

Distress in Kentucky

An Analysis of Socioeconomic and Environmental Distress by Rural and Urban Block Groups

Methodology

An urban block group has a population density of 1,000 people per sq. mi. (and greater) or has population density of at least 500 people per sq. mi. and is adjacent to a block group with at least 1,000 people per sq. mi.

Socioeconomic distress was queried from the ACS 2009-2013 5-year estimates by block group. Not Distressed (rank 0) block groups have an unemployment rate less than 9.0%, an income (per capita income) greater than \$28,155, and a no diploma rate (for population greater than 25 years and older that has some high school, but no diploma) less than 8.0%. Transitional (rank 1). An unemployment rate greater than 9.0%, an income (per capita income) less than \$28,155, a no diploma rate greater than 8.0%, but is not distressed. Distressed (rank 2) areas have an unemployment rate greater than 13.5%, an income (per capita income) less than \$22,524, and a no diploma rate greater than 8.0%. Or an income less than \$16,893 and no diploma greater than 12%. Severely Distressed (rank 3) areas have an unemployment rate greater than 18%, an income (per capita income) less than \$16,893, and a no diploma rate greater than 12%. Or an income less than \$11,262 and no diploma greater than 16%.

Environmental distress was derived from rates of surface coal mining permits and wildfires. It is assumed that higher rates of either indicate environmental distress. Wildfire and permit point feature classes were spatially joined to block groups, which had socioeconomic ranks calculated. In block groups with surface coal mining permits, the average was 1.8 permits per square mile. If a block group had no permits, it was given a permit rank 0. If it had permits, but less than average, it was given a permit rank 1. If it had greater than average rate of permits, it was given a rank 2. In block groups with wildfires, the average burned area is 680 acres. If a block group had no wildfires, it was given a wildfire rank 0. If it had wildfire, but less than average, it was given wildfire rank 1. If it had greater than average, it was given a wildfire rank 2.

Total distress is calculated by addition of socioeconomic distress, wildfire, and surface coal mining permit ranks. For example, Rank 7 block groups have the greatest socioeconomic distress and greater than average rates of surface coal mining and area burned by wildfire.

Summary

Severe socioeconomic distress exists in both urban and rural block groups. Of the 311,000 people in severely distressed block groups, 60% are urban (Chart 2). In rural block groups, as socioeconomic distress increases, so do indicators of environmental distress. Rates of wildfire and surface coal mining nearly double between distressed and severely distressed rural block groups (Chart 1).

Total Distress Index

A Combination of Socioeconomic Distress and Rates of Wildfire and Surface Coal Mining

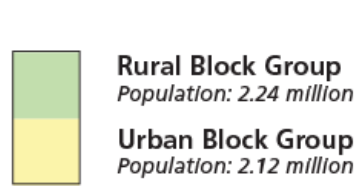


North Bend, Boone County



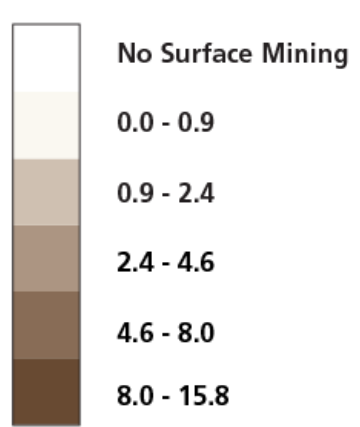
Population:	5,600	Mine Permits	0
Per Capita Income:	\$39,225	Per Square Mile:	
Unemployment Rate:	3.4%	Cumulative Wildfire	0
Adult Population without High School Diploma:	3.2%	Square Miles Burned:	0

Rural/Urban Block Groups



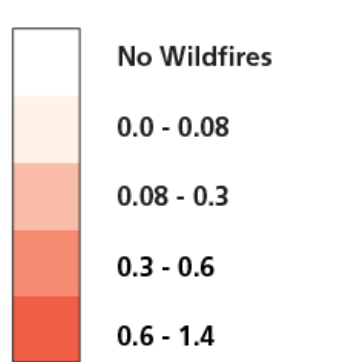
Surface Coal Mining Rate, 1970s - March, 2015

Permits per sq. mi. = (Permits per Block Group) / (Area of Block Group)



Cumulative Wildfire Rate, 1992-2012

Ratio Burned = (Area Burned per Block Group) / (Area of Block Group)

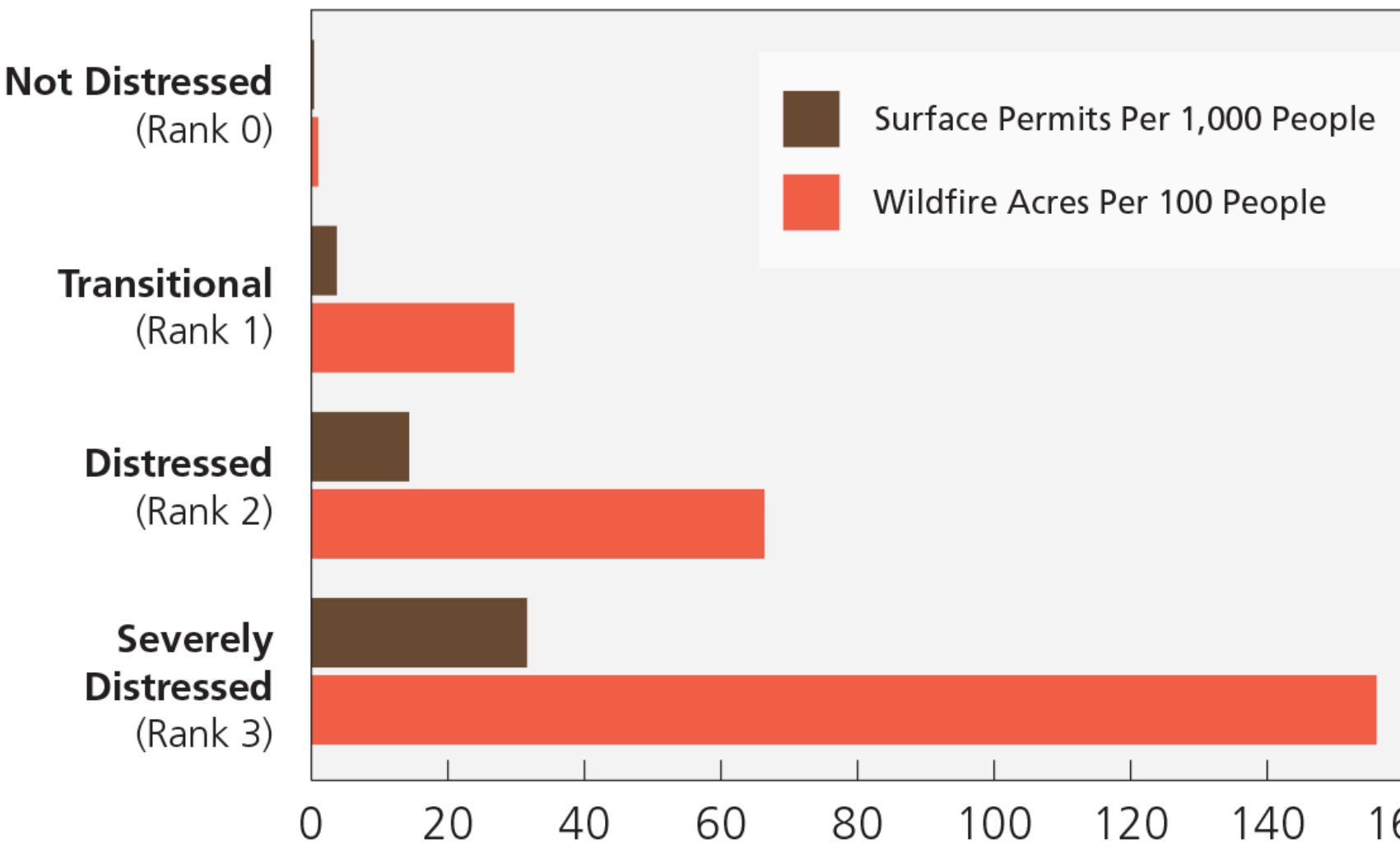


Socioeconomic Distress Index

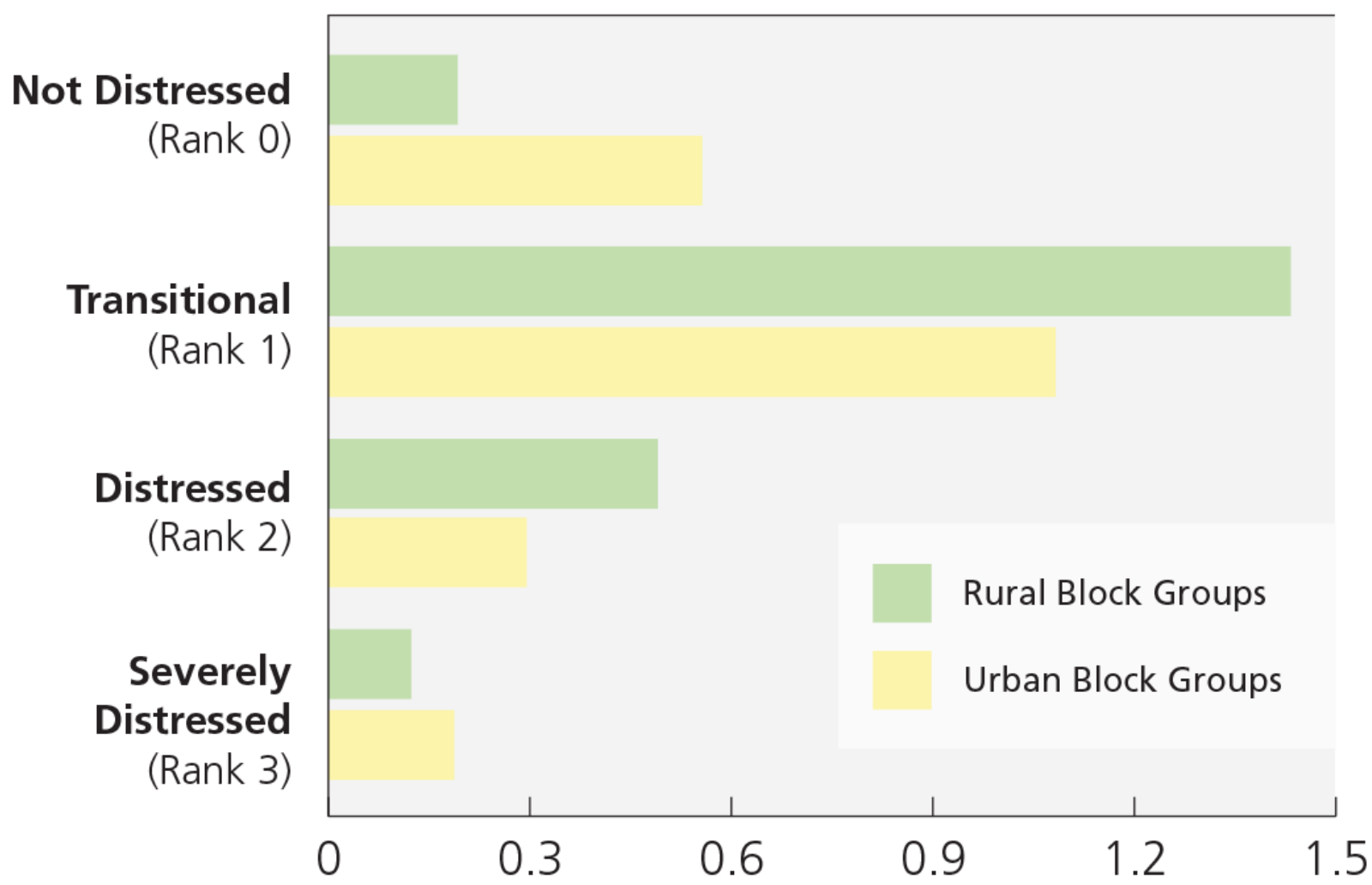
By Block Group



Rates of Surface Coal Mining and Wildfires by Socioeconomic Distress Rank in Rural Block Groups - Chart 1



Population (in millions) by Socioeconomic Distress Rank and Rural and Urban Status - Chart 2



Vicco, Perry County



Population:	1,500	Mine Permits	4.2
Per Capita Income:	\$12,710	Per Square Mile:	
Unemployment Rate:	27.1%	Cumulative Wildfire	4.3
Adult Population without High School Diploma:	15.5%	Square Miles Burned:	

Map was created by Boyd Shearer for GEO 309, Introduction to GIS in the Department of Geography, University of Kentucky during the Spring Semester, 2015.

SOURCES OF DATA
Kentucky Department for Natural Resources, Division of Forestry, January, 2015.
Kentucky Department for Natural Resources, Surface Mining Information System (SMIS) database, accessed March 15, 2015: <http://minepermits.ky.gov/Pages/SpatialData.aspx>
Short, Karen C. 2014. Spatial wildfire occurrence data for the United States, 1992-2012 (FPA_FOD_20140428). 2nd Edition. Fort Collins, CO: Forest Service Research Data Archive. <http://dx.doi.org/10.2737/RDS-2013-0009>
US Census Bureau. 2015. 2009-2013 American Community Survey (ACS) 5-year Estimates.

