

CASUALTY ACTUARIAL SOCIETY
EDUCATION POLICY COMMITTEE

2010 TRAVEL TIME REPORT

BIENNIAL REPORT TO THE BOARD OF
DIRECTORS ON TRAVEL TIME STATISTICS
FOR CANDIDATES OF THE CASUALTY
ACTUARIAL SOCIETY

June 2011

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EXECUTIVE SUMMARY

The 2010 Travel Time Report (2010 Report) provides insights and observations based on travel time statistics compiled using the membership database of the Casualty Actuarial Society (CAS) through September of 2010. In April 2008, the CAS implemented new database software, which resulted in significant data scrubbing to improve the quality of the data prior to conversion. Even following the 2008 data scrubbing, data continue to be updated as exam histories are added. As a result, the statistics produced from some of the data underlying this Report are not fully comparable to the statistics in prior years' reports. The most significant data issues affecting this Report are described in the *Data and Data Organization* section and in Appendix C to this report.

We continue to compile data based on date from first examination (exam); this approach was first introduced for the 2007 Travel Time Report (2007 Report). This allows us to make use of a much larger data set, especially for candidates. We estimate travel time from date of first property and casualty (P&C) actuarial employment¹ by subtracting the median time from first exam to first employment. Many of the tables and charts that display travel time from first employment have been moved from the body of the report and included as Appendix B for completeness and comparison to prior travel time reports.

The available data on candidates by first employment date is limited and has not shown significant change over the recent past. In the 2005 Travel Time Report, only 13% of candidates had a date of first employment; in the 2008 Travel Time Report, this percentage increased to 14%; and in the 2010 Travel Time Report, the percentage is 15%. We do not believe that there is a meaningful increase in the number of candidates reporting date of first employment, nor is there a sufficient volume of experience from which to draw meaningful conclusions. Thus, we recommend the following with respect to future travel time reports:

- Continue to collect information on first employment date with a particular emphasis on collection of this information from candidates
- Monitor whether a sufficient volume of experience exists for the analysis of statistics related to date of first employment included in the travel time report
- If a meaningful volume of experience does not exist (information for close to 50% of candidates), do not include in the analysis supporting the travel time report

¹ Date from first employment is defined to be the date from first full time employment in a P&C actuarial role.

For the 2010 Travel Time Report, we continue to use both time from first exam and time from first employment for consistency with the 2008 Travel Time Report. Similar to 2008, the focus of this report is on time from first exam since:

- First examination data are available for 93% of all candidates in the CAS database and will be available for virtually all new candidates added in the future.
- Reporting of first employment date of candidates remains persistently low.
- The CAS will never capture date of first employment for candidates who do not initially report the information and then drop out of the admissions process, including candidates who remain employed in the P&C industry but do not reach membership. The inability of the CAS to capture this information may materially affect the calculation of travel times from first employment to designation. It is likely also to cause a material overstatement of the success rate for cohorts based on date of first employment.
- Given that the average age at first examination is about 25 and the average gap between first examination and first employment is only about a year, we do not believe that attempting to track travel time from first employment rather than first examination is likely to provide much additional insight.
- There may well be numerous personal reasons for the variation in times from first exam to first employment, but measurement of this may best be done separately. We start that process in this report.

The compilation and interpretation of CAS membership travel time statistics continues to be challenging. Since no single metric can fully convey all aspects of interest regarding travel time, we consider several different measures of exam progress in this report. From our analysis of these metrics, we observe that:

- **Travel time to Fellowship is still above the Board of Directors' goal of five to seven years.** For the most recent years, we project median travel time from date of first employment to Fellowship to be about 7.5 years. The projected median travel time (from first employment) is quite consistent for the last fifteen years (i.e., 1995 to 2010). The travel time is down by more than one year from the level observed in the 1980s and early 1990s.
- **Projected travel time from first employment to Associateship for more recent years is lower than levels in the mid-1970s through the 1980s but somewhat higher in the 2000s than in the 1990s.** It is interesting to note that different trends are apparent based on travel time from first exam and travel time from first employment. From first exam, the travel time to Associateship has remained remarkably consistent between 7.0 and 7.5 years for the 35 year period 1975 through 2009. From first employment, travel time dropped in the 1990's but appears to have increased again in the last decade. We note that there was an increase in Associateship exam requirements in the mid 1970s and an effective increase in 2000, and that average travel time from first exam to first employment has dropped by about a year along with the elimination of the calculus examination.

- **Travel time between first exam and first employment is decreasing.** The average time from first exam to first employment, which increased from the 1970s through the early 1990s (to a high of 2.0 years for the 1990 to 1994 period) now appears to be decreasing. While the data is significantly more limited with respect to date of first employment than date of first exam, the selected values for years 2005 and prior are based on the actual data of more than 4,000 members. We select the value of one year for the period 2006 to 2010. Our tentative conclusion at this time is that the drop is most likely a function of the elimination of the calculus examination from the syllabus, thus delaying the first examination for many candidates by about a year.

- **The number of CAS candidates entering the profession was at its highest in 2005 and has leveled off since then.** From 2000 to 2005 the number of candidates writing the jointly administered exams and the number of new CAS candidates increased dramatically. Since 2005, however, the number of CAS candidates has remained fairly steady between 970 and 1080. The current projection of ultimate candidates for 2010 is just under 900; however, we have actual data only for one half of the year and therefore there is considerably uncertainty in the projection.

- **Significant numbers of candidates drop out of the process before becoming members of the CAS.** Candidates who registered but never passed an exam comprise approximately 20% of the population in the CAS database. For those who pass at least one exam, just over 40% are expected to achieve Associateship, and 35% will reach Fellowship.

- **The average age of the candidates is increasing.** While the trend has leveled off, the average age of candidates sitting their first exam has increased from 23 in 1990 to approximately 25 in more recent years. We observe that candidates who enter the profession in their early 30s tend to have shorter travel times than those who enter the profession in their 20s.

- **There have been significant changes in the exam system since 1990.** We recognize that such changes disrupt the flow of candidates through the system and affect the supply of candidates to employers. (See *Pass Ratios and Progress Statistics* section in Analysis and Results). We expect that the new 2011 syllabus will affect candidate travel times as well.

A final recommendation arising from our analysis is that the CAS begin to capture the date when a candidate is added to the CAS database. This will enable members of the Education Policy Committee to restate prior data to reflect change and recreate missing diagonals in future travel time reports.

ANALYSIS AND RESULTS

The CAS basic education exam system has undergone significant changes since 1990, all with the intent to improve the quality of the admissions process. Travel time statistics are among a number of measures that are used to identify and monitor any effects these changes may have had on the organization's admission rates. The 2010 Report provides insights and observations based on travel time statistics compiled using the CAS membership databases.

"Travel time" is a term commonly used by the CAS to denote the number of years it takes a candidate to achieve membership (either Associateship, ACAS, or Fellowship, FCAS, designation). In 2002, the CAS Board of Directors adopted a revised definition of travel time to denote the time between the first date of full-time P&C actuarial employment and attainment of either the ACAS or FCAS designation.

APPROACH AND METHODOLOGY

In the 2010 Report, we continue to focus on an analysis of travel time from date of first exam. To be consistent with the Board's revised definition of travel time, we adjust the travel times from first exam by an estimate of the time between first exam and first employment to produce projected travel times since first employment. This approach was introduced in the 2007 Report. In this report, we recommend that the focus of future reports be travel time from date of first exam and not from date of first employment due to the limitations in data particularly for the candidate population. We do recommend that the CAS continue to seek date of first employment but not rely on such analyses until a sufficient volume of experience is available.

In our analysis, we construct development triangles showing the count of CAS candidates, ACAS members, and FCAS members by elapsed time from the date of first exam.

We use the CAS candidate count information as a proxy for exposures. As most preliminary exams are jointly administered by the SOA and CAS, the CAS may not know of many candidates (especially those still in university) until they register for a CAS-specific exam or report to the CAS that they have decided to follow the CAS track. For this reason, we also review development statistics for the count of CAS candidates and project these to ultimate by year of first exam using a chain ladder approach. This concept is similar to developing underwriting year premiums to ultimate before using them as an exposure base as is commonly done with treaty reinsurance reserving.

We were only able to create two diagonals of information for the CAS candidate count triangle for the 2008 report due to data inconsistencies which arose as part of the database software conversion. (See further details in the *Data and Data Organization* section of the 2008 report.) No 2009 report was prepared, so we do not have a diagonal for the 2009 data. In addition, a candidate's date of first exam sometimes changes when joint exam and/or SOA records are incorporated into the CAS database. We therefore calculate a 2008 diagonal that is consistent with the 2010 data by reassigning dates of first exam to match the 2010 data, and estimate the missing 2009 diagonal.

We incorporate one other change in the calculations for this report: we exclude candidates who have not yet passed an examination. This means that, all things being equal, there will be somewhat longer development for the full list of candidates by date of first exam. We believe, however, that candidates who register with the CAS but never pass an examination should not be included in meaningful travel time statistics.

Given the limited data on entry into the CAS database, the CAS candidate count development pattern is subject to significant uncertainty. We also recommend that the CAS begin to capture the date when a candidate is added to the database, so that we can restate prior data to reflect changes and recreate missing diagonals in the future.

Traditional actuarial projection methods are applied to estimate ultimate membership counts for cohorts grouped by year of first exam. We use the Bornhuetter-Ferguson approach to estimate the ultimate number of members by year of first exam. Median travel times from date of first exam for each of the ACAS and FCAS membership classes are then estimated. For years where the number of ACAS or FCAS already exceeds 50% of the projected ultimate number of members, we estimate the median travel time as that of the n th member where $2xn =$ estimated ultimate count. Thus, for first-exam classes through 2002 for Associates and through 2001 for Fellows, the estimated median travel time is that of the k th percentile of the current members, where $k = n /$ current member count. For first-exam classes 2003 through 2006 for Associates and 2002 through 2005 for Fellows, we complete the triangles out to the n th member, and estimate the travel time from the completed triangles. For the more recent years, there are so far very few or no members, and we therefore select median travel times consistent with recent years. We highlight that our projections for first exam classes 2006 and forward are therefore only forecasts based on an assumption of stability.

Finally, we calculate the travel time from date of first employment by subtracting an estimate of the average time from date of first exam to the date of first employment.

We include further details regarding the methodology and key assumptions in Appendix A to this report.

For continuity with prior travel time reports, as well as to gain additional insight, we update all of the statistics from the 2008 Report to include results through the May 2010 exam sessions. These additional statistics along with supporting discussions are contained in Appendix B to this report, which includes the following:

- Median travel times for starting cohorts
- Percentage completion for starting cohorts
- Travel times by candidate age

DATA AND DATA ORGANIZATION

The following candidates who are included in the 2010 database are excluded from the data used for this report (reason for exclusion given for each type):

- Candidates with no date of first exam (61 candidates) – no calculations can be performed
- Date of first exam = Jan 1901 (1762 candidates) – no date of first exam
- 1st exam date > date of ACAS (5) – date of first exam is a miscode
- Candidates not in 2008 database who have credit for no exams and whose last exam date <2006 (2184 candidates) – as discussed above, we believe it distorts completion percentages to include candidates who never pass even a single exam, and it is unlikely that these candidates will ever pass an exam. Until relatively recently, candidates who sat for but never passed an exam were not included in the database.
- Candidates not in 2008 database who have credit for no exams and whose last exam date is 2006-2010 (2912 candidates) – again, we believe it distorts completion percentages to include candidates who have not yet passed an exam. Some of these candidates will enter the calculations at a future date, and will appear in the candidate cohort development statistics.
- Candidates in the 2008 database who have never passed an exam (69 candidates) – same comment.
- Candidates who have credit for only one or more VEE subjects or the Professionalism Course whose date of first exam is after 1999. (1404, of whom 180 were not in the 2008 database) – Per CAS staff, these are candidates who passed the CAS VEE examinations during the period when such exams were offered. However, these candidates have never passed another CAS examination, so they are either SoA candidates who achieved credit for VEE via the CAS exams or they fall into the no exams passed categories discussed above. Candidates who passed certain pre-2000 exams can have credit only for VEE subjects in the post-1999 system, and are therefore maintained.

We also made a small number of manual corrections to the data for illogical entries. We communicated and confirmed these corrections with the CAS to ensure that the source data would be corrected as well.

It is critical that anyone analyzing statistics contained in this report understand the limitations in the data set. In addition to the data inconsistencies previously described, we note the following limitations:

- The CAS databases do not contain a complete exam history for every candidate. The databases were originally constructed in the late 1980s. Although an effort was undertaken at that time to locate as many exam results as possible, complete histories were not available for some candidates.
- Prior to 2000, results for joint exams were often entered with an exam date of 1900/01.

- Prior to 2000, failed attempts on joint exams with the SOA were frequently not entered into the database.
- Exam waivers are frequently coded with the date on which the waiver was approved rather than a May or November examination date.
- Exam dates recorded now reflect more frequent administration of the preliminary exams.
- There are 129 FCAS with no date of ACAS recorded. We assume that the ACAS date is the same as the FCAS date in our calculations. (The CAS's recording standard is to leave the ACAS date as a null value if a candidate achieves Fellowship without ever achieving Associateship, i.e., their last exam to completion is a preliminary or Associateship-level exam.)
- Dates coded for achievement of ACAS and FCAS are recorded as the date of the meeting during which the member was formally recognized. This date is generally six months after the exam sitting.

We highlight that the combined effect of the missing data noted in the first three bullets above is a material overstatement of the success rate (percentage of candidates achieving membership) for first-examination cohorts through the mid-1980's.

Further details regarding the compilation of the data underlying the 2010 Report are contained in Appendix C to this report.

To implement the definition of travel time from the date of first P&C employment, the CAS needed to collect date of first P&C actuarial employment information from its members and candidates. Dates of first employment are now routinely requested by the CAS from all candidates registering for CAS exams. There is also an ongoing attempt to collect first employment date for all current members. Despite these efforts, however, dates of first employment are still not present for 85% of candidates, including many candidates who left the process without achieving a designation, and for a significant number of members. Table 1 compares the number of candidates and members for whom we have first employment dates and first exam dates. (The data is as of September 2010 but includes membership dates for the November 2010 designations.)

Table 1

| Membership Category | Total Population | Number with First Employment Dates | % of Individuals with First Employment Dates Coded | Number with First Examination Dates | % of Individuals with First Examination Dates Coded |
|----------------------------|-------------------------|-------------------------------------------|-----------------------------------------------------------|--------------------------------------------|------------------------------------------------------------|
| ACAS | 1,726 | 1,462 | 85% | 1,488 | 86% |
| FCAS | 3,595 | 3,270 | 91% | 3,286 | 91% |
| Candidate | 21,311 | 3,135 | 15% | 20,034 | 94% |
| Total | 26,632 | 7,867 | 30% | 24,809 | 93% |

As evident in Table 1, the percentage of the database population with dates of first employment recorded (30%) is significantly lower than the percentage of the population with dates of first exam recorded (93%). Although the percentage of individuals with first employment coded has increased for every category since 2008, the total has actually dropped from 32% to 30% due to larger increases in candidate counts

than in ACAS or FCAS counts. While we have first employment dates for over 90% of Fellows and more than 85% of Associates, we are still missing first employment dates for 85% of CAS candidates, and we do not expect that percentage to change materially in the future.

Since the 2007 Travel Time Report, we have organized the data by date of first exam as we have this information recorded for over 90% of the population. This contrasts with less than one-third of the population having dates of first employment coded. An additional reason for using date of first exam is that the date of first employment is reported later, and as a result, statistics organized by date of first employment will change over time, possibly influencing the conclusions regarding travel time. We recognize that the data organized by date of first exam will also change from year to year; however, we expect these changes to be less frequent and less significant than the changes to date of first employment. Thus, we believe that an analysis based on date of first exam produces findings with a greater degree of stability and accuracy much sooner than an analysis based on date of first employment.

RESULTS AND OBSERVATIONS

PROJECTED TRAVEL TIME: ACAS AND FCAS

For each Associate and Fellow with recorded first exam dates, we calculate travel time from date of first exam as the difference between the date of the CAS meeting where the credential was recognized and the date of the member's first exam. We estimate projected travel time from date of first employment using projected travel times from date of first exam and a selected lag from date of first exam to date of first employment which varies by five-year time intervals. The distribution of travel time from date of first employment (with results rounded to the nearest year) and from date of first exam and the projected travel time distribution from date of first exam for future members are displayed below in Charts 1 and 2 for Associates and Fellows, respectively.

In both histograms, the furthest most left bar represents the number of members who achieved their designations in less than one-half year after starting their first full time P&C actuarial job (including those who achieved their designations before beginning full time employment). The second bar represents members achieving their designations more than one-half year but less than one and one-half years after starting work. The dark colored bars on each graph represent the distribution of members by travel time from first examination. Both populations are skewed with heavy right tails.

Chart 1

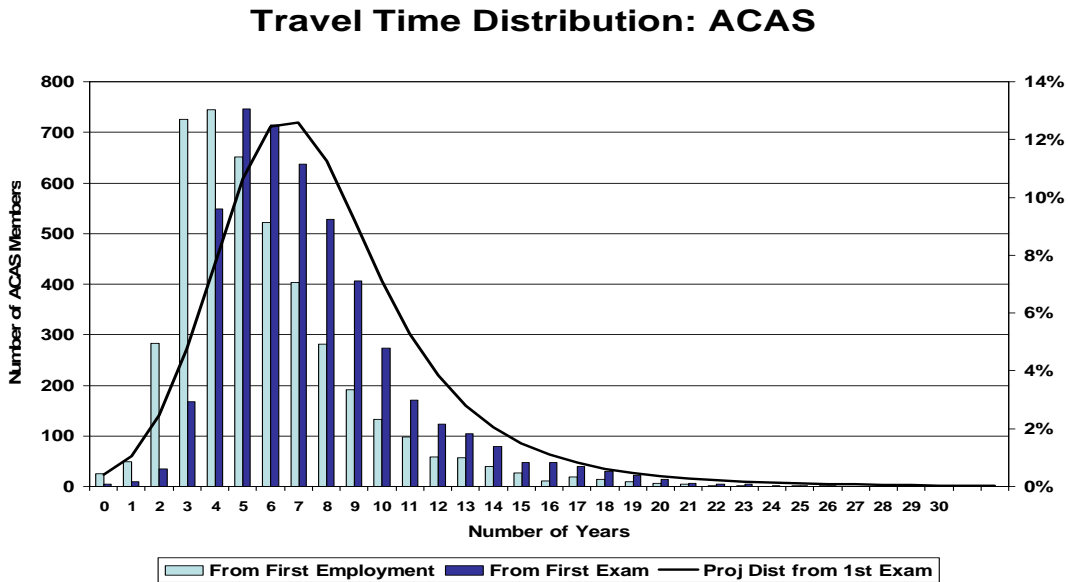
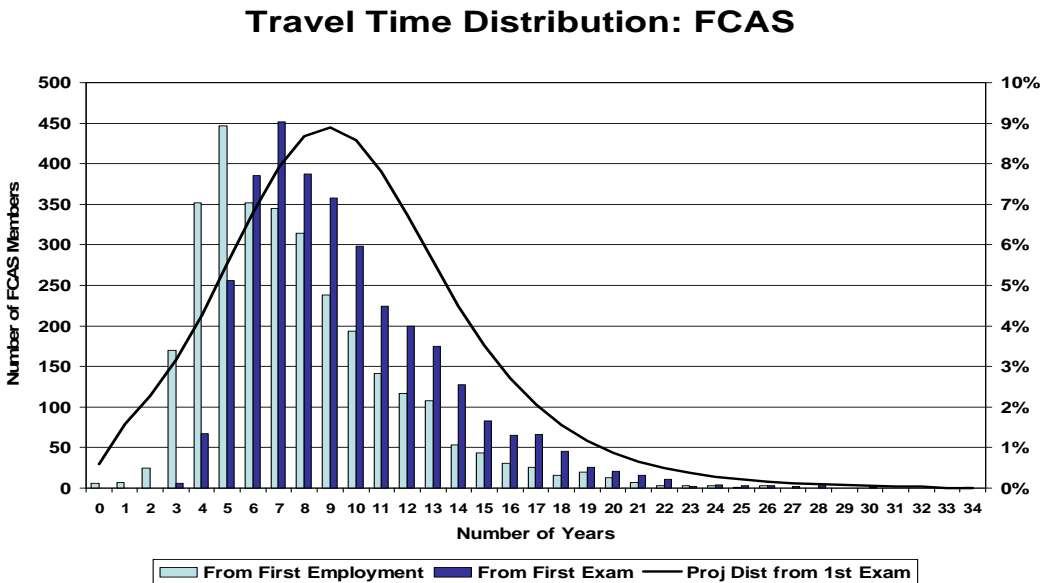


Chart 2



On the following pages, we present Table 2, which includes a summary of the travel time statistics with the data grouped in five-year intervals, and three charts with histograms. In Charts 3 and 4, we present projected travel time from first employment and first exam, respectively, in five-year intervals. In Chart 5, we present travel time from first exam in one-year intervals.

Table 2

| Projected Median Travel Time from Date of First Exam and Date of First Employment | | | | | | | | | |
|-----------------------------------------------------------------------------------|---------------|------|---------------------------|-------|------------------------------------|-------|---------------------------------------------------|-----------------------------------|------|
| Year of First Exam | Actual Counts | | Projected Ultimate Counts | | Travel Time from First Examination | | Selected Time from First Exam to First Employment | Travel Time from First Employment | |
| | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | | ACAS | FCAS |
| 1970 to 1974 | 274 | 219 | 277 | 219 | 5.00 | 8.50 | 0.25 | 4.75 | 8.25 |
| 1975 to 1979 | 432 | 327 | 432 | 327 | 7.00 | 9.00 | 0.67 | 6.33 | 8.33 |
| 1980 to 1984 | 365 | 276 | 365 | 276 | 7.00 | 9.84 | 0.42 | 6.58 | 9.42 |
| 1985 to 1989 | 925 | 641 | 928 | 647 | 7.50 | 10.00 | 1.00 | 6.50 | 9.00 |
| 1990 to 1994 | 977 | 706 | 995 | 742 | 7.50 | 10.00 | 2.00 | 5.50 | 8.00 |
| 1995 to 1999 | 472 | 359 | 518 | 431 | 7.00 | 8.58 | 1.33 | 5.67 | 7.24 |
| 2000 to 2004 | 961 | 589 | 1,553 | 1,278 | 7.42 | 8.89 | 1.17 | 6.25 | 7.72 |
| 2005 to 2009 | 293 | 113 | 2,272 | 1,835 | 7.07 | 8.61 | 1.00 | 6.07 | 7.61 |

Chart 3

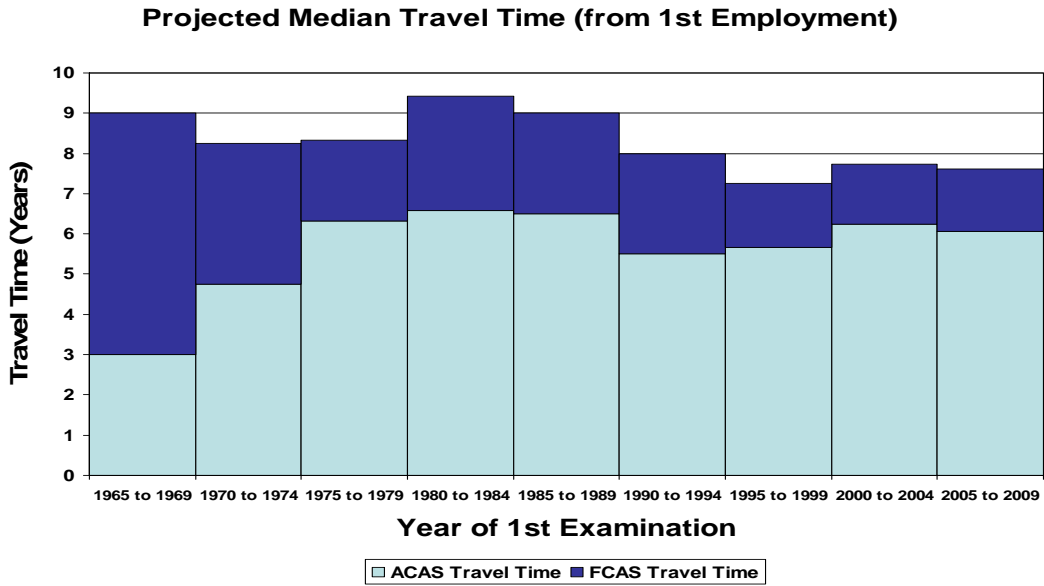


Chart 4

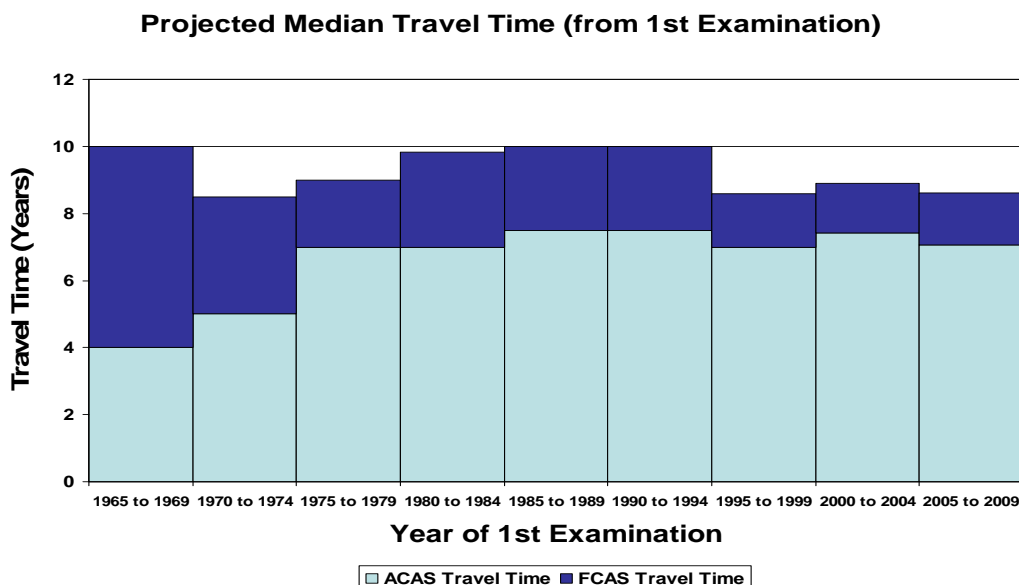


Table 2 and Chart 4 show that in the most recent years (i.e., 2005 to 2009), FCAS projected travel time from date of first exam is somewhat under nine years. The projected travel time for the most recent candidates from date of first exam to Fellowship improves by more than one year from the level in the late 1980s and early 1990s. The most significant driver of the decreased time to Fellowship since the early 1990's appears to be the reduction in the number of examinations from 10 to 9, effective in 2000.

For Associates, current travel time from first exam is roughly seven years and since first employment is about six years. The projected travel time from date of first exam to Associateship has been remarkably stable since the mid-1970s, when the number of Associateship exams was increased from five to seven. It is noteworthy that neither examination partitioning (early 1990's) nor the replacement of the calculus exam with what had been a fellowship exam (2000) appears to have had a material effect on travel time from first examination. The more variable observed time from first employment to Associateship (see appendix B) appears to be mostly a function of changes in the average time from first examination to first employment.

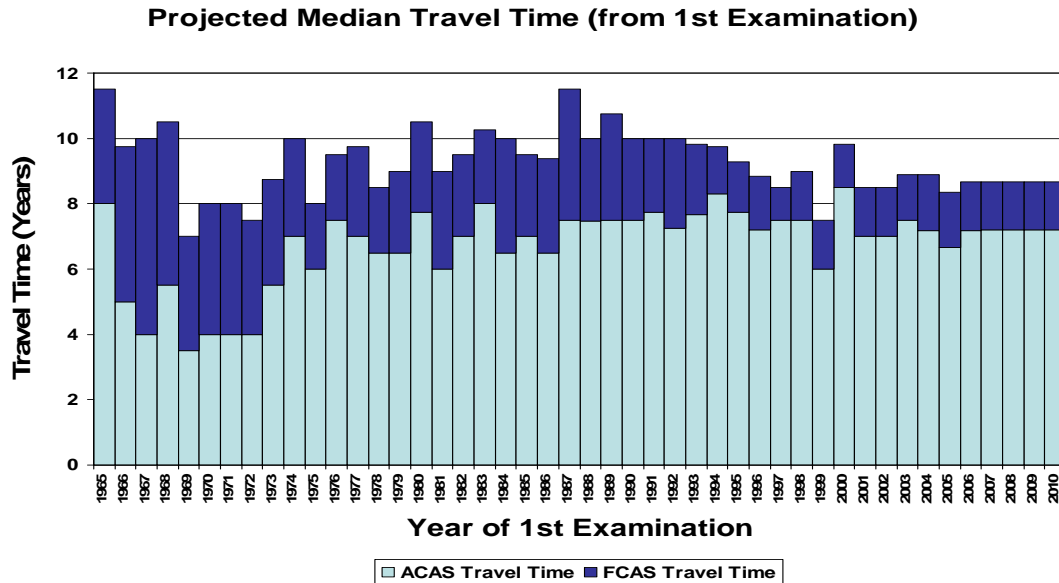
We also compare the projected ACAS and FCAS travel time statistics for the 10th and 25th percentile to the median values. In general, our conclusion is that trends in projected travel times for the most efficient candidates are similar to trends for the median.

The selected time from date of first exam to date of first employment increased from 1970 through 1994 to a high of two years for the five-year period 1990 to 1994. One explanation is that more candidates were entering actuarial programs at universities and taking exams while at university. Another explanation could be related to candidate unemployment rates, giving rise to longer lag times between first exam and first employment. Since 1995, the selected time between first exam and first employment has declined significantly from two years to one year. One possible explanation for the drop in time from first exam to

first employment is the elimination of the calculus exam in 2000. University students (at least in the United States) who might have taken the old Part 1 exam (calculus and linear algebra) as early as their second year of school would be unlikely to take current Exam 1 (probability) until the third year or later.

As noted previously, these changes may be due to other demographic changes which we recommend be investigated further in future reports.

Chart 5



It should be noted that estimates for both ACAS and FCAS travel time for the most recent three or four years reflect limited or no actual experience; they are based primarily on the selected development patterns and a priori candidate success ratios.

We repeat our belief that estimating travel time from the date of first exam yields more reliable results than travel time from date of first employment.

SUCCESS RATIOS

Table 3 below presents thirty years of success ratios for candidates by year of first exam, including the projected ultimate success ratios. The success ratio is defined to be the ultimate number of candidates reaching either the ACAS or FCAS designation divided by the total projected number of ultimate candidates by year of first exam. (Note that the ultimate candidate counts for 2010 are based on only the spring examination results.)

Table 3

| Projected Ultimate Membership Counts and Success Ratios | | | | | | | | |
|---------------------------------------------------------|---------------------|--------------------|--------------|--------------------|---------------|--------------|--------------------|---------------|
| Year of First Exam | CAS Candidate Count | | ACAS Count | | | FCAS Count | | |
| | Recorded | Projected Ultimate | Recorded | Projected Ultimate | Success Ratio | Recorded | Projected Ultimate | Success Ratio |
| | (a) | (b) | (c) | (d) | (e)=(d)/(b) | (f) | (g) | (h)=(g)/(b) |
| PRIOR | 852 | 852 | 706 | 706 | 83% | 540 | 540 | 63% |
| 1979 | 101 | 101 | 75 | 75 | 74% | 62 | 62 | 61% |
| 1980 | 85 | 85 | 66 | 66 | 78% | 55 | 55 | 65% |
| 1981 | 85 | 85 | 65 | 65 | 76% | 54 | 54 | 64% |
| 1982 | 104 | 104 | 72 | 72 | 69% | 56 | 56 | 54% |
| 1983 | 108 | 108 | 77 | 77 | 71% | 48 | 48 | 45% |
| 1984 | 129 | 129 | 85 | 85 | 66% | 63 | 63 | 49% |
| 1985 | 214 | 214 | 115 | 115 | 54% | 83 | 83 | 39% |
| 1986 | 298 | 298 | 147 | 147 | 49% | 108 | 109 | 36% |
| 1987 | 455 | 455 | 214 | 215 | 47% | 140 | 141 | 31% |
| 1988 | 499 | 499 | 188 | 189 | 38% | 131 | 132 | 26% |
| 1989 | 718 | 718 | 261 | 263 | 37% | 179 | 182 | 25% |
| 1990 | 916 | 916 | 273 | 275 | 30% | 197 | 202 | 22% |
| 1991 | 888 | 888 | 226 | 228 | 26% | 158 | 163 | 18% |
| 1992 | 864 | 864 | 206 | 209 | 24% | 151 | 158 | 18% |
| 1993 | 768 | 768 | 136 | 140 | 18% | 103 | 112 | 15% |
| 1994 | 701 | 701 | 136 | 141 | 20% | 97 | 108 | 15% |
| 1995 | 644 | 644 | 114 | 121 | 19% | 78 | 91 | 14% |
| 1996 | 513 | 513 | 97 | 105 | 20% | 76 | 90 | 18% |
| 1997 | 525 | 525 | 114 | 125 | 24% | 87 | 106 | 20% |
| 1998 | 314 | 314 | 81 | 90 | 28% | 60 | 74 | 24% |
| 1999 | 115 | 115 | 66 | 79 | 68% | 58 | 70 | 61% |
| 2000 | 865 | 868 | 223 | 282 | 33% | 128 | 213 | 25% |
| 2001 | 542 | 546 | 192 | 260 | 48% | 137 | 222 | 41% |
| 2002 | 703 | 714 | 229 | 336 | 47% | 155 | 294 | 41% |
| 2003 | 722 | 739 | 168 | 316 | 43% | 98 | 265 | 36% |
| 2004 | 770 | 797 | 149 | 360 | 45% | 71 | 284 | 36% |
| 2005 | 1,017 | 1,068 | 198 | 530 | 50% | 97 | 424 | 40% |
| 2006 | 917 | 987 | 74 | 433 | 44% | 16 | 345 | 35% |
| 2007 | 859 | 971 | 21 | 417 | 43% | 0 | 337 | 35% |
| 2008 | 887 | 1,078 | 0 | 459 | 43% | 0 | 377 | 35% |
| 2009 | 721 | 1,007 | 0 | 433 | 43% | 0 | 353 | 35% |
| 2010 | 336 | 892 | 0 | 383 | 43% | 0 | 312 | 35% |
| TOTAL | 18,235 | 19,563 | 4,774 | 7,796 | 40% | 3,286 | 6,124 | 31% |

The databases were constructed in the late 1980s; despite the best efforts of the CAS, data by date of first exam is not complete prior to 1990. As such, success ratios for years prior to 1990 are overstated and the number of candidates understated. We observe that success ratios appear to have declined in the mid-1990s, but this may be a function of the overstatement of prior success ratios rather than an actual decline. While we note increasing success ratios in recent years, and this year's report indicates somewhat higher success ratios than the 2008 report, it is important to recognize that estimates for the most recent six years reflect limited actual experience. The most recent years' success ratios are based primarily on the selected development patterns and a priori success ratios. Currently, we estimate that over 40% of candidates will achieve their Associateship and about 35% their Fellowship.

This chart shows a drop in the number of candidates attempting their first exam in the 1996 to 1999 years with a corresponding increase in new candidates in 2000. One explanation for this observation could be that candidates who may have otherwise started taking exams in these years waited until after the 2000 syllabus conversion to take their first exam. For candidates that elected to begin sitting in the years immediately prior to the transition, the exam progress has been exceptional.

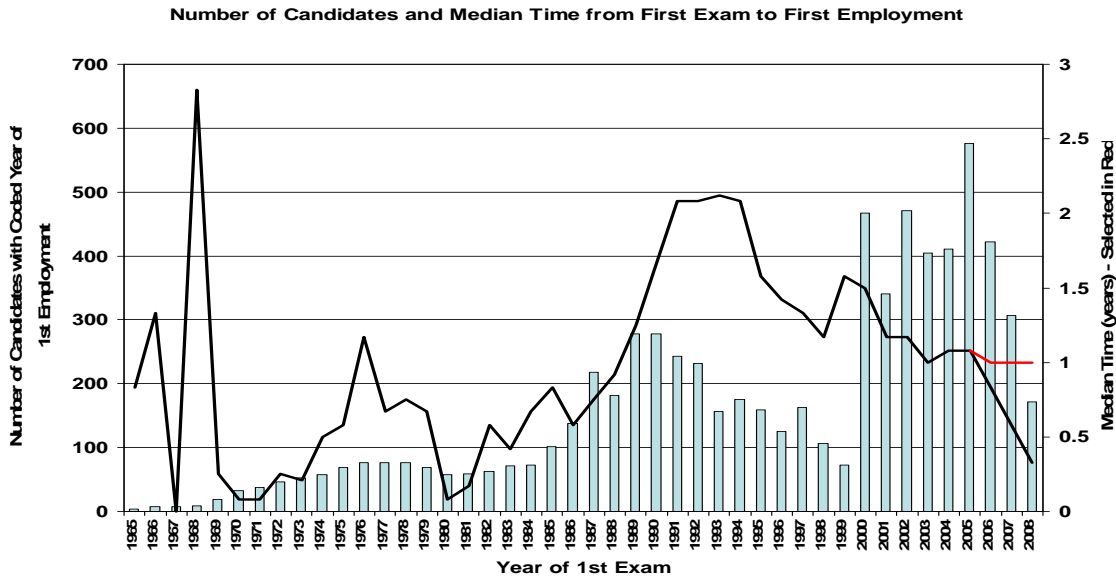
The number of candidates increased dramatically in 2005 and has been reasonably stable since then, with possibly a decrease in 2010. We estimate the number of candidates expected in 2010 based on an incomplete year's data. Similar to the changes in 2000, one possible explanation for the decrease in 2010 could be related to the changes implemented in 2011; candidates could have selected to wait until the new syllabus was implemented in 2011 prior to taking exams. Nevertheless, current indications show a decline in the number of candidates.

We observe that success ratios for first exam-takers pre-2000 appear to be negatively correlated with the number of candidates; however, early indications show that this may not be the case with post-2000 first exam-takers.

TIME FROM FIRST EXAM TO FIRST EMPLOYMENT

Chart 6 below shows the number of candidates with a valid date of first employment (histogram) and the average time from first exam to first employment by year of first exam (line).

Chart 6



The selected time from first exam to first employment for years 2006 through 2010 is 1.00, and is based on our analysis of historical development. The actual data for the most recent years shows a decline in the mean time between date of first exam and date of first employment. Given the large number of candidates for whom we do not yet have dates of first employment, we expect that this value will continue to increase as more candidates are employed or report date of first employment to us, but we do not expect that it will reach the levels observed in the 1990's.

Appendix A contains exhibits showing ACAS and FCAS count triangles, the selected development factors, the initial selected success ratios, and the projected ultimate number of Associates and Fellows.

PASS RATIOS AND PROGRESS STATISTICS

Additional indicators of travel time include exam pass ratios and average candidate exam progress statistics. Exam pass ratios represent the percentage of passing candidates sitting for each exam part. The exam progress statistic, which indicates the average number of exams passed per candidate, is the product of the pass ratios for any given sitting (i.e., the number of full exam equivalents passed per exam equivalent taken by a candidate) and the average number of exams taken by a candidate in the sitting (i.e., the average number of full exam equivalents taken per candidate).

We use data reflecting results through the July 2010 exam sitting (i.e., 2010 statistics do not represent a full year). We present the following four tables with pass ratios and progress statistics:

- Table 4 contains the number of exams taken, the number of candidates who passed the exam, and the raw pass ratio for exam years 2000 through 2010 for exams 1 through 9.
- Table 5 presents the exam progress, pass ratio, and average number of exams taken for the CAS-administered exams for spring 1983 through spring 2010. This table includes a timeline of key changes in the CAS exam structure and process to help explain many of the trends in the observed experience.
- Table 6 contains similar information as Table 5 for all candidates who took jointly-administered exams. We present the exam progress statistics separately for CAS and CAS-SOA jointly-administered exams because the two societies maintain independent databases with different candidate identification numbers.
- Table 7 presents the same statistics as Table 6 but only for candidates who indicated on their application form that they work in the P&C industry.

Table 4

Examination Pass Ratios (CAS database candidates only):

| Exam 1 | | | | | | | | | | | | |
|----------------|------|------|------|------|------|------|------|------|------|------|------|--|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | |
| Exams Taken | 1142 | 851 | 1054 | 1039 | 1077 | 1171 | 1118 | 1216 | 1188 | 992 | 412 | |
| Passed | 854 | 458 | 680 | 655 | 618 | 842 | 715 | 675 | 568 | 398 | 187 | |
| Raw Pass Ratio | 75% | 54% | 65% | 63% | 57% | 72% | 64% | 56% | 48% | 40% | 45% | |
| 3-year MA | | | 64% | 60% | 62% | 64% | 64% | 64% | 56% | 48% | 44% | |

| Exam 2 | | | | | | | | | | | | |
|----------------|------|------|------|------|------|------|------|------|------|------|------|--|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | |
| Exams Taken | 1758 | 774 | 1024 | 1059 | 1106 | 1674 | 1150 | 1034 | 1031 | 580 | 635 | |
| Passed | 1293 | 327 | 566 | 547 | 523 | 1313 | 803 | 626 | 600 | 365 | 316 | |
| Raw Pass Ratio | 74% | 42% | 55% | 52% | 47% | 78% | 70% | 61% | 58% | 63% | 50% | |
| 3-year MA | | | 57% | 50% | 51% | 59% | 65% | 70% | 63% | 61% | 57% | |

| Exam 3F | | | | |
|----------------|------|------|------|------|
| | 2007 | 2008 | 2009 | 2010 |
| Exams Taken | 99 | 1192 | 1158 | 538 |
| Passed | 97 | 614 | 459 | 198 |
| Raw Pass Ratio | 98% | 52% | 40% | 37% |
| 3-year MA | | | 63% | 43% |

| Exam 3L | | 2007 | 2008 | 2009 | 2010 |
|------------------|--|-------------|-------------|-------------|-------------|
| Exams Taken | | | 470 | 478 | 231 |
| Passed | | | 251 | 208 | 118 |
| Raw Pass Ratio | | | 53% | 44% | 51% |
| 3-year MA | | | | | 49% |
| Effective Pass % | | | 61% | 55% | 61% |

| Exam 3L | | 2007 | 2008 | 2009 | 2010 |
|-------------------|--|-------------|-------------|-------------|-------------|
| Waivers Processed | | 121 | 376 | 206 | 115 |

| Exam 3 | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Exams Taken | | 696 | 455 | 605 | 660 | 1025 | 1116 | 1312 |
| Passed | | 375 | 209 | 306 | 331 | 464 | 683 | 817 | 397 |
| Raw Pass Ratio | | 54% | 46% | 51% | 50% | 45% | 61% | 62% | 51% |
| 3-year MA | | | | 50% | 49% | 49% | 52% | 56% | 58% |

| Exam 4 | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Exams Taken | | 522 | 338 | 429 | 627 | 813 | 888 | 1014 | 987 | 913 | 850 |
| Passed | | 265 | 151 | 252 | 386 | 488 | 550 | 694 | 542 | 481 | 395 | 121 |
| Raw Pass Ratio | | 51% | 45% | 59% | 62% | 60% | 62% | 68% | 55% | 53% | 46% | 40% |
| 3-year MA | | | | 51% | 55% | 60% | 61% | 63% | 62% | 59% | 51% | 46% |

| Exam 5 | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exams Taken | | 606 | 525 | 458 | 497 | 563 | 678 | 707 | 892 | 911 | 853 | 843 |
| Passed | | 216 | 190 | 199 | 214 | 229 | 313 | 285 | 396 | 428 | 354 | 389 |
| Raw Pass Ratio | | 36% | 36% | 43% | 43% | 41% | 46% | 40% | 44% | 47% | 42% | 46% |
| 3-year MA | | | | 38% | 41% | 42% | 43% | 42% | 44% | 44% | 44% | 45% |
| Effective Pass % | | 43% | 44% | 49% | 46% | 43% | 50% | 45% | 48% | 51% | 44% | 49% |

| Exam 6 | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exams Taken | | 623 | 596 | 543 | 582 | 628 | 731 | 841 | 933 | 1005 | 1031 | |
| Passed | | 191 | 208 | 217 | 228 | 235 | 300 | 332 | 347 | 293 | 446 | |
| Raw Pass Ratio | | 31% | 35% | 40% | 39% | 37% | 41% | 39% | 37% | 29% | 43% | |
| 3-year MA | | | | 35% | 38% | 39% | 39% | 39% | 39% | 35% | 37% | |
| Effective Pass % | | 41% | 45% | 48% | 46% | 43% | 46% | 43% | 41% | 32% | 46% | |

| Exam 7C | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exams Taken | | 40 | 48 | 47 | 57 | 47 | 59 | 74 | 80 | 83 | 114 | 107 |
| Passed | | 18 | 19 | 19 | 23 | 15 | 24 | 35 | 35 | 21 | 50 | 38 |
| Raw Pass Ratio | | 45% | 40% | 40% | 40% | 32% | 41% | 47% | 44% | 25% | 44% | 36% |
| 3-year MA | | | | 42% | 40% | 38% | 38% | 40% | 44% | 39% | 38% | 35% |
| Effective Pass % | | 46% | 41% | 43% | 43% | 33% | 41% | 49% | 45% | 26% | 45% | 37% |

| Exam 7U | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exams Taken | | 516 | 494 | 442 | 378 | 372 | 405 | 449 | 459 | 575 | 642 | 624 |
| Passed | | 203 | 203 | 207 | 164 | 163 | 187 | 208 | 181 | 273 | 315 | 278 |
| Raw Pass Ratio | | 39% | 41% | 47% | 43% | 44% | 46% | 46% | 39% | 47% | 49% | 45% |
| 3-year MA | | | | 42% | 44% | 45% | 44% | 45% | 44% | 44% | 45% | 47% |
| Effective Pass % | | 47% | 45% | 50% | 45% | 45% | 49% | 48% | 42% | 49% | 52% | 47% |

| Exam 8 | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exams Taken | | 319 | 310 | 349 | 331 | 309 | 312 | 378 | 418 | 425 | 499 | 534 |
| Passed | | 129 | 124 | 176 | 170 | 148 | 133 | 178 | 192 | 200 | 240 | 209 |
| Raw Pass Ratio | | 40% | 40% | 50% | 51% | 48% | 43% | 47% | 46% | 47% | 48% | 39% |
| 3-year MA | | | | 44% | 47% | 50% | 47% | 46% | 45% | 47% | 47% | 45% |
| Effective Pass % | | 45% | 45% | 55% | 54% | 51% | 46% | 51% | 49% | 49% | 51% | 41% |

| Exam 9 | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Exams Taken | | 324 | 308 | 299 | 337 | 360 | 416 | 469 | 607 | 584 | 627 |
| Passed | | 126 | 136 | 138 | 127 | 146 | 192 | 157 | 317 | 187 | 267 |
| Raw Pass Ratio | | 39% | 44% | 46% | 38% | 41% | 46% | 33% | 52% | 32% | 43% |
| 3-year MA | | | | 43% | 43% | 41% | 41% | 40% | 44% | 39% | 42% |
| Effective Pass % | | 46% | 50% | 51% | 42% | 44% | 50% | 36% | 56% | 35% | 46% |

Table 5**Exam Progress Statistics for CAS-Specific Exams**

| CAS Examination | Exam Progress¹ | Pass Ratio² | Average Number of Exams Taken³ |
|----------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|--------------------------------------------------|
| The following statistics are for CAS-administered exams. In 1983, the CAS administered Exams 4-10. | | | |
| Spring 1983 | 0.36 | 0.35 | 1.02 |
| Fall 1983 | 0.29 | 0.29 | 1.01 |
| Spring 1984 | 0.38 | 0.38 | 1.01 |
| Fall 1984 | 0.35 | 0.35 | 1.01 |
| Spring 1985 | 0.36 | 0.36 | 1.02 |
| Fall 1985 | 0.40 | 0.39 | 1.02 |
| Spring 1986 | 0.37 | 0.37 | 1.02 |
| Fall 1986 | 0.38 | 0.37 | 1.01 |
| Spring 1987 | 0.37 | 0.36 | 1.02 |
| Fall 1987 | 0.35 | 0.35 | 1.01 |
| Spring 1988 | 0.35 | 0.34 | 1.02 |
| Fall 1988 | 0.36 | 0.36 | 1.01 |
| Spring 1989 | 0.36 | 0.35 | 1.01 |
| Fall 1989 | 0.39 | 0.39 | 1.01 |
| Spring 1990 | 0.33 | 0.33 | 1.01 |
| Fall 1990, CAS begins to administer Exam 3B. Exam 5 is partitioned into two parts. | | | |
| Fall 1990 | 0.26 | 0.34 | 0.76 |
| Spring 1991 | 0.33 | 0.38 | 0.87 |
| Fall 1991 | 0.28 | 0.36 | 0.77 |
| Spring 1992, CAS partitions Exam 4 into two parts. | | | |
| Spring 1992 | 0.30 | 0.38 | 0.80 |
| Fall 1992 | 0.30 | 0.38 | 0.81 |
| Spring 1993 | 0.29 | 0.38 | 0.78 |
| Fall 1993 | 0.30 | 0.38 | 0.78 |
| Spring 1994 | 0.30 | 0.38 | 0.79 |
| Fall 1994 | 0.30 | 0.39 | 0.76 |
| Spring 1995 | 0.29 | 0.37 | 0.78 |
| Fall 1995 | 0.27 | 0.36 | 0.76 |
| Spring 1996 | 0.31 | 0.40 | 0.78 |
| Fall 1996 | 0.29 | 0.40 | 0.74 |
| Spring 1997 | 0.30 | 0.38 | 0.79 |
| Fall 1997 | 0.24 | 0.33 | 0.73 |
| Spring 1998 | 0.31 | 0.38 | 0.81 |
| Fall 1998 | 0.24 | 0.34 | 0.73 |
| Spring 1999 | 0.30 | 0.40 | 0.77 |
| Fall 1999 | 0.29 | 0.40 | 0.73 |
| Spring 2000, CAS administers non-partitioned Exams 5-9. | | | |
| Spring 2000 | 0.38 | 0.38 | 1.01 |
| Fall 2000 | 0.38 | 0.38 | 1.01 |
| Spring 2001 | 0.39 | 0.39 | 1.01 |

| | | | |
|----------------------------------------------------------------------------------------------------------------------------------------|------|------|------|
| Fall 2001, learning objectives developed for Fall Exams. CAS implements pass mark panels. | | | |
| Fall 2001 | 0.38 | 0.38 | 1.00 |
| Spring 2002, CAS implements item writer training (starting with Fall Exams). Learning objectives developed for Spring Exams. | | | |
| Spring 2002 | 0.46 | 0.46 | 1.00 |
| Fall 2002 | 0.42 | 0.42 | 1.00 |
| Spring 2003 | 0.46 | 0.45 | 1.01 |
| Fall 2003, CAS begins to administer its own version of Exam 3. | | | |
| Fall 2003 | 0.40 | 0.40 | 1.00 |
| Spring 2004 | 0.41 | 0.40 | 1.01 |
| Fall 2004 | 0.38 | 0.38 | 1.01 |
| January 2005, Validation by Educational Experience (VEE) introduced for Economics, Corporate Finance, and Applied Statistical Methods. | | | |
| Spring 2005 | 0.44 | 0.44 | 1.01 |
| Fall 2005 | 0.41 | 0.41 | 1.00 |
| Spring 2006 | 0.43 | 0.42 | 1.01 |
| Fall 2006 | 0.36 | 0.36 | 1.00 |
| Spring 2007 | 0.43 | 0.43 | 1.01 |
| Fall 2007 | 0.50 | 0.49 | 1.01 |
| Spring 2008, Exam 3 is segmented: Exam 3F is a joint exam and Exam 3L is a CAS-specific exam. | | | |
| Spring 2008 | 0.45 | 0.47 | 0.96 |
| Fall 2008 | 0.30 | 0.31 | 0.94 |
| Spring 2009 | 0.44 | 0.46 | 0.96 |
| Fall 2009 | 0.40 | 0.43 | 0.94 |
| Spring 2010 | 0.42 | 0.44 | 0.96 |
| Fall 2010 | 0.38 | 0.40 | 0.95 |

¹ The number of full examination equivalents passed per candidate. (This is a product of the second and third columns.)

² The number of full examination equivalents passed per exam equivalent taken.

³ The number of full examination equivalents taken per candidate.

Table 6**Exam Progress Statistics for Joint Exams (All Candidates)**

| CAS/SoA Examination | Exam Progress¹ | Pass Ratio² | Average Number of Exams Taken³ |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|--------------------------------------------------|
| Spring 2000 | 0.28 | 0.27 | 1.03 |
| Fall 2000 | 0.35 | 0.34 | 1.03 |
| Spring 2001 | 0.37 | 0.36 | 1.04 |
| Fall 2001 | 0.40 | 0.38 | 1.05 |
| Spring 2002 | 0.44 | 0.42 | 1.07 |
| Fall 2002 | 0.45 | 0.43 | 1.06 |
| Spring 2003 | 0.41 | 0.39 | 1.06 |
| Fall 2003, CAS administers its own version of Exam 3 that is reported with CAS-specific exams. | | | |
| Fall 2003 | 0.45 | 0.42 | 1.07 |
| Spring 2004 | 0.36 | 0.34 | 1.06 |
| Fall 2004 | 0.43 | 0.41 | 1.06 |
| January 2005, Validation by Educational Experience (VEE) introduced for Economics, Corporate Finance, and Applied Statistical Methods. | | | |
| Spring 2005 | 0.60 | 0.54 | 1.11 |
| Fall 2005 | 0.45 | 0.41 | 1.09 |
| Spring 2006 | 0.46 | 0.44 | 1.06 |
| Fall 2006 | 0.46 | 0.43 | 1.06 |
| Spring 2007 | 0.45 | 0.43 | 1.05 |
| Fall 2007 | 0.45 | 0.43 | 1.06 |
| Spring 2008, CAS segmented Exam 3 into two sections with Exam 3F/MFE being a joint exam. | | | |
| Spring 2008 | 0.43 | 0.44 | 0.96 |
| Fall 2008 | 0.41 | 0.44 | 0.93 |
| Spring 2009 | 0.40 | 0.45 | 0.90 |
| Fall 2009 | 0.38 | 0.43 | 0.89 |
| Spring 2010 | 0.40 | 0.46 | 0.87 |
| Fall 2010 | 0.36 | 0.42 | 0.86 |

¹ The number of full examination equivalents passed per candidate. (This is a product of the second and third columns.)

² The number of full examination equivalents passed per exam equivalent taken.

³ The number of full examination equivalents taken per candidate.

Table 7**Exam Progress Statistics for Joint Exams (CAS Candidates Only)**

| CAS/SoA Examination | Exam Progress¹ | Pass Ratio² | Average Number of Exams Taken³ |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|--------------------------------------------------|
| Spring 2000 | 0.23 | 0.23 | 1.02 |
| Fall 2000 | 0.28 | 0.27 | 1.01 |
| Spring 2001 | 0.28 | 0.27 | 1.01 |
| Fall 2001 | 0.34 | 0.33 | 1.03 |
| Spring 2002 | 0.37 | 0.36 | 1.04 |
| Fall 2002 | 0.49 | 0.47 | 1.04 |
| Spring 2003 | 0.41 | 0.39 | 1.04 |
| Fall 2003, CAS administers its own version of Exam 3 that is reported with CAS-specific exams. | | | |
| Fall 2003 | 0.45 | 0.44 | 1.03 |
| Spring 2004 | 0.32 | 0.31 | 1.04 |
| Fall 2004 | 0.42 | 0.41 | 1.03 |
| January 2005, Validation by Educational Experience (VEE) introduced for Economics, Corporate Finance, and Applied Statistical Methods. | | | |
| Spring 2005 | 0.57 | 0.54 | 1.05 |
| Fall 2005 | 0.48 | 0.46 | 1.04 |
| Spring 2006 | 0.48 | 0.47 | 1.02 |
| Fall 2006 | 0.52 | 0.51 | 1.03 |
| Spring 2007 | 0.43 | 0.42 | 1.03 |
| Fall 2007 | 0.47 | 0.46 | 1.01 |
| Spring 2008, CAS segmented Exam 3 into two sections with Exam 3F/MFE being a joint exam. | | | |
| Spring 2008 | 0.40 | 0.46 | 0.88 |
| Fall 2008 | 0.39 | 0.44 | 0.87 |
| Spring 2009 | 0.35 | 0.42 | 0.83 |
| Fall 2009 | 0.33 | 0.40 | 0.83 |
| Spring 2010 | 0.32 | 0.42 | 0.78 |
| Fall 2010 | 0.30 | 0.38 | 0.80 |

¹ The number of full examination equivalents passed per candidate. (This is a product of the second and third columns.)

² The number of full examination equivalents passed per exam equivalent taken.

³ The number of full examination equivalents taken per candidate.

NOTE

The Exam Progress Statistics for exams jointly administered by the CAS, CIA, and SoA are presented separately because the CAS and SOA maintain independent databases with different candidate identification numbers. Table 6 provides statistics for all candidates who took joint exams; Table 7 represents only those candidates who indicated on their exam application forms that they work in the property-casualty industry.

Starting in fall 2003, the CAS began offering a separate Exam 3; the statistics for the Fall 2003 and subsequent sittings do not include those registering for SOA Exam 3. Starting in 2008, CAS Exam 3 was split into two parts: 3F and 3L. Exam 3F is jointly administered with the SOA (Course MFE), but enrollment figures in Table 4 include only CAS candidates; Exam 3L is administered by the CAS only.

Based on our analysis of exam progress statistics, we observe the following:

- In the most recent years, there are more candidates taking each of the upper-level CAS-administered exams (exams 7C through 9); pass ratios for these exams have been fairly consistent over the past ten years.
- For each of the upper level exams, the raw pass ratios have remained very stable based on a comparison of the latest five-year average to the eleven-year average.
- For jointly-administered exams (all candidates as well as CAS candidates only), pass ratios for 2005 and later are higher than in 2000 and 2001.
- The average number of exams taken per candidate was relatively stable for all candidates taking the jointly-administered exams and is essentially one exam per sitting. We do observe that since spring 2008, the average number of exams taken is somewhat less than for joint exams for both all candidates and CAS only candidates.
- The average number of exams taken during the partitioning period of the 1990s should be viewed cautiously. The database does not contain records for all failed attempts on jointly-administered exams. These exam attempts are therefore not contemplated in the average number of exams taken. During the partitioning period, it was possible for a candidate to take partial exams under the CAS system at the same time as exams in the CAS and SOA jointly-administered structure (e.g., Exams 1/100, 2/110, 3A/120, 3C/135). The jointly-administered exams are not included in the statistics in Tables 6 and 7 unless the candidate passed the given exam.

APPENDIX A: EXHIBITS UNDERLYING ACTUARIAL ANALYSIS

2010 CAS Travel Time Report

Projected Median Travel Times

| Year of First Exam | Selected Ultimate Counts | | Implied Median Candidate | | Current Membership Counts | | Ultimate Median as Percentile of Current | | Estimated Ultimate Median Travel Time | |
|-----------------------|--------------------------|-------|-----------------------------|-----------|------------------------------|-------|---------------------------------------------|-------------|------------------------------------------|-------|
| | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS |
| | (a) | (b) | [(2) / 2] | [(3) / 2] | (c) | (c) | [(4) / (6)] | [(5) / (7)] | (d) | (e) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| PRIOR | 701 | 539 | 351 | 270 | 701 | 539 | | | | |
| 1979 | 75 | 62 | 38 | 31 | 75 | 62 | 50% | 50% | 6.50 | 9.00 |
| 1980 | 66 | 55 | 33 | 28 | 66 | 55 | 50% | 50% | 7.75 | 10.50 |
| 1981 | 65 | 54 | 33 | 27 | 65 | 54 | 50% | 50% | 6.00 | 9.00 |
| 1982 | 72 | 56 | 36 | 28 | 72 | 56 | 50% | 50% | 7.00 | 9.50 |
| 1983 | 77 | 48 | 39 | 24 | 77 | 48 | 50% | 50% | 8.00 | 10.27 |
| 1984 | 85 | 63 | 43 | 32 | 85 | 63 | 50% | 50% | 6.50 | 10.00 |
| 1985 | 115 | 83 | 58 | 42 | 115 | 83 | 50% | 50% | 7.00 | 9.50 |
| 1986 | 147 | 109 | 74 | 54 | 147 | 108 | 50% | 50% | 6.50 | 9.38 |
| 1987 | 215 | 141 | 107 | 70 | 214 | 140 | 50% | 50% | 7.50 | 11.50 |
| 1988 | 189 | 132 | 94 | 66 | 188 | 131 | 50% | 50% | 7.47 | 10.00 |
| 1989 | 263 | 182 | 131 | 91 | 261 | 179 | 50% | 51% | 7.50 | 10.75 |
| 1990 | 275 | 202 | 138 | 101 | 273 | 197 | 50% | 51% | 7.50 | 10.00 |
| 1991 | 228 | 163 | 114 | 81 | 226 | 158 | 50% | 52% | 7.75 | 10.00 |
| 1992 | 209 | 158 | 105 | 79 | 206 | 151 | 51% | 52% | 7.25 | 10.00 |
| 1993 | 140 | 112 | 70 | 56 | 136 | 103 | 52% | 54% | 7.67 | 9.83 |
| 1994 | 141 | 108 | 71 | 54 | 136 | 97 | 52% | 56% | 8.31 | 9.75 |
| 1995 | 121 | 91 | 61 | 46 | 114 | 78 | 53% | 59% | 7.75 | 9.27 |
| 1996 | 105 | 90 | 52 | 45 | 97 | 76 | 54% | 59% | 7.21 | 8.85 |
| 1997 | 125 | 106 | 62 | 53 | 114 | 87 | 55% | 61% | 7.50 | 8.50 |
| 1998 | 90 | 74 | 45 | 37 | 81 | 60 | 55% | 62% | 7.50 | 9.00 |
| 1999 | 79 | 70 | 39 | 35 | 66 | 58 | 59% | 60% | 6.00 | 7.50 |
| 2000 | 282 | 213 | 141 | 107 | 223 | 128 | 63% | 83% | 8.50 | 9.83 |
| 2001 | 260 | 222 | 130 | 111 | 192 | 137 | 68% | 81% | 7.01 | 8.50 |
| 2002 | 336 | 294 | 168 | 147 | 229 | 155 | 73% | 95% | 7.00 | 8.50 |
| 2003 | 316 | 265 | 158 | 133 | 168 | 98 | 94% | | 7.50 | 8.88 |
| 2004 | 360 | 284 | 180 | 142 | 149 | 71 | | | 7.17 | 8.91 |
| 2005 | 530 | 424 | 265 | 212 | 198 | 97 | | | 6.66 | 8.36 |
| 2006 | 433 | 345 | 216 | 172 | 74 | 16 | | | 7.17 | 8.68 |
| 2007 | 417 | 337 | 208 | 168 | 21 | 0 | | | 7.20 | 8.68 |
| 2008 | 459 | 377 | 230 | 189 | 0 | 0 | | | 7.20 | 8.68 |
| 2009 | 433 | 353 | 217 | 176 | 0 | 0 | | | 7.20 | 8.68 |
| 2010 | 383 | 312 | 192 | 156 | 0 | 0 | | | 7.20 | 8.68 |
| Total | 7,791 | 6,123 | 3,896 | 3,061 | 4,769 | 3,285 | | | | |

Notes:

(a) From CAS 2010 Travel Time Report, Appendix A, Exhibit 1, Sheet 2, Column (6).

(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 1, Sheet 2, Column (7).

(c) From CAS membership database as of December 2010

(d) = Column (8) percentile of existing ACAS travel times for 2002 and prior;

(d) = projected based on selected development pattern, selected ultimate ACAS count and current ACAS count for 2003-2006

(d) = average of 1997-2006 for 2007-2010

(e) = Column (9) percentile of existing FCAS travel times for 2001 and prior;

(e) = projected based on selected development pattern, selected ultimate FCAS count and current FCAS count for 2002-2005

(e) = average of 1996-2005 for 2006-2010

2010 CAS Travel Time Report

Summary of Projected Statistics

| Year of First Exam | Membership Counts | | | Selected Ultimate Counts | | | Expected New Counts | | | Implied ACAS Success Rate | Implied FCAS Success Rate | Percent of ACAS to be new FCAS |
|-----------------------|-------------------|-------|-------|--------------------------|-------|-------|---------------------|-------------|-------------|------------------------------------|------------------------------------|-----------------------------------------|
| | CAS Candidate | ACAS | FCAS | CAS Candidate | ACAS | FCAS | CAS Candidate | ACAS | FCAS | | | |
| | (a) | (a) | (a) | (b) | (c) | (d) | [(5) - (2)] | [(6) - (3)] | [(7) - (4)] | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
| PRIOR | 852 | 701 | 539 | 852 | 701 | 539 | 0 | 0 | 0 | 82% | 63% | 77% |
| 1979 | 101 | 75 | 62 | 101 | 75 | 62 | 0 | 0 | 0 | 74% | 61% | 83% |
| 1980 | 85 | 66 | 55 | 85 | 66 | 55 | 0 | 0 | 0 | 78% | 65% | 83% |
| 1981 | 85 | 65 | 54 | 85 | 65 | 54 | 0 | 0 | 0 | 76% | 64% | 83% |
| 1982 | 104 | 72 | 56 | 104 | 72 | 56 | 0 | 0 | 0 | 69% | 54% | 78% |
| 1983 | 108 | 77 | 48 | 108 | 77 | 48 | 0 | 0 | 0 | 71% | 45% | 62% |
| 1984 | 129 | 85 | 63 | 129 | 85 | 63 | 0 | 0 | 0 | 66% | 49% | 74% |
| 1985 | 214 | 115 | 83 | 214 | 115 | 83 | 0 | 0 | 0 | 54% | 39% | 72% |
| 1986 | 298 | 147 | 108 | 298 | 147 | 109 | 0 | 0 | 1 | 49% | 36% | 74% |
| 1987 | 455 | 214 | 140 | 455 | 215 | 141 | 0 | 1 | 1 | 47% | 31% | 66% |
| 1988 | 499 | 188 | 131 | 499 | 189 | 132 | 0 | 1 | 1 | 38% | 26% | 70% |
| 1989 | 718 | 261 | 179 | 718 | 263 | 182 | 0 | 2 | 3 | 37% | 25% | 69% |
| 1990 | 916 | 273 | 197 | 916 | 275 | 202 | 0 | 2 | 5 | 30% | 22% | 73% |
| 1991 | 888 | 226 | 158 | 888 | 228 | 163 | 0 | 2 | 5 | 26% | 18% | 71% |
| 1992 | 864 | 206 | 151 | 864 | 209 | 158 | 0 | 3 | 7 | 24% | 18% | 75% |
| 1993 | 768 | 136 | 103 | 768 | 140 | 112 | 0 | 4 | 9 | 18% | 15% | 80% |
| 1994 | 701 | 136 | 97 | 701 | 141 | 108 | 0 | 5 | 11 | 20% | 15% | 76% |
| 1995 | 644 | 114 | 78 | 644 | 121 | 91 | 0 | 7 | 13 | 19% | 14% | 75% |
| 1996 | 513 | 97 | 76 | 513 | 105 | 90 | 0 | 8 | 14 | 20% | 18% | 86% |
| 1997 | 525 | 114 | 87 | 525 | 125 | 106 | 0 | 11 | 19 | 24% | 20% | 85% |
| 1998 | 314 | 81 | 60 | 314 | 90 | 74 | 0 | 9 | 14 | 28% | 24% | 83% |
| 1999 | 115 | 66 | 58 | 115 | 79 | 70 | 0 | 13 | 12 | 68% | 61% | 89% |
| 2000 | 865 | 223 | 128 | 868 | 282 | 213 | 3 | 59 | 85 | 33% | 25% | 76% |
| 2001 | 542 | 192 | 137 | 546 | 260 | 222 | 4 | 68 | 85 | 48% | 41% | 85% |
| 2002 | 703 | 229 | 155 | 714 | 336 | 294 | 11 | 107 | 139 | 47% | 41% | 87% |
| 2003 | 722 | 168 | 98 | 739 | 316 | 265 | 17 | 148 | 167 | 43% | 36% | 84% |
| 2004 | 770 | 149 | 71 | 797 | 360 | 284 | 27 | 211 | 213 | 45% | 36% | 79% |
| 2005 | 1,017 | 198 | 97 | 1,068 | 530 | 424 | 51 | 332 | 327 | 50% | 40% | 80% |
| 2006 | 917 | 74 | 16 | 987 | 433 | 345 | 70 | 359 | 329 | 44% | 35% | 80% |
| 2007 | 859 | 21 | 0 | 971 | 417 | 337 | 112 | 396 | 337 | 43% | 35% | 81% |
| 2008 | 887 | 0 | 0 | 1,078 | 459 | 377 | 191 | 459 | 377 | 43% | 35% | 82% |
| 2009 | 721 | 0 | 0 | 1,007 | 433 | 353 | 286 | 433 | 353 | 43% | 35% | 81% |
| 2010 | 336 | 0 | 0 | 892 | 383 | 312 | 556 | 383 | 312 | 43% | 35% | 81% |
| Total | 18,235 | 4,769 | 3,285 | 19,563 | 7,791 | 6,123 | 1,328 | 3,022 | 2,838 | 40% | 31% | 79% |

Notes:

(a) From CAS membership database as of December 2010

(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 3, Column (4).

(c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 2, Sheet 2, Column (9).

(d) From CAS 2010 Travel Time Report, Appendix A, Exhibit 2, Sheet 1, Column (9).

2010 CAS Travel Time Report

Selected Ultimate Counts: FCAS Membership

| Year of First Exam | CAS Candidate Count | Estimated Ultimate Candidate Count | FCAS Count | Projected Ultimate FCAS Members | | | | Selected Ultimate FCAS Count | Implied FCAS Success Rate |
|-----------------------|---------------------------|---------------------------------------------|---------------|---------------------------------|----------------------|-------------------------|-------------------------|---------------------------------------|------------------------------------|
| | | | | Chain Ladder | A Priori Ultimate | Single BF Projection | Double BF Projection | | |
| (1) | (a) | (b) | (a) | (c) | (d) | (e) | (f) | (g) | [(g) / (3)] |
| (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (13) | |
| PRIOR | 852 | 852 | 539 | 539 | 539 | 539 | 539 | 539 | 63.3% |
| 1979 | 101 | 101 | 62 | 62 | 62 | 62 | 62 | 62 | 61.4% |
| 1980 | 85 | 85 | 55 | 55 | 55 | 55 | 55 | 55 | 64.7% |
| 1981 | 85 | 85 | 54 | 54 | 54 | 54 | 54 | 54 | 63.5% |
| 1982 | 104 | 104 | 56 | 56 | 56 | 56 | 56 | 56 | 53.9% |
| 1983 | 108 | 108 | 48 | 48 | 48 | 48 | 48 | 48 | 44.5% |
| 1984 | 129 | 129 | 63 | 63 | 63 | 63 | 63 | 63 | 49.0% |
| 1985 | 214 | 214 | 83 | 83 | 83 | 83 | 83 | 83 | 38.9% |
| 1986 | 298 | 298 | 108 | 109 | 109 | 109 | 109 | 109 | 36.4% |
| 1987 | 455 | 455 | 140 | 141 | 141 | 141 | 141 | 141 | 31.0% |
| 1988 | 499 | 499 | 131 | 132 | 132 | 132 | 132 | 132 | 26.5% |
| 1989 | 718 | 718 | 179 | 182 | 182 | 182 | 182 | 182 | 25.3% |
| 1990 | 916 | 916 | 197 | 202 | 202 | 202 | 202 | 202 | 22.0% |
| 1991 | 888 | 888 | 158 | 163 | 154 | 163 | 163 | 163 | 18.4% |
| 1992 | 864 | 864 | 151 | 158 | 150 | 158 | 158 | 158 | 18.3% |
| 1993 | 768 | 768 | 103 | 110 | 134 | 112 | 110 | 112 | 14.5% |
| 1994 | 701 | 701 | 97 | 106 | 122 | 108 | 106 | 108 | 15.4% |
| 1995 | 644 | 644 | 78 | 89 | 112 | 91 | 89 | 91 | 14.2% |
| 1996 | 513 | 513 | 76 | 90 | 89 | 90 | 90 | 90 | 17.5% |
| 1997 | 525 | 525 | 87 | 109 | 91 | 106 | 109 | 106 | 20.1% |
| 1998 | 314 | 314 | 60 | 81 | 55 | 74 | 79 | 74 | 23.6% |
| 1999 | 115 | 115 | 58 | 84 | 84 | 84 | 84 | 70 | 60.7% |
| 2000 | 865 | 868 | 128 | 200 | 304 | 237 | 213 | 213 | 24.6% |
| 2001 | 542 | 546 | 137 | 246 | 191 | 222 | 235 | 222 | 40.6% |
| 2002 | 703 | 714 | 155 | 348 | 250 | 294 | 318 | 294 | 41.1% |
| 2003 | 722 | 739 | 98 | 277 | 259 | 265 | 270 | 265 | 35.9% |
| 2004 | 770 | 797 | 71 | 301 | 279 | 284 | 288 | 284 | 35.7% |
| 2005 | 1,017 | 1,068 | 97 | 782 | 374 | 424 | 469 | 424 | 39.7% |
| 2006 | 917 | 987 | 16 | 335 | 345 | 345 | 344 | 345 | 35.0% |
| 2007 | 859 | 971 | 0 | 0 | 340 | 337 | 333 | 337 | 34.7% |
| 2008 | 887 | 1,078 | 0 | 0 | 377 | 377 | 377 | 377 | 35.0% |
| 2009 | 721 | 1,007 | 0 | 0 | 353 | 353 | 353 | 353 | 35.0% |
| 2010 | 336 | 892 | 0 | 0 | 312 | 312 | 312 | 312 | 35.0% |
| Total | 18,235 | 19,563 | 3,285 | 5,206 | 6,100 | 6,161 | 6,227 | 6,123 | 31.3% |

Notes:

- (a) From CAS membership database as of December 2010
(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 3, Column (4).
(c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 1, Column (5).
(d) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 1, Column (7).
(e) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 1, Column (9).
(f) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 1, Column (10).
(g) Selected based on Columns (4) through (8)

2010 CAS Travel Time Report

Selected Ultimate Counts: ACAS Membership

| Year of First Exam | CAS Candidate Count | Estimated Ultimate Candidate Count | ACAS Count | Projected Ultimate ACAS Members | | | | Selected Ultimate ACAS Count | Implied ACAS Success Rate |
|-----------------------|---------------------------|---------------------------------------------|---------------|---------------------------------|----------------------|-------------------------|-------------------------|---------------------------------------|------------------------------------|
| | | | | Chain Ladder | A Priori Ultimate | Single BF Projection | Double BF Projection | | |
| (1) | (a) | (b) | (a) | (c) | (d) | (e) | (f) | (g) | [(g) / (3)] |
| (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (13) | |
| PRIOR | 852 | 852 | 701 | 701 | 701 | 701 | 701 | 701 | 82.3% |
| 1979 | 101 | 101 | 75 | 75 | 75 | 75 | 75 | 75 | 74.3% |
| 1980 | 85 | 85 | 66 | 66 | 66 | 66 | 66 | 66 | 77.6% |
| 1981 | 85 | 85 | 65 | 65 | 65 | 65 | 65 | 65 | 76.5% |
| 1982 | 104 | 104 | 72 | 72 | 72 | 72 | 72 | 72 | 69.2% |
| 1983 | 108 | 108 | 77 | 77 | 77 | 77 | 77 | 77 | 71.3% |
| 1984 | 129 | 129 | 85 | 85 | 85 | 85 | 85 | 85 | 65.9% |
| 1985 | 214 | 214 | 115 | 115 | 115 | 115 | 115 | 115 | 53.8% |
| 1986 | 298 | 298 | 147 | 147 | 147 | 147 | 147 | 147 | 49.4% |
| 1987 | 455 | 455 | 214 | 215 | 215 | 215 | 215 | 215 | 47.2% |
| 1988 | 499 | 499 | 188 | 189 | 189 | 189 | 189 | 189 | 37.8% |
| 1989 | 718 | 718 | 261 | 263 | 263 | 263 | 263 | 263 | 36.6% |
| 1990 | 916 | 916 | 273 | 275 | 275 | 275 | 275 | 275 | 30.0% |
| 1991 | 888 | 888 | 226 | 228 | 198 | 228 | 228 | 228 | 25.7% |
| 1992 | 864 | 864 | 206 | 210 | 192 | 209 | 210 | 209 | 24.2% |
| 1993 | 768 | 768 | 136 | 140 | 171 | 140 | 140 | 140 | 18.3% |
| 1994 | 701 | 701 | 136 | 141 | 156 | 141 | 141 | 141 | 20.2% |
| 1995 | 644 | 644 | 114 | 120 | 143 | 121 | 120 | 121 | 18.8% |
| 1996 | 513 | 513 | 97 | 104 | 114 | 105 | 104 | 105 | 20.4% |
| 1997 | 525 | 525 | 114 | 125 | 117 | 125 | 125 | 125 | 23.7% |
| 1998 | 314 | 314 | 81 | 92 | 70 | 90 | 92 | 90 | 28.5% |
| 1999 | 115 | 115 | 66 | 79 | 79 | 79 | 79 | 79 | 68.1% |
| 2000 | 865 | 868 | 223 | 279 | 373 | 297 | 282 | 282 | 32.5% |
| 2001 | 542 | 546 | 192 | 261 | 235 | 254 | 260 | 260 | 47.5% |
| 2002 | 703 | 714 | 229 | 351 | 307 | 336 | 345 | 336 | 47.0% |
| 2003 | 722 | 739 | 168 | 315 | 318 | 316 | 316 | 316 | 42.7% |
| 2004 | 770 | 797 | 149 | 370 | 343 | 354 | 360 | 360 | 45.2% |
| 2005 | 1,017 | 1,068 | 198 | 713 | 459 | 530 | 581 | 530 | 49.6% |
| 2006 | 917 | 987 | 74 | 480 | 424 | 433 | 440 | 433 | 43.9% |
| 2007 | 859 | 971 | 21 | 408 | 417 | 417 | 417 | 417 | 43.0% |
| 2008 | 887 | 1,078 | 0 | 0 | 463 | 459 | 455 | 459 | 42.6% |
| 2009 | 721 | 1,007 | 0 | 0 | 433 | 433 | 433 | 433 | 43.0% |
| 2010 | 336 | 892 | 0 | 0 | 383 | 383 | 383 | 383 | 43.0% |
| Total | 18,235 | 19,563 | 4,769 | 6,761 | 7,740 | 7,795 | 7,856 | 7,791 | 39.8% |

Notes:

- (a) From CAS membership database as of December 2010
(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 3, Column (4).
(c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 2, Column (5).
(d) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 2, Column (7).
(e) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 2, Column (9).
(f) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 2, Column (10).
(g) Selected based on Columns (4) through (8)

2010 CAS Travel Time Report

Projected Ultimate Counts: FCAS Membership

| Year of First Exam | Estimated Ultimate Candidate Count | FCAS Count | Chain Ladder Approach | | Projected FCAS Success Rate | A Priori Ultimate FCAS Count | B-F Approaches | | | | |
|----------------------------------------|------------------------------------|------------|------------------------|-------------------------------|-----------------------------|------------------------------|------------------------|-------------------------------|-------------------------------|--|--|
| | | | Age to Ultimate Factor | Projected Ultimate FCAS Count | | | Expected % of new FCAS | Single BF Ultimate FCAS Count | Double BF Ultimate FCAS Count | | |
| | | | (c) | [(3) x (4)] | | | [100% - 1 / (4)] | [(7) x (8) + (3)] | [(9) x (8) + (3)] | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (13) | | |
| PRIOR | 852 | 539 | 1.000 | 539 | 63% | 539 | 0.0% | 539 | 539 | | |
| 1979 | 101 | 62 | 1.000 | 62 | 61% | 62 | 0.0% | 62 | 62 | | |
| 1980 | 85 | 55 | 1.000 | 55 | 65% | 55 | 0.0% | 55 | 55 | | |
| 1981 | 85 | 54 | 1.000 | 54 | 64% | 54 | 0.0% | 54 | 54 | | |
| 1982 | 104 | 56 | 1.001 | 56 | 54% | 56 | 0.1% | 56 | 56 | | |
| 1983 | 108 | 48 | 1.002 | 48 | 45% | 48 | 0.2% | 48 | 48 | | |
| 1984 | 129 | 63 | 1.003 | 63 | 49% | 63 | 0.3% | 63 | 63 | | |
| 1985 | 214 | 83 | 1.004 | 83 | 39% | 83 | 0.4% | 83 | 83 | | |
| 1986 | 298 | 108 | 1.005 | 109 | 36% | 109 | 0.5% | 109 | 109 | | |
| 1987 | 455 | 140 | 1.007 | 141 | 31% | 141 | 0.7% | 141 | 141 | | |
| 1988 | 499 | 131 | 1.009 | 132 | 26% | 132 | 0.9% | 132 | 132 | | |
| 1989 | 718 | 179 | 1.014 | 182 | 25% | 182 | 1.4% | 182 | 182 | | |
| 1990 | 916 | 197 | 1.023 | 202 | 22% | 202 | 2.3% | 202 | 202 | | |
| 1991 | 888 | 158 | 1.033 | 163 | 18% | 154 | 3.2% | 163 | 163 | | |
| 1992 | 864 | 151 | 1.049 | 158 | 18% | 150 | 4.7% | 158 | 158 | | |
| 1993 | 768 | 103 | 1.070 | 110 | 14% | 134 | 6.5% | 112 | 110 | | |
| 1994 | 701 | 97 | 1.097 | 106 | 15% | 122 | 8.8% | 108 | 106 | | |
| 1995 | 644 | 78 | 1.135 | 89 | 14% | 112 | 11.9% | 91 | 89 | | |
| 1996 | 513 | 76 | 1.186 | 90 | 18% | 89 | 15.7% | 90 | 90 | | |
| 1997 | 525 | 87 | 1.257 | 109 | 21% | 91 | 20.5% | 106 | 109 | | |
| 1998 | 314 | 60 | 1.345 | 81 | 26% | 55 | 25.7% | 74 | 79 | | |
| 1999 | 115 | 58 | 1.446 | 84 | 73% | 84 | 30.9% | 84 | 84 | | |
| 2000 | 868 | 128 | 1.562 | 200 | 23% | 304 | 36.0% | 237 | 213 | | |
| 2001 | 546 | 137 | 1.796 | 246 | 45% | 191 | 44.3% | 222 | 235 | | |
| 2002 | 714 | 155 | 2.245 | 348 | 49% | 250 | 55.5% | 294 | 318 | | |
| 2003 | 739 | 98 | 2.829 | 277 | 37% | 259 | 64.7% | 265 | 270 | | |
| 2004 | 797 | 71 | 4.243 | 301 | 38% | 279 | 76.4% | 284 | 288 | | |
| 2005 | 1,068 | 97 | 8.063 | 782 | 73% | 374 | 87.6% | 424 | 469 | | |
| 2006 | 987 | 16 | 20.963 | 335 | | 345 | 95.2% | 345 | 344 | | |
| 2007 | 971 | 0 | 104.814 | | | 340 | 99.0% | 337 | 333 | | |
| 2008 | 1,078 | 0 | | | | 377 | 100.0% | 377 | 377 | | |
| 2009 | 1,007 | 0 | | | | 353 | 100.0% | 353 | 353 | | |
| 2010 | 892 | 0 | | | | 312 | 100.0% | 312 | 312 | | |
| Total | 19,563 | 3,285 | | 5,206 | | | | | | | |
| (11) Averages: | | | | | | | | | | | |
| (i) Simple Average (1994-1998) | | | | | 19% | | | | | | |
| (ii) Simple Average (1999-2003) | | | | | 38% | | | | | | |
| (iii) Medial Average Ex 1 (1997-2003) | | | | | 36% | | | | | | |
| (iv) Medical Average Ex. 1 (1994-2003) | | | | | 30% | | | | | | |
| (v) Volume Average (1994-1998) | | | | | 18% | | | | | | |
| (vi) Volume Average (1999-2003) | | | | | 37% | | | | | | |
| (vii) Volume Average (1994-2003) | | | | | 30% | | | | | | |
| (viii) Selected 2008 Analysis | | | | | 35% | | | | | | |
| (12) Selected FCAS Success Rate | | | | | 2000-2010 | 35% | | | | | |
| | | | | | 1991-1998 | 17% | | | | | |

Notes:

- (a) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 3, Column (4).
- (b) From CAS membership database as of December 2010
- (c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 4a, Sheets 1 and 2: FCAS Count Development Triangle
- (d) First Exam Years 1990 & Prior & 1999: =(5). Other First Exam Years: =(2) x (12)

2010 CAS Travel Time Report

Projected Ultimate Counts: ACAS Membership

| Year of First Exam | Estimated Ultimate Candidate Count | ACAS Count | Chain Ladder Approach | | Projected ACAS Success Rate | A Priori Ultimate ACAS Count | B-F Approaches | | |
|--------------------|------------------------------------|------------|------------------------|-------------------------------|-----------------------------|------------------------------|------------------------|-------------------------------|-------------------------------|
| | | | Age to Ultimate Factor | Projected Ultimate ACAS Count | | | Expected % of new ACAS | Single BF Ultimate ACAS Count | Double BF Ultimate ACAS Count |
| | | | | | | | | | |
| (1) | (a) | (b) | (c) | [(3) x (4)] | [(5) / (2)] | (d) | [100% - 1 / (4)] | [(7) x (8) + (3)] | [(9) x (8) + (3)] |
| (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| PRIOR | 852 | 701 | 1.000 | 701 | 82% | 701 | 0.0% | 701 | 701 |
| 1979 | 101 | 75 | 1.000 | 75 | 74% | 75 | 0.0% | 75 | 75 |
| 1980 | 85 | 66 | 1.000 | 66 | 78% | 66 | 0.0% | 66 | 66 |
| 1981 | 85 | 65 | 1.000 | 65 | 76% | 65 | 0.0% | 65 | 65 |
| 1982 | 104 | 72 | 1.000 | 72 | 69% | 72 | 0.0% | 72 | 72 |
| 1983 | 108 | 77 | 1.000 | 77 | 71% | 77 | 0.0% | 77 | 77 |
| 1984 | 129 | 85 | 1.000 | 85 | 66% | 85 | 0.0% | 85 | 85 |
| 1985 | 214 | 115 | 1.001 | 115 | 54% | 115 | 0.1% | 115 | 115 |
| 1986 | 298 | 147 | 1.002 | 147 | 49% | 147 | 0.2% | 147 | 147 |
| 1987 | 455 | 214 | 1.003 | 215 | 47% | 215 | 0.3% | 215 | 215 |
| 1988 | 499 | 188 | 1.004 | 189 | 38% | 189 | 0.4% | 189 | 189 |
| 1989 | 718 | 261 | 1.006 | 263 | 37% | 263 | 0.6% | 263 | 263 |
| 1990 | 916 | 273 | 1.008 | 275 | 30% | 275 | 0.8% | 275 | 275 |
| 1991 | 888 | 226 | 1.011 | 228 | 26% | 198 | 1.1% | 228 | 228 |
| 1992 | 864 | 206 | 1.018 | 210 | 24% | 192 | 1.8% | 209 | 210 |
| 1993 | 768 | 136 | 1.026 | 140 | 18% | 171 | 2.6% | 140 | 140 |
| 1994 | 701 | 136 | 1.037 | 141 | 20% | 156 | 3.5% | 141 | 141 |
| 1995 | 644 | 114 | 1.052 | 120 | 19% | 143 | 5.0% | 121 | 120 |
| 1996 | 513 | 97 | 1.073 | 104 | 20% | 114 | 6.8% | 105 | 104 |
| 1997 | 525 | 114 | 1.100 | 125 | 24% | 117 | 9.1% | 125 | 125 |
| 1998 | 314 | 81 | 1.138 | 92 | 29% | 70 | 12.2% | 90 | 92 |
| 1999 | 115 | 66 | 1.190 | 79 | 68% | 79 | 15.9% | 79 | 79 |
| 2000 | 868 | 223 | 1.249 | 279 | 32% | 373 | 19.9% | 297 | 282 |
| 2001 | 546 | 192 | 1.362 | 261 | 48% | 235 | 26.6% | 254 | 260 |
| 2002 | 714 | 229 | 1.532 | 351 | 49% | 307 | 34.7% | 336 | 345 |
| 2003 | 739 | 168 | 1.875 | 315 | 43% | 318 | 46.7% | 316 | 316 |
| 2004 | 797 | 149 | 2.484 | 370 | 46% | 343 | 59.7% | 354 | 360 |
| 2005 | 1,068 | 198 | 3.602 | 713 | 67% | 459 | 72.2% | 530 | 581 |
| 2006 | 987 | 74 | 6.484 | 480 | | 424 | 84.6% | 433 | 440 |
| 2007 | 971 | 21 | 19.452 | 408 | | 417 | 94.9% | 417 | 417 |
| 2008 | 1,078 | 0 | 116.710 | | | 463 | 99.1% | 459 | 455 |
| 2009 | 1,007 | 0 | | | | 433 | 100.0% | 433 | 433 |
| 2010 | 892 | 0 | | | | 383 | 100.0% | 383 | 383 |
| Total | 18,235 | 4,769 | 177 | | | | | | |

(11) Averages:

| | |
|----------------------------------------|-----|
| (i) Simple Average (1994-1998) | 22% |
| (ii) Simple Average (2000-2004) | 44% |
| (iii) Medial Average Ex. 1 (1997-2004) | 41% |
| (iv) Medical Average Ex. 1 (1994-2004) | 35% |
| (v) Volume Average (1994-1998) | 22% |
| (vi) Volume Average (2000-2004) | 43% |
| (vii) Volume Average (1994-2004) | 35% |
| (viii) Selected 2008 Analysis | 40% |

| | | |
|---------------------------------|-----------|-----|
| (12) Selected ACAS Success Rate | 2000-2010 | 43% |
| | 1991-1998 | 22% |

Notes:

- (a) From CAS 2010 Travel Time Report, Appendix A, Exhibit 3, Sheet 3, Column (4).
- (b) From CAS membership database as of December 2010
- (c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 4a, Sheets 1 and 2: ACAS Count Development Triangle
- (d) First Exam Years 1990 & Prior & 1999: =(5). Other First Exam Years: =(2) x (12)

2010 CAS Travel Time Report

Projected Ultimate Counts: CAS Candidates

| Year of First Exam | CAS Candidate Count | Age to Ultimate Factor | Estimated Ultimate CAS Candidate Count |
|-----------------------|---------------------------|------------------------------|-------------------------------------------------|
| (1) | (a) (2) | (b) (3) | [(2) x (3)] (4) |
| PRIOR | 852 | 1.000 | 852 |
| 1979 | 101 | 1.000 | 101 |
| 1980 | 85 | 1.000 | 85 |
| 1981 | 85 | 1.000 | 85 |
| 1982 | 104 | 1.000 | 104 |
| 1983 | 108 | 1.000 | 108 |
| 1984 | 129 | 1.000 | 129 |
| 1985 | 214 | 1.000 | 214 |
| 1986 | 298 | 1.000 | 298 |
| 1987 | 455 | 1.000 | 455 |
| 1988 | 499 | 1.000 | 499 |
| 1989 | 718 | 1.000 | 718 |
| 1990 | 916 | 1.000 | 916 |
| 1991 | 888 | 1.000 | 888 |
| 1992 | 864 | 1.000 | 864 |
| 1993 | 768 | 1.000 | 768 |
| 1994 | 701 | 1.000 | 701 |
| 1995 | 644 | 1.000 | 644 |
| 1996 | 513 | 1.000 | 513 |
| 1997 | 525 | 1.000 | 525 |
| 1998 | 314 | 1.001 | 314 |
| 1999 | 115 | 1.002 | 115 |
| 2000 | 865 | 1.004 | 868 |
| 2001 | 542 | 1.008 | 546 |
| 2002 | 703 | 1.015 | 714 |
| 2003 | 722 | 1.024 | 739 |
| 2004 | 770 | 1.034 | 797 |
| 2005 | 1,017 | 1.050 | 1068 |
| 2006 | 917 | 1.076 | 987 |
| 2007 | 859 | 1.130 | 971 |
| 2008 | 887 | 1.215 | 1078 |
| 2009 | 721 | 1.397 | 1007 |
| 2010 | 336 | 2.654 | 892 |
| Total | 18,235 | | 19,563 |

Notes:

(a) From CAS membership database as of December 2010

(c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 4c, Sheets 1 and 2: CAS Candidate Count Development Triangle

| FCAS Count as of Development Maturity | | | | | | | | | | | | | | | |
|---------------------------------------|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| First Exam Year | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 | 168 | 180 |
| PRIOR | 0 | 0 | 0 | 5 | 25 | 70 | 126 | 192 | 253 | 290 | 341 | 376 | 416 | 441 | 457 |
| 1979 | 0 | 0 | 0 | 0 | 1 | 4 | 12 | 17 | 26 | 35 | 40 | 46 | 50 | 52 | 54 |
| 1980 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 11 | 19 | 25 | 30 | 33 | 38 | 42 | 43 |
| 1981 | 0 | 0 | 0 | 0 | 1 | 5 | 13 | 21 | 25 | 32 | 36 | 40 | 46 | 51 | 51 |
| 1982 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 16 | 22 | 30 | 33 | 38 | 42 | 44 | 45 |
| 1983 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 11 | 15 | 20 | 25 | 34 | 36 | 39 | 40 |
| 1984 | 0 | 0 | 0 | 1 | 3 | 6 | 10 | 16 | 23 | 31 | 37 | 41 | 48 | 55 | 56 |
| 1985 | 0 | 0 | 0 | 0 | 0 | 5 | 12 | 23 | 35 | 43 | 49 | 57 | 65 | 72 | 73 |
| 1986 | 0 | 0 | 0 | 0 | 2 | 9 | 18 | 31 | 47 | 57 | 66 | 75 | 85 | 91 | 98 |
| 1987 | 0 | 0 | 0 | 0 | 2 | 7 | 20 | 35 | 45 | 62 | 67 | 78 | 84 | 92 | 98 |
| 1988 | 0 | 0 | 0 | 0 | 2 | 10 | 19 | 34 | 48 | 63 | 71 | 85 | 92 | 101 | 107 |
| 1989 | 0 | 0 | 0 | 0 | 3 | 9 | 20 | 39 | 54 | 74 | 95 | 114 | 131 | 147 | 161 |
| 1990 | 0 | 0 | 0 | 0 | 0 | 15 | 34 | 53 | 72 | 92 | 114 | 128 | 144 | 165 | 175 |
| 1991 | 0 | 0 | 0 | 0 | 3 | 7 | 17 | 39 | 56 | 77 | 97 | 108 | 121 | 137 | 143 |
| 1992 | 0 | 0 | 0 | 0 | 2 | 7 | 21 | 34 | 57 | 72 | 94 | 107 | 118 | 126 | 134 |
| 1993 | 0 | 0 | 0 | 0 | 1 | 8 | 15 | 28 | 39 | 55 | 65 | 75 | 81 | 86 | 94 |
| 1994 | 0 | 0 | 0 | 0 | 1 | 5 | 10 | 21 | 31 | 54 | 70 | 77 | 83 | 88 | 92 |
| 1995 | 0 | 0 | 0 | 0 | 1 | 6 | 16 | 31 | 40 | 48 | 54 | 61 | 66 | 71 | 75 |
| 1996 | 0 | 0 | 0 | 1 | 7 | 13 | 19 | 28 | 44 | 57 | 62 | 65 | 69 | 73 | 76 |
| 1997 | 0 | 0 | 0 | 1 | 2 | 14 | 31 | 44 | 56 | 68 | 75 | 78 | 83 | 87 | |
| 1998 | 0 | 0 | 0 | 0 | 4 | 10 | 15 | 24 | 34 | 44 | 52 | 55 | 60 | | |
| 1999 | 0 | 0 | 1 | 2 | 2 | 7 | 19 | 38 | 47 | 55 | 56 | 58 | | | |
| 2000 | 0 | 0 | 1 | 1 | 4 | 16 | 35 | 55 | 75 | 109 | 128 | | | | |
| 2001 | 0 | 0 | 0 | 2 | 10 | 31 | 61 | 94 | 113 | 137 | | | | | |
| 2002 | 0 | 0 | 0 | 0 | 16 | 48 | 96 | 132 | 155 | | | | | | |
| 2003 | 0 | 0 | 0 | 0 | 9 | 40 | 68 | 98 | | | | | | | |
| 2004 | 0 | 0 | 0 | 2 | 14 | 38 | 71 | | | | | | | | |
| 2005 | 0 | 0 | 1 | 17 | 49 | 97 | | | | | | | | | |
| 2006 | 0 | 0 | 0 | 2 | 16 | | | | | | | | | | |
| 2007 | 0 | 0 | 0 | 0 | | | | | | | | | | | |
| 2008 | 0 | 0 | 0 | | | | | | | | | | | | |
| 2009 | 0 | 0 | 0 | | | | | | | | | | | | |
| 2010 | 0 | | | | | | | | | | | | | | |

| Age-to-Age Factors | | | | | | | | | | | | | | | |
|--------------------|-------|-------|-------|--------|-------|-------|-------|--------|---------|---------|---------|---------|---------|---------|---------|
| First Exam Year | 12:24 | 24:36 | 36:48 | 48:60 | 60:72 | 72:84 | 84:96 | 96:108 | 108:120 | 120:132 | 132:144 | 144:156 | 156:168 | 168:180 | 180:192 |
| PRIOR | | | | 5.000 | 2.800 | 1.800 | 1.524 | 1.318 | 1.146 | 1.176 | 1.103 | 1.106 | 1.060 | 1.036 | 1.026 |
| 1979 | | | | | 4.000 | 3.000 | 1.417 | 1.529 | 1.346 | 1.143 | 1.150 | 1.087 | 1.040 | 1.038 | 1.000 |
| 1980 | | | | | | 5.000 | 2.200 | 1.727 | 1.316 | 1.200 | 1.100 | 1.152 | 1.105 | 1.024 | 1.093 |
| 1981 | | | | | | 5.000 | 2.600 | 1.615 | 1.190 | 1.280 | 1.125 | 1.111 | 1.150 | 1.109 | 1.000 |
| 1982 | | | | | | | 3.000 | 2.667 | 1.375 | 1.364 | 1.100 | 1.152 | 1.105 | 1.048 | 1.023 |
| 1983 | | | | | | | 6.000 | 1.833 | 1.364 | 1.333 | 1.250 | 1.360 | 1.059 | 1.083 | 1.026 |
| 1984 | | | | 3.000 | 2.000 | 1.667 | 1.600 | 1.438 | 1.348 | 1.194 | 1.108 | 1.171 | 1.146 | 1.018 | 1.054 |
| 1985 | | | | | | 2.400 | 1.917 | 1.522 | 1.229 | 1.140 | 1.163 | 1.140 | 1.108 | 1.014 | 1.014 |
| 1986 | | | | | 4.500 | 2.000 | 1.722 | 1.516 | 1.213 | 1.158 | 1.136 | 1.133 | 1.071 | 1.077 | 1.000 |
| 1987 | | | | | 3.500 | 2.857 | 1.750 | 1.286 | 1.378 | 1.081 | 1.164 | 1.077 | 1.095 | 1.065 | 1.071 |
| 1988 | | | | | 5.000 | 1.900 | 1.789 | 1.412 | 1.313 | 1.127 | 1.197 | 1.082 | 1.098 | 1.059 | 1.037 |
| 1989 | | | | | 3.000 | 2.222 | 1.950 | 1.385 | 1.370 | 1.284 | 1.200 | 1.149 | 1.122 | 1.095 | 1.012 |
| 1990 | | | | | | 2.267 | 1.559 | 1.358 | 1.278 | 1.239 | 1.123 | 1.125 | 1.146 | 1.061 | 1.046 |
| 1991 | | | | | | 2.333 | 2.429 | 2.294 | 1.436 | 1.375 | 1.260 | 1.113 | 1.120 | 1.132 | 1.044 |
| 1992 | | | | | | 3.500 | 3.000 | 1.619 | 1.676 | 1.263 | 1.306 | 1.138 | 1.103 | 1.068 | 1.063 |
| 1993 | | | | | | 8.000 | 1.875 | 1.867 | 1.393 | 1.410 | 1.182 | 1.154 | 1.080 | 1.062 | 1.093 |
| 1994 | | | | | | 5.000 | 2.000 | 2.100 | 1.476 | 1.742 | 1.296 | 1.100 | 1.078 | 1.060 | 1.045 |
| 1995 | | | | | | 6.000 | 2.667 | 1.938 | 1.290 | 1.200 | 1.125 | 1.130 | 1.082 | 1.076 | 1.056 |
| 1996 | | | | | 7.000 | 1.857 | 1.462 | 1.474 | 1.571 | 1.295 | 1.088 | 1.048 | 1.062 | 1.058 | 1.041 |
| 1997 | | | | | 2.000 | 7.000 | 2.214 | 1.419 | 1.273 | 1.214 | 1.103 | 1.040 | 1.064 | 1.048 | |
| 1998 | | | | | | 2.500 | 1.500 | 1.600 | 1.417 | 1.294 | 1.182 | 1.058 | 1.091 | | |
| 1999 | | | | 2.000 | 1.000 | 3.500 | 2.714 | 2.000 | 1.237 | 1.170 | 1.018 | 1.036 | | | |
| 2000 | | | | 1.000 | 4.000 | 4.000 | 2.188 | 1.571 | 1.364 | 1.453 | 1.174 | | | | |
| 2001 | | | | | 5.000 | 3.100 | 1.968 | 1.541 | 1.202 | 1.212 | | | | | |
| 2002 | | | | | | 3.000 | 2.000 | 1.375 | 1.174 | | | | | | |
| 2003 | | | | | | 4.444 | 1.700 | 1.441 | | | | | | | |
| 2004 | | | | | | 2.714 | 1.868 | | | | | | | | |
| 2005 | | | | 17.000 | 2.882 | 1.980 | | | | | | | | | |
| 2006 | | | | | 8.000 | | | | | | | | | | |
| 2007 | | | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | |
| 2009 | | | | | | | | | | | | | | | |

| Averages | | | | | | | | | | | | | | | |
|-----------------------|-------|-------|-------|----------|---------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| | 12:24 | 24:36 | 36:48 | 48:60 | 60:72 | 72:84 | 84:96 | 96:108 | 108:120 | 120:132 | 132:144 | 144:156 | 156:168 | 168:180 | 180:192 |
| Simple Avg | | | | | | | | | | | | | | | |
| All Years | | | | 4.488 | 3.858 | 2.455 | 1.761 | 1.397 | 1.314 | 1.172 | 1.131 | 1.106 | 1.087 | 1.046 | 1.036 |
| Latest 15 | | | | 4.610 | 3.758 | 2.013 | 1.662 | 1.376 | 1.326 | 1.188 | 1.111 | 1.093 | 1.086 | 1.060 | 1.038 |
| Latest 7 | | | | 5.961 | 3.048 | 1.945 | 1.586 | 1.279 | 1.269 | 1.113 | 1.062 | 1.075 | 1.061 | 1.060 | 1.045 |
| Latest 5 | | | | 5.441 | 2.347 | 1.784 | 1.408 | 1.188 | 1.333 | 1.096 | 1.047 | 1.078 | 1.053 | 1.049 | 1.036 |
| Volume Wtd | | | | | | | | | | | | | | | |
| All Years | | | | 5.294 | 2.994 | 2.018 | 1.609 | 1.341 | 1.277 | 1.177 | 1.123 | 1.106 | 1.085 | 1.050 | 1.034 |
| Latest 15 | | | | 4.929 | 2.776 | 1.992 | 1.589 | 1.327 | 1.316 | 1.181 | 1.123 | 1.105 | 1.095 | 1.058 | 1.036 |
| Latest 7 | | | | 4.538 | 2.663 | 1.921 | 1.492 | 1.263 | 1.267 | 1.143 | 1.081 | 1.081 | 1.076 | 1.058 | 1.039 |
| Latest 5 | | | | 4.952 | 2.592 | 1.913 | 1.495 | 1.236 | 1.271 | 1.120 | 1.060 | 1.074 | 1.060 | 1.061 | 1.045 |
| Prior (9-mo triangle) | | | | 18.000 | 5.600 | 3.440 | 2.020 | 1.585 | 1.355 | 1.235 | 1.160 | 1.120 | 1.095 | 1.075 | 1.060 |
| Selected | | | | 15.000 | 5.000 | 2.600 | 1.900 | 1.500 | 1.260 | 1.250 | 1.150 | 1.080 | 1.075 | 1.070 | 1.045 |
| Age to Ult | | | | 1,572.21 | 104.814 | 20.963 | 8.063 | 4.243 | 2.829 | 2.245 | 1.796 | 1.562 | 1.446 | 1.345 | 1.257 |
| % of Ult | | | | 0.06% | 0.95% | 4.77% | 12.40% | 23.57% | 35.35% | 44.54% | 55.67% | 64.02% | 69.15% | 74.33% | 79.54% |

| FCAS Count as of Development Maturity | | | | | | | | | | | | | | | |
|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| First Exam Year | 192 | 204 | 216 | 228 | 240 | 252 | 264 | 276 | 288 | 300 | 312 | 324 | 336 | 348 | 360 |
| PRIOR | 469 | 482 | 495 | 507 | 514 | 520 | 524 | 527 | 529 | 531 | 532 | 535 | 537 | 538 | 539 |
| 1979 | 54 | 57 | 59 | 59 | 59 | 61 | 61 | 61 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| 1980 | 47 | 47 | 49 | 51 | 52 | 52 | 53 | 54 | 54 | 54 | 55 | 55 | 55 | 55 | 55 |
| 1981 | 51 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 53 | 53 | 53 | 53 | 54 | 54 |
| 1982 | 47 | 49 | 50 | 52 | 52 | 53 | 53 | 55 | 55 | 55 | 56 | 56 | 56 | 56 | |
| 1983 | 41 | 42 | 43 | 43 | 46 | 47 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | |
| 1984 | 59 | 59 | 61 | 61 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | | |
| 1985 | 74 | 77 | 80 | 80 | 80 | 82 | 83 | 83 | 83 | 83 | 83 | | | | |
| 1986 | 98 | 100 | 102 | 104 | 105 | 106 | 108 | 108 | 108 | 108 | | | | | |
| 1987 | 105 | 116 | 122 | 132 | 135 | 138 | 139 | 140 | 140 | | | | | | |
| 1988 | 111 | 119 | 121 | 127 | 127 | 130 | 131 | | | | | | | | |
| 1989 | 163 | 168 | 174 | 176 | 177 | 178 | 179 | | | | | | | | |
| 1990 | 183 | 189 | 191 | 194 | 195 | 197 | | | | | | | | | |
| 1991 | 147 | 152 | 156 | 158 | 158 | | | | | | | | | | |
| 1992 | 141 | 148 | 150 | 151 | | | | | | | | | | | |
| 1993 | 101 | 103 | 103 | | | | | | | | | | | | |
| 1994 | 95 | 97 | | | | | | | | | | | | | |
| 1995 | 78 | | | | | | | | | | | | | | |
| 1996 | | | | | | | | | | | | | | | |
| 1997 | | | | | | | | | | | | | | | |
| 1998 | | | | | | | | | | | | | | | |
| 1999 | | | | | | | | | | | | | | | |
| 2000 | | | | | | | | | | | | | | | |
| 2001 | | | | | | | | | | | | | | | |
| 2002 | | | | | | | | | | | | | | | |
| 2003 | | | | | | | | | | | | | | | |
| 2004 | | | | | | | | | | | | | | | |
| 2005 | | | | | | | | | | | | | | | |
| 2006 | | | | | | | | | | | | | | | |
| 2007 | | | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | |
| 2009 | | | | | | | | | | | | | | | |
| 2010 | | | | | | | | | | | | | | | |

| Age-to-Age Factors | | | | | | | | | | | | | | | |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| First Exam Year | 192:204 | 204:216 | 216:228 | 228:240 | 240:252 | 252:264 | 264:276 | 276:288 | 288:300 | 300:312 | 312:324 | 324:336 | 336:348 | 348:360 | 360:Ult |
| PRIOR | 1.028 | 1.027 | 1.024 | 1.014 | 1.012 | 1.008 | 1.006 | 1.004 | 1.004 | 1.002 | 1.006 | 1.004 | 1.002 | 1.002 | |
| 1979 | 1.056 | 1.035 | 1.000 | 1.000 | 1.034 | 1.000 | 1.000 | 1.016 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | |
| 1980 | 1.000 | 1.043 | 1.041 | 1.020 | 1.000 | 1.019 | 1.019 | 1.000 | 1.000 | 1.019 | 1.000 | 1.000 | 1.000 | 1.000 | |
| 1981 | 1.020 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.019 | 1.000 | 1.000 | 1.000 | 1.019 | 1.000 | |
| 1982 | 1.043 | 1.020 | 1.040 | 1.000 | 1.019 | 1.000 | 1.038 | 1.000 | 1.000 | 1.018 | 1.000 | 1.000 | 1.000 | 1.000 | |
| 1983 | 1.024 | 1.024 | 1.000 | 1.070 | 1.022 | 1.021 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | | | |
| 1984 | 1.000 | 1.034 | 1.000 | 1.016 | 1.016 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | | | | | |
| 1985 | 1.041 | 1.039 | 1.000 | 1.000 | 1.025 | 1.012 | 1.000 | 1.000 | 1.000 | 1.000 | | | | | |
| 1986 | 1.020 | 1.020 | 1.020 | 1.010 | 1.010 | 1.019 | 1.000 | 1.000 | 1.000 | | | | | | |
| 1987 | 1.105 | 1.052 | 1.082 | 1.023 | 1.022 | 1.007 | 1.007 | 1.000 | | | | | | | |
| 1988 | 1.072 | 1.017 | 1.050 | 1.000 | 1.024 | 1.008 | 1.000 | | | | | | | | |
| 1989 | 1.031 | 1.036 | 1.011 | 1.006 | 1.006 | 1.006 | | | | | | | | | |
| 1990 | 1.033 | 1.011 | 1.016 | 1.005 | 1.010 | | | | | | | | | | |
| 1991 | 1.034 | 1.026 | 1.013 | 1.000 | | | | | | | | | | | |
| 1992 | 1.050 | 1.014 | 1.007 | | | | | | | | | | | | |
| 1993 | 1.020 | 1.000 | | | | | | | | | | | | | |
| 1994 | 1.021 | | | | | | | | | | | | | | |
| 1995 | | | | | | | | | | | | | | | |
| 1996 | | | | | | | | | | | | | | | |
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| 2007 | | | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | |
| 2009 | | | | | | | | | | | | | | | |

| Averages | | | | | | | | | | | | | | | |
|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 192:204 | 204:216 | 216:228 | 228:240 | 240:252 | 252:264 | 264:276 | 276:288 | 288:300 | 300:312 | 312:324 | 324:336 | 336:348 | 348:360 | 360:Ult |
| Simple Avg | | | | | | | | | | | | | | | |
| All Years | 1.035 | 1.025 | 1.020 | 1.012 | 1.015 | 1.008 | 1.006 | 1.002 | 1.003 | 1.005 | 1.001 | 1.001 | 1.004 | 1.000 | |
| Latest 15 | 1.034 | 1.025 | 1.020 | 1.012 | 1.015 | 1.008 | 1.006 | 1.002 | 1.003 | 1.005 | 1.001 | 1.001 | 1.004 | 1.000 | |
| Latest 7 | 1.046 | 1.022 | 1.025 | 1.007 | 1.017 | 1.009 | 1.006 | 1.000 | 1.002 | 1.005 | 1.001 | 1.001 | 1.004 | 1.000 | |
| Latest 5 | 1.031 | 1.017 | 1.019 | 1.007 | 1.014 | 1.010 | 1.001 | 1.000 | 1.000 | 1.004 | 1.000 | 1.000 | 1.004 | 1.000 | |
| Volume Wtd | | | | | | | | | | | | | | | |
| All Years | 1.036 | 1.024 | 1.022 | 1.010 | 1.014 | 1.008 | 1.005 | 1.003 | 1.003 | 1.003 | 1.003 | 1.002 | 1.003 | 1.001 | |
| Latest 15 | 1.038 | 1.024 | 1.022 | 1.010 | 1.014 | 1.008 | 1.005 | 1.003 | 1.003 | 1.003 | 1.003 | 1.002 | 1.003 | 1.001 | |
| Latest 7 | 1.037 | 1.022 | 1.026 | 1.006 | 1.015 | 1.009 | 1.005 | 1.000 | 1.002 | 1.005 | 1.003 | 1.002 | 1.003 | 1.001 | |
| Latest 5 | 1.033 | 1.018 | 1.018 | 1.006 | 1.014 | 1.009 | 1.002 | 1.000 | 1.000 | 1.003 | 1.000 | 1.000 | 1.003 | 1.001 | |
| Prior | 1.035 | 1.027 | 1.020 | 1.015 | 1.010 | 1.007 | 1.005 | 1.004 | 1.002 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Selected | 1.035 | 1.025 | 1.020 | 1.015 | 1.010 | 1.009 | 1.005 | 1.002 | 1.002 | 1.001 | 1.001 | 1.001 | 1.001 | 1.001 | 1.000 |
| Age to Ult | 1.135 | 1.097 | 1.070 | 1.049 | 1.033 | 1.023 | 1.014 | 1.009 | 1.007 | 1.005 | 1.004 | 1.003 | 1.002 | 1.001 | 1.000 |
| % of Ult | 88.10% | 91.19% | 93.47% | 95.33% | 96.76% | 97.73% | 98.61% | 99.10% | 99.30% | 99.50% | 99.60% | 99.70% | 99.80% | 99.90% | 100.00% |

| ACAS Count as of Development Maturity | | | | | | | | | | | | | | | | |
|---------------------------------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| First Exam Year | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 | 156 | 168 | 180 | |
| PRIOR | 2 | 15 | 53 | 132 | 234 | 319 | 385 | 446 | 492 | 536 | 573 | 593 | 610 | 627 | 637 | |
| 1979 | 0 | 0 | 0 | 4 | 9 | 19 | 29 | 44 | 54 | 58 | 63 | 67 | 70 | 70 | 71 | |
| 1980 | 0 | 0 | 0 | 0 | 3 | 14 | 24 | 30 | 39 | 49 | 53 | 56 | 59 | 61 | 62 | |
| 1981 | 0 | 1 | 2 | 3 | 11 | 21 | 35 | 43 | 51 | 56 | 57 | 59 | 61 | 62 | 62 | |
| 1982 | 0 | 0 | 0 | 0 | 8 | 20 | 30 | 39 | 45 | 55 | 60 | 60 | 64 | 68 | 68 | |
| 1983 | 0 | 0 | 0 | 2 | 7 | 15 | 25 | 37 | 48 | 55 | 59 | 65 | 67 | 68 | 68 | |
| 1984 | 0 | 0 | 1 | 5 | 9 | 20 | 42 | 53 | 60 | 71 | 76 | 79 | 81 | 81 | 83 | |
| 1985 | 0 | 0 | 0 | 3 | 18 | 36 | 49 | 65 | 77 | 88 | 94 | 99 | 102 | 106 | 110 | |
| 1986 | 0 | 0 | 0 | 4 | 19 | 45 | 67 | 83 | 111 | 124 | 131 | 131 | 134 | 140 | 145 | |
| 1987 | 0 | 0 | 0 | 6 | 27 | 47 | 74 | 104 | 121 | 143 | 156 | 161 | 171 | 182 | 186 | |
| 1988 | 0 | 0 | 0 | 9 | 21 | 47 | 73 | 99 | 121 | 134 | 145 | 155 | 164 | 167 | 172 | |
| 1989 | 0 | 0 | 0 | 8 | 23 | 59 | 91 | 137 | 171 | 188 | 212 | 225 | 229 | 237 | 242 | |
| 1990 | 0 | 0 | 0 | 8 | 34 | 71 | 106 | 146 | 171 | 197 | 219 | 234 | 244 | 249 | 258 | |
| 1991 | 0 | 0 | 0 | 6 | 17 | 40 | 78 | 110 | 146 | 170 | 181 | 192 | 202 | 210 | 214 | |
| 1992 | 0 | 0 | 0 | 5 | 23 | 50 | 83 | 114 | 135 | 148 | 161 | 176 | 184 | 191 | 199 | |
| 1993 | 0 | 0 | 1 | 5 | 18 | 26 | 48 | 72 | 81 | 87 | 106 | 117 | 123 | 129 | 130 | |
| 1994 | 0 | 1 | 1 | 3 | 12 | 26 | 40 | 58 | 80 | 93 | 106 | 112 | 123 | 126 | 131 | |
| 1995 | 0 | 0 | 1 | 2 | 9 | 26 | 42 | 61 | 73 | 86 | 93 | 101 | 106 | 111 | 113 | |
| 1996 | 0 | 0 | 1 | 5 | 14 | 26 | 47 | 60 | 68 | 79 | 89 | 92 | 93 | 96 | 97 | |
| 1997 | 0 | 0 | 1 | 3 | 19 | 35 | 55 | 72 | 87 | 100 | 107 | 110 | 113 | 114 | | |
| 1998 | 0 | 0 | 0 | 5 | 12 | 23 | 34 | 50 | 68 | 73 | 76 | 80 | 81 | | | |
| 1999 | 0 | 0 | 2 | 3 | 8 | 26 | 46 | 62 | 65 | 65 | 66 | 66 | | | | |
| 2000 | 0 | 0 | 1 | 6 | 19 | 43 | 71 | 117 | 165 | 200 | 223 | | | | | |
| 2001 | 0 | 0 | 0 | 9 | 38 | 77 | 114 | 149 | 177 | 192 | | | | | | |
| 2002 | 0 | 0 | 0 | 20 | 69 | 116 | 161 | 197 | 229 | | | | | | | |
| 2003 | 0 | 0 | 1 | 17 | 46 | 93 | 133 | 168 | | | | | | | | |
| 2004 | 0 | 0 | 1 | 16 | 54 | 110 | 149 | | | | | | | | | |
| 2005 | 0 | 0 | 18 | 59 | 126 | 198 | | | | | | | | | | |
| 2006 | 0 | 0 | 1 | 16 | 74 | | | | | | | | | | | |
| 2007 | 0 | 0 | 1 | 21 | | | | | | | | | | | | |
| 2008 | 0 | 0 | 0 | | | | | | | | | | | | | |
| 2009 | 0 | 0 | 0 | | | | | | | | | | | | | |
| 2010 | 0 | | | | | | | | | | | | | | | |

| Age-to-Age Factors | | | | | | | | | | | | | | | | |
|--------------------|-------|-------|--------|-------|-------|-------|-------|--------|---------|---------|---------|---------|---------|---------|---------|--|
| First Exam Year | 12:24 | 24:36 | 36:48 | 48:60 | 60:72 | 72:84 | 84:96 | 96:108 | 108:120 | 120:132 | 132:144 | 144:156 | 156:168 | 168:180 | 180:192 | |
| PRIOR | 7.500 | 3.533 | 2.491 | 1.773 | 1.363 | 1.207 | 1.158 | 1.103 | 1.089 | 1.069 | 1.035 | 1.029 | 1.028 | 1.016 | 1.009 | |
| 1979 | | | | 2.250 | 2.111 | 1.526 | 1.517 | 1.227 | 1.074 | 1.086 | 1.063 | 1.045 | 1.000 | 1.014 | 1.028 | |
| 1980 | | | | 4.667 | 1.714 | 1.250 | 1.250 | 1.300 | 1.256 | 1.082 | 1.057 | 1.054 | 1.034 | 1.016 | 1.016 | |
| 1981 | | 2.000 | 1.500 | 3.667 | 1.909 | 1.667 | 1.229 | 1.186 | 1.098 | 1.018 | 1.035 | 1.034 | 1.016 | 1.000 | 1.016 | |
| 1982 | | | | 2.500 | 1.500 | 1.300 | 1.154 | 1.222 | 1.091 | 1.000 | 1.067 | 1.063 | 1.000 | 1.015 | 1.015 | |
| 1983 | | | | 3.500 | 2.143 | 1.667 | 1.480 | 1.297 | 1.146 | 1.073 | 1.102 | 1.031 | 1.015 | 1.000 | 1.044 | |
| 1984 | | | 5.000 | 1.800 | 2.222 | 2.100 | 1.262 | 1.132 | 1.183 | 1.070 | 1.039 | 1.025 | 1.000 | 1.025 | 1.000 | |
| 1985 | | | | 6.000 | 2.000 | 1.361 | 1.327 | 1.185 | 1.143 | 1.068 | 1.053 | 1.030 | 1.039 | 1.038 | 1.036 | |
| 1986 | | | | 4.750 | 2.368 | 1.489 | 1.239 | 1.337 | 1.117 | 1.056 | 1.000 | 1.023 | 1.045 | 1.036 | 1.000 | |
| 1987 | | | | 4.500 | 1.741 | 1.574 | 1.405 | 1.163 | 1.182 | 1.091 | 1.032 | 1.062 | 1.064 | 1.022 | 1.038 | |
| 1988 | | | | 2.333 | 2.238 | 1.553 | 1.356 | 1.222 | 1.107 | 1.082 | 1.069 | 1.058 | 1.018 | 1.030 | 1.023 | |
| 1989 | | | | 2.875 | 2.565 | 1.542 | 1.505 | 1.248 | 1.099 | 1.128 | 1.061 | 1.018 | 1.035 | 1.021 | 1.012 | |
| 1990 | | | | 4.250 | 2.088 | 1.493 | 1.377 | 1.171 | 1.152 | 1.112 | 1.068 | 1.043 | 1.020 | 1.036 | 1.023 | |
| 1991 | | | | 2.833 | 2.353 | 1.950 | 1.410 | 1.327 | 1.164 | 1.065 | 1.061 | 1.052 | 1.040 | 1.019 | 1.028 | |
| 1992 | | | | 4.600 | 2.174 | 1.660 | 1.373 | 1.184 | 1.096 | 1.088 | 1.093 | 1.045 | 1.038 | 1.042 | 1.020 | |
| 1993 | | | 5.000 | 3.600 | 1.444 | 1.846 | 1.500 | 1.125 | 1.074 | 1.218 | 1.104 | 1.051 | 1.049 | 1.008 | 1.008 | |
| 1994 | | | 1.000 | 3.000 | 4.000 | 2.167 | 1.538 | 1.450 | 1.379 | 1.163 | 1.140 | 1.057 | 1.098 | 1.024 | 1.040 | |
| 1995 | | | | 2.000 | 4.500 | 2.889 | 1.615 | 1.452 | 1.197 | 1.178 | 1.081 | 1.086 | 1.050 | 1.047 | 1.018 | |
| 1996 | | | | 5.000 | 2.800 | 1.857 | 1.808 | 1.377 | 1.133 | 1.162 | 1.127 | 1.034 | 1.011 | 1.032 | 1.010 | |
| 1997 | | | | 3.000 | 6.333 | 1.842 | 1.571 | 1.309 | 1.208 | 1.149 | 1.070 | 1.028 | 1.027 | 1.009 | | |
| 1998 | | | | 2.400 | 1.917 | 1.478 | 1.471 | 1.360 | 1.074 | 1.041 | 1.053 | 1.013 | | | | |
| 1999 | | | | 1.500 | 2.667 | 3.250 | 1.769 | 1.348 | 1.048 | 1.000 | 1.015 | 1.000 | | | | |
| 2000 | | | | 6.000 | 3.167 | 2.263 | 1.651 | 1.648 | 1.410 | 1.212 | 1.115 | | | | | |
| 2001 | | | | 4.222 | 2.026 | 1.481 | 1.307 | 1.188 | 1.085 | | | | | | | |
| 2002 | | | | 3.450 | 1.681 | 1.388 | 1.224 | 1.162 | | | | | | | | |
| 2003 | | | 17.000 | 2.706 | 2.022 | 1.430 | 1.263 | | | | | | | | | |
| 2004 | | | 16.000 | 3.375 | 2.037 | 1.355 | | | | | | | | | | |
| 2005 | | | 3.278 | 2.136 | 1.571 | | | | | | | | | | | |
| 2006 | | | 16.000 | 4.625 | | | | | | | | | | | | |
| 2007 | | | 21.000 | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | | |
| 2009 | | | | | | | | | | | | | | | | |

| Averages | | | | | | | | | | | | | | | | |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|--|
| | 12:24 | 24:36 | 36:48 | 48:60 | 60:72 | 72:84 | 84:96 | 96:108 | 108:120 | 120:132 | 132:144 | 144:156 | 156:168 | 168:180 | 180:192 | |
| Simple Avg | | | | | | | | | | | | | | | | |
| All Years | | | 7.185 | 3.523 | 2.193 | 1.590 | 1.363 | 1.218 | 1.134 | 1.086 | 1.051 | 1.041 | 1.031 | 1.021 | 1.020 | |
| Latest 15 | | | 9.078 | 3.532 | 2.127 | 1.578 | 1.385 | 1.227 | 1.126 | 1.100 | 1.059 | 1.044 | 1.035 | 1.027 | 1.019 | |
| Latest 7 | | | 14.656 | 3.258 | 1.868 | 1.461 | 1.358 | 1.234 | 1.104 | 1.074 | 1.040 | 1.040 | 1.032 | 1.024 | 1.019 | |
| Latest 5 | | | 13.426 | 3.380 | 1.804 | 1.392 | 1.243 | 1.175 | 1.148 | 1.065 | 1.026 | 1.020 | 1.021 | 1.014 | 1.020 | |
| Volume Wtd | | | | | | | | | | | | | | | | |
| All Years | | | 4.282 | 2.695 | 1.817 | 1.470 | 1.320 | 1.199 | 1.126 | 1.088 | 1.051 | 1.039 | 1.032 | 1.022 | 1.018 | |
| Latest 15 | | | 6.333 | 3.109 | 1.890 | 1.532 | 1.369 | 1.221 | 1.131 | 1.098 | 1.056 | 1.042 | 1.033 | 1.025 | 1.021 | |
| Latest 7 | | | 7.182 | 2.918 | 1.842 | 1.451 | 1.327 | 1.215 | 1.131 | 1.092 | 1.054 | 1.044 | 1.035 | 1.027 | 1.019 | |
| Latest 5 | | | 5.864 | 2.883 | 1.784 | 1.431 | 1.320 | 1.224 | 1.121 | 1.085 | 1.042 | 1.042 | 1.032 | 1.026 | 1.020 | |
| Prior (9-mo triangle) | 1.500 | 4.500 | 3.360 | 1.985 | 1.590 | 1.380 | 1.235 | 1.132 | 1.090 | 1.070 | 1.048 | 1.037 | 1.029 | 1.019 | 1.019 | |
| Selected | 1.500 | 6.000 | 3.000 | 1.800 | 1.450 | 1.325 | 1.224 | 1.125 | 1.090 | 1.050 | 1.045 | 1.035 | 1.025 | 1.020 | 1.020 | |
| Age to Ult | 175.07 | 116.71 | 19.452 | 6.484 | 3.602 | 2.484 | 1.875 | 1.532 | 1.362 | 1.249 | 1.190 | 1.138 | 1.100 | 1.073 | 1.073 | |
| % of Ult | 0.57% | 0.86% | 5.14% | 15.42% | 27.76% | 40.25% | 53.34% | 65.28% | 73.44% | 80.05% | 84.06% | 87.84% | 90.91% | 93.19% | 93.19% | |

| ACAS Count as of Development Maturity | | | | | | | | | | | | | | | |
|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| First Exam Year | 192 | 204 | 216 | 228 | 240 | 252 | 264 | 276 | 288 | 300 | 312 | 324 | 336 | 348 | 360 |
| PRIOR | 643 | 650 | 662 | 672 | 683 | 687 | 690 | 692 | 693 | 695 | 697 | 698 | 698 | 700 | 700 |
| 1979 | 73 | 73 | 74 | 74 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| 1980 | 63 | 63 | 65 | 65 | 65 | 65 | 65 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 1981 | 63 | 63 | 64 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| 1982 | 69 | 69 | 69 | 69 | 70 | 71 | 71 | 71 | 72 | 72 | 72 | 72 | 72 | 72 | 72 |
| 1983 | 71 | 71 | 71 | 72 | 74 | 74 | 74 | 77 | 77 | 77 | 77 | 77 | 77 | 77 | 77 |
| 1984 | 83 | 83 | 83 | 83 | 84 | 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| 1985 | 114 | 114 | 114 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 115 |
| 1986 | 145 | 146 | 146 | 147 | 147 | 147 | 147 | 147 | 147 | 147 | 147 | 147 | 147 | 147 | 147 |
| 1987 | 193 | 201 | 206 | 208 | 213 | 213 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 | 214 |
| 1988 | 176 | 183 | 183 | 186 | 186 | 186 | 186 | 186 | 186 | 186 | 186 | 186 | 186 | 186 | 186 |
| 1989 | 245 | 252 | 256 | 259 | 260 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 |
| 1990 | 264 | 267 | 270 | 270 | 271 | 271 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 | 273 |
| 1991 | 220 | 223 | 223 | 225 | 226 | 226 | 226 | 226 | 226 | 226 | 226 | 226 | 226 | 226 | 226 |
| 1992 | 203 | 203 | 205 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 |
| 1993 | 131 | 133 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 |
| 1994 | 135 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 | 136 |
| 1995 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | 114 |
| 1996 | | | | | | | | | | | | | | | |
| 1997 | | | | | | | | | | | | | | | |
| 1998 | | | | | | | | | | | | | | | |
| 1999 | | | | | | | | | | | | | | | |
| 2000 | | | | | | | | | | | | | | | |
| 2001 | | | | | | | | | | | | | | | |
| 2002 | | | | | | | | | | | | | | | |
| 2003 | | | | | | | | | | | | | | | |
| 2004 | | | | | | | | | | | | | | | |
| 2005 | | | | | | | | | | | | | | | |
| 2006 | | | | | | | | | | | | | | | |
| 2007 | | | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | |
| 2009 | | | | | | | | | | | | | | | |
| 2010 | | | | | | | | | | | | | | | |

| Age-to-Age Factors | | | | | | | | | | | | | | | |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| First Exam Year | 192:204 | 204:216 | 216:228 | 228:240 | 240:252 | 252:264 | 264:276 | 276:288 | 288:300 | 300:312 | 312:324 | 324:336 | 336:348 | 348:360 | 360:Ult |
| PRIOR | 1.011 | 1.018 | 1.015 | 1.016 | 1.006 | 1.004 | 1.003 | 1.001 | 1.003 | 1.003 | 1.001 | 1.000 | 1.003 | 1.000 | 1.000 |
| 1979 | 1.000 | 1.014 | 1.000 | 1.014 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1980 | 1.000 | 1.032 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.015 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1981 | 1.000 | 1.016 | 1.016 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1982 | 1.000 | 1.000 | 1.000 | 1.014 | 1.014 | 1.000 | 1.000 | 1.014 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1983 | 1.000 | 1.000 | 1.014 | 1.028 | 1.000 | 1.000 | 1.041 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1984 | 1.000 | 1.000 | 1.000 | 1.012 | 1.000 | 1.012 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1985 | 1.000 | 1.000 | 1.009 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1986 | 1.007 | 1.000 | 1.007 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1987 | 1.041 | 1.025 | 1.010 | 1.024 | 1.000 | 1.005 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1988 | 1.040 | 1.000 | 1.016 | 1.000 | 1.000 | 1.000 | 1.011 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1989 | 1.029 | 1.016 | 1.012 | 1.004 | 1.004 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1990 | 1.011 | 1.011 | 1.000 | 1.004 | 1.007 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1991 | 1.014 | 1.000 | 1.009 | 1.004 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1992 | 1.000 | 1.010 | 1.005 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1993 | 1.015 | 1.023 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1994 | 1.007 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1995 | | | | | | | | | | | | | | | |
| 1996 | | | | | | | | | | | | | | | |
| 1997 | | | | | | | | | | | | | | | |
| 1998 | | | | | | | | | | | | | | | |
| 1999 | | | | | | | | | | | | | | | |
| 2000 | | | | | | | | | | | | | | | |
| 2001 | | | | | | | | | | | | | | | |
| 2002 | | | | | | | | | | | | | | | |
| 2003 | | | | | | | | | | | | | | | |
| 2004 | | | | | | | | | | | | | | | |
| 2005 | | | | | | | | | | | | | | | |
| 2006 | | | | | | | | | | | | | | | |
| 2007 | | | | | | | | | | | | | | | |
| 2008 | | | | | | | | | | | | | | | |
| 2009 | | | | | | | | | | | | | | | |

| Averages | | | | | | | | | | | | | | | |
|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 192:204 | 204:216 | 216:228 | 228:240 | 240:252 | 252:264 | 264:276 | 276:288 | 288:300 | 300:312 | 312:324 | 324:336 | 336:348 | 348:360 | 360:Ult |
| Simple Avg | | | | | | | | | | | | | | | |
| All Years | 1.010 | 1.010 | 1.007 | 1.009 | 1.002 | 1.002 | 1.006 | 1.002 | 1.000 | 1.000 | 1.000 | 1.000 | 1.001 | 1.000 | 1.000 |
| Latest 15 | 1.011 | 1.010 | 1.007 | 1.009 | 1.002 | 1.002 | 1.006 | 1.002 | 1.000 | 1.000 | 1.000 | 1.000 | 1.001 | 1.000 | 1.000 |
| Latest 7 | 1.020 | 1.011 | 1.008 | 1.006 | 1.001 | 1.002 | 1.006 | 1.002 | 1.000 | 1.000 | 1.000 | 1.000 | 1.001 | 1.001 | 1.000 |
| Latest 5 | 1.010 | 1.012 | 1.008 | 1.007 | 1.002 | 1.001 | 1.002 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.001 | 1.001 | 1.000 |
| Volume Wtd | | | | | | | | | | | | | | | |
| All Years | 1.013 | 1.012 | 1.009 | 1.010 | 1.003 | 1.002 | 1.004 | 1.001 | 1.001 | 1.002 | 1.001 | 1.000 | 1.002 | 1.000 | 1.000 |
| Latest 15 | 1.015 | 1.010 | 1.009 | 1.010 | 1.003 | 1.002 | 1.004 | 1.001 | 1.001 | 1.002 | 1.001 | 1.000 | 1.002 | 1.002 | 1.000 |
| Latest 7 | 1.017 | 1.012 | 1.008 | 1.006 | 1.002 | 1.002 | 1.006 | 1.001 | 1.000 | 1.000 | 1.001 | 1.000 | 1.002 | 1.002 | 1.000 |
| Latest 5 | 1.009 | 1.011 | 1.008 | 1.007 | 1.003 | 1.001 | 1.003 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.002 | 1.002 | 1.000 |
| Prior | 1.015 | 1.010 | 1.008 | 1.005 | 1.003 | 1.002 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Selected | 1.015 | 1.010 | 1.008 | 1.007 | 1.003 | 1.002 | 1.002 | 1.001 | 1.001 | 1.001 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 |
| Age to Ult | 1.052 | 1.037 | 1.026 | 1.018 | 1.011 | 1.008 | 1.006 | 1.004 | 1.003 | 1.002 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 |
| % of Ult | 95.05% | 96.48% | 97.44% | 98.22% | 98.91% | 99.20% | 99.40% | 99.60% | 99.70% | 99.80% | 99.90% | 100.00% | 100.00% | 100.00% | 100.00% |

Appendix A
2010 CAS Travel Time Report
 CAS Candidate Development "Triangle"

| Year of First Exam | Diagonal as of 9/2007 Calculated in 2008 | Diagonal as of 9/30/2008 | Maturity as of 9/30/2008 | Age-to-Age Factor | Diagonal as of 9/2008 Calculated in 2010 | Diagonal as of 9/2009 Estimated in 2010 | Maturity as of 9/30/2009 | Age-to-Age Factor | Diagonal as of 9/30/2010 | Maturity as of 9/30/2010 | Age-to-Age Factor |
|--------------------|------------------------------------------|--------------------------|--------------------------|-------------------|------------------------------------------|-----------------------------------------|--------------------------|-------------------|--------------------------|--------------------------|-------------------|
| (1) | (a) | (a) | (b) | [(3)/(2)] | (c) | [.25*(6) + .75*(10)] | (b) | [(7)/(6)] | (d) | (b) | [(10)/(8)] |
| (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | |
| PRIOR | 846 | | | | 847 | 851 | | 1.004 | 852 | | 1.001 |
| 1979 | 101 | 101 | 357 | 1.000 | 101 | 101 | 369 | 1.000 | 101 | 381 | 1.000 |
| 1980 | 85 | 85 | 345 | 1.000 | 85 | 85 | 357 | 1.000 | 85 | 369 | 1.000 |
| 1981 | 85 | 85 | 333 | 1.000 | 85 | 85 | 345 | 1.000 | 85 | 357 | 1.000 |
| 1982 | 103 | 104 | 321 | 1.010 | 104 | 104 | 333 | 1.000 | 104 | 345 | 1.000 |
| 1983 | 108 | 108 | 309 | 1.000 | 108 | 108 | 321 | 1.000 | 108 | 333 | 1.000 |
| 1984 | 129 | 129 | 297 | 1.000 | 129 | 129 | 309 | 1.000 | 129 | 321 | 1.000 |
| 1985 | 214 | 214 | 285 | 1.000 | 214 | 214 | 297 | 1.000 | 214 | 309 | 1.000 |
| 1986 | 299 | 299 | 273 | 1.000 | 298 | 298 | 285 | 1.000 | 298 | 297 | 1.000 |
| 1987 | 455 | 455 | 261 | 1.000 | 455 | 455 | 273 | 1.000 | 455 | 285 | 1.000 |
| 1988 | 499 | 500 | 249 | 1.002 | 499 | 499 | 261 | 1.000 | 499 | 273 | 1.000 |
| 1989 | 720 | 720 | 237 | 1.000 | 718 | 718 | 249 | 1.000 | 718 | 261 | 1.000 |
| 1990 | 919 | 919 | 225 | 1.000 | 915 | 916 | 237 | 1.001 | 916 | 249 | 1.000 |
| 1991 | 895 | 895 | 213 | 1.000 | 888 | 888 | 225 | 1.000 | 888 | 237 | 1.000 |
| 1992 | 879 | 880 | 201 | 1.001 | 863 | 864 | 213 | 1.001 | 864 | 225 | 1.000 |
| 1993 | 776 | 776 | 189 | 1.000 | 768 | 768 | 201 | 1.000 | 768 | 213 | 1.000 |
| 1994 | 706 | 706 | 177 | 1.000 | 701 | 701 | 189 | 1.000 | 701 | 201 | 1.000 |
| 1995 | 655 | 656 | 165 | 1.002 | 644 | 644 | 177 | 1.000 | 644 | 189 | 1.000 |
| 1996 | 522 | 522 | 153 | 1.000 | 513 | 513 | 165 | 1.000 | 513 | 177 | 1.000 |
| 1997 | 525 | 525 | 141 | 1.000 | 523 | 525 | 153 | 1.003 | 525 | 165 | 1.001 |
| 1998 | 314 | 314 | 129 | 1.000 | 312 | 314 | 141 | 1.005 | 314 | 153 | 1.002 |
| 1999 | 116 | 116 | 117 | 1.000 | 114 | 115 | 129 | 1.007 | 115 | 141 | 1.002 |
| 2000 | 827 | 838 | 105 | 1.013 | 840 | 859 | 117 | 1.022 | 865 | 129 | 1.007 |
| 2001 | 531 | 536 | 93 | 1.009 | 531 | 539 | 105 | 1.016 | 542 | 117 | 1.005 |
| 2002 | 679 | 685 | 81 | 1.009 | 693 | 701 | 93 | 1.011 | 703 | 105 | 1.004 |
| 2003 | 687 | 698 | 69 | 1.016 | 700 | 717 | 81 | 1.024 | 722 | 93 | 1.008 |
| 2004 | 685 | 727 | 57 | 1.061 | 731 | 760 | 69 | 1.040 | 770 | 81 | 1.013 |
| 2005 | 1,342 | 1,397 | 45 | 1.041 | 931 | 996 | 57 | 1.069 | 1,017 | 69 | 1.022 |
| 2006 | 1,079 | 1,197 | 33 | 1.109 | 769 | 880 | 45 | 1.144 | 917 | 57 | 1.042 |
| 2007 | 525 | 912 | 21 | 1.737 | 632 | 802 | 33 | 1.269 | 859 | 45 | 1.071 |
| 2008 | 445 | | 9 | | 335 | 749 | 21 | 2.236 | 887 | 33 | 1.184 |
| 2009 | | | | | | | 9 | | 721 | 21 | |
| 2010 | | | | | | | | | 336 | 9 | |

Notes:

- (a) From CAS 2008 Travel Time Report, Appendix A, Exhibit 4c
- (c) From CAS membership database as of December 2008; candidates reassigned to match CAS membership database as of December 2010
- (d) From CAS membership database as of December 2010

Database sources: TT by first exam: Candidates as of 9/2008 from Candidate Triangle Column F

2010 CAS Travel Time Report

CAS Candidate Development "Triangle"

| (1) | Age-to-Age Factors | | | Selection | | | |
|---------|--------------------|-----------------|-----------------|-------------------|-------|----------|---------------------------|
| | 2007 to 2008 | 2008 to 2009 | 2009 to 2010 | Simple Average | Prior | Selected | Age-to-Ultimate Factor |
| | (a) | (b) | (c) | (5) | (d) | (e) | (8) |
| 381:Ult | | | | | 1.000 | | 1.000 |
| 369:381 | | | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 357:369 | | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 345:357 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 333:345 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 321:333 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 309:321 | 1.010 | 1.000 | 1.000 | 1.003 | 1.000 | 1.000 | 1.000 |
| 297:309 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 285:297 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 273:285 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 261:273 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 249:261 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 237:249 | 1.002 | 1.000 | 1.000 | 1.001 | 1.000 | 1.000 | 1.000 |
| 225:237 | 1.000 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 213:225 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 201:213 | 1.000 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 189:201 | 1.001 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 177:189 | 1.000 | 1.000 | 1.000 | 1.000 | 1.001 | 1.000 | 1.000 |
| 165:177 | 1.000 | 1.000 | 1.000 | 1.000 | 1.001 | 1.000 | 1.000 |
| 153:165 | 1.002 | 1.000 | 1.001 | 1.001 | 1.001 | 1.001 | 1.001 |
| 141:153 | 1.000 | 1.003 | 1.002 | 1.001 | 1.002 | 1.001 | 1.002 |
| 129:141 | 1.000 | 1.005 | 1.002 | 1.002 | 1.002 | 1.002 | 1.004 |
| 117:129 | 1.000 | 1.007 | 1.007 | 1.005 | 1.003 | 1.004 | 1.008 |
| 105:117 | 1.000 | 1.022 | 1.005 | 1.009 | 1.005 | 1.007 | 1.015 |
| 93:105 | 1.013 | 1.016 | 1.004 | 1.011 | 1.007 | 1.009 | 1.024 |
| 81:93 | 1.009 | 1.011 | 1.008 | 1.009 | 1.010 | 1.010 | 1.034 |
| 69:81 | 1.009 | 1.024 | 1.013 | 1.015 | 1.015 | 1.015 | 1.050 |
| 57:69 | 1.016 | 1.040 | 1.022 | 1.026 | 1.025 | 1.025 | 1.076 |
| 45:57 | 1.061 | 1.069 | 1.042 | 1.058 | 1.040 | 1.050 | 1.130 |
| 33:45 | 1.041 | 1.144 | 1.071 | 1.085 | 1.060 | 1.075 | 1.215 |
| 21:33 | 1.109 | 1.269 | 1.184 | 1.188 | 1.110 | 1.150 | 1.397 |
| 9:21 | 1.737 | 2.236 | | 1.986 | 1.750 | 1.900 | 2.654 |

Notes:

(a) From CAS 2010 Travel Time Report, Appendix A, Exhibit 4c, Sheet 1, Column (5)

(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 4c, Sheet 1, Column (9)

(c) From CAS 2010 Travel Time Report, Appendix A, Exhibit 4c, Sheet 1, Column (12)

(e) Judgmentally selected

2010 CAS Travel Time Report

Projected 10th percentile travel times

| Year of First Exam | Selected Ultimate Counts | | Implied 10th %ile Candidate | | Current Membership Counts | | Ultimate Median as Percentile of Current | | Estimated Ultimate 10th %ile Travel Time | |
|-----------------------|--------------------------|-------|--------------------------------|-----------|------------------------------|-------|---------------------------------------------|-------------|---------------------------------------------|------|
| | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS |
| | (a) | (b) | [(2) / 2] | [(3) / 2] | (c) | (c) | [(4) / (6)] | [(5) / (7)] | (d) | (e) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| PRIOR | 701 | 539 | 70 | 54 | 701 | 539 | | | | |
| 1979 | 75 | 62 | 8 | 6 | 75 | 62 | 10% | 10% | 4.20 | 6.00 |
| 1980 | 66 | 55 | 7 | 6 | 66 | 55 | 10% | 10% | 4.75 | 6.70 |
| 1981 | 65 | 54 | 7 | 5 | 65 | 54 | 10% | 10% | 4.00 | 6.15 |
| 1982 | 72 | 56 | 7 | 6 | 72 | 56 | 10% | 10% | 4.05 | 6.75 |
| 1983 | 77 | 48 | 8 | 5 | 77 | 48 | 10% | 10% | 4.50 | 6.50 |
| 1984 | 85 | 63 | 9 | 6 | 85 | 63 | 10% | 10% | 4.20 | 6.00 |
| 1985 | 115 | 83 | 12 | 8 | 115 | 83 | 10% | 10% | 4.21 | 6.50 |
| 1986 | 147 | 109 | 15 | 11 | 147 | 108 | 10% | 10% | 4.50 | 5.88 |
| 1987 | 215 | 141 | 21 | 14 | 214 | 140 | 10% | 10% | 4.50 | 6.50 |
| 1988 | 189 | 132 | 19 | 13 | 188 | 131 | 10% | 10% | 4.50 | 6.00 |
| 1989 | 263 | 182 | 26 | 18 | 261 | 179 | 10% | 10% | 4.50 | 6.75 |
| 1990 | 275 | 202 | 28 | 20 | 273 | 197 | 10% | 10% | 4.35 | 6.00 |
| 1991 | 228 | 163 | 23 | 16 | 226 | 158 | 10% | 10% | 5.00 | 6.75 |
| 1992 | 209 | 158 | 21 | 16 | 206 | 151 | 10% | 10% | 4.50 | 6.75 |
| 1993 | 140 | 112 | 14 | 11 | 136 | 103 | 10% | 11% | 4.49 | 6.50 |
| 1994 | 141 | 108 | 14 | 11 | 136 | 97 | 10% | 11% | 5.01 | 7.00 |
| 1995 | 121 | 91 | 12 | 9 | 114 | 78 | 11% | 12% | 5.00 | 6.00 |
| 1996 | 105 | 90 | 10 | 9 | 97 | 76 | 11% | 12% | 4.34 | 5.44 |
| 1997 | 125 | 106 | 12 | 11 | 114 | 87 | 11% | 12% | 4.50 | 5.61 |
| 1998 | 90 | 74 | 9 | 7 | 81 | 60 | 11% | 12% | 4.71 | 5.57 |
| 1999 | 79 | 70 | 8 | 7 | 66 | 58 | 12% | 12% | 4.68 | 5.72 |
| 2000 | 282 | 213 | 28 | 21 | 223 | 128 | 13% | 17% | 5.00 | 6.00 |
| 2001 | 260 | 222 | 26 | 22 | 192 | 137 | 14% | 16% | 4.50 | 5.50 |
| 2002 | 336 | 294 | 34 | 29 | 229 | 155 | 15% | 19% | 4.00 | 5.01 |
| 2003 | 316 | 265 | 32 | 27 | 168 | 98 | 19% | 27% | 4.08 | 5.08 |
| 2004 | 360 | 284 | 36 | 28 | 149 | 71 | 24% | 40% | 4.48 | 6.50 |
| 2005 | 530 | 424 | 53 | 42 | 198 | 97 | 27% | 44% | 3.83 | 4.83 |
| 2006 | 433 | 345 | 43 | 34 | 74 | 16 | 59% | | 4.18 | 5.39 |
| 2007 | 417 | 337 | 42 | 34 | 21 | 0 | | | 4.12 | 5.39 |
| 2008 | 459 | 377 | 46 | 38 | 0 | 0 | | | 4.12 | 5.39 |
| 2009 | 433 | 353 | 43 | 35 | 0 | 0 | | | 4.12 | 5.39 |
| 2010 | 383 | 312 | 38 | 31 | 0 | 0 | | | 4.12 | 5.39 |
| Total | 7,791 | 6,123 | 779 | 612 | 4,769 | 3,285 | | | | |

Notes:

(a) From CAS 2010 Travel Time Report, Appendix A, Exhibit 1, Sheet 2, Column (6).

(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 1, Sheet 2, Column (7).

(c) From CAS membership database as of December 2010

(d) = Column (8) percentile of existing ACAS travel times for 2002 and prior;

(d) = projected based on selected development pattern, selected ultimate ACAS count and current ACAS count for 2003-2006

(d) = average of 1997-2006 for 2007-2010

(e) = Column (9) percentile of existing FCAS travel times for 2001 and prior;

(e) = projected based on selected development pattern, selected ultimate FCAS count and current FCAS count for 2002-2005

(e) = average of 1996-2005 for 2006-2010

2010 CAS Travel Time Report

Projected 25th percentile travel times

| Year of First Exam | Selected Ultimate Counts | | Implied 10th %ile Candidate | | Current Membership Counts | | Ultimate Median as Percentile of Current | | Estimated Ultimate 10th %ile Travel Time | |
|-----------------------|--------------------------|-------|--------------------------------|-----------|------------------------------|-------|---------------------------------------------|-------------|---------------------------------------------|------|
| | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS | ACAS | FCAS |
| | (a) | (b) | [(2) / 2] | [(3) / 2] | (c) | (c) | [(4) / (6)] | [(5) / (7)] | (d) | (e) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| PRIOR | 701 | 539 | 175 | 135 | 701 | 539 | | | | |
| 1979 | 75 | 62 | 19 | 16 | 75 | 62 | 25% | 25% | 5.50 | 7.13 |
| 1980 | 66 | 55 | 17 | 14 | 66 | 55 | 25% | 25% | 5.50 | 8.00 |
| 1981 | 65 | 54 | 16 | 14 | 65 | 54 | 25% | 25% | 5.00 | 7.00 |
| 1982 | 72 | 56 | 18 | 14 | 72 | 56 | 25% | 25% | 5.38 | 7.50 |
| 1983 | 77 | 48 | 19 | 12 | 77 | 48 | 25% | 25% | 6.00 | 7.89 |
| 1984 | 85 | 63 | 21 | 16 | 85 | 63 | 25% | 25% | 5.50 | 7.50 |
| 1985 | 115 | 83 | 29 | 21 | 115 | 83 | 25% | 25% | 5.00 | 7.50 |
| 1986 | 147 | 109 | 37 | 27 | 147 | 108 | 25% | 25% | 5.00 | 7.50 |
| 1987 | 215 | 141 | 54 | 35 | 214 | 140 | 25% | 25% | 6.00 | 8.00 |
| 1988 | 189 | 132 | 47 | 33 | 188 | 131 | 25% | 25% | 5.50 | 7.50 |
| 1989 | 263 | 182 | 66 | 45 | 261 | 179 | 25% | 25% | 5.50 | 8.00 |
| 1990 | 275 | 202 | 69 | 50 | 273 | 197 | 25% | 26% | 5.50 | 7.50 |
| 1991 | 228 | 163 | 57 | 41 | 226 | 158 | 25% | 26% | 6.00 | 8.00 |
| 1992 | 209 | 158 | 52 | 40 | 206 | 151 | 25% | 26% | 5.50 | 8.00 |
| 1993 | 140 | 112 | 35 | 28 | 136 | 103 | 26% | 27% | 6.00 | 7.75 |
| 1994 | 141 | 108 | 35 | 27 | 136 | 97 | 26% | 28% | 6.25 | 8.41 |
| 1995 | 121 | 91 | 30 | 23 | 114 | 78 | 27% | 29% | 6.00 | 7.00 |
| 1996 | 105 | 90 | 26 | 22 | 97 | 76 | 27% | 30% | 5.75 | 7.50 |
| 1997 | 125 | 106 | 31 | 26 | 114 | 87 | 27% | 30% | 5.50 | 6.75 |
| 1998 | 90 | 74 | 22 | 19 | 81 | 60 | 28% | 31% | 5.52 | 7.25 |
| 1999 | 79 | 70 | 20 | 18 | 66 | 58 | 30% | 30% | 5.58 | 6.50 |
| 2000 | 282 | 213 | 71 | 53 | 223 | 128 | 32% | 42% | 6.65 | 7.83 |
| 2001 | 260 | 222 | 65 | 55 | 192 | 137 | 34% | 40% | 5.50 | 6.50 |
| 2002 | 336 | 294 | 84 | 73 | 229 | 155 | 37% | 47% | 5.00 | 6.08 |
| 2003 | 316 | 265 | 79 | 66 | 168 | 98 | 47% | 68% | 5.50 | 6.50 |
| 2004 | 360 | 284 | 90 | 71 | 149 | 71 | 60% | 100% | 5.50 | 6.50 |
| 2005 | 530 | 424 | 132 | 106 | 198 | 97 | 67% | | 4.96 | 6.40 |
| 2006 | 433 | 345 | 108 | 86 | 74 | 16 | | | 5.29 | 6.40 |
| 2007 | 417 | 337 | 104 | 84 | 21 | 0 | | | 5.29 | 6.40 |
| 2008 | 459 | 377 | 115 | 94 | 0 | 0 | | | 5.29 | 6.40 |
| 2009 | 433 | 353 | 108 | 88 | 0 | 0 | | | 5.29 | 6.40 |
| 2010 | 383 | 312 | 96 | 78 | 0 | 0 | | | 5.29 | 6.40 |
| Total | 7,791 | 6,123 | 1,948 | 1,531 | 4,769 | 3,285 | | | | |

Notes:

(a) From CAS 2010 Travel Time Report, Appendix A, Exhibit 1, Sheet 2, Column (6).

(b) From CAS 2010 Travel Time Report, Appendix A, Exhibit 1, Sheet 2, Column (7).

(c) From CAS membership database as of December 2010

(d) = Column (8) percentile of existing ACAS travel times for 2002 and prior;

(d) = projected based on selected development pattern, selected ultimate ACAS count and current ACAS count for 2003-2006

(d) = average of 1997-2006 for 2007-2010

(e) = Column (9) percentile of existing FCAS travel times for 2001 and prior;

(e) = projected based on selected development pattern, selected ultimate FCAS count and current FCAS count for 2002-2005

(e) = average of 1996-2005 for 2006-2010

APPENDIX B: ADDITIONAL STATISTICS

A recommendation of our 2010 Travel Time Report is to discontinue the production of this appendix for future reports. It is extremely time-consuming to produce and we believe of limited value.

Appendix B contains additional statistics, updated to include results through the May 2010 exam sessions, along with supporting text. Specifically, this appendix includes:

- Median travel times for starting cohorts;
- Percentage completion for starting cohorts (including Fisher Statistics); and
- Travel times by candidate starting age (Schwartz Statistics).

As the data prior to 1970 are very sparse, we exclude this information from the tables in Appendix B.

MEDIAN TRAVEL TIMES FOR STARTING COHORTS

In order to remove some of the distortions inherent in the statistics representing average travel times for graduating classes caused by the skewed distribution of travel times, a new set of statistics was created in 2002. These statistics group members by year of first employment (“starting cohort”) and compute median, rather than mean, travel times for each group. Additionally, medians are computed for each starting cohort, truncated at each of five and ten years.

These data should be viewed carefully, as more recent cohorts are significantly truncated and will continue to “develop” over time. Cells highlighted in gray are not fully developed.² Obviously, all cells representing the entire population are potentially truncated until all members of a given starting class reach designations or retire from the examination process.

² No cell in the overall median column can be considered fully developed until no active candidate remains who has not completed the examinations. Cells in the truncated column are considered not fully developed when any candidate in the starting year has not yet had the full number of years to sit for exams and receive their credential.

Travel Time Statistics for Associates: Median Travel Time for Starting Cohorts

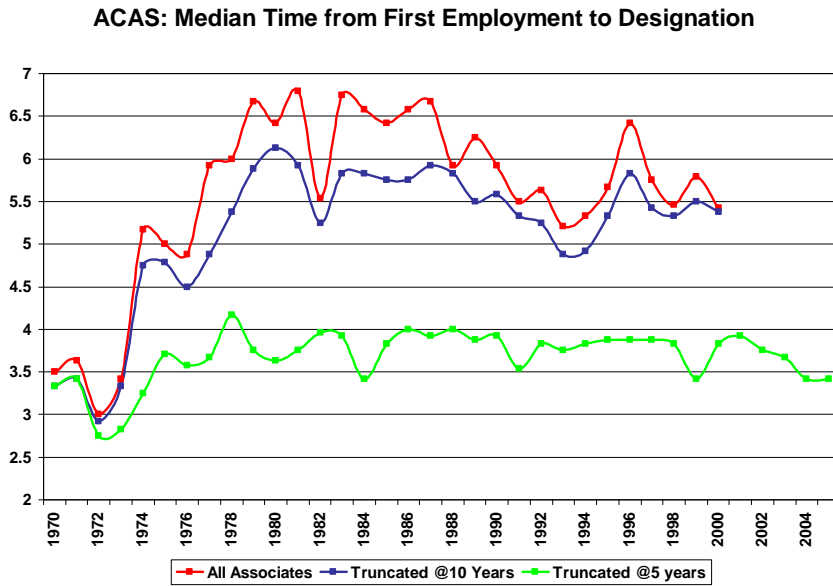
| Year of First Employment | Number of Candidates | Number of Associates | Median Travel Time | Number of Associates | Median Travel Time | Number of Associates | Median Travel Time |
|---------------------------------|-----------------------------|-----------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|---------------------------|
| 1960 | 1 | 1 | 5.42 | 0 | | 1 | 5.42 |
| 1961 | 1 | 1 | 5.58 | 0 | | 1 | 5.58 |
| 1962 | 1 | 1 | 11.08 | 0 | | 0 | |
| 1964 | 4 | 4 | 4.50 | 2 | 3.00 | 3 | 3.58 |
| 1965 | 3 | 3 | 5.42 | 1 | 3.92 | 3 | 5.42 |
| 1966 | 7 | 7 | 4.25 | 5 | 3.92 | 7 | 4.25 |
| 1967 | 9 | 9 | 3.92 | 7 | 3.92 | 9 | 3.92 |
| 1968 | 6 | 6 | 3.96 | 4 | 3.17 | 5 | 3.92 |
| 1969 | 10 | 10 | 3.38 | 9 | 3.33 | 10 | 3.38 |
| 1970 | 28 | 28 | 3.50 | 23 | 3.33 | 23 | 3.33 |
| 1971 | 43 | 42 | 3.63 | 34 | 3.42 | 39 | 3.42 |
| 1972 | 56 | 56 | 3.00 | 43 | 2.75 | 51 | 2.92 |
| 1973 | 65 | 65 | 3.42 | 45 | 2.83 | 59 | 3.33 |
| 1974 | 53 | 51 | 5.17 | 24 | 3.25 | 43 | 4.75 |
| 1975 | 53 | 51 | 5.00 | 26 | 3.71 | 46 | 4.79 |
| 1976 | 73 | 69 | 4.88 | 36 | 3.58 | 57 | 4.50 |
| 1977 | 79 | 78 | 5.92 | 34 | 3.67 | 64 | 4.88 |
| 1978 | 88 | 85 | 6.00 | 34 | 4.17 | 74 | 5.38 |
| 1979 | 104 | 97 | 6.67 | 27 | 3.75 | 74 | 5.88 |
| 1980 | 85 | 85 | 6.42 | 26 | 3.63 | 74 | 6.13 |
| 1981 | 75 | 70 | 6.79 | 21 | 3.75 | 60 | 5.92 |
| 1982 | 79 | 74 | 5.54 | 30 | 3.96 | 66 | 5.25 |
| 1983 | 78 | 73 | 6.75 | 20 | 3.92 | 59 | 5.83 |
| 1984 | 90 | 87 | 6.58 | 27 | 3.42 | 70 | 5.83 |
| 1985 | 85 | 82 | 6.42 | 26 | 3.83 | 68 | 5.75 |
| 1986 | 152 | 135 | 6.58 | 43 | 4.00 | 109 | 5.75 |
| 1987 | 211 | 191 | 6.67 | 66 | 3.92 | 152 | 5.92 |
| 1988 | 148 | 127 | 5.92 | 47 | 4.00 | 110 | 5.83 |
| 1989 | 212 | 189 | 6.25 | 60 | 3.88 | 146 | 5.50 |
| 1990 | 231 | 197 | 5.92 | 78 | 3.92 | 177 | 5.58 |
| 1991 | 197 | 170 | 5.50 | 72 | 3.54 | 153 | 5.33 |
| 1992 | 200 | 171 | 5.63 | 73 | 3.83 | 151 | 5.25 |
| 1993 | 188 | 167 | 5.21 | 78 | 3.75 | 148 | 4.88 |
| 1994 | 229 | 199 | 5.33 | 91 | 3.83 | 173 | 4.92 |
| 1995 | 173 | 130 | 5.67 | 54 | 3.88 | 113 | 5.33 |
| 1996 | 212 | 165 | 6.42 | 54 | 3.88 | 140 | 5.83 |
| 1997 | 198 | 139 | 5.75 | 50 | 3.88 | 118 | 5.42 |

| | | | | | | | |
|------|-----|-----|------|-----|------|-----|------|
| 1998 | 210 | 142 | 5.46 | 60 | 3.83 | 125 | 5.33 |
| 1999 | 181 | 108 | 5.79 | 42 | 3.42 | 99 | 5.50 |
| 2000 | 191 | 102 | 5.42 | 46 | 3.83 | 100 | 5.38 |
| 2001 | 267 | 136 | 5.17 | 65 | 3.92 | 136 | 5.17 |
| 2002 | 352 | 190 | 5.17 | 91 | 3.75 | 189 | 5.17 |
| 2003 | 417 | 224 | 4.42 | 137 | 3.67 | 223 | 4.42 |
| 2004 | 450 | 189 | 4.33 | 130 | 3.42 | 188 | 4.33 |
| 2005 | 486 | 178 | 3.67 | 140 | 3.42 | 177 | 3.67 |
| 2006 | 535 | 196 | 3.42 | 196 | 3.42 | 196 | 3.42 |
| 2007 | 500 | 104 | 2.92 | 104 | 2.92 | 104 | 2.92 |
| 2008 | 371 | 39 | 2.42 | 39 | 2.42 | 39 | 2.42 |
| 2009 | 257 | 5 | 1.42 | 5 | 1.42 | 5 | 1.42 |
| 2010 | 117 | 4 | 0.83 | 3 | 0.83 | 3 | 0.83 |
| 2011 | 5 | 0 | | 0 | | 0 | |

Notes: Because many candidates are unknown to the CAS until they enroll in their first CAS exam, and many are still taking joint exams when they begin P&C employment, the total number of candidates in recent year cohorts will increase over time. For example, in the 2006 report, there were 357 candidates in the 2003 starting cohort versus 414 in this year's report.³

³ The 2004 Travel Time Report had only 75 in this cohort.

Displayed graphically, these data are somewhat easier to interpret:



3

Because the data prior to 1970 are very sparse, the graph begins with 1970. Travel time appears to have peaked in the early 1980's, following the transition in 1975 that increased the number of exams required from five to seven. The transition to partitioned exams in 1990 does not appear to have increased travel time as had been previously feared. Statistics have been included in previous reports that indicate that students sat for fewer exams following partitioning, leading many to conclude that partitioning increased travel time. However, this interpretation of those statistics now appears to be questionable. New statistics which were first included in the 2005 Travel Time Report provide evidence that exam partitioning may not have had a materially deleterious effect on candidate travel time.⁴ Older reports also included statistics on mean travel times for graduating classes. Those statistics were often cited as indicating sharp increases in travel time. Statistics here based on starting year and using median and earlier percentiles do not show sharp increases. On the contrary, with the exception of candidates who started employment in 1996, median travel time truncated at 10 years for all cohorts from 1991 through 2000 is 5.5 years or less, while median travel time truncated at 10 years for cohorts from 1970 through 1990 exceeded 5.5 years for all but two groups.

⁴ See "Fisher Statistics" below.

Truncated at five years, median time to ACAS has fallen consistently between 3.5 and 4 years with very few exceptions. The truncated at five year medians for 2004 and 2005 employment cohorts – both at 3.42 years - look promising and may be reflecting the more frequent administration of the preliminary exams; however, we note that the last year that showed a promising five-year truncated median, 1999, turned out to be only an average year at the 10-year development point.

If we view the pre-2000 calculus exam as likely completed prior to employment for most candidates, we should expect travel time to ACAS to increase following the introduction of the 2000 syllabus because the post-2000 ACAS requires seven exams post-calculus while the 1999 syllabus required only six non-partitioned post-calculus exams. Thus far, however, this does not appear to be the case.

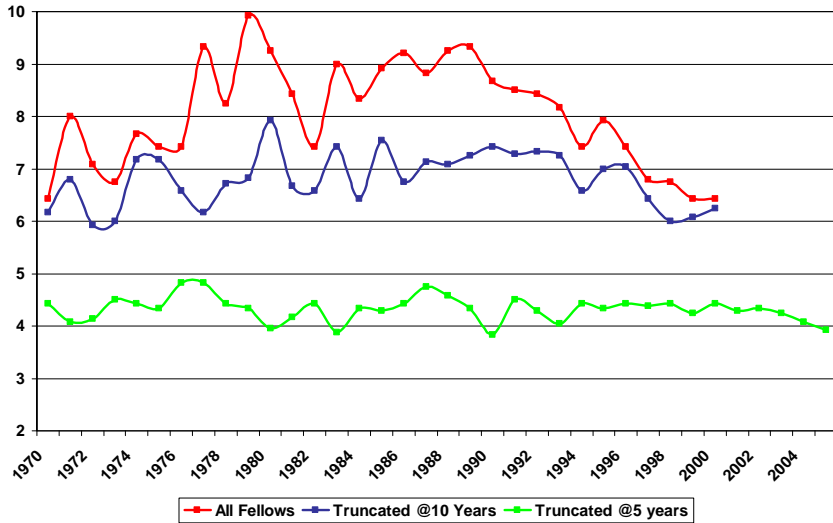
Travel Time Statistics for Fellows: Median Travel Time For Starting Cohorts

| Year of First Employment | Number of Candidates | Number of Associates | Median Travel Time | Number of Associates | Median Travel Time | Number of Associates | Median Travel Time |
|--------------------------|----------------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| 1960 | 1 | 1 | 17.42 | 0 | | 0 | |
| 1961 | 1 | 1 | 12.58 | 0 | | 0 | |
| 1962 | 1 | 0 | | 0 | | 0 | |
| 1964 | 4 | 2 | 13.79 | 0 | | 0 | |
| 1965 | 3 | 3 | 11.92 | 0 | | 1 | 9.42 |
| 1966 | 7 | 6 | 10.92 | 0 | | 3 | 9.25 |
| 1967 | 9 | 9 | 9.25 | 0 | | 5 | 7.83 |
| 1968 | 6 | 5 | 7.92 | 0 | | 3 | 7.50 |
| 1969 | 10 | 6 | 6.63 | 1 | 4.92 | 4 | 5.67 |
| 1970 | 28 | 21 | 6.42 | 3 | 4.42 | 15 | 6.17 |
| 1971 | 43 | 39 | 8.00 | 3 | 4.08 | 28 | 6.79 |
| 1972 | 55 | 43 | 7.08 | 10 | 4.13 | 30 | 5.92 |
| 1973 | 65 | 48 | 6.75 | 8 | 4.50 | 37 | 6.00 |
| 1974 | 53 | 37 | 7.67 | 3 | 4.42 | 30 | 7.17 |
| 1975 | 52 | 41 | 7.42 | 7 | 4.33 | 29 | 7.17 |
| 1976 | 71 | 58 | 7.42 | 9 | 4.83 | 42 | 6.58 |
| 1977 | 79 | 53 | 9.33 | 9 | 4.83 | 31 | 6.17 |
| 1978 | 88 | 68 | 8.25 | 7 | 4.42 | 46 | 6.71 |
| 1979 | 104 | 77 | 9.92 | 8 | 4.33 | 39 | 6.83 |
| 1980 | 84 | 70 | 9.25 | 6 | 3.96 | 44 | 7.92 |
| 1981 | 75 | 51 | 8.42 | 5 | 4.17 | 30 | 6.67 |
| 1982 | 79 | 51 | 7.42 | 6 | 4.42 | 38 | 6.58 |
| 1983 | 78 | 53 | 9.00 | 4 | 3.88 | 31 | 7.42 |
| 1984 | 90 | 61 | 8.33 | 9 | 4.33 | 36 | 6.42 |
| 1985 | 85 | 55 | 8.92 | 2 | 4.29 | 36 | 7.54 |
| 1986 | 152 | 94 | 9.21 | 3 | 4.42 | 52 | 6.75 |
| 1987 | 207 | 128 | 8.83 | 11 | 4.75 | 72 | 7.13 |

| | | | | | | | |
|------|-----|-----|------|----|------|-----|------|
| 1988 | 147 | 97 | 9.25 | 6 | 4.58 | 55 | 7.08 |
| 1989 | 209 | 130 | 9.33 | 13 | 4.33 | 73 | 7.25 |
| 1990 | 230 | 146 | 8.67 | 9 | 3.83 | 91 | 7.42 |
| 1991 | 196 | 124 | 8.50 | 10 | 4.50 | 80 | 7.29 |
| 1992 | 199 | 116 | 8.42 | 16 | 4.29 | 75 | 7.33 |
| 1993 | 187 | 128 | 8.17 | 14 | 4.04 | 96 | 7.25 |
| 1994 | 225 | 146 | 7.42 | 21 | 4.42 | 105 | 6.58 |
| 1995 | 173 | 92 | 7.92 | 10 | 4.33 | 70 | 7.00 |
| 1996 | 209 | 114 | 7.42 | 15 | 4.42 | 90 | 7.04 |
| 1997 | 191 | 100 | 6.79 | 18 | 4.38 | 82 | 6.42 |
| 1998 | 204 | 106 | 6.75 | 36 | 4.42 | 92 | 6.00 |
| 1999 | 179 | 70 | 6.42 | 19 | 4.25 | 59 | 6.08 |
| 2000 | 190 | 77 | 6.42 | 21 | 4.42 | 74 | 6.25 |
| 2001 | 265 | 92 | 6.00 | 32 | 4.29 | 92 | 6.00 |
| 2002 | 351 | 130 | 5.50 | 45 | 4.33 | 130 | 5.50 |
| 2003 | 414 | 158 | 5.38 | 69 | 4.25 | 158 | 5.38 |
| 2004 | 443 | 123 | 4.79 | 68 | 4.08 | 122 | 4.79 |
| 2005 | 470 | 101 | 4.25 | 84 | 3.92 | 100 | 4.25 |
| 2006 | 515 | 95 | 3.83 | 95 | 3.83 | 95 | 3.83 |
| 2007 | 478 | 34 | 3.46 | 34 | 3.46 | 34 | 3.46 |
| 2008 | 327 | 7 | 2.67 | 7 | 2.67 | 7 | 2.67 |
| 2009 | 216 | 2 | 1.63 | 2 | 1.63 | 2 | 1.63 |
| 2010 | 43 | 1 | 0.83 | 1 | 0.83 | 1 | 0.83 |
| 2011 | 2 | 0 | | 0 | | 0 | |

Here again, graphical display makes these figures somewhat easier to interpret.

FCAS: Median Time from First Employment to Designation



5

Again, data prior to 1970 are excluded because they are very sparse. Travel times appear to have peaked in the early 1980's. No clear trends appear as a result of the 1990 transition. The effect of the 2000 transition is not yet fully evident in the data, but travel times truncated at 10 years for the 1997 through 2000 cohorts are at least a full year shorter than the 10 year truncated medians for cohorts starting employment from the late 1980's through the mid-1990's. For the period from 1970 to 1993, the average median travel time is approximately 8.33 years. Standard deviation for classes starting 1970-1992 is 0.91 years. Of all classes from 1970 to 1993, only the class of 1973 succeeded in achieving a median travel time less than seven years. The decrease in median travel time truncated at ten years during the latter 1990's is encouraging. For the very best candidates, median travel times truncated at five years fall consistently around 4.5 years. This is hardly surprising given the number of examinations and the annual administration of the upper exams. Candidates in employment cohorts since 2002 show somewhat shortened median times truncated at five years, but it is probably too soon to draw any conclusions.

PERCENTAGE COMPLETION FOR STARTING COHORTS

Another means of analyzing travel time data is to look at the percentage of each cohort that reaches Associateship or Fellowship within a given number of years. This is a predictor of future direction in median travel time for starting cohorts. If greater numbers of candidates reach designations earlier, median travel time can be expected to decrease. If the percentage of candidates reaching designations at early points falls, median travel time can be expected to increase. It should be noted that this statistic is heavily influenced by the recording of date of first employment. The CAS database contains records for

more than 20,000 individuals. Of these, only 7,868 have recorded employment dates. Note that the CAS database increases in size by more than 1,500 candidates per year. Date of first employment is now requested for all candidates registering for examinations⁵. For candidates that dropped out of the examination system prior to the capture of this data element, there is no cost effective means available to capture their employment dates. These candidates are therefore not included in the population prior to this century. The exclusion of these candidates therefore causes the completion percentages for early years to be inflated. The inclusion of these candidates going forward will cause percentages to fall. Following the earlier convention, cells highlighted in gray are not fully mature.

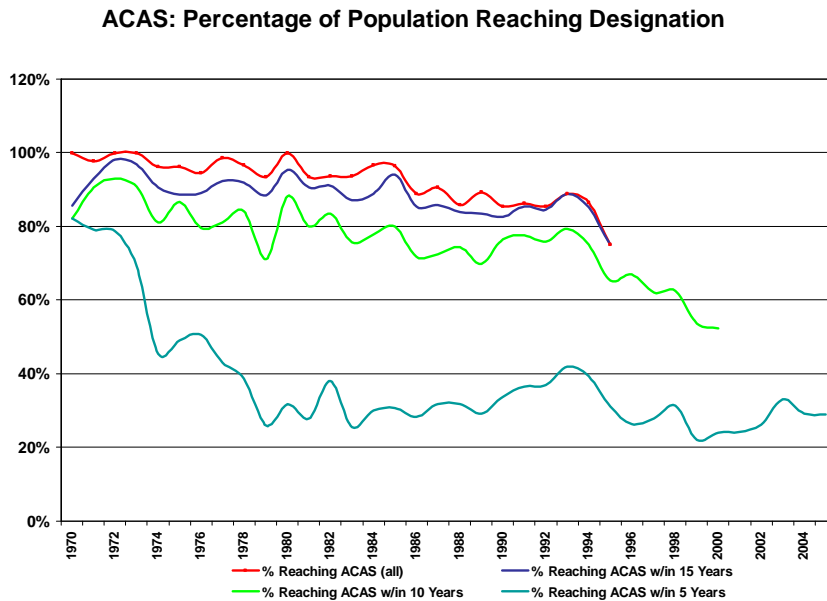
Completion Percentages for Associateship by Starting Cohort

| Year of First Employment | Number of Candidates | % Reaching ACAS Within 5 Years | % Reaching ACAS Within 10 Years | % Reaching ACAS Within 15 Years | % Reaching ACAS Total |
|---------------------------------|-----------------------------|---------------------------------------|----------------------------------------|----------------------------------------|------------------------------|
| 1960 | 1 | 0.0% | 100.0% | 100.0% | 100.0% |
| 1961 | 1 | 0.0% | 100.0% | 100.0% | 100.0% |
| 1962 | 1 | 0.0% | 0.0% | 100.0% | 100.0% |
| 1964 | 4 | 50.0% | 75.0% | 100.0% | 100.0% |
| 1965 | 3 | 33.3% | 100.0% | 100.0% | 100.0% |
| 1966 | 7 | 71.4% | 100.0% | 100.0% | 100.0% |
| 1967 | 9 | 77.8% | 100.0% | 100.0% | 100.0% |
| 1968 | 6 | 66.7% | 83.3% | 100.0% | 100.0% |
| 1969 | 10 | 90.0% | 100.0% | 100.0% | 100.0% |
| 1970 | 28 | 82.1% | 82.1% | 85.7% | 100.0% |
| 1971 | 43 | 79.1% | 90.7% | 93.0% | 97.7% |
| 1972 | 56 | 78.6% | 92.9% | 98.2% | 100.0% |
| 1973 | 65 | 69.2% | 90.8% | 96.9% | 100.0% |
| 1974 | 53 | 45.3% | 81.1% | 90.6% | 96.2% |
| 1975 | 53 | 49.1% | 86.8% | 88.7% | 96.2% |
| 1976 | 73 | 50.7% | 79.5% | 89.0% | 94.5% |
| 1977 | 79 | 43.0% | 81.0% | 92.4% | 98.7% |
| 1978 | 88 | 38.6% | 84.1% | 92.0% | 96.6% |
| 1979 | 104 | 26.0% | 71.2% | 88.5% | 93.3% |
| 1980 | 85 | 31.8% | 88.2% | 95.3% | 100.0% |
| 1981 | 75 | 28.0% | 80.0% | 90.7% | 93.3% |
| 1982 | 79 | 38.0% | 83.5% | 91.1% | 93.7% |
| 1983 | 78 | 25.6% | 75.6% | 87.2% | 93.6% |

⁵ The registration form asks for this information. Not all candidates complete this field.

| | | | | | |
|------|-----|-------|-------|-------|-------|
| 1984 | 90 | 30.0% | 77.8% | 88.9% | 96.7% |
| 1985 | 85 | 30.6% | 80.0% | 94.1% | 96.5% |
| 1986 | 152 | 28.3% | 71.7% | 85.5% | 88.8% |
| 1987 | 211 | 31.8% | 72.5% | 85.8% | 90.5% |
| 1988 | 148 | 31.8% | 74.3% | 83.8% | 85.8% |
| 1989 | 212 | 29.2% | 69.8% | 83.5% | 89.2% |
| 1990 | 231 | 33.8% | 76.6% | 82.7% | 85.3% |
| 1991 | 197 | 36.5% | 77.7% | 85.3% | 86.3% |
| 1992 | 200 | 37.0% | 76.0% | 84.5% | 85.5% |
| 1993 | 188 | 42.0% | 79.3% | 88.8% | 88.8% |
| 1994 | 229 | 39.3% | 75.1% | 85.2% | 86.5% |
| 1995 | 173 | 31.2% | 65.3% | 75.1% | 75.1% |
| 1996 | 212 | 26.4% | 67.0% | 77.8% | 77.8% |
| 1997 | 198 | 27.8% | 62.1% | 70.2% | 70.2% |
| 1998 | 210 | 31.4% | 62.4% | 67.6% | 67.6% |
| 1999 | 181 | 22.1% | 53.6% | 58.6% | 58.6% |
| 2000 | 191 | 24.1% | 52.4% | 53.4% | 53.4% |
| 2001 | 267 | 24.3% | 50.9% | 50.9% | 50.9% |
| 2002 | 352 | 26.1% | 54.0% | 54.0% | 54.0% |
| 2003 | 417 | 33.1% | 53.7% | 53.7% | 53.7% |
| 2004 | 450 | 29.1% | 42.0% | 42.0% | 42.0% |
| 2005 | 486 | 29.0% | 36.6% | 36.6% | 36.6% |
| 2006 | 535 | 36.6% | 36.6% | 36.6% | 36.6% |
| 2007 | 500 | 20.8% | 20.8% | 20.8% | 20.8% |
| 2008 | 371 | 10.5% | 10.5% | 10.5% | 10.5% |
| 2009 | 257 | 1.6% | 1.6% | 1.6% | 1.6% |
| 2010 | 117 | 3.4% | 3.4% | 3.4% | 3.4% |
| 2011 | 5 | 0.0% | 0.0% | 0.0% | 0.0% |

Graphically, these results produce the following:



7

There appear to be some encouraging trends in the percentage of candidates reaching their Associateship within five years. Despite the fact that data points from the late 90's forward are more likely to be depressed by candidates that will ultimately drop out, but who have not yet (recall that date of first employment is now requested on exam registration forms), the proportion of each starting cohort completing Associateship within five years is relatively stable. The decline from 1994 to 2001 may represent the effect of the year 2000 transition, during which students shifted their exam taking patterns in an attempt to maximize post-transition credits. That is, during this period, it was common for students to skip partitioned parts 3-5 where credit could potentially be lost in the transition and attempt 6 and 7 for which the transition provided full credit. This strategy was most likely followed by the best students, creating a hump at the first quartile but perhaps not significantly affecting median travel time. The long term progress of these cohorts should be monitored closely.

The steep drop in the proportion completing Associateship within 10 years for 1994 forward is at least partly a function of data collection. We attempted to test this assumption by excluding candidates who had not sat for an exam in the last four years (since May of 2006). We still observe a significant decline in the completion rate within 10 years beginning in the mid-90's. Could this be in part a function of the dramatic rise in the number of entering candidates at around that time?

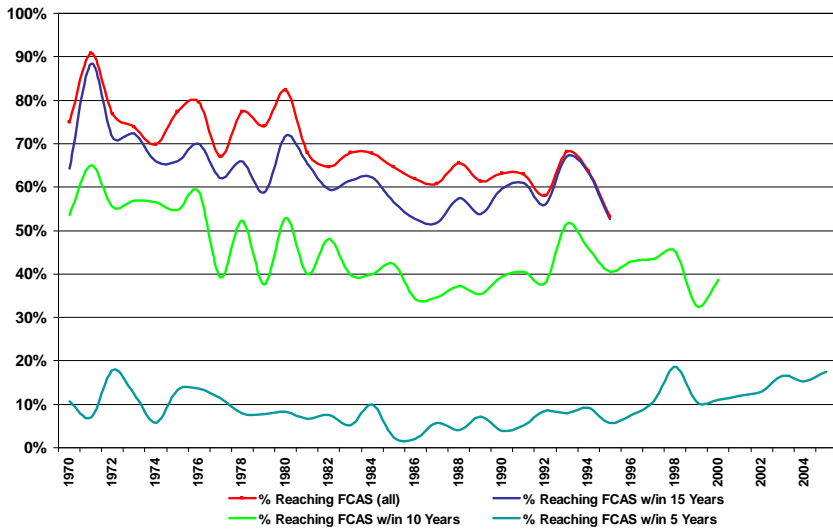
Completion Percentages for Fellowship by Starting Cohort

| Year of First Employment | Number of Candidates | % Reaching FCAS Within 5 Years | % Reaching FCAS Within 10 Years | % Reaching FCAS Within 15 Years | % Reaching FCAS Total |
|--------------------------|----------------------|--------------------------------|---------------------------------|---------------------------------|-----------------------|
| 1960 | 1 | 0.0% | 0.0% | 0.0% | 100.0% |
| 1961 | 1 | 0.0% | 0.0% | 100.0% | 100.0% |
| 1962 | 1 | 0.0% | 0.0% | 0.0% | 0.0% |
| 1964 | 4 | 0.0% | 0.0% | 50.0% | 50.0% |
| 1965 | 3 | 0.0% | 33.3% | 66.7% | 100.0% |
| 1966 | 7 | 0.0% | 42.9% | 85.7% | 85.7% |
| 1967 | 9 | 0.0% | 55.6% | 100.0% | 100.0% |
| 1968 | 6 | 0.0% | 50.0% | 83.3% | 83.3% |
| 1969 | 10 | 10.0% | 40.0% | 60.0% | 60.0% |
| 1970 | 28 | 10.7% | 53.6% | 64.3% | 75.0% |
| 1971 | 43 | 7.0% | 65.1% | 88.4% | 90.7% |
| 1972 | 56 | 17.9% | 55.4% | 71.4% | 76.8% |
| 1973 | 65 | 12.3% | 56.9% | 72.3% | 73.8% |
| 1974 | 53 | 5.7% | 56.6% | 66.0% | 69.8% |
| 1975 | 53 | 13.2% | 54.7% | 66.0% | 77.4% |
| 1976 | 73 | 13.7% | 58.9% | 69.9% | 79.5% |
| 1977 | 79 | 11.4% | 39.2% | 62.0% | 67.1% |
| 1978 | 88 | 8.0% | 52.3% | 65.9% | 77.3% |
| 1979 | 104 | 7.7% | 37.5% | 58.7% | 74.0% |
| 1980 | 85 | 8.2% | 52.9% | 71.8% | 82.4% |
| 1981 | 75 | 6.7% | 40.0% | 65.3% | 68.0% |
| 1982 | 79 | 7.6% | 48.1% | 59.5% | 64.6% |
| 1983 | 78 | 5.1% | 39.7% | 61.5% | 67.9% |
| 1984 | 90 | 10.0% | 40.0% | 62.2% | 67.8% |
| 1985 | 85 | 2.4% | 42.4% | 56.5% | 64.7% |
| 1986 | 152 | 2.0% | 34.2% | 52.6% | 61.8% |
| 1987 | 211 | 5.7% | 34.6% | 51.7% | 60.7% |
| 1988 | 148 | 4.1% | 37.2% | 57.4% | 65.5% |
| 1989 | 212 | 7.1% | 35.4% | 53.8% | 61.3% |
| 1990 | 231 | 3.9% | 39.4% | 59.7% | 63.2% |
| 1991 | 197 | 5.1% | 40.6% | 60.9% | 62.9% |
| 1992 | 200 | 8.5% | 38.0% | 56.0% | 58.0% |
| 1993 | 188 | 8.0% | 51.6% | 67.0% | 68.1% |
| 1994 | 229 | 9.2% | 45.9% | 63.3% | 63.8% |
| 1995 | 173 | 5.8% | 40.5% | 52.6% | 53.2% |
| 1996 | 212 | 7.5% | 42.9% | 53.8% | 53.8% |
| 1997 | 198 | 10.6% | 43.4% | 50.5% | 50.5% |

| | | | | | |
|------|-----|-------|-------|-------|-------|
| 1998 | 210 | 18.6% | 45.2% | 50.5% | 50.5% |
| 1999 | 181 | 10.5% | 32.6% | 38.7% | 38.7% |
| 2000 | 191 | 11.0% | 38.7% | 40.3% | 40.3% |
| 2001 | 267 | 12.0% | 34.5% | 34.5% | 34.5% |
| 2002 | 352 | 12.8% | 36.9% | 36.9% | 36.9% |
| 2003 | 417 | 16.5% | 37.9% | 37.9% | 37.9% |
| 2004 | 450 | 15.3% | 27.3% | 27.3% | 27.3% |
| 2005 | 486 | 17.5% | 20.8% | 20.8% | 20.8% |
| 2006 | 535 | 17.8% | 17.8% | 17.8% | 17.8% |
| 2007 | 500 | 6.8% | 6.8% | 6.8% | 6.8% |
| 2008 | 371 | 1.9% | 1.9% | 1.9% | 1.9% |
| 2009 | 257 | 0.8% | 0.8% | 0.8% | 0.8% |
| 2010 | 117 | 0.9% | 0.9% | 0.9% | 0.9% |
| 2011 | 5 | 0.0% | 0.0% | 0.0% | 0.0% |

Graphically:

FCAS: Percentage of Population Reaching Designation

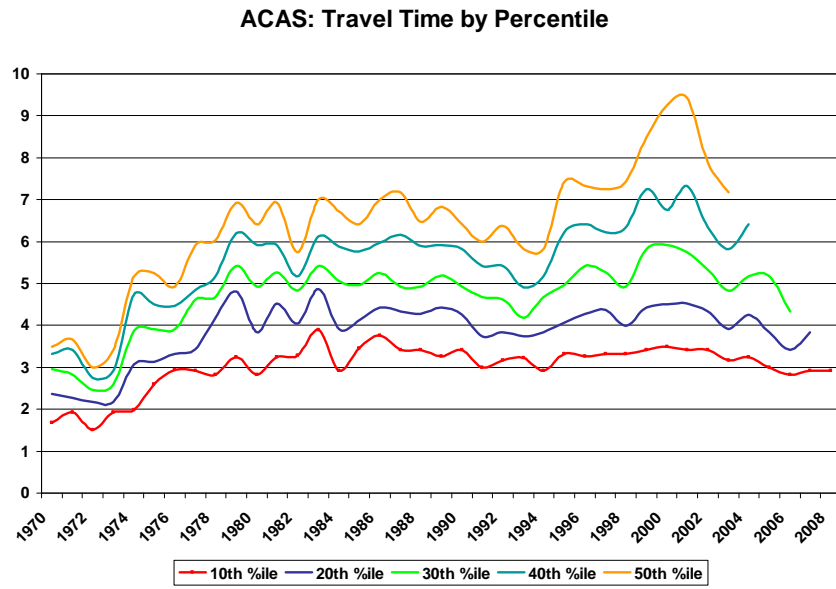


Here again, trends are encouraging, particularly with regard to the percentage of starting cohorts achieving Fellowship within five years. There has been a steady increase since the mid-1980's, and more than 20% of candidates have completed Fellowship within five years for every cohort from 2000 through 2005. The increases may be the effect of improvements in the exam system and – possibly – the reduction of the system from 10 to 9 exams. It is notable, however, that the percentage of candidates achieving fellowship within five years is still less than 25% and the percentage achieving Fellowship within 10 years is less than 50%. It will be difficult to achieve a median travel time of 5-7 years under these circumstances. The spike in completion percentage for the 1998 year is interesting. Candidates in 1997 through 1999 would have been under the greatest pressure to complete examinations prior to the transition in order not to lose credit.

PERCENTAGE COMPLETION: FISHER STATISTICS

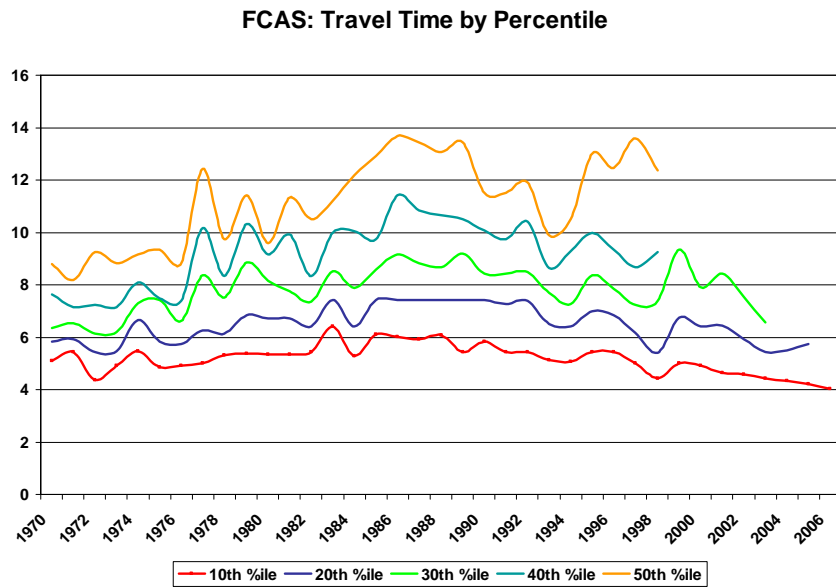
In order to reduce the uncertainty inherent in the emerging nature of the percentage completion statistics, Ginda Fisher suggested an alternative statistic for the 2006 report. Ms. Fisher suggested that candidates be grouped by starting year and ranked by travel time (date of designation versus first employment date). Various percentiles could then be directly compared across starting cohorts. In the graphs below, the 10th percentile can be interpreted as the 10th fastest candidate in a starting class of 100. Once the population in a starting cohort becomes reasonably stable, that is, no new candidates enter the population by virtue of reporting their date of first employment, these statistics will cease to develop. By comparing various travel time percentiles for starting cohorts, we can determine whether faster candidates in each cohort are progressing more quickly than those in other starting cohorts. The results of this organization of the data are very interesting. Results are shown where the given percentile is defined. That is, for the 50th percentile line, 50% of the starting cohort must have reached Associateship. In this data set, the last starting cohort for which 50% of the class has reached Associateship is the class reporting year of first employment in 2003. The last starting cohort for which 50% of the class has reached Fellowship is the class reporting year of first employment in 1998. Our 2006 report showed the last starting cohort at 50% completion to be the 1995 year. We suspect that, if we had data on all candidates, no class would show a 50% completion rate for Fellowship. It is also important to note that the percentiles are understated for the most recent cohorts because new additions to the cohort will tend to show longer travel times than candidates already in the cohort (note that the percentage of exam-active Associates with employment dates in the database is very high).

Fisher Statistics: Travel Time for Various Percentiles to Associateship



10

Fisher Statistics: Travel Time for Various Percentiles to Fellowship



11

Analysis of these results is worthy of additional monitoring. For candidates having reported date of first employment, the fastest students moved most quickly through the Associateship examinations during the 1990's, when exams were partitioned. The apparent increase in time to Associateship for candidates who started working after 2000 is probably more a function of greater reporting than an actual increase in travel time, although the effective addition of an examination has likely also increased travel time except for the fastest candidates.

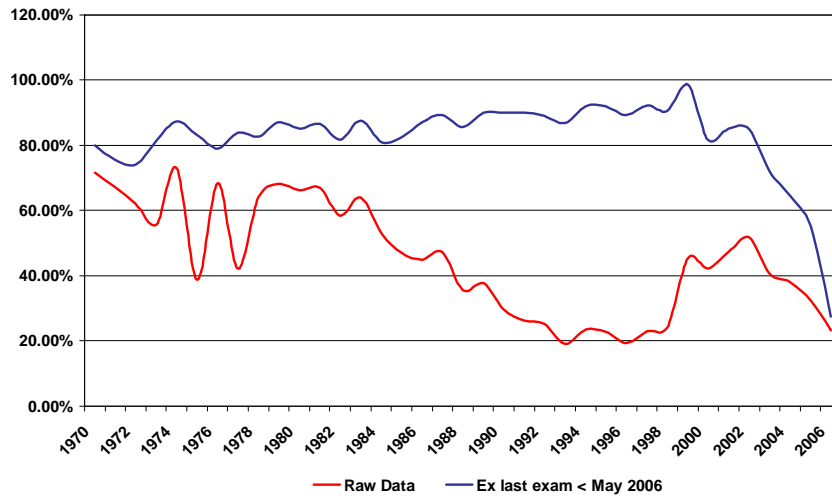
At the 10th and 20th percentiles, students who started working in the 2000's are completing fellowship almost two years faster than their colleagues in the 1980's, at least until the most recent periods for which statistics are available for these percentiles.

In analyzing these results, it is useful to know how various points on the graph are likely to develop in the future. Recall, that in the CAS database, less than 15% of students have coded first employment dates. As CAS Staff add additional first employment dates into the data, the size of various starting cohorts will increase. This will cause the travel time for any desired percentile of that population to likely increase. New data points are more likely to be candidates who have not yet achieved Associateship, or who have just reached the designation. Anecdotal evidence and the very high reporting percentage for Associates indicate that most candidates fill out their year of first employment on the membership application if they have not provided it earlier, presumably because they do not want to have processing delayed because they did not complete every item.

In this respect, it is important to know how various cohorts are likely to have reported their employment dates in order to determine whether this statistic has any likely bias. As a proxy for this statistic, candidates were grouped by year of first exam⁶ and coding of first employment date. The percentage of candidates first sitting in a given year with coded dates of first employment are shown below.

⁶ Year of first exam is defined to be either joint exam or CAS exam, whichever is reported first in the data.

Percentage of Candidates Reporting Year of First Employment by Year of First Exam

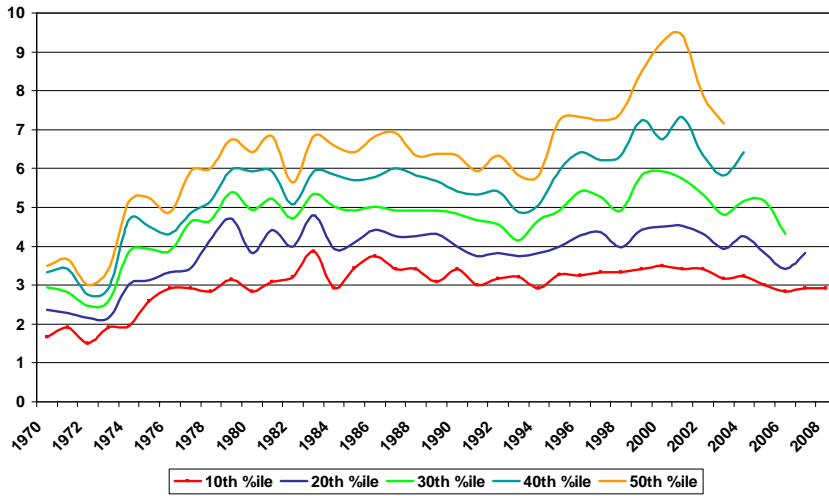


12

This graph indicates that reporting of year of first employment suffers from severe truncation during the 1990's. This could indicate that the Fisher Statistic, while promising for future monitoring, may not represent a valid picture of historical travel time across periods where capture of first employment date across the population is not consistent

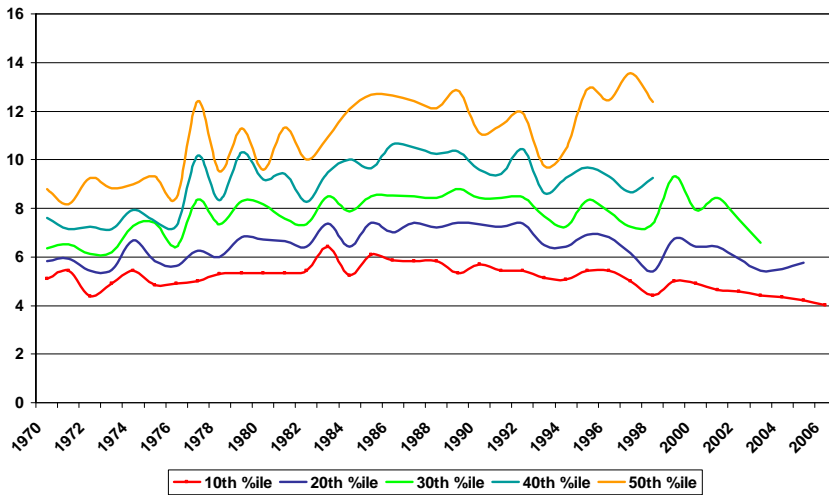
The CAS now captures date of first employment on exam registration forms. The fact that a very low percentage of candidates from the late 1990's have coded dates of first employment implies that these candidates are no longer taking exams and have not reached at least Associateship status. In fact, when we exclude candidates who have not sat an exam since May of 2006, the percentage reporting first employment is stable and rising through the 2000 cohort, perhaps indicating that to construct an apples-to-apples comparison with candidates with first employment in the 1970's and 1980's we should exclude these candidates who are unlikely to return.

ACAS: Travel Time by Percentile Excluding 4-Year Dropouts



13

FCAS: Travel Time by Percentile Excluding 4-Year Dropouts



14

In order to remove some of the uncertainty in these statistics, the Education Policy Committee repeated the production of the Fisher Statistics using year of first examination in place of year of first employment. This compilation of the data removes the truncation produced by the lack of collection of employment dates. Analysis of these statistics indicates that the apparent improvement in travel time indicated above is real and not an artifact of the employment date collection process. Because statistics based on year of

first exam contain much larger populations, smaller percentiles are necessary. For example, the 1998 starting cohort, based on year of first employment, contains 210 candidates. The 1998 cohort based on year of first recorded examination sitting contains 583 candidates, 129 of whom have reported their year of first employment. Graphic results of the Fisher Statistic based on year of first examination appear on the following tables:

Fisher Statistics By Year of First Examination Attempt: Associates

| Travel Times for Various Percentiles of Entering Class | | | | | | | | |
|--------------------------------------------------------|------------|------|------|-------|------|------|-------|-------|
| Entry Year | Candidates | 0.5% | 1% | 2.50% | 5% | 10% | 15% | 20% |
| 1970 | 46 | 1.42 | 1.42 | 1.54 | 2.42 | 2.42 | 3.29 | 3.42 |
| 1971 | 55 | 1.55 | 1.69 | 2.09 | 2.42 | 3.12 | 3.42 | 3.42 |
| 1972 | 74 | 1.42 | 1.42 | 1.42 | 2.24 | 2.57 | 2.92 | 3.42 |
| 1973 | 70 | 0.08 | 0.08 | 2.86 | 5.37 | 5.92 | 7.59 | 7.92 |
| 1974 | 78 | 2.42 | 2.42 | 3.34 | 3.92 | 4.42 | 5.42 | 5.42 |
| 1975 | 103 | 2.04 | 3.94 | 5.47 | 5.92 | 7.92 | 7.92 | 8.92 |
| 1976 | 111 | 3.69 | 3.92 | 3.92 | 3.92 | 4.42 | 5.42 | 5.42 |
| 1977 | 114 | 1.83 | 2.98 | 3.42 | 4.74 | 6.07 | 6.92 | 7.72 |
| 1978 | 118 | 3.42 | 3.50 | 4.38 | 4.42 | 4.92 | 5.42 | 5.92 |
| 1979 | 101 | 3.42 | 3.42 | 3.67 | 4.42 | 5.42 | 5.42 | 6.42 |
| 1980 | 86 | 4.42 | 4.42 | 4.98 | 5.42 | 5.42 | 5.79 | 6.42 |
| 1981 | 88 | 1.85 | 2.29 | 3.59 | 4.42 | 4.77 | 5.42 | 5.92 |
| 1982 | 108 | 4.42 | 4.42 | 4.42 | 4.92 | 5.42 | 5.92 | 6.42 |
| 1983 | 111 | 3.69 | 3.97 | 4.42 | 4.92 | 5.92 | 6.42 | 6.92 |
| 1984 | 138 | 3.26 | 3.42 | 3.63 | 4.42 | 5.77 | 6.42 | 6.42 |
| 1985 | 217 | 3.92 | 4.00 | 4.42 | 4.82 | 5.42 | 5.92 | 6.42 |
| 1986 | 307 | 3.68 | 3.95 | 4.42 | 4.92 | 5.42 | 6.42 | 6.42 |
| 1987 | 460 | 3.56 | 3.92 | 4.42 | 4.92 | 5.92 | 6.92 | 7.42 |
| 1988 | 508 | 3.42 | 3.92 | 4.42 | 5.42 | 6.42 | 7.42 | 8.42 |
| 1989 | 735 | 3.42 | 4.09 | 4.92 | 5.42 | 6.42 | 7.42 | 8.42 |
| 1990 | 933 | 3.92 | 4.42 | 4.42 | 5.42 | 6.92 | 7.92 | 9.42 |
| 1991 | 924 | 3.72 | 4.42 | 5.42 | 6.42 | 7.42 | 8.92 | 11.92 |
| 1992 | 918 | 4.21 | 4.42 | 5.38 | 5.92 | 7.42 | 9.42 | 13.92 |
| 1993 | 812 | 3.92 | 4.42 | 5.42 | 6.42 | 9.92 | 13.92 | |
| 1994 | 741 | 4.42 | 4.92 | 5.42 | 6.92 | 8.92 | 11.92 | |
| 1995 | 699 | 4.42 | 4.92 | 5.92 | 6.92 | 8.92 | 13.92 | |
| 1996 | 644 | 3.52 | 4.42 | 5.92 | 6.92 | 9.42 | | |
| 1997 | 707 | 4.68 | 4.92 | 4.92 | 6.92 | 8.42 | 11.92 | |
| 1998 | 439 | 3.92 | 3.92 | 4.92 | 5.92 | 7.92 | 9.79 | |
| 1999 | 163 | 3.73 | 4.23 | 4.44 | 5.47 | 5.92 | 6.42 | 6.92 |
| 2000 | 1114 | 4.20 | 4.92 | 5.92 | 6.92 | 8.50 | 9.92 | |

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| 2001 | 730 | 3.92 | 4.06 | 4.92 | 5.42 | 5.92 | 7.50 | 8.92 |
| 2002 | 919 | 3.92 | 3.92 | 4.42 | 4.92 | 5.92 | 6.92 | 8.22 |
| 2003 | 1007 | 3.92 | 3.92 | 4.92 | 5.92 | 6.92 | 7.92 | |
| 2004 | 1110 | 3.92 | 3.92 | 4.92 | 5.42 | 6.42 | | |
| 2005 | 1912 | 2.92 | 3.92 | 3.92 | 4.92 | | | |
| 2006 | 1895 | 3.92 | 4.42 | 4.92 | | | | |
| 2007 | 1745 | 3.92 | 3.92 | | | | | |
| 2008 | 1553 | | | | | | | |
| 2009 | 1251 | | | | | | | |

Fisher Statistics By Year of First Examination Attempt: Fellows

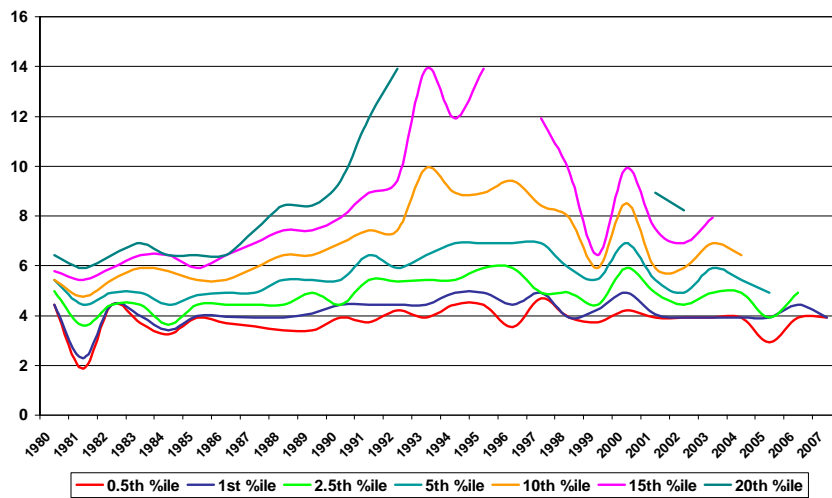
| Travel Times for Various Percentiles of Entering Class | | | | | | | |
|--------------------------------------------------------|------------|------|------|-------|------|-------|-------|
| Entry Year | Candidates | 0.5% | 1% | 2.50% | 5% | 10% | 15% |
| 1970 | 46 | 4.42 | 4.42 | 4.48 | 4.92 | 6.17 | 6.42 |
| 1971 | 55 | 3.69 | 3.96 | 4.59 | 5.62 | 5.92 | 6.42 |
| 1972 | 74 | 3.42 | 3.42 | 4.24 | 4.74 | 5.57 | 6.42 |
| 1973 | 70 | 5.26 | 5.61 | 6.64 | 6.92 | 8.87 | 9.09 |
| 1974 | 78 | 4.61 | 4.80 | 5.84 | 5.92 | 6.92 | 7.92 |
| 1975 | 103 | 5.43 | 5.94 | 6.92 | 7.97 | 9.02 | 10.22 |
| 1976 | 111 | 5.92 | 5.92 | 5.92 | 5.92 | 6.92 | 7.42 |
| 1977 | 114 | 5.48 | 5.92 | 5.92 | 6.92 | 8.92 | 9.89 |
| 1978 | 118 | 4.92 | 5.00 | 5.88 | 5.92 | 6.92 | 7.69 |
| 1979 | 101 | 5.42 | 5.92 | 5.92 | 6.42 | 6.92 | 7.92 |
| 1980 | 86 | 5.84 | 6.27 | 6.48 | 7.04 | 7.92 | 8.42 |
| 1981 | 88 | 5.35 | 5.79 | 5.92 | 6.27 | 6.92 | 7.92 |
| 1982 | 108 | 5.68 | 5.95 | 6.42 | 7.09 | 7.92 | 8.42 |
| 1983 | 111 | 6.47 | 6.92 | 6.92 | 7.17 | 8.42 | 9.92 |
| 1984 | 138 | 4.60 | 4.92 | 5.92 | 6.92 | 7.92 | 8.92 |
| 1985 | 217 | 5.92 | 5.92 | 6.92 | 6.92 | 7.92 | 8.92 |
| 1986 | 307 | 5.45 | 5.92 | 5.92 | 6.92 | 8.22 | 8.92 |
| 1987 | 460 | 5.92 | 5.92 | 6.92 | 7.92 | 9.42 | 11.84 |
| 1988 | 508 | 5.68 | 5.92 | 6.92 | 7.92 | 9.77 | 11.92 |
| 1989 | 735 | 5.92 | 5.92 | 6.92 | 7.92 | 10.12 | 11.92 |
| 1990 | 933 | 5.92 | 5.92 | 6.92 | 7.92 | 10.52 | 12.92 |
| 1991 | 924 | 5.92 | 6.53 | 7.92 | 8.92 | 10.92 | 14.42 |
| 1992 | 918 | 5.92 | 6.92 | 7.92 | 8.92 | 10.92 | 15.92 |
| 1993 | 812 | 5.92 | 6.92 | 7.92 | 9.42 | 13.42 | |
| 1994 | 741 | 5.92 | 6.92 | 7.92 | 9.92 | 11.92 | |

| | | | | | | | |
|------|------|------|------|------|------|-------|------|
| 1995 | 699 | 5.92 | 6.92 | 7.64 | 8.92 | 14.32 | |
| 1996 | 644 | 4.92 | 5.13 | 6.92 | 8.42 | 11.92 | |
| 1997 | 707 | 5.92 | 5.92 | 6.42 | 7.92 | 10.72 | |
| 1998 | 439 | 5.11 | 5.92 | 6.89 | 7.92 | 10.50 | |
| 1999 | 163 | 3.73 | 4.85 | 5.42 | 6.42 | 6.92 | 7.92 |
| 2000 | 1114 | 5.42 | 5.92 | 6.92 | 8.30 | 10.42 | |
| 2001 | 730 | 4.92 | 4.92 | 5.92 | 6.92 | 7.50 | 8.92 |
| 2002 | 919 | 4.92 | 4.92 | 5.92 | 5.92 | 6.92 | 8.92 |
| 2003 | 1007 | 4.92 | 5.50 | 5.92 | 6.92 | | |
| 2004 | 1110 | 4.92 | 4.92 | 5.92 | 6.92 | | |
| 2005 | 1912 | 3.92 | 4.47 | 4.92 | 5.92 | | |
| 2006 | 1895 | 4.92 | | | | | |
| 2007 | 1745 | | | | | | |
| 2008 | 1553 | | | | | | |

Graphic results follow below:

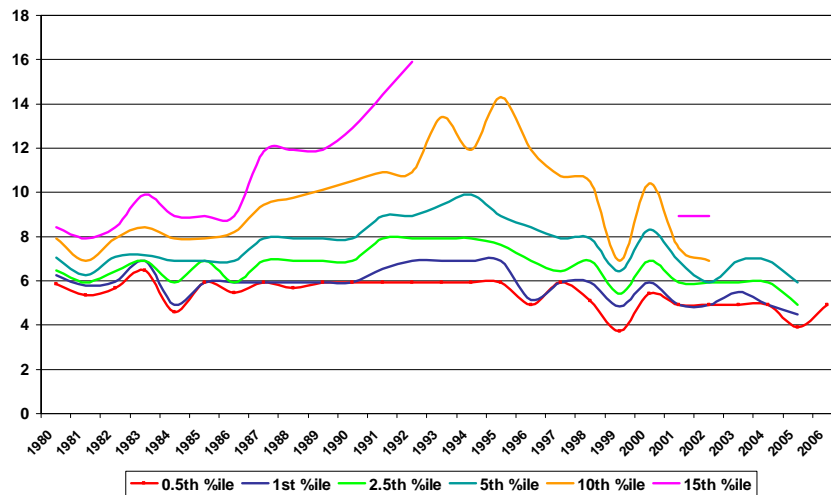
Fisher Statistics By Year of First Examination

ACAS: Travel Time by Percentile Based on Year of First Exam



15

FCAS: Travel Time by Percentile Based on Year of First Exam



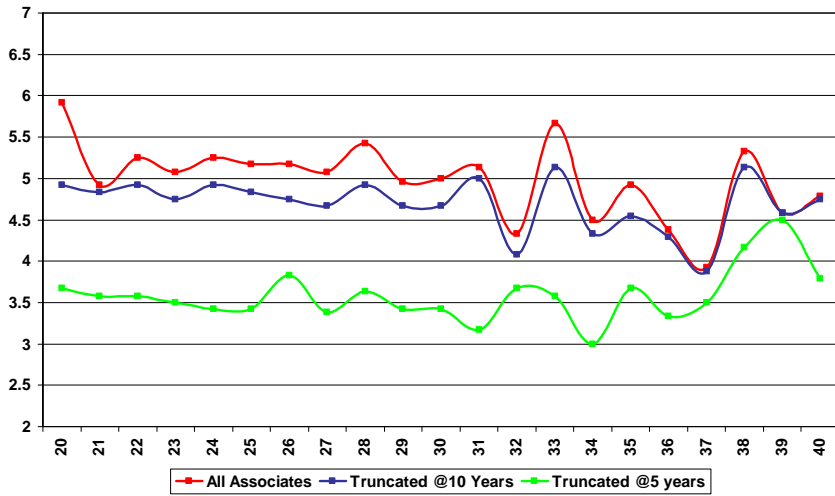
16

The trend in the latter 1990's in these statistics is clear. The most efficient candidates across the entire population of candidates are progressing through the exams to Associateship at about the same rate as prior cohorts, but about a year faster to Fellowship, reflecting the reduced number of exams between Associateship and Fellowship. It is interesting to note - again - that dropping the calculus exam effective in 2000 does not appear to have had any effect on travel time calculated either from date of first employment or from first exam.

TRAVEL TIMES BY CANDIDATE STARTING AGE: SCHWARTZ STATISTICS

Arthur Schwartz suggested that grouping travel times by the starting age of candidates might provide useful insight into the travel time process. Accordingly, beginning in 2006, the Education Policy Committee constructed travel time statistics for candidates according to their age at date of first employment. Travel time is computed here according to difference between date of first employment and date of receipt of designation at the CAS meeting. Compilation of this statistic required that candidates have valid birthdates and first employment dates. Results of this analysis are quite interesting.

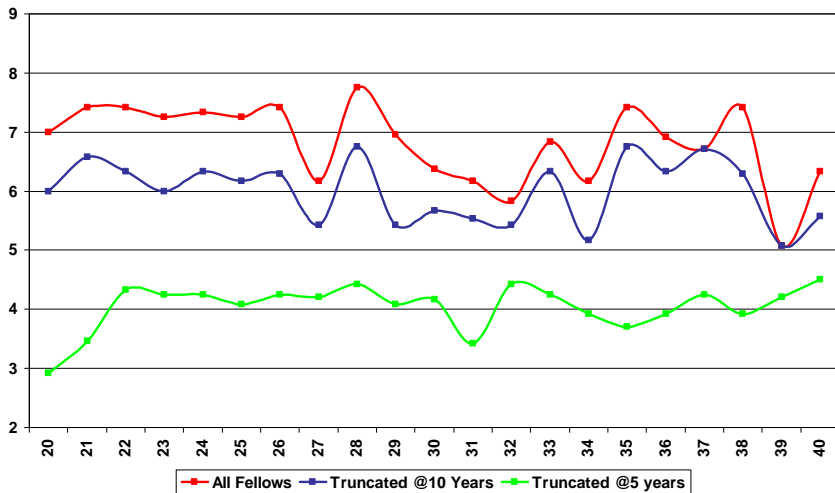
**ACAS: Median Time from First Employment to Designation
by Age at First Employment**



17

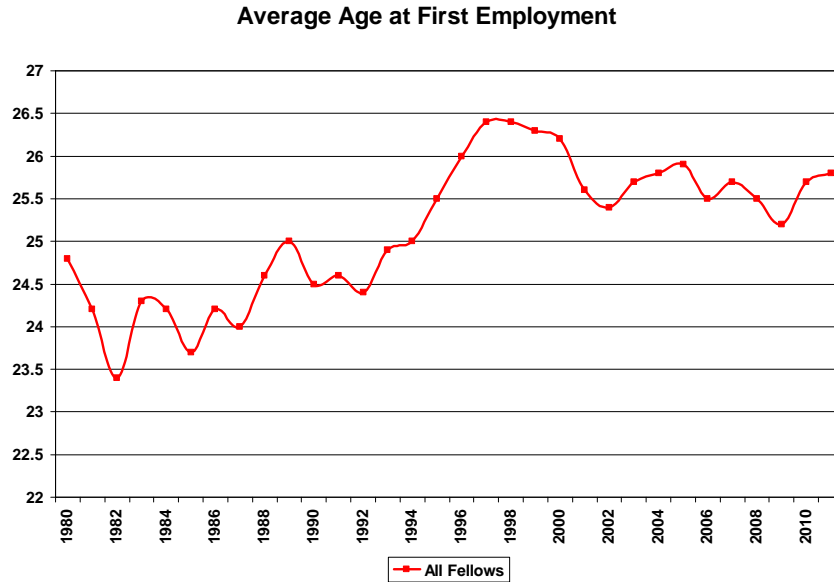
Candidates entering the profession in their mid-30's experience significantly shorter travel times to Fellowship than those entering earlier (sample sizes are smaller for older candidates).

**FCAS: Median Time from First Employment to Designation
by Age at First Employment**



18

The Schwartz statistics further indicate an interesting trend in the candidate population. Grouping candidates by age at first employment produces the following graphic:



19

This graph clearly indicates that the average age of entering candidates (reporting both birth date and date of first employment) is increasing. Given that older candidates generally report shorter travel time, this may be an indicator that median travel times are likely to decrease as the candidate age demographic changes. The Candidate Liaison Committee has recommended to the Education Policy Committee that additional demographics be collected from the candidate population to increase our ability to analyze this change in demographics. Included in these recommendations are degree (Bachelors, Masters, Ph.D) and former work experience in other professions. The Education Policy Committee is exploring the legality of collecting those statistics and hopes to implement their collection in the near future.

APPENDIX C: DATA METHODS

All data presented in this report are derived from exam and membership databases maintained by CAS staff.⁷ These databases are updated following each exam session to reflect individual exam results and membership status.

IDENTIFIED DATA ISSUES

The CAS implemented new database software in April 2008. In preparation for the conversion, CAS staff scrubbed the entire membership database over the span of a few months to identify and merge/remove duplicate records. In addition, records for candidates who only took old Exam 4B (Credibility Theory and Loss Distributions) in the pre-2000 education structure, and subsequently never took another CAS exam,⁸ were not converted to the new software database, but were archived instead. The significant data scrubbing resulted in improvements to the overall quality of the data prior to the database software conversion. Beginning with the 2008 report, candidates without an exam history (i.e., exams passed) have been excluded from the travel time report. These candidates (to the extent that they were included in the database) had been included in the travel time data extracts in the past. As such, there is a difference in the underlying data that rendered some of the statistics in the 2008 report to be incomparable to statistics contained in the prior years' reports. The 2010 statistics, however, should be comparable to the 2008 report. We understand that the CAS continues to scrub the membership database for illogical records and is working with the vendor to ensure that consistency of data extract is maintained going forward. We recommend that the CAS add a field indicating when a candidate enters the database to improve the ability to track cohort growth.

DATA STRUCTURE

The data included in the extract this year includes exam results from both CAS exams and from exams administered jointly by the CAS and SOA. CAS staff members work with the database software vendor to export the data (as shown in Table C.1) and provide it to the Education Policy Committee (EPC) for study.

⁷ Some statistics here include results from joint exams and are derived from the SoA database. Such statistics include candidates for the SoA and candidates that have not yet declared a preference between the Life/Health and Property/Casualty track.

⁸ Most candidates who took old Exam 4B were not CAS candidates as the SOA gave credit for it under its flexible education structure prior to 2000.

Table C.1 summarizes the data elements Included in the extract.

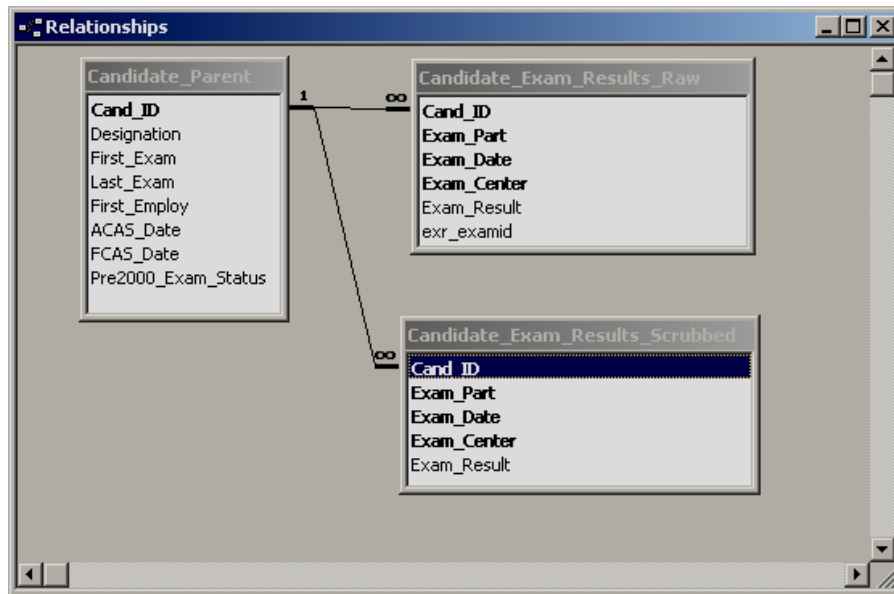
Table C.1

| Field Name | Contents |
|------------|----------------------------------------------------------------|
| MAS_ID | CAS Membership Master ID Number |
| MAS_DESIGN | CAS Membership Status (ACAS, FCAS, Candidate, Affiliate, etc.) |
| EXR_EXSIT | Date of Examination (YYYY/MM) |
| EXR_EXAMID | Examination Part |
| EXR_CENTID | Examination Center |
| EXR_GRADE | Examination Result (Pass, Fail, Not-Take, etc.) |
| EHI_OEXSTA | Examination Credits Prior to 2000 Transition |
| EHI_CEXSTA | Current Examination Credits |
| MAS_FEMPL | Date of Full Time Employment |
| MAS_ACAS | Date ACAS Achieved |
| MAS_FCAS | Date FCAS Achieved |

DATA PROCEDURES

The EPC scrubs, normalizes, and transforms this table into three tables using Microsoft Access. (See Picture C.1 below for relationships used for the data.)

Picture C.1



Three tables are created as part of this process: Candidate_Parent, Candidate_Exam_Results_Raw, and Candidate_Exam_Results_Scrubbed. Candidate_Parent is used to construct the travel time statistics displayed in this report. Candidate_Exam_Results_Raw is used only for ensuring correct record counts and conversion of exam part labels, and Candidate_Exam_Results_Scrubbed is intended for future use in detailed studies of candidate progress.⁹

Tables C.2, C.3, and C.4 summarize the fields contained in the three tables.

Table C.2

| TABLE: CANDIDATE_PARENT | |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Field Name | Contents |
| Cand_ID | CAS Membership Master ID Number |
| Cand_DOB | Candidate Date of Birth. For candidates with no reported date, this field contains zero. |
| Designation | CAS Membership Status (ACAS, FCAS, Candidate, Affiliate, etc.) |
| First_Exam | Date of first examination record found in "Candidate_Exam_Results_Scrubbed"; converted into decimal format for ease of use (i.e. 1998/06 → 1998.5). |
| Last_Exam | Date of last examination record found in "Candidate_Exam_Results_Scrubbed"; converted into decimal format for ease of use (i.e. 1998/06 → 1998.5). |
| First_Employ | Date of first full time P&C employment if reported by candidate; converted into decimal format for ease of use (i.e. 1998/06 → 1998.5). For candidates with no reported date, this field contains the value zero. |
| ACAS_Date | Date ACAS conferred. Converted into decimal format for ease of use (i.e. 1998/06 => 1998.5). For candidates not having achieved Associateship, this field contains zero. |
| FCAS_Date | Date FCAS conferred. Converted into decimal format for ease of use (i.e. 1998/06 => 1998.5). For candidates not having achieved Associateship, this field contains zero. |
| Pre2000_Exam_Status | Free form string containing a list of all pre-2000 exams for which the candidate had credit prior to the transition. For example, "1, 2, 3A, 4B". |

⁹ As an example, the Candidate_Exam_Results_Scrubbed table was used in a 2003 study that used Markov Chains to examine the relationship between the current and prior sitting. That study indicated a strong correlation between passing in prior and current sittings (i.e., candidates who pass are more likely to pass the next exam sitting).

Table C.3

| TABLE: CANDIDATE_EXAM_RESULTS_RAW | |
|-----------------------------------|------------------------------------------------------------------------------------------------|
| Field Name | Contents |
| Cand_ID | CAS Membership Master ID Number. |
| Exam_Part | Standardized exam identifier (see below); converted from "exr_exam_id". |
| Exam_Date | Recorded examination sitting (YYYY/MM) for which the candidate registered to sit for the exam. |
| Exam_Center | Abbreviated examination center. |
| Exam_Result | Pass, Fail, Not-Take, etc. |
| Exr_Exam_ID | Examination part label from raw data (see below). |

Table C.4

| TABLE: CANDIDATE_EXAM_RESULTS_SCRUBBED | |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Field Name | Contents |
| Cand_ID | CAS Membership Master ID Number. |
| Exam_Part | Standardized exam identifier (see below); converted from "exr_exam_id". |
| Exam_Date | Recorded examination sitting (YYYY/MM) for which the candidate registered to sit for the exam; converted into decimal format for ease of use (i.e. 1998/06 → 1998.5). |
| Exam_Center | Abbreviated examination center. |
| Exam_Result | Converted from raw data into Pass, Fail, or Did Not Sit. Note that blank results in the raw data are not imported into this table. |

In order to make the construction of queries simpler, several of the data fields are transformed. This section describes these transformations.

- **Dates.** All dates are transformed into decimal format using the rule: Decimal Date = Year + Month/12. In this fashion, it is possible to compute the difference between dates in the tables without using special query logic (except that exams passed/waiver credited in December of year Y are coded as y+1.0).
- **Exam Results.** Exam result labels are entered by hand and do not always conform to established data entry standards. Table C.5 contains the transformations from raw data to standardized labels.

Table C.5

| EXAM RESULT TRANSFORMATIONS | |
|-----------------------------|-----------------|
| Raw Data | Converted Value |
| FAIL | FAIL |
| NOT-TAKE | DID NOT SIT |
| PASS | PASS |
| REFUND | DID NOT SIT |
| TRANSFER | DID NOT SIT |
| HOLD | DID NOT SIT |
| INVA | DID NOT SIT |
| INVALID | DID NOT SIT |

- Exam Part Labels.** Exam part labels as coded in the raw data are difficult to use because their ASCII sort order is not the natural order in which we are accustomed to seeing them and because Microsoft Access SQL does not distinguish between upper and lower case letters. Table C.6 contains the raw data labels and their converted values. The Exam_Value represents the percentage of an exam attributed to each part label.

Table C.6

| EXAM PART LABEL TRANSFORMATIONS | | |
|---------------------------------|----------------|------------|
| EXR_EXAMID | Converted_Exam | Exam_Value |
| 1 | 01X | 1.00 |
| 2 | 02X | 1.00 |
| 3A | 03A | 0.33 |
| 3b | 03b | 0.33 |
| 3B | 03B | 0.33 |
| 3C | 03C | 0.34 |
| 3F | 03F | 0.50 |
| 3L | 03L | 0.50 |
| 3 | 03X | 1.00 |
| 4A | 04A | 0.50 |
| 4B | 04B | 0.50 |
| 4 | 04X | 1.00 |
| 5A | 05A | 0.50 |
| 5B | 05B | 0.50 |
| 5 | 05X | 1.00 |
| 6 | 06X | 1.00 |
| 7C | 07C | 1.00 |
| 7U | 07U | 1.00 |
| 7 | 07X | 1.00 |
| 8C | 08C | 1.00 |
| 8 | 08X | 1.00 |
| 9 | 09X | 1.00 |
| PC | 0PC | 0.00 |
| VE | 0VE | 0.34 |
| VF | 0VF | 0.33 |
| VS | 0VS | 0.33 |

In addition to the transformations above, the following adjustments are made to the data:

- Entries without a date of first exam or a date of first employment are excluded. Presumably, these would include fellows via mutual recognition.
- Illogical data entries in the Candidate_Parent table were manually adjusted for after consultation with and confirmation from the CAS (e.g., First_Exam is a date later than ACAS_Date or FCAS_Date; Designation field was blank but with a valid ACAS_Date and/or FCAS_Date; Designation field was not blank, but valid ACAS_Date and/or FCAS_Date missing; FCAS_Date is before First_Exam and Designation field is blank; etc.).
- The CAS's recording standard is to leave the ACAS_Date as a null value if a candidate achieves Fellowship without ever achieving Associateship (i.e. their last exam to completion is a preliminary or Associateship-level exam). To avoid inconsistencies in membership counts when compiling ACAS information, the ACAS_Date field was set equal to the FCAS_Date field.