

Carolina Crosstalk

Pushing Boundaries: Students Researching Outside the Box

Issue 2

Letter from the Editor

When I ask incoming students at freshman orientation how many of them are interested in conducting research in college, very few raise their hands. My exclamations that "Research is fun!" and "You can get paid!" are often met with blank stares or doubtful looks. Occasionally, I'll meet an eager science student already looking toward medical school, ready to don a white lab coat and start dissecting organisms. This traditional view of research - the image of lab rats and petri dishes, reserved for serious scientists - is one in the minds of many college students. While there are certainly many opportunities for the pre-med Biology major, there are also research opportunities for aspiring businesspeople, talented musicians, political buffs, and everyone across campus.

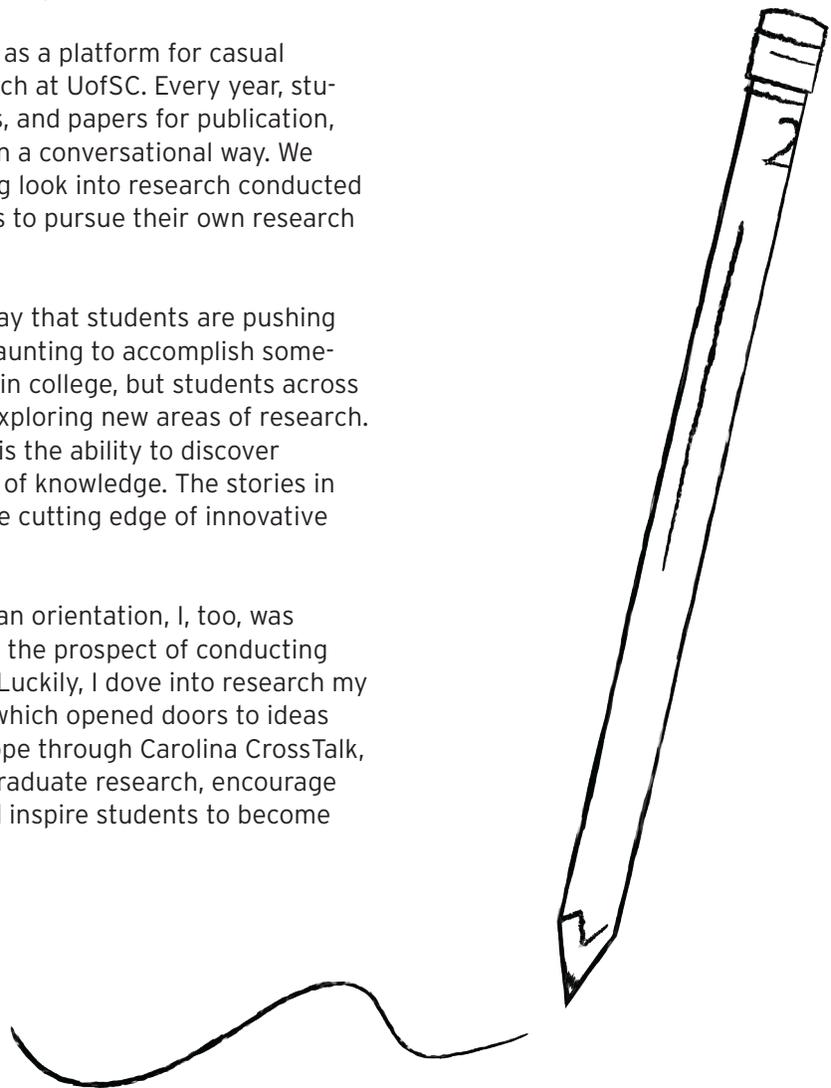
Carolina CrossTalk was founded in 2018 as a platform for casual conversations about undergraduate research at UofSC. Every year, students grind away at theses, journal articles, and papers for publication, but seldom stop to discuss their research in a conversational way. We hope that this magazine offers an engaging look into research conducted across disciplines and encourages students to pursue their own research interests.

This issue, we wanted to highlight the way that students are pushing the boundaries of research. It may seem daunting to accomplish something revolutionary within your short time in college, but students across campus are thinking outside the box and exploring new areas of research. For me, the most exciting part of research is the ability to discover novel information and contribute to a field of knowledge. The stories in this issue illustrate how students are on the cutting edge of innovative research right here at UofSC.

When I think back to my time at freshman orientation, I, too, was mostly unaware of and a bit intimidated by the prospect of conducting research, especially as a non-STEM major. Luckily, I dove into research my first semester through one of my classes, which opened doors to ideas and disciplines I had never considered. I hope through Carolina CrossTalk, we can spark a conversation about undergraduate research, encourage researchers to share their own stories, and inspire students to become involved in research themselves.

*Sophie
Kahler*

Sophie Kahler
Editor-in-Chief



In This Issue

5 Beyond BTS
Aishwarya Somani

7 Local Meets Global
Carly Adair

10 Full Speed Ahead
Gabby Herrin

12 Science + Fiction
Grace Riley

14 Researcher Q&A
Jana Liese

15 Voices of History
Katie Aretakis

16 Researchers Without Borders
Nicole Kent

18 Ask an Ambassador
Riley Lankes

20 Researcher Q&A
Madison Niles

21 Southern Hospitality
Scott Goldberg

23 Inside the Courtroom
Taryn Moyer

Editor-in-Chief Sophie Kahler
Managing Editor Emma Dear
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Beyond BTS

Studying how K-Pop entered the American market

Aishwarya Somani, *International Business*, 2020 • Written by Jared Bailey

While research is commonly perceived as obscure, high-brow, or inaccessible, Aishwarya Somani's project on Korean-Pop group BTS is anything but. She is living proof that, with the right mix of passion and dedication, you can produce valuable research on anything – and even have some fun in the process.

For Aishwarya, a senior finance, international business, and management student in the Honors College, the decision to start this research project was not an obvious one. Growing up, she was not a K-Pop fan – even now, it's not her preferred genre of music – but when her sister introduced her to the music video for BTS's 2016 song "Fire," she was hooked. Over the next few months, Aishwarya became obsessed with the group, and she was not the only one. BTS was amassing a groundswell of support outside of Korea, especially in the United States. Despite singing almost exclusively in Korean, the group's unique upbeat sound had massive cross-cultural appeal and attracted zealous English-speaking fans – some so ardent that they make their own translated lyric videos for BTS's songs.

As Aishwarya observed this rapidly expanding fandom, she became curious. Dozens of K-Pop groups had tried and failed to break into the Western music market. What made BTS an exception? As she failed to find much information about the boy band's success in America, she realized that she could study this herself, and with her upcoming senior thesis for the Honors College, she had the perfect outlet for it. However, there were a couple immediate hurdles that she had to overcome before she could get the project off the ground. First, like many students, she was new to research and had no point of reference for where to start. Second, as far as she could tell, no one had done any work related to her topic.

Aishwarya visited her advisor for help finding an academic mentor. Her advisor was unsure which field of study this topic was in, much less who might be an expert – so, as a shot in the dark, she searched "K-Pop" in the school directory. To their surprise, it turned up a single result: linguistics professor Dr. Elaine Chun in the Department

of English Language and Literature and the Linguistics program. She was the only professor at UofSC conducting research on K-Pop and was the perfect fit for Aishwarya's project.

When Aishwarya reached out to Dr. Chun, the professor was immediately intrigued by the research topic and agreed to serve as a mentor. Since then, she has been a loyal supporter of Aishwarya and a boon to the project, even through Aishwarya's unconventional circumstances. Aishwarya has spent three semesters and a summer abroad, studying in Germany, Taiwan, Singapore, and Brazil. As a result, she has only been able to meet with Dr. Chun a few times in person. However, her mentor has been incredibly flexible and accommodating, willing to do regular Skype calls instead of ordinary meetings. This has also given Aishwarya more confidence as a researcher, as she learned to navigate time zones, language barriers, and her busy schedule abroad while conducting her research.

Like many first-time researchers, Aishwarya had to learn some things the hard way. When she began the project, her research model was far too ambitious, and it took her a while to realize that her aims were unrealistic given her limited time and resources. While she started her project with a meticulous, color-coded organizational plan, Aishwarya admits, "I've done nothing of the sort, actually, when I look back at it." She reluctantly retooled her methodology, paring down several elements. However, this was not an easy process; she had to get creative and devise a quantitative research method that wouldn't be too complicated for her to implement single-handedly.

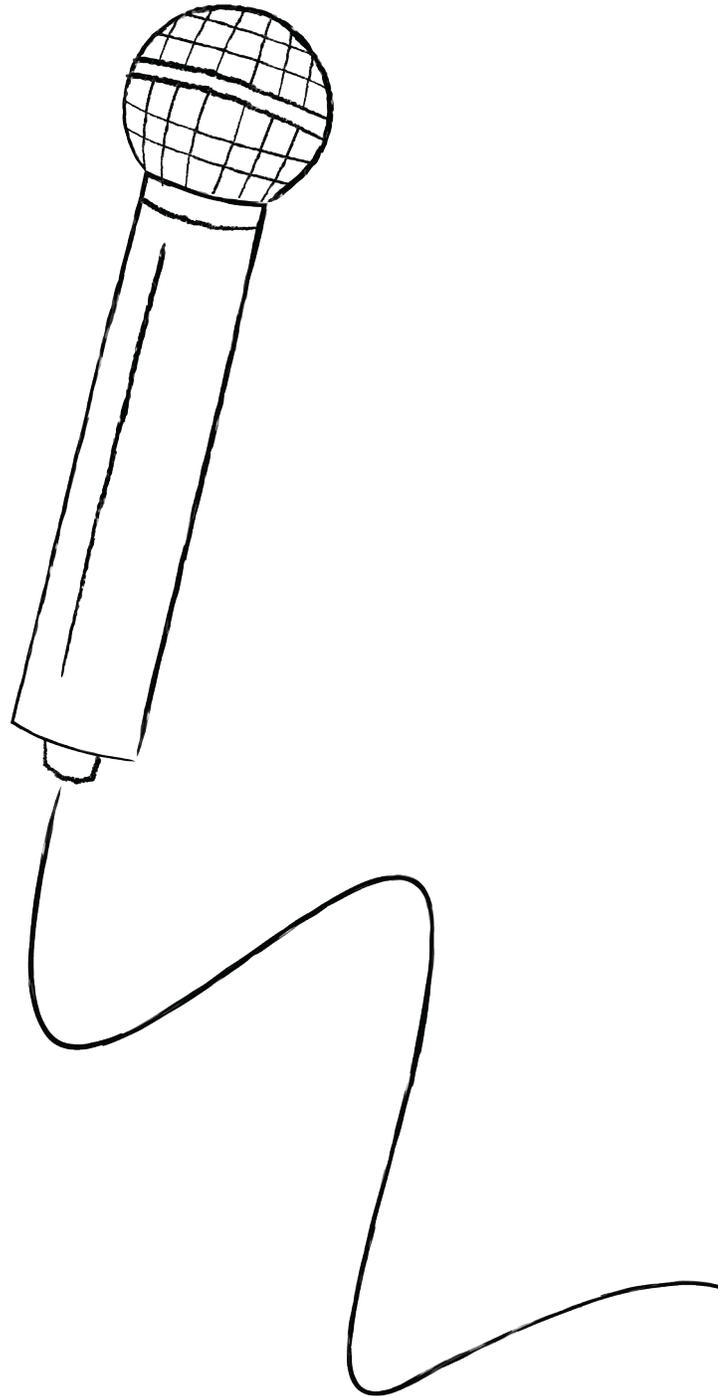
Aishwarya was interested in studying the demographics of BTS fans, but given that she didn't have the ability to get a satisfactorily large sample through conventional survey tactics, she had to improvise. So, she took to Twitter to direct message people in the fandom. After sharing the survey with several people directly, it gained momentum and began circulating through the fandom on its own. The response was massive, with over 300 respondents, and the results were surprising. The age of fans was much wider than she expected, ranging from 18 to 50 years old. She received answers not just from the U.S., but from Turkey, Singapore, and across South America. Her data shows that

the fandom has been traditionally misrepresented in the media, which commonly features the trope of screaming teenage girls, and has drawn comparisons of BTS to the Beatles.

Additionally, Aishwarya studied how BTS' commitment to Korean culture has paradoxically increased their popularity in non-Korean communities. The band has broken the mold of conventional K-Pop by combining traditional Korean instruments and tunes with fresh pop and rap-style music. Even while gaining massive popularity in the United States, the band has no intention of recording an English-language album, something which Aishwarya finds compelling to fans. More than other K-Pop groups, BTS carries an honesty and authenticity that resonates with fans across the world – she believes that the band transcends cultures, borders, and languages because the music is fundamentally a “person-to-person” experience.

Not only has this research given her some eye-opening data, it has also helped Aishwarya grow as a person. She is more at peace now when things go wrong, and she's learned how to take stock of situations and adapt to them. Throughout her research, Aishwarya has maintained an enthusiasm and passion for her topic, and she believes her roots as a BTS fan has given her a helpful perspective. Through perseverance and some clever ingenuity, her work translates BTS' music into an academic context for a new audience to learn from and enjoy.

BTS is having a moment right now, and Aishwarya wants to make sure everyone knows it. She hopes that her research will inspire others to rethink popular perceptions of K-Pop and understand how BTS has blazed a new trail for artists. Aishwarya admits that her research project doesn't fit in one field – it's a bit of music, linguistics, business, sociology, and more – but that doesn't faze her. Like BTS, she refuses to be stuck in one place. ♦



Local Meets Global

Studying the internal communications of certified Benefit Corporations

Carly Adair, Public Relations, 2020 • Written by Emma Dear

Beginning her own brand wasn't something Carly Adair thought would turn into the basis of an academic research project. Shop Local Threads began as a way to give back to the community, where all profits from trendy clothing and accessories are donated to organizations in Columbia. The company's products, from stylized graphic tees to stickers, echo a positive message, embossed with sayings like "Fear Not" and "Stay Humble." Carly, the founder and CEO of Shop Local Threads, aims to combine a creative business with nonprofit advocacy. This past year, through the profits donated from Shop Local Threads, the organization Communities in Schools of the Midlands was able to purchase materials for the year, easing the burden of buying necessary school supplies for many families in the Columbia area.

After encouragement from leaders in the Ronald E. McNair Program, Carly, a senior Public Relations major, decided to pursue research knowing she was interested in businesses that support communities. While working at Athleta, she learned about Benefit Corporations, or B Corporations, and their pledge to give back, much like her own brand. Companies that apply to be labeled a B Corporation undergo strict supervision to meet a high standard of community engagement. Their mission must be community oriented, transparent about their activism, and accountable for their actions. These businesses often advertise that a certain percentage of their profits go toward a nonprofit which they endorse. For instance, popular B Corporations include Ben & Jerry's, Patagonia, and Allbirds, all of which are committed to sourcing environmentally sustainable materials for their products. Today, there are almost 3,000 B Corporations in the world that undergo these regulations, comprising a small but growing percentage of global business.



Carly sporting a tee from her brand, Shop Local Threads.
Photo courtesy of Carly Adair

From the outset of her research, Carly sought to evaluate how internal communications impact the growth of these B Corporations. Working with Dr. Holly Overton in the School of Journalism and Mass Communications, Carly was awarded a Magellan Guarantee Award for her project. She focuses on corporate social responsibility through the lens of communication, marketing, and public relations, hoping to discover whether the strength of internal communications leads to better growth in B Corporations. To answer this, Carly researches existing B Corporations and is conducting interviews with employees of B Corporations in Columbia, Charleston, and Greenville to evaluate their existing internal communication structures.

The number of B Corporations has steadily increased since the first-generation businesses in 2007. A growing number of corporations each year seek to gain this distinction, which Carly believes is due to the large public push to now support businesses that give back. As consumers seek to be socially and environmentally conscious, shopping with B Corporations is a convenient way to feel a part of a greater cause. While it is obvious that many businesses are seeking this label, Carly became particularly curious about how to track their growth. General trends in consumer choices point toward favoring businesses that offer an alternative to the cold, money-hungry image that corporations often assume. Small, local businesses often carry authenticity that big corporations hope to emulate, and a social responsibility label can help large corporations broadcast this appearance to customers.

More than just profit gain, Carly believes that B Corporations experience growth relating to the strength of their public relations. Internal communications, or how a business relays messages within the company and treats its employees, is at the core of business productivity. Carly studies how company culture, business

atmosphere, and employee satisfaction contribute to B Corporations' success. By tracking the growth of existing B Corporations and looking at their internal structures, Carly believes she can identify companies that could be strong candidates for this distinction.

While many students believe research is reserved only for certain majors - often in the STEM field - Carly's project proves that research is essential in other disciplines to foster advancements. By combining her major in Public Relations and minor in Business Administration, Carly created a multidisciplinary project that expands the scope of research on businesses and social responsibility. When beginning her research process, Carly struggled to find any research on B Corporations in non-business journals. She believes that publishing her research in a communications journal would help open a conversation between business and public relations.

Not only has she combined her academic interests in her research project, but Carly has seen the impact of philanthropic businesses through her own brand. Through building Shop Local Threads, she is able to see its tangible effect within the Columbia community, which strengthens her newfound passion for research. Getting involved in research has also helped shift Carly's future goals. While Carly had not considered a future in academia before her research project, she can now envision herself teaching future college students and continuing to conduct research that benefits communities. Whatever path she takes, Carly understands the importance of businesses interacting with their communities, which is why she's committed to keeping it local. ♦



“By combining her major in Public Relations and minor in Business Administration, Carly created a multidisciplinary project that expands the scope of research on businesses and social responsibility.”

Students modeling Shop Local Threads products. Purchases from the brand will support local organizations in Columbia.
Photos courtesy of Carly Adair

Full Speed Ahead

Measuring the ground motion of race cars at the zMAX Dragway

Gabrielle Herrin, *Geophysics*, 2020

Ten-thousand-horsepower engines rev and fans buzz with excitement as drag race cars at the zMAX Dragway in Charlotte, North Carolina, inch closer to the start line. The “Christmas tree” light shows green and the power of the engines is released to propel the cars down the quarter-mile track. Standing nearby, a race fan feels her entire body shake from the ground up. The energy expelled by the car’s massive engine is sent into the ground and causes motion felt by everyone in the stands, like an earthquake of excitement.

For three semesters, my research team has measured the ground motion of the cars as they raced down the track, with instruments we created using small computers called Raspberry Pis. Ground motion measures how the Earth’s surface moves from an event, such as an explosion, and is often used when detecting the strength of an earthquake. Accelerometers connected to the computers measure the acceleration of the ground in gravitational units (g). When four cars raced in the spring, we measured upwards of two g of ground motion. At 330 mph, drivers feel close to five g upon his or her body. When the energy from the race car is transferred to the ground, a wave is created, allowing each fan to physically feel the car’s power.

After the data collection, my research focuses on processing the waveform data to determine the wave velocity and direction and compare a two-car race with a four-car race. My research will also produce an interactive webpage to be used by the zMAX STEM program for young learners, allowing science to compliment the excitement of drag racing. Students can learn about my findings among other hands-on activities while at the Charlotte Motor Speedway.

On race days, my research team often gets bombarded with questions from spectators about our research. I sympathize with these questions because a short time ago, upon arriving at UofSC, I too had no clue what geophysics was. This little-known major focuses on the study of the Earth using gravity, magnetic, electrical, and seismic methods, and its applications span from marine geophysics to environmental consulting to oil exploration. Studying geophysics in the context of drag racing continues to expand the width of the field in an innovative way, one which I had never considered before this project. We hope our research questions will broaden what is currently known about ground motion and recruit new fans of drag racing.



The publicity of our work at the drag race illuminates the extraordinary power of a drag race car, but also allows people to share in our scientific journey. Studying a new avenue within a field can create significant obstacles with no prior research upon which to base your project. We handled this by creating our own instruments, giving us complete design control over our experiments. Geophysics research usually requires highly technical instruments that are often expensive, however, each of our instruments costs less than fifty dollars with the accelerometer component at only eight dollars. Our project’s affordability means that it could be easily replicated in other situations and has allowed us to return each semester for national drag race competitions to increase our data set.

As a researcher, field work is both the most difficult and the most exciting part of the job. For the drag race, we use the fiber optic cable network at the track to send our data to the server. Deploying the equipment on the track



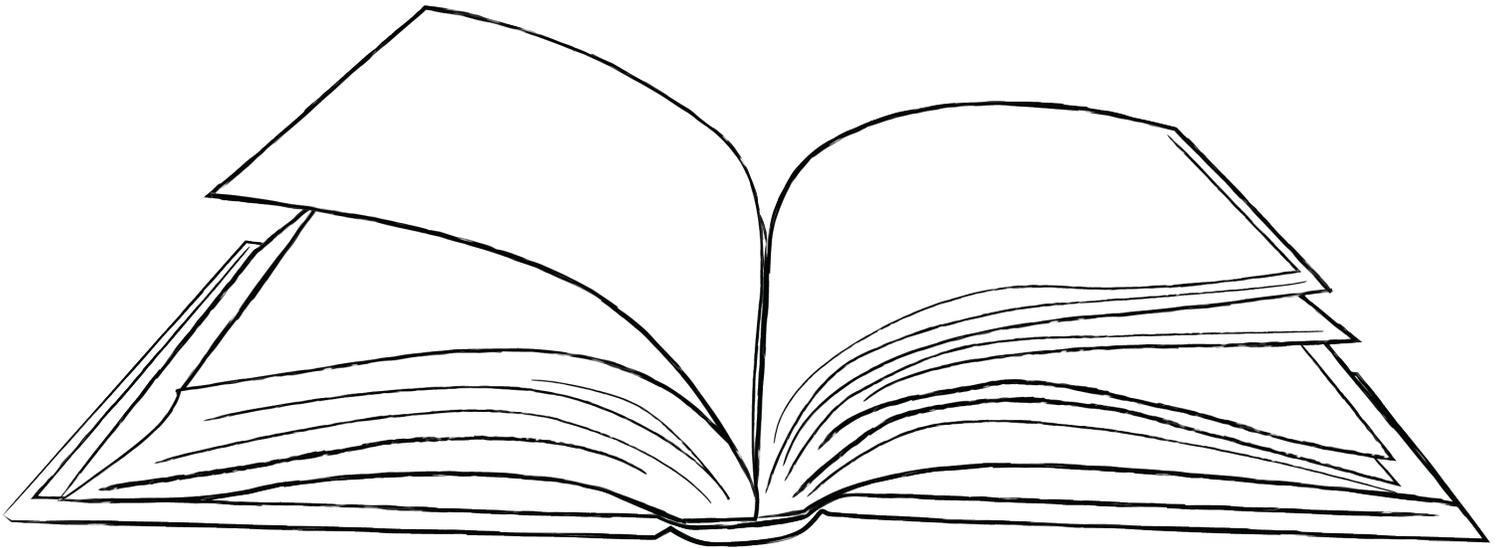
Gabby conducting her field research to measure the ground motion of drag race cars. Photos courtesy of Gabby Herrin

helped me learn that over-packing supplies and keeping detailed notes of everything is vital to have a successful experiment. These skills are important as I continue research in my career because I feel prepared to face unexpected trouble with an experienced hand, even as an undergraduate student. Deploying instruments, solving connectivity problems, and analyzing the waveform data for each race lifts my education outside of the classroom and fuels my passion for geophysics. Our research project has also allowed me to learn from two respected geophysicists, Dr. Tom Owens and Dr. Philip Crotwell, and with remarkable UofSC students Emma Woodford, Jake and Josh Burstein, Kevin Hurler, Jackson Saftner, and Lottie Crotwell. I have not only made lasting connections with faculty and students but also learned where I'd like to head in my future.

Taking research to the zMAX Drag Race may have been unexpected, but it has widened the field of geophysics and taught me valuable skills. From this project, I have been pushed to pursue greater career goals with confidence and grace, and I am looking forward to exploring my field even further. Oftentimes, the answer to "what is geophysics?" results in technical jargon about petroleum, but by pushing the accelerator, it can be so much more. ♦

Science + Fiction

Applying Foucault's theory of biopolitics to Aldous Huxley's *Brave New World*
Grace Riley, English, 2019 • Written by Sophie Kahler



When Grace Riley was confronted with choosing a topic for her senior thesis, she sat on her bed and stared at her bookshelf. As an English major, Grace, who is now pursuing a master's of English and American Literature at UofSC, was struggling to find a topic interesting enough to fill a 40-page thesis. Knowing it would take several months to complete the project, she knew how important it was to pick something that she wouldn't grow bored or resentful of. It was then that *Brave New World*, Aldous Huxley's dystopian novel, jumped out at her. Grace was not unlike the countless teenagers who had read the assigned book in a high school English class, but even as a senior in college, she was struck by the uniqueness of Huxley's controller-versus-controlled narrative. Although the novel was published in 1932, its themes of authority, technology, and oppression are urgently relevant in today's society. Grace knew that she wanted to explore *Brave New World* in her research, but she also knew that in the English field, it isn't enough just to write about your thoughts on a piece of literature - she needed to put it in conversation with something else.

With her rough thesis idea in mind, she went to her professor for direction. Dr. Greg Forter took Grace's interest in the novel's government regulation of the body and pointed her to a seemingly unrelated concept: the French philosopher Michel Foucault's theory of biopower. Foucault theorized that in the modern era, power is not effectively exercised through brute oppression or violence, but through biological and technological manipulation. This falls in line with the premise of *Brave New World*, where citizens are encouraged and given the means to immediately satisfy their physical desires but lack free will and critical thinking. As Grace points out, Huxley's novel illuminates Foucault's argument that when being controlled through pleasure and desire, people are less likely to question, or even recognize, what is controlling them.

Forming the research project was "a mess in the beginning," says Grace. The 311-page novel was full of exciting avenues but narrowing down her focus was initially difficult. Once she decided on putting Foucault into conversation with Huxley's novel, Grace scoured the library databases for existing research mentioning the two but found nothing - a prospect that was both exciting and daunting, realizing that she would be expanding the horizon of what had been studied. With the help of her professors - thesis director Dr. Debra Rae Cohen and secondary reader Dr. Greg Forter - she worked to split her research into three parts and concentrated on several passages in the book. Breaking the paper into sections helped organize and relieve some of the intimidation from the thesis, which helped Grace avoid panicking and spending too much time "inhaling copious amounts of coffee" and instead focus on completing one step of the project at a time.

Getting into the groove of working on an extensive research project was a steep learning curve. Researching while taking a full course load and working two part-time jobs forced Grace to refine her time management skills. She points out that much of what she learned through her research experience - focus, clear writing, organizational skills - is applicable to students in any discipline. Grace also points to her thesis director's constructive criticism

as a point of growth. When receiving comments from her professor on each of her drafts, Grace had to fight the urge not to close her laptop and avoid the overwhelming and intimidating feedback. However, throughout the research and revising process, she learned how to respond productively to criticism because it is a crucial part of the research and writing process and cultivates a fruitful relationship with one's mentor. Still, this was not without moments of panic and stress - Grace still has a screenshot of an email that Dr. Cohen sent her during one of her self-proclaimed "freak-outs" that simply says: "Grace, chill." Dr. Cohen encouraged Grace to relax, focus, and keep going, providing perspective that is valuable to any research project. Having mentors who know the ins-and-outs of the research process to support her throughout the project was vital to Grace's sanity and success.

In addition to preparing her academically for graduate school, Grace's research project gave her the confidence and stamina to tackle big questions of her own. Looking back on her thesis, she says that "a lot of times you feel like you don't really have anything important to say, and like your research isn't a big deal ... but I did get to the finish line, and I did have something to show for it, and I did feel really proud of it."

If there is one thing that Grace is most proud of from her research, it's her ability to successfully combine the scientific and literary fields. Foucault's theory of biopolitics is generally associated with sociology and political science, but Grace wanted to connect the bio-social idea to Huxley's dystopian narrative. Grace admits that while she certainly isn't the first person to put English into conversation with science, she hopes that her project inspires others to rethink traditional English texts and connect seemingly unrelated disciplines. Ultimately, Grace hopes that her project shows that "English can do everything ... it can talk about society, it can talk about politics, and it can definitely talk about science." ♦

Researcher Q&A

Jana Liese is a senior Biochemistry and Molecular Biology major and a 2019 Barry Goldwater Scholar. After graduation, she plans to obtain a joint M.D./Ph.D. in virology and conduct infectious disease research.

Give a brief overview of your research project. Who do you work with? What are you exploring?

I am currently working with Dr. Maksymilian Chruszcz in the Department of Chemistry and Biochemistry. We are trying to understand how the activity of β -lactamases, enzymes that breakdown antibiotics like penicillins and carbapenems, change in response to various transition metals, such as zinc, silver, and copper. To understand this topic, we are investigating the stability and efficiency of these enzymes in the presence and absence of different metals. The idea is to use these metals to “rescue” antibiotics to which bacteria have developed resistance, instead of having to develop new drugs entirely.

What do your day-to-day research activities look like? What do you like or dislike about it?

On any given day I am doing one of two things: prepping reagents needed for an experiment or running the experiment. For example, if I’m running an experiment to look at the stability of β -lactamase at different salt concentrations, I need to make solutions at each of the chosen salt concentrations. Then I have to confirm that my protein (β -lactamase) is in a solution that won’t interfere with the experiment and is at the correct concentration. If it isn’t, then I must transfer the protein to a different solution, which can take anywhere from four to twenty-four hours. I have to do all these things before I can even run the experiment. After analyzing the data, I decide whether the experiment needs to be redone with altered conditions or whether to move on to the next experiment. I really enjoy this last part; it’s like putting together a puzzle. All you have are little pieces that are meaningless on their own, but once you start putting them together, you start seeing the bigger picture.

What has been the most rewarding or exciting part of your research? What challenges have you faced?

A huge part of lab research is optimizing your experimental conditions. An experiment needs to be run tens of times just to make sure everything is working properly before you can get the data needed to answer your research question. This is why scientific research takes such a long time and can be the most challenging part of the research process for me. I tend to be an impatient person, so when an experiment doesn’t work the first few times, I can get very annoyed. But once everything is optimized, the experiment has been run, and you get to analyze your data, it’s so rewarding. It reminds me how every step gets me closer to discovering something new - something no one else may know.

How has research impacted your undergraduate experience and influenced your future goals? Why does a career in research appeal to you?

Although I wanted to get involved in research my freshman year, I wasn’t sure if it was the appropriate career for me. But once I started working in a lab, it became clear that it was the perfect career path. As a researcher, you get to learn something new every day and continually push the boundaries of human knowledge. Contrary to common belief, it’s also an incredibly collaborative field; I’ve gotten to learn from experts in both my field and related fields and seeing them work together to uncover new information is truly inspiring. ♦



Voices of History

Studying the fate of Afro-German children during the Holocaust

Katie Aretakis, *History and English*, 2020 • Written by Sophie Kahler

Katie Aretakis has always been focused. As a fifth grader, she read Elie Wiesel's acclaimed memoir, *Night*, and decided that studying the Holocaust was her calling. Now, ten years later, the senior History and English student is doing just that, working on an extensive research project tracing the history of Afro-German children who underwent forced sterilization during the Holocaust. It's an untold story of racism, oppression, and abuse that has been largely unknown amongst Holocaust scholars, but Katie is committed to telling this important history.

As a prospective student, Katie was drawn to UofSC as a Research I institution and for its opportunities for students to jump into research once they step on campus. Focused as ever, she declared a Jewish Studies minor and signed up for an Honors College study abroad Maymester called "Tracing the Holocaust." As she traveled through Germany, Poland, and the Netherlands, she was struck by unfamiliar pieces of history. At the Buchenwald concentration camp memorial, she noticed the names of Algerian victims, though she had never heard of African people in the Holocaust. After taking a tour of Afro-Dutch cultural sites in Amsterdam, she decided to research whether African-descended people were persecuted by German Nazis and was shocked to find the "Rhineland Bastards" - a derogatory term for a group of Afro-German people who were rounded up by Nazi forces in 1937 and forcibly sterilized. This group was comprised of about 600 mixed-race children in the Rhineland area of Germany - born to French-African soldiers who occupied the area during World War I - who were sterilized under eugenics laws, but the fate of these children had been lost to history.

Katie was fascinated by this newfound story, so she approached her Jewish history professor, Dr. Saskia Coenen Snyder, about using this for her Honors College senior thesis project. Dr. Coenen Snyder was curious about this topic, as she had never heard of this group of Afro-Germans herself, but excited to tackle this under-researched idea. As a researcher, Katie's biggest roadblock is the lack of existing research on this black German population. Holocaust historians have long struggled in research because so many primary sources were destroyed during and after World War II. Katie has mainly relied on two sources: a 1969 German history book that was never translated into English and a 2004 academic paper that includes interviews with Afro-German victims. Using these publications as starting points, Katie has extensively tracked down information on the lost group of children, taking her across the world to find them.

Being a historical researcher is not unlike being a detective. Katie has followed threads, dug through boxes of historic materials, and contacted museums, archives, and libraries to piece together history. In one instance, she visited the United States Holocaust Memorial Museum in Washington, D.C. to find the archives of a historian who died while researching the experience of black Germans during the Holocaust. She was then pointed to the Cornell University Law Library, where she read transcriptions of the Nuremberg trials and found documentation detailing the Afro-German children who were sterilized by the Nazi forces. Finally, while spending two weeks in Germany this past summer funded by a Ceny Walker Undergraduate Fellowship, Katie visited the Arolsen Archives, the world's most comprehensive archive on victims and survivors of Nazi persecution. She was able to trace the personal stories of many of the Afro-German children and discover what happened to them after 1937 - some survived the war, some were sent to concentration camps, and some seemed to disappear from the pages of history. In her research paper, each chapter is named after one of the children, so she can tell both their personal stories and the broader history of racial persecution in Germany.

To be a Holocaust scholar is certainly an emotional, heart-wrenching endeavor, but Katie remains focused on the importance of this discipline. After graduation, she plans to obtain her master's degree and Ph.D. in History or Jewish Studies. Through this research project, she is already breaking barriers in the field by studying the overlooked history of black Germans - something which she hopes will foster a dialogue about whom we consider Holocaust victims and how the Afro-German experience mirrors African American oppression in the United States. Ultimately, she believes that historical research should be made accessible to the public. Katie hopes that one day, the history of Afro-German people will be taught in schools and included in Holocaust exhibits across the world. Through her research at UofSC, she is well on her way to making this a reality. ♦

Researchers Without Borders

Designing a water purification system for the El Cedro Water Supply Project

Nicole Kent, Civil Engineering, 2021 • Written by Lexi Johnston

Many researchers never expect to see their work leave the lab, but Nicole Kent has taken her research across the world. The junior Civil Engineering major didn't think she would be involved in research during college, but quickly found the perfect research opportunity through her involvement with Engineers Without Borders – a campus organization that works with communities locally and abroad to design real-world engineering solutions. Nicole joined Engineers Without Borders during her sophomore year at UofSC. She has wanted to help people in developing countries for much of her life, a desire which prompted her to choose a Civil Engineering major, where she could get involved with hands-on projects. The club combines her long-held passion for serving others with an application of her major – and even better, the organization introduced her to a research project which allowed her to help make a real impact. Through Engineers Without Borders, Nicole became involved in the water purification system design for the El Cedro Water Supply Project, where they are working to consistently provide clean water to the rural El Cedro community in Ecuador.

To reach that goal, they first addressed the existing pipeline that provides the main water source for the El Cedro community. Installed 25 years prior by the Peace Corps, the pipeline, eroded and sagging at various places, was experiencing decreased water flow. The club worked to fix the pipeline in its current state as well as teach the community how to fix it to prevent future issues. Next, the group is working to develop filtration and disinfection systems to ensure safer drinking water. As part of the research, they are testing different methods of filtration which could be used in a developing community as well as methods of disinfection like chlorine. In doing so, they are adapting similar techniques to those used in the United States to make it more sustainable with the resources and landscape of the community.

Those involved in the project expand beyond Engineers Without Borders. Much of the testing required comes from a civil engineering class involved in the project called Sustainable Topics in Engineering. Nicole and other students from Engineers Without Borders then analyze the results and compare the data to the data collected in Ecuador. This January, Nicole travelled to Ecuador with others from the project as a part of their annual trip. The overarching

project in El Cedro follows four steps: evaluate, design, implement, and monitor. Last year the team implemented the pipeline fixes, so this year the team will monitor their progress in addition to evaluating how to best design the filtration systems.

Nicole appreciates that the researchers will be able to see firsthand the impact of their work on those in the El Cedro community. Working on the ground in Ecuador, students interact with the small community of about 100 occupants who rely on the pipeline for water. It's quite a unique experience to go from working on something in a lab for over a year to seeing that work implemented in real time to help others, an experience Nicole certainly never expected to have coming into college. Research has allowed her to connect concepts learned in the classroom to her work in the lab and in Ecuador. To other students unsure about their interest or possibility of research within their major, Nicole advises to go for it and explore where research could take them. Nicole learned firsthand that research opportunities exist beyond the expected majors or avenues as well as the fulfillment such opportunities can provide. "Research isn't something I thought I'd be interested in, but research goes into literally everything," says Nicole. "And it's just been cool to be part of something that's developing and new." ♦





“To other students unsure about their interest or possibility of research within their major, Nicole advises to go for it and explore where research could take them.”



Top: Nicole (third from left) and a team from Engineers Without Borders working on a filtration system in El Cedro, Ecuador. *Photos courtesy of Nicole Kent*

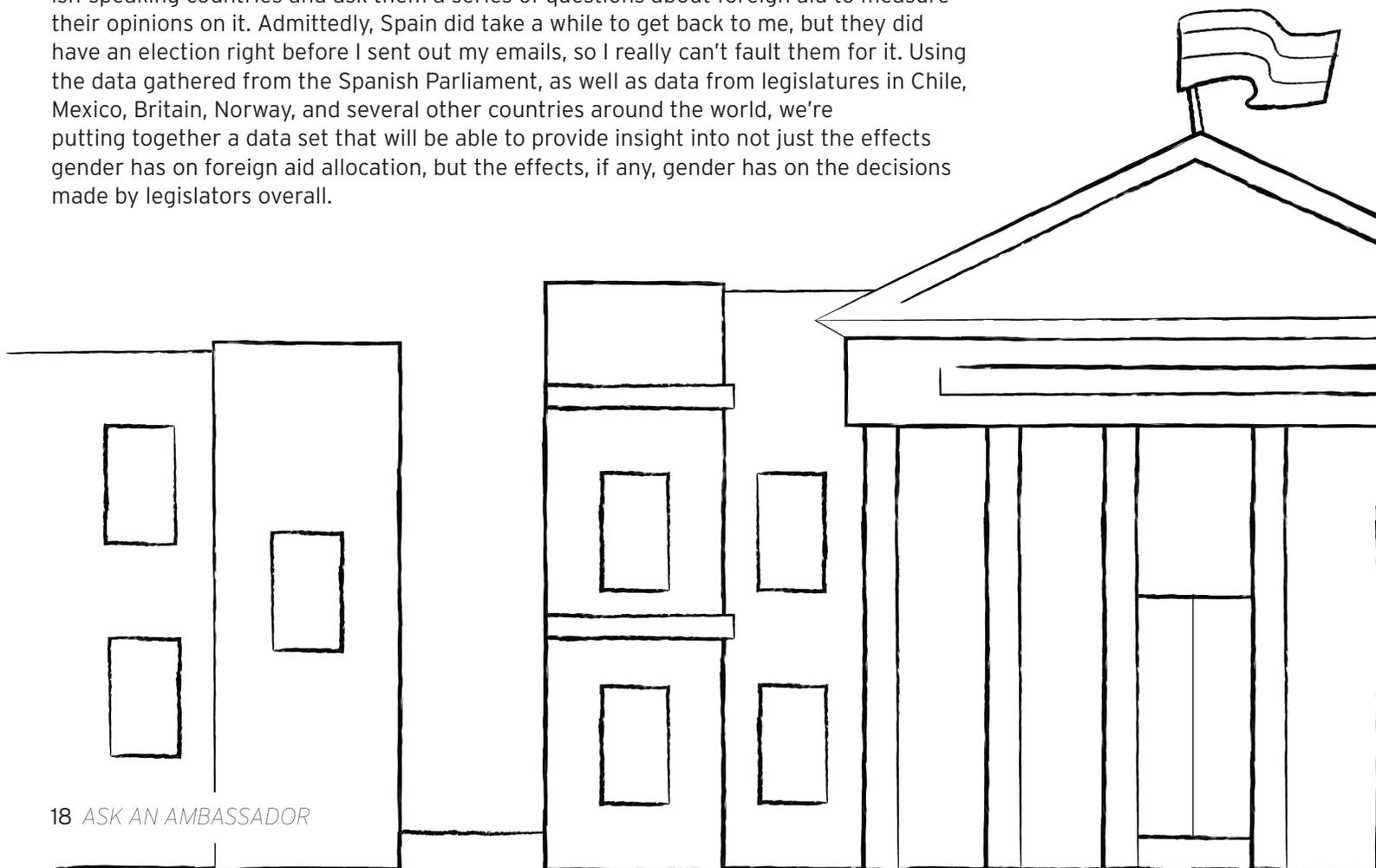
Ask an Ambassador

Gathering data on international foreign aid policy

Riley Lankes, *International Studies*, 2022

My favorite part about doing research in international relations is the variety of interesting tasks and jobs I get to do. One week, I'm contacting members of the Spanish Parliament to ask them how they feel about foreign aid. The next, I'm writing up a few paragraphs about my process of finding and coding transcripts of congressional hearings for a paper that's going to be published. I'll admit, I'm also a fan of how great some of these things sound when I'm trying to impress my friends, but that's definitely secondary to the research itself. I've really enjoyed my experiences in research thus far, and I've learned a lot about the international studies field, how research and governments interact, and what career I want to pursue after I graduate.

The reason I get to spend my days contacting government officials is because the opinions and actions of diplomats and legislators is central to my research. I started research in the spring of my freshman year by joining a research team in the Political Science department. Dr. Tobias Heinrich and Dr. Katelyn Stauffer invited me to work with them and a team of graduate students on a project investigating the effect that gender has on foreign aid. They hypothesized that there would be a correlation between a legislator's gender and how positively they viewed foreign aid, as well as how much money they actually allocated to aid. Our team's job was to either prove or disprove this hypothesis by using a number of methods to measure the opinions and actions of individual legislators to see if there is a correlation. My job specifically was to contact legislators in Spanish-speaking countries and ask them a series of questions about foreign aid to measure their opinions on it. Admittedly, Spain did take a while to get back to me, but they did have an election right before I sent out my emails, so I really can't fault them for it. Using the data gathered from the Spanish Parliament, as well as data from legislatures in Chile, Mexico, Britain, Norway, and several other countries around the world, we're putting together a data set that will be able to provide insight into not just the effects gender has on foreign aid allocation, but the effects, if any, gender has on the decisions made by legislators overall.



Since the project is now past the data gathering phase, we're moving into refining our paper in order to send it around for peer review before publishing. For me, this means writing up paragraphs about my data gathering methodology. Working on the foreign aid paper led me to start thinking about my own research project. I decided to do an independent study in my minor, Information Science, this year to further explore my interests. Working with Dr. Elise Lewis in the Information Science department, I planned out a new project that I hope to turn into my senior thesis and eventually a published paper. The topic started with an offhand question – while discussing events unfolding in Turkey and Syria, I rhetorically asked, "Where do you think our people in the State Department are even getting their information on this?" We decided to see if a quick Google search could answer that question. We found nothing. So we went into the library databases and again came up empty. As it turns out, there is virtually no information available about where our ambassadors, legislators, and the people who make and enact our foreign policy get the information they use in making decisions, or what information they use in the first place. My project seeks to shed some light on this.

Taking inspiration from the first project I worked on, part of my study will involve emailing a similar list of elected officials from around the world and asking them

about what information they use when making decisions about foreign policy and diplomacy, and where they find it. The second part of my study is what I'm most excited about. If you need information from someone, ask them – or better yet, ask them in person. Next year I'm applying to study in Washington, D.C. during the fall and Madrid, Spain during the spring. While in these two national capitals, I'll reach out to embassies, legislators, and other government offices to set up interviews with their respective ambassador or legislator. As I like to say, I'm going to bother some ambassadors.

In all seriousness, I believe interviews with these officials or their staff will be invaluable in filling the aforementioned gap in the literature. We don't know how the people making and enacting our foreign policy are informed, or what information they have access to looks like. My goal is to answer these questions, and in the process, hopefully I'll get to meet a few interesting people. I'm excited to pursue this new project in the coming semesters, as it's right at the intersection of my major and minor. International Studies and Information Science is an interesting combination, but one I believe can provide important insights about how our governments function and how nations conduct diplomacy. Pursuing international peace is my goal, and my research allows me to do that in my own way, even as an undergraduate. ♦



Researcher Q&A

Madison Niles • Psychology, 2021

How and when did you get involved in research? Who are you working with?

I have always been interested in research, but my Research Methods in Psychology class was my first opportunity at learning about and eventually producing research. I worked closely with my teacher and some friends who really helped guide me in the right direction.

What is your research project?

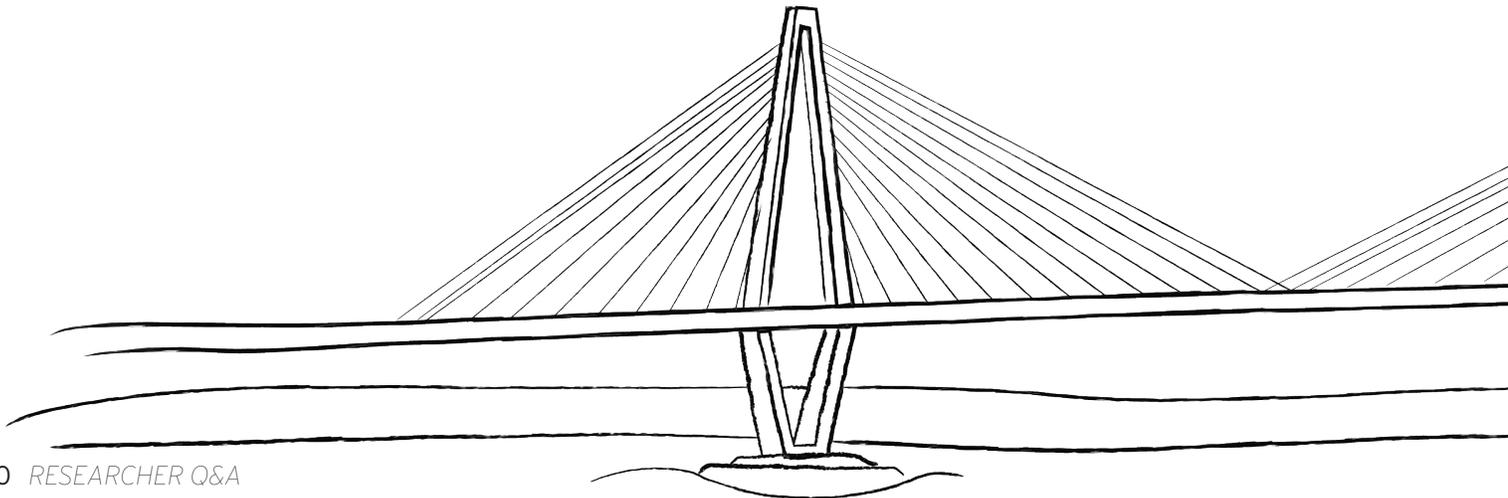
My research project explored relationships in college and the region of college attendance. I wanted to determine whether there was a correlation in those who become engaged during college in one particular region over other regions in the U.S. I surveyed college students throughout the United States to collect data, where I found that the region of college attendance does not have a relationship with likeliness to be engaged. However, I did notice that the geographic region of origin did have a relationship with likeliness to be engaged, indicating where you are from may have an impact on when you prefer to become married.

What has been the most surprising part about your research? Have you faced any obstacles?

I believed my research would show that the Southern region of the U.S. has a higher likeliness to become engaged, simply because I seemed to notice that in the South after I moved here. Based on my results, that ended up not being true. Because I moved around growing up, I had many friends in different states I could send the survey to, but not in every state. Ensuring I could receive the most answers possible that were factual when surveying countrywide proved more difficult than I initially thought.

Do you see yourself continuing research in the future? Has conducting undergraduate research impacted your future plans?

Yes, I do! I currently am doing research in a lab several hours a week, and the more I do it, the more I learn about it and grow more of an appreciation for it. Research can be daunting at first, but when you begin to understand it, it can become really exciting. Eventually I hope to go to graduate school where I will work to become a clinical psychologist and continue pursuing research that will hopefully help us learn more about ourselves, and even better, how to help people. ♦



Southern Hospitality

Analyzing the impact and sustainability of tourism in Charleston

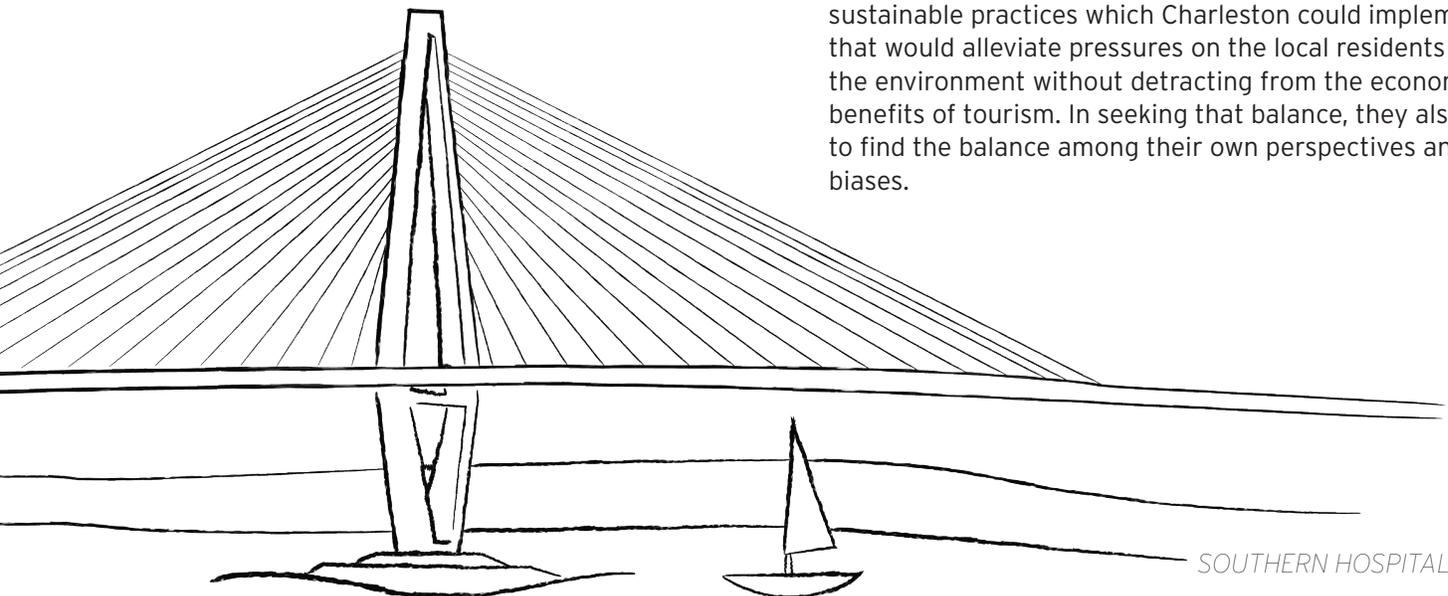
Scott Goldberg, *Hospitality Management*, 2019 • Written by Lexi Johnston

Sometimes in life, the best lesson we can learn is that of looking beyond our own perspective. Scott Goldberg learned this lesson firsthand through his experience in undergraduate research. After majoring in Hospitality Management with a minor in Political Science, Scott graduated in May of 2019 and now works for UofSC as a recruiter for the admissions department. While an undergrad, Scott participated in a group research project on sustainable tourism practices in Charleston and presented his findings at Discover USC, the annual research showcase. Looking back on his college experience, Scott will always remember this research and the ways in which it shifted his worldview.

Scott became involved in his research project through his Sustainable Tourism course with Dr. David Cardenas. The class focused on the analysis of sustainable tourism practices through environmental, sociocultural, and economic lenses. Student groups of four or five members chose a location for a case study in sustainable tourism. After deciding on Charleston, Scott's group set out to explore the impact of tourism on the city and its inhabitants. In choosing Charleston, Scott notes that "of course, being students at the University of South Carolina, we were very interested in how our state does." Part of the draw of this research lies in pointing out the flaws in the current system in place, often challenging the tourism industry. This critical study is an important part of the hospitality and tourism field, as Scott points out that "part of improving ourselves is noting what we're not doing right or what we could be doing better."

The positive impacts of tourism on the city of Charleston seem obvious. Tourism has immense economic effects, bringing in business and increasing tax revenue without increasing the tax burden on residents. However, the negative consequences of the tourism industry prove more complex. An important port city, Charleston has seen a tremendous increase in the number of cruise ships in the last decade. This increased prevalence not only impacts air quality but also contributes to coastal erosion, and the vibrations from the ships' extended idling at port negatively affect marine life, such as the vitality of coral beds. Scott explains that "as the coastline gets smaller and smaller, the water will come up further and further, so even if you're inland now, in a not too distant amount of time you might be beachfront property." It is an issue between industry and ecosystem, in which the port and local businesses benefit from the increase in tourism at significant environmental expense.

Scott and his research partners sought to find solutions to some of these problems created by Charleston's tourism. In interviews with UofSC students from Charleston, the group found that heavy traffic, which is another environmental polluter, is a notable problem associated with tourism. The number of tourists visiting Charleston leads to more cars on the roads of the geographically tight peninsula. Scott identifies that "part of the solution, for traffic at least, is investing in more public transportation systems." For instance, Charleston could adopt something like the light rail system in Charlotte, which has alleviated commuter traffic and promoted energy-efficient transportation. Scott's group sought to find a balance with sustainable practices which Charleston could implement that would alleviate pressures on the local residents and the environment without detracting from the economic benefits of tourism. In seeking that balance, they also had to find the balance among their own perspectives and biases.



The research group came from various backgrounds, from South Carolina to New England, offering unique viewpoints to mitigate bias. Being from New Hampshire, with its very different climate and ecosystem, Scott viewed the research question and expected outcomes with a different perspective than someone from South Carolina. Someone from out of state may be able to point out flaws better than someone from in-state, and someone from in state may better acknowledge the positives in the systems in place. "It's interesting to see the differing perspectives," Scott said, "especially too to see how some of them did line up pretty well." Speaking to the benefit of these differing backgrounds, Scott noted that "fresh eyes, fresh perspectives bring new light on different situations."

Learning to look beyond one's own perspective can encompass more than just learning from the views of others. Going into the project, Scott had preconceived ideas about what they would find in their research and how they would go about finding those answers. "I was set in my own way, of course, about how to do this," Scott said, "and what I learned was that I need to be open to different ways coming in. And I think that's something that helped me grow a bit." Scott's experience researching sustainable tourism in Charleston opened him up not only to unexpected answers on how to address viable practices, but also opened him up to unexpected ways of viewing the world. Scott details how he used to view much of life as black and white, but "through this research, and through my education in general, I've come to realize things are a lot harder to decipher...there's a lot more gray than you would expect." Learning this lesson has made Scott more adaptable, willing to change focus when the results call for it without losing dedication.

Such a skill will serve him well in his future career. While one of Scott's dream jobs is destination marketing, he also wants to one day pursue a PhD in order to become a professor. Looking toward the future, Scott says that "I know I want to pursue future research" in whatever field or career he finds. Thanks to his undergrad experience, he's already started to think about what other impactful questions he's interested in answering. ♦

“I was set in my own way, of course, about how to do this...and what I learned was that I need to be open to different ways coming in. And I think that’s something that helped me grow a bit.”

Inside the Courtroom

Studying the experience of black judges

Taryn Moyer, *Criminal Justice*, 2020 • Written by Jared Bailey

Every researcher inevitably faces setbacks, but what makes a great researcher is their ability to adapt to them. This past year, Taryn Moyer has had the opportunity to prove her own adaptability by working on a particularly fraught project.

Last spring, Taryn, a senior criminal justice student in the Honors College, was looking for something new. After switching out of the math major, she was anxious to get some experience in her new field. She decided to give research a try. She hadn't taken a criminal justice course in almost two years, but she took a longshot and reached out to a professor from freshman year. Fortunately, Dr. Deena Isom Scott happened to be directing a project and needed a research assistant. The project was a case study of a unique court in South Fulton county, Georgia, composed entirely of African American women. Taryn, who had worked in the Richland County public defender's office and observed a disheartening lack of diversity, was eager to participate in the study. However, after she signed on and begun planning the project, they encountered a roadblock. Just as they were gearing up to interview one of the South Fulton county judges, the woman was fired from the court. This threw a wrench in their plans and put the entire project into limbo for several months as they tried to figure out a path forward. After giving it much thought, not only did they decide to continue their research, but to expand its scope, too. Instead of doing a case study of diversity in just one court, they set out to study all the courts in South Carolina.

This new, ambitious objective required significant alterations to their research methodology. For their quantitative analysis, they began compiling the race and gender of all state court actors – such as judges, public defenders, and solicitors – into a database and juxtaposing this data with the composition of the jurisdiction those actors represented. For instance, they are able to see whether a primarily African American county is represented by primarily African American judicial officials. For their qualitative analysis, they started arranging interviews with African American judges and conducting court observations in order to gauge their experiences. They were primarily curious to see how the race of judges did or did not impact expectations in the courtroom. For instance, did an African American appear more confident in his case if he was represented by a white judge or an African American one? In her time at the public defender's office, Taryn witnessed multiple occasions when African American defendants requested to be represented by African

American lawyers – however, due to the lack of diversity in the office, these requests were very rarely granted. Taryn's intuition was that this negatively affected the confidence of these defendants. This study would put that intuition to the test.

Though their new direction and methodology were finally clear, they weren't out of the woods yet. There were still more obstacles to their work. For one, while information about South Carolina judges was easily accessible, it was taking much more time and energy to find reliable data on public defenders. While this would normally be only a minor inconvenience, it was exacerbated by an imminent deadline. Their work was being funded through a Magellan Grant and, because of the nature of that grant, they only had access to the funds until the end of the semester. This put them in a race against the clock to find a sample of sufficient size and quality.

While the project continues, there are still lots of fires to put out day-to-day, but Taryn is already looking to the future. Eventually, she hopes this research expands into a nationwide project, but, in the immediate future, she is considering the ways that it will impact South Carolina. Currently, there is no database analyzing diversity within the state judicial system, so Taryn's project will shed light on underrepresentation in the courts. She points out that diversity has often been overlooked in the criminal justice field because primarily white, male representation has long been the status quo. By studying the way that demographic representation affects the thoughts, emotions, and outcomes of all persons involved in the judicial system, she hopes to highlight the human experience for minorities in the court system. She believes that this research will spark change in the South Carolina criminal justice system and ensure that all citizens feel better represented.

Like many research projects, this has been an exercise in perseverance and endurance for Taryn – both virtues that will prove invaluable when she enrolls in law school. She plans to take a year off between graduating from UofSC and starting law school and hopes to continue working on her research project during that time. Though she never expected to conduct research as an undergraduate, Taryn has found a deeper passion for criminal justice and is looking forward to bringing her own perspective to the legal field. ♦

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