The sky’s the limit for TCU researchers mining big data in pursuit of answers.
On the cover: From Victorian literature to video game addiction, researchers across TCU employ digital analytics in unexpected places. Original photos by Getty images | Photo illustration by Corrie Demmler
The public trusts scholars to find solutions to previously unanswerable problems. In times of crisis, like during a pandemic, pushing the boundaries of the known world becomes society’s most urgent priority. Luckily, our research programs at TCU advance us to the forward edge of that knowledge.

Welcome to *Endeavors* magazine.

While this season has presented us with unprecedented challenges, it also has allowed the resiliency, innovation and excellence of our students, faculty and staff to shine. We respected safety protocols to “Protect the Purple” and worked from remote locations to fulfill the research and creative activities that form the foundation of Texas Christian University’s coveted teacher-scholar model. This issue honors these efforts and highlights the power of the TCU culture to advance academic and personal achievement through intellectual inquiry, the creation of knowledge, and artistic and creative expression.

During a time when effective health communication can mean life or death, the Bob Schieffer College of Communication is examining such messaging in media, film and television and on the web. Leaders in our College of Education partner with nonprofit foundations to engage in research and outreach at local high schools, enhancing college preparedness and enrollment.

In this issue, explore the strength and resilience of human trafficking survivors involved in the anti-trafficking movement as advocates. Learn with us how trailblazers in business, liberal arts, science and engineering, and health care work collectively to apply computational and analytic tools to drive discovery and instruction. Read about the research that will make renewable energy cheaper and more reliable.

Horned Frog scholars and innovators are leading the way to new knowledge and a broader future, filled with data, cures, insights and infinite possibilities for our global community. Join us, as we “Endeavor” to do more.

Floyd Wornley Jr.
Associate Provost for Research and Dean of Graduate Studies
WARMING UP TO COLD CASES

Ashley Wellman advocates for the families of victims of unsolved homicides.

BY JENNY BLAIR

While Ashley Peake Wellman worked in a Florida sheriff’s cold-case unit during her doctoral studies in criminology, she had a life-changing conversation with the mother of a murder victim.

“I just want to know what happened to my daughter, and no one will respond to me,” the woman told Wellman, now an instructor of criminal justice at TCU.

The two went outside and talked for hours. Wellman apologized for not having answers. The mother replied, “I just wanted to be heard. I wanted to know she wasn’t forgotten.”

The encounter shaped Wellman’s calling to work with the families of cold-case homicide victims.

She began a series of detailed interviews with over two dozen grieving family members. Wellman learned about their anger, hurt, frustration and complicated relationships with law enforcement and the news media.

Wellman has published her findings in the Journal of Interpersonal Violence, the Journal of Family Studies, Crime Media Culture and Violence and Victims. As a public speaker and media commentator, she shares insights gleaned from those conversations. She also works with police to improve how they communicate with distraught people hoping for information about a loved one’s death.

“I don’t understand the ivory tower concept of staying inside walls and just keeping your publications inside a journal,” Wellman said.

Marian Borg, an associate professor of sociology at the University of Florida and Wellman’s PhD adviser and co-author, called Wellman’s criminology research an “incredible contribution. … The stories of what people go through and the circumstances they find themselves in — they convey a level of meaning and understanding that you just don’t get with other types of analysis.”

Over 16,000 Americans died by homicide in 2018. That year, 62.3 percent of homicides resulted in an arrest — a drastic drop compared to 1965, when more than 90 percent of slayings resulted in criminal charges. The unresolved crimes have thrust tens of thousands of relatives into limbo.

Bereft of justice, these surviving family members experience a stunted grief, Wellman said. “You don’t know who to blame. … You don’t know where to put that hurt.”

If years drag by and a case remains unsolved, families — especially those in marginalized groups — begin to suspect investigators of not caring. Wellman said. A perceived lack of police sympathy can worsen tensions between law enforcement and communities, which in turn can lead to lower arrest rates.

But if a family has access to a detective who listens and keeps them informed, they are better able to trust the investigative process.

When working with these families, police need to be transparent, offer updates and explain their decisions, said Michele Meitl, an assistant professor of criminal justice and Wellman’s co-author on a 2020 paper about families’ interactions with law enforcement.

“These families have suffered a tremendous amount of grief, just like anybody who has lost a loved one to violence. But there’s sort of a revictimization going on here,” Meitl said. “Any way that we can try and make that relationship work better to minimize the grief is important.”

Beyond private mourning, family members also described a vertiginous shift in their daily lives.

“If someone’s murdered, instantly [a relative] is thrust into these relationships with institutions you had no desire to be a part of,” Wellman said. “You’re surrounded by detectives and law enforcement. Medical people. Medical examiners. The media, full force. … It’s a forced trauma bond with media [and] law enforcement.”

The news media can retraumatize survivors, she said. A headline may frame a victim as a drug user, even if the person was a pot-smoking college student. News reports might add insult to injury by using a victim’s mugshot rather than obtaining a more relatable photo from the family.

Some family members exhaust themselves to keep a case in the public eye.

“For some, it actually becomes a defining role in their life — being that advocate, being that investigator, being the media presence,” Wellman said.

“Maintaining the value of their [loved one’s] life is so important to the survivors.”

Wellman’s own experience gives her added perspective on living with grief. In summer 2018, just before she started working at TCU, her husband, Buddy Wellman, abruptly died. The couple’s daughter was 4 at the time.

Suddenly, advice Wellman had long given the families she works with — get help, advocate for yourself, grieve both individually and as a family — became all too personal.

In coming to terms with widowhood, Wellman wound up becoming a children’s author. Her first book, The Girl Who Dances With Skeletons: My Friend Fresno (Rea of Sunshine, 2020), is about her daughter’s adventures with a toy skeleton.

“I tell my families, ‘You need to create a new chapter. You cannot get over it. There is no closure,’ ” she said. “ ‘But what you can do is you can create new traditions. You can create new identities and roles.’”

LISTEN TO A PODCAST with Ashley Wellman at endeavors.tcu.edu
TURNING OVER
A NEW LEAF IN ENERGY

Inspired by plants, Ben Sherman strives for affordable solar photovoltaic cells.

BY HEATHER ZEIGER
PHOTOGRAPHY BY MARK GRAHAM
Through photosynthesis, plants do something simple yet remarkable: They convert sunlight to energy by breaking apart water molecules. If scientists could replicate what plants do every day, the world would have a clean, endless alternative to fossil fuels.

Ben Sherman, assistant professor of chemistry in TCU’s College of Science & Engineering, develops solar cells that are inspired by plants’ energy conversion process. But for human energy needs, he said, the work isn’t so simple. “Photosynthesis is very convoluted … yet somehow this is the very basis of life.”

According to Sherman, the overall efficiency of converting sunlight into chemical energy during photosynthesis is negligible at best. Plants convert only about 1 percent of the sunlight they receive into carbon dioxide products. For a solar cell to compete with fossil fuels, it would need to achieve at least a 10 percent solar-to-fuel efficiency.

Sherman’s research involves assembling and optimizing photovoltaic cells. These devices are similar to batteries, but they produce electricity when sunlight strikes a special material that causes a chemical reaction to occur. His cells are inspired by photosystem II, a protein complex that drives photosynthesis by using the energy from sunlight and a metal-based catalyst to break apart a water molecule into hydrogen and oxygen.

“The objective has always been to mimic that process,” Sherman said. But breaking apart a water molecule, which is stable by nature, requires a potent catalyst.

One area of his research is searching for an inexpensive metal-based catalyst powerful enough to split a water molecule into its component parts. “The best catalysts we can come up with are using elements you don’t find in nature, at least [not] in photosystem II,” he said.

Sherman’s group, which includes graduate students, an undergraduate research student and a postdoctoral researcher, begins with catalysts proven to be capable of breaking apart water. But these catalysts contain iridium or ruthenium, expensive rare-earth metals. His group builds the rest of the photoelectrode using these catalysts, making sure to optimize all of the other parts. The last piece of the puzzle is changing out the catalyst for experimental ones made from cheaper, more abundant metals.

The right catalyst is just one piece to the puzzle. The kind of photovoltaic cells that Sherman’s group studies are called dye-sensitized solar cells, or Grätzel cells, after the Swedish scientist who invented them. Grätzel cells have four basic parts: a transparent glass surface that conducts electricity, a layer of porous semiconductor material coated with a layer of molecular dye that serves as an electrode, creating an electrical current.

The dye sits on the surface of the semiconductor material. Reactions that require a catalyst — like splitting water — occur in that solution. These reactions always involve electrons moving from the semiconductor electrode to the counter electrode, creating an electrical current.

The end goal is to develop a photoelectrochemical system that is feasible on a large scale. Sherman said some existing systems are 18 percent efficient at converting sunlight to fuel, but they typically use costly semiconductors and expensive metal catalysts. “It’s tens of thousands of dollars for a square centimeter of an actual device. So even at that efficiency, it can’t compete [with fossil fuels].”

Optimizing each part of a complicated cell requires a team effort. “Collaboration is so essential,” Sherman said. “I’m doing the writing and getting the grants, but it’s the grad students that do the work, and without them involved, it would be nothing.”

In 2020, Sherman worked with two graduate students, Debora Beeri and Jackson Roye, and an undergraduate student, Maggie Purvis.

Beeri said she pursued PhD work in Sherman’s lab because she wanted to help find clean energy sources. “It’s great that the scientific world is trying to find cures for cancer and other health problems,” she said Sherman told her. “But who is going to heal the Earth that we live in?”

Beeri’s work involves optimizing the glass surface that conducts electricity, and she is investigating new types of semiconductor electrodes using less expensive materials that could eventually be used on a large scale.

Sherman said he is also interested in developing a rechargeable solar battery. “The largest issue facing humanity is climate change. I wanted to apply myself to that issue and that problem to contribute any way I could.”

“Photosynthesis is very convoluted … yet somehow this is the very basis of life.”

Ben Sherman, assistant professor of chemistry
Viral tweets about fake Covid-19 statistics or supposed cures. Bland and all-too-familiar TV ads for prescription drugs. Hollywood depictions of men living with AIDS that emphasize telltale lesions on the face. Health communication seeps into society through various media and can play a powerful role in public perceptions of illness, disease and treatments. A new minor in health communication and media puts TCU on a path to capitalize on growing interest in the field, both for students who want to pursue medical or health care-adjacent professions and for faculty seeking to research a range of related topics. Effective communication and empathy also stand at the heart of the curriculum of the TCU and UNTHSC School of Medicine, which welcomed its first class in July 2019. Medical students work with artistic directors and communication professionals on role-playing and patient simulations. Physicians-in-training hone their listening skills while also learning the most effective ways to impart information with the purpose of improving patient interactions and care. The medical school’s efforts dovetail with the growing body of research from faculty in TCU’s Bob Schieffer College of Communication. Their shared goal is to discover the best ways to educate people about the most beneficial options for their health. In the fall, Wendy Macias, associate professor of strategic communication and associate dean for undergraduate studies, taught the introductory foundations class for the new health communication minor.
Students came from a range of disciplines, including psychology and engineering as well as communication, nursing and pre-med. Understanding how to impart health-related information most effectively, Macias said, has relevance to many both personally and professionally. “There is so much misinformation,” she said, “particularly in social media.”

A report released in August 2020 by worldwide media watchdog group Avaaz indicated that global health misinformation received at least 3.8 billion Facebook views during the prior year. April 2020 — as the Covid-19 pandemic was escalating in the U.S. — saw a peak in misinformation, with an estimated 460 million views of erroneous posts.

“If Covid-19 has taught us anything,” Macias said, “it’s that all of our lives are at stake and that health care messages in the media matter.”

**AIDS ON SCREEN**

The eruption of the coronavirus pandemic was not the first time in modern history that disease dominated public imagination. A lack of hope in the fight against AIDS typified film depictions during the 1990s, mirroring the bleak realities of a disease much feared and little understood.

Later that decade, scientists created cocktails of pharmaceuticals that helped extend the lives of many living with HIV and AIDS. But for the general public, particularly in the early half of the ’90s, most of the information about the disease came through coverage in the news media or film.

“Most people could not have gotten that knowledge otherwise, which made those early images even more influential,” said Kylo-Patrick Hart, chair and professor of film, television and digital media.

In the award-winning 1993 movie Philadelphia — the first major Hollywood film focused on the AIDS crisis — a gay attorney, portrayed by Tom Hanks, sues his former employer for discrimination. The law firm had fired Hanks’ character when his illness became apparent.

The progression of the protagonist’s disease, which ultimately leads to his on-camera death, is noted in part by the appearance of Kaposi’s sarcoma, or lesions, on the actor’s face.

“The [sarcoma] lesions represented a visual shorthand,” Hart said.


“From the moment the lesion-centered imagery began to surface in U.S. society,” Hart wrote, “members of the gay community insisted that AIDS must be viewed as a disease and not a divine judgment.”

In 2020, Hart wondered about the degree to which representations of the Covid-19 pandemic will ultimately parallel the trends he has spent much of his career analyzing.

“That is one reason why learning something about the representation of AIDS in the media and how it contributed to social construction matters,” he said. “Because there will be other pandemics coming, and maybe for the next one we won’t blame the victims so easily.”

**COUNTERING COVID-19**

In the wake of the novel coronavirus, Jie Zhuang, assistant professor of communication studies, paused her research on mainstream media coverage of live organ transplants to address the pandemic.

She looked at ways to motivate healthy Americans between 18 and 45 — those less likely to encounter deadly consequences from Covid-19 — to embrace protective measures such as face masks.

Zhuang turned to the crowdsourcing platform Amazon MTurk to measure participants’ perceived risk by asking them to rate the truthfulness of the statement “I am susceptible to Covid-19.” She also assessed their views concerning social norms of precautions by measuring responses to statements like “Many people around me wear face masks to prevent Covid-19.”

Counterintuitively — and to her surprise — Zhuang discovered that when those surveyed felt threatened and personally vulnerable to Covid-19, their expressed intention to comply with social norms and adopt protective measures like wearing face masks remained the same or decreased.

Zhuang’s research also revealed that those who felt less threatened by the coronavirus tended to express a stronger motivation to fall in line with social norms and observe the safeguarding measures communicated by health professionals.

Those findings have relevance for anyone in academia or health care who is trying to craft effective messaging, she said.

“This research,” Zhuang said, “suggests that caution be practiced when social normative approaches are used in campaigns targeting young people, who are known to be susceptible to social normative influence.”

**SOCIAL NETWORK NEWS**

Zhuang’s colleague Qinghua Yang also focuses on strategic messaging by looking at how to motivate adults to improve their health.

“More researchers are paying attention to how we can use methods to persuade people to quit unhealthy behavior like smoking or substance abuse and how to adopt healthy behavior like physical activity and eating fresh vegetables,” said the assistant professor of communication studies.

Social media, Yang said, plays a key role in contemporary communication. Research
from health care consulting firm ReferralMD indicates about 30 percent of adults share information about their health on social networking platforms.

Her 2018 paper published in the Journal of Health Communication focused on instances in which cardiovascular health-related tweets were shared on Twitter, with retweets serving as the metric to evaluate a post’s impact.

Yang and her co-authors from the University of Pennsylvania identified 1,251 relevant tweets posted between 2009 and 2015. They coded the tweets according to novelty, utility, theme and source. They examined how some users took to Twitter to ask questions, while others shared personal experiences. Some also tweeted recommendations for certain doctors or treatments.

The goal of the research, Yang said, was to gain a better understanding of what constitutes an effective message on a platform where users had only 140 characters to connect with others.

Social media has gained relevance for public health, the study contended, because “one-third of U.S. individuals are using social media to find health information, share their symptoms and offer options about doctors, drugs and treatments.”

Yang’s team concluded that users tended to share tweets that included certain linguistic features such as exclamation points and hashtags. Tweets coming from organizations enjoyed a greater likelihood of being retweeted than those posted by individuals.

“Nonhealth organizations could be perceived as less credible,” Yang said, “given that they are not related to health and may have self-interests involved in posting the tweets.”

**EFFICACY OF ADS**

Like Twitter, advertising is known for its efficiency: Ad agency creative teams work to convey messages in as little as 30 seconds, and sometimes even less. For the last 20 years, Macias has studied the efficacy of direct-to-consumer advertising for drugs — those milquetoast broadcast campaigns that target consumers in their homes.

Despite declining network TV viewership, ad dollars spent by pharmaceutical companies on the airwaves continue to grow. Marketing research organization WARC expected TV advertising in the health and pharmaceutical category to hit a record $62.9 billion in 2020.

In two minutes or less, drugmakers must convey a wealth of information, from the symptoms a product targets to potential side effects. Most drug ads, however, look largely the same, Macias said. Those similarities dilute the messages’ strength because listeners tend to tune out.

Pharmaceutical ads on TV and the internet often feature smiling family members at home or in a sunny recreational setting with a voiceover describing the medicine and how a consumer feels after using it. But the advertisements do little to educate viewers about the health condition related to the drug and typically neglect to mention much about the disease’s prevalence and causes.

“Ads can be persuasive and have a lot of power, but often only part of the message gets through,” said Macias, who authored an April 2020 article on the subject in Health Marketing Quarterly.

In highlighting the fact that drug advertising often falls short of resonating with consumers, Macias hopes to spark change in the industry, spurring ad agencies to alter their approach in favor of putting more emphasis on educating viewers.

“I have a deep desire to help people,” she said. “I’ve felt compelled to do health communication research in trying to help people be healthier and live better.”

—Wendy Macias, associate professor of strategic communication and associate dean for undergraduate studies
COURTING CONSUMERS

Lindsay Ma studies how communication can restore customer loyalty after a business blunder.

BY KRISTIN BAIRD RATTINI

The story is familiar: One partner in a relationship betrays the other, then tries to win the jilted partner back. Is this the plot of a new rom-com on Netflix? Nope, although romantic entanglements did serve as inspiration for Liang “Lindsay” Ma, assistant professor of strategic communication. Instead, Ma studies the relationships between corporations and their customers—particularly how companies attempt to woo back consumers after fiascos of their own creation.

Ma specializes in crisis communication—a big challenge for companies in the social media age. “It puts a much higher demand on organizations for how quickly they have to respond to a crisis,” Ma said. “If they don’t get their side of the story in the news or heard by their consumers, other people will.”

If a company causes a preventable crisis, the stakes are high to get the message right. For example, look to 2016, when Volkswagen agreed to pay $14.7 billion to settle an emissions-cheating scandal that affected more than 11 million diesel vehicles worldwide. When the scandal broke, executives denied any wrongdoing. They later offered $500 in compensation per affected owner. Instead, outraged customers demanded a buyback of rigged vehicles.

“A crisis is the most challenging moment for the relationship between organizations and stakeholders,” Ma said. “When there is a preventable crisis, consumers usually feel more betrayed.”

According to situational crisis communication theory, a key framework in public relations, a company’s response should be driven by how the public assigns responsibility for the crisis. But Ma thinks companies need to also consider a different factor: How much the crisis threatens the essence, or key attributes, of their brands. She explored the theory in her paper “How the Interplay of Consumer-Brand Identification and Crises Influences the Effectiveness of Corporate Response Strategies,” published in the International Journal of Business Communication in 2020.

A consumer purchase is more than a financial transaction that fulfills a need. A psychological component exists in a concept called consumer-brand identification. “It’s when a consumer identifies with a brand and feels it helps them express what kind of person they are,” Ma said. At the heart of this identification are shared defining attributes, those essential traits that exemplify a brand and represent how consumers envision themselves.

Previous literature argued that if a company had a strong, positive relationship with stakeholders before a crisis, those bonds would buffer the negative impacts of a crisis. Ma questioned if that were always the case. “I thought about it in terms of a romantic relationship,” she said. “If a person dated someone for 10 days versus 10 years, the person who dated for 10 years would feel more hurt or betrayed.”

Ma conducted an online experiment to test how brand identification influenced reactions to hypothetical crises involving familiar companies. Participants identified with Apple for its innovativeness and with Whole Foods for embracing a healthy lifestyle. One of the two hypothetical crisis scenarios for each brand directly threatened the shared defining attribute: that Whole Foods sold nonnatural food in its stores or that Apple had stolen technology.

As Ma expected, the buffering effect of strong identification with the brand was much weaker when the preventable crisis directly threatened the shared attribute. “That attribute not only represents the core meaning or value of the brand,” she said, “it’s an attribute that consumers consider part of their self-concept.”

“Her research contributes to the crisis communication literature by providing a refined perspective on the type of threat a crisis brings to the organization,” said Monica Zhan, assistant professor of communication at the University of Texas at Arlington, who co-authored a 2016 paper with Ma. “Specifically, when a crisis threatens the defining attributes shared between a brand and its consumers … crisis responses are less effective.”

Ma concluded that among the standard public relations tools, compensation is the most effective way to reduce consumers’ negative reactions to a crisis. In Ma’s hypothetical scenario, Whole Foods customers received a refund for the products that were wrongly labeled organic.

But Ma also proposed a new strategy, one she calls identification-intensifier. “Organizations need to try to rebuild their core identity [after a crisis],” she said. “Then they can remind stakeholders that the core identity is even stronger and that they’ll make sure it’s not going to be compromised again.”

She thinks that message, communicated frequently, will be particularly effective for corporations undergoing a crisis. “Brands should keep open and frequent communication with their consumers, especially those who have a very deep psychological connection with them,” she said, “because those are the consumers who will help you get through this time of difficulty.”

ILLUSTRATION BY GETTY IMAGES | Z WEI
TEACHING FOR A KINDER WORLD

Miriam Ezzani champions self-reflection and anti-oppressive practices to help ensure all students have a chance to succeed.

BY RACHEL HEDSTROM

The 21st century’s sweeping social justice movement is calling for comprehensive reforms, including in the way schools operate. Miriam Ezzani, assistant professor of educational leadership, is investigating how teachers can embody compassion and inclusiveness to ensure racial equality in their classrooms.

Systemic racism marginalizes and criminalizes Black males in particular. In addition to the widely reported racial disparities in the U.S. prison system, more than 7 percent of African American males do not complete high school or obtain a GED equivalent, according to the National Center for Education Statistics. Educational inequalities translate into future disadvantages such as lower income, poorer health and a higher likelihood of involvement in the criminal justice system.

Ezzani’s research, published in the February 2020 Journal of School Leadership, details a successful approach to disrupting imbalanced educational outcomes. Through reflective and humanizing practices instituted at an elementary school with a diverse student body, one principal showed how the education system could learn about battling racism.

Ezzani’s case study centers on the work of Ms. DiFalco (a pseudonym), principal of an elementary school with a disproportionate share of disciplinary measures against its Black students. African Americans made up about 15 percent of the school’s population but accounted for more than 80 percent of written discipline plans.

In DiFalco’s two-year study period, DiFalco spent about half of her time in classrooms monitoring teachers’ behaviors and facial expressions. She then met privately with teachers to reflect those mannerisms back to them. The principal’s plan was to help educators understand what it looked and felt like to be a student in their classrooms.

This process of critical self-reflection is profound, Ezzani said. “We all come with a certain worldview: Some come with a narrow lens and some with a wide lens. … When you take teachers through this self-reflective process, this critical self-reflection, you help them ask questions of themselves including: ‘Why do I have specific beliefs about certain groups of students?’ ”

From personal coaching with teachers to the implementation of new schoolwide procedures, DiFalco’s approach addressed systemic racism on the individual and institutional levels. Staff also began lining the hallways each morning to make eye contact with students and greet them by name.

Ezzani called DiFalco’s approach “renegade leadership,” an intentional advocacy for anti-oppressive systems, no matter the priorities set by the school district. “She really shifted her allegiance from the district to the students.”

Keeping young students off disciplinary plans corresponds to a lower likelihood of involvement in the criminal justice system. A Texas Criminal Justice Coalition report, “Reversing the Pipeline to Prison in Texas: How to Ensure Safe Schools AND Safe Students,” showed that students who are suspended and/or expelled are more likely to drop out and end up in the juvenile justice system. Those who are incarcerated as juveniles are 23 percent more likely to be jailed as adults.

Alarmingly, students of color, students with special needs, boys and children in foster care are consistently overrepresented in suspensions and expulsions. Before DiFalco’s reforms, Ezzani said, her elementary school was a strong pipeline school.

To stem the flow, DiFalco helped teachers identify ways they could improve their classrooms. Teachers engaged in weekly group accountability meetings. They also documented students’ academic or behavioral challenge areas.

Disciplinary numbers were monitored closely by the principal, who combined the quantitative perspective with qualitative information gained from observations. Her goal was for disciplinary actions to mirror the makeup of the school’s student population.

The multipronged strategy diminished disciplinary referrals of Black boys by up to 90 percent, Ezzani said. “She was expecting the numbers to go down, and they did.”

At TCU, Ezzani takes her educational leadership students through processes similar to those DiFalco employed. She wants them to explore their biases and understand the influence they can have on other education professionals.

“Her approach to cultural profficiencies is to start within, to examine your own upbringing and experience with isms: racism, sexism, ableism, religionism, any ism that comprises bias,” said Melissa Rincon, principal of William James Middle School in Fort Worth and a PhD student of Ezzani’s. “You look with a critical eye at how those isms manifest within yourself and your view of the world, and then you start to move outward.”

Rincon began the 2020-21 school year with cultural proficiency training and introspection for her teachers. Her intent was to break routine and unconscious practices that do not serve children of color. Change is a process and an ongoing conversation, she said, and not a “one-day professional development check box.”

Rincon said her goal is to create an inclusive school environment that allows all children a chance to focus on their futures. “Students will feel welcome and engaged, and they’ll be learning. That’s our end goal: We want them learning.”

LISTEN TO A PODCAST with Miriam Ezzani at endeavors.tcu.edu
BEFORE YOU HEAR IT

James Rodriguez is analyzing the factors of optimal and sustainable vocal health.

BY TRISHA SPENCE
Hitting the correct notes is paramount, but an accurate rendition of do-re-mi-fa-so-la-ti-do is not a perfect indicator of a singer's vocal health.

When singers feel fine after going up and down scales and sustaining notes, they may think their voice is perfectly healthy. But veteran baritone James D. Rodriguez knows that problems can begin before audible signs of poor vocal health emerge.

Rodriguez, assistant professor of voice and voice pedagogy in TCU’s School of Music, surveyed opera and musical theatre students at TCU in a pilot study as they practiced for performances. His foundational question was straightforward: How does data taken through vocal measurements correspond to a singer’s feeling of health?

“The point of the study is to see where students feel they are vocally versus what science tells us,” Rodriguez said. “Young singers are still becoming aware of their instrument — their body. Singing is our body and can definitely be an Olympic sport.”

The certified vocologist met with the students in the study at three points before a performance: the start of the semester after a restful break, midway through the semester in the throes of rehearsals and the week of opening night.

He asked them questions about age, warmup routines, role details (single or double cast), sleep patterns and water intake.

Rodriguez then recorded them performing a series of vocal exercises.

To determine the s/z ratio — a measure of vocal function — students took a deep breath and made the “s” and “z” sounds as long as they could. They also read “The Rainbow Passage,” a voice and articulation drill published in 1960 that samples the variety of sounds and mouth movements used in everyday speech. They finished by softly singing a high note, repeated in sets of three.

Rodriguez ran the recordings through VoceVista, software that produces spectrograms, or voiceprints. He could compare measurements taken at different times during the rehearsal process to note changes in vibrato and formants, which indicate the shape of the vocal tract.

Rodriguez said vocalists could have the false impression that pushing the voice through hours of rehearsals is fine if they feel OK. The professor, an active performer who has garnered many professional operatic credits, including the title role in Mozart’s opera Don Giovanni, said he wanted to confirm or disprove singers’ intuition with data.

“The prolonged misuse of the voice is going to lead to bigger issues,” he said. “To me, it was very important to find a way to help students address that.”

In a future phase of the study, Rodriguez plans to include visual snapshots of the vocal folds in the larynx, taken with scoping equipment to see the voice in action.

For now, Rodriguez is intrigued by what the study reveals about the culture of vocal performance at TCU. In his one-on-one lessons with students, he noticed they would sometimes cancel a lesson or complain about a tired, dysfunctional voice.

“It became alarming to me,” he said. “How are we equipping these young people to find success?”

He said students sometimes don’t consider voice preservation until the week of the performance, and by then it could be too late to give the vocal folds sufficient rest.

“I think part of the whole reason why students should be here, some portion of it should be vocal health and vocal longevity,” he said. “We all have a part to play in the student’s development.”

Jesus De Hoyos Jr., a doctoral student in voice pedagogy who helped Rodriguez collect data for the study, agreed. The study “allows us to best understand ways to go about teaching students and more information about understanding what they need to be successful.”

De Hoyos said he understands how the pressures of singing for hours every day can be amplified by the stress of being a college student. And sometimes the surge of adrenaline that comes with a performance can distort feelings of vocal health.

Though voice instructors advise students to hydrate and sleep eight hours a night so vocal folds can rest, the risks of disregarding this advice haven’t been quantified. Rodriguez’s research can show students how much their voice will suffer or improve based on hours slept or liters of water consumed.

“In music, we delve into so many nebulous and subjective terms,” De Hoyos said. “We need something that is more concrete, more measured. If your voice is tired, what does that mean exactly? There is a way we can actually quantify when a person is tired or dehydrated.”

WATCH A VIDEO with James D. Rodriguez at endeavors.tcu.edu
Big data is becoming, well, a big deal at TCU. Large-scale number crunching has spread across the campus in directions few people could have imagined a decade ago.

From tracking the movement of galaxies to reworking Shakespeare’s sonnets, faculty and students are launching investigative pursuits using personal computers connected to supercomputers or cloud-based databases.

The AddRan College of Liberal Arts offers a minor in digital analytics. When the program launched in fall 2017, “we were hoping for 20 students, and we passed that number very quickly,” said Curt Rode, a senior instructor in TCU’s department of English who helped create the program. “There’s been tremendous interest from students with little [official] advertising. … We now have over 70 students.”

The liberal arts college undertook a cluster hire to bring more big data experts to campus. Rode, who is also associate director of the Center for Digital Expression, said that not many private universities of TCU’s size have more hands-on engagement with big data.

Big data applications for business and science students seem logical. But how so liberal arts?

“The emphasis on digital culture, digital technology, data analytics and digital humanities — and all other things big data — will further enhance our liberal arts majors’ marketability and preparation for a global economy,” said Sonja Watson, dean of AddRan.

Watson, who took the position in May 2020, has embraced the big data initiative launched by her predecessor, Andrew Schoolmaster. Big data already had been applied at AddRan in such departments as political science, criminal justice, geography, economics, history and English, Schoolmaster said. So it made sense to foster more collaboration and more interdisciplinary synergy across the university.

DATA DEFINED

Just what is big data? According to the Brookings Institution, they are massive datasets used by governments, major corporations, consulting firms and academic researchers to conduct analyses, unearth patterns and drive decision-making. Computer-enabled access to astronomical amounts of information has paid off, Brookings reported, with “a wide range of benefits, such as informing public health research, reducing traffic and identifying systemic discrimination in loan applications.”

Among the three professors in AddRan’s initial cluster hire was geographer Xiaolu Zhou, who used big data to analyze Chicago’s
“The emphasis on digital culture, digital technology, data analytics and digital humanities — and all other things big data — will further enhance our liberal arts majors’ marketability and preparation for a global economy.”

Sonja Watson, dean of the AddRan College of Liberal Arts

bike-sharing program next to travel patterns of the city’s residents. “Users check out the bike at one station and return it at another,” Zhou said. “If not properly balanced, the system is not optimized.” In a paper published in a 2019 Journal of Transport Geography, he also determined what factors influenced people to choose a bike-share over hailing a taxi.

Zhou, an assistant professor of geography, focuses his research on strategies for sustainable urban development. In another 2019 study, this one published in the ISPRS International Journal of Geo-Information, he employed big data to analyze Atlanta’s rental housing market.

He said he mined Craigslist ads and factored for location, amenities and apartment description, then processed the data to craft a model that predicted rental prices for particular properties. “The overall goal was to predict the price based solely on textual description.”

As in all cities, some rental listings were misleading or downright false. But with big data, Zhou said, “Data will speak for itself. The fake data will be outliers, teased out.”

The Chinese-born, Singapore- and U.S.-educated professor also harnessed big data to create a digitally animated map that showed where Covid-19 cases rose and fell across the United States during the early months of the pandemic, making the virus’s spread understandable at a glance.

Working with Johns Hopkins data, which required cleaning (fixing or deleting corrupt or inaccurate data) and reformatting, he envisioned a more user-friendly approach. “Why not create a dashboard to show where the hot spots?” he asked. “What is the trend?”

A SEX-OBJECT SPREADSHEET

For a capstone project required for his minor in digital culture and data analytics in 2020, Paul DeHondt, then a senior, showed how big data could be used to examine popular culture.

DeHondt wanted to see if Hollywood’s depiction of women as sex objects had changed over time. To answer the question, he analyzed and compared the 10 top-grossing films of the golden age of cinema, 1930-1949, with the top 10 hits released between 2000 and 2020.

DeHondt used big data to determine the top films of the respective eras. On BoxOfficeMojo.com, an industry tracking website, he found the dataset of top lifetime grosses and pasted it into a spreadsheet.

He then used a popular software tool called Python to clean and analyze the box-office gross profits. After eliminating other time periods, he split the data between the two periods on which he was focusing. He then reduced the datasets to include only the top 10 grossing films of the two eras.

He then delineated examples of the “male gaze,” a term coined by British filmmaker and scholar Laura Mulvey to describe the sexualized way of observing women that provides men with voyeuristic pleasure.

Next came the time-consuming part. Notebook in hand, DeHondt watched all 20 films — some more than three hours long — marking down instances of what he deemed the male gaze. Results were not totally unexpected. The 1930-49 era had far more instances: 51 compared with 24.

Despite improvement, “Hollywood still objectifies women today in order to satisfy male gaze,” DeHondt’s study concluded.

DeHondt, now a producer for a virtual reality company in Dallas, said his research topic — what he considers anachronistic, sexist filmmaking — veers into the subjective. Even so, his intention was to help audiences become “better film viewers” who more readily recognize poor representations of women.

WAS JANE EYRE A MAN?

Gabí Kirilloff, another big data expert at AddRan, uses massive datasets to analyze 19th- and 20th-century literature.

In a project that ran from 2014 to 2018 and was published in the Journal of Cultural Analytics, Kirilloff, assistant professor of literature and humanities, used big data in a novel way. “I was kind of curious if a computer could guess if a character was male or female based on what the character was doing,” she said.

Looking at 3,329 novels written between 1800 and 1900, she trained a computer model to select the gender based only on verbs a character performed. “A computer could correctly guess about 81 percent of the time,” she said. “Only for six novels did the computer get them backward — one of which was Jane Eyre. The data analysis is a starting point. It raises more questions than it answers. In some cases, the author was creating an unorthodox, spunky woman, as in Eyre.”

In her dissertation research, some of which is under review for publication in the journal College Literature, Kirilloff used a computer to differentiate narration from dialogue — a difficult task because some Victorian novelists were not scrupulous about the use of quotation marks. “Most books in the 19th century are just a hot mess,” she said.

Kirilloff’s solution was to create a script that accounted for numerous scenarios. “It puts quotation marks where they should be,” she said. “It’s not perfect, but I did a small test on 30 novels, and it was 80 percent accurate.”

The digital humanities specialist also applied her data-informed approach to identify a literary device variously called authorial intrusion, reader address or “dear reader” — akin to an actor’s aside to the audience.

“African American authors often use this device to question white readers’ ability to fully empathize with Black characters,” Kirilloff said, citing Harriet Jacobs writing in Incidents in the Life of a Slave Girl, “O reader, can you imagine my joy? No, you cannot, unless you have been a slave mother.”
Reader address was “very popular in the 19th century but never went away,” Kirilloff said. “Modernists don’t totally stop using it, although Victorians were more likely to call the reader ‘reader,’ while modernists would call the reader ‘you.’”

PAYING CASH FOR THE SALAD BAR
In the Neeley School of Business, Sarang Sunder used big data to solve a seemingly intractable problem American businesses face: missing or partially observable data on customers.

Creating a profile of customers based on purchase history is easy when they hand over credit cards or use a loyalty card. “But the system breaks down when customers use cash,” said Sunder, assistant professor of marketing.

And then there are those who pay with credit cards sometimes, greenbacks other times, he said. “The company knows that $5 was spent; it just doesn’t know who paid for it.”

Cash transactions can account for as much as 40 percent of total sales, especially in gas stations and restaurants. Ignoring the cash customer when analyzing data, he said, could lead a company to make suboptimal marketing decisions.

For two years, Sunder and his research collaborator Yi Zhao, a marketing professor at Georgia State University, have been trying to decipher customer behavior when different payment instruments are used to predict behavior for all patrons. “How do you construct a holistic view? How do we characterize customers even though some behavior — say, cash transactions in this case — is invisible to the firm?” Sunder said. “The issue becomes even more complex when there are so many assortments and choice combinations that the customer has.”

For instance, which of the numerous combinations of salad bar items would a patron select when there are so many choices? Developing meaningful customer insights from data becomes especially difficult when the customer information may not be fully observable or when customer choices may include a large assortment of items.

In a recent working paper, Sunder and Zhao took sales data from a national fast-food chain and applied a modeling approach to figure the probabilities that particular customers would use cash. How? They developed a methodology to address the problem of missing data in a way that was sufficiently scalable to handle big data.

Once a customer’s information is matched with potential cash transactions, the company can then apply standard statistical techniques to analyze shopper behavior using a more holistic view.

In this way, the company has a better picture of who the customer really is, Sunder said, which allows the business to build robust marketing strategies and develop deep insights from data.

WRITTEN IN THE STARS
Peter Frinchaboy’s view stretches far beyond suburban fast-food franchises. The astronomer uses big data to study the chemical makeup and other characteristics of stars and galaxies deep in space. TCU is an

“One of the biggest surprises is that stars don’t stay where they are born in the Milky Way,” said Frinchaboy, associate professor of astronomy. “They migrate.”

Astronomers have developed theories that such celestial bodies might shift around, said Frinchaboy, overall survey coordinator for SDSS-IV, which is the fourth generation of the survey, operating from 2014 to 2020. “But we were able to show through chemistry that the migration [is] happening. It had been debated. Now the debate is over.”

The survey takes light from a star and puts it through a prism. From that, he said, “we can see all of the different absorption lines of different chemicals — the chemical fingerprint.”

To test the migration theory, his team of sky survey astronomers collected millions of data points, including location in the galaxy, speeds of stars and chemical measurements of tens of elements per star.

“I remember we were happy to have data for a couple of hundred of stars,” said Frinchaboy, who has published his research in the *Astronomical Journal*. “And now we’re working with [over] half a million.”

**LATE-NIGHT GAMING**

At Neeley, Minakshi Trivedi and Sarang Sunder used big data to analyze the effectiveness of a South Korean policy that banned teenagers from playing video games at late hours. The ban was prompted by an addiction crisis that resulted in neglect of school activities, dropping grades and increasing isolation and depression, leading in severe cases to suicide.

But how effective was this effort?

Trivedi, the J. Vaughn and Evelyne H. Wilson Professor of Marketing and chair of the Neeley Analytics Initiative, and co-author Sunder analyzed data from an online fantasy baseball game and found that casual players did indeed play less. As the researchers explain in a 2020 *Marketing Science* study, heavy gamers — the top 10 percent — found ways to work around the curfew by cutting into school and family time and in fact exacerbated their gaming-related problems.

In the long run, while the ban did prevent light players from becoming game junkies, Trivedi said, “it was of little value to the already heavy gamers. … A more nuanced approach than a simple ban on all online teenage gamers would be required to find a solution to what is a growing global problem.”

Their findings may inform the design of other regulatory and policy solutions aimed at curbing the negative impact of social excesses, such as sugar taxes to curb obesity, heavier excise taxes to prevent smoking and bans on plastic bags to encourage eco-friendly behavior.

More importantly, big data could play a critical role in proving whether these attempts work and, if so, why.

And these TCU students and researchers from an array of academic disciplines have shown that the possibilities for big data are as endless as the numbers themselves.
As a newly out-of-college nurse in an intensive care unit, Katie Lano knew the job would be demanding. But the TCU graduate, who launched her career in 2019, wasn’t prepared for the fear and stress dealt by the outbreak of a deadly new disease.

“That was something that was hard to adjust to — adjusting to death,” said Lano, who has been on the hospital front line of caring for intubated Covid-19 patients.

Lano said she meditates regularly to deal with on-the-job stressors. She learned the skill as a TCU student in an initiative that became the Bebout Wellness Center for the Helping Professions in the Harris College of Nursing & Health Sciences.

“You’re taking care of people and explaining to them what they need to do to be healthy,” Lano said, “and then the nurse has to practice that as well.”

TCU nursing faculty members including Danielle Walker, Pam Frable, Shirley Martin, Ann Johnson, Sharon Cancini and Caitlin

From left: Sharon Cancini (with soccer ball), Ann Johnson, Pam Frable, Caitlin Dodd and Danielle Walker are among the Harris College of Nursing & Health Sciences faculty promoting mindfulness techniques to counteract stress in nursing students.

BREATHING ROOM

Bebout Wellness Center helps Harris nursing students learn to relieve stress.

BY MARIANA RIVAS
PHOTOGRAPHY BY RODGER MALLISON

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Dodd helped launch the Bebout center in 2020 to foster wellness practices among nursing students. But the initiative began in summer 2018 with four accelerated baccalaureate students who were asked to develop a project that was personal to them and could influence their future practice.

“At the time, we were so overwhelmed with stress that we couldn’t think of anything,” said Annie Tague, an alumna who was a student in that class.

Frable, associate professor of nursing, offered them the opportunity to put their proposal into action in the fall 2018 public health nursing clinical. Since then, every class has built on the previous semester’s work to move the initiative forward.

“At the beginning the initiative has been by the students, for the students with faculty champions, mentors and coaches,” Frable said. “It’s a collaboration between faculty and students, with students being empowered to lead.”

Walker, an assistant professor of nursing who developed an elective exploring mental health through literature, took the lead on securing the grant that launched the Bebout Wellness Center.

Funded by the Bebout Family Foundation, the center seeks to support wellness research and provide weekly programming to promote a culture of health.

Sharon Bebout’s daughter was a nursing student at TCU when she took her own life in 2010. The Bebout Family Foundation has since been involved with TCU nursing, setting up a scholarship and most recently establishing the center.

“I think that this type of initiative and this type of program needs to be taught to every person because life is stressful,” Bebout said. “We’re just so busy all the time, and we just don’t really know how to take care of ourselves necessarily in the best way.”

The center includes the Amanda Bebout Resilience Room, a space for quiet meditation for nursing students in the Annie Richardson Bass Building, the headquarters for TCU Nursing.

“You can think about the center as an umbrella that helps connect multiple wellness initiatives,” Frable said.

It isn’t just the students who need better ways to manage stress.

Nurses across the country were overworked before the pandemic erupted. A November 2019 study published in *BioMed Central Nursing* found that 1 in 3 U.S. nurses reported burnout symptoms, including fatigue and lack of motivation. And the effects of the more demanding protocols, panic and mountains of personal protective equipment that have accompanied the novel coronavirus are yet to be fully known.

In a telling finding, nurses who experienced burnout symptoms were more likely to make a mistake than those who didn’t.

“Nurse wellness and the quality of patient care is closely linked,” Walker said. “If we expect our students to go out and provide the best, safest care they can, we need to equip them to do that in every way possible.”

Annie Thompson was in Sharon Canclini’s spring 2020 public health clinical, which hosted Hacks and Snacks, an orientation program to ease the nerves of new nursing students.

“Nursing students really put a lot of pressure on themselves and are used to kind of succeeding, and then you get thrown into this crazy college curriculum,” said Thompson, who endured three stomach ulcers from stress as a student.

Danielle Walker, assistant professor of nursing (top), says nurse wellness is linked to the quality of patient care. Shirley Martin, assistant professor of nursing (above), encourages practicing meditation to help center nursing students.

Two nursing faculty members are collaborating on research to measure stress in nursing students and how mindfulness affects such tension. Their goal is to create strategies for intervention.

Ann Johnson and Shirley Martin, both assistant professors, are studying well-being and mindfulness behaviors in nursing students at TCU, the University of Texas at Arlington and Texas Woman’s University. In addition to assessing the effects of mindfulness workshops, they are measuring stress levels over time via hair cortisol and other psychological tests.

They recently completed a study examining well-being in 417 nursing students. Early findings indicate that students who self-report a mindfulness practice fare better than those who don’t.

“We see that students who had any mindfulness practice, compared to none, tend to be happier, more satisfied with life and less stressed,” Martin said.
KETO or HIGH CARB?

The department of kinesiology is turning nutrition research into a team sport.

BY RACHEL HEDSTROM | GRAPHIC BY MIKE DEL VECHIO

Ketogenic diets — often referred to simply as “keto” — are popular among people attempting to lose weight and improve mental acuity. This diet is also gaining interest among athletes who believe it can help improve performance. But does it?

Literature on the effects of a keto diet — one that is very low in carbohydrates — on athletes is scarce. To help bridge that gap, faculty, graduate students and undergraduate students in kinesiology are comparing a ketogenic diet with a diet high in carbohydrates. Their purpose is to evaluate the diets’ effects on energy expenditure, blood lipids, sleep quality, appetite, and cognitive function and mood in cyclists and triathletes.
KETO vs. HIGH CARB BY THE NUMBERS

**KETGENIC DIET**
5%-10% energy from carbohydrates

**HIGH CARBOHYDRATE DIET**
65%-75% energy from carbohydrates

*Americans typically consume 50.5% of their energy from carbohydrates.*

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**Sleep**
Sleep issues are common among athletes, and diet composition is thought to have an impact on quality and duration.

**Cognitive function and mood**
The few studies in this area have conflicting results. Some suggest a decline in cognitive function following the consumption of a ketogenic diet, while others report no effect.

**Blood lipids**
Ketogenic diets lower triglycerides and raise HDL cholesterol. They are very high in saturated fats, which may raise LDL cholesterol in some individuals.

**Appetite**
In nonathletic populations, ketogenic diets have been shown to reduce appetite. Is this the same for athletes? If so, a keto diet will affect energy intake, which could have negative effects on the immune system and reproductive function.

**Energy expenditure**
Among nonathletes, the metabolic rate after ingestion of a meal is lower for several hours after consuming a low-carbohydrate meal compared with eating a meal high in carbohydrates.

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**A well-balanced team to process data**

Meena Shah, professor and chair of kinesiology, and doctoral student Andy Kreutzer lead a multidisciplinary team of researchers that includes doctoral students Austin Graybeal and Kamiah Moss; master’s students Petra Rack, Garrett Augsburger, Kaitlyn Harrison and Ashlynn Williams; undergraduate students Emma Wichman, Jorde Trudel, Desiree Tadwilliams and Megan Conger; and faculty members Robyn Trocchio, assistant professor of kinesiology, and Jada Willis, director of interprofessional education and assistant professor of nutritional sciences.

Shah said that a sizable research group, with members who represent a diversity of study interests, creates more opportunity for data collection. This in turn gives undergraduate students the opportunity to be key players on the team alongside experienced researchers.

“Collecting data, administering the drinks, analyzing the dietary records — they were helping with many aspects of the study,” Shah said. “This study needs undergraduate students, and they learn so much more by working together as a team than they might have individually.”

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Study: The effect of diet composition on performance, energy expenditure, blood lipids, subjective and objective measures of appetite, sleep quality, cognitive function and mood in highly trained cyclists.

BRIGHTER FUTURES

Recent TCU graduates help North Texas students forge a path beyond high school.

BY LISA MARTIN
As the oldest of four children of Nigerian immigrants, Timi Ijabiken understood little about how to make his way to college in the U.S. From applications and SATs to scholarships and financial aid, the process of pursuing higher education felt out of reach at times for this first-generation college student from Arlington, Texas.

Ijabiken, who now holds a 2019 degree in psychology, credits TCU’s College Advising Corps for playing a pivotal role in his future. TCU’s chapter, like all chapters affiliated with the national advising organization, seeks to make college access more equitable for students who want to continue their education after high school.

The 21st-century numbers paint a portrait of persistent racial disparity in education. The American Council on Education’s 2019 status report revealed that 60.5 percent of Hispanic Americans had attained no more than a high school diploma. Compare that with 49.9 percent of American Indians and Alaska Natives, 45.9 percent of Native Hawaiians or other Pacific Islanders, 45 percent of Black people, 34.5 percent of individuals of more than one race, 34.2 percent of white people and 29 percent of Asians.

In seeking to increase college matriculation rates for marginalized students through its network of advisers on high school campuses, TCU’s College Advising Corps hires young Horned Frog graduates to work with high school seniors.

As a student at Sam Houston High School in Arlington, Ijabiken met regularly with Katherine Rodriguez, the TCU-affiliated adviser working there.

“She helped set me on the trajectory I am on right now,” said Ijabiken, who is currently “paying it forward” by working as an adviser at his alma mater. He’s among 54 TCU college advisers scattered throughout low-income, heavily minority high schools in seven school districts in Dallas-Fort Worth.

Matt Burckhalter, director of TCU’s arm of the national organization, said the campus program began in the 2011-12 academic year with 16 college advisers fresh out of TCU.

New graduates, or “near peers,” as Burckhalter describes them, relate better to high school students in large part because of the narrow age gap.

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Dr. Stuart M. Flynn, founding dean of the TCU and UNTHSC School of Medicine; Phil Hartman, dean and professor of biology in the College of Science & Engineering; Christopher Watts, dean and professor of communication sciences & disorders in the Harris College of Nursing & Health Sciences; and Floyd Wormley Jr., associate provost for research and dean of graduate studies, discuss how student research could lead to significant impacts in all realms of health care.

What is the importance of research in training future health care practitioners?

**Flynn:** First of all, I think all of us should have the inquiry gene. I think physicians definitely should be inquisitive. Otherwise, you’re only as good as where you stopped asking the question, and that’s not where you want your physician to be. We’re very overt about that. We let students know before they come to our school that they will be asking a researchable question. If that makes them uneasy, then we’re just not the right medical school for them.

The second thing is the issue of lifelong learning, which everyone talks about, but when you actually ask them, “Well, what does that mean?” it’s very hard to answer. I think this really helps me answer it: If you’ve actually asked the researchable question, you’ve designed your research protocol, you’ve done it, you have data and you interpret them, what you’ve just done is what you will spend the rest of your life reading that others have done in your discipline. You have both a feel for what that was like, and it also then allows you to have an element of how to critique it.

**Watts:** The cornerstone of clinical practice in health care is evidence-based practice. This is a requirement. It’s something that we train every student in the Harris College of Nursing & Health Sciences in, and there are three components to evidence-based practice.

One is the needs of the patient. What does the patient require? What does the patient want? The second is the experience and skills of the health care professional. How do the knowledge and skills they have align with those patient needs, what the patient wants, the outcome the patient wants? The third is research evidence. All three of these components are equal in value. Any decision that a health care professional makes should be based on the most current and strongest research evidence that validates the assessment that they’re going to do, the treatment they may give, the counseling they give to the patient. Research is critical to health care practice.

In the medical school in particular, students are required to have an ongoing research project from the start. Why is incorporating research throughout the pre-health programs such an imperative at TCU?

**Flynn:** When I arrived at Yale as a faculty member, they had this interesting graduation mandate of a four-year research thesis. I’d never heard of such a thing — medical school is busy enough as it is. Why would you impose that on everybody? A lot of us did research in medical school, but it wasn’t mandatory. As I settled in there, I started to see the immense value of that. I hosted a lot of medical students in my research lab, and I really became wedded to the tremendous value of what these students were getting. [Other] medical schools might mandate a month of research between
the first and second year, and students have to get up in front of their classmates and give a presentation. That’s fantastic. But that’s not what we do. We actually run the marathon with the four-year research thesis; we don’t run the hundred-yard sprint. But I’m wedded to this. That’s why when I came here, we set this up, and the downstream value will be just invaluable to our graduates.

Hartman: In the College of Science & Engineering, we have a significant number, maybe 40 percent of our undergraduates, do research in a substantive sort of way, much higher than at most institutions. Usually when people do research, particularly at the undergraduate and medical school level, they tend to be widgets. They go in and do a very fine, very narrow, very prescribed sort of thing where, frankly, you don’t need a high level of intelligence to do it. So the inquiry, the natural curiosity that Stuart spoke of, you don’t really need that in many undergraduate research opportunities.

I’ve spoken with individuals who really had no idea what they were doing, saying, “I pipette solution A into tube B.” It’s very different at TCU. The medical school has the scholarly thesis as the capstone in that experience. In the College of Science & Engineering, we are assigning students a specific project. Again, there’s the need for them to understand the literature. It’s a much more comprehensive experience. And it speaks to that element of curiosity.

Watts: For graduate nursing there is a research requirement, and undergraduate nurses have the choice to have a more in-depth research experience with a faculty member as part of their curriculum. There are dozens of nursing students who go beyond what’s in the curriculum requirements for research training. They do a mentored research project with a faculty member, and every year we highlight these at a college research symposium for students where we have poster presentations and some talks.

We’ve had hundreds of students each year participate in this. Students from the get-go are so engaged and connected with research and how research is tied to health care that it’s just part of their being, and they’re able to speak the language of science as well. It applies to what they’re learning in their health care trade.

What does a teacher-scholar model look like, and why is it important for a student to see that faculty are active in research?

Hartman: My bread-and-butter course between 1981 and 2012 was a junior-senior level genetics class. When I gave my last lecture, probably 80 percent of the material I talked about that semester had not been discovered in 1981. If I wasn’t keeping up on the field, truly keeping up, and if my degree of keeping up was to read textbooks, I would have quickly devolved into a mediocre, if not worse teacher. We simply have to be current in our disciplines. We have to attend meetings, we have to understand where science is now. And the best way to do that is to do science. I think the best teachers are actually those who are engaged scholars. They complement one another.

Flynn: Can I be a good clinician for the next 30 or 40 years after I graduated and finished my residency? The answer is yes. Am I maybe on some kind of curve of falling behind the state of the art? The answer is probably yes, no matter how much I read. However, if I’m also doing any kind of investigative work, that entails expanding my reading. If I’m going to publish, I have to be on top of my references, I have to be able to defend what they’re saying and I’m valuing them.

It’s because they have that inquisitive gene, which is exactly what we’re trying to both discover when you come here and then grow as you are here.

Wormley: It takes a lot of time to take a green undergraduate student and teach them how to do the research in a lab. The investment in our students is an investment in their lives. I see this as generational because what we do for our students helps lift them and their families and our community. When you’re training professionals, you’re training colleagues, you’re giving back to academia. One of the responsibilities that we have being in academia is that we keep it going, that we create a pedigree of individuals. I know of some individuals who’ve been in science for years, but we look back at who they trained: Do they have anybody still doing research? It’s almost seen as a failure if they don’t versus looking back and seeing a legacy.

We are preparing our students with the practical hands-on knowledge and
experience to be able to make the best and current health care decisions, to provide the best service to their patients and to always be lifelong learners. In this pandemic, we’ve leaned on our health care providers, we’ve leaned on our scientists, we’ve leaned on these people to come up with therapeutics, vaccines and medicines to get us through something that we’ve never seen before.

Those who have been trained properly notice what changes make the patient better. They’re evaluating and they’re making on-the-spot changes that actually save lives. The ability to train people to critically think and evaluate in the moment saves lives. What we do here is prepare people to be able to critically think, evaluate and make decisions that save lives.

— Trisha Spence

Editor’s Note: The questions and answers have been edited for length and clarity.

READ MORE at endeavors.tcu.edu

How is TCU helping to transform the future of health care delivery?

Hartman: In the College of Science & Engineering, we’re doing it two ways. One is we’re making relatively small but discrete contributions to our body of knowledge—that’s the pure scholarship. But I think more important than that, we are training students who are going to go on to careers in the health care professions.

Flynn: It’s absolutely what we covet. It’s a little bit multidimensional. The dimension within the medical school is to train students who are inquisitive. That’s No. 1. I think virtually everybody who graduates from medical school nationwide has a grasp of medical knowledge. That’s the baseline. The part that the patients find really missing isn’t a question of if their physician has that baseline. What they struggle the most with is the lack of listening and the lack of communication. Now that sounds really trite. A lot of doctors at other medical schools roll their eyes and ask why that’s such a big deal. If you talk to the patients, you very quickly realize why that’s such a big deal. It’s a relatively simple adjustment. It’s huge to the patient-physician interaction. So we talk about transforming health care: It starts with that interaction.

What we will do in Tarrant County — it’s already happening — is we now become a magnet for our clinical partners to recruit and hire a different kind of physician. They can hire a cardiovascular surgeon who is asking, “How do I become a part of this medical school?” That’s a big deal. That means they care enough to want to be a part of this and they know what that means because they trained in that environment. The transformation starts: You have a different kind of physician workforce in our community. It is changing under my eyes. Developing residency programs in our community changes the doctors and how they practice and that system. It changes the attraction to bring doctors into that system who like to train residents. At the end of this pipeline those hospitals are going to hire some of these trainees. It doesn’t happen overnight. You change it one step at a time.
SING LIKE A BIRD
Research on how a finch breaks into song may lead to therapies for people who struggle with language.

BY HEATHER ZEIGER

Just before an opera singer launches into an aria, she takes a deep breath. In that moment, beginning with the decision to sing, a cascade of signals occurs inside her brain. A similar flurry of activity happens in a songbird’s brain.

Brenton Cooper, associate professor of psychology, studies the physical and neurological events that occur when a songbird sings. His work also gives insight into how the human brain and body prepare to make sounds.

To predict if a bird—or a human—is about to sing, measure the respirations, he said. “One of the things I look at is the respiratory patterns— the breathing patterns— of birds before and during song.”

Birds breathe differently from humans. Avian species have interconnected air sacs encasing the lungs that fill with air as they breathe. Because these sacs are accessible from outside the body, Cooper can use a pressure monitor to know when a bird takes a deep breath.

Cooper combined his studies on the physical respiratory patterns of zebra finches with the neurological observations of Todd Roberts, an associate professor of neuroscience at UT Southwestern Medical Center in Dallas. Roberts had identified neurons in a finch’s premotor cortex that are active just before it begins a song.

“Dr. Cooper and I had been looking for an opportunity to work together for some time because both of our laboratories are interested in how vocalizations are controlled,” Roberts said.

Together they received a grant from the National Institutes of Health’s BRAIN Initiative to study how events inside the premotor cortex correspond to physical indicators of a zebra finch’s impending song. The hope is that by illuminating how the finch’s brain signals the body to sing, they can help scientists understand how the human brain initiates speech.

In the 1950s, scientists studied how songbirds learn their distinctive melodies. Findings showed that young birds learn by repeating what they hear. Birds taken from their parents and placed with birds who sing another tune will learn the song of the adoptive parent rather than the biological parent’s.

Humans also have a window of development during which they learn how to communicate, Cooper said. “We learn English from parents, and that initial auditory experience formed templates that you mimicked and imitated to develop language skills. Songbirds do the same thing.”

The key part of the bird brain in Cooper and Roberts’ research is the HVC, a neurological transit tunnel between the area of the brain activated when learning a song and the area of the brain that fires during singing. They knew that the HVC is active when a bird sings, but Roberts found that five seconds before a bird decides to sing, neurons in the HVC are active, suggesting it is helping the body prepare to burst into song.

Humans have a brain pathway controlling language that is similar to songbirds’ motor control of song production. Some neurologists theorize that this pathway is associated with Broca’s area, where defects can cause stuttering and other speech disorders. Cooper and Roberts are interested in learning how these neural networks change from a resting state to a vocalizing state. In doing so, they can draw parallels to how birds initiate song and humans prepare to speak.

Their research has applications for children experiencing delays in developing language skills and those who struggle with speaking. “Let’s take vocal fluency disorder, like stuttering in humans,” Cooper said. “One of the characteristics is an inability to initiate speech.”

If he can figure out the mechanisms of initiating speech, he can better understand what causes a person to stammer or otherwise stumble when attempting to talk.

A goal of the grant project is to learn how to control when the bird starts and stops singing using a technique called optogenetics. Roberts described optogenetics as tricking cells into being sensitive to a particular wavelength of light. He can then turn neurons on or off just by flashing a specific color of light.

Cooper said he hopes their research can help scientists develop treatments for children struggling with fluency disorders and adults trying to regain speech after a stroke or learning a second language. “If you really understand how the nervous system produces the behavior, then you should be able to systematically manipulate it and change it.”

PHOTO BY GETTY IMAGES | ANDREW HOWE

PHOTO BY GETTY IMAGES | ANDREW HOWE
They’re mothers. They’re grandmothers. They’re social workers, lawyers, therapists. And they’re survivors of sex trafficking.

They’re also advocates in the anti-trafficking movement.

The former victims, many of whom entered “the life” in their teens and left years later, are telling their stories to Mary Twis, assistant professor and graduate program director in social work.

What she learns from these firsthand accounts may lead to more compassionate and longer-lasting social services — like job training, child care or help with housing — for other trafficked individuals who are seeking to change their lives.

In the U.S., discussions of sex trafficking are often dominated by policymakers, Twis said. “The people who tend to get crowded out of those conversations are the people who have actually experienced it.”

When Twis, a veteran social worker, studied the body of academic research that addresses trafficking, she found that little was based on empirical data culled from survivor accounts. Instead, most were conceptual papers or literature reviews.

In fairness, this group of survivors can be hard to study. Some survivors are not keen to participate in studies that could retraumatize them, and others “don’t self-identify as victims,” Twis said. “A lot of times, survivors say, ‘I don’t want to keep talking about this. I
don’t want to be defined by this.’ ”

Determined to better understand the experiences of trafficked people, Twis and Kathleen Preble, an assistant professor at the University of Missouri School of Social Work, developed a new interviewing method for a study published in Violence and Victims in 2020.

Their approach explores survivors’ perspectives on their lived experiences. It emphasizes the power of storytelling and recognizes that individuals’ experiences may relate to their particular combination of gender and race.

“It’s important that she is including the survivors’ voices,” said Andrea Cimino, a research associate formerly on faculty at the Johns Hopkins University School of Nursing. “It’s imperative for researchers and practitioners to co-create anti-trafficking programs with survivors. Survivors know their needs best, and they should be the ones who are playing a central role in how we provide services to this population.”

As a foundation of the study, the researchers invited the women to reflect on their strengths. “We asked them questions about what [other] people could not see in them,” Twis said, “their deep, intrinsic strengths that could have helped them exit earlier.”

All seven study participants were women who had survived sex trafficking. Each had been out for at least two years, and each now advocates for other victims around the Midwest.

As the women relayed their experiences, Twis noticed that they used different language to describe coping strategies depending on which period of their lives they were referring to. When describing how they dealt with being trafficked, the interviewees used negative language. When discussing their exit, they used affirming language.

“They would talk about how they survived the streets by being manipulative and hustling and working over their johns,” Twis said. “But the words they used to describe how they made it out were being resourceful, being quick on their feet and always thinking one step ahead.”

Twis and Preble’s interviews revealed that in trying to leave a life of sex trafficking, women face three layers of barriers.

First come internal barriers. They must surmount what may be a lifetime of self-doubt, Twis said. “The trafficker has been telling them for years that they’re worthless, they’re stupid, they can never make it on their own.”

Next are the social barriers: They may have to escape a complex web of relationships. “They’re socially embedded in this trafficking world, and it’s not so simple just to leave,” Twis said. “Even if it’s dysfunctional relationships, that’s their social support system.”

The final barriers are systemic or institutional. Only at this step, Twis found, did the women encounter professionals like police or social workers. Yet the social services to help them stabilize and improve their lives are typically short term, limited in scope and underfunded.

One agency will often contract with another to provide piecemeal support, Cimino said. “A lot of times, the services are disconnected, so they aren’t these holistic, wraparound services.”

The implications of the findings? For one, Twis said, anti-trafficking workers could point out victims’ internal strengths to “help build them up from the inside.”

And social services seeking to aid trafficked women and girls need to be longer term and more comprehensive, Twis concluded. “If you’ve been in that world for 10 years and you have this history behind you, that makes it so difficult to establish yourself in a different world that’s putting up barriers at every single curve.”

“‘They’re socially embedded in this trafficking world, and it’s not so simple just to leave. Even if it’s dysfunctional relationships, that’s their social support system.’”

Mary Twis, assistant professor of social work

While discussing traits that led to an escape from human trafficking, victims used affirming language, describing their resourcefulness and ability to focus on the future.
BY POPULIST DEMAND

Members of a 19th-century political movement believed that shared problems required a shared solution.

BY KRISTIN BAIRD RATTINI
Last March, a headline in The Atlantic asked, “Does Anyone Know What ‘Populism’ Means?” It’s a question that Gregg Cantrell is eager and well-equipped to answer.

In his book The People’s Revolt: Texas Populists and the Roots of American Liberalism (Yale University Press, 2020), Cantrell chronicles the establishment of the Texas People’s Party and the rise of the related Populist movement in the 1890s. This regional farmers’ coalition for economic justice had an outsized legacy, espousing ideas that would reverberate throughout the following century in legislation such as the New Deal and the Great Society.

He contrasts that movement’s groundbreaking “big tent” principles and key players with today’s lowercase-p populists, as embodied by such wildly divergent and controversial figures as Donald Trump and Bernie Sanders. “The word populism has been bent and twisted almost beyond recognition today,” Cantrell said. “It has simply become shorthand for demagoguery.”

In Populism’s heyday in the mid-1890s, Texas was home to more Populists than any other state. As the Erma and Ralph Lowe Chair in Texas History and former president of the Texas State Historical Association, Cantrell can explain why Populism found such early and fervent favor in Texas.

“It was a national movement. But its principal strength was in Texas as well as the Plains states and Mountain West,” he said. “It was really born on the frontier, a place where government at all levels was weak and people often had to take matters into their own hands.”

FARM TO LABOR MOVEMENT

Cantrell spent 15 years on The People’s Revolt, drawing on newly digitized newspaper databases and his earlier research on pivotal figures of the movement.

“Gregg is at once a Texas historian and a historian of Texas,” said Andrew Graybill, director of the Clements Center for Southwest Studies at Southern Methodist University. “He knows the story of the Lone Star State inside and out, both as a native son as well as one of its leading chroniclers. At the same time, he is able to place Texas history in its wider national context, which is precisely what he has done so well with The People’s Revolt.”

The alliance lobbied the major political parties for measures to benefit farmers and laborers, such as regulation of the railroads and protections for organized labor through collective bargaining rights and an eight-hour workday, among other measures.

The alliance also put forth an innovative proposal called the Subtreasury Plan. “It would thoroughly revamp the nation’s system of agricultural credit and take the country off the gold standard,” Cantrell said. Doing so would make the nation’s money supply more flexible, relieving the pervasive credit shortage faced by farmers.

However, as a private organization, the Farmers’ Alliance did not have the power to put its plans into action, Cantrell said. “That’s when they concluded a new party was needed.”

A PLACE AT THE TABLE

In 1891, the state’s Populist groundswell gave birth to the Texas People’s Party.

The political landscape was fertile ground for a third party. “Texas was the newest of the Southern states, with a good bit of Western heritage,” Cantrell said, “so political institutions, particularly the Democratic Party, were perhaps not as entrenched there.”

From the start, the party’s approach to gender, religion and race was distinct and ahead of its time, a forerunner of inclusive modern liberalism. “[Populists] believed that all humans should have dignity, whatever their economic status, gender or race,” Cantrell said. “Not every Populist always lived up to these ideals, but you can see the culture of dignity reflected in much of their rhetoric and actions. Among the most obvious signs of it was their welcoming of women into political gatherings, inviting them to speak at conventions and to contribute editorials to Populist newspapers.”

He said this perspective of dignity for all stemmed in large part from the fact that the great majority of Texas Populists were evangelical Protestants; their political beliefs mirrored their religious beliefs. Yet they welcomed those with nontraditional faith practices as well. “Populists were surprisingly tolerant of religious dissent,” Cantrell said. “Even so-called free thinkers — that is, atheists or agnostics — found a home in the party.”

The fractious issue of race in the 1890s complicated the party’s outreach to African
Americans and Mexican Americans. Appeals for their votes usually were presented in terms of shared economic interests, Cantrell said. “It is really important [to note that Populists] treated members of those communities with far more common decency than Democrats did.”

John Rayner, a classically educated and formerly enslaved person, was among the orators and organizers who strove to make the party a biracial coalition, but he ran up against a stark political reality.

“In American politics, you have to win races ultimately, and white Populists knew that to be too progressive in matters of race was to invite white backlash,” Cantrell said. “So the Populists tried to do the impossible: to extend the hand of political friendship and civil citizenship to Blacks without inviting what in the day was called social equality.”

ON THE BALLOT

The Texas People’s Party fielded candidates for state offices in 1892 and 1894, with Judge Thomas Nugent at the top of the ticket both times as its gubernatorial contender. “Nugent was one of the remarkable figures in Texas political history,” Cantrell said. “You rarely find a major political figure whose private and public lives were so remarkably free from any hint of corruption or even self-interest.”

“He was the public face that Populists wanted to put forward to the public. They were in essence saying, ‘Look, this is the sort of leader you’ll get from the People’s Party.’”

In 1894, Nugent garnered 36 percent of the vote for Texas governor, and 24 Populists were elected to the Legislature, establishing the party as the major opponent to the Democrats in the Lone Star State.

Success at the polls would not last long. One economic issue for Populists had long been the uncoupling from the gold standard to loosen the money supply and make credit more available to the average working person. So when William Jennings Bryan gave his legendary “Cross of Gold” speech at the Democratic National Convention in 1896, he co-opted a plank in the Populists’ platform.

Deflated, delegates at the Populist national convention declined to field their own presidential candidate and endorsed Bryan instead, Cantrell said. “This was a fatal dagger in the side of Populists in places like Texas who had built their movement largely on opposition to Democrats.”

The party never recovered from the rift. By 1900, both the Texas and national Populist movements were effectively dead.

Their ideas, however, were not.

OLD ROOTS OF NEW DEALS

“There’s a long list of Populist ideas that eventually came to fruition in the 20th century,” Cantrell said. “Some of these found expression in Progressive reforms. Some had to wait for the New Deal. And still others didn’t find full expression until Lyndon B. Johnson’s Great Society.” (Perhaps it’s no coincidence that President Johnson was the grandson of one of the leaders of the Farmers’ Alliance.)

Major legislation — from the National Labor Relations Act, which gave private-sector workers the right to organize, to the Social Security Act, to the National School Lunch Program — had roots in Populism’s quest for public remedies to economic inequality.

“All of these policies were grounded in the basic belief that in a modern capitalist economy, certain widely shared public problems demanded public solutions,” Cantrell said. “The sturdy individual pulling him- or herself up by their bootstraps was not a realistic strategy for countering corporate power.”

There is a major disconnect, however, between the Populism practiced by the Texas People’s Party and the small-p populism of modern politics.

“In one sense, if you think of populism as a political style — an appeal to the common man and woman against the malignant power of an out-of-touch, corrupt elite — then you can see how the term gets applied to a wide range of political figures, from Huey Long to George Wallace to Bernie Sanders to Donald Trump,” Cantrell said, “and to foreign figures like Hugo Chavez of Venezuela, Marine Le Pen of France, Jair Bolsonaro of Brazil or Viktor Orban of Hungary.

“But it matters a great deal how and why a so-called populist is making his or her populist appeal. Is the political figure doing it cynically, to grab or maintain power, with no real interest in the welfare of the people to whom the appeals are being made? In other words, is populism just a cover for demagoguery? Or is the populist genuinely concerned about championing the interests of ordinary citizens against the predations of a corrupt, unresponsive establishment?”

“My book suggests that the original Texas Populists, with a few notable exceptions, were sincere in their populism. However, most leaders today who are identified as populists, with some notable exceptions, are cynical in their populism. Their appeals are to the fears and prejudices of the masses whom they purport to represent, and their true goals are to gain and hold on to power.

“Indeed, many of today’s so-called populists are profoundly anti-democratic, the antithesis of the Texas Populists I’ve written about.”

Historian Gregg Cantrell spent 15 years researching and writing The People’s Revolt, which chronicles the rise and fall of the Populist movement in Texas.
Leadership today is complicated as companies face issues well beyond what they make or sell, including climate change, income inequality, and racial and ethnic diversity.

Boards of directors work alongside top management, but they’re also responsible for overseeing the CEO, approving executive compensation and setting strategy.

Yet innovations in corporate governance — practices that dictate how boards lead and monitor companies — have a dismal track record.

Ryan Krause, associate professor of strategy at TCU’s Neeley School of Business and the Robert and Edith Schumacher Junior Faculty Fellow in Entrepreneurship and Innovation, wanted to know why.

He argues in the paper “Innovation in the Boardroom,” published last May in the Academy of Management Perspectives, that new ideas in corporate governance must be seen as legitimate from the start. But because innovations are untested and not widely accepted, they’re “inherently illegitimate,” which means they often fail.

Krause and co-author Matthew Semadeni, professor of strategy at Arizona State University’s W.P. Carey School of Business, found that failure to achieve multiple forms of legitimacy leads to disputes and limited adoption of an innovation. The more types of legitimacies garnered, the more likely an innovation will be embraced.

“No one wants to be the first adopter,” Krause said in a Zoom interview from Denmark, where he was on a research sabbatical in fall 2020. “Companies often fall back on the rationale of ‘This is how it’s been done’ or ‘This is best practice’ because it gives them legitimacy.”

Krause and Semadeni analyzed three recent corporate governance innovations — majority voting, say-on-pay voting and the appointment of lead independent directors — based on three types of legitimacies: pragmatic (responding to a need), moral (socially acceptable) and cognitive (necessary or inevitable).

They identified the lead independent director as a successful corporate governance practice. That’s partly because it’s a “compromise solution,” Krause said, which lets a CEO remain as board chair and adds another director to provide oversight and monitoring.

This arrangement dates to the 1990s, but it didn’t gain favor until after the Enron and WorldCom scandals of the early 2000s and the Sarbanes-Oxley Act, which mandated financial and corporate governance improvements. The appointment of lead independent directors eventually spread because it met all three legitimacies, Krause said.

In comparison, requiring a director to receive a majority of shareholder votes to be elected and giving shareholders a say on executive compensation haven’t been as successful.

Nearly 90 percent of Standard & Poor’s 500 companies use majority voting in some form, but most smaller companies do not. Although majority voting has been rapidly adopted, gaining cognitive and pragmatic legitimacy, it has low moral legitimacy, Krause said. Adopted mostly on an advisory basis, it has produced little change, he added.

Many corporate governance practices have focused on executive compensation. The average-CEO-to-average-worker pay ratio was 278 to 1 in 2018, according to the Economic Policy Institute.

To provide shareholders with a greater voice in executive pay, federal legislation now mandates say-on-pay voting for publicly traded companies on an advisory basis. In the past decade, some shareholders have rejected executive pay packages, including at drug company McKesson and financial giant Citigroup.

But Krause said the nonbinding votes appear to have little effect even though many corners see say-on-pay voting as crucial. Previous research by Krause and Semadeni showed shareholders care about high CEO pay only at poorly performing companies, which makes it unclear if a no vote means shareholders are angry with the CEO or the board, Semadeni said.

“The big takeaway is to allow for more flexibility to allow these firms to innovate,” said Semadeni, who has collaborated with Krause on governance research for a decade. “Most of these measures have failed or not achieved what they wanted to do.”

Flexibility is needed, he and Krause concluded, so companies can experiment with new corporate governance practices without having to permanently adopt them.

Sometimes current events, such as the coronavirus pandemic, accelerate change. Covid-19 brought a “seismic shift” to companies that perhaps for the first time had to think about their survival, Krause said. Boards had to become “more active and accessible.”

Now Krause, who won TCU’s 2019 Deans’ Award for Research and Creativity, is focusing his research on board leadership. “The board chair role is incredibly complex and murky,” he said. “I hope to contribute to understanding how they lead and how to best execute this incredibly weird job.”

A CORPORATE CATCH-22

Flexibility is key in helping companies test new governance practices.

BY SHERYL JEAN
SEEKING CLOSURE
Ashley Wellman, an instructor of criminal justice, gives a voice to families of cold-case homicide victims.

PHOTO BY RODGER MALLISON