

**THE GREAT REGRESSION'S IMPACT ON CONSTRUCTION TRAINING
PROGRAMS: MULTI-LEVEL ANALYSES OF RECRUITING & RETENTION
CONCEPTS**

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Introduction

This project began as a result of an intense discussion held at the Missouri Department of Transportation's (MoDOT) Workforce Subcommittee on January 18, 2011. Wherein, MoDOT was considering launching a round of construction training-related requests for proposals (RFP). The author, as a member of the aforementioned subcommittee, recommended that a needs analysis be performed so as to provide data to sculpt the RFP to better fit the economic times rather than rely on an RFP from nearly five years prior. Note: From 2007 to 2010, MoDOT completed a 12-mile stretch of highway in St. Louis that included nearly \$2.5 million dollars to address contemporary training-related issues (Gaal, 2010). This author, with the assistance of a fellow researcher, familiar with the construction industry, developed a needs analysis (survey) based on stakeholders' input. Ultimately, the attempt to collect pertinent data at various levels, utilizing a standardized format, would assist the wider community in evaluating the outcomes of various training programs' recruiting and retention concepts. Consequently, the author set out to examine what impact, if any, focused investments in human capital might have on targeted areas of construction training-related recruiting and retention concepts at various levels.

Literature Review

Why is CTE the answer?

Boucher (2013) exerts, "Vocational training is waiting and ready to produce competent future employees" (para 1). However, Symonds (2012) proclaims, "While other nations increasingly recognize the value of vocational education, many Americans continue to minimize its importance" (p. 39). Nonetheless, one cannot ignore the following: "While nearly 70 percent of all high school-age children in Switzerland attend a vocational education and training program, their 15-24 year-old age group currently only experiences seven percent unemployment" (Renold, 2013). Renold further notes, "That despite the decades-long US focus on reading, math, and science: US cohorts are often steered clear of similar career and technical education programs; are now 25 percent unemployed; and underperform their Swiss counterparts on international tests (i.e., PISA)." Consequently, when it comes to adult education and training programs—mainly designed as 'second-chance' opportunities—it is incumbent upon the construction-related pre-apprenticeship programs that target non-traditionals heed Carnavale, Jayasundera, and Cheah's message:

"The Great Recession that began in December 2007 laid bare many of the shortcomings of the American workforce, especially that lack of workers with postsecondary education. A large majority of jobs lost in the recession and in the recovery had been held by workers with a high school diploma or less. The only real gains made during the still struggling recovery have been in jobs filled by workers with at least some postsecondary education. The

gradual shift to more-educated workers has been going on for decades, but the recession gave it a mighty push. It also left the country with an urgent need to find a way to retrain workers for the more skilled jobs.” (p. 10)

A Proven Model

Kochan, Finegold, and Osterman (2012) proclaim, “Apprenticeships—the vast majority of which are at unionized companies and are jointly run by unions and management—are the most trial-tested way for firms to address their current and future skills needs” (p. 85). One of the major reasons for this stems from the fact that the federal government (US Department of Labor’s Office of Apprenticeship) oversees these jointly managed programs as per 29CFR29. Thusly, Gaal (2012b) declares, “Under 29CFR29, decisions are made by both labor and management, in the best interest of the industry, on behalf of the apprentices.”

The Great Regression

As reported by Ortals (2011), Simonson states, “...construction took the first hit, the hardest hit and has been the slowest to recover from the recession that began in 2007...construction employment peaked in April of 2006 at 2.2 million...That number is now down to 1.1 million” (p. 1). Accordingly, Irwin and Lindeman (2011) assert, “There was one job opening for every 16 unemployed construction workers...” (p. A14). To this end, Gaal (2012b) proclaims, “From 2001-2011, the St. Louis Carpenters Joint Apprenticeship Program has lost approximately \$5.4 million in investments due to the early departures of over 1400 apprentices resulting from the lack of work, etc.” Nonetheless, Nicklaus (2012) posits, “They [St. Louis building trades] can’t do anything about the demand for workers right now, but they can improve the supply” (p. D1).

Methodology

Survey Design & Implementation

The first stage of this study commenced with a pilot (needs analysis) survey—designed and implemented by Dr. Deborah Henry and this author—that included 10 survey questions (See Appendix A for details). These questions were based directly on the conversations that took place in the MoDOT meeting mentioned above. The survey was launched—in late January of 2011—utilizing SurveyMonkey. A total of 56 construction-related professionals in the St. Louis area were emailed a link. These 56 individuals represented management, labor, joint labor-management organizations, and other (i.e., construction consumers, etc.). The response rate was 57 percent (32 of 56). Upon analysis, the results expressed a need to place more focus on retention-related

training matters than recruiting efforts. However, the findings did not suggest that MoDOT totally disregard the recruitment issue (Gaal and Henry, 2011).

The second stage of this study came about as a result of this author addressing an international conference of construction professionals in September of 2011 in White Sulphur Springs, WV. The workshop topic included a number of the elements addressed by the pilot survey. Specifically, how does a training program set strategic direction—not to mention implement program updates and corresponding course designs—without data acquired from an industry-based needs analysis (Gaal, 2012a)? Accordingly, with the assistance of Tom DeRoche at the International Foundation of Employee Benefit Plans (IFEBC), the author weaved the survey questions into the workshop's presentation and requested the participants to respond via an audience response system. There were 24 participants and all were from the USA. Results from this survey—based on the FIG model—were very similar to those in the first stage. Although this stage involved a group with less than 30 participants, the findings further piqued the author's interest and provided the impetus to test the survey tool with a wider audience.

The third stage of this study was conducted at an international conference (IFEBC) for training trustees in Las Vegas, NV on January 24, 2012. Herein, a colleague of the author and session speaker—Larry Beebe, CPA—distributed a paper copy of the survey to 326 participants. Approximately 11 percent of this surveyed audience were Canadians with the remainder coming from the USA. Results from this survey were transcribed into the SurveyMonkey tool, upon receipt, for further analysis (See Appendix B for details).

Multi-level Study Design

As mentioned previously, the second stage of this study did not have enough participants to consider its results statistically reliable/generalizable. To this end, going forward, this author will only utilize the findings from the first and third stages of this study: the original pilot (survey) needs analysis in St. Louis and the survey conducted in Las Vegas with international training trustees (See Appendix B for details).

With all surveys mentioned above, the same 10 questions addressed three categories: General Philosophy, Economic Choices, and Auxiliary Issues (See Appendix A for details). A Likert Scale was utilized to determine participants' attitudes towards various training-related issues impacting today's construction industry. Responses ranged from Strongly Disagree (-2) to Strongly Agree (+2). Results were plugged into the FIG model for analysis and comparison (See Appendix C for details).

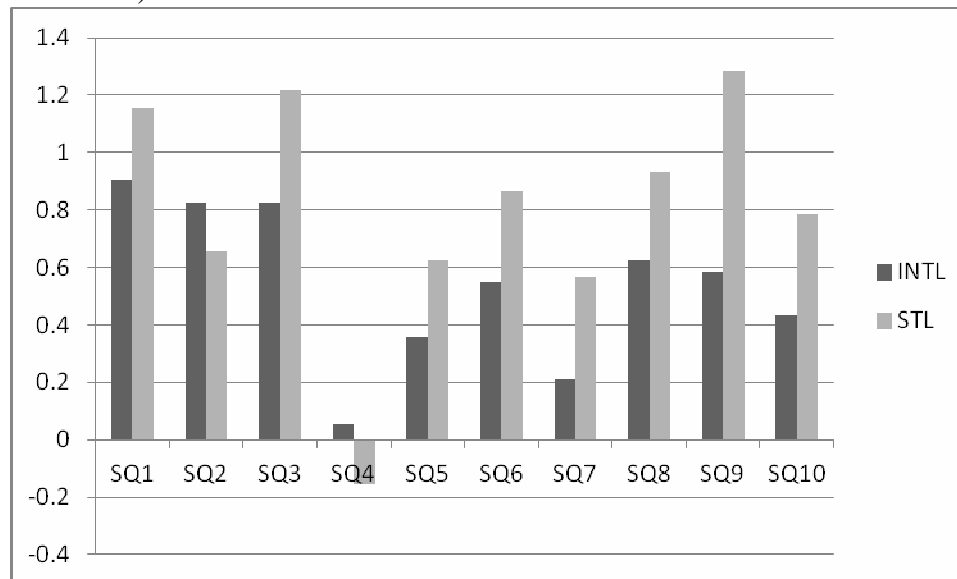
Upon obtaining the FIG model scores for each survey's questions, the author utilized the T-test for independent samples to determine if a significant difference exists between the St. Louis and International groups' means. Under this scenario, the St. Louis

group (first survey) served as the control group while the International group (third survey) served as the experimental group (using average response rates: N = 340). Regarding the data mentioned above, statistical analysis was performed—on Microsoft Excel—utilizing a one-tailed t-test for independent samples (See Appendix D for details).

Results & Findings

FIG Model

Results. Comparison of survey results utilizing the FIG model (See Appendix C for details):



INTL = International

STL = St. Louis

SQ = Survey Question

Findings. Under the General Philosophy section of the survey, both the St. Louis (STL) and International (INTL) groups revealed similar attitudes from survey question (SQ) 1 through SQ3 (See Appendices A and C for details). The exception is the INTL group's slight movement from SQ2 to SQ3. While both groups concur that the construction industry severely declined, the results between SQ2 and SQ3 may suggest that respondents in the STL group are more concerned about adding entry-level workers—during a downturn—while a high number of construction workers are currently un- and under-employed.

Under the Economic Conditions section of the survey, both the STL and INTL groups revealed similar attitudes from SQ5 through SQ7. The notable exception is in the STL group's movement to the negative range in SQ4. While both groups favor investing construction training-related funds in pre-apprenticeship graduates already in the registered apprenticeship system, the results in SQ4 clearly suggest that the respondents

in the STL group are more opposed to focusing training-related funds on recruiting activities, in the current economic environment.

Under the Auxiliary Issues section of the survey, both the STL and INTL groups revealed similar attitudes in SQ8 and SQ10. The exception is in the STL group's more positive movement in SQ9. While both groups agree that pre-apprenticeship program providers must reconfigure their curriculum to offer more timely/valuable industry-based certifications, the results in SQ9 may suggest that respondents in the STL group place more emphasis on the importance of on-going career guidance delivered by pre-apprenticeship training vendors than respondents in the INTL group.

T-tests

Results. Comparison of means with the T-test for independent samples (Refer to Appendix D for more details):

	<u>Control Group—</u>	<u>Experimental Group—</u>
$\sum X_1$		5.367
Mean		.5367
Std Dev		.2632
S_1^2		.0693
n_1		309
$\sum X_2$	7.938	
Mean	.7938	
Std Dev	.3976	
S_2^2	.1581	
n_2	31	

$$t = 1 -4.9481$$

$$t_{\text{crit}} (.01, \infty)_{\text{One Tail}} = 2.326$$

Reject the null hypothesis since $4.948 > 2.326$

Thusly, there is a significant difference.

Findings. When comparing means—based on the data from the STL and INTL surveys and their related-FIG model's calculations—the t-test for independent samples concluded that a statistically significant difference exists between the STL and INTL groups. Thusly, the STL group's collective responses were found to be distinct from those of the INTL group's collective responses at a 99 percent confidence level.

Discussion

A New Focus: Outcomes

Reich (2012) posits, “The great expansion of public institutions in America began in the early years of the 20th century, when progressive reformers championed the idea that we all benefit from public goods” (p. 29). In this author’s opinion, as government budgets are squeezed, it is necessary to ensure that scarce public funds are invested wisely. To this end, organizations exist within the construction industry that collect, analyze, and disseminate data on pre-apprenticeship programs...the very programs that claim to assist non-traditionals (minorities and women). At the local level, various stakeholders in the St. Louis construction industry participate in one such group known as ACCESS (Association for Construction Careers, Education and Support Services). In its recent annual report (ACCESS, 2012), only five of the eight partner pre-apprenticeship programs reported outcomes data (p. 10). In fact, all three of the programs that did not report outcomes data are funded, to some extent, by taxpayers: Construction Prep Center (Missouri Department of Transportation); Emerson Park YouthBuild (US Department of Labor); and Miller Career Academy (St. Louis Public Schools). When making a hiring decision, how can employers trust these three programs graduates’ skill sets when these programs are deficient in reporting mutually-agreed upon outcomes data? Thusly, Gaal (2011) suggests:

“...it is the parts of this system that are under stress due to budget shortfalls, lack of accountability, a misguided focus on inputs/outputs versus outcomes, etc. Accordingly, new approaches to delivering education (and training), measuring teaching and learning effectiveness, and broadening the scope of eligible providers must be seriously considered.” (p. 14)

Moving Beyond the Great Regression

Consider the following eclectic mix of facts:

1. “After the recession of the early 1990s, the employment rate returned to its pre-recession level 15 months after the GDP did. And in the current recovery, it appears that the employment rate will return to its pre-recession level a full 60 months...after GDP ...” (Zakaria, 2013, p. 25);
2. “More than half (56 percent) believe people in their generation will do less well than the one that came immediately before them” (Godofsky, Zukin, and Van Horn, 2011, p. 12);
3. “Fewer and fewer large and medium-sized companies offer their workers full health-care coverage—74 percent did in 1980; under 10 percent do today” (Reich, 2012, p. 13);
4. “...the number of apprenticeship programs in the US has shrunk by 36 percent, since 1998, and enrollments have dropped by 16 percent since a peak in 2003.... (Kochan, Finegold, and Osterman, 2012 p. 85);

5. “In 1975, adjuncts made up 43 percent of the faculty at US colleges. By 2009, that number had climbed to nearly 70 percent....” (Peters and Belkin, 2013, p. A3); and
6. “In 1972, fewer than 350,000 people were being held in prisons and jails nationwide, compared with more than 2 million people today” (Alexander, 2012, p. 8).

So what is the point in providing this wide array of grim statistics? The point is that complacency is the enemy of innovation and growth. In this author’s opinion, construction-related pre-apprenticeship programs (and K-12 school systems) must, in a collaborative and responsible manner, adapt to the current wants, needs, and desires of the marketplace, in the best interest of their pre-apprentices (students).

Interestingly, MERIC (2012) declares, “In Missouri, the 2020 projected job growth for STEM (science, technology, engineering, and math) occupations (+9.5 percent) is higher than the average (+8.8 percent) expected combined growth for all other occupations in the state” (p. 2). With the combination of rising college costs and fewer college graduates finding work in their areas of specialization, how can the US maintain its role as an industrial leader? In this author’s opinion, leaders—from all walks: political, P-20 education, business & industry, labor, government, and community—need to look beyond ‘magic-bullet’ construction-related pre-apprenticeship programs and begin the difficult task of jointly aligning and/or designing ‘systems’ that address the needs of today’s society versus those of the 1950s.

Accordingly, Condon and Wiseman (2013) posit, “The most highly skilled workers—those who can use machines to be more productive but can’t be replaced by them—will continue to prosper” (p. E4). Thusly, the pre-apprenticeship programs mentioned above have a moral obligation to their students and a financial obligation to the taxpayers to ensure that these public investments in human capital provide positive, long-term returns for the greater good of society. How? Start by internalizing these critical principles (Symonds, pp. 40-44):

1. “Extensive employer engagement”: Allow industry professionals to provide timely input on curriculum;
2. “Ample opportunities for work-based learning”: Allow students to learn on state-of-the-art equipment and become familiar with current work practices;
3. “Comprehensive career counseling”: Utilize counselors who are professionally trained to guide students based on their strengths and educate them on the broader labor market; and
4. “High-quality teachers”: Allow instructors to continually update their workplace-based skills.
5. Mentor: “Great educators know that there is no technological substitute for getting to know a student and helping sculpt vital character values” (Chester, p. 21).

Conclusion

Finally, this author calls the question: Why are many of the construction-related pre-apprenticeship programs still operating in 2009-11 (recession era) the same way they did before 2007 (pre-recession era)? Upon further study, many of these same programs have not placed a number of their recent graduates in post-secondary industry-related opportunities (i.e., construction job, trade school, Architecture/Engineering/Construction college program, military, etc.). Equally important, why are funders assisting these questionable pre-apprenticeship programs in clogging the front-end of the pipeline with more recruits instead of bringing their unemployed graduates back into their facilities for more training—at an advanced level? In so doing, with input from joint labor-management groups like those mentioned above, up-skilled graduates would add more value in the marketplace. With that said, it is difficult to ignore the needs of employers that participate in these successful joint labor-management training programs. In this author's opinion, employers do not only desire entry-level employees who possess technical skills and work ethic but also a "feeder" pipeline system consisting of partners they can trust!

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Appendix A

Survey Questions—

General Philosophy:

- 1) Over the past two-plus years, the construction industry has experienced a sharp decline partially due to a nationwide economic recession.

Strongly Disagree Disagree Agree Strongly Agree
- 2) When it comes to pre-apprenticeship training providers in the construction industry, emphasis should be placed on recruiting strategies.

Strongly Disagree Disagree Agree Strongly Agree
- 3) When it comes to pre-apprenticeship training providers in the construction industry, emphasis should be placed on retention strategies.

Strongly Disagree Disagree Agree Strongly Agree

Economic Choices:

- 4) In today's economic environment, scarce resources would be best spent on programs addressing the needs of new pre-apprenticeship training recruits.

Strongly Disagree Disagree Agree Strongly Agree
- 5) In today's economic environment, scarce resources would be best spent on programs addressing the needs of pre-apprenticeship program graduates still seeking industry-related placement/employment.

Strongly Disagree Disagree Agree Strongly Agree
- 6) In today's economic environment, scarce resources would be best spent on programs addressing the needs of pre-apprenticeship program graduates who are currently in registered apprenticeship programs and seeking hours to graduate to journeyworker status.

Strongly Disagree Disagree Agree Strongly Agree
- 7) In today's economic environment, scarce resources would be best spent on programs addressing the needs of pre-apprenticeship program graduates who completed registered apprenticeship programs but are currently unemployed.

Strongly Disagree Disagree Agree Strongly Agree

Auxiliary Issues:

- 8) In an effort to build relationships, it should be a mandatory requirement that all pre-apprenticeship program providers include an industry-related joint labor-management mentoring experience for its participants.

Strongly Disagree Disagree Agree Strongly Agree
- 9) In an effort to build career pathways, it should be a mandatory requirement that all pre-apprenticeship program providers deliver ongoing career guidance (i.e., job search skills, supervisory training, etc.) to its participants.

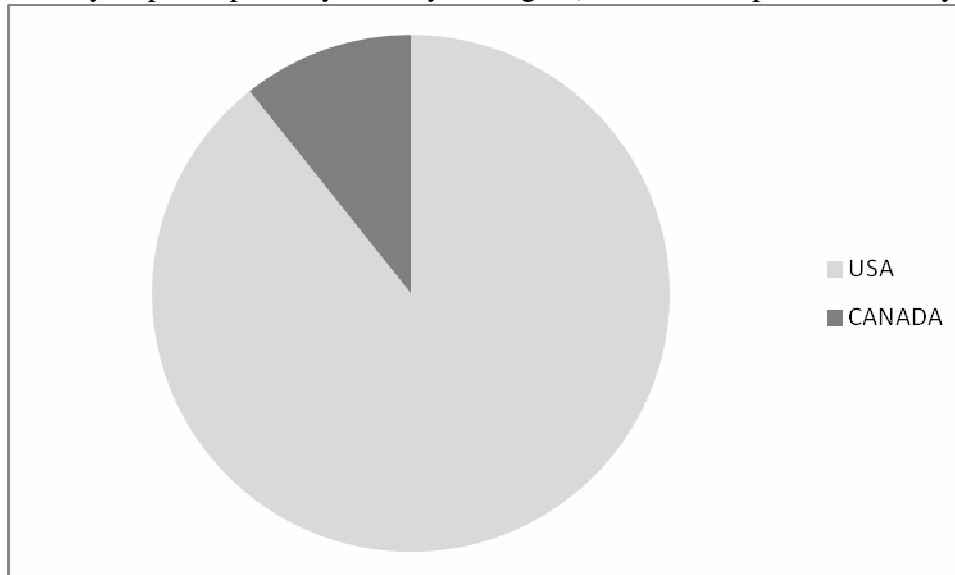
Strongly Disagree Disagree Agree Strongly Agree
- 10) In an effort to ensure that all pre-apprenticeship program providers' curricula meet the demands of today's industry, a shift from general/basic skills training must occur towards specialized skills training (i.e., scaffolding certifications, welding certifications, etc.).

Strongly Disagree Disagree Agree Strongly Agree

Appendix B

Demographics—

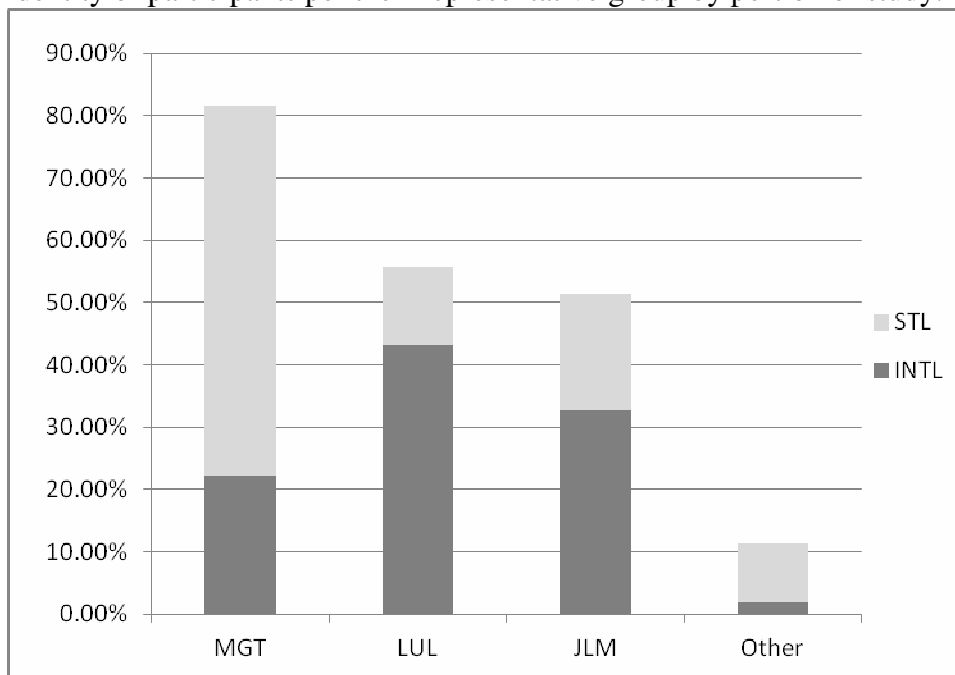
Identity of participants by country of origin (International portion of study only):



USA = 89 percent

Canada = 11 percent

Identity of participants per their representative group by portion of study:



MGT = Management association

LUL = Labor union leader

JLM = Joint labor-management representative

Other = Consultants (attorneys, auditors, construction consumers, etc.)

STL = St. Louis

International = INTL

Appendix C

Details—

FIG Calculations

	INTL	STL
SQ1	**0.9049	1.1563
SQ2	0.8233	0.6563
SQ3	0.8245	1.2188
SQ4	0.0561	-0.1563
SQ5	0.3594	0.625
SQ6	0.547	0.8667
SQ7	0.2082	0.5667
SQ8	0.6263	0.9333
SQ9	0.5859	1.2857
SQ10	0.431	0.7857
TOTAL	5.3666	7.9382

Raw Counts

	INTL	STL
SQ1	326	32
SQ2	317	32
SQ3	319	32
SQ4	321	32
SQ5	320	32
SQ6	298	30
SQ7	293	30
SQ8	297	30
SQ9	297	28
SQ10	297	28
AVG Resp	308.5	30.6
Max	326	32
Min	293	28

**Example of FIG model calculation for SQ1 (international survey):

Over the past two-plus years, the construction industry has experienced a sharp decline partially due to an economic recession.

Raw Counts:

Strongly Disagree	51	15.64%
Disagree	15	4.60%
Agree	108	33.13%
Strongly Agree	152	46.63%
	326	100.00%

Strongly Disagree = SD = -2

Disagree = D = -1

Agree = A = +1

Strongly Agree = SA = +2

$\Sigma SD_{Raw} / \text{Total Participants Group} \dots * -2 = SD_{Weighted}$

$\Sigma D_{Raw} / \text{Total Participants Group} \dots * -1 = D_{Weighted}$

$\Sigma A_{Raw} / \text{Total Participants Group} \dots * +1 = A_{Weighted}$

$+\Sigma SA_{Raw} / \text{Total Participants Group} \dots * +2 = SA_{Weighted}$

Total Group... = Score_{Weighted}

$SD = 51/326 * -2 = -.312$

$D = 15/326 * -1 = -.0460$

$A = 108/326 * +1 = .3313$

$+SA = 152/326 * +2 = .9325$

0.9049**

Appendix D

T-test for independent samples: St. Louis and International Survey Results—

$$t = \frac{.5367 - .7938}{\sqrt{\frac{(309-1) \cdot .0693 + (31-1) \cdot .1581}{309 + 31 - 1} (1/309 + 1/31)}}$$

$$t = \frac{-.2571}{\sqrt{.0027}}$$

$$t = \frac{-.2571}{.05196}$$

$$t = -4.948$$

$$t_{\text{crit}} (.01, \infty)_{\text{One Tail}} = 2.326$$

Reject $H_0: \mu_c = \mu_e$ (Reject the null hypothesis: Control Mean is equal to Experimental Mean)

Reject the null hypothesis since $|-4.948| > 2.326$

$H_A: \mu_c > \mu_e$ (Accept the alternative hypothesis: Control Mean is greater than Experimental Mean)

Thusly, there is a significant difference.