Integrated project: Access to drinking water (Part 1 - Understanding the data) [MCQ] (Version : 0)

TEST

Correct Answer

Answered in 5.35 Minutes

Question 1/10

What is the percentage difference between the dataset and the estimated world urban population size (the total number of people living in urban areas) for 2020?

- [ ] 0.44%
- [ ] 2.14%
- [ ] 2.00%
- [x] 1.70%

Explanation:

The total urban population size (the total number of people living in urban areas, NOT the percentages) for the dataset needs to determine by first calculating the number of people in urban areas per country based on the population size per country (pop_n) and the urban share (pop_u), and then taking the sum of these urban totals for the entire dataset. Before the percentage difference can be calculated, the dataset's urban population size and the estimated world urban population need to be in the same unit size, so either in billions, thousands, or ones.

Question 2/10

True or false? Based on the national population versus urban and rural share visualisation, where the x-axis is

the aggregated national population size and the y-axis is the population share in percentage, the average population share across all population sizes is approximately 50% because the chart lines fluctuate equally above and below the 50% line.

- [ ] True
- [x] False

Explanation:

The line chart created is deceiving because, although it oscillates around 50% on the chart, we cannot say that it indicates a 50% average share because we are comparing two different parts of the population. An individual or household can only live in either a rural or an urban area, but not both. For example, if the urban share is 30%, the rural share will be 70%. So, if we had to sum the two points for every population size tick on the chart, we would get a 100%.

Question 3/10

True or false? The distribution of the national basic service feature (wat_bas_n) is more similar to the distribution of the urban basic feature (wat_bas_u) than it is to the national limited feature (wat_lim_n).

- [ ] False
- [x] True

Explanation:

Considering the measures of central tendency and spread, we can see that the maximum for both wat_bas_n and wat_bas_u is 100%. We also see that the minimums, means, medians, first and third quartiles as well as the interquartile range are more similar between wat_bas_n and wat_bas_u than wat_lim_n. Considering the box and whisker plot, we clearly see that wat_bas_n and wat_bas_u sit at the top of our plot, while wat_lim_n sits at the bottom. If we had to imagine what the distributions would look like based on the measures and chart, we know that wat_bas_n and wat_bas_u will exhibit negatively skewed distributions because the outliers occur to the left of the number line, while wat_lim_n exhibits a positively skewed distribution

because outliers occur to the right of the number line.

Question 4/10

What is the interquartile range of the estimated rural share of people with surface service feature, wat_sur_r?

- [ ] 1.94
- [ ] 4.22
- [x] 6.16
- [ ] 0.00

Explanation:

Before the interquartile range can be calculated, the first quartile (Q1) and third quartile (Q3) need to be calculated. We use the QUARTILE() function to calculate each of these, where data in the function point to the feature wat_sur_r (Column L) and quartile_number is 1 and 3 respectively. To calculate the interquartile range, we subtract the value of Q1 from Q3, i.e. IQR = Q3 - Q1.

Question 5/10

Which of the following statements is true based on the created 100% stacked column chart for urban population share versus access to the various water levels?

- [ ] Countries with smaller urban population shares are more likely to provide basic water service than countries with greater urban population shares.
- [x] Countries with greater urban population shares are more likely to provide basic water service than countries with smaller urban population shares.

- [ ] Basic, limited, unimproved, and surface-level urban access increase and decrease based on the share of urban population, and we can estimate that the relationship between water access and urbanisation is constant.

- [ ] Basic, limited, unimproved, and surface-level urban access do not increase or decrease based on the share of urban population, and we can therefore not estimate any type of relationship between water access and urbanisation.

Explanation:

When the sort is correctly applied to the variable used on the x-axis (pop_u (rounded)), we see that toward the right of the number line, limited, unimproved, and surface access decreases, and basic increases. When the sort is applied to the rural population share, we see the opposite, with basic at a maximum on the left of the number line (but still at the highest values) because the number line is in descending order. When the dataset is sorted on the national population size, there is no order to the number line and seemingly no relationship between access and urbanisation.

Question 6/10

True or false? Based on the created 100% stacked column chart for rural population share versus access to the various water levels, there are countries with approximately 100% access to the basic service level across all rural population shares (0 to 100% share of rural population).

- [ ] False

- [x] True

Explanation:

When the sort is correctly applied to the variable used on the x-axis (pop_r (rounded)), we see ~100% basic access at a rural population share of 2%, 5 – 8%, 12%, 16%, 20%, 28%, 40%, 46 – 47%, 49%, 59%, and 100%, although there seems to be some trend where, on average, basic access

decreases with rural population share increase.

Question 7/10

Based on the created pivot table, what is the national average percentage of access to limited services (wat_lim_n) for low-income countries?

- [ ] 430.26%
- [x] 16.55%
- [ ] 17.09%
- [ ] 3.87%

Explanation:

If the pivot table is set up correctly, with AVERAGE of wat_lim_n (rather than SUM as per standard when setting up a pivot table), the value for income_group = “low income” (or income_group = 1) can simply be read from the table.

Note: A greater GNI would result in a higher rating on the economic scale from low to high income.

Question 8/10

Which of the following statements are true for population sizes and shares across the different income groups according to the dataset?

a. More people included in this dataset live in low-income countries than in any of the other types of economies.
b. High-income countries are on average more urbanised than low-, lower-middle-, and upper-middle-income countries.
c. More people included in this dataset live in lower-middle-income countries than in any of the other types of economies.
d. On average, the greater the GNI the more urbanised.

- [ ] Only a and b
- [ ] All of the above

- [ ] Only a
- [x] Only b, c, and d

Explanation:

Although *visually* it seems like SUM of pop_n for income_group = “low income” seems to be the largest, it is actually the second smallest (only null income_group entries are fewer). Lower-middle income is actually the largest total in this column, so statement a is false.

Question 9/10

Which of the following options has the highest national percentage for each of the service levels for the different income groups according to the pivot table?

- [ ] Basic access in unidentified economies (NAN); Limited access in low-income countries; Unimproved access in low-income countries; Surface access in low-income countries
- [ ] Basic access in high-income countries; Limited access in lower-middle-income countries; Unimproved access in lower-middle-income countries; Surface access in lower-middle-income countries
- [x] Basic access in high-income countries; Limited access in low-income countries; Unimproved access in low-income countries; Surface access in low-income countries
- [ ] Basic access in unidentified economies (NAN); Limited access in lower-middle-income countries; Unimproved access in lower-middle-income countries; Surface access in lower-middle-income countries

Explanation:

If the pivot table is set up correctly, with AVERAGE of the various national access feature, the maximum value can simply be identified.

Question 10/10

True or false? Visualising the pivot table values for national access versus income group indicates that as urbanisation increases, so does the share of the population with basic water access, and as GNI increases, limited, unimproved, and surface water access decreases.

- [ ] False
- [x] True

Explanation:

There is a clear relationship between urbanisation (average of urban share) and water access shares. As urbanisation increases, so does the average of basic access (average of basic share) increase and limited, unimproved, and surface access decrease. Also, as GNI increases (or income group increases from low to high), basic share increases, and limited, unimproved, and surface shares decrease.