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FLORIDA COVID-19 EMPLOYMENT DISRUPTION & RESULTING MEAL DEFICIT ANALYSIS

A Granular Analysis Across the State

Commissioned By

FEEDING® FLORIDA
Florida's Food Bank Network

May 7, 2020

OVERVIEW

Unemployment Disruption

The overall goal of Feeding Florida in the commissioning of this body of work was to estimate how many meals are missed by Florida's newly unemployed population so that the Feeding Florida network – which serves every county throughout the state – can prepare to address the COVID-19 crisis. Our first objective to address this goal was to estimate how many meals are missed by this newly unemployed population because households can no longer afford them. We generated estimates of COVID-19 employment disruption at small geographic units across Florida. Our analysis estimates how many *additional workers* in a block group (*i.e.* over and above the baseline pre-COVID-19 level of unemployment) have become unemployed by either (1) the direct shutdown of businesses (such as bars, restaurants, and schools), or (2) the social distancing regulation that makes some work impossible to perform in a traditional workplace or remotely at home, where social distancing can be observed. These geographic units for which we generated unemployment projections are technically called "block groups" because they consist of small clusters of individual blocks. Imagine dividing the state of Florida into more than 11,400 small pieces and estimating highly reliable COVID-19 employment disruption for each one. This is what this work accomplishes.

Although we first anticipated and were commissioned to create one single approach for unemployment disruption, after embarking on the analysis we realized that – to understand the best and most accurate fit for the unique conditions of Florida – an analysis and examination of 4 separate approaches based on ability to work from home, essential and non-essential workers, and other factors related to the COVID-19 unemployment crisis was required. The four scenarios are described in detail in the methodology section, and our conclusions concerning why Scenario #4 is the best fit for Florida is explained in the Findings and in summary form in the sub-section of "Considerations & Limitations" of the Methodology section. In Scenario #4, which we conclude is most accurate, only essential workers and salaried workers continue to be employed. Even in some other types of other non-essential hourly employment, telecommuting may be feasible in theory but the absence of high-speed internet, adequate home computing resources, or the presence of pressing childcare needs can render the telecommuting option infeasible in practice for many of these workers.

The "worst case" scenario in terms of employment disruption is scenario #4.

This is the scenario that Florida officials need to prepare for.

Even if Florida conditions do not reach this upper bound, they will likely come very close.

The "worst case" scenario in terms of employment disruption is scenario #4. This is the scenario that Florida officials need to be prepared for and the one we have mapped by block group for every Florida county (maps are located in a separate online folder). Theses totals are what can be considered the upper bound, the highest projected rate of unemployment and need for additional meals. The additional unemployment crisis resulting from COVID-19 could very well reach this upper-bound level but it most likely will not exceed it. But even if it falls short of this projection, our analysis suggests that it will come very close to it. Projections for the other three alternative employment disruption scenarios are also provided. One of the four appears much "rosier" than the other three, but, in our view, it is far off the mark for Florida. We provide all scenarios for transparency and shared learning; hopefully other states will benefit from Florida's leadership in using evidence-based information to assess and respond to pressing pandemic conditions.

Missing Meals Resulting from COVID-19

The second objective was to estimate how many meals are missed by this newly unemployed population, accounting for all other ways these households might acquire meals and groceries, excluding any post-COVID-19 stimulus money or new increases in SNAP that might occur as a result of the pandemic. This is an update of our Meal Deficit Metric (MDM) model recently released for every block group across Florida (also over 11,400 units of geography). Our results were statistically significant at the block group level. The MDM calculates the unmet food gap at this 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. Again, the MDM predicts meals that are missed because households cannot afford them. This is distinct from dieting and fasting for reasons not related to food affordability.

What we were able to accomplish *now* in response to the pandemic was to *adapt* the MDM statistical model to our current employment disruption results and other measures. This allowed us to calculate *additional* meals missed due to COVID-19 unemployment. In the findings section, we detail the pre-and-post-COVID-19 meal deficit county-by-county along with unemployment projections, household internet access, and other useful variables. Maps of missing meals and other variables for each county are also provided by block group in a separate folder. The *original* MDM (released in March of 2020) and this "COVID-19" update of the MDM are both sponsored by Feeding Florida. To learn more about the MDM and our overall methodology, visit PinpointHunger.com or MariGallagher.com. Information on how we *updated* the MDM to account for missing meals resulting from COVID-19 can also be found in the methodology section of this Executive Summary.

Elder Vulnerability

A third objective was to detail elder vulnerability during this crisis. This includes maps and data tables showing residential locations of Florida elders who – though of retirement age – are or recently were in the workforce. Most of them likely continued working past retirement age because they have few assets and have a history of being in a low-to-moderate income category. These are the seniors that likely require ongoing income for daily needs, such as groceries. These senior jobs are usually low-tech and high-touch in terms of public

interaction. Those in an essential high touch job, such as grocery cashier, who continue to work, are putting themselves at a high health risk. Most, however, likely lost employment and are in need of grocery support.

Public Release Includes Detailed Spreadsheet of Block Group Results & Maps

Available now online (at PinpointHunger.com and MariGallagher.com) is this Executive Summary. Other information will be released in stages. Next, we will assemble and post maps for each county across Florida. We will then construct and post an Excel spreadsheet with block group details for all 11,400-plus geographic units across the state.

All maps in the map folder will be high resolution. Increase the "percentage shown" at the top of the PDF to enlarge features. The maps are intended to be viewed online, not printed, as printing to a standard size page will diminish the quality. The spreadsheet includes the original block group ID from the Census and what we call an MG block group ID, a shorter number that makes it easy for the viewer to find specific block groups on the "key code" map we will provide in the folder. We are providing additional *pro bono* analysis and deliverables beyond our required contract – including the construction and public release of a Florida-wide spreadsheet – to complement Feeding Florida's substantial commitment, leadership, and investment in fighting hunger every day and during times of crisis.

This body of work supports the Feeding Florida network and others throughout the state who are addressing the dire conditions that continue to mount as the pandemic continues, especially as it concerns the additional charitable meals needed because of the extensive employment disruption caused by COVID-19 and also the pre-COVID19 meal deficit. Feeding Florida has 12 food bank members that together serve every Florida county. 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.

We are posting detailed resources including a Florida-wide spreadsheet for public use to support local action and shared learning.

We thank Feeding Florida for commissioning this work and hope other states will benefit from Florida's leadership in using evidence-based information to assess and respond to pressing conditions resulting from COVID-19.

Visit PinpointHunger.com & MariGallagher.com for more information as it becomes available.

Acknowledgements

This work would not be possible without the support and leadership of Feeding Florida. We thank Feeding Florida, especially its Executive Director, Robin Safley, who has been tireless in her disaster relief efforts and her commitment to use evidence-based information to identify and help those in need. Her insights and feedback have been enormously helpful.

We also thank and acknowledge Feeding Florida's board Chair, Sandra Frank (All Faiths Food Bank), and its Vice Chair, Richard LeBer (Harry Chapin Food Bank of Southwest Florida), for also providing valuable feedback and encouragement at critical junctures as we developed and released the original MDM results.

Finally, our analysis benefited from recent employment analyses by other research organizations, specifically the Federal Reserve Bank of St. Louis and the National Bureau of Economic Research. We thank them for their efforts.

FINDINGS

Employment Disruption

Although we first anticipated and were commissioned to create one single approach for unemployment disruption, after embarking on the analysis we realized that – to understand the best and most accurate fit for the unique conditions of Florida – an analysis and examination of four separate approaches based on ability to work from home, essential and non-essential workers, and other factors related to the COVID-19 unemployment crisis was required. We provide all scenario results for transparency and shared learning.

The "worst case" scenario in terms of employment disruption is Scenario #4. This is what can be considered the upper bound, the highest projected rate of unemployment and need for additional meals and other types of support. The additional unemployment crisis resulting from COVID-19 could very well reach this level but it most likely will not exceed it. But even if it falls short of this projection, our analysis suggests that it will come very close to it. **Florida has a workforce that is distinct** from those in California, New York,

HIGHLIGHTS

- **Total unemployed without pay in Florida resulting from COVID-19: 3,324,551 workers**
- **Percentage of civilian workforce now or soon to be unemployed without pay related only to COVID-19: 35%**
- **Missing weekly meals resulting from only from the employment disruption of COVID-19: 2,723,532**
- **Pre-COVID-19 weekly missing meals** (per our March 2020 analysis – higher than previously documented by other studies): **16,936,154**
- **Pre-and-post-COVID-19 total weekly missing meals: 19,659,686**

Iowa, Alabama, or other states. We attempted to exhaust and scrutinize all plausible methods within a short timeframe to account for special economic and employment conditions across Florida, and we provide strong evidence in the methodology section as to why Florida officials should prepare for this worst outcome. This analysis was conducted for over 11,400 geographic units. We are making our spreadsheet of results, including all of the employment codes, public so that it can be utilized not only by Feeding Florida's strong food bank network but by all Florida officials and organizations that work hard each day to serve their constituents. Florida is a state with a strong resolve to rebound from crisis, whether from a hurricane or from the pressing conditions of today's pandemic.

We project the upper bound of unemployment disruption in Florida to approach if not actually reach 3,324,551 workers. This is the number of workers employed pre-COVID-19 who already have or soon will be unemployed or furloughed without pay; this does not include now-not-working-but-still-being-paid salaried workers. Overall across Florida, this represents 35% of the civilian workforce pre-COVID-19. However, as the tables and charts that follow reveal, some counties face tougher challenges. For example, St. Lucie and Volusia counties fare worst with a COVID-19-related unemployment rate of 48%. **This is not total unemployment. This is unemployment without pay resulting only from the pandemic.** By design, we are not factoring in any relief – such as unemployment benefits – that these laid-off workers might be receiving from state and federal programs.

Many of these households do not have traditional computer internet access in the household. For example, Dixie County has a weighted score of 49% of households without internet access in the household (and an additional unemployment rate without pay resulting from COVID-19 of 32%). Details follow in charts and tables for all counties. A few key points to eliminate confusion: (1) our unemployment without pay estimate is reliable and is based on specific Florida job categories factoring in the ability to work remotely off-site from home; (2) internet-related scores at the county level shown in the table are based on block group estimates from the most recent American Community Survey for all 11,400-plus Florida block groups; (3) block group level scores allow local leaders to assess block group conditions when utilizing our detailed spreadsheet, but note that our county scores (calculated up from the block group level) might be slightly different from other estimates updated more frequently but generated instead across the county level; (4) internet access in the home does not include internet access via smart phone or other small devices; and (5) we did not need to include traditional home internet access as an input into our unemployment projection. This last point is the most important. We were surprised at the number of households without traditional home internet access, and some county leaders might be as well, but please note that these numbers were not nor did they need to be factored into our projections. We provide them simply for additional information.

We also did not need to use state-wide or county-wide measures of Florida's unemployment situation in March and April in generating our projections. Nonetheless, it is useful to assess Florida-specific unemployment data, which also relate to stay-at-home orders and business restrictions due to the need for social distancing. The U.S. Bureau of Labor Statistics (BLS) reports the unemployment rate for each state with a one-month lag, using data from its monthly Current Population Survey (CPS). The BLS April 17, 2020 report is the most recent and describes the unemployment situation in each state during March 2020. The report to be released May 22, 2020 will describe unemployment during April 2020.

The restrictions on work and activities outside the home imposed by states in order to restrain the spread of the coronavirus (which has an effect on employment disruption and thus unemployment claims) did not generally begin until the middle of March. Therefore, for most states, the BLS unemployment rate will reflect only 2 weeks of the impact of those restrictions. Florida's stay-at-home order took affect April 3, so none of the effect of the order's restrictions will be evident in the March unemployment rate, although some of the self-imposed social distancing measures did have a partial effect on unemployment claims (discussed shortly). The March unemployment rate for Florida was 4.3%, an increase from February's 3.1% rate and January's 2.8% rate.

Like residents in other states, however, Floridians were already beginning to curtail their activities outside the home by the beginning of March, even in the absence of formal restrictions (and this affects the unemployment rate and claims to some degree). OpenTable.com reports restaurant seatings by state, based on both reservations and walk-ins. Their data show that restaurants in Florida were experiencing declines in seatings compared to one year ago as early as March 1: seatings in the following 7 days were down nearly 10% year-over-year. The next 7 days were down more than 25%, and the 7 days after that by 50%. By March 19 (a full day before the state ordered restaurants and bars to cease dine-in service and nearly 2 full weeks prior to the state's stay at home order), Most of Florida's non-fast-food restaurants with a drive-thru option had already essentially ended dining-in and those that could transitioned to delivery or curbside pickup. Others closed. As a result, some COVID-19 unemployment will already be apparent in Florida's March unemployment figures, although the full impact will not appear until the April figures are released on May 22.

A slightly more up-to-date picture of Florida's unemployment situation in recent weeks can be seen in new claims for Unemployment Insurance (UI). These figures reflect week-to-week changes in the population of workers covered by UI (*i.e.* excluding the self-employed). When economic activity is slowing and few workers are leaving unemployment for new jobs, the sum of new UI claims over the preceding weeks provides a useful proxy for the total number of unemployed workers at a point in time. This is useful, as it provides *weekly* updates rather that the *monthly* updates of the unemployment rate from the BLS.

New weekly UI claims in Florida rose from 74,313 in the week ending March 21 to 505,137 in the week ending April 18 and fell slightly to 432,465 in the week ending April 25. Over these 6 weeks, total new UI claims were 1,590,703 or 18.7% of the labor force covered by the UI program (again, not all workers are eligible for UI). These new additions will likely bring the total Florida unemployment rate (factoring in only those eligible to submit UI claims) to 23% by April 25 (the pre-COVID rate of 4.3% plus the additional 18.7%). If new UI claims increase by the same rate over the following 2 weeks (April 26-May 10) as they did over the week April 18-25, the state's unemployment rate will be 33% by the end of April (again, factoring in only those eligible to submit UI claims). This projection of high levels of new UI claims for Florida is reasonable because although new UI claims have actually begun to fall nationally, Florida's stay-at-home order was imposed later than in many other states. Even though some workers might have become unemployed earlier because of the self-imposed social distancing measures on the part of some employers, more UI claims are highly likely because, overall, they have not yet peaked.

As detailed in the previous paragraph, if one simply looks at UI claims week-to-week, the state's unemployment rate would be pegged at 33% by the end of April. Our projected worst-case scenario for Florida of a 40% total unemployment rate (pre-COVID-19 plus the 35% that is COVID-19-related) is more reasonable and likely for three reasons:

(1) New UI claims generally lag a week behind actual job separations because most states impose a 7-day wait between losing a job and filing for benefits;

(2) Unemployment will likely rise more rapidly than UI claims have risen through April 25 (rather than holding at the April 25 level over the next 2 weeks as detailed above) because the workers most likely to be able to transition to working from home will have already done this by now, and firms can switch fewer workers to telecommuting and continued employment than they did earlier in April. Because of COVID-19, the demand for certain types of products and services have fallen because they are not deemed necessary during the pandemic. Examples include clothes, cars, and the use of taxi or Uber services. Additionally, even many middle-class workers with jobs suitable for telecommuting are watching their budgets and are wary of spending; most U.S. households overall have reported a decrease in household income. The fall in demand for a firm's products and services, even if those products and services can be generated off-site through social distancing measures, results in more unemployment now than it did a few weeks ago.

(3) Many workers in the current labor market will not be actively searching for a new job because they expect to resume their old job when the health environment improves, so they will not show up in conventional unemployment rates like those above that look only at those actively seeking employment, while our COVID-19 projection, by design, includes all workers temporarily idled without pay as unemployed; and

(4) Finally, as discussed, there are many workers that are ineligible for filing UI claims because of the nature of their employment (i.e. self-employed or gig workers). Our projection factors in all types of Florida workers.

Missing Meals Resulting from COVID-19

The second objective was to estimate how many meals are missed by this newly unemployed population because they cannot afford them, accounting for all other ways these households might acquire meals and groceries, excluding any post-COVID-19 stimulus money or new increases in SNAP that might occur as a result of the pandemic. This is an update of the Meal Deficit Metric (MDM) recently released for every block group across Florida (also over 11,400 units of geography). Our results were statistically significant at the block group level. The MDM calculates the unmet food gap at this 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. Again, the MDM predicts meals that are missed because households cannot afford them. This is distinct from dieting and fasting for reasons not related to food affordability.

What we were able to accomplish *now* in response to the pandemic was to *adapt* the MDM statistical model to our current employment disruption results and other measures. This

allowed us to calculate *additional* meals missed due to COVID-19 unemployment. Our third objective was to detail the numbers and locations of pre-COVID-19 working elders who especially need grocery support during this crisis.

In the following tables, **we detail the pre-and-post-COVID-19 meal deficit county-by-county.** To learn more about the MDM and our overall methodology, visit PinpointHunger.com or MariGallagher.com. Information on how we *updated* the MDM to account for missing meals resulting from COVID-19 can also be found in the methodology section of this Executive Summary. Our March of 2020 MDM release revealed that the meal deficit in Florida Pre-COVID-19 was much higher than previously understood. Why might this be? First, our model uses only Florida-specific data and generates statistically significant results at a very small geographic unit (block groups). 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, 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. These factors must be accounted for to generate a reliable meal deficit total and corresponding action plan. Local and statewide leaders cannot solve a problem such as huger without knowing *how many* and specifically *where* (meaning small geographic units) meals are missing. **Consider, for example, Palm Beach County. Our pre-COVID-19 analysis showed that missing meals were undercounted by other studies for that county by over 60%.** This was not only corrected county-wide, but also *specified* for 884 small geographic units (block groups) within Palm Beach County, allowing food relief to be pinpointed.

The Florida-wide Pre-COVID-19 Meal Deficit
was 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

Post-COVID-19, the meal deficit across Florida has, as expected, increased again, as shown in the tables that follow and the cull-out box at the start of this section. The post-COVID-19 missing meals detailed in this document reflects Scenario #4. In the full spreadsheet, however, we detail what, in theory, *could* result in missing meals from all four scenarios. The missing meal totals from Scenarios #1 through #3 (the other approaches concerning employment disruption) are lower, but it is unlikely that they would be that low in reality. **We have provided strong evidence as to why Scenario #4 is the most accurate fit for Florida, and we encourage Florida officials to support local food bank leaders in their efforts to meet the charitable food needs of both pre-and-post-COVID-19.**

The Post-COVID-19 Meal Deficit adds an additional, serious strain to the lives of now unemployed Floridians already struggling to cope with economic hardship and uncertainty

This *additional* meal loss is roughly how many meals would be missed in total if every adult and child living in Tampa would have to skip a meal every single day because they could not afford it

Conclusion

Although this is a difficult time for Florida, we are hopeful that the analysis provided will enable public officials, foundations, food bank leaders, and other actors to identify and direct food and other resources to those in need.

Florida is a state with a strong resolve to rebound from crisis, whether from a hurricane or from the pressing conditions of today's pandemic. We thank Feeding Florida for commissioning this work, its individual food bank members for their ongoing and outstanding efforts to feed those who are hungry, and all Florida officials and organizations that work hard each day to serve their constituents.

We also hope that other states will benefit from Florida's leadership in using evidence-based information to assess and respond to pressing conditions resulting from COVID-19.

Table 1: Unemployment Disruption Analysis Resulting From COVID-19

County Name & Units of Measurement[1] (Block Groups) See notes at bottom of table		Current County Pop[2]	Based on Worst Case Impact From COVID-19 (Scenario #4)		Alternative Scenarios[3]		
			Additional Unemployed Workers Without Pay	Additional Unemployed Without Pay as % of Labor Force	Scenario #1 Additional Unemployed Workers Without Pay	Scenario #2 Additional Unemployed Workers Without Pay	Scenario #3 Additional Unemployed Workers Without Pay
Alachua	155	269,956	30,215	24%	29,104	27,288	18,287
Baker	12	28,355	3,623	33%	3,513	3,352	2,449
Bay	108	185,287	36,338	43%	35,326	33,134	24,677
Bradford	18	27,732	3,158	33%	3,044	2,919	2,181
Brevard	317	596,849	63,669	25%	60,531	58,348	41,613
Broward	939	1,951,260	335,005	34%	323,186	305,934	219,315
Calhoun	10	14,587	1,757	35%	1,730	1,642	1,387
Charlotte	107	184,998	22,556	36%	21,321	20,785	15,898
Citrus	87	147,929	15,373	32%	14,777	14,083	10,746
Clay	81	216,072	35,405	37%	33,595	32,557	23,703
Collier	192	378,488	62,422	39%	60,350	58,142	48,470
Columbia	40	70,503	8,809	33%	8,498	8,144	6,251
DeSoto	26	37,489	5,408	38%	5,289	5,121	4,583
Dixie	12	16,700	1,606	32%	1,558	1,504	1,215
Duval	489	950,181	151,508	33%	145,724	138,982	96,201
Escambia	190	315,534	55,908	40%	54,541	51,763	38,025
Flagler	51	112,067	15,061	37%	14,194	13,883	10,372
Franklin	11	11,736	1,488	35%	1,463	1,383	1,164
Gadsden	32	45,894	5,518	33%	5,406	5,096	3,657
Gilchrist	13	18,256	2,491	35%	2,411	2,320	1,805
Glades	10	13,724	1,253	32%	1,226	1,163	883
Gulf	14	16,164	1,877	32%	1,843	1,729	1,342
Hamilton	10	14,310	1,249	33%	1,211	1,157	886
Hardee	20	27,245	3,695	35%	3,591	3,465	2,855
Hendry	25	41,556	6,795	38%	6,696	6,425	5,514
Hernando	106	190,865	23,939	34%	22,601	22,041	16,580
Highlands	79	105,424	11,456	34%	11,101	10,584	8,182
Hillsborough	879	1,436,888	257,040	37%	243,769	235,807	162,148
Holmes	15	19,477	2,337	35%	2,277	2,170	1,717
Indian River	92	157,413	19,296	33%	18,325	17,567	13,415
Jackson	39	48,305	5,182	30%	5,075	4,760	3,652
Jefferson	10	14,288	1,760	33%	1,725	1,613	1,150
Lafayette	6	8,732	817	31%	791	761	533
Lake	148	356,495	53,906	39%	51,289	50,019	36,433
Lee	513	754,610	133,801	43%	128,752	122,479	91,104
Leon	177	292,502	48,374	32%	46,901	43,946	27,141
Levy	28	40,770	5,508	36%	5,336	5,116	4,216
Liberty	6	8,457	860	34%	844	803	628

Table 1 *continued*: Unemployment Disruption Analysis Resulting From COVID-19

County Name & Units of Measurement[1] (Block Groups) See notes at bottom of table		Current County Pop[2]	Based on Worst Case Impact From COVID-19 (Scenario #4)		Alternative Scenarios[3]		
			Additional Unemployed Workers Without Pay	Additional Unemployed Without Pay as % of Labor Force	Scenario #1 Additional Unemployed Workers Without Pay	Scenario #2 Additional Unemployed Workers Without Pay	Scenario #3 Additional Unemployed Workers Without Pay
Madison	16	18,529	2,040	32%	1,987	1,890	1,433
Manatee	207	394,855	57,060	35%	54,196	52,485	38,752
Marion	175	359,977	34,270	27%	32,835	31,743	23,299
Martin	93	160,912	23,355	34%	21,794	21,382	15,546
Miami-Dade	1,593	2,761,581	438,928	33%	426,218	405,109	300,473
Monroe	76	75,027	15,108	36%	14,657	13,931	10,739
Nassau	39	85,832	12,555	33%	12,164	11,552	8,332
Okaloosa	115	207,269	29,959	33%	29,241	27,438	19,588
Okeechobee	28	41,537	5,342	34%	5,246	4,987	4,103
Orange	375	1,380,645	240,905	35%	232,216	221,761	167,897
Osceola	76	367,990	40,685	25%	38,795	37,537	17,724
Palm Beach	884	1,485,941	237,325	34%	226,418	216,723	158,823
Pasco	307	539,630	97,310	45%	91,079	88,913	58,286
Pinellas	719	975,280	177,430	39%	167,746	161,927	109,047
Polk	331	708,009	97,724	35%	94,631	90,140	67,675
Putnam	61	74,163	8,789	34%	8,495	8,172	6,449
Santa Rosa	77	179,349	30,958	42%	29,800	28,748	18,298
Sarasota	251	426,718	61,146	36%	58,366	56,180	42,515
Seminole	235	467,832	50,172	21%	46,958	45,226	16,684
St. Johns	81	254,261	20,168	18%	18,717	18,572	11,641
St. Lucie	140	321,128	62,676	48%	60,641	58,170	41,940
Sumter	41	128,754	9,227	35%	8,756	8,487	6,462
Suwannee	26	44,191	5,661	32%	5,499	5,258	4,232
Taylor	19	21,623	2,116	31%	2,060	1,967	1,517
Union	9	14,940	1,108	29%	1,073	1,024	755
Volusia	288	547,538	107,700	48%	103,314	98,869	76,006
Wakulla	14	32,461	4,773	35%	4,683	4,406	3,084
Walton	44	71,375	10,530	34%	10,218	9,641	6,918
Washington	15	24,880	3,065	36%	2,994	2,853	2,294
TOTAL OR AVERAGE	**11,402**	**21,299,325**	**3,324,551**	**35%**	**3,189,710**	**3,053,077**	**2,190,889**

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. 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.

[2] The total county population figures we present here are the latest estimates. The most current population figures we use in our employment analysis is at the block group level. Those population estimates are slightly different than countywide population estimates. Therefore, if one sums the block group population in the spreadsheet that we are making public, that total is marginally lower. Other totals might also vary marginally due to rounding to enhance legibility in the table.

[3] The four scenarios are described in detail in the methodology section, and our conclusions concerning why Scenario #4 is the best fit for Florida is explained in the Methodology sub-section “Considerations & Limitations” and in the Findings section.

Table 2: Unemployment Disruption Analysis Resulting From COVID-19 with Scenario Percentages

County Name	Based on Worst Case Impact From COVID-19 (Scenario #4)		Alternative Scenarios[1]					
	Additional Unemployed Workers Without Pay	Additional Unemployed Without Pay as % of Labor Force	Scenario #1 Additional Unemployed Workers Without Pay	Scenario #1 Additional Unemployed Without Pay as % of Labor Force	Scenario #2 Additional Unemployed Workers Without Pay	Scenario #2 Additional Unemployed Without Pay as % of Labor Force	Scenario #3 Additional Unemployed Workers Without Pay	Scenario #3 Additional Unemployed Without Pay as % of Labor Force
Alachua	30,215	24%	29,104	23%	27,288	22%	18,287	15%
Baker	3,623	33%	3,513	32%	3,352	31%	2,449	22%
Bay	36,338	43%	35,326	42%	33,134	40%	24,677	29%
Bradford	3,158	33%	3,044	32%	2,919	31%	2,181	23%
Brevard	63,669	25%	60,531	24%	58,348	23%	41,613	16%
Broward	335,005	34%	323,186	33%	305,934	31%	219,315	22%
Calhoun	1,757	35%	1,730	35%	1,642	33%	1,387	28%
Charlotte	22,556	36%	21,321	34%	20,785	33%	15,898	25%
Citrus	15,373	32%	14,777	31%	14,083	29%	10,746	22%
Clay	35,405	37%	33,595	35%	32,557	34%	23,703	25%
Collier	62,422	39%	60,350	38%	58,142	37%	48,470	31%
Columbia	8,809	33%	8,498	32%	8,144	31%	6,251	23%
DeSoto	5,408	38%	5,289	38%	5,121	36%	4,583	33%
Dixie	1,606	32%	1,558	31%	1,504	30%	1,215	25%
Duval	151,508	33%	145,724	32%	138,982	30%	96,201	21%
Escambia	55,908	40%	54,541	39%	51,763	37%	38,025	27%
Flagler	15,061	37%	14,194	34%	13,883	34%	10,372	25%
Franklin	1,488	35%	1,463	34%	1,383	32%	1,164	27%
Gadsden	5,518	33%	5,406	32%	5,096	30%	3,657	22%
Gilchrist	2,491	35%	2,411	34%	2,320	33%	1,805	25%
Glades	1,253	32%	1,226	31%	1,163	30%	883	23%
Gulf	1,877	32%	1,843	31%	1,729	29%	1,342	23%
Hamilton	1,249	33%	1,211	32%	1,157	31%	886	23%
Hardee	3,695	35%	3,591	34%	3,465	33%	2,855	27%
Hendry	6,795	38%	6,696	37%	6,425	36%	5,514	31%
Hernando	23,939	34%	22,601	32%	22,041	32%	16,580	24%
Highlands	11,456	34%	11,101	33%	10,584	31%	8,182	24%
Hillsborough	257,040	37%	243,769	36%	235,807	34%	162,148	24%
Holmes	2,337	35%	2,277	34%	2,170	32%	1,717	26%
Indian River	19,296	33%	18,325	31%	17,567	30%	13,415	23%
Jackson	5,182	30%	5,075	30%	4,760	28%	3,652	21%
Jefferson	1,760	33%	1,725	32%	1,613	30%	1,150	21%
Lafayette	817	31%	791	30%	761	29%	533	21%
Lake	53,906	39%	51,289	37%	50,019	36%	36,433	26%
Lee	133,801	43%	128,752	42%	122,479	40%	91,104	29%
Leon	48,374	32%	46,901	31%	43,946	29%	27,141	18%
Levy	5,508	36%	5,336	35%	5,116	33%	4,216	27%
Liberty	860	34%	844	33%	803	32%	628	25%

Table 2 *continued*: Unemployment Disruption Analysis Resulting From COVID-19 with Scenario Percentages

County Name	Based on Worst Case Impact From COVID-19 (Scenario #4)		Alternative Scenarios[1]					
	Additional Unemployed Workers Without Pay	Additional Unemployed Without Pay as % of Labor Force	Scenario #1 Additional Unemployed Workers Without Pay	Scenario #1 Additional Unemployed Without Pay as % of Labor Force	Scenario #2 Additional Unemployed Workers Without Pay	Scenario #2 Additional Unemployed Without Pay as % of Labor Force	Scenario #3 Additional Unemployed Workers Without Pay	Scenario #3 Additional Unemployed Without Pay as % of Labor Force
Madison	2,040	32%	1,987	31%	1,890	30%	1,433	22%
Manatee	57,060	35%	54,196	34%	52,485	33%	38,752	24%
Marion	34,270	27%	32,835	26%	31,743	25%	23,299	18%
Martin	23,355	34%	21,794	32%	21,382	31%	15,546	23%
Miami-Dade	438,928	33%	426,218	32%	405,109	30%	300,473	22%
Monroe	15,108	36%	14,657	35%	13,931	34%	10,739	26%
Nassau	12,555	33%	12,164	32%	11,552	31%	8,332	22%
Okaloosa	29,959	33%	29,241	33%	27,438	31%	19,588	22%
Okeechobee	5,342	34%	5,246	34%	4,987	32%	4,103	26%
Orange	240,905	35%	232,216	34%	221,761	33%	167,897	25%
Osceola	40,685	25%	38,795	24%	37,537	23%	17,724	11%
Palm Beach	237,325	34%	226,418	33%	216,723	31%	158,823	23%
Pasco	97,310	45%	91,079	42%	88,913	41%	58,286	27%
Pinellas	177,430	39%	167,746	37%	161,927	35%	109,047	24%
Polk	97,724	35%	94,631	34%	90,140	32%	67,675	24%
Putnam	8,789	34%	8,495	33%	8,172	31%	6,449	25%
Santa Rosa	30,958	42%	29,800	40%	28,748	39%	18,298	25%
Sarasota	61,146	36%	58,366	35%	56,180	33%	42,515	25%
Seminole	50,172	21%	46,958	20%	45,226	19%	16,684	7%
St. Johns	20,168	18%	18,717	17%	18,572	17%	11,641	11%
St. Lucie	62,676	48%	60,641	47%	58,170	45%	41,940	32%
Sumter	9,227	35%	8,756	34%	8,487	33%	6,462	25%
Suwannee	5,661	32%	5,499	31%	5,258	30%	4,232	24%
Taylor	2,116	31%	2,060	30%	1,967	29%	1,517	22%
Union	1,108	29%	1,073	28%	1,024	27%	755	20%
Volusia	107,700	48%	103,314	46%	98,869	44%	76,006	34%
Wakulla	4,773	35%	4,683	34%	4,406	32%	3,084	22%
Walton	10,530	34%	10,218	33%	9,641	31%	6,918	23%
Washington	3,065	36%	2,994	35%	2,853	33%	2,294	27%
TOTAL OR AVERAGE	**3,324,551**	**35%**	**3,189,710**	**33%**	**3,053,077**	**32%**	**2,190,889**	**23%**

NOTES

[1] The four scenarios are described in detail in the methodology section, and our conclusions concerning why Scenario #4 is the best fit for Florida is explained in the Methodology sub-section “Considerations & Limitations” and in the Findings section.

Table 3: Worst Case Scenario of Unemployment Disruption
Missing Meals Related to COVID-19, Internet Access, and Elder Workers

County Name & Units of Measurement[1] (Block Groups) See notes at bottom of table		Current Total County Pop[2]	% of All HHs Without Internet Access Inside HH	Based on Worst Case Impact From COVID-19 (Scenario #4)			Pre-COVID-19 Weekly Missing Meals (entire population)	Total Weekly Missing Meals (entire population)	% of Employed Pre-COVID-19 Age 65 & Over (of that age bracket)
				Additional Unemployed Workers Without Pay	Additional Unemployed Without Pay as % of Labor Force	Weekly Missing Meals Related Only to COVID-19			
Alachua	155	269,956	16%	30,215	24%	24,904	206,232	231,136	20%
Baker	12	28,355	25%	3,623	33%	2,886	21,657	24,544	15%
Bay	108	185,287	17%	36,338	43%	31,444	147,588	179,032	19%
Bradford	18	27,732	33%	3,158	33%	3,141	22,427	25,568	13%
Brevard	317	596,849	15%	63,669	25%	59,972	438,472	498,444	16%
Broward	939	1,951,260	17%	335,005	34%	242,456	1,679,707	1,922,164	22%
Calhoun	10	14,587	36%	1,757	35%	1,787	13,057	14,844	14%
Charlotte	107	184,998	17%	22,556	36%	27,430	123,282	150,712	14%
Citrus	87	147,929	19%	15,373	32%	20,918	118,966	139,884	11%
Clay	81	216,072	12%	35,405	37%	27,311	154,139	181,450	17%
Collier	192	378,488	17%	62,422	39%	51,258	227,551	278,809	18%
Columbia	40	70,503	22%	8,809	33%	8,384	59,999	68,383	13%
DeSoto	26	37,489	46%	5,408	38%	4,621	31,986	36,607	12%
Dixie	12	16,700	49%	1,606	32%	2,120	14,125	16,246	9%
Duval	489	950,181	18%	151,508	33%	119,540	843,807	963,346	20%
Escambia	190	315,534	18%	55,908	40%	48,376	253,111	301,487	16%
Flagler	51	112,067	21%	15,061	37%	14,427	75,277	89,704	14%
Franklin	11	11,736	25%	1,488	35%	1,633	9,797	11,429	18%
Gadsden	32	45,894	41%	5,518	33%	5,862	58,697	64,559	14%
Gilchrist	13	18,256	33%	2,491	35%	2,336	14,004	16,340	11%
Glades	10	13,724	44%	1,253	32%	1,304	8,791	10,095	9%
Gulf	14	16,164	22%	1,877	32%	1,812	12,658	14,470	12%
Hamilton	10	14,310	34%	1,249	33%	1,659	15,222	16,881	9%
Hardee	20	27,245	40%	3,695	35%	2,860	24,019	26,878	19%
Hendry	25	41,556	36%	6,795	38%	4,503	39,686	44,189	15%
Hernando	106	190,865	18%	23,939	34%	25,771	154,888	180,659	11%
Highlands	79	105,424	28%	11,456	34%	14,456	87,722	102,178	12%
Hillsborough	879	1,436,888	15%	257,040	37%	194,524	1,198,829	1,393,352	19%
Holmes	15	19,477	29%	2,337	35%	2,546	16,655	19,201	15%
Indian River	92	157,413	19%	19,296	33%	20,106	107,907	128,013	16%
Jackson	39	48,305	29%	5,182	30%	5,311	42,697	48,008	13%
Jefferson	10	14,288	28%	1,760	33%	1,881	13,296	15,176	24%
Lafayette	6	8,732	28%	817	31%	820	6,320	7,140	11%
Lake	148	356,495	16%	53,906	39%	49,355	253,857	303,212	15%
Lee	513	754,610	17%	133,801	43%	116,158	494,753	610,911	17%
Leon	177	292,502	14%	48,374	32%	37,994	265,542	303,537	25%
Levy	28	40,770	36%	5,508	36%	5,929	38,508	44,437	14%
Liberty	6	8,457	37%	860	34%	918	6,229	7,147	8%

Table 3 *continued*: Worst Case Scenario of Unemployment Disruption Missing Meals Related to COVID-19, Internet Access, and Elder Workers

County Name & Units of Measurement[1] (Block Groups) See notes at bottom of table		Current Total County Pop[2]	% of All HHs Without Internet Access Inside HH	Based on Worst Case Impact From COVID-19 (Scenario #4)			Pre-COVID-19 Weekly Missing Meal (entire population)	Total Weekly Missing Meals (entire population)	% of Employed Pre-COVID-19 Age 65 & Over (of that age bracket)
				Additional Unemployed Workers Without Pay	Additional Unemployed Without Pay as % of Labor Force	Weekly Missing Meals Related Only to COVID-19			
Madison	16	18,529	40%	2,040	32%	2,254	19,847	22,102	14%
Manatee	207	394,855	19%	57,060	35%	50,843	260,424	311,268	16%
Marion	175	359,977	22%	34,270	27%	38,384	295,653	334,037	13%
Martin	93	160,912	16%	23,355	34%	22,449	98,978	121,427	18%
Miami-Dade	1,593	2,761,581	25%	438,928	33%	292,992	2,702,021	2,995,013	18%
Monroe	76	75,027	19%	15,108	36%	11,243	46,591	57,834	28%
Nassau	39	85,832	15%	12,555	33%	10,065	56,664	66,729	19%
Okaloosa	115	207,269	18%	29,959	33%	26,554	144,838	171,391	20%
Okeechobee	28	41,537	40%	5,342	34%	4,739	35,919	40,658	11%
Orange	375	1,380,645	14%	240,905	35%	164,193	1,136,636	1,300,829	20%
Osceola	76	367,990	23%	40,685	25%	25,095	291,245	316,341	17%
Palm Beach	884	1,485,941	16%	237,325	34%	193,841	1,073,522	1,267,362	20%
Pasco	307	539,630	19%	97,310	45%	90,006	391,458	481,464	13%
Pinellas	719	975,280	19%	177,430	39%	166,579	725,602	892,181	19%
Polk	331	708,009	33%	97,724	35%	81,992	557,781	639,773	16%
Putnam	61	74,163	31%	8,789	34%	9,948	72,808	82,756	13%
Santa Rosa	77	179,349	13%	30,958	42%	26,153	122,737	148,890	18%
Sarasota	251	426,718	16%	61,146	36%	66,955	268,352	335,306	17%
Seminole	235	467,832	10%	50,172	21%	34,828	303,582	338,410	22%
St. Johns	81	254,261	13%	20,168	18%	15,510	129,861	145,371	20%
St. Lucie	140	321,128	18%	62,676	48%	55,263	255,777	311,041	15%
Sumter	41	128,754	15%	9,227	35%	18,335	58,052	76,387	11%
Suwannee	26	44,191	24%	5,661	32%	5,432	42,156	47,588	16%
Taylor	19	21,623	35%	2,116	31%	2,484	19,602	22,086	12%
Union	9	14,940	36%	1,108	29%	1,161	11,121	12,282	15%
Volusia	288	547,538	22%	107,700	48%	101,718	423,694	525,412	16%
Wakulla	14	32,461	24%	4,773	35%	3,991	24,328	28,319	19%
Walton	44	71,375	20%	10,530	34%	8,672	44,638	53,311	21%
Washington	15	24,880	26%	3,065	36%	3,140	20,807	23,948	13%
TOTAL OR AVERAGE	**11,402**	**21,299,325**	**19%**	**3,324,551**	**35%**	**2,723,532**	**16,936,154**	**19,659,686**	**18%**

NOTES

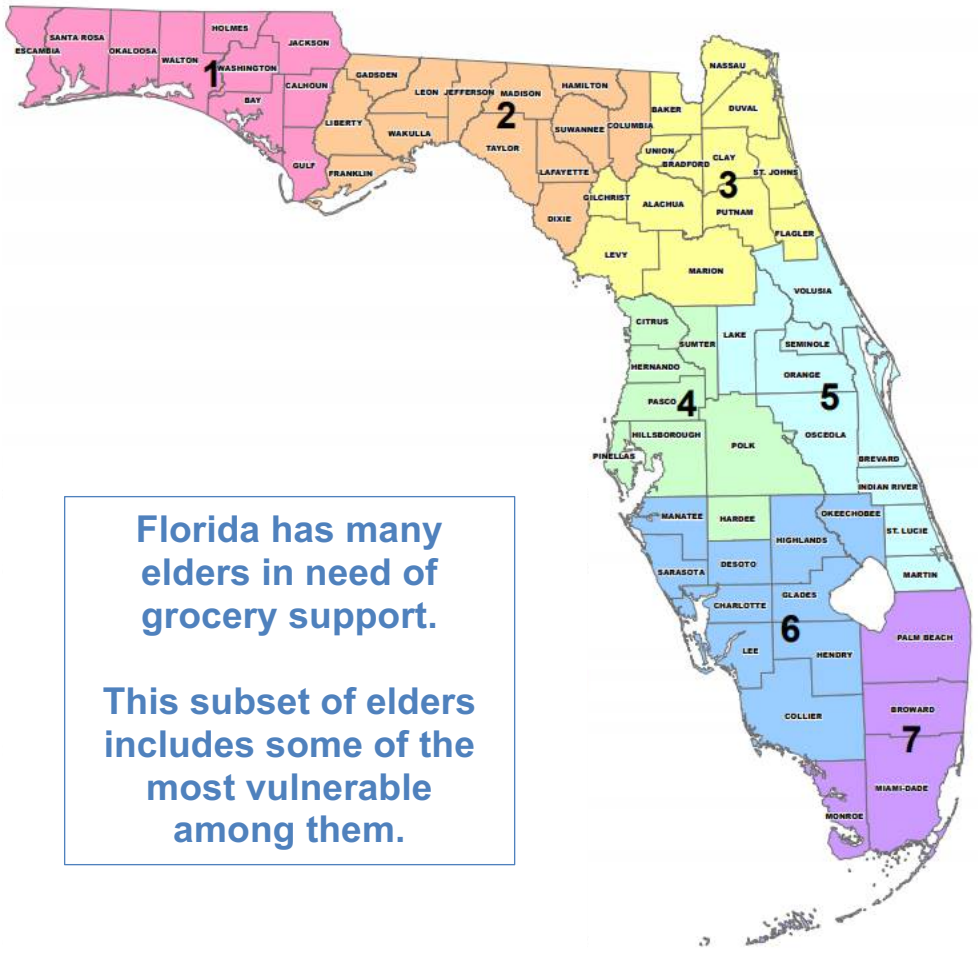
[1] Units of Measurement is the total number of small geographic areas for which the model generates reliable scores across the county. These geographic units are technically called “block groups” because they consist of a small cluster of individual blocks. There are **11,442** total block groups in 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.

[2] The total county population figures we present here are the latest estimates. The most current population figures we use in our employment analysis is at the block group level. Those population estimates are slightly different than countywide population estimates. Therefore, if one sums the block group population in the spreadsheet that we are making public, that total is marginally lower. Other totals might also vary marginally due to rounding to enhance legibility in the table.

Table 4: Vulnerable Working Elders

Elder Zone	Number Employed Pre-COVID-19 Age 65 & Over
1	16,951
2	72,409
3	134,066
4	134,447
5	111,027
6	214,584
7	713,419
TOTAL	29,935

Map 1: Department of Emergency Management Regions



Florida has many elders in need of grocery support.

This subset of elders includes some of the most vulnerable among them.

NOTES

(1) Table 3 details Florida elders who – though of retirement age – are or recently were in the workforce. Most of them likely continued working past retirement age because they have few assets and have a history of being in a low-to-moderate income category. These are the seniors that likely require ongoing income for daily needs, such as groceries. These senior jobs are usually low-tech and high-touch in terms of public interaction. Those in an essential high touch job, such as grocery cashier, who continue to work, are putting themselves at a high health risk. Most, however, likely lost employment and are in need of grocery support.

(2) This analysis was done originally at the block group level for all Florida block groups (see posted spreadsheet) and summed or averaged from the block group to the county level (see previous table). Because our estimates are at the block group level, they might differ slightly from estimates made at the county level.

(3) The map to the right of the table is the Department of Emergency Management Regions.

(4) Block group data are mapped for each Florida county. View high-resolution maps online at PinpointHunger.com and MariGallagher.com.

Chart 1: Additional Unemployed Without Pay as Percentage of Civilian Labor Force in Alphabetical Order

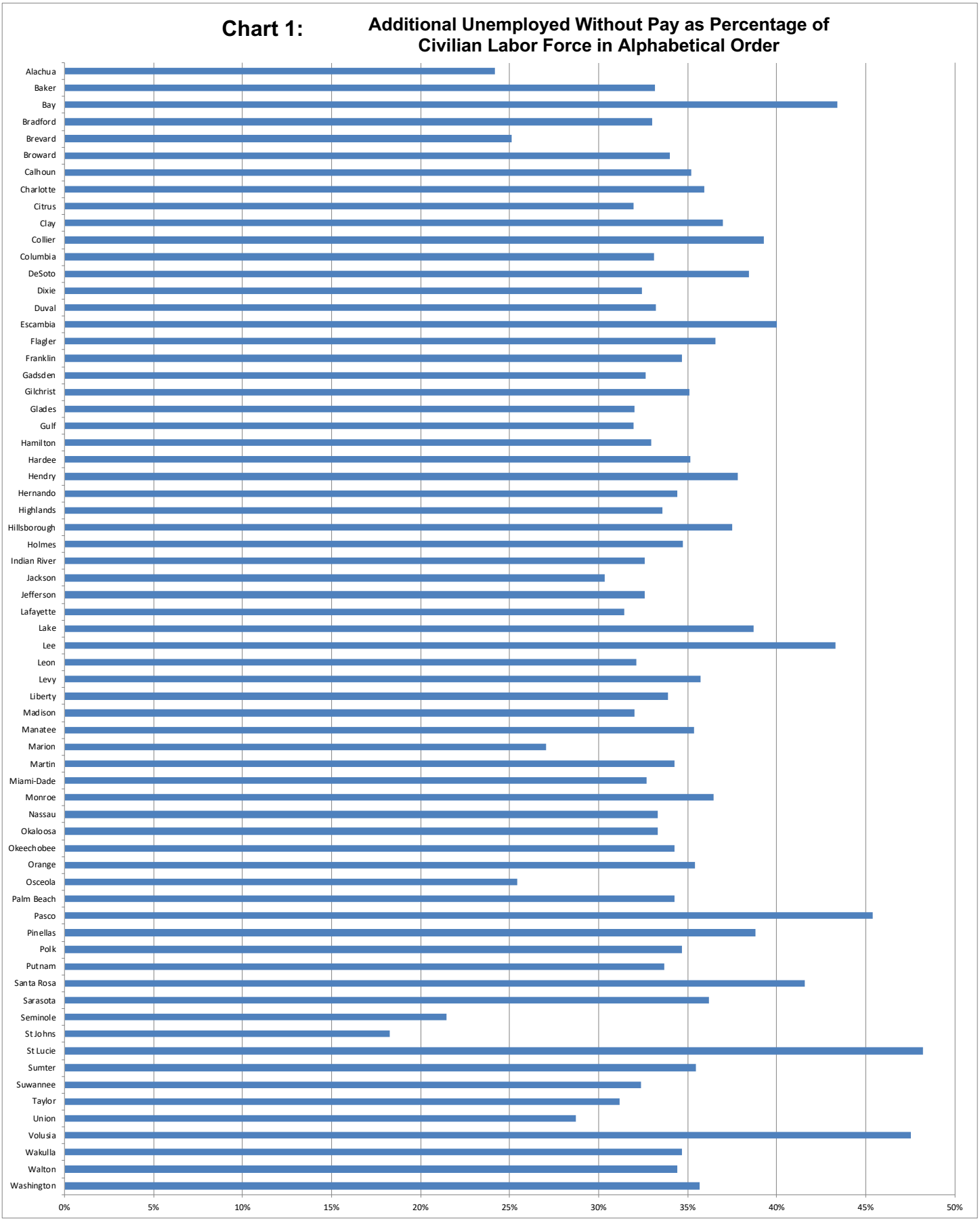


Chart 2: **Additional Unemployed Without Pay as Percentage of Civilian Labor Force from Lowest to Highest**

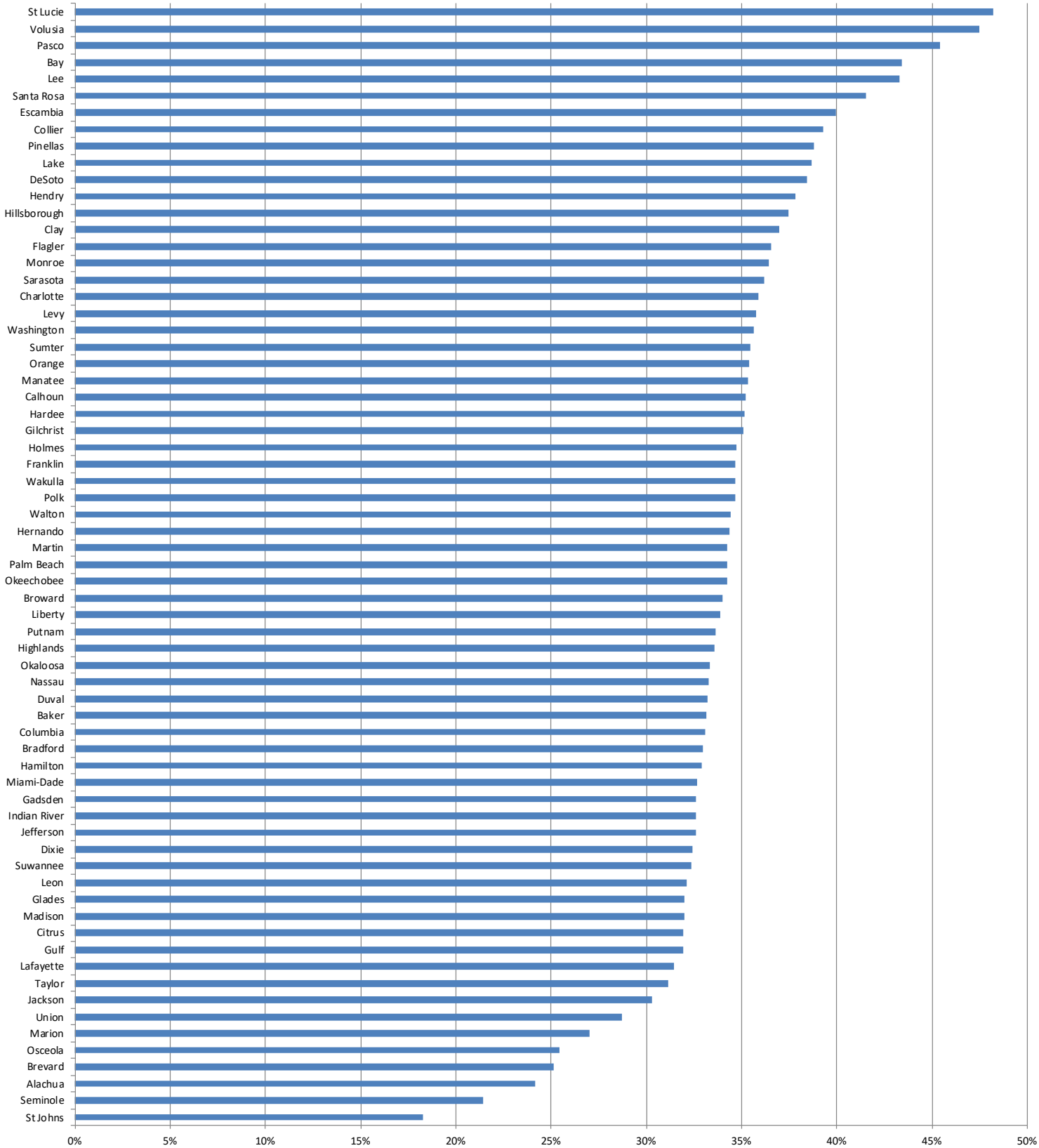


Chart 3: Percentage of Florida Households by County Without Internet Access Inside the Household in Alphabetical Order

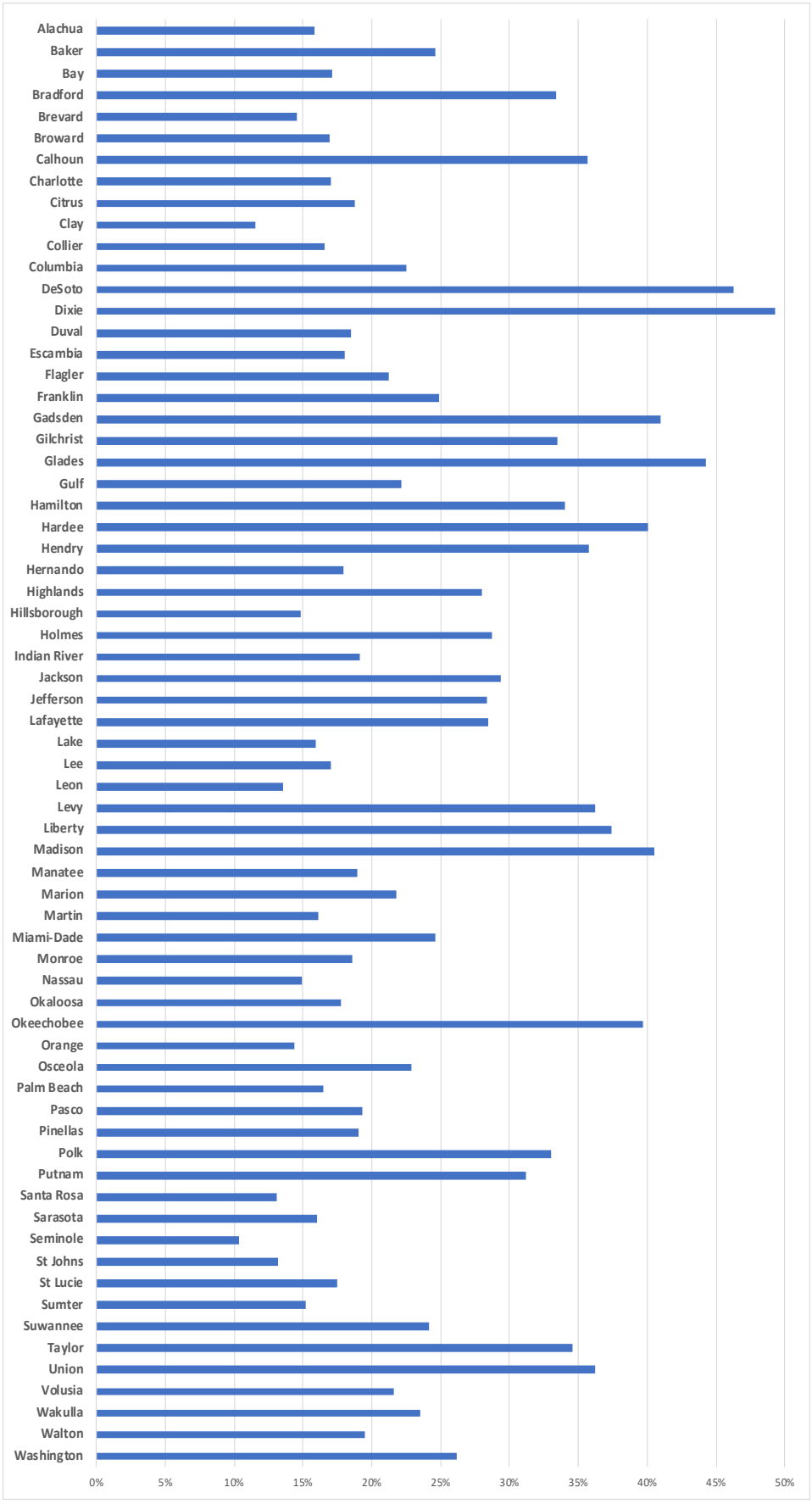


Chart 4: **Percentage of Florida Households by County Without Internet Access Inside the Household from Highest to Lowest**

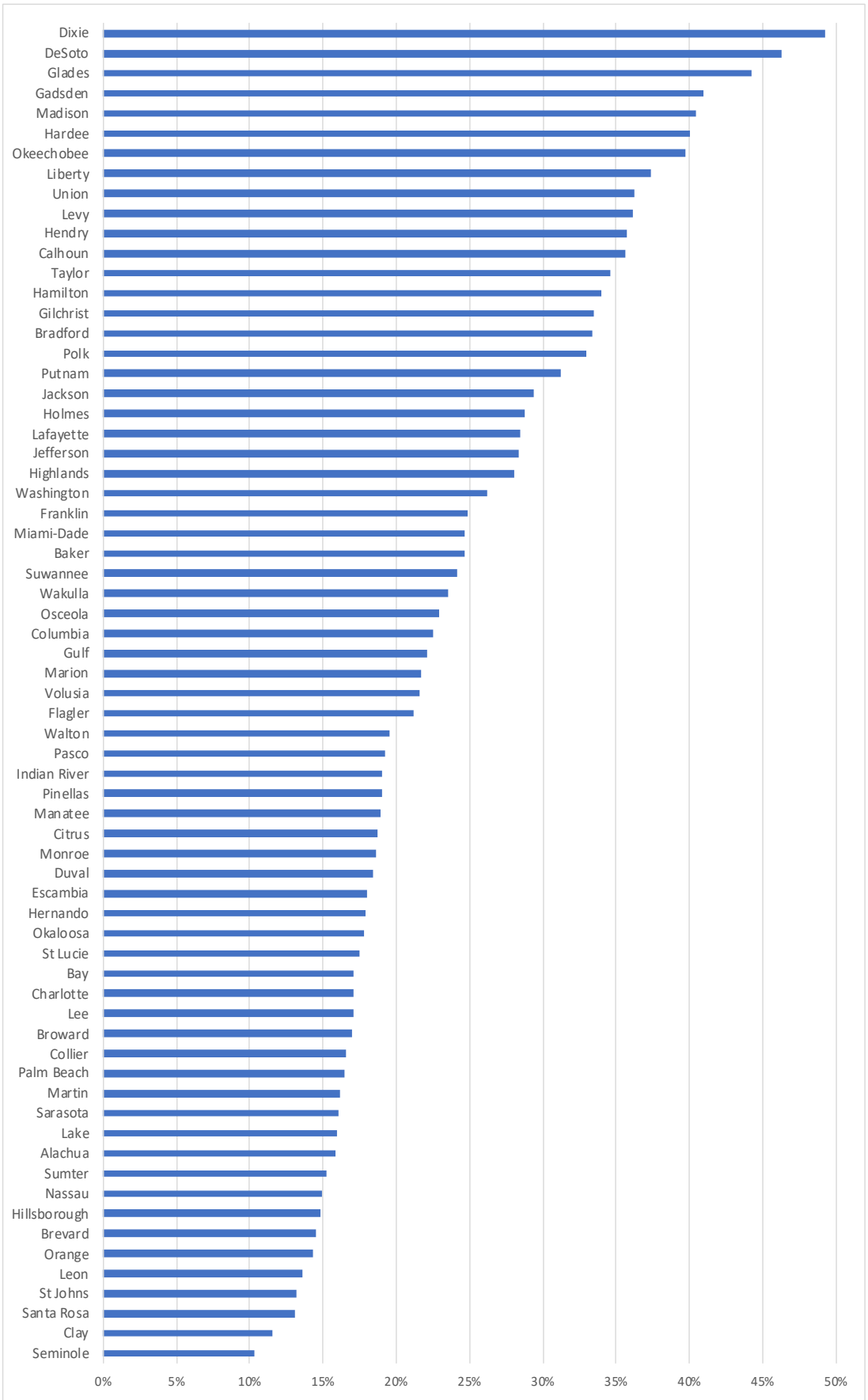


Chart 5: Percentage of Florida Households by County Without a car in Alphabetical Order

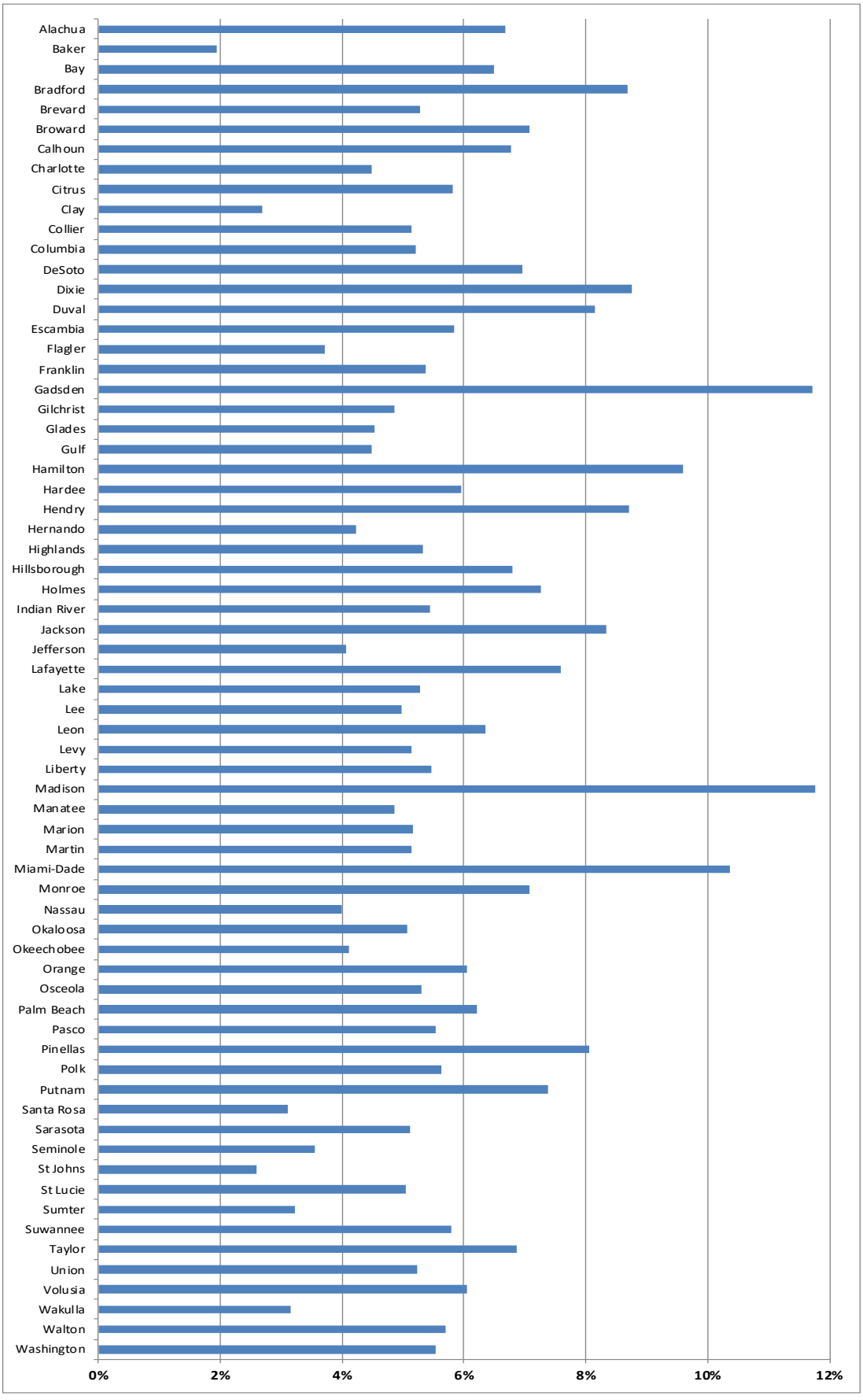
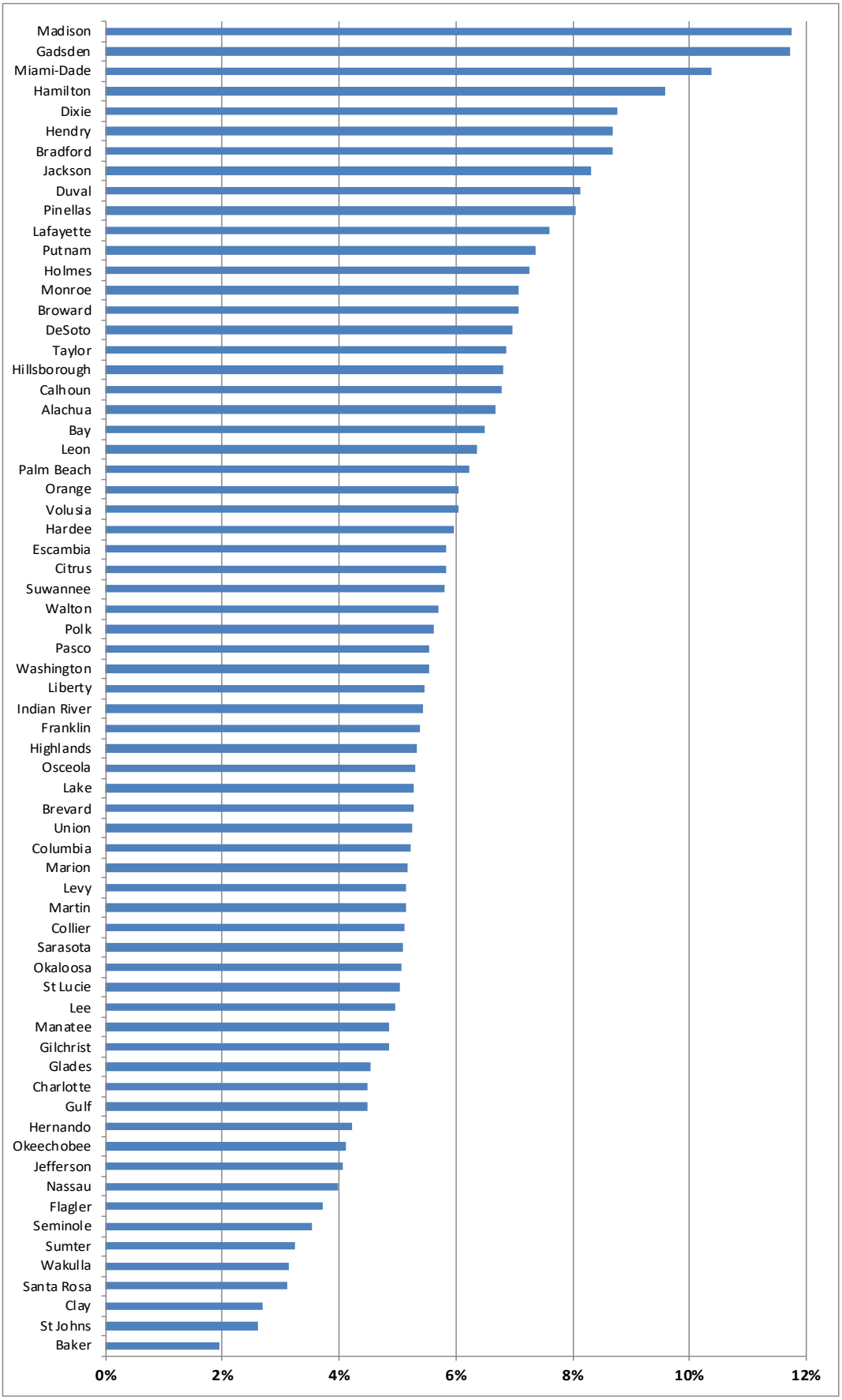


Chart 6: **Percentage of Florida Households by County Without a Car from Highest to Lowest**



METHODOLOGY

Employment Disruption Analysis

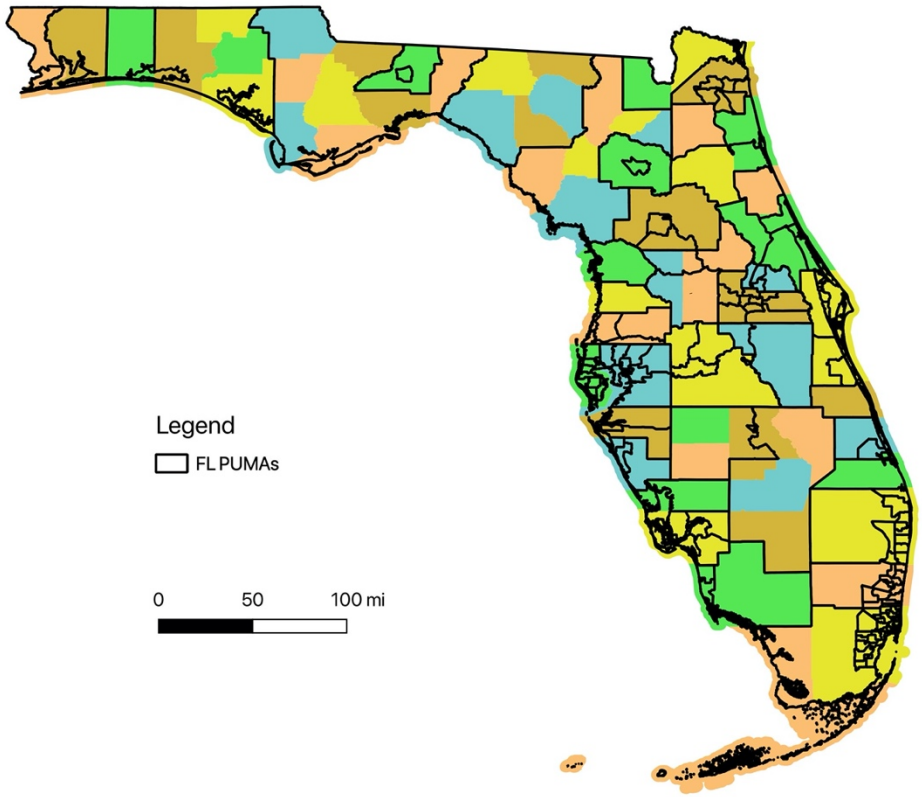
1. **Procedure:** Calculate the fraction of the labor force in each Florida block group that is susceptible to unemployment as a direct result of the shutdown of some work sites as a result of the COVID-19 crisis. In a March 24, 2020 blog post, the Federal Reserve Bank of St. Louis examined 808 detailed occupations and classified them into high and low risk of COVID-19 related unemployment.[1] Occupations at low risk of COVID-19 related unemployment were workers either in: (1) "essential" positions; (2) jobs where work can likely be completed off-site at home (*e.g.* computer programmers); or (3) positions likely to be salaried (*e.g.* elementary school teachers).[2] The following steps apply this methodology to the specific case of Florida.

2. **Examine Scenario Options:** We constructed an estimate that we believe is most appropriate for planning purposes, which we call "Worst Case" Scenario #4. Although we first anticipated and were commissioned to create one single approach for unemployment disruption, after embarking on the analysis we realized that – to understand the best and most accurate fit for the unique conditions of Florida – an analysis and examination of 4 separate approaches based on ability to work from home, essential and non-essential workers, and other factors related to the COVID-19 unemployment crisis was required. The "worst case" is what Florida officials need to be prepared for and the scenario we have mapped by block group for every Florida county in a separate folder. Worst case results are what can be considered the upper bound for how bad things are likely to get; the additional unemployment crisis resulting from COVID-19 could very well reach this level but it most likely will not exceed it. But even if it falls short of this projection, our analysis suggests that it will come very close to it. Projections for the other three employment disruption scenarios are also provided for transparency and shared learning across states. One of the four appears much "rosier" than the other three, but, in our view, it is far off the mark for Florida.

3. **"Essential" Occupations:** The block group level tabulations in the U.S. Census Bureau's five-year American Community Survey (ACS) are insufficient for identifying essential occupations at the block-group level, as the 22 occupational categories provided are too broad. For example, they provide a count of workers employed in "Protective Service Occupations" – a broader category than workers employed specifically in public safety (police, firefighters, EMTs). Our calculation instead requires the use of ACS individual-level data on full-time (52 weeks per year, 40 hours per week) workers age 25-65 who are not in group quarters from IPUMS.org.[3] An example

[1] Charles S. Gascon, "COVID-19: Which Workers Face the Highest Unemployment Risk?" downloaded April 6, 2020 at https://www.stlouisfed.org/on-the-economy/2020/march/covid-19-workers-highest-unemployment-risk.
[2] The category of "essential workers" consists of public safety, health, transportation, crucial infrastructure, food preparation and processing, food retailing (including grocery workers), and farm, fishing, and forestry occupations.
[3] The ACS 5-year files used here are for 2012-16, 2013-17, and 2014-18. The only complication in these calculations is grocery workers – they comprise a variety of specific occupations within the specific industrial category of "grocery stores" in Retail Trade. Across Florida, 94% of grocery workers fall into 6 occupations.

of “group quarters” would be residents living in nursing homes, prisons, or other large group (non-family) living arrangement. We can calculate this figure for 151 “Public Use Microdata Areas” (PUMAs). These are parts of counties or groups of counties that have populations of 100,000 or more. Each block group in Florida is located within a PUMA, allowing the calculation of PUMA-level averages, such as the fraction of those in Protective Service Occupations who are specifically within the smaller public safety category.



Map 2: Florida Counties & PUMAs

Note: High-resolution maps for all Florida counties are or will soon be provided in a separate folder online at **PinpointHunger.com & MariGallagher.com.**

These occupations, together with their 2-digit codes and the fraction of workers in those occupations who are in the “grocery store” industry are: Sales and Related Occupations (code 41, 40.95%); Office and Administrative Support Occupations (code 43, 21.50%); Transportation and Material Moving Occupations (code 53, 11.47%); Food Preparation and Serving Related Occupations (code 35, 9.50%); Production Occupations (code 51, 8.69%); and Management Occupations (code 11, 1.54%). These fractions by Public Use Microdata Area (described below) will be applied to their respective occupations to determine the number of workers in each block group who are grocery workers, and these workers will then be added to the “essential workers” category. For the full list of 2-digit occupations, see footnote 13 below. The full listing of 530 detailed occupations in the ACS individual-level data, the 4-category and 22-category groupings into which they fall, and whether they are categorized for this exercise as “essential” can be seen in the full spreadsheet which we are making public. This is available now or will be soon at PinpointHunger.com and MariGallagher.com.

We can then apply these scores to each block group within each PUMA. When we do this, we find that the fraction of those in Protective Service Occupations who are specifically in public safety is 64.7% across all of Florida, ranging from a low of 17.7% in part of Miami-Dade County to a high of 89.5% in Levy County.[4] Protective Service Occupations is only one category in which many other sub-occupations are located that are relevant to this analysis. We use Protective Services here as one example to provide insight into how the analysis was conducted and the complexities that need to be considered.

4. **Salaried Workers:** This is similarly straightforward to calculate, as it appears in the 2009-19 Annual Social and Economic (ASEC) supplement to the U.S. Bureau of Labor Statistics Current Population Survey (CPS) from which this fraction can be calculated for each of 4 broad occupation categories in 26 of Florida's largest counties.[5]

5. **Occupations that can likely be performed off-site:** These jobs have been identified by the Federal Reserve Bank of St. Louis in an October 29, 2019 blog post, but those estimates are national averages and will not reflect Florida-specific characteristics.[6] For example, the ability to conduct work off-site will reflect both the availability of a high-speed internet connection, local commuting patterns, and the mix of specific jobs within broad occupational categories. On this last point, someone who works as a "mail clerk" for an organization or corporation has a job that cannot be performed off-site at home. This job is part of the larger category "Office and Administrative Support Occupations," so to the extent that the fraction of mail clerks varies across counties, the fraction of work that can be completed off-site will vary even if the fraction of all jobs in Office and Administrative Support Occupations does not vary across counties.

6. **ACS Measure:** Our first approach to deriving a Florida-specific measure of jobs that can be performed off-site begins by retrieving 2014-18 ACS individual-level data on full-time (52 weeks per year, 40 hours per week) wage and salary workers (*i.e.* excluding the self-employed) age 25-65 who are not in group quarters from IPUMS.org for 22 broad occupations.[7] The ACS asks employed respondents to report their mode

[4] A PUMA is not to be confused with a Metropolitan Area. The latter is "a region consisting of a large urban core together with surrounding communities that have a high degree of economic and social integration with the urban core." Rural places and non-rural places that are not integrated with a large urban core are excluded from Metropolitan Areas, so not every block group in Florida is located within a Metropolitan Area. PUMAs, in contrast, exhaustively partition the entire state, so every block group in Florida is located within one and only one PUMA. Figure 1 shows the correspondence between Florida's 67 counties and its 151 PUMAs.

[5] These categories are: (1) Professional, managerial, or technical; (2) Sales or service; (3) Clerical or administrative support; and (4) Manufacturing, construction, maintenance, or farming. The individual counties for which this can be calculated are Alachua, Bay, Brevard, Broward, Clay, Collier, Escambia, Hernando, Hillsborough, Indian River, Lake, Lee, Marion, Miami-Dade, Okaloosa, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, St. Johns, St. Lucie, Santa Rosa, Seminole, and Volusia. Smaller counties are not separately identified in the CPS-ASEC and are treated here as a residual category (*i.e.* the same fraction salaried in each of the four broad categories will be applied in each of the 41 smaller counties).

[6] Iris Arbogast, Charles S. Gascon, and Andrew Spewak, "Working from Home: More Americans Are Telecommuting," downloaded April 6, 2020 at https://www.stlouisfed.org/publications/regional-economist/third-quarter-2019/working-home-more-americans-telecommuting.

[7] The 22 occupation categories and their corresponding 2-digit codes in the U.S. Bureau of Labor Statistics *Standard Occupation Classification* (2010) are: Management Occupations (11); Business and Financial

of transportation to work. One category is "Worked at home," which makes it possible to calculate the fraction who provided this response for 22 occupation categories. We can again do this for 151 PUMAs.[8] This measure will therefore be Florida-specific but also PUMA-specific and occupation-specific. This will produce a lower bound on the number of jobs that can be performed at home, as it reflects pre-COVID-19 conditions when "usually" having its employees working at home was not an urgent need for most businesses.

7. **NHTS Measure:** An alternative measure of the ability to work at home can be derived from the 2017 National Household Travel Survey (NHTS) conducted by the Federal Highway Administration.[9] Data for Florida can be extracted, and the responses to the question on the number of times an individual worked from home can be used to calculate the possibility of completing work off-site for 4 broad occupations.[10] Though there is insufficient geographic detail in the NHTS to do this calculation separately by county, it is nonetheless useful to provide a more comprehensive measure of the ability to work at home. Across all 4 occupations, the NHTS figure is 9.7% compared to the 3.5% figure across all occupations derived from the ACS in Step 6 above. This is not surprising, as the ACS question identifies workers who "usually" work from home, while the NHTS question identifies workers who have worked from home 4 or more days in the past month.

8. **NBER Measure:** One more alternative measure of the ability to work at home was provided in a recent working paper from the National Bureau of Economic Research.[11] The authors went through all 808 detailed occupations recognized by the U.S. Bureau of Labor Statistics and examined the responses to a series of 38 specific questions for each job described in the Occupational Information Network (O*NET) surveys conducted by the U.S. Department of Labor's Employment and Training Administration. They focused on questions covering "work context" and "generalized work activities." They considered job attributes such as "Performing for or Working Directly with the Public is very important," "Repairing and Maintaining Electronic Equipment is very important," and "Average respondent says they are physically close

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Operations Occupations (13); Computer and Mathematical Occupations (15); Architecture and Engineering Occupations (17); Life, Physical, and Social Science Occupations (19); Community and Social Services Occupations (21); Legal Occupations (23); Education, Training, and Library Occupations (25); Arts, Design, Entertainment, Sports, and Media Occupations (27); Healthcare Practitioners and Technical Occupations (29); Healthcare Support Occupations (31); Protective Service Occupations (33); Food Preparation and Serving Related Occupations (35); Building and Grounds Cleaning and Maintenance Occupations (37); Personal Care and Service Occupations (39); Sales and Related Occupations (41); Office and Administrative Support Occupations (43); Farming, Fishing, and Forestry Occupations (45); Construction and Extraction Occupations (47); Installation, Maintenance, and Repair Occupations (49); Production Occupations (51); Transportation and Material Moving Occupations (53).

[8] Smaller counties are not separately identified in the ACS and are treated as a residual category (*i.e.* the same fraction working at home in the 22 occupations will be applied in each of the 41 smaller counties). See footnote 5 for a list of the 26 larger counties for which this can be separately identified.

[9] The national figures calculated by Abrogast *et al.* (See footnote 6 above) were 3% from the ACS and 7% from the NHTS.

[10] See footnote 5 above.

[11] "How Many Jobs Can be Done at Home?", Jonathan I. Dingel and Brent Neiman, NBER Working Paper No. 26948, Issued in April 2020, downloaded at https://www.nber.org/papers/w26948.

(at least moderately close) to others."[12] They have collapsed the 808 occupations down to the 22 occupations we have used above. The underlying O*NET data provide no geographic detail, so it is not possible to customize this measure of the ability to work off-site for either all of Florida or individual Florida counties.

9. **Limitations and Considerations:** Here we explain the scenarios #1 through #4. None of the three measures discussed above (scenarios #1 through #3) of the ability to work off-site is ideal. The first (from the ACS – Scenario #1) is a lower bound. The second (from the NHTS – Scenario #2) cannot be tailored to Florida's local environment because it lacks geographic detail beyond state and can identify only 4 broad occupational categories. The third (from the NBER – Scenario #3) is more comprehensive than the estimate provided by the Federal Reserve Bank of St. Louis but it, too, cannot be tailored to Florida's local environment because it lacks geographic detail (in fact, it has less geographic detail than the NHTS measure as it does not identify state while the NHTS does, though the NBER estimate provides more occupational detail with 22 categories rather than the 4 in the NHTS). In the absence of a perfect measure, we provide estimates of excess COVID-19 related unemployment under three scenarios, each corresponding to one of these measures of the ability to conduct work off-site. Our preferred approach, Scenario #4, is the "worst case" scenario in terms of employment disruption. In this scenario, only essential workers and salaried workers continue to be employed; telecommuting may be feasible in theory but the absence of high-speed internet or adequate home computing resources or the presence of pressing childcare needs renders the telecommuting option infeasible in practice for most hourly workers. Results are what can be considered the upper bound; the additional unemployment crisis resulting from COVID-19 could very well reach this level but it most likely will not exceed it. But even if it falls short of this projection, our analysis suggests that it will come very close to it.

10. **Specific Steps:** The calculation of excess COVID-19 related unemployment by Florida block group proceeds as follows:

    - Using the block-group data from the 2018 ACS (downloaded from NHGIS.org), calculate "normal unemployment" as the number of individuals actively seeking work. Allocate these unemployed individuals across the 22 occupations identified in the ACS block-group data according to the share of each occupation in the total number of unemployed workers in the block group's PUMA, calculated from the ACS individual-level data for 2012-16, 2013-17, and 2014-18.[13] This provides a

[12] A blog post from the Federal Reserve Bank of St. Louis focused more narrowly on the issue of social distancing by using only the last of these questions: "Social Distancing and Contact-Intensive Occupations," by Fernando Leibovici, Ana Maria Santacreu, and Matthew Famiglietti, March 24, 2020, downloaded at https://www.stlouisfed.org/on-the-economy/2020/march/social-distancing-contact-intensive-occupations. The NBER study examined considerably more aspects of the work environment and thus provides a better guide to whether a specific job could be performed off-site.

[13] This step is necessary because the block-level ACS tabulations report unemployment and occupation, but they do not report unemployment separately for each occupation – they provide one unemployment measure for each block-group across all occupations. With the individual-level data, it is possible to calculate unemployment by occupation for each PUMA and apply these 22 occupation-specific unemployment rates to each block group within each PUMA.

measure of "total potential employment" for each of 22 occupations in each block group.

- Calculate the fraction of workers in the block group who are in occupations at low risk of COVID-19 unemployment ("essential" workers estimated in Step 3 above, salaried workers estimated in Step 4 above, and workers whose work cannot be performed off-site estimated in Steps 6, 7, and 8 above). Assume that zero "essential" workers and zero salaried workers are unemployed, and that fractions in each occupation corresponding to the ability to work off-site remain employed in occupations where the majority of workers are paid hourly rather than on a monthly salary.

- Subtract these figures for all 22 occupations in each block group from the total potential employment in each occupation and each block group calculated in the first bullet point above. The resulting figure provides three measures of the total unemployment in each block group that correspond to the three measures of ability to conduct work off-site. Sum each of these three figures across all 22 occupations in each block group and divide it by the total potential employment in the block group to calculate the COVID-19 unemployment rate under social distancing.

- To calculate COVID-19 unemployment under a total lock-down (or "stay at home" order), redo the steps above, but assume that all hourly wage workers are now unemployed (*i.e.* the only workers receiving incomes are "essential" workers and salaried workers, including salaried workers who are in the broad "Protective Service Occupations" group but outside the narrower public health and safety group that it contains).

Missing Meals Resulting from COVID-19

As discussed in the Overview, our second objective was to estimate how many meals are missed by this newly unemployed population because they cannot afford them, accounting for all other ways these households might acquire meals and groceries. This is an update of the Meal Deficit Metric (MDM) recently released (March of 2020) for every block group across Florida (also over 11,400 units of geography). The MDM calculates the unmet food gap at this 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. Again, the MDM predicts meals that are missed because households cannot afford them. This is distinct from dieting and fasting for reasons not related to food affordability.

What we were able to accomplish *now* in response to the pandemic was to *adapt* the MDM statistical model to our current employment disruption results and other measures. This allowed us to calculate *additional* meals missed. In the interest of time, so that we can release these findings as expediently as possibly, we are not repeating our entire MDM methodology here. Visit PinpointHunger.com or MariGallagher.com for those details. The key steps that we took to update that model are: (1) calculate COVID-19 unemployment for each

Florida block-group under different scenarios corresponding to different degrees to which work can be performed off-site using the methodology described above; (2) take the MDM model which uses unemployment at the block-group level as well as other characteristics (*e.g.* income, education, family structure) to predict missing meals but substitute each of the four unemployment rate scenarios in place of the unemployment rate used in the original MDM analysis while leaving values for the other block-group characteristics unchanged; and (3) subtract predicted missing meals from the original analysis from predicted missing meals under each of the four scenarios.