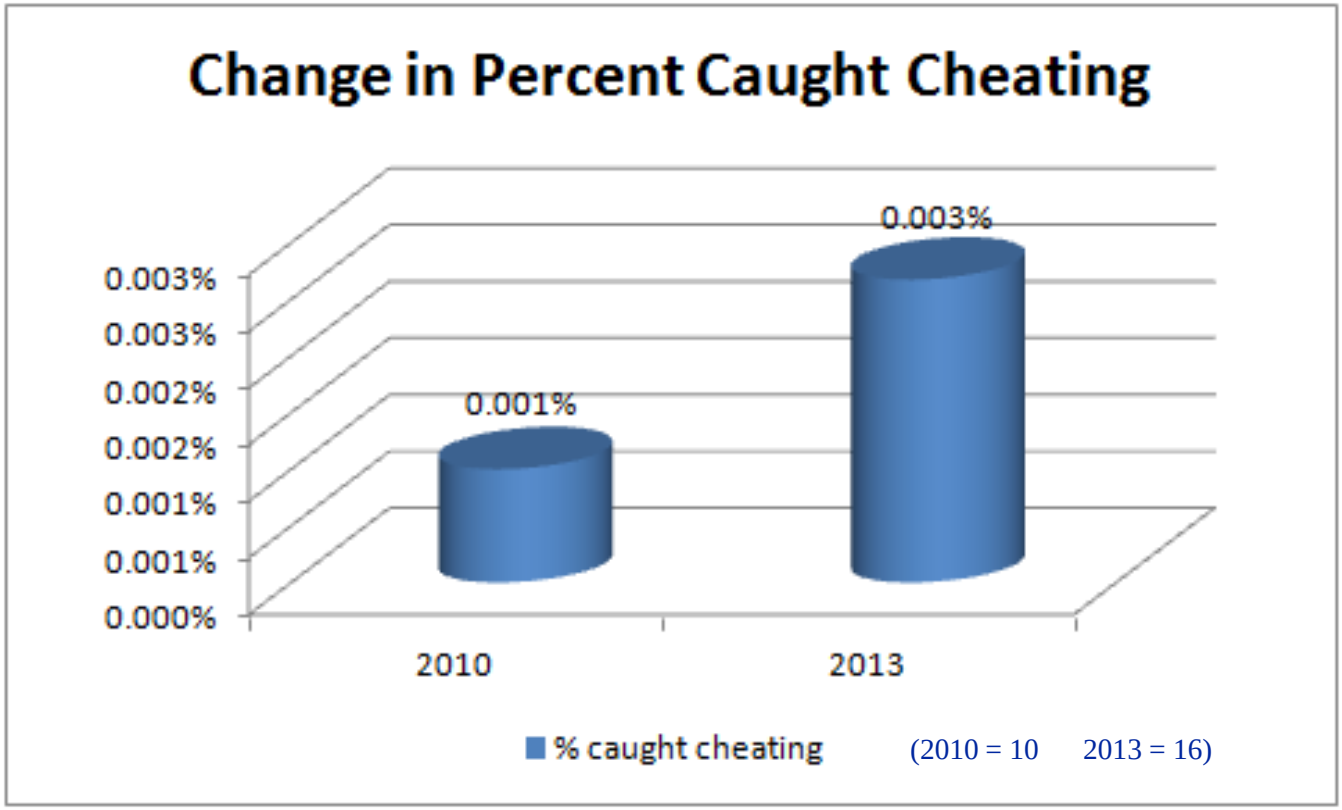


- All test sites pose risks. Increase likely due to better detection and reporting

Reasons for Site Irregularities – 2013

1. 122 cases of incorrect test taker demographic information which was corrected on site
2. 50 cases of candidates not having the proper identification
3. 46 cases of technical glitches at test center delaying test start
4. Delays in starting test because of scheduling mixup
5. Proctors left the door of the examination room open, exposing test takers to excessive noise

Goal Four: Reduce Cheating and Test Administration Irregularities

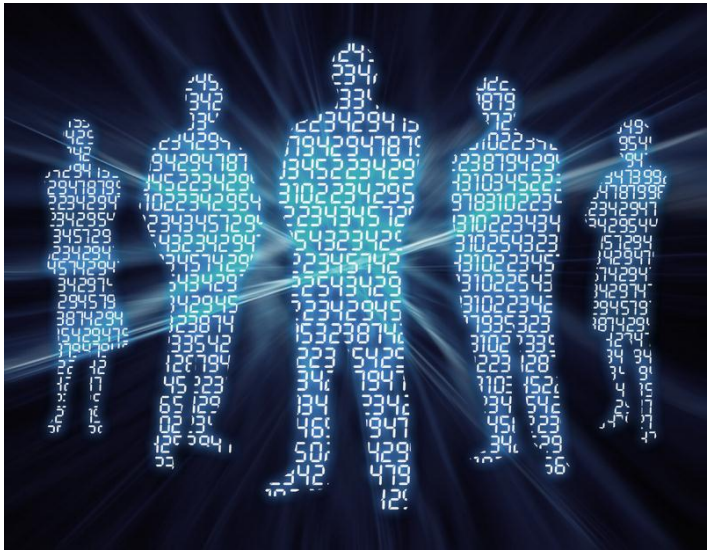


(2010 = 10 2013 = 16)

- Though rare, cheating even once is a serious test security problem, especially when enabled by proctors

Data Forensics Employed to Combat Cheating

1. Item Analysis
2. Group Analysis
3. Item Difficulty (p-value) Analysis
4. Point Biserial Correlation
5. Pass Rate Analysis
6. Detailed Item Response Analysis
7. Score Irregularity Reports
8. Web Surveillance – Google Alerts
9. Incident Response Investigation



Most Frequent Corrective Actions Taken To Combat Cheating

1. Item overlap among exam forms was decreased to limit item exposure
2. More exam forms developed per quarter to lessen exam form exposure
3. Limit the number of candidates per table to increase spacing
4. Conduct monthly data forensic detection analysis
5. Proctor checklist and script developed to help proctors ensure they administer exam correctly
6. Proctors required to sign performance agreements and pass retraining
7. Revoked scores and denied future testing for examinees caught cheating
8. Revoked Proctor/Administrator privileges for those caught colluding in cheating

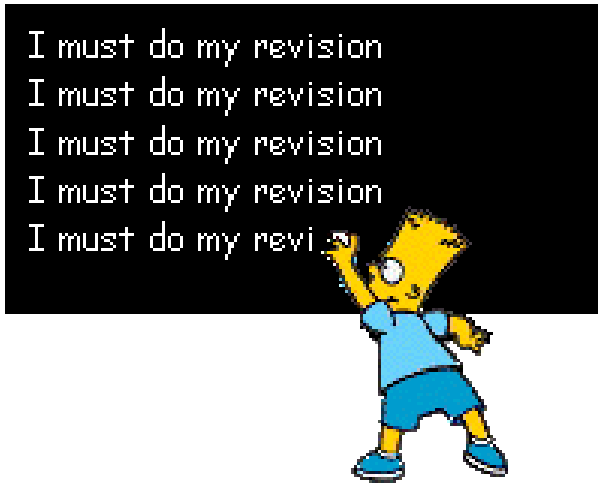
Test Versions and Revisions

Versions Employed:

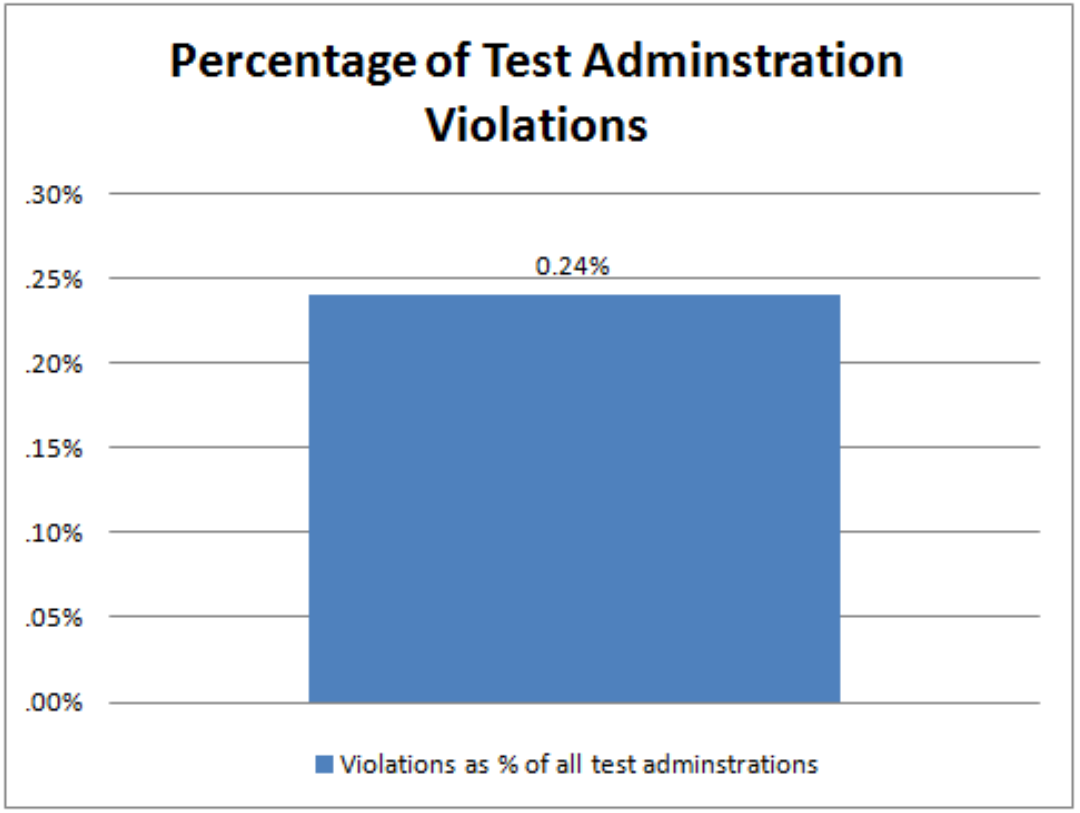
- Minimum of 2 versions/administration
- Maximum of 8 versions used

Revision Frequency:

- Minimum of yearly
- Maximum of monthly



Test Administration Violations

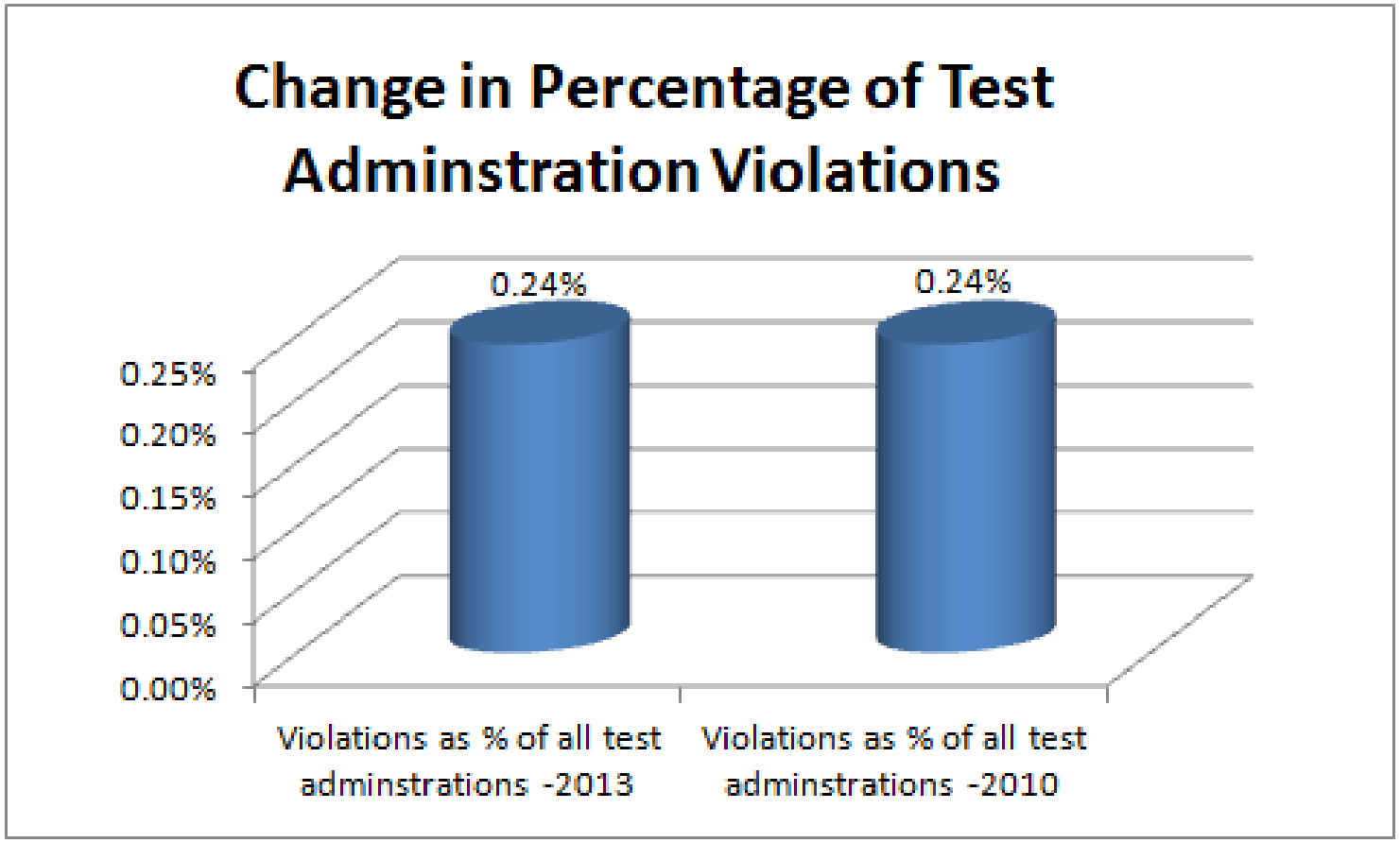


- Two out of a thousand test administrations contain a violation, compromising validity and reliability

Most Frequent Reasons for Test Administration Irregularities

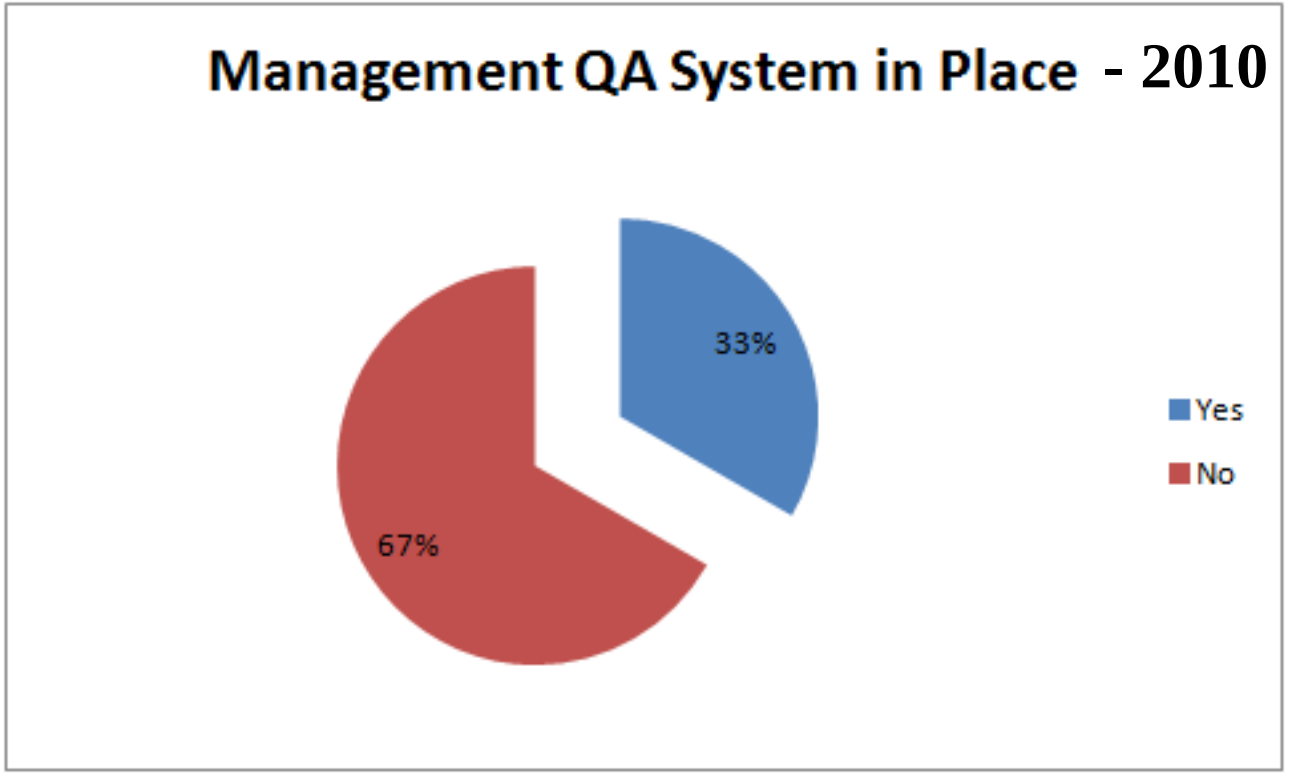
1. More exam booklets opened than answer sheets
2. Use of exam booklet more than once
3. Failure to monitor examinees during entire exam
4. Self-administration of exam
5. Proctor collusion in cheating

Change in Percentage of Administration Violations



- No change in percent of violations over past 3 years.

Goal Five: Improve Test Quality Assurance



- Only 1 of 3 providers had QA system in 2009-10 and it was incomplete

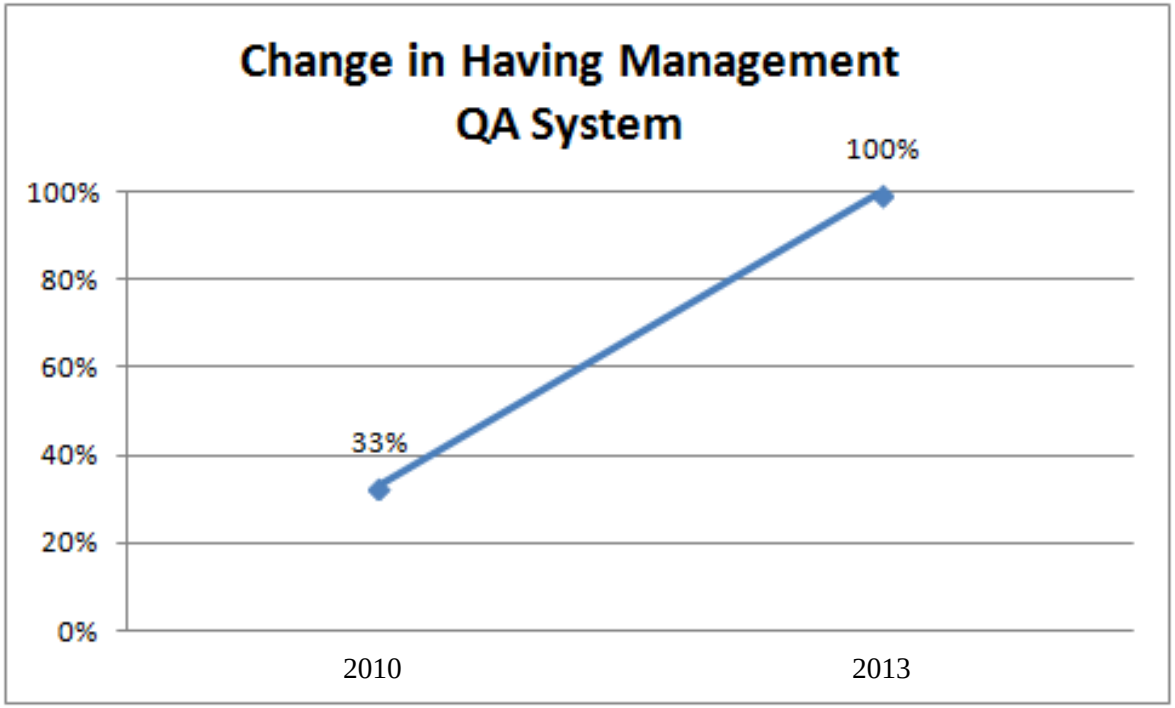
QA System Elements in Place -2010

- Quality control at each step in test production, storing, shipping, and receiving materials back from test sites
- Stringent rules for how test materials are to be handled and accounted for

Most Frequent Reasons for QA System Breaches

1. Materials returned out of order. Exams are required to be staggered in a certain way to increase their security.
2. Failure to return test materials on time
3. Lost test booklets/completed answer sheets
4. Candidates did not sign their rosters individually or signature was blank
5. Forensics uncovered possible cheating

Changes in QA System in 2013



- All providers now have a Management QA system in place. Some elements still being fully implemented.

Management QA System Elements - 2013

- Document/Material Controls
- Internal Audits
- Management review systems- continual improvement
- Corrective actions/preventive actions to address deficiencies
- 3rd party accreditations & certifications
- Forensic Data Analysis of exam performance
- Test Administration Security Survey included in exam forms w/Incident Reports.

Provider Perceptions of Test Security Breaches

- "Public perception of diminished reliability and integrity of the exam and the organizations providing it"
- "We serve as an industry gatekeeper, ensuring that people legitimately earn the credentials they seek to achieve."
- "We proactively take preventive, and corrective actions to ensure there is no negative impact to the integrity of food protection testing and food safety as the result of a test security breach."
- "We are a trusted test development and delivery provider to more than 400 organizations worldwide. On their behalf, we securely deliver an average of 10 million exams per year."

Recommendations

- Proctors/Administrators:
  - Provide retraining regularly
  - Increase screening and selection standards
  - Vigorously apply disciplinary actions against offenders
- Shipping Irregularities:
  - Use traceable carriers only, especially those with high reputation for security and reliability
  - Enforce rules for shipping

Recommendations (cont'd)

- Test Sites/Administration:
  - Standardize test site requirements across all providers
  - Share best practices for administration
- Test Cheating:
  - Share best practices for data forensics and cheating detection
  - Encourage test-takers to report cheating (whistleblower hotline)
- QA System:
  - Fully implement for all providers
  - Use it as preventive mechanism

Future Steps

- Present findings to key stakeholders
- Fine tune data collection methods as needed
- Compare the pilot year to the baseline year to look for improvements
- Conduct summative post analysis after 2014 year when all test security improvements have been fully implemented
- Include test security evaluation as part of ANSI annual surveillance and monitor trends