

Impact of Mental Health on Marriage in the USA (2021/2022)

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# Introduction & Scope

Main Question: Does mental health, specifically mental illness and suicidality, impact marriage rates in different USA states?

#### Scope of the Question

Category	Factors
Mental Health	<ul><li>1- Any Mental Illness</li><li>2- Serious Mental Illness</li><li>3- Received Mental Health Treatment</li><li>4- Major Depressive Episode</li></ul>
Suicidality Factors	<ul><li>1- Had Serious Thoughts of Suicide</li><li>2- Made Any Suicide Plans</li><li>3- Attempted Suicide</li></ul>

# Data Choice & Pipeline

Dataset 1: Marriage Rates by State (2019-2022)	Dataset 2: Mental Illness and Suicidality (2021-2022)
National Center for Health Statistics	Trusted source with Accuracy National Survey on Drug Use and Health with -
This dataset shows the number of marriages per 1,000 people in each U.S. state for 2021/2022	Confidence Intervals 95% Age Groups: Includes specific data for 12-17, 18-25, 26+, and 18+.

#### Aautomated pipeline approach **Data Extraction Data Transformation Data Loading** Cleaning, Marriage Rates Storing Data: PDF file restructuring SQLite Merging database Mental Health and **Datasets** Suicidality Data: **Excel file** ×≣ Data validation, error handling during **Quality Measures:** extraction, handling of missing data, flexibility to adapt to changes in input data, reproducibility through other storage, and exclusion of irrelevant rows and columns.

# Conditions for Accurate Analysis

While thinking what is the best way to answer the question and to create a proper Hypothesis I came a cross several obstacles

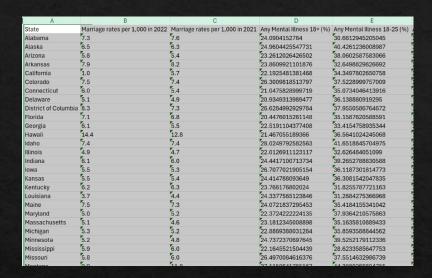
- 1. I have originally 4 age groups as discussed earlier
- 2. Only 2 years of data which is not enough to create relation between the change of marriage rates compared to health factor
- 3. Marriage is suspected to other factors, such as socioeconomic conditions, cultural norms and religion and these are highly diverse in a migrant country like USA
- 4. Health factors were taken in 2021 and 2022 due to sample size as one year

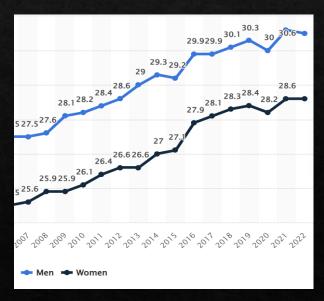
# Solutions

Sol 1: As in 2021 and 2022 is our scope I did further research and found out the following median age for men and women is 30 and 28 Hence I focus on the Age group 26+ (Health factors)

Sol 2,3: To Avoid Noise its logical to understand that every state has different constitution laws as well as society so instead of the focusing on the year to reach correlation we will analyse based on each state

Sol 4: Get the avg marriage rate 2021 and 2022





Estimated median age in USA first wedding from 1998 to 2022, by sex

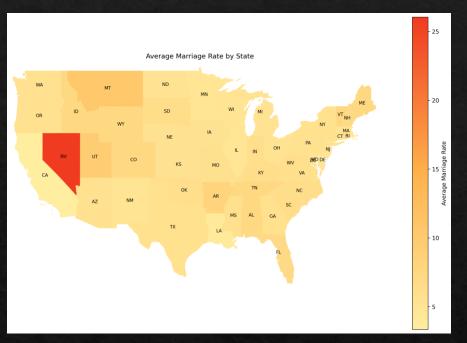
# Analysis - Set the Hypothesis

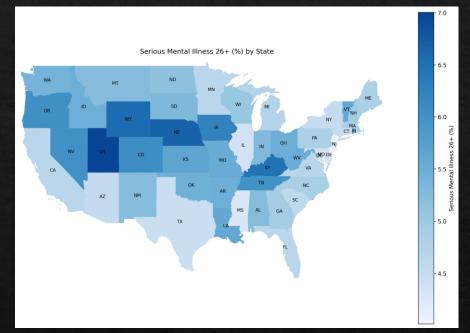
(H0): There is **no significant correlation** between marriage rates and mental health metrics or Suicidality Factors. Any observed correlation is due to random chance.

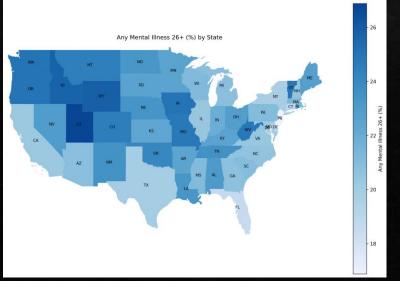
(H1):There is correlation between marriage rates and mental health metrics or Suicidality Factors. this relationship is unlikely to be due to random chance.

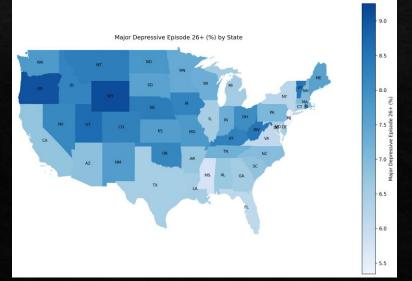
# Analysis – Geo visualization of Mental Health

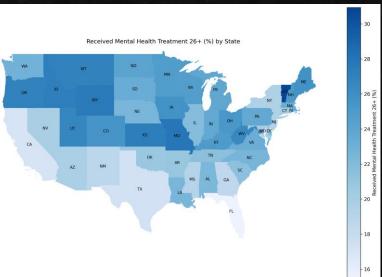






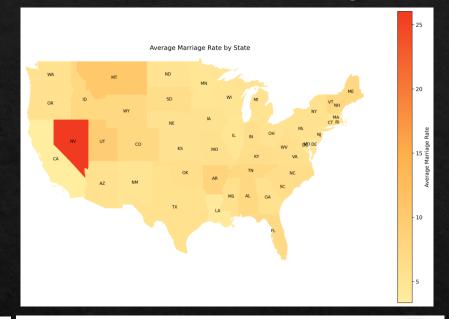


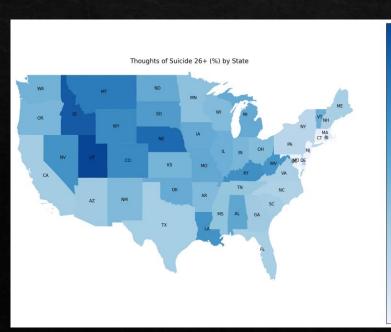


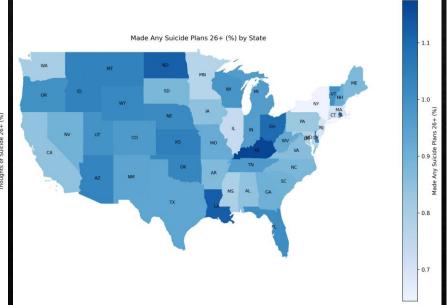


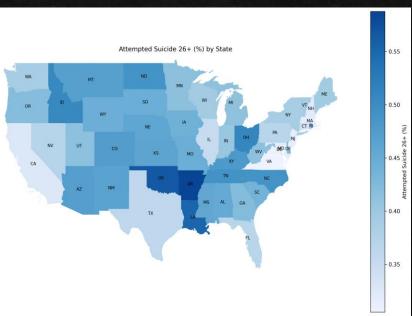
# Analysis – Geo visualization of Suicidality Factors



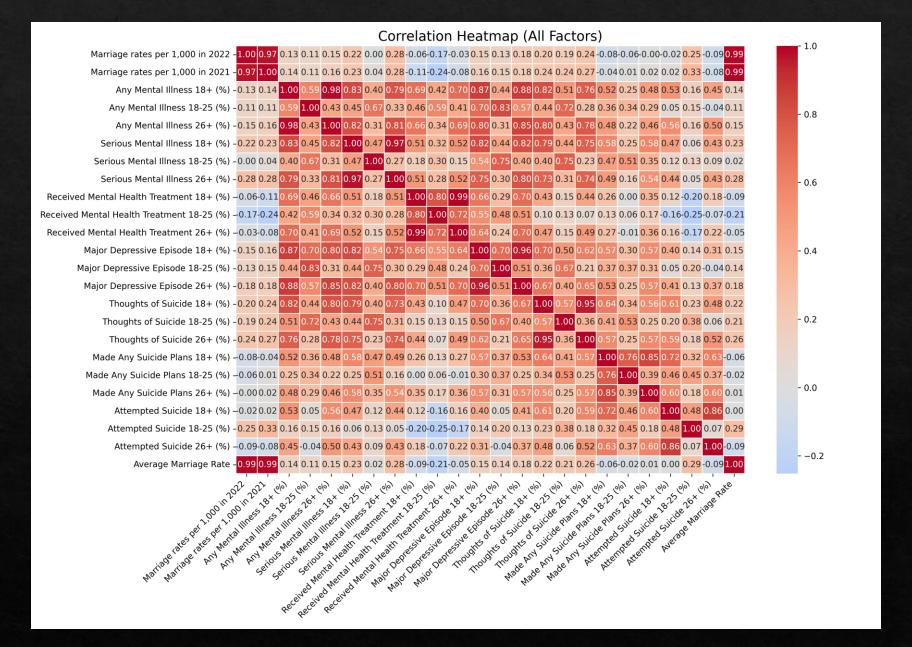








### Analysis – Correlation matrix before selecting 26+ Age group



### Analysis – Correlation matrix



Further Analysis needed

More detailed, state-specific correlations and P-values.

# Analysis – Top 3 Strongest Correlations:

Mental Health Metric: Serious Mental Illness 26+ (%)

Correlation: 0.283

P-value: 0.044

Mental Health Metric: Thoughts of Suicide 26+ (%)

Correlation: 0.256

P-value: 0.070

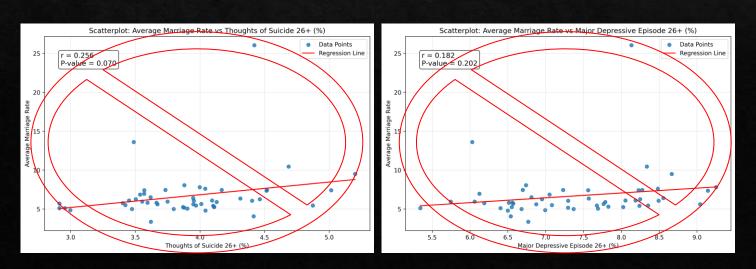
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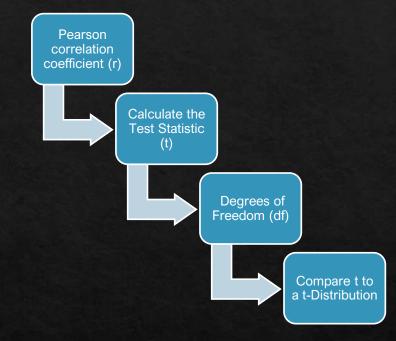
Mental Health Metric: Major Depressive Episode 26+ (%)

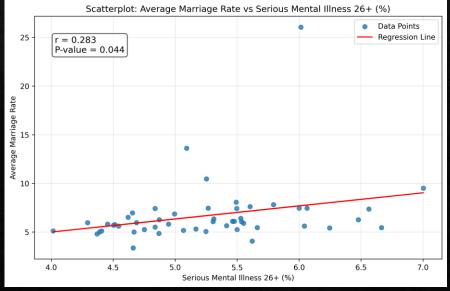
Correlation: 0.182

P-value: 0.202

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#### Analysis – Strongest Correlations (linear regression):

Metric	Coefficient	Intercept	R-squared	P-value
Serious Mental				
Illness 26+ (%)	1.3442	-0.3886	0.0799	0.0445
Thoughts of Suicide		<b>美国基础等</b>		
26+ (%)	1.6361	0.2805	0.0655	0.0697
Major Depressive				
Episode 26+ (%)	0.6216	2.0798	0.0330	0.2018

- Serious Mental Illness 26+ (%) has the strongest and statistically significant relationship with the Average Marriage Rate, though its explanatory power (R-squared) is still low at 8%. For every 1% increase in the rate of Serious Mental Illness 26+, the Average Marriage Rate is predicted to increase by 1.34 person per 1000.
- Thoughts of Suicide 26+ (%) shows a marginally significant relationship with marriage rates, but its explanatory power is even weaker (R-squared of 6.6%).
- Major Depressive Episode 26+ (%) has the weakest relationship, both in terms of explanatory power (R-squared of 3.3%) and weakly significant.

## Conclusion – Argument

• The result is quite shocking for me to be honest from my life experience main reason it's a positive correlation If mental health issues are severe, they could create barriers to forming stable relationships

#### BUT

R-squared values are very low mental health is not a significant determinant of marriage rates. (small variability)

**Correlation** ≠ **Causation**: The relationship between mental illness and marriage rates may not imply causation

I am in Favor of Null Hypothesis

(H0): There is **no significant correlation** between marriage rates and mental health metrics or Suicidality Factors. Any observed correlation is due to random chance.

Hence, I will take it with a grain of salt Moderate positive correlation between 'Serious Mental Illness 26+ (%)' and marriage rates and adjust the conclusion to be

There is **no significant correlation** between marriage rates and mental health metrics or Suicidality Factors. Any observed correlation is due to random chance. Except for a chance that 'Serious Mental Illness 26+ (%)' Factor show some potential and need further study

Conclusion – Future Work

Longitudinal Analysis: I will observe changes in marriage rates and mental health factors over time not just by State-Level Data

# THANK YOU Q&A