

DATA ANALYSIS OF NEW IMPLEMENTATIONS TO
UNIVERSITY TUTORIAL SERVICES

by

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Honors Thesis

Appalachian State University

Submitted to the Honors College in partial fulfillment of the requirements for the degree of
Bachelor of Science in Actuarial Science

May, 2019

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Abstract

This study reviews the satisfaction and effectiveness of new implementations of University Tutorial Services (UTS) on Appalachian State University's campus. With new technology available, many modifications were put in place to improve the efficiency of scheduling and holding a tutoring appointment. Undoubtedly, for a system to be most effective and successful, the satisfaction of the parties involved is highly significant. To test the satisfaction, we distributed online surveys to four sample groups within the UTS population, including returning tutors, returning students, new tutors, and new students. By splitting the population by its Experience and Role within UTS, we were able to examine the reasons for variation in response data by utilizing statistical tests and prior knowledge of UTS feedback. It was found that Experience was a significant reason for differences in mean response rates in four of the eight questions, but Role and the interaction between Experience and Role were not statistically significant in explaining variation in responses in any of the questions. From here, a contextual analysis provides further background information on potential reasoning for the variation in responses. Following the results and analysis, probable solutions are presented that could assist in further improving the satisfaction of the four samples.

Introduction

University Tutorial Services (UTS) at Appalachian State University was founded in August of 1984 as a resource for all undergraduate students to support their academic needs. Students can elect to sign up for a small group appointment with a tutor who has been successful in the course previously, or can drop in to any of the learning labs for impromptu assistance offered regularly for the most highly demanded courses on campus. All tutors are student employees with outstanding grade point averages and exceptional grades in the courses that they tutor.

In the spring semester of 2019, UTS modified its delivery model, giving students more opportunity and flexibility in receiving tutoring services. Rather than physically visiting the UTS center on campus and committing to an entire semester of appointments, students now have the opportunity to sign up in person or online for a tutor and for just a single appointment. Online sign-up is done through TutorTrac, the online tutoring platform used at Appalachian State owned by Redrock Software Corporation (<https://www.go-redrock.com/products/tutortrac/>). These changes were made to improve student and employee satisfaction within UTS. For this project, we administered satisfaction surveys to both students and tutors regarding various aspects of the new tutoring model. We used the survey results and other data collected via TutorTrac to measure satisfaction and effectiveness of the new model.

Historical Background of University Tutorial Services

I have been a student at Appalachian State University for four years now and have worked at UTS for three of those years. To learn more about the long-term history of UTS, I interviewed Wes Waugh, Director of Technology Support Services for the Student Learning

Center at Appalachian State University, to gain his perspective on the history of UTS. Wes accepted his first role with the Student Learning Center, formerly known as the Learning Assistance Program, in 1997, and since has held multiple roles within this platform. He started as the University Tutorial Services Director in 1997 and transferred into his current role as Director of Technology Support Services in 2009. This totals 21 years of experience within academic support services for students at Appalachian State, leading me to use him as a credible source for the historical background of UTS (W. Waugh, Personal interview, February 5, 2019).

While the revamping of the tutoring center this semester was a first for me, it was not a first for Wes. After discussing the many transitions UTS took on over the years, we derived two transitions that were just as monumental as the current modification. When Wes entered his position at UTS in 1997, his first mission was to move toward electronic data-recording to better track paper records kept at UTS. At this time, technology usage was much less common, both in the tutoring center and even across campus. While this transition did not lead to technology being used to schedule appointments or log visits as it is done today, it meant spreadsheets were put together regularly to record visit information and used for budgetary and utilization purposes. Most of the data recording would be done by Wes himself or by seasoned staff members (W. Waugh, Personal interview, February 5, 2019).

The next largest transition was the implementation of TutorTrac in 2006 that allowed all appointment scheduling to be completed online. The functionality and flexibility of TutorTrac provided a new opportunity for UTS. The past was what I would consider manual calculations, and the implementation of TutorTrac was like the purchase of the first calculator. TutorTrac allowed all visits to be recorded automatically, schedules to be built, and tutors and students to be notified of their appointment time without having to physically come into the tutoring center.

TutorTrac also refined the manner in which data was collected, by providing quick and simple reports for nearly all information desired. For instance, running a report on the number of appointments created and attended during a specific time frame of the semester is as easy as clicking a few buttons. The implementations in both 1997 and in 2006 greatly impacted students because of the efficiency of data collection and the new scheduling mechanism. It even affected employees beyond UTS, such as academic advisors and other staff and faculty who promoted tutoring on campus. Fortunately, most accepted the new online scheduling model and jumped on board quite easily, and while some did not embrace the change, lack of acceptance from some was expected. (W. Waugh, Personal interview, February 5, 2019).

The model in place until recently, which had been in place since 2006, consisted of a combination of online and paper resources. To start the process, students were required to come into the UTS center and fill out a paper request form. From this point, students would list all of their weekly availability and UTS Staff would pick a time slot that matched both their availability and the appropriate tutors' schedules. Tutor schedules were collected on paper during mandatory training and transferred online using TutorTrac following the training. If no time slots matched in the scheduling process, students were emailed follow-up information concerning other available times or resources to utilize, which typically took multiple business days to be resolved before the student was scheduled. Once scheduled, tutors received a confirmation email of the appointment, along with the student, and the paper request form would be placed in their designated folder. This tutor and student(s) would meet at the same day and time each week for the remainder of the semester. All tutoring sessions were held in-person at the UTS center, unless all allotted spaces were full, in which case tutors were asked to hold their session in the campus library nearby. During the initial tutoring session with each student, tutors were required

to review a contract with the student concerning UTS policies and procedures, which created another paper form in their designated folder. Tutors also had to maintain session logs for each student, taking notes on the happenings of each tutoring sessions, such as content covered and specifics of assignments completed.

Despite the improvements, there were still some inefficiencies in this process that created dissatisfaction. Observationally, many students commented on their dissatisfaction with the inconvenience of completing a paper request form. Not only were they displeased to have to travel across campus to complete a form that could easily be completed online, but many students also felt passionately about Appalachian's drive for sustainability and the opportunity for the system to be made paperless (<https://sustain.appstate.edu/>). With there being three paper forms kept per student (the request form, contract, and session log), most tutors having upwards of 10 appointments each week, and UTS employing approximately 130 tutors, around 4,000 sheets of paper were used, scanned into TutorTrac, and thrown away each semester. One could see why, on a campus as sustainable as Appalachian State, we felt encouraged to move in a more paperless direction, especially since it was more than possible to do so with the recent technological advancements. Another concern from both the tutor and the student perspective was the recurring appointments set by TutorTrac when students signed up for a tutor. If students had no new material or decided to simply not attend, tutors were left without pay unexpectedly, causing severe employee dissatisfaction. Student cancellations and missed appointments would add up over the semester and ultimately prevent them from easily obtaining a tutor the next semester, as they would have to schedule a meeting with the UTS Director to discuss the attendance policy and reasoning behind it. While students were made aware of these policies when they reviewed and signed the tutoring contract with their tutor in the first session, most

were still disgruntled having to wait anywhere from one or two weeks to be scheduled for an appointment. These remaining inconveniences caused UTS to consider additional changes to the scheduling model for tutoring, ultimately aiming to increase satisfaction amongst tutors and students.

As Wes was the leader of both of these past transitions, it was naturally expected that he would hold the same role in any upcoming transitions. This expectation was met this past fall, when Wes and Lee Cope, University Tutorial Services Director, decided to take the next step in diving further into the opportunities that advanced technology provides.

New Implementations of University Tutorial Services

Appalachian State University's undergraduate student population has been steadily increasing each year, yet the physical space and accessible resources on campus have not varied (Institutional Research, Assessment and Planning, 2018). UTS is one of the many resources that is offered to all undergraduate students, which in recent years has expanded to include a large number of off-campus students as well as on-campus students. As growth continued, UTS had to determine a better way to utilize the resources available to serve the undergraduate student population to the best of its abilities. With a stagnant budget, UTS could not hire additional student employees or offer those currently employed more hours to fit the needs of students, but it could alter the manner in which these services were offered.

In prior semesters, students who signed up for tutoring were committed to weekly tutoring for the entirety of the semester. This model exhausted appointment availability early in the semester, creating a lack of resources for undergraduate students who determined their need for tutoring later into the semester. Starting in the spring of 2019, UTS began allowing students

to sign up for only one appointment at a time. That way, if a student chose not to attend tutoring one week, that appointment slot would be available to another student if needed, hence increasing the accessibility of the on-campus tutoring resource. Students have the ability to log on to TutorTrac themselves, navigate the system, and designate which of the available times would work best for their schedule and specific course needs. Students could simulate the model that UTS delivered previously by repeating this booking process weekly, or they could use this resource randomly as desired.

While further development of this resource allows for the beneficial opportunity to serve more undergraduate students, it also creates cause for concern. UTS has found over multiple semesters' worth of observational data that students must attend tutoring upwards of four times during the semester in which they are enrolled to see substantial grade improvement. Without the guarantee from weekly recurring appointments that students will attend multiple tutoring appointments, we cannot be sure that the tutoring services that we are providing are genuinely improving the student's grade. We lose this sense of control, hence losing the ability to regulate the efficiency of the resource that UTS provides.

Along with booking single appointments, students now also have the option to choose between in-person and online tutoring platforms. Following the rebranding of Distance Education at Appalachian State University to App State Online (<https://online.appstate.edu/>), Chancellor Sheri Everts administered a change across campus to require all on-campus resources to be available to all off-campus undergraduates. With this opportunity in place, UTS jumped at the chance to offer online tutoring to all undergraduate students, whether they are on or off campus. Not only did this mandate increase the number of students that UTS reached, but also the hours in which it could provide services. With the implementation of ZOOM, an online audio

and visual conferencing program, online tutoring was simple (<https://zoom.us/about>). Being in the physical UTS space was unnecessary when using ZOOM, which encouraged UTS to broaden hours of operation, hence reaching even more students. Rather than the typical 9pm to 8pm, Monday through Thursday, and 9am to 5pm, Friday, schedule that UTS has operated on for years, we implemented online tutoring via ZOOM from 7am to 12am, Monday through Friday.

Online tutoring has proven to be a great resource for many college students, benefiting “any learner who has difficulty getting to campus during business hours,” and not solely online students (Smith, 2005, p. 28). There are a number of clear advantages in online tutoring, including “availability from home or campus ... lower facilities cost ... better data collection and retrieval ... and, potentially, greater service consistency” (Smith, 2005, p. 28). Online tutoring sessions are ideal not only for App State Online students, but also for traveling student athletes, students impacted by poor weather circumstances, and students who focus better during late night study sessions. Online tutoring at Appalachian State might not ultimately affect the facility costs, but it does affect the facility usage. With only 23 tables and whiteboards available for use in the tutoring center, UTS was unable to accommodate the number of students requesting services. This new opportunity in online tutoring allows for more students to receive services without the physical space limitation. Considering the high functionality of TutorTrac, data collection of tutoring appointments is already impressive, but the use of ZOOM in online tutoring allows for full sessions to be recorded, observed, and managed by UTS Staff. The ability to observe the entirety of an appointment without the tutor and student(s) knowing preserves the genuineness of a typical tutoring session while allowing for detailed examination of the quality of the tutoring session. This creates the opportunity for UTS Staff to provide more accurate

feedback to the tutor, and therefore standardizes the consistency of tutoring sessions for all employed tutors.

Many of these advancements would not have been implemented without the efforts produced by newly hired UTS Director, Lee Cope. Lee has worked in the Student Learning Center at Appalachian State University for just one year. Pedagogically, Lee planned to observe the processes in place during his first year of employment before invoking any changes. During this timeframe, Lee researched the methodologies of other collegiate tutoring centers at universities of similar size. By the spring 2019 semester, Lee felt prepared to take on a transition that he felt would ultimately have positive effects on Appalachian's student body. While providing UTS resources online was a requirement, moving to the single-appointment scheduling model was an elective decision. With a change as significant as this, a large amount of planning was put into place. Based on years of data collected and analyzed in TutorTrac, Lee and Wes determined the best time to implement these changes was during a spring semester because of the large decrease in usage from fall to spring (Figure 1).



Figure 1. Number of Tutoring Appointments Attended by Semester.

The determination to allow students to schedule themselves came from two specific reasons: professional experience prior to employment at Appalachian and anonymous feedback provided by students and tutors following multiple previous semesters. Prior to working at

Appalachian, Lee was employed by the Student Learning Center equivalent at Mars Hill University. In his experience there, he discovered that most every university that uses TutorTrac for their tutoring services applied the function of students scheduling themselves. He was surprised to find that Appalachian, one of the leading universities in sustainability, was not employing this function and was instead using paper forms to gather the necessary information before transferring this information online. Considering we had all the required software to implement this capability, the reasoning behind wasting both paper resources and personnel resources, in UTS Staff that collected the requests and completed the scheduling process, was unknown. With this newfound information, there was no sound purpose in continuing the old method. Before announcing the certainty of this new implementation, Lee dove into records of three previous semesters' anonymous feedback surveys. Following each semester, UTS sends out surveys from TutorTrac to all students who have utilized UTS services in any platform and to all employed tutors. Because of the anonymity, most are *very* honest concerning their opinions, both positive and negative. Most statements were found to be in relation to dissatisfaction with the outdated system, which caused limitations to student accessibility and lack of appropriate pay to tutors.

The modifications to allow students to schedule their own appointments on TutorTrac and have the opportunity to receive tutoring online could potentially improve these dissatisfactions from both perspectives, but the overall measurement of satisfaction and effectiveness may be affected by whether a student has experience with the previous system. For tutors that have been employed with UTS for multiple semesters, this change came as a blindside and has resulted in fewer number of hours worked (Figure 2). For students that had used UTS services for multiple semesters, this change required them to learn a new computer software

system and placed the responsibility on them to book their appointments when needed. We expect to see overall improvement in satisfaction and efficiency in the coming semesters, as tutors we employ and students we serve will recognize this scheduling model as the norm and will have no knowledge of the previous model.



Figure 2. Hours Worked by Tutors by Semester.

Survey Methods

For this project, surveys (Appendices A-D) were sent to samples from four different groups of Appalachian State undergraduate students, including returning tutors, returning students, new tutors, and new students, to measure satisfaction with various aspects of the tutoring delivery model. These aspects included overall satisfaction, satisfaction with TutorTrac, satisfaction with ZOOM, satisfaction with the single-booking model, and many others. The purpose was to compare responses of these four different samples to conclude the potential relationship between their role within UTS, prior experience at UTS, and their satisfaction with UTS services.

I. Sample

Returning tutors are classified as tutors who were employed by UTS prior to the change in the spring 2019 semester and held at least one small group tutoring session during the spring 2019 semester, demonstrating experience with both models from the tutor perspective. Returning students are categorized as Appalachian State undergraduate students who received tutoring services on campus in a semester prior to spring 2019 and in the spring 2019 semester, also demonstrating experience with both models, but from the student perspective. New tutors are classified as tutors who began employment with UTS at the start of the spring 2019 semester and held at least one small group tutoring session during the spring 2019 semester, demonstrating experience with only the new model from the tutor perspective. New students are categorized as Appalachian State undergraduate students who received tutoring services on campus for the first time in the spring 2019 semester, also demonstrating experience with only the new model, but from the student perspective.

Each of these four samples were asked similar questions about their satisfaction. Returning tutors and students were asked to compare the spring 2019 semester and previous semesters in specified sections of the survey, and were asked a set of standalone questions regarding their satisfaction with the new UTS features in the spring 2019 semester that did not require an explicit comparison with past semesters. New tutors and students were only asked a set of standalone questions, as the comparative questions were not relevant for this group.

II. Survey Procedure

The survey was created using Google Forms and sent to recipients via Appalachian State email. Recipients were determined by data collected from TutorTrac, portraying usage of UTS services in the spring 2019 semester with comparison to seven previous semesters. The

comparison to previous semesters was used to assess if students who received services in the spring 2019 semester had previously received services during their academic career at Appalachian State, hence splitting the sample of students into returning students and new students. The divide between returning tutors and new tutors was determined by verifying the initial start date of employment of tutors, which is stored under each tutor's consultant profile on TutorTrac. In total, the surveys were sent to 73 returning students, 45 returning tutors, 71 new students, and 12 new tutors. Responses were received from 21 returning students, 34 returning tutors, 23 new students, and 12 new tutors.

The survey was confidential, but not entirely anonymous, allowing the ability to reach back out to those who had not yet responded to minimize the non-response rate. Emails with the survey link and information were sent to the four samples three times total over a two week period.

The survey was comprised of 17 to 21 questions, dependent on the recipient, with optional spaces to comment following each question. Participants of the survey began by answering four demographic questions about themselves, and were then asked to rate their satisfaction with the various aspects of the tutoring services offered at Appalachian.

Hypotheses

Satisfaction with the new implementations of UTS is vital to the success of these new implementations. Satisfaction ratings are expected to be lower from returning tutors and students in comparison to new tutors and students because of the effect that a change has on any person. Those sampled with no experience to the previous model represent the potential for increased

satisfaction ratings in semesters to come, as the sample populations that show dissatisfaction graduate from or leave Appalachian.

For all Roles and Experience levels of respondents, I expected the satisfaction ratings of aspects of UTS that were not altered to be fairly neutral in comparison and highly satisfying individually. Examples of this would be the tutor satisfaction with the quality of their observation feedback and student satisfaction with the quality of their tutor. Because these aspects did not change, satisfaction with them should not alter for the spring 2019 semester.

I expect the satisfaction ratings of aspects of UTS that did alter or are completely new to be fairly neutral or generally dissatisfied. Not only will the returning tutors and students likely convey dissatisfaction due to the change, but all sample populations might display some levels of dissatisfaction because of the unforeseen flaws in the system. Any new implementation has complications to be worked out, which ultimately causes disapproval in nearly any circumstance. Examples of this would be tutor satisfaction with the number of work hours received each week and student satisfaction with the quantity of appointments available, along with both tutor and student satisfaction with TutorTrac, ZOOM, and the single-booking scheduling model.

The largest changes that impact the most people are the single-booking scheduling modeling and implementation of online tutoring via ZOOM. I expect these two features to have the lowest satisfaction ratings from all four sample groups because of their effect on all tutors and all students. The single-booking scheduling model requires students to sign up for tutoring each week rather than previously having appointments set up for the entirety of the semester. Forgetting to sign up could result in not receiving tutoring one week. The single-booking scheduling model varies a tutor's schedule each week and denies the tutor the opportunity to get to know their students because they might only meet them the one time. The largest concern here

is a tutor not knowing their definite work schedule until twelve hours before the designated appointment time. Online tutoring via ZOOM allows students the opportunity to receive tutorial services outside of regular operating hours and from the comfort of their own home, but some may find this system inconvenient or difficult to operate. Furthermore, students who prefer in-person tutoring with a particular tutor may have schedule conflicts, resulting in them using the online tutoring out of necessity rather than preference. From the tutor perspective, UTS obligated all tutors to create at least two hours of their schedule as online tutoring, ensuring that all subjects offered for in-person UTS would also be available online. Some tutors who were not comfortable with the new technology were displeased with this requirement during the training period, which leads me to believe there would be high levels of dissatisfaction after a period of use.

Data

Following the data collection period, for each selected group we calculated the mean response of each question, several of which were measured on a 1-5 Likert Scale where higher values corresponded with a higher level of agreement with the question. The results are displayed in Table 1. For purposes of convenience, we have ordered the questions one through eight. However, this numbering does not correspond with the numbering of questions in the actual surveys.

Group	n	Q1: Overall Satisfaction	Q2: Work Hours	Q3: Tutor Trac	Q4: Tutor Satisfaction	Q5: Observations	Q6: Single Booking	Q7: Quantity of Appts. available	Q8: ZOOM
Returning Students	21	3.10		3.43	3.67		3.76	3.24	2.82
Returning Tutors	34	2.94	2.18	3.50		3.18	3.41		3.00
New Students	23	4.22		3.83	4.52		4.26	3.57	3.42
New Tutors	12	4.08	2.92	4.42		3.50	4.17		3.00
Mean Response		3.46	2.37	3.69	4.11	3.26	3.81	3.41	3.06

Table 1. Average Satisfaction Ratings by Experience and Role.

The responses in Table 1 display consistently higher satisfaction ratings from new tutors and students in comparison to returning tutors and students. From the new tutors and students, only one of the eight questions had a below neutral rating from the tutor perspective, that being the satisfaction with the number of work hours received. In similarity, the lowest satisfaction rating displayed overall is the returning tutor satisfaction level with the number of work hours received. This question has the lowest mean satisfaction rating, as well as the only mean satisfaction rating below a neutral rating. The highest satisfaction rating displayed overall is the new student satisfaction level with the quality of their tutor. This question also has the overall highest mean satisfaction rating in Table 1.

I. Methods

We ran a sequence of analysis of variance (ANOVA) tests to determine the reasons behind the variation in responses. One ANOVA test was conducted for each response item summarized previously in Table 1. We categorized the explanatory factors into the terms ‘Experience’ and ‘Role,’ allowing for new and returning students and tutors to be classified according to both explanatory factors. Many of the questions were asked of both students and tutors, and in those cases we considered both of the explanatory factors and their interaction in a two-way ANOVA analysis. Other questions were asked of only students or only tutors, and in those cases we conducted a one-way ANOVA analysis. We used the F statistic and a significance threshold of $\alpha = .05$ initially for each analysis to assess the overall statistical significance of the model. When the results of the F statistic were significant, we looked further at whether Experience or Role (or both) contributed significantly to the variation in responses for each question.

Some assumptions of ANOVA models is that the response variable be normally distributed with equal variance in each group. We note here that the survey responses employed a Likert scale, which is by definition not a continuous distribution. Therefore, the responses are not normally distributed, but they showed enough consistency in their variances to meet the second assumption, and the ANOVA tests are reasonably robust to lack of normality. For these reasons, we chose these methods to be appropriate for our survey responses. In addition, for each comparison, we also ran permutation tests for statistical comparisons, which avoid the ANOVA assumption of normally distributed data.

The sample sizes may have an effect on the power of objecting the null hypothesis. The sample sizes were small due to the sampling of tutors and students available at this point in the

semester. Further analysis of these trends will be useful in the future with a larger sample to learn more about the effects.

II. Results

After conducting the ANOVA analyses, four of the eight F statistics were significant at the 5% level. Further examination of these results suggested that Experience was a significant variable in all four of these questions and Role was not significant in any of the questions. I will break down these results by question and explain the calculations received. An analysis will follow in the next section.

Question 1 concerned the student and tutor overall satisfaction with UTS. The ANOVA test for this question showed statistically significant results as a function of Experience but not in Role. This was determined because the p-value for Experience was approximately zero and the p-value for Role was 0.53. The p-value for the interaction between Experience and Role was 0.97. The R^2 value is 25.19%, meaning 25.19% of the variation in responses is explained by the factors we studied. Visually, we can see the significance of Experience and lack of significance of Role by looking at an interaction plot (Figure 3), which plots the mean response to the survey question based upon group, which also corresponds to the numerical values listed in Table 1 previously.

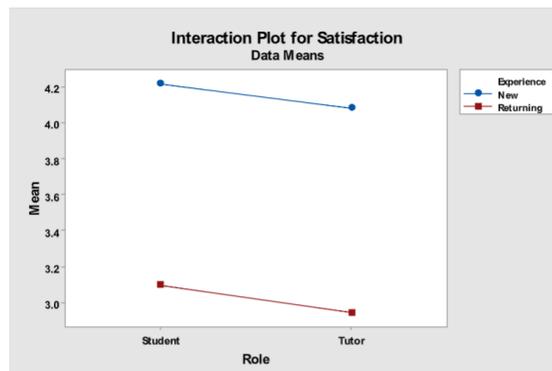


Figure 3. Interaction Plot for Overall Satisfaction.

Upon analysis of the above graph, it is apparent that Experience contributes much more to the variation in responses than Role or the interaction of Experience and Role. This statement is understood by recognizing the gap between the New (blue) and Returning (red) lines, whereas the gap is much smaller between the Student (left) and Tutor (right) data points. The means of the New and Returning data vary by approximately 1.13 satisfaction points with means of 4.15 and 3.02, respectively. In contrast, Tutor and Student satisfaction varies by only 0.14 points on average, revealing much less significance in Role than Experience in the reasoning behind the variance in responses. It can be visually determined that the interaction of Experience and Role contributes very little because the lines appear to be nearly parallel. Graphically, an interaction between the two variables would be apparent if the lines in Figure 3 were non-parallel. The permutation test for this comparison was run using the R software package (version 3.5.2). The permutation test results showed virtually identical p-values to the ANOVA analyses, which provides some assurance that the lack of normality in the data is not a major issue.

Question 2 asked tutors to rate their satisfaction with the number of work hours they had received this semester. This question only concerned tutors, permitting us to only run a single-variable ANOVA test on Experience. The ANOVA test found that Experience did not play a significant role in the variance, with a p-value of 0.08. This p-value was only slightly above our significance threshold of 0.05, and as such we have some suggestive evidence of an effect of Experience, but the R^2 of the ANOVA model in this analysis is only 6.78%, so we could not justify Experience holding significance in the variation of responses on this question. We also examined this question using a permutation test to verify results, and found a two-sided p-value of approximately 0.10. This result is consistent with our result from the ANOVA model,

suggesting that we do not have strong evidence that the Experience variable affects the variation in responses.

Question 3 concerned all sample groups' satisfaction with the TutorTrac software. The ANOVA test for this data introduced significance in Experience, but not in Role. This was determined because the p-value for Experience was 0.01 and the p-value for Role was 0.20. The p-value for the interaction between Experience and Role was 0.32. The R^2 value is 7.77%, so while the p-value for Experience does demonstrate significance, we can still only explain 7.77% of the variation in the data. The p-values for both Role and the interaction between Experience and Role are much smaller in comparison to the p-values evaluated in Question 1, which can be explained by these variables explaining *some* of the variance in the responses, but not a significant amount. This can also be visually seen in Figure 4.

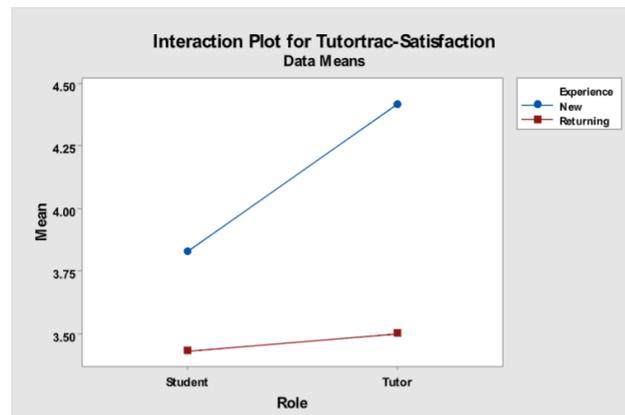


Figure 4. Interaction Plot for TutorTrac Satisfaction.

In comparison to the interaction plot demonstrating the results of Question 1 (Figure 3), the data seen is slightly more similar, conveying a contribution of some significance level to the variance from each of the three variables. The New and Returning data are still different enough to create significance in the Experience variable, but not such an apparent difference that would

compute a p-value of nearly zero. The Student and Tutor satisfaction fluctuate more than in Question 1, but still do not visibly alter enough to make Role a significant variable. The interaction between Experience and Role does not appear to be close to parallel, but also does not intersect, which explains the p-value of 0.32 being much smaller than the p-value of the interaction in Question 1, that being 0.97. The permutation test for this analysis showed virtually identical p-values to the ANOVA analyses, which provides some assurance that the lack of normality in the data is not a major issue.

Question 4 asked students about their satisfaction with the quality of their tutor. This question only concerned students, permitting us to only run a single-variable ANOVA test on Experience. The ANOVA test found that Experience did play a significant role in the variance, with a p-value of .01. The R^2 value demonstrates that 17.29% of the variance can be explained by the significance of Experience in response to the data received in Question 4. The variance between New and Returning can be seen in the box plot (Figure 5) displaying satisfaction ratings. We also examined this question using a permutation test to verify results, and found a two-sided p-value of approximately 0.004. This result is consistent with our conclusion from the ANOVA model.

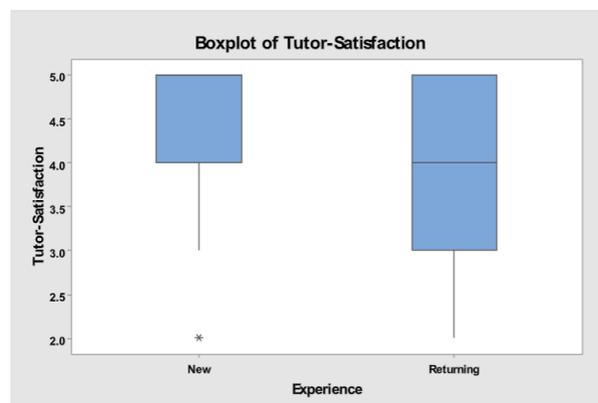


Figure 5. Box Plot for Quality of Tutor Satisfaction.

Question 5 asked tutors to rate their satisfaction with the observation feedback that they had received from UTS Staff this semester. This question only concerned tutors, permitting us to only run a single-variable ANOVA test on Experience. The ANOVA test found that Experience did not play a significant role in the variance, with a p-value of 0.18. We also examined this question using a permutation test to verify results, and found a two-sided p-value of approximately 0.42. This result agrees with our result from the ANOVA model.

Question 6 concerned the student and tutor satisfaction with the new single-booking scheduling model. The results of the ANOVA test revealed Experience was significant, with a p-value of 0.03. The p-values of Role and the interaction between Experience and Role were 0.43 and 0.65, respectively. The R^2 value is 8.10%, so while the p-value for Experience does demonstrate significance, we can still only explain 8.10% of the variation in the data from these variables. These results are visibly apparent in the below interaction plot (Figure 6). The permutation test for this comparison was run using the R software package and again showed virtually identical p-values to the ANOVA analyses for this question.



Figure 6. Interaction Plot for Single-Booking Satisfaction.

Question 7 asked students to rate their satisfaction with the quantity of available appointments viewed on TutorTrac when booking their appointment. This question only concerned students, permitting us to only run a single-variable ANOVA test on Experience. The ANOVA test found that Experience did not play a significant role in the variance, with a p-value of 0.49. Experience could only explain 1.12% of the variance in the responses. We also examined this question using a permutation test to verify results, and found a two-sided p-value of approximately 0.54. This result also suggests that we do not have strong evidence that the Experience variable affects the variation in responses.

Question 8 asked all tutors and students who had utilized ZOOM for tutoring purposes to rate their satisfaction with the software and its practicality in UTS. The ANOVA test found that neither Experience, Role, nor an interaction thereof played a significant role in the variance, with p-values of 0.43, 0.76, and 0.43, respectively. These variables could only explain 2.95% of the variance in the responses. This question revealed the only circumstance in which the variance could not be explained by Experience, Role, nor their interaction. The box plot (Figure 7) demonstrates this explanation, with both New and Returning Tutors being fairly neutral in their level of satisfaction, New Students being satisfied on average, and Returning Students being dissatisfied on average. This data lacks a correlation between the Experience and Role relationships.

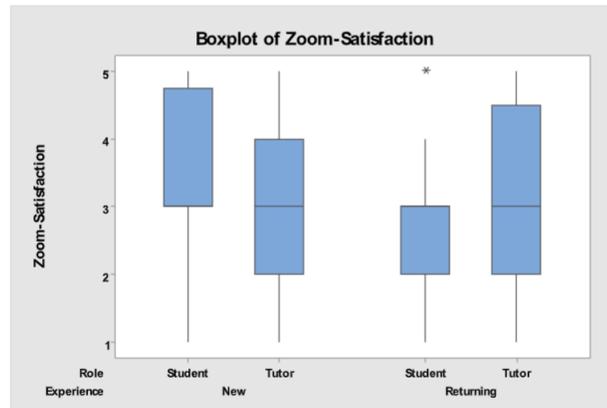


Figure 7. Box Plot for ZOOM Satisfaction.

There is one apparent error in the analysis of significance, being the significance level in which the variation was measured. Given the multiple hypothesis tests being run, each at the 5% significance level, we could apply a stricter threshold to provide against errors in the eight models. This stricter threshold would be 0.00625, being 0.05 divided by the 8 models run. There is strong evidence in two questions, Question 1 and Question 4, with a p-value lower than 0.00625 and more suggestive evidence in the two other questions, Question 3 and Question 6, with p-values between 0.00625 and 0.05. This more conservative threshold provides stronger evidence that Experience is the reasoning behind the variation in satisfaction for overall satisfaction and satisfaction with tutor quality, and is less significant but still suggestive in satisfaction with TutorTrac and satisfaction with the single-booking scheduling model. Of the other four questions, some responses may have been significant, and we rejected the null due to the small sample size. This may have affected the power of our analysis, especially if the effects are more modest in scale. The permutation test for this comparison was run using the R software package and again showed virtually identical p-values to the ANOVA analyses for this question.

In the next section, we will dive into a contextual analysis of these results. While the classifications of the sample populations only contributed to 50% of the questions asked, we can still determine reasoning for most of the responses based on prior knowledge and information of UTS.

Analysis

Satisfaction with a service is something that can fluctuate with any alteration of that service. The survey recipients in this sample represent a population of all undergraduate students enrolled at Appalachian State, and their satisfaction and feedback contributes to the changes made within UTS. We can break down the potential reasoning behind the variation of satisfaction levels by Experience and/or Role for each question.

Because the overall satisfaction is impacted by all other aspects of UTS questioned in the surveys, we will save the explanation of Question 1 for last.

Question 2 asked tutors to rate their satisfaction with the number of work hours that they had received this semester. Returning tutors had an average satisfaction level of 2.18 and new tutors had an average satisfaction level of 2.92. The ANOVA test did not find Experience to be a significant variable, meaning this difference between returning tutors and new tutors must have another explanation. From observation and submitted tutor feedback, we can conclude that tutors overall are dissatisfied with the number of work hours received, independent of their experience with UTS. With the new appointment scheduling model, the responsibility for scheduling an appointment each week falls on the student. In this methodology, we are nearly guaranteeing a student will only schedule an appointment if they truly want to attend tutoring and reap its benefits, not just because they have to attend due to scheduling an entire semester's worth of

appointments. However, with the positive aspect comes a negative as well: tutors are not working as many hours. Students are scheduling fewer appointments and the majority of hours available on tutor's schedules are not being booked, causing a case for dissatisfaction across the board.

Question 3 concerned tutor and student satisfaction with the TutorTrac software.

Returning students had an average satisfaction level of 3.43, returning tutors had an average satisfaction level of 3.50, new students had an average satisfaction level of 3.83, and new tutors had an average satisfaction level of 4.42. The ANOVA model demonstrated significance in the Experience variable, introducing reasoning why both new tutors and new students had higher satisfaction ratings than returning tutors and returning students. Because of the modification of the scheduling method and the increased use of TutorTrac in this method, both returning tutors and students are likely dissatisfied with the responsibility it now requires of them. Students who have utilized UTS services before are accustomed to UTS Lab Managers completing the scheduling process for them and working around their available times, but they are now required to schedule their own appointment and only choose from the available times listed. Tutors who have been employed with UTS for multiple semesters had previously only used TutorTrac to view their payroll, but are now required to clock themselves in and out and take brief notes of the happenings of their tutoring appointment in TutorTrac. Both circumstances instruct these parties to complete a few extra steps that they are not accustomed to, likely being the cause for a lower rating of satisfaction in comparison to new tutors and students.

Question 4 concerned the student's satisfaction with the quality of their tutor. Returning students had an average satisfaction level of 3.67 and new students had an average satisfaction level of 4.52. The ANOVA model demonstrated significance in the Experience variable,

introducing reasoning why new students had higher satisfaction ratings than returning students. Contextually, the significantly higher satisfaction rating provided by the new student sample population is potentially in combination with the implementation of single-booking. Because returning students are accustomed to meeting with the same tutor every week, hence getting to know them and having them adjust to the course content and student's learning style, they presumably struggle to maintain a similar quality tutoring appointment when these aspects have to be addressed nearly each session.

Question 5 asked the tutor to rate their satisfaction with the quality of their observational feedback from UTS Staff. Returning tutors had an average satisfaction level of 3.18 and new tutors had an average satisfaction level of 3.50. The ANOVA test did not find Experience to be a significant variable, meaning this difference between returning tutors and new tutors has to have another explanation. The overall neutrality in satisfaction is likely because of the lack of change in the quality of feedback in the observation reported back to the tutor. Most UTS Staff that complete these observational efforts are experienced tutors, but are likely not experienced in the subject matter being discussed between tutor and student. For instance, a Lab Manager who is a Mathematics major could be observing a Spanish tutoring session. The primary goal of the observations is to provide general constructive criticism on the tutor and their approach to tutoring, not specific course content. Because of this lack of course content knowledge, observation completed by UTS Staff may be taken more lightly, causing reason for neutrality or dissatisfaction.

Question 6 concerned tutor and student satisfaction with the new single-booking scheduling model. Returning students had an average satisfaction level of 3.76, returning tutors had an average satisfaction level of 3.41, new students had an average satisfaction level of 4.26,

and new tutors had an average satisfaction level of 4.12. The ANOVA model demonstrated significance in the Experience variable, introducing reasoning why both new tutors and new students had higher satisfaction ratings than returning tutors and returning students. In this circumstance, resistance to change is reasonably the most accurate answer. The single-booking scheduling model is basically a 180° flip from the system UTS had used previously. Change typically results in some level of dissatisfaction from those who are having to adapt to the change. Because new tutors and new students are unfamiliar with the previous system, they represent a more unbiased opinion on the overall population's satisfaction with the single-booking scheduling model.

Question 7 asked students of their satisfaction level with the quantity of available tutoring appointments viewed on TutorTrac when booking their appointment. Returning students had an average satisfaction level of 3.24 and new students had an average satisfaction level of 3.57. The ANOVA test did not find Experience to be a significant variable, meaning this variation must have another explanation. In the previous scheduling model, students were unable to view the available appointments. They would simply supply UTS Lab Managers with their weekly availability and an appointment time would be assigned to them. In this case, we can assume that a slightly-above neutral rating is actually desired. This claim informs us that there are not too few appointment slots listed, but also not an abundant amount making the decision or viewing process difficult.

Question 8 concerned the tutor and student satisfaction with ZOOM, when utilized for tutoring purposes. Returning students had an average satisfaction level of 2.82, returning tutors had an average satisfaction level of 3.00, new students had an average satisfaction level of 3.42, and new tutors had an average satisfaction level of 3.00. The ANOVA test did not find

Experience or Role to be significant variables, concluding that the variation of these results has another justification. Tutors, both new and returning, have an exactly neutral average satisfaction rating in this question, whereas returning students' and new students' satisfaction levels differ largely. We can conclude that the varying satisfaction levels in these responses come from an individual's comfortability with technology. While an online tutoring appointment, may be convenient, it isn't typically the first choice, as it loses some of the personability preserved in an in-person tutoring appointment.

Circling back to question 1, which concerns all four sample groups' overall satisfaction with UTS, returning students had an average satisfaction level of 3.10, returning tutors had an average satisfaction level of 2.94, new students had an average satisfaction level of 4.22, and new tutors had an average satisfaction level of 4.08. These results seem mildly accurate in comparison to the averages of satisfaction levels (Table 2) of the individual aspects of UTS.

	Satisfaction Averages (excluding Overall Satisfaction) (A)	Overall Satisfaction Ratings from Survey (B)	Difference (A - B)
Returning Students	3.38	3.10	.29
Returning Tutors	3.05	2.94	.11
New Students	3.92	4.22	-.30
New Tutors	3.60	4.08	-.48

Table 2. Comparison of Overall Satisfaction Ratings.

Tutor and student satisfaction with each of the aspects of UTS should generally equal their overall satisfaction with UTS. From the returning party perspective, satisfaction averages from questions two through eight rank higher than the overall satisfaction average in question one by .29 and .11, by returning student and returning tutor respectively. This conveys that the returning tutor and returning student overall satisfaction is likely higher than admitted in the survey. From the new party perspective, satisfaction averages from questions two through eight rank lower than the overall satisfaction average in question one by .30 and .48, by new student and new tutor respectively. This conveys that the new tutor and new student overall satisfaction is likely lower than admitted in the survey, considering their average satisfaction with the individual aspects of UTS. We can speculate that new tutors and students feel obligated, maybe subconsciously, to have a higher satisfaction level due to their lack of experience with UTS, not wanting to prejudicially claim negative satisfaction with a system in which they know very little. In contrast, returning tutors and students have a higher level of experience with UTS and likely feel more comfortable sharing their thoughts of UTS. Due to feedback provided, we can conclude that the overall satisfaction levels reported were lower than the average of other satisfaction levels because of the requests for improvement of these various aspects and others impacting their overall judgement.

Probable Solutions

In the analysis of satisfaction from the four samples, I determined my experience at UTS provided credibility to suggest potential solutions to the dissatisfaction levels. The implementation of these solutions could increase the overall satisfaction in all four populations.

As many customer service focused businesses should, UTS has promoted growth in its marketing efforts across campus. By creating an Assistant Tutoring Coordinator for Social Media and Branding Promotion position, we have had the capability of posting about the resources offered by UTS more consistently and providing more professionally-made handouts in building around campus. This increased marketing effort will reasonably increase the number of appointments booked, as more undergraduate students will be aware of the services offered by UTS for all undergraduate students at no cost. This would improve the satisfaction level of tutors, both new and returning, in the number of work hours that they receive each week.

To also increase tutor satisfaction with work hours received each week, UTS will employ a fewer number of tutors, beginning this upcoming fall 2019 semester. UTS currently employs 136 tutors, 94 of which have small group appointment hours on their availability. Tutors are required to have at least four hours of tutoring available each week, but most have upwards of 10. Due to the single-booking system, a majority of the tutor's available hours are not being booked by students. Employing less tutors would mean having less hours of availability posted while still covering all courses necessary, leading to more of the tutor's hours being filled each week. The ideal goal would be to only employ 75-90 tutors in total each semester.

Another way to increase the number of work hours tutors receive is by requiring students who are at risk or on academic probation to attend regular tutoring. Each semester, we collect a list of students who are on academic probation, and email them with information about our resources for easy access. Unfortunately, very few of these students actually follow through with receiving tutoring services because of the lack of motivation and self-esteem. Requiring these students to attend tutoring appointments could increase both their motivation and confidence and potentially keep them on the track to obtaining their degree.

With the single-booking model in place, many students have felt as though the quality of their tutoring appointment has decreased. Most students work better once the tutor knows the student and their particular learning styles. It can take an entire tutoring appointment of one hour to truly determine this, and can be pointless if the next tutoring appointment the student schedules is with a different tutor. The solution here is to encourage students to sign up for the same tutor, and even the same time every week. By developing that relationship between student and tutor, students will feel more encouraged to come, and tutors will be able to better assist the student. Students have the ability to sign up for the next week's appointment immediately after their tutoring appointment and should do so if they believe it will be necessary to guarantee working with the same tutor in the following session.

More advanced training is definitely a considerable solution to a large majority of the dissatisfaction levels. As this new system developed quite quickly, creating detailed training was on the backburner to ensuring that the whole system actually worked in all aspects. Working diligently over the next few semesters to create this detailed training for students and tutors new to UTS will improve our satisfaction levels. This will be most significant in ZOOM, as the online interface for tutoring is entirely new to everyone involved. Most Appalachian students are not familiar with ZOOM through any other opportunities on campus, so providing a comprehensive tutorial video is instrumental in their understanding and use of ZOOM in other aspects of academics and extracurriculars.

Lastly, in each question where Experience plays a significant role in the reasoning behind the variation in satisfaction levels, time is truly the best solution. Undoubtedly, tutors and students who are accustomed to the previous systems are going to display some level of dissatisfaction, as adapting to an entirely new system is never simple. As these students and

tutors graduate or move on from Appalachian, new students and tutors will enter with no other expectation than what currently exists. The model we have in place now will be the only one they are exposed to, which will likely increase satisfaction levels from lack of comparison.

Conclusion

This spring semester of 2019 included many monumental changes for UTS. The two most impactful were the transition to a single-booking scheduling model and the addition of online tutoring via ZOOM. Both of these changes, along with the other smaller changes presented this semester, provided more opportunity and flexibility for students to receive the necessary tutoring services. With this in mind, we predicted various levels of satisfaction with the new implementations, but no model is perfect and a measurement of success must be put in place. Shortly following the semester start, we ran semester-comparison data to track the number of small group appointments scheduled, and sent out feedback opportunities to all parties involved. These parties were the four samples utilized in the satisfaction survey.

Prior to the new implementations, UTS Director Lee Cope consulted anonymous feedback from previous semesters to ensure that the actions taken were for good reason. Many students found dissatisfaction with having to complete a paper request form, and many tutors recognized the abundance of wasted paper in UTS and wanted to focus Appalachian's drive for sustainability within UTS. Lee recognized these problems and knew there would be solutions in the direction of a paperless system. Removing paper from the system meant removing a majority of the oversight and control and shifting this to the students and tutors. The responsibility for scheduling an appointment fell to the student, which meant only students who truly wanted to

attend tutoring would, and we would have more opportunities for the students who actually need the academic assistance.

Aforementioned, no model can be determined to be ‘working’ without the proper measurement of efficiency, and in this case, satisfaction. The purpose of the surveys sent was to compare responses of the four different samples to determine the possible relationship between their role within UTS, prior experience at UTS, and their satisfaction with UTS services. We hypothesized the satisfaction ratings would be lower overall from returning tutors and students due to their requirement to adjust to a new system. In comparison, we expected the satisfaction ratings would be generally high to new tutors and students. This hypothesis was concluded to be incorrect. Satisfaction ratings from the new tutor and student parties were higher than the returning tutor and students parties overall, but were not as high as anticipated in most aspects. We also anticipated the satisfaction with the single-booking scheduling model and with ZOOM to be lowest, as these changes were the most impactful to all parties. Ultimately, satisfaction with the single-booking scheduling model actually had the second highest overall rating, averaged by each of the parties’ responses. Satisfaction with ZOOM had the second lowest score, only being trumped by satisfaction with the number of work hours received.

In order to improve the circumstances we acknowledge as the semester comes to a close, we have various solutions including increased marketing efforts, employing a fewer number of tutors, requiring at-risk students to attend regular tutoring, and more advanced training. While each of these additions might promote the use of tutorial services and boost satisfaction across all parties, time is the best long-term solution. As students and tutors move on from Appalachian, the new system will be the only one students and tutors have ever used. Most dissatisfaction comes from resistance to change and lack of adaptability, and the natural flow of time will

continue to naturally increase satisfaction levels with aspects of UTS. We have positive evidence that some of the changes made in these new implementations are already beneficial. Over time, these changes will become normal and assimilated.

Appendix A*UTS Returning Tutor Satisfaction*

1. Prior to spring 2019, how many semesters (including summer sessions) have you tutored?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
 - h. 8
 - i. 9
 - j. 10
2. Gender
 - a. Male
 - b. Female
 - c. Prefer not to say
 - d. Other
3. Major or Area of Study
 - i. _____
4. What subject areas are you coded to tutor?
 - i. _____
5. Overall, how would you rate your satisfaction as a UTS employee this semester compared to previous semesters?
 - a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction
 - d. More Satisfied
 - e. Much More Satisfied
6. Leave additional comments here.
 - i. _____
7. Rate your satisfaction with the number of work hours you received each week this semester in comparison to previous semesters.
 - a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction
 - d. More Satisfied
 - e. Much More Satisfied
8. Leave additional comments here.
 - i. _____
9. Rate your satisfaction with your use of TutorTrac this semester compared to previous semesters.
 - a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction

- d. More Satisfied
 - e. Much More Satisfied
10. Leave additional comments here.
- i. _____
11. Rate your satisfaction with the quality of your monthly observation feedback in comparison to previous semesters.
- a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction
 - d. More Satisfied
 - e. Much More Satisfied
12. Leave additional comments here.
- i. _____
13. Did you see a recognizable difference in student motivation when they attend their tutoring appointment(s) in comparison to previous semesters?
- a. Yes, students are more motivated this semester compared to previous semesters.
 - b. Yes, students are less motivated this semester compared to previous semesters.
 - c. No
 - d. Not sure
14. Leave additional comments here.
- i. _____
15. Rate your satisfaction with the ZOOM software for tutoring purposes. (You can skip this question if you have not used ZOOM for tutoring purposes.)
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
16. Leave additional comments here.
- i. _____
17. Rate your satisfaction with the student's ability to book a single appointment rather than an automatically recurring appointment.
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
18. Leave additional comments here.
- i. _____
19. Do you think this new system of single appointment bookings has reduced the frequency of student cancellations and missed appointments?
- a. Yes
 - b. No
 - c. Not sure
20. Leave additional comments here.
- i. _____

21. Do you have any additional feedback or suggestions for UTS to improve your experience as a UTS employee?

i. _____

Appendix B

UTS Returning Student Satisfaction

1. What is your current class year?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Other
2. Gender
 - a. Male
 - b. Female
 - c. Prefer not to say
 - d. Other
3. Major or Area of Study
 - i. _____
4. List the class(es) for which you attended tutoring appointments in the spring 2019 semester.
 - i. _____
5. Overall, how would you rate your satisfaction with University Tutorial Services in the spring 2019 semester compared to previous semesters?
 - a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction
 - d. More Satisfied
 - e. Much More Satisfied
6. Leave additional comments here.
 - i. _____
7. Rate your satisfaction with your use of the online system (TutorTrac) to schedule appointments in comparison to UTS Staff handling this procedure previously.
 - a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction
 - d. More Satisfied
 - e. Much More Satisfied
8. Leave additional comments here.
 - i. _____
9. Rate your satisfaction with the tutor(s) you met with in the spring 2019 semester compared to previous semesters.
 - a. Much Less Satisfied
 - b. Less Satisfied
 - c. Same Level of Satisfaction

- d. More Satisfied
 - e. Much More Satisfied
10. Leave additional comments here.
- i. _____
11. Rate your satisfaction with the ZOOM software for tutoring purposes. (You can skip this question if you have not used ZOOM for tutoring purposes.)
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
12. Leave additional comments here.
- i. _____
13. Rate your satisfaction with the ability to book a single tutoring appointment.
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
14. Leave additional comments here.
- i. _____
15. Rate your satisfaction with the quantity of available tutoring appointments this semester.
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
16. Leave additional comments here.
- i. _____
17. Do you have any additional feedback or suggestions for UTS to improve your experience at Appalachian?
- i. _____

Appendix C

UTS New Tutor Satisfaction

- 1. Class/Year
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Other
- 2. Gender
 - a. Male
 - b. Female
 - c. Prefer not to say

- d. Other
3. Major or Area of Study
 - i. _____
 4. What subject areas are you coded to tutor?
 - i. _____
 5. Overall, how would you rate your satisfaction as a UTS employee?
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
 6. Leave additional comments here.
 - i. _____
 7. Rate your satisfaction with the number of work hours you've received each week this semester.
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
 8. Leave additional comments here.
 - i. _____
 9. Rate your satisfaction with your use of TutorTrac this semester.
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
 10. Leave additional comments here.
 - i. _____
 11. Rate your satisfaction with the quality of your monthly observation feedback.
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
 12. Leave additional comments here.
 - i. _____
 13. Rate your satisfaction with the ZOOM software for tutoring purposes. (You can skip this question if you have not used ZOOM for tutoring purposes.)
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied

14. Leave additional comments here.
 - i. _____
15. Rate your satisfaction with the student's ability to book a single appointment.
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
16. Leave additional comments here.
 - i. _____
17. Do you have any additional feedback or suggestions for UTS to improve your experience as a UTS employee?
 - i. _____

Appendix D

UTS New Student Satisfaction

1. What is your current class year?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Other
2. What is your gender?
 - a. Female
 - b. Male
 - c. Prefer not to say
 - d. Other
3. What is your Major or Area of Study?
 - i. _____
4. List the class(es) for which you attended tutoring appointments in the spring 2019 semester.
 - i. _____
5. Overall, how would you rate your satisfaction with University Tutorial Services in the spring 2019 semester?
 - a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
6. Leave additional comments here.
 - i. _____
7. Rate your satisfaction with your use of the online system (TutorTrac) to schedule appointments.
 - a. Very Dissatisfied

- b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
8. Leave additional comments here.
- i. _____
9. Rate your satisfaction with the tutor(s) you met with in the spring 2019 semester.
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
10. Leave additional comments here.
- i. _____
11. Rate your satisfaction with the ZOOM software for tutoring purposes. (You can skip this question if you have not used ZOOM for tutoring purposes.)
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
12. Leave additional comments here.
- i. _____
13. Rate your satisfaction with the ability to book a single tutoring appointment.
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
14. Leave additional comments here.
- i. _____
15. Rate your satisfaction with the quantity of available tutoring appointments this semester.
- a. Very Dissatisfied
 - b. Dissatisfied
 - c. Neutral
 - d. Satisfied
 - e. Very Satisfied
16. Leave additional comments here.
- i. _____
17. Do you have any additional feedback or suggestions for UTS to improve your experience at Appalachian?
- i. _____

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