**Addressing Water Inequality: An Analysis of California's Public Water Systems and Policy Solutions for Disadvantaged Communities**

1. **Introduction**

Being able to have safe drinking water stands as a fundamental right, yet different communities across the world, particularly in California, experience considerable gaps in their access to water quantity and quality. People from most parts of California benefit from sustainable water services, yet several marginalized communities in rural and low-income urban areas experience elevated risks from contaminated water supplies. Various social, economic, and environmental elements, together with racial discrimination, unstable economic markets, and outdated infrastructure systems, drive this inequality. The absence of equal clean water access leads to critical effects which cause health deterioration and economic difficulties and sustain negative poverty and social inequality patterns.

California's water system, despite its size and complexity, struggles with issues of equity in water distribution. The affluent parts of cities get steady, clean water supplies. Still, poorer areas, mainly inhabited by Latino and African American residents, face insufficient water infrastructure due to poor quality water sources. Inspection results indicate higher exposure of residents in these regions to dangerous chemicals like arsenic and nitrates in their drinking water, which creates severe health concerns. Historical, along with present social inequality patterns, combine with climate change issues to intensify these challenges so vulnerable groups remain with no sufficient access to vital water resources.

This study investigates the elements contributing to California's public water dispersion inequity, with particular attention paid to its effects on susceptible population groups. The research establishes connections between water quality standing, socioeconomic factors, and neighbourhood location to reveal how some neighbourhoods struggle more with clean water access. Existing policies, technological solutions, and potential new approaches will be examined in the research to determine ways of reducing discriminatory water distribution patterns across the state.

Addressing water inequality in California stands as an essential requirement because it defends both community health among disadvantaged residents along environmental equality between groups in society. Secure equal access to protected water supplies across California remains an emergency requirement since this western state faces escalating water scarcity during drought periods. The study adds to water justice discourse through systematic investigation of structural inequalities which maintain racial disparities and through the presentation of practical methods to attain water equity.

This investigation will answer three main questions by determining what social elements, together with economic conditions and environmental aspects, result in unequal clean water access throughout California. Which factors determine that marginalized communities face unequal water treatment, and how do racial, class and geographical locations influence water distribution? The state needs new policies and technological innovations to guarantee fair water distribution, particularly for disadvantaged groups. This research investigates water inequality at multiple levels in California while creating strategies for securing water rights for all members of society.

1. **Literature Review**

The water systems of California deal with multiple complicated challenges which encompass both reliable water availability and water quality together with proper distribution among different populations. The state operates under extensive challenges because it exists across multiple geographic zones and demonstrates financial disparities between regions while dealing with climate change consequences. As the biggest and most intricate water system in the United States exists in California the state faces water shortage alongside pollution and unequal distribution of clean drinking water. Each distinct area within the system shows different water conditions because its dependable water resource supply levels change accordingly.

The state of California retrieves its water supply from Sierra Nevada snowmelt and maintains reservoirs as well as aqueducts to operate its water distribution network. Continuous pressure on these water supply systems continues during drought years because climate change has produced both longer and more intense dry spells. Water resource management in the state must balance sustainable water delivery to its 40 million residents together with broad agricultural operations through scarce resources. Water storage and distribution fails to meet increasing challenges because dry periods affect California with increasing regularity.

The principal water quality problems continue to threaten communities across the entire state of California. The residents throughout rural areas and low-income districts of Central Valley and southern California lack reliable access to water purity. Federal water requirement limits are exceeded by unsafe drinking water, which affects more than one million people across California, according to national reports. Public health risks plague communities that obtain water from systems contaminated with nitrates, arsenic, and lead contamination. The water systems cannot afford to upgrade their infrastructure because they do not have sufficient financial resources to maintain it.

Groundwater supply represents the primary water source for the state as it attempts to meet escalating water requirements, which creates a major problem. The excessive extraction of groundwater has led to surface land destruction and deteriorating water quality in defined areas. The contamination of groundwater has made it harder for communities to access clean water through these pollution problems.

California faces limitations in solving its water issues because water supply concentrations are unbalanced across the state. The Central California cities of Los Angeles, San Francisco, and San Diego operate secure, clean water supply systems, yet rural communities, especially those located in the Central Valley, encounter water contamination issues. Better funding for infrastructure combined with wider water management involvement will result in equal water accessibility for the people of California.

* 1. **Water Disparities Among Demographic Groups**

The effects of polluted water on Latino and African American populations in California represent a major issue that recent research has started to analyze more intensively. The research conducted by Acquah & Allaire (2023) and Fernandez-Bou et al. (2023) shows that these populations typically reside in places where water pollution rates are high, thus negatively impacting their medical situation and life conditions. Communities with poor water quality mainly consist of residents from lower-income brackets who have little influence on political matters.

The populations seek water from outdated and maintained unsatisfactorily water supply systems. The rural Latino communities located in the Central Valley particularly depend on secondary water service systems that tend to harbour nitrates, arsenic or bacterial contaminants. These pollutants present significant dangers to public health and affect three main vulnerable groups: children, elderly citizens, and women who are pregnant. Those who continually encounter hazardous substances in their water supply face increases in their potential to develop cancer alongside birth abnormalities and developmental delays.

Historical redlining practices alongside housing segregation and environmental racism together expose Latino and African American communities to unequal amounts of environmental hazards that include polluted water. Such communities struggle to get clean water because they face different barriers which include restricted funds along with weak political standing coupled with complicated administrative systems that overlook their needs.

Thanks to the environmental justice movement, the nation now recognizes the unequal distribution of water services among communities and seeks justice through improved water infrastructure development in these areas. The California Department of Water Resources, together with other state agencies, currently tackles these disparities through their implementation programs. California Directorates focus their water infrastructure investment funds on areas that have higher pollution rates. Many efforts must be enacted to deliver clean drinking water safety to all people throughout California without discrimination based on either race or economic level.

* 1. **Water Policy and Governance: Historical Context and Recent Developments**

The development of water policies in California spans throughout history to respond to the fast growth rate and complex natural resource management needs across the state. Since the start of the state's water management system, California has built big infrastructure elements, including dams, reservoirs, and aqueducts. The State Water Project and Central Valley Project development enabled northern California water allocation to transport water throughout southern regions, supporting agricultural growth and urban expansion.

The centralized water management system authorized to serve agricultural practices and urban development has received growing opposition. California has started implementing more sustainable water management approaches because water scarcity and environmental preservation have become vital issues. The Sustainable Groundwater Management Act (SGMA) stands as a major achievement, becoming law in 2014 to control excessive groundwater usage while avoiding additional damage to the environment. Under SGMA, local agencies must write operational plans for managing their groundwater source areas and work toward sustainability by 2040.

The California Water Plan undergoes its most recent restructuring in 2023 to serve as the guiding document for state water resource management. Through this plan, the state focuses on climate change adaptation, water system resilience enhancement, and water equality between all communities. The 2023 revision of the California Water Plan emphasizes forward progress that serves disadvantaged communities and native tribes because they typically face exclusion from water management procedures. Building upon previous top-down water management systems, California now adopts an inclusive strategy to serve the entire population's social and cultural requirements.

Water policies in California need to address intricate challenges regarding restoring natural environments and preserving habitats. The Sacramento-San Joaquin Delta, together with other critical ecosystems, makes California its home while supplying water to millions of residents. Controlling water management between human supply requirements and environmental sustainability demands rigorous oversight because climate change impacts extend with increasing intensity.

* 1. **Technological Solutions and Modelling Tools in Water Management**

The water management issues across California require breakthrough technological solutions to find optimal repair measures. Additions of predictive analytics enable better water quality outcome predictions and water resource availability forecasts through its operation combined with data modelling and real-time monitoring systems for water distribution networks. Water management systems become smarter and more efficient through implemented technological solutions because they reduce water scarcity during droughts and critical emergencies.

These monitoring systems let water utilities recognize pollutants during their occurrence, resulting in the simultaneous protection of public health systems. Remote sensing allows for combined monitoring of underground aquifers and water surface elevations, enabling the detection of water levels that mostly exist in subsurface zones.

Water management effectiveness in California has grown significantly because of advanced predictive modelling technologies now spread throughout the field. Modern predictive modelling systems produce water supply outlooks by analyzing recorded data, which combines actual climate measurements with projected climate conditions. The data collection provides water executives with tools to choose suitable reservoir control systems and decide appropriate water allocations between agriculture, cities, and environmental protection needs.

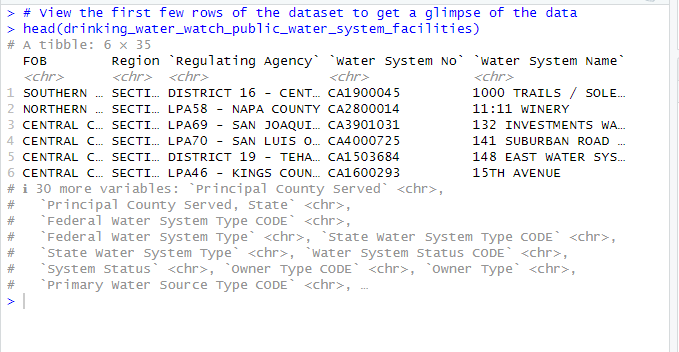
Water recycling technology in California operates jointly with desalination methods to preserve water supplies. The wastewater facilities in Orange County operate their water recycling operation through state-financed capital and produce potable water from their treatment facilities. The desalination plant currently under development in Huntington Beach could supply water to California, but its implementation creates problems related to finances and environmental effects.

California must implement these modern technologies to increase water stability. The state should dedicate funding to infrastructure expansion through targeted budget allocations while simultaneously developing water technology policies which need appropriate financial support.

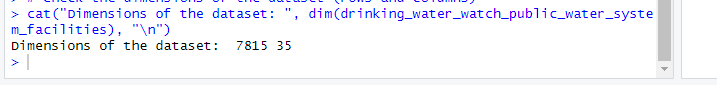
1. **Methods**

The analysis seeks to understand how the distribution of water resources differs between California public water systems using data from Drinking Water Watch Public Water System Facilities. The study will use different methods, including data collection followed by preprocessing exploratory data analysis and advanced statistical modelling, to discover patterns and relationships throughout the data. The research methods used to execute the objectives are explained in this part.

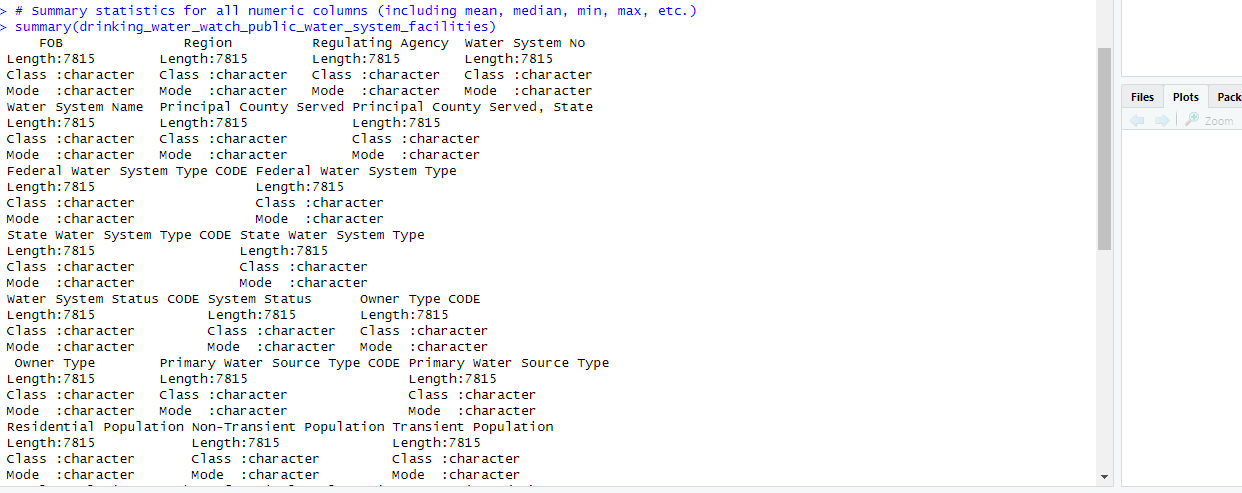
* 1. **Overview of California's Public Water Systems: Preliminary Dataset Insights**



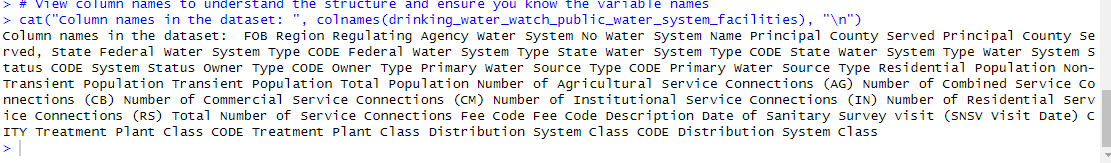
The figure presents the results from applying the head () function on the Drinking Water Watch Public Water System Facilities dataset, which visualizes the initial six records of data. A different water system from California occupies each row of the table, which contains columns revealing vital information about FOB (region), Region, Regulating Agency, Water System No, and Water System Name. The dataset contains four extra elements which are Principal County Served, Water System Type, System Status and Primary Water Source Type. The overview explains dataset arrangement to help understand how water systems in different regions of California are identified and classified.



The output generated by the dim () function displays the dimension structure of the Drinking Water Watch Public Water System Facilities dataset. The data contains 7,815 rows to match 35 columns. The California public water system database contains 7,815 records that utilize 35 variables to describe each system through its name and region and its water source information and population data along with regulatory compliance details. The graphic representation provides an overview of the database dimension and amount of accessible data for analytical purposes.



Summary () function output for the Drinking Water Watch Public Water System Facilities dataset shows a comprehensive breakdown of its columns and rows, which number 35 and 7,815, respectively. The whole dataset consists of text-based variables that function as characters with mode classification. The dataset maintains multiple types of information in its total 35 columns, which include FOB, Region, Regulating Agency, Water System No and Water System Name, among additional details. Or each water system, the available attributes include information about the geographic region with additional categories ranging from water source type to system status and populations served, then to service connection types, including agricultural com, commercial, and residential purposes. Additional columns present in the dataset provide information about water system regulations as well as treatment plant classification and survey date information. Data analysis requires additional reformulation steps, mainly for numerical population variables that exist in textual format.



The displayed information contains the colnames () function output from R that shows the column names in the Drinking Water Watch Public Water System Facilities dataset. The dataset contains 35 columns comprising variables starting from FOB through Water System Status in addition to Principal County Served and Water System Name among other key identifiers. The dataset contains important columns which include water source information and service connection details besides population statistics (both residential and transient) and regulatory information. The output shows a detailed listing of all variables present in the dataset since this information helps users understand data structure to select appropriate columns for analysis.

* 1. **Data Collection and Preprocessing**

This research utilizes the Drinking Water Watch Public Water System Facilities dataset as its main data source. The California Department of Public Health dataset includes 7,815 entries with details on 35 variables that describe multiple California public water systems. The data retrieved through Drinking Water Watch Public Water System Facilities remains publicly accessible as the database receives regular updates to maintain data accuracy. The dataset includes several variables which detail the features of public water systems throughout California, including their locations, regulatory agencies, water sources, population distribution, and physical structures.

* + 1. **Cleaning Missing Values**

Objective one of preprocessing operations targets the handling of missing data. The analysis needs to start after handling null values found in Residential Population and Non-Transient Population variables throughout the dataset. A proper approach to handle missing data gaps will be determined according to the missing data extent. When few variables have missing data imputation through mean or median methods will be employed for data replacement. The researchers will either substitute categorical variable missing values with prevailing categories or delete insignificant missing data points.

The result of colSums(is.na(...)) reveals what data points are missing from the Drinking Water Watch Public Water System Facilities dataset. Two key records feature extensive amounts of missing entries such as Principal County Served and Principal County Served, State due to 208 absent values. The dataset contains missing entries for Primary Water Source Type and Residential Population since it lacks information about 172 rows. Most missing values appear in Fee Code Description and Date of Sanitary Survey Visit while Owner Type and Fee Code present fewer (\textit{9 and 66}) empty entries. The analysis requires additional data imputation methods or more investigation of incomplete geographic system data points to achieve robust analysis results.

* + 1. **Data Transformation**

The dataset contains Population Served variables recorded as strings including NULL and 800 values that present analysis obstacles. These variables will be converted to numeric values according to requirements. The program will transform "NULL" values into pre-defined missing values while string representations of numbers become integers for statistical processing.

* + 1. **Categorization and Encoding**

Multiple variables in the dataset represent categories, including "Regulating Agency" and "Water Source Type." This analysis requires a numerical representation of categorical data, which will serve as input. Every water source category within the dataset (groundwater and surface water) will receive its own numeric code. Each distinct agency under the "Regulating Agency" variable will receive separate binary indicator variables during transformation.

* + 1. **Key Variables**

The study of California's water systems will depend on multiple essential variables for analysis. The provided variables deliver essential data to show how public water systems operate throughout the state.

* The Water System Name function is a distinctive identification tool for monitoring each public water system in the state.
* The geographic region within California that the water system serves. Studies will depend heavily on this variable to recognize regional water availability and quality standards variations.
* The data shows the water system's origin based on groundwater, surface water, and other sources. The data provides necessary insights into water system environmental sustainability and information about possible sources of pollution.
* The variable indicates the types of people the water system serves, including residential, non-residential, and transient populations. The size of the served population will enable experts to measure the extent of water access problems in California.
* The System Status variable shows whether a water system operates or remains idle. This data analysis method should identify operational problems within specific distribution zones.
* The variable allows researchers to identify the agency overseeing water systems, allowing them to study the impact of regulation on water quality and fairness.
  1. **Exploratory Data Analysis (EDA)**

The research team will use Exploratory Data Analysis (EDA) to explore the dataset, patterns, and inequality evidence in water access distribution. The study will employ descriptive statistics in combination with data visualization and correlation analysis for the dataset.

* + 1. **Descriptive Statistics**

Background statistics, including mean, median, mode and standard deviation, will be generated to analyze both "Population Served" and "Water Source Type" from their continuous data fields. The data statistics will present an overview based on central tendency and spread together with distribution information. The research will use the interquartile range (IQR) to evaluate the dispersion of studied values.

* + 1. **Data Visualization**

Visualization tools help researchers find trends, detect outliers, and spot dataset discrepancies because they display information that sets data patterns free from basic raw data presentation. The multiple visual representations help data analysis by giving depth to important variables affecting water access and quality in California's public water system.

organs enable effective distribution visualization of continuous variables, including "Population Served" and "Water System Size." Received variables display their central tendencies, and value spreads through the frequency distribution visualizations, which we call histograms. The histogram of "Population Served" serves to identify if water systems typically maintain small customer bases or if the data points heavily towards extensive population demographics. The histogram analysis of "Water System Size" helps researchers distinguish between major and minor water facilities, affecting water distribution systems' availability and infrastructure. The visual representations simplify the assessment of water system dimensions and let viewers better understand the statewide water system structures.

The comparison of the frequency of categorical variables "Water Source Type" and "Regulating Agency" will use bar charts. Plots of this kind are effective tools to show which categories occur frequently in the dataset while enabling users to compare which water sources and regulatory bodies appear most often throughout the state. The "Water Source Type" bar chart presents the ratio between groundwater and surface water systems, allowing users to understand the relationship between sustainable resource utilization and potential water source dangers. A bar chart visualization of the "Regulating Agency" enables the reader to understand which regulatory bodies oversee which water systems in California by displaying their distribution rates. Through these visual comparisons, people can easily see categorical data and identify which categories are unusually abundant or deficient.

The continuous variables "Population Served" and "Water System Size" will be screened using Box plot graphs to determine their spread and detect any anomalous values. Box plots effectively show the data distribution patterns and reveal skewness while helping to identify major outliers that stand away from normal dataset distributions. Statistics on water system sizes throughout various California regions analyzed through box plots demonstrate how diverse areas differ in infrastructure since specific regions possess a dominant number of major water systems while smaller systems dominate other areas. The visualization technique discovers unusual extreme water system size cases and outlier population values that need additional analysis.

Combining these different visual representations will help identify disparities in water services accompanied by geographical and institutional factors affecting access and quality. These visual representations will help us find distribution inconsistencies regarding water resources across California, particularly in connection to population numbers, source types, and geographic regions. The obtained visual insights from this process will be the starting point for conducting advanced statistical analysis to help understand the state's water equity factors.

* + 1. **Correlation Analysis**

The research will utilize Pearson or Spearman correlation tests to investigate relationships between the main dataset variables. The research will explore the connection between water source types and population sizes and demonstrate which areas show the most substantial water pollution problems. Through correlation analysis, researchers can identify how the variables affect each other and discover any risk elements connected to water access.

* 1. **Advanced Statistical Modelling**

Advanced statistical modelling software will serve as a tool to establish a comprehensive understanding of water access and quality determinants in California. This modelling system provides us with a way to understand different relationships between variables as it predicts upcoming water system situations.

* + 1. **Multivariate Regression Analysis**

Regression analysis of multiple variables will connect the active status of water systems to their population size and multiple characteristics. Scientists will evaluate the independent factors, which consist of geographic regions combined with water source categories and regulatory oversight responsibilities. This analysis model determines the strongest variables that affect the functioning state of water systems and population size distribution.

Our investigation details the relationship between socioeconomic elements, geographic positions, and water quality, which affects water system operational status and served population numbers. Rural and low-income areas typically present lower probabilities for functioning water systems because their infrastructure remains inadequate.

* + 1. **Clustering Analysis**

The analysis of cluster groups will consolidate water systems based on three elements: "Population Served," "Water Source Type," and "System Status." The identification of groups with similar characteristics among water systems depends on applying either K-means clustering or hierarchical clustering methods. These patterns exist specifically within water system types and geographic areas based on different water service characteristics.

Clustering analysis provides optimal results for discovering areas which lack proper water system services or face difficulty in supplying water to their population base. The identification of clusters will enable us to create custom recommendations which focus on policy developments as well as infrastructure implementations.

* + 1. **Predictive Analytics**

Forecasted water quality and availability problems will be predicted through applications of predictive modelling, which analyses present trends. The predictive models will utilize multiple variables, including projections about population increase alongside anticipated impacts of climate change and the different water supply systems. By applying predictive analytics, authorities can get real-time information for water-affected zones so they can take proactive action through planning decisions.

Through predictive modelling approaches, water depletion and contamination areas in the future can be estimated using combinations of past water data with population projection estimates and climate information. Thus, water infrastructure and policy reforms can receive their highest priority through the utilization of these forecasts.

* 1. **Data Sources and References**

This study relies on Drinking Water Watch Public Water System Facilities data to obtain primary information about public water systems throughout California. This study uses the Drinking Water Watch Public Water System Facilities dataset as its primary source, along with secondary sources composed of governmental reports and academic studies research papers to strengthen the analysis. Secondary data sources will connect the research outcomes and present a wider perspective on water disparities within California. This research approach will generate a detailed examination of disparities which affect both water quality and availability at public water systems across California. The obtained results will present the elements that drive these disparities, which can empower the creation of policy recommendations targeting water equity and sustainability improvements throughout California.

1. **Preliminary Results and Discussion**

The Drinking Water Watch Public Water System Facilities dataset includes 7,815 records that detail the characteristics of 35 variables for water systems throughout California. The main purpose of this research is to analyze water resource availability and distribution quality throughout the state by evaluating regional differences and system types while examining the social and economic effects of water availability. The preliminary findings derived from the data set receive analysis regarding water disparities and drinking water security in California.

**Descriptive Statistics and Data Overview**

The dataset includes essential variables, which include FOB (region), Water System Name, Regulating Agency, Water System No, Principal County Served, and Primary Water Source Type. These variables let users identify each system by assigning classifications that capture location and management details. The dataset shows that water systems exist in three major California areas known as Southern California, Northern California, and Central California, and each of these parts maintains unique characteristics for its managed water systems.

Research shows that groundwater stands as the main water source for many systems inspected through the dataset while matching California’s overall dependence on underground water supplies in rural and urban transitional areas of the San Joaquin Valley and Southern California regions. The crucial water supply role of groundwater exposes these sources to greater vulnerability to pollution that develops safety and quality concerns in specific regions. The discovered preliminary data underscores the necessity for additional research about water supply systems that maintain their operations using groundwater as well as their approaches to managing water quality.

System Status flags down whether individual water supply systems operate or not. Preliminary data reveals that a substantial number of water supplies function actively leading to positive indications about state-wide water availability. The assessment of inactive systems requires closer inspection to determine both causes and effects because they present potential access barriers for specific communities found in rural areas.

**Regional Disparities in Water Access**

The initial dataset analysis reveals an intense and significant difference in how water systems are available and maintained based on geographical location. The data shows Northern California as a region containing numerous community-based water systems which maintain stable and long-term access to water. The areas that have metropolitan structures possess extensive development systems which enable them to maintain large human settlements efficiently. The water systems in Central California and Southern California, along with their wide expanses of rural land and farming areas, present a combination of water sources that extend from transient non-community systems to systems that draw water from groundwater supplies.

The county data in Central California demonstrates that Fresno Kern, and Kings tend to operate systems supplying water to mobile populations. The water infrastructure of agricultural regions specifically sections itself toward labour workers and short-term residents instead of long-term residence communities. The urban territories of Los Angeles County, along with San Francisco, maintain established water infrastructure networks to supply their permanent residential bases, while rural counties operate smaller water systems. The contrast shows a substantial economic inequality, which leads rural farmers to struggle more to secure trustworthy and uncontaminated water supplies.

**Water System Types and Source Reliability**

Both Federal Water System Type and State Water System Type fields analyzed the water system types across California. The database uses three classification columns which distinguish community systems from non-transient non-community systems and transient systems because each group operates under unique regulatory frameworks. Community systems represent the most commonly found water systems in urban areas, as these systems receive extensive support for maintaining quality infrastructure. The regulatory frameworks for non-transient, non-community water systems match their compact dimensions as they provide water services for locations including educational institutions and workplaces. Water quality monitoring takes place less consistently among transient water facilities that serve temporary populations such as travellers or seasonal employees in rural locations and tourism zones.

The Primary Water Source Type data shows numerous California water systems utilize groundwater as their main source, even though this presents significant concerns because of contamination problems and excessive groundwater extraction issues throughout the state's aquifer system. Groundwater, which remains accessible in rural regions, exposes itself to high risks from pollutants like nitrates and arsenic, along with other dangerous chemicals that stem from agricultural runoff and industrial pollution. Thorough testing alongside proper water management becomes essential because the Central Valley agricultural regions heavily depend on groundwater resources, which present continuing water contamination risks.

**Population Served and Water System Capacity**

Each water system within the dataset presents data about Residential populations together with Non-Transient Population, Transient Population, and Total Population information. The designed columns enable an initial examination of water system dimensions to evaluate their serving capability for local populations. The data shows that city-based community water systems provide service to large permanent populations, but rural and touristic regions depend mostly on non-community systems for their transient populations.

A major problem exists regarding the empty fields in the Residential Population and Primary Water Source Type columns because both contain 172 missing data points each. The absence of data reduces our ability to conduct thorough evaluations of water accessibility in different communities. The evaluation requires complete data to correctly portray water accessibility conditions for both urban and rural areas, which face the most significant disparities.

**Policy Implications and Water Management Challenges**

Preliminary findings about water access and equity conditions in California bring forth major conclusions to the analysis. Active water systems constitute most supply systems across California but certain sections of the state retain substantial differences based on water system infrastructure and reliability alongside service population numbers. The communities of Central and Southern California that operate in rural and farming regions struggle with too much groundwater dependence but metropolitan areas get better and consistent water services.

The study analysis reveals the importance of specific infrastructure funding coupled with solid regulatory monitoring systems in critical water system areas. Defining water equity as an absolute priority of state policymakers remains essential because climate change creates prolonged droughts and rising water scarcity across California and serves overpopulation communities.

**Limitations and Next Steps**

The presented preliminary findings have useful value, but future stages of analysis need to resolve existing problematic aspects. Additional investigation must be conducted on the data gaps in the Residential Population and Primary Water Source Type fields because they could adversely influence the research outcomes. The assessment of water system quality, particularly aimed at groundwater-dependent systems, requires additional examination to incorporate both contamination levels and treatment standards data.

The research should extend to provide increased depth about regulatory standards which control water systems throughout California, especially within the farmlands and remote areas that demonstrate heightened contamination risks. The complete understanding of water equity in the state depends on adding water quality testing results along with regulatory compliance data.

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