2024 Public Health Showcase
Poster Presentation Abstracts - Public Health Research

#1

Abstract Title:	Trends In High-Risk Human Papilloma Virus (Hr-Hpv) Positivity Rates From 2000-2023 At A University Hospital Laboratory
Student:	Khushi Arora
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Julie Ribes / jaribes@email.uky.edu

Abstract: Background: Testing guidelines for Human Papilloma Virus (HPV) have evolved from looking at the presence or absence of HPV to looking at individual genotypes associated with cancers, such as HPV 16, HPV 18, and other high-risk HPV (hrHPV). Furthermore, the recommended target population has also changed based on age. Methods: This retrospective study analyzed de-identified hrHPV testing data at University of Kentucky Clinical Microbiology Lab from 2001-2023. The hrHPV positivity trends were assessed for impact of changes in testing/guidelines such as liberalization of testing and recommended target age group. Results: Since the inception of hrHPV in 2000, the total number of tests performed has trended upwards. HPV positivity rates decreased significantly from 2012 to 2013, correlating with the liberalization of HPV testing and removal of ASCUS as a pretest recommendation. The liberalizing of HPV testing was also associated with a significant decrease in HPV detection in women less than 30 years of age from years 2012-2014. Since the introduction of more specific testing for hrHPV genotypes in 2019, the positivity rate for individual high-risk genotypes have only shown slight variability. HPV positivity showed a slight initial rise with change to testing at 25 years-old before falling back to previous levels. Conclusion: Due to liberalization of testing in non-high-risk population, the positivity rate decreased, likely showing an artificial lower proportion of hrHPV. The introduction of hrHPV testing provides a better understanding of the spectrum of HPV in the population and over time may also demonstrate the effect of vaccinations.

2024 Public Health Showcase
Poster Presentation Abstracts - Public Health Research

#2

Abstract Title:	The Relationship Between Depressive Symptoms And Combined Endpoint Heart Failure Outcomes In A Rural Adult Population
Student:	Savannah Bush
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Ketrell McWhorter / ketrell.mcwhorter@uky.edu

Abstract: Background: The NIH reports, over 5 million Americans are currently affected by heart failure, and the rate is rising annually. Depression is the most frequently diagnosed psychiatric condition in patients prior to HF. The high prevalence of heart failure (HF) outcomes along with reported depressive symptoms among rural Appalachian adults, lead to this study's investigation of the relationship between self-reported depression and combined endpoint heart failure (ceHF).   Methods: Data from the Rural Education to Improve Outcomes in Heart Failure (REMOTE) trial was comprised of 602 adults with ceHF outcomes, which included rehospitalization, emergency room visit, or death. Log-binomial regression was used to estimate prevalence ratios (PR) and 95% confidence intervals (CI) of ceHF outcomes among REMOTE participants who reported depressive symptoms versus those who did not, adjusting for sociodemographic and clinical characteristics, and sleep. Results: Compared to those who reported no depressive symptoms there was an increased prevalence of ceHF among participants who reported depression in models fully adjusted for 'sleeping well at night'(PR=1.45, [95%CI:1.19-1.76]), 'being tired or having low energy' (MLHF Survey: PR=1.32, [95%CI:1.10-1.57]; PHQ:PR=1.34, [95%CI:1.11-1.61]), and having trouble falling or staying asleep or sleeping too much (PR=1.37, [95%CI:1.12-1.68]). Conclusions: This research constitutes a discussion surrounding depression being a direct cause of ceHF. When adjusting for sleep difficulties in the depression-ceHF relationship, our findings remained significant. Therefore, further research should be done considering the relationship among depression, sleep, and HF outcomes.

2024 Public Health Showcase
Poster Presentation Abstracts - Public Health Research

#3

Abstract Title:	Assessing Students In Health Colleges Learning Outcomes In Courses That Utilize Non-Traditional Reading Assignments
Student:	Ashley Hardin
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Sarah Cprek / sarah.cprek@uky.edu

Abstract: Background: Literature has found non-traditional readings such as shared reading experiences and book clubs are effective ways to engage undergraduate students in learning that differs from traditional reading assignments. These learning activities have been found to increase student's interest in a topic and support a greater understanding and application of core concepts within the discipline. Engaging students in this type of teaching approach provides an opportunity to enhance their skills in critical thinking. Further, it fosters collaboration and facilitates the development of effective communication skills. Through these assignments' students expand their topic knowledge, critique popular writing, practice informal discussion of discipline specific topics, and present their findings to their peers. Data suggests that shared reading experiences may support the development of life-long learning pathways following degree completion; a critical practice for those entering public health and other health professions. Current Study: This cross-sectional study surveyed students from two health colleges at the University of Kentucky (n=160) on their experience with courses that utilized shared reading assignments. Results are preliminary. It is hypothesized that students who engaged in courses that incorporate shared reading assignments will report higher rates of assigned reading completion when compared with their self-reported rates from other courses with traditional reading assignments. Further, it is expected that students will report continued engagement with self-guided learning activities following the completion of the course. This study has implications for future innovative teaching within health colleges that foster the development of life-long learning pathways.

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#4

Abstract Title:	Local Government Participation In Addressing Health Through Community Networks
Student:	Abigail Humphrey
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Rachel Hogg-Graham / rachel.hogg@uky.edu

Abstract: Introduction: Cross-sector networks addressing health and social services are core in improving health and well-being. Local government organizations are important collaborators in these networks, as they are responsible for providing access to services that improve individual unmet social needs. This study examines trends in local government participation in community networks across the US.   Methods: We used retrospective cohort data from 2014-2018 to examine local government participation in population health activities. The National Longitudinal Survey of Public Health Systems follows a cohort of over 500 US communities where local public health officials report on the availability of 20 core population health activities and the range of organizations that contribute to each activity. We completed a descriptive analysis to examine trends in local government participation. Results: Local government participation in all population health activities increased from 24.6% in 2014 to 27.5% in 2018. Across all years, local government organizations participated in policy and planning activities at the highest rate. We found substantial variation in the portion of communities reporting local government participation in individual activities. Over 50% of communities in 2018 reported local government participation in assessment of community health status and needs and maintaining a communication network across sectors.   Conclusion: Local government engagement in population health networks has increased over time. They play a strong role in delivery of policy and planning activities. Engaging local government agencies will not only increase access to social services but has the potential to inform and implement policies that strengthen population health networks.

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#5

Abstract Title:	Community Input In Harm Reduction Kiosk Design
Student:	Samantha Jones
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	April Young / april.young@uky.edu

Abstract: Appalachian regions of the country, especially in the state of Kentucky, have experienced an extremely heavy burden of harm related to drug use and a lack of harm reduction services. The primary explanation for this disproportionate burden is barriers to healthcare that have existed in these regions for decades, including inadequate access to healthcare providers and transportation. Previous research has focused on implementing low threshold access to harm reduction supplies via the use of vending machines, but these projects have only been conducted in urban, highly populated cities. We compiled local community members' input through the use of focus groups, surveying, and creating a design team. The design team utilized information provided from the focus groups and surveys to vote upon elements that were vital to the implementation of the vending machine. Similar to the machine in Las Vegas, participants wanted an easy way to access the supplies inside, so the use of a swipe card and pin code was decided upon. Unlike other machines present around the globe, community members wanted the physical design to be as discrete as possible, ensuring that no additional attention would be drawn to it. These findings indicate that community members are aware of the need for a harm reduction vending machine in their community, but they want to ensure that its installation would not disrupt local culture.

2024 Public Health Showcase
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#6

Abstract Title:	Enhancing Child Welfare: A Comprehensive Analysis Of The Role Of Qualified Individuals
Student:	Annie Marsh
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	John Lyons / john.lyons@uky.edu

Abstract: This research focused on the issue of a reliance on Qualified Residential Treatment Programs (QRTPs) within the child-welfare system. QRTPs are intended to offer residential care to children who are unable to safely live in family-based settings. Legislation emphasizes a shift towards a "family first model" that aims to place children in the least restrictive environment possible. The Center for Innovation in Population Health at UK worked on developing a survey and interview instruments to understand the systemic challenges child-welfare workers face. The objective of the study was to create an interview and survey questionnaire to discern the variations in the role of QIs across states, jurisdictions, and individual contexts. This included an examination of the extent to which these variations align with the goals of the Family First Prevention Services Act (FFPSA) and government agencies, while identifying opportunities to enhance the effectiveness of the QI role. The research team applied for grants to offer compensation for individuals who participated in the survey and interview.   This research advocates for a shift away from the one-size-fits-all approach of QRTPs, promoting a thoughtful, individualized consideration for each child's needs within the child-welfare system. Family-based interventions emerge as a proven, more effective strategy for securing permanent homes for children and addressing traumas endured. By leveraging QIs, the child-welfare system can potentially mitigate drawbacks associated with QRTPs, fostering a more nuanced and personalized approach to placements. The QI survey and interviews provide novel insights to support the implementation of the role of QIs.

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#7

Abstract Title:	Building Bridges Initiative Theory Of Change For Residential Intervention Program Evaluation
Student:	Carly Meyers
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Margaret McGladrey / margaret.mcgladrey@uky.edu

Abstract: Background: The IPH Center is conducting a mixed-methods participatory evaluation to assess the impact of using the Building Bridges Initiative's (BBI) Theory of Change (TOC) for Residential Intervention to initiate and implement change processes that improve client, program, and community outcomes. Because the TOC framework engages providers and clients in the collaborative use of standard program evaluation tools, this pilot project is ideally suited to participatory evaluation. In participatory evaluation, project stakeholders set the evaluation criteria, collect, and analyze data, and use those data to adjust and improve the project. Methods: Provider recruitment is complete, and the project will launch in May 2024 after CEO orientation. During the project kick-off meeting, an evaluation sub-group will review the draft list of process and outcome measures, make recommendations for revisions and additions, and identify relevant administrative data. During the one-year implementation period, process measures such as meeting rosters documentation as well as project-specific outcome data will be collected by provider teams. Post-implementation, we will reconvene the evaluation sub-group to 1) review the process and outcome evaluation data across sites and by priority area and 2) discuss possible interpretations of patterns in the data and explanations of findings. The evaluation sub-group also will discuss what the data indicate in terms of the acceptability, feasibility, and usability of the TOC intervention. Results and Conclusions: The undergraduate student researcher will be involved with all data collection and dissemination, with the goal of publishing in peer-reviewed articles and developing a book-length comparative case study.

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#8

Abstract Title:	Examining Life Satisfaction After Collegiate Sports Retirement
Student:	Adam Nudelman
Degree level:	Undergraduate
College:	College of Education
Mentor / e-mail:	Caitlin Northcutt / caitlin.pope@uky.edu

Abstract: Background: In 2023, there were over 10 million students actively participating in collegiate sports in the United States (US). Fewer than 3% of all US collegiate athletes continue playing as professional athletes. US collegiate athletes have higher levels of daily stress than their non-athlete counterparts along with depression and anxiety disorder symptoms, substance abuse, eating disorders, and other adverse health outcomes during their years of play. Given the average collegiate athlete begins playing their sport around age 14, coupled with the time commitment to their sport during their academic career, many form a sense of identity as an athlete. Widely under studied is how former collegiate athletes adapt to life post collegiate sport retirement. Objective: To investigate life satisfaction and stress in a sample of former collegiate athletes post sports retirement. Methods: Participants ages 18 and older who had previously participated in a club or varsity collegiate sport completed an online survey and were recruited using a snowball sampling approach. Researchers promoted the survey on social media platforms including Facebook, Instagram, and X. Descriptive and quantitative analyses will be conducted on the de-identified dataset. Results: Data collection is currently in progress (n = 88 out of N =100) and will conclude by March 1st. Descriptive and quantitative analyses will be presented. Conclusions: Life satisfaction and stress for former college athletes post sport retirement is widely unknown. This study will help inform areas for intervention to improve psychological outcomes of retired collegiate athletes post-retirement from their sport.

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#9

Abstract Title:	Svi And Dental Care Across Appalachian Kentucky
Student:	Jill Patel
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Richard Ingram / richard.ingram@uky.edu

Abstract: This research project aims to conduct a comprehensive investigation into the correlation between the Social Vulnerability Index (SVI) and access to dental care within Appalachian states. Appalachia, characterized by unique geographical and socioeconomic challenges, provided to be an intriguing context for understanding disparities in oral health. Utilizing a quantitative approach, the study plans to collect and analyze data from the Behavioral Risk Factor Surveillance System as provided by the Centers for Disease Control and Prevention. The SVI, a multidimensional measure capturing social determinants of health, serves as a key variable in assessing vulnerability. We assume that our findings will reveal a significant association between higher SVI scores and limited access to dental care services across Appalachian states. We assume that residents in regions with elevated social vulnerability are more likely to face barriers such as limited transportation, financial constraints, and a shortage of accessible dental healthcare facilities. Additionally, qualitative insights shed light on the intricate interplay between social determinants and oral health outcomes, emphasizing the need for targeted interventions.

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#10

Abstract Title:	Firearm-Related Morbidity And Mortality, Kentucky, 2016-2022
Student:	Mason Taylor
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Julia Costich / julia.costich@uky.edu

Abstract: In Kentucky, firearm injury is the leading cause of death and the fifth most common cause of hospitalization. Firearm-related morbidity and mortality has been steadily increasing in Kentucky from 2016 to 2022. To better understand this trend, longitudinal data for the state's firearm-related morbidity and mortality was utilized. Kentucky inpatient and emergency department discharge data was used for inpatient hospitalizations and mortality data was provided by the Office of the State Medical Examiner to the Kentucky Department of Public Health and the Kentucky Injury Prevention & Research Center. The data suggested numerous research questions to investigate, like changes in firearm-related morbidity and mortality, case-fatality rate, proportion of suicide versus homicide by age group and race, and over- or under-representation of racial and ethnic minorities in firearm morbidity and mortality. Throughout the COVID-19 pandemic, the number of fatal homicides increased by 46% and the number of fatal suicides increased by 34% in Kentucky. These increases were significantly greater than national rates. The findings indicated statistically significant differences among various demographic groups using firearm homicide and suicide data. Statistically significant differences among males and females, younger and older age groups, Black and White individuals, Appalachian and non-Appalachian individuals, and rural and urban individuals were found. Firearm injury case-fatality rates did not increase from 2016 to 2022 due to the increasing popularity of more lethal assault weapons and high-capacity ammunition magazines. To determine whether the increase in firearm injuries in Kentucky continues or is referable to the pandemic, post-pandemic trends must be monitored.

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#11

Abstract Title:	Incarceration Release And Fatal Overdose Prevalence
Student:	Brayden Ward
Degree level:	Undergraduate
College:	College of Public Health
Mentor / e-mail:	Dana Quesinberry / dana.quesinberry@uky.edu

Abstract: Background Overdoses deaths have continued to climb nationally. Overdose deaths (32.4 per 100,000 in 2021) are currently the leading cause of accidental deaths in the country. Studies have shown a significant increased risk for overdose mortality post-incarceration. The goal of this study is to assess prevalence of fatal overdoses among the incarcerated population and their individual characteristics and incarceration characteristics in Kentucky. Methods This study was conducted using publicly available prison release data from the Commonwealth of Kentucky during the time period of 2021-August 2023. Release date was linked to death certificate by first/last name limited by prison release date/death date. Linked data was analyzed to determine mortality among the study population, including fatal overdoses. Data was stratified by personal demographics and incarceration characteristics. Means for age and time from release to death were calculated. Results Fatal overdose deaths made up 22.87% of deaths for those released from Kentucky corrections are local-regional jails between 2021-August 2023.The highest age groups with fatal overdose prevalence were those of 18-24, 25-34, and 35-44. Overdoses accounted for minimum 42.86% of deaths in those age ranges averaging 248 days post-release before death.   Conclusion There is a notable correlation between fatal overdoses and the post-incarcerated population in Kentucky. Overdose death prevalence was second behind "other" (67.44%). There was a significant drop-off to third ranked death cause (COVID 5.53%). It is important that reentry services be aware of the risk overdoses, especially for those in high risk age groups/other categories.

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#12

Abstract Title:	Cardiovascular Disease Burden Among Adults With Type 1 Diabetes In The Us
Student:	Orighomisan Agboghoroma
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Mary Lacy / mary.lacy@uky.edu

Abstract: Background Cardiovascular disease (CVD) is a major cause of morbidity and mortality for people with type 1 diabetes (T1D). However, few studies report the age-specific burden of CVD in this population. This study aims to quantify the age- and sex-specific burden of CVD among adults with T1D in the US using real-world data. Methods We used nationwide commercial claims data from Merative MarketScan from 2016 to identify adults aged 20 years and older with T1D. ICD-10 codes from claims for inpatient and outpatient services were used to estimate the age- and sex-specific prevalence of CVD defined as any of the following diseases: ischemic heart disease (IHD), stroke, heart failure (HF), acute myocardial infarction (AMI), atrial fibrillation (AF), and peripheral arterial disease (PAD).   Results Among 45,877 people with T1D (age 47±16years; 48.2% female), the prevalence of CVD was 15.63%. IHD and PAD were the most prevalent types of CVD (prevalence of 9.66% and 5.48%, respectively). The prevalence of CVD increased with age (from 1.48% in those aged 20-29 years to 54.80% in those aged 70+ years) and was higher in men than in women (16.52% in men vs 14.62% in women; p<0.0001). Conclusion The overall burden of CVD in this population T1D was 15.63%, and this increased with age and was higher in men. This burden is higher than observed by the CDC in the general population (5.5%) and less than in people with type 2 diabetes (45.2%) in another study using insurance claims data.

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#13

Abstract Title:	Current Linkage To Treatment And Recovery Support Services For Patients With A Substance Use Disorder: A Survey Of Kentucky Physicians
Student:	Seif Atyia
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Terry Bunn / terry.bunn@uky.edu

Abstract: Background: It is well established that there is an ongoing substance use epidemic that was exacerbated by the opioid crisis. Individuals with SUD can be treated effectively, but connecting them to treatment and recovery support resources may be difficult. Physicians vary in their approach when presented with such a patient, and the evaluation of these practices is important to assess current gaps in linkage to SUD treatment and recovery care.   Methods: The survey was sent by email to all 12,152 in-state physicians licensed in Kentucky; 524 responded. Addiction specialists were categorized separately as well as emergency physicians and psychiatrists. Internal and family medicine were combined into one category, and all other specialties were grouped into an "Other" category. The results were analyzed using descriptive statistics and cross tabulations for the quantitative data, while thematic and content analysis were used for the qualitative data. Results: Of the 524 respondents, 271 (51.72%) said that they treated patients with SUD. Despite this, about 30% of them do not screen for SUD. Across all specialties (except for addiction and psychiatry), most providers refer patients with SUD treatment without prescribing any kind of treatment themselves. In addition, about one-third of providers do not know about findhelpnowky.org. Further data analysis is pending.   Conclusion: <Preliminary>. There are current gaps in screening and linkage to care. Work is necessary to increase screening, build provider capacity to treat, and increase knowledge of resources in Kentucky.

2024 Public Health Showcase
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#14

Abstract Title:	Examining The Relationship Between Social Determinants Of Health And Drug Selling Among People Who Use Drugs In Appalachian Kentucky
Student:	Grace Debo
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Rachel Vickers-Smith / rachel.vickers@uky.edu

Abstract: Introduction: Contrary to the common stereotype of drug sellers as predatory "kingpins", many are individuals who use drugs themselves and engage in low-level selling on and off depending on personal and economic circumstances. Research that describes the relationship between social determinants of health (SDoH) and drug selling is scarce. The purpose of this study is to explore this association among a cohort of people who use drugs in Appalachian Kentucky.   Methods: We conducted a cross-sectional secondary analysis using data from the Kentucky Outreach Service Kiosk (KyOSK) project which focuses on drug use in two Appalachian counties. From March 2023-January 2024, KyOSK enrolled 743 individuals aged 18+ who recently used drugs. Of those enrolled, 738 answered a question about drug selling in the past 30 days and are included in this analysis. We used chi-square tests and logistic regression to examine the association between SDoH and recent drug selling.   Preliminary Results: One in five participants reported selling drugs within the last 30 days (n=152), among whom 70 (46.05%) identified this as their primary income source. SDoH including food insecurity ($p = .03$), housing instability ($p = .03$), lack of medical care ($p = .0003$), and absence of drug treatment ($p = .0058$) were associated with drug selling. Drug sellers reported a significantly higher average monthly income than those who don't sell ($750.64 and $683.24, respectively; $p<0.01$). This analysis is on-going.

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#15

Abstract Title:	The Effect Of Household Income On Children's Emotional And Behavioral Health
Student:	Vanessa Diaz
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Corrine Williams / corrine.williams@uky.edu

Abstract: Mental health disorders encompass issues such as anxiety, depression and behavioral disorders like ADHD. In childhood, diagnosis occurs when symptoms of these begin to change the way children behave and handle their emotion; therefore, their social and emotional development, along with regulatory skills are used to assess optimal mental health.   Household income has been identified as a significant factor in individuals' health. Based on the National Survey of Children's Health (NSCH) data, children whose families are of higher income levels were less likely to have Adverse Childhood Experiences (ACEs) leading to mental health disorders such as anxiety, depression or ADHD compared to those of lower income levels. This study is intended to identify the effects of household income on children's emotional and behavioral wellbeing. It is hypothesized that children of low income households experience more anxiety, depression and/or ADHD in comparison to those in higher income levels.   A secondary analysis of NSCH 2022 data using SAS will be conducted to observe the emotional and behavioral wellbeing of children in relation to their household income level. The expected outcome is for children in lower income households to experience higher rates of anxiety, depression and/or ADHD. Results and conclusion will be excluded at this time to prevent inaccuracies due to speculations and bias, since the data analysis is currently incomplete. Once it has been completed, the results will be presented at the upcoming Public Health Showcase come March 25, 2024.

2024 Public Health Showcase
Poster Presentation Abstracts - Public Health Research

#16

Abstract Title:	Verification Of Cannabis Retailers In Lexington, Kentucky: A Ground-Truthing Assessment
Student:	Victoria Hamilton
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Jay Christian / jay.christian@uky.edu

Abstract: There is no existing literature on the legal cannabis retail market in Kentucky; thus, confirming the presence of cannabis retailers provides efficient and nuanced data. Hemp, as defined by the Agricultural Improvement Act of 2018 (also referred to as the Farm Bill), is any part of the cannabis plant with a delta-9-tetrahydrocannabinol (^9THC) concentration of 0.3 percent or less. Hemp-derived products are not considered marijuana. Several hemp-derived products, like CBD and delta-8-tetrahydrocannabinol (^{8} THC), are sold as vapes, edibles, oils, and more. The purpose of this project is to conduct a ground truthing exercise examining the existence of 61 cannabis retailers in Lexington, Kentucky.   Cannabis retailers were identified by Google search using the terms "vapor", "vape", "CBD", "Delta-8", "cannabis", "smoke", "hemp", "cannabinoid", "dab pen", "head shop", and "marijuana". Cannabis retailers are defined in this study as retail businesses which sell cannabis products. The final sample included 61 potential cannabis retailers located within an approximate 5.7 mile radius from the University of Kentucky campus. A map created by a collaborator in the Department of Geography was followed to collect data. The name, address, availability of cannabis products, and a supplemental photo of the retailer were confirmed using a data collection survey in REDCap. Of the 61 retailers identified in the google search, 9 retailers were unable to be located resulting in 52 confirmed cannabis product retailers in Lexington, Kentucky. Given the prevalence of use and the recent increase in cannabis-derived products and availability, further efforts should aim to bridging research gaps.

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#17

Abstract Title:	Demographic And Behavioral Characteristics Of People Who Help Others Inject Drugs: A Study Of People Who Inject Drugs In Appalachia Kentucky
Student:	Ryli Hockensmith
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	April Young / april.young@uky.edu

Abstract: Background: Harms related to injection drug use (i.e., overdose, hepatitis C, and other injection-related infections) remain a major public health concern, particularly in rural Appalachia. Harm reduction programs are proven successful in supporting PWUD and the success of these programs are often heightened by the involvement of individuals with lived and living experience of injection drug use. Involving trusted members of the community of people who inject drugs (PWID) is critical and one such population is people who inject drugs and assist others with injection. Referred to as "Injection Assistors", these individuals may be in a position to share knowledge with clients and practice harm reduction. However, little is known about injection assistors in rural settings. This study aims to understand the demographic and behavioral characteristics of injection assistors in Appalachian Kentucky. Methods: This study utilizes survey data collected from 433 PWID enrolled in the Kentucky Outreach Service (KyOSK) study. A cross sectional secondary analysis of people who inject drugs and assist others with injection was performed. Bivariate analyses were performed to compare injection assistors with those who do not assist others with injection on demographic, behavioral, service usage, harm reduction and demographic characteristics. Results & Conclusions: In total, 29.8% (n=128) of PWID assisted others with injection. Injection assistors were primarily male (53.91%) and had a mean age of 39 years compared to their counterparts. 94.91% had access to Narcan, and 71.05% reported receiving services from an SEP within the last 6 months. The study and analysis are ongoing.

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#18

Abstract Title:	Characterizing The Relationship Between Nonprescription Benzodiazepine Use And The Presence Of Mental Health Symptoms And Stressful Or Traumatic Life Events
Student:	Julia Kollitz
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Rachel Vickers-Smith / rachel.vickers@uky.edu

Abstract: Introduction: As benzodiazepine prescribing as a short-term treatment for anxiety has increased, nonprescription use of benzodiazepines (NPUB) has also increased. This is concerning because long-term use can be harmful. Within the current literature there is not a clear consensus on whether people engage in NPUB to manage anxiety and depression symptoms. This study seeks to characterize the relationship between mental health factors and NPUB among people who use drugs in Appalachian Kentucky. Methods: This secondary, cross-sectional data analysis uses data collected for the Kentucky Outreach Service Kiosk Study. There were 743 participants included in the analytic sample. Interviewer-administered questionnaires assessed self-reported mental health factors including depressive symptoms measured by the Center for Epidemiologic Studies Depression Scale (CES-D) and a screening for posttraumatic stress disorder (PTSD) (Mini International Neuropsychiatric Interview). NPUB was self-reported in response to the survey question benzodiazepine use in the past six months "to get high". We used chi-square, t-tests, and logistic regression to determine if there are significant differences between those who used benzodiazepines in the last six months to get high and those who have not.   Preliminary Results: Over one third of the analytic sample (n=270) reported NPUB in the past six months. This group was older, had more depressive symptomology, and had a higher frequency of PTSD symptoms interfering with their daily lives than those who did not report past six-month NPUB (all p0.02). Additional analyses are ongoing.

2024 Public Health Showcase
Poster Presentation Abstracts - Public Health Research

#19

Abstract Title:	Local Health Department Trust In Cross-Sector Social Need Networks
Student:	Kelsie Kwok
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Rachel Hogg-Graham / rachel.hogg@uky.edu

Abstract: Background: Public trust in local health departments has been declining post COVID-19, which can impact perception and attitudes towards proposed public health measures. However, trust perceptions on the part of their community partners might be very different. Trust is an important aspect in a well-functioning network, especially regarding the interactions between partners when navigating resources and goals.   Methods: We examined cross-sector efforts to address unmet social needs across six Kentucky communities (three urban, three rural). For this analysis, we focused on local health departments in the sample. We used the Program to Analyze, Record, and Track Networks to Enhance Relationships (PARTNER) Tool to gather granular data on partnerships happening in each community. Community organizations completed online surveys to indicate services provided, primary function, and frequency of collaboration with other organizations in the network. We analyzed data to examine trust scores of local health departments.   Results: Urban did not report two local health departments as partners in community networks, the one that did have low trust score across the three dimensions. On average, rural communities and local health departments had high trust scores, specifically considered reliable partners supporting the mission of the networks. They did score lower on the open to discussion dimension.   Conclusion: Results suggest that local health departments play a particularly important role in rural health communities and are considered trusted partners. We found that their role in urban communities was less prevalent and when present not as trusted.

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#20

Abstract Title:	The Relationship Between Self-Reported Depressive Symptoms At 3 Timepoints And Infant Sleep Practices At 6-Month Follow-Up In A Population Of Mothers In Santo Domingo, Ecuador
Student:	Kassidy Lane
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Ketrell McWhorter / ketrell.mcwhorter@uky.edu

Abstract: Abstract Background Previous studies have linked maternal depression with poor infant sleep (e.g., waking up at night and infants having trouble settling to sleep). This study examined the relationship between maternal depressive symptoms at three time points and safe infant sleep at 6-month follow-up. Methods Data was collected from a randomized clinical trial including 100 women recruited from a health center in Santo Domingo, Ecuador during their third trimester of pregnancy. Log-binomial regression was used to estimate prevalence ratios (PR) and 95% confidence intervals (CI) of safe infant sleeping at 6 months among mothers who reported depressive symptoms at 3 time points versus those who did not, adjusting for sociodemographic characteristics and clinical trial group. Depression was defined by the 2-item Patient Health Questionnaire Scale. Results Average age was 24 (±6.2) years old and 81% were of mixed race, 89% reported 'living below or just at needs being met.' There was an increased prevalence of unsafe infant sleeping at 6 months among mothers who reported depression at baseline compared to mothers who did not (PR=1.46, [95%CI:0.55-3.89]) and at 1-month (PR=1.18, [95%CI:0.46-3.02]). There was a 12% decreased prevalence of unsafe infant sleeping at 6 months among mothers who reported depression at 6 months compared to those who did not. Conclusions Although our associations did not reach significance, based on our findings at baseline and 1-month follow-up, intervention programs for moms living in low-income areas should focus on safe infant sleep practices and how to identify and overcome maternal and post-partum depression properly.

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#21

Abstract Title:	Kentucky Communities, Partnerships, And Preventable Hospitalizations
Student:	Kangai Miriti
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Rachel Hogg-Graham / rachel.hogg@uky.edu

Abstract: Introduction: Agency for Healthcare Research and Quality's Prevention Quality Indicators (PQIs) measure an individual's risk for experiencing a preventable hospitalization. Furthermore, PQIs highlight gaps in access to quality outpatient care. Community-based organizations (CBOs) can play an integral role in bridging that gap. This study examines cross-sector partnerships between Medicaid Managed Care Organizations (MCOs) and CBOs in Kentucky and the relationship between prevention quality indicators. Methods: The Program to Analyze, Record, and Track Networks to Enhance Relationships (PARTNER) Tool was used to gather granular data on the types of MCO-CBO partnerships that are happening in each community. A secondary analysis was used to compare MCO-CBO partnerships and 2018-2022 PQIs to examine the association between network density in six communities and PQIs across rural and urban Kentucky regions.   Results: The average risk of preventable hospitalizations was higher in rural communities than in urban communities. Average risk of preventable hospitalizations for chronic conditions was greatest in rural communities. Across all communities there was little variation in network density, however, network density is slightly higher in urban communities. There was a negative association between network density and risk of preventable hospitalizations in hospitalizations for acute and diabetic conditions in both urban and rural communities.   Conclusion: Results suggest strengthening cross-sector partnerships to address preventable hospitalizations could improve health outcomes across rural and urban communities in Kentucky.

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#22

Abstract Title:	Association Between Community Racial Composition And Population Health Activities
Student:	Christopher Otieno
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Rachel Hogg-Graham / rachel.hogg@uky.edu

Abstract: Background : Improving health outcomes requires interventions beyond traditional clinical care. A wholistic approach that focuses on population health and partnerships that integrate health and social services may be particularly important for reducing health inequities. Little is known about the relationship between community diversity and population health system structure. This study explores the association between community racial composition and the multisector delivery of population health activities. Methods: Retrospective cohort study using 2014, 2016, and 2018 data from the National Longitudinal Survey of Public Health Systems (NALSYS). NALSYS follows a cohort of over 500 US communities where local public health officials report on the availability of 20 core population health activities in their community and the range of organizations that contribute to that activity. We categorized communities into quartiles based on the portion of the population that is black. We used multivariable regression to examine the association between level of diversity and organization participation in population health networks. Generalized linear models with a longitudinal specification were used to control for temporal correlation. Data were also linked with additional sources to control for market and community characteristics.   Results: Our results suggest substantial variation in the relationship between diversity and cross-sector contributions to population health. We found that insurers and state and local government agencies had higher participation in population health activities in more diverse communities ($p<0.05$).   Conclusions: Our findings suggest that a subset of sectors may be focusing their population health efforts on diverse populations that have both complex health and social needs.

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#23

Abstract Title:	Community Pharmacy Surveillance Of Sars-Cov-2: A Pilot Collaborative Study
Student:	Lien Qasrawi
Degree level:	Master's
College:	College of Pharmacy
Mentor / e-mail:	Vincent Venditto / vincent.venditto@uky.edu

Abstract: During the COVID-19 pandemic, community pharmacies assumed a significant role in providing healthcare services in the community setting. In this pilot study, we utilized community pharmacies as a platform to recruit subjects for longitudinal collection of blood and nasal swabs. Serology was performed to detect IgG antibodies against SARS-CoV-2 proteins (N and RBD). Positive samples were assessed for endpoint titers against SARS CoV-2 proteins. Longitudinal sampling of subjects resulted in 88 blood samples with anti-N and anti-RBD IgG detected in 86% of samples. Notably, elevated titers remained high over the course of the study while those with low titers remained low. Two subjects had an increase in titers which corresponded with a positive SARS-CoV-2 test during the study. In conclusion, community pharmacies are ideal locations for local surveillance of infectious agents. This ongoing study continues to recruit participants to improve our understanding of community level infection and disease prevalence.

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#24

Abstract Title: Discriminating Cytokine Profiles In Diabetes And Periodontal Disease Using Pls-Da

Student: Shubh Saraswat

Degree level: Master's

College: College of Public Health

Mentor / e-mail: Amanda Ellis / amanda.ellis@uky.edu

Abstract: Introduction & Objective: We aim to use Partial Least Squares-Discrimination Analysis (PLS-DA) to analyze cytokine profiles in T cells in the context of diabetes and periodontal disease (PD). Methods: PLS-DA is a statistical method that facilitates the identification of intricate patterns within complex cytokine data sets. We applied PLS-DA to investigate combinatorial cytokine profiles that differentiate T cells of subjects with diabetes and PD. Results: The PLS-DA analysis distinguished CD3/CD28-generated cytokine profiles from PD and Obese subjects with a 73% accuracy indicating a significant shift supporting inflammation. PLS-DA also showed similar discrimination in LPS-elicited cytokine profiles from PD and Obese subjects with an accuracy of 85%. LPS-elicited cytokines discriminated cells from T2D subjects and PDT2D subjects with an accuracy of 73%. Comparison of PD Stage II-III with PD Stage IV of cells stimulated with CD3/CD28, PLS-DA showed higher amounts of cytokines were generated by cells from subjects with T2D in Stage II-III which was also seen in LPS stimulated cells with accuracies 85% and 84% respectively. Conclusion: PLS-DA analysis revealed differences in cytokine profiles among subjects with PD and without PD. This analytical method emphasized the differential impact of PD on cells within these groups, showing a moderate effect on cells from subjects with PD and no significant impact on cells from subjects without PD. These findings emphasize the importance of PD and diabetes status in cytokine profile alterations and impact of these variables on subjects.

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#25

Abstract Title:	Utilizing Reinforcement Learning Models To Understand Mechanisms Of Value-Based Decision-Making In Individuals With Cocaine Use Disorder
Student:	Preston Tolbert
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Michael Wesley / michael.wesley@uky.edu

Abstract: Background: Substantial effort has been made into understanding the behavioral mechanisms of decision making in individuals with cocaine use disorder (CUD). Values of different options are influenced by attributes not observable through traditional statistical techniques. Reinforcement learning (RL) models can be used to understand mechanisms of the decision-making process. We hypothesized that choice behavior and RL parameters would differ between individuals with and without CUD (n=17/group).   Methods: Demographically matched participants completed a task where two distinct options were presented which could reward ($0.25) with different probabilities that reversed unpredictably. T-tests were used to analyze choice data. AIC scores and RL recovery procedures were used to arbitrate candidate models. Simulations were used to interpret RL parameters. Mann-Whitney U tests were used to compare RL parameters. Kendall tau coefficients were used to compare behavioral measures with RL parameters. Results: Individuals with CUD made significantly fewer "correct" choices than those without CUD ($t32=-2.31$, $p=0.03$). An RL model with learning rate (a), inverse temperature (b), and perseveration (c) parameters best fit the data. Simulation indicated that lower a and higher b were most associated with increased "correct" choices. Individuals with CUD had significantly lower b than controls ($U=46$, $p<0.01$). b and "correct" choices were positively associated ($tau=0.61$, $p<0.01$).   Conclusion: This study found differences in decision making between individuals with and without CUD, identifying possible aspects of the decision-making process via RL analyses, explaining these results beyond traditional statistical approaches. This information could be used to better inform future research in this clinically relevant population.

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#26

Abstract Title:	Examining The Association Of Social Vulnerability With Acute Myocardial Infarction Hospitalizations And Mortality In Kentucky
Student:	Hanan Yusuf
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	Mary Lacy / mary.lacy@uky.edu

Abstract: Background: Cardiovascular disease (CVD) is the leading cause of mortality in the US, with social vulnerability significantly impacting its outcomes. Limited research regarding the contribution of social vulnerability to cardiovascular health in Kentucky exists. This study aims to examine the association between county-level social vulnerability and acute myocardial infarction (AMI) hospitalization and mortality rates in Kentucky from 2016-2020. Methods: Annual Kentucky county level rates of AMI hospitalizations and mortality among adults 35 years old were obtained from the Centers for Disease Prevention and Control (CDC) and presented as five-year age-adjusted rates. County-level social vulnerability index (SVI) data were also obtained from the CDC. Percentile ranking scores for SVI overall and by subcategory themes (i.e., socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation) were presented as quartiles, with Q1 representing the least socially vulnerable counties and Q4 the most. Linear regression models were used to examine the association of SVI with study outcomes. Results: Compared to the least vulnerable counties (Q1), those in the most vulnerable (Q4) had higher age-adjusted AMI hospitalization rates (Q1=389.17 v Q4=519.33; p=0.0002), and higher age-adjusted AMI-related mortality rates (Q1=114.44 v Q4=168.76; p=0.02). In linear regression models simultaneously adjusting for the four subcategory themes, socioeconomic status was associated with increased AMI hospitalization rates (p=0.01), while racial and ethnic minority status was associated with lower AMI hospitalization and AMI mortality rates (p=<.0001, p=0.04, respectively). Conclusion: Findings suggest that interventions addressing overall social vulnerability and socioeconomic disparities may enhance CVD health statewide.

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#27

Abstract Title:	Mail-Based Or Home Delivery Syringe Services: Preferences Among People Who Inject Drugs In Appalachian Kentucky
Student:	Su Su Zin
Degree level:	Master's
College:	College of Public Health
Mentor / e-mail:	April Young / april.young@uky.edu

Abstract: Introduction: Syringe Services Programs (SSPs) help people who inject drugs (PWID) access sterile needles, syringes and other injection equipment and provide other health services such as naloxone and hepatitis C and HIV testing. However, some PWID encounter difficulties in accessing SSPs in-person due to barriers such as limited access to transportation and fear of stigma. A mail-order or home-delivery syringe program may help to overcome these challenges. This study explores interest in a mail-order/home-delivery program among PWID in Eastern Kentucky and compares the characteristics of those who want the program to those who do not. Methods: We conducted a cross-sectional secondary data analysis of people who reported injecting drugs to get high within past 30 days (n= 246) at the baseline survey of the Kentucky Communities and Researchers Engaging to Halt the Opioid Epidemic (CARE2HOPE) study. Participants were recruited from Eastern Kentucky from 2018 to 2020. The outcome variable was "Do you prefer the SSP operated by delivery to the address where you stay?". Findings: More than half of the participants (52.9%) reported being willing to use a mail-order/home-delivery syringe program if one existed in their community. Although age was not significantly associated with desire for mail-order syringe services, it is notable that most individuals in the age ranges of 30-39 and 50 and older wanted a program (64.6% and 68.8%, respectively) whereas fewer than 50% who were in the age ranges of 20-29 and 40-49 wanted a program (44.7% and 39.7%, respectively).   Conclusion: Data analysis is ongoing.

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#28

Abstract Title:	Physicians In Community Networks: Contributions To The Delivery Of Public Health Activities
Student:	Haritomane Brillakis
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Rachel Hogg-Graham / rachel.hogg@uky.edu

Abstract: Background   Collaborative partnerships between healthcare and non-healthcare entities are crucial for addressing health and social inequities and improving patient outcomes. This study examines the impact of community-level factors on changes in physician participation within local public health systems over time.   Methods   We conducted a retrospective cohort study using National Survey of Public Health Systems (NALSYS) data. NALSYS collects information on 20 core population health activities aligning with the 3 core functions of public health: assessment, policy development, and assurance and evaluation. Data from 2014, 2016, and 2018 were analyzed to examine trends in physician contributions. Multivariable regression analysis assessed the impact of community-level factors on physician participation. Results Physician participation in public health activities remained consistent from 2014 to 2018 (16%). Assessment activities increased from 21.3% to 24.3%, while assurance and evaluation activities displayed variability, declining from 7.2% in 2014 to 6.9% in 2016, with a slight rebound to 7.0% in 2018. Participation in policy and planning activities remained stable. Rural communities had lower physician participation, with negative associations between uninsured rates and physician engagement in all activity subgroups ($p<0.05$). Poverty rates and physician contributions varied between rural and urban areas, with a strong positive association observed in rural areas for physician involvement in policy and planning activities ($p<0.05$). Urban communities showed no statistically significant differences in overall physician contributions.   Conclusion   Significant differences in physician participation exist between urban and rural communities. Strengthening physician involvement in public health activities may enhance access and quality of care.

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#29

Abstract Title:	What We Missed: Quantifying Undiagnosed Cancer Cases In The Us During Covid-19, March-December 2020
Student:	Todd Burus
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Krystle Kuhs / krystle.kuhs@uky.edu

Abstract: Purpose: The COVID-19 pandemic disrupted cancer screening and detection in the U.S. A nationwide analysis of the extent of this disruption using cancer registry data has not been conducted. Methods: We used time-series forecasting methods to calculate expected cancer incidence rates for March-December 2020 from pre-pandemic trends (January 2018-February 2020). We measured the relative difference between observed and expected cancer incidence rates and numbers of potentially missed cases. We analyzed the impact on the total U.S. population and on different population subgroups and stages of diagnosis. Results: Nationwide, observed rates of all sites cancer incidence were 28.6% (95% prediction interval [PI], 25.4%-31.7%) lower than expected during March-May 2020, 6.3% (95% PI, 3.8%-8.8%) lower in June-December 2020, and overall 13.0% (95% PI, 11.2%-14.9%) lower during the first 10 months of the pandemic, resulting in potentially 134,395 (95% PI, 112,544-156,680) undiagnosed cancer cases. Prostate cancer accounted for the largest number of potentially missed cases (22,950), followed by female breast cancer (16,870) and lung cancer (16,333). Screenable cancers saw a total rate reduction of 13.9% (95% PI, 12.2%-15.6%) versus expected. Rates of female breast cancer recovered to previous trends following the first three months of the pandemic, but levels remained suppressed for colorectal, cervical, and lung cancers. Conclusions: A substantial disruption to cancer diagnoses occurred in the U.S. during the first 10 months of the COVID-19 pandemic. Our findings on the overall and differential impacts inform where the U.S. healthcare system should be looking to make up ground in cancer screening and detection.

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Abstract Title:	Investigation Of Pregnancy-Associated Risks For Emergency Department And Hospitalization Encounters Related To Substance Use Disorder, Mental Health Conditions, And Intimate Partner Violence
Student:	Monica Clouse
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Dana Quesinberry / dana.quesinberry@uky.edu

Abstract: Background/Significance: Kentucky's maternal mortality rate is the 6th highest in the United States. The Kentucky Maternal Mortality Review Committee (MMRC) found that 91% of maternal deaths from 2018 were determined to be preventable, and substance use disorder (SUD) was found to be a contributing factor in 52% of all Kentucky's maternal deaths. Mental health conditions (MHCs) were a contributing factor in 44% of Kentucky's maternal deaths in 2018. Together between 80-90% of Kentucky's maternal deaths are due to violence, SUD and/or mental health conditions. In Kentucky, the prevalence and severity in which MHCs, SUD, and intimate partner violence (IPV) exists among pregnant women is not well documented or understood. This study aims to investigate the severity of mental health conditions, SUD, and IPV among Kentucky female residents between the ages of 12-51 by examining emergency department (ED) visits and hospital admissions by pregnancy status. Methods: Descriptive statistical analyses will include chi-square and t-test to compare distributions of categorical and continuous variables by pregnancy status and any combination of the outcome variables (i.e., MHCs, SUD, IPV, MHCs & IPV, SUD & IPV, MHCs & SUD, and MHCs, SUD, & IPV). Multinomial logistic regression will be used to understand if pregnancy (independent variable) increases the risk of ED or hospitalization encounters associated with any of the seven categories of the outcome variable. Results: In progress. Conclusions: The authors hypothesize that being pregnant will increase the odds of ED and hospitalization encounters related to all outcome variable categories.

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Abstract Title:	Snoring And Systemic Inflammation Are Associated With Greater Likelihood Of Depression Diagnosis
Student:	Drew Farr
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Min-Woong Sohn / min-woong.sohn@uky.edu

Abstract: Background: Sleep disturbance has been linked to both inflammation and depression, but the underlying pathways remain unclear. We tested two hypotheses: fewer hours of self-reported total sleep time (TST) and sleep symptoms-including snoring, orthopnea, apnea, and difficulty sleeping-will be associated with higher odds of having elevated c-reactive protein; and elevated CRP will be associated with higher odds of having a diagnosis of depression.   Methods: The study utilized Wave V data from The National Longitudinal Study of Adolescent to Adult Health, including participants with a valid measurement of hs-CRP (n = 1581), considered elevated according to CDC/AHA relative risk categories (>3 mg/L). Multiple logistic regression was used to predict elevated hs-CRP and depression as functions of self-reported TST, the square of TST, snoring, orthopnea, apnea, and difficulty sleeping. Covariates in each of the models were those considered to be essential for a study of sleep, depression, and serum c-reactive protein. Data preparation and analysis were completed using Stata 18.0.   Results: Snoring was associated with higher odds of having elevated hs-CRP (OR = 1.37, 95% CI 1.12, 1.69). Elevated hs-CRP was associated with higher odds of having a diagnosis of depression (OR = 1.55, 95% CI 1.02, 2.35).   Conclusion: Snoring is a key predictor of depression and perhaps of inflammatory depression, a meaningful depression subtype with distinct treatment demands for optimal management. Treatments for inflammatory depression will benefit from understanding its underlying risk factors, either for clinical trials of future psychiatric medications or by the application of existing anti-inflammatory drugs/biologics.

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Abstract Title:	Intersection Of Age And Rurality On Early-Onset Colorectal Cancer (Eocrc)
Student:	Caitlyn Grunert
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Min-Woong Sohn / min-woong.sohn@uky.edu

Abstract: Purpose: The objective of this study is to elucidate the relationships between age at diagnoses with early-onset colorectal cancer outcomes, while examining the operating role of rurality.   Methods: I conducted a retrospective analysis utilizing data from the 2006- 2020 Surveillance, Epidemiology, and End Results Program. Kaplan-Meier method   and Cox proportional hazard regression were performed.   Results: It was determined that patients aged 20-29 years old at age of diagnosis had a mean survival of 55 months compared to their 30-39- and 40-49-year-old counterparts who were observed to have survival of 57 and 61 survival months, respectively. A preliminary analysis also demonstrated that Hispanic (all races) and Non-Hispanic Whites (NH-White) had higher rates of early-onset Colorectal cancer (EOCRC) diagnoses for those aged 20-29 years old. Moreover, those who were single (never married) aged 20-29 years old at diagnoses of EOCRC had higher rates than their married/domestic partner and divorced/separated/widowed counterparts. Further analysis is required to determine if there are statistically significant results.   Conclusions: Those aged 20-29 years old are considered a higher risk group for EOCRC compared to their 30-39- and 40-49-year-old counterparts. It can also be interpreted that those who are Hispanic or NH-white are at a higher risk of EOCRC than patients belonging to another racial/ethnic group. However, further analysis of the 2006-2020 Surveillance, Epidemiology, and End Results Program data is required to interpret further analysis.   KEYWORDS colorectal cancer survival, early-onset colorectal cancer (EOCRC), colorectal cancer screening, United States

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Abstract Title:	Economic Consequences Of Long Covid On Working-Age Americans (Work In Progress)
Student:	Nurlan Kussainov
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Ann Coker / ann.coker@uky.edu

Abstract: Abstract: This research explores the economic impact of Long Covid among working-age Americans, utilizing data from the Women, Health, and You (WHY) project. Approximately 8% of this demographic, equating to 16.3 million individuals, are grappling with Long Covid, facing significant challenges in employment, income stability, and medical expenses. The study hypothesizes that Long Covid leads to decreased income, disrupted work plans, and increased medical expenses, contributing to financial instability. Utilizing WHY cohort data, the research employs descriptive and inferential statistics to assess the financial outcomes of Long Covid. The findings may indicate a pressing need for targeted interventions to support those affected, especially economically vulnerable families. Background: The persistence of Long Covid presents significant health and economic challenges. Research indicates a considerable portion of working-age Americans suffering from Long Covid, impacting their employment and financial well-being. This study leverages WHY data to examine these economic consequences. Methods: The study uses data from the WHY cohort, including COVID-19 prevention surveys conducted between February 2022 and June 2023. It focuses on assessing the impact of Long Covid on financial well-being, with variables including employment status, income changes, and reduced work hours. Research question: The impact of Long Covid on financial well-being among the Women, Health, and You (WHY) cohort. Conclusions: The economic repercussions of Long Covid on working-age Americans are substantial, necessitating targeted policy interventions and support mechanisms. This study may underscore the importance of addressing the economic challenges posed by Long Covid to mitigate its long-term impacts on individuals and households.

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Abstract Title:	Phase I Clinical Trial Designs In Oncology: A Systematic Literature Review From 2020 To 2022
Student:	Ning Li
Degree level:	Doctoral
College:	College of Public Health
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Abstract: Background: Phase I clinical trials aim to find the highest dose of a novel drug that may be administrated safely without having serious adverse effects. Model-based designs have recently become popular in dose-finding procedure as a desirable substitute for algorithm-based designs. Our objective is to provide an overview of phase I clinical trial in oncology. Methods: A retrospective analysis on phase I clinical trials in oncology was performed by using PubMed database between 1 January 2020, and 31 December 2022. We extracted all papers with inclusion of phase I clinical trials in oncology and then kept only those in which dose-escalation or/ and dose-expansion were conducted. We also compared the study parameters, design parameters, and patient parameters between industry sponsored study and academia sponsored study.   Result: Among the 1450 papers retrieved, 256 trials described phase I clinical trials in oncology. Overall, 71.1% trials were done with single study cohort, half of trials collected a group of 11-30 study volunteers, 55.1% were sponsored by industry, 53.5 of trials were performed with single agents, and 99.2% of trials had less than 10 patients who experienced DLTs.   The traditional 3+3 (73.85%) was still the most prevailing method for phase I cancer dose escalation clinical trials. More than 50% of the trails did not reach MTDs. Industry sponsored study enrolled more patients in dose escalation trials with benefits of continental cooperation. Compared to previous findings, the usage of model-based design increased to about 10%, and percentage of traditional 3+3 design decreased to 74%.   Conclusions: Phase I traditional 3+3 designs perform well, but there is still room for development in novel model-based dose-escalation designs in clinical practice seem worth.

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Abstract Title:	Examination Of The Impact Of The Covid-19 Pandemic On Hospitalizations Of Endocarditis, Myocarditis, And Pericarditis - An Interrupted Time Series Study From The Nis 2018-2020
Student:	Meera Marji
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Steven Browning / srbrown@email.uky.edu

Abstract: Background: The COVID-19 pandemic led to an overall decline in hospitalizations. However, the impact on cardiovascular conditions like endocarditis, myocarditis, and pericarditis remains underexplored despite their potential for severe outcomes. Methods: Using ICD-10-CM codes from the National Inpatient Sample (NIS) data, we identified hospitalizations for these conditions among adults (18 years) from 2018 to 2020. An interrupted time series (ITS) analysis compared hospitalization numbers before (January 2018February 2020) and during the pandemic (March 2020-December 2020). All reported numbers are weighted. Results: Among 76,762,573 all-cause hospitalizations occurring nationally from January 2018 to February 2020, 193,930 were for endocarditis, 21,685 for myocarditis, and 49,650 for pericarditis. From March 2020 to December 2020, there were 26,422,315 hospitalizations, 72,030 for endocarditis, 13,480 for myocarditis, and 17,110 for pericarditis. Hospital length of stay significantly increased for all three conditions during the pandemic compared to the pre-pandemic: endocarditis (13.4 vs. 12.8 days), myocarditis (8.7 vs. 6 days), and pericarditis (6.7 vs. 6.1 days), all with $p<0.01$. In-hospital mortality increased during the pandemic for endocarditis (11.1% vs. 9.1%), myocarditis (16.8% vs. 3.9%), and pericarditis (4% vs. 2.8%), all with $p<0.01$. ITS analysis showed an immediate decrease in monthly admissions for endocarditis and pericarditis in March 2020. Myocarditis hospitalizations doubled from 880 in February 2020 to 1605 in March. Conclusions: We observed an immediate increase in monthly hospitalizations for myocarditis and an immediate decrease in hospitalizations for endocarditis and pericarditis following the COVID-19 pandemic. Length of stay and in-hospital mortality increased during the pandemic for all three conditions.

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#36

Abstract Title:	The Performance Of Marginal Modeling Methods When The Outcome Of Interest Is A Rare Cluster-Level Count And People Can Have The Event Of Interest At Most Once
Student:	Shawn Nigam
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Philip Westgate / philip.westgate@uky.edu

Abstract: Background: Rare cluster-level count outcomes in both cluster-randomized trials (CRTs) and observational studies are common in epidemiology. We will be comparing the performance of regression approaches to modeling these outcomes in terms of power, validity of inference, and practicality, with a specific focus on opioid overdose fatalities in Kentucky as the event of interest. Methods: To compare the performance of three regression approaches - modified overdispersed binomial, modified negative binomial, and modified Poisson regression - we will be conducting simulation studies based on the HEALing Communities Study (HCS) and a cross-sectional observational study of opioid overdose fatalities in Kentucky. Test size and power will be compared across a variety of settings to ensure valid inference and determine which method is the most powerful.   Results: In the simulation studies, we found that all three regression approaches resulted in valid inference. In terms of power, modified negative binomial regression and modified overdispersed binomial regression outperformed modified Poisson regression when the working overdispersion structure involved a common intra-cluster correlation (ICC) or common overdispersion parameter k. However, modified Poisson regression was more powerful than the other two methods when the working overdispersion structure was common among all clusters.   Conclusion: In general, modified overdispersed binomial regression and modified negative binomial regression performed similarly across most settings, so for modeling rare cluster-level count outcomes, they can be used interchangeably. Future research on the performance of these methods when dealing with non-rare events or events that can occur more than once per subject is necessary.

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Abstract Title:	The Time-Varying Protective Effects Of Medicaid Expansion On Health Insurance Coverage Associated With Covid-Related Job Losses
Student:	Tolulope Oladele
Degree level:	Doctoral
College:	College of Public Health
Mentor / e-mail:	Joseph Benitez / joseph.benitez@uky.edu

Abstract: Background The Medicaid program served as a safety net which preserved health insurance coverage for Americans who suffered from COVID19 related job losses. However, it is not known whether these protective effects were consistent across the three-year pandemic period. Objective Our study explored the variation with time, if any, of the impact of Medicaid Expansion on health insurance coverage among those with COVID19 related job loss. Methods Using pooled cross-sectional data from the Household Pulse Survey 2020-2023 and the triple difference in difference approach, we explored the variation with time in the Medicaid insurance coverage and uninsured status among the employed and those unemployed due to COVID-related reasons in Medicaid expansion states compared to such differences in Medicaid non-expansion states. Results Six percent of our sample were unemployed due to COVID-related reasons. Compared to those employed, uninsurance rates among those with COVID-related job losses were 9.9 percentage points (PPT) lower and Medicaid coverage higher by 6.0 PPT($p<0.001$) in Medicaid expansion states. These effects were moderated over time. The positive relationships between Medicaid expansion and Medicaid coverage among those with COVID-related job losses were strengthened by 3.7 PPT ($P<0.001$) and 4.2 PPT ($P<0.001$) in 2021 and 2022, respectively but reduced abruptly by 2.5 PPT ($P<0.001$) in 2023. A similar relationship was found between Medicaid expansion and uninsurance rate. Conclusion Medicaid expansion played a protective role against the sudden shocks of COVID-19 unemployment on health insurance coverage and Medicaid enrollment. This protection disappeared in 2023, possibly because of the vanishing pandemic, gradual economic recovery, and unwinding Medicaid coverage.

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Abstract Title:	Marital Status And Physical Activity Among Patients With Diabetes
Student:	Aiemere Oikeh
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Abstract: Background   Patients with diabetes are recommended to engage in physical activity as one of the diabetes self-management strategies to control their hemoglobin A1c (HbA1c) levels, blood pressure, and low-density lipoprotein cholesterol. The World Health Organization and the American Diabetes Association recommend that adults with diabetes engage in 2.5 - 5 hours of moderate-intensity physical activity or 1.25 - 2.5 hours of vigorous physical activity weekly.   Objective   To examine if marital status is associated with physical activity among individuals with diabetes.   Methods The 2019, 2020, and 2021 data from the Behavioral Risk Factor Surveillance System (BRFSS) were used for the study. All analyses were weighted, and appropriate subpopulation methods were applied. A bivariate analysis was conducted to estimate the descriptives of the baseline characteristics, while a logistic regression analysis was used to estimate odds ratios. A propensity score analysis was used to control for confounding. All analyses were conducted using SAS Version 9.4. Results The sample consisted of 157,649 respondents with diabetes, of whom 58.5% engaged in physical activity or exercise during the past 30 days, 57.4% were Non-Hispanic White, 56.4% were married/cohabiting, 10% resided in rural areas, and the majority had health insurance coverage (62.3%). People who were married were 18% more likely to engage in physical activity (OR= 1.18; 95% CI=1.12, 1.15; p < 0.001) compared to unmarried people.   Conclusion Physical activity among patients who have diabetes is significantly higher among patients who are married. Extra care may be needed to improve physical activity for unmarried patients.

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Abstract Title:	Understanding How Disparities In Healthcare Access And Quality Are Associated With Motor Vehicle Crashes In The United States: A Scoping Review
Student:	Lauren Roach
Degree level:	Doctoral
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Abstract:

Background: Motor vehicle crashes are a leading cause of unintentional injury and fatality in the United States (US). Prior research has heavily focused on human, vehicle, roadway environment, and equipment predictors of crashes. Less understood is how social determinants of health (SDoH) may shape crash risk and outcomes. Research on healthcare access and quality, a SDoH domain, has shown that better healthcare access and quality is associated with lower crash mortality. Given the varying nature of healthcare across the US, a comprehensive understanding of how healthcare access and quality is assessed in the context of crash risk and outcomes is needed. Objective: To conduct a systematic scoping review of published and gray literature assessing the association between healthcare access and quality and crashes in the US.   Methods: A systematic search of published and gray literature was conducted across public health and engineering databases. Healthcare access and quality was defined as access and use of healthcare services, access and use of primary care services, health literacy, health insurance status, or medical debt. Crash-related outcomes included crash incidence, behavioral human crash factors, or crash injury severity. PRISMA guidelines were followed using Covidence software.   Results: Full-text screening has been completed. Thematic results from the full-text analysis will be presented.   Conclusions: This review will help define the state of the field regarding how disparities in healthcare access and quality are being examined in relation to crash risk factors and outcomes in the US. Findings will guide recommendations on needed topics of research and policy.

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#40

Abstract Title:	Population-Based Analysis Of Cannabis Use Among Kentucky Adults, 2020-2021
Student:	Sydney Shafer
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Abstract:

Purpose We conducted this study to assess cannabis use rates in the state of Kentucky relative to socioeconomic, demographic, and geographic factors, as well as reasons for use and modes of use.   Methods We pooled Kentucky Behavioral Risk Factor Surveillance System (BRFSS) data for 2020-2021, reweighted responses, and used these weights for all analyses. We identified those who reported current cannabis use (at least once in the past 30 days), and daily use (all of the past 30 days). We calculated prevalence of current and daily use for Appalachian, Delta, and Central geographic regions of Kentucky. We tabulated descriptive statistics and used multivariable logistic regression to identify characteristics of individuals who used cannabis. Results The prevalence of cannabis use was lower in Kentucky (10%) than nationally (about 18%). Of those who used cannabis, 41% used it daily. Those who were male, ages 18-34, never married, black, less than HS education, lower household income, and lived in the Central region were more likely to use cannabis. Among those who used cannabis, mode of use varied somewhat among age groups, education levels, income groups, and marital status, but smoking was most common-78% overall. About 33% used cannabis for recreation alone, 24% for medical reasons alone, and 43% for both reasons.   Conclusion Despite the illegal status of cannabis in Kentucky, its use is common across population sub-groups. A large proportion of Kentuckians using cannabis do so daily, and most for a medical purpose. Smoking, however, remains the most common mode of use.

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Abstract Title:	The Role Of Adverse And Positive Childhood Experiences In A Wide Range Of Youth Health Items.
Student:	Hyeeun Shin
Degree level:	Doctoral
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Abstract: Adverse childhood experiences (ACEs) refer to exposure to potentially traumatic life events in childhood. Studies have consistently shown that ACEs contribute to poorer outcomes along the dimensions of physical/mental health, risky behaviors, and life functioning, exerting both immediate effects on the youth and lasting effects into adulthood. As emphasized by the CDC, the opposite, Positive Childhood Experiences (PCEs) represented by a secure and nurturing growth environment should be explored as a protective counterbalance to achieve the well-being of youth despite the presence of ACEs. This study aims to delve deeper into the circumstance where the protective exposures to PCE may be enough to counter ACEs as risk factors across a range of health items in mental/physical, behavioral, and functioning domains. We hypothesize that the effect of PCEs will eventually be overwhelmed by a high number of ACEs but with distinct patterns and thresholds for different health items.   Methods: the study data is a randomized cross-section of 21,964 foster care youth aged between 5 and 23, routinely administered with Child Adolescents Needs and Strengths (CANS) assessment by a large Midwest state between 2011 and 2023. The effect of PCEs and ACEs is estimated by linear or logistic regression depending on the type of health items, which also gives the boundary where enough PCEs may cancel a given number of ACEs or vice versa. Preliminary results: (1) for most items, the required number of PCEs to balance one ACE varies; (2) for most items, the effect of PCEs also affects the effect of ACEs and vice versa, showing either enhanced or diminished gain of each additional PCE.

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Abstract Title:	Are We Hearing The Whole Story? A Literature Review Of Longitudinal Studies Examining Three Causes Of Sensorineural Hearing Loss
Student:	Hannah Speaks
Degree level:	Doctoral
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Abstract: Hearing loss is commonly acknowledged as a byproduct of aging and noise exposure. While it is the third most prevalent chronic condition in the United States, it is also considered to be the most preventable of the top three conditions. However, as research interest grows between the association of hearing loss and other conditions, notably cognitive decline and dementia, there has been increased scrutiny of the causes of hearing loss, and therefore its prevention. Causal methods for hearing loss have proven to be less clear. Therefore, a literature review was conducted to examine study methods for studying hearing loss longitudinally, to better ascertain the relationship between hearing and its most identified causal factors: age, noise, and ototoxicity. Peer-reviewed journal articles featuring longitudinal study designs were aggregated using the following combinations of key words through PubMed, Google Scholar, and Web of Science: "hearing loss" "hearing", "presbycusis", "ototoxin", "age-induced hearing loss" "noise-induced hearing loss", "sensorineural hearing loss", "hearing impairment", "occupational hearing loss" "longitudinal", "follow-up" "cohort". This search returned over 1200 papers, with only 143 meeting criteria for inclusion after title and abstract review. Included studies looked at hearing as a longitudinal outcome of age, noise, or ototoxic exposure in adults. The review has highlighted issues with precise measurement of both exposures and outcome, and thus far has illustrated a sparsity of longitudinal studies on sensorineural hearing loss, weakening causal relationships between aging, noise, and ototoxic exposure on hearing loss.

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Abstract Title:	Combining Cans Data And Machine Learning To Predict Autism Spectrum Disorder, Testing Of A Neural Network To Predict Known Cases Of Asd (Autism Spectrum Disorder).
Student:	Wiley Turner
Degree level:	Doctoral
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Abstract: Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impairments in communication, social interaction, and restricted behaviors and interests. As awareness grew, this led to an increase in screening and testing, thus increasing prevalence. While this improvement is welcome, there is evidence that those in minority groups and of lower socioeconomic status may lack adequate access to screening and cases may go undetected. This project leverages CANS data to train a predictive model to predict the probability of ASD. CANS data is a reliable and validated assessment widely used across many jurisdictions in child welfare and behavioral health settings. The CANS assessment is divided into domains and further into individual items that capture many aspects of behavioral health, many of the items correlate to the typical symptoms seen in those with ASD. The training data was from a large western jurisdiction (N = 74738), a neighboring jurisdiction was used to test the model (N = 138124). Identification of ASD cases were through review of ICD9 and ICD10 codes attached to the assessment data. A bilayer neural network was trained on an even split of cases and controls, 9,109 controls and 9109 cases randomly sampled. The model was then applied to test data, using person level maximum predicted probabilities we obtained a sensitivity and specificity of 0.876 and 0.703, respectively. At the assessment level a sensitivity and specificity of 0.756 and 0.783 was seen. Combining machine learning and the CANS assessments may provide a way to identify and screen children who may have ASD but remain undiagnosed.

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Abstract Title:	Clustering Analysis Identifying Skeletal Muscle Features Associated With Walking Performance In Peripheral Artery Disease
Student:	Rena Wang
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Abstract: Background: Peripheral artery disease (PAD) affects millions of people worldwide and is associated with significant morbidity and mortality. There is lack of research of using muscle features to predict PAD. Thus, we aim at identifying features in PAD gastrocnemius muscle biopsies that are associated with walking performance. Methods: We used the muscle samples stored in the Northwestern University biorepository, in conjunction with the extensive clinical and functional data included in a REDcap database. Features in 58 PAD muscle biopsies were quantified. K-means and Hierarchical clustering were conducted on 6-minute and 4-meter walking tests. Strictly standardized mean difference (SSMD) and t-test were employed for further group comparison. The study is in progress and we will reach over 400 samples.   Results: Clustering identified two clusters of patients associated with walking performance. Cluster I patients had better walking performance than Cluster 2. Our further analysis on group comparison revealed the following association between the muscle features and the two clusters. Cluster 1 had a higher proportion of fibers devoid of intermyofibrillar mitochondria (IMFM-), including both type 1 and type 2 fibers. The proportion of type 2 fibers with IMFM- areas containing the autophagy marker LC3 (F2_LC3) was higher in cluster I than in cluster II ($|SSMD|>0.25$). The difference in type 2 fibers with IMFM- areas containing LC3 was statistically significant ($p<0.05$) between these two clusters. Conclusions: We identified two distinct groups on walking performance and one significantly associated feature in muscle biopsies. This finding should help to discover a new approach to diagnosing PAD.

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Abstract Title:	Advancing Salivary Biomarker Development With Machine Learning
Student:	Qi Yan
Degree level:	Doctoral
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Abstract: Introduction: Periodontitis is a chronic inflammatory disease caused by oral microorganisms. Currently, there are no good biomarker(s) for early periodontitis diagnosis and the standard diagnostic assessment rely on subjective methods such as clinical and radiographic examinations. Objective: To determine the best combination of biomarkers that can be used to create a diagnostic panel and eventually a point-of-care device for detecting periodontal disease.   Methods: In a prospective multicenter cohort study, whole unstimulated saliva was collected from dental patients at 3 research sites. Saliva samples were assayed with 15 known salivary biomarkers that reflect key biological pathways of periodontitis. The collected data was analyzed using random forest, and the sensitivity and specificity were calculated to determine the best biomarker combination. Results: A total of 84 dental patients [mean age 59.75 ± 9.22 yrs old, 40% male] were included in this analysis. A combination of 1 protein (IL1b) and 2 bacteria (Otu146 and Otu156) was determined to be best as it yielded a specificity of 0.87 and a sensitivity of 0.95 in its decision tree. Smaller combinations sizes such as 1 protein and 1 bacterium had worse sensitivity and specificity while larger combination sizes had similar values. Conclusion: The data suggests the combination of 1 protein (IL1b) and 2 bacteria (Otu146 and Otu156) is the best at determining periodontitis. While larger combination sizes had similar values, the cost of testing for more biomarkers was taken into account when concluding the best combination.