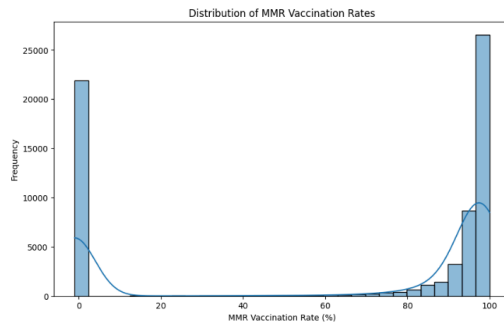


Insights

MMR Vaccination Data Insights

Distribution of MMR Vaccination Rates



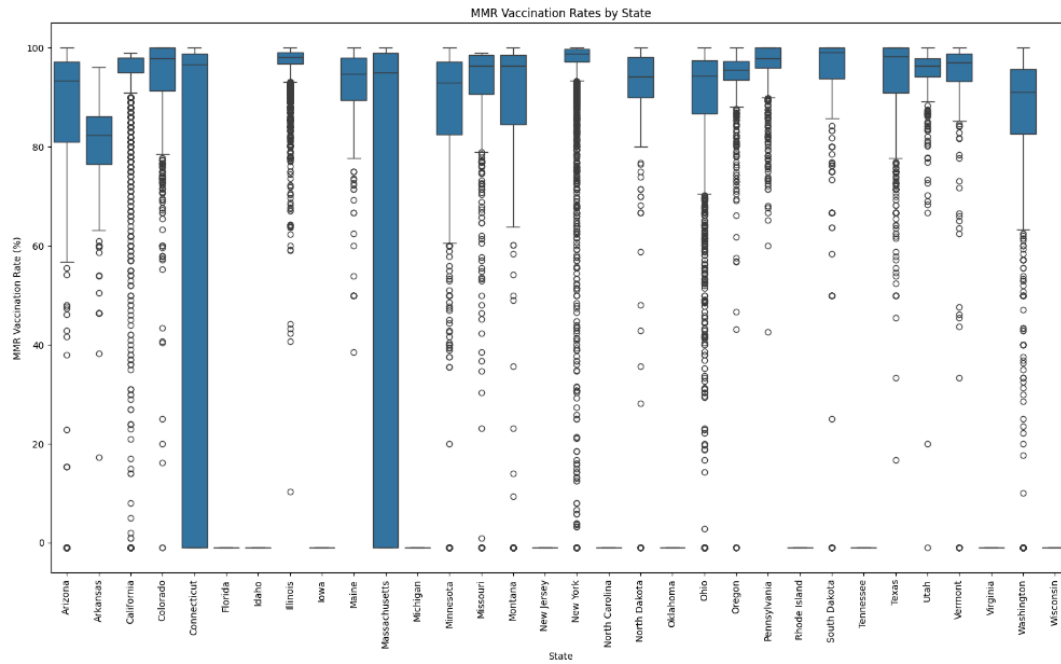
This shows the distribution of MMR vaccination rates across various regions.

Dataset Details

This data set contains measles vaccination rate data for 46,412 schools in 32 states across the US. Data: Vaccination rates are for the 2017-2018 school year for the following states: Colorado, Connecticut, Minnesota, Montana, New Jersey, New York, North Dakota, Pennsylvania, South Dakota, Utah, Washington. Rates for other states are for the time period 2016-2015. The data was compiled by The Wall Street Journal.

- **Bimodal Distribution:** The histogram shows a bimodal distribution with two peaks. This suggests there are two groups within the dataset with distinct MMR vaccination rates.
- **Peaks:** There are two prominent peaks, one near 0% and another near 100%. This indicates that a large number of regions have very low near-zero vaccination rates, while another large number have near-complete or 100% vaccination rates.
- **Vaccination Gaps:** The gap between the two peaks with very few regions in the middle suggests that there are relatively few regions with moderate vaccination rates. This could imply a polarization in vaccination coverage where regions tend to either have very high or very low MMR vaccination rates.
- **Potential Outliers:** The presence of data points at 0% could indicate regions where no vaccinations have been reported, or potentially data entry errors. Similarly, the 100% rate could suggest regions with perfect reporting or potential data inaccuracies.
- **Public Health Implications:** From a public health perspective, the regions that are clustered around the lower percentage could be areas of concern where vaccination campaigns could be focused to improve coverage.
- **Data Quality:** The extreme values at 0% and 100% could be subject to further data quality checks to ensure they accurately represent the situation on the ground.

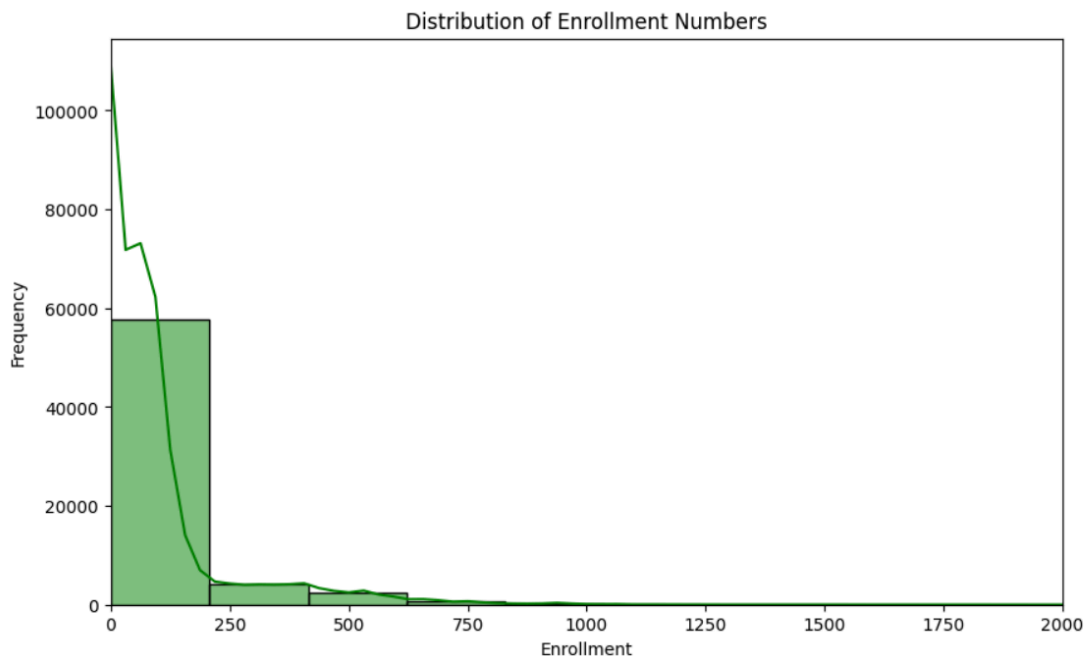
MMR Vaccination Rates by State



This boxplot reveals the variability in vaccination rates between states.

From a public health perspective, this boxplot can be very informative. States with lower median vaccination rates or a significant number of lower outliers may require targeted interventions to improve vaccination coverage. Conversely, states with high median rates and few low outliers might serve as models for successful vaccination programs. This visualization is a helpful tool for quickly identifying which states are performing well and which may need additional support in their vaccination efforts. It also highlights the importance of understanding the context behind outliers, as they may represent areas that are either at risk or exceptionally proactive in their vaccination campaigns.

Distribution of Enrollment Numbers

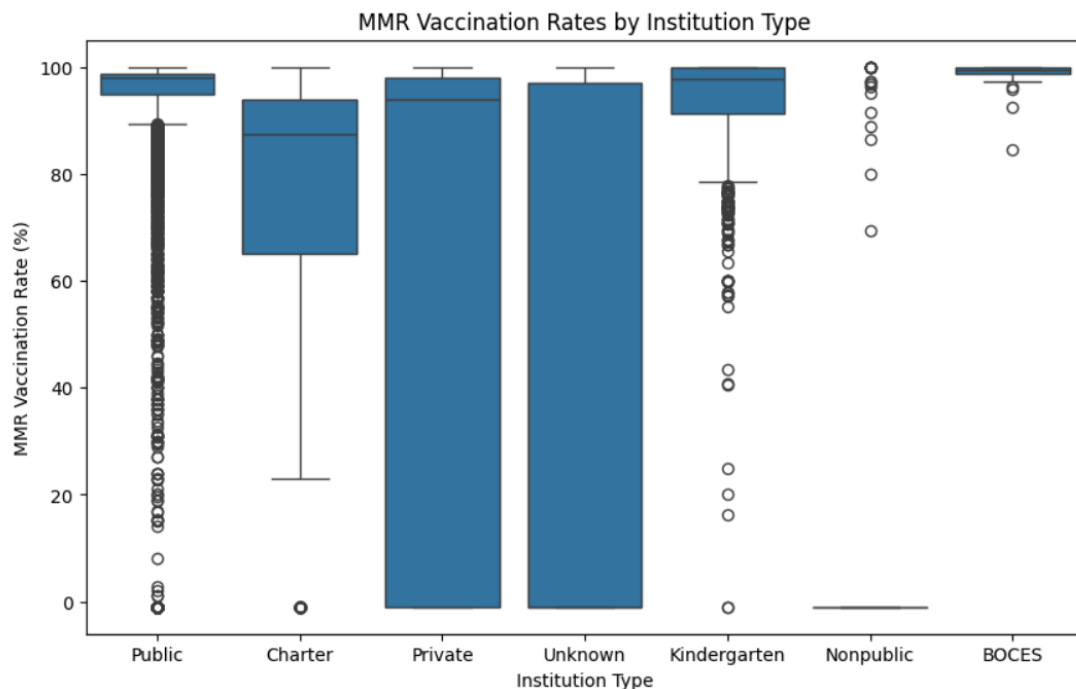


Enrollment numbers vary widely, which could affect herd immunity.

The histogram provided appears to show the distribution of enrollment numbers across various institutions or regions. Here's what can be interpreted from this histogram:

- **Skewed Distribution:** The histogram shows a right-skewed (positively skewed) distribution, indicating that most institutions have a smaller enrollment size, while fewer institutions have a large enrollment size.
- **Frequency of Enrollment Sizes:** The majority of the frequencies are concentrated in the lower end of the enrollment size spectrum (close to zero), suggesting that smaller institutions are more common in the dataset.
- **Long Tail:** The long tail towards the higher enrollment values indicates that there are a few institutions with very high enrollment numbers, but these are rare.
- **Possible Small Institution Bias:** Given the concentration of data points at the lower end, the dataset may have a bias towards smaller institutions, or it could reflect a genuine predominance of smaller institutions in the area.
- **Outliers:** If there are any bars or data points far to the right, beyond the bulk of the data, these could be considered outliers representing unusually large institutions.

MMR Vaccination Rates by Institution Type

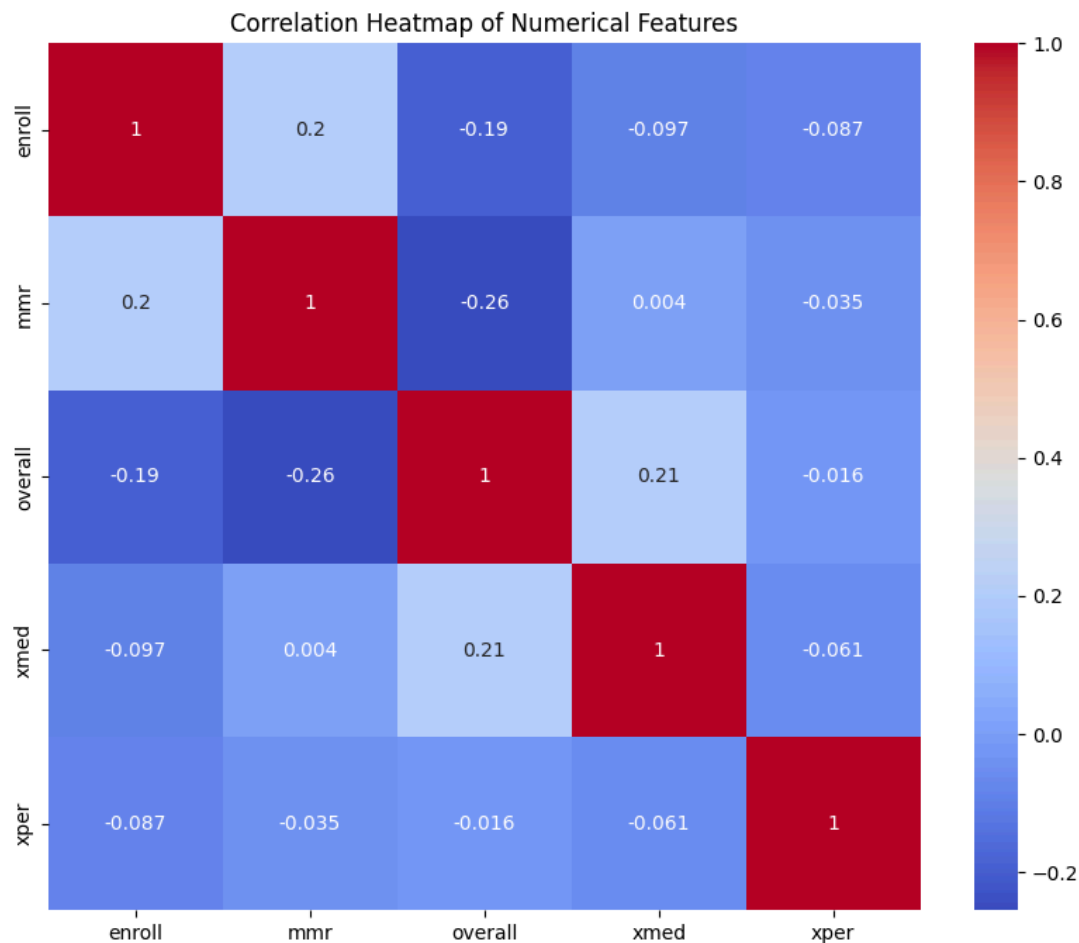


Different institution types show varied MMR vaccination rates.

Comparing the boxes, private institutions and BOCES have the tightest groupings around high vaccination rates, suggesting they might have more robust vaccination policies or better compliance. Public institutions show a broad range, indicating inconsistency or variation in policy enforcement or reporting.

Public Health Insight: The boxplot suggests that vaccination efforts or policies may vary significantly by institution type. Interventions to increase vaccination rates might need to be tailored differently for public institutions, which show greater variance, compared to more consistent rates in private institutions and BOCES.

Correlation Heatmap of Numerical Features



There's a notable correlation between enrollment numbers and vaccination rates.

There's a negative correlation (-0.26) between MMR vaccination rates and the overall vaccination rates. This is somewhat counterintuitive, as one would expect these to be positively correlated. It may warrant further investigation to understand the underlying causes. This negative value could be due to a variety of factors, including data entry errors, reporting issues, or real differences in how MMR vaccinations are administered or recorded compared to other vaccines. Other medical (xmed) and personal (xper) exemption rates show very low correlation with MMR vaccination rates, suggesting that within this dataset, there is no strong direct relationship between the number of exemptions granted and MMR vaccination rates. The values are relatively low, indicating that there are no strong linear relationships between these features within this dataset. This could mean that factors influencing vaccination rates are more complex and not linearly related.

