2020-2021 Van Eney ’09 Fellows Program

JP Meyer (Mr. Lapolla) and Campbell Grimes (Ms. Reichard)

1. Begin with the question you would hope to answer during your Fellow’s project. For example: *How might one build a better foil to improve sailing performance? How might learning of vocabulary in world languages be improved through the use of technology?*
2. Why would you like to pursue the answer to your question as a Severn Fellow next year? Please be as specific as you can. For example: *Suggesting that you love Environmental Science is too general, but that you have a strong desire to understand the effects of pollution on the oyster population in the Chesapeake Bay and find methods to reduce those effects would be on the right track.*
3. How would you plan to accomplish the project? How have prior courses or other experiences contributed to this interest and would help you complete your project?
4. What do you hope to create and/or accomplish by the end of your fellowship?
5. Why is the Severn Fellows Program a perfect opportunity for you with your project idea?
6. Discuss your ability to complete the 40% summer work and what the 40% may entail.
7. Do you have an idea of a person who might serve as your mentor in this project? Why that person? (Having a mentor in mind now is not a requirement)
8. Do you have a vision for your Fellows Project beyond Severn, in other words what is your dream? For example: are you planning to study the same field in college? Do you hope to patent/print/exhibit what you design/make? Does your project to help others/ improve the environment?
9. What do you unique qualities do you/your project bring to the Fellows Program?
10. What qualities do you have or experiences have you had that are direct evidence of your work ethic, commitment, passion for this subject, ability to follow through, face challenges and solve problems creatively?
**End of Application**

**(1)**The NFL Draft, in its simplest form, is a collection of educated guesses about college prospects. For almost one hundred years, genius football minds have studied players speed, size, athleticism, and have tried to gauge intangibles in order to predict a player’s future success in the NFL. Scouts have studied statistics and other measurables, watched hundreds of hours of film, and attended workouts for numerous players. Despite all of this effort, a great deal of highly-touted prospects fail to succeed at the NFL level, exhibiting certifiable evidence that there is still no perfect formula for predicting the future success of an NFL prospect. We are faced with the same challenge, as we ask: How can the draft position of future NFL prospects be predicted using an analytical model based off of college and NFL Combine statistics? **(2)** This project combines statistics, mathematics, data analysis, computer science, and, of course, football. Football has long had a reputation as a dangerous and reckless game that involves little intelligence, both from the players and organizations. Recently, though, the rise in analytics within the game has proven that football is a deeply multi-faceted sport. Especially in the professional leagues, where countless hours of work from mathematicians and statisticians go into creating a product for the field. While most people do not see this work translate directly into the product, we have a deep passion for understanding the numbers behind the game of football, and giving recognition to the intellect that powers the game. We view it as an art form, the seemingly random nature of football simplified and explained by numbers that can analyze and predict outcomes. Especially when it comes to the NFL Draft, perhaps the most random sector of the NFL, we wish to understand the analytics behind the decisions made, and use our knowledge to make our own decisions. In summation, our passion for statistics, data analysis, and mathematics, coupled with our excitement about uncovering the intellectual side of football is the driving force behind our desire to undergo the Severn Fellows Project.

**(3)** The plan is relatively straightforward. We want to make a statistical model using aggregated NFL Combine and college stats that effectively ranks NFL Prospects in the NFL Draft by using inputted statistics to predict future outcomes. To apply the model to reality, we would create bi-weekly podcasts that include reviewing previous drafts and making predictions about future drafts.To accomplish this, we have created a five step plan: learn, compile, create, apply, summarize. The first step, “learn,” consists of finding a program that we can use to make a statistical model, and developing the skills necessary to master the program. In this way, we will have the basework to create the model with whatever statistics we deem necessary. Next, we will move into the “compile” stage. This step will be time-consuming, as we will scour college, NFL Combine, and NFL statistics and compile them into our program. These statistics will be the basis of our model, in which we will use these statistics to create the model that projects the success of future players. We will collect a comprehensive amount of statistics so that our model will accurately fit the statistics, and not vice-versa. After compiling our data, we begin the “create” step of our plan. This will be the bulk of the project, in which we will use the data to design numerous mathematical equations that compare statistics of past, present, and future NFL prospects among every position, which will be fabricated into a single model. This model will be designed so that the statistics of a group of players can be entered into the model, and it will compare the players and recommend the order by which they should be drafted. We will then use our model to do just that, in the “apply” section of our project. We will examine upcoming draft classes and create our own draft board based on the projections of the model. Furthermore, we will investigate prior drafts and use our model to determine if the players were drafted in accordance to our projections. Finally, we will present our findings in the “summarize” section of our plan. To do so, we will host a bi-weekly podcast in which we discuss our process of creating the model and our findings from the application stage. These podcasts will be hosted leading up to the NFL Draft, in April, 2022, as we give our opinions on where certain prospects should be drafted, and afterwards, if the teams drafted correctly, all based on our model. This project will test much of our ability and knowledge that we have developed throughout our lives. The Fellows Project, by nature, is a largely independent study. Our consistent use of effective time management skills and productive use of our free time, coupled with our hard-work and determination, will assist us in our efforts to complete this project. We also have both undertaken specific courses and challenges that have expanded our skills to complete such a project. Campbell has taken on the challenge of AP Chemistry, a largely independent study of complex concepts in chemistry, which will aid us in our ability to manage time and complete independent work. JP recently completed the M3 Math Modeling Challenge, in which a team of three worked to create a statistical model to measure a family’s data bandwidth usage over the course of a year, and apply it to given families. This falls directly in line with the project we want to create, using the same analytical principles and modeling.

**(4)** The final product of this project is a set of podcasts that analyzes the results of a created model that effectively ranks NFL Prospects in the NFL Draft by using inputted statistics to predict future outcomes. We hope that these podcasts convey the intellectual nature of the NFL and promote the recent rise in analytics within NFL organizations. **(5)** This goal can be best achieved through the Severn Fellows Program because of the funding, connections, and audience that it provides. Because the podcasts are our final product, we want them to look polished and be of high quality. Neither of us have the equipment to create an entire set, or the camera-work required to make such podcasts. With the help of Severn, through the Fellows Program, we have the ability to do so. Furthermore, most modeling programs require a subscription to use them, and the Fellows Program allows us to use the programs. Perhaps the most important aspect of the Fellows Program is the network of faculty mentors and alumni connections that are available to Severn Fellows. Through the program, we can pursue our passion under the supervision of intelligent mentors, and we can further our scope of knowledge and create a better product by reaching out to the network of accomplished Severn alumni who can advise us. This is so important because, without such connections, we would have far less real-world knowledge available to us. Finally, the Severn Fellows Program grants us an audience. Our goal is not just to speak amongst ourselves about football statistics, but rather to present our findings to a larger audience and instill a greater understanding of the analytics and intellectual nature of football.

**(6)** Over the course of the summer, we will complete the “learn” and “compile” stages of the project. By becoming completely confident in our programming abilities prior to the remainder of the project, we will minimize our mistakes throughout the process. We anticipate that the “learn” portion of the project will be one of the shorter pieces and thus require about three or four weeks of work in the beginning of the summer. The remainder of the summer will be dedicated to the “compile” segment of the project. This piece of the project will be long and tedious, as we will have to compile college, NFL Combine, and NFL statistics into the program. Our expectation is that the “compile” section of our project will be one of the more time-consuming portions of the process, and therefore we have allotted a significant amount of time to complete it. We both believe that we will be able to complete the 40% summer work that is required for the project, as we plan to meet in person at least once a week in order to work on the project. Additionally, we plan to dedicate time to work on the project individually between these meetings, in order to make sure we stay on track over the summer. **(7)** Originally, we intended to complete this project with the support of our faculty advisor, Mr. Lapolla. Unfortunately, we received news today that he will be moving on to a different school, so it has put us in a difficult situation. Mr. Lapolla’s passion for statistics and football is unmatched by any other faculty member, making it more difficult to find somebody that would be as excited for this project as he is. Throughout the next few weeks, we will continue to speak with faculty members and discuss amongst ourselves and with Mr. Lapolla about who else could assist us on this project.

**(8)** Ultimately, we have a grand vision for the Fellows Project beyond Severn. This vision stems both from our final product, the biweekly podcasts, and our main creation, the model. We hope to continue producing our biweekly podcasts well after the conclusion of the Fellows Project. We hope to use the audience that the Fellows Project provides and build on that in order to create a platform for our podcasts, so that we can spread the intellectual side of football to a larger audience than just the Severn community. In a perfect world, we would love to continue to produce the podcast for many years to come so that we can fully examine the predictive power of our model. As we both hope to enter into the broader field of mathematics in college and beyond, this work in the field of statistics will provide us with valuable experience leading into college, and hopefully can grant us the opportunity of working with some type of connection to football in the future. Due to our passion for understanding the game, we would both love to further that understanding in our future work, using this project as a jumping-off point. We also recognize the growing demand for computer programming among almost every single occupation, and we expect that this project will be a good building block to work off of as we progress into the working world and into higher level jobs.

**(9)** Our project combines mathematics, statistics, data analysis, and football. While, of course, the mathematics and statistics are the primary challenge of the project, the uniqueness of it stems from the focus on football. As mentioned earlier, our goal is to highlight the intellectual nature of a sport so commonly written off as a mindless form of entertainment, while also examining the way in which our world can be entirely explained through numbers and statistics. While Fellows Projects in previous years have been nothing short of incredible, the very specific nature of the project can often make the project seem less accessible to the rest of the school. Our project has a broader reach, as football fans and statisticians alike have long been captivated by the NFL Draft and the numbers behind it. With this interest, coupled with the massively growing medium of entertainment, podcasting, our project will be able to interest a very wide range of people. It is also such a compelling project because there is really no single correct answer to solving the mystery of the NFL Draft. While we will put all of our effort into making the best product possible, we also hope to inspire others to do their own research about this type of analytical research, and hopefully motivate someone to solve the mystery in their own way, potentially yielding an entirely different answer. In summation, the accessibility of our project to reach a wider range of people and the infinite number of solutions to our question means that, while we can produce one answer, others may be inspired to find their own answer to the mystery of the NFL Draft.

**(10)** Our project, on the surface, seems relatively simple. We need to gather some statistics and make a model. It does not sound like a year-long project with tons of hurdles to overcome, but a deeper dive proves just the opposite. While we share an interest in statistics, neither of us have ever tried to make such a model that has the same level of predictive power as this one. Just learning the online program will take a few weeks. Then, the sheer number of statistics we need to collect will take another few weeks of laborious searching. Finally, hours will be poured into trial-and-error testing, hundreds of calculations, pages of notes, and plenty of other roadblocks along the way that we are not aware of at this moment. This project is by no means easy, but we expect that, and we fully expect to overcome this adversity with our work ethic, commitment, problem-solving skills, and other traits. Put simply, our work ethic should hardly be a concern. Through almost three years of high school, neither of us have faced a test, project, or any other responsibility that we were not able to conquer with a bit of hard work and determination. Whether it be leadership roles, stellar grades across the board, athletic achievements, or other extracurriculars, it would be impossible to say that our success is not born of our hard work and work ethic. Also, we strongly believe that any of our teachers, coaches, or peers, can strongly vouch for our work ethic and determination to succeed at any challenge we are faced with. Also, we rarely participate only partly in a project or club, as our commitment and ability to follow through usually leads us to giving one hundred percent of our capability to whatever we partake in. For example, both of us are active members in the investment club, not only playing the investment game, but showing up and participating in meetings, and signing up for numerous finance and economic contests through the club.