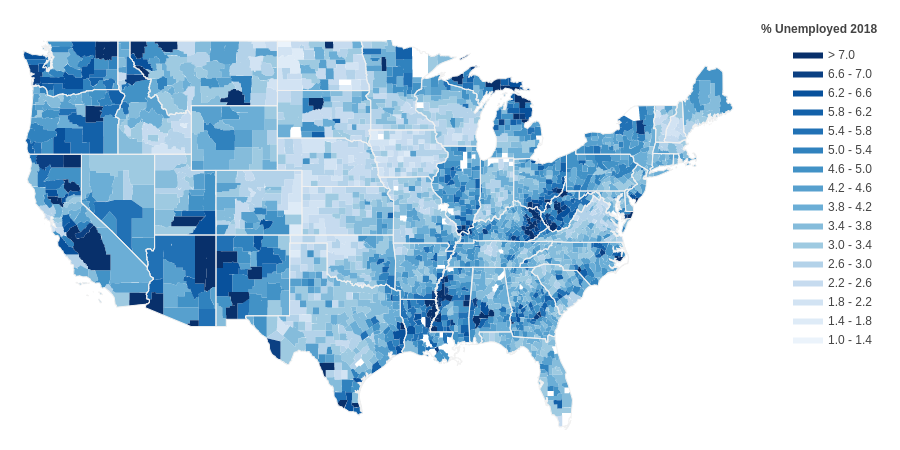
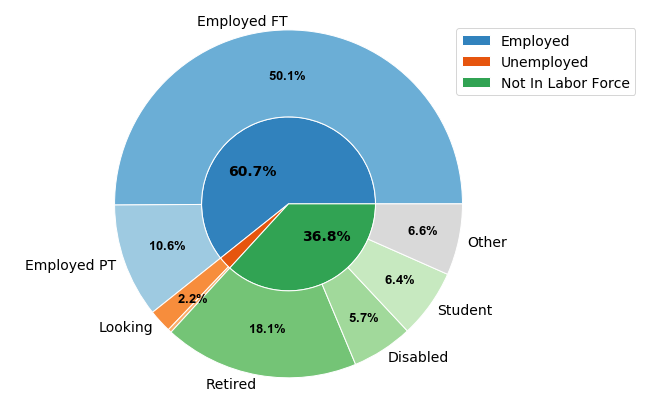
**Rethinking Unemployment – Overview**

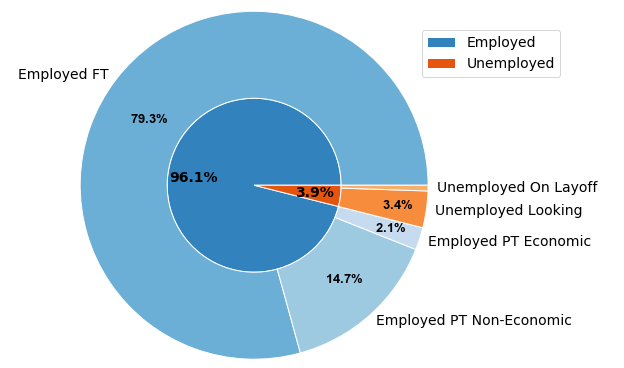
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1. **Background**
   1. Definitions
      * Unemployed (U3)
        + Looking within past month or on layoff
      * Employed
        + At work or absent
        + Full-time: 35+ Hours per week
        + Part-time: <35 Hours per week
      * Labor Force
        + Employed + Unemployed
      * Not In Labor Force (U3)
        + Discouraged, Retired, Disabled, and certain Students, among others
      * Relevant Population
        + Adult Civilian Non-Instititionalized 16+ (Excludes Active Military and Incarcerated)
        + Employed + Unemployed + NILF

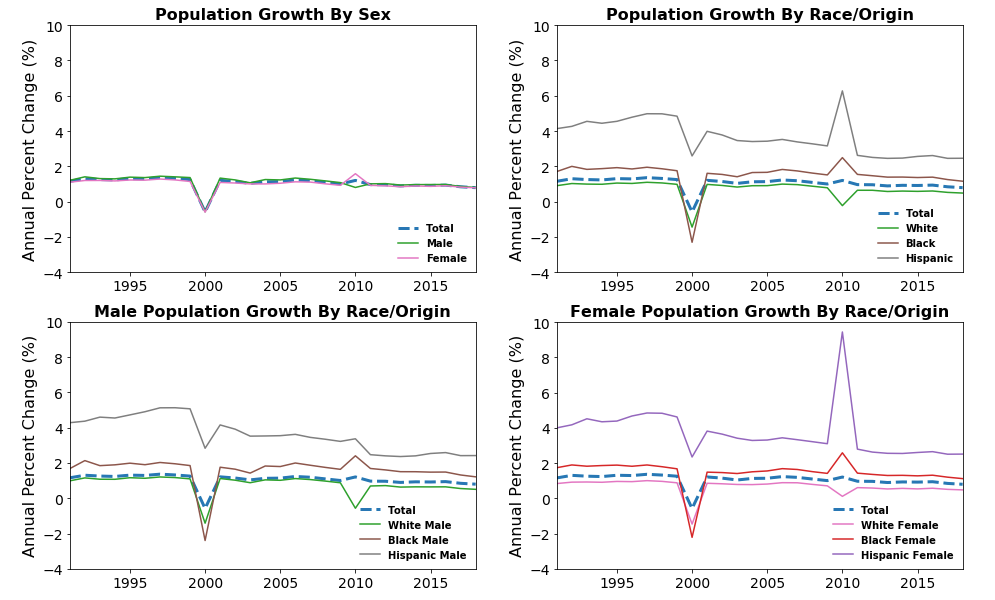
**Adult Non-Institutionalized Civilian Population Segments (16+)**



**2018 Labor Force Segments**

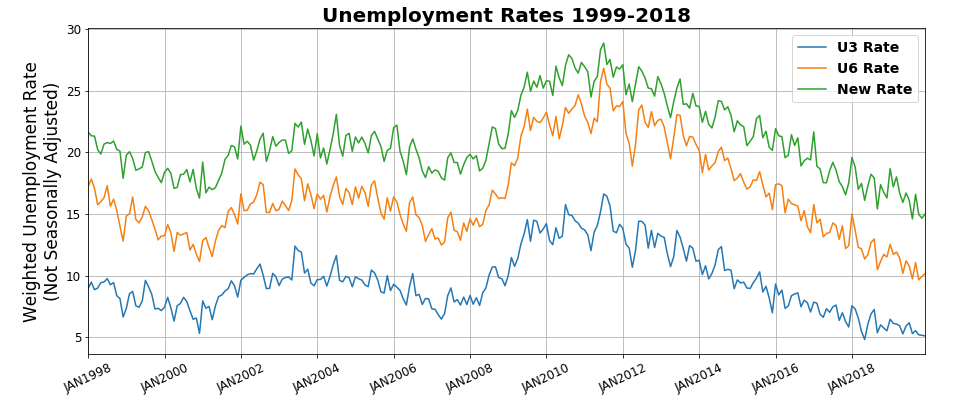


* 1. Data Sources Used
     + U.S. Census Current Population Survey Responses
     + U.S. Census Population Estimates
     + Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics
     + Bureau of Justice Statistics
     + ICPSR Incarceration Data
     + Prison Policy Initiative Incarceration Statistics
  2. Statistics
     + Unemployment Rate (U3)
       - Unemployed/Labor Force
     + Labor Force Participation Rate (U3)
       - Labor Force/Population
     + Population Growth Rates
  3. Subpopulations
     + Sex, Race, Origin, Age, State
     + Metropolitan vs. Non-metropolitan
     + Educational Attainment
     + Students (Full-time and Part-time)
       - Students who work (Full-time and Part-time)
     + Retired (65+,under 65)
     + Disabled (Including estimate of on-the-job disabilities)



* 1. Rate Calculation Methodology
     + Current Population Survey (CPS) respondents may not reflect Adult Civilian Non-Institutionalized Population
       - Weight survey respondents by Age, Race, Origin, Sex and State
     + Rates are adjusted for recurring annual business cycle fluctuations
       - Seasonal Adjustment
       - Both seasonally adjusted and non-seasonally adjusted rates are released
  2. U3 vs. U6
     + U6 includes discouraged workers, those who have looked in past year (but not month), and those who aren’t looking for certain reasons (don’t think they have necessary skills)
     + Workers who are part time for economic reasons counted as unemployed
     + U6 Rates typically between 1.5-2x U3 rates

1. **New Rate Calculation**
   1. Calculate U3 and U6 rates manually
      * Weighting
        + Use Census Population Estimates Data to get population counts by year, age, sex, origin, race and state
        + Group ages into bins (16-19,20-24,etc..)
      * Seasonal adjustment
        + Calculate seasonally adjusted rates using moving averages
      * Proximity to official U3 and U6 rates obtained:
        + U3 (Not seasonally adjusted): 1.3% difference on average
        + U3 (Seasonally adjusted): 2.0% difference on average
        + U6 (Not seasonally adjusted): 2.5% difference on average
        + U6 (Seasonally adjusted): 2.75% difference on average
   2. New Rate - Methodology
      * U6 Similarities
        + Includes Discouraged workers, those who aren’t looking for specific reasons, those looking for work in past 12 months (but not last month)
      * U6 Differences
        + Excludes High School Students and Full Time University Students working Full Time Hours from Population entirely
        + Counts individuals disabled on the job as unemployed (~29% of total disabled)
        + Add nonviolent drug offenders (~22% of total incarcerated) into relevant population, consider them unemployed
        + Only a fraction of Part-time workers provide reason (economic vs. non-economic)
          - Calculate proportion of PT workers with legitimate reasons (Essentially that they would like to work full time but can’t because of factors out of their control) relative to all PT workers who provided any reason as to why they were PT
          - Extend this proportion to all PT workers to include those who did not provide specific reason as to why they were working PT as opposed to FT
          - Instead of considering all PT workers with legitimate reason to be unemployed, calculate the average number of hours worked by PT workers (ex. - 17.5) and calculate proportion of FT hours not worked (35-17.5/35 = ½)
          - Subtract half the number of PT workers obtained during calculation above from employed totals and add this same number to unemployed totals; this way the unemployment rate treats PT workers with predetermined reasons as partially employed as opposed to fully unemployed
   3. New Rate - Limitations
      * Had to run many tests to get as close to official U6 Unemployment Rates as possible since precise calculation is not made available (which survey response items to tally up)
        + My estimates differ from official numbers by 2.5% on average, giving me some room for improvement as my U3 rate estimates differ by only 1.3% (likely due to slightly different weighting methodology)
      * Limited data available on incarcerated population
        + Yearly data available (up until 2016) on total # incarcerated broken out by gender and race/origin, but not by age or state
        + Could only find high-level statistics on types of crimes committed by incarcerated population (ex.- drug offenders, burglaries, etc..) but not detailed data on individual cases
      * Detailed Population data available only until 2018
        + Use 2018 population data when calculating 2019 figures in my analysis – once the 2020 census data is released will be able to calculate using up-to-date figures
   4. New Rate - Results
      * Difference between observed new rate and U3 and U6 rates (for total population as well as population subsegments)
      * Include Labor Force Participation Rates under each of these 3 rate methodologies into analysis
      * Include analysis of population growth for various population segments (emphasizing noteworthy trends)



1. **Conclusion**
   1. Takeaways
      * Newly calculated unemployed rate x% points above U6 and U3 rates for entire population (around 3-5 percentage points higher than U6 on average or so)
      * Discuss subpopulations where there are meaningful differences between these rates and deviations or interesting trends in comparison with entire population
      * Discuss noteworthy trends in LFPR for different subpopulation segments
      * Emphasize importance of using the LFPR and UR in combination to understand true picture of unemployment
      * Revisit population and subpopulation growth data, pointing out any interesting trends/findings that come up
      * Mention current economic crisis and intention to update analysis once enough data is made available to extend analysis
   2. Future Direction
      * Try calculating additional unemployment rates using different methodologies
        + For example: Can add all nonviolent incarcerated into unemployment totals
      * Research and implement seasonal adjustments which reflect Census’s methodology more accurately
      * Improve upon U6 estimates by finding correct combination of survey response items which when tallied up produce rates as close to official figures as possible
      * Store entire dataset (~50GB) into database on the cloud
      * Create web application allowing users to specify subpopulations, rate methodologies etc. in order to calculate their own unemployment rates based on what they believe to make sense (who to include as unemployed and who not to include) while providing them with the “official” rates as benchmarks
      * Data on the incarcerated population is quite fragmented and scattered – need to spend more time researching