

Quantitative Reasoning in Social Justice Topics Chart

Source: <http://www.radicalmath.org/>
 Modified by Gowun Park (Quantitative Reasoning Fellow)

QR Topic	Social Justice Issues	Some Useful Websites
Adding	<ul style="list-style-type: none"> • Basic Family Budgets <ul style="list-style-type: none"> ○ Determining how much money a family needs to survive, live comfortably, etc. • Mayan Mathematics <ul style="list-style-type: none"> ○ Learn how to add, subtract, multiply in a base 20 system 	<p>EPI Family Budget Calculator http://www.epi.org/resources/budget/</p> <p>http://www.storyofmathematics.com/mayan.html</p>
Averages	<ul style="list-style-type: none"> • Union Salaries <ul style="list-style-type: none"> ○ Union officials and Management often have different ways to come up with the “average salary” of a worker. Use real data to understand how the mean, median, or mode could each be used here, and the difference between the average each one gave. 	<p>Current Employment Statistics (CES) Database http://www.bls.gov/ces/home.htm#data</p> <p>Union Membership and Coverage Database from the CPS http://www.unionstats.com/</p>
Combinations	<ul style="list-style-type: none"> • The Lottery <ul style="list-style-type: none"> ○ Study how the Lottery works, why it’s nearly impossible to win, and the economic damage it causes 	<p>Powerball Lottery: Odds of Winning a Prize http://mathforum.org/library/drmath/view/56122.html</p>
Exponents	<ul style="list-style-type: none"> • Population Growth <ul style="list-style-type: none"> ○ Growth/decline of food and water resources, cities 	<p>International Data Base (map interface also available) http://www.census.gov/population/international/data/idb/informationGateway.php</p>
Fractions	<ul style="list-style-type: none"> • War Budgets <ul style="list-style-type: none"> ○ Comparing budgets for 	<p>Pie Chart http://www.warresisters.org/piechart.htm</p>

	<p>defense department to budgets for other social services to the total budget</p> <ul style="list-style-type: none"> ○ Comparing how money spent on military operations could be used to support other important causes (ex: if a bomb costs \$10 million and a it costs \$10,000 to provide health care for an entire family for a year, how many families could get health care for the cost of this bomb). 	<p>Cost of National Security http://costofwar.com/index.html</p> <p>Trade-offs Exercise (tools) https://www.nationalpriorities.org/interactive-data/trade-offs/</p>
<p>Geometry</p>	<ul style="list-style-type: none"> • Liquor Stores/Fast Food Chains <ul style="list-style-type: none"> ○ Look at how many liquor stores or fast food chains are within a 1-mile radius or within 5 blocks of your school. This can be compared with schools in other neighborhoods • Environment by location <ul style="list-style-type: none"> ○ Determine the air quality, drinking water and foods in the neighborhood • Migration/Geographic Mobility <ul style="list-style-type: none"> ○ News releases published by the Census Bureau and data • Ethnomathematics <ul style="list-style-type: none"> ○ African Fractals ○ Islamic Tessellations ○ Origami 	<p>maps.google.com</p> <p>http://www.fastfoodmaps.com/</p> <p>Environmental Information by Location https://www.epa.gov/environmental-topics/environmental-information-location</p> <p>https://www.census.gov/topics/population/migration/news.All.html</p> <p>http://www.rpi.edu/~eglash/eglash.dir/afactal/afactal.htm http://mathforum.org/sum95/suzanne/tess.intro.html</p> <p>Origami & Math www.paperfolding.com/math/</p>
<p>Graphing</p>	<ul style="list-style-type: none"> • Line Graphs <ul style="list-style-type: none"> ○ Incarceration rates over time 	<p>https://www.bjs.gov/index.cfm?ty=kfdetail&iid=493</p>

	<ul style="list-style-type: none"> • Pie Graphs <ul style="list-style-type: none"> ○ Federal Budget • Bar Graphs <ul style="list-style-type: none"> ○ Young Adults: Then and Now (multiple characteristics of the population age 18-34 in 1980, 1990, 2000 and today) 	<p>https://www.nationalpriorities.org/budget-basics/federal-budget-101/</p> <p>https://www.census.gov/censusexplorer/censusexplorer-youngadults.html</p>
<p>Inequalities</p>	<ul style="list-style-type: none"> • Income, Wage, or Education <ul style="list-style-type: none"> ○ Compare household income, employee pay, or number of college graduates at the U.S. state or county-level • Graduation Rates <ul style="list-style-type: none"> ○ Creating algebraic inequalities to describe limits on funding, class size, school size, etc., how can a school or district maximize graduation rates? • Small Business <ul style="list-style-type: none"> ○ By creating a number of algebraic inequalities that describe limits a business is working with. 	<p>Census Explorer: People, Education and Income (Interactive Tool) https://www.census.gov/censusexplorer/censusexplorer.html</p> <p>See “The School Funding Project” http://www.radicalmath.org/main.php?id=schoolfunding</p> <p>Summary statistics https://www.sba.gov/sites/default/files/advocacy/United_States.pdf Firm Size Data https://www.sba.gov/advocacy/firm-size-data</p>
<p>Logarithms</p>	<ul style="list-style-type: none"> • Growth Rates <ul style="list-style-type: none"> ○ People, prisoners, AIDS cases, health factors, etc. 	<p>Global Health: http://apps.who.int/globalatlas/ National Prisoner Statistics (NPS): https://www.bjs.gov/index.cfm?ty=nps</p>
<p>Percents</p>	<ul style="list-style-type: none"> • Student Debt by Race and Class <ul style="list-style-type: none"> ○ Inequality of student debt ○ Impacts of student debt on the post-college lives • Growth Rate <ul style="list-style-type: none"> ○ Growth in rates of homelessness, poverty, people in jail, etc. • Proportions, ex: 	<p>The Debt Divide (Demos) http://www.demos.org/sites/default/files/publications/Mark-Debt%20divide%20Final%20(SF).pdf</p> <p>U.S. Income and Poverty: http://www.census.gov/library/publications/2016/demo/p60-256.html</p> <p>Health (Health, Unites Sates)</p>

	<ul style="list-style-type: none"> ○ Percent of each race in total population vs. incarcerated (or in the military, killed in the war, dropping out of high school, college graduates, etc) 	<p>https://www.cdc.gov/nchs/hus/index.htm</p> <p>Housing: http://www.census.gov/hhes/www/housing.html</p>
Probability	<ul style="list-style-type: none"> ● Racial Profiling <ul style="list-style-type: none"> ○ Explore the probability that a traffic stop should be (and is) of a person of color 	<p>Rhode Island Traffic Stop Statistics https://repository.library.northeastern.edu/files/neu:344621/fulltext.pdf</p>
Rates	<ul style="list-style-type: none"> ● Prison growth <ul style="list-style-type: none"> ○ Rates of different races and genders becoming incarcerated ○ Compared to growth of high school graduates ○ Compared to growth of funding for higher education ● Population growth <ul style="list-style-type: none"> ○ In different countries (also good for looking at a population density) ● Extreme Poverty <ul style="list-style-type: none"> ○ The proportion of the world's population living in extreme poverty over time. 	<p>National Center for Education Statistics http://nces.ed.gov/pubs2002/dropout91_97/all_tables.asp Tracking State Prison Growth in 50 States https://www.prisonpolicy.org/reports/overtime.html#driverdata Data and BJS releases https://www.bjs.gov/latestreleases.cfm</p> <p>World Population http://data.worldbank.org/indicator/SP.POP.TOTL?locations=1W</p> <p>World Poverty (Percentage of Population) http://data.worldbank.org/indicator/SI.POV.DDAY?locations=1W&start=1981&end=2013&view=chart</p>
Slope	<ul style="list-style-type: none"> ● Rates of Increase/Decrease of: <ul style="list-style-type: none"> ○ People in prison ○ Poverty ● Population 	<p>See resources listed above</p>
Statistics	<ul style="list-style-type: none"> ● Community Surveys <ul style="list-style-type: none"> ○ Teach students how to write surveys, and then survey your school or local community about any social issue. Statistical analysis can be used 	<p>American Community Survey (ACS) https://www.census.gov/programs-surveys/acs/</p> <p>See above links for Statistical data to analyze</p>

	<p>to understand the results: averages, ranges, frequency tables, graphing, correlation, percents, hypothesis testing, variance, standard deviation, etc.</p> <ul style="list-style-type: none">• Racial Profiling<ul style="list-style-type: none">○ Try different sampling experiments to understand the why having a disproportionate number of drivers of color stopped by police is unfair.• Debtor's Prisons<ul style="list-style-type: none">○ Modern-day debtor's prisons across the country.	<p>American Civil Liberties Union https://www.aclu.org/issues/racial-justice/race-and-criminal-justice/racial-profiling</p> <p>https://www.aclu.org/issues/racial-justice/race-and-criminal-justice/debtors-prisons</p>
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