

Oregon Health & Science University
School of Medicine

Scholarly Projects Final Report

Title *(Must match poster title; include key words in the title to improve electronic search capabilities.)*

Initiating a partnership with undergraduate students to promote medical careers to high school students in rural Oregon

Student Investigator's Name

Mikayla Stevens

Date of Submission *(mm/dd/yyyy)*

03/19/2021

Graduation Year

2021

Project Course *(Indicate whether the project was conducted in the Scholarly Projects Curriculum; Physician Scientist Experience; Combined Degree Program [MD/MPH, MD/PhD]; or other course.)*

Scholarly Projects Curriculum

Co-Investigators *(Names, departments; institution if not OHSU)*

Eric Wiser, MD; OHSU

Mentor's Name

Eric Wiser, MD; OHSU

Mentor's Department

Family Medicine

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Concentration Lead's Name

Charles Thomas, MD

Project/Research Question

Does presenting about careers in medicine to rural high school students increase their level of interest in pursuing a medical career?

Type of Project *(Best description of your project; e.g., research study, quality improvement project, engineering project, etc.)*

Research Study

Key words *(4-10 words describing key aspects of your project)*

Rural recruitment
Promoting medical careers
High school outreach

Meeting Presentations

If your project was presented at a meeting besides the OHSU Capstone, please provide the meeting(s) name, location, date, and presentation format below (poster vs. podium presentation or other).

Not Applicable

Publications *(Abstract, article, other)*

If your project was published, please provide reference(s) below in JAMA style.

Not Applicable

Submission to Archive

Final reports will be archived in a central library to benefit other students and colleagues. Describe any restrictions below (e.g., hold until publication of article on a specific date).

Not Applicable

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Next Steps

What are possible next steps that would build upon the results of this project? Could any data or tools resulting from the project have the potential to be used to answer new research questions by future medical students?

Consider expanding to general classes (instead of health occupations, anatomy, etc.)
Increase the number of schools and students
Increase the increments on the survey to create more distinction between interest level reported
Intent is to continue this as an annual program

Student's Signature/Date *(Electronic signatures on this form are acceptable.)*

This report describes work that I conducted in the Scholarly Projects Curriculum or alternative academic program at the OHSU School of Medicine. By typing my signature below, I attest to its authenticity and originality and agree to submit it to the Archive.

X

Stud

Mentor's Approval *(Signature/date)*

X

Mentor Name

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Introduction

There is a shortage of health care providers in rural Oregon, especially in the southern portion of the state. The Oregon Health Authority site shows Klamath County as a designated Health Professional Shortage Area (HPSA) due to low income¹. The HPSA score is a measure of the severity of shortage in these areas; the score is from 8-18 where 9 is some need, 10 is serious need, 14 is urgent need and 16 is critical need. Klamath County has a HPSA score of 17 as of 2017 as shown in figure 1¹. Not only does this mean that there are not enough primary care providers in the area to care for the population, but it also means that the providers that are in the area tend to be over-worked and are more likely to burn out.

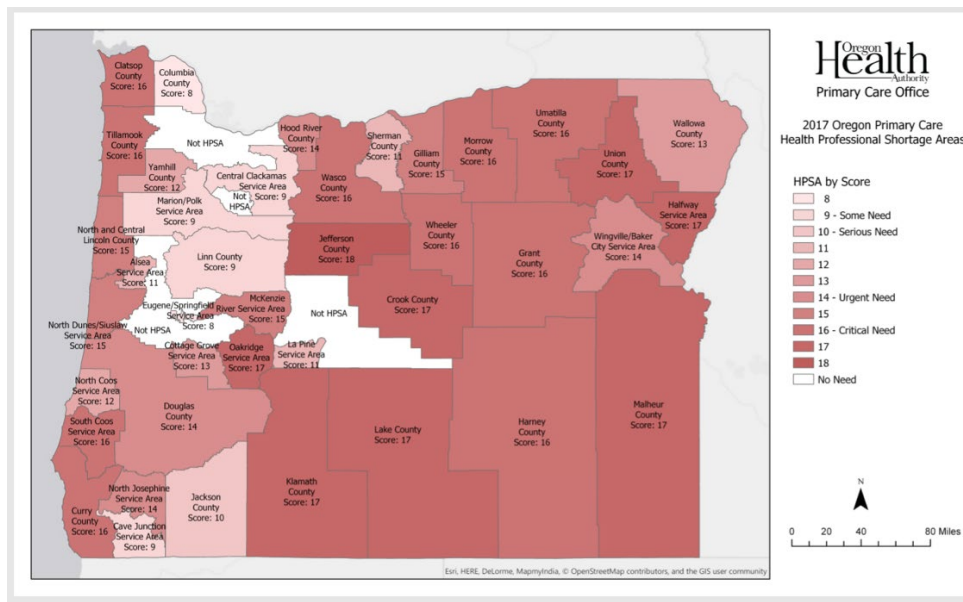


Figure 1. Severity of primary care HPSA in Oregon as of 2017 as designated by the Oregon Health Authority.

There are many incentives for medical professionals to practice rurally. For example, there are scholarships like that of the Scholars for a Healthy Oregon Initiative which pays for student tuition during medical school with a service obligation of 5 years after residency in a rural area of Oregon. There is also Primary Care Loan Forgiveness (PCLF) which gives recipients a portion of tuition and fees in exchange for a service obligation at an approved rural Oregon practice site². The need for rural physicians is so vast that the state continues to fund these programs to encourage graduates into rural practice.

An article published in 2018 describes the use of the Community Apgar Questionnaire (CAQ) to assess the impact of recruitment and retention for primary practice providers in rural areas. The study concluded that the decision to practice rural medicine is complex and multifactorial but cited that the most important aspects to recruitment and retention were medical, hospital and community support, and economic factors whereas the challenges centered around geographical factors³. A 2017 British study discussed the evolving problem of retaining general practitioners (primary care providers) in rural areas. They also found that the choice to practice rural medicine was idiosyncratic and intrinsic to each individual practitioner. They did however find that early exposure, fit between skill and attributes and significant experience were all factors that increased recruitment to rural areas⁴.

It was found that practicing rural physicians in Canada were more likely to have come from a rural background, attended a rural undergraduate university and had postgraduate rural training as described in a 2005 study⁵. This project is aimed at high school students who are currently living in rural areas and provides them with early exposure to the medical field and career possibilities within the field. By targeting both rural background and early exposure, it is feasible that the result would be an increase in recruitment of future rural healthcare professionals.

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Methods

Prior to beginning enrollment on this study, need was identified via research and analysis of HPSA scores in various Oregon counties. Southern Oregon AHEC provided a contact sheet for the administration at Southern Oregon high schools. The principals were then contacted to assess for interest and availability at each school. Some replied with contact information for specific teachers or program leads that were interested. Times and dates were established with the teachers for a virtual 1-hour presentation with question-and-answer period to follow. A schedule of dates for presentations at five Southern Oregon high schools was established.

The head of the biology department at Southern Oregon University was also contacted and referred me to the faculty and student leads for the Pre-healthcare Society. The leads helped to organize a training session. The template for the presentations was developed during this preliminary period.

I then met with the SOU Pre-healthcare Society to discuss the content and expectations surrounding the project. I answered their questions and had the students sign up for which presentation each student would participate in. A template presentation was given to the SOU students who edited it to reflect their personal journey to medicine. The final presentations were approved prior to the presentation date.

The presentations were given virtually followed by administration of the deidentified surveys to determine the student's level of interest in the medical field and how that was affected by the given presentation. The survey/study participation was completely optional with the need for any student under the age of 18 to have a parent/guardian provide consent prior to completing the second page of the survey. Refer to the appendix for full consent documentation. The data was collected in the Qualtrics survey web tool and exported to be compared statistically. A copy of the survey is included below.

Post-Presentation Survey

Grade: _____ Age: _____ Applying to college: Yes / No / Unsure

Evaluate the presentation using the following rating scale:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Prior to this presentation, I knew I wanted to enter the medical field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I thought this presentation was interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My questions about the medical field and training requirements were answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After this presentation, I am interested in a career in the medical field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What did you like about the presentation?

What improvements could be made to this presentation?

Is there anything you would have like to spend more time on?

Figure 2. The questions on the survey that was administered to each participant. Please refer to the appendix for a full screenshot of the survey directly from Qualtrics including the consenting documentation and questions asked.

The data was compiled, sorted and analyzed in excel. As shown in figure 2, the survey documented the student's level of interest on a 5-point scale: strongly interested, somewhat interested, neutral, somewhat disinterested, and strongly disinterested. Then each answer was converted to a numerical value where 2=strong interest, 1=some interest, 0=neutral, -1=some disinterest, -2=strong disinterest. The individual values were separated into the two data sets, one for pre-presentation and one for post-presentation. The two data sets were compared using a t-test. The results were then sent to the Southern Oregon AHEC representative to be used for future rural recruitment strategies and/or studies.

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Results

There were over 100 students present for the five presentations, it was then optional for the students to proceed with the study and complete the survey. Also, any students under 18 years of age had to get consent from their parent/guardian prior to completing the survey. A total of 50 students consented to the study (see the appendix for full consent procedure) and 50 student responses collected via the Qualtrics survey web tool. There were 4 students or their parent/guardian that initiated the survey but who did not consent to the study and, therefore, did not answer any survey questions; those responses were not included in the following data.

There were 12 participants (24%) that endorsed an increased level of interest post-presentation from that which they reported prior to the presentation. This is compared to the 4 participants (8%) that reported a decreased level of interest after listening to the presentation. There were also 34 participants that reported the same interest level after the presentation as they did prior; however, of these, 21 (62%) of them indicated the highest level of interest both pre-presentation and post-presentation. See table 1 for a concise summary of this data.

	Number	Percentage
Increased Interest	12	24%
Decreased Interest	4	8%
No change in interest	34	68%
Highest level of interest (pre and post)	21	42%

Table 1. Interest change reported when comparing reported interest in pursuing a medical career prior to and after the presentation including those that indicated the highest level of interest both pre-presentation and post-presentation.

As shown in figure 2, the survey documented the student's level of interest on a 5-point scale which was converted to numerical values as described in the methods. The data sets were compared using a t-test which yielded a t-value of -0.603 and a p-value of 0.274 as reported in table 2 below.

	Number
Quantified interest prior to presentation	41
Quantified interest post-presentation	49
Change in interest	8
T-value	-0.60323
p-value	0.273874

Table 2. Quantified interest in pursuing a medical career based on a score of 2 (strong interest), 1 (some interest), 0 (neutral), -1 (some disinterest), -2 (strong disinterest) separated by prior to the presentation and afterwards. From these values, a t-test was done to compare the 2 sets of data (pre-presentation and post-presentation). The t-value and p-value are also listed.

The data was simplified into three groups in each data set (pre-presentation and post-presentation): those that showed any level of interest in pursuing a medical career, those that were neutral, and those that showed any level of disinterest. This resulted in 31 (62%) documenting some level of interest in pursuing a medical career prior to the presentation and 35 (70%) afterwards as seen in table 3. In other words, after listening to the given presentation, 70 percent of the students were interested in a medical career. It was also reported by this group of students that 45 (90%) were planning to pursue a college education.

Students interested in a medical career	Number	Percentage
Pre-presentation	31	0.62
Post-presentation	35	0.70

Table 3. Number and corresponding percentage of students who designated they were interested in pursuing a medical career (either strongly or somewhat interested).

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Discussion

There was not a significant difference between the pre-presentation reported interest in pursuing a medical career compared to the post-presentation interest level ($p>0.05$). Although this is not the result that was hoped for, it is notable that there was an overall increase in interest among the students in the study. A total of 12/50 (24%) students reported that the presentation increased their level of interest. Even if only one or two go on to pursue a career as a medical provider, this is still more than prior to the presentation. The motivation behind creating this program and reaching out to high school students is so that each and every one of them knows that they can pursue a medical career regardless of their background or financial situation.

It is also worth noting that 62% of the students that participating in the study reported that they were strongly interested in a medical career prior to hearing the presentation. The lectures were scheduled during health occupations, anatomy, and STEM&M classes so the data reflects that this is a group of students who are on a path toward a medical career prior to this study. As great as it is that there was this level of interest prior to the intervention, it also means that there was no way to capture an increase their interest given the scale that interest was assessed on in the survey only going up to “strongly agree”. Although it is reasonable to say that this style of presentation could reinforce their interest. I also found that, during the sessions, these were the students with questions which myself and the SOU student could answer. In order to address the shortage of healthcare providers in rural areas, it is important to spark new interest in youth as well as reinforcing those with preexisting interest in pursuing a medical career.

An aspect of the study which is not captured in the data is the personal growth of both myself and the SOU students that I worked with. By the end of the fifth presentation, I found that I was more comfortable navigating a large group in the virtual environment, more confident speaking to a large group, more confident in sharing my own story and goals, as well as formatting answers to student’s questions without using too much jargon that they didn’t understand. The latter being something that is difficult in the medical field because there are so many technical terms to describe these careers and requirements along the path to becoming a physician. The SOU students reported to me that this was a great introduction to the clinical research process which they will continue to participate in as they pursue their own medical careers. They also provided feedback that they improved on their presentation skills and comfort with the virtual platform through this project. Many of them requested to continue to work on this project in the coming years.

I do plan to continue this as an annual program. There may be some barriers to making that happen as I enter residency, but I am in the process of looking for another OHSU student to take on running the project and hope to continue my involvement moving forward. Continuing the project would allow for improving on the existing limitations and collecting more data. The limitations identified during this study include its limited reach to only students in highly interested groups (i.e. those already taking health occupations or anatomy classes), only half of the students present for the presentations consented to participate in the study, and the survey increments were limited in a way that did not capture an increase in those highly interested prior to the intervention. The former could be addressed by scheduling future presentations to general classes that all students take. The low participation cannot be changed because consent is voluntary, but the study could be expanded to include more students which would increase the number of surveys received even if the participation percentage remained the same. Along this same thought, participation in the study would likely be increased if the presentation were given in-person versus virtually. The latter of the limitations could be overcome by a simple review of the survey questions and the scale used to assess interest.

The qualitative questions at the end of the survey provided me with valuable feedback from the students on other improvements to make. These included focusing more time on the college application process and providing a concise summary of what the path to becoming a physician looks like. The responses were overwhelmingly positive with the majority of the students reporting that they found the talk interesting and informative. The goal of this program is to reach out to youth and encourage them to pursue a career they are passionate about and, in that respect, it was a success.

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Conclusions (2-3 summary sentences)

The majority of rural providers come from a rural background and this study found that reaching out to high school students by giving informative presentations on the medical field and personal journeys increased the student's interest in pursuing their own medical career. This program will continue in the coming years to reach more students and provide more data on the effect of community outreach on the recruitment of rural physicians.

References (JAMA style format)

1. Oregon Health Authority. *Primary Care Health Professional Shortage Areas in Oregon*. Published 2017. Retrieved November 2, 2019, from Oregon Health Authority Primary Care Office: <https://www.oregon.gov/oha/HPA/HP-PCO/Pages/Maps.aspx>
2. University, O. H. *Primary Care Loan Forgiveness*. Published 2001. Retrieved Feb 2, 2020, from Oregon Office of Rural Health: <https://www.ohsu.edu/oregon-office-of-rural-health/primary-care-loan-forgiveness-pclf>
3. Terry DR, Nguyen HB, Schmitz D, Baker E. Lived experiences and insights into the advantages important to rural recruitment and retention of general practitioners. *Rural Remote Health*. 2018;18(3):4561.
4. Marchand C, Peckham S. Addressing the crisis of GP recruitment and retention: a systematic review. *British Journal of General Practice*. 2017;67(657):e227–e237.
5. Rourke JT, Incitti F, Rourke LL, Kennard M. Relationship between practice location of Ontario family physicians and their rural background or amount of rural medical education experience. *Canadian Journal of Rural Medicine*. 2005;10(4):231–240.

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Appendix

1. Post-presentation Survey Screenshot from Qualtrics



TITLE: Initiating a partnership with undergraduate students to promote careers in medicine via presentations to high schools in rural Oregon.

PRINCIPAL INVESTIGATOR: Eric Wiser, MD

CO-INVESTIGATORS: Mikayla Stevens, BS

WHY IS THIS STUDY BEING DONE?: "You" means you or your child. You have been invited to be in this research study, which is a medical student capstone project, because you are a high school student in Southern Oregon who will be hearing a presentation on medical careers by SOU and OHSU students. The purpose of this study is to determine how the presentation changes your level of interest in a medical career. By meeting this objective, we will establish whether early exposure to the requirements and career options within medicine is helpful in promoting careers in medicine to high school students. There is a short survey to be completed after the presentation to provide this information.

Data collected from/about you in this study will not be used and/or shared for future research.

WHAT PROCEDURES ARE INVOLVED IN THE SURVEY PORTION OF THIS STUDY?: If you decide allow the student/agree to participate in this study, they will complete a survey online that will take about 5 minutes. The survey will ask questions about the student's/your age, grade level, whether or not you plan to attend college as well as the content of the presentation and your interest in medicine. This data will be collected and analyzed afterwards. If you have any questions, concerns, or complaints regarding this study now or in the future, or you think you may have been injured or harmed by the study, contact Mikayla Stevens 541-891-5489.

WHAT RISKS CAN I EXPECT FROM TAKING PART IN THE SURVEY PORTION OF THIS STUDY?: We have made every effort to protect your identity, there is minimal risk of loss of confidentiality. The survey responses are collected without any identifying information and will remain anonymous.

WHAT ARE THE BENEFITS OF TAKING PART IN THE SURVEY PORTION OF THIS STUDY?: You may or may not benefit from being in this study. However, by serving as a subject, you may help us gain a better understanding of student interest towards medical careers. We also hope to be there to answer questions about college application, the medical field, and any other relevant questions you may have.

WHAT ARE THE ALTERNATIVES TO TAKING PART IN THE SURVEY PORTION OF THIS STUDY?: You may choose to not participate in this study.

WILL I RECEIVE RESULTS FROM THIS STUDY?: You may not personally receive results from this study, but aggregated information will be made available to the schools and they can share it with you at their discretion.

WHO WILL SEE MY PERSONAL INFORMATION?: In this study we are not receiving identifiable information about participants so there is little chance of breach of confidentiality.

WILL ANY OF MY INFORMATION OR SAMPLES FROM THIS STUDY BE USED FOR ANY COMMERCIAL PROFIT? Information about you or obtained from you in this research may be used for commercial purposes such as making a discovery that could in the future be patented or licensed to a company which could result in a possible financial benefit to that company OHSU and its researchers. There are no plans to pay you if this happens. You will not have any property rights or ownership or financial interest in or arising from products or data that may result from your participation in this study. Further you will have no responsibility or liability for any use that may be made of your samples or information.

WHERE CAN I GET MORE INFORMATION?: This research is being overseen by an Institutional Review Board ("IRB"). You may talk to the IRB at (503) 494-7887 or rb@ohsu.edu
• Your questions, concerns, or complaints are not being answered by the research team.
• You want to talk to someone besides the research team.
• You have questions about your rights as a research subject.
• You want to get more information or provide input about this research.

You may also submit a report to the OHSU Integrity Hotline online at <https://secure.ethicspoint.com/domain/media/en/gu/18915/index.html> or by calling toll-free (877) 733-8313 (anonymous and available 24 hours a day 7 days a week).

DO I HAVE TO TAKE PART IN THIS STUDY? You do not have to allow your student to join this or any research study. If you do agree and later change your mind you may withdraw your consent at any time. If you refuse to join or withdraw early from the study there will be no penalty or loss of any benefits to which you or the student are otherwise entitled.

HOW DO I TELL YOU IF I WANT TO TAKE PART IN THE SURVEY PORTION OF THE STUDY? Please indicate whether you provide your consent to participate in this study using the check boxes below

Yes, I provide consent to participate in this study. By selecting this option, you are certifying that you are either A student 18 years or older; OR Are the parent or guardian of a student under 18 years old and are over 18 years old yourself.
 No, I do not provide consent to participate in this study. If selecting this option, do not fill out the questions on the next page but still submit the survey at the bottom of the second page.

Grade

Age

Are you planning to apply to college(s)?

- Yes
 No
 Unsure

Evaluate the presentation using the following rating scale:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Prior to this presentation, I knew I wanted to enter the medical field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I thought this presentation was interesting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My questions about the medical field and training requirements were answered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After this presentation, I am interested in a career in the medical field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What did you like about the presentation?

What improvements could be made to this presentation?

Is there anything you would have like to spend more time on?