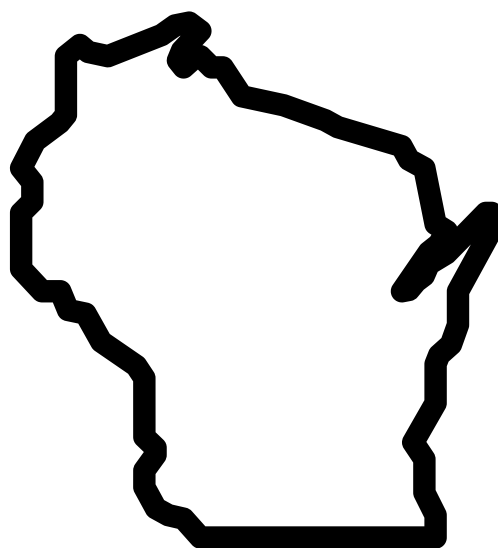


SHOW PROGRESS REPORT

- JULY 2021 -



SHOW PERC Progress Report 2020-2021



Executive Summary

The Survey of the Health of Wisconsin (SHOW) remains a one-of-a-kind resource for innovative, cutting edge population health sciences and translational research, supporting faculty and staff across the University of Wisconsin School of Medicine and Public Health (SMPH) and advancing community-academic partnerships.

SHOW is nationally recognized by NIH for its well-established and impactful longitudinal cohort. A complete description of the history of the program and various waves of sample collection is available [here](#).

SHOW's data science hub, survey, objective physical activity, sleep, and exam data, along with biosamples, protocols and expertise in research design and recruitment provide valuable resources for diverse faculty to advance their research. Through SHOW, new and junior faculty - many from basic and clinical sciences - have easy access to innovative data to launch their careers. Ancillary studies supported 30-70% of the over \$2,000,000 annual operational budget during each of the last three years. In 2021, SHOW became a core shared service within the UW Carbone Cancer Center with aims to support new project development, rigorous cancer surveillance, and use of the biorepository for bench-to-community translational research.

At a time when many research labs were shutting their doors to weather the pandemic, SHOW accelerated our work. The program **continues to play a leading role in the UW SMPH COVID-19 response**. SHOW launched its **COVID-19 Community Impact survey**, as well as partnered with the Wisconsin State Health Department, local health departments and communities to develop the **Past Antibody Covid-19 Community Survey (PACCS)**. These initiatives identified sub-populations hardest hit by the pandemic and contributed measures ranging from risk perceptions to vaccine hesitancy across the state. This work informed public health leaders of population levels of COVID-19 immunity, at a time when great uncertainty persisted. The great success and impact of the SHOW COVID-19 response would not have been possible without the WPP's continued long-term investment.

Investigators are continually turning to SHOW for expertise in community-based research. This work is built on over ten years of creating and fostering partnerships in Milwaukee and was done in collaboration with the Collaborative Center for Community Engagement and Health partnerships. SHOW's past success in recruiting not only rural residents around the state, but hard-to-reach sub-populations (Black, Latinx, and Burmese Refugee communities) is increasingly being sought after. SHOW's approach to advancing health equity includes building trusted relationships with community leaders, hiring field staff in the communities we work in, and expertise in tailoring recruitment efforts, community give-back and biosample collection to in-the-field, non-clinical settings at community sites. **SHOW's diverse cohort continues to be leveraged to provide pilot data for NIH grants.**

SHOW's impact in the last 12 months includes rapid response to public health needs for COVID-19 surveillance and research, cohort maintenance, expanded outreach and community engagement, and accelerated use of the SHOW infrastructure by investigators across University of Wisconsin and beyond. Between July 2020 and June 2021, SHOW has fulfilled all of its aims and its mission to *support ongoing population health monitoring and research, foster diverse partnerships, and support ongoing education in order to promote population health equity and well-being in Wisconsin and beyond*. SHOW data provided baseline information on several key indicators of health, including the burden of cancer and cancer disparities in Wisconsin. Use of SHOW as a resource for several ongoing campus initiatives include: the UW-Madison Diabetes Research Center, UW biorepository for cancer research, the Wisconsin Alzheimer's Disease Research Center, and the UW Center for Healthy Minds. **Key accomplishments include:**

1) [Completion of PACCS \(Past Antibody Covid-19 Community Survey\)](#): repeated blood samples collected from over 1000 SHOW participants for serological testing in 3-month intervals to track COVID-19 antibodies in WI;

- 2) [COVID-19 Community Impact survey](#): online/phone survey on pandemic impact on health and well-being conducted between May 2020 and July 2021 among more than 1800 past SHOW participants;
- 3) 17 peer-reviewed publications;
- 4) 5 federally funded grants; 10 pending grants;
- 5) 9 ancillary projects;
- 6) 11 studies using SHOW biosamples; and
- 7) over 40 faculty and students requesting SHOW data for their research projects

The data and publications emanating from SHOW provide evidence for public health decision-making, advancing prevention research, and policy making. Several newsletters and the SHOW website are designed to make key findings readily accessible. An updated SHOW methods paper is pending peer review and available in pre-print [here](#). Several other methods papers are available, including SHOW's contributions to building a population-based microbiome resource on UW campus, as well as methods for gathering objective, cumulative data among pre-school aged children to understand how home environments influence child well-being. These methods are providing preliminary data and evidence of feasibility for an NIH R01 application (PI: Paul Peppard). Past findings are also supporting prevention research and education to private well owners across the entire state. In total, peer-review research has been cited over 2000 times.

SHOW data were used to inform Wisconsin's comprehensive [cancer control plan for 2020-2030](#): based on an ancillary study of cancer survivors. This work also led to two publications to date including [The Financial Toxicity of Cancer](#) by Weather et al, and *Alcohol Use During Chemotherapy* by Zhang et al. (under review).

A few select 2021 publications illustrate the **breadth of research data and findings related to health and health equity** using SHOW Core data include:

- Halling, M et. al (2021). Exposure to socioenvironmental stress as a predictor of physical and mental health. *Journal of Health Psychology*.
- Ersig AL, et al. Association Between Food Allergy, Psychological Stress, and Allostatic Load. *Western Journal of Nursing Research*. June 2021. doi:10.1177/01939459211019042
- Deyang Yu, et. al. (PI: Dudley W. Lamming). 2021. The adverse metabolic effects of branched-chain amino acids are mediated by isoleucine and valine. *Cell Metabolism*. Vol 33: Issue 5. Pages 905-922.e6.
- Malecki K, et al. 2021. Statewide Impact of COVID-19 on Social Determinants of Health- A First Look: Findings from the Survey of the Health of Wisconsin. *MedRxiv Preprint*. Submission pending.

Select examples of **ongoing and innovative research endeavors building on unique SHOW data elements and biorepository** include:

- Objective accelerometry data combined with RNA samples are supporting research on chronobiology in a general population sample. (PI: Bradfield)
- Epigenetic analyses show accelerated biological aging among individuals who perceive neighborhoods to be stressful areas to live in. (PI's: Engelman, Malecki)
- Construction of residential histories for tracking contextual differences in cumulative social and environmental determinants of health and cancer (PI's: Trentham-Dietz, Malecki)
- New high-throughput antibody testing for COVID-19 surveillance. (PI: Andes)
- Multi-drug resistance carrier status among school age children (PI: Safdar)

None of this would be possible without the sustained support from the Wisconsin Partnership Program and ongoing, trusted community partnerships throughout Wisconsin. Moving forward, SHOW will continue a

careful strategic planning process in collaboration with the SHOW Scientific Advisory Board to advance research, education and promote equity in Wisconsin and beyond.

INTRODUCTION

SHOW is a critically important infrastructure for advancing population health research and promoting health equity at the University of Wisconsin. The work summarized in the report below demonstrates how WPP investments in the last 13 years have built a rigorous population-based cohort, supported community-based recruitment, partnership building, and cutting-edge translational research – namely from bench to community. **SHOW is nationally recognized by NIH for its well-established and impactful longitudinal cohort. As a state-of-the-art infrastructure for community-based biosample collection and an existing cohort of over 5,000 randomly selected people from a statewide sample, SHOW provides an ideal platform for accelerating research and education through ancillary studies.** The program also supports advancing junior faculty and young scholars in translational and new, high-risk areas of research and discovery. The program bridges diverse partnerships between basic scientists and epidemiologists. It also supports trusted partnerships and community-engaged research, conducted in collaboration with other health equity and scholars across the University campus. A complete description of the history of the program and various waves of sample collection is available [here](#) with details on the past history and data collection for the program.

SHOW's impact in the last 12 months includes rapid response to public health needs for COVID-19 surveillance and research, cohort maintenance, expanded outreach and community engagement, and accelerated use of the SHOW infrastructure by investigators across University of Wisconsin and beyond. Between July 2020 and June 2021, SHOW has fulfilled all of its aims and its mission to *support ongoing population health monitoring and research, foster diverse partnerships, and support ongoing education in order to promote population health equity and well-being in Wisconsin and beyond. The overall goals of the SHOW program as proposed for 2019-2022 was to promote research on aging, health equity and well-being by maintaining a high-quality representative population-based cohort. Several specific aims including cohort maintenance, increasing utility of the resource, and longitudinal follow-up were funded.* SHOW data provided baseline information on several key indicators of health, including the burden of cancer and cancer disparities in Wisconsin. Use of SHOW as a resource for several ongoing campus initiatives include: the UW-Madison Diabetes Research Center, UW biorepository for cancer research, the Wisconsin Alzheimer's Disease Research Center, and the UW Center for Healthy Minds. Most recently SHOW has formally become identified as a shared resource within the UW Carbone Cancer Center.

This 2020-2021 annual report to the Wisconsin Partnership Program first describes the ongoing work that SHOW has completed in 2020-2021 as a key player at the University of Wisconsin – Madison in the fight against COVID-19. A brief description of SHOW as an important infrastructure for advancing the Wisconsin Idea success in training of the next generation of students is also provided. This is followed by a summary and highlights of key activities, successes and impacts in each of the original aims of the program.

SHOW's COVID 19 RESPONSE

With ongoing support from the WPP, the SHOW program was well poised to play a leading role in the UW SMPH COVID-19 response and provided researchers with avenues to continue research. Shortly after stay-at-home orders were announced across the state in response to the COVID-19 pandemic, the SHOW program requested permission from the WPP to pivot efforts to divert SHOW core funds towards COVID-19 research and surveillance. SHOW rapidly responded to the COVID-19 pandemic by developing an online survey for tracking pandemic impact on health, behaviors and attitudes towards mitigation strategies referred to as the COVID-19 Impact survey.

COVID-19 Community Impact Survey

In April and May 2020 in response to the COVID-19 pandemic, SHOW quickly developed, received IRB approval and launched a new survey to gather baseline information on SHOW COVID impacts across the state of WI. The survey was designed to be administered as both a web and telephone-based survey. The first two of three planned waves of the COVID-19 impact surveys were completed in May/June 2020, and January 2021. The

third wave is being conducted currently in June/July 2021. **SHOW's ability to stay relevant and continue survey and data collection operations during the pandemic led to the launch of SHOW's public use data infrastructure, increased advancement of COVID-19 research, and lifted investigators and researchers whose research stalled during the pandemic.** Timely dissemination of results is ongoing with the aid of developing a public use data set and establishing data working groups for investigators to engage and use SHOW data.

Successes/Accomplishments

- All past adult SHOW participants from 2008-2020 (n=5,249) were invited to complete an online or phone survey about COVID-19 testing, exposure, and the pandemic's impact on their health, daily life and well-being.
- n=1,050 completed wave I, n=1,889 completed wave II.
- SHOW staff prepared and made available a public use data set within four weeks of ending data collection, an unprecedented quick turnaround. We are leveraging this model to improve SHOW's process for cleaning and preparing SHOW's main core survey data and making the data available more rapidly than in prior years.
- 63 unique data users have downloaded the public use data set (See Appendix K)

Direct Impacts

- 27 investigators across campus contributed survey items for their research (Appendix J).
- A methods paper describing the study is published in pre-print and has been submitted for publication (<https://www.medrxiv.org/content/10.1101/2021.02.18.21252017v1>)
- Accelerated SHOW's public use data infrastructure. Data is publicly available via the SHOW website: <https://show.wisc.edu/covid-19/covid-19-projects/covid-19-public-use-data/>.
- Over 20 data requests/manuscript forms have been proposed, submitted, and are in progress.
- Preliminary data from this study were used for one RAD-X application by Dr. Ehrenthal and faculty within the UW Prevention Research Center and ICTR to address disparities in COVID-19 testing and access to testing among women, children and families across the state. This application was submitted in early August 2020.
- Dr. Susan Andrea of Kinesiology was able to recruit participants through SHOW for her study on barriers to physical activity among rural, female caregivers. Originally planning to recruit through schools, she was unable to conduct her research. She was able to leverage the SHOW infrastructure instead and complete her work.
- The UW Center for Healthy Minds was able to continue recruitment through invitation at the end of the COVID-19 online survey, for those interested in participating in their Emotions and Wellness Study. **A total of 114 SHOW** participants completed the initial screening at web screen (83 women/31 men). Of those, **85 were eligible** to continue to the final screening step (62 women/23 men).

Key Findings to Date

- Ongoing analyses have found disparities in COVID-19 testing across multiple social determinants of health ([pre-print available](#))
- Topics of inquiry include: impact of COVID-19 on food security, economics, housing stability, mental health and well-being, access to care, risk perceptions, vaccine hesitancy, and delays in access to care
- Post-Doctorate fellow Dr. Natascha Merten was able to swiftly finish a manuscript on COVID-19 sensory loss and mental health using the COVID-19 data and submit for publication in *Health Psychology*.

The Past Antibody COVID-19 Community Survey (PACCS)

In late April and early May 2020, SHOW partnered with The Wisconsin Department of Health Services and the Wisconsin State Laboratory of Hygiene to launch the Past Antibody COVID-19 Community Survey (PACCS). PACCS leveraged the existing SHOW cohort and includes over 1.5 million dollars in ancillary study funding to

support serological testing among past 2014-2016 SHOW participants, 2018-2019 African American participants, and Latinx pilot participants. The WI Department of Health Services (DHS) utilized the SHOW infrastructure to conduct a one-of-a-kind, statewide, population-based serological surveillance to inform public health efforts. DHS specifically identified SHOW because of its representative cohort, oversample of disadvantaged population (Latinx, Black or African American participants) and the vast experience of community-based biosample collection that SHOW already has in the state. This unprecedented effort includes ongoing collaborations with **Dr. Ryan Westergaard, Chief Medical Officer in the Division of Communicable Diseases, who is also faculty in the SMPH Department of Medicine.**

Successes/Accomplishments

- Most remarkable was the ability for the SHOW team to quickly mobilize and collect blood samples for serological testing in community sites across the entire state of Wisconsin in July/August 2020, in October/November 2020, and a third time in March/April 2021.
- Over 80% of baseline participants completed all three WAVES of the PACCS survey.
- 1,056 SHOW participants completed WAVE I, surpassing recruitment goals of completing at least 1,000 participants.
- n=1,070 participated in Wave II (October/November 2020), and n=1,002 participated in Wave III (March/April 2021).
- Crude estimates of seroprevalence in the total study population increased ten-fold from 1.4% during WAVE I to 11.5% in WAVE III. Within the statewide probability sample, weighted estimates increased from an estimated 1.6% (95% CI:0.6-2.5%), to 6.8% (95% CI:4.3-9.4%) in WAVE II, to 11.4% (95% CI:8.2, 14.6%). (Table 2 and Appendix H).

Direct Impacts

- Results of all three waves were finalized and shared with DHS, as well as via [pre-prints](#) describing the overall trends in COVID-19 spread across diverse WI regions. Results were disseminated via press releases to the UW community, local health departments and statewide, local, and national media.
- SHOW participants were provided with their COVID-19 antibody test results
- Data were immediately used to validate other surveillance data and support evidence-based decision-making by Dr. Ryan Westergaard, leading the states COVID-19 response.

"PACCS was routinely referenced for seropositivity rates in communications with our local public health partners and other stakeholders. It has been a valuable data source to use in the context of national antibody studies from Red Cross and CDC, which were subject to potential biases resulting from studying only blood donors and those seeking medical care, respectively. The description of racial/ethnic disparities has also been valuable for our understanding of at-risk communities and for planning related to vaccine outreach." – **Dr. Ryan Westergaard**

- SHOW was able to add timely questions on COVID-19 vaccine use and hesitancy in WAVE III of the study. Questions were informed by DHS and results immediately disseminated to DHS to support decision-making on when and how resources should be used to advance vaccine distribution and informational campaigns across the state.

PACCS and Novel COVID-19 Research

- Based on the success of the first WAVE of SHOW surveillance (PACCS) study, SHOW leadership and staff were also asked to support an outbreak investigation among 162 campers at a Jewish camp in South East Wisconsin. Within 48 hours, SHOW was able to mobilize staff, identify phlebotomists and develop protocols to safely collect serological samples from all campers.
- The WI State Lab of Hygiene, in collaboration with Dr. Ryan Westergaard at WI Department of Health Services, submitted a CDC grant for funding to leverage SHOW's recruitment and community site

sample collection efforts to investigate antibody response to COVID-19 vaccination. They proposed to test a neutralizing antibody assay, starting in fall 2021 and will complete three waves of data collection.

- To capitalize on PACCS, a more traditional applied public health surveillance effort, SHOW also consented the majority (78, or 87%) of participants (*kids were counted) to use their samples for COVID-19 research. Investigators who are planning to use the serum samples include **Dr. David Andes in the UW Department of Medicine.**

“We were thankful to be able to utilize SHOW serum samples (N=830) that were collected in a state-wide assessment of prior COVID-19 infection. The goal of our studies was to develop a miniaturized and high-throughput SARS-CoV-2 antibody assay. We utilized the Promega immunoassay targeting the Spike protein with luminescence endpoints as the starting assay. We were able to increase the format from a 96- to 1536-well format and reduced the plasma volume needed to 3 microliters (an amount that make finger-stick blood spot assays feasible). The assay performance was similar between the original and modified formats (sensitivity and specificity >90%). Use of automated tools such as robotics allow processing to result times of near an hour and a projected cost per sample in the range of 1-3 dollars. The assay should be feasible for many healthcare laboratory settings.” – Dr. David Andes

Advancing the WPP Strategic Plan and Promoting the Wisconsin Idea

Even throughout the pandemic, SHOW continued its important mission of giveback through dissemination of results and data to communities. To meet the goals of advancing health equity research, and expanding the scope and reach of the SHOW program, several new partnerships and collaborations were formed with community organizations in the City of Milwaukee, including KidTown Learning Center, Personalized Interventions Varied & On Time (PIVOT), Community Care Inc., and Hayat Pharmacy (See Appendix G). SHOW leveraged its important partnerships in Milwaukee and adapted recruitment methods to complete survey participation on 630 African American and Latinx residents of Milwaukee, surpassing the goal of 500.

- A presentation was made to the Wisconsin Alzheimer’s Institute, Center for Community Engagement and Health Partnerships Community Advisory Board in June 2020 regarding updates and findings from the SHOW 2018-2019 data collection efforts among under-represented minority populations and lessons learned. The presentation was well received, and the CAB was grateful for the continued partnership and updates. Feedback from this group included the need for continued dissemination even if via web-conference to support dissemination of findings to community partners.
- SHOW received a UW ICTR-CAP pipeline grant in collaboration with the Wisconsin Public Health Research Network in January 2021 to disseminate testing resources to private well-water users in the state – results from 2014 SHOW survey. This is a capstone project for an MPH student. Dissemination of materials begins fall 2021 and evaluation of dissemination begins winter 2021.
- In response to SAB feedback and ICTR-CAP consultation meeting feedback, analysis of 2018-2019 data was completed and one-page, infographic factsheets and newsletter updates started going out monthly to Milwaukee community partners in September 2020. In-person meetings to engage with partners will resume in July 2021 and promotional events resume in fall 2021 to engage with community interests and needs. PACCS press releases and thank you cards were also shared, along with COVID-19 survey updates, with community partners throughout the year.

SHOW as a Shared Resource for the UWCCC

SHOW data have been continually used to inform program planning and policy development. As a key example, SHOW data were used in Wisconsin's comprehensive [cancer control plan for 2020-2030](#): based on an ancillary study of cancer survivors. This work also led to two publications to date including [The Financial Toxicity of Cancer](#) by Weather et al, and [Alcohol Use During Chemotherapy](#) by Zhang et al. (under review). The

value of the SHOW surveillance data combined with statewide study sample and biological sample data encourage the UWCCC to provide support for SHOW to become a core resource of the UW Carbone Cancer Center. Planning was ongoing in 2020, and services are officially being offered as of July 1, 2021.

The mission of the Survey of the Health of Wisconsin (SHOW) Shared Resource within the Carbone Cancer Center is to reduce the burden of cancer by facilitating high-impact population health monitoring and translational research. In support of this mission, SHOW provides access to timely longitudinal data and biosamples from a representative statewide sample of UWCCC catchment area residents. Dr. Malecki (CPC) serves as the Faculty Leader of SHOW and has over 15 years of experience in conducting community-engaged public health surveillance and translational research. Dr. Schultz serves as the Facility Manager and is experienced in survey research and epidemiology. The remaining SHOW staff are highly qualified experts in population-based epidemiologic research and data sciences that will support UWCCC members with three specific aims:

- 1) New Ancillary Project Development. SHOW provides support to UWCCC members for conducting new cancer-related population health research. Services include multi-modal survey design, questionnaire development, protocols for household and community-based questionnaires, physical measurements, biological sample collection, data sample tracking and storage.
- 2) Population Health Surveillance. The SHOW Shared Resource facilitates use of survey data from SHOW and other studies to track trends in the cancer burden, use of cancer screening tests, and the prevalence of known and emerging cancer risk factors in the population. SHOW fosters community-engaged research with diverse populations throughout Wisconsin. SHOW also provides technical support on data elements.
- 3) Access to human biological samples for translational cancer research – SHOW supports access to state-of-the-art biological samples from diverse catchment area populations, including matched controls. The SHOW biorepository includes stored plasma, serum, DNA and mRNA for use in translational research including biomarker development and validation in real-world settings. The biological samples can also be used by UWCCC members to support multi-omic analyses.

This model may be valuable to other shared service cores in the future.

SHOW continues to serve as an excellent resource for training in epidemiology and population health sciences (see Appendix E), with core SHOW data integrated into SMPH and UW-Milwaukee curriculum and over 50 undergraduate, graduate, medical and preventive medicine residents advancing their careers using SHOW resources. In 2020-2021 alone, SHOW supported 1 Preventive Medicine Resident, 2 MPH students, and 5 PhD students with data for their graduate level research in public health, sociology, urban planning, and biomedical research. Allison Rodriguez who was a PA for SHOW supported the data team and community outreach and dissemination in 2020, and was recently hired as a SHOW researcher to support establishing the SHOW shared service within the University of Wisconsin Carbone Cancer Center. Bianca Silva is also an MPH student in Population Health Sciences who has supported dissemination of SHOW findings regarding carbon monoxide poisoning among state residents. Amy Van Aartsen is leading efforts to disseminate and evaluate testing information to private well water users in the state as part of her MPH capstone.

Doctoral students include Megan Agnew, funded on a newly awarded R01 to conduct residential histories and track social disadvantage across the lifecourse, and Lauren Schrader and Joni Sondello from basic sciences, who are using specimens from SHOW's biorepository for their research projects. Two new project assistants will begin their training in population health sciences and work with SHOW beginning in Fall 2021.

PROGRESS AND IMPACT BY SHOW 2019-2020 AIMS

Following is an abridged summary of SHOW's achievements 07/1/2020-7/30/2021 towards specific aims (proposed prior to the COVID-19 pandemic).

Aim 1: Maintain a rigorous population-health and translational research infrastructure.

- 1) Maintain data and biological sample repositories.
- 2) Increase diversity of the sample.

- 3) Establish a scientific advisory board (SAB) to support and inform program direction.

Aim 2: Increase access to and use of SHOW's unique combination of genetic, sociodemographic, behavioral, and neighborhood-level data within and outside of the University of Wisconsin for population health science, translational, and health equity research.

- 1) Create, maintain and annually expand a public use dataset.
- 2) Improve accessibility to data documentation/codebooks.
- 3) Build and maintain community-based partnerships to increase the use of SHOW tools by community organizations.

Aim 3: Conduct ongoing longitudinal follow-up of this contemporary, well-characterized cohort to support broad-based population health research in addition to a targeted focus on innovative environmental health and aging research.

- 1) Collect 5-10 year follow-up data.
- 2) Develop and implement innovative, cost-effective methods for data and sample collection.

Aim 4: Support new ancillary study projects including health equity and translational studies advancing evidence-based personalized, precision medicine.

Aim 1: Maintain a rigorous population-health and translational research infrastructure.

In 2020-2021, with the recommendation of the SAB, **Cohort maintenance was a primary activity between July 2020-June 2021.** With COVID, it became clear that time and resources were needed to understand who remained active members of the cohort and who were lost to follow-up. In conducting the COVID-19 Impact survey, efforts were made to gather email and updated telephone numbers from all past SHOW participants including those that may have moved out of state.

Outcomes include 18 peer-review publications, 23 presentations, 5 federally funded and 10 pending grants, and 9 ancillary studies that have resulted from SHOW or are ancillary to SHOW in 2020-2021 (See Appendices A-C). Additionally, 11 studies used the biorepository and 5,271 serum samples were added to the biorepository in 2020-2021 (Appendix F). Data are increasingly being used for innovative translational health sciences research by faculty in Department of Medicine, Bacteriology, the UW School of Pharmacy, genetic and prevention research in the School of Nursing, community-based sample collection and aging research by the ADRC and WRAP (See Appendices D & E). Between July 1, 2020 and June 30, 2021, data and resources have been used by over 40 faculty and students across the entire School of Medicine and Public Health (SMPH), the UW campus and beyond.

Aim 1.1. Maintain data and biological sample repositories.

SHOW's biorepository offers serum, plasma, urine, stool, RNA and DNA on a well-characterized, diverse cohort, supporting important translational science, and insight into emerging environmental contaminants.

Key Successes

- In 2020, SHOW recorded its highest use of serum (n=3000) and PAXgene (n=280) biospecimens by UW investigators.
In 2021, SHOW recorded its highest use of DNA (n=1200) biospecimen data by UW researchers (Appendix F).
- The PACCS project added over 5,500 serum aliquots in biorepository for COVID-19 research (Appendix F).
- 2020-2021 supported 10 investigators on 11 biorepository/biosample studies using plasma, PBMC, urine, serum, PAXgene, DNA stool, and DNA blood samples. (Appendix F).
- Increased utilization of samples by SMPH and other UW faculty for a wide range of analyses and research (See Appendix D for more detail on type and scope of data requests by students and faculty).

In 2020, SHOW partnered with the UW Biotechnology Center to have biobank management software, Freezerworks, (purchased by SHOW in 2018) used by GEAM (Genome Editing and Animal Models) to share the maintenance costs and upkeep.

- The software is critical to maintain the SHOW biorepository and has unique features including enhanced security, HIPAA compliance capabilities, and improved sample tracking.
- Over 200,000 biorepository samples were re-inventoried, re-organized, and entered into the new database. The project began in early 2019 and will be completed in Fall 2021, due to delays caused by COVID-19 campus closures.

Ancillary studies using biological samples are summarized in Table 1 below.

Aim 1.2 Increase Diversity of the Sample.

Much work in recruiting a racial and ethnically diverse population was done in Milwaukee and was completed in 2019. Details of this work were described in a previous progress report. As part of ongoing efforts to increase diversity in the sample and provide a resource for future investigators to build on, much of the past year has been invested in disseminating results and gathering feedback.

Efforts in Milwaukee and partnerships played a key role in the successful recruitment of past SHOW participants into PACCS. Response rates for PACCS WAVE III were highest among past Latinx participants. (See [pre-print](#) and updated summary of results in **Table 2** below).

Participation in PACCS by racially, ethnically, and geographically diverse SHOW participants was critically important to advancing public health. Black or African American and Latinx participants, including mostly Milwaukee residents, highlighted the importance of having representation from multiple sub-populations in biomedical research and surveillance. The prevalence of COVID-19 seropositivity were four times higher among Latinx participants in October 2020 but were similar to statewide in April and March. In contrast, the Black or African American community antibody prevalence was twice as high as the state average in March and April.

- Several additional community partnerships were formed in the summer and fall of 2019 which played an important role in SHOW's success at recruiting >400 African Americans in Milwaukee. Partnering organizations include: Community Care Inc., KidTown Learning Center, PIVOT, Walnut Park Apartments, and Hayat Pharmacy. See Appendix G for a complete list of community organizations SHOW collaborates with, what collaborations and mutual support has occurred, and what is ongoing.
- Community Care Inc. and KidTown are now site locations for PACCS COVID-19 Antibody testing, in addition to a new partnership – Parklawn Assembly of God. DHS and SHOW were able to provide giveback in the form of free COVID-19 antibody testing for employees at these establishments.

Success: As a result of these efforts, investigators are continually turning to SHOW for expertise in community-based research. SHOW's past success in recruiting not only rural residents around the state, but hard-to-reach sub-populations (Black, Latinx, and Burmese Refugee communities) is increasingly being recognized and sought after. This includes leveraging SHOW's current network of community partners in Milwaukee and Madison, approach for building lasting and trusting relationships with community leaders, hiring field staff in the communities we work in, and expertise in tailoring recruitment efforts, community give-back and biosample collection to in-the-field, non-clinical settings at community sites. NIH is increasingly requiring clinical, translational, and population-based research include diverse study samples and address health disparities. **SHOW's diverse cohort continues to be leveraged to provide pilot data for NIH grants**, in addition to supporting study design, recruitment, and community-based biosample collection for grant proposals.

Impacts of SHOW's community-based research & diverse cohort:

- **Dr. Carey Gleason**, Department of Medicine, leveraged SHOW for NIH RO1 supplement to conduct African Americans Fighting Alzheimer's in Midlife (AA-FAIM) study. Community-based sample

collection was launched in June 2021 on older adults in community settings in Madison among past and new ADRC and WRAP participants (two long-standing Alzheimer's cohorts).

- **Dr. Michal Engelman's** and Dr. Kristen Malecki's multiple – PI NIH/NIA R01, Residential, Epigenetic Weathering and Disadvantage (REWARD), funded in 2019, carried on with data analyses and helped to fund graduate students and 50% effort of a scientist at SHOW. Residential history reconstruction occurred throughout the year, and samples were analyzed for epigenetic biological aging markers. Additional analyses will be conducted on 2021 follow-up participant samples.
- **Dr. Vishala Parmasad**, Department of Medicine, Infectious Disease, submitted NIH OC grant in 2021 to leverage SHOW's field data collection, study design, community partnership building, and survey development services to identify community perceptions of COVID-19 risk, willingness to continue testing, and barriers to accessing POCT testing sites for COVID-19 in rural areas in the state.
- **Dr. Paul Peppard** submitted an NIH R01 in July 2021 to fund a Wisconsin Children's Sleep Cohort that would leverage SHOW's community partnerships in Black and Latinx communities in Milwaukee and Madison to recruit 4-8 year old children and parents to examine how sleep affects metabolic health, cognitive functioning and development.
- **Dr. Nasia Safdar**, Department of Medicine, submitted CDC Prevention Epicenters for Antibiotic Resistance grant in 2020. It would use SHOW as a core resource for understanding presence of antibiotic resistance in the population.
- SHOW provided a letter of support for Maureen Smith's application with MCW to build an infrastructure for health disparities research that bridges academic and health care partners.

Aim 1.3 Establish a scientific advisory board (SAB) to support and inform program direction.

- The SHOW SAB was established in August 2019 with the goal of forming a team of diverse experts spanning different departments across campus to provide scientific program guidance (See Appendix I for list of SAB members).
- SHOW holds biannual meetings with the SAB and has held five meetings to-date: September 2019, March 2020, October 2020, February 2021, July 2021.
- The SAB has advised SHOW to
 - 1) focus on longitudinal follow-up of adult participants and oversampling in minority communities; (impressed with COVID-19 survey and PACCS research)
 - 2) focus research on environment, aging, obesity and microbiome
 - 3) improve SHOW outreach to researchers by clearly articulating what makes SHOW novel and why others should use it; improving website and data access, having focused meetings, seminars and outreach to researchers and communities; develop a business plan
 - 4) connect and collaborate with other researchers, research entities and community organizations who have expertise and interest in community evaluation and interventions who use SHOW's infrastructure and/or cohort to carry out their programs.

Details of how SHOW has addressed the SAB's advice is addressed throughout this report in subsequent aims. Highlights are as follows:

- In the fall 2019 SHOW leadership and core scientists met to finalize plans for cohort maintenance, retention and to focus the SHOW survey on environment and aging related research. This theme is consistent with recommendations from the SHOW SAB. It is cross-disciplinary, allows for advancements in basic science to be translated, and aligns with other well-established programs and centers across SMPH including the UW Carbone Cancer Center, newly evolving initiatives around metabolic health and obesity research, the Wisconsin Alzheimer's Institute and the Center for Demography and Aging.
- Based on SAB feedback, plans were developed to conduct longitudinal follow-up among adults only and in relationship with ongoing NIH-funded research by key investigators to begin fall

2021 (Engelman and Malecki).

- The SAB also encouraged ongoing community engagement and data collection in under-served minority communities. A community engagement and outreach plan was developed in Milwaukee for data dissemination, and grant/evaluation/program development with partners. This work is being led by SHOW's Assistant Director, Amy Schultz. This work will be further advanced by SHOW PI, Dr. Malecki who was recently named Director for the Center for Urban Population Health
- Based on SAB recommendations to increase awareness of the SHOW program, outreach and communication staff revamped the SHOW website in Winter 2020 and moved to a self-hosted site. SHOW is planning another annual re-vamp this summer of the website, to include electronic consultation scheduling and data request process to make tracking and communication easier. The website will also clearly feature SHOW's services and the RE-AIMME initiative.
- SHOW extended partnerships by formally becoming a member of the ICTR-CAP program, and attended over four ICTR-CAP events, as well as the Neighborhood Health Partnerships navigator pilot program and ongoing trainings. These strategic partnerships are in line with overall aims for the SHOW program and to encourage the use of the SHOW program for intervention related research. SHOW staff have been attending Dissemination and Implementation research trainings.
- To further support use of the SHOW infrastructure for intervention research - SHOW has connected with the Community Aging and Action Research Network (CAARN) to develop and encourage faculty to consider the use of the SHOW program to gather data to shape interventions. Key examples include rural physical activity programs led by Dr. Lisa Cadmus Bertram in the Department of Kinesiology, and Dr. Heidi Brown in the Department of Obstetrics and Gynecology who are using SHOW infrastructure and/or cohort to carry out their programs.
- SHOW has met with ICTR-D&I for consult on business model development. Recommendations were to develop a list of program and services. SHOW leadership continue this work.

Aim 2: Increase access to and use of SHOW's unique combination of genetic, sociodemographic, behavioral, and neighborhood-level data for population health sciences (including clinical, epidemiologic, basic, translational, and health equity) research.

SHOW's data science team has been under leadership of Dr. Matt Walsh. Dr. Walsh holds a newly created lead Data Scientist and Data Team Supervisor position with a primary focus of supporting and expanding high quality data curation and data security.

Several successes during the past funding period include:

- **Expanded resources for student and faculty training in use of SHOW data.** In both summers 2020 & 2021, SHOW hosted a one-week SAS training session for students interested in working with and analyzing SHOW data. This is particularly important and useful for clinical and basic science students.
- Increased efficiency and quick turnaround time in processing analytic data sets

Accelerating awareness and use of SHOW was made possible through implementation of a formal social media plan to branch out to new audiences. Social media includes Facebook and Twitter accounts. SHOW also keeps an up-to-date website to support dissemination of key program activities, findings and results.

Key successes are as follows:

- SHOW has begun tracking social media use and aims to branch out to new audiences, including using Facebook as a platform for dissemination of COVID-19 related findings and integration on the new SHOW website. Two Facebook posts are launched weekly, three tweets and three retweets/week. SHOW has 449 Facebook followers and 236 Twitter followers, but our reach is growing weekly with a

goal of n=700 Facebook and n=500 Twitter followers by 2022. We average adding 10 new followers/week.

- SHOW now has 9 mail-chimp audiences and tracks views of emails, responses and engagement and also responses to formal feedback surveys to gauge what marketing is working and where to focus resources.
- SHOW has developed a marketing plan, with deliverable and tracking goals to assess what marketing is worth continued investment and what marketing is not.
- SHOW has PACCS press releases on website, plans to launch community partner webpage with factsheets and resources, and a monthly spotlight reel on the home page – to be finished September 2021.

Improve accessibility to data documentation/codebooks.

- COVID-19 put main plans to improve data documentation and accessibility on hold. However, the COVID-19 data request/access embedded form, documentation, how-to guides and data sets shared publicly via BOX are templates we are in the process of applying to SHOW core data - plans for release in January 2022.
- Summer 2021 the team combined and improved the data request / manuscript form to streamline tracking and decrease burden on users. An embedded e-form on the website will be launched August 2021.
- In addition to the e-form for data requests, a consultation form will be on the website for investigators and users to easily schedule meetings with SHOW.
- The data team put together a data user and delivery plan to increase use via how-to videos and data byte sharing of research and projects on-going at SHOW.

Build and maintain community-based partnerships to increase impact of SHOW and reach of SHOW data with community organizations. Partnerships are ongoing and actively established to support program planning, implementation and evaluation.

- Several additional community partnerships in Milwaukee were formed in 2018-2019. Partnering organizations include: Community Care Inc., KidTown Learning Center, PIVOT, Walnut Park Apartments, Clinton Rose Senior Center, BLOC, Hyatt Pharmacy. See Appendix G for complete list of community organizations SHOW collaborates with, what collaborations and mutual support has occurred, and what is ongoing. During the pandemic, monthly factsheets on the 2018-2019 data were sent to partners, along with surveys and virtual meetings to gauge data and grant needs and interests.
- SHOW presented preliminary data to the Wisconsin Alzheimer's Institute Community Advisory Board under the leadership of Gina Green Harris within the Collaborative Center for Community Engagement (CCE) in Milwaukee. This presentation had two aims: 1) update the existing CAB on how SHOW responded to and used CAB feedback in planning of 2018-2019 sample collection; 2) to gather the CAB's feedback on best ways to continue with outreach and communication efforts with community and statewide partners in light of COVID-19.
- SHOW established two additional partnerships – Parklawn Assembly of God in northwest corridor of Milwaukee in a predominantly African American community, and S.S. Morris Church – an African American church on the east side of Madison. Parklawn served as a PACCS site and S.S. Morris as a site for the AA-FAIM study.
- SHOW has one-on-one meetings with community partners starting in July 2021 and will be attending 4 community events in Fall 2021 to bring the SHOW presence back in the community and engage with what the present concerns and needs are. This helps to inform future work and maintain ties for cohort maintenance.

Aim 3: Conduct ongoing outreach, engagement, and longitudinal follow-up of the existing statewide sample, to support broad-based population health, environmental and aging research.

Aim 3.1 Support cohort retention and collect 5-10-year follow-up health data, physical exam and biological samples (n=800-1000) from existing statewide representative samples.

- SHOW is actively planning to return to the field to complete this aim beginning in September 2021. Activities have included engagement with several key research initiatives across the UW seeking input for content and research direction.
- SHOW's data team has focused on data analysis of cohort, eligibility, and past participation to determine loss to follow-up. Efforts are being made to contact all SHOW participants for up-to-date contact information and implement on-going, quarterly updates, biannual newsletters, and annual check-ins for contact information changes. This will aid in cohort retention over time.
- The SHOW RE-AIMME initiative has also launched. Researching Equity- Aging, Inflammation, Microbiome, Metabolism, and the Environment is SHOW's new initiative to facilitate communicating what SHOW data collection, services, and research focuses on. This will help to ensure new investigators and community partners can grasp whether our focus aligns with theirs. New home webpage to be launched August 2021 will present this.
- The SHOW COVID-19 Impact Survey accelerated cohort retention efforts and utilization of different modes of communication and survey completion. This survey was intended to serve as a follow-up of all adult SHOW participants from 2008-2020 (>5,000 participants). In planning for this survey, SHOW made an attempt to obtain email address, updated mailing addresses and telephone numbers from all past participants. Then all participants were invited to complete an online or phone survey about COVID-19 testing, exposure, and the pandemic's impact on their health, daily life, and well-being. The response rate for this online survey was approximately 30% which is above what one would expect in an online survey. More importantly, SHOW was able to identify individuals who will require additional follow-up and maintenance efforts in order to continue to maintain the cohort.
- Key lessons learned from the WAVE I cohort suggest (not surprising, and in concordance with empirical evidence) that online surveys are not effective methods for reaching under-represented, or lower SES individuals. Thus, SHOW made efforts in WAVES II and III to include both mail-based surveys and telephone surveys in subsequent waves. The response rates and total number of participants in the second WAVE was much higher due to these efforts.
- WI DHS' COVID-19 Antibody tracking survey (PACCS) leveraged the 2014-2020 sample and conducted follow-up on the cohort for COVID-19 antibody testing. We had a 30-40% response rate on average across all three WAVES. Ongoing efforts for cohort retention include follow-up thank you letters to community-based survey sites, local health department partners and past participants.
- Another key accomplishment, based on guidance from Dr. Maureen Smith and Dr. Amy Trentham-Dietz, is inclusion of consent language for linkage of SHOW individuals to electronic health records for COVID-19 and other population health research. Over half of the COVID-19 survey participants (n=877) consented to EHR linkage from COVID-19 impact survey.

Aim 4: Support new ancillary study projects including health equity and translational studies advancing evidence-based personalized precision medicine.

The most notable SHOW ancillary studies have been described in detail above with respect to SHOW's critically important response to COVID-19. SHOW has gained a solid reputation for community engagement with hard-to-reach populations and an ability to support biosample collection in community settings. This supports the current novelty of the SHOW program, which does this work while also collecting important individual data on the social determinants of health which can then be leveraged for novel biomarker discovery. Further, access to address-based data and consent among SHOW participants for linkage with health record data have also

increased the visibility of SHOW across SMPH, including new partnerships with the UW Carbone Cancer Center (see future directions below).

Key Successes

Nine federal grants to the National Institutes of Health (NIH), the Centers for Disease Control and Prevention and the United States Environmental Protection Agency were submitted and/or received funding since July 2019. See Appendix C for a summary and status of grants ongoing and submitted July 2019-2021.

NIH R01/R21 proposals funded include:

- Drs. Malecki, Arendt and Nikodemova completed sample collection using SHOW's unique biosample collection resources as part of an R21 for the Obesity, Toll-Like Receptor, and Immune Function (TLR) project which will use SHOW samples to better understand the impact of obesity on toll-like receptor signaling as a mechanism for altering immune function.
- Dr. Michal Engelman, sociology and co-PI with Dr. Malecki received an R01 funded by NIH/NIA, which is titled Research Epigenetics, Weathering and Residential Disadvantage which will use SHOW's unique data to reconstruct contextual data on social determinants of health and use DNA methylation profiles to examine measures of accelerated biological aging across disadvantaged urban and rural communities.
- Dr. Gleason's NIH supplement to use SHOW for community engagement and community biosample collection is an excellent example of how SHOW has established ongoing expertise in community-based biosample collection.
- A P30 Cancer Center Support Grant application to NIH submitted by Kristina A. Matkowskyj, MD, PhD in the Department of Pathology and Laboratory Medicine for development of a UW COVID-19 biobank will use the SHOW infrastructure for investigators interested in identification of community-based controls.

Other NIH and federally funded projects:

- Dr. Judith Simcox received a UW Building Interdisciplinary Research Careers in Women's Health (BIRCWH) award funded by NIH that includes using SHOW samples for lipidomics research to advance understanding of disparities in metabolic health.
- Dr. Noel Stanton, of the Wisconsin State Laboratory of Hygiene received grant funding from the national Association for Public Health Laboratories (APHL) for biomonitoring of Perfluorinated (PFAS) compounds among a subsample of 600 SHOW participants. Samples have been processed and analyses are on-going.

Two federal proposals (2 NIH proposals) have been submitted since June 2020 and are pending review.

These Pending applications include use of SHOW for intervention and community-based biosample collection:

- Dr. Vishala Parmasad, Department of Medicine, Infectious Disease, submitted an NIH OC grant in 2021 to leverage SHOW's field data collection, study design, community partnership building, and survey development services to identify community perceptions of COVID-19 risk, willingness to continue testing, and barriers to accessing POCT testing sites for COVID-19 in rural Wisconsin areas.
- Dr. Paul Peppard submitted an NIH RO1 in July 2021 to fund a Wisconsin Children's Sleep Cohort that would leverage SHOW's community partnerships in Black and Latinx communities in Milwaukee and Madison to recruit 4-8 year old children and parents to examine how sleep affects health, cognitive functioning and development.

Other federal grants also submitted but not funded include:

- Dr. Martin Shafer at the Wisconsin State Laboratory of Hygiene and a collaborative team of environmental scientists across UW Madison submitted a proposal to the US Environmental Protection Agency to address newly emerging perfluorinated compounds across the U.S.
- Dr. Dudley Lamming and Dawn Davis submitted an R01 to NIH in January and Dr. Federico Rey and Lamming submitted a microbiome grant to NIH in October. The latter two proposals were not discussed. Investigators are pursuing new options.

Other SHOW-related Internal UW Grant Initiatives funded include:

- Dr. Dudley Lamming, Judith Simcox (Co-PIs), collaborators Federico Rey, Dawn Davis, Rozalyn Anderson, Vincent Cryns, and Chris Bradfield received UW 2020 funding “Accelerating Diabetes and Metabolism Research” to purchase new equipment to advance metabolic health which will be housed in the UW Biotechnology Center.
- Dr. Amy Schultz and Susan Zahner’s UW ICTR-CAP grant to disseminate private well water resources to SHOW participants and local and state agencies.

In response to the March 2020 request for more information on the use of SHOW by investigators, **Table 1** (below) outlines ongoing translational projects using the SHOW biobank as part of the SHOW’s increased translational research efforts. More details are provided in Appendices (A-D).

Unanticipated Challenges and Progress Towards Future Goals

We are living in a new world. SHOW has overcome several staffing challenges in the past 12 months, has increased visibility and accessibility of the SHOW program and is now playing a key role in both the SMPH and statewide public health response to COVID-19. The future of the COVID-19 pandemic remains largely unknown and will shape future efforts for continued in-person follow-up. At the same time, SHOW investigators continue to support applications for NIH funding of existing biosamples and longitudinal follow-up of past SHOW participants. Ongoing support for the core infrastructure will continue to be important for these collaborative efforts to be successful and sustained.

SHOW leadership has also been mindful of the need to identify outside funding to maintain the core SHOW infrastructure and will continue to look for these opportunities within NIH. However, these efforts are dependent on some level of continued institutional funding and commitment to the program. SHOW becoming a core service within the UW Carbone Cancer Center highlights potential opportunities for additional sustained funding for core program activities. Additional support within key strategic areas: aging, metabolic health, and health equity is ongoing. However, taking on this new partnership adds additional administrative reporting and staffing requirements not currently available within the core SHOW program. SHOW’s support from the WPP has averaged 1.2 million annually. The total SHOW operating budget is between 1.6 to 2.0 million annually with ancillary studies that leverage and build on the core infrastructure. SHOW is working to carefully track and monitor these costs. Building a more sustainable model for SHOW will diminish the long-term, overall impact of the program to the school. SHOW is working with the SAB to support a cost-effective path forward that sustains program impact.

Table 1. SHOW Use of Biosamples for Translational Research by Investigator

Investigator	Department	Project	Biospecimen
John Denu	WID, Dept of Biomolecular Chemistry	SHOW pilot: Dysregulated epigenetic-metabolism axis as a marker of aging	PBMC, plasma
Uma Wesley	SMPH, Dept of Neurological Surgery	SHOW pilot: Identifying plasma inflammatory/angiogenic biomarkers associated with increased risk of stroke and cognitive decline among adults with different co-morbidity	Plasma
Robert Lipinski	SVM, Dept of Comparative Biosciences	R01: Developmental toxicity of the pesticide synergist and hedgehog pathway inhibitor piperonyl butoxide	Plasma
Kristen Malecki	SMPH, Dept of Population Health Sciences	R01: REWARD, Researching epigenetics, weathering, aging & residential disadvantage	Plasma, DNA
Maria Nikodemova	SMPH, Dept of Population Health Sciences	R21: Obesity, Toll-like receptors and human sensitivity to the environment	PBMC
Judi Simcox	College of Agricultural and Life Sciences, Dept of Biochemistry	Improving biomarkers of metabolic syndrome in African American populations	Plasma
Dudley Lamming	SMPH, Dept of Medicine	SHOW pilot: Dietary isoleucine is a key regulator of metabolic health	Plasma
Noel Stanton	Wisconsin State Lab of Hygiene	Establishment of Serum PFAS testing in Wisconsin	Serum
Christopher Bradfield	SMPH, Oncology	R01, Manuscript Prep. RNA Seq and transcription of the AhR in smokers vs. non-smokers	DNA/RNA
David Andes, MD	SMPH, Department of Medicine	New COVID-19 Anti-body test discovery	Serum (from COVID-19 Study)
Christopher Bradfield	SMPH, Oncology	Development and identification of bio-assay for tracking disrupted circadian rhythms using human RNA transcripts.	DNA/RNA
Vincent Cryns/Joni Sedilloa	SMPH, Department of Medicine	Use of DNA Methylation data to improve understanding of dietary methionine intake and altered epigenetic pathways as risk factors for metabolic health and cancer.	DNA/DNA Methylation
Andrew Hryckowian	SMPH, Department of Medicine	Use of stool DNA samples for the presence of Group B Streptococcus in the GI tracks of adults	Stool DNA

Table 2: PACCS Spotlight

PACCS spotlight:

A summary of key findings to be published in pre-print online and being prepped for publication in Clinical Infectious Disease journal are as follows:

- 996, 994, and 929 participants were in the original statewide population-based probability sample and were used to estimate weighted statewide estimates. From WAVE I to WAVE II, crude estimates of seroprevalence in the total study population increased from 1.9% to 7.3%. Within the statewide probability sample, weighted estimates increased from an estimated 1.6% (95% CI:0.6-2.5%) seropositivity to 6.8% (95% CI:4.3-9.4%). These data were collected right before a November increase in overall documented cases in the state. March 2021 seroprevalence had doubled among the study participants.
- Seroprevalence varied by health region in both waves. Although there was no gender difference observed in WAVE I, the seropositivity rate was higher in men 9.4% (95% CI:4.3, 14.3) compared to women 4.3% (CI: 2.7-5.3%) in WAVE II. Health regions are defined by the Wisconsin Department of Health Services to represent geographic service areas for local and state public health practitioners. In WAVE I, the greatest proportion of positive tests was detected in the Southeastern region of the state, home to Milwaukee, the largest metropolitan area in the state (3.1% positive; 95% CI:1.4-4.9%); this increased to 9.3% (95% CI:3.3-15.1%) in WAVE II.
- Sub-population differences in seroprevalence were observed by state agency designated health regions and by racial/ethnic composition and location of study participants. The greatest change in antibody-positive results from WAVE I to WAVE II was in the North and Northeast from 1.7% (0.0-4.3%) to 8.7% (95% CI: 5.0-12.4%), this jump persisted through WAVE III to 13.0% (8.6, 17.4%). Prevalence also varied by age and race-ethnicity with the highest WAVE II prevalence among 45-64 year-olds at 8.1% (5.6-10.7%) up from 1.9% positive in WAVE I and compared to 6.1% (1.5-10.8%) among participants younger than 44 and 6.4% positive (3.3-9.5%) in those older than 65. Self-identified Non-whites (n=133) also had a higher prevalence of 8.3% (0.3-16.4%) compared to Non-Hispanic Whites (n=861) with 6.5% (3.8-9.2%). Among the non-white participants, n=55 were among a Latino population oversample recruited from a largely industrial and working-class community on Milwaukee's south side. Of these individuals, over 25% had positive antibodies measured during WAVE II, by WAVE III prevalence was reduced to 9%. Among other Milwaukee residents who largely self-identified as Black or African American, we saw shifts in seroprevalence from 6.1% in WAVE 1 to 20.0% in WAVE III.



Appendix A

Peer-Reviewed Scientific Publications By Year: 2020 to 2021

2020

1. Wisconsin Office of Children's Mental Health. Supporting Child well-being through Health Use of Screen Time. 2020.
2. Schmidt CW, Snedden TR, Malecki KM, et al. Bicycling Rates and the Prevalence of Bicycle helmet usage in the state of Wisconsin. Wisconsin Medical Journal. 2020.
3. Thakur T, Barnet JH, LeCaire T, Bersch A, Peppard P, Malecki K, Moberg DP. Prescribed opiate use in Wisconsin from 2008-2016: Findings from the Survey of the Health of Wisconsin. WMJ. 2020;119(2):102-109.
4. Jessica S. Gorzelitz, Kristen M. Malecki, Lisa A. Cadmus-Bertram. Awareness of Physical Activity Guidelines Among Rural Women. American Journal of Preventive Medicine. 2020. Volume 59, Issue 1: 143-145. <https://doi.org/10.1016/j.amepre.2020.01.022>.
5. Brown HW, Wise ME, LeCaire TJ, Braun EJ, Drewry AM, Buttigieg EM, Macco M, Barnet JH, Bersch A, Peppard PE, Malecki KMC, Nieto FJ, Mahoney JE. Reasons Behind Preferences for Community-Based Continence Promotion. Female Pelvic Med Reconstr Surg. 2020 Jul;26(7):425-430. doi: 10.1097/SPV.0000000000000806. PMID: 32217918; PMCID: PMC7329600.
6. Schultz, Amy A., Kristen Malecki, Maddie M. Olson, Saliha B. Selman, Oona-Ife Olaiya, Alexandra Spicer, James J. Schauer, Ross Edwards, Heather L. Kirkorian, and Janean Dilworth-Bart. "Investigating Cumulative Exposures among 3-to 4-Year-Old Children Using Wearable Ultrafine Particle Sensors and Language Environment Devices: A Pilot and Feasibility Study." International Journal of Environmental Research and Public Health 17, no. 14 (2020): 5259.
7. Kates AE, Jarrett O, Skarlupka JH, Sethi A, Duster M, Watson L, Suen G, Poulsen K, Safdar N. Household Pet Ownership and the Microbial Diversity of the Human Gut Microbiota. Front Cell Infect Microbiol. 2020 Feb 28;10:73. doi: 10.3389/fcimb.2020.00073. PMID: 32185142; PMCID: PMC7058978.

2021

8. Holzhausen, E., Hagen, EW, LeCaire T, Cadmus-Bertram L, Malecki KC, Peppard P. A Comparison of Self- and Proxy-Reported Subjective Sleep Durations with Objective Actigraphy Measurements in a Survey of Wisconsin Children 6-17 Years of Age. American Journal of Epidemiology 190 (5), 755-765

9. Halling, M., Timmer-Murillo, S., Hunt, J. C., Geier, T., Beyer, K. M., Malecki, K. M., & deRoos-Cassini, T. A. (2021). Exposure to socioenvironmental stress as a predictor of physical and mental health. *Journal of Health Psychology*.
10. Zhao L, Cull Weatherer A, Kerch S, LeCaire T, Remington PL, LoConte NK. 2021. Alcohol Use During Chemotherapy. Under consideration at *Wisconsin Medical Journal*.
11. Ersig AL, Brown RL, Malecki K. Association Between Food Allergy, Psychological Stress, and Allostatic Load. *Western Journal of Nursing Research*. June 2021. doi:10.1177/01939459211019042
12. Stroope J. 2021. Active transportation and social capital: the association between walking or biking for transportation and community participation. *Preventive Medicine*. 150: 106666. <https://doi.org/10.1016/j.ypmed.2021.106666>
13. Hii, M., Beyer, K., Namin, S., Malecki, K., Schultz, A., & Rublee, C. 2021. Respiratory diseases, racial disparities, and residential proximity to coal power plants in Wisconsin, USA: a cross-sectional study. *The Lancet Global Health*, 9, S19.
14. Deyang Yu, Nicole E. Richardson, Cara L. Green, Alexandra B. Spicer, Michaela E. Murphy, Victoria Flores, Cholsoon Jang, Ildiko Kasza, Maria Nikodemova, Matthew H. Wakai, Jay L. Tomasiewicz, Shany E. Yang, Blake R. Miller, Heidi H. Pak, Jacqueline A. Brinkman, Jennifer M. Rojas, William J. Quinn, Eunhae P. Cheng, Elizabeth N. Konon, Lexington R. Haider, Megan Finke, Michelle Sonsalla, Caroline M. Alexander, Joshua D. Rabinowitz, Joseph A. Baur, Kristen C. Malecki, Dudley W. Lamming. 2021. The adverse metabolic effects of branched-chain amino acids are mediated by isoleucine and valine. *Cell Metabolism*. Vol 33: Issue 5. Pages 905-922.e6.
15. Malecki K, Nikodemova M, Schultz AA, LeCaire T, Bersch A, Cadmus-Bertram L, Engelman C, Hagen E, Palta M, Sethi A, Walsh M, Nieto FJ, Peppard P. 2021. The Survey of the Health of Wisconsin (SHOW) Program: an infrastructure for advancing population health sciences in the 21st century. *MedRxiv Preprint*. Pending review at *BMJ Open*.
16. Malecki K, Schultz A, Nikodemova M, Walsh M, Bersch A, Cronin J, Cadmus-Bertram L, Engelman C, Lubsen J, Peppard P, Sethi A. 2021. Statewide Impact of COVID-19 on Social Determinants of Health- A First Look: Findings from the Survey of the Health of Wisconsin. *MedRxiv Preprint*. Submission pending.
17. Malecki K, Nikodemova M, Schultz A, Walsh M, Bersch A, Sethi A, Peppard P, Engelman C, Cadmus-Bertram L, Safdar N, Batemen A, Westergaard R. 2020. Population Changes in Seroprevalence among a Statewide Sample in the United States. *MedRxiv Preprint*. Submission pending.
18. He, X., Raymond, M., Tomasallo, C., Schultz, A., & Meiman, J. 2021. Fish consumption and awareness of fish advisories among Burmese refugees: A respondent-driven sampling study in Milwaukee, Wisconsin. *Environmental Research*, 197, 110906.

Presentations and Abstracts by Year: 2020 to 2021

2020

1. Cronin J and Rodriguez A. A Tool for Gathering Novel Local Public Health Data: Survey of the Health of Wisconsin. August 24, 2020. Virtual presentation.
2. M. Nikodemova, EA Holzhausen, C. Deblois, G. Suen, PE Peppard, AK Sethi, K. Malecki. The Reproducibility and Stability of Stool Microbiota During Collection and Transport of Stool Specimen. Poster. August 2020. 32nd Annual International Society For Environmental Epidemiology (ISEE 2020) Virtual conference.

3. Malecki KCM, Nikodemova M, Schultz AA, Spicer A, Engelman E. Cumulative Environmental Exposures (Social * Environment) and Accelerated Biological Aging. Poster. August 25, 2020. 32nd Annual International Society For Environmental Epidemiology (ISEE 2020) Virtual conference.
4. Malecki KCM. Water Quality, Exposure Assessment and Gut Microbial Diversity Among Private Well-Owners. Panel Presentation. August 27, 2020. 32nd Annual International Society For Environmental Epidemiology (ISEE 2020) Virtual conference.
5. Cronin J and Schultz A. WPHRN Presents: Using The Survey Of The Health Of Wisconsin In Public Health Practice. June 9, 2020. Virtual webinar.
6. Cronin J, Schultz A, Walsh M, Nikodemova N, Malecki K. October 30, 2020. The intersection of mental health and COVID-19: how exposure, testing, behaviors, and perceptions influence mental health outcomes. USC CESR COVID-19 Work In Progress Conference. Virtual Presentation.
7. Campbell J, Bednarke K, Schultz A, Malecki K, Beyer K. 2020. Associations among Neighborhood Green space, air pollution, and sleep quality and duration in Children: evidence from the Survey of the Health of Wisconsin. Medical College of Wisconsin - Milwaukee: Virtual Student Poster Presentation.
8. Bednarke K, Campbell J, Schultz A, Malecki K, Beyer K. 2020. Associations among Green space and Children's lung function. Medical College of Wisconsin - Milwaukee: Virtual Student Poster Presentation.
9. Nolan M. 2020. Disparities in Healthcare Quality and Utilization by Smoking Status, Wisconsin, 2014-2016. American College of Preventive Medicine: Emerging Leaders Research Showcase webinar.
10. Hii M, Beyer K, Namin S, Malecki K, Rublee C. 2020. Respiratory disease and racial health disparities with residential proximity to coal power plants in Wisconsin. Medical College of Wisconsin - Milwaukee: Virtual Student Poster Presentation.
11. Malecki K. 2020. Molecular Epidemiology and SHOW: Using Population-based data to Advance Translational Research. Cancer Biology Seminar and Speaker Chat. September 15, 2020. Virtual.
12. Ersig A, Young E, Brown R, Malecki K, LeCaire T, Barnet J. 2020. Genetic Variation, stress response, and allostatic load in adults with chronic health conditions. International Society of Nurses in Genetics (ISONG) Conference. November 13-15, 2020. Virtual poster presentation.
13. Mikulas A, Curtis K, Engelman M, Malecki K. Sense of Community in Context: a place-based perspective on experiences of social capital. Accepted for presentation at Population Association of America 2020 Conference, Washington DC, April 2020 (Conference cancelled)
14. Cronin J. 2020. Survey of the Health of Wisconsin: Collaborating with Students. Department of Population Health Sciences Graduate Student Seminar. Fall 2020 Semester. Virtual Presentation.

2021

15. Cronin J. 2021. The Survey of the Health of Wisconsin: A Health and COVID-19 Data Resource. 2021 Data Science Bazaar. Hosted by the UW Madison Data Science Hub. Virtual flash talk presentation.
16. Cadmus-Bertram L., Schultz A, Peppard P, Malecki K. 2021. Relationship of COVID-related Changes to Mental Health and Sleep in Wisconsin Adults. Society of Behavioral Medicine Annual Meeting: Virtual presentation.
17. Agnew M, Engelman M, Malecki K. 2021. Residential Histories in Urban and Rural Places: Quantifying the impact of neighborhood exposures on population health in Wisconsin. PAA 2021. Virtual Poster Presentation. May 2021

18. Zhao L, Cull Weatherer A, Kerch S, LeCaire T, Remington PL, LoConte NK. 2021. Prevalence of Alcohol Use During Chemotherapy. ACPM Preventative Medicine 2021 Conference. Virtual Poster.
19. Malecki K. 2021. Using a Population-Health Data Infrastructure to Collect Multi-Omic Data to Address Cancer Health Disparities. UW Carbone Cancer Center Research Retreat. Virtual presentation.
20. Mumm B, Barnet J, LeCaire T, Malecki K, Wise M, Newman D, Brown H. 2021. Who are we leaving High and Not Dry? Disseminating Bladder Health Promotion to Women via Email. International Continence Society Conference. Melbourne, AUS. October 2021. Abstract pending review.
21. Murphy S, Spicer A, Remington P, Malecki K. 2021. Rural-Urban differences in Depression, Firearm Ownership and Firearm Suicide Risk. American College of Preventative Medicine 2021 Conference. May 2021. Virtual Poster presentation.
22. Malecki K. 2021. Population Health Sciences and Opportunities for Aging Socio-genomics Research. UW Madison Center for Demography of Health and Aging: Social Genomics Seminar. Virtual Presentation. March 3, 2021.
23. Cronin J. 2021. The Survey of the Health of Wisconsin: Health Research Resource and COVID-19 Data Opportunities. School of Human Ecology, Human Development and Family Studies Seminar. March 2021. Virtual Presentation.

Appendix B – SHOW Ancillary Studies Ongoing 2019-2021

Applied Public Health / Community Health Projects

Study	Start Year	End Year	Funding	Award to SHOW	Total Award	Collaborators	Summary
AA-FAIM	2021	2023	NIH Supplement	\$150,874	\$218,767	Carey Gleason, Dept of Medicine, ADRC/WRAP	African Americans Fighting Alzheimer's in Midlife (AA-FAIM) is a sub-study of the Wisconsin Registry for Alzheimer's Prevention (WRAP) and Alzheimer's Disease Research Core (ADRC) designed to understand how mid-life modifiable risk factors impact African Americans at risk for Alzheimer's Disease. SHOW's community site phlebotomy service is leveraged.
Taking the Next Step (TaNS)	2021	2022	ICTR-CAP	\$30,974	\$33,620	Amy Schultz, SHOW, Susan Zahner, Wisconsin Public Health Research Network (WPHRN), DHS/DNR advisory board	As a result of private well water survey findings in 2014, resource sheets will be developed and disseminated to private users in SHOW and to local and state agencies for distribution.
PACCS	2020	2021	DHS/CDC	\$1,371,054	\$1,576,712	Ryan Westergaard, WI Dept of Health Services	DHS asked SHOW to conduct 3 waves of COVID-19 antibody testing among the SHOW 2014-2016 statewide representative sample and 2017-2020 underrepresented populations sample in Milwaukee. Waves occur in July/August 2020, October/November 2020, and March/April 2021 for surveillance and tracking purposes.
COVID-19 Outbreak Investigation	August 2020	August 2020	DHS/CDC	Included in PACCS	N/A	Westergaard, Schultz, Malecki UW Madison University of Pennsylvania, Johns Hopkins, CDC, WI DHS	In early August 2020, DHS utilized the SHOW infrastructure for two days of antibody testing of >150 adolescent males at a Mukwonago Jewish Camp where an outbreak had occurred in June/July 2020. SHOW provided phlebotomists, supplies, equipment, and consulting on logistics and planning for antibody tests for COVID-19 research for investigators at University of Pennsylvania & Johns Hopkins University.

Latinx Pilot	2019	2020	SHOW/WPP NCE Funds	Included as part of SHOW CORE	N/A	Kristen Malecki, Population Health Sciences;	Conduct SHOW Core survey and biosample collection with a focus on recruiting Latinx community members in the City of Milwaukee. Latinx population is underrepresented in health research and this pilot will explore methods to recruit and retain participants, including focus group meetings with community leaders, adaptations to recruitment and appointment methods to include convenience sampling and public facilities for interviews rather than homes.
EPHT Carbon Monoxide Monitoring	2017	2020	DHS/CDC	\$97,929	\$100,800	Meiman, Werner. WI Dept. of Health Services. Wisconsin Environmental Public Health Tracking program, WI Dept. of Health Services	The EPHT program is partnering with SHOW to implement a module in the core survey during the next triannual sample in order to assess the prevalence of functional CO detectors in homes and assess characteristics of WI residents who are protected by CO monitors as well as their awareness of CO risk and need for monitoring.
SHOW and Tell 2	2019	2020	Start-up funds	\$9,855	\$15,000	Heidi Brown, SMPH, Obstetrics & Gynecology/Urology	This project investigates the use of electronic messaging as an approach for dissemination of lower urinary tract symptoms prevention interventions to clearly define populations of women who are motivated to receive bladder health promotion materials in this manner.
UWCCC Cancer Survivorship Survey	2018	2020	UWCCC	\$30,733	\$50,000	Noelle LoConte, Amy Trentham-Dietz, SMPH, UWCCC	Wisconsin Comprehensive Cancer Survivor Survey to past SHOW participants reporting a cancer diagnosis. The goal of the survey is to learn about how having cancer impacted their health, quality of life, household income, and ability to work.
Burmese Angler's Study	2017	2019	DHS/ATSDR	Included in Anglers III	N/A	Henry Anderson, Jon Meiman, WI Dept. of Health Services	This project will implement a biomonitoring program to evaluate body burden of both legacy and emerging contaminants among anglers who are Burmese immigrants and their descendants residing in the Milwaukee Estuary Area of Concern (AOC) community.

Anglers III	2017	2019	DHS/ATSDR	\$489,318	\$562,718	Henry Anderson, Jon Meiman, WI Dept. of Health Services	This project will implement a biomonitoring program to evaluate body burden of both legacy and emerging contaminants among anglers residing in the Milwaukee Estuary Area of Concern (AOC) community.
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Translational Research Projects

Study	Start Year	End Year	Funding	Award to SHOW	Total Award	Collaborators	Summary
PFAS Pilot	2020	2021	Association of Public Health Laboratories (APHL)	\$6,000	\$50,370	Noel Stanton, Martin Shaffer, WI State Lab of Hygiene & Jon Meiman, WI State Health Department	Goal is to establish a CLIA-approved serum PFAS panel using SHOW's archived serum samples. WSLH will employ new testing capability to characterize historical population exposures in Wisconsin and provide sampling materials to enable the assessment of current exposure levels. Will promote testing of high-risk populations and utilize an established infrastructure for both retrospective and prospective representative sampling.
Accelerating Metabolism and Diabetes Research at UW Madison	April, 2020	ongoing	UW 2020/ VCRGE	Included as part of SHOW CORE	\$500,000	Dudley Lamming, Vincent Cryns, Judith Simcox, Christopher Bradfield, Rozalyn Anderson, Alan Attie, Troy Hornberger, Dawn Davis, David Pagliarini, Federico Rey	Project supports new technology necessary to build a state of the art Lipodomics research core at the UW Madison
Improving biomarkers of metabolic syndrome in African American populations	2020	Ongoing	Start Ups/ NIH UW BIRCIH Award	\$1,675	\$290, 693	Judith Simcox	Metabolic disease markers were developed largely on data from Western European Caucasians populations. Recent studies show they are poor predictors of metabolic health in African American, Latino Americans and Native Americans. This project tests the hypothesis that inflammatory markers such as high sensitivity

							CRP and arachidonic acid are predictive markers of metabolic disease in African Americans.
REWARD – Residential, Epigenetic Weathering and Disadvantage	2019	Ongoing	NIH/R01	\$1,250,601	\$1,904,445	Michal Engelman, UW Sociology Kristen Malecki, Population Health Sciences;	Using ~1400 past SHOW participants to examine individual and neighborhood-level disadvantage with epigenetic markers of accelerated biological aging, the epigenetic mechanisms linking accelerated biological aging (Δ DmA) with two weathering-related phenotypic outcomes, and Characterize the impact of disadvantage across the life-course on epigenetic markers of aging.
Obesity, Toll Like Receptors and Immune Response	2020	ongoing	NIH/R21	\$275,000 Plus \$49,000 PARCI	\$426,125	Kristen Malecki and Maria Nikodemova, Population Health Sciences;	Test the hypothesis that obesity modulates Toll-like receptors expression and activation in PBMCs. Blood draw on SHOW past and new SHOW participants.
Microbiome Reliability Pilot	2019	2020	SHOW Biobank Pilot Funds	Included as part of SHOW CORE	N/A	Maria Nikodemova, Population Health Sciences	Test how stool samples stored at different temperatures for different lengths of time affects microbiome diversity and richness. Useful for understanding how shipping and storage logistics for getting stool samples back to SHOW from the field before processing and storage in -80C freezer affects the science.
The Human Microbiome in Health and Disease	2019	ongoing	NIH	\$0.00	\$954,842	David Andes, Currie, Safdar, SMPH, Medicine, Medical Microbiology & Immunology	Center of Excellence for Translational Research (CETR) application. Project building on the WARRIOR-SHOW data and specimens to explore antimicrobial activity of human associated bacteria as well as the potential role of fecal microbiome in conferring resistance to pathogen invasion.
Role of dietary isoleucine and histidine in regulating health of mice and humans	2019	ongoing	SHOW	N/A- \$10,000 to Lamming	*	Dudley Lamming, SMPH, Medicine; Endocrinology	SHOW biorepository samples and existing data for individuals with dietary intake on isoleucine and histidine will be used to investigate how circulating levels of these amino acids correlate with dietary consumption and BMI and whether a relationship exists between fibroblast growth factor 21 levels and lower diet or plasma amino acid levels.

Understanding population end of life planning.	Delayed to 2021 due to COVID	ongoing	Department of Family and Community Health	N/A	N/A	Julia Lubsen	Follow-up of SHOW participants to determine what end of life planning and health care decision-making is in place among a general population-based sample. Questions were being developed to be added to the next face to face follow-up of SHOW participants.
Emotions and Wellness Study	2019	ongoing	NIH/NIMH	\$15,000	\$3,777,730	Richard Davidson, SMPH, UW Center for Healthy Minds	The purpose of this study is to determine how our emotions, brain, and body processes interact to learn what factors promote health and well-being. SHOW's role is to identify eligible past SHOW participants (2008-2016) and send them materials about this study so they can reach out if interested in participating.
All of Us	2018	ongoing	NIH	\$294,157	\$900,000	Murray Brilliant, Marshfield Clinical Research Foundation	National study with a goal of recruiting one million participants. SHOW will identify and recruit eligible past SHOW participants (2008-2016)
Epigenetics, metabolism, and host Microbiome	2018	ongoing	Existing funds, NIH submission	\$40,000	\$120,000	John Denu, WID, Biomolecular Chemistry	WARRIOR-SHOW cohort blood (PBMC) sample collection. This was a pilot study focusing on aging. They are looking for biomarkers to assess the aging process. They are looking for metabolite markers in the PBMCs and the role of the microbiome in this process.
Systemic Biomarkers of Health Disparities	2018	ongoing	ICTR	\$1,490	\$50,000	Tracy Downs, SMPH Urology and UWCCC, Roz Anderson, SMPH, Medicine and UWCCC	Existing measures from SHOW will be used to identify individuals by obesity class and plasma samples will be used to validate markers of metabolic status. SHOW data and biosamples will be used in the investigation.
Toxoplasma and Protection of Weight Gain	2017	ongoing	VCRGE – Microbiome Initiative	\$10,000	\$125,110	Laura Knoll, Medical Microbiology; Federico Rey, Bacteriology; Kristen Malecki, SMPH, Population Health Sciences	Data, biorepository samples and microbiome data from the SHOW-WARRIOR cohort will be used to investigate the role of asymptomatic infection with Toxoplasma gondii in preventing weight gain. Both animal and human models are proposed in the investigation.
Developmental Toxicity Associated with Piperonyl	2017	ongoing	NIH-NIEHS	\$50,000	\$2,435,000	Robert Lipinski, Comparative Biosciences, Veterinary Medicine	This study investigates the Hedgehog pathway in animal models and correlates developmental toxicity-associated concentrations of pesticide synergist piperonyl butoxide (PBO) in the mouse

Butoxide Exposure							with those in humans (women of child-bearing age). SHOW biorepository samples and data will be used to provide a foundation for improved risk assessment. The long-term goal of the project is prevention of complex birth defects through identification of high-risk populations and defined windows of exposure to environmental agents.
Allostatic Load in Adults ...with Food Allergy	2017	ongoing	SoN pilot	\$4,176	*	Anne Ersig, School of Nursing	The study will examine clinical measures and genetic markers of allostatic load among young adults with food allergies and matched healthy controls using data and DNA from SHOW.

University Grant Development Projects

Study	Start Year	End Year	Funding	Award to SHOW	Total Award	Collaborators	Summary
Lift Up	2021	2022	Virginia Horne Henry Fund	\$3,256	\$40,670	Susan Andreae, Kinesiology	Dr. Andreae planned on recruiting via female caregiver via school for her “Developing a Family-Centered Physical Activity Program” called Lift Up. Due to COVID-19 she was unable to start her program until she connected with SHOW. SHOW is contacting eligible rural, female caregivers via email and mail and they are reaching out to Dr. Andreae if they are interested in participating. The study assesses barriers to physical activity among grandmothers and mothers in rural Wisconsin.
Center for inherited disease research high throughput sequencing and genotyping resource (CIDR)	2019	ongoing	NIH/NHGRI	\$356,000	\$356,000	Kristen Malecki, Population Health Sciences; Michal Engelman, Sociology	SHOW DNA was submitted for GWAS and EWAS analysis from 600 participants of the WARRIOR-SHOW cohort for expanding the SHOW data resource for new grants and discoveries.

CREATE	2017	2020	UW2020	\$289,188 (SHOW & SOHE)	289,188	Janean Dilworth-Bart, SoHE; James Schauer, CoE; Kristen Malecki, Population Health Sciences	Cumulative Risks, Early development and emerging Academic Trajectories (CREATE); the SHOW infrastructure is being used to support this pilot study that will document psychosocial, chemical, and non-chemical stressors among 60 low-income 3- to 4-year old children living and attending preschool.
Population-based Microbiome Research Core (PMRC)	2017	2019	UW VCRGE – Microbiome Initiative	\$250,000	\$250,000	Ajay Sethi, Population Health Sciences;	The PMRC will build on the existing SHOW infrastructure and expand upon a data and specimen bank created from a pilot diet and microbiota study that began in 2016. Microbiome built environment samples from households and stool will be collected to serve as a resource for future investigations of the gut microbiome.
Examining Potential of the Microbiome in Children to Reduce Antibiotic Resistance (EPIC)	2017	2019	UW VCRGE – Microbiome Initiative	\$47,685	\$250,000	Nasia Safdar, Medicine, Infectious Disease	Examining the Potential of the Microbiome in Children to Reduce Antibiotic Resistance: the EPIC Study. Investigation of the influence of daycare on MDROs and gut microbiome in children aged 6 months to 5 years of age.
Lead and Microbiome Diversity	2017	2018	Dept. of Medicine pilot	\$40,000	\$50,000	Nasia Safdar, Shannah Eggers, Medicine; Kristen Malecki, Population Health Sciences	This project will investigate lead in SHOW biorepository samples for SHOW/WARRIOR participants who provided stool samples for multidrug resistant organism (MDRO) analysis. The project will also utilize SHOW core and WARRIOR risk factor data, such as diet, as well as use GIS to calculate proximity to roadways for these individuals.
Daytime Functioning and Sleep in Children Pilot	2017	2018	UW VCRGE Fall Competition	\$3,900	\$48,285	Paul Peppard, Erika Hagen; VCRGE Fall Competition Funding	This project will pilot data collection on social-emotional-behavioral outcomes and alertness testing as a measure of alertness, as related to sleep duration and quality in SHOW children. This pilot data will serve as preliminary findings for R01 submissions by Drs. Peppard and Hagen.

Winning the War on Antibiotic Resistance in Wisconsin (WARRIOR)	2016	2018	WPP	\$126,000	\$497,848	Nasia Safdar Medicine, Ajay Sethi, Population Health Sciences	The WARRIOR project examines the relationship between fiber-rich food intake and gut microbiota, the prevalence of intestinal colonization of multi-drug resistant organisms (MDRO) and the relationship between fiber intake with MDRO colonization in 600 SHOW subjects.
Physical Act. in Rural WI Women	2016	2018	VHH pilot, Dept Kinesiology	\$2,000	\$10,000	Lisa Cadmus-Bertram, Kinesiology	SHOW will partner in this assessment of rural women's beliefs about barriers and facilitators to physical activity in Wisconsin, including a mail-based survey as well as qualitative component.

**Exact total award amount was not shared*

Appendix C – SHOW Grants Submitted

NIH or Other Federally Funded Grants Submitted or Awarded 2019-2021

Study	Funding source	PI(s)/institution or department (SHOW partner)	Description	Status/ Timing
AA-FAIM African Americans Fighting Alzheimer's in Midlife	NIH, R01 Supplement	Carey Gleason, Dept of Medicine, ADRC/WRAP	NIH, R01 Supplement Biosample collection of older adults with cognitive dementia in community Settings. Leverages SHOW's community-site phlebotomy to complete ADRC and WRAP follow-up appointments and new recruits.	Carey Gleason, Wisconsin Alzheimer's Institute, NIH Supplement. Submitted 05/2020. Funded 05/2020.
REWARD – Residential, Epigenetic Weathering and Disadvantage	NIH/NIA R01	Michal Engelman, UW Sociology Kristen Malecki, Population Health Sciences	Using ~1400 past SHOW participants to (1) Examine the association of individual and neighborhood-level disadvantage with epigenetic markers of accelerated biological aging. 2) Aim 2 Investigate the epigenetic mechanisms linking accelerated biological aging (Δ DmA) with two weathering-related phenotypic outcomes with well-known social disparities (cardiometabolic, inflammation). (3) Characterize the impact of disadvantage across the life-course on epigenetic markers of aging. (birth certificate linkage, longitudinal follow-up)	Submitted 10/2018; Not funded. Resubmitted 01/2019; Funded 9/2019.
Obesity, Toll-Like Receptors, and Human Sensitivity to the Environment	NIH/NIAID R21	Malecki/PHS	SHOW data and biosamples will be used for investigating obesity, toll-like receptors and sensitivity to the environment (uses SHOW biorepository).	Submitted 2/2018; Not funded. Resubmitted 11/2018; Funded 6/2019.

Study	Funding source	PI(s)/institution or department (SHOW partner)	Description	Status/ Timing
Improving biomarkers of metabolic syndrome in African American populations	NIH UW BIRCWH Award	Judith Simcox/ Biochemistry	Metabolic disease markers were developed largely on data from Western European Caucasians populations and recent studies showed that they are poor predictors of metabolic health in minority groups including African American, Latino Americans and Native Americans. This project tests the hypothesis that inflammatory markers such as high sensitivity CRP and arachidonic acid are predictive markers of metabolic disease in African American.	Submitted 2/2020; Funded 5/2020.
Taking the next step: disseminating information regarding private well water stewardship	UW ICTR-CAP Pipeline Funds	Amy Schultz/ PHS Susan Zahner/ WPHRN	Dissemination of private well water testing information and resources to SHOW private well water users and local, state agencies for distribution. Implemented after survey results in 2014 indicated a lack of knowledge and an interest in gaining for information.	Submitted 01/2021; Funded 02/2021.
Establishment of Serum PFAS Testing in Wisconsin	APHL RFP	Noel Stanton and Martin Shaffer, Wisconsin State Lab of Hygiene; Jon Meiman, WI DHS. Kristen Malecki, Population Health Sciences.	Completion of the development, validation, and subsequent availability of serum PFAS testing in Wisconsin. Use SHOW biobanked serum samples to test measure PFAS and assess predictors of serum PFAS levels in the Wisconsin population using unadjusted and multivariate linear regression	Submitted 3/10/2020 Accepted 6/4/2020
PFAS Sources, Cycling and Human Exposure in Rural America	EPA -SF424	Martin Shaffer, Wisconsin State Lab of Hygiene; Rebecca Larson, Biological Systems Engineering, James Schauer, WSLH; Kristen Malecki, Population Health Sciences.	The overall goal of this project is to provide an understanding of the presence, sources, cycling, and human health risk of PFAS in rural and agricultural America. The study will emphasize the key roles of land application of biosolids and manure on drinking water contamination, atmospheric cycling, environmental dispersal, and human contaminant burdens and health risks. SHOW will be used to develop a novel PFAS exposure and health risk assessment supported by the new source characterization data; and a human health risk communication portfolio.	Submitted 2/11/2020 Not Funded
Identifying geroprotective alterations in the gut microbiome and metabolites.	NIH/R01	Federico Rey, Bacteriology Dudley Lamming Department of Medicine	Application submitted to NIH. SHOW wrote a letter of support for this application which would provide resources and access to stored stool microbiome samples.	Submitted 10/2019; Not discussed

Study	Funding source	PI(s)/institution or department (SHOW partner)	Description	Status/ Timing
Translational regulation of metabolic health by dietary amino acids	NIH/R01 WPP Collaborative Health Sciences Grant	Dudley Lamming, Associate Professor, Department of Medicine Dawn Davis, Department of Medicine	Goals were to take a translational research approach and combine basic animal research findings, with population- based research and to conduct a clinical trial to improve metabolic health via dietary restriction of branched chain amino acids. The application was submitted to NIH in January 2019, and not discussed. Plans are in place to submit again to the WPP Collaborative Health Sciences program.	Submitted 2/2020; Not discussed
StrokeNet Central Repository	NIH/NINDS	Dempsey/Neurological Surgery and Neurology	U19 Central Repository application for UW to NIH/NINDS; SHOW participating in central biorepository to store samples from StrokeNet cites across the country (uses SHOW biorepository).	Submitted 4/2019; Not Funded.
EPHT Biomonitoring	CDC	Meimen, Werner/DHS; Malecki/PHS	This study will use the SHOW research infrastructure and biospecimens for monitoring environmental exposures among Wisconsin residents across the state, including cohort follow-up (uses SHOW biorepository)	Submitted 4/2019; Not funded.
COVID-19 RAD-X	NIH/RAD-X Program	Deborah Ehrenthal, UW Obstetrics/Population Health Sciences The Wisconsin Prevention Research Center	This study will use SHOW's biorepository to identify banked samples from COVID-19 positive patient from UW Health. Age-matched control samples and data would also be available for comparison within and outside of our patient catchment areas. Allow for the identification of environmental and genetic factors of risk, exposure, and response to COVID-19 infection.	Submitted 08/2020; Not funded.

Non-Federal and Other Grants Submitted 2019-2021

Study	Funding source	PI(s)/institution or department (SHOW partner)	Description	Status/ Timing
Accelerating Diabetes and Metabolism Research	UW 2020	Dr. Dudley Lamming, Judith Simcox (Co-PIs) collaborators Federico Rey, Dawn Davis, Rozalyn Anderson, Vincent Cryns, and Chris Bradfield	Purchase new equipment to advance metabolic health which will be housed in the UW Biotechnology Center. SHOW samples and collaborations cited as important infrastructure for leveraging resources and future research proposals.	Submitted 10/2019; Funded 4/2020

Study	Funding source	PI(s)/institution or department (SHOW partner)	Description	Status/ Timing
Dried blood spot (DBS) biomarker assays in a laboratory study of emotions, well-being, and health:	UW2020	Richard Davidson; Schaefer, Stacey; Wisconsin National Primate Research Center Dr. Thomas McDade from Northwestern University	Through a collaboration between scientists at the UW Center for Healthy Minds, the Wisconsin National Primate Research Center (WNPRC), and Dr. Thomas McDade from Northwestern University, we wish to establish the validity of using dried blood spot (DBS) for biomarker assays of immune and endocrine function in human studies of emotion with the goal of bringing this methodology to the WNPRC Assay Services for use in future large-scale intervention studies of well-being.	Submitted 10/2019; Not funded.
Leveraging data from SHOW to explore stress, sleep, hunger & preferences	Center for Demography of Health and Aging (CDHA) Pilot	Ashton/SoHE	Using existing SHOW data to examine relationships between stress, sleep deprivation and hunger biomarkers and economic preferences.	Submitted 4/2019; Not funded.
Leveraging data from SHOW to determine factors driving population, physical, mental and cognitive function trends	SSA Retirement and Disability Research Consortium, through Center for Financial Security, SoHE	Ashton/SoHE	Use existing SHOW data to determine factors driving population, physical, mental and cognitive function trends to provide recommendations for the development of surveys to inform our understanding of claiming behavior and projecting the costs of the Social Security program for future solvency and sustainability.	Submitted 4/2019; Selected for submission to RDRC 5/2019; Not Funded.

Submitted/PENDING 2019-2021 Grants

Study	Start Year	End Year	Funding	PI/Collaborators	Summary
Developing a UW Madison Biobank for COVID-19 and other Research	2020	N/A- Pending NIH Review	NIH/P30 Cancer Center Support Grant Application	Kristina A. Matkowskyj, MD, PhD UW Carbone Cancer Center	SHOW was included in the UWCCC application to NIH to provide matched control samples for clinical research into COVID-19 and other cancer related outcomes and for SHOW to become a core resource for a UW Madison Biobank.
Protecting Patients from Infections, Antibiotic Resistance, and	2020-N/A	Pending	CDC Prevention Epicenters for Antibiotic Resistance	Nasia Safdar Department of Medicine	This application was being prepared for March 10, 2020 submission to use SHOW as a core resource for understanding

SHOW PERC Progress Report 2020-2021

Other adverse events					presence of antibiotic resistance in the population.
Metals, Microbiome, Inflammation, and the Metabolome (MMIM)	August 2020	Pending	NIH, Parent R01	Malecki/PHS; Safdar/Depts Medicine and Infectious Diseases	Resubmission of Lead, Microbiome, and inflammation grant. Investigating the built environment, lead and MDROs in the WARRIOR-SHOW cohort PMRC samples (uses SHOW biorepository, microbiome data).
Wisconsin Children's Sleep Cohort	July 2021	Pending	NIH, R01	Paul Peppard/PHS	Leveraging SHOW's community partnerships in Black and Latinx communities in MKE and Madison to recruit 4-8 yr old children and parents to examine how sleep affects health, cognitive functioning, and development.
Comparative- and Cost- Effectiveness of Population Strategies to Improve Diet and Reduce Cancer	October 2020	Pending	R01 renewal	Fang Fang Zhang, Friedman School of Nutrition Science and Policy, Tufts University Yan Li, Department of Population Health Science and Policy Icahn School of Medicine at Mount Sinai	Leveraging SHOW data and SHOW consultation to assess how policy impact, location, and community factors may affect diet.
Unique Factors Contributing to Disparity in Stroke and Vascular Cognitive Impairment in Native American Tribal Members	April 2021	Pending	NIH R01	Robert Dempsey, Department of Neurological surgery, School of Medicine Leonelo Bautista/PHS	Non-tribal members would be recruited through SHOW and compared with Oneida tribe members to examine associations between stroke risk factors and unequal burden of CVD outcomes
Evaluation of Pharmacy-based Point-of-care toolkit in rural,	July 2021	Pending	NIH POC	Vishala Parmasad	Leveraging SHOW's field data collection, study design, community partnership building, and survey

SHOW PERC Progress Report 2020-2021

underserved areas				Department of Medicine, Infectious Disease	development services to identify community perceptions of COVID-19 risk, willingness to continue testing, and barriers to accessing POCT testing sites for COVID-19.
Assessment of the dynamic change of population immunity and susceptibility to emerging influenza antigenic variants in the United States	July 2021	Pending	CDC SHEPheRD RFTOP	Nasia Safdar Department of Medicine, Infectious Disease	Leveraging SHOW's recruitment and in-home/community-site sample collection service to conduct serological flu testing among children.
Microbiome and Metabolome Cohort for Environmental Exposures and Cancer Risk (MM_CEECR)	January 2021	Pending	NIH	Kristen Malecki/PHS Amy Trentham Dietz/PHS Nia Norris and Gina Green-Harris Center for Community Engaged Health Partnerships (CCEHP)	Establish a microbiome and metabolome cohort for environmental exposures and cancer risk – modeled after SHOW program.
CDC WI Neutralizing Antibody Assay	April 2021	Pending	CDC	Alana Sterkel Wisconsin State Lab of Hygiene Ryan Westergaard, Wisconsin State Health Department	Leveraging SHOW's recruitment and community site sample collection to conduct investigation of antibody response to COVID-19 vaccination.

Appendix D – Ongoing Data Requests July 2020 - July 2021

School of Medicine and Public Health Data Requests

Researcher	Project Description / Title		Department / Faculty Lab	Year Submitted	Project Type	Status (Ongoing, Complete)
Maria Nikodemova	Microbiome methods paper	SMPH	Population Health Sciences / Scientist	2020	(4) Manuscript Development	Complete
Marietou Ouayogode	Association between Healthy Food Financing Program and perception of food access, diet, BMI, obesity, and health disparities in Wisconsin	SMPH	Population Health Sciences / Faculty	2020	(3) Grant Development	Complete
Amy Schultz	Covid-19 Impact Survey Initial Manuscript	SMPH	Population Health Sciences / Scientist	2020	(4) Manuscript Development	Complete
Allison Rodriguez	Community Engagement Milwaukee	SMPH	Population Health Sciences / Researcher	2020	(1) Internal Inquiry	Complete
Mikayla Schowalter	Alcohol Consumption	SMPH	Population Health Sciences / Grad student	2020	(8) Exploratory Analysis	Complete
Joni Sedillo	Epigenetic Inheritance of DNA Methylation	SMPH	Genetics / Post-doctoral fellow	2021	(4) Manuscript Development	Complete
Lauren Giurini	Disparities Covid-19 Pandemic and Environmental Toxin Exposures	SMPH	Population Health Sciences / Grad student	2021	(7) Student Project (PhD Level)	Complete
Erika Hagen	Biosample availability sleep supplement	SMPH	Population Health Sciences / Scientist	2021	(10) Biosamples	Complete

Lauren Bednarz	Covid-19 Impact Local disparities HIP	SMPH	HIP / Smith	2021	(3) Grant Development	Ongoing
Natascha Merten	Covid-19 Hearing and Vision	SMPH	Population Health Sciences / Researcher	2021	(4) Manuscript Development	Complete
Leonelo Bautista	Sample Size Inquiry Dempsey RO1	SMPH	Population Health Sciences / Faculty	2021	(3) Grant Development	Complete
Andrew Hryckowian	Biosamples stool analysis for GBS	SMPH	Department of Medicine / Faculty	2021	(10) Biosamples	Ongoing
Rachel Berman	Data Cleaning Hypertension Medications	SMPH	Population Health Sciences / Undergrad student	2021	(6) Student Project (BS/Master's Level)	Complete
Eunice Park	Sense of Community before/after COVID-19 pandemic	SMPH	Population Health Sciences / Oliver	2021	(7) Student Project (PhD Level)	Complete
Vishala Parmasad	Point of Care Testing Covid-19	SMPH	Medicine / Safdar	2021	(1) Internal Inquiry	Ongoing
Sarah Salas	Experiences of Discrimination 2008-2016	SMPH	Population Health Sciences / Engelman	2021	(9) Ancillary Partners	Ongoing

Other UW-Madison Data Requests

Researcher	Project Description / Title	Institution	Department	Year Originally Submitted	Project Type	Status (Ongoing, Complete)
Judy Simcox	Lipidomics analysis using plasma samples	UW	CALS - Biochemistry / Faculty	2020	(4) Manuscript Development	Complete

Susan Andreae	Rural sample pull for ancillary project	UW	School of Ed - Kinesiology / Faculty	2021	(9) Ancillary Partners	Complete
Rob Lipinski	Birth effects and pesticides	UW	Vet Med - Comparative Biosciences / Faculty	2021	(3) Grant Development	Complete
Lauren Dillard	Hearing loss toxicity	UW	Communication Sciences and Disorders / Fowler	2021	(4) Manuscript Development	Complete
Somya Rastogi	Physical Activity in Minors	UW	School of Ed - Kinesiology / Cadmus-Bertram	2021	(7) Student Project (PhD Level)	Ongoing

Outside Institutions and Partners

Researcher	Project Description / Title	Institution	Department / Faculty Lab	Year Originally Submitted	Project Type	Status (Ongoing, Complete)
Danielle Washington	Food insecurity, sociodemographics, safety net services and health	UWM	Public Health/Lorraine Malcoe	2020	(6) Student Project (BS/Master's Level)	Complete
Phoenix Do	Health disparities multi-level modeling	UWM	Public Health	2020	(8) Exploratory Analysis	Complete
Jonelle Campbell	Neighborhood green space, air pollution and sleep quality and duration in children	MCW	Medical School/Beyer	2020	(4) Manuscript Development	Complete
Kate Bednarke	Neighborhood green space and respiratory health and function in children	MCW	Medical School/Beyer	2020	(4) Manuscript Development	Ongoing

Michael Hii	Proximity to coal burning power plant and respiratory health	MCW	Medical School/Beyer	2020	(4) Manuscript Development	Ongoing
Jessica Stroope	Active Transportation and Sense of Community	LSU	Public Health	2020	(7) Student Project (PhD Level)	Complete
Lena Swander	WI DHS Economic Analysis	State	Department of Health Sciences	2020	(2) External Inquiry	Ongoing
Shannah Eggers	Microbiome weight quantile sum regression	Icahn School of Med at Mt Sinai	Post-doctoral fellow with Bixby, Gennings	2020	(4) Manuscript Development	Complete
Jon Meiman	Vaccine Hesitancy IMPACT	State	Department of Health Sciences	2021	(2) External Inquiry	Complete
Jon Meiman	Vaccine Hesitancy PACCS	State	Department of Health Sciences	2021	(2) External Inquiry	Complete
Yaidi Cancel Martinez	Veterans Economic Wellbeing	UWM	Center for Economic Development / Scientist	2021	(2) External Inquiry	Ongoing
Thomas Whyte	Covid-19 Test Development and Validation	State	Lab of Hygiene	2021	(2) External Inquiry	Complete

Appendix E – Graduate Student Projects

Graduate Student Completed MPH, MS, PhD projects.

MPH Students	Title	Year
Bianca Silva	Carbon Monoxide Poisoning Prevention Among Wisconsin Adults	2020
Amy Van Aartsen	Disseminating Research Findings from Private Well Owners	2020
Allison Rodriguez	Survey of the Latinx Community in Wisconsin	2019
Jewon Lee	Survey of the Health of Wisconsin Community Health Report for Brown County.	2019
Elizabeth Hovel	Economic Hardship and Cardiovascular Health in Wisconsin	2015
Karissa Ryan	Obesity prevention among Wisconsin Adults	2017
Madison Carey	Using Data for Public Health Action: The Role Stakeholder Engagement Played in Optimally Disseminating SHOW data	2016
Maggie Grabow	What Moves Us: A Comparison of Perceived and Objective Predictors of Active Transportation Behaviors	2013

MS/PhD Students	Title	Year
Elizabeth Holzhausen	The association between sedentary behavior, physical activity, and the richness, diversity, and composition of the gut microbiome	2021
Alexandra Spicer	Cumulative Environmental Exposures and Accelerated Biological Aging	2020
Rissa Lane	Comparison of Estimates of Physical Activity in Children and Adolescents living in Wisconsin measured with Subjective and Objective Tools	2019
Christian Schmidt	Bicycling rates and the prevalence of bicycle helmet usage in the state of Wisconsin using data from the Survey of the Health of Wisconsin.	2018
Linn Jennings	LGBT Health and Healthcare Access and Utilization in Wisconsin	2018
Kate Rifken	Veteran Access to Care and Health Outcomes	2016
Dhwani Bosamiya	Impact of Affordable Care Act dependent coverage expansion on insurance coverage and health-related outcomes of young adults in Wisconsin	2017
Jess Gorzelitz	Concordance of physical activity reporting: Interviewer-administered GPAQ verses waist accelerometry from 2014 SHOW Adult cohort	2016
Amy Schultz	Allergic disease associations with regional and localized estimates of air pollution	2015
Kaitlyn Booske	Predictors of mental health service utilization by adults with depression or anxiety symptoms in the survey of the health of Wisconsin.	2015
Erin Bailey	Predictors of discordance between perceived and objective neighborhood data	2013
Jianhong Che	Overall prescription medication use among adults: findings from the Survey of the Health of Wisconsin	2014
Lauren Hale	Perceived neighborhood quality, sleep quality, and health status: Evidence from the Survey of the Health of Wisconsin.	2013
Shaini Kothari	Examining the association between the severity of depression and consumption of sugar-sweetened beverages among participants of the Survey of Health of Wisconsin (SHOW) study	2014

Graduate Student Ongoing MPH, MS, PhD, MSTP projects.

Student	Title	Student Type
Nate Torell	Predictive Models for Vaccine Hesitancy	MPH, UW Madison
Lauren Dillard	Hearing loss and Nutrition	PhD, Department of Communication Sciences and Disorders (UW-Madison)
Zachary Lipecki	Predictive Model for Repeat Participation in SHOW Studies	Concentration in Analysis and Research, Department of Sociology (UW-Madison)
Mikayla Schowalter	Vaccine Hesitancy using PACCS and COVID-19 Impact Data	PhD, Epidemiology (UW-Madison)
Maya Muldowney	Resilience, Demographics, and Coping	MD, Shapiro Program (Primary Mentor: Dr. Safdar)
Eunice Part	Social Capital and Mental Health	PhD, Population Health Sciences (UW-Madison)
Eleanna Melcher	Food Insecurity and Mental Health	MD, MSTP Program (UW-Madison)
Jessica Stroope	Active transportation and social capital: The association between walking or biking for transportation and community participation	PhD, Louisiana State University, Ag Center
Amy Van Aartsen	Taking the Next step: Using Community-based Research Findings to Promote Safe Private Well Water	MPH, Population Health
Mikayla Schowalter	Effects of COVID-19 on alcohol and tobacco consumption, and employment. Predictors of COVID-19 vaccine hesitancy.	PhD, Epidemiology
Lauren Dillard	Epidemiology of hearing loss and rehabilitation	PhD, Department of Communication Sciences and Disorders
Megan Agnew	Residential History and Social Disadvantage Associated with Epigenetic Aging	PhD, Population Health
Alex Mikulus	Rural disadvantage and social cohesion.	PhD, Sociology
Joni Sedello	DNA Methylation and Dietary Methionine Intake	PhD, Department of Medicine
Lauren Schrader	Developing novel biomarkers of Circadian Disruption and Metabolic Health	PhD, Physiology
Rachel Anderson	Amino Acid Consumption and Metabolic Health	PhD, Department of Medicine
UW Milwaukee	Multiple	MPH, PhD
MCW students	Multiple	MD, Masters
MSTP students	Multiple	MSTP training
Preventive Medicine Residents	Multiple	SMPH PMR training in Epidemiology
UW Madison Undergraduates	Multiple	Various

Appendix F – SHOW Biorepository Inventory

SHOW Core Biorepository Inventory

	SHOW Cohort Year														
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*	2021*	TOTAL
Participating Subjects	198	296	853	802	389	379	411	559	591	550	380	96	1862	942	8308
Serum	1,884	2,743	8,643	8,698	4,659	4,698	3,970	5,982	5,884	3,213	2339	693	3698	1873	58977
Plasma	2,853	3,720	10,728	11,132	5,888	6,025	4,997	7,002	7,184	4,098	3945	831			68403
Urine	2,515	4,017	12,442	12,686	5,534	5,474	5,265	7,108	8,275	7,196	3309	893			62028
WholeBlood PaxGene							354	504	524	486	228	66			2162
DNA blood/saliva	103	272	819	781	377	378	388	532	568	515	232	69			5034
PBMC											188				188

*Biosample from PACCS Wave I-III, if consented to storage of blood for COVID-19 research from blood draw for COVID-19 Antibody test.

SHOW Ancillary Population-based Microbiome Research Core (PMRC) Biorepository Inventory

	Baseline		Follow-up	
	# of participants (P) or households (H)	# samples	# of participants (P) or households (H)	# samples
Stool	749 (P)	749	306 (P)	4223
Saliva	788 (P)	788		
Plasma			142 (P)	1124
Household dust			301 (P)	1212
High touch swabs			235 (H)	699
Soil			203 (H)	1334

Usage of SHOW Biospecimens by UW Investigators (by biospecimen type and year)

Biospecimen use by year	Plasma/ serum	Urine	DNA	Stool	PAXgene
2016	840	80			40
2017	460	965	61	525	50
2018	300	229	870		150
2019	208	180			
2020	3000	40			280
2021	50		1200		98

Serum aliquots collected and stored from PACCS - to be used for unspecified COVID-19 research

	PACCS Wave 1	PACCS Wave 2	PACCS Wave 3
# of Participants	833	1030	942
# of Serum aliquots	1644	2054	1873

Usage of SHOW Biospecimens by UW Investigators – 2020-2021

Biosample use			
	Data request #	Biosample type	# aliquots
2020			
Wesley	416	Plasma	60
Lamming	382	Plasma	140
Denu	431	PBMC	280
Denu	431	Plasma	560
Simcox	476	Plasma	200
Nikodemova	486	Urine	40
Andes	493	Serum (PACS)	830
Stanton	490	Serum	1210
2021			
Schrader	413	PAXgene	98
Lipinski	508	serum	50
Malecki	460	DNA blood	1200
Hryckowian	515	DNA stool	500

Appendix G – SHOW partners of the City of Milwaukee

PARTNERS	Organization Description
1. Personalized Intervention Varied & On Time (PIVOT)	PIVOT Services enhances the quality of life of Milwaukee area residents and their families, by actively promoting participation in high school completion programs, workshops, seminars, and character development sessions.
2. Community Care Inc.	Community Care develops and demonstrates innovative, flexible, community-based programs to care for at-risk adults in order to optimize their quality of life and optimize the allocation of community resources.
3. KidTown Learning Center	Learning center, not merely a daycare, that follows national scope and sequence standards for learning. They focus on five areas of child development: language, cognitive, physical, create art expression and social-emotional development.
4. Walnut Park Apartments	Low-income, government-funded apartment facility
5. Medical College of Wisconsin (MCW) – cancer center	Private medical school and graduate school of sciences
6. Hayat Pharmacy	Provides pharmacy services such as free prescription delivery, medication therapy management, medication synchronization, safe medication disposal and community outreach events all over the greater Milwaukee area.
7. Walnut Way	Non-profit in Lindsay Heights community - Support culture wellness by offering health programs and classes, create spaces and opportunities to participate in civic engagement through events, programs, meetings; transform unused spaces into productive gardens and parts; collaborate across sectors to bring investment back to depressed corridors in Milwaukee.
8. United Community Center (UCC)	Provides programs to Hispanics and near south side residents of all ages in the areas of education, cultural arts, recreation, community development, and health and human services. Assists individuals in achieving their potential by focusing on cultural heritage as a means of strengthening personal development and by promoting high academic standards in all its educational programs.
9. United Migrant Opportunity Services (UMOS)	Independently governed 501(c)3 nonprofit organization connected to a network of more than 1,400 local United Ways through United Way Worldwide. United Way convenes resources, volunteers, experts, and other service providers for short-term relief and long-term success.
10. Parklawn Assembly of God	Prominent church – located at intersection of two busy streets - predominantly serving the Black community in northwest corridor of Milwaukee.

Appendix H – Past Antibody COVID-19 Community Survey (PACCS) Wave I, Wave II, and Wave III results.

Complete pre-print publication and results can be viewed here: <https://www.medrxiv.org/content/10.1101/2020.12.18.20248479v1.full.pdf>

Table 1. Past Antibody COVID-19 Community Survey Seroprevalence Results, WAVE I, WAVE II and WAVE III.

	WAVE I July - Early August, 2020				WAVE II Late October- Early December, 2020				WAVE III Late March- April, 2021			
Select Factors	N	Crude Percent	Weighted Percent*	Weighted 95% CI*	N	Crude Percent	Weighted Percent*	Weighted 95% CI*	N	Crude Percent	Weighted Percent*	Weighted 95% CI*
TOTAL	996	1.4	1.6	(0.6, 2.5)	994	6.5	6.8	(4.3,9.4)	929	11.5	11.4	(8.2, 14.6)
Age (on June 21, 2020)												
12 to 44	309	1.3	1.4	(0.0, 2.9)	297	5.7	6.1	(1.5, 10.8)	261	10.7	10.5	(5.0, 16.0)
45 to 64	308	2.0	1.9	(0.2, 3.6)	318	8.2	8.1	(5.6, 10.7)	301	13.3	12.9	(7.6, 18.2)
65 or older	379	1.1	1.5	(0.1, 3.0)	379	5.8	6.4	(3.3, 9.5)	367	10.6	11.2	(8.1, 14.3)
Gender												
Male	418	1.2	1.6	(0.8, 3.2)	405	8.2	9.4	(4.3, 14.5)	387	11.9	11.5	(6.9, 16.1)
Female	578	1.7	1.6	(0.8, 3.2)	589	5.4	4.3	(2.7, 5.8)	542	11.3	11.3	(7.0, 15.6)
Race / Ethnicity												
Non-Hispanic white (alone)	870	1.2	1.3	(0.1, 2.4)	861	6.3	6.5	(3.8, 9.2)	817	11.5	10.8	(7.9, 13.6)
Non-Hispanic Black or African American (alone or in combination)	50	4.0	5.6	(0.0, 14.5)	65	7.7	4.1	(0.0, 8.5)	45	8.9	18.7	(0.5, 36.9)
Hispanic (any race)	20	5.0	2.3	(0.0, 7.0)	23	8.7	12.8	(0.0, 32.1)	22	13.6	11.5	(0.0, 23.7)
Non-Hispanic other or multiracial (not Black or African American)	56	1.8	1.0	(0.0, 3.1)	45	8.9	7.8	(0.0, 20.0)	45	13.3	12.7	(0.0, 27.2)
Poverty (at previous survey 2014-2019)												
≥200% FPL	780	1.8	1.0	(0.0, 3.1)	768	6.8	7.5	(4.2, 10.7)	728	12.6	13.2	(10.2, 16.2)

<200% FPL	216	1.0	1.1	(0.1, 2.0)	226	5.8	5.2	(1.1, 9.4)	201	7.5	6.9	(1.7, 12.2)
Health Region												
SE	341	2.8	2.7	(0.3, 5.1)	346	7.8	9.2	(3.3, 15.1)	305	11.5	10.8	(3.7, 17.8)
S	94	2.6	3.1	(1.3, 4.9)	98	4.1	2.4	(0.6, 4.3)	96	8.3	9.4	(1.3, 17.4)
W	288	0.0	0.0	NA	276	4.0	3.9	(2.9, 4.9)	258	10.9	11.6	(5.5, 17.7)
N & NE	273	0.3	0.3	(0.0, 0.7)	274	8.4	8.7	(5.0, 12.4)	270	13.3	13.0	(8.6, 17.4)
*Estimates accounted for the sampling weights and sampling design elements of stratification and clustering.												

Table 2. Surveillance Recruitment and Response Rates for COVID-19 Antibody Testing*

Sample WAVE I	Eligible	Participate	Response Rate (%)	Positive Tests	% Positive
2014-2016	2228	952	42.7	13	1.4
2018-2019 (probability)	273	47	17.2	1	2.1
2018-2019 (convenience)	169	33	19.5	2	6.1
Latinx pilot	104	24	23.1	4	16.7
Sample WAVE II	Eligible	Participate	Response Rate	Positive Tests	% Positive
2014-2016	2228	930	41.7	61	6.6
2018-2019 (probability)	273	64	23.4	4	6.3
2018-2019 (convenience)	169	38	22.5	3	7.9
Latinx pilot	104	38	36.5	10	26.3
Sample WAVE III**	Eligible	Participate	Response Rate	Positive Tests	% Positive
2014-2016	2092	883	42.2	103	11.7
2018-2019 (probability)	220	47	21.4	4	8.5
2018-2019 (convenience)	112	40	35.7	8	20.0
Latinx pilot	71	32	45.1	3	9.4

*NOTE: Study sample individuals were asked to refrain from participation if they had an active COVID-19 infection or known COVID-19 exposure in the last two weeks.

**The eligible participants are lower than waves 1 & 2 due to ongoing cohort maintenance (ie. Removing deceased individuals, etc).

Appendix I – SHOW Scientific Advisory Board (SAB) Members

MEMBER	DEPARTMENT	AREA OF RESEARCH/EXPERTISE
Maria Mora Pinzon	Dept. of Medicine, Geriatrics	Geriatrics; preventive medicine, health equity, health services research
Amy Trentham-Dietz	Dept. of Population Health Sciences; UWCCC, Cancer Control Program	Cancer, epidemiology, statistics
Stephen Meyn	Dept. of Pediatrics, UW Center for Human Genomics and Precision Medicine	Pediatrics, genomics, precision medicine
Federico Rey	Dept. of Bacteriology	Microbiome, microbe-diet, cardiovascular disease
John Denu	Dept. of Biomolecular Chemistry, Epigenetics Theme Leader, Wisconsin Institute for Discovery	Omics, epigenetics, microbiome, precision medicine
Michal Engelman	Dept. of Sociology, Center for Demography and Ecology, Center for Demography of Health and Aging	Sociology, aging, demography, statistics
Sheri Johnson	Population Health Institute, Population Health Sciences	Clinical psychology, health equity, community-based research
Sara Lindberg	Population Health Institute, Dept. of Population Health Sciences	Developmental psychology, evaluation research
Jane Mahoney	Dept. of Medicine, Geriatrics; Director, Community-Academic Aging Resource Network, Wisconsin Alzheimer's Institute, Dissemination and Implementation Resources	Aging, falls prevention, Alzheimer's disease
James Gern	Dept. of Pediatrics; PI: UW Asthma and Allergic Diseases Clinical Research Center (AADCRC)	Pediatrics, asthma, immune response to viral infections and environmental exposures
Alberto Palloni	Dept. of Sociology	Aging and the Life Course, Biodemography, Evolutionary Demography, Mathematical Population Models, Methods and Statistics
Vincent Cryns	Division of Endocrinology, Diabetes and Metabolism, Dept. of Medicine, Director of WI Obesity Prevention Initiative	Metabolism, diabetes, cancer, obesity related disorders

Appendix J – SHOW COVID-19 Survey Investigators

Investigators who contributed in the development of the SHOW COVID-19 Survey and their research proposal topic follows in the table below.

MEMBER	DEPARTMENT	COVID-19 Survey – research
Sheri Johnson	Population Health Institute, Population Health Sciences	Political empowerment- ability to vote, voting participation in April 2020
Jane Mahoney	Dept. of Medicine, Geriatrics; Director, Community-Academic Aging Resource Network, Wisconsin Alzheimer's Institute, Dissemination and Implementation Resources	Adult caregiving impacts, unemployment and loss of health insurance issues, effects of social isolation/quarantine on elderly, lack of access to resources, substance use changes
Janean Dilworth-Bart	School of Human Ecology, Center for Child and Family Well-being	COVID-19 impacts on family and child well-being & learning
Kristin Litzelman	School of Human Ecology	COVID-19 impact on caregiving and cancer survivorship
Heather Kirkorian	School of Human Ecology, Center for Child and Family Well-being	COVID-19 impacts on family and child well-being & learning
Margaret Kerr	School of Human Ecology, Center for Child and Family Well-being	The impact of COVID-19 on parents' mental health, emotions, and behaviors and how that might differ for parents in different economic circumstances
Tiffany Green	Population Health Sciences, Obstetrics & Gynecology	Usual Source of Care, reproductive health
Natascha Merten	Population Health Sciences	Sensory impairment, COVID-19 and mental health; sense of purpose in life and employment, mental health impacts from COVID-19
Marguerite Burns	Population Health Sciences	Perception and knowledge of risk and COVID-19; access to info
Lisa Cadmus Bertram	Kinesiology; Population Health Sciences	Physical activity protective factor; changes in PA due to COVID-19
Jonathan Patz	Global Health Institute; Nelson Institute for Environmental Studies; Department of Population Health Sciences; Center for Sustainability & the Global Environment	Physical activity protective factor; changes in PA due to COVID-19
Mariétou Ouayogodé	Population Health Sciences	Pandemic effects on employment, job security, and housing insecurity; food access and food security

Julia Lubsen	Family Medicine and Community Health	Fear of discrimination, impacts on access to care
Deb Ehrental	Obstetrics & Gynecology, Population Health Sciences	Reproductive health and pregnancy- related to access to contraception, loss of home visiting/other perinatal support, delivery alone, etc. ; Early childhood (birth to 3)- missed immunizations/early intervention, programs/child neglect, children with special health care needs; Substance use disorder- lost access to treatment programs, relapse, etc.
Maureen Durkin	Population Health Sciences	Reproductive health and pregnancy- related to access to contraception, loss of home visiting/other perinatal support, delivery alone, etc. ; Early childhood (birth to 3)- missed immunizations/early intervention, programs/child neglect, children with special health care needs; Substance use disorder- lost access to treatment programs, relapse, etc.
Amy Trentham-Dietz	Dept. of Population Health Sciences; UWCCC, Cancer Control Program	Access to care for patients receiving routine care and cancer treatment
Rebecca Myerson	Population Health Sciences	Perceived risk, misinformation, predictors of actual risk, health behaviors
Paul Peppard	Population Health Sciences	sleep: pre-/during/post-COVID19 examining longitudinal changes in sleep duration, insomnia symptoms and satisfaction with sleep, potential interactions with sleep and mental health
Ajay Sethi	Population Health Sciences	Immunizations, contact tracing, self-reported symptoms
Thomas Oliver	Population Health Sciences	social isolation to self-assessed mental health and physical health
Maureen Smith	Population Health Sciences and Family Medicine & Community Health	Adult caregiving impacts, unemployment and loss of health insurance issues, effects of social isolation/quarantine on elderly, lack of access to resources, substance use changes
Lydia Ashton	School of Human Ecology	COVID-19 impacts on risk perception, risk attitudes
Jessica Cao	Population Health Sciences	the use of telehealth and its contribution/alleviation to equity/disparity in care access during COVID-19; how caregiving and cost-sharing relate to telehealth utilization and patient experiences
Jillian Baumgartner and Brian Robinson	McGill University: Institute for Health and Social Policy; Department of Epidemiology, Biostatistics and Occupational	COVID-19's impacts on housing security, and concerns regarding housing security

	Health; Department of Geography	
Anne Ersig	School of Nursing	COVID-19 impacts on children and adolescents with health conditions
Ellen Goldstein	Family Medicine and Community Health	The physical, mental, and economic toll of COVID-19 in Wisconsin's disadvantaged communities; incorporating the adverse childhood experiences and brief trauma questionnaires into the COVID-19 survey

Appendix K – SHOW COVID-19 Public Use Data Requests

Request Date	Request Number	Affiliation: University, State Agency, Local Agency, or Organization	Department and/or School	Topics of interest	Research Aims
8/4/2020	1	UW-Madison		Economic changes: employment, housing, Economic changes: food security, benefit programs, Impacts on child caregiving	How did the COVID-19 pandemic impact employment, job security, and housing insecurity? How did the pandemic affect food security and access to food?
8/4/2020	2	UW-Madison		Risk perceptions, risk taking behaviors, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion	How does COVID19 affect risk perception and risk attitudes? (Primary outcome variables will be the 4 items from the Global Preference Survey suggested by my research team)
8/5/2020	3	UW-Madison		Economic changes: employment, housing, Emotional and mental health, including resiliency, social cohesion, Physical activity, Current and pre-existing health conditions	Sensory impairment and COVID pandemic 1a) Do people with self-reported hearing and/or visual impairment report more depressive symptoms, loneliness, stress and less purpose in life during the COVID pandemic than people without those sensory losses? 1b) Do people with self-reported hearing and/or visual impairment use different coping strategies to promote their well-being? E.g. sensory impaired may do more home projects instead of having more virtual conversations? 1c) Does their household size moderate those effects? Are the differences between sensory impaired and

					<p>unimpaired larger in people living alone?</p> <p>Purpose in life during COVID pandemic</p> <p>2a) To what extent is loss of employment during COVID pandemic associated with purpose in life?</p> <p>2b) To what extent is purpose in life during COVID pandemic associated with loneliness and depression?</p> <p>2c) To what extent is purpose in life during COVID pandemic associated with the kind and amount of coping strategies and activities to support mental health?</p> <p>2d) How does household size affect these associations?</p>
8/7/2020	4	UW-Madison		Economic changes: employment, housing, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving	The impact of COVID-19 on parents' mental health, emotions, and behaviors and how that might differ for parents in different economic circumstances
8/19/2020	5	UW-Madison		Access to healthcare, Physical activity, Cancer	Are adults having to cancel or postpone their cancer screening tests due to COVID-19? Are they modifying their behaviors that are also cancer risk factors (smoking, body weight, physical activity, drinking alcohol)?
8/19/2020	6	UW-Madison		Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving	<p>1. Specify the associations between parenting stress and resilience during the COVID-19 pandemic and indicators of parenting behaviors and child wellbeing.</p> <p>2. Evaluate the extent to which parents'/caregivers' sense of family and social cohesion are associated with indicators of child wellbeing.</p>

SHOW PERC Progress Report 2020-2021

8/19/2020	7	UW-Madison		COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Cancer	I'm interested in how physical activity has been affected in cancer survivors, including how this may vary by their risk-taking behaviors, and relationships w/ other relevant behavioral factors (sleep, stress, resiliency). Also interested in looking at these data in the non-cancer participants... depends in part on the sample sizes for cancer vs. overall.
8/20/2020	8	UW-Madison		COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving, Impacts on adult caregiving	How have caregivers been impacted by the pandemic as compared to non-caregivers (caregiver defined as caring for a family member or friend with an illness or disability)? Specifically interested in a) concern about COVID-19; b) impacts on health and well-being; c) delayed and foregone medical care; and d) economic hardship
8/20/2020	9	UW-Madison		COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Substance use, Impacts on child caregiving	1. What is the unique impact of COVID, and the non-pharmaceutical interventions (NPI) designed to reduce the spread of COVID, on pregnant women and families with young children? 2. What are the experiences of COVID-19 testing, contact tracing, and mitigation among community-based providers and pregnant/postpartum women and households with children living in underserved communities?
8/21/2020	10	UW-Madison		COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Economic changes: employment, housing,	(1) Is social engagement associated with health outcomes during the pandemic? (Is it a protective and/or promoting

SHOW PERC Progress Report 2020-2021

				Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Physical activity	factor?) (2) Does the association between social engagement and health outcomes hold or even strengthen during the pandemic? (Compare pre-pandemic vs during-pandemic) (3) Would a stronger sense of social cohesion lead to greater physical activity? (Risk perceptions as a potential effect modifier?)
8/21/2020	11	UW-Madison		Emotional and mental health, including resiliency, social cohesion, Sleep, Impacts on child caregiving, Impacts on adult caregiving	What is the impact of the SARS-COV-2 pandemic on intergenerational family well being? a. Is there a role of media use and technology in family stress and coping during the pandemic? b. What are the characteristics of intergenerational stress, caregiving burden, and coping across Wisconsin regions? c. Are there individual and family resilience processes that moderate the impact of the pandemic-related psychosocial stress?
9/30/2020	12	UW-Madison		COVID-19 testing, symptoms, diagnoses, Emotional and mental health, including resiliency, social cohesion, Sleep	How does the COVID era affect sleep quality and duration (pre, post COVID era and trajectories from March 2020 through 2021)? Does sleep and COVID era interact to predict mental health (depression, stress) outcomes?
10/2/2020	13	UW-Madison		COVID-19 testing, symptoms, diagnoses, Access to healthcare, Emotional and mental health, including resiliency, social cohesion, Current and pre-existing health conditions	How has the COVID-19 pandemic impacted engagement in advance care planning (ACP)? Are those who have been directly impacted by the pandemic (i.e.

SHOW PERC Progress Report 2020-2021

					diagnosed with COVID, family member diagnosed with COVID), more likely to have engaged in ACP since the start of the pandemic?
10/5/2020	14	UW-Madison		COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Current and pre-existing health conditions	I plan to write a manuscript about risk, beliefs, and actions (testing, screening, and preventive actions) related to Covid-19. Most likely I will wait until two waves of survey data are available to write the manuscript.
11/6/2020	15	UW-Madison		Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity	The project seeks to evaluate the impact of the COVID-19 pandemic on employment, food, mental health, and housing security in Wisconsin using the Survey of the Health of Wisconsin (SHOW).
11/17/2020	16	UW-Madison		Economic changes: employment, housing, Emotional and mental health, including resiliency, social cohesion, Substance use	How has alcohol and tobacco consumption changed over time and the implications this has had on mental health/wellbeing. How has employment status adjustments affected alcohol and tobacco consumption?
11/19/2020	17	UW-Madison		COVID-19 testing, symptoms, diagnoses, Economic changes: employment, housing, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving, Impacts on adult caregiving	1. Geographic distribution (& urban/rural comparison) of mitigation behaviors, testing/exposure, and beliefs around COVID-19 effectiveness; track changes overtime; 2. Wave I cross sectional paper on genders: (1) differences in changes in employment and caregiving and associated factors, (2) perceptions, beliefs, behaviors, stress and coping among healthcare workers and essential workers vs. everyone else.

SHOW PERC Progress Report 2020-2021

12/2/2020	18	UW-Madison		Risk perceptions, risk taking behaviors	I would like to do in-depth analysis of considering COVID-19 a threat to family, community, state.
12/14/2020	19	UW-Madison		Access to healthcare, Risk perceptions, risk taking behaviors, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving, Impacts on adult caregiving, Stress and coping skills/activities	<ul style="list-style-type: none"> - use of telehealth and its contribution/alleviation to equity/disparity in care access during COVID-19. - how caregiving burden and cost-sharing of care services may further shape the telehealth utilization and patient experiences.
1/19/2021	20	UW-Madison		COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Stress and coping skills/activities	<p>How does one's environment (ground water/ neighborhood) effect covid severity (symptoms)?</p> <p>How does race effect one's risk taking behavior and mental/health resiliency during the pandemic?</p>
1/26/2021	21	UW-Madison	Extension	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Current and pre-existing health conditions, Stress and coping skills/activities	Will be including data on the impact of the COVID-19 pandemic on Forest County youth as part of our youth risk behavior survey report to the county board and stakeholders.
1/26/2021	22	University of Wisconsin - Madison	School of Medicine and Public Health	COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Emotional and mental health, including resiliency, social cohesion, Stress and coping skills/activities	I'm working with Amy Schultz on how the perceptions of COVID-19 vary between rural and urban populations, and how these perceptions affect things like their behaviors and mental and physical health.

SHOW PERC Progress Report 2020-2021

1/26/2021	23	none	none	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Current and pre-existing health conditions	I'm interested in using the survey data to help identify gaps in testing data, such as finding out who may not be accessing COVID-19, to see if it is possible to adjust the numbers captured by our data collection system. Similarly, I would like to use this data on symptoms to look at the missing data collected on symptoms at the state to see if we can better understand COVID-19 symptoms.
1/26/2021	24	None	Portage County HHS - Division of Public Health	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Cancer, Current and pre-existing health conditions, Stress and coping skills/activities	As a public health officer I take part in many community conversations related to the COVID-19 Pandemic. This data will be used to examine the impact of the pandemic of Wisconsinites in general in order to make recommendations for the recovery phase of the pandemic locally.
1/26/2021	25	UWM University of Wisconsin-Milwaukee	Joseph J. Zilber School of Public Health	Access to healthcare, Risk perceptions, risk taking behaviors, Current and pre-existing health conditions	1. The impact of the Covid-19 Pandemic on sexual health care service utilization. 2. Risky sexual behaviors during the pandemic 3. Prevalence of sexually transmitted diseases during the pandemic
1/27/2021	26	University of Wisconsin - Stevens Point	Health Sciences and Wellness	Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving,	COVID's impact on health behaviors and environmental factors which influence health outcomes (SDOH) in WI.

SHOW PERC Progress Report 2020-2021

				Current and pre-existing health conditions, Stress and coping skills/activities	
1/27/2021	27	N/A	N/A	Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Current and pre-existing health conditions, Stress and coping skills/activities	1. Did health disparities increase as a result of COVID-19 in our community? If so, what are they? 2. Did any new health disparities surface as a result of COVID-19? If so, what are they? 3. What are the short and long term impacts of COVID-19 in our community?
1/29/2021	28	SMPH	Population Health Institute	Emotional and mental health, including resiliency, social cohesion, Substance use, Impacts on child caregiving, Stress and coping skills/activities	Work on opioid use and also adolescent coping.
1/30/2021	29	University of Wisconsin	SHOW	COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving, Impacts on adult caregiving	Is the immunization mandatory to take?
1/30/2021	30	University of Wisconsin	SHOW	COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Impacts on adult caregiving	Is it mandatory to take the immunization?

SHOW PERC Progress Report 2020-2021

2/1/2021	31	n/a	Wisconsin Department of Health Services	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Current and pre-existing health conditions, Stress and coping skills/activities	I'm interested in analyzing COVID-related data in relation to occupation as well as asthma status.
2/1/2021	32	Medical College of Wisconsin	WI Office of Children's Mental Health	Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving, Stress and coping skills/activities	DPI, WIPPS, MCW and OCMH launched a statewide youth COVID study with 20 focus groups last month. We would like to see how your data may complement our findings, and will reciprocate if interested.
2/2/2021	33	University of Wisconsin-Madison	Institute on Aging	COVID-19 testing, symptoms, diagnoses	MIDUS would like to review SHOW's COVID instrument and possibly adapt SHOW's measures, with attribution.
2/3/2021	34	UW-Madison	Medicine	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Physical activity, Current and pre-existing health conditions, Stress and coping skills/activities	There are reports showing an association between lockdowns, limited mobility and access to gyms, and lower physical activity levels in the population. Reports also show that with limited physical activity individuals have adapted certain coping skills such as meditation to help them deal with stress. Our study will focus on answering the following specific research questions: 1. What is the effect of COVID-19 on physical activity levels? 2. Other than physical activity what new coping ways has COVID-19 had on the population? The first analysis will focus on physical activity, stress, and coping

					<p>skills/activities questions. Subsequently, we will expand this analysis to examine research questions from the following topics:</p> <ul style="list-style-type: none"> • COVID-19 testing, symptoms, diagnoses • Access to healthcare • Risk perceptions, risk-taking behaviors • Current and pre-existing health conditions
2/3/2021	35	None (but doctorate from UW Sociology)	None	COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Substance use, Impacts on child caregiving, Stress and coping skills/activities	As the PI for Wisconsin's Youth Risk Behavior Survey and a researcher for DPI, I'm interested in how the pandemic is affecting the economic, social-emotional, and physical wellbeing of families with school-age children. Having a better sense of the stressors on families helps schools better serve children now and in the future.
2/3/2021	36	Milwaukee	Milwaukee	COVID-19 testing, symptoms, diagnoses	Covid19
2/6/2021	37	Idk	Idk	COVID-19 testing, symptoms, diagnoses, Stress and coping skills/activities	Idk
2/8/2021	38	Medical Sciences Center	Community Impact Survey	COVID-19 testing, symptoms, diagnoses	taking survey
2/10/2021	39	none	none	Emotional and mental health, including resiliency, social cohesion, Physical activity, Current and pre-existing health conditions	When will we have enough vaccinations for all that want them?
2/10/2021	40	Na	Na	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes:	To see the specific impact of COVID 19 in our lives

SHOW PERC Progress Report 2020-2021

				employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Stress and coping skills/activities	
2/11/2021	41	UW Madison	PHS	COVID-19 testing, symptoms, diagnoses, Stress and coping skills/activities	Looking at stuff
2/11/2021	42	University of Wisconsin	PHS	COVID-19 testing, symptoms, diagnoses, Economic changes: employment, housing, Cancer, Current and pre-existing health conditions, Stress and coping skills/activities	research
2/15/2021	43	DVM/PhD student (final year of study)	Department of Medical Sciences	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs	Seeking data access to run a mini-study as part of a 2-week research externship with Dr. Malecki. The aim is to investigate associations between socio-economic status, race and ethnicity and COVID-19 testing/diagnosis response rate within the SHOW COVID-19 survey cohort. Specific study variables of interest include participant education level, race, ethnicity, household income level, housing status, number of people living within the same household, access to healthcare, and food security. Diagnostic/testing response rate variables include self-reported history of having COVID-19 in the past, and self-reported positive COVID-19 test.
2/16/2021	44	UW-Madison	School of Nursing	Access to healthcare, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity,	Aim 1: Examine older adults' behavioral responses to stress (sleep, physical activity, and diet) before and during COVID-19 pandemic.

SHOW PERC Progress Report 2020-2021

				Current and pre-existing health conditions, Stress and coping skills/activities	Aim 2: Examine the neuroendocrine responses to stress (cortisol/DHEA/BDNF) before and during COVID-19 pandemic.
2/18/2021	45	University of Wisconsin - Madison	Population Health Sciences	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Cancer, Current and pre-existing health conditions, Stress and coping skills/activities	Looking for opportunities to pair this data/info with the data we use in NHP.
2/24/2021	46	University of Wisconsin-Madison	Industrial and Systems Engineering	Access to healthcare, Risk perceptions, risk taking behaviors, Substance use	I have another grant that is studying how police can divert opioid users to treatment. Overdoses unfortunately increased during the pandemic. I am interested in studying substance use and illicit opioid usage changed during the pandemic.
3/1/2021	47	University of Wisconsin-Madison	Planning and Landscape Architecture	Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Physical activity, Current and pre-existing health conditions, Stress and coping skills/activities	How does COVID-19 influence people's behaviors and health?
3/1/2021	48	none	none	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Emotional and mental health, including resiliency, social cohesion,	Where can I get a shot for covid.

SHOW PERC Progress Report 2020-2021

				Physical activity, Current and pre-existing health conditions	
3/13/2021	49	UW-madison	Human Development and Family Studies	COVID-19 testing, symptoms, diagnoses, Impacts on child caregiving, Impacts on adult caregiving, Stress and coping skills/activities	parenting stress, media use
3/20/2021	50	UW-Madison	SMPH	COVID-19 testing, symptoms, diagnoses	research
3/25/2021	51	Local Agency	N/A	Emotional and mental health, including resiliency, social cohesion, Substance use, Stress and coping skills/activities	Would like to know the impact Covid 19 has had on children's mental health Birth to age 18.
5/28/2021	52	UW Madison	Labor Education and Chicano and Latino Studies	Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Impacts on child caregiving, Stress and coping skills/activities	What are the primary health and safety, economic, and social impacts the COVID-19 pandemic is having on essential worker immigrant and non immigrant communities across the state?
5/28/2021	53	Wisconsin	Family Medicine and Community Health	Access to healthcare, Risk perceptions, risk taking behaviors, Emotional and mental health, including resiliency, social cohesion, Substance use, Stress and coping skills/activities	I am interested to examine the influence of a two-factor latent class structure composed of risk and protective variables (e.g., sociodemographic characteristics, psychosocial factors, chronic health conditions, coping activities, access to care) on mental health/psychosocial symptoms (e.g., depression, anxiety, stress), and assess the differential associations of race/ethnicity, family level income, and geographical location.

6/2/2021	54	University of Wisconsin School of Medicine and Public Health	School of Medicine	Access to healthcare, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Stress and coping skills/activities	I am interested in analyzing the associations between different health/coping behaviors and resilience/wellbeing. I will analyze how behaviors and resilience differs between groups (based on gender identity, sexual orientation, income, race, and age).
6/4/2021	55	University of Wisconsin-Madison	School of Nursing	Access to healthcare, Risk perceptions, risk taking behaviors, Emotional and mental health, including resiliency, social cohesion, Current and pre-existing health conditions, Stress and coping skills/activities	<p>1. In adults with pre-existing health conditions, did the COVID-19 pandemic affect stress levels, stress responses, and coping activities? (If possible: what changes occurred during the pandemic, vs. before?)</p> <p>2. Did adults with pre-existing health conditions have difficulty accessing health care during the COVID-19 pandemic? (If possible: find out what was difficult, and how they responded.)</p> <p>3. What were risk perceptions and risk-taking behaviors during the COVID-19 pandemic for adults with pre-existing health conditions? (And, if possible, were there changes from pre-pandemic?)</p> <p>4. How did adults with pre-existing health conditions rate their emotional and mental health during the COVID-19 pandemic? (And, if possible, were there changes from pre-pandemic?)</p>
6/21/2021	56	UW Madison	School of Human Ecology	Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health,	How do families make decisions about housing resources when faced with the COVID-19 pandemic housing crisis?

				including resiliency, social cohesion, Substance use, Impacts on adult caregiving	
6/22/2021	57	Pierce County Public Health Department	NA	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Current and pre-existing health conditions, Stress and coping skills/activities	St. Croix and Pierce Counties are interested in using this data for our upcoming community health needs assessment. We are hoping that the survey responses can be regionalized.
6/23/2021	58	LHD	not	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Substance use, Current and pre-existing health conditions, Stress and coping skills/activities	PH Surveillance to see changes
6/25/2021	59	Local Health Department	n/a	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Cancer, Current and pre-existing health conditions, Stress and coping skills/activities	Not using for research, looking at equity and how that intersects with COVID-19 in our community

SHOW PERC Progress Report 2020-2021

7/10/2021	60	WI		COVID-19 testing, symptoms, diagnoses	accidentally deleted my email
7/11/2021	61	WI	South division hs	COVID-19 testing, symptoms, diagnoses	Covid-19
7/11/2021	62	Wisconsin	High school	COVID-19 testing, symptoms, diagnoses, Risk perceptions, risk taking behaviors, Economic changes: employment, housing	Survey
7/12/2021	63	WI	participant in study	COVID-19 testing, symptoms, diagnoses, Access to healthcare, Risk perceptions, risk taking behaviors, Economic changes: employment, housing, Economic changes: food security, benefit programs, Emotional and mental health, including resiliency, social cohesion, Sleep, Physical activity, Substance use, Impacts on child caregiving, Impacts on adult caregiving, Cancer, Current and pre-existing health conditions, Stress and coping skills/activities	attempting to complete covid-19 community impact survey