Rural America:

A Study on How Comfortably First-Year College Students Use Technology

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Abstract

Rural Education has systemic issues that lead to low integration of technology during a student's K-12 education. While research exists on rural students both being hindered by their background, as well as being able to overcome it, when transitioning to higher-ed, no direct correlation between technological familiarity or comfort due to their former education has been made. To fill this gap, a team of researchers surveyed 668 students enrolled at The University of Tampa's BAC 100 Digital Skills freshman class. They found that, though anomalies existed, there was not enough evidence to say that rural students were far behind their peers with familiarity and ease-of-use of common technological programs, such as the Microsoft Office Suite.

Purpose of Study

Higher-Education settings are a microcosm of America as a whole; colleges and universities often serve as a melting pot for students of all different spectrums of gender, race, faith, and background. Depending on the institution attended, every one of the 50 states, along with dozens of countries, can be represented within the student body at any given time. Although most of us would like to think that each student has had equal opportunity, it's not statistically likely that an incoming freshman class will have each of its students enroll on an even playing field. Focusing on the U.S., a student's hometown and their access to public schools can vary wildly. A student, for example, graduating from the top private high school in a highly populated

city might have a drastically different relationship with technology in the classroom compared to a student coming from a true rural environment.

A rural environment is defined as, “an open swath of land that has few homes or other buildings, and not very many people” (National Geographic Society, 2011). A rural area’s population, by definition, is not heavily centralized, and this translates to an economy where poverty is normalized. This level of poverty contributes to lower retention rates for those originating from rural regions, as only 10% of students from low-income families attain a bachelor’s degree by the age of 25 (Gutierrez, 2016), and rural districts have an even more difficult time in this regard compared to their urban counterparts in improving these statistics. Since 2000, an urban student has a 10-15% higher chance of going to college than a rural resident (Gutierrez, 2016).

The state of lower-income prevalent in rural America bleeds into their infrastructure; integrating technology to their classrooms for daily use is rendered much more difficult. A former Federal Communications Commissions Chairman explained that 41% of rural schools lack access to the fast fiber connections (Wheeler, 2014). This means that 41% of rural schools are operating without high-speed internet, compared to the 31% of urban schools without the same access.

Despite making up only 15% of the population, rural residents are spread out across 72% of the U.S. (C-Span, 2013). Due to such factors, the majority of rural school districts are forced to allocate a greater percentage of their budget to transporting their students instead of investing into new technologies or making technologies accessible to their students. The geography of

rural areas plays a key role in disincentivizing quality teachers as well; rural schools tend to be far away from many services that appeal to young people or newly formed families (Gutierrez, 2016), which may keep instructors who may otherwise be critical in shepherding in the usage of technology.

Problem Statement

These factors all affect rural American students during their K-12 education, but the effects may or may not translate to their higher-ed studies. A level playing field of access would ideally have students across the rural divide be able to use the most widespread of inputting software, such as what the Microsoft Office Suite provides, to keep up with their peers in class and set them up for academic success. The purpose of this research study is to answer the following question: How comfortably do rural American first-year college students use common technological software? Due to the nature of the technological 21st century, no hypothesis has been formed one as to whether rural students are, in fact, at a disadvantage in this particular regard.

Literature Review

Rural Education in America as a topic is not one that is researched or promoted enough as often as it seemingly should be, given that roughly one fifth of all students enrolled in the country's public education system are from rurally developed areas (Croft and Moore, 2019). In

fact, one study found this to be especially true in the world of academia, when the researcher found that the top five ranked educational research journals, *Sociology of Education, Journal of Educational and Behavioral Statistics, Educational Evaluation and Policy Analysis, Review of Educational Research, and the American Educational Research Journal*, housed 59 more articles discussing the needs and advancements of urban education in America than those within the rural realm between 2004 and 2014: 64 published articles centered around urban education vs. 5 published rural articles (Schafft, 2016).

This does not mean research is anywhere near non-existent; however, and what has been outlined thus far shows an education system with acknowledged shortcomings. For example, modern rural schools are disproportionately unequipped to use technology when accessing aid to teach their students due to inadequate funding as well as limited professional development opportunities. Even when basic equipment like computers are made available, it is insufficient when the internet provided has poor broadband connections, as this renders poor access and low quality when using the most sought are instructional assets and materials, like videos, while they are being streamed or downloaded (T. H. Sundeen and D.M. Sundeen, 2013).

While funding certainly plays its part on how often technology is implemented in a student's curriculum (Gutierrez, 2016), it's crucial to keep in mind how implementation is at least equally important; this is best exemplified by a research study conducted in Title 1 middle schools in rural Texas (Tyler-Wood, Cockerham, & Johnson, 2018). The researchers had acquired a 3D printing device and placed it within the school grounds for the entirety of a semester. At the end of the semester, they had found that only four teachers ended up using the

equipment to any capacity for their courses. The researchers concluded that mere acquiring of resources, in this case technology, can not see its use. Teachers need motivation to do so, awareness, and proper training.

On this front, teachers can have mixed results. Rural districts lack the incentives to keep their own community-born teachers who don't want to leave, as well as the fact that they can't attract newcomers to their area due to low financial opportunities. From those that are available, rural principals have a much less diverse and capable group of applying teachers to select from. Those that do end up qualified can often not compete with the aptitude of those same teachers applying in more urban portions of the country (Hassel & Dean, 2016). The instructors who do end up helming rural classrooms also have to have the open disposition towards seamless class integration with the technology, and the literature on this matter is quite mixed. For example, one study, surveying over 500 rural elementary school teachers in Ohio, found a multitude of reasons for why teachers were unwilling to use technology to the fullest extent in their courses (Howley, Wood, & Hough, 2011). They found, aside from accessibility problems, that their rural teachers actually held a more positive outlook on the idea of further technological integration than their non-rural counterparts, possibly because they had more to gain from its use. This finding goes against 1.) the established norm of rural schools being disadvantaged access-wise to advanced equipment and 2.) contradicts other research that shows rural teachers being more averse to technological leaps in their classrooms (Page & Hill, 2008).

In higher-ed, there is research that suggests a student coming from a rural background may have a more difficult time at achieving academic success, be it due to lower levels of

enrolling in college in the first place (Provasnik, KewalRamani, Coleman, Gilberson, Herring, & Xie, 2007) compared to those from different developed areas or the related metric of their obtaining much lower standardized test scores when measured against the rest of the country (Herman, Huffman, Anderson, & Goldken, 2013). At the same time, research can also be pointed towards increasing numbers of college enrollment from rural students (Howley, Chavis, & Kester, 2013). That this latter study is from a more recent year compared to Provanaik et al, 2007's is relevant in that it may indicate an emerging trend.

In terms of performance while in college, a recent dissertation found that students transitioning from their rural K-12 education to SUNY Cobleskill, a branch of SUNY that is focused on agriculture, actually held a higher GPA than their non-rural counterparts and that they would return for following semesters at the same rate as other students (Moore, 2018). It is very possible, though, that this is just the environment where a student from a rural area would thrive. For example, research that centered on rural students transitioning from high school to their freshman year at Oregon State University. Findings that were all retrieved through interviews helped shape the conclusion that their academic journey could be eased through a sense of community and social involvement (Ganss, 2016).

On the matter of technological proficiency for students from a rural background transitioning to their higher-education academic career, virtually no research was found on the matter. It is this gap in the literature that we hope to address.

Methodology

This research study used a mixed-method (interviews and online survey) to analyze how comfortably first-year college students hailing from rural areas in the USA use technology. Incoming students to the University of Tampa are all required to take part in a mandatory Baccalaureate experience, BAC 100 Digital Skills, ensuring that virtually all participants of this study were first-year college students. This course covers basic computer literacy, in addition to going over the functionality of Microsoft software in the form of Word, PowerPoint, and Excel. There were 2,327 students enrolled in the four sections of the online class.

A questionnaire was created to collect quantitative and qualitative data for this study. Survey questions include two categories. The first category contains demographic information (age, school location in terms of city and state, type of community), and the second category contains questions to help understand the relationship first-year students have with technology. They had the option to choose between rural, urban, suburban, or other with the community types. Participants in this study were asked to fill out a survey about the use of technology devices in their schooling and how comfortable they are with basic computer programs of Microsoft Office Suite such as Microsoft Word, Excel and PowerPoint, as well as if they know how to use certain specific functions within each of the three programs. The final two questions of the survey asked if the participants were willing to be interviewed for further questions, as well as to provide contact information.

The questionnaire was distributed for about four (4) weeks period through SurveyMonkey to ensure anonymity from early October to November 2019. Respondents

received the survey link via their BAC 100 - Digital skills course professors; the professors were able to package in the research survey in with their course evaluation survey. The timing of the surveys coincided with the completion of their course, so all students had seen what the 7 ½ week semester offered. Once collected, we were able to view question summaries, data trends, and individual responses through SurveyMonkey. We evaluated first the overall responses and then narrowed it down by filtering those who had answered and self-identified as coming from a rural background. We closed down the link before analyzing. Identifying information such as phone number or email address was collected only if the student opted into a potential interview.

Those who self-identified as spending most of their K-12 education within a rural background and indicated that they were available for a follow-up interview were reached out to for the purposes of scheduling said interview. The research team met with the students individually in private offices on the UT campus for privacy purposes. The only materials used for these interviews were a laptop or pen and paper for notetaking answers and follow-up questions. The purpose of the interview was to go more in-depth than the survey regarding the subject's upbringing, perspective, and technological proficiency. The interviews took no longer than 15 minutes and carried minimal risk for the participant. Interview questions asked were:

1. Tell me what you think being well-versed in technology means.
2. How well would you say you use technology and why?
3. You selected Rural on the survey when describing the area you spent most of your K-12 education in. Can you go into detail on why you described it as such?

4. Did you high school provide access to a computer, and how often would you say you used it?
5. What would you say you found most difficult about BAC 100 Digital Skills?
6. Is there anything in your K-12 education that helped prepare you for this class?
7. Are there any external factors in your life that helped prepare you for this class?
8. What do you wish you had already known coming into this course?
9. Which Microsoft Office program do you think you'll benefit from mastering the most?
10. Do you have any questions or anything further to add regarding our research?

Limitations

Ideally, the quality of this study could be strengthened by conducting research with a wider array of outcome measures, such as pre- and post-tests, analyses of classroom environments across the county, and access to grades assigned particularly for the BAC 100 course. The makeup of University of Tampa, being a private institution may yield results that differ quite wildly from public higher-ed institutions. Worth expounding upon is that 3 students who self-identified as rural, but by definition did not fit the category once their inputted hometown was cross-referenced with the U.S. Census data were still included with the rest of the rural student answers, as relegating them to "Other" or fitting them to the other categories of Suburban or Rural felt like tampering with the results to an extent. In the end, we felt mindset of their community may be more important in this manner, but perhaps going categorically by town and

state for each student and placing them in their defined categories would lead to different findings.

Ethical Consideration

No piece of our survey or interview will specifically call for the mention of name or student ID number here at UT. Surveys will be distributed online via Survey Monkey without requesting any personal information. The consent form, found in the Appendix section of this paper, needed to be accepted and acknowledged by every participant of the survey. For students who agree to be interviewed on the final two questions of the survey, names will not be recorded in any fashion for our final collection of information. Data will be recorded anonymously. Interview Responses will be housed in a locked private cabinet in Teddy Marcelo's office in the GHS building. Only Teddy Marcelo, Anu Brahim, Suzanne Ensmann, and Maxie-Lew Dunn will have direct access to the data. Data will be reported and compiled as a research paper, and will subsequently be destroyed on December 8, 2019.

Findings

By the time the survey was closed, we had 668 surveys submitted back to us from the BAC 100 Digital Skills students. 99% of the population fell within the 18-24 age category (only 2 were between 25-34).

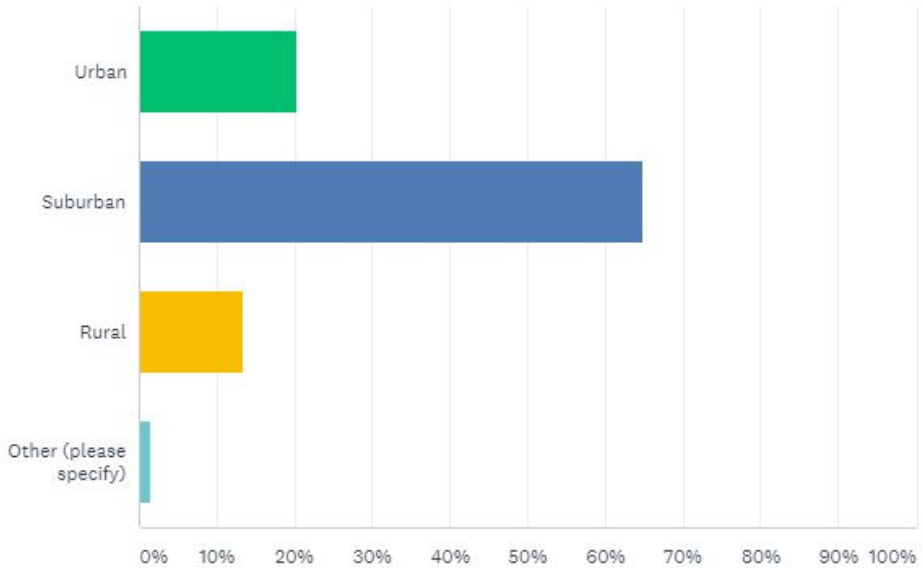
These students then described their community's level of development where they had

spent most of their K-12 Education. 13.32% of our participants (89) had self-identified as coming from a rural background. 64.82%, the vast majority of the UT freshmen in this course, had identified as coming from a suburban background, 20.36% had identified coming from an urban background, and 1.5% identified as “Other,” explaining a mix of answers such as coming from an island background or a mix of suburban near urban, etc.

Q3

How would you describe the community you spent most of your K-12 education in?

Answered: 668 Skipped: 0



ANSWER CHOICES		RESPONSES	
Urban		20.36%	136
Suburban		64.82%	433
Rural		13.32%	89
Other (please specify)	Responses	1.50%	10

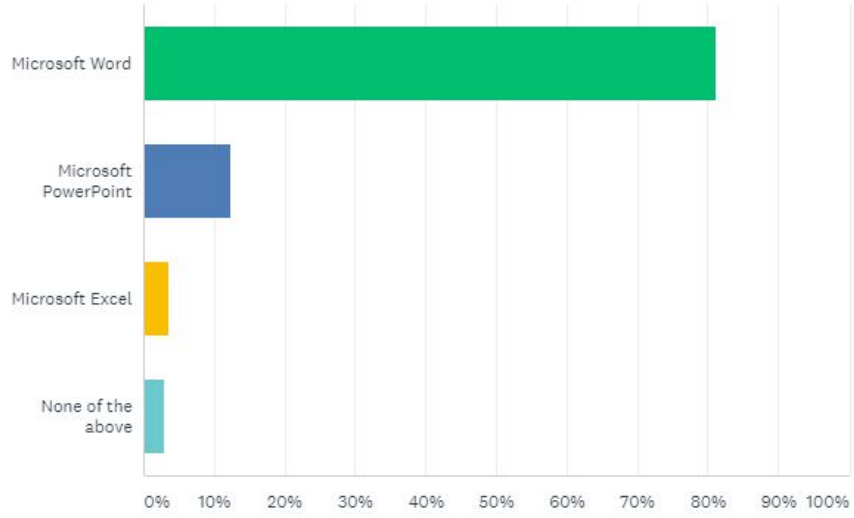
Overall

For question #4, on the familiarity of the students with the Microsoft Office Suite, 14.67% of students identified as having been extremely familiar, 27.69% were very familiar, 42.22% were somewhat familiar, 10.93% were not so familiar, and 4.49% were not at all familiar. Question #5 had students identify which of the three programs covered in BAC 100 Digital Skills they were most familiar with prior to taking the course. 81.14% of students chose Word, 12.28% chose PowerPoint, 3.59% chose Excel, and 2.99% chose not being familiar with any of the three.

Q5

Which Microsoft Office Software were you most familiar with before taking BAC 100 Digital Skills?

Answered: 668 Skipped: 0



ANSWER CHOICES	RESPONSES	
Microsoft Word	81.14%	542
Microsoft PowerPoint	12.28%	82
Microsoft Excel	3.59%	24
None of the above	2.99%	20
TOTAL		668

Question #6 dealt with familiarity specific to Microsoft Word functionality; particularly, it asked how familiar the student was to aligning text in Word prior to the BAC 100 course. 26.2% of students answered extremely familiar, 31.29% answered very familiar, 29.19% answered somewhat familiar, 8.98% answered not so familiar, and 4.34% answered not at all familiar.

Question #7 issued the same frame of question, but directed towards Excel. It asked how familiar the student with the AutoSum function in Excel prior to taking the course. 8.08% answered very familiar, 11.53% answered very familiar, 31.59% answered somewhat familiar, 27.69% answered not so familiar, and 21.11% answered not at all familiar.

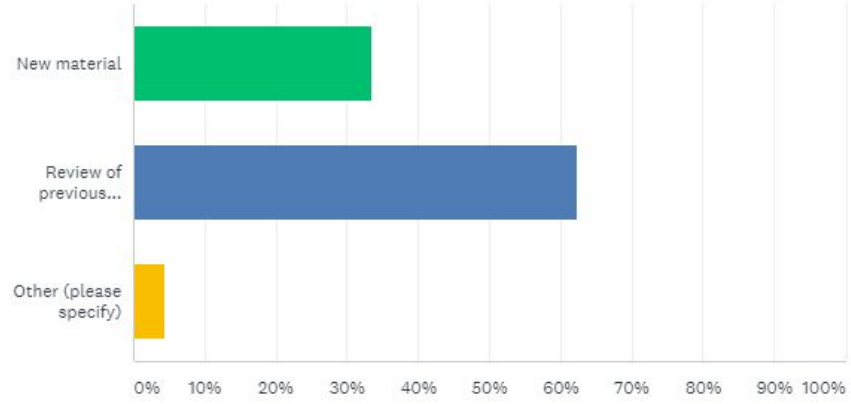
Question #8 similarly asked how familiar students were using various slide layouts in PowerPoint prior to BAC 100. 27.69% answered extremely familiar, 32.04 answered very familiar, 28.59% answered somewhat familiar, 7.04% answered not so familiar, and 4.64% answered not at all familiar.

Question #9 asked the students if they considered BAC 100 Digital Skills to be a course where new material was learned or to be a course focused on reviewing and mastering previous knowledge. 33.38% of students chose new material, 62.28% chose review of previous knowledge, and 4.34% of students chose "other," explaining further that it was a combination of the two, neither, or a review for everything with the exception of new material for Excel, etc. Two of the 29 who selected "other" also said that google drive took the place of Microsoft Office.

Q9

Do you consider BAC 100 Digital Skills to be a class where you are learning new material or a class where you are reviewing and mastering previous knowledge?

Answered: 668 Skipped: 0



ANSWER CHOICES		RESPONSES	
New material		33.38%	223
Review of previous knowledge		62.28%	416
Other (please specify)	Responses	4.34%	29
TOTAL			668

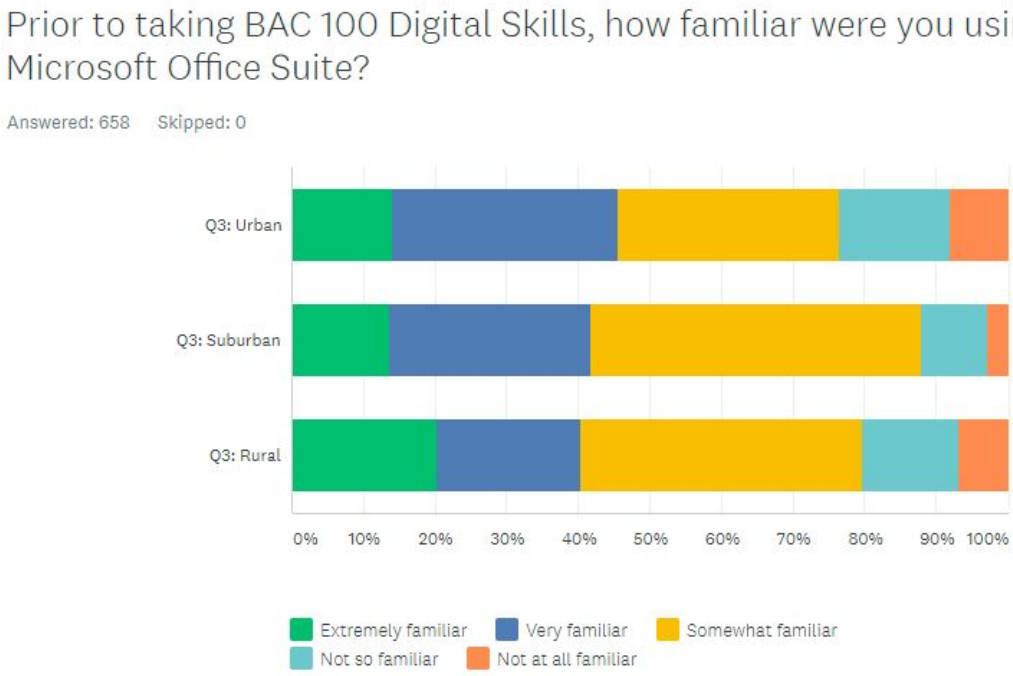
Question #10 asked students how much their abilities in the Microsoft Office Suite had improved due to taking BAC 100 Digital Skills. 3.14% said highly improved, 35.78% said improved, 34.13% said somewhat improved, 16.77% said barely improved, and 10.18% said not at all improved.

Questions #11 and 12 were centered around asking students if they were willing to be interviewed, as well as providing contact information on the instance if they were able to be followed up with.

Rural Specific

After reviewing the overall responses, we were able to filter through the responses of those who had just identified as spending most of their K-12 education from a rural background (the 89 students). We analyzed the responses of those who identified as urban and suburban to use as a reference with the rural students. It's important to note that those who selected "Other" were not part of these groupings, so the responses being calculated fell from 668 to 658. The divide of answers fell as follows: 89 rural-identifying students made up 13.53% of the 658 surveys, urban-identifying students made up 136 of the responses, or 20.67%, and the suburban-identifying students made up the bulk of the surveys as 433 (65.81%).

Going to the metrics of familiarity, we reviewed Question#4 on how familiar the students were with the Microsoft Office Suite prior to taking BAC 100 Digital Skills. 20.22% of rural students identified as extremely familiar, 20.22% identified as very familiar, 39.33% identified as somewhat familiar, 13.48% identified as not so familiar, and 6.74% identified as not at all familiar.



	EXTREMELY FAMILIAR	VERY FAMILIAR	SOMEWHAT FAMILIAR	NOT SO FAMILIAR	NOT AT ALL FAMILIAR	TOTAL
Q3: Urban	13.97% 19	31.62% 43	30.88% 42	15.44% 21	8.09% 11	20.67% 136
Q3: Suburban	13.63% 59	28.18% 122	46.19% 200	9.24% 40	2.77% 12	65.81% 433
Q3: Rural	20.22% 18	20.22% 18	39.33% 35	13.48% 12	6.74% 6	13.53% 89
Total Respondents	96	183	277	73	29	658

Question #5 revealed that 75.28% of rural students were most familiar with Microsoft Word, 15.73% were most familiar with PowerPoint, 3.37% were most familiar with Excel, and 5.62% were not at all familiar with any of the three prior to taking the BAC 100 course.

Asking how familiar were students with aligning text in Word prior to BAC 100, Question #6 showed that 26.97% of rural students were extremely familiar, 31.46% were very familiar, 24.72% were somewhat familiar, 11.24% were not so familiar, and 5.62% were not at all familiar.

On Question #7, asking how familiar students were with the AutoSum function in Excel prior to BAC 100, rural students answered as follows: 7.87% were extremely familiar, 16.85% were very familiar, 20.22% were somewhat familiar, 35.58% were not so familiar, and 22.47% were not at all familiar.

Asking how familiar students were with various slide layouts in PowerPoint, Question #8 revealed that 29.21% of rural students were extremely familiar, 30.34% were very familiar, 29.21% were somewhat familiar, 3.37% were not so familiar, and 7.87% were not at all familiar.

Question #9 asked students if they considered BAC 100 Digital Skills to be a review of previous knowledge or a class where they were learning new material. 34.83% of rural students said the class was covering new material, 61.8% said it was a review of previous knowledge, and 3.37% of students said "other."

Question #10 asked students how much their abilities may have improved within the Microsoft Office Suite directly due to taking BAC 100 Digital Skills. 3.37% of rural students said highly improved, 35.96% said improved, 32.58% said somewhat improved, 12.36% said barely improved, and 15.73% said not at all improved.

Interviews

Each member of the research team met with one student who had self-identified as coming from a rural community during their K-12 education, as well as had expressed an actual willingness to be followed up with.

For each of our 10 questions we received the following answers:

1. **Tell me what you think being well-versed in technology means.**

   "...I have the ability to use a smartphone or laptop to search for information on any website. It also includes the ability to use radio, car stereo or any device because technology isn't just limited to phone and laptop."

   "Having well-rounded experiences and knowledge on all the different technologies in the world."

2. **How well would you say you use technology and why?**

   "I would say well enough, but more related to social media and basic communications that are necessary like emails or even entertainment."

   "I think I'm pretty well-versed. I went to a private school, [name omitted] Elementary, which helped, but when I went to high school, I switched to a public high school.

3. **You selected Rural on the survey when describing the area you spent most of your K-12 education in. Can you go into detail on why you described it as such?**

   "Rural because it's not a huge city; it's only populated...and slightly more developed due to a university, but around the area are a bunch of smaller towns around the outskirts. Some places don't even have water. People lived in large masses of tents and trailers. Ten minutes from my house are just a lot of farms. Twenty minutes from my house, kids don't go to school, and there are gravel roads everywhere."

   "...because I come from a small and isolated town in Kentucky called [omitted] and attended [omitted] high school.

4. **Did your high school provide access to a computer, and how often would you say you used it?**

   "Yes, we had computer labs, but could only access (them) when we (had) a class that required it. The school also provided us with personal laptops to turn in our work daily while in class. Although, the teachers focused more on paper-work maybe because they were not fond of technology, obviously being a rural area and they were all older teachers. We definitely had access, but didn't use it as much as we probably could have to our full advantage."

   "I've had access to technology both in school and at home for as long as I can remember."

   "If you were writing a paper for an English paper in class, you could use one of their computers, but oftentimes the internet wouldn't work. Only when submitting a final paper would they let you edit on the computer; the initial draft was on pen and paper. Nothing was turned in online. (During my) Freshman year, (we) had online grading software, but they got rid of it later presumably because of costs."

5. **What would you say you found most difficult about BAC 100 Digital Skills?**

   "Participation was hard because it was challenging to be forced to learn knowledge that I could actually look up on the website and basically related to the school such as library resources rather than ask us what we need to know. It felt pointless, especially when I had heavier, more challenging, classes to attend.

"Didn't find it very challenging because I would use Microsoft Office Suite on my own time. Excel, however, was very difficult due to lack of use in high school."

6. **Is there anything in your K-12 education that helped prepare you for this class?**

   "In elementary, we learned a whole bunch of programs. High school (and its lack of use there) made it rusty, (as) several features were updated and I was not as familiar with updated versions."

   "Probably my ability to use the computer for MS word and something similar to Blackboard called Google Classroom, which we used in my high school to check our courses, turn in our work and check grades and assignments. A lot of the BAC course was online including online quizzes, so that prepared me to use the computer in college and in BAC class."

7. **Are there any external factors in your life that helped prepare you for this class?**

   "Just because I'm from a small town doesn't mean I was cut off from the world. I feel like I had a normal suburban upbringing."

   "Probably my teachers from high school because they were very independent and wouldn't let you slack with assignments, similar to classes at UT. They provided you with basic information for you to find out and submit within a week, so it was structured differently from most public schools and they helped support you to do projects like manage my planner and that is similar to the BAC class requirement. This helped me do well in this class."

"Recreational use during middle and high school (of programs), especially Word and PowerPoint.

8. **What do you wish you had already known coming into this course?**

"Excel, using it at all."

"...that the BAC class was more about the use of campus resources rather than add transitional knowledge to our first year in college. I would have preferred if it was more structured to help students manage their weekly planner because each day or week is different on campus.

9. **Which Microsoft Office program do you think you'll benefit from mastering the most?**

"...Word and Excel. PowerPoint seems so easy because I started to make presentations at age 12 for fun, but there seems to be more to explore, especially with MS Word. For Example, I still struggle getting back to the beginning after indenting.

"Excel because graphs and numbers when writing research papers will come in handy."

10. **Do you have any questions or anything further to add regarding our research?**

"My parents were helpful in immersing me in technology. They assisted in finding ways for me to use tech even if they didn't know (themselves). Call service in Indiana is rough."

"I will definitely like to make an extra comment because a lot of the people in my grade are from the north like New Jersey, Long Island, different inner cities that look a lot like Tampa, and they attended private school, unlike people like me that have only one private

school in my local area, which is around an hour or two away from my house, and also probably costs half as much as it costs here at UT. So private school is out of the option for someone from a rural area, and that definitely plays a difference in knowledge between advances in technology versus school work. A lot of people here have more knowledge with Microsoft Excel. Personally, I was only taught to us Excel in just a semester course in high school, and we hardly used it...The rural high school basically prepares you for how to graduate and join the workforce more so it is common for many to work on farms. It isn't structured towards preparing us for college, document citations, writing papers, etc. It's different in educational values and people usually drop out of high school to work because it's a more labor intensive area that isn't growing economically."

"I'm realizing I might not have had as much access as I thought, but I am both reviewing content in BAC 100 and learning new things."

Discussion

Recap

Immediately, something to note was that the rural population objectively was the smallest self-identifying portion of our BAC 100 survey participants. We expected it to be as such, and it ended up making 13.32% of the total 668. The bulk of UT students taking BAC 100 Digital Skills came heavily from suburban areas followed by a distant second in urban-identifying students.

With those numbers in mind, the rural students and how they answered seemed to be higher at both positive and negative ends of the spectrum. For example, Question #4 tackled familiarity with the Microsoft Office Suite prior to BAC 100. Here, 20.22% of rural students answered extremely familiar, 5.55% higher than the total class average response. On that same question, though, 6.74% answered as not at all familiar with the Office Suite, 2.25% higher than the class total response. While the extreme familiarity ranked them higher their urban and suburban counterparts, those rural students very familiar with the Office Suite was 20.22% as well, 7.47% lower than the class average response of 27.69%. Similarly, those not so familiar with the Office Suite prior to BAC 100 was slightly higher than the class average response by 2.55%. What this implied was that those rural students who knew the material extremely well knew them in greater percentages than those students from other areas, but they were also more likely to be not so familiar or not at all familiar with the material. Urban-identifying students, actually were even more drastic in being less extremely familiar and not at all familiar with the Office Suite.

Supporting this implication, Question #5 had 5.62% of rural students identify as being most familiar with none of the three Office software prior to BAC 100, 2.63% higher than the class average. Like the rest of the class, rural students felt most comfortable with Word, followed distantly by PowerPoint, and Excel.

Two of our three questions that asked about specific functions in the three programs, text alignment in Word and various slide layouts in PowerPoint, also showed that rural students, if marginally, slightly led or held the class average with those that identified as extremely familiar

within 1-2%. The exception was with AutoSum in Excel, where rural students were .21% lower than the class average at being extremely familiar. The same trend of rural students being more likely to be not at all familiar, though continued across the board for all three of the questions by 1-3%.

Rural students basically mirrored the class average responses of those who say BAC 100 Skills as a recap vs. a class that taught new material (34.83% saw it as new material vs. 61.8% saw it as a recap. To contrast 33.38% of students total saw it as new material and 62.28% saw it as a recap. Less than 5% for both saw it as "Other."

Finally, our final question gauged that rural students assessed that their skills had not improved at all 5.55% higher than the class average, while 3.37% of their students (.23% higher than the class average) claimed that they had highly improved in their abilities in the Microsoft Office Suite due to BAC 100.

Analysis

Rural students were extremely divided on either claiming proficiency higher than the class average while at the same time being the self-identifying group to be the least familiar with the product. At a glance, this seems contradictory, but aligns well with the multitude of research that appears mixed on whether rural students are or are not at a disadvantage when transitioning to higher education.

Rural students are 10% less likely than non-rural students to claim they have great internet connection (Croft & Moore, 2019), but if a private institution is more likely to attract

those lower numbers, which may have a socioeconomic implication, it could account for why our rural population seemed to be above the curve in terms of self-identifying extreme familiarity.

While all of our interviews indicated degrees of limitations with certain access to technology or their environment having academic shortcomings to varying capacities, they also all seemed to have indicated ways to overcome, be it through their parents, a private school they had previously attended, or enough self-motivation to not be affected. It's possible that the students surveyed who did indeed come from rural areas could have come from more affluent families if they were able to transition to Tampa, but that can't be measured within the confines of our study.

What can be measured is that despite this extreme familiarity that rural students exhibited, they were also more likely than the average student in BAC 100 to be at a complete lack of familiarity with certain software and their specific functions. This suggests that rural districts could still have a way to go in adapting and integrating software as a regular part of their curriculum, as our interviews mostly agree with.

Finally, this discrepancy can also be tied per American region. Rural American Education, despite facing similar adversity across the board with poor broadband access, low funds across its districts, and limited pools of quality instructors, should perhaps not be viewed as a monolithic structure. This directly coincides with what we learned through our individual interview sessions. We had three rural students participate and all three had wildly different responses on how they equated their rural community with their technological familiarity, as one student mostly didn't feel they were affected by their rural community, while another was very

vocal about the hardships they faced; the third student acknowledged technological shortcomings, but was able to circumvent negative consequences by being enrolled at a private institution for most of their K-12 education. Socioeconomic factors, opportunities provided by their individual school district or state could greatly affect a technological upbringing. Also unexpectedly, although not the focus of this study, was that the urban population seemed to have the least amount of self-identifying students identify as being extremely familiar with the common technological programs or their specific functions, as well as also have high numbers as well with those completely unfamiliar.

Conclusion

While we didn't have a hypothesis to reference for or against, the information gathered through our survey and interviews seemed to simultaneously agree with the fact that students were disadvantaged with technological access based on the lower-levels of access at home and school (Croft & Moore, 2019), while also saying that there were various ways students would and have overcome these obstacles. Based on strictly the numbers, our first-year BAC 100 Digital Skills students helped answer our research question in that while they were more likely to be completely unfamiliar with a Microsoft Office Suite program or its various functions, they were also slightly ahead of the curve with extreme familiarity. In this manner, we feel the two extremes balance out to say that rural students as a whole are just as comfortable at using technology as their freshman peers.

Suggestions for Further Research

Going back to speaking on school-districts operating radically different from each other when it came to rural areas, we would suggest that further research in this realm go about investigating where a student indicates they spent their K-12 education in and then systematically requesting information to cross-reference how regularly that particular school integrating their curriculum with technology. Of course, this would constitute a more far-reaching, time consuming, and possibly costly affair, but it would yield more precise results when comparing student familiarities and aptitudes. We would also recommend factoring in and measuring grades to use in conjunction with self-assessments and interviews.

Appendix

Survey Questions

1. What is your current age?
2. What city did you graduate high school from?
3. How would you describe the community you spent most of your K-12 education in?
4. Prior to taking BAC 100 Digital Skills, how familiar were you using the Microsoft Office Suite?
5. Which Microsoft Office Software were you most familiar with before taking BAC 100 Digital Skills?
6. Prior to BAC 100 Digital Skills, how familiar were you with aligning text in Microsoft Word?
7. Prior to BAC 100 Digital Skills, how familiar were you with using AutoSum in Microsoft Excel?
8. Prior to BAC 100 Digital Skills, how familiar were you with using various slide layouts in Microsoft PowerPoint?
9. Do you consider BAC 100 Digital Skills to be a class where you are learning new material or a class where you are reviewing and mastering previous knowledge?

10. How much have your abilities in the Microsoft Office Suite improved due to BAC 100 Digital Skills?
11. Would you be available to schedule an interview to further discuss how developed communities learn to use technology differently?
12. If yes, what phone number or email may we use to best reach you?

INFORMED CONSENT
THE UNIVERSITY OF TAMPA

Project Title: Rural America: A Study on How Comfortably First-Year College Students Use Technology

Principal Investigator: Teddy Marcelo

Co-Investigators: Anu Brahim, Maxie Lew-Dunn, Suzanne Ensmann

Purpose of Project: Our research group is looking to understand how differing access to technology may or may not affect freshman college students, particularly when they spend most of their K-12 education in rural parts of America. Specifically, we wish to know how comfortably rural American first-year college students use common technological software, such as the Microsoft Office Suite programs (Word, PowerPoint, and Excel). Although one may assume that there would be a setback for rural students, the tech-savvy nature of Millennials and Gen Z makes us unwilling to hypothesize one way or another. We hope to utilize UT's own BAC 100 Digital Skills course as a platform to conduct our surveys and interviews. Both instructors teaching the Fall 2019 sections of the course are willing to help us engage with their students.

Procedures: Surveys will be administered with the aid of our BAC 100 Digital Skills professors. Our 12 questions are estimated at 4 minutes to complete and will be administered once online through Survey
Monkey. On the surveys themselves is a question for those interested in participating further for interview
session. These will be administered once to willing participants via each of our group members in of of
our enclosed offices in either Plant Hall or GHS (Maxie-Lew Dunn and Teddy Marcelo are both admissions counselors with their own offices that Anu Brahim can also use), or in the space on UT of the
participant's choosing.

Criteria: All participants are enrolled in BAC 100, are domestic students, and need to be 18 years or older. Risks/Benefits: Minimal Risk. There is no known potential for physical or social harm in this study. Society will be benefited by having more studies conducted in the area of observing Rural American Education.

Risks/Benefits: Minimal Risk. There is no known potential for physical or social harm in this study. Society will be benefited by having more studies conducted in the area of observing Rural American Education.

Confidentiality: No piece of our survey or interview will specifically call for the mention of name or ID
number here at UT. Surveys will be distributed online via Survey Monkey. For students who agree to interview, names will not be recorded in any fashion for our final collection of information. Data will be
recorded anonymously. Interview Responses will be housed in a locked private cabinet in Teddy Marcelo's office in the GHS building. Only Teddy Marcelo, Anu Brahim, Suzanne Ensmann, and Maxie-Lew Dunn will have direct access to the data. Data will be reported as in-house UT research for
EME 603 Inquiry and Measurement as a compiled research paper, and will subsequently be destroyed on
December 8, 2019.

CONSENT
I have read the above information and my questions and concerns, if any, have been responded to satisfactorily by project staff. I believe I understand the purpose, benefits, and risks, if any, of the study, and give my informed and free consent to be a participant.

OK

Consent Form

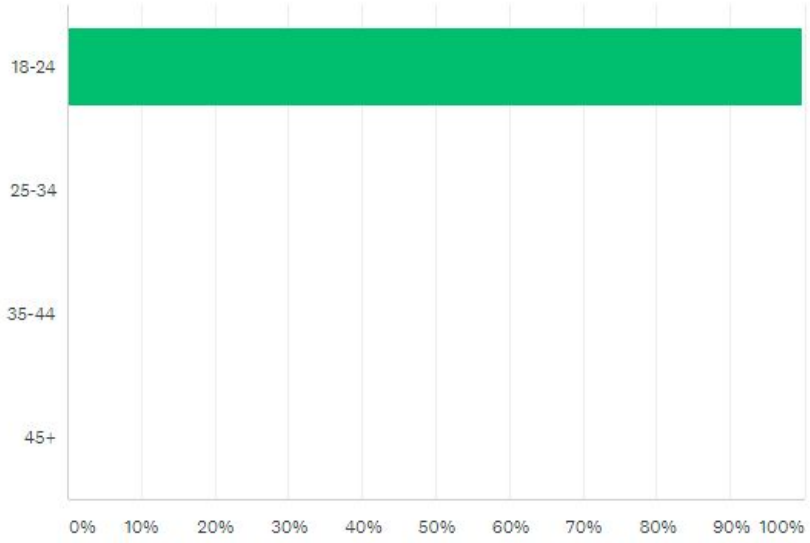
Survey Results

Q1

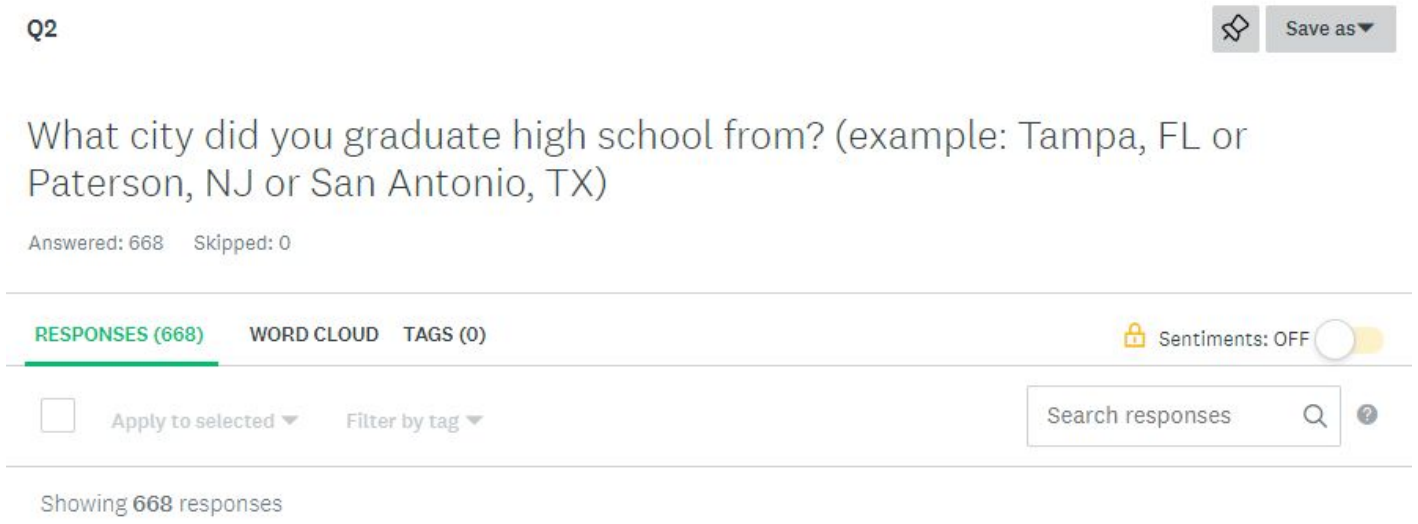
Customize Save as

What is your current age?

Answered: 668 Skipped: 0



ANSWER CHOICES	RESPONSES	
18-24	99.70%	666
25-34	0.30%	2
35-44	0.00%	0
45+	0.00%	0
TOTAL		668


Q2
Save as
What city did you graduate high school from? (example: Tampa, FL or Paterson, NJ or San Antonio, TX)
Answered: 668 Skipped: 0
RESPONSES (668)
WORD CLOUD
TAGS (0)
Sentiments: OFF
Apply to selected
Filter by tag
Search responses
Showing 668 responses

Q3

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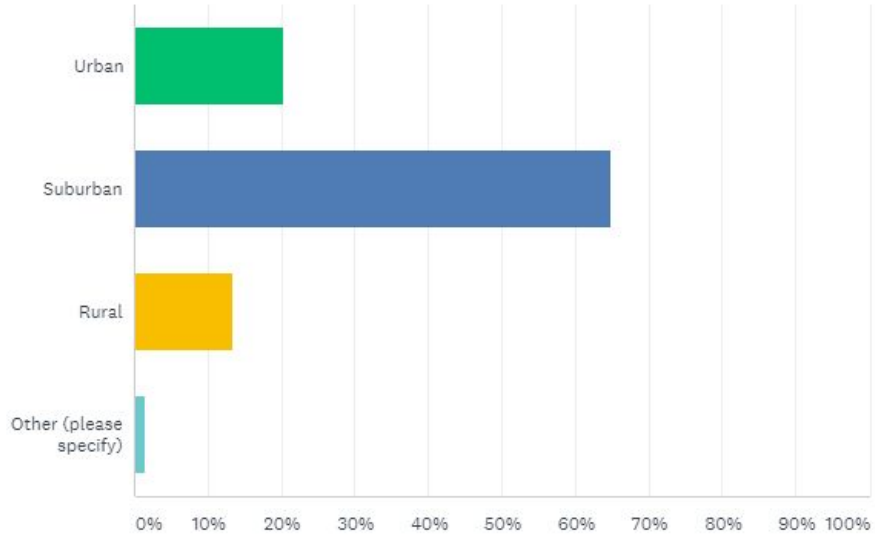
How would you describe the community you spent most of your K-12 education in?

Answered: 668 Skipped: 0



ANSWER CHOICES		RESPONSES	
Urban		20.36%	136
Suburban		64.82%	433
Rural		13.32%	89
Other (please specify)	Responses	1.50%	10
TOTAL			668

Q4

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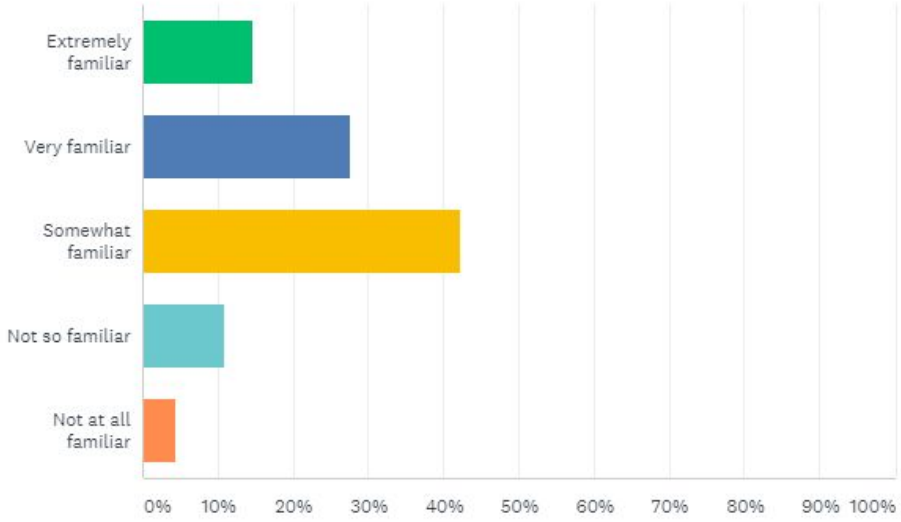
Prior to taking BAC 100 Digital Skills, how familiar were you using the Microsoft Office Suite?

Answered: 668 Skipped: 0



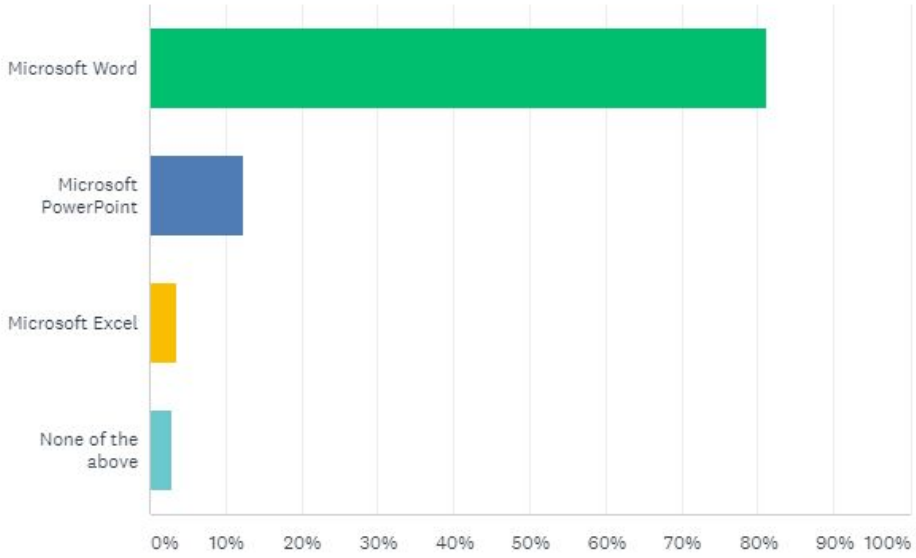
ANSWER CHOICES	RESPONSES	
Extremely familiar	14.67%	98
Very familiar	27.69%	185
Somewhat familiar	42.22%	282
Not so familiar	10.93%	73
Not at all familiar	4.49%	30
TOTAL		668

Q5

Customize Save as

Which Microsoft Office Software were you most familiar with before taking BAC 100 Digital Skills?

Answered: 668 Skipped: 0



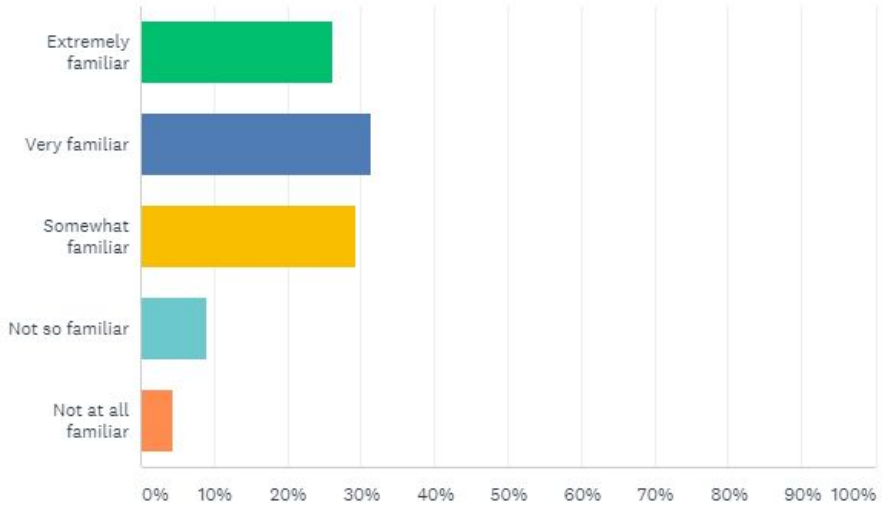
ANSWER CHOICES	RESPONSES	
Microsoft Word	81.14%	542
Microsoft PowerPoint	12.28%	82
Microsoft Excel	3.59%	24
None of the above	2.99%	20
TOTAL		668

Q6

Customize Save as

Prior to BAC 100 Digital Skills, how familiar were you with aligning text in Microsoft Word?

Answered: 668 Skipped: 0



ANSWER CHOICES	RESPONSES	
Extremely familiar	26.20%	175
Very familiar	31.29%	209
Somewhat familiar	29.19%	195
Not so familiar	8.98%	60
Not at all familiar	4.34%	29
TOTAL		668

Q7

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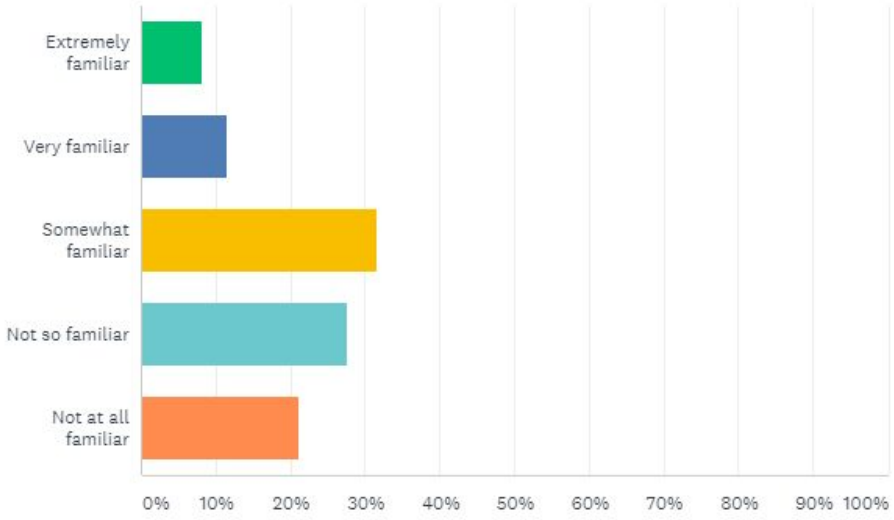
Prior to BAC 100 Digital Skills, how familiar were you with using AutoSum in Microsoft Excel?

Answered: 668 Skipped: 0



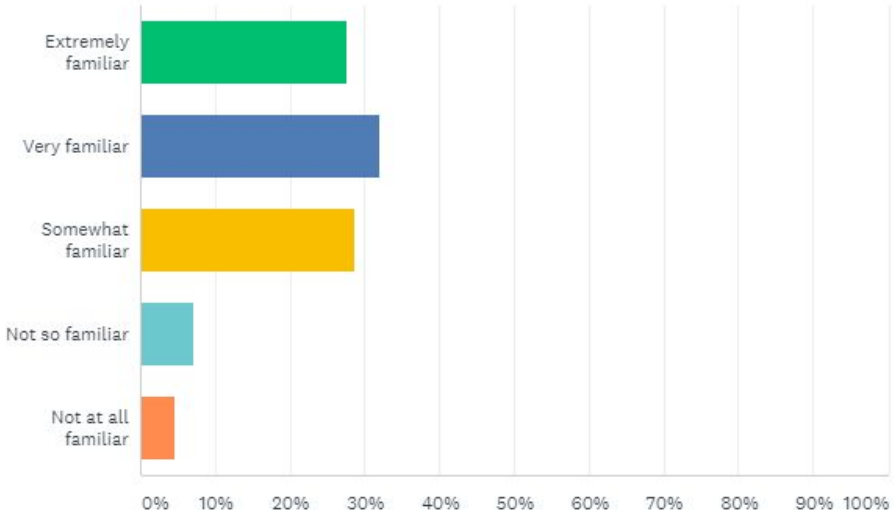
ANSWER CHOICES	RESPONSES	
Extremely familiar	8.08%	54
Very familiar	11.53%	77
Somewhat familiar	31.59%	211
Not so familiar	27.69%	185
Not at all familiar	21.11%	141
TOTAL		668

Q8

Customize Save as

Prior to BAC 100 Digital Skills, how familiar were you with using various slide layouts in Microsoft PowerPoint?

Answered: 668 Skipped: 0



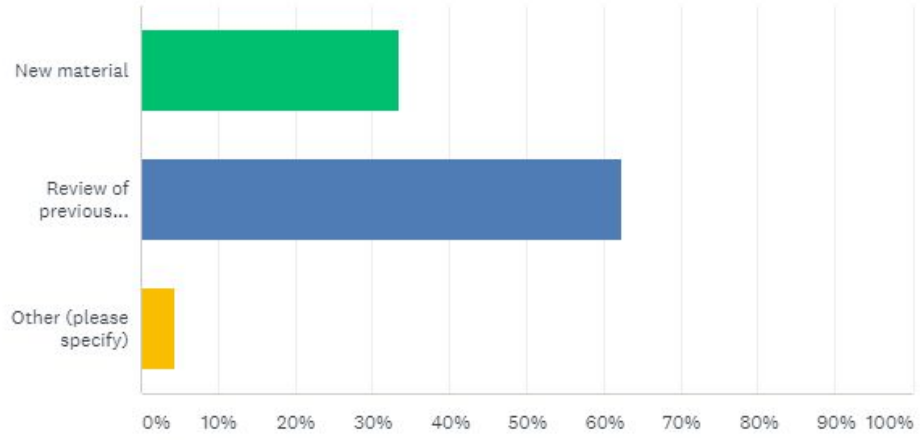
ANSWER CHOICES	RESPONSES	
Extremely familiar	27.69%	185
Very familiar	32.04%	214
Somewhat familiar	28.59%	191
Not so familiar	7.04%	47
Not at all familiar	4.64%	31
TOTAL		668

Q9

Customize Save as

Do you consider BAC 100 Digital Skills to be a class where you are learning new material or a class where you are reviewing and mastering previous knowledge?

Answered: 668 Skipped: 0



ANSWER CHOICES		RESPONSES	
New material		33.38%	223
Review of previous knowledge		62.28%	416
Other (please specify)	Responses	4.34%	29
TOTAL			668

Q10

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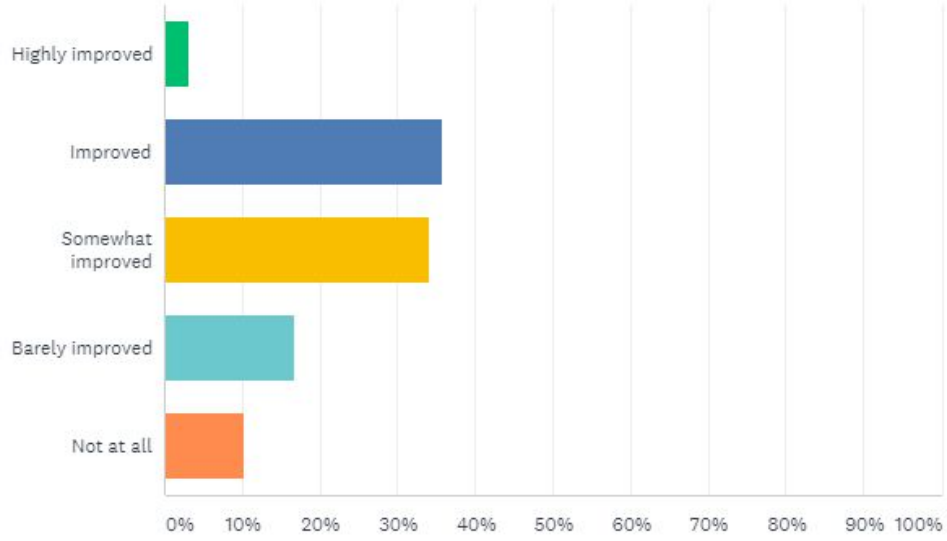
How much have your abilities in the Microsoft Office Suite improved due to BAC 100 Digital Skills?

Answered: 668 Skipped: 0



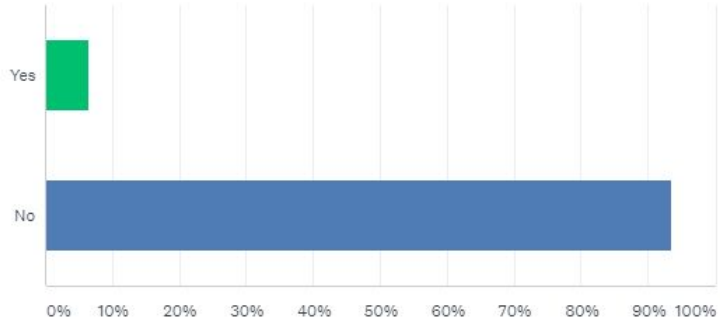
ANSWER CHOICES	RESPONSES	
Highly improved	3.14%	21
Improved	35.78%	239
Somewhat improved	34.13%	228
Barely improved	16.77%	112
Not at all	10.18%	68
TOTAL		668

Q11

Customize Save as

Would you be available to schedule an interview to further discuss how developed communities learn to use technology differently?

Answered: 668 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	6.44%	43
No	93.56%	625
TOTAL		668

Q12

Save as

If yes, what phone number or email may we use to best reach you?

Answered: 94 Skipped: 574

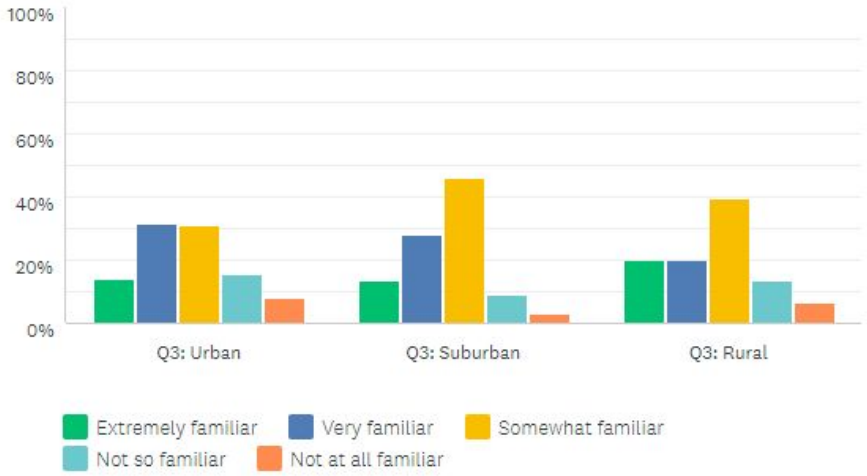
Rural Survey Focused Results

Q4

Customize Save as

Prior to taking BAC 100 Digital Skills, how familiar were you using the Microsoft Office Suite?

Answered: 658 Skipped: 0



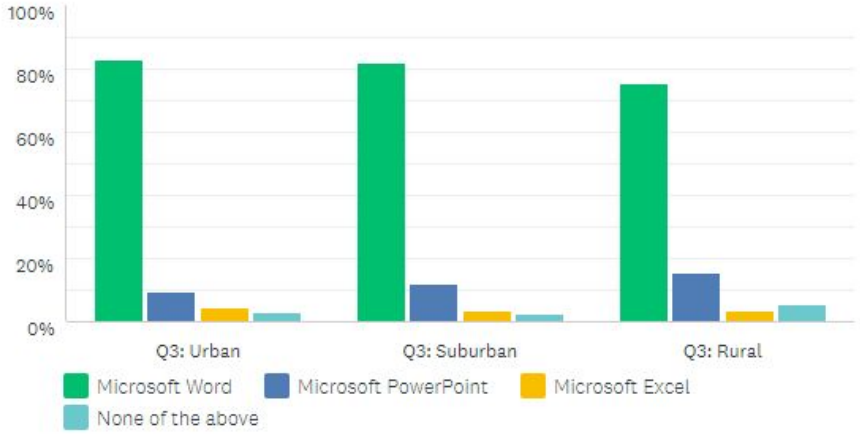
	EXTREMELY FAMILIAR	VERY FAMILIAR	SOMEWHAT FAMILIAR	NOT SO FAMILIAR	NOT AT ALL FAMILIAR	TOTAL
Q3: Urban	13.97% 19	31.62% 43	30.88% 42	15.44% 21	8.09% 11	20.67% 136
Q3: Suburban	13.63% 59	28.18% 122	46.19% 200	9.24% 40	2.77% 12	65.81% 433
Q3: Rural	20.22% 18	20.22% 18	39.33% 35	13.48% 12	6.74% 6	13.53% 89
Total Respondents	96	183	277	73	29	658

Q5

Customize Save as

Which Microsoft Office Software were you most familiar with before taking BAC 100 Digital Skills?

Answered: 658 Skipped: 0



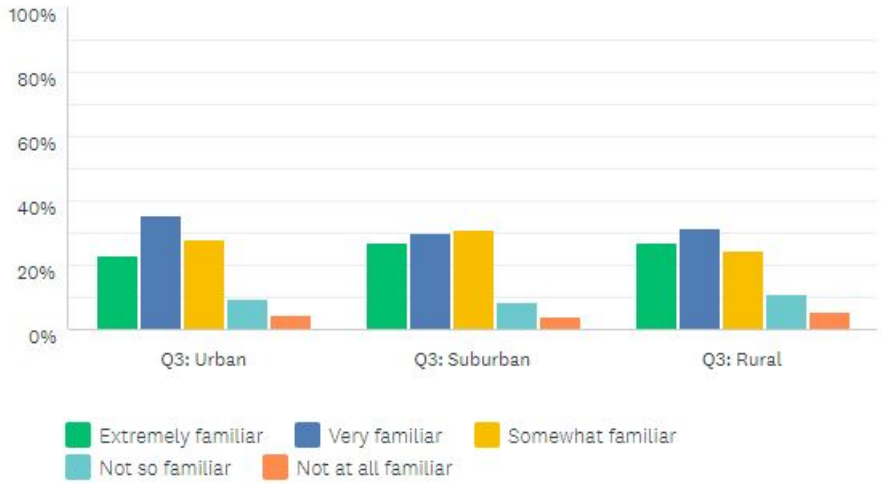
	MICROSOFT WORD	MICROSOFT POWERPOINT	MICROSOFT EXCEL	NONE OF THE ABOVE	TOTAL
Q3: Urban	83.09% 113	9.56% 13	4.41% 6	2.94% 4	20.67% 136
Q3: Suburban	81.99% 355	12.24% 53	3.46% 15	2.31% 10	65.81% 433
Q3: Rural	75.28% 67	15.73% 14	3.37% 3	5.62% 5	13.53% 89
Total Respondents	535	80	24	19	658

Q6

Customize Save as

Prior to BAC 100 Digital Skills, how familiar were you with aligning text in Microsoft Word?

Answered: 658 Skipped: 0



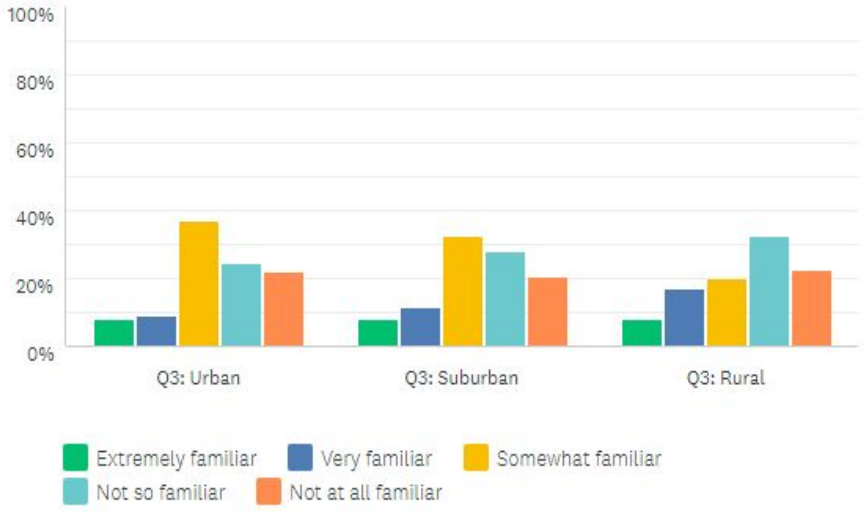
	EXTREMELY FAMILIAR	VERY FAMILIAR	SOMEWHAT FAMILIAR	NOT SO FAMILIAR	NOT AT ALL FAMILIAR	TOTAL
Q3: Urban	22.79% 31	35.29% 48	27.94% 38	9.56% 13	4.41% 6	20.67% 136
Q3: Suburban	26.79% 116	29.79% 129	30.95% 134	8.55% 37	3.93% 17	65.81% 433
Q3: Rural	26.97% 24	31.46% 28	24.72% 22	11.24% 10	5.62% 5	13.53% 89
Total Respondents	171	205	194	60	28	658

Q7

Customize Save as

Prior to BAC 100 Digital Skills, how familiar were you with using AutoSum in Microsoft Excel?

Answered: 658 Skipped: 0



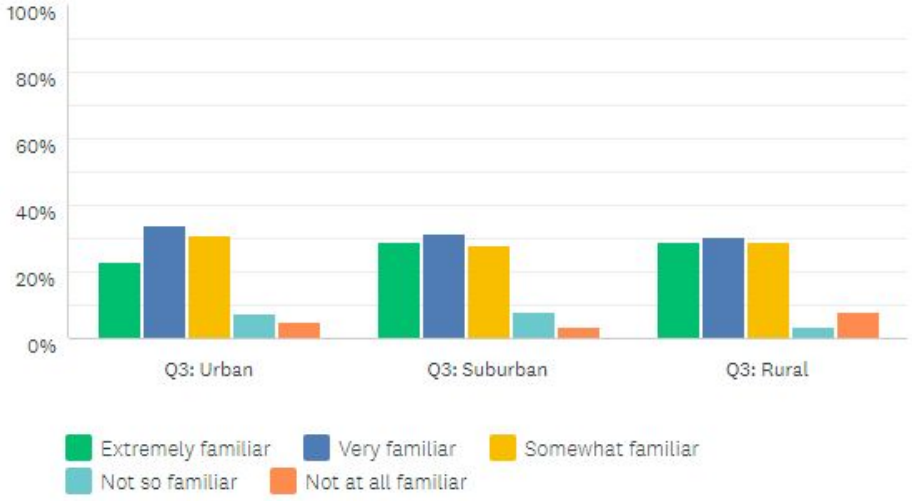
	EXTREMELY FAMILIAR	VERY FAMILIAR	SOMEWHAT FAMILIAR	NOT SO FAMILIAR	NOT AT ALL FAMILIAR	TOTAL
Q3: Urban	8.09% 11	8.82% 12	36.76% 50	24.26% 33	22.06% 30	20.67% 136
Q3: Suburban	7.85% 34	11.32% 49	32.33% 140	27.94% 121	20.55% 89	65.81% 433
Q3: Rural	7.87% 7	16.85% 15	20.22% 18	32.58% 29	22.47% 20	13.53% 89
Total Respondents	52	76	208	183	139	658

Q8

Customize Save as

Prior to BAC 100 Digital Skills, how familiar were you with using various slide layouts in Microsoft PowerPoint?

Answered: 658 Skipped: 0



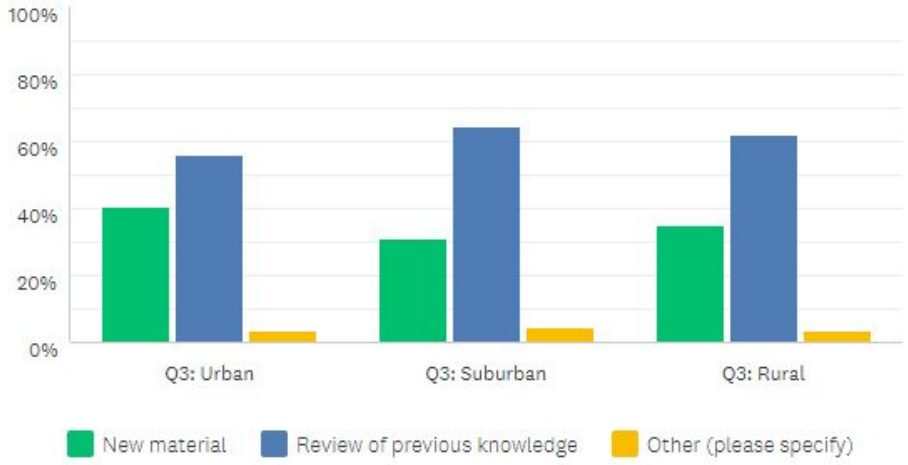
	EXTREMELY FAMILIAR	VERY FAMILIAR	SOMEWHAT FAMILIAR	NOT SO FAMILIAR	NOT AT ALL FAMILIAR	TOTAL
Q3: Urban	22.79% 31	33.82% 46	30.88% 42	7.35% 10	5.15% 7	20.67% 136
Q3: Suburban	28.87% 125	31.64% 137	27.94% 121	7.85% 34	3.70% 16	65.81% 433
Q3: Rural	29.21% 26	30.34% 27	29.21% 26	3.37% 3	7.87% 7	13.53% 89
Total Respondents	182	210	189	47	30	658

Q9

Customize Save as

Do you consider BAC 100 Digital Skills to be a class where you are learning new material or a class where you are reviewing and mastering previous knowledge?

Answered: 658 Skipped: 0



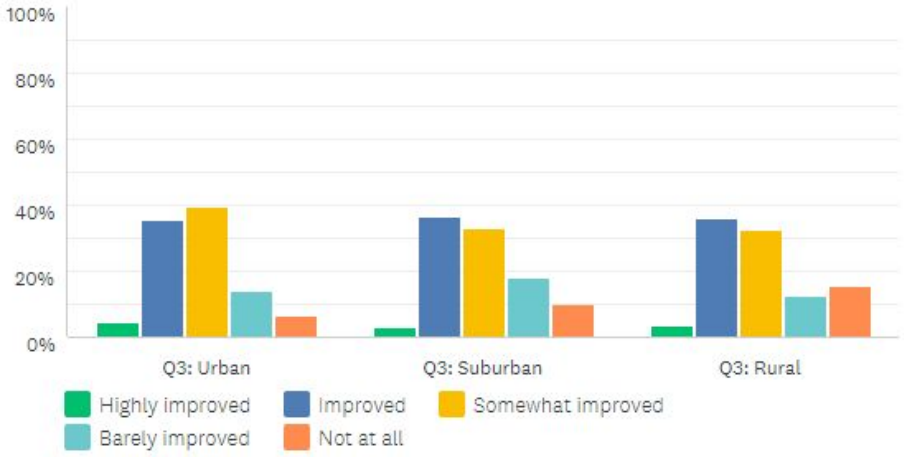
	NEW MATERIAL	REVIEW OF PREVIOUS KNOWLEDGE	OTHER (PLEASE SPECIFY)	TOTAL
Q3: Urban	40.44% 55	55.88% 76	3.68% 5 Responses	20.67% 136
Q3: Suburban	30.95% 134	64.43% 279	4.62% 20 Responses	65.81% 433
Q3: Rural	34.83% 31	61.80% 55	3.37% 3 Responses	13.53% 89
Total Respondents	220	410	28	658

Q10

Customize Save as

How much have your abilities in the Microsoft Office Suite improved due to BAC 100 Digital Skills?

Answered: 658 Skipped: 0



	HIGHLY IMPROVED	IMPROVED	SOMEWHAT IMPROVED	BARELY IMPROVED	NOT AT ALL	TOTAL
Q3: Urban	4.41% 6	35.29% 48	39.71% 54	13.97% 19	6.62% 9	20.67% 136
Q3: Suburban	2.77% 12	36.26% 157	33.03% 143	18.01% 78	9.93% 43	65.81% 433
Q3: Rural	3.37% 3	35.96% 32	32.58% 29	12.36% 11	15.73% 14	13.53% 89
Total Respondents	21	237	226	108	66	658

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