UMKC Faculty Researcher Award

2021-06-18

The UMKC School of Medicine has yearly awards that it hands out to faculty including a [faculty researcher award](https://med.umkc.edu/professional_development/faculty-awards/faculty-researcher-award/). The awards allow for self-nomination, so I thought “Why not?”

Here is a review of the criteria for the award and an early draft of my application. Wish me luck.

The award is to recognize “clinical and/or bench research.” As a statistician, my work does not fall neatly into either category. I can probably claim both, though more of my work has been on the clinical end.

I need to show “significant contributions to the medical research” and this includes publications, presentations, and grants. I have a pretty good record in all of these areas, as I show below.

I also need to show “a sustained record of collaborating and mentoring learners and faculty in research.” It is a bit harder to quantify this. I can get some letters of support that might help here.

Grant funding is very important. I “must have received grant funding as a Principal Investigator or Co-Principal Investigator” or I must have “consistently contributed as Co-Investigator on funded research.” I have one grant where I am the principal investigator and can point to seven more what I am a co-investigator or consultant.

I need to prepare a nomination letter. This letter must document “how the individual’s clinical or bench research has impacted UMKC.” It asks for specific outcome measures.

The first is the “number of peer-reviewed PMID publications and journal name(s) in the past 5 years.” If it has to be in Pubmed and be peer-reviewed, then I have 9. If you are more inclusive, I have 13.

The second is the “number of presentations (invited and peer reviewed) at regional, national, and international academic meetings in the past 5 years.” In my career of close to 40 years, I have never had a peer-reviewed presentation. This is not the norm in the world of Statistics. It is very difficult to count the number of invited presentations, as there is a fuzzy boundary between invited and contributed presentations. Does it count, for example, if you are invited to give a talk in a session by the session organizer and not the conference organizer? If you are invited to be part of a panel discussion, is that an invited talk? If you have to categorize them, I have one that is definitely invited, and two or three that could probably be counted as invited.

The third is the “number and type of grants (and if these grants are UMKC SOM), amount of funding, and role in each project in past 5 years.” Amount of funding is problematic as many of these grants are massive multi-site initiatives and my role, while not insubstantial, does not account for more than a small fraction of the effort.

The fourth is the “number of learners and faculty that nominee has collaborated and mentored in research in the last 5 years, including the number of learners and faculty that have obtained peer-reviewed PMID publications and presentations (academic meetings at regional, national, and international meetings) in the past 5 years” This is absolutely impossible to quantify. I’ll include a couple of collaborators in the letters of reference.

The fifth is any “research innovations, patents, or other contributions to research in past 5 years.” I don’t have any patents, per see, and any “innovations” or “other contributions” would be difficult to specify.

I need to submit

* a nomination letter (see below for an early draft),
* three letters of support, and
* a recent CV.

### Early draft of my nomination letter.

I wish to submit this self-nomination for the Faculty Researcher Award. I am enclosing this nomination letter, three letters of support, and a current CV.

As a consulting statistician, my research efforts are largely in support of other researchers. In the past five years, I do have one grant where I am the principal investigator, but on the remaining grants, I am typically playing a small but still important role, typically supported at 10% effort or less. Likewise, in most of my publications, I am more often a co-author rather than the lead author. I don’t mind playing second fiddle in these settings; my best work is often that done in the service of others.

I assist with details like data management, sample size justification, and documentation of research methods. These make no direct contribution to the practice of medicine, but are still vital components of any grant or publication. As such, my efforts are largely behind the scenes. My job, I tell people, is to make smart people smarter.

#### Research grants

My greatest contribution to the research reputation of the UMKC School of Medicine has been through research grants. Since I started work at UMKC in 2009, I have received formal support on 13 research grants (7 in the past five years, see the list below). This does not include, however, the large number of grants that I have provided informal assistance on. In particular, I have helped write many Sarah Morrison research awards as part of my work for the Research and Statistical Consult Service.

I have given talks on grant writing both locally (2018) and at the International Research Conference on Complementary and Alternative Medicine (2012 and 2014). These talks focus on aspects of the grant that are not difficult, such as creating a data sharing plan or setting up a data safety monitoring board. Nevertheless, these details are the ones that most grant writers feel the greatest insecurity and uncertainty about. Providing rigorous documentation of the non-medical aspects of a research study makes these grants more competitive. It’s all part of my effort to make smart people smarter.

#### Research publications/presentations

I have an extensive publication record, with 31 publications since I started work at UMKC (14 in the past five years). Some of this represents my own effort. Dr. Shui Ye invited me to write a chapter on the R programming language in his book, Big Data Analysis for Bioinformatics, published in 2015. I also contributed two articles to The Encyclopedia of Big Data, published in 2018. These articles describe the U.S. Bureau of the Census and the Centers for Disease Control and Prevention, the two most important government agencies for providing big data that our researchers use.

Just as with grants, however, my best work is on those publications where I am not the lead author. I co-authored three publications (two in the past five years) with a research team that used a network of African-American churches to deliver health care interventions to underserved communities in Kansas City. Two more publications (one in the past five years) were with a quality improvement team at Children’s Mercy Hospital and Boston Children’s Hospital that examined the consistency of echocardiogram readings at both institutions. These teams were already capable of writing about their outstanding research. My contribution in the documentation of methods and reporting of results served to make these papers even more rigorous. It’s another example of making smart people smarter.

My role in research presentations is difficult to quantify. I stopped tracking most presentations over 20 years ago. There were just too many of them and it was impossible to independently verify the details of many of these presentations.

I only track presentations where I am the first author. I have 42 first author presentations at regional, national, or international conferences since I started work at UMKC (23 in the past five years). None of these presentations were peer-reviewed, as that is not the norm in the field of Statistics.

My most popular presentations are the short courses. In addition to the two short courses mentioned earlier for the International Research Conference on Complementary and Alternative Medicine, I have been invited to give short courses for the American Society of Andrology, the American Statistical Association, the Medical Librarians Association, and the Midwest Society for Pediatric Research. These organizations all asked me back repeatedly because my short courses were so well received. The people attending these conferences were already accomplished researchers. They just wanted to learn more in an area of research that they were not yet comfortable with. This is again a way in which I make smart people smarter.

#### Research collaborations, internal

I dislike the term “mentoring” as it implies a subordinate status to the person being mentored. In my interactions with other researchers, I learn as much from them as they learn from me, so I will substitute the term “collaboration.”

My collaboration with the Center for Economic Information (CEI) started in 2018 when I met Doug Bowles at an organizational meeting of the Institute for Data Education, Analytics, and Science. CEI has had a long history of working in Kansas City, Kansas, and Kansas City, Missouri to share geocoded information to help decision makers in neighborhood organizations and local governments. I worked with CEI to submit two grants in 2019 to the Department of Housing and Urban Development for seven hundred thousand dollars and one million dollars. Both grants supported cost effective lead remediation efforts and represented cross-institutional collaborations. Although only the first grant was funded, the second one missed the funding cut-off by a single point on a 100 point scale. We plan to resubmit this grant later this summer.

CEI has employed many Ph.D. students and helped direct their dissertation work. I provided informal guidance on Bayesian statistical models for two recent graduates, Natalie Kane and Neal Wilson. Natalie is currently working in a post-doctoral position at Children’s Mercy Hospital and Neal has parlayed his research expertise into major support on two large research grants.

It is impossible to count the number of collaborations that I have been a part of since I joined UMKC. When I ran the Research and Statistical Consult Service (RSCS) from 2008 through 2016, I had been averaging roughly 60 different collaborations per year. Many of these were with medical students and residents, starting on their very first research project. While I still help out from time to time with the RSCS, my collaborations since then have been much more focussed.

One of my most enjoyable collaborations has been with Mark Patterson, a faculty member in the School of Pharmacy. We collaborated on a University of Missouri Research Board grant many years ago. When I found out that I was ineligible for support on that grant (because of my part-time status), I helped Mark reallocate my funds to support a graduate research assistant in the Mathematics and Statistics Department. That was a wise move because this student was very smart and ambitious and could allocate 20 hours per week on the project. He helped Mark produce several peer-reviewed publications.

Since I have worked with Mark, he has developed a broad range of research skills. He talks with me regularly about advanced methodologies in Statistics. While he has learned most of this on his own, I do help by explaining the theoretical foundations and defining the limitations of these approaches. He was quite talented when I first met him, but he has grown into a top-notch researcher who earned tenure and who now holds a joint appointment in our department.

I have served on four thesis or dissertation committees in the past five years, but this understates my efforts to help graduate students with their research. As an example, I got an email inquiry in April 2021 from Kyle Reed, an IPhD student in the Earth and Environmental Sciences department. He is developing a regional climate model and tying it to mortality data to estimate future heat-related deaths in Missouri. They have a very good handle on things but had questions about a modelling approach, quasi-Poisson regression, that is commonly used in the literature. I have met with this student and his advisor twice and helped explain how this model works.

I attended a talk in 2019 by Raj Anantharaman, a Big Data Fellow and PhD candidate in Computer Science, who gave an excellent talk on the use of a convolutional neural network to examine nerve conduction signals in the arm and identify certain postural motions such as pointing. He described the training set, where a volunteer would make repeated motions like pointing for 100 replications before switching to a different motion. I noted in the question and answer session how the training set could be vastly improved through the use of randomization, as one motion in a real world setting would never be used consecutively, but rather one motion would almost always be followed by a different motion. Thus, randomization would help the training set model a real world setting more accurately.

#### Research collaborations, external

My collaboriations do not stop at the edge of campus. I have many collaborations in the Kansas City area and beyond.

Another very profitable collaboration has been with The Analysis Factor. The Analysis Factor, founded by Karen Grace-Martin, is a training and statistical consulting group providing support to other statistical consultants. One of the biggest challenges to a brand new statistical consultant is handling the unexpected, odd, or strange consulting requests from researchers that do not fit neatly into the statistical coursework in a Masters or PhD program. They offer webinars and short courses on an eclectic series of topics that fill in the gaps not covered in traditional statistics classes. The also answer tehcnical questions on discussion boards that they host.

I have been collaborating with The Analysis Factor since 2015, presenting webinars and short courses on topics like Bayesian statistics, meta-analysis, and survival analysis. Through innovative marketing methods, Karen is able to bring large audiences to my talks and they always ask such interesting questions. I also help answer questions on the discussion boards that are outside the areas of expertise of others working with The Analysis Factor.

Karen and I have also participated in workshops and panel discussions sponsored by the American Statistical Association aimed at consultants just beginning their careers. Helping other consultants get started has always been a passion of mine. I started an independent consulting business in 2008, and there was not a lot of guidance out there targeted towards statistical consulting. I documented my efforts in getting started and presented them on my blog and in a series of articles for the Amstat News, a newsletter for the American Statistical Association.

I have also built successful research collaborations in Informatics through a series of quarterly meetings at Kansas University Medical Center (KUMC) since 2018. The recent meetings, of course, have been virtual. These are co-organized with Mei Liu, the acting director of Medical Informatics at KUMC. We have invited speakers from KUMC, UMKC, Childrens Mercy, Kansas State University, and the University of Missouri. These meetings promote existing research and encourage new efforts and cross-institutional collaborations. The meetups are supported by the Frontiers Clinical and Translational grant and promote their goal of bringing together researchers across the Kansas City region.

Additional research collaborators occur through the Kansas City R Users Group, which I took over the management of in 2014. This group meets monthly to discuss all aspects of the R programming language. It attracts faculty and students at Kansas University, UMKC, and Northwest Missouri State University as well as researchers at Childrens Mercy and Cerner Corporation.

#### 14 publications from July 2016 through June 2021. Note that 4 of these are not peer-reviewed or indexed in PubMed.

1. Dubin JR, Simon SD, Norrell K, Perera J, Gowen J, Cil A. Risk of Recall Among Medical Devices Undergoing US Food and Drug Administration 510(k) Clearance and Premarket Approval, 2008-2017. JAMA Network Open. 2021-05-06; 4(5): e217274. <doi:10.1001/jamanetworkopen.2021.7274>
2. Younis M, Elkaryoni A, Williams GW, Jakhar I, Suman S, Simon S, Salzman G. The Use of Direct Oral Anticoagulants in the Management of Venous Thromboembolism in Patients With Obesity. Cureus 2020-08-25, 12(8): e10006. <doi:10.7759/cureus.10006>.
3. Berkley-Patton J, Bowe Thompson C, Goggin K, Catley D, Berman M, Bradley-Ewing A, Derose K, Resnicow K, Allsworth J, & Simon S. A religiously-tailored, multilevel intervention in African American churches to increase HIV testing rates: rationale and design of the Taking It to the Pews cluster randomized trial. Contemporary Clinical Trials 2019; 86: 105848.
4. Simon SD. Centers for Disease Control and Prevention. In Encyclopedia of Big Data. Schintler LA, McNeely CL (eds.). Springer Link: New York, NY. Published online 2018-03-01. <https://doi.org/10.1007/978-3-319-32001-4_258-1>. Note: not peer-reviewed and does not appear in PubMed.
5. Simon SD. Census Bureau (U.S.). In Encyclopedia of Big Data. Schintler LA, McNeely CL (eds.). Springer Link: New York, NY. Published online 2018-03-01. <https://doi.org/10.1007/978-3-319-32001-4_257-1>. Note: not peer-reviewed and does not appear in PubMed.
6. Simon SD. Getting Paid: How to Determine Your Fee. Amstat News. 2017 (August 1). Note: not peer-reviewed and does not appear in PubMed.
7. Simon SD. Why Be an Independent Consultant? Amstat News. 2017 (April 1). Note: not peer-reviewed and does not appear in PubMed.
8. Barker JP, Simon SD, Dubin J. The Methodology of Clinical Studies Used by the FDA for Approval of High-Risk Orthopaedic Devices. The Journal of Bone and Joint Surgery. American Volume. 2017; 99(9):711-719. PMID: 28463914
9. Parthiban A, Levine JC, Nathan M, Marshall JA, Shirali GS, Simon SD, Colan SD, Newburger JW, Raghuveer G. Implementation of a Quality Improvement Bundle Improves Echocardiographic Imaging after Congenital Heart Surgery in Children. Journal of the American Society of Echocardiography : official publication of the American Society of Echocardiography. 2016; 29(12):1163-1170.e3. PMID: 27742240
10. Jiang Y, Guarino P, Ma S, Simon S, Mayo MS, Raghavan R, Gajewski BJ. Bayesian accrual prediction for interim review of clinical studies: open source R package and smartphone application. Trials. 2016; 17(1):336. PMID: 27449769, PMCID: PMC4957321
11. Prindaville B, Simon SD, Horii KA. Dermatology-related outpatient visits by children: Implications for workforce and pediatric education. Journal of the American Academy of Dermatology. 2016; 75(1):228-9. PMID: 27317526
12. Berkley-Patton J, Thompson CB, Moore E, Hawes S, Simon S, Goggin K, Martinez D, Berman M, Booker A. An HIV Testing Intervention in African American Churches: Pilot Study Findings. Annals of Behavioral Medicine : a publication of the Society of Behavioral Medicine. 2016; 50(3):480-5. NIHMSID: NIHMS752446 PMID: 26821712, PMCID: PMC5026504
13. Baker JM, Pace HA, Ladesich JB, Simon SD. Evaluation of the Impact of Corticosteroid Dose on the Incidence of Hyperglycemia in Hospitalized Patients with an Acute Exacerbation of Chronic Obstructive Pulmonary Disease. Hospital Pharmacy. 2016; 51(4):296-304. PMID: 27303077, PMCID: PMC4896332
14. Parthiban A, Levine JC, Nathan M, Marshall JA, Shirali GS, Simon SD, Colan SD, Newburger JW, Raghuveer G. Impact of Variability in Echocardiographic Interpretation on Assessment of Adequacy of Repair Following Congenital Heart Surgery: A Pilot Study. Pediatric Cardiology. 2016; 37(1):144-50. PMID: 26358473

#### 23 presentations from July 2016 through June 2021. This does not include presentations where I am not the lead author.

1. Simon SD. “Survival analysis,” 24 hours of webinar presentations spread across eight weeks presented for The Analysis Factor, Virtual format, April-June 2018. This was repeated September-November 2018 and September-November 2020.
2. Simon SD. “Business Side of Setting Up an Independent Statistical Consulting Practice,” a 15 minute presentation for the Joint Statistical Meetings, Virtual format, August 2020.
3. Simon SD. “Improving Your Scatterplots,” a 90 minute webinar presented for The Analysis Factor, Virtual format, April 2020.
4. Simon SD. “Validity and Reliability,” a 90 minute webinar presented for The Analysis Factor, Virtual format, November 2019.
5. Simon SD. “Good Enough Practices for Statistical Computing,” a 90 minute webinar presented for The Analysis Factor, Virtual format, August 2019.
6. Simon SD. “Ebenezer Scrooge, Data Scientist,” a poster presentation for the UMKC Faculty Research Symposium, Kansas City, MO, April 2019.
7. Simon SD. “Survival analysis,” 24 hours of webinar presentations spread across eight weeks presented for The Analysis Factor, April-June 2018. This was repeated in September-November 2018.
8. Simon SD. “Mining the Electronic Health Record,” a 10 minute presentation for the Midwest Bioinformatics Symposium, Kansas City, MO, April 2019.
9. Simon SD. “What’s the best statistical package,” a 90 minute webinar presented for The Analysis Factor, Virtual format, February 2018.
10. Simon SD. “Design and analysis of a meta-analysis,” a 90 minute webinar presented for The Analysis Factor, Virtual format, November 2018.
11. Simon SD. “Finding customers for your independent consulting practice,” a 90 minute webinar presented for the Statistical Consulting Section of the American Statistical Association, Virtual format, November 2018.
12. Simon SD. “Business essentials for starting an independent consulting practice,” a 90 minute webinar presented for the Statistical Consulting Section of the American Statistical Association, August 2018.
13. Simon SD. “Tests of equivalence and non-inferiority,” a 90 minute webinar presented for The Analysis Factor, Virtual format, April 2018.
14. Simon SD. “Mining the electronic health record. Why and how,” a 30 minute presentation for the regional Frontiers in Biostatistics conference, Kansas City, MO, April 2018.
15. Simon SD. “How to Write a Data Analysis Plan for a Grant Proposal,” a 60 presentation for the Atterbury Student Success Center, Kansas City, MO, April 2018.
16. Simon SD. “Using transformations to improve your linear regression model,” a 90 minute webinar presented for The Analysis Factor, Virtual format, March 2018.
17. Simon SD. “Setting up your independent consulting practice,” a 90 minute talk for the Center for Research Methods and Data Analysis, Lawrence, KS, February 2018.
18. Simon SD. “Good Computing Practices for Researchers,” a 90 minute webinar presented for The Analysis Factor, November 2017, also presented for the KUMC Biostatistics Journal Club, November 2017.
19. Simon SD. “Simulating clinical trials,” an invited 20 minute presentation for the Applied Stochastic Modeling and Data Analysis conference, London, England, June 2017.
20. Simon SD. “LASSO Regression,” a 90 minute webinar presented for The Analysis Factor, Virtual format, November 2016.
21. Simon SD. “Cox Regression,” a 90 minute webinar presented for The Analysis Factor, Virtual format, September 2016.
22. Simon SD. “Formal Programs Teaching Critical Appraisal in Evidence-Based Medicine,” an invited 20 minute presentation for the Joint Statistical Meeting, Chicago, IL, August 2016.

#### 8 grants funded from July 2016 through June 2021.

Note: I have not included the total grant awards for any of these grants, which total over $30 million dollars. While I have a substantial role in all of these grants, it would be folly to suggest that that I am responsible for anywhere close to the total amount of support on any of these grants. Most of the success of these grants is due to the hard work of others. This list also does not include grants submitted but not funded.

1. Healthy Eastside KC (Jackson County Legislature, Principal Investigator: Jannette Berkley-Patton). This is a community-based partnership and project to address vaccine hesitancy and health inequities in portions of Jackson County identified by the Centers for Disease Control and Prevention as having exceedingly high socially vulnerable index scores. I am funded at 10% effort from June 2021 through November 2021.
2. Lead Impact Study–Kansas City (HHTS20000276, Housing and Urban Development, Principal Investigator: Steve Simon). We propose a data collection effort to show that lead safe interventions can be targeted more effectively and that they can inform decisions about the choices among intervention strategies. Our first aim is to quantify the extent to which remediations to make housing lead safe by HUD standards lead to fewer lead poisoned children among those who move in. Our second aim is to develop an exterior housing-based risk index to cost effectively target homes with higher interior lead dust levels. I am funded at 10% effort from January 2021 through December 2024.
3. COVID-19 Testing and Linkage to Care with African-American Church and Health Agency Partners (DK124664-01S1, National Institute of Diabetes and Digestive and Kidney Diseases, Principal Investigator: Jannette Berkley-Patton). The primary aim of this study is to fully test a culturally/religiously-tailored, church-based COVID19 testing and linkage to care (LTC) intervention condition against a non- tailored intervention condition on COVID19 testing rates at 6 months with adult AA church members and the community members they serve. Guided by the Theory of Planned Behavior and Socioecological Model, our community- engaged approach includes trained church leaders delivering a culturally, church-appropriate COVID19 Toolkit. Examination of LTC use and contact tracing approval will aid in understanding intervention impact on COVID19 testing by addressing participant essential needs. Potential mediators/moderators related to receipt of COVID-19 testing will be evaluated, and a process evaluation to determine implementation facilitators, barriers, and fidelity related to increasing COVID19 testing rates. I am funded at 10% effort during calendar year 2021 and 5% effort during calendar year 2022.
4. Development of a telehealth obesity intervention for patients with MS. (Multiple Sclerosis Society, Principal Investigator: Jared Bruce) A cross-disciplinary research team is testing the effectiveness of an MS-specific weigh loss/healthy living program delivered by phone, since obesity can profoundly worsen MS severity. I am funded at 2% effort starting in October 2019, increasing to 5% effort from October 2023 through September 2024.
5. Frontiers: University of Kansas Clinical and Translational Science Institute (NIH 5UL1TR002366-04, Principal Investigator: Mario Castro). The Heartland Institute for Clinical and Translational Research has been a catalyst for bringing together translational science investigators and stakeholders across the KC region, and beyond. The vision of Frontiers is to contribute to and lead national efforts to transform the way we do clinical and translational research (CTR), and to ensure research is more rapidly and more efficiently translated to the point of care so that it may contribute to improved health. I am funded at 10% effort starting in September 2017 through June 2021.
6. Preschool Development Grant Birth through Five Initiative (90TP0066-01, Missouri Department of Elementary and Secondary Education, Principal Investigator: Mike Abel). We present best practices for professionals and programs across Missouri’s early childhood mixed-delivery system. For more than 50 years, early childhood programs that support the growth and development of young children have been shown to have a profound impact on children over their lifespan. The challenge is to identify what elements of a high-quality early childhood program are most associated with positive outcomes for children and families. I was funded at 5% effort from September to December 2020.
7. Greater Plains Collaborative (PCORI HSRP20162063, Principal Investigator: Lemuel Waitman). The Greater Plains Collaborative (GPC) is a new network of 10 leading medical centers in 7 states committed to a shared vision of improving healthcare delivery through ongoing learning, adoption of evidence-based practices, and active research dissemination. Role: Consultant. I billed at an hourly rate from February 2016 to August 2017 when my efforts were switched to “Frontiers: University of Kansas Clinical and Translational Science Institute” described above.