Suicide in India from 2001 to 2012: Visualizations using Tableau

ABSTRACT

This project aims to analyse and visualize the trends and patterns of suicide cases in India from 2001 to 2012. Suicide is a critical social issue, and understanding its patterns can help in devising effective preventive measures and mental health interventions. The project utilizes Tableau, a powerful data visualization tool, to present the data in an interactive and insightful manner.

INTRODUCTION

i) Overview:

Suicide is a difficult topic to discuss, but it's an issue that affects many people in India. In fact, according to data from 2001 to 2012, suicide rates in India have been steadily increasing. It's important that we talk about this issue and work together to prevent it.

Visualizing this data can help us better understand the scope of the problem and identify areas where interventions may be most effective. By looking at the numbers, we can see that suicide is not just a personal tragedy, but a public health concern that requires our attention and action.

ii) Purpose:

This project intimates the suicidal reports held In the year 2002-2012.In this project,we have visualized the reports by using bubble chart, pie chart, etc.This project helps to collect data from many sources and convert it to useful that can be utilized to data driven choices.

This project helps to understand the cause of the issue in an easy manner. This project helps to connect with several data sources, analyse data and visualize it to get superior insights.

LITERATURE SURVEY

Existing problem:

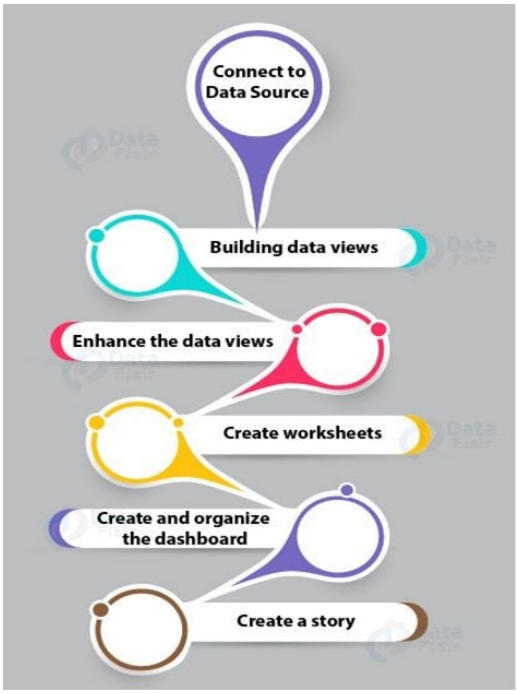
1. Using Data visualization one can easily connect, extract data and draw visualizations from any data source having different data representations.
2. As relevant data points grow exponentially, it becomes challenging to use traditional dashboards to track these metrics and make informed timely decisions.

Proposed solution:

1. To deploy any reports or applications we need to check lot of things like frame work, folder permissions, etc. Without worrying about all these issues, in tableau we can deploy our projects, data sources & workbooks easily.
2. Grouping and correlating multiple anomalies by design, Anodot's AI-powered analytics elevates the essential insights first. By learning the normal behaviour of millions of metric's, Anodot detects only the most impactful incidents and alerts relevant teams at the start.

THEORITICAL ANALYSIS

Block diagram:



Hardware Requirements

- Processor: A multi-core processor is recommended, such as Intel Core i5 or i7 for smaller projects, or Xeon processors for larger deployments.
- RAM: The minimum RAM requirement is 8 GB, but for larger datasets or complex visualizations, 16 GB or more is recommended.
- Hard Disk Space: Sufficient disk space to store your data and Tableau project files. The amount of space required depends on the size of your data.
- Network: A stable network connection is necessary for accessing data sources and sharing visualizations.

Software Requirements

- Operating System: Tableau Desktop supports Windows and macOS. Ensure that your operating system version is compatible with the Tableau Desktop version you plan to use.
- Database Drivers: If you are connecting to databases or other data sources, ensure that you have the required database drivers installed on your machine.
- Web Browser: When publishing and accessing visualizations on Tableau Server or Online, you'll need a supported web browser such as Google Chrome, Mozilla Firefox, or Microsoft Edge.

Methodology

a. Data Collection: The primary data source for this project is the National Crime Records Bureau (NCRB) report on suicides in India. The dataset contains information on various factors such as age, gender, occupation, causes, and methods of suicide.
b. Data Preprocessing: The dataset is cleaned and prepared for visualization by removing duplicates, handling missing values, and transforming the data into a format suitable for analysis.
c. Data Visualization: Tableau is used to create a series of visualizations to explore different aspects of suicide cases in India. The visualizations include charts, graphs, maps, and interactive dashboards.

THE DATASET
State: Name of the Indian state where the data belongs to.
Year: Year ranges from 2001-2012, the complete field contains data for that year respectively.
Type_code: Major classification of “Why Did People Commit Suicide”.
Type: Sub-classification of type code.

Gender: Either the person committing suicide was a male/female.
Age_group: What age group does the person belong to who committed suicide.
Total: Count of people who committed suicide and has the common above 6 mentioned parameters.

EXPERIMENTAL INVESTIGATIONS

There have been very few articles that have dealt exclusively with suicide preventive strategies or with a scientific and systematic evaluation of a strategy.

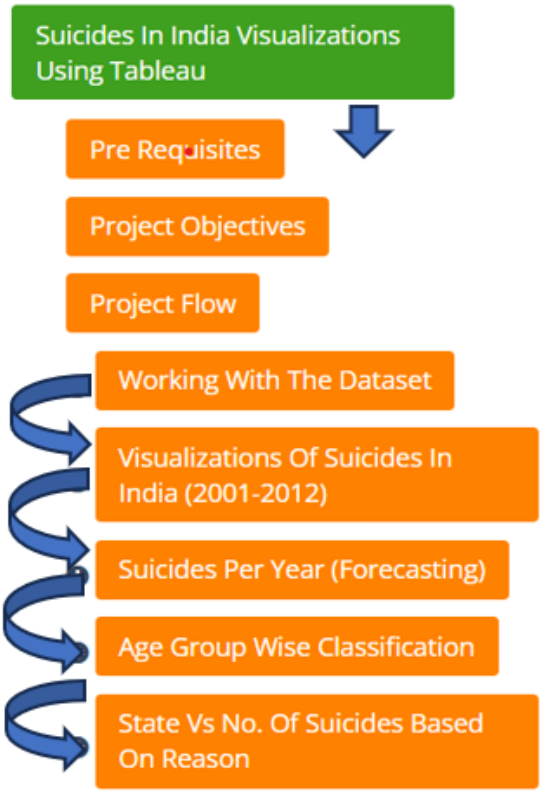
1. Singh[47] in his article evaluated the various suicide prevention activities such as the community activities, the psychiatric and medical activities, suicide prevention centers, psychiatric emergency services, crises intervention centers, role of general practitioners, research and media. He concluded by stressing on the role of the psychiatrist in dealing with this issue.

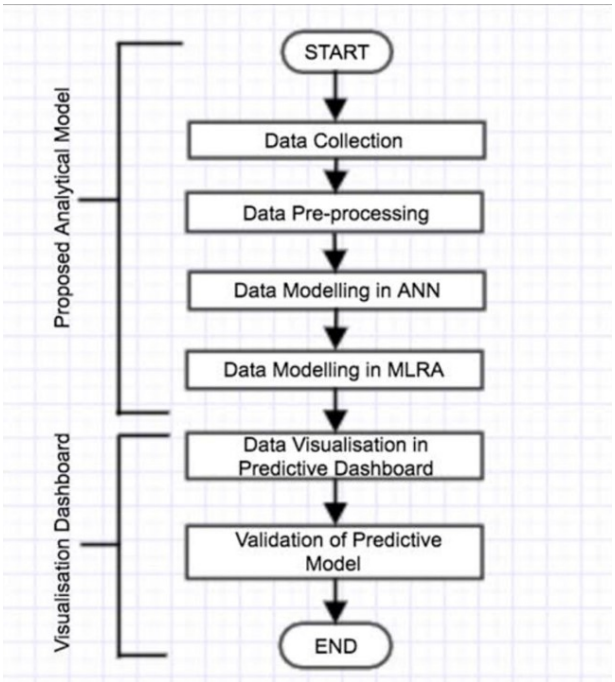
2. Venkoba Rao[48] in his article delineated the risk factors associated with suicidal attempts and its association with psychiatric disorders and the biological evidence for suicidal behaviour. The article based on cited studies recommended that education of general physicians, limiting access to availability of antidepressants, paracetamol and pesticides would lower the rates of suicide.

3. Jena and Siddharta[49] reviewed articles on non fatal suicidal attempts of adolescents in both Indian and international literature. They stated that non fatal suicidal behaviour among adolescents needs to be evaluated and managed effectively in order to reduce the rates. They concluded that Indian studies in this area are a very few and there is a great need to conduct research in this area. The article also stresses the importance for professionals like general practitioners, teachers, paediatricians, school counsellors to be trained to identify non fatal suicide behaviours in adolescents so as to facilitate referral and effective management.

4. Vijayakumar[50] in an editorial expresses the urgent need for suicide prevention in India and stresses that suicide is a multifaceted problem and hence suicide prevention programs should also be multidimensional. In India, suicide prevention is more of a social and public health objective than a traditional exercise in the mental health sector. She concludes by saying that the time is ripe for mental health professionals to adopt proactive and leadership roles in suicide prevention and save the lives of thousands of young Indians.

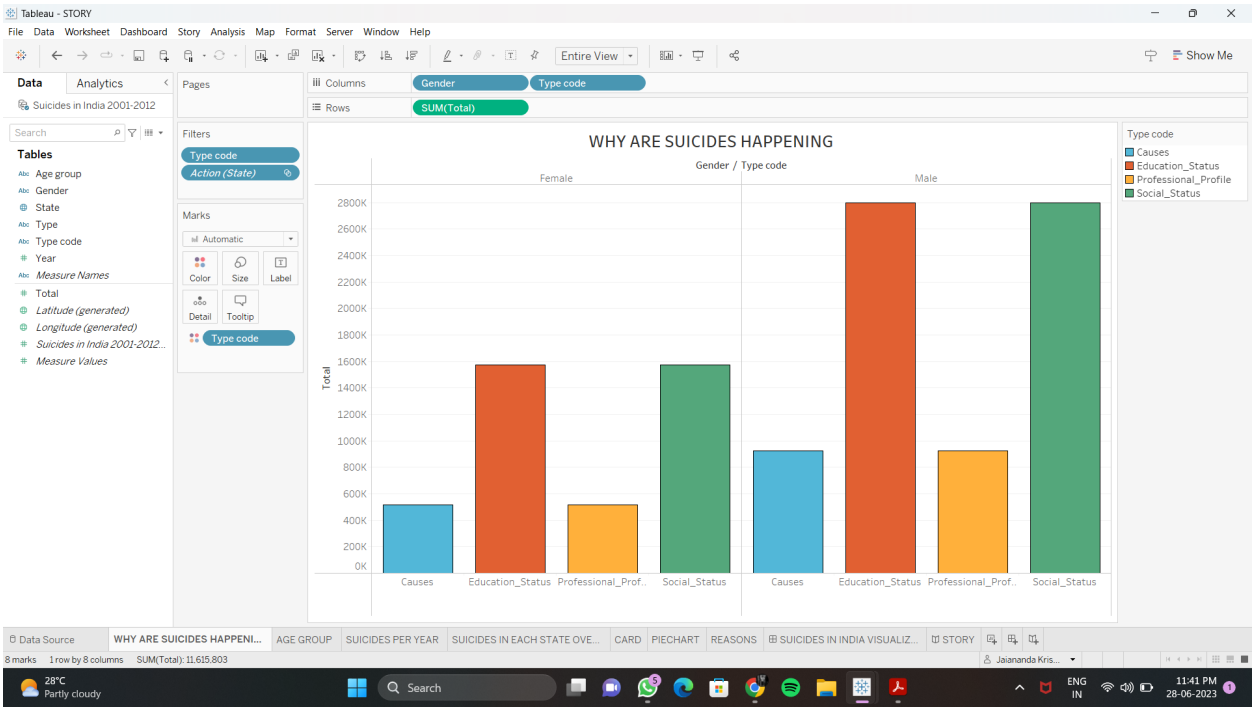
FLOWCHART

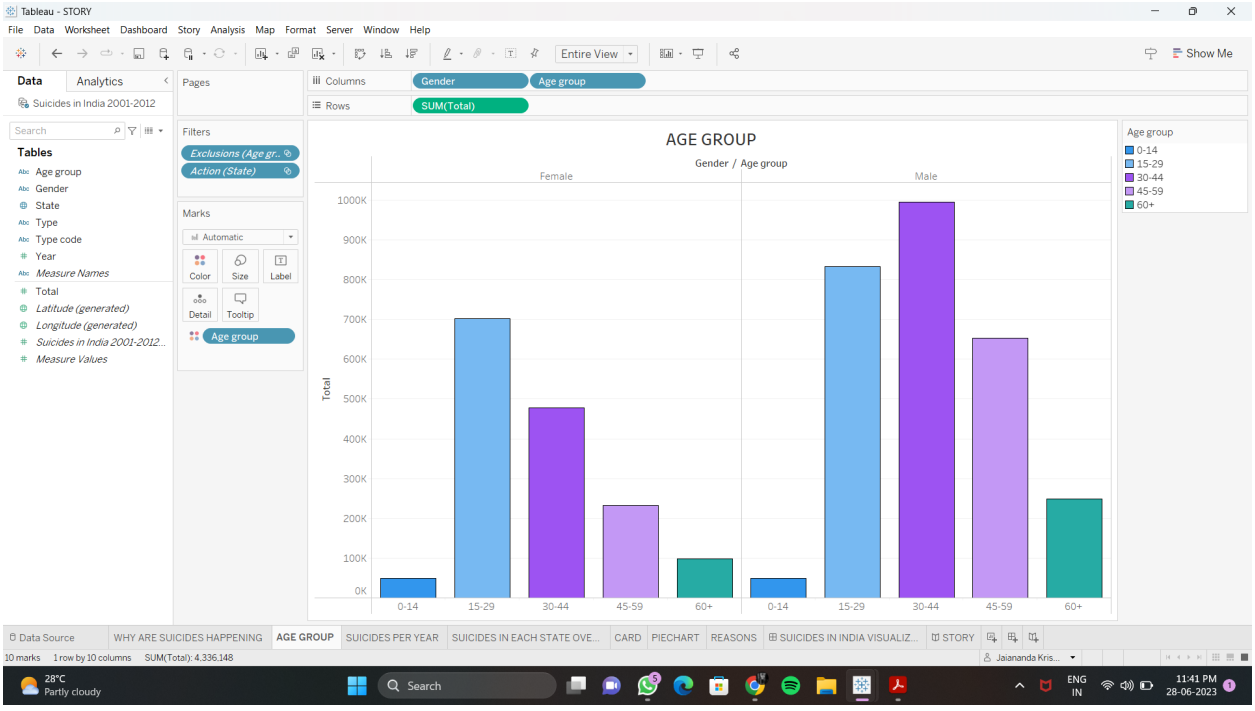

Suicides In India Visualizations Using Tableau
Pre Requisites
Project Objectives
Project Flow
Working With The Dataset
Visualizations Of Suicides In India (2001-2012)
Suicides Per Year (Forecasting)
Age Group Wise Classification
State Vs No. Of Suicides Based On Reason


START
Data Collection
Data Pre-processing
Data Modelling in ANN
Data Modelling in MLRA
Data Visualisation in Predictive Dashboard
Validation of Predictive Model
END
Proposed Analytical Model
Visualisation Dashboard

RESULTS

Screenshots of the visualizations,dashboard and story created .





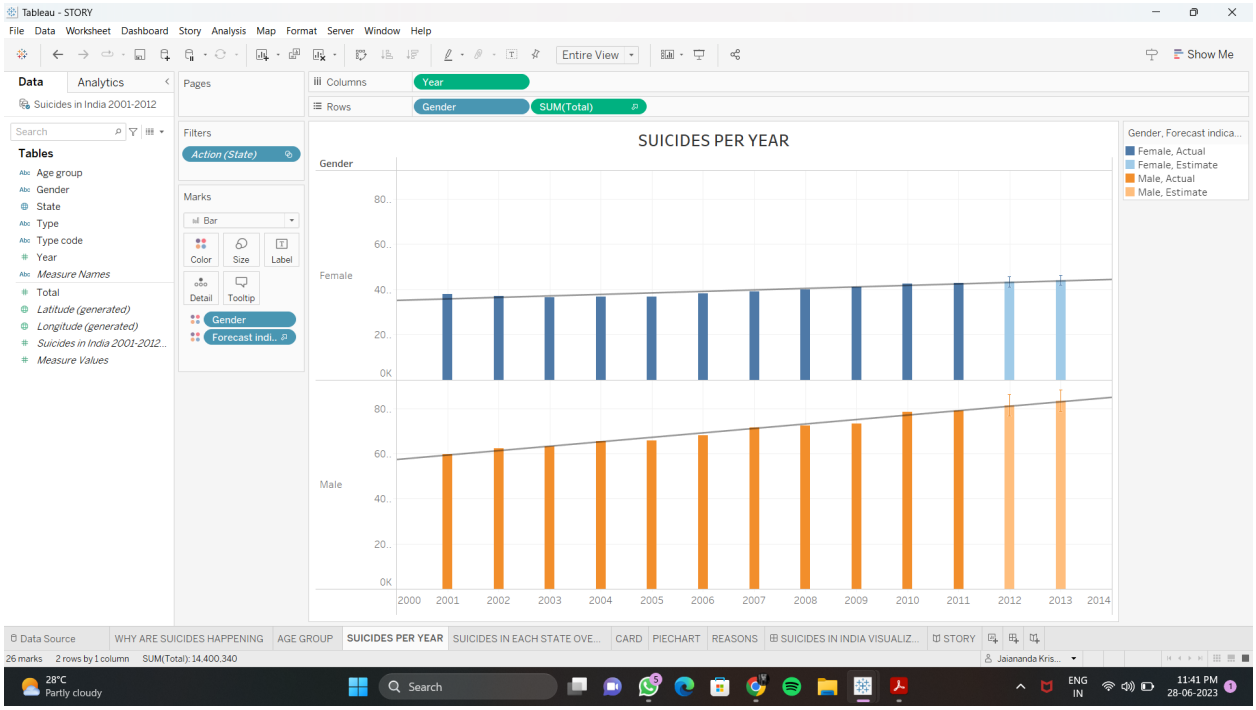


Tableau - STORY
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
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Data
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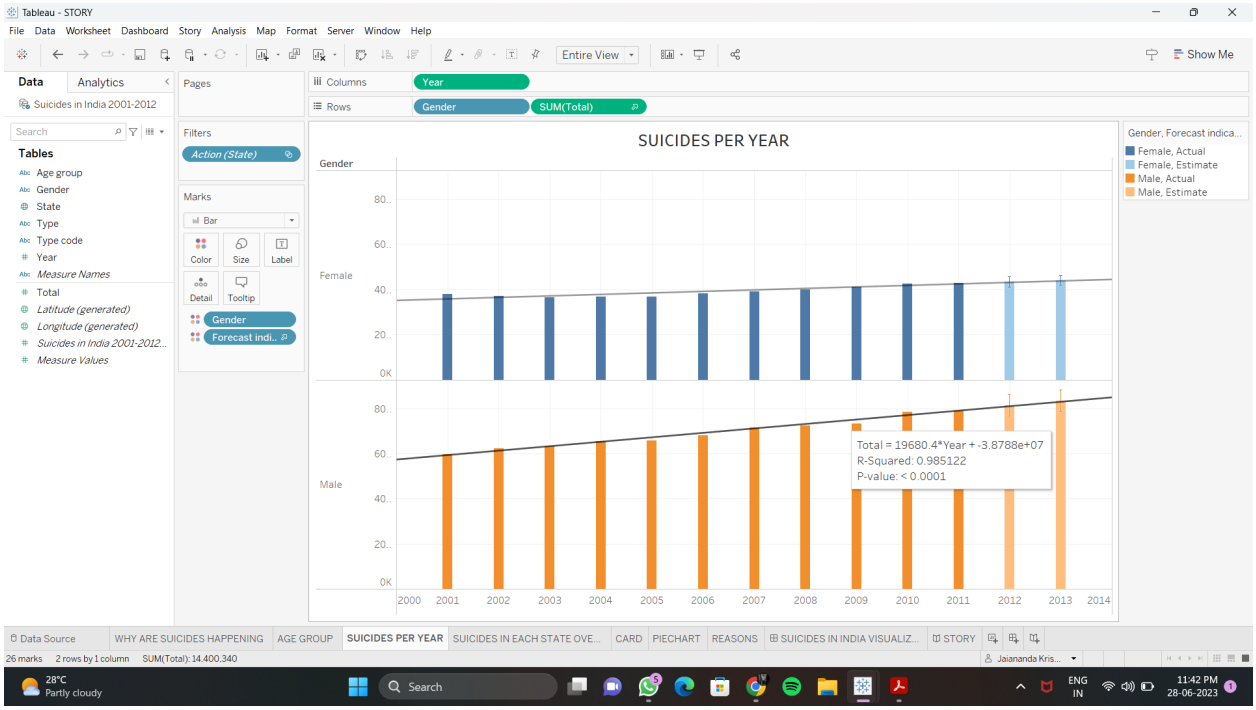
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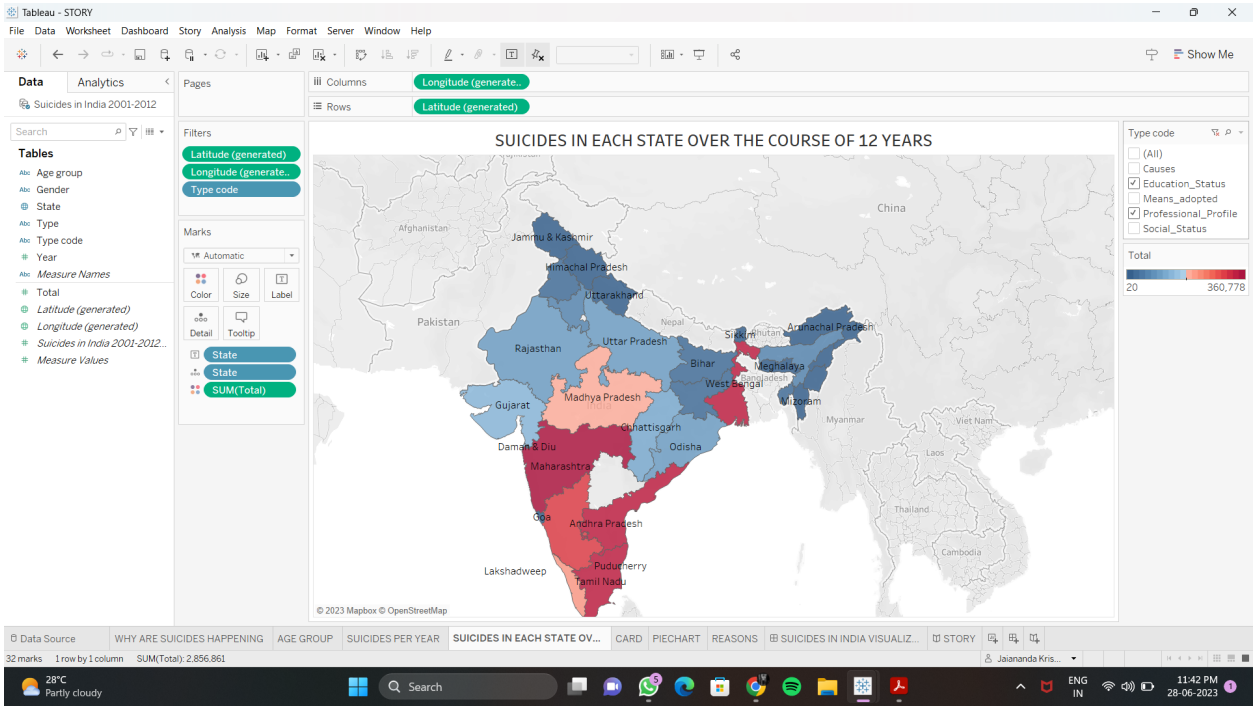
Tableau - STORY
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China
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Nepal
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Myanmar
Viet Nam
Laos
Thailand
Cambodia
Jammu & Kashmir
Himachal Pradesh
Uttarakhand
Rajasthan
Uttar Pradesh
Sikkim
Arunachal Pradesh
Bihar
Meghalaya
West Bengal
Mizoram
Gujarat
Madhya Pradesh
Chhattisgarh
Odisha
Daman & Diu
Maharashtra
Goa
Andhra Pradesh
Puducherry
Tamil Nadu
Lakshadweep
© 2023 Mapbox © OpenStreetMap
Data Source
WHY ARE SUICIDES HAPPENING
AGE GROUP
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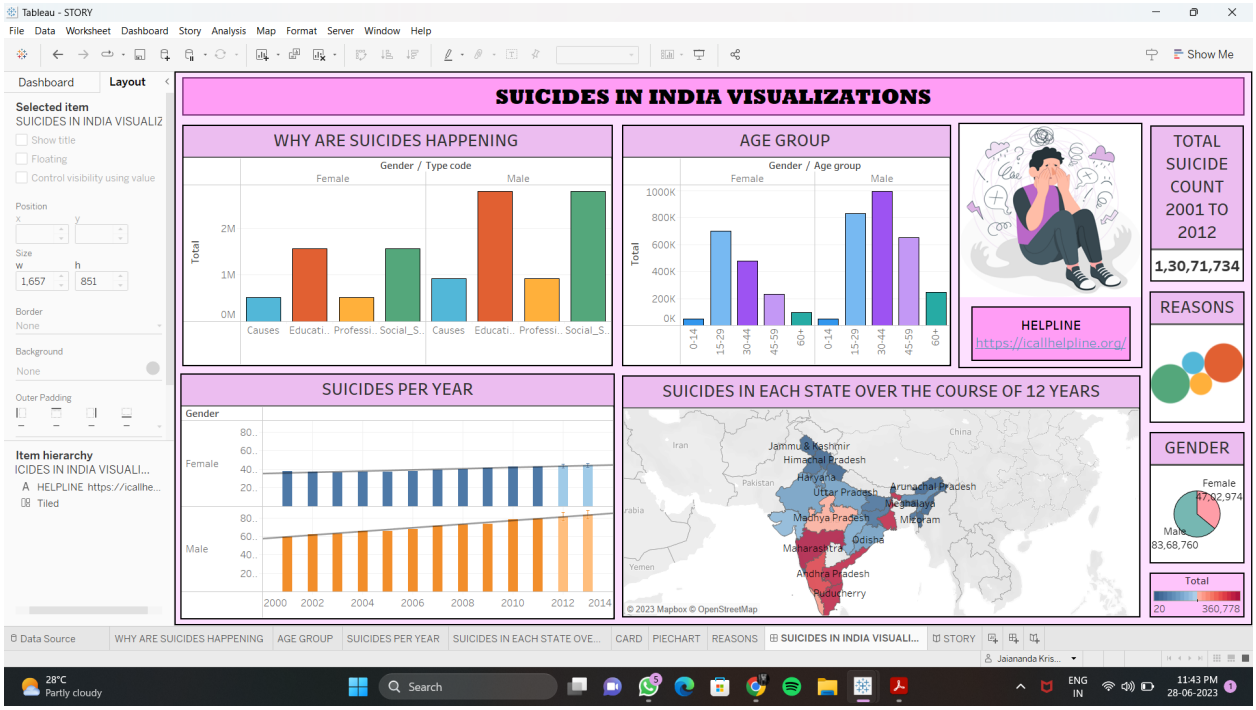
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TOTAL SUICIDE COUNT 2001 TO 2012
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SUICIDES IN EACH STATE OVER THE COURSE OF 12 YEARS
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Yemen
Jammu & Kashmir
Himachal Pradesh
Haryana
Uttar Pradesh
Arunachal Pradesh
Meghalaya
Madhya Pradesh
Mizoram
Odisha
Maharashtra
Andhra Pradesh
Puducherry
© 2023 Mapbox © OpenStreetMap
GENDER
Female
87,02,974
Male
83,68,760
Total
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360,778
Data Source
WHY ARE SUICIDES HAPPENING
AGE GROUP
SUICIDES PER YEAR
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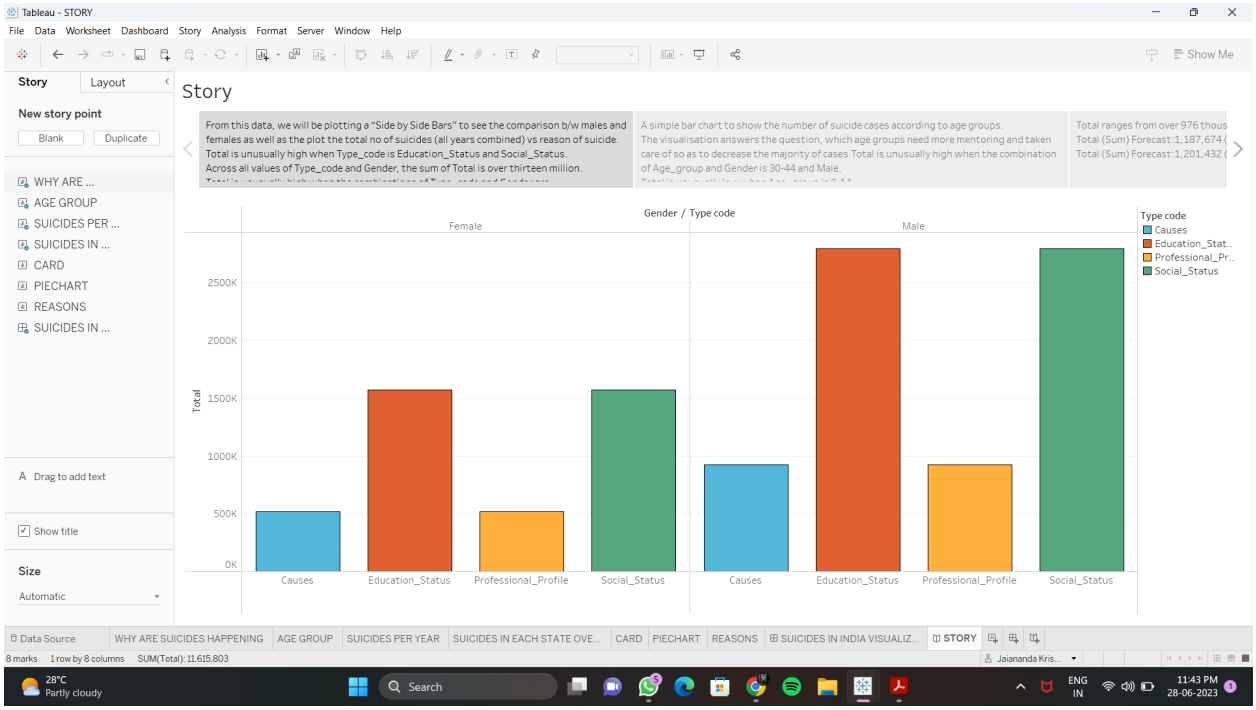

Advantages of using Tableau:

1. Visualization can be a very spiritual practice. Precise visualizations and clarity of mind can take you deeper within yourself, facilitating a powerful connection to the sacred. Visualization is a great access point for meditation and can help you move deeper into stillness and connection with your higher power and higher self.
2. There are three things you should know when it comes to data visualization. The first is that data visualization has become a faster, more effective communication and motivation tool. This has happened due to the second point of data visualization: people are, by and large, visual learners.
3. Data visualization tools are, simply put, an awesome sales tool.; Advances in technology have caused us to change our preconceived notions surrounding data presentation. What we once saw as dull and mundane, can now be seen as beautiful.

Disadvantages of using Tableau:

1. It requiring more time, effort, and skills to design, develop, and maintain than static charts, and potentially increasing the complexity and cost of the data analysis process.
2. It gives assessment not exactness – While the information is exact in foreseeing the circumstances, the perception of similar just gives the assessment.

APPLICATIONS

1. **Data visualization and reporting:** Tableau is widely used for creating visually appealing and interactive data visualizations, charts, and reports. It allows users to present complex data in a clear and understandable format, enabling stakeholders to derive insights and make data-driven decisions.

2. **Data exploration and discovery:** Data visualization facilitates data exploration by providing an intuitive interface to interact with data. Users can apply filters, drill down into details, and perform ad-hoc analysis to uncover hidden insights and relationships within the data.

3. **Geospatial analysis and mapping:** Data visualization has robust geospatial capabilities, allowing users to create maps and perform geospatial analysis. It supports various map visualizations, including point maps, heat maps, and plethora maps. This is useful for analysing location-based data, identifying geographical patterns, and making spatially informed decisions.

4. **Healthcare analytics:** Data visualization is increasingly used in the healthcare industry for analysing patient data, monitoring healthcare outcomes, and improving operational efficiency. It aids in visualizing clinical data, tracking disease outbreaks, identifying healthcare trends, and optimizing resource allocation.

5. **Human resources analytics:** Tableau assists HR professionals in analysing and visualizing workforce data. It helps in tracking employee performance, identifying talent gaps, monitoring employee engagement, and generating HR reports and dashboards.

CONCLUSION

In conclusion, the visualizations of suicides in India from 2001 to 2012 provide important insights into the patterns and trends of this critical issue. Through the analysis of available data, several key observations can be made:

1. **Overall Increase:** The visualizations reveal a general increase in the number of suicides in India during the specified period. This suggests a growing concern and highlights the need for proactive measures to address mental health and social factors contributing to suicides.

2. **Gender Disparity:** There is a noticeable gender disparity in suicide rates, with males consistently accounting for a higher proportion of suicides compared to females. This pattern should prompt targeted interventions and awareness campaigns aimed at understanding and addressing the unique challenges faced by different genders.

3. **Age Distribution:** The visualizations demonstrate variations in suicide rates across different age groups. Certain age ranges, such as young adults and elderly individuals, appear to be more vulnerable to suicide. This highlights the importance of targeted support and mental health services tailored to these specific age demographics.

4. **Regional Disparities:** The data visualizations indicate variations in suicide rates across different states and regions of India. It is crucial to recognize and understand the underlying factors contributing to these regional disparities, such as socioeconomic conditions, cultural factors, and access to mental health resources.

5. **Causes and Contributing Factors:** While the visualizations do not explicitly provide information on the causes of suicides, they serve as a starting point for identifying potential contributing factors. Further research and analysis are necessary to delve deeper into the underlying causes, including mental health issues, societal pressures, economic stress, and relationship problems.

6. **Need for Mental Health Support:** The visualizations emphasize the urgent need for increased mental health support and awareness campaigns in India. Initiatives should focus on reducing stigma, improving access to mental health services, and promoting mental well-being at the individual, community, and societal levels.

Overall, the visualizations of suicides in India from 2001 to 2012 shed light on the magnitude and complexity of the issue. They underscore the importance of adopting a multi-faceted approach that combines preventive measures, early intervention, policy changes, and community engagement to effectively address the challenge of suicide in India.

FUTURE SCOPE

1.Conduct a longitudinal study to analyze suicide trends in India beyond 2012, providing a more comprehensive understanding of the issue over time.

2. Examine the role of access to mental health services and support systems in different regions of India to determine gaps and areas for improvement.

3. Analyze the influence of media reporting on suicides and its potential impact on suicide rates, exploring responsible reporting guidelines and their effectiveness.

4. Conduct qualitative research, such as interviews or focus groups, to gather personal narratives and insights into the underlying causes and experiences related to suicides.

5. Assess the effectiveness of existing suicide prevention programs and initiatives in India, identifying successful strategies and areas requiring further attention.

6. Explore the impact of educational initiatives on mental health awareness and suicide prevention, evaluating the effectiveness of school-based programs and awareness campaigns.

7. Investigate the correlation between substance abuse and suicide rates, examining the prevalence of substance use disorders as a contributing factor in suicides.

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4. Nandi DN, Banarjee G, Boral GC. Suicide in West Bengal - A century apart. Indian J Psychiatry. 1978;20:155–60. [Google Scholar]
5. Hedge RS. Suicide in rural community. Indian J Psychiatry. 1980;22:368–70. [PMC free article] [PubMed] [Google Scholar].

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https://public.tableau.com/en-us/gallery
https://www.tableau.com/blog
https://community.tableau.com/
https://help.tableau.com/current/guides/en-us/tableau-help.html
https://interworks.com/blog/
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APPENDIX

Links for the visualizations.

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DASHBOARDS

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https://public.tableau.com/views/DashBoard-2_16878910452980/Dashboard1?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link&:device=desktop

DEMONSTRATION LINK

https://drive.google.com/drive/folders/1S9gcdJGkPWMJINRJBw5IL24ZFFyXDWat?usp=sharing