



# No baby booms or birth sex ratio changes following Fifty Shades of Grey in the United States



Victor Grech

Academic Department of Paediatrics, Mater Dei Hospital, Malta

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## ABSTRACT

**Introduction:** The Fifty Shades of Grey (FSOG) trilogy were publicised by the media as inflaming increased coital activity, and that this would result a baby boom. Furthermore, increased coital activity skews the sex ratio at birth (M/T) toward male births. This study was carried out in order to ascertain whether there were any spikes in total births or in M/T in the United States (US) circa nine months following the FSOG books.

**Methods:** Monthly male and female births for the US were obtained directly from the website of the Centre for Disease Control (01/2007–12/2015).

**Results:** This study analysed 36,499,163 live births (M/T 0.5117, 95% CI 0.5116–0.5119). There are no discernible spikes in total births or M/T at annual level, or circa nine months after FSOG book releases i.e. 04/2012 and 01/2013.

**Discussion:** The absence of spikes in births or M/T may have been due to exaggeration of the FSOG effect, it may only have provoked planned pregnancies, or modern contraception was sufficiently effective to prevent extra conceptions. The media build-up may also have stimulated a Hawthorne effect, with FSOG-affected individuals employing effective contraception. This study highlights the importance of measurement of cause and effect since anticipated results may not always ensue from events.

## 1. Introduction

Fifty Shades of Grey (FSOG) is an erotic romance by the British author E. L. James which was published in July 2011. The storyline depicts the complexly sexualised relationship between a young business magnate and a college graduate. The plot is characterised by soft porn elements that include risqué themes such as bondage, dominance and submission, and sadio-masochism. The media greatly highlighted this facet, with comments such as “said to have sparked a ‘mommy porn’ revolution” [1]. FSOG was the first of a trilogy that dominated best-seller lists the world over [2]. The second and third volumes, Fifty Shades Darker and Fifty Shades Freed, were published in April 2012 and a film adaptation of the first book was released in 13 February 2015.

All four releases, especially the first book, were plugged by the popular media as provoking increased coital activity, and that such behaviour would ensue in a baby boom. Media hype with regard to this prospect was particularly forceful: “It’s one of the hottest and best-selling book series of all time. It has made millions of readers swoon”

[1]. Authorities were cited as confirming this effect and for example, Robin Milhausen, an Associate Professor of Family Relations and Human Sexuality at the University of Guelph, was quoted as saying that “the material is arousing...Many women respond to the book and don’t even know it. It’s leading to more sex” [3].

In addition, the male to female ratio at birth (male divided by total births: M/T) is expected to approximate 0.515 (with a slight excess of male births). Numerous factors may affect this ratio [4], and it has been shown that increased coital activity may result in a rise in M/T, as will be later discussed [5].

This study was thus carried out in order to ascertain whether there were any spikes in total births or in M/T in the United States (US) overall, and in individual races, circa nine months following the publication of FSOG books.

## 2. Methods

Monthly male and female births for the US were obtained from the website of the US Centers of Disease Control (CDC Wonder). Data was

E-mail address: [victor.e.grech@gov.mt](mailto:victor.e.grech@gov.mt).

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**Table 1**  
Annual births and M/T for the United States overall and by race, 2007–2015.

All	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Male	2,208,071	2,173,389	2,113,856	2,046,935	2,024,052	2,021,434	2,012,954	2,040,701	2,036,161	18,677,553
Female	2,108,162	2,074,305	2,016,809	1,952,451	1,929,538	1,931,407	1,919,227	1,947,375	1,942,336	17,821,610
Total	4,316,233	4,247,694	4,130,665	3,999,386	3,953,590	3,952,841	3,932,181	3,988,076	3,978,497	36,499,163
UCI	0.5120	0.5121	0.5122	0.5123	0.5124	0.5119	0.5124	0.5122	0.5123	0.5119
M/T	0.5116	0.5117	0.5117	0.5118	0.5120	0.5114	0.5119	0.5117	0.5118	0.5117
LCI	0.5111	0.5112	0.5113	0.5113	0.5115	0.5109	0.5114	0.5112	0.5113	0.5116
Asian or Pacific Islander										
Male	131,300	130,590	129,526	127,837	130,729	140,590	137,008	145,647	144,867	1,218,094
Female	123,188	122,595	121,563	119,049	123,186	132,212	128,665	137,076	136,397	1,143,931
Total	254,488	253,185	251,089	246,886	253,915	272,802	265,673	282,723	281,264	2,362,025
UCI	0.5179	0.5177	0.5178	0.5198	0.5168	0.5172	0.5176	0.5170	0.5169	0.5163
M/T	0.5159	0.5158	0.5159	0.5178	0.5149	0.5154	0.5157	0.5152	0.5151	0.5157
LCI	0.5140	0.5138	0.5139	0.5158	0.5129	0.5135	0.5138	0.5133	0.5132	0.5151
White										
Male	1,708,315	1,676,718	1,625,436	1,571,470	1,547,927	1,535,177	1,529,972	1,547,425	1,543,326	14,285,766
Female	1,628,311	1,597,445	1,547,857	1,497,845	1,472,428	1,464,643	1,455,785	1,472,438	1,469,529	13,606,281
Total	3,336,626	3,274,163	3,173,293	3,069,315	3,020,355	2,999,820	2,985,757	3,019,863	3,012,855	27,892,047
UCI	0.5125	0.5126	0.5128	0.5126	0.5131	0.5123	0.5130	0.5130	0.5128	0.5124
M/T	0.5120	0.5121	0.5122	0.5120	0.5125	0.5118	0.5124	0.5124	0.5122	0.5122
LCI	0.5115	0.5116	0.5117	0.5114	0.5119	0.5112	0.5119	0.5119	0.5117	0.5120
Black or African American										
Male	343,279	340,885	334,142	323,956	321,666	322,164	322,365	324,821	325,262	2,958,540
Female	332,397	329,924	323,476	312,469	311,235	311,962	312,395	315,741	314,817	2,864,416
Total	675,676	670,809	657,618	636,425	632,901	634,126	634,760	640,562	640,079	5,822,956
UCI	0.5092	0.5094	0.5093	0.5103	0.5095	0.5093	0.5091	0.5083	0.5094	0.5085
M/T	0.5081	0.5082	0.5081	0.5090	0.5082	0.5080	0.5079	0.5071	0.5082	0.5081
LCI	0.5069	0.5070	0.5069	0.5078	0.5070	0.5068	0.5066	0.5059	0.5069	0.5077
American Indian or Alaska Native										
Male	25,177	25,196	24,752	23,672	23,730	23,503	23,609	22,808	22,706	215,153
Female	24,266	24,341	23,913	23,088	22,689	22,590	22,382	22,120	21,593	206,982
Total	49,443	49,537	48,665	46,760	46,419	46,093	45,991	44,928	44,299	422,135
UCI	0.5136	0.5130	0.5131	0.5108	0.5158	0.5145	0.5179	0.5123	0.5172	0.5112
M/T	0.5092	0.5086	0.5086	0.5062	0.5112	0.5099	0.5133	0.5077	0.5126	0.5097
LCI	0.5048	0.5042	0.5042	0.5017	0.5067	0.5053	0.5088	0.5030	0.5079	0.5082

available from January 2007 to December 2015. Data by race was available as Asian or Pacific Islander, White, Black or African American and American Indian or Alaska Native.

Data was imported into Microsoft Excel, which was used analysis and charting. The quadratic equations of Fleiss were used for the calculation of 95% confidence intervals for ratios [6]. Chi tests and chi tests for trends for annual male and female births were used throughout using the Bio-Med-Stat Excel add-in for contingency tables [7].

The null hypothesis was that FSOG releases in July 2011 and April 2012 did not influence total births and M/T circa nine months later, i.e. April 2012 and January 2013.

### 3. Results

This study analysed 36,499,163 live births (M/T 0.5117, 95% CI 0.5116–0.5119). Annual births and M/T, overall and by race, are shown in Table 1. M/T was Asian or Pacific Islander > White > Black or African American and American Indian or Alaska Native (Fig. 1).

There are no discernible spikes in total births or M/T at annual level, overall or in any of the four races.

A subsection of the dataset, a monthly depiction of births and M/T for January 2012 to December 2013 is shown in Table 2. There are no

discernible spikes in total births or M/T at monthly level at/around the months in question i.e. April 2012 and January 2013.

### 4. Discussion

It has been demonstrated that increased coital activity may increase the birth rate (in the absence of adequate contraception) and also increase M/T. This is because the sex ratio at conception follows a U-shaped regression curve on the cycle day of insemination. Female conceptions result most often from conceptions around ovulation and male conceptions occur more frequently at the beginning and end of the menstrual cycle [8,9].

This phenomenon has been proposed as the reason for the observed M/T elevations that occur in relation to wars [5]. More recently, a similar rise in M/T was noted in Japan just prior to 1965 and immediately following 1967, i.e. on both sides of the Chinese Zodiac Fire Horse Year which was deemed inauspicious for a female birth [10]. This may also have been responsible for a rise in M/T following the FIFA World Cup in South Africa in 2010 [11].

In this study, no spikes in births or in M/T are evident post FSOG exposure. The popular media had salaciously reported that “the books’ plot, revolving around the explicitly detailed relationship between

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