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Index of Youth Vulnerability

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Introduction

The Healthy Youth/Healthy Regions research team developed a geo-referenced Index of Youth Vulnerability. The purpose of this index is to:

- Identify geographic areas with high concentrations of adolescents likely to face disproportionate levels of challenge in making a healthy transition to adulthood
- Provide baseline data for tracking change over time
- Provide a tool for modeling potential effects of focused attention on particular populations.

The index employs 5 research-based indicators associated with young adult marginalization from many of the institutional settings that facilitate pathways to a healthy adulthood for most youth (Osgood *et al.*, 2005; Settersten *et al.*, 2005):

- not completing high school
- teen parenting
- foster care placement
- involvement with the juvenile justice system
- low family income

The following sections offer an overview of our methodology, resulting index and maps, and a summary of conclusions that might be drawn from this analysis.

Methods

The index employs five predictive data points: high school drop out rates, teen birth rates, foster care placement rates, juvenile felony arrest rates, and median household income. Our dual objectives of presenting an analysis at the smallest feasible geographic enumeration unit (zip code) and using data that can be updated annually (we used 2008 data) have guided our selection of data sources and data points.

For each data point, data were normalized and then categorized into quintiles. Each quintile was then given a ranking number from 1 to 5 with 1 representing lowest levels of vulnerability or need and 5 indicating the highest levels.

Out of Work & Out of School

We originally sought to use 'out of work and out of school' as a dependent variable or indicator of disconnection/vulnerability among young adults (ages 20-24). This indicator is a calculation generated by the U.S. Census Bureau but was only available at the zip code level for the year 2000. An industry-based source of demographic data, Geolytics, Inc., was able to provide 2008 data, but only at the PUMA (Public Use Microdata Area) level. While these data were 'crosswalked' to the zip code level for this analysis, the PUMA enumeration unit was too large to make it a meaningful dependent variable in a geographically weighted regression analysis. Figure 1 shows the ranking and underlying rates of disconnected youth in our region.

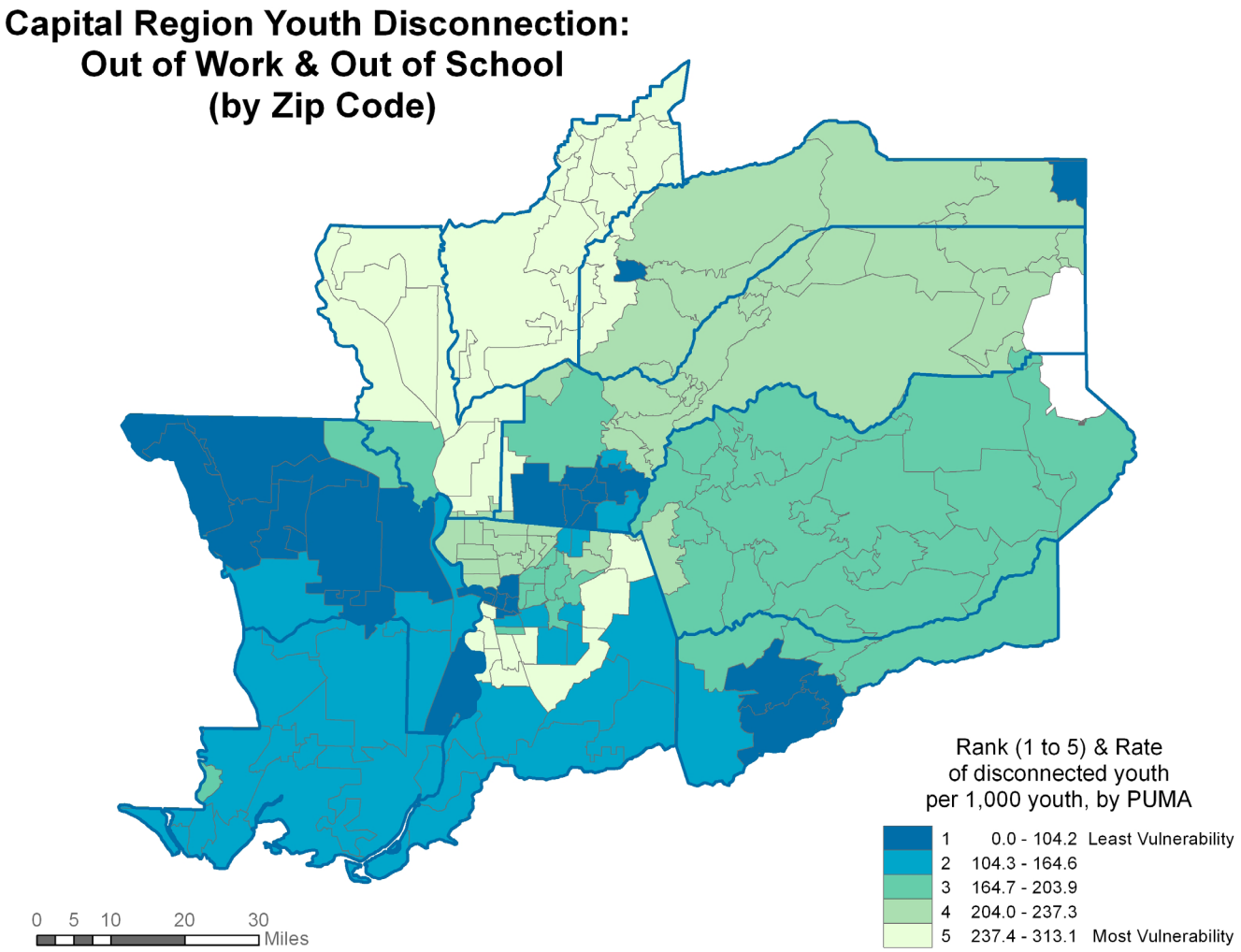

Figure 1: Youth disconnection or vulnerability might be defined as those who are both out of work and out of school. A ranking of 5 indicates a higher level of this disconnection in a Public Use Microdata Area (PUMA). Actual rates for the region are shown to the right of the rank.

High School Dropout

Youth who do not complete high school are vulnerable in many ways: economically, fewer opportunities, and worse health outcomes, among others. We collected the data for adults aged 18-24 who completed 9th to 12th grade but received no diploma, from the American Community Survey 2006-2008 3-year Estimates Dataset. The smallest level of enumeration available was Unified School District. Drop out rates were then re-apportioned to zip codes within school districts and ranked (Figure 2).

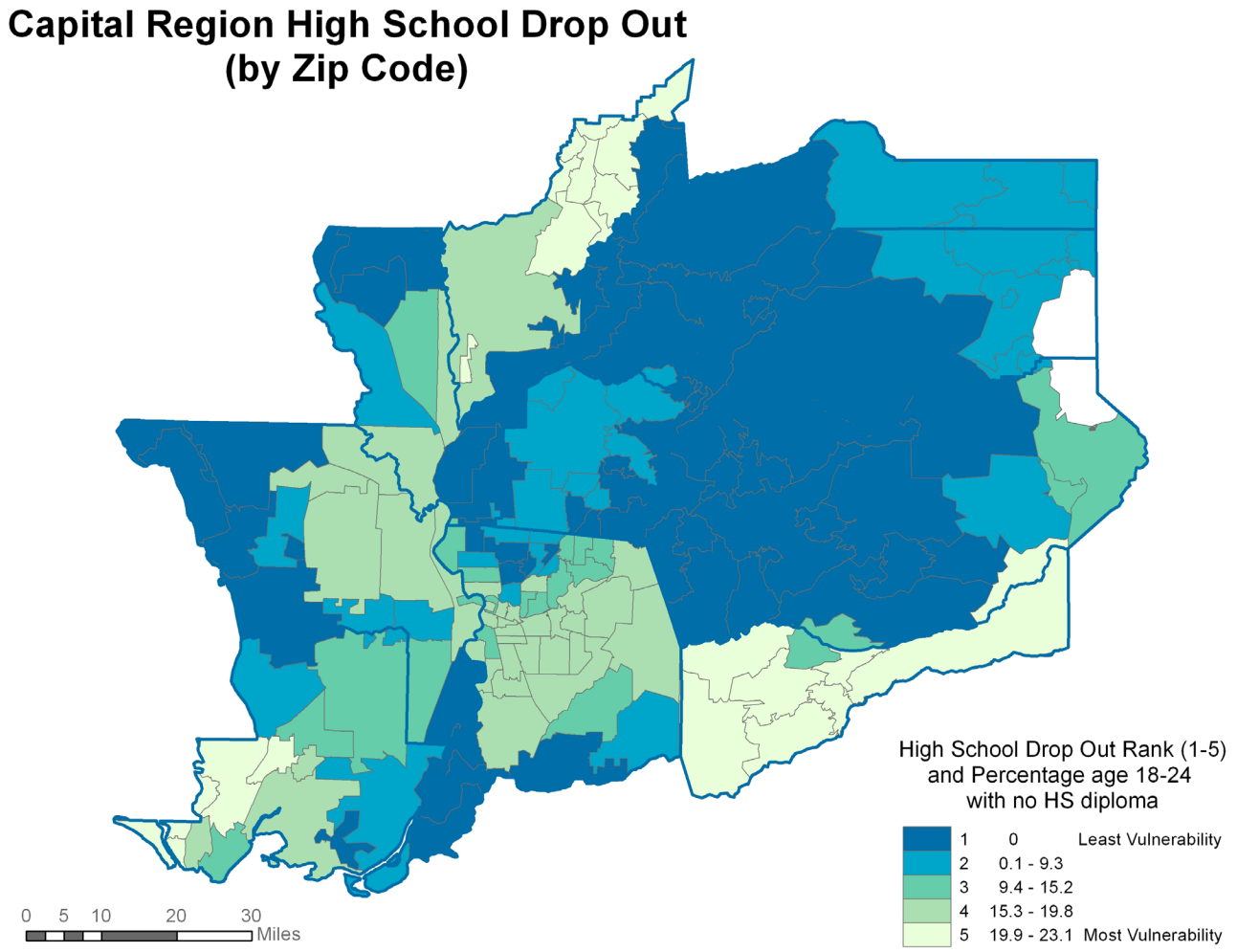

Figure 2: High school drop out rates by school district, but re-apportioned to zip codes. A rank of 5 indicates a higher percentage of high school drop outs among the High School aged population. Use caution when interpreting the listed drop out rates since re-apportionment required adjustment due to overlapping of multiple zip code and school district boundaries.

Teen Birth

It has been shown that the population-wide percentage of teen births strongly resembles the teen birth rate. Data for all California births are available annually at the California Department of Public Health's vital Records website: http://www.cdph.ca.gov/data/statistics/Pages/BirthProfilesbyZIPCode.aspx Data are organized by zip code and represent the percentage of births to teens (to women under the age of 20), among all births (Figure 3).

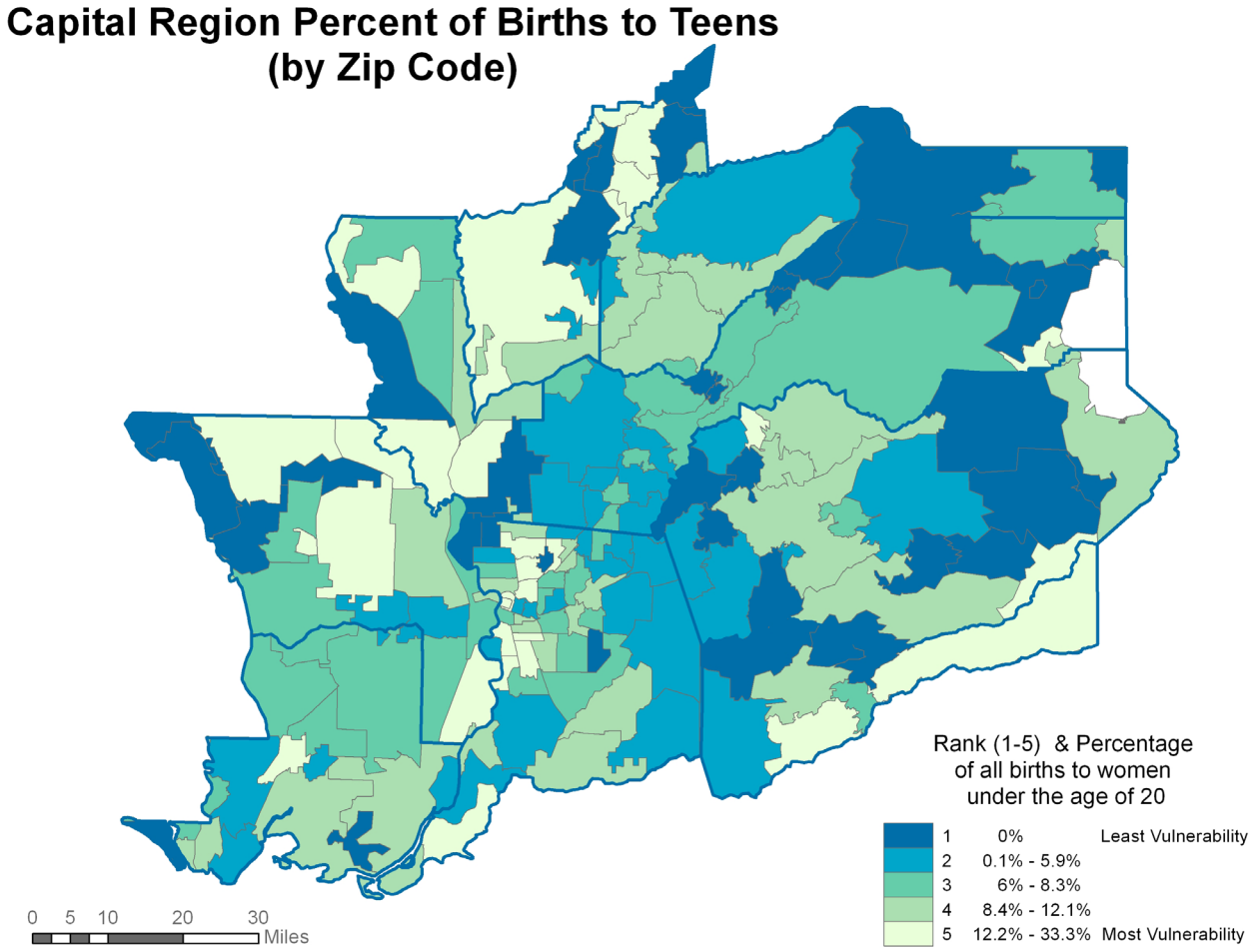

Figure 3. Teen Birth rate as a percentage of births to teens (age less than 20 years) by zip code. A rank of 5 indicates an area with the highest quintile of teen births in the region.

Foster Care

Yearly data on foster care entry and referral rates are collected and made available annually via the Child Welfare Dynamic Reporting System at: http://cssr.berkeley.edu/ucb_childwelfare/GeoData.aspx. We selected foster care referral rates, per 1,000 children age 0-17(Figure 4).

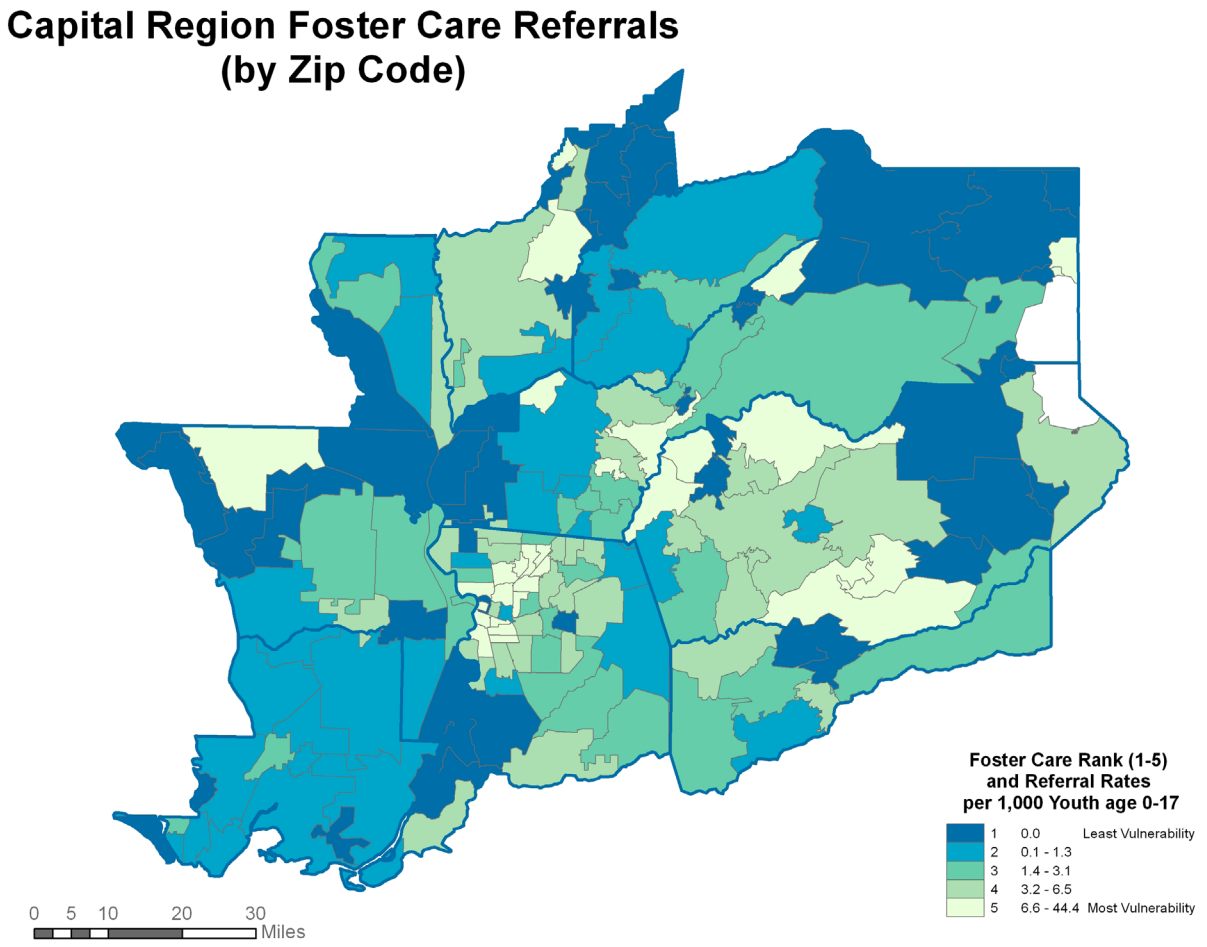

Figure 4. Foster care referral rates per 1,000 children age 0-17 are shown with associated quintile ranks, with 5 representing the highest referral rates.

Juvenile Felony Arrests

The challenge of identifying and obtaining data on youth engagement in the juvenile justice system is an important finding of this work unto itself, in light of the limitations created for any efforts to hold systems accountable or plan prevention or re-entry support. Incarceration, parole, probation, diversion, and other sentencing and parole data are only publicly reported at a county scale. Juvenile felony arrest rates are available at a precinct level, but we are unable to discern when individuals are counted multiple times (for multiple arrests), and whether/how youth are charged and sentenced. We are currently exploring the possibility of gaining access to sentencing data, which might enable assessment of numbers of youth residing in particular zip codes who are sentenced to diversion, probation, county facilities, California Youth Authority, and the adult system, as well as

arrest data obtained from the California Department of Justice crime statistics website: http://ag.ca.gov/cjsc/statisticsdatatabs/ArrestCityJuv.php.

Data were organized by precincts / jurisdictions. We determined which zip codes were represented in each city/jurisdiction. Where there were multiple zip codes in a jurisdiction, the arrests were distributed according to the percentage of the total population living in that zip code based on the 2008 population estimates (ESRI shapefile) (the total population percentages were found to be similar to the juvenile population percentages). For example, if there were two zip codes in a jurisdiction and one zip code included 75% of the population, then 75% of the arrests were allocated to that zip code, and 25% to the other one. Similarly, we distributed the felony arrests across all zip codes in a county for the Sheriff's department and California Highway Patrol (CHP) arrests because they could occur in any jurisdiction within the county. We then calculated an incidence rate per 1,000 youth and ranked the felony arrests by quintile (Figure 5).

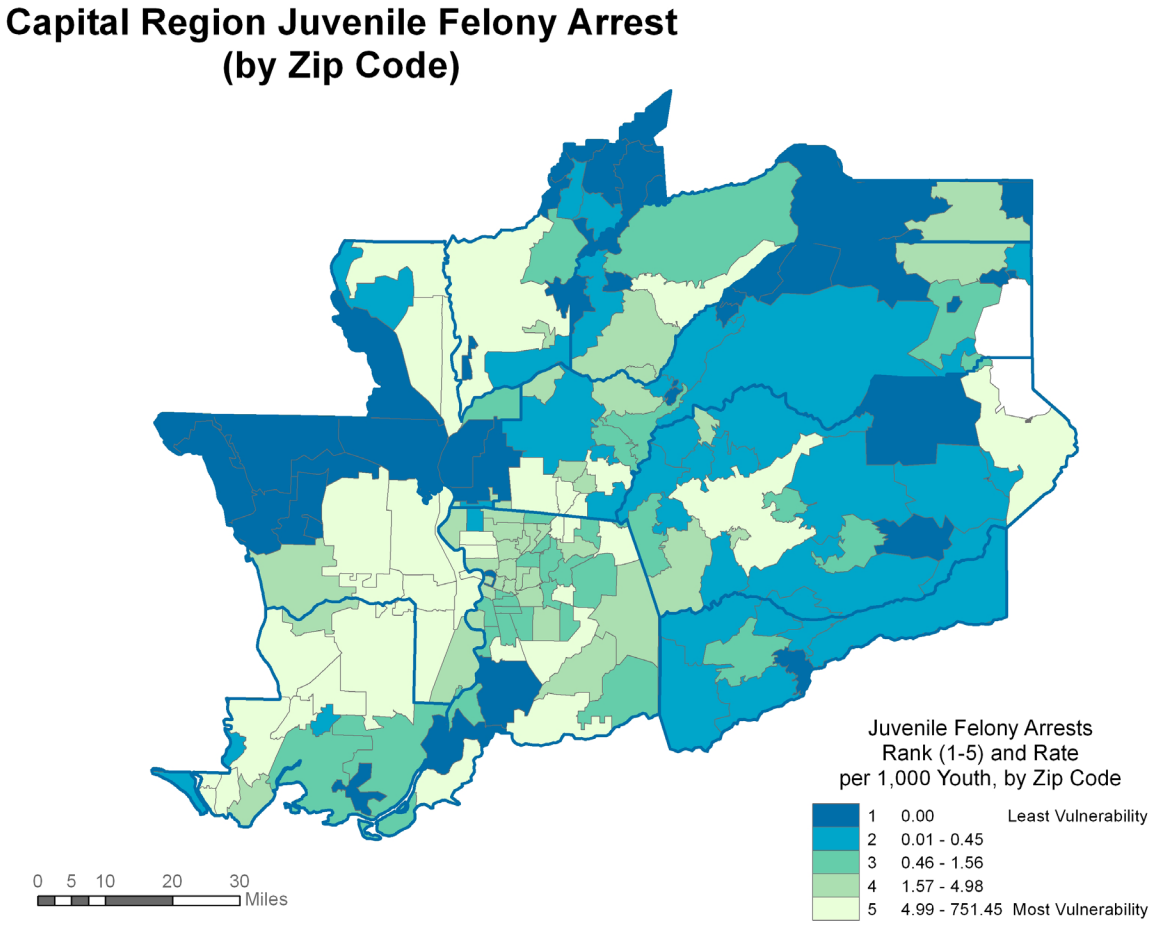

Figure 5: Juvenile felony arrests by jurisdiction - re-apportioned to zip code based on population estimates. Sheriff and CHP arrests were re-apportioned to all zip codes in a county based on that zip code's population. Quintiles of arrests were ranked on a scale of 1 to 5 with 5 being the highest proportion of arrests per 1,000 young people.

Median Income

We used Geolytics data to obtain information on median household income by zip code in the region. Income was classified in quintiles and ranked with 1 being the highest income quintile and 5 being the lowest (Figure 6).

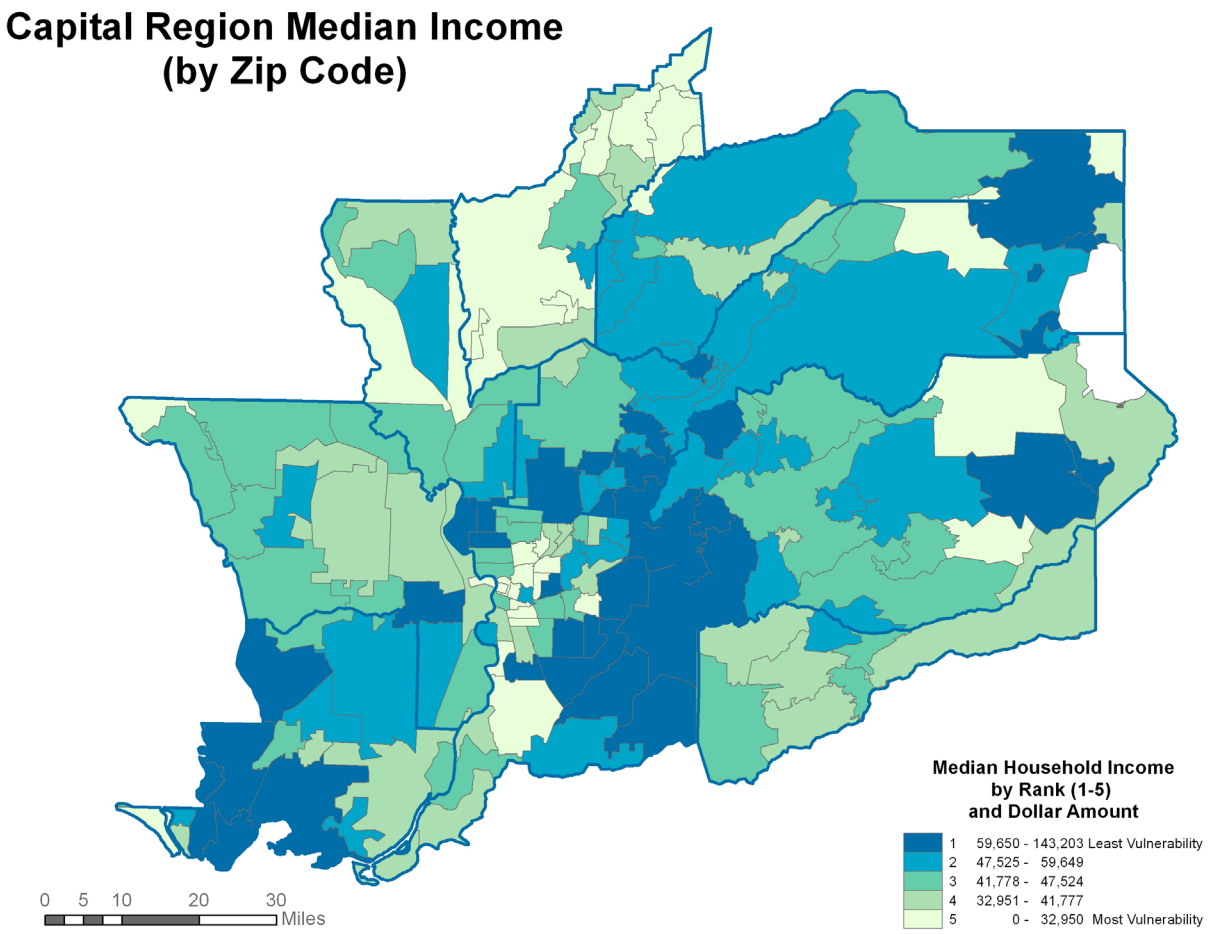

Figure 6: Median household income ranked in quintiles such that 1 means the highest income group (lowest need) and 5 is the lowest income group (highest need). Actual median income ranges are listed to the right of the ranks.

The Index of Youth Vulnerability

To create the index, we averaged the rank for each of the five predictor variables mentioned. Then the results were classified by quintiles such that the lowest quintile would represent the areas with the least vulnerability to disconnection while the highest quintile would be at risk for disconnection (Figure 7).

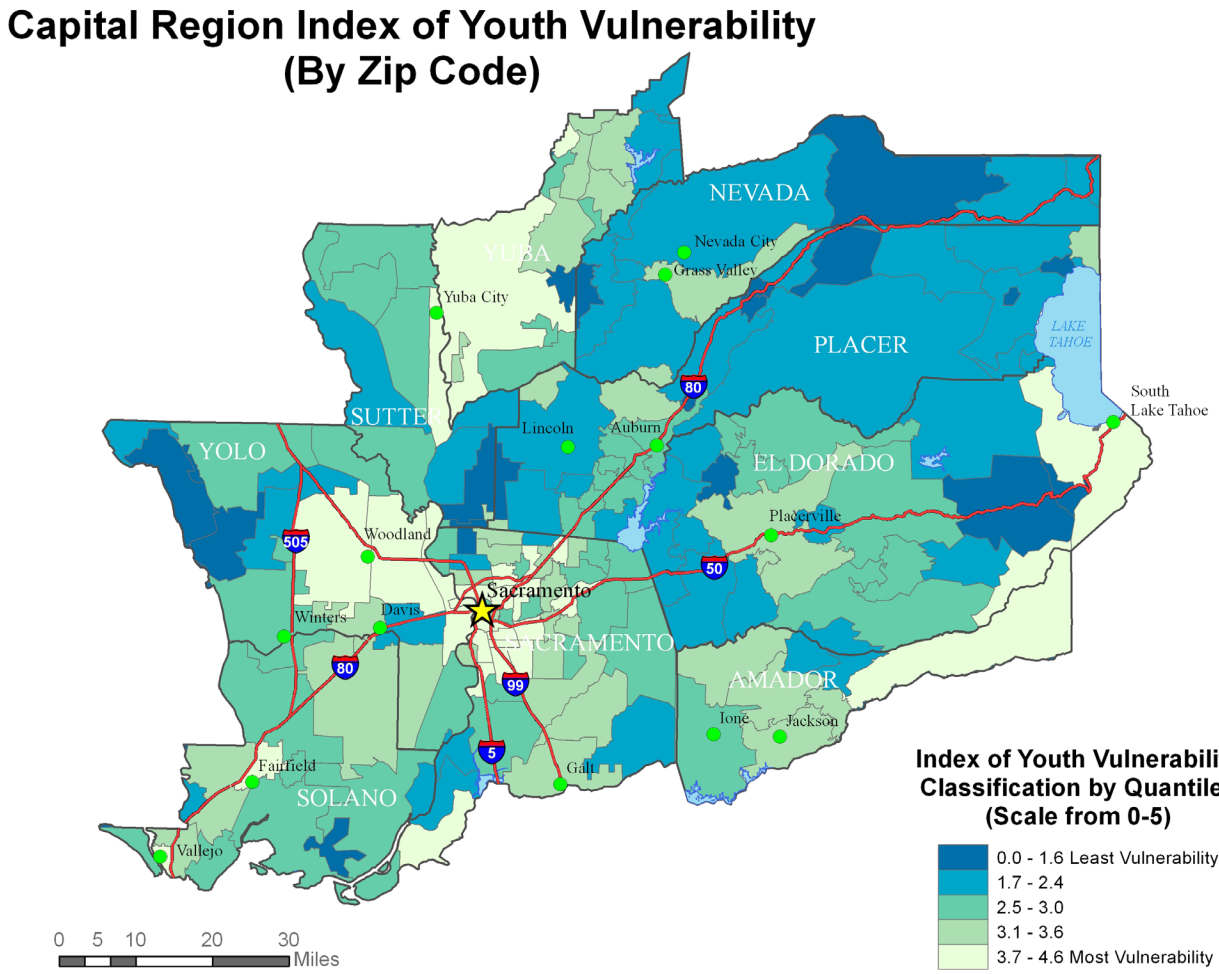

Figure 7: The index of youth vulnerability based on the average of rank scores from: high school drop outs, teen birth, foster care referrals, juvenile felony arrests and median household income. The highest quintile (lightest color) represents the most at-risk populations.

Summary/Conclusions

Although some of the data did not lend itself well to zip code level interpretation (school drop outs, out of work and out of school youth and juvenile felony arrests), we believe there is value in drawing attention to geographies with high concentrations of young people likely to need additional support around transitioning to independent, healthy adulthood.

This set of maps highlight the relative rates of each of the data points noted herein. Viewing the region as a whole, there appears to be consistent significant risk areas in Yuba County, West Sacramento, neighborhoods and unincorporated areas south and north of Sacramento, the Fairfield, Vallejo and Rio Vista areas of Solano County, and the South Lake Tahoe area of El Dorado County. Creative investments in and engagement with young people in these areas are especially needed to promote youth and regional health.

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