

Increasing abortion-related hospitalization rates among adolescents in Mexico in the last decade, by age group and by state of residence

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Introduction:

Maternal mortality and morbidity represent persistent challenges in most countries, particularly in the developing world. According to the most recent World Health Organization (WHO) World Report on unsafe abortion mortality, abortion caused 47,000 deaths, 13.1% of the 358,000 overall maternal deaths estimated to have occurred in 2008 (1). This proportion was calculated to be 12% in the Latin American region, and 9% in Central America (including Mexico) (1). In Mexico, a recent analysis of the official data base of maternal mortality during nearly two decades shows that abortion-related mortality caused 7.2% of all maternal deaths, with little variance over times in the absolute numbers and the proportion of maternal deaths (2).

Incidence of induced abortion, in the same year, has been estimated to be 28 per 1,000 women 15-44 years of age; 24 in developed and 29 in developing world, half of those being considered unsafe events. In Latin America and Caribbean region (LAC), the estimated incidence was higher, at 32 induced abortions per 1,000 women, nearly all of which were unsafe (3).

The incidence of induced abortion is extremely difficult to estimate, particularly where this event is legally restricted, such as in Mexico. With the exception of Mexico City, where a legal reform in 2007 legalized abortion on women's request until the 12th week of gestation (4), in the rest of the country abortion is allowed only for specific causes: rape, danger for women's life and/or health, and severe fetal malformations (5). Access to legal procedures under these circumstances, however, is extremely limited (6).

A variety of indirect methodologies have been applied, and can help researchers estimate the real incidence of induced abortion even in legally restricted contexts (7). One important source of all abortion-related events is aggregated hospital discharge data from national health information systems; under the International Classification of Diseases (ICD) to detail diagnoses or causes for admission, including abortion-related morbidity. Using these aggregate health data, and the specific ICD-10 codes, researchers can calculate the total absolute numbers of hospitalizations due to abortion.

Additionally, the corresponding rates can also be estimated, by year of hospitalization, by health-system sector, by patient age-group and by type of event, including probably unsafe, induced abortions (8).

The relationship between fertility, contraceptive prevalence rate and induced abortion rate has been extensively analyzed (9,10). Particular attention should be given to specific age groups, where high unmet contraceptive needs are detected, in spite of low fertility aspiration. In Mexico, such is the case of adolescents, where unmet contraceptive needs is being reported in one out of four 15-19 ys. teens in union, compared with one out of ten 15-49 ys. women (24.6% vs. 9.8%) (11).

Objective: The objective of our study was to identify numbers and rates of hospitalizations due to all abortion-related causes, among Mexican adolescents 10-19 ys. of age, by years (2000 to 2010) and age sub-groups.

Methodology: We analyzed the official health information system of Mexican Ministry of Health for hospitalizations (SAEH for its Spanish initials) during the reporting period. All the following codes from International Classification of Diseases 10th Edition (ICD-10 codes) were included as abortion-related causes: O00-O08 plus Z303 (legally induced abortions, in Mexico City). We analyzed absolute numbers (Abortion-Related Hospitalizations: AH) and rates (Abortion-Related Hospitalization Rates: AHR) among 10-19 years adolescents, using in the denominator the official projection of 10-19 ys. female population, estimated by the National Population Council (CONAPO) for corresponding years (12)¹. Both numerators and denominators include only events and population covered by the Minister of Health and by Popular Insurance (Seguro Popular: SP, according to the adopted term), i.e. female population without any private or public health insurance plan.

Results: Between 2000 and 2010, in the MOH/SP a total of 1,096,269 hospitalizations were registered due to all-abortion causes, representing 10.7% of all maternal hospitalizations in the same period of time (**Table 1**). Between 2000 and 2010, other public health institutions (such as IMSS, ISSSTE and Defense) also registered abortion hospitalizations, in a decreasing proportion of the total (from 55% in 2000 down to 37% in 2010 - data not shown), totalizing a little more than 2 million AH over the study period.

¹ New estimates have been published recently by The National Population Council, available at <http://www.conapo.gob.mx/es/CONAPO/Proyecciones>

Hospitalizations among adolescents (10-19 ys.) accounted for 22.8% of all AH: 1% of all (11,183 events) were among youngest adolescents (10-14 ys) and the rest (239,747 events) were in 15-19 ys adolescents. Absolute numbers of AH increased year by year, and the observed yearly percentage increase was highest in the 10-14 ys. group: 7.6% vs. 6.4% in 15-19 ys teens (compared with 5.3% in 20-24 ys young women) (**Figure 1**).

Analyzing the proportion of abortions hospitalizations vs. Live Births registered in the same MOH/SP public health institutions, we could find that the proportion increased over time at all ages, with the exception of the older group (50-54 ys). Among women 45-49 ys, AH steadily represent over 40% of Live Births. The increase was also notable among the 10-14 ys. teens, where abortion went from 13.6% of Live Births in 2000 up to 16.3% in 2010 (**Figure 2**).

In terms of rates, mean AHR was 0.3 x 1,000 girls 10-14 ys, and 7.4 x 1,000 adolescents 15-19 ys. during the whole period over the whole country (**Table 2**). In comparative terms, AHR was higher than 15-19 ys only among two other age-groups in the analyzed decade: 10 x 1,000 young women 20-24 ys and 8.3 x 1,000 women 25-29 ys of age (data not shown). Rates increased as well as absolute numbers during the study period, among all adolescents: they went from 0.2 up to 0.5 x 1,000 girls 10-14 ys, and from 6.1 to 9.5 x 1,000 teens 15-19 ys in 2000 and 2010 respectively (**Figure 3**).

Differences among states were observed both in terms of absolute numbers of AH and in terms of AH Rates. Mean AHR during 2000-2010 in adolescents varied greatly among states: 10 states presented a rate that more than doubled the national mean among youngest adolescents, and 6 states presented the same phenomenon among older adolescents. Baja California Sur presented the highest AHR in both age groups: 1.2 x 1,000 among 10-14 ys and 21 x 1,000 15-19 ys. teens (**Table 2**). Overall, Mexican states presented increases year by year in absolute number of AH in these age groups, but profound differences were again observed among federal entities. Only four states showed a decrease among youngest adolescents, that are presented in **Figure 4**.

Discussion and Conclusions: Hospitalizations due to all abortion-related events show a continuous increment over the last decade in Mexico. While the bulk of care, in absolute numbers, concentrates among women 20-24 ys. of age, relative increments in rates are particularly striking in the extreme age groups, and especially among adolescents. Very young age-groups (10 to 14 years of age) are not traditionally included in demographic and reproductive health surveys in most countries, including Mexico, making these adolescents mostly “invisible”. Hospitalization data analysis, disaggregated by

age groups, allows to visualize these age groups, in terms of demographic and public health aspects. They help identifying new tendencies in sexual and reproductive behaviors and emerging needs among these very young teens, including the need to protect their human rights from potential violations, in terms of sexual violence, risk to their health, discrimination in access to information and services.

More and diverse types of research are needed, both quantitative and qualitative; to investigate the observed geographical differences in terms of abortion hospitalization rates. They may reflect a variety of cultural and ideological variables, that affect the decision-making process in case of an unplanned pregnancy, as well as potential barriers in the access to care. It is important to reiterate that this kind of studies cannot estimate the incidence of induced abortion in countries such as Mexico, where it is criminalized and can lead to severe consequences for women's lives and safety, as well as for medical providers. However, these analysis can represent a valuable proxy indicator of the number of events that finally results in hospitalizations of those women who either experience a spontaneous or induced abortion.

These data strongly suggest increasing unmet contraceptive needs among young teens in Mexico, and mandate prompt interventions in terms of sexual education and access to contraceptive services, both as primary prevention (avoiding a first unplanned, untimed early pregnancy) as well as timely secondary prevention (providing post-abortion contraception) in these young and very young Mexican adolescents.

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Table 1: Abortion-related Hospitalizations^{1/}, by years and age groups.
Mexico MOH 2000-2010

Age Group (ys)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total 2000-2010
10-14	679	750	804	734	941	958	1,038	1,197	1,330	1,338	1,414	11,183
15 - 19	15,655	16,185	17,305	17,796	18,738	20,940	22,643	24,892	27,826	28,611	29,156	239,747
20 - 24	21,140	21,926	22,787	24,271	24,991	27,653	29,135	32,031	34,443	35,093	35,575	309,045
25 - 29	15,731	16,444	17,478	18,080	18,539	20,528	21,901	23,369	25,105	25,605	26,274	229,054
30 - 34	10,306	11,005	11,662	12,513	12,989	14,474	15,704	16,890	17,703	18,161	18,417	159,824
35 - 39	6,672	6,825	7,280	7,753	8,094	9,024	9,856	10,370	11,412	11,849	12,292	101,427
40 - 44	2,910	2,964	2,902	3,082	3,224	3,490	3,802	4,025	4,262	4,448	4,573	39,682
45 - 49	498	459	461	463	464	538	566	570	549	578	573	5,719
50 - 54	43	42	37	47	46	60	70	56	58	67	62	588
Total 10-54 ys	73,634	76,600	80,716	84,739	88,026	97,665	104,715	113,400	122,688	125,750	128,336	1,096,269

Source: Mexican MOH, Automatized System of Hospitalization / Sistema Automatizado de Egresos Hospitalarios (SAEH), 2000-2010.

1/ Hospitalizations due to all abortion-related causes, codified by ICD -10 10th Revision, includes all codes O00 - O08 and Z303 (Legal abortions)

Table 2: Abortion Hospitalizations Rates among 10-14 ys. and 15-19 ys adolescents by states, Mexico MOH 2000-2010.

STATES	10-14 ys.	15-19 ys.
Aguascalientes	0.6	15.0
Baja California	0.6	13.0
Baja California Sur	1.2	21.1
Campeche	0.5	9.1
Coahuila	0.9	16.9
Colima	0.8	16.9
Chiapas	0.2	4.5
Chihuahua	0.5	9.4
Mexico City	0.6	16.1
Durango	0.5	11.2
Guanajuato	0.3	7.0
Guerrero	0.3	4.5
Hidalgo	0.2	6.1
Jalisco	0.4	8.3
State of Mexico	0.2	5.7
Michoacán	0.2	4.8
Morelos	0.4	8.7
Nayarit	0.6	11.8
Nuevo León	0.3	6.2
Oaxaca	0.1	3.5
Puebla	0.1	3.7
Querétaro	0.4	9.9
Quintana Roo	0.5	9.9

San Luis Potosí	0.2	5.5
Sinaloa	0.6	12.7
Sonora	0.8	17.6
Tabasco	0.5	9.6
Tamaulipas	0.6	13.0
Tlaxcala	0.3	8.1
Veracruz	0.3	5.3
Yucatán	0.2	4.6
Zacatecas	0.3	7.4
National	0.3	7.4

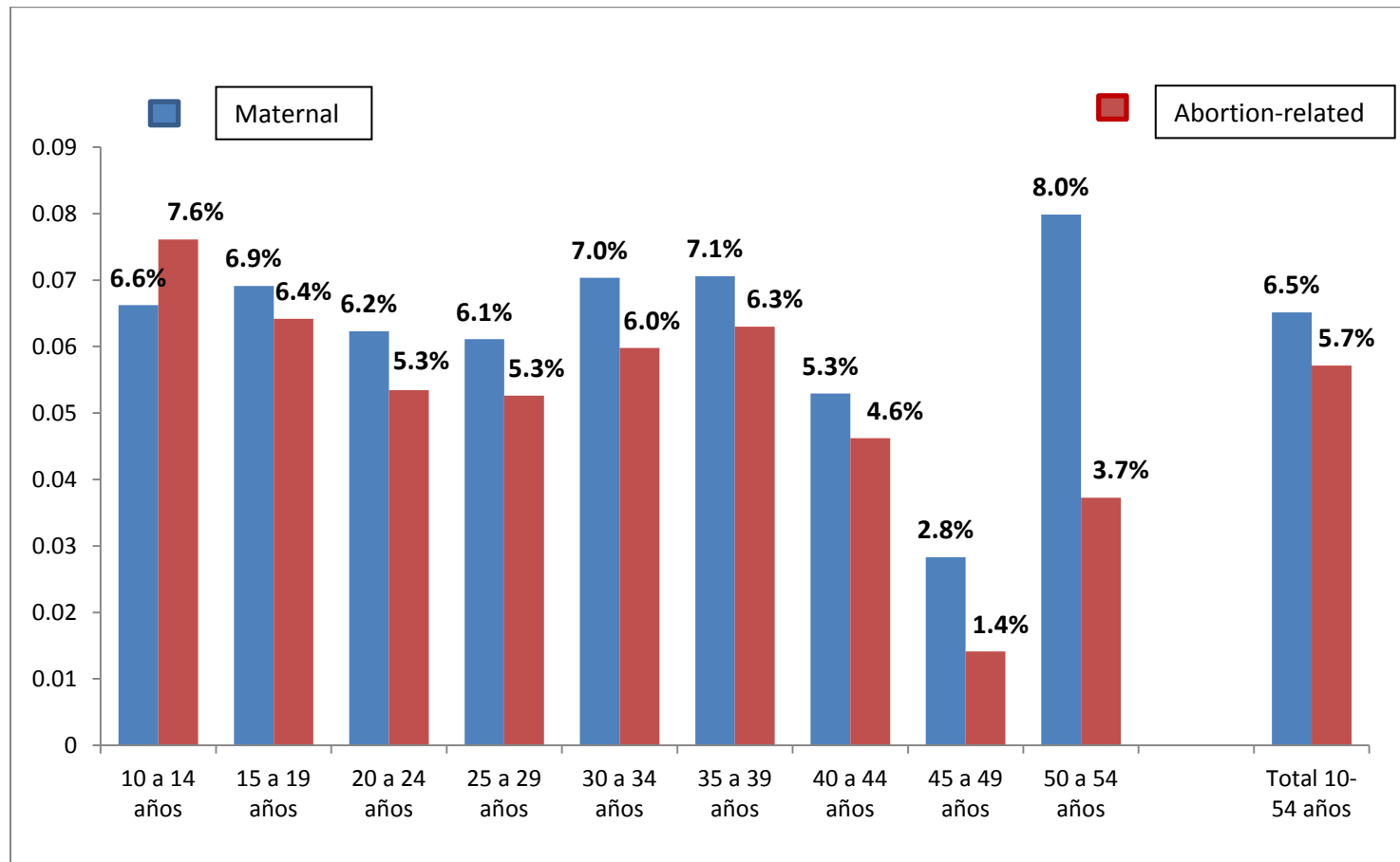
Sources: Numerator. Mexico MOH Sistema Automatizado de Egresos Hospitalarios (SAEH), 2000-2010.

Denominator: Population Projections 2005-20030, CONAPO 2006 (ref. 12)

1/ Hospitalizaion Rate x 1,000 women 10-54 years of age.

*/ Abortions: all ICD-10 codes: O00 - O08 and Z303 (legal abortion)

Figure 1: Yearly Increase of maternal and abortion-related hospitalizations by age groups, Mexico MOH, 2000-2010



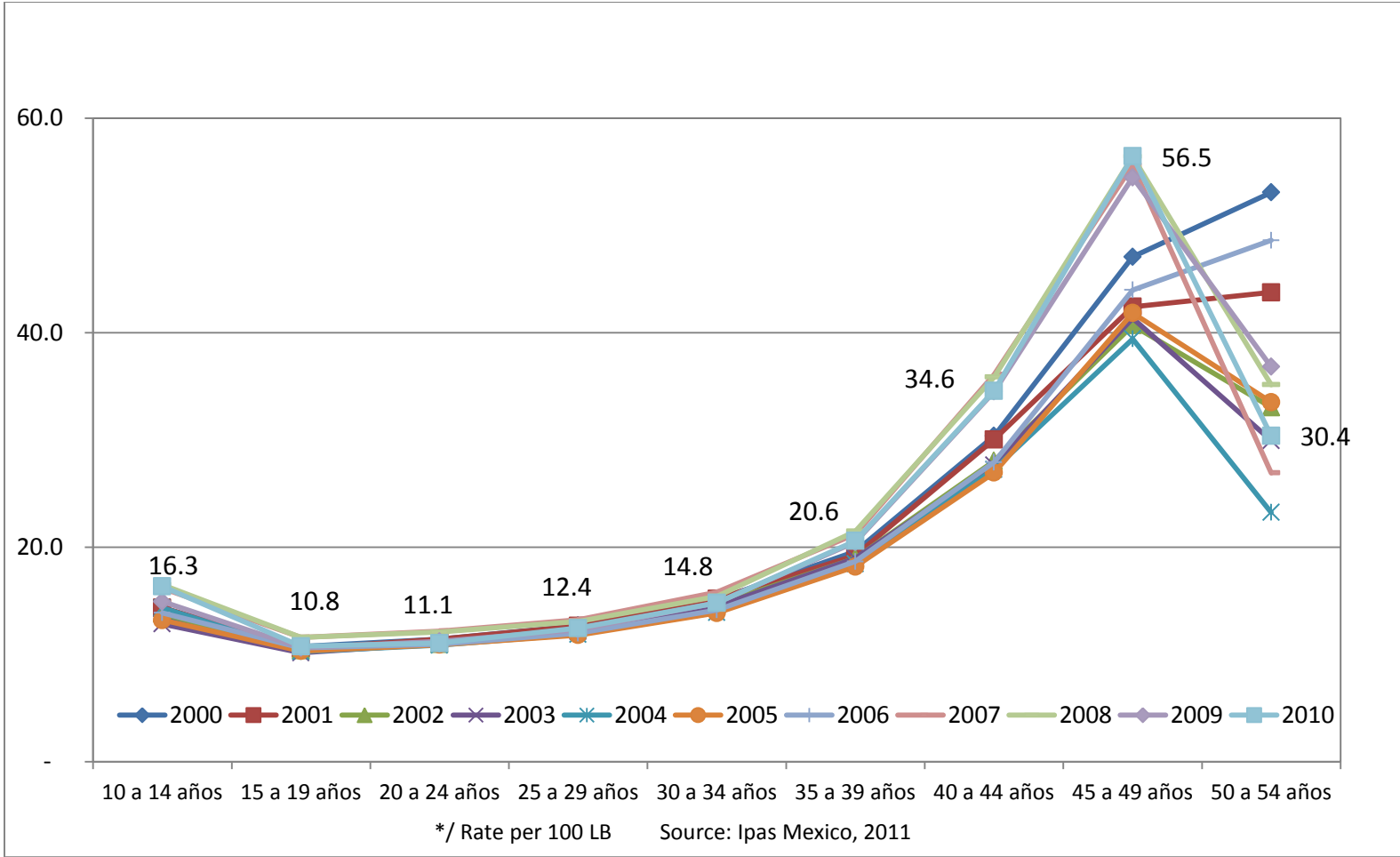
Sources: Numerator. Mexico MOH Sistema Automatizado de Egresos Hospitalarios (SAEH), 2000-2010.

Denominator: Population Projections 2005-20030, CONAPO 2006 (ref. 12)

1/ Hospitalizaion Rate x 1,000 women 10-54 years of age.

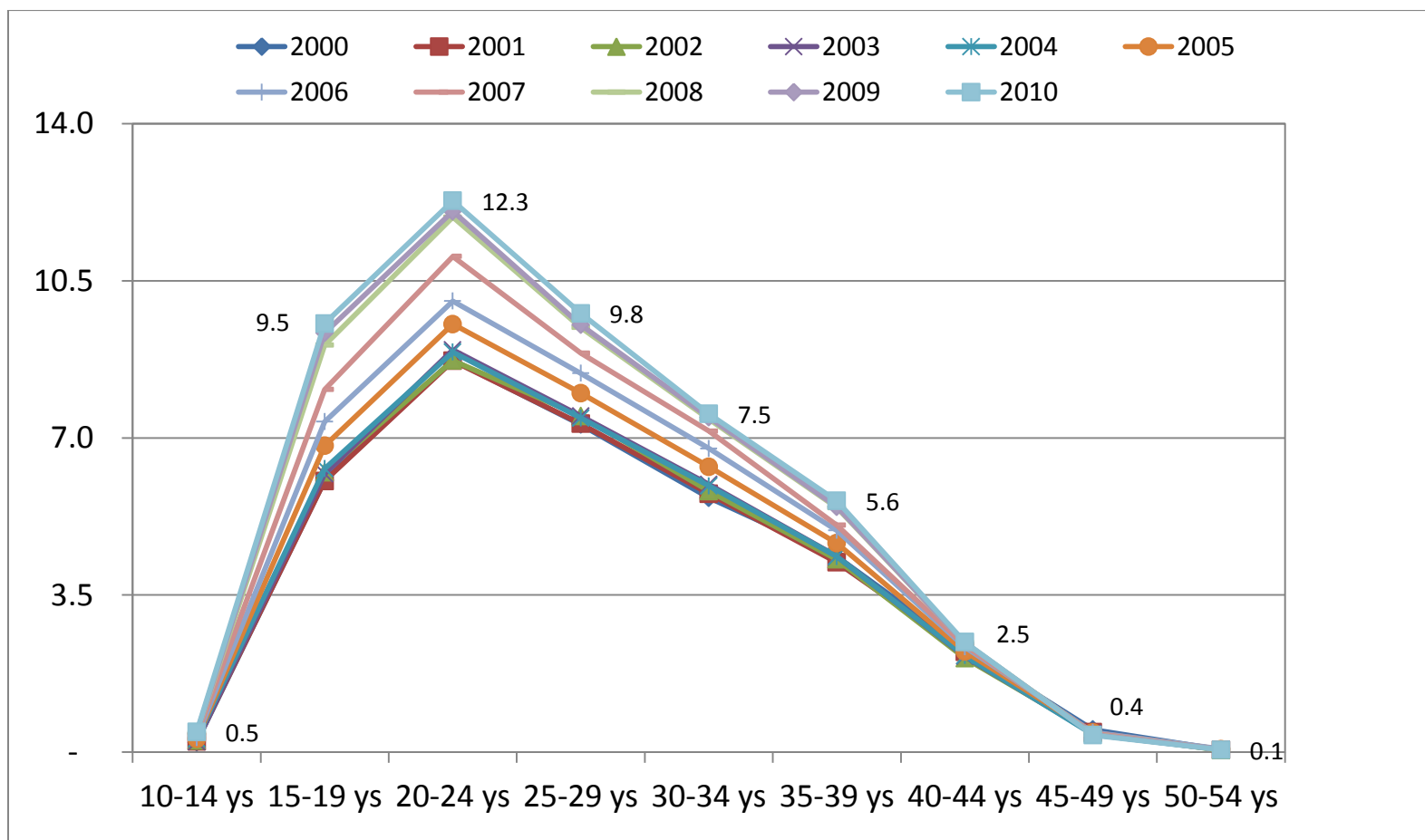
*/ Abortions: all ICD-10 codes: O00 - O08 and Z303 (legal abortion)

Figure 2: Abortion-related Hospitalizations as proportion of Live-Births, by years and by age-groups. MOH Mexico, 2000-2010



Sources: Mexico MOH Sistema Automatizado de Egresos Hospitalarios (SAEH), 2000-2010. Abortion includes all ICD-10 codes: O00 - O08 and Z303 (legal abortion)

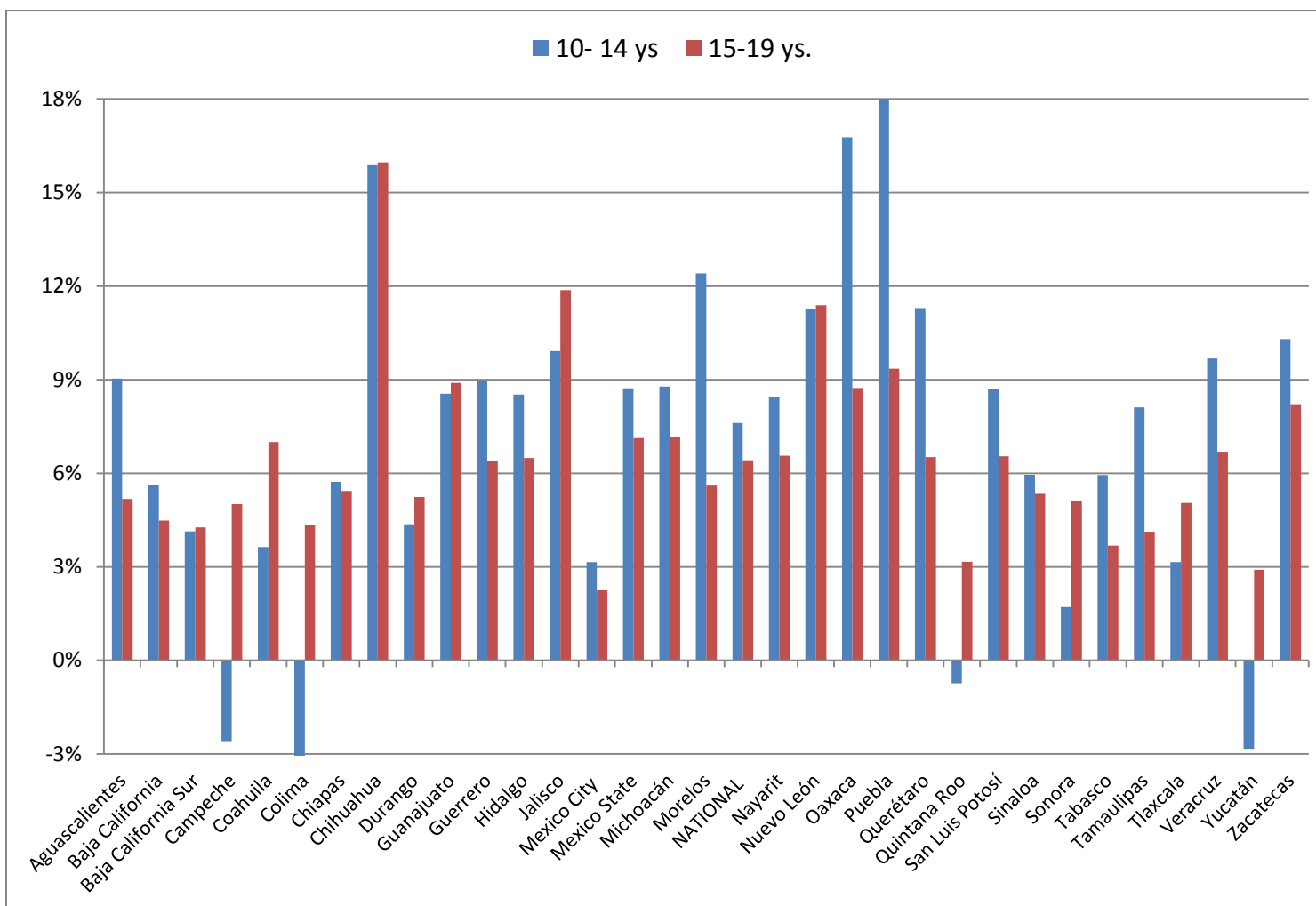
Figure 3: Abortion Hospitalization Rates by years and by age groups, Mexico MOH 2000-2010



Sources: Numerator. Mexico MOH Sistema Automatizado de Egresos Hospitalarios (SAEH), 2000-2010,
 Denominator: Population Projections 2005-20030, CONAPO 2006 (ref. 12);

Hospitalizaion Rate x 1,000 women 10-54 years of age. Abortion includes all ICD-10 codes: O00 - O08 and Z303 (legal abortion

Figure 4: Mean yearly increase in Abortion Hospitalizations among 10-14 ys. and 15-19 ys. adolescents by federal entities, Mexico MOH 2000-2010.



Sources: Mexico MOH Sistema Automatizado de Egresos Hospitalarios (SAEH), 2000-2010. Abortion includes all ICD-10 codes: O00 - O08 and Z303 (legal abortion)