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Final Report, Kent County Early Childhood Indicators – Baseline Data

Community Research Institute-Johnson Center

Community Research Institute

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FINAL REPORT

Kent County Early Childhood Indicators – Baseline Data

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first steps
growing every child's potential

Great Start

Every young child in Kent County will enter kindergarten ready to succeed in school and in life.

That vision inspires and guides the work of our community's early childhood collaborative. With the help of parents, educators, healthcare providers, private and public sector service providers, policy makers and philanthropic leaders, together we are shaping a coordinated, integrated system of early childhood services that are high quality, culturally sensitive, voluntary and accessible.

Critical to our efforts is the ability to measure our collective impact, monitor systems development and report reliable, relevant information about the well-being and school readiness of young children to the broader community. To that end, we partnered with the Community Research Institute (CRI) at Grand Valley State University to identify indicators that ultimately could be adopted by the community collaborative as a part of our overall planning efforts.

Using an iterative process, more than 40 community partners worked with CRI to generate dozens of potential indicators that were then vetted and analyzed with an eye toward national best practice. The list was culled further based on a number of factors, including data availability, reliability and relevance to the five core elements of our early childhood community vision –

- Parents have the knowledge, skills and opportunities to give their young children a great start in life.
- Families have the relationships and resources they need to raise their young children, and their basic needs are met.
- Young children have quality early learning experiences starting at birth.
- Young children and their families receive the quality, comprehensive services and education they need to maximize their health.
- The community understands the importance of early childhood and invests in the healthy development and early learning of young children.

This report represents the results of those efforts. While the report is a starting point, it builds on previous efforts and includes a set of indicators that will guide us as we work to achieve our community vision.

We are profoundly grateful to everyone who contributed their time, talent and energy to this process, and to those who continue to believe in and invest in this work.

Lynne Ferrell
Chair, Great Start Collaborative

Rebekah Fennell
Executive Director, First Steps

CRI, October 27, 2011

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Executive Summary

This report provides a baseline analysis for several Kent County early childhood indicators. The process for choosing these indicators began in 2010. Four workgroups of community members came together around four broad categories: physical and behavioral health, early care and education, parent education, and family support. The Community Research Institute (CRI) at the Johnson Center for Philanthropy at Grand Valley State University provided technical support to the workgroups identifying data sources and ensuring proposed indicators aligned with principles for good indicators. At the end of the process Kent County's Great Start Collaborative (GSC) endorsed the indicators.

When possible in the full report, we compare county numbers to state averages and in some cases, areas within Kent County, such as the City of Grand Rapids. In addition, we present detailed analyses of four early childhood indicators at the census tract level to shed greater light on the demographic trends and needs at a much more localized and focused level. We are fully committed to expanding the indicators for which we can perform this more granular geographic analysis as we access more detailed data through partnerships with state and local agencies.

Presenting the data through maps is one way we focus on areas of need within Kent County. Another way we combine findings from multiple indicators into a more focused presentation of need is the use of a statistical procedure called factor analysis. The report uses factor analysis to explore different groups of connected indicators and how they manifest different needs and challenges for sub populations (such as different racial or ethnic groups or different income levels) in different parts of the county.

Findings for individual early childhood indicators can be used to track community changes over time. For many indicators we can assess our county's progress for various sub populations at the county level. For indicators where we have more localized data, we can discover differences for these subpopulations and for different geographic areas. This can be useful for making program decisions in areas where greater needs are identified. For example, areas where there is an apparent unmet need for preschool can be identified. State, county, and city agencies have been very successful using geographic factors to identify and target for testing children at-risk for lead poisoning. Specific areas of need are often hidden in county level data that compares favorably with state or national averages. This is the main reason for seeking data with both subpopulation characteristics (such as race and ethnicity) and geographic characteristics (preferably street address) attached.

For early childhood system providers this baseline indicator report confirms the need for greater attention to the Early Childhood System in Kent County. Additionally, this report provides the necessary descriptors and geographic picture of the areas with specific needs.

For Funders and other stakeholders this report highlights the continuing struggle of many families in areas of the county to access affordable child care and other essential services.

The report also highlights the need for better data access at the local level to inform decision-making about the early childhood system.

For the broader community these indicators report reliable, relevant information about the well-being and school readiness of young children in Kent County.

Our community's development of these early childhood indicators was guided by several principles. We sought to put the community in community indicators by recognizing that geography matters. We always tried to access data at the record level with street addresses attached. We sought to provide a core set of working indicators that can assist local providers in managing their early childhood services. Finally, we recognize that many services provided to children are difficult to count and many of the things we can count are not the most important for improving the lives of children.

Key Findings

It is useful to present county-level data for these early childhood indicators to understand where we are collectively as Kent County. However, by closely examining subgroups and subgeographies within the county we begin to understand our communities and their particular needs. The following key findings from the baseline indicator data emphasize differences found for local areas within the county.

Maternal and Child Health Index

- Areas in the city of Grand Rapids typically see poorer birth outcomes than do other areas of the county.
- Some rural areas in the northern part of the county also are experiencing birth outcomes that are worse than the county average.

Parent Education Index

- Outcomes in certain areas of Grand Rapids are worse than for the county as a whole.
- Parts of Grandville and Wyoming are also seeing outcomes below the county average.
- Most of the rural northern areas of the county with lower than average scores on the maternal and child health index have slightly better than average scores on the parent education index.

Child Care Affordability

- There is not one census tract in Kent County where a family living at or below 75 percent ($16,196 for a family of four)of the Federal Poverty Level (FPL) has sufficient income to cover their housing, transportation and child care expenses.
- Among children living at or below 75 percent of FPL, the typical income deficit required for full time child care was more than $5,700 for a four year old and $6,600 annually for an infant.

- The typical family with a four-year-old living between 100 and 125 percent ($21,594 - $26,993 for a family of four) of FPL has an annual deficit of nearly $300 while a similar family with a newborn as an annual deficit of nearly $1,200.
- Ada, a comparatively wealthy section of the county, exhibits among the greatest child care income deficits, in part due to higher housing and transportation costs.
- Despite greater relative need in some wealthier areas of Kent County the absolute need is still greatest in Grand Rapids because of the much greater numbers of families with children living in poverty in the city.

Children Living in Poverty

- More than one in five young children (age 0-5) in Kent County lives in families below the poverty line.
- Michigan's poverty rate for this age group is slightly higher than Kent County's, 22.7 to 20.8 percent.
- The City of Grand Rapids saw poverty among the very young decrease from its high of 37.5 percent in 2006 to 33.9 percent in 2009.

At-risk Children Enrolled in Public Preschool

- Approximately three-quarters (73.4 percent) of economically at risk four-year-olds in Kent County are enrolled in either the Great Start Readiness Program (1,656) or Head Start (1,157).
- The other 26.6 percent of economically at-risk four-year-olds in the county, more than 1,000 children, are not being served due to a lack of available funding and slots.

Associated Risk and Need Factors

- A sizable population of children exhibit a combination of risk factors such as poor pregnancy outcomes and high levels of poverty. These children are concentrated in Grand Rapids but rural areas of the county also have high risk and high need children.
- Children who are both poor and linguistically isolated—English is not the primary language spoken in their homes—are concentrated in some areas of Grand Rapids, Wyoming, and Kentwood but also in rural areas in the northwest part of the county surrounding Sparta.

Children Ready for Kindergarten

- Twenty-seven percent of Kent County students enter kindergarten with less than age-appropriate oral language and/or early-literacy skills. This converts to almost 2,600 students.

Factor Analysis

We simultaneously examined all indicators analyzed at the census tract level using a data reduction technique called factor analysis to reduce our broad set of indicators into three components, or factors. We developed typologies for three factors that help summarize our findings. These three factors are described as follows.

Factor 1 – Extreme Risk - Extreme Need Children
This population exhibits many factors that would put them at risk of poor outcomes. Among the three factors, this cluster exhibits the most severe risk factors, including poor pregnancy outcomes with very high levels of poverty.

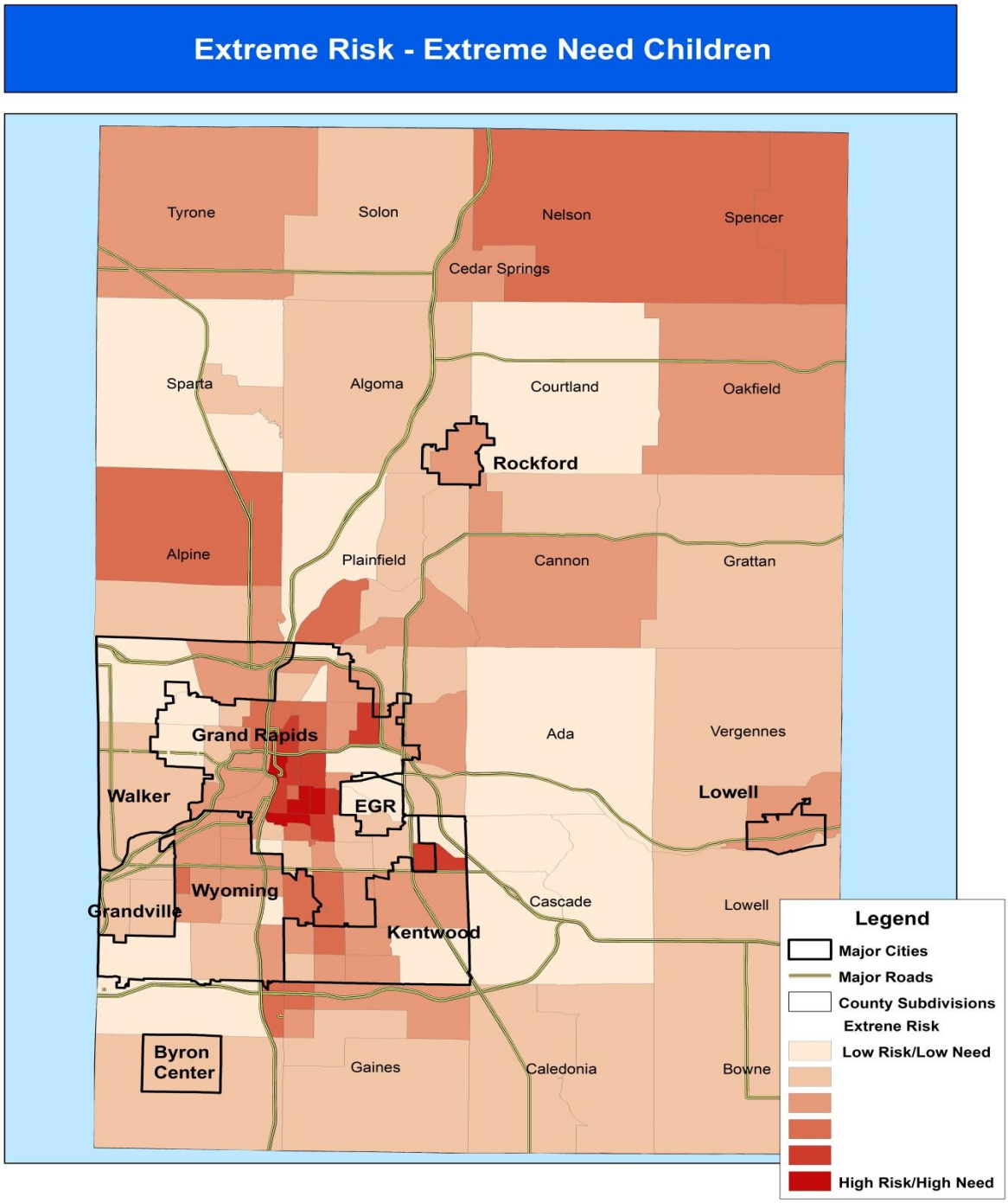
Factor 2 – Low Income Linguistically Isolated Children
The most severe risk factors among children in this cluster are the high percentage of households that are linguistically isolated. In addition, moderately high levels of women associated with this group did not begin prenatal care during their first trimester. These children are likely to be poor and largely Hispanic.

Factor 3 –Moderately Low Income and Isolated
Children associated with this cluster are least likely to be enrolled in child care or preschool. The census tracts most closely associated with this factor are rural, especially in the northwest corner of Kent County. Although these tracts do not suffer from high levels of children living in poverty, they do have moderately low levels of household income.

We developed summary maps of each of these factors (see the following three pages). Areas with darker shading are those most associated with the factor. For example, in the map on the following page detailing Extreme Risk - Extreme Need Children, the areas of inner city Grand Rapids are those most associated with this factor. The lighter shaded areas, such as Ada and Cascade exhibit little to none of the characteristics associated with this factor and thus, we could conclude that on balance, there are few children with extreme risk and extreme need in these areas.

Analysis such as this can be useful in developing appropriate policy responses to the differing needs of individual communities and is particularly useful in uncovering relationships that are difficult to ascertain when examining the various indicators one-by-one.

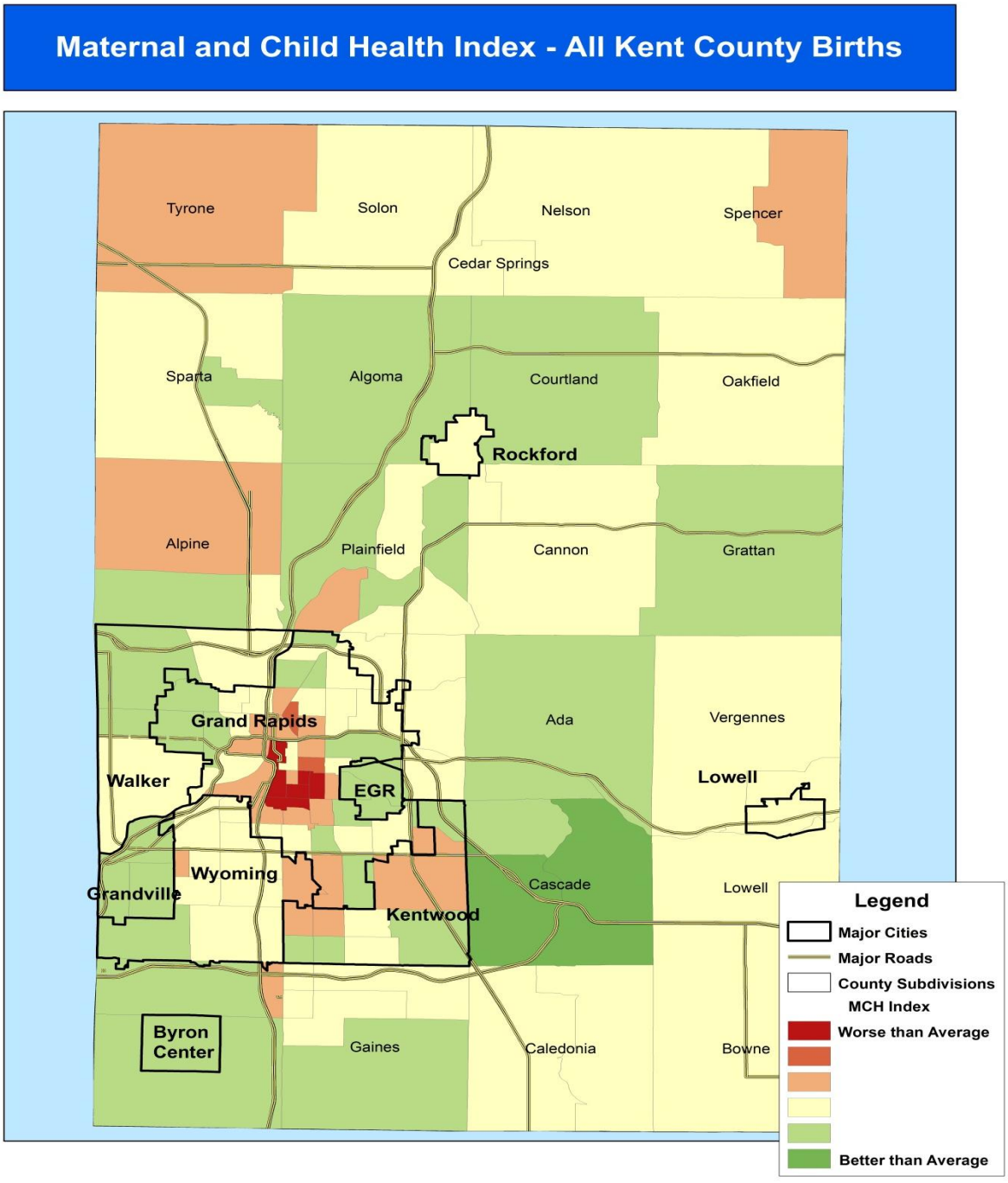
The map on the following page represents a population that exhibits many factors that would put them at risk of poor outcomes. Among the three factors, this cluster exhibits the most severe risk factors, including poor pregnancy outcomes with very high levels of poverty. While the areas of highest risk and highest need are in the city of Grand Rapids there also are areas of greater risk and need in rural areas in the northern part of the county.



The most severe risk factors among children in the cluster represented in the above map are the high percentage of households that are linguistically isolated. In addition, moderately high levels of women associated with this group did not begin prenatal care during their first trimester. These children are likely to be poor and largely Hispanic. The more isolated areas on this map are spread throughout Grand Rapids, Wyoming, Kentwood, and the areas surrounding Sparta.

Indicators Analyzed by Census Tract

For several indicators, we were able to obtain data that allows and analysis by the 126 different census tracts within Kent County. Approximately 4,000 to 5,000 people live in each census tract. Mapping these indicators enables us to view geographic areas of need that may be masked when looking at county-level data.



Maternal and Child Health Index

This index is a composite of three items derived from state vital records. The index is composed of 1) the percentage of births delivered at full-term; 2) the percentage of births where prenatal care began within the first trimester; and 3) the percentage of births resulting in a satisfactory birth weight. Each of these three components is an important indicator of early childhood well-being.

Because this index is not widely used throughout the U.S., there are no comparable scores. The individual components, however, are widely reported at the national and state level. Kent County fares better when looking at the percentage of births delivered at normal birth weight. A total of 94 percent of births in Kent County are at normal birth weight compared to 90 percent nationally. The percentage of women who access prenatal care services within the first trimester is also higher in Kent County than nationally. About 81 percent of women accessed prenatal care within the first trimester nationally as compared to 84 percent in Kent County.

Geographic differences are apparent when examining all births through this index and when looking at births for different sub-populations. Areas within the city of Grand Rapids typically see poorer birth outcomes than do births in other areas of the county. However, some rural areas in the northern part of the county also are experiencing birth outcomes that are worse than the county average.

Parent Education Index

A composite of four items derived from state vital records – the percentage of births in which the mother did not smoke during pregnancy; the percentage of births in which the mother did not consume alcohol during pregnancy; the percentage of births in which the mother conceived a subsequent pregnancy 18 or more months after a previous birth; and the percentage of births in which the birth certificate contains data about the father (a proxy for planned pregnancy). As with the Maternal and Child Health Index, these components all have important influences on early childhood well-being.

In Kent County, the percentage of women that did not smoke during pregnancy was equal to the national average of about 90 percent. Mothers of Non-White infants reported slightly lower rates of those that did not smoke during pregnancy at 86.4 percent versus 90.7 percent of mothers to White infants.

As with the maternal and child health index, the parent education index presents different outcomes in different parts of the county. Outcomes in certain areas of Grand Rapids are worse than the county as a whole. Parts of Grandville and Wyoming also see outcomes below the county average. Most of the rural northern areas of the county with lower than average scores on the maternal and child health index have slightly better than average scores on the parent education index.

Children Living in Poverty

The percent of children age 0-5 in families living in poverty during the previous year. In 2009, the latest year for which data are available, the U.S. Department of Health and Human Service's threshold for a family of four (i.e. two parents with two children) was $22,050 (this includes pre-tax cash income but not non-cash assistance such as food stamps or housing subsidies). The 2011 poverty threshold for a family of four is $22,350. Poverty is linked to a number of negative educational, health-related, and emotional outcomes for children. These effects begin before birth and continue into a child's adulthood.

More than one in five young children in Kent County live in families below the poverty line. The state poverty rate for this age group is slightly higher than the rate for Kent County, 22.7 percent to 20.8 percent. The City of Grand Rapids saw poverty among the very young decrease from its high of 37.5 percent in 2006 to 33.9 percent in 2009 among children 0 to 5 years old.

Child Care Affordability

A measure of the family income deficit a hypothetical child at various poverty levels would need to attend full time child care, factoring in housing and transportation expenses. This deficit model seemed most appropriate for the analysis since it offers policy makers the ability to better understand resource gaps required to provide child care services for those most in need as well as the cost of subsidizing those services when and where appropriate. We chose to include housing and transportation expenses in our formula because they are the largest expenses for the typical household and there are a number of generally accepted methods for estimating such expenses.

Among children living at 75 percent or below of Federal Poverty Level (FPL), the typical income deficit required for full time child care was more than $5,700 for a four year old and $6,600 annually for an infant. There is not one census tract within Kent County where a family living at 75 percent or below of FPL would have sufficient income to cover their housing, transportation and child care expenses. For children living in families with incomes between 100 and 125 percent of FPL, the overwhelming majority of families would also have severe income deficits if utilizing child care services. The typical family with a four-year-old living between 100 and 125 percent of FPL would have an annual deficit of nearly $300 while a similar family with a newborn would have an annual deficit of nearly $1,200.

For many indicators analyzed for this report areas of inner-city Grand Rapids have shown areas of greatest need. When looking at child care affordability, however, Ada, a comparatively wealthy section of the county, exhibits among the greatest child care income deficits. This is mainly a function of the housing costs in Ada, which are three to four times that of many census tracts in Grand Rapids. Despite greater relative need in some wealthier areas of Kent County the absolute need is still greatest in Grand Rapids because of the much greater numbers of families with children living in poverty within the city.

Indicators Analyzed at the County Level

At-risk Children Enrolled in Publicly Funded Preschool

Estimating the number of at-risk children involves two separate calculations. The numerator for the calculation is the number of at-risk children enrolled in publicly funded preschool (an estimate of the number of at-risk children whose needs are met). This is defined as the sum of four-year-old children enrolled in either Head Start or the Great Start Readiness Program during the current year. The denominator for the calculation is the number of first grade children receiving free or reduced (cost) lunches (FRL) at school. The total number of children in first grade receiving FRL is a proxy for total need. Preschool and early intervention programs have been shown to have a number of positive effects on children from low-income families but not all low-income children are enrolled in preschool. This measure estimates the percentage of four-year olds from low-income families who are enrolled in publicly funded preschool. The estimates only consider economic risk factors, not other non-economic risk factors.

We estimate that the total number of 4-year-old children in need in Kent County is 3,833 based on the number of children eligible for FRL. Currently, about 2,813 or almost three-quarters (73.4 percent) of at-risk four-year old children in Kent County are enrolled in either the Great Start Readiness Program (1,656) or Head Start (1,157). Based on these estimates, there are gaps in the number of children potentially eligible for one of the two preschool programs and the ability to meet those needs. We estimate that greater than a quarter or 1,020 of at-risk 4-year-old children in Kent County have unmet needs. It should be noted that this is a conservative estimate as it is based solely on economic risk and does not account for other risk factors, such as primary language other than English or low educational attainment of parents.

Children Ready for Kindergarten

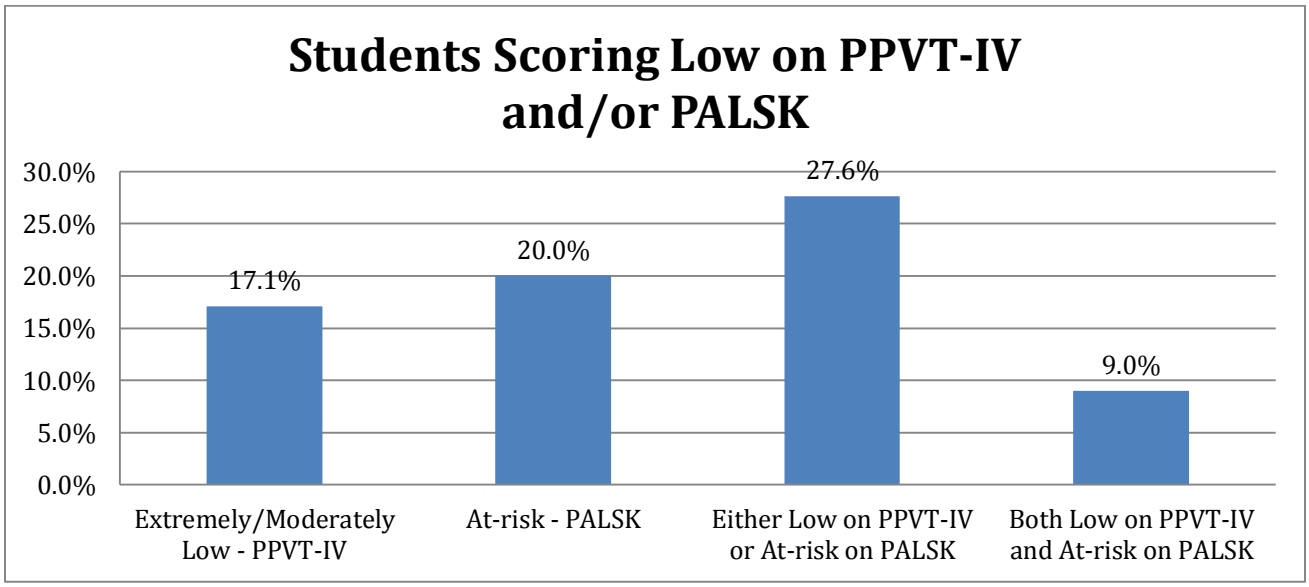
Percent of children performing at or above grade level on the PPVT-IV and the PALSK tests. There is great community-wide interest in children's readiness levels as they begin their school careers. Nationally, there is no broad agreement on what readiness includes, but cognitive pre-literacy measures can be used as a proxy for academic readiness. The Peabody Picture Vocabulary Test (PPVT-IV) measures the receptive vocabulary of children. Vocabulary assessment is strongly related to reading comprehension and correlates highly with general verbal ability. Vocabulary acquisition is an important indicator of a child's linguistic and cognitive development and readiness for formal schooling. The Phonological Awareness Literacy Screening K (PALSK) consists of screening instruments that measure young children's knowledge of several important literacy fundamentals including: phonological awareness, alphabet knowledge, knowledge of letter sounds, spelling, concept of word, and word recognition in isolation.

In the fall of 2010, a stratified random sample of approximately 600 children beginning kindergarten in Kent County were administered either the PPVT-IV or PALSK tests. On the PPVT-IV approximately one out of six students (17.1 percent) scored in either the low or the extremely low range. Given that the total kindergarten enrollment in Kent County ISD

schools in 2010-11 was 9,404 students, approximately 1,600 children entered kindergarten with less than age appropriate oral language skills.

The PALSK test identifies children as at-risk of needing special services to progress to reading at grade level by third grade. Twenty percent of children in the sample taking the PALSK scored in the at-risk range.

These two assessments cover different topics. So a student scoring high on one assessment may not score high on the other. Figure 10 also shows students who scored either extremely or moderately low on the PPVT-IV, at-risk on the PALSK, either extremely or moderately low on the PPVT-IV or at-risk on the PALSK, and both extremely or moderately low on the PPVT-IV and at-risk on the PALSK. Twenty-seven percent of Kent County students enter kindergarten with less than age-appropriate oral language and/or early-literacy skills. This converts to almost 2,600 students.



Children Appropriately Immunized

The percent of children age 19-35 months who have received a series of age-appropriate immunizations. These immunizations reduce the risk of disease and help prevent outbreaks. Children that are fully immunized often indicate appropriate parental engagement with their children.

Kent County's immunization rate for young children (19 to 35 months old is a commonly reported age group) for 2010 is higher than the rate for Michigan as a whole (65.6 percent versus 62.5 percent). This was the case for all of the past five years except 2009.

Substantiated Victims of Abuse and/or Neglect (age 0-5)

The rate of substantiated cases of abuse or neglect for children ages 0-5. Child abuse and neglect data typically fall into one of two broad categories: 1) the rate of child abuse and neglect reports and 2) the rate of substantiated child abuse and neglect cases. This distinction is very important because in most cases, reports of child abuse and neglect do not end up becoming substantiated by Child Protective Services. The rate of substantiated cases is generally a more accurate measure of the prevalence of abuse and neglect because it reflects cases that are verified. Children who experience abuse or neglect in their early years are more likely to be absent from school, have lower educational aspirations, and experience anxiety, depression, and other psychological issues in adolescence.

The Kent County rate is consistently higher than that for the state as a whole. In some recent years the gap has been small, in others it has been large. At both the state and county levels, the rate of substantiated cases of child abuse and/or neglect for young children (0-5 years old) is consistently higher than the overall rate for children (0 to 17 years old). Although Kent County appears to have higher rates of abuse and neglect compared to the statewide averages, this may be, in part, a function of increased awareness—as the public becomes more aware of child abuse and neglect and how to report it the reported rate may increase as less instances go unreported.

Hospitalization Rate for Ambulatory Care Sensitive Conditions

The rate of children ages 0-5 hospitalized for identified ambulatory care sensitive conditions (ACS). ACS conditions often are used as a proxy for access to preventive care. Researchers argue that certain conditions, like asthma, are ambulatory care sensitive — that is hospitalization is largely preventable by timely and appropriate primary and preventive health care. Thus, high rates of hospitalization and emergency department utilization for these conditions are an indicator of a need for better or more appropriate primary care

Kent County's ACS hospitalization rate for children 0 to 5 years old declined over the past two years after increasing from 2006 to 2007. The current rate is considerably lower than the rate for Michigan as a whole. We are seeking access to hospital discharge data from the Michigan Hospital Association to determine the extent to which ACS conditions are present among various subgroups and geographic areas within Kent County. This analysis will give us a more complete understanding of where children in the county are facing access barriers to primary care services.

Elevated Blood Lead Level

Percent of tested children 0-72 months with confirmed elevated blood lead level (≥ 10 □g/dL, micrograms per deciliter). Children who are identified by risk factors related to where they live are targeted for blood lead testing. According to the Centers for Disease Control and Prevention consequences of lead exposure can include: nervous system and kidney damage; poor muscle coordination; learning disabilities; attention deficit disorder; and speech, language and behavior problems.

The percent of tested children with elevated blood lead levels in Kent County has consistently decreased over the last five years (from 2.4 percent in 2006 to 0.7 percent in 2010). This decline has been mirrored, though less dramatically, in the state as a whole (from 1.6 percent in 2006 to 0.8 percent in 2010). The decline has been even more pronounced in the City of Grand Rapids. The city's rate of tested children with elevated blood lead levels declined from 4.1 percent in 2006 to 1.3 percent in 2010. The city's rate is still almost double the rate for the county and for Michigan as a whole. In 2010, 10,735 children 0-72 months in Kent County were tested for blood lead. Just under half of those tested (4,959) lived in the City of Grand Rapids.

Indicators Being Developed

Recommended indicators for which CRI is working to access data

(Data are collected for these indicators. CRI is working to access and analyze the data. Once complete, analysis of these indicators will be added to the baseline report).

- Medical home (proxy is % of children of Medicaid who have received all age-appropriate medical checkups)
- Dental home (proxy is % of children of Medicaid who have received all age-appropriate dental checkups)
- Identification of special needs (we are working to determine the most appropriate indicator to measure early identification and intervention for children who qualify for special education services)

Recommended indicators for which data are not currently available

- Children read to daily
- Housing & transportation index
- Body mass index

Introduction

This report provides the results of baseline analysis for several Kent County early childhood indicators. These indicators were chosen as part of a process beginning in May 2010 to develop measures important to improving the lives of young children in our community. Four workgroups of community members came together to develop indicators around four broad categories: physical and behavioral health, early care and education, parent education, and family support. Assisted by the Community Research Institute (CRI), these workgroups presented their recommendations to Kent County's Great Start Collaborative (GSC) in August. First Steps and the GSC then prioritized the recommended indicators in the fall of 2010 and commissioned CRI to begin developing these baseline indicators.

The results included in this report establish baseline values for Kent County with respect to the early childhood indicators. When possible, comparisons are made to state averages and in some cases, areas within Kent County, such as the City of Grand Rapids. In addition, we present detailed analyses of four early childhood indicators at the census tract level to shed greater light on the demographic trends and perceived needs at a much more localized and focused level. The detailed analysis is intended to provide the reader with greater insight to the possibilities and level of understanding that may be achieved by shifting the focus from a macro view to a community or neighborhood view. CRI is fully committed to expanding the number of indicators for which we can perform this more granular geographic analysis as we access more detailed data through partnerships with state and local agencies. Unfortunately, we are unable to report baseline data for all indicators at this time. We do, however, present the definition, rationale, analysis (when appropriate) and data sources for each indicator.

The following general points helped guide our community's development of these early childhood indicators from inception through this initial analysis. They are important to restate as the community moves from conceptual stage through the actual tracking and analysis of data.

- You can't manage what you can't measure. This is an old management adage that is accurate today. Although there are a number of ways to develop community indicators, our desire has been to provide a core set of working indicators to assist local providers in managing their early childhood services. While these indicators will almost certainly be amended over time, they should be viewed as a foundation from which to build upon.
- Put the *community* in community indicators. Vulnerable children and their families often live within local communities that are the explicit targets of change from community initiatives. Comparing the status of citizens across community areas can reveal inequalities that suggest levels of need and indicate where limited resources should be targeted.

- Geography matters. Community and geography go hand in hand. Because definitions of "community" typically have some geographic boundaries, data used for community indicators must be suitable for assignment to geographic units. In the best possible scenario, administrative agency data should be obtained with the street address intact.
- Secondary data analysis does not mean second-rate indicators. The Kent County early childhood indicators lean heavily on indicators that have existing sources of data. These data sources offer a potential wealth of information that can ensure consistency and allow for comparability at the local, county, state and national level without the expense or added burdens of gathering new sources of information.
- "Not everything that counts can be counted, and not everything that can be counted counts" (Albert Einstein). This quote underscores the nature of providing important services to children and their families. Many services provided to children are difficult to count (i.e. develop indicators for) and many of the things we can count may not be the most important for improving the lives of the children.

Organization of the Report

The report consists of four sections that detail the efforts and results of developing the initial set of indicators:

- **Section I** details state, county and some local trends in terms of developing baseline measures for several key indicators. For each indicator, a baseline measure is developed for Kent County and the City of Grand Rapids when possible. Within this chapter, detail is provided on how each indicator is measured, its rationale, initial analysis and its data source.
- **Section II** provides analysis of four indicators in detail. Each of the four indicators represents one of the strategic areas of Kent County's Early Childhood Vision: Physical and Behavioral Health, Early Care and Education, Parent Education, and Family Support. In this section we analyze current trends among small geographic areas and various subgroups of the population within Kent County to identify areas with unmet needs.
- **Section III** provides an analysis of the child care affordability indicator. This analysis includes estimates of childcare affordability within Kent County at the census tract level.

Indicator Development

The indicators and maps produced for this report were calculated and developed based on the availability of data. In many instances, the raw data were not available at the time of publication. For example, many of the indicators developed in Section I of the report were made available only at an aggregate level, such as the county. In this case, aggregation implies that the data typically reflect the mean or average of the variable of interest. The results reported within this document reflect the most current year or years of data that were available.

The early childhood indicators work undertaken here continues to be an iterative process as we move forward to gather, analyze and establish baseline measures. While confident in the value of these data, we recognize the limitations of these efforts. For instance, the work groups recommended several other indicators for which data are not available or accessible currently. *(Please see indicators listed below).* The initial indicators in this report provide a basis that can spur the development of more precise indicators as we move forward. But more importantly, this first analysis has unleashed a process whereby community priorities will be narrowed by identifying the intersection of local needs and community assets, leading to more appropriate investments in our community's children.

<u>Recommended indicators for which CRI is working to access data</u>
(Data are collected for these indicators. CRI is working to access and analyze the data. Once complete, analysis of these indicators will be added to the baseline report).

- Medical home (proxy is % of children of Medicaid who have received all age-appropriate medical checkups)
- Dental home (proxy is % of children of Medicaid who have received all age-appropriate dental checkups)
- Identification of special needs (we are working to determine the most appropriate indicator to measure early identification and intervention for children who qualify for special education services)

<u>Recommended indicators for which data are not currently available</u>

- Children read to daily
- Housing & transportation index
- Body mass index

Section I - Summary of Baseline Indicators at the County Level

The following section details the results of indicators developed primarily for Kent County. These initial calculations were developed to permit quick comparisons of key indicators against Michigan statewide averages when possible. In some instances, data were available that permitted comparisons within Kent County, although they were typically reserved only for the City of Grand Rapids.

Maternal and Child Health Index

DEFINITION*:* A composite of three items derived from vital records (records of life events kept under governmental authority, including birth certificates, marriage licenses, and death certificates). The Maternal and Child Health Index is calculated by summing the following items and then rescaling those values into an overall index:

- The percentage of births delivered at full-term (greater than 38 weeks of gestation, but less than 43);
- The percentage of births where prenatal care began within the first trimester; and
- The percentage of births resulting in a satisfactory birth weight (greater than 2,500 grams).

Only singleton births were used in the calculation of the Maternal and Child Health Index because multiple births are more likely to be born at less than full-term and with low birth weight. Restricting the analysis to singleton births avoids potential bias that may be introduced into the calculation from births more inclined to poor outcomes.

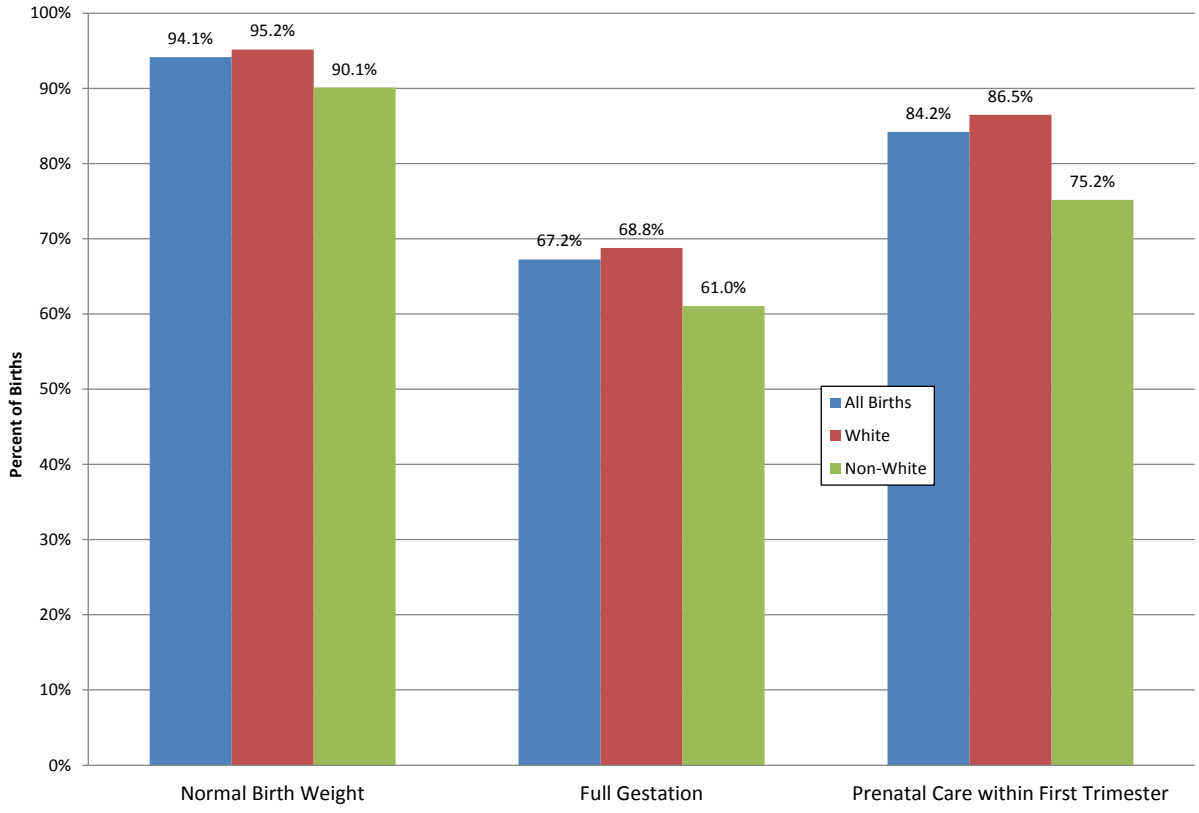
RATIONALE: The three components of this index are important indicators of early childhood well-being. Children delivered pre-term are more likely to have significant behavioral problems in early adolescence (Gray, Indurkhya, & McCormick, 2004) and suffer from higher rates of morbidity and mortality (The Consortium on Safe Labor, 2010). Children born with low birth weight are also more likely to have poor educational outcomes (Hack et al., 2002) and are also likely to suffer from higher rates of morbidity and mortality. Early onset of prenatal care is universally associated with better birthing outcomes and the relationship between low birth weight and pre-term birth is also well documented (Herbst, Mercer, Beazley, Meyer, & Carr, 2003).

ANALYSIS: The Maternal and Child Health Index was developed by the Baltimore Neighborhood Indicators Alliance-Jacob France Institute at the University of Baltimore. Because it is not widely used throughout the U.S., there are no comparable index scores. The individual components, however, are widely reported at the national and state level. When compared to national measures, Kent County fares better in the area of the percentage of births delivered at normal birth weight. Nationally, slightly more than 90 percent of all births were at normal birth weight compared to 94 percent in Kent County. The percentage of women who accessed prenatal care services within the first trimester is also higher in Kent County than among national averages.

About 81 percent of women accessed prenatal care within the first trimester nationally as compared to 84 percent of those in Kent County. When examining white and non-white births in Kent County, non-white infants fare worse on all three measures than their white peers. This trend is also representative of all three measures nationally.

The breakdown of the infant's ethnicity for the Maternal and Child Health Index was not analyzed beyond the variable for race, white and non-white infants. This was due to the fact that there was no variable for ethnicity in the Michigan vital records database. It is possible, however, to compute the ethnicity of the infant which will be analyzed in future analysis. In addition, we calculated the Maternal and Child Health Index for the years 2003 – 2006 to assist with the detailed analysis of the Maternal and Child Health Index in Section III of this report. By aggregating several years of data, we are able to develop stable rates for smaller geographic areas and subpopulations.

Figure 1: Individual Measures of the Maternal and Child Health Index for Kent County: 2003 – 2006*



*For more detailed analysis, see *Detailed Maternal and Child Health Index* starting on page 44.

DATA SOURCE: Michigan Vital Records, Michigan Department of Community Health.

Postpartum Depression

DEFINITION*:* Percent of women enrolled in the Maternal Infant Health Program (MIHP) scoring greater than 13 (indicating moderate to severe depression) on the Edinburgh Postnatal Depression Scale (EPDS). The EPDS was developed for screening postpartum women in outpatient, home visiting settings, or at the 6 –8 week postpartum examination. It is widely utilized among numerous populations including U.S. women and Spanish speaking women in other countries. The EPDS consists of 10 questions and the test can usually be completed in less than 5 minutes. The EPDS is, however, only a screening tool and does not diagnose depression (Cox, Holden, & Sagovsky, 1987).

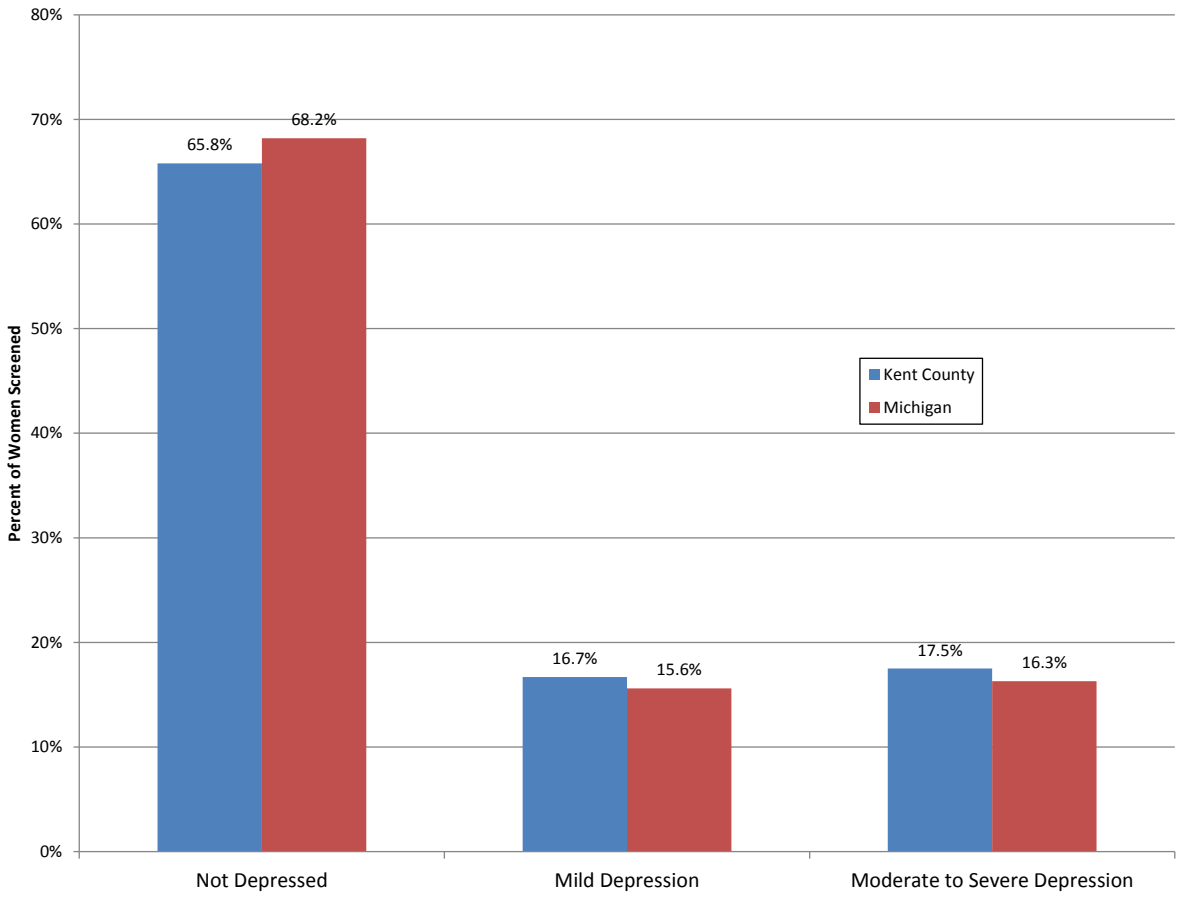
RATIONALE: Some new mothers experience a severe, long-lasting form of depression known as postpartum depression. Rarely, an extreme form of postpartum depression known as postpartum psychosis develops after childbirth. Research has shown that a mother's depression in the first few months after birth is linked to the child's behavioral development (Henshaw, Foreman, & Cox, 2004; Moehler et al., 2007).

The data presented in this report come from the Michigan Families Medicaid Project. The data reflect Medicaid-eligible women who were screened upon enrollment in the Maternal Infant Health Program (MIHP). The data cover 2008 through 2010, representing almost 3,000 women in Kent County.

ANALYSIS: Kent County's rate of depression for screened Medicaid-eligible pregnant women is slightly higher than the rate for Michigan as a whole for both mild and moderate to severe depression. Just over a third of women screened in Kent County indicated some type of depression (33.8 percent when combining mild and moderate-severe categories) versus just under a third for Michigan (31.9 percent when combining mild and moderate-severe categories).

The analysis was restricted to Medicaid-eligible women because of data availability. There are no consistently collected data available among women screened for postpartum depression with private health insurance. To gain a potentially fuller understanding of the level of postpartum depression within the county, we plan to examine hospital discharge data from the Michigan Hospital Association in the near future to determine the extent to which all new mothers are diagnosed with postpartum depression at the time of birth.

Figure 2: Depression Rate for Screened Medicaid-Covered Pregnant Women: 2008 - 2010



DATA SOURCE: MDCH Data Warehouse through the Michigan State University, College of Human Medicine, Department of Obstetrics, Gynecology and Reproductive Medicine and Institute for Health Care Studies.

Hospitalization Rate for Ambulatory Care Sensitive Conditions

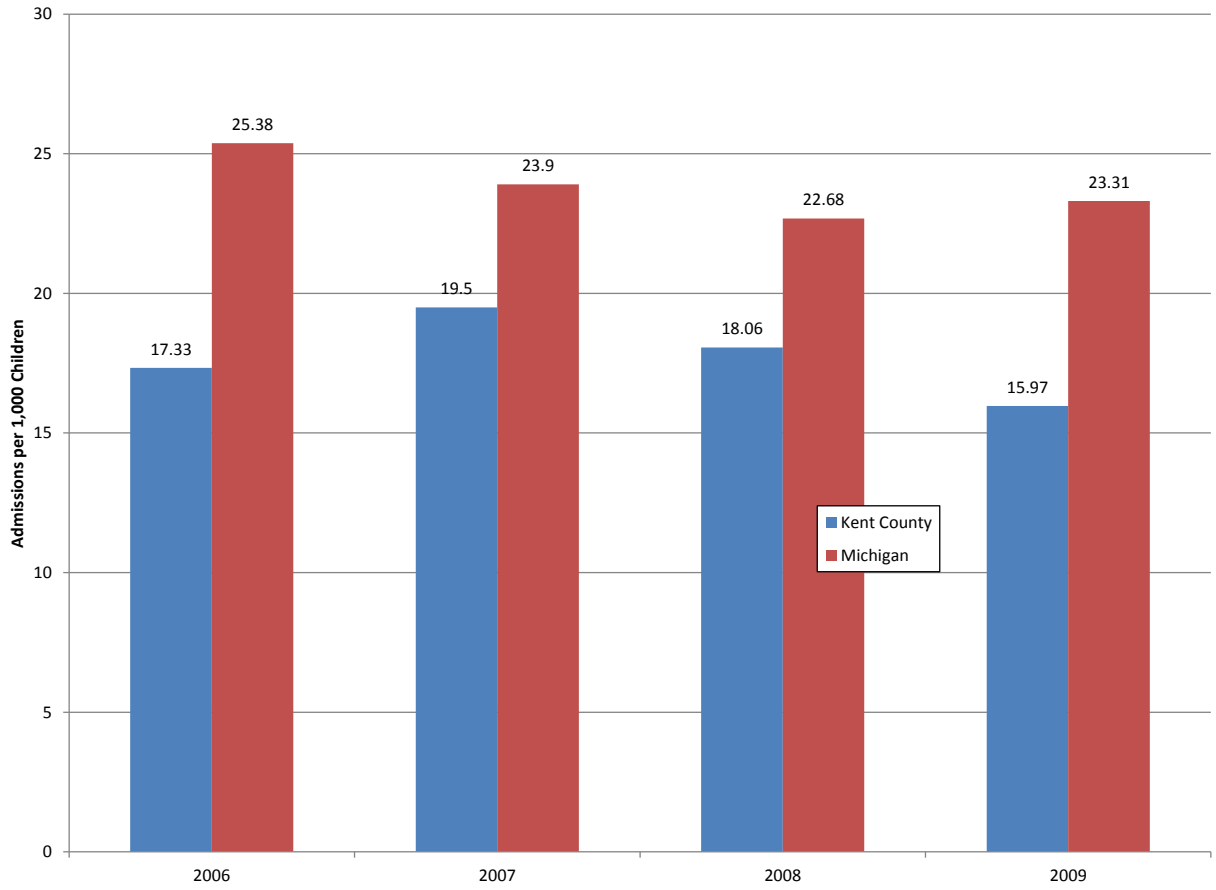
DEFINITION*:* Rate of children ages 0-5, per 1,000 children that were hospitalized for identified ambulatory care sensitive conditions (ACS) based on residency of the child. For example, Kent County is home to several large hospital systems, such St. Mary's Health Care and Spectrum Health that attract patients from virtually all parts of West Michigan. ACS admissions are calculated on the child's county of residence, not the county in which the child was admitted.

RATIONALE: Ambulatory care sensitive (ACS) conditions are often used as a proxy for access to preventive care. Researchers argue that certain conditions, like asthma, are ambulatory care sensitive—that is hospitalization is largely preventable by timely and appropriate primary and preventive health care. Thus, high rates of hospitalization and emergency department utilization for these conditions are an indicator of a need for better or more appropriate primary care (Ricketts, 1997). Examining ACS rates have gained wide acceptance as indicators for policy actions in a number of states. In Nebraska, ACS conditions were used to assess overall system adequacy (Nebraska Health Informaiton Project, 1996). In New York, these same measures were used to evaluate health professional recruitment and retention (Schreiber & Zielinski, 1997). To evaluate overall healthcare system performance, the states of Utah (Silver, Babitz, & Magill, 1997), Virginia (Shukla & Pestian, 1996) and West Virginia (Cockley, 1996) have all used such measures. In North Carolina, researchers used ACS measures and GIS to evaluate problems in local primary care systems, finding that access to effective primary care was reflected in lower rates of ACS admissions, even after accounting for the health care resources in a particular area (Ricketts, Randolph, Howard, Pathman, & Carey, 2001).

ANALYSIS: Kent County's ACS hospitalization rate for children 0 to 5 years old declined over the past two years after increasing from 2006 to 2007. The current rate, 158.7 ACS hospitalizations per 1,000 children 0 to 5 years old, is considerably lower than the rate for Michigan as a whole of 233.1 per 1,000 children. Michigan's ACS hospitalization rate decreased from 2006 through 2008 yet experienced a slight uptick in 2009.

We plan to examine hospital discharge data from the Michigan Hospital Association in the near future to determine the extent to which ACS conditions are present among various subgroups and geographic areas within Kent County. This analysis will give us a more complete understanding of where children in the county are facing access barriers to primary care services.

Figure 3: Hospitalization Rate for Ambulatory Care Sensitive Conditions for Children Ages 0 to 5 per 1,000: 2006 - 2009



DATA SOURCE: Michigan Department of Community Health; Kent County Population Estimates, U.S. Department of Commerce, Bureau of the Census.

At-Risk Children Enrolled in Publicly-Funded Preschool

DEFINITION*:* Estimating the number of at-risk 4-year-old children involves two separate calculations. The numerator for the calculation is the number of at-risk children enrolled in publicly-funded preschool and is the basis for the estimate of the number of at-risk children whose needs are met. This is defined as the sum of four-year-old children enrolled in Head Start and the Great Start Readiness Program during the current year. The denominator for the calculation is the number of first grade children receiving for free or reduced (cost) lunches (FRL) at school. The total number of children in first grade receiving FRL is a proxy for total need.

RATIONALE: Preschool and early intervention programs have been shown to have a number of positive effects on children from low-income families (Karoly, Kilburn, & Cannon, 2005). Not all low-income children, however, are enrolled in preschool. This measure estimates the percentage of four-year old children from low-income families who are enrolled in preschool. Gaps between the number of potentially eligible children—as measured by FRL eligibility in first grade—and the number of children actually served by these programs signify unmet needs within the community. FRL is an appropriate proxy to estimate the overall need among children of their cohort because the eligibility guidelines for FRL and Head Start and the Great Start Readiness Program are similar.

ANALYSIS: We estimate that the total number of 4-year-old children in need in Kent County is 3,833 based on the number of children eligible for FRL. Currently, about 2,813 or almost three-quarters (73.4 percent) of at-risk four-year old children in Kent County are enrolled in either the Great Start Readiness Program (1,656) or Head Start (1,157). Based on these estimates, there are gaps in the number of children potentially eligible for one of the two preschool programs and the ability to meet those needs. We estimate that greater than a quarter or 1,020 of at-risk 4-year-old children in Kent County have unmet needs. It should be noted that this is a conservative estimate as it is based solely on economic risk and does not account for other risk factors, such as primary language other than English or low educational attainment of parents.

Figure 4: Estimated Number of Economically At-Risk 4-year-olds Compared to Public Preschool Spaces Available: 2011*†

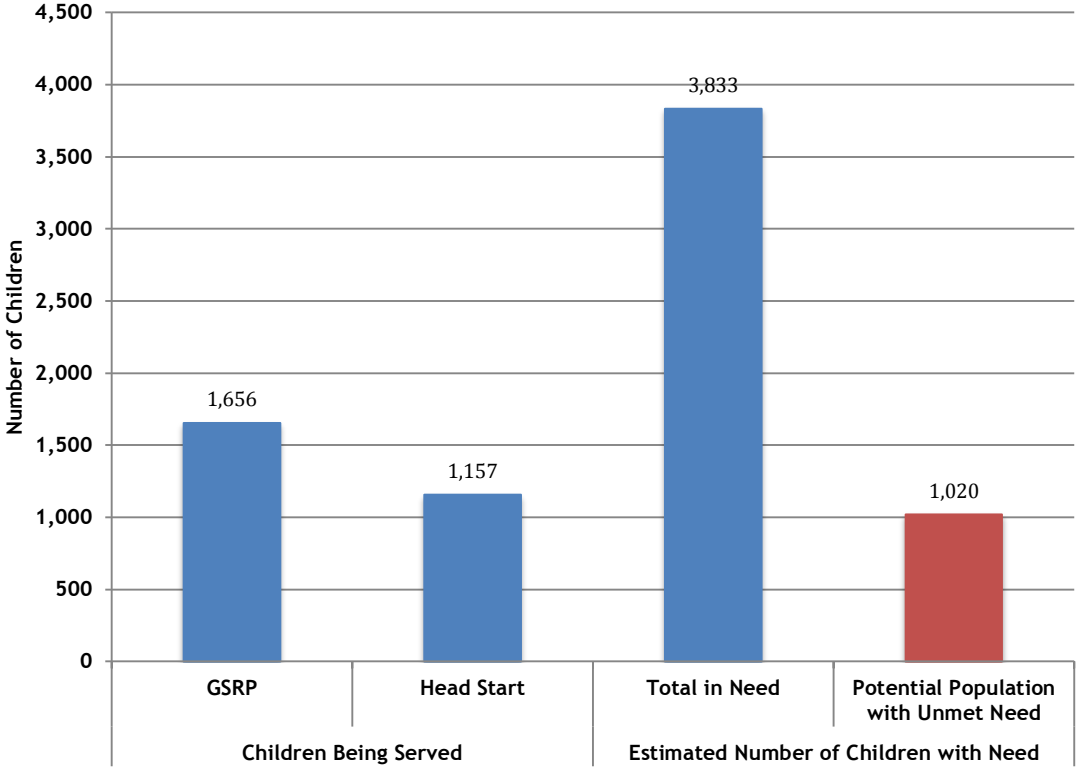


*Figure reflects *economically* at-risk children only (does not reflect special education status, limited English proficiency, severe or challenging behavior, or other risk factors).
†For more detailed analysis, see *Family Service Needs Index* on page 64.

DATA SOURCE: Head Start; Great Start Readiness Program; Kent County ISD.

Parent Education Index

DEFINITION*:* A composite of four items derived from vital records (records of life events kept under governmental authority, including birth certificates, marriage licenses, and death certificates). The Parent Education Index is calculated by summing the following items and then rescaling those values into an overall index:

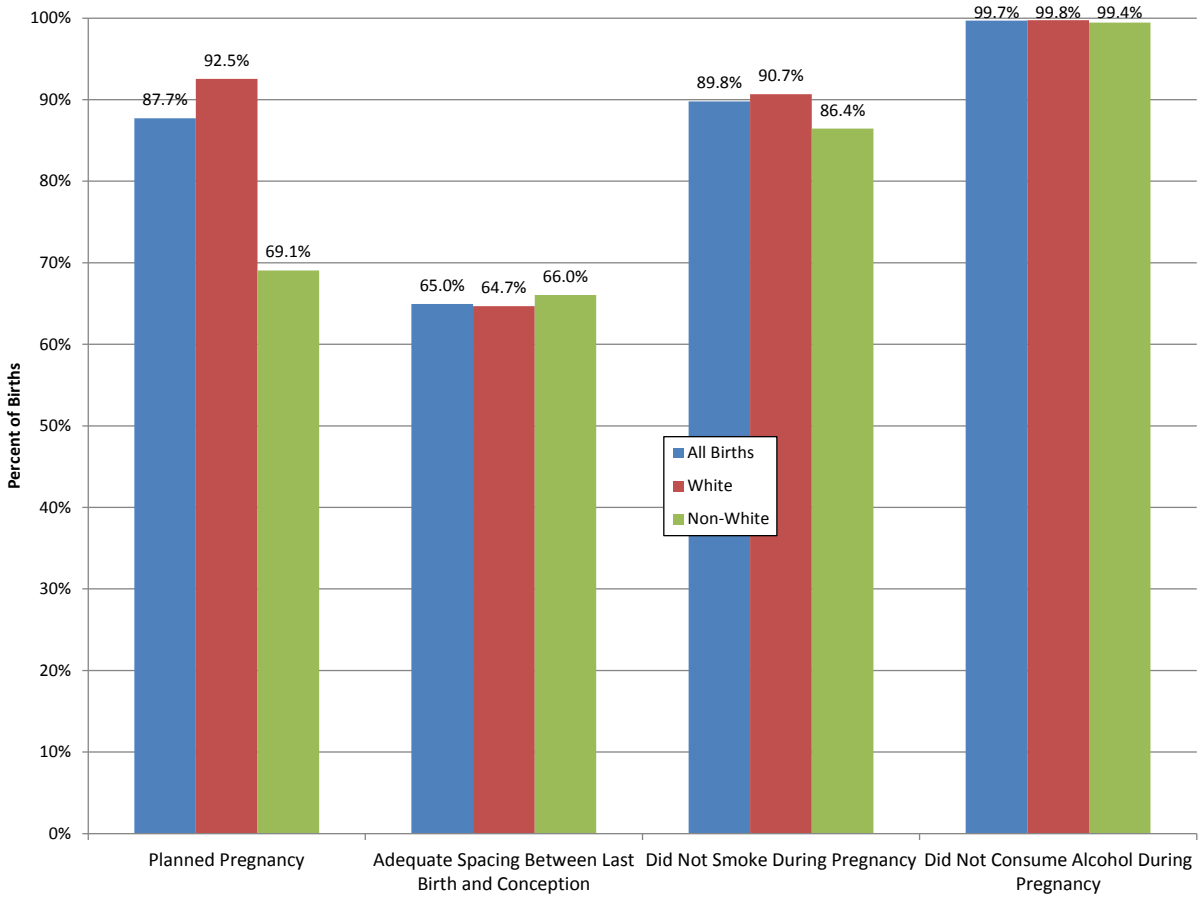
- The percentage of births where the mother did not smoke during pregnancy;
- The percentage of births where the mother did not consume alcohol during pregnancy;
- The percentage of births where the mother conceived a subsequent pregnancy 18 or more months after a previous birth; and
- The percentage of births where there are data about the father (used as a proxy for planned pregnancy).

Only births where the mother had a previous birth were used in the calculation of the Parent Education Index.

RATIONALE: Smoking and alcohol consumption during pregnancy are known risks to children's health (Aliyu et al., 2009). Babies born to women who conceive very soon after having a child are at greater risk for potentially serious delivery-related complications, including premature birth and low birth weight (Conde-Agudelo, Rosas-Bermúdez, & Kafury-Goeta, 2006). Babies born to mothers with low educational attainment, such as those without a high school diploma, are more likely to receive inadequate prenatal care and have adverse outcomes (Liu, Liu, Ye, & Li, 2006). Lack of information about the father on the birth certificate can signal an unplanned pregnancy. Currently, nearly 20% of all birth certificates contain no information about the father. Research suggests that this omission is most prevalent among births to women who were never married. Among births where information about the father was omitted, these births were also frequently associated with infants born to teenage mothers. When paternity could be established through a survey, the father was often three or more years older than the mother. Among all teenage mothers, 20% of the fathers were six or more years older than the mother with the greatest age differential among mothers that were not high school graduates (Landry & Forrest, 1995). Each component is potentially useful in measuring education among women bearing children in the community.

ANALYSIS: The individual Parent Education Index components are displayed in Figure 5. Other than surveys and personal interviews, there are few widely available measures of unplanned pregnancy. Birth certificates where there was no information about the father is used as a crude proxy for unintended pregnancy. This information was more than three times more likely to be missing among non-white children as compared to white children in Kent County. In terms of the percentage of women that did not smoke during pregnancy, the overall rate for those residing in Kent County was equal to the national average of about 90 percent. Mothers of non-white infants reported slightly lower rates of those that did not smoke during pregnancy at 86.4 percent versus 90.7 percent of mothers to white infants.

Figure 5: Individual Measures of the Parent Education Index for Kent County: 2003 – 2006*



*For more detailed analysis, see *Parent Education Index* starting on page 50.

DATA SOURCE: Michigan Vital Records, Michigan Department of Community Health

Children Appropriately Immunized

DEFINITION*:* Percent of children age 19-35 months who have received age-appropriate immunizations for the following:

- 4 doses of DTaP - Diphtheria and tetanus toxoids and acellular pertussis vaccine;
- 3 doses of Polio - Inactivated poliovirus vaccine (IPV);
- 1 dose of MMR – Measles, mumps and rubella vaccine;
- 3 doses of Hib - Haemophilus influenza type b conjugate vaccine; and
- 3 doses of HepB – Hepatitis B vaccine.

There are several methods to estimate the percentage of children that are age-appropriately immunized. Researchers often sample school immunization records or base estimates from the Centers for Disease Control and Prevention National Immunization Survey. We, however, envision building an algorithm to examine immunization data retrospectively to develop immunization rates. The figure below provides the full recommended immunization schedule for children ages 0 through 6 years old for 2011. By using the immunization schedule; we can develop appropriate algorithms to estimate immunization rates.

Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2011

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼ Age ►	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B[1]	HepB	HepB			HepB						
Rotavirus[2]			RV	RV	RV[2]						
Diphtheria, Tetanus, Pertussis[3]			DTaP	DTaP	DTaP	see footnote[3]	DTaP				DTaP
Haemophilus influenzae type b[4]			Hib	Hib	Hib[4]	Hib					
Pneumococcal[5]			PCV	PCV	PCV	PCV				PPSV	
Inactivated Poliovirus[6]			IPV	IPV	IPV						IPV
Influenza[7]					Influenza (Yearly)						
Measles, Mumps, Rubella[8]						MMR		see footnote[8]			MMR
Varicella[9]						Varicella		see footnote[9]			Varicella
Hepatitis A[10]						HepA (2 doses)				HepA Series	
Meningococcal[11]										MCV4	

Range of recommended ages for all children

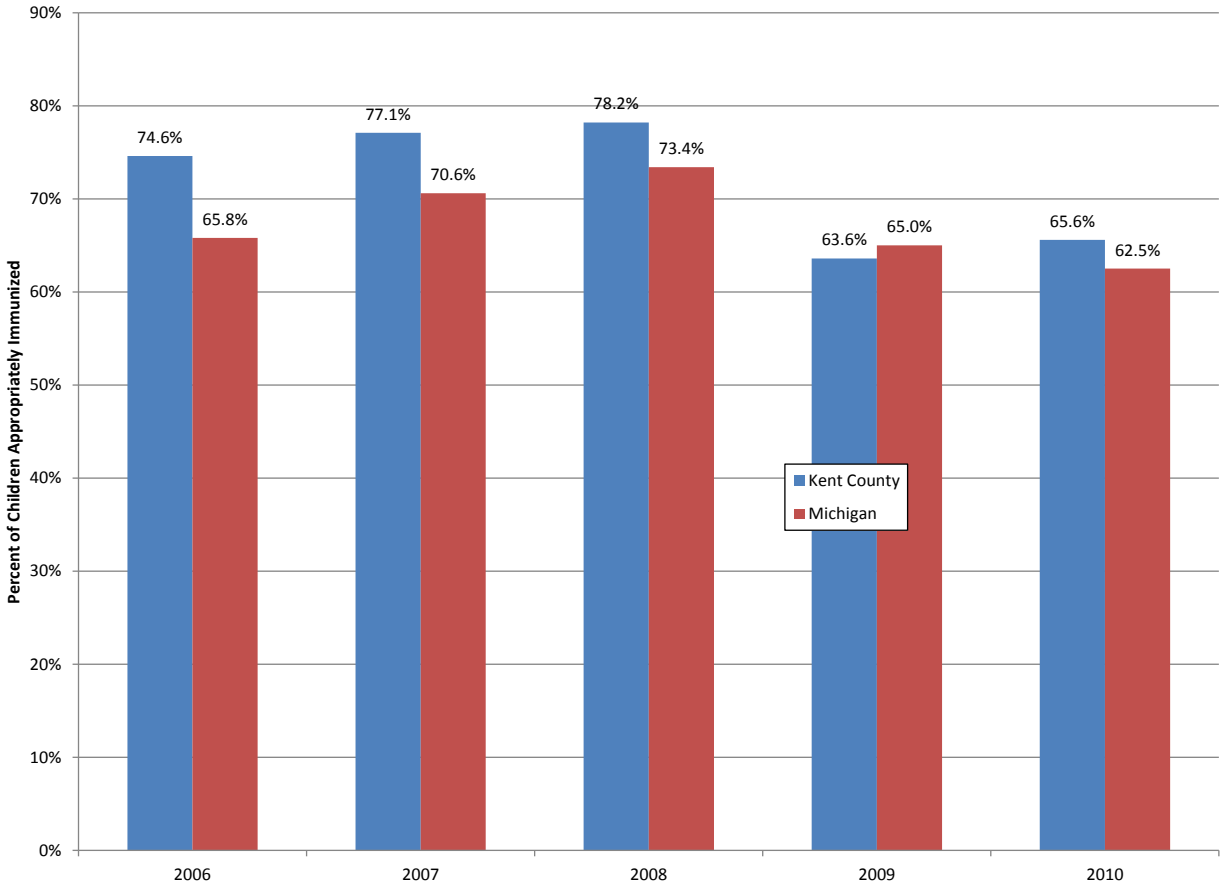
Range of recommended ages for certain high-risk groups

Source: American Academy of Pediatrics

RATIONALE: Immunizations reduce the risk of disease and help prevent outbreaks. Parents receive information about the benefits of immunizations and the recommended schedule of vaccinations from the child's medical home and in parent education and family support programs. Children that are fully immunized often indicate appropriate parental engagement with their children. Among children that were not fully immunized, they tended to be African-American and had a younger, often-unmarried mother who had less education than fully immunized children. In addition, under-immunized children were more likely to live in a household below the poverty level, with more children, and had moved across state lines (Smith, Chu, & Barker, 2004).

ANALYSIS: Kent County's immunization rate for young children (19 to 35 months old is a commonly reported age group) declined markedly from 2008 to 2009 (78.2 percent to 63.6 percent) before increasing slightly in 2010 to 65.6 percent. Kent County's rate for 2010 is higher than the rate for Michigan as a whole (65.6 percent versus 62.5 percent). This was the case for all of the past five years except 2009 when Kent County experienced a steep drop.

Figure 6: Percent of Appropriately Immunized Children, 19 to 35 Months: 2006 – 2010



DATA SOURCE: Michigan Care Improvement Registry, Michigan Department of Community Health

Substantiated Victims of Abuse and/or Neglect (age 0-5)

DEFINITION*:* Rate of substantiated cases of abuse or neglect for children ages 0-5 per 1,000 children. Child abuse and neglect data typically fall into one of two broad categories: 1) the rate of child abuse and neglect reports and 2) the rate of substantiated child abuse and neglect cases. This distinction is very important because in most cases, reports of child abuse and neglect do not end up becoming substantiated by Child Protective Services after investigation. The rate of substantiated cases is generally a more accurate measure of the prevalence of abuse and neglect because it reflects cases that are verified.

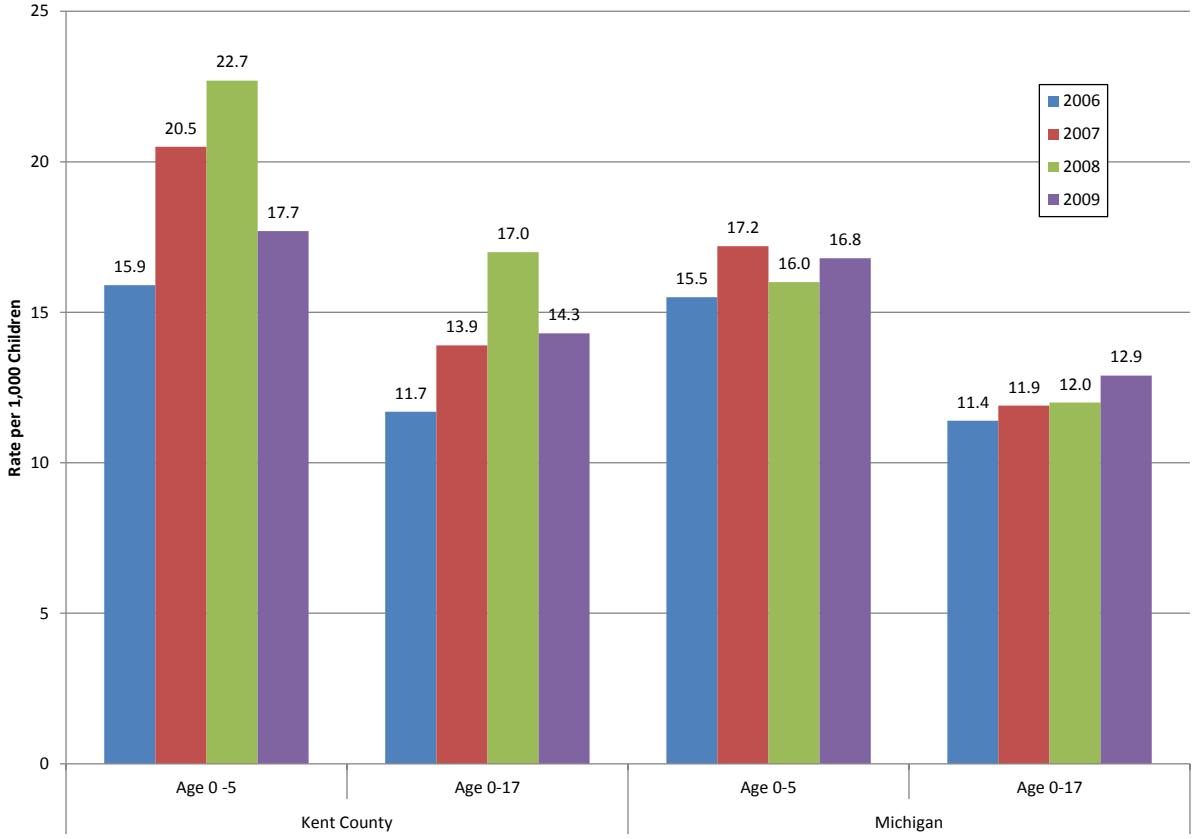
RATIONALE: Children who experience abuse or neglect in their early years are more likely to be absent from school, have lower educational aspirations, and experience anxiety, depression, and other psychological issues in adolescence (Lansford et al., 2002). Further, studies have shown that children that experience abuse or neglect were

- 53 percent more likely to be arrested as juveniles;
- 38 percent more likely to be arrested as adults;
- 38 percent more likely to be arrested for committing a violent crime.

The numbers for females alone are even more graphic: abused or neglected females were 77 percent more likely to be arrested (Briscoe, 1994).

ANALYSIS: The rate of substantiated cases of child abuse and/or neglect for young children in Kent County has gyrated for several years. In 2008, the rate peaked at 22.7 cases per 1,000 children then declined to 17.7 cases per 1,000 children in 2009. The Kent County rate is consistently higher than that for the state as a whole. The years 2006 and 2009 show slight differences between the county and state rates while 2007 and 2008 show a larger gap, driven by an increase in the rate for Kent County. It also is worthy to note that the rate of substantiated cases of child abuse and/or neglect for young children (0-5 years old) is consistently higher than the overall rate for children (0 to 17 years old). Although Kent County appears to have higher rates of abuse and neglect than the state as a whole, that is not necessarily an indication that a higher percentage of children in Kent County are maltreated. Many experts contend that abuse and neglect rates often increase as communities intensify their focus on reporting and identifying case of maltreatment. However, these rates also are influenced by economic factors such as increased family stressors related to poverty and unemployment

Figure 7: Rate of Substantiated Cases of Child Abuse and Neglect by Age Group per 1,000: 2006 - 2009



DATA SOURCE: Michigan Department of Human Services

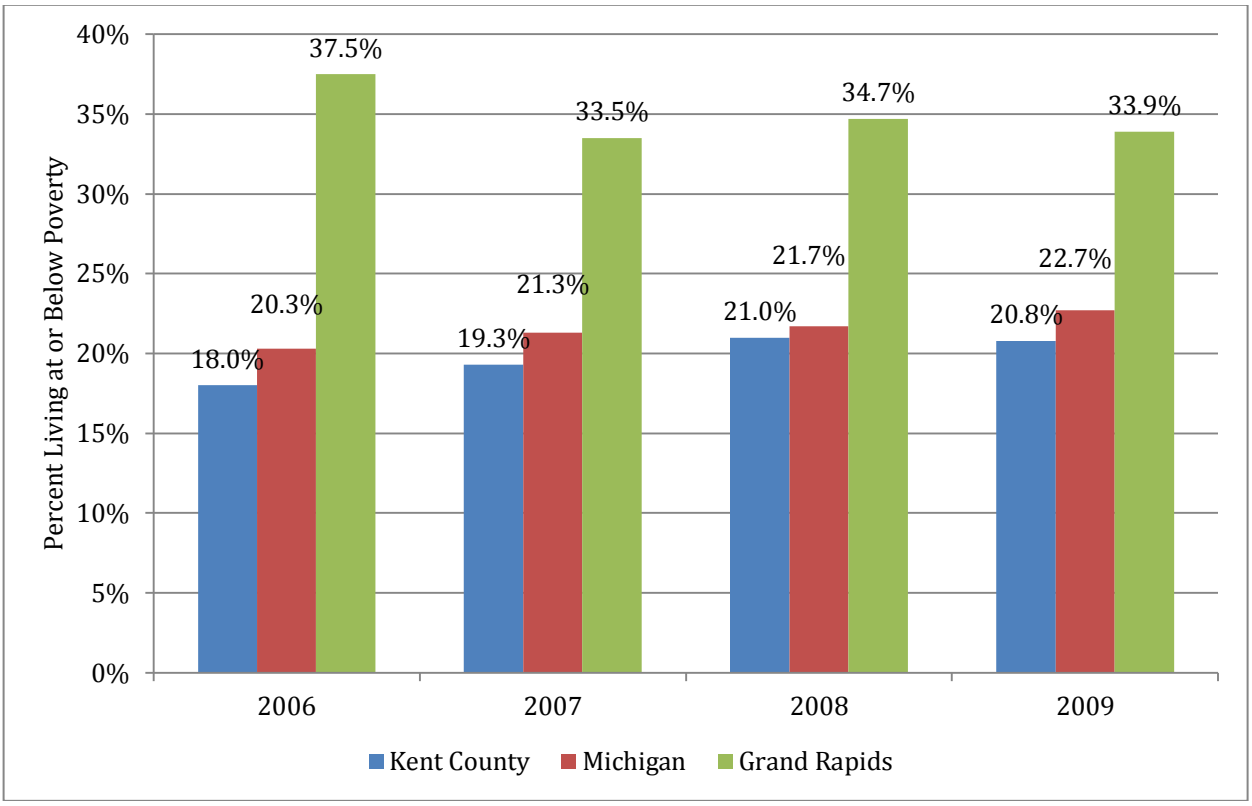
Children Living in Poverty (ages 0-5)

DEFINITION*:* Percent of children age 0-5 in families living in poverty during the previous year. Poverty thresholds were originally developed in 1963-1964 by the Social Security Administration. These thresholds were based on the dollar costs of the U.S. Department of Agriculture's (USDA) economy food plan for families of three or more persons. The 1964 USDA economy food plan is defined as a nutritionally adequate meal plan on a short-term basis. The threshold is multiplied by a factor of three to account for the average dollar value of all food used during a week (both at home and away from home) accounting for about one third of their total money income after taxes. The fundamental way the US Federal Poverty Level (FPL) is calculated has remained the same since its creation, with annual updates to account for inflation. Thus, the poverty measure created in 1963-64 represents the same purchasing power then as it does today (Assistant Secretary for Planning and Evaluation, 2011b). In 2009, the latest year in which data are available, the U.S. Department of Health and Human Service's threshold for a family of four (i.e. two parents with two children) was $22,050 (this includes pre-tax cash income but not non-cash assistance such as food stamps or housing subsidies). Currently, the 2011 poverty threshold for a family of four is $22,350 (Assistant Secretary for Planning and Evaluation, 2011a).

RATIONALE: Poverty is linked to a number of negative educational, health-related, and emotional outcomes for children. These effects begin before birth and continue into a child's adulthood. Children living in poverty are more likely than children from non-poverty families to develop disease and to experience more severe effects from any disease they may develop. Poverty is also associated with lower levels of school achievement. Children who live in poverty are also much more likely than other children to experience developmental problems (Bradley & Corwyn, 2002).

ANALYSIS: Poverty among 0 to 5 year olds in Kent County has increased over the past few years. Currently, more than one-in-five young children in Kent County live in families below the poverty line. This largely mirrors the trend in the state of Michigan as a whole. The poverty rate did level off from 2008 to 2009 in the county while it continued to increase in Michigan. The state poverty rate for this age group is slightly higher than the rate for Kent County, 22.7 percent to 20.8 percent. The City of Grand Rapids saw poverty among the very young decrease from its high of 37.5 percent in 2006 to 33.9 percent in 2009 among children 0 to 5 years old.

Figure 8: Percent of Children Ages 0 to 5 Living at or Below the Federal Poverty Level: 2006 – 2009*



*For more detailed analysis, see *At-Risk Index* starting on page 56.

DATA SOURCE: American Community Survey, U.S. Department of Commerce, Bureau of the Census.

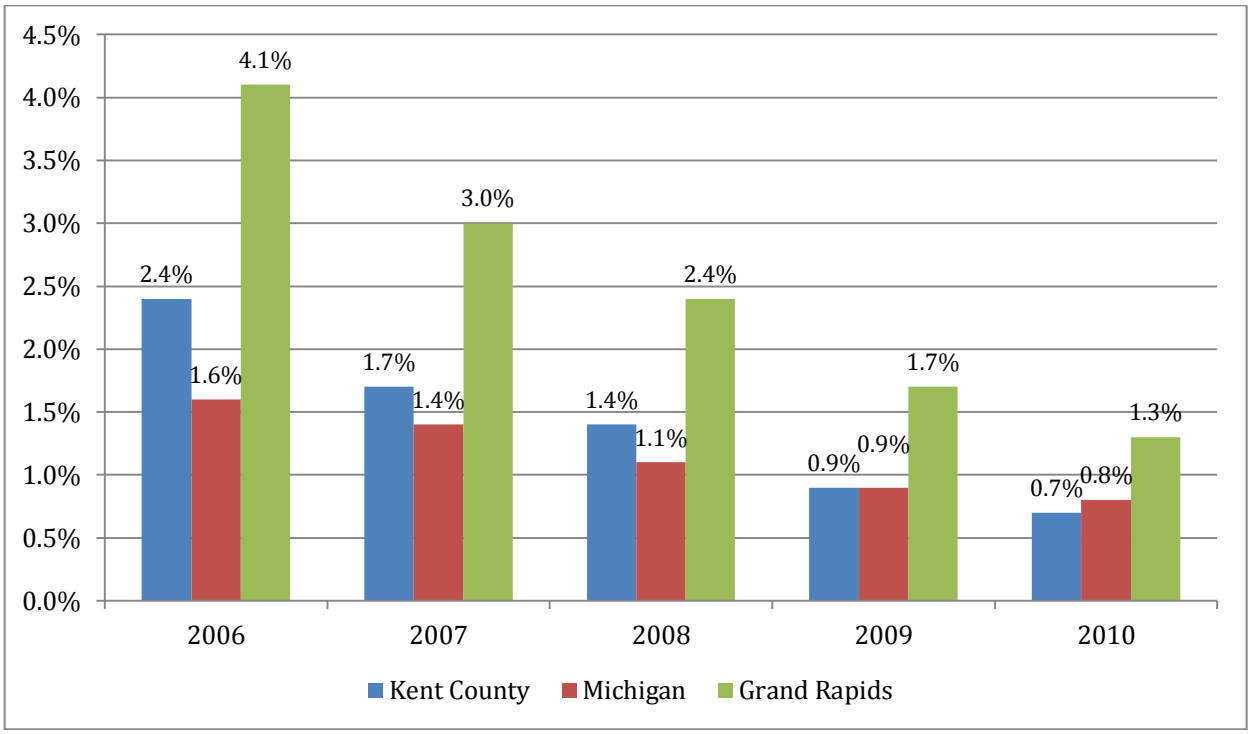
Elevated Blood Lead Level

DEFINITION*:* Percent of tested children 0-72 months with confirmed Elevated Blood Lead Level (≥ 10 μg/dL, micrograms per deciliter).

RATIONALE: Many health-related indictors are related to the environment in which children live. The issue of blood lead levels in children has been addressed in recent years and we have good data that allows communities to plan their interventions and track their progress in dealing with elevated blood lead levels in children. The overwhelming majority of childhood lead poisoning cases in Kent County result from exposure to lead dust, flakes and chips (Greater Grand Rapids Children's Environmental Health Initiative, 2009). This exposure is much more common in older homes. According to the Centers for Disease Control and Prevention (2004), consequences of lead exposure can include: nervous system and kidney damage; poor muscle coordination; learning disabilities; attention deficit disorder; and speech, language and behavior problems (Work Group of the Advisory Committee on Childhood Lead Poisoning Prevention, 2004).

ANALYSIS: The percent of tested children with elevated blood lead levels in Kent County has consistently decreased over the last five years (from 2.4 percent in 2006 to 0.7 percent in 2010). This decline has been mirrored, though less dramatically, in the state as a whole (from 1.6 percent in 2006 to 0.8 percent in 2010). The decline has been even more pronounced in the City of Grand Rapids. The city's rate of tested children with elevated blood lead levels declined from 4.1 percent in 2006 to 1.3 percent in 2010. The city's rate is still almost double the rate for the county and for Michigan as a whole. In 2010, 10,735 children 0-72 months in Kent County were tested for blood lead. Just under half of those tested (4,959) lived in the City of Grand Rapids.

Figure 9: Percent of Children Testing Positive for Elevated Blood Lead Levels: 2006 – 2010



DATA SOURCE: Michigan Department of Community Health

Children Ready for Kindergarten

DEFINITION*:* Percent of children with age-appropriate (or above) oral language skills, as measured by the Peabody Picture Vocabulary Test (PPVT-IV) test, and age-appropriate early literacy skills, as measured by the Phonological Awareness Literacy Screening K (PALSK).

RATIONALE: There is great community-wide interest in assessing children's readiness levels as they begin kindergarten. While there is no broad agreement on how to define and assess readiness, cognitive pre-literacy measures can be used as a proxy for academic readiness. The PPVT-IV measures the receptive vocabulary of children. Vocabulary assessment is strongly related to reading comprehension and correlates highly with general verbal ability. Vocabulary acquisition is an important indicator of a child's linguistic and cognitive development and readiness for formal schooling.

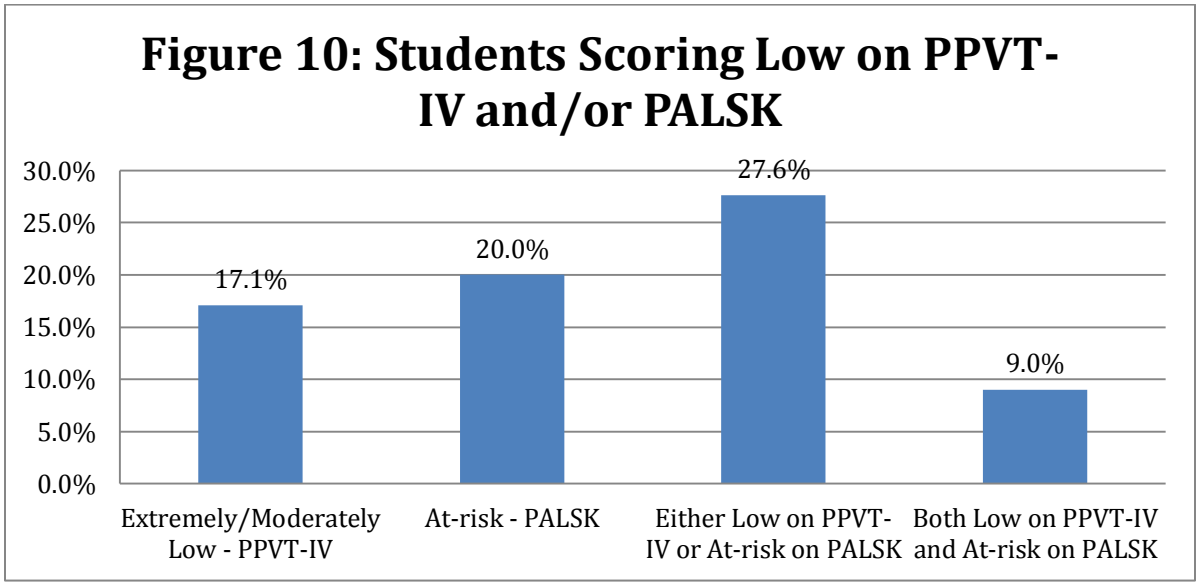
The PALSK consists of screening instruments that measure young children's knowledge of several important literacy fundamentals including: phonological awareness, alphabet knowledge, knowledge of letter sounds, spelling, concept of word, and word recognition in isolation. The purpose is to identify children who have less than age-appropriate skills and may need additional instruction and support to ensure reading success.

In the fall of 2010, a stratified random sample of approximately 600 kindergarteners from 20 participating school districts in Kent County were administered the PPVT-IV and PALSK tests. Together, those assessments provide a snapshot of baseline readiness for children beginning kindergarten.

ANALYSIS: The PPVT-IV converts raw scores to standard scores with 100 being the average score for the general population of students. Two-thirds of beginning kindergarteners scored in the average range. Approximately one out of six students (17.1 percent) scored in either the extremely low (8.3 percent) or moderately low (8.8 percent) range. Given that the total kindergarten enrollment in Kent County ISD schools in 2010-11 was 9,404 students, approximately 1,600 children entered kindergarten with less than age appropriate oral language skills.

The PALSK test identifies children as at-risk of needing special services to progress to reading at grade level by third grade. Twenty percent of children in the sample taking the PALSK scored in the at-risk range.

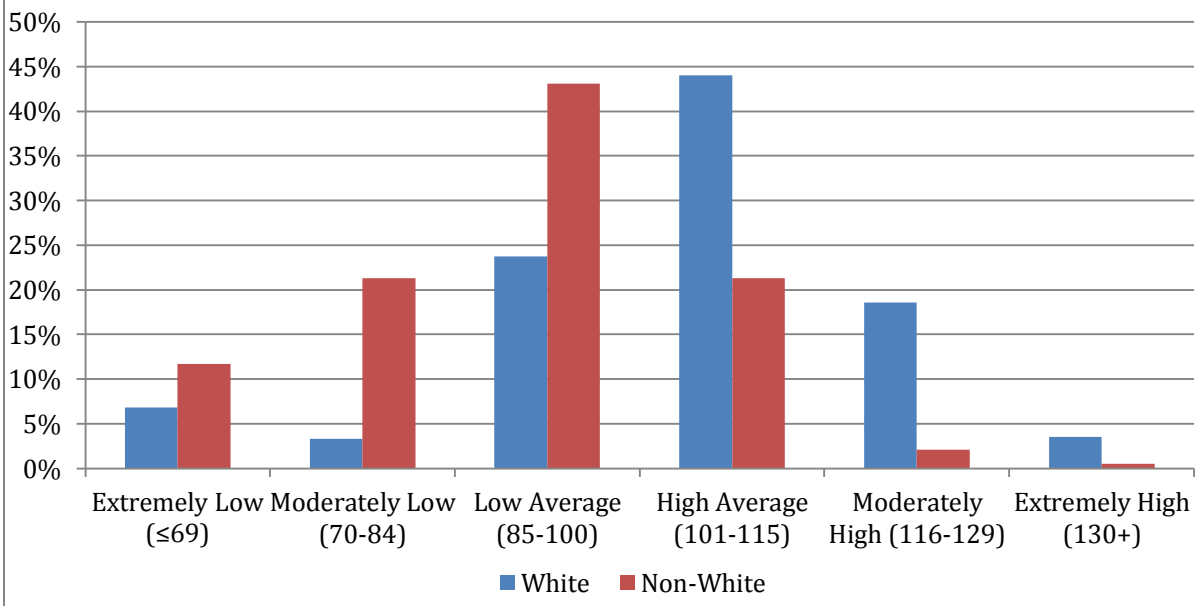
These two assessments cover different topics. So a student scoring high on one assessment may not score high on the other. Figure 10 also shows students who scored either extremely or moderately low on the PPVT-IV, at-risk on the PALSK, either extremely or moderately low on the PPVT-IV or at-risk on the PALSK, and both extremely or moderately low on the PPVT-IV and at-risk on the PALSK. Twenty-seven percent of Kent County students enter kindergarten with less than age-appropriate oral language and/or early-literacy skills. This converts to almost 2,600 students.



Nine percent of students fall into a category that could be described as "extreme risk" – they scored both at-risk on the PALSK and had less than age-appropriate oral language skills on the PPVT-IV. This percentage converts to more than 800 kindergarteners in Kent County.

Figure 11, below, shows the PPVT scores of white students versus those of non-white students. The mean score of white students on the PPVT-IV was 101.5 while the mean score of the non-white students was 87.5. This is a statistically significant difference. While the average white and non-white student has age-appropriate oral language skills, nearly one-third (32.9 percent) of non-white students and one-tenth (10.1 percent) of white students have less than age appropriate oral language skills.

Figure 11: PPVT-IV Standard Scores by Race



DATA SOURCE: Kent ISD

Section II - Detailed Analysis of Selected Indicators

The decennial U.S. census report found that the population of Grand Rapids fell from 197,800 in 2000 to 188,040 in 2010, a loss of nearly 5%. Despite the fact that many of Michigan's largest cities, such as Detroit and Grand Rapids are suffering from a decline in the population, there are other areas of the state that are growing. On balance, the population in West Michigan actually grew over the past 10 years. Fourteen West Michigan counties, including Kent County, showed a net increase in population of nearly four percent. Today, the population of West Michigan totals nearly 2 million (Kolker, 2011).

While these facts are interesting in and of themselves, aggregate analysis at the regional level is too large to use as a method to examine the needs of the children within Kent County. Regions are too large. Counties are too large. Even Standard Metropolitan Statistical Areas and singular focus on cities within each county are too large. Despite this fact, we often examine trends at these levels to shape policy and allocate resources. Only by closely examining subgroups within each county can we begin to understand our communities and their particular needs. Anyone familiar with Kent County knows full well the differences between the demographic and income characteristics of Grand Rapids and East Grand Rapids. They further know the ethnic and cultural differences between Sparta and Ada. Examining adjacent or nearly adjacent communities *within* Kent County reveals that some communities have far less in common with each other than communities far beyond the borders of Kent County and West Michigan.

This analysis is driven by the need to acknowledge these differences and the desire to better understand the communities in which we live so that *all children can thrive*. It is our hope that this analysis will assist community leaders in continuing to offer and invest in innovative, efficiently run programs that are aimed at doing nothing less than making our community stronger.

Methodology

In developing the detailed analysis, we evaluated the leading efforts across the country to learn from their success and to replicate those models locally in Kent County. While the approach we have taken cannot be fully attributed to a single source or model, one model was most influential in developing our approach and analysis. The University of Wisconsin Population Health Institute (UWPHI) is easily recognized as one the nation's most respected leaders in the area of developing community health indicators. Through funding from the Robert Wood Johnson Foundation, UWPHI has developed *County Health Rankings* for all 50 states. Their research has shown us that where we live matters to our health. The health of a community depends on many different factors – ranging from individual health behaviors, education and jobs, to quality of health care, to the environment (University of Wisconsin Population Health

Institute, 2011). Although the scope is narrower in terms of its singular focus on health and many of the variables analyzed in the *County Health Rankings* are different than those chosen for this project, the detailed methodology developed by UWPHI was extremely helpful in our methodological design to combine several indicators into a single, overall metric.

In our efforts to examine indicators within Kent County at a more localized level, census tracts were chosen as the unit of geographic analysis. Census tracts are small, relatively permanent geographic entities within counties (or the statistical equivalents of counties) delineated by a committee of local data users. Generally, census tracts have between 2,500 and 8,000 residents and boundaries that follow visible features. When first established, census tracts are to be as homogeneous as possible with respect to population characteristics, economic status, and living conditions (Economics and Statistics Administration & Bureau of the Census, 1994).

In Kent County, there are 126 census tracts. As evident in the following maps, the geographic area of the census tracts in more densely populated areas such as Grand Rapids are smaller than the geographic areas of the less densely populated rural areas of the county. Again, while the geographic areas for census tracts may differ, each tract has roughly the same number of individuals residing within each tract (2,500 to 8,000) that improves the validity of our comparisons.

In our analysis, we provide detailed analysis designed to at least partially assess one of the following four areas of interest. These four strategic areas are part of Kent County's Vision for an Early Childhood System. The guiding principles from the vision were used to direct the process:

1. ***Physical and Behavioral Health***: Young children and their families receive the quality, comprehensive services and education they need to maximize their health.
    - All components of the healthcare system work together to meet the needs of children and families;
    - All young children receive comprehensive health services, including primary care in a quality medical home, dental care, developmental and other screenings, and, as needed, mental health services and specialty care;
    - All families of young children have access to comprehensive quality healthcare;
    - All women have access to quality preconception, prenatal, and postnatal care and other related support services; and
    - All families of young children receive information and education about prevention, leading a healthy lifestyle, and eliminating environmental risks.

2. ***Early Care and Education****:* Young children have quality learning experiences starting at birth.
    - Early care and education programs and K-12 school systems work together to support the education of young children;
    - All families of young children have access to quality child care and early education;
    - All families of children ages 3 and 4 have access to quality preschool;
    - Early care and education providers have quality education, professional development, training, and other resources;
    - Children with developmental delays and disabilities are identified early and receive appropriate instruction and services; and
    - Systems are in place to measure the readiness of children entering kindergarten

3. ***Parent Education***: Parents have the knowledge, skills and opportunities to give their young children a great start in life.
    - Parenting education is integrated into all aspects of the early childhood system;
    - All parents have access to information about parenting, child development, health, early education, and community sources; and
    - All parents are educated about how to use the results of screenings and other information pertaining to the wellbeing of their young child or children.

4. ***Family Support***: Families have the relationships and resources they need to raise their young children, and their basic needs are met.
    - Public and private sector agencies work together to strengthen services to families;
    - All families of young children have access to resources to help meet their basic needs, including food, housing, clothing, transportation, and employment;
    - All families, starting prenatally and continuing through childhood, are offered a menu of support services; and
    - All families of young children have access to enrichment opportunities and an environment that promotes their wellbeing, including park space, recreation activities, libraries, and cultural institutions.

The indicators can be aggregated or disaggregated for various population subgroups and localized areas within the county that will become the basis for a report card or dashboard in future development.

Standardizing the Data

We standardized each measure within each census tract in order to facilitate accurate and easy comparisons. Because some measures are in a number of different scales (i.e. some are percentages, some are rates or some are averages of survey responses), standardizing each of these measures transforms them into the same metric. This gives each individual indicator a mean (average) value of 0 and a standard deviation (measure of spread) of 1. In statistics, we call this a Z-score.

The Z-score developed for each census tract is relative to balance of the county for the particular metric. A positive Z-score indicates a value for the census tract that is higher than the average as compared to the rest of the county while a negative Z-score indicates a value for the census tract that is lower than the average of county. The scores we compute for each indicator are composites of the Z-scores for each of the individual measures. Each measure that goes into its respective index is weighted equally.

It is important to note that the results as reported within the following maps do not represent statistically significant differences and should not be construed as such. The Z-score simply provides a relative assessment of each census tract as a single unit of analysis, compared to the overall average from which it is being measured against.

Detailed Maternal and Child Health Index

The Maternal and Child Health Index is a composite of three items derived from vital records data:

- The percentage of births delivered at term (greater than 38 weeks, but not more than 43 weeks of gestation);
- The percentage of births where prenatal care began within the first trimester; and
- The percentage of births resulting in a satisfactory birth weight (greater than 2,500 grams).

These items were summed to create a comparative index that is mapped by census tract for each of the following:

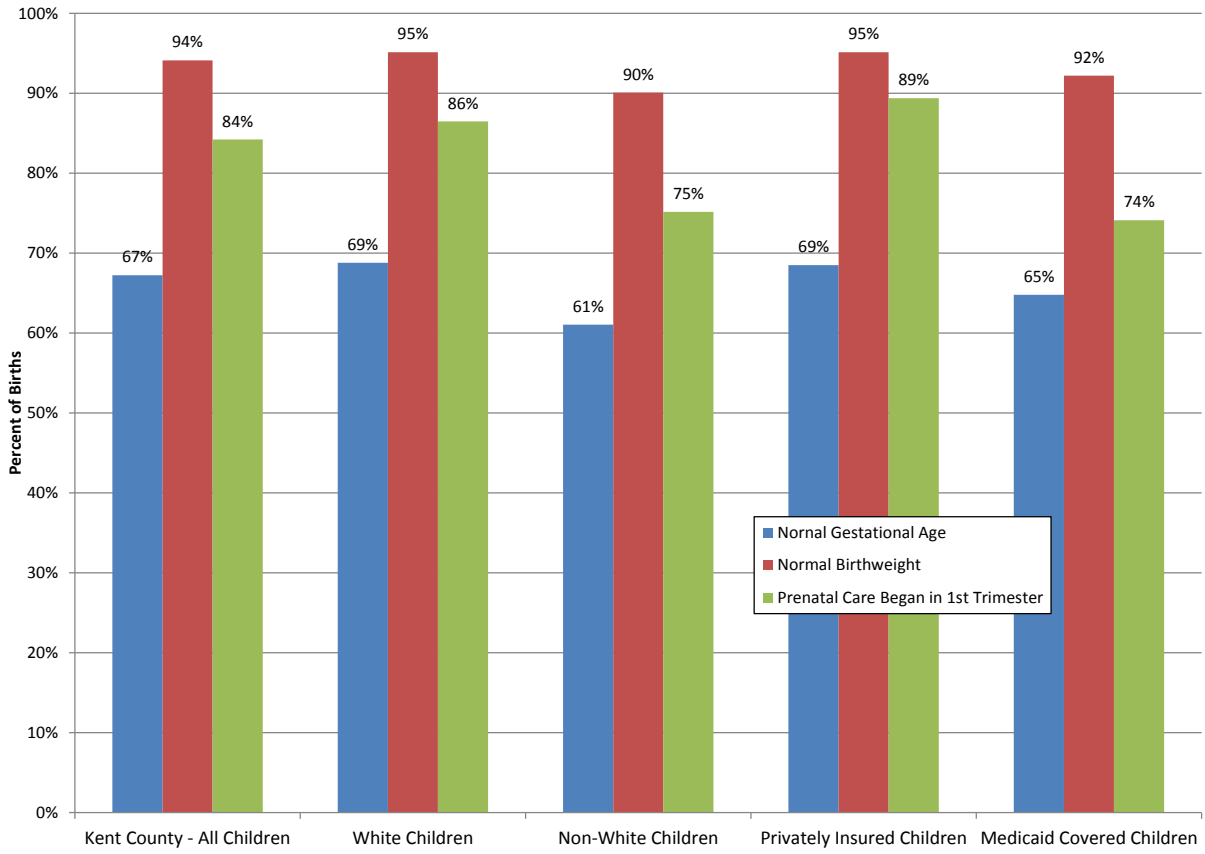
- Maternal and Child Health Index for all births in Kent County. The index compares the relative standing of each tract as compared to the overall average for Kent County.
- Maternal and Child Health Index for white births. The index compares the relative standing of each tract as compared to the overall average for White births only in Kent County.
- Maternal and Child Health Index for non-white births. The index compares the relative standing of each tract as compared the overall average for white births. We compared non-white infants to white infants because for many health and socioeconomic conditions, non-white infants and children bear a disproportionate burden of disease, injury, death, disability, incarceration and lower levels of educational attainment among others. Identifying and eliminating these disparities will require culturally appropriate initiatives, community support, and equitable access to services.
- Maternal and Child Health Index for Medicaid covered births (Medicaid as the primary payment source of the birth). The index compares the relative standing of each tract as compared to the overall average of births that were privately insured. We compared Medicaid covered infants to privately insured infants because of access and quality of care problems that have plagued the Medicaid system for years. In addition, Medicaid covered infants and children also suffer from the same health disparities as noted above.

The index was created using singleton births only. We employed only singleton births because infants born as part of a multiple delivery are much more likely to have low birth weight than singleton births. Where the number of births by census tract for this measure was below 10, those numbers are suppressed. The goal of suppressing these events is twofold: 1) to maintain confidentiality and 2) low numbers of events tend to distort or skew the results because the percentages or rates derived from small samples can be unstable.

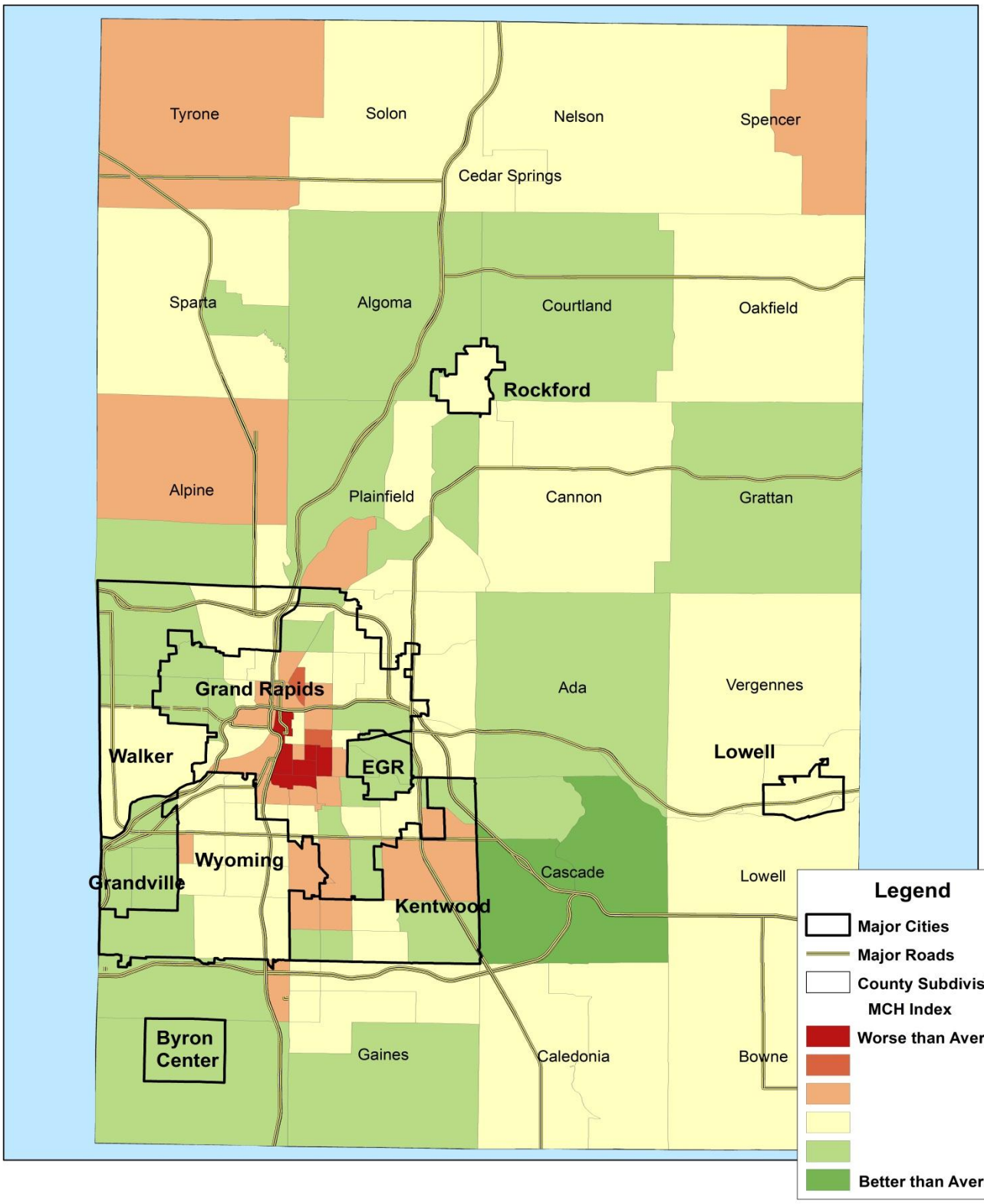
Figure 14 summarizes the various items that went into the Maternal and Child Health Index for Kent County. In addition, we added analysis of two important subgroups that compare the overall county rates of white to non-white children and privately insured to Medicaid covered children.

The breakdown of the infant's ethnicity for the Maternal and Child Health Index was not analyzed beyond the variable for race, white and non-white infants. This was due to the fact that there was no variable for ethnicity in the Michigan vital records database. It is possible, however, to compute the ethnicity of the infant which will be analyzed in future analysis. In addition, we calculated the Maternal and Child Health Index for the years 2003 – 2006 to assist with our analysis as reported here. By aggregating several years of data, we are able to develop stable rates for smaller geographic areas (i.e. census tracts) and several subgroups of interest, such as Medicaid-covered births.

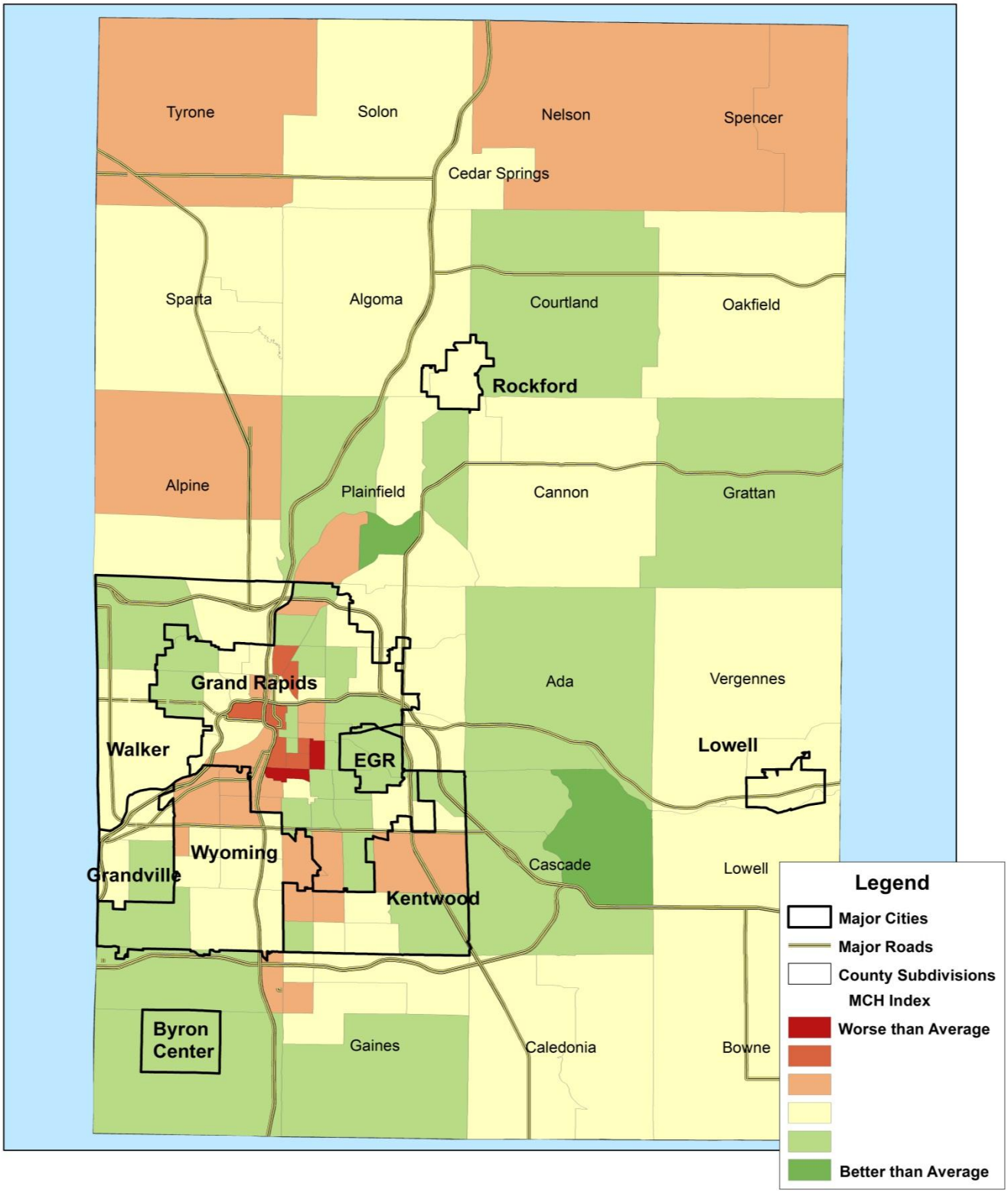
Figure 14: Analysis of the Individual Maternal and Child Health Index Components for Kent County: 2003 - 2006



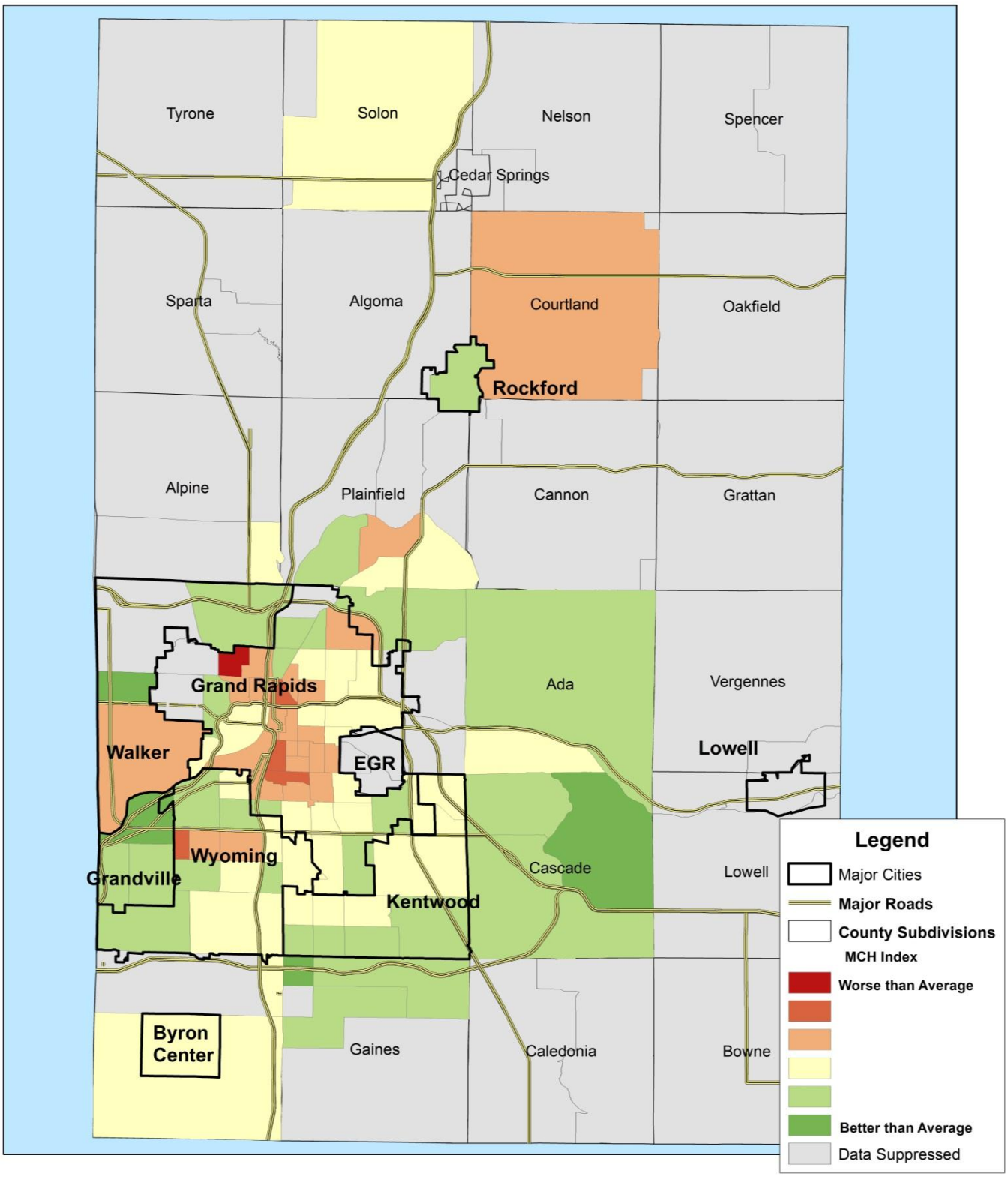
Maternal and Child Health Index - All Kent County Births



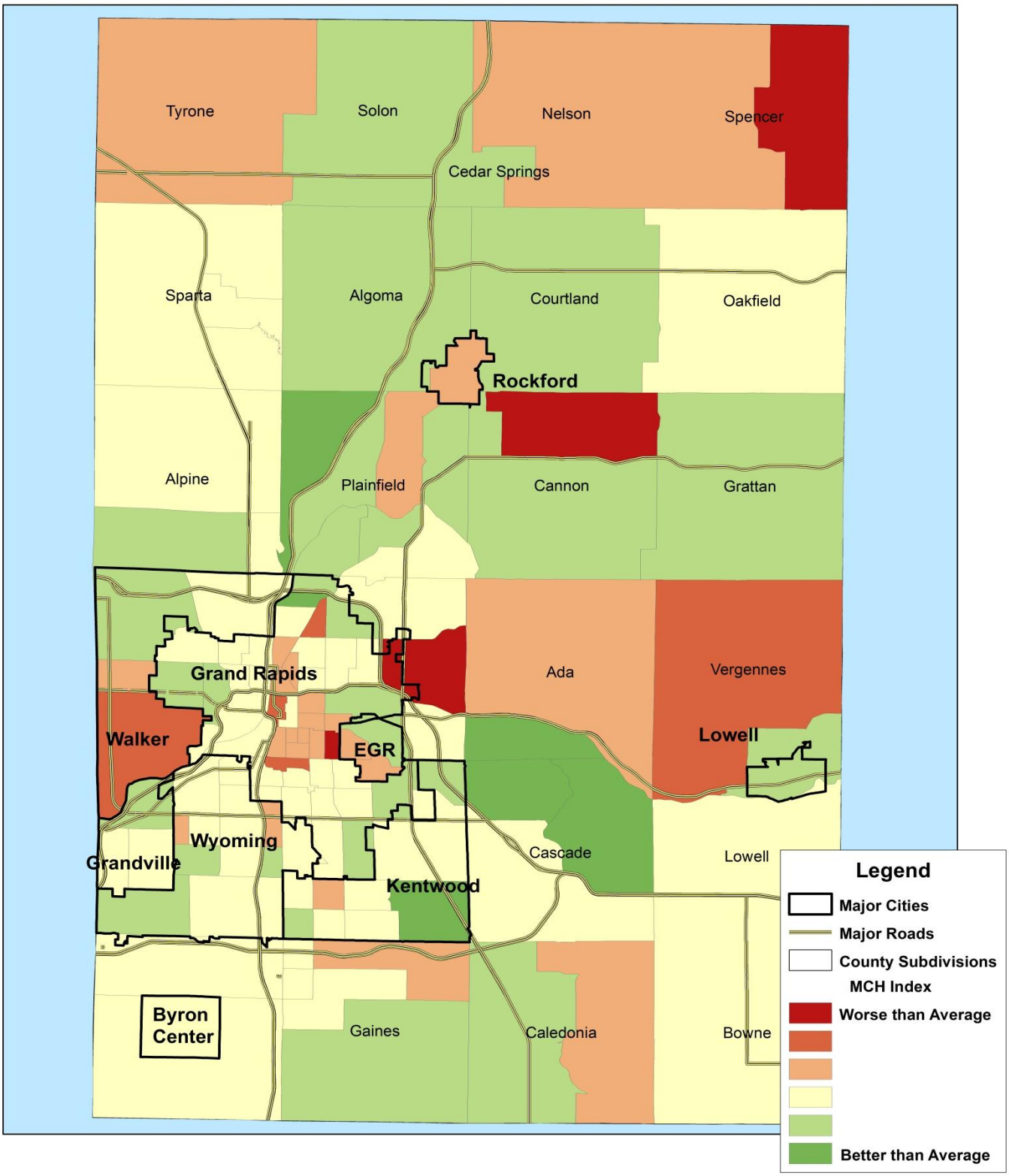
Maternal and Child Health Index - White Births Only



Maternal and Child Health Index - Non-White Births as Compared to the Overall Average for White Births



Maternal and Child Health Index - Medicaid Covered Births as Compared to the Overall Average for Privately Insured



Parent Education Index

The Parent Education Index is a composite of four items derived from vital records data:

- The percentage of births where mother did not smoke during pregnancy;
- The percentage of births where mother did not consume alcohol during pregnancy;
- The percentage of births where conception following the previous birth was greater than 18 months; and
- The percentage of births where the certificate indicates information or paternity is acknowledged about the father (used as a proxy for planned pregnancy).

These items were summed to create a comparative index for each of the following:

- Parent Education Index for all births in Kent County. The index compares the relative standing of each tract as compared to the overall average for Kent County.
- Parent Education Index for white births. The index compares the relative standing of each tract as compared to the overall average for white infants in Kent County.
- Parent Education Index for non-white births. The index compares the relative standing of each tract as compared to the overall average among white infants. We compared non-white infants to white infants because for many health and socioeconomic conditions, non-white infants and children bear a disproportionate burden of disease, injury, death, disability, incarceration, lower levels of educational attainment among others. Identifying and eliminating these disparities will require culturally appropriate initiatives, community support, and equitable access to services.
- Parent Education Index for Medicaid covered births (Medicaid as the primary payment source of the birth). The index compares the relative standing of each tract as compared to the overall average of births that were privately insured. We compared Medicaid covered infants to privately insured infants because of access and quality of care problems that have plagued the Medicaid system for years. In addition, Medicaid covered infants and children also suffer from the same health disparities as noted above.

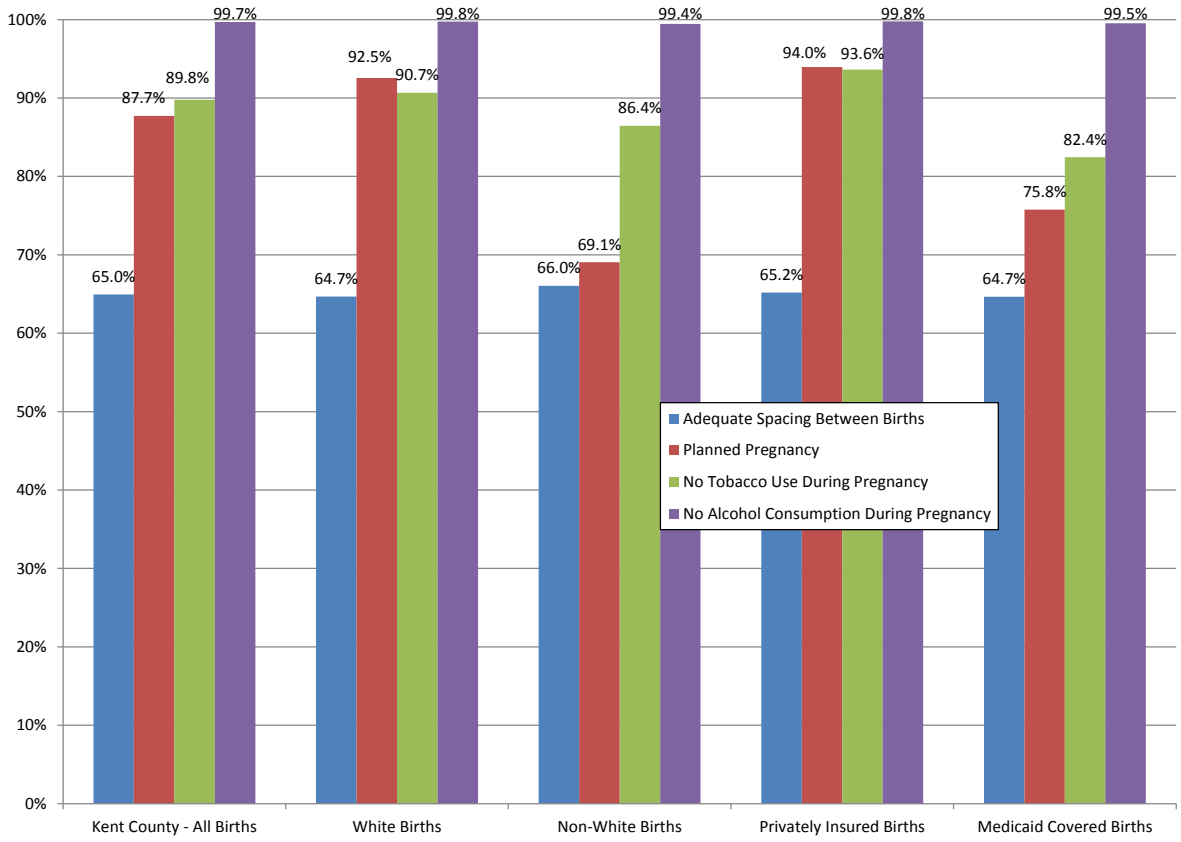
To determine the amount of time between pregnancies, the calculation for this index had to be limited only to women that had at least one previous live birth. About half of the mothers giving birth between 2003 and 2006 reported a previous live birth; the results provided in Figure 11 and the subsequent maps in this section refer only to those women. For example, the percentage of women that did not smoke during pregnancy was derived from those reporting a previous birth. Thus, the percentages reported here should not be construed as representative of all births in the county. In

addition, where the number of births by census tract for this measure was below 10, those results are suppressed. The goal of suppressing these events is twofold: 1) to maintain confidentiality and 2) low numbers of events tend to distort or skew the results because the percentages or rates derived from small samples can be unstable.

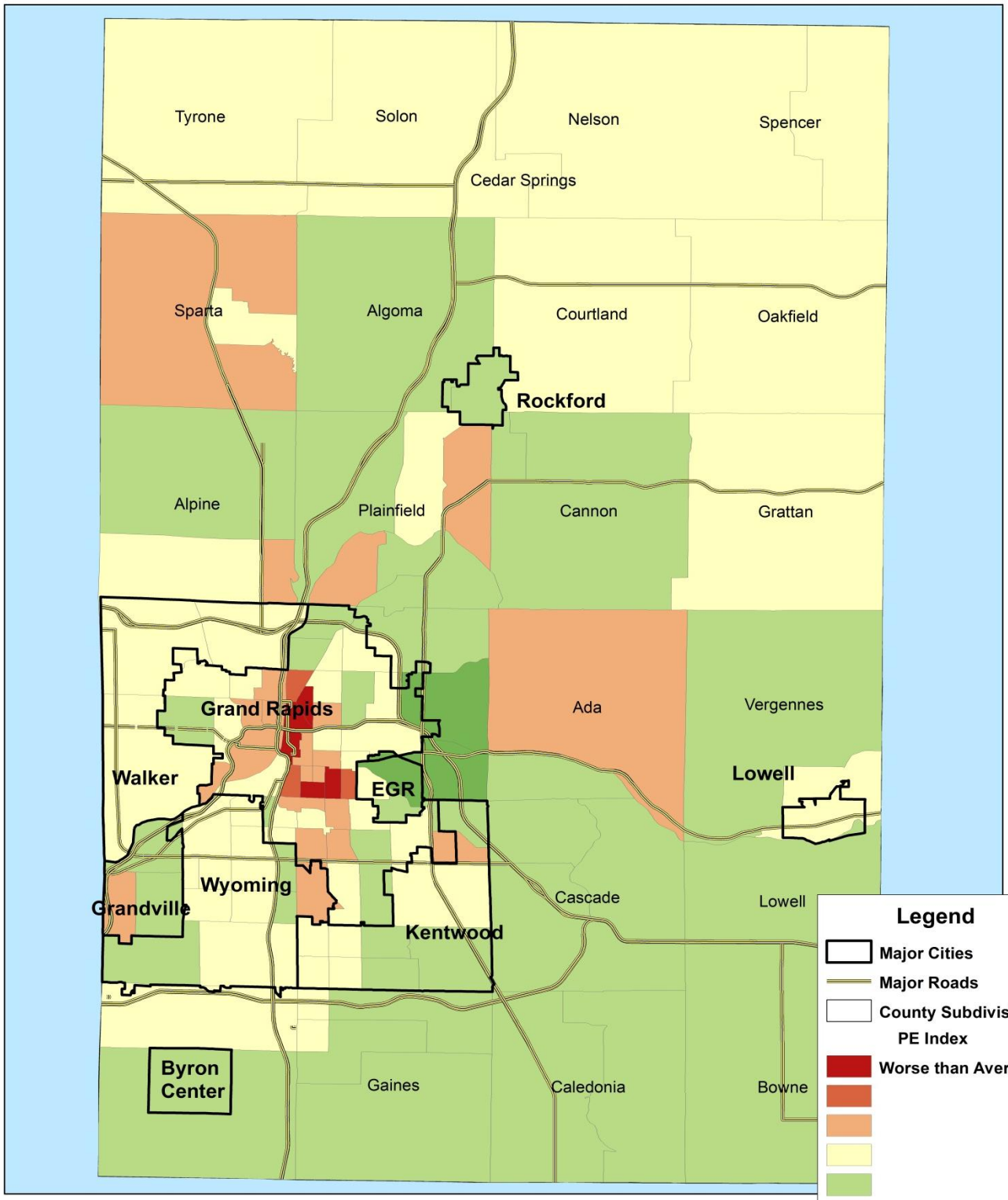
Figure 15 summarizes the selected items that went into the Parent Education Index by Kent County and subgroup analysis that compares the overall county rates of White to Non-White children and privately insured to Medicaid covered births.

The breakdown of the infant's ethnicity for the Parent Education Index was not analyzed beyond the variable for race, White and Non-White infants. This was due to the fact that there was no variable for ethnicity in the Michigan vital records database. It is possible, however, to compute the ethnicity of the infant which will be analyzed in future analysis. In addition, we calculated the Parent Education Index for the years 2003 – 2006 to assist with our analysis as reported here. By aggregating several years of data, we are able to develop stable rates for smaller geographic areas (i.e. census tracts) and several subgroups of interest, such as Medicaid-covered births.

Figure 15: Analysis of the Individual Parent Education Index Components for Kent County: 2003- 2006



Parent Education Index - All Kent County Births



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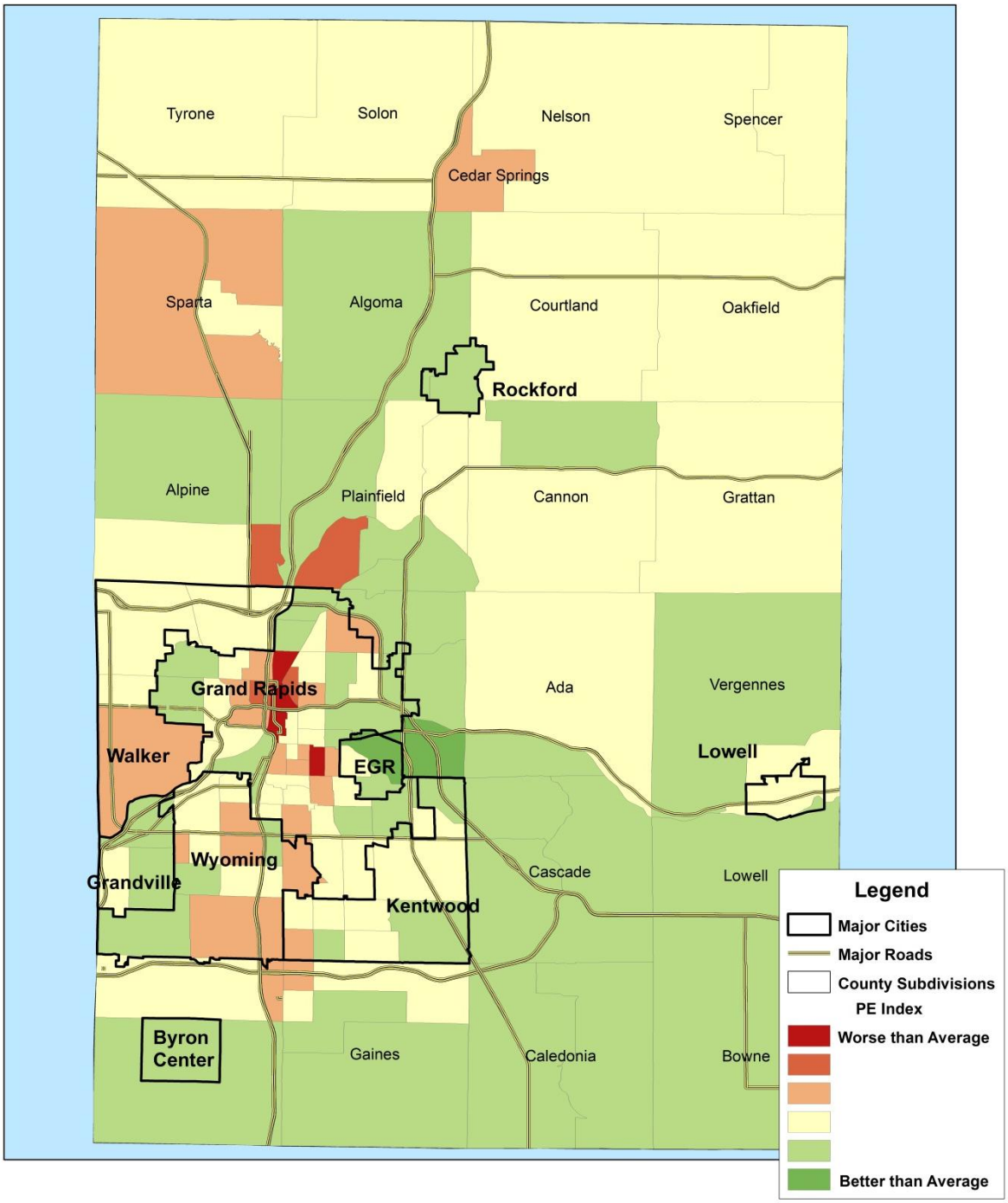
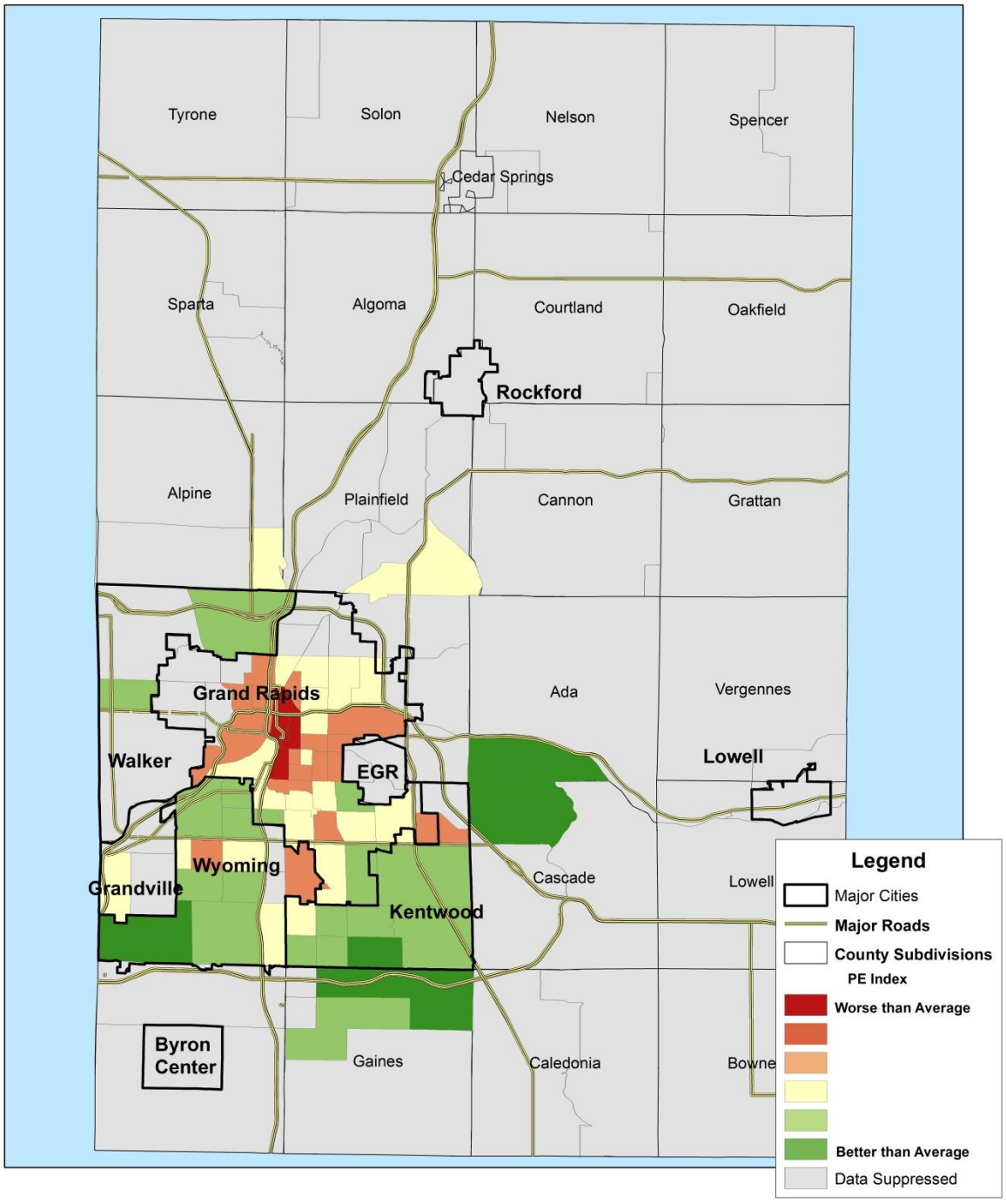
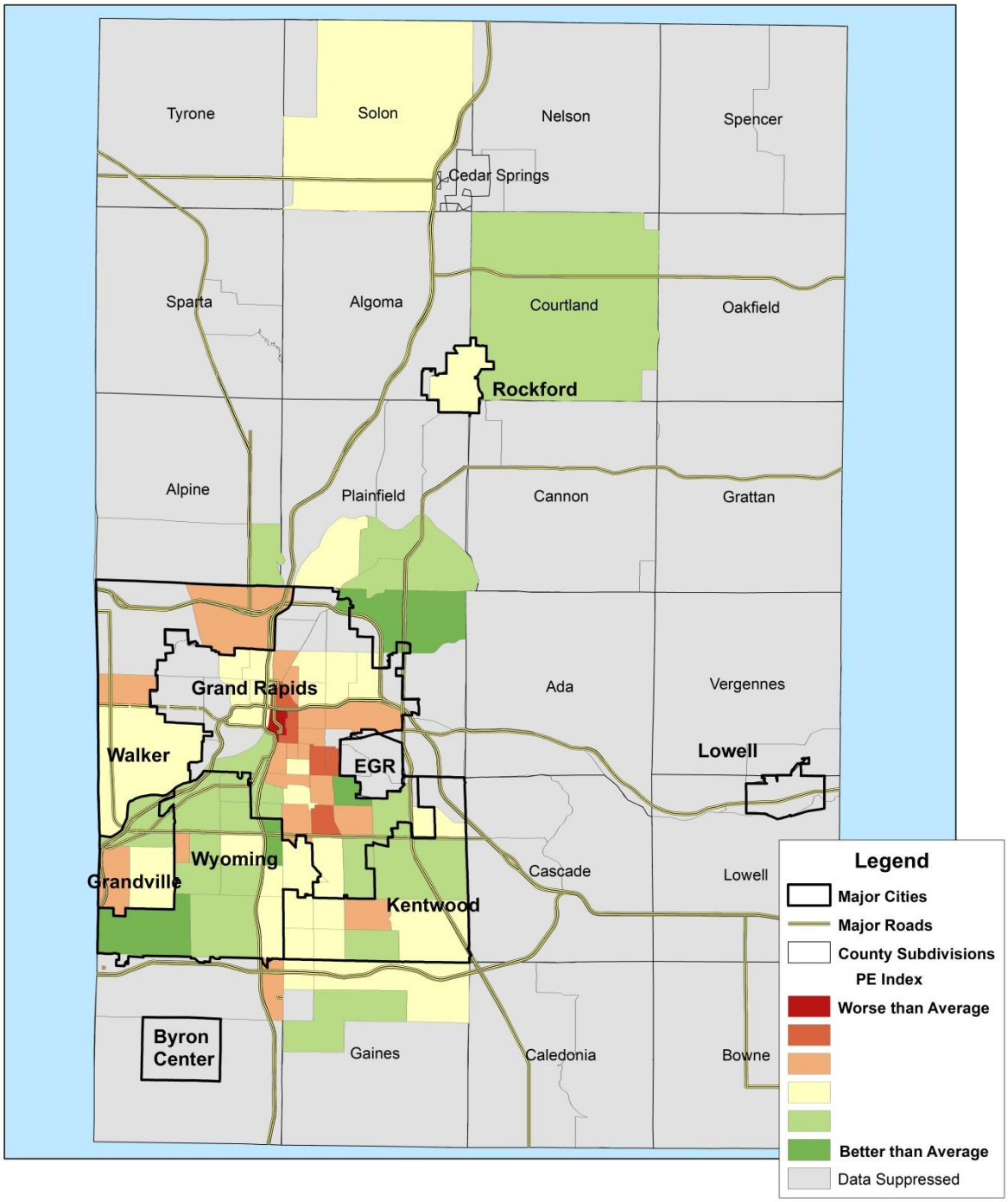
Parent Education Index - White Births Only



Parent Education Index - Non-White Births as Compared to the Overall Average for White Births



Parent Education Index - Medicaid Covered Births as Compared to the Overall Average for Privately Insured



At-Risk Index

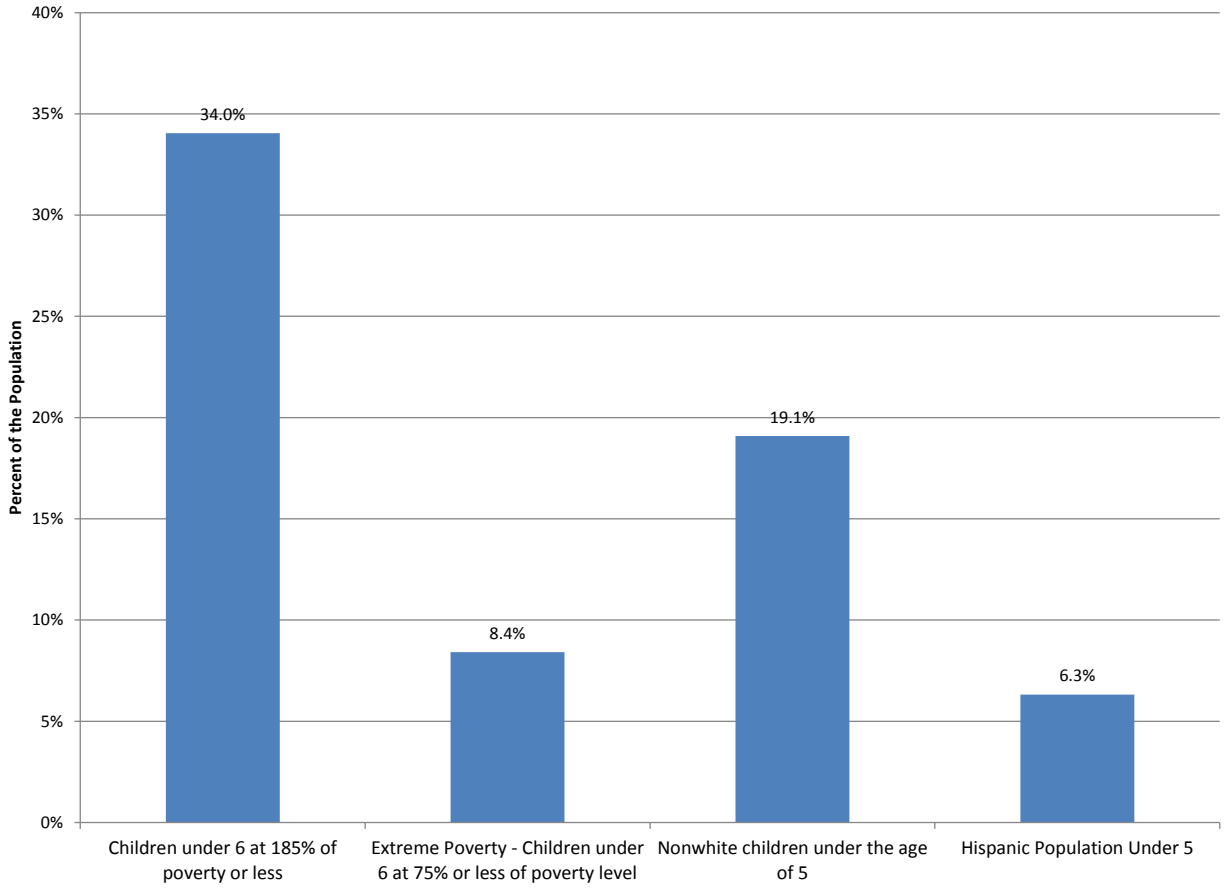
The At-Risk Index is a composite of five items derived from the American Community Survey (ACS). The ACS is a nationwide survey designed to provide communities a fresh look at how they are changing and is a critical element in the Census Bureau's decennial census program. The ACS collects information such as age, race, income, commute time to work, home value, veteran status, and other important data. In 2010, the Census Bureau released the first 5-year estimates for small areas, such as census tracts. These first 5-year estimates are based on ACS data collected between 2005 through 2009 and were used to develop the At-Risk Index. The index is based on the following data elements:

- Percentage of children ages under the age of 6 at 185% of Federal Poverty Level (FPL) or below;
- Percentage of children ages under the age of 6 living in extreme poverty (75% or below FPL);
- Median household income (not shown in the figure on the next page);
- Percentage of Hispanic children under the age of 6; and
- Percentage of non-white children under the age of 6.

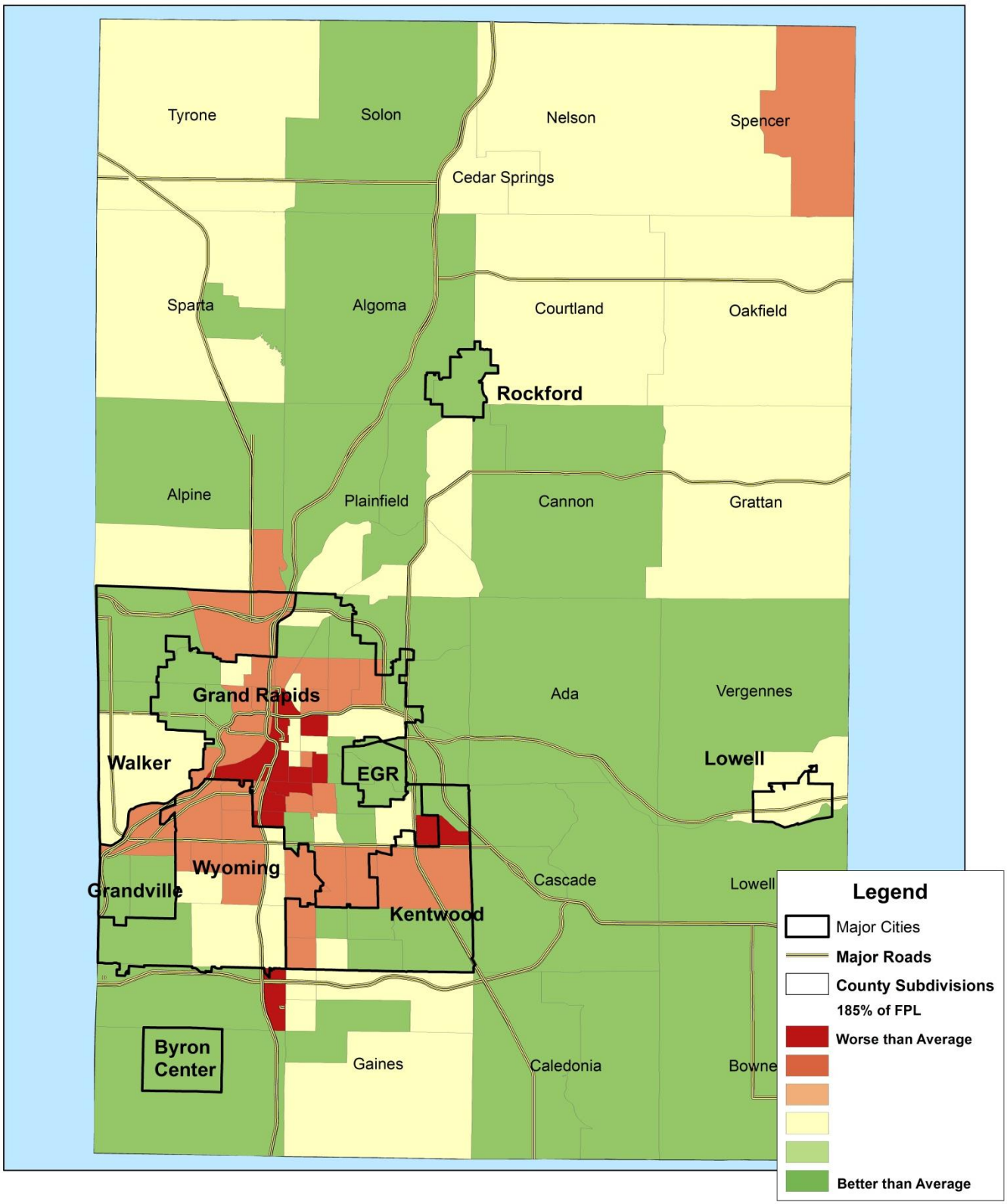
These measures were chosen because the association of children living with many risk factors may lead to unfavorable outcomes. Social research has identified many indicators that put children at risk of problems ranging from dropping out of school to crime. While there are many other potential variables, these were chosen because of their relevance to those in need in our community. Perhaps most importantly, this measure seeks to gain a better understanding of at-risk by eschewing the typical measure of need or risk that is derived solely from poverty statistics. For years, researchers have lamented the shortcomings of the official FPL, arguing that it underestimates disadvantaged groups, such as people of color and female-headed households (Christopher, 2005). Researchers argue that more complete measures of poverty account for other socioeconomic characteristics, such as education, immigration status and ethnicity.

We report the median values for the individual components of the At-Risk Index in Figure 16. The median represents the middle value in the dataset, with half of the values falling above the median and half the values falling below the median. The median is the most appropriate measure of central tendency when there are extreme values in the data. Unlike the mean (average), the median is not influenced by extreme values (outliers) and will not distort what might be considered typical.

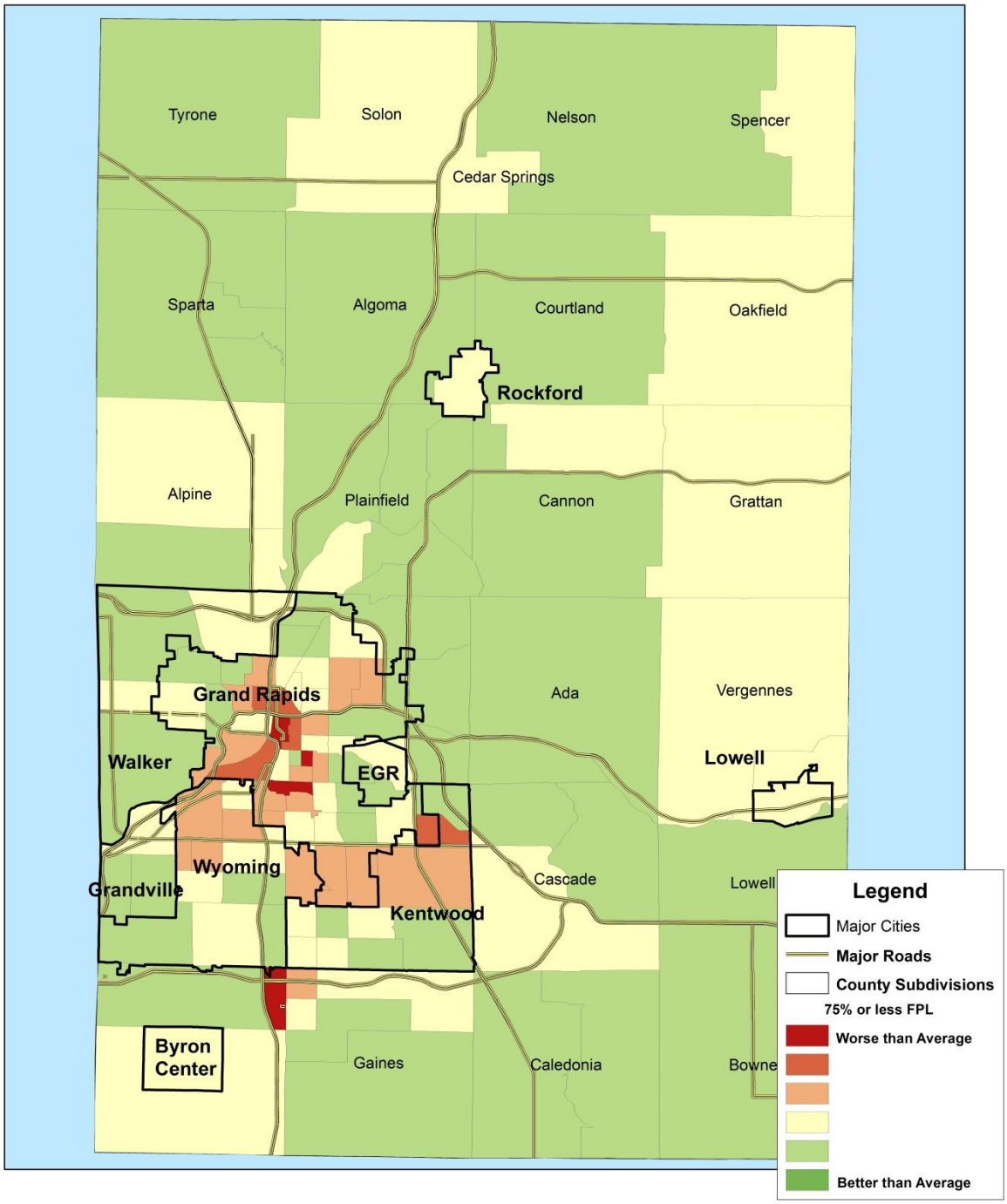
Figure 16: Median Values of the Individual At-Risk Index Components for Kent County: 2005 – 2009



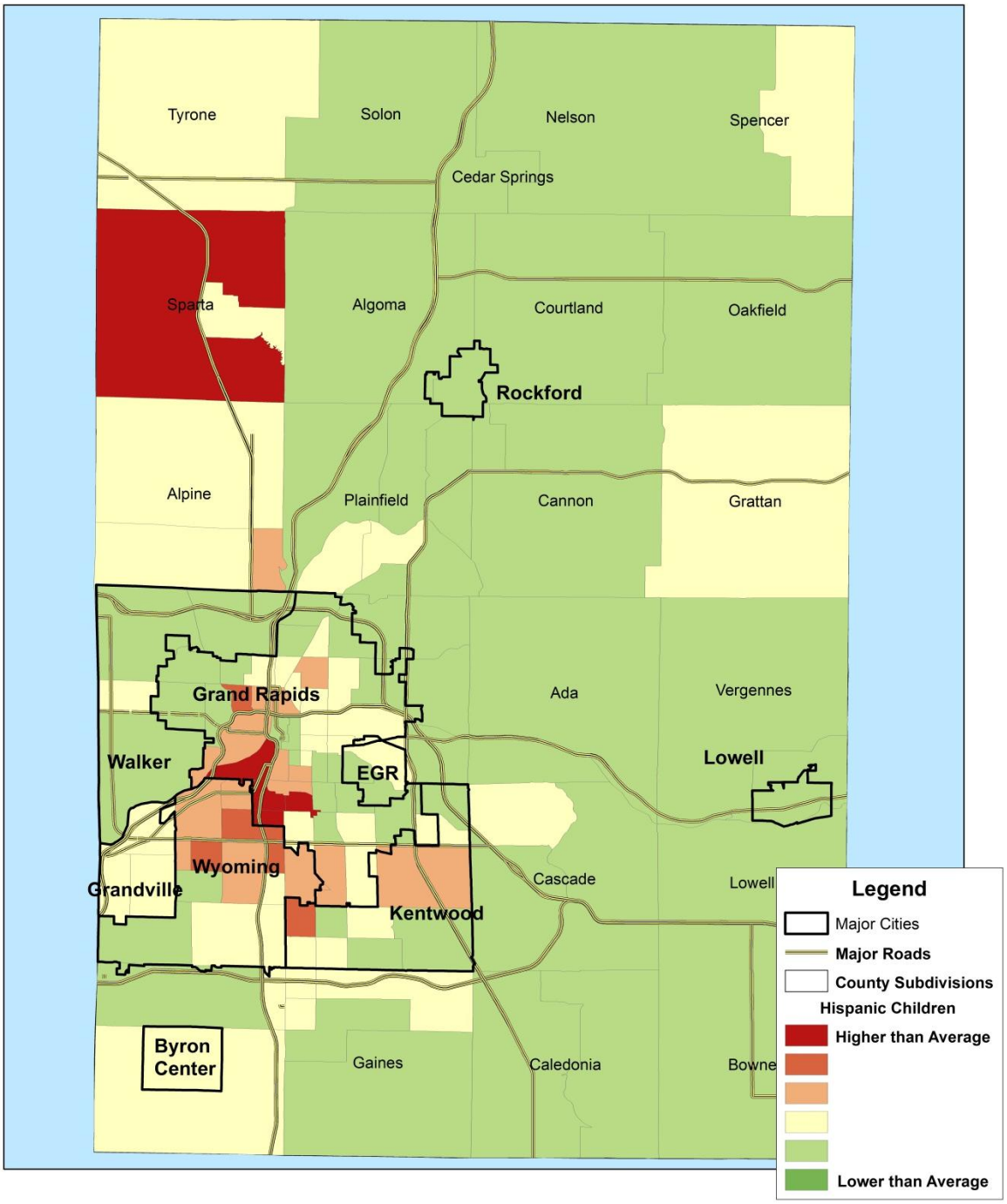
Proportion of Children Under the Age of 6 at or Below 185% of FPL



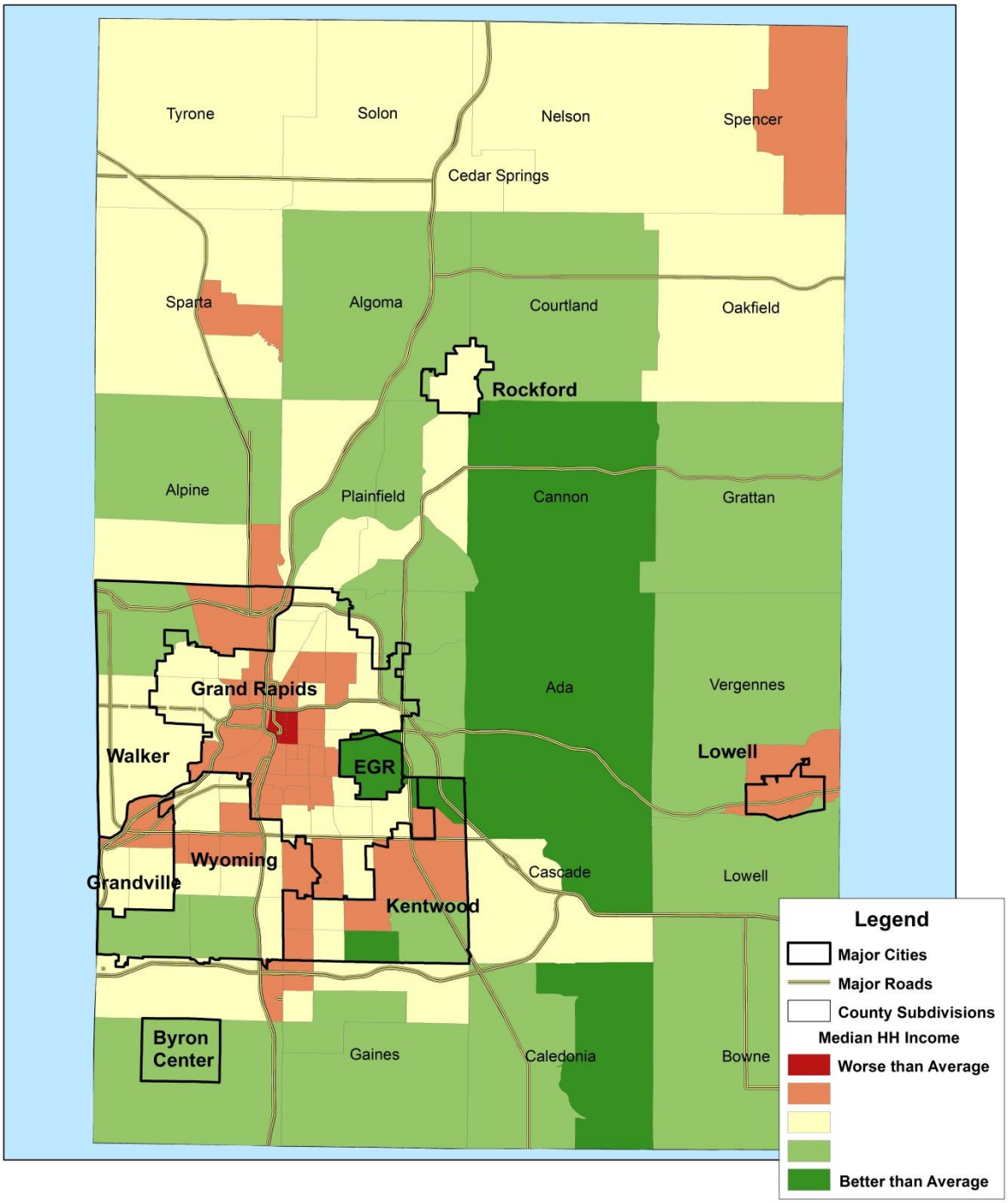
Proportion of Children Under the Age of 6 in Extreme Poverty - at or Below 75% of FPL



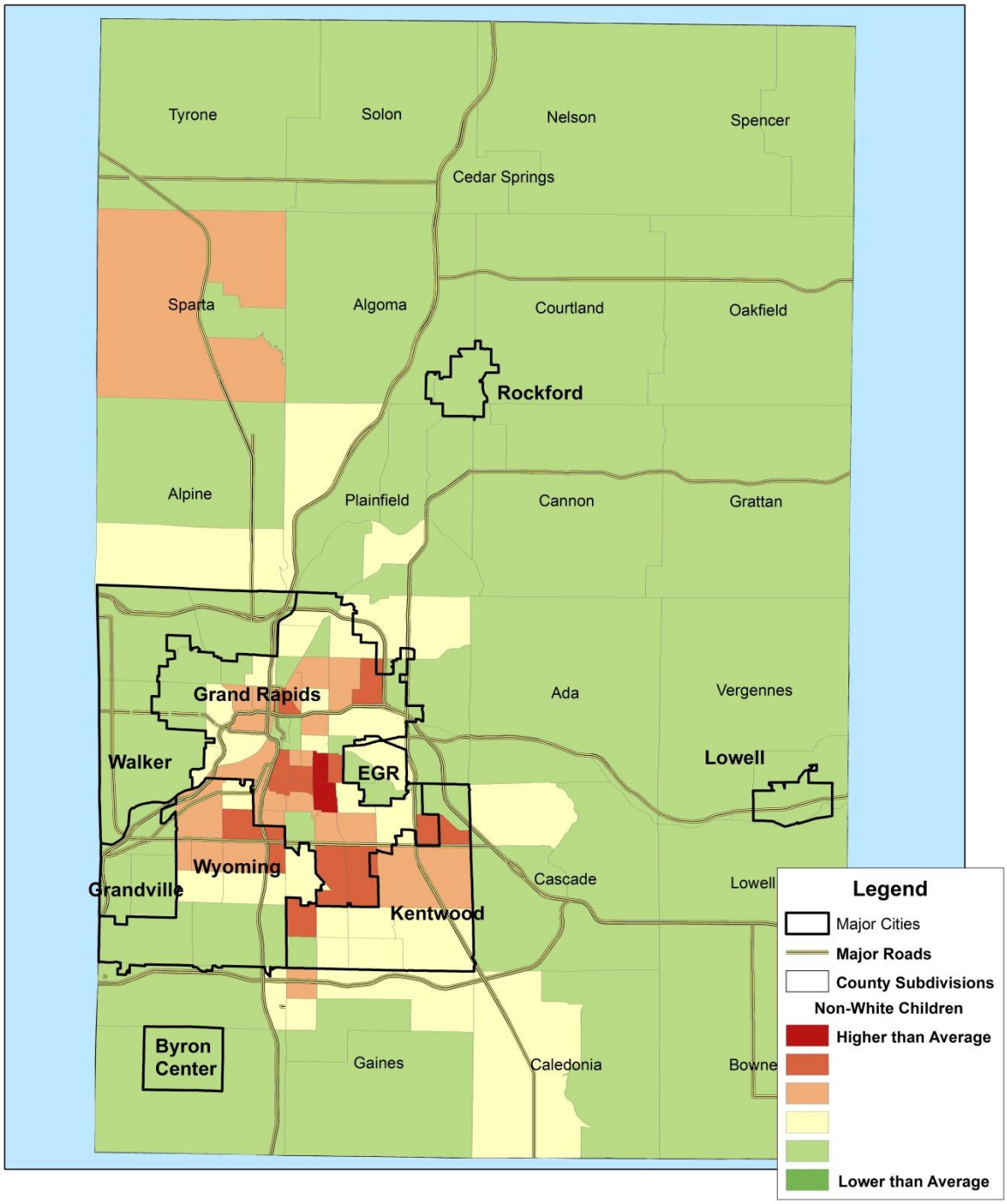
Proportion of Hispanic Children Under the Age of 5



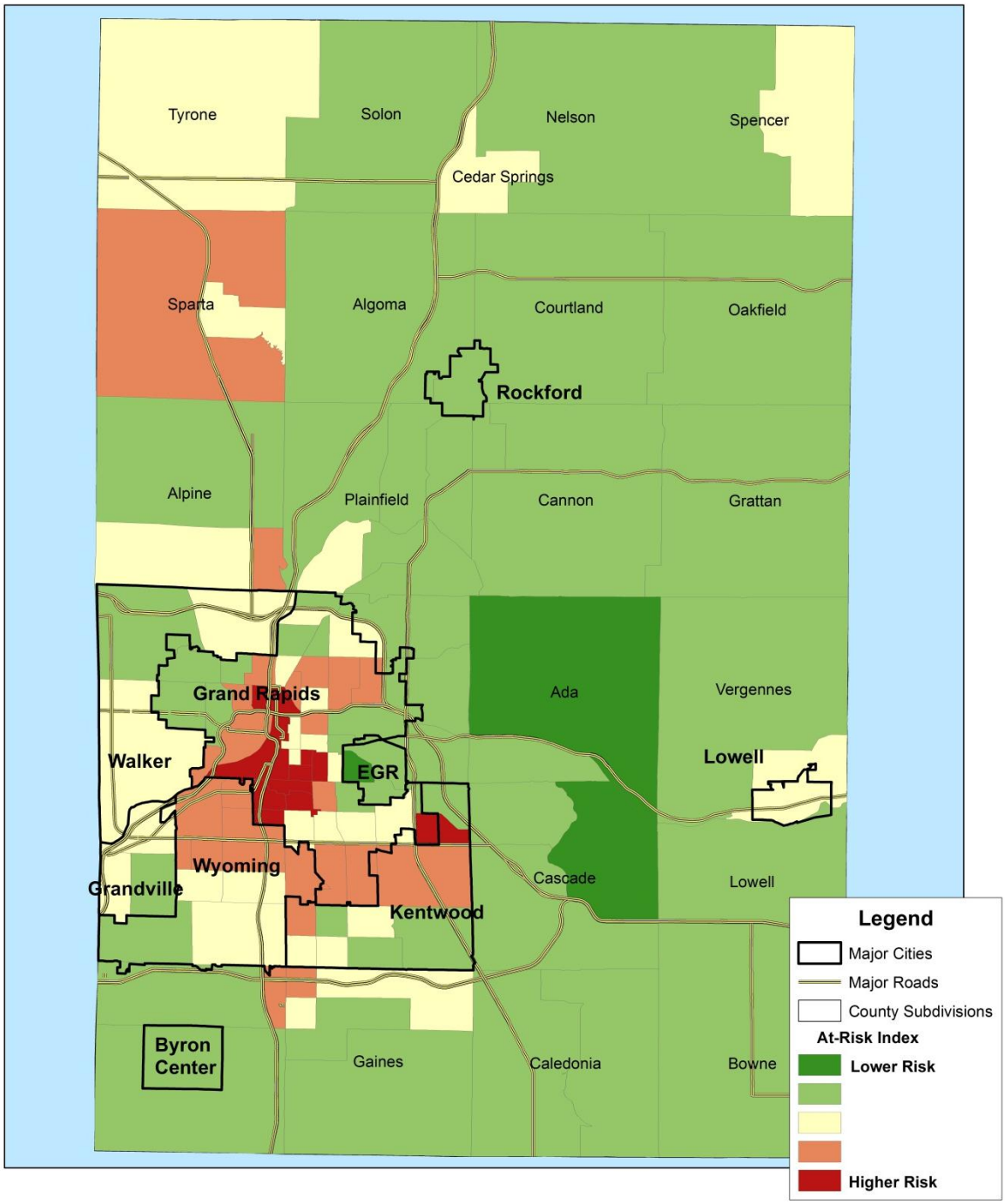
Median Household Income



Proportion of Non-White Under the Age of 5



At-Risk Index



Family Service Needs Index

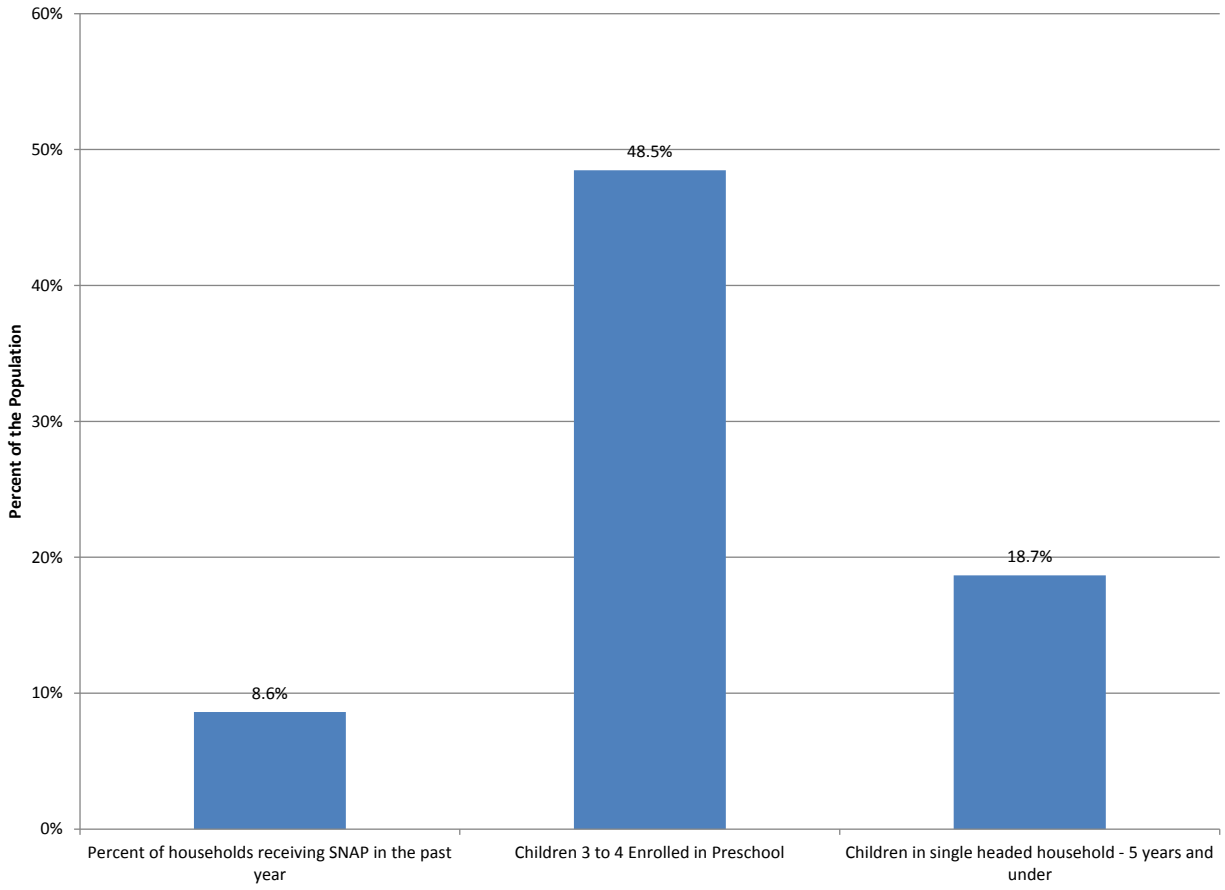
The Family Service Need Index is a composite of three items derived from the American Community Survey (ACS). The ACS is a nationwide survey designed to provide communities a fresh look at how they are changing and is a critical element in the Census Bureau's decennial census program. The ACS collects information such as age, race, income, commute time to work, home value, veteran status, and other important data. In 2010, the Census Bureau released the first 5-year estimates for small areas, such as census tracts. These first 5-year estimates are based on ACS data collected from 2005 through 2009 and were used to develop the index. The index is based on the following data elements:

- Percentage of households receiving Supplemental Nutrition Assistance Program (SNAP) benefits (i.e. food stamps) during the past year;
- Percentage of 3 to 4 year-olds enrolled in child care or preschool; and
- Percentage of single-parent households with children under the age of 5.

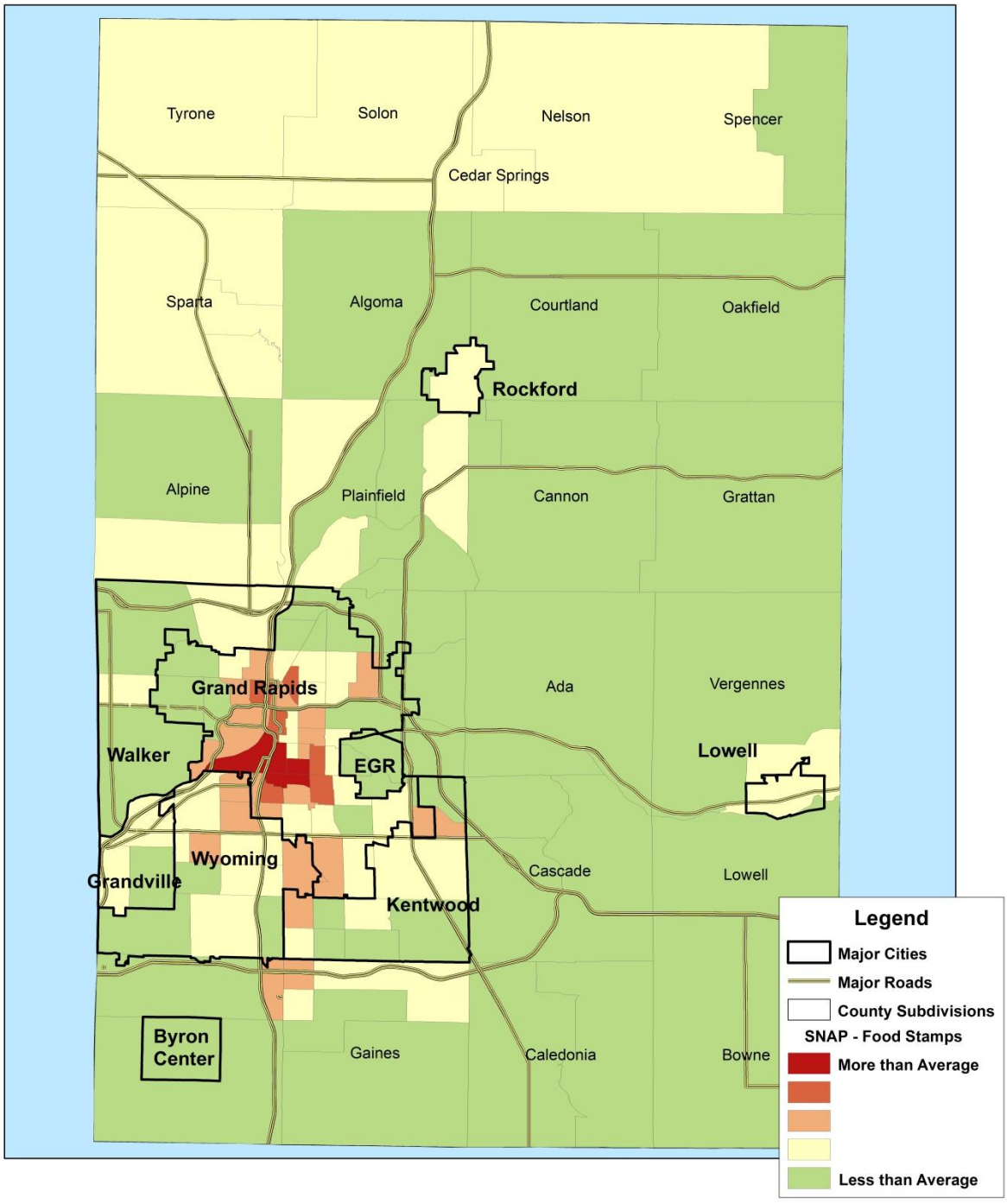
These measures were chosen because of their association to children and families that are likely to have social, educational, and health service needs.

We report the median values for the individual components of the Family Service Needs Index in Figure 17. The median represents the middle value in the dataset, with half of the values falling above the median and half the values falling below the median. The median is the most appropriate measure of central tendency when there are extreme values in the data. Unlike the mean (average), the median is not influenced by extreme values (outliers) and will not distort what might be considered typical.

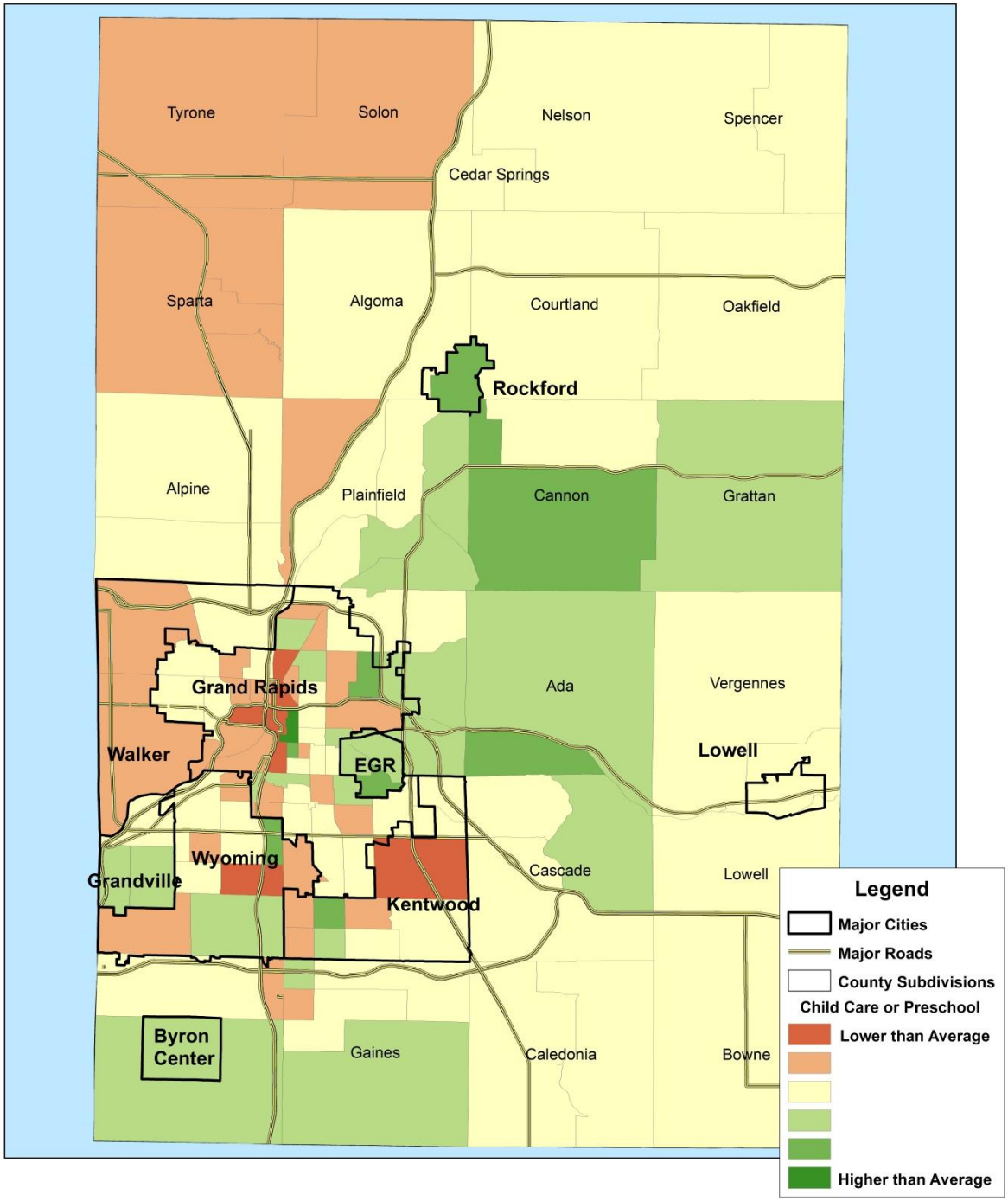
Figure 17: Median Values for the Individual Service Needs Index Components for Kent County: 2005 – 2009



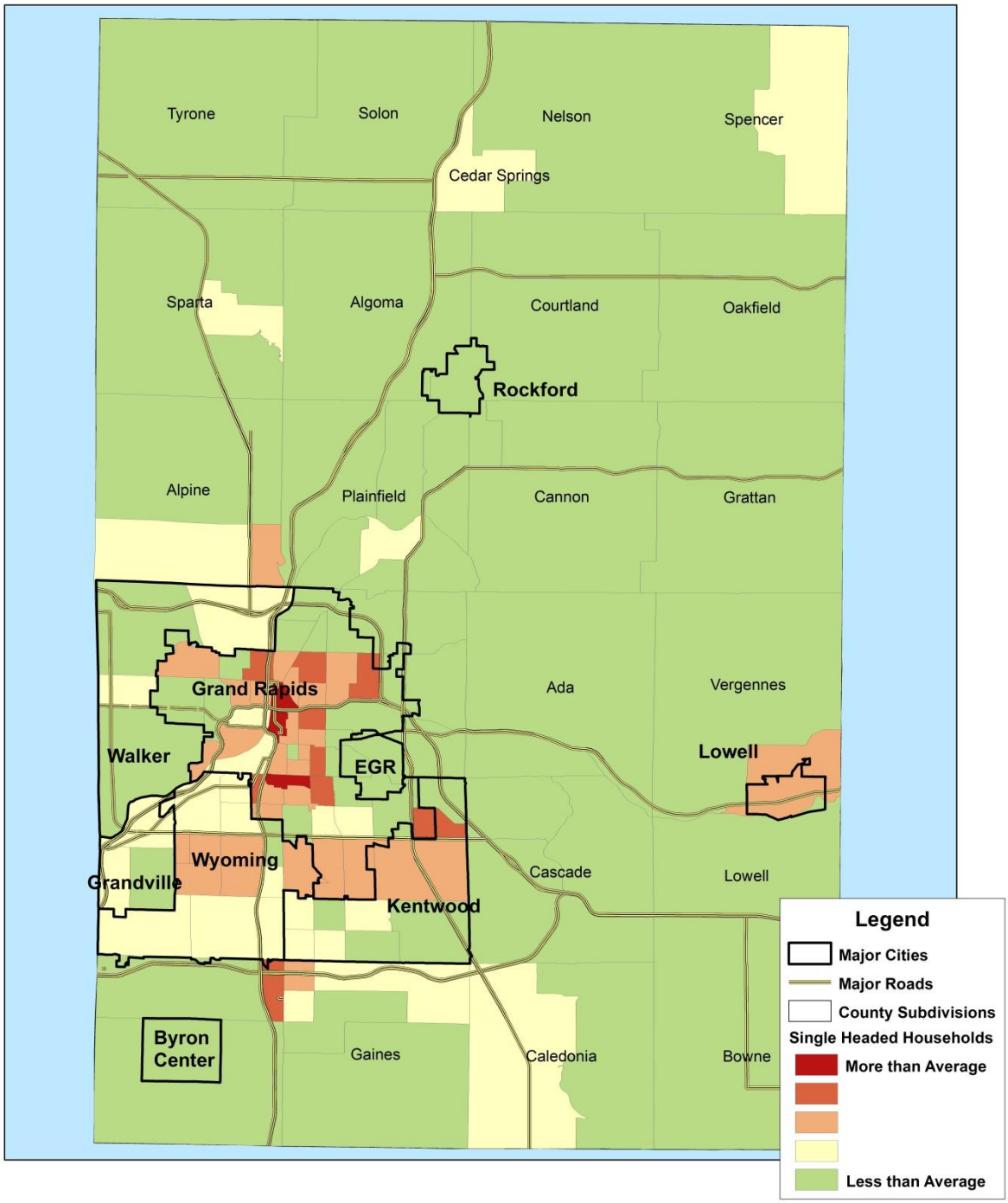
Proportion of Households Receiving Supplemental Nutrition Assistance Program (SNAP) During the Past Year



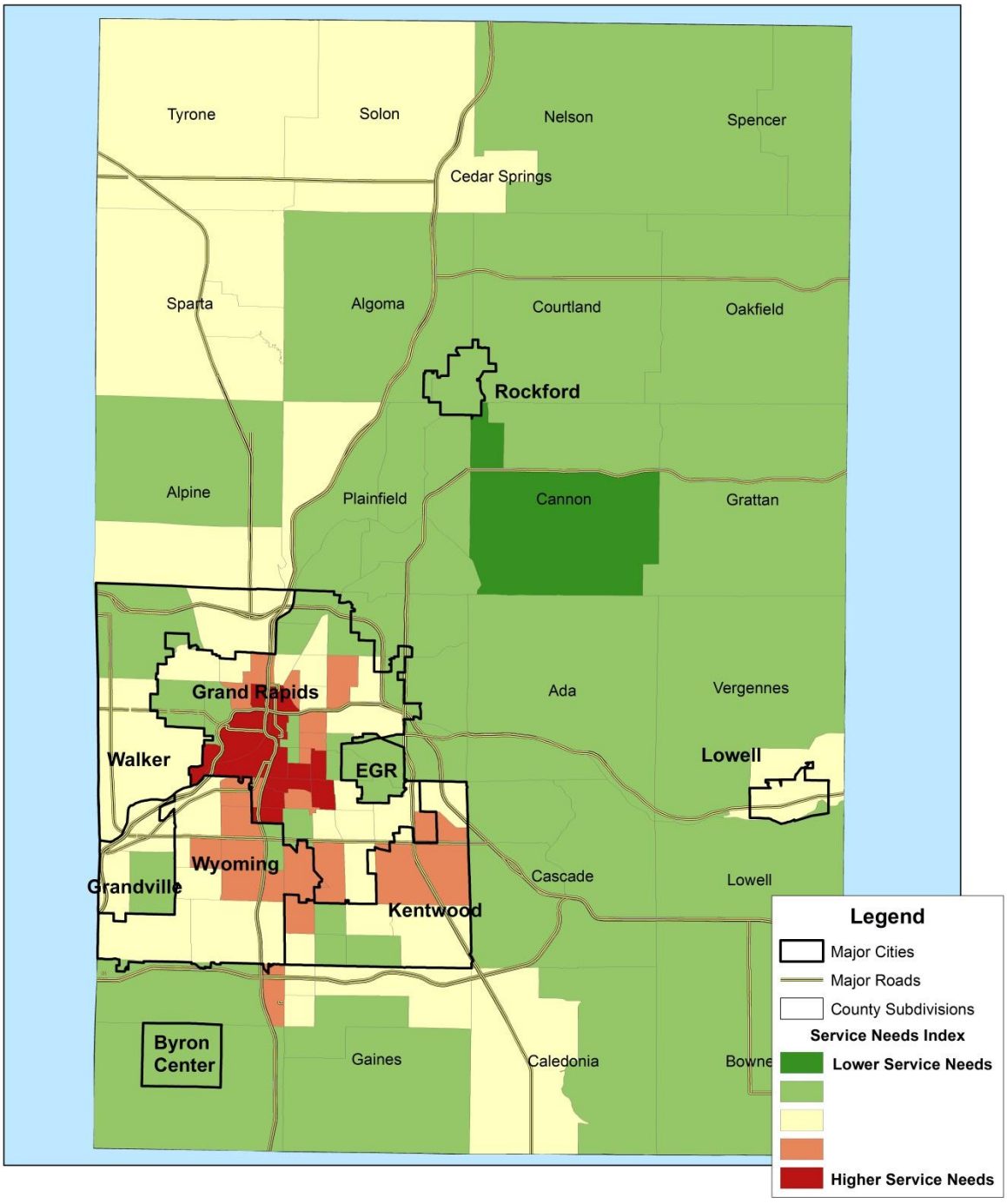
Proportion of Children Ages 3 to 4 Enrolled in Child Care or Preschool



Proportion of Single Headed Households with Children Under the Age of 5



Service Needs Index



Strategies for Identifying Areas with Need

While the findings in the preceding section may be interesting, they can also be overwhelming. There is a statistical procedure called factor analysis that is commonly used in connection with attitude surveys when complex attitudes or behaviors cannot be measured adequately by a single question but are instead a product of several questions. Factor analysis is a data reduction method that tests the data for the existence of clusters within multiple variables. The existence of clusters suggests that a group of variables could be measuring aspects of the same underlying dimension. These underlying dimensions are known as factors. By reducing the dataset from a group of interrelated variables into a smaller set of uncorrelated factors, factor analysis achieves parsimony by explaining the maximum amount of common variance using the smallest number of explanatory concepts.

When examining all of the variables simultaneously from the preceding section, factor analysis reduced our broad set of indicators or measures into three components or factors as displayed in Table 1 on page 72. Table 1 contains the loadings for each variable onto each factor. The factor structure matrix represents the correlations between the variables and the factors. The factor analysis component matrix represents the linear combination of the variables.

For example, Factor or Component 1 is comprised of each variable in the table for which there is a score. If there is no score in the matrix, that particular variable is not associated with the overall factor. In the case of Factor 1, there is no association among households that are linguistically isolated.

A second component to interpreting the factor scores is through examining the direction of the relationship. Again, in examining Factor 1, the component score for Percent of Planned Pregnancies was -.871. This indicates that there is a negative relationship among the variables. You may recall in our Parent Education Index, we measured the percentage of planned births (using complete information about the father on the birth certificate as proxy). Since this number is negative (-), this would indicate that the census tracts associated with this factor have *lower* proportions of planned pregnancies (as determined by our measurement). Where numbers are positive, the relationship is positive. If we were to examine the first variable with a positive value for Factor 1, Percent of Children Living in a Single Headed Household Under the Age of 5, we would interpret the relationship as one of *high* levels of children living in single headed households.

A third and final point in interpreting the factor scores is to understand the strength of association or the relationship. Positive factor scores can have values between 0 (no association) and 1 (perfect association). Negative factor scores can have values between 0 (no association) and -1 (perfect negative association). The closer the value is to 1 (positive factor scores) or -1 (negative factor scores) the stronger the association. Although factor scores can be generated for all variables, we used a cutoff of .4 to ensure that only the variables with the strongest association for each factor remained part of the final solution.

Below is a short summary of how one could interpret the traits or characteristics associated with Factor 1:

- Low percentage of births with planned pregnancy;
- Low percentage of births with normal birth weight;
- Low percentage of births with normal gestational period;
- High percentage of children under the age of 5 living a single headed household;
- High percentage of households that access SNAP during the past year;
- Low percentage of the births where prenatal care began in the first trimester;
- High percentage of children suffering from extreme poverty;
- Household with low median incomes;
- Moderate percentage of non-white children under the age of 5; and
- Moderate percent of mothers that did not smoke during pregnancy.

Table 1: Factor Analysis Component Matrix

Socioeconomic Variable	Component		
	1	2	3
Percent of Planned Pregnancies	-.871		
Percent of Births at Normal Birth Weight	-.813		
Percent of Births with Normal Gestation Period	-.749		
Percent of Children Living in a Single Headed Household Under the Age of 5	.708		
Percent of Households Receiving SNAP (food stamps) During the Past Year	.707	.561	
Percent of Births Where Prenatal Care Began During the First Trimester	-.696	-.548	
Extreme Poverty – Percentage of Children Living at or Below 75% of FPL	.683	.414	
Median Household Income	-.630		-.474
Percent of Children Under the Age of 5 Living at or Below 185% of FPL	.630	.548	
Households that are Linguistically Isolated		.897	
Percent of Hispanic Children Under the Age of 5		.867	
Percent of Non-White Children Under the Age of 5	.571	.605	
Percent of Children Ages 3 to 4 Enrolled in Preschool			-.807
Percent of Mothers that Did Not Smoke During Pregnancy	.486		.683

By examining the common themes or characteristics of each factor, we developed a typology or classification scheme for each of the three factors to help in summarizing our findings by giving each factor a name.

- **Factor 1 – Extreme Risk/Extreme Need Children**. This proportion of the population exhibits many factors that would put them at risk of poor outcomes. Among each of the three factors or dimensions, this cluster exhibits the most severe risk factors, including poor pregnancy outcomes with very high levels of poverty.

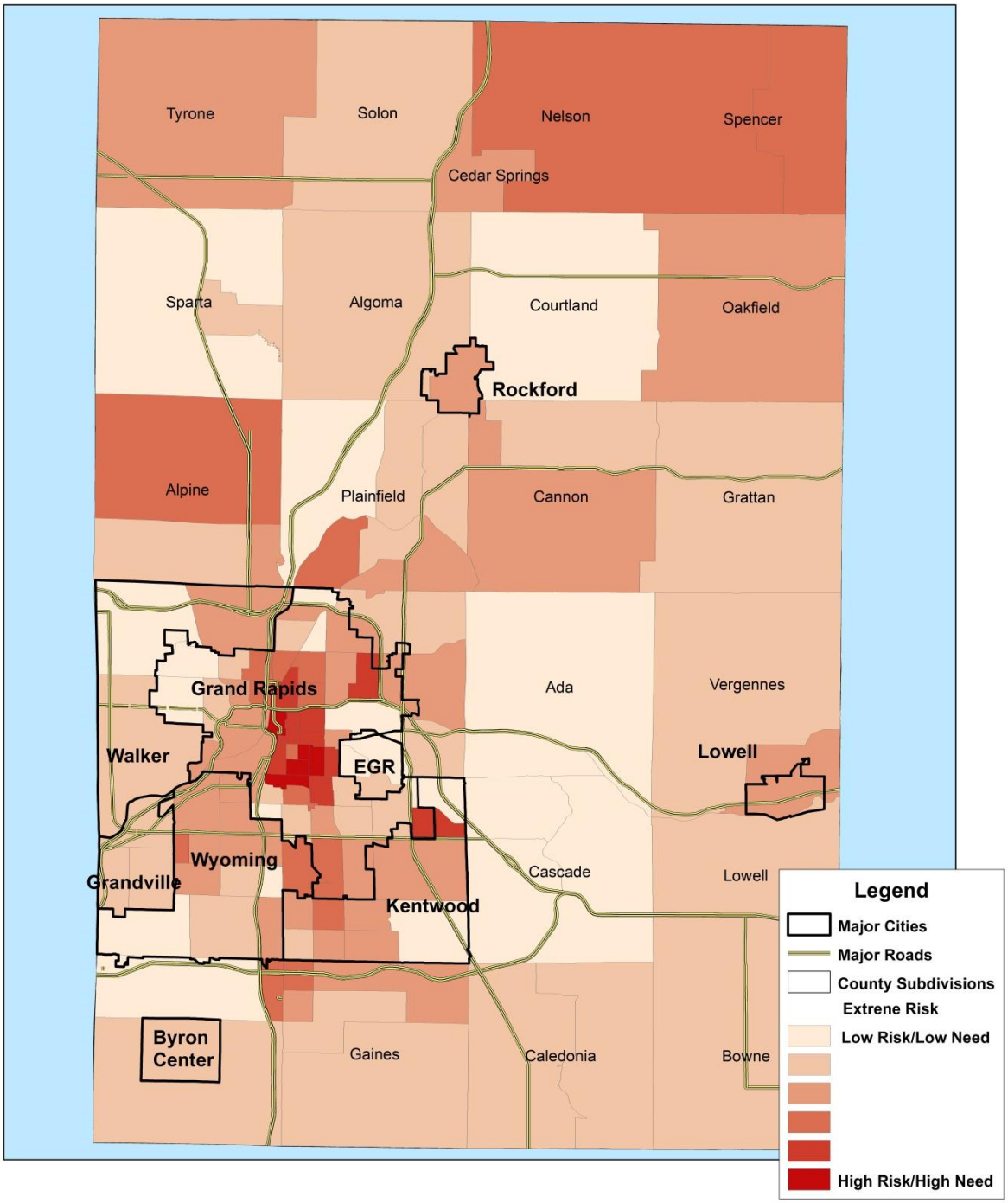
- **Factor 2 – Poor Immigrant Children**. The most severe risk factors among children in this cluster are the high percentage of households that are linguistically isolated. Those with limited English proficiency typically suffer wage penalties, earning between 4 and 40 percent of their English-proficient peers. Children living in linguistically isolated households typically have lower achievement scores than those in non-linguistically isolated households (Jiménez, 2006). In addition, moderately high levels of women associated with this group did not begin prenatal care during their first trimester. They are also likely to be poor and largely Hispanic.

- **Factor 3 –Moderately Poor and Isolated**. Children associated with this cluster are most likely not to be enrolled in child care or preschool. Although we did not assign an urban or rural classification scheme to the factor analysis, it is evident that the census tracts most closely associated with this factor are indeed rural, especially in the northwest corner of Kent County. Although these tracts do not suffer from high levels of children living in poverty, they do have moderately low levels of household income. In addition, the mothers of children in this cluster are unlikely to have smoked during pregnancy.

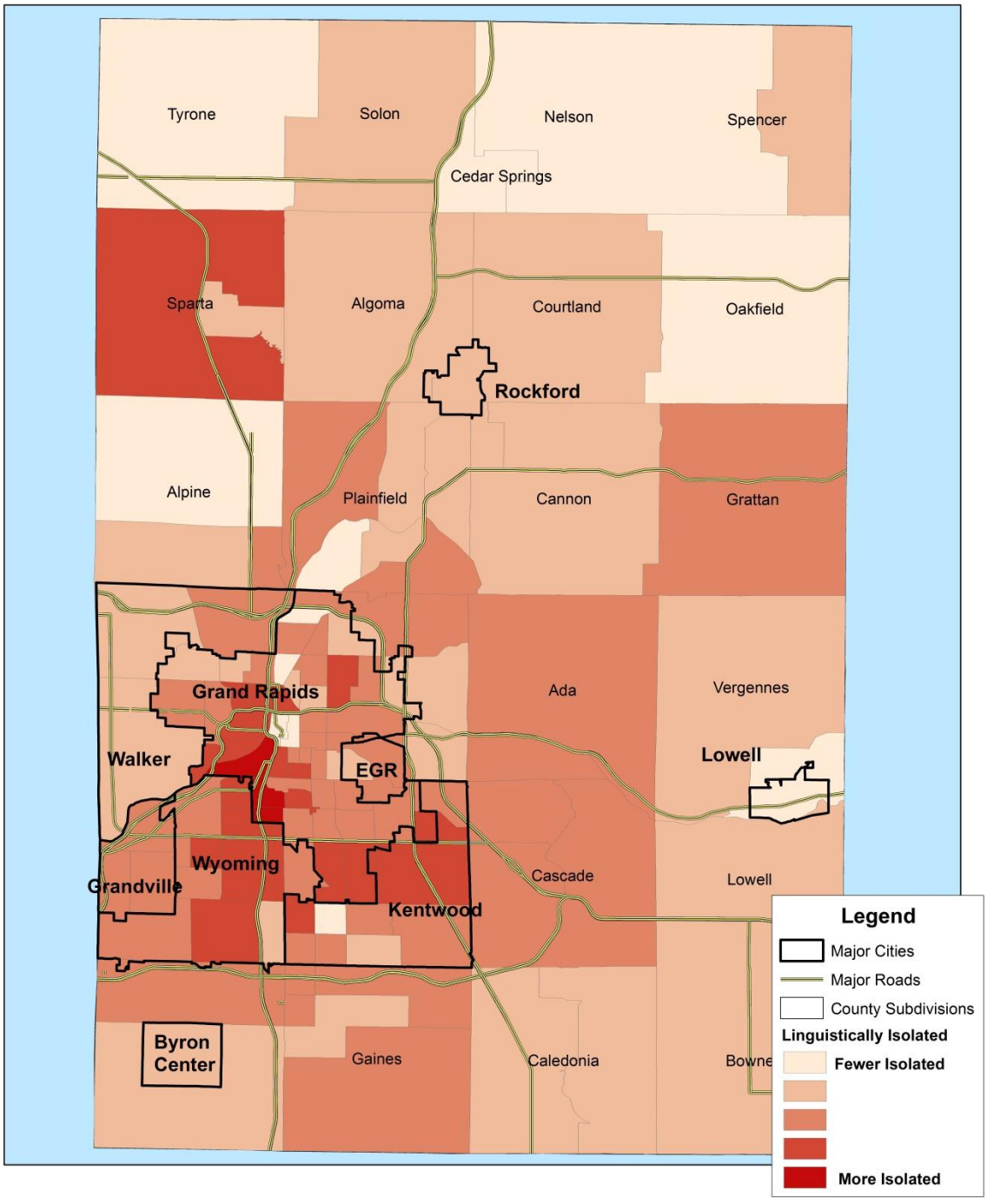
We developed three summary maps of each of the factors. Areas with darker shading are those most associated with the factors. For example, in the map on the following page detailing Extreme Risk/Extreme Need Children, the areas of inner city Grand Rapids are those most associated with Factor 1. The lighter shaded areas, such as Ada and Cascade exhibit little to none of the characteristics associated with Factor 1 and thus, we could conclude that on balance, there are few children with extreme risk and extreme need in these areas.

Analysis such as this may be useful in planning how to develop appropriate policy responses to the differing needs of individual communities and is particularly useful in uncovering relationships that are difficult to ascertain when examining the various indicators one-by-one.

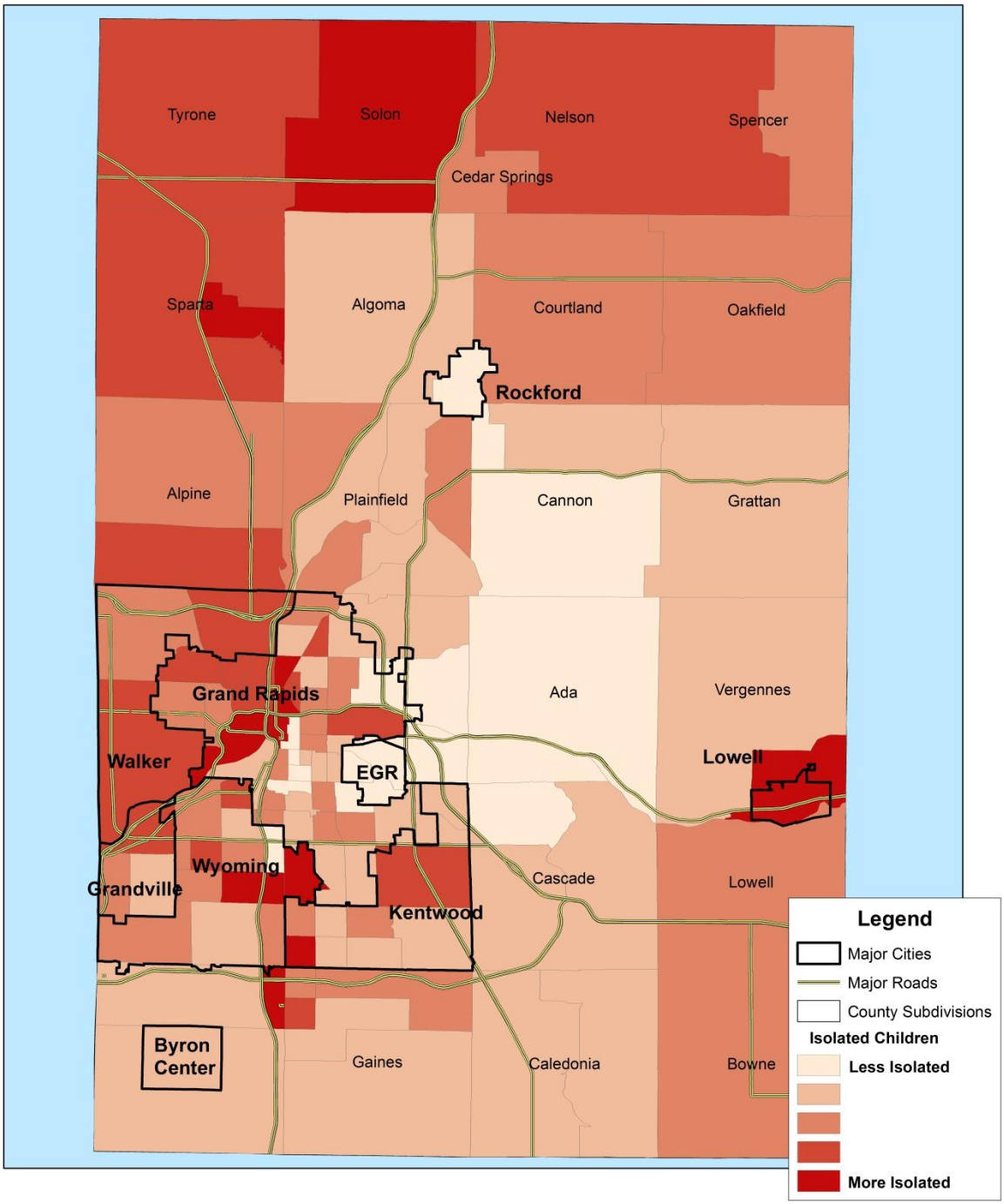
Extreme Risk - Extreme Need Children



Low-Income Linguistically Isolated Children



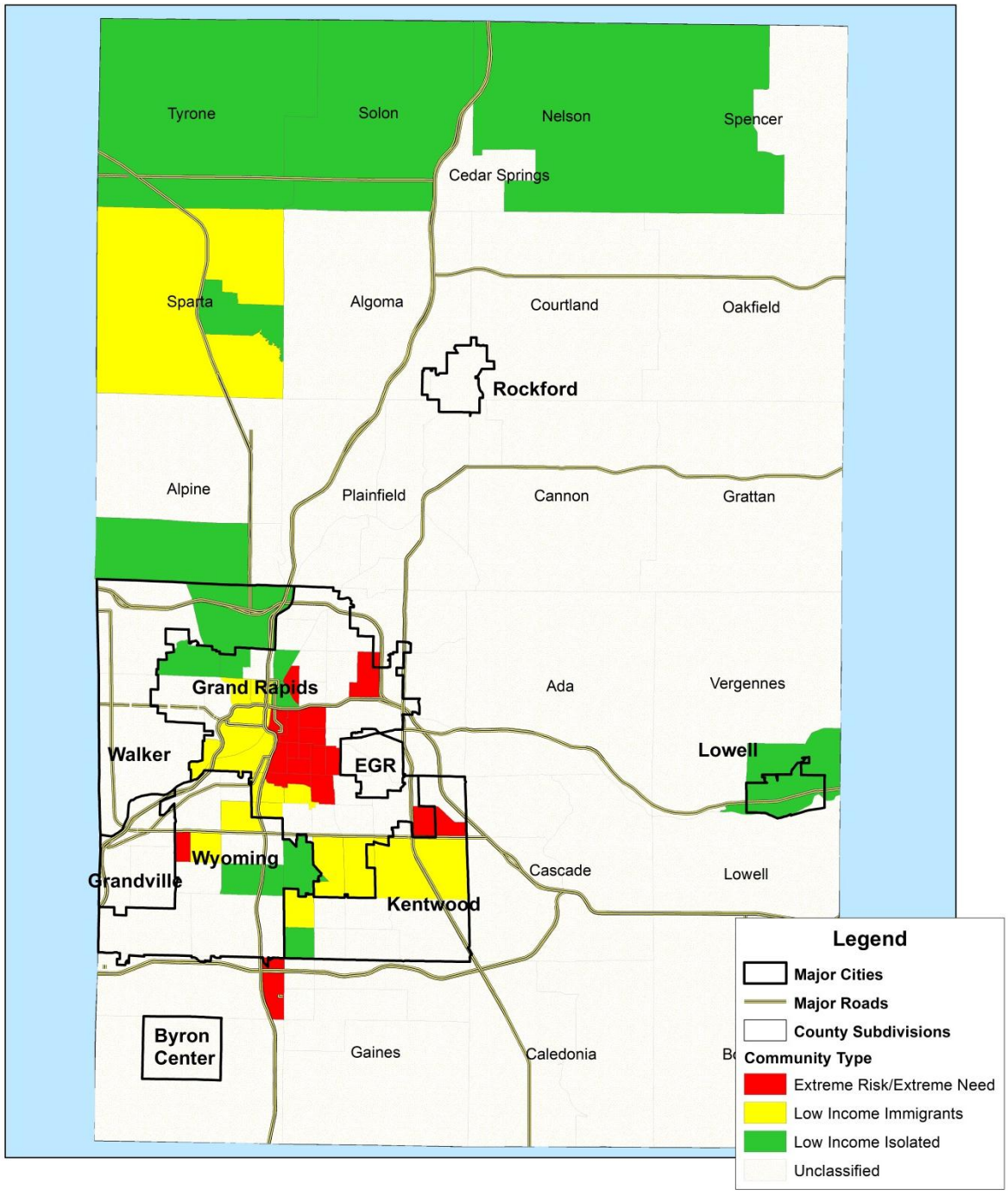
Moderately Low-Income and Isolated Children



In the final map, we summarized the census tracts into one of the three aforementioned categories based on the factor scores. It must be noted that every tract receives a score on each of the three factors, but we chose only to highlight those census tracts demonstrating the greatest needs based on their factor scores. The selection of the 37 census tracts mapped on the following page were those determined most likely to have significant need. This interpretation is guided by theory, but invariably contains a subjective component. Thus, there is no single solution in identifying communities in need.

Finally, we moved to designate each census tract as having a definable need based on the previous analysis into a single, best-fitting type. To facilitate easy interpretation of the scores, the factor scores were rescaled from 0 to 100 with 100 being the most severe in terms of characteristics of need.

Classification Summary by Community Type



Section III - Childcare Affordability

DEFINITION*:* Most measures and estimates of childcare affordability are derived from surveys or focused studies within a defined geographic area. Given that we know of no current survey data in Michigan that measures childcare affordability coupled with community desires to analyze this key indicator at a low geographic area, we developed estimates of childcare affordability within Kent County at the census tract level. These estimates were derived from several data sources, including the American Community Survey, the Bureau of Labor Statistics and the National Association of Child Care Resource and Referral Agencies.

The indicator is a measure of the family income deficit a hypothetical child at various poverty levels would need to attend full-time childcare, while also factoring in housing and transportation expenses. The deficit model seemed most appropriate for the analysis since it offers policy-makers the ability to better understand resource gaps required to provide childcare services for those most in need as well as the cost of subsidizing those services when and where appropriate. We chose to include housing and transportation expenses in our formula because they are the largest expenses for the typical household and there are a number of generally accepted methods for estimating such expenses. The analysis of childcare affordability is calculated based on the following assumptions:

- Housing expenditures were calculated based on the median rent in each census tract as reported in the 2005 – 2009 American Community Survey small area estimates.
- Transportation expenditures were estimated from the 2008 (most recently available) Consumer Expenditure Data developed by the Bureau of Labor Statistics. We developed the estimates based on the average transportation expenditures among the population in the lower quintile, which is 13.21%. We applied this value to all census tracts.
- Childcare expenditures were derived on average yearly childcare expenditures for a newborn receiving full-time childcare and a four year old receiving full-time child care. The average for the two age groups was based on the annual fees for an infant receiving childcare service in a center and those receiving care in a family child-care home. Care provided in the family child-care home is 10 – 15% cheaper than care provided by a center. In 2011, the average cost for full-time childcare for a newborn in Michigan was $8,112 per year. The average cost for full-time childcare for a four year old was $6,342.
- We estimated family resources by calculating the approximate annual income based on poverty estimates from the American Community Survey. We developed estimates for two families of interest:
    - A child living in a family at or below 75% of the federal poverty level, and
    - A child living in a family between 100 and 125% of the federal poverty level.

Below is an example of how we calculated the childcare affordability income deficit or surplus estimates for a newborn living in a family at or below 75% of the FPL:

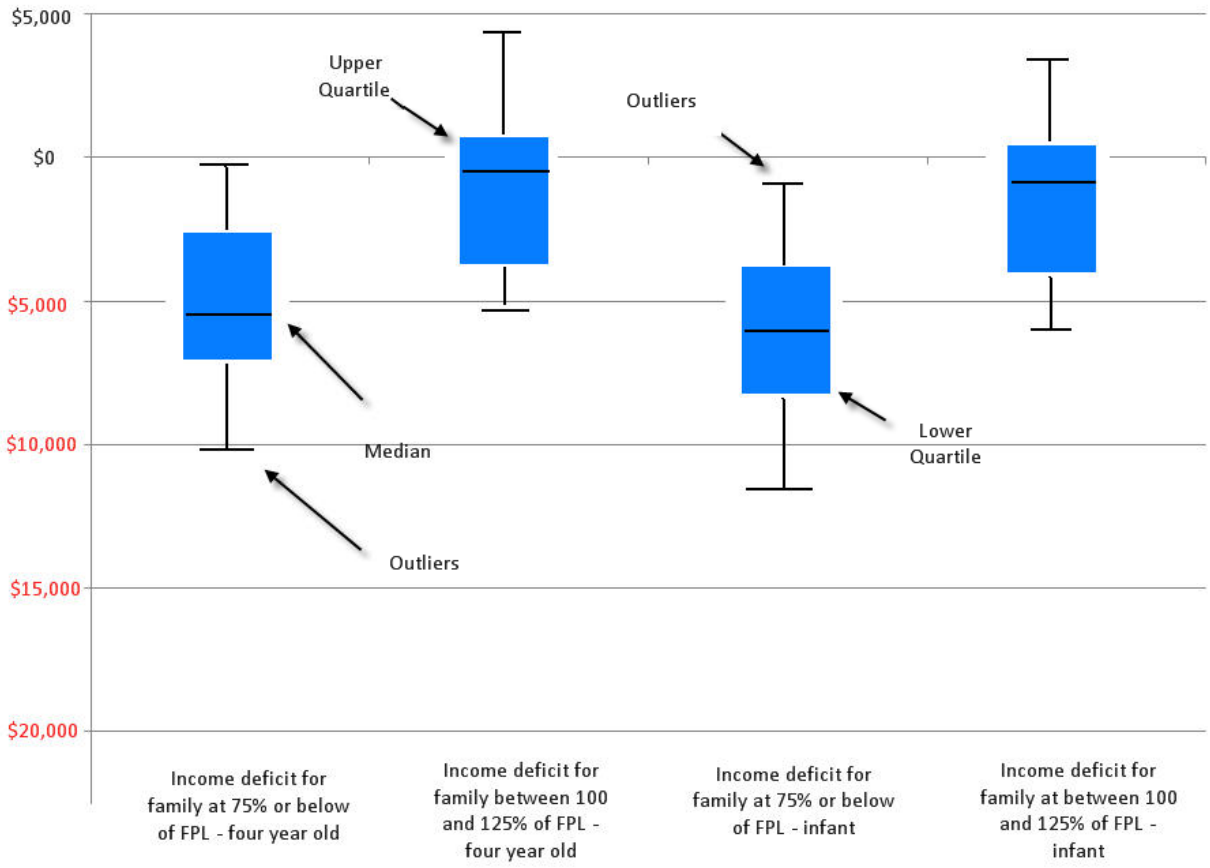
$$Income\ Deficit\ or\ Surplus = 75\%\ FPL - (Housing\ (Median\ Rent) + Transportation\ (Ave\ Trans\ for\ bottom\ quintile\ income) + Childcare\ (newborn)$$

RATIONALE: Affordable, high quality child care is one of the most critical needs of working parents. Needs for child care vary across a wide range of children, such as care for infants, special needs children, children who are ill and for those needing care at specific times, such as after-school care. Nationally and in Michigan, many low- and moderate-income parents have difficulty affording high quality care. The National Association of Child Care Resource and Referral Agencies estimates that the cost for full-time care for an infant in a childcare center is about 11.4% of the median income for a married couple. As a proportion of costs, the burden for childcare among single-headed households is much greater. Full-time childcare costs for a newborn among single female-headed households consume nearly 40% of median income.

ANALYSIS: The methodology we chose to analyze child care affordability in Kent County is very conservative, because it does not include all household or consumer expenditures. For example, we ignored food costs as well as personal expenditures due to an inability to find broadly accepted metrics. Although the Bureau of Labor Statistics develops consumer expenditure data for other types of household expenditures, there were no estimates available for our geography of interest. Thus, the analysis provided within this report offers readers the ability to consider the requisite resources needed to provide housing, transportation and childcare based solely on assumptions related to the income of the child's family.

Because of the wide variability in the income deficits needed for full-time childcare in each of Kent County's 126 census tracts, we developed a box plot to represent the results of our analysis. The box plot provides a visual summary of many important aspects of a distribution. The box stretches from the lower hinge (defined as the first quartile or 25th percentile) to the upper hinge (the 75th percentile) and therefore contains the middle half of the scores in the distribution. Among children living at 75% or below of FPL, the typical income deficit required for full-time childcare was more than $5,700 and $6,600 annually for a four year old and infant respectively. There is not one census tract within Kent County where a family living at 75% or below of FPL would sufficient income to cover their housing, transportation and childcare expenditures. For children living in families with incomes between 100 and 125% of FPL, the overwhelming majority of families would also have severe income deficits if utilizing childcare services. The typical family with a four year old living between 100 and 125% of FPL would have an annual deficit of nearly $300 while a similar family with a newborn, would have an annual deficit of nearly $1,200. Using this methodology, however, it is evident to see in Figure 1 that about a quarter of Kent County census tracts would actually show a surplus of income when factoring transportation, housing and childcare costs for their respective tracts.

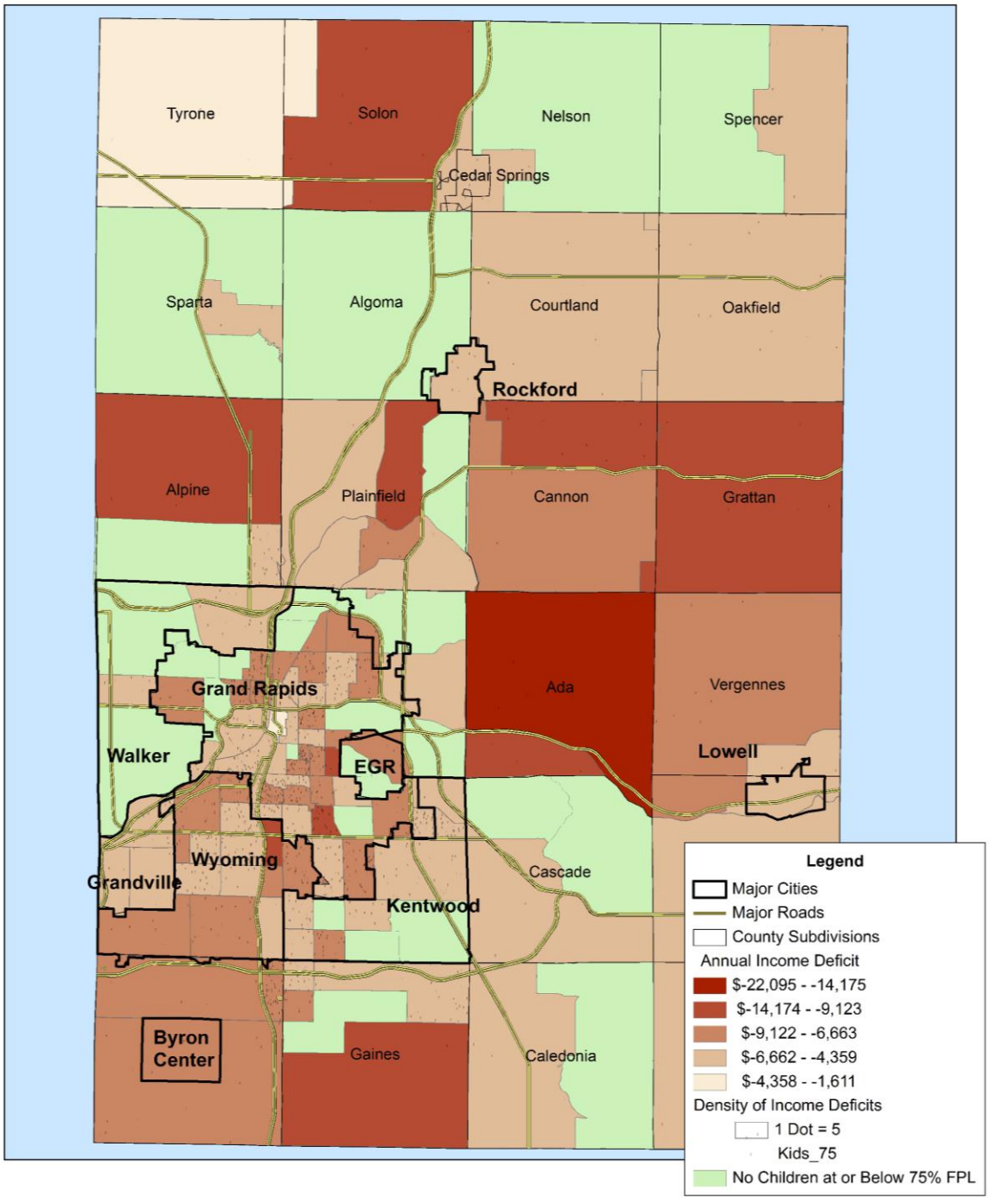
Figure 18: Box Plot of Income Deficit and Surplus for Full-time Childcare Services: At or Below 75% of FPL and Between 100 and 125% of FPL



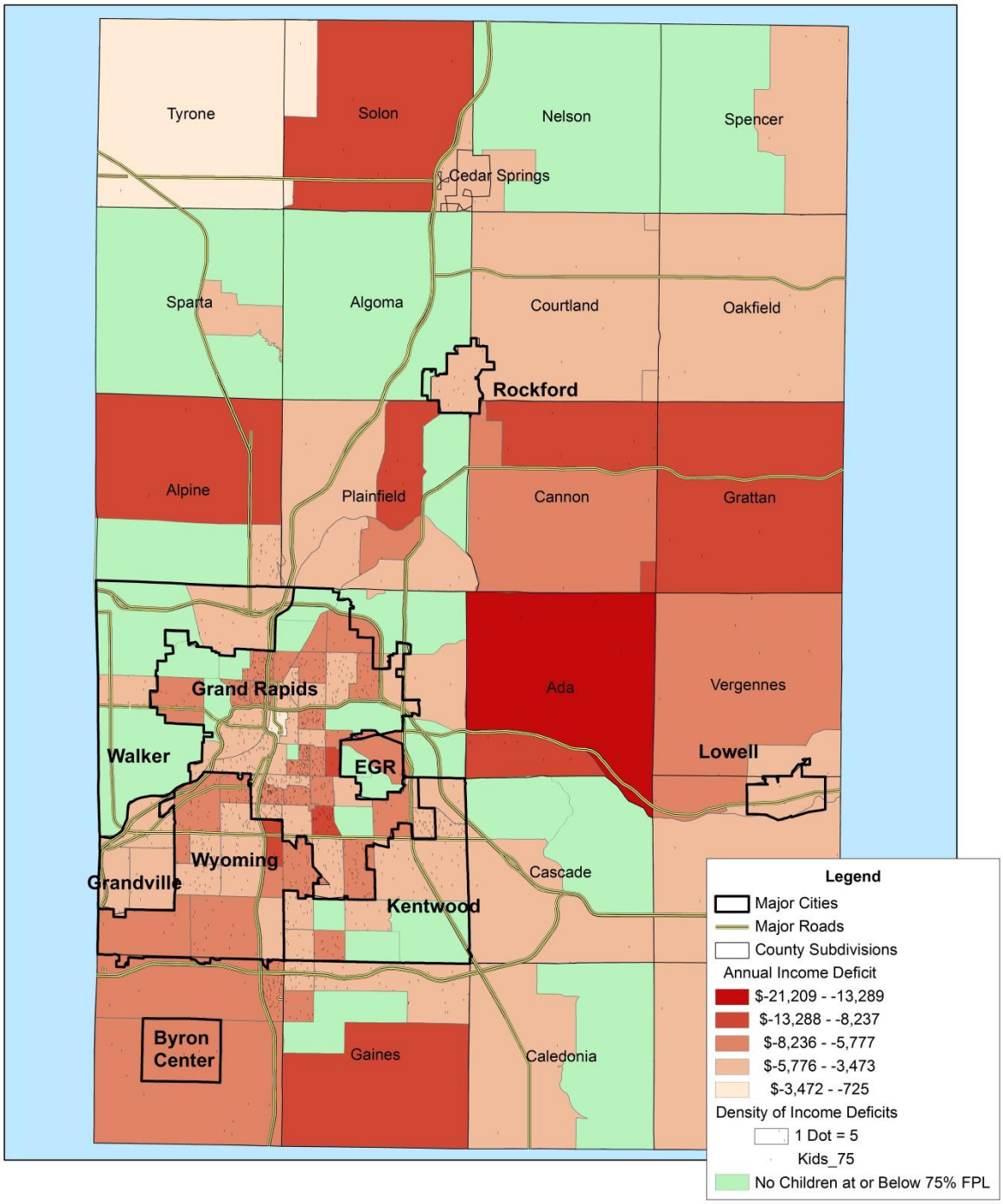
Because of the great variability among income deficits across census tracts, we developed a series of maps based on the same analysis provided in the previous figure. This analysis was developed to demonstrate where income deficits are the greatest in absolute terms and then also to demonstrate where the greatest densities of children whose families have income deficits (implying that they could potentially benefit from childcare subsidies) to assist policymakers in developing appropriate interventions and strategies to assist those in need.

A relatively different picture has emerged from this particular analysis as compared to the analysis of previous indicators. In many instances of our previous analysis, areas of inner-city Grand Rapids have shown some of the most severe deficits. In this analysis, however, Ada is among one of the areas in Kent County exhibiting the greatest childcare income deficits. This seems to be a function of the housing costs in Ada, which are three to four times that of many census tracts in Grand Rapids. In relative terms, income deficits related to childcare affordability are severely impacted by high living costs. In can be shown, however, that despite greater relative need in other areas of the county (those shaded in darker colors), absolute need is still greatest in Grand Rapids because of the sheer numbers of families with children living in poverty. The absolute need is displayed on each map through the density dots, where each dot represents 5 children living in a family with an income deficit.

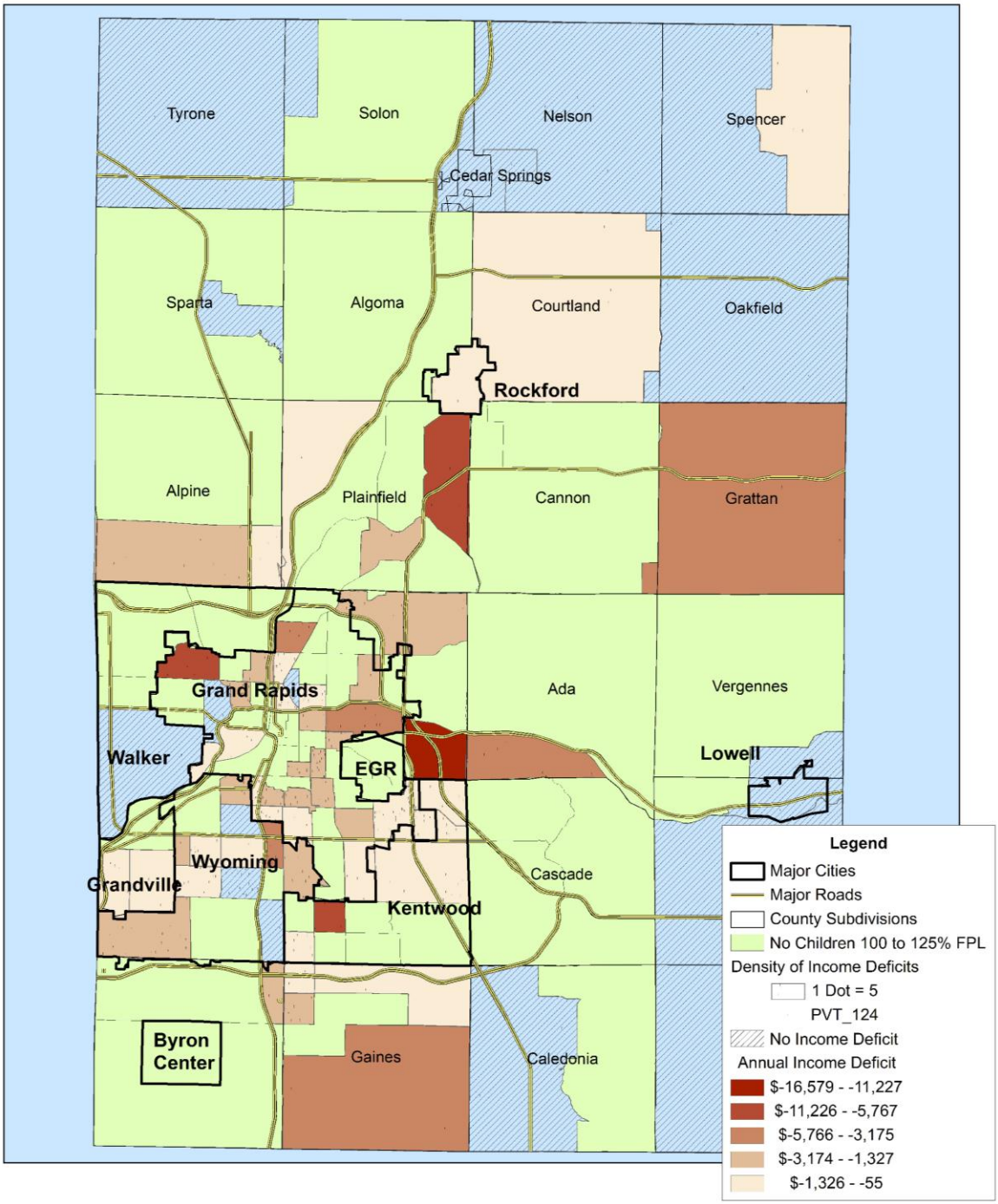
Annual Income Deficit Required for Full-Time Childcare for a Newborn - Families at or Below the 75% of FPL



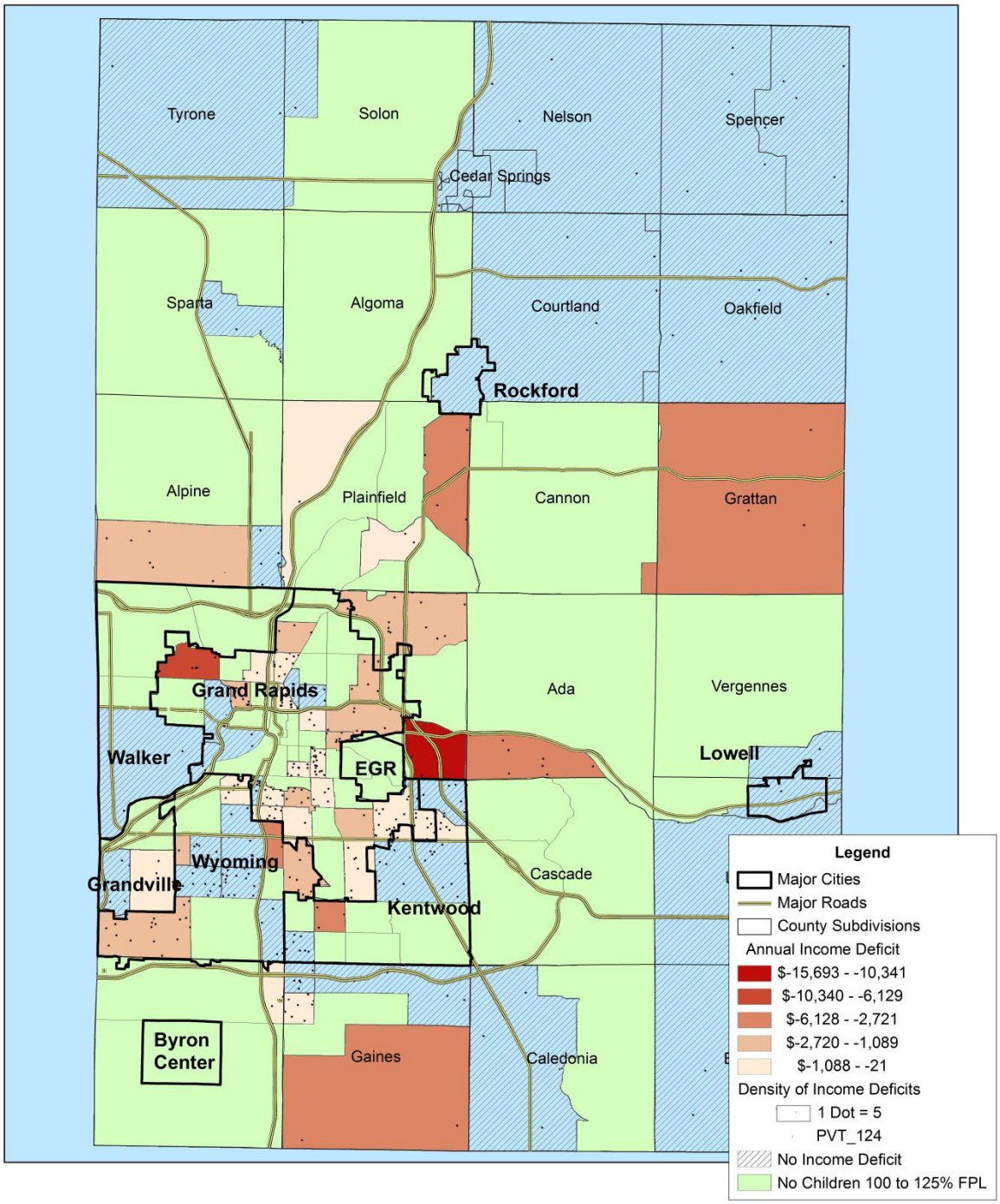
Annual Income Deficit Required for Full-Time Childcare for a 4 Year Old - Families at or Below 75% FPL



Annual Income Deficit Required for Full-Time Childcare for a Newborn - Families Between 100 - 125% FPL



Annual Income Deficit Required for Full-Time Childcare for a 4 Year Old - Families Between 100 and 125% FPL



References

Aliyu, M. H., Wilson, R. E., Zoorob, R., Brown, K., Alio, A. P., Clayton, H., et al. (2009). Prenatal alcohol consumption and fetal growth restriction: Potentiation effect by concomitant smoking. [Article]. *Nicotine & Tobacco Research, 11*(1), 36-43.

American Academy of Pediatrics. (2006). Identifying infants and young children with developmental disorders in the medical home: An algorithm for developmental surveillance and screening. *Pediatrics, 118*(1), 405-420.

Assistant Secretary for Planning and Evaluation. (2011a). 2011 HHS Poverty Guidelines. Retrieved April 23, 2011, from http://aspe.hhs.gov/poverty/11poverty.shtml.

Assistant Secretary for Planning and Evaluation. (2011b). Frequently Asked Questions Related to the Poverty Guidelines and Poverty. Retrieved April 23, 2011, from http://aspe.hhs.gov/poverty/faq.shtml.

Boyle C.A., Decoufle P., & Yeargin-Allsopp M. (1994). Prevalence and health impact of developmental disabilities in US children. *Pediatrics,* 93(3), 399–403.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. [Article]. *Annual Review of Psychology, 53*(1), 371.

Briscoe, J. (1994). The cost of child abuse and neglect. [Article]. *Corrections Today, 56*(7), 26.

Christopher, K. (2005). "The poverty line forty years later: Alternative poverty measures and women's lives". [Article]. *Race, Gender & Class, 12*(2), 34-52.

Cockley, D. E. (1996). *The effect of subsidized primary care centers in avoidable hospitalization in West Virginia communities during 1988-1992.* Chapel Hill, NC: Department of Health Policy and Administration, The University of North Carolina at Chapel Hill.

Conde-Agudelo, A., Rosas-Bermúdez, A., & Kafury-Goeta, A. C. (2006). Birth spacing and risk of adverse perinatal outcomes. *JAMA: The Journal of the American Medical Association, 295*(15), 1809-1823.

Cox, J., Holden, J., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry, 150*(6), 782-786.

Dinour, L. M., Bergen, D., & Yeh, M.-C. (2007). The food insecurity-obesity paradox: A review of the literature and the role food stamps may play. *Journal of the American Dietetic Association, 107*(11), 1952-1961.

Division of Nutrition Physical Activity and Obesity, & National Center for Chronic Disease Prevention and Health Promotion. (2011). Healthy weight - it's not a diet, it's a lifestyle! Retrieved April 23, 2011, from http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html.

Drewnowski, A., & Darmon, N. (2005). Food choices and diet costs: An economic analysis. *J Nutr, 135*(4), 900-904.

Economics and Statistics Administration, & Bureau of the Census. (1994). *Geographic areas reference manual*. Washington, DC: U.S. Department of Commerce.

Gray, R. F., Indurkhya, A., & McCormick, M. C. (2004). Prevalence, stability, and predictors of clinically significant behavior problems in low birth weight children at 3, 5, and 8 years of age. *Pediatrics, 114*(3), 736-743.

Greater Grand Rapids Children's Environmental Health Initiative. (2009). *Summary of environmental health indicators for Kent County, Michigan*. Grand Rapids, MI: Author.

Hack, M., Flannery, D. J., Schluchter, M., Cartar, L., Borawski, E., & Klein, N. (2002). Outcomes in young adulthood for very-low-birth-weight infants. *New England Journal of Medicine, 346*(3), 149-157.

Henshaw, C., Foreman, D., & Cox, J. (2004). Postnatal blues: A risk factor for postnatal depression. [Article]. *Journal of Psychosomatic Obstetrics & Gynecology, 25*(3/4), 267-272.

Herbst, M. A., Mercer, B. M., Beazley, D., Meyer, N., & Carr, T. (2003). Relationship of prenatal care and perinatal morbidity in low-birth-weight infants. *American Journal of Obstetrics and Gynecology, 189*(4), 930-933.

Jiménez, R. (2006). Chapter 8: A response to "the linguistic isolation of Hispanic students in California's public schools". [Article]. *Yearbook of the National Society for the Study of Education (Wiley-Blackwell), 105*(2), 155-172.

Karoly, L., Kilburn, M., & Cannon, J. (2005). *Early childhood interventions: Proven results, future promise*. Santa Monica, CA: Rand.

Kolker, K. (2011). Grand Rapids down, W Michigan counties up in census 2010. Retrieved April 1, 2011, from http://www.woodtv.com/dpp/news/local/kent_county/2010-census-numbers-for-west-michigan.

Landry, D. J., & Forrest, J. D. (1995). How old are U.S. fathers? *Family Planning Perspectives, 27*(4), 159-165.

Lansford, J. E., Dodge, K. A., Pettit, G. S., Bates, J. E., Crozier, J., & Kaplow, J. (2002). A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Arch Pediatr Adolesc Med, 156*(8), 824-830.

Liu, Y., Liu, J., Ye, R., & Li, Z. (2006). Association of preconceptional health care utilization and early initiation of prenatal care.(Original Article). *Journal of Perinatology, 26*(7), 409.

Moehler, E., Kagan, J., Parzer, P., Brunner, R., Reck, C., Wiebel, A., et al. (2007). Childhood behavioral inhibition and maternal symptoms of depression. *Psychopathology, 40*(6), 446-452.

Nebraska Health Informaiton Project. (1996). *Ambulatory care sensitive condition 1994 - 1995*. Omaha, NE: Nebraska Center for Rural Health Research.

Ricketts, T. C. (1997). Access and ambulatory care sensitive conditions. *The Journal of Rural Health, 13*(4), 275-275.

Ricketts, T. C., Randolph, R., Howard, H. A., Pathman, D., & Carey, T. (2001). Hospitalization rates as indicators of access to primary care. *Health & Place, 7*, 27-38.

Rosenberg, S.A., Zhang, D., & Robinson, C.C. (2008). Prevalence of developmental delays and participation in early intervention services for young children. *Pediatrics*, 121(6), e1503-09.

Schreiber, S., & Zielinski, T. (1997). The meaning of ambulatory care sensitive admissions: Urban and rural perspectives. *The Journal of Rural Health, 13*(4), 276-284.

Shlay, A. B., Weinraub, M., Harmon, M., & Tran, H. (2004). Barriers to subsidies: Why low-income families do not use child care subsidies. *Social Science Research, 33*(1), 134-157.

Shukla, R. K., & Pestian, J. P. (1996). *Small area analysis of primary care sentinel events in Virginia*. Richmond, VA: Williamson Institute for Health Studies, Viriginia Commonwealth University.

Silver, M. P., Babitz, M. E., & Magill, M. K. (1997). Ambulatory care sensitive hospitalization rates in the aged Medicare population in Utah, 1990-1994. *The Journal of Rural Health, 13*(4), 285-294.

Simpson, G.A., Colpe, L., Greenspan, S. (2003). Measuring functional developmental delay in infants and young children: Prevalence rates from the NHIS-D. *Paediatr Perinat Epidemiol,* 17(1), 68–80.

Smith, P. J., Chu, S. Y., & Barker, L. E. (2004). Children who have received no vaccines: Who are they and where do they live? *Pediatrics, 114*(1), 187-195.

Tanumihardjo, S. A., Anderson, C., Kaufer-Horwitz, M., Bode, L., Emenaker, N. J., Haqq, A. M., et al. (2007). Poverty, obesity, and malnutrition: An international perspective recognizing the paradox. *Journal of the American Dietetic Association, 107*(11), 1966-1972.

The Consortium on Safe Labor. (2010). Respiratory morbidity in late preterm births. *JAMA: The Journal of the American Medical Association, 304*(4), 419-425.

Townsend, M. S. (2006). Obesity in low-income communities: Prevalence, effects, a place to begin. *Journal of the American Dietetic Association, 106*(1), 34-37.

University of Wisconsin Population Health Institute. (2011). County health rankings: Mobilizing action toward community health. Retrieved November 8, 2010, from http://www.countyhealthrankings.org/.

Weinraub, M., Shlay, A. B., Harmon, M., & Tran, H. (2005). Subsidizing child care: How child care subsidies affect the child care used by low-income African American families. *Early Childhood Research Quarterly, 20*(4), 373-392.

Work Group of the Advisory Committee on Childhood Lead Poisoning Prevention. (2004). *A review of evidence of health effects of blood lead levels <10 µg/dl in children*. Atlanta, GA: National Center for Environmental Health - Centers for Disease Control and Prevention.