https://www.arc.gov/wp-content/uploads/2025/05/PRB_ARC_Chartbook_ACS_2019_2023_FINAL_2025-06.pdf#page=194

https://www.arc.gov/about-the-appalachian-region/

1. How is the Appalachian Region defined? How many US States are included?
   a. The Appalachian Region is defined by its 423 counties. It constitutes 13 states, including parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, and Virginia, and all of West Virginia.

2. Provide some context on how rural Appalachia compares to the rest of rural America, specifically, in:
   - Population and demographics:
     - Rural Appalachia's population is about 2.4 million people (which is a 3.8% decrease since 2010), while that of Non-Appalachian Rural is approximately 13.2 million people (a 0.4% decrease since 2010).
     - The median age in Appalachian Rural is 42.3 and that in Non-Applachian rural is 41.2.
   - Education:
     - Working-age adults (ages 25-64) in rural Appalachia continue to lag behind those in non-Applachian rural counties on all levels of education. For example:
       - 86% vs 89.6% with HS diploma
       - 10.3% vs 11.3% with an associate's degree, w/o bachelor's degree
       - 19.5% vs 24.3% with bachelor's degree or more
   - Employment:
     - The percentage of rural Appalachian adults ages 25 to 64 in the civilian labor force is about 8.4 percentage points lower than in rural counties outside the Region.
     - The unemployment rate in rural Appalachia is also slightly higher than rural non-Applachian regions, at 4.8% versus 3.8%
   - Income and poverty
     - Median household income in rural Appalachia counties is more than $10,000 below that of households in rural counties in the rest of the country ($50,699 vs $62,346)
     - A greater share of rural Appalachian residents live in poverty (19.4% vs 14.8%)
     - The gap is even wider among children in poverty (24.6% vs 19.1%)
   - Broadband Access:

- 81.4% of households in rural Appalachian have broadband, compared to 84.4% in non-Appalachian households
3. Briefly describe each of the five listed goals in the ARC's Strategic Plan for investing in the Appalachian Region (https://www.arc.gov/strategicplan/).

- Building Appalachian Business: This goal focuses on strengthening the region's economy through expanding economic development strategies and investments in entrepreneurship and business development
- Building Appalachia's Workforce Ecosystem: The focus of this goal is to expand and strengthen community systems (education, healthcare , housing, childcare, and others) that help Appalachians obtain a job, stay on the job, and advance along a financially sustaining career pathway.
- Building Appalachia's Infrastructure: This goal will help ensure that the residents and businesses of Appalachia have access to reliable, affordable and resilient utilities and infrastructure in order to successfully live and work in the region.
- Building Regional Culture and Tourism: Focuses on strengthening Appalachia's community and economic development potential by preserving and investing in the region's local, cultural heritage, and natural assets.
- Building Community Leaders and Capacity: The primary focus of this goal is to invest in the capacity of local leaders, organizations, and communities to address local challenges by providing technical assistance and support to access resources, engage partners, identify strategies and tactics, and conduct effective planning and project execution.

Coding part:

Step 7:

Mean:

- The mean is the average value. You add up all the numbers and divide by how many there are. In this case, it shows the average poverty rate across all counties.

Standard Deviation:

- The standard deviation shows how spread out the numbers are from the average. A small number means most counties have similar poverty rates, and a larger number means there's more variation between counties.

Step 11:

Running the program without the thousands="," option caused the numeric columns like PCI and poverty rate to be read as strings because they contained commas (e.g., "55,000"). Python couldn't convert these strings to numbers, so the data became NaN (Not a Number), excluding them from all subsequent calculations, including the basic mean and standard deviation. The thousands="," option is required because it tells the Pandas library to strip out those commas during file loading. This ensures the data is correctly interpreted as a usable number format, which is a necessary cleaning step for this specific CSV file.

Step 15:

Analyzing the tables reveals a clear inverse correlation between wealth and poverty: counties with the highest Per Capita Income (PCI) have the lowest poverty rates, and vice-versa. The highest poverty rates are concentrated in highly rural areas, often on reservations (South Dakota) or in the deep South.

Regarding Average Unemployment, the metric shows a weaker correlation with the other two. The counties with the highest unemployment figures (like Imperial, CA, and Kusilvak, AK) often represent highly seasonal economies (agriculture, fishing, tourism) or remote areas, suggesting that high unemployment isn't always driven solely by structural poverty, but by volatility and lack of year-round work.

A significant internal conflict was observed in Texas, where Loving County (PCI: $100,614, Poverty: 1.20%) and Starr County (PCI: $18,831, Poverty: 32.60%) represent opposite ends of the economic spectrum. This extreme disparity can be explained by their unique economie.: Loving County's wealth is artificially inflated by a tiny population benefiting from massive oil and gas revenues, while Starr County struggles with structural poverty due to limited border region economies and low-wage agriculture.

Sources:

- Loving County: The high PCI is due to the county being the least-populous county in the US, with wealth from oil and gas production being divided by very few residents.
    - [Loving County, Texas - Wikipedia](#)
    - [Loving County - Texas State Historical Association](#)
- Starr County: Its high poverty rate is characteristic of Texas-Mexico border counties, where the economy relies on seasonal, low-wage jobs, leading to chronic economic distress.
    - [Starr County, Texas - Wikipedia](#)
    - [Border Report Section 3 – Population and Demographics of the Texas-Mexico Border Region - Texas DSHS](#)