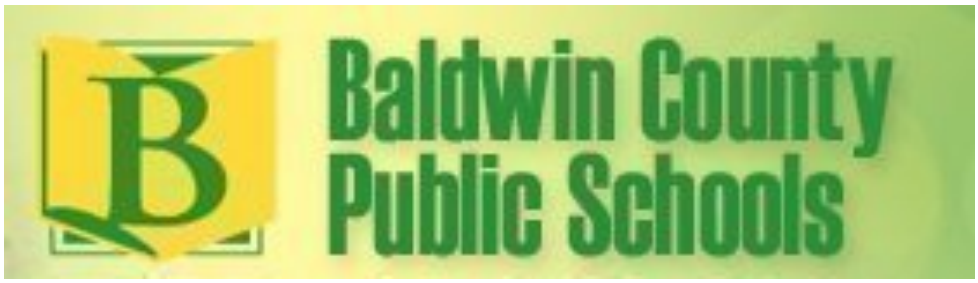
Proposed Millage Increase for Baldwin County Public Schools: Economic Analysis



by

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Executive Summary

Major findings of this report are summarized in this section. BCPSS refers to the Baldwin County Public School System.

Socio-Economic Status of Baldwin County

1. The six largest counties in Alabama are Baldwin, Jefferson, Madison, Mobile, Montgomery, and Shelby. The rates of growth of population from 1970 to 2013 were 439.79 percent for Shelby County, 229.29 percent for Baldwin County, 85.96 percent for Madison County, 35.08 percent for Montgomery County, 30.50 percent for Mobile County, and 2.25 percent for Jefferson County.

2. The growth rates of population during the last three years, i.e., 2010 to 2013, were 6.69 percent for Baldwin County, 4.24 percent for Shelby County, 3.19 percent for Madison County, 0.21 percent for Mobile County, 0.17 percent for Jefferson County, and -1.35 percent for Montgomery County.

3. Not only was the growth rate of population from 2010 to 2013 the fastest in Baldwin County, but the actual increase in population was the largest in Baldwin County: 12,265 in Baldwin County, 10,724 in Madison County, 8301 in Shelby County, 1,088 for Jefferson County, 863 in Mobile County, -3,094 in Montgomery County.

4. Baldwin County is the fastest growing county in Alabama, faster than Shelby County.

5. Per capita personal income of Baldwin County residents for 2013 was $39,100 and ranked 5th among 67 counties in Alabama. The Baldwin County rate of unemployment in September 2014 was 5.3 percent and ranked 7th lowest in the state.

6. Baldwin County is a highly educated place with 88.4 percent of its adults having graduated from high school. In Alabama, only Shelby County at 91.5 percent and Madison County at 89.5 percent are higher than Baldwin County. Baldwin County has the 6th highest educated residents at 27.7 percent when measured in terms of the percentage of adult residents with a bachelor's degree or higher.

7. Rapidly increasing population in Baldwin County is translating into a surge in the number of students attending the BCPSS. The annual rate of growth of average daily membership (ADM) from 2000 to 2014 is 2.06 percent. The growth rate has been accelerating at 2.10 percent during the last five years, 2010 to 2014.

Property Tax Rates in Comparison

8: BCPSS ranks 87th out of 135 reporting school systems as measured by the number of property tax mills dedicated to public schools. The real impact is worse than 87th because the 12 mills include 10 mills mandated by state law to be contributed or "matched" to Alabama's Foundation Program as Baldwin County's "equity funding" contribution.

9. Based on FY 2014 data, the total revenue raised by the 12 mills of ad valorem tax dedicated for public education in Baldwin County was $42,210,006. But, due to the equity funding 10 mill match required by state law as a condition for receiving state funds from the Foundation Program, most of those local funds are lost. In fact, in FY 2014 alone $36,890,870, almost $1,300 per student, was deducted from the Foundation Program dollars budgeted for Baldwin County public schools based upon its student population. Baldwin County, in effect, was allowed by state law to "keep" from its ad valorem revenue, only $5,319,136 of over $42 million local funds collected during FY 2014. Thus, while 12 mills generate a considerable sum the reality is only a tiny fraction of this local funding is available for local education uses such as construction of new schools.

10. Property tax equivalent is the hypothetical property tax rate that is calculated based on the assumption that a school system collects all its local revenues solely from property tax. For BCPSS, property tax equivalent is the property tax rate that generates the same amount that BCPSS collects from the penny sales tax and other tax sources as well as the 12 mill property tax.

11. The property tax equivalent for BCPSS, after taking the penny sales tax and other taxes into account, is 34.74 mills. That millage rate checks in at no better than 50th out of 134 reporting school systems.

Impact of Projected Construction Expenditures

12. Assuming that 20 to 30 new portables are needed each year, the annual cost of portables becomes $720,000 to $1,080,000. This represents net savings when new capital projects are undertaken, since portables are no longer needed with new classrooms and since these portables cannot be sold or returned to the original sellers for reimbursement.

13. The approximate amount of new revenues from the proposed increase in millage from 12 to 20 mills is about $30 million. BCPSS plans to borrow and/or allocate, from the additional property tax revenue, $350 million for construction of classrooms and improvement of campuses over a ten year period.

14. The new construction expenditures will generate the following economic impact in Baldwin County:

- Pre-tax wage or earning impact of $25,668,549 per year or $256,685,489 for 10 years
- Jobs of 769 each year continuing for 10 years;
- Tax revenues for cities in Baldwin County of $265,620 per year or $2,656,197 for 10 years;
- Tax revenues for Baldwin County Commission of $239,639 per year or $2,396,390 for 10 years;
- Tax revenues for the state of Alabama of $1,147,102 per year or $11,471,018 for 10 years;
- Spending on groceries of $1,891,614 per year or $18,916,138 for 10 years;
- Spending at restaurants of $1,338,421 per year or $13,384,214 for 10 years;
- Spending on apparel and services for men and boys: $201,605 per year or $2,016,055 for 10 years;
- Spending on apparel and services for women and girls of $395,060 per year or $3,950,598 for 10 years;
- Spending on footwear of $189,650 per year or $1,896,504 for 10 years
- Spending on new cars of 1,419,390 per year or $14,193,896 for 10 years;

- Spending on health care of $1,646,535 per ear or $16,465,354 for 10 years;
- Cash contributions of $919,451 or $9,194,515 for 10 years; and
- And more (see Table 3-2 of the report).

15. These impacts account for the fact that the increased tax burden, standing alone, will lower spending and employment. Conservatively, only 50 percent of construction expenditures are assumed to create positive economic impacts, while the other 50 percent are assumed to be offset by negative impacts of tax increases and possible leakages of impacts to other counties. The impact numbers shown in this report are thus net impacts.

Impact of Public Education on Crime

16. Numerous studies have found a high correlation between the importance of staying in school and completing high school and low crime rates. Findings include that:

- A 2004 landmark study by Lochner and Moretti finds that a one-year increase in average education levels in a state reduces state-level arrest rates by 11 percent or more; that a ten percentage point increase in high school graduation rates would reduce arrest rates by 7-9 percent; that a one year increase in average years of schooling reduces both property and violent crime by about 11-12 percent; and that the social savings of a one percentage point increase in male US high school graduation rates are more than $3,000 of taxpayer dollars in annual savings per additional male graduate.
- Review of individual-level panel data on the African-American male population aged between 13 and 22 indicates that dropping out of school at age 16 increases the likelihood of committing crime and being incarcerated at age 19-22 by up to 14.8 percentage points and up to 8.1 percentage points, respectively.
- According to 2001 data from the United Kingdom, incarceration rates among men ages 21-25 were more than eight times higher for high school dropouts compared to those who graduated from high school.

Impact of Public Schools on Property Value

17. Studies have found a positive correlation between proximity to public schools and property values. Findings include that:

- Proximity to quality schools increases property values;
- After accounting for other neighborhood characteristics, the prices of similar houses are higher in school districts with higher expenditures per pupil;
- Homeowners do value school districts that spend more per pupil;
- Higher achievement scores are associated with higher house values in the neighborhood; and
- A thoughtful study based on St. Louis data by Chiodo et al, published in the 2010 issue of the Federal Reserve Bank of St. Louis Review, finds that the price premium parents must pay to buy a house in an area associated with better schools increases as school quality increases, and that the price premium from school quality remains substantially large, particularly for neighborhoods associated with high-quality schools.

Impact of Public Education on Community Development

18: One of the greatest thinkers of our time, Milton Friedman said: "'the education of my child contributes to other people's welfare by promoting a stable and democratic society."

19. Community groups have actively encouraged public schools to purchase supplies and services from local businesses and to award school construction and capital improvement projects to local contractors. In some communities, schools are now emphasizing local hiring practices.

20. In her 2001 study for public education in Pennsylvania, Mitra states that effective education improves decision-making abilities that then help individuals stay out of trouble and live better, healthier, and longer lives. Examples of benefits cited by Mitra include that:

- High school dropouts are more than twice as likely to be unemployed and three times more likely to receive welfare assistance, costing

billions of dollars nationally each year for government funded assistance programs;

- There is a return of at least 7 dollars for every dollar invested in pre-kindergarten education;
- Mortality decreases for every additional year in schooling by 7.2% for men and 6% for women; and the chances of optimum health is up to 8 times higher for citizens with eighteen years of education versus only seven;
- Average annual public health costs are $2,700 per dropout, $1,000 per high school graduate, and $170 per college graduate; and
- A 1-year increase in median education level is associated with a more than 13% jump in political primary turnout.

Impact of Public Education in Alabama

21. A regression analysis of 67 county public school systems and socio-economic data of the 67 counties in Alabama indicates that:

- The greater the share of local revenue out of total revenue of a school system, the greater the percentage of students who complete high school;
- Counties that have a greater percentage of residents with a bachelor's degree or higher have a higher percentage of students completing high school;
- A one percentage point increase in residents with a bachelor's degree will lead to an increase in local revenues per student by $42.65 each year;
- High local property values have a positive impact on local revenue per student; and
- Completing high school education is important in lowering the unemployment rate.

Individual Share of the 8-Mill Increase

22. According to the Alabama Center for Real Estate at the University of Alabama, the median price of homes as of September 2014 was $190,999. The share of the 8-mill tax increase for this median price is $152.80 per year, or $2.94 per week. Consider five prices of a product: $1, $2, $3, $4, and $10. Median price is the one in the

middle, which is $3. Mean or average price is the sum of all divided the number of prices, i.e., ($1 + $2 + $3 + $4 + $10)/5 = $4.

Graphic Summary of Selected Findings

Shown below are seven graphs that highlight selected findings of this report. The seven graphs are:

1. Growth Rates of Population by County: 2010 to 2013 in Percent
2. Rankings of Baldwin County and Baldwin Co. public School System
3. Annual Wage Impact of Construction Expenditures
4. Annual Employment Impact of Construction Expenditures
5. Annual Impact of Construction Expenditures on Selected Industries
6. 8-Mill Tax Share for Median House Price
7. Impact of Quality Public Education

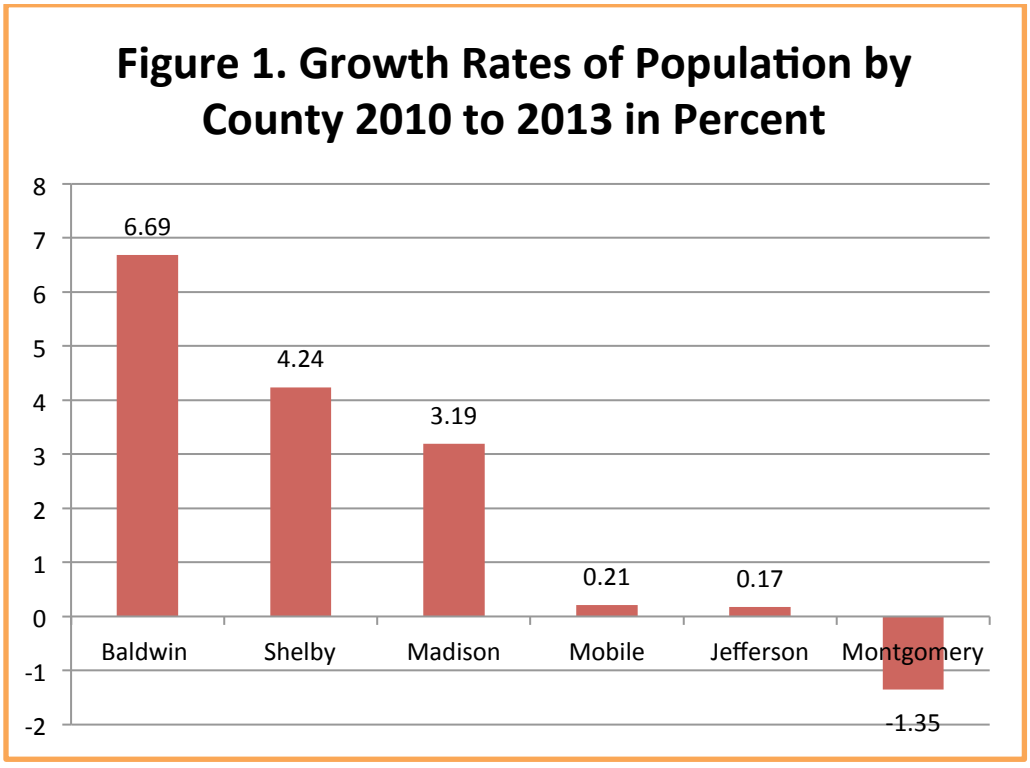


Figure 2. Rankings of Baldwin County and Baldwin County Public School System
(BCPSS tax rankings worse if adjusted for equity funding)

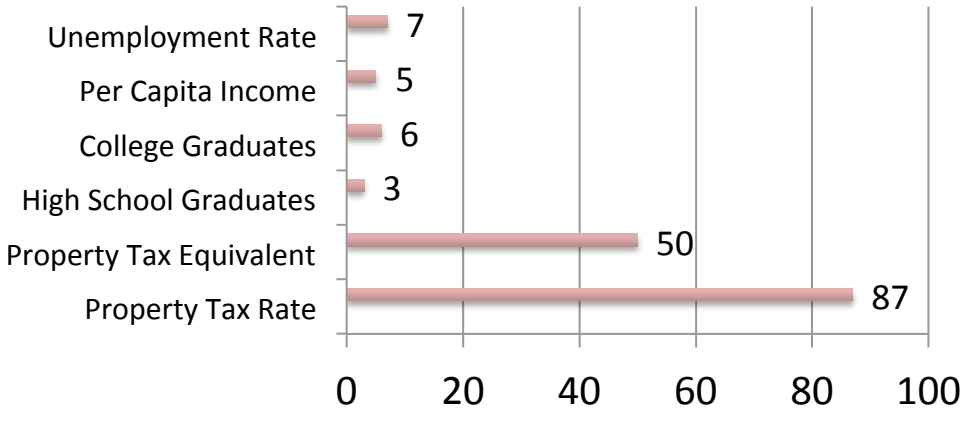


Figure 3. Annual Wage Impact of Construction Expenditures ($25,668,549 total)

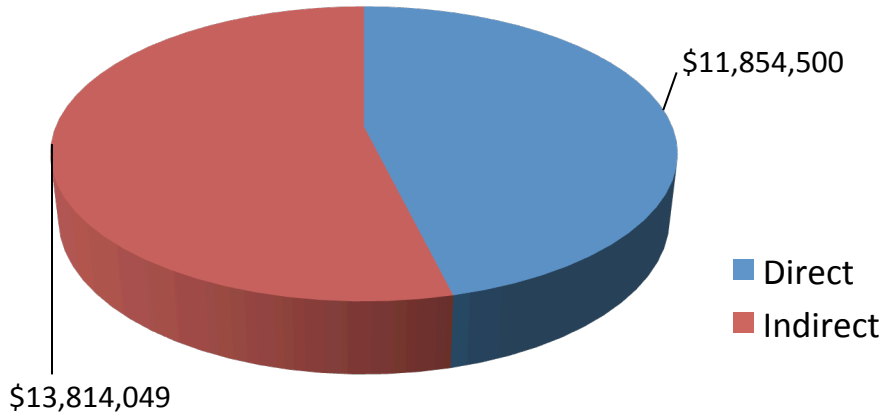


Figure 4. Annual Employment Impact of Construction Expenditures (769 total)

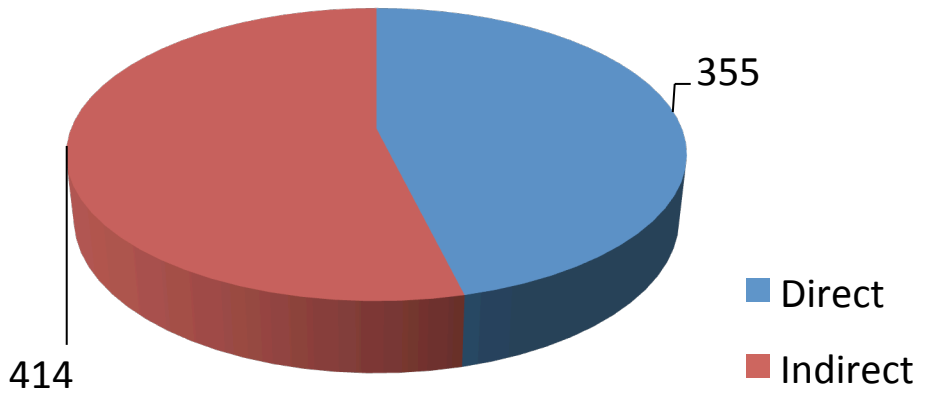
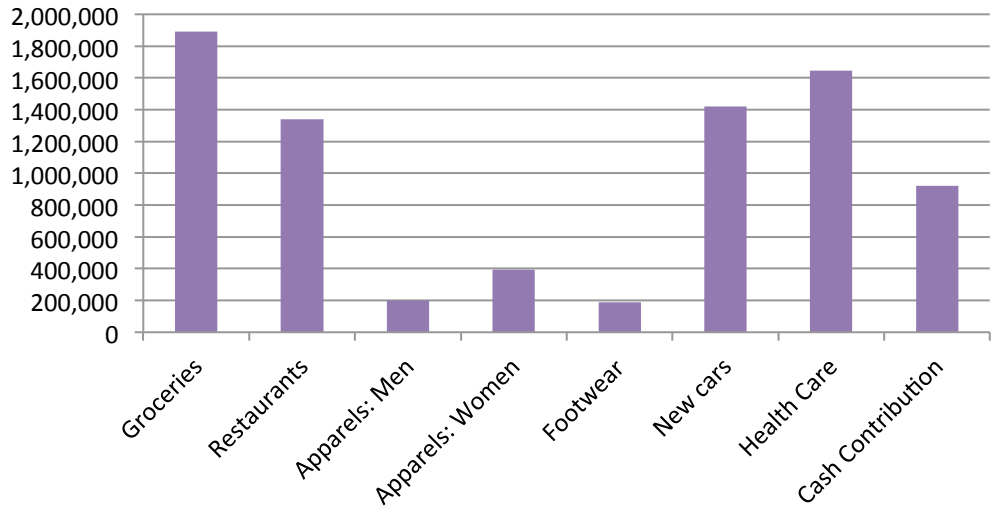


Figure 5. Annual Impact of Construction Expenditures on Selected Industries



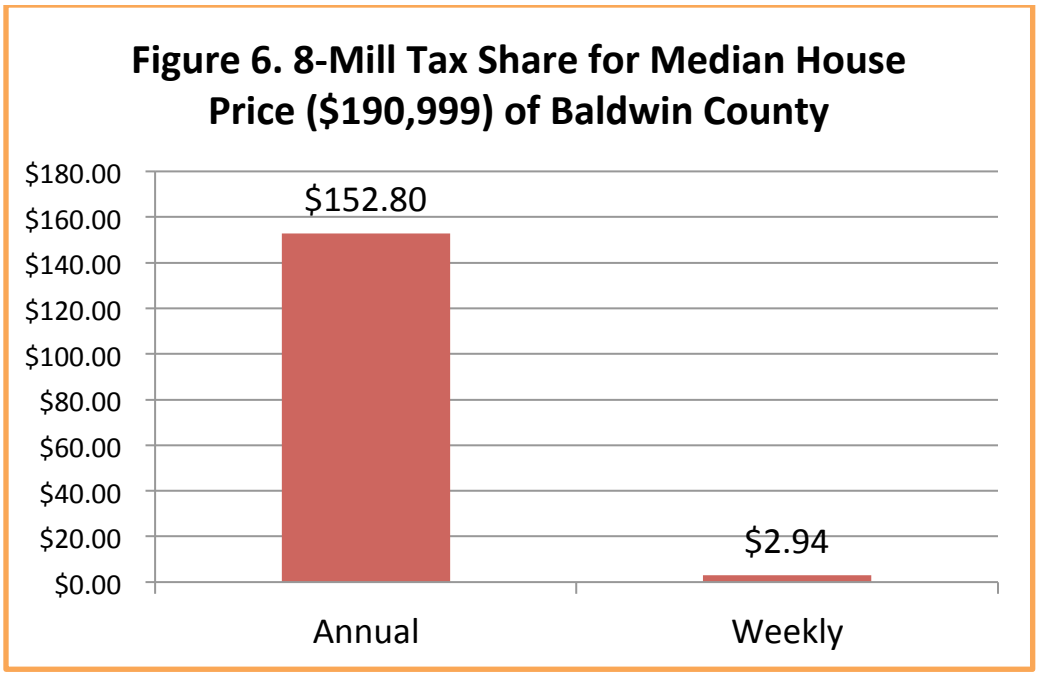


Figure 7. Impact of Quality Public Education

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Section 1

Socio-Economic Profile of Alabama Counties

Admittedly, how much residents of a particular county should pay to support its public school system is subject to opinion. However, when one looks at the demographic and economic trends of Baldwin County in comparison to other counties in Alabama, different perspectives emerge.

Population Growth of Selected Counties

Resident population figures for the six largest counties in Alabama are presented in Table 1-1 annually for years 1970 to 2013. The six counties are: Baldwin, Jefferson, Madison, Mobile, Montgomery, and Shelby. For analysis, several growth rates are calculated in Table 1-2 on the basis of raw numbers shown in Table 1-1.

The most telling numbers are shown in the last two rows of Table 1-2. The rates of growth of population from 1970 to 2013 were 439.79 percent for Shelby County, 229.29 percent for Baldwin County, 85.96 percent for Madison County, 35.08 percent for Montgomery County, 30.50 percent for Mobile County, and 2.25 percent for Jefferson County.

When the growth rates of the latest three years are compared, a different trend emerges. The rates of growth of population from 2010 to 2013 were 6.69 percent for Baldwin County, 4.24 percent for Shelby County, 3.19 percent for Madison County, 0.21 percent for Mobile County, 0.17 percent for Jefferson County, and -1.35 percent for Montgomery County.

Perhaps, most striking, however, is that not only the growth rate of population from 2010 to 2013 was the fastest in Baldwin County outpacing that of Shelby County, but the actual increase in population was the largest in Baldwin County outpacing that of any county in the table: 12,265 in Baldwin County, 10,724 in Madison County, 8301 in Shelby County, 1,088 for Jefferson County, 863 in Mobile County, -3,094 in Montgomery County.

Contrary to the belief that Baldwin County is the 2nd fastest growing county in Alabama, latest data point toward the observation that Baldwin County is the 1st fastest growing county in Alabama.

Table 1-1. Resident Population for Selected Counties in Alabama

Year	Alabama	Baldwin	Jefferson	Madison	Mobile	Montgomery	Shelby
1970	3,444,354	59,382	644,991	186,540	317,308	167,790	38,037
1971	3,497,076	60,100	649,800	188,600	323,300	169,900	40,100
1972	3,539,400	62,400	647,100	189,100	324,300	176,100	42,700
1973	3,579,780	64,200	650,600	189,800	324,500	179,300	46,200
1974	3,626,499	66,100	648,800	188,300	329,400	182,900	49,800
1975	3,678,814	67,900	655,300	188,200	335,200	183,200	51,700
1976	3,735,139	70,200	661,300	190,200	344,900	187,000	54,600
1977	3,780,403	72,400	663,600	192,500	353,100	188,100	60,200
1978	3,831,836	74,500	667,400	193,200	360,100	190,600	63,500
1979	3,866,248	76,600	671,700	194,900	361,700	193,400	64,500
1980	3,900,368	78,556	671,371	196,966	364,980	197,038	66,298
1981	3,918,531	80,287	667,790	199,929	370,432	199,562	69,275
1982	3,925,266	82,331	662,404	202,737	374,782	200,094	70,960
1983	3,934,102	83,978	660,835	206,594	376,842	200,456	72,847
1984	3,951,820	86,752	659,571	210,710	376,211	202,530	75,959
1985	3,972,523	89,401	658,988	215,234	378,847	203,886	79,601
1986	3,991,569	91,311	657,905	220,122	381,729	206,257	83,214
1987	4,015,264	93,214	657,665	225,390	383,696	207,792	88,469
1988	4,023,844	94,649	655,628	231,324	381,501	208,436	92,527
1989	4,030,222	96,198	653,400	235,778	378,869	209,650	96,496
1990	4,048,508	98,955	652,239	239,996	379,167	209,537	100,024
1991	4,091,025	102,420	656,878	246,398	382,978	212,685	102,833
1992	4,139,269	106,595	660,713	254,049	388,097	215,742	106,528
1993	4,193,114	111,416	663,178	262,516	393,740	218,667	112,031
1994	4,232,965	116,565	665,429	266,323	395,685	220,870	117,797
1995	4,262,731	120,896	666,106	265,495	395,664	222,041	122,508
1996	4,290,403	125,412	665,943	266,447	396,163	222,834	126,681
1997	4,320,281	130,164	664,268	267,870	397,917	223,792	131,607
1998	4,351,037	134,444	664,457	272,798	398,479	224,224	135,954
1999	4,369,862	137,555	662,845	274,692	399,323	223,548	140,502
2000	4,452,173	141,384	662,285	277,941	400,165	223,479	144,684
2001	4,467,634	145,017	661,524	281,240	400,070	222,949	149,432
2002	4,480,089	148,177	659,815	285,897	398,284	222,864	154,080
2003	4,503,491	151,798	660,732	290,509	397,522	222,170	159,833
2004	4,530,729	156,640	659,912	294,494	397,073	221,938	165,912
2005	4,569,805	162,623	659,425	299,845	397,698	222,039	171,856
2006	4,628,981	168,572	660,914	306,975	401,302	225,183	178,994
2007	4,672,840	172,851	660,773	313,133	404,028	225,443	183,639
2008	4,718,206	176,268	662,649	320,216	407,712	224,584	188,500
2009	4,757,938	179,831	665,058	326,923	410,389	224,280	192,420
2010	4,785,570	183,275	658,391	336,168	413,216	229,753	195,879
2011	4,801,627	186,830	658,967	339,673	413,145	231,910	198,123
2012	4,817,528	190,790	660,009	343,080	413,936	230,149	200,941
2013	4,833,722	195,540	659,479	346,892	414,079	226,659	204,180

Source: U.S. Census Bureau 2014.

Table 1-2. Population Growth Rates of Selected Counties

Year	Alabama	Baldwin	Jefferson	Madison	Mobile	Montgomery	Shelby
1970 to 1980	13.24	32.29	4.09	5.59	15.02	17.43	74.30
1980 to 1990	3.80	25.97	-2.85	21.85	3.89	6.34	50.87
1990 to 2000	9.97	42.88	1.54	15.81	5.54	6.65	44.65
2000 to 2010	7.49	29.63	-0.59	20.95	3.26	2.81	35.38
2010 to 2013	1.01	6.69	0.17	3.19	0.21	-1.35	4.24
1970 to 2013	**40.34**	**229.29**	**2.25**	**85.96**	**30.50**	**35.08**	**436.79**
2010 to 2013		**12,265**	**1,088**	**10,724**	**863**	**-3,094**	**8,301**

Source: Adapted from Table 1-1.

Income and Education Profile of All Counties

Another way of evaluating the health of Baldwin County is to review the levels of income and education as summarized in Table 1-3. Table 1-3 summarizes latest data by county of per capital personal income, rate of unemployment, percent of high school graduates for 25 years old and over, and residents with bachelor's degree or higher for 25 years and older.

Per capital personal income of Baldwin County for 2013 was $39,100 and ranked 5th among 67 counties in Alabama. Only Shelby County ($46,291), Jefferson County ($45,961), Madison County ($43,308), and Montgomery County ($40,168) are ahead of Baldwin County.

The Baldwin County rate of unemployment in September 2014 was 5.3 percent, tied with four other counties but ranked 7th best in the state. Only Shelby County (4.3%), Cherokee County (4.7%), Lee County (4.7%), Blount County (4.8%), Cullman County (4.9%) and St. Clair County (5.2%) are ahead of Baldwin County.

Importantly and proudly, Baldwin County is a highly educated place with 88.4 percent of adults being high school graduates. Only Shelby County at 91.5 percent and Madison County at 89.5 percent are ahead of Baldwin County. Baldwin County also has the 6th highest educated residents at 27.7 percent when measured in terms of the percentage of adult residents with bachelor's degree or higher. Only Shelby County (40.5%), Madison County (37.8%), Lee County (31.3%), Montgomery County (30.9%), and Jefferson County (29.3%) are ahead of Baldwin County.

Table 1-3. Income and Education Comparison by County

Rank	County	PCPI 2013	County	UNR 9-14	County	HS+ 2012	County	BA+ 2012
1	Shelby	46,291	Shelby	4.3	Shelby	91.5	Shelby	40.5
2	Jefferson	45,961	Cherokee	4.7	Madison	89.5	Madison	37.8
3	Madison	43,308	Lee	4.7	**Baldwin**	**88.4**	Lee	31.3
4	Montgomery	40,168	Blount	4.8	Jefferson	87.2	Montgomery	30.9
5	**Baldwin**	**39,100**	Cullman	4.9	Elmore	86.2	Jefferson	29.3
6	Coffee	38,002	St. Clair	5.2	Lee	86.0	**Baldwin**	**27.7**
7	Houston	37,338	**Baldwin**	**5.3**	Tuscaloosa	85.8	Tuscaloosa	26.6
8	Marengo	36,787	Crenshaw	5.3	Montgomery	85.3	Coffee	22.6
9	Limestone	36,398	Limestone	5.3	Autauga	85.1	Pike	22.5
10	Elmore	36,261	Madison	5.3	Dale	84.2	Lauderdale	21.9
11	Lowndes	36,127	Tuscaloosa	5.3	Mobile	83.6	Limestone	21.9
12	Tuscaloosa	36,095	Autauga	5.4	Colbert	83.4	Autauga	21.7
13	Pike	35,448	Coffee	5.5	Houston	83.3	Elmore	21.1
14	Autauga	34,843	Elmore	5.6	Lauderdale	83.2	Mobile	20.3
15	Walker	34,493	Cleburne	5.7	Marengo	83.0	Macon	19.5
16	Morgan	34,219	Geneva	5.7	Morgan	82.0	Morgan	19.5
17	Crenshaw	34,122	Jackson	5.7	Coffee	81.8	Houston	19.3
18	Henry	33,977	Jefferson	5.7	Etowah	81.7	Colbert	18.0
19	Lauderdale	33,907	Chilton	5.8	Pike	81.6	Marengo	17.7
20	St. Clair	33,837	Morgan	5.8	Limestone	81.1	Dale	17.5
21	Talladega	33,686	Etowah	5.9	St. Clair	80.7	Calhoun	16.0
22	Colbert	33,459	Marshall	5.9	Washington	79.9	Henry	15.8
23	Tallapoosa	33,417	Walker	6.0	Macon	79.6	Tallapoosa	15.5
24	Cullman	33,370	DeKalb	6.2	Henry	79.0	Marshall	15.3
25	Etowah	33,162	Chambers	6.3	Calhoun	78.8	Sumter	15.3
26	Greene	33,060	Pike	6.3	Cullman	78.8	Etowah	15.2
27	Mobile	32,843	Talladega	6.3	Clarke	78.4	St. Clair	14.9
28	Jackson	32,719	Bibb	6.4	Russell	78.4	Russell	14.7
29	Choctaw	32,528	Houston	6.4	Lawrence	77.9	Barbour	14.5
30	Calhoun	32,432	Covington	6.5	Talladega	77.9	Cullman	14.2
31	Macon	32,323	Lauderdale	6.5	Tallapoosa	77.8	Lowndes	14.2
32	Marshall	32,243	Fayette	6.6	Pickens	77.5	Covington	13.8
33	Cleburne	32,226	Henry	6.6	Cherokee	77.1	Dallas	13.3
34	Dale	32,116	Lamar	6.6	Butler	76.3	Jackson	13.2
35	Lawrence	31,947	Montgomery	6.6	Crenshaw	76.3	Cherokee	13.1
36	Escambia	31,684	Randolph	6.6	Lamar	76.3	Lawrence	13.0
37	Geneva	31,637	Calhoun	6.7	Lowndes	76.2	Butler	12.9
38	Clarke	31,497	Pickens	6.7	Bibb	76.1	Clarke	12.7
39	Perry	31,432	Coosa	6.9	Walker	76.1	Chilton	12.5
40	Covington	31,341	Dale	6.9	Monroe	75.9	Blount	12.4
41	Butler	31,082	Choctaw	7.0	Conecuh	75.8	Talladega	12.3
42	Hale	31,007	Mobile	7.0	Coosa	75.8	Escambia	12.2
43	Pickens	30,822	Clay	7.1	Fayette	75.8	Franklin	12.2
44	Conecuh	30,602	Franklin	7.2	Blount	75.7	Bullock	11.9
45	Russell	30,558	Hale	7.2	Chilton	75.7	Choctaw	11.9

46	Lee	30,499	Marengo	7.2	Greene	75.6	Randolph	11.9
47	Chambers	30,082	Tallapoosa	7.2	Sumter	75.4	Hale	11.7
48	Chilton	30,060	Butler	7.5	Dallas	75.3	Winston	11.7
49	Dallas	30,042	Lawrence	7.5	Geneva	75.3	Fayette	11.6
50	Monroe	29,744	Colbert	7.6	Escambia	75.2	Greene	11.6
51	Fayette	29,737	Escambia	7.6	Jackson	74.9	Wilcox	11.1
52	Lamar	29,629	Winston	7.8	Marshall	74.6	Chambers	11.0
53	Blount	29,222	Macon	7.9	Clay	74.2	Crenshaw	11.0
54	Washington	29,208	Marion	7.9	Cleburne	74.2	Perry	11.0
55	Clay	29,056	Russell	8.2	Choctaw	74.1	Geneva	10.9
56	Wilcox	28,932	Sumter	8.6	Chambers	73.8	Walker	10.3
57	Cherokee	28,761	Washington	8.8	Barbour	73.6	Lamar	10.2
58	Marion	28,656	Clarke	9.6	Hale	73.2	DeKalb	9.9
59	DeKalb	28,649	Conecuh	9.7	Franklin	73.1	Monroe	9.9
60	Barbour	28,559	Monroe	10.1	Perry	72.3	Pickens	9.8
61	Sumter	28,464	Greene	10.2	Marion	71.7	Conecuh	9.7
62	Randolph	28,360	Barbour	10.7	Randolph	71.6	Coosa	9.7
63	Franklin	27,997	Perry	11.6	Wilcox	71.3	Cleburne	9.5
64	Winston	27,597	Bullock	12.0	DeKalb	70.5	Washington	9.5
65	Bibb	25,352	Dallas	12.1	Bullock	70.3	Bibb	9.0
66	Coosa	24,838	Lowndes	12.5	Winston	69.9	Clay	8.8
67	Bullock	24,043	Wilcox	13.9	Covington	7.4	Marion	8.7
	Average	32,498		**7.1**				**15.8**

Source: Adapted from Federal Reserve Bank of St. Louis, November 2014.

Growth of Enrollment at BCPSS

Rapidly increasing population leads to a rapidly increasing number of students. ADM in 2000 was 22,319 that increased to 29,660 in 2014. The annual rate of growth of ADM from 2000 to 2014 is 2.06 percent. Importantly, the growth rate appears accelerating at 2.10 percent during the last five years, 2010 to 2014. The growth rates of BCPSS enrollment are summarized in Table 1-4.

Table 1-4. Enrollment Growth at Baldwin County Public Schools

Year	ADM	Growth in%
FY 2000	22,319	
FY 2001	22,599	1.25%
FY 2002	23,087	2.16%
FY 2003	23,414	1.41%
FY 2004	23,978	2.41%
FY 2005	24,657	2.83%
FY 2006	25,825	4.74%
FY 2007	26,037	0.82%
FY 2008	26,323	1.10%
FY 2009	26,736	1.57%
FY 2010	27,445	2.65%
FY 2011	27,774	1.20%
FY 2012	28,319	1.96%
FY 2013	28,997	2.39%
FY 2014	29,660	2.29%
Average 2000 to 2014		2.06%
Average 2010 to 2014		2.10%

Source: Baldwin County Board of Education 2014.

Summary

The six largest counties in Alabama are Baldwin, Jefferson, Madison, Mobile, Montgomery, and Shelby. The rates of growth of population from 1970 to 2013 were 439.79 percent for Shelby County, 229.29 percent for Baldwin County, 85.96 percent for Madison County, 35.08 percent for Montgomery County, 30.50 percent for Mobile County, and 2.25 percent for Jefferson County.

The growth rates of population during the latest three years, i.e., 2010 to 2013, were 6.69 percent for Baldwin County, 4.24 percent for Shelby

County, 3.19 percent for Madison County, 0.21 percent for Mobile County, 0.17 percent for Jefferson County, and -1.35 percent for Montgomery County. Not only the growth rate of population from 2010 to 2013 was the fastest in Baldwin County, but the actual increase in population was the largest in Baldwin County: 12,265 in Baldwin County, 10,724 in Madison County, 8301 in Shelby County, 1,088 for Jefferson County, 863 in Mobile County, -3,094 in Montgomery County. Contrary to the belief that Baldwin County is the 2nd fastest growing county in Alabama, latest data indicate that Baldwin County is the 1st fastest growing county in Alabama.

Per capital personal income of Baldwin County for 2013 was $39,100 and ranked 5th among 67 counties in Alabama. Only Shelby County ($46,291), Jefferson County ($45,961), Madison County ($43,308), and Montgomery County ($40,168) are ahead of Baldwin County.

The Baldwin County rate of unemployment in September 2014 was 5.3 percent, tied with four other counties but ranked 7th lowest in the state. Only Shelby County (4.3%), Cherokee County (4.7%), Lee County (4.7%), Blount County (4.8%), Cullman County (4.9%) and St. Clair County (5.2%) are ahead of Baldwin County.

Baldwin County is a highly educated place with 88.4 percent of adults being high school graduates. Only Shelby County at 91.5 percent and Madison County at 89.5 percent are ahead of Baldwin County. Baldwin County has the 6th highest educated residents at 27.7 percent when measured in terms of the percentage of adult residents with bachelor's degree or higher. Only Shelby County (40.5%), Madison County (37.8%), Lee County (31.3%), Montgomery County (30.9%), and Jefferson County (29.3%) are ahead of Baldwin County.

Rapidly increasing population leads to a rapidly increasing number of students. The number of students at Baldwin County Public Schools was 22,319 in 2010 but increased to 29,660 in 2014. The annual rate of growth of ADM from 2000 to 2014 is 2.06 percent. Importantly, the growth rate appears accelerating at 2.10 percent during the last five years, 2010 to 2014

Section 2

Property Tax Rates by School System: A Comparison

According to the National Center for Education Statistics, Common Core of Data, Alabama is ranked 44th in local revenues per ADM, while it is ranked 43rd in local expenditures per ADM. (Source: U.S. Department of Education, National Center for Education Statistics, Common Core of Data, "National Public Education Financial Survey," 2010-11, v.1a) This means that if a school system is not ranked high within Alabama, the low ranking of the school system most likely indicates a very low ranking when compared to school systems in the rest of the country. This leads us to the important question of how much property taxes Baldwin County residents are paying for the BCPSS and how the property tax rate that these residents are paying for the BCPSS compares to the property tax rates that residents in other counties of Alabama.

Property Tax Rates by School System

Property tax rates are usually measured in mills with one mill being 0.1 percent levied on the assessed value of properties. Property tax rates in mills that are levied in all school systems are summarized in Table 4-1. The rates are led by Mountain Brook City at 52.9 mills, Vestavia Hills City at 52.05 mills, and Hoover City at 46 mills. No less than 27 county systems and 4 city systems levy the minimum required 10 mills as shown in Table 2-1.

Baldwin County Public Schools rank at 87th out of 135 school systems at 12 mills. To truly understand what this ranking means, however, it is necessary to consider the state's Foundation Program. As introduced in Section 3, "The intent of the Foundation Program was to provide an equitable, basic funding stream for public K-12 schools throughout the state. The equity came through mandated 10-mill equivalence in local property tax which the local school system had to commit to the Foundation Program." (School Superintendents of Alabama, "A Primer on The Foundation Program and School Funding in Alabama," Montgomery, AL, February 2011, p. 2) These equity funds then are distributed to all school systems in Alabama solely based on ADM, i.e., the number of students.

The financial impact of the Foundation Program is illustrated in Table 2-2 in which BCPSS is listed as having ADM of 28,996.50, and paid to the

Foundation Program, called Chargeback in the table, of 36,890,870. On per student basis, the amount paid to the Program is $127.23 which ranks at 6th highest out of 134 school systems excluding Alabaster City for which no data are available. Since the average of chargeback per ADM is $64.18, it may be said that BCPSS pays $127.23 but is paid $64.18 for each student enrolled at the BCPSS. In brief, the 87th ranking of property tax rate for BCPSS in Table 2-1 is actually overestimating the contribution of the property tax to the Baldwin County Public Schools.

Table 2-1. Current Property Tax Rates of All Public School Systems in Alabama FY2013

School System	Total Mills	Rank
Mountain Brook City	52.9	1
Vestavia Hills City	52.05	2
Hoover City	46	3
Midfield City	38.7	4
Homewood City	37.5	5
Fairfield City	34.1	6
Macon County	32	7
Birmingham City	30.8	8
Jefferson County	30.1	9
Leeds City	30.1	10
Trussville City	30.1	11
Shelby County	30	12
Mobile County- Mobile City & Prichard	29.5	13
Phoenix City	28.5	14
Sylacauga City	28.5	15
Bessemer City	28	16
Huntsville City	27.5	17
Madison City	27	18
Tarrant City	26.2	19
Chickasaw City	26	20
Madison City	25	21
Boaz City	25	22
Florence City	25	23
Auburn City	24	24
Opelika City	24	25
Selma City	23.3	26
Ozark City	23	27
Cherokee County	22	28
Escambia County	22	29
Brewton City	22	30
Decatur City	22	31
Fort Payne City	22	32
Gadsden City	22	33

Mobile County-outside Mobile City and Prichard	21.5	34
Saraland City	21.5	35
Satsuma City	21.5	36
Calhoun County	21	37
Lee County	21	38
Tuscaloosa City	21	39
Tuscumbia City	20.5	40
Eufaula City	20	41
Muscle Shoals City	20	42
Piedmont City	20	43
Anniston City	19.8	44
Sheffield City	19	45
Lanett City	18.7	46
Bullock County	18.5	47
Jacksonville City	18.5	48
Oxford City	18.5	49
Lauderdale County	18	50
Talladega County	18	51
Demopolis City	18	52
Russellville City	17.8	53
Marshall County	17.5	54
Russell County	17.5	55
Cullman City	17.5	56
Morgan County	17.1	57
Hartselle City	17.1	58
Cleburne County	17	59
Coffee County	17	60
Andalusia City	17	61
Guntersville City	17	62
Winfield City	17	63
Oneonta City	16.5	64
Elba City	16	65
Enterprise City	16	66
Clarke County	15.5	67
Albertville City	15.5	68
Thomasville City	15.5	69
Etowah County	15	70
Lowndes County	15	71
Tallapoosa County	15	72
Alexander City	15	73
Athens City	15	74
Attalla City	15	75
Haleyville City	15	76
DeKalb County	14.5	77
Scottsboro City	14.5	78
Choctaw County	14	79
Greene County	14	80

Sumter County	13.8	81
Chambers County	13.7	82
Clay County	13.5	83
Saint Clair County	13.5	84
Pell City	13.5	85
Talladega City	12.5	86
Baldwin County	**12**	**87**
Butler County	12	88
Colbert County	12	89
Coosa County	12	90
Henry County	12	91
Randolph County	12	92
Washington County	12	93
Winston County	12	94
Dothan City	12	95
Opp City	12	96
Roanoke City	12	97
Perry County	11.7	98
Chilton County	11.5	99
Dallas County	11.5	100
Pickens County	11.21	101
Geneva County	11	102
Geneva City	11	103
Troy City	10.7	104
Jasper City	10.5	105
Autauga County	10	106
Barbour County	10	107
Bibb County	10	108
Blount County	10	109
Conecuh County	10	110
Covington County	10	111
Crenshaw County	10	112
Cullman County	10	113
Dale County	10	114
Elmore County	10	115
Fayette County	10	116
Franklin County	10	117
Hale County	10	118
Houston County	10	119
Jackson County	10	120
Lamar County	10	121
Lawrence County	10	122
Limestone County	10	123
Marengo County	10	124
Marion County	10	125
Monroe County	10	126
Montgomery County	10	127
Pike County	10	128

Tuscaloosa County	10	129
Walker County	10	130
Wilcox County	10	131
Arab City	10	132
Daleville County	10	133
Linden City	10	134
Tallassee City	10	135

Source: Alabama Department of Education. Note that rankings of identical mills are alphabetized by system names.

Table 2-2. Equity Funds by All School Systems in Alabama FY 2014

System		ADM	Chargeback	Value of Mill per ADM	Value of Mill per ADM
Colbert	county	2 695.50	4,009,840	148.76	1
Homewood	city	3 661.15	5,380,970	146.97	2
Coosa	county	1,147.45	1,599,360	139.38	3
Tallapoosa	county	2,982.00	4,133,130	138.60	4
Anniston	city	2,026.90	2,585,460	127.56	5
Baldwin	**county**	**28,996.50**	**36,890,870**	**127.23**	**6**
Choctaw	county	1,702.70	2,138,730	125.61	7
Tuscaloosa	city	9,869.00	12,258,280	124.21	8
Mountain Brook	city	4,467.15	5,541,190	124.04	9
Marengo	county	1,263.40	1,504,360	119.07	10
Barbour	county	988.70	1,101,890	111.45	11
Birmingham	city	24,877.40	27,105,110	108.95	12
Hoover	city	13,688.75	14,470,200	105.71	13
Greene	county	1,224.50	1,293,300	105.62	14
Auburn	city	7,367.55	7,645,170	103.77	15
Wilcox	county	3,210.90	3,296,250	102.66	16
Morgan	county	7,727.00	7,804,440	101.00	17
Cullman	city	3 096.95	3,096,770	99.99	18
Randolph	county	2,248.80	2,110,730	93.86	19
Clarke	county	3,152.10	2 945,420	93.44	20
Vestavia Hills	city	6,594.40	5,993,620	90.89	21
Talladega	county	7,561.40	6,849,550	90.59	22
Huntsville	city	22,831.40	20 461,630	89.62	23
Florence	city	4 330.60	3,859,940	89.13	24
Dothan	city	9,336.95	8,290,790	88.80	25

Mobile	county	58,113.55	51,429,810	88.50	26
Monroe	county	3,669.75	3,064,970	83.52	27
Opelika	city	4,330.15	3,587,790	82.86	28
Trussville	city	4,232.60	3,501,780	82.73	29
Troy	city	2,099.65	1,700,450	80.99	30
Montgomery	county	31,306.50	25,093,740	80.16	31
Shelby	county	28,745.35	22,933,450	79.78	32
Houston	county	6,413.45	4,994,880	77.88	33
Elmore	county	11,487.30	8,871,670	77.23	34
Decatur	city	8,311.75	6,383,440	76.80	35
Athens	city	3,179.75	2,377,290	74.76	36
Tuscaloosa	county	739,295.70	541,184,880	73.20	37
Covington	county	3,093.70	2,263,440	73.16	38
Alexander	city	3,170.50	2 283 360	72.02	39
Bessemer	city	4,093.65	2,912,680	71.15	40
Jefferson	county	36,159.40	25,625,000	70.87	41
Coffee	county	2,099.95	1,470,780	70.04	42
Winston	county	1,835.80	1,283,660	69.92	43
Conecuh	county	1,590.95	1,108,580	69.68	44
Chambers	county	3,818.75	2,659,030	69.63	45
Escambia	county	4,605.55	3,193,630	69.34	46
Gadsden	city	5,486.50	3 801,810	69.29	47
Leeds	city	1,780.65	1,218,130	68.41	48
Guntersville	city	1 969.35	1,313,170	66.68	49
Andalusia	city	1,756.00	1 159,650	66.04	50
Walker	county	17,770.50	11,704,480	65.86	51
Butler	county	3,149.65	2,044,760	64.92	52
Oxford	city	4,105.55	2,652,920	64.62	53
Tarrant	city	1,096.00	686,700	62.66	54
Jasper	city	2,690.00	1,683,970	62.60	55
Lowndes	county	1,754.45	1,094,480	62.38	56
Pell	city	4,088.00	2,531,220	61.92	57
Cherokee	county	4,073.60	2,510,350	61.62	58
Madison	city	9,334.35	5,696,260	61.02	59
Autauga	county	9,698.60	5,892,740	60.76	60
Washington	county	7,881.10	4,787,770	60.75	61

Saraland	city	2,515.60	1,502,110	59.71	62
St Clair	county	8,824.85	5,217,650	59.12	63
Crenshaw	county	2,188.15	1 278,010	58.41	64
Cullman	county	9,549.50	5,575,480	58.39	65
Muscle Shoals	city	2,827.05	1,641,950	58.08	66
Brewton	city	1 156.25	666,500	57.64	67
Pike	county	2,249.60	1,293,230	57.49	68
Jacksonville	city	1,522.05	874,970	57.49	69
Macon	county	2,381.15	1,347,230	56.58	70
Scottsboro	city	2,626.15	1,465,330	55.80	71
Henry	county	2,723.85	1,513,720	55.57	72
Fort Payne	city	3 010.20	1,669,190	55.45	73
Sumter	county	1,876.45	1,032,980	55.05	74
Bullock	county	1,492.70	820,470	54.97	75
Fayette	county	2,379.20	1,291,690	54.29	76
Lee	county	9,787.30	5,275,370	53.90	77
Marion	county	3,442.70	1,836,980	53.36	78
Pickens	county	2,733.60	1,452,240	53.13	79
Dallas	county	3,695.65	1,946,750	52.68	80
Russell	county	3,535.60	1,853,840	52.43	81
Lawrence	county	5,066.35	2,604,650	51.41	82
Sylacauga	city	2,377.50	1,213,110	51.02	83
Madison	county	19,341.85	9,858,790	50.97	84
Jackson	county	5,697.00	2,888,340	50.70	85
Dale	county	3,052.70	1,531,110	50.16	86
Chickasaw	city	872.45	435,760	49.95	87
Franklin	county	3 148.85	1,567,880	49.79	88
Etowah	county	9,132.35	4,536,660	49.68	89
Chilton	county	7 597.25	3,733,190	49.14	90
Lanett	city	845.05	414,660	49.07	91
Oneonta	city	1,470.60	719,220	48.91	92
Lauderdale	county	8,607.35	4,204,330	48.85	93
Lamar	county	2,371.95	1,152,160	48.57	94
Perry	county	1,698.70	810,240	47.70	95
Clay	county	2,051.50	958,990	46.75	96
Geneva	county	2,718.50	1,251,580	46.04	97

Albertville	city	4,348.40	1,911 500	43.96	98
Sheffield	city	1,077.85	473,540	43.93	99
Ozark	city	2,281.90	1,000,320	43.84	100
Cleburne	county	2,617.20	1,145,140	43.75	101
Hale	county	2,785.45	1,214,970	43.62	102
Eufaula	city	2,688.90	1 168,960	43.47	103
Daleville	city	1,185.15	507,100	42.79	104
Limestone	county	9,008.80	3,812,350	42.32	105
Calhoun	county	9,203.85	3,890,750	42.27	106
Enterprise	city	6 549.20	2,730,800	41.70	107
Blount	county	8,343.55	3,440,040	41.23	108
Boaz	city	2,135.85	858,020	40.17	109
Fairfield	city	1,755.95	702,420	40.00	110
Bibb	county	3,551.50	1,418,440	39.94	111
Arab	city	2,514.55	1,000,000	39.77	112
DeKalb	county	8,688.90	3,427,680	39.45	113
Talladega	city	2,350.30	909,540	38.70	114
Tuscumbia	city	1,481.95	557,590	37.63	115
Piedmont	city	1,195.40	447,810	37.46	116
Elba	city	733.15	272,080	37.11	117
Selma	city	3,742.95	1,329,390	35.52	118
Phoenix	city	6,862.00	2,425,840	35.35	119
Opp	city	1,324.70	467,410	35.28	120
Hartselle	city	3,100.80	1,050,260	33.87	121
Demopolis	city	2,286.60	765,490	33.48	122
Satsuma	city	1,462.95	475,170	32.48	123
Thomasville	city	1,477.65	458,600	31.04	124
Winfield	city	1,267.75	391,520	30.88	125
Roanoke	city	1,525.55	469,760	30.79	126
Tallassee	city	1,883.65	575,870	30.57	127
Midfield	city	1,224.40	371,860	30.37	128
Geneva	city	1,278.20	370, 170	28.96	129
Russellville	city	2,462.65	703,870	28.58	130
Marshall	county	5,616.45	1;577,250	28.08	131
Linden	city	500.60	140,570	28.08	132
Attalla	city	1,876.45	428,880	22.86	133

Haleyville	city	1,676.70	377,660	22.52	134
Alabaster	city			n.a.	
Average				**64.18**	

Source: Adapted from Alabama Department of Education.

Penny Sales Tax and Property Tax Equivalent

Granted that the property tax rate for BCPSS is low, what about the penny sales tax that Baldwin County residents are paying for the BCPSS? Clearly, this is a good question since the penny tax, albeit temporary to date, greatly contributes to the BCPSS finance.

If we assume that the amount derived from the penny sales tax and all other tax sources that the BCPSS is receiving is coming from property tax, how high would property taxes have to be in order to generate the same amount of revenue? This hypothetical property tax rate is known as the property tax equivalent (PTE):

$$PTE = (R^{PT} + R^{OS})/AV$$

In which R^{PT} = revenue from property tax, R^{OS} = revenue from tax sources other than property tax, and AV = assessed value of taxable property.

Property tax equivalents of all public school systems in Alabama are summarized in Table 2-3, which indicates that the property tax equivalent for BCPSS is 34.74 mills, and the ranking of BCPSS improves but still checks in at 50th out of 134 reporting school systems. In fact, even this revised ranking of BCPSS appears well below the Baldwin County rankings of overall economic health in comparison to the rest of the state, reviewed in Section 1.

A regression based on data of 67 Alabama counties yielded the following estimates:

$$PTE = 8.4169 + 0.4011BA + 0.0049LREV - 0.0001ADM - 0.0113RACE$$
$$\qquad\qquad (2.2666) \quad (3.4275) \quad (1.0294) \quad (0.2464)$$
$$R2 = 0.31$$

In which BA = & of adults with bachelor's degree or higher, LREV = local revenue per ADM, and RACE = % of non-whites in 2010. Figures in the parentheses are t-values for the estimated coefficients. Interestingly, the predicted value for BCPSS by the model is 40.67 mills, which is very close to the sum (41.74) of current property tax equivalent of 34.74 mills and the sum of proposed 8 mills.

Table 2-3. Mill Equivalents of All Public School Systems in Alabama FY 2013

School System	Mills Equivalent	Rank
Haleyville City	95.24	1
Hartselle City	87.21	2
Russellville City	70.62	3
Brewton City	61.99	4
Sheffield City	58.92	5
Fairfield City	58.16	6
Conecuh County	56.47	7
Athens City	55.85	8
Decatur City	55.23	9
Midfield City	52.86	10
Tallassee City	51.96	11
Vestavia Hills City	51.72	12
Scottsboro City	51.54	13
Phenix City	51.45	14
Tuscumbia City	50.60	15
Boaz City	50.54	16
Mountain Brook City	50.52	17
Homewood City	49.16	18
Winfield City	49.13	19
Limestone County	48.92	20
Geneva City	48.18	21
Thomasville City	47.90	22
Oxford City	47.82	23
Marshall County	47.42	24
Hoover City	46.99	25
Madison City	44.79	26
Huntsville City	44.12	27
Auburn City	43.86	28
Demopolis City	43.72	29
Lee County	43.53	30
Linden City	43.41	31
Elba City	42.37	32
Jasper City	42.03	33
Opelika City	42.00	34
Madison County	41.91	35
Attalla City	41.62	36
Muscle Shoals City	40.61	37
Florence City	40.22	38
Tuscaloosa City	39.76	39
Eufaula City	39.20	40
Talladega City	38.97	41
Calhoun County	38.59	42
Jacksonville City	37.73	43

Daleville City	37.45	44
Shelby County	37.44	45
Satsuma City	36.81	46
Cherokee County	36.40	47
Piedmont City	35.84	48
Roanoke City	35.50	49
Baldwin County	**34.74**	**50**
Guntersville City	34.40	51
Trussville City	34.31	52
Saraland City	34.20	53
Pike County	34.16	54
Sylacauga City	33.60	55
Lawrence County	33.35	56
Enterprise City	33.34	57
Macon County	33.34	58
Ozark City	32.75	59
Jefferson County	32.67	60
Tarrant City	32.58	61
Walker County	31.98	62
Opp City	31.93	63
Sumter County	31.43	64
Albertville City	31.21	65
Lauderdale County	31.10	66
Bessemer City	31.01	67
Fort Payne City	31.00	68
Escambia County	31.00	69
Lanett City	30.68	70
Cullman City	30.39	71
Leeds City	29.97	72
Morgan County	29.72	73
Pell City	29.63	74
Selma City	29.62	75
Russell County	29.22	76
Birmingham City	29.16	77
Arab City	28.32	78
Lowndes County	28.13	79
Franklin County	27.77	80
Cullman County	27.76	81
Jackson County	27.67	82
Chickasaw City	27.43	83
Dale County	27.40	84
Andalusia City	27.12	85
Perry County	27.03	86
Troy City	26.69	87
Alexander City	26.36	88
Colbert County	26.13	89
Bibb County	25.95	90
Talladega County	25.58	91

Wilcox County	25.53	92
DeKalb County	24.73	93
Greene County	24.61	94
Coffee County	24.55	95
Montgomery County	24.51	96
Cleburne County	23.85	97
Bullock County	23.47	98
Anniston City	23.33	99
Oneonta City	23.14	100
Gadsden City	22.98	101
Tuscaloosa County	22.59	102
Dothan City	22.48	103
Butler County	22.35	104
Saint Clair County	22.19	105
Fayette County	22.04	106
Hale County	20.86	107
Crenshaw County	20.80	108
Dallas County	20.67	109
Lamar County	20.65	110
Blount County	20.57	111
Chilton County	20.42	112
Chambers County	20.21	113
Mobile County	20.15	114
Houston County	19.70	115
Henry County	19.51	116
Autauga County	19.21	117
Elmore County	18.95	118
Covington County	18.72	119
Clay County	18.37	120
Marion County	18.20	121
Geneva County	17.52	122
Winston County	17.17	123
Tallapoosa County	17.14	124
Etowah County	17.03	125
Clarke County	16.71	126
Pickens County	16.23	127
Monroe County	15.98	128
Randolph County	15.07	129
Marengo County	13.17	130
Barbour County	12.60	131
Coosa County	12.03	132
Washington County	11.90	133
Choctaw County	10.48	134

Source: Alabama Department of Education.

Summary

School systems with the highest property tax rates are Mountain Brook City at 52.9 mills, Vestavia Hills City at 52.05 mills, and Hoover City at 46 mills. The opposite is that no less than 27 counties and 4 cities levy the minimum required 10 mills.

Baldwin County Public Schools rank at 87th out of 135 school systems at 12 mills. The Foundation Program, however, mandates 10-mill equivalence that local school system has to commit to the Foundation Program. These “equity” funds then are distributed to all school systems based on the number of students. Based on FY 2013 data, Baldwin County Public Schools paid $127.23 per student to the Foundation Program (6th highest out of 134 school systems), but received $64.18 per student. Even the 87th ranking is an overestimation.

The low revenue is made up by collection of penny sales tax in Baldwin County Public School System. Property tax equivalent refers to the hypothetical property tax rate based on the assumption that the same amount collected from the penny sales tax is coming from property tax. When the mill equivalents are compared among all public school systems in Alabama, the ranking of the Baldwin County Public School System improves from 87th but only to 50th out of 134 school systems.

The FY 2014 contribution to the equity funds by Baldwin County is $36,890,870 at 10 mills. This means that the approximate amount of new revenues from the proposed increase in millage from 12 to 20 mills is about $30 million: ($36,890,870/10 x 8 = $29,512,696)

Section 3

Impact of Projected Construction Expenditures

BCPSS currently utilizes almost100 portables that are, comparatively speaking, inferior so far as safety and security is concerned to classrooms in its school buildings. Elimination of portables has been a top priority in capital expenditure plans that the proposed increase in property tax mills will make possible.

Portable Classrooms

According to a powerpoint presentation titled Growth and Capacity Analysis that was presented during the November 13, 2014 Education Summit at Daphne Civic Center, the 100 portables in use in 2014 are projected to increase to 345 five years later, and to 447 ten years later, unless more classrooms are built. These projections are based on the projected increase in enrollment from 30,643 in 2014 to 34,399 five years later, and to 35,897 ten years later.

Portables are spread all over the BCPSS: Gulf Shores Elementary, Rockwell Elementary (Spanish Fort), Spanish Fort High, Daphne East Elementary, Central Baldwin Middle (Robertsdale), Elsanor Elementary (Robertsdale), Rosinton Elementary (Robertsdale), Fairhope High, Magnolia Elementary (Foley), Swift Elementary (Foley), and Fairhope High. At many of these schools, portables are located at the back-end of the campus, making it difficult for passers-by to actually see them.

It may be noted that suppliers of portables do not rent them, most likely because portables depreciate, making them almost impossible to rent again when they are returned if they are returnable at all. This means that BCPSS has to purchase them outright. On the average, portables cost approximately $36,000 each although actual price varies with individual portables. Assuming that 20 to 30 new portables are needed each year, the annual cost of portables becomes $720,000 to $1,080,000. This represents savings when new capital projects are undertaken, since portables are no longer needed with new classrooms.

Savings in Capital Expenditures from Increased Millage

Equity funds from the Foundation Program do not cover capital projects. This means that any significant capital projects have to be funded with local revenues. A primary source of local (not total) revenue since FY 2012 has been the temporary penny sales tax that requires periodic renewal, while borrowing money for capital projects requires a bond issue that, in turn, requires a steady sources of revenue with minimal uncertainty. If bonds were backed by revenue sources that require periodic voter approval such as the penny sales tax, if funds could even be borrowed at all, the interest rate that new bonds require becomes significantly higher to compensate for the uncertainty that voters may not approve renewal at a later date. The higher interest payments become pure waste so long as BCPSS has no other reasonable alternatives but to proceed with the new capital expenditures.

Projected Capital Expenditures from Increased Millage

The approximate amount of new revenues from the proposed increase in millage from 12 to 20 mills is about $30 million: ($36,890,870/10 x 8 = $29,512,696). How much money can be borrowed with this annual revenue depends on two factors: prevailing rate of interest and projected needs of capital projects. Based on presentations made by BCPSS officials during the November 13, 2014 Education Summit, it is assumed that $350 million will be spent during a 10-year period. To make the calculations easier to understand, the calculations of economic impact below will be based on that assumption that the $350 million will be spread evenly during the ten year period.

Methodology of Impact Estimation

Economic impact studies often include multiplier effects in the study area. Multipliers employed in this study are RIMS II multipliers developed by the U.S. Bureau of Economic Analysis. Use of multipliers in this report follows recommendations made in two studies prepared by BEA economists on how to use these multipliers (Zoë O. Ambargis, Thomas McComb, and Carol A. Robbins, “Estimating the Local Economic Impacts of University Activity Using a Bill of Goods Approach,” The 19th International Input-Output Conference, Alexandria, Virginia June 13-19, 2011; and Rebecca Bess and Zoë O. Ambargis, “Input-Output Models for

Impact Analysis: Suggestions for Practitioners Using RIMS II Multipliers," Paper presented at the 50th Southern Regional Science Association Conference, March 23-27, 2011, New Orleans, Louisiana).

There are three types of multiplier effects. The direct effect is defined as the increase in inputs that is prompted by the new expenditures for the purpose of operating or carrying out the project. "The indirect effect is defined as the additional rounds of spending in the supply chain of those inputs, and the induced effect is defined as the household spending by employees throughout the supply chain." (Ambargis, McComb and Robbins, p. 5) RIMS II provides both Type I and Type II multipliers. Type I multipliers account for the direct and indirect impacts based on how goods and services are supplied within a region. Type II multipliers not only account for these direct and indirect impacts, but they also account for induced impacts based on the purchases made by employees. (Bess and Ambargis, p. 7) BEA began to publish Type II multipliers since May 11, 2011.

Suppose that there is a $1 million increase in construction expenditures by BCPSS. The $1 million is the direct effect of the new construction expenditures. New expenditures on, say, cement, then will lead to the production of cement. Expenditures on cement represent indirect effect. Indirect effect runs through construction and production of supplies that are need for construction. Throughout these processes, workers earn their income and spend their income on a number of products unrelated to construction such as clothing, groceries, cars, books, insurance, and more. These expenditures by construction workers on goods and services unrelated to construction represent induced effect. Assuming that the sum of indirect and induced effects is $1.5 million, then the construction multiplier becomes 2.5, i.e., ($1M + $1.5M)/$1M = 2.5. Actual regional multipliers vary with county or state.

The approach to estimating the impact of projected construction expenditures of $350 million is based on a publication by this investigator. (Semoon Chang, "RIMS II-Based Model of Estimating Economic Impacts: An Illustration Based on the Mobile, Alabama, Area Study" *Applied Research in Economic Development*, Vol. 3, No. 2, 2006, pp. 88-100.) It may also be noted that short-term events usually do not generate full multiplier effects. BCPSS construction projects, however, are a long term event, which will be spread out over ten year period and thus is expected to generate full multiplier effect. (Semoon Chang, Hwa-Kyung Kim, and

Katarina Petrovcikova, “Uses and Abuses of Economic Impact Studies in Tourism,” *Event Management*, forthcoming 2015.)

Economic Impact of Projected Capital Expenditures

Estimation of projected construction expenditures, summarized in Tables 3-1 and 3-2, employs the following notes that merit explanation:

- Since all major shopping areas are located in incorporated areas, 90 percent of retail expenditures are assumed to be made in incorporated areas.

- Sales tax rates in Alabama are the most complicated in the United States with rates varying within a municipality, let alone county. Sales tax rates for cities, county, and state are assumed to be 3% - 2% - 4% in Baldwin County which has a separate 1% sales tax for its public schools.

- To see, first-hand, what the sales tax rate is in Daphne, this investigator went to Dick’s Sporting Goods at the Jubilee Shopping Center south of the Town Center, and bought a box of Slazenger golf balls and a bag of tees. The price was $17.96 and the sales tax was $1.71, making the sales tax rate of 9.521158 percent.

- Property tax rates vary widely from one jurisdiction to the next. State property tax rate, including that for schools, is 6.5 mills.

- In Baldwin County, county rate is 9.5 mills while city rates vary from 4 mills to 15 mills. The city rate is assumed to average 10 mills. The local school rate is assumed to be 12 mills although impact estimation is based on the passage of the proposed 8 mill increase.

- For “Other AL”, the country rate is assumed to be 15 mills while the city rate is assumed to be 7.5 mills. The local school tax rate is assumed to be 12 mills.

Importantly, it should be noted that taxes have a negative impact on employment and wages. In addition, some of the construction expenditures may leak to businesses outside Baldwin County due either to the unavailability of resources including manpower, or to cost savings through

hiring of outside businesses. Some Baldwin residents may also spend some of their earnings outside Baldwin County. In order to account for the negative impact of new taxes and possible leakages of expenditures, it is assumed that, (perhaps too) conservatively, only 50 percent of construction expenditures will create positive economic impacts. These net impacts are summarized in Tables 3-1 for wage, employment and tax impact and Table 3-2 for retail expenditures impact. The two tables show annual impact as well as ten year total impact.

Table 3-1 indicates that even after subtraction of the negative impact of tax increases, the projected capital expenditures will generate the following economic impact.

Wages Impact

- $25,668,549 per year or $256,685,489 for 10 years
- These are the wages or pre-tax personal income that is generated by BCPSS construction activities through weekly or monthly pays to all workers employed directly or indirectly through multiplier effects.

New Jobs

- 769 each year continuing for 10 years
- BCPSS construction activities will create and maintain 769 jobs each year during the 10 years of construction. Note that it should not be read as 7,690 jobs for 10 years.

Tax Revenues for Cities in Baldwin County

- $265,620 per year or $2,656,197 for 10 years
- Cities in Baldwin County will benefit from collection of new tax revenues that will be generated through spending of wages by employees of construction-related activities. The primary source of these new tax revenues will be sales tax when employees spend their earnings on a wide range of taxable goods.

Tax Revenues for Baldwin County Commission

- $239,639 per year or $2,396,390 for 10 years
- Baldwin County Commission will benefit from collection of new tax revenues that will be generated through spending of wages by employees of construction-related activities. The primary source of these new tax revenues will be sales tax when employees spend their earnings on a wide range of taxable goods.

Tax Revenues for the State of Alabama

- $1,147,102 per year or $11,471,018 for 10 years
- The state of Alabama will be a large beneficiary from collection of new tax revenues that will be generated through spending of wages by employees of construction-related activities. The primary source of these new tax revenues will be income tax as well as sales tax when employees earn and spend their earnings on a wide range of taxable goods.

Tax Revenues for BCPSS

- $182,221 per year or $1,822,210 for 10 years
- In addition to the direct 8 mill impact, the BCPSS will collect these revenues when construction-related employees spend their earnings on items that are subject to school taxes such as sales tax and property tax.

Table 3-2 indicates that even after subtraction of the negative impact of tax increases, the projected capital expenditures will generate the following new expenditures by industry in Baldwin County. Note that the impact of the new construction expenditures will generate new sales in virtually every segment of the Baldwin County economy:

- Groceries stores: $1,891,614 per year or $18,916,138 for 10 years;
- Restaurants: $1,338,421 per year or $13,384,214 for 10 years;
- Apparel and services for men and boys: $201,605 per year or $2,016,055 for 10 years;
- Apparel and services for women and girls: $395,060 per year or $3,950,598 for 10 years;
- Footwear: $189,650 per year or $1,896,504 for 10 years
- New car purchases: 1,419,390 per year or $14,193,896 for 10 years;
- Health care: $1,646,535 per ear or $16,465,354 for 10 years;
- Cash contributions: $919,451 or $9,194,515 for 10 years; and
- More as indicated in Table 3-2.

Table 3-1. Jobs, Wages, and Tax Impact of Construction Expenditures

Impact by Type			Annual Direct Impact	Annual Total Impact	10-Year Total Impact
	Total Expenditures		17,500,000	37,892,750	378,927,500
	Earning		11,854,500	25,668,549	256,685,489
	Employment		355	769	769 annually
Tax Impact from Earnings			11,854,500	25,668,549	256,685,489
	Cities Combined		0		
		sales tax, gen.	110,674	239,643	2,396,431
		property tax	11,997	25,977	259,766
		cities total	122,671	265,620	2,656,197
	Baldwin County Commission		0		
		sales tax	61,486	133,135	1,331,351
		property tax	49,187	106,504	1,065,039
		county total	110,672	239,639	2,396,390
	State of Alabama		0		
		income tax	391,199	847,062	8,470,621
		sales tax	122,971	266,270	2,662,701
		property tax	15,596	33,770	337,695
		state total	529,766	1,147,102	11,471,018
	School tax		0		
		county property tax	47,987	103,906	1,039,063
			36,168	78,315	783,147
		school tax total	84,155	182,221	1,822,210

Table 3-2. Retail Expenditures Impact of Construction Expenditures

Food		Annual Direct Impact	Annual Total Impact	10-Year Total Impact
	Food at home	873,604	1,891,614	18,916,138
	Food away from home	618,123	1,338,421	13,384,214
Alcoholic Beverages		92,355	199,975	1,999,753
Housing		0		
	Shelter	2,139,212	4,632,036	46,320,356
	Utilities, fuels, and public services	938,854	2,032,901	20,329,007
	Household operations	243,184	526,565	5,265,653
	Housekeeping supplies	167,393	362,455	3,624,552
	Household furnishings/equipment	372,681	806,965	8,069,654
Apparel and services				
	Men and boys	93,107	201,605	2,016,055
	Women and girls	182,450	395,060	3,950,598
	Children under 2 years old	21,583	46,733	467,333
	Footwear	87,586	189,650	1,896,504
	Other apparel products/services	63,243	136,940	1,369,396
Transportation				
	Vehicle purchases (net outlay)	655,516	1,419,390	14,193,896
	Gasoline and motor oil	527,776	1,142,793	11,427,934
	Other vehicle expenses	595,034	1,288,428	12,884,275
	Public transportation	78,803	170,631	1,706,311
Health care		760,419	1,646,535	16,465,354
Entertainment		619,127	1,340,595	13,405,950
Personal care products/services		148,821	322,243	3,222,427
Reading		21,332	46,190	461,899
Education		205,790	445,597	4,455,970
Tobacco prod/supplies		98,880	214,104	2,141,039
Miscellaneous		192,740	417,340	4,173,397
Cash contributions		424,630	919,451	9,194,515
Personal insurance/pensions				
	Life/personal insurance	74,787	161,936	1,619,365
	Pensions/social security	1,183,794	2,563,270	25,632,698

Summary

There are approximately 100 portables in 2014, which are projected to increase to 345 five years later, and to 447 ten years later, unless more classrooms were built. Portables are spread all over the BCPSS: Gulf Shores Elementary, Rockwell Elementary (Spanish Fort), Spanish Fort

High, Daphne East Elementary, Central Baldwin Middle (Robertsdale), Elsanor Elementary (Robertsdale), Rosinton Elementary (Robertsdale), Fairhope High, Magnolia Elementary (Foley), Swift Elementary (Foley), and Fairhope High.

Suppliers of portables do not rent them, meaning that the BCPSS will have to buy them. On the average, portables cost approximately $36,000 each although actual price varies with individual portables. Assuming that 20 to 30 new portables are needed each year, the annual cost of portables becomes $720,000 to $1,080,000. This represents savings when new capital projects are undertaken, since portables are no longer needed with new classrooms.

Borrowing money for capital projects requires a bond issue that, in turn, requires steady sources of revenue with minimal uncertainty. If bonds were backed by revenue sources that require periodic voter approval such as the penny sales tax, the interest rate that new bonds require becomes significantly higher to compensate for the uncertainty that voters may not approve renewal at a later date.

Provided that the proposed 8 mill increase is approved, the capital expenditures are projected to increase by $350 million over ten-year period. It should be noted that taxes have a negative impact on employment and wages. Some Baldwin residents may also spend some of their earnings outside Baldwin County. In calculating economic impact of the $350 million capital expenditures, therefore, only 50 percent of construction expenditures will create net positive economic impacts as highlighted below:

- Wages impact of $25,668,549 per year or $256,685,489 for 10 years;
- New jobs of 769 each year continuing for 10 years;
- Tax revenues for cities in Baldwin County of $265,620 per year or $2,656,197 for 10 years;
- Tax revenues for Baldwin County Commission of $239,639 per year or $2,396,390 for 10 years;
- Tax revenues for the state of Alabama of $1,147,102 per year or $11,471,018 for 10 years; and more as indicated in Table 3-2.

Section 4

Impact of Public Education in Literature

Reviewed in this section are impacts of public education on crime, property value, and economic development as these are discovered by scholars in the United States and beyond.

Impact of Public Education on Crime

Studies indicate that there are three main channels through which education lowers crime rate: income effects, time availability, and patience or risk aversion. (Stephen Machin Olivier Marie Sunčica Vujić, "The Crime Reducing Effect of Education" IZA (Germany) Discussion Paper Series No. 5000, June 2010, p. 2; and Stephen Machin, Olivier Marie, and Sunčica Vujić, "Youth Crime and Education Expansion," Maastricht University (Netherlands) RM/12/036, June 12, 2012, p. 3) According to the income effects, education increases the returns to legitimate work, raising the opportunity costs of illegal behavior, meaning that people with more education and greater earning ability have more to lose from criminal activities. According to the time availability hypothesis, when youngsters stay at school, they are "not available for participating in criminal activity." (Stephen Machin Olivier Marie Sunčica Vujić, "The Crime Reducing Effect of Education" IZA (Germany) Discussion Paper Series No. 5000, June 2010, p. 4) According to the risk aversion hypothesis, people with more education have greater present value of future earnings and thus try to minimize risk of losing it by being patient, while "young people who drop out of school tend to be myopic and more focused on immediate costs from schooling (stress from taking tests, uninteresting curricula, foregone earnings, etc.), rather than on future gains from an additional year of schooling." (Stephen Machin Olivier Marie Sunčica Vujić, "The Crime Reducing Effect of Education" IZA (Germany) Discussion Paper Series No. 5000, June 2010, p. 5)

Based on a panel data of 20 Italian regions 1980 to 1995, a study by Buonanno and Leonida suggests that a ten percentage point increase in high school graduation rates would reduce property crime rates by 4 percent and total crime rates by about 3 percent. The study finds no evidence that university completion reduces crime. [P. Buonanno, and L. Leonida (2006),"Education and Crime: Evidence from Italian Regions", *Applied Economics Letters,* 13, 709-13]

Machin at al studied “an expansion of the post-compulsory education system that occurred in the UK for cohorts of young people born between 1972 and 1975 who faced a change in the school leaving examination system in 1988 when they reached the compulsory school leaving age. This reform significantly expanded the number of individuals who participated in post-compulsory education as full-time students who stayed on after the compulsory school leaving age. We use this variation in post-compulsory education participation to identify the causal impact of education of crime. For young men, we report a strong crime reducing effect of education, which is bigger in (absolute) magnitude than that implied by least squares regressions. A 1 percent increase in the proportion of male students reduces male crime by around 1.9 percent and a 1 percent increase in the proportion of men staying on at school after the compulsory school leaving age reduces male crime by around 1.7 percent. We also find crime reducing effects for young women, though these are smaller with crime reductions of somewhere between 1.1 and 1.3 percent. For young men, we also find that education causally reduces both property and violent crimes. (Stephen Machin, Olivier Marie, and Sunčica Vujić, “Youth Crime and Education Expansion,” Maastricht University (Netherlands) RM/12/036, June 12, 2012, pp. 18-19.)

According to Hjalmarsson and Lochner, iIn 1997, “75 percent of state and 59 percent of federal prison inmates in the US did not have a high school diploma,” while in 2001, “more than 75 percent of convicted persons in Italy had not completed high school.” Further, incarceration rates among men ages 21-25 in the United Kingdom were more than eight times higher for those without an education qualification (i.e. dropouts) relative to those with a qualification.” (Randi Hjalmarsson and Lance Lochner, “The Impact of education on Crime: International Evidence,” *CESifo DICE Research Report*, February 20, 2012, p. 49) Among Swedes born between 1943 and 1955, “men with at least one criminal conviction had completed 0.7 years less schooling, on average, than men without a conviction; the difference for women was roughly half this size.” (R. Hjalmarsson, H. Holmlund, and M. Lindquist (2011), “The Effect of Education on Criminal Convictions and Incarceration: Causal Evidence from Micro-Data”, Centre for Economic Policy Research Discussion Paper no. 8646.]

By utilizing individual-level panel data reported by the African-American male population aged between 13 and 22, Merio and Wolpin

estimated youth's decisions to engage in schooling, employment and criminal behavior, and simulated the effect of changing schooling status at age 16 for the same individuals and compare their criminal involvement.. (Merlo, A. and K. Wolpin (2009), "The Transition from School to Jail: Youth Crime and High School Completion among Black Males", *Penn Institute for Economic Research Working Paper* 09–002.) They concluded that "not attending school at age 16 (implying school dropout) increases the likelihood of committing crime and being incarcerated at age 19-22 by up to 14.8 percentage points and up to 8.1 percentage points, respectively." (Iryna Rud, Chris Van Klaveren, Wim Groot, Henriëtte Maassen van den Brink, "Education and Youth Crime: a Review of the Empirical Literature," *TIER, Maastricht University, Working Paper Series* WP 13/06, 2013, p. 17)

Rud et all cites several findings on the relation between education and crime on page 16 of their paper (Iryna Rud, Chris Van Klaveren, Wim Groot, Henriëtte Maassen van den Brink, "Education and Youth Crime: a Review of the Empirical Literature," *TIER, Maastricht University, Working Paper Series* WP 13/06, 2013.). For example, a study on Swedish reform in vocational education found that an "access to prolonged and more theoretical vocational education leads to a persistent reduction in property crime, but not significant decrease in violent crime. In particular, three-years vocational programs lead to a reduction in property crime among students by a 1.8 percentage point, compared to no three-year vocational programs."(p. 16) For another, a study based on the reform in post-compulsory education system in the late 1980s and early 1990s in the U.K. concludes that "a one percent increase in the proportion of males in full time education and a one percent increase in the proportion of men staying in education after the compulsory school leaving age reduces criminal behavior of young men by around 1.9 percent and 1.7 percent, respectively. This reduction is also present for women, although smaller in magnitude, 1.1 percent and 1.3 percent, respectively."(p. 16) Still another study based on Norwegian data on educational characteristics and detailed data on imprisonment for persons aged between 21 and 22 "suggest that an additional semester in high school reduces the probability of imprisonment by 0.44 percentage points." (p. 17)

Finally, a landmark study by Lochner and Moretti (L. Lochner, & Moretti, E. (2004). The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports, *American Economic Review*, 94 (1), pp. 155 – 189) finds that a one-year increase in average education levels in a

state reduces state-level arrest rates by 11 percent or more; that a ten percentage point increase in high school graduation rates would reduce arrest rates by 7-9 percent; that a one year increase in average years of schooling reduces both property and violent crime by about 11-12 percent; and that the social savings of a one percentage point increase in male US high school graduation rates (from reduced crime alone) in 1990 would have amounted to more than $2 billion, representing more than $3,000 in annual savings per additional male graduate.

Impact of Public Education on Property Values

Owusu-Edusei et al states that “Although public schools in the United States are tuition free, people ‘pay’ for better quality public education indirectly through real estate markets, bidding up the price of homes in higher-performing school districts.” (Kwame Owusu-Edusei, Jr., Molly Espey, and Huiyan Lin, “Does Close Count? School Proximity, School Quality, and Residential Property Values,” *Journal of Agricultural and Applied Economics*, Vol. 39, No. 1(April 2007), 211-221; p. 211) It is important to notice the word, high-performing. Note also that there is no consensus on how to measure school quality, although parents seem to know schools that they consider to be high quality.

In a study of 310 school districts for 77,000 house transactions in 2000 in Ohio, Brasington and Haurin conclude that households value average proficiency test scores and expenditures of the school district in which they intend to live. (D.M. Brasington, and D.R. Haurin. "Educational Outcomes and Houre Values: A Test of the Value Added Approach," *Journal of Regional Science,* 46(2006); 245-68.)

A study by Owusu-Edusei et al focused on Greenville (SC) school district, and includes data for 3,732 single family homes sold between 1994 and 2000 as recorded by the Greenville County property assessment office. In their regression model, the price of homes sold is hypothesized to depend on quality of education as measured by school ratings that the state of South Carolina collects in relative performance and achievements of schools in Greenville area; structural housing characteristics; neighborhood characteristics; temporal characteristics; and park, golf course and school proximity variables. School quality ratings cover all elementary, middle, and high schools. (Kwame Owusu-Edusei, Jr., Molly Espey, and Huiyan Lin, “Does Close Count? School Proximity, School

Quality, and Residential Property Values," *Journal of Agricultural and Applied Economics*, Vol. 39, No. 1(April 2007), 211-221' p. 216) Authors conclude that "school quality has a significant positive impact on residential property values. However, the impact of school proximity appears to be as significant in terms of property values, with close proximity generally making a positive contribution to property values while greater than average distance from schools correlates with significantly lower property values," and that "While parents are often the most vocal proponents of shorter commutes to schools, other property owners could also benefit through increased property values. Both improved educational quality and prudent choices about school locations could produce rewards for school districts and local communities through increased property tax revenues generated by higher property values." (Kwame Owusu-Edusei, Jr., Molly Espey, and Huiyan Lin, "Does Close Count? School Proximity, School Quality, and Residential Property Values," *Journal of Agricultural and Applied Economics*, Vol. 39, No. 1(April 2007), 211-221' p. 220)

Crone states that since the late 1960s, "a series of articles on what determines house prices have used per pupil expenditures as a proxy for the quality of the local school. Most of these studies have found that after accounting for other neighborhood characteristics, the prices of similar houses are higher in school districts with higher expenditures per pupil. Other studies have found no positive relationship between school expenditures and house prices, but the weight of the evidence is that home owners do value school districts that spend more per pupil." (Theodore M. Crone, "House Prices and the Quality Of Public Schools: What Are We Buying?" Federal Reserve Bank of Philadelphia *Business Review*, September/October 1998, pp. 3-14; p. 6)

Crone also states that studies "have consistently found that higher achievement is associated with higher house prices. Most studies have used the average score for a given grade on some standard reading, math, or general academic test as the measure of achievement, and higher average scores are associated with higher house values in the neighborhood." (Theodore M. Crone, "House Prices and the Quality Of Public Schools: What Are We Buying?" Federal Reserve Bank of Philadelphia *Business Review*, September/October 1998, pp. 3-14; p. 9) For example, Reinhard looked at the improvement in the average reading level between first and third grade, and found that the greater the improvement in average reading levels, the higher were neighborhood

house prices. (Raymond M. Reinhard, “Estimating Property Tax Capitalization: A Further Comment,” *Journal of Political Economy*, 89 (1981), pp. 1251-60)

A thoughtful study by Chiodo et al, published in the Federal Reserve Bank of St. Louis Review, finds the relationship between quality of public schools and house prices to be nonlinear. To be specific, “we find that the price premium parents must pay to buy a house in an area associated with a better school increases as school quality increases. This is true even after controlling for neighborhood characteristics, such as the racial composition of neighborhoods, which is also capitalized into house prices. In contrast to previous studies that use the boundary discontinuity approach, we find that the price premium from school quality remains substantially large, particularly for neighborhoods associated with high-quality schools.” (Abbigail J. Chiodo, Rubén Hernández-Murillo, and Michael T. Owyang, “Nonlinear Effects of School Quality on House Prices,” Federal Reserve Bank of St. Louis *Review*, May/June 2010, 92(3), pp. 185-204; p. 185) Authors obtained house price and house characteristics data from First American Real Estate Solutions. The observations selected correspond to a cross section of single-family residences sold during the 1998-2001 period in the St. Louis, Missouri, metropolitan area. (pp. 190-191) The study sample included 38,656 single-family residences. School quality in the study is measured by a school-level index generated by the Missouri Department of Elementary and Secondary Education, which “is computed from test score data from the Missouri Assessment Program (MAP); annual MAP testing is a statewide man- date for public schools.” (p. 191) Other independent variables included in regression are: math score, number of bedrooms, age of building, lot area in square feet, living area in square feet, number of stories, number of rooms, census block - percent female, census block - percent nonwhite, census block - percent people 5 to 14 years of age, and property tax rate. (p. 194)

Chiodo et all conclude that “houses associated with higher-quality schools command a much higher price premium. Interestingly, and in contrast to many studies in the literature, the price premium remains substantially large, especially for houses associated with above-average schools. This is true even in our most conservative estimates, which complement the boundary discontinuity approach by explicitly controlling for neighborhood demo- graphics. These estimates also reveal that the

racial composition of neighborhoods is capitalized directly into house prices." (p. 201)

Impact of Public Education on Community Development

Ideas linking public schools to community development abound. According to Chung, "community groups have actively encouraged public schools to purchase supplies and services from local businesses and to award school construction and capital improvement projects to local contractors. In some communities, schools are now emphasizing local hiring practices. The Cypress Hills Community School in Brooklyn, for example, developed a program to employ parents in its cafe- teria lunch program. Some communities are also partnering with schools to provide job-training and trade school classes for community members. In schools where these types of adult-learning programs already exist, community development organizations are working to enhance current offerings and better link classes with local economic development initiatives." (Connie Chung, "Public Schools to Community Development," Federal Reserve Bank of Boston *Communities & Banking*, Winter 2005, pp. 10-16; p. 13) Coats spells out the local procurement procedure: (a) Generate a list of supplies and other purchases made by the local school; (b) Make an inventory of local vendors who could provide any of the items on the list; (c) Encourage local businesses to submit applications to the BE to get approved vendor status; and (d) Match local school purchases with local vendors. (Stephen Coats, "School Participation in Local Community Development: Ideas for Getting Started," Institute for Policy Research, Northwestern University, June 1993; pp. 3-4).

Maryand adopted the Smart Growth and Neighborhood Conservation Act in 1997. The Act allows state, not local, public school construction investments in Priority Funding Areas (PFAs) "In Maryland, county governments designate planned community growth areas that, in most cases, are certified by counties as PFAs. PFA designations depend on the availability of existing or planned infrastructure including water and sewerage service. Within Maryland, coordination between local planning departments and Local Education Agencies (LEAs) is essential if public schools are to support PFAs in channeling growth and stopping suburban sprawl. A community-centered school functions much like a major department store in a shopping center in that that the community school serves as an "anchor" to attract and retain families." (Maryland Department

of Planning, *Managing Maryland's Growth: Smart Growth, Community Planning and Public School Construction*, Publication No. 2008-001, July 2008; p. 2) Smart growth strategy in Maryland also stresses the community-centered school approach which encourages public schools to promote community involvement and interaction with nearby residents. (p.0)

In her study for public education in Pennsylvania, Mitra states that "effective education improves decision-making abilities that then help individuals stay out of trouble and live better, healthier, and longer lives. As economist Milton Friedman wrote, 'the education of my child contributes to other people's welfare by promoting a stable and democratic society'." (Dana Mitra, "Pennsylvania's Best Investment: The Social and Economic Benefits of Public Education," Educational Law Center, 2011; p. 7) She further states that "Investing in public education is thus far more cost-effective for the state than paying for the social and economic consequences of under-funded, low quality schools." (Dana Mitra, "Pennsylvania's Best Investment: The Social and Economic Benefits of Public Education," Educational Law Center, 2011; p. 3) Examples of benefits that Mitra listed on are quoted directly below (p.3):

- High school dropouts are more than twice as likely to be unemployed and three times more likely to receive welfare assistance, costing billions of dollars nationally each year for government funded assistance programs.
- Decreasing the number of high school dropouts by half would nationally produce $45 billion per year in net economic benefit to society.
- Improved education and more stable employment greatly increase tax revenue, such as a return of at least 7 dollars for every dollar invested in pre-kindergarten education.
- 41% of all prisoners have not completed high school, compared to 18 percent of the general adult population. The annual cost of incarcerating an individual is about $32,000, while the annual cost of a quality public education is about $11,000.
- A 5% increase in the male graduate rate would save $5 billion in crime-related expenses.
- Mortality decreases for every additional year in schooling by 7.2% for men and 6% for women; and the chances of optimum health is up to 8 times higher for citizens with eighteen years of education versus only seven.
- Graduating from high school improves the quality of health, reduces dependence on public health programs by 60 percent, and cuts by six times the rate of alcohol abuse.

- National savings in public health costs would exceed $40 billion if every high school dropout in just a single year would graduate. Average annual public health costs are $2,700 per dropout, $1,000 per high school graduate, and $170 per college graduate.
- A 1-year increase in median education level is associated with a more than 13% jump in political primary turnout.

Mitra also states that “Adam Smith, John Adams, Thomas Jefferson and other early thinkers whose ideas influenced the birth of this nation felt strongly that the strength of democracy and the state relied on a well-educated populace who could make informed decisions. Research over time has confirmed that better educated individuals are more likely to be engaged in political activity and to make informed decisions in the electoral process.”(p. 22)

Upon review of many studies between public schools and economic development, Weiss concludes that “By educating the future workforce, public schools help make states and localities more economically competitive. In addition, as a basic industry, schools are major employers that have a short-term stimulus impact on state and local economies. Evidence suggests that the quality of public schools can also influence business site selection and labor location decisions.” (Jonathan D. Weiss, “Public Schools and Economic Development: What the Research Shows,” Cincinnati, Ohio: KnowledgeWorks Foundation, 2004; p. 31)

Summary

Studies indicate that there are three main channels through which education lowers crime rate: income effects, time availability, and patience or risk aversion.

According to the income effects, education increases the returns to legitimate work, raising the opportunity costs of illegal behavior, meaning that people with more education and greater earning ability have more to lose from criminal activities. According to the time availability hypothesis, when youngsters stay at school, they are not available for participating in criminal activity. According to the risk aversion hypothesis, people with more education have greater present value of future earnings and thus try to minimize risk of losing it by not participating in criminal activities. Numerous studies based on data in the U.S. and beyond have found the

importance of staying at school and completing high school in lowering crime rates.

Studies have found a positive correlation between proximity to public schools and property values. Findings include: that proximity to quality schools increases property values; that after accounting for other neighborhood characteristics, the prices of similar houses are higher in school districts with higher expenditures per pupil; that home owners do value school districts that spend more per pupil; that higher achievement scores are associated with higher house values in the neighborhood; and that after controlling for neighborhood characteristics, such as the racial composition of neighborhoods, the price premium parents must pay to buy a house in an area associated with a better school increases as school quality increases.

Studies linking public schools to community development have found that “effective education improves decision-making abilities that then help individuals stay out of trouble and live better, healthier, and longer lives. As economist Milton Friedman wrote, ‘the education of my child contributes to other people’s welfare by promoting a stable and democratic society’.” Studies have also found that “By educating the future workforce, public schools help make states and localities more economically competitive.”

Section 5

Impact of Public Education in Alabama

Reviewed in this section is an analysis of overall impacts of public schools in Alabama based on county-wide data.

Local Support and Quality of Education

A state-wide survey of Alabama residents by PARCA finds that 75.8 percent believe funding to make a difference in education quality while 19.5 percent do not; that 68.3 percent believe too little is spent on education while 15.1 percent and 6.4 percent believe either enough or too much; and that 56 percent feel the appropriate goal for public school performance to be top ranked among states, while the remainder feel top half of states (12.9%), average in region (9.3%) or does not matter (11.9%). (PARCA 2014 Survey: Education and Aspiration, Statewide RDD phone survey: N=547, Conducted January 2 – January 21, 2014)

After reviewing 2003 data of the National Assessment of Educational Progress (NAEP) averages per-pupil funding by state, McKenzie concludes that “states’ average SAT scores are largely driven by their participation rates, and correcting for participation, high-spending states do outscore low-spending states. States with high per-pupil spending generally outscore states with low per-pupil spending on the NAEP as well,” and that how states fund public education makes a difference by finding that “When funding is decomposed into federal, state, local property tax and other local (e.g., county) components, the dominant driver of NAEP [National Assessment of Educational Progress] performance is shown to be local funding.” (John Mackenzie, "Public School Funding and Performance," University of Delaware Newark Working Paper prepared for the Christina School District Board of Education (2010), p. 7) McKenzie explains this finding by stating that “local funding goes hand in hand with local accountability: communities that own and control their own schools tend to demand higher performance from them, and are likely to be more supportive of them in turn. Public school systems that are primarily dependent on state funding generally have lower average NAEP performances.”(p. 7)

Although data of many school-related variables are available for both city and county school systems, data of most, if not all, important economic

variables are available for county, not for school district unless the school district happens to coincide with county as many do. Presented below is an analysis based on all county school systems as well as county data.

Regression Analysis

The following three equations are estimated based on cross section data of all 67 counties in Alabama:

HS = f(BA, SLREV, ADM)
LREV = f(HS, BA, PCPI, YIELD, ADM)
UNR = f(LREV, RACE, HS, D10)

Dependent variables are defined:

HS = percent of high school graduates among 25 years and older in 2012
LREV = local revenue per ADM or FY 2013
UNR = rate of unemployment for September 2014

Independent variables are defined:

ADM = average daily membership, i.e., number of enrolled students at each county school system for FY 2013
BA = percent of 25 years and older who had bachelors degree or higher in 2012
PCPI = per capita personal income for 2013
RACE = percent of nonwhites for 2010
SLREV = share of local revenue to total revenue per ADM for each county school system in decimals for FY 2013
YIELD = equity funds, called chargeback, per mill
D10 = dummy variable for 7counties that had the rate of unemployment greater than 10 percent: Barbour, Dallas, Greene, Lowndes, Monroe, Perry, and Wilcox.

Sources of data are: Alabama State Department of Education, American Community Survey, Federal Reserve Bank of St. Louis FRED database, U.S. Bureau of Economic Analysis, and U.S. Census Bureau.

Although the equations exhibit simultaneity among themselves, they are estimated in reduced form because results of the two-stage estimation were not any better.

Estimates of the three equations are summarized in Table 5-1 below. Stars at the end of t-values indicate the levels of statistical significance: 3 stars at 1 percent, 2 stars at 5 percent, and 1 star at 10 percent level of significance.

Table 5-1. Estimates of the Model

Variables	R^2	Coefficient	t-Value
HS	76.7		
Intercept		67.0529	56.1894***
BA		0.5374	9.2849***
SLREV		9.1595	1.6766*
ADM		0.000005	1.5030
LREV			
R Square	38.6		
Intercept		1520.3553	0.6999
HS		-4.9320	-0.1499
BA		42.6531	1.7518*
PCPI		0.0201	0.6396
YIELD		0.0012	4.2971***
ADM		-0.0973	-3.9508***
UNR	81.2		
Intercept		13.9248	7.4515***
RACE		0.0381	5.7012***
HS		-0.1077	-4.5165***
10+		3.0677	6.6733***

What the Estimates Tell Us

HS stands for the percentage of adult residents who have high school diploma or GED. Estimates of the HS equation indicate that counties that have a greater percentage of residents with a bachelor's degree or higher will have a higher percentage of students completing high school. A one

percentage point increase in residents with a bachelor's degree will lead to a 0.5 percentage point increase in high school graduation rate. Estimates of the HS equation also indicates that the greater the share of local revenue out of total revenue of a school system, the greater the percentage of students who complete high school. System enrollment variable (ADM) is not statistically significant, meriting no interpretation.

LREV stands for the amount of local revenue per student. Estimates of the LREV equation again point toward the importance of county residents having a higher education degree. A one percentage point increase in residents with a bachelor's degree will lead to an increase in local revenues per student by $42.65 each year. The LREV equation also Indicates the positive impact of high local property values on local revenue per student, and that larger school enrollments are associated with lower local revenues per student.

UNR stands for the rate of unemployment in September 2014, latest unemployment data at the time of this preparation. The seven counties that had at least 10 percent rate of unemployment i.e., Barbour, Dallas, Greene, Lowndes, Monroe, Perry, and Wilcox counties, are mostly located in what is known as the black belt that has had chronic economic problems. A map showing the location of these counties is attached as Appendix 8a. The Estimates of the UNR equation indicate the importance of completing high school education. A one percentage point increase in residents with a bachelor's degree will lead to a decrease in the rate of unemployment by 0.1 percent.

Summary

Findings based on a statistical analysis of 67 county public school systems and socio-economic data of the 67 counties in Alabama indicate that counties that have a greater percentage of residents with a bachelor's degree or higher have a higher percentage of students completing high school; that the greater the share of local revenue out of total revenue of a school system, the greater the percentage of students who complete high school; that a one percentage point increase in residents with a bachelor's degree will lead to an increase in local revenues per student by $42.65 each year; high local property values have a positive impact on local revenue per student; and that completing high school education is important in lowering the unemployment rate.

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