

**RE: 2020 Annual Report for the PHF Grant**

Aug 20<sup>th</sup>, 2020

Dear PHF steering committee members,

During the past year, in addition to teaching, research, and service, I have also participated in a project with the Upper Peninsula Health Plan (UPHP) in Marquette. Below I highlight some of the progress I have made since the last report.

Progress Summary:

Teaching:

- Currently advising four PhD students in statistics.
- Developed one online course, Predictive Modeling, for the MS online program in Applied Statistics in the summer of 2020.

Research:

- Co-authored two publications in peer-reviewed journals since the last report in Sep 2019.
- Submitted two external proposals:
  - To NIH R15, as a PI in Feb 2020 (Not funded)
  - To NIST, as a Co-PI in June 2020 (PI is Dr. David R. Shonnard) (Not funded)

Service:

- Served as the graduate director in the math department.
- Served in the departmental recruitment committee in the academic year of 2019.
- Served in the university Early Career Management (ECM) Committee as an external advocate for Kelly Kamm in KIP.
- Served as a member in the university Data and Safety Monitoring Board (DSMB).
- Served as the Editorial Board member of Scientific Reports since May 2019 (The journal had an impact score of 4.120 in 2020).

Outreach:

- Invited Dr. Hebbring from Marshfield Clinic to MTU in Nov 2019. During the meeting, we discussed our plan on future NIH proposal submissions and potential projects between the Marshfield Clinic and my group. Dr. Caryn Heldt also organized a social event to promote interaction between members in HRI and Dr. Hebbring.
- Gave a presentation at UPHP in Dec 2019 on data analysis for the Diabetic Medication Compliance project.

### Last year's initiatives and progresses:

I proposed two initiatives in the last report:

- 1. Although the R01 proposal was not funded, I have built a collaboration with Dr. Hebbing at Marshfield Clinic. He also invited me spend a sabbatical at the Marshfield Clinic, so I can access the data at the hospital. He would like to visit Michigan Tech again and talk to other faculty members on campus that might further the collaboration opportunities between Marshfield Clinic and Michigan Tech. We plan to discuss the previous R01 proposal and make decisions on a future submission of a R01. We will either revise the proposal or submit a new proposal to NIH.*
  - During Dr. Hebbing's visit, we discussed our plan on future NIH proposal submission and potential projects between Marshfield Clinic and my group. Due to the pandemic, we have not made any progress on the projects and the revising of the R01 proposal. However, based on the comments from the PHF committee, I did submit a R15 proposal to NIH in Feb 2020. Although I received very positive comments on the proposal, the proposal was not funded. I plan to revise the proposal and submit it in Oct 2020.
  - I worked with a group of researchers at MTU to submit a proposal to NIST as a Co-PI in June 2020. The title of the proposal is Systems Analysis of Supply Chain Resilience for COVID-19 Pandemic Response Products (PI is Dr. David R. Shonnard).
- 2. My two graduate students and I did literature reviews regarding Diabetic Medication Compliance and Total Cost of Care after the first meeting with UPHP. Now we are ready to perform data analyses. I expect to have results by the end of Dec 2019, then write publications on the findings, and present them at UPHP and at a conference. In Spring of 2020, we will work on the second project on opioids if we can get the data. My long term goal on the collaboration with UPHP is to submit a NIH proposal on health care and epidemiology studies in rural areas. The results we get from the first project can served as preliminary studies for the proposal.*
  - As we planned in the last report, my students and I completed the Diabetic Medication Compliance project and gave a presentation at UPHP in Dec 2019. The CEO, the Chief Quality Officer and their staff members at UPHP attended the presentation. They were very impressed and interested in the findings from the data analysis. After the presentation, we decided to move forward the second project on opioids. We just received the IRS approval from the state in the end of July 2020 on the opioids project. Now UPHP is preparing the data to be released to us. We are looking forward to working on this project.

### Brief Summary of how the funds have been spend

I used the fund to support two graduate students (to pay for their stipend for the academic semesters; the department paid for their tuition) and to pay for the trip to UPHP in Dec 2019.

Ying Sha, Professor in Statistics  
PHF Endowed Professor of Population Health  
Department of Mathematical Sciences