# ❧THE MEAL DEFICIT METRIC PROJECT❧

## Measuring Missing Meals at a Granular Level Across Florida

**MDM**

*Commissioned By*

FEEDING® FLORIDA
Florida's Food Bank Network

## EXECUTIVE SUMMARY
March 2020

## OVERVIEW

### The Meal Deficit Metric

Imagine dividing the state of Florida into more than 11,400 small pieces and statistically predicting "hunger totals" for each one. This is exactly what The Meal Deficit Metric Project accomplishes across Florida.

The Meal Deficit Metric is a unique model developed by Mari Gallagher Research & Consulting Group (MG) and commissioned by Feeding Florida, the premier statewide association of food banks.

The Meal Deficit Metric calculates the unmet food gap at a very low geography after "netting out" (1) all government food subsidies such as the Supplemental Nutrition Assistance Program (SNAP) and free-or-reduced-price school meals, (2) charitable food provided through pantries and other organizations, and (3) all other ways that households might acquire food, including support from friends and relatives. The Meal Deficit Metric predicts meals that are missed because households cannot afford them. This is distinct from dieting and fasting for reasons not related to food affordability.

### A New Approach

Why is this work unique? First, our model uses only Florida-specific data and generates statistically significant results at a very small geographic unit. Up until now, most food banks across America have only had access to reliable "net hunger totals," with results at the state or county level. Looking down from such a high plateau, how is it possible to accurately identify the locations and totals of missed meals across a county? Most know that Florida is a diverse state and that there is great variation among counties, but there is also great variation *within* counties.

Let us consider Hillsborough County, Florida, as an example of how the Meal Deficit Metric is designed to help local food bank leaders pinpoint, quantify,

### APPENDIX

The Appendix is a separate document that includes very high-resolution maps for each Florida county. Please consult the download instructions.

**MORE INFORMATION AVAILABLE ONLINE AT:**

**FeedingFlorida.org**

**MariGallagher.com**

### ⤖FEEDING FLORIDA⤖

This research would not be possible without the generous support and thought leadership of Feeding Florida and its members.

Thank you for your steadfast commitment to fighting hunger every day in every community across the entire State of Florida.

and address hunger. Hillsborough County has a total area of 1,266 square miles that includes urban centers such as Tampa, but also suburbs, small towns, and very low-density rural areas. Instead of only one score to apply across this large and diverse county, our model divides Hillsborough into 879 small pieces and generates reliable scores for each one.

Florida, in many ways, is the land of food abundance, with its rich, fertile soil, long growing season, lush farms, vast fisheries, and 300-plus commodity crops. Hunger in Florida is often underestimated and hidden from view. Because our model (1) considers all households, not just poor households or those households that self-identify as "food insecure" and (2) calculates missing meals at these very small geographic units, true hunger is revealed in a new way that makes meaningful and trackable food relief possible.

> **Florida is leading the way in the application of this new approach**

> **The MDM can be applied to other states, regions, counties, cities, towns, and communities across America**

Anti-hunger leaders and public officials *everywhere* are well aware of those "obvious sections" of their counties with high concentrations of very poor households. But having a sense of (1) where many poor people live and (2) their general population count, is not synonymous with (3) quantifying the number of net missing meals or (4) pinpointing the locations where meals are missed. Nor does it account for (5) those "not so obvious" households and locations where meals might regularly or periodically be missed because households cannot afford them.

### New Terminology

> **We _avoid_ the labels _food insecure_ and _food insecurity_**

All movements require a periodic updating of methods and terminology. Many food relief advocates across America use the term "food insecure" to (1) describe all SNAP-qualifying households (which is an income bracket adjusted for household size) as (2) the population that experiences hunger. In our view, this is problematic for many reasons. In this new body of work, we avoid the labels "food insecure" and "food insecurity" and instead use "net missing meals" and "net meal deficit" as more accurate and specific descriptions.

Where did the term "food insecurity" originate?

In 1939, as America was recovering from the Great Depression, the federal government created its first version of today's food relief program. In the 1960s, efforts were refined and tested with pilot programs. This ultimately resulted in the Food Stamp Act of 1964 (SNAP's predecessor).

For the first time, there was wide public awareness of hunger and poverty. In response, federal program officials developed a formula that used household income (adjusted by the number of members in the household) as a way to quantify and target the national "food insecure" population. Income was the early proxy

> **Instead we use _net missing meals_ and _net meal deficit_**

for "food insecurity" and for hunger. But "food insecurity" programs were designed to *reduce* "food insecurity" and as such *reduce* hunger. Therefore, the terms should not be used interchangeably unless (1) all efforts that contribute to reducing hunger are netted out and (2) all households of all income levels are considered. In the 1990s, the United States Department of Agriculture (USDA), in partnership with others, began a yearly hunger survey. This results in yearly "food insecurity" reports based on survey findings. When USDA researchers use the term "food insecurity" in their survey analysis, they are indeed "netting out" all other ways that households might acquire food and they consider all households. This survey is of tremendous value. It is a dependable, reliable, year-to-year assessment of hunger across America. As such, it is a major resource in all anti-hunger toolboxes. We use Florida-specific results from the hunger survey as one of many components in our Meal Deficit Metric Model. However, in many other cases in the larger anti-hunger field, the term "food insecurity" is used incorrectly and is misunderstood.

> **The USDA Hunger Survey is extremely valuable**

> **Food banks, pantries, and most feeding and anti-hunger programs across America receive support from the USDA in the form of dollars or food**

> **Learn more at: FNS.USDA.gov**

Imagine assigning all households residing anywhere in the United States to one of these three categories: (1) those that qualify for and receive government food subsidies such as SNAP; (2) those that qualify for but *do not* receive government food subsidies, for whatever reason; and (3) those that do not qualify for government food subsidies and therefore do not receive them. Each of these three household categories across a large geography will have some combination of (1) households that regularly miss meals, (2) households that periodically or occasionally miss meals, and (3) households that have all their meal needs completely met. The number of households that qualify for food subsidies is often incorrectly conflated with the number of households that go hungry. This is confusing, and also incorrect.

> **The Meal Deficit Metric takes the stereotypes and the guesswork out of directing food relief to households in need**

A second problem is that announcing that a community has a certain number of these "food insecure families" does not reveal how many meals they are missing. It weights all households equally as having the same meal deficit and adds the households up as one total. However, households do not all have the exact same meal shortage. Households miss meals for different reasons and at different times. Some miss them regularly each week or at the end of the month, when resources run short. Others miss them periodically at different times of the year due to unforeseen hardships (such as an illness, job loss, or divorce). Some households miss some or more meals than usual depending on the season (when household employment is seasonal, for example).

The Meal Deficit Metric takes the stereotypes and the guesswork out of directing food relief to households in need. In many communities across America, wages have not kept up with the

rising cost of housing, daycare, health insurance, and other necessities. Some households might earn a good wage but still have very tight budgets and maxed-out credit. When the unexpected happens, it is not just the "obvious poor" who have to choose between paying bills or buying enough food. This is why it is important to consider all households in all income brackets and then "net out" all resources used to put food on the table, including but not limited to government food programs, using *localized* data. And this is also why we have developed a few new terms to communicate what exactly our model measures.

## Acknowledgements

**Feeding Florida's substantial investment of resources, insights, and thought leadership made this work possible**

**Learn more at FeedingFlorida.org**

**Many have directly or indirectly contributed to this work – thank you**

# KEY FINDINGS

## Overview

> **All Florida counties, big and small, have serious hunger issues and require resources and thoughtful attention**

In this section, we provide high-level findings of net missing meals across Florida. A set of high-resolution maps is in the Appendix, one map for each of Florida's 67 counties, with the exception of Monroe County. Monroe is surrounded by water and a good portion of it is included in the county boundary; two maps were required for clarity. Maps are high-resolution. To zoom in and enlarge features, view maps on a desktop computer and increase the "percentage shown" number. Maps detail weekly missing meals per household across the county for small, pinpointed areas. These geographic units are technically called "block groups" because they consist of a small cluster of individual blocks. Florida Meal Deficit Metric scores are statistically significant at the block group level. For more information, please see the Methodology section.

## Florida Results

With more than 21 million residents, Florida is a diverse and large state. It has 300-plus commodity crops, industrial and small family farms, and local community-supported agricultural initiatives. Florida has a capable, statewide system that administers government food subsidy benefits such SNAP. In 2017, the SNAP program included 3,187,000 Florida residents, or 15% of the state population (1 in 7). Total Florida SNAP benefits for that year totaled $4.78 billion. And there are other government-funded food subsidy programs; SNAP is not the only one, and this underscores the importance of "netting out" from hunger totals all ways families acquire food.

Although some areas are defined as food deserts or low grocery access areas, overall, there are many high-quality chain and independent grocers throughout the state that accept SNAP. Florida has a comprehensive charitable food relief system. Feeding Florida, for example, has 12 food bank members that together serve every county in the state. As a united, committed, and focused voice, Feeding Florida advocates for those who go hungry, and as an effective anti-hunger network, it provides food directly to families in need through their own facilities and through 2,300-plus local charitable agencies.

Floridians have many ways of acquiring food, but those many ways still fall short. Many meals are missed because people cannot afford them. How many? Considering the fierce war waged on hunger in Florida, an astonishing number. Florida has a yearly net Meal Deficit of 880 million meals.

> **Accounting for all food subsidies, food bank support, and help from friends and family,**
> **Floridians miss a total of 880 million meals per year because they cannot afford them**

Households miss meals for different reasons and at different times. Some miss them regularly each week or at the end of the month, when resources run short. Others miss them periodically at different times of the year due to unforeseen hardships (such as an illness, job loss, or divorce). Some households miss some or more meals than usual depending on the season (when household employment is seasonal, for example).

As discussed in the Overview section, the focus should not exclusively be on traditionally defined poor households. The number of households that qualify for food subsidies is often incorrectly conflated with the number of households that go hungry. This is confusing, and also incorrect. The Meal Deficit Metric considers the meal needs of *all* Florida households.

As we all need to eat as part of the human condition, accounting for households that only *periodically* miss meals throughout the course of the year is one of many factors that contribute to this staggering yearly total: 880 million meals missed throughout the state. This is distinct from dieting and fasting for reasons not related to food affordability.

If the Meal Deficit burden was distributed equally across the state, the yearly total is equivalent to each man, woman, and child in Florida missing 41 meals per year. If all the meals were missed at one time, this would mean every Floridian going for two straight weeks without any kind of food.

> # The yearly Meal Deficit is equivalent to each Floridian
> ## —the entire population across the state— missing 41 meals per year
>
> ### If all the meals were missed at one time, this would mean every Floridian —for two straight weeks— would not eat a single meal

## Next we provide a table of all Florida counties by their county-level Meal Deficit Metric scores.

A few important notes first. Feeding Florida and its members are in the process of reviewing the 11,400-plus geographic units of nuanced results county by county to determine the best way to incorporate this evidence into local anti-hunger plans. We invite you to periodically visit FeedingFlorida.org or MariGallagher.com for future announcements and postings.

## Our goal in this document is to briefly present the big picture of the hunger challenge today in Florida.

It is premature at this stage to single out any particular county as having the most need or of being most worthy of support and solutions. All Florida counties, big and small, have serious hunger issues and require resources and thoughtful attention. For this reason, Meal Deficit Metric scores are listed in alphabetical order by county, not by a ranking of counties. We also provide a chart of the percentage of meals missed. A percentage, as opposed to a total, adjusts for population, making county scores comparable.

## However, we remind the reader these are scores looking down from the high plateau of the county level.

For example, the percentage of missing meals is based on the simple average of block groups across that county, and the average inevitably overlooks considerable variation across block groups within the county. Another county can have a cluster of block groups with a much higher percentage of missing meals, but that county's overall scoring masks that small cluster because other areas of the county have lower need. Summary tables and charts are very useful but should not be used to finalize decisions about which counties to prioritize for resource allocation.

> **Summary tables and charts are very useful but should not be used to finalize decisions about which counties to prioritize**

Next, we describe the variables that appear in the table (page 8) and the single variable that appears in the chart (page 10). More information is available in the Methodology section.

> **We exclude population living in "group quarters" such as nursing homes**

**(1) Current County Population**
The Meal Deficit Metric (MDM), by necessity, uses data that lag a few years in time. The MDM has also been designed to account for the population living in households. We exclude residents living in group quarters such as nursing homes or other large group (non-family) living arrangements where residents most likely have all of their meals provided for them. However, as a useful

reference point, we list in the table the most current total county population, which includes those residents living in households and in group quarters.

**(2) Total Yearly Missing Meals**

**Many households that miss meals do not quality for food subsidy programs**

This is the total net missing meals per year aggregated up from each block group across each county for the population living in households only. The Meal Deficit Metric includes households of all income levels. It is not limited to those considered "poor" or "food insecure." Keep in mind that many households that miss meals do not qualify for the SNAP or other food programs.

**(3) Total Weekly Missing Meals**
This is the total net missing weekly meals for each county for the population living in households only.

**Households miss meals for different reasons and at different times.**

Households miss meals for different reasons and at different times. Some miss them regularly each week or at the end of the month, when resources run short. Others miss them periodically at different times of the year due to unforeseen hardships (such as an illness, job loss, or divorce). Some households miss some or more meals than usual depending on the season (when household employment is seasonal, for example). Therefore, while the total yearly meal deficit accounts for all the different reasons people might miss meals across the 12-month period, the weekly total is the simple average across all the weeks in the year.

**(4) Average Weekly Household Missing Meals**
This is the average number of meals missed per week by a typical household. The Meal Deficit Metric model generates reliable scores at the individual block group level. In this table, we are making a few variables available to the public at the county level. For this county-level score, we use the simple average across all of the county's block groups.

**(5) Percentage of Total Meals Missed**
A general goal in society is for each household member to have steady access to three meals a day. This variable – the percentage of total meals missed – reveals how far short of that goal an area has fallen. As noted, households experience different meal losses, and those meal losses can be distributed in different ways at different times across different households. For this and other reasons, one cannot correctly try to extrapolate the meal deficit population total from this figure. For example, consider two distinct households that each contain four family members (two adults and two children). Each household in this example misses a total of four meals per week. In one household, the mother might miss all four meals. In another household, each parent might miss two meals. Or perhaps the children also miss some of the meals. And this meal loss distribution can vary week to week. The Meal Deficit Metric was designed to predict the total household meals missed across a very small geographic unit – the block group – to help food banks and their partners pinpoint and address the total meal deficit. The research team has provided them with additional block group data and tools to examine those block groups more closely. This enables them to launch effective and trackable hunger reduction plans.

| County Name & Units of Measurement* (Block Groups) See note at bottom of table | | Current County Population | Total Yearly Missing Meals | Total Weekly Missing Meals | Average Weekly Household Missing Meals | Percentage of Total Meals Missed |
|---|---|---|---|---|---|---|
| Alachua | 155 | 269,956 | 10,724,078 | 206,232 | 2.17 | 4.68% |
| Baker | 12 | 28,355 | 1,126,178 | 21,657 | 2.69 | 4.91% |
| Bay | 108 | 185,287 | 7,674,582 | 147,588 | 2.22 | 4.64% |
| Bradford | 18 | 27,732 | 1,166,199 | 22,427 | 2.63 | 5.26% |
| Brevard | 317 | 596,849 | 22,800,565 | 438,472 | 2.01 | 4.33% |
| Broward | 939 | 1,951,260 | 87,344,782 | 1,679,707 | 2.60 | 4.94% |
| Calhoun | 10 | 14,587 | 678,968 | 13,057 | 2.74 | 5.13% |
| Charlotte | 107 | 184,998 | 6,410,681 | 123,282 | 1.74 | 3.94% |
| Citrus | 87 | 147,929 | 6,186,238 | 118,966 | 2.01 | 4.47% |
| Clay | 81 | 216,072 | 8,015,234 | 154,139 | 2.19 | 4.12% |
| Collier | 192 | 378,488 | 11,832,643 | 227,551 | 1.83 | 3.42% |
| Columbia | 40 | 70,503 | 3,119,960 | 59,999 | 2.81 | 5.74% |
| DeSoto | 26 | 37,489 | 1,663,269 | 31,986 | 2.96 | 5.49% |
| Dixie | 12 | 16,700 | 734,512 | 14,125 | 2.36 | 4.87% |
| Duval | 489 | 950,181 | 43,877,955 | 843,807 | 2.68 | 5.58% |
| Escambia | 190 | 315,534 | 13,161,763 | 253,111 | 2.24 | 4.99% |
| Flagler | 51 | 112,067 | 3,914,393 | 75,277 | 1.94 | 3.92% |
| Franklin | 11 | 11,736 | 509,419 | 9,797 | 2.11 | 4.52% |
| Gadsden | 32 | 45,894 | 3,052,234 | 58,697 | 3.44 | 6.56% |
| Gilchrist | 13 | 18,256 | 728,206 | 14,004 | 2.28 | 4.57% |
| Glades | 10 | 13,724 | 457,114 | 8,791 | 2.39 | 4.97% |
| Gulf | 14 | 16,164 | 658,222 | 12,658 | 2.41 | 4.90% |
| Hamilton | 10 | 14,310 | 791,562 | 15,222 | 3.34 | 6.59% |
| Hardee | 20 | 27,245 | 1,248,975 | 24,019 | 3.04 | 5.26% |
| Hendry | 25 | 41,556 | 2,063,668 | 39,686 | 3.27 | 5.48% |
| Hernando | 106 | 190,865 | 8,054,164 | 154,888 | 2.24 | 4.66% |
| Highlands | 79 | 105,424 | 4,561,553 | 87,722 | 2.31 | 4.85% |
| Hillsborough | 879 | 1,436,888 | 62,339,084 | 1,198,829 | 2.53 | 5.01% |
| Holmes | 15 | 19,477 | 866,060 | 16,655 | 2.50 | 4.98% |
| Indian River | 92 | 157,413 | 5,611,182 | 107,907 | 1.84 | 4.06% |
| Jackson | 39 | 48,305 | 2,220,229 | 42,697 | 2.60 | 5.52% |
| Jefferson | 10 | 14,288 | 691,368 | 13,296 | 2.59 | 5.42% |
| Lafayette | 6 | 8,732 | 328,647 | 6,320 | 2.65 | 5.06% |
| Lake | 148 | 356,495 | 13,200,566 | 253,857 | 2.23 | 4.58% |
| Lee | 513 | 754,610 | 25,727,182 | 494,753 | 2.11 | 4.20% |
| Leon | 177 | 292,502 | 13,808,198 | 265,542 | 2.44 | 5.16% |
| Levy | 28 | 40,770 | 2,002,390 | 38,508 | 2.50 | 5.21% |
| Liberty | 6 | 8,457 | 323,922 | 6,229 | 2.51 | 4.84% |

| County Name & Units of Measurement* (Block Groups) See note at bottom of table | Current County Pop- ulation | Total Yearly Missing Meals | Total Weekly Missing Meals | Average Weekly Household Missing Meals | Percentage of Total Meals Missed |
|---|---|---|---|---|---|
| Madison | 16 | 18,529 | 1,032,066 | 19,847 | 3.02 | 6.24% |
| Manatee | 207 | 394,855 | 13,542,070 | 260,424 | 2.06 | 4.20% |
| Marion | 175 | 359,977 | 15,373,938 | 295,653 | 2.43 | 5.04% |
| Martin | 93 | 160,912 | 5,146,838 | 98,978 | 1.65 | 3.53% |
| Miami-Dade | 1,593 | 2,761,581 | 140,505,096 | 2,702,021 | 3.20 | 5.85% |
| Monroe | 76 | 75,027 | 2,422,738 | 46,591 | 1.54 | 3.47% |
| Nassau | 39 | 85,832 | 2,946,537 | 56,664 | 1.93 | 3.79% |
| Okaloosa | 115 | 207,269 | 7,531,556 | 144,838 | 1.89 | 3.93% |
| Okeechobee | 28 | 41,537 | 1,867,777 | 35,919 | 2.65 | 4.91% |
| Orange | 375 | 1,380,645 | 59,105,047 | 1,136,636 | 2.56 | 5.01% |
| Osceola | 76 | 367,990 | 15,144,765 | 291,245 | 2.92 | 5.48% |
| Palm Beach | 884 | 1,485,941 | 55,823,122 | 1,073,522 | 2.08 | 4.14% |
| Pasco | 307 | 539,630 | 20,355,823 | 391,458 | 2.15 | 4.47% |
| Pinellas | 719 | 975,280 | 37,731,292 | 725,602 | 1.89 | 4.29% |
| Polk | 331 | 708,009 | 29,004,590 | 557,781 | 2.66 | 5.08% |
| Putnam | 61 | 74,163 | 3,786,025 | 72,808 | 2.64 | 5.53% |
| Santa Rosa | 77 | 179,349 | 6,382,308 | 122,737 | 2.08 | 3.91% |
| Sarasota | 251 | 426,718 | 13,954,287 | 268,352 | 1.51 | 3.43% |
| Seminole | 235 | 467,832 | 15,786,259 | 303,582 | 2.09 | 4.24% |
| St. Johns | 81 | 254,261 | 6,752,769 | 129,861 | 1.56 | 3.22% |
| St. Lucie | 140 | 321,128 | 13,300,428 | 255,777 | 2.51 | 5.11% |
| Sumter | 41 | 128,754 | 3,018,692 | 58,052 | 1.87 | 4.17% |
| Suwannee | 26 | 44,191 | 2,192,120 | 42,156 | 2.84 | 5.62% |
| Taylor | 19 | 21,623 | 1,019,320 | 19,602 | 2.77 | 5.86% |
| Union | 9 | 14,940 | 578,283 | 11,121 | 2.91 | 5.38% |
| Volusia | 288 | 547,538 | 22,032,089 | 423,694 | 2.26 | 4.88% |
| Wakulla | 14 | 32,461 | 1,265,065 | 24,328 | 2.19 | 4.32% |
| Walton | 44 | 71,375 | 2,321,194 | 44,638 | 1.99 | 4.02% |
| Washington | 15 | 24,880 | 1,081,989 | 20,807 | 2.62 | 5.22% |
| TOTAL OR AVERAGE | 11,402 | 21,299,325 | 880,680,028 | 16,936,154 | 2.38 | 4.79% |

*NOTES

(1) Units of Measurement is the total number of small geographic areas for which the model generates reliable scores across the county. These geographic units are technically called "block groups" because they consist of a small cluster of individual blocks.

(2) There are 11,442 total block groups in Florida. The table sums to only 11,402 because there are 40 Florida block groups that are only water; those were immediately excluded from our baseline number of block groups. See the methodology section for more information.

## All Florida Counties

### Average Percentage of Total Meals Missed
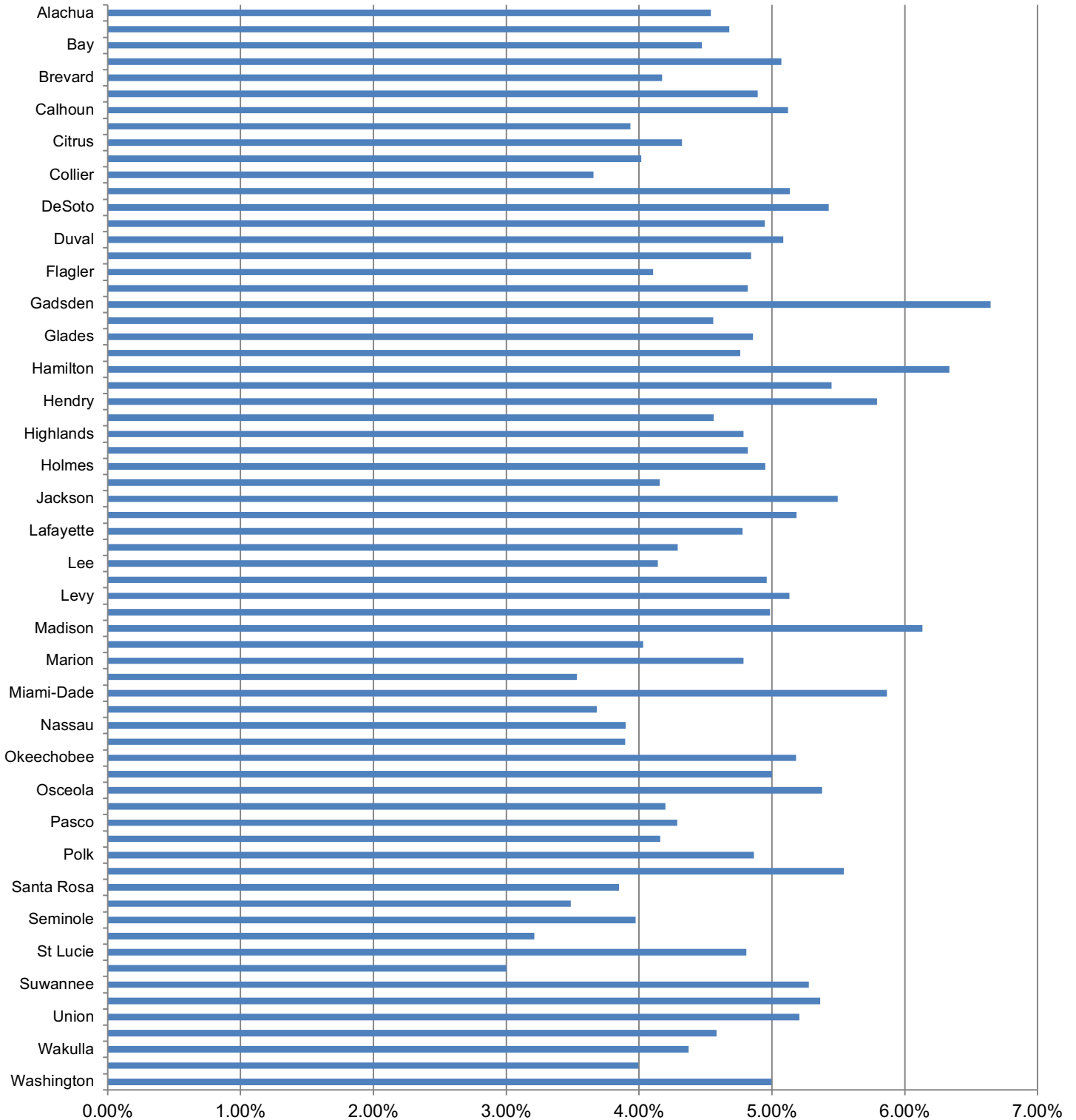
## METHODOLOGY

### A Unique Model

Mari Gallagher Research & Consulting Group (MG) developed a unique statistical model that utilizes a USDA hunger survey administered in Florida and across the United States. In the USDA hunger survey, respondents are asked a number of questions concerning food purchases, food subsidies, and missing meals. Our model uses only (1) Florida-specific household level data from the USDA hunger survey, (2) *additional* household level data collected from other Census-administered surveys and appended to hunger survey household records, and (3) demographic data from the American Community Survey at the block group level across Florida. We call the model the Meal Deficit Metric and its output is a Meal Deficit Score. Scores are in both missing meals and – for food bank planning purposes – missing meals are also converted to pounds of food.

The Meal Deficit Metric calculates the unmet food gap at a very low geography after "netting out" (1) government food subsidies such as SNAP and free-or-reduced-price school meals, (2) charitable food provided through pantries and other organizations, and (3) all other ways that households might acquire food, including support from friends and relatives. The Meal Deficit Metric predicts meals that are missed because households cannot afford them. This is distinct from dieting and fasting for reasons not related to food affordability.

### Reliability

The findings from our model are statistically significant, meaning that they are reliable and are unlikely to have resulted from chance patterns in the data.

### Unit of Measurement: The Block Group

Our unit of measurement is the Census-defined block group.

Over the past year, as we met with community leaders across Florida to introduce our work, we found that the "block group" as a geographic unit or even as a general concept is fairly unknown. This is not surprising. We have had this same experience in other parts of the country as well. This is most likely because funders and organizations in the nonprofit arena, not only in Florida, but all across the U.S., typically rely on tabulations by county, by ZIP Code, or by Census tract. Block group data are rarely used. We provide a brief explanation that we hope is useful as an introduction to block groups and why they are an ideal geographic unit for measuring and understanding "hunger totals" and other community conditions.

Over the course of history, county boundaries have changed from time to time, although today they rarely do. Determining county boundaries is strictly a state matter. The U.S. Census Bureau has created a hierarchy of geographic units below the county unit and re-examines (and, in some cases, re-configures) their boundaries every 10 years. Below the county, the next largest unit is the ZIP Code. There are two types of ZIP Code areas. To keep it simple, one can be considered a "postal" ZIP Code, originally created by the U.S. Postal System.

The other can be considered a "Census" ZIP Code, adopted and amended by the Census Bureau. The "postal" ZIP Code and the "Census" ZIP Code are geographically similar but usually not identical. We have seen instances where tabulated "Census" ZIP Code data is detailed in a table but then, as a location reference, the ZIP Code boundary is mapped using the "postal" boundary. There also can be confusion when ZIP Codes cross county boundaries. For example, if you are a county official, and you are relying on ZIP Code data either averaged or totaled across the ZIP Code, it would be helpful to know which ZIP Codes cross county boundaries.

Below the ZIP Code are Census-defined tracts. Tracts are made up of a cluster of block groups. They can be be large and elongated and stretch out in one direction for many miles.

Below tracts are Census-defined block groups. Blocks groups are a much smaller unit made up of a cluster of individual blocks. The block group has very robust data that is collected each year and rolled into moving five-year estimates as part of the American Community Survey. Results are very detailed and reliable. This is also true of tracts, but because block groups are much smaller, in our view, block group data are more insightful and actionable.

Blocks are the smallest Census unit, although any point on a block also can be pinpointed and mapped, and many rural blocks also can stretch out for comparatively long distances compared to urban blocks. Blocks have very limited data: every 10 years, the Census updates its counts of total block population by race and by adults and children.

Here is an illustration from one of our community PowerPoint presentations underscoring the small size of block groups compared to other units of measurement:
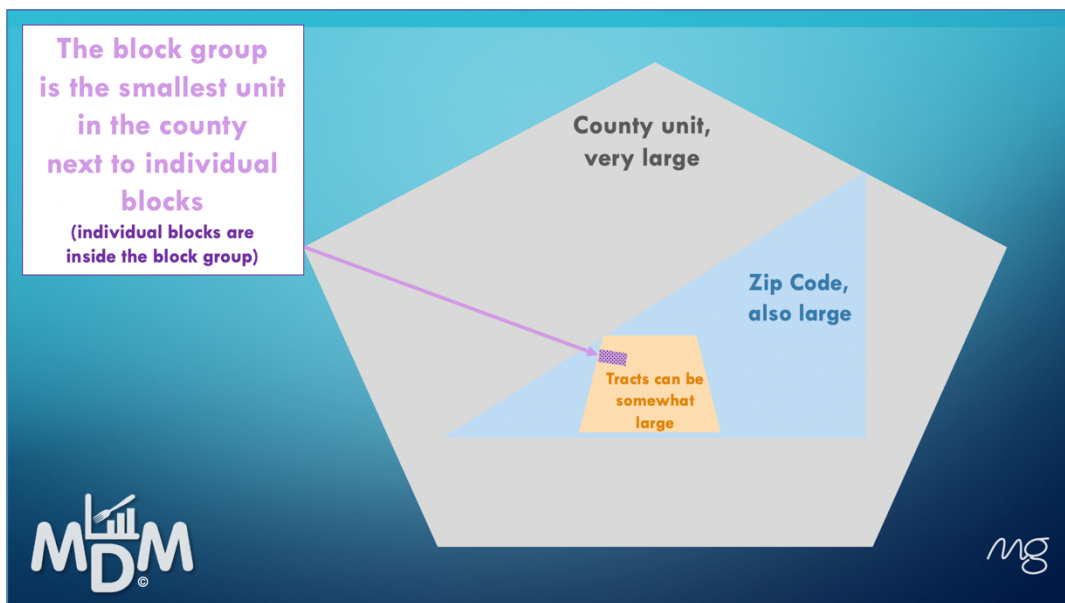


Florida has over 11,400 block groups. This compares to 67 counties, 1,104 ZIP Codes (248 of which cross county boundaries), and just over 4,000 tracts. That our model results in reliable scores at the block group level is ideal: to fight hunger effectively, it is critical to pinpoint exact locations where meals are missing. This public report focuses on high-level findings:

total meals missed across the entire state and county-by-county. Local block group scores within counties are being reviewed and incorporated into local anti-hunger plans.

## Excluded Block Groups

Those block groups across Florida that have zero or very low population or have insufficient data among the data fields required by our model have been excluded from scoring.

Take Palm Beach County as an example.

Palm Beach County has 886 block groups. However, two are completely in water, and those were immediately eliminated from the analysis, resulting in our baseline block group number being 884. Of that total, 862 block groups (roughly 96%) have robust enough data to calculate meal deficit scores. We were able to impute "meal gap" scores for half of the 4% of remaining block groups. This increased our scoring of all baseline block groups to 98%. Only a small number of remaining block groups within conservation areas or with very low residential population constituted the 2% that were not appropriate for scoring.

## Pilot Project

Our model was first developed as a pilot project for Palm Beach County block groups in 2017. Known for its beautiful beaches, expensive retirement homes, sophisticated hotels, and lush golf courses, Palm Beach County also has a residential population that struggles to make ends meet. This is certainly the case in every county across Florida, and probably every county across America. However, Florida in many ways is the land of abundance; with its rich, fertile soil, long growing season, farms and fisheries, and 300-plus commodity crops, hunger is often underestimated and hidden from view. Because our model (1) considers all households – not just poor households or those households that self-identify as "food insecure" — and (2) calculates missing meals at these very small geographic units – the block group – true hunger is revealed in a new way that makes meaningful and trackable food relief planning possible.

## Statewide Launch

After completion of the Palm Beach County pilot and the period of time needed to review this new approach and the results with Feeding Florida's leadership team, we were commissioned to apply our model to the state as a whole. The effort to calculate meal deficit scores for all block groups across all 67 Florida counties in Florida thus began in early 2019. However, to be consistent with the work begun in Palm Beach County, we kept the same baseline year of data usage, which was the most recent data available in 2017 when the model was first developed and applied to Palm Beach County. We expect to update results for all block groups across Florida in the near future and to track progress in hunger reduction moving forward from this initial baseline.

By early summer of 2019, Meal Deficit Metric deliverables for each of the 67 counties were completed. This included a "re-run" of Palm Beach County. These statewide results were also statistically significant and, as such, reliable, and the Palm Beach County results were consistent with our initial model application. During the second half of 2019, we participated in

community briefings with Feeding Florida's leadership to begin to introduce the approach and results. Now, in January of 2020, high-level findings are being released to the public.

## Action Zone Geospatial Cluster Analysis

After producing an estimate for the meal deficit of the typical family in each block group, we conducted a Spatially Constrained Multivariate Clustering Analysis in ArcGIS Pro to find groupings of contiguous block groups that were statistically similar across a set of characteristics (meal deficit, income, race, education, family structure). This type of analysis is described here: http://pro.arcgis.com/en/pro-app/tool-reference/spatial-statistics/spatially-constrained-multivariate-clustering.htm

The objective was to create groupings where the similarity between contiguous block groups within the same group is greater than the similarity between any contiguous blocks in different groups. The program calculates the optimal number of groups and the specific block groups that belong within each group. This is similar to a standard practice in marketing research where a broad market (e.g. breakfast foods) is partitioned into several distinct sub-markets (healthy, convenient, gluten-free) based on product and consumer characteristics (calories, preparation time, allergies, adult or child).

The cluster analysis results in a number of Action Zones for each county. For example, Orange County has 12 distinct Action Zones. Some are large in land area; others are much smaller. Because different Action Zones by design contain populations with different characteristics, they might require different or modified food relief strategies. Our purpose in conducting the cluster analysis was not to enable food banks to assign clients to Action Zones or talk publicly about Action Zones. Our purpose was instead to provide an extra behind-the-scenes tool for Feeding Florida and its members. Imagine that a food bank is targeting a particular community for a special initiative. Perhaps this community includes block groups located in different Action Zones. In serving the community, it is useful to know that these two sets of block groups are distinct in some way. Perhaps the block groups in one Action Zone are comprised of mostly young families with children that have certain meal preferences and different times of the day when they can access pantries and programs. Perhaps the block groups in the other Action Zone are comprised mostly of seniors living alone that have other needs and preferences. The overall strategy then is informed by this information.

> **To be consistent with the Palm Beach County pilot, we kept the same baseline year of data usage, which was the most recent data available in 2017 when the model was first developed and applied to Palm Beach County.**

## Data Details

As discussed, the model pilot began in 2017, and we continued with that year's most recent data to be consistent as we applied the model to the entire state of Florida. Our current all-Florida projections are based on block group characteristics (in the 2015 American Community Survey – ACS) and the relationship between household characteristics and the number of additional meals each household requires to meet its basic food needs (estimated from the December 1995-2014 "Food Security" Supplement to the Current Population Survey – CPS). The CPS is a nationally representative

monthly survey administered by the U.S. Census Bureau. For the years 1995-2014, 22,000 Florida households participated, and their data were extracted from the IPUMS-CPS website. Each December, the survey contains a set of questions, devised in cooperation with the U.S. Department of Agriculture (USDA), to assess unmet food needs in households. The survey asks useful questions, including: (1) "what is the usual weekly amount the household spends on food?" and (2) "how much additional money is needed in order for the household to meet weekly basic household needs for food?" The two questions were combined to determine how many additional meals the household needed to "meet weekly basic household needs for food." This was done by adding (1) and (2) together (to get the weekly food spending that would meet basic needs), using the household composition to determine the cost of each of the household's 21 meals per person per week (assuming that each adult meal was 1.5 times the cost of each child meal), and dividing (2) by the estimated per meal cost to determine how many meals (rather than how many dollars) were represented by the family's unmet food needs.

## ABOUT FEEDING FLORIDA



Feeding Florida is the state's leading organization in the fight to end hunger. Its statewide network unites its 12 member food banks to provide a healthy, adequate, and consistent food supply to every community every day. Feeding Florida member food banks support more than 2,300 local charitable agencies, which provide food directly to individuals and families in

need to ensure a hunger-free Florida. Feeding Florida is a unified voice regarding hunger and focuses on each community's needs.

Feeding Florida's member food banks include: All Faiths Food Bank, America's Second Harvest of the Big Bend, Inc., Bread of the Mighty, Feeding Northeast Florida, Feeding South Florida, Feeding Tampa Bay, Feeding the Gulf Coast, First Step Food Bank, Florida Gateway Food Bank, Harry Chapin Food Bank of Southwest Florida, Second Harvest Food Bank of Central Florida, and Treasure Coast Food Bank.

## ABOUT THE RESEARCH TEAM

Mari Gallagher Research & Consulting Group (MG) is a national firm specializing in localized data, strategic information, and measurable solutions. MG authored *Examining the Impact of Food Deserts on Public Health in Chicago*, a breakthrough study that popularized the term "Food Desert" nationally in 2006 and encouraged Congress to enter "Food Desert" language into the Farm Bill. In large part because of MG's work, millions of dollars have been invested in underserved areas across the country. MG consults on strategies that improve quality of life, community health, neighborhood market conditions, and the reduction of hunger. MG has received dozens of awards over the years, including one from Concern Worldwide, a global organization that focuses on hunger reduction. Clients and partners include grassroots community and civic organizations, government entities, foundations, small and large for-profit and non-profit ventures, healthcare systems, and major international corporations. MG's work has informed the Institute of Medicine, Congress, and diverse policy, market, and public health initiatives.

The Meal Deficit Metric utilized the ability to (1) conduct statistical modeling and manage and analyze large datasets at pinpointed geographies, (2) apply advanced skills in GIS, spatial analysis, and mapping, (3) integrate deep content knowledge across many fields, hunger being only one, (4) execute a statistical model that not only is reliable but has actionable, practical, and relevant applications for local food banks, (5) communicate complex findings to community audiences, (6) help local leaders develop evidence-based programs and strategies and monitor progress, and (7) understand and incorporate the uniqueness, regional distinctions, and agricultural diversity of Florida. Our firm has been working across Florida consistently for the last five years around issues concerning hunger, local food systems, food deserts, public health impacts, untapped market opportunities, and disaster relief. We are especially proud of our intense *pro bono* work that supported Feeding Florida's response to Hurricane Michael.

We are grateful to Feeding Florida, the Florida Department of Agriculture and Consumer Services, and many others for the invitation over these many years to be of assistance.

The Florida partners that we have had the privilege to work with continue to inspire us and reinforce our belief that evidence-based solutions can indeed make the world better.