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# Income in the United Way Service Area

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Year 5 Update - 2015

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The Institute for Urban Policy Research  
At The University of Texas at Dallas

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## Poverty

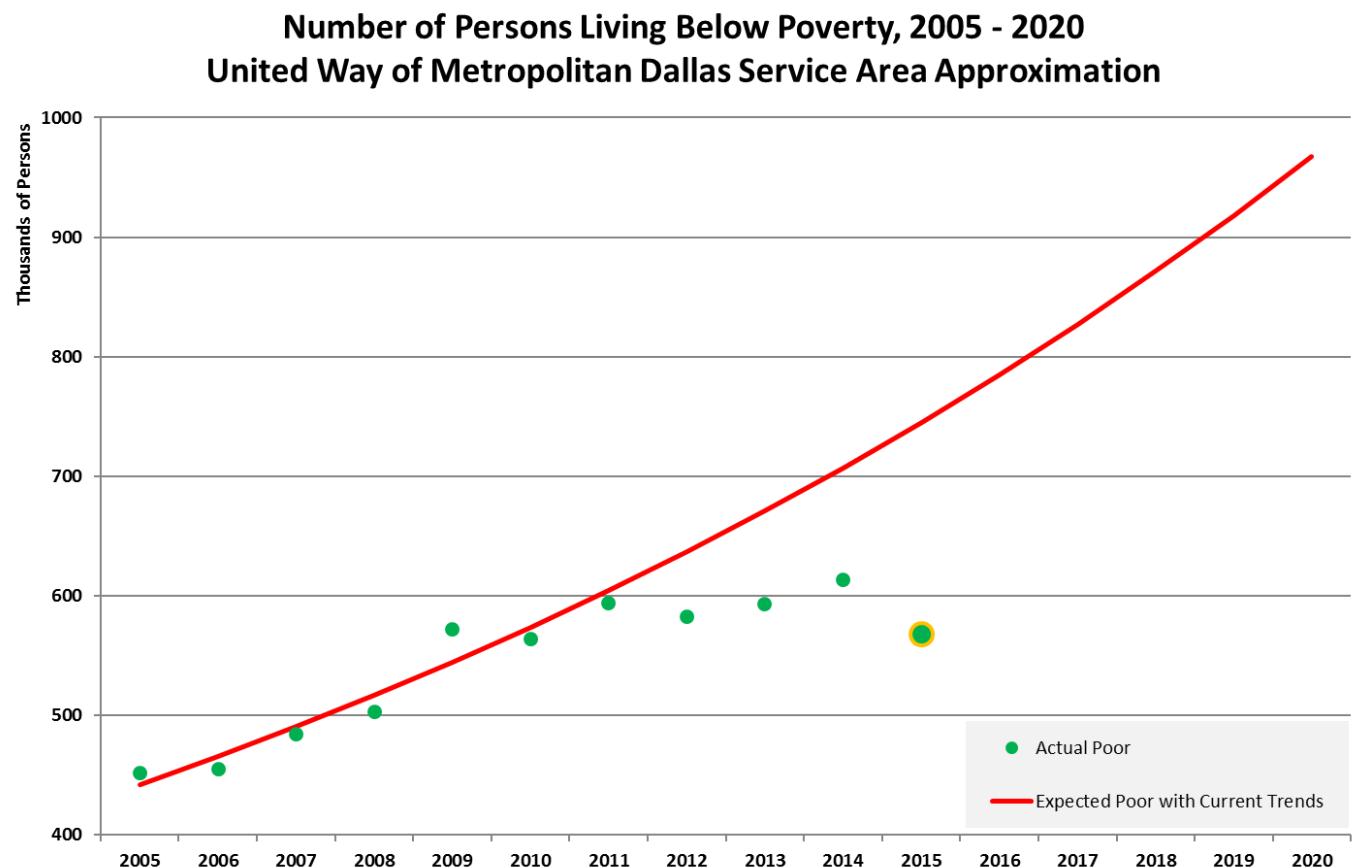
The United Way of Metropolitan Dallas set a goal of 250,000 fewer persons in poverty than would otherwise have been expected without United Way investment. This section focuses on the state of poverty in the United Way service area in 2015 and compares this to the condition set at baseline in 2010. It compares changes in poverty since 2010 against what would have been expected had the trend at baseline continued uninterrupted.

## Overview

The process of developing these estimates and projections is technically complex. First, census boundaries do not precisely align with the United Way's service area. Furthermore, these boundaries were significantly changed in 2012, so a discussion of the precise methods used to approximate the geography is presented in the Appendix. Second, because the estimates and projections below are derived from data sources that represent only a sample of the population, there is some margin of error around them. The Appendix contains a more robust discussion of the process used to generate the margins of error, an indicator of the reliability of each estimate, and an indicator of statistically significant changes from baseline for each indicator.

As has been documented in prior reports, the Institute's analysis of the U.S. Census Bureau's American Community Survey (ACS) indicated an estimated 563,874 persons were living in poverty in the United Way service area (Dallas, Collin, Rockwall, and southern Denton counties) in 2010. That report also detailed the Institute's projection of approximately 967,515 persons living in poverty in the service area by 2020. Using the same estimation methodology as previous years, an estimated 568,154 persons were living in poverty in the service area in 2015, about 136,000 fewer than the 704,211 that would have been anticipated with no additional intervention. Figure 1 depicts these data, with green dots representing the number estimated to be in poverty each year through 2015. The solid red line depicts the projected change through 2020 if the pattern established through baseline were to continue. Table 1 presents the year-by-year numbers estimated from the ACS, as well as projected numbers for the following years through 2020. The estimate for 2015 is particularly notable, not only because it is lower than expected with no intervention, but it is actually lower than the number of poor persons reported in 2011 – the beginning of the United 2020 campaign – when there were approximately 594,159 poor persons in the United Way service area.

*Figure 1. Number of Persons Living Below Poverty, 2005-2020*



Source: Institute for Urban Policy Research Analysis of Public Use Microdata Sample (PUMS) Data  
for American Community Survey 1 Year Estimates 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015.

*Table 1. Number of Persons Living Below Poverty, 2005-2020<sup>1</sup>*

Number of Poor Persons	Number of Poor Persons Expected with No Change to Current Trends
<b>2005</b>	<b>452,178</b>
<b>2006</b>	<b>455,562</b>
<b>2007</b>	<b>484,950</b>
<b>2008</b>	<b>503,388</b>
<b>2009</b>	<b>572,508</b>
<b>2010</b>	<b>563,874</b>
<b>2011</b>	<b>594,159</b>
<b>2012</b>	<b>582,868</b>
<b>2013</b>	<b>593,194</b>
<b>2014</b>	<b>613,192</b>
<b>2015</b>	<b>568,154</b>
<b>2016</b>	<b>704,211</b>
<b>2017</b>	<b>730,718</b>
<b>2018</b>	<b>757,225</b>
<b>2019</b>	<b>783,732</b>
<b>2020</b>	<b>810,239</b>
	<b>836,746</b>

Table 2 presents the number of persons estimated to be in poverty, along with the percent of population. For reference, Table 4 presents the federal poverty threshold for the year 2015. This is the guideline that the Census Bureau employed in assigning poverty status to households.

*Table 2. Number and Percent of Persons by Poverty Status, 2005-2015*

Poverty Status	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>At or Above Poverty</b>	2,910,063	3,059,956	3,095,304	3,165,426	3,189,065	3,113,406	3,151,335	3,239,031	3,285,512	3,352,953	3,472,482
	86.6	87.0	86.5	86.3	84.8	84.7	84.1	84.7	84.7	84.5	85.9
<b>Below Poverty</b>	452,178	455,562	484,950	503,388	572,508	563,874	594,159	582,868	593,194	613,192	568,154
	13.5	13.0	13.6	13.7	15.2	15.3	15.9	15.3	15.3	15.5	14.1

*Table 3. Number and Percent of Households by Poverty Status, 2005-2015*

Poverty	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>At or Above Poverty</b>	1,050,272	1,081,565	1,097,883	1,116,943	1,117,208	1,135,295	1,144,844	1,164,636	1,186,982	1,200,901	1,244,646
	87.89	88.52	88.43	87.80	87.09	87.34	86.71	86.66	86.28	85.96	87.26
<b>Below Poverty</b>	144,698	140,253	143,588	155,259	165,585	164,620	175,497	179,335	188,675	196,175	181,697
	12.11	11.48	11.57	12.20	12.91	12.66	13.29	13.34	13.72	14.04	12.74

<sup>1</sup> Source: Institute for Urban Policy Research Analysis of Public Use Microdata Sample (PUMS) data from the American Community Survey 1 year estimates 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014 and 2015.

*Table 4. Federal Poverty Threshold by Size of Family Unit and Number of Children Under Age 18, 2015*

Household Income Size of Family Unit	Number of Related Children Under 18 Years Old							8 or More
	0	1	2	3	4	5	6	
One Person								
Under 65	12,331							
65 and Up	11,367							
Two People								
HH Under 65	15,871	16,337						
HH 65 and Up	14,326	16,275						
Three or More People								
Three people	18,540	19,078	19,096					
Four people	24,447	24,847	24,036	24,120				
Five people	29,482	29,911	28,995	28,286	27,853			
Six people	33,909	34,044	33,342	32,670	31,670	31,078		
Seven people	39,017	39,260	38,421	37,835	36,745	35,473	34,077	
Eight people	43,637	44,023	43,230	42,536	41,551	40,300	38,999	38,668
Nine people or more	52,493	52,747	52,046	51,457	50,490	49,159	47,956	47,658
								45,822

## Considerations in Assessing Changes in Estimates

While the margins of error and statistical significance are discussed more fully in the Appendix, the reader should be cautioned to consider the following information when assessing year-to-year changes. The ACS draws on responses from a small subset of the population, and the Public Use Micro Sample (PUMS) data used to prepare this report draws on a still smaller subset of that data. Thus, all estimates presented for 2015 (and for prior years) are accompanied by a margin of error in the Appendix. The narrower the margin, the more reliable the estimate. This, in essence, is the driver behind the symbols used to mark the estimates in the Appendix as high, moderate, or low reliability. The issue is further exacerbated when comparing estimates from two or more years. Quite simply, "noise" could be responsible for a shift in the percent or number of persons in poverty, particularly in smaller subsets of the population. To that end, the Appendix also presents indicators of statistical significance for each change figure. To guard against unwarranted conclusions, the report suppresses indications of statistically significant changes when one or both of the estimates being compared were marked as "low reliability."

## Change in Poverty for Demographic Segments

The sections below detail, for major demographic categories, the number and percent of persons or households living in poverty in 2015, as well as the change in both number and percent from 2010 estimates. Current year estimates, presented in the red shaded tables, are accompanied by margins of error and reliability estimates presented in the Appendix. Changes from 2010 are presented in the blue shaded tables, and the Appendix presents the accompanying margins of error for these change estimates. Narratives accompanying the tables below also make note of statistically significant changes. A more thorough discussion is presented in the appendix.

Table 5 presents the variation in the number and percent of persons by poverty status and race/ethnicity in 2015, while Table 6 presents changes since 2010. As in previous years, non-Hispanic African-Americans and Hispanics showed larger proportions of the population in poverty, at 20.38% and 21.85%, respectively. Though there were fewer Hispanics living in the United Way service area compared to non-Hispanic Whites, there were two and a half times as many living in poverty (272,649 compared to 106,312).

*Table 5. Number and Percent of Persons in Poverty by Race/Ethnicity, 2015*

At or Above			
Race / Ethnicity	Poverty Below Poverty	Total	
<b>Non-Hispanic White</b>	1,553,153 93.59	106,312 6.41	<b>1,659,465</b>
<b>Non-Hispanic Black</b>	554,283 79.62	141,872 20.38	<b>696,155</b>
<b>Non-Hispanic Asian</b>	287,460 90.03	31,822 9.97	<b>319,282</b>
<b>Non-Hispanic Other</b>	78,541 85.56	13,256 14.44	<b>91,797</b>
<b>Hispanic</b>	975,310 78.15	272,649 21.85	<b>1,247,959</b>
<b>Total</b>	3,448,747 85.9	565,911 14.1	<b>4,014,658</b>

*Table 6. Change in Number and Percent of Persons in Poverty by Race/Ethnicity, 2010-2015*

At or Above			
Race / Ethnicity	Poverty Below Poverty	Total	
<b>Non-Hispanic White</b>	+37,815 +0.4	-4,241 -0.4	<b>+33,574</b>
<b>Non-Hispanic Black</b>	+86,824 +3.6	-5,600 -3.6	<b>+81,224</b>
<b>Non-Hispanic Asian</b>	+74,690 -1.7	+12,516 +1.7	<b>+87,206</b>
<b>Non-Hispanic Other</b>	+5,602 -0.7	+1,600 +0.7	<b>+7,202</b>
<b>Hispanic</b>	+130,410 +2.7	-2,238 -2.7	<b>+128,172</b>
<b>Total</b>	<b>+335,341</b>	<b>+2,037</b>	<b>+337,378</b>

The changes presented in Table 6 help illustrate the magnitude of the shift in the United Way service area. From 2010 to 2015, there were an estimated 337,378 persons added. Of that population increase, fewer than 1% were below poverty. Since 2010, the poverty rate for Black and Hispanic persons in the service area has dropped by 3.6% and 2.7%, respectively; both decreases were statistically significant.

Similarly, Table 7 presents the number and percent of persons in poverty by age group in 2015. In the United Way service area, children continued to be more likely to live in poverty, with more than one in five children below 17 living in poor households. Table 8 presents the change in number and percent of persons in poverty by age group for 2010-2015. In the United Way service area, poverty rates decreased for all age groups, except the elderly. Despite the small relative changes in poverty, the number of persons in poverty aged 18 to 64 decreased significantly over the period.

*Table 7. Number and Percent of Persons in Poverty by Age Group, 2015*

At or Above			
Age Group	Poverty Below Poverty	Total	
<b>Under 5</b>	223,238 77.67	64,186 22.33	<b>287,424</b>
<b>5 to 17</b>	623,491 79.88	157,073 20.12	<b>780,564</b>
<b>18 to 64</b>	2,237,878 87.9	307,942 12.1	<b>2,545,820</b>
<b>65 and Up</b>	364,140 90.84	36,710 9.16	<b>400,850</b>
<b>Total</b>	3,448,747 85.9	565,911 14.1	<b>4,014,658</b>

*Table 8. Change in Number and Percent of Persons in Poverty by Age Group, 2010-2015*

At or Above			
Age Group	Poverty Below Poverty	Total	
<b>Under 5</b>	+7,302 +3.0	-9,028 -3.0	<b>-1,726</b>
<b>5 to 17</b>	+46,349 +1.8	-5,314 -1.8	<b>+41,035</b>
<b>18 to 64</b>	+205,375 +0.9	+4,616 -0.9	<b>+209,991</b>
<b>65 and Up</b>	+76,315 -1.2	+11,763 +1.2	<b>+88,078</b>
<b>Total</b>	<b>+335,341</b>	<b>+2,037</b>	<b>+337,378</b>

Table 9 and Table 10 present the number and percent of persons in poverty by sex, as well as the change over time. Women were more likely than men to be poor. Although the number in poverty increased slightly for both groups, the poverty rate decreased from 2010 to 2015 for both men and women; the decrease is statistically significant for both.

Table 9. Number and Percent of Persons in Poverty by Sex, 2015

Sex	At or Above		Total
	Poverty	Below Poverty	
Male	1,723,506	255,118	<b>1,978,624</b>
	87.11	12.89	
Female	1,725,241	310,793	<b>2,036,034</b>
	84.74	15.26	
Total	<b>3,448,747</b>	<b>565,911</b>	<b>4,014,658</b>
	<b>85.90</b>	<b>14.10</b>	

Table 10. Change in Number and Percent of Persons in Poverty by Sex, 2010-2015

Sex	At or Above		Total
	Poverty	Below Poverty	
Male	+162,338	+6	<b>+162,344</b>
	+1.2	-1.2	
Female	+173,003	+2,031	<b>+175,034</b>
	+1.3	-1.3	
Total	<b>+335,341</b>	<b>+2,037</b>	<b>+337,378</b>

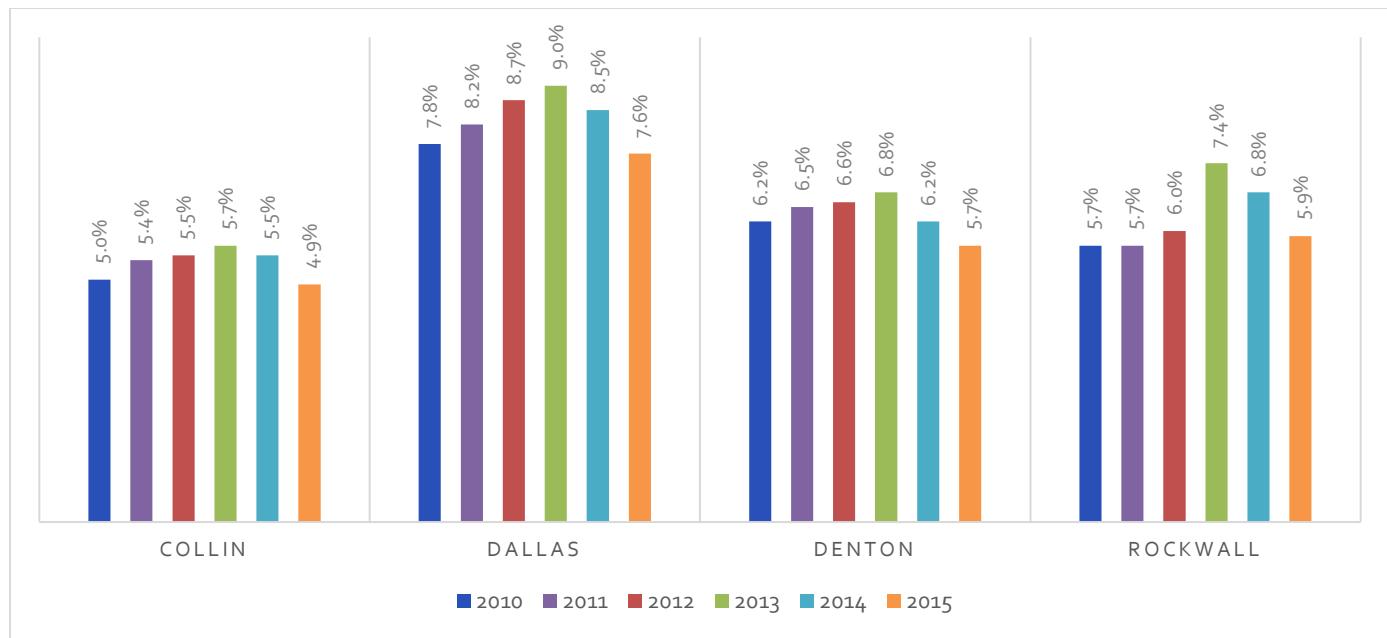
## Employment

One of the most important indicators of the health of the economy is the unemployment rate. According to the ACS, the rate of unemployment in the U.S. was 8.3% in 2015, down from 9.2% in 2014. In 2015, every county in the United Way service area outperformed the national unemployment rate and demonstrated a steady decline in unemployment since its peak in 2013.<sup>2</sup> Figure 2 illustrates the six-year trend in unemployment rates for counties in the United Way service area. Compared to national numbers, the United Way service area fared particularly well in 2015, with unemployment rates in all counties below the national average of 8.3%. Collin County had the lowest unemployment rate out of all counties in the service area, and the Dallas County had the highest. Between 2014 and 2015, unemployment rates in both Dallas and Rockwall Counties fell by 0.9 percentage points, in Collin County by 0.6 percentage points, and in Denton County by 0.5 percentage points.

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<sup>2</sup>Unemployment and joblessness rates are not available for small enough geographies to approximate Southern Denton County. Thus, Figure 2 and Figure 3 refer to the entirety of Denton County.

Figure 2. Unemployment Rate by County, United Way of Metropolitan Dallas Service Area, 2011-2015.



While unemployment rates serve as a key economic indicator, its definition is specific and often overlooked. Official unemployment rates typically originate from the Bureau of Labor Statistics, which only considers a person unemployed if he or she is actively looking for work. The unemployment rate refers to the percentage of individuals in the labor force who lack employment, and the labor force is defined as only those employed or actively seeking employment.

As a result, the unemployment rate does not account for several groups of people, most notably discouraged workers – those who have stopped looking for a job because they cannot find one. The result of excluding discouraged workers is that the unemployment rates can improve without additional job creation if enough individuals leave the labor force. Figure 3 illustrates the rate of joblessness in the United Way service area over the same period. Joblessness, unlike unemployment, includes individuals who do not participate in the labor force. In other words, the jobless rate reflects the percentage of all working age persons without a job, regardless of any desire of attempt to secure one. The jobless rate should be higher than the unemployment rate because it includes the discouraged workers; it also includes individuals who willingly forgo the labor force – like retirees, students, and homemakers, among others.

*Figure 3. Jobless Rate by County, United Way of Metropolitan Dallas Service Area, 2011-2015.*



Compared to the previous year's estimates, the jobless fell in Dallas County from 2014 to 2015 by 0.5 percentage points. Conversely, the jobless rate in each of the other counties was up very slightly. From 2013 to 2015, the jobless rate remained virtually unchanged across the five counties. Although the data presented here is not conclusive, steady joblessness rate paired with falling unemployment rates suggests that much of the decrease in unemployment is likely due to workers leaving the workforce, for one reason or another.

*Table 11. Number of Paid Employees by County, United Way of Metropolitan Dallas Service Area, 2010-2014.*

County	2010	2011	2012	2013	2014
<b>Collin</b>	288,674	304,938	314,129	336,461	354,722
<b>Dallas</b>	1,231,305	1,239,445	1,290,410	1,322,022	1,361,547
<b>Denton</b>	155,931	166,739	179,848	182,916	191,536
<b>Rockwall</b>	18,768	19,861	20,681	20,809	22,034

The number of paid employees in the county is based on business responses to the U.S. Census Bureau; because it is measured by employers and not households, an individual who works for more than one business would be counted more than once as a paid employee. This is worth noting, because Figure 3 demonstrates a largely stable jobless rate for the past three years, while Table 11 shows a consistent increase in paid employees over the same period. Taken together, this suggests that the increase in employees may be the result of individuals taking on second jobs or that new workers are traveling from other counties. Overall, the employment environment in the United Way service area outperforms much of the nation and continues to improve, if gradually.

## Small Businesses

Small businesses are essential to the strength of a local economy. Small businesses can provide job opportunities to those that larger corporations cannot. Although the nation has struggled with steady job growth since the recession began, small business job growth has been an important asset to replacing jobs lost. Additionally, small business often drive innovation, in part because employees usually work in closer proximity to consumers and can learn and hear firsthand about their needs and desires. Moreover, due to the nature of the U.S. retail market and the continuing expansion of online sales, a small business has the potential to develop into a national or international operation; others remain in the community, and continue to provide more and more employment, and to stimulate the local economy.

*Table 12. Number of Small businesses (fewer than 50 employees) by county, United Way of Metropolitan Dallas Service Area, 2010-2014.*

County	2010	2011	2012	2013	2014
<b>Collin</b>	16,733	17,170	17,883	18,716	19,386
<b>Dallas</b>	56,796	56,458	56,892	57,639	58,500
<b>Denton</b>	10,758	10,857	11,420	11,877	12,397
<b>Rockwall</b>	1,597	1,544	1,761	1,806	1,880

Across the four counties, the number of small businesses increased steadily from 2010 to 2014; although, both Dallas and Rockwall counties saw nominal decreases between 2010 and 2011. Except for Rockwall County in 2011, small business made up the clear majority of business in each county during each year.

## Conclusion

Economic indicators demonstrate that the counties in the United Way service area outperform much of the nation; furthermore, they have seen improvement, particularly with regards to poverty alleviation and decreasing unemployment rates since the adoption of community-wide goals. Meanwhile small business and paid employees increased across all four counties. The indicators of economic performance appear to be moving in the right direction for the United Way service area.

## Appendix: Reliability of Poverty Estimates

### A Summary of the Data Source

The estimates presented in this report were derived from the Public Use Micro Sample (PUMS) data, which is a representative sample of individual records drawn from the American Community Survey (ACS). They represent a roughly 1% sample of the nation's households and all the persons in each of the sampled households. Because the estimates are drawn from a sample that is itself drawn from a sample of the population, significant care must be taken in estimating the reliability for each percentage or total computed. Considerations of geography and sampling strategy are outlined below.

### Geographic Implications

The United Way of Metropolitan Dallas serves Dallas, Collin, Rockwall, and southern Denton counties. The data in PUMS are made available at a unit of geography known as the Public Use Microsample Area, or PUMA. PUMAs are sufficiently large so as to ensure confidentiality of census respondent information. In counties like Dallas, the sheer number of persons results in 15 PUMAs in 2000, increasing to 22 in 2010. When counties have smaller populations, they're often combined to create one PUMA. In the 2000 delineations, Rockwall and Kaufman counties were combined. For the 2010 delineations, Rockwall was combined with Hunt. This has implications for the analysis of ACS PUMS data for the United Way service area.

*Figure 4. Alignment of United Way Service Area and PUMAs, 2010*

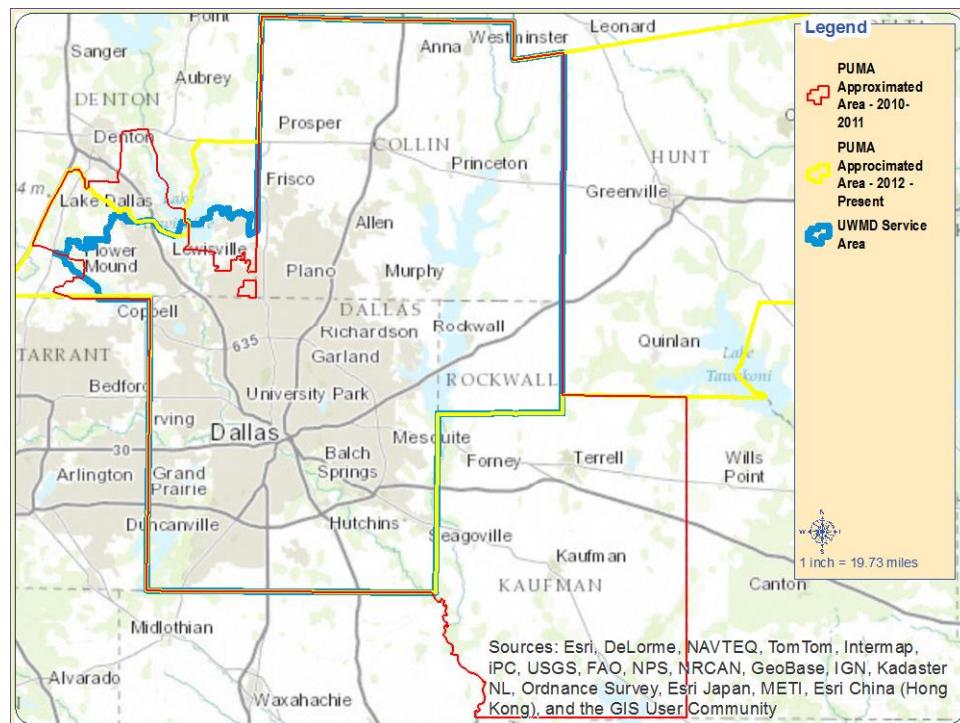


Figure 4 illustrates the alignment between the United Way service area, outlined in blue, and the 2010 Census PUMAs that were aggregated to comprise the approximations used in the 2010 and 2011 reports, outlined in red, and the 2010 Census PUMAs that were aggregated to comprise the

approximations used in the 2012 and subsequent reports, outlined in yellow.<sup>3</sup> While the counties of Dallas, Rockwall, and Collin are completely contained, the approximation area includes portions of Denton County that fall beyond the service area. In the 2010 and 2011 reports, it also included all of Kaufman County, while the 2012 and subsequent reports, which used the 2012 PUMAs, dropped Kaufman County and added Hunt County. The inclusion of Kaufman and Hunt counties over different years has minimal implications for relative prevalence (e.g., percentages), but Kaufman County and Hunt County do add approximately 80,000 to 100,000 persons into the formula. However, with an aggregate population in the approximation area of almost 3.7 million, the influence of 100,000 persons is negligible.

For the overall measure of percent and number of persons in poverty, the 2015 estimates (based on the newly drawn PUMAs) were adjusted back to the 2010 and 2011 estimate boundaries using the methodology adopted in 2012. Dallas and Collin counties were included in their entireties, with no impact on estimations. Denton County's 2010 PUMAs were adjusted back to 2000 PUMAs by using the geographic correspondence service for population base counts hosted by the Missouri Census Data Center. The aggregate counts were adjusted downward by removing Hunt County's poor and non-poor populations, and adjusted upward by adding Kaufman County's poor and non-poor populations. All other estimates use the new geographies.

### Reliability of the Estimates

Each record included in the PUMS data is weighted to reflect the probability of that record having been selected into the sample. This weighting is a method of controlling for variations in the sampling procedure designed to ensure representation across various dimensions. An additional set of 80 weights is generated by the Census Bureau for each record using a method known as Successive Difference Replicates (SDR) Weighting. To assess the reliability of the estimates prepared above, they are reproduced 80 times using each of the different SDR weights. Then, the standard error of the estimate is generated from the 80 differently weighted versions to produce a standard error that recognizes the "sample from a sample" issue peculiar to PUMS data.

The tables that follow provide, for each poverty-related percentage and total given in the report, the standard error for the estimate that was produced using the SDR methodology. The standard error can be thought of as one indicator of the reliability of the estimate, in that the larger the standard error, the less reliable the estimate is. The standard error is then used in the computation of a 95% confidence interval around the original estimate. The lower and upper bounds of the confidence interval are reported in the table as well. Finally, using the coefficient of variation as a guide, we provide an indicator of the reliability of each estimate.<sup>4</sup> When the coefficient of variation falls at or below 12%, the estimate is thought to be of high reliability. When the coefficient of variation falls above 40%, the estimate is thought to be of low reliability. When the coefficient of variation falls in between, the estimate is said to be of medium reliability. The level of reliability is indicated in the tables below by a

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<sup>3</sup> The following 2000 PUMAs were aggregated to comprise the United Way Service Area: 2000, 2101, 2102, 2103, 2104, 2201, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, and 2315. For the 2012 report, the following 2010 PUMAs were aggregated: 900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 2001, 2002, 2003, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, and 2322.

<sup>4</sup> For a complete discussion of the methodology, see National Research Council, *Using the American Community Survey: Benefits and Challenges* (Washington, D.C.: The National Academies Press, 2007).

green circle for high reliability, a yellow triangle for medium reliability, and a red diamond for low reliability.

*Table 13. Reliability Indicators for Percent of Persons in Poverty by Race/Ethnicity, 2015*

Race / Ethnicity	Percent	Standard Error	Lower Bound	Upper Bound	Reliability
Non-Hispanic White	6.406	0.301	5.817	6.996	
NH Black	20.379	1.001	18.418	22.341	
NH Asian	9.967	0.960	8.086	11.848	
NH Other	14.441	2.345	9.844	19.037	
Hispanic	21.848	0.845	20.192	23.503	

*Table 14. Reliability Indicators for Number of Persons in Poverty by Race/Ethnicity, 2015*

Race / Ethnicity	Total	Standard				Reliability
		Error	Lower Bound	Upper Bound		
NH White	106,312	5,036.61	96,440.43	116,183.60		
NH Black	141,872	7,027.47	128,098.40	155,645.60		
NH Asian	31,822	3,123.64	25,699.79	37,944.21		
NH Other	13,256	2,299.18	8,749.69	17,762.31		
Hispanic	272,649	10,621.45	251,831.30	293,466.70		

*Table 15. Reliability Indicators for Percent of Persons in Poverty by Age Group, 2015*

Age Group	Percent	Standard				Reliability
		Error	Lower Bound	Upper Bound		
Under 5	22.331	1.172	20.034	24.629		
5 to 17	20.123	0.886	18.386	21.860		
18 to 64	12.096	0.307	11.494	12.698		
65 and Up	9.158	0.584	8.013	10.303		

*Table 16. Reliability Indicators for Number of Persons in Poverty by Age Group, 2015*

Age Group	Total	Standard				Reliability
		Error	Lower Bound	Upper Bound		
Under 5	64,186	3,424.07	57,474.96	70,897.04		
5 to 17	157,073	6,873.89	143,600.40	170,545.60		
18 to 64	307,942	7,812.38	292,630.00	323,254.00		
65 and Up	36,710	2,342.48	32,118.82	41,301.18		

*Table 17. Reliability Indicators for Percent of Persons in Poverty by Sex, 2015*

Sex	Percent	Standard				Reliability
		Error	Lower Bound	Upper Bound		
Male	12.894	0.383	12.142	13.645		
Female	15.265	0.425	14.433	16.097		

Table 18. Reliability Indicators for Number of Persons in Poverty by Sex, 2015

Sex	Total	Standard			Reliability
		Error	Lower Bound	Upper Bound	
Male	255,118	7,614.34	240,194.20	270,041.80	
Female	310,793	8,646.66	293,845.90	327,740.10	

### Statistical Significance of the Changes

Recall that the ACS is a survey of a sample of the population. The PUMS data used to produce the estimates contained herein are a sample drawn from the ACS sample. For that reason, the estimates that were presented in this report were accompanied by a margin of error computed at the 95% level. Comparing each year to the previous year presents further complications. When we compute the change in the number of percent of persons living in poverty, we must treat that difference to the same cautious interpretation. The formula for the standard error of the difference between two years' estimates is simply derived by taking the square root of the sum of each year's squared standard deviation.

In that vein, we present the below tables detailing the margin of error and statistical significance of changes over time. For each change in either the number or percentage of persons or households, we provide the standard error of the difference as well as the lower and upper bounds of a 90% confidence interval. In addition, we graphically present the statistical significance of the change at the  $0.10 \alpha$  level. We depict statistically significant upward progress (fewer number of persons or percent poor) with a green upward-pointing arrow. Non-statistically significant change is presented with a yellow dash, while statistically significant negative change (higher number of persons or percent poor) is presented with a red downward-pointing arrow.

Table 19. Significance of Change in Percent of Persons in Poverty by Race/Ethnicity, 2010-2015

Race / Ethnicity	Percent	Standard		Upper Bound	Significant Change
		Error	Lower Bound		
Non-Hispanic White	-0.393	0.481	-1.185	0.398	
NH Black	-3.603	1.477	-6.032	-1.173	
NH Asian	+1.648	1.332	-0.544	3.840	
NH Other	+0.662	3.107	-4.448	5.772	
Hispanic	-2.701	1.341	-4.906	-0.495	

Table 20. Significance of Change in Number of Persons in Poverty by Race/Ethnicity, 2010-2015

Race / Ethnicity	Total	Standard			Significant Change
		Error	Lower Bound	Upper Bound	
NH White	-4,241	7,880.67	-17,204.70	8,722.70	
NH Black	-5,600	9,727.62	-21,601.93	10,401.93	
NH Asian	+12,516	3,781.36	6,295.66	18,736.34	
NH Other	+1,600	2,903.09	-3,175.58	6,375.58	
Hispanic	-2,238	15,777.87	-28,192.60	23,716.60	

Table 21. Significance of Change in Percent of Persons in Poverty by Age Group, 2010-2015

Age Group	Percent	Standard Error	Lower Bound	Upper Bound	Significant Change
<b>Under 5</b>	-2.989	1.840	-6.016	0.038	■
<b>5 to 17</b>	-1.835	1.183	-3.781	0.111	■
<b>18 to 64</b>	-0.890	0.500	-1.713	-0.067	▲
<b>65 and Up</b>	+1.182	0.777	-0.096	2.460	■

Table 22. Significance of Change in Number of Persons in Poverty by Age Group, 2010-2014

Age Group	Total	Standard			Significant Change
		Error	Lower Bound	Upper Bound	
<b>Under 5</b>	-9,028	5,285.95	-17,723.39	-332.61	▲
<b>5 to 17</b>	-5,314	9,038.53	-20,182.38	9,554.38	■
<b>18 to 64</b>	+4,616	12,079.50	-15,254.78	24,486.78	■
<b>65 and Up</b>	+11,763	2,830.18	7,107.36	16,418.64	▼

Table 23. Significance of Change in Percent of Persons in Poverty by Sex, 2010-2014

Sex	Percent	Standard			Significant Change
		Error	Lower Bound	Upper Bound	
<b>Male</b>	-1.152	0.598	-2.135	-0.169	▲
<b>Female</b>	-1.327	0.652	-2.398	-0.255	▲

Table 24. Significance of Change in Number of Persons in Poverty by Sex, 2010-2014

Sex	Total	Standard			Significant Change
		Error	Lower Bound	Upper Bound	
<b>Male</b>	+6	11,276.17	-18,543.30	18,555.30	■
<b>Female</b>	+2,031	12,614.19	-18,719.34	22,781.34	■



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