
United States: Estimated abortions, 2012-2015

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Abstract: This document reviews methodology and results for abortion estimates for the United States for 2012-2015, discusses limitations of the methodology, and compares the results to subsequently published estimates by the Guttmacher Institute.

In the United States, individual states have widely varying policies regarding abortion data collection, including whether data are collected at all, and if so whether from clinics as well as hospitals; whether reporting from providers is mandatory or voluntary; what information is included in reports, such as residency of women obtaining abortions; and how quickly data are published (this ranges from less than a year to 5 years after abortions are performed). National-level data are collected by the Centers for Disease Control on a voluntary basis from the state agencies and are thus incomplete. The Guttmacher Institute (GI) periodically publishes estimates based on state agency data and direct surveys of providers (who are often more cooperative with GI requests than state government requests, based on comparison of results). Consequently these are generally considered the most reliable national-level figures and were more recently published for 2011 (Jones and Jerman, 2014).

Given the infrequent publication of GI estimates (typically at three year intervals in recent years), alternate estimation methods are necessary. Here, our preferred estimate is based on totals from state-level abortions estimates through 2015, this approach being described in the next section. We then review alternate methods used to validate the result. Then we discuss the limitations of these methods particularly as they bear on accuracy. The estimates in this document were completed in August 2016, prior to publication of new GI estimates in March 2017 (Jones and Jerman, 2017), so a final note is added to compare the estimates.

Construction of state-level estimates to develop national estimates

All available official statistics on state-level abortion were compiled for 2000-2015 by state of occurrence, from state health statistics sources (Johnston, 2016) and from the CDC annual abortion surveillance reports (Elam-Evans et al., 2003; Gamble et al., 2009; Pazol et al., 2009, 2011a, 2011b, 2012, 2013, 2014, 2015; Strauss et al., 2004, 2005, 2006, 2007). These data are listed in Table 1.

The state-level data suffer from a variety of reporting issues. Alaska reported no data for 2000-2002. California has reported only Medicare-funded abortions for 2000-2010, and listed figures for 2011-2014 are estimated annual breakdowns of abortions reported by Planned Parenthood. Colorado reporting in 2000-2003 was significantly incomplete. Maryland data appears to vary in completeness over time, particularly after 2006. New Hampshire has made no abortion reporting in this time period. New Jersey states that their data are incomplete. West Virginia reported no data in 2003. Other completeness issues will be evident in comparisons to GI data to follow.

Table 1. Official abortion data by state of occurrence, U.S. states, 2000-2015

state	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AL	13,553	13,382	12,249	10,979	11,370	11,211	11,654	11,267	11,268	10,882	10,280	9,523	9,076	8,485	8,080	
AK				1,806	1,937	1,956	1,923	1,701	1,759	1,938	1,716	1,627	1,632	1,450	1,361	1,334
AZ	10,064	8,302	10,677	10,316	12,690	10,778	10,836	10,759	10,660	10,271	11,438	14,401	13,340	13,401	12,900	
AR	5,501	5,924	5,316	5,408	4,644	4,695	4,988	4,845	4,789	4,580	4,532	4,033	3,782	3,732	4,073	3,771
CA	75,209	84,381	90,040	90,953	90,946	94,602	80,647	80,069	85,843	88,466	93,542	6,000	12,000	15,000	9,000	
CO	4,215	4,633	7,757	9,852	11,415	11,682	11,048	11,363	11,581	11,598	11,438	10,474	9,972			
CT	12,908	13,265	13,470	12,404	12,189	12,110	14,112	14,534	14,442	13,732	13,438	12,615	11,955	10,560		
DE	5,082	4,869	4,493	4,178	4,588	4,148	4,804	4,949	4,603	4,710	4,666	3,794	3,823	3,041		
DC	6,659	5,385	5,511	5,121	2,401	2,518	2,692	2,369	2,553	2,596	2,896	2,768	2,615			
FL	88,563	85,589	87,964	89,995	91,710	92,513	95,586	91,954	87,520	82,038	79,908	77,166	76,151	72,727	72,107	71,740
GA	31,680	33,545	34,298	34,545	32,708	31,739	30,550	31,038	35,888	32,925	34,585	32,770	31,370	27,456	26,485	
HI	3,941	3,999	3,920	3,608	3,467	3,548	3,990	3,756	3,273	3,342	3,064	2,671	2,824			
ID	801	738	829	911	963	1,099	1,249	1,442	1,481	1,650	1,510	1,440	1,458	1,375	1,353	
IL	45,884	46,546	46,945	42,247	43,537	43,409	46,467	45,298	47,717	46,077	41,859	41,324	43,203	40,750		
IN	12,272	11,875	10,937	11,458	10,514	10,686	10,614	10,887	10,999	10,557	10,048	9,112	8,808	8,179	8,118	7,957
IA	6,059	5,722	6,240	5,916	6,022	5,881	6,728	6,649	6,486	5,829	5,399	4,815	4,648	4,423	3,464	
KS	12,225	12,284	11,765	11,618	11,357	10,837	11,173	10,836	10,642	9,474	8,373	7,885	7,598	7,662	7,294	6,974
KY	4,630	3,764	3,502	3,621	3,557	3,776	3,912	4,389	4,272	4,120	3,929	3,957	3,810			
LA	11,384	10,932	10,451	10,642	11,224	8,860	6,204	6,833	6,817	8,167	8,872	8,955	9,225	9,977	10,211	
ME	2,536	2,515	2,315	2,550	2,593	2,653	2,672	2,689	2,623	2,413	2,311	1,773	2,046	1,939	2,021	1,836
MD	12,337	13,502	13,595	11,485	10,096	10,797	9,530	2,810	4,070	5,750	6,520	3,190				
MA	27,180	26,293	25,249	25,741	24,366	23,268	24,246	24,128	23,883	22,945	20,802	20,703	20,062			
MI	26,807	28,220	29,231	29,540	26,269	25,209	25,636	24,683	25,970	22,357	23,307	23,366	23,230	26,120	27,629	27,151
MN	14,477	14,833	14,239	14,174	13,791	13,365	14,065	13,843	12,948	12,388	11,505	11,071	10,701	9,903	10,123	9,861
MS	3,758	3,566	3,605	3,753	3,500	3,041	2,949	2,932	2,772	2,438	2,297	2,224	2,176			
MO	7,884	7,797	8,201	8,350	8,072	7,977	7,556	7,324	7,413	6,881	6,163	5,772	5,624	5,416	5,060	
MT	2,441	2,350	2,249	2,249	2,256	2,155	2,119	2,238	2,125	2,223	2,160	2,147	2,031	1,842	1,690	
NE	4,178	3,982	3,775	3,990	3,584	3,173	2,927	2,481	2,813	2,551	2,464	2,372	2,299	2,177	2,270	2,004
NV	8,732	10,110	9,960	9,323	9,856	10,565	11,471	10,646	10,789	9,540	7,787	7,206	7,218			
NH																
NJ	33,026	33,606	32,854	32,762	32,642	31,230	30,986	26,668	28,480	28,519	28,217	26,558	22,953			

NM	5,465	5,166	5,069	5,832	6,070	5,934	6,087	6,036	5,398	5,022	4,779	4,083	3,517	3,408		
NY	129,678	127,102	127,983	124,957	126,002	124,849	127,437	128,036	124,867	119,996	115,724	111,296	104,370	94,326	93,299	
NC	30,942	30,419	29,229	31,006	33,954	32,335	35,088	33,233	31,822	30,596	30,952	26,192	24,439	22,820	24,605	
ND	1,341	1,216	1,219	1,354	1,357	1,231	1,298	1,235	1,386	1,290	1,291	1,247	1,330	1,182	1,264	
OH	38,140	37,464	35,830	35,319	34,242	34,128	32,936	30,859	29,613	28,721	28,123	24,764	25,473	23,216	21,186	
OK	7,183	7,038	6,500	6,644	6,712	6,641	7,088	6,640	6,478	6,430	6,097	5,416	5,150	5,013	4,488	
OR	14,194	14,272	13,172	12,622	11,443	11,602	12,246	11,883	11,610	10,801	9,990	9,567	9,016	8,283	8,231	8,604
PA	35,630	36,820	35,167	36,908	36,030	34,909	36,731	36,663	38,807	37,284	36,778	36,280	34,536	32,108	32,146	
RI	5,413	5,455	5,550	5,538	5,587	5,091	4,828	4,820	4,502	4,326	4,181	4,165	3,549			
SC	7,527	7,014	6,657	6,573	6,565	6,716	7,005	7,544	7,187	6,911	6,464	6,379	6,084	5,878		
SD	878	895	826	819	814	805	748	707	848	769	737	597	634	601	551	
TN	17,479	17,405	17,807	17,610	16,400	16,178	17,883	18,171	18,253	17,474	16,373	16,115	15,859			
TX	76,121	77,537	79,929	79,166	75,053	77,374	82,056	81,079	81,591	77,850	77,592	72,470	68,298	63,849	54,902	
UT	3,509	3,594	3,524	3,576	3,665	3,556	3,753	3,933	3,911	3,665	3,780	3,386	3,273	3,102	2,948	
VT	1,781	1,519	1,635	1,696	1,734	1,620	1,611	1,583	1,494	1,319	1,333	1,355	1,270			
VA	27,999	24,586	24,992	26,437	26,117	26,309	27,349	27,981	28,698	27,442	25,943	25,413	22,916	20,852	20,187	
WA	25,692	25,620	25,148	25,084	24,664	24,108	24,631	24,850	24,297	22,672	21,124	20,225	18,386	17,592	17,710	
WV	2,549	2,332	2,049		1,945	1,674	2,037	1,853	1,983	1,772	1,999	1,837	1,828	1,876		
WI	11,040	10,925	10,489	10,557	9,943	9,817	9,580	8,267	8,229	8,542	7,825	7,249	6,927	6,462	5,800	
WY	6	4	10	7	12	14	7	9			0					
USA	936,553	938,292	944,422	941,200	932,573	924,372	933,733	910,762	917,453	883,839	866,111	739,748	712,485	586,183	500,556	141,232

Available GI estimates of state-level abortions by state of occurrence for the years in question were compiled (Finer and Henshaw, 2003; Jones et al., 2008; Jones and Kooistra, 2011; Jones and Jerman, 2014). These are listed in Table 2 and cover 2000, 2004, 2005, 2007, 2008, 2010, and 2011.

Table 2. GI abortion figures by state of occurrence for U.S. states, 2000, 2004-05, 2007-08, 2010-11

state	2000	2004	2005	2007	2008	2010	2011
AL	13,830	11,300	11,340	11,270	11,270	10,280	9,550
AK	1,660	1,920	1,880	1,720	1,700	1,930	1,820
AZ	17,940	17,930	19,480	17,550	19,500	15,180	16,100
AR	5,540	4,610	4,710	4,890	4,890	4,680	4,370
CA	236,060	208,180	208,430	223,180	214,190	191,550	181,730
CO	15,530	15,500	16,120	16,260	15,960	15,060	14,710
CT	15,240	16,810	16,780	17,390	17,030	15,430	14,640
DE	5,440	4,950	5,150	7,570	7,070	6,570	5,090
DC	9,800	7,130	7,230	4,160	4,450	4,660	4,750
FL	103,050	96,680	92,300	95,520	94,360	86,180	84,990
GA	32,140	34,100	33,180	35,740	39,820	35,590	34,910
HI	5,630	5,190	5,350	5,650	5,630	5,520	5,580
ID	1,950	1,990	1,810	2,010	1,800	1,740	1,680

IL	63,690	52,870	50,970	52,200	54,920	44,400	44,580
IN	12,490	11,010	11,150	10,960	10,680	10,400	9,430
IA	5,970	6,040	6,370	7,110	6,560	6,000	5,640
KS	12,270	11,220	10,410	10,700	10,620	7,240	6,940
KY	4,700	3,670	3,870	4,550	4,430	4,040	3,970
LA	13,100	12,600	11,400	14,340	14,860	12,710	12,210
ME	2,650	2,880	2,770	2,870	2,800	2,490	2,360
MD	34,560	38,020	37,590	34,380	34,290	34,310	34,260
MA	30,410	26,300	27,270	25,790	24,900	24,360	24,030
MI	46,470	43,300	40,600	35,930	36,790	30,770	29,190
MN	14,610	13,800	13,910	14,000	13,060	11,570	11,140
MS	3,780	3,500	3,090	2,930	2,770	2,300	2,220
MO	7,920	8,600	8,400	7,400	7,440	6,160	5,820
MT	2,510	2,330	2,150	2,350	2,230	2,220	2,220
NE	4,250	3,660	3,220	2,530	2,840	2,490	2,570
NV	13,740	13,080	13,530	14,070	13,450	11,850	11,290
NH	3,010	3,160	3,170	3,200	3,200	3,040	3,200
NJ	65,780	58,050	61,150	55,370	54,160	48,840	46,990
NM	5,760	6,260	6,220	6,840	6,150	5,630	5,180
NY	164,630	160,140	155,960	148,990	153,110	142,790	138,370
NC	37,610	36,220	34,500	34,290	33,140	32,700	28,600
ND	1,340	1,340	1,230	1,240	1,400	1,290	1,250
OH	40,230	35,050	35,060	33,790	33,550	30,220	28,590
OK	7,390	7,100	6,950	7,000	7,160	6,290	5,860
OR	17,010	13,200	13,200	13,370	12,920	11,010	10,690
PA	36,570	35,600	34,150	36,190	41,000	38,650	36,870
RI	5,600	5,730	5,290	4,910	5,000	4,290	4,210
SC	8,210	6,600	7,080	7,580	7,300	6,730	6,620
SD	870	800	790	710	850	740	600
TN	19,010	18,200	18,140	18,380	19,550	17,850	16,720
TX	89,160	85,210	85,760	81,880	84,610	79,390	73,200
UT	3,510	3,610	3,630	4,100	4,000	3,540	3,290
VT	1,660	1,720	1,490	1,570	1,510	1,370	1,370
VA	28,780	26,340	26,520	29,800	28,520	27,660	27,110
WA	26,200	23,900	23,260	24,860	24,320	22,240	21,880
WV	2,540	2,420	2,360	2,230	2,280	2,540	2,390
WI	11,130	9,700	9,800	8,270	8,230	8,080	7,640
WY	100	80	70	90	90	90	120
USA	1,313,030	1,219,600	1,206,240	1,209,680	1,212,360	1,102,660	1,058,540

Estimates of the fractions of abortions officially reported were made for all states and years. GI estimates are assumed complete, and for all years/states where both GI estimates and official data exist this ratio provides a reporting rate. Rates are linearly interpolated between years with known rates, and the most recent reporting rate is carried from the last year to the present. The average reporting rate is 85.5% for 2000-2015. The median and 68% range of reporting rates are 92.7% and 62.1-99.6%, respectively. Table 3 provides the results for all years and states.

Table 3. Estimated fraction of abortions reported, U.S. states, 2000-2015

state	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AL	0.980	0.987	0.993	1.000	1.006	0.989	0.994	1.000	1.000	1.000	1.000	0.997	0.997	0.997	0.997	0.997
AK		0.252	0.504	0.757	1.009	1.040	1.015	0.989	1.035	0.962	0.889	0.894	0.894	0.894	0.894	0.894
AZ	0.561	0.598	0.634	0.671	0.708	0.553	0.583	0.613	0.547	0.650	0.753	0.894	0.894	0.894	0.894	0.894
AR	0.993	0.997	1.000	1.004	1.007	0.997	0.994	0.991	0.979	0.974	0.968	0.923	0.923	0.923	0.923	0.923
CA	0.319	0.348	0.378	0.407	0.437	0.454	0.406	0.359	0.401	0.445	0.488					
CO		0.184	0.368	0.552	0.736	0.725	0.712	0.699	0.726	0.743	0.759	0.712	0.712	0.712	0.712	0.712
CT	0.847	0.817	0.786	0.756	0.725	0.722	0.779	0.836	0.848	0.859	0.871	0.862	0.862	0.862	0.862	0.862
DE	0.934	0.932	0.931	0.929	0.927	0.805	0.730	0.654	0.651	0.681	0.710	0.745	0.745	0.745	0.745	0.745
DC	0.679	0.594	0.508	0.422	0.337	0.348	0.459	0.569	0.574	0.598	0.621	0.583	0.583	0.583	0.583	0.583
FL	0.859	0.882	0.904	0.926	0.949	1.002	0.982	0.963	0.928	0.927	0.927	0.908	0.908	0.908	0.908	0.908
GA	0.986	0.979	0.972	0.966	0.959	0.957	0.913	0.868	0.901	0.937	0.972	0.939	0.939	0.939	0.939	0.939
HI	0.700	0.692	0.684	0.676	0.668	0.663	0.664	0.665	0.581	0.568	0.555	0.479	0.479	0.479	0.479	0.479
ID	0.411	0.429	0.447	0.466	0.484	0.607	0.662	0.717	0.823	0.845	0.868	0.857	0.857	0.857	0.857	0.857
IL	0.720	0.746	0.772	0.798	0.823	0.852	0.860	0.868	0.869	0.906	0.943	0.927	0.927	0.927	0.927	0.927
IN	0.983	0.976	0.969	0.962	0.955	0.958	0.976	0.993	1.030	0.998	0.966	0.966	0.966	0.966	0.966	0.966
IA	1.015	1.010	1.006	1.001	0.997	0.923	0.929	0.935	0.989	0.944	0.900	0.854	0.854	0.854	0.854	0.854
KS	0.996	1.000	1.004	1.008	1.012	1.041	1.027	1.013	1.002	1.079	1.156	1.136	1.000	1.000	1.000	1.000
KY	0.985	0.981	0.977	0.973	0.969	0.976	0.970	0.965	0.964	0.968	0.973	0.997	0.997	0.997	0.997	0.997
LA	0.869	0.874	0.880	0.885	0.891	0.777	0.627	0.476	0.459	0.578	0.698	0.733	0.733	0.733	0.733	0.733
ME	0.957	0.943	0.929	0.915	0.900	0.958	0.947	0.937	0.937	0.932	0.928	0.751	0.751	0.751	0.751	0.751
MD	0.357	0.334	0.311	0.288	0.266	0.287	0.184	0.082	0.119	0.154	0.190	0.093	0.093	0.093	0.093	0.093
MA	0.894	0.902	0.910	0.918	0.926	0.853	0.894	0.936	0.959	0.907	0.854	0.862	0.862	0.862	0.862	0.862
MI	0.577	0.584	0.592	0.599	0.607	0.621	0.654	0.687	0.706	0.732	0.757	0.800	0.800	0.800	0.800	0.800
MN	0.991	0.993	0.995	0.997	0.999	0.961	0.975	0.989	0.991	0.993	0.994	0.994	0.994	0.994	0.994	0.994
MS	0.994	0.996	0.997	0.999	1.000	0.984	0.992	1.001	1.001	1.000	0.999	1.002	1.000	1.000	1.000	1.000
MO	0.995	0.981	0.967	0.953	0.939	0.950	0.970	0.990	0.996	0.998	1.000	0.992	0.992	0.992	0.992	0.992
MT	0.973	0.971	0.970	0.969	0.968	1.002	0.977	0.952	0.953	0.963	0.973	0.967	0.967	0.967	0.967	0.967
NE	0.983	0.982	0.981	0.980	0.979	0.985	0.983	0.981	0.990	0.990	0.990	0.923	0.923	0.923	0.923	0.923
NV	0.636	0.665	0.695	0.724	0.754	0.781	0.769	0.757	0.802	0.730	0.657	0.638	0.638	0.638	0.638	0.638

NH																
NJ	0.502	0.517	0.532	0.547	0.562	0.511	0.496	0.482	0.526	0.552	0.578	0.565	0.565	0.565	0.565	0.565
NM	0.949	0.954	0.959	0.964	0.970	0.954	0.918	0.882	0.878	0.863	0.849	0.788	0.788	0.788	0.788	0.788
NY	0.788	0.787	0.787	0.787	0.787	0.801	0.830	0.859	0.816	0.813	0.810	0.804	0.804	0.804	0.804	0.804
NC	0.823	0.851	0.880	0.909	0.937	0.937	0.953	0.969	0.960	0.953	0.947	0.916	0.916	0.916	0.916	0.916
ND	1.001	1.004	1.007	1.010	1.013	1.001	0.998	0.996	0.990	0.995	1.001	0.998	0.998	0.998	0.998	0.998
OH	0.948	0.955	0.962	0.970	0.977	0.973	0.943	0.913	0.883	0.907	0.931	0.866	0.866	0.866	0.866	0.866
OK	0.972	0.965	0.959	0.952	0.945	0.956	0.952	0.949	0.905	0.937	0.969	0.924	0.924	0.924	0.924	0.924
OR	0.834	0.843	0.851	0.859	0.867	0.879	0.884	0.889	0.899	0.903	0.907	0.895	0.895	0.895	0.895	0.895
PA	0.974	0.984	0.993	1.003	1.012	1.022	1.018	1.013	0.947	0.949	0.952	0.984	0.984	0.984	0.984	0.984
RI	0.967	0.969	0.971	0.973	0.975	0.962	0.972	0.982	0.900	0.937	0.975	0.989	0.989	0.989	0.989	0.989
SC	0.917	0.936	0.956	0.975	0.995	0.949	0.972	0.995	0.985	0.972	0.960	0.964	0.964	0.964	0.964	0.964
SD	1.009	1.011	1.013	1.015	1.018	1.019	1.007	0.996	0.998	0.997	0.996	0.995	0.995	0.995	0.995	0.995
TN	0.919	0.915	0.910	0.906	0.901	0.892	0.940	0.989	0.934	0.925	0.917	0.964	0.964	0.964	0.964	0.964
TX	0.854	0.861	0.867	0.874	0.881	0.902	0.946	0.990	0.964	0.971	0.977	0.990	0.990	0.990	0.990	0.990
UT	1.000	1.004	1.007	1.011	1.015	0.980	0.969	0.959	0.978	1.023	1.068	1.029	1.000	1.000	1.000	1.000
VT	1.073	1.057	1.041	1.024	1.008	1.087	1.048	1.008	0.989	0.981	0.973	0.989	0.989	0.989	0.989	0.989
VA	0.973	0.978	0.982	0.987	0.992	0.992	0.966	0.939	1.006	0.972	0.938	0.937	0.937	0.937	0.937	0.937
WA	0.981	0.993	1.006	1.019	1.032	1.036	1.018	1.000	0.999	0.974	0.950	0.924	0.924	0.924	0.924	0.924
WV	1.004	0.954	0.904	0.854	0.804	0.709	0.770	0.831	0.870	0.828	0.787	0.769	0.769	0.769	0.769	0.769
WI	0.992	1.000	1.008	1.017	1.025	1.002	1.001	1.000	1.000	0.984	0.968	0.949	0.949	0.949	0.949	0.949
WY	0.060	0.083	0.105	0.128	0.150	0.200	0.150	0.100								
USA	1.000	1.002	1.008	1.005	0.996	0.987	0.997	0.972	0.980	0.944	0.925	0.790	0.761			

The resulting estimates of reporting rates were applied to all years/states with officially reported data to estimate total abortions. For intermediate years with no official or GI data, estimates were interpolated.

To construct estimates for recent years following the last reported data, estimated rates of year-to-year change in abortion numbers were constructed for all states. Relative changes in abortions were calculated from the GI estimates for each state for the period 2003/4 to 2007/8, and for 2007/8 to 2010/11 (averaging figures for each pair of years, then comparing across the 3-4 year intervening period). The resulting relative changes for the two periods are plotted for each state in Figure 1, plotting the percent change from 2007/8 to 2010/11 versus the percent change from 2003/4 to 2007/8.

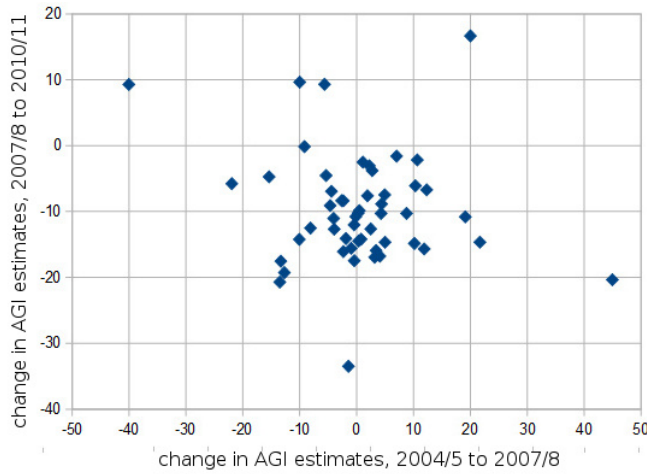


Figure 1. Abortion numbers by occurrence, state changes between GI reports

We use an assumption that state-level trends for 2003-2011 will tend to be reflected going forward from 2011 and apply this to associate subsequent trends for each state to nearby states in Figure 1. For subsequent year trends, known annual change ratios were obtained from the preceding results. Where change ratios were missing, for each state and year the change ratio C was estimated from an average of change ratios C_i for all other states with known change ratios, this average weighted by the distance in Figure 1—specifically by an ad-hoc formulation:

$$C = \sum_i C_i (R_{1,i}^2 + R_{2,i}^2 + 1)^{0.5} / \sum_i (R_{1,i}^2 + R_{2,i}^2 + 1)^{0.5}$$

where R_1 , R_2 are the percent changes in GI figures for 2004/5 to 2007/8 and for 2007/8 to 2011/11, respectively, and the additional factor of one introduces a bias towards an annual change of ratio 1, i.e. no change. No ratio estimates were made for Wyoming due to small numbers of reported abortions.

Table 4. Change in GI abortion figures, 2004-2007 and 2007-2010, and estimated annual change in abortions by state of occurrence, U.S. states, 2011-2015

state	Change in GI estimates		Known or estimated abortions relative to preceding year				
	2004/5 to 2007/8	2007/8 to 2010/11	2011	2012	2013	2014	2015
AL	-0.44	-12.02	0.926	0.953	0.935	0.952	0.979
AK	-10.00	9.65	0.948	1.003	0.888	0.939	0.980
AZ	-0.96	-15.57	1.259	0.926	1.005	0.963	0.980
AR	4.94	-7.46	0.890	0.938	0.987	1.091	0.926
CA	4.98	-14.65	0.946	0.974	0.956	0.976	0.982
CO	1.90	-7.60	0.916	0.952	0.952	0.986	0.979
CT	2.47	-12.64	0.939	0.948	0.883	0.978	0.978
DE	44.95	-20.36	0.813	1.008	0.795	0.990	0.994
DC	-40.04	9.29	0.956	0.945	0.977	0.990	0.992
FL	0.48	-9.85	0.966	0.987	0.955	0.991	0.995
GA	12.31	-6.70	0.948	0.957	0.875	0.965	0.986
HI	7.02	-1.60	0.872	1.057	0.953	0.986	0.984

ID	0.26	-10.24	0.954	1.013	0.943	0.984	0.987
IL	3.16	-16.93	0.987	1.045	0.943	0.977	0.984
IN	-2.35	-8.36	0.907	0.967	0.929	0.993	0.980
IA	10.15	-14.85	0.892	0.965	0.952	0.783	0.986
KS	-1.43	-33.49	0.942	0.964	1.008	0.952	0.956
KY	19.10	-10.80	1.007	0.963	0.968	0.983	0.989
LA	21.67	-14.66	1.009	1.030	1.082	1.023	0.990
ME	0.35	-14.46	0.767	1.154	0.948	1.042	0.908
MD	-9.18	-0.15	0.959	0.976	0.961	0.982	0.985
MA	-5.38	-4.54	0.995	0.969	0.953	0.982	0.984
MI	-13.33	-17.55	1.003	0.994	1.124	1.058	0.983
MN	-2.35	-16.08	0.962	0.967	0.925	1.022	0.974
MS	-13.51	-20.70	0.968	0.978	0.977	0.981	0.986
MO	-12.71	-19.27	0.937	0.974	0.963	0.934	0.986
MT	2.23	-3.06	0.994	0.946	0.907	0.917	0.983
NE	-21.95	-5.77	0.963	0.969	0.947	1.043	0.883
NV	3.42	-15.92	0.925	1.002	0.956	0.977	0.982
NH	1.11	-2.50	0.958	0.978	0.945	0.981	0.984
NJ	-8.11	-12.51	0.941	0.864	0.959	0.981	0.984
NM	4.09	-16.78	0.854	0.861	0.969	0.977	0.984
NY	-4.43	-6.93	0.962	0.938	0.904	0.989	0.984
NC	-4.65	-9.09	0.846	0.933	0.934	1.078	0.983
ND	2.72	-3.79	0.966	1.067	0.889	1.069	0.981
OH	-3.95	-12.67	0.881	1.029	0.911	0.913	0.982
OK	0.78	-14.19	0.888	0.951	0.973	0.895	0.953
OR	-0.42	-17.46	0.958	0.942	0.919	0.994	1.045
PA	10.67	-2.16	0.986	0.952	0.930	1.001	0.986
RI	-10.07	-14.23	0.996	0.852	0.966	0.983	0.985
SC	8.77	-10.28	0.987	0.954	0.966	0.979	0.982
SD	-1.89	-14.10	0.810	1.062	0.948	0.917	0.978
TN	4.38	-8.86	0.984	0.984	0.955	0.994	0.972
TX	-2.62	-8.35	0.934	0.942	0.935	0.860	0.981
UT	11.88	-15.68	0.896	0.967	0.948	0.950	0.987
VT	-4.05	-11.04	1.017	0.937	0.950	0.977	0.983
VA	10.33	-6.09	0.980	0.902	0.910	0.968	0.984
WA	4.28	-10.29	0.957	0.909	0.957	1.007	0.978
WV	-5.65	9.31	0.919	0.995	1.026	0.982	0.988
WI	-15.38	-4.73	0.926	0.956	0.933	0.898	0.981
WY	20.00	16.67					
USA	-0.16	-10.77	0.944	0.970	0.949	0.977	0.979

The resulting change ratios were applied to produce abortion estimates for each state and year, shown in Table 5. In some cases the first (last) year of data was carried backward (forward): for

Alaska 2000-2002, Colorado 2000-2003, and Wyoming 2012-2015. Yellow highlighting indicates figures estimated based on the change ratios constructed above.

Table 5. Composite estimates of abortions by state of occurrence, U.S. states, 2000-2015

state	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
AL	13,830	13,565	12,334	10,983	11,300	11,340	11,722	11,270	11,270	10,883	10,280	9,550	9,102	8,509	8,103	7,933
AK	2,387	2,387	2,387	2,387	1,920	1,880	1,895	1,720	1,700	2,015	1,930	1,820	1,826	1,622	1,522	1,492
AZ	17,940	13,891	16,831	15,373	17,930	19,480	18,581	17,550	19,500	15,800	15,180	16,100	14,914	14,982	14,422	14,139
AR	5,540	5,944	5,315	5,388	4,610	4,710	5,019	4,890	4,890	4,703	4,680	4,370	4,098	4,044	4,413	4,086
CA	236,060	242,358	238,370	223,309	208,180	208,430	198,481	223,180	214,190	198,996	191,550	181,688	176,989	169,124	165,065	162,094
CO	15,500	15,500	15,500	15,500	15,500	16,120	15,522	16,260	15,960	15,619	15,060	14,710	14,005	13,330	13,143	12,867
CT	15,240	16,246	17,136	16,417	16,810	16,780	18,122	17,390	17,030	15,977	15,430	14,640	13,874	12,255	11,985	11,721
DE	5,440	5,222	4,828	4,499	4,950	5,150	6,584	7,570	7,070	6,920	6,570	5,090	5,129	4,080	4,039	4,015
DC	9,800	9,069	10,846	12,123	7,130	7,230	5,867	4,160	4,450	4,344	4,660	4,750	4,487	4,382	4,338	4,303
FL	103,050	97,071	97,305	97,155	96,680	92,300	97,290	95,520	94,360	88,463	86,180	84,990	83,872	80,101	79,418	79,014
GA	32,140	34,262	35,270	35,768	34,100	33,180	33,479	35,740	39,820	35,157	35,590	34,910	33,419	29,249	28,215	27,820
HI	5,630	5,779	5,731	5,337	5,190	5,350	6,009	5,650	5,630	5,882	5,520	5,580	5,900	5,624	5,545	5,456
ID	1,950	1,720	1,853	1,956	1,990	1,810	1,886	2,010	1,800	1,952	1,740	1,680	1,701	1,604	1,579	1,558
IL	63,690	62,378	60,814	52,960	52,870	50,970	54,049	52,200	54,920	50,868	44,400	44,580	46,607	43,961	42,950	42,263
IN	12,490	12,171	11,290	11,912	11,010	11,150	10,877	10,960	10,680	10,578	10,400	9,430	9,115	8,464	8,401	8,235
IA	5,970	5,663	6,203	5,907	6,040	6,370	7,241	7,110	6,560	6,173	6,000	5,640	5,444	5,181	4,058	4,001
KS	12,270	12,280	11,715	11,523	11,220	10,410	10,881	10,700	10,620	8,778	7,240	6,940	7,598	7,662	7,294	6,974
KY	4,700	3,836	3,584	3,721	3,670	3,870	4,032	4,550	4,430	4,254	4,040	3,970	3,823	3,700	3,637	3,597
LA	13,100	12,502	11,877	12,020	12,600	11,400	9,897	14,340	14,860	14,120	12,710	12,210	12,578	13,603	13,923	13,784
ME	2,650	2,668	2,493	2,788	2,880	2,770	2,821	2,870	2,800	2,588	2,490	2,360	2,723	2,581	2,690	2,444
MD	34,560	40,411	43,677	39,823	38,020	37,590	51,658	34,380	34,290	37,250	34,310	34,260	33,440	32,124	31,546	31,073
MA	30,410	29,151	27,742	28,031	26,300	27,270	27,109	25,790	24,900	25,310	24,360	24,030	23,286	22,184	21,785	21,436
MI	46,470	48,296	49,396	49,297	43,300	40,600	39,202	35,930	36,790	30,556	30,770	29,190	29,020	32,630	34,516	33,918
MN	14,610	14,937	14,309	14,213	13,800	13,910	14,429	14,000	13,060	12,477	11,570	11,140	10,768	9,965	10,186	9,922
MS	3,780	3,582	3,616	3,758	3,500	3,090	2,972	2,930	2,770	2,439	2,300	2,220	2,176	2,126	2,086	2,058
MO	7,920	7,946	8,481	8,763	8,600	8,400	7,792	7,400	7,440	6,892	6,160	5,820	5,671	5,461	5,102	5,029
MT	2,510	2,419	2,318	2,320	2,330	2,150	2,168	2,350	2,230	2,309	2,220	2,220	2,100	1,905	1,747	1,717
NE	4,250	4,055	3,848	4,071	3,660	3,220	2,978	2,530	2,840	2,577	2,490	2,570	2,491	2,359	2,459	2,171
NV	13,740	15,203	14,341	12,877	13,080	13,530	14,922	14,070	13,450	13,075	11,850	11,290	11,309	10,809	10,559	10,371
NH	3,010	3,048	3,085	3,123	3,160	3,170	3,185	3,200	3,200	3,120	3,040	3,200	3,129	2,957	2,901	2,853
NJ	65,780	64,986	61,734	59,867	58,050	61,150	62,450	55,370	54,160	51,684	48,840	46,990	40,612	38,956	38,214	37,619
NM	5,760	5,415	5,285	6,047	6,260	6,220	6,629	6,840	6,150	5,817	5,630	5,180	4,462	4,324	4,223	4,156
NY	164,630	161,404	162,568	158,768	160,140	155,960	153,550	148,990	153,110	147,598	142,790	138,370	129,759	117,272	115,995	114,139
NC	37,610	35,729	33,212	34,119	36,220	34,500	36,810	34,290	33,140	32,092	32,700	28,600	26,686	24,918	26,867	26,410
ND	1,340	1,211	1,211	1,341	1,340	1,230	1,300	1,240	1,400	1,296	1,290	1,250	1,333	1,185	1,267	1,243
OH	40,230	39,218	37,226	36,422	35,050	35,060	34,914	33,790	33,550	31,679	30,220	28,590	29,409	26,803	24,459	24,019
OK	7,390	7,291	6,780	6,979	7,100	6,950	7,445	7,000	7,160	6,862	6,290	5,860	5,572	5,424	4,856	4,628

OR	17,010	16,939	15,484	14,698	13,200	13,200	13,855	13,370	12,920	11,961	11,010	10,690	10,074	9,255	9,197	9,614
PA	36,570	37,429	35,408	36,811	35,600	34,150	36,094	36,190	41,000	39,286	38,650	36,870	35,098	32,630	32,669	32,212
RI	5,600	5,631	5,717	5,692	5,730	5,290	4,967	4,910	5,000	4,614	4,290	4,210	3,587	3,466	3,407	3,356
SC	8,210	7,491	6,965	6,740	6,600	7,080	7,207	7,580	7,300	7,106	6,730	6,620	6,314	6,100	5,969	5,863
SD	870	885	815	807	800	790	743	710	850	771	740	600	637	604	554	542
TN	19,010	19,025	19,562	19,444	18,200	18,140	19,020	18,380	19,550	18,882	17,850	16,720	16,454	15,722	15,621	15,181
TX	89,160	90,105	92,161	90,575	85,210	85,760	86,720	81,880	84,610	80,189	79,390	73,200	68,986	64,492	55,455	54,401
UT	3,510	3,581	3,498	3,536	3,610	3,630	3,871	4,100	4,000	3,583	3,540	3,290	3,273	3,102	2,948	2,910
VT	1,660	1,437	1,571	1,656	1,720	1,490	1,538	1,570	1,510	1,344	1,370	1,370	1,284	1,219	1,191	1,170
VA	28,780	25,151	25,445	26,789	26,340	26,520	28,326	29,800	28,520	28,230	27,660	27,110	24,446	22,244	21,535	21,190
WA	26,200	25,789	24,991	24,613	23,900	23,260	24,195	24,860	24,320	23,267	22,240	21,880	19,891	19,032	19,159	18,738
WV	2,540	2,446	2,268	2,344	2,420	2,360	2,645	2,230	2,280	2,139	2,540	2,390	2,378	2,441	2,398	2,369
WI	11,130	10,923	10,401	10,383	9,700	9,800	9,573	8,270	8,230	8,679	8,080	7,640	7,301	6,811	6,113	5,999
WY	100	48	95	55	80	70	47	90	90	90	90	120	120	120	120	120

Table 6 gives the resulting totals for U.S. abortions (rounded to the nearest 100), along with available GI and CDC figures and totals of state-level official figures (the latter from Table 1). The large difference between total official figures and CDC figures arises primarily from the fact that the CDC does not include any figures for California, whereas the official figures sums include reported Medicare funded abortions in California (which account for less than half of abortions in that state).

Table 6. Final estimates for the U.S.

year	sum of state underreporting and trend results (Table 5)	GI estimates (Table 2)	sum of official figures (Table 1)	CDC figures
2000	1,313,700	1,312,990	936,553	857,475
2001	1,305,700	1,291,000	938,292	853,485
2002	1,294,900	1,269,000	944,422	854,122
2003	1,261,000	1,250,000	941,200	848,163
2004	1,219,600	1,222,100	932,573	839,226
2005	1,206,200	1,206,200	924,372	820,151
2006	1,228,600	1,242,200	933,733	852,385
2007	1,209,700	1,209,640	910,762	827,609
2008	1,212,400	1,212,350	917,453	825,564
2009	1,147,200	1,151,600	883,839	789,217
2010	1,102,700	1,102,700	866,111	765,651
2011	1,058,500	1,058,500	739,748	730,322
2012	1,018,300		712,485	699,202
2013	962,700		586,183	
2014	939,800		500,556	
2015	924,200		141,232	

Figure 2 shows state level trends for 2000-2015 from available data with the trend from the resulting U.S. estimate. Each state trend line represents only available official reported data (with no adjustments for underreporting), with values for each state uniformly scaled to maximize the match to the GI estimate-based trend line for the U.S. This drives a tendency for the trend lines to cluster in the period 2000-2011. Of states with available data to at least 2013, most (27) show continuing steady declines, though some (8) show flat or rising trends (though in the case of Arizona, changes in levels of reporting are likely involved).

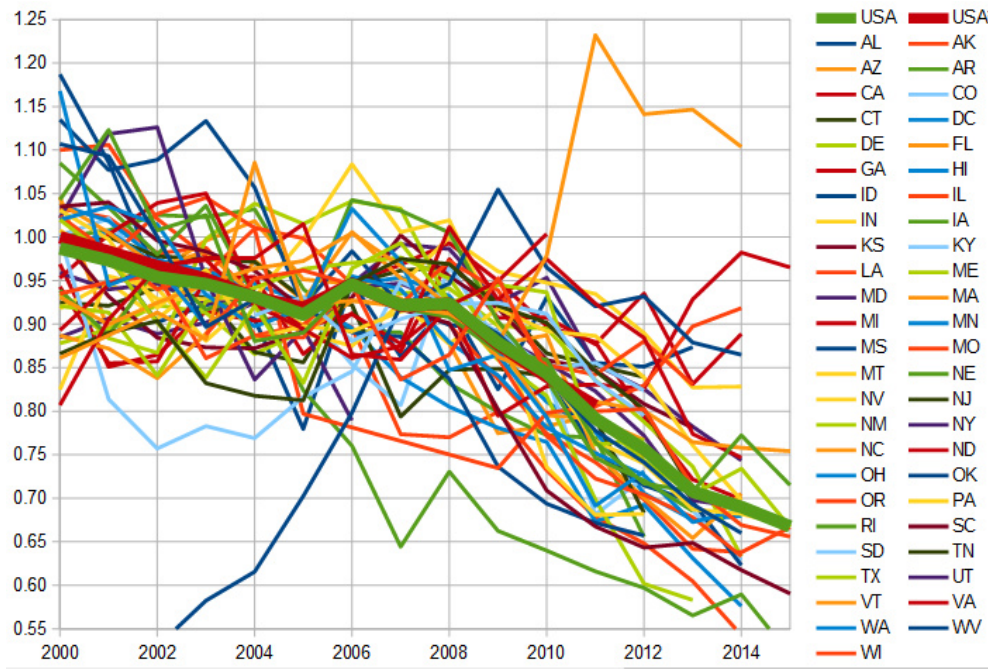


Figure 2. State trends and trend for final U.S. estimate

Comparison to alternate estimation methods

Several alternate estimation methods were employed to help validate the above results. In general they are based on composites of recent year-to-year trends for states with available data. Based on the state level data previously compiled (Table 1), trends for all states were calculated up to the latest year available in each case and compared to the 2000-2011 trends in the GI data. Table 7 compares the final results from the preferred methodology (Table 5) to those from alternate methodologies:

- Trends are extrapolated based on the average of reported trends for the 15 states with the highest abortion numbers (these states accounted for 79% of U.S. abortions in 2011).
- National trend is a weighted average for all states with reported trends, with weighting based on each state’s fraction of national abortions in 2011, and with no contribution from states with no trend data for the year in question (2012-2015).
- Same as above, except that where no trend data are available for a state/year a flat trend (no change) is used for that state when taking the weighted average.

The first two alternative methods give results within 2.3% of the statewise estimate method for all years, and in particular differ by only 0.3% and 1.1% when carried to 2015. The third alternative, intentionally skewed towards no trend to bound any national decrease, still yields a 9.0% decrease from 2011 to 2015 versus 12.7-13.6% decreases for the other methods.

Table 7. Compared estimates for the U.S. (GI figure for 2011)

year	sum of state estimates (Table 5)	Trend based on 15 states with highest abortion numbers	Weighted average of trends for all states with available data	Weighted average of trends for all states with flat trend if no data	State-trend based estimates, 2013
2011	1,058,500	1,058,500	1,058,500	1,058,500	1,058,500
2012	1,018,300	1,007,600	1,013,500	1,022,900	1,020,000
2013	962,700	940,800	951,800	981,500	1,000,000
2014	939,800	931,700	926,200	965,900	
2015	924,200	921,300	914,300	964,000	
% change, 2011 to 2015	-12.7%	-13.0%	-13.6%	-8.9%	N/A

Older estimates constructed by the author are illustrated in Figure 3. These estimates used various approaches to composite state-level trends in recent years (similar to the three alternate methods above) applied to produce estimates for 2009-2012 prior to release of GI's estimates for 2010-2011. Estimates by GI are shown in blue (1999-2008) and in black (2009-2011). The other lines show different methods for constructing U.S. estimates based on limited state-level data, all made prior to release of GI's estimates for 2009-2011. GI's estimates proved to be below nearly all the state-trend based estimates, suggesting that such estimates are not biased towards faster declines.

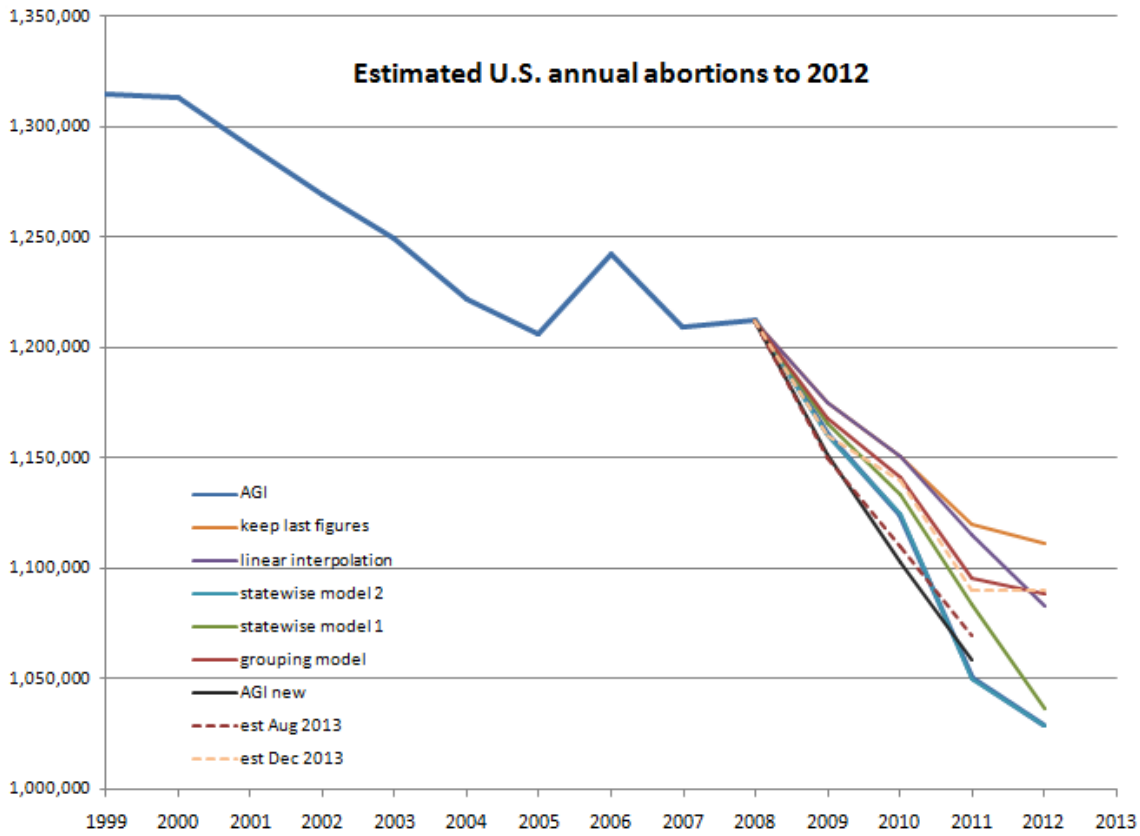


Figure 3. Annual United States abortions, 1999-2012. Estimates are by GI (blue, 1999-2008; black, 2009-2011) or by the author employing various methods.

Figure 4 shows U.S. abortions for 1960-2015, providing perspective for the estimated decline obtained with the preferred methodology.

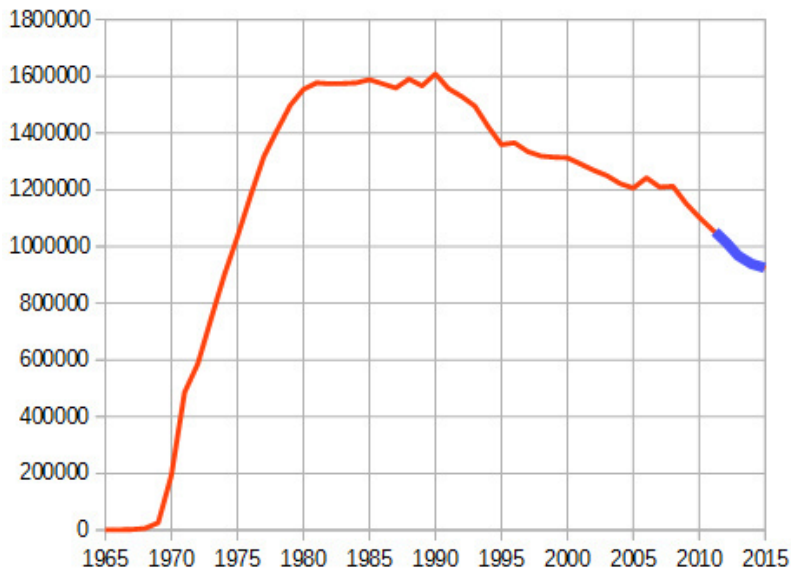


Figure 4. U.S. abortions, 1960-2015 (current estimates in blue)

Limitations of these estimates

Prior to 1998, national abortion surveillance by the CDC yielded relatively complete reporting relative to GI's periodic estimates. In 1998 California, New Hampshire, and Alaska ceased reporting abortions to the CDC (Alaska later resumed reporting). This breakdown in completeness of CDC data along with increased latency of GI publication of estimates has led to a gap in available national-level abortion numbers for the U.S.

As illustration of the pitfalls of trying to fill this reporting gap, in October 2004 Glen Stassen published the claim (Stassen, 2004a) that U.S. abortions had increased since the last GI estimates available for 2000 (Elam-Evans et al., 2003). Stassen further claimed that this increase was linked to Bush administration policies, with his claims subsequently echoed by candidates in the last month prior to the 2004 presidential election. Analysts disputed Stassen's claims (O'Bannon and Hussey, 2004; Johnston, 2005), however, and when his methodology of using limited state-by-state reporting to estimate national trends was presented (Stassen, 2004b) it was evident that the methodology was fundamentally flawed even apart from cherry-picking of data. The debate was sufficient to prompt GI to release interim national-level estimates (Finer and Henshaw, 2005), which showed that U.S. abortions had continued to decline in 2001 and 2002.

The preferred methodology adopted here implies an average annual drop in U.S. abortions from 2011 to 2015. While significant, this is not inconsistent with declines in recent years nor with estimates based on simplified composites of state-level trends. We nonetheless advise caution in approaching these results, as there are a number of issues any one of which could degrade their accuracy:

- The approach used here effectively estimates missing trends for a given state based on those for states with similar trends prior to the missing periods. This assumed similarity does not directly address similarity in socio-economic factors contributing to particular abortion rates, nor does it allow for changes in these factors during the periods when estimates are constructed.
- California abortions have been unreported since 1998. Since California accounts for about 18% of U.S. abortions, the final U.S. result is very dependent on trends in that state.
- Many states have implemented various restrictions on abortion in recent years. These could cause changes in state-level trends apart from the dependencies that underlie the comparative approach used here. Alternately, they could lead to greater underreporting of abortions by providers, impacting the reported statistics used to construct results.
- The approval of the abortion pill for over-the-counter use could be substantially increasing the numbers of abortions unregistered in any reporting system. The extent to which this is involved in decreasing trends is unknown.

Finally, it may be noted that improved methods of building estimates from state-level data are possible. Methods based on trends in abortion rates rather than raw numbers might offer improvement. Approaches that factor in similarities in state socio-economic factors and/or policies potentially affecting abortion levels could be better than this approach which presumes that such factors are fully reflected in comparative trends.

Final note: comparison to GI estimates published in 2017

The estimates described above were completed in August 2016 for the *Abortion Worldwide Report* (2017). Subsequently, in March 2017 new GI estimates for the United States were published (Jones and Jerman, 2017). These estimates are compared in Table 8. Our estimate for 2014 differed from the GI estimate by 1.5%. Alternately, our estimate of the 2011-2014 decline was underestimated relative to the GI estimate by 10.3%—note that the weighting scheme we employed for state-level estimates is intentionally biased towards no change, to offset the possibility that states with early official reports tend to have changes larger than the norm. At the state level, our estimates differed from the GI 2017 estimates by an average of +3.2% (± 13.1); for the 10 states with the largest numbers of abortions in 2014 the average difference was -1.0% (± 10.1).

Table 8. Comparison of preceding estimates for the U.S. to new GI estimates

year	adopted estimates in Aug 2016 (Table 5)	GI estimates in Mar 2017 (Jones and Jerman, 2017)	notes
2011	1,058,500	1,058,500	from Jones and Jerman
2012	1,018,300	1,011,000	
2013	962,700	958,700	
2014	939,800	926,200	
2015	924,200		
% change, 2011 to 2014	-11.2%	-12.5%	

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