Zip Code Estimates of People Without Health Insurance from The 2004 Florida Health Insurance Studies

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ZIP Code Estimates of People Without Health Insurance

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Preface

In 1998, the Florida legislature created the Florida Health Insurance Study (FHIS) to provide reliable estimates of the percentage and number of Floridians without health insurance—statewide, for various parts of the state, and for key demographic groups (Hispanics, Blacks, children, and low-income). The telephone survey conducted in 1999 was one of largest statewide studies in the nation, and a series of reports provided valuable data to inform decisions by Florida lawmakers, health planners, and business leaders.

Thanks to the State Planning Grant (SPG) program of the Health Resources and Services Administration (HRSA), funding became available in 2004 to update the FHIS 1999. The purpose of the planning grants is to assist states to develop plans for providing access to affordable health insurance coverage to all their citizens, an effort that will be informed by reliable estimates from the FHIS 2004 telephone survey in Florida. Florida's Agency for Health Care Administration (AHCA) again provided leadership at the state level, and a team from the University of Florida also conducted the 2004 survey. The award of Florida's planning grant was timely, coming in 2003 as a Governor's Task Force on Access to Affordable Health Insurance and House Select Committee on Affordable Health Care for Floridians were formed to address the issue of health insurance.

More information on various FHIS 2004 research activities can be found at

http://ahca.myflorida.com/Medicaid/quality_management/mrp/Projects/fhis2004/index.shtml

Executive Summary

The goals of the FHIS 2004 were to estimate the number and percentage of uninsured individuals at the state and district level.

In addition, there is considerable interest in estimates for other geographic areas as a general rule the smallest geographic areas for which such estimates can be constructed is the ZIP Code. Local governments and nonprofit or for-profit health care agencies or facilities that attempt to meet the needs of those uninsured residents will be able to use ZIP Code estimates to identify those geographic areas most in need of services.

In this report, estimates of the number and percentage of uninsured people are provided for 868 of Florida's ZIP Codes. The selection of these ZIP Codes was based on the following criteria:

- Residential ZIP Codes
- ZIP Codes that existed in 2000 and for which 2000 U.S. Census demographic data were available
- ZIP Codes for which street delivery was available
- Post office ZIP Codes with no street delivery having more than 1,000 people
- ZIP Codes designated for a single-address business or institution (e.g. a university) are not included

The findings indicate that uninsurance rates vary from a low of 6.6% in 32312, which is located in the Tallahassee area, to a high of 44.6% in 34142, which is located in the Immokalee area (Collier County).

It bears emphasis that the statistical techniques used to generate these estimates are very complex. Furthermore, the methods are themselves the subject of continuing scientific development, debate and refinement. These constraints are especially important for estimates referring to areas that are sparsely populated. Users should keep these limitations in mind, particularly in reference to ZIP Codes in Gadsden County, which are 32324, 32332, 32333, 32343, and 32351.

In addition to the statistical cautions, the users of ZIP Code estimates should be aware of data constraints when using these data. First, ZIP Codes are dynamic. The U.S. Postal Service reviews ZIP Code areas in an on-going process designed to facilitate mail delivery especially when populations are highly changeable. New ZIP Codes are assigned as communities change. This effectively precludes direct comparisons from one year to another. Users are strongly cautioned that ZIP Code estimates should be summed, otherwise manipulated mathematically only, with great care and attention to the precise details of boundaries, current circumstances and exclusion. Second, ZIP Codes do not align with county or other political boundaries except those of the entire state. This is best illustrated by reviewing Flagler, St. Johns and Volusia counties. Flagler County is contiguous to both St. Johns and Volusia counties and they have ZIP Codes in common. For example, ZIP Code 32086 is located in both Flagler and St. Johns counties; and ZIP Code 32174 is located in both Flagler and Volusia counties. The complexity of ZIP Code boundaries occurs more frequently in the rural areas of the state where a ZIP Code may be shared by multiple counties. For example, the geographic boundary for ZIP Code 34974

includes parts of Highlands, Glades, Martin and Okeechobee counties. (Note: ZIP Codes boundary maps may be viewed on the U.S. Census web site.)

Introduction

The 1999 FHIS marked the first time that reliable estimates of uninsurance rates were available for sub-state regions within Florida. The district-level design of that study allowed reliable estimation for the seven major metropolitan regions in Florida as well as multi-county districts that were identified and grouped to be as homogenous as possible.

Health planners, and policy experts, who used the numbers for program planning and projections as well as their consideration of various potential interventions, welcomed those estimates. But planners and policymakers also expressed a desire for estimates at the ZIP Code level in order to identify geographic areas with high rates of uninsured and most in need of health care services. In response to this request, small area synthetic estimates were made using data from the 2000 U.S. Census.

In designing the sample plan for the FHIS 2004, this interest in multi-level estimates was taken into consideration. The telephone survey and its sample were designed to support the use of small-area estimation techniques to generate estimates of uninsurance for less populous areas.

Methodology

For the FHIS 2004, telephone interviews were conducted with 17,435 Florida households, collecting data for about 46,876 individuals. Telephone fieldwork was conducted between April and August of 2004, and was implemented by the Survey Research Center of the University of Florida's Bureau of Economic and Business Research.

Interviews were conducted in English, Spanish, or Haitian Creole depending on the preference of the interviewee. The survey took about 14 minutes to complete, depending on the size of the household. A full household enumeration was conducted, and information was also obtained about health status, access and utilization of health services, and type of employment.

Like other statewide surveys to measure health insurance, the focus of the FHIS is Floridians under age 65, since virtually all Americans age 65 or older have some health coverage through Medicare. Only households with at least one non-elder are included in the survey. The survey questionnaire was kept as similar as possible to the 1999 version to allow for comparisons.

In the table that follows, estimates are provided for the 868 ZIP Codes that were created using model-based techniques, specifically a Hierarchical Bayesian (HB) approach. Technical details on this methodology are provided in the Technical Appendix.

Table 1. Number and Percent of Uninsured Floridians by ZIP Code, 2000.

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32008	3,933	796	20.2
32009	2,512	419	16.7
32011	10,237	1,700	16.6
32013	45	9	19.4
32024	13,424	2,614	19.5
32025	13,099	2,615	20.0
32033	1,723	172	10.0
32034	20,709	3,380	16.3
32038	5,472	1,062	19.4
32040	5,669	1,107	19.5
32043	16,829	1,832	10.9
32044	1,211	242	20.0
32046	7,235	1,195	16.5
32052	7,445	1,738	23.3
32053	2,920	607	20.8
32054	9,178	1,967	21.4
32055	15,280	3,318	21.7
32058	5,468	1,247	22.8
32059	1,379	272	19.7
32060	19,666	4,057	20.6
32061	126	24	19.1
32062	1,660	326	19.6
32063	9,879	1,986	20.1
32065	18,954	2,135	11.3
32066	4,853	1,139	23.5
32068	34,400	3,811	11.1
32071	2,648	525	19.8
32073	45,018	5,040	11.2
32082	23,365	2,322	9.9
32083	2,939	633	21.5
32084	15,774	1,714	10.9
32086	18,082	1,828	10.1

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32087	3,040	602	19.8
32091	13,844	2,865	20.7
32092	5,661	566	10.0
32094	2,222	436	19.6
32095	18,819	1,922	10.2
32096	2,345	465	19.8
32097	9,599	1,604	16.7
32102	1,880	379	20.2
32110	5,379	973	18.1
32112	5,122	1,173	22.9
32113	5,868	1,156	19.7
32114	28,927	4,726	16.3
32117	20,358	3,207	15.8
32118	13,046	2,143	16.4
32119	29,611	4,802	16.2
32124	10,659	1,746	16.4
32127	22,661	3,502	15.5
32130	4,180	716	17.1
32131	4,013	811	20.2
32132	5,524	877	15.9
32134	6,093	1,102	18.1
32136	4,556	802	17.6
32137	14,336	2,528	17.6
32139	418	90	21.5
32140	1,375	266	19.3
32141	11,613	1,774	15.3
32145	3,456	338	9.8
32148	8,994	1,814	20.2
32159	13,344	2,277	17.1
32164	10,623	1,899	17.9
32168	14,728	2,265	15.4
32169	6,769	1,036	15.3
32174	30,472	4,638	15.2
32176	10,310	1,587	15.4
32177	21,399	4,377	20.5

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32179	6,581	1,222	18.6
32180	4,358	807	18.5
32181	1,280	257	20.1
32187	1,686	337	20.0
32189	4,271	810	19.0
32190	914	155	17.0
32195	2,714	529	19.5
32202	3,993	717	18.0
32204	6,216	954	15.3
32205	26,103	3,449	13.2
32206	18,829	3,116	16.6
32207	28,844	3,819	13.2
32208	29,323	4,741	16.2
32209	33,041	5,763	17.4
32210	51,479	7,037	13.7
32211	30,694	4,435	14.5
32212	2,481	457	18.4
32215	804	113	14.1
32216	25,593	3,411	13.3
32217	17,011	2,215	13.0
32218	34,373	4,865	14.2
32219	8,422	1,183	14.1
32220	9,706	1,141	11.8
32221	16,231	2,000	12.3
32222	4,117	514	12.5
32223	23,277	2,701	11.6
32224	30,320	4,072	13.4
32225	42,465	5,483	12.9
32226	7,310	839	11.5
32227	5,244	1,059	20.2
32233	22,932	3,072	13.4
32234	5,775	693	12.0
32244	43,214	5,827	13.5
32246	33,812	4,490	13.3
32250	20,809	2,513	12.1

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32254	13,504	2,012	14.9
32256	26,665	3,670	13.8
32257	32,985	4,103	12.4
32258	11,779	1,408	12.0
32259	16,708	1,885	11.3
32266	6,354	743	11.7
32277	24,959	3,505	14.0
32301	25,069	2,142	8.6
32303	40,295	3,097	7.7
32304	37,186	3,466	9.3
32308	39,462	2,769	7.0
32310	27,983	2,079	7.4
32311	23,963	1,663	6.9
32312	25,958	1,717	6.6
32320	3,253	660	20.3
32321	4,888	1,090	22.3
32322	3,082	685	22.2
32324^	4,372	1,442	33.0
32327	17,115	3,411	19.9
32328	2,548	498	19.6
32331	3,529	694	19.7
32332^	1,954	638	32.7
32333^	10,363	3,312	32.0
32334	1,339	270	20.2
32336	978	200	20.5
32340	10,615	2,339	22.0
32343^	1,214	406	33.5
32344	8,932	1,849	20.7
32346	1,800	341	19.0
32347	14,946	3,041	20.4
32350	968	193	19.9
32351^	20,841	6,741	32.3
32355	228	45	19.7
32356	82	15	17.8
32358	1,591	312	19.6

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32359	1,084	199	18.3
32401	20,277	3,815	18.8
32403	2,754	543	19.7
32404	31,000	5,737	18.5
32405	22,324	4,061	18.2
32407	5,022	910	18.1
32408	10,946	2,002	18.3
32409	6,661	1,188	17.8
32413	7,427	1,317	17.7
32420	1,406	269	19.1
32421	3,256	641	19.7
32423	993	197	19.8
32424	6,380	1,422	22.3
32425	9,992	2,080	20.8
32426	819	167	20.4
32427	2,487	488	19.6
32428	12,235	2,477	20.2
32430	877	172	19.6
32431	3,933	782	19.9
32433	16,351	3,304	20.2
32437	579	118	20.4
32438	3,034	537	17.7
32439	5,219	1,011	19.4
32440	4,569	917	20.1
32442	2,763	543	19.6
32443	4,030	909	22.6
32444	13,787	2,464	17.9
32445	2,585	608	23.5
32446	7,775	1,559	20.1
32448	7,287	1,501	20.6
32449	484	92	19.1
32455	3,259	627	19.3
32456	6,105	1,181	19.3
32459	5,302	1,054	19.9
32460	4,747	1,082	22.8

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32462	2,494	485	19.4
32464	3,243	626	19.3
32465	5,692	1,185	20.8
32466	5,126	915	17.9
32501	13,313	2,340	17.6
32503	27,597	4,872	17.7
32504	19,944	3,315	16.6
32505	25,470	4,300	16.9
32506	28,750	4,894	17.0
32507	25,163	4,243	16.9
32508	10,389	2,138	20.6
32514	29,429	5,045	17.1
32526	28,078	4,599	16.4
32531	3,709	461	12.4
32533	21,470	3,450	16.1
32534	10,592	1,767	16.7
32535	5,840	985	16.9
32536	11,704	1,496	12.8
32539	18,115	2,319	12.8
32541	12,628	1,560	12.4
32542	9,570	1,323	13.8
32544	3,083	455	14.8
32547	24,982	3,351	13.4
32548	18,715	2,482	13.3
32561	22,180	3,441	15.5
32564	2,081	231	11.1
32565	4,598	512	11.1
32566	19,146	2,212	11.6
32567	3,080	380	12.3
32568	2,770	449	16.2
32569	10,389	1,382	13.3
32570	21,630	2,480	11.5
32571	21,877	2,458	11.2
32577	4,083	650	15.9
32578	24,177	3,002	12.4

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32579	8,397	1,059	12.6
32580	4,230	590	14.0
32583	17,166	1,967	11.5
32601	15,793	2,532	16.0
32603	11,361	1,979	17.4
32605	19,470	2,326	11.9
32606	15,189	1,813	11.9
32607	24,382	3,611	14.8
32608	35,512	5,444	15.3
32609	16,538	2,191	13.3
32615	9,745	1,080	11.1
32617	3,168	634	20.0
32618	6,071	679	11.2
32619	3,481	673	19.3
32621	2,983	618	20.7
32622	1,386	275	19.8
32625	1,289	241	18.7
32626	6,192	1,202	19.4
32628	4,387	941	21.5
32640	8,809	972	11.0
32641	12,446	1,537	12.4
32643	7,901	860	10.9
32648	297	56	18.9
32653	11,114	1,279	11.5
32656	9,804	1,057	10.8
32666	3,774	724	19.2
32667	2,732	304	11.1
32668	3,334	660	19.8
32669	6,697	742	11.1
32680	6,239	1,209	19.4
32686	4,347	897	20.6
32693	8,108	1,834	22.6
32694	1,641	175	10.7
32696	8,764	1,765	20.1
32701	19,437	3,017	15.5

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32702	2,354	441	18.8
32703	39,048	7,060	18.1
32707	29,659	4,221	14.2
32708	34,738	4,624	13.3
32709	1,962	262	13.4
32712	26,031	4,162	16.0
32713	12,685	1,961	15.5
32714	31,662	4,954	15.7
32720	22,024	3,650	16.6
32724	19,509	3,153	16.2
32725	30,741	5,051	16.4
32726	13,612	3,022	22.2
32730	5,055	775	15.3
32732	4,535	535	11.8
32735	1,573	298	19.0
32736	6,838	1,263	18.5
32738	31,039	5,075	16.4
32744	2,353	358	15.2
32746	26,940	3,530	13.1
32750	21,136	2,715	12.9
32751	15,017	2,246	15.0
32754	7,495	1,004	13.4
32757	14,219	2,295	16.1
32759	1,883	290	15.4
32763	10,956	1,747	16.0
32764	1,914	293	15.3
32765	40,353	5,565	13.8
32766	6,708	858	12.8
32767	1,748	320	18.3
32771	26,607	4,149	15.6
32773	21,485	3,243	15.1
32776	5,857	1,161	19.8
32778	9,124	1,818	19.9
32779	26,250	3,054	11.6
32780	24,067	3,322	13.8

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32784	7,428	1,462	19.7
32789	19,738	3,191	16.2
32792	43,670	8,067	18.5
32796	16,682	2,280	13.7
32798	471	61	13.0
32801	5,552	1,049	18.9
32803	17,284	2,805	16.2
32804	15,355	2,275	14.8
32805	21,724	4,980	22.9
32806	22,513	3,603	16.0
32807	25,867	5,386	20.8
32808	44,839	9,625	21.5
32809	20,224	4,202	20.8
32810	29,996	5,717	19.1
32811	31,283	7,129	22.8
32812	32,071	5,667	17.7
32817	26,129	5,012	19.2
32818	32,691	6,757	20.7
32819	21,958	3,638	16.6
32820	2,737	403	14.7
32821	11,524	2,138	18.6
32822	46,829	9,805	20.9
32824	17,956	3,781	21.1
32825	40,686	8,217	20.2
32826	22,372	4,897	21.9
32827	2,066	439	21.3
32828	21,311	3,732	17.5
32829	3,334	607	18.2
32831	57	10	16.9
32832	1,708	234	13.7
32833	4,622	714	15.5
32835	29,807	5,330	17.9
32836	11,185	1,764	15.8
32837	32,463	6,146	18.9
32839	37,951	8,972	23.6

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
32901	16,359	2,501	15.3
32903	9,905	1,337	13.5
32904	12,799	1,743	13.6
32905	16,995	2,565	15.1
32907	29,408	4,161	14.2
32908	4,941	697	14.1
32909	16,469	2,346	14.3
32920	6,912	994	14.4
32922	13,735	2,048	14.9
32925	2,128	358	16.8
32926	16,520	2,265	13.7
32927	24,543	3,630	14.8
32931	9,933	1,345	13.5
32934	11,685	1,583	13.6
32935	33,860	4,865	14.4
32937	20,996	2,821	13.4
32940	13,815	1,850	13.4
32948	4,551	950	20.9
32949	590	76	12.9
32950	3,899	517	13.3
32951	7,497	969	12.9
32952	16,608	2,217	13.4
32953	17,753	2,455	13.8
32955	21,489	2,970	13.8
32958	14,281	3,234	22.7
32960	14,907	3,719	24.9
32962	14,557	3,436	23.6
32963	7,652	1,596	20.9
32966	6,642	1,537	23.1
32967	9,846	2,468	25.1
32968	7,451	1,715	23.0
32976	4,227	539	12.8
33004	12,467	2,331	18.7
33009	23,009	4,496	19.5
33010	36,463	11,847	32.5

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33012	59,879	19,158	32.0
33013	26,724	8,614	32.2
33014	33,920	10,087	29.7
33015	45,969	13,402	29.2
33016	39,057	12,146	31.1
33018	34,808	10,855	31.2
33019	11,582	1,809	15.6
33020	35,082	6,876	19.6
33021	35,757	6,003	16.8
33023	55,498	12,398	22.3
33024	52,517	9,754	18.6
33025	42,050	9,348	22.2
33026	25,485	4,172	16.4
33027	15,948	3,350	21.0
33028	21,225	4,198	19.8
33029	33,683	6,561	19.5
33030	25,394	6,874	27.1
33031	4,967	944	19.0
33032	19,510	5,267	27.0
33033	29,098	8,079	27.8
33034	14,344	3,998	27.9
33035	2,384	490	20.6
33036	2,832	520	18.4
33037	10,592	2,078	19.6
33040	30,331	6,361	21.0
33042	5,183	918	17.7
33043	4,385	785	17.9
33050	9,422	1,958	20.8
33054	25,150	7,674	30.5
33055	40,951	12,436	30.4
33056	31,147	9,297	29.9
33060	28,889	5,760	19.9
33062	16,017	2,219	13.9
33063	39,510	6,543	16.6
33064	44,811	8,057	18.0

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33065	46,978	8,082	17.2
33066	7,818	1,183	15.1
33067	22,103	3,114	14.1
33068	43,910	8,982	20.5
33069	17,666	3,669	20.8
33070	4,715	872	18.5
33071	35,028	5,195	14.8
33073	18,396	2,950	16.0
33076	19,104	2,730	14.3
33109	396	66	16.8
33125	39,068	12,606	32.3
33126	36,265	11,709	32.3
33127	24,692	7,470	30.3
33128	5,652	1,867	33.0
33129	9,040	2,474	27.4
33130	16,581	5,374	32.4
33131	4,201	1,134	27.0
33132	4,696	1,413	30.1
33133	25,182	6,420	25.5
33134	26,869	7,522	28.0
33135	27,802	9,091	32.7
33136	11,923	3,522	29.5
33137	15,560	4,478	28.8
33138	26,266	6,717	25.6
33139	30,603	8,072	26.4
33140	15,624	3,505	22.4
33141	31,139	8,721	28.0
33142	46,659	14,669	31.4
33143	25,755	6,383	24.8
33144	19,026	6,079	32.0
33145	22,315	6,943	31.1
33146	11,533	2,770	24.0
33147	45,368	13,797	30.4
33149	8,876	2,071	23.3
33150	23,806	6,926	29.1

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33154	9,653	2,129	22.1
33155	35,453	10,381	29.3
33156	27,959	5,729	20.5
33157	55,042	13,503	24.5
33158	5,747	1,023	17.8
33160	23,805	5,396	22.7
33161	48,016	13,354	27.8
33162	40,874	11,112	27.2
33165	45,823	14,067	30.7
33166	19,860	5,472	27.6
33167	16,666	4,944	29.7
33168	23,116	6,684	28.9
33169	32,898	9,661	29.4
33170	7,673	2,069	27.0
33172	34,094	10,743	31.5
33173	28,868	7,883	27.3
33174	24,998	7,990	32.0
33175	45,460	13,837	30.4
33176	46,528	11,410	24.5
33177	42,330	12,288	29.0
33178	14,455	3,992	27.6
33179	31,083	7,745	24.9
33180	14,722	2,873	19.5
33181	15,571	4,061	26.1
33182	15,809	5,039	31.9
33183	31,786	9,162	28.8
33184	17,172	5,373	31.3
33185	9,093	2,650	29.1
33186	55,359	14,628	26.4
33187	13,026	3,430	26.3
33189	18,391	4,668	25.4
33190	4,604	1,223	26.6
33193	39,522	11,933	30.2
33196	32,690	9,083	27.8
33301	10,534	1,769	16.8

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33304	15,917	2,834	17.8
33305	10,238	1,533	15.0
33306	3,018	412	13.7
33308	19,429	2,720	14.0
33309	29,736	5,928	19.9
33311	58,808	14,155	24.1
33312	40,261	7,996	19.9
33313	50,204	11,872	23.7
33314	21,588	3,645	16.9
33315	11,302	1,863	16.5
33316	8,195	1,273	15.5
33317	29,865	5,377	18.0
33319	30,243	6,387	21.1
33321	24,265	4,218	17.4
33322	27,451	4,603	16.8
33323	16,793	2,759	16.4
33324	36,599	5,853	16.0
33325	25,627	3,919	15.3
33326	27,287	4,659	17.1
33327	12,674	2,106	16.6
33328	18,144	2,621	14.5
33330	10,405	1,575	15.1
33331	19,940	3,305	16.6
33332	3,579	579	16.2
33334	27,378	4,921	18.0
33351	29,373	5,365	18.3
33401	15,741	3,909	24.8
33403	10,474	2,291	21.9
33404	24,489	6,781	27.7
33405	16,905	3,688	21.8
33406	22,593	4,549	20.1
33407	25,749	6,923	26.9
33408	11,617	1,585	13.7
33409	19,500	4,202	21.6
33410	22,352	3,390	15.2

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33411	35,173	6,372	18.1
33412	8,261	1,300	15.7
33413	8,185	1,560	19.1
33414	33,701	5,311	15.8
33415	33,428	6,948	20.8
33417	17,690	3,648	20.6
33418	21,749	3,054	14.0
33426	9,988	1,696	17.0
33428	31,701	5,125	16.2
33430	19,684	5,555	28.2
33431	14,172	2,331	16.5
33432	13,108	2,196	16.8
33433	28,336	4,274	15.1
33434	11,247	1,608	14.3
33435	23,557	5,543	23.5
33436	24,295	4,233	17.4
33437	20,486	3,188	15.6
33438	704	165	23.4
33440	16,579	4,846	29.2
33441	22,138	4,063	18.4
33442	16,385	2,500	15.3
33444	18,963	4,687	24.7
33445	18,223	3,566	19.6
33446	3,840	533	13.9
33455	10,824	1,848	17.1
33458	29,322	4,535	15.5
33460	28,118	6,678	23.8
33461	30,312	6,424	21.2
33462	20,818	3,862	18.6
33463	34,342	6,708	19.5
33467	28,974	4,496	15.5
33469	9,938	1,660	16.7
33470	18,184	2,890	15.9
33471	4,723	1,179	25.0
33476	7,810	2,228	28.5

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33477	7,197	900	12.5
33478	10,592	1,422	13.4
33480	5,306	711	13.4
33483	8,745	1,408	16.1
33484	7,195	1,107	15.4
33486	18,815	2,883	15.3
33487	10,653	1,591	14.9
33493	3,656	1,117	30.6
33496	14,620	2,067	14.1
33498	11,814	1,752	14.8
33510	20,224	2,713	13.4
33511	41,087	5,636	13.7
33513	8,404	1,801	21.4
33514	1,425	310	21.7
33523	14,726	2,912	19.8
33525	11,321	2,116	18.7
33527	10,435	1,421	13.6
33534	6,875	909	13.2
33538	3,130	604	19.3
33540	13,156	2,334	17.7
33541	12,858	2,240	17.4
33543	10,533	1,962	18.6
33544	6,571	1,195	18.2
33547	7,850	972	12.4
33549	40,719	5,300	13.0
33556	12,823	1,603	12.5
33565	13,946	1,764	12.7
33566	18,883	2,622	13.9
33567	23,230	3,162	13.6
33569	32,124	4,258	13.3
33570	10,021	1,392	13.9
33572	6,071	762	12.6
33573	2,767	331	12.0
33576	1,797	321	17.9
33584	18,613	2,401	12.9

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33585	674	136	20.1
33592	8,744	1,140	13.0
33594	43,418	5,572	12.8
33597	6,132	1,235	20.1
33598	7,513	1,118	14.9
33602	7,768	1,172	15.1
33603	18,210	2,752	15.1
33604	32,762	4,821	14.7
33605	14,613	2,302	15.8
33606	13,341	1,852	13.9
33607	18,450	2,885	15.6
33609	13,451	1,847	13.7
33610	28,290	4,219	14.9
33611	25,251	3,430	13.6
33612	37,713	5,830	15.5
33613	25,945	4,074	15.7
33614	39,088	6,104	15.6
33615	36,925	5,326	14.4
33616	11,018	1,616	14.7
33617	38,524	5,930	15.4
33618	18,145	2,445	13.5
33619	25,948	3,933	15.2
33621	2,683	419	15.6
33624	41,304	5,654	13.7
33625	19,306	2,631	13.6
33626	10,508	1,383	13.2
33629	18,997	2,379	12.5
33634	17,509	2,565	14.7
33635	11,171	1,525	13.7
33637	11,657	1,708	14.7
33647	24,991	3,459	13.8
33701	11,793	2,544	21.6
33702	23,845	4,418	18.5
33703	20,194	3,570	17.7
33704	14,237	2,582	18.1

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33705	23,419	5,477	23.4
33706	12,137	2,047	16.9
33707	17,509	3,178	18.2
33708	11,249	1,903	16.9
33709	18,364	3,366	18.3
33710	26,571	4,764	17.9
33711	16,994	4,009	23.6
33712	22,593	5,640	25.0
33713	26,959	5,287	19.6
33714	14,433	2,636	18.3
33715	4,927	809	16.4
33716	9,368	2,106	22.5
33755	22,844	5,191	22.7
33756	21,925	4,339	19.8
33759	16,193	3,349	20.7
33760	15,358	3,436	22.4
33761	14,120	2,402	17.0
33762	5,414	1,018	18.8
33763	9,985	1,939	19.4
33764	17,212	3,119	18.1
33765	10,936	2,261	20.7
33767	6,197	1,010	16.3
33770	18,065	3,368	18.6
33771	19,768	3,698	18.7
33772	16,806	2,903	17.3
33773	13,380	2,397	17.9
33774	13,538	2,397	17.7
33776	10,768	1,748	16.2
33777	14,018	2,424	17.3
33778	10,508	1,972	18.8
33781	21,678	4,130	19.1
33782	14,586	2,578	17.7
33785	4,748	825	17.4
33786	1,199	197	16.4
33801	26,368	4,731	17.9

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33803	21,087	3,865	18.3
33805	16,939	2,531	14.9
33809	22,361	3,875	17.3
33810	24,370	4,214	17.3
33811	14,382	2,539	17.7
33813	30,998	5,294	17.1
33815	11,021	1,867	16.9
33823	22,640	3,988	17.6
33825	17,191	3,441	20.0
33827	2,170	383	17.6
33830	22,203	3,821	17.2
33834	6,242	1,838	29.4
33837	16,859	3,216	19.1
33838	2,214	377	17.0
33839	1,385	244	17.6
33841	6,632	1,287	19.4
33843	8,405	1,739	20.7
33844	20,587	3,996	19.4
33849	384	68	17.6
33850	3,357	570	17.0
33852	13,082	2,730	20.9
33853	25,764	4,376	17.0
33857	1,181	206	17.5
33860	14,872	2,707	18.2
33865	585	152	26.0
33868	9,665	1,673	17.3
33870	15,306	2,854	18.6
33872	12,408	2,203	17.8
33873	12,523	3,945	31.5
33880	28,877	5,481	19.0
33881	20,104	3,112	15.5
33884	14,580	2,496	17.1
33890	4,340	1,363	31.4
33901	17,224	4,930	28.6
33903	13,566	2,769	20.4

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33904	22,565	4,578	20.3
33905	22,045	6,285	28.5
33907	16,491	4,464	27.1
33908	14,753	3,012	20.4
33909	7,764	1,702	21.9
33912	27,505	5,564	20.2
33913	3,748	827	22.1
33914	21,975	4,557	20.7
33916	18,210	6,688	36.7
33917	18,979	3,632	19.1
33919	17,695	3,498	19.8
33920	3,912	841	21.5
33921	816	134	16.4
33922	3,120	637	20.4
33924	230	38	16.5
33928	5,117	957	18.7
33931	6,020	1,118	18.6
33935	15,824	5,584	35.3
33936	12,220	3,080	25.2
33946	605	108	17.9
33947	3,208	609	19.0
33948	10,727	2,373	22.1
33950	10,458	2,108	20.2
33952	20,530	4,653	22.7
33953	2,378	490	20.6
33954	5,983	1,365	22.8
33955	4,167	807	19.4
33956	2,241	373	16.7
33957	3,663	631	17.2
33960	581	98	16.9
33971	7,919	1,973	24.9
33972	6,170	1,365	22.1
33980	4,672	1,121	24.0
33981	5,094	1,030	20.2
33982	6,866	1,612	23.5

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
33983	7,560	1,653	21.9
33990	19,207	4,224	22.0
33991	7,636	1,582	20.7
33993	3,545	696	19.6
34102	7,833	1,729	22.1
34103	7,650	1,689	22.1
34104	14,193	3,694	26.0
34105	6,235	1,346	21.6
34108	10,865	2,392	22.0
34109	14,022	3,033	21.6
34110	9,846	2,129	21.6
34112	17,959	5,127	28.6
34113	10,545	3,474	32.9
34114	5,932	1,848	31.2
34116	23,335	7,532	32.3
34117	9,515	2,412	25.4
34119	7,335	1,456	19.9
34120	11,220	2,925	26.1
34134	7,341	1,296	17.7
34135	18,305	5,104	27.9
34141	103	27	26.3
34142	22,928	10,217	44.6
34145	9,388	1,862	19.8
34201	1,175	185	15.7
34202	13,543	2,356	17.4
34203	19,219	4,279	22.3
34205	25,050	5,532	22.1
34207	21,894	4,570	20.9
34208	26,557	6,216	23.4
34209	22,905	3,884	17.0
34210	8,666	1,603	18.5
34215	556	86	15.5
34216	1,261	195	15.4
34217	4,380	710	16.2
34219	4,468	822	18.4

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
34221	24,734	6,142	24.8
34222	4,279	783	18.3
34223	10,096	1,630	16.2
34224	9,066	1,470	16.2
34228	3,168	454	14.3
34229	3,262	513	15.7
34231	23,066	4,096	17.8
34232	25,966	4,773	18.4
34233	10,271	1,744	17.0
34234	16,339	3,585	21.9
34235	8,409	1,537	18.3
34236	7,779	1,886	24.3
34237	13,952	3,445	24.7
34238	8,603	1,434	16.7
34239	11,806	2,171	18.4
34240	5,911	968	16.4
34241	9,811	1,626	16.6
34242	5,849	913	15.6
34243	15,924	2,951	18.5
34251	4,016	870	21.7
34266	25,879	7,770	30.0
34275	9,542	1,545	16.2
34285	3,595	576	16.0
34286	7,785	1,363	17.5
34287	11,078	1,952	17.6
34292	7,965	1,251	15.7
34293	19,642	3,231	16.5
34420	10,627	2,103	19.8
34428	7,436	1,578	21.2
34429	5,877	1,234	21.0
34431	4,354	813	18.7
34432	6,711	1,246	18.6
34433	3,114	648	20.8
34434	2,906	621	21.4
34436	6,022	1,263	21.0

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
34442	7,081	1,459	20.6
34446	7,822	1,610	20.6
34448	7,191	1,515	21.1
34449	2,593	484	18.7
34450	6,647	1,370	20.6
34452	7,041	1,523	21.6
34453	5,665	1,201	21.2
34461	6,104	1,288	21.1
34465	6,728	1,414	21.0
34470	11,988	2,404	20.1
34471	17,153	3,288	19.2
34472	14,567	3,126	21.5
34473	5,908	1,481	25.1
34474	12,596	2,831	22.5
34475	11,732	2,880	24.6
34476	6,909	1,277	18.5
34479	10,478	2,042	19.5
34480	8,793	1,707	19.4
34481	5,322	991	18.6
34482	13,087	2,775	21.2
34484	1,941	386	19.9
34488	7,221	1,378	19.1
34491	13,519	2,637	19.5
34498	416	75	18.1
34601	15,997	2,653	16.6
34602	4,889	827	16.9
34606	13,942	2,473	17.7
34607	4,901	806	16.5
34608	15,221	2,696	17.7
34609	21,821	3,835	17.6
34610	9,411	1,637	17.4
34613	7,529	1,284	17.1
34614	2,327	405	17.4
34639	17,440	3,196	18.3
34652	17,082	3,056	17.9

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
34653	21,432	3,871	18.1
34654	13,053	2,264	17.3
34655	16,987	2,955	17.4
34667	19,146	3,316	17.3
34668	27,650	5,009	18.1
34669	8,521	1,472	17.3
34677	16,565	3,014	18.2
34681	1,099	181	16.4
34683	28,855	4,939	17.1
34684	18,312	3,263	17.8
34685	14,932	2,545	17.0
34689	21,876	3,905	17.9
34690	8,706	1,575	18.1
34691	12,732	2,275	17.9
34695	14,736	2,575	17.5
34698	23,706	4,187	17.7
34705	1,774	384	21.6
34711	33,480	7,171	21.4
34731	7,069	1,313	18.6
34734	2,443	405	16.6
34736	6,902	1,591	23.1
34737	1,601	309	19.3
34739	653	97	14.9
34741	32,618	7,206	22.1
34743	23,673	5,738	24.2
34744	25,538	4,667	18.3
34746	14,827	2,538	17.1
34747	5,070	752	14.8
34748	19,492	4,193	21.5
34753	2,591	738	28.5
34756	2,008	377	18.8
34758	11,610	2,371	20.4
34759	6,760	1,461	21.6
34761	25,783	4,267	16.6
34762	326	60	18.3

ZIP Code	Population 2000*	Estimated Uninsured	
		Number	Percent
34769	14,932	2,259	15.1
34771	8,555	1,151	13.5
34772	10,246	1,515	14.8
34773	1,495	206	13.8
34785	12,130	2,784	23.0
34786	7,768	1,055	13.6
34787	19,712	3,388	17.2
34788	9,042	1,633	18.1
34797	673	128	19.0
34945	3,366	929	27.6
34946	5,620	1,413	25.2
34947	9,394	2,597	27.6
34949	3,888	892	22.9
34950	15,491	4,539	29.3
34951	8,227	1,939	23.6
34952	20,694	5,134	24.8
34953	23,197	5,692	24.5
34956	7,942	2,016	25.4
34957	12,520	2,110	16.9
34972	16,011	4,526	28.3
34974	16,646	4,119	24.7
34981	2,987	814	27.3
34982	18,112	4,692	25.9
34983	22,218	5,378	24.2
34984	8,305	2,028	24.4
34986	3,343	744	22.3
34987	1,094	276	25.2
34990	17,477	2,897	16.6
34994	10,525	2,004	19.0
34996	6,371	1,138	17.9
34997	24,071	4,367	18.1

*Source:
http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF1_U&_lang=en&_ts=144247295046.

^The available data in all ZIP Code areas in Gadsden County are insufficient to sustain reliable estimates of the uninsured rates using the statistical method employed in this analysis.

Technical Appendix:

Details on the Calculation of Hierarchical Bayesian Estimates for ZIP Codes

Small area estimation is concerned with using sample data from a population, scattered over a large domain, to make inferences about some quantitative measure (an average, or total, or proportion) of an attribute within subdomains of that larger population. It frequently occurs that for some such subdomains, the sample may contain few or perhaps even no cases, such that direct estimates are not feasible. In that circumstance available small area estimation techniques may be classified as indirect or model-based. Hierarchical Bayes (HB) estimation is one of the model-based techniques, which borrows the strength of auxiliary information that is related to the variable of interest.

The FHIS 2004 used both direct and model-based estimation techniques to estimate uninsurance rates. Direct estimates were used at the county level when the available sample size was sufficient to generate a reliable estimate with an acceptable standard error (an effective sample size of 275 individuals). Due the available sample size, a model-based technique, specifically the Hierarchical Bayesian approach, was used for estimating uninsured rates in ZIP Codes areas.

The FHIS 2004 survey yielded person level data that included whether or not a person had health insurance (the outcome variable of primary interest) along with a number of variables related to health insurance status such as age, gender, race/ethnicity, highest education level attained by household members, largest firm size of employed household members, family income as a percent of federal poverty level, and geographic location within the 17 FHIS 2004 districts. Additionally, information is available from the 2000 U.S. Census about characteristics of living in each ZIP code. The challenge is to produce ZIP Code level estimates that synthesize information available from both the FHIS 2004 survey and 2000 U.S. Census data, using methods that have been validated by other researchers. An approach that combines the methods of Popoff, Judson, and Fadali [Measuring the Number of People Without Health Insurance: A Test of Synthetic Estimates Approach for Small Areas Using Survey of Income and Program Participation (SIPP) Microdata, Fall 2001] and Ghosh, Kim, and Sinha [Hierarchical Bayesian Models For Small Domain Estimation, in preparation] was employed.

Popoff et al. devised a small area estimation approach using synthetic estimation techniques. Using 1996 SIPP data for 80,923 individuals, they demonstrated that the characteristics of age, race, gender, and Hispanic origin predicted the proportion of uninsured quite well. They proposed that the proportion of uninsured in a small geographic area could be estimated as follows:

1) Obtain survey data that represents the population as a whole. Estimate the effects of age, gender, race and Hispanic origin on the probability of uninsurance for the population based on the survey data.

2) Divide a small geographic area into domains based on age, gender, race, and Hispanic origin and obtain 2000 U.S. Census estimates of the numbers of residents in each domain.

3) A synthetic estimate of the proportion of uninsured in each small geographic area is then found by calculating the number of uninsured within each domain defined by age, gender, race, and Hispanic origin (by overlaying estimates derived from population survey); summing the number of uninsured in each domain; and dividing the estimated number of uninsured by the total number of residents living in a small area. Table 1 illustrates the Popoff et al. approach for estimating the number of uninsured individuals in a domain defined as "White non-Hispanic females less than 18 yrs old." A complete illustration of the method would require extending Table 1 for all other domains (e.g., White non-Hispanic males less than 18 yrs old, Hispanic females less than 18 yrs old, Hispanic males less than 18 yrs old, etc.).

Table 1: Illustration of Synthetic Estimation

Small geographic Area	**# White non-Hispanic females less than 18 yrs old (from Census data)**	**Estimated proportion of White non-Hispanic females less than 18 yrs old who are uninsured (from survey data)**	**Estimated # of uninsured White non-Hispanic females less than 18 yrs old**
1	$n_{1,W,F,<18}$	$p_{1,W,F,<18}$	$n_{1,W,F,<18} \cdot p_{1,W,F,<18}$
2	$n_{2,W,F,<18}$	$p_{2,W,F,<18}$	$n_{2,W,F,<18} \cdot p_{2,W,F,<18}$
3	$n_{3,W,F,<18}$	$p_{3,W,F,<18}$	$n_{3,W,F,<18} \cdot p_{3,W,F,<18}$
…	…	…	…

The HB modeling approach developed by Ghosh et al. was followed to estimate the proportion of individuals without health insurance for domains cross-classified by age, gender, and race/ethnicity. The model is built in stages, hence the name *hierarchical*. As part of the estimation method, available covariates at the individual level are incorporated in the model specification to improve the predictive capacity for estimation at the domain level. Ghosh et al. used data provided by the National Center for Health Statistics (NCHS) to formulate a HB model that provided estimates for proportion of uninsured in cross-classified domains. The NCHS data set included individual level data for more than 100,000 people and included over 800 covariates. In a covariate selection procedure the variables retained for the final model were family size, education level, and family income. The Markov chain Monte Carlo (MCMC) numerical integration technique employing the Gibbs sampler was used to compute estimates and corresponding standard errors for the NCHS study.

Estimates for ZIP Code are derived by combining the approaches of Popoff et al. and Ghosh et al. to estimate uninsurance proportions using a synthetic estimation approach. The synthetic approach uses HB modeling to estimate uninsurance rates in various subpopulations then overlays these estimates on ZIP Code level data available from the 2000 U.S. Census to yield a ZIP Code level estimate of uninsurance. Although the synthetic estimation approach does not yield estimates of standard error, this method of calculating uninsurance was chosen because it takes advantage of salient information about uninsurance that was available from both the FHIS 2004 survey data and the 2000 U.S. Census. The FHIS 2004 ZIP Code level estimates were produced as follows:

1) For each of the FHIS 2004 districts, domains were defined based on age group (0—18, 19—24, 25—44, 45—64), gender (M, F), and race/ethnicity (non-Hispanic White, Hispanic, Black, and Other). A total of 544 domains were thus defined (17 districts × 4 age groups × 2 genders × 4 race/ethnicity categories).

2) For each of the 544 domains, cross-classified by age, gender, and race/ethnicity, a HB modeling procedure was applied to estimate the proportion of individuals without health insurance. The model used the FHIS 2004 survey variables of highest education level attained by household members, largest firm size of employed household members, and family income as a percent of federal poverty level as covariates (following the result of variable selection via logistic regression modeling). Professor Dalho Kim (Kyungpook National University) wrote specialized FORTRAN software to apply MCMC numerical integration that employed the Gibbs sampler to produce the FHIS 2004 HB domain estimates. In three of the 544 domains, an estimate could not be calculated due to insufficient data. For these domains the direct statewide uninsurance rate was used.

3) A dataset was prepared using 2000 U.S. Census ZIP Code data that included the number of residents in each of the domains cross-classified by age, gender, and race/ethnicity. The definition of each domain is given in Table 2. There were 17 sets of domain estimates corresponding to each of the17 districts.

4) For each ZIP Code, the set of domain estimates was selected that corresponded to the district that contained that ZIP Code. Then, within each ZIP Code, the proportion of uninsured was estimated by calculating the number of uninsured in each domain (multiplying the HB domain estimates of proportion of uninsured by the number of individuals in each domain), summing across domains to find the estimated number of uninsured in each ZIP Code, and dividing the number of uninsured in each ZIP Code by the total number of people under age 65 living in the ZIP Code.

5) The resulting FHIS 2004 ZIP Code level estimates of proportion of uninsured were then calibrated to match the district level estimates that were available in that district, by multiplying each ZIP Code estimate by a constant coefficient that ensured parity between FHIS 2004 district estimates and FHIS 2004 ZIP Code estimates.

Table 2: Domain definitions

Domain	Definition
1	Non-Hispanic White females 0-18 years of age
2	Non-Hispanic White males 0-18 years of age
3	Hispanic females 0-18 years of age
4	Hispanic males 0-18 years of age
5	Black females 0-18 years of age
6	Black males 0-18 years of age
7	Other females 0-18 years of age
8	Other males 0-18 years of age
9	Non-Hispanic White females 19-24 years of age
10	Non-Hispanic White males 19-24 years of age
11	Hispanic females 19-24 years of age
12	Hispanic males 19-24 years of age
13	Black females 19-24 years of age
14	Black males 19-24 years of age
15	Other females 19-24 years of age
16	Other males 19-24 years of age
17	Non-Hispanic White females 25- 44 years of age
18	Non-Hispanic White males 25- 44 years of age
19	Hispanic females 25- 44 years of age
20	Hispanic males 25- 44 years of age
21	Black females 25- 44 years of age
22	Black males 25- 44 years of age
23	Other females 25- 44 years of age
24	Other males 25- 44 years of age
25	Non-Hispanic White females 45-64 years of age
26	Non-Hispanic White males 45-64 years of age
27	Hispanic females 45-64 years of age
28	Hispanic males 45-64 years of age
29	Black females 45-64 years of age
30	Black males 45-64 years of age
31	Other females 45-64 years of age
32	Other males 45-64 years of age

References

Popoff C, Judson DH and Fadali B. *Measuring the Number of People Without Health Insurance: A Test of a Synthetic Estimates Approach for Small Areas Using SIPP Microdata,* paper presented at the 2001 Federal Committee on Statistical Methodology Conference.

Ghosh M, Kim D and Sinha K. *Hierarchical Bayesian Models for Small Domain Estimation*. Unpublished manuscript.