



CSAO

CANADIAN STANDARD ASSESSMENT IN OPTOMETRY

Summary Report 2008 Administrations



Prepared for
Canadian Examiners in Optometry
By
MARTEK Assessments Ltd.

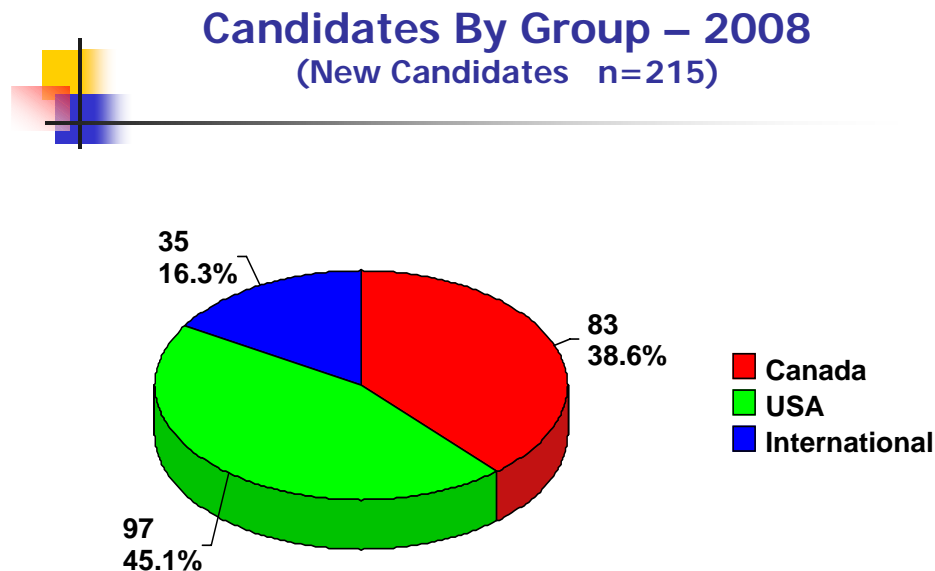
The purpose of this report is to provide Canadian Examiners in Optometry with annual statistical insight and a psychometric analysis and summary related to the Canadian Standard Assessment in Optometry (CSAO) as a source of reference for ongoing assessment maintenance and development and for communication to stakeholders. Please note that this report focuses solely on data related to CSAO candidates that have initiated the CSAO process during the 2008 calendar year (new candidate = .1). The results analysis contained herein does not include results data related to those candidates that participated during this calendar year, but initiated the CSAO process during the prior calendar year. Nor does it project overall data or “pass rates” for those candidates that initiated the CSAO process during the current calendar year but are eligible to complete that process during the subsequent year.

OVERVIEW

During 2008, a total of 223 candidates participated in the 3 CSAO administrations. Of this number, 215 (94.4%) were new candidates and 8 (5.6%) represented reassessment candidates from the previous year. For the April administration, 111 candidates attended with 103 of these being new candidates and 8 returning for reassessment in one or more components. The May session was made up of 91 new candidates only. For the October administration, 21 new candidates participated along with 22 candidates returning for reassessment. Of those returning for reassessment, 21 had fallen below on one or more components in the Spring 2008 administration. Overall, the 215 new candidates for 2008 was a significant increase from 2007 when 170 new candidates participated in the exam process.

Figure 1, represents a breakdown of candidates across the categories Canada, USA and International. A total of 83 (38.6%) Canadian educated, 97 (45.1%) American educated and 35 (16.3%) Internationally educated candidates participated in the 2008 administrations. In comparison to 2007, the participation rate of international candidates in 2008 saw the largest increase. In the previous year 12 (7.1%) candidates participated while 2008 saw 35 (16.3%) internationals sit the examinations.

Figure 1: Distribution of Candidates by Group



The increase in overall candidate participation in 2008 also reflects an increase in the number of institutions from around the world represented at the 2008 examinations. In fact this rate has been increasing over the last few years. In 2007, a total of 25 institutions sent one or more candidates to the CSAO, while the 2008 examinations saw a total of 43 institutions represented.

Table 1 reports the new candidate pool (N=215) by Professional School for the 2008 administrations.

<u>INSTITUTION</u>	<u>#</u>	<u>%</u>	<u>INSTITUTION</u>	<u>#</u>	<u>%</u>
Alepp University Hospital - Syria	1	.5	Manila Central University	1	.5
Bharati Vidyapeeth Medical College India	1	.5	Medical College Amritsar, India	1	.5
Bogota, Columbia	1	.5	Michigan College	2	.9
Cairo U., Egypt	1	.5	New England College	21	9.8
Central College of Philippines	1	.5	Nova Southeastern Univ	7	3.3
Centro Escolar University Philippines	2	.9	Pacific University	9	4.2
China - M.D. Shan Dong University	1	.5	Pennsylvania College	15	7.0
China - Xiangya Medical School	1	.5	Shahid Beheshti (Iran)	2	.9
China - Peking U. Health Science Center	1	.5	Shanghai Second Medical University, China	1	.5
City University (London)	2	.9	Southern California	1	.5
Davao Doctors College	1	.5	Southern College	4	1.9
Dayanand Medical College India	2	.9	SUNY	4	1.9
Ferris State College of Optometry	1	.5	U.of Benin-Nigeria	2	.9
Glasgow Caledonian University	1	.5	U.of Manchester	1	.5
Glasgow University, Scotland	1	.5	U.of Melbourne	2	.9
Govt Med. College Nagpur India	1	.5	U.of Montreal	10	4.7
Illinois College	23	10.7	U.of Waterloo	73	34.0
IMO State University-Nigeria	1	.5	University of Houston	3	1.4
Indiana University	6	2.8	University of Missouri	1	.5
Iran - Mashad Medical University	1	.5	University of New South Wales Australia	1	.5
Lasalle University - Columbia	1	.5	West China U. of Medical Sciences, China	1	.5
Lotus College, India	2	.9	TOTAL	215	100.0

Table 1: Distribution of New Candidates across Schools

STRUCTURE OF THE CSAO COMPONENTS

The CSAO is comprised of 7 components. The 3 written components include Optometric Knowledge (380 items), Ocular Therapeutics (120 items) and Clinical Judgment (100 items) and 4 Clinical Skills Stations.

The content of Optometric Knowledge reflects areas from the Biological Sciences and Visual Sciences and specifically addressed the following topics: Human Biology, Systemic conditions, Human and Visual Development & Aging, Ocular Visual Biology, Ocular Disease/Trauma, Radiation, Light & Optics, Vision and Public Health and Safety.

The Ocular Therapeutics exam includes the following areas: general Microbiology, general immunology, general pharmacology, ocular pharmacology, ocular disease/trauma: treatment, management and progress.

The Clinical Judgment Examination involves consists 25 of clinical cases drawing from the following areas: Oculomotor, (4 cases,) Sensory-integrative, (3 cases) Systemic disease (4 cases), Refractive Error, (6 cases) Ocular Disease (6 cases) and Accommodation (2 cases).

The four 45 minute skills stations require the candidates to perform a number of clinical skills in the following four sessions:

1. Skills and Techniques in Interviewing and Assessing Refractive and Accommodative Conditions
2. Skills and Techniques in Assessing Oculomotor and Sensory-Integrative Functions
3. Skills and Techniques in Assessing Oculomotor and Systemic Disease
4. Skills and Techniques in Assessing Ophthalmic Appliances

SUMMARY OF CANDIDATE PERFORMANCE

In reporting the results for the 2008 administrations, the results are presented at two points in time. The first point reflects the results for first attempt candidates. The second point in time is for the Year End results again for new candidates in 2008. Any candidate who is unsuccessful in the Spring administration may choose to retake any failing component in the October administration. For those candidates, the Year End result reflects their final status. For example, a candidate who failed in the Spring administration but passed in the October administration would be classified as a failing candidate for the Spring administration but a passing candidate at year-end.

Figure 2, represents the overall pass rate for all new 215 Spring 2008 candidates on their first attempt. In order for a performance to be deemed as a “Pass” the candidate is required to be successful in all 7 CSAO components. The overall 2008 first attempt pass rate was 85.6%.

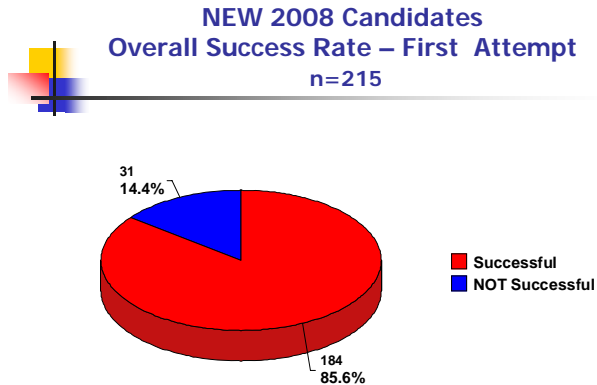
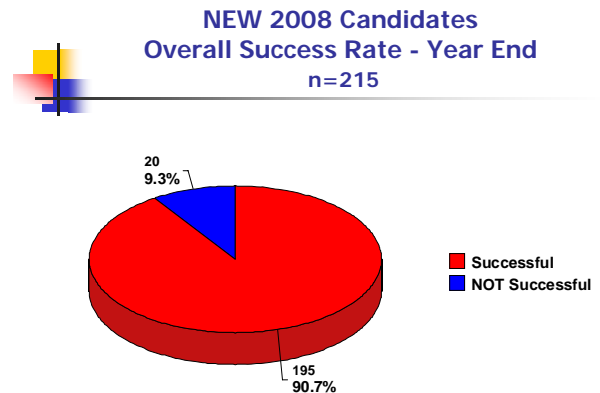


Figure 3, represents the Year End pass rate for all 215 new 2008 candidates. The 2008 results of 90.7% are comparable to the 2007-year end results (95.9%). For those candidates who sat both the CSAO and the NBEO it may be of interest to them to know that the overall pass rates for the two exams were comparable with the NBEO 2008 Ultimate Pass Rate, Parts I-III at graduation falling at 93.9%. (Source: http://spectacle.berkeley.edu/opt_/txtp/admissions/admitnbeo.html)



PERFORMANCE BY GROUP

Figure 4, below, breaks down the overall pass rate for all 215 new candidates by the following groupings: Canada, USA and International educated on their first attempt. Results for the three groups were consistent with previous administrations with Canadian candidates having the strongest performance and International candidates reflecting the weakest performance. However, given the relatively small sample size for the International candidates these results must be interpreted cautiously.

NEW 2008 Candidates by Group Overall Success Rate – First Attempt

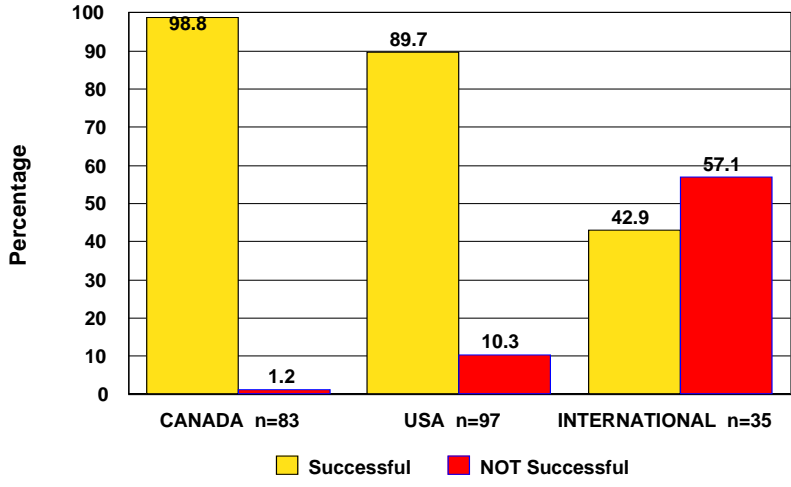
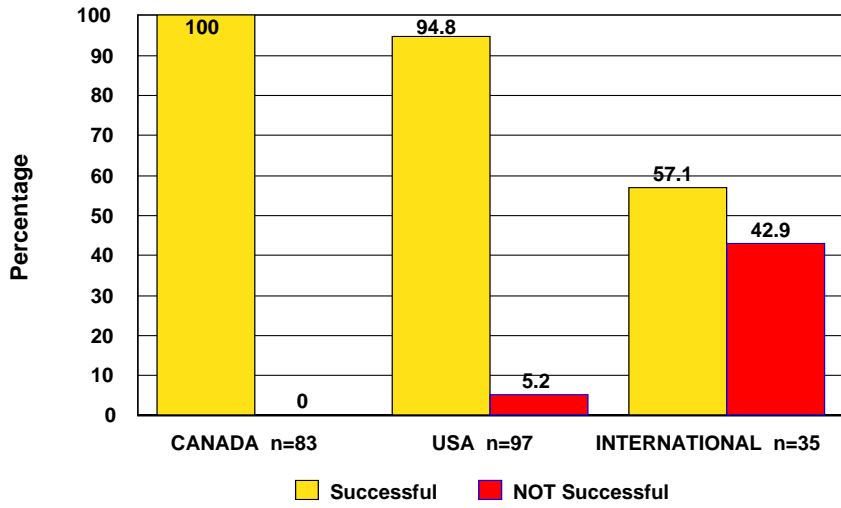


Figure 5 below again provides the overall results for each group at Year End. As the results indicate, each group benefited from including the final status of candidates who failed in the Spring but were successful in October.

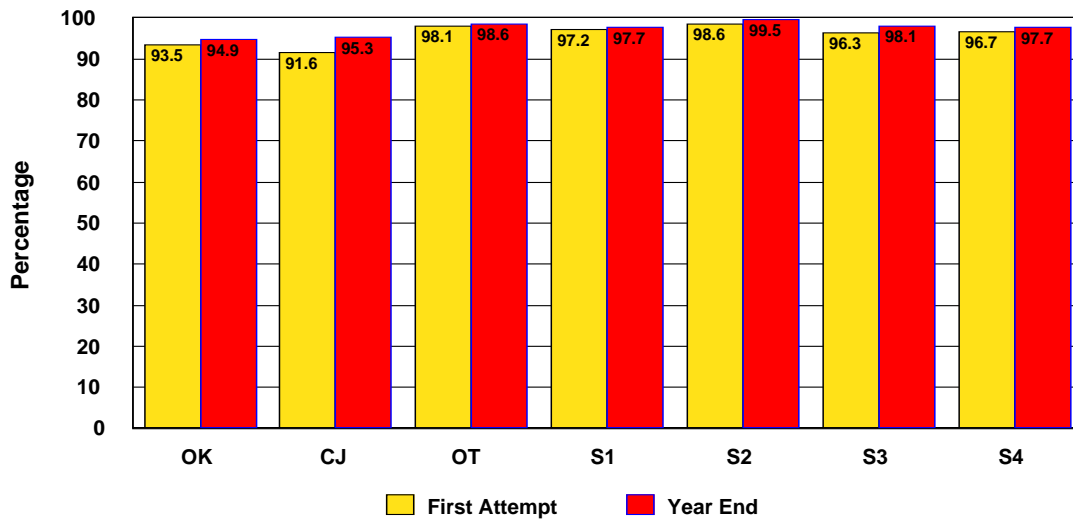
NEW 2008 Candidates by Group Overall Success Rate – Year End



PERFORMANCE BY COMPONENT

Figure 6 represents the overall pass rate for each of the 7 CSAO assessment components for all candidates on First Attempt and Year End.

2008 Pass Rate By Component For All 215 New Candidates



KNOWLEDGE COMPONENTS

OK: Optometric Knowledge

OT: Ocular Therapeutics

CJ: Clinical Judgement

CLINICAL SKILLS COMPONENTS

S1: Interviewing/Assessing Refractive & Accommodative Conditions

S2: Assessing Oculomotor & Sensory-Integrative Functions

S3: Assessing Oculomotor & Systemic Disease

S4: Assessing Ophthalmic Appliances

GROUP PASS RATE BY COMPONENT

Figure 7 compares the First Attempt performance of all 3 groups on each of the 7 CSAO exam components. Figure 8 provides the results for Year-End status across each of the 7 components. While the performance of North America candidates was comparable, International candidates encountered greater challenges in all areas and particularly in Optometric Knowledge and Clinical Judgment, for the written components and Sessions 1 and 3 for the clinical skills.

Figure 7: Pass Rates by Component – First Attempt

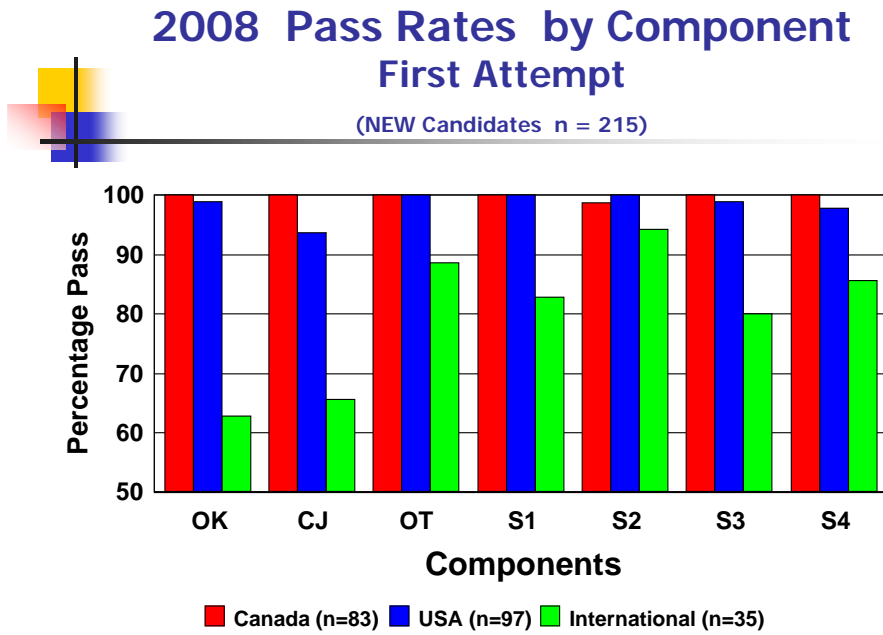
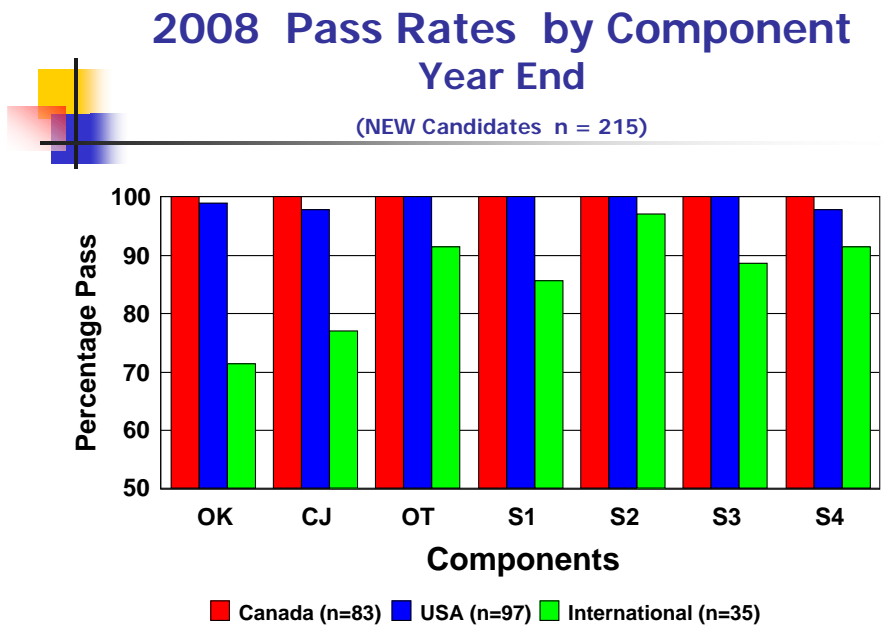


Figure 8: Pass Rates by Component – Year End



ITEM ANALYSIS AND PSYCHOMETRIC PROPERTIES OF THE EXAMINATION COMPONENTS

A complete item analysis was undertaken for all three, 2008 administrations. For the April examinations, 14 items in Optometric Knowledge, 6 items in Ocular Therapeutics and 7 items in Clinical Judgment were deleted from scoring. In May, 8 items in Optometric Knowledge, 6 items in Ocular therapeutics and 3 items in Clinical Judgment were deleted from scoring. In the October exam 13 items in Optometric Knowledge, 5 items in Ocular Therapeutics and 1 item in Clinical Judgment were deleted from scoring.

Overall, the percentage of the items deleted from scoring across the three sessions was modest (4.5%, 2.8% and 3.2% respectively).

No items were deleted for all candidates for any of the 4 Clinical Skills examinations.

Table 2 reports reliability coefficients for each CSAO component for all three 2008 administrations. The traditional Cronbach's alpha is reported but given that the CSAO examinations are better characterized as criterion-referenced tests, the Livingston's reliability coefficient is also provided. A closer examination of the Livingston's coefficient across all components for all administrations indicates that they are strong and contribute to establishing the validity of these measures.

Table 2: Reliability coefficients for the components of all three 2008 CSAO administrations.

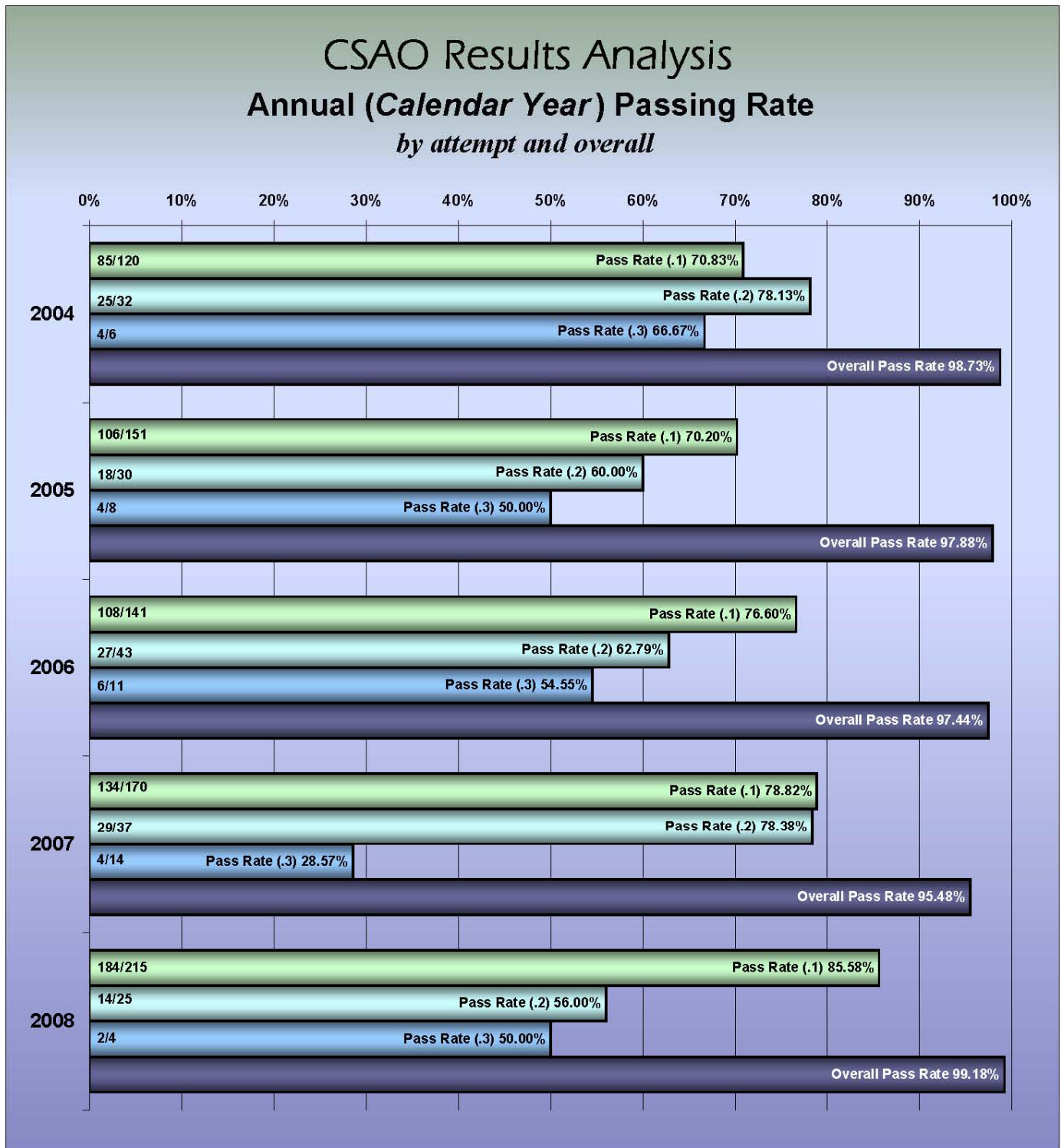
CSAO Component	APRIL 2008		MAY 2008		OCTOBER 2008	
	Alpha	K ²	Alpha	K ²	Alpha	K ²
Optometric Knowledge	.90	.98	.94	.98	.94	.95
Ocular Therapeutics	.72	.96	.89	.98	.85	.94
Clinical Judgment	.67	.87	.85	.93	.82	.84
Clinical Skills 1	.53	.89	.56	.91	.86	.88
Clinical Skills 2	.46	.93	.50	.87	.65	.89
Clinical Skills 3	.74	.94	.65	.92	.80	.87
Clinical Skills 4	.56	.94	.72	.93	.74	.85

k² (Livingston's Coefficient Kappa)

PERFORMANCE OF REASSESSMENT CANDIDATES

In total, 8 candidates who had first attempted the CSAO exam prior to 2008 returned for reassessment. Of these 6 (75%) were successful. For new 2008 candidates, 21 of the 25 unsuccessful candidates in the Spring administration of the CSAO returned in October. Of these candidates 11(52.4%) were successful.

The following statistical charts were prepared by CEO to provide a comprehensive report of CSAO cumulative and overall performance by annual calendar year.



Note: Annual "Overall Pass Rate" is based on those candidates that were unsuccessful on their third attempt within a given year. This figure does not reflect those failing candidates that chose not to complete the entitled two reassessment opportunities.

CSAO Results Analysis

Annual (Calendar Year) Overall Passing Rate by source of training; by attempt

