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Pace University

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Measuring Students' Knowledge and Interest in Data Analytics at Pace University

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B.B.A in Business Analytics

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Abstract

Our research project surveyed students at the Pace University - New York City campus and looked into their current level of knowledge and interest of data analytics. The goal was to better understand students' knowledge regarding this subject matter, and the ways in which they have come to hear about data analytics. Our research included asking each participant to provide us with their own assessment of their actual level of data analytics knowledge and their perspective on how important data analytics skills are for their career and whether or not they would like to learn more of this subject in the future. We utilized an Institutional Review Board approved survey to ask for students' responses which was conducted online. In total 127 students participated in the study. The demographics of the respondents were representative of the Pace University community and the student body. The results of this study yielded a better understanding of the student body's current level of knowledge and interest of data analytics. In summary, the responses indicated that data analytics skills are rapidly becoming a necessity across the majority of the respondents' future industries. Students want to learn more about this subject, and in some instances they need to learn more to stay ahead of the competition. Another conclusion drawn from the results of this research is that Pace University should push to make this subject a matter more students are exposed to. The fact that a clear majority of respondents said they would like to learn more on this subject means that it would be beneficial for Pace University to at least consider growing the number and availability of these courses.

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Introduction

In today's increasingly competitive job market, it is crucial that we gain as much of an advantage over other potential candidates as possible. This idea was presented to me in my junior year at Smithtown High School West by my Statistics teacher. He then proceeded to introduce me to the subject of Data Science and Analytics. At this point in time, I was certain that I wanted to pursue a career in a business-related subject but was not entirely sure what to pick. As I entered my senior year, finding the perfect major and college to attend seemed like an impossible task. For one, I could look for a safe major that is already established and well known among future employers. However, I always remembered my teacher's advice and wanted to find a subject that put me ahead of the rest. This is when I was introduced to Pace University's Data Analytics program. With one of the smallest graduating class of all majors at Pace, this program was advertised as providing knowledge and information on an area of study that is often described as the future of business. I was instantly sold to the idea and after some research I realized that this was exactly what I had been looking for.

As the workplace becomes more tech-driven and fast-paced, data analysis and the skills gained from these courses are sure to play an increasingly important role in business education. In other words, the average office today is completely different than it was 15 years ago. New technology and processes for higher efficiency are constantly being introduced. Along with these updates comes a need for people who are fluent in using the upgraded tools. That is the need that new graduates, such as myself, are trying to fill by majoring in the field of Data Analytics. This is also why it is important to study how the student body feels about this new rising major.

Research Question

This study aims to measure Pace University student's current understanding of Data Analytics and determine the level of importance they give to the subject matter. These results will then be used to assess the need for Pace University to make data analytics a subject students study more. In other words, these results will help estimate the student's want for more data analytics education which in turn will aid Pace University in making a decision to expand this curriculum and make data analytics classes more easily available for all students regardless of their major.

Literature Review

Data Analytics and Decision Making

Data analytics is now a well-established topic that trends across many different industries. People are aware of the power of analyzing data and the competitive advantage it provides. However, this was not always the case. Although the concept of analyzing data can be traced back to hundreds of years ago, the more modern use of it, which is more popularly known as Data Science, originated a little over 50 years ago (Das & Kumar 2013, 153-156).

“The Future of Data Analysis” by John Tukey is an article published in 1962 on *The Annals of Mathematical Statistics*, an academic journal that served as the main hub for mathematically advanced statistical researchers of the era. Tukey foresaw the rise of data science and analytics in this article, which shocked his readers with the following paragraph:

For a long time, I thought I was a statistician, interested in inferences from the particular to the general. But as I have watched mathematical statistics evolve, I have had to

wonder and to doubt...All in all I have come to feel that my central interest is in data analysis, which I take to include, among other things: procedures for analyzing data, techniques for interpreting the results of such procedures, ways of planning the gathering of data to make its analysis easier, more precise or more accurate, and all the machinery and results of (mathematical) statistics which apply to analyzing data (Tukey 1962)

This article came almost as a confession made by Tukey, who was essentially making a claim that applied statistics had started to become too narrowly focused on mathematics, and may even begin to lack use. He urged statisticians of the day to drastically widen and redirect their research. Tukey's "The Future of Data Analysis" does not directly introduce specific analytics tools or definitions, however it does something more impactful than that. In the long run, Tukey's article would lay down the framework for Data Science, which is the study of applied statistics and computer science with the purpose to interpret data (Donoho 2017, 745-766).

Now that we understand the origin of analytics, we can look closer at its purpose. In any given industry there are decision-makers. Companies in every industry are now collecting overwhelming amounts of data. In fact, according to The International Data Corporation, the digital universe will contain 44 trillion gigabytes of data by 2020. This would be a tenfold increase since 2013 (Provost & Fawcett 2013). The world is at a point where every decision must be driven by data to optimize results and stay aligned with the success of competitors.

For this reason, analytics has become an increasingly important asset for decision-makers around the world. Mobile phones, loyalty cards, social media and other web platforms create the opportunity for companies and organizations to acquire significant benefits (Gandomi & Haider 2015, 137-144). Not only does analytics allow organizations to analyze internal data like sales,

inventory or shipment, but it also makes it possible to study external data such as supply chains or customer markets (Provost & Fawcett 2013). With the increasing size and varying types of data, it is becoming necessary to make educated decisions based on facts drawn from the meaning of this data. In other words, managers that make decisions with the help of analytics are better informed, which leads to better and faster decisions.

So much has been the impact that data analytics is no longer confined to one department in an organization, but it has adapted to become a part of every existing team with the purpose of optimizing decision-making in every possible scenario (Donoho 2017, 745-766). This change comes from the fact that companies were collecting tons of data but wasting most of it due to underutilization. Now with a data analyst in every or most teams, companies can ensure that most if not all of the information available is being used.

Introducing a New Area of Study in Higher Education

Next, it is important to also look into how new fields of study had been introduced in the past. There is a set of majors that has been around since the beginning. These majors include but are not limited to economics, politics, history, law, and education (Sajko). The idea is clear, these are professions that served as foundations for other specific majors and lead to the creation of schools that specialized in each area. Take now a major such as Computer Science. It is a relatively new area of study that has already established itself as one of the most relevant degrees out there. Thus, to understand how Business Analytics can become a more predominant area of study, it would be beneficial to look at how Computer Science at another university achieved this level.

Purdue University professors John Rice and Saul Rosen published an article on how Computer Science became a major at Purdue University and thus provided a frame of reference of what the usual phases of this process look like (Rice & Rosen 2017). In their experience, the main stages for this process were curriculum, crisis and recovery. Creating a curriculum, the first phase of the process, was described as being a lengthy task to accomplish and the hardest to come to conclusion in, given the number of approvals this has to go through. The next phase described by Rice and Rosen was the crisis stage. This stage took place during the first few graduating classes and was named after all of the nuisances and problems that arose at the major's inception. Finally, the recovery stage was reached. This is when most of the problems were encountered and solved and most if not all of the graduating class of the new major reached the end of their college careers without any issues in from the department (Rice & Rosen 2017). This is how Purdue University was able to introduce a new Computer Science major in the early 1970s. This is relevant when discussing the rise of Data Analytics as a major since we can look to the process described by Rice and Rosen as a reference to what we can do to help develop the program at Pace University.

Data Analytics at Pace University

Due to the rapid growth of data analytics across all industries, colleges have had to adjust their curriculums to incorporate this subject in recent years. These programs can be anything from one-week boot camps to complete bachelor's and master's degrees that teach students the basis of analytics and the different tools used in specific industries worldwide.

Pace University was among the first colleges to introduce one of these programs both an undergraduate and graduate concentration under the name of "Management Science". The

program was small and was comprised of the a few business school students who had heard about it after being at Pace for a few semesters. The graduate Management Science program was halted after 20 years, while the undergraduate program's name would eventually be changed to Quantitative Business Analysis and introduced an undergraduate option in an effort to make the major more marketable to employers for students upon graduation and thus increase student enrolment in the program.

The Quantitative Business Analysis program director decided to push for an upgrade in the content of specific classes as well for the creation of classes that help the students learn the more technical skills associated with the major that are so sought after by employers in the job market. This change was officially put into place in the Fall of 2018 and the program's name was changed from Quantitative Business Analysis to Business Analytics. Since then, the popularity of this program has increased significantly. Freshmen are now choosing to start off on this path from day one, rather than joining in their Sophomore or Junior years.

The new Business Analytics program focuses on preparing students with the ability to learn more technical skills for data analysis. For example, students that graduate with the Business Analytics major now leave Pace University having learned how to use Microsoft Excel to its full potential as well as the top two data analytics programming languages across all industries, R and Python. Programming language classes are taught by professors from the Seidenberg School of Computer Science & Information Systems ensuring that the faculty have full command of the course material.

Pace University was recently ranked within the "Top 20 Colleges That Will Make You Rich", a ranking published by Forbes.com that included other institutions such as Stanford University and the University of California at Berkeley (Cea). This ranking is based on

calculating the starting median salary out of college and comparing it to the availability of financial aid at the same institution. Ivy League colleges dominated the ranking but Pace was right up there with them (Cea). For this reason, it is safe to say that Pace University has a mission to maintain this reputation and modifying its Business Analytics program to give its graduates an extra advantage on the market was just another step along the way. Even though logically this makes sense, this study will seek to assess if the students' perspectives on this subject matter also call for a growth of the curriculum.

Methodology

Research Framework and Method

The research process for this study was be divided into 3 different stages: gathering data, analyzing data, and extracting information. First and foremost, we must ask the Pace University student body directly about their knowledge of analytics and if they would like to learn more in the future. Secondly, we can use this data to create visualizations that will help better understand these results. Lastly, we will draw conclusions from the patterns that may arise from the data in order to answer the research question.

The gathering stage of the research process requires a method for acquiring data. In this study, a survey will be used to collect answers from as many Pace University students as possible. There are four main reasons why a survey is being used for this study. The first one is the basically nonexistent cost per respondent, since online surveys can be created and accessed by people all over the world who have access to the internet. The second reason is the fact that it is an appropriate way to find characteristics of the population. In other words, it guarantees a better sample from which to gather data due to its broad capability. The third reason is the

flexibility by which surveys can be administered. One can copy a link to a text, social media page or email and open it from any device that has access to any of these platforms. This ensures a higher chance of collecting responses. Last but not least, the fourth reason is the dependability of surveys. This method allows for anonymity and allows for students to answer in a natural way, therefore making their answers more valid.

Participants

The participants of this study were Pace University students from the New York City campus. This survey was made available to all students of Pace University including undergraduate, graduate, and transfer students. The main distribution channel for the survey was via email to fellow Pace students. Additionally, a link to the survey was posted on Pace University Facebook groups and through word-of-mouth communication.

As mentioned before, all of the respondents listed the NYC campus as their main campus. This was not a surprise as most of the distribution channels targeted mostly students from this campus. The participants ranged from 18 to 23 in age and the average age was 19.97 years old. In terms of class standing, respondents were 18.9% first-year students, 30.7% sophomores, 38.6% juniors, 11.6% seniors and 0% graduate students. The racial/ethnic identity of the respondents appears in Figure 1 found below and is compared to the official Pace University race and ethnicity data for the student body (“Student Body Profile” 2015).

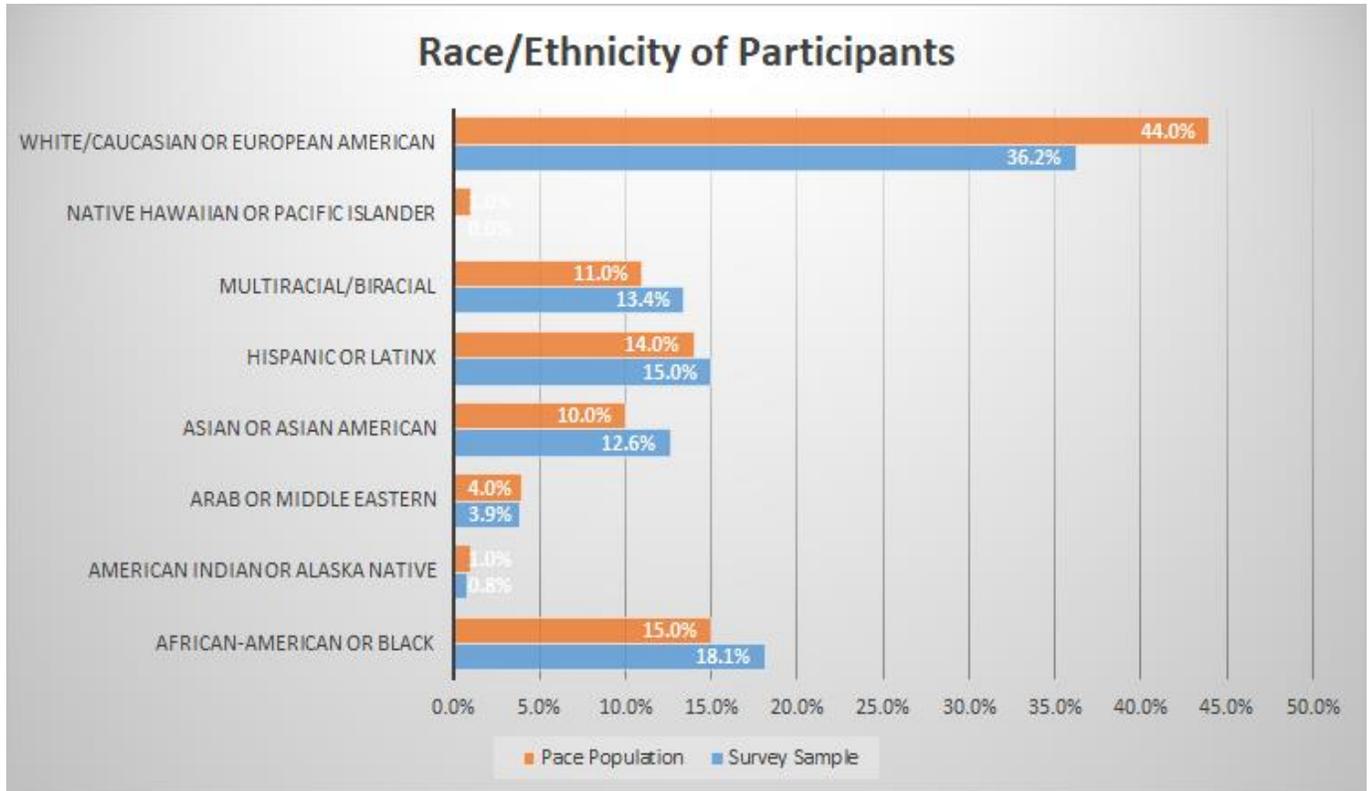


Figure 1

While we do not believe any of these differences to be of enough significance to impact our findings and are still confident that they will be comparable to the total population of Pace University students, it is important to keep this in mind as the results of the survey are announced.

Survey Content

Participants were asked to complete a brief survey, about 5 minutes long, that asked questions on five different areas: Demographic Information, Current Level of Analytics Knowledge, Level of Analytics Knowledge after High School Graduation, Importance of Analytics in Future Target Industry, and Likelihood to Continue Learning About Analytics in the Future. The framework of this survey was specifically designed to match that of previous

research with a similar intent. This survey was designed to be taken by students with any level of analytics knowledge and provided informative context notes for the more complex questions. For example, some students may not be aware of the Business Analytics class at Pace University, which is a business core class that every Lubin School of Business student must take, so an explanation of which classes were considered part of the Business Analytics curriculum was available.

The survey consisted of a combination of short answer, scale based and multiple choice questions and was created using Google Forms. The survey participants remained anonymous and the survey did not ask for any identifying information such as name, date of birth, Pace UID, or email. This was done so it would not be possible to link the participants to their answers. Moreover, the survey was entirely voluntary and subjects were allowed to refuse to participate. A complete copy of the survey can be found in the appendix.

The survey was open for responses for 21 days from March 8th to March 29th of the year 2019. In total, 127 complete surveys were completed and collected during this time.

Survey Results

First Exposure to Data Analytics

The first section of the survey aimed to gather information about when and where each respondent was exposed to the concept of data analytics. These were multiple choice questions that gave the students a few exclusive answers as well as an “Other” option for those who fell outside of any of the answers. Fortunately, there was only one instance in which this option was used for either of these two questions. As shown in the appendix, the first question revealed that an overwhelming 78% of respondents first heard of the concept of data analytics during their

time at college/university. The second most popular answer discovered that 15% of respondents learned about the concept of data analytics prior to graduating high school. Additionally, only 7% of respondents stated that they had never heard of data analytics.

Q1. When did you first hear of the concept of Data Analytics?					
	During my time at College/University	During or before High School	Never heard of Data Analytics	Total	
Lubin					
Freshman/First Year	3	3	0	6	5%
Junior	20	2	0	22	17%
Senior	7	1	0	8	6%
Sophomore	14	1	0	15	12%
Lubin Total	44	7	0	51	40%
Non-Lubin					
Freshman/First Year	15	1	2	18	14%
Junior	21	4	2	27	21%
Senior	4	2	1	7	6%
Sophomore	15	5	4	24	19%
Non-Lubin Total	55	12	9	76	60%

Figure 2

In an effort to gain additional insight from these results, we were able to further break down the responses to this question first by the respondent’s current class standing and then by whether or not they are part of the Lubin School of Business, as shown in Figure 2. This is because we expect students in this school to be more likely to have heard of or even learned about data analytics. From this break down, we can see that 44 of the 51 respondents who are part of the Lubin School of Business have first heard of data analytics at work or in a class, and only in 7 instances do they first learn about it from a family or friend in the field. However, those who are not part of the business school are more likely to have first learned of data analytics from a family or friend in the field since they are not directly taking any classes on this subject. Additionally, we were not able to distinguish any pattern related to the respondents’ current class

standing for this question since neither the count of responses for each answer nor the percentage of each row vary by class standing.

The second question included in this section sought to find out *where* the respondents had first heard of the concept of data analytics. A majority of them, 56.7% to be exact, stated they first encountered data analytics in a class. Of the remaining respondents, 36.2% said that they were first introduced to this concept at work or from a family/friend in the field. Similarly, to the previous question, about 7% of respondents said that they had never heard of the concept of data analytics. This was to be expected since it would only make sense to choose these answers in a pair, otherwise, that would be a sign of some misunderstanding. Lastly, the one respondent that chose “Other” as an answer to this question stated that they first heard of the concept of data analytics “In the RA office”. This answer is understandable and for the purposes of this study, we decided that it falls under the same category as learning about data analytics from a friend.

Q2. Where did you first hear about Data Analytics?						
	At Work	From family/friend in the field	In a Class	Never heard of Data Analytics	Total	
Lubin						
Freshman/First Year	2	0	4	0	6	5%
Junior	2	3	17	0	22	17%
Senior	1	0	7	0	8	6%
Sophomore	2	1	12	0	15	12%
Lubin Total	7	4	40	0	51	40%
Non-Lubin						
Freshman/First Year	5	5	6	2	18	14%
Junior	6	7	12	2	27	21%
Senior	1	4	1	1	7	6%
Sophomore	2	6	13	3	24	19%
Non-Lubin Total	14	22	32	8	76	60%

Figure 3

Similar to the previous question, a breakdown by class standing and whether or not a respondent is part of the Lubin School of Business was helpful in finding more details about these answers. Right away, a clear difference from those respondents who are part of the Lubin School of Business and those who are not is that all of the Lubin students have previously heard of the concept of data analytics. In other words, exactly zero respondents who are part of Lubin answered that they had never heard of Data Analytics compared to the eight non-Lubin students who said they had never heard of this subject. Additionally, it was interesting to see that across the board, “During my time at College/University” was the most frequent answer regardless of class standing.

Current Level of Data Analytics Knowledge

In the second section, the survey collected information on the current level of data analytics knowledge of each respondent. In order to do so, two questions were asked. The first question asked whether or not the respondent had taken a Business Analytics class at Pace University. As expected, the majority of the participants, 81.1% to be exact, said they had not taken a class in this subject at Pace University while the remaining respondents said they had. It is important to note that of this remaining 18.9% of participants, 87.5% are enrolled in a major that is part of the Lubin School of Business. No “Other” answers were recorded.

The second question of this section prompted the respondents to rank their current level of data analytics knowledge on a scale of 1-10. An explanation for the scale was deemed necessary and was provided to the right of the question. To the left of the number one, there was a description that read “Never taken a class, never used at work”. To the right of the number ten, a description read “Taken classes, Use frequently at work”. As shown in Figure 4, the

distribution of the results was skewed to the right, meaning most of the answers were concentrated at the bottom of the scale.

On a scale of 1-10, where would you rank your current level of Data Analytics knowledge?

127 responses

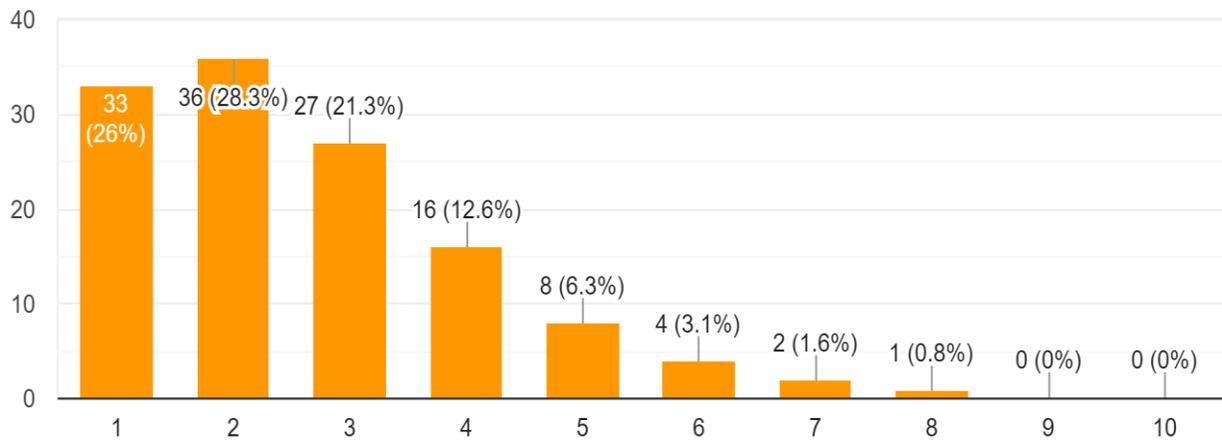


Figure 4

Given as most of the respondents indicated that they did not take a data analytics class at Pace University, it came as no surprise that the average answer for this question fell at 2.65. On that note, only 15 out of 127 answers were above a 5. It is also important to note that there were no recorded answers above a score of 8 and no “Other” option was available for this question.

Average Ranking of Current Level of Data Analytics Knowledge

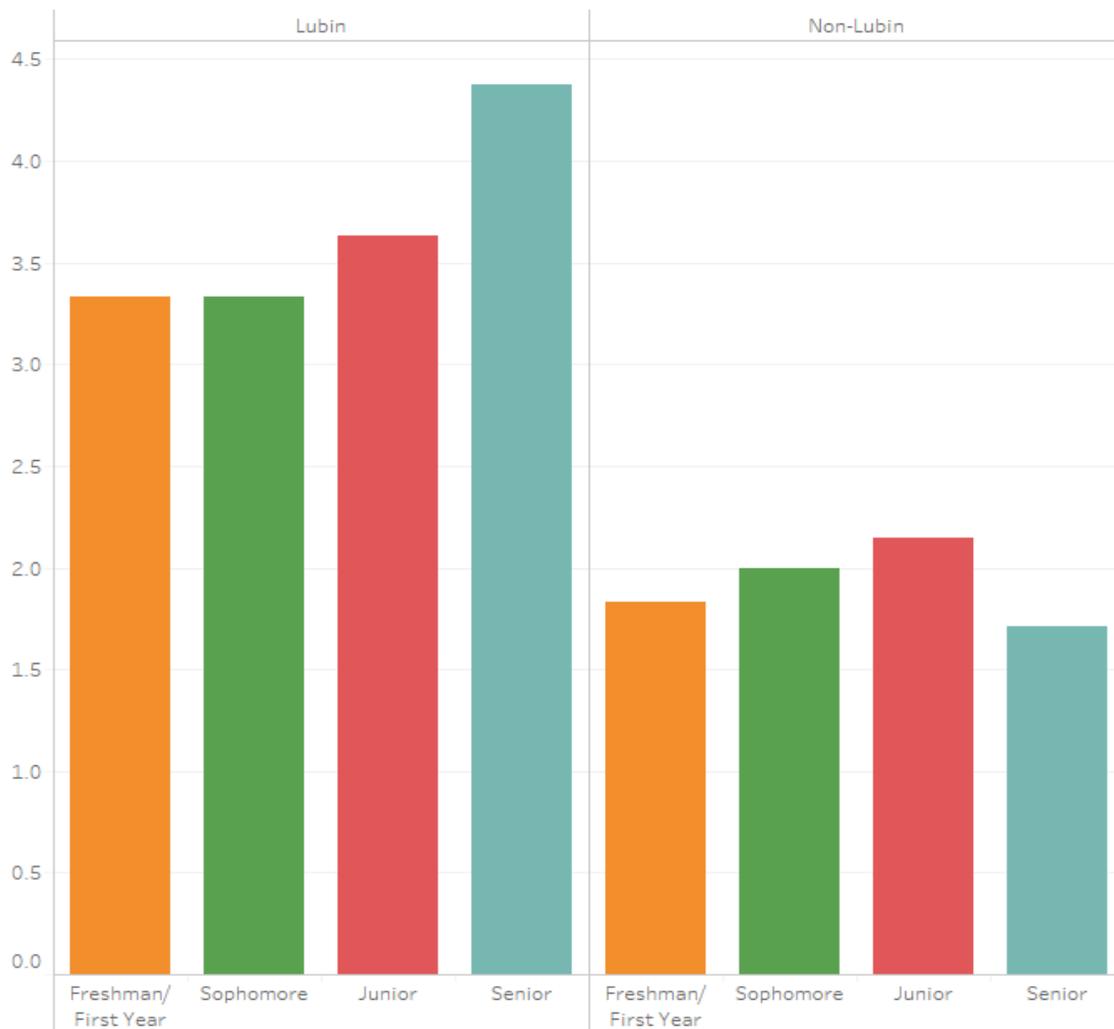


Figure 5

We decided to once again divide these answers by whether or not the respondent belonged to the Lubin School of Business and their current class standing, as illustrated in Figure 5. In this case, a clear pattern was immediately recognizable from the results. The raw average for Lubin students was 3.67 while for non-Lubin students the average was 1.92. The averages for Lubin students also seem to increase from first year to senior class standing. This makes sense as one would expect that seniors with more class and work experience have a higher level of data analytics knowledge. On the other hand, the averages for those respondents who are not part of

the Lubin School of Business did not create a clear pattern from first years to seniors. Moreover, these averages were at least one-point lower compared to their Lubin counterparts.

Future Interest in Data Analytics

The next two questions on the survey are part of the last section which aims to gather the level of interest that the respondents have for data analytics knowledge. Furthermore, the questions served as a way to tell if each participant's future plans impact their inquisitiveness for more data analytics knowledge. Both of the following questions included an "Other" option as an answer, but it was only present on the second. The first question asks whether it will be important to have data analytics skills in the respondents intended future target industry. This is a multiple-choice question with a scale-like group of 4 answer options used to guide the respondent towards a simplistic response. This was done to avoid confusion or overthinking of the question. As shown in the appendix, 76.4% of the respondents said that data analytics skills were "Important" or "Very Important" in their future target industries. Of the remaining 23.6%, the overwhelming majority opted for a "Neutral" answer, thus leaving only 6 respondents who chose "Not Important" as an answer to this question.

The second question of this section was a rather simple Yes-or-No question which asked if the participant would like to further their education in the data analytics field in the future. About 85% of respondents answered "Yes", which was to be expected due to the fact that most of them deemed data analytics skills to be important in their future target industries. The remaining 15% of respondents answered "No" except for two instances in which the participants wrote in "Maybe" and "Not Sure". For the purposes of this study, we will include these two

answers in the “No” category since there would be no significance in creating a separate group only for these two responses.

In the future, will you or would you like to further your education in the Data Analytics field?

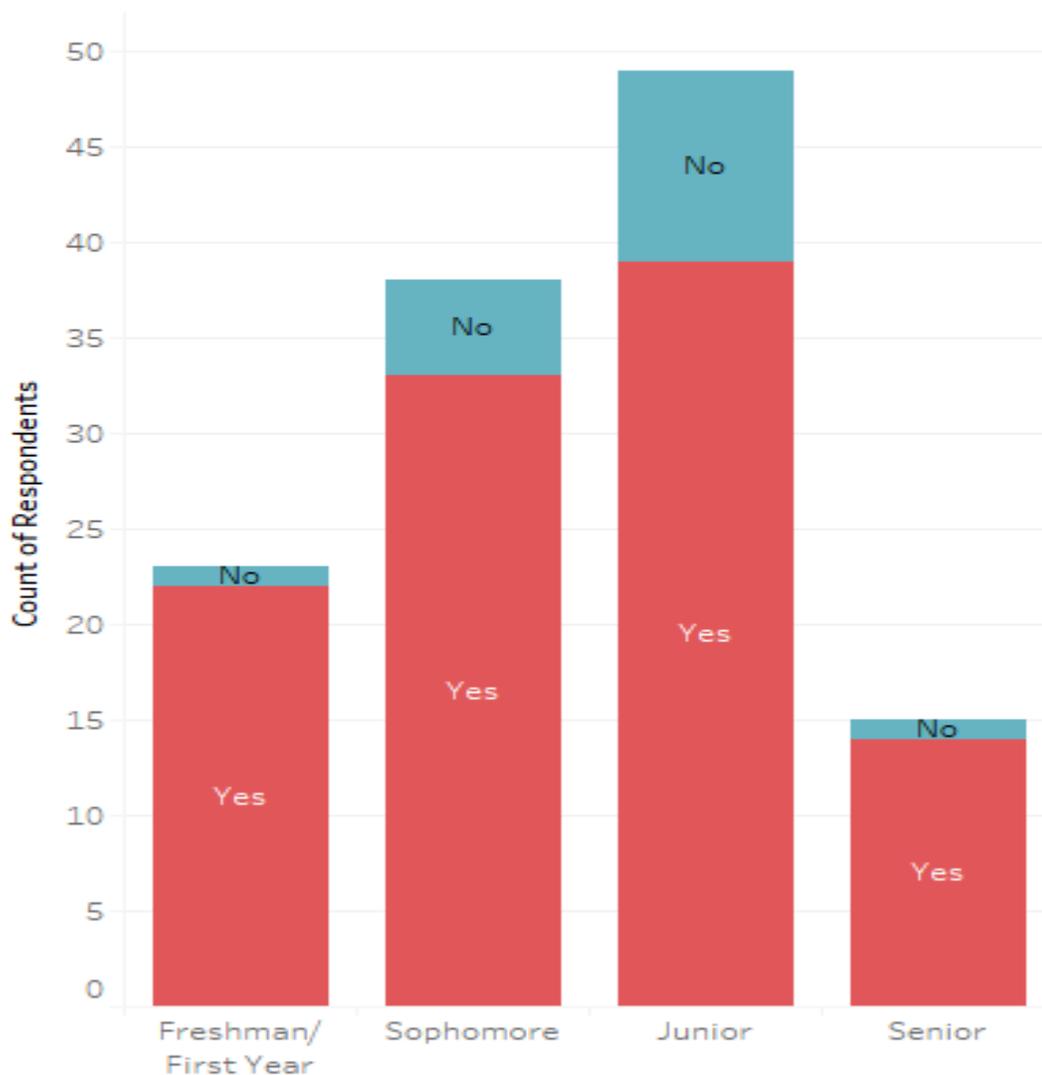


Figure 6

Figure 6 above contains a stacked column chart that shows the count of respondents who answered either “Yes” or “No” to this question split into each class standing. The stacked

column chart was helpful here because we wanted to see how a binary response varies in four different scenarios. In this case, we can see that regardless of class standing, the overwhelming majority does indeed intend to further their education in the data analytics field. This is to be expected since the total percentage of respondents who answered “Yes” was so high.

Analysis of Results

All in all, the results of the survey in every section were as expected and are aligned with much of the information that was studied in the literature review. The previously discussed research lead to a couple of conclusions that were confirmed by the participants’ responses to the survey. These conclusions were that the growing popularity of the Data Analytics major is supported by the increase in demand for professionals with these skills and that Pace University, in their efforts to maintain their reputation of being a top college in terms of preparing their students for the future needs of employers, should look to grow their relatively new data analytics program.

In terms of the first exposure to data analytics section, the results were quite interesting. The fact that 78% of the survey participants first heard of the concept of data analytics during their time at college/university makes it pretty clear that most students are coming into Pace without a clue of what data analytics is. This is expected because it would be unrealistic to expect an incoming student to find themselves enrolling into a data analytics class from the beginning as they are not aware that the subject even exists. Additionally, only 56.7% of the respondents said that they had first heard of the concept of data analytics in a class while 36.2% said they first heard of it at work. With data analytics quickly making its way into every industry out there, it is not surprising that a good amount of students is first being introduced to this

concept inside their work environment. However, most of them still end up learning about this subject in a class which is not necessarily a Business Analytics class. It is good to know that only 7% of all respondents said they have never heard of the concept of data analytics since this supports the previous claim that this is quickly becoming a popular subject matter.

The next section of the survey produced results that help assess the current level of data analytics knowledge of the participants. For example, more than 4 out of every 5 respondents said that they had not taken a data analytics class at Pace University and thus have not received any formal higher education on the matter. Given these results, it would only make sense that the subsequent question, which aimed to pinpoint where respondents rank their current level of data analytics on a 1-10 scale, would have a relatively low mean value. As previously discussed, this was indeed true. The mean of the distribution for the knowledge ranking question was indeed 2.65. Perhaps these questions were too similar in terms of the intended information to gather, however, the fact that the collected answers make sense is a good indication that the survey was clearly understood by the respondents.

The last section of the survey, which aimed to gauge the participants' level of future interest in data analytics education, is where we began to see some interesting results. The first question in this section asked the respondent to determine the importance of data analytics skills in their future target industry. The fact that over 75% of all responses deemed these skills "Important" or "Very Important" seemed too high at first. For this reason, we compared this statistic to the percentage of majors shared between the students who are in data-related majors and those who are not. For data-related majors, we created a list of all Lubin School of Business majors as well as Economics and Mathematics. To our surprise, these majors made up a little over 50% of the total respondents. Of the remaining 50% of students who did not belong to any

of these majors, 30% of them still deemed data analytics skills “Important” or “Very Important” in their future target industry. This peculiarity is just another way in which the results of this study create a supporting argument for the rapid growth of data analytics in every different field regardless of industry.

The next and final information gathering question of the survey saw a good majority of respondents (85% of the total) express that they would like to expand their knowledge of data analytics in the future. This question was strategically placed at the end of the survey because it is meant to have the respondent think about their own responses to the previous questions and make an assessment of whether or not data analytics is a subject matter that is worth their time. The fact most participants did think it was worth it to learn more about this topic in the future can be used as an argument for why Pace University should continue to grow its data analytics curriculum.

Suggestions for Applying the Results in the Future

Now that we have analyzed the results of this research, we can explore the future applications of these findings. As we discussed in the previous section, there are essentially two conclusions about the data analytics program at Pace University that were confirmed by the survey results. The first conclusion is that data analytics is growing in terms of popularity and necessity across all industries. Not only was this supported by the employer research in the literature review, but it was also confirmed by the overwhelming majority of survey respondents who agreed that data analytics skills were significant in their future target industries and also those who agreed to want to learn more about this subject in the future. Hence, Pace University

can use this information in order to be confident that their new Business Analytics program is indeed focusing on teaching the right skills for their students.

The second conclusion was that Pace University should look to grow its data analytics curriculum. In this case, the results of the survey prove more useful because they set a starting point for how much the student community wants to seek further learning in this subject. This study can then be recreated, for example on a yearly basis, in order to see if and how the results change. Pace University can then use this new information to make a more educated decision on whether or not they want to expand their data analytics curriculum and to gauge how much resources are worth spending in said process.

Last but not least, this study can be used in the future to collect information on how any new area of study that arises is viewed by the student body. A higher education program can be very time-consuming and costly to create, so having a good idea of how the students would react or how important they feel it is to learn this new information for their future would make the decision easier. This study provides one way to achieve this using a simple survey and analysis process.

Limitations

In the duration of this study, limitations of the research were identified and have to be discussed since they may affect the results of the survey. Firstly, the fact that the survey was distributed online and was completely anonymous means that we do not know for certain who was completing the survey or if the answers were entirely their own. Furthermore, participant's answers could have been influenced by the environment they were in (i.e. If they were around others at the time) and the fact that every question was mandatory could have caused respondents

to choose an answer even when they may not have felt that any of them were a good reflection of their thoughts. The trouble with not presenting questions face-to-face to participants of this study is that each person may have different interpretations of each question. Without someone present to fully explain the questionnaire and make sure that everyone has the same understanding, the results can be subjective. We aimed to battle this issue by simplifying each question and answer options as much possible while adding explanations to any unclear concepts or answer choices.

Additionally, a limitation of using a survey all together is the possibility of unconscious answers. Everyone who uses a survey to gather information hopes for dedicated answers, but there is no real way to know if the respondents have truly understood the questions or thoroughly reviewed it before answering (Beadell & Guay, Ch. 6). Sometimes, answers will be selected prior to fully reading the question or other potential answers. While skipping questions was not an option in this case, this could have, as previously mentioned, forced some respondents into choosing any answers. This limitation is tough to overcome, but we believe that due to the short length of the survey (which in turn avoids survey fatigue) and the simplicity of the questions we likely received accurate responses.

Another significant limitation of this study is the relatively small sample size that was gathered for this survey. At the beginning of this study, an online sample size calculator was used to obtain an estimate of how many responses we should receive in order to have 5% margin of error (this is a standard measure for basic surveys). The tool calculated that a sample of 374 student responses was necessary to reach the desired margin of error based on the total student body population of 13,312 which was obtained from the Student Body Profile for Pace University (SurveyMonkey). Although our sample size was significantly smaller at 127

responses, this disparity is set to have a smaller effect on the results. This is due to the fact that this study is surveying Pace University students in order to assess their level of knowledge and interest in data analytics which makes the population smaller than other comparable studies. Additionally, this number includes graduate students but does not say what the proportion of undergraduate to graduate students is. Since this study is targeted at undergraduate students, the total population would be smaller making the required sample size smaller.

Despite these limitations, we believe that the results of this survey are sufficiently accurate and the conclusions drawn and supported from the data gathered can still be used to sustain the claims put forward in this paper.

Conclusion

In conclusion, the results of this study yield a better understanding of the Pace University - New York City Campus student body's current level of knowledge and interest in data analytics. There were two main arguments that were presented at the beginning of this study that were confirmed by the results of this research. In summary, the responses indicated that data analytics skills are rapidly becoming a necessity across the majority of the respondents' future industries. Students want to learn more about this subject, and in some instances they need to learn more to stay ahead of the competition. This brings us to the next conclusion drawn from the results of this study, which is that Pace University should look to expand its data analytics curriculum. The fact that a clear majority of respondents said they would like to learn more on this subject means that it would be beneficial for Pace University to at least consider growing the number and availability of these courses.

We do not mean to minimize any of the efforts Pace has already made to tailor their Business Analytics major to the needs of future employers. However, these classes are still highly specific to students in the major as there are little opportunities for other students to take these classes and fully understand what the subject is all about. Pace University has a good reputation in terms of keeping their students ahead of the competition by providing a meaningful education that targets subjects that both current students and future employers are interested in. We are confident that this will continue to happen with this data analytics curriculum and with any new majors that may appear in the future.

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Appendix

Survey Results

Q1. When did you first hear of the concept of Data Analytics?		
	Count	Percentage
During my time at College/University	99	78.0%
During or before High School	19	15.0%
Never heard of Data Analytics	9	7.1%
Grand Total	127	100.0%

Q2. Where did you first hear about Data Analytics?		
	Count	Percentage
In a Class	72	56.7%
From family/friend in the field	26	20.5%
At Work	21	16.5%
Never heard of Data Analytics	8	6.3%
Grand Total	127	100.0%

Q3. Have you taken a Business Analytics class at Pace University?		
	Count	Percentage
No	103	81.1%
Yes	24	18.9%
Grand Total	127	100.0%

Q4. On a scale of 1-10, where would you rank your current level of Data Analytics knowledge?		
	Count	Percentage
1	33	25.98%
2	36	28.35%
3	27	21.26%
4	16	12.60%
5	8	6.30%
6	4	3.15%
7	2	1.57%
8	1	0.79%
Grand Total	127	100.00%

Q5. Based on your knowledge, how important is it to have Data Analytics skills in your future target industry?		
	Count	Percentage
Important	67	52.8%
Very Important	30	23.6%
Neutral	24	18.9%
Not Important	6	4.7%
Grand Total	127	100.0%

Q6. In the future, will you or would you like to further your education in the Data Analytics field?		
	Count	Percentage
Yes	108	85.0%
No	17	13.4%
Maybe	1	0.8%
not sure	1	0.8%
Grand Total	127	100.0%

Q7. Are you a Pace University student?		
	Count	Percentage
Yes	127	100.0%
Grand Total	127	100.0%

Q8. What is your primary campus?		
	Count	Percentage
NYC	127	100.0%
Grand Total	127	100.0%

Q9. What is your School? (Select all that apply)		
	Count	Percentage
Dyson College of Arts and Sciences	58	45.7%
Lubin School of Business	51	40.2%
Seidenberg School of Computer Science and Information Systems	6	4.7%
College of Health Professions	5	3.9%
Pace Performing Arts	5	3.9%
School of Education	1	0.8%
School of Law	1	0.8%
Grand Total	127	100.0%

Q10. What is your major?		
	Count	Percentage
Marketing	13	10.2%
Accounting	11	8.7%
Economics	10	7.9%
Psychology	8	6.3%
Finance	8	6.3%
Communications	6	4.7%
Mathematics	4	3.1%
Business Analytics	4	3.1%
Arts and Entertainment Management	4	3.1%
Computer Science	4	3.1%
Criminal Justice	4	3.1%
Political Science	3	2.4%
Biology	2	1.6%
nursing	2	1.6%
BFA Acting	2	1.6%
art history	2	1.6%
Undecided	2	1.6%
Peace and Justice Studies	2	1.6%
BA Acting	2	1.6%
Speech Pathology	2	1.6%
History	2	1.6%
Women and Gender Studies	2	1.6%
African American Studies	1	0.8%
Quantitative Business Analysis	1	0.8%
Philosophy and Religious Studies	1	0.8%
Business	1	0.8%
International Management	1	0.8%
Accounting	1	0.8%
Commercial Dance	1	0.8%
Business - Undecided	1	0.8%
Prelaw	1	0.8%
Business Admin	1	0.8%
Computer Information Systems	1	0.8%
Film	1	0.8%
Management	1	0.8%
Film and Screen Studies and Psychology	1	0.8%
chemistry	1	0.8%
Arts & Entertainment Management	1	0.8%
BA Directing	1	0.8%
Finance	1	0.8%
Communications Studies	1	0.8%

Business Analytics and Finance	1	0.8%
Communications/Film	1	0.8%
HR Management	1	0.8%
Speech Language Pathology	1	0.8%
Information Systems	1	0.8%
Biomed	1	0.8%
International Management	1	0.8%
Economics and Political Science	1	0.8%
Elementary Education	1	0.8%
Grand Total	127	100.0%

Q11. What is your age?		
	Count	Percentage
20	44	34.6%
19	37	29.1%
21	32	25.2%
18	7	5.5%
22	6	4.7%
23	1	0.8%
Grand Total	127	100.0%

Q12. What is your current class standing?		
	Count	Percentage
Junior	49	38.6%
Sophomore	39	30.7%
Freshman/First Year	24	18.9%
Senior	15	11.8%
Grand Total	127	100.0%

Q13. How do you describe your racial/ethnic identity? (select all that apply)		
	Count	Percentage
White/Caucasian or European American	47	37.0%
African-American or Black	23	18.1%
Hispanic or Latinx	18	14.2%
Multiracial/Biracial	16	12.6%
Asian or Asian American	16	12.6%
Arab or Middle Eastern	5	3.9%
Hispanic or Latinx, Multiracial/Biracial	1	0.8%
American Indian or Alaska Native or Indigenous or First Nations	1	0.8%
Grand Total	127	100.0%

Q14. What state did you attend High School in? (select all that apply)		
	Count	Percentage
NY	36	28.3%
NJ	17	13.4%
PA	15	11.8%
CA	13	10.2%
FL	7	5.5%
I did not attend High School in the U.S	6	4.7%
MA	4	3.1%
CT	3	2.4%
AZ	2	1.6%
TX	2	1.6%
OH	2	1.6%
ID	2	1.6%
DE	2	1.6%
VT	2	1.6%
IN	1	0.8%
LA	1	0.8%
WV	1	0.8%
CT, IA	1	0.8%
NV	1	0.8%
MD	1	0.8%
GA, NJ	1	0.8%
MI	1	0.8%
SC	1	0.8%
NH	1	0.8%
GA	1	0.8%
IN, NY	1	0.8%
AR	1	0.8%
KY	1	0.8%
Grand Total	127	100.0%