Upper Great Lakes States' Recreational Angler Participation Map Book

See "Upper Great Lakes States' Angler Estimates and Map Book Documentation, 1999-2015" for detailed methods and data description

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Wisconsin

Regional (Illinois, Indiana, Michigan, Minnesota, and Wisconsin)

Lake-level (Lake Huron, Lake Michigan, and Lake Superior)

Background and Data Description

This Map Book includes a set of forty-nine maps that together illustrate geographic patterns in angler participation rates in Illinois, Indiana, Michigan, Minnesota, and Wisconsin. Participation rates are presented by sex and county of the angler's residence. It accompanies a series of reports that analyze angler demographics and present projections of future anglers for each state. Please see those reports and the accompanying documentation paper entitled "Upper Great Lakes States' Angler Estimates and Map Book Documentation, 1999-2015" for methodological details and for detailed age-period-cohort analysis and population projections.

The maps included here show trends in recreational fishing participation rates between 2000 and 2016, separately for males and females. Also included are estimates of Great Lakes salmon/trout fishing participation by state of residence and at the lake-level for Lakes Huron, Michigan, and Superior. The collection includes maps by state showing (1) the participation rate in fishing (number of anglers divided by the population in residence), and (2) change in the fishing participation rate over time (calculated as the rate at time {t+1} minus the rate at time {t}). It also includes maps of the Upper Great Lakes region as a whole (5 states) and maps showing angler participation at the lake level, which include (1) the total number of anglers by county of residence, (2) the participation rate in fishing, and (3) change in fishing participation rate over time.

The primary data sources for the angler estimates are anonymized fishing license sales data provided by staff within each state's Department of Natural Resources. Our lab used these data to create a multi-state and regional angler database that includes the estimated number of Illinois, Indiana, Michigan, Minnesota, and Wisconsin residents who purchased a fishing license by their age, sex, and county of primary residence[1]. These data form the basis of the maps. Anglers are counted in the county of primary residence, which may not correspond to the county where they fish. Years available range from 1999 to 2016, but vary for each state. Individual state maps only include the population from the first age a fishing license is required up to age 79. The regional maps only include the population age 18-79, to facilitate comparison between states. In calculating participation rates, the number of anglers is divided by total population of the same sex and age group as of July 1 of each year (mid-year) as reported by the U.S. Census Bureau in the Intercensal Estimates program. Because there is no Great Lakes salmon/trout stamp required in Indiana, Michigan, or Minnesota, the number of GL salmon/trout anglers in these states had to be estimated by employing statistical models and several assumptions (methods are detailed in the documentation paper mentioned above). We expect that the estimates presented here may underestimate GL salmon/trout fishing in these three states.

Overall, the maps show that the number of anglers is greatest in larger cities and more urbanized areas, because there are more people living there (see Figure 31). Participation rates, however, tend to be higher in more rural areas and in counties where there is greater access to

[1] In Michigan, 17% of license sales records were missing values on county of residence. These individuals were omitted from the Michigan maps. This means the Michigan maps reflect an underestimation of resident angler participation rates.

fishing opportunities (lakes, reservoirs and rivers). The total number of unique anglers declined somewhat between 2000 and 2014. The largest declines in the absolute number of anglers occurred in eastern and northern Minnesota, northern Wisconsin, and eastern Michigan (see Figure 32). Among males, fishing participation is generally declining across all five states. Female fishing participation is generally increasing, especially in Illinois, Michigan, and Wisconsin. However, this pattern is variable with some counties experiencing considerably more growth than others and many counties in Minnesota experiencing decline in female participation rates.

Maps showing GL salmon/trout fishing participation show that participation rates decrease as distance from Great Lake increases, and that the total number of resident GL salmon/trout anglers is highest in urban areas that border a Great Lake (e.g., St. Louis County, MN which contains Duluth and Cook County, IL which contains Chicago). Participation in GL salmon/trout fishing has increased in some counties over the last several years, while decreasing in others. Many of the counties that have experienced decline are those with relatively high participation rates.

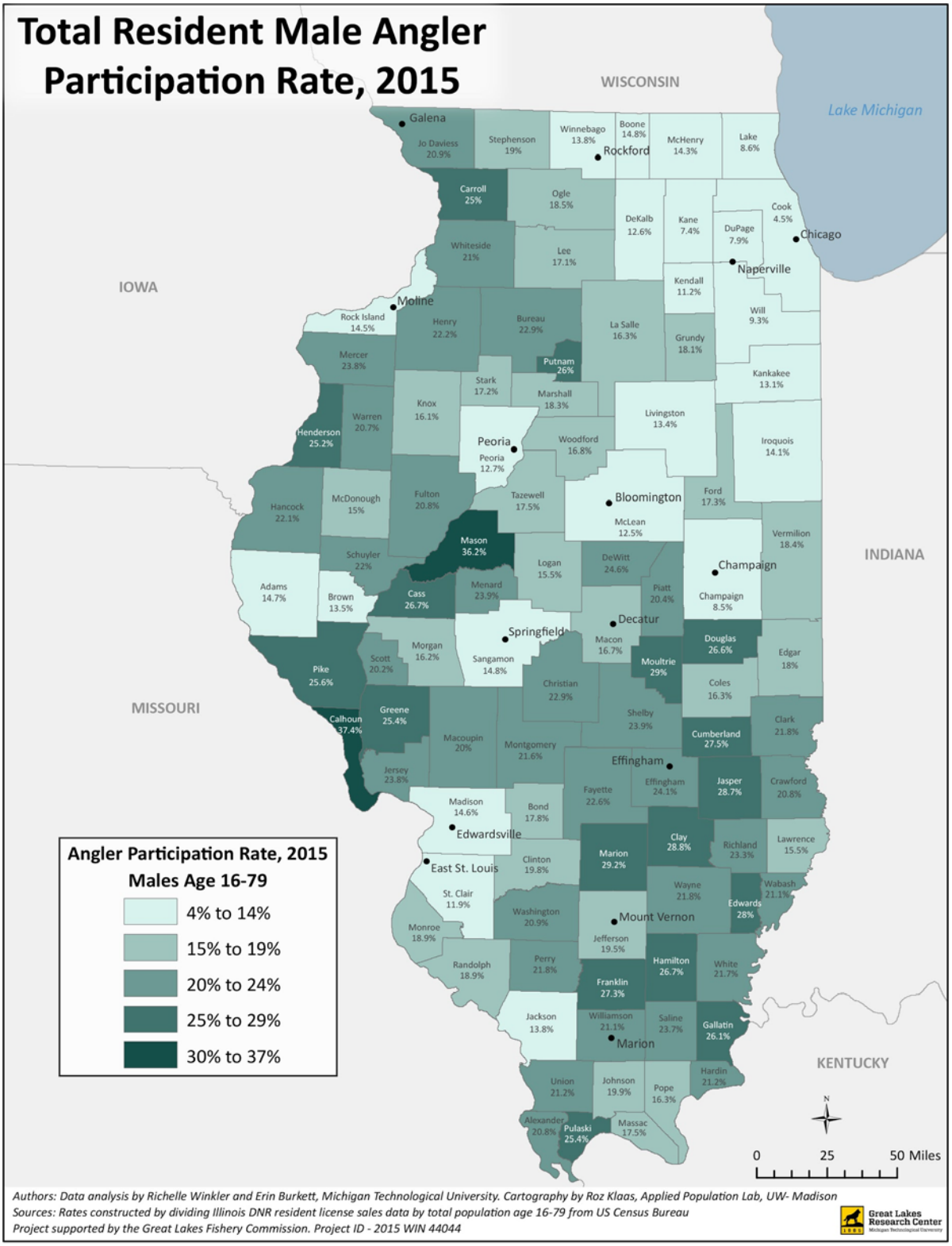


Figure 1: Male Fishing Participation Rates, 2015

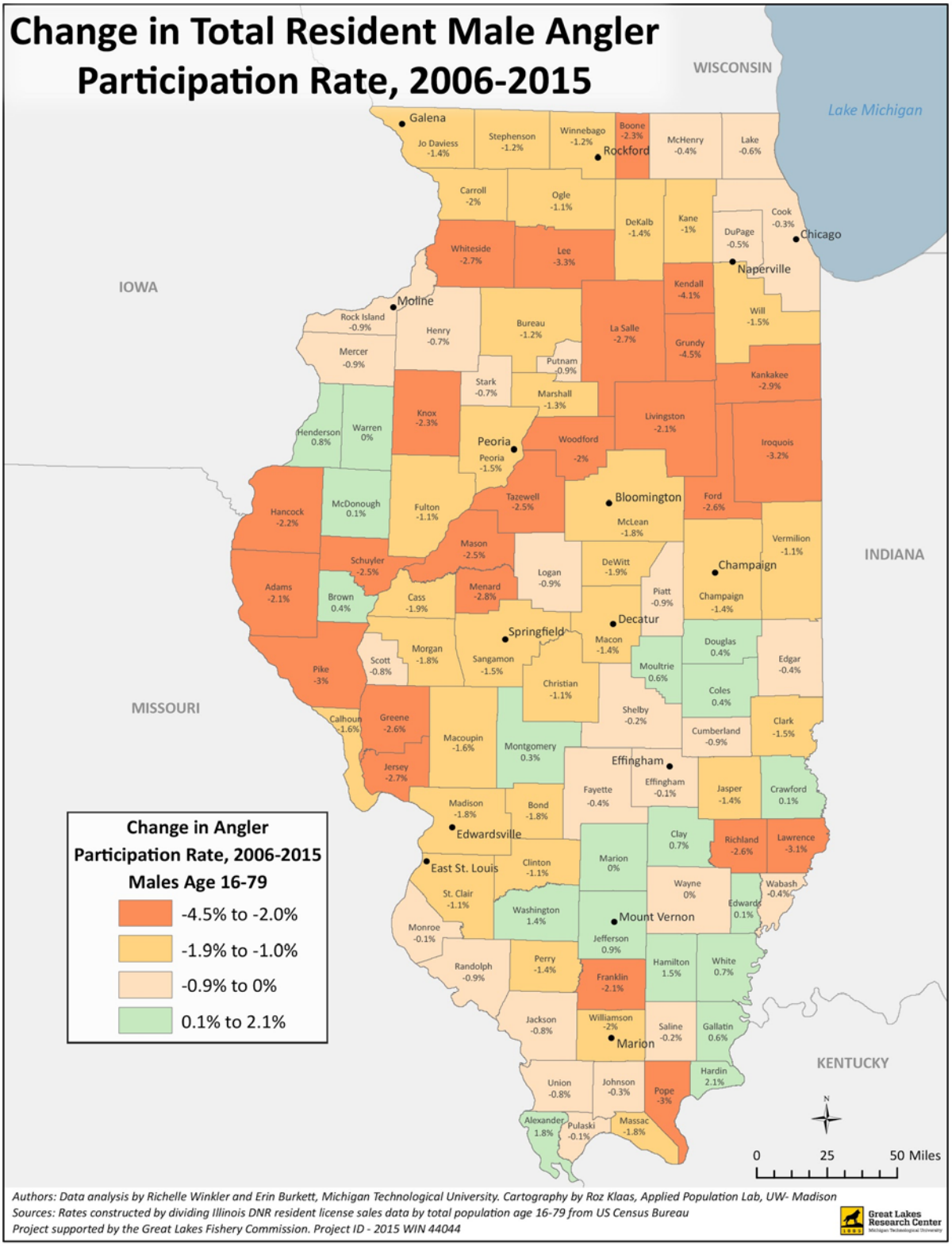


Figure 2: Change in Male Fishing Participation Rates, 2006-2015

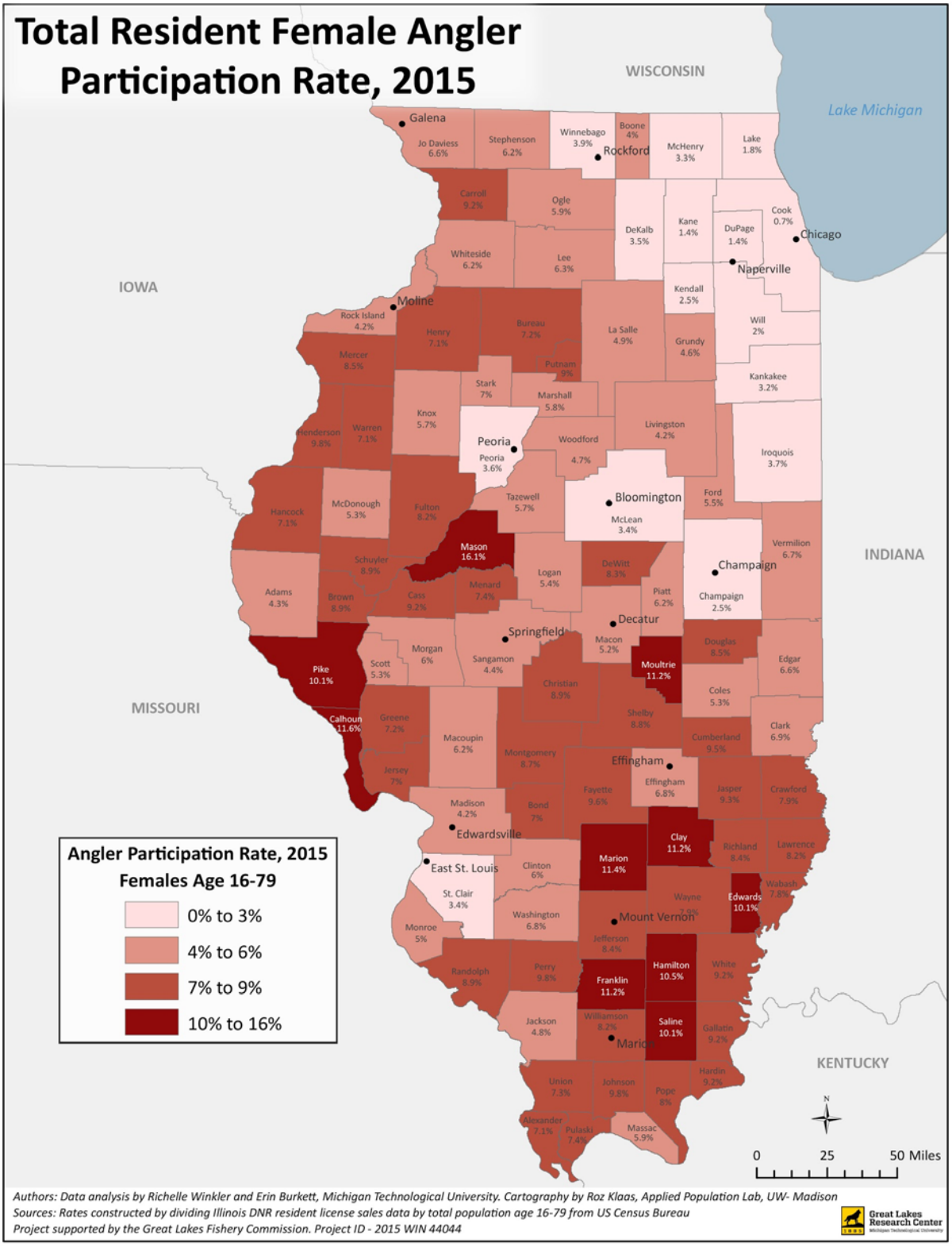
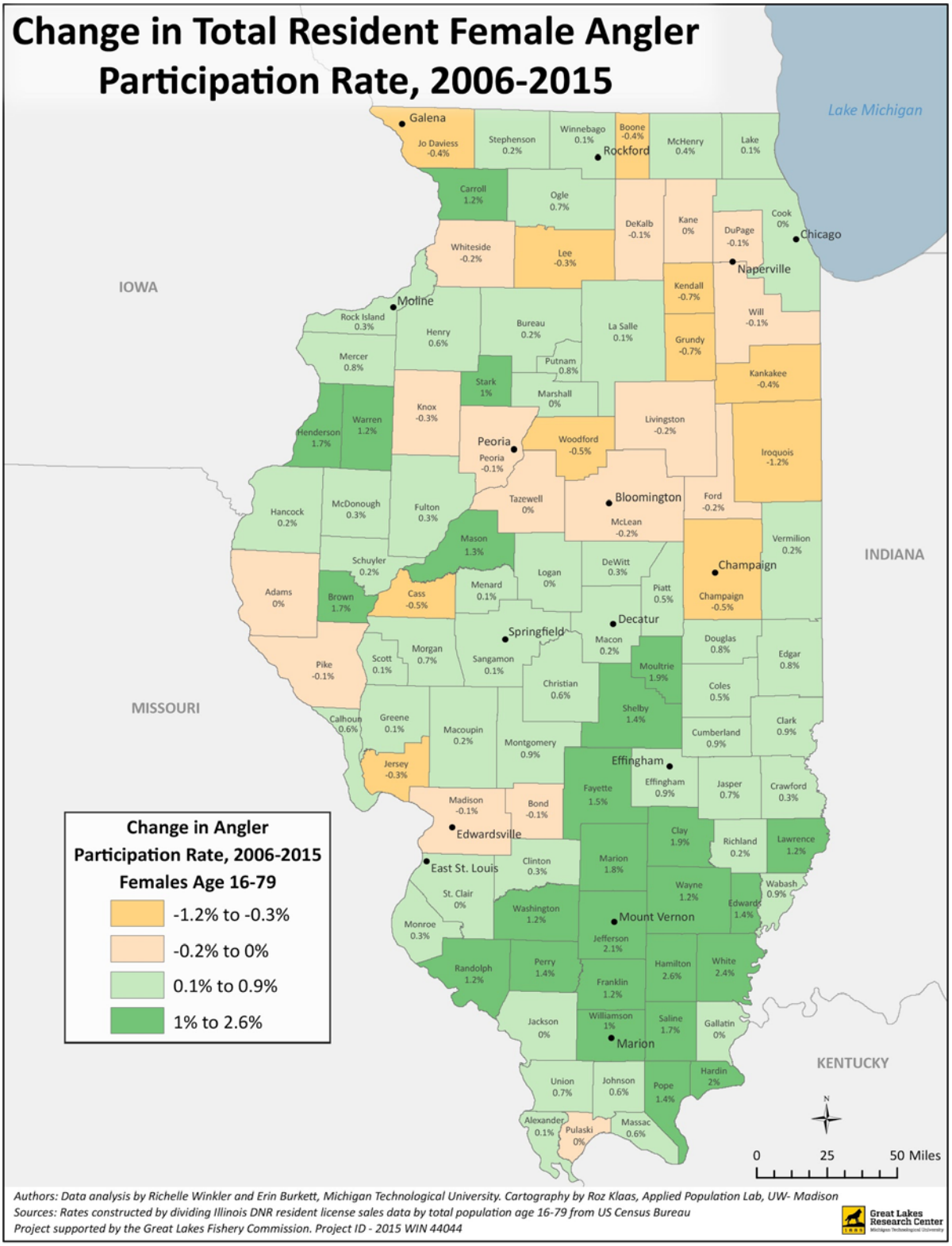


Figure 3: Female Fishing Participation Rates, 2015



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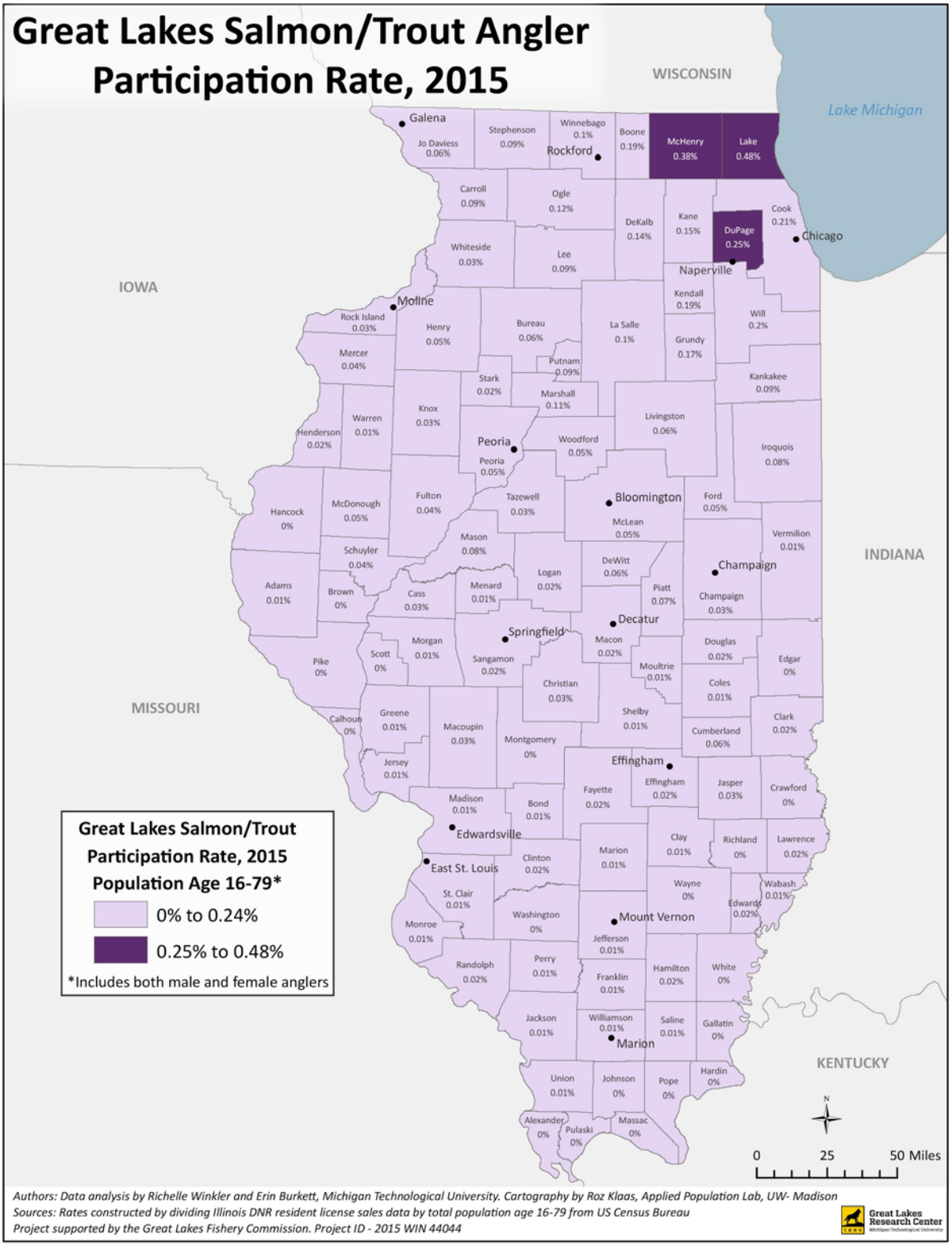
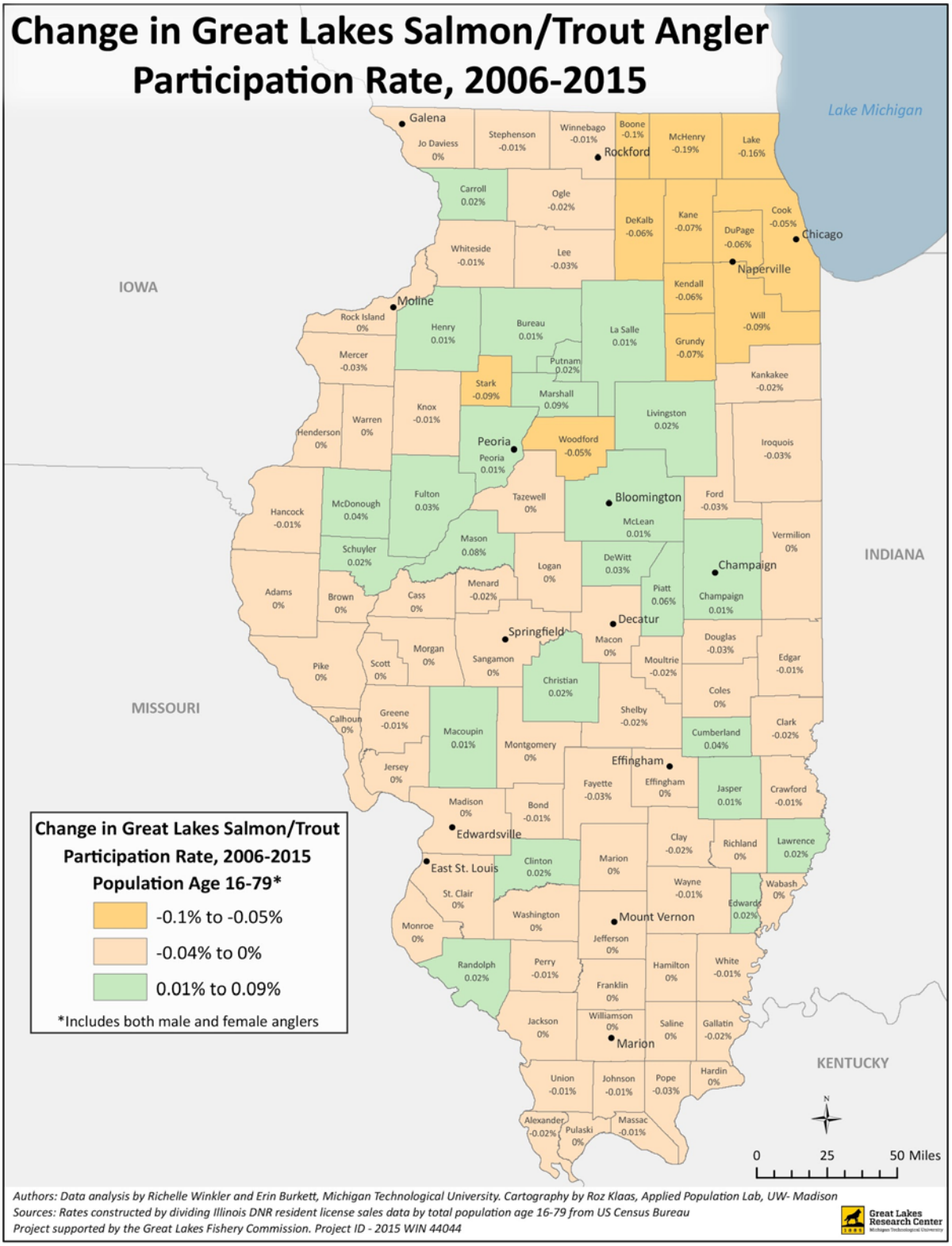


Figure 5: Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2015



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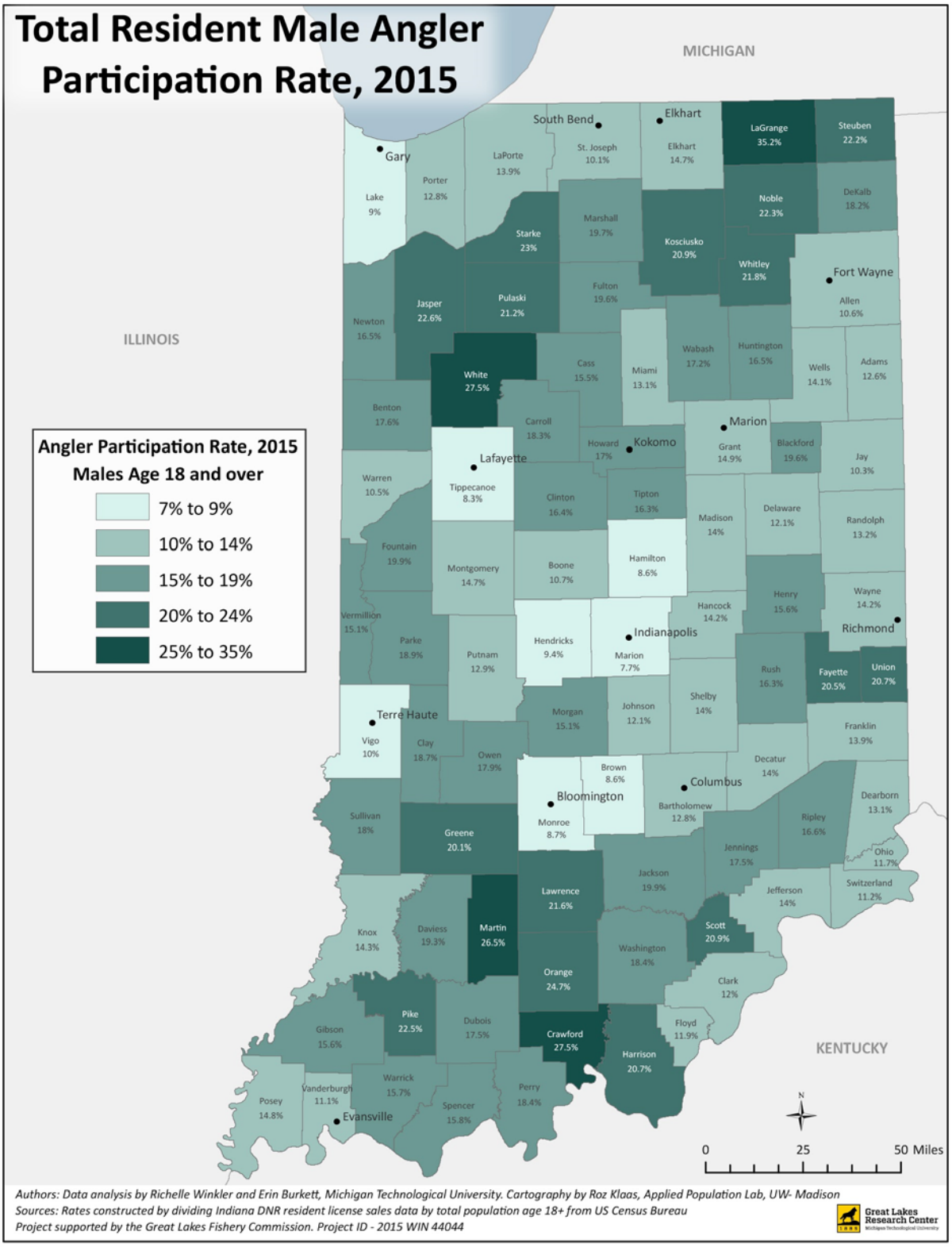

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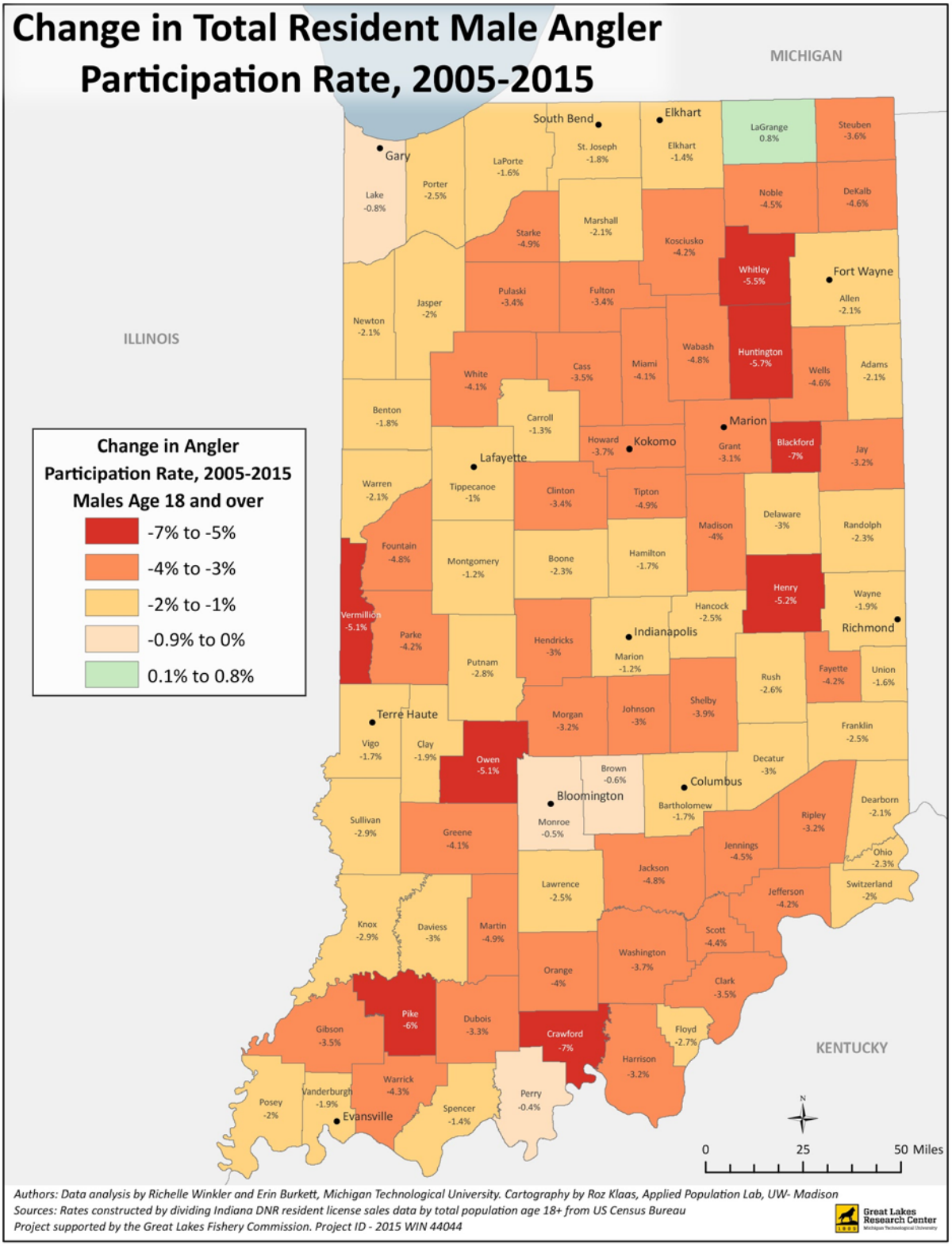

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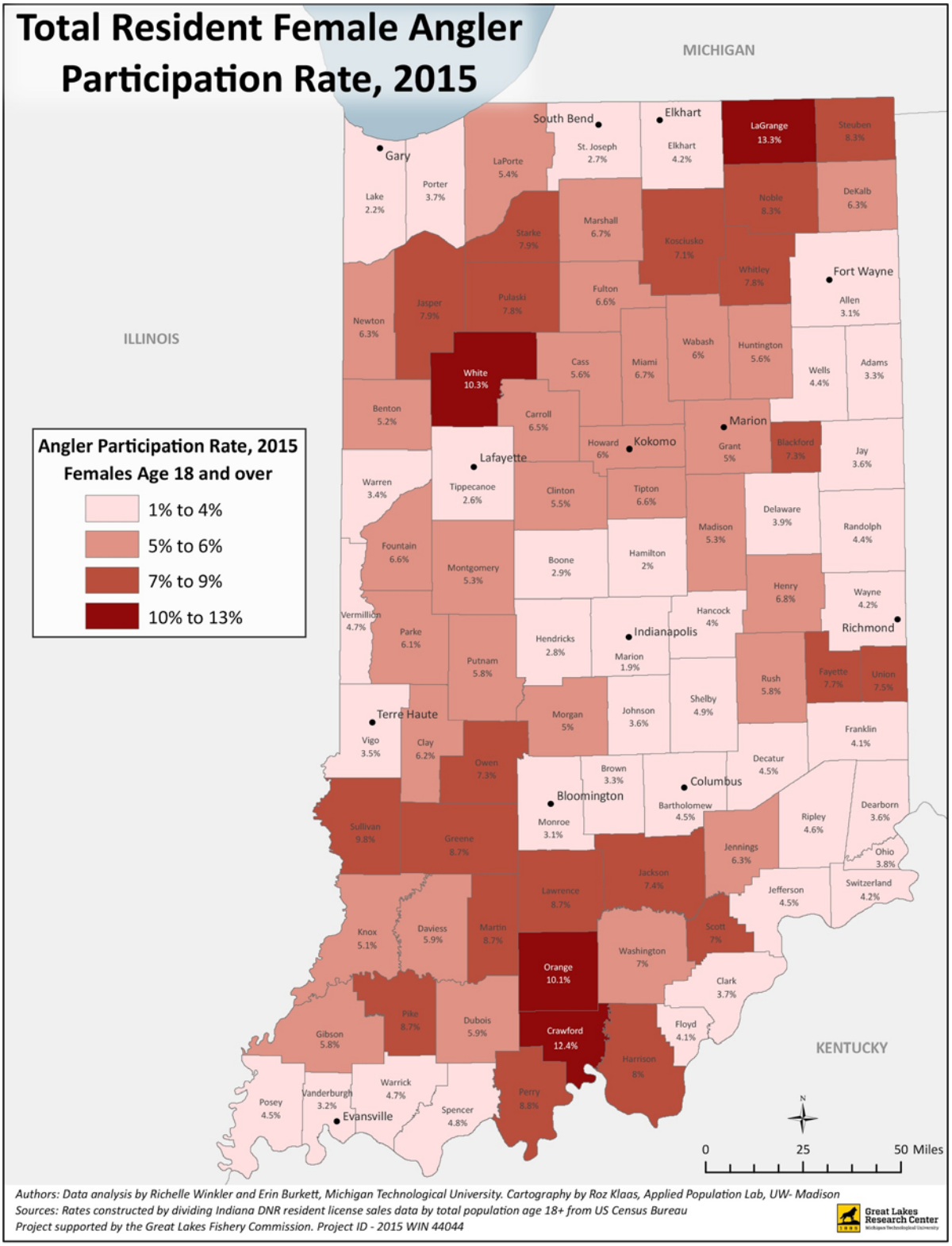

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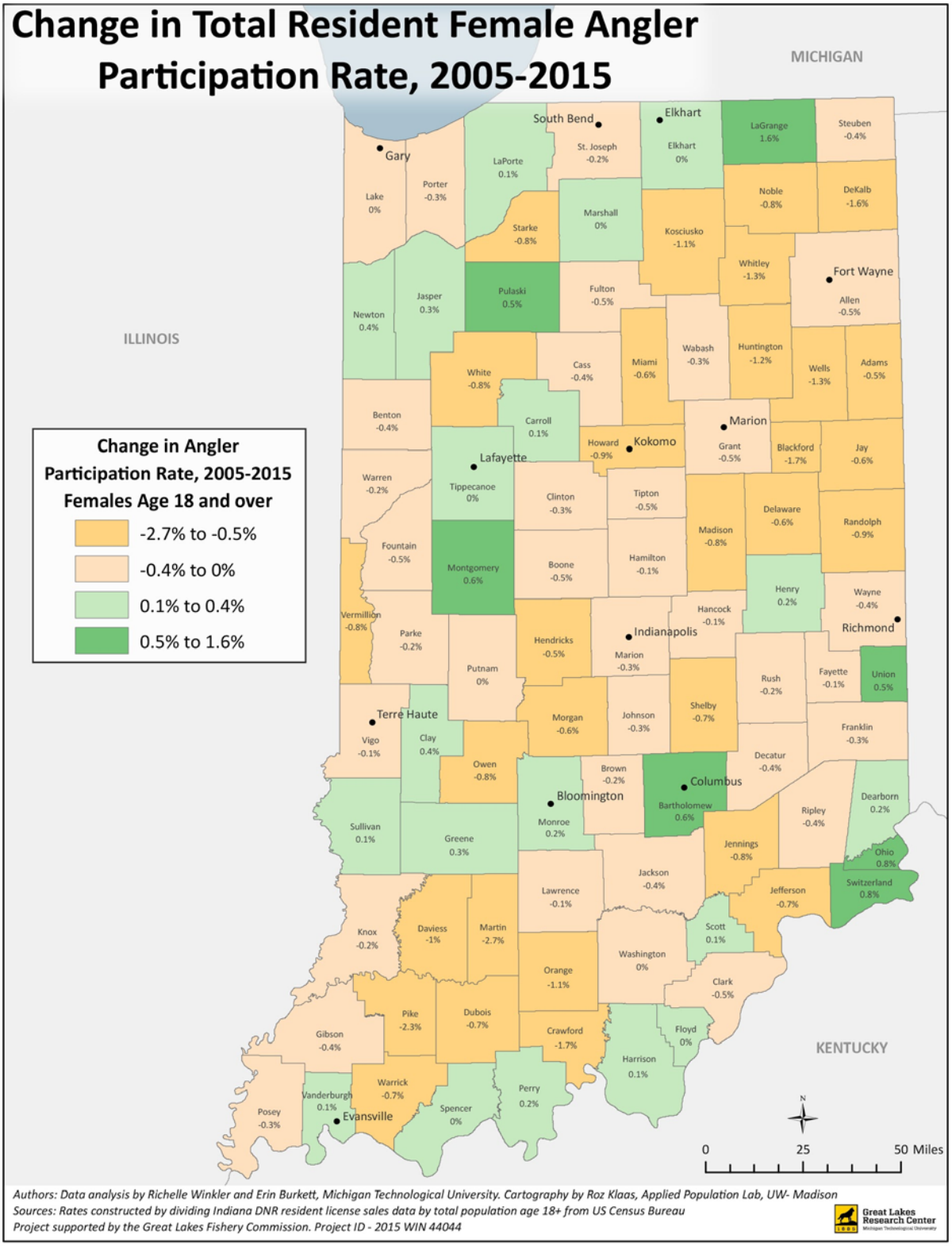

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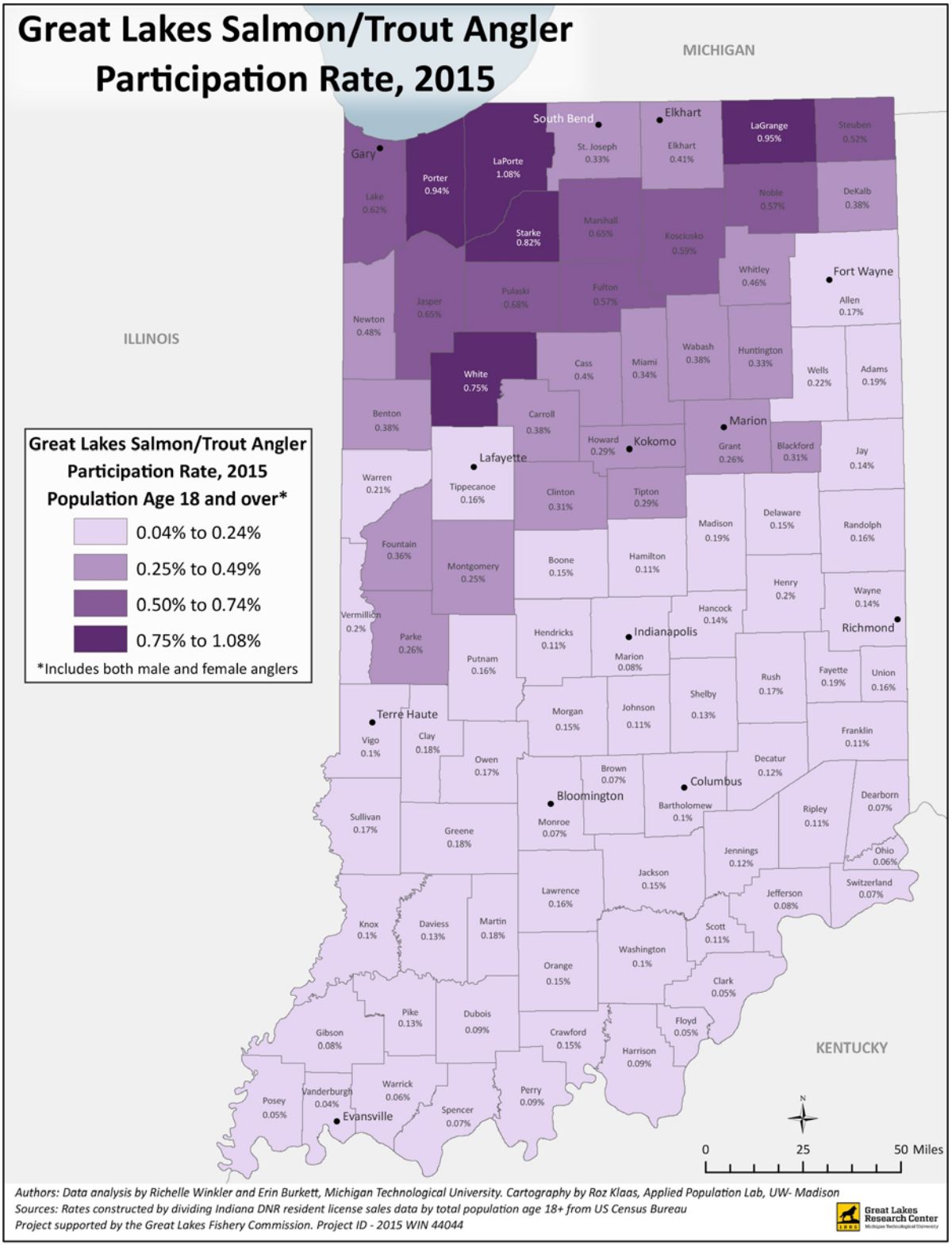
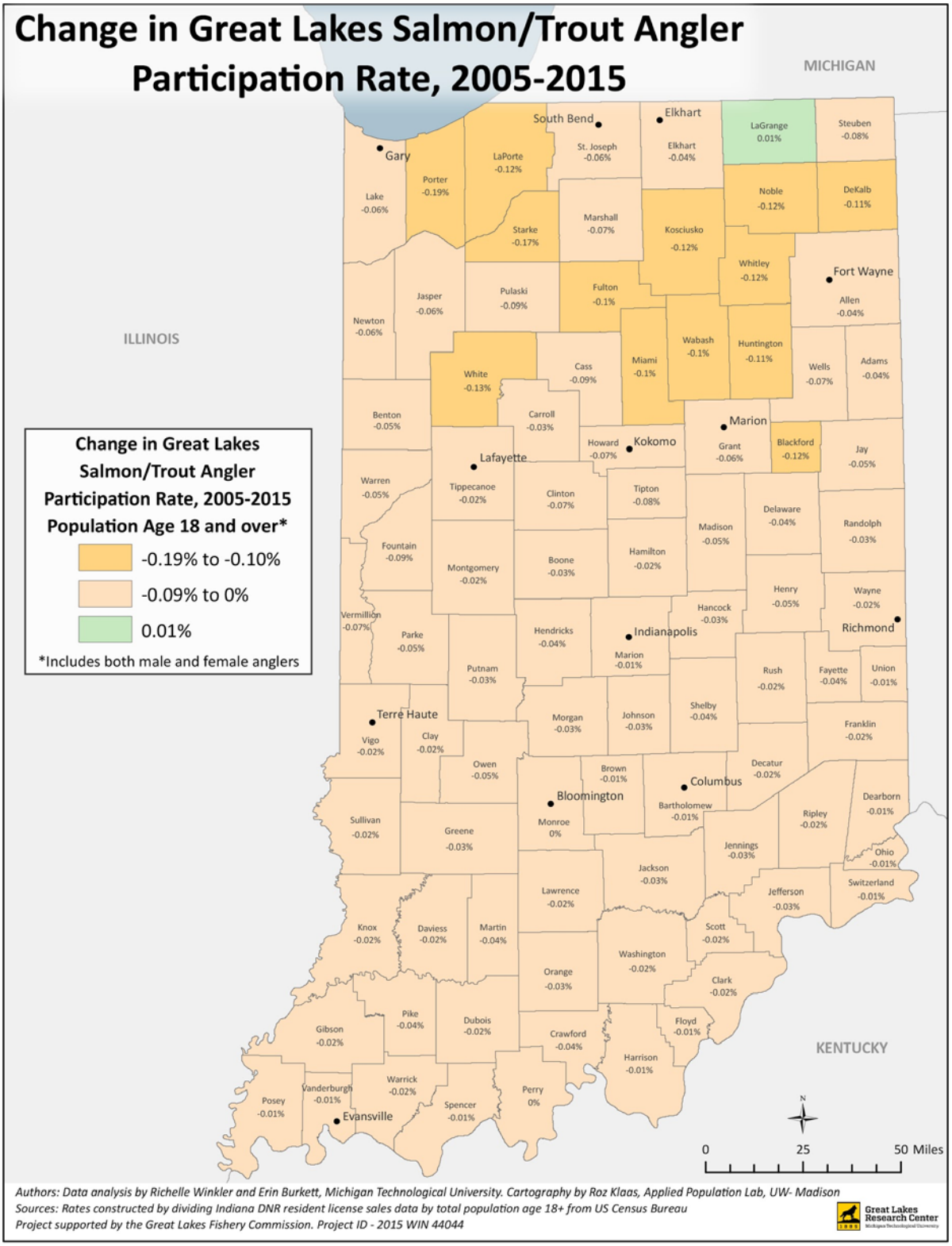


Figure 11: Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2015



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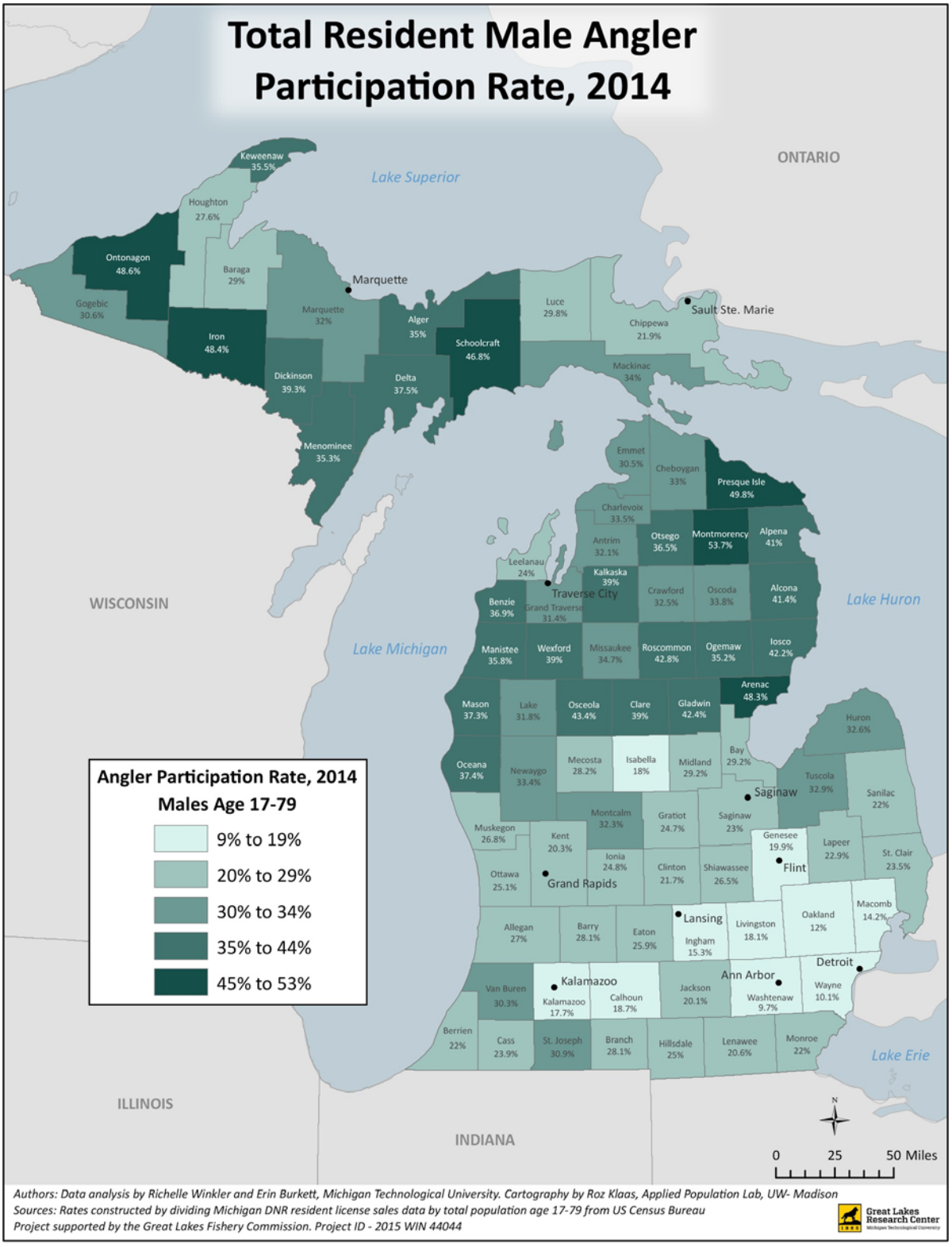
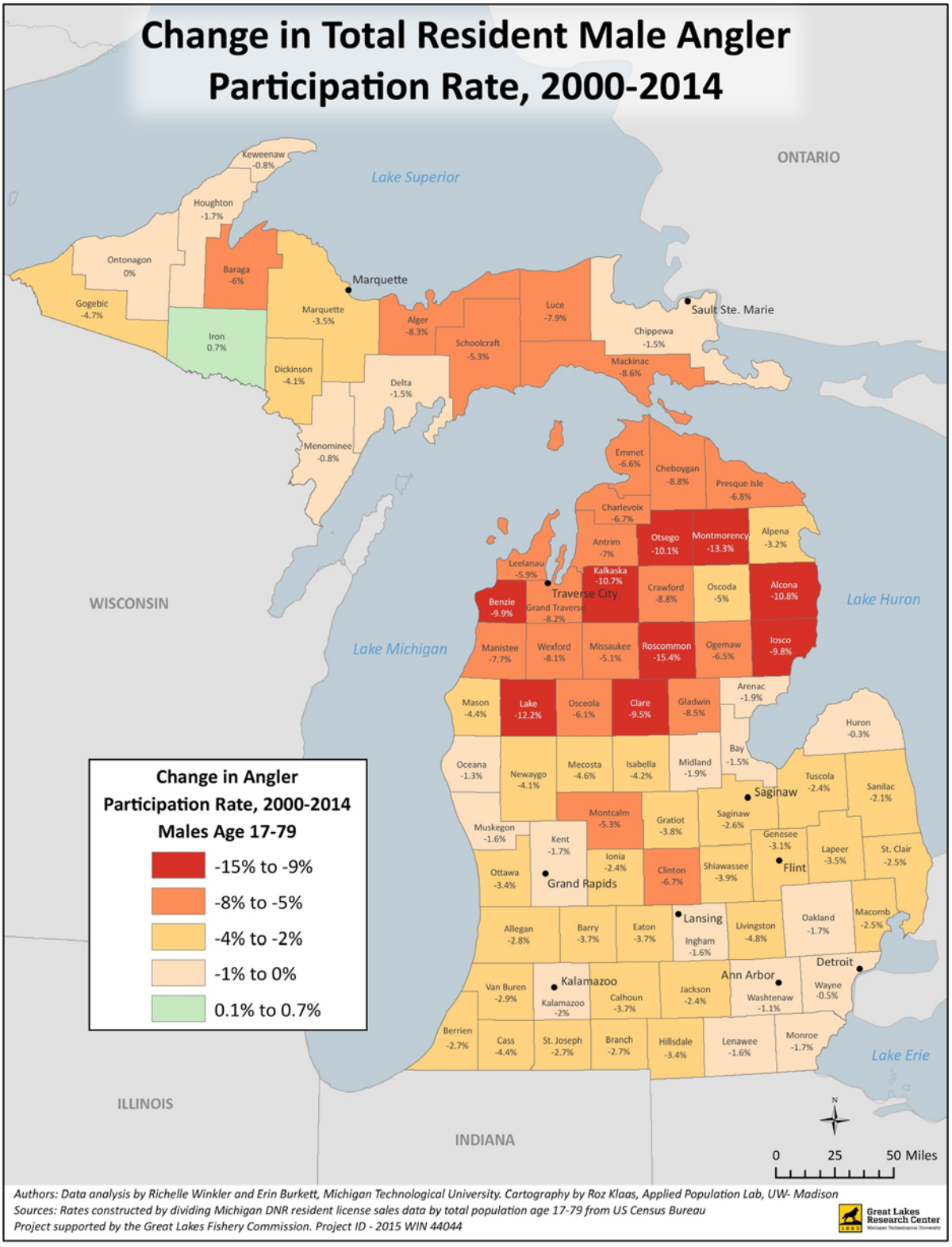


Figure 13: Male Fishing Participation Rates, 2014



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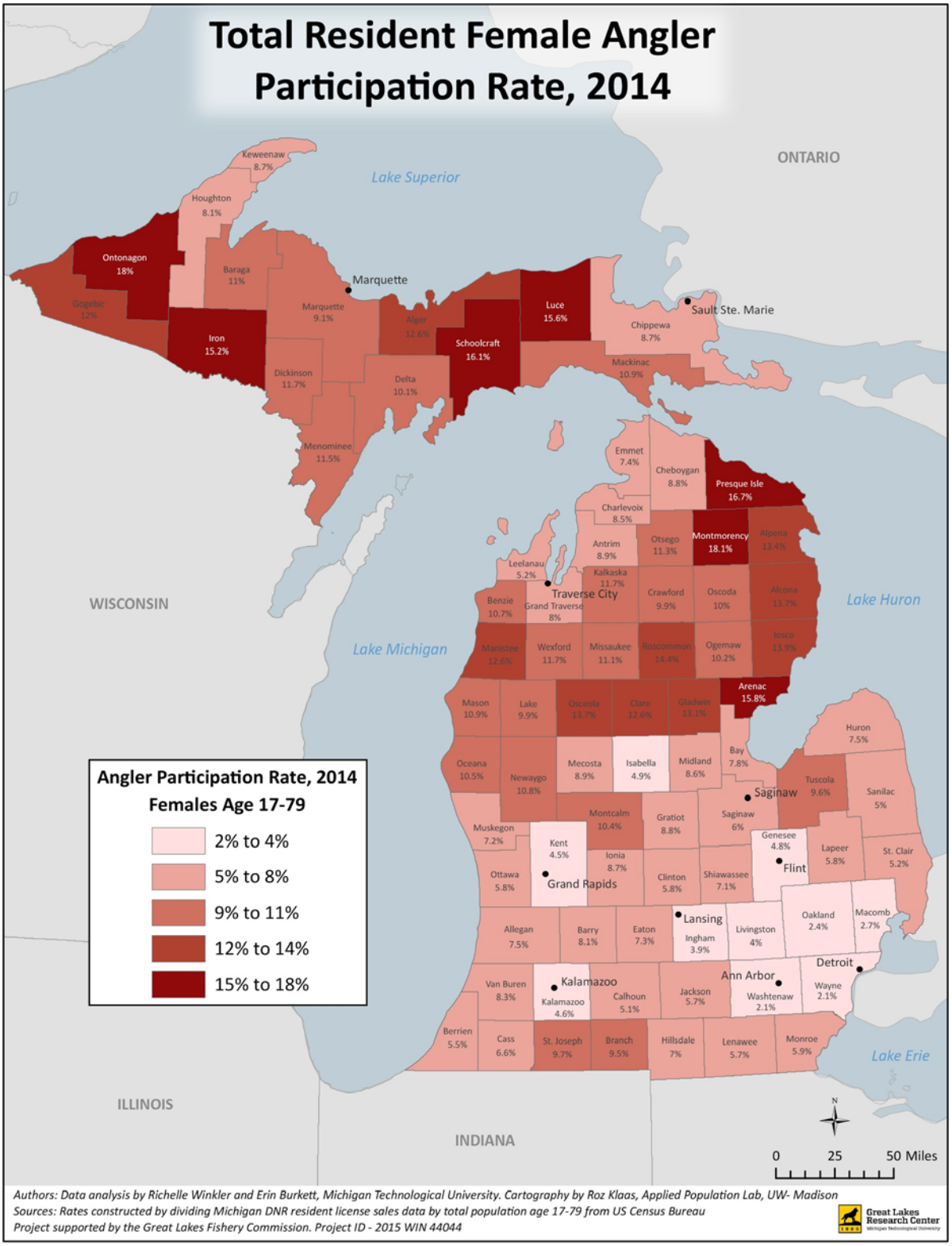
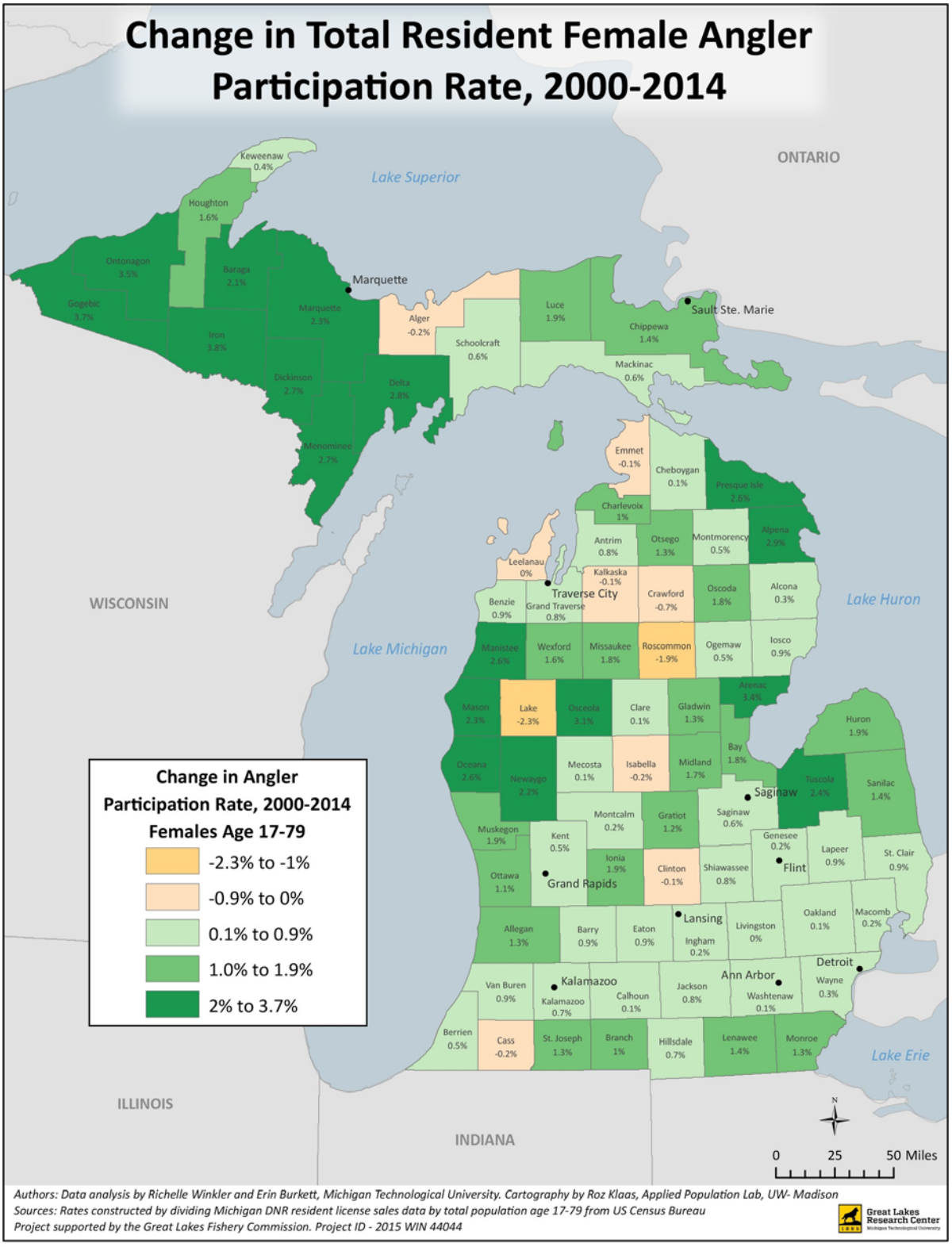


Figure 15: Female Fishing Participation Rates, 2014



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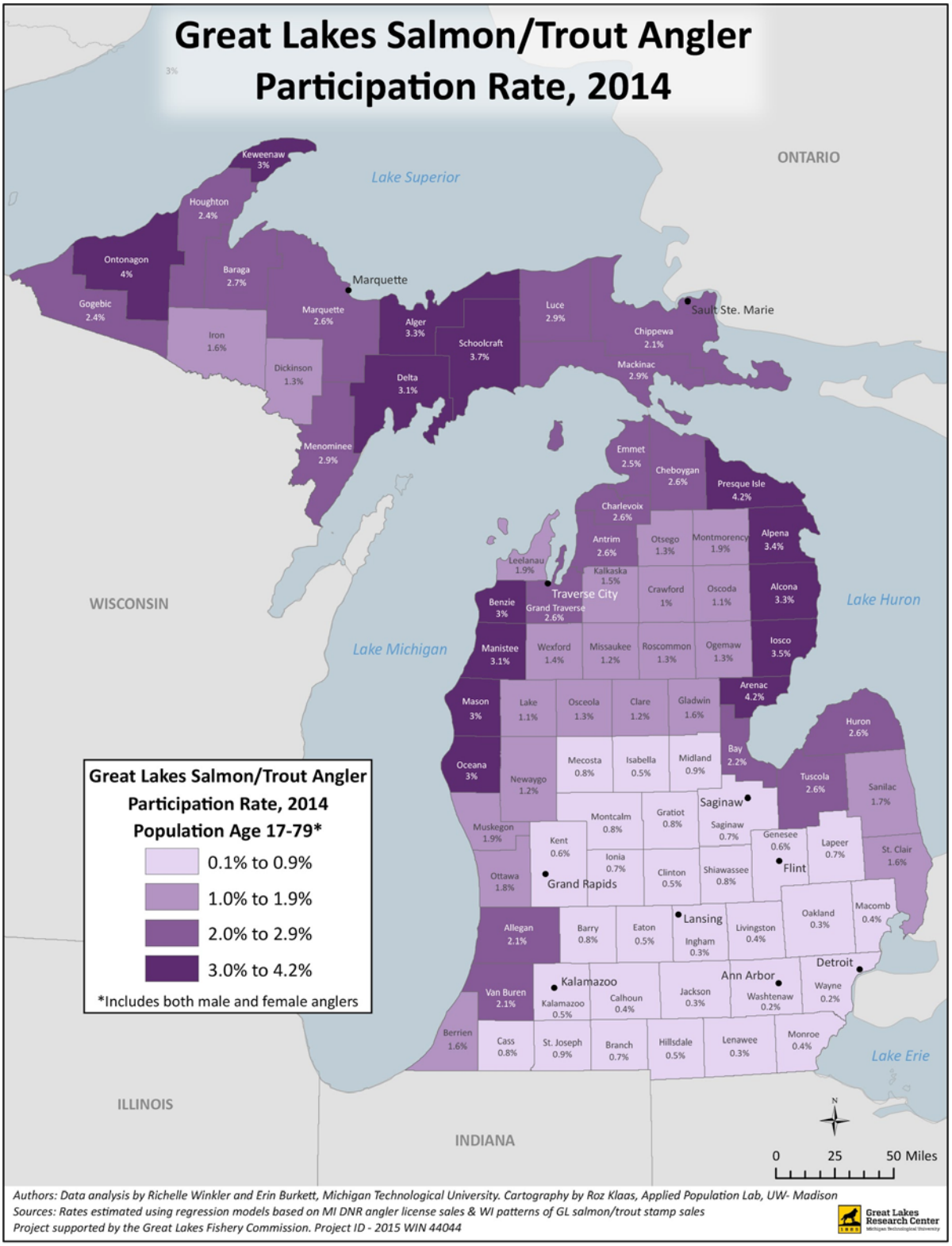

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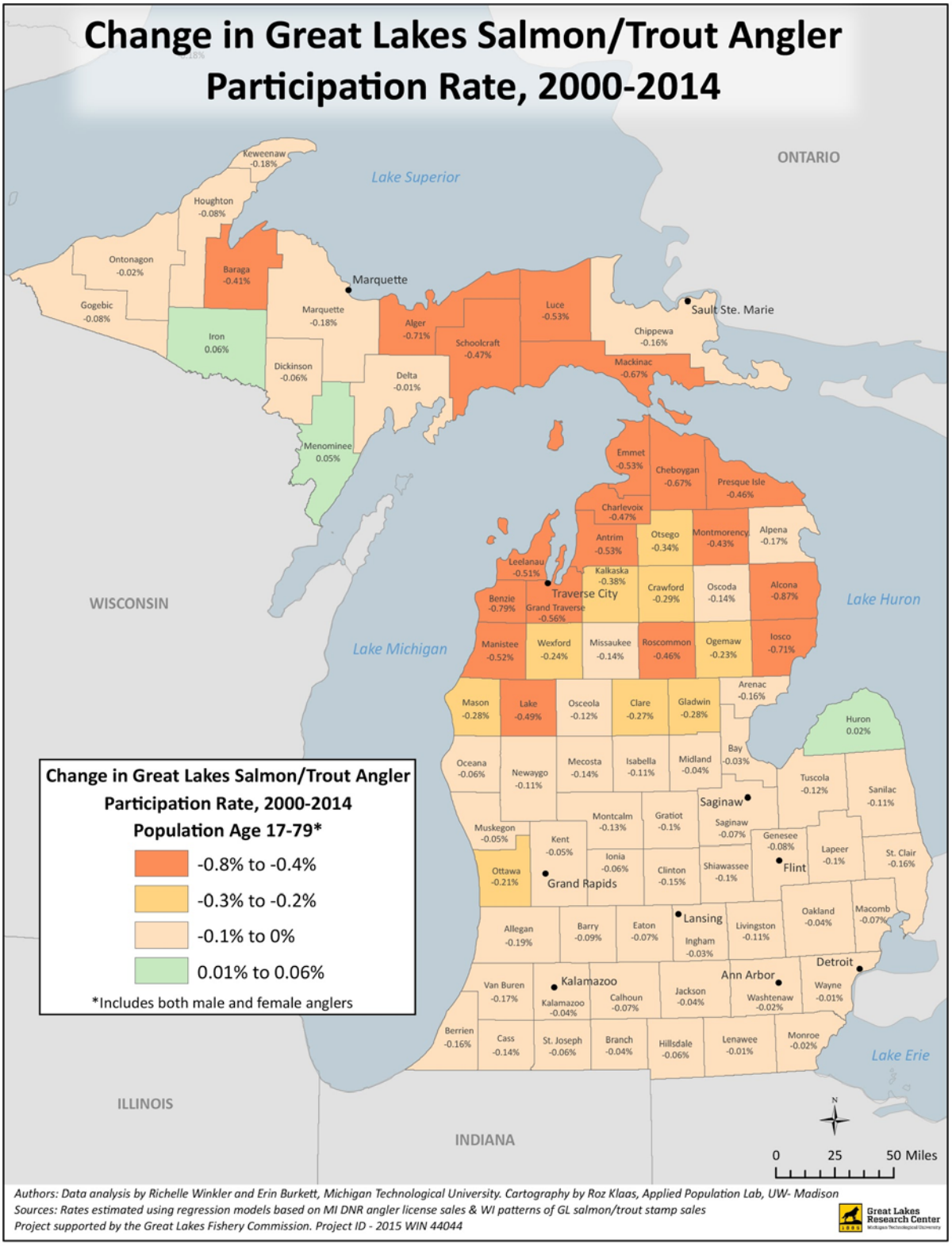

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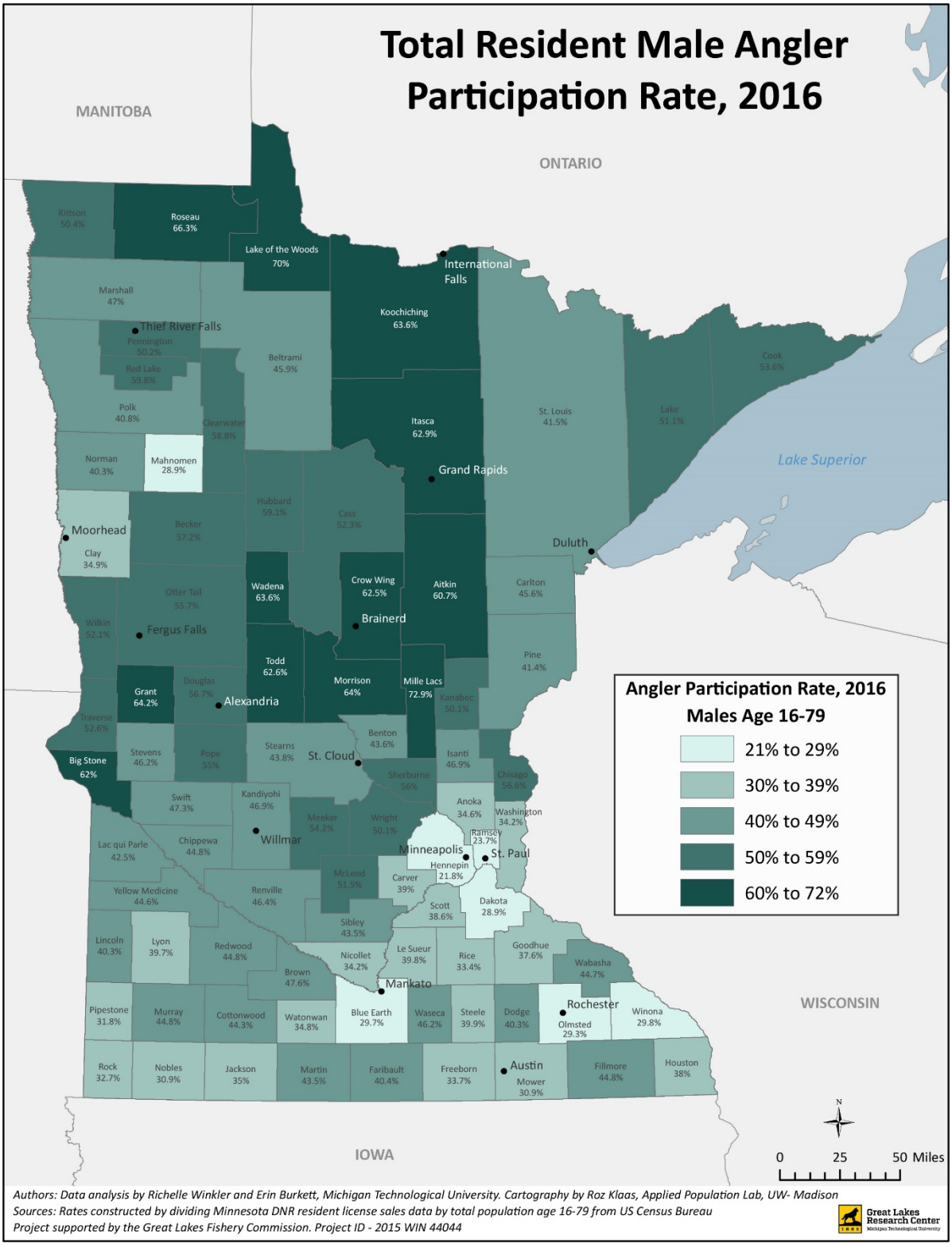

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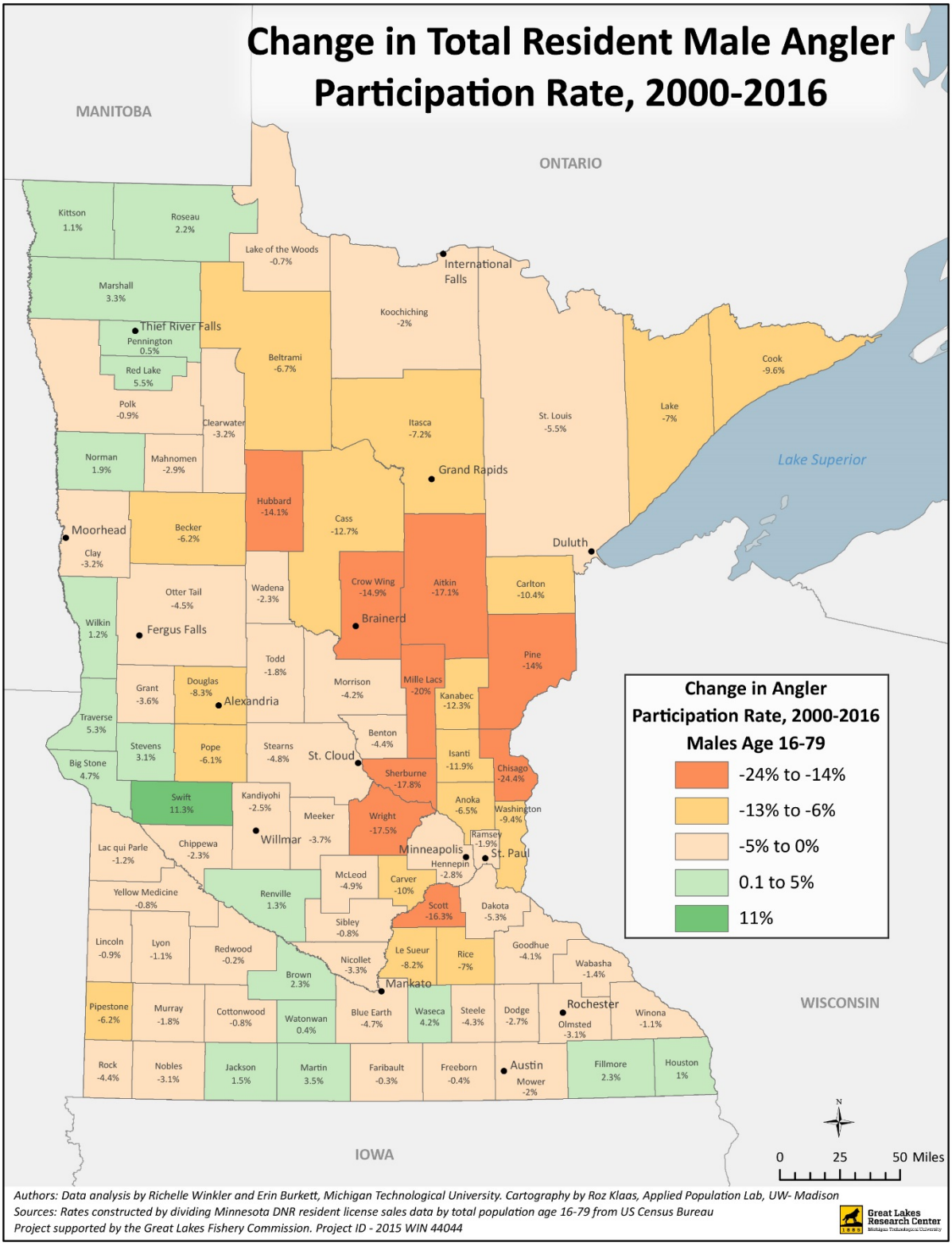
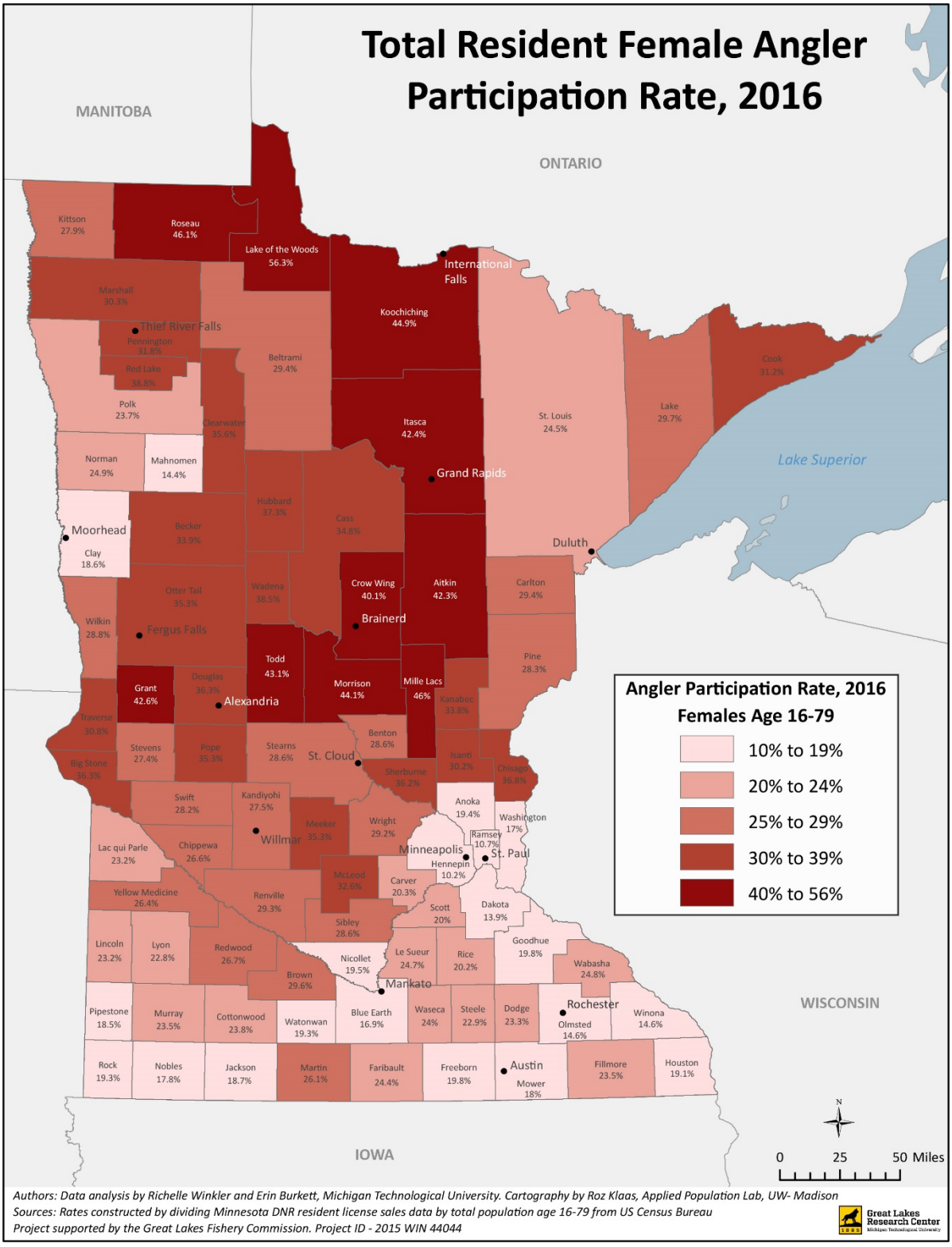


Figure 20: Change in Male Fishing Participation Rates, 2000-2016



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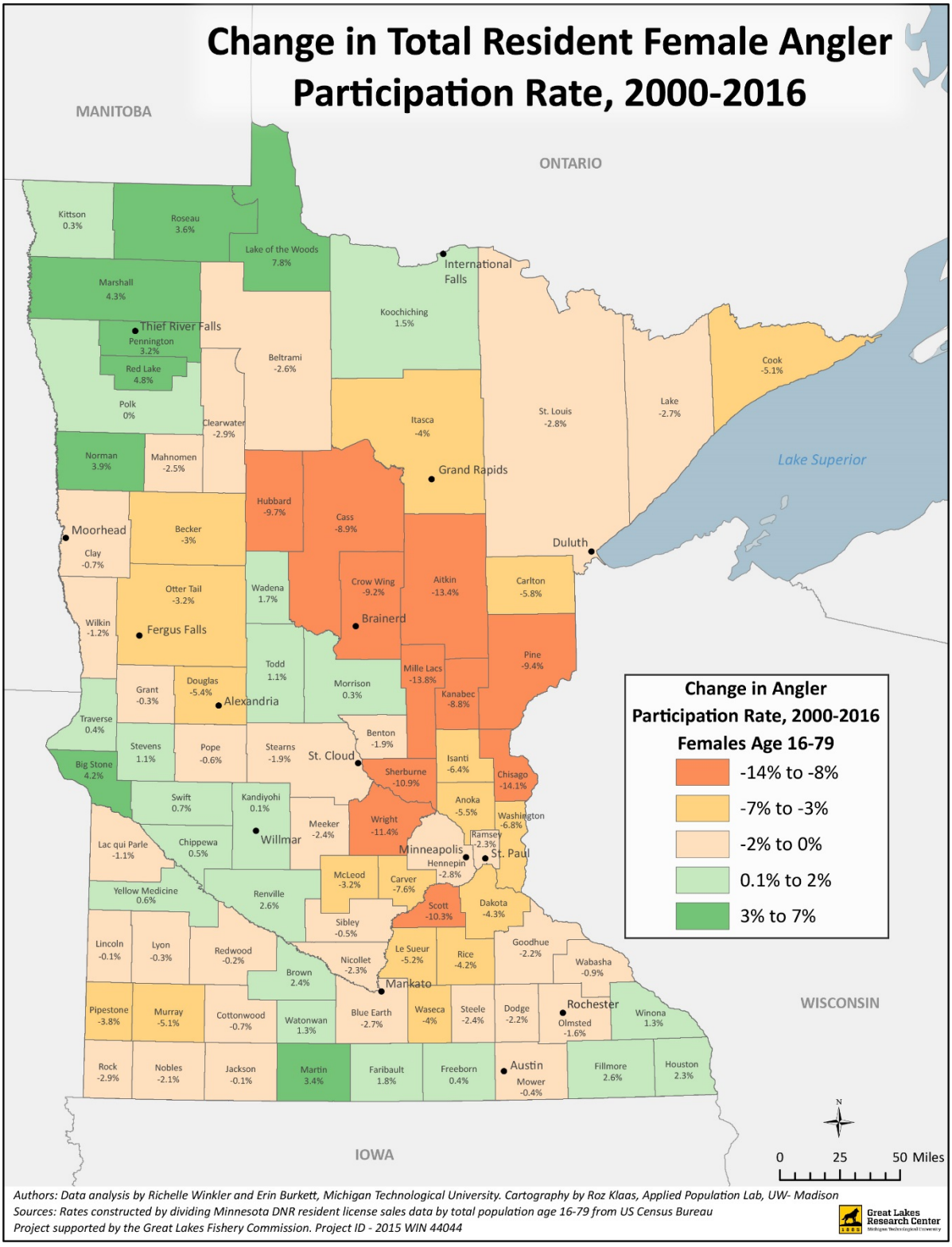

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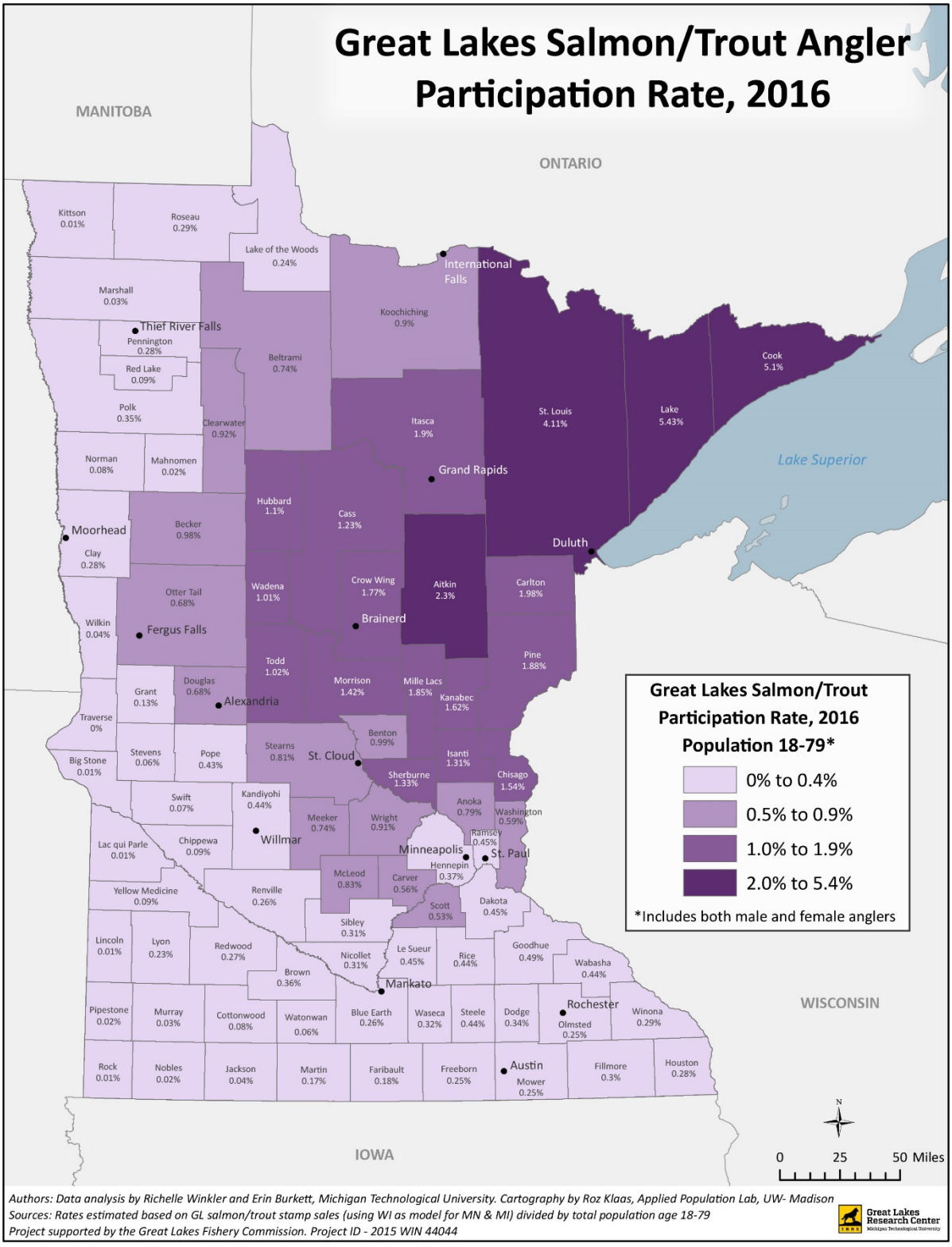
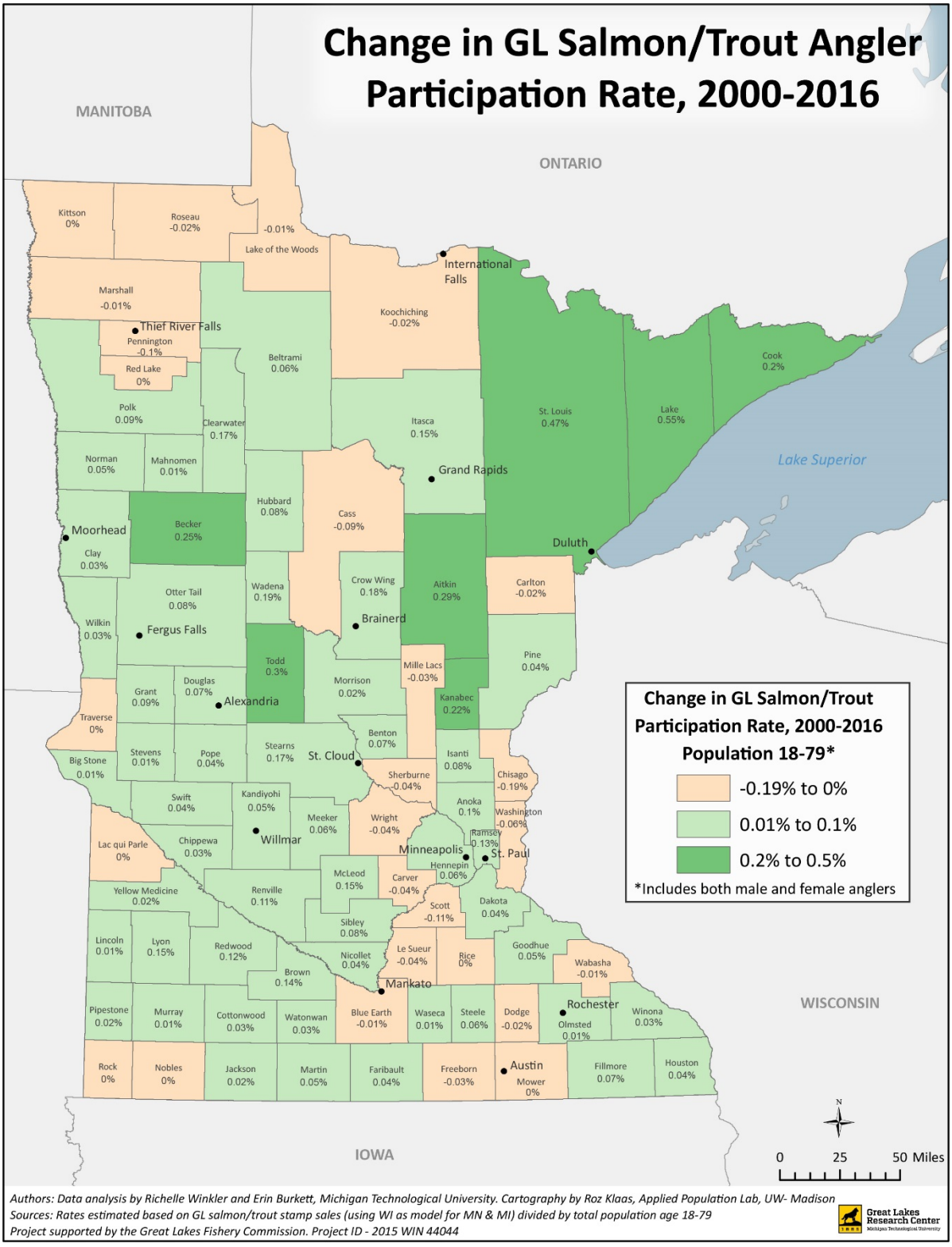


Figure 23: Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2016



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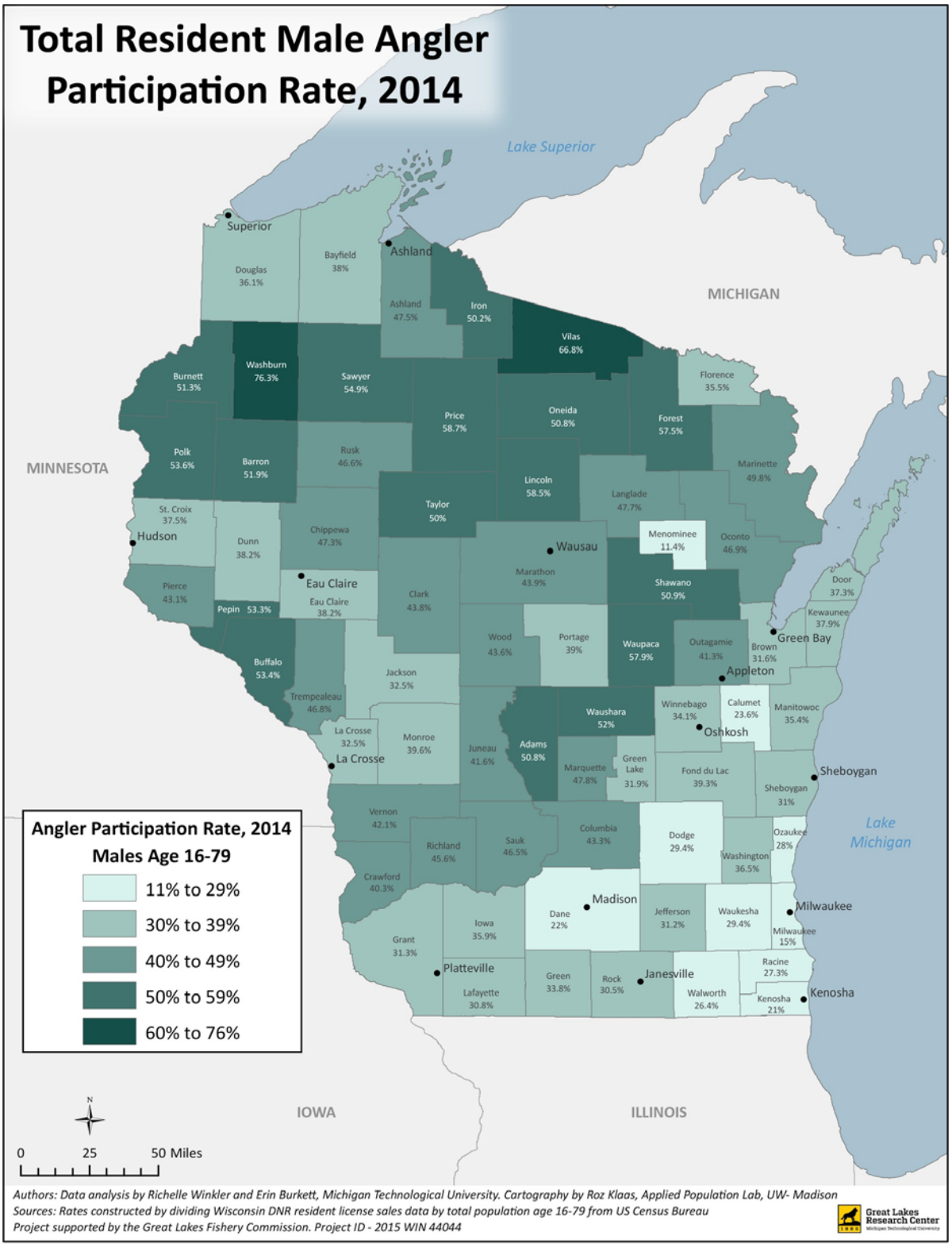

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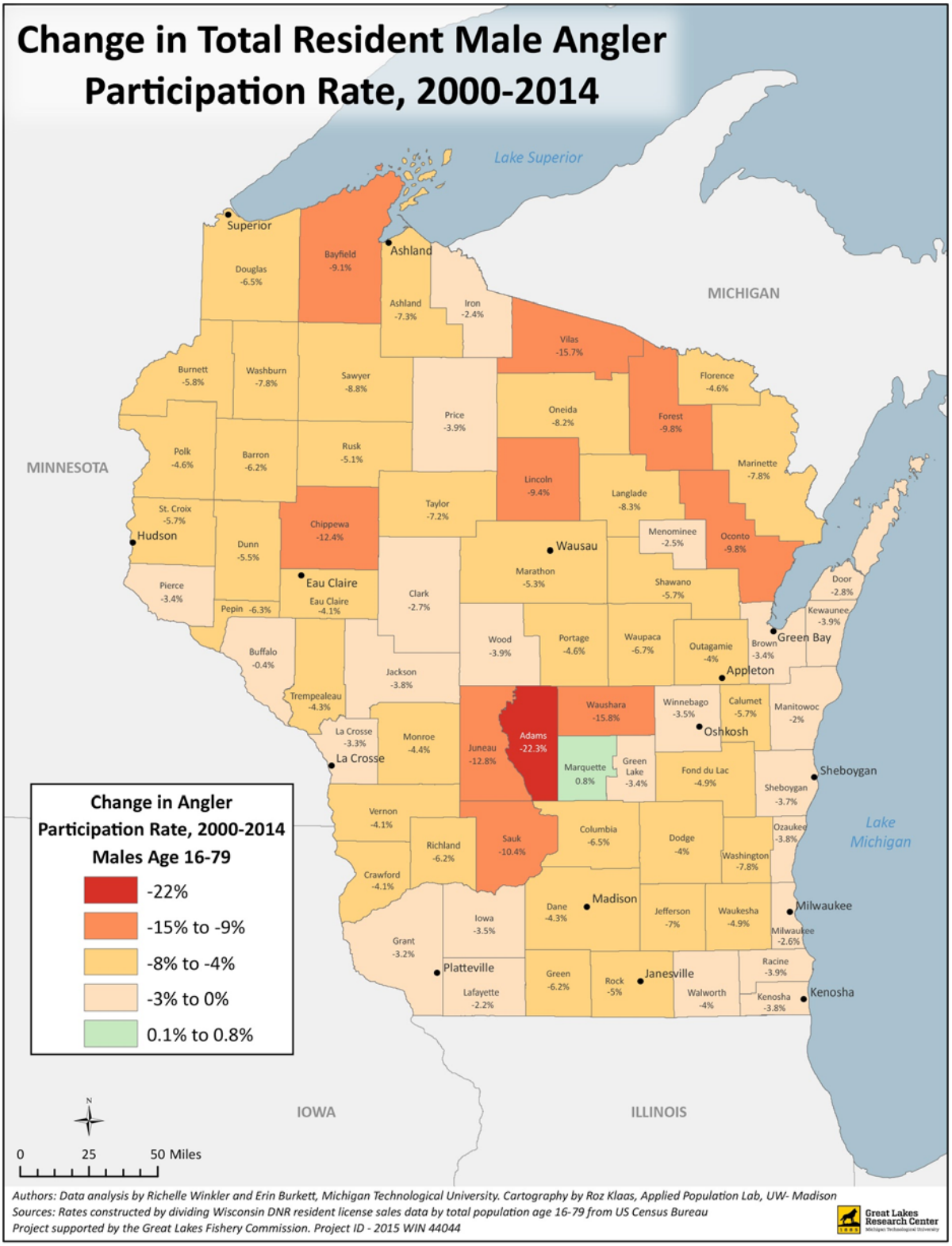

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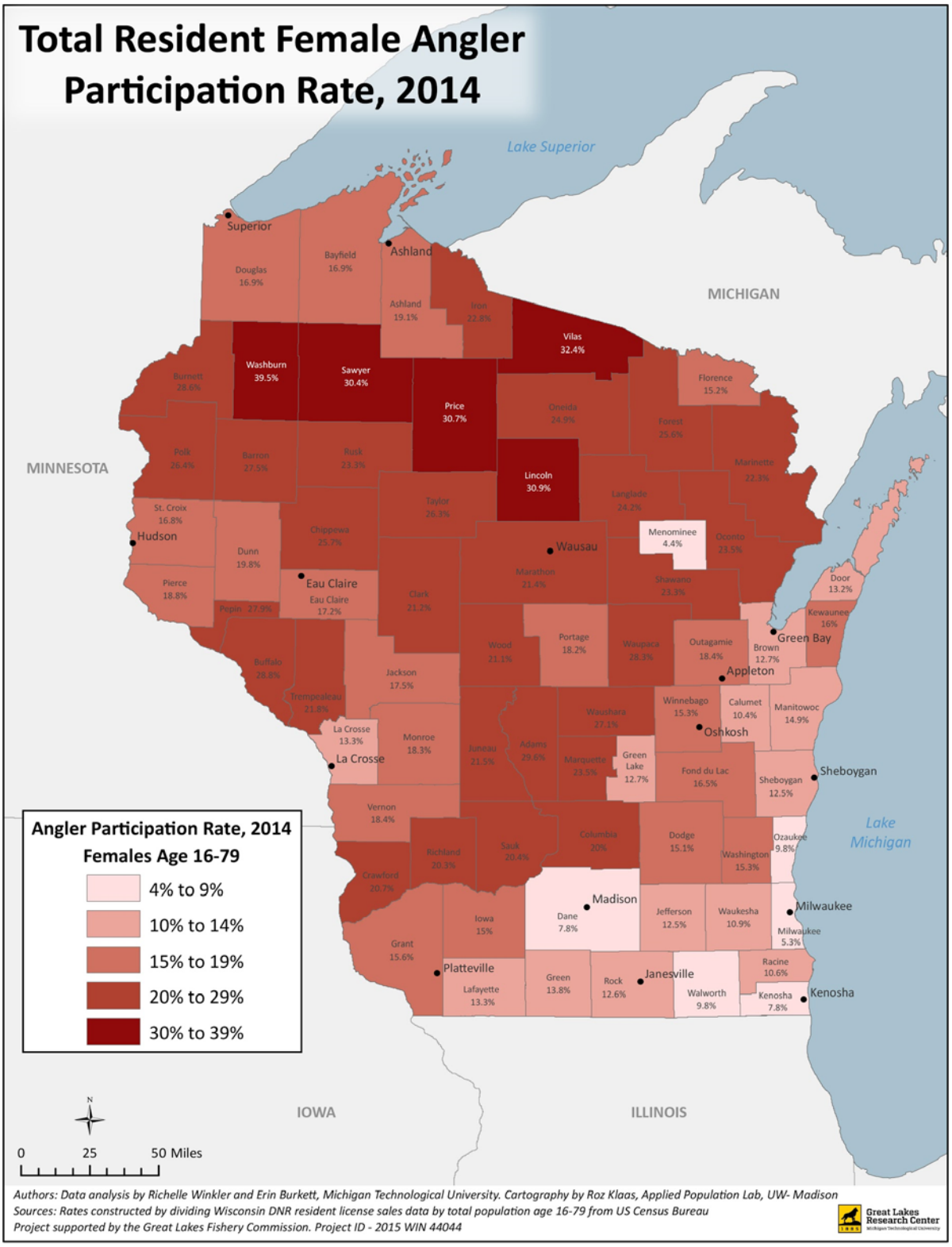

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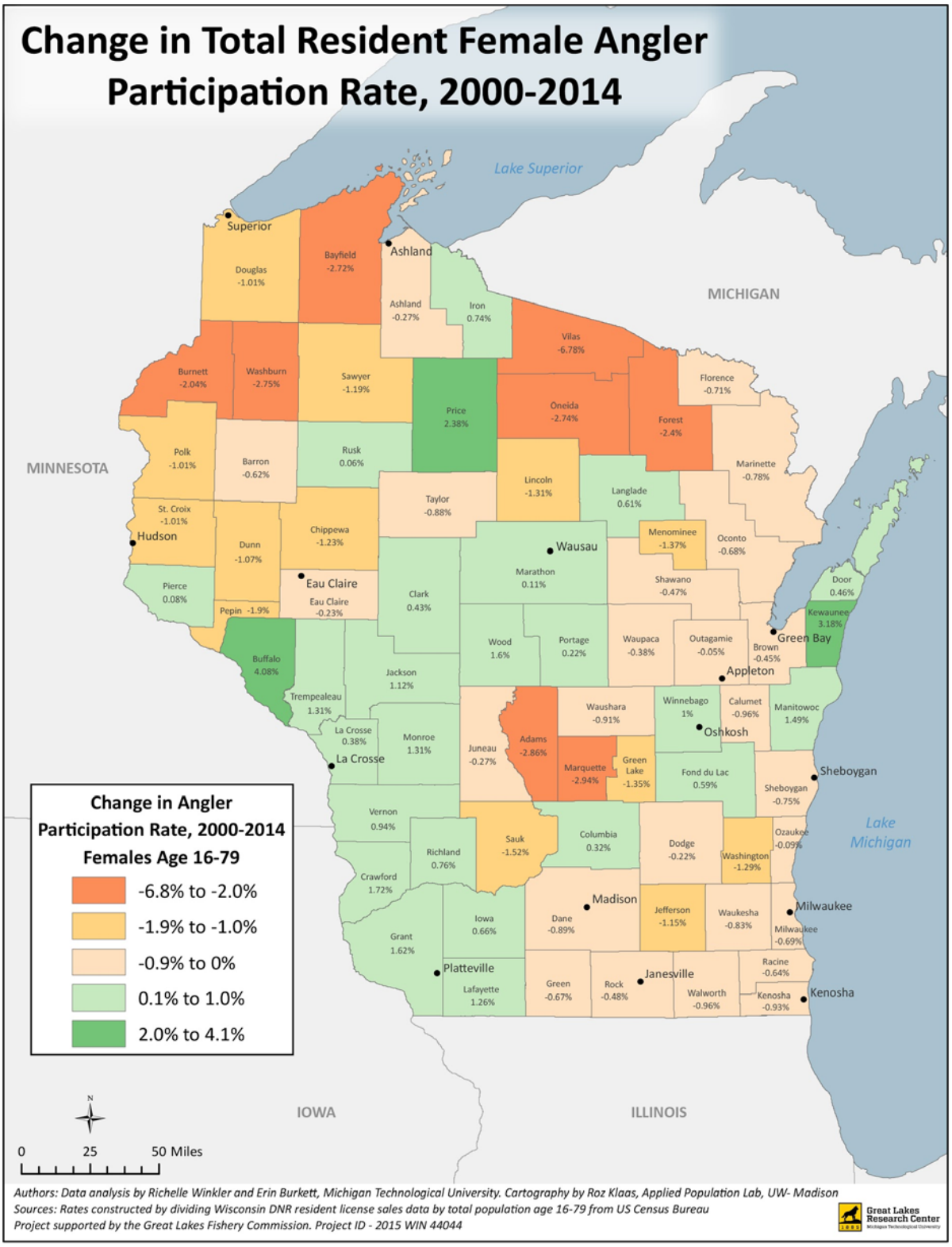

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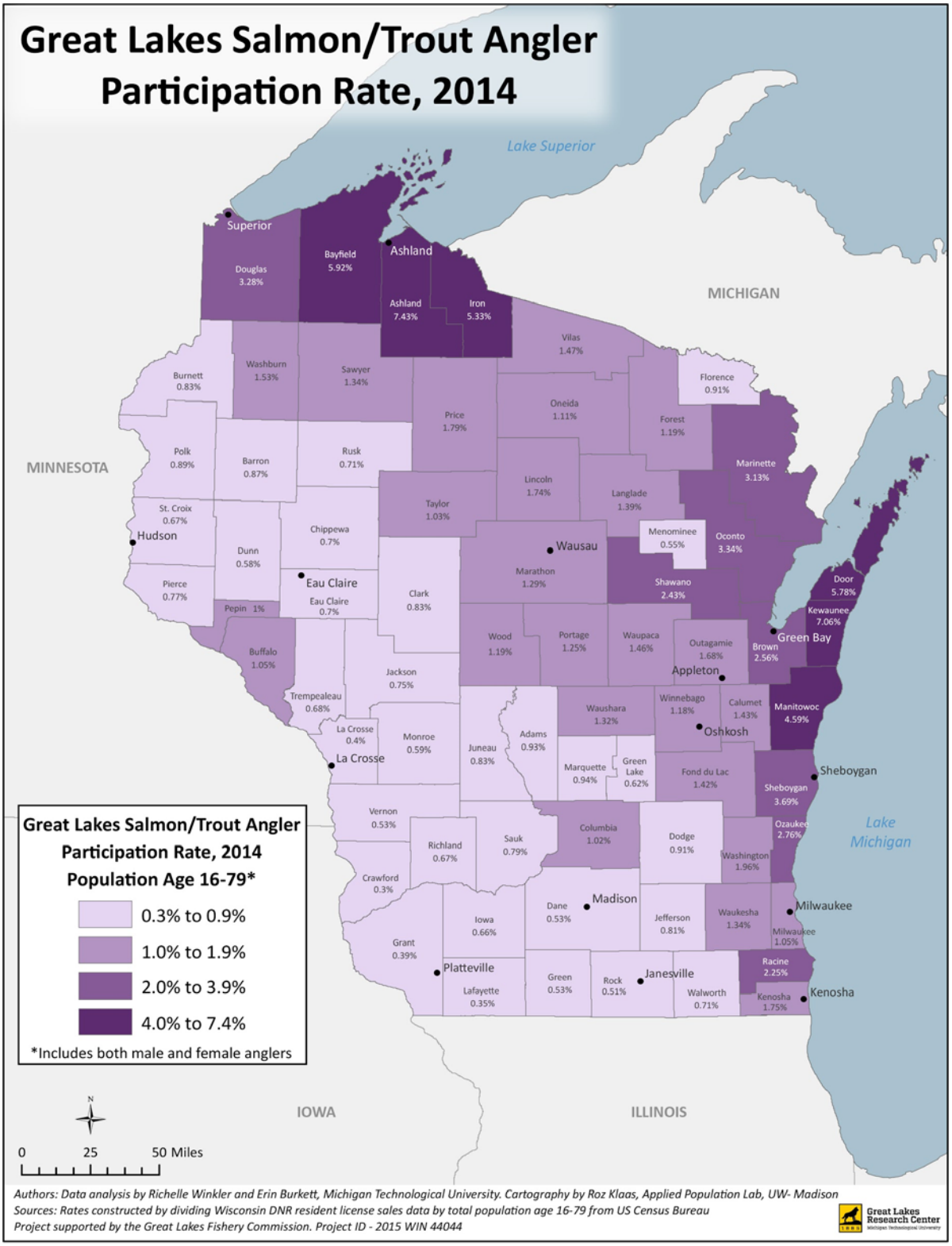

Figure 29: Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2014

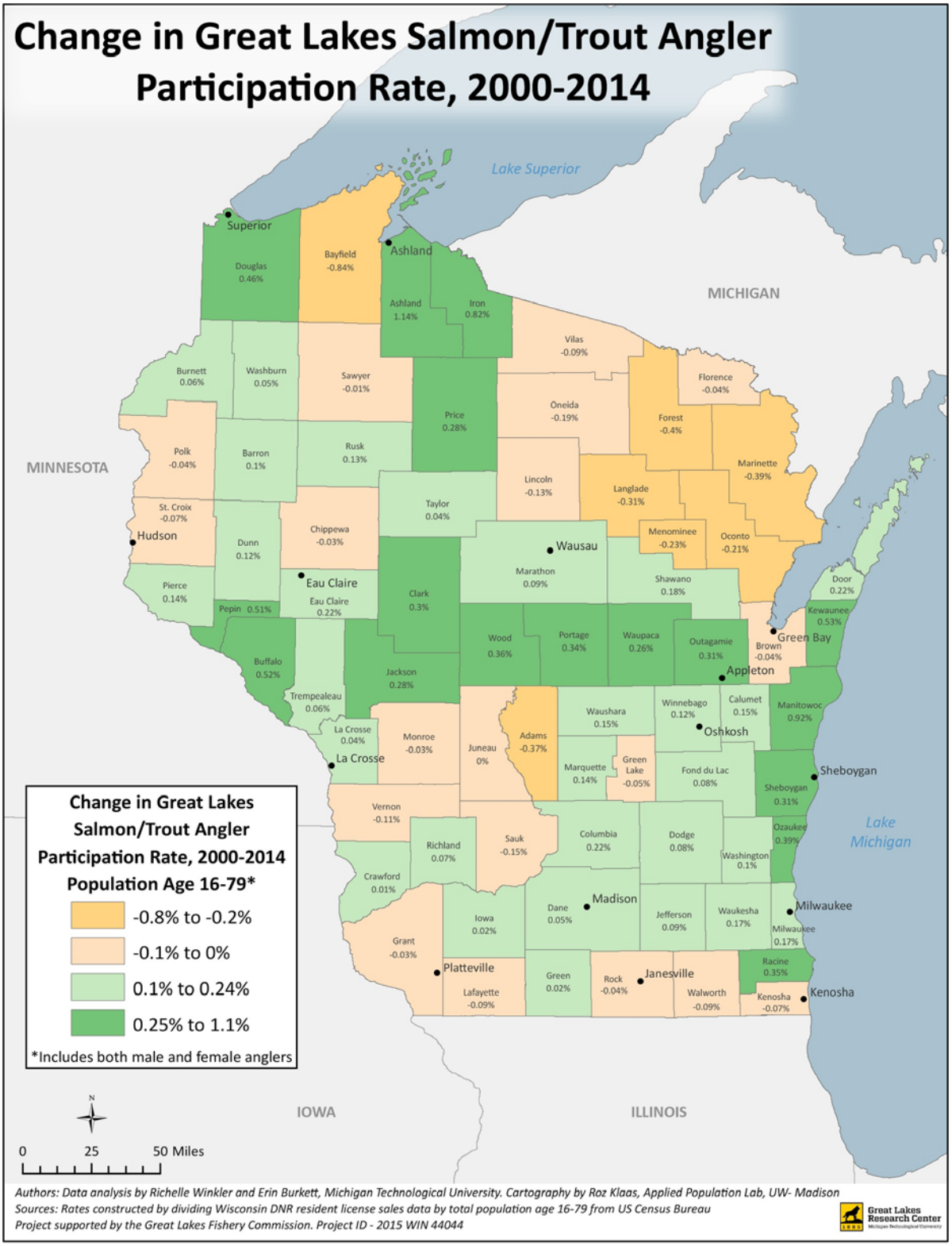

Figure 30: Change in Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2000-2014

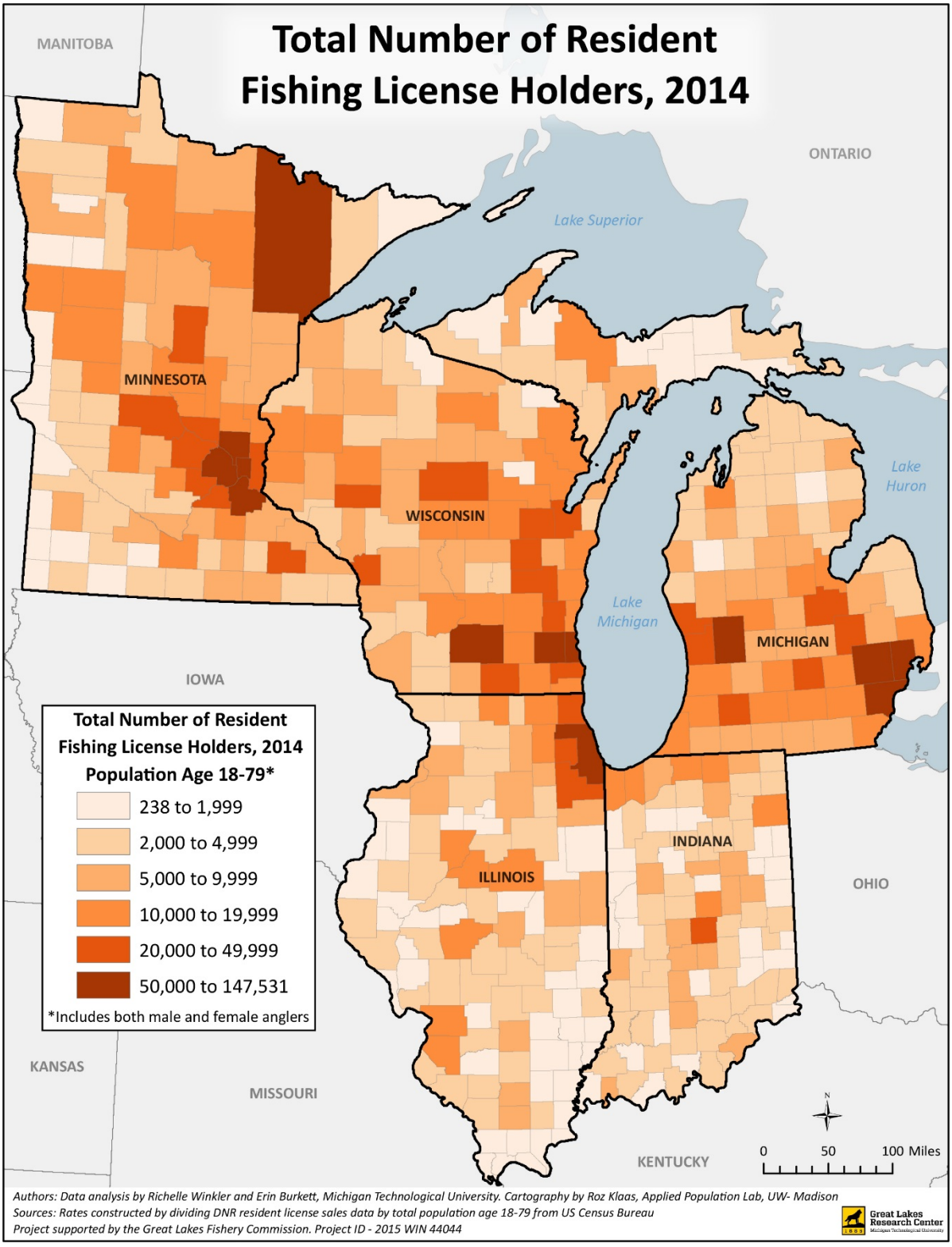

Figure 31: Number of Total Anglers (Combined Male/Female), 2014

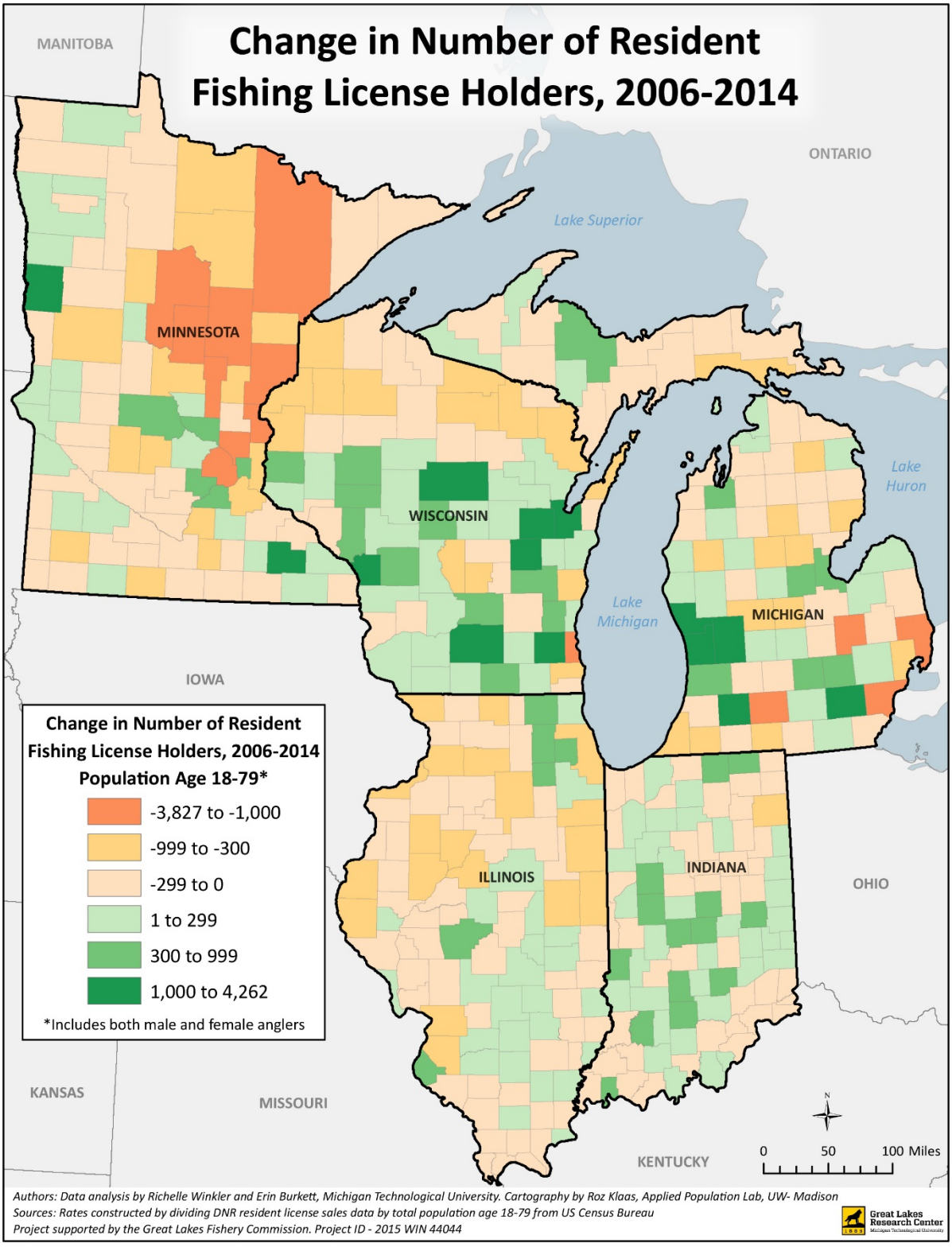

Figure 32: Numerical Change in Total Anglers (Combined Male/Female), 2006-2014

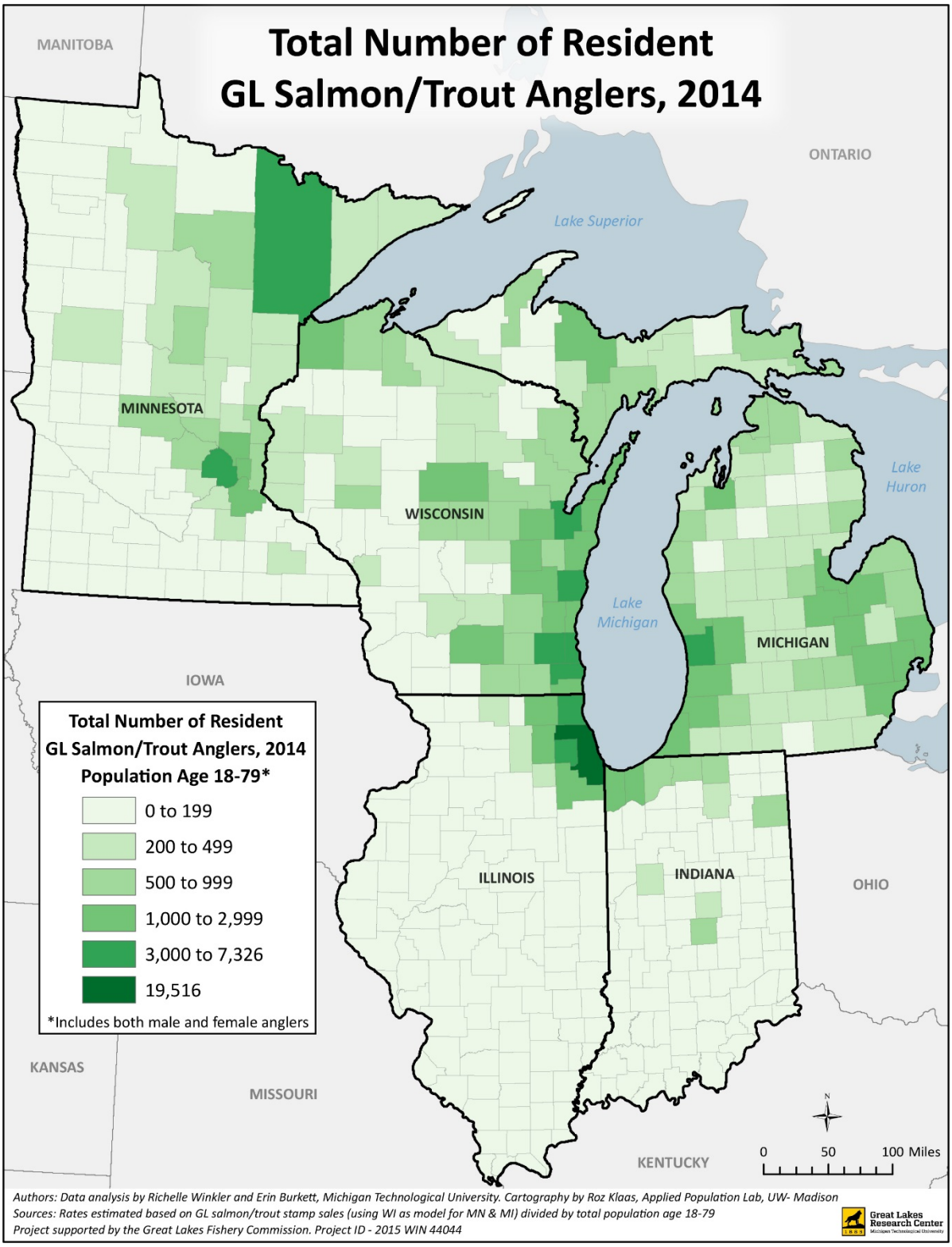

Figure 33: Number of Great Lakes Salmon/Trout Anglers (Combined Male/Female), 2014

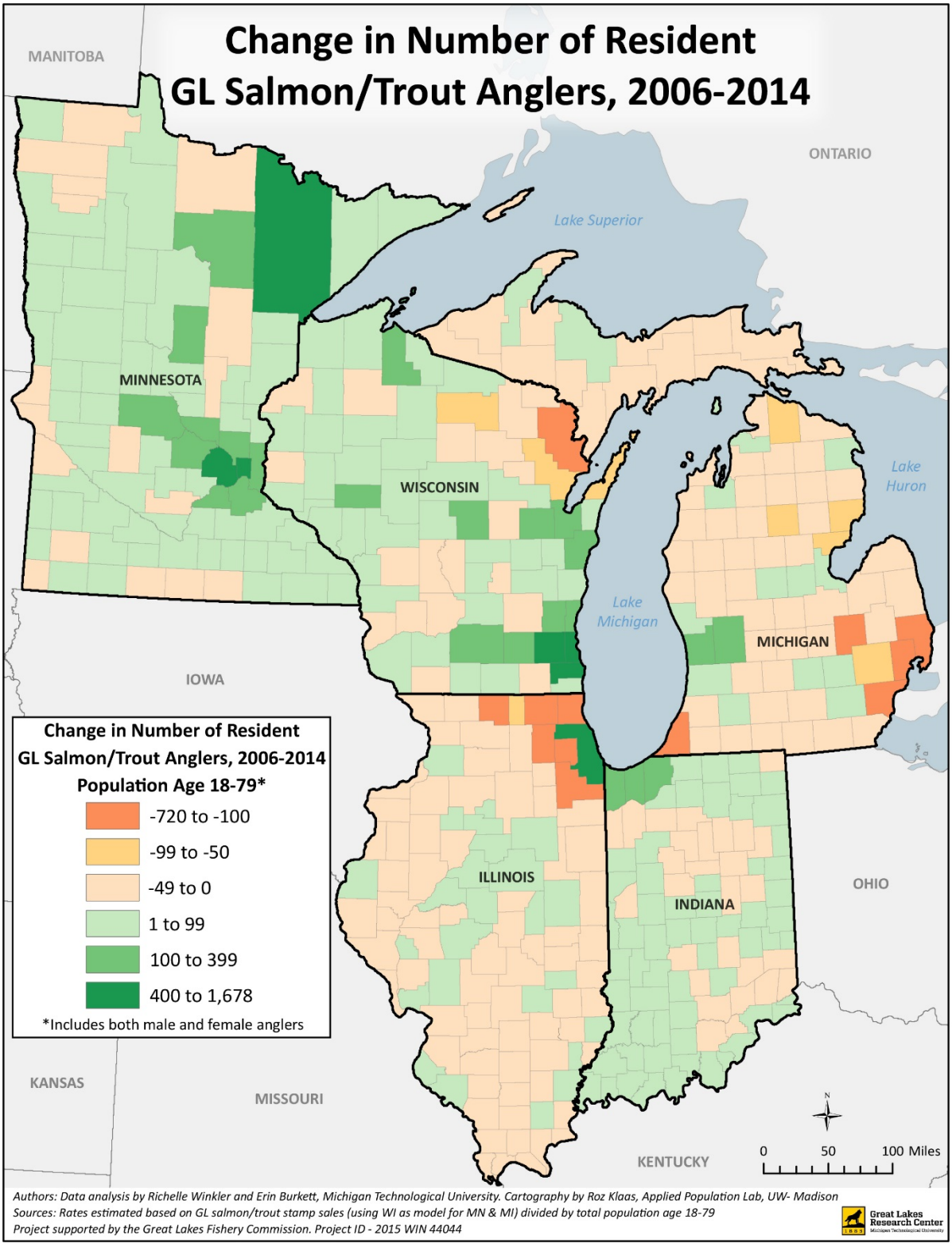

Figure 34: Numerical Change in Great Lakes Salmon/Trout Anglers (Combined Male/Female), 2006-2014

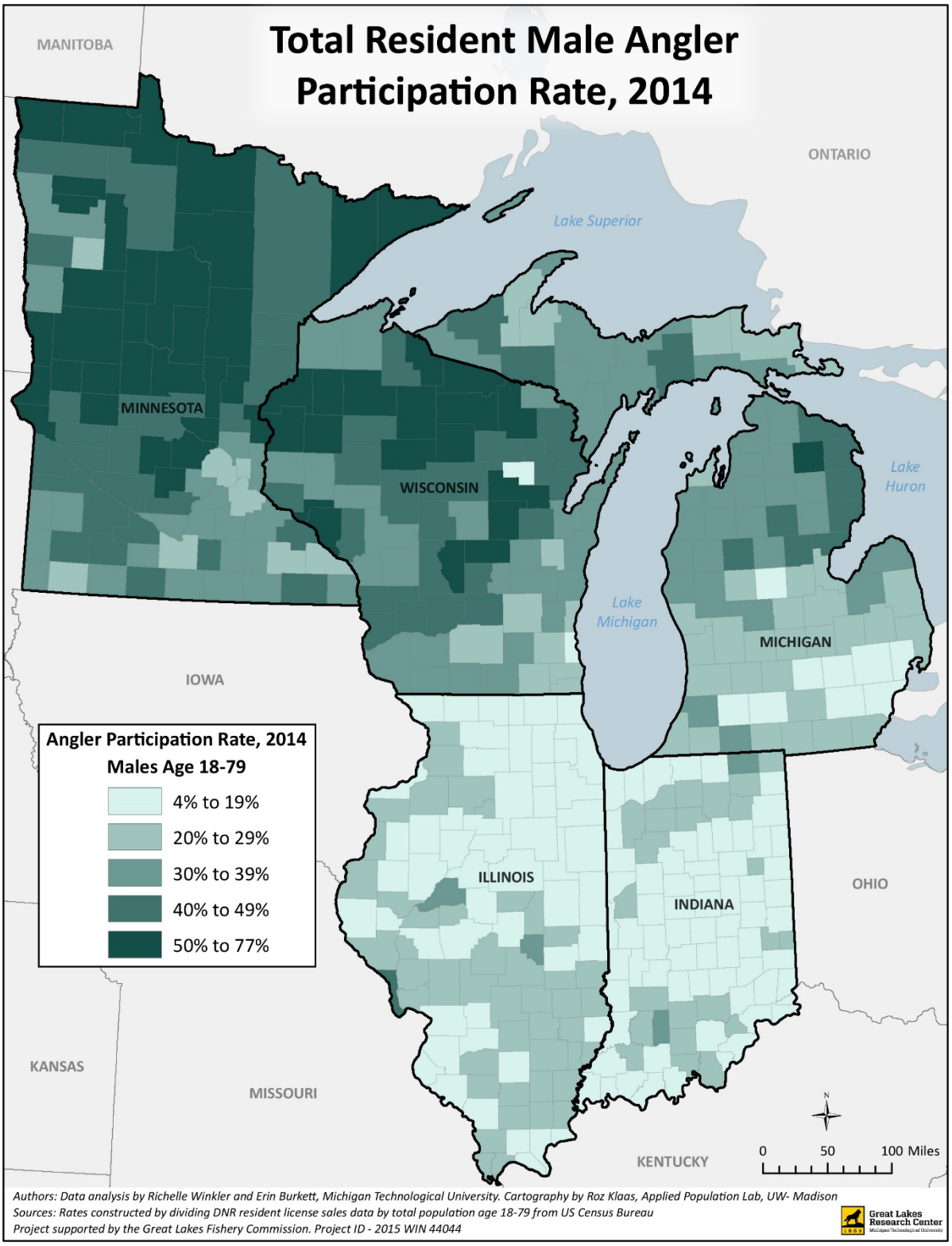

Figure 35: Male Fishing Participation Rates, 2014

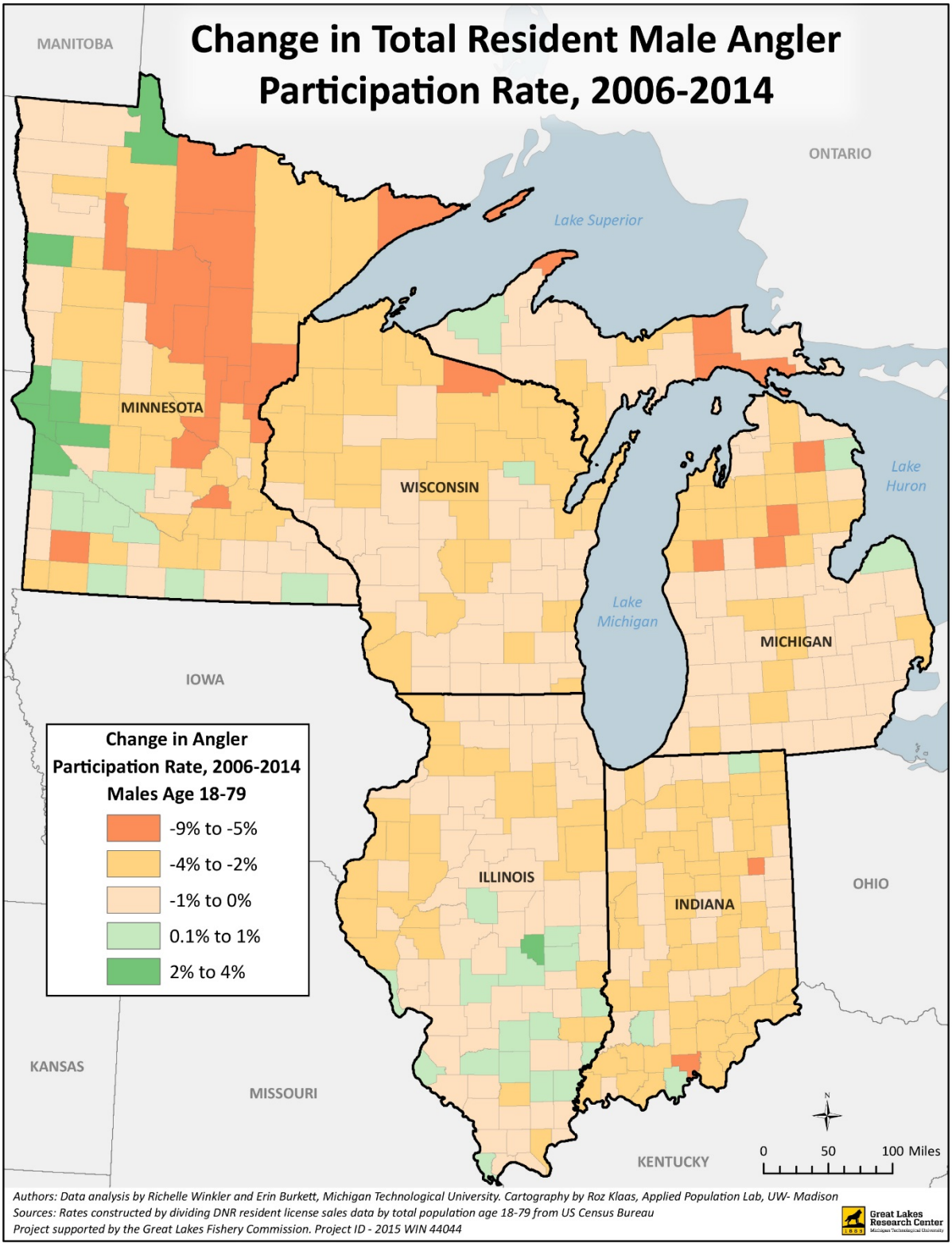

Figure 36: Change in Male Fishing Participation Rates, 2006-2014

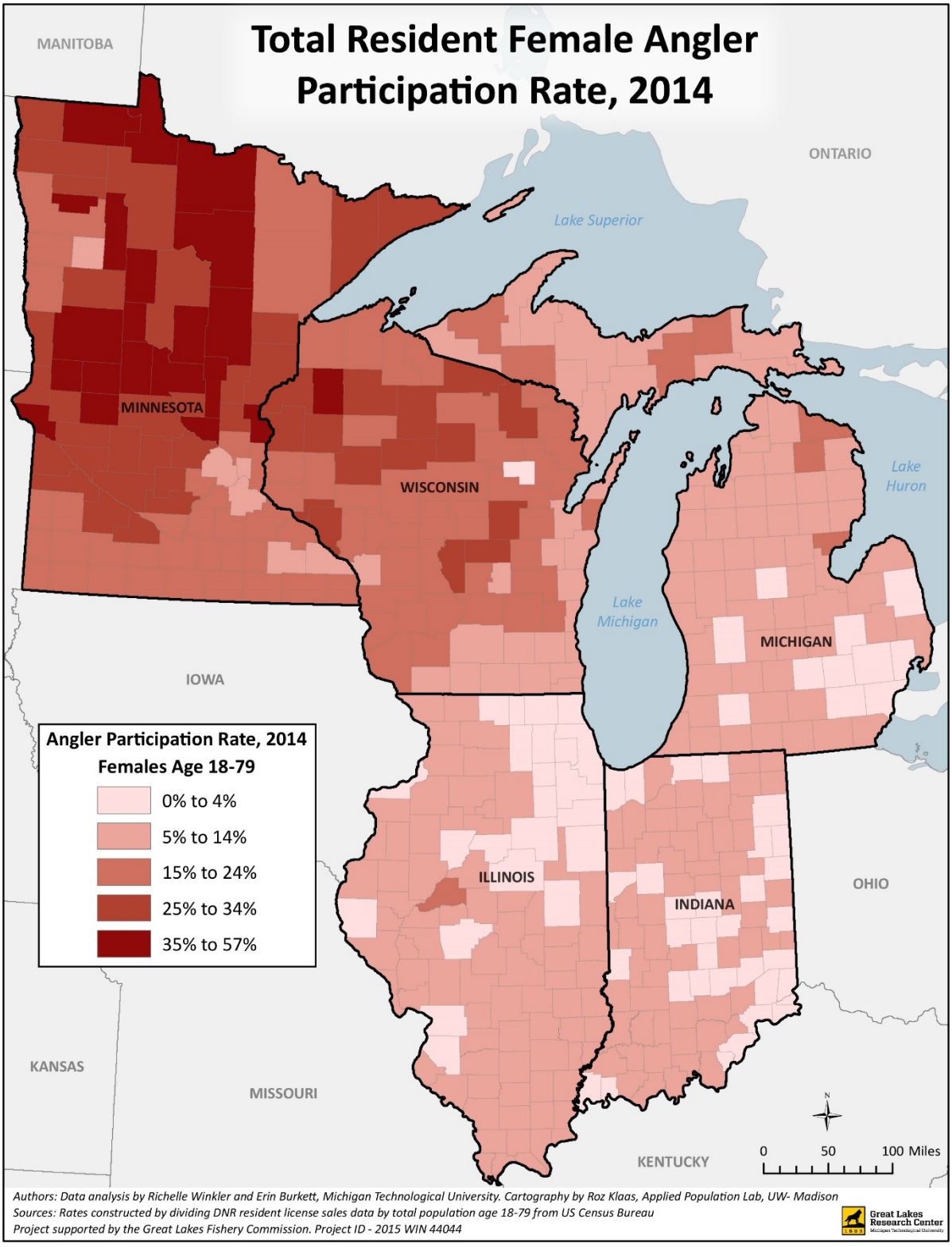

Figure 37: Female Fishing Participation Rates, 2014

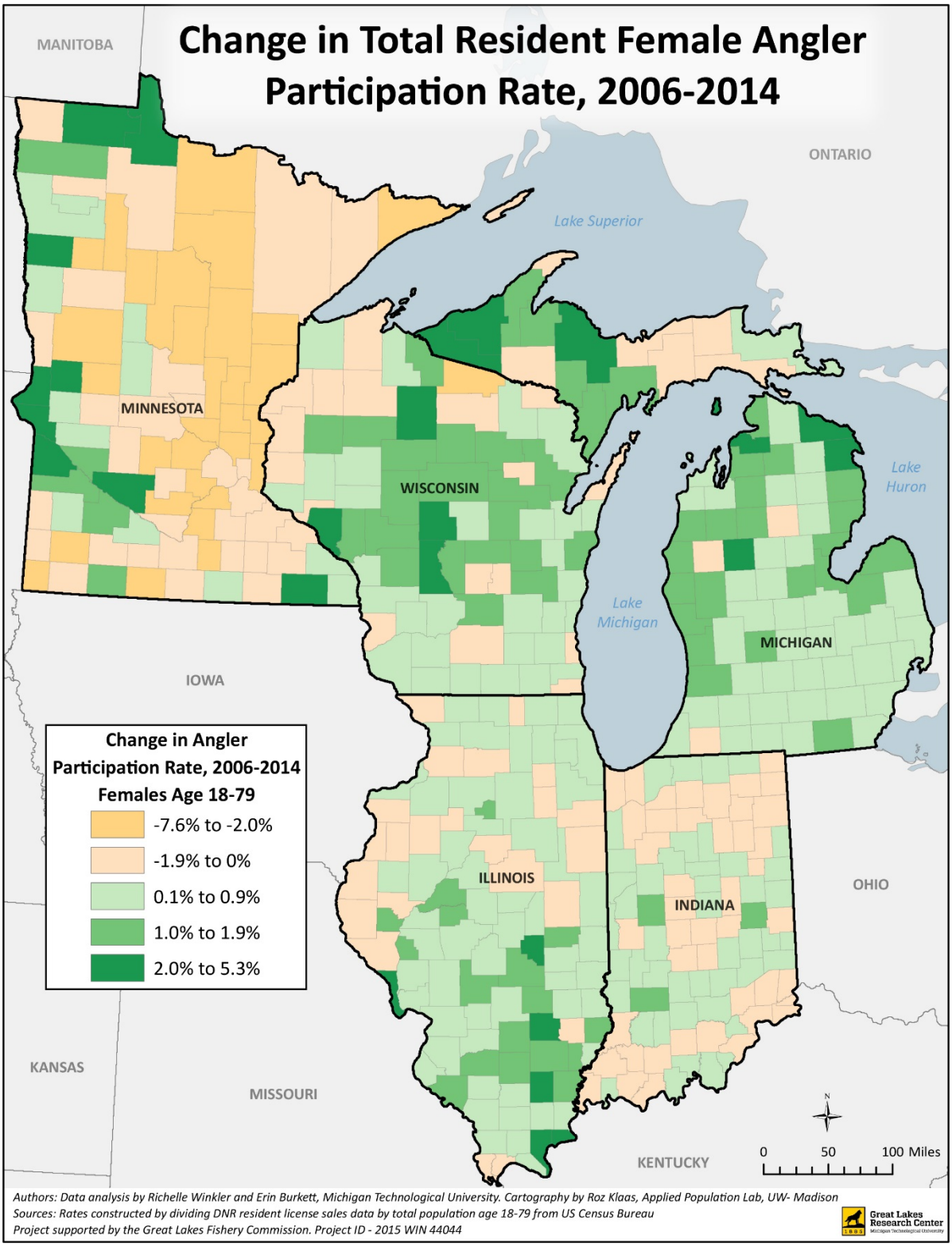

Figure 38: Change in Female Fishing Participation Rates, 2006-2014

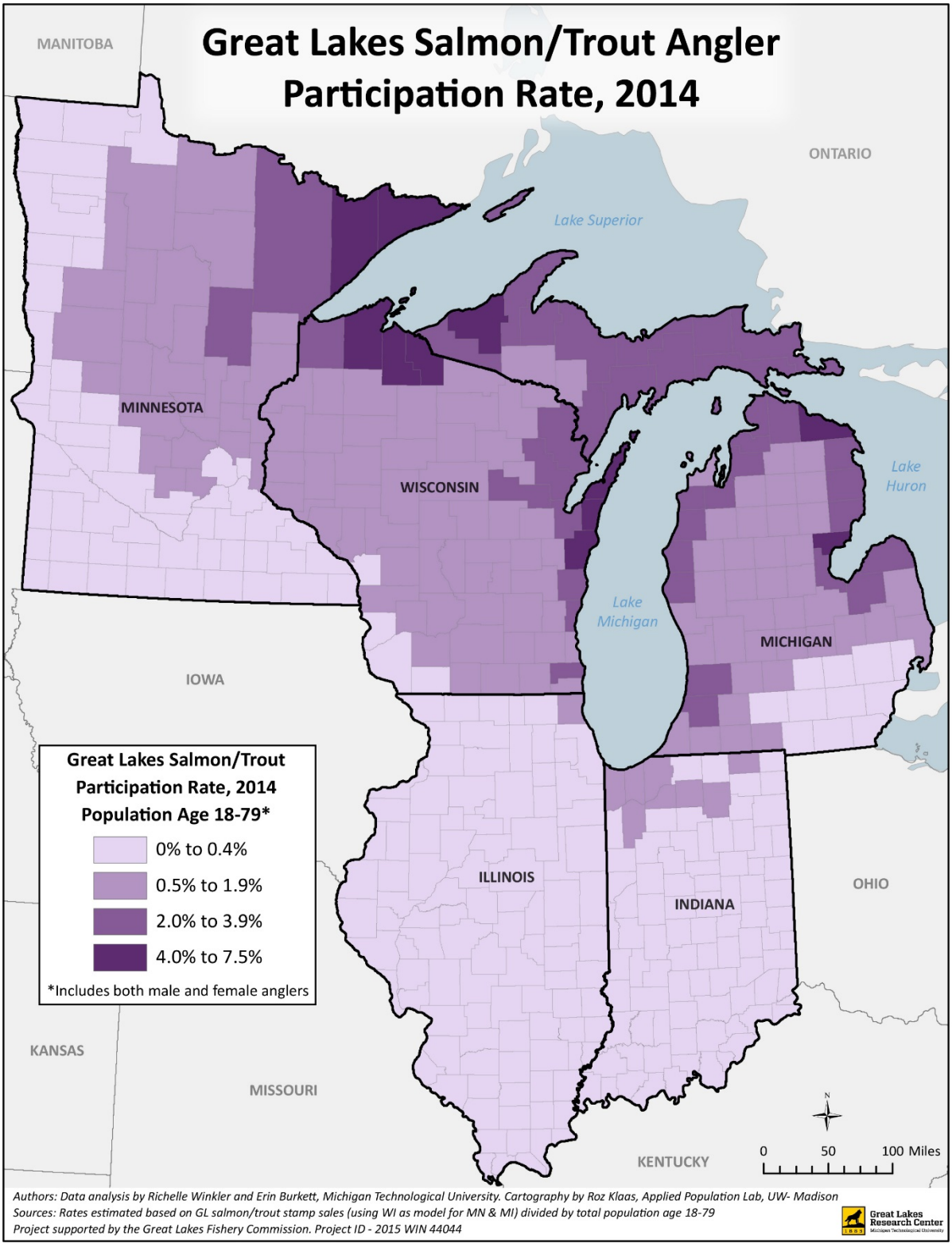

Figure 39: Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2014

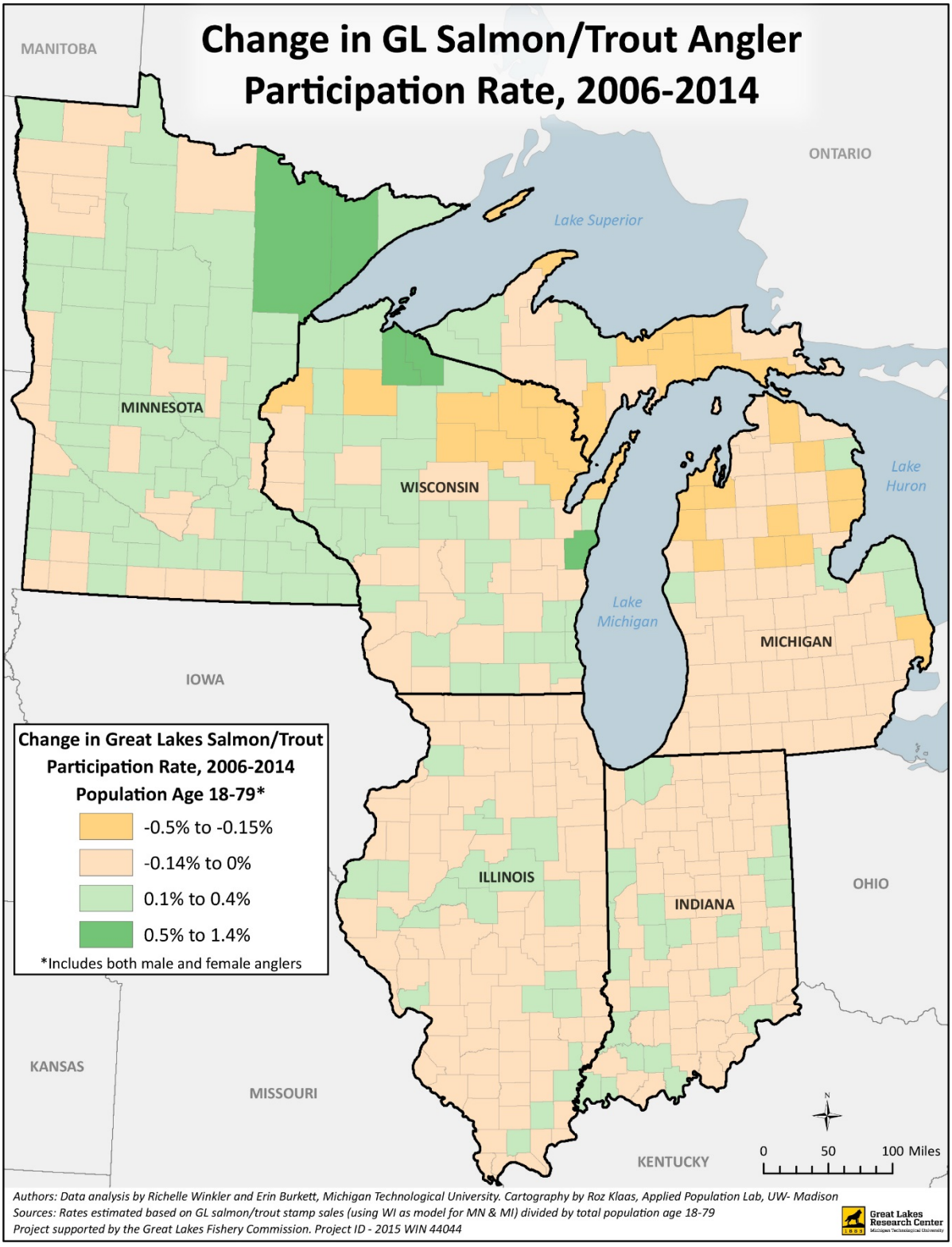

Figure 40: Change in Great Lakes Salmon/Trout Fishing Participation Rates (Combined Male/Female), 2006-2014

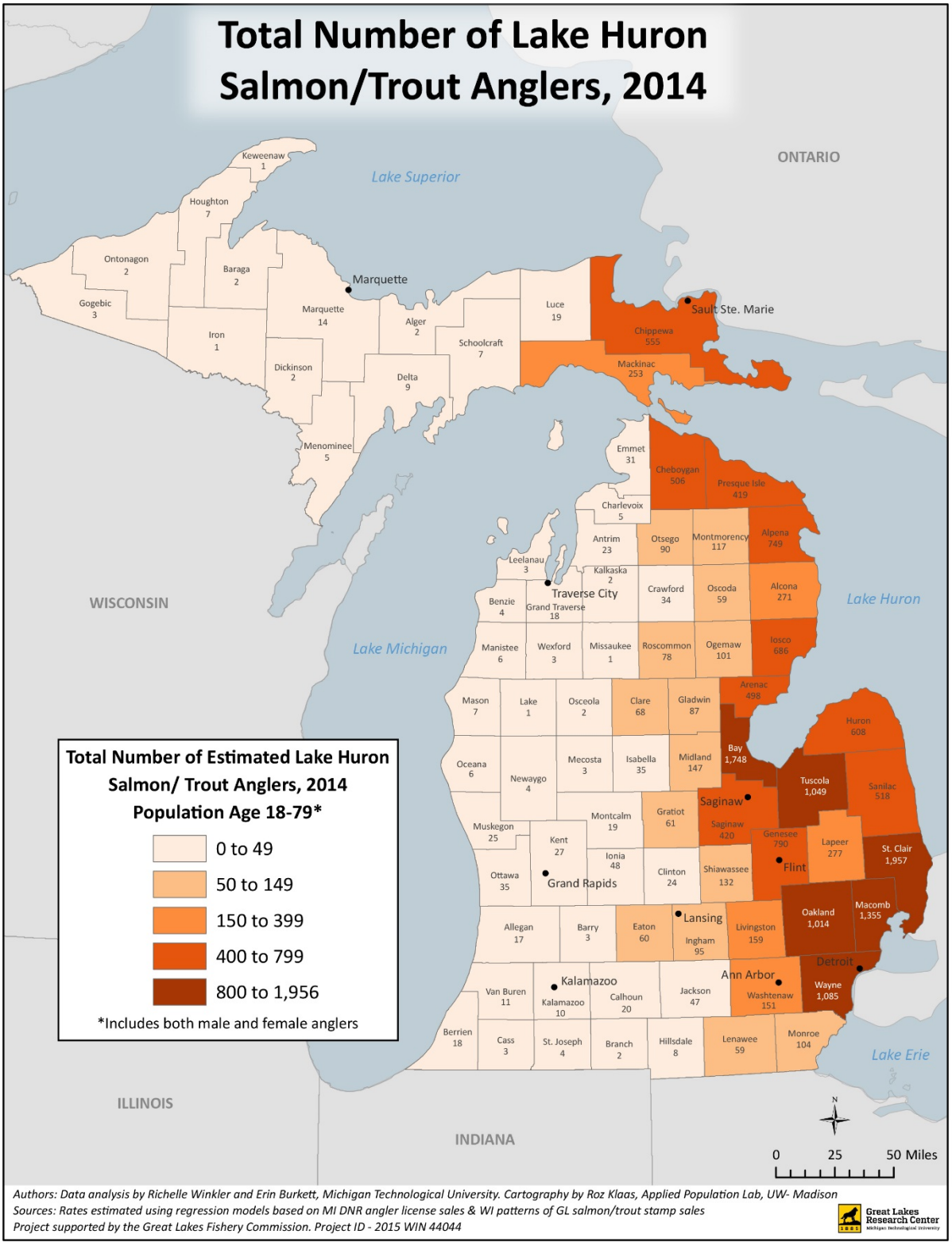

Figure 41: Number of Estimated Lake Huron Salmon/Trout Anglers (Combined Male/Female), 2014

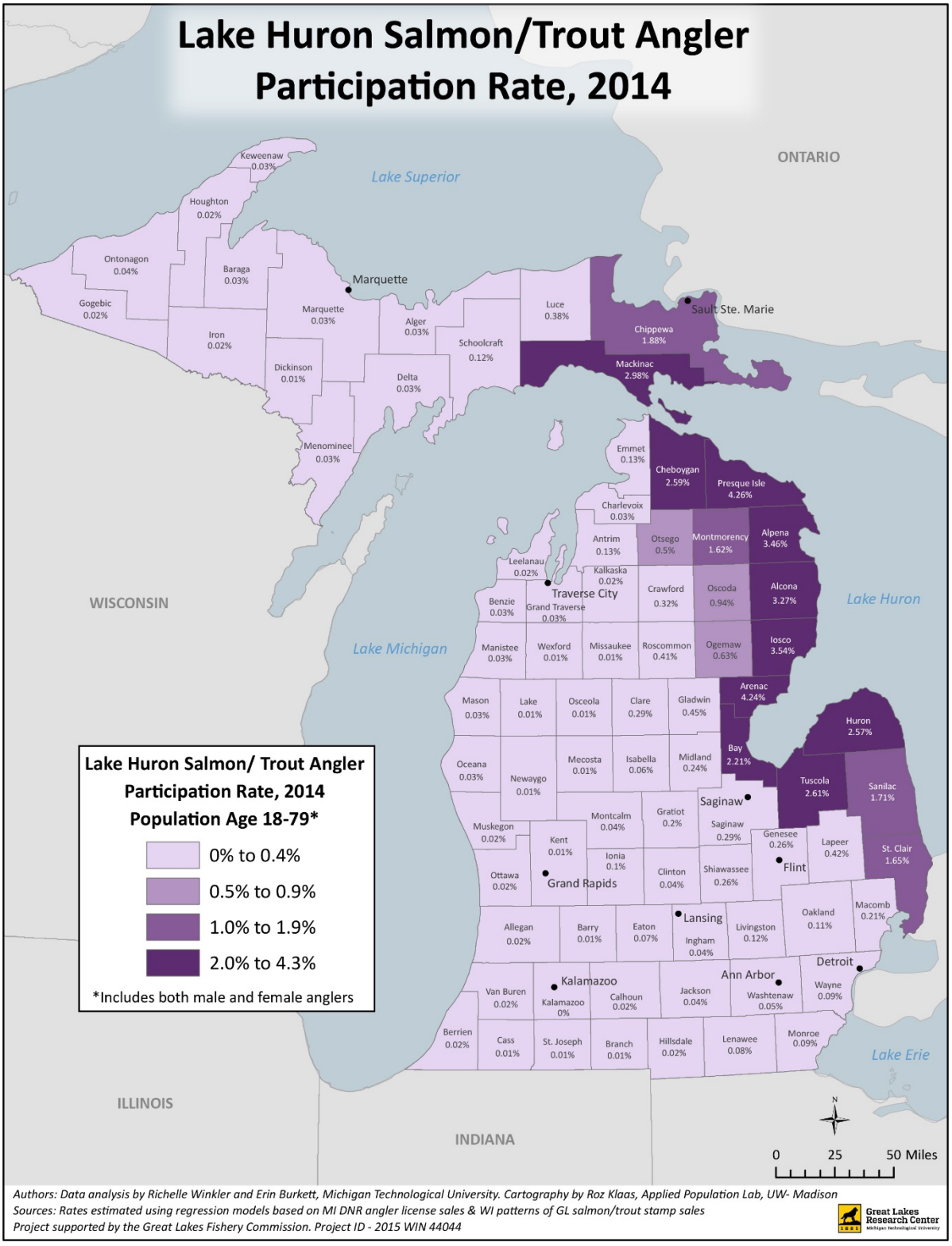

Figure 42: Lake Huron Salmon/Trout Fishing Participation Estimates, 2014

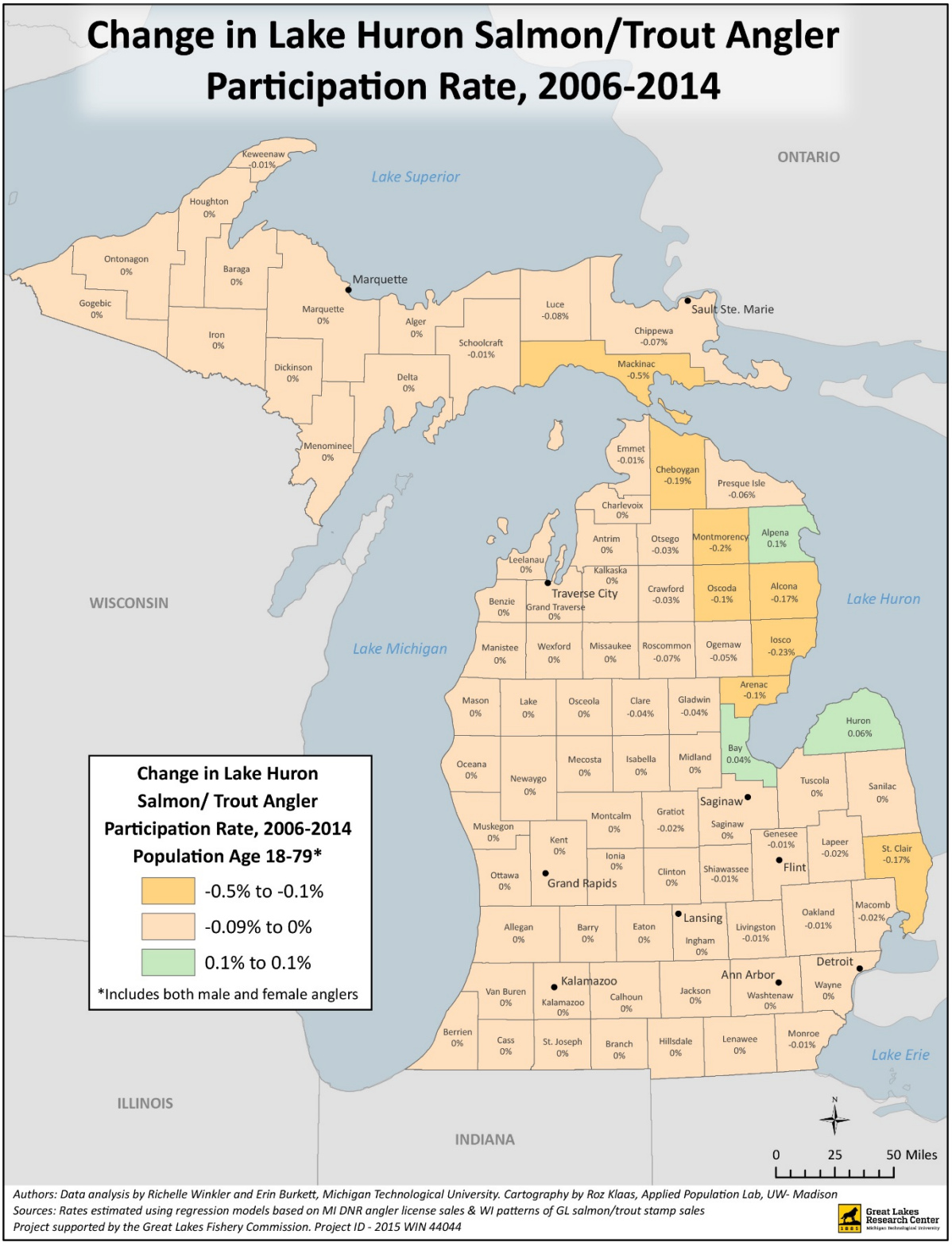

Figure 43: Change in Estimated Lake Huron Salmon/Trout Fishing Participation Rates, 2006-2014

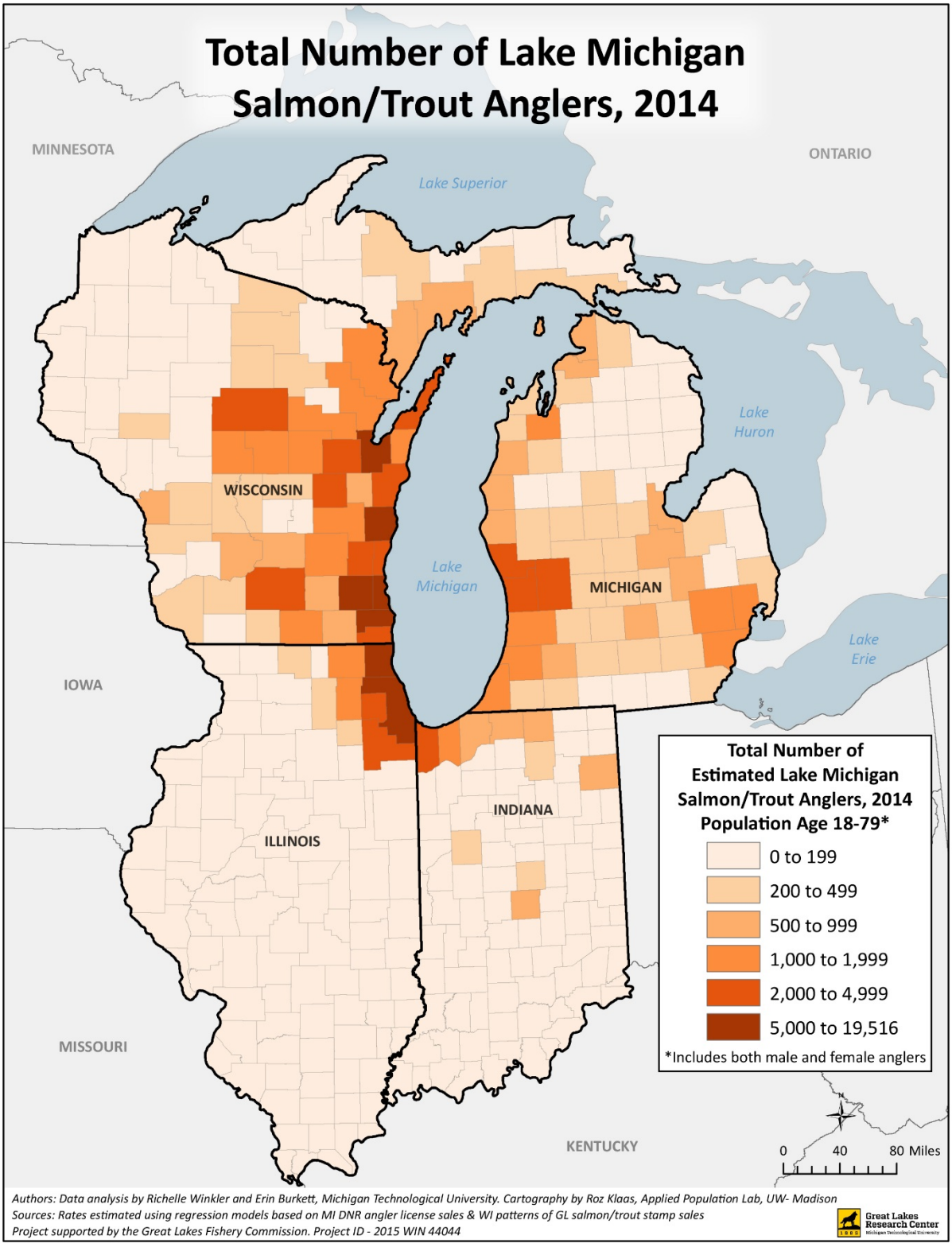

Figure 44: Number of Estimated Lake Michigan Salmon/Trout Anglers (Combined Male/Female), 2014

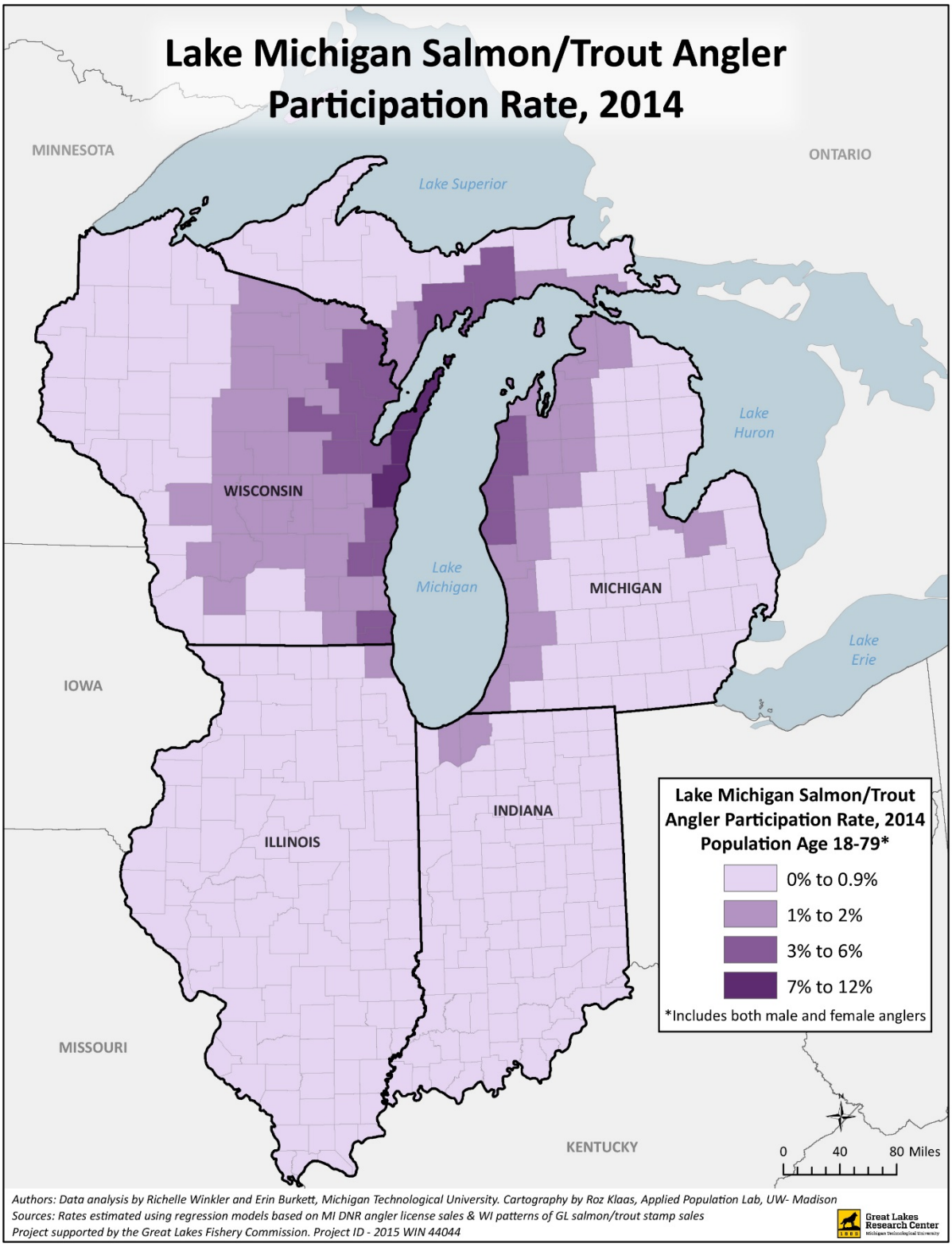

Figure 45: Lake Michigan Salmon/Trout Fishing Participation Estimates, 2014

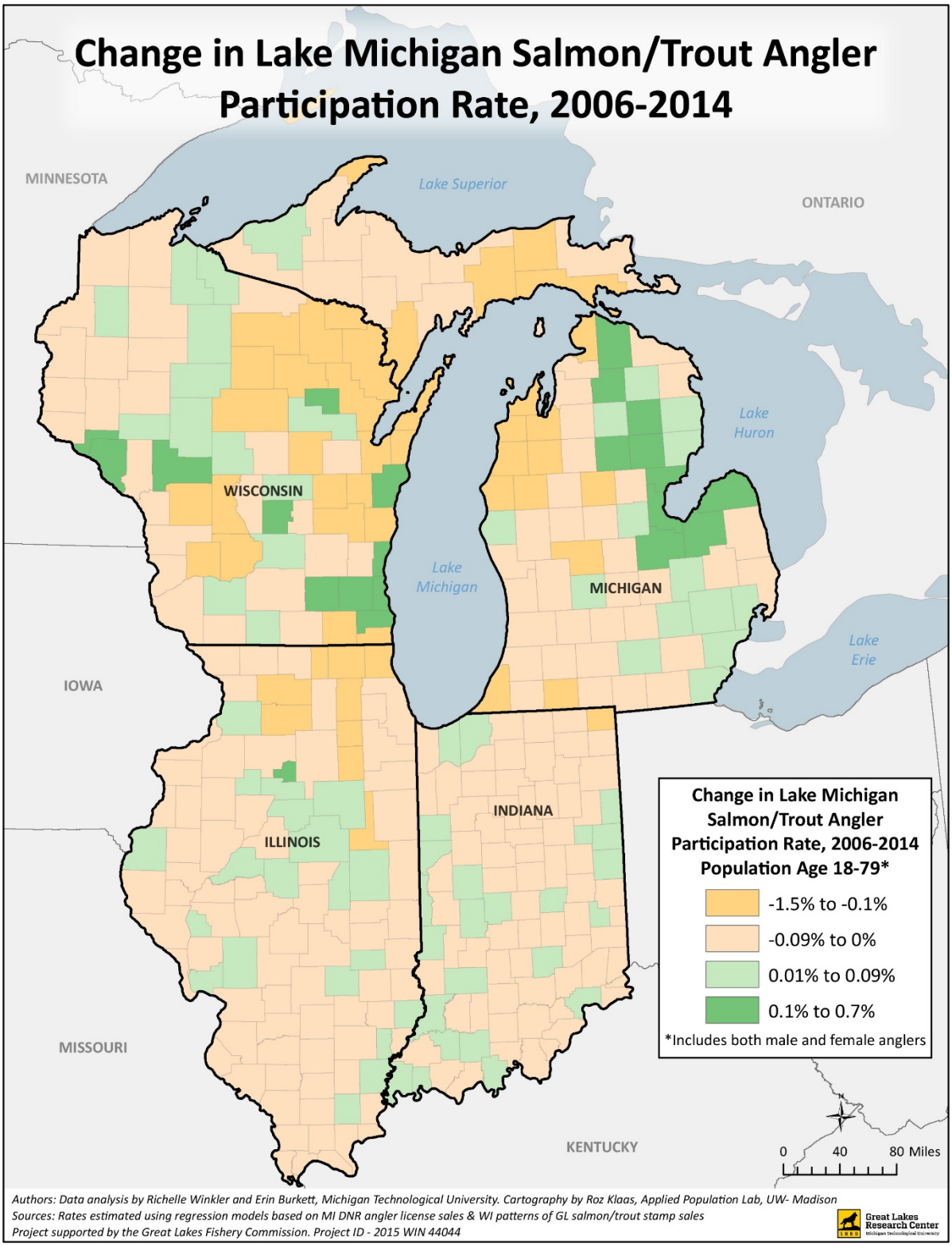

Figure 46: Change in Estimated Lake Michigan Salmon/Trout Fishing Participation, 2006-2014

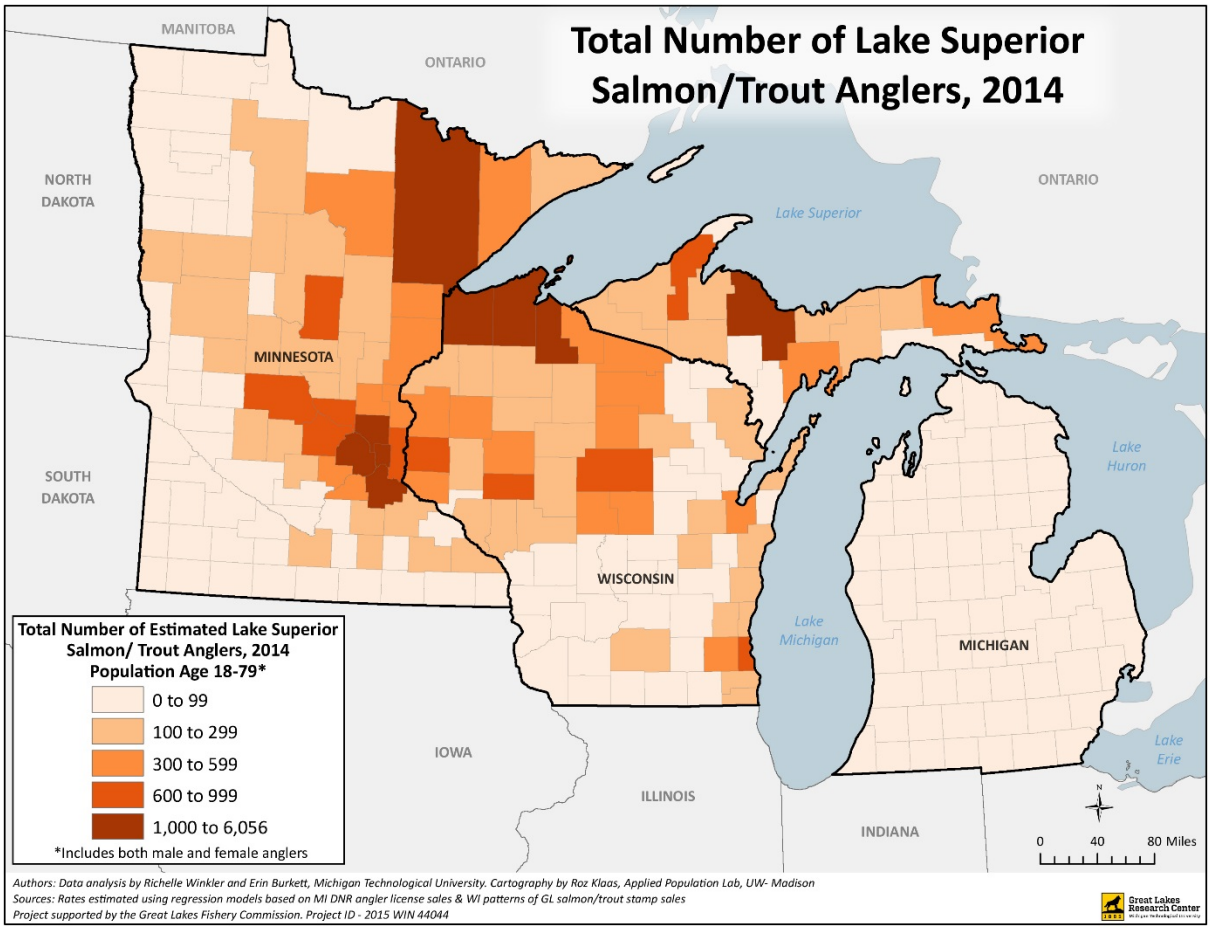

Figure 47: Number of Estimated Lake Superior Salmon/Trout Anglers (Combined Male/Female), 2014

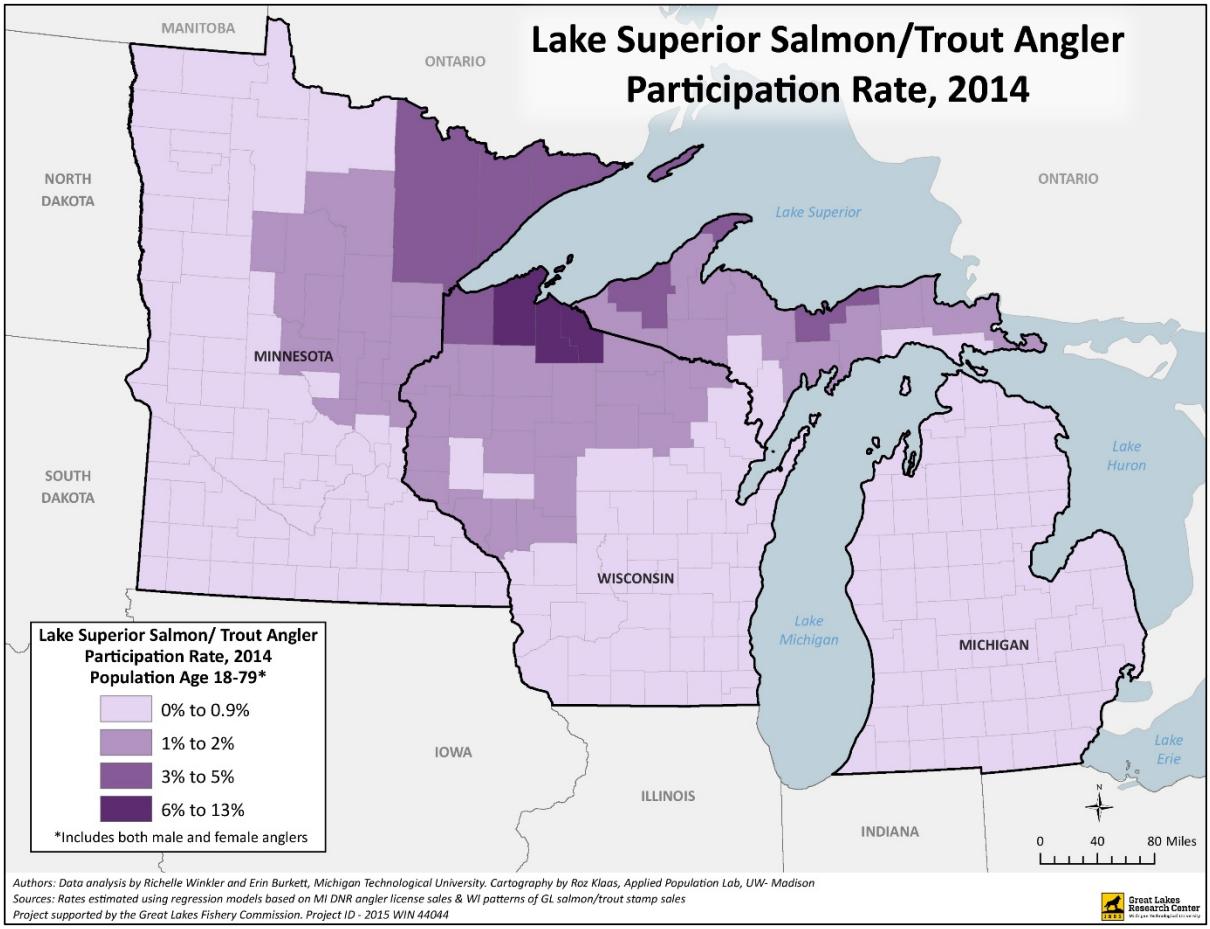

Figure 48: Lake Superior Salmon/Trout Fishing Participation Estimates, 2014

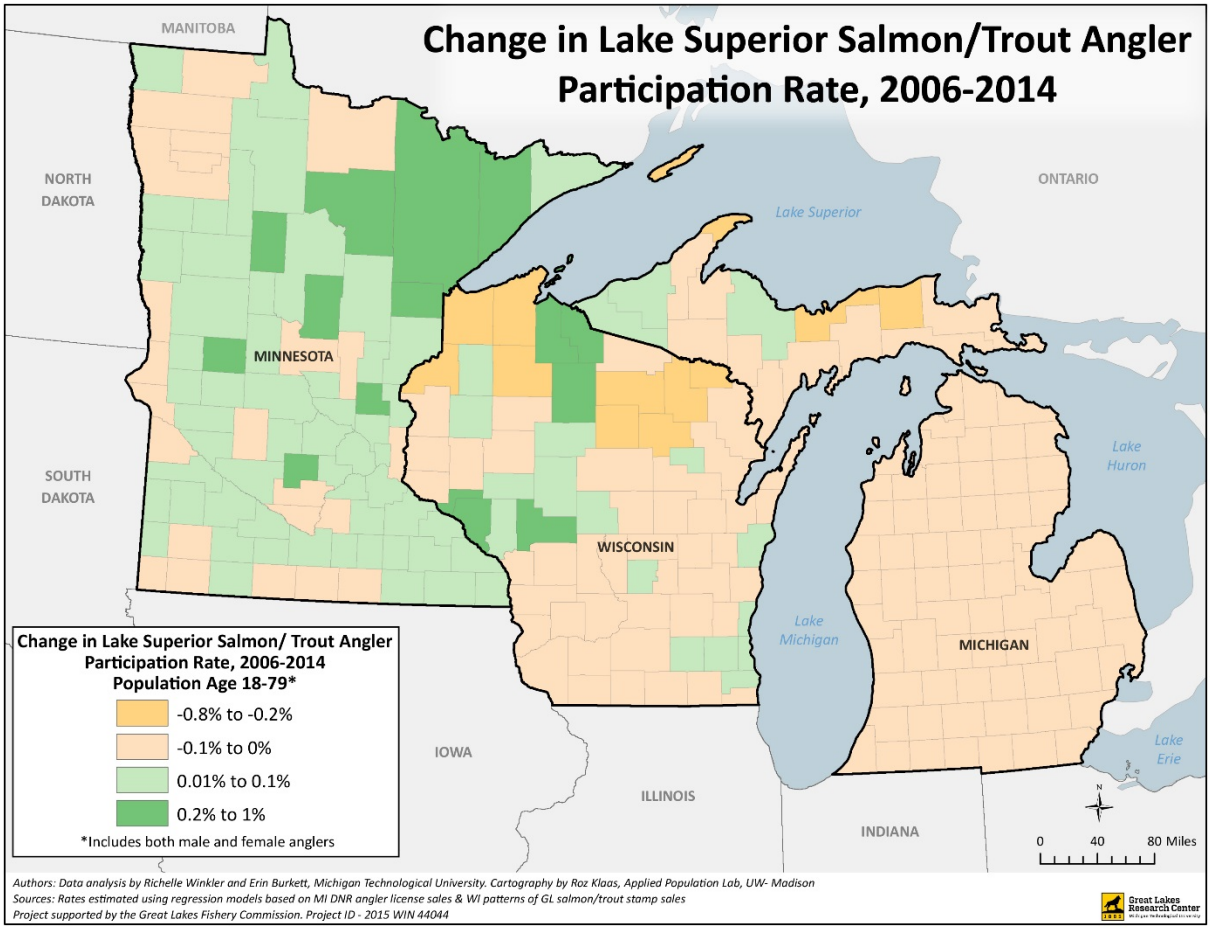

Figure 49: Change in Lake Superior Salmon/Trout Fishing Participation Estimates, 2006-2014