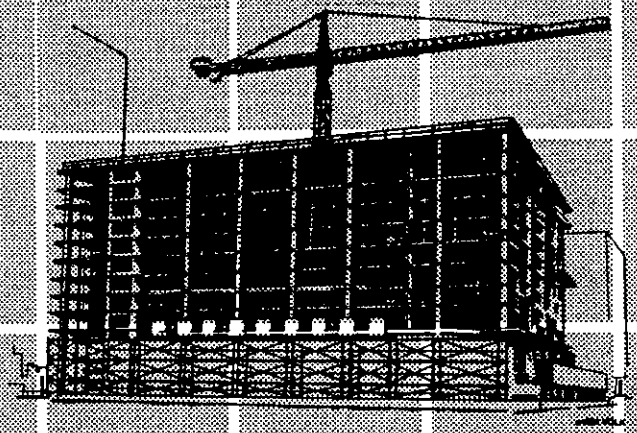
TECHNICAL PUBLICATION NO. 101

A STUDY OF CONSTRUCTION SCHOOLS THAT TEACH COURSES FOR THE CONSTRUCTION INDUSTRY LICENSING BOARD EXAMINATIONS

This research project was sponsored by
The Building Construction Industry Advisory Committee under a grant from the
State of Florida Department of Education



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1991

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SEPTEMBER 1991

THIS RESEARCH PROJECT WAS SPONSORED BY THE
BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE
UNDER A GRANT FROM THE STATE OF FLORIDA
DEPARTMENT OF EDUCATION

ACKNOWLEDGEMENTS

The research presented in this report was accomplished through the strong support and cooperation of many persons. The author is especially indebted to the individuals employed by the Bureau Of Examination Services in Tampa, Orlando, Miami and Jacksonville for their graceful assistance in administering and collecting the survey of candidates, a burdensome task which was heaped upon their already hectic schedule at the last minute.

Although many others gave of their time and assistance, the following merit special recognition:

Mr. Warren Sutton, Chairman, Examinations Committee, Florida Construction Industry Licensing Board And Member, Building Construction Industry Advisory Committee

Mr. Bruce Simpson, Project Coordinator, Building Construction Industry Advisory Committee

Mr. John Pistorino, Member, Building Construction Industry Advisory Committee

Dr. Brisbane Brown, Executive Secretary, Building Construction Industry Advisory Committee

Mr. Daniel O'Brien, Executive Director, Florida Construction Industry Licensing Board

Dr. Paulette Johnson, Department Of Statistics, Florida International University

Ms. Lourdes Barouh, Secretary, Florida International University

Mr. Frank Kowalski, Member and Immediate Past Chairman, Florida Real Estate Commission

Mr. Michael Bellehumere, Supervisor Of Education And Examinations, Florida Real Estate Commission

Mr. William R. Schooling, Manager, Examination And Research Services, Contractors State License Board Of The State Of California

ACKNOWLEDGEMENTS

(Continued)

Mr. Raymond W. Berrian, Lead Analyst, Examination And Research Services, Contractors State License Board Of The State Of California

Mr. David R. Phillips, Registrar, Contractors State License Board Of The State Of California

Ms. Sandra Vaughn, Esq., Enforcement Section, Contractors State License Board Of The State Of California

Dr. Joseph S. Martinez, Division Of Private And Postsecondary Education, State Of California Department Of Education

Mr. Jorge Leon, Graduate Student, Florida International University

Ms. Joy Sobodowski, Student Assistant, Florida International University

Ms. Mary Alice Palmer, Bureau Of Examination Services, State Of Florida Department Of Professional Regulation

Ms. Ila Jones, Bureau Of Examination Services, State Of Florida Department Of Professional Regulation

Ms. Joanne Cohen, Bureau Of Examination Services, State Of Florida Department Of Professional Regulation

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EXECUTIVE SUMMARY

During the last decade the State of Florida has experienced a proliferation in the number of organizations ("schools") that advertise the teaching of preparation courses intended to help candidates pass the state and/or local contractors' licensing examinations. These schools, their curricula, their instructors, etc., are not currently regulated by any public or private agency.

Prior to this study there was no organized information about these schools. The increase in their numbers, the lack of any mandatory regulatory control over them, and the lack of information about how effectively they serve their students' needs contributed to the perception that a comprehensive study of them should be undertaken. Additionally, the Construction Industry Licensing Board (CILB) has in recent years noticed an increase in the number of complaints about schools and their operations. This, combined with a series of recent incidents involving school associated persons attempting to remove exam information from test sites, raised the concern of the CILB for the integrity of this part of the licensing process and for the welfare of the public that utilize these schools' services. The latter contributed significantly to the perceived need to fund this project.

The primary objectives of the study were a) to compile information about the operation of these schools, b) to determine their effectiveness and whether or not the present unregulated system was adequately serving the public and c) to make a recommendation as to whether these schools should be regulated.

All the objectives of the study were accomplished. It is the author's opinion that the overwhelming majority of exam candidates that attended these schools are satisfied with the product they received, and that there is no widespread fraud being perpetrated on the public by these organizations. The author concludes that there currently is no need to regulate schools, for regulation is not likely to eliminate the problems being experienced by the CILB. This report makes a series of recommendations intended a) to mitigate those problems without resorting to the added cost and burden of regulation, b) to give exam candidates more flexibility in their choice of method to prepare for their contractors' licensing exam.

A copy of this report may be obtained by contacting:

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FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings

As would be expected from an unregulated industry, construction schools that teach courses for the CILB licensing examinations follow no uniform guidelines as to organization, curriculum, class format, or instructor credential requirements. Despite this the percentage of class time for the two schools whose curricula were closely examined showed a remarkable correspondence between the percentage of total instructional class time received by an average student on a particular topic and the weight given by the DPR to that topic on the state examinations. Also, for a variety of reasons and other than requiring teaching credentials, schools almost always use instructors that are either licensed themselves or are in the process of obtaining a license, although not necessarily in the exam category for which they teach classes. This may or may not be relevant,

however, and depends on the specific class material taught by the instructor. For example the Business Administration/Financial Management part of Division I exams is very similar (if not identical) across the board for all Division I categories. Therefore there would appear to be no incongruency for an instructor licensed as a general contractor to be teaching builder and residential candidates to prepare for this part of the examination.

If the experiences and opinions of exam candidates that utilized these schools is a valid indicator of their effectiveness and of their business operations, then the June 1990 survey of exam candidates shows an overwhelming endorsement of the current unregulated system. As is discussed in the survey results in Chapter 3, most school attendees felt the school they attended had done either a very good or an outstanding job of preparing them for the state exam; that the material that they had learned would be either helpful or extremely helpful in running their construction business; that the advertising claims of the school they attended had been either accurate or very accurate, and that they would have little or no reservation in recommending the school they attended to a friend or associate. Furthermore, the great majority of candi-

dates that attended schools did not feel that schools should be regulated, the subjects taught should be regulated, or that instructors should be required to have teaching credentials. These results in no way support fears that the present unregulated school industry is responsible for perpetrating widespread abuse of the public.

The discussion above is in no way intended to suggest that all schools are doing an excellent job and are perceived as such by their attendees. As in any free market, some organizations excel in their operations while others do not. The chi square analyses show marked differences between the opinions of those candidates that attended NAMED schools and those candidates that attended schools in the OTHER category. This seems to indicate that the larger, older and more established schools are doing a better job than the newer, smaller and more local schools. The chi square tests also reveal statistically significant differences in opinion between attendees of specific schools, most of which were the older, larger and more established ones. In fact, if the chi square tests of the opinions of candidates attending specific schools (Appendix I) are compared to the passing results from the DPR Office of Examination Services survey of

March 1988 (Appendix B), it is quite evident that some correlation exists between the passing rates for specific schools reported by that survey and the opinions of candidates that attended the same schools for the June 1990 exams two years later.

It is the author's opinion that the lack of precise and detailed information available to the public about the problem solving skills required to pass state exams contributes to the ongoing problems with exam security and the removal of information from examination sites. As discussed in Chapter 1, the only information available to candidates (and the public at large) about exam content is that found in the *Candidate Information Booklet* (an excerpt from the February 1990 exam booklet is found in Appendix A) prepared by the CILB prior to each exam. This information is so broad in scope and so general in nature that a literal interpretation would require a prospective licensee to practically have degrees in insurance, accounting, law, real estate, finance, management, structural engineering, drawing, and construction, among other subjects, to pass the exam. It does not surprise the author that upon seeing this information, coupled with a long list of required reference books, candidates flock to construction schools for help. Construction schools,

on the other hand, feeling pressure to deliver accurate instruction to their students and not getting precise and relevant information from the CILB are forced by these circumstances to rely on smuggling information about questions from examination sites.

With respect to exam security the situation in California provides an interesting comparison. California tests approximately four times as many candidates a year as Florida does. It administers tests 24 times a year, as compared to 3 in Florida. It examines candidates at 11 different sites, compared to 3 in Florida. There are many more schools than in Florida and their operations and behavior seem quite bold and marginal (by Florida standards), despite the fact that all schools in California are regulated by the Private, Post Secondary Education Division of the California Department of Education. Still, the California Contractors State License Board (CSLB) does not perceive the situation to be a crisis and does not react as such. It remains aware and vigilant of schools' actions, and is not hesitant to act when a particular school's operations become unacceptable (as when a school adopted stationery that was indistinguishable from the board's own). Yet the CSLB feels that, among other obvious security measures, by developing and updat-

ing a very large data bank of questions for their exams they stay several steps ahead of the efforts of those who attempt to obtain exam information to use in schools or for any other purpose.

There is another area where the author feels California practices and experiences offer a valuable suggestion for Florida. The CSLB uses a single reference book for the Business/Law portion of the exam. This not only reduces the cost of obtaining a license, but also serves to guide exam candidates as to precisely what topics in the business and law area the CSLB feels licensees should be throroughly knowledgeable about.

Conclusions

It is the author's opinion that presently there are no compelling reasons for regulating construction schools. As is clearly evident in California, regulation is not the solution to reducing or eliminating problems associated with removal of information from examination sites. It does not automatically ensure uniformity or consistency of curricula, or the establishment of minimum qualification standards for instructors.

The situation will change, however, if the Florida Construction Industry Licensing Law is amended to include

pre-licensing, post licensing or continuing education requirements. It is clear that these circumstances would require regulation of schools, subjects, and instructors to assure compliance with statutory requirements, as is the case for real estate schools under Chapter 475, Florida Real Estate License Law (Chapter 5).

Recommendations

The author suggests the following recommendations:

1. The CILB should consider starting and maintaining a detailed and accurate case history file of complaints and problems related to construction schools and associated issues. Among other uses, this may serve as a data base to evaluate the frequency, seriousness, and severity of problems arising from incidents involving schools.

2. The CILB should consider developing and publishing a book of typical (preferably past exam) questions and solutions for all the different types of questions and problems that it uses on its exams. The book should provide in depth detail as to the type of knowledge and skills that it expects candidates for licensure to know

and to demonstrate mastery of on the licensing exams. Subsequent CILB exams should be comprised of similar questions, to establish the validity of this source of information for those that need to use it to prepare for their exams. This book should be provided (or made available for purchase) to exam candidates upon the receipt of their application for licensing and to the general public. Making this information available at large would probably help exam candidates decide whether or not they need to attend a school to learn those skills and may even motivate them to save on school expense and learn the subjects on their own. It would also most likely reduce the pressure that schools feel to go to extremes to smuggle exam information from examination sites.

3. In conjunction with item 2 (above) the CILB should consider expanding the database of exam questions to such a large number that the likelihood of repeating questions within a 3 to 6 exam cycle would be unlikely.

4. The CILB should consider reducing the number of reference books required for state exams. Combining information on law, insurance, general business and financial knowledge, and other topics covered on Part I of state exams into one reference. This would not only drastically reduce the already extremely high cost of the licensing process to candidates, but would also reduce the public perception that these exams are extremely difficult. This aura of difficulty contributes to the anxiety of candidates who, when faced with the information given in the *Candidate Information Booklet*, and the long list of references required feel overwhelmed and seek the only effective help available, which is provided by licensing schools.
5. If and when Chapter 489 F.S. (Construction Industry Licensing Law) is amended to include regulation of construction schools, a good model to use as a framework would be Chapter 475 F.S. (Real Estate License Law), and the Rules of the Florida Real Estate Commission.

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Chapter 1

INTRODUCTION AND BACKGROUND INFORMATION

1.1 Registration and Certification of Contractors

In the State of Florida the Department of Professional Regulation (DPR) is charged with the responsibility for licensing trades and professions. In the case of contractors Chapter 489 of the Florida Statutes (the Construction Industry Licensing Law) stipulates that all construction licensing (except for electrical contractors) is to be handled by the Construction Industry Licensing Board (CILB), one of the many boards which constitute the DPR.

Licensing of contractors in Florida exists at two levels. A qualified individual may obtain a "local" license by meeting local (city or county) requirements. This license allows the individual to practice his/her trade only in the jurisdiction in which the license is obtained. In the language of the Florida Construction Industry Licensing Law individuals holding local licenses

are called "registered" contractors. Local licensing requirements vary from jurisdiction to jurisdiction, but many local licensing boards require passing of a written examination as a partial requirement for licensure. Licensing of contractors also exists at a state level. Qualified individuals may obtain a "state" license by meeting the requirements for "certification" as spelled out in Chapter 489. In the language of Chapter 489, contractors holding statewide licenses are called "certified" contractors. The statute groups certified contractors into one of two categories. Division I consists of general, building, residential and drywall contractors. Division II comprises all the other licenses, such as roofing, plumbing, swimming pool, solar heating contractors, etc. Certification allows the contractor to practice his/her trade anywhere in the state by paying for a local occupational license, but without having to also meet local licensing requirements. Requirements for certification are uniform throughout the state, and they include the passing of a rigorous examination. In the case of Division I contractors, this examination lasts two days and tests an applicant's knowledge of business and financial management, contract administration, project management, and other relevant construction

related topics.

Chapter 489 does not require applicants for certification to take any course as a prerequisite for taking the state examinations. Individuals who chose to attend construction schools to take preparation courses do so voluntarily, based on a widely held perception that the examinations are very difficult to pass without the specialized schooling these schools provide.

1.2 State Licensing Examinations

Both Division I and Division II examinations are administered three times a year (approximately February, June and October) to approximately 6,000 candidates. All examinations are open book, although candidates are only permitted the use of books from a state approved reference list. Construction school workbooks, clean paper pads, bound or unbound notes, or any other materials are not allowed in the examination room and may be considered cause for dismissal from the examination and may lead to denial of licensure. All of the exams are written by an independent contractor, and are reviewed by members of the Examination Committee of the CILB.

Division I Examination

The Division I examination consists of three parts administered in two days. Part I is given the morning and the afternoon of the first day (for a total of 9 hours), and covers Business and Financial Management. It is divided into two sections. Section A (morning), Business Administration, is a 4 1/2 hour session with 40 multiple choice questions. Twenty questions have value of 4 points and 20 questions have a value of 1 point. Section B (afternoon), Financial Administration, is a 4 1/2 hour session also comprised of 40 multiple choice questions, 20 with a value of 4 points and 20 with a value of 1 point.

Part II, Contract Administration, is given the morning of the second day. It is a 4 1/2 hour session with 40 multiple choice questions. Twenty questions have a value of 4 points and 20 questions have a value of 1 point.

Part III, Project Management, is given the afternoon of the second day. It is a 4 1/2 hour session with 40 multiple choice questions. Twenty questions have a value of 4 points and 20 questions have a value of 1 point.

The three parts are scored separately. The passing score is 69.01%. Candidates that fail one or more parts

are allowed to retake those parts not passed. A candidate must pass all three parts within three consecutive attempts in order to become eligible for certification. If a candidate fails to pass all three parts in three attempts he/she loses credit for any parts passed and must retake all three parts. Historically, 30 to 50% of Division I candidates pass the exam each time it is given.

Appendix A contains an excerpt from the *Candidate Information Booklet* for the February 19-20, 1990 Division I construction examinations. This excerpt outlines the subjects to be covered on each part of the examination, and the approximate (within 3%) value the questions on that subject will have towards the total score for that part of the examination. The examination information in this booklet is the only information released by the Department of Professional Regulation regarding the content of the exam.

Division II Examinations

The Division II examination consists of two parts. Part I is entitled Business Knowledge and Part II is entitled Trade Knowledge. The number of exam sessions, length of examination time, number of questions, etc.,

depend on the particular trade or category the candidate seeks to be licensed within. Historically, 40 to 60% of Division II candidates pass the exam each time it is given.

1.3 Construction Schools

During the last decade the State of Florida has experienced a proliferation of the number of organizations (which will henceforth be called "schools") which advertise the teaching of preparation courses intended to help candidates pass the state examinations and/or the local examinations. Currently these schools, their curricula, their instructors, etc., are not required to submit to regulation by any public or private agency.

To the author's knowledge, no comprehensive study of these schools and their operations has previously been undertaken. As such, not much is known about these schools. In March of 1988 the Office of Examination Services of the State of Florida Department of Professional Regulation released an extensive study (Please see Appendix B) of the results of the state examinations administered in October 1987. This excellent analysis by Dr. Denise L. Stone included the tabulation of passing rates for several major schools for that particular

examination, but discussion of the schools and their operations were beyond the scope of the report.

The lack of organized information about schools, the increase in their numbers, the lack of any mandatory regulatory control over them, and the lack of information about how effectively they serve their students' needs were all reasons that supported the need for this study. Additionally, the Construction Industry Licensing Board (CILB) has in recent years perceived an increase in the number of complaints about schools and their operations. This, combined with a series of recent incidents involving school associated persons attempting to remove exam information from test sites have raised the concern of the CILB for the integrity of this part of the licensing process and for the welfare of the public that utilize construction school services.

1.4 Research Objective

The objective of this study is to compile information about the operation, curricula, and effectiveness of schools that offer courses to prepare candidates for licensure to pass the Construction Industry Licensing Board examinations.

1.5 Methodology and Procedures

To accomplish the research objectives the research was divided into three parts, as follows:

1. Gathering information about schools and their operation. This process involved compiling a list of schools operating throughout the state, obtaining any available promotional material disseminated by the schools, and performing a survey of three major schools via a personal interview with a responsible individual from the school. The information compiled about schools is presented in Chapter 2 of this report.

2. Determination of attitudes and feelings towards schools by examination candidates that attended schools. This part consisted of documenting the experiences and opinions that examination candidates hold about schools. A questionnaire/survey was devised and administered (voluntarily) to all candidates that took the state examinations in June of 1990. The results of this questionnaire/survey are discussed in Chapter 3 of this report.

3. Gathering information from another state (California) and from another board within Florida (Real Estate Commission) concerning their experiences with, procedures for, and regulation of schools that prepare candidates for their examinations. To accomplish this part of the research the author traveled to Sacramento, California, to meet with the staff of the Contractors Licensing Board of the Department of Consumer Affairs and the Division of Private, Post Secondary Education of the California Department of Education. In Florida, the author met with the immediate past Chairman of the Florida Real Estate Commission, interviewed the Supervisor of the Education and Examination Department of FREC, and researched Chapter 475 F.S. (Real Estate Licensing Law) and the Rules of the Real Estate Commission. The results of this part of the investigation are found in Chapters 4 and 5.

Chapter 2

CONSTRUCTION SCHOOLS

2.1 Background and General Information

Individuals that choose to take a preparatory course for their state examination have a choice of attending a variety of schools. In some parts of the state there are public institutions that offer established and relatively well known programs. Such is the case in Jacksonville and in Miami, where the University of North Florida and Miami Dade Community College, respectively, have offered such classes for some time. Most individuals that take preparatory classes, however, attend one of the many private schools that are dedicated to teaching for the local and/or state examinations.

2.2 Location and Class Format

Some schools hold classes in their immediate geographical area, drawing primarily from adjacent local markets. Many others, especially the older, larger, and

more established schools teach classes at various locations throughout the state. Most schools hold free, introductory classes prior to the start of their teaching schedule for an upcoming examination. These introductory sessions are intended to provide prospective students with information about licensing requirements, completion of the state application, and information relating to the state examinations. They also include the distribution of promotional materials about the school.

Class formats among schools vary widely. One school does not use a classroom setting at all in teaching for the Division I examinations. This school provides its students with video taped lectures and other class materials which a student utilizes on his/her own time to prepare for the exam. Most schools do use a classroom setting and teach either weekend classes or a combination of evening and weekend classes. The evening classes are usually three to four hours long, while the weekend classes generally are full day sessions with a break for lunch. The topics covered are repeated on a rotating basis, and it is possible for a student to attend lectures on a particular subject multiple times, although in some cases this may require traveling to different locations in the state.

None of the private schools surveyed taught traditional academic type courses, where an outline of topics is sequentially and progressively covered over a designated term of time and topics are not repeated except for review purposes. School representatives interviewed were asked why they don't utilize formal, traditional type courses. All replied that the main reason is to provide flexibility for their students. From experience the schools claim that traditional academic type classes are inappropriate and highly ineffective for the students they serve, most of whom are generally full time employees in the construction industry. It is the author's opinion that, in addition to the reasons given by the schools, class formats are also highly influenced by their potential impact on enrollment. Use of a traditional, non-repeating class format probably would substantially decrease a school's potential enrollment. The reason is that potential students would not likely register for a sequential course once it was underway, since they would have missed important material that had already been covered in prior classes. The repeating evenings and weekend class format makes it possible for a school to claim that examination candidates may enroll in

their classes just a few weeks prior to the day of an examination and still have an opportunity to attend a complete course covering all potential examination topics.

One feature common to the class format of the majority of schools studied is the last minute, intensive review sessions generally held during the two or three weeks just prior to each examination. Sometimes called "review seminars" or "practice testing," these sessions consist primarily of a series of practice tests administered under conditions resembling actual exam conditions, and whose questions are carefully written to closely resemble those that might appear on the state exam.

2.3 Curriculum

The curriculum followed by the schools surveyed parallels the main divisions of the state exams. Most schools hold separate sessions for Business Administration/Financial Administration and for Contract Administration/Project Management. Within these categories there is no standard or common outline of topics that is covered by the different schools. The only information made available by the Department of Professional Regulation to

the public about examination content is that found in the "Examination Content and Timing" section of the *Candidate Information Booklet* (an excerpt of which may be found in Appendix A for the February 19-20, 1990 Division I examinations). An review of this information reveals that it is quite general in nature and very broad in scope, and both schools and candidates feel that it is not very helpful in providing guidance as to specifically what kind of knowledge and skills must be mastered in order to pass the examinations.

School representatives interviewed were asked how they determined what material they covered in their classes. None alluded to the *Candidate Information Booklet*. Their curriculum decisions are made based upon the information they can obtain about exams that have been administered in the past. This information is obtained essentially in three ways. One is debriefing of students that have just taken the test. The second is by having school representatives actually take some exams. The third is by those same school representatives failing parts of the exam and later making appointments to review their work, as well as by continuing to retake those parts that they failed.

School representatives interviewed were also asked

about their school's teaching philosophy. Specifically, they were asked if they just taught their students how to work problems that might appear on the test. All schools interviewed answered no. Even though they acknowledged that answering questions on the test correctly was their ultimate goal, they emphasized that their classes always attempt to impart a knowledge of fundamental and basic principles related to the subjects covered, gradually working towards the depth and detail necessary to work the exam questions correctly.

Representatives from three major schools were asked to furnish detailed information about their classes. Specifically, they were requested to provide an average number of hours that their typical student attended classes, and to break these times down into the amount of time spent in class on each of the exam topics as listed on the "Examination Content and Timing" section of the *Candidate Information Booklet*. Only two of the school representatives interviewed had sufficient knowledge of their curriculum to answer these questions. School "A" students attended class for an average of 66 hours, while School "B" students attended class for an average of 96 hours. The results are shown on Tables 1 and 2, which follow.

The reader should note the following:

1. For analysis and comparison Parts II and III of the second day have been combined, since the breakdown of subjects on the *Candidate Information Booklet* shows these two parts as sharing many topics. For example, Reading Plans And Specifications is listed as a topic on both Contract Administration and Project Management, therefore the two were combined and the percentages adjusted accordingly.

2. The percentages shown for the schools were calculated by taking the time an average student would be instructed on a specific subject as a percentage of the total average time the student would have attended the respective school.

3. The percentages shown for the exam are adjusted values from the *Candidate Information Booklet*, which gives percentages as if each exam part had a value of 100%. The values shown on Tables 1 and 2 have been adjusted to account for the sections combined from Parts II and III, and have also been adjusted so that the entire exam (Parts I, II and III combined) has a value of 100%.

Table 1

Comparison Of Approximate Average Time Spent On A Topic In Class By A Typical Student In Two Construction Schools, Versus Approximate Value Of Questions Relating To That Topic On The First Day Of The State Examination

First Day: Business Administration and Financial Management Topic	Approx. % Exam	% Class Time School "A"	% Class Time School "B"
Business Risk Management Insurance	4.0%	3.8%	1.7%
Business Record Keeping Bookkeeping and Accounting	3.8%	3.0%	8.7%
General Business Laws	3.8%	2.3%	1.7%
Business Organizations and Procedures	3.0%	0.8%	1.7%
Federal and State Tax Laws	2.8%	3.0%	1.7%
Laws Governing Certification	2.3%	1.5%	1.2%
Federal and State Labor Laws	2.3%	2.3%	1.2%
Health and Safety Laws	3.3%	1.5%	1.7%
Cash Flow Management	7.0%	7.6%	5.2%
Management Accounting Principles	3.0%	3.0%	0.9%
Analysis of Financial Statements Financial Ratios and Calc.	7.0%	10.6%	3.5%
Equipment and Property Purchases	6.0%	6.1%	0.9%
Credit and Borrowing Principles	2.0%	4.5%	0.9%
Total First Day	50.0%	50.0%	31.1%

Table 2

Comparison Of Approximate Average Time Spent On A Topic In Class By A Typical Student In Two Construction Schools, Versus Approximate Value Of Questions Relating To That Topic On The Second Day Of The State Examination

Second Day: Contract Administration and Project Management Topic	Approx. % Exam	% Class Time School "A"	% Class Time School "B"
Materials, Tools, Equipment and Construction Methods	9.8%	5.3%	8.2%
Reading Plans and Specifications, Construction Codes and Standards	8.3%	9.8%	25.5%
Quantity, Time and Cost Estimates Proposals and Bids	7.0%	21.2%	10.9%
Scheduling, Cost Control and Budgeting	9.0%	3.0%	9.9%
Contracts, Sub-Contracts, Agreements Change Orders and Contract Amend.	10.0%	6.8%	7.0%
Obtaining Licenses, Permits and Approvals	2.8%	1.5%	1.8%
Liens and Lien Laws	2.0%	0.8%	3.2%
Job Safety and Safety Laws	1.3%	1.5%	2.3%
Total Second Day	50.0%	50.0%	68.9%

A review of Tables 1 and 2 reveals that, with very few exceptions, the percentage of total instructional class time received by the average School "A" student on a particular topic is almost equivalent to the weight given by the DPR to that topic on the state examination. While this correspondence is not as close for the average School "B" student as it is for the average School "A" student, the percentage of instructional class time received by School "B" students still parallels the weight given by DPR to the different exam topics.

The most significant differences between percentage time of school instruction and percentage value of the exam appear to occur on two topics covered on the second day of the exam. It appears that School "A" students had considerably more instructional time on Quantity, Time and Cost Estimates than would seem warranted by the percentage weight assigned that topic, while School "B" students had considerably more instructional time on Reading Plans and Specifications than would seem warranted by its percentage weight. The author believes that in reality there is no difference between the two schools, and that as far as these two topics are concerned, the survey merely reveals differences in semantics. The preparation of quantity, time, and cost estimates is

intrinsically dependent upon the ability to read and to interpret plans and specifications. In fact, these two topics are not separately covered during school instruction, and the teaching of plan reading occurs as part of the process of teaching quantity take off. Keeping this in mind and mentally adding the percentages for the two topics for each school, it can be seen that there really isn't much difference between them as to the percentage time of their total instruction that is spent on Plan Reading/Quantity Take Off.

There is, however, a significant difference between the percentage time of instruction spent by the schools on Plan Reading/Quantity Take Off (31.0% for School "A" and 36.4% for School "B") and the apparent weight given these topics by the examination (15.3%). This may be due to a number of reasons, as follows:

1. From experience, the majority of school attendees are very lacking in the plan reading, organizational, and arithmetic skills necessary to quickly and efficiently prepare an accurate quantity take off. Since these skills are not easily obtained by self instruction (while other knowledge, such as laws and regulations can be) a larger percentage of class time has to be spent

on these subjects.

2. Even though the combined weight of Plan Reading and Quantity Take Off given by the *Candidate Information Booklet* is 15.3%, exam questions on other topics invariably include some degree of plan reading and quantity take off. In effect, the total percentage of exam questions involving some aspect of these two is probably higher than 15.3%.

3. The disproportionate percentage of time spent on Plan Reading and Quantity Take Off may be a lingering reflection of the distribution of the weight of exam topics as they existed until 1987, when the state exams were overhauled. For many years prior to 1987, the exam consisted of 70% Plan Reading and Quantity Take Off, and 30% "look up in the book" type questions.

In the author's opinion Tables 1 and 2 suggest that for the schools studied, despite the absence of a regulatory agency mandated course outline, there is a remarkable correspondence between the percentage of total instructional class time received by an average student on

a particular topic and the weight given by the DPR to that topic on the state examinations.

2.4 Instructors

The three schools interviewed were asked if they required their instructors to have any of the following:

1. Formal educational training in construction as evidenced by a college or vocational degree in Architecture, Engineering, Building Construction or Construction Management.

2. Construction experience.

3. Teaching experience.

4. A state license in the exam category or categories that the instructor taught classes for.

Formal Educational Training In Construction

Of the schools interviewed one requires its instructors to have a college degree, although not necessarily in construction. The other two schools do not require any formal training in construction or any other subject, although some of their instructors do have college degrees. One school was very emphatic in declaring that its

classes had to be taught at a "very common sense level," and that its best instructors did not have college degrees. This school implied that its college educated instructors were less able to teach at the required level than its instructors who have no college degree.

Construction Experience

Although many of their instructors are or have been actively involved in construction, none of the schools interviewed require their instructors to have construction experience. Construction experience is viewed as desirable from both a teaching and a promotional point of view, but not as an absolute necessity.

Teaching Experience

None of the schools interviewed require instructors to have teaching credentials or extensive teaching experience. All the schools, however, put their instructors through trial periods before engaging them to teach classes on a regular basis. During these trial periods prospective instructors teach classes under observation by an experienced school instructor who, in addition to evaluating the trainee's teaching potential,

provides guidance and constructive criticism when and if required.

Licensure

One of the schools interviewed requires its instructors to have a state or a local license in the category that they teach classes in. The other two schools do not require any licensure as a prerequisite to start teaching. If, however, an instructor does not have a license these two other schools require, as a minimum, that the instructor take the state test. Taking the test is viewed as necessary so that the instructor will have direct personal exposure to the exam environment and thereby be able to relate to the conditions his/her students will face. Requiring an unlicensed instructor to take the test also reaps the additional benefit for the school of obtaining information about the exam. Schools usually find it desirable for instructors who take the exams to eventually pass them, for credibility and promotional reasons.

2.5 Advertising and Promotion

Schools advertise their classes using a variety of vehicles. These include combinations of newspaper and trade magazine advertisements, direct mailing of brochures to target markets, and holding free "introductory classes."

The older, larger and more established private schools with statewide name recognition place newspaper and magazine advertisements to coincide with their free introductory classes. The effectiveness of these ads is questionable, however, and placing them in newspapers around the state is very expensive. For these schools advertising dollars are more effectively spent on direct mailing. One especially valuable target market is those individuals that have submitted applications to take state exams. The CILB allows school representatives to visit the board office and compile mailing lists of upcoming examination candidates from applications received, which are in the public record.

Smaller schools tend to serve local markets, and rely more heavily on newspapers and local printed mass media to promote their classes. This is also the case for public institutions such as university and community

college continuing education and professional development programs.

Free introductory classes are offered by most schools, including public institutions. In these classes information is provided about licensing requirements, license applications and instructions for completing them are given out, and attendees are provided with an overview of the state test and the books required. These classes are also intended to promote the school and its services, and some schools use them to aggressively recruit prospective students.

Most large private schools offer some kind of guarantee should a student fail any part of the exam. Two schools with a statewide presence advertise that their students may take classes as many times as needed to pass the test, with no strings attached. Two other large private schools allow their students to retake classes free for up to a year from the date of their first exam, or for three consecutive exams, respectively. After these periods both schools permit students to re-enroll for one-half the current tuition. Public institutions do not offer any type of guarantees.

Advertising claims made by schools on their promotional materials vary widely. One public institution

has claimed a passing rate of 80% in trade magazine advertising. Some large private schools make no mention of a passing rate, and simply claim that they guarantee their classes will help students pass the state exams. Other large private schools make bolder claims. One brochure reads "During the School's almost 18 years of existence, we believe we have maintained the highest passing percentage of any school in the state. "A flyer from another large private school claims that "....we have put together a "NO FAIL" program that has been tested by some of our students and so far has produced a "100% passing rate."

It is important to note that most schools, especially the older and more established ones, consider their best advertising resource to be their large base of past students who have passed state exams after attending their school. Direct mail, newspaper ads and introductory classes are ancillary reinforcement to those prospective students that are predisposed to attending classes because they have been referred by word of mouth from friends or colleagues that felt satisfied with the school's role in helping them obtain their state license.

2.6 Cost

School tuition for a full course of study ranges from $350 for some community college courses to as much as $995 for one private school. Most schools offer variant courses for specific parts of the test for less than the cost of full tuition (e.g. One school offers Business Administration and Financial Management - Part I only, for $495.) One school permits students to enroll for the last minute intensive review seminars at a cost of $550.

Many private schools also generate additional income by offering to sell their students a variety of items. These include books required for the test, which for the June 1991 state test range from $420 plus tax for the plumbing exam to as much as $820 plus tax for air conditioning exam. Other items sold include study aids in the form of cassette tapes, video tapes, books of sample questions and answers, etc., as well as supplies such as calculators, tabs, highliters, pads, and other sundry stationery items.

Chapter 3

CANDIDATE SURVEY

3.1 Introduction

Section 1.3, Construction Schools, discussed the reasons which prompted the Construction Industry Licensing Board to request that this research be performed. The catalysts behind the Board's action were complaints it had recently received from individuals alleging questionable practices by some construction schools.

At the start of this project the author requested that CILB provide him with whatever information was available about problems or complaints regarding schools. The author was furnished documentation pertaining to some recent complaints, but was told that no records were maintained on a long term basis. Essentially there was no historical data base available to study to determine the nature, the scope, and the trends of complaints or problems with the schools.

The lack of historical information made it necessary

to find another means to use to determine whether, in the public view, a serious problem existed. The solution was to survey the people directly affected. How did the consumers of the schools' product, the exam candidates who had attended those schools, feel about their effectiveness and their operation? To the author their experiences with and opinions about the construction schools that they attended would be the next best indicator of the effectiveness of the present unregulated system.

3.2 Candidate Survey

A questionnaire/survey was developed and administered (voluntarily) to all candidates (statewide) that took the state examinations in June of 1990. A copy of the original questionnaire may be found in Appendix C.

The survey was performed at the end of the morning session of the second day of the examination. The survey was administered at this time for several reasons. The author felt that prior to answering the survey a candidate should have had an opportunity to take enough of the exam so that he/she would be able to render a valid judgment regarding how helpful attending a school had been for them. This ruled out giving the survey at the beginning of the exam. Administering the survey at the

end of the exam would have most likely drastically reduced the number of responses, since, after two days of testing, most candidates are eager to leave. Mailing the survey to candidates after the test ran the dual risk of reducing the number of responses and of the respondents' opinions being skewed by whether they had passed or failed any parts of the exam.

As to the survey itself, questions 1 to 7 were general information questions intended to detail the characteristics of the candidate population. Questions 9 to 12 were to be answered by construction school attendees only, and were intended to document candidate opinions about the effectiveness of the construction school they attended. Questions 13 to 17 were intended to determine both school attendees' and non-attendees' opinions regarding state regulation of schools, subjects taught, instructors, etc. Question 18 was intended to determine candidates' feelings towards some compulsory education as a prerequisite to candidacy for the exam.

3.3 Survey Analyses

Responses to the survey were compiled and the following reduction and/or analyses were made:

1. Frequencies of all the variables were tabulated for all respondents (Appendix D).

2. Frequencies of all the variables were tabulated for respondents that attended construction schools. (Appendix E).

3. Frequencies of all the variables were tabulated for respondents that did not attend construction schools (Appendix F).

4. Chi square tests were performed to determine if there were statistically significant differences between the responses of candidates that attended schools and those of candidates that did not attend schools (Appendix G).

5. Chi square tests were performed to determine if there were statistically significant differences between the responses of candidates that attended schools expressly NAMED in the survey and those who attended schools in the OTHER category (Appendix H).

6. Chi square test were performed to determine if there were statistically significant differences between candidates that attended specific

construction schools, exluding schools so small that chi square results might be invalid (Appendix I).

The reasons for tabulating frequencies are obvious. Chi square tests of school attendees versus non attendees were deemed necessary to reveal significant differences, if any, between the characteristics of school attendees and non-attendees, as well as to discover significant differences in their opinions with respect to some of the survey questions.

Chi square tests of NAMED school attendees versus attendees of schools in the OTHER category were performed to determine the difference, if any, in the perceived performance and effectiveness between the larger, older, and more established schools and the newer, smaller and less well known organizations.

3.3 Graphical Presentation of Survey Results

Figures 1 through 13 are bar charts and pie charts which describe the characteristics of the population surveyed. They represent the results of questions 1 through 7 in the survey. Figures 14 through 17 reflect only the opinions of those exam candidates that attended

construction schools. They represent the results of questions 8 through 12 in the survey. Figures 18 through 22 reflect the opinions of all the candidates. They represent the results of questions of questions 13 through 18 in the survey.

Figures 23 through 27 are pie charts obtained from the chi square tests of candidates that attended construction schools versus candidates that did not attend construction schools. Only those variables which showed a statistically significant difference between attendees and non-attendees have been graphed. For all other variables there was no statistically significant difference between the responses of these two groups.

Figures 28 through 33 are pie charts obtained from the chi square tests of candidates that attended NAMED construction schools versus candidates that attended schools in the OTHER category. Only those variables which showed a statistically significant difference between attendees of NAMED schools and attendees of OTHER schools have been graphed. For all other variables there was no statistically significant difference between the responses of these two groups.

FIG. 1

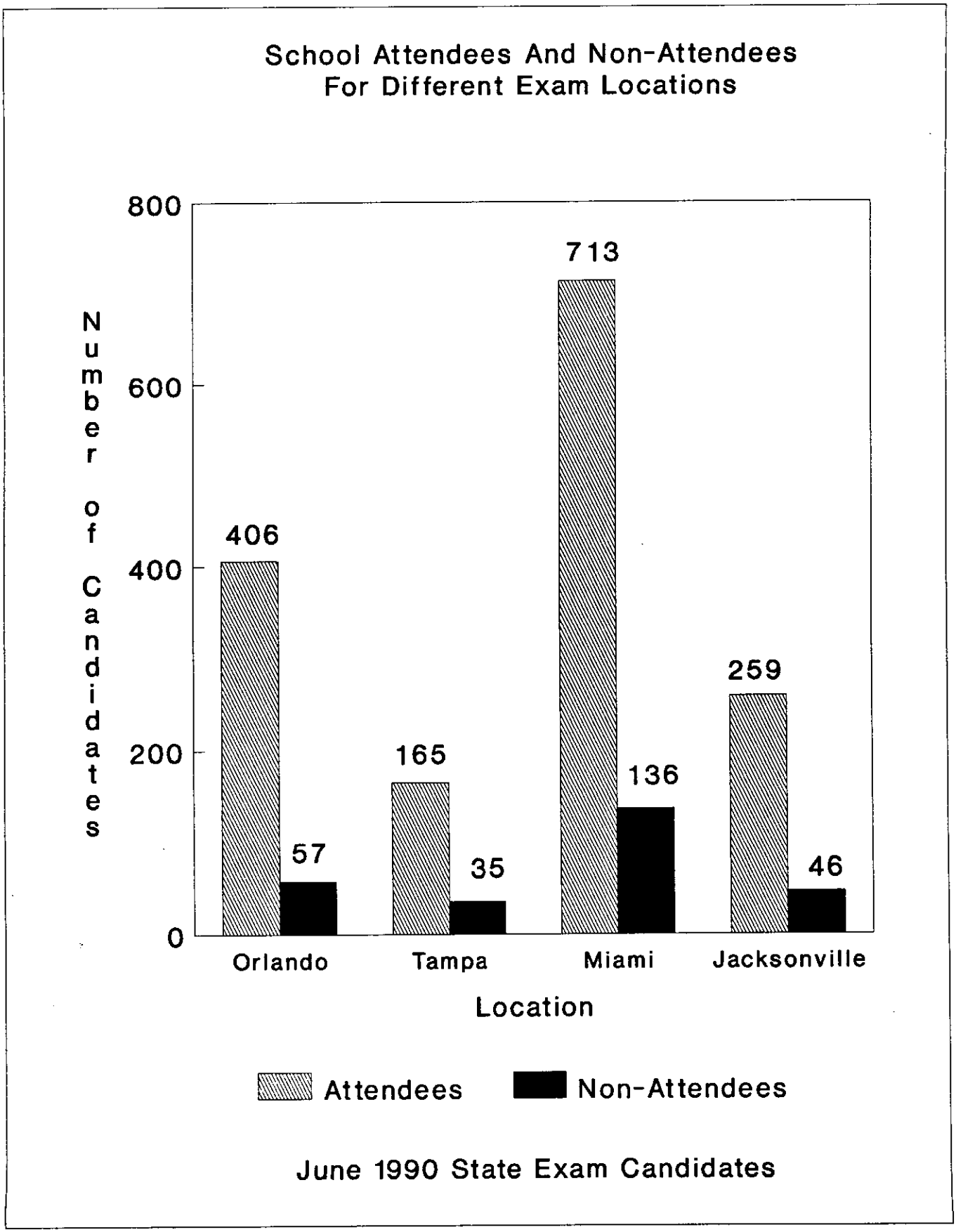
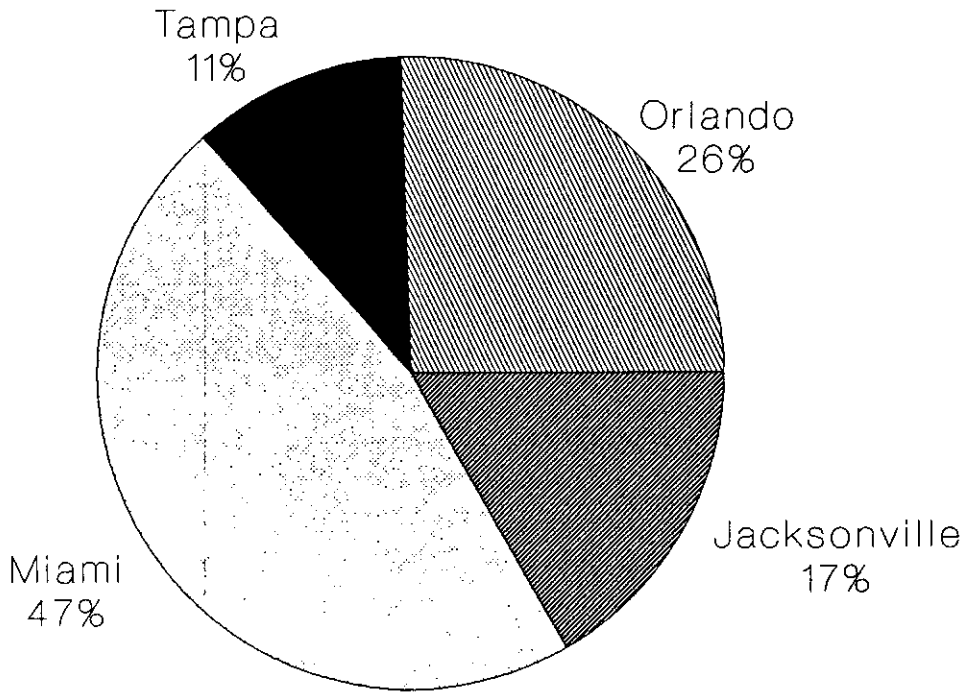

School Attendees And Non-Attendees
For Different Exam Locations
Number of Candidates
800
600
400
200
0
406
57
165
35
713
136
259
46
Orlando
Tampa
Miami
Jacksonville
Location
Attendees
Non-Attendees
June 1990 State Exam Candidates

FIG. 2

Distribution of Candidates By Exam Location



June 1990 State Exam Candidates

FIG. 3

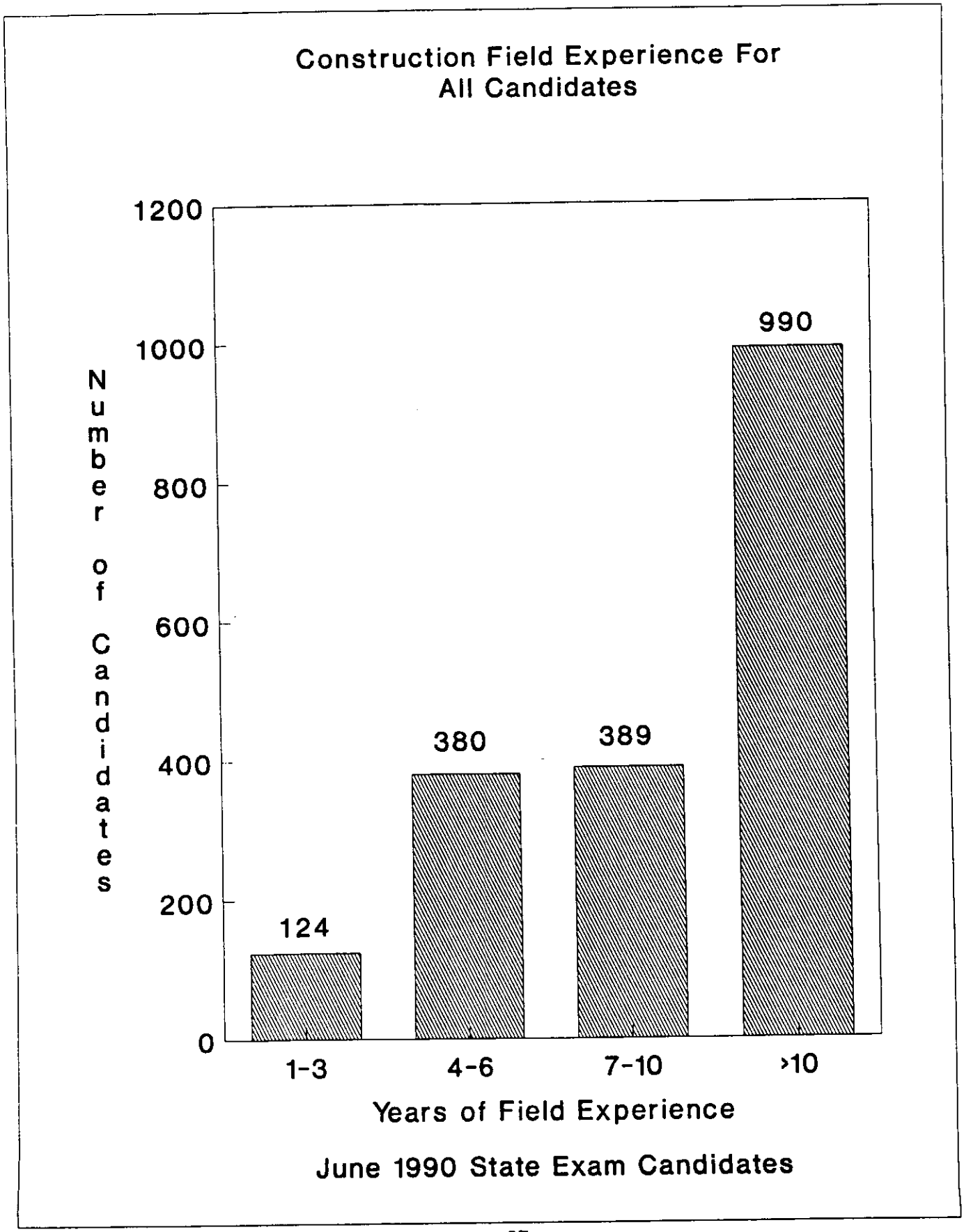
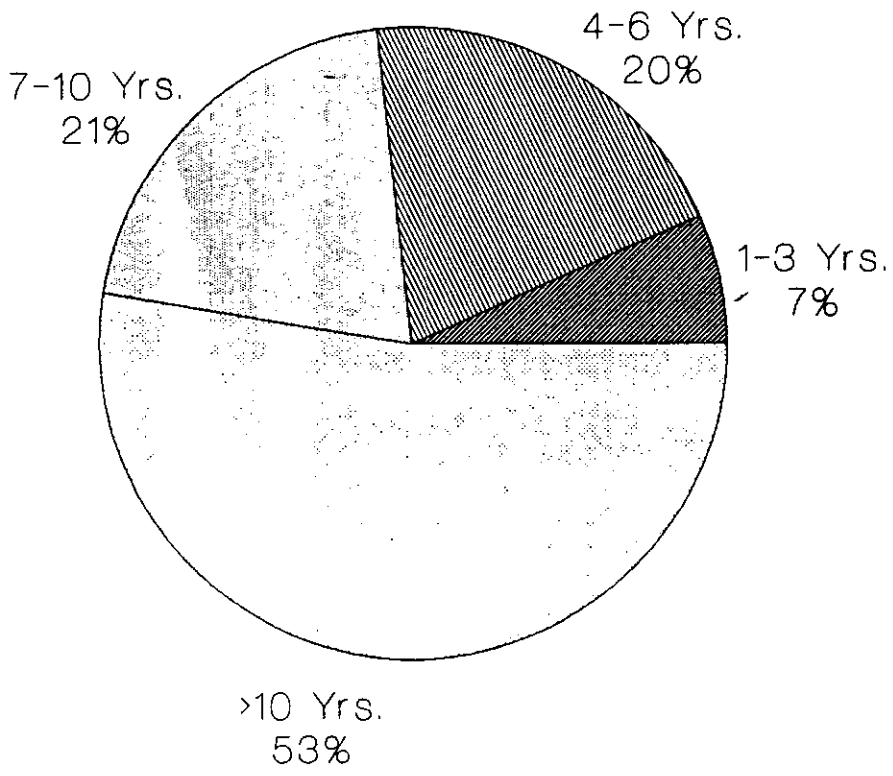

Construction Field Experience For
All Candidates
1200
1000
800
600
400
200
0
Number of Candidates
124
380
389
990
1-3
4-6
7-10
>10
Years of Field Experience
June 1990 State Exam Candidates

FIG. 4

Distribution Of Field Experience For All Candidates



June 1990 State Exam Candidates

FIG. 5

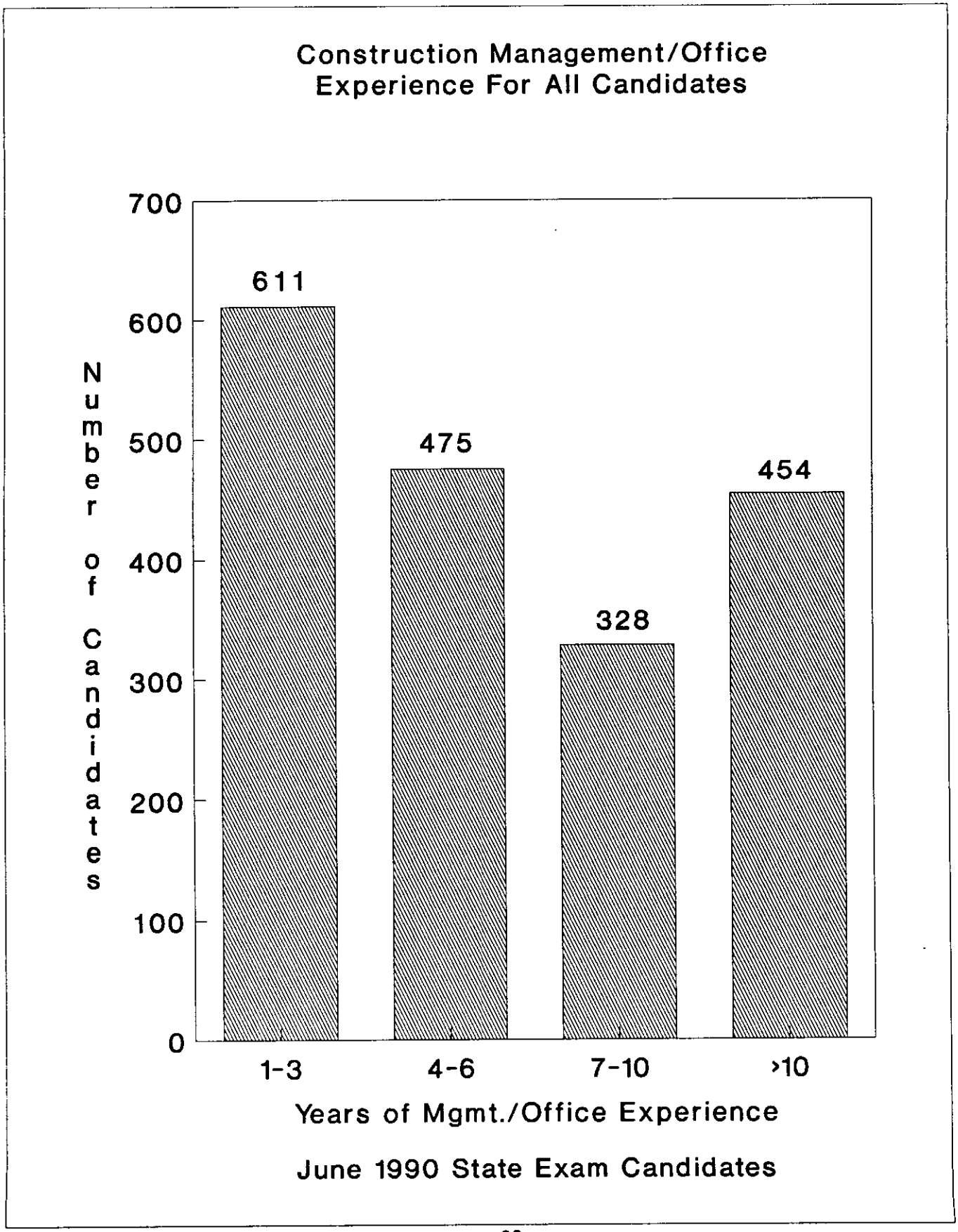
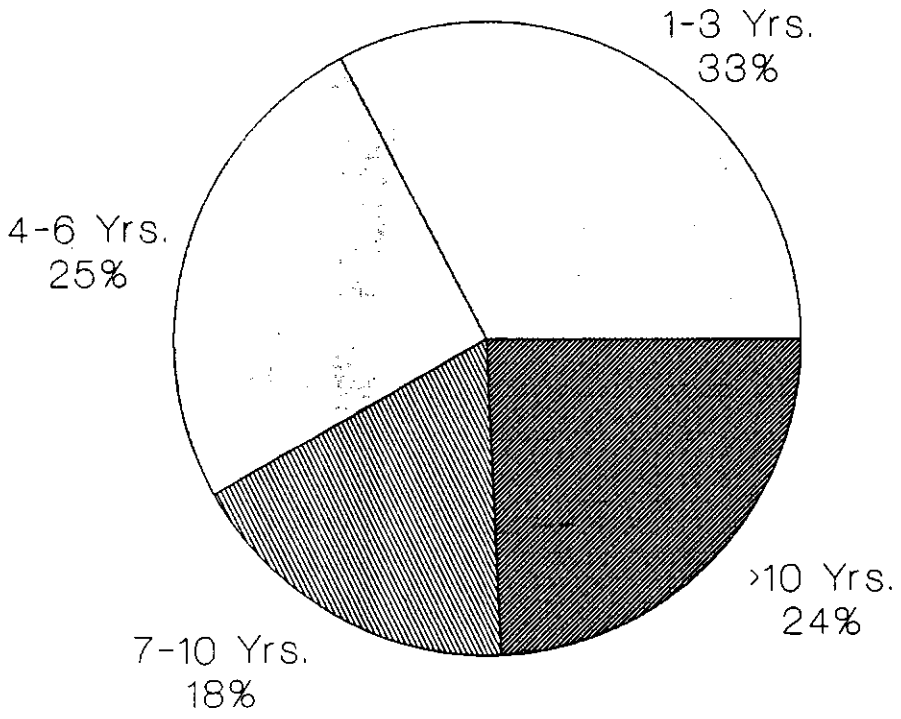

Construction Management/Office
Experience For All Candidates
700
600
500
400
300
200
100
0
Number of Candidates
611
475
328
454
1-3
4-6
7-10
>10
Years of Mgmt./Office Experience
June 1990 State Exam Candidates

FIG. 6

Distribution Of Management/Office Experience For All Candidates



June 1990 State Exam Candidates

FIG. 7

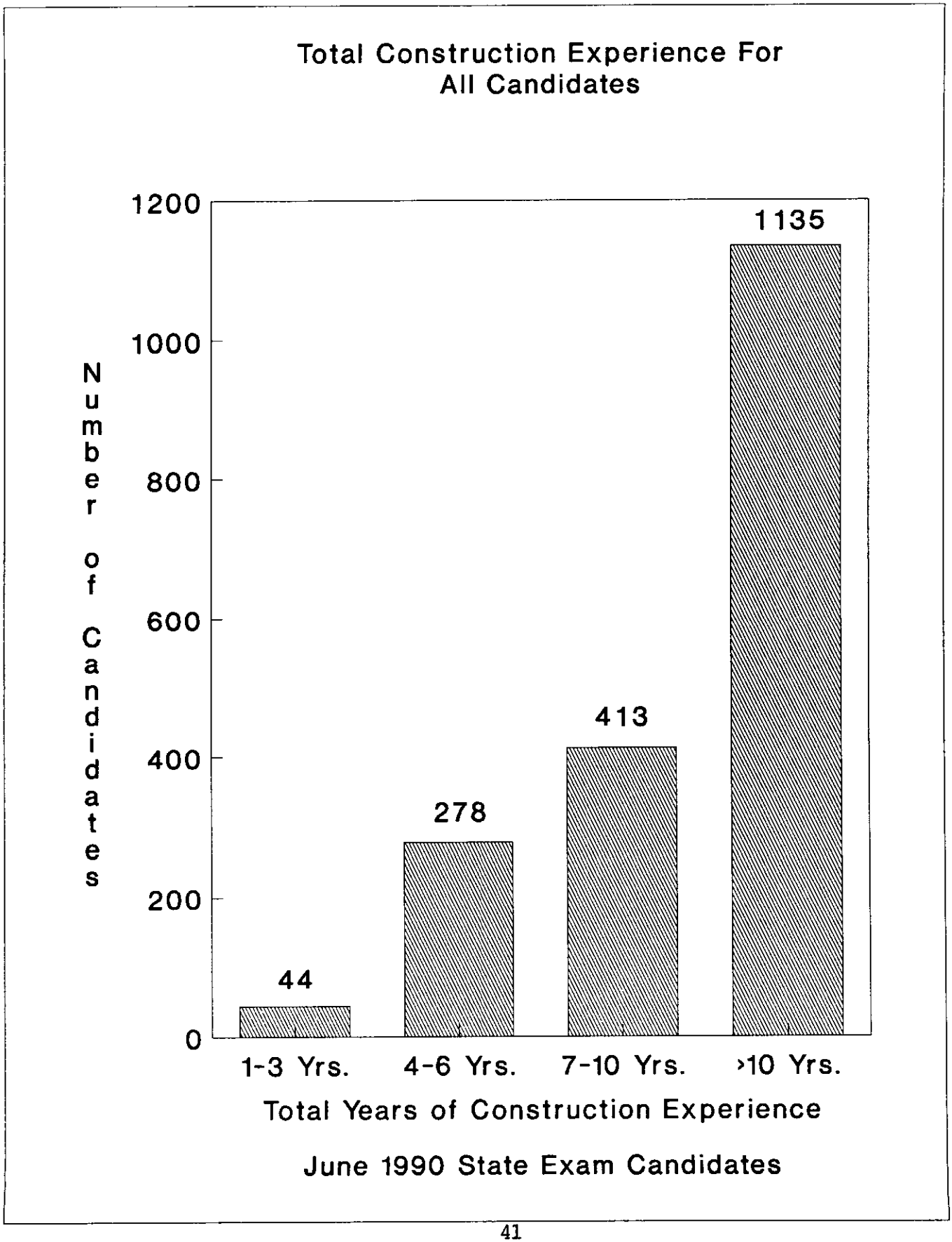
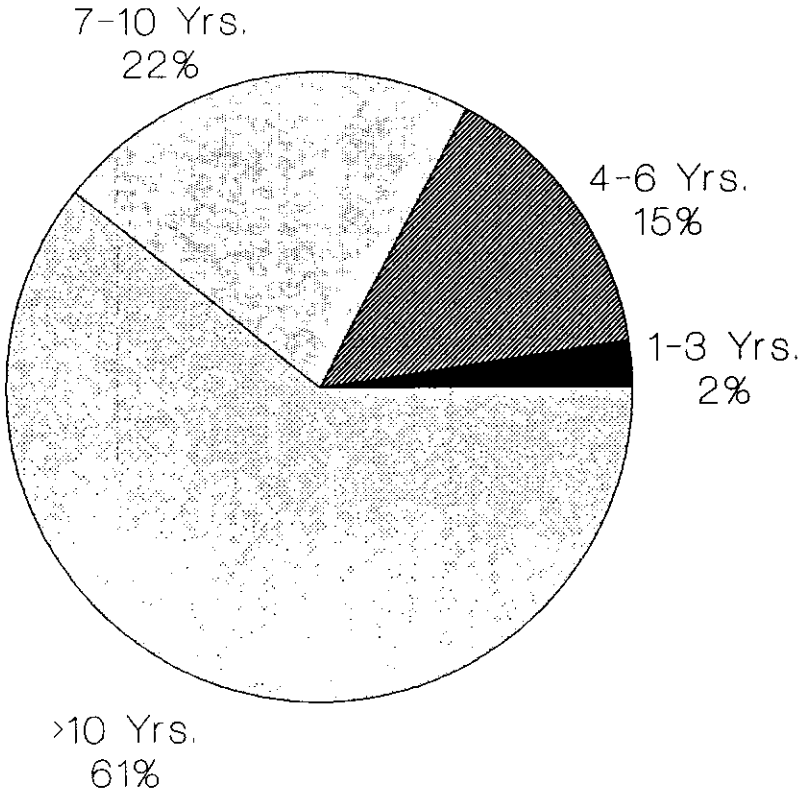

Total Construction Experience For
All Candidates
Number of Candidates
1200
1000
800
600
400
200
0
44
278
413
1135
1-3 Yrs.
4-6 Yrs.
7-10 Yrs.
>10 Yrs.
Total Years of Construction Experience
June 1990 State Exam Candidates

FIG. 8

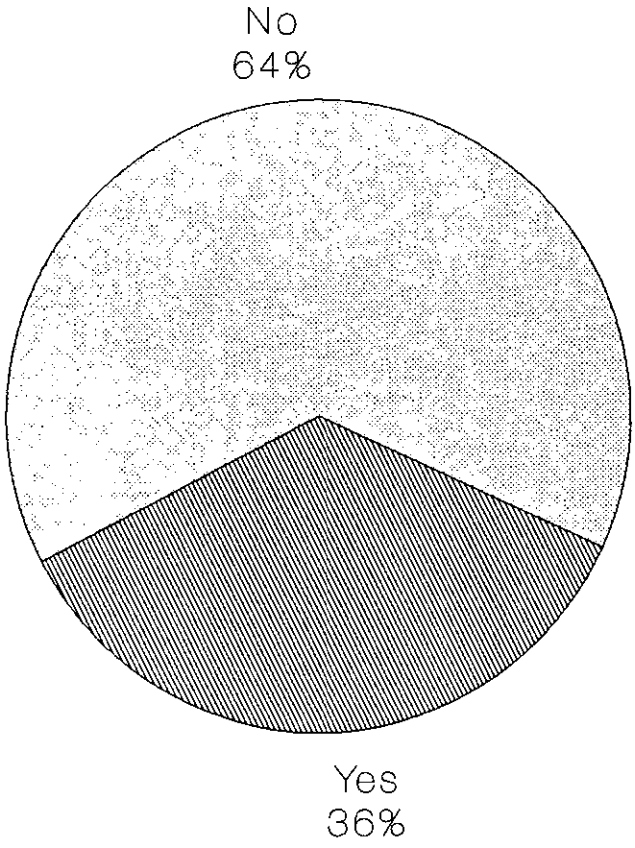
Distribution Of Total Construction Experience For All Candidates



June 1990 State Exam Candidates

FIG. 9

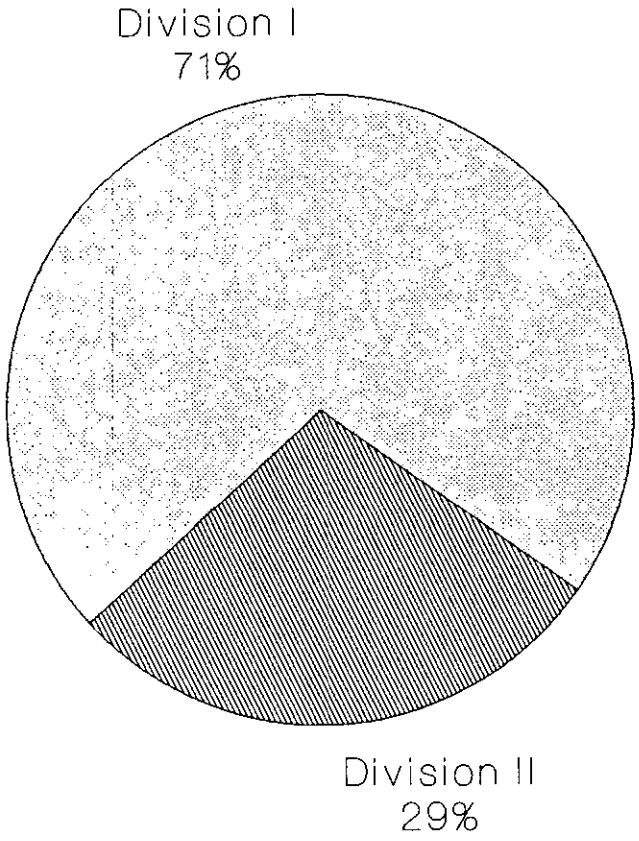
Distribution Of Answers To The Question: Do You Have A College Degree Or Any Other Formal Training In Construction?



June 1990 State Exam Candidates

FIG. 10

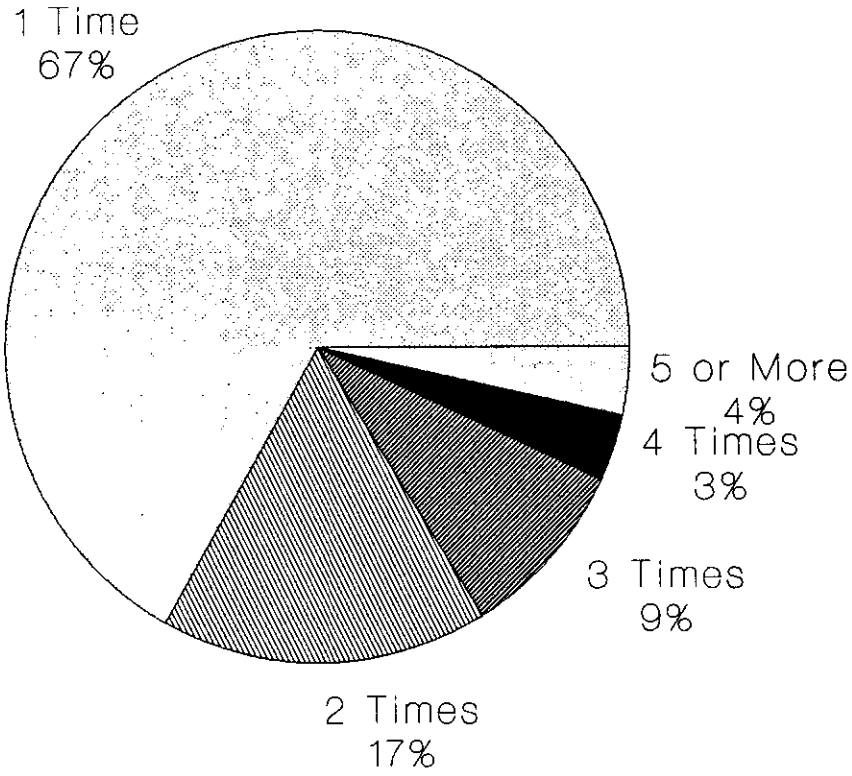
Distribution Of Answers To The Question: What License Category Are You Taking This Exam For?



June 1990 State Exam Candidates

FIG. 11

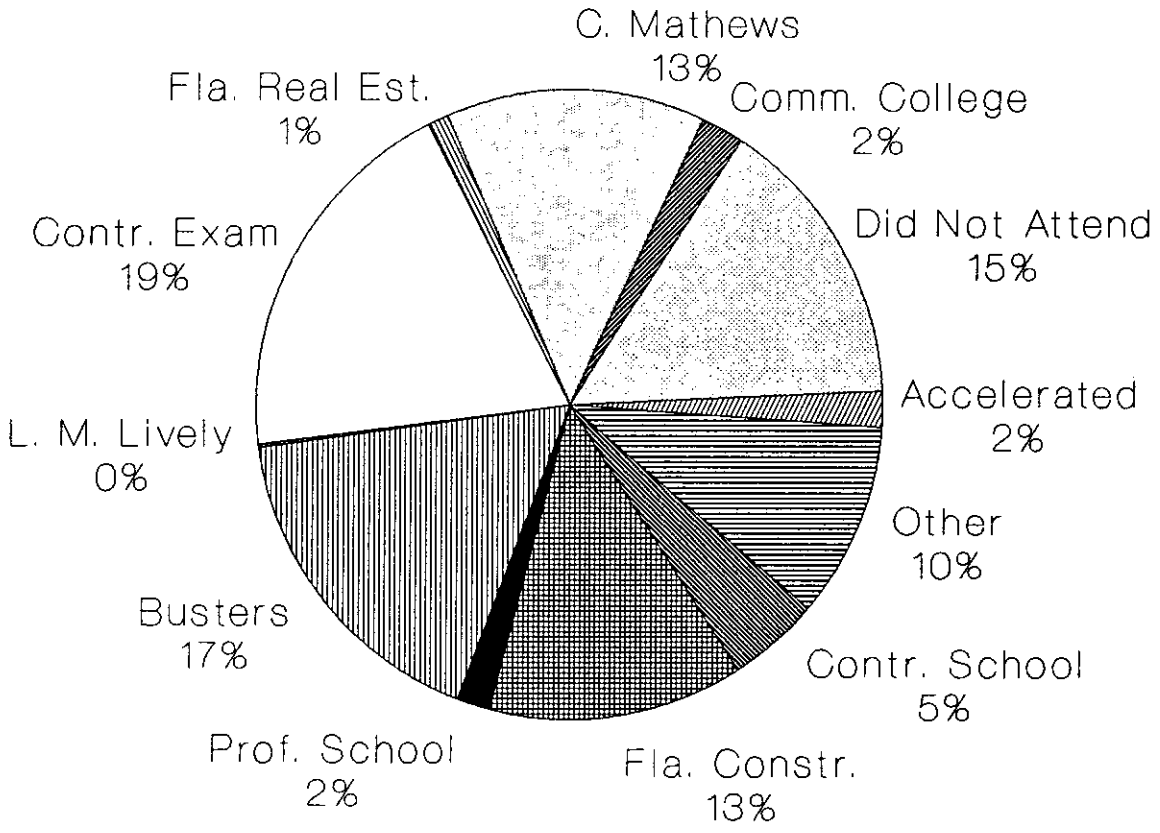
Distribution Of Answers To The Question: What Is The Maximum Number Of Times You've Taken Any Part Of This Exam?



June 1990 State Exam Candidates

FIG. 12

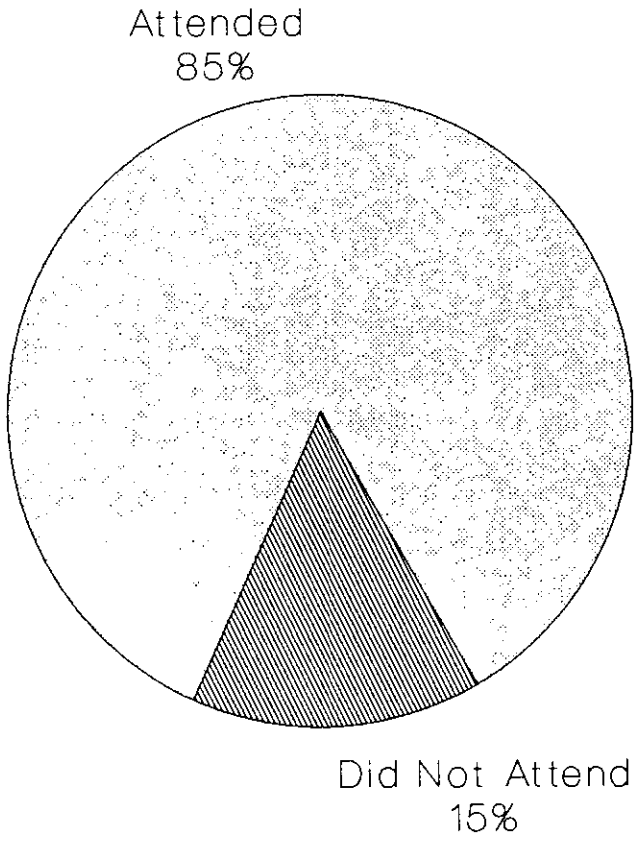
Distribution Of All Candidates By School Attendance



June 1990 State Exam Candidates

FIG. 13

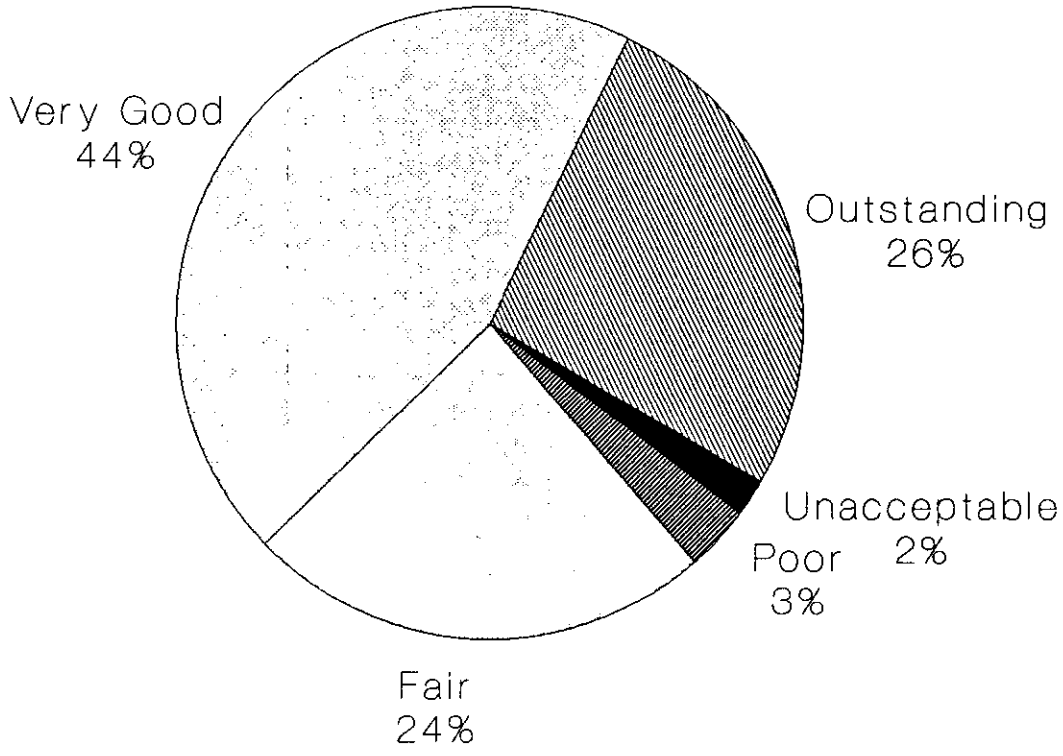
Distribution Of Candidates
Construction School Attendance



June 1990 State Exam Candidates

FIG. 14

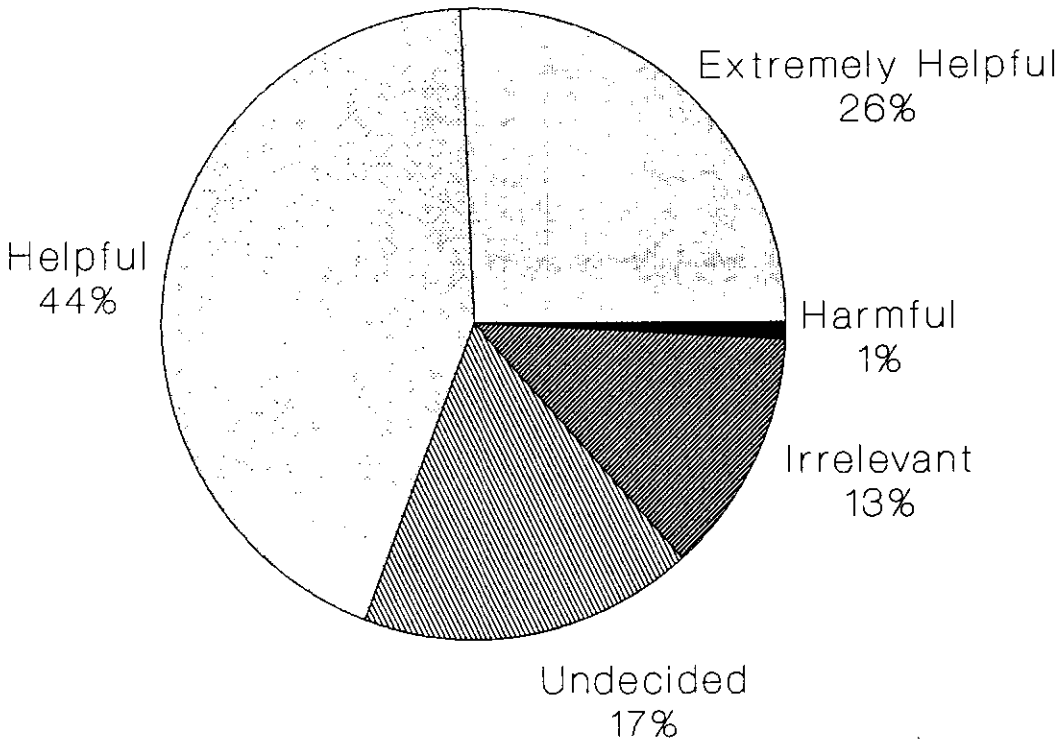
Distribution Of Answers To The Question: How Helpful Was School You Attended In Preparing You For The Licensing Exam?



June 1990 State Exam Candidates

FIG. 15

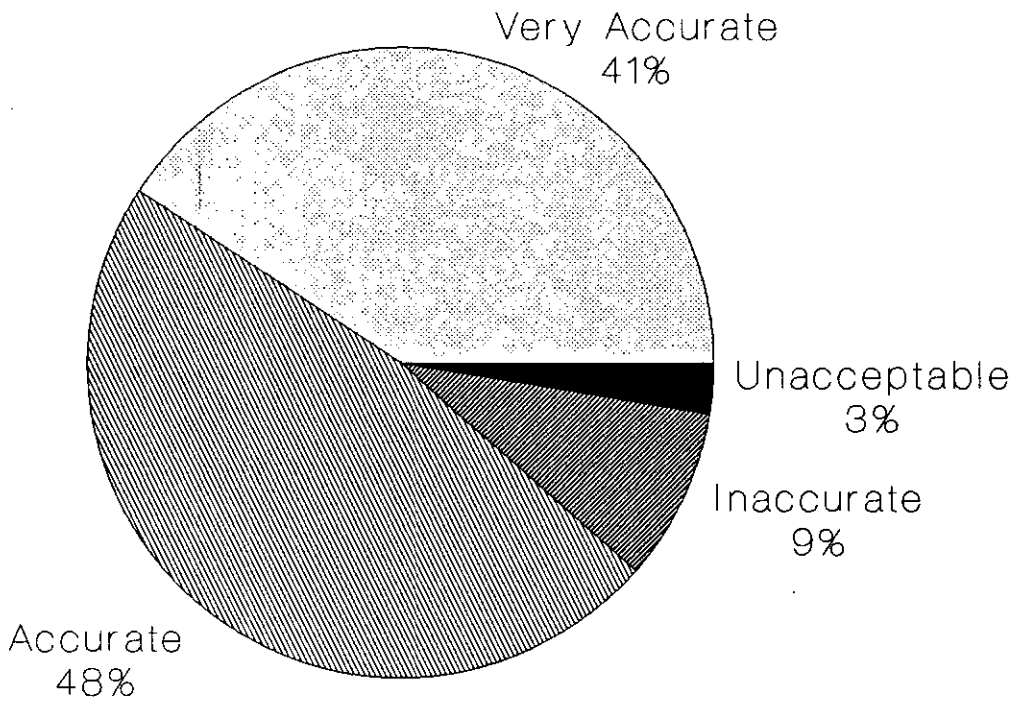
Distribution Of Answers To The Question: How Helpful Is The School Material You Learned In Running Your Const. Business?



June 1990 State Exam Candidates

FIG. 16

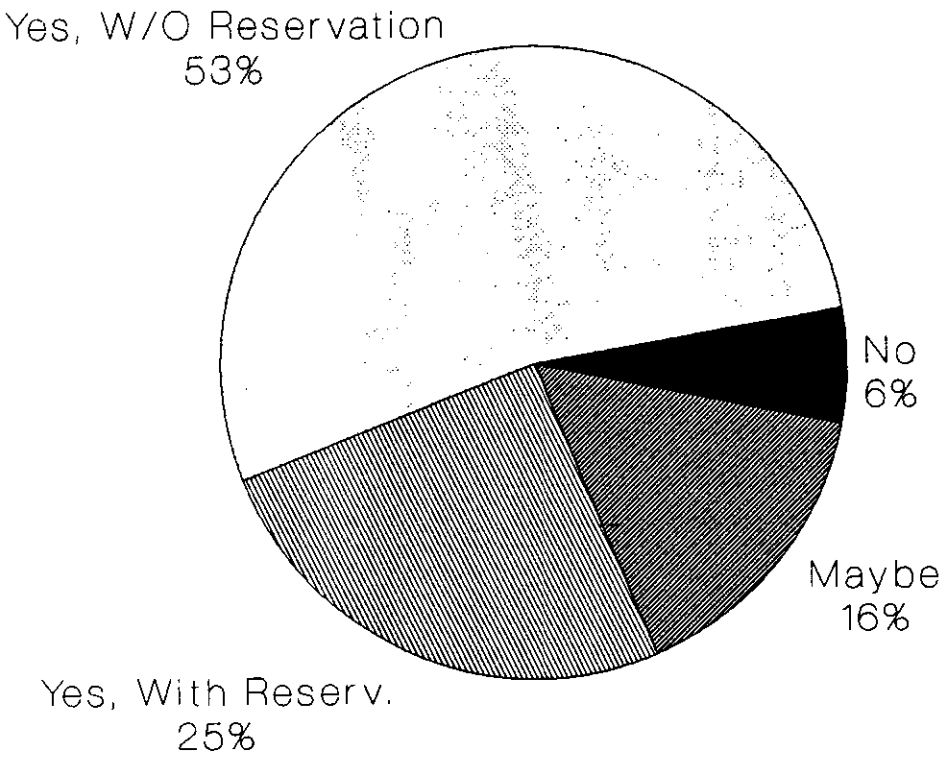
Distribution Of Answers To The Question: Do You Feel The Advertising Claims Of The School You Attended Were Accurate?



June 1990 State Exam Candidates

FIG. 17

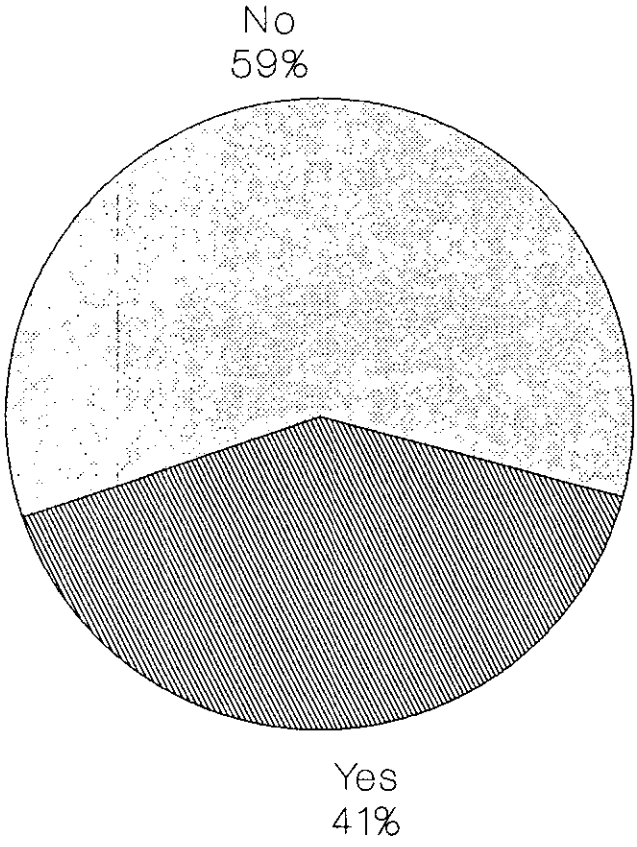
Distribution Of Answers To The Question: Would You Recommend The School That You Attended To A Friend Or To An Associate?



June 1990 State Exam Candidates

FIG. 18

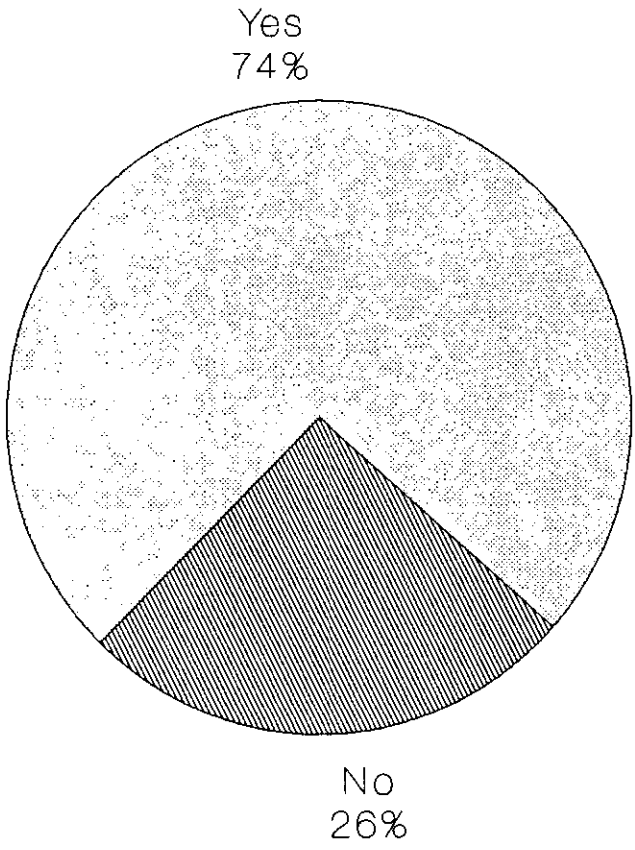
Distribution Of Answers To The Question: Do You Feel Construction Schools Should Be Regulated By The State Of Florida?



June 1990 State Exam Candidates

FIG. 19

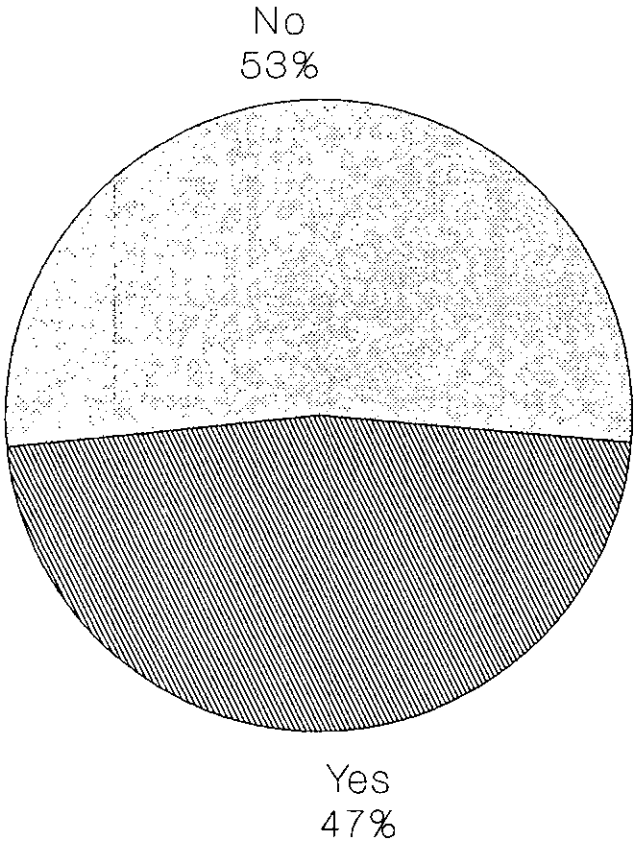
Distribution Of Answers To The Question: Do You Feel Const. School Instructors Should Themselves Be Licensed?



June 1990 State Exam Candidates

FIG. 20

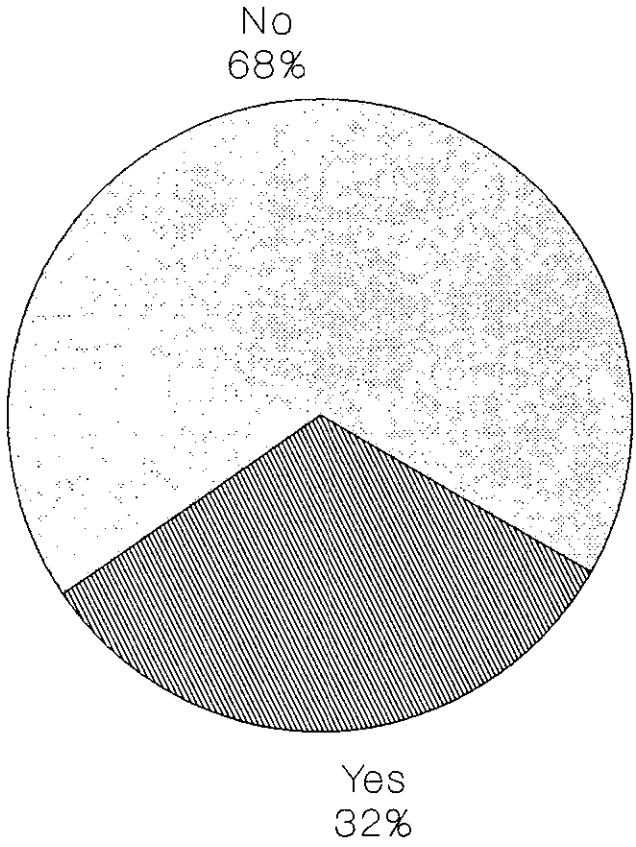
Distribution Of Answers To The Question: Do You Feel Const. School Instructors Should Have Teaching Credentials?



June 1990 State Exam Candidates

FIG. 21

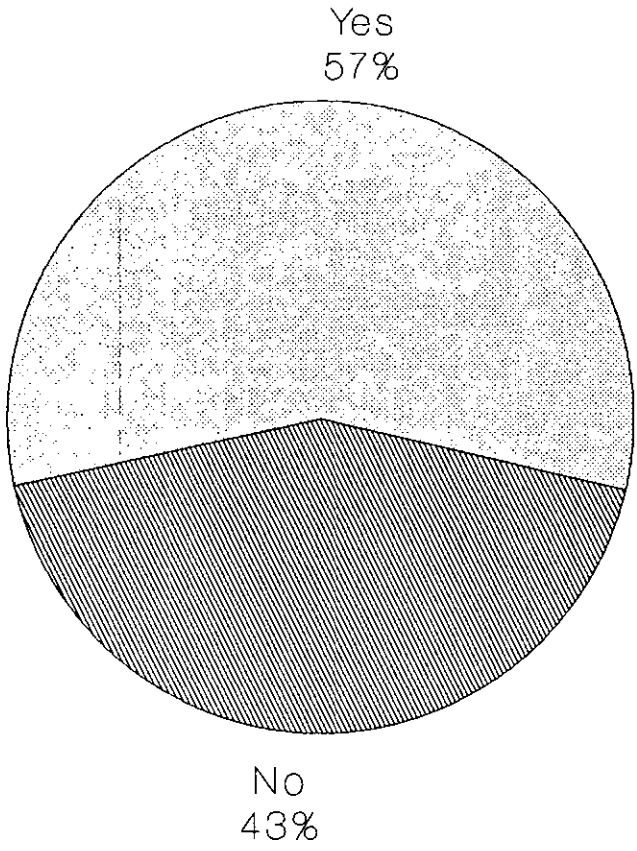
**Distribution Of Answers To The Question:
Do You Feel The Subjects Taught By Const
Schools Should Be Regulated By The State**



June 1990 State Exam Candidates

FIG. 22

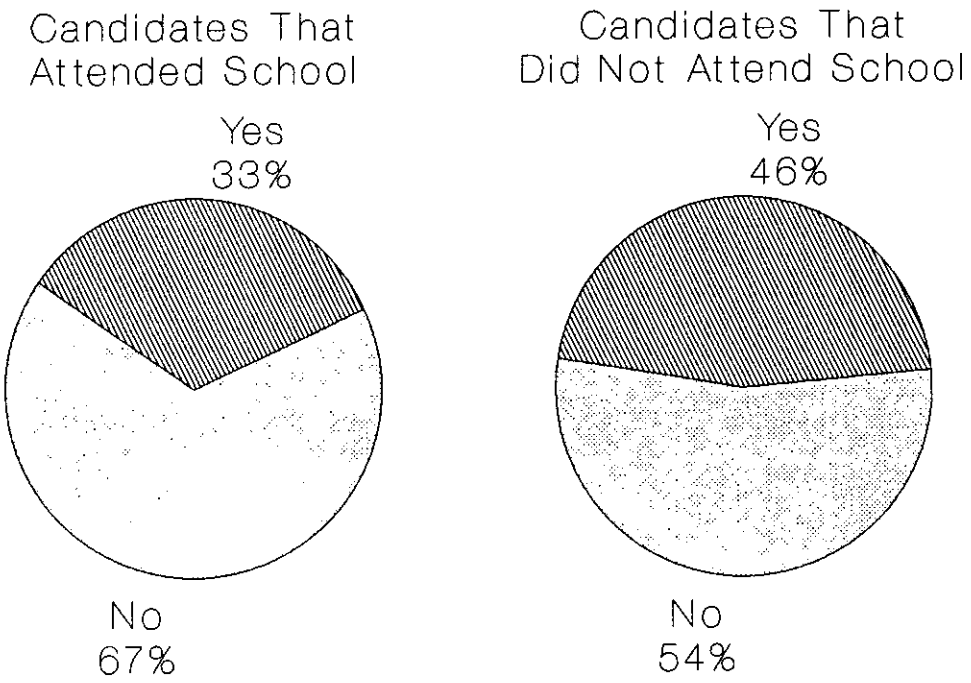
Distribution Of Answers To The Question: Should All Candidates Be Required To Take A Mandatory Class Before The Exam?



June 1990 State Exam Candidates

FIG. 23

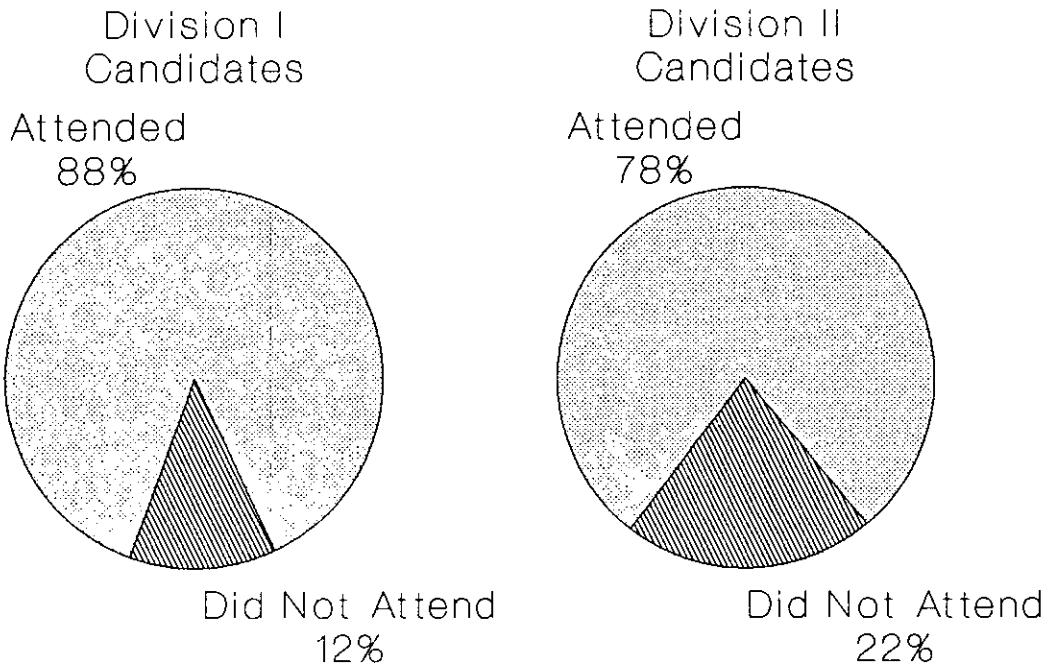
Construction School Attendance
Formal Educational Training Background



June 1990 State Exam Candidates

FIG. 24

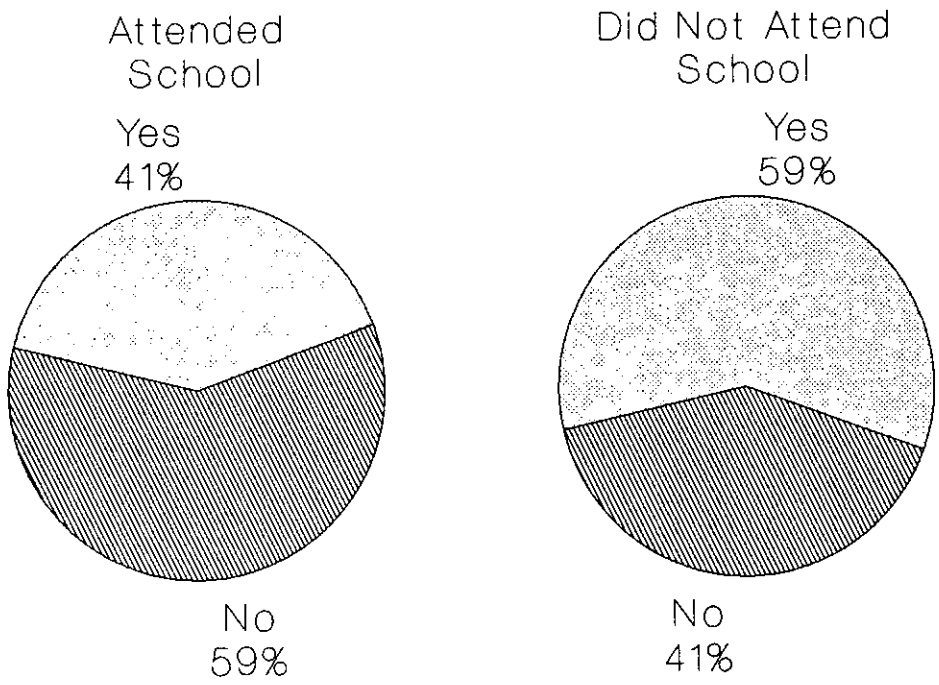
Distribution Of Candidates By License
Division I vs Division II
School Attendees vs Non-Attendees



June 1990 State Exam Candidates

FIG. 25

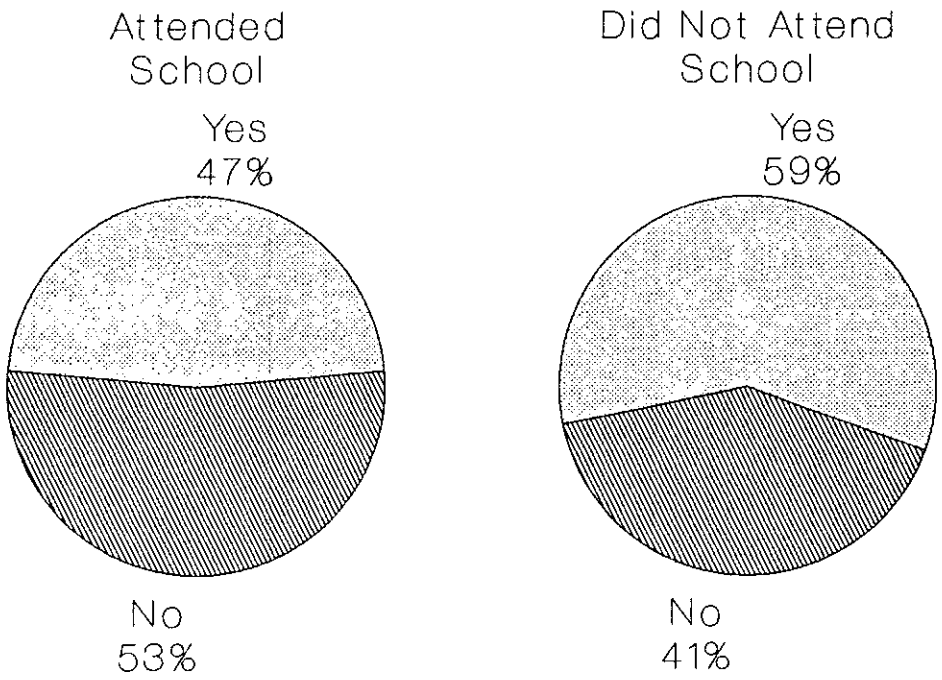
Answers To: Should Construction Schools Be Regulated? School Attendees vs Non-Attendees



June 1990 State Exam Candidates

FIG. 26

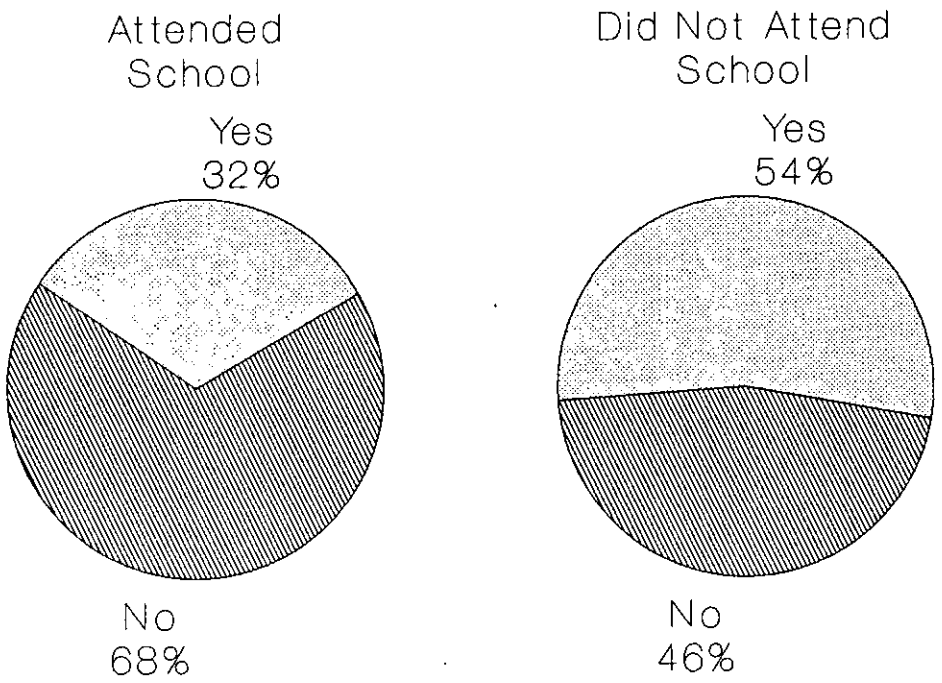
Answers To: Should Construction School Instructors Have Teaching Credentials? School Attendees vs Non-Attendees



June 1990 State Exam Candidates

FIG. 27

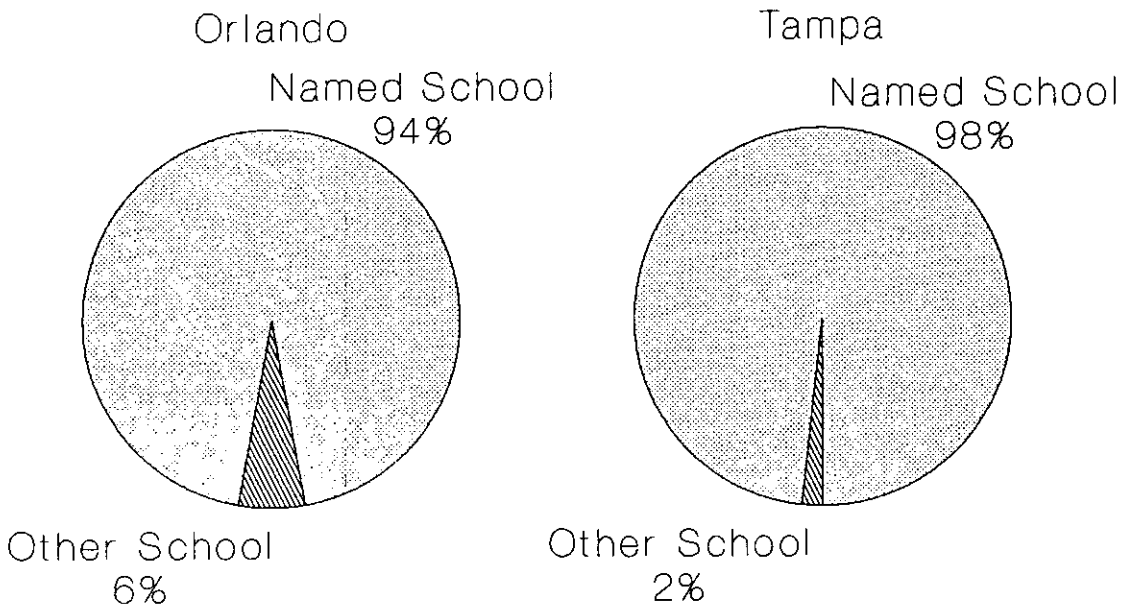
Answers To: Should Subjects Taught By Construction Schools Be Regulated? School Attendees vs Non-Attendees



June 1990 State Exam Candidates

FIG. 28

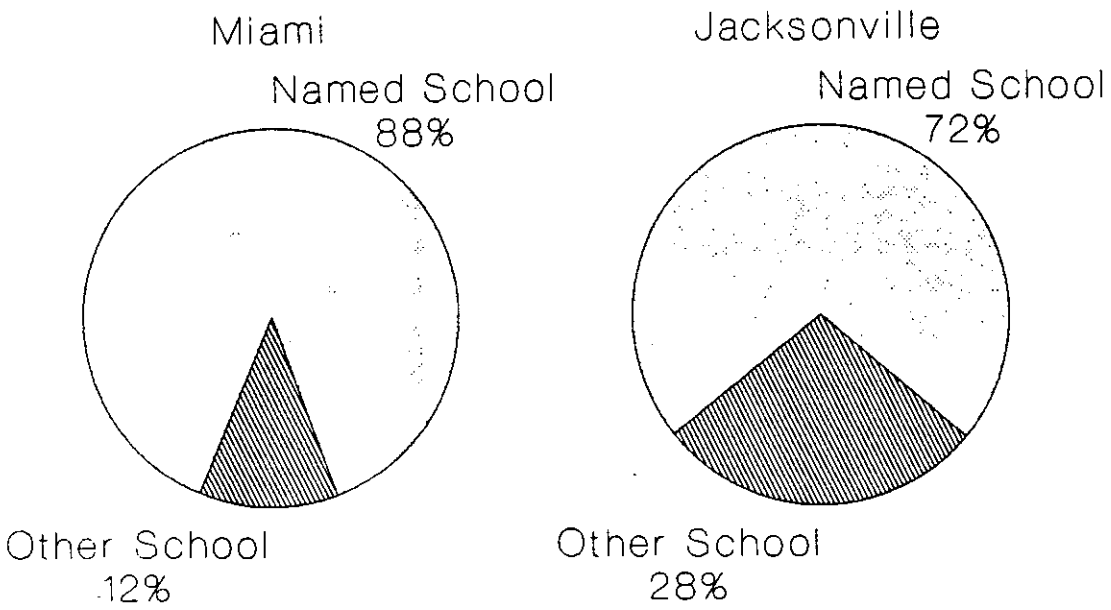
Distribution Of Attendance By Location
NAMED Schools vs OTHER Schools



June 1990 State Exam Candidates

FIG. 29

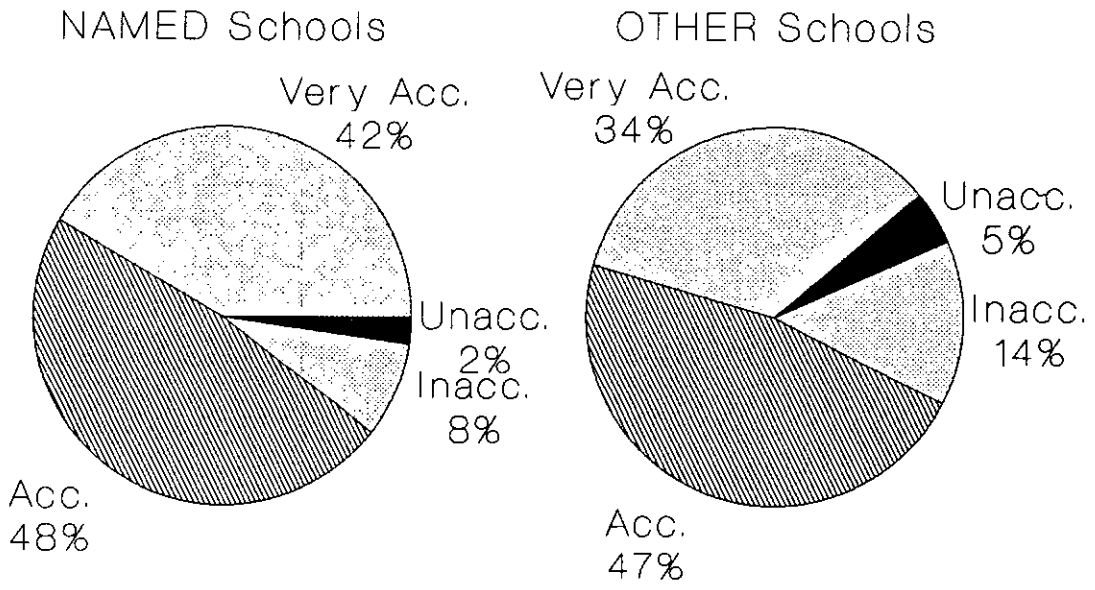
Distribution Of Attendance By Location
NAMED Schools vs OTHER Schools



June 1990 State Exam Candidates

FIG. 30

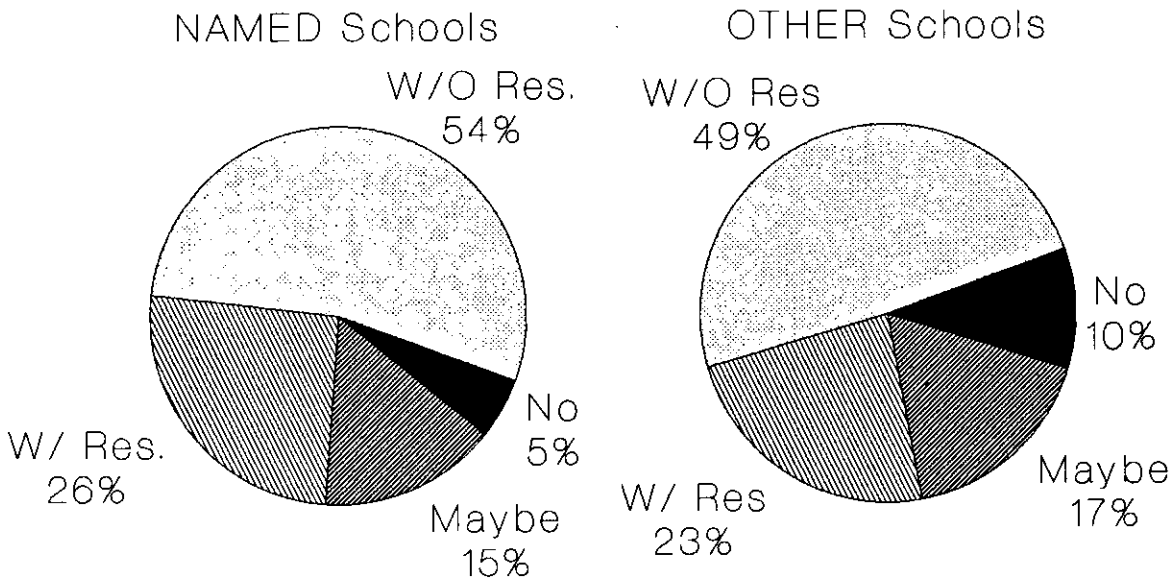
Answers To: Were The Advertising Claims Made By The School You Attended Accurate NAMED Schools vs OTHER Schools



June 1990 State Exam Candidates

FIG. 31

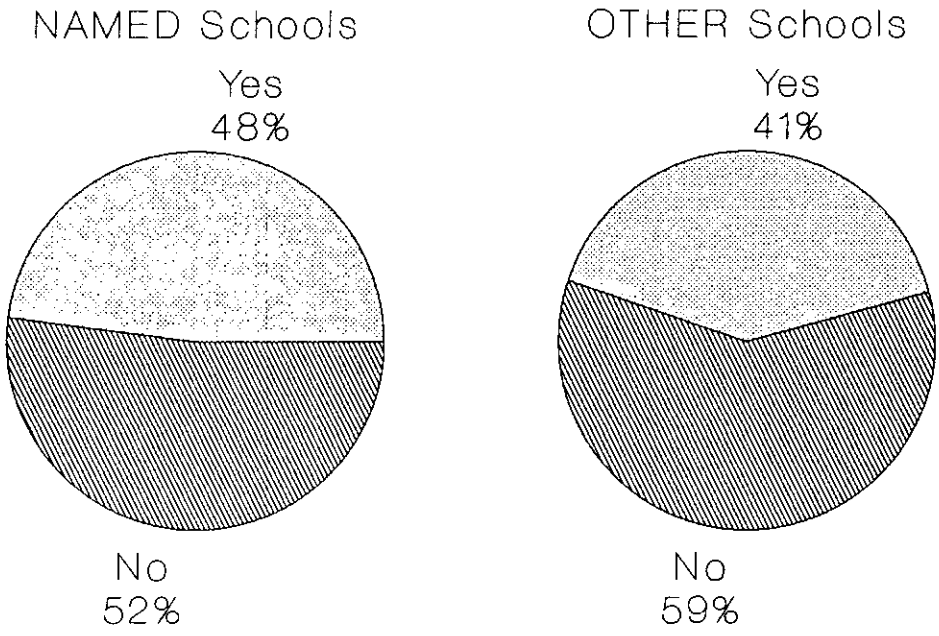
Answers To: Would You Recommend The School That You Attended To A Friend? NAMED Schools vs OTHER Schools



June 1990 State Exam Candidates

FIG. 32

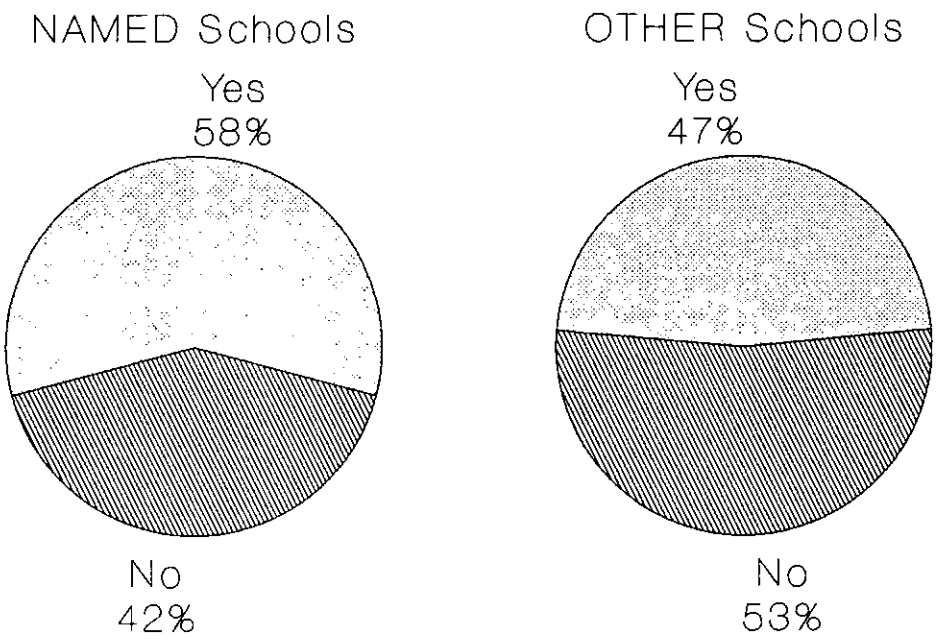
Answers To: Should Construction School Instructors Have Teaching Credentials? NAMED Schools vs OTHER Schools



June 1990 State Exam Candidates

FIG. 33

Answers To: Should All Exam Candidates Be Required To Take A Mandatory Class? NAMED Schools vs OTHER Schools



June 1990 State Exam Candidates

3.4 Discussion Of Survey Results

Of the June 1990 exam candidates 71% were in Division I and 29% were in Division II. 36% had a college degree or some type of formal training in construction, while 64% did not. 85% of all candidates attended a construction school to help them prepare for their state exam, 15% did not.

Chi square tests show that there was a statistically significant difference in percentage of school attendance between Division I and Division II candidates. Division I candidates were more likely to attend a construction school than Division II candidates. Of Division I candidates, 88% attended a construction school and 12% did not, whereas for Division II candidates, 78% attended a construction school and 22% did not. A significantly higher percentage of exam candidates in Miami and Jacksonville attended a school in the OTHER category rather than a NAMED school, as compared to exam candidates in Orlando and Tampa. The percentages of exam candidates that attended a school in the OTHER category were 28% for Jacksonville, 12% for Miami, 6% for Orlando and 2% for Tampa. There was also a statistically significant difference in the educational background of those candidates

that attended construction schools versus those that did not. Candidates that did not attend a construction school were more likely to have a college degree or some type of formal training in construction than candidates that attended a school. Of the candidates that did not attend a construction school 46% had a college degree or some formal training in construction and 54% did not, while for those candidates that attended a construction school 33% had a college degree or some form of formal training in construction and 67% did not.

Of the candidates that attended a construction school 80% felt that the school they attended had either been outstanding or very good in helping them prepare for the state exam, while only 5% felt the school they attended did a poor or an unacceptable job. 80% of school attendees felt that the material they learned in the school they attended would be either extremely helpful or helpful in running their construction business, while 13% said this material was irrelevant for running a construction business and only 1% thought this material was harmful. There was no statistically significant difference between attendees of NAMED schools and attendees of schools in the OTHER category for these two questions. The chi square tests did reveal statistically significant

differences between specific schools for these questions, but it is beyond the scope of this report to analyze the performance of specific schools. The reader may draw his/her own conclusions regarding specific schools by carefully studying Appendix I.

With regards to advertising accuracy 89% of candidates that attended construction schools felt the advertising claims of the school they attended had been either very accurate or accurate, while 12% felt they were either inaccurate or unacceptable. 78% of school attendees would recommend the school they attended to a friend or associate; 53% without reservation and 25% with some reservation. Only 6% responded that they would definitely not recommend the school they attended to a friend or associate. The chi square tests show statistically significant differences between attendees of NAMED schools and attendees of schools in the OTHER category for these two questions. Attendees of NAMED schools were more likely to feel the advertising claims made by the school they attended were accurate, and were more likely to recommend their school to a friend or associate. Of candidates that attended NAMED schools, 90% felt the school's advertising claims were either very accurate or accurate, while 10% felt they were either inaccurate or

unacceptable. Of candidates that attended schools in the OTHER category 81% felt the school's advertising claims were either very accurate or acurate, while 19% felt they were either inaccurate or unacceptable. As to recommending the school they attended to a friend or associate, of those candidates that attended NAMED schools 80% would recommend the school they attended, while 5% definitely would not. Of those candidates that attended schools in the OTHER category, 72% would recommend the school they attended, while 10% definitely would not.

With regards to state regulation of construction schools, 59% of all candidates felt construction schools should not be regulated while 41% felt they should be regulated. Chi square tests show a significant difference in opinion for this question between candidates that attended schools and those that did not. Candidates that attended a school were much less likely to feel that schools should be regulated than candidates that did not attend a school. Of those candidates that attended a school 32% felt schools should be regulated while 68% felt they should not. Of those candidates that did not attend a school 54% felt schools should be regulated while 46% thought they should not.

Other statistically significant differences between

attendees of NAMED schools and attendees of schools in the OTHER category occurred for opinions about the teaching credentials of construction school instructors and whether or not all exam candidates should be required to take a mandatory class. Attendees of NAMED schools were more likely to feel that construction school instructors should have teaching credentials than attendees of schools in the OTHER category. Of those candidates that attended NAMED schools 48% felt instructors should have teaching credentials while 52% felt they should not. Of those candidates that attended schools in the OTHER category 41% felt instructors should have teaching credentials while 59% felt they should not. As to requiring a mandatory class of all exam candidates, 58% of those that attended NAMED schools felt a mandatory class should be required while 42% felt it should not. Of those candidates that attended schools in the OTHER category 47% felt a mandatory class should be required while 53% felt it should not.

Chapter 4

COMPARISON WITH CALIFORNIA

4.1 Introduction and General Information

The State of California Department of Consumer Affairs (DCA) comprises 32 bureaus and boards which regulate various services and industries in the state. Included among these is the Contractors State License Board (CSLB). The CSLB employs approximately 400 people and has a budget of around $34,000,000 per year. The laws governing the DCA and the CSLB are part of California's Business and Professions Code. Sections 7000 through 7173 of this Code are known as the Contractors' State License Law. The rules and regulations of the Contractors State License Board comprise Title 16, Chapter 8 of the California Code of Regulations.

Contractor licensing in California exists only at the state level. The CSLB issues licenses for 44 different trade classifications. The qualifications for licensure are in many respects quite similar to those in

Florida. For example, there is a minimum age requirement (18 years), an experience requirement (at least four years of experience with varying credit towards experience granted for technical training, apprenticeship training, or education), a financial requirement (minimum operating capital equal to or exceeding $2,500) and a bond requirement ($10,000 for a Swimming Pool license, $5,000 for all other licenses). In addition, qualifying individuals are required to take a written examination unless they meet the requirements for a waiver.

4.2 Licensing Examinations

The California contractors licensing examinations are two part tests of varying length (depending on the specific trade), but never longer than eight hours. Part I, Law and Business, is the same for all categories and consists of 100 multiple choice questions on the following subjects:

1. Money management (about 30 % of the test);

2. Employee relations, which includes unemployment insurance, workers' compensation, construction safety laws, etc. (about 25% of the test);

3. Contracts and contract disputes, which includes contractors license law, mechanics' lien law, etc. (about 45% of the test).

Part II, Trade Examination, consists of multiple choice questions many of which refer to accompanying blueprints and/or booklets containing drawings or blueprints.

Written examinations are administered twice a month at 11 different sites throughout the state to approximately 1,000 individuals each time. Candidates that do not speak English are permitted to use translators during their examination. In 1990 the CSLB began experimenting with a computer administered exam on a voluntary basis. This exam is given 3 or 4 times daily at each of the 11 sites. After initial evaluation and modifications, it is expected that all future exams will be administered by computer.

Unlike Florida, all exams are closed book, and the only materials a candidate may use are a scale and a non-printing battery calculator. The only required basic study guide is a book entitled *Contractors License Law and Reference Book*, costing $7, which is written for the License Board and updated every two years (Appendix J is

a copy of the Table of Contents of this book). There are four other recommended references suggested for this part of the test, among them *Employer's Tax Guide (Circular E)* and *California Personal Income Tax Withholding Guide*. The total dollar value of required and recommended books for both parts depends on the trade, but is generally less than $200.

Required passing percentages vary from category to category, but for Part I (which all categories take) it is 60%. If a candidate fails one or both parts of the examination they are given two more opportunities to pass what they failed. If both parts are not passed after three attempts the application is considered null and void and the candidate has to submit a new application. Historically, the passing rate for all exams averages in the high 70's (in %). This is a major difference from Florida, where passing rates are historically much lower (see Chapter 1). The CSLB philosophy is to get contractors licensed, to decrease unlicensed activity. It maintains that once contractors are licensed they will have to account for their actions under the Contractors' License Law, and therefore the CSLB's jurisdiction over them will serve to better protect the public.

Another major difference from Florida lies in exam

development and writing. California does not rely solely on independent contractors for exam development. Many California trade examinations are developed and/or reviewed by practicing contractors who, during the course of a year, volunteer their time on weekends to CSLB sponsored workshops held in different areas of the state specifically to review and/or to develop exam questions. The CSLB's experience is that questions formulated this way tend to really emphasize those areas of the trade that contractors within that trade really need to know to practice safely. Questions so written also tend to have less problems related to the level of knowledge required for that specific topic.

Exam questions and revisions are also prepared within the CSLB by 3 full time examination specialists. When not involved in preparing new exams these specialists may undertake as many as 6 different exam revisions each year.

The CSLB also uses the services of independent contractors, usually institutions of higher learning. Sometimes these are hired when a particular exam is to be re-written from scratch. Most often they are used to polish and to review the validity (e.g., grammatical, contextual, etc.) of questions developed by practicing

contractors and by the Board's examination specialists.

For Part I, Law and Business, the Board has compiled a database of over 1,500 questions. Since this part of the exam only has 100 questions, it is possible to administer a sequence of exams no two of which are identical or even similar. This large data bank of questions is also a strong motivation for candidates not to memorize questions, and for schools not to simply teach the answers to questions.

4.3 Construction Schools

There are numerous organizations that advertise construction exam preparation courses throughout California. In the 1990 San Francisco Yellow Pages alone there are 17 such organizations listed. Competition for students is fierce, and schools appear to be much bolder and much less responsible than their Florida counterparts.

Almost all schools in California advertise a passing guarantee or a full refund of their tuition. Some brazenly advertise that their services include filling out the application for licensure for the student, including providing someone to sign the certificate of experience for the candidate and processing the necessary paperwork once the candidate passes the exam. In fact, some schools

collect the examination fee from the students along with the school tuition, and complete the entire application process for them. Some schools have logos and stationery deceptively similar to that of the CSLB, and some of their flyers are identical to CSLB flyers in every respect except for a toll free number in fine print. Despite statutory penalties for conduct that violates examination security (including the removal of exam questions for future use) schools aggressively advertise wine and cheese "debriefing" parties, sometimes held in adjacent rooms to those where the exams are administered.

Even though the school behavior just described might seem intolerable, the CSLB considers school related problems to be relatively minor compared to other complaints that it investigates. The CSLB has a section entirely devoted to enforcement of the licensing law and the Board regulations and this section aggressively pursues violations, even to the point of setting up stings. Of the approximately 30,000 consumer complaints the Board hears each year, about 30% deal with unlicensed activity and the rest are against licensed contractors. As far as construction schools are concerned, the CSLB keeps a close watch for behavior that potentially may cause serious damage to the public but by and large most

school excesses are considered to be nuisances that are easily dealt with. For example, the CSLB's response to schools' efforts to obtain exam questions is countered by constantly expanding their database of questions for the exams, as well as by exam revisions.

All private construction schools in California are regulated by the Private Post Secondary Education Division of the California Department of Education. This regulation merely consists of registering the school and its principals, and does not involve curriculum, teacher qualifications, etc. This type of regulation seems to provide little if any protection for the public, and appears to have no influence upon schools' behavior, advertising, or effectiveness in aiding candidates for licensure.

Chapter 5

COMPARISON WITH FLORIDA REAL ESTATE COMMISSION

5.1 Background and General Information

The Florida Real Estate Commission (FREC) is at the other end of the spectrum from the Construction Industry Licensing Board as far as education and regulation of education related matters. As stated in the Florida Real Estate Commission Handbook:

> The Florida Real Estate Commission by law has the duty to educate real estate professionals to practice ethically, legally, and competently for the protection of the public at large. To fulfill that duty, the real estate license law and the Commission's rules explicitly regulate the substance and conduct of real estate education courses and examinations for salesmen and brokers, as well as the conduct and credentials of real estate schools and educators. [1]

The Florida Real Estate License Law (Chapter 475 of

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1. *Florida Real Estate Commission Handbook*, 1989 Edition, page 1-49.

the Florida Statutes) requires licensing of schools and persons offering courses of study in real estate practice. "This applies to those who teach any course prescribed by the Commission for initial licensure or renewal or any course designed to aid or assist applicants for licensure to pass an examination conducted by the Commission."[2] Exempt are accredited universities, colleges, community colleges and area vocational-technical centers teaching transferable college credit courses.

5.2 Educational Requirements For Licensure

Chapter 475 prescribes that, in addition to other licensing requirements, persons wishing to become licensed as real estate salesmen or brokers must satisfactorily complete FREC prescribed courses prior to being permitted to take the licensing examinations. In the case of salesman candidates this means "satisfactory completion of Course I which consist of a minimum of 63 classroom hours of 50 minutes each, including examination. Course I includes the basics of real estate principles and practices, real estate laws, and the real estate license law. The Florida Real Estate Commission Handbook

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2. *FREC Handbook*, op. cit., page 1-49.

is a required textbook in the course."[3] In the case of broker candidates this means "satisfactory completion of Course II which consists of a minimum of 72 classroom hours of 50 minutes each, including examination. Course II includes the basic of real estate appraising, investment, financing, and brokerage management."[4]

The Real Estate License Law also requires post-licensing education prior to the first renewal of a license following initial licensure, and continuing education prior to subsequent renewals after the first license is renewed. Post licensing education consists of:

> A Commission-prescribed or approved post-licensing education requirement taken at an accredited educational institution or given by a Commission-approved sponsor. For salesmen, the course consists of a minimum of 45 classroom hours of 50 minutes each. For brokers, two courses are required, consisting of a minimum of 30 classroom hours of 50 minutes each. These courses are intended to develop the licensees' skills necessary for effective practice, and courses are offered in the licensees' specialty areas. A licensee must complete the course satisfactorily with a minimum grade of 75 percent on the end-of-course examination.[5]

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3. *FREC Handbook,* op. cit., page 1-19.

4. Ibid., page 1-19.

5. Ibid., page 1-20.

Continuing education is defined as:

> A minimum of 14 classroom hours of instruction of 50 minutes each, as prescribed by the Commission, during each renewal period of their current license. The continuing education courses may be taken by correspondence.[6]

5.3 Licensing Of Real Estate Schools

Section 475.451(1) F.S. requires any person, school or institution that offers real estate education courses (except for exemptions noted for accredited institutions offering transferable college credit) to first obtain a permit. The term permit is expressly distinguished from the term license. A permit does not confer any right whatever for the permittee to practice as a salesman or as a broker. A school permitholder directs the overall operation of a school. The permitholder must:

> a) hold a license as a real estate broker, either active or nonactive, or have passed an instructor's examination administered by the Commission.
>
> b) secure proper forms from the DPR; complete the forms, attach a proper fee, and file with the DPR.

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6. *FREC Handbook*, op. cit., page 1-20.

c) teach only if qualified as an instructor holding an instructor's permit [See 475.421(2)(a) F.S.].[7]

Although not required by law, a school permitholder may, if desired, establish a school chief administrative person to administer the overall policies and practices of the school. If actively teaching, the chief administrator must meet the requirements for a school instructor. If he/she only operates the school such technical qualifications are not required. It is important to note, however, that the administrator's actions are governed by the real estate license law. While the school permitholder or a school instructor under the control of the school permitholder can administer the school, it is also important to note that school permitholders are liable under the license law for the acts of their administrators.

5.4 Licensing Of School Instructors

Section 21V-17.011 of the Rules of the Florida Real Estate Commission requires that any person teaching as an individual for a proprietary real estate school, or for a university, college, community college or vocational-

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7. *FREC Handbook*, op. cit., page 1-50.

technical center teaching courses on a non-transferable college credit basis qualify for an instructor's permit prior to teaching in a classroom. Courses of instruction covered by this rule include:

> (a) Pre-license courses prescribed or approved by the Commission as a condition for licensure.
>
> (b) Post-licensure courses and continuing education courses prescribed or approved by the Commission as a condition to retain licensure.
>
> (c) Courses designed or represented to enable or assist applicants for licensure as brokers or salesmen to pass examinations for such licensure.
>
> (d) Courses of study in real estate practice.[8]

In order to qualify for an instructor's permit an individual must first meet the qualifications for practicing real estate set out in sec. 475.17(1) F.S. and must show competency in real estate education by meeting one of the following requirements:

> (a) Hold a Bachelor's Degree in a business related subject such as real estate, finance, accounting, business administration, or its equivalency, and hold a valid broker's license in this state.

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8. *FREC Handbook*, op.cit., page B-57.

> (b) Hold a Bachelor's Degree, have extensive experience, and hold a valid broker's license in this state. As a minimum, "extensive real estate experience" shall be defined as three years of full-time experience as a broker. This experience must include having participated in closing at least five real estate transactions as agent, or as the employing broker of agents, for either party to the transaction, within the 12-month period immediately preceding the filing of an instructor's application.
>
> (c) Pass the instructor's examination administered by the Division of Real Estate.[9]

A school instructor is required to actively teach in the classroom. Instructors' permits have no inactive status. All instructors must be employed by a licensed school to maintain a permit.

School instructors are required to "recertify" their competency each permit period by satisfactorily completing a minimum of 15 classroom hours of instruction in real estate subjects and/or instructional techniques as prescribed by FREC. Of the 15 classroom hours required, 7 hours must be in a seminar conducted by the Commission.

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9. *FREC Handbook*, op. cit., page B-58.

5.5 Curriculum

Section 21V-17.009 of the Rules of the Florida Real Estate Commission requires that applicants for a school permit show that:

> A course of study to be offered by the applicant which is designed or represented to enable anyone to pass an examination for licensure conducted by the Department of Professional Regulation (1) substantially covers the material contained in the applicable Florida Real Estate Commission prescribed course; (2) consists of not less than 15 hours of classroom or individual instruction; and (3) is not comprised solely of a study of questions and answers which would indicate that there has been an attempt to obtain questions from actual examinations given by the Department of Professional Regulation.[10]

The FREC Education and Examinations Department uses universities, consultants, and its own staff (which includes 2 exam development specialists) to develop detailed, extensive outlines and course materials to serve as guidelines for all Commission prescribed courses. These same resources are used to develop the exams they administer 24 times a year to 36,000 candidates at 3 locations in Florida.

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10. *FREC Handbook*, op. cit., page B-57.

5.6 Advertising By Real Estate Schools

Section 475.4511 F.S. contains restrictions created to protect the public in general and prospective students in particular in their dealings with real estate schools. It is intended to ensure honest, accurate representations in schools' advertisements. These restrictions are as follows:

> 1) No school shall offer advertisements that are false, inaccurate, misleading or exaggerated.
>
> 2) Any school promising or guaranteeing employment or placement of a student must offer such student or prospective student a bona fide contract of employment.
>
> 3) School must advertise only in the school name registered with the Commission; and the school may not advertise in connection with an advertisement of an affiliated real estate broker unless there is a distinct separation in the advertisement.
>
> 4) Schools are prohibited from referencing any school pass/fail ratios on the state licensing examination in their advertising. Note: The purpose here is to prevent advertising such potentially misleading and dubious statistics to prospective students.[11]

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11. *FREC Handbook*, op. cit., page 1-54.

The license law also expressly limits the guarantees that schools or instructors may give their students. The following guarantees are illegal and fraudulent under 475.451 F.S.:

> *Guarantee to Pass Commission's Exam:* No person or school may guarantee that its pupils will pass any examination given by the DPR. This includes, as well, promises of refunds if the pupil fail. Obviously, no school or instructor can guarantee every student will pass the examination. The school or instructor should teach as clearly and comprehensively as possible; the rest is up to the student. School or instructors who violate this provision may have their permits suspended.
>
> *Permit As an Endorsement:* No person or school may represent that the issuance of a permit is a recommendation or endorsement by the Commission of the school's or the instructor's abilities, or of any course. Violation may result in permit suspension.[12]

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12. *FREC Handbook*, op. cit., page 1-54.

APPENDIX A

EXCERPTS FROM CANDIDATE INFORMATION BOOKLET

FOR THE FEBRUARY 19-20, 1990 DIVISION I EXAMINATIONS

PART I - FINANCIAL & BUSINESS MANAGEMENT	Approximate % of the Exam Within 3%	
Section A - Business Administration	General & Building	Residential
General business management skills, including knowledge, understanding and application of:		
1. **Business risk management including** various types of business insurance coverage, workman's compensation, builder's risk, liability and equipment insurance, project property insurance, named-peril builders risk insurance, equipment floaters, fidelity bonds, subcontractor insurance, computation of premium rates, knowledge of insurance claims coverage.	16%	16%
2. **Business record keeping, including** knowledge of job ledgers, knowledge of accounting methods, the percentage of completion method, the completed contract method, checking and approval of invoices and purchase orders.	15%	15%
3. **Health and safety laws, rules and** practices which includes OSHA laws, accident reports.	13%	13%
4. **Business organization, policies** and procedures, including partnerships, corporations, joint ventures, personnel management, labor negotiations, contract negotiation and execution, salaries, legal matters, investments, scope of operations, approval of major expenditure.	12%	12%

5. **General business law for setting** up a contracting business, contracts, warranties and guarantees, bonds, business licenses, partnerships, corporations, joint ventures, qualifying agents, express and implied warranties.	15%	15%
6. **Federal and State tax laws** regulations and procedures, including withholding, FICA, unem ployment taxes, self employment tax, and estimated taxes.	11%	11%
7. **Federal and State labor laws and** regulations, including overtime, minimum wage, working hours, child labor, EEO, Fair Labor Standards Act.	9%	9%
8. **Labor and regulations governing** state contractor certification, Chapter 489 Florida Statutes.	9%	9%

SECTION B - Financial Administration:

Controlling and managing the money end of a contracting business, including knowledge, understanding and application of:

1. **Cash flow management including** analysis of payables and receivables, retainages, plotting job progress, complying with draw schedules, discounts, knowledge of accounting principles, billing procedures and methods, short and long term financing, maintaining job ledgers, inventory management, penalty clauses, legal fees, collection methods and legal aspects thereof, and analysis of cash flow statements.	28%	28%
2. **Management accounting principles** payrolls, overhead expenses,	12%	12%

accounting methods, cash accounting.

3. **Analysis of financial statements** and reports such as balance sheets, income statements, and net worth statements.	14%	14%
4. **Equipment and property purchases** including analysis of leases and mortgages, operating costs, lease versus purchase decisions, straight line depreciation and recapturing costs, amortization, book value (adjusted basis).	24%	24%
5. **Credit and borrowing principles** loan procedures and terms, interest, points, and closing costs.	8%	8%
6. **Financial ratios, calculation and** basic math including balance sheet ratios, combined ratios, income ratios, and current ratios.	14%	14%

PART II - CONTRACT ADMINISTRATION	Approximate % of the Exam Within 3%	
	General & Building	Residential
Managing and operating the day to day activities of a contracting company including knowledge, understanding and application of:		
1. **Contracts, subcontracts, agreements** including purchase orders, work orders, and bonding, payment methods and procedures, reimbursable costs, general and supplementary conditions, technical specifications, addenda, retainage, penalties, shop drawings, subcontractors insurance, The Miller Act, schedule of values.	20%	20%

2. **Scheduling, cost control, and** budgeting, including development of schedule formulas, percentage of completion method of accounting. Billing method, completed contract method, equipment purchase, operating costs, discounts, cash management and inventory control.	18%	18%
3. **Reading plans and specifications** including construction codes and standards, general conditions, supplementary conditions, knowledge of Architectural and engineering symbols, knowledge of construction methods and nomenclature.	14%	14%
4. **Cost estimates for proposals and bids** including take off and preparing cost estimates, bidding, obtaining and evaluating bids (including estimates from subcontractors and suppliers), lump sum or unit price instructions to bidders, general and supplemental conditions, drawings, specs and addenda, forms of contracts, overhead and profit.	14%	13%
5. **Materials, tools, equipment and construction methods**, including shipping, expediting on site storage, purchasing, leasing, and operating costs.	14%	15%
6. **Contract amendments and change orders**, including authorizations acceleration, site conditions, and payment schedules.	8%	9%
7. **All phases of liens and Florida lien law** including notices to owner, notice of commencement, lien waivers, payment bonds, foreclosures, assignments.	8%	7%

8. **Obtaining licenses, permits and approvals**, including special inspections tests required for permits and inspections, anti-discrimination laws.	4%	4%

PART III - PROJECT MANAGEMENT	Approximate % of the Exam Within 3%	
	General & Building	Residential
Managing, controlling and conducting a specific project including knowledge, understanding and application of:		
1. **Materials, tools, equipment and** construction methods, including shoring, bracing and erection, site layout, knowledge of construction nomenclature, earthwork, soil conditions, use of survey instruments, quality control, purchasing or leasing equipment, form work.	25%	25%
2. **Reading plans and specifications** including construction codes and standards, shop drawing, knowledge of architectural and engineering symbols, knowledge of construction methods and nomenclature, general and supplemental conditions.	19%	19%
3. **Scheduling, cost control, and** budgeting including knowledge of scheduling formulas, deliveries, storage, bar charts, lump sum and unit cost, job cost, ledgers, cost accounting reports, coordination of subcontractor activities, progress reports.	18%	18%
4. **Quantity, time, and cost estimating** reading plants and specs, labor and material costs, knowledge of	9%	9%

scheduling charts and diagrams, contingencies, penalties.		
5. **Obtaining licenses, permits and approvals** including inspections, subcontractor licenses, temporary permits, exemptions, required tests for inspections, and special inspections.	7%	8%
6. **Contract amendments and change orders**, authorizations, general and supplemental conditions, contracts, budget and cost control.	7%	7%
7. **Proposals and bids, cost estimates bidding**, obtaining and evaluating bids (including estimates from subcontractors and suppliers), overhead and profit, taxes, insurance, unit price, lump sum, general and supplemental conditions.	5%	5%
8. **Project contracts, subcontracts** agreements, purchase orders, work orders, payment methods and procedures, shop drawing, general and sub-contract agreements.	5%	4%
9. **Job Safety, OSHA Insurance** requirements, training, inspection, recordkeeping, truss erection and bracing.	5%	5%

APPENDIX B

CONSTRUCTION INDUSTRY OCTOBER 1987 EXAMINATION RESULTS

DEPARTMENT OF PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY OCTOBER 1987 EXAMINATION RESULTS

Tom Gallagher, Secretary

J.R. (Jock) Crockett, Chairman
Board of Construction Industry

Mary Alice Palmer, Administrator
Office of Examination Services

OFFICE OF EXAMINATION SERVICES
MARCH 1988

Prepared by Denise Lauzier Stone, Ph.D.

Executive Summary

The following represent the major findings of the October 1987 Construction Industry Examination:

* A total of 2894 candidates took the October 1987 Construction Industry Examination of which 1199 (41.4%) passed.

* There were 1609 (55.5%) first time (originals) candidates and 654 (22.5%) candidates who were first time retakes.

* The passing rate of candidates decreased with the number of exam retakes.

* Over half of candidates with a Bachelor's Degree in Construction and Civil Engineering had the highest passing rate for both Division I and II.

* Few candidates took the exam to upgrade their current certification status(6.8%).

* Candidates who spent time preparing for the exam in in exam preparation school or in class had a slightly higher passing rate than candidates who did not.

* Of Division I candidates who attended an exam preparation school, the school with the highest percentage of passing candidates were: Contractor's Exam School (26.1%), Dave Buster's School of Construction (34.2%), and Florida Construction School (37.2%).

* Of Division II candidates who attended an exam preparation school, the school with the highest percentage of passing candidates were: Construction Educational Services (57.1%), Carl Mathews Construction School (67.1%), Florida Construction School (68.0%), and Dave Buster's School of Construction (100.0%).

* There were 2723 male candidates (94.1%) with a passing rate of 42.7 percent and 170 female candidates (5.8%) with a passing rate of 30.5 percent.

October 1987 Construction Industry Examination

The results presented in this report are based on a survey administered at the October 1987 Construction Industry Examination. Not all candidates who took the exam completed a questionnaire. Of 2894 candidates who took the exam, 1412 (49.0%) responded to the survey. The Office of Examination Services considers the sample to be representative. Presented data in this report are estimates with the exception of Table 1 which are actual exam results.

The Construction Industry Exam consists of Division I and Division II. Division I is taken by general, building, and residential contractors who must pass each of three separate examinations (Part I, Part II, and Part III). Division II is taken by other contractors such as roofing, plumbing, and solar heating contractors who receive one overall score.

A total of 1830 candidates took Division I exams (see Table 1). Of those candidates, a total of 576 passed (31.5%). One thousand sixty four candidates took the Division II exams of which 623 passed (58.6%). There were a total of 2894 candidates for Division I and II combined. Of this number, 41.4% passed the exam.

There was a total of 1609 first time (originals) candidates examined for Division I and II which represented 55.5 percent of total candidates (see Table 2). Of originals in Division I, 38.1 percent passed the exam compared to 61.4 percent of Division II original candidates.

Of candidates who had taken the exam at least three times previously, there were 178 Division I candidates and 19 Division II candidates. The passing rate decreased with the number of exam retakes. Approximately 31 percent of Division I candidates passed after retaking the exam one time in contrast to 16.8 percent of candidates who passed after three or more retakes. This difference was very slight for Division II candidates. Of Division II candidates who took the exam one time previously, 49.1 percent passed while 47.3 percent passed of those who had taken the exam three times previously.

Over half of the candidates with a degree in construction and civil engineering passed the exam for both Division I and II (see Table 3). More than 75 percent of candidates in Division II with a Bachelors degree passed the exam.

There was a marked difference in the passing rate of Division I and II candidates who had vocational training in their field. Of those candidates who received vocational training in their field, 25.7 percent passed in Division I while 56.2 percent passed in Division II. The passing rate for candidates with union or non-union apprenticeship was very similar for Division I (17.6% and 20.0% respectively). The difference in the passing rate for

Division II candidates with union or non-union apprenticeship was negligable (44.4% and 44.2% respectively).

The passing rate for Division II candidates was consistently and substantially higher than Division I candidates across years of experience. Division I and II candidates with 1-6 years of experience did better overall than candidates with more than seven years of experience. Of Division I candidates with 1-6 years of experience, 34.6 percent passed as compared to 27.6 percent of candidates with 7-12 years of experience. The difference is greater for Division II candidates. Of these candidates, 70.4 percent with 1-6 years of experience passed in contrast to 57.3 percent of candidates with 7-12 years of experience.

According to the results, most candidates did not take the Construction Industry Exam to upgrade their current certification status. For those who did, the passing rate was lower than might be expected. Of Division I candidates who took the exam to upgrade their certification status, 24.1 percent passed while 42.9 percent of Division II candidates passed.

The passing rate of Division I candidates with respect to exam preparation school attendance is generally low (see Table 4). For these candidates, the highest passing rate was 37.2 percent. The following exam preparation schools were attended by Division I candidates with the highest passing rate: Contractor's Exam School (26.1%), Dave Buster's School of Construction (34.2%), and Florida Construction School (37.2%). By contrast, the passing rate of Division II candidates is much higher with respect to this variable. The passing rates of these candidates ranged between 20.0 percent and 100 percent. The highest percentage of Division II candidates who passed the exam attended the following exam preparation schools: Construction Educational Services (57.1%), Carl Mathews Construction School (67.1%), Florida Construction School (68.0%), and Dave Buster's School of Construction (100%).

The data indicated that Division I candidates who spent between 1 and 15 hours in exam preparation school or class preparing for the exam had the highest passing rate (37.2%) for that division. Division II candidates who spent between 16 and 40 hours in exam preparation school preparing for the exam had the highest passing rate (65.3%) for that division.

There was a small difference in the passing rate among candidates who spent minimum time studying and those who spent more than 200 hours. Of candidates who spent up to 79 hours studying, 46.2 percent passed and 36.6 percent of candidates passed who studied over 200 hours.

Division I candidates who spent the most on exam preparation school had the highest passing rate. Of these candidates, those who spent between $100 and $700 had a passing rate of 31.0

percent. In contrast, candidates who spent over $1500 had a high passing rate of 78.4 percent. The reverse is true for Division II candidates. Of these candidates, those who spent between $100 and $700, had a passing rate of 63.8 percent whereas 53.3 percent of candidates who spent over $1500 passed the exam.

Division I candidates who spent the most on book expenses (over $1100) had a passing rate of 100 percent while candidates who spent less on books (up to $500) had a passing rate of 31.3 percent. Division II candidates, on the other hand, who spent the least on books had the highest passing rate. Of candidates who spent up to $500, 62.1 percent passed the exam while those who spent between $501 and $1100, 56.5 percent passed.

There was a decrease in the percent of candidates who passed with the number of exam parts attempted (see Table 5). Of candidates who took only one part, 62.6 percent passed in contrast to 31.4 percent who attempted two parts and passed and 23.9 percent who attempted all three parts and passed them all.

Caucasians had the highest passing rate of candidates (42.9%) who passed the exam (see Table 6). This was followed by Hispanics (36.7%) and Blacks (12.5%).

There was a total of 2723 male candidates (94.1%) and a total of 170 female candidates (5.8%) who took the exam. Male candidates had a passing rate of 42.7 percent whereas female candidates had a passing rate of 30.5 percent.

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Table 1. October 1987 Construction Industry Exam Results by Division

Division	Number Examined	Number Passed	Percent Passed
DIVISION I	1830	576	31.5%
Part I	1534	612	39.9%
Part II	1484	751	50.6%
Part III	1551	613	39.5%
DIVISION II	1064	623	58.6%
DIVISION I & II	2894	1199	41.4%

Table 2. October 1987 Construction Industry Licensing Exam Results by Originals and Retakes

Division	Number Examined	Number Passed	Percent Passed
DIVISION I	1830	576	30.8%
Originals	755	288	38.1%
Retakes			
1 time	534	165	30.8%
2 times	361	92	25.4%
3 times	178	30	16.8%
DIVISION II	1064	623	58.5%
Originals	854	525	61.4%
Retakes			
1 time	120	59	49.1%
2 times	69	29	42.0%
3 times	19	9	47.3%
DIVISION I & II	2894	1199	41.4%
Originals	1609	813	50.4%
Retakes			
1 time	654	224	33.2%
2 times	430	121	27.2%
3 times	197	39	19.7%

Table 3. October 1987 Construction Industry Exam Results by selected Variables

Variable	Division I Number Examined	Division I % Pass	Division I % Fail	Division II Number Examined	Division II % Pass	Division II % Fail	Division I & II Number Examined	Division I & II % Pass	Division I & II % Fail
Level of Education									
B.A. Construction	351	60.4%	39.6%	52	75.0%	25.0%	462	61.4%	38.6%
Architecture	99	46.7%	53.3%	13	100.0%	00.00	129	50.0%	50.0%
Civil Engineering	291	65.9%	34.1%	144	100.0%	00.00	445	72.7%	27.3%
Mechanical Engineering	66	20.0%	80.0%	275	90.5%	9.5%	251	67.7%	32.3%
Business Administration	503	40.8%	59.2%	236	77.8%	22.2%	762	47.9%	52.1%
Other Four Yr. Degrees	517	35.9%	64.1%	341	76.9%	23.1%	843	46.2%	53.8%
Vocational Training									
Program in Field	331	25.7%	74.3%	319	56.2%	43.8%	662	41.7%	23.0%
Union Apprenticeship	111	17.6%	82.4%	85	44.4%	55.6%	198	30.2%	69.8%
Non-union Apprenticeship	174	20.0%	80.0%	145	44.2%	55.8%	324	31.8%	68.2%
None of the Above	1213	33.6%	66.4%	513	69.4%	30.6%	1709	45.3%	54.7%
Years of Experience									
1 - 6	486	34.6%	65.3%	204	70.4%	29.5%	693	46.7%	53.2%
7 - 12	633	27.6%	72.3%	410	57.3%	42.7%	1043	40.0%	59.8%
13 - 20	480	27.4%	72.5%	312	61.0%	38.8%	792	41.6%	58.3%
Over 20	229	31.1%	68.9%	136	50.7%	49.3%	365	39.0%	61.0%
Registered Local Contractor									
Yes	107	22.0%	78.0%	166	64.8%	35.2%	282	49.3%	50.7%
No	1722	30.2%	69.7%	897	58.9%	41.1%	2611	40.9%	59.1%
Upgrade Certification									
Yes	116	24.1%	75.9%	80	42.9%	57.1%	198	32.3%	67.7%
No	1713	30.1%	69.9%	983	61.5%	38.5%	2695	42.4%	57.6%

Table 4. October 1987 Construction Industry Exam Results with Respect to Preparatory School, Time, and Costs

Variable	Division I Number Examined	Division I % Pass	Division I % Fail	Division II Number Examined	Division II % Pass	Division II % Fail	Division I & II Number Examined	Division I & II % Pass	Division I & II % Fail
Preparation School Attended									
Construction AC Academy	2	00.0%	100.0%	110	45.7%	54.3%	104	44.7%	55.3%
Carl Mathews Const. School	297	22.3%	77.7%	350	67.1%	32.9%	613	46.0%	54.0%
Contractor's School	4	00.0%	100.0%	12	20.0%	80.0%	15	14.3%	85.7%
Contractor's Exam	201	26.1%	73.9%	312	55.4%	44.6%	484	43.6%	56.4%
Dave Buster's School Const.	629	34.2%	65.8%	7	100.0%	00.0%	617	34.9%	65.1%
Florida Construction School	510	37.2%	62.8%	247	68.0%	32.0%	724	46.9%	53.1%
Const. Educational Services	11	20.0%	80.0%	16	57.1%	42.9%	26	41.7%	58.3%
Other	73	15.8%	84.2%	151	54.0%	46.0%	308	33.1%	66.9%
Exam Prep. Time in School/Class									
None	140	24.6%	75.4%	167	54.0%	46.0%	314	41.4%	58.6%
1 - 15	93	37.2%	62.7%	76	45.0%	55.0%	171	40.8%	59.0%
16 - 40	448	10.1%	76.3%	334	65.3%	34.6%	788	42.7%	57.1%
41 - 90	673	31.1%	68.8%	339	61.0%	38.9%	1009	41.9%	58.0%
Over 90	474	34.7%	65.3%	145	63.2%	36.8%	610	42.0%	58.0%
Study Time									
Under 20 - 79	942	23.7%	76.3%	659	64.7%	35.2%	1610	46.2%	53.7%
80 - Over 200	887	28.2%	71.8%	404	52.7%	47.2%	1283	36.6%	63.3%
Preparation School Cost									
None	95	27.9%	72.1%	116	53.4%	46.6%	216	42.6%	57.4
$100 - 700	892	31.0%	68.9%	661	63.8%	36.1%	1563	45.7%	54.1%
$701 - 1500	676	32.0%	67.9%	255	55.9%	44.0%	922	39.0%	60.9%
Over 1500	165	78.4%	21.6%	30	53.3%	46.7%	190	27.0%	73.0%
Book Costs									
None - $500	598	31.3%	68.6%	730	62.1%	37.8%	948	37.8%	68.6%
$501 - 1100	1216	29.7%	70.2%	331	56.5%	43.4%	1921	29.8%	70.5%
Over 1100	15	100.0%	00.0%	2	00.0%	100.0%	24	00.0%	100.%

Table 5. October 1987 Construction Industry Exam Results by Parts Attempted and Passed for Division I

	Parts Attempted		
	Only 1 part	Only 2 parts	All 3 parts
Number of Candidates	186	352	1336
Number of Parts Passed			
% Passed only 1 Part	62.6%	36.0%	23.2%
only 2 Parts	___	31.4%	17.9%
only 3 Parts	___	___	23.9%

Table 6. October 1987 Construction Industry Exam Results by Race and Sex for Division I & II

	Total Number	Percent Passed
Race		
Caucasian	2661	42.9%
Hispanic	101	36.7%
Black	48	12.5%
Other	74	38.9%
Sex		
Female	170	30.5%
Male	2723	42.7%

1. Of the following, what is the highest level of education that you have completed?

   A. Bachelor's degree or above in Building Construction
   B. Bachelor's degree or above in Architecture
   C. Bachelor's degree or above in Civil Engineering
   D. Bachelor's degree or above in Mechanical Engineering
   E. Bachelor's degree or above in Sanitary Engineering
   F. Bachelor's degree or above in Business Administration
   G. Bachelor's degree or above in any other field
   H. Associates degree in the field for which you are seeking certification
   I. Associates degree in any other field
   J. Three years of college - no degree
   K. Two years of college - no degree
   L. One year of college - no degree
   M. High school diploma
   N. None of the above

2. Of the following, what is the highest level of vocational training that you have completed?

   A. Vocational program in the field for which you are seeking certification
   B. Union sponsored apprenticeship program in the field for which you are seeking certification
   C. Non-union sponsored apprenticeship program in the field for which you are seeking certification
   D. None of the above

3. Are you currently a licensed contractor in any other state in the category for which you are seeking certification?

   A. Yes
   B. No

4. Are you currently a locally registered contractor in Florida in the category for which you are seeking certification?

   A. Yes
   B. No

5. Are you attempting to upgrade your current Florida certification (For example: from a Residential contractor to a Building contractor or from an Air "B" contractor to an Air "A" contractor)?

   A. Yes
   B. No

6. What type of local or out-of-state trade license do you hold in the category for which you are seeking certification?

   A. Journeyman
   B. Master
   C. None of the above

7. How many years of experience do you have in the field for which you are seeking certification? Include all years in that field whether as a contractor or as an employee. One year equals at least 1600 hours

   A. 1-2
   B. 3-4
   C. 5-6
   D. 7-8
   E. 9-10
   F. 11-12
   G. 13-14
   H. 15-16
   I. 17-18
   J. 19-20
   K. Over 20

8. How many times have you <u>previously</u> taken the Florida certification exam in the category for which you are now seeking certification?

   A. None - This is the first time I'm taking the exam in this category.
   B. 1
   C. 2
   D. 3
   E. 4
   F. 5 or more

9. How many hours did you spend studying for this examination? Do not include time spent in an exam preparation school or class.

   A. Less than 20
   B. 20-39
   C. 40-59
   D. 60-79
   E. 80-99
   F. 100-149
   G. 150-200
   H. Over 200

10. How many hours did you spend in an exam preparation school or class preparing for this exam?

A. None. I did not attend an exam preparation school or class
B. 1-5
C. 6-10
D. 11-15
E. 16-20
F. 21-30
G. 31-40
H. 41-50
I. 51-70
J. 71-90
K. Over 90

11. Which exam preparation school or class did you attend? If you attended more than one, select the last one attended.

A. None. I did not attend an exam preparation school or class.
B. Construction Air Conditioning Academy
C. Carl Mathews Construction School
D. Contractors School
E. Contractors Exam School
F. Dave Buster's School of Construction
G. Florida Construction School
H. Construction Educational Services
I. Blaise School of Construction
J. Other (please list) _____

12. What was the approximate cost of your preparation school or class?

A. None. I did not attend an exam preparation school or class.
B. $ 0 to 300
C. 301 to 500
D. 501 to 700
E. 701 to 900
F. 901 to 1100
G. 1101 to 1300
H. 1301 to 1500
I. Over 1500

13. How much did you pay for the books used on this examination?

A. Less than $100
B. $ 100 to 300
C. 301 to 500
D. 501 to 700
E. 701 to 900
F. 900 to 1100
G. Over 1100

14. Other than payments for books or for an exam preparation school or class, how much did you pay for other expenses related to this exam (such as travel, lodging, etc)?

A. Less than $100
B. $ 100 to 300
C. 301 to 500
D. 501 to 700
E. 701 to 900
F. 901 to 1100
G. 1101 to 1300
H. 1301 to 1500
I. Over 1500

15. Your sex:

A. Male
B. Female

16. Your race:

A. Caucasian - non hispanic
B. Hispanic
C. Black
D. Oriental
E. American Indian
F. Other (please list) _____

17. Was the licensing application form clearly written and easily understandable? If not, please explain why not on the back of this booklet.

A. Yes
B. No

THANK YOU!

APPENDIX C

SURVEY OF CANDIDATES THAT TOOK THE CONSTRUCTION LICENSING STATE EXAMINATIONS JUNE 27, 1990

BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE

SURVEY

Dear Candidate:

The last decade has seen a tremendous increase in the number of schools that advertise classes to help prepare prospective licensees to pass their construction licensing exams. The Construction Industry Licensing Board is concerned about the effectiveness of these schools, their classes, and their impact upon you, the potential consumer for these services. The CILB, through the Building Construction Industry Advisory Committee of the State of Florida, has funded a study of these schools. This study is being conducted by the Department of Construction Management at Florida International University.

A part of the study consists of surveying you, the prospective licensee, to document your experiences and your opinions concerning these schools. We request that you answer the attached questionnaire completely, carefully considering each answer that you give. Do not write your name or any other identifying information on the survey. This survey **IS TOTALLY CONFIDENTIAL.** Please note that **YOUR PARTICIPATION IN THIS SURVEY WILL IN NO WAY AFFECT YOUR SCORE ON THIS EXAMINATION.**

Thank you for your cooperation on this most important endeavor to you and to the construction industry.

Respectfully,
J. D. Mitrani, General Contractor
Chairman,
Department of Construction Management
Florida International University

BUILDING CONSTRUCTION INDUSTRY ADVISORY COMMITTEE SURVEY

Page One - June 27, 1990

INSTRUCTIONS: CIRCLE THE LETTER NEXT TO THE CHOICE THAT YOU FEEL IS MOST APPROPRIATE

1. At which location are you taking the licensing examination?

   a. Orlando b. Tampa c. Miami d. Jacksonville

2. How many years of field experience do you have in construction?

   a. 1-3 yrs b. 4-6 yrs c. 7-10 yrs d. more than 10 yrs

3. How many years of management/office experience do you have related to construction?

   a. 1-3 yrs b. 4-6 yrs c. 7-10 yrs d. more than 10 yrs

4. How many total years of construction experience do you have?

   a. 1-3 yrs b. 4-6 yrs c. 7-10 yrs d. more than 10 yrs

5. Do you have a construction related college degree or other formal training in construction (BCN, Arch., Civil Engr, trade school)?

   a. Yes b. No

6. What license category are you taking the exam for?

   a. Division I - General, Building or Residential

   b. Division II - Air Cond., Mechanical, Roofing, Plumbing or any other category.

7. What is the maximum number of times that you have taken any one part of this particular licensing exam?

   a. 1 b. 2 c. 3 d. 4 e. 5 or more times

Continue On Next Page

8. Did you attend a construction school to help you prepare for this licensing exam? If you did, please circle the one(s) that you attended from the following list.

   a. I did not attend a construction school
   b. Accelerated Construction College
   c. Carl Mathew's Construction School
   d. Contractors Exam School
   e. Contractors School
   f. Dave Buster's School of Construction
   g. Florida Construction School
   h. Florida Real Estate Inst.
   i. Lewis M. Lively Area Vocational Technical School
   j. Professional School of Construction
   k. A Florida Community College
   l. Other

9. If you attended a construction school, how helpful do you feel it was in preparing you for your licensing exam?

   a. Outstanding. Couldn't have done without it.
   b. Very Good. Met most of my needs.
   c. Fair. Met some of my needs but fell short.
   d. Poor. I could have done without it.
   e. Unacceptable. It was a total waste of time and money.

10. If you attended a construction school, how useful do you feel the material you learned will be in helping you to run a profitable construction business?

    a. Extremely helpful. Will greatly improve my business.
    b. Somewhat helpful. Has potential to improve my business.
    c. Undecided. May or may not improve my business.
    d. Irrelevant. What I learned was unrelated to real life.
    e. Harmful. Adopting what I learned will hurt my business.

11. If you attended a construction school, do you feel that the advertising claims the school made in its promotional materials or in class were accurate?

    a. Very Accurate. School delivered on all its promises.
    b. Somewhat Accurate. School delivered on most its promises
    c. Inaccurate. School's claims were mostly not met.
    d. Unacceptable. School's claims were outright misleading.

Continue On Next Page

12. If you attended a construction school, would you recommend the same school to a friend or to a business associate?

    a. Yes. Without any reservations.
    b. Yes. With some reservations.
    c. Maybe. I would advice him/her to look into other schools.
    d. Definitely Not. This school was totally unsuitable.
    e. No. In retrospect I don't think its necessary to attend a prep school to pass this exam.

13. Do you feel that schools who advertise that they teach prep courses for construction exams should be regulated by the State of Florida?

    a. Yes b. No

14. If you answered "Yes" to the previous question, which state agency do you feel would be the most appropriate regulating body?

    a. Department of Education
    b. State Board of Independent Post-Secondary Vocational, Technical, Trade, and Business Schools
    c. Department of Professional Regulation
    d. Construction Industry Licensing Board
    e. Other

15. Do you feel that instructors who teach for construction prep schools should themselves be licensed?

    a. Yes b. No

16. Do you feel that instructors who teach for construction prep schools should have teaching credentials or a teaching certificate?

    a. Yes b. No

17. Do you feel that the subjects taught by construction prep schools should be regulated and closely monitored by the State of Florida?

    a. Yes b. No

18. Some State Licensing Boards, such as the Real Estate Commission, require that all prospective licensees take a mandatory class before taking the licensing exams. Do you feel that the construction industry and prospective construction license holders would benefit from such a requirement?

    a. Yes b. No

THANK YOU FOR YOUR COOPERATION

APPENDIX D - SURVEY RESULTS

FREQUENCIES OF ALL VARIABLES FOR ALL CANDIDATES

APPENDIX D - SURVEY RESULTS

FREQUENCIES OF ALL THE VARIABLES FOR ALL CANDIDATES

Location of Licensing Exam

LOCATION	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Orlando	472	25.5	472	25.5
Tampa	204	11.0	676	36.6
Miami	863	46.7	1539	83.3
Jacksonville	309	16.7	1848	100.0

Frequency Missing = 44

Yrs of Field Experience in Cons

FIELDEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	124	6.6	124	6.6
4-6 yrs	380	20.2	504	26.8
7-10 yrs	389	20.7	893	47.4
more than 10 yrs	990	52.6	1883	100.0

Frequency Missing = 9

Yrs of Mgmt/Office Experience in Cons

MGMTEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	611	32.7	611	32.7
4-6 yrs	475	25.4	1086	58.1
7-10 yrs	328	17.6	1414	75.7
more than 10 yrs	454	24.3	1868	100.0

Frequency Missing = 24

Frequencies of all the variables for all candidates.

Total Yrs of Construction Experience

CONSEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	44	2.4	44	2.4
4-6 yrs	278	14.9	322	17.2
7-10 yrs	413	22.1	735	39.3
more than 10 yrs	1135	60.7	1870	100.0

Frequency Missing = 22

College Deg/Formal Training in Cons

DEGREE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	664	35.5	664	35.5
no	1205	64.5	1869	100.0

Frequency Missing = 23

License Category Taking Exam For

LICENSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Division I	1342	71.5	1342	71.5
Division II	536	28.5	1878	100.0

Frequency Missing = 14

Max Number of Times Taken Part Exam

XEXAM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 time	1232	66.8	1232	66.8
2 times	313	17.0	1545	83.8
3 times	171	9.3	1716	93.1
4 times	63	3.4	1779	96.5
5 or more times	65	3.5	1844	100.0

Frequency Missing = 48

Frequencies of all the variables for all candidates.

Construction School Attended

SCHOOL	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Did not attend	281	15.1	281	15.1
Acceler Cons Sch	34	1.8	315	16.9
Carl Mathews Con	250	13.4	565	30.4
Contractors Exam	361	19.4	926	49.8
Contractors Scho	89	4.8	1015	54.6
Dave Busters Sch	317	17.1	1332	71.7
Fla Cons School	245	13.2	1577	84.8
Fla Real Estate	20	1.1	1597	85.9
Lewis M Lively V	3	0.2	1600	86.1
Prof Sch of Cons	32	1.7	1632	87.8
A Fla Comm Colle	41	2.2	1673	90.0
Other	186	10.0	1859	100.0

Frequency Missing = 33

Helpful in Preparing for Lic Exam

PREPARE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Outstanding	419	26.3	419	26.3
Very Good	706	44.3	1125	70.6
Fair	383	24.0	1508	94.7
Poor	54	3.4	1562	98.1
Unacceptable	31	1.9	1593	100.0

Frequency Missing = 299

Helpful for Running Business

RUNBUS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Extremely Helpfu	408	25.6	408	25.6
Somewhat Helpful	701	43.9	1109	69.5
Undecided	274	17.2	1383	86.7
Irrelevant	198	12.4	1581	99.1
Harmful	15	0.9	1596	100.0

Frequency Missing = 296

Frequencies of all the variables for all candidates.

Advertising Claims Accurate

ADVACCUR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Very Accurate	643	40.7	643	40.7
Somewhat Accurat	755	47.8	1398	88.5
Inaccurate	141	8.9	1539	97.5
Unacceptable	40	2.5	1579	100.0

Frequency Missing = 313

Recommend School to Friend/Assoc

RECOM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes, W/O Res	856	53.2	856	53.2
Yes, With Res	408	25.3	1264	78.5
Maybe	249	15.5	1513	94.0
Definitely Not	39	2.4	1552	96.4
No	58	3.6	1610	100.0

Frequency Missing = 282

Should School Be Regulated By State

REGULATE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	751	42.7	751	42.7
no	1008	57.3	1759	100.0

Frequency Missing = 133

Frequencies of all the variables for all candidates.

Which State Agency Should Regulate

AGENCY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Dept of Educ	178	21.0	178	21.0
ST Board of IPVT	164	19.3	342	40.3
Dept of Prof Reg	218	25.7	560	66.0
Cons Ind Lic Boa	265	31.2	825	97.2
Other	24	2.8	849	100.0

Frequency Missing = 1043

Should Instructors be Licensed

ILICENSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	1318	74.5	1318	74.5
no	450	25.5	1768	100.0

Frequency Missing = 124

Should Inst Have Teaching Cred/Cert

ICERTIFY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	861	48.4	861	48.4
no	919	51.6	1780	100.0

Frequency Missing = 112

Should Subjects Taught Be Regulated

RSUBJECT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	615	34.6	615	34.6
no	1161	65.4	1776	100.0

Frequency Missing = 116

Should Prosp Lic Take Mandatory Class

MANCLASS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	1059	56.9	1059	56.9
no	802	43.1	1861	100.0

Frequency Missing = 31

APPENDIX E - SURVEY RESULTS

FREQUENCIES OF ALL VARIABLES FOR CANDIDATES THAT ATTENDED CONSTRUCTION SCHOOLS ONLY

APPENDIX E - SURVEY RESULTS

FREQUENCIES OF ALL THE VARIABLES FOR CANDIDATES THAT ATTENDED CONSTRUCTION SCHOOLS ONLY

Construction School Attended

SCHOOL	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Acceler Cons Sch	34	2.2	34	2.2
Carl Mathews Con	250	15.8	284	18.0
Contractors Exam	361	22.9	645	40.9
Contractors Scho	89	5.6	734	46.5
Dave Busters Sch	317	20.1	1051	66.6
Fla Cons School	245	15.5	1296	82.1
Fla Real Estate	20	1.3	1316	83.4
Lewis M Lively V	3	0.2	1319	83.6
Prof Sch of Cons	32	2.0	1351	85.6
A Fla Comm Colle	41	2.6	1392	88.2
Other	186	11.8	1578	100.0

Location of Licensing Exam

LOCATION	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Orlando	406	26.3	406	26.3
Tampa	165	10.7	571	37.0
Miami	713	46.2	1284	83.2
Jacksonville	259	16.8	1543	100.0

Frequency Missing = 35

Yrs of Field Experience in Cons

FIELDEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	106	6.7	106	6.7
4-6 yrs	320	20.4	426	27.1
7-10 yrs	322	20.5	748	47.6
more than 10 yrs	823	52.4	1571	100.0

Frequency Missing = 7

Frequencies of all the variables -- FOR ATTENDEES ONLY

Yrs of Mgmt/Office Experience in Cons

MGMTEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	514	32.9	514	32.9
4-6 yrs	405	26.0	919	58.9
7-10 yrs	266	17.1	1185	76.0
more than 10 yrs	375	24.0	1560	100.0

Frequency Missing = 18

Total Yrs of Construction Experience

CONSEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	37	2.4	37	2.4
4-6 yrs	244	15.6	281	18.0
7-10 yrs	337	21.6	618	39.6
more than 10 yrs	944	60.4	1562	100.0

Frequency Missing = 16

College Deg/Formal Training in Cons

DEGREE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	522	33.4	522	33.4
no	1039	66.6	1561	100.0

Frequency Missing = 17

License Category Taking Exam For

LICENSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Division I	1151	73.4	1151	73.4
Division II	418	26.6	1569	100.0

Frequency Missing = 9

Frequencies of all the variables -- FOR ATTENDEES ONLY

Max Number of Times Taken Part Exam

XEXAM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 time	1027	66.6	1027	66.6
2 times	267	17.3	1294	83.9
3 times	137	8.9	1431	92.8
4 times	53	3.4	1484	96.2
5 or more times	58	3.8	1542	100.0

Frequency Missing = 36

Helpful in Preparing for Lic Exam

PREPARE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Outstanding	410	26.1	410	26.1
Very Good	699	44.5	1109	70.6
Fair	379	24.1	1488	94.7
Poor	53	3.4	1541	98.1
Unacceptable	30	1.9	1571	100.0

Frequency Missing = 7

Helpful for Running Business

RUNBUS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Extremely Helpfu	403	25.7	403	25.7
Somewhat Helpful	684	43.6	1087	69.2
Undecided	272	17.3	1359	86.6
Irrelevant	197	12.5	1556	99.1
Harmful	14	0.9	1570	100.0

Frequency Missing = 8

Frequencies of all the variables -- FOR ATTENDEES ONLY

Advertising Claims Accurate

ADVACCUR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Very Accurate	634	40.8	634	40.8
Somewhat Accurat	742	47.7	1376	88.5
Inaccurate	138	8.9	1514	97.4
Unacceptable	40	2.6	1554	100.0

Frequency Missing = 24

Recommend School to Friend/Assoc

RECOM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes, W/O Res	832	53.2	832	53.2
Yes, With Res	397	25.4	1229	78.5
Maybe	244	15.6	1473	94.1
Definitely Not	39	2.5	1512	96.6
No	53	3.4	1565	100.0

Frequency Missing = 13

Should School Be Regulated By State

REGULATE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	626	40.6	626	40.6
no	914	59.4	1540	100.0

Frequency Missing = 38

Frequencies of all the variables -- FOR ATTENDEES ONLY

Which State Agency Should Regulate

AGENCY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Dept of Educ	144	20.3	144	20.3
ST Board of IPVT	144	20.3	288	40.7
Dept of Prof Reg	180	25.4	468	66.1
Cons Ind Lic Boa	216	30.5	684	96.6
Other	24	3.4	708	100.0

Frequency Missing = 870

Should Instructors be Licensed

ILICENSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	1143	74.1	1143	74.1
no	399	25.9	1542	100.0

Frequency Missing = 36

Should Inst Have Teaching Cred/Cert

ICERTIFY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	732	47.1	732	47.1
no	822	52.9	1554	100.0

Frequency Missing = 24

Should Subjects Taught Be Regulated

RSUBJECT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	499	32.2	499	32.2
no	1053	67.8	1552	100.0

Frequency Missing = 26

Frequencies of all the variables -- FOR ATTENDEES ONLY

Should Prosp Lic Take Mandatory Class

MANCLASS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	887	57.0	887	57.0
no	670	43.0	1557	100.0

Frequency Missing = 21

APPENDIX F - SURVEY RESULTS

FREQUENCIES OF ALL VARIABLES FOR CANDIDATES THAT DID NOT ATTEND CONSTRUCTION SCHOOLS

APPENDIX F - SURVEY RESULTS

FREQUENCIES OF ALL VARIABLES FOR CANDIDATES THAT DID NOT ATTEND CONSTRUCTION SCHOOLS

Construction School Attended

SCHOOL	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Did not attend	281	100.0	281	100.0

Location of Licensing Exam

LOCATION	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Orlando	57	20.8	57	20.8
Tampa	35	12.8	92	33.6
Miami	136	49.6	228	83.2
Jacksonville	46	16.8	274	100.0

Frequency Missing = 7

Yrs of Field Experience in Cons

FIELDEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	15	5.4	15	5.4
4-6 yrs	57	20.4	72	25.7
7-10 yrs	58	20.7	130	46.4
more than 10 yrs	150	53.6	280	100.0

Frequency Missing = 1

Yrs of Mgmt/Office Experience in Cons

MGMTEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	86	31.0	86	31.0
4-6 yrs	67	24.2	153	55.2
7-10 yrs	54	19.5	207	74.7
more than 10 yrs	70	25.3	277	100.0

Frequency Missing = 4

frequencies of all the variables -- FOR NON ATTENDEES ONLY

Total Yrs of Construction Experience

CONSEXP	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1-3 yrs	7	2.5	7	2.5
4-6 yrs	32	11.6	39	14.1
7-10 yrs	66	23.8	105	37.9
more than 10 yrs	172	62.1	277	100.0

Frequency Missing = 4

College Deg/Formal Training in Cons

DEGREE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	128	46.0	128	46.0
no	150	54.0	278	100.0

Frequency Missing = 3

License Category Taking Exam For

LICENSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Division I	164	58.8	164	58.8
Division II	115	41.2	279	100.0

Frequency Missing = 2

Max Number of Times Taken Part Exam

XEXAM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 time	189	69.2	189	69.2
2 times	41	15.0	230	84.2
3 times	30	11.0	260	95.2
4 times	8	2.9	268	98.2
5 or more times	5	1.8	273	100.0

Frequency Missing = 8

frequencies of all the variables -- FOR NON ATTENDEES ONLY

Helpful in Preparing for Lic Exam

PREPARE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Outstanding	5	38.5	5	38.5
Very Good	4	30.8	9	69.2
Fair	2	15.4	11	84.6
Poor	1	7.7	12	92.3
Unacceptable	1	7.7	13	100.0

Frequency Missing = 268

Helpful for Running Business

RUNBUS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Extremely Helpfu	3	18.8	3	18.8
Somewhat Helpful	11	68.8	14	87.5
Irrelevant	1	6.3	15	93.8
Harmful	1	6.3	16	100.0

Frequency Missing = 265

Advertising Claims Accurate

ADVACCUR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Very Accurate	5	33.3	5	33.3
Somewhat Accurat	7	46.7	12	80.0
Inaccurate	3	20.0	15	100.0

Frequency Missing = 266

Recommend School to Friend/Assoc

RECOM	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes, W/O Res	15	45.5	15	45.5
Yes, With Res	9	27.3	24	72.7
Maybe	4	12.1	28	84.8
No	5	15.2	33	100.0

Frequency Missing = 248

Should School Be Regulated By State

REGULATE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	120	59.1	120	59.1
no	83	40.9	203	100.0

Frequency Missing = 78

Which State Agency Should Regulate

AGENCY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Dept of Educ	30	22.7	30	22.7
ST Board of IPVT	19	14.4	49	37.1
Dept of Prof Reg	37	28.0	86	65.2
Cons Ind Lic Boa	46	34.8	132	100.0

Frequency Missing = 149

Should Instructors be Licensed

ILICENSE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	162	78.6	162	78.6
no	44	21.4	206	100.0

Frequency Missing = 75

Should Inst Have Teaching Cred/Cert

ICERTIFY	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	121	58.7	121	58.7
no	85	41.3	206	100.0

Frequency Missing = 75

Should Subjects Taught Be Regulated

RSUBJECT	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	111	53.9	111	53.9
no	95	46.1	206	100.0

Frequency Missing = 75

Should Prosp Lic Take Mandatory Class

MANCLASS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	154	56.0	154	56.0
no	121	44.0	275	100.0

Frequency Missing = 6

APPENDIX G - SURVEY RESULTS

CHI-SQUARE TESTS OF ALL VARIABLES FOR CANDIDATES THAT ATTENDED CONSTRUCTION SCHOOLS VS CANDIDATES THAT DID NOT ATTEND CONSTRUCTION SCHOOLS

APPENDIX G - SURVEY RESULTS

CHI-SQUARE TESTS OF ALL VARIABLES FOR ALL CANDIDATES THAT ATTENDED CONSTRUCTION SCHOOLS VS CANDIDATES THAT DID NOT ATTEND CONSTRUCTION SCHOOLS

TABLE OF YNSCHOOL BY LOCATION

YNSCHOOL LOCATION(Location of Licensing Exam)

Frequency Percent Row Pct Col Pct	Orlando	Tampa	Miami	Jacksonville	Total
did attend	406 22.34 26.31 87.69	165 9.08 10.69 82.50	713 39.24 46.21 83.98	259 14.25 16.79 84.92	1543 84.92
did not attend	57 3.14 20.80 12.31	35 1.93 12.77 17.50	136 7.48 49.64 16.02	46 2.53 16.79 15.08	274 15.08
Total	463 25.48	200 11.01	849 46.73	305 16.79	1817 100.00

Frequency Missing = 75

STATISTICS FOR TABLE OF YNSCHOOL BY LOCATION

Statistic	DF	Value	Prob
Chi-Square	3	4.271	0.234
Likelihood Ratio Chi-Square	3	4.379	0.223
Mantel-Haenszel Chi-Square	1	1.701	0.192
Phi Coefficient		0.048	
Contingency Coefficient		0.048	
Cramer's V		0.048	

Effective Sample Size = 1817
Frequency Missing = 75

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY FIELDEXP

YNSCHOOL FIELDEXP(Yrs of Field Experience in Cons)

Frequency Percent Row Pct Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
did attend	106 5.73 6.75 87.60	320 17.29 20.37 84.88	322 17.40 20.50 84.74	823 44.46 52.39 84.58	1571 84.87
did not attend	15 0.81 5.36 12.40	57 3.08 20.36 15.12	58 3.13 20.71 15.26	150 8.10 53.57 15.42	280 15.13
Total	121 6.54	377 20.37	380 20.53	973 52.57	1851 100.00

Frequency Missing = 41

STATISTICS FOR TABLE OF YNSCHOOL BY FIELDEXP

Statistic	DF	Value	Prob
Chi-Square	3	0.771	0.856
Likelihood Ratio Chi-Square	3	0.810	0.847
Mantel-Haenszel Chi-Square	1	0.394	0.530
Phi Coefficient		0.020	
Contingency Coefficient		0.020	
Cramer's V		0.020	

Effective Sample Size = 1851
Frequency Missing = 41

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY MGMTEXP

YNSCHOOL MGMTEXP(Yrs of Mgmt/Office Experience in Cons)

Frequency / Percent / Row Pct / Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
did attend	514	405	266	375	1560
	27.98	22.05	14.48	20.41	84.92
	32.95	25.96	17.05	24.04	
	85.67	85.81	83.13	84.27	
did not attend	86	67	54	70	277
	4.68	3.65	2.94	3.81	15.08
	31.05	24.19	19.49	25.27	
	14.33	14.19	16.88	15.73	
Total	600	472	320	445	1837
	32.66	25.69	17.42	24.22	100.00

Frequency Missing = 55

STATISTICS FOR TABLE OF YNSCHOOL BY MGMTEXP

Statistic	DF	Value	Prob
Chi-Square	3	1.502	0.682
Likelihood Ratio Chi-Square	3	1.484	0.686
Mantel-Haenszel Chi-Square	1	0.802	0.371
Phi Coefficient		0.029	
Contingency Coefficient		0.029	
Cramer's V		0.029	

Effective Sample Size = 1837
Frequency Missing = 55

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY CONSEXP

YNSCHOOL CONSEXP(Total Yrs of Construction Experience)

Frequency / Percent / Row Pct / Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
did attend	37	244	337	944	1562
	2.01	13.27	18.33	51.33	84.94
	2.37	15.62	21.57	60.44	
	84.09	88.41	83.62	84.59	
did not attend	7	32	66	172	277
	0.38	1.74	3.59	9.35	15.06
	2.53	11.55	23.83	62.09	
	15.91	11.59	16.38	15.41	
Total	44	276	403	1116	1839
	2.39	15.01	21.91	60.69	100.00

Frequency Missing = 53

STATISTICS FOR TABLE OF YNSCHOOL BY CONSEXP

Statistic	DF	Value	Prob
Chi-Square	3	3.271	0.352
Likelihood Ratio Chi-Square	3	3.444	0.328
Mantel-Haenszel Chi-Square	1	1.004	0.316
Phi Coefficient		0.042	
Contingency Coefficient		0.042	
Cramer's V		0.042	

Effective Sample Size = 1839
Frequency Missing = 53

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY DEGREE

YNSCHOOL

	DEGREE(College Deg/Formal Training in Cons)		
Frequency Percent Row Pct Col Pct	yes	no	Total
did attend	522 28.38 33.44 80.31	1039 56.50 66.56 87.38	1561 84.88
did not attend	128 6.96 46.04 19.69	150 8.16 53.96 12.62	278 15.12
Total	650 35.35	1189 64.65	1839 100.00

Frequency Missing = 53

STATISTICS FOR TABLE OF YNSCHOOL BY DEGREE

Statistic	DF	Value	Prob
Chi-Square	1	16.402	0.000
Likelihood Ratio Chi-Square	1	15.928	0.000
Continuity Adj. Chi-Square	1	15.855	0.000
Mantel-Haenszel Chi-Square	1	16.393	0.000
Fisher's Exact Test (Left)			4.28E-05
(Right)			1.000
(2-Tail)			7.42E-05
Phi Coefficient		-0.094	
Contingency Coefficient		0.094	
Cramer's V		-0.094	

Effective Sample Size = 1839
Frequency Missing = 53

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY LICENSE

YNSCHOOL

Frequency / Percent / Row Pct / Col Pct	LICENSE(License Category Taking Exam For) Division I	Division II	Total
did attend	1151 62.28 73.36 87.53	418 22.62 26.64 78.42	1569 84.90
did not attend	164 8.87 58.78 12.47	115 6.22 41.22 21.58	279 15.10
Total	1315 71.16	533 28.84	1848 100.00

Frequency Missing = 44

STATISTICS FOR TABLE OF YNSCHOOL BY LICENSE

Statistic	DF	Value	Prob
Chi-Square	1	24.527	0.000
Likelihood Ratio Chi-Square	1	23.212	0.000
Continuity Adj. Chi-Square	1	23.822	0.000
Mantel-Haenszel Chi-Square	1	24.513	0.000
Fisher's Exact Test (Left)			1.000
(Right)			9.91E-07
(2-Tail)			1.40E-06
Phi Coefficient		0.115	
Contingency Coefficient		0.114	
Cramer's V		0.115	

Effective Sample Size = 1848
Frequency Missing = 44

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY XEXAM

YNSCHOOL XEXAM(Max Number of Times Taken Part Exam)

Frequency / Percent / Row Pct / Col Pct	1 time	2 times	3 times	4 times	5 or more times	Total
did attend	1027	267	137	53	58	1542
	56.58	14.71	7.55	2.92	3.20	84.96
	66.60	17.32	8.88	3.44	3.76	
	84.46	86.69	82.04	86.89	92.06	
did not attend	189	41	30	8	5	273
	10.41	2.26	1.65	0.44	0.28	15.04
	69.23	15.02	10.99	2.93	1.83	
	15.54	13.31	17.96	13.11	7.94	
Total	1216	308	167	61	63	1815
	67.00	16.97	9.20	3.36	3.47	100.00

Frequency Missing = 77

STATISTICS FOR TABLE OF YNSCHOOL BY XEXAM

Statistic	DF	Value	Prob
Chi-Square	4	4.742	0.315
Likelihood Ratio Chi-Square	4	5.152	0.272
Mantel-Haenszel Chi-Square	1	1.193	0.275
Phi Coefficient		0.051	
Contingency Coefficient		0.051	
Cramer's V		0.051	

Effective Sample Size = 1815
Frequency Missing = 77

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY REGULATE

YNSCHOOL

	REGULATE(Should School Be Regulated By State)		
Frequency Percent Row Pct Col Pct	yes	no	Total
did attend	626 35.92 40.65 83.91	914 52.44 59.35 91.68	1540 88.35
did not attend	120 6.88 59.11 16.09	83 4.76 40.89 8.32	203 11.65
Total	746 42.80	997 57.20	1743 100.00

Frequency Missing = 149

STATISTICS FOR TABLE OF YNSCHOOL BY REGULATE

Statistic	DF	Value	Prob
Chi-Square	1	24.976	0.000
Likelihood Ratio Chi-Square	1	24.689	0.000
Continuity Adj. Chi-Square	1	24.228	0.000
Mantel-Haenszel Chi-Square	1	24.962	0.000
Fisher's Exact Test (Left)			4.92E-07
(Right)			1.000
(2-Tail)			7.86E-07
Phi Coefficient		-0.120	
Contingency Coefficient		0.119	
Cramer's V		-0.120	

Effective Sample Size = 1743
Frequency Missing = 149

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY AGENCY

YNSCHOOL AGENCY(Which State Agency Should Regulate)

Frequency / Percent / Row Pct / Col Pct	Dept of Educ	ST Board of IPVT	Dept of Prof Reg	Cons Ind Lic Boa	Other	Total
did attend	144	144	180	216	24	708
	17.14	17.14	21.43	25.71	2.86	84.29
	20.34	20.34	25.42	30.51	3.39	
	82.76	88.34	82.95	82.44	100.00	
did not attend	30	19	37	46	0	132
	3.57	2.26	4.40	5.48	0.00	15.71
	22.73	14.39	28.03	34.85	0.00	
	17.24	11.66	17.05	17.56	0.00	
Total	174	163	217	262	24	840
	20.71	19.40	25.83	31.19	2.86	100.00

Frequency Missing = 1052

STATISTICS FOR TABLE OF YNSCHOOL BY AGENCY

Statistic	DF	Value	Prob
Chi-Square	4	7.772	0.100
Likelihood Ratio Chi-Square	4	11.634	0.020
Mantel-Haenszel Chi-Square	1	0.013	0.910
Phi Coefficient		0.096	
Contingency Coefficient		0.096	
Cramer's V		0.096	

Effective Sample Size = 840
Frequency Missing = 1052
WARNING: 56% of the data are missing.

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY ILICENSE

YNSCHOOL ILICENSE(Should Instructors be Licensed)

Frequency / Percent / Row Pct / Col Pct	yes	no	Total
did attend	1143	399	1542
	65.39	22.83	88.22
	74.12	25.88	
	87.59	90.07	
did not attend	162	44	206
	9.27	2.52	11.78
	78.64	21.36	
	12.41	9.93	
Total	1305	443	1748
	74.66	25.34	100.00

Frequency Missing = 144

STATISTICS FOR TABLE OF YNSCHOOL BY ILICENSE

Statistic	DF	Value	Prob
Chi-Square	1	1.959	0.162
Likelihood Ratio Chi-Square	1	2.024	0.155
Continuity Adj. Chi-Square	1	1.728	0.189
Mantel-Haenszel Chi-Square	1	1.958	0.162
Fisher's Exact Test (Left)			0.093
(Right)			0.933
(2-Tail)			0.173
Phi Coefficient		-0.033	
Contingency Coefficient		0.033	
Cramer's V		-0.033	

Effective Sample Size = 1748
Frequency Missing = 144

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY ICERTIFY

YNSCHOOL

	ICERTIFY(Should Inst Have Teaching Cred/Cert)		
Frequency Percent Row Pct Col Pct	yes	no	Total
did attend	732 41.59 47.10 85.81	822 46.70 52.90 90.63	1554 88.30
did not attend	121 6.88 58.74 14.19	85 4.83 41.26 9.37	206 11.70
Total	853 48.47	907 51.53	1760 100.00

Frequency Missing = 132

STATISTICS FOR TABLE OF YNSCHOOL BY ICERTIFY

Statistic	DF	Value	Prob
Chi-Square	1	9.856	0.002
Likelihood Ratio Chi-Square	1	9.882	0.002
Continuity Adj. Chi-Square	1	9.396	0.002
Mantel-Haenszel Chi-Square	1	9.850	0.002
Fisher's Exact Test (Left)			1.08E-03
(Right)			0.999
(2-Tail)			1.81E-03
Phi Coefficient		-0.075	
Contingency Coefficient		0.075	
Cramer's V		-0.075	

Effective Sample Size = 1760
Frequency Missing = 132

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY RSUBJECT

YNSCHOOL

RSUBJECT(Should Subjects Taught Be Regulated)

Frequency / Percent / Row Pct / Col Pct	yes	no	Total
did attend	499	1053	1552
	28.38	59.90	88.28
	32.15	67.85	
	81.80	91.72	
did not attend	111	95	206
	6.31	5.40	11.72
	53.88	46.12	
	18.20	8.28	
Total	610	1148	1758
	34.70	65.30	100.00

Frequency Missing = 134

STATISTICS FOR TABLE OF YNSCHOOL BY RSUBJECT

Statistic	DF	Value	Prob
Chi-Square	1	37.904	0.000
Likelihood Ratio Chi-Square	1	36.113	0.000
Continuity Adj. Chi-Square	1	36.951	0.000
Mantel-Haenszel Chi-Square	1	37.882	0.000
Fisher's Exact Test (Left)			1.44E-09
(Right)			1.000
(2-Tail)			2.10E-09
Phi Coefficient		-0.147	
Contingency Coefficient		0.145	
Cramer's V		-0.147	

Effective Sample Size = 1758
Frequency Missing = 134

Chi-square Tests of ynschool (DID or DID NOT ATTEND) some school by all other variables

TABLE OF YNSCHOOL BY MANCLASS

YNSCHOOL

	MANCLASS(Should Prosp Lic Take Mandatory Class)		
Frequency Percent Row Pct Col Pct	yes	no	Total
did attend	887 48.42 56.97 85.21	670 36.57 43.03 84.70	1557 84.99
did not attend	154 8.41 56.00 14.79	121 6.60 44.00 15.30	275 15.01
Total	1041 56.82	791 43.18	1832 100.00

Frequency Missing = 60

STATISTICS FOR TABLE OF YNSCHOOL BY MANCLASS

Statistic	DF	Value	Prob
Chi-Square	1	0.089	0.765
Likelihood Ratio Chi-Square	1	0.089	0.765
Continuity Adj. Chi-Square	1	0.054	0.816
Mantel-Haenszel Chi-Square	1	0.089	0.765
Fisher's Exact Test (Left)			0.643
(Right)			0.407
(2-Tail)			0.792
Phi Coefficient		0.007	
Contingency Coefficient		0.007	
Cramer's V		0.007	

Effective Sample Size = 1832
Frequency Missing = 60

APPENDIX H - SURVEY RESULTS

CHI-SQUARE TESTS OF ALL VARIABLES FOR CANDIDATES THAT ATTENDED NAMED SCHOOLS VS CANDIDATES THAT ATTENDE SCHOOLS IN THE OTHER CATEGORY

CHI-SQUARE TESTS OF ALL VARIABLES FOR CANDIDATES THAT ATTENDED NAMED SCHOOLS VS CANDIDATES THAT ATTENDED SCHOOLS IN THE OTHER CATEGORY

TABLE OF SCHOOL5 BY LOCATION

SCHOOL5(ONLY Attendees of Named vs Other schools)
LOCATION(Location of Licensing Exam)

Frequency Percent Row Pct Col Pct	Orlando	Tampa	Miami	Jacksonville	Total
Attended Named S	383 24.82 28.16 94.33	162 10.50 11.91 98.18	629 40.76 46.25 88.22	186 12.05 13.68 71.81	1360 88.14
Attended OTHER S	23 1.49 12.57 5.67	3 0.19 1.64 1.82	84 5.44 45.90 11.78	73 4.73 39.89 28.19	183 11.86
Total	406 26.31	165 10.69	713 46.21	259 16.79	1543 100.00

Frequency Missing = 349

STATISTICS FOR TABLE OF SCHOOL5 BY LOCATION

Statistic	DF	Value	Prob
Chi-Square	3	96.860	0.000
Likelihood Ratio Chi-Square	3	91.936	0.000
Mantel-Haenszel Chi-Square	1	66.460	0.000
Phi Coefficient		0.251	
Contingency Coefficient		0.243	
Cramer's V		0.251	

Effective Sample Size = 1543
Frequency Missing = 349
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY FIELDEXP

SCHOOL5(ONLY Attendees of Named vs Other schools)
FIELDEXP(Yrs of Field Experience in Cons)

Frequency / Percent / Row Pct / Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
Attended Named S	92	282	278	734	1386
	5.86	17.95	17.70	46.72	88.22
	6.64	20.35	20.06	52.96	
	86.79	88.13	86.34	89.19	
Attended OTHER S	14	38	44	89	185
	0.89	2.42	2.80	5.67	11.78
	7.57	20.54	23.78	48.11	
	13.21	11.88	13.66	10.81	
Total	106	320	322	823	1571
	6.75	20.37	20.50	52.39	100.00

Frequency Missing = 321

STATISTICS FOR TABLE OF SCHOOL5 BY FIELDEXP

Statistic	DF	Value	Prob
Chi-Square	3	2.051	0.562
Likelihood Ratio Chi-Square	3	2.014	0.569
Mantel-Haenszel Chi-Square	1	0.807	0.369
Phi Coefficient		0.036	
Contingency Coefficient		0.036	
Cramer's V		0.036	

Effective Sample Size = 1571
Frequency Missing = 321
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY MGMTEXP

SCHOOL5(ONLY Attendees of Named vs Other schools)
MGMTEXP(Yrs of Mgmt/Office Experience in Cons)

Frequency Percent Row Pct Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more tha n 10 yrs	Total
Attended Named S	452	353	240	330	1375
	28.97	22.63	15.38	21.15	88.14
	32.87	25.67	17.45	24.00	
	87.94	87.16	90.23	88.00	
Attended OTHER S	62	52	26	45	185
	3.97	3.33	1.67	2.88	11.86
	33.51	28.11	14.05	24.32	
	12.06	12.84	9.77	12.00	
Total	514	405	266	375	1560
	32.95	25.96	17.05	24.04	100.00

Frequency Missing = 332

STATISTICS FOR TABLE OF SCHOOL5 BY MGMTEXP

Statistic	DF	Value	Prob
Chi-Square	3	1.506	0.681
Likelihood Ratio Chi-Square	3	1.559	0.669
Mantel-Haenszel Chi-Square	1	0.138	0.710
Phi Coefficient		0.031	
Contingency Coefficient		0.031	
Cramer's V		0.031	

Effective Sample Size = 1560
Frequency Missing = 332
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY CONSEXP

SCHOOL5(ONLY Attendees of Named vs Other schools)
CONSEXP(Total Yrs of Construction Experience)

Frequency Percent Row Pct Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
Attended Named S	33 2.11 2.40 89.19	218 13.96 15.83 89.34	292 18.69 21.21 86.65	834 53.39 60.57 88.35	1377 88.16
Attended OTHER S	4 0.26 2.16 10.81	26 1.66 14.05 10.66	45 2.88 24.32 13.35	110 7.04 59.46 11.65	185 11.84
Total	37 2.37	244 15.62	337 21.57	944 60.44	1562 100.00

Frequency Missing = 330

STATISTICS FOR TABLE OF SCHOOL5 BY CONSEXP

Statistic	DF	Value	Prob
Chi-Square	3	1.136	0.768
Likelihood Ratio Chi-Square	3	1.122	0.772
Mantel-Haenszel Chi-Square	1	0.030	0.861
Phi Coefficient		0.027	
Contingency Coefficient		0.027	
Cramer's V		0.027	

Effective Sample Size = 1562
Frequency Missing = 330
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY DEGREE

SCHOOL5(ONLY Attendees of Named vs Other schools)
DEGREE(College Deg/Formal Training in Cons)

Frequency Percent Row Pct Col Pct	yes	no	Total
Attended Named S	462 29.60 33.58 88.51	914 58.55 66.42 87.97	1376 88.15
Attended OTHER S	60 3.84 32.43 11.49	125 8.01 67.57 12.03	185 11.85
Total	522 33.44	1039 66.56	1561 100.00

Frequency Missing = 331

STATISTICS FOR TABLE OF SCHOOL5 BY DEGREE

Statistic	DF	Value	Prob
Chi-Square	1	0.096	0.757
Likelihood Ratio Chi-Square	1	0.096	0.756
Continuity Adj. Chi-Square	1	0.051	0.821
Mantel-Haenszel Chi-Square	1	0.096	0.757
Fisher's Exact Test (Left)			0.650
(Right)			0.413
(2-Tail)			0.804
Phi Coefficient		0.008	
Contingency Coefficient		0.008	
Cramer's V		0.008	

Effective Sample Size = 1561
Frequency Missing = 331
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY LICENSE

SCHOOL5(ONLY Attendees of Named vs Other schools)
LICENSE(License Category Taking Exam For)

Frequency Percent Row Pct Col Pct	Division I	Division II	Total
Attended Named S	1024 65.26 73.88 88.97	362 23.07 26.12 86.60	1386 88.34
Attended OTHER S	127 8.09 69.40 11.03	56 3.57 30.60 13.40	183 11.66
Total	1151 73.36	418 26.64	1569 100.00

Frequency Missing = 323

STATISTICS FOR TABLE OF SCHOOL5 BY LICENSE

Statistic	DF	Value	Prob
Chi-Square	1	1.662	0.197
Likelihood Ratio Chi-Square	1	1.621	0.203
Continuity Adj. Chi-Square	1	1.441	0.230
Mantel-Haenszel Chi-Square	1	1.661	0.197
Fisher's Exact Test (Left)			0.915
(Right)			0.116
(2-Tail)			0.213
Phi Coefficient		0.033	
Contingency Coefficient		0.033	
Cramer's V		0.033	

Effective Sample Size = 1569
Frequency Missing = 323
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY XEXAM

SCHOOL5(ONLY Attendees of Named vs Other schools)
XEXAM(Max Number of Times Taken Part Exam)

Frequency Percent Row Pct Col Pct	1 time	2 times	3 times	4 times	5 or more times	Total
Attended Named S	896 58.11 65.69 87.24	241 15.63 17.67 90.26	126 8.17 9.24 91.97	48 3.11 3.52 90.57	53 3.44 3.89 91.38	1364 88.46
Attended OTHER S	131 8.50 73.60 12.76	26 1.69 14.61 9.74	11 0.71 6.18 8.03	5 0.32 2.81 9.43	5 0.32 2.81 8.62	178 11.54
Total	1027 66.60	267 17.32	137 8.88	53 3.44	58 3.76	1542 100.00

Frequency Missing = 350

STATISTICS FOR TABLE OF SCHOOL5 BY XEXAM

Statistic	DF	Value	Prob
Chi-Square	4	4.704	0.319
Likelihood Ratio Chi-Square	4	4.932	0.294
Mantel-Haenszel Chi-Square	1	3.571	0.059
Phi Coefficient		0.055	
Contingency Coefficient		0.055	
Cramer's V		0.055	

Effective Sample Size = 1542
Frequency Missing = 350
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY PREPARE

SCHOOL5(ONLY Attendees of Named vs Other schools)
PREPARE(Helpful in Preparing for Lic Exam)

Frequency Percent Row Pct Col Pct	Outstanding	Very Good	Fair	Poor	Unacceptable	Total
Attended Named S	366 23.30 26.41 89.27	622 39.59 44.88 88.98	328 20.88 23.67 86.54	46 2.93 3.32 86.79	24 1.53 1.73 80.00	1386 88.22
Attended OTHER S	44 2.80 23.78 10.73	77 4.90 41.62 11.02	51 3.25 27.57 13.46	7 0.45 3.78 13.21	6 0.38 3.24 20.00	185 11.78
Total	410 26.10	699 44.49	379 24.12	53 3.37	30 1.91	1571 100.00

Frequency Missing = 321

STATISTICS FOR TABLE OF SCHOOL5 BY PREPARE

Statistic	DF	Value	Prob
Chi-Square	4	3.907	0.419
Likelihood Ratio Chi-Square	4	3.589	0.464
Mantel-Haenszel Chi-Square	1	2.939	0.086
Phi Coefficient		0.050	
Contingency Coefficient		0.050	
Cramer's V		0.050	

Effective Sample Size = 1571
Frequency Missing = 321
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY RUNBUS

SCHOOL5(ONLY Attendees of Named vs Other schools)
RUNBUS(Helpful for Running Business)

Frequency Percent Row Pct Col Pct	Extremely Helpful	Somewhat Helpful	Undecided	Irrelevant	Harmful	Total
Attended Named S	356	603	242	175	9	1385
	22.68	38.41	15.41	11.15	0.57	88.22
	25.70	43.54	17.47	12.64	0.65	
	88.34	88.16	88.97	88.83	64.29	
Attended OTHER S	47	81	30	22	5	185
	2.99	5.16	1.91	1.40	0.32	11.78
	25.41	43.78	16.22	11.89	2.70	
	11.66	11.84	11.03	11.17	35.71	
Total	403	684	272	197	14	1570
	25.67	43.57	17.32	12.55	0.89	100.00

Frequency Missing = 322

STATISTICS FOR TABLE OF SCHOOL5 BY RUNBUS

Statistic	DF	Value	Prob
Chi-Square	4	7.942	0.094
Likelihood Ratio Chi-Square	4	5.625	0.229
Mantel-Haenszel Chi-Square	1	0.231	0.631
Phi Coefficient		0.071	
Contingency Coefficient		0.071	
Cramer's V		0.071	

Effective Sample Size = 1570
Frequency Missing = 322
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY ADVACCUR

SCHOOL5(ONLY Attendees of Named vs Other schools)
ADVACCUR(Advertising Claims Accurate)

Frequency Percent Row Pct Col Pct	Very Accurate	Somewhat Accurate	Inaccurate	Unacceptable	Total
Attended Named S	573 36.87 41.61 90.38	659 42.41 47.86 88.81	113 7.27 8.21 81.88	32 2.06 2.32 80.00	1377 88.61
Attended OTHER S	61 3.93 34.46 9.62	83 5.34 46.89 11.19	25 1.61 14.12 18.12	8 0.51 4.52 20.00	177 11.39
Total	634 40.80	742 47.75	138 8.88	40 2.57	1554 100.00

Frequency Missing = 338

STATISTICS FOR TABLE OF SCHOOL5 BY ADVACCUR

Statistic	DF	Value	Prob
Chi-Square	3	11.119	0.011
Likelihood Ratio Chi-Square	3	9.920	0.019
Mantel-Haenszel Chi-Square	1	9.047	0.003
Phi Coefficient		0.085	
Contingency Coefficient		0.084	
Cramer's V		0.085	

Effective Sample Size = 1554
Frequency Missing = 338
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY RECOM

SCHOOL5(ONLY Attendees of Named vs Other schools)
RECOM(Recommend School to Friend/Assoc)

Frequency Percent Row Pct Col Pct	Yes, W/O Res	Yes, With Res	Maybe	Definitely Not	No	Total
Attended Named S	742	354	212	32	41	1381
	47.41	22.62	13.55	2.04	2.62	88.24
	53.73	25.63	15.35	2.32	2.97	
	89.18	89.17	86.89	82.05	77.36	
Attended OTHER S	90	43	32	7	12	184
	5.75	2.75	2.04	0.45	0.77	11.76
	48.91	23.37	17.39	3.80	6.52	
	10.82	10.83	13.11	17.95	22.64	
Total	832	397	244	39	53	1565
	53.16	25.37	15.59	2.49	3.39	100.00

Frequency Missing = 327

STATISTICS FOR TABLE OF SCHOOL5 BY RECOM

Statistic	DF	Value	Prob
Chi-Square	4	8.963	0.062
Likelihood Ratio Chi-Square	4	7.681	0.104
Mantel-Haenszel Chi-Square	1	6.539	0.011
Phi Coefficient		0.076	
Contingency Coefficient		0.075	
Cramer's V		0.076	

Effective Sample Size = 1565
Frequency Missing = 327
WARNING: 17% of the data are missing.

TABLE OF SCHOOL5 BY REGULATE

SCHOOL5(ONLY Attendees of Named vs Other schools)
REGULATE(Should School Be Regulated By State)

Frequency Percent Row Pct Col Pct	yes	no	Total
Attended Named S	552 35.84 40.68 88.18	805 52.27 59.32 88.07	1357 88.12
Attended OTHER S	74 4.81 40.44 11.82	109 7.08 59.56 11.93	183 11.88
Total	626 40.65	914 59.35	1540 100.00

Frequency Missing = 352

STATISTICS FOR TABLE OF SCHOOL5 BY REGULATE

Statistic	DF	Value	Prob
Chi-Square	1	0.004	0.950
Likelihood Ratio Chi-Square	1	0.004	0.950
Continuity Adj. Chi-Square	1	0.000	1.000
Mantel-Haenszel Chi-Square	1	0.004	0.950
Fisher's Exact Test (Left)			0.555
(Right)			0.509
(2-Tail)			1.000
Phi Coefficient		0.002	
Contingency Coefficient		0.002	
Cramer's V		0.002	

Effective Sample Size = 1540
Frequency Missing = 352
WARNING: 19% of the data are missing.

TABLE OF SCHOOL5 BY AGENCY

SCHOOL5(ONLY Attendees of Named vs Other schools)
AGENCY(Which State Agency Should Regulate)

Frequency Percent Row Pct Col Pct	Dept of Educ	ST Board of IPVT	Dept of Prof Reg	Cons Ind Lic Boa	Other	Total
Attended Named S	130	125	157	192	21	625
	18.36	17.66	22.18	27.12	2.97	88.28
	20.80	20.00	25.12	30.72	3.36	
	90.28	86.81	87.22	88.89	87.50	
Attended OTHER S	14	19	23	24	3	83
	1.98	2.68	3.25	3.39	0.42	11.72
	16.87	22.89	27.71	28.92	3.61	
	9.72	13.19	12.78	11.11	12.50	
Total	144	144	180	216	24	708
	20.34	20.34	25.42	30.51	3.39	100.00

Frequency Missing = 1184

STATISTICS FOR TABLE OF SCHOOL5 BY AGENCY

Statistic	DF	Value	Prob
Chi-Square	4	1.144	0.887
Likelihood Ratio Chi-Square	4	1.160	0.885
Mantel-Haenszel Chi-Square	1	0.071	0.790
Phi Coefficient		0.040	
Contingency Coefficient		0.040	
Cramer's V		0.040	

Effective Sample Size = 708
Frequency Missing = 1184
WARNING: 63% of the data are missing.

TABLE OF SCHOOL5 BY ILICENSE

SCHOOL5(ONLY Attendees of Named vs Other schools)
ILICENSE(Should Instructors be Licensed)

Frequency Percent Row Pct Col Pct	yes	no	Total
Attended Named S	1004 65.11 73.82 87.84	356 23.09 26.18 89.22	1360 88.20
Attended OTHER S	139 9.01 76.37 12.16	43 2.79 23.63 10.78	182 11.80
Total	1143 74.12	399 25.88	1542 100.00

Frequency Missing = 350

STATISTICS FOR TABLE OF SCHOOL5 BY ILICENSE

Statistic	DF	Value	Prob
Chi-Square	1	0.544	0.461
Likelihood Ratio Chi-Square	1	0.554	0.457
Continuity Adj. Chi-Square	1	0.419	0.517
Mantel-Haenszel Chi-Square	1	0.544	0.461
Fisher's Exact Test (Left)			0.261
(Right)			0.795
(2-Tail)			0.528
Phi Coefficient		-0.019	
Contingency Coefficient		0.019	
Cramer's V		-0.019	

Effective Sample Size = 1542
Frequency Missing = 350
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY ICERTIFY

SCHOOL5(ONLY Attendees of Named vs Other schools)
ICERTIFY(Should Inst Have Teaching Cred/Cert)

Frequency Percent Row Pct Col Pct	yes	no	Total
Attended Named S	658 42.34 47.96 89.89	714 45.95 52.04 86.86	1372 88.29
Attended OTHER S	74 4.76 40.66 10.11	108 6.95 59.34 13.14	182 11.71
Total	732 47.10	822 52.90	1554 100.00

Frequency Missing = 338

STATISTICS FOR TABLE OF SCHOOL5 BY ICERTIFY

Statistic	DF	Value	Prob
Chi-Square	1	3.437	0.064
Likelihood Ratio Chi-Square	1	3.460	0.063
Continuity Adj. Chi-Square	1	3.150	0.076
Mantel-Haenszel Chi-Square	1	3.434	0.064
Fisher's Exact Test (Left)			0.974
(Right)			0.038
(2-Tail)			0.069
Phi Coefficient		0.047	
Contingency Coefficient		0.047	
Cramer's V		0.047	

Effective Sample Size = 1554
Frequency Missing = 338
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY RSUBJECT

SCHOOL5(ONLY Attendees of Named vs Other schools)
RSUBJECT(Should Subjects Taught Be Regulated)

Frequency Percent Row Pct Col Pct	yes	no	Total
Attended Named S	438 28.22 31.99 87.78	931 59.99 68.01 88.41	1369 88.21
Attended OTHER S	61 3.93 33.33 12.22	122 7.86 66.67 11.59	183 11.79
Total	499 32.15	1053 67.85	1552 100.00

Frequency Missing = 340

STATISTICS FOR TABLE OF SCHOOL5 BY RSUBJECT

Statistic	DF	Value	Prob
Chi-Square	1	0.133	0.716
Likelihood Ratio Chi-Square	1	0.132	0.716
Continuity Adj. Chi-Square	1	0.078	0.779
Mantel-Haenszel Chi-Square	1	0.133	0.716
Fisher's Exact Test (Left)			0.387
(Right)			0.675
(2-Tail)			0.736
Phi Coefficient		-0.009	
Contingency Coefficient		0.009	
Cramer's V		-0.009	

Effective Sample Size = 1552
Frequency Missing = 340
WARNING: 18% of the data are missing.

TABLE OF SCHOOL5 BY MANCLASS

SCHOOL5(ONLY Attendees of Named vs Other schools)
MANCLASS(Should Prosp Lic Take Mandatory Class)

Frequency Percent Row Pct Col Pct	yes	no	Total
Attended Named S	800 51.38 58.27 90.19	573 36.80 41.73 85.52	1373 88.18
Attended OTHER S	87 5.59 47.28 9.81	97 6.23 52.72 14.48	184 11.82
Total	887 56.97	670 43.03	1557 100.00

Frequency Missing = 335

STATISTICS FOR TABLE OF SCHOOL5 BY MANCLASS

Statistic	DF	Value	Prob
Chi-Square	1	7.985	0.005
Likelihood Ratio Chi-Square	1	7.905	0.005
Continuity Adj. Chi-Square	1	7.544	0.006
Mantel-Haenszel Chi-Square	1	7.980	0.005
Fisher's Exact Test (Left)			0.998
(Right)			3.12E-03
(2-Tail)			5.45E-03
Phi Coefficient		0.072	
Contingency Coefficient		0.071	
Cramer's V		0.072	

Effective Sample Size = 1557
Frequency Missing = 335
WARNING: 18% of the data are missing.

APPENDIX I - SURVEY RESULTS

CHI-SQUARE TESTS OF CANDIDATES WHO ATTENDED SPECIFIC CONSTRUCTION SCHOOLS, EXCLUDING SCHOOLS SO SMALL THAT CHI-SQUARE RESULTS MIGHT BE INVALID

TABLE OF SCHOOL4 BY LOCATION
SCHOOL4(Only attendees of a large enough school)
LOCATION(Location of Licensing Exam)

Frequency Percent Row Pct Col Pct	Orlando	Tampa	Miami	Jacksonville	Total
Carl Mathews Con	78 5.52 33.48 19.40	99 7.00 42.49 62.26	32 2.26 13.73 5.06	24 1.70 10.30 10.91	233 16.48
Contractors Exam	43 3.04 12.08 10.70	15 1.06 4.21 9.43	280 19.80 78.65 44.23	18 1.27 5.06 8.18	356 25.18
Contractors Scho	2 0.14 2.25 0.50	3 0.21 3.37 1.89	82 5.80 92.13 12.95	2 0.14 2.25 0.91	89 6.29
Dave Busters Sch	121 8.56 38.78 30.10	30 2.12 9.62 18.87	103 7.28 33.01 16.27	58 4.10 18.59 26.36	312 22.07
Fla Cons School	135 9.55 56.02 33.58	9 0.64 3.73 5.66	52 3.68 21.58 8.21	45 3.18 18.67 20.45	241 17.04
Other	23 1.63 12.57 5.72	3 0.21 1.64 1.89	84 5.94 45.90 13.27	73 5.16 39.89 33.18	183 12.94
Total	402 28.43	159 11.24	633 44.77	220 15.56	1414 100.00

Frequency Missing = 478

STATISTICS FOR TABLE OF SCHOOL4 BY LOCATION

Statistic	DF	Value	Prob
Chi-Square	15	737.342	0.000
Likelihood Ratio Chi-Square	15	678.618	0.000
Mantel-Haenszel Chi-Square	1	40.364	0.000
Phi Coefficient		0.722	
Contingency Coefficient		0.585	
Cramer's V		0.417	

Effective Sample Size = 1414
Frequency Missing = 478
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY FIELDEXP

SCHOOL4(Only attendees of a large enough school)
FIELDEXP(Yrs of Field Experience in Cons)

Frequency / Percent / Row Pct / Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
Carl Mathews Con	12	49	50	139	250
	0.83	3.40	3.47	9.65	17.35
	4.80	19.60	20.00	55.60	
	12.90	17.07	16.89	18.17	
Contractors Exam	21	57	86	196	360
	1.46	3.96	5.97	13.60	24.98
	5.83	15.83	23.89	54.44	
	22.58	19.86	29.05	25.62	
Contractors Scho	4	33	16	35	88
	0.28	2.29	1.11	2.43	6.11
	4.55	37.50	18.18	39.77	
	4.30	11.50	5.41	4.58	
Dave Busters Sch	28	60	56	171	315
	1.94	4.16	3.89	11.87	21.86
	8.89	19.05	17.78	54.29	
	30.11	20.91	18.92	22.35	
Fla Cons School	14	50	44	135	243
	0.97	3.47	3.05	9.37	16.86
	5.76	20.58	18.11	55.56	
	15.05	17.42	14.86	17.65	
Other	14	38	44	89	185
	0.97	2.64	3.05	6.18	12.84
	7.57	20.54	23.78	48.11	
	15.05	13.24	14.86	11.63	
Total	93	287	296	765	1441
	6.45	19.92	20.54	53.09	100.00

Frequency Missing = 451

STATISTICS FOR TABLE OF SCHOOL4 BY FIELDEXP

Statistic	DF	Value	Prob
Chi-Square	15	31.743	0.007
Likelihood Ratio Chi-Square	15	29.231	0.015
Mantel-Haenszel Chi-Square	1	2.213	0.137
Phi Coefficient		0.148	
Contingency Coefficient		0.147	
Cramer's V		0.086	

Effective Sample Size = 1441
Frequency Missing = 451
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY MGMTEXP

SCHOOL4(Only attendees of a large enough school)
MGMTEXP(Yrs of Mgmt/Office Experience in Cons)

Frequency Percent Row Pct Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
Carl Mathews Con	70 4.89 28.34 15.15	71 4.96 28.74 19.19	47 3.28 19.03 18.80	59 4.12 23.89 16.91	247 17.26
Contractors Exam	111 7.76 31.01 24.03	96 6.71 26.82 25.95	60 4.19 16.76 24.00	91 6.36 25.42 26.07	358 25.02
Contractors Scho	40 2.80 44.94 8.66	24 1.68 26.97 6.49	13 0.91 14.61 5.20	12 0.84 13.48 3.44	89 6.22
Dave Busters Sch	94 6.57 29.94 20.35	73 5.10 23.25 19.73	62 4.33 19.75 24.80	85 5.94 27.07 24.36	314 21.94
Fla Cons School	85 5.94 35.71 18.40	54 3.77 22.69 14.59	42 2.94 17.65 16.80	57 3.98 23.95 16.33	238 16.63
Other	62 4.33 33.51 13.42	52 3.63 28.11 14.05	26 1.82 14.05 10.40	45 3.14 24.32 12.89	185 12.93
Total	462 32.29	370 25.86	250 17.47	349 24.39	1431 100.00

Frequency Missing = 461

STATISTICS FOR TABLE OF SCHOOL4 BY MGMTEXP

Statistic	DF	Value	Prob
Chi-Square	15	18.860	0.220
Likelihood Ratio Chi-Square	15	19.322	0.200
Mantel-Haenszel Chi-Square	1	0.463	0.496
Phi Coefficient		0.115	
Contingency Coefficient		0.114	
Cramer's V		0.066	

Effective Sample Size = 1431
Frequency Missing = 461
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY CONSEXP

SCHOOL4(Only attendees of a large enough school)
CONSEXP(Total Yrs of Construction Experience)

Frequency Percent Row Pct Col Pct	1-3 yrs	4-6 yrs	7-10 yrs	more than 10 yrs	Total
Carl Mathews Con	2 0.14 0.81 6.25	34 2.37 13.71 15.67	50 3.49 20.16 16.18	162 11.30 65.32 18.51	248 17.31
Contractors Exam	12 0.84 3.36 37.50	51 3.56 14.29 23.50	74 5.16 20.73 23.95	220 15.35 61.62 25.14	357 24.91
Contractors Scho	1 0.07 1.12 3.13	24 1.67 26.97 11.06	24 1.67 26.97 7.77	40 2.79 44.94 4.57	89 6.21
Dave Busters Sch	7 0.49 2.24 21.88	52 3.63 16.67 23.96	66 4.61 21.15 21.36	187 13.05 59.94 21.37	312 21.77
Fla Cons School	6 0.42 2.48 18.75	30 2.09 12.40 13.82	50 3.49 20.66 16.18	156 10.89 64.46 17.83	242 16.89
Other	4 0.28 2.16 12.50	26 1.81 14.05 11.98	45 3.14 24.32 14.56	110 7.68 59.46 12.57	185 12.91
Total	32 2.23	217 15.14	309 21.56	875 61.06	1433 100.00

Frequency Missing = 459

STATISTICS FOR TABLE OF SCHOOL4 BY CONSEXP

Statistic	DF	Value	Prob
Chi-Square	15	22.870	0.087
Likelihood Ratio Chi-Square	15	22.218	0.102
Mantel-Haenszel Chi-Square	1	0.088	0.767
Phi Coefficient		0.126	
Contingency Coefficient		0.125	
Cramer's V		0.073	

Effective Sample Size = 1433
Frequency Missing = 459
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY DEGREE

SCHOOL4(Only attendees of a large enough school)
DEGREE(College Deg/Formal Training in Cons)

Frequency Percent Row Pct Col Pct	yes	no	Total
Carl Mathews Con	69 4.82 28.16 14.62	176 12.30 71.84 18.35	245 17.12
Contractors Exam	118 8.25 32.87 25.00	241 16.84 67.13 25.13	359 25.09
Contractors Scho	33 2.31 37.50 6.99	55 3.84 62.50 5.74	88 6.15
Dave Busters Sch	116 8.11 36.94 24.58	198 13.84 63.06 20.65	314 21.94
Fla Cons School	76 5.31 31.67 16.10	164 11.46 68.33 17.10	240 16.77
Other	60 4.19 32.43 12.71	125 8.74 67.57 13.03	185 12.93
Total	472 32.98	959 67.02	1431 100.00

Frequency Missing = 461

STATISTICS FOR TABLE OF SCHOOL4 BY DEGREE

Statistic	DF	Value	Prob
Chi-Square	5	5.830	0.323
Likelihood Ratio Chi-Square	5	5.844	0.322
Mantel-Haenszel Chi-Square	1	0.226	0.635
Phi Coefficient		0.064	
Contingency Coefficient		0.064	
Cramer's V		0.064	

Effective Sample Size = 1431
Frequency Missing = 461
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY LICENSE

SCHOOL4(Only attendees of a large enough school)
LICENSE(License Category Taking Exam For)

Frequency Percent Row Pct Col Pct	Division I	Division II	Total
Carl Mathews Con	132 9.17 53.23 12.87	116 8.06 46.77 28.09	248 17.23
Contractors Exam	236 16.40 65.74 23.00	123 8.55 34.26 29.78	359 24.95
Contractors Scho	69 4.79 77.53 6.73	20 1.39 22.47 4.84	89 6.18
Dave Busters Sch	294 20.43 93.33 28.65	21 1.46 6.67 5.08	315 21.89
Fla Cons School	168 11.67 68.57 16.37	77 5.35 31.43 18.64	245 17.03
Other	127 8.83 69.40 12.38	56 3.89 30.60 13.56	183 12.72
Total	1026 71.30	413 28.70	1439 100.00

Frequency Missing = 453

STATISTICS FOR TABLE OF SCHOOL4 BY LICENSE

Statistic	DF	Value	Prob
Chi-Square	5	122.649	0.000
Likelihood Ratio Chi-Square	5	141.369	0.000
Mantel-Haenszel Chi-Square	1	9.233	0.002
Phi Coefficient		0.292	
Contingency Coefficient		0.280	
Cramer's V		0.292	

Effective Sample Size = 1439
Frequency Missing = 453
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY XEXAM

SCHOOL4(Only attendees of a large enough school)
XEXAM(Max Number of Times Taken Part Exam)

Frequency Percent Row Pct Col Pct	1 time	2 times	3 times	4 times	5 or more times	Total
Carl Mathews Con	175 12.38 72.92 18.54	39 2.76 16.25 16.05	12 0.85 5.00 9.60	8 0.57 3.33 16.67	6 0.42 2.50 11.11	240 16.97
Contractors Exam	224 15.84 63.10 23.73	59 4.17 16.62 24.28	46 3.25 12.96 36.80	8 0.57 2.25 16.67	18 1.27 5.07 33.33	355 25.11
Contractors Scho	61 4.31 69.32 6.46	18 1.27 20.45 7.41	6 0.42 6.82 4.80	2 0.14 2.27 4.17	1 0.07 1.14 1.85	88 6.22
Dave Busters Sch	201 14.21 64.42 21.29	60 4.24 19.23 24.69	27 1.91 8.65 21.60	12 0.85 3.85 25.00	12 0.85 3.85 22.22	312 22.07
Fla Cons School	152 10.75 63.07 16.10	41 2.90 17.01 16.87	23 1.63 9.54 18.40	13 0.92 5.39 27.08	12 0.85 4.98 22.22	241 17.04
Other	131 9.26 73.60 13.88	26 1.84 14.61 10.70	11 0.78 6.18 8.80	5 0.35 2.81 10.42	5 0.35 2.81 9.26	178 12.59
Total	944 66.76	243 17.19	125 8.84	48 3.39	54 3.82	1414 100.00

Frequency Missing = 478

STATISTICS FOR TABLE OF SCHOOL4 BY XEXAM

Statistic	DF	Value	Prob
Chi-Square	20	29.563	0.077
Likelihood Ratio Chi-Square	20	30.003	0.070
Mantel-Haenszel Chi-Square	1	0.428	0.513
Phi Coefficient		0.145	
Contingency Coefficient		0.143	
Cramer's V		0.072	

Effective Sample Size = 1414
Frequency Missing = 478
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY PREPARE

SCHOOL4(Only attendees of a large enough school)
PREPARE(Helpful in Preparing for Lic Exam)

Frequency Percent Row Pct Col Pct	Outstanding	Very Good	Fair	Poor	Unacceptable	Total
Carl Mathews Con	65 4.51 26.21 18.01	125 8.67 50.40 19.23	52 3.61 20.97 14.61	5 0.35 2.02 11.11	1 0.07 0.40 3.45	248 17.21
Contractors Exam	58 4.02 16.16 16.07	151 10.48 42.06 23.23	122 8.47 33.98 34.27	17 1.18 4.74 37.78	11 0.76 3.06 37.93	359 24.91
Contractors Scho	24 1.67 26.97 6.65	37 2.57 41.57 5.69	23 1.60 25.84 6.46	3 0.21 3.37 6.67	2 0.14 2.25 6.90	89 6.18
Dave Busters Sch	87 6.04 27.53 24.10	154 10.69 48.73 23.69	65 4.51 20.57 18.26	4 0.28 1.27 8.89	6 0.42 1.90 20.69	316 21.93
Fla Cons School	83 5.76 34.02 22.99	106 7.36 43.44 16.31	43 2.98 17.62 12.08	9 0.62 3.69 20.00	3 0.21 1.23 10.34	244 16.93
Other	44 3.05 23.78 12.19	77 5.34 41.62 11.85	51 3.54 27.57 14.33	7 0.49 3.78 15.56	6 0.42 3.24 20.69	185 12.84
Total	361 25.05	650 45.11	356 24.71	45 3.12	29 2.01	1441 100.00

Frequency Missing = 451

STATISTICS FOR TABLE OF SCHOOL4 BY PREPARE

Statistic	DF	Value	Prob
Chi-Square	20	61.457	0.000
Likelihood Ratio Chi-Square	20	63.579	0.000
Mantel-Haenszel Chi-Square	1	0.097	0.756
Phi Coefficient		0.207	
Contingency Coefficient		0.202	
Cramer's V		0.103	

Effective Sample Size = 1441
Frequency Missing = 451
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY RUNBUS

SCHOOL4(Only attendees of a large enough school)
RUNBUS(Helpful for Running Business)

Frequency / Percent / Row Pct / Col Pct	Extremely Helpful	Somewhat Helpful	Undecided	Irrelevant	Harmful	Total
Carl Mathews Con	62	109	36	39	1	247
	4.31	7.57	2.50	2.71	0.07	17.15
	25.10	44.13	14.57	15.79	0.40	
	16.94	17.38	14.29	21.43	7.69	
Contractors Exam	79	157	73	49	2	360
	5.49	10.90	5.07	3.40	0.14	25.00
	21.94	43.61	20.28	13.61	0.56	
	21.58	25.04	28.97	26.92	15.38	
Contractors Scho	29	43	12	4	1	89
	2.01	2.99	0.83	0.28	0.07	6.18
	32.58	48.31	13.48	4.49	1.12	
	7.92	6.86	4.76	2.20	7.69	
Dave Busters Sch	59	150	59	46	2	316
	4.10	10.42	4.10	3.19	0.14	21.94
	18.67	47.47	18.67	14.56	0.63	
	16.12	23.92	23.41	25.27	15.38	
Fla Cons School	90	87	42	22	2	243
	6.25	6.04	2.92	1.53	0.14	16.88
	37.04	35.80	17.28	9.05	0.82	
	24.59	13.88	16.67	12.09	15.38	
Other	47	81	30	22	5	185
	3.26	5.63	2.08	1.53	0.35	12.85
	25.41	43.78	16.22	11.89	2.70	
	12.84	12.92	11.90	12.09	38.46	
Total	366	627	252	182	13	1440
	25.42	43.54	17.50	12.64	0.90	100.00

Frequency Missing = 452

STATISTICS FOR TABLE OF SCHOOL4 BY RUNBUS

Statistic	DF	Value	Prob
Chi-Square	20	49.549	0.000
Likelihood Ratio Chi-Square	20	48.271	0.000
Mantel-Haenszel Chi-Square	1	0.364	0.546
Phi Coefficient		0.185	
Contingency Coefficient		0.182	
Cramer's V		0.093	

Effective Sample Size = 1440
Frequency Missing = 452
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY ADVACCUR

SCHOOL4(Only attendees of a large enough school)
ADVACCUR(Advertising Claims Accurate)

Frequency Percent Row Pct Col Pct	Very Accurate	Somewhat Accurate	Inaccurate	Unacceptable	Total
Carl Mathews Con	100 7.01 40.49 17.73	139 9.75 56.28 19.91	7 0.49 2.83 5.38	1 0.07 0.40 2.94	247 17.32
Contractors Exam	96 6.73 26.82 17.02	205 14.38 57.26 29.37	46 3.23 12.85 35.38	11 0.77 3.07 32.35	358 25.11
Contractors Scho	44 3.09 49.44 7.80	32 2.24 35.96 4.58	9 0.63 10.11 6.92	4 0.28 4.49 11.76	89 6.24
Dave Busters Sch	135 9.47 42.99 23.94	147 10.31 46.82 21.06	25 1.75 7.96 19.23	7 0.49 2.23 20.59	314 22.02
Fla Cons School	128 8.98 53.11 22.70	92 6.45 38.17 13.18	18 1.26 7.47 13.85	3 0.21 1.24 8.82	241 16.90
Other	61 4.28 34.46 10.82	83 5.82 46.89 11.89	25 1.75 14.12 19.23	8 0.56 4.52 23.53	177 12.41
Total	564 39.55	698 48.95	130 9.12	34 2.38	1426 100.00

Frequency Missing = 466

STATISTICS FOR TABLE OF SCHOOL4 BY ADVACCUR

Statistic	DF	Value	Prob
Chi-Square	15	80.705	0.000
Likelihood Ratio Chi-Square	15	85.821	0.000
Mantel-Haenszel Chi-Square	1	0.910	0.340
Phi Coefficient		0.238	
Contingency Coefficient		0.231	
Cramer's V		0.137	

Effective Sample Size = 1426
Frequency Missing = 466
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY RECOM

SCHOOL4(Only attendees of a large enough school)
RECOM(Recommend School to Friend/Assoc)

Frequency / Percent / Row Pct / Col Pct	Yes, W/O Res	Yes, With Res	Maybe	Definitely Not	No	Total
Carl Mathews Con	140	68	32	3	4	247
	9.76	4.74	2.23	0.21	0.28	17.21
	56.68	27.53	12.96	1.21	1.62	
	18.72	18.18	14.04	8.33	8.16	
Contractors Exam	150	98	83	12	15	358
	10.45	6.83	5.78	0.84	1.05	24.95
	41.90	27.37	23.18	3.35	4.19	
	20.05	26.20	36.40	33.33	30.61	
Contractors Scho	48	24	12	5	0	89
	3.34	1.67	0.84	0.35	0.00	6.20
	53.93	26.97	13.48	5.62	0.00	
	6.42	6.42	5.26	13.89	0.00	
Dave Busters Sch	172	89	40	7	7	315
	11.99	6.20	2.79	0.49	0.49	21.95
	54.60	28.25	12.70	2.22	2.22	
	22.99	23.80	17.54	19.44	14.29	
Fla Cons School	148	52	29	2	11	242
	10.31	3.62	2.02	0.14	0.77	16.86
	61.16	21.49	11.98	0.83	4.55	
	19.79	13.90	12.72	5.56	22.45	
Other	90	43	32	7	12	184
	6.27	3.00	2.23	0.49	0.84	12.82
	48.91	23.37	17.39	3.80	6.52	
	12.03	11.50	14.04	19.44	24.49	
Total	748	374	228	36	49	1435
	52.13	26.06	15.89	2.51	3.41	100.00

Frequency Missing = 457

STATISTICS FOR TABLE OF SCHOOL4 BY RECOM

Statistic	DF	Value	Prob
Chi-Square	20	58.082	0.000
Likelihood Ratio Chi-Square	20	60.218	0.000
Mantel-Haenszel Chi-Square	1	1.304	0.254
Phi Coefficient		0.201	
Contingency Coefficient		0.197	
Cramer's V		0.101	

Effective Sample Size = 1435
Frequency Missing = 457
WARNING: 24% of the data are missing.

TABLE OF SCHOOL4 BY REGULATE

SCHOOL4(Only attendees of a large enough school)
REGULATE(Should School Be Regulated By State)

Frequency Percent Row Pct Col Pct	yes	no	Total
Carl Mathews Con	88 6.23 36.07 15.44	156 11.04 63.93 18.51	244 17.27
Contractors Exam	155 10.97 44.03 27.19	197 13.94 55.97 23.37	352 24.91
Contractors Scho	43 3.04 48.31 7.54	46 3.26 51.69 5.46	89 6.30
Dave Busters Sch	121 8.56 39.03 21.23	189 13.38 60.97 22.42	310 21.94
Fla Cons School	89 6.30 37.87 15.61	146 10.33 62.13 17.32	235 16.63
Other	74 5.24 40.44 12.98	109 7.71 59.56 12.93	183 12.95
Total	570 40.34	843 59.66	1413 100.00

Frequency Missing = 479

STATISTICS FOR TABLE OF SCHOOL4 BY REGULATE

Statistic	DF	Value	Prob
Chi-Square	5	7.016	0.219
Likelihood Ratio Chi-Square	5	6.988	0.222
Mantel-Haenszel Chi-Square	1	0.017	0.896
Phi Coefficient		0.070	
Contingency Coefficient		0.070	
Cramer's V		0.070	

Effective Sample Size = 1413
Frequency Missing = 479
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY AGENCY

SCHOOL4(Only attendees of a large enough school)
AGENCY(Which State Agency Should Regulate)

Frequency Percent Row Pct Col Pct	Dept of Educ	ST Board of IPVT	Dept of Prof Reg	Cons Ind Lic Boa	Other	Total
Carl Mathews Con	25 3.88 24.04 18.66	20 3.10 19.23 14.39	26 4.03 25.00 16.46	28 4.34 26.92 14.51	5 0.78 4.81 23.81	104 16.12
Contractors Exam	42 6.51 24.42 31.34	42 6.51 24.42 30.22	37 5.74 21.51 23.42	48 7.44 27.91 24.87	3 0.47 1.74 14.29	172 26.67
Contractors Scho	9 1.40 19.15 6.72	12 1.86 25.53 8.63	13 2.02 27.66 8.23	11 1.71 23.40 5.70	2 0.31 4.26 9.52	47 7.29
Dave Busters Sch	23 3.57 16.55 17.16	27 4.19 19.42 19.42	31 4.81 22.30 19.62	53 8.22 38.13 27.46	5 0.78 3.60 23.81	139 21.55
Fla Cons School	21 3.26 21.00 15.67	19 2.95 19.00 13.67	28 4.34 28.00 17.72	29 4.50 29.00 15.03	3 0.47 3.00 14.29	100 15.50
Other	14 2.17 16.87 10.45	19 2.95 22.89 13.67	23 3.57 27.71 14.56	24 3.72 28.92 12.44	3 0.47 3.61 14.29	83 12.87
Total	134 20.78	139 21.55	158 24.50	193 29.92	21 3.26	645 100.00

Frequency Missing = 1247

STATISTICS FOR TABLE OF SCHOOL4 BY AGENCY

Statistic	DF	Value	Prob
Chi-Square	20	14.000	0.830
Likelihood Ratio Chi-Square	20	13.978	0.832
Mantel-Haenszel Chi-Square	1	1.469	0.226
Phi Coefficient		0.147	
Contingency Coefficient		0.146	
Cramer's V		0.074	

Effective Sample Size = 645
Frequency Missing = 1247
WARNING: 66% of the data are missing.

TABLE OF SCHOOL4 BY ILICENSE

SCHOOL4(Only attendees of a large enough school)
ILICENSE(Should Instructors be Licensed)

Frequency Percent Row Pct Col Pct	yes	no	Total
Carl Mathews Con	164 11.60 68.05 15.75	77 5.45 31.95 20.64	241 17.04
Contractors Exam	283 20.01 79.05 27.19	75 5.30 20.95 20.11	358 25.32
Contractors Scho	72 5.09 82.76 6.92	15 1.06 17.24 4.02	87 6.15
Dave Busters Sch	221 15.63 70.83 21.23	91 6.44 29.17 24.40	312 22.07
Fla Cons School	162 11.46 69.23 15.56	72 5.09 30.77 19.30	234 16.55
Other	139 9.83 76.37 13.35	43 3.04 23.63 11.53	182 12.87
Total	1041 73.62	373 26.38	1414 100.00

Frequency Missing = 478

STATISTICS FOR TABLE OF SCHOOL4 BY ILICENSE

Statistic	DF	Value	Prob
Chi-Square	5	17.307	0.004
Likelihood Ratio Chi-Square	5	17.690	0.003
Mantel-Haenszel Chi-Square	1	0.086	0.769
Phi Coefficient		0.111	
Contingency Coefficient		0.110	
Cramer's V		0.111	

Effective Sample Size = 1414
Frequency Missing = 478
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY ICERTIFY

SCHOOL4(Only attendees of a large enough school)
ICERTIFY(Should Inst Have Teaching Cred/Cert)

Frequency Percent Row Pct Col Pct	yes	no	Total
Carl Mathews Con	104 7.29 42.11 15.62	143 10.03 57.89 18.82	247 17.32
Contractors Exam	188 13.18 52.81 28.23	168 11.78 47.19 22.11	356 24.96
Contractors Scho	52 3.65 58.43 7.81	37 2.59 41.57 4.87	89 6.24
Dave Busters Sch	168 11.78 53.67 25.23	145 10.17 46.33 19.08	313 21.95
Fla Cons School	80 5.61 33.47 12.01	159 11.15 66.53 20.92	239 16.76
Other	74 5.19 40.66 11.11	108 7.57 59.34 14.21	182 12.76
Total	666 46.70	760 53.30	1426 100.00

Frequency Missing = 466

STATISTICS FOR TABLE OF SCHOOL4 BY ICERTIFY

Statistic	DF	Value	Prob
Chi-Square	5	37.933	0.000
Likelihood Ratio Chi-Square	5	38.339	0.000
Mantel-Haenszel Chi-Square	1	5.277	0.022
Phi Coefficient		0.163	
Contingency Coefficient		0.161	
Cramer's V		0.163	

Effective Sample Size = 1426
Frequency Missing = 466
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY RSUBJECT

SCHOOL4(Only attendees of a large enough school)
RSUBJECT(Should Subjects Taught Be Regulated)

Frequency Percent Row Pct Col Pct	yes	no	Total
Carl Mathews Con	61 4.29 24.80 13.41	185 13.00 75.20 19.11	246 17.29
Contractors Exam	130 9.14 36.52 28.57	226 15.88 63.48 23.35	356 25.02
Contractors Scho	35 2.46 39.33 7.69	54 3.79 60.67 5.58	89 6.25
Dave Busters Sch	105 7.38 33.65 23.08	207 14.55 66.35 21.38	312 21.93
Fla Cons School	63 4.43 26.58 13.85	174 12.23 73.42 17.98	237 16.65
Other	61 4.29 33.33 13.41	122 8.57 66.67 12.60	183 12.86
Total	455 31.97	968 68.03	1423 100.00

Frequency Missing = 469

STATISTICS FOR TABLE OF SCHOOL4 BY RSUBJECT

Statistic	DF	Value	Prob
Chi-Square	5	15.143	0.010
Likelihood Ratio Chi-Square	5	15.365	0.009
Mantel-Haenszel Chi-Square	1	0.115	0.735
Phi Coefficient		0.103	
Contingency Coefficient		0.103	
Cramer's V		0.103	

Effective Sample Size = 1423
Frequency Missing = 469
WARNING: 25% of the data are missing.

TABLE OF SCHOOL4 BY MANCLASS

SCHOOL4(Only attendees of a large enough school)
MANCLASS(Should Prosp Lic Take Mandatory Class)

Frequency Percent Row Pct Col Pct	yes	no	Total
Carl Mathews Con	141 9.85 56.63 17.28	108 7.55 43.37 17.56	249 17.40
Contractors Exam	217 15.16 60.96 26.59	139 9.71 39.04 22.60	356 24.88
Contractors Scho	58 4.05 66.67 7.11	29 2.03 33.33 4.72	87 6.08
Dave Busters Sch	177 12.37 56.55 21.69	136 9.50 43.45 22.11	313 21.87
Fla Cons School	136 9.50 56.20 16.67	106 7.41 43.80 17.24	242 16.91
Other	87 6.08 47.28 10.66	97 6.78 52.72 15.77	184 12.86
Total	816 57.02	615 42.98	1431 100.00

Frequency Missing = 461

STATISTICS FOR TABLE OF SCHOOL4 BY MANCLASS

Statistic	DF	Value	Prob
Chi-Square	5	12.783	0.026
Likelihood Ratio Chi-Square	5	12.802	0.025
Mantel-Haenszel Chi-Square	1	7.869	0.005
Phi Coefficient		0.095	
Contingency Coefficient		0.094	
Cramer's V		0.095	

Effective Sample Size = 1431
Frequency Missing = 461
WARNING: 24% of the data are missing.

APPENDIX J

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