



Introduction

Background:

Importance of Merging Databases

- **Over 20 years** of fragmented data on caregivers and older adults with cognitive impairments at Weill Cornell Medicine.
- Fragmentation and **inconsistent coding** limit the utility of these datasets.
- A unified database enhances comprehensive analyses and the detection of subtle effects.

Significance of the Topic

- Over 11 million Americans provide unpaid care for people with Alzheimer's or other dementias.
- 40% of caregivers report high emotional stress; 20% experience physical health issues.
- Comprehensive data is essential for developing effective support systems and interventions.

Project Objective:

- 1: Integrate 5 key datasets, standardizing 1,277 variables related to caregiving and cognitive impairments.
- 2: Establish a web interface for easy database access and querying for researchers.
- 3: Support future research and meta-analytic studies on psychosocial outcomes, caregiving, and cognitive impairments

Data Source

Database	Focus	Variables	Data Points
Community REACH	Health, well-being, social interactions	618	352
NINR	Community care services and outcomes	802	635
GEMSSTAR	Emotional and cognitive assessments	128	391
REACH 1	Health metrics, baseline and follow-up	794	5282
REACH 2	Longitudinal health data	1185	1577
VIDEO	Video assessments of interactions	1007	313

- **Similarities:** Standardized tools, focus on caregivers and cognitive impairments, and consistent data collection.
- **Differences:** Varying scope and detail, different collection periods, and unique methods.

Enables holistic analysis, improves longitudinal studies, and informs better policy decisions.

Method

Data Preparation and Initial Handling

Step 1: Initial Data Handling with Excel

- Clean and organizes raw data.
- Identify and rectifies any discrepancies or missing values.

Step 2: Variable-Level Data Analysis with SPSS

- Conduct descriptive statistics to summarize the data.
- Perform inferential statistics to make predictions or inferences about the data.

Comparative Analysis Across Studies

Step 3: Identifying Common and Unique Variables

- Intersection (Common Variables)
- Union (Unique Variables)

Step 4: Evaluating Variable Scales

- Verify the measurement scales of each variable.
- Standardize scales where necessary to facilitate accurate comparison.

Data Cleaning and Validation

Step 5: Data Cleaning

- Regression Analysis: To identify and correct outliers or erroneous data points.
- Descriptive Statistics: Calculate maximum, minimum, and mean values to spot inconsistencies.
- Cross-Checking: Compare data points across different variables to ensure consistency and accuracy.

Step 6: Final Selection of Significant Surveys

- The relevance of the survey to our research objectives.
- The quality and reliability of the data.
- The potential impact of the survey findings on our study.

Web page implement

Step 7: Prototype Design

- User Interface (UI) Design: Create models of user profiles and flowcharts of operations to ensure that the interface is intuitive and easy to use.
- Responsive design: Ensure that the site is user-friendly across devices and screen sizes (different UI designs and how design components switch, etc.).

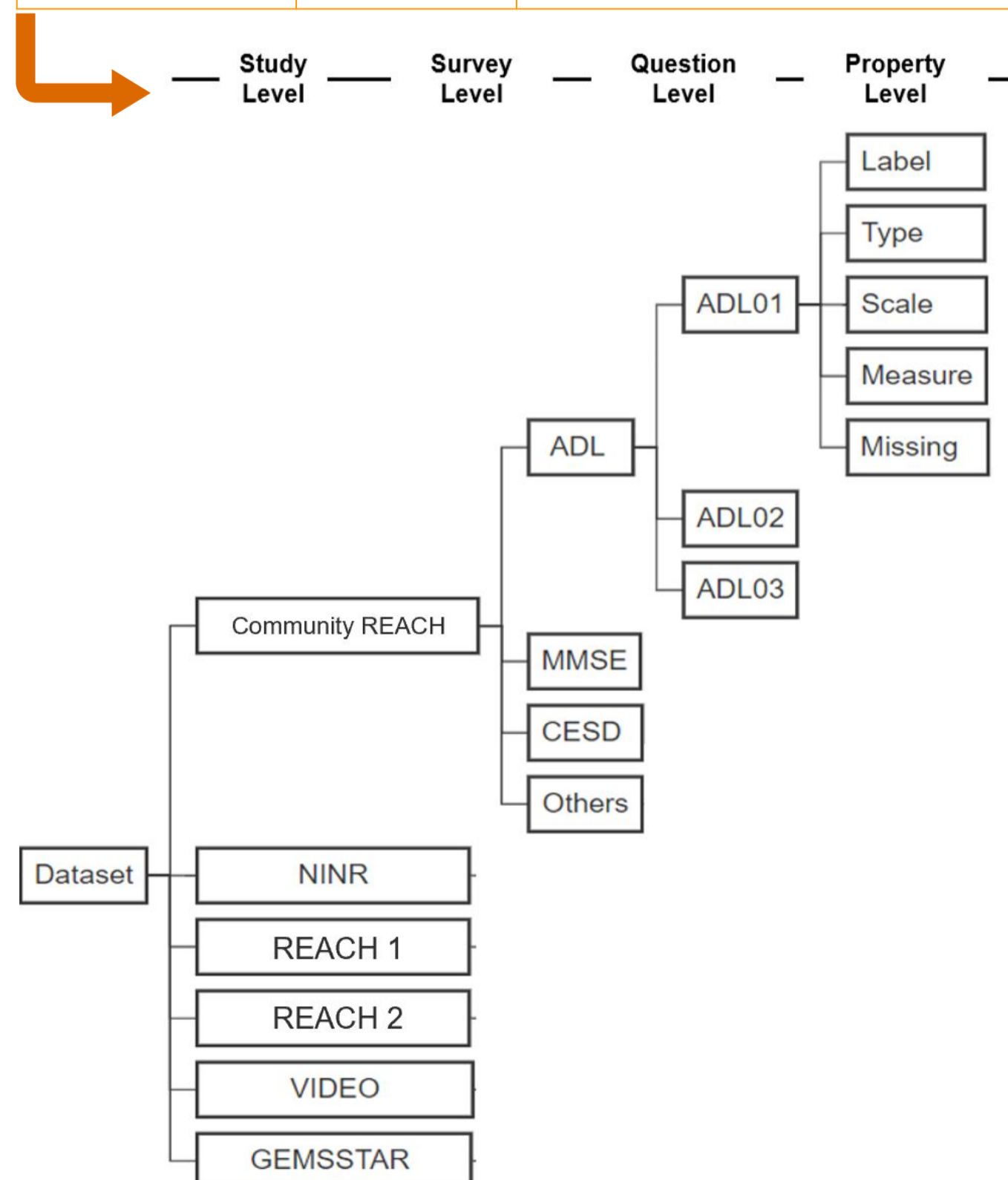
Step 8: Code Implement

- Development: Convert prototype into functional web pages using HTML and JavaScript. Complete the development of another version using native technology.
- Deployment: Use GitHub to host the page.
- Testing and Debugging: Test to identify and fix bugs, ensuring the website operates smoothly.

Results

Data Structure

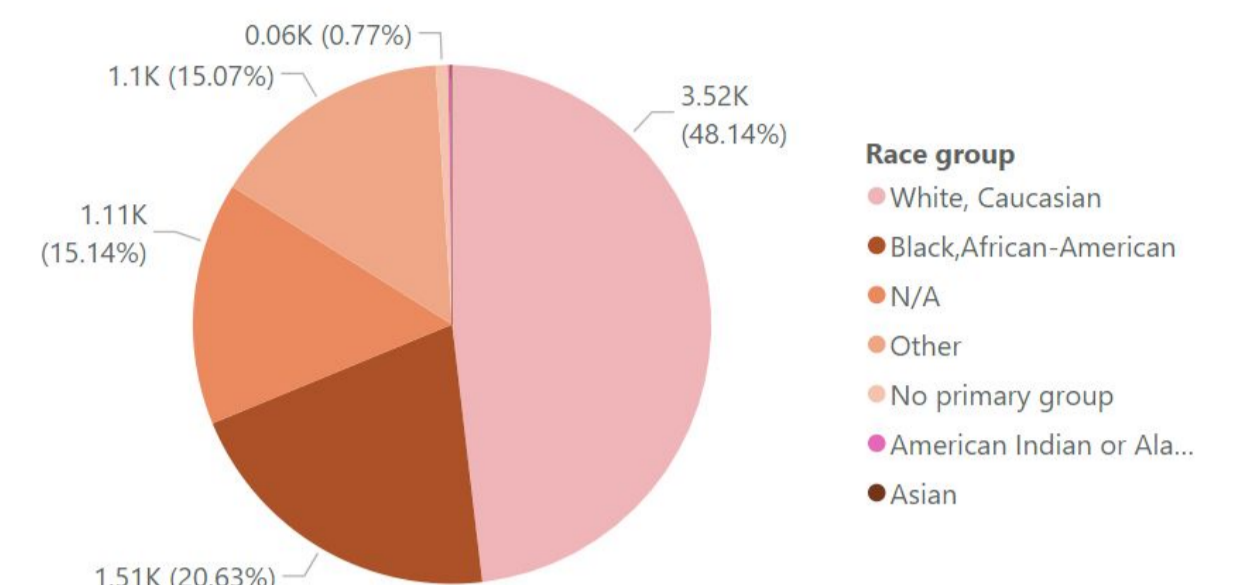
Data Hierarchy	Statistical	Property
Study-Level	5 Studies	Large, accessible datasets support complex, multifaceted research inquiries.
Survey-Level	26 Surveys	Categorized into three primary domains: 1. Mental Health 2. Effectiveness Evaluations 3. Social Support Measures
Question-Level	1,277 Questions	Based on efforts of different organizations and current literature review
Response-Level	8,550 Answers	Panel data Missing data



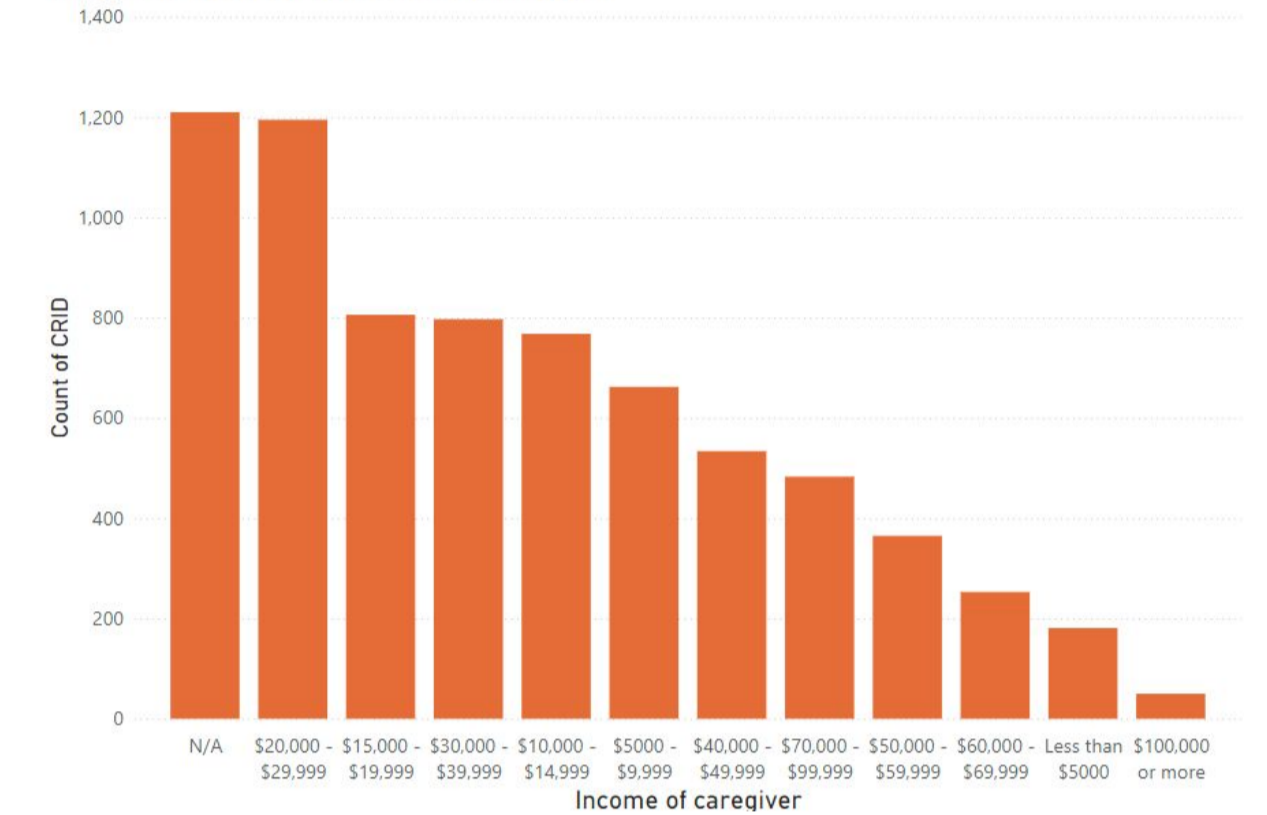
This ensures comprehensive data collection and minimizes biases associated with a single method.

Data Visuals:

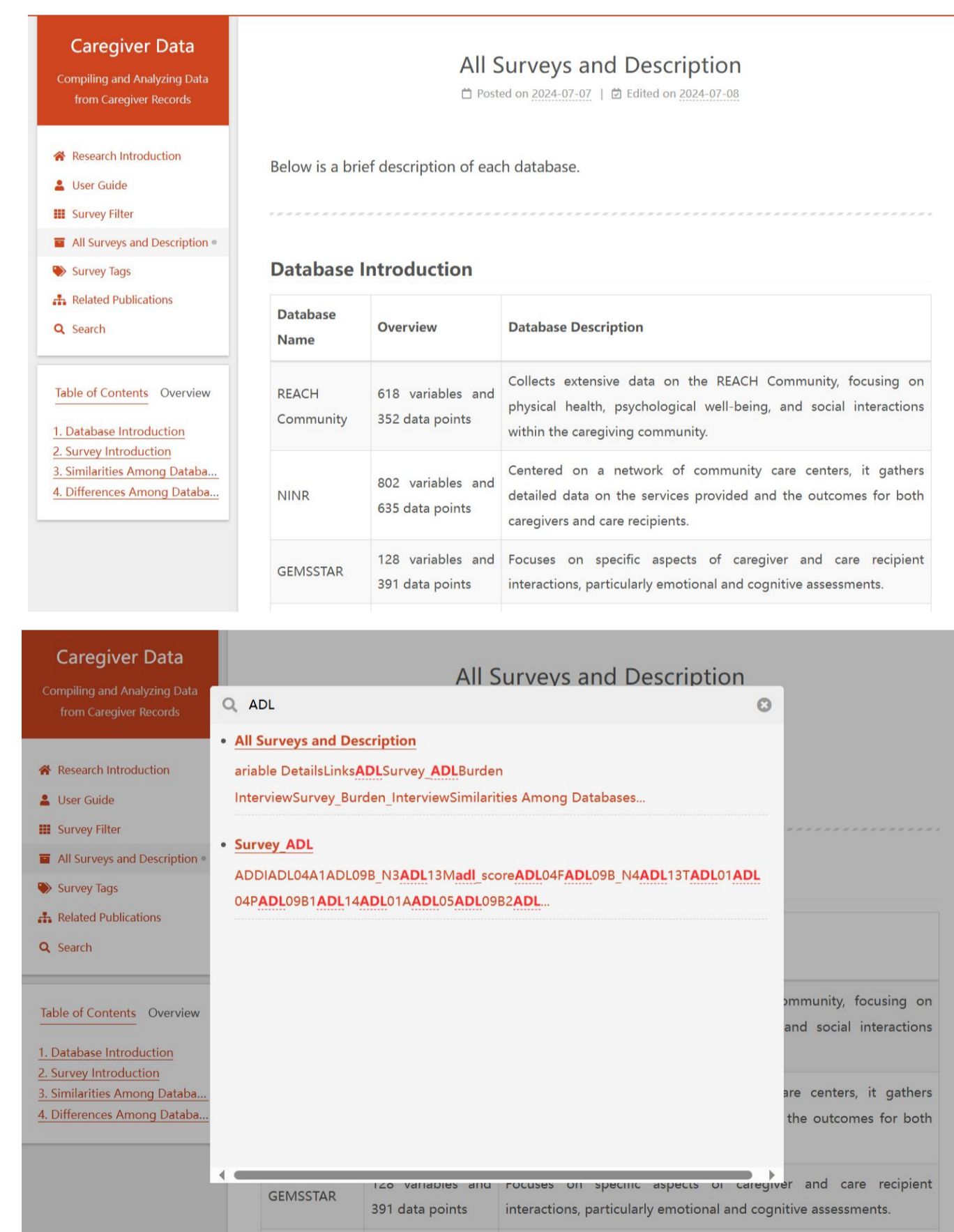
Number of Individuals by Race group



Count of CRID by Income of caregiver



Web Visuals:



Conclusion

- Integrate fragmented psychosocial datasets at Weill Cornell Medicine standardizes 1,277 variables from 5 key studies, supporting comprehensive analyses and meta-analytic studies. The user-friendly web interface supports diverse research initiatives. Despite small sample sizes and outdated data, this database provides a solid foundation for future research, improving caregiving practices and policies.

Bibliography

- Alzheimer's Association. (2023). Alzheimer's Disease Facts and Figures. Retrieved from [\[https://www.alz.org/alzheimers-dementia/facts-figures\]](https://www.alz.org/alzheimers-dementia/facts-figures)(<https://www.alz.org/alzheimers-dementia/facts-figures>)
- Centers for Disease Control and Prevention (CDC). (2023). For Caregivers, Family and Friends — A Public Health Issue. Retrieved from [\[https://www.cdc.gov/aging/caregiving/index.htm\]](https://www.cdc.gov/aging/caregiving/index.htm)(<https://www.cdc.gov/aging/caregiving/index.htm>)