ABC Certification

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Mission Statement:

To raise the level of competence in Forensic Science through peer-based certification and promotion of professional development. The ABC is dedicated to the highest standards and programs for scientists involved in the administration of justice.

American Board of Criminalistics

- Board of Directors is the governing body. The BoD is comprised of one representative of each member organization, up to three at-large representatives and one public member.

- Examination Committee develops the exams. The EC is comprised of one representative of each member organization.

- Member organizations:

| AAFS | ASTM | ASCLD | NEAFS | SAFS |
| SWAFS | MAAFS | NWAFS | MAFS | CAC |

Program Philosophy

- Examinations measure knowledge and reasoning
- Demonstrate general forensic knowledge in addition to specialty knowledge
- Require continuing professional involvement and competency
- Include proficiency testing for Fellows
- Continual improvement through accreditation; FSAB accredited since 2004.

Brief History

▶ ABC was incorporated in 1989.

▶ ABC built on the previous work of the Criminalistics Certification Study Committee and the California Association of Criminalists.

▶ Original certification scheme required passing a General Knowledge Examination (GKE) for Diplomate status and a Specialty Examination for Fellow status.

Brief History

- In 1993 the first GKEs were given in Boston.

- In 1994 the first specialty exams were given in San Antonio.

- In 2000 Technical Specialist examinations were added for Molecular Biology and Drug Analysis.

- In 2007 the current testing format was incorporated in San Antonio.

Current Examinations Offered

Molecular Biology

Drug Analysis

Comprehensive Criminalistics

Fire Debris

Paint and Polymer

Hair and Fiber

Levels of Certification

Affiliate
(Certification Eligible)

- Degree in natural science or forensic field
- May sit if in last quarter or semester before graduating
- Less than two years' work experience

Diplomate

- Degree in natural science or forensic field
- Two years full-time experience
- Actively working in forensics
- Denoted by ABC-D

Fellow

- Degree in natural science or forensic field
- Two years full-time experience
- Actively working in forensics
- Provide proof of annual proficiency testing
- Denoted by ABC-F

Certification Examination Preparation

Application
- Submit application and $50 application fee
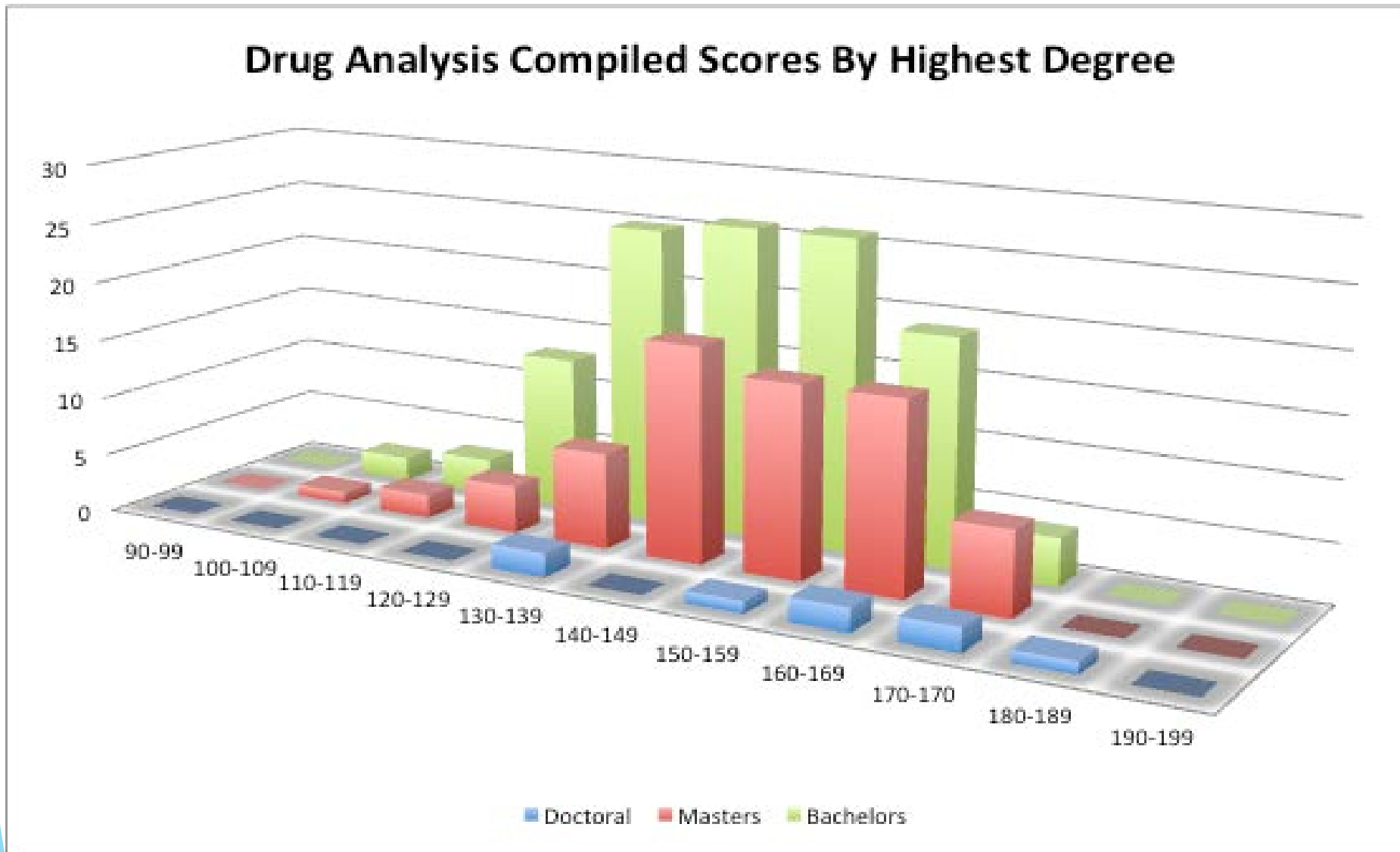- Vetted by Credentials Committee

Sitting Selection
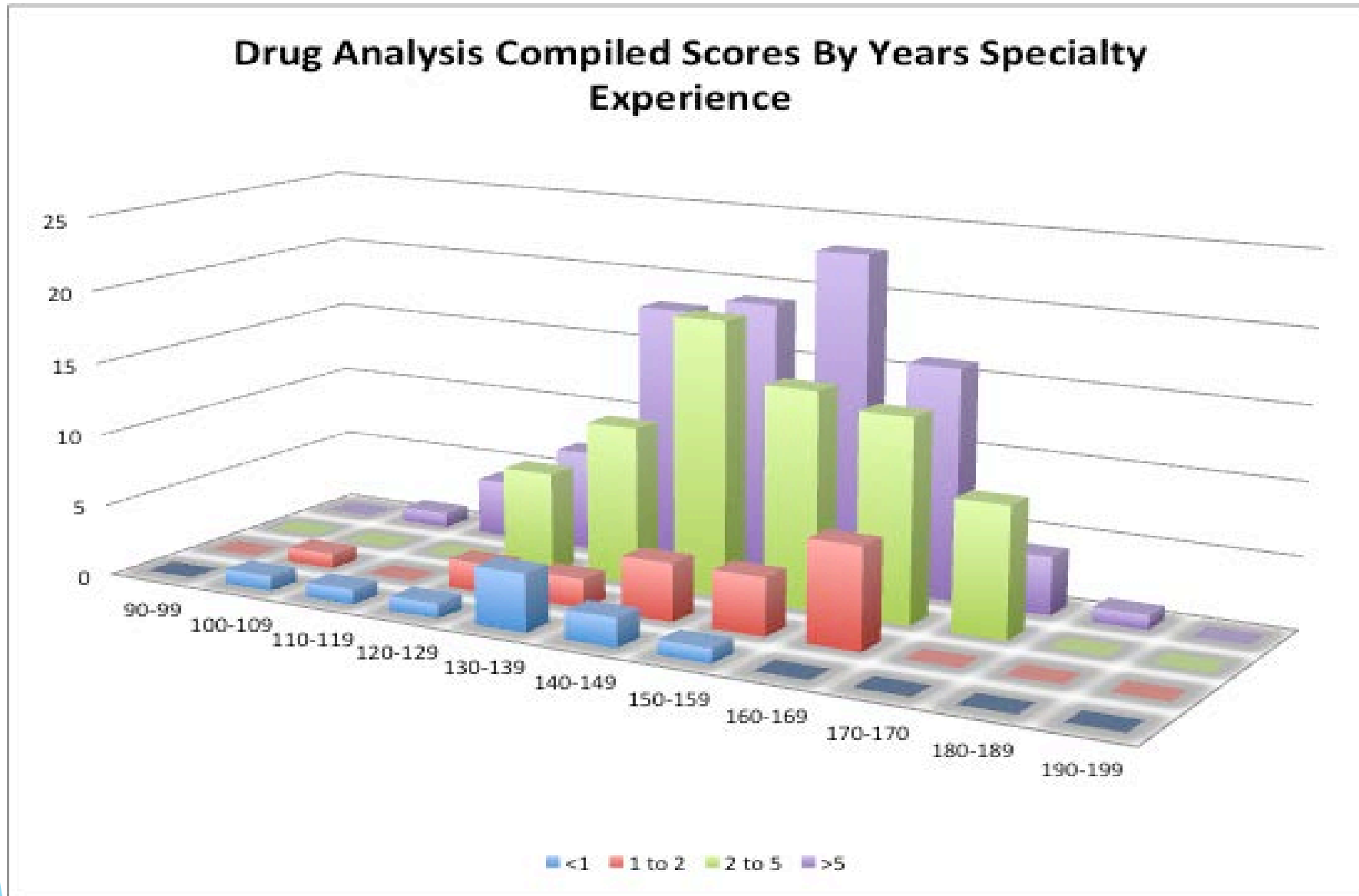- Request for Examination Seat
- Submit $250 sitting fee

STUDY
- Work experience
- Study guide with list of KSAs covered on examination
- Study guide with literature references

How does education affect score?
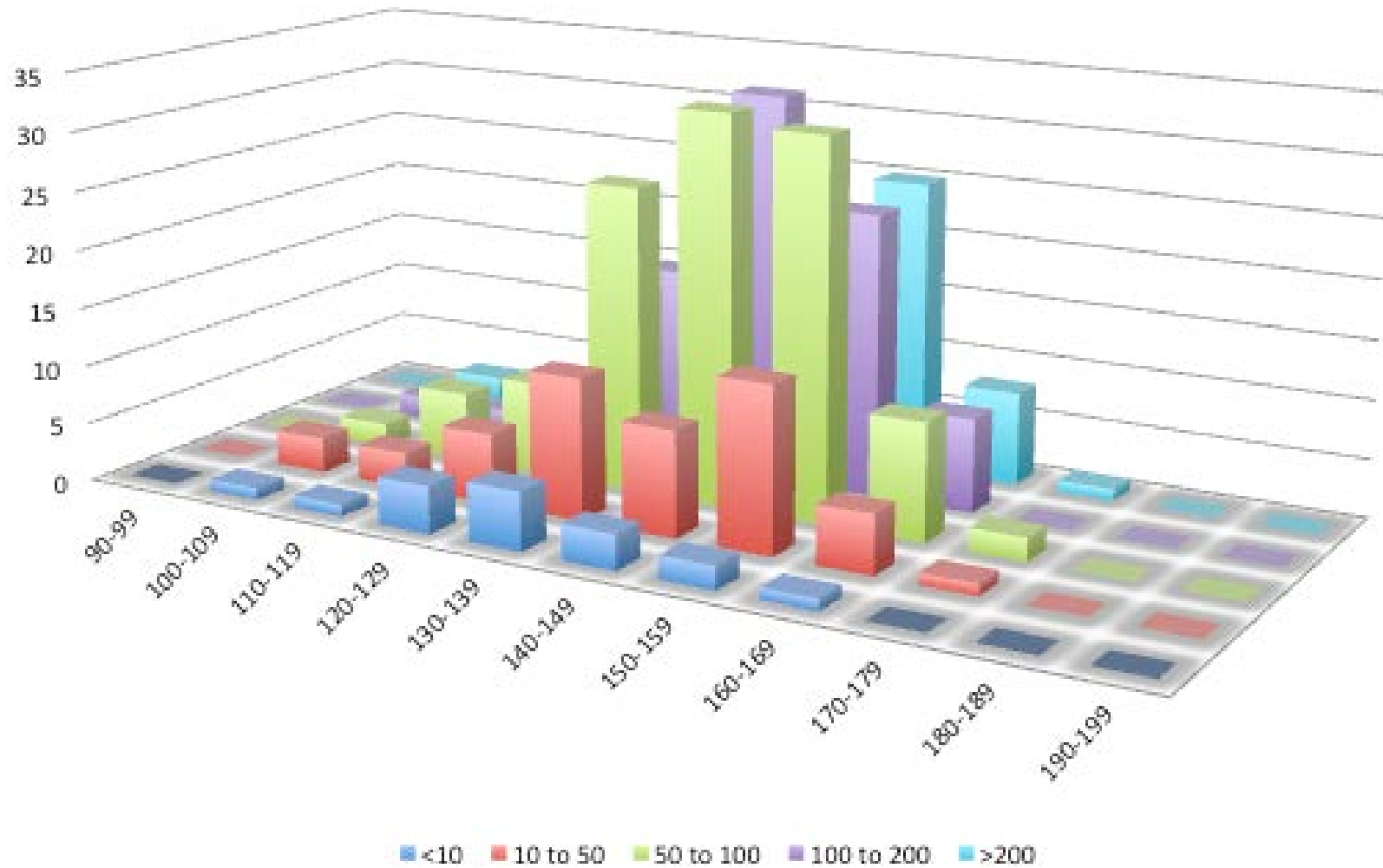

Drug Analysis Compiled Scores By Highest Degree

How does experience affect score?

Drug Analysis Compiled Scores By Years Specialty Experience

How does study affect score?

Molecular Bio Compiled Scores By Hours of Study

ABC Examination Pass Rates

Examination	Passing Rate*
Molecular Biology	~65%
Comprehensive Criminalistics	~60%
Drug Analysis	~70%
Fire Debris**	~70%
Hair and Fiber**	100%
Paint and Polymer**	~90%

* Percentages are rounded to nearest 5% as the percentage varies depending on what time frame is captured to calculate the pass rate.

** Very low throughput examinations therefore the pass rate appears skewed.

Maintaining Certification*

Annual Recertification Paperwork and Maintenance Fees of $50

Annually sign Rules of Professional Conduct

Recertification

Attain 50 recertification points over 5 years; 10 points must be in Professional Development; 15 must be in specialty area

Fellows: Proof of annual proficiency testing in the certified disciplines
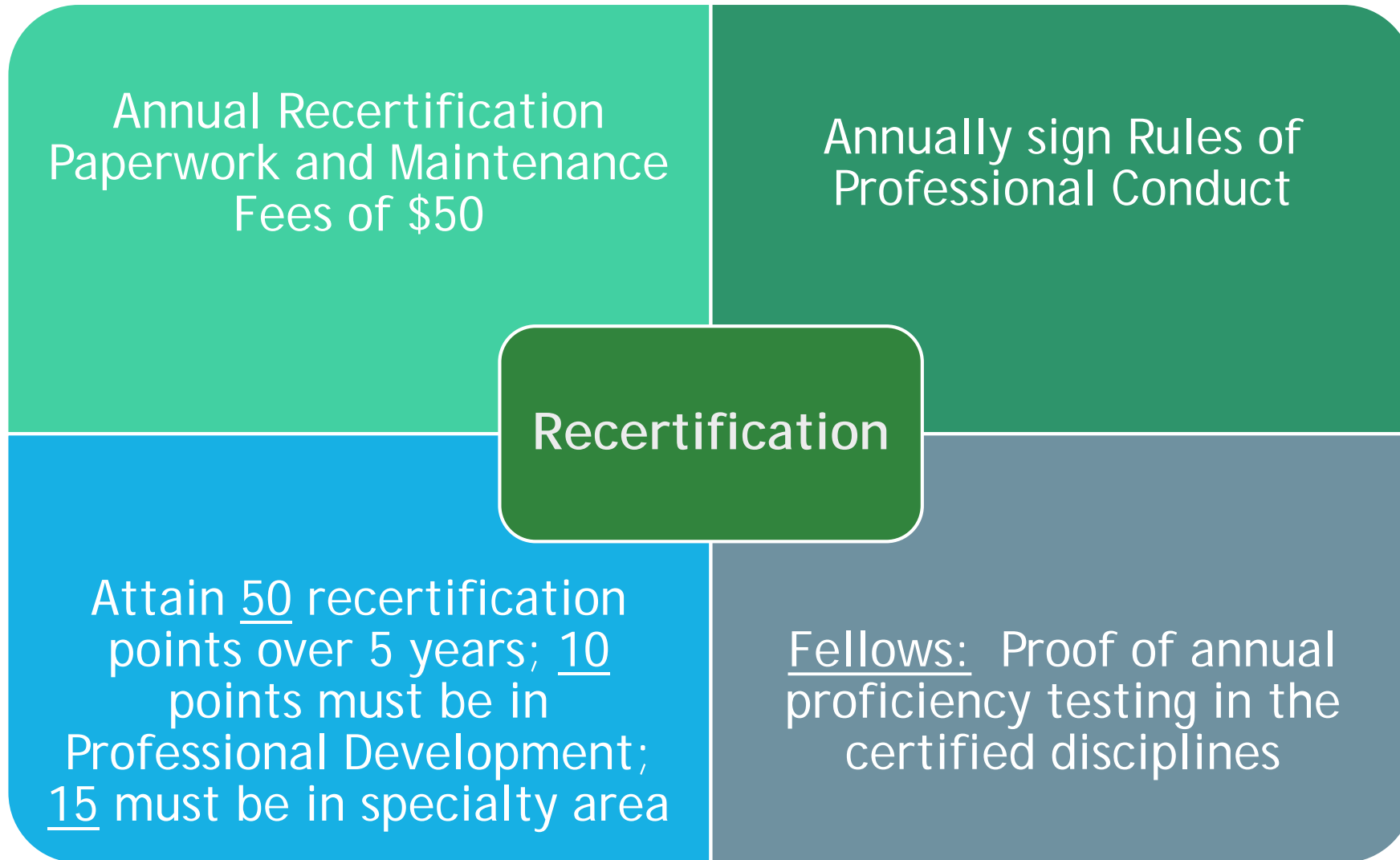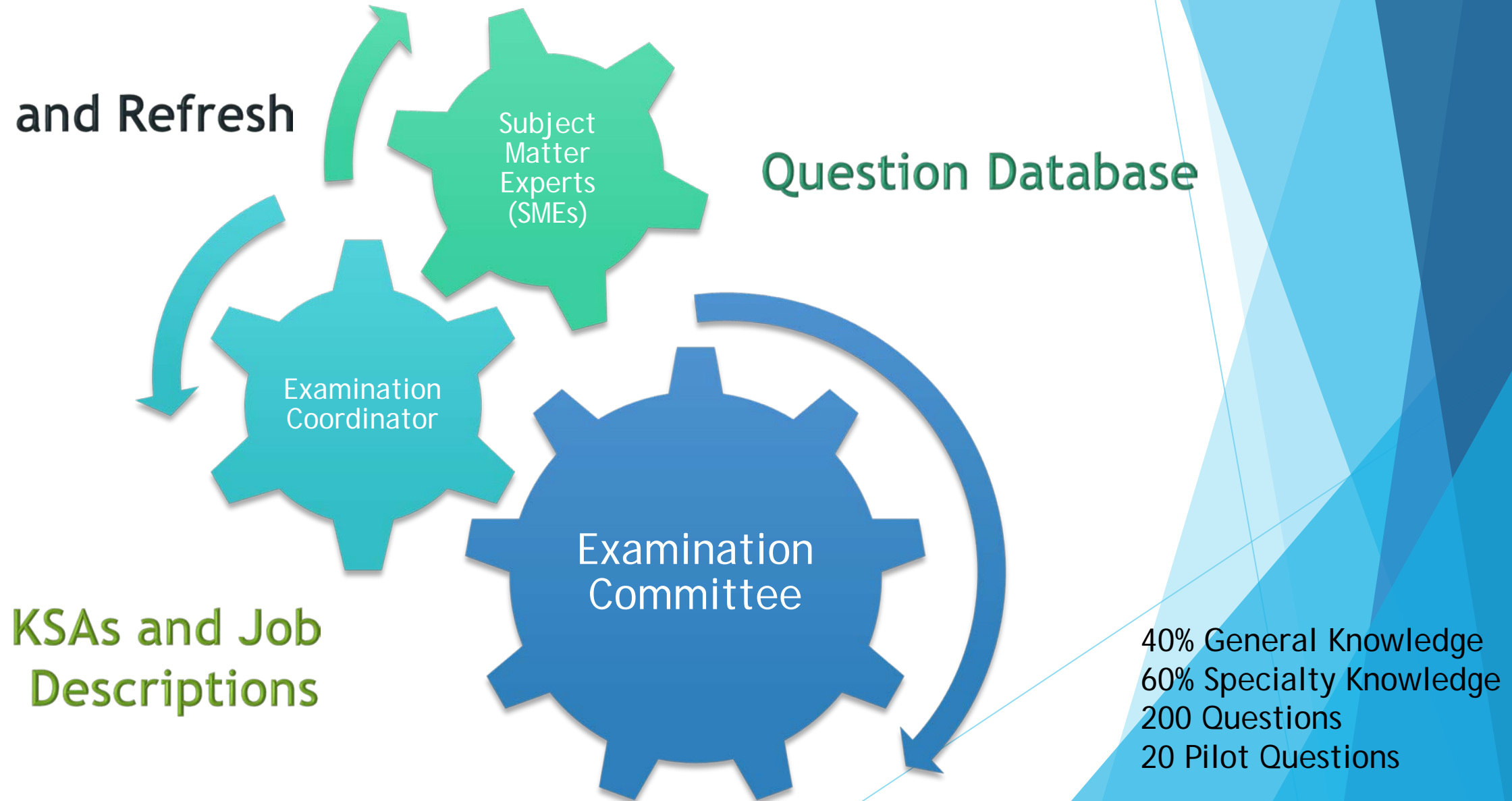
*Certificates are valid for 5 years

Cost Comparisons

Organization	Application Fee	Examination Fee	Recertification Fees or Dues	Recertification Cycle
American Board of Criminalistics	$50	$250	$50 annually	5 years
International Association for Identification	$200 Members $300 Non-members	N/A	$200 Members $300 Non-members Per recertification cycle	5 years
The Association of Firearms & Tool Mark Examiners	N/A	$50 Written $200 Practical	$25 per recertification cycle	5 years
American Board of Forensic Toxicology	$150	N/A	$100 annually	5 years
International Association of Forensic Nurses	$275 Member $400 Non-member	N/A	$275 Members $400 Non-members Per recertification cycle	3 years

Examination Development

Review and Refresh

Subject Matter Experts (SMEs)

Question Database

Examination Coordinator

KSAs and Job Descriptions

Examination Committee

40% General Knowledge
60% Specialty Knowledge
200 Questions
20 Pilot Questions

How our examinations have previously been validated:

- ▶ Have to have a sample size of at least 20 test takers and some negative controls (individuals not trained in the discipline being tested).

- ▶ Look at how ALL questions performed on the Pilot Tests, including responses and look for the natural break in test scores

- ▶ Pilot and performance measures- Critical!

What we are working towards:

ISO/IEC 17024 Conformity Assessment- General Requirements for Bodies Operating Certification of Persons

- American National Standards Institute (ANSI)
- National Commission on Certifying Agencies (NCCA)
  - Now offering ISO 17024 accreditation to the organizations that are currently accredited to their own standards or who are seeking dual accreditation

Impartiality

- Have firewalls between examination creators, examination scorers, trainers.

- Have procedures in place to prevent conflict of interest in candidate approval, proctoring examinations, recertification review, etc.

- Conduct threat analysis of related organizations and the work we are doing to mitigate those threats to impartiality.

- Have procedures in place to protect candidate during examination grading.
  - Our current examinations are multiple choice and electronically graded.

Certification Scheme Requirements- ISO/IEC 17024

Job Task Analysis -JTA

Expert Panel

- Minimally 15 experts (SMEs)
- Examine job description of individuals taking examination
- Determine KSAs
- Determine frequency and importance of each KSA

Survey

- Expert panel will develop a survey to be distributed to 200+ individuals working within the discipline to further refine frequency and importance of KSAs.

Exam Blueprint

- The expert panel will review the survey and will develop a blue-print for the examination based on the survey results. The blueprint of the examination will determine the KSAs and proportion of questions in each KSA category.

Certification Scheme Requirements- ISO/IEC 17024

Examination Development

Exam Development

- Examination committee will develop the examination based on the examination blueprint determined in Job Task Analysis

Sensitivity Testing

- We require sensitivity testing of our questions prior to being put onto an examination.

Item Analysis

- Item analysis needs conducted on each examination.
- The item analysis utilizes data from test takers. Statistically, 2X the number of questions on the examination is preferable (400 for our examinations); minimally, 100 invested test takers.

Certification Scheme Requirements- ISO/IEC 17024

What is an Item Analysis?
The item analysis is a statistical analysis conducted by someone trained in psychometrics.

What is psychometrics?
Psychometrics is the branch of psychology that deals with the design, administration, and interpretation of quantitative tests for the measurement of psychological variables such as intelligence, aptitude, and personality traits.

Simplified:
The item analysis will provide a statistical analysis of the examination question responses to test if the examination is performing properly and that those who pass the examination have the sufficient knowledge base to be certified.

Certification Scheme Requirements- ISO/IEC 17024

Examples of what an item analysis will include:

Response Choice Frequencies and distractor analysis; are all distractors working equally	Standard error of measure at the cut off score; is there a possibility of false positives or false negatives	Test reliability at the item level, or how reliable the test is if the item is deleted
Item discrimination, which means how well the item differentiates between higher and lower scorers on the overall test	Item difficulty, expressed as proportion of respondents who answered a question correctly	Demographic Analysis to determine if demographics affect passage rates

Upon completion of the item analysis, the examination will be revised as necessary to ensure a properly performing examination

Certification Scheme Requirements- ISO/IEC 17024

Other Considerations:
- ❖ Examinations should not be stagnant. The JTA and Item Analysis must be completed with a pre-defined frequency, typically minimally every 5 years. However, this could be more frequent in a discipline that has faster changing technology.

- ❖ Grandfathering is not allowed. We must define a process by which individuals are recertified to the accredited certification program. Some certifications will never be accredited (older certifications).

- ❖ Each certification scheme is a different scope of accreditation and separate assessment (Diplomate and Fellow for each exam are separate, which means currently we have a total of 12).

ABC Concerns/Challenges

- Volunteer operations
- Cost drivers/mandates; cost of business
- Examinations with low throughput (Trace Evidence)
- Validating examinations with the required >100 test takers
- Proficiency testing separates levels of certification
- Specialized evidence areas with limited participation (i.e. Explosives, Glass, Instrumental Document Authentication)
- Waiting periods between examinations
- Recertification process and points

Thank you!

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