

Qualitative Study of the Perceptions of Land Surveying and Geomatics over Time

7/2/2019

Summary

The learned profession of land surveying, also known as geomatics or geomatics engineering, has seen a dramatic slowdown in the recruitment of new practitioners not just as students at Wake Tech, but across North Carolina, and indeed, the United States. All estimates of the average age of Professional Land Surveyors are over 60 years of age - and has been so for the past decade. Based on the questionnaire data, my hypothesis that there has been a generational shift in how young people are introduced to the profession appears to be correct, and the change seems to be that land surveying is no longer mentioned as frequently in classrooms at all educational levels. The conclusions and recommendations of this study can be used to create industry-school partnerships to get land surveying awareness back into the public schools so that new land surveyors can be trained and apprenticed.

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Definitions and Key Words

recruitment, surveying, geomatics

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Purple underlined text is a link to another part of the document.

Teal underlined text is a link to a web page.

Method

A questionnaire about people's perceptions of land surveying and geomatics was developed in May 2018 after discussion with high school Drafting teacher, Amy Crump. It was created as a Google Form and given a shortened URL, <http://bit.ly/LandSurveyingQuestions>. The questionnaire is included in [Appendix A – The Questions](#).

The URL was distributed in December 2018 via my personal Facebook profile, various Facebook groups to which I belong (including The Field Crew, a group for surveyors and survey technicians), my professional Twitter account @SuLeoneMSEd1, and my personal Instagram account. In February 2019, I sent the link with an explanatory email to approximately 3,000 contacts, including Wake Tech faculty, staff, students and industry partners. In March 2019, I posted the link on LinkedIn.

On June 10, 2019, I closed the form and exported the data to Excel. I classified the qualitative responses and compared various segments of the data based on demographics including age range, participation in the industry and approximate age of learning about land surveying. The tabular results are included in [Appendix C – The Questionnaire Results Tables](#).

The link was followed 562 times. There were 188 completed questionnaires.

In June 2019 by Mr. Donald Queen at Western Piedmont Community College in Morganton, NC and Mr. Adam Spillman at Central Piedmont Community College in Charlotte, NC agreed with my findings about the profession category and networking of the respondents, about how and when people first learn about surveying, and about how and how well people define surveying and geomatics.

Notes about Phraseology

- “In the field” and “in the industry” refer to surveying and engineering as a whole
- “The profession” refers only to surveying
- The phrase “s/e company” is shorthand for “surveying or engineering company”
- “Profession category” means the categories of being in the industry versus not.

Findings

About the Data Set

- The respondents live in 6 countries, including 16 U.S. states and 16 North Carolina counties. 84% of all the respondents live in North Carolina. 62% of all the respondents live in Wake County. 3% of all the respondents live outside the United States in Croatia, India, Poland, Rwanda, and Switzerland. There was a statistically significant number of respondents from Florida, Indiana, and New Hampshire relative to their local population.
- The respondents were nearly equally spread among three age ranges: 18-35, 36-50 and 51-75. There were no respondents younger than 18 or older than 75.
- About a fifth of the respondents work for or have worked for an s/e company, but only about a quarter of those are ages 18-35 as compared to 36%-39% of the other two age groups. About half the respondents know someone in the field. 40% (75) of the respondents neither work in the field nor know someone who does.
- 79% (148) of the respondents described the circumstances of when they first learned about surveying.
- 78% (147) of the respondents mentioned an age range or school level in their description of when they first learned about surveying.
- 58% (109) of the respondents offered suggestions for how to increase interest in surveying.
- 14% (26) of the respondents provided their contact information to become involved in increasing interest in surveying.

How People First Learned about Surveying

1. In the past 20 years
 - career counselors and teachers at all educational levels do not talk about surveying in class as much as before. In fact, in North Carolina, civil engineering and surveying are not part of the high school Drafting curriculum, which instead focuses on architecture (Revit) and mechanical design (AutoCAD and Inventor).
 - people are far less likely to be offered a job surveying without education.
 - people are far less likely to know what surveyors do, even if they know someone who is a surveyor
 - people are less likely to have a friend or family member who is a surveyor, or to know someone who hired a surveyor.
 - people are more likely to have seen a surveyor “on the side of the road” or working on a construction project.
2. People age 36-50 are more likely to work with or around surveyors than other age groups.
3. 16% of all respondents first learned about surveying in a classroom setting, and about 40% of those went into the field. Those who discovered surveying in high school were most likely to enter the profession.

4. About a third of all respondents first learned about surveying by seeing surveyors working in their community and asking someone what they were doing, but only 7% of those went into the profession.
5. 7% first learned about surveying while at work, and 40% of those switched to surveying.
6. 14% of all respondents found out about surveying from someone in the field they know personally.

When People First Learned about Surveying

1. People who know someone in surveying or engineering are mildly less likely to have learned about surveying after college, having already learned about it by then.
2. People who work for an s/e company are much more likely to have learned about surveying before the end of college, with nearly two-thirds learning about it during middle school, high school or college.
3. People who do not work for an s/e company are much more likely to have learned about surveying as children or teenagers.
4. In the past 20 years, people are much less likely to find out about surveying as a "child", which was interpreted to represent kids age 6-12.
5. 20-40 years ago, people were much more likely to first hear about surveying after college or as an adult.
6. 40-60 years ago, people were a little more likely to first hear about surveying either as a child or during college.
7. Younger adults are less likely to have worked at an s/e company, but they are more likely to know someone in the industry whether or not they have worked at an s/e company.

Defining What Surveyors Do

Descriptions of what surveyors do were classified using the following criteria:

correct	knew technical vocabulary/processes
partly correct	vague idea or used "survey" in the definition
incorrect	no idea or thought it was data polling

1. 15% (28) of all the respondents don't know what surveyors do. Most of them either thought surveyors gather questionnaire data or do research, or that they help determine the quality of the land or soil for construction. Respondents age 18-30, whether they work for an s/e company or not, were most likely to think surveyors collect opinion data.
2. The 17% (32) of the respondents who had a partly correct definition of surveying were very specific in the tasks of a surveyor, but only about a fifth of them said surveyors make maps.
3. The supermajority of the respondents gave a correct definition of surveying, and used technical terms like height or elevation, land features or topography, distance, angle or dimensions, and were more likely to mention the use of special technology.

4. People age 51-75 who do *not* work in the industry were more likely to mention boundaries or property lines in their definition of surveying than any other age group, even among those who do work in the industry. Among those who *do* work in industry, young adults were most likely to mention property lines, but also topography and technology.
5. People in the industry were much more likely to mention measurement, regardless of their age group, than people not working at an s/e company.

Defining What Geomatics Is

The word “geomatics” was first coined in 1981 and was intended to be a blending of traditional land surveying and data science. The word now includes remote sensing and focuses on the use of technology in an interdisciplinary way.

Some sources claim that in the United States there has been a preference for the term geospatial science instead of geomatics.

In the Wake Tech Geomatics Technology degree program, we teach that geomatics and surveying are synonymous because we have broadened “surveying” to include LiDAR and GNSS instead of confining the term to methods using levels, theodolites and electronic distance measurement devices.

Descriptions of what geomatics is were evaluated using the following criteria:

correct	knew it's the same as surveying
mostly correct	knew technical vocabulary/processes
partly correct	vague idea, knew geo = Earth
incorrect	no idea or thought it was a branch of math

1. By and large, "geomatics" is an unknown word with only 20% of all respondents giving a mostly correct or correct definition. Nearly half of all s/e company employees age 51-75 thought geomatics is a branch of mathematics or geography, followed distantly by young adults not working in the field.
2. Respondents in each of the represented age groups were equally likely to guess that geomatics means "earth measuring" or “measuring land” based on the root words.
3. Surprisingly, people who work or worked for an s/e company were less likely to equate the root geo- with land, earth or world than people who do not work in the industry.
4. People in an s/e company age 18-35 are much less likely than all respondents to say that geomatics means "measuring land". The likelihood that another profession category x age group would say that is about the same between those segments.
5. No one knew that geomatics is just another word for land surveying except people age 36-75 who work at an s/e company, and those age 36-50 are more likely to know that fact.
6. The younger an s/e company employee is, the more likely s/he was to reference data collection and land features or topography in their definition of geomatics.
7. S/e company employees age 18-35 were dramatically more likely include references to topography, coordinates, map projections or geospatial data collection, and to mention

specialized technology or GPS, than any other age group or professional category. This is likely due to the dramatic rise in use of GNSS and LiDAR in the past 15-20 years. This may also be due to topo being a common entry-level surveying task.

8. Overall, respondents seemed to think of "geomatics" as a more scientific pursuit than land surveying, even though they are synonymous.

Perceived Value of Land Surveying in Society

1. People age 18-50 are very much less likely to highly rate the importance of surveying in their society and are therefore mildly less likely to enter the profession.

Knowledge of Role of Surveying in Society

1. On average, half of the respondents did not know that the first Federal surveying law predated the ratification of the US Constitution. Only about 18% of the respondents did not know that surveyors are required for the sale and development of land.
2. People age 18-35, regardless of whether they know someone who works in the industry or not, are much less informed about surveying's history and its involvement with the sale and development of land. If they work for an s/e company, however, they are just as informed as other age groups.
3. People age 51-75, both in and out of the industry, were more likely to know about surveying's history and its involvement with the sale and development of land. This supports to the hypothesis that surveying was talked about more in schools 40-60 years ago.

Statistically Significant Correlations

NOTE: If there was a difference between the Pearson r-coefficient and the Spearman rs- (rho-) coefficient, the relationship was likely to be nonlinear and therefore the Spearman value was used to determine the strength of the correlation. These instances are indicated by the ‡ double dagger symbol at the end of the claim.

Because this qualitative data reflects human behavior, correlations tend to be muddier and therefore numerically lower by approximately 0.1 than non-sociological data. In general, statistical correlations in this dataset were mild to moderate, with the average absolute Pearson R-value (or Spearman rs-value) being 0.16, and the highest absolute value being 0.37. The lowest absolute value considered to be even very mild is 0.18. When a correlation is classified as "moderate", the r- or rs-value is included in parentheses.

Networking

- Working for an s/e company *moderately* increases your chances of knowing someone else who works for an s/e company. ($r=0.37$) Surprisingly, although this was the strongest of all the correlations, it is not a guarantee, which may mean that there are a significant number of single-surveyor companies.

Importance to Society

- Not surprisingly, working for an s/e company, or knowing someone who does, *moderately* increases your chances of rating surveying as extremely important in your society. ‡ ($r_s=0.30$ and $r_s=0.27$, respectively)
- Older respondents very mildly tend to rate surveying as more important in their society. ‡

Surveying Laws

- Not surprisingly, working for an s/e company makes you mildly *less* surprised that the Federal surveying law was passed before the US Constitution was ratified.
- Older respondents, and those who can more correctly you can define geomatics, are very mildly *less* likely to be surprised that the Federal surveying law was passed before the US Constitution was ratified.

Surveying in Real Estate

- The more correctly you can define surveying, the mildly *less* surprised you are in its role in the sale and development of land. ‡

Defining Surveying

- Older respondents are very mildly more likely to be able to correctly define surveying. ‡
- Interestingly, the older you were when you first learned about surveying, the mildly *less* likely you are to be able to define it correctly. This is the only statistically significant correlation to your age when you first learned about surveying.
- Knowing someone who works for an s/e company *moderately* increases your chances of correctly defining surveying. ($r=0.28$)

Defining Geomatics

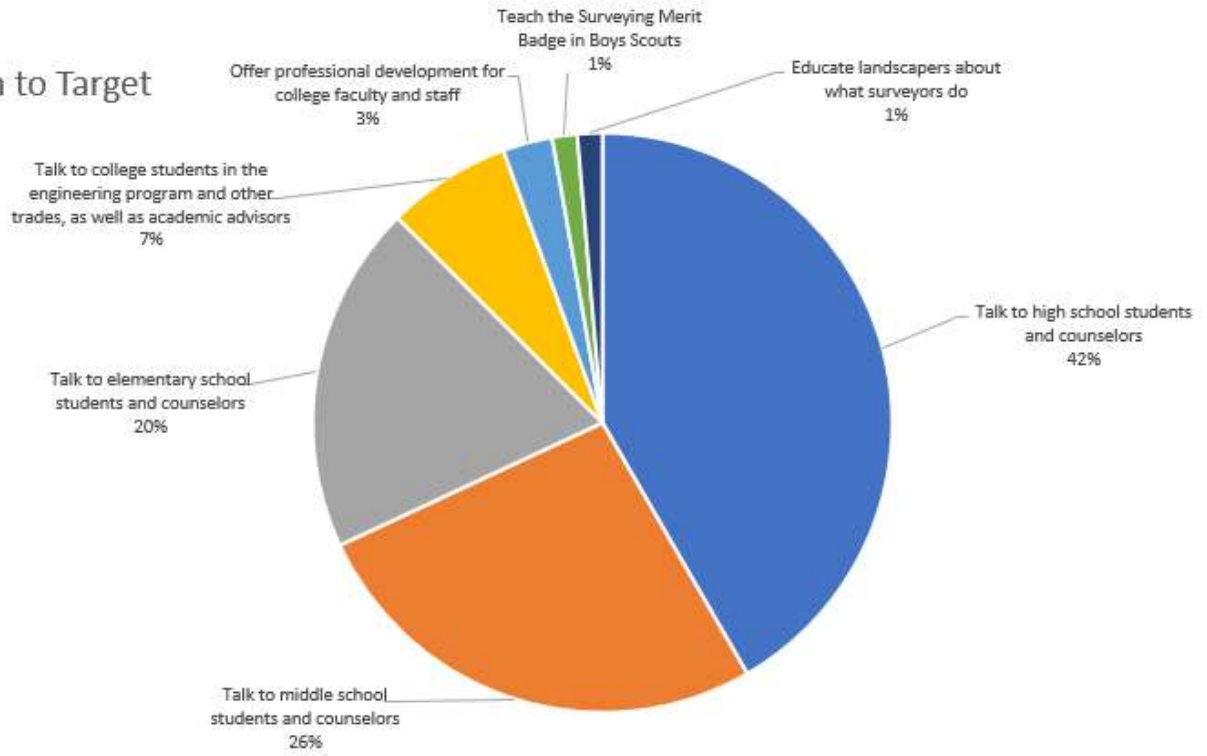
- Working for an s/e company, or knowing someone who does, very mildly increases your chances of correctly defining geomatics. ‡
- The more correctly you can define surveying, the very mildly higher the likelihood that you can also correctly define geomatics. ‡

There Is No Statistical Relationship between These Variables

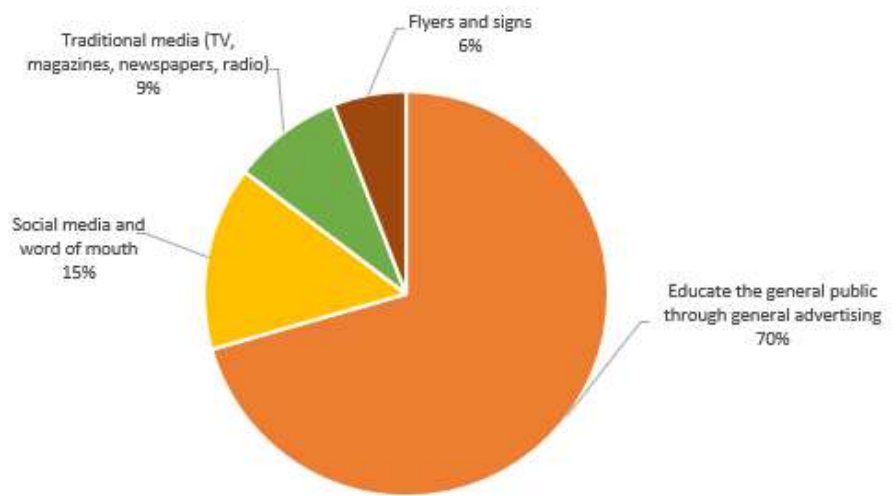
- Working for an s/e company has no statistical bearing on your ability to correctly define surveying, to know about the history of surveying law, or to know about surveying's role in the sale and development of land. (This surprised me.)
- Neither your current age nor the age when you first learned about surveying has any statistical bearing on your ability to correctly define geomatics.
- Knowing the correct definition of surveying has no statistical bearing on how highly you rate it or how well you know about the history of surveying law. ‡
- Knowing the correct definition of geomatics has no statistical bearing on how highly you rate it or how well you know about surveying's role in the sale and development of land.
- How old you were when you first learned about surveying has no statistical bearing on anything except being able to define it correctly, as mentioned above.

Respondent Suggestions for Increasing Awareness of and Interest in Surveying

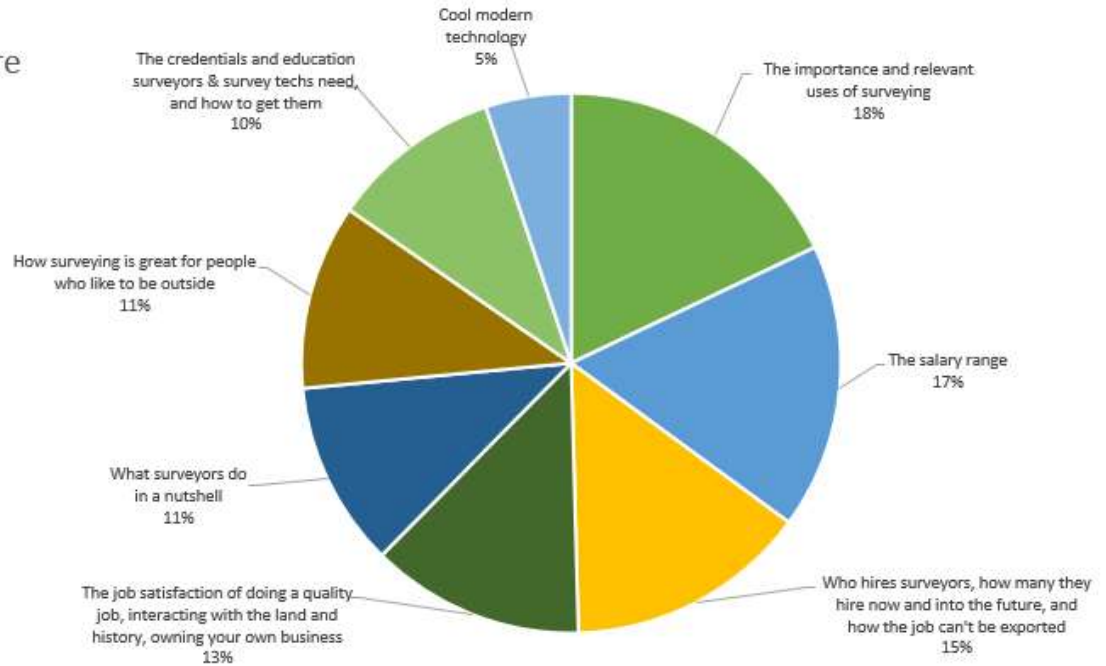
Whom to Target



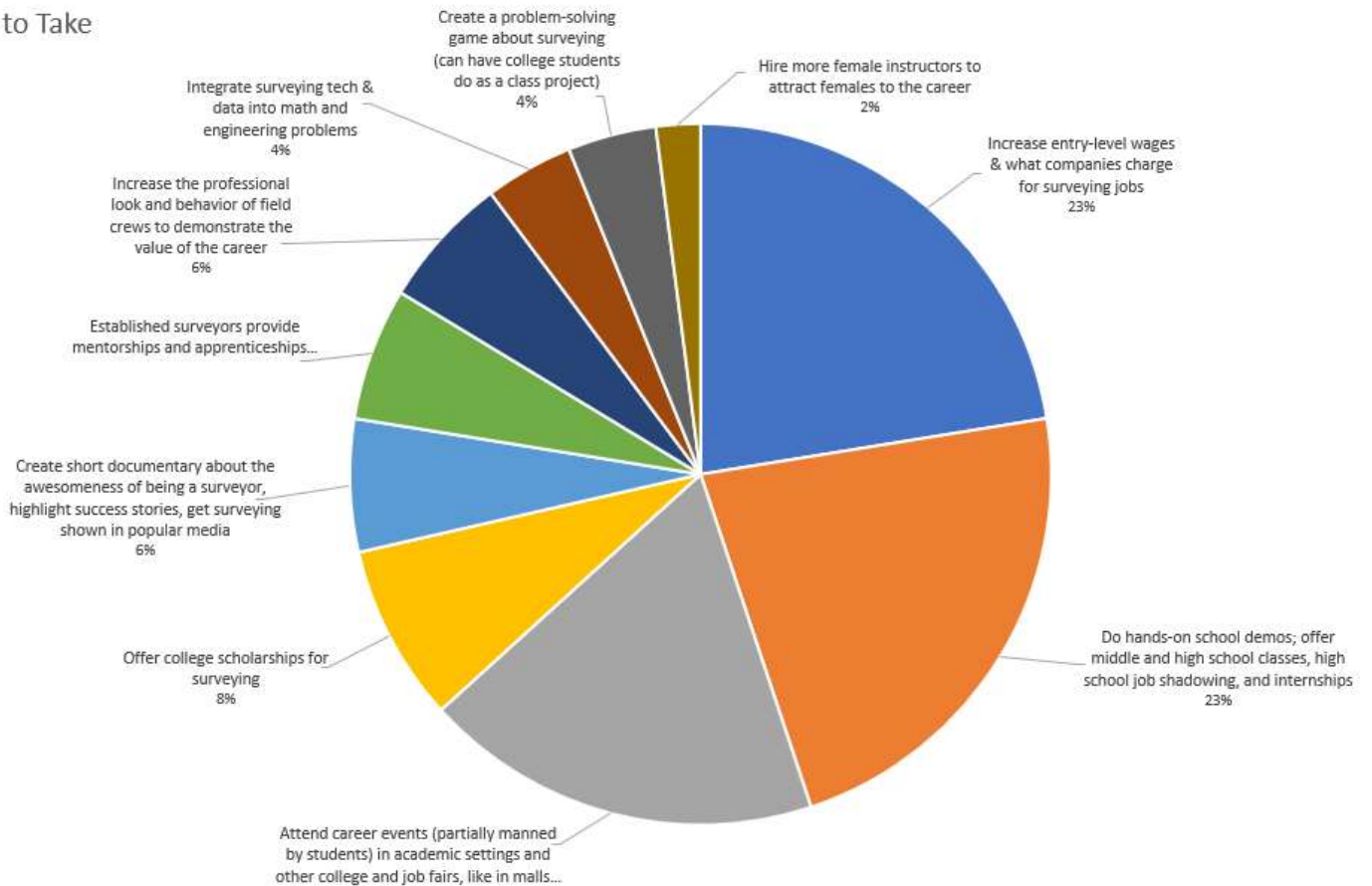
Where to Advertise



What to Share



Actions to Take



Conclusions

Basis A

First learning about surveying at an earlier age, just seeing surveyors at work in their community, or knowing someone in the industry, does not increase the likelihood that the person will enter the profession, but once exposed to surveying in an authentic way, people are more likely to enter the profession.

In recent decades, fewer people are being hired without formal training even though the comments gathered show that people tend to get interested in surveying by doing it. Requiring post-secondary surveying education of new employees may be a barrier to entry.

Learning about surveying in an academic setting at any level increases the likelihood that the person will enter the profession, but job shadowing and internship opportunities greatly increase the likelihood that the person will enter the profession, especially during high school.

The younger you are when you first learn about surveying the more likely you are to really know what it is, and therefore you will rate surveying as being mildly more important in society, and thus be very mildly more likely to enter the profession.

Knowing someone who works in the profession has a good chance of increasing how highly it will be rated.

Recommendation #1

Offer meaningful job shadowing opportunities to middle school and high school students.

Recommendation #2

Hire high school students as interns or apprentices.

Recommendation #3

Do more personal outreach to elementary, middle and high school classrooms and counselors, especially drafting and shop classes, as well as attending college and career day events at high schools and malls. Teach hands-on workshops to all ages and formal classes in surveying to high school students.

Recommendation #4

Create marketing materials that target the modalities favored by current high school and college age people, those born 1998-2006. This will include various-length promo videos and memes that can be shared on social media platforms. Include the information suggested in the "What to Share" list.

Recommendation #5

Participate in mentorships with high school and college students.

Recommendation #6

Volunteer to teach the Boy Scouts Surveying Merit Badge.

Basis B

Cross-training in surveying while at work dramatically increases the likelihood that the person will enter the profession.

Recommendation #7

Cross-train all interested CAD and engineering techs as survey techs.

Recommendation #8

Talk with engineering students about switching to or adding surveying.

Recommendation #9

Offer professional development sessions to college advisors, staff and faculty, as well as landscaping technicians.

Basis C

Only 10 of 188 respondents (5%) knew “geomatics” is another word for surveying, and 8 of them either work at an s/e company or know someone who does. Everybody else was really just guessing.

Additionally, the Wake Tech program at the Vernon Malone College & Career Academy (in partnership with the Wake County Public School System) had a very slow start because it had been marketed in Spring 2015 as “GIS/Geospatial Technologies” (thereafter known as GIS by all public school personnel) and then “Geomatics Mapping Technology” in Spring 2016 before being renamed in Spring 2017 as “Applied Engineering, Surveying & Mapping Technology,” which was followed by quintupled enrollment. The program was ended in May 2017.

Recommendation #10

Surveyors, surveying educators and college administrators need to stop calling it geomatics.

Action Planning and Implementation

The next steps are:

- I will communicate my conclusions and recommendations to my department, my institutional contacts, the industry professionals on our Advisory Board, and the North Carolina Society of Surveyors.
- If approved by my department and division, I will research high school drafting and shop programs in Wake County and bordering counties for the purpose of establishing relationships with teachers and career/guidance counselors, and subsequently visiting classrooms on behalf of the Geomatics Technology program. Because this would necessarily involve the creation of generation-appropriate marketing materials, this may become my next benchmarking project.

Results

The final results of the study must be determined based on Geomatics Technology program enrollments following implementation of the recommendations by various stakeholders.

Applied Benchmarking Database Review

Recruitment to college programs has been the focus of many projects over the last six years. Some focus on recruiting women into STEM fields, and others focus on recruiting all students to specific trades. These projects focus on awareness of the college programs at Wake Tech but seem to assume that students know the career option exists and just need to be pointed to Wake Tech to be trained.

In additions to traditional advertising and marketing efforts, recommendations of these projects include faculty appearances at high school career day and college day events as well as cooperation with municipal workforce programs.

They are listed in reverse chronological order.

2018-2019

- The Development of Marketing and Recruitment Strategies Within Higher Education (Sheila Weathersbee and Arthur Davis)

2017-2018

- Boy Scouts Merit Badge - College (Gina Beaudry)
- Community Outreach Tracking (Monica Gemperlein)

2016-2017

- Cosmetology Student Recruitment (Saundra Branch-Johnson)
- Current Student Recruitment Methods (Julie Eldridge)
- Recruitment & Outreach Best Practices Manual (Anthony Garnes and Camilla Crump)

2015-2016

- Recruitment of Female Students for Mechanical Engineering Technology (Dana Adams, Anthony Pope, Noah Spencer, and Russell Wahrman)
- High School Students involvement in CTE CCP in Criminal Justice (John Allen)

2014-2015

- Recruitment and Retention of Women in Engineering (Charlotte Ihnatolya)
- Career Pathway Recruitment for College & Career Readiness (Monica Gemperlein)
- Recruitment and Outreach Monthly Summary Report (Michelle Lair)
- Workplace Implemented Learning & Lab Initiative (Byron Latil)
- AET Recruitment Trailer (David Underwood)

2013-2014

- Active Recruitment Strategies (Anthony Garnes)
- Other Methods to improve the enrollment in our courses (Maria Obregon)

Appendix A – The Questions

Q1 (short answer)

What is your five-digit ZIP Code? (If you do not live in the United States of America, please give your city, province, country and postal code.)

Q2 (multiple choice)

Which statement best describes you?

- I am in pre-school or elementary school.
- I am in middle school or junior high school.
- I am in high school.
- I am age 18-35.
- I am age 36-50.
- I am age 51-75.
- I am at least 76 years of age.

Q3 (multiple choice)

Are you working or have you ever worked for a surveying or engineering company?

- Yes
- No

Q4 (multiple choice)

Do you know someone who is working or has ever worked for a surveying or engineering company?

- Yes
- No

Q5 (short answer)

Describe when you first learned about surveying. Be as detailed as you like.

Q6 (short answer)

Without looking it up, tell me what surveyors do.

Q7 (multiple choice)

How important do you think the surveying career is for the society you live in?
Likert scale of 1 (Not important at all) to 10 (Extremely important)

Q8 (short answer)

Without looking it up, tell me what the word "geomatics" means.

Q9 (multiple choice)

Are you surprised to learn that the national law in the U.S. about land surveying was made official before the U.S. Constitution was made official?

- Yes
- No

Q10 (multiple choice)

Are you surprised to learn that a surveyor is supposed to be involved every time land is sold or built upon?

- Yes
- No

Q11 (short answer)

Optional: Let me know how you think we can get more people interested in the career of surveying.

Q12 (short answer)

Optional: If you would like to help spread the word about surveying and surveying education opportunities, please provide your full name and a good email address. Your contact information will only be used for this project.

Appendix B – Volunteers

The following people provided their contact information in order to be of assistance in increasing the awareness and interest in surveying and surveying education programs.

Name

Amy Crump

Brian Hiles

Cheryl Burk

Crescentia Brown

David Nichols

Dr. Jerry W. Nave, PLS

Elizabeth Williams

Farhan Khan

Gary Stickle

James E Franklin

Jason Graves

Jeff Barron, PLS (NC), RPLS (TX)

Jennifer Cox

John Bean

Justin Tallent

Kay Ruth

Leah Lockamy

Luis Oliva

Osman Navarro Maldonado

Perry Monds

Rebeca Trojan

Sara Rutledge

Sheryl Davy

Suzy Chapman

Twizeyimana Sylvere

bryndaf

mcmahelj

srasor

Appendix C – The Questionnaire Results Tables

The pivot tables were generated by Excel. The tables of percentages were created by me. The complete Excel workbook is available upon request.

Networking

Row Labels	Count of Are you working or have you ever worked for a surveying or engineering company?	Count of Do you know someone who is working or has ever worked for a surveying or engineering company?
No	149	149
No	75	75
I am age 18-35.	25	25
I am age 36-50.	29	29
I am age 51-75.	21	21
Yes	74	74
I am age 18-35.	28	28
I am age 36-50.	25	25
I am age 51-75.	21	21
Yes	39	39
No	2	2
I am age 36-50.	1	1
I am age 51-75.	1	1
Yes	37	37
I am age 18-35.	10	10
I am age 36-50.	13	13
I am age 51-75.	14	14
Grand Total	188	188

78.7% of all respondents do not work/have not worked for a surveying or engineering company, n = 188

35.6% are age 18-35

36.2% are age 36-50

28.2% are age 51-75

20.7% of all respondents work/have worked for a surveying or engineering company, n = 188

25.6% are age 18-35, n = 39

35.9% are age 36-50, n = 39

38.5% are age 51-75, n = 39

49.7% of those not in the field know someone in the field, n = 149

37.8% are age 18-35, n = 74

33.8% are age 36-50, n = 74

28.4% are age 51-75, n = 74

50.7% of those not in the field do not know someone in the field, n = 149

33.3% are age 18-35, n = 75

38.7% are age 36-50, n = 75

28.0% are age 51-75, n = 75

94.9% of those in the field know someone in the field, n = 39

27.0% are age 18-35, n = 37

35.1% are age 36-50, n = 37

37.8% are age 51-75, n = 37

5.1% of those in the field do not know someone in the field, n = 39

0.0% are age 18-35, n = 2

50.0% are age 36-50, n = 2

50.0% are age 51-75, n = 2

How People First Learned about Surveying by Profession Category, Networking and Age Range

Row Labels	Boy Scouts	buying/selling/building a home, dividing an estate	career counselor	college setting	co-worker was a surveyor	elementary school setting	friend/family member was a surveyor	middle/high school setting	never learned about surveyors	offered a job/in the military	related to a field I was interested in	saw on the side of the road/new subdivision	saw working for a neighbor/family member
No	0	15	2	4	6	3	17	7	17	0	4	36	9
No	0	10	1	2	1	0	1	5	15	0	2	21	5
I am age 18-35.	0	1	0	2	0	0	0	1	11	0	1	5	1
I am age 36-50.	0	6	0	0	1	0	0	3	3	0	0	9	2
I am age 51-75.	0	3	1	0	0	0	1	1	1	0	1	7	2
Yes	0	5	1	2	5	3	16	2	2	0	2	15	4
I am age 18-35.	0	2	1	0	3	1	5	0	1	0	1	8	1
I am age 36-50.	0	1	0	2	2	2	6	0	1	0	0	5	1
I am age 51-75.	0	2	0	0	0	0	5	2	0	0	1	2	2
Yes	1	2	2	4	5	1	3	4	0	4	0	1	1
No	0	0	0	1	0	0	0	0	0	1	0	0	0
I am age 36-50.	0	0	0	0	0	0	0	0	0	1	0	0	0
I am age 51-75.	0	0	0	1	0	0	0	0	0	0	0	0	0
Yes	1	2	2	3	5	1	3	4	0	3	0	1	1
I am age 18-35.	0	2	0	0	0	0	1	2	0	0	0	1	0
I am age 36-50.	0	0	1	1	2	0	2	1	0	2	0	0	0
I am age 51-75.	1	0	1	2	3	1	0	1	0	1	0	0	1
Grand Total	1	17	4	8	11	4	20	11	17	4	4	37	10

Row Labels	Boy Scouts	buying/selling/building a home, dividing an estate	career counselor	college setting	co-worker was a surveyor	elementary school setting	friend/family member was a surveyor	middle/high school setting	never learned about surveyors	offered a job/in the military	related to a field I was interested in	saw on the side of the road/new subdivision	saw working for a neighbor/family member	
Not in field	0%	10%	1%	3%	4%	2%	11%	5%	11%	0%	3%	24%	6%	n= 148
18-35	0%	3%	1%	2%	3%	1%	4%	1%	10%	0%	2%	11%	2%	n= 120
36-50	0%	6%	0%	2%	3%	2%	5%	3%	3%	0%	0%	12%	3%	n= 120
51-75	0%	4%	1%	0%	0%	0%	5%	3%	1%	0%	2%	8%	3%	n= 120
In field	1%	1%	1%	3%	3%	1%	2%	3%	0%	3%	0%	1%	1%	n= 148
18-35	0%	7%	0%	0%	0%	0%	4%	7%	0%	0%	0%	4%	0%	n= 28
36-50	0%	0%	4%	4%	7%	0%	7%	4%	0%	11%	0%	0%	0%	n= 28
51-75	4%	0%	4%	11%	11%	4%	0%	4%	0%	4%	0%	0%	4%	n= 28
Do not know someone	0%	7%	1%	2%	1%	0%	1%	3%	10%	1%	1%	14%	3%	n= 148
18-35	0%	2%	0%	3%	0%	0%	0%	2%	17%	0%	2%	8%	2%	n = 65
36-50	0%	9%	0%	0%	2%	0%	0%	5%	5%	2%	0%	14%	3%	n = 65
51-75	0%	5%	2%	2%	0%	0%	2%	2%	2%	0%	2%	11%	3%	n = 65
Know someone	1%	5%	2%	3%	7%	3%	13%	4%	1%	2%	1%	11%	3%	n= 148
18-35	0%	5%	1%	0%	4%	1%	7%	2%	1%	0%	1%	11%	1%	n = 83
36-50	0%	1%	1%	4%	5%	2%	10%	1%	1%	2%	0%	6%	1%	n = 83
51-75	1%	2%	1%	2%	4%	1%	6%	4%	0%	1%	1%	2%	4%	n = 83
TOTAL	1%	11%	3%	5%	7%	3%	14%	7%	11%	3%	3%	25%	7%	n= 148
18-35	0%	3%	1%	1%	2%	1%	4%	2%	8%	0%	1%	9%	1%	n= 148
36-50	0%	5%	1%	2%	3%	1%	5%	3%	3%	2%	0%	9%	2%	n= 148
51-75	1%	3%	1%	2%	2%	1%	4%	3%	1%	1%	1%	6%	3%	n= 148

When People First Learned about Surveying by Profession Category, Networking and Age Range

Row Labels	0-5 Little	13-18 high school/ teenager	19-24 college	25-29 after college	30+ adult	6-12 kid/child
No	7	30	18	10	15	33
No	2	15	8	6	7	12
I am age 18-35.	1	3	5	2	0	2
I am age 36-50.	0	7	1	3	5	5
I am age 51-75.	1	5	2	1	2	5
Yes	5	15	10	4	8	21
I am age 18-35.	3	9	4	1	0	7
I am age 36-50.	2	2	3	2	6	6
I am age 51-75.	0	4	3	1	2	8
Yes	1	14	7	5	2	5
No	0	0	1	0	0	0
I am age 36-50.	0	0	0	0	0	0
I am age 51-75.	0	0	1	0	0	0
Yes	1	14	6	5	2	5
I am age 18-35.	1	5	1	0	0	1
I am age 36-50.	0	5	2	3	1	1
I am age 51-75.	0	4	3	2	1	3
Grand Total	8	44	25	15	17	38

Row Labels	0-5 Little	13-18 high school/ teenager	19-24 college	25-29 after college	30+ adult	6-12 kid/child		
Not in field	5%	20%	12%	7%	10%	3%	n = 147	77%
18-35	4%	11%	8%	3%	0%	8%	n = 113	
36-50	2%	8%	4%	4%	10%	10%	n = 113	
51-75	1%	8%	4%	2%	4%	12%	n = 113	
In field	1%	10%	5%	3%	1%	3%	n = 147	23%
18-35	3%	15%	3%	0%	0%	3%	n = 34	
36-50	0%	15%	6%	9%	3%	3%	n = 34	
51-75	0%	12%	12%	6%	3%	9%	n = 34	
Not know someone	1%	10%	6%	4%	5%	8%	n = 147	35%
18-35	2%	6%	10%	4%	0%	4%	n = 51	
36-50	0%	14%	2%	6%	10%	10%	n = 51	
51-75	2%	10%	6%	2%	4%	10%	n = 51	
Know someone	4%	20%	11%	6%	7%	18%	n = 147	67%
18-35	4%	14%	5%	1%	0%	8%	n = 99	
36-50	2%	7%	5%	5%	7%	7%	n = 99	
51-75	0%	8%	6%	3%	3%	11%	n = 99	
TOTALS	5%	30%	17%	10%	12%	26%	n = 147	
18-35	3%	12%	7%	2%	0%	7%	n = 147	
36-50	1%	10%	4%	5%	8%	8%	n = 147	
51-75	1%	9%	6%	3%	3%	11%	n = 147	

Correctness of What Surveyors Do by Age Range

- 2 correct knew technical vocabulary/processes
- 1 partly correct vague idea or used "survey" in the definition
- 0 incorrect no idea or thought it was data polling

Row Labels	Count of Correct Surveyor Definition	Sum of Opinion polls/ collect data	Sum of Make Maps/ Plots/ Plans	Sum of Elevation/ height words used	Sum of Utilities	Sum of Topography/ Lay of the land/features	Sum of Distance/ Angle words used	Sum of Measure/ Survey words used	Sum of Area/ acreage	Sum of Before/during construction/ development	Sum of Property lines/ boundaries	Sum of Tools/ Technology	Sum of Determine Land/soil quality for construction	Sum of Count traffic	Sum of Take photos
0	28	11				1		1		2			8	2	2
I am age 18-35.	17	9								1			5		1
I am age 36-50.	9	1				1		1		1			3	2	1
I am age 51-75.	2	1													
1	32		6			3		21	1	2	3		1		
I am age 18-35.	9		1			2		6		1	2		1		
I am age 36-50.	12		2					8	1	1					
I am age 51-75.	11		3			1		7			1				
2	128		44	15	5	37	11	63	5	34	73	16	1		1
I am age 18-35.	37		12	6	1	12	3	17	1	13	18	3			
I am age 36-50.	47		16	7	2	15	5	26	4	11	27	8			
I am age 51-75.	44		16	2	2	10	3	20		10	28	5	1		1
Grand Total	188	11	50	15	5	41	11	85	6	38	76	16	10	2	3

- 14.9% of all respondents really did not know what surveyors do, n = 188
- 17.0% of all respondents had some idea of what surveyors do, n = 188
- 68.1% of all respondents had a pretty good idea of what surveyors do, n = 188

Of all respondents who really did not know what surveyors do, n = 28

- 39.3% thought they gather questionnaire data or do research
- 3.6% thought they do something with the land
- 3.6% thought they measure
- 28.6% thought they help determine the quality of the land or soil for construction
- 7.1% thought they count traffic
- 7.1% thought they take photos for some reason

Of all respondents who had some idea of what surveyors do, n = 32

- 18.8% thought they make or plot maps
- 9.4% thought they do something to do with the lay of the land or features on it
- 65.6% used words like "measure" or "survey"
- 3.1% thought they do something with area or acreage
- 6.3% thought they are part of the construction process
- 9.4% thought they do something with property lines, borders or boundaries
- 3.1% thought they help determine the quality of the land or soil for construction

Of all respondents who had a pretty good idea of what surveyors do, n = 128

- 34.4% thought they make or plot maps
- 11.7% used words like "elevation" or "height"
- 3.9% used words like "utilities"
- 8.6% used words like "distance", "angle" or "dimensions"
- 49.2% used words like "measure" or "survey"
- 57.0% thought they do something with property lines, borders or boundaries
- 12.5% mentioned that they use special tools, equipment or technology
- 0.8% thought they help determine the quality of the land or soil for construction
- 0.8% thought they take photos for some reason

Correctness of What Surveyors Do by Profession Category and Age Range

- 2 correct knew technical vocabulary/processes
- 1 partly correct vague idea or used "survey" in the definition
- 0 incorrect no idea or thought it was data polling

Row Labels	Count of Correct Surveyor Definition	Sum of Opinion polls/ collect data	Sum of Make Maps/ Plots/ Plans	Sum of Elevation/ height words used	Sum of Utilities	Sum of Topography/ Lay of the land/features	Sum of Distance/ Angle words used	Sum of Measure/ Survey words used	Sum of Area/ acreage	Sum of Before/during construction/ development	Sum of Property lines/ boundaries	Sum of Tools/ Technology	Sum of Determine Land/soil quality for construction	Sum of Count traffic	Sum of Take photos
No	149	9	41	13	3	34	10	62	6	29	60	12	10	2	3
I am age 18-35.	53	8	10	6	1	12	3	20	1	13	15	1	6		1
0	16	8								1			5		1
1	7		1			2		5		1	1		1		
2	30		9	6	1	10	3	15	1	11	14	1			
I am age 36-50.	54	1	16	5	2	14	5	26	5	10	21	7	3	2	1
0	8	1				1		1					3	2	1
1	9		2					5	1	1					
2	37		14	5	2	13	5	20	4	9	21	7			
I am age 51-75.	42		15	2		8	2	16		6	24	4	1		1
0	1														
1	7		2			1		4			1				
2	34		13	2		7	2	12		6	23	4	1		1
Yes	39	2	9	2	2	7	1	23		9	16	4			
I am age 18-35.	10	1	3			2		3		2	5	2			
0	1	1													
1	2							1			1				
2	7		3			2		2		2	4	2			

Row Labels	Count of Correct Surveyor Definition	Sum of Opinion polls/ collect data	Sum of Make Maps/ Plots/ Plans	Sum of Elevation/ height words used	Sum of Utilities	Sum of Topography/ Lay of the land/features	Sum of Distance/ Angle words used	Sum of Measure/ Survey words used	Sum of Area/ acreage	Sum of Before/during construction/ development	Sum of Property lines/ boundaries	Sum of Tools/ Technology	Sum of Determine Land/soil quality for construction	Sum of Count traffic	Sum of Take photos
I am age 36-50.	14		2	2		2		9		3	6	1			
0	1									1					
1	3							3							
2	10		2	2		2		6		2	6	1			
I am age 51-75.	15	1	4		2	3	1	11		4	5	1			
0	1	1													
1	4		1					3							
2	10		3		2	3	1	8		4	5	1			
Grand Total	188	11	50	15	5	41	11	85	6	38	76	16	10	2	3

Row Labels	Count of Correct Surveyor Definition	Sum of Opinion polls/ collect data	Sum of Make Maps/ Plots/ Plans	Sum of Elevation/ height words used	Sum of Utilities	Sum of Topography/ Lay of the land/features	Sum of Distance/ Angle words used	Sum of Measure/ Survey words used	Sum of Area/ acreage	Sum of Before/during construction/ development	Sum of Property lines/ boundaries	Sum of Tools/ Technology	Sum of Determine Land/soil quality for construction	Sum of Count traffic	Sum of Take photos	
In field 18-35	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 39
Incorrect	10%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 10
Partly correct	20%	0%	0%	0%	0%	0%	0%	10%	0%	0%	10%	0%	0%	0%	0%	n = 10
Correct	70%	0%	30%	0%	0%	20%	0%	20%	0%	20%	40%	20%	0%	0%	0%	n = 10
In field 36-50	3%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	n = 39
Incorrect	7%	0%	0%	0%	0%	0%	0%	0%	0%	7%	0%	0%	0%	0%	0%	n = 14
Partly correct	21%	0%	0%	0%	0%	0%	0%	21%	0%	0%	0%	0%	0%	0%	0%	n = 14
Correct	71%	0%	14%	14%	0%	14%	0%	43%	0%	14%	43%	7%	0%	0%	0%	n = 14
In field 51-75	3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 39
Incorrect	7%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 15
Partly correct	27%	0%	7%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%	n = 15
Correct	67%	0%	20%	0%	13%	20%	7%	53%	0%	27%	33%	7%	0%	0%	0%	n = 15
Incorrect	15%	6%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	4%	1%	1%	n = 188
18-35	27%	14%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	8%	0%	2%	n = 63
36-50	13%	1%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	4%	3%	1%	n = 68
51-75	4%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 57
Partly Correct	17%	0%	3%	0%	0%	2%	0%	11%	1%	1%	2%	0%	1%	0%	0%	n = 188
18-35	14%	0%	2%	0%	0%	3%	0%	10%	0%	2%	3%	0%	2%	0%	0%	n = 63
36-50	18%	0%	3%	0%	0%	0%	0%	12%	1%	1%	0%	0%	0%	0%	0%	n = 68
51-75	19%	0%	5%	0%	0%	2%	0%	12%	0%	0%	2%	0%	0%	0%	0%	n = 57

Row Labels	Count of Correct Surveyor Definition	Sum of Opinion polls/ collect data	Sum of Make Maps/ Plots/ Plans	Sum of Elevation/ height words used	Sum of Utilities	Sum of Topography/ Lay of the land/features	Sum of Distance/ Angle words used	Sum of Measure/ Survey words used	Sum of Area/ acreage	Sum of Before/during construction/ development	Sum of Property lines/ boundaries	Sum of Tools/ Technology	Sum of Determine Land/soil quality for construction	Sum of Count traffic	Sum of Take photos	
Correct	68%	0%	23%	8%	3%	20%	6%	34%	3%	18%	39%	9%	1%	0%	1%	n = 188
18-35	59%	0%	19%	10%	2%	19%	5%	27%	2%	21%	29%	5%	0%	0%	0%	n = 63
36-50	69%	0%	24%	10%	3%	22%	7%	38%	6%	16%	40%	12%	0%	0%	0%	n = 68
51-75	77%	0%	28%	4%	4%	18%	5%	35%	0%	18%	49%	9%	2%	0%	2%	n = 57
Incorrect	15%	6%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	4%	1%	1%	n = 188
Not in field	17%	6%	0%	0%	0%	1%	0%	1%	0%	1%	0%	0%	5%	1%	1%	n = 149
In field	8%	5%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	n = 39
Partly Correct	17%	0%	3%	0%	0%	2%	0%	11%	1%	1%	2%	0%	1%	0%	0%	n = 188
Not in field	15%	0%	3%	0%	0%	2%	0%	9%	1%	1%	1%	0%	1%	0%	0%	n = 149
In field	23%	0%	3%	0%	0%	0%	0%	18%	0%	0%	3%	0%	0%	0%	0%	n = 39
Correct	68%	0%	23%	8%	3%	20%	6%	34%	3%	18%	39%	9%	1%	0%	1%	n = 188
Not in field	68%	0%	24%	9%	2%	20%	7%	32%	3%	17%	39%	8%	1%	0%	1%	n = 149
In field	69%	0%	21%	5%	5%	18%	3%	41%	0%	21%	38%	10%	0%	0%	0%	n = 39
TOTALS	100%	6%	27%	8%	3%	22%	6%	45%	3%	20%	40%	9%	5%	1%	2%	n = 188
Incorrect	100%	39%	0%	0%	0%	4%	0%	4%	0%	7%	0%	0%	29%	7%	7%	n = 28
Partly Correct	100%	0%	19%	0%	0%	9%	0%	66%	3%	6%	9%	0%	3%	0%	0%	n = 32
Correct	100%	0%	34%	12%	4%	29%	9%	49%	4%	27%	57%	13%	1%	0%	1%	n = 128

Row Labels	Count of Correct Geomatics Definition	Sum of no idea	Sum of surveying, locating	Sum of root words: geo = land/ Earth/ world	Sum of measure, area, dimension	Sum of geometry, math	Sum of geography, geographical	Sum of data collection, data analysis	Sum of surface of Earth, landscape	Sum of specifically GPS or hard technology related	Sum of map making	Sum of numbers, calculating	Sum of geology, rocks, land masses	Sum of design, construction	Sum of geodesy, projection, coordinates	Sum of soil related	Sum of science	Sum of geolocation/ geospatial data	Sum of work, automation	Sum of space
0	78	42		4	4	11	11	6		2	6	2	3	2		2	1			1
No	66	39		4	2	7	8	3		1	6	1	3	2		2				
No	40	24		2	2	4	5	1			2	1	2	1		2				
I am age 18-35.	15	9				3	3						1							
I am age 36-50.	15	9		2	1	1	2	1			2			1		1				
I am age 51-75.	10	6			1							1	1			1				
Yes	26	15		2		3	3	2		1	4		1	1						
I am age 18-35.	10	3		2		3	2	1		1	2			1						
I am age 36-50.	12	9					1				2		1							
I am age 51-75.	4	3						1												
Yes	12	3			2	4	3	3		1			1				1			1
No	1							1					1							
I am age 51-75.	1							1					1							
Yes	11	3			2	4	3	2		1								1		1
I am age 18-35.	2	1						1									1			
I am age 36-50.	3	1				1		1												
I am age 51-75.	6	1			2	3	3			1										1
1	71		1	48	23	16	8	5	8	4	5	6	4	1	4	1	1			2
No	61		1	41	20	13	7	5	7	2	4	6	4	1	3	1	1			2
No	25			16	10	9	4	3	2		2	2	1		2		1			
I am age 18-35.	7			6	2	2						1								
I am age 36-50.	10			6	5	4	2		1		2		1		2					
I am age 51-75.	8			4	3	3	2	3	1			1					1			

Row Labels	Count of Correct Geomatics Definition	Sum of no idea	Sum of surveying, locating	Sum of root words: geo = land/ Earth/ world	Sum of measure, area, dimension	Sum of geometry, math	Sum of geography, geographical	Sum of data collection, data analysis	Sum of surface of Earth, landscape	Sum of specifically GPS or hard technology related	Sum of map making	Sum of numbers, calculating	Sum of geology, rocks, land masses	Sum of design, construction	Sum of geodesy, projection, coordinates	Sum of soil related	Sum of science	Sum of geology/ geospatial data	Sum of work, automation	Sum of space
Yes	36		1	25	10	4	3	2	5	2	2	4	3	1	1	1			2	
I am age 18-35.	12			10	4	2	1		2			2	1						1	
I am age 36-50.	12			8	5	1	1	1	2			1	1			1				
I am age 51-75.	12		1	7	1	1	1	1	1	2	2	1	1	1	1				1	
Yes	10			7	3	3	1		1	2	1				1					
No	1			1		1														
I am age 36-50.	1			1		1														
Yes	9			6	3	2	1		1	2	1				1					
I am age 18-35.	3			1			1			2	1				1					
I am age 36-50.	3			2		1			1											
I am age 51-75.	3			3	3	1														
3	10		10			1	1	1		1	2								1	
No	4		4								1									
No	2		2								1									
I am age 36-50.	2		2								1									
Yes	2		2																	
I am age 51-75.	2		2																	
Yes	6		6			1	1	1		1	1								1	
Yes	6		6			1	1	1		1	1								1	
I am age 18-35.	1		1			1				1									1	
I am age 36-50.	3		3																	
I am age 51-75.	2		2				1	1												
Grand Total	188	42	16	57	40	29	23	21	20	12	14	10	7	5	5	4	3	3	2	1

Row Labels	Count of Correct Geomatics Definition	Sum of no idea	Sum of surveying, locating	Sum of root words: geo = land/ Earth/ world	Sum of measure, area, dimension	Sum of geometry, math	Sum of geography, geographical	Sum of data collection, data analysis	Sum of surface of Earth, landscape	Sum of specifically GPS or hard technology related	Sum of map making	Sum of numbers, calculating	Sum of geology, rocks, land masses	Sum of design, construction	Sum of geodesy, projection, coordinates	Sum of soil related	Sum of science	Sum of geology/ geospatial data	Sum of work, automation	Sum of space	
Mostly correct	15%	0%	3%	3%	7%	1%	2%	5%	6%	3%	1%	1%	0%	1%	1%	1%	1%	1%	0%	0%	n = 188
Incorrect	41%	22%	0%	2%	2%	6%	6%	3%	0%	1%	3%	1%	2%	1%	0%	1%	1%	0%	0%	1%	n = 188
Partly Correct	38%	0%	1%	26%	12%	9%	4%	3%	4%	2%	3%	3%	2%	1%	2%	1%	1%	0%	1%	0%	n = 188
Correct	5%	0%	5%	0%	0%	1%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	n = 188
Not in field	79%	21%	5%	26%	15%	11%	9%	7%	7%	4%	6%	4%	4%	3%	2%	2%	1%	1%	1%	0%	n = 188
Mostly correct	12%	0%	3%	3%	5%	0%	1%	4%	4%	3%	0%	1%	0%	1%	0%	1%	1%	1%	0%	0%	n = 149
Incorrect	44%	26%	0%	3%	1%	5%	5%	2%	0%	1%	4%	1%	2%	1%	0%	1%	0%	0%	0%	0%	n = 149
Partly Correct	41%	0%	1%	28%	13%	9%	5%	3%	5%	1%	3%	4%	3%	1%	2%	1%	1%	0%	1%	0%	n = 149
Correct	3%	0%	3%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 149
In field	21%	2%	3%	4%	6%	5%	3%	4%	4%	2%	2%	1%	0%	0%	1%	0%	1%	1%	0%	1%	n = 188
Mostly correct	28%	0%	0%	3%	15%	3%	3%	8%	15%	0%	3%	3%	0%	0%	3%	0%	0%	3%	0%	0%	n = 39
Incorrect	31%	8%	0%	0%	5%	10%	8%	8%	0%	3%	0%	3%	0%	0%	0%	0%	3%	0%	0%	3%	n = 39
Partly Correct	26%	0%	0%	18%	8%	8%	3%	0%	3%	5%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%	n = 39
Correct	15%	0%	15%	0%	0%	3%	3%	3%	0%	3%	3%	0%	0%	0%	0%	0%	0%	3%	0%	0%	n = 39

Row Labels	Count of Correct Geomatics Definition	Sum of no idea	Sum of surveying, locating	Sum of root words: geo = land/ Earth/ world	Sum of measure, area, dimension	Sum of geometry, math	Sum of geography, geographical	Sum of data collection, data analysis	Sum of surface of Earth, landscape	Sum of specifically GPS or hard technology related	Sum of map making	Sum of numbers, calculating	Sum of geology, rocks, land masses	Sum of design, construction	Sum of geodesy, projection, coordinates	Sum of soil related	Sum of science	Sum of geolocation/ geospatial data	Sum of work, automation	Sum of space	
Does not know someone	41%	13%	3%	11%	9%	7%	5%	4%	3%	1%	3%	3%	2%	1%	1%	2%	1%	0%	0%	0%	n = 188
Mostly correct	10%	0%	4%	3%	5%	0%	0%	3%	4%	3%	0%	1%	0%	1%	0%	1%	0%	0%	0%	0%	n = 77
Incorrect	53%	31%	0%	3%	3%	5%	6%	3%	0%	0%	3%	3%	3%	1%	0%	3%	0%	0%	0%	0%	n = 77
Partly Correct	34%	0%	0%	22%	13%	13%	5%	4%	3%	0%	3%	3%	1%	0%	3%	0%	1%	0%	0%	0%	n = 77
Correct	3%	0%	3%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	n = 77
Knows someone	59%	10%	6%	19%	13%	8%	7%	7%	8%	5%	5%	3%	2%	2%	2%	1%	1%	2%	1%	1%	n = 188
Mostly correct	19%	0%	2%	3%	8%	1%	3%	6%	8%	3%	1%	1%	0%	1%	1%	0%	1%	2%	0%	0%	n = 111
Incorrect	33%	16%	0%	2%	2%	6%	5%	4%	0%	2%	4%	0%	1%	1%	0%	0%	1%	0%	0%	1%	n = 111
Partly Correct	41%	0%	1%	28%	12%	5%	4%	2%	5%	4%	3%	4%	3%	1%	2%	1%	0%	0%	2%	0%	n = 111
Correct	7%	0%	7%	0%	0%	1%	1%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	n = 111
18-35	34%	7%	1%	12%	5%	6%	5%	3%	4%	3%	2%	2%	1%	1%	1%	1%	1%	2%	1%	0%	n = 188
Mostly correct	21%	0%	2%	5%	6%	0%	3%	6%	10%	2%	0%	2%	0%	2%	2%	2%	0%	3%	0%	0%	n = 63
Incorrect	43%	21%	0%	3%	0%	10%	8%	3%	0%	2%	3%	0%	2%	2%	0%	0%	2%	0%	0%	0%	n = 63
Partly Correct	35%	0%	0%	27%	10%	6%	3%	0%	3%	3%	2%	5%	2%	0%	2%	0%	0%	0%	2%	0%	n = 63
Correct	2%	0%	2%	0%	0%	2%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	n = 63

Rating of Importance of Surveying in Society

Average of How important do you think the surveying career is for the society you live in?		How important do you think the surveying career is for the society you live in?			
Row Labels					
No	8.362	Minimum	1.000	18-35	8.159 below mean
No	7.973	-1 σ	6.895	36-50	8.500 near mean
I am age 18-35.	7.360	25th %ile	8.000	51-75	9.175 above mean
I am age 36-50.	7.690	Mean	8.590	<i>range</i>	1.017 significant
I am age 51-75.	9.095	Median	9.000	n = 188	
Yes	8.757	75th %ile	10.000	n = 188	
I am age 18-35.	8.607	+1 σ	10.286	n = 188	
I am age 36-50.	8.800	Maximum	10.000	n = 188	
I am age 51-75.	8.905	Mode	10.000	n = 188	
Yes	9.462	Standard Deviation	1.695	n = 188	
No	9.000	2/3 St Dev	1.130	n = 188	
I am age 36-50.	8.000	1/2 St Dev	0.848	n = 188	
I am age 51-75.	10.000			n = 188	
Yes	9.486	Do not work in industry	8.362 below mean	18-35	7.360 below 25th %
I am age 18-35.	8.900	Work in industry	9.462 above mean	36-50	7.700 below 25th %
I am age 36-50.	9.769	<i>difference</i>	1.099 significant	51-75	9.136 above mean
I am age 51-75.	9.643			<i>range</i>	1.776 >1 σ very sign
Grand Total	8.590			<i>weighted average</i>	
		Do not know someone	8.487 below mean	18-35	8.684 above mean
		Know someone	9.122 above mean	36-50	9.132 above mean
		<i>difference</i>	0.635	51-75	9.200 above mean
				<i>range</i>	0.516

Surprised by the Role of Surveying in Society

Row Labels	Surprised that surveying law predates Constitution ratification	Surprised by surveyor's role in real estate
No	82	25
No	39	15
I am age 18-35.	16	6
I am age 36-50.	13	5
I am age 51-75.	10	4
Yes	43	10
I am age 18-35.	21	6
I am age 36-50.	14	3
I am age 51-75.	8	1
Yes	13	8
No	1	1
I am age 36-50.	0	0
I am age 51-75.	1	1
Yes	12	7
I am age 18-35.	3	3
I am age 36-50.	5	2
I am age 51-75.	4	2
Grand Total	95	33

	Surprised that surveying law predates Constitution ratification	<i>variance</i>	Surprised by surveyor's role in real estate	<i>variance</i>	n
TOTAL	50.53%		17.55%		188
Do not work in industry	55.03%	4.50%	16.78%	-0.77%	149
Work in industry	33.33%	-17.20%	20.51%	2.96%	39
<i>difference</i>	-21.70%		3.73%		
Do not know someone	51.95%	1.42%	20.78%	3.23%	77
Know someone	49.55%	-0.98%	15.32%	-2.24%	111
<i>difference</i>	-2.40%		-5.46%		
18-35	63.49%	12.96%	23.81%	6.26%	63
36-50	47.06%	-3.47%	14.71%	-2.85%	68
51-75	40.35%	-10.18%	14.04%	-3.52%	57
<i>range</i>	-23.14%		-9.77%		

	Surprised that surveying law predates Constitution ratification	<i>variance</i>	Surprised by surveyor's role in real estate	<i>variance</i>	n
Do not work in industry					149
18-35	69.81%	19.28%	22.64%	5.09%	53
36-50	50.00%	-0.53%	14.81%	-2.74%	54
51-75	42.86%	-7.67%	11.90%	-5.65%	42
<i>range</i>	-26.95%		-10.74%		
Work in industry					39
18-35	30.00%	-20.53%	30.00%	12.45%	10
36-50	35.71%	-14.82%	14.29%	-3.27%	14
51-75	33.33%	-17.20%	20.00%	2.45%	15
<i>range</i>	3.33%		-10.00%		
Do not know someone					77
18-35	64.00%	13.47%	24.00%	6.45%	25
36-50	43.33%	-7.20%	16.67%	-0.89%	30
51-75	50.00%	-0.53%	22.73%	5.17%	22
<i>range</i>	-14.00%		-1.27%		
Know someone					111
18-35	63.16%	12.63%	23.68%	6.13%	38
36-50	50.00%	-0.53%	13.16%	-4.40%	38
51-75	34.29%	-16.25%	8.57%	-8.98%	35
<i>range</i>	-28.87%		-15.11%		

Statistical Correlations

			Pearson						Spearman	
<u>Array 1</u>	<u>Array 2</u>	<u>n</u>	<u>r</u>	<u>r-squared</u>	<u>t</u>	<u>critical value</u> <u>=tinv()</u>	<u>p-value</u> <u>=tdist()</u>	<u>significant</u> <u>if p<0.05</u>	<u>rs</u>	<u>rs-squared</u>
Age Now	Age Learned	188	0.11	1.3%	1.547	1.973	0.123		#N/A	#N/A
Age Now	Profession Category	188	0.10	1.0%	1.387	1.973	0.167		0.10	1.0%
Age Now	Networking	188	0.00	0.0%	0.021	1.973	0.984		0.00	0.0%
Age Learned	Profession Category	147	0.07	0.5%	0.877	1.976	0.382		#N/A	#N/A
Age Learned	Networking	147	-0.08	0.7%	0.977	1.976	0.330		#N/A	#N/A
Profession Category	Networking	188	0.37	13.9%	5.479	1.973	0.000	yes	0.37	13.9%
Age Now	Importance	188	0.23	5.3%	3.242	1.973	0.001	yes	0.22	5.0%
Age Now	Surprised by law	188	-0.19	3.6%	2.645	1.973	0.009	yes	-0.19	3.5%
Age Now	Surprised by real estate	188	-0.11	1.2%	1.506	1.973	0.134		-0.10	1.1%
Age Learned	Importance	147	-0.07	0.4%	0.788	1.976	0.432		#N/A	#N/A
Age Learned	Surprised by law	147	0.00	0.0%	0.000	1.976	1.000		#N/A	#N/A
Age Learned	Surprised by real estate	147	0.13	1.8%	1.639	1.976	0.103		#N/A	#N/A
Profession Category	Importance	188	0.26	6.9%	3.727	1.973	0.000	yes	0.30	9.0%
Profession Category	Surprised by law	188	-0.18	3.1%	2.438	1.973	0.016	yes	-0.18	3.1%
Profession Category	Surprised by real estate	188	0.04	0.2%	0.543	1.973	0.588		0.04	0.2%
Networking	Importance	188	0.29	8.5%	4.146	1.973	0.000	yes	0.27	7.2%
Networking	Surprised by law	188	-0.02	0.1%	0.322	1.973	0.748		-0.02	0.1%
Networking	Surprised by real estate	188	-0.07	0.5%	0.966	1.973	0.335		-0.07	0.5%
Age Now	Correct Surveying Definition	188	0.23	5.2%	3.191	1.973	0.002	yes	0.20	3.8%
Age Now	Correct Geomatics Definition	188	0.05	0.2%	0.679	1.973	0.498		0.04	0.2%
Age Learned	Correct Surveying Definition	147	-0.25	6.4%	3.160	1.976	0.002	yes	#N/A	#N/A
Age Learned	Correct Geomatics Definition	147	-0.07	0.5%	0.890	1.976	0.375		#N/A	#N/A

		Pearson						
<u>Array 1</u>	<u>Array 2</u>	<u>n</u>	<u>r</u>	<u>r-squared</u>	<u>t</u>	<u>critical value</u> <u>=tinv()</u>	<u>p-value</u> <u>=tdist()</u>	<u>significant</u> <u>if p<0.05</u>
Profession Category	Correct Surveying Definition	188	0.06	0.3%	0.789	1.973	0.431	
Profession Category	Correct Geomatics Definition	188	0.26	6.6%	3.617	1.973	0.000	yes
Networking	Correct Surveying Definition	188	0.28	7.7%	3.936	1.973	0.000	yes
Networking	Correct Geomatics Definition	188	0.21	4.5%	2.969	1.973	0.003	yes
Correct Surveying Definition	Importance	188	0.17	3.0%	2.413	1.973	0.017	yes
Correct Surveying Definition	Surprised by law	188	-0.08	0.6%	1.089	1.973	0.278	
Correct Surveying Definition	Surprised by real estate	188	-0.24	5.6%	3.332	1.973	0.001	yes
Correct Geomatics Definition	Importance	188	0.10	1.0%	1.393	1.973	0.165	
Correct Geomatics Definition	Surprised by law	188	-0.21	4.5%	2.958	1.973	0.004	yes
Correct Geomatics Definition	Surprised by real estate	188	-0.13	1.6%	1.746	1.973	0.082	
Correct Surveying Definition	Correct Geomatics Definition	188	0.23	5.1%	3.172	1.973	0.002	yes

Spearman	
<u>rs</u>	<u>rs-squared</u>
0.04	0.1%
0.22	4.7%
0.28	7.6%
0.22	4.7%
0.13	1.6%
-0.05	0.2%
-0.23	5.5%
0.06	0.4%
-0.20	4.1%
-0.13	1.7%
0.22	4.8%

