**INTERPRETATION OF RESULT**

**Find the total number of heart attack incidences for each age group in Germany.**

* The youth group experienced a certain number of heart attacks.
* The adult group had more heart attacks than the youth group.

This suggests that heart attacks are more prevalent among adults compared to youths.

**Calculate the average BMI for each gender across all states.**

There is not significant difference in average BMI across states or genders, with all values hovering around 25.

**List the top 5 states with the highest heart attack incidence rates among youth.**

* Hesse has the highest number of heart attack incidences.
* Berlin follows closely behind, with a slightly lower number of cases.
* Saxony, Bavaria, and Baden-Württemberg have similar numbers of heart attack incidences, all being just a bit lower than Berlin and Hesse.

**Count the number of heart attack incidences in urban areas compared to rural areas.**

Rural areas have a slightly higher number of heart attack incidences compared to urban areas. This suggests that heart attacks are more common in rural areas than in urban ones.

**Find the average heart attack incidence by socioeconomic status.**

* There is very little difference in the number of heart attack incidences across different socioeconomic statuses.
* The incidence is slightly lower in the high socioeconomic status group, followed by middle and low groups, but the difference is minimal.

This suggests that socioeconomic status doesn’t have a significant impact on the number of heart attack incidences

**Identify the year with the highest heart attack incidences for adults.**

The year 2017 had the highest number of heart attack incidences for adults, with a total of 4686 cases.

**Compare the heart attack incidence rates between youth and adults by region.**

* Rural areas have slightly higher heart attack incidences for both age groups compared to Urban areas.
* The adult age group shows the highest incidence in both urban and rural areas.

**Calculate the percentage of smokers who have had heart attacks across all age groups.**

10.01% of smokers have experienced heart attacks.

**Find the average physical activity level for states with below-average heart attack rates.**

* Bavaria, Lower Saxony, and North Rhine-Westphalia are the states with below average heart attack rates.
* The heart attack rates in these states are all slightly below the average, with Bavaria having the lowest rate among them.

**List the years in which alcohol consumption was above the national average.**

* In all the years listed, the average alcohol consumption is above the national average, with values very close to each other.
* 2017 has the highest average alcohol consumption, while 2018 has the lowest among these years.

**Calculate the average stress level for states with the top 10 highest air pollution indices.**

* Hamburg has the highest average stress level, followed by Berlin.
* North Rhine-Westphalia, Baden-Württemberg, and Bavaria have slightly lower stress levels, with values very close to each other.

**Group the data by education level and find the average cholesterol level for each group.**

* People with a Primary education level have the highest average cholesterol levels, followed by Secondary and Tertiary education levels.
* The differences in cholesterol levels between education levels are small.

**Calculate the average heart attack rate in regions with above-average healthcare access.**

The heart attack rates are quite similar in Rural and Urban areas, with Rural areas having a slightly lower average rate.

**Compare the total heart attack incidence rates for urban vs. rural areas grouped by socioeconomic status.**

* The Low socioeconomic status group has a higher total incidence in Rural areas compared to Urban areas.
* Middle and High socioeconomic status groups show similar patterns between urban and rural areas.

**Find the most common diet quality rating among youth with heart attacks.**

The most common diet quality rating for youth with heart attacks is Average.

**Identify the states where the heart attack incidence rate increased year-over-year for three consecutive years.**

* In Baden-Württemberg and Bavaria, the heart attack incidences have generally increased from one year to the next.
* Other states like Hamburg, Hesse, and Saxony show similar yearly increases in incidences.

**Calculate the average physical activity level grouped by employment status.**

* Unemployed individuals have the highest average physical activity score, while Employed individuals have slightly lower scores.
* Retired and Student groups have similar scores, close to the Employed group.

**Using a subquery, find the states where the average BMI is above the national average.**

Bavaria, Hamburg, and Baden-Württemberg have an average BMI above the national average, while Saxony is slightly below the national average.

**Find the states where the youth heart attack rate is higher than the adult rate using a self-join.**

In Bavaria, the youth heart attack rate is higher than the adult rate.

**Write a query to find the states with the highest incidence rate for smokers and compare it to nonsmokers using a join.**

* Hesse has the highest incidence rate for smokers, closely followed by Saxony.
* For non-smokers, Berlin has the highest incidence rate, slightly higher than the rate for smokers.

**Use a subquery to find states with higher-than-average stress levels but lower-than-average heart attack incidences.**

Saxony, Berlin, and Bavaria have higher-than-average stress levels but lower-than-average heart attack incidences.

**Rank the states by heart attack incidence rate in adults, partitioned by year.**

* The rankings of states in terms of heart attack incidence rates have fluctuated over the years.
* Baden-Württemberg ranked the highest in 2021, while Saxony and North Rhine-Westphalia had consistent rankings across several years.
* Berlin had the highest rank in 2023.

**Use a window function to identify the top 3 states with the highest youth heart attack rates each year.**

* Baden-Württemberg, Saxony, and Hamburg consistently had the highest youth heart attack rates in 2015.
* Other states like Lower Saxony, North Rhine-Westphalia, and Bavaria also had high rates in specific years.

**Find the correlation between air pollution index and heart attack incidence rates.**

The correlation between the air pollution index and heart attack incidence rate is very small at 0.000764, suggesting little to no direct relationship.

**Identify the regions with a consistent increase in heart attack rates across all socioeconomic levels.**

Baden-Württemberg, Bavaria, Berlin, Hamburg, Lower Saxony, and Saxony show a consistent increase in heart attack rates across all socioeconomic levels.

**Analyse the effect of diabetes on heart attack incidences for different age groups using a group-by analysis.**

* Adults have a slightly higher incidence rate for diabetics compared to non-diabetics.
* For youth, the rates are very close, with diabetic youth having a marginally higher rate than non-diabetic youth.

**Calculate the year-over-year growth in heart attack incidences for youth in Germany.**

* The total incidences show some fluctuations, with 2019 having the highest growth percentage at 6.7466.
* The incidences in 2023 saw a decrease from the previous years, with 2022 showing some recovery.

**Determine if smoking status or alcohol consumption has a stronger correlation with heart attack incidences.**

* The correlation between alcohol consumption and heart attack incidence is -0.002767, showing a very weak inverse relationship.
* The correlation between smoking habit and heart attack incidence is -0.000188, indicating an extremely weak relationship.

**Analyse the impact of education level on physical activity levels and its effect on heart attack rates.**

* Primary education leads to higher physical activity in the "high physical activity" category, while Tertiary education has higher rates in "low physical activity."
* The heart attack rates slightly vary across education levels, but the differences are minimal.

**Identify the states where family history has the highest influence on heart attack rates, controlling for age group and gender.**

* Saxony has the highest influence of family history on heart attack rates for youth (especially males).
* Lower Saxony and North Rhine-Westphalia also show significant family history influence in youth.

**Use a CTE (Common Table Expression) to find the average diet quality and its relationship to heart attack rates in adults.**

* Poor and Average diet quality have higher heart attack incidence rates, indicating High Risk.
* Good diet quality has a slightly lower incidence rate, marked as Low Risk.

**Analyse the relationship between hypertension and cholesterol levels and their combined effect on heart attack incidence rates.**

People with hypertension have slightly lower cholesterol levels but a lower average heart attack rate than those without hypertension.

**Write a query to segment the population into high-risk and low-risk groups for heart attacks based on stress level, BMI, and healthcare access.**

Low Risk comprises the majority of the population, with Moderate Risk and High Risk groups being significantly smaller in size.