High Level Data Summary

CDC Wonder is a comprehensive national database based on death certificate data that allows extensive analysis of mortality statistics and causes of death. The county-level data enables localized understanding of public health issues.

Few key points about the Underlying Cause of Death database:

- It contains mortality data for all U.S. counties based on death certificates.
- Each death identifies a single underlying cause of death and demographic information about the deceased.
- It provides death counts, crude and age-adjusted death rates, and statistical info like confidence intervals.
- The database provides information on the underlying cause of death, which is identified using 4-digit ICD-10 (International Classification of Diseases, 10th Edition) codes or groups of codes. This allows us to study mortality patterns related to specific diseases or conditions.
- The database includes demographic information such as age, race, Hispanic ethnicity, and gender of the deceased. This allows for the analysis of mortality patterns among different population groups.
- Data can be broken down by place of residence, age, race, ethnicity, gender, year, cause of death, injury intent, etc.
- It also includes some additional details like place of death, autopsy status, month, and weekday of death.
- The database provides death counts, crude death rates, age-adjusted death rates, and associated 95% confidence intervals and standard errors for death rates. This information is essential for assessing the precision of mortality estimates.
- The database categorizes areas based on their level of urbanization. This classification can be used to examine mortality disparities between urban and rural areas.
- It's an invaluable resource for public health research to understand patterns and changes in mortality in the U.S. at a local, regional, and national level.

We can use this database to study trends in mortality, identify health disparities, assess the impact of public health interventions, and inform healthcare policies and practices. The availability of detailed demographic and cause-specific data at various geographic levels makes it a valuable resource for epidemiological research and health surveillance.

We have explored a sample data which had underlying causes of death data from the year 2016 to 2020.

Based on our analysis we have encountered following columns:

- Geography - County/state/national level
- Years - Multi-year aggregates
- Race - Breakdowns by racial groups
- Ethnicity - Hispanic/Non-Hispanic
- Age - By Ten-year age group
- Gender
- Cause of Death - ICD-10 codes
- Crude Rates - Total mortality rates
- Age-adjusted Rates - Controlled for age distribution.
- Standard Errors - For statistical testing
- Margins of Error - Around the rates

The key insights from the data:

- Compare mortality rates for different demographics and geographies.
- Identify leading causes of death overall and by subgroups.
- Assess statistical significance of rate differences.
- Analyze time trends and patterns.
- Rank causes of death by mortality burden
- Identify populations with the highest risk for different conditions.

Based on the insights we can do following visualizations:

- Time trends for overall and cause-specific mortality.
- Bar charts showing leading causes of death.
- Heatmaps of mortality rates by age and gender
- Box plots visualizing rate distributions.
- Scatter plots comparing different demographics.

These visualizations and insights will enable detailed mortality analytics at the county level overall and for population subgroups.

Few utilizations of this may be:

- Track progress on reducing mortality over time.

- Compare county-level patterns to identify localized health needs.
- Establish baseline metrics to set targets for mortality reduction.
- Conduct research into risk factors and prevention strategies
- Allocate health funding based on mortality data.

The screenshot of sample data we have analyzed.

Mortality per 100,000	Geography	Years	Race	Age	Gender	Crude Rate	Crude rate per standard error	Age Adjusted rate	Age adjusted rate standard error	Margin of Error Crude Rate	Margin of Error Age adjusted
Disease of Heart	Central Indiana	2016-2020	All	55+	All	609.6	5.1	704.5	5.9	10.0	11.6
Suicide	Central Indiana	2016-2020	All	55+	All	17.3	0.9	17.2	0.9	33.9	33.7
Suicide	Central Indiana	2016-2020	All	55+	F	5.8	0.7	5.5	0.6	1.4	1.2
Suicide	Central Indiana	2016-2020	All	55+	M	31.1	1.7	31.8	1.8	3.3	3.5
Suicide	Indiana	2016-2020	All	55+	All	17.3	0.4	17.2	0.4	0.8	0.8
Suicide	Indiana	2016-2020	All	55+	F	5.2	0.3	5	0.3	0.6	0.6
Suicide	Indiana	2016-2020	All	55+	M	31.3	0.8	32.3	0.9	1.6	1.8
Suicide	US	2016-2020	All	55+	All	17.7	0.1	17.7	0.1	0.2	0.2
Suicide	US	2016-2020	All	55+	F	6.7	0.1	6.6	0.1	0.2	0.2
Suicide	US	2016-2020	All	55+	M	30.6	0.1	31.4	0.1	0.2	0.2
Chronic lower respiratory disease	Central Indiana	2016-2020	All	55+	All	199.7	2.9	233.7	3.4	5.7	6.7
Falls	Central Indiana	2016-2020	All	55+	F	19.5	1.2	20.4	1.3	2.4	2.5
Falls	Central Indiana	2016-2020	All	55+	M	25.7	1.5	33.5	2.1	2.9	4.1
Falls	Indiana	2016-2020	All	55+	All	25.9	0.5	28.7	0.6	1	1.2
Falls	Indiana	2016-2020	All	55+	F	22.7	0.7	22.5	0.7	1.4	1.4
Falls	Indiana	2016-2020	All	55+	M	29.6	0.8	37.1	1	1.6	2.0
Cerebrovascular disease	Central Indiana	2016-2020	All	55+	All	137.7	2.4	162.7	2.9	4.7	5.7
Drug Overdose	Central Indiana	2016-2020	Black	55+	All	37.8	3.5	32.8	3.1	6.7	6.1
Drug Overdose	Central Indiana	2016-2020	White	55+	All	16.4	0.9	15	0.8	1.8	1.6
Drug Overdose	Indiana	2016-2020	All	55+	All	15.2	0.4	14.2	0.4	0.8	0.8
Drug Overdose	Indiana	2016-2020	Black	55+	All	34.8	2.2	30.2	2	4.3	3.9
Drug Overdose	Indiana	2016-2020	White	55+	All	13.7	0.4	12.8	0.4	0.3	0.8
All Cause Mortality	Central Indiana	2016-2020	All	55+	All	2794.3	10.8	3217.9	12.7	21.1	24.9
All Cause Mortality	Central Indiana	2016-2020	Black (not Hispanic)	55+	All	2984.2	31.1	3650.4	39.4	60.9	77.2
All Cause Mortality	Central Indiana	2016-2020	Hispanic	55+	All	1210.6	46.9	1840.8	78.6	91.9	154.1
All Cause Mortality	Central Indiana	2016-2020	White (not Hispanic)	55+	All	2857.4	12.1	3212.6	13.7	23.7	26.9
All Cause Mortality	Indiana	2016-2020	All	55+	All	3041.9	5.6	3313.9	6.2	11	12.2
All Cause Mortality	Indiana	2016-2020	Black (not Hispanic)	55+	All	3140.1	21.4	3748.6	26.4	41.9	51.7