

APPENDIX C: IBRC Population Projections

South Bend, Indiana

Population Projections 2005 - 2025

Produced by the Indiana Business Research Center (IBRC)

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Background

Local officials in South Bend, Indiana are currently in the process of developing a 20-year comprehensive plan. This plan will serve as a guide for public policy decision makers, and will set the course for future community development. Among many other things, city planners need to take population change into consideration. Toward that aim, the City of South Bend has asked the Indiana Business Research Center (IBRC) to provide population projections for South Bend through the year 2025.

Methods

Two different projection methods were utilized for comparison: shift-share and share-of-growth. Both of these are ratio methods, which are a specific type of trend extrapolation method. They are used for projecting the population of a smaller area in relation to independent projections for a larger area of which it is a part. In this case, our projections for South Bend are related to our previously released projections for St. Joseph County, which are available online at http://www.stats.indiana.edu/pop_proj/. The cohort component method, a relatively complex and data-intensive technique, was used to generate the county-level projections (released July 2003).

Limitations

Planners and decision makers should keep in mind that none of the methods we used take economic phenomena into consideration. Volatile variables such as employment levels and unemployment rates are not part of the models. Nonetheless, changes in employment can have lasting effects on population growth. For example, the opening or closing of a major manufacturing plant would have an impact on migration trends. Our demographic projection models do not account for the possibility of these occurrences because those variables are not as predictable as the movement and life-cycles of population, which are in and of themselves the best inputs to determine future population growth or decline.

METHODOLOGY

Shift-Share Method

The shift-share method is used for modeling a smaller region's population as a share of that of an encompassing larger region. In our case, the population of South Bend is modeled based on the independently projected population of St. Joseph County ($P_{St.J,t}$ below). The change observed during the 1990-2000 base period is extrapolated into the future. Note that the population counts for 1990 and 2000 are taken from U.S. Census Bureau data, and have a reference date of April 1; thus, all projections are also in reference to April 1 of the projection year. These projections were generated using the following formula:

$$P_{SB,t} = P_{StJ,t} \left[\frac{P_{SB,2000}}{P_{StJ,2000}} + \frac{z}{10} \left(\frac{P_{SB,2000}}{P_{StJ,2000}} - \frac{P_{SB,1990}}{P_{StJ,1990}} \right) \right]$$

Where:

P = Population
 SB = South Bend
 StJ = St. Joseph County
 t = Target projection year
 z = Years into the projection horizon ($t - 2000$)
 10 = Years within the base period (1990-2000)
 1990 = Base year
 2000 = Launch year

This method, however, is known to give unreliable results in cases where the smaller region has grown very slowly over the base period. This is the case for South Bend, which saw a gain of only 2,278 people from 1990 to 2000, increasing from 105,511 to 107,789 residents. Therefore, we elected to implement a second method for comparison.

Share-of-Growth Method

The share-of-growth method is similar in concept to the shift-share method; but instead of focusing on shares of *population* (in absolute numbers), the focus is on shares of population *growth*. Given the characteristics of our data, this method provides us with more reliable projections than the shift-share method does. The share-of-growth projections were generated via the following formula:

$$P_{SB,t} = P_{SB,2000} + \left[\frac{(P_{SB,2000} - P_{SB,1990})}{(P_{StJ,2000} - P_{StJ,1990})} \right] (P_{StJ,t} - P_{StJ,2000})$$

It should be noted that while this method is considered reliable, it could potentially have problems when the growth rates of the smaller and larger areas have opposite signs. That is not a concern of ours, however, because South Bend and St. Joseph County both realized population gains over the base period.

Cohort Component Method

The cohort component method was used to generate the projections for St. Joseph County (released July 2003). This method provides the most detailed accounting of population composition and change, and is the ideal population projection tool when the input data are

available (and when the analyst has time to make use of the method). Population counts are delineated by gender and five-year age groups. The effects of mortality, migration, and fertility are determined in separate “modules” of the model.

As typically implemented, projections are generated in intervals equal to the width of the age groups; thus, the projections are for the years 2005, 2010, 2015, 2020, and 2025. The method is much too complex to outline in complete detail here, but those interested in learning more may consult such references as Smith, Tayman, and Swanson’s *State and Local Population Projections* (2001), or Preston, Heuveline, and Guillot’s *Demography* (2001). For details about the specific implementation of this method in generating projections for Indiana and all 92 counties, please see our methodology statement online at http://www.stats.indiana.edu/pop_proj/Methodology.html.

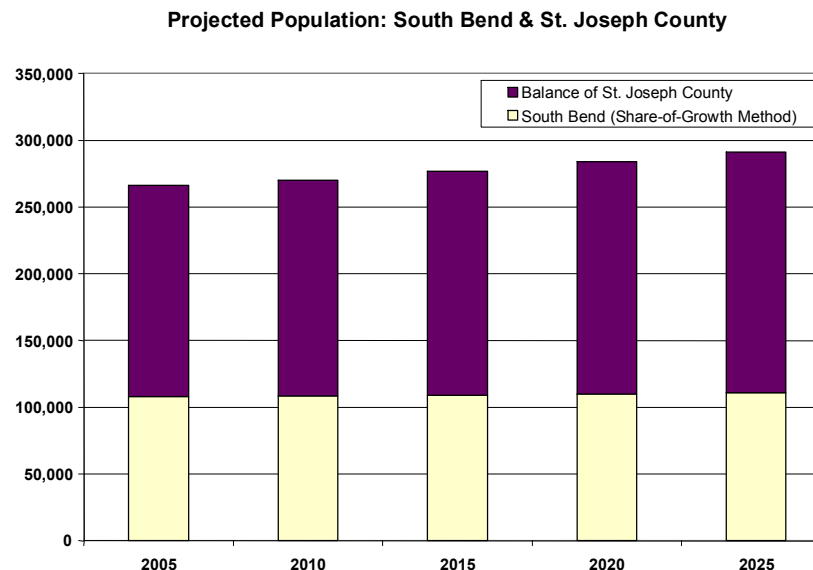
Comparison of Results

The table below shows the projections that we generated for South Bend, as well as the projections we had previously produced for St. Joseph County. Note how the discrepancy between the competing projections for South Bend widens over time.

	2005	2010	2015	2020	2025
St. Joseph County	266,371	270,266	276,679	283,885	290,946
South Bend, Shift-Share Method	105,297	103,974	103,510	103,199	102,684
South Bend, Share-of-Growth Method	107,889	108,368	109,158	110,045	110,914

We should point out that the shift-share projection for 2005 is more in line with the Census Bureau’s most recent population estimate for South Bend, which is 105,540 as of July 1, 2003. If the population of South Bend were to continue a gradual decline throughout the projection horizon, then the shift-share projections would prove to be more accurate. However, given the slight increase observed between 1990 and 2000, and the known advantages of the share-of-growth method in our situation, the projections generated by that method are thought to be more reliable in the long term. Therefore, those projections were selected for further analysis.

The chart below shows the projected population of South Bend versus that of St. Joseph County. Note that South Bend’s population growth is very small throughout the projection horizon, while the population of St. Joseph County as a whole is expected to increase by about 25,000 residents.



Age-Sex-Race-Hispanic Breakdowns

We were asked to provide details about the projected South Bend population with regard to age, sex, race, and Hispanic ethnicity. The requested race categories are white alone, African American alone, all other races alone, and two or more races. (Note that Hispanic is considered by the Census Bureau to be an ethnicity, not a race.) In order to do this, we took the following steps:

1. For each target year, the total projected population for South Bend was distributed to the 5-year age groups by gender. To accomplish this, we first tabulated the previously projected age-sex proportions for St. Joseph County. These tables were then adjusted to account for differences between St. Joseph County and South Bend, as determined by Census 2000 data. These adjusted proportions were then applied to the total projected South Bend population to generate the age-sex breakdowns for each projection year.
2. South Bend's age-sex-race-Hispanic (ASRH) breakdowns for the year 2000, based on Census Bureau data, were selected as our basis for predicting future ASRH breakdowns. Note that we would've liked to project future race and Hispanic distributions based on the progression observed between 1990 and 2000, but the Census Bureau substantially changed their race categories for the 2000 Census; thus, the race breakdowns observed for those two years are not directly comparable.
3. South Bend's race and Hispanic proportions for 2000 were calculated *within each age-sex grouping*. That is, all 18 of the age groups for each gender were assessed individually, so the four race percentages add to 100 percent within each of the 36 groups. The proportion of Hispanic and non-Hispanic residents also add to 100 percent within each group.
4. The race and Hispanic proportions were advanced forward in time based on the trends observed across age categories within each gender for the year 2000. Much subjective judgment was used at this stage, especially due to the presence of the undergraduate and graduate student populations attending Notre Dame. The 20-24, 25-29, and 30-34 age groups exhibited a racial make-up that differed substantially from the trends observed across the other age groups. Therefore, these three age groups were handled in a different manner. The overall process of projecting the proportions of race and Hispanic ethnicity was more art than science, but it was grounded in the principles of demography.
5. The projected race and Hispanic proportions were applied to the projected age-sex population breakdowns that were calculated in step 1 above. Minor adjustments were then made to compensate for rounding error as needed.

The South Bend population projections are provided in the final pages of this document. The gender breakdowns are omitted from these pages, but are included in spreadsheets provided to the City of South Bend.

Implications for Housing

There will not be much of an increase in the demand for housing based on projected population growth. As was seen in the previous chart, the size of the population of South Bend is expected to change very little over the planning horizon. Therefore, it will remain challenging to fill the existing excess housing capacity.

According to the 2000 Census, 7.4 percent of the housing units in South Bend were vacant, compared to 7.6 percent in 1990. Of the units occupied in 2000, 36.9 percent were renter-occupied, versus 34.1 percent for 1990. Therefore, it seems we can expect the vacancy rate to continue to decrease very slightly, while an increase in the proportion of renter-occupied units is also likely.

It also appears that developers will naturally be drawn to the suburban areas of the county where more population growth is expected. Planners may wish to brainstorm about creative ways to encourage developers to take on "urban renewal" real estate development projects in South Bend.

Implications for Education

The population of school-age children, like the overall population, is projected to change very little over the planning horizon. See the table below for a summary of the projected population for ages 5 to 19.

Projected Population, Age 5 to 19 years:

Year	<i>Total</i>	White Alone	Black African American Alone	or All Other Races Alone	Two More Races	or <i>Hispanic or Latino</i>
2005	22,854	11,987	7,538	1,915	1,414	2,924
2010	22,372	11,551	6,969	2,206	1,646	3,436
2015	22,573	11,567	6,902	2,275	1,829	3,770
2020	22,755	11,470	6,948	2,363	1,974	3,979
2025	22,795	11,361	6,833	2,466	2,135	4,090

A slight decrease in total numbers is expected through the remainder of the current decade, followed by slight increases thereafter. This is due to a combination of demographic effects, such as changes in the number of females of child-bearing age, differing fertility rates by age group, etc. Note that the figure projected for the year 2025 is slightly lower than the 2005 figure.

More worthy of note here are the expected shifts in the race and Hispanic proportions. See the table on the following page for a summary of the expected proportional shifts.

Projected Proportions, Age 5 to 19 years:

Year	<i>Total</i>	White Alone	Black African American Alone	or All Other Races Alone	Two More Races	or <i>Hispanic or Latino</i>
2005	100.0%	52.5%	33.0%	8.4%	6.2%	12.8%
2010	100.0%	51.6%	31.2%	9.9%	7.4%	15.4%
2015	100.0%	51.2%	30.6%	10.1%	8.1%	16.7%
2020	100.0%	50.4%	30.5%	10.4%	8.7%	17.5%
2025	100.0%	49.8%	30.0%	10.8%	9.4%	17.9%

In particular, it appears that more effort to accommodate the educational needs of the growing Hispanic and multiracial populations will be required. Note that the Hispanic population, as a share of the total for this age group, is expected to increase by 5.1 percentage points over the 20-year planning horizon. Also note that the proportion within the “Two or More Races” category is expected to increase by 3.2 percentage points, and that of the “All Other Races Alone” group is predicted to rise by 2.4 percentage points. These projections serve as a testament to the increasing diversity of the South Bend community in general, and the imminent increase in multiculturalism within the city’s schools.

Implications for Economic Development

One of the things those involved with economic development efforts may need to consider is the size of the available workforce. The population aged 25 to 54 (the prime working age years) is expected to decrease by 3,762 over the 20-year period. That is not a huge decrease, but it is certainly worth noting. The table below summarizes the expected changes.

Projected Population, Age 25 to 54 years:

Year	<i>Total</i>	White Alone	Black African American Alone	or	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
2005	43,560	29,079	10,459		3,194	828	4,102
2010	42,396	27,628	10,535		3,310	923	4,353
2015	40,988	26,079	10,418		3,433	1,058	4,613
2020	40,016	25,019	10,237		3,536	1,224	4,767
2025	39,798	24,430	10,187		3,726	1,455	4,991

As is the case for education, the race and ethnicity shifts are relevant considerations for economic developers. The expected shifts are shown in the table below.

Projected Proportions, Age 25 to 54 years:

Year	<i>Total</i>	White Alone	Black African American Alone	or	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
2005	100.0%	66.8%	24.0%		7.3%	1.9%	9.4%
2010	100.0%	65.2%	24.8%		7.8%	2.2%	10.3%
2015	100.0%	63.6%	25.4%		8.4%	2.6%	11.3%
2020	100.0%	62.5%	25.6%		8.8%	3.1%	11.9%
2025	100.0%	61.4%	25.6%		9.4%	3.7%	12.5%

The shifts for this age group are not as big as those projected for the school-age population, but they are nonetheless worthy of note. The proportion of working-age Hispanics is expected to rise by 3.1 percentage points, while that of the “Two or More Races” group will increase by 1.8 percentage points, and the “All Other Races Alone” category is predicted to make a gain of 2.1 percentage points.

As time goes on, it will become even more advantageous for business leaders and managers to have bi-lingual or multi-lingual capabilities, and to be effective in communicating with workers who have varying degrees of proficiency with the English language. This is especially the case for entrepreneurs and managers who wish to develop new opportunities in the services industries, since many of those businesses may seek low-skilled or semi-skilled labor that is often supplied by international in-migrants. It is also the case for businesses who wish to leverage the high-skilled talents of the international students and graduates of the University of Notre Dame.

Having said all of that, economic developers are not “stuck with the hand that has been dealt” by our population projections. As mentioned earlier in this report, our projections do not take economic phenomena into consideration, so the working-age population may not necessarily decrease as projected. If economic developers are able to stimulate growth in employment opportunities in South Bend, that should attract new working-age residents to the area.

REFERENCES

Preston, S. H., Heuveline, P., & Guillot, M. 2001. *Demography: Measuring and modeling population processes*. Oxford, UK: Blackwell Publishers.

Smith, S. K., Tayman, J., & Swanson, D. A. 2001. *State and local population projections: Methodology and analysis*. New York: Kluwer Academic/Plenum Publishers.

South Bend Projections: DATA

South Bend Projections: 2005

	<i>Total</i>	White Alone	Black or African American Alone	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
Under 5 years	9,043	4,611	2,822	891	719	1,542
5 to 9 years	7,873	4,139	2,350	773	611	1,209
10 to 14 years	7,859	4,041	2,549	778	491	1,057
15 to 19 years	7,122	3,807	2,639	364	312	658
20 to 24 years	8,555	5,439	1,919	932	265	988
25 to 29 years	8,774	5,816	1,764	1,004	190	1,087
30 to 34 years	8,013	5,293	1,657	866	197	1,067
35 to 39 years	6,633	4,218	1,930	355	130	633
40 to 44 years	6,887	4,471	1,899	387	130	572
45 to 49 years	6,759	4,650	1,709	305	95	377
50 to 54 years	6,494	4,631	1,500	277	86	366
55 to 59 years	5,259	3,869	1,079	257	54	216
60 to 64 years	3,851	2,904	841	68	38	201
65 to 69 years	2,998	2,357	572	57	12	96
70 to 74 years	3,250	2,499	663	63	25	74
75 to 79 years	3,310	2,749	493	18	50	35
80 to 84 years	2,698	2,335	332	11	20	14
85 years and over	2,511	2,266	233	0	12	3
Sum:	107,889	70,095	26,951	7,406	3,437	10,195
Distribution:	100.0%	65.0%	25.0%	6.9%	3.2%	9.4%

South Bend Projections: 2010

	<i>Total</i>	White Alone	Black or African American Alone	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
Under 5 years	9,248	4,655	2,835	972	786	1,619
5 to 9 years	8,105	4,133	2,528	798	646	1,382
10 to 14 years	7,150	3,759	2,133	703	555	1,098
15 to 19 years	7,117	3,659	2,308	705	445	956
20 to 24 years	8,560	5,391	1,936	950	283	1,006
25 to 29 years	8,784	5,770	1,784	1,024	206	1,106
30 to 34 years	8,020	5,250	1,674	883	213	1,084
35 to 39 years	6,670	4,152	1,911	433	174	697
40 to 44 years	6,061	3,851	1,768	324	118	577
45 to 49 years	6,318	4,105	1,739	355	119	526
50 to 54 years	6,543	4,500	1,659	291	93	363
55 to 59 years	6,160	4,394	1,422	262	82	348
60 to 64 years	5,023	3,697	1,030	245	51	205
65 to 69 years	3,642	2,745	797	65	35	191
70 to 74 years	2,976	2,342	568	55	11	93
75 to 79 years	2,795	2,148	571	54	22	64
80 to 84 years	2,494	2,077	368	12	37	27
85 years and over	2,702	2,336	334	12	20	13
Sum:	108,368	68,964	27,365	8,143	3,896	11,355
Distribution:	100.0%	63.6%	25.3%	7.5%	3.6%	10.5%

South Bend Projections: 2015

	<i>Total</i>	White Alone	Black or African American Alone	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
Under 5 years	9,343	4,671	2,794	999	879	1,663
5 to 9 years	8,329	4,193	2,553	875	708	1,458
10 to 14 years	7,303	3,724	2,278	719	582	1,245
15 to 19 years	6,941	3,650	2,071	681	539	1,067
20 to 24 years	8,399	5,240	1,916	949	294	1,004
25 to 29 years	8,664	5,640	1,777	1,026	221	1,109
30 to 34 years	7,892	5,119	1,662	885	226	1,083
35 to 39 years	6,662	4,030	1,919	483	230	749
40 to 44 years	6,094	3,790	1,749	397	158	635
45 to 49 years	5,530	3,516	1,611	296	107	527
50 to 54 years	6,146	3,984	1,700	346	116	510
55 to 59 years	6,235	4,289	1,580	278	88	346
60 to 64 years	5,892	4,202	1,361	250	79	332
65 to 69 years	4,717	3,475	967	228	47	191
70 to 74 years	3,558	2,679	782	64	33	187
75 to 79 years	2,592	2,040	494	48	10	80
80 to 84 years	2,151	1,648	445	41	17	49
85 years and over	2,710	2,263	393	12	42	30
Sum:	109,158	68,153	28,052	8,577	4,376	12,265
Distribution:	100.0%	62.4%	25.7%	7.9%	4.0%	11.2%

South Bend Projections: 2020

	<i>Total</i>	White Alone	Black or African American Alone	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
Under 5 years	9,357	4,613	2,760	1,047	937	1,723
5 to 9 years	8,447	4,223	2,525	904	795	1,505
10 to 14 years	7,492	3,772	2,297	786	637	1,312
15 to 19 years	6,816	3,475	2,126	673	542	1,162
20 to 24 years	8,289	5,122	1,907	953	307	1,007
25 to 29 years	8,587	5,538	1,778	1,035	236	1,116
30 to 34 years	7,806	5,016	1,660	891	239	1,086
35 to 39 years	6,536	3,873	1,859	516	288	785
40 to 44 years	6,095	3,685	1,758	442	210	684
45 to 49 years	5,577	3,471	1,599	362	145	582
50 to 54 years	5,415	3,436	1,583	290	106	514
55 to 59 years	5,891	3,822	1,627	331	111	489
60 to 64 years	6,002	4,128	1,522	267	85	333
65 to 69 years	5,539	3,946	1,282	236	75	311
70 to 74 years	4,524	3,335	927	217	45	180
75 to 79 years	3,095	2,330	681	56	28	163
80 to 84 years	2,024	1,593	387	37	7	60
85 years and over	2,553	1,948	538	47	20	59
Sum:	110,045	67,326	28,816	9,090	4,813	13,071
Distribution:	100.0%	61.2%	26.2%	8.3%	4.4%	11.9%

South Bend Projections: 2025

	<i>Total</i>	White Alone	Black or African American Alone	All Other Races Alone	Two or More Races	<i>Hispanic or Latino</i>
Under 5 years	9,414	4,618	2,712	1,096	988	1,770
5 to 9 years	8,485	4,183	2,503	950	849	1,562
10 to 14 years	7,603	3,801	2,274	813	715	1,354
15 to 19 years	6,707	3,377	2,056	703	571	1,174
20 to 24 years	8,196	5,016	1,902	959	319	1,012
25 to 29 years	8,526	5,447	1,782	1,045	252	1,125
30 to 34 years	7,735	4,924	1,660	899	252	1,093
35 to 39 years	6,461	3,715	1,848	546	352	857
40 to 44 years	5,991	3,548	1,707	473	263	717
45 to 49 years	5,598	3,386	1,613	406	193	630
50 to 54 years	5,487	3,410	1,577	357	143	569
55 to 59 years	5,231	3,322	1,528	280	101	497
60 to 64 years	5,724	3,712	1,582	322	108	476
65 to 69 years	5,685	3,907	1,445	251	82	314
70 to 74 years	5,283	3,758	1,227	225	73	296
75 to 79 years	3,919	2,890	803	187	39	154
80 to 84 years	2,424	1,821	537	45	21	128
85 years and over	2,445	1,926	468	42	9	69
Sum:	110,914	66,761	29,224	9,599	5,330	13,797
Distribution:	100.0%	60.2%	26.3%	8.7%	4.8%	12.4%