Full Narrative Report for 23-01-06 of the NC Policy Collaboratory's COVID Research Portfolio

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Back-to-College Challenge: Health Ambassadors for a Coordinated Culture of Safety and Wellness on WNC Campuses

Overview

Overall our project was highly successful especially with regards to the coordinated student health ambassador program. Big picture successes: all 6 WNC campuses in the collaborative effort were able to continue residential classes over the fall term, from 7/1 to 12/31 aggregate positivity rates across student populations were <3% vs. >8% across NC and two campuses had exceptionally low rates—Warren Wilson College (0 cases) and UNC Asheville (27 cases; 1.2% positivity rate). This team with has done 2 conference presentations and has a manuscript nearly ready for submission. The social bridging project is growing, albeit more slowly than proposed, and is clearly improving the lives of the socially isolated adults who the wellness volunteers reach. And we have been awarded funding to continue and amplify this work through June 30, 2021 from the UNC System Office. The comorbidity research team was set back timewise due to difficulty in getting access to the data. It is a strong team with researchers from UNC Asheville, MAHEC, UNC School of Medicine and Wake Forest University who are deep into the analysis and reporting as I write. They will complete two research manuscripts over the next months one utilizing NC DHHS statewide data and the other utilizing data extracted from three large hospital systems in the state. We are excited to be able to sustain work on all three projects past the grant period.

Project Proposal

Our project had three coordinated aims:

1. To initiate a WNC University Health Ambassador program to engage campus communities in rapidly adopting safe, evidence-based practices to establish a culture of safety on the 6 regional campuses, and evaluate the effectiveness.
2. To research the impact of reducing social isolation by rapidly escalating the roll out of the Social Bridging Initiative. Designed to increase connection of socially-isolated individuals, especially older adults, the Social Bridging Initiative utilizes trained wellness volunteers to link people to community resources to reduce isolation, lower risk of COVID 19 infection, increase access to telehealth services, and increase wellness through access to programming and requested resources.
3. And to conduct a statewide study of comorbidity for individuals who have died from COVID-19.

WNC University Student Health Ambassador Program

We propose to initiate an innovative WNC University Health Ambassador program at the six residential colleges and universities in the western region of the state. This program will employ and train a team of upper level student leaders to engage the student body in rapidly adopting safe, evidence-based practices that will quickly establish a culture of safety and prevention on campus. Leading conversations, training fellow students and monitoring safety practices in an age appropriate and creative manner should enhance more rapid acceptance and adoption of social distancing, wearing of face coverings, participation in symptom tracking and other measures that will minimize the impact of COVID infection on campus. These paid ambassadors will be trained well by UNC Asheville faculty and staff in conjunction with MAHEC medical and public health professionals and will share practical implementation successes with each other.

In addition, the six leaders of the institutions have agreed to a common mitigation strategy, including sharing a rapid response team run by MAHEC. The rapid response team will consist of trained medical professionals, on call to quickly follow up on positive symptoms, test, isolate, contact trace and quarantine in accordance with state and national guidelines. The response team will work with local health departments and colleges to react quickly and to continue to test. Student ambassadors will work with the team and help ensure that the student's non-medical needs are met.

This student-led, campus culture change along with the partnership with UNC Health Sciences at MAHEC represents an innovative approach to educate, inspire, and mitigate against a rapid and pervasive spread of COVID on campus and prevent closure of the campus. We intend to also employ UNCA faculty and students in a regional study of the process and effectiveness as a unique and novel approach to rapid, student-led, culture change and mitigation strategy. Not only will this project provide vital communication and services for the University and area communities in the time of crisis, but it will develop young people's interest in health-related careers and promote the health sector as a career choice for young people. We expect the results of this program to be published and widely disseminated to the rest of the state. We are requesting funding to implement, evaluate, and seed the sustainability of this effort.

Expanding and Studying the Impact of the Social Bridging Initiative

Students and community volunteers will also participate in a Social Bridging Initiative to help older adults (65+) and other with comorbidities, stay in their homes safely and receive benefits from willing and trained ambassadors. By doing this, team members will work with other agencies including Department of Health and Human Services and regional Area Agencies on Aging, to minimize the disproportionate impact on individuals with comorbidities (advanced age, diabetes, inactivity, etc.) which make them at higher risk to COVID.

In the state of NC, individuals age 65 and older account for 20% of COVID-19 cases and 85% of deaths due to COVID-19 (source: https://covid19.ncdhhs.gov/dashboard/cases). One in four residents in WNC is 65 or older, 64% of veterans in WNC are 65 or older, one in two have no vehicle available to them, and 16,500 individuals 65+ are living alone or with others not related to them as family. (source: NC DHHS COVID-19: Cases) In addition, there are 10,000 elderly living in long term care facilities in the 16 western counties in North Carolina. This is the major comorbidity associated with excess fatalities with COVID-19. In the United States, more than 30% of all deaths have occurred in residents of long-term care facilities and some states that percentage is over 50%. Of the six most common risk factors for social isolation for seniors in the US, NC ranks higher than the national average on 4 of these (disability,

divorced/widowed/separated, homebound, and living below poverty level.) (source: America's Health Rankings | AHR)

Social isolation leads to inactivity, increased cognitive decline, weakened immunity, and depression and anxiety (source; https://www.cdc.gov/aging/publications/features/lonely-older-adults.html). The Social Bridging Initiative utilizes undergraduate students, medical and pharmacy learners, and community volunteers to help socially-isolated older adults to learn and set up technology to access virtual social and medical visits. In addition, through calls to their homes the socially-isolated elders will be supported in connecting with evidence-based programs for remote disease risk management and fall prevention opportunities and resources for addressing social and behavioral determinants of health. They also will provide companionship and a bridge to the outside world of which they have been largely isolated. The effectiveness of this program will be evaluated and studied to assess the merits of expansion. In addition, it will provide valuable but safe, on-campus employment for students.

Statewide Comorbidity Analysis

UNC Asheville faculty will team up with the Chair of Research at MAHEC, Dr. Jacquie Halladay to collaborate with research teams at UNC-CH and other campuses to get access to the needed data on individuals who die from COVID-19 from the period March 2020 through September 2020. We anticipate that the most accessible data with sufficient information about co-morbidities is from the major hospital systems (Wake, Duke, UNC, Mission, Atrium and Vident), however, other data sources will be explored including state held data, Medicare data, among other sources. We will immediately pursue Institutional Review Board approval and data sourcing efforts upon notification of award.

The primary analysis will use Cox proportional hazard regression models to determine the co-morbidity risk factors associated with death and survival. The Cox proportional hazard regression model will assess the potential impact of hypertension, diabetes, coronary artery disease, immunodeficiency disease, chronic obstructive pulmonary disease, malignancies, renal diseases, and smoking status on outcome from COVID-19. The primary outcome of this project will be the determination of whether one, or a combination of, co-morbidities most predicts death as an outcome of COVID-19. Secondary analyses, on one or more subsets of data will evaluate the relationships of certain blood markers of health (fasting blood glucose, HbA1c, cholesterol, and triglycerides), health behaviors (stress, alcohol use, activity levels, and diet), socioeconomic status, height and weight, to death as an outcome of COVID-19.

Reports on this information will be provided to the NC Policy Collaboratory in report form in December and as at least two manuscripts submitted for publication in rapid response sections in peer reviewed medical and public health journals. In addition, through these same data sources we hope to acquire records on all those being treated or hospitalized with COVID-19 to study the factors that increase the likelihood of recovery from a COVID-19 infection. If available, these additional analyses could significantly impact public health and medical leaders to support messaging and programing to reduce risk of dying to this viral infection.

Context: A Coordinated Process of Safely Re-opening Campuses

In order to provide a safe, onsite, educational experience during the COVID-19 pandemic for Western NC (WNC) colleges and universities a team of chancellors, presidents and Mountain Area Health Education Center (MAHEC) leaders have been meeting weekly to prepare for an August reopening of the WNC Campuses. Considerations driving this preparation for reopening are numerous. Clearly, the situation will remain dynamic so the response will need to remain dynamic and will be driven by local case counts and other metrics, state phase, and regulatory guidelines. Plans to reopen campus for onsite

instruction in August will include a combination of virtual education as well as in-person instruction but with significant modifications to traditional practices. Colleges and universities will need to alter the physical environment to accommodate physical distance guidance and gathering size limits. As it is not currently possible to guarantee safety, strategies will focus to prevent spread, isolate cases, and mitigate risks. Guidelines and plans will need to follow Governor's orders with respect to travel, sheltering in place and reopening campuses.

The overall plan for WNC college and university reopening is based on published general guidance on best practices for higher education, congregate living situations, and food service. Planning for environmental controls is underway and incorporates creating work and study areas that promote physical distancing, ensuring current airflow controls are working optimally, adding physical barriers to reduce close personal contact where necessary, following recommended guidelines for cleaning and disinfection practices, marking one way passage through buildings and down corridors and six feet of spacing in lines at high-traffic areas, and establishing a space plan for isolation and quarantine of students living in congregate settings. In addition, guidelines are being prepared for student, faculty and staff arrival on campus with regular symptom checking, testing, surveillance and monitoring, and systems for communication, and best practices in public health education.

While all of this work must and will continue in a coordinated manner, these last three, surveillance and monitoring, public health education, and communication efforts are the focus of this proposal. The proposed project focuses on research and activities related to monitoring, assessing and addressing the public health impacts of COVID-19 (priority 4).

Goals: Student, faculty, and staff teams at UNC Asheville will partner with MAHEC colleagues to:

- Develop a national best-practice to improve adherence with COVID-19 prevention strategies and reduce COVID-19 transmission in colleges and universities with on-campus congregate living through student peer-to-peer led education, communication and supporting case and contact intervention.
- Enhance community outreach, decrease social isolation and improve well-being of older adults and other socially-isolated community members through connection by expanding the Social Bridging Initiative.
- Safely employ 100+ learners and recent graduates from 6 residential campuses in WNC to participate in the Back-to-College Challenge, the Social Bridging Initiative and applied health and social science research.
- Study and report on the impact of these two initiatives as important elements in a statewide response to the COVID-19 pandemic.

Participating colleges and universities: University of North Carolina Asheville (UNC Asheville), Western Carolina University (WCU), Brevard College, Mars Hill University, Montreat College, and Warren Wilson College.

Intervention: Hire and train student health ambassadors to serve as peer leaders, wellness supporters and COVID experts among their student body and with socially-isolated community members. Student health ambassadors will participate in peer education activities, facilitate communication on key COVID messaging including accessing symptom checking and testing, support case and contact follow-up and support and engage in social bridging calls to socially-isolated community members and peers.

Activities--UNC Asheville will partner with MAHEC to:

1. Educate--Create and evaluate appropriate health education for college and university students and WNC community members and provide initial and on-going education and support for student ambassadors and college and university faculty and staff.
2. Communicate--Develop and evaluate peer-to-peer communication strategies and communication with WNC community members for COVID interventions including COVID evaluation, testing, and follow-up.
3. Monitor--Adapt and evaluate guidance for tracking, tracing and supporting people diagnosed with COVID and their contacts for a student population.
4. Bridge--Connect to socially-isolated Western North Carolinians (older adults, people quarantined, caregivers, people in rural areas, among others) by phone to increase social connection, help them access and use to tools for connection (telehealth platforms, video conversation platforms, ways to link to family, social and faith-based groups), and offer support in connecting to NCCare360 and 211 for help with addressing social determinants of health.
5. Evaluate Impact--Through collecting both process and outcomes data on both projects

Deliverables:

- Develop a replicable peer-to-peer education model for supporting peers in engaging in safer, healthy, and more resilient behaviors as colleges and universities navigate re-opening during a pandemic.
- Hire and train up to 98 student ambassadors and 12 undergraduate research students from all six colleges and universities in WNC.
- Adapt NC DHHS model for training students to do health and safety communication (for mask wearing, physical distancing, checking on isolated folks, etc.)
- Conduct virtual interactive seminars (ECHO model) weekly for education and support of ambassadors.
- Socially connect by phone to all self-identified or referred socially-isolated community members
- Evaluate and report on the effectiveness of the peer-to-peer health communication, education, monitoring, and social bridging efforts.

Responsibilities:

- UNC Asheville and MAHEC will develop education, communication and tracking and monitoring guidance and training.
- MAHEC will provide project coordination and clinical consultation.
- UNC Asheville will serve as the coordinating university and research and evaluation lead institution.
- UNC Asheville and UNC Health Sciences at MAHEC will coordinate the Social Bridging Initiative.

Participating student body: up to 98 student ambassadors trained + 12 undergraduate researchers + 4 learners at MAHEC (MPH, Pharmacy, Medicine) = 114 learners employed part time

Over 20,000 campus community members will likely be impacted by the efforts of the Health Ambassadors and professional team members in the Back-to-College Challenge.
Potential number of students impacted by this project
UNC Asheville Community impacted 3765 students--40 ambassadors
Western Carolina University 12,167 students--30+ students trained as health ambassadors

Also in the WNC consortium of Colleges and Universities (funding sourced through MAHEC):
Mars Hill 1255 students--7 students trained as health ambassadors

Montreat 695 students--7 students trained as health ambassadors
Brevard College 688 students--7 students trained as health ambassadors
Warren Wilson College 582--7 students trained as health ambassadors

Faculty and staff on all 6 campuses will be impacted by the efforts of the Health Ambassadors and professional teams guiding the communication, education and monitoring efforts.

Socially-isolated community members around the western region of North Carolina will be identified and contacted by phone with social bridging calls to increase social connection, access to tools for connection, and support in connecting to NCCare360 and 211 for help with addressing the social determinants of health.

Research and Evaluation Plan
The NC Center for Health and Wellness (NCCHW) at UNC Asheville will lead the research and evaluation elements of this project with collaboration from the UNC Asheville faculty lead for the Applied Social Sciences program and Associate Professor, Sociology, Dr. Lyndi Hewitt, PhD, an epidemiologist at MAHEC, Dr. Sherri Denslow, PhD, MPH, and undergraduate researchers from health and wellness, sociology, political science, economics and statistics. Other supporters include: Nicolle Miller, MPH, RD, Director of State and Community Collaborations and Director of Healthy Aging NC, Dr. Amy Lanou, PhD, Executive Director of the NCCHW and Co-director, UNC Gillings MPH program in Asheville.

The North Carolina Center for Health and Wellness (NCCHW) at UNC Asheville aims to develop healthy North Carolina communities with equitable opportunities, with particular focus on addressing health disparities in the prevention and treatment of chronic health conditions. Consistent with our mission, the NCCHW serves as a state hub for the coordination and promotion of healthy-living initiatives that work to prevent chronic conditions and reduce disability among all North Carolinians. We strive to reach our goals through our two primary initiatives: Healthy Aging NC (HANC) and Culture of Results™ (COR). As North Carolina's statewide resource center for evidence-based health programs, HANC: connects people to the programs and agencies that improve community health; increases the capacity of agencies to deliver these programs; maintains the www.healthyagingnc.com website with current program information and online registration systems; and collects and analyzes data to report results. COR provides evidence-based training and technical support to agencies and initiatives across NC, applying key aspects of empowerment evaluation—providing evaluation as part of an ongoing planning process to support client self-determination and empowerment and organizational capacity building. Agencies and initiatives are able to develop the skills and capacity to evaluate their own services to adapt, improve, expand, and communicate the impact of their work and their contribution to the health and wellbeing of the population.

Outcomes and Evaluation Methods
Our **objectives** include: 1) engaging WNC college campus communities in rapidly adopting safe, evidence-based practices to maintain a culture of safety and health; 2) reducing social-isolation among older adults in WNC; and 3) improving health outcomes among campus community members and WNC communities.

Anticipated **outcomes** include: 1) reduced higher risk transmission behaviors by college community members; 2) increased knowledge how to stay safe, increase resilience, and improve wellness while physically distancing; 3) increased understanding of the social connection and technology needs of isolated older adults in WNC; 4) reduction in barriers to using telehealth, NC Care360 and other virtual

connection services; 5) increased availability and use of evidence-based tools for staying well and socially connected while physical distancing. These anticipated outcomes may be further refined as stakeholders engage in inclusive planning and evaluation processes to develop meaningful performance measures.

NCCHW employs a training and technical assistance program called Culture of Results (COR), which supports NCCHW and our partners in measuring their impact and improving results. NCCHW staff engage partners in learning and using Results-Based Accountability (RBA). RBA is an evidence-based framework for community improvement and program planning and evaluation. NCCHW applies RBA to track the quality and efficacy of programs and continuously improve. RBA leads stakeholders through the process of starting with the results desired and working backwards towards the means (or the strategies) to achieve them. Data is critical to the process, both in terms of performance measures and community indicators.

AIM 1: ***To initiate a WNC University Student Health Ambassador program to engage campus communities in rapidly adopting safe, evidence-based practices to establish a culture of safety on the 6 regional residential campuses in WNC, and evaluate the effectiveness of this work.***

Practice Report: Back to College: Student Health Ambassadors at Residential Campuses Contribute to Safe Campus Living and Learning during the COVID-19 Pandemic

Authors: Amy Joy Lanou, PhD, Jordan Perry, MPH, Lane Graves Perry, III, PhD, Brian Garland, MM, Kari Hunt, PhD, Kol Gold-Leighton, MPH

Background: In Summer 2020 six residential institutions of higher education (IHE) and the Mountain Area Health Education Center (MAHEC) in Western North Carolina chose a collaborative approach to mitigating COVID-19 infection rates on campus.
Aim: This approach shares the practices and successes of this concerted effort with a focus on a: large public, medium public, and small private IHE.
Methods: The campuses promoted a healthy and safe culture through a rigorous and transformational learning experience focusing on developing and engaging student health ambassadors (SHA) in applying the diffusion of innovations model to spread information, peer-to-peer gain-framing, and training.
Results: Over the term, each participating IHE was able to keep student infection rates low and remain residential for the fall semester. Promising transferable practices across the schools include: having strong institutional support (consistent messaging, role modeling, and administrative support); focusing SHA roles around positive and proactive gain-framed health messaging, mental health promotion and support; and changing campus culture through peer-led efforts to overcome negative stigma surrounding COVID-19 awareness and foster a community of health and care.
Conclusions: Transferable insights, tools, and lessons learned from three case studies focused on the role and impact of peer-to-peer student health advocates on campus to mitigate the spread of COVID-19.

INTRODUCTION

In summer of 2020, concerns about the spread of COVID-19 infection precipitated the need for a rapid shift in health-and-safety related behaviors on college campuses as students returned to live and study in the fall. The focus of college reopening efforts was to avoid or reduce the transmission of COVID-19 infection to mitigate the risk of severe illness and death among those at highest risk[9]. Keeping students safely learning and living on campus was predicted to reduce a variety of negative impacts from student mental and emotional health to enrollment decreases to community wide economic concerns. Campuses employed a wide variety of prevention, screening, testing, isolation and quarantine practices and public health organizations including the CDC and state health departments provided regularly updated guidance to institutions of higher education[2].

In a September 2020 commentary in JAMA, CDC-affiliated authors wrote, "A model response—both in planning for and responding to outbreaks—will involve a close partnership between communities and universities to join forces to reduce SARS-CoV-2 transmission"[9]. In Western North Carolina, a group of six residential institutions of higher education (IHE) chose a collaborative approach to mitigating COVID-19 infection rates, promoting a healthy and safe campus culture, and continuing to provide a rigorous and transformational learning experience. These IHEs put students at the center of the approach. Students along with all other campus stakeholders had an integral role to play in creating a campus environment and culture conducive to learning in the context of a viral pandemic. In addition, the IHEs worked closely with their county health departments and the Mountain Area Health Education Center (MAHEC), an organization "committed to improving health in Western North Carolina through

innovative health professions training and education and compassionate healthcare." The collaborative approach taken focused on engaging student health ambassadors using a peer-to-peer education model, the diffusion of creative and innovative student-driven ideas, and positive messaging, education and support rather than "scare tactics" and enforcement.

Peer-to-peer education has been used successfully to shift behaviors on university campuses and in other contexts. When it comes to shaping campus values, a longitudinal evaluation by White et al, 2009[10] demonstrated that peer health educators have a health promoting impact on the alcohol consumption, drug use, and dietary choices of their peers. In a peer-to-peer program pairing international and domestic students for 6 weeks, the impact of peer education both influenced healthy behaviors and promoted cultural competence[11]. Allowing students to help create health their own promotion programming is integral as they are closely aligned with their peers and hold similar values and general temperaments, which allows peer educators to be successful role models during and after school[1].

Diffusion of Innovations

Students initiating and influencing a peer-to-peer campus culture change creates greater buy-in from more reluctant students. Peer educators in the college setting are naturally more focused on shaping their leadership qualities and engaging in healthier behaviors. An applicable process describing how ideas, technology, and behaviors spread is explored and mapped by Rogers' (2003) Diffusion of Innovations Theory[7]. Rogers (2003) notes that in any given population or sector (e.g., a new technology diffusing in urban areas, a fashion forward style diffusing through a specific demographic, or a campaign focused on healthy COVID-19 behaviors on a specific college campus) ideas move through distinct segments codified as innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and laggards (16%). As noted, each of these segments represent a different percentage of the overall population and each of these segments have a specific receptivity, or rate of adoption, associated with the idea moving through the population. For example, a COVID-19 safety campaign that calls for students to wear (an approved mask or face covering), wait (physical distance), and wash (sanitize hands properly) would start with a specific, small group of innovators and move into adoption by early adopters. This would represent roughly 15-16% of a specific population (e.g., residential students attending classes in person on a university campus) adopting a specific idea (e.g., a set of positive behaviors that would slow the spread of COVID-19 on campus framed as a public health campaign). That is not enough of the population to actually meet the goal of a public health campaign; therefore, a strategy to reach the early majority (34%) would need to be adopted.

Considering this, the diffusion of an idea from a select few to the wider many can be explained. In an expansion of the Diffusion of Innovations theory, O'Steen and Perry[6] (2012) note that population segment adoption can come about naturally or organically due to environmental conditions and context shifts, or "this can come about through… a more strategic manner with a change in institutional leadership or revised organizational goals" (p. 33). Juxtaposed with the organic environments or natural conditions, this more strategic manner might be considered synthetic or human-made/informed. Rogers (2003) accounts for this momentum with the five following diffusion drivers that positively correlate with the movement of an idea from one population segment to the next (e.g., early adopter to early majority): relative advantage as value and prestige, compatibility with population's values, complexity to understand, trialability to test with low risk, and observability as being visible to others. Still yet, even with current contexts considered such as the natural environmental conditions (e.g., a global pandemic) and the human-made/informed idea or response (e.g., a public health campaign designed to slow the spread of COVID-19), Rogers (1983) generally notes, "getting a new idea adopted, even when it has obvious advantages is often very difficult" (p. 1).

Positive Reinforcement and a Gain-Framing Approach

Numerous studies have shown that gain-framing or positive messaging in efforts to shape health intentions and behaviors are more effective than loss-framing or scare tactics. A meta-analysis of 94 papers that compared the persuasive impact of loss- and gain-framed messages on health behaviors showed that gain-framed messages were significantly more likely to result in prevention behaviors[3]. In addition, the IHEs in this collaboration avoided putting SHAs in an enforcement role as our collective experience in peer education and experts in higher education[4] concur that we have the best chance of achieving our goals when the students' work is positive, proactive, and prevention-focused rather than reactive or enforcement-focused. Some experts suggest that "scolding and punishing students" may mean they are less likely to comply with testing and contact tracing should the need arise. Simply put, the SHAs' role is to proactively role model and positively support other students[8]. In doing so, SHA peer educators and culture shifters have the potential to head off the adverse outcomes that this pandemic could bring and lift up a culture of wellness and community care among their peers.

The purpose of this of this report is to share the practices and successes of this effort by six institutions of higher education in WNC with a focus on the programs at one large public (Western Carolina University), one medium public (University of North Carolina Asheville), and one small private university (Mars Hill University).

METHODS - WNC Collaboration & Program Overview

The collaboration among the six institutions of higher education was initiated by their Chancellors and Presidents who had chosen to meet regularly with MAHEC leadership to plan a course forward for a safer reopening. A collaborative student health ambassador program came into focus as state COVID funding for research related to COVID response became available through the NC Policy Collaboratory. UNC Asheville's Chancellor, one of the authors (AJL), and two leaders from MAHEC, the CEO and the Chair of Public and Community Health, applied for and received funds to support the programs at MAHEC and the two North Carolina state institutions (UNCA and WCU). MAHEC leaders contributed funding for the 4 private institutions (Mars Hill University, Warren Wilson College, Brevard College, and Montreat College) to support the rapid development and implementation of the Student Health Ambassador (SHA) program to prepare for campus reopening and support WNC campuses in supporting a culture of safety and wellness in response to COVID-19. As part of this effort, a project manager was hired by MAHEC to coordinate the Student Health Ambassador program across the schools (author KGL). Each campus identified IHE leads for the work (3 are authors; JP, LP and KH).

MAHEC also provided ongoing technical assistance and clinical consultation to IHE leadership, faculty, and staff throughout the fall semester using an ECHO virtual platform for 50 to 300 attendees. Scheduled as needed, these hour-long sessions addressed topics such as public health guidance, infection trends and dashboard developments, testing news and protocols, isolation and quarantine protocols, racial equity in COVID response, risk factors for severe illness and vaccination development progress. In addition, weekly smaller cross-institution collaborative meetings were held for the COVID administrative, clinical and SHA leads from each IHE. These video conference meetings provided an opportunity for idea sharing, education, and cross-campus communication.

The collective goal of this project was to develop a Student Health Ambassador (SHA) initiative onsite at each IHE to work with the COVID-19 lead staff/faculty members at each IHE to engage the campus community in responding to COVID-19 and rapidly adopting safe, evidence-based practices by modeling, sharing relevant resources, information, and providing technical assistance that builds awareness, increases skills, and changes behaviors that support and encourage effective prevention and mitigation of COVID-19. These efforts were designed to be complementary and supportive of efforts of other campus stakeholders to prepare for physical distancing, mask wearing, hand and surface sanitation, reduced living density, take-out food operations, way-finding through buildings, temperature

and symptom checking strategies, separate housing for students in isolation or quarantine as well as combinations of remote, hybrid and onsite learning.

Hiring and training of SHAs happened in a staggered manner due to timing of the receipt of funding and differences in fall semester start times. Campuses devised their own processes for recruiting and hiring SHAs using a common job description modified to meet the needs of each campus. In July a small team of UNC Asheville and MAHEC staff and faculty prepared a student-centered training for future SHAs (author JP). The training curriculum covered the role of the ambassadors, COVID-19 basics, state/local/campus-specific policies, confidentiality, self-care, peer education, supporting peers, evaluation of health information, communication skills, and bystander intervention including role-playing scenarios. On August 5th and 6th, 45 UNC Asheville students (including 10 already selected to be PEPAH interns, an established volunteer peer educator program) were trained using the collaboratively developed SHA curriculum. With support from UNC Asheville trainers and the faculty who led a credit-bearing summer Pandemic Preparedness Course, Western Carolina University leaders trained 21 Catamounts Care Ambassadors on August 21 (Catamounts Care was an already established peer education program). On August 28th MAHEC, UNC Asheville, and WCU staff facilitated a SHA training designed for the newly hired SHAs at the 4 private IHEs: 7 from Brevard College, 5 from Mars Hill University, 9 from Montreat College, and 6 from Warren Wilson College.

After training was completed, UNC Asheville SHAs met twice weekly to develop peer-to-peer communication strategies and address specific content in smaller teams, and all the other IHE teams met weekly for ongoing training and support, as well as to plan and establish their peer-to-peer communication strategies for a campus COVID response. All 93 SHAs wore custom made ID badges and SHA t-shirts while engaged in various peer education and support on campus activities. Collectively, throughout the fall semester SHAs amassed over 1,500 hrs of training and team meetings. In addition, the MAHEC team provided monthly virtual SHA huddles where SHAs and IHE leads came together to learn from each other and from clinical experts at MAHEC and UNC Asheville how to best continue supporting students, faculty, and staff and receive up-to-date COVID-19 information and share experiences. Huddles were offered three times during the fall semester for SHAs and included the following content: 1) addressed SHA successes, challenges and current activities in September, 2) Chancellor's and Presidents gratitude, project highlights and new and newsworthy COVID-19 education and Q&A with MAHEC MDs in October, and 3) COVID trends and updates and a expert panel addressing leaving from and returning to campus safely, mental and emotional health and tools for building resiliency in November.

The SHAs and their campus program coordinators benefitted from institutional support from their Chancellors and Presidents as well as faculty, student affairs and health professionals on all six campuses. With this support, the SHAs were able to engage in a wide range of on-campus activities that encourage safer, healthier, and more resilient behaviors. The programs on three of the campuses will be detailed below. Some example activities from all six campuses include: virtual and in person support stations, witnessing wellness walks, social media promoted mask wearing contests, COVID-safe text alerts, decompression Zoom sessions, meal and care package deliveries to students in quarantine and isolation, virtual game nights, and a Healthy Lions Influencers campaign.

UNC Asheville assembled an evaluation team to guide UNC Asheville SHAs and support the other campuses in understanding the impact of this rapidly deployed, coordinated peer-education effort. The evaluation team led key stakeholders through an empowerment focused evaluation process based on the Results-Based Accountability framework to collectively identify and prioritize the headline and data development performance measures to collect answers to the questions: how much did we do, how well did we do it, and how much impact did the SHAs have? The team identified some measures were already being collected (e.g. confirmed COVID-19 cases on campus dashboards, and number of views on social media) and developed two surveys: one to evaluate the impact of the program on the student

population who was meeting on campus for classes and one to understand the impact of program engagement on the health ambassadors themselves. WCU created their own evaluation methods which included post-wellness walk tracking by the SHAs and an in-person survey created and implemented by a graduate student team. Our evaluation team reviewed these evaluation tools to identify seven performance measures used by both schools and shared these and the instruments with the four other campuses. Finally, each campus collected as much data as possible in the fall and used this information to plan for Spring 2021.

RESULTS - Project Descriptions at 3 of the Campuses

The practices and successes of this collaborative effort by six institutions of higher education in WNC are highlighted in case study format for the SHA programs at one large public (Western Carolina University), one medium public (University of North Carolina Asheville), and one small private university (Mars Hill University).

Mars Hill University

Mars Hill University is a private, liberal arts institution located in Mars Hill, NC, which has a population of about 2,620 and is approximately 20 minutes north of Asheville. In Fall 2020, the campus population was comprised of 1051 students (949 traditional students, 71 adult and graduate undergraduate students, 30 graduate students, and 1 dual-enrolled student) and approximately 285 employees (https://www.mhu.edu/about/profile-student-body/). An academic community rooted in the Christian faith, Mars Hill University challenges and equips students to pursue intellectual, spiritual, and personal growth through an education that is grounded in a rigorous study of the liberal arts, connected with the world of work, committed to character development, to service, and to responsible citizenship in the community, the region, and the world (https://www.mhu.edu/about/).

The Program--The Healthy Lions Campaign

The MHU Student Health Ambassador (SHA) program was mobilized by five undergraduate students and one faculty SHA Coordinator. On August 14th, the SHA Coordinator was selected to oversee the program at MHU (author KH). Over the next week, a modified description of the SHA position was created and posted on the student employee portal. The position was posted to all students, but many of the top applicants were recommended by faculty members and administrators. In the following week, applications were reviewed and interviews were facilitated virtually over Zoom. By August 26th, five students had been hired for the SHA positions, for 10 hours/week at a pay rate of $12/hr. The five MHU students started preparing very quickly for their new role, when they joined fellow students from the other private institutions (Warren Wilson, Brevard College, and Montreat College) in a ½ day virtual Student Health Ambassador training on August 28th. The following week included their first of many weekly SHA meetings and two days assisting staff with student move-in.

Over the course of the semester, these 5 SHAs contributed approximately 400 hours to the campus-wide response effort. They assisted the MHU COVID-19 Response Team (CRT) with the implementation of new protocols and procedures, including, but not limited to: training students on the process for self-reporting temperature and symptoms, staffing various thermal camera temperature stations, delivering meals and goodie bags to students in quarantine and isolation, and promoting and assisting with multiple flu shot clinics held on campus.

In addition to reinforcement of public health education and messaging through social media platforms, the primary focus for programming was the Healthy Lions Campaign, which is best described as a community initiative “to keep our Lions safe, healthy, and on campus!” The campaign included a Healthy Lions Challenge, a reward system to encourage and support students who were demonstrating appropriate health behaviors and following COVID-19 guidelines. Students who met the established

criteria were recognized as Healthy Lions Influencers and received a complimentary t-shirt. The SHAs also utilized the inherent leadership potential and high percentage of student-athletes (49%) at MHU to extend the reach of the Healthy Lions Campaign. Two athletes per team were selected as Healthy Lions Influencers and served as liaisons between the athletic teams and the SHAs. The student-athletes helped to promote Healthy Lions programming and modeled healthy behaviors. Future efforts will consist of intentional recruitment of additional Healthy Lions Influencers from established student leadership groups on campus.

Institutional and Environmental Support

In August 2020, the MHU administration assembled 11 individuals from various departments on campus to serve on the CRT. The SHA Coordinator was part of the CRT, which allowed for the direct communication of needs and concerns between the group and SHAs. Face-to-face classes were also delayed three weeks, which enabled additional and necessary preparations to take place before the arrival of students. In addition to the development of COVID-19 related policies and procedures, the CRT met daily throughout the semester to continually assess the needs of the campus. Daily meetings and responsibilities consisted of reviewing new cases (housing needs, contacts, etc.), addressing academic support and communication with faculty regarding student navigation of classes from quarantine and isolation, coordinating room assignments and meal deliveries (~4,300 meals were delivered by 40 faculty/staff volunteers and SHAs). In addition, the CRT team, managed COVID-19 testing and contact tracing (by medical services and athletic training personnel), addressed concerns and policy violations generated from a community accountability form, updated university dashboard numbers, reviewed disaggregated data for forecasting, and assisted with the reintegration plans (post Q/I) for student-athletes/teams.

Successes

Although the pandemic challenged the University in many ways, the advantages of a small, close-knit campus prevailed when it was needed most. Stemming from transparency and strong communication from senior leadership, faculty, staff, and students followed suit by sharing responsibility and renewing commitment to the MHU community and its values. The collaborative effort amongst the SHAs and the CRT, as well as the proactive approach to testing and contact tracing allowed the campus to continue with the face-to-face learning environment. Across the fall semester there were 76 confirmed positive COVID-19 cases (65 students, 11 employees) for a student infection rate of 6.2% and an overall infection rate of 5.7%.

The SHAs reported feeling strongly supported, developing leadership skills and confidence, and making more connections on campus. One SHA stated, “I feel proud and confident that I am able to go home for the semester knowing that our program was able to make an impression on the student body. While we may not have been able to move mountains, we definitely planted the seeds to a healthier future.”

Figure 1. SHAs handing out promotional items and stamps for the Healthy Lions Challenge.(left)
Figure 2. Students displaying their new Healthy Lions Influencer T-shirts.(right)

SHA Engagement Activity	**Number of SHAs**	**Description**	**Aligned Goal(s)**	**Impact**
Healthy Lions Campaign	All	The SHAs worked approximately 1-2 hour shifts during the week to cover the Healthy Lions table and promote the campaign. The campaign included a Healthy Lions Challenge, which is a reward system to encourage students to demonstrate appropriate health behaviors and follow COVID-19 guidelines. The SHAs also "recruited" Healthy Lions Influencers (2 representatives from each athletic team) to model safe and healthy behavior that will encourage the remainder of the student body to follow suit.	Positively reinforce healthy COVID-19 behaviors and practices.	Over 350+ stamps and 45 t-shirts were given out to students (Healthy Lions Influencers). This included 32 student-athletes that were selected as Healthy Lions Influencers.
Events	All	SHAs supported events on campus, including student move in, staffing of thermal camera temperature stations, multiple Flu Shot Clinics (assisted w/ promotion of, and day of check-in), the Centennial of 19th Amendment - Women's Right to Vote event (assisted w/ physical distancing of participants). SHAs planned and facilitated events, such as the Tie Dye Mask Decorating event for Halloween and a "Holiday Workout" for students to participate in over the winter break.	Educate and support other students in engaging in safer practices.	The SHA organized and/or supported 15 events on campus in the fall semester.
Communications & Messaging	All	Developed and maintained a Facebook, Instagram, and Twitter accounts and an SHA email address. Worked with the Department of Marketing & Communications to create and distribute informational flyers related to COVID-19 and campus policies. Promoted the	Inform and educate student peers on COVID-19 health guidelines.	For the 14-week fall 2020 semester, over 150 posts were made amongst the 3 social media sites. Followers included: Facebook (99), Instagram (202), Twitter (32).

		MyReasonWNC campaign through various posts and supporting #MyReasonWNC videos.		
Support of students in Quarantine and Isolation	All, 1 Coordinator	SHAs worked with faculty and staff volunteers and Dining Services to coordinate meal delivery to students in Quarantine and Isolation. The SHAs also provided support for these students through occasional distribution of goodie bags (crossword puzzles, candy, stress reliever items).	Support students in isolation or quarantine by helping to meet non-medical needs like meal or class supply delivery and virtual support.	The SHAs and approximately 40 faculty and staff members delivered over 4300 meals to students in Quarantine and Isolation over the course of the semester.
Training and Continuing Education	All	SHAs received 4 hours of general training from the coordinators and MAHEC partners in late August 2020. The SHAs met weekly to discuss upcoming events and updated COVID information (e.g., case rates, interventions, weekly reflections, etc.) and monthly with all ~90 health ambassadors from across the six partner campuses for professional development purposes.	Participate in training to understand COVID-19, its impact, its prevention, and campus resources.	Each SHA participated in 12 team meetings with the SHA Coordinator and 4 joint meetings with all six campus partners and MAHEC.

Table 1. From Engagement Activities to Impact: An Overview of the MHU SHA Program

Lessons Learned

The implementation of new campus policies and procedures at the start of the semester created a steeper learning curve and issues with cooperation amongst students (ex: mask wearing and guest policies within residence halls). Even with an emphasis on modeling the behaviors and positive reinforcement, the SHAs still contended with some of the negative social and political stigma surrounding the pandemic. The team observed an increase in policy violations in the final few weeks of the semester due to mask/overall policy fatigue. The decreased social interaction and stress associated with the pandemic also warrants more attention from the University related to emotional health of students and employees.

Western Carolina University

Founded in 1891, Western Carolina University (WCU) is a public regional comprehensive university in a rural area in western North Carolina. WCU has a student enrollment of nearly 12,000 students with roughly 4,000 living on-campus in residence halls and another 4,000 non-residential students living within a few miles off-campus. WCU's mission focuses on creating "learning opportunities that incorporate teaching, research, service, and engagement through on-campus, off-campus, on-line and international experiences." The university focuses its programs and activities in an effort "to sustain and improve individual lives and enhance economic and community development in Western Carolina and beyond'' (WCU Mission Statement). A sustained commitment in partnership with the community is a hallmark of WCU and manifests in every college in the form of engaged research, teaching, and service.

Institutional context

In mid-March 2020, COVID-19 required WCU to move all courses to an online virtual learning environment. Summer 2020 provided WCU administration and faculty the time and space to intentionally focus on planning and preparation for fall 2020 with the intention and commitment to resuming in-person courses in a healthy and safe way. The guiding policy for a healthy and safe in-person fall semester reopen was referred to as the *Catamounts Care* public health campaign. *Catamounts Care* was designed to remind our campus community of the shared standards and personal

responsibility "for actions that may affect our own health and the health of our friends, colleagues, and the board campus community" (WCU Community Standards, 2020). The *Catamounts Care* campaign focused specifically on articulating, encouraging, and supporting the following guidelines: wash your hands properly, practice social and physical distancing, face coverings are required, clean and disinfect, "Feeling sick? Stay home", and practice self-care and show respect and caring to all (https://www.wcu.edu/operations-procedures/community-standards.aspx). This public health campaign included extensive messaging from campus leaders in the form of radio and social media ads, campus signage, and branded personal protective equipment packages for all faculty, staff, and students.

The program--the Catamounts Care Student Health Ambassadors program

Through the IHE partnership, an outreach component was added to the WCU *Catamounts Care* public health campaign – the Catamounts Care Student Health Ambassadors (CCSHA) program. The CCSHA program focused specifically on outreach and education with the greater intention of fostering and supporting a culture of care around safe COVID-19 health-guidelines and practices. These ambassadors served as the proverbial boots-on-the-ground on the frontlines of the *Catamounts Care* campaign. CCSHA's primary goals centered on helping inform and educate student peers on COVID-19 health-guidelines, positively reinforce healthy COVID-19 behaviors and practices, and to be seen as a positive example on campus by peers.

Between July and August 2020 CCSHA position descriptions were developed, positions were listed and advertised, group interviews were facilitated, hires were made, a training program was developed and delivered, and an operational and logistics management structure was organized in preparation for the fall 2020 semester. The WCU CCSHA program had 20 ambassadors hired, trained, and engaged by Monday, August 31, 2020. Each ambassador received a $1,300 educational stipend for the fall semester.

The operational and logistics management structure for the WCU CCSHA program was made up of three primary engagement components: witnessing wellness walks, sub-teams membership, and continuing education. Each of these strategies engaged CCSHA's, connected to one or more program goals, and was impact focused. These concerted efforts directly impacted the case rates WCU experienced over the fall semester. During the fall semester (7/1-12/31), WCU had 474 confirmed positive COVID-19 cases (437 students, 30 employees, and 7 contractors). During the fall our positivity rate never was higher than 13% and was only above 10% two times (the first two weeks back on campus, 8/21-8/31, 12.8% and 13.2% respectively). A majority of the weeks (10 weeks) reported a <5% positive test result. This resulted in a 4.7% infection rate across WCU students in fall 2020.

Successes

CCSHA Engagement Activity	Number of CCSHAs	Description	Aligned Goal(s)	Impact
Witnessing Wellness Walks (WWW) & Follow-Up Shift Surveys	All (2-3 shifts per week per CCSHA)	Organized daily (M-F, 2-hour shifts between 9 am-5 pm) campus walks across three zones (upper, lower, & Millennial campuses) in teams of two. CCSHA's positively reinforced mask wearing, physical distancing, and other	Positively reinforce healthy COVID-19 behaviors and practices; Be a seen example on campus by peers.	A total of 422 WWW's over 12 weeks with ~5,500 positive interactions and ~800 challenging interactions leading to the distribution of ~4,000 positive reinforcement sticker & info bags.

		positive behavior with *Catamounts Care* stickers & info bags.		
Sub-Team Membership: Social Media	6	Developed and managed the CCSA social media account with the purpose of disseminating up-to-date information. Organized weekly posts & campaigns focused on campus guidelines and programs.	Inform and educate student peers on COVID-19 health guidelines.	125 Instagram followers, 31 posts over the fall 2020 semester, & 2-3 weekly stories.
Sub-Team Membership: Incentives & Programming	7	Developed the weekly (W, 10 am-1 pm) CCSA store where students could convert *Catamounts Care* stickers into prizes (e.g., free coffee, t-shirts, etc.), earn additional stickers, and get info.	Positively reinforce healthy COVID-19 behaviors and practices.	Over 10 store weeks ~50 customers per week engaging a total of ~500 student customers.
Sub-Team Membership: Outreach & Care	7	Developed the outreach effort to the Quarantine & Isolation hall and the Thank You & Pen Pal campaigns.	Be a seen example on campus by peers.	150 Catamounts Care bags distributed & signed and distributed 100's of thank you cards to frontline employees and had 12 pen pals.
Continuing Education	All	Met weekly to discuss updated COVID information (e.g., case rates, interventions, weekly reflections, etc.) and monthly with all ~90 health ambassadors from across the six partner campuses for professional development purposes.	Inform and educate student peers on COVID-19 health-guidelines.	12 continuing education meetings with 4 being joint meetings with all six campus partners and MAHEC.

Table 2. From Engagement Activities to Impact: An Overview of the WCU CCSHA Program

Challenges

Some challenges WCU experienced included the perception of peers viewing the CCSHA's as "COVID police" or enforcers of institutional policy, versus the positive behavior reinforcers they were hired and trained to be. This led to peers temporarily responding with positive behavior when a CCSHA was in the vicinity and going back to less safe behavior once the CCSHA left the area. Another challenge was couched in the unknown and fluid nature of starting something brand new amidst a global pandemic with real, local impacts. There were elements of territorialism, credit-sharing, attribution of successes, and communication breakdowns. All things considered, the project was proven successful in impact and will be replicated in the spring 2021 semester.

Figure 3. CCSHA Training photo.

University of North Carolina Asheville

The University of North Carolina Asheville is the state's designated public liberal arts university and one of the 17 UNC System institutions. UNC Asheville is located in Asheville, NC and had 3,363 students and 705 employees in Fall 2020. The university's liberal arts curriculum and approach to teaching and learning emphasize critical thinking, clear and thoughtful expression, undergraduate research, community engagement, and free and open inquiry. Through small class sizes, close collaboration, and high-impact experiences, the university strives to prepare the next generation of leaders and productive citizens to serve North Carolina and the nation. The university's values include diversity and inclusion, innovation, and sustainability (https://www.unca.edu/about/mission-values/).

UNC Asheville's Student Health Ambassador (SHA) program was developed in Summer 2020 with a goal of reducing COVID-19 transmission and promoting wellness among students. This program included 45 student ambassadors, two staff coordinators, and 11 faculty/staff advisors. SHAs received 10 hours of initial training as well as continuing education and support through the semester. During Fall 2020, SHAs provided 1,798 hours of in-person and virtual support through support stations on campus and Zoom sessions, planned and supported 32 events, and developed health promotion messages in collaboration with the office of Communications and Marketing. SHAs worked in teams such as Athletics, Performing Arts, Communications, and more. The program was grounded in what the coordinators called the 3 Ps: positive, proactive, and prevention-focused, and SHAs were intentionally kept out of enforcement roles.

SHA Engagement Activity	Number of SHAs	Description	Aligned Goal(s)	Impact
Support stations - on campus and virtual	Most, some did not feel as comfortable being on campus or tabling and we did not push them since it was not part of the original job description	Available 1-2 hour shifts each day of the week (fewer on Saturday and Sunday) in 4-8 campus locations, plus 2 virtual sessions (more on weeks with high levels of need)	Educate and support other students in engaging in safer practices. Assist with voluntary temperature checks.	1,798 support hours provided in Fall 2020

Communications Team: SHAC (one of eight topic-based teams)	6 SHAs, 3 advisors	Created and maintained an Instagram page and email address. Created and distributed flyers on paper and digitally. Managed communication between the eight teams, interested campus partners and students, and worked directly with the university's Communication and Marketing professionals. Worked with campus and community journalists. Provided resources to the other IHEs.	Develop social media and print health communication campaigns for other students. Communicate regularly with teammates, supervisors, and advisors.	317 Instagram followers 5 videos produced in collaboration with Communication and Marketing Over 30 campus and external publications
Events	Most, some teams were focused on things like communications	SHAs supported events organized by others such as painting a Black Lives Matter protest and mural and Glowga by providing staffing and safer practices. SHAs planned and facilitated events such as a Halloween scavenger hunt open to teams/pods and wellness bingo for a Living and Learning Community.	Educate and support other students in engaging in safer practices.	32 events planned, facilitated and/or supported
Support of students in Quarantine and Isolation	5 SHAs, 1 advisor	SHAs worked with professional staff and Dining Services providers to coordinate meal delivery to students in Quarantine and Isolation.In addition, the SHAs provided support through texts, phone calls, social media, and educational materials.	Support students in isolation or quarantine by helping to meet non-medical needs like meal or class supply delivery and virtual support.	1,101 meals delivered
Training and Continuing Education	All	SHAs received 8 hours of general training from the coordinators and MAHEC partners in addition to 2 hours of team content training in August 2020 Met weekly to discuss updated COVID information (e.g., case rates, interventions, weekly reflections, etc.) and monthly with all ~90 health ambassadors from across the six partner campuses for professional development purposes.	Participate in training to understand COVID-19, its impact, its prevention, and campus resources. Engage in safer practices including the 3 Ws.	Each SHA participated in at a minimum of 40 hours of meetings and trainings through the 15 week semester.

Table 3. From Engagement Activities to Impact: An Overview of the UNCA SHA Program.

Institutional and Environmental Support

Though the pandemic brought many challenges, UNC Asheville faculty, staff, and administrators set the campus up for success. Residential Education ensured that students were spread into lower density housing, Academic Affairs shifted the academic calendar so the semester began and ended early, and UNC Asheville has a strong culture of care on campus. During the Fall 2020 semester, 49% of

classes were held completely in-person, 33% of classes were completely online, and 18% were hybrid with a mix of in-person and online elements. Finally, there was strong campus and community support of and buy-in for the SHA program. Examples of this included frequent statements about the program from university administration, inclusion of the coordinator in the Emergency Operations Committee, and offers of ongoing support.

Successes

UNC Asheville recorded 27 confirmed COVID-19 cases among students and employees between July 1st and December 4th, 2020; this is the lowest prevalence of cases among the 17 campuses in the UNC System (<1% infection rate for students and for students + employees). SHAs reported building leadership and communication skills, and feeling supported by faculty and staff. Finally, UNC Asheville was able to start classes as planned, stay on campus until the planned end of the semester (before Thanksgiving), and to offer exit testing for COVID-19 to any interested student. Quarantine and isolation spaces were never at or near capacity, and no COVID-19 cases were traced to classroom transmission. The majority of cases were traced to off campus sources.

Challenges

Some challenges UNC Asheville experienced included pressure for the SHAs to engage in enforcement (such as making sure students were wearing masks or were socially distancing or reporting non-compliance with community standards) or to engage in practices that were not evidence-based, such as temperature checks. In addition, while the strong campus and community support of this program was a benefit, it also meant the program was highlighted often and credited for successes that were the result of parallel efforts across a number of campus units. For this reason it was subjected to scrutiny and some faculty and staff had questions and critical feedback about the role of the ambassadors and how the program functioned.

Figure 4. SHAs supporting Campus Recreation's Glowga event. (left)
Figure 5. SHAs tabling in support of student mental health. (right)

DISCUSSION

As highlighted by the experience of the three campuses detailed above, two key goals were realized by this collaboration of WNC residential IHEs implementing SHA programs: 1) COVID-19

infection rates were mitigated by comprehensive prevention efforts and 2) students were able to live, learn and play on campus for all or the majority of the term (some campuses had classes post-Thanksgiving that were shifted entirely online). Comprehensive prevention efforts included mandatory mask wearing, consistent social distancing practices in buildings, classrooms, living spaces and even outdoors, frequent and thorough personal hand and institutional disinfecting. A recent economic analysis in the Annals of Internal Medicine[5], found that not only does extensive social distancing with a mandatory mask-wearing policy prevent most COVID-19 cases on college campuses, but it is also very cost-effective. The collaborative student health ambassador programs at each of these campuses supported the diffusion and adoption of these comprehensive prevention efforts.

Within higher education contexts, student leaders and their engagement are imperatives. If practitioners can find ways to highly engage students in high-level roles, then deep impact is possible. This assertion is supported in Rogers' Diffusion of Innovation theory and has been concretely observed in applied contexts, particularly on these three campuses that supported Student Health Ambassadors to diffuse healthy behaviors proven to slow the spread of COVID-19 in communities. With this, engaged, committed students are the keystones to ideas pervasively permeating a campus. Whether it is democratic engagement initiatives like voting or a public health campaign designed to slow the spread, students must buy-in and students tend to buy-in when they see other students buying in. This process is scalable, but it must start with dedicated and prepared student leaders who essentially serve as innovators and early adopters of ideas worth spreading.

Overall, regular communication between campus leaders, MAHEC, and SHAs amplified learning and created efficiencies of effort (or at least reduced duplication) and facilitated a shared culture of health and safety for the six IHEs in WNC.

Promising & Transferable Practices

A promising practice is a transferable concept that can be adopted and applied in other higher education contexts. As students were key to the *Catamounts Care* public health campaign and the CCSHA program, the *Healthy Lions Campaign* and the UNC Asheville's Student Health Ambassador program, the promising practices observed will be focused on the student perspective.

The first promising practice we observed from the very beginning and that is **identifying and selecting the right students**. A common theme across all 21 of the ambassadors at WCU was their shared perspective that WCU was their home and that they wanted to do everything possible to keep their home and neighbors safe.

As staff recruited and interviewed possible SHAs at UNC Asheville, they sought students who were well known on campus (either as formal or informal leaders), who were positive and believed they could make an impact on their campus, who were willing to be flexible in the face of changing guidance, and who were interested in health promotion, but weren't necessarily experts. Key to peer education is building trust, and student peer educators who are willing to say "I don't know, but let me find out and get back to you," is invaluable.

At MHU, the Coordinator and hiring staff looked intentionally for students who had prior involvement on campus and had demonstrated a passion for service and a level of commitment to the campus community. Students best suited for the SHA position would prove to be self-motivated with inherent leadership abilities, display a strong work ethic in the classroom, and possess a sociable demeanor. The student-athletes selected as the first sub-group of Healthy Lions Influencers were

deemed as influential leaders due to their involvement in athletics, and could be utilized as early adopters[7] in the facilitation of appropriate health behaviors on campus.

A second promising practice was centered on the ambassadors' awareness of the **strong institutional support**, which at WCU came in the form of institutional messaging, Chancellor and other administrative support (e.g., training welcome from the Chancellor, follow-up thank you notes, invitation to present at the board of trustees meeting, public recognition of the CCSHA program, etc.). One CCSHA at WCU commented, "Even the chancellor took time out of her day to talk to the SHAs on their walks and tell them how proud of them she was." At UNC Asheville, institutional support was highlighted by the Chancellor expressing her gratitude at SHA meetings/huddles, grant support for the work, administrators highlighting SHA activities at campus wide town halls, and intensive support from the marketing and communications, health and counseling, and student affairs teams. In addition, WCU's Chancellor and UNC Asheville's Chancellor sent each of the SHAs a thank you gift and note at the end of the Fall 2020 semester. The SHAs at MHU felt very supported by faculty and staff, and were acknowledged and thanked personally by the Provost and University President at a MAHEC sponsored "Huddle" meeting, Board of Trustees meetings, through *Happenings on the Hill* weekly updates, and the *Alumni & Friends* newsletter. Administrative support also came in the form of financial resources to purchase prizes and incentives for the Healthy Lions Challenge. One staff member conveyed his appreciation for the work of the SHAs by stating, "I just wanted to shoot you a quick message of gratitude and support for your efforts and dedication to helping keep MHU healthy during this pandemic. I hope you know how vital and appreciated you are, even if it doesn't always feel that way."

Focusing the SHA role around **the 3 Ps: positive, proactive, and prevention-focused** was the third promising practice. Positive approaches including positive messaging (gain-framed health communication) and giving out stickers to highlight healthful behaviors witnessed on campuses. Similar positive reinforcement and shared responsibility was demonstrated at MHU during the Healthy Lions Challenge and through the stamps given to students for appropriate health behaviors, such as completing the Lion's Pledge to Pride, logging their daily temperatures/symptoms, and consistently practicing the 3Ws. Much of UNC Asheville's messaging was framed around safer activities you can engage in rather than focusing on what not to do. A CCSHA reflected, "Do not underestimate the power a sticker can have on making someone smile." Proactive approaches included producing videos for fellow students on how to head off potential problems before they happen, training on bystander intervention techniques, and hosting support stations around UNCA's campus and co-organizing events to highlight the need for racial equity. The prevention focus was manifested through hosting events to promote mental and emotional health, supporting flu shot clinics, providing remote personal training to students in quarantine or isolation. A MHU SHA noted, "Helping at the flu shot clinic led to staff/faculty thanking the SHAs for helping students fill out insurance paperwork, which made me remember that our community is grateful for the effort we're making to stay healthy." As a second example, UNC Asheville SHAs hosted a COVID anxiety/mental health awareness tabling event and one student mentioned that this really made a difference for them. This student explained that "they connected with the SHAs over learning what aromatherapy can do to improve/stabilize moods, especially while living on campus during COVID."

A corollary to this focus was our concerted efforts to avoid putting the SHAs in enforcement roles to help them build trust and maintain good relationships with their peers. We believe that it is unlikely that a student chastised by a peer educator for improper mask wearing would then return to that same peer educator for support or advice in the future. UNC Asheville's SHA reported receiving lots

of texts, direct messages, and even questions during their classes from peers who respected them and knew they would get a non-judgmental and accurate response.

The fourth promising practice is focused on the **leadership skills** the ambassadors developed through their experience. At all the campuses, SHA coordinators provided ongoing support and training for the SHAs so they had the skills and knowledge needed to develop as leaders, educate with confidence, and build trust with their peers. Ambassadors specifically noted they became active leaders and learned to make a positive difference in their community. In discussing the vital role of the SHAs, Mars Hill University President, Tony Floyd, commented, "the students in the participating universities have begun to get some national recognition. Their jobs come with an enormous responsibility and they were a big part of our success last semester. I hope that every ambassador takes great pride in this accomplishment." The lessons CCSHAs learned in how to shape their WCU home was transferable to informing future environments or future homes and communities. This was captured in the following way – *at a minimum, we helped the vibe on campus and at a maximum we directly helped our community stay here [on campus in person]. You cannot underestimate the power of the vibe we helped create*. Iterating this further, another WCU ambassador stated, "serving as a CCSHA has allowed me to continue to promote a culture of love, education, and respect, rather than hate, on our beautiful campus, with our beautiful people." This is a powerful belief about the world for student leaders to develop.

A fifth and in some ways, overarching, promising practice was the focus from the inception on **peer-led campus culture change**. SHA program leaders set this intention early and worked with SHAs to envision what that would look like in practice. At MHU, the SHAs started to realize their impact when peers and teammates started asking questions such as, "what should I do if my roommate has a fever?" or "what can I expect out of on-campus quarantine?" They also compared their ambassador role to that of "being on a team working towards a common goal..with communication as the foundational component for effective teamwork." Many SHAs made civic engagement a priority and worked collectively to overcome the "negative stigma surrounding us, COVID, etc." A UNC Asheville SHA explained "our tabling events did not always have to be about COVID. We are fostering community, and talking to students about the election and other campus threats can be more important for the health of BIPOC students."

Student peers at WCU, stated that their CCSHA's "set a good example," hearing "affirmations make[s] me want to try more," and "make me think of wearing a mask outside as well as inside." In their team meetings, SHAs highlighted the importance of the informal conversations, correspondence, and social media connections in shifting culture. They talked about how friends, people who live in their buildings, off-campus community members and even family would ask them about prevention strategies, testing, and for informal advice. They spoke eloquently about their roles to "influence happiness and help push forward a community in an uncertain time" and "to positively encourage students to follow university guidelines (three W's) and to be a motivator for students across campus without being authoritative." Nearly 85% of ambassador peers at WCU surveyed reported a positive experience with the CCSHAs.

In addition to shared successes, the three IHEs also experienced shared challenges. Leaders spoke often of "building the ship as we sail it" or "building the airplane as we fly it" to communicate the necessity of rapid adaptation to emerging information and institutional mandates. Though this afforded the institutions flexibility in planning, we were not able to be as intentional about evaluation of the SHA program as would have been ideal. Due to the emergent nature of the pandemic, evaluation of this

program was conducted later in the semester, and somewhat inconsistently across the institutions. Campus stakeholders and attendees at conference presentations describing this program understandably wanted to see our evaluation results, and they were admittedly limited.

Another shared challenge was the necessity of avoiding older school health promotion in higher education frameworks, which can prioritize events and one-time programs with incentives over policy or cultural change. We did not focus on events or programs so much as train Student Health Ambassadors and release them into their natural environments. We knew that the majority of their work would happen informally, in the texts and direct messages and late night conversations with peers, and we leaned into this by preparing them to have those conversations and respond to questions without judgement and with accurate information.

A final shared challenge is envisioning sustained culture change and continued support of the program without external grant funding. After the pandemic ebbs, we hope to maintain the incredible momentum achieved in a short period of time, yet recognize the difficulty of doing so without continued external grant funding. We are hopeful that these promising practices can persist beyond the scope of this project and well after grant funding has expired.

CONCLUSIONS/IMPLICATIONS

The promising practices gleaned from these programs are transferable to other campuses who are interested in slowing the spread of COVID-19. Additionally, as we envision a post-COVID-19 campus, we recognize the value of gain-framing, peer-to-peer engagement, and the diffusion of positive ideas across campus through student representatives. Whether the message being relayed is focused on slowing the spread of COVID-19 or centered on responsible drinking, consent, or receiving the flu shot, messaging that is informed and diffused by students for students is a practice that can benefit campus communities. These efforts, we strived to fight fear, not only with a dose of faith, but with an IV of knowledge, research, and engagement. The more informed and engaged the members of our campus community are, the more likely positive behaviors and actions will beget more positive behaviors and actions. In turn, knowledge compounds faith and belief. These programs were a key ingredient to the culture of care that was established to mitigate the spread COVID-19 in fall 2020 across 6 campuses representing over 17,000 students across the western North Carolina region.

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SHA Program Evaluation at UNC Asheville
Submitted by evaluation team members: Lindy Hewitt, Cathy Whitlock, Emma Olson, Meredith Silver

UNC Asheville completed the fall semester with students in residence and meeting ~60% of our classes fully or partially in the classroom since late July. We had 5 COVID cases in August, 6 in September, 12 in October and 4 in November for a cumulative total of 27 cases among faculty, staff and students. Over the course of the fall semester 1147 students in total were tested with 595 tests conducted the week before the Thanksgiving break. At the end of the fall semester there were 27 total positive COVID cases reported (14 student cases and 13 faculty/staff cases) with a 1.2% positivity rate. This is the lowest infection rate across the 16 UNC system campuses.

In order to assess the impact of the Student Health Ambassador (SHA) program on students and the campus community, 2 forms of anonymous survey data were collected: 1) an anonymous survey of the SHA team (n=44) that focused on the impact the SHAs are having on UNCA's campus from their perspective; measured key gains in knowledge, skills & experiences; explored improvement strategies; and 2) an anonymous survey distributed to a convenience sample of students by faculty willing to share with their classes (n=145). The goal of the 2nd survey was to collect information about the knowledge, perceptions and experiences of the broader student body with regard to the SHA program and the university's practices in response to the pandemic. The majority of respondents were students who lived on campus (59.3%), were taking a mix of in-person and online classes (77.9%), and were in their first or second year of college (69.4%). 77.2% of respondents identified as white, and 34.6% identified as male.

Student Experience Survey--Fall 2020

The main story
On the whole, student respondents reported *extraordinarily* high levels of adherence to community expectations and with "the 3 Ws" both on and off campus (see frequency tables here). Because of the limited variation in these key dependent variables, it's difficult to find strong statistical evidence of a direct, robust relationship between healthy behaviors and interactions with student health ambassadors. That said, respondents primarily reported either positive or neutral impressions of the ambassadors. Furthermore, multiple crosstabulations indicated that students who had a personal connection with an SHA, visited a station, or followed the SHA account on social media were even more likely to adhere to community expectations, wear masks, etc. than students who didn't have an SHA interaction (note the differences especially in the "strongly agree" categories of several crosstabulations).

Characteristics of the Sample (N=145):
- Year in School (First-year=44.4%; Sophomore=25%; Junior=18.8%; Senior=11.8%)
- Class modality (Online-only classes=22.1%; Mix of in-person and online=77.9%)
- Living situation (On-campus residents=59.3%; Off-campus local=33.8%; Off-campus away=6.9%)
- Gender (34.6% male; 65.4% female or non-binary)
- Racial Identity (77.2% white; 22.8% non-white)

Key Points:
- **92.4%** of respondents reported following UNCA's community expectations either always or usually. Among respondents who had an SHA interaction, adherence was even higher, at **98.3%.**
- **95.9%** of respondents reported wearing a mask *on* campus either always or usually.
- **95.9%** of respondents reported wearing a mask *off* campus either always or usually.

- **30.1%** of respondents reported having interacted with an SHA at a support station (either virtual or in-person)
- **65.5%** of respondents reported that their knowledge of COVID-19 had increased since the beginning of the fall semester. This number rises above 70% for respondents who reported an SHA interaction.
- **92.4%** of respondents reported believing that personal safety measures could protect others in the community.
- **19.4%** of respondents reported having a personal connection with a student health ambassador
- **49.7%** of respondents either agreed or strongly agreed that their interactions with SHAs had been positive/helpful; 44.8% reported a neutral response, which may have been because they had no interactions with an SHA. Among respondents who engaged in some way with an SHA, **62.7%** agreed or strongly agreed that their interaction was helpful, while **32.2%** reported neutral feelings.
- Students who reported practicing one healthy behavior were likely to report practicing others, as well (e.g., students who wore masks tended to wash their hands and practice social distancing, too).
- Visiting an SHA station seemed to matter, a little bit. There was a weak but positive, significant correlation (r = .172) between visiting an SHA station and adhering to community expectations
- Health behaviors on campus = healthy behaviors off campus
- Interactions with SHAs seemed to make more of a difference at the highest levels of adherence.

Emails and personal connections were the most common ways students heard about the SHA program.

Selected qualitative comments re: how SHAs influenced behaviors:

- *The handouts really helped me understand some of the precautions taken at UNCA.*
- *I've seen posts on Instagram that help me gain more information*

- *I saw a student in my class with a SHA t-shirt and asked her about SHA. She was open and willing to answer my questions and told me if I had any questions in the future I could ask her. Also, at tables in front of the Ramsey Library, the SHA reps there were helpful and open to questions.*
- *I liked having the option for someone to take my temperature everyday.*
- *These interactions specifically make me feel involved and attending their events brightens my day with fun activities and connecting with others.*
- *Since I am not on campus this semester, I have interacted with the SHA through email or social media. Those outlets have provided me with great information on ways UNCA is trying to prevent the spread of COVID as well as give more information on the topic.*
- *Having someone I know in the health ambassadors really helped me to understand their mission because it was easier to approach them and get to know them.*
- *Voting information booths were helpful, and the SHAs at the booths were very interactive and friendly. The effort to get out the vote on campus has been ongoing by Dr. Moraguez in the Political Science department, but this year I felt that the effort benefited greatly from SHA's involvement.*

Student Health Ambassador (SHA) Self-Assessment Survey Report—Fall 2020

Methods

The Final Self-Assessment Survey was administered to forty-four Student Health Ambassadors from December 3, 2020 to December 18, 2020. Out of the forty-four surveys administered, thirty SHAs responded. The survey consisted of a total of fourteen questions. The following questions are categorized and listed from highest to lowest average based on a four-point Likert scale. (*Please see summary charts of all Likert measures at the end of the document-- 0 = strongly disagree and 4 = strongly agree)*

Key Findings

Overall, the majority of SHAs reported positive gains ("agree or strongly agree") across nearly all changes assessed. Across all questions, there were increases in self-reported positive outcomes from the mid-term to the final assessment (which were only a few weeks apart). The most substantial gains were in the two questions: *To what extent has the experience of serving as a SHA helped you feel more comfortable providing COVID-19-related health information to others?*; *To what extent did the SHA trainings help you build your confidence in and ability to communicate the 3 W's and other COVID-19 related safer practices?*

Key changes students reported included:

- Increased desire to add health practices to personal daily routines
- Increased belief in the important impact SHAs have on campus community
- Increased belief that SHAs offer "incredible value" for non-COVID public health initiatives on campus; the University should consider SHAs as a long-term position
- Increased understanding of the value of spreading reliable, easy to understand information, how to determine what is a reliable source of information, and how information shapes behavior

Recurring Themes: increased confidence, increased feelings of positive impact, increased self-care

Key lessons students learned included:

- Learned how to approach people pertaining to health and following guidelines
- Learned how to communicate health related topics to others and how to promote wellness on campus and the effective ways of spreading helpful information (e.g., tabling)
- Learned that in order to take care of people, you need to first take care of yourself
- Learned the importance of organizational skills

Recurring themes: teamwork, collaboration, communication, reliable information, self-care

Key impacts SHA's felt they had on the campus:

- Increased safety and feelings of safety; in realistic, non-punitive, and fun ways which allowed for students to still be active on campus
- Impacted the COVID rates on campus by helping to prevent the spread of COVID
- Impacted the student body by increasing their trust in the information which SHAs provided
- Provided other school's with SHAs graphics which they used on their Instagram accounts

Recurring themes: Low COVID cases on campus, supporting students, campus safety, SHA's had a positive impact on campus, increased student's knowledge of COVID

Detailed Findings

How well did we do it?
To what extent do you feel supported by your faculty advisors?
Average score: 3.83, Median: 4

To what extent do you have the resources and support you need to be successful as a student health ambassador?
Average score: 3.4, Median: 4

Is anyone better off?
To what extent has the experience of serving as a SHA helped you feel better able to review and understand COVID-19-related health information?
Average score: 3.67, Median: 4

To what extent did the SHA trainings help you build your confidence in and ability to communicate the 3 W's and other COVID-19 related safer practices?
Average score: 3.63, Median: 4

To what extent has the experience of serving as a SHA helped you feel more comfortable providing COVID-19-related health information to others?
Average score: 3.62, Median: 4

To what extent has the experience of serving as an SHA helped you feel more confident talking with someone about their ability to make healthy choices?
Average score: 3.53, Median: 4

To what extent has the experience of serving as an SHA helped you feel better able to review and understand general health information?
Average score: 3.5, Median:4

To what extent has the experience of serving as an SHA helped you feel better able to evaluate the credibility of the source of information you are reviewing?
Average score: 3.47, Median: 4
To what extent has the experience of serving as an SHA made you feel better able to motivate other students to make behavioral changes?
Average score: 3.33, Median: 4

To what extent did the training help you build your communication skills?
Average score: 3.33, Median: 4

Key Changes
Students reported key changes in knowledge/beliefs, attitudes, or behaviors:

- Personal behavior shifts in daily routines in regard to health and wellness
- Increased ability in self-expression and personal needs in the work environment
- Increased belief in the important impact SHAs have on campus community

- Increased belief SHAs can have strong impact on other, non-COVID related health initiatives on campus
- Increased confidence in the personal pursuit as healthcare and public health as a career choice
- Increased understanding of COVID, thus a decrease in personal anxiety around COVID and an increase in the ability to teach other people about COVID
- Increased communication skills, confidence, and patience
- Increased independence and trust in instincts
- Increased desire to promote safety on campus to stop the spread of COVID
- Increased motivation in modeling healthy behavior
- Increased desire to make choices in the interest of others (e.g., not traveling)
- Increased understanding of the value of spreading reliable, easy to understand information, how to determine what is a reliable source of information, and how information shapes behavior
- Increased positive outlook on life
    - In terms of knowing how to approach people in "a gentle and patient" manner
- Increased ability to talk with people an individual has never met before
- Increased campus involvement and understanding of what a safe campus looks like

Only one student reported that it "did not impact my beliefs, attitudes or behaviors."

Recurring Themes: increased confidence, increased feelings of positive impact, increased self-care

Key Lessons Learned

Students reported many lessons learned. While these might commonly be considered improvement strategies, some were more reflective of skills they built as well.

- How to start conversations
- How to be more approachable
- Learned the "power" of peers educating peers and how to be "a better peer"
- Team building skills, teamwork, and cooperation
- Time management
- Learned how to communicate health related topics to others and how to promote wellness on campus and the effective ways of spreading helpful information (e.g., tabling)
- Learned how collaboration can improve efficacy and safety
- Learned the intricacies of student health care
- Skills and experience needed to provide multiple levels of support for students (e.g., emotional support, resource allocation, policy-making, and community-building)
- Learned that the sources where information comes from are very important and that sometimes it is as easy as providing accurate, reliable information
- Learned how to utilize tools such as Canva to create information and persuasive marketing
- Learned that making a connection is the first step in creating change
- Learned that public health work can be hard, but greatly benefits the community and is "worth it"
- Patience, gratitude, and understanding around the pandemic
- Learned how to approach people pertaining to health and following guidelines

- Learned that in order to take care of people, you need to first take care of yourself
- Learned that if you have an idea, speak up
- Learned how to deal with peers on your team not coming through and having to take on extra work responsibilities by yourself
- Learned the importance of organizational skills

Recurring themes: teamwork, collaboration, communication, reliable information, self-care

Key Impacts

- Increased safety and feelings of safety; in realistic, non-punitive, and fun ways which allowed for students to still be active on campus
- Provided diverse perspectives to the campus community
- Decreased anxiety around being on campus and attending in-person classes
- Provided support through a variety of different programs
- Increased student body awareness on how to access COVID tests
- Provided SHAs with a sense of purpose during the pandemic
- Delivered meals and wellness kits to students in quarantine and isolation
- Impacted the COVID rates on campus by helping to prevent the spread of COVID
- Provided positive impact on mental health support
- Impacted campus community by being able to provide a "listening ear"
- Impacted campus community by increasing knowledge of both COVID and available resources as well as being a constant "reminder" that COVID is still around
- Impacted campus community by promoting health and wellness that extends outside of just COVID protocols
- Provided other school's with SHAs graphics which they used on their Instagram accounts
- Impacted student body by increasing their trust in the information which SHAs provided

One student felt like there was no impact on the campus community.

Recurring themes: Low COVID cases on campus, supporting students, campus safety, SHA's had a positive impact on campus, increased student's knowledge of COVID

Strategies for Improvement

Students offered up a plethora of ideas for what additional resources and support could help them do their job better, including:

- Full support bags for each shift
- More engaging activities at tables
- Clearly communicated changes in guidance from university administration, clearer lines of communication if updates occur
- Community building between SHA teams
- Decrease emphasis on tabling for spring semester
    - There is noted sense of "tabling fatigue" or exposure tolerance among students regarding SHAs causing SHA-student interaction to become less frequent
    - Thus, emphasizing SHA message across other platforms will be important

- Increase give away items for students, faculty, and staff
- Gain access to Canva Pro features for flyer making
- Increase opportunities to “lend a hand” to departments and organizations
- PowerPoint slides (a manual) to refer back to if needed
- More guidance from team supervisors as far as setting up activities/projects/events
- More tabling items/resources in the bags, support when it comes to holding different types of safe SHA events
- Increase insight into what the administration does and their thought processes with regards to areas that might be relevant to the work of SHAs
- More support from Kenda and Jordan
    - One student felt as if they were “on their own in a bad way.” They reported their team “rarely” supported them and would appreciate “more strictness” so that people are “not allowed to do nothing”
- More direction and more training

We are able to continue this program at all 6 campuses due to financial support from MAHEC!

We have given two presentations on this work one at the American College Health Association’s COVID Summit in December and the other in February at the PACE Conference (Pathways to Achieving Civic Engagement) Conference. A manuscript on this collaborative work is nearly ready for submission.

Some media coverage of the work of our Student Health Ambassadors:

- June 13, 2020, UNC Board of Governors Awards $610K to UNCA COVID-19 Efforts, *Mountain Xpress*
- June 15, 2020, UNCA Gets $610,000 to Fight COVID-19, WLOS TV-13
- June 16, 2020, UNC Asheville to Open Campus Aug. 10 for Fall Semester, Outlines COVID-19 Precautions, *Asheville Citizen-Times*

- August 5, 2020, 'Owl In This Together': Warren Wilson Releases Plans for Fall Semester, *Black Mountain News*
- August 19, 2020, UNC Asheville Leads Critical COVID-19 Efforts at State, National Levels, *Asheville Citizen-Times*
- Sept. 2, Catamounts Care Ambassadors Promote Positive Side of Preventing Pandemic Spread, WCU Stories
- Sept. 3 https://avltoday.6amcity.com/newsletters/september-3-2020-nine-new-books-from-wnc-authors-cheap-gas/AVLToday Coronavirus Updates
- Sept. 10, Student-led Program at WCU Helps to Stop Spread of COVID-19, WLOS TV-13
- Sept. 16, WCU Officials Say COVID-19 Prevention Strategy Has Been Successful, WLOS TV-13
- Oct. 6, 2020, Not All Heroes Wear Capes—Some Simply Wear Masks and Stay Six Feet Apart, NC Policy Collaboratory
- Nov. 24, 2020, Warren Wilson College Ends Fall Semester with No On-Campus Cases of COVID-19, *Mountain Xpress*
- Dec. 2, 2020, How UNC Asheville Continues to Thrive During COVID, *AVL Today*
- Dec. 4, Warren Wilson College Ends Semester with No On-Campus Cases of COVID-19, WMYA & WLOS
- Jan. 18, Mars Hill University Prepares for In-Person Semester Starting Feb. 2, *Mountain Xpress*
- Jan. 5, 2021, Western NC College Students Combat COVID, *North Carolina Health News*
- *Jan. 26, 2021,* WNC Colleges and Universities Partner with Academic Health Center to Combat COVID, AHEC News
- https://coronavirus.unca.edu/resources/student-health-ambassadors/
- https://stories.unca.edu/meet-the-student-health-ambassadors
- https://www.instagram.com/unca_sha/

Social Bridging Initiative

AIM 2: ***To evaluate the impact of the Social Bridging Initiative for reducing social isolation and its health impacts among older adults and other socially-isolated individuals and western North Carolinians.***

The Social Bridging work was led by staff and faculty at the NC Center for Health and Wellness at UNC Asheville in partnership with a faculty member at UNC Health Sciences at MAHEC and UNC Eshelman School of Pharmacy. We collaborated with other area agencies including Land of Sky Area Agency on Aging, Council on Aging of Henderson County, Council on Aging of Buncombe County and Western Carolina Medical Society. The project team included 15 trained wellness callers, 3 team leads, and 4 project evaluators from UNC Asheville. Wellness callers completed 4 hours of training each and an additional one hour of Dementia Friendly Communication training. They also engaged in weekly 30-minute "huddles" to receive coaching and peer support.

In order to identify needs, assess social determinants of health and isolation, and track progress, the Social Bridging Project (SBP) team utilized the Results-based Accountability evaluation framework. An instrument was created via Qualtrics survey forms to track participants' responses. The questions were split into four categories.

1) demographic information: participant's age, county, living situation.
2) In order to measure the quantity of project efforts, data was collected on: number of calls made, number of participants reached.
3) In order to monitor the quality of services callers indicated: did the participant answer; was this a first successful call or a follow-up call.
4) In order to understand the impact callers were making on the participants, callers reported: what type of information did you provide; did you help a participant solve a problem; did the participant report feeling better after your conversation.

Overall, 307 calls were made of which 61.5% were productive (n=189). A "productive conversation" is defined as a conversation in which the caller provided information, assistance using technology, and/or social support.

34 different participants benefited by having one or more productive conversations with SBP callers. A few participants had more than 15 conversations during this time period.

According to the callers, 76% of the participants who had multiple conversations primarily received social/emotional support during follow-up calls. A few participants regularly received a combination of social support and technical assistance.

82% of the participants reported feeling better at the end of the call (16% were unsure if they felt better).

In addition to social support, 21% of the calls involved technical assistance, 19% provided information about Covid-19 including testing, and 13% provided information about other health care resources.

Some recommendations for future work in this area:

- Increasing concern about social isolation in older adults should be met with coordinated efforts by government and non-profit agencies.

- The NC Department Aging and Adult Services is working to address social isolation and loneliness. NCCHW is partnering with them to move towards serving as a hub for programs and services to promote social connectedness. Because social isolation and loneliness can lead or worsen mental health conditions such as depression, health care payors (government and private) should be encouraged to support efforts to reduce social isolation in older adults.
- The data collected show qualitative reports of just how valuable some calls seemed to be for really isolated participants-several begged to be visited in person, making the case for expanding the program and also considering an added in-person component as it becomes safer to do so.

Some media links to related media:

- https://www.mywcms.org/news-and-events/newsroom/the-social-bridging-project
- https://www.wpcog.org/single-post/2020/07/13/the-social-bridging-project
- https://www.buncombecounty.org/countycenter/news-detail.aspx?id=18678
- https://www.themountaineer.com/senior_covid/someone-to-talk-to-program-combats-isolation-with-phone-calls-to-seniors/article_a97672e8-d545-11ea-86f1-b763b370bb1f.html

We presented on this work at a regional Healthy Aging Conference and have received follow-up funding ($55,000) through the UNC System Office to continue the expansion and evaluation of this important work through June 30, 2021.

Proposal Narrative: Impact of the Social Bridging Project on Connectedness of Socially-Isolated Older Adults

The need

In the state of North Carolina, individuals age 65 and older account for 15% of COVID-19 cases, 42% of the hospitalizations and 82% of deaths due to COVID-19 (source). One in four residents in western North Carolina (WNC) is 65 or older, 64% of veterans in WNC are 65 or older, one in two have no vehicle available to them, and 16,500 individuals 65+ are living alone or with others not related to them as family (NC State Aging Profile 2018.pdf). In addition, there are 10,000 elderly living in long term care facilities in the 16 western counties in North Carolina, which is the major comorbidity associated with excess fatalities with COVID-19. In the United States, more than 30% of all deaths due to COVID-19 have occurred in residents of long-term care facilities, and in some states that percentage is over 50%.

According to the NAM 2020 Report titled "Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System", roughly 1 in 4 older adults are socially isolated (pre-COVID) and roughly 1 in 3 reports feeling lonely. Social isolation is bad for health. This report notes that social isolation is associated with increased risk of all cause mortality, a 50% increased risk of dementia, 29% increased risk of coronary heart disease and a 32% increased risk of stroke. (NAM 2020 Report). Of the six most common risk factors for social isolation for seniors in the US, NC ranks higher than the national average on 4 of these (disability, divorced/widowed/separated, homebound, and living below poverty level) (source: America's Health Rankings | AHR). Social isolation leads to inactivity, increased cognitive decline, weakened immunity, and depression and anxiety (CDC source). And, voluntary isolation to reduce risk of COVID infection and potential disability and death, has increased the number of people who are socially isolated. In a National Academy of Medicine commentary, Novak, Sebastian and Lustig, urge health scientists to focus research efforts on understanding how the COVID-19 pandemic impacts social isolation and resultant increased health risks. And, perhaps more importantly, to study the impact of programs and opportunities to increase social connectedness of socially-isolated individuals and populations.

Compound this with evidence that older adults are more likely to be excluded from digital services because they opt not to use the internet, lack necessary devices or broadband access and/or lack experience with using technology. Taken together with increased need to socially-distance due to COVID-19 safety measures creates a population that is vulnerable to the double burden of social and digital exclusion which is further exacerbated in rural areas. With the exception of Buncombe and Henderson Counties, nearly all of WNC is considered rural. A recent Pew Research Center report showed that less than two-thirds of rural adults in the U.S. have broadband Internet at home (compared with three-quarters of urban adults). Even when rural residents have access to the Internet, it is often at slower speeds with poorer connections, making synchronous activities like video-conferencing especially difficult (Kaur, 2020). As a result, older adults in rural areas are among the most likely to be left out of any creative, technologically-based adaptations to meet social and other needs during this crisis.

For all the reasons outlined above, we have crafted a research program to plan, implement and evaluate the Social Bridging Project.

The project

UNC Asheville and UNC Health Sciences at Mountain Area Health Education Center (MAHEC) have partnered together on the Social Bridging Project (SBP), which provides members of the community who are isolated due to the COVID-19 social distancing requirements with a source of social connection, technology support and referrals to needed resources. Over the course of a very short period of time, many people lost some or all of their opportunities for in-person social connections such as church and faith gatherings, fitness facilities, clubs, restaurants, coffee shops, and senior centers that also provide free or low-cost meals. We know that wellness is partially achieved by successfully navigating the many social determinants of health such as safe housing, utilities, employment status/income, transportation, access to food and preventive health services.

In the Social Bridging Project, trained wellness volunteers, student interns and project staff (or SBP team members) conduct social wellness check-ins with members of the community who may be at increased risk of social isolation, mental and emotional health struggles, reduced access to in-person medical care, and a reduced access to community support in general. In addition to creating a social bridge to reduce the impact of social isolation, SBP team members support participants by providing resources to lower risk of COVID 19 infection, increase access to telehealth services, and increase wellness through access to programming and requested resources.

The Social Bridging Project has a strong coordination team—two faculty leads, including one from UNC Asheville (Lanou—Health and Wellness) and one from UNC Health Sciences at Mountain Area Health Education Center (Woodall—Pharmacy) and a project coordinator/volunteer trainer (Jones—graduate student). We have been working with other agencies including the Department of Health and Human Services and regional Area Agencies on Aging to minimize the pandemic's disproportionate impact on individuals with comorbidities (advanced age, diabetes, inactivity, etc.), which makes them at higher risk of severe consequences of COVID-19. The Social Bridging Project for addressing social isolation in WNC has been implemented since May of 2020. We have trained 3 cohorts of SBP team members (who are nearly all volunteers) with over 35 trainees total. Through ongoing trainings on use of NCCare360, COVID 19 prevention, dementia care, and SBP team members have learned how to better serve our participants. The SBP team members provide companionship and a bridge to the outside world from which the participants have been largely isolated and over time may help them to safely stay in their homes. In addition, the project provides valuable but safe, on-campus learning opportunities for

undergraduate students (psychology, health and wellness, others) and post-graduate medical, public health, and pharmacy learners.

In October we envisioned and started marketing a wellness writer's offering for the SBP to engage socially-isolated people with SBP team members through letter writing. We expanded marketing of the program by giving talks, doing radio shows, and developing new electronic publicity materials for distribution. The effectiveness of this program is being evaluated and studied to assess the merits of expansion.

The project proposed here (Phase II) builds on and will expand the successes of the existing Social Bridging Project (Phase I) by a) reaching a larger number of socially-isolated participants with calls and written correspondence, b) expanding access of services to include access to remotely offered evidence-based health promotion programs supported by Healthy Aging NC, and c) expanding technical support services for partner agencies working to reduce social isolation through remote program delivery.

Our long term goals are to significantly reduce the impact of social isolation on health for older adults and those at high risk for experiencing other health, mental health and wellness effects as a result of the pandemic. We aim to find funding to sustain this work after June 2021. Funding for the current project is through the NC Policy Collaboratory (July to December 2020) and MAHEC (January to June 2021). Our request for funding for project acceleration and research expansion in Phase II is detailed below.

The research focus

Our research objective is to evaluate the impact of the Social Bridging Project on reducing social isolation and its health impacts among older adults and other socially-isolated individuals and western North Carolinians.

Phase I

From July to December our research and evaluation team has developed an evaluation process and an instrument to help us understand the answers to 3 questions regarding the impact of the SBP: 1) how much have we done, 2) how well are we doing it, and 3) is anyone better off from the social bridging calls? The evaluation strategy designed by research experts (2 UNC Asheville faculty and one NC Center for Health and Wellness staff member) that has been vetted by UNC Asheville's institutional review board; we have been collecting data since mid-September. The instrument is a google survey for logging the calls that the trained wellness team members make.

From late August through October, of the 217 calls to social-isolated individuals recorded by trained volunteers, 61% of the attempted calls resulted in successful conversations of 10 minutes to 2.5 hours in length; the others went unanswered or did not result in a social bridging conversation. Roughly 80% of participants indicate that they feel helped/better after engaging in a social bridging wellness call. We have reached individuals in 4 WNC counties--Rutherford, Henderson, Catawba and Buncombe--with information about use of technology, transportation, health care resources, COVID-19 prevention, medication management and food access.

Phase II

Our more nuanced and expanded research objective is to evaluate the impact of the Social Bridging Project on reducing the effects of social isolation escalated by measures to reduce risk of COVID-19 infection. To do this we will assess select health, mental health and social determinants among participating individuals in WNC as well as how the initiative improves the understanding, skills and

circumstances of volunteers. This evaluation will expand upon the current method of volunteers assessing each participant interaction. In addition, we will evaluate the impact of our wellness writers program and our expanded marketing and communication efforts.

With added graduate and undergraduate research support, we will accelerate our outcomes between January and June 2021 to include:

1. conducting a literature review to understand various ways of evaluating the impact of this type of intervention and validated tools for studying social isolation and connectedness and a review of data collected on how public health measures to reduce COVID-19 infection have impacted rates of social isolation among older adults in WNC.
2. surveying the existing population measures and evaluations of related initiatives being led by the North Carolina Center for Health and Wellness Healthy Aging team,
3. designing and implementing a more robust evaluation that captures change in social isolation and other health markers among the participating socially-isolated individuals,
4. developing a process for understanding the impact of participating in the SBP for wellness callers/writers (the team members) utilizing both qualitative and quantitative methods, and
5. collecting, aggregating, analyzing, and reporting on data. Key results will be reflected in NCCHW Scorecard(s) and a final report.

Two planned manuscripts will reflect on how the initiative's impact is contributing to building better health, mental health and social support across the region as well as key competencies and capacities of the volunteers involved.

AIM 3: Conduct a statewide study of comorbidity for individuals who have died from COVID-19.

Work continues on two versions of this project one using data available from the NC State Department of Health and Human Services and the other using data acquired from 3 large NC hospital systems: UNC, Duke and Wake. Our team includes 3 UNC Asheville faculty members, 2 UNC-CH faculty members and a faculty member from Wake Forest University. Manuscript drafts are underway. The team's progress has been slowed by the delays getting access to the data from two of the hospital systems and the state.

Comorbidity Study State Data Version
Research Question: What are factors and comorbidities associated with death among those positive for COVID-19 in NC? Is the NC experience similar to that of settings outside of NC?

Methods: Our team obtained data on all reported cases of COVID-19 in NC from March 1 to September 30, 2020 from the NC Department of Health and Human Services. Data elements include demographics (age, sex, race/ethnicity, county of residence) and the presence of comorbidities (diabetes, metabolic disorder, kidney disease, immunosuppression, cardiovascular disease, and chronic lung disease). We aim to understand the distribution of demographic and health factors in NC residents with COVID-19 and to understand if these factors are associated with a higher fatality risk. Analysis will be primarily descriptive in nature to give an overview of COVID-19 cases (214,264) and deaths in NC (4053). This will help us understand if the NC experience is similar to that of other regions. We hope this information will help provide understanding of our state's COVID-19 experience and guidance for health initiatives.

Findings: Preliminary findings have shown that death from COVID-19 increases steeply with increased age starting around age 50. We have also found that there are differences in fatality based on race/ethnicity, sex and the presence of comorbidities. We are working to better understand the interactions between these factors and their association with death. We are also looking at how distributions of these factors in NC COVID-19 cases compare to the distribution in all residents of the state. We are also working to identify the most appropriate tactic for handling a substantial amount of missing data for race (18%), ethnicity (30%) and presence of comorbidities (49-55% depending on comorbidity).

Work in progress:

- How the presence of comorbidities in those with reported COVID-19 compares to NC residents overall.
- How demographics of those with reported COVID-19 compares to NC residents overall.
- COVID-19 fatality rate in those with specific demographic and comorbidity factors.

Implications and Policy Recommendations:

- This study used individual-level data from NC DHHS, which required a data use agreement. The 3-month process of obtaining permission to use the data delayed our ability to understand trends within the state. A policy expediting data access would accelerate the sharing of results with stakeholders implementing prevention actions.
- We are limited in our analysis by missing data. Policies to ensure more detailed and complete data are warranted. This may include more comprehensive training of trackers and funding for ensuring data collection forms are efficiently designed.
- Policies to connect the disparate groups and individuals who are working with these data would allow for greater efficiency. Likely many tasks (e.g. data cleaning, managing missing data) were

repeated among several groups and possibly using different methods. Policies creating a central data hub and analysis team are warranted. As we continue with data analysis, we may have additional recommendations to share.

Comorbidity Study Hospital Data Version

Research Question: What are comorbidities associated with severe illness/death among those hospitalized for COVID-19 in NC? How does a hospital-based population differ from the population of all identified cases in the state?

Methods: Our team acquired clinical data from hospital electronic health records, housed in secure health system data warehouses, that inform how patients diagnosed with COVID-19 experienced care delivered at 3 large NC health systems (Duke, Wake Forest Baptist, and UNC Healthcare). These data were procured into "datamarts" created to capture COVID-19 related care. Patient data from 9 hospitals were abstracted and will soon be available for aggregate analyses. Currently we have data from Duke and UNC and expect the Wake data shortly (by mid-February). We aim to understand if there are specific patient characteristics and inpatient experiences that are associated with dying of COVID-19 (e.g. age, race, ethnicity, chronic heart, lung, kidney disease, smoking status, vital signs at hospital admission/ being placed on a ventilator). Our data capture hospitalizations from 3/1/2020 to 9/30/2020. We will provide descriptive analyses that can help us to understand if the NC hospital experience is similar to that of other settings. Analysis may provide information helpful for planning future responses to similar pandemics.

Findings: We are still obtaining our three-hospital system data set so do not yet have findings to share. We expect to have data from ~6000 COVID-19 hospitalizations.

Work in progress:
How hospital data reflect the state data:

1. How does the presence of comorbidities compare?
2. How do demographic factors compare?
3. Are associations with demographic factors and comorbidities and death similar?

How many patients were readmitted?
Description of vitals at admission.
Description of key care metrics including ventilation, ICU admission and length of stay.

Implications and policy recommendations: This study used data from three academic health systems in North Carolina that have partnered to combine and harmonize existing clinical data captured in electronic health records in order to support large scale and multi-site research studies. However, accessing the data from these sources was a slow and challenging process. Policies should be in place to expedite data acquisition for analysis by qualified teams. Faster access to data would ensure more up-to-date studies, especially important during an ever-changing pandemic. Additional policies should establish data collection guidelines to ensure complete data sets and to prevent the challenges of missing or duplicate data, which our team is currently confronting. A final recommendation is the establishment of a central data hub to prevent duplicate or uneven data management and analysis strategies across data users. These policies would enhance researchers' capacity to set the research agenda for better understanding of causal pathways and prevention strategies and to share data to facilitate effective collaboration.