



CSAO

CANADIAN STANDARD ASSESSMENT IN OPTOMETRY

Summary Report

2009 Administrations



Prepared for
Canadian Examiners in Optometry
By
MARTEK Assessments Ltd.

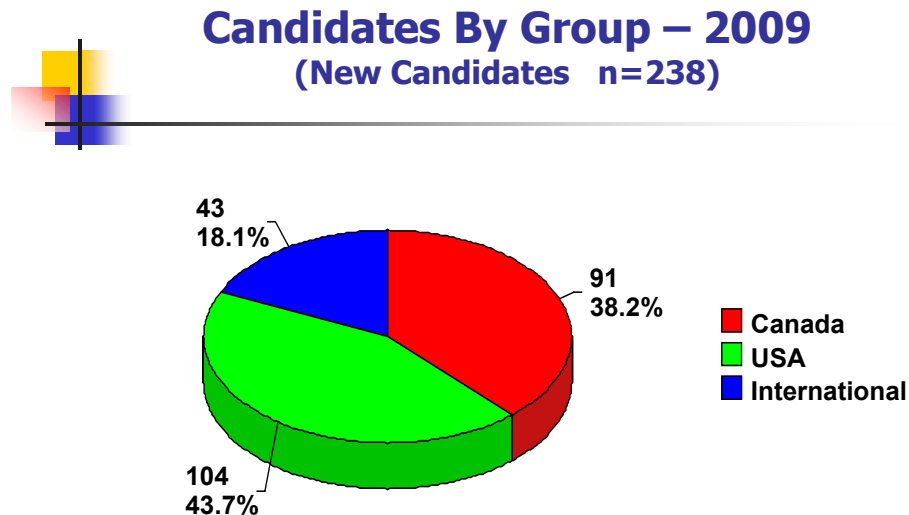
The purpose of this report is to provide Canadian Examiners in Optometry with annual statistical insight and a psychometric analysis and summary related to the Canadian Standard Assessment in Optometry (CSAO) as a source of reference for ongoing assessment maintenance and development and for communication to stakeholders. Please note that this report focuses solely on data related to CSAO candidates that have initiated the CSAO process during the 2009 calendar year (new candidate = .1). The results analysis contained herein does not include the complete 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 2009, a total of 255 candidates participated in the 3 CSAO administrations. Of this number, 238 (93.3%) were new candidates and 17(6.7%) represented reassessment candidates from the previous years. For the April administration, 163 candidates attended with 146 (89.6%) of these being new candidates and 17 (10.4%) returning for reassessment in one or more components. The May session was made up of 42 new candidates only. For the October administration, 50 new candidates participated along with 32 candidates returning for reassessment. Of those returning for reassessment, 27 had fallen below on one or more components in the Spring 2009 administration. Overall, the 238 new candidates for 2009 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 91 (38.2%) Canadian educated, 104 (43.7%) American educated and 43 (18.1%) Internationally educated candidates participated in the 2009 administrations. In comparison to 2008, the participation rates of all three groups are similar.

Figure 1: Distribution of Candidates by Group



Consistent with previous years a significant number of institutions from around the world were represented at the 2009 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; in 2008, a total of 43 institutions were represented while 44 institutions participated in the 2009 CSAO.

Table 1 reports the new candidate pool (N=238) by Professional School for the 2009 administrations.

<u>INSTITUTION</u>	<u>#</u>	<u>%</u>	<u>INSTITUTION</u>	<u>#</u>	<u>%</u>
Ain Shams University Egypt	1	.4	Pennsylvania College	14	5.9
Anglia Ruskin University	1	.4	Queensland University	1	.4
Berkeley	2	.8	Rizai Medical Center, Philippines	1	.4
Bradford England	4	1.7	Royal College London England	2	.8
Cairo U Egypt	3	1.3	Shahid Beheshti (Iran)	2	.8
Cardiff, England	2	.8	Siberian State Medical University	1	.4
Centro Escolar University Philippines	1	.4	Sichuan University, China	1	.4
City University (London)	2	.8	Southern California	3	1.3
College of Physicians Karachi Pakistan	1	.4	Southern College	2	.8
Ferris State University	1	.4	SUNY	4	1.7
Harbin Medical University China	2	.8	U de San Francisco, Ecuador	1	.4
Illinois College	24	10.1	U. of Montreal	10	4.2
Indiana University	3	1.3	U of Ashton-England	4	1.7
Int. Am. Puerto Rico	1	.4	U of Waterloo	81	34.0
Iran, Tehran University	2	.8	Unisalle Columbia	1	.4
Lotus College, India	1	.4	University of Auckland	3	1.3
Ludhiana India	1	.4	University of Baghdad	1	.4
Michigan College	1	.4	University of Education Utrecht, NL	1	.4
New England College	21	8.8	University of Houston	1	.4
Ningxia Medical School, China	1	.4	University of Kabul	1	.4
Nova Southeastern University	4	1.7	U of New South Wales Australia	1	.4
Ohio State University	1	.4	TOTAL	238	100.0

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 component includes the following areas: general Microbiology, general immunology, general pharmacology, ocular pharmacology, ocular disease/trauma: treatment, management and prognosis.

The Clinical Judgment assessment consists of 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 clinical skills sessions require candidates to perform a number of techniques and procedures in the following areas:

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

For the 2009 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 2009. 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 238 Spring 2009 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 2009 first attempt pass rate was 79%.

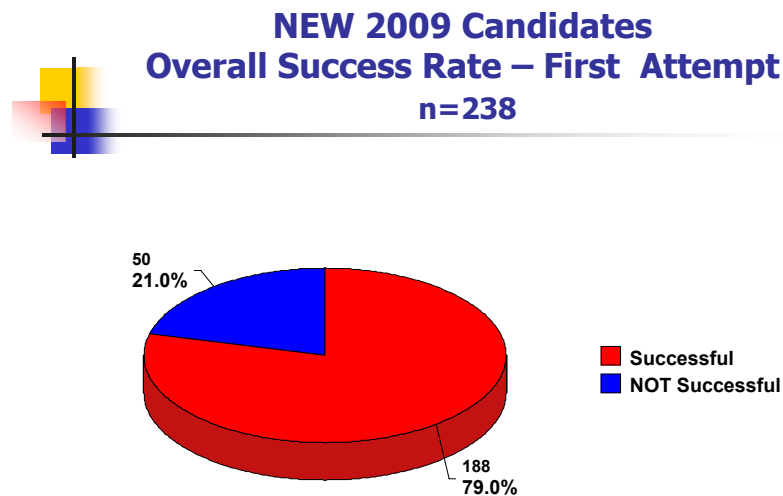
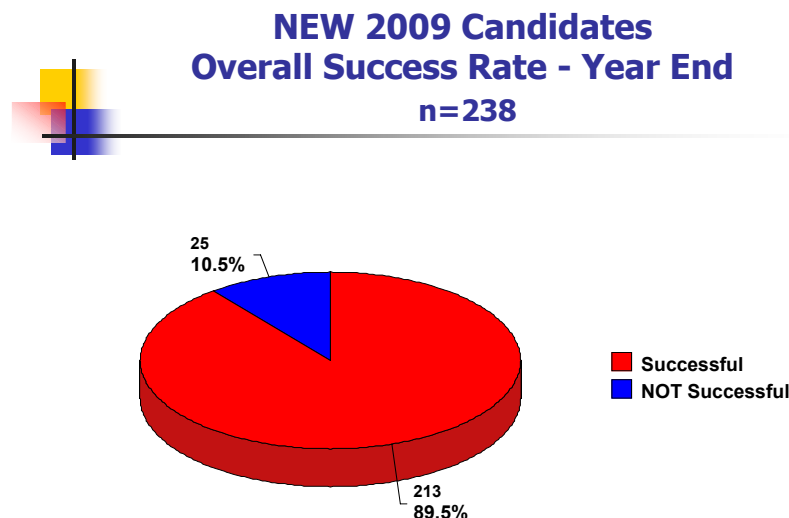


Figure 3 represents the Year End pass rate for all 238 new 2009 candidates. The 2009 results of 89.5% are comparable to the 2008-year end results (90.7%). For those candidates who sat both the CSAO and the NBEO, it may be of interest to them to know that the overall pass rates for the two exams were comparable with the NBEO 2009 Ultimate Pass Rate, Parts I-III at graduation falling at 90.7%. (Source: http://optometry.berkeley.edu/opt/_txtpp/admissions/admitnbeo.html)



PERFORMANCE BY GROUP

Figure 4 below breaks down the overall pass rate for all 238 new candidates by the following groupings: Canada, USA and International educated on their first attempt. The pattern of results for the three groups was consistent with previous administrations with Canadian candidates having the strongest performance and International candidates reflecting the weakest performance.

**NEW 2009 Candidates by Group
Overall Success Rate – First Attempt**

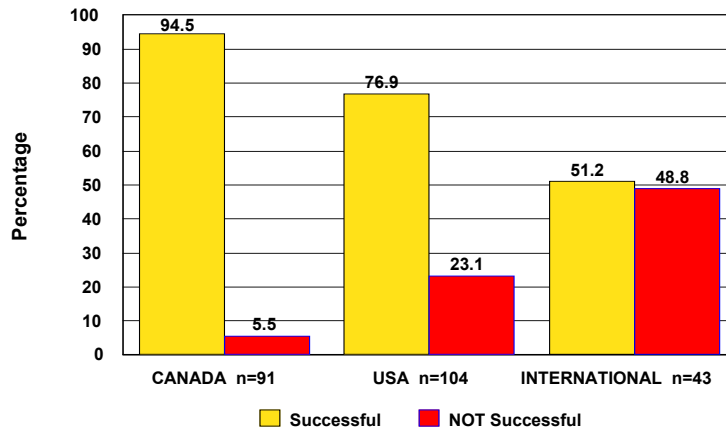
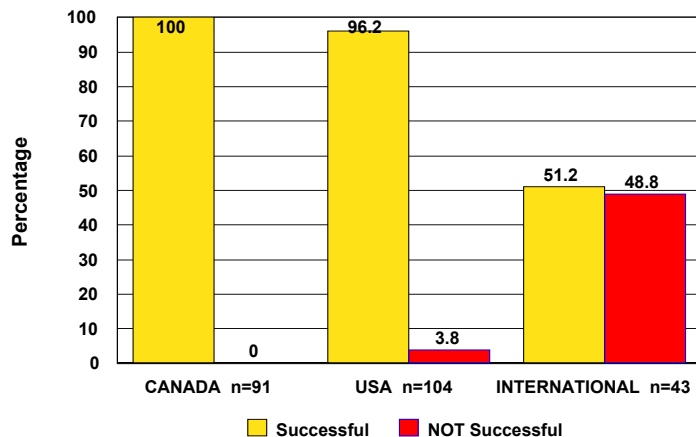


Figure 5 below again provides the overall results for each group at Year End. As the results indicate, both Canadian and US educated groups benefited from including the final status of candidates who failed in the Spring. Since the new International candidates for 2009 did not participate in the Spring but solely in the fall administration, no change in their status is reported.

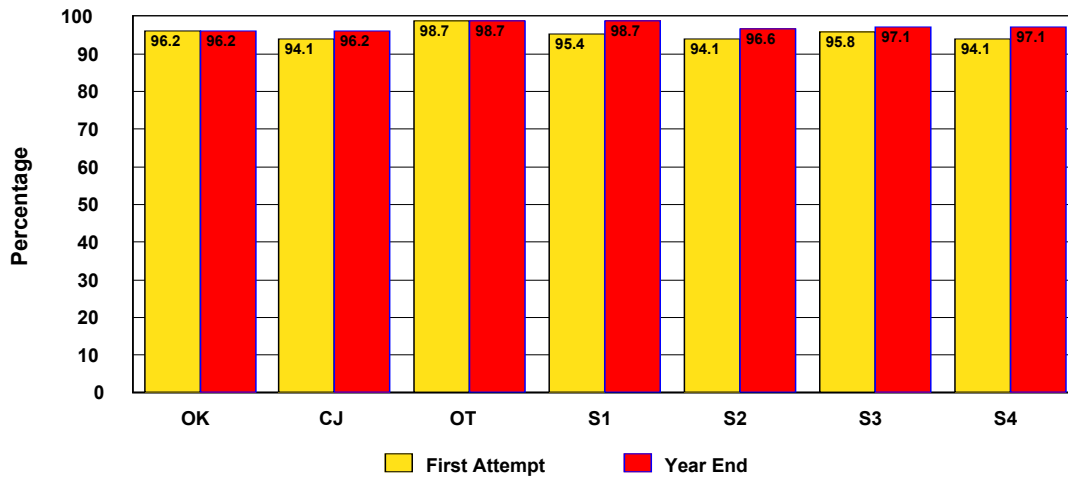
**NEW 2009 Candidates by Group
Overall Success Rate – Year End**



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.

2009 Pass Rate By Component For All 238 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 virtually all areas of the CSAO.

Figure 7: Pass Rates by Component – First Attempt

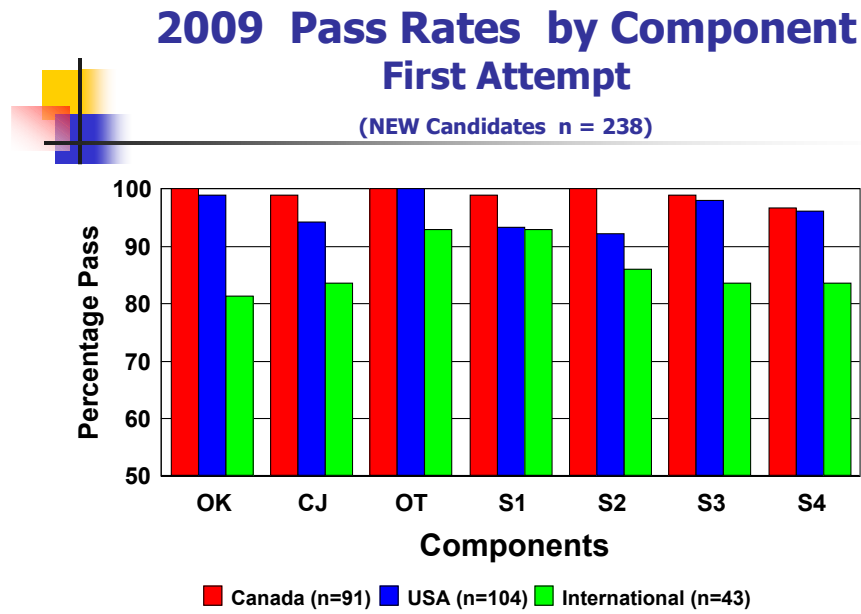
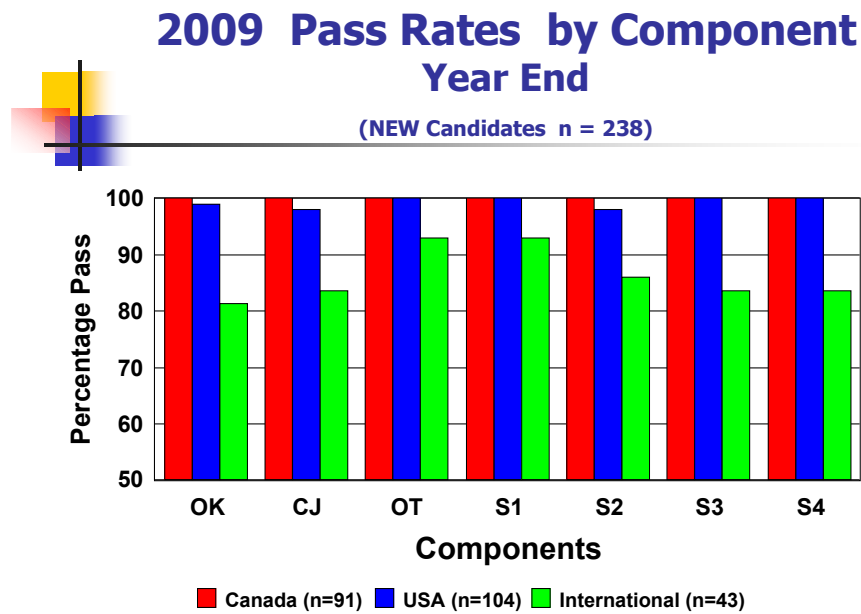


Figure 8: Pass Rates by Component – Year End



ITEM ANALYSIS AND PSYCHOMETRIC PROPERTIES OF THE EXAMINATION COMPONENTS

A complete item analysis was undertaken for all three 2009 administrations. For the April examinations, 17 items in Optometric Knowledge, 5 items in Ocular Therapeutics and 5 items in Clinical Judgment were deleted from scoring. In May, 15 items in Optometric Knowledge, 6 items in Ocular therapeutics and 5 items in Clinical Judgment were deleted from scoring. In the October exam, 18 items in Optometric Knowledge, 1 item in Ocular Therapeutics and 2 items in Clinical Judgment were deleted from scoring.

Overall, the percentage of the items deleted from scoring across the three sessions was modest; 4.5%, 4.3% and 3.5% 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 2009 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 2009 CSAO administrations.

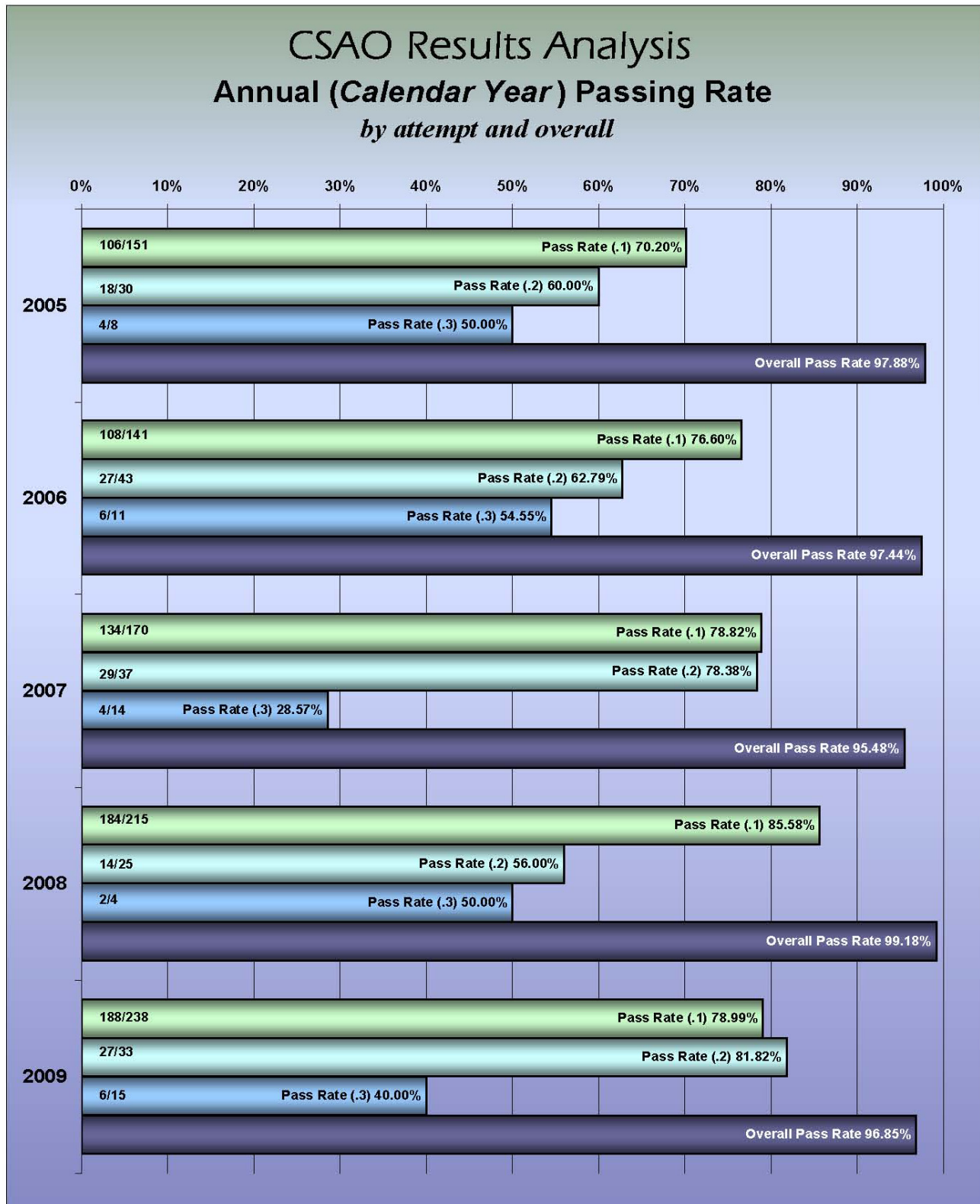
CSAO Component	APRIL 2009		MAY 2009		OCTOBER 2009	
	Alpha	K^2	Alpha	K^2	Alpha	K^2
Optometric Knowledge	.92	.98	.91	.98	.92	.96
Ocular Therapeutics	.75	.97	.80	.97	.78	.94
Clinical Judgment	.73	.92	.77	.88	.73	.87
Clinical Skills 1	.69	.86	.40	.92	.75	.85
Clinical Skills 2	.59	.92	.57	.86	.81	.88
Clinical Skills 3	.72	.92	.63	.91	.80	.85
Clinical Skills 4	.61	.93	.44	.87	.81	.88

k^2 (Livingston's Coefficient Kappa)

PERFORMANCE OF REASSESSMENT CANDIDATES

In total, 17 candidates who had first attempted the CSAO exam prior to 2009 returned for reassessment. Of these 9 (52.9%) were successful.

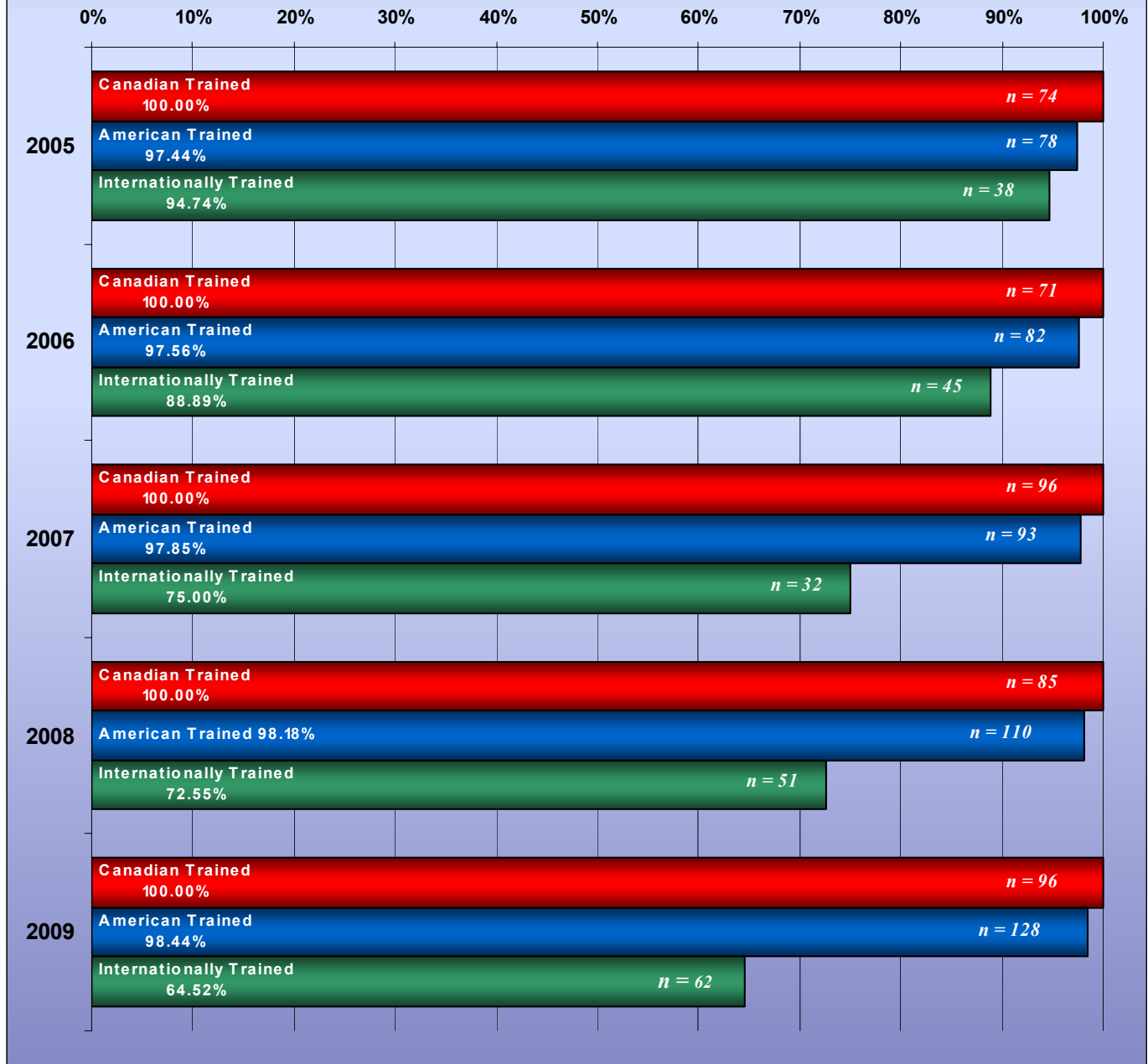
The following statistical charts were prepared by CEO to provide a comprehensive report of CSAO cumulative and overall performance by annual calendar year.



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 Performance Rate *by source of training*



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

