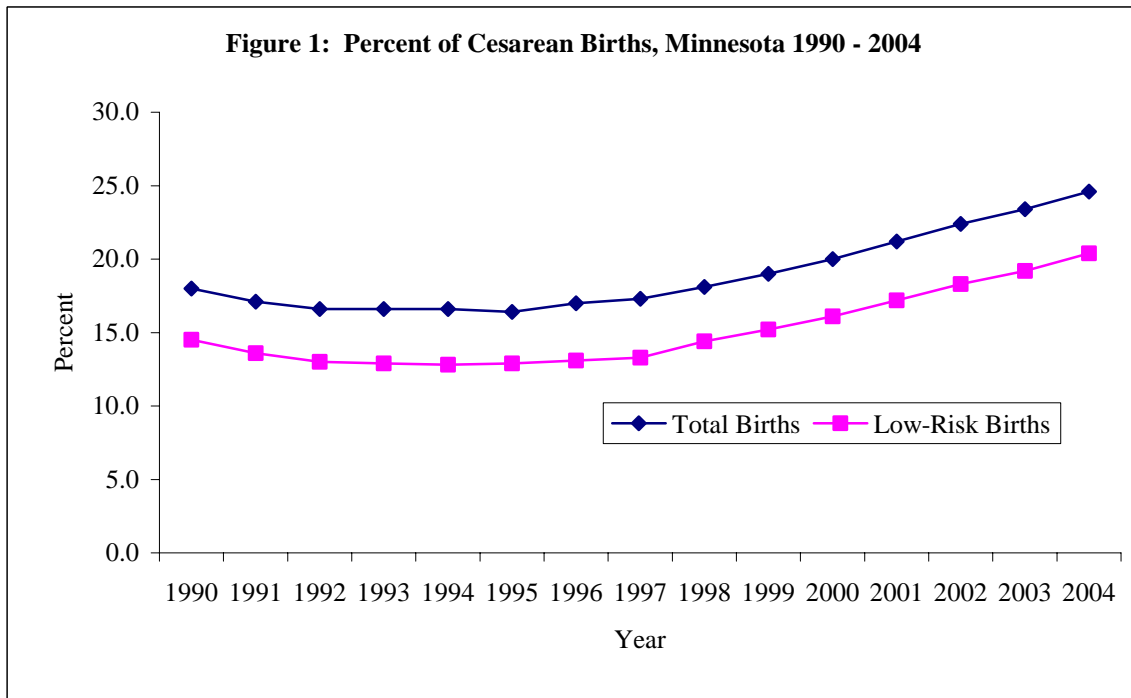


Minnesota Births 1990 – 2004: The pattern of increasing C-Section births

In the period 1990-1998, C-Section rates for births to Minnesota residents remained remarkably stable, averaging 17.7% of total births each year. Starting in 1999, there has been a gradual but steady increase of roughly 1.1 % yearly in the rate of total C-sections, rising from 18.0% in 1990 to 24.6% of all births in 2004. Data from the Minnesota birth certificate does not address whether a C-section was planned, but trends in delivery methods can be seen.

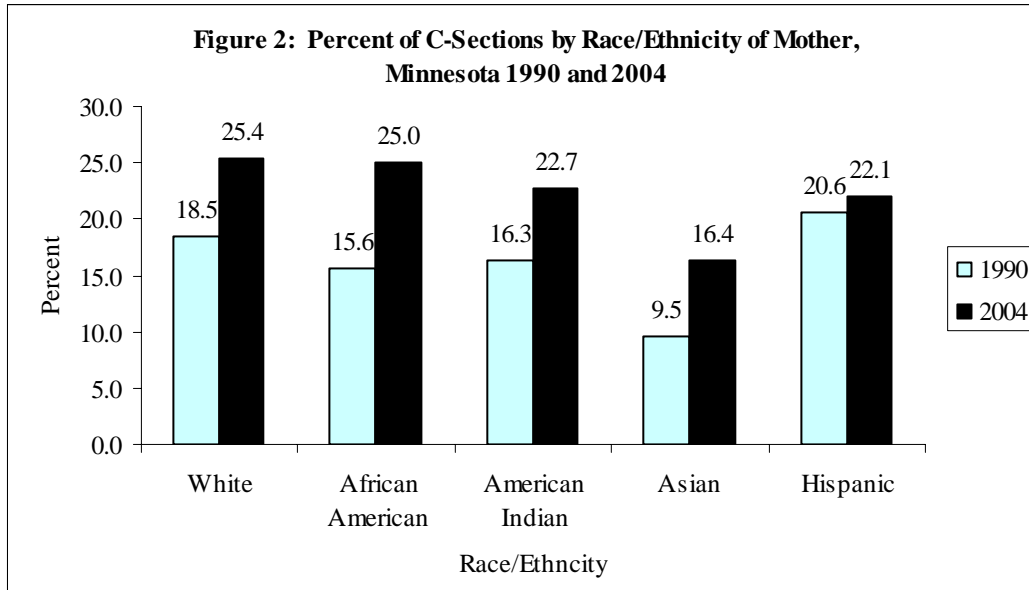


A low-risk birth, as defined by Centers for Disease Control and Prevention, is a full-term (at least 37 weeks of gestation), singleton pregnancy, with vertex fetal presentation (a non-breech birth). These pregnancies are assumed to be the least problematic, with the greatest chance for an uncomplicated, vaginal delivery.

From 1990-1998, C-section births averaged 13.4% of all low-risk births. Looking at these low-risk births separately, the pattern remains where, starting in 1999, the number of C-section births increases 1.0% yearly, from 14.5% in 1990 to 20.4% in 2004 (Figure 1).

Race and Ethnicity of Mother

Breaking down the C-section rates by race and ethnicity of mother shows the greatest increase for African American mothers; Hispanic mothers show the least change in the percent of C-section births (Figure 2).



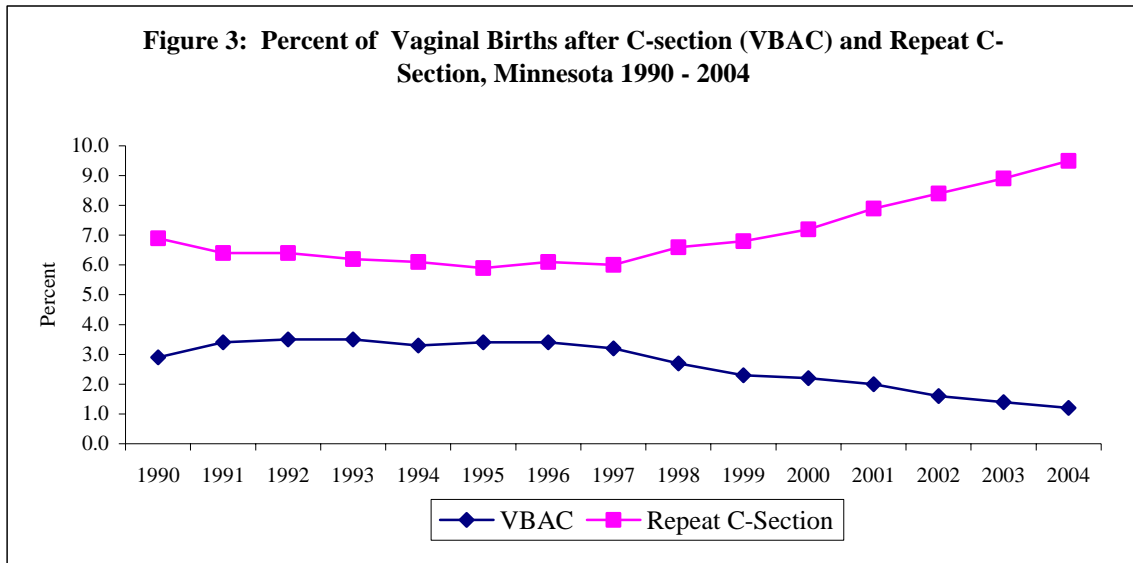
Dividing these groups further into U.S. born vs. foreign-born mothers shows increasing patterns for all groups, except for Asian, U.S. born mothers; counts for foreign-born American Indians are too small for analysis (Table 1).

Table 1: Percent of Births by C-section by Race/Ethnicity of Mother and Birthplace of Mother, Minnesota 1990 and 2004

Race of Mother	Birthplace of Mother							
	Foreign Country				United States			
	1990		2004		1990		2004	
N	Percent	N	Percent	N	Percent	N	Percent	
Asian	172	8.7	599	17.6	21	29.2	69	10.4
White	233	17.6	450	21.8	10,902	18.5	13,340	25.6
African American	29	18.8	679	26.3	359	15.4	716	24.0
American Indian	4	*	6	*	203	16.2	296	22.5
Hispanic	69	20.8	813	21.0	146	20.5	362	25.5

Repeat C-section

Repeat C-section births, where a mother has already had a previous C-section birth, are also steadily increasing; leading to a corresponding decrease in the number of vaginal births after a previous caesarian (Figure 3).



Age of Mother

Teen mothers age 19 and under showed the slightest increase in C-section births; age 40 and older mothers showed the greatest increase in percent C-sections, increasing 8.9% between 1990 and 2004 (Table 2).

Not only is the C-section rate increasing within the older mother group, the proportion of total births per year to women 40 and older has been increasing as well, from 1.2% in 1990, more than doubling to 2.6% by 2004; this additionally contributes to the increase in C-section births. By contrast, births to teen mothers have been gradually dropping over the years, from 8.0% of all births in 1990 to 7.1% in 2004.

Table 2: Percent of C-section Births by Age of Mother – Minnesota 1990 and 2004

Age Group	1990	2004
19 and under	13.2	15.7
20-39	18.3	24.9
40 and over	26.7	35.6

General Facts

Multiple births made up 2.3% of births in 1990; by 2004 the percent of multiples rose to 3.5% of total births. The majority of multiple births result in C-section, and this also began increasing in 1998. In 1990 C-section births to multiples was 53.8%, rising to 65% by 2004.

Induction at birth has increased steadily over the years, from 12.4% of all births in 1990 to 21.4% in 2004. However, this increase is primarily from vaginal births, where induction increased from 12.8% in 1990 to 24.1% in 2004. C-section births involving induction went from 11.5% in 1990 to a high of 16.9% in 1997, then declining to 13.8% in 2004.

Finally, over the years there have been anecdotal assumptions that births are increasingly scheduled for convenience, around the daily appointments and golf tee-times of a typical hectic life. This is an amusing thought, but C-section births, which can be well-planned, show only a slight weekend decrease from 1990 to 2004; this also holds true for vaginal births, which cannot be as well-scheduled (Tables 3 and 4).

Table 3: Vaginal Births by Day of the Week, Minnesota 1990 and 2004

	1990		2004	
	N	Percent	N	Percent
Sunday	6,627	12.2	5,687	10.7
Monday	8,122	14.9	7,748	14.6
Tuesday	8,237	15.1	8,213	15.5
Wednesday	8,339	15.3	8,346	15.7
Thursday	8,249	15.2	8,322	15.7
Friday	7,911	14.5	8,216	15.5
Saturday	6,896	12.7	6,464	12.2

Table 4: C-Section Births by Day of the Week, Minnesota 1990 and 2004

	1990		2004	
	N	Percent	N	Percent
Sunday	938	7.8	1,202	7.0
Monday	1,934	16.2	2,779	16.1
Tuesday	1,930	16.1	3,089	17.9
Wednesday	1,973	16.5	2,963	17.2
Thursday	2,017	16.9	2,832	16.4
Friday	2,047	17.1	2,956	17.1
Saturday	1,115	9.3	1,425	8.3

Minnesota Vital Signs

**Minnesota Center for Health Statistics
Office Health Policy, Statistics and Informatics
Minnesota Department of Health**

Vital Signs is available on the Minnesota Center for Health Statistics website, <http://www.health.state.mn.us/divs/chs/vitalsigns/index.html>. If you require this document in another format such as large print, Braille, or cassette tape call 651/201-3504 or email healthstats@health.state.mn.us.



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