**Yi - Slides 3-4:** COVID Vaccination Rate and Population Density

Mention Api,csv and excel files from Cdc

-In general, areas with higher population densities may be at greater risk for disease transmission, as there are more opportunities for the disease to spread from person to person. Therefore, people in those areas are more willing to take vaccines to prevent outbreaks and reduce the spread of the disease.

-New Mexico is an exception to this pattern. Going into the pandemic with a dearth of financial resources compared with richer states, and disparities like having fewer hospital beds per capita than nearly every other state, the authorities in New Mexico carried out a series of ways to encourage people to take covid vaccines.

1. Strong public health messaging
2. Access to vaccines
3. Partnerships and collaborations
4. Early action

**Yi - Slides 5:** Vaccination Rate by Gender in US

In most cases, women were significantly more likely to express a desire to delay or reject the vaccine than men were. Women were also more likely than men to state that the vaccine was too new, that they were fearful of side effects, and that they had a medical contra-indication to the vaccine. However, as 3/15/2023, the overall female vaccination rate is higher than male vaccination rate across the country.

Public health experts cited many reasons for the difference, including that women make up three-quarters of the workforce in health care and education, sectors prioritized for initial vaccines. Women’s longer life spans also mean that older people in the first rounds of vaccine eligibility were more likely to be female. But as eligibility expands to all adults, the gap has continued. Experts point to women’s roles as caregivers and their greater likelihood to seek out preventive health care in general as contributing factors.

**Yi - Slides 6-7:** Vaccination Rate by Age Group

Overall, the vaccination rates have been increasing steadily across all age groups, with the highest rates among those 65 and older, followed by those in the 50-64 age group. The lower vaccination rates in the younger age groups are a cause for concern, as they represent a significant portion of the population that can still contribute to the spread of the virus.

**Gianna - Slide 8-10**: COVID Vaccination Symptoms Analysis

The following graphs display the top 12 symptoms after receiving the COVID vaccination among a subject pool of up to 330,000. Medical term substitutions are provided for easier understanding of terminology used within the chart.

Despite the need for COVID vaccinations, they supplied varied negative symptoms ranging from injection site pain and fever to no adverse events reported at all. COVID Vaccination symptoms have stayed relatively the same over time throughout the past three years the vaccination has been supplied to the U.S. population. The top 5 symptoms are Pain, Headache, Pyrexia (fever), Erythema (skin irritation), and Fatigue.

Even with the alterations and increase in COVID vaccinations, the symptoms correlated to them have little change. COVID vaccinations have done great in regards to preventing hospitalizations and death regardless of their varying symptoms as demonstrated in the following slides.

**Augustin - Slide 11:**

Data shows that as the Booster became available, there was a very steady and increasingly high turnout of doses administered.

In the next few graphs, we’ll see the effectiveness of the booster shot through hospitalizations from individuals who are unvaccinated, and individuals who are vaccinated with and without the booster

**Asha - Slide 12-15**:

Over the course of a year, study shows that adults 18+ were hospitalized 16x higher than those who were vaccinated, and 2.6x higher than adults who were vaccinated with the booster.

There have also been more hospitalizations from those who are vaccinated with the booster, than those who only received the vaccination.

There was a surge in hospitalizations for the youth in January 2022, and December 2022.

Furthermore, there were more hospitalizations for those that were unvaccinated, than those that were vaccinated with the booster between. This shows a decrease in hospitalizations from vaccinated adults 18+ without the booster, and an increase in hospitalizations between November 2021 to September 2022 in vaccinated adults with the booster.

Overall these visuals show that there is an overwhelming outcome of hospitalizations amongst unvaccinated individuals, which gathers that vaccinations make a significant difference compared to those that are unvaccinated.

**Ehsan** -**Slides: 16-17-18-19**

Analysis and Conclusion

The visualizations provide compelling evidence that there is a substantial difference in COVID-19 outcomes between vaccinated and unvaccinated individuals. In every representation, unvaccinated individuals experience higher outcome rates.

Both line charts and bar charts consistently display a higher prevalence of COVID-19 cases and deaths among unvaccinated individuals compared to their vaccinated counterparts. This trend is evident across all time periods, illustrating the persistence of this disparity.

In conclusion, our comprehensive visualizations and analysis highlight the significant impact of vaccination on reducing COVID-19 risks. Unvaccinated individuals consistently demonstrate higher outcome rates, emphasizing the importance of vaccination campaigns and public health measures in mitigating the effects of the pandemic. By encouraging vaccination, we can protect our communities and contribute to the global effort to control the spread of COVID-19.