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Recent trends and patterns in US abortion-to-live birth ratios based on publicly  
available state websites

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An abstract of  
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2012

## Abstract

Recent trends and patterns in US abortion-to-live birth ratios based on publicly available state websites  
By Orawee Chinthakanan

**Background:** State and national policy development on abortion requires current information. Abortion data on a few state websites may be more current and useful in monitoring recent trends and patterns of abortion than national reports by state of occurrence by CDC or Guttmacher Institute.

**Objective:** To determine the overall trends and variations in abortion-to-live birth ratios by age, race, ethnicity and marital status by state of residence for 2004-2009 for states that have published data

**Methods:** We searched all state health department websites for data on characteristics of women having abortions and live births by state of residence. We used 16 reporting areas (AZ, DE, DC, GA, ID, IN, MN, MO, NM, NYC, NYS, PA, TX, WA, WI) that had available data for abortion categorized by ethnicity. We calculated overall ratios for states with data. We did not conduct statistical analysis on trends because abortion ratios vary greatly by geographic area, and the temporal changes are not in the same direction for different reporting areas.

**Results:** The abortion ratio for overall, Hispanic and non-Hispanic are 278.2, 248.9, and 282.7 per 1,000 live births respectively. For non-Hispanics, Blacks have the highest ratio compared to other, Alaska/American Indian/Hawaiian, Asian/ Pacific Islander, and White (654.3, 365.8, 276.0, 263.0, 173.0 per 1,000 live births). For women under age 20, Asians have the highest abortion ratio; for older women, Blacks have the highest ratio. The highest abortion ratio occurred among women aged less than 15 years, followed by aged 15-19 for most groups. The abortion ratio trend is steady in women aged 25-35 years, then rising among those aged 40 years or older. The abortion ratio among Hispanic women who are married is lower than unmarried women (61.9 vs. 224.1 per 1,000 live births)

**Conclusion:** Overall, trends by race, ethnicity, age, marital status are stable for 2004 through 2009.

**Public Health Implication:** With technical support from NAPHSIS and CDC, many states would benefit from developing standard reporting and web-based publication of abortion statistics; improving the timely use of this data for informing program and policy decision making.

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## Chapter1: Introduction

Abortion is one of the most common medical interventions undergone by reproductive aged women in the United States[1], because of the high level of unintended pregnancy. The median state unintended pregnancy rate was 51 per 1,000 women aged 15–44[2]. In the United States, 54% of unintended pregnancies end in abortion[3] and 95% of abortions are associated with unintended pregnancies.[4]

During the 1960s twenty states in the U.S. had a major movement to legalize abortion[5]. In 1967, Colorado became the first state to legalize abortion in cases of rape, incest, or in which pregnancy would lead to permanent physical disability of the woman. In 1973, *Roe v. Wade* Supreme Court decision struck down state laws that made abortion illegal.

Since 1969, central health agencies voluntarily provide annual summary tables on Abortion Surveillance to CDC [6]. In 1978, NCHS introduced “the U.S. Standard Report of Induced Termination of Pregnancy” for reporting of induced abortion to get standardized data from states[7]. The National Center for Health Statistics (NCHS), tried to develop an abortion reporting system as part of vital statistics but for fiscal reasons, NCHS terminated the abortion reporting system after data year 1993[8]. Currently CDC’s National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) and the Guttmacher Institute are the primary sources of statistical data on abortion. The Guttmacher institute, an independent nonprofit research organization, conducts a periodic direct survey of abortion providers; however, this is not an annual survey.

In the U.S., each state that collects abortion data uses its own form. Although states’ forms resemble the U.S. Standard Report of Induced Termination of Pregnancy, other states’ forms deviate substantially from this template. For some states CDC’s published report does not reflect the most current data on state websites. And because state forms vary, not all states

have data for this analysis. State and national abortion policy development should be evidence-based and informed by the most current information. Abortion data in states, by place of residence or occurrence, may be more current and more useful in monitoring recent trends and patterns of abortion than national and state reports by CDC or Guttmacher Institute. We chose to use the abortion data reported by state of residence rather than by state of occurrence to be comparable with data reported to CDC. The purpose of this study is to determine overall trends and variations in abortion-to-live birth ratios by age, race, ethnicity and marital status, by state of residence for 2004-2009, for states that have website published data.

We illustrate trends and patterns of abortion ratios for selected states which have published abortion data on their websites[9-17] for 2004-2009 on age, race, ethnicity (Hispanic), and marital status. We use three measures of abortion: 1) the total number of abortions in a given population, 2) the percentage of abortions within a given population, and 3) the abortion ratio(the number of abortions per 1,000 live births within a given population). The abortion ratio reflects the ratio of pregnancies in a population that end in abortion compared with live birth; abortion ratios change both according to the proportion of pregnancies in a population that are unintended and the proportion of unintended pregnancies that are continued. We chose to use abortion ratios instead of abortion rates because we have more accurate data on numbers of births by maternal age, race, residence than we have on population estimates; moreover high abortion ratios may indicate populations in special need of family planning counseling and services. We searched all state health department websites for data on characteristics of women having abortions and live births by state of residence. For some states we used the live birth data from CDC website[18].We used 16 reporting areas (AZ, DE, DC, GA, ID, IN, MN, MO, NM, NYC, NYS, PA, TX, WA, WI) that had available data for abortion categorized by ethnicity. For 11 of 16 areas we subtracted Hispanic data from overall data to get non-Hispanic data (DE, DC, ID, IN, MN, NYS, PA, WA, WI). In this study, each variable was categorized as the following: age group in years of the women (<15,



15-19, 20-24, 25-29, 30-34, 35-39,  $\geq 40$ ), race/ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic Asian/ Pacific Islander, non-Hispanic Native Hawaiian/ American Indian/ Alaska, non-Hispanic others, and Hispanic), ethnicity (Hispanic and non-Hispanic), marital status (married, including currently married or separated; unmarried, including never married, widowed, or divorced).

We calculated overall abortion ratios for each state included in this analysis, and abortion ratios for each category with available data. We did not conduct statistical analysis on trends because abortion ratios vary greatly by geographic area, and the temporal changes are not in the same direction for different reporting areas. We were not required to submit to IRB as we did not conduct human subject research.

## **Chapter 2: Comprehensive Review of the Literature**

### **Legalized abortion**

Prior to the middle of nineteenth century, abortion was only minimally regulated in the United States. The abortions that occurred before quickening were not regulated at all. Abortion was commonly practiced and freely advertised in newspapers, offered by wide range of practitioners of vary degrees of medical training and credentials. Abortion activity was attempted by self-abortion using various herbs and drugs[19]. The estimated illegal abortion is one of the largest criminal activities in the nation, approximately one million women annually, between 500 to 10,000 of these women die, another 350,000 suffer from complications and injuries[20]. The most important force in the campaign to criminalize abortion were the physicians. The American Medical Association (AMA), founded in 1847, made the abortion issue as the highest priority[21]. The criminalization of this medical procedure was advocated to exclude nonmedical doctors from providing medical and obstetric services. In nineteenth-century when childbirth was a major cause of maternal death, the therapeutic abortion was not difficult to justify. The regulations allowed physicians to perform therapeutic abortions for the pregnant women's life was in danger. It was not hard for women to seek abortion care. In the twentieth century with advanced medical technology, childbirth became less risky. In addition, doctors began to perform procedures in hospitals, they came under more inspection from their peers and hospital review boards. These two factors began to restrict access to legal abortion services. By the mid-twentieth century, physicians began to advocate a clarification of their legal status for both protect themselves from liability and to provide service for their patients. In 1959, the American Law Institute proposed a model penal code that would make abortion legal in more than life-threatening circumstances, including in cases of rape or incest, when the child would be born with grave physical or mental defects, and when the physical or mental health of pregnant woman was at

stake. In 1960s- 1970s, the modern abortion regulation reform movement began as a campaign for self-regulation.

The Supreme Court's 1973 decision in *Roe v. Wade* legalizing abortion nationwide[22, 23] that drew upon ideas about individualism and privacy to conclude that the state had no rights to intervene in the first trimester in women's abortion decisions. This individualist understanding of rights was codified in further decisions. Justice Powell wrote for the Supreme Court majority in *Maher v. Roe* in 1977 that "We are not unsympathetic to the plight of an indigent woman who desires an abortion, but the Constitution does not provide judicial remedies for every social; and economic ill". Social and economic problems that do not arise directly from state action are seen as outside the purview of the rights secured by *Roe v. Wade*, just as the Court had historically viewed the inequalities of bargaining position between employers and employees as merely private. When the Supreme Court revisited *Roe* in *Webster* (1989) and *Casey* (1992) decisions, it allowed the state more latitude in intervening to protect the fetus but continued to define women's right as that of making an individual choice[24].

Seven years after *Roe v. Wade*, over 1.6 million abortions were being performed annually. It was accounted almost one abortion for every two live births. In addition, legalized abortion may lead to reduced crime for two reasons. First, women who have abortions are those most at risk to give birth to children who would engage in criminal activity. Second, women may use abortion to optimize the timing of childbearing. As a result, legalized abortion provides a woman the opportunity to delay childbearing if the current conditions are suboptimal. Children are born into better environments, and future criminality is likely to be reduced[25].

### **Abortion Reporting in the United States**

Since the legalized abortion movement in several states during the late 1960s made an impact on distinguish between spontaneous and induced termination of pregnancy in reporting. Therefore, some states began to collect induced abortion data separately[26]. In 1969, Center

for Disease Control and Prevention began conducting abortion surveillance to document the number and characteristics of women obtaining legal induced abortions [26, 27]. Around 1973, the National Center for Health Statistics (NCHS) took responsible to obtain abortion data collection. In addition, NCHS introduced a standard form for the reporting of induced abortion (the U.S. Standard Report of Induced Termination of Pregnancy) in 1978. Presently, CDC's abortion surveillance system remains the main source of abortion data. The primary responsibility for recording, collecting and managing data rests with the states' vital statistics agencies that submit data to CDC on voluntary basis[26].

Another abortion data source is from the Alan Guttmacher Insitute. They identified abortion providers from a variety of sources (yellow pages for entire country, the membership directory of the National Abortion Federation, provider listings on the internet and miscellaneous other sources such as mifepristone distributor). They developed questionnaire as a tool for collecting data. All providers were asked the number of induced abortions they performed during the survey period, the minimum and maximum gestations at which they will perform surgical abortions and medical abortions, and whether they offered early medication abortion, and distance traveled by clients[28].

### **States' abortion reporting**

The laws of collect abortion data as required are different by states. Induced termination of pregnancy reporting is required in 35 states and New York City. By laws, they require every hospital or providers to file a report regularly on each abortion performed. These laws mandate that abortion reports be submitted to the state department of health, state registrar or state vital statistics officer, and that the agency in turn publish the statistics. Five states and the District of Columbia collect abortion data on a voluntary basis, and their health departments provide forms and publish data (table 1).

Table 1- Abortion reporting, by jurisdiction[26]

Jurisdiction	Type of reporting			
	Mandatory			Voluntary
	Abortion statute	Fetal death statute	Regulatory policy	
Alabama	X			
Alaska				X
Arizona			X	
Arkansas	X <sup>a</sup>			
California				
Colorado		X <sup>b</sup>		
Connecticut			X	
Delaware	X			
Florida	X <sup>a</sup>			
Georgia	X <sup>a</sup>			
Hawaii		X		
Idaho	X <sup>a</sup>			
Illinois	X <sup>a</sup>			
Indiana	X			
Iowa	X <sup>a</sup>			
Kansas	X			
Kentucky	X			
Louisiana	X			
Maine	X			
Maryland				X
Massachusetts	X			
Michigan	X			
Minnesota	X <sup>a</sup>			
Mississippi	X <sup>a</sup>			

Missouri	X <sup>a</sup>			
Montana	X			
Nebraska	X			
Nevada	X <sup>a</sup>			
New Hampshire				X
New Jersey				X <sup>c</sup>
New Mexico	X <sup>a</sup>			
New York		X		
North Carolina	X <sup>a</sup>			
North Dakota	X <sup>a</sup>			
Ohio	X <sup>a</sup>			
Oklahoma				
Oregon	X <sup>a</sup>			
Pennsylvania	X			
Rhode Island		X <sup>a</sup>		
South Carolina	X <sup>a</sup>			
South Dakota	X			
Tennessee	X			
Texas	X <sup>a</sup>			
Utah	X			
Vermont	X			
Virginia		X <sup>a</sup>		
Washington			X	
West Virginia				X <sup>c</sup>
Wisconsin	X			
Wyoming	X			

<sup>a</sup>A regulatory policy guides abortion data collection in addition to state statute.

<sup>b</sup>Abortion reporting is done in accordance with the state's death certification statute.

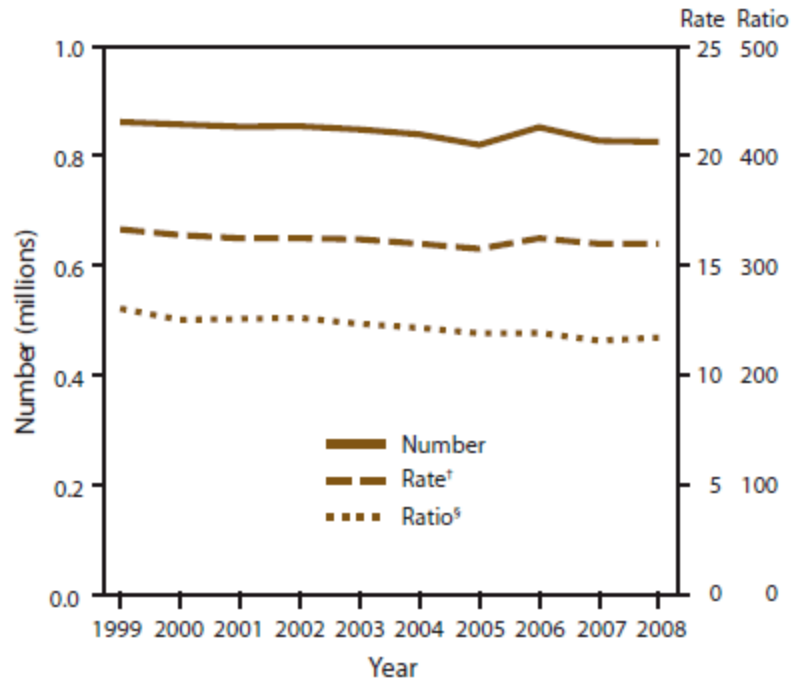
<sup>c</sup>A broad health statute provides legal authority for abortion-related data collection.

## **Characteristics of women who obtained a legal abortion**

Since abortion surveillance 1972, CDC reported number of abortion, abortion rate, and abortion ratio categorized by residence (in and out-of-state), age group ( $\leq 19$ , 20- 24,  $\geq 25$ ), race (white, black, other), marital status (married, unmarried), number of live births (0, 1, 2, 3,  $\geq 4$ ), type of procedure (curettage, intrauterine instillation, other), and weeks of gestation ( $\leq 8$ , 9- 10, 11- 12, 13- 15, 16- 20,  $\geq 21$ ). In 1990, data of Hispanic origin (Hispanic, Non-Hispanic) was first available on abortion reports submitted by central health agencies to CDC [17]. 2007 was the first year for which cross-classified race/ethnicity (Non-Hispanic white, Non-Hispanic black, Non-Hispanic other, Hispanic) data were compiled[29].

From abortion surveillance 2008, CDC reported abortion by occurrence, place of residence, race (white, black, other), ethnicity (Hispanic/ Non-Hispanic), race/ ethnicity (Non-Hispanic white, Non-Hispanic black, Non-Hispanic other, Hispanic), marital status (married/ unmarried), age group ( $<15$ , 15- 19, 20- 24, 25- 29, 30- 34, 35- 39,  $\geq 40$ ), method type (curettage, medical, intrauterine instillation), number of previous induced termination of pregnancy, gestational age ( $\leq 8$ , 9- 13, 14- 15, 16- 17, 18- 20,  $>21$  weeks), and case-fatality rate. The abortion trends are remained 3%, 4%, and 10% lower, for abortion numbers, rates, and ratios respectively, in 2008 than they had been in 1999[29].

Figure 1- Number, rate, and ratio of abortions performed, by year, United States<sup>a</sup>, 1999-2008[29]



<sup>a</sup> Data are for 45 reporting areas; excludes Alaska, California, Louisiana, Maryland, New Hampshire, Oklahoma, and West Virginia.

<sup>†</sup> Number of abortions per 1,000 women aged 15- 44 years.

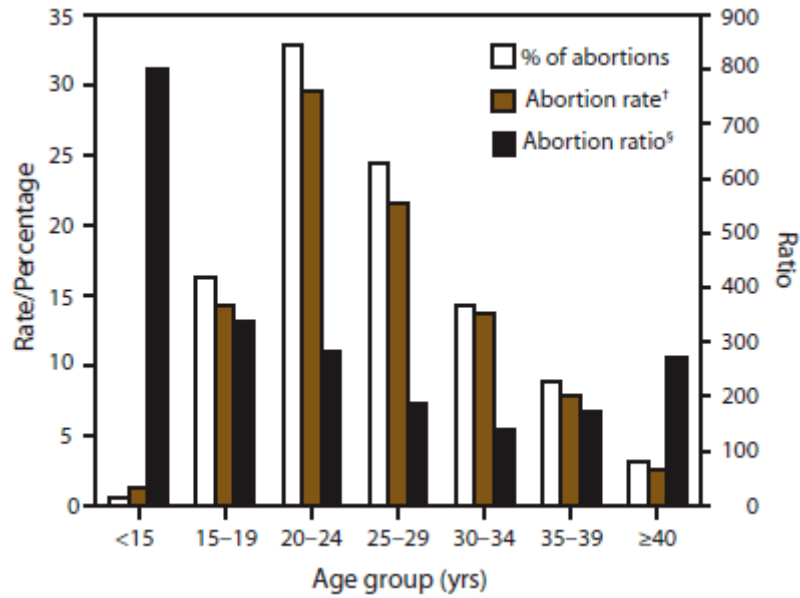
<sup>§</sup> Number of abortions per 1,000 live births.

The abortion ratio of overall, Hispanic and non-Hispanic are 214, 192 and 220 per 1,000 live births respectively. Non-Hispanic white women had the lowest abortion ratios (140 abortions per 1,000 live births), whereas non-Hispanic black women had the highest abortion ratios (472 abortions per 1,000 live births). There is no abortion trends by race/ethnicity because CDC began compiling this variable since 2007.

Women aged 20- 29 years accounted for the majority (57.1%) of abortions and had the highest abortion rates (29.6 and 21.6 abortions per 1,000 women aged 20-24 and 25-29 years, respectively). Women in the youngest and oldest age groups had the smallest percentage of abortions (0.5% and 3.1% respectively).

Figure 2- Abortion ratio, rate, and percentage of total abortions, by age group of women who obtained a legal abortion, United States<sup>a</sup>, 2008





<sup>a</sup> Data are for 47 areas; excludes California, Florida, Maryland, New Hampshire, and Wyoming.

<sup>†</sup> Number of abortions per 1,000 women aged 15-44 years.

<sup>§</sup> Number of abortions per 1,000 live births.

Abortion trends by marital status from 30 reporting areas shows that percentage of abortions accounted for by unmarried women increased 4% from 81.2% in 1999 to 84.4% in 2008.

## **Chapter 3: Manuscript**

Title page for Maternal and Child Health Journal Manuscript Draft

Title: Recent trends and patterns in US abortion-to-live birth ratios based on publicly available state websites

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**Recent trends and patterns in US abortion-to-live birth ratios based on publicly available state websites**

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## **Abstract**

**Background:** State and national policy development on abortion requires current information. Abortion data on a few state websites may be more current and more useful in monitoring recent trends and patterns of abortion than national reports by state of occurrence by CDC or Guttmacher Institute.

**Objective:** To determine the overall trends and variations in abortion-to-live birth ratios by age, race, ethnicity and marital status by state of residence for 2004-2009 for states that have published data

**Methods:** We searched all state health department websites for data on characteristics of women having abortions and live births by state of residence. For some states we used the live birth data from CDC website; and for some states we subtracted Hispanic data from overall data to get non-Hispanic data. We used 16 reporting areas (AZ, DE, DC, GA, ID, IN, MN, MO, NM, NYC, NYS, PA, TX, WA, WI) that had available data for abortion categorized by ethnicity. We calculated overall ratios for states with data. We did not conduct statistical analysis on trends because abortion ratios vary greatly by geographic area, and the temporal changes are not in the same direction for different reporting areas.

**Results:** The abortion ratio for overall, Hispanic and non-Hispanic are 278.2, 248.9, and 282.7 per 1,000 live births respectively. For non-Hispanics, Blacks have the highest ratio compared to other, Alaska/American Indian/ Hawaiian, Asian/ Pacific Islander, and White (654.3, 365.8, 276.0, 263.0, 173.0 per 1,000 live births). For women under age 20, Asians have the highest abortion ratio; for older women, Blacks have the highest ratio. The highest abortion ratio occurred among women aged less than 15 years, followed by aged 15-19 for most groups. The abortion ratio trend is steady in women aged 25-35 years, then rising among those aged 40 years or older. The abortion ratio among Hispanic women who are married is lower than unmarried women (61.9 vs. 224.1 per 1,000 live births)

**Conclusion:** Overall, trends by race, ethnicity, age, marital status are fairly stable for 2004 through 2009.

**Public Health Implication:** With technical support from NAPHSIS and CDC, many states would benefit from developing standard reporting and web-based publication of abortion statistics; improving the timely use of this data for informing program and policy decision making.

**Keyword:** abortion trends, United States abortion ratio, state website

## **Introduction**

Abortion is one of the most common medical interventions undergone by reproductive aged women in the United States[1], because of the high level of unintended pregnancy. The median state unintended pregnancy rate was 51 per 1,000 women aged 15–44[2]. In the United States, 54% of unintended pregnancies end in abortion[3] and 95% of abortions are associated with unintended pregnancies.[4]

During the 1960s twenty states in the U.S. had a major movement to legalize abortion[5]. In 1967, Colorado became the first state to legalize abortion in cases of rape, incest, or in which pregnancy would lead to permanent physical disability of the woman. In 1973, *Roe v. Wade* Supreme Court decision struck down state laws that made abortion illegal.

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In the U.S., each state that collects abortion data uses its own form. Although states’ forms resemble the U.S. Standard Report of Induced Termination of Pregnancy, other states’ forms deviate substantially from this template. For some states CDC’s published report does not reflect the most current data on state websites. And because state forms vary, not all states have data for this analysis. State and national abortion policy development should be evidence-based and informed by the most current information. Abortion data in states, by

place of residence or occurrence, may be more current and more useful in monitoring recent trends and patterns of abortion than national and state reports by CDC or Guttmacher Institute. We chose to use the abortion data reported by state of residence rather than by state of occurrence to be comparable with data reported to CDC. The purpose of this study is to determine overall trends and variations in abortion-to-live birth ratios by age, race, ethnicity and marital status, by state of residence for 2004-2009, for states that have website published data.

### **Materials and Methods**

We illustrate trends and patterns of abortion ratios for selected states which have published abortion data on their websites[9-19] for 2004-2009 on age, race, ethnicity (Hispanic), and marital status. We use three measures of abortion: 1) the total number of abortions in a given population, 2) the percentage of abortions within a given population, and 3) the abortion ratio(the number of abortions per 1,000 live births within a given population). The abortion ratio reflects the ratio of pregnancies in a population that end in abortion compared with live birth; abortion ratios change both according to the proportion of pregnancies in a population that are unintended and the proportion of unintended pregnancies that are continued. We chose to use abortion ratios instead of abortion rates because we have more accurate data on numbers of births by maternal age, race, residence than we have on population estimates; moreover high abortion ratios may indicate populations in special need of family planning counseling and services. We searched all state health department websites for data on characteristics of women having abortions and live births by state of residence. For some states we used the live birth data from CDC website[20].We used 16 reporting areas (AZ, DE, DC, GA, ID, IN, MN, MO, NM, NYC, NYS, PA, TX, WA, WI) that had available data for abortion categorized by ethnicity. For 11 of 16 areas we subtracted Hispanic data from overall data to get non-Hispanic data (DE, DC, ID, IN, MN, NYS, PA, WA, WI). In this

study, each variable was categorized as the following: age group in years of the women (<15, 15-19, 20-24, 25-29, 30-34, 35-39,  $\geq$  40), race/ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic Asian/ Pacific Islander, non-Hispanic Native Hawaiian/ American Indian/ Alaska, non-Hispanic others, and Hispanic), ethnicity (Hispanic and non-Hispanic), marital status (married, including currently married or separated; unmarried, including never married, widowed, or divorced).

We calculated overall abortion ratios for each state included in this analysis, and abortion ratios for each category with available data. We did not conduct statistical analysis on trends because abortion ratios vary greatly by geographic area, and the temporal changes are not in the same direction for different reporting areas.

## **Results**

Thirty three states and NYC report various characteristics of women obtaining abortion by residence for 2004-2009 (Table 1). Some states reported numbers only for their residents who obtained abortion in-state. This table only shows states that collected data on relationship between variables in the columns and rows. For example, 12 states (AL, GA, HI, IN, MI, MN, MO, NV, OH, SC, UT, WI) reported age by race of women obtaining abortion by residence (Table 1). 16 states (AZ, DE, DC, GA, ID, IN, MN, MO, NM, NYC, NYS, PA, TX, WA, WI) distinguished Hispanic status by residence(data not shown), but only two reported age by Hispanic status (Table 1). Some states report abortions by characteristics, such as county of residence or health district, that are not available through CDC or Guttmacher Institute.



**Table 1- Characteristics of women obtaining abortion by state of residence and occurrence from 33 state websites and New York City 2004-2009**

	Residence data						Occurrence data						
	Age	Race	Hispanic	Marital status	Previous Induced Termination of Pregnancy	Procedure	Age	Race	Marital status	Hispanic	Education	Previous live birth	Procedure
<b>Race</b>	AL, GA, HI, IN, MI, MN, MO, NV, OH, SC, UT, WI		GA, MO	HI			AL, AK, AR, DE, HI, IN, LA, ME, MS, NJ, NM, NYC, NYS <sup>a</sup> , OK, SC, SD		HI, LA				
<b>Marital status</b>	AL, HI, MI, MN, MO, UT, WI	MI, MO, PA, VA, WI	MO, WI, PA				AL, AK, DE, HI, ID, IN, ME, NJ, NYC, OK	AR, NJ, OK		AR			
<b>Education</b>	AL, IN, UT	MO, WI	MO, WI			UT	AL, DE, IN, OK	DE, OK	SD				
<b>Previous live birth</b>	AL, UT, WA			MI			AL, DE, IN, ME, NE, OK	IN, OK	ME, VT				
<b>County of residence</b>	GA, ID, IN, MI, OH, PA, SC, TX, UT, WA, WI	GA, ID, NV, OH, SC, TN, TX, WI	GA, ID, NV, TX, WI	NV	MI, WA		DE, IN, MT, NYS <sup>a</sup> , SC, VT	DE, IN, NYU, SC	DE	DE	DE, VT	DE	OH
<b>Public health district</b>	GA, ID	GA, ID, TN, VA	GA, ID	VA									IA
<b>Hispanic</b>	NV, WI						AR, DE, NJ, NM, NYC, NYS <sup>a</sup>		DE				

<sup>a</sup> NYS = New York State without New York City

Table 2- Abortions and abortion ratios per 1000 live births by place of residence, 16 reporting areas, 2004-2009, as of April 2011

State	2004	2005	2006	2007	2008	2009
	N (ratio)	N (ratio)	N (ratio)	N (ratio)	N (ratio)	N (ratio)
AZ	12,301 (131.7)	10,446 (109.0)	10,506 (103.0)	10,486 (102.1)	10,396 (104.8)	10,045 (108.5)
DE <sup>b</sup>	3,263 (287.3)	3,031 (261.2)	3,451 (290.0)	3,532 (292.0)	3,307 (275.2)	
DC	1,127 (142.0)	2,686 (338.3)	1,697 (199.1)	1,587 (178.9)	1,403 (153.6)	
GA	28,628 (206.6)	28,015 (198.8)	27,642 (186.3)	29,415 (195.1)	32,066 (218.9)	30,330 (214.6)
ID <sup>b</sup>	1,618 (71.8)	1,827 (79.2)	1,919 (79.3)	2,160 (86.3)	2,132 (84.8)	2,348 (99.0)
IN <sup>c</sup>	10,036 (115.2)	10,224 (117.4)	10,092 (112.9)	10,382 (115.7)		
MN	12,753 (180.6)	12,303 (173.5)	12,948 (176.1)	12,770 (173.3)	11,896 (164.4)	11,391 (161.3)
MO <sup>a</sup>	11,871 (152.8)	11,619 (147.9)	11,833 (145.5)	11,470 (140.1)	11,508 (142.2)	10,815 (137.2)
NM	5,693 (200.8)	5,599 (194.3)	5,764 (192.7)	5,724 (187.0)		

NY <sup>a</sup>	120,401 (483.5)	117,944 (480.6)	121,278 (486.7)	120,554 (477.1)	118,381 (474.2)	115,008 (466.4)
NYC	91,673 (738.7)	88,891 (724.3)	90,157 (718.3)	90,870 (704.6)	89,469 (700.7)	87,273 (688.4)
NYS <sup>a</sup>	34,816 (267.1)	35,022 (272)	38,052 (293.3)	37,244 (287.1)	35,906 (280.7)	34,379 (275.4)
PA <sup>a</sup>	34,517 (239.4)	33,468 (230.8)	35,192 (236.7)	35,217 (234.3)	37,222 (249.9)	
TX	72,441 (189.9)	74,399 (193.0)	79,041 (197.9)	77,811 (191.0)	78,330 (193.3)	
WA	24,568 (300.7)	24,162 (292.4)	24,790 (285.5)	24,735 (278.2)	24,279 (269.0)	22,642 (253.7)
WI	9,719 (138.6)	9,566 (134.9)	9,352 (129.3)	8,099 (111.3)	8,008 (111.2)	
Total (exclude NYC, NYS)	348,936 (238.3)	345,289 (234.2)	355,505 (233.0)	353,942 (228.7)	338,928 (240.1)	202,579 (272.7)

<sup>a</sup>non-Hispanic = Total ITOP- Hispanic ITOP, Non-Hispanic Live birth= Total live birth-

Hispanic live birth

<sup>b</sup>Non-Hispanic Live birth= Total live birth- Hispanic Live birth

<sup>c</sup>live births data from CDC website

The number of abortions and abortion ratios vary by place of residence, 16 selected states and cities in 2004-2009 (table 2). The percentage difference between abortion ratios on state websites and CDC Abortion Surveillance varies between 0% and 41.8% (table 3).

Table 3- Percentage difference<sup>a</sup> in abortion ratio (per 1000 live births) by place of residence between state websites and CDC Abortion Surveillance 2004-2007

State	2004	2005	2006	2007
AZ	2.4%	2.6%	2.9%	2.7%
DE	5.8%	7.0%	6.1%	4.9%
DC	41.8%	-23.5%	21.0%	-17.7%
GA	0.7%	0.6%	0.4%	-7.2%
ID	2.9%	1.0%	2.0%	3.0%
IN	13.4%	13.0%	11.8%	10.3%
MN	4.4%	4.2%	4.3%	3.7%
MO	16.5%	16.9%	19.2%	20.0%
NM	10.8%	10.9%	9.5%	11.4%
NYC	-2.7%	-2.6%	-3.5%	-4.2%
NY	0.3%	0.3%	0.3%	0.2%
NYS	1.8%	2.2%	1.6%	1.3%
PA	7.9%	8.8%	7.9%	8.5%
TX	0.6%	0.0%	0.0%	0.0%
WA	0.1%	0.2%	-0.2%	-0.1%
WI	11.2%	11.3%	13.8%	15.7%

<sup>a</sup> calculated by abortion ratio from CDC reported minus the abortion ratio from state report, then divided by abortion ratio from CDC report

The percentages of abortion ratio difference were categorized by low and high differences. Four states (DC, IN, MO, NM, WI) reported rates that differ from their report to CDC by more than 10%. Four states differed by 5-10%, four by 1-5%, and three by less than 1%. (table 4).

Table 4- Percent difference of abortion ratio between state reported on website and reported to CDC surveillance

Low			High
< 1%	1%-5%	> 5%-10%	> 10%
NY	AZ	DE	DC
TX	ID	GA	IN
WA	MN	NYC	MO
	NYS	PA	NM
			WI

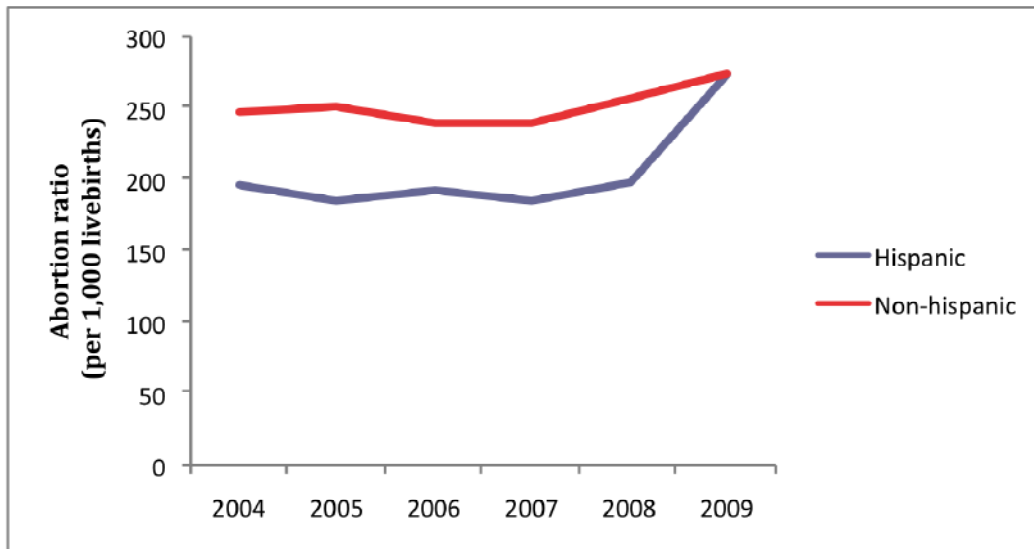
The overall abortion ratios for 14 states are 238.3 in 2004, 234.2 in 2005, 233.0 in 2006, and 228.7 in 2007. The abortion ratio declined 4.0% from 2004 to 2007.

The overall abortion ratio, abortion ratio for Hispanic and non-Hispanic women for 2004-2009 in 16 reporting areas are 278.2 overall, 248.9 Hispanic, and 282.7 for non-Hispanic per 1,000 live births respectively. For non-Hispanics, Blacks have the highest ratio compared to other, Alaska/American/Indian/ Hawaiian, Asian/ Pacific Islander, and white (654.3, 365.8, 276.0, 263.0, 173.0 per 1,000 live births, respectively).

For 14 states combined, the abortion ratio among Hispanics was level from 2004 to 2008 and then increased from 197 to 274 between 2008 and 2009. The abortion ratio among non-

Hispanics was level from 2004 to 2008 and then increased from 256 in 2008 to 274 in 2009 (figure 1).

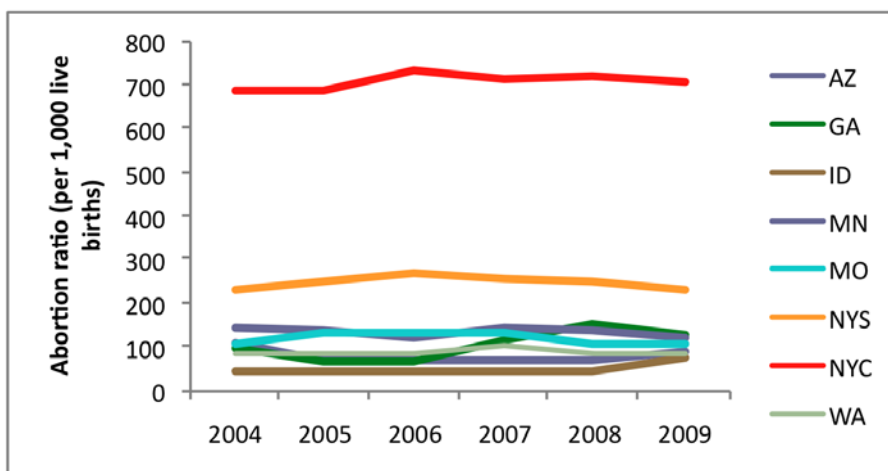
Figure 1- Abortion ratio trends, Hispanic and Non-Hispanic, 2004- 2009<sup>a</sup>



<sup>a</sup>14 states consist of AZ, DE, DC, GA, ID, IN, MN, MO, NM, NY, PA, TX, WA, WI. IN and MN do not have 2008 data. DE, DC, IN, MN, PA, TX, and WI do not have 2009 data.

Comparing abortion ratios for Hispanics between New York State and 6 other states that have 2009 data, the abortion ratio among New York State residents is about 530 or over five times higher than in 6 other states (figure 2).

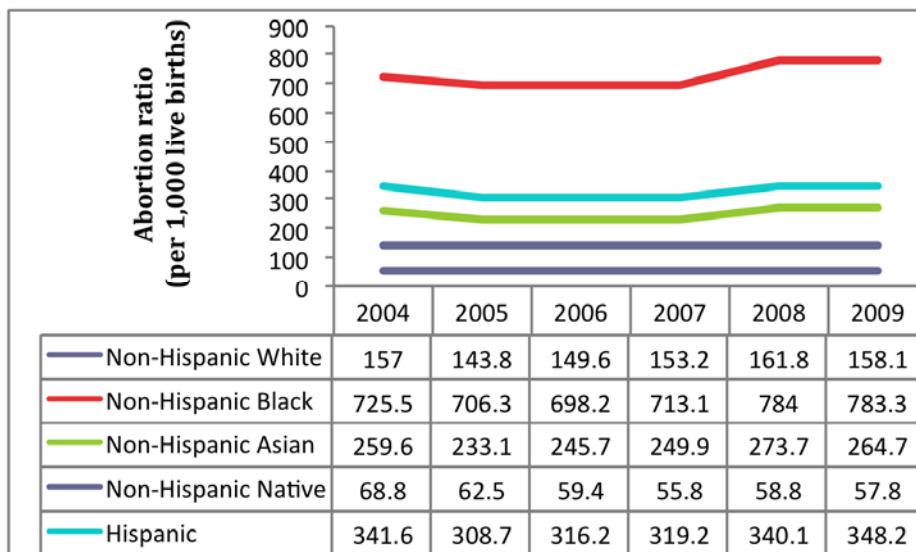
Figure 2- Abortion ratio trends for Hispanic women 2004-2009<sup>a</sup>



<sup>a</sup>data from 8 reporting areas: AZ, GA, ID, MN, MO, NYS, NYC, WA

Three states (AZ, GA, and NYC) categorized ethnicity/race into Hispanic, non-Hispanic white, non-Hispanic black, non-Hispanic asian, and non-Hispanic other and have data for 2004-2009. Non-Hispanic black group has the highest abortion ratio, followed by Hispanic, non-Hispanic asian, non-Hispanic white and non-Hispanic other. non-Hispanic black, Hispanic, and non-Hispanic asian showed the biggest increase in abortion ratio from 2007 to 2008 among (figure 3). For most race/ethnic groups, temporal fluctuations are small. However, non-Hispanic Black women have the highest ratio and experienced a 10% increase in 2008 (figure 3).

Figure 3- Abortion ratio trend, selected states, by race, 2004-2009<sup>a, b</sup>

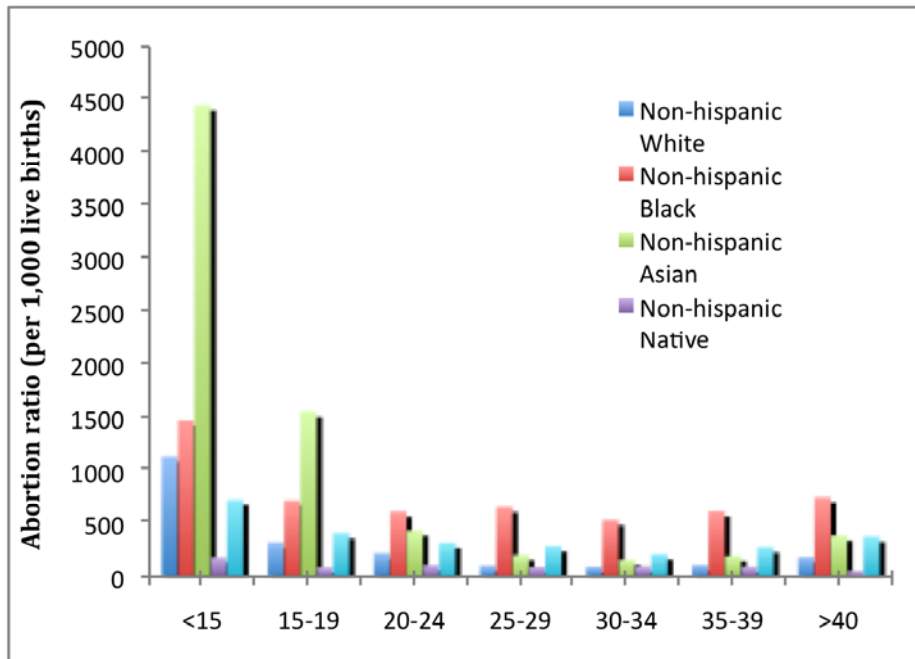


<sup>a</sup>data from 3 states: AZ, GA, NYC

<sup>b</sup>Non-Hispanic Other is not included because it was outlier and not complete for all states.

By age, a consistent pattern existed across all racial/ethnic groups, with the lowest abortion ratios occurring among women aged 30-34 years and the highest occurring among those aged less than 15 years. For women under age 20, non-Hispanic Asians have the highest abortion ratio; for older women, non-Hispanic Blacks have the highest ratio. (figure 4).

Figure 4- Abortion ratio, four reporting areas, by age and race and Hispanic status, 2004-2009<sup>a</sup>



<sup>a</sup>Data from 4 states: AZ, GA, NM, NYC

For the three states reporting abortion data by marital status, the abortion ratio is consistently about 10 times higher for unmarried than for married. For 2004-2008, the abortion ratio declined 12.2% for unmarried women. (Table 5)

Table 5- Abortion ratio by marital status, by year 2004-2008, n (ratio)<sup>a</sup>

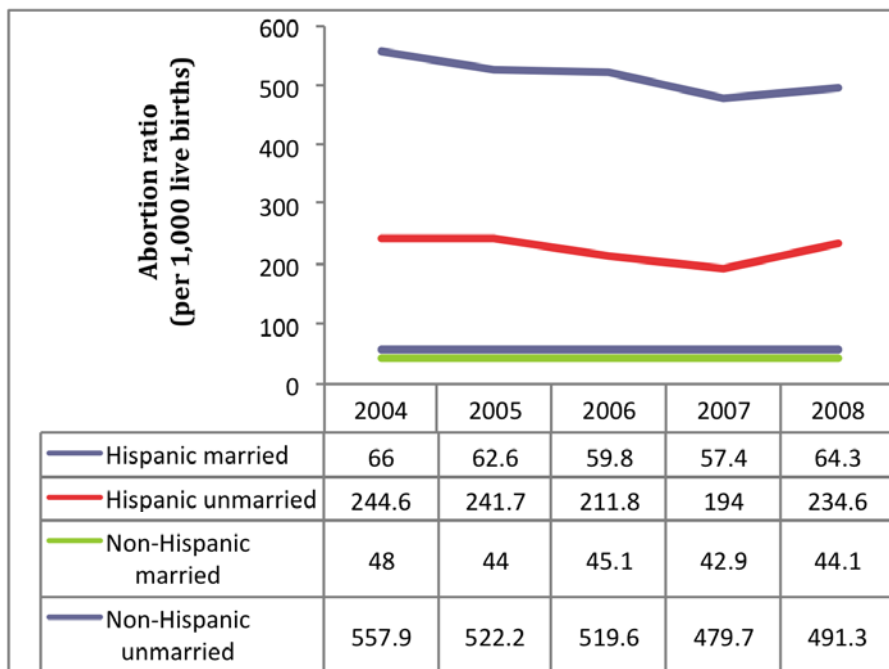
Ethnicity/ marital status	2004	2005	2006	2007	2008
Overall married	6,916 (49.0)	6,300 (45.1)	6,405 (46.0)	6,005 (43.8)	6,063 (45.3)
Overall unmarried	37,315 (515.2)	36,680 (483.2)	38,123 (474.3)	37,303 (437.5)	39,155 (452.5)

<sup>a</sup>Residence data from 3 states: MO, PA, WI



The overall abortion ratio among Hispanic married women is about 50% higher than nonHispanic married women, but unmarried Hispanic women have lower abortion ratios than unmarried non-Hispanic women. Unmarried Hispanic women have an abortion ratio that is 3.6 times higher than for married Hispanic women (224.1 vs. 61.9 per 1,000 live births) (figure 6).

Figure 6- Marital status categorized by ethnicity<sup>a</sup>

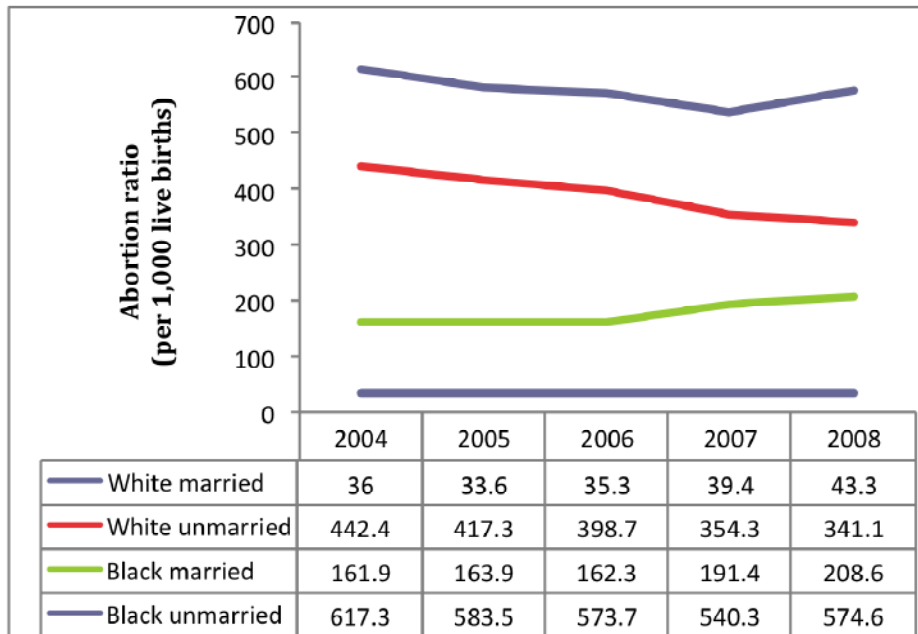


<sup>a</sup>Residence data from 3 states: MO, PA, WI

Non-Hispanic- unmarried women have the highest abortion ratios. The abortion ratio for unmarried Hispanics decreased between 2004 and 2007 and increased 21% in 2008.

For four states with data for 2004-2008, trends in abortion ratios varied by race and marital status. For white and black married women, the abortion ratio increased 20% and 29% respectively, while it decreased 23% for white unmarried and 7% for black unmarried women. (figure 7).

Figure 7- Marital status categorized by race<sup>a</sup>



<sup>a</sup>data for 4 states (MO, PA, VA, WI)

## Discussion

The 15 reporting areas that provided website-published data for abortions by residence during 2004- 2008, abortion ratios are similar to abortion ratios reported by CDC abortion surveillance report[6]. These 15 areas reported 482,056 abortions for 2007 for an abortion ratio of 229 abortions per 1,000 live births. For the same year, the 45 areas reporting to CDC had an abortion ratio of 231 abortions per 1,000 live births. CDC does not have published abortion surveillance for 2009. In this study, the abortion ratios in 2009 are higher than other years because the 8 reporting areas are areas with higher ratios. The data states publish on their website may differ from the data they report to CDC because of different data collected and allocation of events by time period. CDC has developed a model reporting form to encourage more uniform collection of these data, but state laws govern the collection of abortion data and each state can develop its own form and create its own report. In addition, some states, when reporting by residence, report numbers only for their residents who obtained abortions in-state, and other states are able to include abortions for their residents

who obtained abortions in other states. Residents may go out-of-state to obtain an abortion due to geographic proximity or to locally restrictive state laws or policies. The Alan Guttmacher Institute (AGI) has developed a methodology to account for this. AGI reassigned abortions from the state of occurrence to the woman's state of residence on the basis of special tabulations they requested from state health departments[21]. The potential advantages of looking at state website are 1) to determine the quality and availability of the state reported abortion data and to compare with the national abortion report and 2) to examine patterns of abortion based on data uniquely available on state websites.

The increasing abortion ratios in the last couple years might contribute to a decrease in number of births and fertility[22, 23]. Moreover, the increase in abortion ratios among married women and the decrease in abortion ratios among unmarried women may be a result of restrictive policies that selectively affect unmarried women. In addition, the very low abortion ratio among non-Hispanic Native American women may result from the lack of abortion services provide by the Indian Health Service. The Native American Women's Health Education Resource Center (NAWHERC) revealed only 25 abortions performed at or funded by IHS clinics over the last two decades[24]. From a recent urban Indian health organizations (UIHO) survey, there is no onsite abortion service[25].

A unique finding of this study is that non-Hispanic Asian women aged less than 20 years have the higher abortion ratios than other ethnic/racial groups. Among women aged 20 years and older, non-Hispanic black women have the highest abortion ratio compared to other racial and ethnicity. The very high abortion ratios among unmarried young Asian women may reflect the cultural preference for advancing education before having children. In addition, parents discuss very little information about a range of sexual topics to their Asian American adolescent[26]. Expressions of sexuality outside of marriage are considered highly inappropriate in most Asian cultures[27]. Therefore, abortion is an alternative way to solve the outcome of having sex before marriage[28].

The overall finding in this report on race and ethnicity reflect that for the observed states, Black women obtain abortions more frequently than non-Black women. New York has the highest abortion ratio among Hispanic women compared to other states and New York is among the top five states in Hispanic population in the United State[29]. The high abortion ratio among Non-Hispanic black women may reflect their high unintended pregnancy rates[3].

The findings in this study are subject to at least three limitations. First, each state has developed reporting forms that do not collect data in the same format. As a result, many reporting states do not have the characteristics of women obtaining abortions, such as residence, age, race, ethnicity, marital status. In addition, variable categories differ among states. Second, some reporting areas have not reported cross-classified race/ethnicity data. Some states published their abortion data on their official websites by using data for the state in which the abortion was performed rather than for the state in which the woman lived. Third, this study might not represent the national characteristics due to incompleteness of data.

Because the public health implications of abortion data are important, state reported abortion surveillance is important to individuals, organizations, and to the government sector for assessing changes in clinical practice and evaluating interventions to preventing unintended pregnancies. With technical support from National Association for Public Health Statistics and Information Systems (NAPHSIS), National Abortion Federation (NAF) and CDC, states could develop standard reporting and website publication of abortion statistics that would improve the timely use of this data for informing program and policy decision making.

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## **Chapter 4: Discussion, Conclusion and Recommendations**

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Political issue is one of factors contributing to abortion ratios. For example, the new regulation of not allowing female younger than 17 years to have access to contraceptive pills would likely increased unintended pregnancy among teenagers. Another example is the rule to allow catholic-oriented companies to make a decision on contraception rule to their

employees. It is very likely that the company will not provide contraception to their employees. Therefore, both politics and religion will likely influence the abortion ratio.

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## Appendix

Table 1- Abortion ratio trend, by race, Arizona, Georgia and New York City, 2004-2009

	2004	2005	2006	2007	2008	2009
Non-Hispanic White	22,556	20,603	22,265	22,757	22,495	21,655
	(157.0)	(143.8)	(149.6)	(153.2)	(161.8)	(158.1)
Non-Hispanic Black	54,658	54,507	56,590	58,099	60,501	58,993
	(725.5)	(706.3)	(698.2)	(713.1)	(784.0)	(783.3)
Non-Hispanic Asian	6,179	5,554	6,213	6,933	7,072	6,665
	(259.6)	(233.1)	(245.7)	(249.9)	(273.7)	(264.7)
Non-Hispanic Native	440	410	397	376	385	369
	(68.8)	(62.5)	(59.4)	(55.8)	(58.8)	(57.8)
Hispanic	34,374	31,949	34,432	35,403	35,157	34,006
	(341.6)	(308.7)	(316.2)	(319.2)	(340.1)	(348.2)

\*Data from 3 states: AZ, GA, NYC

\*\*Abandon Non-Hispanic Other because it was outlier and not complete for all states.

Table 2- Abortion number and ratio by race/ethnicity, Arizona, 2004-2009

	2004	2005	2006	2007	2008	2009
Non-hispanic White	5276	4431	5106	5202	4737	4579
	134.3	111.7	118.7	123.2	113.0	115.1
Non-hispanic Black	723	585	581	675	744	736
	224.8	169.6	150.4	162.1	173.0	168.1
Non-hispanic Asian	444	379	391	454	412	390
	169.9	135.1	124.7	133.1	120.3	114.8
Non-hispanic Native	341	353	342	310	297	300
	55.7	56.1	53.7	48.4	46.7	48.6
Hispanic	4485	3112	3160	3719	3124	3303
	109.9	73.8	70.4	81.3	73.3	86.1

Table 3- Abortion number and ratio by race/ethnicity, Georgia, 2004-2009

	2004	2005	2006	2007	2008	2009
Non-hispanic White	7854	6368	7378	7334	7307	7223
	117.6	96.1	109.1	109.6	124.4	122.9
Non-hispanic Black	14088	13695	13720	14610	17900	17459
	330.2	305.8	285.2	304.1	398.2	401.1
Non-hispanic Asian	924	821	863	1035	1103	1063
	207.5	178.0	179.9	205.2	262.1	262.4
Non-hispanic Native	99	57	55	66	88	69
	360.0	215.1	171.9	197.0	473.1	315.1
Non-hispanic Other	250	206	199	83	1280	1224
	540.0	388.7	307.1	23.5	146.7	207.6
Hispanic	1943	1627	1594	2788	3112	2339
	97.1	74.7	67.4	113.9	152.9	123.0



Table 4- Abortion number and ratio by race/ethnicity, New Mexico, 2004-2007

	2004	2005	2006	2007
Non-hispanic White	1582	1501	1621	1582
	178.7	177.0	188.6	178.9
Non-hispanic Black	195	178	165	168
	390.8	330.2	275.5	262.5
Non-hispanic Asian	122	202	108	100
	299.0	438.2	196.7	196.5
Non-hispanic Native	718	684	722	728
	198.8	184.4	182.3	185.6
Hispanic	2836	2815	2893	2564
	189.3	180.1	178.4	154.3

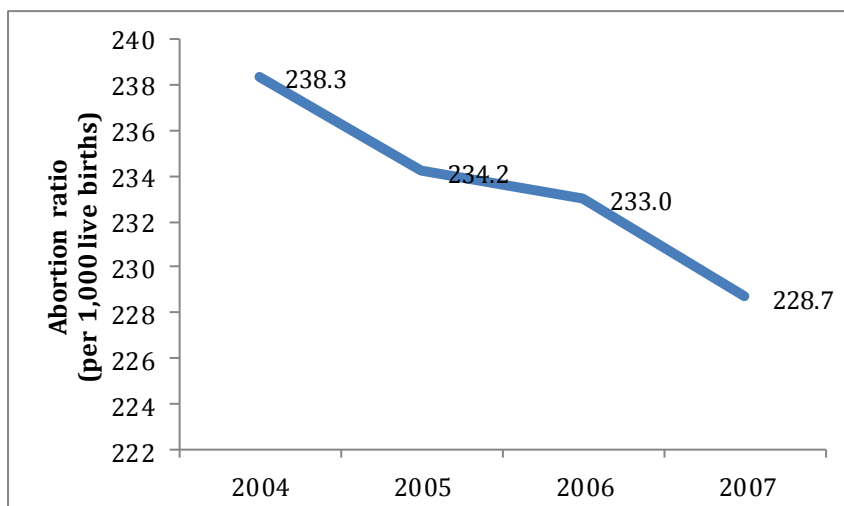
Table 5- Abortion number and ratio by race/ethnicity, New York City, 2004-2009

	2004	2005	2006	2007	2008	2009
Non-hispanic White	9426	9804	9781	10221	10451	9853
	250.3	262.6	255.8	259.7	179.7	256.3
Non-hispanic Black	39847	40227	42289	42814	41857	40798
	1353.1	1390.3	1454.4	1462.8	1499.3	1488.7
Non-hispanic Asian	4811	4354	4959	5444	5557	5212
	287.5	265.4	285.7	282.2	305.3	294.0
Non-hispanic Other	646	541	635	518	396	349
	2584.0	1701.3	2351.9	2252.2	155.4	417.5
Hispanic	27946	27210	29678	28896	28921	28364
	702.2	688.1	734.4	709.8	716.2	704.1

Table 6- Abortion number and ratio by race/ethnicity, Texas, 2004-2009

	2004	2005	2006	2007	2008
Non-hispanic White	25020	25827	26925	26677	25047
	183.6	187.8	192.4	190.3	179.7
Non-hispanic Black	16436	17503	18554	18235	19708
	394.5	415.2	403.1	393.4	428.9
Non-hispanic Asian	2962	2953	3041	3238	3181
	222.7	223.8	216.2	210.8	199.2
Non-hispanic Native	78	100	204	237	174
	103.0	134.6	246.4	295.9	205.7
Hispanic	26341	26657	28558	28721	29320
	140.0	139.2	144.0	140.4	144.4

Figure 1-Overall trend for 14 states<sup>a</sup>, 2004-2007



<sup>a</sup> 14 states consist of AZ, DE, DC, GA, ID, IN, MN, MO, NM, NY, PA, TX, WA, WI

Figure 2- Abortion ratio trends of New York State (including NYC), 2004-2009

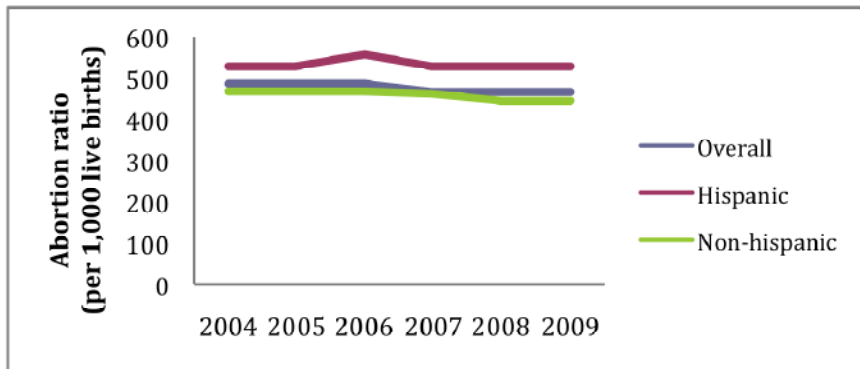


Figure 3- Abortion ratio trends of Arizona, 2004-2009

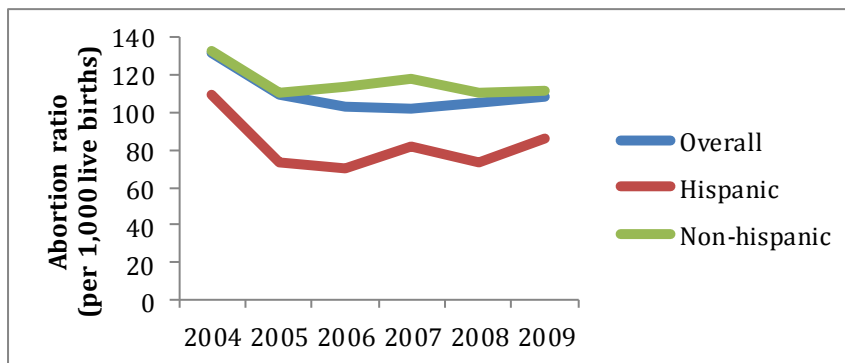


Figure 4- Abortion ratio trends of Georgia, 2004-2009

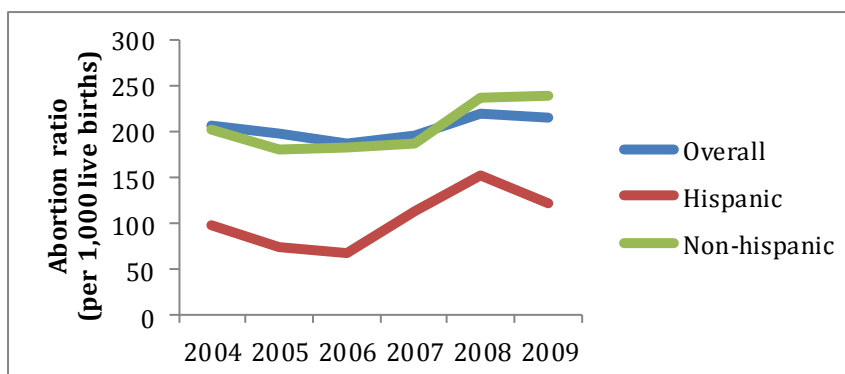


Figure 5- Abortion ratio trends of Idaho, 2004- 2009

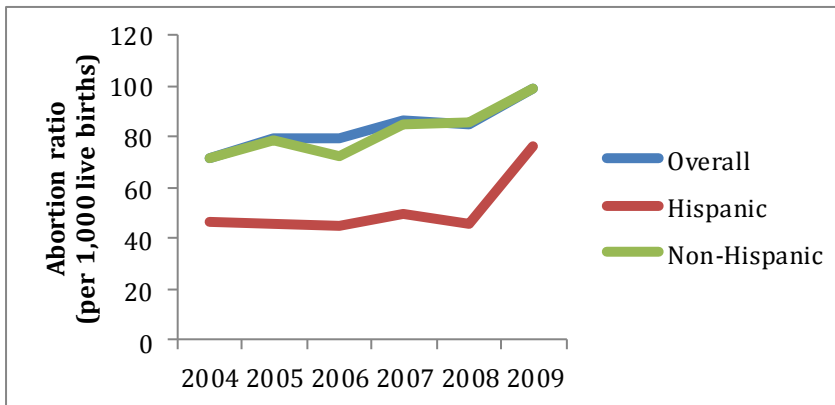


Figure 6- Abortion ratio trends of Minnesota, 2004-2009

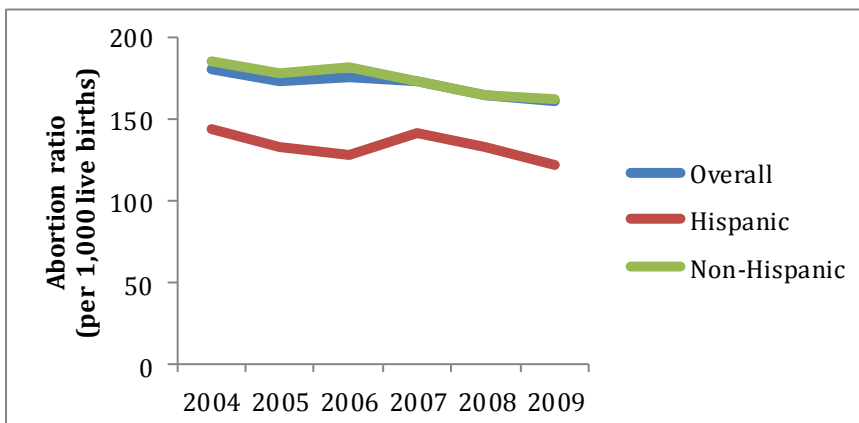


Figure 7- Abortion ratio trends of Missouri, 2004-2009

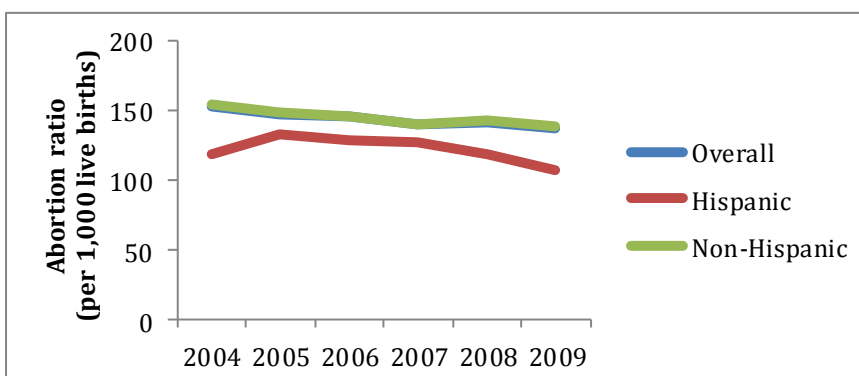


Figure 8- Abortion ratio trends of Washington (WA), 2004-2009

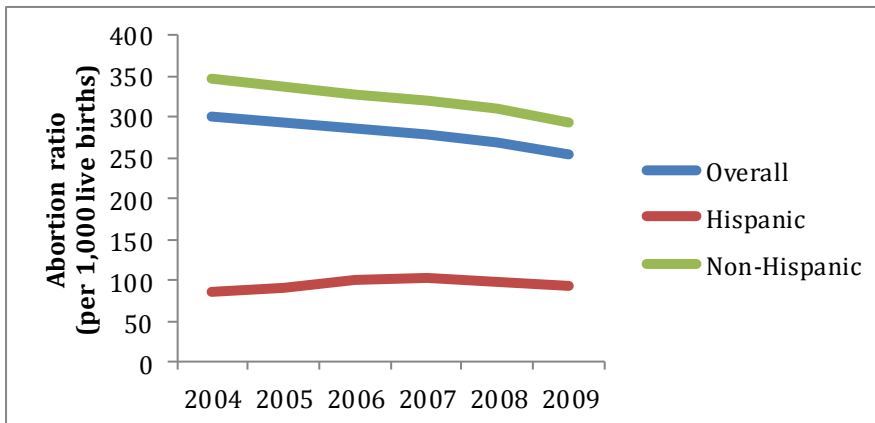
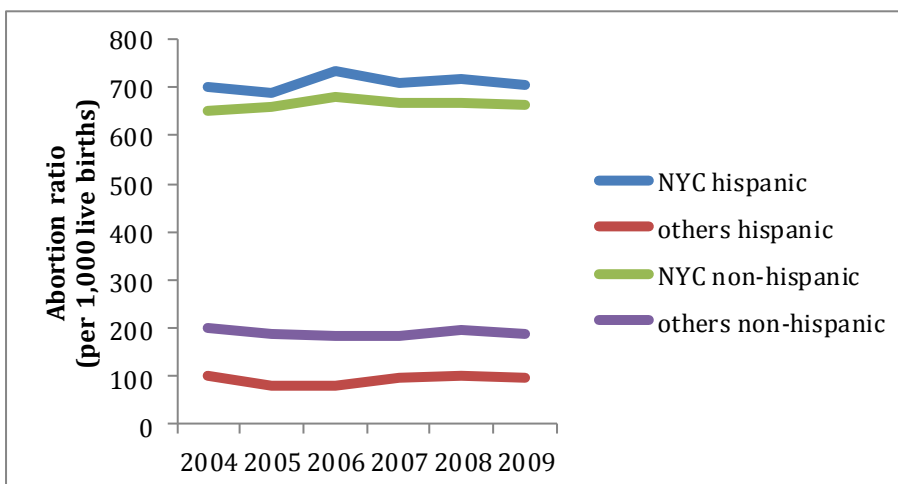
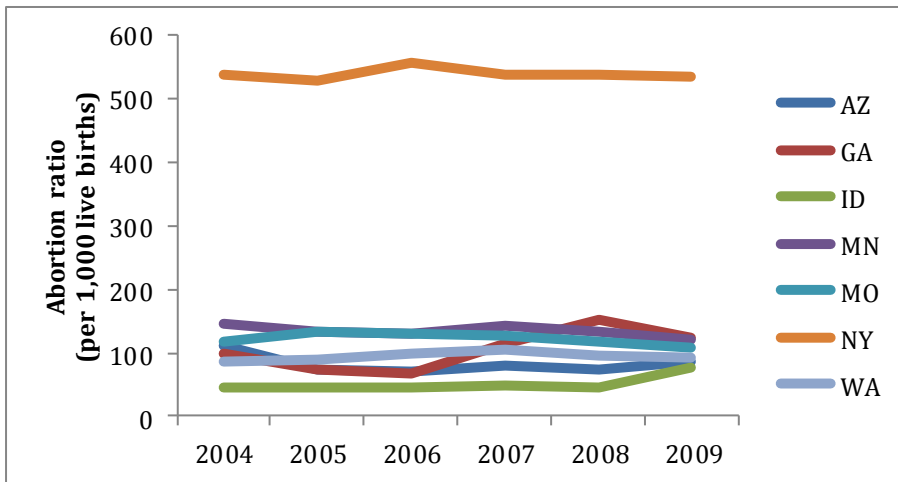


Figure 9- Comparison abortion ratio trend between NYC and 6 other states<sup>a</sup>, 2004-2009



<sup>a</sup>Other 6 states: AZ, GA, ID, MN, MO, WA

Figure 11- Abortion ratio trends for Hispanic women 2004-2009\*



\*data from 7 states: AZ, GA, ID, MN, MO, NY, WA

Figure 10- Abortion ratio trends for Hispanic women 2004-2008 (include NYC and NYS)

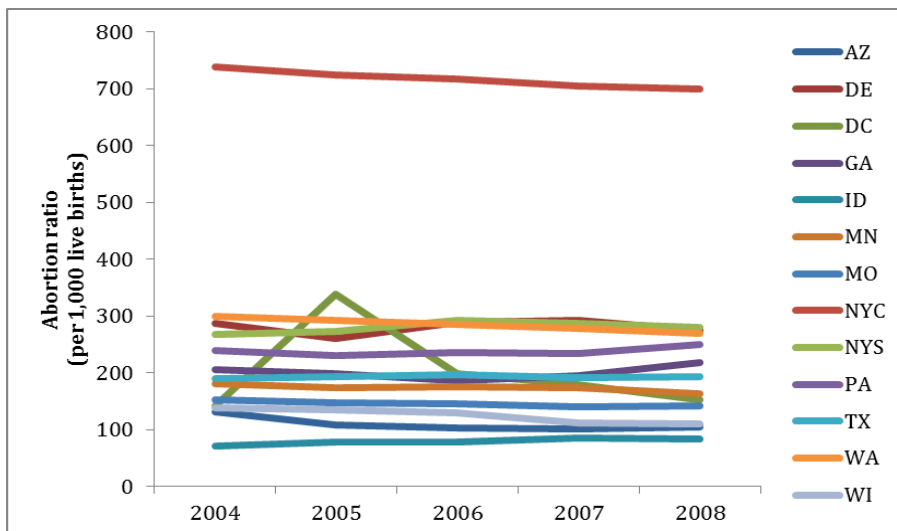


Figure 11- Abortion ratio trends for Hispanic women 2004-2008 (include NY)

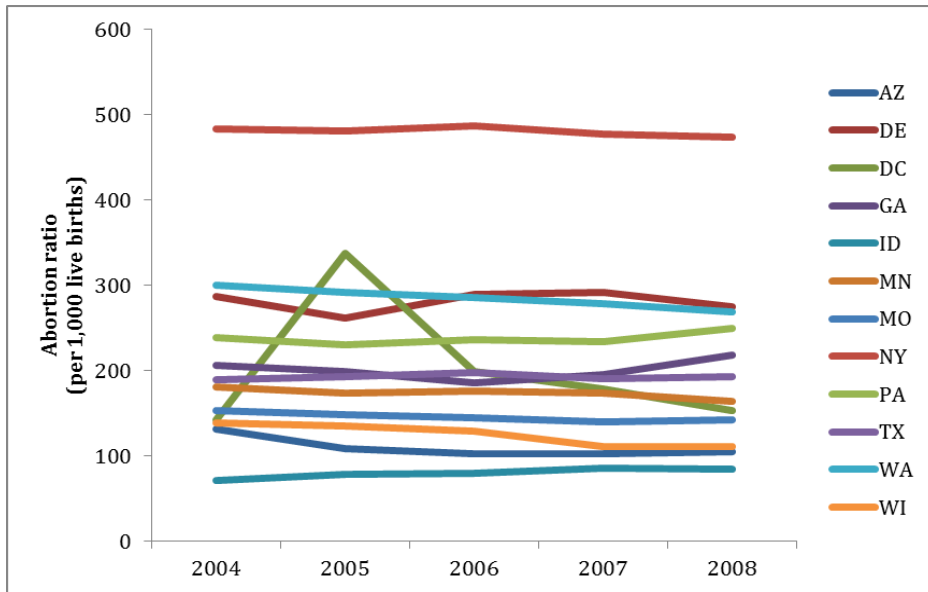


Figure 12- Abortion ratio trend by race, AZ, 2004-2009

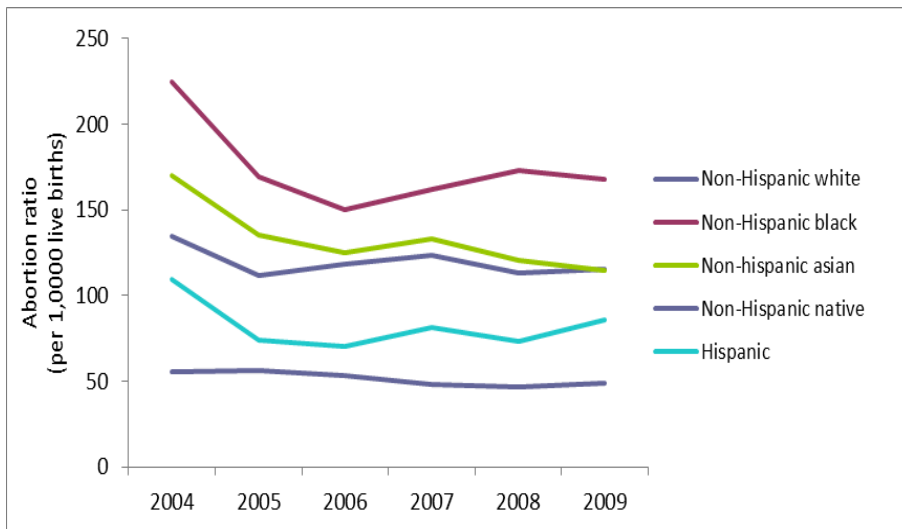


Figure 13- Abortion ratio trend by race, GA, 2004-2009

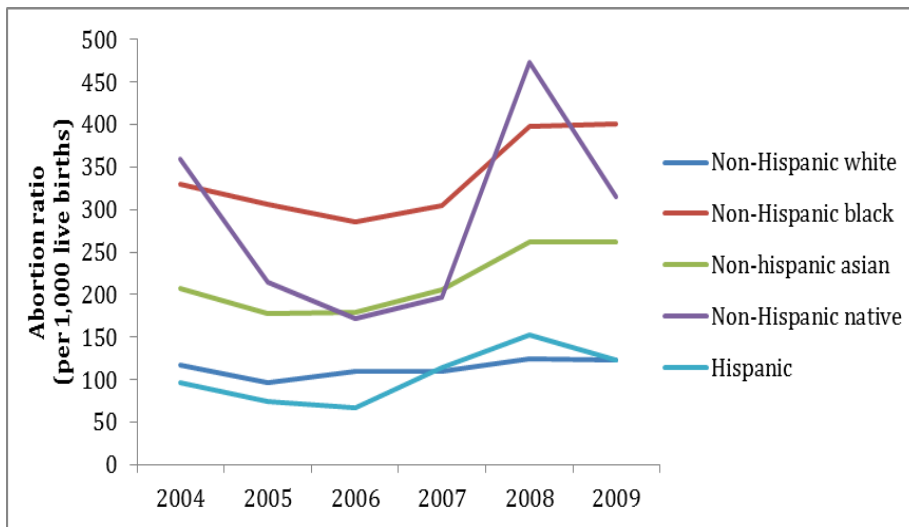


Figure 14- Abortion ratio trend by race, NM, 2004-2007

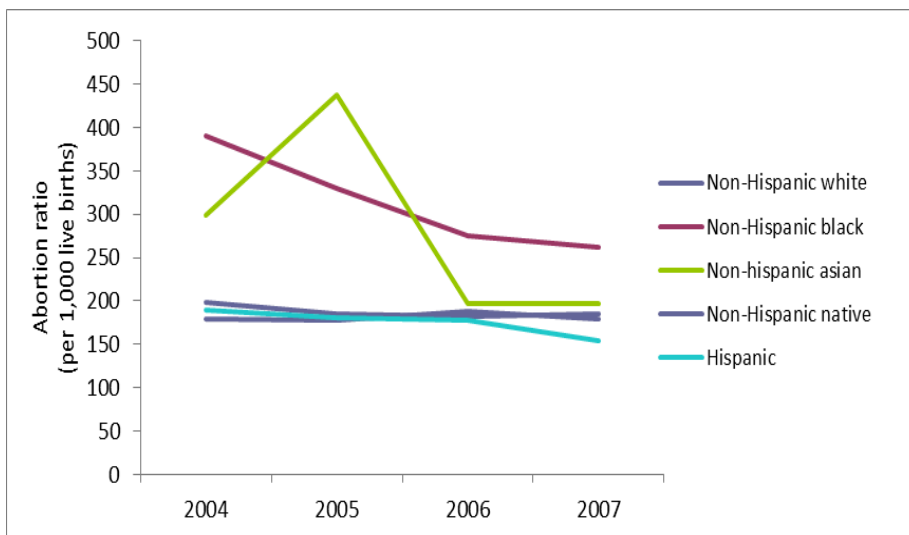




Figure 15- Abortion ratio trend NYC, 2004-2009

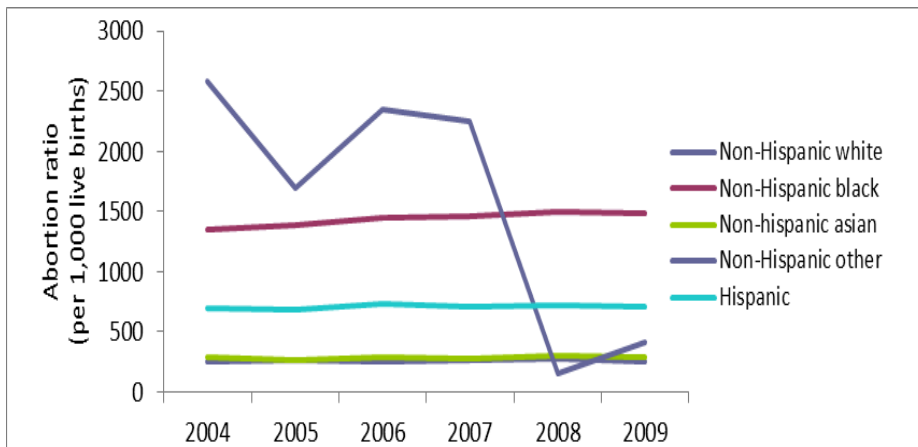


Figure 16-Abortion ratio trend TX, 2004-2008

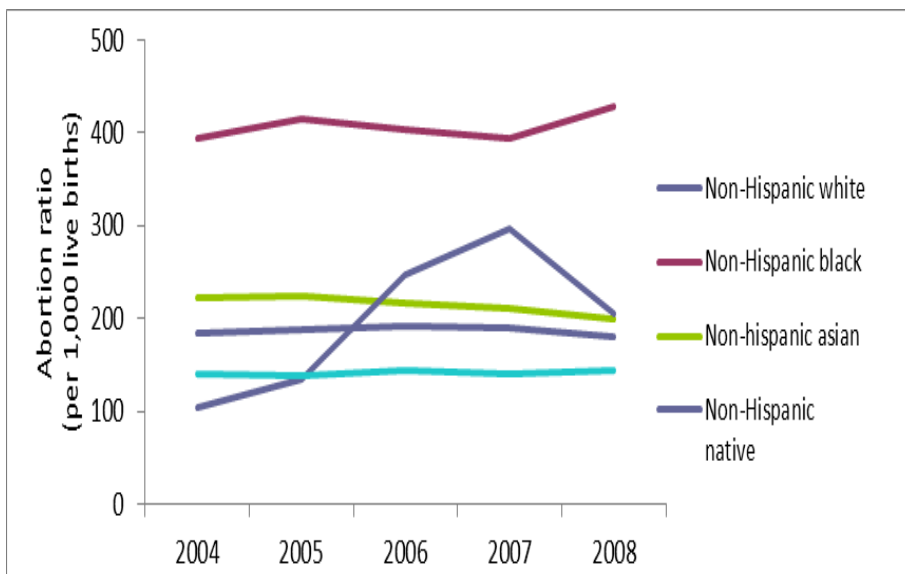


Figure 17- Abortion ratio, AZ, by age and race/ethnicity status, 2004-2009

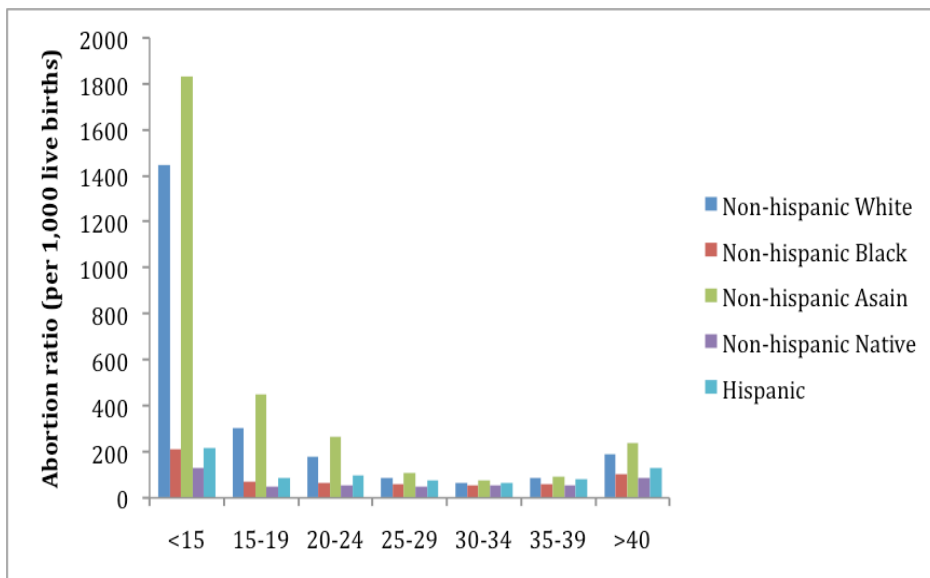


Figure 18- Abortion ratio, GA, by age and race/ethnicity status, 2004-2009

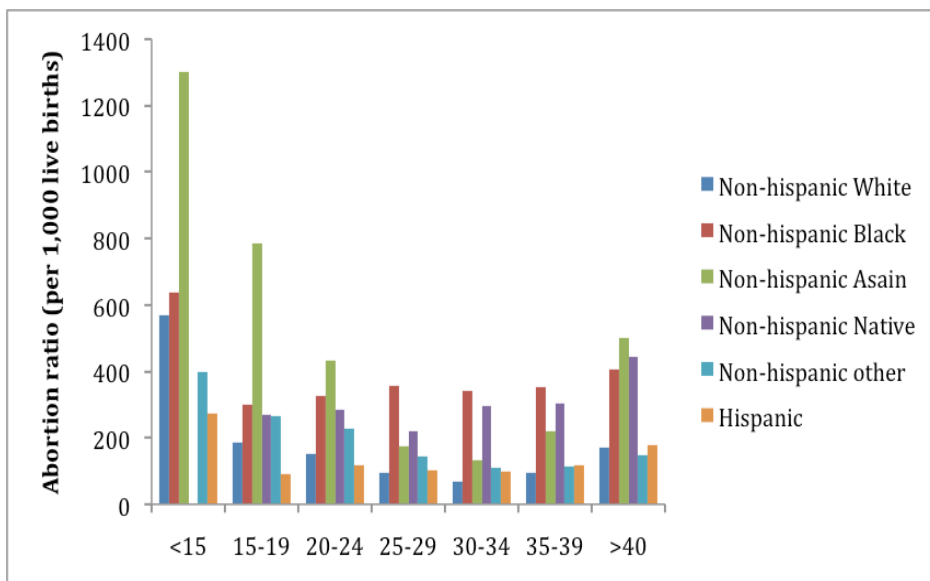
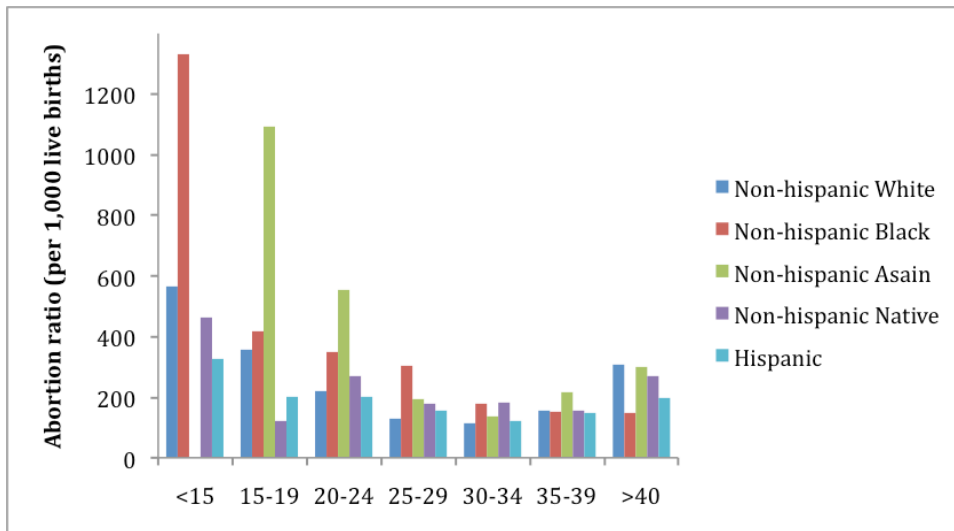


Figure 19- Abortion ratio, NM, by age and race/ethnicity status, 2004-2009



\* asian age<15 denominator=0

Figure 20- Abortion ratio, NYC, by age and race/ethnicity status, 2004-2009

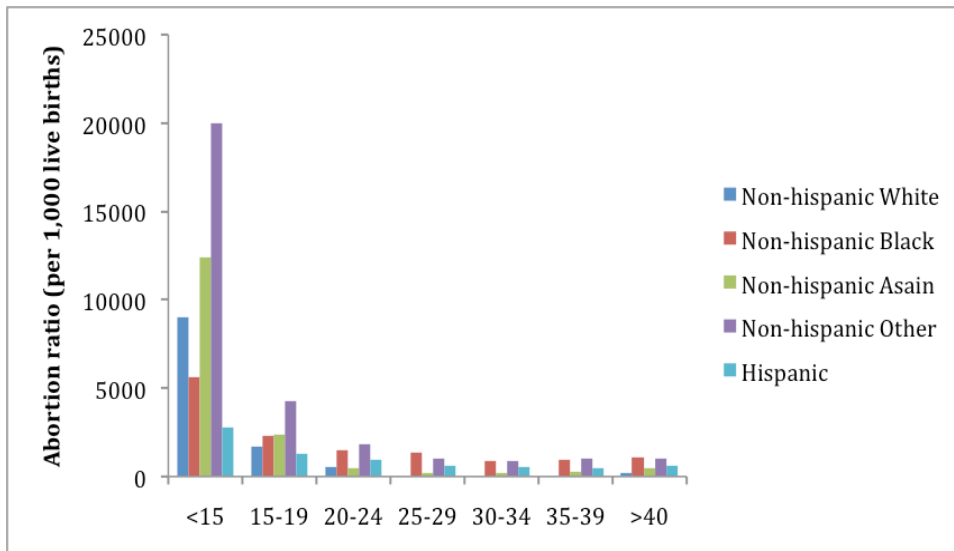


Figure 27- Real GDP and abortion trends

