Lauren Korshak: Hi everyone I want to thank you all for joining today’s session. My name is Lauren Korshak. I lead translation and awareness activities for the office of health equity. The office of health equity was created in 2012 to ensure that the VHA provides appropriate individualized healthcare to each veteran in a way that eliminates disparative health outcomes and assures health equity.  
  
We have five goals around leadership, awareness, improving health outcomes, increasing workforce diversity, and supporting data research and evaluation to achieve health equity. The office of health equity focuses efforts on many different groups of veterans who experience greater obstacles to health related to race and ethnicity, gender, age, geographic location, socioeconomic status, sexual orientation, mental health, military era, cognitive sensory, physical disability, and others.  
  
Going to encourage you all to go and visit our website. It’s ca.gov/healthequity. We have a lot of really good resources on this site. We now have a link to our new podcast series there. And I would also encourage you if you have not yet to sign up for our \_\_\_\_\_ [0:01:25], where we will send you our newsletter with all of the things that are going on in our office and also across VA related to equity.  
  
Today’s cyber seminar is identifying differences in COVID-19 infection, mortality, vaccine receipt in veterans. I want to go ahead and introduce our speakers. Michelle Wong is a health science specialist at the center for the \_\_\_\_\_ [0:02:00] of Healthcare Innovation, Implementation and Policy. Also does research and development at the VA Greater Los Angeles Healthcare System.   
  
Jaqueline Ferguson is an HSR&D research health science specialist. And Tonya Haderline is an investigator at the VA HSR&D Center for the study of healthcare innovation implementation and policy. So I now want to go ahead and introduce and let Michelle Wong go ahead and begin our presentation if that’s okay.

Michelle Wong: Thank you so much for that introduction Lauren. Today I’ll be sharing our research on racial ethnic disparities in COVID-19 infection and mortality over time. We published this study last May and here’s the citation. To start off with some background, there’s been a lot of research on racial ethnic disparities in COVID-19 infection and mortality. Much of this research has described disparities among non-Hispanic black and Hispanic patients relative to non-Hispanic white patients.  
  
Meanwhile, there’s been limited research on other racial ethnic groups. But there’s some evidence that native Hawaiian, other Pacific Islander, and American Indian Alaska native patients also experience disparities in COVID-19 outcomes. Just as an aside for the remainder of the presentation, I’ll refer to non-Hispanic black and non-Hispanic white as black and white.  
  
So we’re currently entering the third year of the pandemic. I’m sure that at the start of the pandemic none of us thought we’d still be here in 2022. At least I certainly didn’t. And that said, the pandemic has changed so much over these past two years. For example I think many of us can appreciate how different this holiday has been compared to last year. Some changes that I want to highlight include greater awareness of racial ethnic disparities as well as efforts to address these disparities. We also have better COVID-19 treatments. And as our understanding of the pandemic changes, so has risk mitigation policies and behaviors such as social distancing, masking, working from home. And these policies continue to change.  
  
We also have vaccines now along with new variants. Something I’m sure we’re all very all aware of now that we’re in the era of omicron. Yet most of the studies that describe disparities don’t consider how these disparities have changed as the pandemic evolves. This is important to consider because some of these changes might reduce or even exacerbate disparities.   
  
For example, we have new and effective COVID-19 treatments but these are often in limited supply so access is not uniform throughout the population. To address this gap, our study examined racial ethnic differences in COVID-19 infection and mortality over three time periods. From March to November 2020, and a national and racial ethnically diverse sample of veterans. We hypothesized that disparities and infection and mortality would change over time. And more specifically that they would decrease over time given greater awareness of these disparities.   
  
Our data came from VHAs national database of veteran evaluated for potential COVID-19 infection at any VHA facility. Our sample included veterans who received a PCR COVID test from March 1st of 2020 through November 25, excluding veteran VHA employees. So now onto our key variables. We had two dependent variables. First, testing positive for COVID-19. And second, mortality among those who tested positive. Our independent variable was veteran race ethnicity. We considered the following racial ethnic groups: American Indian Alaskan Native, Asian, Black, Hispanic, Native Hawaiian other Pacific Islander, and the reference group of white. We included an effect modifier for time period. Specifically we considered three time periods: Spring, from March to May 2020. Summer, from June to August 2020. And fall, from September to November 2020.  
  
We also controlled for age, gender and having a CDC risk factor for serious COVID-19. I want to talk more about why we chose these time periods. First off they generally correspond to peaks in COVID-19 case positivity. In the spring of 2020 there was a lot of initial uncertainty about the pandemic. I’m sure we can all vaguely remember what was going on at the start of the pandemic. And at this time, most of the country went into lockdown or was under shelter in place orders.  
  
There was also a lack of knowledge about racial ethnic disparities. In fact, some news outlets even went as far as to speculate whether COVID-19 could be the quote unquote great equalizer. In the summer of 2020, things started to open up again. People started traveling again. At the same time there was growing evidence of racial ethnic disparities in COVID-19 especially among black and Hispanic populations.  
  
And in the fall, there was a mix of openings and closing depending on the state and the county. For example, some states completely lifted all restrictions whereas other states started to reimplement some of the restrictions from the beginning of the pandemic.  
  
Colder weather also forced many people to congregate inside. This time period also captures the beginning of the holiday spike when people started traveling for the holidays. For statistical analysis, we calculated summary descriptive statistics. We then fit adjusted logistic regression models that included an interaction term between race, ethnicity, and time period. To aid in the interpretation of the regression coefficients. We calculated adjusted predicted probabilities from the regression output.  
  
To determine racial ethnic differences within each time period, we calculated linear combinations of odds ratios comparing each racial ethnic minoritized group to the white reference group for each time period. And we considered. And we considered P values less than .05 as being statistically significant.   
  
Now onto the results. This table here shows the racial ethnic composition for the full sample of everyone tested and the sub sample of those who tested positive. We can see that both samples are racial ethnically diverse. Almost 40% of those who were tested were from a racial ethnic minoritized group as were approximately 45% of those who tested positive.   
  
This line graph shows adjusted predicted probabilities of COVID-19 infection for each racial ethnic group by time period. In the spring of 2020, test positivity was higher among black veterans compared to white veterans. In the summer of 2020, test positivity was higher among Hispanic, black, American Indian Alaskan Native, and Native Hawaiian other Pacific Islander veterans compared to white veterans. And in the fall of 2020, only American Indian Alaskan Native veterans still had a higher probability of COVID-19 infection. And in fact, Asian veterans had a lower probability of COVID-19 infection. So overall, we see that more racial ethnic minoritized groups experienced disparities in COVID-19 infection over the summer. It’s possible that once lockdowns ended, minoritized groups who were overrepresented in essential jobs were more likely to get COVID through job related exposures. But then over time, the likelihood of infection equalized across the entire population.  
  
Now onto mortality results. Similarly, this line graph presents adjusted predicted probabilities of mortality for each racial ethnic group by time period among those who had COVID-19. We see that over time, the probability of death decreased for all groups. But the groups at higher risk did change over time.  
  
In the spring of 2020, only black veterans had a statistically significant higher predicted probability of mortality compared to white veterans. I also want to note here that other racial ethnic minoritized groups also had large point estimates but we had a smaller sample size for these other groups. So the lack of statistical significance may be due to sample size and power issues especially for American Indian Alaskan Native, Asian, and Native Hawaiian other Pacific Islander veterans.  
  
In the summer, American Indian Alaskan Native, Asian and Hispanic veterans, had a higher probability of mortality. And in the fall, black veterans actually had a lower probability of mortality compared to white veterans.   
  
So, in conclusion, we found that patterns in COVID-19 infection and mortality did change over time. Unlike our hypothesis of disparities decreasing over time, we found that more racial ethnic minoritized groups experienced disparities compared to white veterans in the summer of 2020. I do want to highlight additional findings that differ from studies conducted in other samples. We found that Asian veterans experienced mortality disparities in the summer. The limited research in other samples that include Asian individuals suggest lower risk but it’s possible that disparities for this group existed only at certain points in time.  
  
Additionally, while much of the disparities were found, higher mortality among black patients, we found that in our sample black veterans experience mortality disparities only early in the pandemic. And as time passed, they no longer experienced disparities. And in fact they had a mortality advantage in the fall.  
  
The main implication of our study is that it’s important to also consider changes over time when examining COVID-19 disparities. In our study we used broad timeframes to capture these trends. But it’s important to note that multiple changes did occur within each of the timeframes. Policymakers and public health leaders may actually be more interested in how specific changes or considered strategy of changes, affect disparities.   
  
For example, how specific policy changes, public health guidance, as well as other advances might affect patterns in COVID-19 outcomes. Ultimately it’s important to ensure that police and public health actions that are intended to reduce risk on a population level do not inadvertently widen gaps for historically marginalized populations.  
  
I want to quickly acknowledge some limitations for our study. First, there was limited generalizability to non-VA settings. We also did not consider a geographic variation. Nor did we account for social determinants of health. Finally, American Indian Alaskan Native mortality may be overrepresented in our sample because VA support at Indian Health Service clinics as part of its fourth mission and as part of this may have provided care to American Indian Alaskan Native Veterans who were sicker.  
  
Finally, what’s next? After we conducted this study, several of my co-authors and I also wrote a companion commentary piece for the National Academies of Medicines Perspectives publication where we emphasized the importance of considering time when examining racial ethnic disparities during a pandemic as well as other evolving and dynamic disaster events.   
  
We also highlighted another important component to consider which is geographic variation. And you’ll hear more about this in the next presentation.   
  
Finally, I’d like to thank my co-authors as well as our funders at Office of Health Equity, VA Query, and VA HSR&D. Thank you for your time.

Jaqueline Ferguson: Alright thank you I’ll take over for the next presentation. My name is Jaqueline Ferguson. I’ll be talking today right where Dr. Wong left off looking at geographic and temporal variation in the race and ethnic disparities for SARS-CoV-2 positivity. Please note the views expressed are those of myself and my co-authors and they do not represent the views of the United States Department of Veterans or the US Government.  
  
So, as Dr. Wong talked about in her presentation, there’s been a lot of evidence that’s highlighted the vast disparities in SARS-CoV-2 infection. The responses to the pandemic have evolved rapidly over the last two years as different areas have enacted different precautions to reduce and prevent COVID-19 infection, hospitalizations, and mortality. Work from Dr. Wong, Dr. \_\_\_\_\_ [0:15:51] and myself have identified critical trends in race and ethnic disparities by time among veterans. Most notably the disparities and infection rates among veterans of color and how these trends have evolved across time. But examining the interaction between space and time is also important.  
  
As a recent CDC report illustrated, early in the pandemic, COVID-19 rates were highest in large metropolitan areas. However, through the summer of 2021, rates, sorry, 2020, rates began to rise in medium and small metropolitan areas. By the fall, the rates had flipped. The highest instance rates were now found in medium and small metropolitan areas while lower rates were seen in large and central metro areas. Therefore, to understand the evolving nature of SARS-CoV-2 positivity related disparities, we need to examine interactions by both space and time.   
  
So to start, our objective was to evaluate changes and the disparities for testing SARS-CoV-2 positive over the first 18 months of the pandemic from mid-February through August 2021. This was a unique collaboration I’m actually very proud to be a part of with Dr. Christopher, myself, doctors’ Amy Holmes Osbourne, and Amanda Purnell. We realized early into this project that both Christopher and I were working on the same question through one of the many OHE working group meetings and we combined our efforts together to rapidly put together the research that you’ll see today.   
  
We performed a retrospective cohort analysis of all veterans who were tested for SARS-CoV-2 in VA medical facilities between February 12th, 2020, and August 16th, 2021, which comprised about 1.3 million veterans. We identified laboratory PCR test results for SARS-CoV-2 using a text searching algorithm as described in our previous work which excluded all antibody tests.  
  
We estimated the odds of testing positive for SARS-CoV-2 for black, Hispanic, Latino, henceforth known as Hispanic. Asian, American Indian Alaskan Native, Native Hawaiian Pacific Islander, and people of mixed race relative to white individuals. All models were adjusted for personal characteristics such as sex, age, rural or urban residence, and also adjusted for a wide range of clinical characteristics that have been evaluated in prior reports that can potentially explain disparities in positivity.  
  
To examine the odds of SARS-CoV-2 positivity among veterans we stratified our cohort into five ways initially based on the temporal distribution nationally. As demarcated on the figure on your right, wave one was from February 12th through May 31st, 2020. Wave two was from June 1st through September 30th, 2020. Wave three was from October 1st, 2020, to February 28th, 2021. Wave four was March 1st through June 30th, 2021. And wave five was July 1st through August 16th. However, due to the size of the third wave which occurred in the fall of 2020 through the spring of 2021, we split this wave into two equal waves based off of cases. Waves 3A and 3B which corresponded to the midpoint of December 11th just before the holiday season.   
  
Next, we evaluated regional differences by time where we stratified the models by the US census regions that you see here. Here we present the character six of all of individuals tested and tested positive for SARS-CoV-2 between February 12th and August 16th, 2021, in VA. The population is similar to the overall population of veterans who were active in VA care and that is the majority white, older, and male. When we evaluated crew prevalence of testing positive in this population we found that all non-white groups had a higher crew prevalence than white individuals and that veterans who were younger or male had a higher crew prevalence positivity than older or female veterans.  
  
The west US census region had the highest crew prevalence of SARS-CoV-2 positive tests while the south had the lowest. The results presented by Dr. Wong we found disparities among black veterans decreased over time as you can see in this pooled odds ratio here on the right. The largest disparities were found in wave one. When we evaluated regional disparities as presented on the left here between the northeast, west, Midwest, and south where the reference group is white, we found some evidence of regional variation in the disparity for testing positive by time. While wave one disparities for black individuals were found in all regions, they were notably higher in the Midwest, about an odds ratio of 2.72. And in the south with an odds ratio of 2.25. So essentially about double the odds of testing positive among white veterans. Whereas in the northeast it was lower, around 1.5 and the west around 1.3.  
  
By the fall, the disparity in testing positive had attenuated and was really only seen in the northeast for black veterans. Between March and June 30th, there was a bit of resurgence in the odds of testing positive among black veterans compared to white veterans in the northeast but it quickly attenuated between July 1st and August 16th such that by the end of the study period, there were no observed disparities for black veterans in any census region.  
  
Among Hispanic veterans, disparities did attenuate over time as you can see on this pooled COVID plot on the right but there was still prevalence between July 1st and August 16th in 2021. When we examine the interaction of both time and space among Hispanic veterans, we can see the disparities for testing positive among Hispanic individuals were present in all regions in wave one. And was quite elevated.   
  
As we proceed through the next two waves, it remained elevated through the fall of 2020. And this was where we saw an attenuation among black veterans in their odds of testing positive. By the last observed wave, Hispanic individuals still had a slightly elevated odds of testing positive relative to white veterans in the west and in the south.  
  
Among Asian veterans we found evidence of a disparity in testing positive in the first wave between February 12th and May 31st in wave one amongst all spatially pooled results. So much of the results by Dr. Wong we found the disparities and infection decreased over time and reversed actually in pooled models between March 1st and June 30th in 2021.  
  
When we look at the differences by region, we can see the disparities for Asian individuals in wave one is primarily found in the northeast where they had a 1.79 odds ratio compared to white veterans. And also in the Midwest where their odds of positivity was about double compared to white veterans. This disparity quickly attenuated to the null through the subsequent waves of the pandemic in all regions. And notably in the west in the later waves, Asian veterans actually had a lower odds of testing positive than white veterans. This went to 50% lower odds of testing positive after we adjusted for the wide range of demographic and clinical characteristics in July 1st and August 16th time period.   
  
American Indian and Alaskan Native individuals had elevated odds of testing positive in early pandemic and this attenuated by the last observed wave in the spatially pooled results. And for regional and time interactions, American Indian and Alaskan Native individuals had elevated odds of testing positive in the west and the Midwest. And we see that these higher odds of testing positive for American Indian Alaska Native veterans compared to white veterans in the west persisted in all time periods apart from wave five with the highest odds that were observed in wave one.  
  
When we looked amongst Native Hawaiian and Pacific Islander veterans there were really no discernible patterns in regional disparities. However these groups had relatively small numbers. So they were stratified by time and region. Even amongst the spatially pooled results on the right, we see the suggestion of a slightly increased odds of testing positive among Native Hawaiian and Pacific Islander veterans but similar to other race and ethnic groups in the VA. Disparity in testing positive dissipated by the winter of 2021.  
  
Similarly among veterans described as missed race in the electronic health records there were no discernible patterns in regional disparities and the spatially pooled models. However again, these groups had relatively small numbers of events when stratified by time and region. Which might limit our statistical power to detect association.   
  
So, to sum up, SARS-CoV-2 also known as COVID-19 is impacting all communities and is now much less concentrated in specific vulnerable groups compared to early in the pandemic. This does not imply that the over burden of COVID-19 may be equal as marginalized populations such as persons of color experience substantial access rates early in the epidemic and may experience excess extended effects or more severe outcomes. We found as a whole, the disparities for testing positive were attenuated but remained elevated for Hispanic individuals. A deeper understanding of this mechanism is needed. This might be possibly due to the overrepresentation of Hispanic workers in essential and front-line jobs that tend to have higher exposure and more precarious employment which limits the ability to take a sick leave or quarantine or isolate after exposure.   
  
And then we also found one other result we wanted to highlight was the Asian veterans had lower odds of testing positive than white individuals between March and August 2021. This might be because of the higher rates of vaccination amongst Asian veterans and white veterans which you’ll hear more about in the next presentation. Could also be due to potential differential barriers to care and or the lower likelihood of utilizing VA services which could include getting tested among Asian veterans.  
  
To wrap up, just a few limitations I wanted to highlight. We only looked at the SARS-CoV-2 PCR tests that were administered at VA. So veterans who tested positive in another healthcare system and then sought treatment at VA were not included in our sample. We did not have information on the very important key social deterrents of health and occupational exposures which we know can limit someone’s likelihood of being exposed and then subsequently testing positive for COVID.  
  
And then finally SARS-CoV-2 test availability in VA varied by local caseload, supply, and the local policy for testing criteria which could influence our results. If you'd like to hear more about this work, I’m very pleased to announce that our paper was just published last week in Scientific Reports. I’ve included the citation here. And then I just wanted to give another shout out to my wonderful collaborators for working so rapidly together with me on this study. And with that, I’ll leave it to the next presenter.

Tonya Haderline: Thanks Dr. Ferguson, I’m Tonya Haderline, I will be presenting today on racial ethnic variation in VA vaccine uptake during the COVID-19 pandemic focusing on the early months of the vaccine rollout. Before getting started I’d like to acknowledge my co-authors as well as funding from the VA office of health equity and query and also VA health services research and development.   
  
We have no conflicts of interest to disclose and the views represented today are my own and do not necessarily reflect the views of the VA or the US government. I wanted to let you all know that this work is available at the American Journal of Preventative Medicine by open access online so you can check that out if you’d like to find out more information.   
  
I’ll begin with some background information on racial ethnic healthcare disparities curing COVID-19. Black, Hispanic, American Indian Alaskan Native, and some Asian subgroups are at higher risk for COVID-19 infection, hospitalization, and death than whites. Potential reasons to racial ethnic disparities in the COVID-19 infection and outcomes include overrepresentation of racial ethnic minorities among essential workers, higher population density in racial ethnic minority neighborhoods, and reduced medical access. These disadvantages are the result of systemic racism that affects both health outcomes and social determinants of health such as education, income, employment and housing.  
  
Racial ethnic disparities and vaccine access are a key concern for the US COVID-19 vaccine rollout which started in December 2020. In the early phases of the rollout, data showed that US COVID-19 vaccination rates were lower for blacks and Hispanics than whites. Historically, in the case of the flu vaccine for example, attitudinal barriers such as institutional mistrust due to both historical and current discrimination in the medical system have contributed to lower vaccine uptake among racial ethnic minorities. For the COVID-19 vaccine in the early stages of the vaccine rollout, research that despite actual and perceived increased COVID-19 infection risks, blacks were reporting more COVID-19 vaccine hesitancy than whites.   
  
At the same time it’s important to remember that structural vaccine uptake barriers such as limited healthcare access, limited time for medical appointments, and vaccine supply issues disproportionately affect people from racial ethnic minority communities. And American Indian Alaskan native populations community leaders have led vaccine outreach campaigns in partnership with the Indian health service to maximize vaccine uptake. The Indian health service is an important resource for COVID-19 vaccination in this community given higher infection rates and mortality among American Indian Alaskan natives relative to whites.   
  
Outreach strategies have included vaccination clinics, familiar community gathering places, traveling clinics to cover widespread rural areas, and call center staffed by native language speakers. These efforts have been implemented in cooperation with tribal leaders to increase trust among people from American Indian Alaskan native communities.   
  
The VA COVID-19 vaccine rollout began shortly after the US vaccine rollout in December 2020. By examining the electronic health records, we have the opportunity to assess racial ethnic variation in COVID-19 vaccination rates and a managed care system that has few access barriers.   
  
The objective of the study I’m presenting today was to examine the association between racial ethnic minority status and VA COVID-19 vaccine uptake during the early stages of the VA COVID-19 vaccine rollout. Based on reports of higher COVID-19 vaccination rates among American Indian Alaskan natives due to Indian health services, residential proximity to federally recognized tribal areas was tested as a moderator of the association between race ethnicity and vaccine uptake.  
  
Regarding our sample and measures, we used the VA electronic health record to construct our cohort which consisted of about 3.5 million veterans aged 65 or older with outpatient use two years prior to the onset of the US COVID-19 pandemic which we defined as between March 1, 2018 and February 29, 2020. We only included veterans aged 65 or older because VA’s initial vaccination efforts targeted older adults. We used the electronic health record to identify COVID-19 vaccinations between the start of the VA COVID-19 vaccine rollout December 14, 2020, and February 23rd, 2021. We derived a race ethnicity variable using combined data from multiple databases to minimize missingness. All individuals reporting Hispanic ethnicity were categorized as Hispanic regardless of their reported race. And co-variants included age, sex, urban versus rural residents, residents in the Indian health service contract health service delivery area county, influenza vaccination, medical comorbidities, and risk for death or hospitalization as indicated by VA care assessment needs scores.  
  
We tested proximity to Indian health service contract health service delivery areas as a moderating variable. I’ll use the acronym CHSDA from now forward. The variable indicates residents in a county on or near federally recognized tribal areas. Direct and contract health services can be made available by the Indian health service to eligible individuals who reside within these areas. We assess proximity of the county to CHSDA areas rather than outright residents on reservations because many American Indian Alaskan natives live near but on reservations.  
  
Our analysis consisted of two of regression models with VA COVID-19 vaccination as a dependent variable. Model one included all co-variates and model two added race ethnicity for Indian service CHSDA county interaction term. Standard areas requested by VA facility.  
  
So, as far as results. For sample characteristics as I mentioned earlier, the sample comprised about 3.5 million veterans, 97% were male, 75% were white, 11% black, 4% Hispanic, and less than 1% from Asian American Indian Alaskan native Hawaiian other Pacific Islander and more than one race reporting groups.  
  
Black and Hispanic veterans were younger on average than whites and also showed a higher percentage of women veterans. 25% of the overall cohort resided in an Indian health service CHSDA county compared to 53% of American Indian Alaskan native veterans. 24% of the cohort had received at least one COVID-19 vaccine dose as of February 23rd, 2021. I’d also like to remind everyone that the sample only comprised veterans aged 65 or older.   
  
This chart depicts results for COVID-19 vaccine uptake by race ethnicity as estimated in model one. Estimates are adjusted for demographic and clinical co-variates. Black, Hispanic, and Asian veterans were significantly more likely than white to receive a VA COVID-19 vaccination. American Indian Alaska natives, abbreviated AIAN here were less likely than whites to receive a VA COVID-19 vaccination. Working on advancing my slide here. There we go.  
  
This next chart shows the main finding from model two where CHSDA was tested as a moderator of the association between race and COVID-19 vaccine uptake. So if we look at the chart on the left, we see adjusted probability of vaccination among white veterans who are the reference group. And on the right, probability for American Indian Alaska natives is shown. The blue bars show probability of vaccine uptake for people living in a CHSDA county and the green bar represents those who do not live in CHSDA county.  
  
So we can see here that whites had a similar rate or odds of COVID-19 vaccination regardless of where they live. However, on the right side of the chart, we can see that VA COVID-19 vaccine uptake was lower for American Indian Alaska natives who lived in CHSDA counties. So, in CHSDA counties only, VA COVID-19 vaccine uptake was lower for American Indian Alaska natives than for whites.  
  
In contrast, in non CHSDA counties, American Indian Alaska natives and white veterans showed no difference in VA COVID-19 vaccine uptake. And so we can say that this disparity in VA COVID-19 vaccine uptake among American Indian Alaska natives only occurred for veterans living in Indian health service community health contract health service delivery area counties.  
  
And so, in summary, this study on racial ethnic variation in COVID-19 vaccine uptake showed that black, Hispanic, and Asian veteran VA users were more likely than whites to receive a VA COVID-19 vaccination. In contrast, data from the US general population around this time showed higher vaccination among whites relative to black Hispanic and Asian people.  
  
There are several potential reasons for higher COVID-19 vaccination among black, Hispanic, and Asian veterans. The VA is a geographically distributed managed care healthcare system offering low-cost care to qualifying patients. The findings could reflect reduced logistical barriers for minoritized VA patients compared to private healthcare. To maximize COVID-19 vaccine access among minorities, VA engaged in deliberate outreach efforts based on prior evidence of vaccine hesitancy in minority communities. These included listening sessions with diverse veterans and staff, targeted electronic communications, calling eligible veterans directly, and offering both technology based and non-technology-based options for appointment scheduling.  
  
It's also possible that whites were more likely to use non-VA community care to obtain vaccinations than minorities. And finally, it’s possible that racial ethnic minorities in the VA sought vaccination more often based on higher perceived and actual risk for COVID-19 infection and death. But if the audience has other ideas for why COVID-19 vaccination was higher in these minority groups I’d be curious to hear. So feel free to chime in during the Q&A.   
  
Regarding VA COVID-19 vaccination among American Indian Alaska natives, our results show that American Indian Alaska natives were less likely than whites to receive the COVID-19 vaccinations but only those residing in Indian health service CHSDA counties. This points to potential use of Indian health service delivered COVID-19 vaccinations among CHSDA dwelling American Indian Alaska native veterans.   
  
This could be explained by lower structural barriers to Indian health service care due to fixed physical proximity, higher institutional trust in any health service relative to VA, and also the outreach efforts I mentioned earlier in the presentation.   
  
Regarding study limitations. Because veteran COVID-19 vaccine uptake was measured using VA encounter data, racial ethnic differences in non-VA COVID-19 vaccine uptake among veterans cannot be determined. Although that lower vaccine use among American Indian Alaska natives in CHSDA counties could relate to Indian health service use, this was not assessed directly. Also the findings might not be generalizable to non-VA populations.  
  
In conclusion, lower logistical barriers to VA use may mitigate racial ethnic disparities in vaccine uptake. The Indian health service may provide a safety net effective at reaching American Indian Alaska native veterans. Addressing vaccination access barriers in non-VA settings can potentially reduce racial ethnic disparities in COVID-19 vaccination. And so I will wrap things up here. Thank you all for listening.

Marie Anestario: Hi this is Marie Anestario, I’m a colleague of Heidi Schluder. She currently had to step away for a moment so I’m going to go ahead and start the Q&A. For Dr. Wong, what data sources did you use to determine veteran race? Were the data restricted to self-identified race values only? And how did you handle veterans who identify with more than one race?

Michelle Wong: Thanks for that question. Similar to what Dr. Haderline mentioned, we actually combined, used a combination of data sources including both self-reported race, OMAP, went through electronic medical records, and there’s the hierarchy which we used to combine these different data sources together. I believe that Dr. Donna Washington has previously presented on that during a prior cyber seminar. And for multiple race we actually had that as a separate group. I did not present those findings because there’s a lot of heterogeneity within the quote unquote multi race group so it’s really hard to come up with clear, it’s really difficult to interpret those findings. So I did not present those findings.

Marie Anestario: Okay and Dr. Wong we have another question here about what data source did you use for death slash date of death?

Michelle Wong: This came from the electronic medical record.

Marie Anestario: Okay. Next question, do any of the presenters know about changes in likelihood of testing over time by race and ethnicity? It would be interesting to note how willingness to get tested may have evolved. Example if certain groups were getting tested at lower rates initially and then willingness increased over time as this could also have impacted test positivity rates.

Michelle Wong: That’s a great question. We did look at this early in the pandemic and there’s a paper that we published. I want to say we used maybe the first six to nine months of the data. I can post the link to that in the chat to that paper in the chat. We looked at, our denominator was people who had either COVID-19 exposure or symptoms. So this is theoretically everyone who should have been tested for COVID-19 and we looked at how racial ethnic patterns and testing changed over time and we found that actually initially veterans from racial ethnic minoritized groups were more likely to be tested and then later on in the pandemic pretty much anyone who had COVID-19 exposure or symptoms were receiving a COVID-19 test. Granted all of this data is from 2020 so I’m not sure what the trends are right now.

Marie Anestario: Did any of the other presenters like to comment also?

Tonya Haderline: I was going to chime in and say that we also did an analysis looking at the likelihood of getting tested but I do think Dr. Wong’s paper is better because hers was conditional on COVID exposure or symptoms which I think is kind of critical. In our paper we did also find that black or African American Hispanic Latino veterans were more likely to have a COVID-19 test whereas Asian veterans had a decreased likelihood and that was for February through December 28th, the end of the year in 2020. But we didn’t pursue down that avenue in such detail because the reasons for people getting tested began to evolve really rapidly. There were more tests for outpatient procedures for screening as the VA shifted back into having outpatient procedures again. So I would say the best reference to my knowledge would be the paper that Dr. Wong just chatted about.

Marie Anestario: Okay. Next question. Dr. Ferguson, did you restrict your analysis to the first recorded SARS-CoV-2 test for veterans or could veterans appear in multiple waves?

Jaqueline Ferguson: Yeah that’s a great question. So, for individuals with multiple tests we selected the first positive test. And then for those without a positive test during the entire study period regardless of wave, we selected the first negative test. So, we only if somebody tested positive in wave one they were considered in wave one. If they subsequently tested positive again for some reason in a subsequent wave, we only considered the first incident.

Marie Anestario: Okay and Dr. Ferguson I think this question is also for you. Were any oddities noticed during the first wave when testing was quite limited and only selected patients were being tested?

Jaqueline Ferguson: Oddities. I think we tried to avoid any statistical flukes by making the time periods sufficiently large so that we could capture enough variability so that our estimates could be relatively stable. So I think we avoided a little bit of that. I think maybe what the question is getting at is in the very very early periods like in the beginning of February early March there were some kind of oddities and people were getting tested and when that was coded but I think that settled out pretty quickly.

Marie Anestario: Okay and the next question is for Dr. Haderline. I’ve not before seen Hispanic veterans collapsed into a single racial group that’s separate from their recorded race values. Is this a common practice and were Hispanic black and Hispanic white veterans are generally similar to each other with regard to co-variates in your models?

Tonya Haderline: Right so, the methodology was yes, anyone who reported Hispanic ethnicity was categorized as Hispanic. This is a practice that we’ve been using in our research group for some time. Just to acknowledge that there might be some cultural differences regarding ethnicity. And we’ve also found out that there tends to be more missing data otherwise because a lot of people don’t indicate a race if they consider themselves to be Hispanic. Could you repeat the second part of the question?

Marie Anestario: Sure. The second part of the question was were Hispanic black and Hispanic white veterans are generally similar to each other with regard to co-variates in the models, question mark.

Tonya Haderline: Right so we didn’t examine Hispanic white versus Hispanic black for our analysis I think that’s a really great point though that collapsing them might make some assumptions about cultural similarities. And so in our study it was more non-Hispanic black and non-Hispanic white but I think that’s definitely something to consider in future studies.

Marie Anestario: Okay I think this next question is for all of you. Do you have any data based on economic status and not racial ethnic group?

Unidentified Female: I’ve been working with Dr. Malloy and Dr. Hausman on a study using data from, oh gosh I just blanked on the name. But we do have some papers in the works that are looking at individual socioeconomic status and COVID testing positivity that’s still currently under review. So hopefully we’ll have some of those results out soon. But there is limited SES data in electronic health records, the CDW data sets at VA. So it can be a difficult analysis to complete.

Marie Anestario: Okay and the next question is for Dr. Ferguson. Just curious as to whether there was limiting or practical reason for analyzing your outcome by region only. And if you have had any success or difficulty in analyzing at the state or county level with veteran data.

Jaqueline Ferguson: Absolutely. It really becomes an issue of power and so if you want to avoid this unfortunate thing where statistics is not good at operating at small numbers, and you want to look at all racial groups that the VA captures information for, you're limited to the size of the geographical area that you can evaluate. So we could look at for example, white Hispanic and black differences at smaller groups such as the state and even maybe for some counties. But we would have to exclude Asian, American Indian Alaskan native, native Hawaiian Pacific Islander, and other veterans in those analyses. I do have another paper where we looked at black, white differences at the county level. And that analysis was difficult to perceive because the geographic variation where veterans live is not random. So we had to exclude some counties based off of sample size which is not my favorite thing to do. So there are definite statistical limitations when evaluating smaller and smaller geographical areas.

Marie Anestario: Thank you. It seems one interpretation of the first two is that at risk people died at higher rates early in the pandemic. So, we could be seeing a change in risk pool and not actually equalization of disparities. Is there a way to control for that?

Michelle Wong: In my analysis, this is Dr. Wong. In my analysis we control for age, as well as having a CDC identified comorbidity for serious COVID-19. So I think that does help the change to address the underlying risk for COVID-19 mortality.

Marie Anestario: Any other comments from the other presenters? Okay we’ll just go ahead to the next question. Did any of the researchers use the VA COVID shared database? And if not, what was the reason for not doing so?

Unidentified Female: I can start. Our team did not use the VA COVID shared database because we had started with the algorithmic text pull from the laboratory results from CDW which is now incorporated into the VA COVID shared database. So, when this work was going on, the shared database was launching and so, some of my co-authors for example, Christopher Wrench was working with COVID shared data resource folks to incorporate some of those text definitions. So for us it was just an issue about timing that we didn’t want to pull all instances with the NLP with the natural language processing from the health records that we were interested in the laboratory results in VA but I’ll let the other presenters speak towards their data sets.

Unidentified Female: So for my data set, and Dr. Wong’s is similar since we’re both working in the same research group, our data came from the office of health equity and so, we were jumping into this really early into the pandemic like before the shared resource was quite constructed. And so we used operational definitions to derive our variables. As time went on and the shared COVID data resource became more developed, some variables were adjusted to match their methodologies. But I can say that both the COVID-19 shared data resource and our data rely heavily on the corporate data warehouse and so there’s a similar kind of underlying pool of data that informs both.

Marie Anestario: Okay are there any other comments regarding that? Okay we’ll move on. Were people of non-white racial and ethnic backgrounds have higher COVID-19 hospitalization rates in the VA throughout the pandemic or did those numbers change over time as well? That question was not directed to anyone specifically so if anyone has any comments. Okay we can skip that. One of the other questions that came up it says I agree that data is a critical key. Now that we have the data, how do we create trust in these ethnicity slash areas?

Tonya Haderline: I really, and this is Dr. Haderline, I really found it interesting learning more about the efforts of the Indian health service and local tribal leaders partnering to maximize vaccine uptake in native populations and their work was just very driven in the community and their methodology was developed in collaboration with community members. There's been a lot more research about data equity recently and how to include people under study in the process of choosing variables, deciding what areas area most important to them. So I think moving forward and I think the VA is going in this direction, using more of a community focus where we are in collaboration with veterans from these communities would be really helpful in terms of developing strategies to address these issues now that we have the data.

Marie Anestario: Okay thank you. A question came up, are you going to show your work to a diverse veteran engagement panel so that they have a chance to give you feedback on interpretation of your results?

Jaqueline Ferguson: I’ll just jump in since that aligns so perfect with what I was just talking about. I know on my part we didn’t have anything scheduled but thank you so much for pointing that out. I think it’s definitely something that we can talk about setting up. Thank you.

Marie Anestario: Okay well that seems to be, let’s see here if we have any other questions in the queue. Do you guys have any closing comments before we end today’s session?

Michelle Wong: Nope. Thank you so much.

Jaqueline Ferguson: None here but I really appreciate everyone’s time and attention.

Tonya Haderline: Same. I’d like to thank OHE for creating the space for us to highlight our results. It’s been really exciting to work on such rapidly moving work in the past year.

Marie Anestario: Well thank you so much for taking the time to prepare and present today’s presentation. And thank you for the audience for joining us for today’s HSR&D Cyber Seminar. When I close this meeting, you’ll be prompted with a survey form. Please take a few moments to fill that out. We really do count and appreciate your feedback. Thank you, have a great day and stay safe.