



HPV
INFORMATION
CENTRE

Human Papillomavirus and Related Diseases Report

AMERICAS

Version posted at www.hpvcentre.net on 17 April 2018

Copyright and Permissions

©ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre), 2018.

All rights reserved. HPV Information Centre publications can be obtained from the HPV Information Centre Secretariat, Institut Català d'Oncologia, Avda. Gran Via de l'Hospitalet, 199-203 08908 L'Hospitalet del Llobregat (Barcelona) Spain. E-mail: hvpcentre@iconcologia.net. Requests for permission to reproduce or translate HPV Information Centre publications - whether for sale or for non-commercial distribution- should be addressed to the HPV Information Centre Secretariat, at the above address.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part the HPV Information Centre concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or of certain manufacturers products does not imply that they are endorsed or recommended the HPV Information Centre in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters. All reasonable precautions have been taken by the HPV Information Centre to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the HPV Information Centre be liable for damages arising from its use.

The development of this report has been supported by grants from the European Comission (7th Framework Programme grant HEALTH-F3-2010-242061, HEALTH-F2-2011-282562, HPV AHEAD).

Recommended citation:

Bruni L, Barrionuevo-Rosas L, Albero G, Serrano B, Mena M, Gómez D, Muñoz J, Bosch FX, de Sanjosé S. ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre). Human Papillomavirus and Related Diseases in Americas. Summary Report 17 April 2018. [Date Accessed]

Abbreviations

Table 1: Abbreviations

Abbreviation	Full term
HPV	Human papillomavirus
PREHDICT Project	Health economic modelling of prevention strategies for HPV-related diseases in European countries
HPV Information Centre	ICO Information Centre on HPV and Cervical Cancer
GW	Genital warts
RRP	Recurrent respiratory papillomatosis
SIL	Squamous intraepithelial lesions
LSIL	Low-grade cervical lesions
HSIL	High-grade cervical lesions
ICC	Invasive cervical cancer
CIS	Carcinoma in situ
CIN	Cervical intraepithelial neoplasia
AIN2/3	Anal intraepithelial neoplasia of grade 2 and/or 3
VIN 2/3	Vulvar intraepithelial neoplasia of grade 2 and/or 3
VaIN 2/3	Vaginal intraepithelial neoplasia of grade 2 and/or 3
PeIN 2/3	Penile intraepithelial neoplasia of grade 2 and/or 3
95% CI	95% confidence interval
N	Number of cases tested
HPV Prev	HPV prevalence
ASR	Age-standardised rate
MSM	Men who have sex with men
Non MSM	Heterosexual men
SCC	Squamous cell carcinomas
STI	Sexually transmitted infections
HIV/AIDS	Human immunodeficiency virus/acquired immunodeficiency syndrome
TS	Type specific
EIA	Enzyme immunoassay
RLBM	Reverse line blotting method
RFLP	Restriction fragment length polymorphism
RHA	Reverse hybridisation assay
RLH	Reverse line hybridisation
LiPA	Line probe assay
SBH	Southern blot hybridisation
ISH	In situ hybridisation
MABA	Micro array-based assay
LBA	Line blot assay
HC2	Hybrid Capture 2
SAT	Suspension array technology
PCR	Polymerase chain reaction
SPF	Short primer fragment
q-PCR	Quantitative polymerase chain reaction
RLBH	Reverse line blot hybridisation
RT-PCR	Real-time polymerase chain reaction
DBH	Dot blot hybridisation
HR	High risk
DSA	Direct sequence analysis
MAA	Microchip array assay

Executive summary

Human papillomavirus (HPV) infection is now a well-established cause of cervical cancer and there is growing evidence of HPV being a relevant factor in other anogenital cancers (anus, vulva, vagina and penis) as well as head and neck cancers. HPV types 16 and 18 are responsible for about 70% of all cervical cancer cases worldwide. HPV vaccines that prevent HPV 16 and 18 infections are now available and have the potential to reduce the incidence of cervical and other anogenital cancers.

This report provides key information for Americas on: cervical cancer; other anogenital cancers, and head and neck cancers; HPV-related statistics; factors contributing to cervical cancer; cervical cancer screening practises; HPV vaccine introduction, and other relevant immunization indicators. The report is intended to strengthen the guidance for health policy implementation of primary and secondary cervical cancer prevention strategies in the region.

Americas has an estimated population of 398.6 million women aged 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 83,195 women are diagnosed with cervical cancer and 35,673 die from the disease. Cervical cancer ranks* as the fourth most frequent cancer among women in Americas.

* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st). Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

Table 2: Key statistics on Americas and its regions

	Americas	Caribbean	Central America	Northern America	South America
Population					
Women at risk for cervical cancer (Female population aged ≥15 yrs) in millions	398.6	16.8	65.3	150.2	166.2
Burden of cervical cancer					
Annual number of new cervical cancer cases	83,195	5,018	18,792	14,377	45,008
Standardised incidence rates per 100,000 population	14.9	21.0	23.5	6.6	20.3
Annual number of cervical cancer deaths	35,673	2,254	6,937	7,108	19,374
Standardised mortality rates per 100,000 population	5.9	8.6	8.9	2.6	8.6
Burden of cervical HPV infection					
Prevalence (%) of HPV 16 and/or HPV 18 among women with:					
Normal cytology	5.4	15.8	4.7	4.4	12.1
Low-grade cervical lesions (LSIL/CIN-1)	26.7	7.6	15.0	27.1	35.6
High-grade cervical lesions (HSIL/ CIN-2 / CIN-3 / CIS)	56.9	32.6	40.8	58.6	56.3
Cervical cancer	68.2	60.2	63.1	71.4	62.6

LSIL, low-grade intraepithelial lesions; HSIL, high-grade intraepithelial lesions; CIN, cervical intraepithelial neoplasia; CIS, carcinoma in-situ. Please see the specific sections for more information.

Contents

Abbreviations	iii
Executive summary	iv
1 Introduction	1
2 Demographic and socioeconomic factors	3
3 Burden of HPV-related cancers	6
3.1 Cervical cancer	6
3.1.1 Incidence	6
3.1.2 Mortality	21
3.1.3 Comparison of incidence and mortality	32
3.2 Anogenital cancers other than the cervix	33
3.2.1 Anal cancer	36
3.2.2 Vulvar cancer	49
3.2.3 Vaginal cancer	57
3.2.4 Penile cancer	65
3.3 Head and neck cancers	73
3.3.1 Pharyngeal cancer (excluding nasopharynx)	76
4 HPV-related statistics	82
4.1 HPV burden in women with normal cervical cytology, cervical precancerous lesions or invasive cervical cancer	82
4.1.1 HPV prevalence in women with normal cervical cytology	83
4.1.2 HPV type distribution among women with normal cervical cytology, precancerous cervical lesions and cervical cancer	92
4.1.3 HPV type distribution among HIV+ women with normal cervical cytology	107
4.1.4 Terminology	108
4.2 HPV burden in anogenital cancers other than the cervix	109
4.2.1 Anal cancer and precancerous anal lesions	109
4.2.2 Vulvar cancer and precancerous vulvar lesions	112
4.2.3 Vaginal cancer and precancerous vaginal lesions	115
4.2.4 Penile cancer and precancerous penile lesions	117
4.3 HPV burden in men	120
4.4 HPV burden in the head and neck	126
4.4.1 Burden of oral HPV infection in healthy population	126
4.4.2 HPV burden in head and neck cancers	126
5 Factors contributing to cervical cancer	134
6 Sexual behaviour and reproductive health indicators	138
7 HPV preventive strategies	140
7.1 Cervical cancer screening practices	140
7.2 HPV vaccination	144
7.2.1 HPV vaccine licensure and introduction	144
8 Protective factors for cervical cancer	146
9 References	150
10 Glossary	161

List of Figures

1	American regions	1
2	Population pyramid of the Americas	4
3	Population trends in four selected age groups in the Americas for 2017	4
4	Age-standardised incidence rates (ASR) of cervical cancer in regions of the Americas (estimates for 2012)	6
5	Age-standardised incidence rates of cervical cancer in the Americas (estimates for 2012)	7
6	Age-standardised incidence rate of cervical cancer cases attributable to HPV by country in the Americas (estimates for 2012)	8
7	Ranking of cervical cancer versus other cancers among all women and women aged 15-44 years, according to incidence rates in the Americas (estimates for 2012)	10
8	Comparison of the ten most frequent cancers in all women in the Americas and its regions (estimates for 2012)	11
9	Comparison of the ten most frequent cancers in women aged 15-44 years by the Americas and its regions (estimates for 2012)	12
10	Age-specific incidence of cervical cancer in the Americas and its regions (estimates for 2012)	13
11	Annual number of new cases of cervical cancer by age group in American regions (estimates for 2012)	14
12	Annual number of cases and age-specific incidence rates of cervical cancer in the Americas and its regions (estimates for 2012)	15
13	Annual number of cases and age-specific incidence rates of cervical cancer in the Americas and its regions (estimates for 2012) (Continued)	16
14	Time trends in cervical cancer incidence type in Brazil (cancer registry data)	18
15	Time trends in cervical cancer incidence type in Canada (cancer registry data)	18
16	Time trends in cervical cancer incidence type in Colombia (cancer registry data)	19
17	Time trends in cervical cancer incidence type in Ecuador (cancer registry data)	19
18	Time trends in cervical cancer incidence type in the USA (cancer registry data)	20
19	Age-standardised mortality rates (ASR) of cervical cancer in American regions (estimates for 2012)	21
20	Age-standardised mortality rates of cervical cancer in the Americas (estimates for 2012)	22
21	Ranking of cervical cancer versus other cancers among all women and women aged 15-44 years, according to mortality rates in the Americas (estimates for 2012)	24
22	Comparison of the ten most frequent cancer deaths in women aged 15-44 years in the Americas and its regions (estimates for 2012)	25
23	Comparison of the ten most frequent cancer deaths in women of all ages in the Americas and its regions (estimates for 2012)	26
24	Age-specific mortality of cervical cancer in the Americas and its regions (estimates for 2012)	27
25	Annual number of deaths of cervical cancer by age group in American regions (estimates for 2012)	28
26	Annual number of deaths and age-specific mortality rates of cervical cancer in the Americas and its regions (estimates for 2012)	29
27	Annual number of deaths and age-specific mortality rates of cervical cancer in the Americas and its regions (estimates for 2012) (Continued)	30
28	Age-specific incidence and mortality rates of cervical cancer in the Americas and its regions (estimates for 2012)	32
29	Age-standardised incidence rates of anogenital cancers other than the cervix in the Americas (estimates for 2012)	33
30	Age-standardised incidence rate of other anogenital cancer cases attributable to HPV by country in the Americas (estimates for 2012)	35
31	Time trends in anal cancer incidence in Brazil (cancer registry data)	43
32	Time trends in anal cancer incidence in Canada (cancer registry data)	44
33	Time trends in anal cancer incidence in Colombia (cancer registry data)	45
34	Time trends in anal cancer incidence in Costa Rica (cancer registry data)	46
35	Time trends in anal cancer incidence in Ecuador (cancer registry data)	47
36	Time trends in anal cancer incidence in the USA (cancer registry data)	48
37	Time trends in vulvar cancer incidence in Brazil (cancer registry data)	54
38	Time trends in vulvar cancer incidence in Canada (cancer registry data)	54
39	Time trends in vulvar cancer incidence in Colombia (cancer registry data)	54
40	Time trends in vulvar cancer incidence in Costa Rica (cancer registry data)	55
41	Time trends in vulvar cancer incidence in Ecuador (cancer registry data)	55
42	Time trends in vulvar cancer incidence in USA (cancer registry data)	55
43	Time trends in vaginal cancer incidence in Brazil (cancer registry data)	62
44	Time trends in vaginal cancer incidence in Canada (cancer registry data)	62
45	Time trends in vaginal cancer incidence in Colombia (cancer registry data)	62
46	Time trends in vaginal cancer incidence in Costa Rica (cancer registry data)	63
47	Time trends in vaginal cancer incidence in Ecuador (cancer registry data)	63
48	Time trends in vaginal cancer incidence in USA (cancer registry data)	63
49	Time trends in penile cancer incidence in Brazil (cancer registry data)	70
50	Time trends in penile cancer incidence in Canada (cancer registry data)	70
51	Time trends in penile cancer incidence in Colombia (cancer registry data)	71
52	Time trends in penile cancer incidence in Costa Rica (cancer registry data)	71

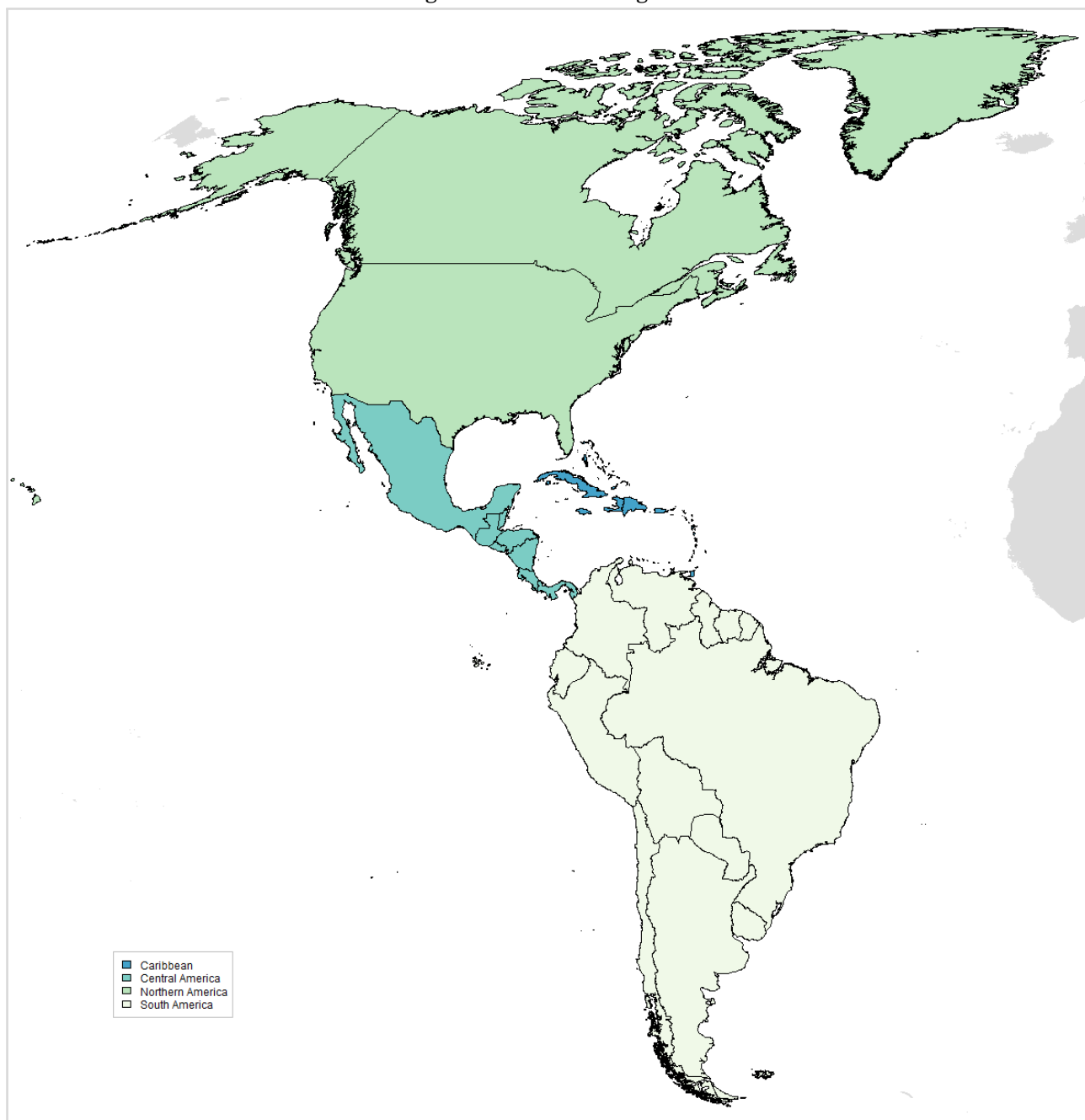
53	Time trends in penile cancer incidence in Ecuador (cancer registry data)	71
54	Time trends in penile cancer incidence in USA (cancer registry data)	72
55	Age-standardised incidence rates of head and neck cancer in the Americas (estimates for 2012)	73
56	Age-standardised incidence rate of head and neck cancer cases attributable to HPV by country in the Americas (estimates for 2012)	75
57	Comparison of cancer incidence and mortality of pharynx (excluding nasopharynx) in males by age group in the Americas and its regions. Includes ICD-10 codes: C09-10,C12-14 (estimates for 2012).	78
58	Comparison of cancer incidence and mortality of pharynx (excluding nasopharynx) in females by age group in the Americas and its regions. Includes ICD-10 codes: C09-10,C12-14 (estimates for 2012).	80
59	Prevalence of HPV among women with normal cervical cytology in the Americas	83
60	Crude age-specific HPV prevalence (%) and 95% confidence interval in women with normal cervical cytology in the Americas and its regions	84
61	Prevalence of HPV among women with normal cervical cytology in the Americas by country and study	85
62	Prevalence of HPV among women with normal cervical cytology in the Americas by country and study (continued)	87
63	Prevalence of HPV among women with normal cervical cytology in the Americas by country and study (continued)	89
64	Prevalence of HPV among women with normal cervical cytology in the Americas by country and study (continued)	91
65	Prevalence of HPV 16 among women with normal cervical cytology in the Americas by country and study	93
66	Prevalence of HPV 16 among women with normal cervical cytology in the Americas by country and study (continued)	94
67	Prevalence of HPV 16 among women with low-grade cervical lesions in the Americas by country and study	95
68	Prevalence of HPV 16 among women with low-grade cervical lesions in the Americas by country and study (continued)	96
69	Prevalence of HPV 16 among women with high-grade cervical lesions in the Americas by country and study	97
70	Prevalence of HPV 16 among women with high-grade cervical lesions in the Americas by country and study (continued)	98
71	Prevalence of HPV 16 among women with invasive cervical cancer in the Americas by country and study	99
72	Prevalence of HPV 16 among women with invasive cervical cancer in the Americas by country and study (continued)	100
73	Comparison of the ten most frequent HPV oncogenic types among women with and without cervical lesions in the Americas and its regions	101
74	Comparison of the ten most frequent HPV oncogenic types among women with and without cervical lesions in the Americas and its regions (continued)	102
75	Comparison of the ten most frequent HPV oncogenic types among women with invasive cervical cancer by histology in the Americas and its regions	103
76	Comparison of the ten most frequent HPV oncogenic types among women with invasive cervical cancer by histology in the Americas and its regions (continued)	104
77	Comparison of the ten most frequent HPV types in anal cancer cases in the Americas and the World	110
78	Comparison of the ten most frequent HPV types in AIN 2/3 cases in the Americas and the World	111
79	Comparison of the ten most frequent HPV types in cases of vulvar cancer in the Americas and the World	114
80	Comparison of the ten most frequent HPV types in VIN 2/3 cases in the Americas and the World	114
81	Comparison of the ten most frequent HPV types in vaginal cancer cases in the Americas and the World	116
82	Comparison of the ten most frequent HPV types in VaIN 2/3 cases in the Americas and the World	116
83	Comparison of the ten most frequent HPV types in penile cancer cases in the Americas and the World	119
84	Comparison of the ten most frequent HPV types in PeIN 2/3 cases in the Americas and the World	119
85	Prevalence of female tobacco smoking in the Americas	134
86	Total fertility rates in the Americas	135
87	Prevalence of hormonal contraceptive use in the Americas	136
88	Prevalence of HIV in the Americas	137
89	Percentage of 15-year-old girls who report sexual intercourse in the Americas	138
90	Status of HPV vaccination programmes in the Americas	144
91	Prevalence of male circumcision in the Americas	146
92	Prevalence of condom use in the Americas	148

List of Tables

1	Abbreviations	iii
2	Key statistics on Americas and its regions	iv
3	Population (in millions) estimates in the Americas for 2017	3
4	Sociodemographic indicators in the Americas	5
5	Incidence of cervical cancer in the Americas (estimates for 2012)	9
6	Cervical cancer mortality in the Americas (estimates for 2012)	22
7	Incidence of anal cancer in the Americas by cancer registry and sex	36
8	Incidence of vulvar cancer in the Americas by cancer registry	49
9	Incidence of vaginal cancer in the Americas by cancer registry	57
10	Incidence of penile cancer in the Americas by cancer registry	65
11	Cancer incidence of pharynx (excluding nasopharynx) in the Americas and its regions by sex. Includes ICD-10 codes: C09-10, C12-14 (estimates for 2012).	76
12	Cancer mortality of pharynx (excluding nasopharynx) in the Americas and its regions by sex. Includes ICD-10 codes: C09-10, C12-14 (estimates for 2012).	77
13	Prevalence of HPV 16/18 in women with normal cytology, precancerous cervical lesions and invasive cervical cancer in the Americas	92
14	Type-specific HPV prevalence in women with normal cervical cytology, precancerous cervical lesions and invasive cervical cancer in the Americas	105
15	Type-specific HPV prevalence among invasive cervical cancer cases in the Americas by histology	106
16	American studies on HPV prevalence among HIV women with normal cytology	107
17	American studies on HPV prevalence among anal cancer cases (male and female)	109
18	American studies on HPV prevalence among AIN 2/3 cases (male and female)	110
19	American studies on HPV prevalence among vulvar cancer cases	112
20	American studies on HPV prevalence among VIN 2/3 cases	113
21	American studies on HPV prevalence among vaginal cancer cases	115
22	American studies on HPV prevalence among VaIN 2/3 cases	115
23	American studies on HPV prevalence among penile cancer cases	117
24	American studies on HPV prevalence among PeIN 2/3 cases	118
25	American studies on anogenital HPV prevalence among men	120
26	American studies on anogenital HPV prevalence among men from special subgroups	122
27	American studies on oral HPV prevalence among healthy population	126
28	American studies on HPV prevalence among cases of oral cavity cancer	126
29	American studies on HPV prevalence in cases of oropharyngeal cancer	129
30	American studies on HPV prevalence in cases of hypopharyngeal or laryngeal cancer	132
31	Cervical cancer screening policies in the Americas	140
32	HPV vaccination policies for the female population in the Americas	145
33	References of studies included	150
34	Glossary	161

1 Introduction

Figure 1: American regions



The HPV Information Centre aims to compile and centralise updated data and statistics on human papillomavirus (HPV) and HPV-related cancers. This report aims to summarise the data available to fully evaluate the burden of disease in Americas and to facilitate stakeholders and relevant bodies of decision makers to formulate recommendations on the prevention of cervical cancer and other HPV-related cancers. Data include relevant cancer statistic estimates, epidemiological determinants of cervical cancer such as demographics, socioeconomic factors, risk factors, burden of HPV infection in women and men, and cervical screening and immunisation practises. The report is structured into the following sections:

Section 2, Demographic and socioeconomic factors. This section summarises the sociodemographic profile of Americas. For analytical purposes, Americas is divided into four regions: Caribbean, Central America, Northern America, South America (Figure 1).

Section 3, Burden of HPV-related cancers. This section describes the current burden of invasive cervical cancer and other HPV-related cancers in Americas with estimates of prevalence, incidence and mortality rates.

Section 4, HPV-related statistics. This section summarises reports on prevalence of HPV and HPV type-specific distribution in women with normal cytology, women with precancerous lesions and invasive cervical cancer. In addition, the burden of HPV in other anogenital cancers (anus, vulva, vagina, and penis) is presented.

Section 5, Factors contributing to cervical cancer. This section describes factors that can modify the natural history of HPV and cervical carcinogenesis such as the use of smoking, parity, oral contraceptive use and co-infection with HIV.

Section 6, Sexual behaviour and reproductive health indicators. This section presents sexual and reproductive behaviour indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers.

Section 7, HPV preventive strategies. This section presents preventive strategies that include basic characteristics and performance of cervical cancer screening status, status of HPV vaccine licensure introduction, and recommendations in national immunisation programmes.

Section 8, Protective factors for cervical cancer. This section presents the prevalence of male circumcision and condom use.

2 Demographic and socioeconomic factors

Table 3: Population (in millions) estimates in the Americas for 2017

Region / Country	Male			Female		
	10-14 years	15+ years	Total	10-14 years	15+ years	Total
Americas^{1,a,±}	39.74	383.15	500.03	38.20	398.60	510.76
Caribbean^{1,b,±}	1.83	16.19	21.68	1.76	16.83	22.09
Antigua & Bar. ^{1,±}	0.00	0.03	0.04	0.00	0.04	0.05
Bahamas ^{1,±}	0.01	0.15	0.19	0.01	0.16	0.20
Barbados ^{1,±}	0.01	0.11	0.14	0.01	0.12	0.15
Cuba ^{1,±}	0.33	4.79	5.72	0.31	4.80	5.67
Dominica ^{2,±}	0.00	0.03	0.04	0.00	0.03	0.04
Dominican Rep. ^{1,±}	0.53	3.75	5.36	0.51	3.86	5.41
Grenada ^{1,±}	0.00	0.04	0.05	0.00	0.04	0.05
Haiti ^{1,±}	0.59	3.59	5.43	0.58	3.77	5.55
Jamaica ^{1,±}	0.11	1.07	1.40	0.11	1.10	1.41
St Kitts & Nev. ^{2,±}	0.00	0.02	0.03	0.00	0.02	0.03
St Lucia ^{1,±}	0.01	0.07	0.09	0.01	0.07	0.10
St Vincent ^{1,±}	0.00	0.04	0.06	0.00	0.04	0.05
Trinidad & Tob. ^{1,±}	0.05	0.53	0.67	0.05	0.56	0.69
Central America^{1,±}	8.38	62.80	87.87	8.05	65.33	89.38
Belize ^{1,±}	0.02	0.13	0.19	0.02	0.13	0.19
Costa Rica ^{1,±}	0.18	1.91	2.45	0.18	1.93	2.45
El Salvador ^{1,±}	0.29	2.07	2.89	0.27	2.50	3.28
Guatemala ^{1,±}	0.99	5.23	8.32	0.95	5.70	8.68
Honduras ^{1,±}	0.45	2.87	4.15	0.43	2.92	4.15
Mexico ^{1,±}	5.97	46.98	64.78	5.74	48.38	65.44
Nicaragua ^{1,±}	0.31	2.14	3.07	0.29	2.27	3.15
Panama ^{1,±}	0.18	1.48	2.03	0.17	1.49	2.02
Northern America^{1,c,±}	11.69	145.76	180.10	11.23	150.22	183.12
Canada ^{1,±}	0.98	15.16	18.17	0.93	15.59	18.45
USA ^{1,±}	10.70	130.55	161.87	10.29	134.58	164.61
South America^{1,d,±}	17.84	158.40	210.37	17.16	166.23	216.18
Argentina ¹	1.84	16.07	21.67	1.78	17.19	22.60
Bolivia ^{1,±}	0.58	3.75	5.53	0.56	3.80	5.52
Brazil ^{1,±}	8.50	79.94	103.80	8.18	84.51	107.44
Chile ^{1,±}	0.63	7.21	9.04	0.61	7.51	9.28
Colombia ^{1,±}	2.05	18.26	24.14	1.96	19.29	24.93
Ecuador ^{1,±}	0.78	5.89	8.31	0.75	6.00	8.32
Guyana ^{1,±}	0.04	0.28	0.39	0.04	0.28	0.38
Paraguay ^{1,±}	0.33	2.43	3.46	0.32	2.37	3.36
Peru ^{1,±}	1.45	11.57	16.07	1.39	11.79	16.10
Suriname ^{1,±}	0.02	0.20	0.28	0.02	0.21	0.28
Uruguay ^{1,±}	0.13	1.30	1.67	0.12	1.43	1.79
Venezuela ^{1,±}	1.47	11.39	15.88	1.41	11.75	16.05
Latin America & Caribbean^{1,±}	28.05	237.39	319.93	26.97	248.38	327.64

Data accessed on 27 Mar 2017.

Please refer to original source for methods of estimation.

^a Aggregated by the HPV Information Centre pooling its individual areas/countries.

^b Including Anguilla, British Virgin Islands, Caribbean Netherlands, Cayman Islands, Dominica, Montserrat, Saint Kitts and Nevis, Sint Maarten (Dutch part) and Turks and Caicos Islands.

^c Including Bermuda, Greenland, and Saint-Pierre-et-Miquelon.

^d Including Falkland Islands (Malvinas).

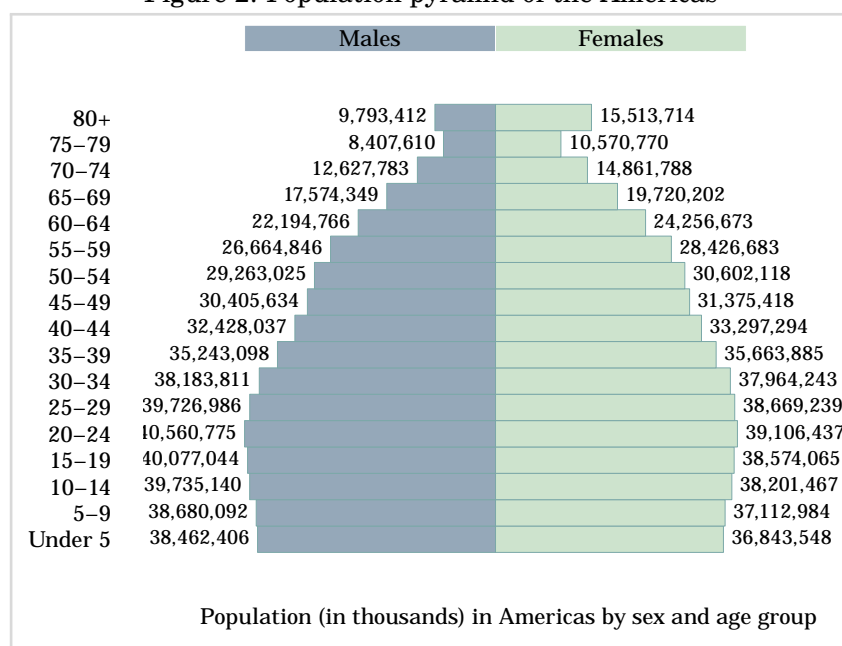
Year of estimate: ± 2017;

Data sources:

¹ United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: <https://esa.un.org/unpd/wpp/Download/Standard/Population/>. [Accessed on March 21, 2017].

² International Programs Center for Demographic and Economic Studies, Population Division, U.S. Census Bureau. International Database. Available at <http://www.census.gov/population/international/data/idb/informationGateway.php>. [Accessed on March 21, 2017].

Figure 2: Population pyramid of the Americas



Data accessed on 27 Mar 2017.

Please refer to original source for methods of estimation.

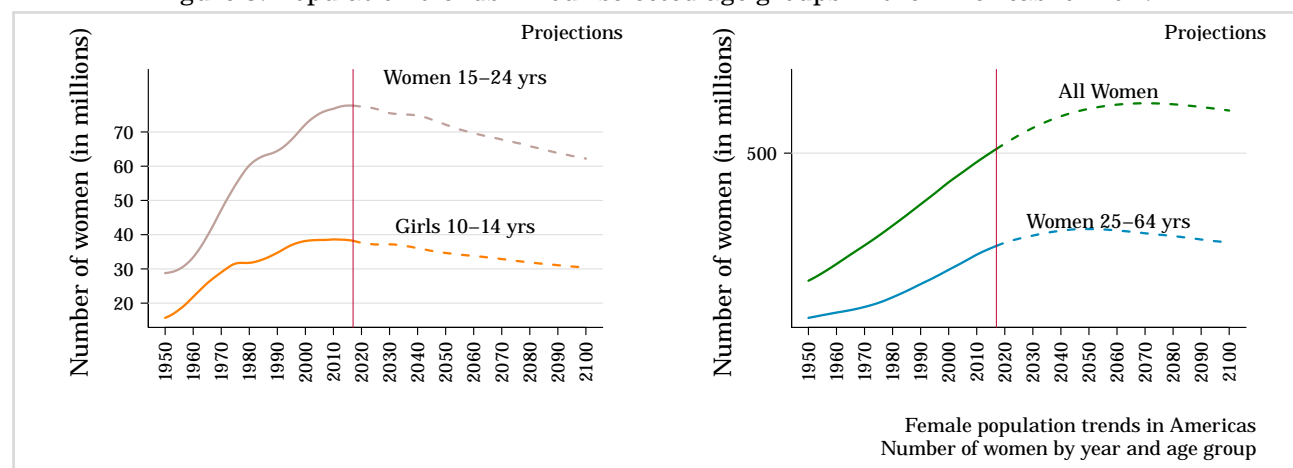
Aggregated by the HPV Information Centre pooling its individual areas/countries.

Year of estimate: 2017;

Data sources:

United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: <https://esa.un.org/unpd/wpp/Download/Standard/Population/>. [Accessed on March 21, 2017].

Figure 3: Population trends in four selected age groups in the Americas for 2017



Data accessed on 27 Mar 2017.

Please refer to original source for methods of estimation.

Aggregated by the HPV Information Centre pooling its individual areas/countries.

Year of estimate: 2017;

Data sources:

United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: <https://esa.un.org/unpd/wpp/Download/Standard/Population/>. [Accessed on March 21, 2017].

Table 4: Sociodemographic indicators in the Americas

Indicator	Male	Female	Total
Population in thousands ^{1,±}	500,028.9	510,760.5	1,010,789.4
Population growth rate (%) ¹	-	-	-
Median age of the population (in years) ¹	-	-	-
Population living in urban areas (%) ²	-	-	-
Crude birth rate (births per 1,000) ¹	-	-	-
Crude death rate (deaths per 1,000) ¹	-	-	-
Life expectancy at birth (in years) ^{3,a,b}	-	-	-
Adult mortality rate (probability of dying between 15 and 60 years old per 1,000) ⁴	-	-	-
Under age five mortality rate (per 1,000 live births) ^{3,c}	-	-	-
Density of physicians (per 1,000 population) ^{5,d}	-	-	-
Gross national income per capita (PPP current international \$) ^{6,e}	-	-	-
Adult literacy rate (%) (aged 15 and older) ⁷	-	-	-
Youth literacy rate (%) (aged 15-24 years) ⁷	-	-	-
Net primary school enrollment ratio ⁷	-	-	-
Net secondary school enrollment ratio ⁷	-	-	-

Data accessed on 27 Mar 2017.

Please refer to original source for methods of estimation.

^a World Population Prospects, the 2015 revision (WPP2015). New York (NY): United Nations DESA, Population Division.^b WHO annual life tables for 1985–2015 based on the WPP2015, on the data held in the WHO Mortality Database and on HIV mortality estimates prepared by UNAIDS. WHO Member States with a population of less than 90 000 in 2015 were not included in the analysis.^c Levels & Trends in Child Mortality. Report 2015. Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation. New York (NY), Geneva and Washington (DC): United Nations Children's Fund, World Health Organization, World Bank and United Nations; 2015 (http://www.unicef.org/publications/files/Child_Mortality_Report_2015_Web_9_Sept_15.pdf, accessed 26 March 2016).^d Number of medical doctors (physicians), including generalist and specialist medical practitioners, per 1 000 population.^e GNI per capita based on purchasing power parity (PPP). PPP GNI is gross national income (GNI) converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GNI as a U.S. dollar has in the United States. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Data are in current international dollars based on the 2011 ICP round.Year of estimate: [±]2017;**Data sources:**¹ United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Prospects: The 2015 Revision, DVD Edition. Available at: <https://esa.un.org/unpd/wpp/Download/Standard/Population/>. [Accessed on March 21, 2017].² United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, CD-ROM Edition. Available at: <https://esa.un.org/unpd/wup/CD-ROM/>. [Accessed on March 21, 2017].³ World Health Statistics 2016. Geneva, World Health Organization, 2016. Available at: http://who.int/entity/gho/publications/world_health_statistics/2016/en/index.html. [Accessed on March 21, 2017].⁴ World Health Organization. Global Health Observatory data repository. Available at: <http://apps.who.int/gho/data/view.main.1360?lang=en>. [Accessed on March 21, 2017].⁵ The 2016 update, Global Health Workforce Statistics, World Health Organization, Geneva (<http://www.who.int/hrh/statistics/hwfstats/>). [Accessed on March 21, 2017].⁶ World Bank, World Development Indicators Database. Washington, DC. International Comparison Program database. Available at: <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>. [Accessed on March 21, 2017].⁷ UNESCO Institute for Statistics Data Centre [online database]. Montreal, UNESCO Institute for Statistics. Available at: <http://stats.uis.unesco.org> [Accessed on March 21, 2017].

3 Burden of HPV-related cancers

3.1 Cervical cancer

Cancer of the cervix uteri is the 4th most common cancer among women worldwide, with an estimated 527,624 new cases and 265,672 deaths in 2012 (GLOBOCAN). The majority of cases are squamous cell carcinoma followed by adenocarcinomas. (*Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90*)

This section describes the current burden of invasive cervical cancer in Americas and its regions with estimates of the annual number of new cases, deaths, incidence and mortality.

3.1.1 Incidence

KEY STATS

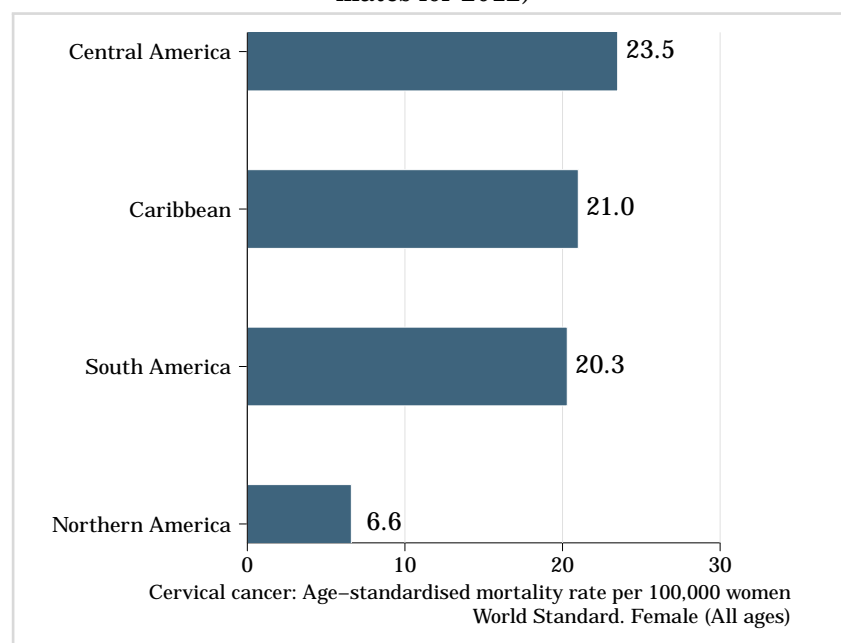
About 83,195 new cervical cancer cases are diagnosed annually in Americas (estimates for 2012).

Cervical cancer ranks* as the 4th leading cause of female cancer in Americas.

Cervical cancer is the 2nd most common female cancer in women aged 15 to 44 years in Americas.

* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st). Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

Figure 4: Age-standardised incidence rates (ASR) of cervical cancer in regions of the Americas (estimates for 2012)



Data accessed on 15 Nov 2015.

(Continued on next page)

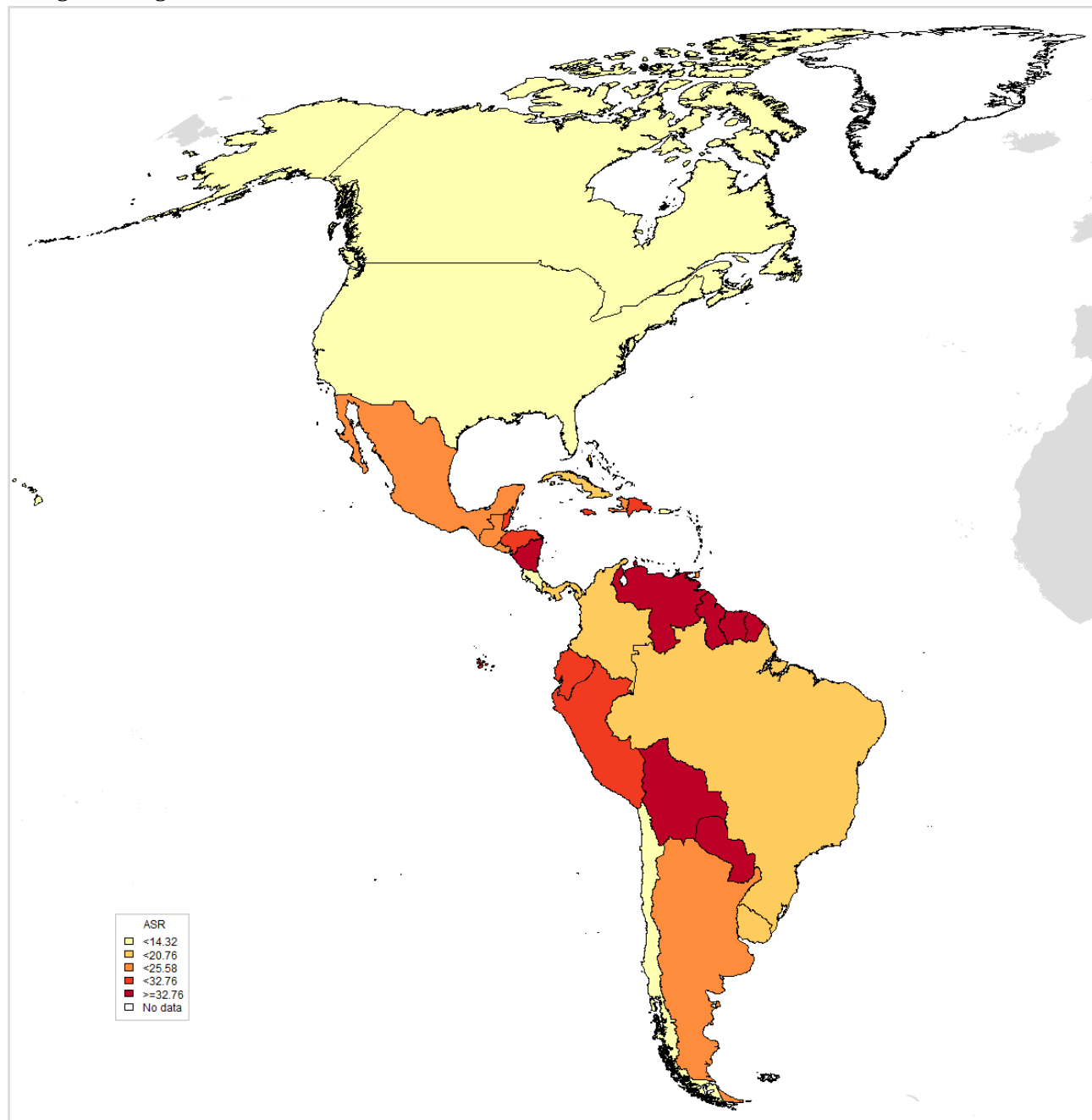
(Figure 4 – continued from previous page)

Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

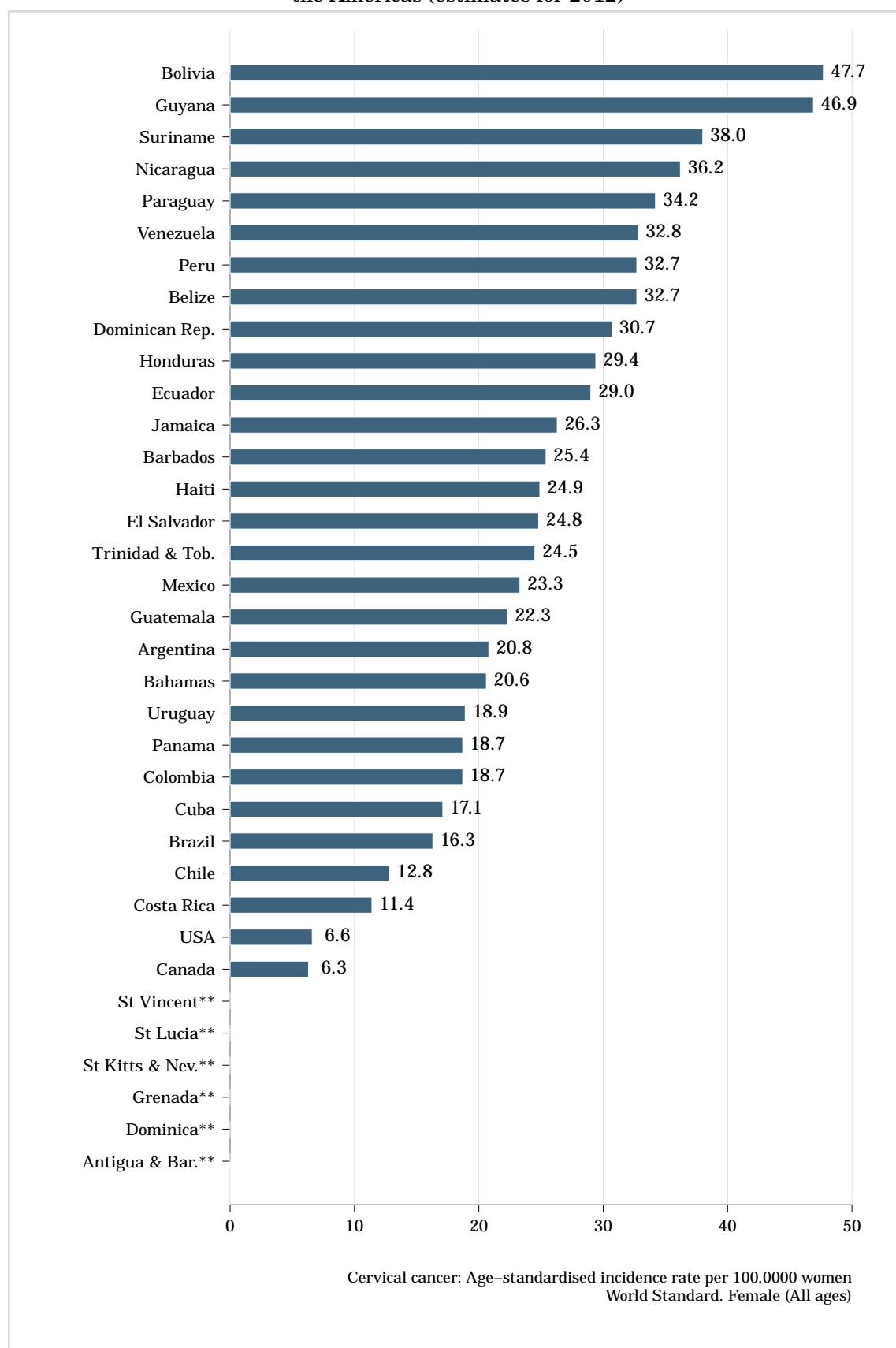
Figure 5: Age-standardised incidence rates of cervical cancer in the Americas (estimates for 2012)

**Data accessed on 15 Nov 2015.**

Rates per 100,000 women per year.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 6: Age-standardised incidence rate of cervical cancer cases attributable to HPV by country in the Americas (estimates for 2012)



** No rates are available.

Data accessed on 15 Nov 2015.

Rates per 100,000 women per year.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Table 5: Incidence of cervical cancer in the Americas (estimates for 2012)

Area	N cases	Crude rate ^a	ASR ^a	Cumulative risk (%) ages 0-74 years ^b	Ranking of CC	
					All women	Women 15-44 years
Americas	83,195	17.2	14.9	1.4	4	2
Caribbean	5,018	23.6	21.0	2.0	2	2
Antigua & Barbuda	-	-	-	-	-	-
Bahamas	44	24.5	20.6	2.1	2	2
Barbados	44	31.8	25.4	2.2	4	2
Cuba	1,287	23.0	17.1	1.6	4	2
Dominica	-	-	-	-	-	-
Dominican Republic	1,507	29.7	30.7	3.0	2	1
Grenada	-	-	-	-	-	-
Haiti	1,048	20.3	24.9	2.5	1	1
Jamaica	392	28.0	26.3	2.6	2	2
St Kitts & Nevis	-	-	-	-	-	-
St Lucia	-	-	-	-	-	-
St Vincent & The Grenadines	-	-	-	-	-	-
Trinidad & Tobago	209	30.0	24.5	2.5	2	2
Central America	18,792	23.1	23.5	2.3	2	1
Belize	43	26.2	32.7	3.1	2	1
Costa Rica	297	12.6	11.4	1.1	5	3
El Salvador	823	25.0	24.8	2.2	1	1
Guatemala	1,393	18.0	22.3	2.0	1	1
Honduras	991	25.1	29.4	2.7	1	1
Mexico	13,960	23.7	23.3	2.3	2	1
Nicaragua	934	31.0	36.2	3.5	1	1
Panama	351	19.5	18.7	1.8	2	2
Northern America	14,377	8.1	6.6	0.6	13	4
Canada	1,408	8.1	6.3	0.6	13	3
USA	12,966	8.1	6.6	0.6	13	4
South America	45,008	22.2	20.3	2.0	2	2
Argentina	4,956	23.6	20.8	2.0	3	2
Bolivia	2,029	39.5	47.7	4.9	1	1
Brazil	18,503	18.4	16.3	1.7	2	2
Chile	1,441	16.4	12.8	1.3	4	2
Colombia	4,661	19.3	18.7	1.9	2	1
Ecuador	2,094	28.2	29.0	3.0	2	1
Guyana	161	42.7	46.9	4.9	2	1
Paraguay	1,022	30.8	34.2	3.2	2	1
Peru	4,636	31.3	32.7	3.4	1	1
Suriname	107	40.2	38.0	3.7	2	1
Uruguay	402	22.9	18.9	1.8	3	2
Venezuela	4,973	33.4	32.8	3.0	2	1
Latin America & Caribbean	68,818	22.5	21.2	2.1	2	2

Data accessed on 15 Nov 2015.

ASR: Age-standardized rate. Standardized rates have been estimated using the direct method and the World population as the reference; Standardised rates have been estimated using the direct method and the World population as the reference.

Ranking of cervical cancer incidence to other cancers among all women ages 15-44 years according to highest incidence rates (ranking 1st). Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using ASR may differ.

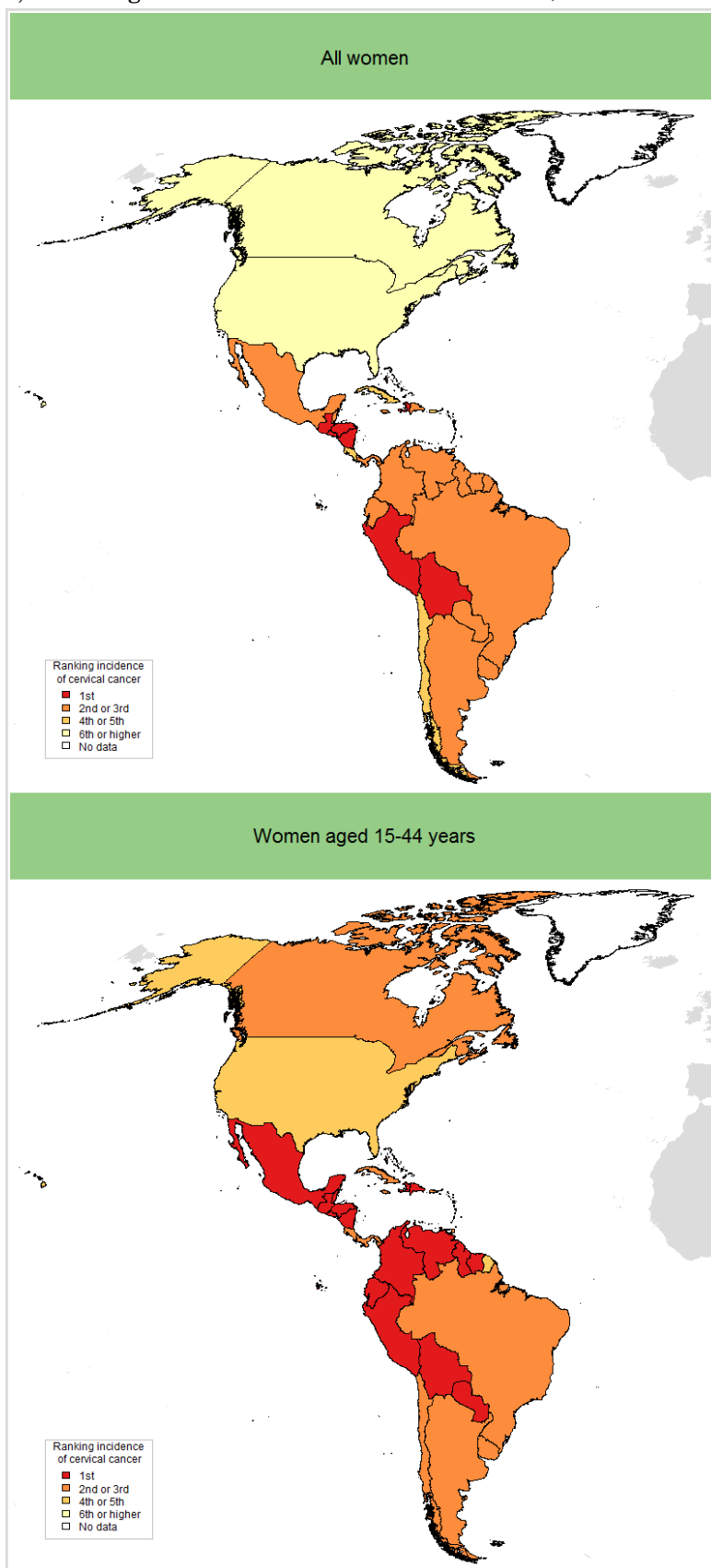
^a Rates per 100,000 women per year.

^b Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

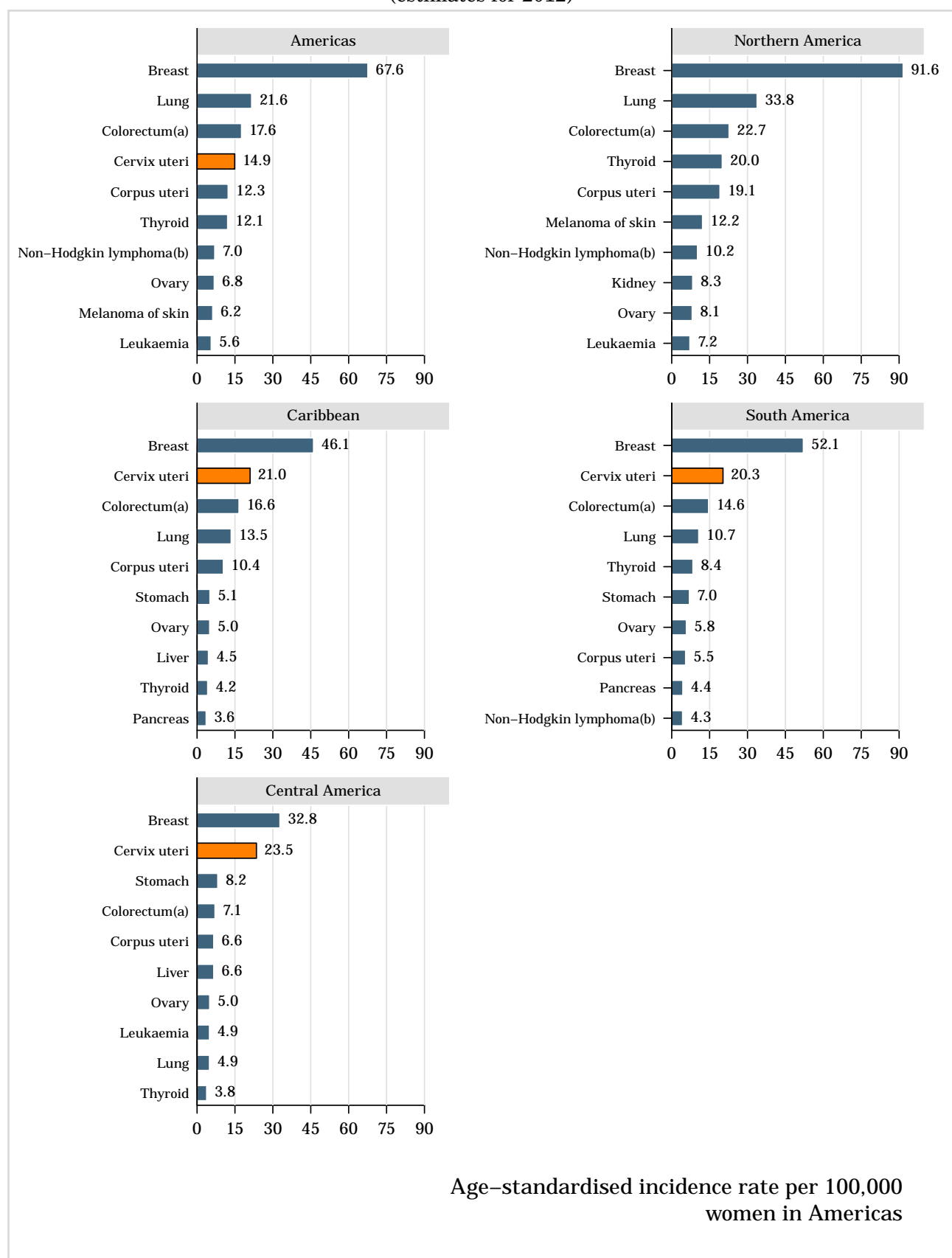
Figure 7: Ranking of cervical cancer versus other cancers among all women and women aged 15-44 years, according to incidence rates in the Americas (estimates for 2012)



Data accessed on 15 Nov 2015.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 8: Comparison of the ten most frequent cancers in all women in the Americas and its regions (estimates for 2012)



Data accessed on 15 Nov 2015.

^a Includes anal cancer (C21).

^b Includes HIV disease resulting in malignant neoplasms (B21).

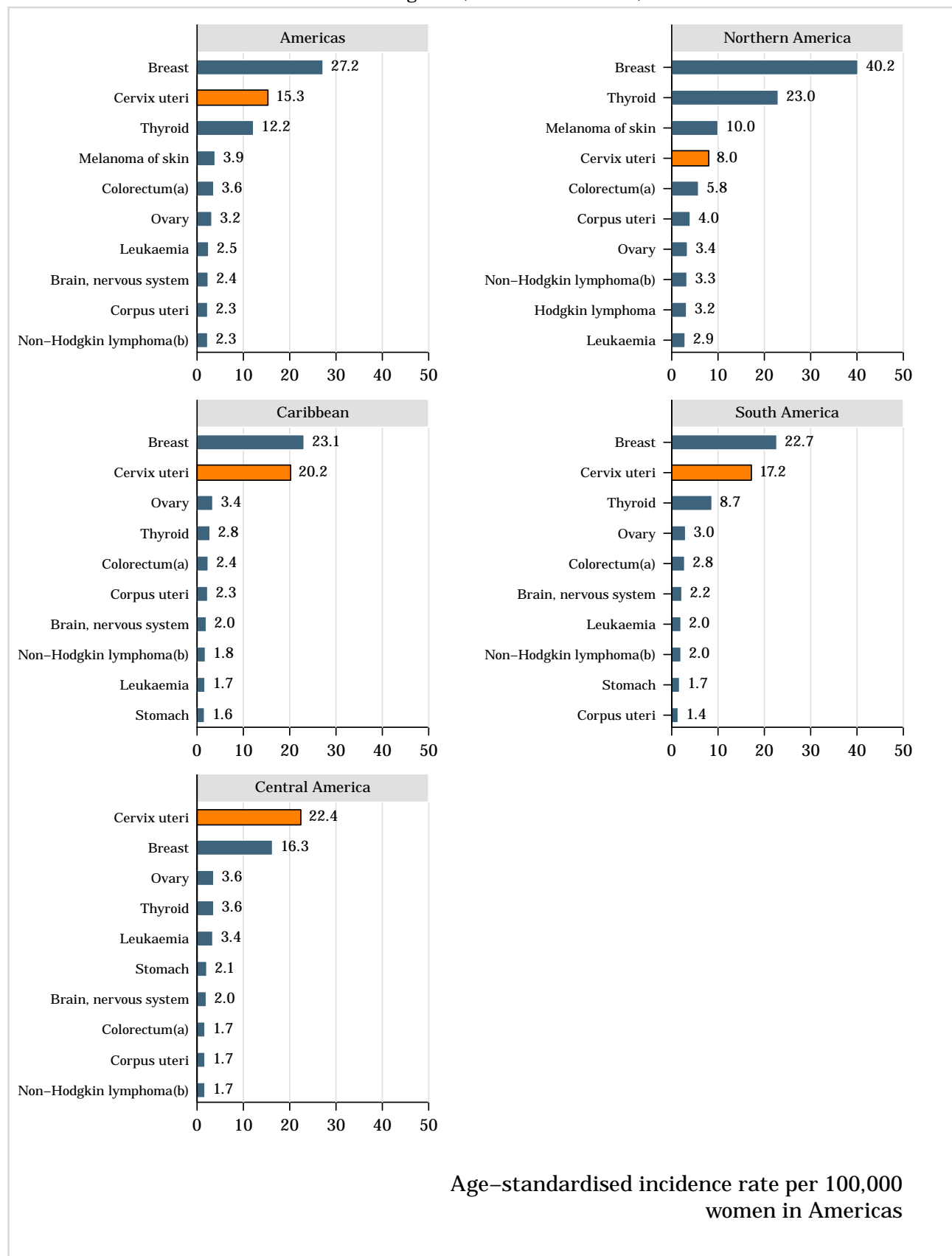
Data sources:

(Continued on next page)

(Figure 8 – continued from previous page)

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 9: Comparison of the ten most frequent cancers in women aged 15-44 years by the Americas and its regions (estimates for 2012)



Data accessed on 15 Nov 2015.

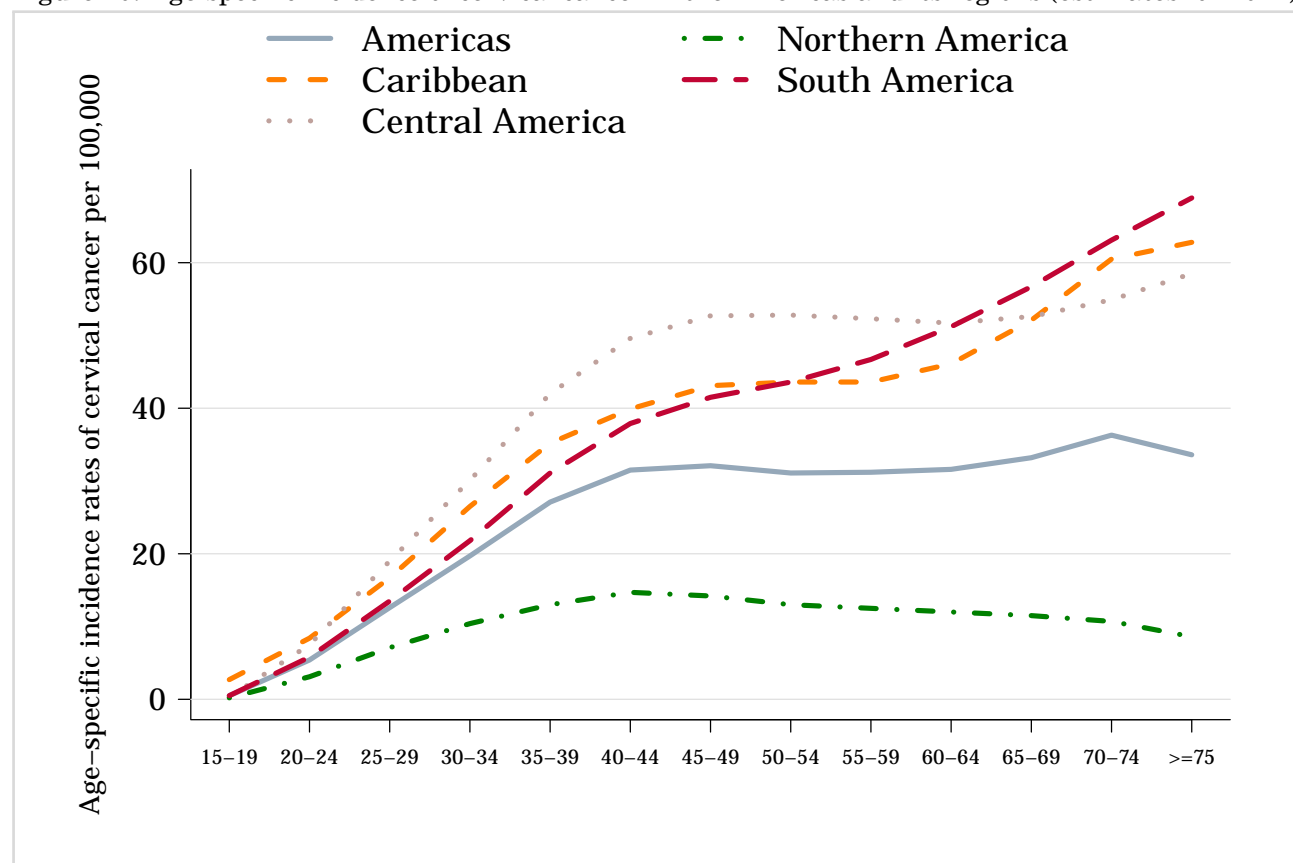
^a Includes anal cancer (C21).

^b Includes HIV disease resulting in malignant neoplasms (B21).

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 10: Age-specific incidence of cervical cancer in the Americas and its regions (estimates for 2012)

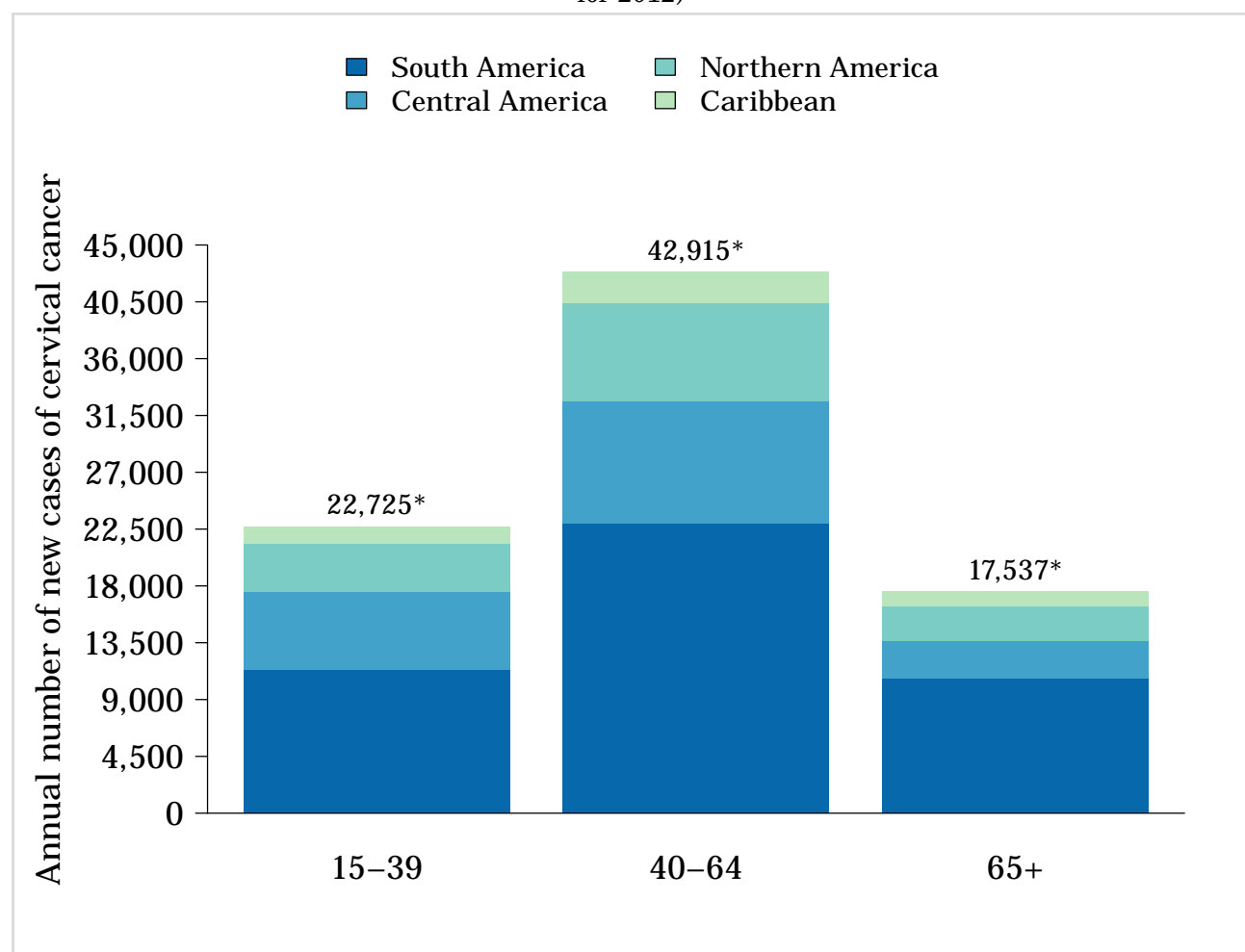


Data accessed on 15 Nov 2015.

Rates per 100,000 women per year.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 11: Annual number of new cases of cervical cancer by age group in American regions (estimates for 2012)



* South America 15-39 years: 11,385 cases. 40-64 years: 22,975 cases. 65+ years: 10,645 cases.

* Central America 15-39 years: 6,106 cases. 40-64 years: 9,668 cases. 65+ years: 3,017 cases.

* Northern America 15-39 years: 3,872 cases. 40-64 years: 7,805 cases. 65+ years: 2,697 cases.

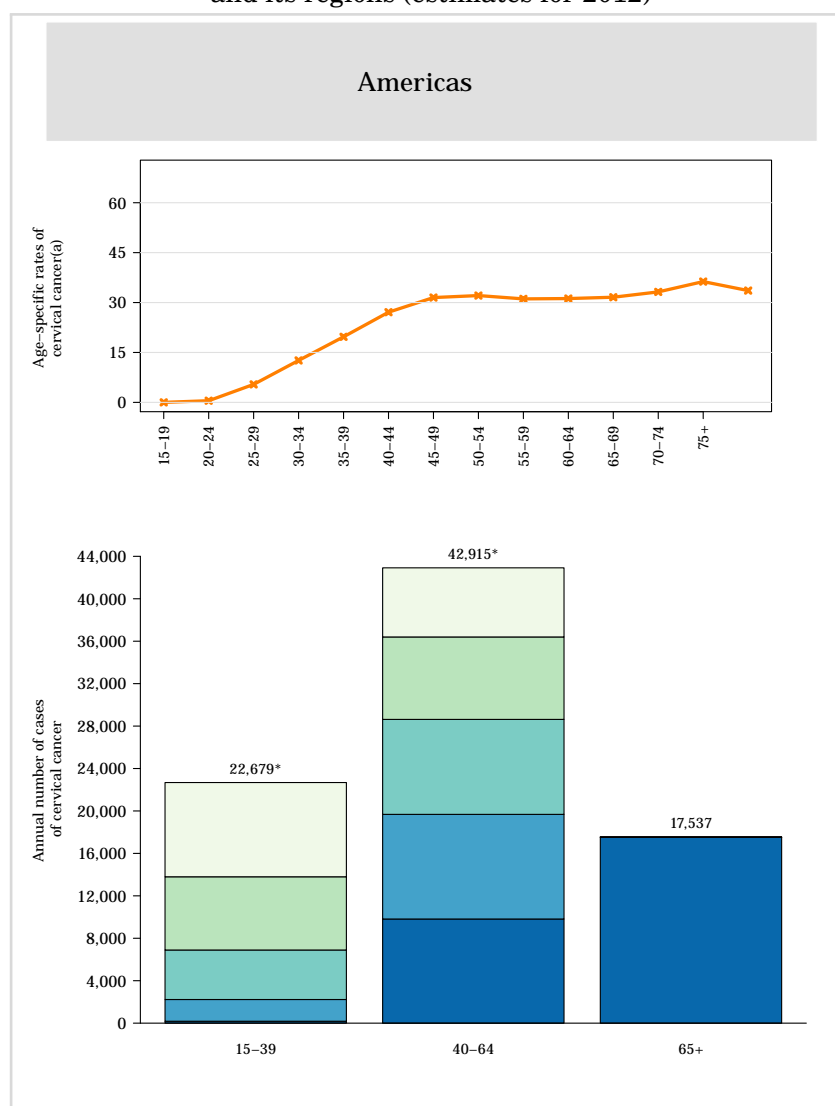
* Caribbean 15-39 years: 1,362 cases. 40-64 years: 2,467 cases. 65+ years: 1,178 cases.

Data accessed on 15 Nov 2015.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 12: Annual number of cases and age-specific incidence rates of cervical cancer in the Americas and its regions (estimates for 2012)



* Americas 15-19 yrs: 180 cases. 20-24 yrs: 2,047 cases. 25-29 yrs: 4,668 cases. 30-34 yrs: 6,901 cases. 35-39 yrs: 8,883 cases. 40-44 yrs: 9,817 cases. 45-49 yrs: 9,862 cases. 50-54 yrs: 8,951 cases. 55-59 yrs: 7,771 cases. 60-64 yrs: 6,514 cases.

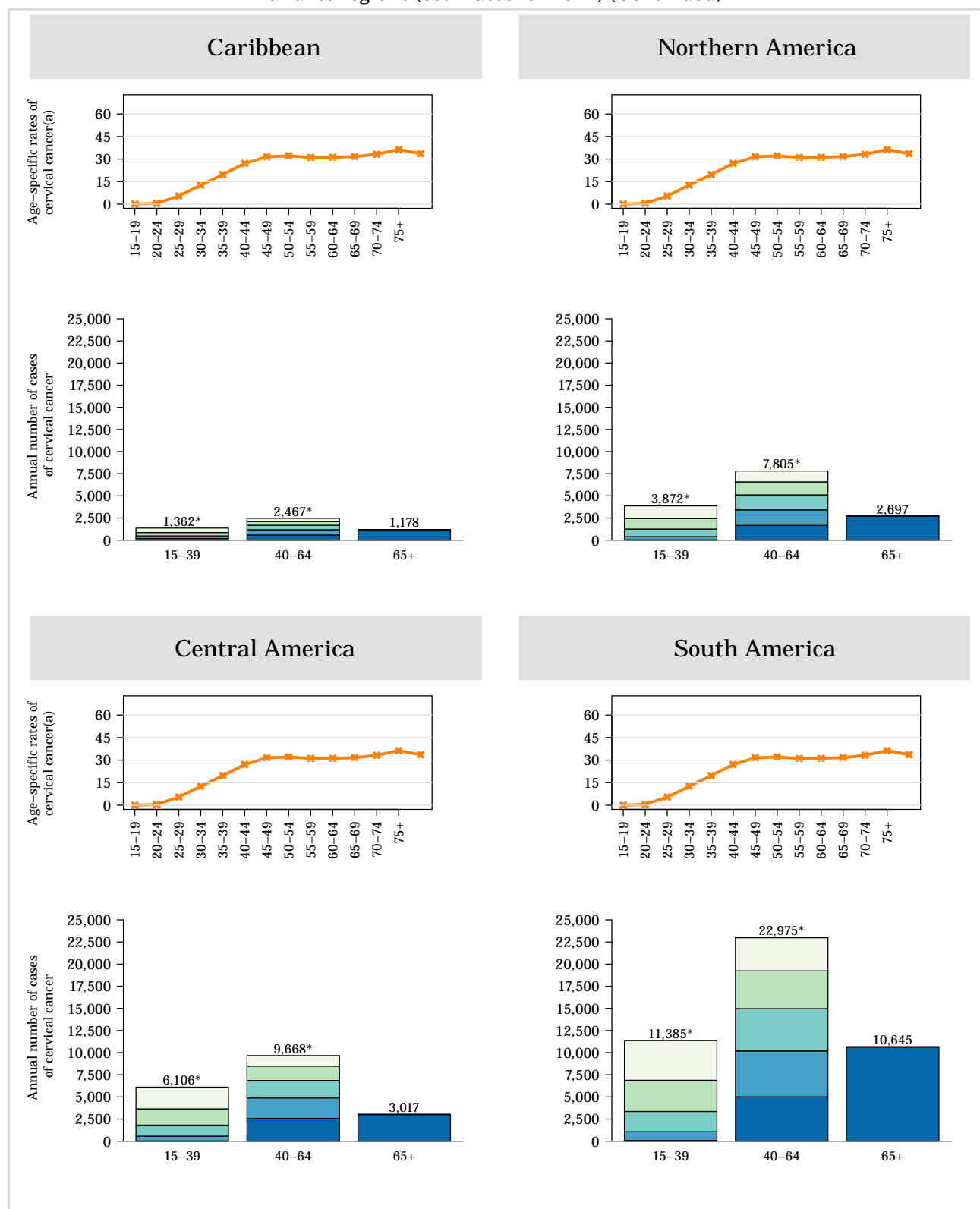
Data accessed on 15 Nov 2015.

^a Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 13: Annual number of cases and age-specific incidence rates of cervical cancer in the Americas and its regions (estimates for 2012) (Continued)



* Caribbean 15-19 yrs: 49 cases. 20-24 yrs: 150 cases. 25-29 yrs: 279 cases. 30-34 yrs: 385 cases. 35-39 yrs: 499 cases. 40-44 yrs: 575 cases. 45-49 yrs: 604 cases. 50-54 yrs: 507 cases. 55-59 yrs: 418 cases. 60-64 yrs: 363 cases.

* Central America 15-19 yrs: 22 cases. 20-24 yrs: 548 cases. 25-29 yrs: 1,249 cases. 30-34 yrs: 1,835 cases. 35-39 yrs: 2,452 cases. 40-44 yrs: 2,575 cases. 45-49 yrs: 2,318 cases. 50-54 yrs: 1,969 cases. 55-59 yrs: 1,618 cases. 60-64 yrs: 1,188 cases.

* Northern America 15-19 yrs: 28 cases. 20-24 yrs: 367 cases. 25-29 yrs: 858 cases. 30-34 yrs: 1,175 cases. 35-39 yrs: 1,444 cases. 40-44 yrs: 1,657 cases. 45-49 yrs: 1,764 cases. 50-54 yrs: 1,690 cases. 55-59 yrs: 1,468 cases. 60-64 yrs: 1,226 cases.

* South America 15-19 yrs: 82 cases. 20-24 yrs: 987 cases. 25-29 yrs: 2,291 cases. 30-34 yrs: 3,519 cases. 35-39 yrs: 4,506 cases. 40-44 yrs: 5,010 cases. 45-49 yrs: 5,176 cases. 50-54 yrs: 4,785 cases. 55-59 yrs: 4,267 cases. 60-64 yrs: 3,737 cases.

Data accessed on 15 Nov 2015.

(Continued on next page)

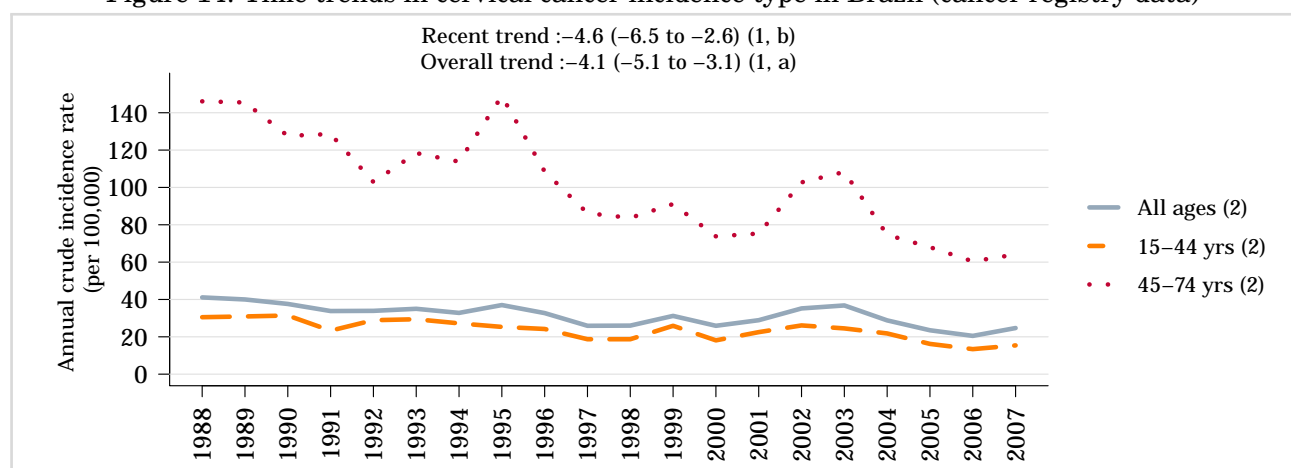
(Figure 13 – continued from previous page)

^a Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 14: Time trends in cervical cancer incidence type in Brazil (cancer registry data)



Data accessed on 27 Apr 2015.

^a Estimated annual percentage change based on the trend variable from the net drift for the most recent two 5-year periods.

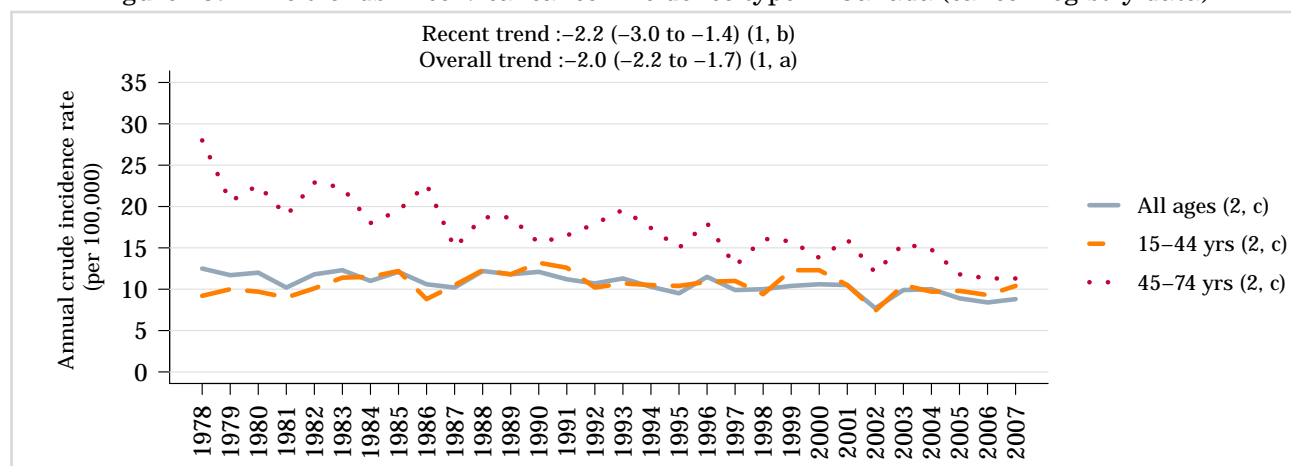
^b Estimated annual percentage change based on the trend variable from the net drift for 15 years, from 1988-2002.

Data sources:

¹ Vaccarella S, Lortet-Tieulent J, Plummer M, Franceschi S, Bray F. Worldwide trends in cervical cancer incidence: Impact of screening against changes in disease risk factors. *eur J Cancer* 2013;49:3262-73.

² Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 15: Time trends in cervical cancer incidence type in Canada (cancer registry data)



Data accessed on 27 Apr 2015.

^a Estimated annual percentage change based on the trend variable from the net drift for the most recent two 5-year periods.

^b Estimated annual percentage change based on the trend variable from the net drift for 20 years, from 1983-2002.

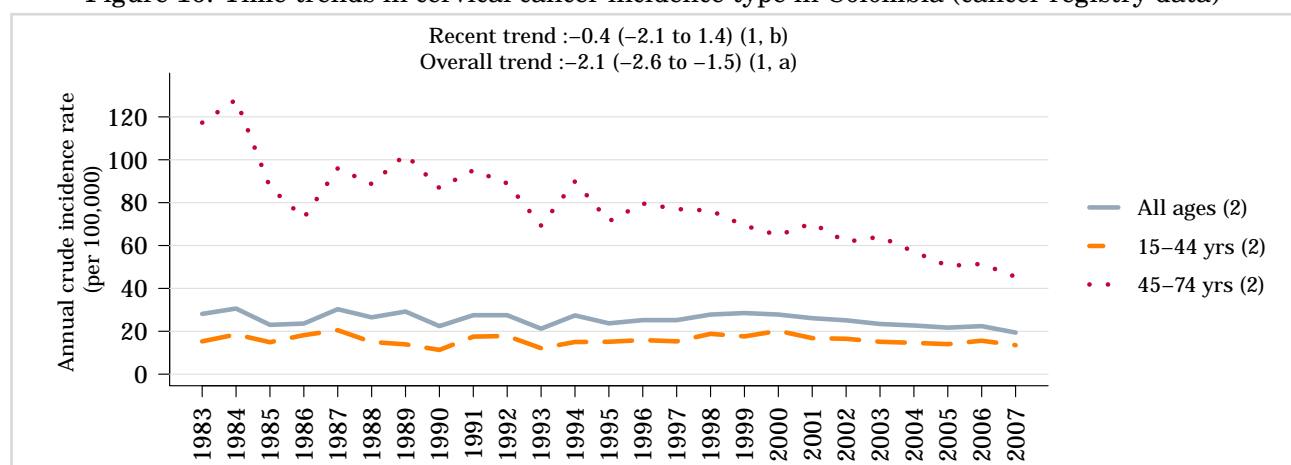
^c The following regional cancer registries provided data and contributed to their national estimate: Manitoba, Nova Scotia, Saskatchewan.

Data sources:

¹ Vaccarella S, Lortet-Tieulent J, Plummer M, Franceschi S, Bray F. Worldwide trends in cervical cancer incidence: Impact of screening against changes in disease risk factors. *eur J Cancer* 2013;49:3262-73.

² Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 16: Time trends in cervical cancer incidence type in Colombia (cancer registry data)



Data accessed on 27 Apr 2015.

^a Estimated annual percentage change based on the trend variable from the net drift for the most recent two 5-year periods.

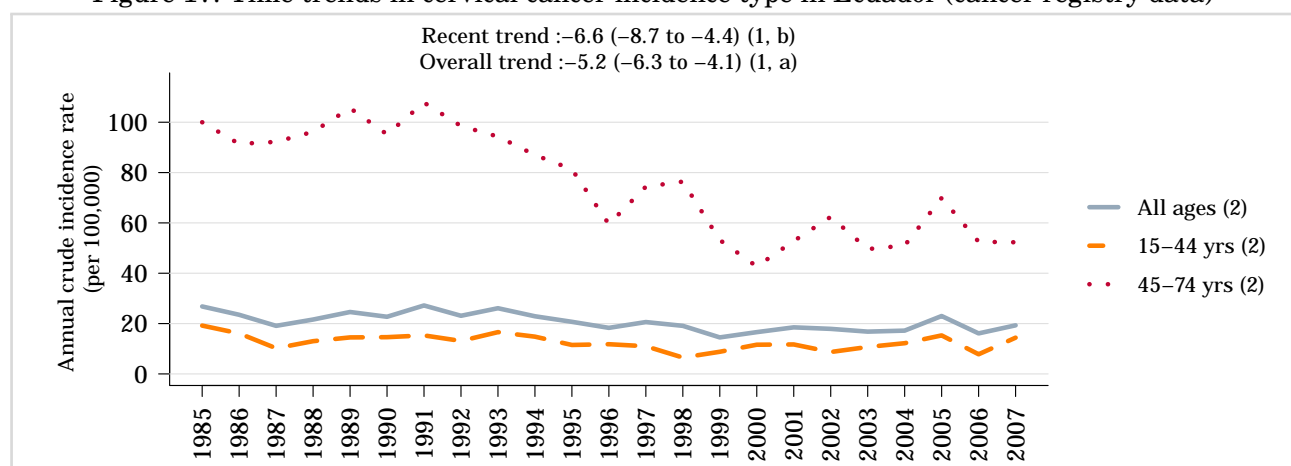
^b Estimated annual percentage change based on the trend variable from the net drift for 20 years, from 1983-2002.

Data sources:

¹ Vaccarella S, Lortet-Tieulent J, Plummer M, Franceschi S, Bray F. Worldwide trends in cervical cancer incidence: Impact of screening against changes in disease risk factors. *eur J Cancer* 2013;49:3262-73.

² Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 17: Time trends in cervical cancer incidence type in Ecuador (cancer registry data)



Data accessed on 27 Apr 2015.

^a Estimated annual percentage change based on the trend variable from the net drift for the most recent two 5-year periods.

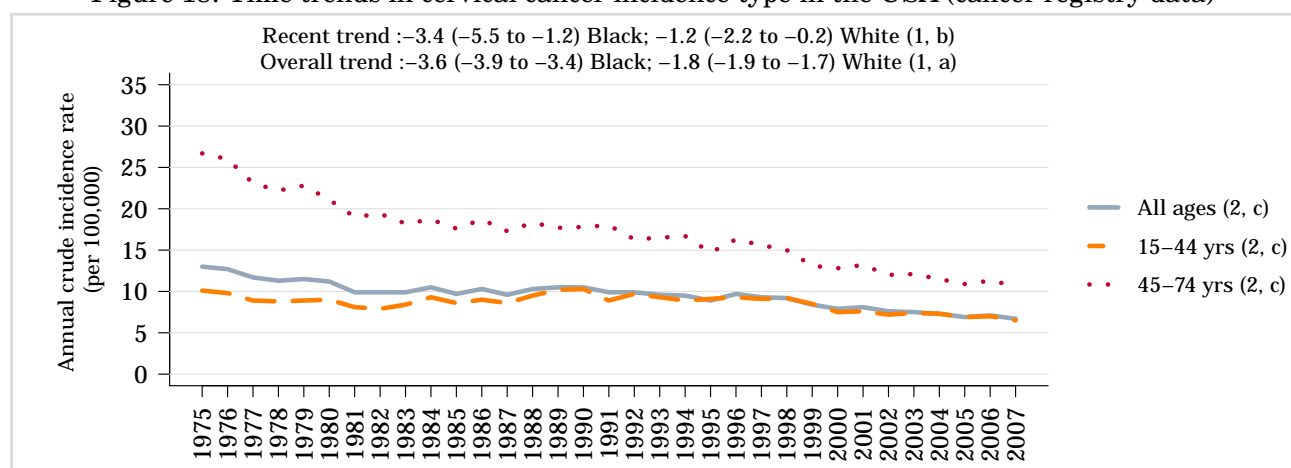
^b Estimated annual percentage change based on the trend variable from the net drift for 15 years, from 1988-2002.

Data sources:

¹ Vaccarella S, Lortet-Tieulent J, Plummer M, Franceschi S, Bray F. Worldwide trends in cervical cancer incidence: Impact of screening against changes in disease risk factors. *eur J Cancer* 2013;49:3262-73.

² Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 18: Time trends in cervical cancer incidence type in the USA (cancer registry data)



Data accessed on 27 Apr 2015.

^a Estimated annual percentage change based on the trend variable from the net drift for the most recent two 5-year periods.

^b Estimated annual percentage change based on the trend variable from the net drift for 35 years, from 1975-2009.

^c The following regional cancer registries provided data and contributed to their national estimate: California: San Francisco, Connecticut, Georgia: Atlanta, Hawaii, Iowa, Michigan: Detroit, New Mexico, Utah and Washington: Seattle.

Data sources:

¹ Vaccarella S, Lortet-Tieulent J, Plummer M, Franceschi S, Bray F. Worldwide trends in cervical cancer incidence: Impact of screening against changes in disease risk factors. *eur J Cancer* 2013;49:3262-73.

² Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

3.1.2 Mortality

KEY STATS

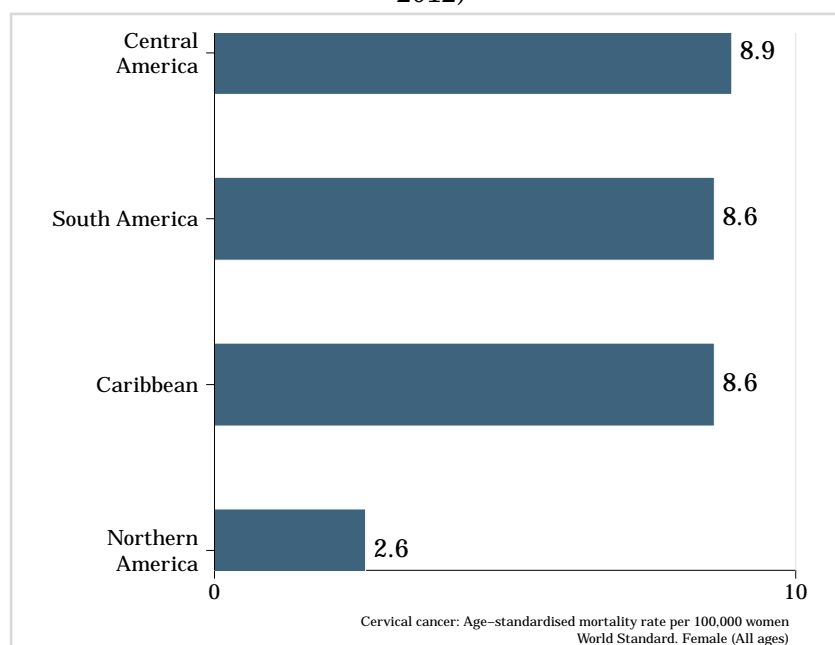
About **35,673 new cervical cancer deaths** occur **annually** in **Americas** (estimates for 2012).

Cervical cancer **ranks* as the 5th leading cause** of female cancer deaths in **Americas**.

Cervical cancer is the **2nd most common** female cancer deaths in **women aged 15 to 44 years** in **Americas**.

* Ranking of cervical cancer incidence to other cancers among all women according to highest incidence rates (ranking 1st). Ranking is based on crude incidence rates (actual number of cervical cancer cases). Ranking using age-standardized rate (ASR) may differ.

Figure 19: Age-standardised mortality rates (ASR) of cervical cancer in American regions (estimates for 2012)



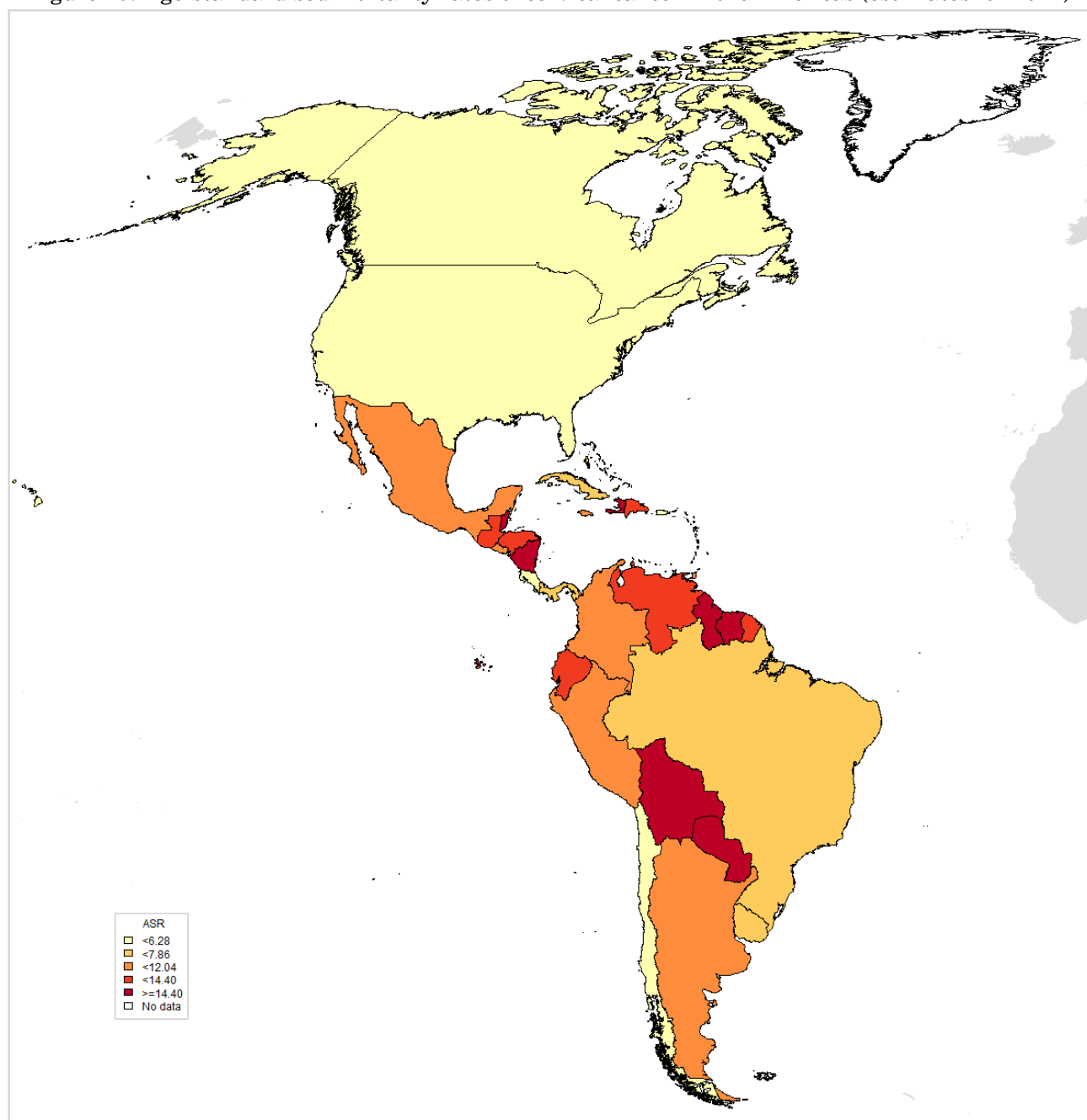
Data accessed on 15 Nov 2015.

Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 20: Age-standardised mortality rates of cervical cancer in the Americas (estimates for 2012)



Data accessed on 15 Nov 2015.

ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;

Rates per 100,000 women per year.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Table 6: Cervical cancer mortality in the Americas (estimates for 2012)

Area	N cases	Crude rate ^a	ASR ^a	Cumulative risk (%) ages 0-74 years ^b	Ranking of CC	
					All women	Women 15-44 years
Americas	35,673	7.4	5.9	0.6	5	2
Caribbean	2,254	10.6	8.6	0.9	4	2
Antigua & Barbuda	-	-	-	-	-	-
Bahamas	15	8.4	7.0	0.8	3	4
Barbados	15	10.8	7.2	0.7	4	2
Cuba	569	10.2	6.7	0.7	4	1
Dominica	-	-	-	-	-	-

(Continued on next page)

(Table 6 – continued from previous page)

Area	N cases	Crude rate ^a	ASR ^a	Cumulative risk (%) ages 0-74 years ^b	Ranking of CC	
					All women	Women 15-44 years
Dominican Republic	600	11.8	12.3	1.4	2	2
Grenada	-	-	-	-	-	-
Haiti	575	11.1	14.6	1.3	1	2
Jamaica	185	13.2	11.9	1.3	2	2
St Kitts & Nevis	-	-	-	-	-	-
St Lucia	-	-	-	-	-	-
St Vincent & The Grenadines	-	-	-	-	-	-
Trinidad & Tobago	105	15.1	12.0	1.4	2	2
Central America	6,937	8.5	8.9	1.0	2	1
Belize	17	10.3	14.9	1.6	1	1
Costa Rica	116	4.9	4.4	0.5	4	2
El Salvador	388	11.8	11.9	1.2	2	1
Guatemala	672	8.7	12.2	1.2	3	1
Honduras	417	10.5	14.1	1.5	1	1
Mexico	4,769	8.1	8.0	0.9	2	2
Nicaragua	424	14.1	18.3	2.0	1	1
Panama	134	7.4	7.1	0.8	2	2
Northern America	7,108	4.0	2.6	0.3	11	2
Canada	503	2.9	1.7	0.2	15	3
USA	6,605	4.1	2.7	0.3	11	2
South America	19,374	9.5	8.6	0.9	3	2
Argentina	2,127	10.1	8.3	0.9	5	1
Bolivia	845	16.5	21.0	2.4	1	1
Brazil	8,414	8.3	7.3	0.8	4	2
Chile	734	8.3	6.0	0.7	6	2
Colombia	1,986	8.2	8.0	0.9	2	1
Ecuador	1,026	13.8	14.0	1.5	1	1
Guyana	71	18.8	21.9	2.5	1	1
Paraguay	439	13.2	15.7	1.7	1	1
Peru	1,715	11.6	12.0	1.3	2	1
Suriname	44	16.5	15.7	1.8	1	1
Uruguay	175	10.0	7.1	0.7	6	2
Venezuela	1,789	12.0	12.3	1.3	2	1
Latin America & Caribbean	28,565	9.4	8.7	0.9	2	1

Data accessed on 15 Nov 2015.

ASR: Age-standardized rate, Standardized rates have been estimated using the direct method and the World population as the reference;

Standardised rates have been estimated using the direct method and the World population as the reference.

Ranking of cervical cancer mortality to other cancers among all women ages 15-44 years according to highest mortality rates (ranking 1st). Ranking is based on crude mortality rates (actual number of cervical cancer deaths). Ranking using AST may differ.

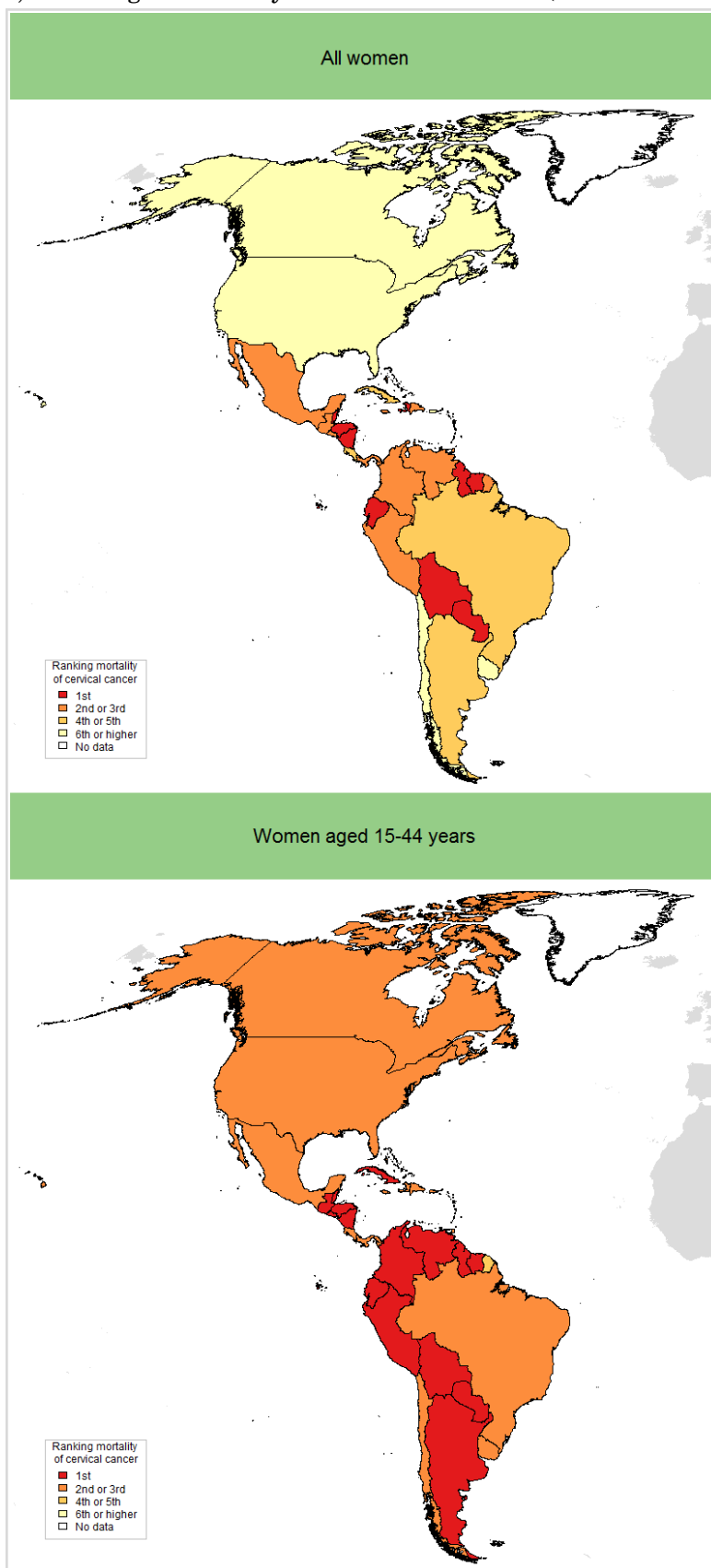
^a Rates per 100,000 women per year.

^b Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

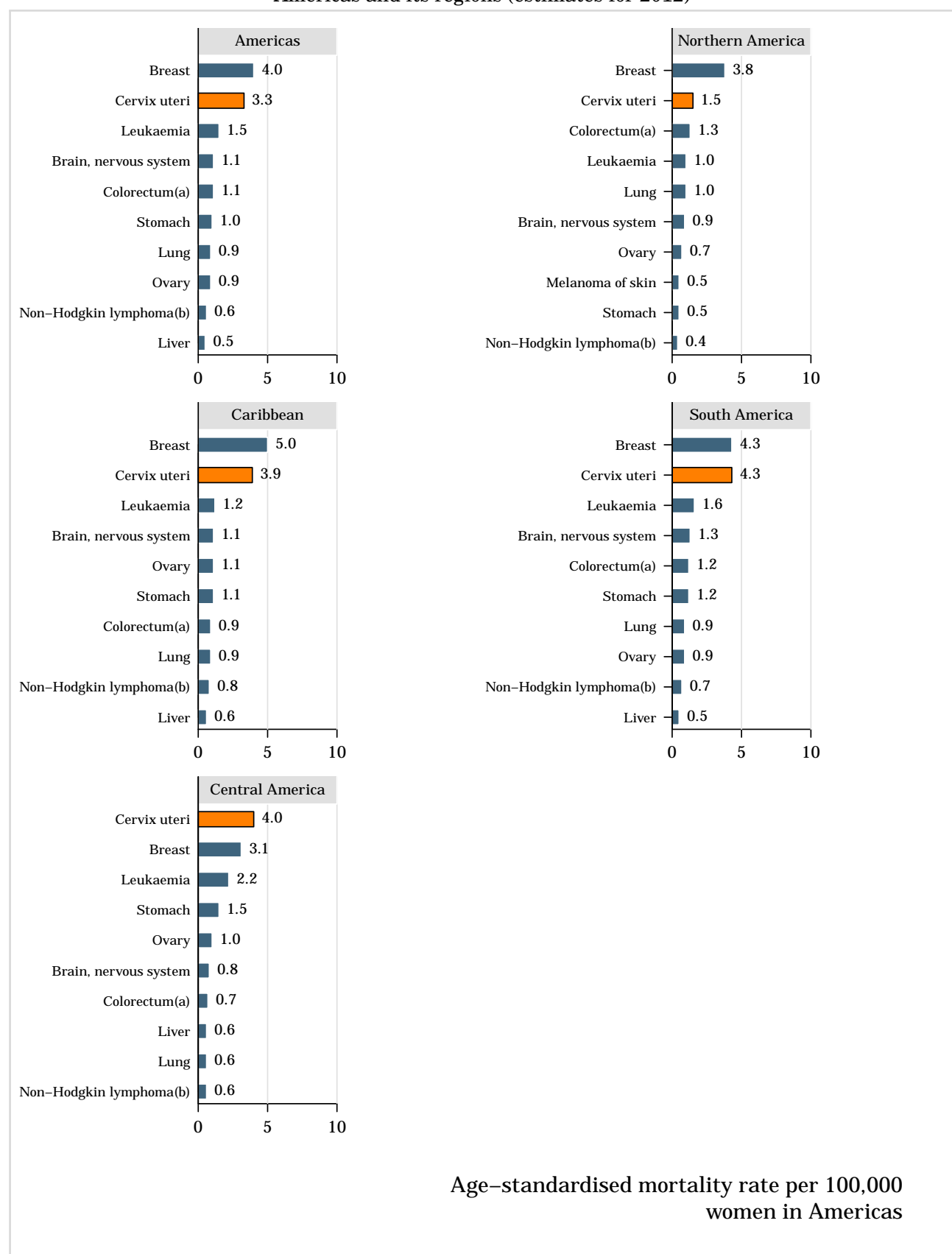
Figure 21: Ranking of cervical cancer versus other cancers among all women and women aged 15-44 years, according to mortality rates in the Americas (estimates for 2012)



Data accessed on 15 Nov 2015.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 22: Comparison of the ten most frequent cancer deaths in women aged 15-44 years in the Americas and its regions (estimates for 2012)



Data accessed on 15 Nov 2015.

^a Includes anal cancer (C21).

^b Includes HIV disease resulting in malignant neoplasms (B21).

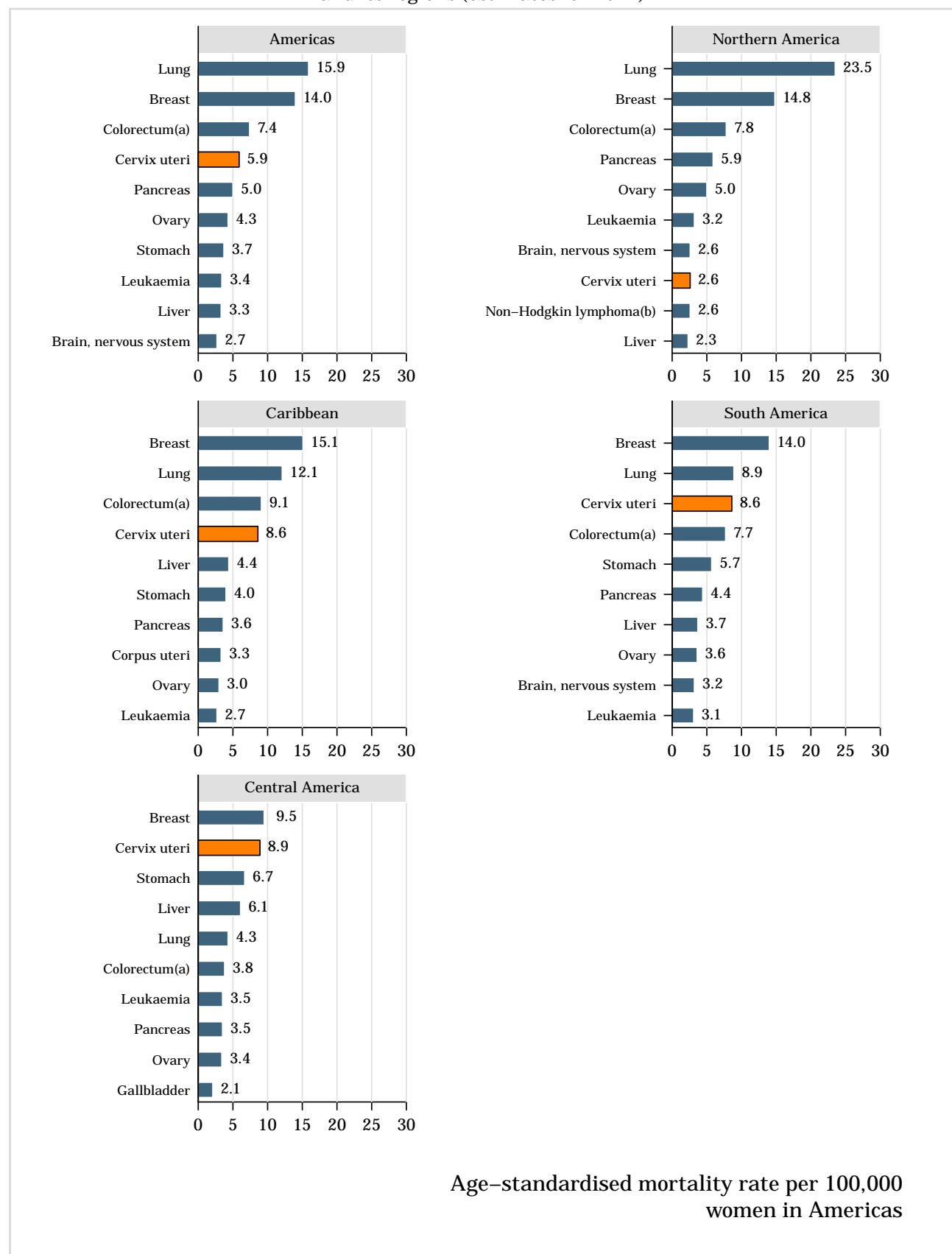
Data sources:

(Continued on next page)

(Figure 22 – continued from previous page)

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 23: Comparison of the ten most frequent cancer deaths in women of all ages in the Americas and its regions (estimates for 2012)



Data accessed on 15 Nov 2015.

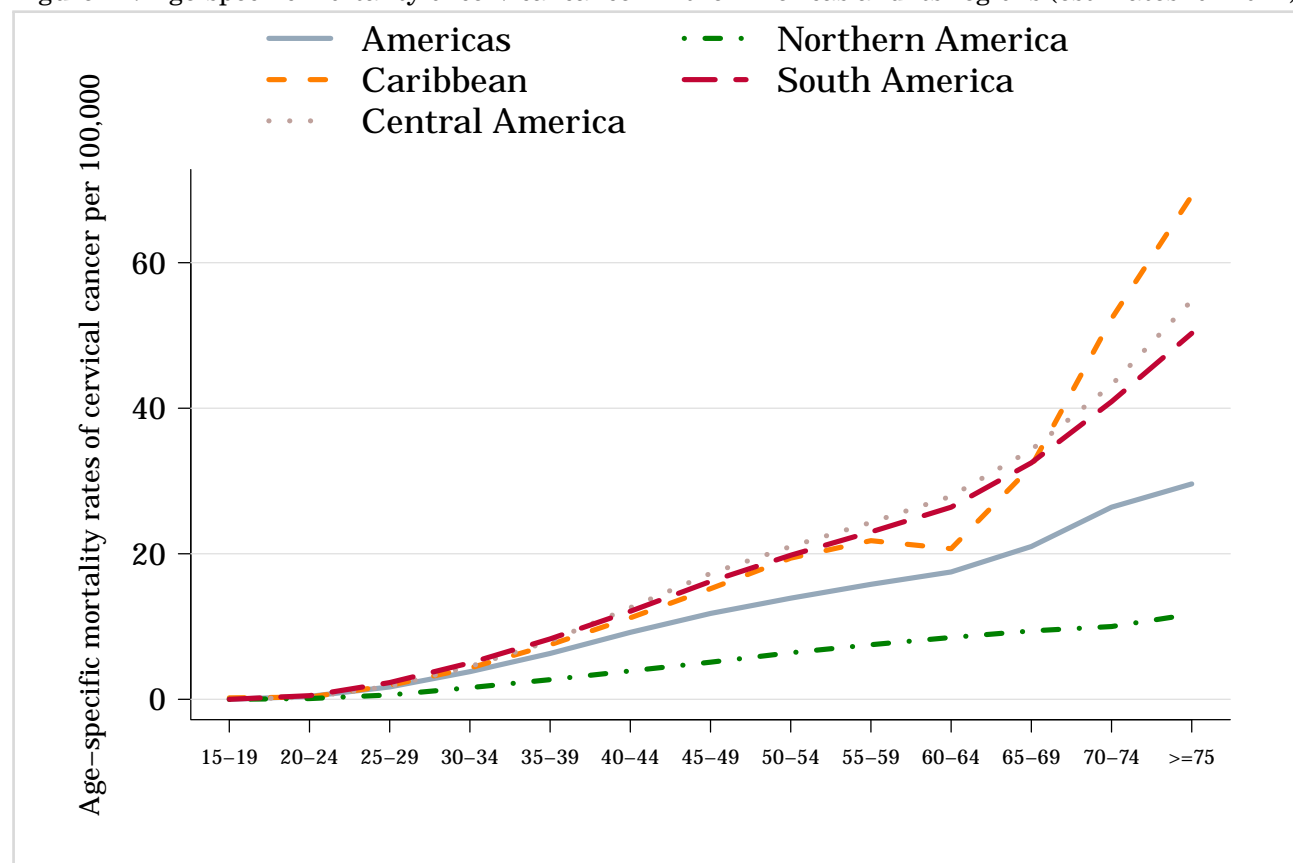
^a Includes anal cancer (C21).

^b Includes HIV disease resulting in malignant neoplasms (B21).

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 24: Age-specific mortality of cervical cancer in the Americas and its regions (estimates for 2012)

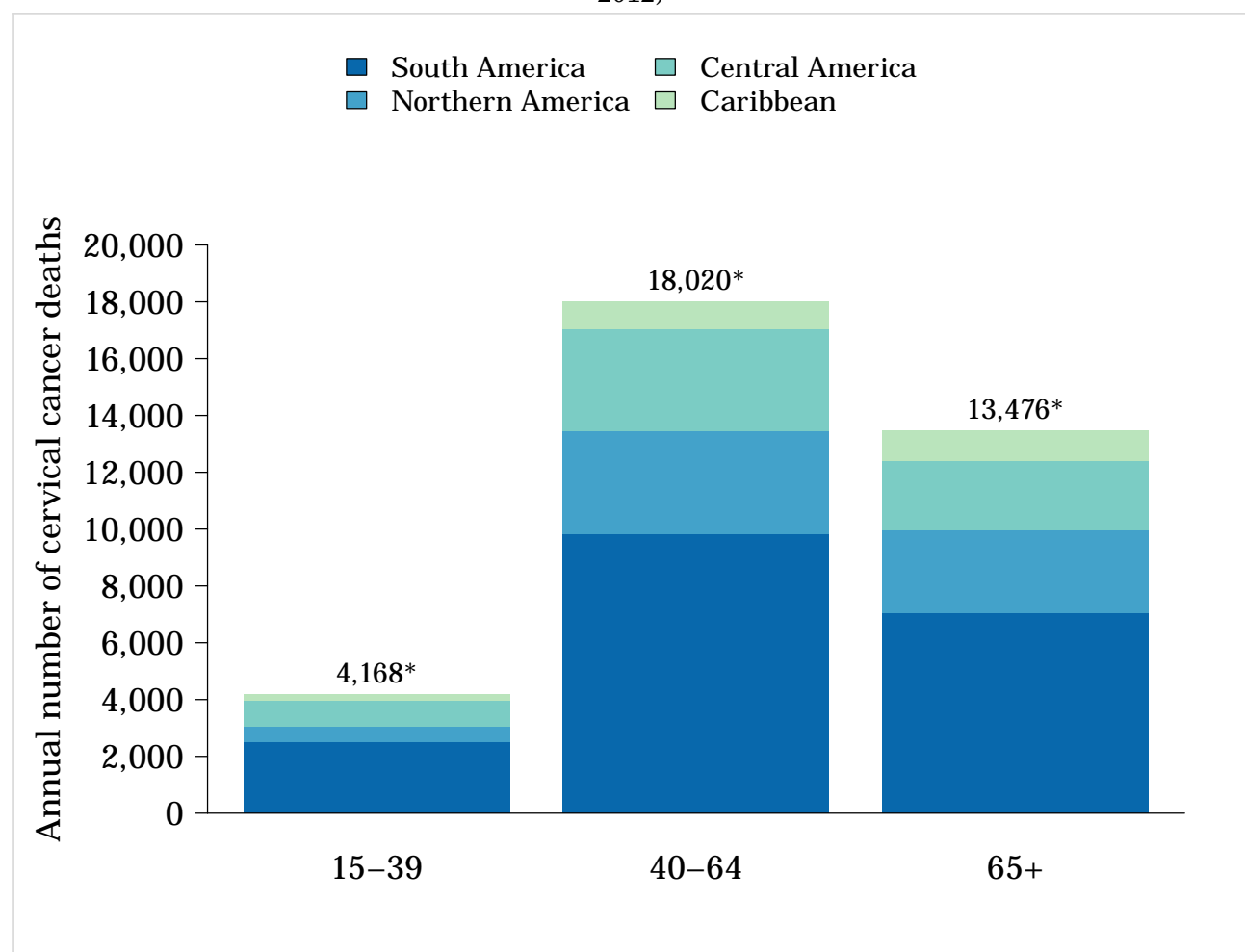


Data accessed on 15 Nov 2015.

Rates per 100,000 women per year.

Data sources: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 25: Annual number of deaths of cervical cancer by age group in American regions (estimates for 2012)



* South America 15-39 years: 2,503 cases. 40-64 years: 9,813 cases. 65+ years: 7,057 cases.

* Northern America 15-39 years: 568 cases. 40-64 years: 3,644 cases. 65+ years: 2,896 cases.

* Central America 15-39 years: 888 cases. 40-64 years: 3,592 cases. 65+ years: 2,456 cases.

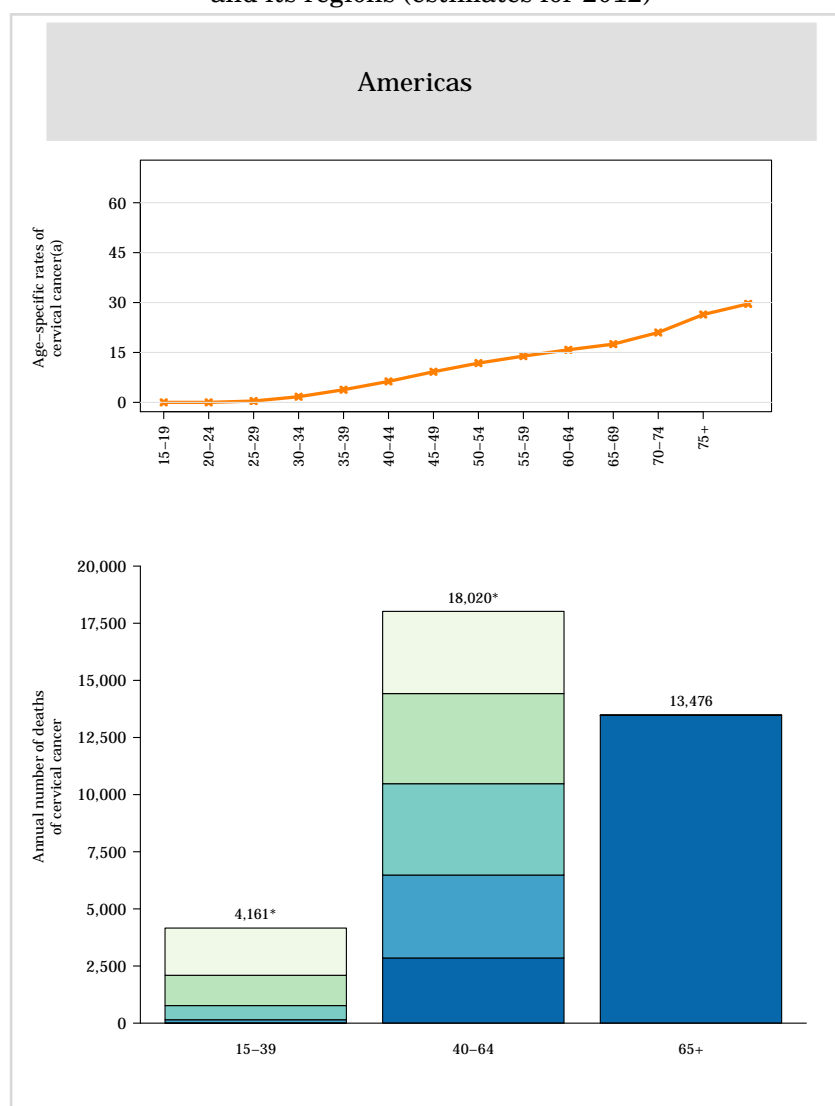
* Caribbean 15-39 years: 209 cases. 40-64 years: 971 cases. 65+ years: 1,067 cases.

Data accessed on 15 Nov 2015.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 26: Annual number of deaths and age-specific mortality rates of cervical cancer in the Americas and its regions (estimates for 2012)



* Americas 15-19 yrs: 12 cases. 20-24 yrs: 137 cases. 25-29 yrs: 620 cases. 30-34 yrs: 1,325 cases. 35-39 yrs: 2,067 cases. 40-44 yrs: 2,852 cases. 45-49 yrs: 3,629 cases. 50-54 yrs: 3,997 cases. 55-59 yrs: 3,944 cases. 60-64 yrs: 3,598 cases.

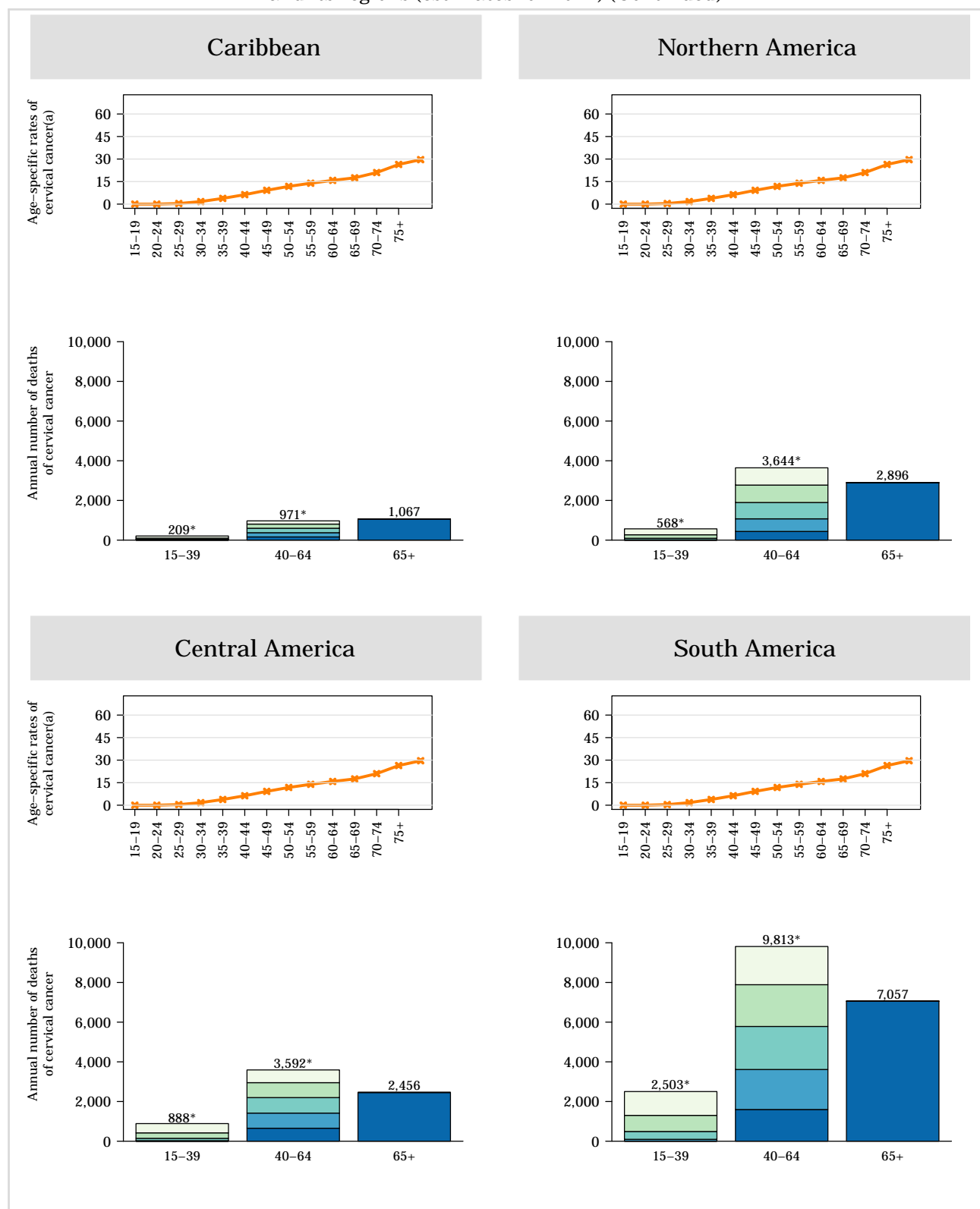
Data accessed on 15 Nov 2015.

^a Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 27: Annual number of deaths and age-specific mortality rates of cervical cancer in the Americas and its regions (estimates for 2012) (Continued)



* Caribbean 15-19 yrs: 3 cases. 20-24 yrs: 6 cases. 25-29 yrs: 31 cases. 30-34 yrs: 63 cases. 35-39 yrs: 106 cases. 40-44 yrs: 161 cases. 45-49 yrs: 213 cases. 50-54 yrs: 225 cases. 55-59 yrs: 209 cases. 60-64 yrs: 163 cases.

* Central America 15-19 yrs: 2 cases. 20-24 yrs: 25 cases. 25-29 yrs: 118 cases. 30-34 yrs: 276 cases. 35-39 yrs: 467 cases. 40-44 yrs: 655 cases. 45-49 yrs: 763 cases. 50-54 yrs: 781 cases. 55-59 yrs: 752 cases. 60-64 yrs: 641 cases.

* Northern America 15-19 yrs: 1 cases. 20-24 yrs: 16 cases. 25-29 yrs: 77 cases. 30-34 yrs: 176 cases. 35-39 yrs: 298 cases. 40-44 yrs: 437 cases. 45-49 yrs: 637 cases. 50-54 yrs: 823 cases. 55-59 yrs: 878 cases. 60-64 yrs: 869 cases.

* South America 15-19 yrs: 6 cases. 20-24 yrs: 90 cases. 25-29 yrs: 395 cases. 30-34 yrs: 812 cases. 35-39 yrs: 1,200 cases. 40-44 yrs: 1,599 cases. 45-49 yrs: 2,016 cases. 50-54 yrs: 2,168 cases. 55-59 yrs: 2,105 cases. 60-64 yrs: 1,925 cases.

Data accessed on 15 Nov 2015.

(Continued on next page)

(Figure 27 – continued from previous page)

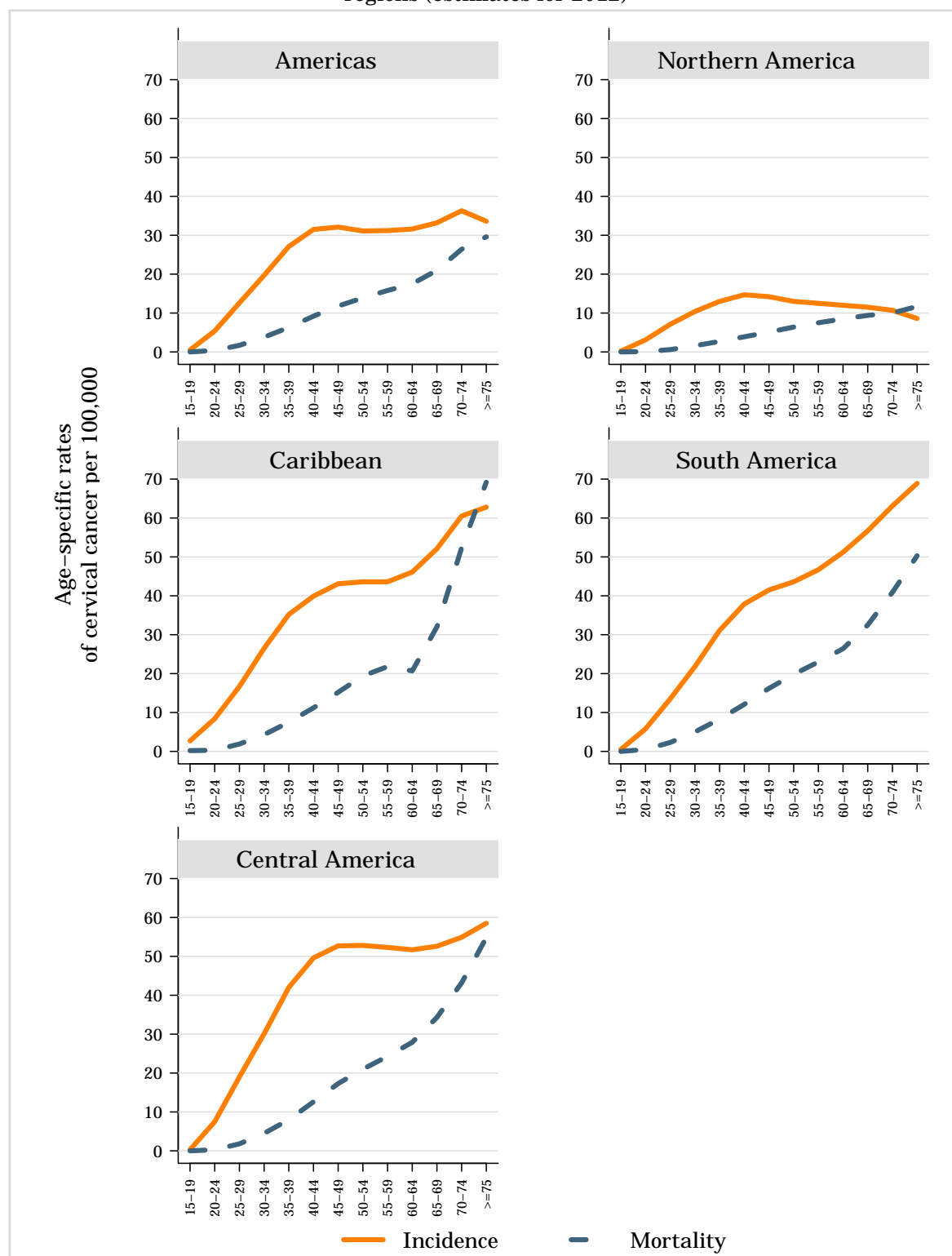
^a Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

3.1.3 Comparison of incidence and mortality

Figure 28: Age-specific incidence and mortality rates of cervical cancer in the Americas and its regions (estimates for 2012)



Data accessed on 15 Nov 2015.

Rates per 100,000 women per year.

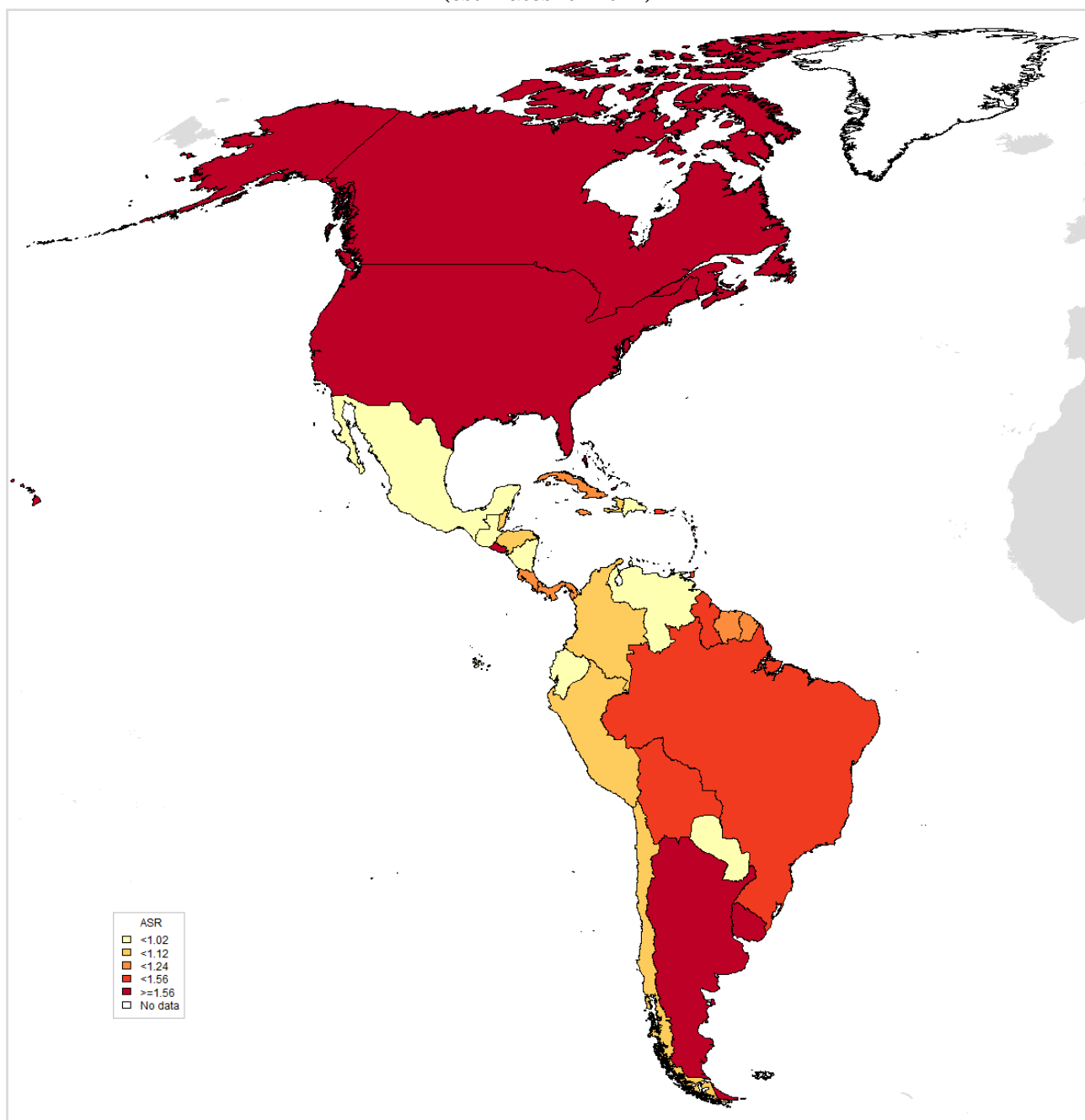
Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

3.2 Anogenital cancers other than the cervix

Data on the role of HPV in anogenital cancers other than the cervix are limited, but there is an increasing body of evidence strongly linking HPV DNA with cancers of the anus, vulva, vagina, and penis. Although these cancers are much less frequent compared to cancer of the cervix, their association with HPV make them potentially preventable and subject to similar preventative strategies as those for cervical cancer. (*Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90*)

Figure 29: Age-standardised incidence rates of anogenital cancers other than the cervix in the Americas (estimates for 2012)



Data accessed on 08 May 2017.

ASR: Age-standardized rate, rates per 100,000 per year.

Please refer to original source for methods.

Other anogenital cancer cases (vulvar, vaginal, anal, and penile).

GLOBOCAN quality index for availability of incidence data:

- For Argentina, Brazil: High quality regional (coverage between 10% and 50%).

- For Bahamas, Belize, Bolivia, Barbados, Dominican Republic, Guadeloupe, Guatemala, French Guiana, Guyana, Honduras, Haiti, Nicaragua, Panama, Paraguay, El Salvador, Suriname, Venezuela: No data.

- For Canada, Costa Rica, Martinique, Puerto Rico, Uruguay, USA: High quality national data or high quality regional (coverage greater than 50%).

(Continued on next page)

(Figure 29 – continued from previous page)

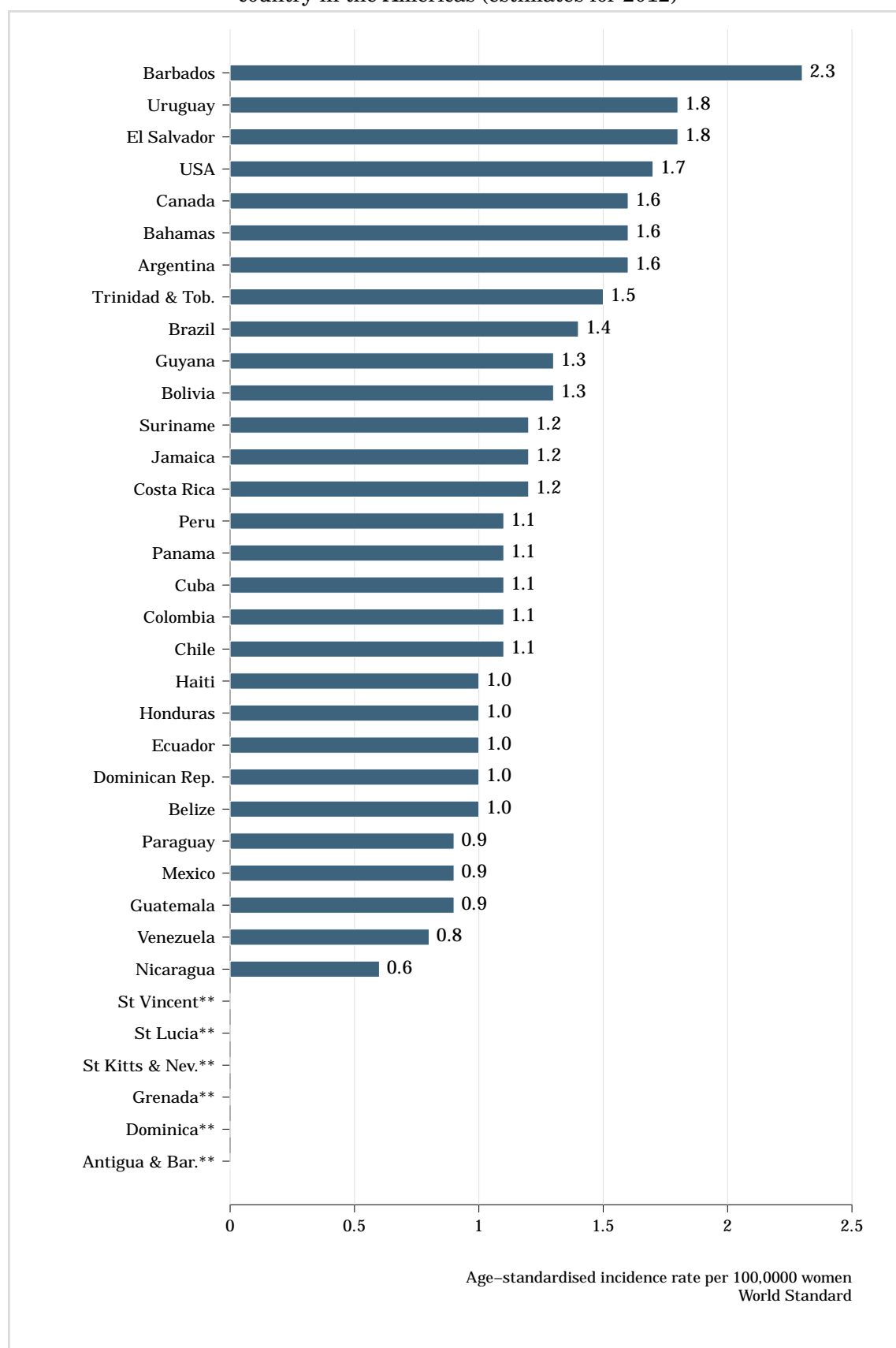
- For Chile, Colombia, Cuba, Ecuador, Jamaica: High quality regional (coverage lower than 10%).
- For Mexico, Peru: Regional data (rates).
- For Trinidad & Tobago: National data (rates).

GLOBOCAN quality index of methods for calculating incidence: Methods to estimate the sex- and age-specific incidence rates of cancer for a specific country:

- For Argentina, Brazil, Chile, Colombia, Cuba, Ecuador: Estimated from national mortality by modelling using incidence mortality ratios derived from recorded data in country-specific cancer registries
- For Bahamas, Belize, Barbados, Dominican Republic, Guadeloupe, Guatemala, French Guiana, Guyana, Honduras, Haiti, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Trinidad & Tobago, Venezuela: Estimated from national mortality estimates using modelled survival
- For Bolivia: Age/sex specific rates for "all cancers" were partitioned using data on relative frequency of different cancers (by age and sex)
- For Canada, Costa Rica, Martinique, Puerto Rico, USA: Rates projected to 2012
- For Uruguay: Most recent rates applied to 2012 population

Data sources: Worldwide burden of cancer attributable to HPV by site, country and HPV type. de Martel C, Plummer M, Vignat J, Franceschi S. Int J Cancer. 2017 Apr 1. doi: 10.1002/ijc.30716. [Epub ahead of print]. PMID:28369882.

Figure 30: Age-standardised incidence rate of other anogenital cancer cases attributable to HPV by country in the Americas (estimates for 2012)



** No rates are available.

Data accessed on 08 May 2017.

ASR: Age-standardized rate, rates per 100,000 per year.

Please refer to original source for methods.

(Continued on next page)

(Figure 30 – continued from previous page)

Other anogenital cancer cases (vulvar, vaginal, anal, and penile).

GLOBOCAN quality index for availability of incidence data:

- For Nicaragua, Venezuela, Guatemala, Paraguay, Belize, Dominican Republic, Honduras, Haiti, Panama, Suriname, Bolivia, Guyana, Bahamas, El Salvador, Barbados: No data.
- For Mexico, Peru: Regional data (rates).
- For Ecuador, Chile, Colombia, Cuba, Jamaica: High quality regional (coverage lower than 10%).
- For Costa Rica, Canada, USA, Uruguay: High quality national data or high quality regional (coverage greater than 50%).
- For Brazil, Argentina: High quality regional (coverage between 10% and 50%).
- For Trinidad & Tobago: National data (rates).

GLOBOCAN quality index of methods for calculating incidence: Methods to estimate the sex- and age-specific incidence rates of cancer for a specific country:

- For Nicaragua, Venezuela, Guatemala, Mexico, Paraguay, Belize, Dominican Republic, Honduras, Haiti, Panama, Peru, Jamaica, Suriname, Guyana, Trinidad & Tobago, Bahamas, El Salvador, Barbados: Estimated from national mortality estimates using modelled survival
- For Ecuador, Chile, Colombia, Cuba, Brazil, Argentina: Estimated from national mortality by modelling using incidence mortality ratios derived from recorded data in country-specific cancer registries
- For Costa Rica, Canada, USA: Rates projected to 2012
- For Bolivia: Age/sex specific rates for "all cancers" were partitioned using data on relative frequency of different cancers (by age and sex)
- For Uruguay: Most recent rates applied to 2012 population

Data sources: de Martel C, Plummer M, Vignat J, Franceschi S. Worldwide burden of cancer attributable to HPV by site, country and HPV type. Int J Cancer. 2017

3.2.1 Anal cancer

Anal cancer is rare in the general population with an average worldwide incidence of 1 per 100,000, but is reported to be increasing in more developed regions. Globally, there are an estimated 27,000 new cases every year (*de Martel C et al. Lancet Oncol 2012;13(6):607-15*). Women have higher incidences of anal cancer than men. Incidence is particularly high among populations of men who have sex with men (MSM), women with history of cervical or vulvar cancer, and immunosuppressed populations, including those who are HIV-infected and patients with a history of organ transplantation. These cancers are predominantly squamous cell carcinoma, adenocarcinomas, or basaloid and cloacogenic carcinomas.

Table 7: Incidence of anal cancer in the Americas by cancer registry and sex

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
Caribbean							
Antigua & Bar.	-	-	-	-	-	-	-
Bahamas	-	-	-	-	-	-	-
Barbados	-	-	-	-	-	-	-
Cuba ¹	-	-	-	-	-	-	-
Villa Clara	2004-2007	13	0.8	0.6	20	1.2	0.8
Dominica	-	-	-	-	-	-	-
Dominican Rep.	-	-	-	-	-	-	-
Grenada	-	-	-	-	-	-	-
Haiti	-	-	-	-	-	-	-
Jamaica ¹	-	-	-	-	-	-	-
Kingston and St Andrew	2003-2007	6	0.4	0.4	16	0.9	1.0
St Kitts & Nev.	-	-	-	-	-	-	-
St Lucia	-	-	-	-	-	-	-
St Vincent	-	-	-	-	-	-	-
Trinidad & Tob.	-	-	-	-	-	-	-
Central America							
Belize	-	-	-	-	-	-	-
Costa Rica ¹	-	-	-	-	-	-	-

(Continued on next page)

(Table 7 – continued from previous page)

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
National	2003-2007	44	0.4	0.5	56	0.5	0.6
El Salvador	-	-	-	-	-	-	-
Guatemala	-	-	-	-	-	-	-
Honduras	-	-	-	-	-	-	-
Mexico	-	-	-	-	-	-	-
Nicaragua	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-
Northern America							
Canada ¹							
Alberta	2003-2007	60	0.7	0.5	135	1.6	1.2
British Columbia	2003-2007	150	1.4	1.0	215	2.0	1.2
Manitoba	2003-2007	28	1.0	0.7	51	1.7	1.1
National	2003-2007	1114	1.4	0.9	1492	1.8	1.1
New Brunswick	2003-2007	23	1.3	0.8	30	1.6	0.9
Newfoundland and Labrador	2003-2007	8	0.6	0.4	17	1.3	0.8
Northwest Territories	2003-2007	0	0.0	0.0	2	1.9	1.7
Nova Scotia	2003-2007	34	1.5	0.9	47	2.0	1.1
Ontario	2003-2007	585	1.9	1.3	693	2.2	1.4
Prince Edward Island	2003-2007	2	0.6	0.4	8	2.3	1.5
Quebec	2003-2007	196	1.0	0.7	257	1.3	0.8
Saskatchewan	2003-2007	27	1.1	0.7	37	1.5	0.8
Yukon	2003-2007	1	1.2	0.8	0	0.0	0.0
USA ¹							
Alabama	2003-2007	137	1.2	0.9	238	2.0	1.3
Alabama (Black)	2003-2007	30	1.1	1.0	42	1.3	1.0
Alabama (White)	2003-2007	106	1.3	0.9	195	2.3	1.4
Alaska	2003-2007	25	1.4	1.3	40	2.5	2.0
Alaska (American Indian)	2003-2007	8	2.8	3.0	6	2.2	2.3
Arizona	2003-2007	155	1.0	0.8	241	1.6	1.1
Arizona (American Indian)	2003-2007	2	0.3	0.3	1	0.1	0.1
Arizona (Asian and Pacific Islander)	2003-2007	0	0.0	0.0	3	0.7	0.6
Arizona (Black)	2003-2007	12	1.9	2.0	6	1.0	1.0
Arizona (White)	2003-2007	139	1.1	0.7	227	1.7	1.1
Arkansas	2003-2007	92	1.4	0.9	160	2.3	1.4
Arkansas (Black)	2003-2007	12	1.1	1.2	10	0.9	0.7
Arkansas (White)	2003-2007	80	1.4	0.9	148	2.6	1.6
California	2003-2007	1184	1.3	1.1	1673	1.9	1.3
California (American Indian)	2003-2007	6	0.5	0.4	5	0.4	0.3
California (Asian and Pacific Islander)	2003-2007	48	0.4	0.3	66	0.5	0.4
California (Black)	2003-2007	87	1.4	1.2	105	1.6	1.3
California (White)	2003-2007	1028	1.5	1.1	1481	2.1	1.5

(Continued on next page)

(Table 7 – continued from previous page)

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
California, Los Angeles County	2003-2007	318	1.3	1.1	408	1.7	1.2
California, Los Angeles County (Asian and Pacific Islander)	2003-2007	20	0.6	0.5	26	0.7	0.4
California, Los Angeles County (Black)	2003-2007	34	1.5	1.3	45	1.7	1.3
California, Los Angeles County (Chinese)	2003-2007	5	0.5	0.5	15	1.5	0.9
California, Los Angeles County (Filipino)	2003-2007	4	0.6	0.5	1	0.1	0.1
California, Los Angeles County (Hispanic White)	2003-2007	61	0.6	0.7	82	0.8	0.8
California, Los Angeles County (Japanese)	2003-2007	3	1.1	0.6	7	2.1	0.8
California, Los Angeles County (Korean)	2003-2007	4	0.8	0.6	2	0.4	0.1
California, Los Angeles County (Non-Hispanic White)	2003-2007	201	2.7	1.6	252	3.4	1.7
California, Los Angeles County (White)	2003-2007	262	1.4	1.2	334	1.8	1.3
California: San Francisco	2003-2007	218	2.1	1.5	183	1.7	1.1
California: San Francisco (Asian and Pacific Islander)	2003-2007	12	0.5	0.4	12	0.5	0.3
California: San Francisco (Black)	2003-2007	23	2.4	1.8	25	2.3	1.6
California: San Francisco (Hispanic White)	2003-2007	14	0.7	0.9	18	1.0	1.0
California: San Francisco (Non-Hispanic White)	2003-2007	168	3.4	2.0	126	2.5	1.3
California: San Francisco (White)	2003-2007	182	2.6	1.8	144	2.1	1.2
Colorado	2003-2007	119	1.0	0.8	221	1.9	1.3
Colorado (Asian and Pacific Islander)	2003-2007	0	0.0	0.0	0	0.0	0.0
Colorado (Black)	2003-2007	5	0.9	0.9	4	0.8	0.7
Colorado (White)	2003-2007	111	1.0	0.8	214	2.0	1.4
Connecticut	2003-2007	114	1.3	0.9	174	1.9	1.2
Connecticut (Black)	2003-2007	12	1.4	1.4	16	1.7	1.2
Connecticut (White)	2003-2007	102	1.4	0.9	157	2.1	1.2
Delaware	2003-2007	28	1.4	0.9	54	2.5	1.8
Delaware (Black)	2003-2007	6	1.4	1.1	8	1.7	1.3
Delaware (White)	2003-2007	21	1.4	0.9	46	2.8	1.9
Florida	2003-2007	727	1.7	1.1	1227	2.7	1.6
Florida (Asian and Pacific Islander)	2003-2007	6	0.6	0.4	4	0.4	0.3
Florida (Black)	2003-2007	66	1.0	0.9	83	1.1	1.0
Florida (White)	2003-2007	646	1.8	1.1	1132	3.1	1.7
Georgia	2003-2007	273	1.2	1.0	382	1.6	1.2

(Continued on next page)

(Table 7 – continued from previous page)

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
Georgia (Asian and Pacific Islander)	2003-2007	0	0.0	0.0	1	0.2	0.2
Georgia (Black)	2003-2007	73	1.1	1.1	69	1.0	0.9
Georgia (White)	2003-2007	198	1.3	1.0	311	2.0	1.4
Georgia, Atlanta	2003-2007	117	1.4	1.2	128	1.5	1.2
Georgia, Atlanta (Black)	2003-2007	40	1.4	1.3	32	1.0	1.0
Georgia, Atlanta (White)	2003-2007	75	1.6	1.3	96	2.1	1.5
Hawaii	2003-2007	39	1.2	0.8	33	1.1	0.6
Hawaii (Chinese)	2003-2007	1	0.7	0.2	2	1.1	0.8
Hawaii (Filipino)	2003-2007	4	0.9	0.8	2	0.4	0.1
Hawaii (Hawaiian)	2003-2007	7	1.0	0.9	7	1.0	1.1
Hawaii (Japanese)	2003-2007	2	0.3	0.2	3	0.5	0.2
Hawaii (White)	2003-2007	22	2.6	1.6	17	2.4	1.3
Idaho	2003-2007	31	0.9	0.7	65	1.8	1.3
Illinois	2003-2007	421	1.4	1.0	579	1.8	1.2
Illinois (Asian and Pacific Islander)	2003-2007	4	0.3	0.3	3	0.2	0.2
Illinois (Black)	2003-2007	89	1.9	1.8	68	1.3	1.1
Illinois (White)	2003-2007	319	1.3	0.9	505	2.0	1.2
Indiana	2003-2007	177	1.1	0.8	376	2.4	1.5
Indiana (Black)	2003-2007	15	1.1	1.0	22	1.5	1.3
Indiana (White)	2003-2007	160	1.2	0.8	353	2.5	1.6
Iowa	2003-2007	75	1.0	0.7	165	2.2	1.4
Kentucky	2003-2007	135	1.3	1.0	268	2.5	1.6
Louisiana	2003-2004,2006-2007	110	1.3	1.0	161	1.8	1.1
Louisiana (Black)	2003-2004,2006-2007	31	1.1	1.1	37	1.2	1.0
Louisiana (White)	2003-2004,2006-2007	78	1.4	1.0	123	2.1	1.2
Louisiana, New Orleans	2003-2004,2006-2007	26	1.6	1.3	31	1.8	1.1
Louisiana, New Orleans (Black)	2003-2004,2006-2007	10	1.5	1.4	12	1.6	1.3
Louisiana, New Orleans (White)	2003-2004,2006-2007	16	1.8	1.3	19	2.0	1.1
Maine	2003-2007	59	1.8	1.3	86	2.6	1.4
Massachusetts	2003-2007	197	1.3	0.9	316	1.9	1.2
Massachusetts (Asian and Pacific Islander)	2003-2007	1	0.1	0.1	4	0.5	0.5
Massachusetts (Black)	2003-2007	9	0.8	0.9	13	1.1	0.9
Massachusetts (White)	2003-2007	186	1.4	0.9	294	2.0	1.2
Michigan	2003-2007	265	1.1	0.8	507	2.0	1.3
Michigan (Asian and Pacific Islander)	2003-2007	1	0.2	0.2	0	0.0	0.0
Michigan (Black)	2003-2007	57	1.6	1.5	64	1.6	1.4
Michigan (White)	2003-2007	201	1.0	0.7	437	2.1	1.3

(Continued on next page)

(Table 7 – continued from previous page)

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
Michigan, Detroit	2003-2007	114	1.2	0.8	202	1.9	1.3
Michigan, Detroit (Black)	2003-2007	45	1.9	1.6	48	1.7	1.4
Michigan, Detroit (White)	2003-2007	67	1.0	0.6	153	2.1	1.3
Mississippi	2003-2007	106	1.5	1.2	119	1.6	1.0
Missouri	2003-2007	202	1.4	1.0	367	2.5	1.6
Missouri (Black)	2003-2007	22	1.4	1.4	34	1.9	1.6
Missouri (White)	2003-2007	177	1.4	1.0	332	2.6	1.6
Montana	2003-2007	23	1.0	0.6	48	2.1	1.3
Montana (American Indian)	2003-2007	2	1.3	1.3	1	0.6	0.6
Nebraska	2003-2007	40	0.9	0.7	68	1.5	1.1
Nebraska (Black)	2003-2007	0	0.0	0.0	3	1.5	1.5
Nebraska (White)	2003-2007	36	0.9	0.7	64	1.6	1.0
New Hampshire	2003-2007	30	0.9	0.6	65	2.0	1.1
New Jersey	2003-2007	249	1.2	0.9	429	1.9	1.2
New Jersey (Black)	2003-2007	41	1.3	1.3	58	1.7	1.3
New Jersey (White)	2003-2007	202	1.2	0.8	366	2.2	1.2
New Mexico	2003-2007	51	1.1	0.8	91	1.9	1.3
New Mexico (Hispanic White)	2003-2007	7	0.3	0.3	21	1.0	0.9
New Mexico (Non-Hispanic White)	2003-2007	42	2.1	1.2	64	3.0	1.6
New Mexico (White)	2003-2007	49	1.2	0.8	85	2.1	1.3
New York State	2003-2007	745	1.6	1.1	996	2.0	1.2
New York State (Asian and Pacific Islander)	2003-2007	13	0.4	0.3	13	0.4	0.3
New York State (Black)	2003-2007	144	1.8	1.6	134	1.5	1.1
New York State (White)	2003-2007	569	1.6	1.1	832	2.3	1.3
North Carolina	2003-2007	253	1.2	0.9	463	2.1	1.3
North Carolina (American Indian)	2003-2007	3	1.1	1.0	2	0.7	0.6
North Carolina (Asian and Pacific Islander)	2003-2007	1	0.2	0.2	2	0.5	0.5
North Carolina (Black)	2003-2007	55	1.2	1.1	67	1.3	1.1
North Carolina (White)	2003-2007	192	1.2	0.8	389	2.4	1.4
North Dakota	2003-2007	6	0.4	0.3	18	1.1	0.6
NPCR (42 States)	2003-2007	8243	1.3	0.9	13207	2.0	1.3
NPCR (42 States) (American Indian)	2003-2007	53	0.7	0.7	62	0.9	0.8
NPCR (42 States) (Asian and Pacific Islander)	2003-2007	93	0.3	0.3	135	0.4	0.3
NPCR (42 States) (Black)	2003-2007	1125	1.3	1.3	1171	1.3	1.0
NPCR (42 States) (White)	2003-2007	6869	1.3	0.9	11726	2.2	1.4
Ohio	2003-2007	347	1.2	0.9	588	2.0	1.3
Ohio (Asian and Pacific Islander)	2003-2007	0	0.0	0.0	0	0.0	0.0
Ohio (Black)	2003-2007	48	1.4	1.3	45	1.2	1.0
Ohio (White)	2003-2007	295	1.2	0.8	533	2.1	1.3
Oklahoma	2003-2007	116	1.3	1.0	210	2.3	1.6

(Continued on next page)

(Table 7 – continued from previous page)

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
Oklahoma (American Indian)	2003-2007	7	0.9	0.9	25	3.1	2.9
Oklahoma (Black)	2003-2007	7	1.0	1.0	10	1.3	1.1
Oklahoma (White)	2003-2007	102	1.4	1.0	173	2.4	1.5
Oregon	2003-2007	140	1.6	1.1	237	2.6	1.6
Oregon (Asian and Pacific Islander)	2003-2007	1	0.3	0.2	0	0.0	0.0
Oregon (Black)	2003-2007	2	0.9	0.9	2	1.0	1.2
Oregon (White)	2003-2007	132	1.6	1.1	233	2.8	1.7
Pennsylvania	2003-2007	415	1.4	0.9	690	2.2	1.3
Pennsylvania (Asian and Pacific Islander)	2003-2007	4	0.6	0.7	4	0.5	0.5
Pennsylvania (Black)	2003-2007	55	1.7	1.7	66	1.8	1.4
Pennsylvania (White)	2003-2007	351	1.3	0.8	610	2.2	1.3
Puerto Rico	2003-2007	79	0.8	0.6	166	1.6	1.0
Rhode Island	2003-2007	36	1.4	1.0	46	1.7	1.1
Rhode Island (Black)	2003-2007	1	0.6	0.6	3	1.7	1.5
Rhode Island (White)	2003-2007	35	1.5	1.0	43	1.7	1.0
SEER (18 Registries)	2003-2007	2535	1.2	1.0	3912	1.9	1.3
SEER (18 Registries) (Asian and Pacific Islander)	2003-2007	72	0.4	0.3	95	0.5	0.3
SEER (18 Registries) (Black)	2003-2007	308	1.3	1.2	358	1.4	1.2
SEER (18 Registries) (Hispanic White)	2003-2007	182	0.4	0.6	310	0.8	0.9
SEER (18 Registries) (Non-Hispanic White)	2003-2007	1941	1.6	1.1	3109	2.5	1.5
SEER (18 Registries) (White)	2003-2007	2123	1.3	1.0	3419	2.1	1.4
SEER (9 Registries)	2003-2007	911	1.3	1.0	1304	1.8	1.2
SEER (9 Registries) (Black)	2003-2007	133	1.6	1.5	131	1.4	1.2
SEER (9 Registries) (White)	2003-2007	743	1.4	1.0	1125	2.1	1.3
South Carolina	2003-2007	131	1.3	0.9	213	1.9	1.2
South Carolina (Black)	2003-2007	44	1.5	1.4	36	1.1	0.8
South Carolina (White)	2003-2007	85	1.2	0.8	175	2.3	1.4
South Dakota	2003-2007	13	0.7	0.5	32	1.6	1.0
Tennessee	2003-2007	163	1.1	0.8	329	2.1	1.4
Tennessee (Black)	2003-2007	24	1.0	1.0	32	1.2	1.0
Tennessee (White)	2003-2007	138	1.2	0.8	296	2.4	1.5
Texas	2003-2007	603	1.1	0.9	827	1.4	1.1
Texas (Asian and Pacific Islander)	2003-2007	5	0.2	0.3	8	0.4	0.4
Texas (Black)	2003-2007	80	1.2	1.2	77	1.1	1.0
Texas (White)	2003-2007	512	1.1	0.9	738	1.5	1.1
Utah	2003-2007	35	0.6	0.5	59	0.9	0.8
Vermont	2003-2007	21	1.4	1.0	27	1.7	1.1
Virginia	2003-2007	204	1.1	0.8	354	1.8	1.2
Virginia (Asian and Pacific Islander)	2003-2007	2	0.2	0.2	4	0.4	0.4

(Continued on next page)

(Table 7 – continued from previous page)

Country / Registry	Period	Male			Female		
		N cases ^a	Crude rate ^b	ASR ^b	N cases ^a	Crude rate ^c	ASR ^c
Virginia (Black)	2003-2007	41	1.1	1.1	46	1.1	0.8
Virginia (White)	2003-2007	159	1.1	0.8	294	2.1	1.3
Washington State	2003-2007	192	1.2	0.9	371	2.4	1.5
Washington, Seattle	2003-2007	148	1.4	1.0	269	2.5	1.6
West Virginia	2003-2007	53	1.2	0.8	117	2.5	1.5
Wisconsin	2003-2007	128	0.9	0.6	248	1.8	1.1
Wisconsin (Black)	2003-2007	11	1.3	1.4	14	1.6	1.5
Wisconsin (White)	2003-2007	113	0.9	0.6	228	1.8	1.1
Wyoming	2003-2007	14	1.1	0.7	22	1.8	1.1
South America							
Argentina¹							
Bahia Blanca	2003-2007	3	0.4	0.4	10	1.3	0.8
Cordoba	2004-2007	20	0.8	0.7	16	0.6	0.4
Mendoza	2003-2007	21	0.5	0.4	33	0.8	0.6
Tierra del Fuego	2003-2007	1	0.3	0.2	0	0.0	0.0
Bolivia	-	-	-	-	-	-	-
Brazil¹							
Aracaju	2003-2006	9	1.0	1.4	11	1.0	1.2
Belo Horizonte	2003-2005	25	0.8	0.9	53	1.4	1.4
Cuiaba	2003-2006	10	0.7	0.8	13	0.8	1.2
Fortaleza	2003-2006	13	0.3	0.4	49	1.0	1.2
Goiania	2003-2007	12	0.4	0.6	33	1.1	1.2
Sao Paulo	2003-2007	235	0.9	1.0	387	1.4	1.3
Chile¹							
Bío Bío Province	2003-2007	3	0.3	0.3	2	0.2	0.1
Region of Antofagasta	2003-2007	4	0.3	0.4	14	1.1	1.0
Valdivia	2003-2007	5	0.5	0.5	7	0.8	0.7
Colombia¹							
Bucaramanga	2003-2007	6	0.2	0.3	35	1.3	1.4
Cali	2003-2007	29	0.6	0.7	101	1.9	1.9
Manizales	2003-2007	12	1.3	1.3	10	1.0	0.8
Pasto	2003-2007	2	0.2	0.3	8	0.8	0.8
Ecuador¹							
Cuenca	2003-2007	2	0.2	0.2	2	0.2	0.2
Quito	2003-2007	5	0.1	0.2	25	0.6	0.7
Guyana	-	-	-	-	-	-	-
Paraguay	-	-	-	-	-	-	-
Peru²							
Trujillo	1998-2002	4	0.3	0.5	13	0.8	1.2
Suriname	-	-	-	-	-	-	-
Uruguay¹							
National	2005-2007	62	1.3	0.9	73	1.4	0.8
Venezuela	-	-	-	-	-	-	-
Latin America & Caribbean	-	-	-	-	-	-	-

Data accessed on 05 May 2015.^aAccumulated number of cases during the period in the population covered by the corresponding registry.^bRates per 100,000 men per year.^cRates per 100,000 women per year.

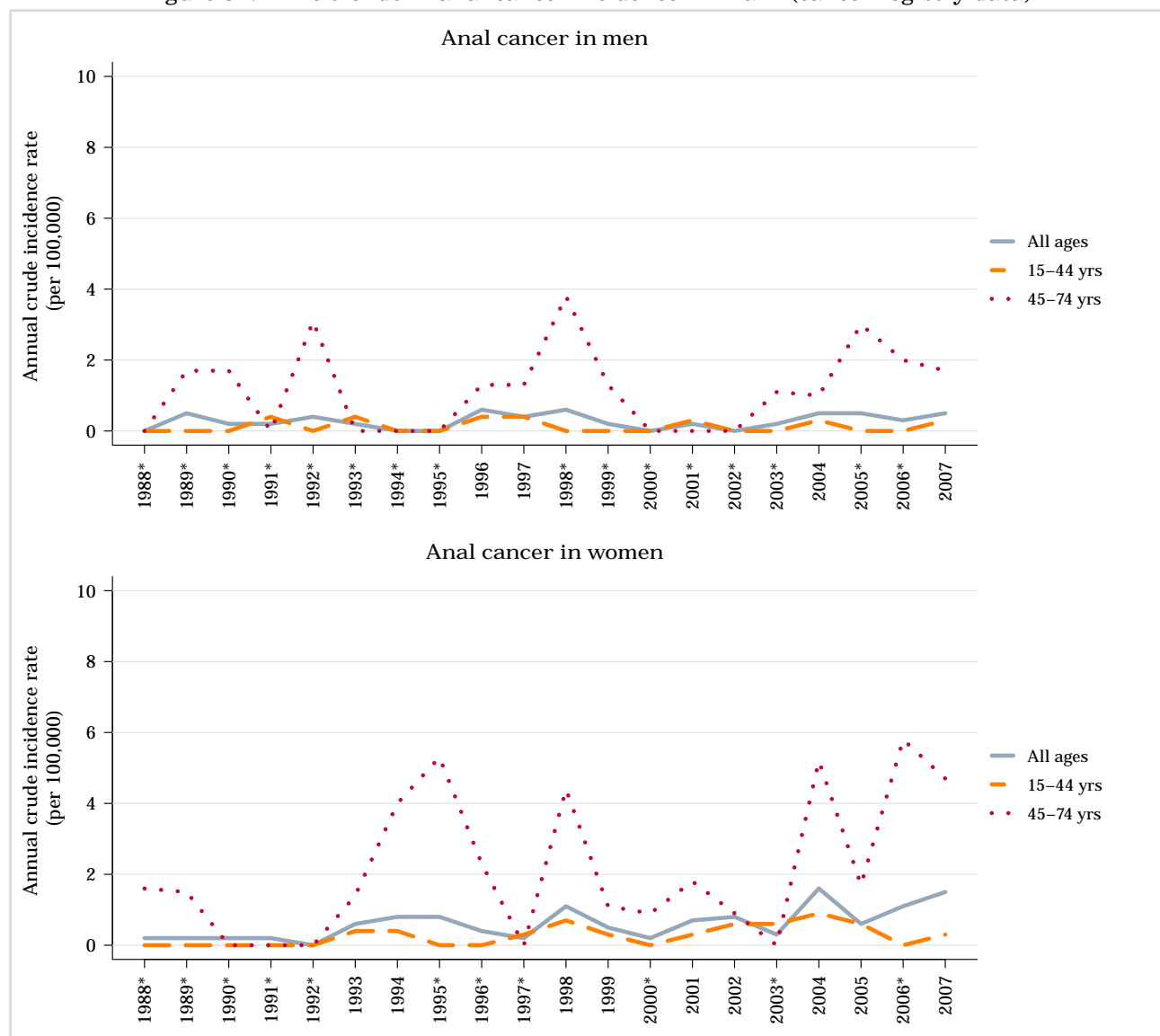
(Continued on next page)

(Table 7 – continued from previous page)

Data sources:

¹Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. <http://ci5.iarc.fr>

²Curado. M. P., Edwards, B., Shin. H.R., Storm. H., Ferlay. J., Heanue. M. and Boyle. P., eds (2007). Cancer Incidence in Five Continents, Vol. IX. IARC Scientific Publications No. 160, Lyon, IARC.

Figure 31: Time trends in anal cancer incidence in Brazil (cancer registry data)

*No cases were registered for this age group.

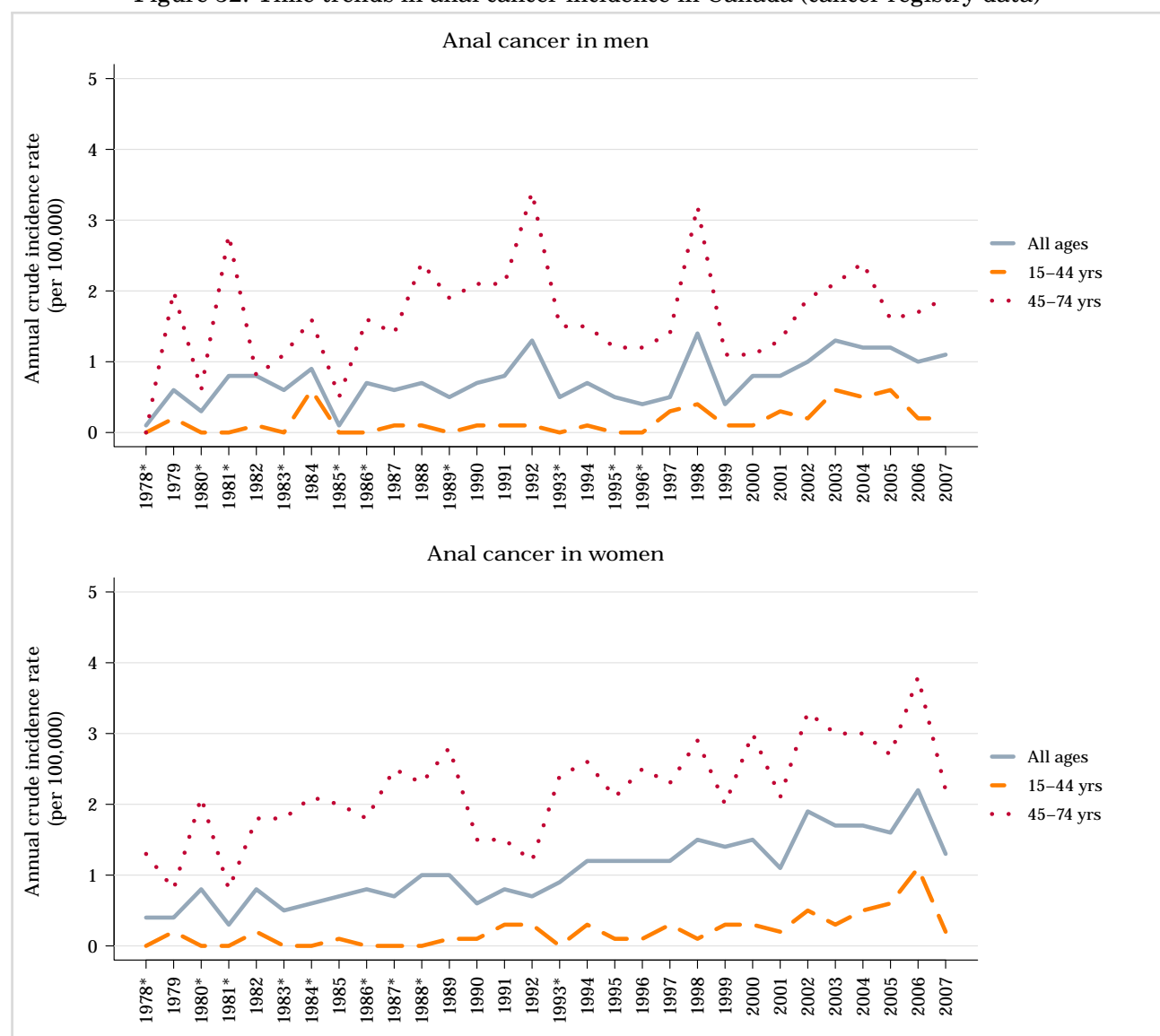
Data accessed on 27 Apr 2015.

Data was provided by the Goiania registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 32: Time trends in anal cancer incidence in Canada (cancer registry data)



*No cases were registered for this age group.

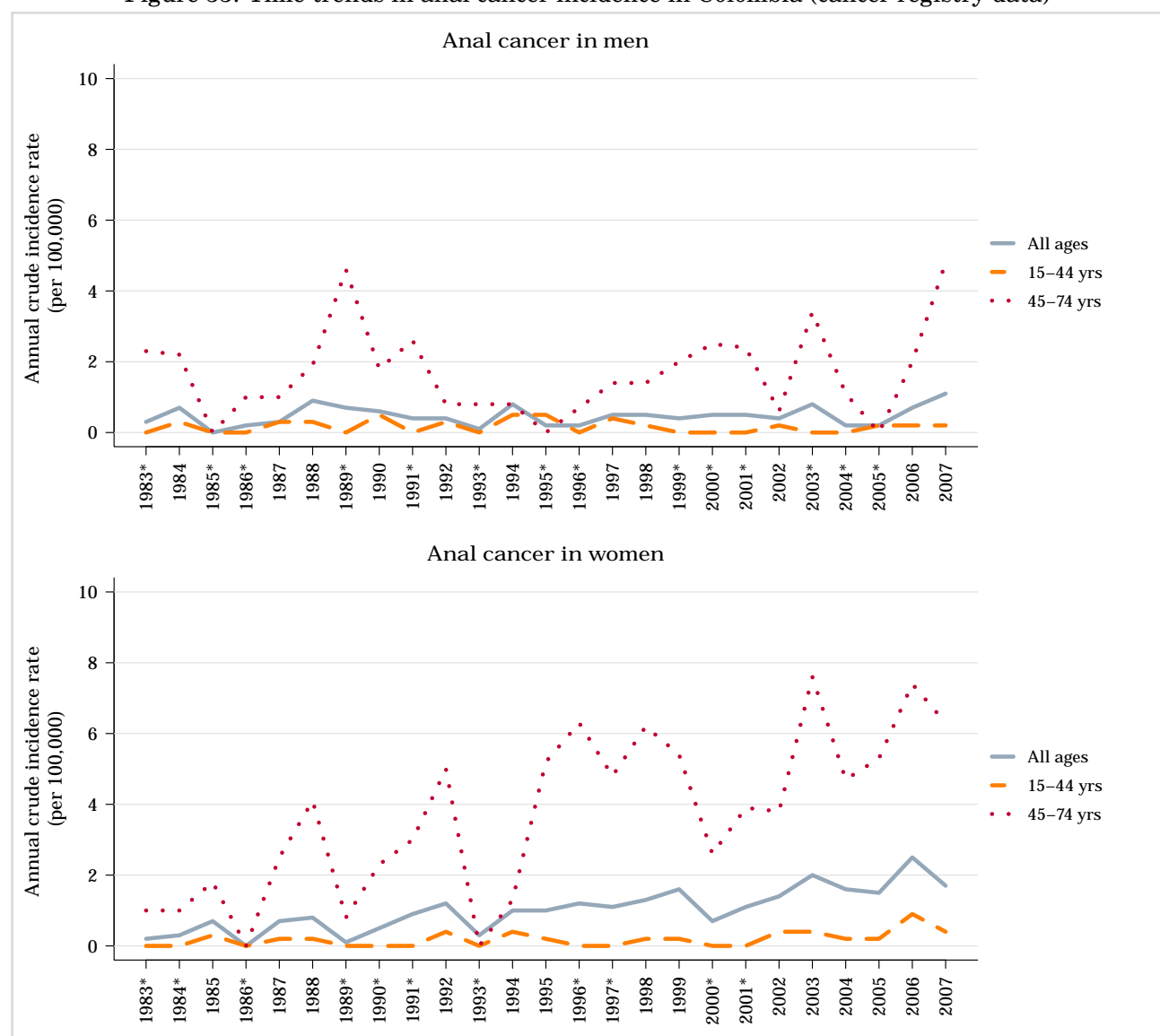
Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: Manitoba, Nova Scotia, Saskatchewan.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 33: Time trends in anal cancer incidence in Colombia (cancer registry data)



*No cases were registered for this age group.

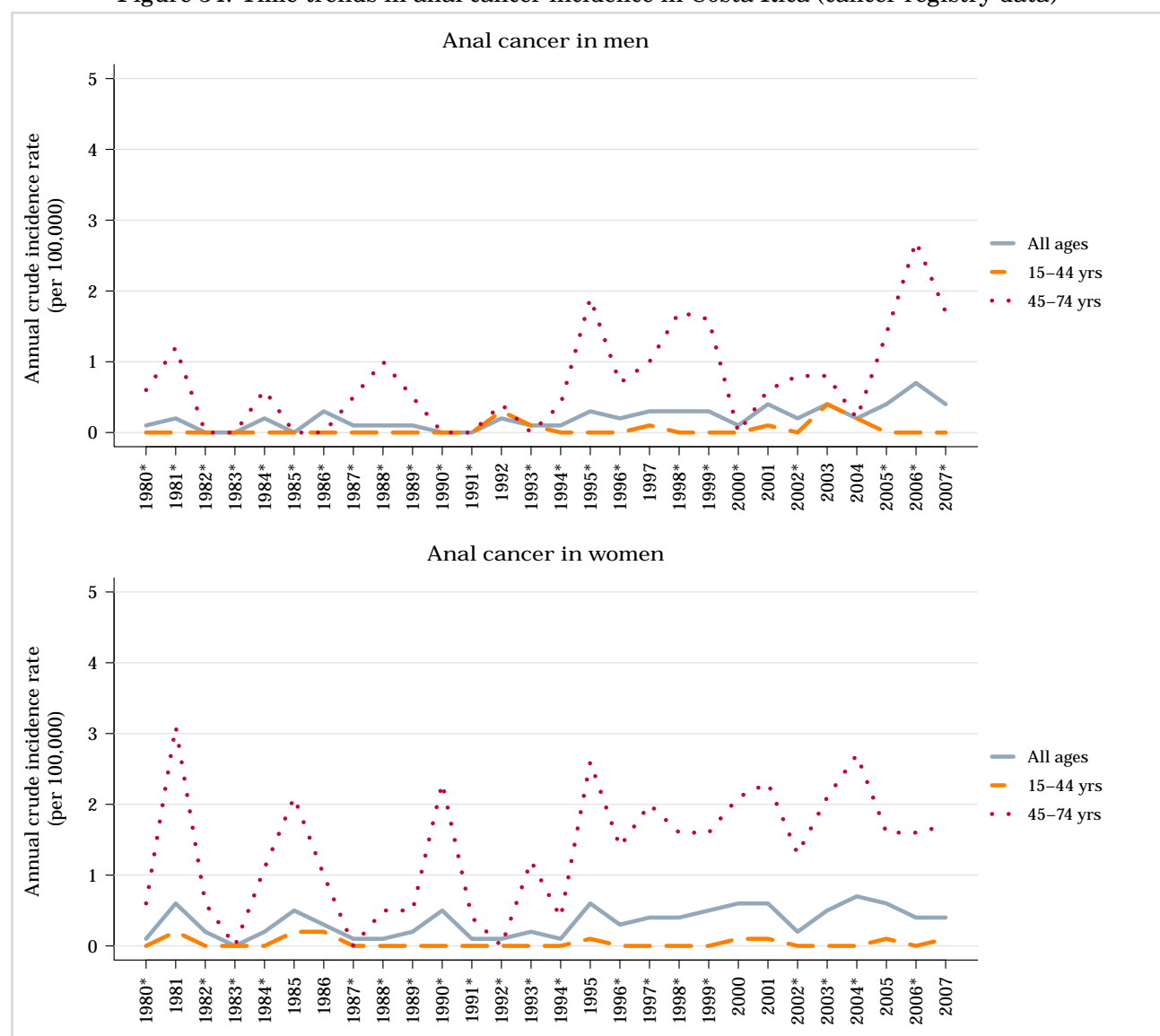
Data accessed on 27 Apr 2015.

Data was provided by the Cali registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 34: Time trends in anal cancer incidence in Costa Rica (cancer registry data)



*No cases were registered for this age group.

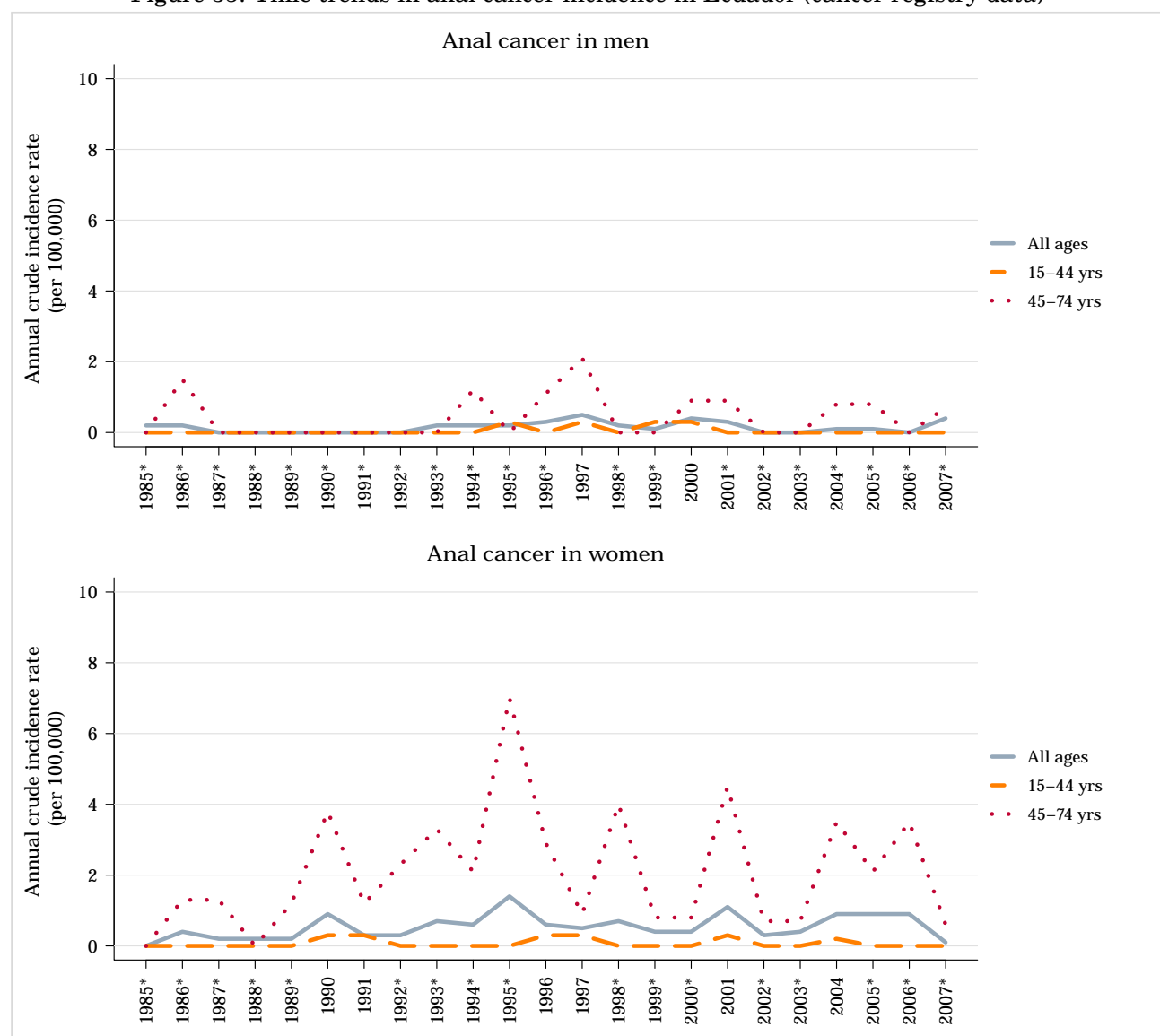
Data accessed on 27 Apr 2015.

Data was provided by the national registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 35: Time trends in anal cancer incidence in Ecuador (cancer registry data)



*No cases were registered for this age group.

Data accessed on 27 Apr 2015.

Data was provided by the Quito registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 36: Time trends in anal cancer incidence in the USA (cancer registry data)



*No cases were registered for this age group.

Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: California: San Francisco, Connecticut, Georgia: Atlanta, Hawaii, Iowa, Michigan: Detroit, New Mexico, Utah and Washington: Seattle.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

NOTE

Time trends in cancer incidence are shown only in countries with available data.

3.2.2 Vulvar cancer

Cancer of the vulva is rare among women worldwide, with an estimated 27,000 new cases in 2008, representing 4% of all gynaecologic cancers (*de Martel C et al. Lancet Oncol 2012;13(6):607-15*). Worldwide, about 60% of all vulvar cancer cases occur in more developed countries. Vulvar cancer has two distinct histological patterns with two different risk factor profiles: (1) basaloid/warty types (2) keratinising types. Basaloid/warty lesions are more common in young women, are very often associated with HPV DNA detection (75-100%), and have a similar risk factor profile as cervical cancer. Keratinising vulvar carcinomas represent the majority of the vulvar lesions (>60%), they occur more often in older women and are more rarely associated with HPV (*IARC Monograph Vol 100B*)

Table 8: Incidence of vulvar cancer in the Americas by cancer registry

Country	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
Caribbean					
Antigua & Barbuda	-	-	-	-	-
Bahamas	-	-	-	-	-
Barbados	-	-	-	-	-
Cuba ¹	Villa Clara	2004-2007	29	1.8	1.0
Dominica	-	-	-	-	-
Dominican Republic	-	-	-	-	-
Grenada	-	-	-	-	-
Haiti	-	-	-	-	-
Jamaica ¹	Kingston and St Andrew	2003-2007	8	0.5	0.4
St Kitts & Nevis	-	-	-	-	-
St Lucia	-	-	-	-	-
St Vincent & The Grenadines	-	-	-	-	-
Trinidad & Tobago	-	-	-	-	-
Central America					
Belize	-	-	-	-	-
Costa Rica ¹	National	2003-2007	92	0.9	0.9
El Salvador	-	-	-	-	-
Guatemala	-	-	-	-	-
Honduras	-	-	-	-	-
Mexico	-	-	-	-	-
Nicaragua	-	-	-	-	-
Panama	-	-	-	-	-
Northern America					
Canada ¹	Alberta	2003-2007	189	2.3	1.5
	British Columbia	2003-2007	207	2.0	1.0
	Manitoba	2003-2007	84	2.8	1.8
	National	2003-2007	2044	2.5	1.4
	New Brunswick	2003-2007	55	2.9	1.7
	Newfoundland and Labrador	2003-2007	36	2.8	1.3
	Northwest Territories	2003-2007	1	1.0	1.2
	Nova Scotia	2003-2007	83	3.5	1.8
	Ontario	2003-2007	827	2.6	1.4
	Prince Edward Island	2003-2007	7	2.0	0.8
	Quebec	2003-2007	472	2.5	1.2
	Saskatchewan	2003-2007	83	3.3	1.6
	Yukon	2003-2007	0	0.0	0.0
USA ¹	Alabama	2003-2007	301	2.6	1.5
	Alabama (Black)	2003-2007	52	1.6	1.3
	Alabama (White)	2003-2007	240	2.9	1.5
	Alaska	2003-2007	30	1.9	1.6
	Alaska (American Indian)	2003-2007	5	1.8	1.7
	Arizona	2003-2007	287	1.9	1.2

(Continued on next page)

(Table 8 – continued from previous page)

Country	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
Arizona (American Indian)		2003-2007	6	0.8	0.8
Arizona (Asian and Pacific Islander)		2003-2007	1	0.2	0.3
Arizona (Black)		2003-2007	3	0.5	0.5
Arizona (White)		2003-2007	273	2.1	1.2
Arkansas		2003-2007	215	3.0	1.9
Arkansas (Black)		2003-2007	24	2.0	1.6
Arkansas (White)		2003-2007	187	3.2	1.9
California		2003-2007	1735	1.9	1.2
California (American Indian)		2003-2007	4	0.3	0.2
California (Asian and Pacific Islander)		2003-2007	90	0.7	0.5
California (Black)		2003-2007	95	1.4	1.1
California (White)		2003-2007	1508	2.2	1.3
California, Los Angeles County		2003-2007	447	1.8	1.2
California, Los Angeles County (Asian and Pacific Islander)		2003-2007	27	0.8	0.4
California, Los Angeles County (Black)		2003-2007	45	1.7	1.2
California, Los Angeles County (Chinese)		2003-2007	10	1.0	0.7
California, Los Angeles County (Filipino)		2003-2007	6	0.7	0.4
California, Los Angeles County (Hispanic White)		2003-2007	116	1.1	1.1
California, Los Angeles County (Japanese)		2003-2007	2	0.6	0.3
California, Los Angeles County (Korean)		2003-2007	6	1.1	0.6
California, Los Angeles County (Non-Hispanic White)		2003-2007	251	3.3	1.5
California, Los Angeles County (White)		2003-2007	367	2.0	1.3
California: San Francisco		2003-2007	209	2.0	1.1
California: San Francisco (Asian and Pacific Islander)		2003-2007	26	1.0	0.6
California: San Francisco (Black)		2003-2007	20	1.9	1.3
California: San Francisco (Hispanic White)		2003-2007	10	0.6	0.6
California: San Francisco (Non-Hispanic White)		2003-2007	149	3.0	1.4
California: San Francisco (White)		2003-2007	159	2.3	1.3
Colorado		2003-2007	251	2.2	1.4
Colorado (Asian and Pacific Islander)		2003-2007	2	0.5	0.5
Colorado (Black)		2003-2007	5	1.0	0.9
Colorado (White)		2003-2007	233	2.2	1.3
Connecticut		2003-2007	287	3.2	1.5
Connecticut (Black)		2003-2007	17	1.8	1.4
Connecticut (White)		2003-2007	267	3.5	1.5
Delaware		2003-2007	56	2.6	1.5
Delaware (Black)		2003-2007	6	1.3	1.1
Delaware (White)		2003-2007	49	3.0	1.6
Florida		2003-2007	1297	2.9	1.5
Florida (Asian and Pacific Islander)		2003-2007	1	0.1	0.1
Florida (Black)		2003-2007	91	1.2	1.0
Florida (White)		2003-2007	1190	3.3	1.6
Georgia		2003-2007	530	2.3	1.6
Georgia (Asian and Pacific Islander)		2003-2007	4	0.6	0.6
Georgia (Black)		2003-2007	93	1.3	1.1
Georgia (White)		2003-2007	425	2.8	1.7
Georgia, Atlanta		2003-2007	150	1.8	1.4
Georgia, Atlanta (Black)		2003-2007	44	1.3	1.3
Georgia, Atlanta (White)		2003-2007	97	2.1	1.5
Hawaii		2003-2007	65	2.1	1.1

(Continued on next page)

(Table 8 – continued from previous page)

Country	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
	Hawaii (Chinese)	2003-2007	0	0.0	0.0
	Hawaii (Filipino)	2003-2007	5	1.0	0.7
	Hawaii (Hawaiian)	2003-2007	9	1.3	1.0
	Hawaii (Japanese)	2003-2007	22	3.4	0.9
	Hawaii (White)	2003-2007	24	3.3	2.1
	Idaho	2003-2007	87	2.4	1.4
	Illinois	2003-2007	857	2.7	1.5
	Illinois (Asian and Pacific Islander)	2003-2007	4	0.3	0.2
	Illinois (Black)	2003-2007	83	1.6	1.3
	Illinois (White)	2003-2007	748	2.9	1.6
	Indiana	2003-2007	479	3.0	1.8
	Indiana (Black)	2003-2007	24	1.6	1.4
	Indiana (White)	2003-2007	446	3.2	1.8
	Iowa	2003-2007	280	3.7	1.9
	Kentucky	2003-2007	384	3.6	2.2
	Louisiana	2003- 2004,2006- 2007	262	2.9	1.8
	Louisiana (Black)	2003- 2004,2006- 2007	52	1.7	1.4
	Louisiana (White)	2003- 2004,2006- 2007	207	3.5	2.0
	Louisiana, New Orleans	2003- 2004,2006- 2007	50	2.8	1.7
	Louisiana, New Orleans (Black)	2003- 2004,2006- 2007	13	1.7	1.4
	Louisiana, New Orleans (White)	2003- 2004,2006- 2007	37	3.9	2.0
	Maine	2003-2007	128	3.8	1.9
	Massachusetts	2003-2007	545	3.3	1.8
	Massachusetts (Asian and Pacific Islander)	2003-2007	3	0.4	0.5
	Massachusetts (Black)	2003-2007	14	1.2	1.0
	Massachusetts (White)	2003-2007	520	3.6	1.8
	Michigan	2003-2007	772	3.0	1.7
	Michigan (Asian and Pacific Islander)	2003-2007	2	0.3	0.4
	Michigan (Black)	2003-2007	68	1.7	1.5
	Michigan (White)	2003-2007	686	3.3	1.8
	Michigan, Detroit	2003-2007	307	3.0	1.7
	Michigan, Detroit (Black)	2003-2007	56	2.0	1.6
	Michigan, Detroit (White)	2003-2007	247	3.4	1.8
	Mississippi	2003-2007	211	2.8	1.8
	Missouri	2003-2007	485	3.3	1.9
	Missouri (Black)	2003-2007	36	2.0	1.7
	Missouri (White)	2003-2007	446	3.5	2.0
	Montana	2003-2007	75	3.2	1.7
	Montana (American Indian)	2003-2007	2	1.3	1.1
	Nebraska	2003-2007	126	2.8	1.5
	Nebraska (Black)	2003-2007	3	1.5	1.5
	Nebraska (White)	2003-2007	116	2.8	1.4
	New Hampshire	2003-2007	112	3.4	1.7
	New Jersey	2003-2007	595	2.7	1.4

(Continued on next page)

(Table 8 – continued from previous page)

Country	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
	New Jersey (Black)	2003-2007	52	1.5	1.2
	New Jersey (White)	2003-2007	523	3.1	1.5
	New Mexico	2003-2007	90	1.9	1.2
	New Mexico (Hispanic White)	2003-2007	19	0.9	0.7
	New Mexico (Non-Hispanic White)	2003-2007	58	2.7	1.4
	New Mexico (White)	2003-2007	77	1.9	1.1
	New York State	2003-2007	1346	2.7	1.4
	New York State (Asian and Pacific Islander)	2003-2007	12	0.4	0.2
	New York State (Black)	2003-2007	148	1.6	1.2
	New York State (White)	2003-2007	1159	3.1	1.5
	North Carolina	2003-2007	551	2.5	1.5
	North Carolina (American Indian)	2003-2007	1	0.3	0.3
	North Carolina (Asian and Pacific Islander)	2003-2007	2	0.5	0.4
	North Carolina (Black)	2003-2007	83	1.6	1.2
	North Carolina (White)	2003-2007	461	2.8	1.6
	North Dakota	2003-2007	50	3.2	1.5
	NPCR (42 States)	2003-2007	17514	2.6	1.5
	NPCR (42 States) (American Indian)	2003-2007	78	1.1	1.0
	NPCR (42 States) (Asian and Pacific Islander)	2003-2007	151	0.5	0.4
	NPCR (42 States) (Black)	2003-2007	1374	1.5	1.2
	NPCR (42 States) (White)	2003-2007	15617	2.9	1.6
	Ohio	2003-2007	870	3.0	1.7
	Ohio (Asian and Pacific Islander)	2003-2007	0	0.0	0.0
	Ohio (Black)	2003-2007	47	1.3	1.0
	Ohio (White)	2003-2007	810	3.2	1.8
	Oklahoma	2003-2007	293	3.3	2.0
	Oklahoma (American Indian)	2003-2007	19	2.3	2.2
	Oklahoma (Black)	2003-2007	8	1.1	1.0
	Oklahoma (White)	2003-2007	265	3.6	2.1
	Oregon	2003-2007	255	2.8	1.6
	Oregon (Asian and Pacific Islander)	2003-2007	0	0.0	0.0
	Oregon (Black)	2003-2007	3	1.5	1.6
	Oregon (White)	2003-2007	238	2.8	1.6
	Pennsylvania	2003-2007	1195	3.7	1.9
	Pennsylvania (Asian and Pacific Islander)	2003-2007	2	0.3	0.2
	Pennsylvania (Black)	2003-2007	78	2.2	1.7
	Pennsylvania (White)	2003-2007	1097	4.0	1.9
	Puerto Rico	2003-2007	200	2.0	1.0
	Rhode Island	2003-2007	119	4.3	2.5
	Rhode Island (Black)	2003-2007	4	2.2	2.0
	Rhode Island (White)	2003-2007	108	4.4	2.3
	SEER (18 Registries)	2003-2007	4909	2.4	1.4
	SEER (18 Registries) (Asian and Pacific Islander)	2003-2007	155	0.8	0.5
	SEER (18 Registries) (Black)	2003-2007	394	1.5	1.3
	SEER (18 Registries) (Hispanic White)	2003-2007	370	1.0	1.0
	SEER (18 Registries) (Non-Hispanic White)	2003-2007	3894	3.2	1.6
	SEER (18 Registries) (White)	2003-2007	4264	2.7	1.5
	SEER (9 Registries)	2003-2007	1757	2.5	1.5
	SEER (9 Registries) (Black)	2003-2007	145	1.6	1.4
	SEER (9 Registries) (White)	2003-2007	1499	2.8	1.5
	South Carolina	2003-2007	306	2.8	1.7

(Continued on next page)

(Table 8 – continued from previous page)

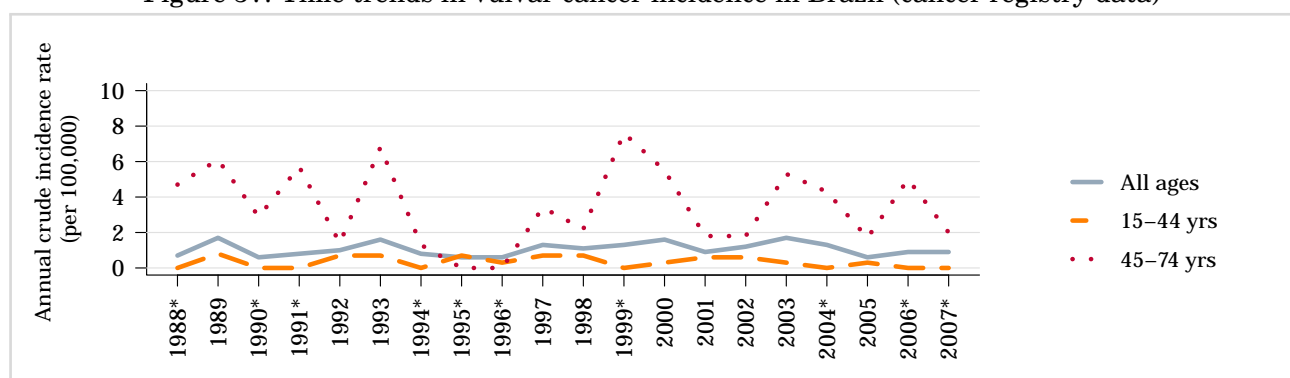
Country	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
	South Carolina (Black)	2003-2007	42	1.3	0.9
	South Carolina (White)	2003-2007	259	3.5	1.9
	South Dakota	2003-2007	66	3.4	1.9
	Tennessee	2003-2007	415	2.7	1.6
	Tennessee (Black)	2003-2007	33	1.2	1.0
	Tennessee (White)	2003-2007	378	3.0	1.7
	Texas	2003-2007	1130	2.0	1.4
	Texas (Asian and Pacific Islander)	2003-2007	6	0.3	0.2
	Texas (Black)	2003-2007	111	1.6	1.3
	Texas (White)	2003-2007	987	2.1	1.4
	Utah	2003-2007	82	1.3	1.0
	Vermont	2003-2007	49	3.1	1.7
	Virginia	2003-2007	451	2.3	1.4
	Virginia (Asian and Pacific Islander)	2003-2007	4	0.4	0.4
	Virginia (Black)	2003-2007	56	1.4	1.0
	Virginia (White)	2003-2007	380	2.7	1.5
	Washington State	2003-2007	388	2.5	1.5
	Washington, Seattle	2003-2007	287	2.7	1.6
	West Virginia	2003-2007	167	3.6	1.9
	Wisconsin	2003-2007	380	2.7	1.4
	Wisconsin (Black)	2003-2007	12	1.3	1.4
	Wisconsin (White)	2003-2007	358	2.8	1.3
	Wyoming	2003-2007	27	2.1	1.3
South America					
Argentina ¹	Bahia Blanca	2003-2007	6	0.8	0.3
	Cordoba	2004-2007	49	1.8	1.1
	Mendoza	2003-2007	69	1.6	1.2
	Tierra del Fuego	2003-2007	5	1.8	3.0
Bolivia	-	-	-	-	-
Brazil ¹	Aracaju	2003-2006	10	1.0	1.0
	Belo Horizonte	2003-2005	33	0.9	0.8
	Cuiaba	2003-2006	12	0.8	1.0
	Fortaleza	2003-2006	17	0.3	0.4
	Goiania	2003-2007	34	1.1	1.3
	Sao Paulo	2003-2007	510	1.8	1.6
Chile ¹	Bío Bío Province	2003-2007	4	0.4	0.3
	Region of Antofagasta	2003-2007	17	1.3	1.3
	Valdivia	2003-2007	9	1.0	0.6
Colombia ¹	Bucaramanga	2003-2007	20	0.7	0.7
	Cali	2003-2007	55	1.0	0.9
	Manizales	2003-2007	5	0.5	0.3
	Pasto	2003-2007	5	0.5	0.6
Ecuador ¹	Cuenca	2003-2007	9	0.7	0.6
	Quito	2003-2007	28	0.7	0.8
Guyana	-	-	-	-	-
Paraguay	-	-	-	-	-
Peru ²	Trujillo	1998-2002	21	1.3	2.0
Suriname	-	-	-	-	-
Uruguay ¹	National	2005-2007	110	2.1	1.0
Venezuela	-	-	-	-	-

Data accessed on 05 May 2015.^aAccumulated number of cases during the period in the population covered by the corresponding registry.^bRates per 100,000 women per year.

Data sources:

¹Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. <http://ci5.iarc.fr>²Curado, M. P., Edwards, B., Shin, H.R., Storm, H., Ferlay, J., Heanue, M. and Boyle, P., eds (2007). Cancer Incidence in Five Continents, Vol. IX. IARC Scientific Publications No. 160, Lyon, IARC.

Figure 37: Time trends in vulvar cancer incidence in Brazil (cancer registry data)



*No cases were registered for this age group.

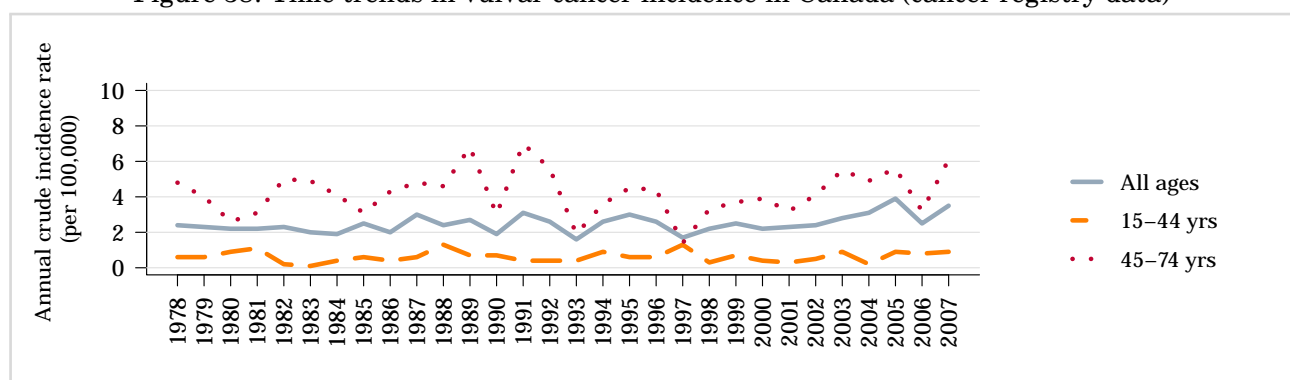
Data accessed on 27 Apr 2015.

Data was provided by the Goiania registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 38: Time trends in vulvar cancer incidence in Canada (cancer registry data)



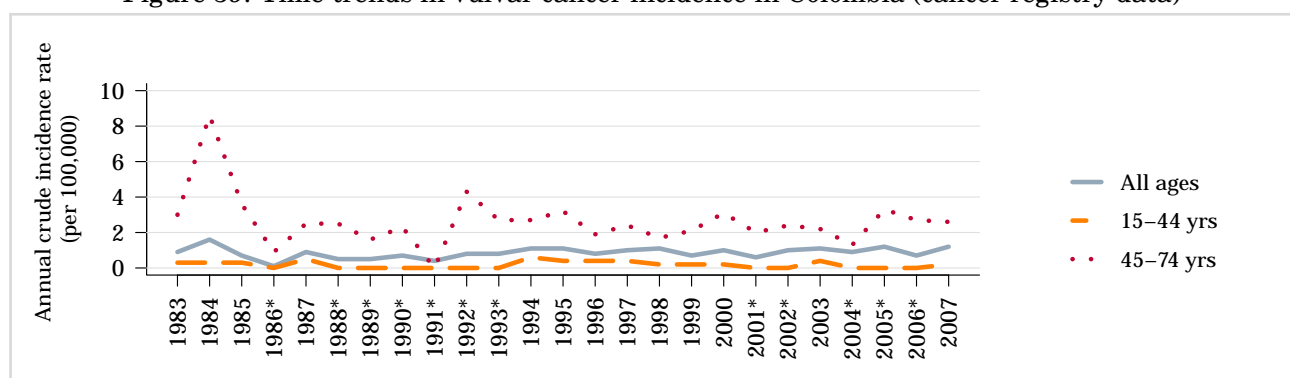
Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: Manitoba, Nova Scotia, Saskatchewan.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 39: Time trends in vulvar cancer incidence in Colombia (cancer registry data)



*No cases were registered for this age group.

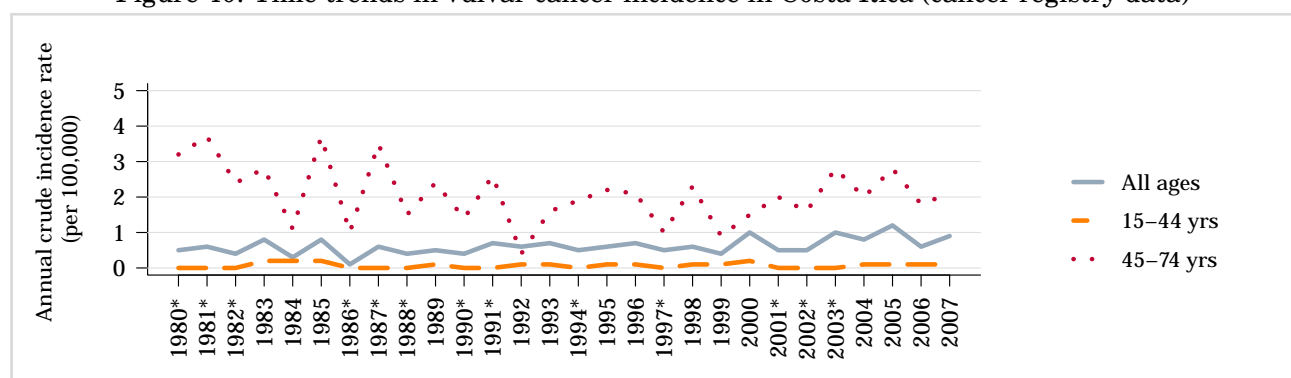
Data accessed on 27 Apr 2015.

Data was provided by the Cali registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 40: Time trends in vulvar cancer incidence in Costa Rica (cancer registry data)



*No cases were registered for this age group.

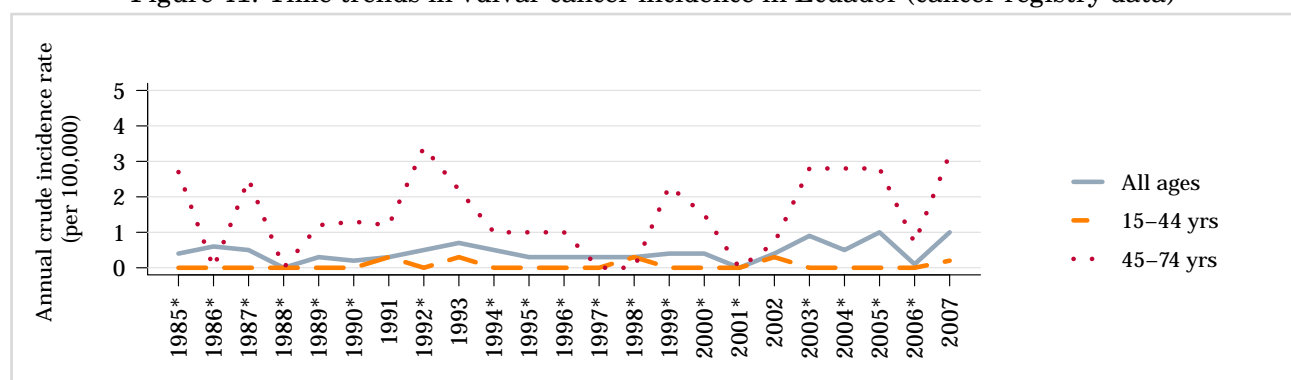
Data accessed on 27 Apr 2015.

Data was provided by the national registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 41: Time trends in vulvar cancer incidence in Ecuador (cancer registry data)



*No cases were registered for this age group.

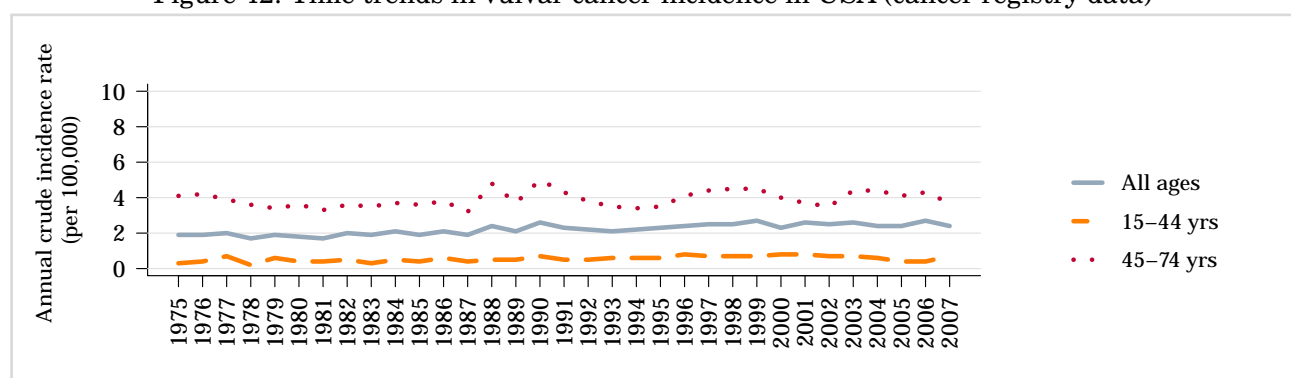
Data accessed on 27 Apr 2015.

Data was provided by the Quito registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 42: Time trends in vulvar cancer incidence in USA (cancer registry data)



Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: California: San Francisco, Connecticut, Georgia: Atlanta, Hawaii, Iowa, Michigan: Detroit, New Mexico, Utah and Washington: Seattle.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

NOTE

Time trends in cancer incidence are shown only in countries with available data.

3.2.3 Vaginal cancer

Cancer of the vagina is a rare cancer, with an estimated 13,000 new cases in 2008, representing 2% of all gynaecologic cancers (*de Martel C et al. Lancet Oncol 2012;13(6):607-15*). Although unreported and similar to cervical cancer, the majority of vaginal cancer cases (68%) occur in less developed countries. Most vaginal cancers are squamous cell carcinoma (90%) generally attributable to HPV, followed by clear cell adenocarcinomas and melanoma. Metastatic cervical cancer can be misclassified as cancer of the vagina. Invasive vaginal cancer is diagnosed primarily in old women (≥ 65 years) and the diagnosis is rare in women under 45 years whereas the peak incidence of carcinoma in situ is observed between ages 55 and 70 (*Vaccine 2008, Vol. 26, Suppl 10*)

Table 9: Incidence of vaginal cancer in the Americas by cancer registry

Country name	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
Caribbean					
Antigua & Barbuda	-	-	-	-	-
Bahamas	-	-	-	-	-
Barbados	-	-	-	-	-
Cuba ¹	Villa Clara	2004-2007	4	0.2	0.1
Dominica	-	-	-	-	-
Dominican Republic	-	-	-	-	-
Grenada	-	-	-	-	-
Haiti	-	-	-	-	-
Jamaica ¹	Kingston and St Andrew	2003-2007	3	0.2	0.1
St Kitts & Nevis	-	-	-	-	-
St Lucia	-	-	-	-	-
St Vincent & The Grenadines	-	-	-	-	-
Trinidad & Tobago	-	-	-	-	-
Central America					
Belize	-	-	-	-	-
Costa Rica ¹	National	2003-2007	25	0.2	0.2
El Salvador	-	-	-	-	-
Guatemala	-	-	-	-	-
Honduras	-	-	-	-	-
Mexico	-	-	-	-	-
Nicaragua	-	-	-	-	-
Panama	-	-	-	-	-
Northern America					
Canada ¹	Alberta	2003-2007	53	0.6	0.4
	British Columbia	2003-2007	84	0.8	0.4
	Manitoba	2003-2007	20	0.7	0.4
	National	2003-2007	621	0.8	0.4
	New Brunswick	2003-2007	21	1.1	0.5
	Newfoundland and Labrador	2003-2007	7	0.5	0.3
	Northwest Territories	2003-2007	1	1.0	1.7
	Nova Scotia	2003-2007	33	1.4	0.7
	Ontario	2003-2007	251	0.8	0.5
	Prince Edward Island	2003-2007	3	0.9	0.5
	Quebec	2003-2007	135	0.7	0.3
	Saskatchewan	2003-2007	13	0.5	0.3
	Yukon	2003-2007	0	0.0	0.0
USA ¹	Alabama	2003-2007	94	0.8	0.5
	Alabama (Black)	2003-2007	25	0.8	0.6
	Alabama (White)	2003-2007	67	0.8	0.4
	Alaska	2003-2007	12	0.7	0.6
	Alaska (American Indian)	2003-2007	2	0.7	0.6
	Arizona	2003-2007	81	0.5	0.3

(Continued on next page)

(Table 9 – continued from previous page)

Country name	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
Arizona (American Indian)		2003-2007	1	0.1	0.2
Arizona (Asian and Pacific Islander)		2003-2007	1	0.2	0.3
Arizona (Black)		2003-2007	0	0.0	0.0
Arizona (White)		2003-2007	77	0.6	0.3
Arkansas		2003-2007	64	0.9	0.5
Arkansas (Black)		2003-2007	12	1.0	0.8
Arkansas (White)		2003-2007	52	0.9	0.5
California		2003-2007	593	0.7	0.4
California (American Indian)		2003-2007	1	0.1	0.1
California (Asian and Pacific Islander)		2003-2007	47	0.4	0.3
California (Black)		2003-2007	52	0.8	0.6
California (White)		2003-2007	476	0.7	0.4
California, Los Angeles County		2003-2007	177	0.7	0.5
California, Los Angeles County (Asian and Pacific Islander)		2003-2007	18	0.5	0.3
California, Los Angeles County (Black)		2003-2007	18	0.7	0.6
California, Los Angeles County (Chinese)		2003-2007	6	0.6	0.4
California, Los Angeles County (Filipino)		2003-2007	4	0.5	0.3
California, Los Angeles County (Hispanic White)		2003-2007	64	0.6	0.6
California, Los Angeles County (Japanese)		2003-2007	1	0.3	0.1
California, Los Angeles County (Korean)		2003-2007	3	0.5	0.3
California, Los Angeles County (Non-Hispanic White)		2003-2007	75	1.0	0.5
California, Los Angeles County (White)		2003-2007	139	0.8	0.5
California: San Francisco		2003-2007	71	0.7	0.4
California: San Francisco (Asian and Pacific Islander)		2003-2007	14	0.6	0.4
California: San Francisco (Black)		2003-2007	12	1.1	0.8
California: San Francisco (Hispanic White)		2003-2007	10	0.6	0.6
California: San Francisco (Non-Hispanic White)		2003-2007	35	0.7	0.4
California: San Francisco (White)		2003-2007	45	0.7	0.4
Colorado		2003-2007	71	0.6	0.4
Colorado (Asian and Pacific Islander)		2003-2007	5	1.4	1.1
Colorado (Black)		2003-2007	4	0.8	0.8
Colorado (White)		2003-2007	62	0.6	0.4
Connecticut		2003-2007	80	0.9	0.4
Connecticut (Black)		2003-2007	9	0.9	0.8
Connecticut (White)		2003-2007	69	0.9	0.4
Delaware		2003-2007	15	0.7	0.4
Delaware (Black)		2003-2007	5	1.1	0.8
Delaware (White)		2003-2007	10	0.6	0.4
Florida		2003-2007	363	0.8	0.4
Florida (Asian and Pacific Islander)		2003-2007	5	0.4	0.3
Florida (Black)		2003-2007	62	0.8	0.7
Florida (White)		2003-2007	290	0.8	0.4
Georgia		2003-2007	203	0.9	0.6
Georgia (Asian and Pacific Islander)		2003-2007	2	0.3	0.3
Georgia (Black)		2003-2007	69	1.0	0.9
Georgia (White)		2003-2007	132	0.9	0.5
Georgia, Atlanta		2003-2007	63	0.8	0.6
Georgia, Atlanta (Black)		2003-2007	31	0.9	1.1
Georgia, Atlanta (White)		2003-2007	31	0.7	0.4
Hawaii		2003-2007	22	0.7	0.4

(Continued on next page)

(Table 9 – continued from previous page)

Country name	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
Hawaii (Chinese)		2003-2007	1	0.6	0.1
Hawaii (Filipino)		2003-2007	2	0.4	0.3
Hawaii (Hawaiian)		2003-2007	4	0.6	0.6
Hawaii (Japanese)		2003-2007	3	0.5	0.1
Hawaii (White)		2003-2007	8	1.1	0.5
Idaho		2003-2007	28	0.8	0.5
Illinois		2003-2007	252	0.8	0.5
Illinois (Asian and Pacific Islander)		2003-2007	7	0.5	0.4
Illinois (Black)		2003-2007	59	1.1	0.8
Illinois (White)		2003-2007	182	0.7	0.4
Indiana		2003-2007	126	0.8	0.5
Indiana (Black)		2003-2007	13	0.9	0.7
Indiana (White)		2003-2007	112	0.8	0.4
Iowa		2003-2007	65	0.9	0.4
Kentucky		2003-2007	105	1.0	0.6
Louisiana		2003- 2004,2006- 2007	82	0.9	0.6
Louisiana (Black)		2003- 2004,2006- 2007	23	0.8	0.6
Louisiana (White)		2003- 2004,2006- 2007	59	1.0	0.6
Louisiana, New Orleans		2003- 2004,2006- 2007	17	1.0	0.6
Louisiana, New Orleans (Black)		2003- 2004,2006- 2007	3	0.4	0.3
Louisiana, New Orleans (White)		2003- 2004,2006- 2007	14	1.5	0.9
Maine		2003-2007	32	1.0	0.5
Massachusetts		2003-2007	123	0.7	0.4
Massachusetts (Asian and Pacific Islander)		2003-2007	2	0.2	0.3
Massachusetts (Black)		2003-2007	16	1.3	1.3
Massachusetts (White)		2003-2007	103	0.7	0.4
Michigan		2003-2007	224	0.9	0.5
Michigan (Asian and Pacific Islander)		2003-2007	1	0.2	0.2
Michigan (Black)		2003-2007	30	0.8	0.6
Michigan (White)		2003-2007	186	0.9	0.5
Michigan, Detroit		2003-2007	94	0.9	0.5
Michigan, Detroit (Black)		2003-2007	28	1.0	0.8
Michigan, Detroit (White)		2003-2007	66	0.9	0.5
Mississippi		2003-2007	68	0.9	0.6
Missouri		2003-2007	112	0.8	0.4
Missouri (Black)		2003-2007	16	0.9	0.7
Missouri (White)		2003-2007	95	0.7	0.4
Montana		2003-2007	17	0.7	0.3
Montana (American Indian)		2003-2007	2	1.3	1.4
Nebraska		2003-2007	29	0.7	0.4
Nebraska (Black)		2003-2007	2	1.0	1.0
Nebraska (White)		2003-2007	26	0.6	0.3
New Hampshire		2003-2007	17	0.5	0.3
New Jersey		2003-2007	191	0.9	0.5

(Continued on next page)

(Table 9 – continued from previous page)

Country name	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
New Jersey (Black)		2003-2007	35	1.0	0.9
New Jersey (White)		2003-2007	143	0.8	0.4
New Mexico		2003-2007	36	0.7	0.4
New Mexico (Hispanic White)		2003-2007	14	0.7	0.6
New Mexico (Non-Hispanic White)		2003-2007	20	0.9	0.4
New Mexico (White)		2003-2007	34	0.8	0.5
New York State		2003-2007	403	0.8	0.5
New York State (Asian and Pacific Islander)		2003-2007	10	0.3	0.2
New York State (Black)		2003-2007	99	1.1	0.8
New York State (White)		2003-2007	286	0.8	0.4
North Carolina		2003-2007	173	0.8	0.5
North Carolina (American Indian)		2003-2007	1	0.3	0.4
North Carolina (Asian and Pacific Islander)		2003-2007	1	0.2	0.1
North Carolina (Black)		2003-2007	42	0.8	0.6
North Carolina (White)		2003-2007	129	0.8	0.4
North Dakota		2003-2007	8	0.5	0.2
NPCR (42 States)		2003-2007	5057	0.8	0.4
NPCR (42 States) (American Indian)		2003-2007	25	0.3	0.3
NPCR (42 States) (Asian and Pacific Islander)		2003-2007	116	0.4	0.3
NPCR (42 States) (Black)		2003-2007	808	0.9	0.7
NPCR (42 States) (White)		2003-2007	4035	0.7	0.4
Ohio		2003-2007	224	0.8	0.4
Ohio (Asian and Pacific Islander)		2003-2007	3	0.7	0.7
Ohio (Black)		2003-2007	29	0.8	0.5
Ohio (White)		2003-2007	189	0.8	0.4
Oklahoma		2003-2007	76	0.8	0.5
Oklahoma (American Indian)		2003-2007	8	1.0	0.8
Oklahoma (Black)		2003-2007	4	0.5	0.4
Oklahoma (White)		2003-2007	64	0.9	0.5
Oregon		2003-2007	58	0.6	0.4
Oregon (Asian and Pacific Islander)		2003-2007	1	0.3	0.2
Oregon (Black)		2003-2007	2	1.0	1.1
Oregon (White)		2003-2007	54	0.6	0.4
Pennsylvania		2003-2007	277	0.9	0.4
Pennsylvania (Asian and Pacific Islander)		2003-2007	1	0.1	0.1
Pennsylvania (Black)		2003-2007	34	1.0	0.7
Pennsylvania (White)		2003-2007	237	0.9	0.4
Puerto Rico		2003-2007	110	1.1	0.7
Rhode Island		2003-2007	16	0.6	0.3
Rhode Island (Black)		2003-2007	0	0.0	0.0
Rhode Island (White)		2003-2007	15	0.6	0.3
SEER (18 Registries)		2003-2007	1578	0.8	0.5
SEER (18 Registries) (Asian and Pacific Islander)		2003-2007	87	0.5	0.3
SEER (18 Registries) (Black)		2003-2007	227	0.9	0.8
SEER (18 Registries) (Hispanic White)		2003-2007	175	0.5	0.5
SEER (18 Registries) (Non-Hispanic White)		2003-2007	1068	0.9	0.4
SEER (18 Registries) (White)		2003-2007	1243	0.8	0.5
SEER (9 Registries)		2003-2007	536	0.8	0.5
SEER (9 Registries) (Black)		2003-2007	85	0.9	0.8
SEER (9 Registries) (White)		2003-2007	410	0.8	0.4
South Carolina		2003-2007	100	0.9	0.5

(Continued on next page)

(Table 9 – continued from previous page)

Country name	Cancer registry	Period	Female		
			N cases ^a	Crude rate ^b	ASR ^b
	South Carolina (Black)	2003-2007	24	0.7	0.5
	South Carolina (White)	2003-2007	74	1.0	0.5
	South Dakota	2003-2007	13	0.7	0.3
	Tennessee	2003-2007	136	0.9	0.5
	Tennessee (Black)	2003-2007	21	0.8	0.7
	Tennessee (White)	2003-2007	110	0.9	0.5
	Texas	2003-2007	391	0.7	0.5
	Texas (Asian and Pacific Islander)	2003-2007	6	0.3	0.3
	Texas (Black)	2003-2007	65	0.9	0.7
	Texas (White)	2003-2007	315	0.7	0.4
	Utah	2003-2007	23	0.4	0.3
	Vermont	2003-2007	17	1.1	0.7
	Virginia	2003-2007	139	0.7	0.4
	Virginia (Asian and Pacific Islander)	2003-2007	5	0.5	0.5
	Virginia (Black)	2003-2007	40	1.0	0.7
	Virginia (White)	2003-2007	91	0.6	0.4
	Washington State	2003-2007	118	0.7	0.4
	Washington, Seattle	2003-2007	82	0.8	0.5
	West Virginia	2003-2007	47	1.0	0.5
	Wisconsin	2003-2007	81	0.6	0.3
	Wisconsin (Black)	2003-2007	7	0.8	0.7
	Wisconsin (White)	2003-2007	73	0.6	0.3
	Wyoming	2003-2007	11	0.9	0.7
South America					
Argentina ¹	Bahia Blanca	2003-2007	11	1.5	1.0
	Cordoba	2004-2007	14	0.5	0.4
	Mendoza	2003-2007	24	0.6	0.5
	Tierra del Fuego	2003-2007	1	0.4	0.4
Bolivia	-	-	-	-	-
Brazil ¹	Aracaju	2003-2006	6	0.6	0.9
	Belo Horizonte	2003-2005	24	0.6	0.6
	Cuiaba	2003-2006	7	0.4	0.6
	Fortaleza	2003-2006	22	0.4	0.5
	Goiania	2003-2007	22	0.7	0.8
	Sao Paulo	2003-2007	348	1.2	1.1
Chile ¹	Bío Bío Province	2003-2007	9	1.0	0.8
	Region of Antofagasta	2003-2007	7	0.5	0.6
	Valdivia	2003-2007	2	0.2	0.2
Colombia ¹	Bucaramanga	2003-2007	20	0.7	0.8
	Cali	2003-2007	31	0.6	0.6
	Manizales	2003-2007	5	0.5	0.5
	Pasto	2003-2007	0	0.0	0.0
Ecuador ¹	Cuenca	2003-2007	5	0.4	0.4
	Quito	2003-2007	15	0.4	0.5
Guyana	-	-	-	-	-
Paraguay	-	-	-	-	-
Peru ²	Trujillo	1998-2002	2	0.1	0.2
Suriname	-	-	-	-	-
Uruguay ¹	National	2005-2007	39	0.8	0.4
Venezuela	-	-	-	-	-
Latin America & Caribbean					

Data accessed on 05 May 2015.

Please refer to original source (available at <http://ci5.iarc.fr/Ci5i-ix/ci5i-ix.htm>)^aAccumulated number of cases during the period in the population covered by the corresponding registry.^bRates per 100,000 women per year.

Data sources:

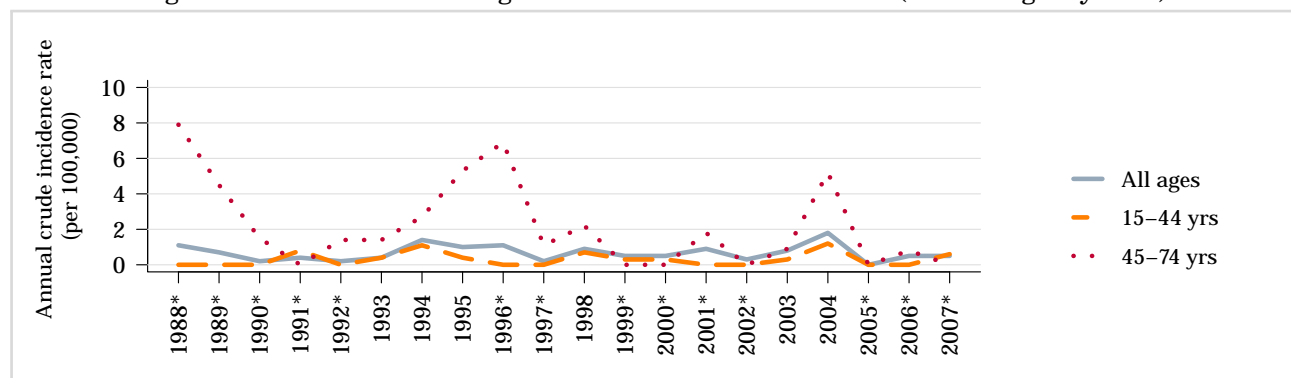
(Continued on next page)

(Table 9 – continued from previous page)

¹Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. <http://ci5.iarc.fr>

²Curado M. P., Edwards B., Shin H.R., Storm H., Ferlay J., Heanue M. and Boyle P., eds (2007). Cancer Incidence in Five Continents, Vol. IX. IARC Scientific Publications No. 160, Lyon, IARC.

Figure 43: Time trends in vaginal cancer incidence in Brazil (cancer registry data)



*No cases were registered for this age group.

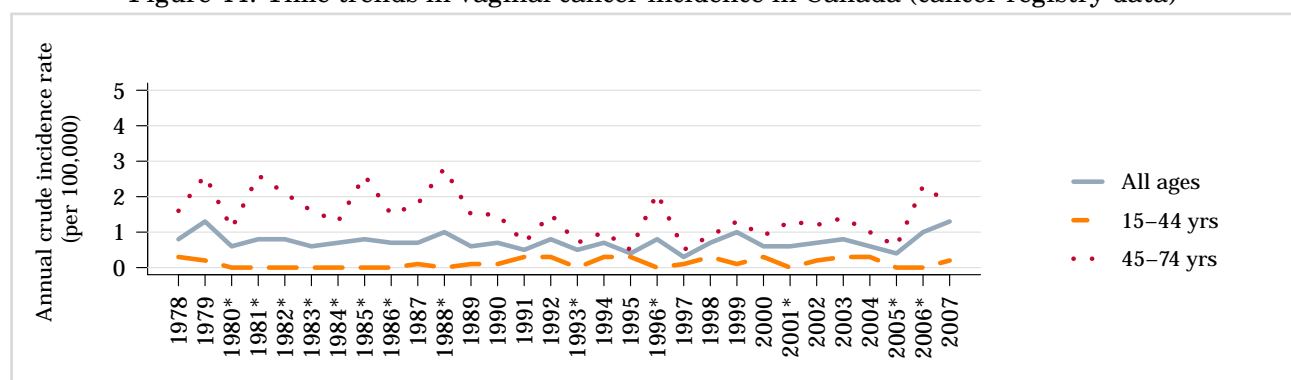
Data accessed on 27 Apr 2015.

Data was provided by the Goiania registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 44: Time trends in vaginal cancer incidence in Canada (cancer registry data)



*No cases were registered for this age group.

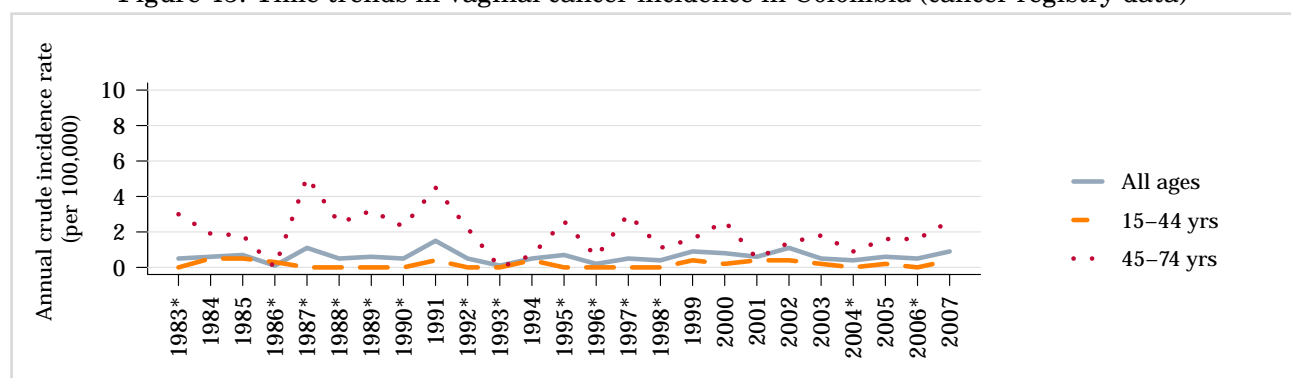
Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: Manitoba, Nova Scotia, Saskatchewan.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 45: Time trends in vaginal cancer incidence in Colombia (cancer registry data)



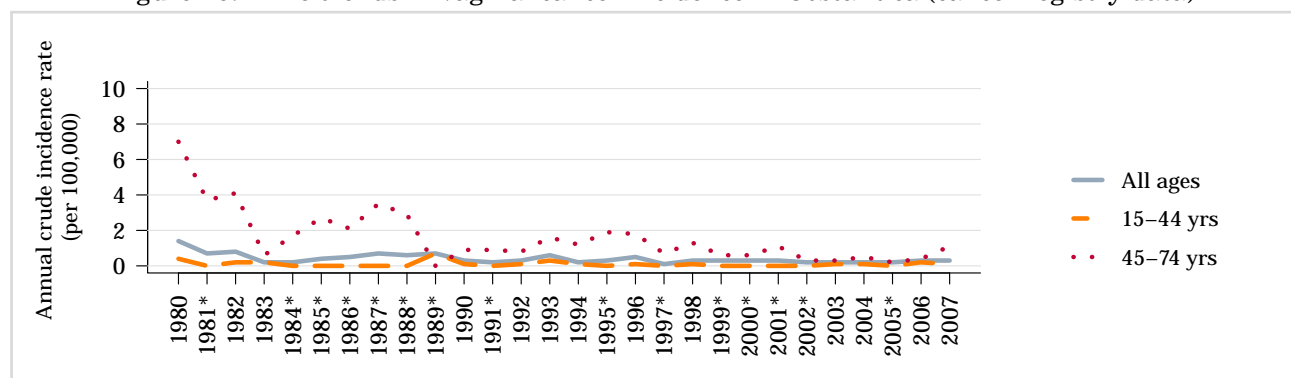
*No cases were registered for this age group.

(Continued on next page)

(Figure 48 – continued from previous page)

Data accessed on 27 Apr 2015.

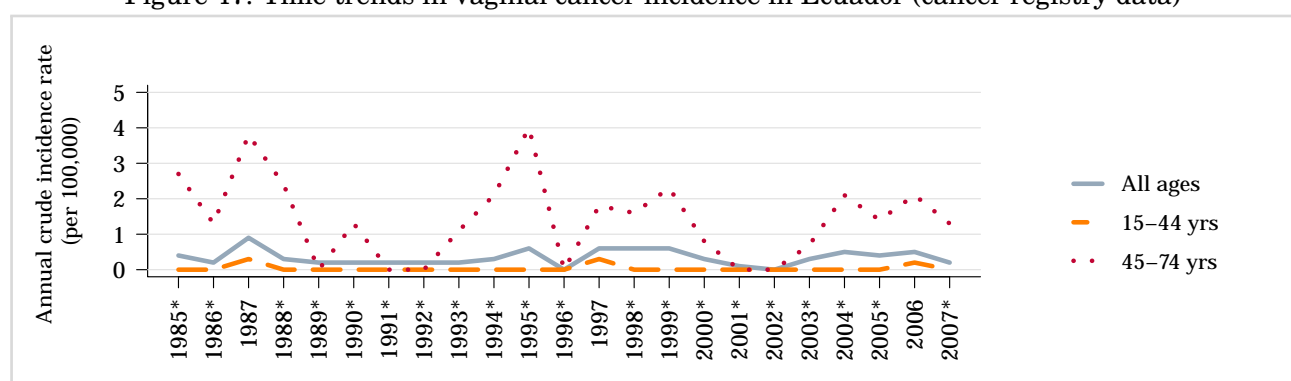
Data was provided by the Cali registry.

Data sources:Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>**Figure 46: Time trends in vaginal cancer incidence in Costa Rica (cancer registry data)**

*No cases were registered for this age group.

Data accessed on 27 Apr 2015.

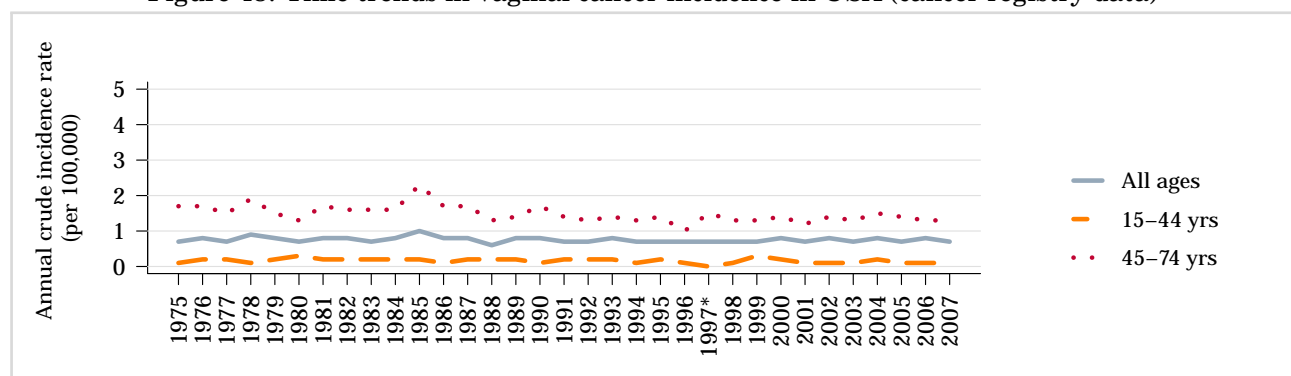
Data was provided by the national registry.

Data sources:Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>**Figure 47: Time trends in vaginal cancer incidence in Ecuador (cancer registry data)**

*No cases were registered for this age group.

Data accessed on 27 Apr 2015.

Data was provided by the Quito registry.

Data sources:Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>**Figure 48: Time trends in vaginal cancer incidence in USA (cancer registry data)**

*No cases were registered for this age group.

Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: California: San Francisco, Connecticut, Georgia: Atlanta, Hawaii, Iowa, Michigan: Detroit, New Mexico, Utah and Washington: Seattle.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

NOTE

Time trends in cancer incidence are shown only in countries with available data.

3.2.4 Penile cancer

The annual burden of penile cancer has been estimated to be 22,000 cases worldwide with incidence rates strongly correlating with those of cervical cancer (*de Martel C et al. Lancet Oncol 2012;13(6):607-15*). Penile cancer is rare and most commonly affects men aged 50-70 years. Incidence rates are higher in less developed countries than in more developed countries, accounting for up to 10% of male cancers in some parts of Africa, South America and Asia. Precursor cancerous penile lesions (PeIN) are rare. Cancers of the penis are primarily of squamous cell carcinomas (SCC) (95%) and the most common penile SCC histologic sub-types are keratinising (49%), mixed warty-basaloid (17%), verrucous (8%) warty (6%), and basaloid (4%). HPV is most commonly detected in basaloid and warty tumours but is less common in keratinising and verrucous tumours. Approximately 60-100% of PeIN lesions are HPV DNA positive.

Table 10: Incidence of penile cancer in the Americas by cancer registry

Country name	Cancer registry	Period	Male		
			N cases ^a	Crude rate ^b	ASR ^b
Caribbean					
Antigua & Barbuda	-	-	-	-	-
Bahamas	-	-	-	-	-
Barbados	-	-	-	-	-
Cuba ¹	Villa Clara	2004-2007	41	2.5	1.6
Dominica	-	-	-	-	-
Dominican Republic	-	-	-	-	-
Grenada	-	-	-	-	-
Haiti	-	-	-	-	-
Jamaica ¹	Kingston and St Andrew	2003-2007	18	1.2	1.1
St Kitts & Nevis	-	-	-	-	-
St Lucia	-	-	-	-	-
St Vincent & The Grenadines	-	-	-	-	-
Trinidad & Tobago	-	-	-	-	-
Central America					
Belize	-	-	-	-	-
Costa Rica ¹	National	2003-2007	110	1.0	1.2
El Salvador	-	-	-	-	-
Guatemala	-	-	-	-	-
Honduras	-	-	-	-	-
Mexico	-	-	-	-	-
Nicaragua	-	-	-	-	-
Panama	-	-	-	-	-
Northern America					
Canada ¹	Alberta	2003-2007	77	0.9	0.7
	British Columbia	2003-2007	57	0.5	0.3
	Manitoba	2003-2007	31	1.1	0.6
	National	2003-2007	662	0.8	0.5
	New Brunswick	2003-2007	32	1.7	1.0
	Newfoundland and Labrador	2003-2007	18	1.4	0.9
	Northwest Territories	2003-2007	0	0.0	0.0
	Nova Scotia	2003-2007	30	1.3	0.8
	Ontario	2003-2007	233	0.8	0.5
	Prince Edward Island	2003-2007	3	0.9	0.5
	Quebec	2003-2007	147	0.8	0.5
	Saskatchewan	2003-2007	34	1.4	0.9
	Yukon	2003-2007	0	0.0	0.0
	USA ¹	Alabama	2003-2007	90	0.8
Alabama (Black)		2003-2007	20	0.7	0.7

(Continued on next page)

(Table 10 – continued from previous page)

Country name	Cancer registry	Period	Male		
			N cases ^a	Crude rate ^b	ASR ^b
Alabama (White)		2003-2007	69	0.9	0.5
Alaska		2003-2007	13	0.7	0.7
Alaska (American Indian)		2003-2007	2	0.7	0.8
Arizona		2003-2007	106	0.7	0.5
Arizona (American Indian)		2003-2007	6	0.8	0.8
Arizona (Asian and Pacific Islander)		2003-2007	1	0.3	0.3
Arizona (Black)		2003-2007	4	0.6	0.9
Arizona (White)		2003-2007	95	0.7	0.5
Arkansas		2003-2007	65	1.0	0.7
Arkansas (Black)		2003-2007	4	0.4	0.4
Arkansas (White)		2003-2007	61	1.1	0.7
California		2003-2007	561	0.6	0.5
California (American Indian)		2003-2007	3	0.2	0.3
California (Asian and Pacific Islander)		2003-2007	31	0.3	0.2
California (Black)		2003-2007	35	0.6	0.6
California (White)		2003-2007	477	0.7	0.5
California, Los Angeles County		2003-2007	149	0.6	0.5
California, Los Angeles County (Asian and Pacific Islander)		2003-2007	7	0.2	0.1
California, Los Angeles County (Black)		2003-2007	14	0.6	0.5
California, Los Angeles County (Chinese)		2003-2007	3	0.3	0.2
California, Los Angeles County (Filipino)		2003-2007	1	0.1	0.1
California, Los Angeles County (Hispanic White)		2003-2007	70	0.6	0.8
California, Los Angeles County (Japanese)		2003-2007	0	0.0	0.0
California, Los Angeles County (Korean)		2003-2007	2	0.4	0.3
California, Los Angeles County (Non-Hispanic White)		2003-2007	54	0.7	0.4
California, Los Angeles County (White)		2003-2007	124	0.7	0.6
California: San Francisco		2003-2007	48	0.5	0.3
California: San Francisco (Asian and Pacific Islander)		2003-2007	6	0.3	0.2
California: San Francisco (Black)		2003-2007	7	0.7	0.6
California: San Francisco (Hispanic White)		2003-2007	11	0.6	0.7
California: San Francisco (Non-Hispanic White)		2003-2007	24	0.5	0.3
California: San Francisco (White)		2003-2007	35	0.5	0.3
Colorado		2003-2007	62	0.5	0.4
Colorado (Asian and Pacific Islander)		2003-2007	1	0.3	0.3
Colorado (Black)		2003-2007	4	0.7	0.9
Colorado (White)		2003-2007	57	0.5	0.4
Connecticut		2003-2007	66	0.8	0.5
Connecticut (Black)		2003-2007	2	0.2	0.2
Connecticut (White)		2003-2007	61	0.8	0.5
Delaware		2003-2007	7	0.3	0.2
Delaware (Black)		2003-2007	3	0.7	0.5
Delaware (White)		2003-2007	3	0.2	0.1
Florida		2003-2007	405	0.9	0.5
Florida (Asian and Pacific Islander)		2003-2007	0	0.0	0.0
Florida (Black)		2003-2007	60	0.9	1.0
Florida (White)		2003-2007	336	1.0	0.5
Georgia		2003-2007	120	0.5	0.5
Georgia (Asian and Pacific Islander)		2003-2007	0	0.0	0.0
Georgia (Black)		2003-2007	28	0.4	0.5
Georgia (White)		2003-2007	90	0.6	0.4

(Continued on next page)

(Table 10 – continued from previous page)

Country name	Cancer registry	Period	Male		
			N cases ^a	Crude rate ^b	ASR ^b
Georgia, Atlanta		2003-2007	27	0.3	0.3
Georgia, Atlanta (Black)		2003-2007	11	0.4	0.6
Georgia, Atlanta (White)		2003-2007	15	0.3	0.3
Hawaii		2003-2007	19	0.6	0.3
Hawaii (Chinese)		2003-2007	1	0.7	0.3
Hawaii (Filipino)		2003-2007	3	0.7	0.4
Hawaii (Hawaiian)		2003-2007	4	0.6	0.6
Hawaii (Japanese)		2003-2007	2	0.3	0.2
Hawaii (White)		2003-2007	9	1.1	0.5
Idaho		2003-2007	22	0.6	0.4
Illinois		2003-2007	223	0.7	0.5
Illinois (Asian and Pacific Islander)		2003-2007	3	0.2	0.2
Illinois (Black)		2003-2007	32	0.7	0.7
Illinois (White)		2003-2007	182	0.7	0.5
Indiana		2003-2007	123	0.8	0.6
Indiana (Black)		2003-2007	5	0.4	0.4
Indiana (White)		2003-2007	118	0.9	0.6
Iowa		2003-2007	76	1.0	0.6
Kentucky		2003-2007	119	1.2	0.8
Louisiana		2003- 2004,2006- 2007	76	0.9	0.7
Louisiana (Black)		2003- 2004,2006- 2007	23	0.9	0.8
Louisiana (White)		2003- 2004,2006- 2007	53	0.9	0.6
Louisiana, New Orleans		2003- 2004,2006- 2007	12	0.7	0.5
Louisiana, New Orleans (Black)		2003- 2004,2006- 2007	6	0.9	0.9
Louisiana, New Orleans (White)		2003- 2004,2006- 2007	6	0.7	0.3
Maine		2003-2007	40	1.3	0.8
Massachusetts		2003-2007	153	1.0	0.6
Massachusetts (Asian and Pacific Islander)		2003-2007	5	0.7	0.8
Massachusetts (Black)		2003-2007	4	0.4	0.5
Massachusetts (White)		2003-2007	140	1.0	0.6
Michigan		2003-2007	177	0.7	0.5
Michigan (Asian and Pacific Islander)		2003-2007	2	0.3	0.5
Michigan (Black)		2003-2007	21	0.6	0.5
Michigan (White)		2003-2007	149	0.7	0.4
Michigan, Detroit		2003-2007	72	0.7	0.5
Michigan, Detroit (Black)		2003-2007	18	0.8	0.6
Michigan, Detroit (White)		2003-2007	52	0.7	0.4
Mississippi		2003-2007	61	0.9	0.6
Missouri		2003-2007	115	0.8	0.5
Missouri (Black)		2003-2007	5	0.3	0.3
Missouri (White)		2003-2007	108	0.9	0.5
Montana		2003-2007	18	0.8	0.5
Montana (American Indian)		2003-2007	3	1.9	2.2
Nebraska		2003-2007	33	0.8	0.5

(Continued on next page)

(Table 10 – continued from previous page)

Country name	Cancer registry	Period	Male		
			N cases ^a	Crude rate ^b	ASR ^b
Nebraska (Black)		2003-2007	0	0.0	0.0
Nebraska (White)		2003-2007	32	0.8	0.5
New Hampshire		2003-2007	21	0.7	0.4
New Jersey		2003-2007	157	0.7	0.5
New Jersey (Black)		2003-2007	11	0.4	0.3
New Jersey (White)		2003-2007	138	0.8	0.5
New Mexico		2003-2007	30	0.6	0.4
New Mexico (Hispanic White)		2003-2007	16	0.8	0.8
New Mexico (Non-Hispanic White)		2003-2007	9	0.4	0.2
New Mexico (White)		2003-2007	25	0.6	0.4
New York State		2003-2007	392	0.8	0.6
New York State (Asian and Pacific Islander)		2003-2007	12	0.4	0.3
New York State (Black)		2003-2007	68	0.8	0.8
New York State (White)		2003-2007	299	0.8	0.5
North Carolina		2003-2007	150	0.7	0.5
North Carolina (American Indian)		2003-2007	0	0.0	0.0
North Carolina (Asian and Pacific Islander)		2003-2007	0	0.0	0.0
North Carolina (Black)		2003-2007	31	0.7	0.7
North Carolina (White)		2003-2007	118	0.7	0.5
North Dakota		2003-2007	11	0.7	0.3
NPCR (42 States)		2003-2007	4858	0.7	0.5
NPCR (42 States) (American Indian)		2003-2007	38	0.5	0.6
NPCR (42 States) (Asian and Pacific Islander)		2003-2007	67	0.2	0.2
NPCR (42 States) (Black)		2003-2007	524	0.6	0.6
NPCR (42 States) (White)		2003-2007	4139	0.8	0.5
Ohio		2003-2007	195	0.7	0.5
Ohio (Asian and Pacific Islander)		2003-2007	0	0.0	0.0
Ohio (Black)		2003-2007	15	0.4	0.5
Ohio (White)		2003-2007	178	0.7	0.5
Oklahoma		2003-2007	83	0.9	0.7
Oklahoma (American Indian)		2003-2007	10	1.3	1.3
Oklahoma (Black)		2003-2007	3	0.4	0.5
Oklahoma (White)		2003-2007	69	1.0	0.6
Oregon		2003-2007	62	0.7	0.4
Oregon (Asian and Pacific Islander)		2003-2007	1	0.3	0.3
Oregon (Black)		2003-2007	0	0.0	0.0
Oregon (White)		2003-2007	57	0.7	0.4
Pennsylvania		2003-2007	233	0.8	0.4
Pennsylvania (Asian and Pacific Islander)		2003-2007	1	0.1	0.2
Pennsylvania (Black)		2003-2007	19	0.6	0.5
Pennsylvania (White)		2003-2007	210	0.8	0.4
Puerto Rico		2003-2007	237	2.5	1.8
Rhode Island		2003-2007	31	1.2	0.8
Rhode Island (Black)		2003-2007	1	0.6	1.0
Rhode Island (White)		2003-2007	28	1.2	0.7
SEER (18 Registries)		2003-2007	1377	0.7	0.5
SEER (18 Registries) (Asian and Pacific Islander)		2003-2007	58	0.3	0.3
SEER (18 Registries) (Black)		2003-2007	124	0.5	0.5
SEER (18 Registries) (Hispanic White)		2003-2007	264	0.6	0.9
SEER (18 Registries) (Non-Hispanic White)		2003-2007	902	0.8	0.4
SEER (18 Registries) (White)		2003-2007	1166	0.7	0.5

(Continued on next page)

(Table 10 – continued from previous page)

Country name	Cancer registry	Period	Male		
			N cases ^a	Crude rate ^b	ASR ^b
	SEER (9 Registries)	2003-2007	417	0.6	0.4
	SEER (9 Registries) (Black)	2003-2007	41	0.5	0.5
	SEER (9 Registries) (White)	2003-2007	344	0.7	0.4
	South Carolina	2003-2007	80	0.8	0.5
	South Carolina (Black)	2003-2007	23	0.8	0.7
	South Carolina (White)	2003-2007	55	0.8	0.5
	South Dakota	2003-2007	22	1.1	0.6
	Tennessee	2003-2007	97	0.7	0.5
	Tennessee (Black)	2003-2007	11	0.5	0.5
	Tennessee (White)	2003-2007	86	0.7	0.5
	Texas	2003-2007	435	0.8	0.6
	Texas (Asian and Pacific Islander)	2003-2007	2	0.1	0.1
	Texas (Black)	2003-2007	37	0.6	0.6
	Texas (White)	2003-2007	384	0.8	0.6
	Utah	2003-2007	23	0.4	0.3
	Vermont	2003-2007	8	0.5	0.3
	Virginia	2003-2007	129	0.7	0.5
	Virginia (Asian and Pacific Islander)	2003-2007	2	0.2	0.3
	Virginia (Black)	2003-2007	28	0.8	0.6
	Virginia (White)	2003-2007	97	0.7	0.5
	Washington State	2003-2007	82	0.5	0.3
	Washington, Seattle	2003-2007	56	0.5	0.4
	West Virginia	2003-2007	53	1.2	0.7
	Wisconsin	2003-2007	104	0.8	0.5
	Wisconsin (Black)	2003-2007	3	0.4	0.4
	Wisconsin (White)	2003-2007	97	0.8	0.5
	Wyoming	2003-2007	11	0.9	0.6
South America					
Argentina ¹	Bahia Blanca	2003-2007	11	1.6	1.2
	Cordoba	2004-2007	33	1.3	1.2
	Mendoza	2003-2007	58	1.5	1.4
	Tierra del Fuego	2003-2007	2	0.7	1.2
Bolivia	-	-	-	-	-
Brazil ¹	Aracaju	2003-2006	17	1.8	2.5
	Belo Horizonte	2003-2005	24	0.7	0.9
	Cuiaba	2003-2006	20	1.3	2.1
	Fortaleza	2003-2006	51	1.2	1.7
	Goiania	2003-2007	65	2.3	3.3
	Sao Paulo	2003-2007	403	1.6	1.7
Chile ¹	Bío Bío Province	2003-2007	8	0.8	0.8
	Region of Antofagasta	2003-2007	19	1.3	1.6
	Valdivia	2003-2007	10	1.1	0.9
Colombia ¹	Bucaramanga	2003-2007	31	1.3	1.4
	Cali	2003-2007	54	1.1	1.2
	Manizales	2003-2007	20	2.2	2.2
	Pasto	2003-2007	11	1.2	1.4
Ecuador ¹	Cuenca	2003-2007	1	0.1	0.1
	Quito	2003-2007	18	0.5	0.6
Guyana	-	-	-	-	-
Paraguay ²	Asuncion Region	1988-1989	46	2.6	4.2
Peru ³	Trujillo	1998-2002	15	1.1	1.8
Suriname	-	-	-	-	-
Uruguay ¹	National	2005-2007	96	2.0	1.5

(Continued on next page)

(Table 10 – continued from previous page)

Country name	Cancer registry	Period	Male		
			N cases ^a	Crude rate ^b	ASR ^b
Venezuela	-	-	-	-	-
Latin America & Caribbean					

Data accessed on 05 May 2015.

Please refer to original source (available at <http://ci5.iarc.fr/CI5i-ix/ci5i-ix.htm>)

^aAccumulated number of cases during the period in the population covered by the corresponding registry.

^bRates per 100,000 men per year.

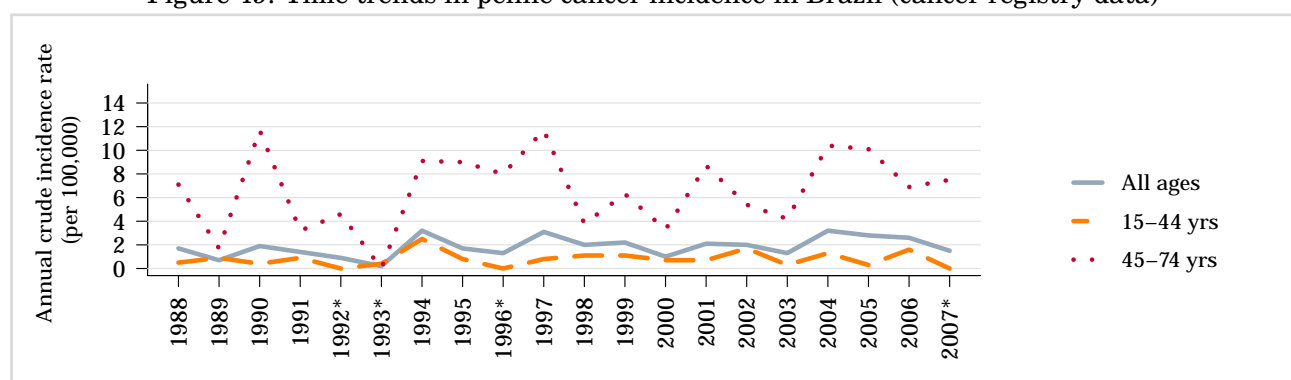
Data sources:

¹Forman D, Bray F, Brewster DH, Gombe Mbalawa C, Kohler B, Piñeros M, Steliarova-Foucher E, Swaminathan R and Ferlay J eds (2013). Cancer Incidence in Five Continents, Vol. X (electronic version) Lyon, IARC. <http://ci5.iarc.fr>

²Parkin, D.M., Muir, C.S., Whelan, S.L., Gao, Y.-T., Ferlay, J., Powell, J., eds (1992). Cancer Incidence in Five Continents, Vol. VI. IARC Scientific Publications No. 120, Lyon, IARC.

³Curado. M. P., Edwards, B., Shin. H.R., Storm. H., Ferlay. J., Heanue. M. and Boyle. P., eds (2007). Cancer Incidence in Five Continents, Vol. IX. IARC Scientific Publications No. 160, Lyon, IARC.

Figure 49: Time trends in penile cancer incidence in Brazil (cancer registry data)



*No cases were registered for this age group.

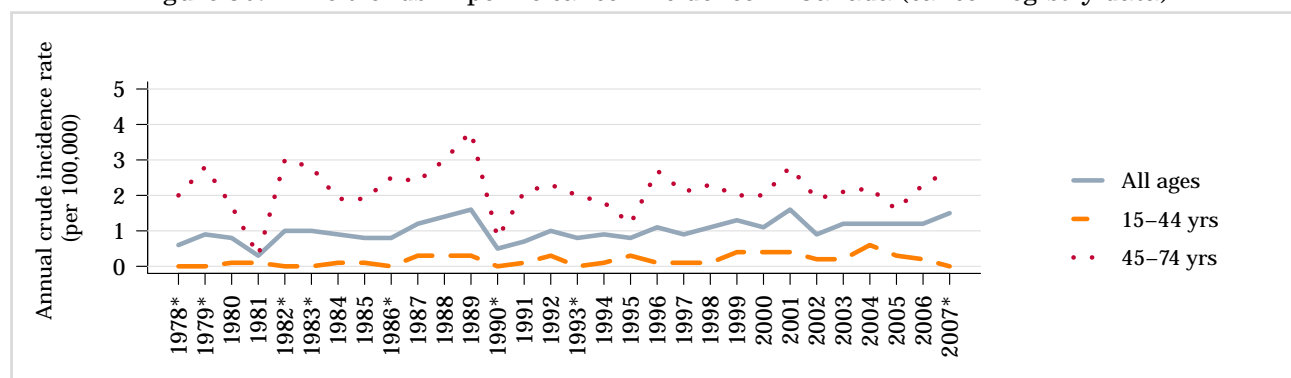
Data accessed on 27 Apr 2015.

Data was provided by the Goiania registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 50: Time trends in penile cancer incidence in Canada (cancer registry data)



*No cases were registered for this age group.

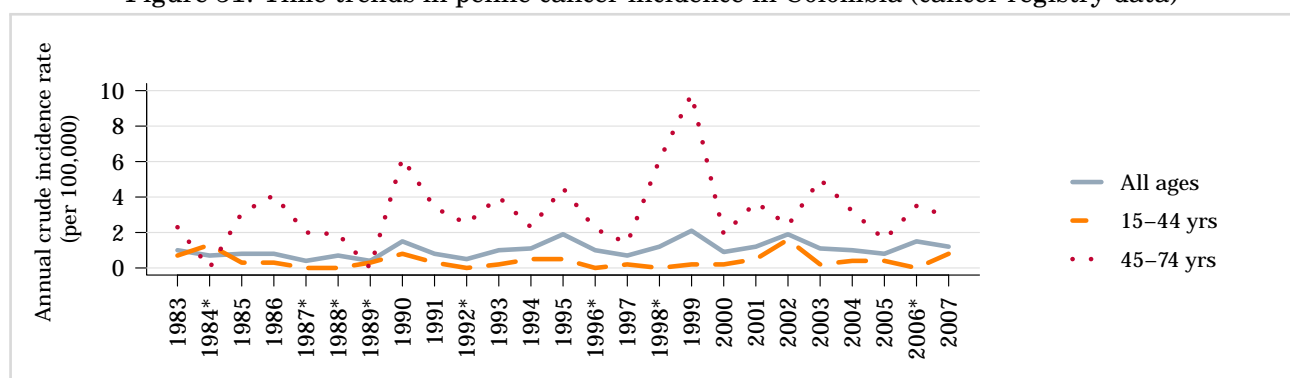
Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: Manitoba, Nova Scotia, Saskatchewan.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 51: Time trends in penile cancer incidence in Colombia (cancer registry data)



*No cases were registered for this age group.

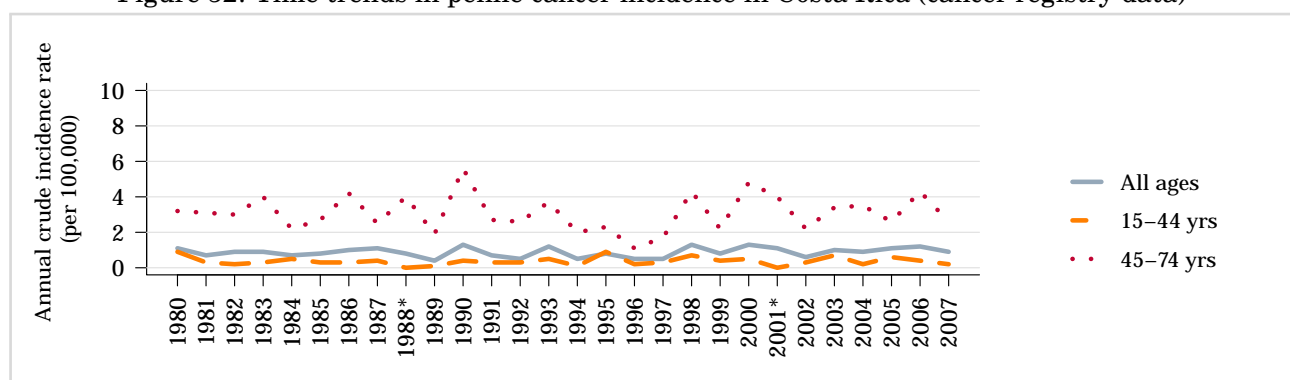
Data accessed on 27 Apr 2015.

Data was provided by the Cali registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 52: Time trends in penile cancer incidence in Costa Rica (cancer registry data)



*No cases were registered for this age group.

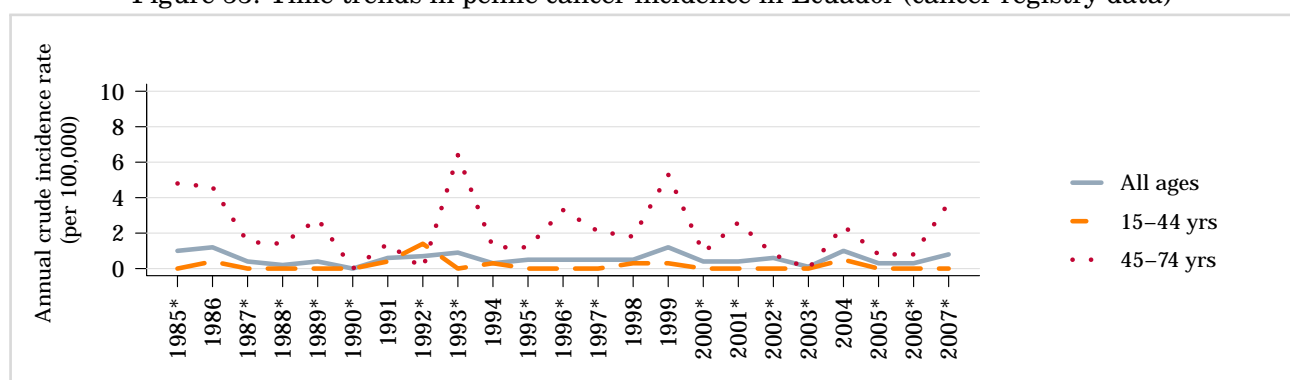
Data accessed on 27 Apr 2015.

Data was provided by the national registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 53: Time trends in penile cancer incidence in Ecuador (cancer registry data)



*No cases were registered for this age group.

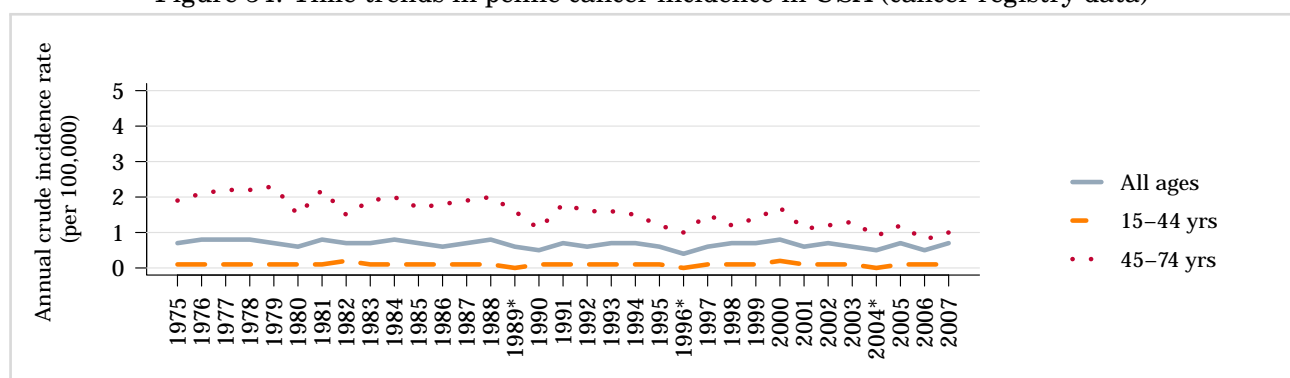
Data accessed on 27 Apr 2015.

Data was provided by the Quito registry.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

Figure 54: Time trends in penile cancer incidence in USA (cancer registry data)



*No cases were registered for this age group.

Data accessed on 27 Apr 2015.

The following regional cancer registries provided data and contributed to their national estimate: California: San Francisco, Connecticut, Georgia: Atlanta, Hawaii, Iowa, Michigan: Detroit, New Mexico, Utah and Washington: Seattle.

Data sources:

Ferlay J, Bray F, Steliarova-Foucher E and Forman D. Cancer Incidence in Five Continents, CI5plus: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2014. Available from: <http://ci5.iarc.fr>

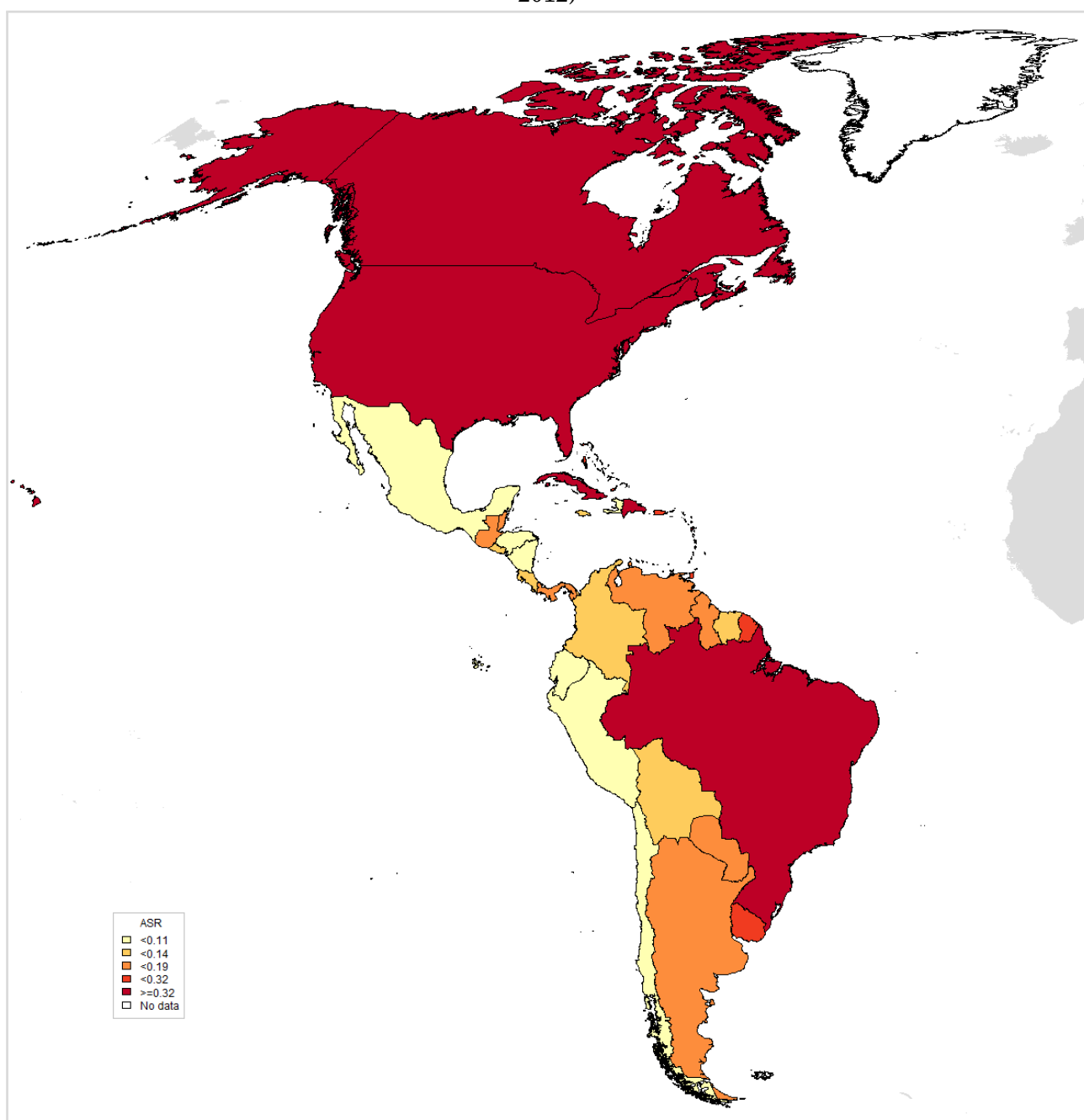
NOTE

Time trends in cancer incidence are shown only in countries with available data.

3.3 Head and neck cancers

The majority of head and neck cancers are associated with high tobacco and alcohol consumption. However, increasing trends in the incidence at specific sites suggest that other aetiological factors are involved, and infection by certain high-risk types of HPV (i.e. HPV16) have been reported to be associated with head and neck cancers, in particular with oropharyngeal cancer. Current evidence suggests that HPV16 is associated with tonsil cancer (including Waldeyer ring cancer), base of tongue cancer and other oropharyngeal cancer sites. Associations with other head and neck cancer sites such as oral cancer are neither strong nor consistent when compared to molecular-epidemiological data on HPV and oropharyngeal cancer. Association with laryngeal cancer is still unclear (IARC Monograph Vol 100B).

Figure 55: Age-standardised incidence rates of head and neck cancer in the Americas (estimates for 2012)



Data accessed on 08 May 2017.

ASR: Age-standardized rate, rates per 100,000 per year.

Please refer to original source for methods.

Head and neck cancer cases (oropharynx, oral cavity and larynx).

GLOBOCAN quality index for availability of incidence data:

(Continued on next page)

(Figure 55 – continued from previous page)

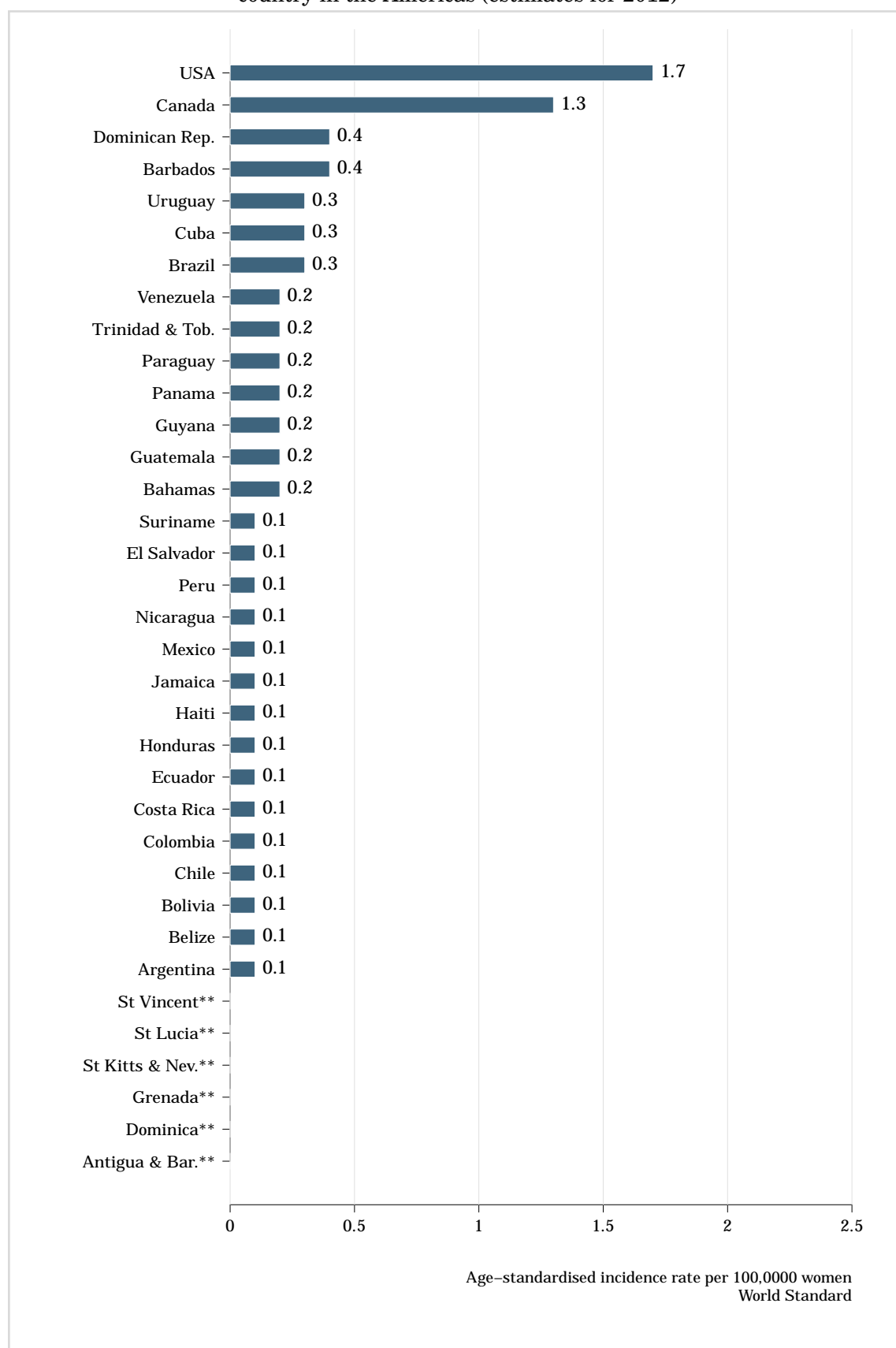
- For Argentina, Brazil: High quality regional (coverage between 10% and 50%).
- For Bahamas, Belize, Bolivia, Barbados, Dominican Republic, Guadeloupe, Guatemala, French Guiana, Guyana, Honduras, Haiti, Nicaragua, Panama, Paraguay, El Salvador, Suriname, Venezuela: No data.
- For Canada, Costa Rica, Martinique, Puerto Rico, Uruguay, USA: High quality national data or high quality regional (coverage greater than 50%).
- For Chile, Colombia, Cuba, Ecuador, Jamaica: High quality regional (coverage lower than 10%).
- For Mexico, Peru: Regional data (rates).
- For Trinidad & Tobago: National data (rates).

GLOBOCAN quality index of methods for calculating incidence: Methods to estimate the sex- and age-specific incidence rates of cancer for a specific country:

- For Argentina, Brazil, Chile, Colombia, Cuba, Ecuador: Estimated from national mortality by modelling using incidence mortality ratios derived from recorded data in country-specific cancer registries
- For Bahamas, Belize, Barbados, Dominican Republic, Guadeloupe, Guatemala, French Guiana, Guyana, Honduras, Haiti, Jamaica, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Trinidad & Tobago, Venezuela: Estimated from national mortality estimates using modelled survival
- For Bolivia: Age/sex specific rates for "all cancers" were partitioned using data on relative frequency of different cancers (by age and sex)
- For Canada, Costa Rica, Martinique, Puerto Rico, USA: Rates projected to 2012
- For Uruguay: Most recent rates applied to 2012 population

Data sources: Worldwide burden of cancer attributable to HPV by site, country and HPV type. de Martel C, Plummer M, Vignat J, Franceschi S. Int J Cancer. 2017 Apr 1. doi: 10.1002/ijc.30716. [Epub ahead of print]. PMID:28369882.

Figure 56: Age-standardised incidence rate of head and neck cancer cases attributable to HPV by country in the Americas (estimates for 2012)



** No rates are available.

Data accessed on 08 May 2017.

ASR: Age-standardized rate, rates per 100,000 per year.

Please refer to original source for methods.

(Continued on next page)

(Figure 56 – continued from previous page)

Head and neck cancer cases (oropharynx, oral cavity and larynx).

GLOBOCAN quality index for availability of incidence data:

- For Argentina, Brazil: High quality regional (coverage between 10% and 50%).
- For Belize, Bolivia, Honduras, Haiti, Nicaragua, El Salvador, Suriname, Bahamas, Guatemala, Guyana, Panama, Paraguay, Venezuela, Barbados, Dominican Republic: No data.
- For Chile, Colombia, Ecuador, Jamaica, Cuba: High quality regional (coverage lower than 10%).
- For Costa Rica, Uruguay, Canada, USA: High quality national data or high quality regional (coverage greater than 50%).
- For Mexico, Peru: Regional data (rates).
- For Trinidad & Tobago: National data (rates).

GLOBOCAN quality index of methods for calculating incidence: Methods to estimate the sex- and age-specific incidence rates of cancer for a specific country:

- For Argentina, Chile, Colombia, Ecuador, Brazil, Cuba: Estimated from national mortality by modelling using incidence mortality ratios derived from recorded data in country-specific cancer registries
- For Belize, Honduras, Haiti, Jamaica, Mexico, Nicaragua, Peru, El Salvador, Suriname, Bahamas, Guatemala, Guyana, Panama, Paraguay, Trinidad & Tobago, Venezuela, Barbados, Dominican Republic: Estimated from national mortality estimates using modelled survival
- For Bolivia: Age/sex specific rates for "all cancers" were partitioned using data on relative frequency of different cancers (by age and sex)
- For Costa Rica, Canada, USA: Rates projected to 2012
- For Uruguay: Most recent rates applied to 2012 population

Data sources: de Martel C, Plummer M, Vignat J, Franceschi S. Worldwide burden of cancer attributable to HPV by site, country and HPV type. Int J Cancer. 2017

3.3.1 Pharyngeal cancer (excluding nasopharynx)

Table 11: Cancer incidence of pharynx (excluding nasopharynx) in the Americas and its regions by sex.
Includes ICD-10 codes: C09-10, C12-14 (estimates for 2012).

Area	MALE				FEMALE			
	N cases	Crude ^a rate	ASR ^a	Cum risk ^b (%) ages 0-74	N cases	Crude ^a rate	ASR ^a	Cum risk ^b (%) ages 0-74
Americas	17637	3.7	3.3	0.4	4471	0.9	0.7	0.1
Caribbean	815	3.9	3.6	0.4	227	1.1	0.9	0.1
Antigua & Bar.	-	-	-	-	-	-	-	-
Bahamas	5	2.9	3.3	0.4	0	0.0	0.0	0.0
Barbados	12	8.8	5.9	0.7	3	2.2	1.1	0.2
Cuba	330	5.8	3.9	0.5	52	0.9	0.5	0.1
Dominica	-	-	-	-	-	-	-	-
Dominican Rep.	255	5.0	5.6	0.7	127	2.5	2.6	0.3
Grenada	-	-	-	-	-	-	-	-
Haiti	46	0.9	1.4	0.2	7	0.1	0.1	0.0
Jamaica	7	0.5	0.6	0.1	4	0.3	0.3	0.0
St Kitts & Nev.	-	-	-	-	-	-	-	-
St Lucia	-	-	-	-	-	-	-	-
St Vincent	-	-	-	-	-	-	-	-
Trinidad & Tob.	16	2.4	2.5	0.3	9	1.3	1.0	0.1
Central America	694	0.9	1.0	0.1	218	0.3	0.3	0.0
Belize	1	0.6	1.5	0.2	0	0.0	0.0	0.0
Costa Rica	30	1.2	1.3	0.1	8	0.3	0.3	0.0
El Salvador	46	1.5	1.8	0.2	26	0.8	0.8	0.1
Guatemala	106	1.4	2.3	0.3	56	0.7	1.0	0.1
Honduras	43	1.1	1.7	0.2	12	0.3	0.4	0.1
Mexico	403	0.7	0.8	0.1	105	0.2	0.2	0.0
Nicaragua	22	0.7	1.2	0.2	3	0.1	0.1	0.0
Panama	43	2.4	2.6	0.4	8	0.4	0.4	0.0
Northern America	10493	6.1	4.2	0.5	2756	1.6	1.0	0.1
Canada	905	5.3	3.2	0.4	241	1.4	0.8	0.1
USA	9584	6.1	4.3	0.5	2515	1.6	1.0	0.1
South America	5635	2.8	3.0	0.3	1270	0.6	0.5	0.1
Argentina	315	1.6	1.4	0.2	63	0.3	0.2	0.0
Bolivia	20	0.4	0.6	0.1	23	0.4	0.6	0.1
Brazil	4551	4.7	4.7	0.5	953	0.9	0.8	0.1
Chile	100	1.2	1.0	0.1	19	0.2	0.1	0.0
Colombia	190	0.8	1.0	0.1	77	0.3	0.3	0.0
Ecuador	48	0.6	0.7	0.1	16	0.2	0.2	0.0
Guyana	4	1.1	1.4	0.2	1	0.3	0.3	0.0
Paraguay	68	2.0	2.6	0.3	11	0.3	0.3	0.0
Peru	70	0.5	0.6	0.1	43	0.3	0.3	0.0
Suriname	5	1.9	2.0	0.2	1	0.4	0.5	0.1
Uruguay	78	4.8	3.7	0.5	15	0.9	0.5	0.1
Venezuela	184	1.2	1.4	0.2	48	0.3	0.3	0.0
Latin America & Caribbean	7144	2.4	2.6	0.3	1715	0.6	0.5	0.1

Data accessed on 15 Nov 2015.

^a Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.^b Cumulative risk (incidence) is the probability or risk of individuals getting from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to develop from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

(Continued on next page)

(Table 11 – continued from previous page)

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Table 12: Cancer mortality of pharynx (excluding nasopharynx) in the Americas and its regions by sex.
Includes ICD-10 codes: C09-10, C12-14 (estimates for 2012).

Area	MALE				FEMALE			
	N cases	Crude ^a rate	ASR ^a	Cum risk ^b (%) ages 0-74	N cases	Crude ^a rate	ASR ^a	Cum risk ^b (%) ages 0-74
Americas	8381	1.8	1.5	0.2	2173	0.5	0.3	0.0
Caribbean	568	2.7	2.4	0.3	159	0.7	0.6	0.1
Antigua & Bar.	-	-	-	-	-	-	-	-
Bahamas	3	1.7	2.0	0.2	0	0.0	0.0	0.0
Barbados	8	5.9	4.0	0.5	2	1.4	0.7	0.1
Cuba	234	4.1	2.6	0.3	40	0.7	0.4	0.0
Dominica	-	-	-	-	-	-	-	-
Dominican Rep.	187	3.7	4.0	0.5	93	1.8	1.8	0.2
Grenada	-	-	-	-	-	-	-	-
Haiti	40	0.8	1.3	0.2	6	0.1	0.1	0.0
Jamaica	5	0.4	0.4	0.0	2	0.1	0.1	0.0
St Kitts & Nev.	-	-	-	-	-	-	-	-
St Lucia	-	-	-	-	-	-	-	-
St Vincent	-	-	-	-	-	-	-	-
Trinidad & Tob.	10	1.5	1.6	0.2	5	0.7	0.6	0.1
Central America	482	0.6	0.7	0.1	153	0.2	0.2	0.0
Belize	1	0.6	1.5	0.2	0	0.0	0.0	0.0
Costa Rica	22	0.9	0.9	0.1	4	0.2	0.1	0.0
El Salvador	34	1.1	1.2	0.1	19	0.6	0.5	0.1
Guatemala	86	1.2	1.9	0.2	44	0.6	0.8	0.1
Honduras	34	0.9	1.3	0.1	10	0.3	0.4	0.0
Mexico	260	0.5	0.5	0.1	68	0.1	0.1	0.0
Nicaragua	17	0.6	1.0	0.1	3	0.1	0.1	0.0
Panama	28	1.5	1.6	0.2	5	0.3	0.2	0.0
Northern America	3145	1.8	1.2	0.1	970	0.5	0.3	0.0
Canada	336	2.0	1.1	0.1	104	0.6	0.3	0.0
USA	2809	1.8	1.2	0.1	866	0.5	0.3	0.0
South America	4186	2.1	2.2	0.3	891	0.4	0.4	0.0
Argentina	201	1.0	0.9	0.1	44	0.2	0.1	0.0
Bolivia	15	0.3	0.5	0.1	18	0.4	0.4	0.0
Brazil	3466	3.6	3.6	0.4	657	0.7	0.5	0.1
Chile	70	0.8	0.7	0.1	21	0.2	0.1	0.0
Colombia	120	0.5	0.6	0.1	52	0.2	0.2	0.0
Ecuador	36	0.5	0.5	0.1	14	0.2	0.2	0.0
Guyana	3	0.8	1.2	0.2	1	0.3	0.3	0.0
Paraguay	51	1.5	2.0	0.2	8	0.2	0.2	0.0
Peru	47	0.3	0.4	0.0	30	0.2	0.2	0.0
Suriname	4	1.5	1.6	0.1	1	0.4	0.5	0.1
Uruguay	48	2.9	2.3	0.3	12	0.7	0.3	0.0
Venezuela	125	0.8	1.0	0.1	33	0.2	0.2	0.0
Latin America & Caribbean	5236	1.8	1.9	0.2	1203	0.4	0.3	0.0

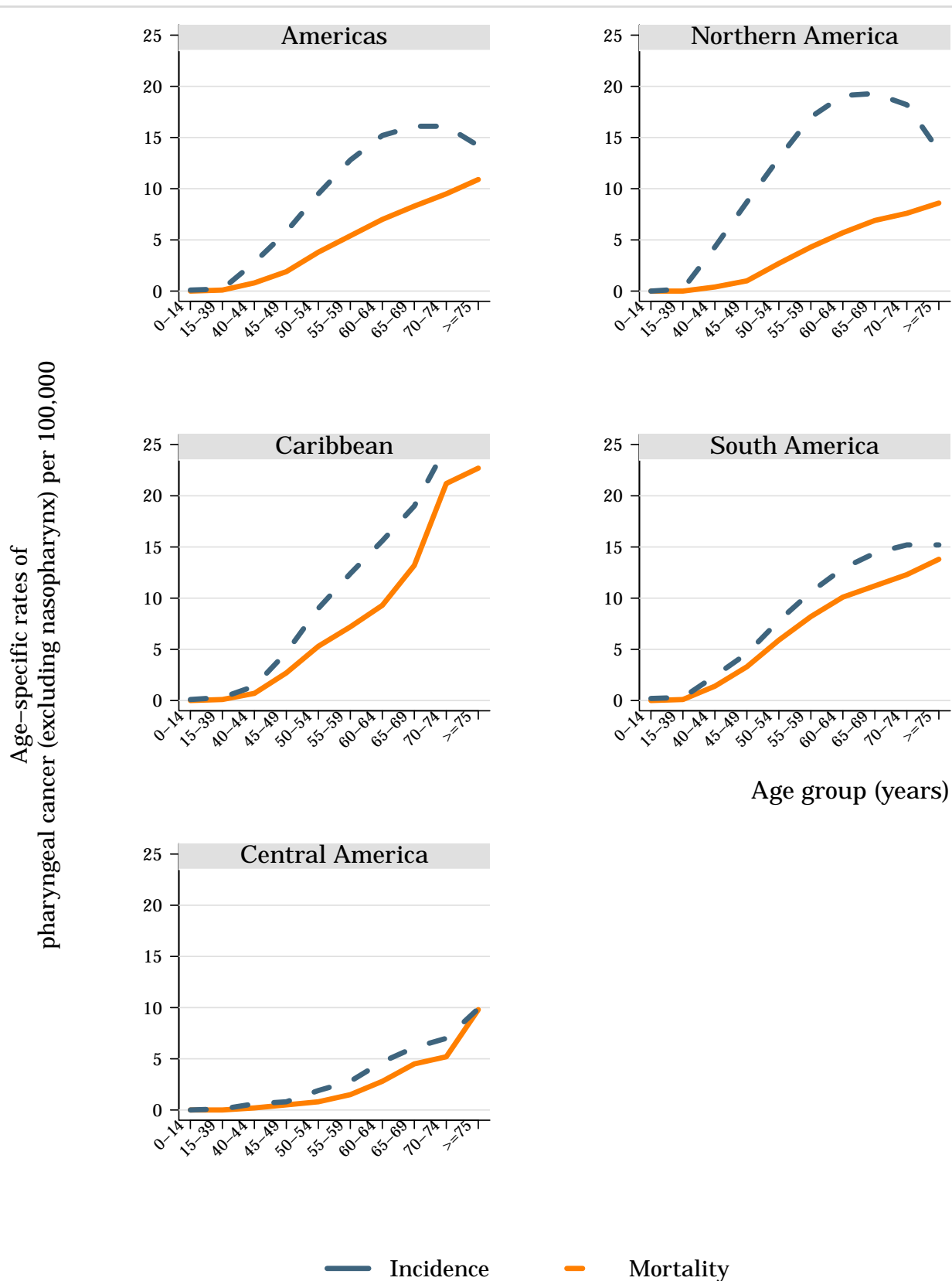
Data accessed on 15 Nov 2015.

^a Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.^b Cumulative risk (mortality) is the probability or risk of individuals dying from the disease during ages 0-74 years. For cancer, it is expressed as the % of new born children who would be expected to die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 57: Comparison of cancer incidence and mortality of pharynx (excluding nasopharynx) in males by age group in the Americas and its regions. Includes ICD-10 codes: C09-10,C12-14 (estimates for 2012).



Data accessed on 15 Nov 2015.

For specific estimation methodology refer to http://globocan.iarc.fr/Pages/DataSource_and_methods.aspx

(Continued on next page)

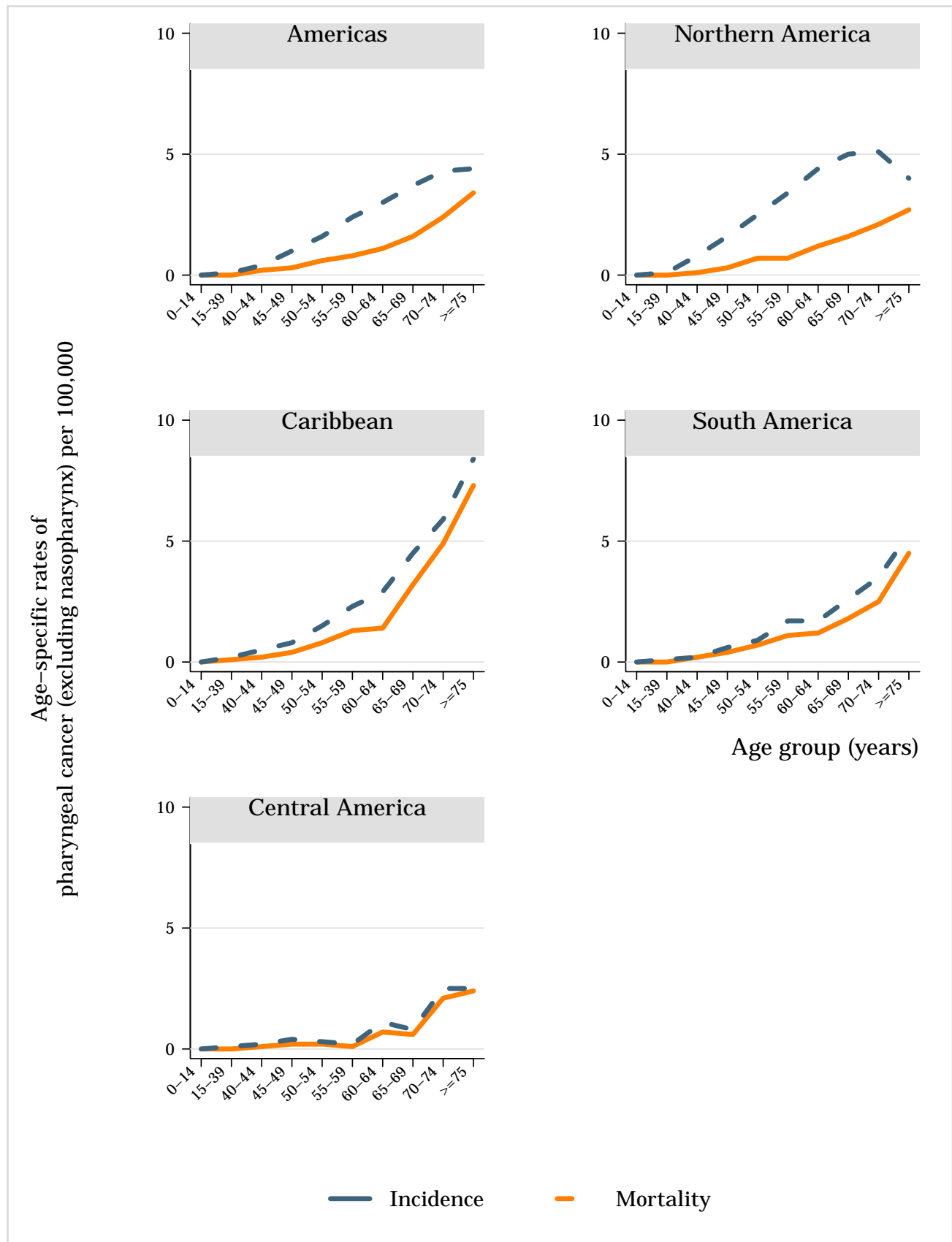
(Figure 58 – continued from previous page)

*European countries included in the Seven framework programme PREHDICT project (43 countries). Please refer to Introduction (link) to see PREHDICT project aim and coverage.
Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

Figure 58: Comparison of cancer incidence and mortality of pharynx (excluding nasopharynx) in females by age group in the Americas and its regions. Includes ICD-10 codes: C09-10,C12-14 (estimates for 2012).



Data accessed on 15 Nov 2015.

For specific estimation methodology refer to http://globocan.iarc.fr/Pages/DataSource_and_methods.aspx

(Continued on next page)

(Figure 58 – continued from previous page)

Male: Rates per 100,000 men per year. Female: Rates per 100,000 women per year.

Data sources:

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. GLOBOCAN 2012 v1.2, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>.

4 HPV-related statistics

HPV infection is commonly found in the anogenital tract of men and women with and without clinical lesions. The aetiological role of HPV infection among women with cervical cancer is well-established, and there is growing evidence of its central role in other anogenital sites. This section presents the HPV burden at each of the anogenital tract sites. The methodologies used to compile the information on HPV burden are derived from systematic reviews and meta-analyses of the literature. Due to the limitations of HPV DNA detection methods and study designs used, these data should be interpreted with caution and used only as a guide to assess the burden of HPV infection within the population (*Vaccine 2006, Vol. 24, Suppl 3; Vaccine 2008, Vol. 26, Suppl 10; Vaccine 2012, Vol. 30, Suppl 5; IARC Monographs 2007, Vol. 90*)

4.1 HPV burden in women with normal cervical cytology, cervical precancerous lesions or invasive cervical cancer

The statistics shown in this section focus on HPV infection in the cervix uteri. HPV cervical infection results in cervical morphological lesions ranging from normalcy (cytologically normal women) to different stages of precancerous lesions (CIN-1, CIN-2, CIN-3/CIS) and invasive cervical cancer. HPV infection is measured by HPV DNA detection in cervical cells (fresh tissue, paraffin embedded or exfoliated cells).

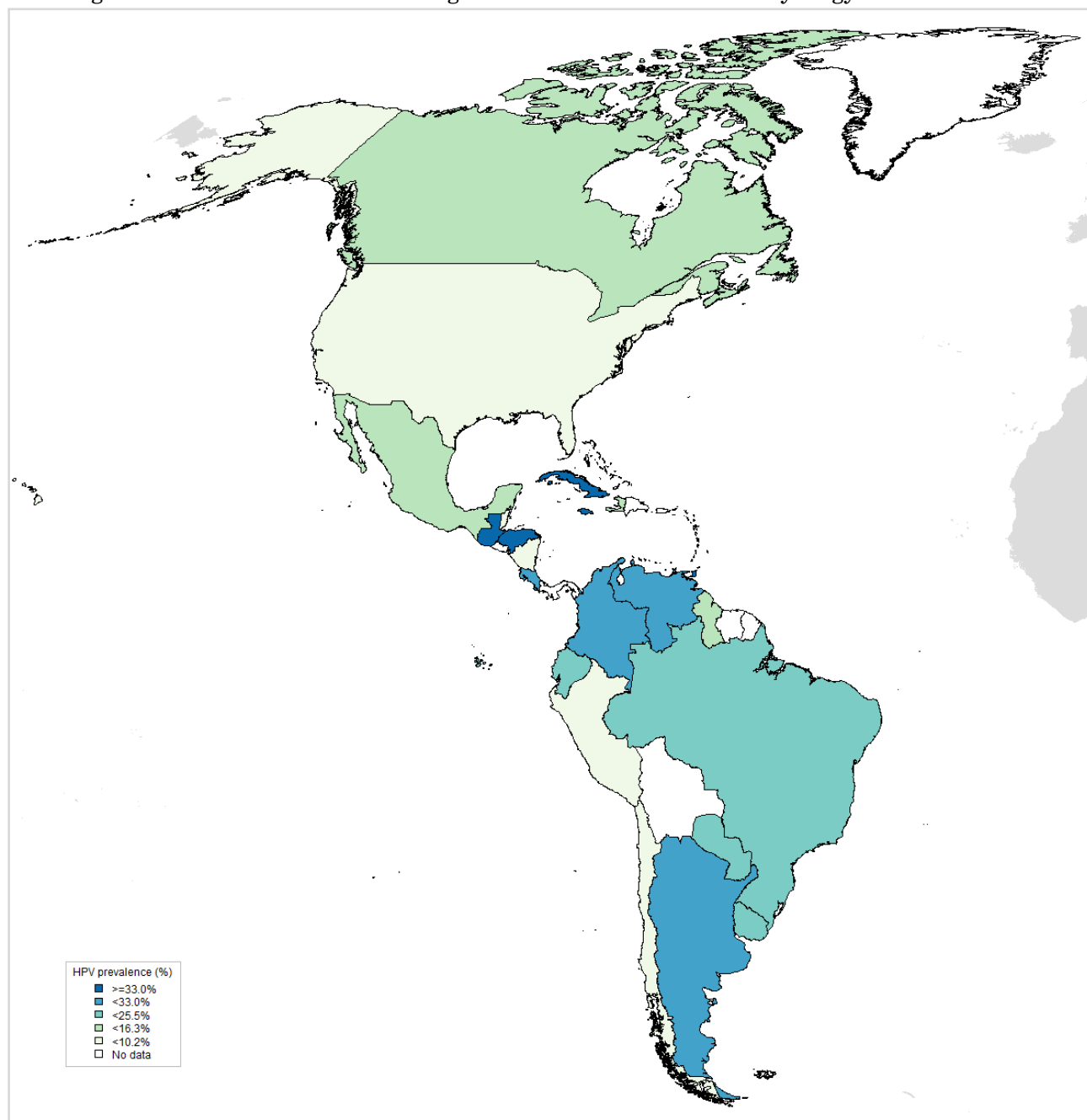
The prevalence of HPV increases with lesion severity. HPV causes virtually 100% of cervical cancer cases, and an underestimation of HPV prevalence in cervical cancer is most likely due to the limitations of study methodologies. Worldwide, HPV16 and 18 (the two vaccine-preventable types) contribute to over 70% of all cervical cancer cases, between 41% and 67% of high-grade cervical lesions and 16-32% of low-grade cervical lesions. After HPV16/18, the six most common HPV types are the same in all world regions, namely 31, 33, 35, 45, 52 and 58; these account for an additional 20% of cervical cancers worldwide (*Clifford G, Vaccine 2006;24(S3):26*).

Methods: Prevalence and type distribution of human papillomavirus in cervical carcinoma, low-grade cervical lesions, high-grade cervical lesions and normal cytology: systematic review and meta-analysis

A systematic review of the literature was conducted regarding the worldwide HPV-prevalence and type distribution for cervical carcinoma, low-grade cervical lesions, high-grade cervical lesions and normal cytology from 1990 to 'data as of' indicated in each section. The search terms for the review were 'HPV' AND cerv* using Pubmed. There were no limits in publication language. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR or HC2, a minimum of 20 cases for cervical carcinoma, 20 cases for low-grade cervical lesions, 20 cases for high-grade cervical lesions and 100 cases for normal cytology and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive extracted for each study were pooled to estimate the prevalence of HPV DNA and the HPV type distribution globally and by geographical region. Binomial 95% confidence intervals were calculated for each HPV prevalence. For more details refer to the methods document.

4.1.1 HPV prevalence in women with normal cervical cytology

Figure 59: Prevalence of HPV among women with normal cervical cytology in the Americas



Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

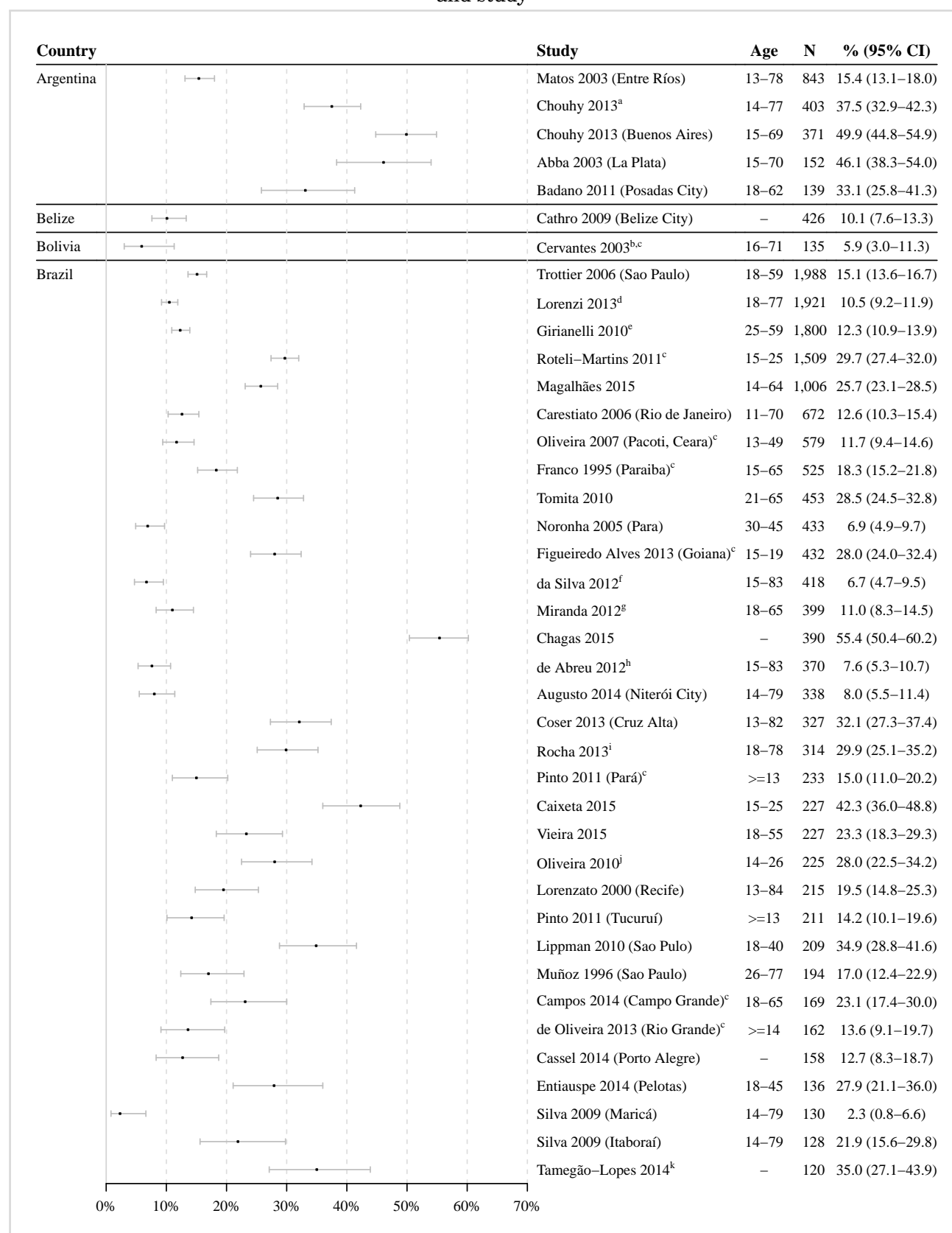
Figure 60: Crude age-specific HPV prevalence (%) and 95% confidence interval in women with normal cervical cytology in the Americas and its regions



Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

Data sources: See references in Section 9.

Figure 61: Prevalence of HPV among women with normal cervical cytology in the Americas by country and study



(Continued on next page)

Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

^aGranadero Baigorria City (Santa Fe Province)

(Continued on next page)

(Figure 61 – continued from previous page)

^b Amazonian lowland

^c Women from the general population, including some with cytological cervical abnormalities

^d Barretos (Sao Paulo)

^e Duque de Caxias and Nova Iguaçu (State of Rio de Janeiro)

^f Paçandú (Paraná)

^g Ouro Preto city (Minas Gerais)

^h Maringá, Paçandú and União da Vitória (Paraná State)

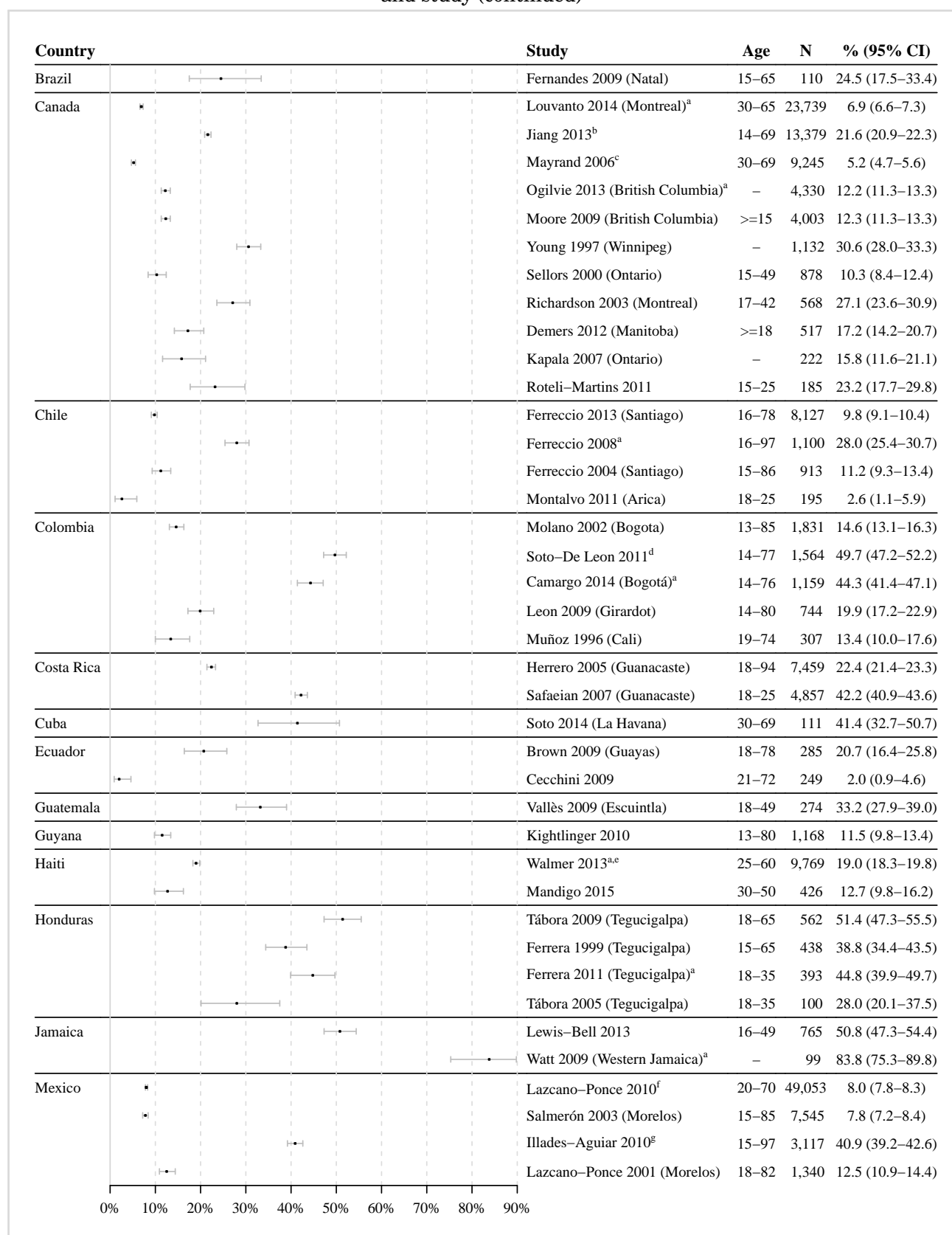
ⁱ Coari (Amazonas State)

^j Niterói City (Rio de Janeiro)

^k Juruti (Pará)

Data sources: See references in Section 9.

Figure 62: Prevalence of HPV among women with normal cervical cytology in the Americas by country and study (continued)



(Continued on next page)

Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

^a Women from the general population, including some with cytological cervical abnormalities

(Continued on next page)

(Figure 62 – continued from previous page)

^b Northwest Territories, Nunavut, Labrador, Yukon.

^c Montreal and Newfoundland

^d Bogotá, Leticia, Chaparral, Giradot and Tumaco

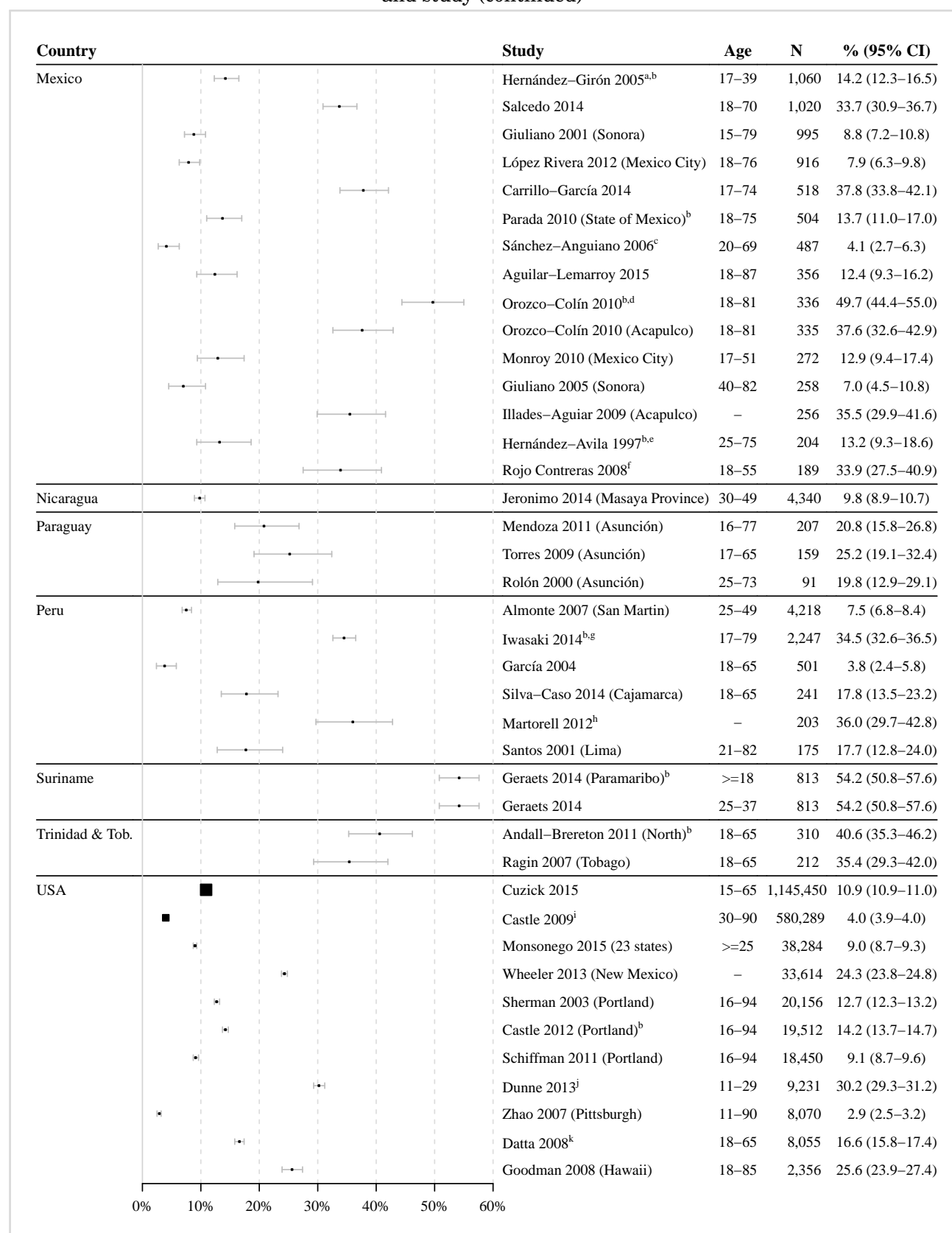
^e Port-au-Prince, Leogane

^f Northern and Southern Mexico City, State of Mexico, Guerrero, Michoacán, Morelos, Jalisco, Nuevo León, Oaxaca, Querétaro, Veracruz and Yucatán

^g Acapulco, Chilpancingo and Iguala (State of Guerrero)

Data sources: See references in Section 9.

Figure 63: Prevalence of HPV among women with normal cervical cytology in the Americas by country and study (continued)



(Continued on next page)

Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

^aCuernavaca

(Continued on next page)

(Figure 63 – continued from previous page)

^b Women from the general population, including some with cytological cervical abnormalities

^c Durango City

^d Lázaro Cárdenas

^e Mexico City

^f Guadalajara

^g Iquitos, Cajamarca, Piura, Chiclayo, Lima, Arequipa, Cuzco and Juliana

^h Iquitos and Loreto

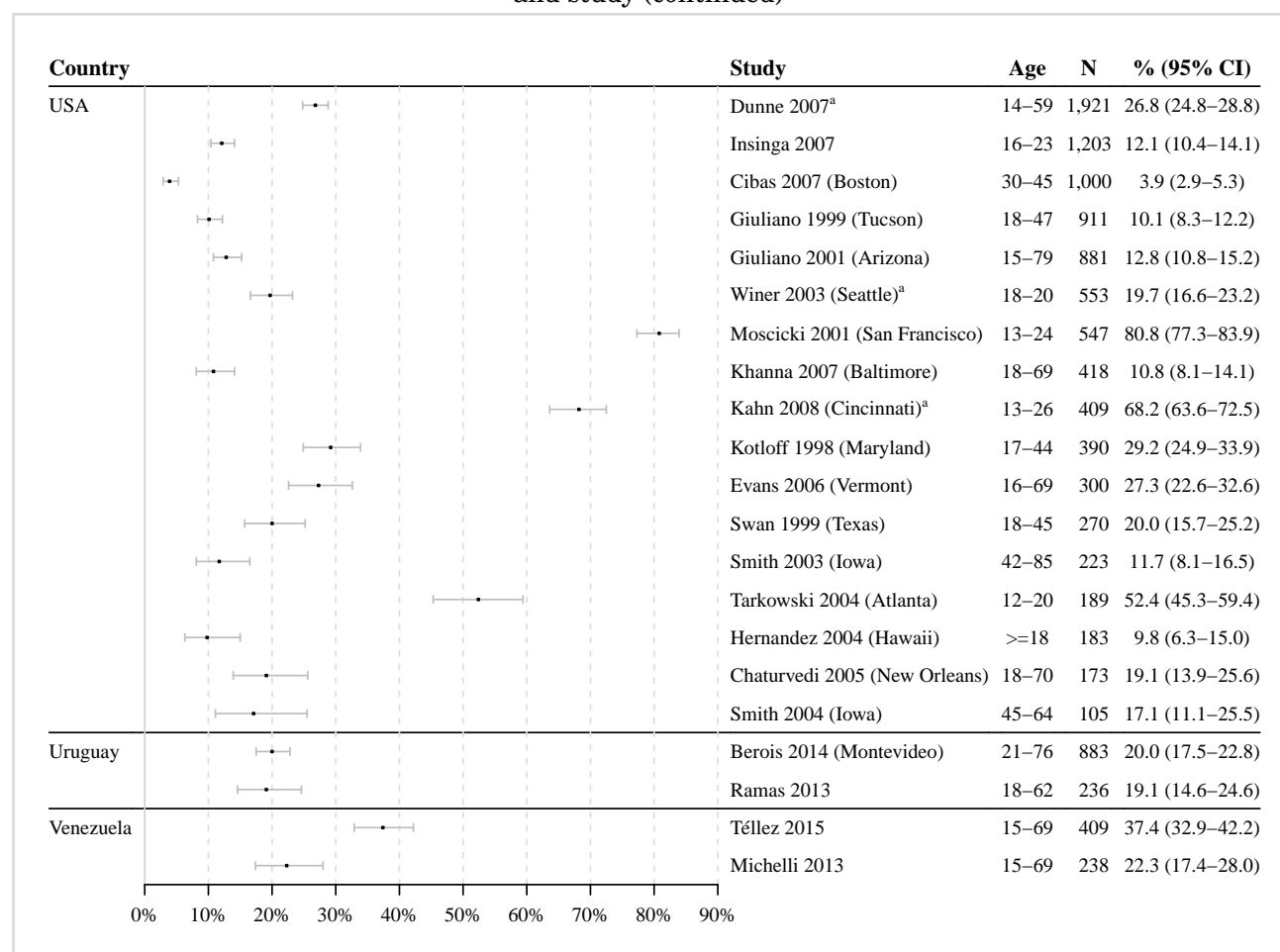
ⁱ Northern California

^j San Francisco Bay, Sacramento, Central Valley, Northwest Oregon and Southwest Washington Areas

^k Boston, Baltimore, New Orleans, Denver, Seattle, Los Angeles

Data sources: See references in Section 9.

Figure 64: Prevalence of HPV among women with normal cervical cytology in the Americas by country and study (continued)



Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

^a Women from the general population, including some with cytological cervical abnormalities

Data sources: See references in Section 9.

4.1.2 HPV type distribution among women with normal cervical cytology, precancerous cervical lesions and cervical cancer

Table 13: Prevalence of HPV 16/18 in women with normal cytology, precancerous cervical lesions and invasive cervical cancer in the Americas

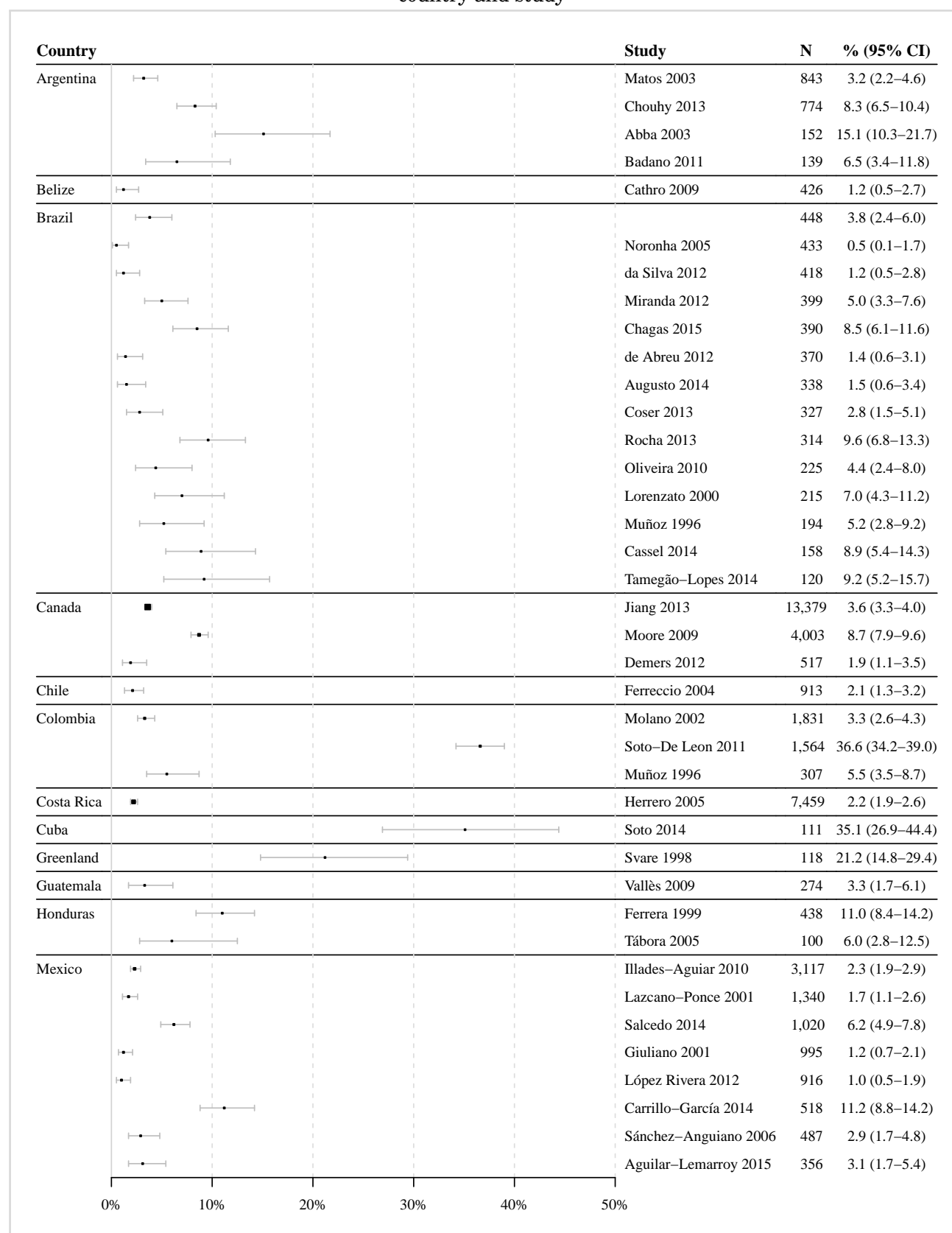
Country /Region	Normal cytology		Low-grade lesions		High-grade lesions		Cervical cancer	
	No. tested	HPV Prev (95% CI)	No. tested	HPV Prev (95% CI)	No. tested	HPV Prev (95% CI)	No. tested	HPV Prev (95% CI)
Americas	110,268	5.4 (5.3-5.5)	9,893	26.7 (25.8-27.6)	13,590	56.9 (56.1-57.7)	10,022	68.2 (67.3-69.1)
Caribbean	323	15.8 (12.2-20.2)	263	7.6 (5.0-11.5)	285	32.6 (27.5-38.3)	133	60.2 (51.7-68.1)
Antigua & Bar.	-	--	-	--	-	--	-	--
Bahamas	-	--	-	--	-	--	-	--
Barbados	-	--	-	--	-	--	-	--
Cuba	111	39.6 (31.0-48.9)	15	6.7 (1.2-29.8)	36	30.6 (18.0-46.9)	41	63.4 (48.1-76.4)
Dominica	-	--	-	--	-	--	-	--
Dominican Rep.	-	--	-	--	-	--	-	--
Grenada	-	--	-	--	-	--	-	--
Haiti	-	--	-	--	-	--	-	--
Jamaica	-	--	248	7.7 (5.0-11.7)	249	32.9 (27.4-39.0)	14	50.0 (26.8-73.2)
St Kitts & Nev.	-	--	-	--	-	--	-	--
St Lucia	-	--	-	--	-	--	-	--
St Vincent	-	--	-	--	-	--	-	--
Trinidad & Tob.	212	3.3 (1.6-6.7)	-	--	-	--	78	60.3 (49.2-70.4)
Central America	18,421	4.7 (4.4-5.0)	1,424	15.0 (13.3-17.0)	559	40.8 (36.8-44.9)	2,897	63.1 (61.3-64.8)
Belize	426	2.6 (1.4-4.6)	10	20.0 (5.7-51.0)	15	46.7 (24.8-69.9)	-	--
Costa Rica	7,459	3.3 (2.9-3.7)	-	--	108	52.8 (43.4-61.9)	35	62.9 (46.3-76.8)
El Salvador	-	--	-	--	-	--	-	--
Guatemala	274	5.5 (3.3-8.8)	-	--	-	--	-	--
Honduras	538	14.7 (11.9-17.9)	44	18.2 (9.5-32.0)	81	43.2 (33.0-54.1)	99	53.5 (43.8-63.0)
Mexico	9,724	5.1 (4.7-5.6)	1,291	15.3 (13.5-17.4)	247	37.7 (31.8-43.8)	2,361	65.0 (63.1-66.9)
Nicaragua	-	--	79	7.6 (3.5-15.6)	108	33.3 (25.2-42.7)	19	57.9 (36.3-76.9)
Panama	-	--	-	--	-	--	68	63.2 (51.4-73.7)
Northern America	77,952	4.4 (4.3-4.5)	6,015	27.1 (26.0-28.2)	10,230	58.6 (57.6-59.6)	3,707	71.4 (69.9-72.8)
Canada	17,899	6.2 (5.9-6.6)	1,688	33.5 (31.3-35.8)	754	67.0 (63.5-70.2)	169	74.0 (66.9-80.0)
USA	59,935	3.9 (3.7-4.1)	4,327	24.7 (23.4-26.0)	9,476	57.9 (56.9-58.9)	3,506	71.2 (69.7-72.7)
South America	13,771	12.1 (11.6-12.7)	2,191	35.6 (33.6-37.6)	2,516	56.3 (54.4-58.2)	6,239	62.6 (61.4-63.8)
Argentina	1,908	8.7 (7.5-10.0)	549	30.4 (26.7-34.4)	186	55.9 (48.7-62.9)	267	77.9 (72.5-82.5)
Bolivia	-	--	-	--	-	--	45	40.0 (27.0-54.5)
Brazil	4,349	5.7 (5.1-6.4)	554	30.9 (27.2-34.8)	1,463	56.8 (54.2-59.3)	1,364	68.2 (65.7-70.6)
Chile	913	2.5 (1.7-3.8)	206	44.7 (38.0-51.5)	110	70.9 (61.8-78.6)	457	86.4 (83.0-89.3)
Colombia	3,702	24.6 (23.2-26.0)	185	75.1 (68.4-80.8)	309	54.4 (48.8-59.8)	425	62.1 (57.4-66.6)
Ecuador	-	--	29	34.5 (19.9-52.7)	109	37.6 (29.1-47.0)	58	37.9 (26.6-50.8)
Guyana	-	--	-	--	-	--	-	--
Paraguay	293	4.8 (2.9-7.9)	219	39.3 (33.0-45.9)	74	43.2 (32.6-54.6)	523	58.9 (54.6-63.0)
Peru	879	6.6 (5.1-8.4)	22	27.3 (13.2-48.2)	32	53.1 (36.4-69.1)	249	65.9 (59.8-71.5)
Suriname	-	--	-	--	-	--	116	52.6 (43.6-61.4)
Uruguay	1,119	3.7 (2.7-4.9)	227	24.2 (19.1-30.2)	-	--	-	--
Venezuela	409	35.2 (30.7-40.0)	200	27.0 (21.3-33.5)	233	61.8 (55.4-67.8)	96	79.2 (70.0-86.1)
Latin America & Caribbean	32,515	7.9 (7.6-8.2)	3,878	26.1 (24.7-27.5)	3,360	51.7 (50.0-53.4)	9,269	62.7 (61.7-63.7)

Data updated on 19 May 2017 (data as of 30 Jun 2015 / 30 Jun 2015).

95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;

Data sources: See references in Section 9.

Figure 65: Prevalence of HPV 16 among women with normal cervical cytology in the Americas by country and study



(Continued on next page)

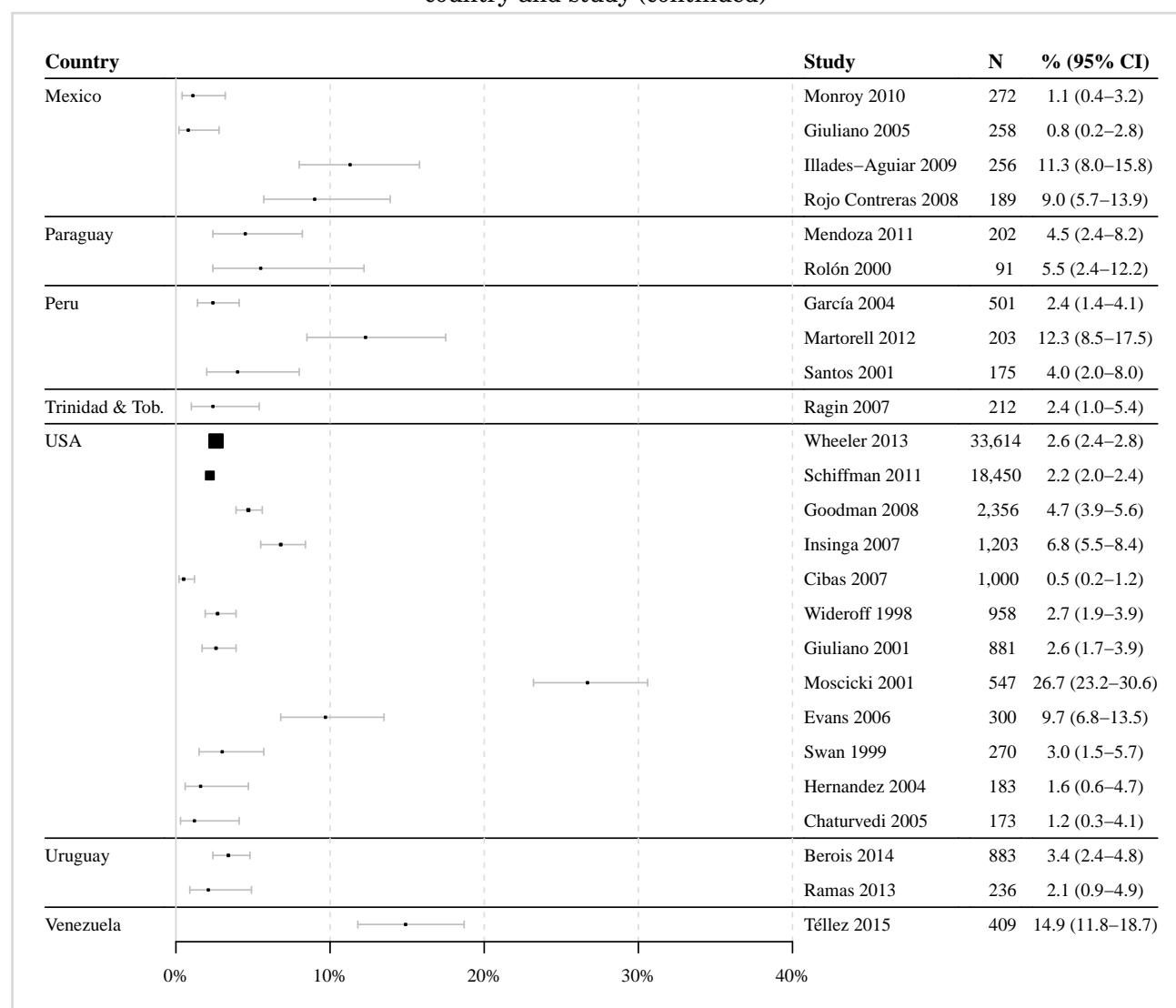
Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 66: Prevalence of HPV 16 among women with normal cervical cytology in the Americas by country and study (continued)



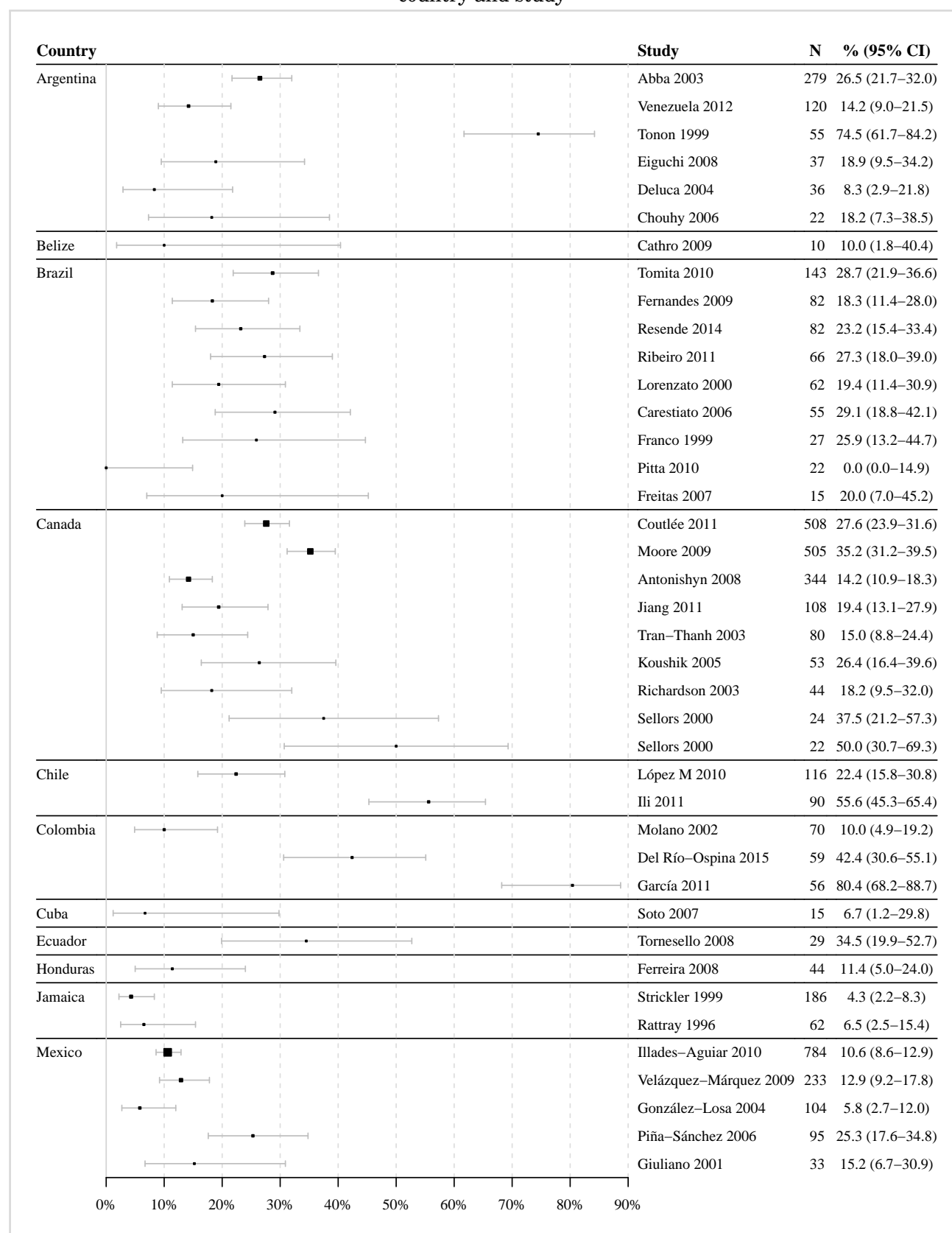
Data updated on 15 Dec 2016 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 67: Prevalence of HPV 16 among women with low-grade cervical lesions in the Americas by country and study



(Continued on next page)

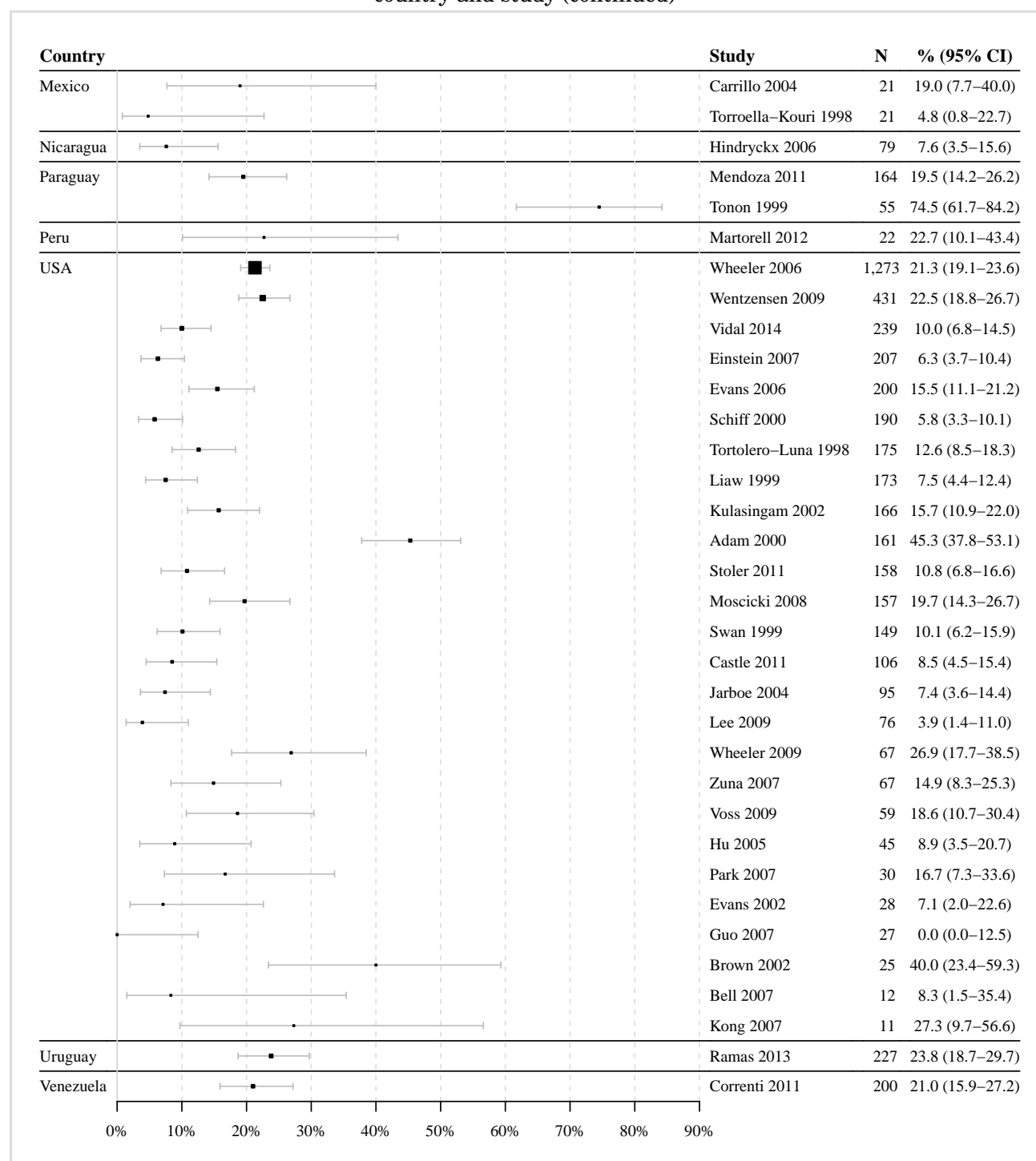
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; Low-grade lesions: LSIL or CIN-1; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 68: Prevalence of HPV 16 among women with low-grade cervical lesions in the Americas by country and study (continued)



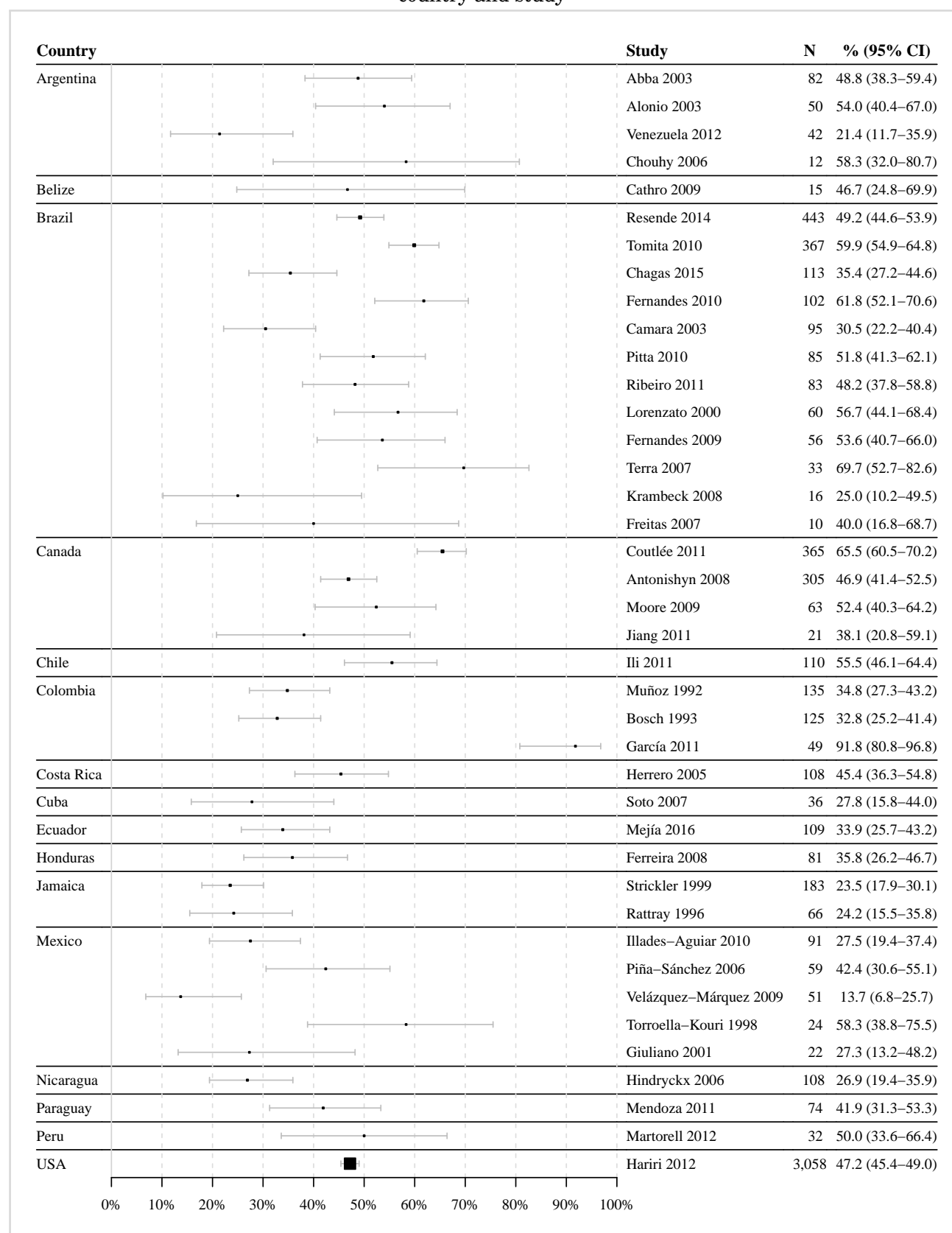
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; Low-grade lesions: LSIL or CIN-1; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 69: Prevalence of HPV 16 among women with high-grade cervical lesions in the Americas by country and study



(Continued on next page)

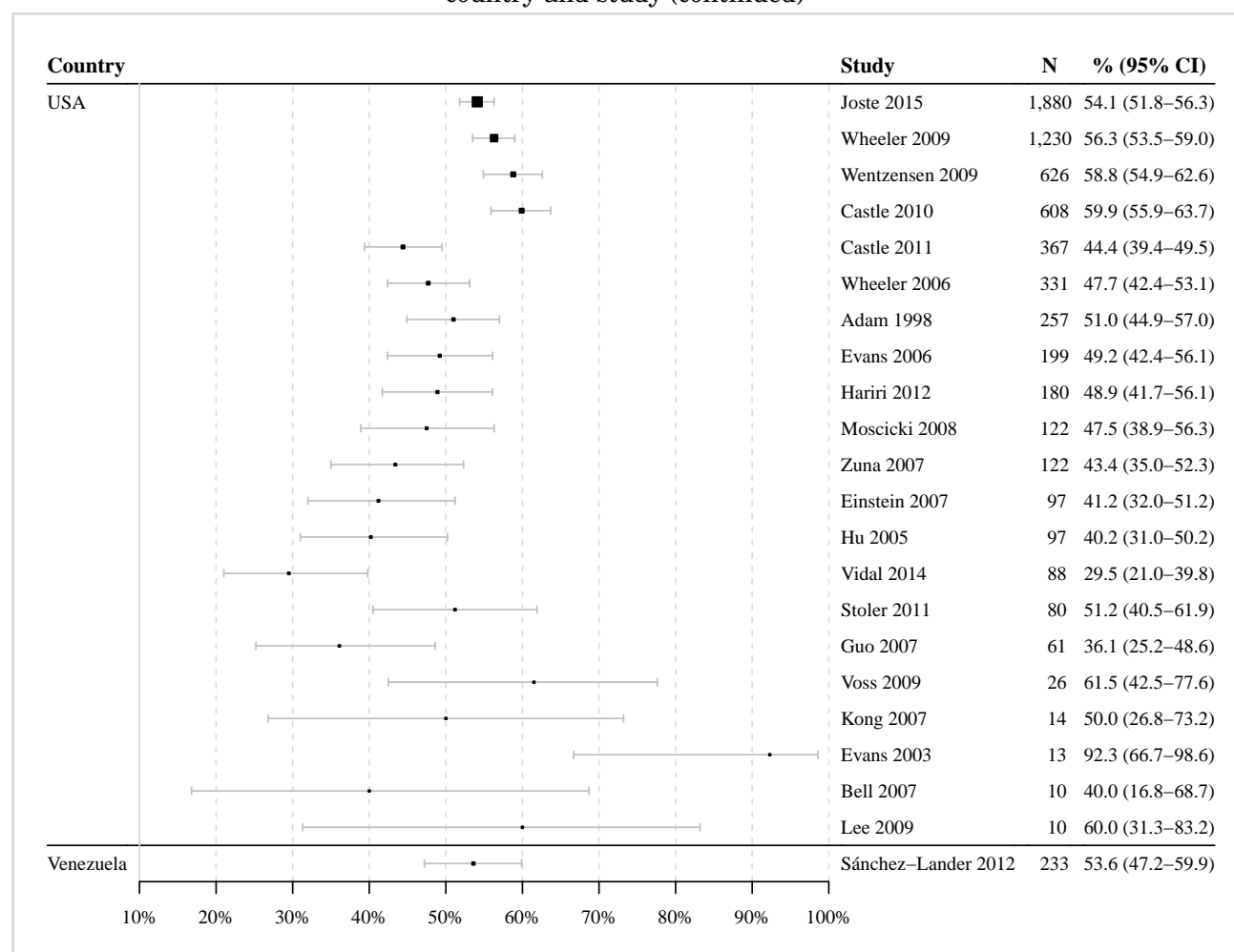
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 70: Prevalence of HPV 16 among women with high-grade cervical lesions in the Americas by country and study (continued)



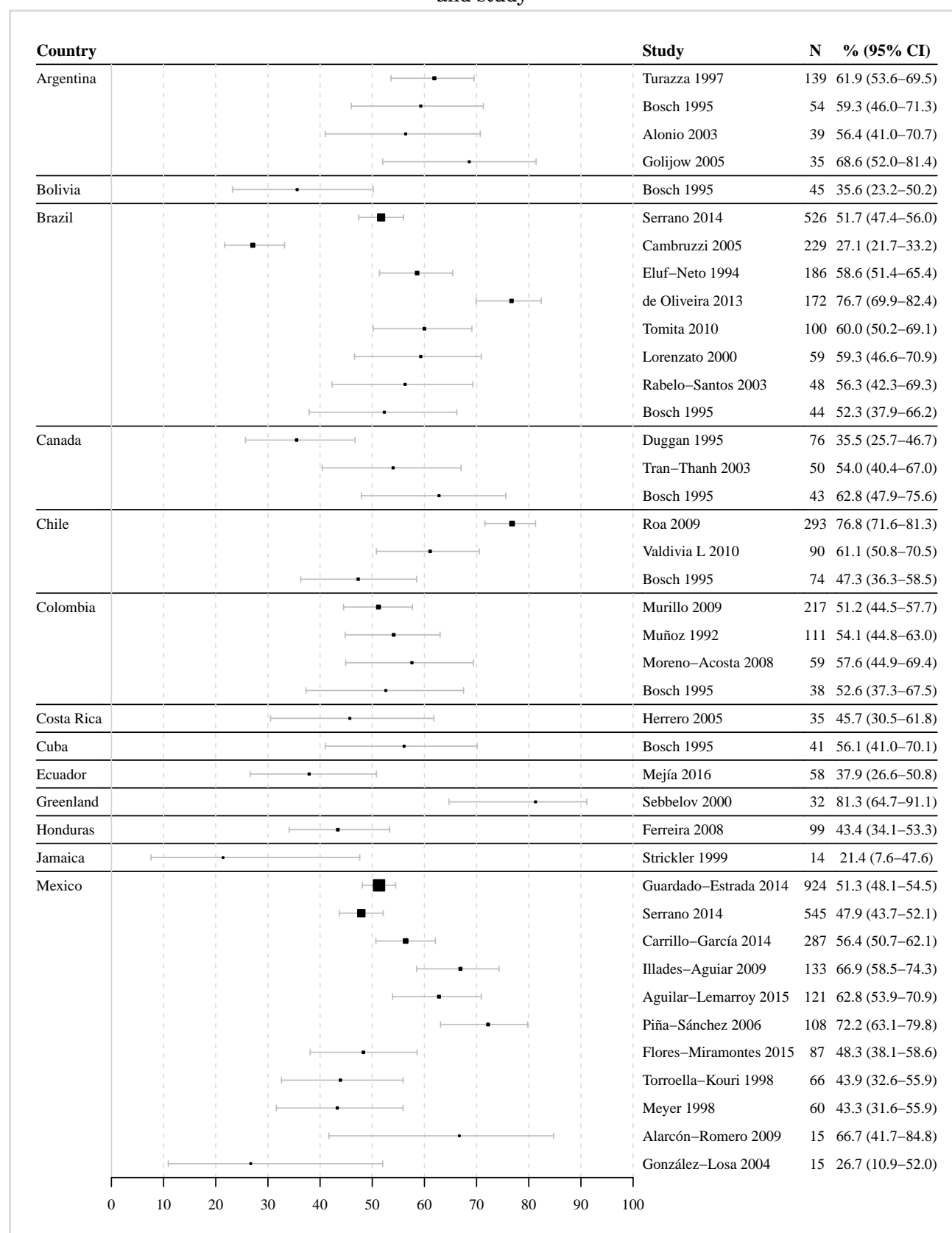
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 71: Prevalence of HPV 16 among women with invasive cervical cancer in the Americas by country and study



(Continued on next page)

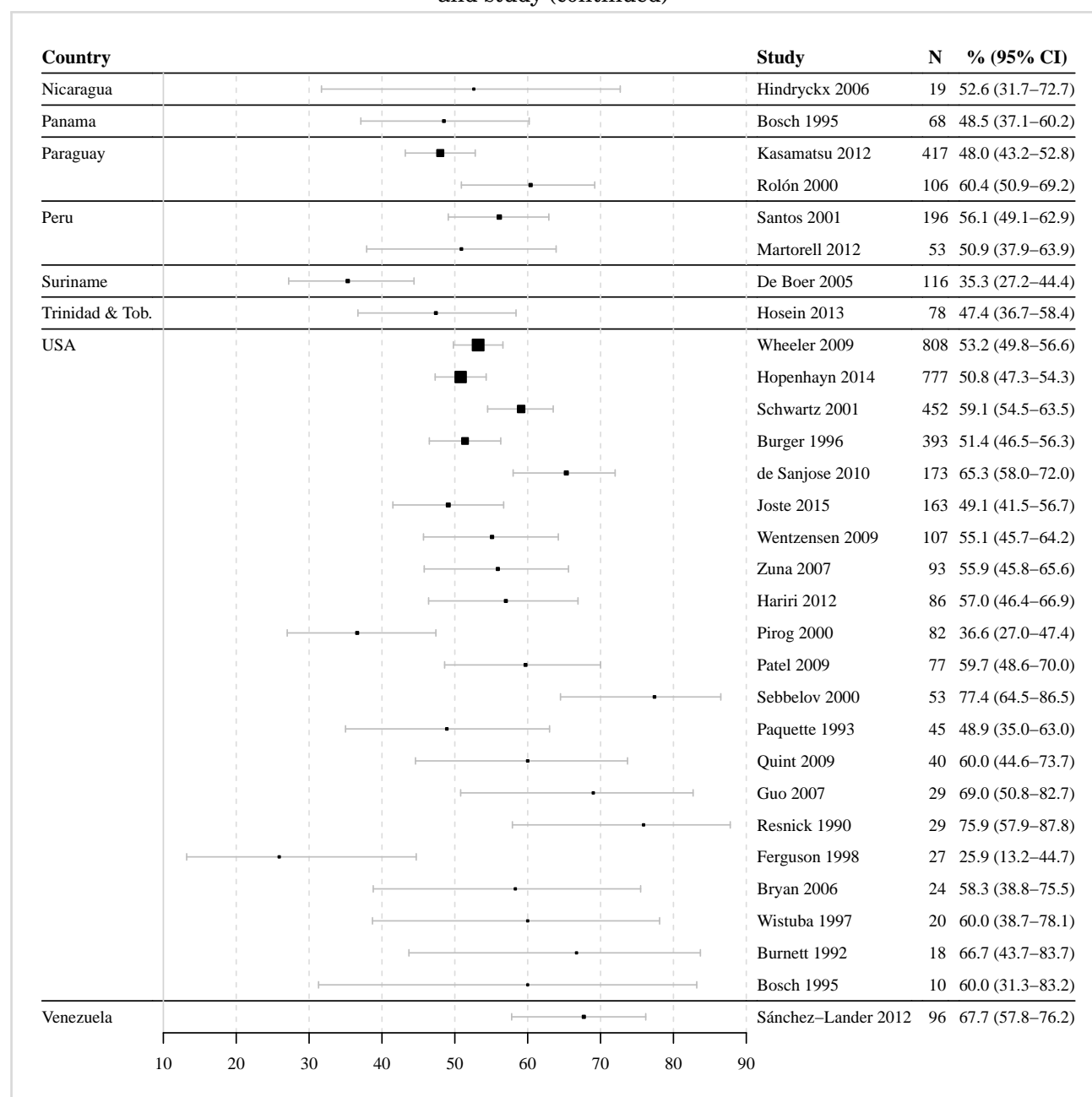
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 72: Prevalence of HPV 16 among women with invasive cervical cancer in the Americas by country and study (continued)



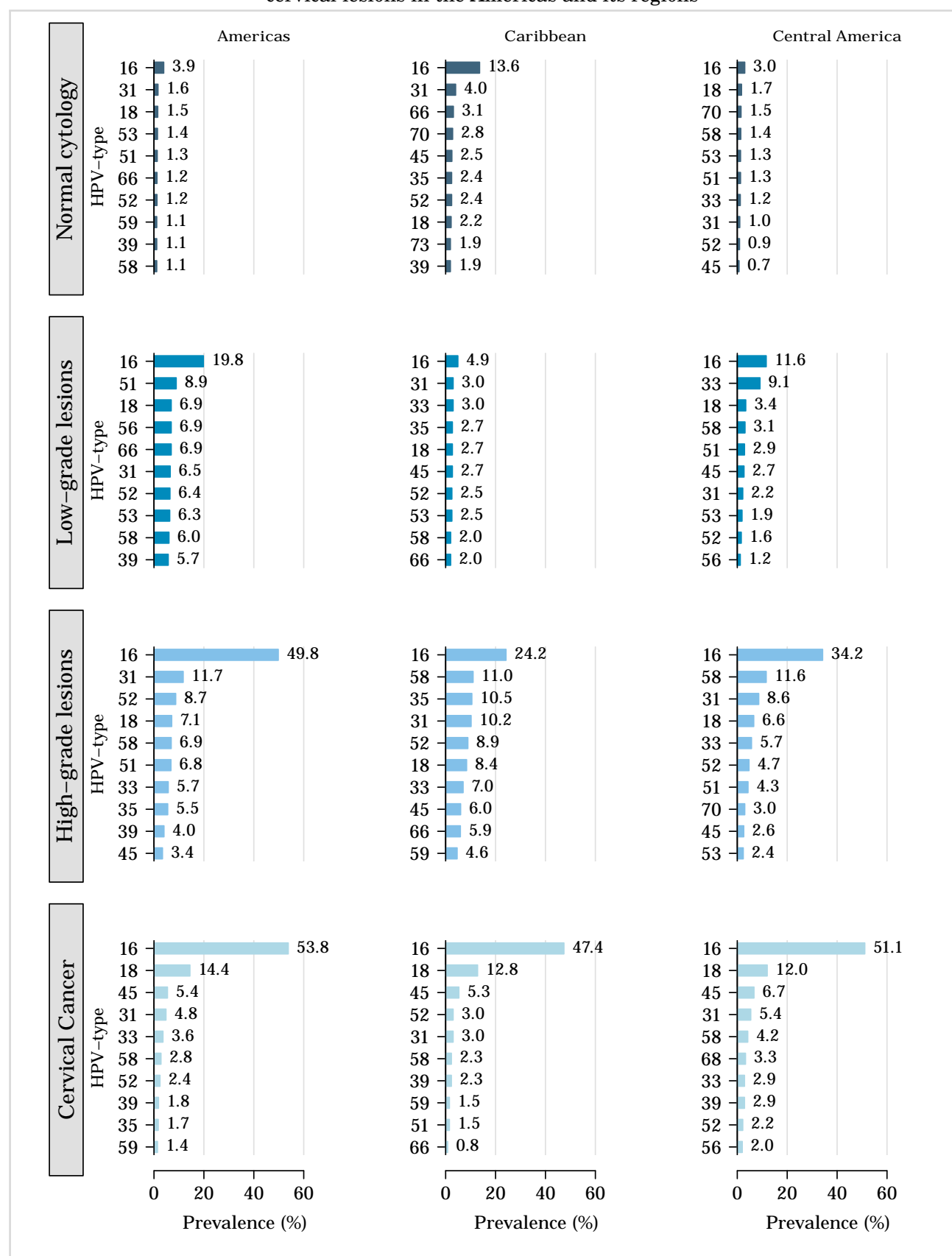
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; N: number of women tested;

The samples for HPV testing come from cervical specimens (fresh/fixed biopsies or exfoliated cells). The line represents the 95% confidence interval and the shadowed square is proportional to the sample size.

Data sources: See references in Section 9.

Figure 73: Comparison of the ten most frequent HPV oncogenic types among women with and without cervical lesions in the Americas and its regions



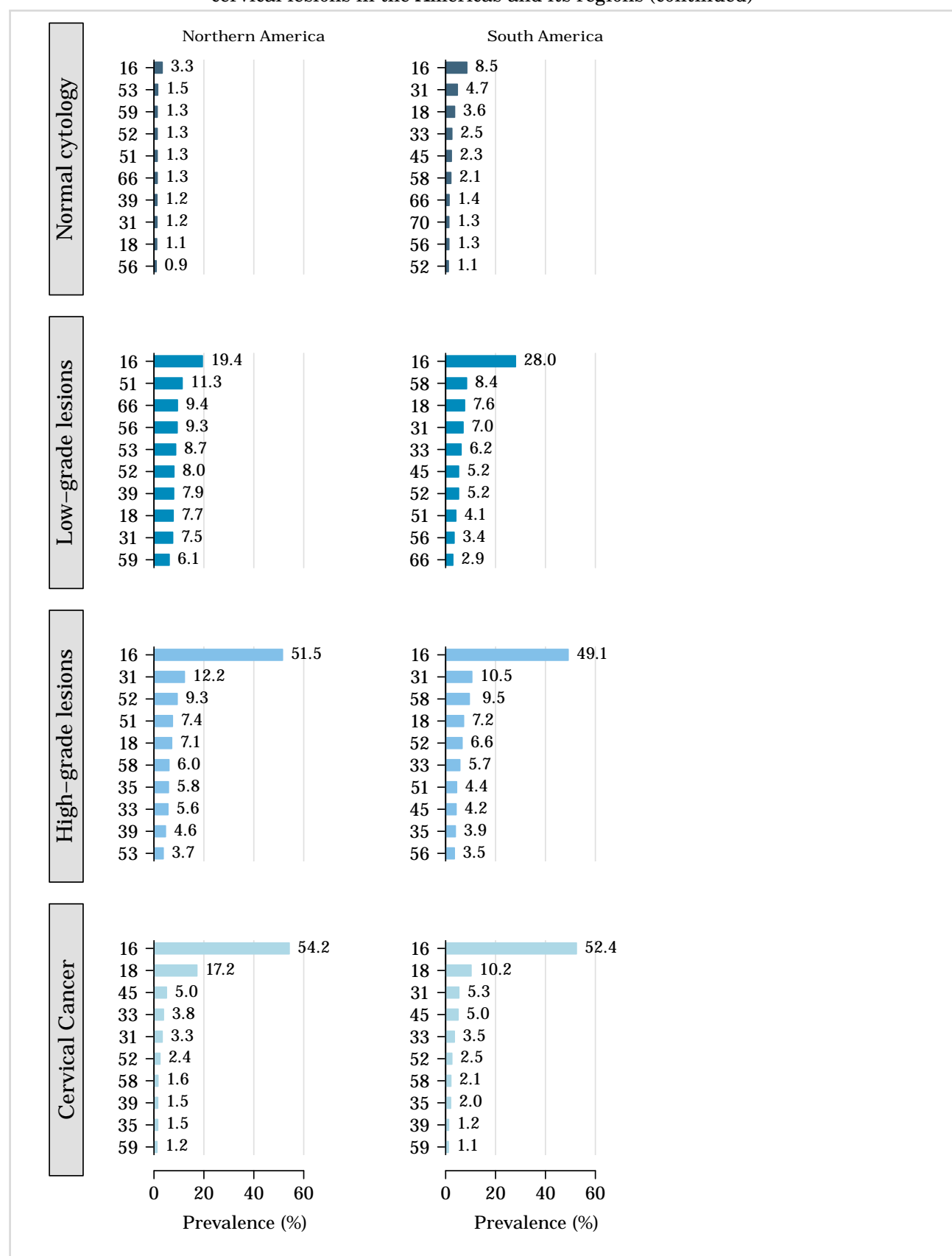
Data updated on 19 May 2017 (data as of 30 Jun 2015).

High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

Figure 74: Comparison of the ten most frequent HPV oncogenic types among women with and without cervical lesions in the Americas and its regions (continued)



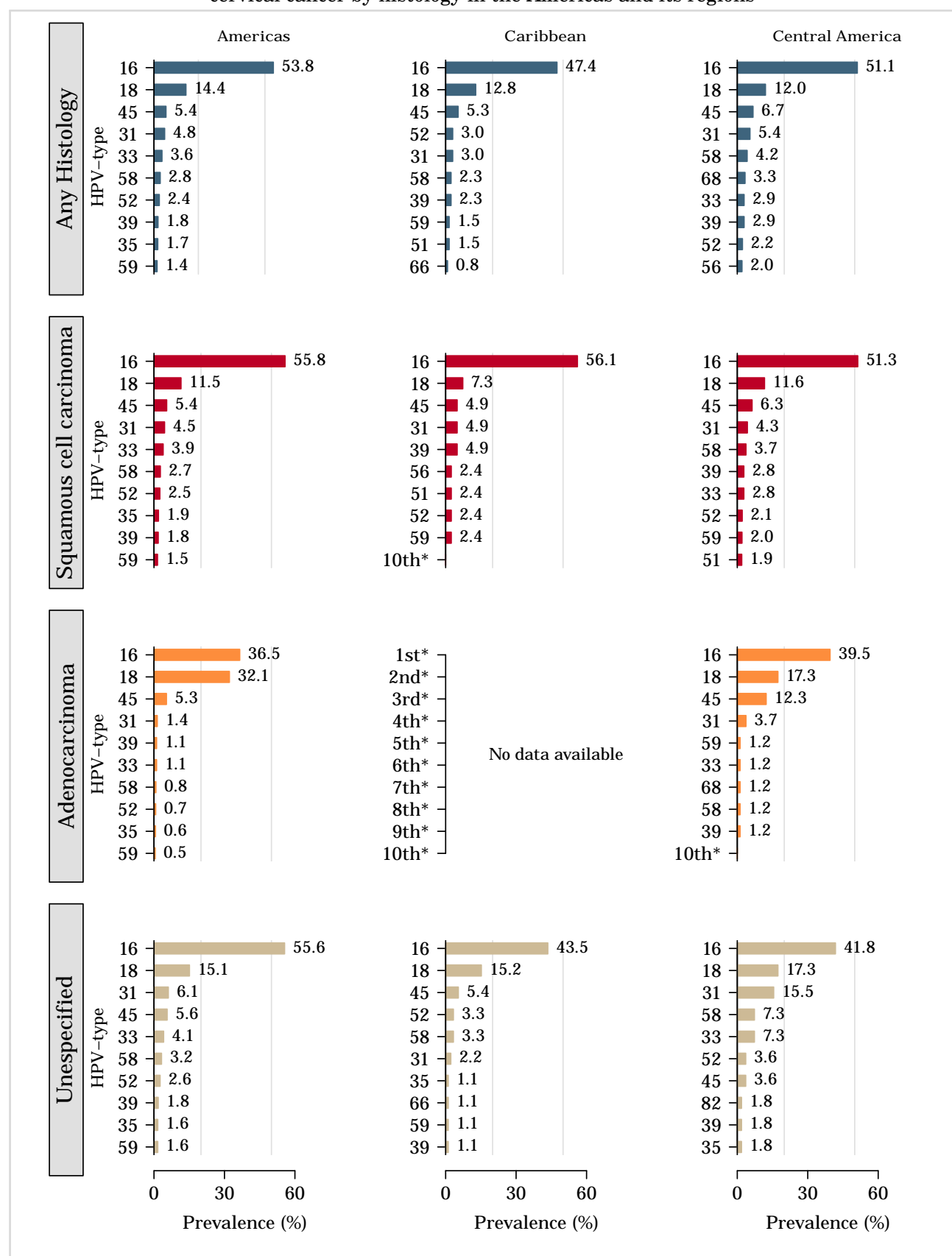
Data updated on 19 May 2017 (data as of 30 Jun 2015).

High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

Figure 75: Comparison of the ten most frequent HPV oncogenic types among women with invasive cervical cancer by histology in the Americas and its regions



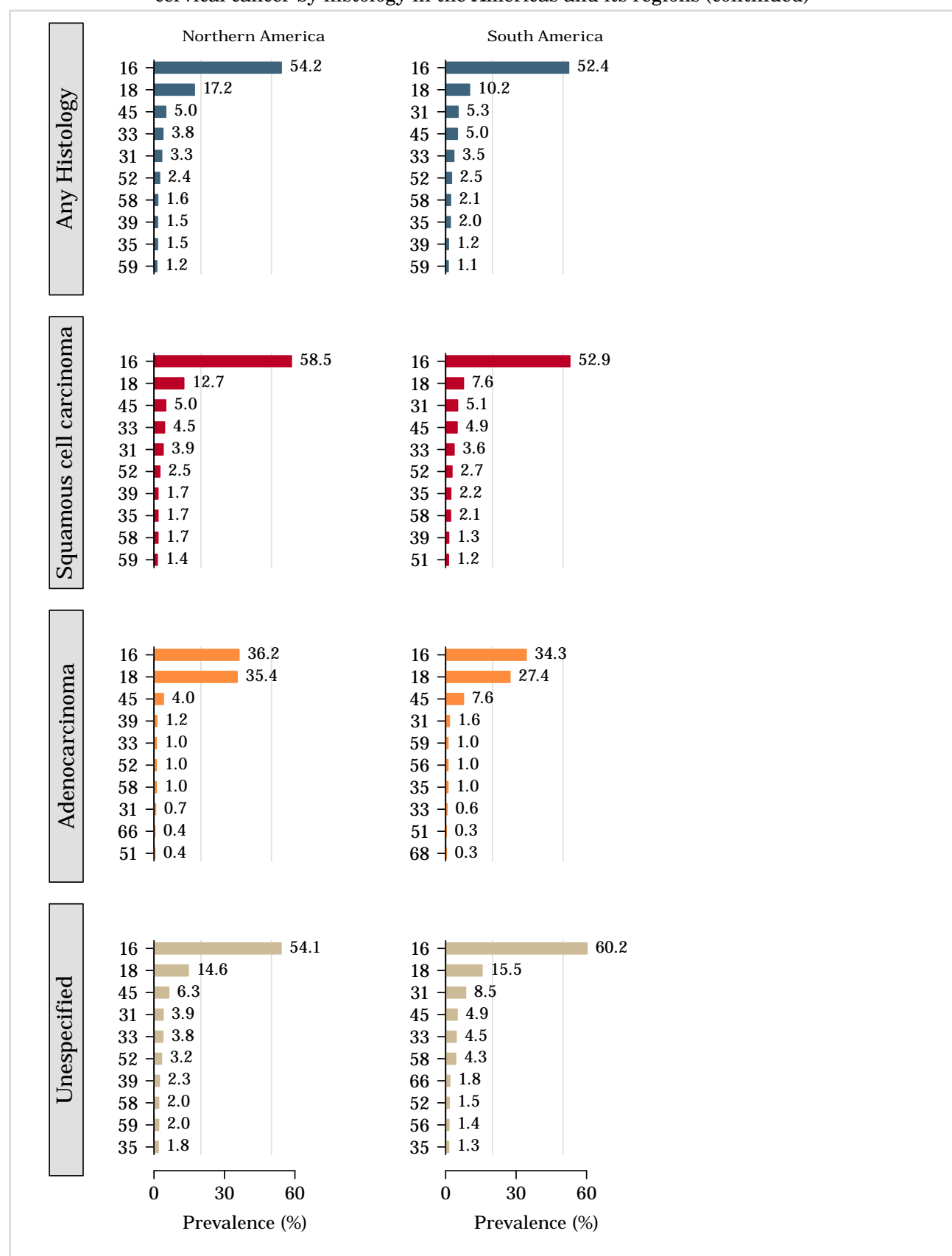
*No data available. No more types than shown were tested or were positive.

Data updated on 19 May 2017 (data as of 30 Jun 2015).

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

Figure 76: Comparison of the ten most frequent HPV oncogenic types among women with invasive cervical cancer by histology in the Americas and its regions (continued)



*No data available. No more types than shown were tested or were positive.

Data updated on 19 May 2017 (data as of 30 Jun 2015).

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

Table 14: Type-specific HPV prevalence in women with normal cervical cytology, precancerous cervical lesions and invasive cervical cancer in the Americas

HPV Type	Normal cytology		Low-grade lesions		High-grade lesions		Cervical cancer	
	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)
ONCOGENIC HPV TYPES								
High-risk HPV types								
16	110,268	3.9 (3.8-4.0)	9,893	19.8 (19.0-20.6)	13,590	49.8 (48.9-50.6)	10,022	53.8 (52.9-54.8)
18	109,477	1.5 (1.4-1.6)	9,893	6.9 (6.5-7.5)	13,574	7.1 (6.7-7.5)	9,963	14.4 (13.7-15.1)
31	105,662	1.6 (1.5-1.7)	9,455	6.5 (6.0-7.0)	13,411	11.7 (11.2-12.3)	9,452	4.8 (4.4-5.3)
33	105,944	0.8 (0.8-0.9)	8,853	4.8 (4.4-5.3)	13,026	5.7 (5.3-6.1)	9,407	3.6 (3.3-4.0)
35	102,039	0.6 (0.5-0.6)	8,654	3.9 (3.5-4.3)	12,999	5.5 (5.1-5.9)	9,236	1.7 (1.5-2.0)
39	101,867	1.1 (1.0-1.1)	8,046	5.7 (5.2-6.2)	12,291	4.0 (3.6-4.3)	9,013	1.8 (1.5-2.0)
45	104,868	1.0 (0.9-1.0)	8,741	4.1 (3.7-4.6)	12,721	3.4 (3.1-3.8)	9,198	5.4 (5.0-5.9)
51	98,414	1.3 (1.2-1.3)	7,602	8.9 (8.3-9.6)	12,411	6.8 (6.3-7.2)	9,096	1.0 (0.9-1.3)
52	102,865	1.2 (1.2-1.3)	8,074	6.4 (5.9-7.0)	12,523	8.7 (8.2-9.2)	9,105	2.4 (2.1-2.7)
56	103,302	0.8 (0.8-0.9)	8,181	6.9 (6.3-7.4)	12,446	2.6 (2.4-2.9)	8,940	1.2 (1.0-1.5)
58	104,541	1.1 (1.1-1.2)	8,470	6.0 (5.5-6.5)	12,723	6.9 (6.5-7.3)	9,105	2.8 (2.5-3.1)
59	102,689	1.1 (1.0-1.2)	8,018	4.5 (4.1-5.0)	11,870	3.0 (2.7-3.3)	9,013	1.4 (1.2-1.6)
Probable/possible carcinogen								
26	94,643	0.1 (0.1-0.1)	6,114	0.5 (0.3-0.7)	10,463	0.5 (0.3-0.6)	7,340	0.4 (0.2-0.5)
30	34,451	0.2 (0.2-0.3)	1,186	0.7 (0.3-1.3)	656	0.3 (0.1-1.1)	2,343	0.1 (0.0-0.4)
34	72,529	0.1 (0.0-0.1)	3,022	0.3 (0.2-0.6)	6,055	0.0 (0.0-0.1)	4,788	0.1 (0.0-0.2)
53	101,024	1.4 (1.3-1.5)	7,765	6.3 (5.8-6.9)	11,380	3.3 (3.0-3.7)	7,699	0.6 (0.4-0.8)
66	101,078	1.2 (1.1-1.2)	7,742	6.9 (6.4-7.5)	11,659	3.3 (3.0-3.7)	8,012	0.6 (0.5-0.9)
67	88,375	0.4 (0.4-0.5)	4,435	1.9 (1.6-2.4)	9,460	1.0 (0.9-1.3)	4,422	0.2 (0.1-0.4)
68	100,367	0.5 (0.5-0.6)	7,473	2.5 (2.2-2.9)	10,292	1.6 (1.4-1.9)	7,241	1.3 (1.1-1.6)
69	89,768	0.0 (0.0-0.1)	4,664	0.3 (0.2-0.6)	9,284	0.3 (0.2-0.4)	4,912	0.5 (0.3-0.7)
70	95,780	0.9 (0.8-1.0)	5,719	2.0 (1.7-2.4)	10,140	1.3 (1.1-1.5)	7,617	0.2 (0.1-0.4)
73	98,745	0.5 (0.4-0.5)	7,318	2.0 (1.7-2.4)	9,656	1.9 (1.6-2.2)	5,941	0.5 (0.3-0.7)
82	100,128	0.3 (0.3-0.3)	6,837	1.8 (1.5-2.1)	10,801	2.1 (1.9-2.4)	7,022	0.1 (0.1-0.2)
85	41,877	0.2 (0.2-0.2)	903	0.6 (0.2-1.3)	3,455	0.3 (0.2-0.5)	-	-
97	272	0.4 (0.1-2.1)	-	-	-	-	-	-
NON-ONCOGENIC HPV TYPES								
6	97,075	1.2 (1.1-1.3)	8,119	7.3 (6.7-7.9)	11,463	2.6 (2.3-2.9)	8,096	0.6 (0.5-0.8)
11	97,145	0.4 (0.3-0.4)	7,953	2.6 (2.3-3.0)	11,437	0.8 (0.6-0.9)	8,873	0.7 (0.5-0.9)
32	27,353	0.2 (0.1-0.2)	357	0.3 (0.0-1.6)	-	-	346	0.0 (0.0-1.1)
40	80,577	0.3 (0.3-0.3)	369	1.4 (0.6-3.1)	5,291	0.5 (0.3-0.7)	4,725	0.0 (0.0-0.1)
42	78,438	0.9 (0.8-1.0)	369	3.8 (2.3-6.3)	2,109	1.2 (0.8-1.7)	5,824	0.3 (0.2-0.5)
43	27,761	0.3 (0.2-0.3)	130	1.5 (0.4-5.4)	374	1.9 (0.9-3.8)	4,328	0.2 (0.1-0.4)
44	78,567	0.6 (0.5-0.7)	596	1.2 (0.6-2.4)	3,520	0.4 (0.3-0.7)	5,377	0.2 (0.1-0.3)
54	79,895	1.2 (1.2-1.3)	357	1.1 (0.4-2.8)	5,245	1.0 (0.8-1.3)	5,679	0.2 (0.1-0.3)
55	-	-	-	-	-	-	-	-
57	27,031	0.0 (0.0-0.0)	249	0.0 (0.0-1.5)	265	0.0 (0.0-1.4)	2,443	0.1 (0.0-0.4)
61	77,188	1.2 (1.2-1.3)	716	2.2 (1.4-3.6)	5,333	0.8 (0.6-1.0)	5,794	0.2 (0.1-0.3)
62	71,248	1.9 (1.8-2.0)	716	4.5 (3.2-6.2)	5,100	0.8 (0.6-1.1)	2,466	0.4 (0.2-0.7)
64	-	-	-	-	-	-	-	-
71	74,743	0.4 (0.3-0.4)	130	0.0 (0.0-2.9)	5,203	0.0 (0.0-0.1)	3,541	0.4 (0.2-0.6)
72	75,227	0.4 (0.4-0.5)	369	1.6 (0.7-3.5)	5,058	0.1 (0.1-0.3)	3,758	0.2 (0.1-0.4)
74	29,368	0.3 (0.2-0.4)	130	0.0 (0.0-2.9)	265	0.0 (0.0-1.4)	3,071	0.0 (0.0-0.1)
81	77,391	0.9 (0.8-0.9)	596	1.8 (1.0-3.3)	5,167	0.2 (0.1-0.4)	3,348	0.2 (0.1-0.4)
83	80,795	0.8 (0.8-0.9)	596	1.5 (0.8-2.8)	5,058	0.4 (0.3-0.7)	3,899	0.2 (0.1-0.4)
84	79,846	1.2 (1.2-1.3)	596	2.9 (1.8-4.5)	5,058	0.5 (0.3-0.7)	2,710	0.4 (0.3-0.8)
86	15,583	0.3 (0.2-0.4)	-	-	-	-	-	-
87	15,188	0.2 (0.1-0.3)	130	0.8 (0.1-4.2)	-	-	-	-
89	74,244	1.2 (1.1-1.3)	130	2.3 (0.8-6.6)	4,970	1.0 (0.8-1.4)	2,688	0.2 (0.1-0.5)
90	15,802	0.4 (0.3-0.5)	130	3.1 (1.2-7.6)	-	-	418	0.0 (0.0-0.9)
91	15,088	0.0 (0.0-0.1)	130	3.1 (1.2-7.6)	-	-	1,792	0.0 (0.0-0.2)

Data updated on 19 May 2017 (data as of 30 Jun 2015 / 30 Jun 2015).

95% CI: 95% Confidence Interval; High-grade lesions: CIN-2, CIN-3, CIS or HSIL; Low-grade lesions: LSIL or CIN-1;

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

Table 15: Type-specific HPV prevalence among invasive cervical cancer cases in the Americas by histology

HPV Type	Any Histology		Squamous cell carcinoma		Adenocarcinoma		Unspecified	
	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)	No. tested	HPV Prev % (95% CI)
ONCOGENIC HPV TYPES								
High-risk HPV types								
16	10,022	53.8 (52.9-54.8)	7,465	55.8 (54.7-57.0)	1,113	36.5 (33.7-39.3)	2,147	55.6 (53.5-57.7)
18	9,963	14.4 (13.7-15.1)	7,465	11.5 (10.8-12.2)	1,113	32.1 (29.4-34.9)	2,088	15.1 (13.7-16.7)
31	9,452	4.8 (4.4-5.3)	7,326	4.5 (4.1-5.0)	857	1.4 (0.8-2.4)	1,972	6.1 (5.2-7.3)
33	9,407	3.6 (3.3-4.0)	7,298	3.9 (3.4-4.3)	840	1.1 (0.6-2.0)	1,972	4.1 (3.3-5.1)
35	9,236	1.7 (1.5-2.0)	7,127	1.9 (1.6-2.2)	840	0.6 (0.3-1.4)	1,972	1.6 (1.1-2.2)
39	9,013	1.8 (1.5-2.0)	6,795	1.8 (1.5-2.2)	741	1.1 (0.5-2.1)	1,972	1.8 (1.3-2.5)
45	9,198	5.4 (5.0-5.9)	7,138	5.4 (4.9-5.9)	791	5.3 (4.0-7.1)	1,972	5.6 (4.6-6.7)
51	9,096	1.0 (0.9-1.3)	6,878	1.1 (0.9-1.4)	741	0.4 (0.1-1.2)	1,972	1.0 (0.6-1.5)
52	9,105	2.4 (2.1-2.7)	7,072	2.5 (2.2-2.9)	764	0.7 (0.3-1.5)	1,972	2.6 (2.0-3.4)
56	8,940	1.2 (1.0-1.5)	6,907	1.0 (0.8-1.2)	764	0.3 (0.1-0.9)	1,972	1.2 (0.8-1.7)
58	9,105	2.8 (2.5-3.1)	7,072	2.7 (2.3-3.1)	764	0.8 (0.4-1.7)	1,972	3.2 (2.5-4.1)
59	9,013	1.4 (1.2-1.6)	6,980	1.5 (1.3-1.8)	764	0.5 (0.2-1.3)	1,972	1.6 (1.1-2.2)
Probable/possible carcinogen								
26	7,340	0.4 (0.2-0.5)	-	-	-	-	-	-
30	2,343	0.1 (0.0-0.4)	1,961	0.2 (0.1-0.4)	251	0.0 (0.0-1.5)	131	0.0 (0.0-2.8)
34	4,788	0.1 (0.0-0.2)	3,007	0.1 (0.0-0.2)	530	0.0 (0.0-0.7)	1,251	0.2 (0.0-0.6)
53	7,699	0.6 (0.4-0.8)	-	-	-	-	-	-
66	8,012	0.6 (0.5-0.9)	5,871	0.4 (0.3-0.6)	741	0.3 (0.1-1.0)	1,895	0.9 (0.6-1.4)
67	4,422	0.2 (0.1-0.4)	2,939	0.3 (0.2-0.6)	340	0.0 (0.0-1.1)	1,143	0.0 (0.0-0.3)
68	7,241	1.3 (1.1-1.6)	5,211	0.8 (0.6-1.0)	701	0.3 (0.1-1.0)	1,164	0.4 (0.2-1.0)
69	4,912	0.5 (0.3-0.7)	-	-	-	-	-	-
70	7,617	0.2 (0.1-0.4)	-	-	-	-	-	-
73	5,941	0.5 (0.3-0.7)	-	-	-	-	-	-
82	7,022	0.1 (0.1-0.2)	4,357	0.1 (0.0-0.3)	497	0.0 (0.0-0.8)	1,881	0.2 (0.1-0.5)
97	-	-	-	-	-	-	-	-
NON-ONCOGENIC HPV TYPES								
6	8,096	0.6 (0.5-0.8)	-	-	-	-	-	-
11	8,873	0.7 (0.5-0.9)	-	-	-	-	-	-
32	346	0.0 (0.0-1.1)	-	-	-	-	-	-
40	4,725	0.0 (0.0-0.1)	-	-	-	-	-	-
42	5,824	0.3 (0.2-0.5)	4,495	0.1 (0.0-0.3)	416	0.0 (0.0-0.9)	1,408	0.3 (0.1-0.7)
43	4,328	0.2 (0.1-0.4)	-	-	-	-	-	-
44	5,377	0.2 (0.1-0.3)	4,249	0.0 (0.0-0.2)	392	0.0 (0.0-1.0)	1,439	0.5 (0.2-1.0)
54	5,679	0.2 (0.1-0.3)	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-
57	2,443	0.1 (0.0-0.4)	-	-	-	-	-	-
61	5,794	0.2 (0.1-0.3)	-	-	-	-	-	-
62	2,466	0.4 (0.2-0.7)	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-
71	3,541	0.4 (0.2-0.6)	-	-	-	-	-	-
72	3,758	0.2 (0.1-0.4)	-	-	-	-	-	-
74	3,071	0.0 (0.0-0.1)	-	-	-	-	-	-
81	3,348	0.2 (0.1-0.4)	-	-	-	-	-	-
83	3,899	0.2 (0.1-0.4)	-	-	-	-	-	-
84	2,710	0.4 (0.3-0.8)	-	-	-	-	-	-
89	2,688	0.2 (0.1-0.5)	-	-	-	-	-	-
90	418	0.0 (0.0-0.9)	-	-	-	-	-	-
91	1,792	0.0 (0.0-0.2)	-	-	-	-	-	-

Data updated on 19 May 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval;

The samples for HPV testing come from cervical specimens (fresh / fixed biopsies or exfoliated cells).

Data sources: See references in Section 9.

4.1.3 HPV type distribution among HIV+ women with normal cervical cytology

Table 16: American studies on HPV prevalence among HIV women with normal cytology

Country	Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence	
				%	(95% CI)
No Data Available	-	-	-	-	-

Data updated on 31 Jul 2013 (data as of 31 Dec 2011). Only for European countries.

95% CI: 95% Confidence Interval;

Data sources: See references in Section 9.

4.1.4 Terminology

Cytologically normal women

No abnormal cells are observed on the surface of their cervix upon cytology.

Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL)

SIL and CIN are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision. The condition is graded as CIN 1, 2 or 3, according to the thickness of the abnormal epithelium (1/3, 2/3 or the entire thickness).

Low-grade cervical lesions (LSIL/CIN-1)

Low-grade cervical lesions are defined by early changes in size, shape, and number of abnormal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.

High-grade cervical lesions (HSIL/ CIN-2 / CIN-3 / CIS)

High-grade cervical lesions are defined by a large number of precancerous cells on the surface of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3 or cervical carcinoma in situ (CIS).

Carcinoma in situ (CIS)

Preinvasive malignancy limited to the epithelium without invasion of the basement membrane. CIN 3 encompasses the squamous carcinoma in situ.

Invasive cervical cancer (ICC) / Cervical cancer

If the high-grade precancerous cells invade the basement membrane is called ICC. ICC stages range from stage I (cancer is in the cervix or uterus only) to stage IV (the cancer has spread to distant organs, such as the liver).

Invasive squamous cell carcinoma

Invasive carcinoma composed of cells resembling those of squamous epithelium.

Adenocarcinoma

Invasive tumour with glandular and squamous elements intermingled.

4.2 HPV burden in anogenital cancers other than the cervix

Methods: Prevalence and type distribution of human papillomavirus in carcinoma of the vulva, vagina, anus and penis: systematic review and meta-analysis

A systematic review of the literature was conducted on the worldwide HPV-prevalence and type distribution for anogenital carcinomas other than cervix from January 1986 to 'data as of' indicated in each section. The search terms for the review were 'HPV' AND (anus OR anal) OR (penile) OR vagin* OR vulv* using Pubmed. There were no limits in publication language. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR, a minimum of 10 cases by lesion and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive cases were extracted for each study to estimate the prevalence of HPV DNA and the HPV type distribution. Binomial 95% confidence intervals were calculated for each HPV prevalence.

4.2.1 Anal cancer and precancerous anal lesions

Anal cancer is similar to cervical cancer with respect to overall HPV DNA positivity, with approximately 88% of cases associated with HPV infection worldwide (*de Martel C et al. Lancet Oncol 2012;13(6):607-15*). HPV16 is the most common type detected, representing 73% of all HPV-positive tumours. HPV18 is the second most common type detected and is found in approximately 5% of cases. HPV DNA is also detected in the majority of precancerous anal lesions (AIN) (91.5% in AIN1 and 93.9% in AIN2/3) (De Vuyst H et al. *Int J Cancer* 2009; 124: 1626-36). In this section, the HPV prevalence among anal cancer cases and precancerous anal lesions in Americas are presented.

Table 17: American studies on HPV prevalence among anal cancer cases (male and female)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types HPV type (%)
			%	(95% CI)	
Ouhoumane 2013 (Canada)	PCR L1-Consensus primer, LBA (HPV 6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 40, 42, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 81, 82, 83, 84, 89)	96	91.7	(84.4-95.7)	HPV 16 (82.3%) HPV 6 (3.1%) HPV 33 (3.1%) HPV 18 (2.1%) HPV 58 (2.1%)
Alemanly 2015 (USA)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 67, 68, 69, 70, 73, 74, 82, 83, 87, 89, 91)	96	95.8	(89.8-98.4)	HPV 16 (81.3%) HPV 18 (7.3%) HPV 31 (4.2%) HPV 39 (3.1%) HPV 52 (3.1%)
Daling 2004 (USA)	PCR-MY09/11, PCR L1-Consensus primer, RFLP, TS (HPV 16, 18)	199	86.9	(81.5-90.9)	HPV 16 (69.8%) HPV 18 (8.5%)
Palefsky 1991 (USA)	PCR-E6, TS (HPV 06/11, 16, 18, 31, 33)	13	84.6	(57.8-95.7)	HPV 16 (76.9%) HPV 31 (23.1%) HPV 6/11 (15.4%) HPV 33 (7.7%)
Zaki 1992 (USA)	PCR L1-Consensus primer, TS (HPV 6, 11, 16, 18, 16/18)	11	72.7	(43.4-90.3)	HPV 16 (18.2%) HPV 6 (9.1%) HPV 11 (9.1%) HPV 16/18 (9.1%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval;

EIA: Enzyme ImmunoAssay; LBA: Line-Blot Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; SPF: Short Primer Fragment; TS: Type Specific;

Data sources: See references in Section 9.

Table 18: American studies on HPV prevalence among AIN 2/3 cases (male and female)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types HPV type (%)
			%	(95% CI)	
Gohy 2008 ^a (Canada)	PCR-MY09/11, (HPV 6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 40, 42, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 81, 82, 83, 84, 89)	62	93.5	(84.6-97.5)	HPV 16 (35.5%) HPV 18 (16.1%) HPV 58 (16.1%) HPV 42 (9.7%) HPV 45 (9.7%)
Salit 2009 ^a (Canada)	PCR-PGMY09/11, PCR L1-Consensus primer, LBA (HPV 6, 11, 16, 18, 26, 31, 33, 35, 39, 40, 42, 44, 45, 51, 52, 53, 54, 56, 57, 58, 59, 66, 68)	74	100.0	(95.1-100.0)	HPV 16 (52.7%) HPV 18 (32.4%) HPV 31 (31.1%) HPV 6 (28.4%) HPV 52 (27.0%)
Alemaný 2015 ^b (Latin America & Caribbean)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 67, 68, 69, 70, 73, 74, 82, 83, 87, 89, 91)	12	100.0	(75.8-100.0)	HPV 16 (91.7%) HPV 6 (8.3%) HPV 11 (8.3%)
Sahasrabuddhe 2013 ^a (USA)	PCR-PGMY09/11, LBA (HPV 6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 40, 42, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 81, 82, 83, 84)	104	99.0	(94.8-99.8)	HPV 16 (54.8%) HPV 6 (26.0%) HPV 31 (22.1%) HPV 42 (22.1%) HPV 66 (21.2%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; AIN 2/3: Anal intraepithelial neoplasia of grade 2/3;

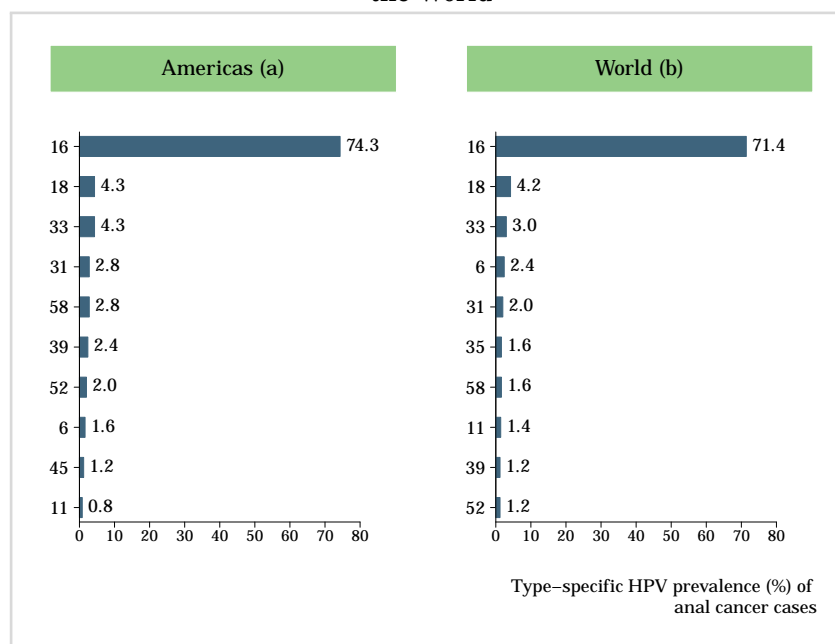
EIA: Enzyme ImmunoAssay; LBA: Line-Blot Assay; PCR: Polymerase Chain Reaction; SPF: Short Primer Fragment;

^a HIV positive cases

^b Includes cases from Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico and Paraguay

Data sources: See references in Section 9.

Figure 77: Comparison of the ten most frequent HPV types in anal cancer cases in the Americas and the World



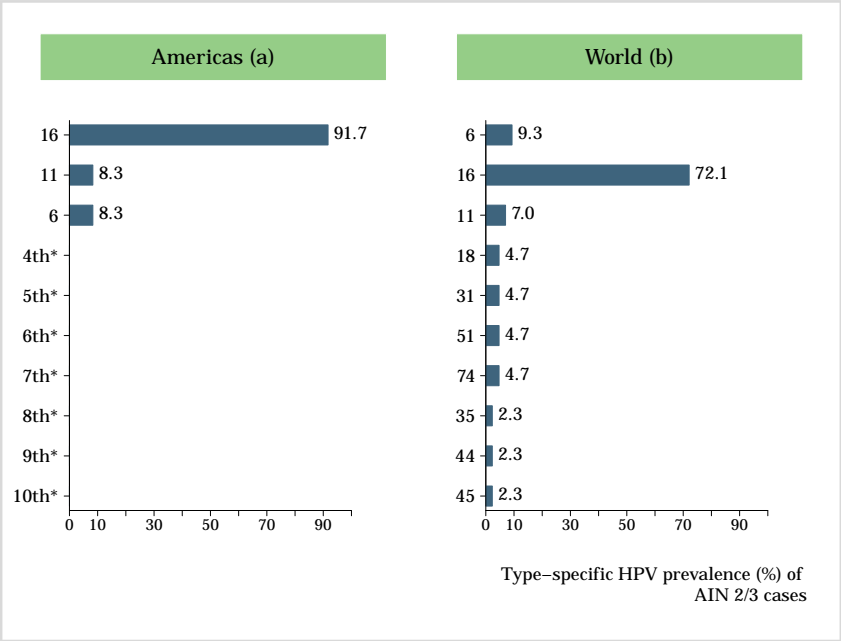
Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

^a Includes cases from Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay and United States

^b Includes cases from Europe (Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom); America (Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay and United States); Africa (Mali, Nigeria and Senegal); Asia (Bangladesh, India and South Korea)

Data sources: See references in Section 9.

Figure 78: Comparison of the ten most frequent HPV types in AIN 2/3 cases in the Americas and the World



*No data available. No more types than shown were tested or were positive.

Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

AIN 2/3: Anal intraepithelial neoplasia of grade 2/3;

^a Includes cases from Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay

^b Includes cases from Europe (Bosnia-Herzegovina, Czech Republic, France, Germany, Poland, Portugal, Slovenia, Spain and United Kingdom); America (Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay)

Data sources: See references in Section 9.

4.2.2 Vulvar cancer and precancerous vulvar lesions

HPV attribution for vulvar cancer is 43% worldwide (*de Martel C et al. Lancet Oncol 2012;13(6):607-15*). Vulvar cancer has two distinct histological patterns with two different risk factor profiles: (1) basaloid/warty types (2) keratinising types. Basaloid/warty lesions are more common in young women, are frequently found adjacent to VIN, are very often associated with HPV DNA detection (86%), and have a similar risk factor profile as cervical cancer. Keratinising vulvar carcinomas represent the majority of the vulvar lesions (>60%). These lesions develop from non HPV-related chronic vulvar dermatoses, especially lichen sclerosus and/or squamous hyperplasia, their immediate cancer precursor lesion is differentiated VIN, they occur more often in older women, and are rarely associated with HPV (6%) or with any of the other risk factors typical of cervical cancer. HPV prevalence is frequently detected among cases of high-grade VIN (VIN2/3) (85.3%). HPV 16 is the most common type detected followed by HPV 33 (De Vuyst H et al. *Int J Cancer* 2009; 124:1626-36). In this section, the HPV prevalence among vulvar cancer cases and precancerous vulvar lesions in Americas are presented.

Table 19: American studies on HPV prevalence among vulvar cancer cases

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types HPV type (%)
			%	(95% CI)	
Pinto 1999 (Brazil)	PCR L1-Consensus primer, PCR-E6, TS (HPV 06/11, 16, 18, 40, 42, 43, 44, 45, 51, 52, 54, 56, 58)	158	24.1	(18.1-31.3)	HPV 16 (16.5%) HPV 18 (9.5%) HPV 6/11 (1.3%) HPV 45 (0.6%)
de Sanjosé 2013 ^a (Latin America & Caribbean)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 67, 68, 69, 70, 73, 74, 82, 83, 87, 89, 91)	324	40.1	(34.9-45.5)	-
de Sanjosé 2013 (USA)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 67, 68, 69, 70, 73, 74, 82, 83, 87, 89, 91)	50	50.0	(36.6-63.4)	HPV 16 (34.0%) HPV 33 (8.0%) HPV 6 (2.0%) HPV 18 (2.0%) HPV 44 (2.0%)
Gargano 2012 (USA)	PCR-SPF10, LBA, (HPV 6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 74, 81, 82, 83, 84)	176	68.8	(61.6-75.1)	HPV 16 (48.3%) HPV 33 (10.2%) HPV 52 (2.8%) HPV 18 (1.7%) HPV 31 (1.1%)
Kim 1996 (USA)	PCR-MY09/11, PCR L1-Consensus primer, TS, Sequencing (HPV 16, 18)	18	38.9	(20.3-61.4)	HPV 16 (27.8%) HPV 18 (5.6%)
Madeleine 1997 (USA)	PCR-MY09/11, PCR L1-Consensus primer, PCR-E6, RFLP (HPV 16)	55	50.9	(38.1-63.6)	HPV 16 (43.6%)
Sutton 2008 (USA)	PCR L1-Consensus primer, LBA (HPV 6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 40, 42, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 70, 71, 72, 73, 81, 82, 83, 84)	116	69.8	(60.9-77.4)	HPV 16 (56.0%) HPV 33 (10.3%) HPV 45 (3.4%) HPV 6 (2.6%) HPV 52 (2.6%)
Tate 1994 (USA)	PCR-MY09/11, PCR L1-Consensus primer, RFLP (HPV 16, 33)	13	53.8	(29.1-76.8)	HPV 16 (46.2%) HPV 33 (7.7%)

(Continued on next page)

(Table 19 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
Riethdorf 2004 ^b (World)	PCR L1-Consensus primer, TS (HPV 16)	71	87.3	(77.6-93.2)	HPV 16 (87.3%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval;

EIA: Enzyme ImmunoAssay; LBA: Line-Blot Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; SPF: Short Primer Fragment; TS: Type Specific;

^aIncludes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, and Venezuela

^bIncludes cases from Germany and United States of America

Data sources: See references in Section 9.

Table 20: American studies on HPV prevalence among VIN 2/3 cases

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
de Sanjosé 2013 ^a (Latin America & Caribbean)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 67, 68, 69, 70, 73, 74, 82, 83, 87, 89, 91)	126	77.8	(69.8-84.2)	-
Gargano 2012 (USA)	PCR-SPF10, LBA, (HPV 16, 18, 33, 52, 59)	68	97.1	(89.9-99.2)	HPV 16 (80.9%) HPV 33 (8.8%) HPV 59 (2.9%) HPV 18 (1.5%)
Madeleine 1997 (USA)	PCR-MY09/11, PCR L1-Consensus primer, PCR-E6, RFLP (HPV 16)	253	71.5	(65.7-76.7)	HPV 16 (61.7%)
Srodon 2006 (USA)	PCR-MY09/11, PCR-SPF10, , Sequencing (HPV 6, 11, 16, 18, 20, 21, 22, 23, 26, 30, 31, 32, 33, 34, 35, 38, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 74, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91)	34	100.0	(89.8-100.0)	HPV 16 (91.2%) HPV 18 (5.9%) HPV 35 (5.9%) HPV 11 (2.9%) HPV 33 (2.9%)
Riethdorf 2004 ^b (World)	PCR L1-Consensus primer, TS (HPV 16)	60	68.3	(55.8-78.7)	HPV 16 (68.3%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; VIN 2/3: Vulvar intraepithelial neoplasia of grade 2/3;

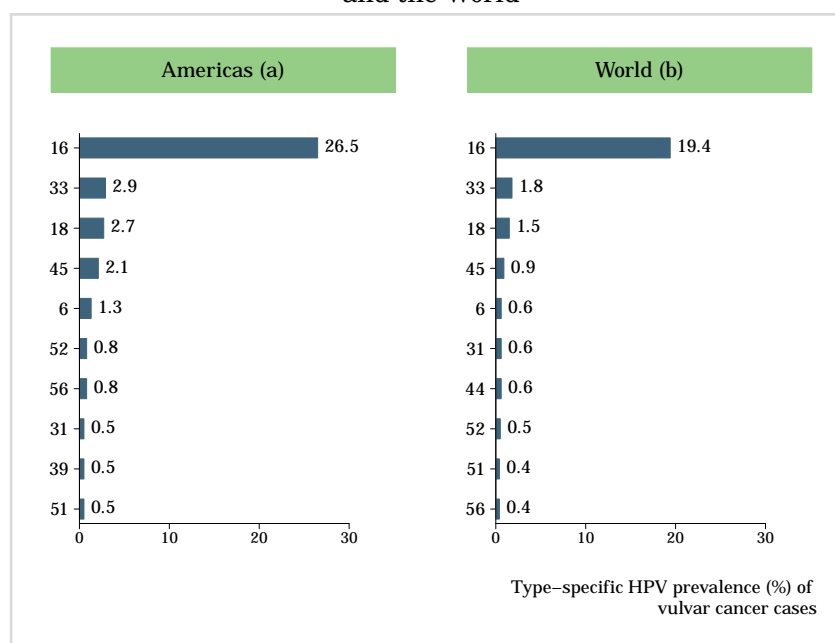
EIA: Enzyme ImmunoAssay; LBA: Line-Blot Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; SPF: Short Primer Fragment; TS: Type Specific;

^aIncludes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, and Venezuela

^bIncludes cases from Germany and United States of America

Data sources: See references in Section 9.

Figure 79: Comparison of the ten most frequent HPV types in cases of vulvar cancer in the Americas and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

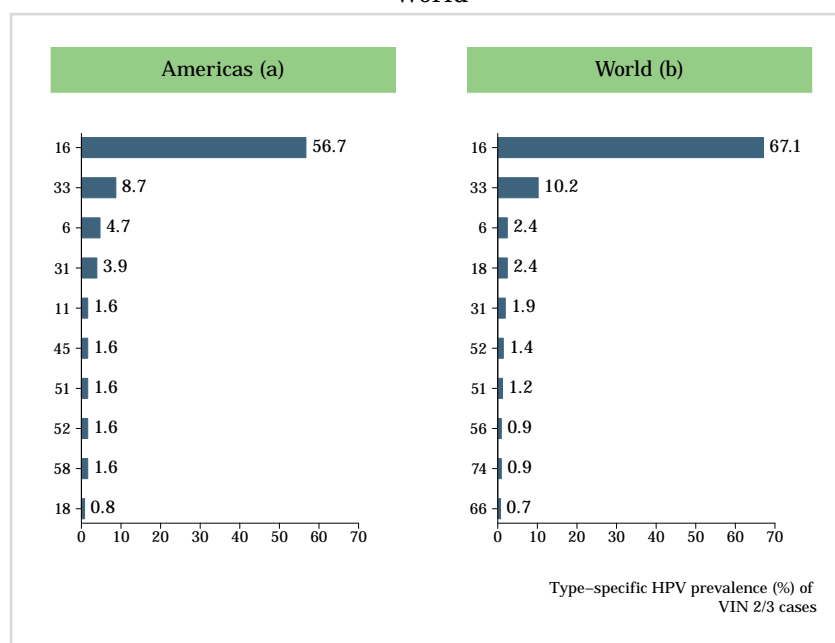
VIN 2/3: Vulvar intraepithelial neoplasia of grade 2/3;

^a Includes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, United States of America and Venezuela

^b Includes cases from America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, United States of America and Venezuela); Africa (Mali, Mozambique, Nigeria, and Senegal); Oceania (Australia and New Zealand); Europe (Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom); and in Asia (Bangladesh, India, Israel, South Korea, Kuwait, Lebanon, Philippines, Taiwan and Turkey)

Data sources: See references in Section 9.

Figure 80: Comparison of the ten most frequent HPV types in VIN 2/3 cases in the Americas and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

VIN 2/3: Vulvar intraepithelial neoplasia of grade 2/3;

^a Includes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay, and Venezuela.

^b Includes cases from America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Uruguay and Venezuela); Oceania (Australia and New Zealand); Europe (Austria, Belarus, Bosnia-Herzegovina, Czech Republic, France, Germany, Greece, Italy, Poland, Portugal, Spain and United Kingdom); and in Asia (Bangladesh, India, Israel, South Korea, Kuwait, Lebanon, Philippines, Taiwan and Turkey)

Data sources: See references in Section 9.

4.2.3 Vaginal cancer and precancerous vaginal lesions

Vaginal and cervical cancers share similar risk factors and it is generally accepted that both carcinomas share the same aetiology of HPV infection although there is limited evidence available. Women with vaginal cancer are more likely to have a history of other anogenital cancers, particularly of the cervix, and these two carcinomas are frequently diagnosed simultaneously. HPV DNA is detected among 70% of invasive vaginal carcinomas and 91% of high-grade vaginal neoplasias (VaIN2/3). HPV16 is the most common type in high-grade vaginal neoplasias and it is detected in at least 70% of HPV-positive carcinomas (*de Martel C et al. Lancet Oncol 2012;13(6):607-15; De Vuyst H et al. Int J Cancer 2009; 124: 1626-36*). In this section, the HPV prevalence among vaginal cancer cases and precancerous vaginal lesions in Americas are presented.

Table 21: American studies on HPV prevalence among vaginal cancer cases

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types (%)
			%	(95% CI)	
Alemaný 2014 (Americas)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 35, 39, 42, 45, 51, 52, 53, 56, 58, 59, 66, 67, 68, 69, 73, 82)	191	78.0	(71.6-83.3)	HPV 16 (42.4%) HPV 31 (5.8%) HPV 18 (4.2%) HPV 33 (4.2%) HPV 52 (3.1%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval;

EIA: Enzyme ImmunoAssay; PCR: Polymerase Chain Reaction; SPF: Short Primer Fragment;

^aIncludes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United States of America and Venezuela

Data sources: See references in Section 9.

Table 22: American studies on HPV prevalence among VaIN 2/3 cases

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types (%)
			%	(95% CI)	
Alemaný 2014 (Americas)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 33, 35, 39, 42, 45, 51, 52, 53, 56, 58, 59, 66, 67, 68, 69, 73, 82, 89)	80	92.5	(84.6-96.5)	HPV 16 (46.3%) HPV 18 (6.3%) HPV 52 (6.3%) HPV 73 (6.3%) HPV 6 (3.8%)
Daling (USA)	PCR-MY09/11, PCR L1-Consensus primer, RFLP, TS (HPV 16, 31, 33, 35, 58, 66, 73)	99	77.8	(68.6-84.8)	HPV 16 (54.5%) HPV 58 (1.0%) HPV 66 (1.0%) HPV 73 (1.0%)
Srodon (USA)	PCR-MY09/11, PCR-SPF10, , Sequencing (HPV 6, 11, 16, 18, 20, 21, 22, 23, 26, 30, 31, 32, 33, 34, 35, 38, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 57, 58, 59, 60, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 74, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91)	16	93.8	(71.7-98.9)	HPV 16 (50.0%) HPV 58 (18.8%) HPV 31 (12.5%) HPV 35 (6.3%) HPV 51 (6.3%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; VaIN 2/3: Vaginal intraepithelial neoplasia of grade 2/3;

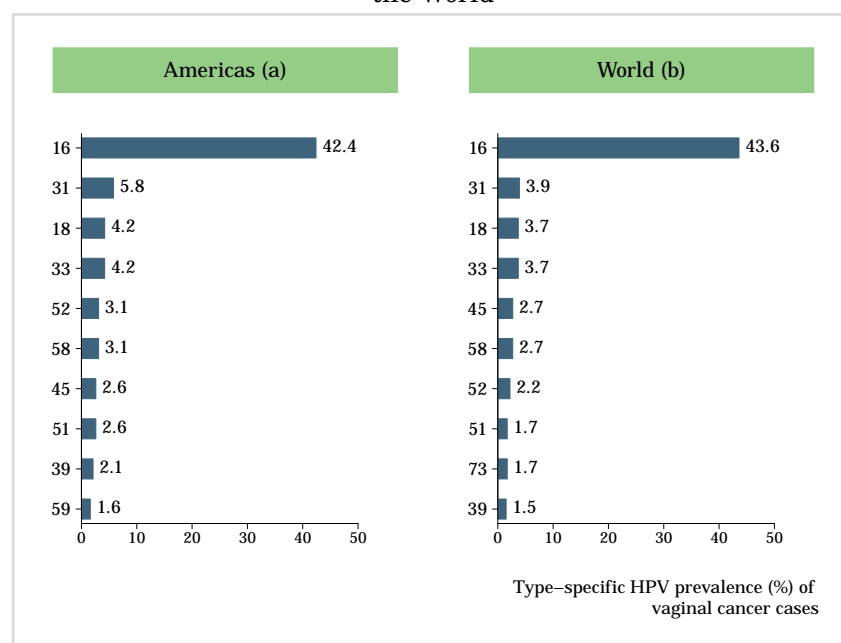
EIA: Enzyme ImmunoAssay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; SPF: Short Primer Fragment; TS: Type Specific;

Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626

Alemaný L, Eur J Cancer 2014; 50: 2846 | Daling JR, Gynecol Oncol 2002; 84: 263 | Srodon M, Am J Surg Pathol 2006; 30: 1513

Data sources: See references in Section 9.

Figure 81: Comparison of the ten most frequent HPV types in vaginal cancer cases in the Americas and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

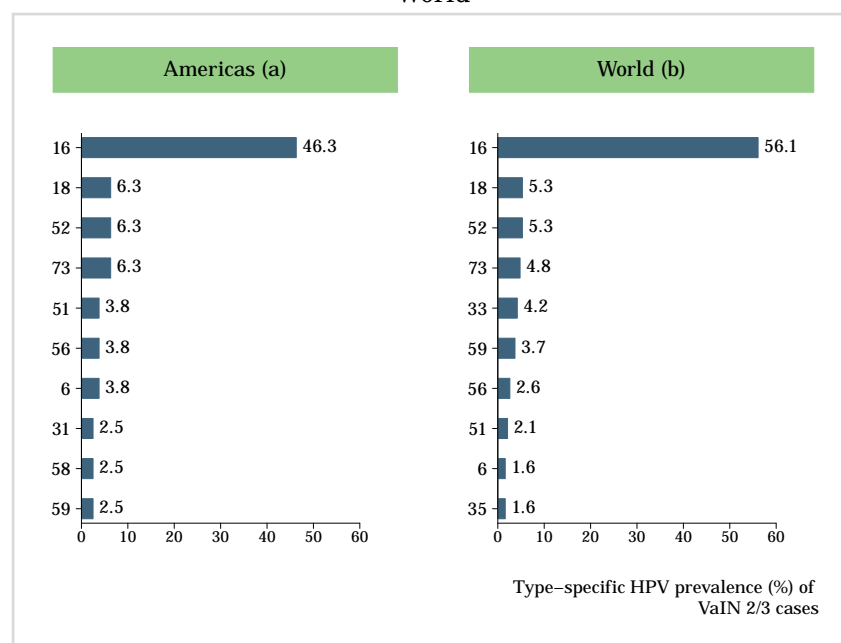
VAIN 2/3: Vaginal intraepithelial neoplasia of grade 2/3;

^a Includes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United States of America and Venezuela.

^b Includes cases from Europe (Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom); America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United states of America and Venezuela); Africa (Mozambique, Nigeria); Asia (Bangladesh, India, Israel, South Korea, Kuwait, Philippines, Taiwan and Turkey); and Oceania (Australia)

Data sources: See references in Section 9.

Figure 82: Comparison of the ten most frequent HPV types in VaIN 2/3 cases in the Americas and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2014).

VAIN 2/3: Vaginal intraepithelial neoplasia of grade 2/3;

^a Includes cases from Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United States of America and Venezuela.

^b Includes cases from Europe (Austria, Belarus, Czech Republic, France, Germany, Greece, Poland, Spain and United Kingdom); America (Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Paraguay, Uruguay, United states of America and Venezuela); Asia (Bangladesh, India, Israel, South Korea, Kuwait, Philippines, Taiwan and Turkey); and Oceania (Australia)

Data sources: See references in Section 9.

4.2.4 Penile cancer and precancerous penile lesions

HPV DNA is detectable in approximately 50% of all penile cancers (de Martel C et al. *Lancet Oncol* 2012;13(6):607-15). Among HPV-related penile tumours, HPV16 is the most common type detected, followed by HPV18 and HPV types 6/11 (Miralles C et al. *J Clin Pathol* 2009;62:870-8). Over 95% of invasive penile cancers are SCC and the most common penile SCC histologic sub-types are keratinising (49%), mixed warty-basaloid (17%), verrucous (8%), warty (6%), and basaloid (4%). HPV is commonly detected in basaloid and warty tumours but is less common in keratinising and verrucous tumours. In this section, the HPV prevalence among penile cancer cases and precancerous penile lesions in Americas are presented.

Table 23: American studies on HPV prevalence among penile cancer cases

Study		HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types HPV type (%)
				%	(95% CI)	
Rubin (Americas)	2001	PCR L1-Consensus primer, PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 35, 45, 52, 53, 68)	142	42.3	(34.4-50.5)	HPV 16 (25.4%) HPV 6 (3.5%) HPV 45 (2.8%) HPV 52 (2.8%) HPV 35 (2.1%)
Picconi (Argentina)	2000	PCR L1-Consensus primer, TS (HPV 6, 16, 18, 31, 33)	38	71.1	(55.2-83.0)	HPV 18 (28.9%) HPV 16 (21.1%) HPV 6 (5.3%)
Afonso (Brazil)	2012	PCR-MY09/11, PCR L1-Consensus primer, PCR-E6, RFLP (HPV 6, 11, 16, 18, 26, 31, 33, 35, 45, 53, 62, 70, 71, 73)	133	56.4	(47.9-64.5)	HPV 16 (17.3%) HPV 45 (12.8%) HPV 6 (6.8%) HPV 18 (3.8%) HPV 31 (3.0%)
Calmon (Brazil)	2013	PCR L1-Consensus primer, qPCR, (HPV 6, 11, 16, 18, 26, 31, 33, 35, 39, 40, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 66, 68, 69, 70, 71, 73, 74, 82)	47	48.9	(35.3-62.8)	HPV 16 (40.4%) HPV 11 (10.6%) HPV 35 (2.1%)
de Sousa (Brazil)	2015	PCR-PGMY09/11, PCR-MULTIPLEX, Sequencing (HPV 11, 16, 18, 45, 69)	76	63.2	(51.9-73.1)	HPV 16 (13.2%) HPV 11 (7.9%) HPV 18 (5.3%) HPV 69 (2.6%) HPV 45 (1.3%)
Fonseca (Brazil)	2013	Sequencing (HPV 6, 11, 16, 18, 33, 45, 51, 52, 53, 58, 68)	82	61.0	(50.2-70.8)	HPV 11 (39.0%) HPV 6 (19.5%) HPV 16 (18.3%) HPV 53 (11.0%) HPV 33 (2.4%)
Scheiner (Brazil)	2008	PCR-MY09/11, RFLP (HPV 6, 16, 18, 31, 33, 45, 71)	80	72.5	(61.9-81.1)	HPV 16 (15.0%) HPV 6 (5.0%) HPV 18 (1.3%) HPV 31 (1.3%) HPV 33 (1.3%)
Maden (Canada)	1993	PCR L1-Consensus primer, PCR-E6, PCR-E7, TS (HPV 16)	67	49.3	(37.7-60.9)	HPV 16 (34.3%)
López-Romero (Mexico)	2013	PCR-E6, , Sequencing (HPV 11, 16, 18, 31, 33, 58, 59)	76	75.0	(64.2-83.4)	HPV 16 (61.8%) HPV 11 (3.9%) HPV 31 (3.9%) HPV 18 (1.3%) HPV 33 (1.3%)

(Continued on next page)

(Table 23 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
Cubilla 2010 (Paraguay)	PCR-SPF10, (HPV 6, 11, 16, 18, 31, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 66, 68, 70, 73, 74)	202	31.7	(25.7-38.4)	HPV 16 (22.8%) HPV 6 (3.0%) HPV 18 (2.0%) HPV 11 (1.5%) HPV 35 (1.5%)
Alemaný 2016 (USA)	PCR-SPF10, EIA, (HPV 6, 11, 16, 18, 26, 30, 31, 32, 33, 34, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 66, 67, 68, 69, 70, 73, 74, 82, 83, 87, 89, 90, 91)	16	18.8	(6.6-43.0)	HPV 16 (18.8%)
Cupp 1995 (USA)	PCR L1-Consensus primer, PCR-E6, TS (HPV 16, 18)	42	54.8	(39.9-68.8)	HPV 16 (40.5%) HPV 18 (4.8%)
Daling 2005 (USA)	PCR-MY09/11, PCR L1-Consensus primer, PCR-E6, RFLP, Sequencing (HPV 6, 16, 18, 31, 33, 45, 53)	94	79.8	(70.6-86.7)	HPV 16 (69.1%) HPV 6 (4.3%) HPV 33 (2.1%) HPV 18 (1.1%) HPV 31 (1.1%)
Hernandez 2014 (USA)	PCR, LBA, (HPV 6, 11, 16, 18, 26, 31, 33, 35, 39, 40, 42, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 81, 82, 83, 84, 89)	79	63.3	(52.3-73.1)	HPV 16 (44.3%) HPV 18 (5.1%) HPV 33 (5.1%) HPV 45 (3.8%) HPV 6 (2.5%)

Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval;

EIA: Enzyme ImmunoAssay; LBA: Line-Blot Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; SPF: Short Primer Fragment; TS: Type Specific;

Data sources: See references in Section 9.

Table 24: American studies on HPV prevalence among PeIN 2/3 cases

Study	HPV detection method and targeted Method	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
López-Romero 2013 (Mexico)	PCR-E6, , Sequencing (HPV 16, 18, 31, 33, 58, 59)	10	100.0	(72.2-100.0)	HPV 16 (100.0%)
Cupp 1995 (USA)	PCR L1-Consensus primer, PCR-E6, TS (HPV 16, 18)	25	92.0	(75.0-97.8)	HPV 16 (80.0%) HPV 18 (8.0%)

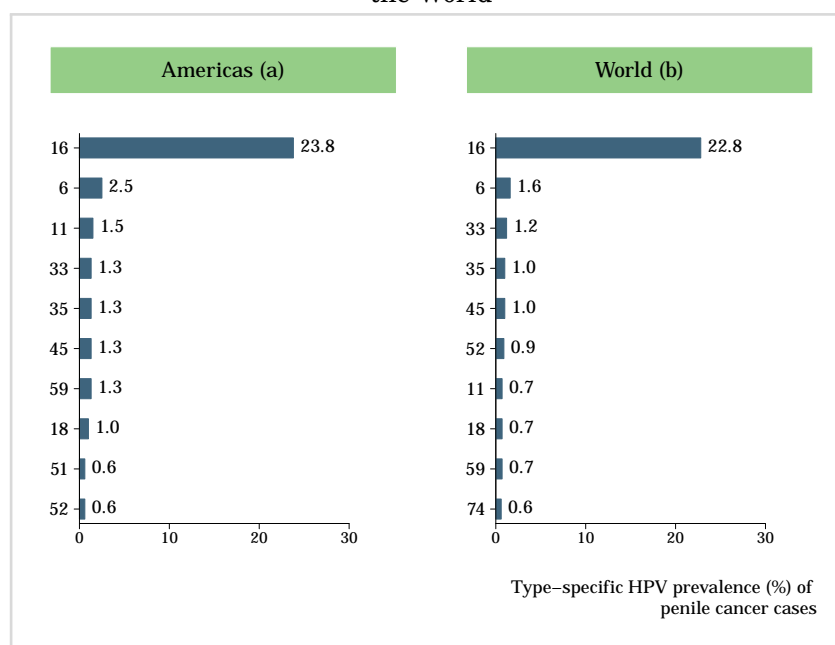
Data updated on 28 Jun 2017 (data as of 30 Jun 2015).

95% CI: 95% Confidence Interval; PeIN 2/3: Penile intraepithelial neoplasia of grade 2/3;

PCR: Polymerase Chain Reaction; TS: Type Specific;

Data sources: See references in Section 9.

Figure 83: Comparison of the ten most frequent HPV types in penile cancer cases in the Americas and the World



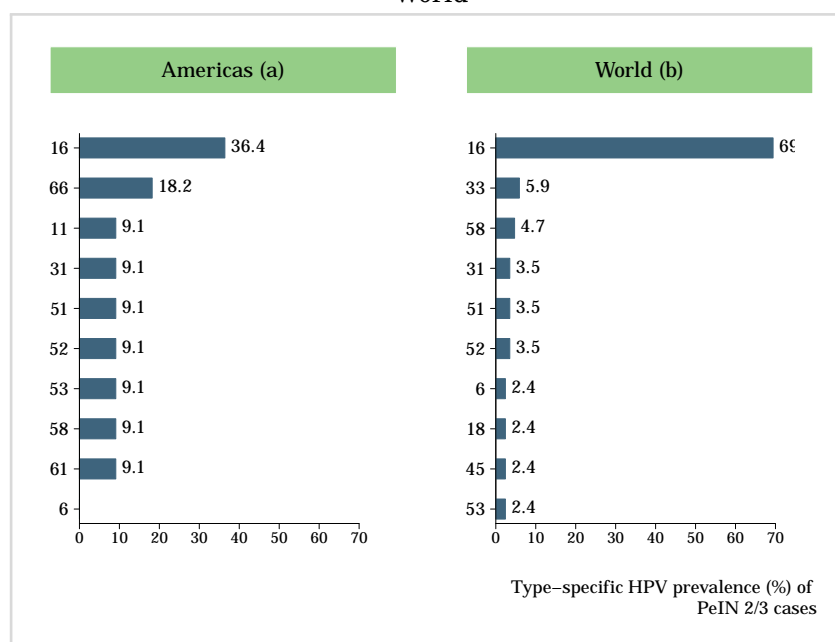
Data updated on 09 Feb 2017 (data as of 30 Jun 2015).

^a Includes cases from Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela and United States

^b Includes cases from Australia, Bangladesh, India, South Korea, Lebanon, Philippines, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela and United States, Mozambique, Nigeria, Senegal, Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom.

Data sources: See references in Section 9.

Figure 84: Comparison of the ten most frequent HPV types in PeIN 2/3 cases in the Americas and the World



Data updated on 09 Feb 2017 (data as of 30 Jun 2015).

^a Includes cases from Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela.

^b Includes cases from Australia, Bangladesh, India, South Korea, Lebanon, Philippines, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Venezuela, Mozambique, Nigeria, Senegal, Czech Republic, France, Greece, Poland, Portugal, Spain and United Kingdom.

Data sources: See references in Section 9.

4.3 HPV burden in men

The information to date regarding anogenital HPV infection is primarily derived from cross-sectional studies of selected populations such as general population, university students, military recruits, and studies that examined husbands of control women, as well as from prospective studies. Special sub-groups include mainly studies that examined STD (sexually transmitted diseases) clinic attendees, MSM (men who have sex with men), HIV positive men, and partners of women with HPV lesions, CIN (cervical intraepithelial neoplasia), cervical cancer or cervical carcinoma in situ. Globally, prevalence of external genital HPV infection in men is higher than cervical HPV infection in women, but persistence is less likely. As with genital HPV prevalence, high numbers of sexual partners increase the acquisition of oncogenic HPV infections (Vaccine 2012, Vol. 30, Suppl 5). In this section, the HPV burden among men in Americas is presented.

Methods

HPV burden in men was based on published systematic reviews and meta-analyses (Dunne EF, J Infect Dis 2006; 194: 1044, Smith JS, J Adolesc Health 2011; 48: 540, Olesen TB, Sex Transm Infect 2014; 90: 455, and Hebnes JB, J Sex Med 2014; 11: 2630) up to October 31, 2015. The search terms for the review were human papillomavirus, men, polymerase chain reaction (PCR), hybrid capture (HC), and viral DNA. References cited in selected articles were also investigated. Inclusion criteria were: HPV DNA detection by means of PCR or HC (ISH if data are not available for the country), and a detailed description of HPV DNA detection and genotyping techniques used. The number of cases tested and HPV positive cases were extracted for each study to estimate the anogenital prevalence of HPV DNA. Binomial 95% confidence intervals were calculated for each anogenital HPV prevalence.

Table 25: American studies on anogenital HPV prevalence among men

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
Brazil	Franceschi 2002	Glans, corona, urethra	PCR-GP5+/6+	Husbands of control women	24-81	56	39.3	(26.5-53.2)
	Giuliano 2008 ^a	Corona sulcus, glans, shaft and scrotum	PCR-PGMY09/11 and GP5/6+	General population	18-70	382	72.3	(67.5-76.7)
	Nyitray 2011	Anal canal	PCR-PGMY09/11	HIV- MSM from general population and population from a STD clinic	18-70	176	47.2	(39.6-54.8)
				HIV- MSW from general population and population from a STD clinic	18-70	1305	12.2	(10.5-14.1)
	Rosenblatt 2004	Shaft, dorsal and prebalanic area, prepuce, urethral meatus	HC2 HR	Partners of women without CIN	-	60	15	(7.1-26.6)
	Vardas 2011 ^b	Penis	RT-PCR-Multiplex or Bplex	Heterosexual men enrolled in a HPV vaccine trial	Median 20 (15-24)	3132	21.2	(19.8-22.7)
Canada	Vardas 2011 ^b	Penis	RT-PCR-Multiplex or Bplex	Heterosexual men enrolled in a HPV vaccine trial	Median 20 (15-24)	3132	21.2	(19.8-22.7)
Chile	Guzmán 2008	Corona and shaft	PCR-GP5+/6+	University students	20-51	61	83.6	(71.9-91.8)
Colombia	Franceschi 2002	Glans, corona, urethra	PCR-GP5+/6+	Husbands of control women	23-82	128	18.8	(12.4-26.6)

(Table 25 – continued from previous page)

(Table 25 – continued from previous page)

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
Mexico	Giuliano 2008 ^a	Corona sulcus, glans, shaft and scrotum	PCR-PGMY09/11 and GP5/6+	General population and organized health care systems	18-70	362	61.9	(56.7-66.9)
	Lajous 2005	Corona, shaft, upper third of the scrotum, urethral meatus, urethra	PCR-BGH 20 and BPCO4	Military conscripts	16-40	1030	44.6	(41.5-47.7)
	Lazcano-Ponce 2001	Corona, urethra	PCR-GP5+/6+	Sexually active college students and industry workers	14-55	96	42.7	(32.7-53.2)
	Nyitray 2011	Anal canal	PCR-PGMY09/11	HIV- MSM from organized health care systems, factories and military	18-70	176	47.2	(39.6-54.8)
				HIV- MSW from organized health care systems, factories and military	18-70	1305	12.2	(10.5-14.1)
	Sánchez-Alemán 2002	Glans and prepuce	HC2 HR	University students	>=18	71	8.5	(3.2-17.5)
	Vaccarella 2006	Scrotum, coronal sulcus, the glans and the opening of the meatus	PCR-PGMY09/11	Men who requested a vasectomy	Mean 34	779	8.7	(6.8-10.9)
	Vardas 2011 ^b	Penis	RT-PCR-Multiplex or Bplex	Heterosexual men enrolled in a HPV vaccine trial	Median 20 (15-24)	3132	21.2	(19.8-22.7)
USA	Giuliano 2008 ^c	Corona sulcus, glans, shaft and scrotum	PCR-PGMY09/11	General population	18-44	290	30	(24.8-35.6)
	Giuliano 2008 ^a	Corona sulcus, glans, shaft and scrotum	PCR-PGMY09/11 and GP5/6+	General population and population from University	18-70	416	61.3	(56.4-66.0)
	Hernandez 2008	Glans, corona sulcus, penile shaft, scrotum	PCR-PGMY09/11	University population	Mean 29	300	35.3	(29.9-41.0)
	Nielson 2007	Glans, corona sulcus, penile shaft and scrotum, perianal area, anus	PCR-PGMY09/11	General population volunteers and STD clinic attendees	18-40	463	65.4	(60.9-69.8)
	Nyitray 2011	Anal canal	PCR-PGMY09/11	HIV- MSM from general population and population from University	18-70	176	47.2	(39.6-54.8)

(Table 25 – continued from previous page)

(Table 25 – continued from previous page)

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
				HIV- MSM from general population and population from University	18-70	1305	12.2	(10.5-14.1)
	Partridge 2007	Glans, urethral meatus, penile shaft and scrotum	PCR-MY09/11 HMB 01	Heterosexual university students	18-20	240	25.8	(20.4-31.9)
	Vardas 2011 ^b	Penis	RT-PCR-Multiplex or Biplex	Heterosexual men enrolled in a HPV vaccine trial	Median 20 (15-24)	3132	21.2	(19.8-22.7)
	Weaver 2004	Glans, prepuce, shaft, scrotum	PCR-MY09/11 HMB 01	University students	18-25	283	35	(29.4-40.9)

Data updated on 28 Jun 2017 (data as of 31 Oct 2015).

95% CI: 95% Confidence Interval;

HC2: Hybrid Capture 2; PCR: Polymerase Chain Reaction; RT-PCR: Real Time Polymerase Chain Reaction; MSM: Men who have sex with men; MSW: Men who have sex with women; STD: sexually transmitted diseases;

^a Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036

^b Includes cases from Australia, Brazil, Canada, Croatia, Germany, Mexico, Spain, and USA.

^c Giuliano AR, J Infect Dis 2008; 198: 827

Data sources: See references in Section 9.

Table 26: American studies on anogenital HPV prevalence among men from special subgroups

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
Argentina	Pando 2012	Anus	GP-PCR Reverse line blot hybridization	HIV- MSM	Mean/Median 31 years	69	79.7	(68.3-88.4)
				HIV+ MSM	Mean/Median 31 years	39	92.3	(79.1-98.4)
Brazil	de Lima Rocha 2012	Coronal sulcus, glans, and prepuce	PCR-GP5+/6+	Sexual partners of women with cervical HPV infection	18-60	43	51.2	(35.5-66.7)
	Franceschi 2002	Glans, corona, urethra	PCR-GP5+/6+	Husbands of women with invasive cervical cancer	27-79	53	35.8	(23.1-50.2)
	Freire 2014	Shaft, glans, balanopreputial sulcus and urethral	PCR-Papillocheck	Men referred to the Urological Division	18-81	355	72.1	(67.1-76.7)
	Goldstone 2011	Anus	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16-27)	602	42.4	(38.4-46.4)
		Penis	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16-27)	602	18.4	(15.4-21.8)
	Guimarães 2011	Anus	PCR-DBH	HIV+	>=18	445	65.6	(61.0-70.0)

(Table 26 – continued from previous page)

(Table 26 – continued from previous page)

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
	Nicolau 2005	Glans, urethra, internal and external prepuce, scrotum, anus	HC2 HR, LR	Partners of women with HPV	19-53	50	70 (55.4-82.1)	
	Nyitray 2011	Anal canal	PCR-PGMY09/11	HIV- MSM from general population and population from a STD clinic	18-70	176	47.2 (39.6-54.8)	
	Rombaldi 2006	Prepuce, preglans, shaft, urethral canal	PCR-L1, MY09/11	Partners of women with CIN	18-56	99	54.5 (44.2-64.6)	
	Rosenblatt 2004	Shaft, dorsal and prebalanic area, prepuce, urethral meatus	HC2 HR	Partners of women with CIN	-	30	76.7 (57.7-90.1)	
Canada	de Poko- mandy 2009	Anal canal	PCR-PGMY09/11	HIV+ MSM	Median 43 (21- 66)	241	97.9 (95.2-99.3)	
	Goldstone 2011	Anus	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16- 27)	602	42.4 (38.4-46.4)	
		Penis	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16- 27)	602	18.4 (15.4-21.8)	
	Ogilvie 2009	Shaft, scrotum	PCR-Roche Amplicor HPV test	Heterosexual men attending provincial STD clinic	16-69	262	69.8 (63.9-75.3)	
	Salit 2009	Anus	PCR-PGMY09/11	HIV+ MSM participants in TRACE study	38-50	224	93.3 (89.2-96.2)	
	Salit 2010	Anal canal	HC2	HIV+ MSM	Median 44.4 (IQR=39.4- 50.6)	400	93 (90.0-95.3)	
Colombia	Franceschi 2002	Glans, corona, urethra	PCR-GP5+/6+	Husbands of women with cervical carcinoma in situ	23-76	63	20.6 (11.5-32.7)	
				Husbands of women with invasive cervical cancer	24-79	50	32 (19.5-46.7)	
Mexico	Goldstone 2011	Anus	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16- 27)	602	42.4 (38.4-46.4)	
		Penis	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16- 27)	602	18.4 (15.4-21.8)	
	Leyva- López 2003	Urethral meatus	PCR-L1	Partners of women with CIN	17-64	187	2.1 (0.6-5.4)	

(Table 26 – continued from previous page)

(Table 26 – continued from previous page)

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
	Mendez-Martinez 2014	Anus	PCR-INNO-LIPA	HIV+ MSM	Median 39 (IQR=33-45)	324	86.1	(81.9-89.7)
	Nyitray 2011	Anal canal	PCR-PGMY09/11	HIV- MSM from organized health care systems, factories and military	18-70	176	47.2	(39.6-54.8)
	Torres-Ibarra 2014	Anus	PCR-PGMY09/11	HIV+ MSM	18-69	446	93	(90.3-95.2)
Peru	Blas 2015	Anal canal	PCR-Linear Array	HIV- MSM	Mean 34 (18-59)	101	76.2	(66.7-84.1)
		Coronal sulcus, glans, penis shaft, and scrotum	PCR-Linear Array	HIV- MSM	Mean 34 (18-59)	101	40.6	(30.9-50.8)
	Quinn 2012	Anus	PCR-Line blot	MSM	Mean 33 (SD=10.1)	105	77.1	(67.9-84.8)
USA	Baken 1995	Penis	PCR-MY09/11	Heterosexual partners of STD clinic attendees	>17	48	62.5	(47.4-76.0)
	Baldwin 2003	Glans, corona, urethra	PCR-PGMY09/11	STD clinic attendees	18-70	393	28.2	(23.8-33.0)
	Berry 2009	Anal canal	PCR-MY09/11	HIV- MSM	26-75	81	56.8	(45.3-67.8)
				HIV+ MSM	26-75	32	90.6	(75.0-98.0)
	Caussy 1990	Anus	PCR-TS 6,11,16,18,31,33,35	HIV± homosexual men	Mean 40.6	105	39	(29.7-49.1)
	Chin-Hong 2004	Anus	PCR-MY09/11	HIV- MSM in EXPLORE cohort	18-89	1218	56.8	(54.0-59.6)
	Chin-Hong 2008	Anus	PCR- generic probe set by DBH	HIV- homosexual or bisexual men	24-73	87	57.5	(46.4-68.0)
				HIV+ homosexual or bisexual men	24-73	38	86.8	(71.9-95.6)
	Colón-López 2014	Anus	PCR-MY09/11	STD clinic attendees (29.8% MSM)	>=18	192	57.8	(50.5-64.9)
	Conley 2010	Anal canal	PCR-Linear Array	HIV + MSM	Median 42 (IQR=36-48)	379	95.8	(93.2-97.6)
				HIV+ MSW	Median 42 (IQR=38-48)	92	58.7	(47.9-68.9)
	Critchlow 1998	Anus	PCR-MY09/11	HIV- homosexual men	Mean 34	284	66.5	(60.7-72.0)
				HIV+ homosexual men	Mean 34	322	91.6	(88.0-94.4)

(Table 26 – continued from previous page)

(Table 26 – continued from previous page)

Country	Study	Anatomic sites samples	HPV detection method	Population	Age (years)	HPV prevalence		
						No	%	(95% CI)
	Fife 2003	Glans, corona, shaft, inguinal skin, scrotum, perineum, perianal, urine	PCR-TS 6,11	STD clinic attendees	18-50	20	10	(1.2-31.7)
	Friedman 1998	Anal canal	PCR-MY09/11, HMB01, and HC	HIV- MSM	<40 years	46	69.6	(54.2-82.3)
				HIV+ MSM	<40 years	135	90.4	(84.1-94.8)
	Gandra 2015	Anus	HC2	HIV+ heterosexual men	Median 55 (IQR=49- 60)	40	27.5	(14.6-43.9)
				HIV+ MSM	Median 49 (IQR=41- 57)	107	54.2	(44.3-63.9)
	Goldstone 2011	Anus	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16- 27)	602	42.4	(38.4-46.4)
		Penis	RT-PCR-Multiplex or Biplex	HIV- MSM	Median 22 (16- 27)	602	18.4	(15.4-21.8)
	Hood 2016	Anus	PCR-MY09/11	HIV+ MSM	Mean 39.5 (SD=7.8)	309	92.6	(89.0-95.2)
	Kiviat 1993	Anal canal	PCR-MY09/11	HIV- MSM/bisexual men	16-50	152	78.3	(70.9-84.6)
				HIV+ MSM/bisexual men	16-50	241	91.7	(87.5-94.9)
	Moscicki 2003	Anus	PCR-MY09/11 and HMB01	High-risk adolescent boys in REACH cohort	13-18	83	44.6	(33.7-55.9)
	Nyitray 2011	Anal canal	PCR-PGMY09/11	HIV- MSM from general population and population from University	18-70	176	47.2	(39.6-54.8)
	Palefsky 1997	Anus	PCR-MY09/11	HIV+ homosexual or bisexual men	24-66	118	93.2	(87.1-97.0)
	Palefsky 1998	Anus	PCR-MY09/11	HIV- homosexual or bisexual men	26-73	200	61	(53.9-67.8)
				HIV+ homosexual or bisexual men	24-64	289	93.1	(89.5-95.7)
				HIV± homosexual or bisexual men	24-73	489	80	(76.1-83.4)
	Palefsky 2005	Anal canal	PCR-L1 consensus primers	HIV+ MSM	-	323	95.4	(92.5-97.4)
	Wiley 2013	Anus	PCR-PGMY09/11	HIV- MSM	Mean 55	683	70.3	(66.7-73.7)
				HIV+ MSM	Mean 55	579	90.7	(88.0-92.9)
	Wilkin 2004	Anal canal	HC2	HIV+ MSM	90% > 30 years	55	78.2	(65.0-88.2)

Data updated on 28 Jun 2017 (data as of 31 Oct 2015).

95% CI: 95% Confidence Interval;

DBH: Dot Blot Hybridization; HC2: Hybrid Capture 2; PCR: Polymerase Chain Reaction; RT-PCR: Real Time Polymerase Chain Reaction; TS: Type Specific; MSM: Men who have sex with

men; MSW: Men who have sex with women; STD: sexually transmitted diseases;

Data sources: See references in Section 9.

4.4 HPV burden in the head and neck

The last evaluation of the International Agency for Research in Cancer (IARC) on the carcinogenicity of HPV in humans concluded that (a) there is enough evidence for the carcinogenicity of HPV type 16 in the oral cavity, oropharynx (including tonsil cancer, base of tongue cancer and other oropharyngeal cancer sites), and (b) limited evidence for laryngeal cancer (*IARC Monograph Vol 100B*). There is increasing evidence that HPV-related oropharyngeal cancers constitute an epidemiological, molecular and clinical distinct form as compared to non HPV-related ones. Some studies indicate that the most likely explanation for the origin of this distinct form of head and neck cancers associated with HPV is a sexually acquired oral HPV infection that is not cleared, persists and evolves into a neoplastic lesion. The most recent figures estimate that 25.6% of all oropharyngeal cancers are attributable to HPV infection with HPV16 being the most frequent type (*de Martel C. Lancet Oncol. 2012;13(6):607*). In this section, the HPV burden in the head and neck in Americas is presented.

4.4.1 Burden of oral HPV infection in healthy population

Table 27: American studies on oral HPV prevalence among healthy population

Study	Method specimen collection and anatomic site	HPV detection method and targeted HPV types	Population	Age (years)	No. Tested	HPV prevalence % (95% CI)	Prev. of 5 most frequent HPV types (%)
MEN							
No Data Available	-	-	-	-	-	--	-
WOMEN							
No Data Available	-	-	-	-	-	--	-
BOTH OR UNSPECIFIED							
No Data Available	-	-	-	-	-	--	-

Data updated on 15 Dec 2014 (data as of 29 Feb 2012). Only for European countries.

95% CI: 95% Confidence Interval;

Data sources: See references in Section 9.

4.4.2 HPV burden in head and neck cancers

Table 28: American studies on HPV prevalence among cases of oral cavity cancer

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence % (95% CI)	Prevalence of 5 most frequent HPV types (%)
MEN				
Oliveira (Brazil) 2009	GP5+/GP6+ (L1) DBH (6. 11. 16. 18. 31. 33. 34. 35. 39. 40. 42. 43. 44. 45. 51. 52. 54. 56. 58)	57	31.6 (21.0-44.5)	-
Herrero (Canada) 2003	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	17	11.8 (3.3-34.3)	HPV 16 (11.8%)
Noble-Topham 1993 (Canada)	TS-PCR E6/E7 for 6b/11/16/18 Amplification with TS primers (6b/11. 16. 18)	7	57.1 (25.0-84.2)	HPV 18 (57.1%) HPV 16 (14.3%)
Herrero (Cuba) 2003	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	53	0.0 -	-

(Continued on next page)

(Table 28 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types (%)
			%	(95% CI)	
Ibieta 2005 (Mexico)	MY09/MY11 (L1) and GP5/GP6 (L1) Amplification with TS primers (16. 18)	36	41.7	(27.1-57.8)	-
Lohavanichbutr 2009 (USA)	MY09/MY11 (L1) and GP5+/GP6+ (L1) Hybridization with Roche LBA (6. 11. 16. 18. 26. 31. 33. 35. 39. 40. 42. 45. 51. 52. 53. 54. 55. 56. 58. 59. 61. 62. 64. 66. 67. 68. 69. 70. 71. 72. 73. 81. 82. 83. 84. 89)	56	19.6	(11.3-31.8)	-
Miller 1994 (Venezuela)	TS-PCR E6 for 16/18 Hybridization with TS probes (16. 18)	14	78.6	(52.4-92.4)	HPV 16 (71.4%) HPV 18 (42.9%)
Premoli-De-Percoco 2001 (Venezuela)	TS-PCR for 6/11/16/18 Hybridization with TS probes (6. 11. 16. 18)	0	-	-	-
WOMEN					
Oliveira 2009 (Brazil)	GP5+/GP6+ (L1) DBH (6. 11. 16. 18. 31. 33. 34. 35. 39. 40. 42. 43. 44. 45. 51. 52. 54. 56. 58)	31	25.8	(13.7-43.2)	-
Herrero 2003 (Canada)	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	11	9.1	(1.6-37.7)	HPV 16 (9.1%)
Noble-Topham 1993 (Canada)	TS-PCR E6/E7 for 6b/11/16/18 Amplification with TS primers (6b/11. 16. 18)	13	46.2	(23.2-70.9)	HPV 18 (30.8%) HPV 16 (7.7%)
Herrero 2003 (Cuba)	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	25	4.0	(0.7-19.5)	HPV 16 (4.0%)
Ibieta 2005 (Mexico)	MY09/MY11 (L1) and GP5/GP6 (L1) Amplification with TS primers (16. 18)	14	42.9	(21.4-67.4)	-
Lohavanichbutr 2009 (USA)	MY09/MY11 (L1) and GP5+/GP6+ (L1) Hybridization with Roche LBA (6. 11. 16. 18. 26. 31. 33. 35. 39. 40. 42. 45. 51. 52. 53. 54. 55. 56. 58. 59. 61. 62. 64. 66. 67. 68. 69. 70. 71. 72. 73. 81. 82. 83. 84. 89)	32	21.9	(11.0-38.8)	-
Miller 1994 (Venezuela)	TS-PCR E6 for 16/18 Hybridization with TS probes (16. 18)	13	53.8	(29.1-76.8)	HPV 16 (46.2%) HPV 18 (7.7%)
Premoli-De-Percoco 2001 (Venezuela)	TS-PCR for 6/11/16/18 Hybridization with TS probes (6. 11. 16. 18)	50	60.0	(46.2-72.4)	HPV 16 (50.0%) HPV 18 (16.0%)
BOTH OR UNSPECIFIED					
González 2007 (Argentina)	MY09/MY11 (L1) and GP5+/GP6+ (L1) RFLP and DBH	25	60.0	(40.7-76.6)	HPV 16 (48.0%) HPV 11 (28.0%) HPV 6 (8.0%) HPV 18 (4.0%)
Oliveira 2009 (Brazil)	GP5+/GP6+ (L1) DBH (6. 11. 16. 18. 31. 33. 34. 35. 39. 40. 42. 43. 44. 45. 51. 52. 54. 56. 58)	88	29.5	(21.0-39.8)	HPV 18 (28.4%) HPV 16 (5.7%)

(Continued on next page)

(Table 28 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
Rivero 2006 (Brazil)	GP5+/GP6+ (L1) CSA-ISH (DAKO) (6. 11. 16. 18)	40	0.0	-	-
Herrero 2003 (Canada)	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	28	10.7	(3.7-27.2)	HPV 16 (10.7%)
Noble-Topham 1993 (Canada)	TS-PCR E6/E7 for 6b/11/16/18 Amplification with TS primers (6b/11. 16. 18)	23	43.5	(25.6-63.2)	HPV 18 (34.8%) HPV 16 (8.7%)
Herrero 2003 (Cuba)	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	78	1.3	(0.2-6.9)	HPV 16 (1.3%) HPV 18 (1.3%)
Anaya-Saavedra 2008 (Mexico)	MY09/MY11 (L1) and GP5+GP6+ (L1) Sequencing	62	43.5	(31.9-55.9)	HPV 16 (24.2%) HPV 18 (8.1%) HPV 33 (3.2%) HPV 2 (1.6%) HPV 11 (1.6%)
Ibieta 2005 (Mexico)	MY09/MY11 (L1) and GP5/GP6 (L1) Amplification with TS primers (16. 18)	50	42.0	(29.4-55.8)	HPV 16 (28.0%)
Chuang 2008 (USA)	RT-PCR E6/E7 for 16 Hybridization with TS probes (16)	21	0.0	-	-
Furniss 2007 (USA)	TS-PCR L1 for 16 Amplification with TS primers (16)	150	25.3	(19.0-32.8)	HPV 16 (25.3%)
Ha 2002 (USA)	RT-PCR E6/E7 for 16 Amplification with TS primers (16)	34	2.9	(0.5-14.9)	HPV 16 (2.9%)
Harris 2011 (USA)	MY09/MY11 (L1) and GP5+GP6+ (L1) Sequencing	25	8.0	(2.2-25.0)	HPV 16 (8.0%)
Holladay 1993 (USA)	L1 consensus primers Hybridization with TS probes (6. 11. 16. 18. 33)	39	17.9	(9.0-32.7)	HPV 16 (17.9%) HPV 18 (2.6%)
Liang 2008 (USA)	GP5+/GP6+ (L1) Amplification with TS primers (16)	51	2.0	(0.3-10.3)	HPV 16 (2.0%)
Lohavanichbutr 2009 (USA)	MY09/MY11 (L1) and GP5+/GP6+ (L1) Hybridization with Roche LBA (6. 11. 16. 18. 26. 31. 33. 35. 39. 40. 42. 45. 51. 52. 53. 54. 55. 56. 58. 59. 61. 62. 64. 66. 67. 68. 69. 70. 71. 72. 73. 81. 82. 83. 84. 89)	88	20.5	(13.3-30.0)	HPV 16 (18.2%) HPV 32 (1.1%) HPV 53 (1.1%)
Paz 1997 (USA)	MY09/MY11 (L1) and IU/IWDO (E1) Amplification with TS primers (6. 16. 18)	53	13.2	(6.5-24.8)	HPV 16 (9.4%) HPV 6 (1.9%) HPV 8 (1.9%)
Schlecht 2011 (USA)	MY09/MY11 (L1) and HMB01 (L1) DBH (40 HPV types including 16. 18. 31. 33. 35. 39. 45. 51. 52. 56. 58. 66)	36	13.9	(6.1-28.7)	HPV 16 (11.1%)
Schwartz 1998 (USA)	MY09/MY11 (L1) and TS-PCR E6 for 6/11/16/18 Hybridization with TS probes (6. 11. 16. 18. 31/33/35)	193	21.2	(16.1-27.5)	HPV 16 (11.4%) HPV 6 (6.2%) HPV 11 (3.6%) HPV 18 (1.0%)

(Continued on next page)

(Table 28 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types (%)
			%	(95% CI)	
Smith 2004 (USA)	MY09/MY11 (L1) and HMB01 (L1) Sequencing	123	10.6	(6.3-17.2)	HPV 16 (8.1%) HPV 33 (2.4%)
Zhao 2005 (USA)	RT-PCR E6/E7 for 16 Hybridization with TS probes (16)	38	15.8	(7.4-30.4)	HPV 16 (15.8%)
Miller 1994 (Venezuela)	TS-PCR E6 for 16/18 Hybridization with TS probes (16, 18)	27	66.7	(47.8-81.4)	HPV 16 (59.3%) HPV 18 (25.9%)
Premoli-De-Percoco 2001 (Venezuela)	TS-PCR for 6/11/16/18 Hybridization with TS probes (6, 11, 16, 18)	50	60.0	(46.2-72.4)	HPV 16 (50.0%) HPV 18 (16.0%)
Ribeiro 2011 ^a (World)	PGMY09/11 (L1) Amplification with TS primers (16)	132	0.0	-	-

Data updated on 28 Jun 2017 (data as of 31 Dec 2015).

95% CI: 95% Confidence Interval;

DBH: Dot Blot Hybridization; EIA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; ISH: In Situ Hybridization; LBA: Line-Blot Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RT-PCR: Real Time Polymerase Chain Reaction; TS: Type Specific;

^a Includes cases from Argentina, Brazil, Cuba, Russia, Slovakia, Czech Republic, Romania and Poland

Data sources: See references in Section 9.

Table 29: American studies on HPV prevalence in cases of oropharyngeal cancer

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types HPV type (%)	
			%	(95% CI)		
MEN						
Herrero (Cuba)	2003	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	21	19.0	(7.7-40.0)	HPV 16 (19.0%)
Chaturvedi (USA)	2011	SPF10 (L1) Inno-LiPA (6. 11. 16. 18. 26. 31. 33. 35. 40. 43. 44. 45. 51. 52. 53. 54. 56. 58. 59. 66. 68. 69-71. 70. 73. 74. 82)	210	47.6	(41.0-54.4)	-
Cohen	2008 (USA)	GP5+/GP6+ (L1) and TS-PCR E7 for 16 Hybridization with TS probes (16)	27	70.4	(51.5-84.1)	HPV 16 (70.4%)
Ernster (USA)	2007	TS-PCR for 16/18 Amplification with TS primers (16. 18)	51	72.5	(59.1-82.9)	HPV 16 (72.5%)
Lohavanichbutr	2009 (USA)	MY09/MY11 (L1) and GP5+/GP6+ (L1) Hybridization with Roche LBA (6. 11. 16. 18. 26. 31. 33. 35. 39. 40. 42. 45. 51. 52. 53. 54. 55. 56. 58. 59. 61. 62. 64. 66. 67. 68. 69. 70. 71. 72. 73. 81. 82. 83. 84. 89)	28	82.1	(64.4-92.1)	-
Posner (USA)	2011	TS-PCR E6/E7 for 16 Amplification with TS primers (16)	89	50.6	(40.4-60.7)	HPV 16 (50.6%)
Tezal	2009 (USA)	TS-PCR E6 for 16/18 Amplification with TS primers (16. 18)	26	76.9	(57.9-89.0)	HPV 16 (76.9%)
WOMEN						

(Continued on next page)

(Table 29 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
Herrero 2003 (Cuba)	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	5	0.0	-	-
Chaturvedi 2011 (USA)	SPF10 (L1) Inno-LiPA (6. 11. 16. 18. 26. 31. 33. 35. 40. 43. 44. 45. 51. 52. 53. 54. 56. 58. 59. 66. 68. 69-71. 70. 73. 74. 82)	53	30.2	(19.5-43.5)	-
Cohen 2008 (USA)	GP5+/GP6+ (L1) and TS-PCR E7 for 16 Hybridization with TS probes (16)	8	62.5	(30.6-86.3)	HPV 16 (62.5%)
Ernster 2007 (USA)	TS-PCR for 16/18 Amplification with TS primers (16. 18)	21	61.9	(40.9-79.2)	HPV 16 (61.9%)
Lohavanichbutr 2009 (USA)	MY09/MY11 (L1) and GP5+/GP6+ (L1) Hybridization with Roche LBA (6. 11. 16. 18. 26. 31. 33. 35. 39. 40. 42. 45. 51. 52. 53. 54. 55. 56. 58. 59. 61. 62. 64. 66. 67. 68. 69. 70. 71. 72. 73. 81. 82. 83. 84. 89)	3	0.0	-	-
Posner 2011 (USA)	TS-PCR E6/E7 for 16 Amplification with TS primers (16)	22	50.0	(30.7-69.3)	HPV 16 (50.0%)
Tezal 2009 (USA)	TS-PCR E6 for 16/18 Amplification with TS primers (16. 18)	4	25.0	(4.6-69.9)	HPV 16 (25.0%)
BOTH OR UNSPECIFIED					
Cortezzi 2004 (Brazil)	GP5+/GP6+ (L1) DBH (6. 11. 16. 18. 31. 33. 34. 39. 42. 45. 51. 52. 54. 56)	21	14.3	(5.0-34.6)	HPV 16 (14.3%)
Nichols 2013 (Canada)	PCR-E6, PCR-E7, PCR-MULTIPLEX (HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 67, 68)	95	52.6	(42.7-62.4)	HPV 16 (47.4%) HPV 18 (2.1%) HPV 67 (2.1%) HPV 33 (1.1%)
Herrero 2003 (Cuba)	GP5+/GP6+ (L1) Hybridization with EIA oligonucleotide probes (2. 6. 11. 16. 18. 31. 33. 35. 39. 40. 42. 43. 44. 45. 51. 52. 56. 58. 59. 66. 68)	26	15.4	(6.2-33.5)	HPV 16 (15.4%)
Agoston 2010 (USA)	Generic L1 primers from Access Genetics and TS-PCR E7 for 16 RFLP	102	90.2	(82.9-94.6)	HPV 16 (73.5%) HPV 58 (1.0%)
Chaturvedi 2011 (USA)	SPF10 (L1) Inno-LiPA (6. 11. 16. 18. 26. 31. 33. 35. 40. 43. 44. 45. 51. 52. 53. 54. 56. 58. 59. 66. 68. 69-71. 70. 73. 74. 82)	263	44.1	(38.2-50.1)	HPV 16 (38.8%) HPV 35 (1.5%) HPV 33 (1.1%) HPV 58 (1.1%) HPV 18 (0.8%)
Cohen 2008 (USA)	GP5+/GP6+ (L1) and TS-PCR E7 for 16 Hybridization with TS probes (16)	35	68.6	(52.0-81.4)	HPV 16 (68.6%)
D'Souza 2007 (USA)	MY09/MY11 (L1) Hybridization with Roche LBA (6. 11. 16. 18. 26. 31. 33. 35. 39. 40. 42. 45. 51. 52. 53. 54. 55. 56. 58. 59. 61. 62. 64. 66. 67. 68. 69. 70. 71. 72. 73. 81. 82. 83. 84. 89)	60	63.3	(50.7-74.4)	HPV 16 (58.3%) HPV 33 (6.7%) HPV 35 (1.7%)

(Continued on next page)

(Table 29 – continued from previous page)

Study		HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPV types HPV type (%)
				%	(95% CI)	
D'Souza (USA)	2014	PCR-PGMY09/11, LiPA (HPV 6, 11, 16, 18, 26, 31, 33, 34, 35, 39, 40, 42, 44, 45, 51, 52, 53, 54, 56, 58, 59, 61, 62, 66, 67, 68, 69, 70, 71, 72, 73, 81, 82, 83, 84)	164	64.6	(57.1-71.5)	HPV 16 (53.7%) HPV 52 (8.5%) HPV 33 (2.4%) HPV 73 (1.8%) HPV 51 (1.2%)
Ernster (USA)	2007	TS-PCR for 16/18 Amplification with TS primers (16, 18)	72	69.4	(58.0-78.9)	HPV 16 (69.4%)
Furniss (USA)	2007	TS-PCR L1 for 16 Amplification with TS primers (16)	43	34.9	(22.4-49.8)	HPV 16 (34.9%)
Hooper (USA)	2015	HC2, PCR-E6, PCR-E7, PCR-MULTIPLEX (HPV 6, 11, 16, 18, 26, 31, 33, 35, 39, 42, 44, 45, 51, 52, 53, 56, 58, 59, 66, 67, 68, 69, 70, 73, 82)	44	75.0	(60.6-85.4)	HPV 16 (70.5%) HPV 18 (2.3%) HPV 33 (2.3%) HPV 35 (2.3%)
Isayeva (USA)	2014	PCR-E6, PCR-E7, TS (HPV 16, 18)	102	62.7	(53.1-71.5)	HPV 16 (65.7%) HPV 18 (14.7%)
Jordan (USA)	2012	PCR L1-Consensus primer, PCR-SPF10, LiPA (HPV 6, 11, 16, 18, 26, 31, 33, 35, 39, 40, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 66, 68, 69, 70, 71, 72, 73, 82)	233	79.0	(73.3-83.7)	HPV 16 (73.0%) HPV 18 (2.6%) HPV 33 (1.7%) HPV 6 (1.3%) HPV 11 (1.3%)
Kerr 2015 (USA)		PCR, RFLP, TS (HPV 16, 33, 35, 58)	28	89.3	(72.8-96.3)	HPV 16 (71.4%) HPV 33 (3.6%) HPV 35 (3.6%) HPV 58 (3.6%)
Kingma (USA)	2010	PGMY09/11 (L1) Inno-LiPA (6, 11, 16, 18, 26, 31, 33, 35, 40, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 66, 68, 69-71, 70, 73, 74, 82)	61	86.9	(76.2-93.2)	HPV 16 (67.2%) HPV 18 (14.8%) HPV 33 (4.9%) HPV 45 (1.6%) HPV 82 (1.6%)
Kong 2009 (USA)		GP5+/GP6+ (L1) and TS-PCR Sequencing	49	67.3	(53.4-78.8)	HPV 16 (65.3%) HPV 18 (2.0%) HPV 33 (2.0%)
Lohavanichbutr 2009 (USA)		MY09/MY11 (L1) and GP5+/GP6+ (L1) Hybridization with Roche LBA (6, 11, 16, 18, 26, 31, 33, 35, 39, 40, 42, 45, 51, 52, 53, 54, 55, 56, 58, 59, 61, 62, 64, 66, 67, 68, 69, 70, 71, 72, 73, 81, 82, 83, 84, 89)	31	74.2	(56.8-86.3)	HPV 16 (67.7%) HPV 35 (3.2%) HPV 45 (3.2%)
Posner (USA)	2011	TS-PCR E6/E7 for 16 Amplification with TS primers (16)	111	50.5	(41.3-59.6)	HPV 16 (50.5%)
Schlecht (USA)	2011	MY09/MY11 (L1) and HMB01 (L1) DBH (40 HPV types including 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 66)	30	50.0	(33.2-66.8)	HPV 16 (43.3%) HPV 35 (3.3%)
Schwartz (USA)	1998	MY09/MY11 (L1) and TS-PCR E6 for 6/11/16/18 Hybridization with TS probes (6, 11, 16, 18, 31/33/35)	55	41.8	(29.7-55.0)	HPV 16 (34.5%) HPV 6 (12.7%) HPV 11 (3.6%)
Sethi 2012 (USA)		PCR-SPF10, EIA, LiPA (HPV 6, 11, 16, 18, 31, 33, 35, 39, 40, 42, 43, 44, 45, 51, 52, 53, 54, 56, 58, 59, 66, 68, 70, 73, 74)	81	50.6	(40.0-61.2)	HPV 16 (45.7%) HPV 33 (2.5%) HPV 35 (1.2%) HPV 56 (1.2%)

(Continued on next page)

(Table 29 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
Smith 2004 (USA)	MY09/MY11 (L1) and HMB01 (L1) Sequencing	62	40.3	(29.0-52.7)	HPV 16 (37.1%) HPV 18 (1.6%) HPV 33 (1.6%)
Steinau 2014 (USA)	PCR, LBA, LiPA (HPV 16, 18, 31, 33, 35, 39, 45, 52)	557	72.4	(68.5-75.9)	HPV 16 (60.5%) HPV 33 (5.6%) HPV 18 (2.5%) HPV 35 (2.0%) HPV 39 (0.9%)
Strome 2002 (USA)	MY09/MY11 (L1) and TS-PCR E6 for 6/11/16/18 Sequencing	52	46.2	(33.3-59.5)	HPV 16 (40.4%) HPV 12 (3.8%) HPV 59 (1.9%)
Tezal 2009 (USA)	TS-PCR E6 for 16/18 Amplification with TS primers (16, 18)	30	70.0	(52.1-83.3)	HPV 16 (70.0%)
Walline 2013 (USA)	PCR-PGMY09/11, PCR L1-Consensus primer, PCR-E6, PCR- MULTIPLEX (HPV 16, 18, 33, 35, 39, 66)	208	88.0	(82.9-91.7)	HPV 16 (78.8%) HPV 33 (1.9%) HPV 35 (1.9%) HPV 18 (1.0%) HPV 39 (0.5%)
Zhao 2005 (USA)	RT-PCR E6/E7 for 16 Hybridization with TS probes (16)	26	57.7	(38.9-74.5)	HPV 16 (57.7%)
Ribeiro 2011 ^a (World)	PGMY09/11 (L1) Amplification with TS primers (16)	136	0.7	(0.1-4.0)	HPV 16 (0.7%)

Data updated on 29 Jun 2017 (data as of 31 Dec 2015 / 31 Dec 2015).

95% CI: 95% Confidence Interval;

DBH: Dot Blot Hybridization; ELA: Enzyme ImmunoAssay; HC2: Hybrid Capture 2; LBA: Line-Blot Assay; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RT-PCR: Real Time Polymerase Chain Reaction; SPF: Short Primer Fragment; TS: Type Specific;

^a Includes cases from Argentina, Brazil, Cuba, Russia, Slovakia, Czech Republic, Romania and Poland

Data sources: See references in Section 9.

Table 30: American studies on HPV prevalence in cases of hypopharyngeal or laryngeal cancer

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)	
			%	(95% CI)		
MEN						
Fliss (Canada)	1994	TS-PCR E6/E7 for 6b/11/16/18 Amplification with TS primers (6b/11. 16. 18)	28	46.4	(29.5-64.2)	HPV 16 (32.1%) HPV 18 (32.1%)
Torrente (Chile)	2005	MY09/MY11 (L1) RFLP	25	36.0	(20.2-55.5)	-
WOMEN						
Fliss (Canada)	1994	TS-PCR E6/E7 for 6b/11/16/18 Amplification with TS primers (6b/11. 16. 18)	1	0.0	-	-
Torrente (Chile)	2005	MY09/MY11 (L1) RFLP	6	16.7	(3.0-56.4)	-
BOTH OR UNSPECIFIED						
Miranda (Brazil)	2009	GP5+/GP6+ (L1) Amplification with TS primers (16. 18. 33) and sequencing	27	7.4	(2.1-23.4)	HPV 16 (7.4%) HPV 6 (3.7%)
Fliss (Canada)	1994	TS-PCR E6/E7 for 6b/11/16/18 Amplification with TS primers (6b/11. 16. 18)	29	44.8	(28.4-62.5)	HPV 16 (31.0%) HPV 18 (31.0%)

(Continued on next page)

(Table 30 – continued from previous page)

Study	HPV detection method and targeted HPV types	No. Tested	HPV prevalence		Prevalence of 5 most frequent HPVs HPV type (%)
			%	(95% CI)	
Gheit 2014 (Chile)	PCR-E7, PCR- MULTIPLEX (HPV 6, 11, 16, 18, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 70, 73, 82)	32	12.5	(5.0-28.1)	HPV 31 (6.3%) HPV 11 (3.1%) HPV 59 (3.1%)
Torrente 2005 (Chile)	MY09/MY11 (L1) RFLP	31	32.3	(18.6-49.9)	HPV 16 (9.7%) HPV 58 (6.5%) HPV 38 (3.2%) HPV 39 (3.2%) HPV 45 (3.2%)
García-Milián 1998 (Cuba)	MY09/MY11 (L1) and TS-PCR E6 for 6/11/16/18 SBH (6. 11. 16. 18)	33	48.5	(32.5-64.8)	HPV 16 (45.5%) HPV 6 (3.0%) HPV 18 (3.0%)
Brandwein 1993 (USA)	Perkin Censu L1 consensus primers Hybridization with TS probes (6. 11. 16. 18. 31. 35. 51)	40	7.5	(2.6-19.9)	HPV 16 (2.5%)
Chernock 2013 (USA)	PCR L1-Consensus primer, PCR-SPF10, LiPA (HPV 16, 18, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68)	76	17.1	(10.3-27.1)	HPV 16 (13.2%) HPV 31 (10.5%) HPV 53 (9.2%)
Furniss 2007 (USA)	TS-PCR L1 for 16 Amplification with TS primers (16)	63	31.7	(21.6-44.0)	HPV 16 (31.7%)
Paz 1997 (USA)	MY09/MY11 (L1) and IU/IWDO (E1) Amplification with TS primers (6. 16. 18)	43	4.7	(1.3-15.5)	HPV 16 (2.3%)
Schlecht 2011 (USA)	MY09/MY11 (L1) and HMB01 (L1) DBH (40 HPV types including 16. 18. 31. 33. 35. 39. 45. 51. 52. 56. 58. 66)	40	27.5	(16.1-42.8)	HPV 16 (27.5%)
Shen 1996 (USA)	MY09/MY11 (L1) and TS-PCR E7 for 16/18 RFLP*	32	9.4	(3.2-24.2)	HPV 6 (3.1%) HPV 11 (3.1%) HPV 18 (3.1%)
Zhao 2005 (USA)	RT-PCR E6/E7 for 16 Hybridization with TS probes (16)	22	18.2	(7.3-38.5)	HPV 16 (18.2%)
Ribeiro 2011 ^a (World)	PGMY09/11 (L1) Amplification with TS primers (16)	239	0.8	(0.2-3.0)	HPV 16 (0.8%)

Data updated on 28 Jun 2017 (data as of 31 Dec 2015).

95% CI: 95% Confidence Interval;

DBH: Dot Blot Hybridization; LiPA: Line Probe Assay; PCR: Polymerase Chain Reaction; RFLP: Restriction Fragment Length Polymorphism; RT-PCR: Real Time Polymerase Chain Reaction; SBH: Southern Blot Hybridization; SPF: Short Primer Fragment; TS: Type Specific;

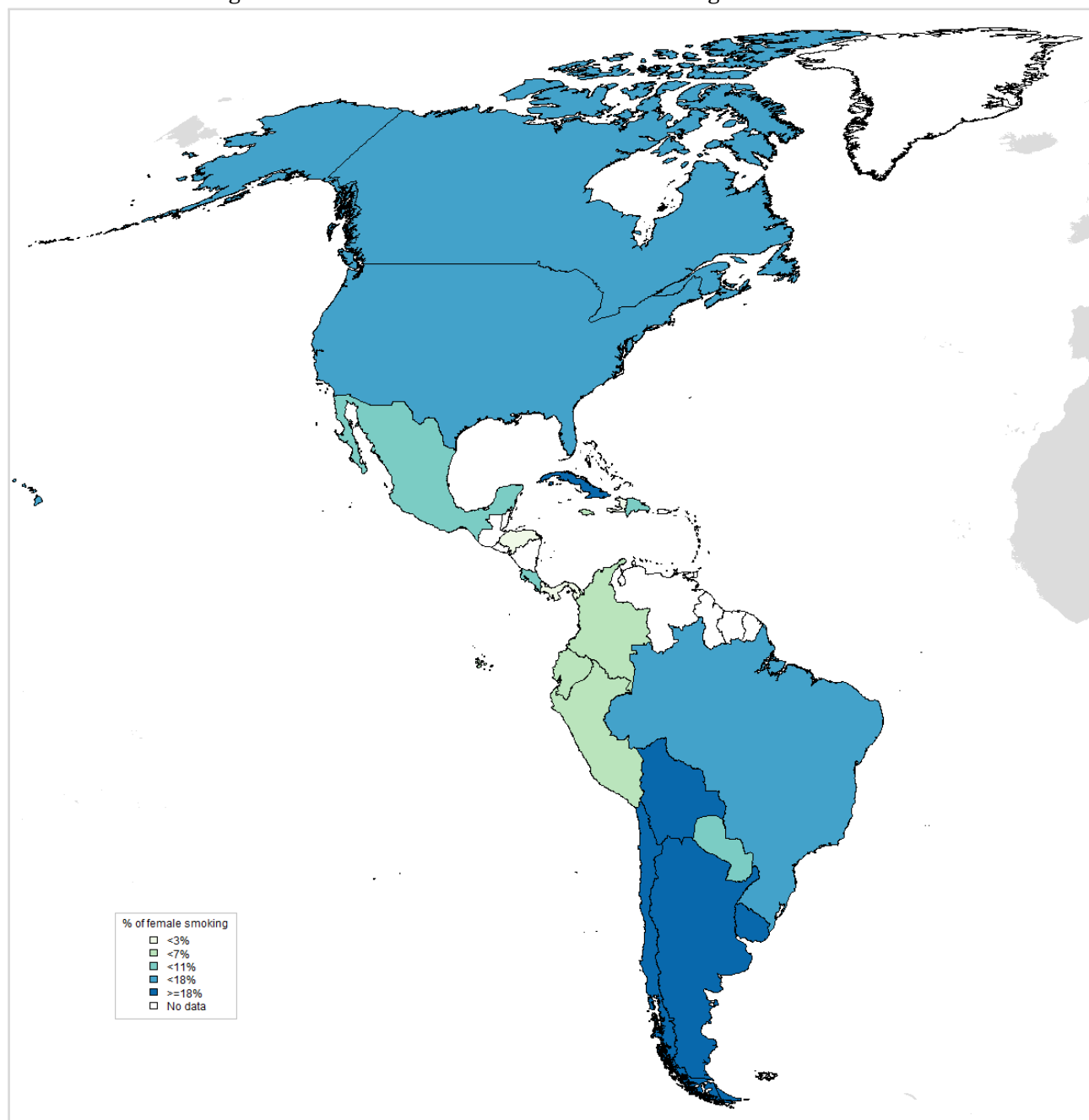
^aIncludes cases from Argentina, Brazil, Cuba, Russia, Slovakia, Czech Republic, Romania and Poland

Data sources: See references in Section 9.

5 Factors contributing to cervical cancer

HPV is a necessary cause of cervical cancer, but it is not a sufficient cause. Other cofactors are necessary for progression from cervical HPV infection to cancer. Tobacco smoking, high parity, long-term hormonal contraceptive use, and co-infection with HIV have been identified as established cofactors. Co-infection with *Chlamydia trachomatis* and herpes simplex virus type-2, immunosuppression, and certain dietary deficiencies are other probable cofactors. Genetic and immunological host factors and viral factors other than type, such as variants of type, viral load and viral integration, are likely to be important but have not been clearly identified. (Muñoz N, *Vaccine* 2006; 24(S3): 1-10). In this section, the prevalence of smoking, parity (fertility), oral contraceptive use, and HIV in Americas are presented.

Figure 85: Prevalence of female tobacco smoking in the Americas

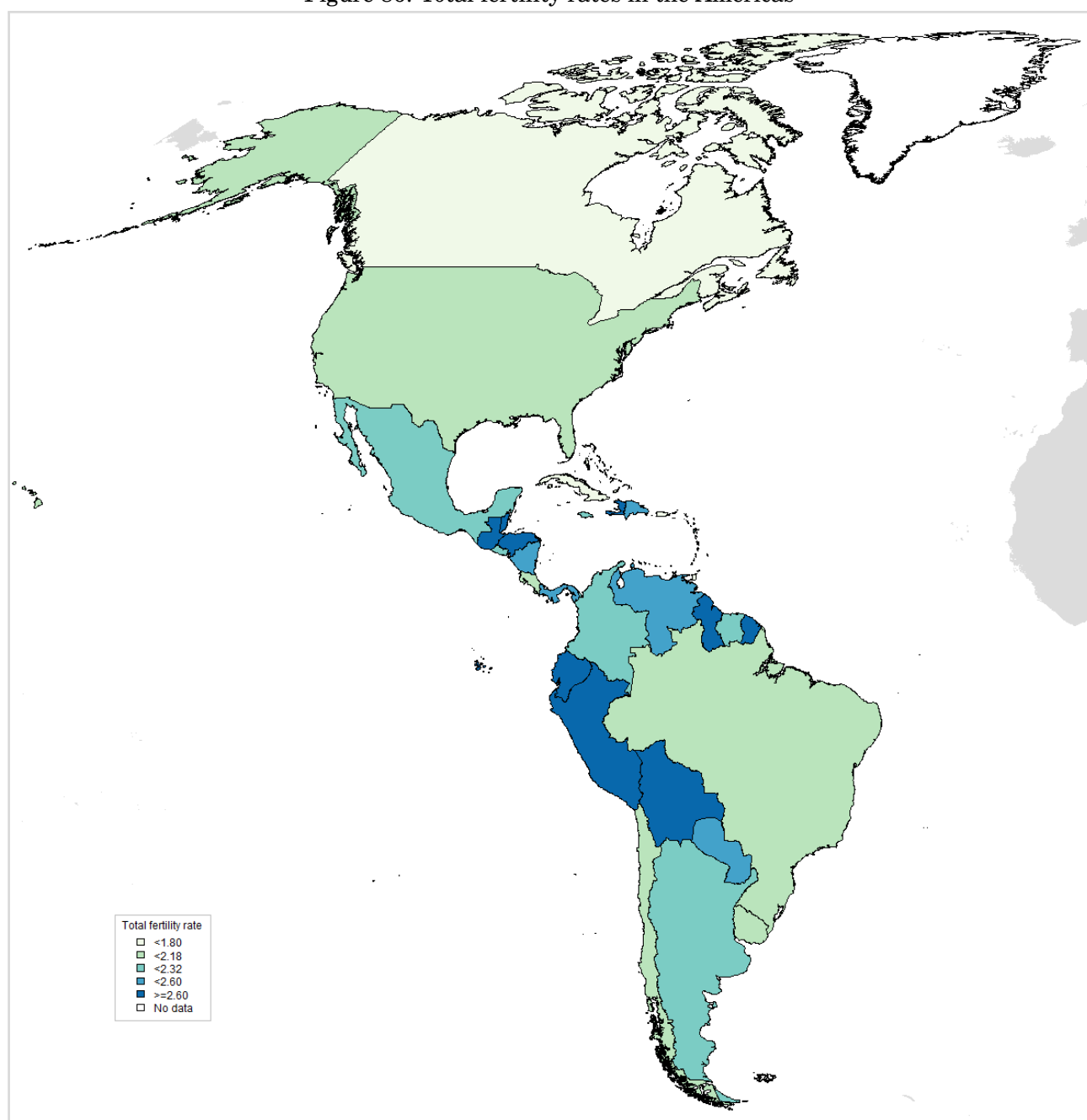


Data accessed on 22 Mar 2017.

Adjusted and age-standardized prevalence estimates of tobacco use by country, for the year 2013. These rates are constructed solely for the purpose of comparing tobacco use prevalence estimates across countries, and should not be used to estimate the number of smokers in the population.

Data sources: WHO report on the global tobacco epidemic, 2015: The MPOWER package. Geneva, World Health Organization, 2015. Available at http://www.who.int/tobacco/global_report/2015/en/index.html

Figure 86: Total fertility rates in the Americas

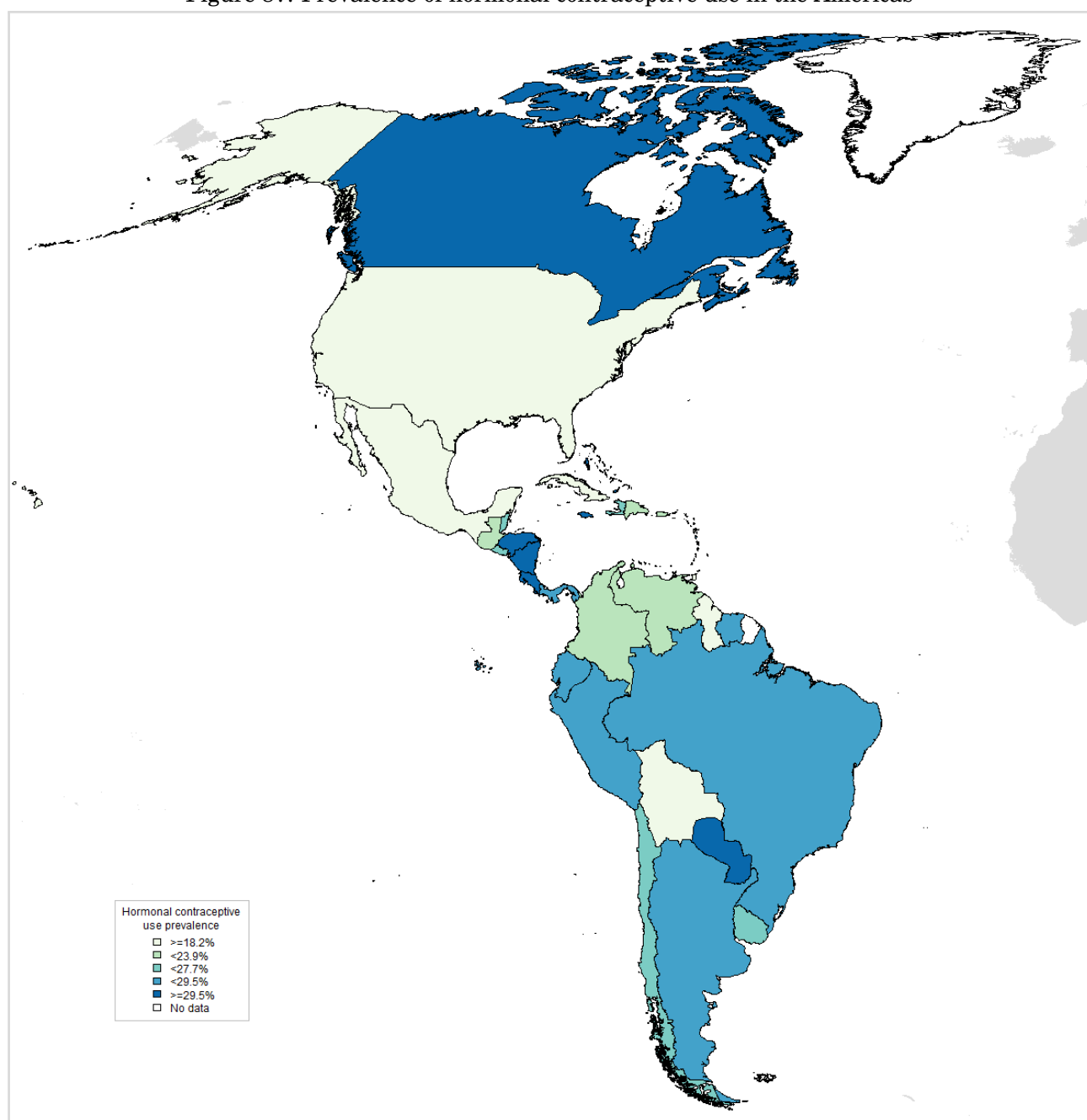
**Data accessed on 22 Mar 2017.**

For Aruba, Argentina, Chile, Costa Rica, Cuba, Grenada, St Lucia, Puerto Rico, Trinidad & Tobago, St Vincent & The Grenadines: The number of women by age is estimated by the United Nations Population Division and published in World Population Prospects: the 2015 Revision.

Data sources:

For Aruba, Argentina, Bahamas, Belize, Bolivia, Brazil, Barbados, Canada, Chile, Colombia, Costa Rica, Cuba, Curaçao, Dominican Republic, Ecuador, Guadeloupe, Grenada, Guatemala, French Guiana, Guyana, Honduras, Haiti, Jamaica, St Lucia, Mexico, Martinique, Nicaragua, Panama, Peru, Puerto Rico, Paraguay, El Salvador, Suriname, Trinidad & Tobago, Uruguay, USA, St Vincent & The Grenadines, Venezuela, US Virgin Islands: United Nations, Department of Economic and Social Affairs, Population Division (2015). World Fertility Data 2015 (POP/DB/Fert/Rev2015). Available at: <http://www.un.org/en/development/desa/population/publications/dataset/fertility/wfd2015.shtml>. [Accessed on March 22, 2017].

Figure 87: Prevalence of hormonal contraceptive use in the Americas

**Data accessed on 22 Mar 2017.**

Proportion (%) of women using hormonal contraception (pill, injectable or implant), among those of reproductive age who are married or in union.

For Anguilla, Argentina, Guadeloupe, Martinique: Data pertain to all women of reproductive age, irrespective of marital status.

For Canada: Data pertain to women who have ever had sex. Data pertain to all women of reproductive age, irrespective of marital status. Data pertain to sexually active, non-pregnant women.

For Chile: Data pertain to men and women of reproductive age.

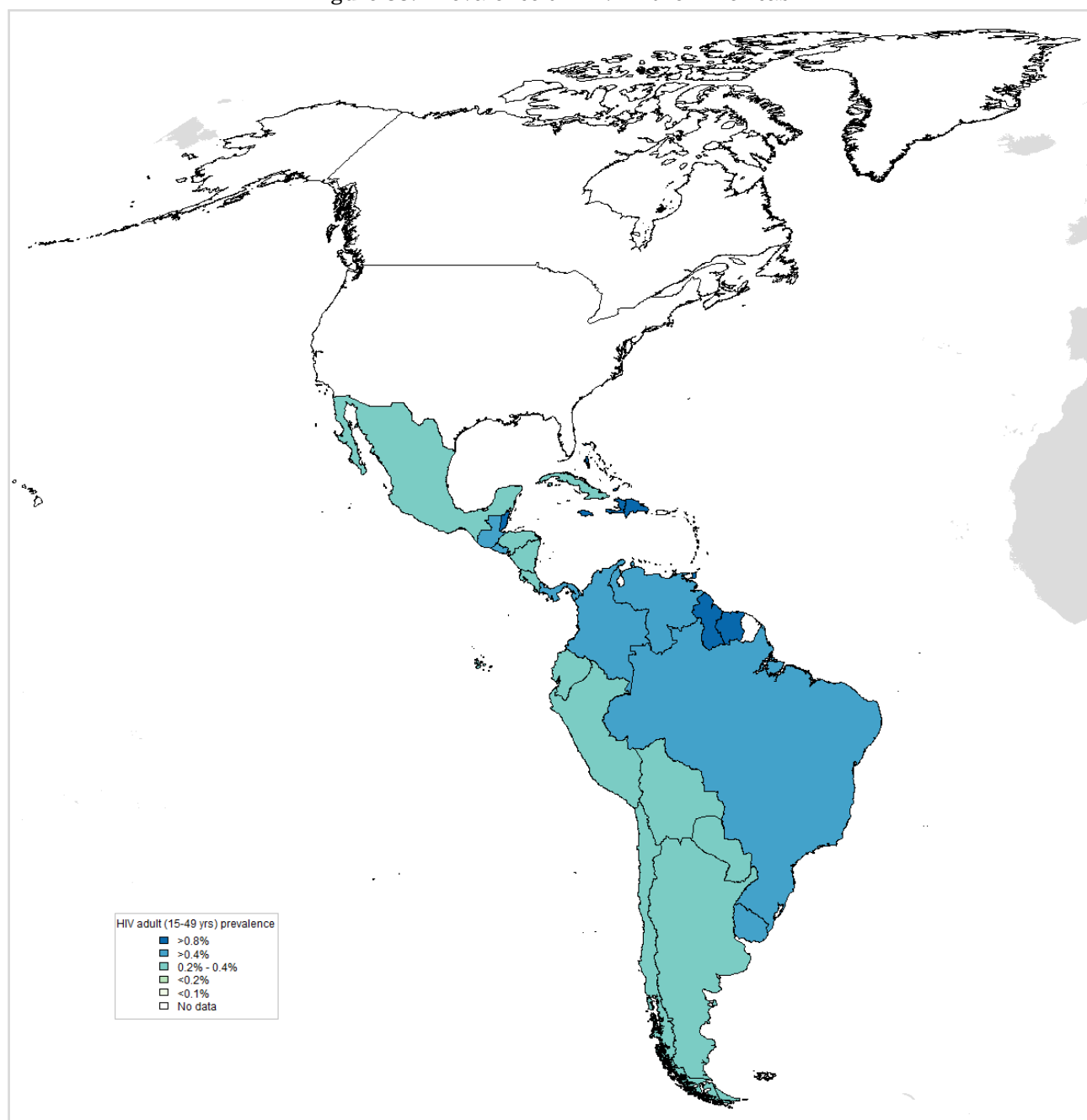
For Puerto Rico: Data pertain to sexually active women of reproductive age.

For Uruguay: Data pertain to men and women of reproductive age who are married or in a union.

For US Virgin Islands: Data pertain to women exposed to the risk of pregnancy.

Data sources: United Nations, Department of Economic and Social Affairs, Population Division (2016). World Contraceptive Use 2016 (POP/DB/CP/Rev2016). <http://www.un.org/en/development/desa/population/publications/dataset/contraception/wcu2016.shtml>. Available at: [Accessed on March 22, 2017].

Figure 88: Prevalence of HIV in the Americas

**Data accessed on 22 Mar 2017.**

Estimates include all people with HIV infection, regardless of whether they have developed symptoms of AIDS.

For Barbados, Chile: Child estimates not published due to small numbers

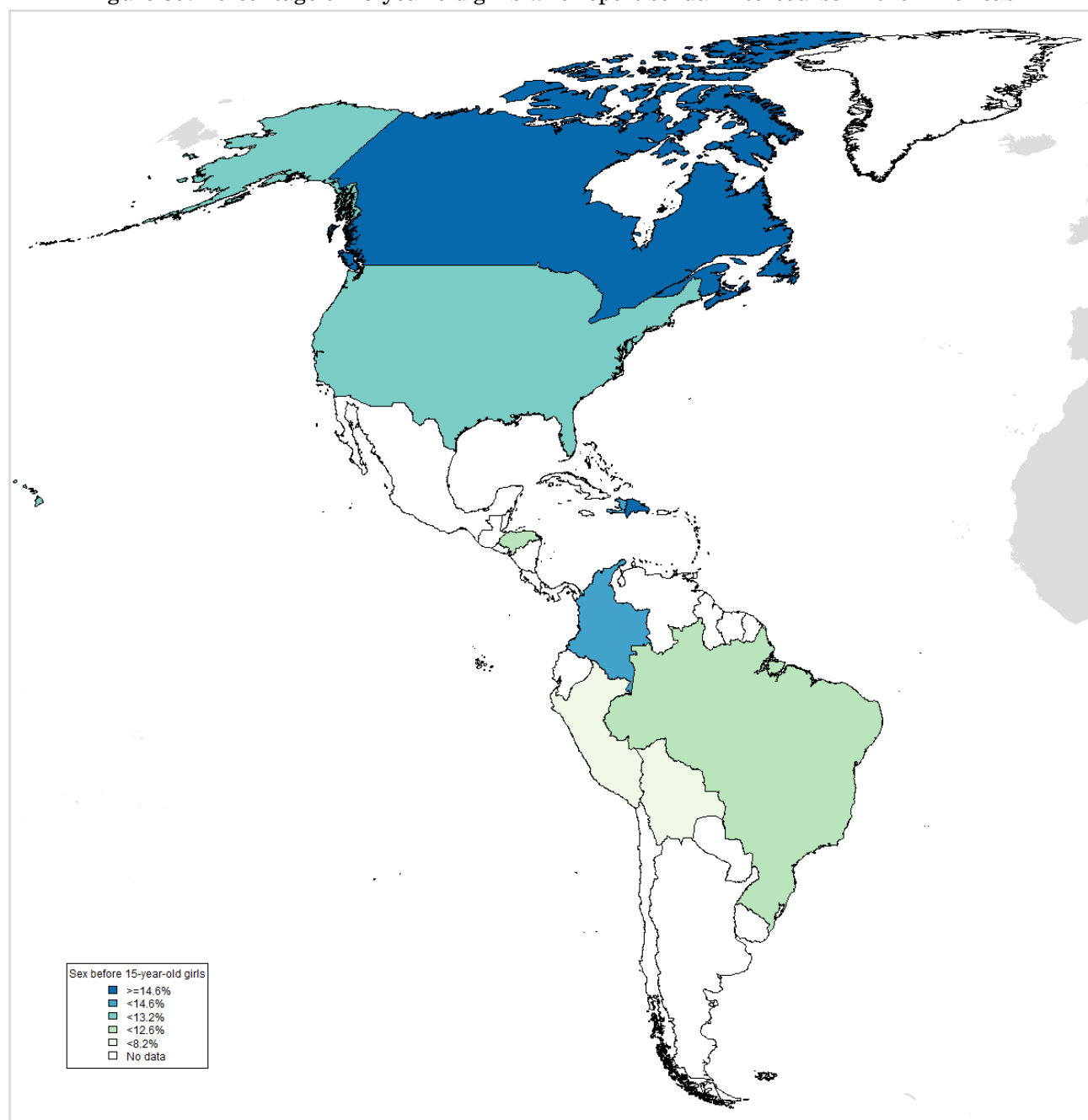
For Colombia: Antiretroviral therapy data was not available at the time of publication

Data sources: UNAIDS database [internet]. Available at: <http://aidsinfo.unaids.org/> [Accessed on March 22, 2017]

6 Sexual behaviour and reproductive health indicators

Sexual intercourse is the primary route of transmission of genital HPV infection. Information about sexual and reproductive health behaviours is essential to the design of effective preventive strategies against anogenital cancers. In this section, we describe sexual and reproductive health indicators that may be used as proxy measures of risk for HPV infection and anogenital cancers. Several studies have reported that earlier sexual debut is a risk factor for HPV infection, although the reason for this relationship is still unclear. In this section, information on sexual and reproductive health behaviour in Americas is presented.

Figure 89: Percentage of 15-year-old girls who report sexual intercourse in the Americas



Data accessed on 16 Mar 2017.

For Bonaire, St Eustatius & Saba, Bolivia, Brazil: The main sources of data were surveys by the MEASURE DHS (Demographic and Health Surveys) project and published estimates from Reproductive National Health Surveys.

For Bonaire, St Eustatius & Saba, Bolivia, Brazil: Year of estimation: not reported

For Canada: Fifteen-year-olds teenagers only were asked whether they had ever had sexual intercourse.

For Canada: Year of estimation: 2013-2014

For Chile: Year of estimation: 2000

For Colombia, Dominican Republic, Honduras, Haiti, Peru, USA: Percentage of all 15- to 19-year-olds who report having had sex before the age of 15 years.

For Colombia: Year of estimation: 2010

(Continued on next page)

(Figure 89 – continued from previous page)

For Dominican Republic: Year of estimation: 2013

For Honduras: Year of estimation: 2011-2012

For Haiti, Peru: Year of estimation: 2012

For USA: Year of estimation: 2011-2013

Data sources:

For Bonaire, St Eustatius & Saba, Bolivia, Brazil: Sexual behaviour in context: a global perspective. Wellings K, Collumbien M, Slaymaker E, et al. Lancet. 2006 Nov 11;368(9548):1706-28. Review. Erratum in: Lancet. 2007 Jan 27;369(9558):274. PMID:17098090.

Canada: Growing up unequal: gender and socioeconomic differences in young people's health and well-being. Health Behaviour in School-aged Children (HBSC) study: international report from the 2013/2014 survey. Inchley J, Currie D, Young T, et al. Copenhagen, WHO Regional Office for Europe, 2016 (Health Policy for Children and Adolescents, No. 7). Available at: http://www.euro.who.int/__data/assets/pdf_file/0003/303438/HSBC-No.7-Growing-up-unequal-Full-Report.pdf?ua=1

Colombia, Dominican Republic, Honduras, Haiti, Peru: ICF International, 2015. The DHS (Demographic and Health Surveys) Program STATcompiler. Funded by USAID. <http://www.statcompiler.com>. Accessed on March 16 2017.

USA: CDC/NCHS, National Survey of Family Growth, 2011–2013. Sexual Activity, Contraceptive Use, and Childbearing of Teenagers Aged 15–19 in the United States. NCHS Data Brief No. 209, July 2015. Martinez G, Abma J. Available at: <https://www.cdc.gov/nchs/products/databriefs/db209.htm>

7 HPV preventive strategies

It is established that well-organised cervical screening programmes or widespread good quality cytology can reduce cervical cancer incidence and mortality. The introduction of HPV vaccination could also effectively reduce the burden of cervical cancer in the coming decades. This section presents indicators on basic characteristics and performance of cervical cancer screening, status of HPV vaccine licensure, and introduction in Americas.

7.1 Cervical cancer screening practices

Screening strategies differ between countries. Some countries have population-based programmes, where in each round of screening women in the target population are individually identified and invited to attend screening. This type of programme can be implemented nationwide or only in specific regions of the country. In opportunistic screening, invitations depend on the individual's decision or on encounters with health-care providers. The most frequent method for cervical cancer screening is cytology, and there are alternative methods such as HPV DNA tests and visual inspection with acetic acid (VIA). VIA is an alternative to cytology-based screening in low-resource settings (the 'see and treat' approach). HPV DNA testing is being introduced into some countries as an adjunct to cytology screening ('co-testing') or as the primary screening test to be followed by a secondary, more specific test, such as cytology.

Table 31: Cervical cancer screening policies in the Americas

Country	Availability of cervical cancer screening programme ^a	Quality assurance structure and mandate to supervise and to monitor the screening process ^b	Active invitation to screening ^c	Main screening test used for primary screening	Demonstration projects	Screening ages (years)	Screening interval or frequency of screenings
Antigua & Bar.	Yes	No	No	Cytology	HPV test	21-65 (cytology), over 30 (HPV test)	5 years (cytology)
Argentina	Yes	Yes	Yes	Cytology/HPV test		35-64 (cytology), above 30 (HPV test)	Cytology every 3 years, after 2 consecutive annual negative tests. HPV test every 3 years
Bahamas	Yes	No	No	Cytology		Above 21-59	1 year
Barbados	Yes	No	No	Cytology		21-65	3 years (ages 21-49), 5 years (ages 50-65)
Belize	Yes	No	No	Cytology		21-55	3 years, after 3 consecutive annual negative tests

(Continued on next page)

(Table 31 – continued from previous page)

Country	Availability of cervical cancer screening programme ^a	Quality assurance structure and mandate to supervise and to monitor the screening process ^b	Active invitation to screening ^c	Main screening test used for primary screening	Demonstration projects	Screening ages (years)	Screening interval or frequency of screenings
Bolivia	Yes	Yes	No	Cytology/VIA		25-64	3 years, after 2 consecutive annual negative tests
Brazil	Yes	Yes	No	Cytology		25-64	3 years, after 2 consecutive annual negative tests
Canada	Yes	Yes, varies among regions	No, varies among regions	Cytology	HPV test	21-65/69/70 varies by region	Varies among regions: Manitoba, Ontario, Québec, Nova Scotia: every 3 years (ages 21- 65/69). Prince Edward island: every 2 years (ages 21-65). Other regions every 2-3 years (ages 21-70) after 3 consecutive annual negative tests
Chile	Yes	Yes	No	Cytology		25-64	3 years
Colombia	Yes	No	No	Cytology/VIA/HPV test		25-69 (cytology), 30-50 (VIA), 30-69 (HPV test)	Cytology every 3 years, after 2 consecutive annual negative tests. VIA every 3 years. HPV test every 5 years
Costa Rica	Yes	No	No	Cytology		Above 20	1 year
Cuba	Yes	No	No	Cytology		25-64	3 years
Curaçao	Yes	-	-	HPV test		30-65	-
Dominica	Yes	No	No	Cytology		18-65	-

(Continued on next page)

(Table 31 – continued from previous page)

Country	Availability of cervical cancer screening programme ^a	Quality assurance structure and mandate to supervise and to monitor the screening process ^b	Active invitation to screening ^c	Main screening test used for primary screening	Demonstration projects	Screening ages (years)	Screening interval or frequency of screenings
Dominican Rep.	Yes	No	No	Cytology/HPV test		35-64	Cytology every 1 year
Ecuador	Yes	No	No	Cytology		35-64	5 years
El Salvador	Yes	No	No	Cytology/VIA	HPV test	30-59	2 years
Grenada	Yes	-	-	Cytology	VIA	21 (or 3 years after sexually debut)	3 years, after 3 consecutive annual negative tests
Guatemala	Yes	No	No	Cytology/VIA		25-54	3 years
Guyana	Yes	No	No	VIA/cytology		30-49	-
Haiti	Yes	No	No	VIA		>=35	-
Honduras	Yes	Yes	No	Cytology	VIA	30-59 (cytology)	3 years, after 2 consecutive annual negative tests
Jamaica	Yes	No	No	Cytology		25-54	3 years, after 2 consecutive annual negative tests
Mexico	Yes	Yes	No	Cytology/HPV test		25-64	Cytology every 3 years, after 2 consecutive annual negative tests
Nicaragua	Yes	Yes	No	Cytology/VIA	HPV test	25-64 (cytology), 30-50 (VIA)	Cytology/VIA every 3 years, after 3 consecutive annual negative tests
Panama	Yes	No	No	Cytology/VIA		25-59	3 years, after 3 consecutive annual negative tests
Paraguay	Yes	Yes	No	Cytology/VIA	HPV test	25-49	Cytology/VIA every 3 years, after 3 consecutive annual negative tests

(Continued on next page)

(Table 31 – continued from previous page)

Country	Availability of cervical cancer screening programme ^a	Quality assurance structure and mandate to supervise and to monitor the screening process ^β	Active invitation to screening ^γ	Main screening test used for primary screening	Demonstration projects	Screening ages (years)	Screening interval or frequency of screenings
Peru	Yes	Yes	Yes	Cytology/VIA	HPV test	PAP/VIA: 30-49	Cytology/VIA every 3 years
Puerto Rico	Yes	Yes only in NBCCED Program	-	Cytology/HPV test		21-65 (cytology), 30-65 (HPV test)	3 years (cytology), 5 years (cotesting: HPV test and cytology)
Saint Vincent and the Grenadines	Yes	No	No	Cytology		20-65	3 years, after 2 consecutive annual negative tests
Sint Maarten (Dutch part)	Yes	-	-	Cytology/HPV test		-	-
St Kitts & Nev.	Yes	No	No	Cytology		18-55	3 years, after 2 consecutive annual negative tests
St Lucia	Yes	-	-	Cytology	VIA	18-55	1 year
St Vincent	Yes	No	No	Cytology		20-65	3 years after 2 consecutive annual negative tests
Suriname	Yes	No	No	Cytology/VIA		23-55	2 years
Trinidad & Tob.	Yes	No	No	Cytology		Sexually active (not specified age)	1 year
Uruguay	Yes	Yes	No	Cytology		21-69	3 years, after 2 consecutive annual negative tests
USA	Yes	Yes only in NBCCED Program	No	Cytology/HPV test		21-65 (cytology), over 30 (HPV test)	3 years (cytology), 5 years (HPV test)
Venezuela	Yes	No	No	Cytology		25-64	3 years

Data accessed on 31 Dec 2016.

^aPublic national cervical cancer screening program in place (Cytology/VIA/HPV testing). Countries may have clinical guidelines or protocols, and cervical cancer screening services in a private sector but without a public national program. Publicly mandated programmes have a law, official regulation, decision, directive or recommendation that provides the public mandate to implement the programme with an authorised screening test, examination interval, target group and funding and co-payment determined.

^βSelf-reported quality assurance: Organised programmes provide for a national or regional team responsible for implementation and require providers to follow guidelines, rules, or standard operating procedures. They also define a quality assurance structure and mandate supervision and monitoring of the screening process. To evaluate impact, organised programmes also require ascertainment of the population disease burden. Quality assurance consists of the management and coordination of the programme throughout all levels of the screening process (invitation, testing, diagnosis and follow-up of screen-positives) to assure that the programme performs adequately and provides services that are effective and in-line with programme standards. The quality assurance structure is self-reported as part of the national cancer programs or plans.

^γSelf-reported active invitation or recruitment, as organised population-based programmes, identify and personally invite each eligible person in the target population to attend a given round of screening.

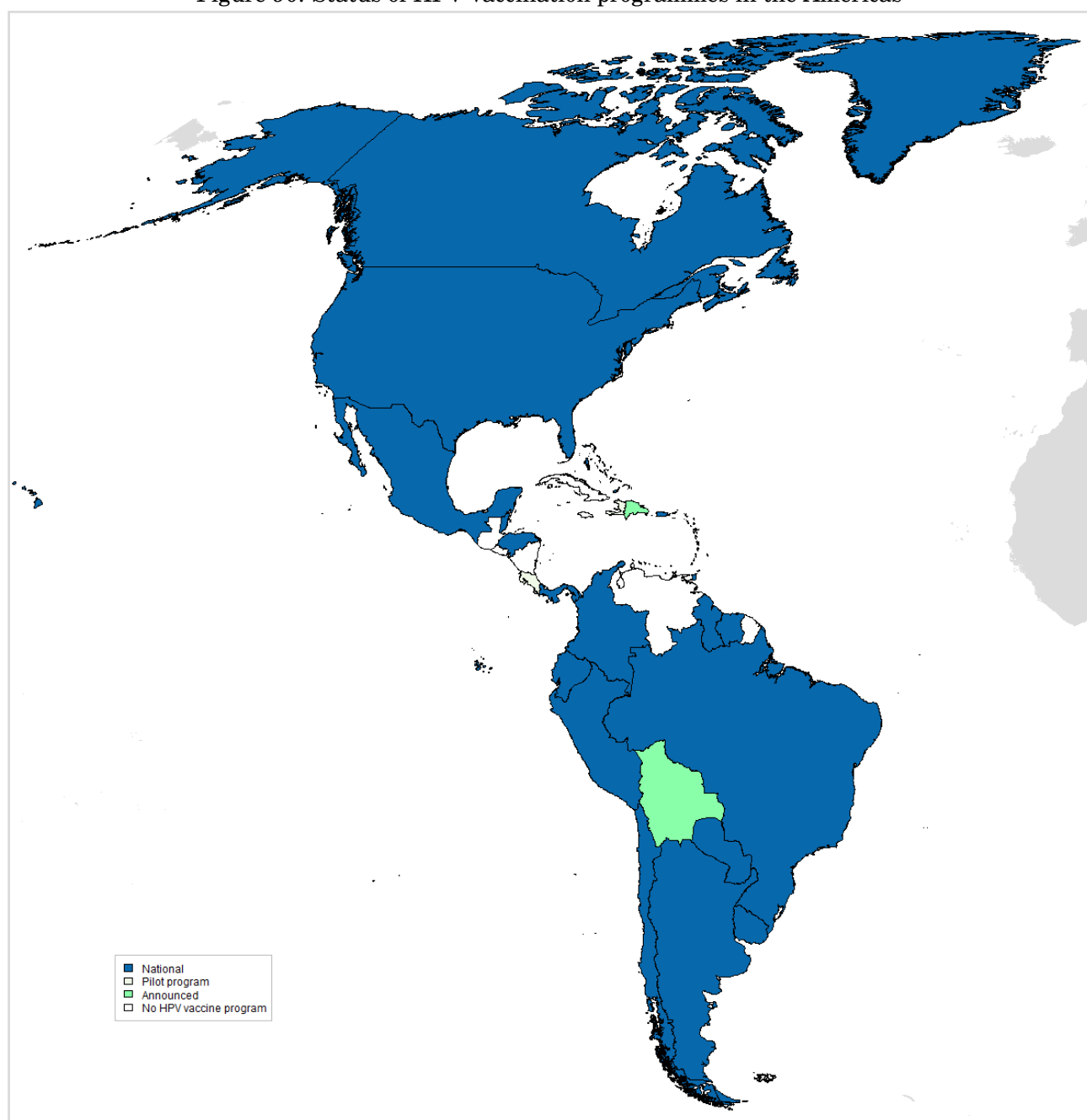
Data sources:

Data sources are detailed at the country-specific report

7.2 HPV vaccination

7.2.1 HPV vaccine licensure and introduction

Figure 90: Status of HPV vaccination programmes in the Americas



Data accessed on 31 Dec 2016.

Data sources: Adapted from Bruni L, Diaz M, Barrionuevo-Rosas L, Herrero R, Bray F, Bosch FX, de Sanjosé S, Castellsagué X. Global estimates of human papillomavirus vaccination coverage by region and income level: a pooled analysis. *Lancet Glob Health*. 2016 Jul;4(7):e453-63

Table 32: HPV vaccination policies for the female population in the Americas

Country	Routine Immunization	
	HPV vaccination programme	Date of start
Antigua and Barbuda	National program	2016
Argentina	National program	2011
Bahamas	National program	2015
Barbados	National program	2014
Belize	National program	2016
Bolivia (Plurinational State of)	Announced	-
Brazil	National program	2014
Canada	National program	2007
Chile	National program	2014
Colombia	National program	2012
Costa Rica	Pilot	-
Cuba	No program	-
Dominica	No program	-
Dominican Republic	Announced	-
Ecuador	National program	2015
El Salvador	No program	-
Grenada	No program	-
Guatemala	No program	-
Guyana	National program	2011
Haiti	Pilot	-
Honduras	National program	2016
Jamaica	No program	-
Mexico	National program	2012
Nicaragua	No program	-
Panama	National program	2008
Paraguay	National program	2013
Peru	National program	2011
Saint Kitts and Nevis	No program	-
Saint Lucia	No program	-
Saint Vincent and the Grenadines	No program	-
Suriname	National program	2013
Trinidad and Tobago	National program	2013
United States of America	National program	2006
Uruguay	National program	2013
Venezuela (Bolivarian Republic of)	No program	-

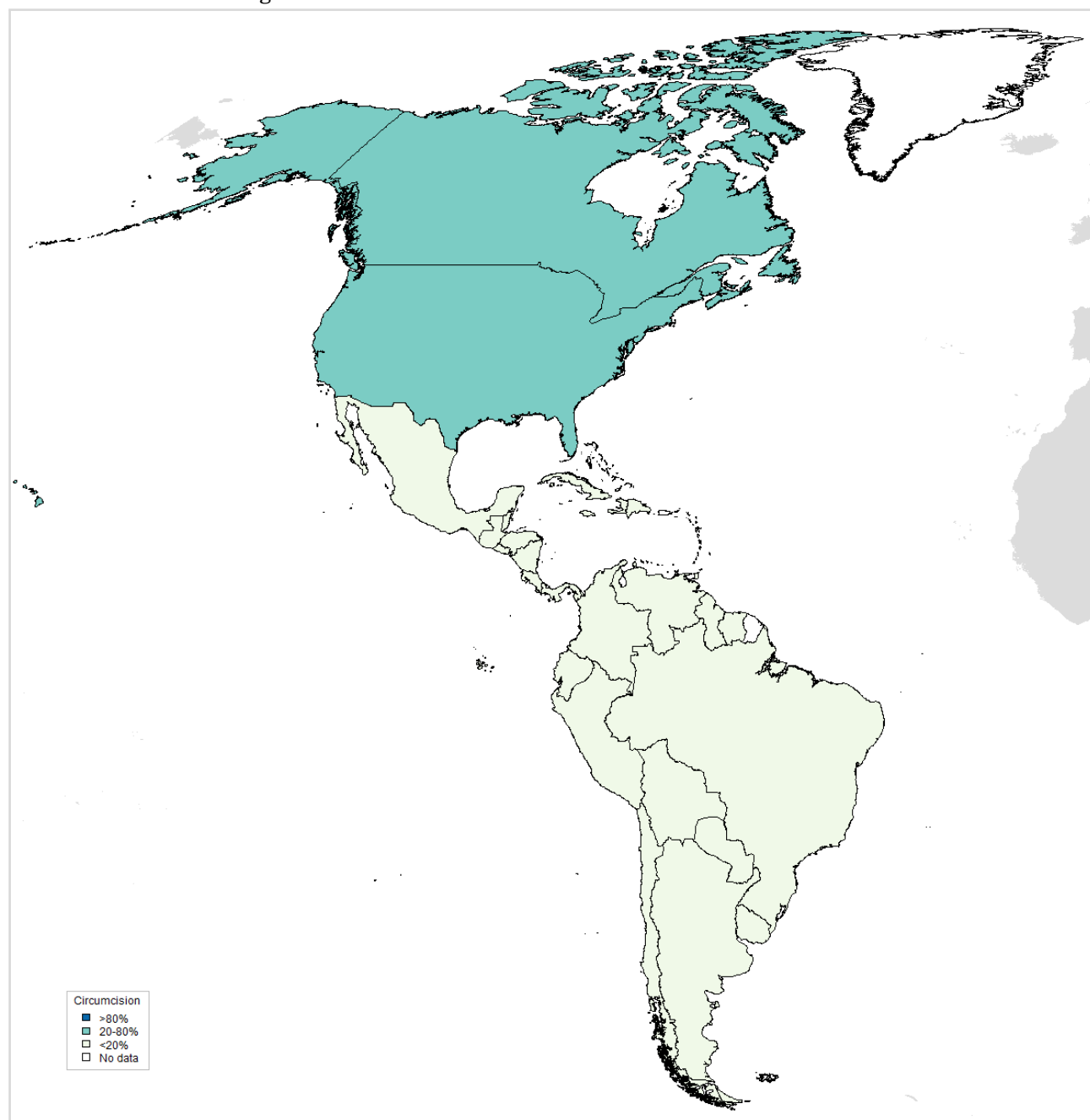
Data accessed on 31 Dec 2016.Data sources:

Adapted from Bruni L, Diaz M, Barrionuevo-Rosas L, Herrero R, Bray F, Bosch FX, de Sanjosé S, Castellsagué X. Global estimates of human papillomavirus vaccination coverage by region and income level: a pooled analysis. Lancet Glob Health. 2016 Jul;4(7):e453-63

8 Protective factors for cervical cancer

Male circumcision and the use of condoms have shown a significant protective effect against HPV transmission.

Figure 91: Prevalence of male circumcision in the Americas



Data accessed on 31 Aug 2015.

Data from Demographic and Health Surveys (DHS) and other publications to categorise the country-wide prevalence of male circumcision as <20%, 20-80%, or >80%.

Please refer to country-specific reference(s) for full methodologies.

Data sources: Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until August 2015. Reference publication: Albero G, Sex Transm Dis. 2012 Feb;39(2):104-13.

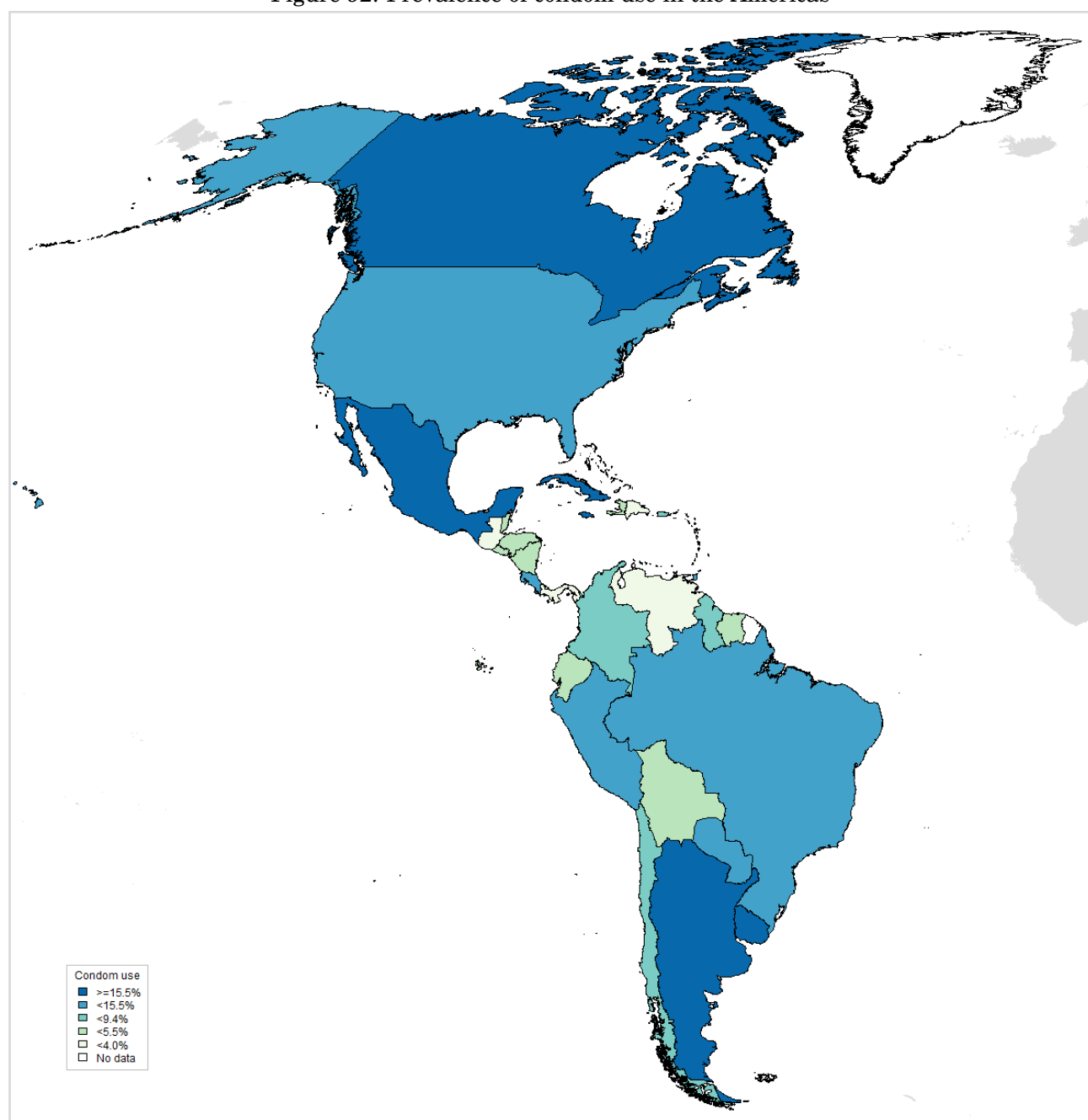
For Argentina, Chile, Costa Rica, Cuba, Trinidad & Tobago, Uruguay: WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Belize, Bolivia, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Peru, Paraguay, El Salvador, Suriname, Venezuela: Drain PK, BMC Infect Dis 2006; 6: 172 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Brazil: Castellsagué X, Am J Epidemiol 2005; 162: 907 | Drain PK, BMC Infect Dis 2006; 6: 172 | Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Canada: Ogilvie GS, Sex Transm Infect 2009; 85: 221 | Quayle SS, J Urol 2003; 170: 1533 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Colombia: Castellsagué X, Am J Epidemiol 2005; 162: 907 | Drain PK, BMC Infect Dis 2006; 6: 172 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Dominican Republic: 2013 Demographic and Health Surveys (DHS) | Drain PK, BMC Infect Dis 2006; 6: 172 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Guyana: 2009 Demographic and Health Surveys (DHS) | Drain PK, BMC Infect Dis 2006; 6: 172 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Haiti: 2006 Demographic and Health Surveys (DHS) | Drain PK, BMC Infect Dis 2006; 6: 172 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Jamaica: Drain PK, BMC Infect Dis 2006; 6: 172 | Figueroa JP, West Indian Med J 2010; 59: 351 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability
Mexico: Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036 | Lajoux M, Cancer Epidemiol Biomarkers Prev 2005; 14: 1710 | Vaccarella S, Cancer Epidemiol Biomarkers Prev 2006; 15: 326 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability

(Continued on next page)

(Figure 91 – continued from previous page)

USA: Baldwin SB, Sex Transm Dis 2004; 31: 601 | Cook LS, Am J Public Health 1994; 84: 197 | Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036 | Hernandez BY, J Infect Dis 2008; 197: 787 | Lu B, J Infect Dis 2009; 199: 362 | McKinney CM, Sex Transm Dis 2008; 35: 814 | Nelson CP, J Urol 2005; 173: 978 | Nielson CM, Cancer Epidemiol Biomarkers Prev 2007; 16: 1107 | Partridge JM, J Infect Dis 2007; 196: 1128 | Ryan C, J Am Acad Dermatol 2015; 72: 978 | Weaver BA, J Infect Dis 2004; 189: 677 | WHO 2007: Male circumcision: Global trends and determinants of prevalence, safety and acceptability

Figure 92: Prevalence of condom use in the Americas

**Data accessed on 21 Mar 2017.**

Please refer to original source for methods of estimation.

Condom use: Proportion of male partners who are using condoms with their female partners of reproductive age (15-49 years) to whom they are married or in union by country.

For Argentina: Data pertain to urban centers with 2,000 or more people.

Data sources: United Nations, Department of Economic and Social Affairs, Population Division (2016). World Contraceptive Use 2016 (POP/DB/CP/Rev2016). <http://www.un.org/en/development/desa/population/publications/dataset/contraception/vcu2016.shtml>. Available at: [Accessed on March 22, 2017].

For Anguilla: Anguilla 2003 Reproductive Health Survey

Argentina: Argentina 2013 Encuesta Nacional sobre Salud Sexual y Reproductiva

Antigua & Barbuda: Antigua and Barbuda 1988 Contraceptive Prevalence Survey in Antigua

Bahamas: Bahamas 1988 IPPF-WHR Caribbean Contraceptive Prevalence Survey

Belize: Belize 2011 Multiple Indicator Cluster Survey

Bolivia: Bolivia 2008 Demographic and Health Survey

Brazil: Brazil 2006-2007 Demographic and Health Survey

Barbados: Barbados 2012 Multiple Indicator Cluster Survey

Canada: Canada 2006 Contraceptive Studies

Chile: Chile 2006 Encuesta Nacional de Calidad de Vida y Salud

Colombia: Colombia 2010 Demographic and Health Survey

Costa Rica: Costa Rica 2011 Multiple Indicator Cluster Survey

Cuba: Cuba 2014 Multiple Indicator Cluster Survey

Dominica: Dominica 1987 IPPF/WHR Caribbean Contraceptive Prevalence Survey

Dominican Republic: Dominican Republic 2014 Multiple Indicator Cluster Survey

Ecuador: Ecuador 2012 Encuesta Nacional de Salud y Nutrición

Guadeloupe: Guadeloupe 1976 Fertility Survey

Grenada: Grenada 1990 IPPF/WHR Caribbean Contraceptive Prevalence Survey

Guatemala: Guatemala 2014-2015 Demographic and Health Survey (DHS)

Guyana: Guyana 2014 Multiple Indicator Cluster Survey

(Continued on next page)

(Figure 92 – continued from previous page)

Honduras: Honduras 2011-2012 Demographic and Health Survey
Haiti: Haiti 2012 Demographic and Health Survey
Jamaica: Jamaica 2008 Reproductive and Health Survey
St Kitts & Nevis: Saint Kitts and Nevis 1984 Contraceptive Prevalence Survey
St Lucia: Saint Lucia 2012 Multiple Indicator Cluster Survey
Mexico: Mexico 2014 Encuesta Nacional de la Dinámica Demográfica
Montserrat: Montserrat 1984 IPPF-WHR Caribbean Contraceptive Prevalence Survey
Martinique: Martinique 1976 Fertility Survey
Nicaragua: Nicaragua 2011-2012 Demographic and Health Survey
Panama: Panama 2013 Multiple Indicator Cluster Survey
Peru: Peru 2014 Demographic and Health Survey (Continuous)
Puerto Rico: Puerto Rico 2002 Behavioral Risk Factor Surveillance System
Paraguay: Paraguay 2008 Encuesta Nacional de Demografía y Salud Sexual y Reproductiva
El Salvador: El Salvador 2014 MICS
Suriname: Suriname 2010 Multiple Indicator Cluster Survey
Trinidad & Tobago: Trinidad and Tobago 2006 Multiple Indicator Cluster Survey
Uruguay: Uruguay 2004 Encuesta Nacional sobre Reproducción Biológica y Social de la Población
USA: United States of America 2011-2013 National Survey of Family Growth
St Vincent & The Grenadines: Saint Vincent and the Grenadines 1988 IPPF-WHR Caribbean Contraceptive Prevalence Survey
Venezuela: Venezuela (Bolivarian Republic of) 1998 Encuesta Nacional de Población y Familia
US Virgin Islands: United States Virgin Islands 2002 Behavioral Risk Factor Surveillance System

9 References

HPV-related statistics were gathered from specific databases created at the Institut Català d'Oncologia and the International Agency for Research on Cancer.

Systematic collection of published literature from peer-reviewed journals is stored in these databases. Data correspond to results from the following reference papers as well as updated results from continuous monitoring of the literature by the HPV Information Centre:

Table 33: References of studies included

Country	Study
HPV prevalence and HPV type distribution for cytologically normal women	
General sources	Based on systematic reviews and meta-analysis performed by ICO. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bruni L, J Infect Dis 2010; 202: 1789. 2) De Sanjosé S, Lancet Infect Dis 2007; 7: 453
Americas	
Argentina	Abba MC, Rev Argent Microbiol 2003; 35: 74 Badano I, Rev Argent Microbiol 2011; 43: 263 Chouhy D, J Med Virol 2013; 85: 655 Matos E, Sex Transm Dis 2003; 30: 593
Belize	Cathro HP, Hum Pathol 2009; 40: 942
Bolivia	Cervantes J, Rev Inst Med Trop Sao Paulo 2003; 45: 131
Brazil	Augusto EF, Rev Lat Am Enfermagem 2014; 22: 100 Caixeta RC, Diagn Cytopathol 2015; 43: 780 Campos KL, Mem Inst Oswaldo Cruz 2014; 109: 352 Carestiatto FN, Braz J Infect Dis 2006; 10: 331 Cassel AP, Genet Mol Biol 2014; 37: 360 Chagas BS, PLoS ONE 2015; 10: e0132570 Coser J, Genet Mol Res 2013; 12: 4276 da Silva MC, Arch Gynecol Obstet 2012; 286: 1015 de Abreu AL, Am J Trop Med Hyg 2012; 87: 1149 de Oliveira GR, Rev Bras Ginecol Obstet 2013; 35: 226 Entiauspe LG, Braz J Microbiol 2014; 45: 689 Fernandes JV, Int J Gynaecol Obstet 2009; 105: 21 Figueiredo Alves RR, BMC Public Health 2013; 13: 1041 Franco EL, J Infect Dis 1995; 172: 756 Girianelli VR, Rev Bras Ginecol Obstet 2010; 32: 39 Lippman SA, Int J STD AIDS 2010; 21: 105 Lorenzato F, Int J Gynecol Cancer 2000; 10: 143 Lorenzi AT, Gynecol Oncol 2013; 131: 131 Magalhães PA, Arch Gynecol Obstet 2015; 291: 1095 Miranda PM, Genet Mol Res 2012; 11: 1752 Muñoz N, Sex Transm Dis 1996; 23: 504 Noronha VL, DST J Bras Doenças Sex Transm 2005; 17: 49 Oliveira FA, Mem Inst Oswaldo Cruz 2007; 102: 751 Oliveira LH, Rev Soc Bras Med Trop 2010; 43: 4 Pinto Dda S, Cad Saude Publica 2011; 27: 769 Rocha DA, Infect Dis Obstet Gynecol 2013; 2013: 514859 Roteli-Martins CM, Int J Gynecol Pathol 2011; 30: 173 Silva KC, Mem Inst Oswaldo Cruz 2009; 104: 885 Tamegão-Lopes BP, Infect Agents Cancer 2014; 9: 25 Tomita LY, Int J Cancer 2010; 126: 703 Trottier H, Cancer Epidemiol Biomarkers Prev 2006; 15: 1274 Vieira RC, Infect Agents Cancer 2015; 10: 21
Canada	Demers AA, Chronic Dis Inj Can 2012; 32: 177 Jiang Y, Infect Agents Cancer 2013; 8: 25 Kapala J, J Virol Methods 2007; 142: 223 Louvanto K, Am J Obstet Gynecol 2014; 210: 474.e1 Mayrand MH, Int J Cancer 2006; 119: 615 Moore RA, Cancer Causes Control 2009; 20: 1387 Ogilvie GS, Vaccine 2013; 31: 1129 Richardson H, Cancer Epidemiol Biomarkers Prev 2003; 12: 485 Roteli-Martins CM, Int J Gynecol Pathol 2011; 30: 173 Sellors JW, CMAJ 2000; 163: 503 Young TK, Sex Transm Dis 1997; 24: 293
Chile	Ferreccio C, BMC Public Health 2008; 8: 78 Ferreccio C, Cancer Epidemiol Biomarkers Prev 2004; 13: 2271 Ferreccio C, Int J Cancer 2013; 132: 916 Montalvo MT, Oncol Lett 2011; 2: 701
Colombia	Camargo M, BMC Cancer 2014; 14: 451 Leon S, Sex Transm Dis 2009; 36: 290 Molano M, Br J Cancer 2002; 87: 324 Muñoz N, Sex Transm Dis 1996; 23: 504 Soto-De Leon S, PLoS ONE 2011; 6: e14705
Costa Rica	Herrero R, J Infect Dis 2005; 191: 1796 Safaeian M, J Clin Microbiol 2007; 45: 1447

(Continued)

Table 33 – Continued

Country	Study
Cuba	Soto Y, J Low Genit Tract Dis 2014; 18: 210
Ecuador	Brown CR, Braz J Med Biol Res 2009; 42: 629 Cecchini G, Pathologica 2009; 101: 76
Guatemala	Vallès X, Int J Cancer 2009; 125: 1161
Guyana	Kightlinger RS, Am J Obstet Gynecol 2010; 202: 626.e1
Honduras	Ferrera A, Int J Cancer 1999; 82: 799 Ferrera A, Int J Gynaecol Obstet 2011; 113: 96 Tábor N, Am J Trop Med Hyg 2005; 73: 50 Tábor N, Cancer Causes Control 2009; 20: 1663
Haiti	Mandigo M, Int J Gynaecol Obstet 2015; 128: 206 Walmer DK, PLoS ONE 2013; 8: e76110
Jamaica	Lewis-Bell K, Rev Panam Salud Publica 2013; 33: 159 Watt A, Infect Agents Cancer 2009; 4 Suppl 1: S11
Mexico	Aguilar-Lemarroy A, J Med Virol 2015; 87: 871 Carrillo-García A, Gynecol Oncol 2014; 134: 534 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2001; 10: 1129 Giuliano AR, Int J STD AIDS 2005; 16: 247 Hernández-Avila M, Arch Med Res 1997; 28: 265 Hernández-Girón C, Sex Transm Dis 2005; 32: 613 Illades-Aguir B, Cancer Detect Prev 2009; 32: 300 Illades-Aguir B, Gynecol Oncol 2010; 117: 291 Lazcano-Ponce E, Cancer Causes Control 2010; 21: 1693 Lazcano-Ponce E, Int J Cancer 2001; 91: 412 López Rivera MG, Infect Dis Obstet Gynecol 2012; 2012: 384758 Monroy OL, J Clin Virol 2010; 47: 43 Orozco-Colín A, Int J Infect Dis 2010; 14: e1082 Parada R, BMC Infect Dis 2010; 10: 223 Rojo Contreras W, Ginecol Obstet Mex 2008; 76: 9 Salcedo M, Asian Pac J Cancer Prev 2014; 15: 10061 Salmerón J, Cancer Causes Control 2003; 14: 505 Sánchez-Anguiano LF, BMC Infect Dis 2006; 6: 27
Nicaragua	Jeronimo J, Int J Gynecol Cancer 2014; 24: 576
Peru	Almonte M, Int J Cancer 2007; 121: 796 García PJ, Bull World Health Organ 2004; 82: 483 Iwasaki R, Braz J Infect Dis 2014; 18: 469 Martorell M, Genet Mol Res 2012; 11: 2099 Santos C, Br J Cancer 2001; 85: 966 Silva-Caso W, Asian Pac J Trop Med 2014; 7S1: S121
Paraguay	Mendoza LP, J Med Virol 2011; 83: 1351 Rolón PA, Int J Cancer 2000; 85: 486 Torres LM, Braz J Infect Dis 2009; 13: 203
Suriname	Geraets DT, Sex Transm Infect 2014
Trinidad & Tobago	Andall-Brereton GM, Rev Panam Salud Publica 2011; 29: 220 Ragin CC, Biomarkers 2007; 12: 510
Uruguay	Berois N, J Med Virol 2014; 86: 647 Ramas V, J Med Virol 2013; 85: 845
USA	Castle PE, J Clin Oncol 2012; 30: 3044 Castle PE, Obstet Gynecol 2009; 113: 595 Chaturvedi AK, J Med Virol 2005; 75: 105 Cibas ES, Gynecol Oncol 2007; 104: 702 Cuzick J, Int J Cancer 2015; 136: 2854 Datta SD, Ann Intern Med 2008; 148: 493 Dunne EF, Cancer Causes Control 2013; 24: 403 Dunne EF, JAMA 2007; 297: 813 Evans MF, Cancer 2006; 106: 1054 Giuliano AR, Cancer Epidemiol Biomarkers Prev 1999; 8: 615 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2001; 10: 1129 Goodman MT, Cancer Res 2008; 68: 8813 Hernandez BY, Nutr Cancer 2004; 49: 109 Insinga RP, Cancer Epidemiol Biomarkers Prev 2007; 16: 709 Kahn JA, Obstet Gynecol 2008; 111: 1103 Khanna N, Int J Gynecol Cancer 2007; 17: 615 Kotloff KL, Sex Transm Dis 1998; 25: 243 Monsonego J, Gynecol Oncol 2015; 137: 47 Moscicki AB, JAMA 2001; 285: 2995 Schiffman M, Cancer Epidemiol Biomarkers Prev 2011; 20: 1398 Sherman ME, J Natl Cancer Inst 2003; 95: 46 Smith EM, Cancer Detect Prev 2003; 27: 472 Smith EM, Int J Gynaecol Obstet 2004; 87: 131 Swan DC, J Clin Microbiol 1999; 37: 1030 Tarkowski TA, J Infect Dis 2004; 189: 46 Wheeler CM, Int J Cancer 2013; 132: 198 Winer RL, Am J Epidemiol 2003; 157: 218 Zhao C, Cancer 2007; 111: 292
Venezuela	Michelli E, Invest Clin 2013; 54: 392 Téllez L, Ecancermedicalscience 2015; 9: 579

(Continued)

Table 33 – Continued

Country	Study
HPV type distribution for invasive cervical cancer (ICC)	
General sources	Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2014. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Li N, Int J Cancer 2011;128:927 3) Smith JS, Int J Cancer 2007;121:621 4) Clifford GM, Br J Cancer 2003;88:63 5) Clifford GM, Br J Cancer 2003;89:101.
Americas	
Argentina	Contributing studies: Alonio LV, J Clin Virol 2003; 27: 263 Bosch FX, J Natl Cancer Inst 1995; 87: 796 Golijow CD, Gynecol Oncol 2005; 96: 181 Turazza E, Acta Obstet Gynecol Scand 1997; 76: 271
Bolivia	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796
Brazil	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796 Cambruzzi E, Pathol Oncol Res 2005; 11: 114 de Oliveira CM, BMC Cancer 2013; 13: 357 Eluf-Neto J, Br J Cancer 1994; 69: 114 Lorenzato F, Int J Gynecol Cancer 2000; 10: 143 Rabelo-Santos SH, Mem Inst Oswaldo Cruz 2003; 98: 181 Serrano B, Cancer Epidemiol 2014 Tomita LY, Int J Cancer 2010; 126: 703
Canada	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796 Duggan MA, Hum Pathol 1995; 26: 319 Tran-Thanh D, Am J Obstet Gynecol 2003; 188: 129
Chile	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796 Roa JC, Int J Gynaecol Obstet 2009; 105: 150 Valdivia L IM, Rev Chilena Infectol 2010; 27: 11
Colombia	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796 Moreno-Acosta P, Virus Genes 2008; 37: 22 Murillo R, Infect Dis Obstet Gynecol 2009; 2009: 653598 Muñoz N, Int J Cancer 1992; 52: 743
Costa Rica	Contributing studies: Herrero R, J Infect Dis 2005; 191: 1796
Cuba	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796
Ecuador	Contributing studies: Mejía L, J Med Virol 2016; 88: 144
Honduras	Contributing studies: Ferreira M, Mod Pathol 2008; 21: 968
Jamaica	Contributing studies: Strickler HD, J Med Virol 1999; 59: 60
Mexico	Contributing studies: Aguilar-Lemarroy A, J Med Virol 2015; 87: 871 Alarcón-Romero Ldel C, Salud Publica Mex 2009; 51: 134 Carrillo-García A, Gynecol Oncol 2014; 134: 534 Flores-Miramontes MG, Virol J 2015; 12: 161 González-Losa Mdel R, J Clin Virol 2004; 29: 202 Guardado-Estrada M, PLoS ONE 2014; 9: e109406 Illades-Aguir B, Cancer Detect Prev 2009; 32: 300 Meyer T, J Infect Dis 1998; 178: 252 Piña-Sánchez P, Int J Gynecol Cancer 2006; 16: 1041 Serrano B, Cancer Epidemiol 2014 Torroella-Kouri M, Gynecol Oncol 1998; 70: 115
Nicaragua	Contributing studies: Hindryckx P, Sex Transm Infect 2006; 82: 334
Panama	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796
Peru	Contributing studies: Martorell M, Genet Mol Res 2012; 11: 2099 Santos C, Br J Cancer 2001; 85: 966
Paraguay	Contributing studies: Kasamatsu E, J Med Virol 2012; 84: 1628 Rolón PA, Int J Cancer 2000; 85: 486
Suriname	Contributing studies: De Boer MA, Int J Cancer 2005; 114: 422
Trinidad & Tobago	Contributing studies: Hosein F, Rev Panam Salud Publica 2013; 33: 267

(Continued)

Table 33 – Continued

Country	Study
USA	Contributing studies: Bosch FX, J Natl Cancer Inst 1995; 87: 796 Bryan JT, J Med Virol 2006; 78: 117 Burger RA, J Natl Cancer Inst 1996; 88: 1361 Burnett AF, Gynecol Oncol 1992; 47: 343 de Sanjose S, Lancet Oncol 2010; 11: 1048 Ferguson AW, Mod Pathol 1998; 11: 11 Guo M, Mod Pathol 2007; 20: 256 Hariri S, PLoS ONE 2012; 7: e34044 Hopenhayn C, J Low Genit Tract Dis 2014; 18: 182 Joste NE, Cancer Epidemiol Biomarkers Prev 2015; 24: 230 Paquette RL, Cancer 1993; 72: 1272 Patel DA, J Virol Methods 2009; 160: 78 Pirog EC, Am J Pathol 2000; 157: 1055 Quint KD, Gynecol Oncol 2009; 114: 390 Resnick RM, J Natl Cancer Inst 1990; 82: 1477 Schwartz SM, J Clin Oncol 2001; 19: 1906 Sebbelov AM, Microbes Infect 2000; 2: 121 Wentzensen N, Int J Cancer 2009; 124: 964 Wheeler CM, J Natl Cancer Inst 2009; 101: 475 Wistuba II, Cancer Res 1997; 57: 3154 Zuna RE, Mod Pathol 2007; 20: 167
Venezuela	Contributing studies: Sánchez-Lander J, Cancer Epidemiol 2012; 36: e284
HPV type distribution for cervical high grade squamous intraepithelial lesions	
General sources	Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Smith JS, Int J Cancer 2007;121:621 3) Clifford GM, Br J Cancer 2003;89:101.
Americas	
Argentina	Contributing studies: Abba MC, Rev Argent Microbiol 2003; 35: 74 Alonio LV, J Clin Virol 2003; 27: 263 Chouhy D, Int J Mol Med 2006; 18: 995 Deluca GD, Rev Inst Med Trop Sao Paulo 2004; 46: 9 Venezuela RF, Rev Inst Med Trop Sao Paulo 2012; 54: 11
Belize	Contributing studies: Cathro HP, Hum Pathol 2009; 40: 942
Brazil	Contributing studies: Camara GN, Mem Inst Oswaldo Cruz 2003; 98: 879 Carestiatto FN, Rev Soc Bras Med Trop 2006; 39: 428 Chagas BS, PLoS ONE 2015; 10: e0132570 Fernandes JV, BMC Res Notes 2010; 3: 96 Fernandes JV, Int J Gynaecol Obstet 2009; 105: 21 Freitas TP, Rev Inst Med Trop Sao Paulo 2007; 49: 297 Krambeck WM, Clin Exp Obstet Gynecol 2008; 35: 175 Lorenzato F, Int J Gynecol Cancer 2000; 10: 143 Pitta DR, Rev Bras Ginecol Obstet 2010; 32: 315 Resende LS, BMC Infect Dis 2014; 14: 214 Ribeiro AA, Int J Gynecol Pathol 2011; 30: 288 Terra AP, Tumori 2007; 93: 572 Tomita LY, Int J Cancer 2010; 126: 703
Canada	Contributing studies: Antonishyn NA, Arch Pathol Lab Med 2008; 132: 54 Coutlée F, J Med Virol 2011; 83: 1034 Jiang Y, J Infect Public Health 2011; 4: 219 Moore RA, Cancer Causes Control 2009; 20: 1387
Chile	Contributing studies: Ili CG, J Med Virol 2011; 83: 833
Colombia	Contributing studies: Bosch FX, Cancer Epidemiol Biomarkers Prev 1993; 2: 415 García DA, Open Virol J 2011; 5: 70 Muñoz N, Int J Cancer 1992; 52: 743
Costa Rica	Contributing studies: Herrero R, J Infect Dis 2005; 191: 1796
Cuba	Contributing studies: Soto Y, Sex Transm Dis 2007; 34: 974
Ecuador	Contributing studies: Mejía L, J Med Virol 2016; 88: 144
Honduras	Contributing studies: Ferreira M, Mod Pathol 2008; 21: 968
Jamaica	Contributing studies: Ratray C, J Infect Dis 1996; 173: 718 Strickler HD, J Med Virol 1999; 59: 60
Mexico	Contributing studies: Giuliano AR, Cancer Epidemiol Biomarkers Prev 2001; 10: 1129 Illades-Aguilar B, Gynecol Oncol 2010; 117: 291 Piña-Sánchez P, Int J Gynecol Cancer 2006; 16: 1041 Torroella-Kouri M, Gynecol Oncol 1998; 70: 115 Velázquez-Márquez N, Int J Infect Dis 2009; 13: 690
Nicaragua	Contributing studies: Hindryckx P, Sex Transm Infect 2006; 82: 334
Peru	Contributing studies: Martorell M, Genet Mol Res 2012; 11: 2099
Paraguay	Contributing studies: Mendoza LP, J Med Virol 2011; 83: 1351

(Continued)

Table 33 – Continued

Country	Study
USA	Contributing studies: Adam E, Am J Obstet Gynecol 1998; 178: 1235 Bell MC, Gynecol Oncol 2007; 107: 236 Castle PE, Cancer Epidemiol Biomarkers Prev 2010; 19: 1675 Castle PE, Cancer Epidemiol Biomarkers Prev 2011; 20: 946 Einstein MH, Int J Cancer 2007; 120: 55 Evans MF, Cancer 2006; 106: 1054 Evans MF, Eur J Gynaecol Oncol 2003; 24: 373 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2001; 10: 1129 Guo M, Mod Pathol 2007; 20: 256 Hariri S, J Infect Dis 2012; 206: 1878 Hariri S, PLoS ONE 2012; 7: e34044 Hu L, Mod Pathol 2005; 18: 267 Joste NE, Cancer Epidemiol Biomarkers Prev 2015; 24: 230 Kong CS, Am J Surg Pathol 2007; 31: 33 Lee SH, Int J Gynaecol Obstet 2009; 105: 210 Moscicki AB, Obstet Gynecol 2008; 112: 1335 Stoler MH, Am J Clin Pathol 2011; 135: 468 Vidal AC, Cancer Causes Control 2014; 25: 1055 Voss JS, Anal Quant Cytol Histol 2009; 31: 208 Wentzensen N, Int J Cancer 2009; 124: 964 Wheeler CM, J Infect Dis 2006; 194: 1291 Wheeler CM, J Natl Cancer Inst 2009; 101: 475 Zuna RE, Mod Pathol 2007; 20: 167
Venezuela	Contributing studies: Sánchez-Lander J, Cancer Epidemiol 2012; 36: e284
HPV type distribution for cervical low grade squamous intraepithelial lesions	
General sources	Based on meta-analysis performed by IARC's Infections and Cancer Epidemiology Group up to November 2011, the ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Guan P, Int J Cancer 2012;131:2349 2) Clifford GM, Cancer Epidemiol Biomarkers Prev 2005;14:1157
Americas	
Argentina	Contributing studies: Abba MC, Rev Argent Microbiol 2003; 35: 74 Chouhy D, Int J Mol Med 2006; 18: 995 Deluca GD, Rev Inst Med Trop Sao Paulo 2004; 46: 9 Eiguchi K, J Low Genit Tract Dis 2008; 12: 262 Tonon SA, Infect Dis Obstet Gynecol 1999; 7: 237 Venezuela RF, Rev Inst Med Trop Sao Paulo 2012; 54: 11
Belize	Contributing studies: Cathro HP, Hum Pathol 2009; 40: 942
Brazil	Contributing studies: Carestiatto FN, Rev Soc Bras Med Trop 2006; 39: 428 Fernandes JV, Int J Gynaecol Obstet 2009; 105: 21 Franco E, Rev Panam Salud Publica 1999; 6: 223 Freitas TP, Rev Inst Med Trop Sao Paulo 2007; 49: 297 Krambeck WM, Clin Exp Obstet Gynecol 2008; 35: 175 Lorenzato F, Int J Gynecol Cancer 2000; 10: 143 Pitta DR, Rev Bras Ginecol Obstet 2010; 32: 315 Resende LS, BMC Infect Dis 2014; 14: 214 Ribeiro AA, Int J Gynecol Pathol 2011; 30: 288 Tomita LY, Int J Cancer 2010; 126: 703
Canada	Contributing studies: Antonishyn NA, Arch Pathol Lab Med 2008; 132: 54 Coutlée F, J Med Virol 2011; 83: 1034 Jiang Y, J Infect Public Health 2011; 4: 219 Koushik A, Cancer Detect Prev 2005; 29: 307 Moore RA, Cancer Causes Control 2009; 20: 1387 Richardson H, Cancer Epidemiol Biomarkers Prev 2003; 12: 485 Sellors JW, CMAJ 2000; 163: 503 Sellors JW, CMAJ 2000; 163: 513 Tran-Thanh D, Am J Obstet Gynecol 2003; 188: 129
Chile	Contributing studies: Ili CG, J Med Virol 2011; 83: 833 López M J, Rev Med Chil 2010; 138: 1343
Colombia	Contributing studies: Del Río-Ospina L, BMC Cancer 2015; 15: 100 García DA, Open Virol J 2011; 5: 70 Molano M, Br J Cancer 2002; 87: 1417
Cuba	Contributing studies: Soto Y, Sex Transm Dis 2007; 34: 974
Ecuador	Contributing studies: Tornosello ML, J Med Virol 2008; 80: 1959
Honduras	Contributing studies: Ferreira M, Mod Pathol 2008; 21: 968
Jamaica	Contributing studies: Rattray C, J Infect Dis 1996; 173: 718 Strickler HD, J Med Virol 1999; 59: 60
Mexico	Contributing studies: Carrillo A, Salud Publica Mex 2004; 46: 7 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2001; 10: 1129 González-Losa Mdel R, J Clin Virol 2004; 29: 202 Illades-Aguir B, Gynecol Oncol 2010; 117: 291 Piña-Sánchez P, Int J Gynecol Cancer 2006; 16: 1041 Torroella-Kouri M, Gynecol Oncol 1998; 70: 115 Velázquez-Márquez N, Int J Infect Dis 2009; 13: 690
Nicaragua	Contributing studies: Hindryckx P, Sex Transm Infect 2006; 82: 334

(Continued)

Table 33 – Continued

Country	Study
Peru	Contributing studies: Martorell M, Genet Mol Res 2012; 11: 2099
Paraguay	Contributing studies: Mendoza LP, J Med Virol 2011; 83: 1351 Tonon SA, Infect Dis Obstet Gynecol 1999; 7: 237
Uruguay	Contributing studies: Ramas V, J Med Virol 2013; 85: 845
USA	Contributing studies: Adam E, Am J Obstet Gynecol 2000; 182: 257 Bell MC, Gynecol Oncol 2007; 107: 236 Brown DR, Sex Transm Dis 2002; 29: 763 Castle PE, Cancer Epidemiol Biomarkers Prev 2011; 20: 946 Einstein MH, Int J Cancer 2007; 120: 55 Evans MF, Cancer 2006; 106: 1054 Evans MF, Mod Pathol 2002; 15: 1339 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2001; 10: 1129 Guo M, Mod Pathol 2007; 20: 256 Hu L, Mod Pathol 2005; 18: 267 Jarboe EA, Hum Pathol 2004; 35: 396 Kong CS, Am J Surg Pathol 2007; 31: 33 Kulasingam SL, JAMA 2002; 288: 1749 Lee SH, Int J Gynaecol Obstet 2009; 105: 210 Liaw KL, J Natl Cancer Inst 1999; 91: 954 Moscicki AB, Obstet Gynecol 2008; 112: 1335 Park K, Int J Gynecol Pathol 2007; 26: 457 Schiff M, Am J Epidemiol 2000; 152: 716 Stoler MH, Am J Clin Pathol 2011; 135: 468 Swan DC, J Clin Microbiol 1999; 37: 1030 Tortolero-Luna G, Cad Saude Publica 1998; 14 Suppl 3: 149 Vidal AC, Cancer Causes Control 2014; 25: 1055 Voss JS, Anal Quant Cytol Histol 2009; 31: 208 Wentzensen N, Int J Cancer 2009; 124: 964 Wheeler CM, J Infect Dis 2006; 194: 1291 Wheeler CM, J Natl Cancer Inst 2009; 101: 475 Zuna RE, Mod Pathol 2007; 20: 167
Venezuela	Contributing studies: Correnti M, Gynecol Oncol 2011; 121: 527
HPV type distribution for invasive anal cancer	
General sources	Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Americas	
Canada	Ouhoumane N, Cancer Epidemiol 2013; 37: 807
Chile	Aleman L, Int J Cancer 2015; 136: 98
Colombia	Aleman L, Int J Cancer 2015; 136: 98
Ecuador	Aleman L, Int J Cancer 2015; 136: 98
Guatemala	Aleman L, Int J Cancer 2015; 136: 98
Honduras	Aleman L, Int J Cancer 2015; 136: 98
Mexico	Aleman L, Int J Cancer 2015; 136: 98
Paraguay	Aleman L, Int J Cancer 2015; 136: 98
USA	Aleman L, Int J Cancer 2015; 136: 98 Daling JR, Cancer 2004; 101: 270 Palefsky JM, Cancer Res 1991; 51: 1014 Zaki SR, Am J Pathol 1992; 140: 1345
HPV type distribution for anal intraepithelial neoplasia (AIN)	
General sources	Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Americas	
Canada	Gohy L, J Acquir Immune Defic Syndr 2008; 49: 32 Salit IE, Cancer Epidemiol Biomarkers Prev 2009; 18: 1986
Chile	Aleman L, Int J Cancer 2015; 136: 98
Colombia	Aleman L, Int J Cancer 2015; 136: 98
Ecuador	Aleman L, Int J Cancer 2015; 136: 98
Guatemala	Aleman L, Int J Cancer 2015; 136: 98
Honduras	Aleman L, Int J Cancer 2015; 136: 98
Mexico	Aleman L, Int J Cancer 2015; 136: 98
Paraguay	Aleman L, Int J Cancer 2015; 136: 98
USA	Sahasrabuddhe VV, J Infect Dis 2013; 207: 392

(Continued)

Table 33 – Continued

Country	Study
HPV type distribution for invasive vulvar cancer	
General sources	Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Americas	
Argentina	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Brazil	de Sanjosé S, Eur J Cancer 2013; 49: 3450 Pinto AP, Gynecol Oncol 1999; 74: 61
Chile	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Colombia	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Ecuador	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Guatemala	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Honduras	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Mexico	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Paraguay	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Uruguay	de Sanjosé S, Eur J Cancer 2013; 49: 3450
USA	de Sanjosé S, Eur J Cancer 2013; 49: 3450 Gargano JW, J Low Genit Tract Dis 2012; 16: 471 Kim YT, Hum Pathol 1996; 27: 389 Madeleine MM, J Natl Cancer Inst 1997; 89: 1516 Riethdorf S, Hum Pathol 2004; 35: 1477 Sutton BC, Mod Pathol 2008; 21: 345 Tate JE, Gynecol Oncol 1994; 53: 78
Venezuela	de Sanjosé S, Eur J Cancer 2013; 49: 3450
HPV type distribution for vulvar intraepithelial neoplasia (VIN)	
General sources	Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Americas	
Argentina	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Brazil	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Chile	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Colombia	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Ecuador	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Guatemala	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Honduras	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Mexico	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Paraguay	de Sanjosé S, Eur J Cancer 2013; 49: 3450
Uruguay	de Sanjosé S, Eur J Cancer 2013; 49: 3450
USA	Gargano JW, J Low Genit Tract Dis 2012; 16: 471 Madeleine MM, J Natl Cancer Inst 1997; 89: 1516 Riethdorf S, Hum Pathol 2004; 35: 1477 Srodon M, Am J Surg Pathol 2006; 30: 1513
Venezuela	de Sanjosé S, Eur J Cancer 2013; 49: 3450
HPV type distribution for invasive vaginal cancer	
General sources	Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Americas	
Argentina	Aleman L, Eur J Cancer 2014; 50: 2846
Brazil	Aleman L, Eur J Cancer 2014; 50: 2846
Chile	Aleman L, Eur J Cancer 2014; 50: 2846

(Continued)

Table 33 – Continued

Country	Study
Colombia	Alemaný L, Eur J Cancer 2014; 50: 2846
Ecuador	Alemaný L, Eur J Cancer 2014; 50: 2846
Guatemala	Alemaný L, Eur J Cancer 2014; 50: 2846
Mexico	Alemaný L, Eur J Cancer 2014; 50: 2846
Paraguay	Alemaný L, Eur J Cancer 2014; 50: 2846
Uruguay	Alemaný L, Eur J Cancer 2014; 50: 2846
USA	Alemaný L, Eur J Cancer 2014; 50: 2846
Venezuela	Alemaný L, Eur J Cancer 2014; 50: 2846
HPV type distribution for vaginal intraepithelial neoplasia (VAIN)	
General sources	Based on systematic reviews (up to 2008) performed by ICO for the IARC Monograph on the Evaluation of Carcinogenic Risks to Humans volume 100B and IARC's Infections and Cancer Epidemiology Group. The ICO HPV Information Centre has updated data until June 2015. Reference publications: 1) Bouvard V, Lancet Oncol 2009;10:321 2) De Vuyst H, Int J Cancer 2009;124:1626
Americas	
Argentina	Alemaný L, Eur J Cancer 2014; 50: 2846
Brazil	Alemaný L, Eur J Cancer 2014; 50: 2846
Chile	Alemaný L, Eur J Cancer 2014; 50: 2846
Colombia	Alemaný L, Eur J Cancer 2014; 50: 2846
Ecuador	Alemaný L, Eur J Cancer 2014; 50: 2846
Guatemala	Alemaný L, Eur J Cancer 2014; 50: 2846
Mexico	Alemaný L, Eur J Cancer 2014; 50: 2846
Paraguay	Alemaný L, Eur J Cancer 2014; 50: 2846
Uruguay	Alemaný L, Eur J Cancer 2014; 50: 2846
USA	Alemaný L, Eur J Cancer 2014; 50: 2846 Daling JR, Gynecol Oncol 2002; 84: 263 Srodon M, Am J Surg Pathol 2006; 30: 1513
Venezuela	Alemaný L, Eur J Cancer 2014; 50: 2846
HPV type distribution for invasive penile cancer	
General sources	The ICO HPV Information Centre has updated data until June 2015. Reference publications (up to 2008): 1) Bouvard V, Lancet Oncol 2009;10:321 2) Miralles-Guri C, J Clin Pathol 2009;62:870
Americas	
Argentina	Picconi MA, J Med Virol 2000; 61: 65
Brazil	Afonso LA, Mem Inst Oswaldo Cruz 2012; 107: 18 Calmon MF, PLoS ONE 2013; 8: e53260 de Sousa ID, BMC Urol 2015; 15: 13 Fonseca AG, Int Braz J Urol 2013; 39: 542 Scheiner MA, Int Braz J Urol 2008; 34: 467
Canada	Maden C, J Natl Cancer Inst 1993; 85: 19
Mexico	López-Romero R, Int J Clin Exp Pathol 2013; 6: 1409
Paraguay	Cubilla AL, Am J Surg Pathol 2010; 34: 104 Rubin MA, Am J Pathol 2001; 159: 1211
USA	Alemaný L, Eur Urol 2016; 69: 953 Cupp MR, J Urol 1995; 154: 1024 Daling JR, Int J Cancer 2005; 116: 606 Hernandez BY, Front Oncol 2014; 4: 9 Rubin MA, Am J Pathol 2001; 159: 1211
HPV type distribution for penile intraepithelial neoplasia (PEIN)	
General sources	The ICO HPV Information Centre has updated data until June 2014. Reference publication (up to 2008): Bouvard V, Lancet Oncol 2009;10:321
Americas	
Mexico	López-Romero R, Int J Clin Exp Pathol 2013; 6: 1409
USA	Cupp MR, J Urol 1995; 154: 1024
The anogenital prevalence of HPV-DNA in men: HPV in men	
General sources	Based on published systematic reviews, the ICO HPV Information Centre has updated data until October 2015. Reference publications: 1) Dunne EF, J Infect Dis 2006; 194: 1044 2) Smith JS, J Adolesc Health 2011; 48: 540 3) Olesen TB, Sex Transm Infect 2014; 90: 455 4) Hebnes JB, J Sex Med 2014; 11: 2630.

(Continued)

Table 33 – Continued

Country	Study
Americas	
Brazil	Franceschi S, Br J Cancer 2002; 86: 705 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036 Nyitray AG, J Infect Dis 2011; 203: 49 Rosenblatt C, Int J Gynaecol Obstet 2004; 84: 156 Vardas E, J Infect Dis 2011; 203: 58
Canada	Vardas E, J Infect Dis 2011; 203: 58
Chile	Guzmán P, Rev Med Chil 2008; 136: 1381
Colombia	Franceschi S, Br J Cancer 2002; 86: 705
Mexico	Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036 Lajous M, Cancer Epidemiol Biomarkers Prev 2005; 14: 1710 Lazcano-Ponce E, Sex Transm Dis 2001; 28: 277 Nyitray AG, J Infect Dis 2011; 203: 49 Sánchez-Alemán MA, Salud Publica Mex 2002; 44: 442 Vaccarella S, Int J Cancer 2006; 119: 1934 Vardas E, J Infect Dis 2011; 203: 58
USA	Giuliano AR, J Infect Dis 2008; 198: 827 Giuliano AR, Cancer Epidemiol Biomarkers Prev 2008; 17: 2036 Hernandez BY, J Infect Dis 2008; 197: 787 Nielson CM, Cancer Epidemiol Biomarkers Prev 2007; 16: 1107 Nyitray AG, J Infect Dis 2011; 203: 49 Partridge JM, J Infect Dis 2007; 196: 1128 Vardas E, J Infect Dis 2011; 203: 58 Weaver BA, J Infect Dis 2004; 189: 677
The anogenital prevalence of HPV-DNA in men: HPV in special subgroups (HIV, MSM, etc)	
General sources	Based on published systematic reviews, the ICO HPV Information Centre has updated data until October 2015. Reference publications: 1) Dunne EF, J Infect Dis 2006; 194: 1044 2) Smith JS, J Adolesc Health 2011; 48: 540 3) Olesen TB, Sex Transm Infect 2014; 90: 455 4) Hebnes JB, J Sex Med 2014; 11: 2630.
Americas	
Argentina	Pando MA, PLoS One 2012; 7: 127
Brazil	de Lima Rocha MG, PLoS ONE 2012; 7: 128 Franceschi S, Br J Cancer 2002; 86: 705 Freire MP, Int Braz J Urol 2014; 40: 67 Goldstone S, J Infect Dis 2011; 203: 66 Guimarães MD, J Acquir Immune Defic Syndr 2011; 57 Suppl 3: S217 Nicolau SM, Urology 2005; 65: 251 Nyitray AG, J Infect Dis 2011; 203: 49 Rombaldi RL, Braz J Med Biol Res 2006; 39: 177 Rosenblatt C, Int J Gynaecol Obstet 2004; 84: 156
Canada	de Pokomandy A, J Infect Dis 2009; 199: 965 Goldstone S, J Infect Dis 2011; 203: 66 Ogilvie GS, Sex Transm Infect 2009; 85: 221 Salit IE, Cancer Epidemiol Biomarkers Prev 2009; 18: 1986 Salit IE, AIDS 2010; 24: 1307
Colombia	Franceschi S, Br J Cancer 2002; 86: 705
Mexico	Goldstone S, J Infect Dis 2011; 203: 66 Leyva-López AG, Salud Publica Mex 2003; 45 Suppl 5: S589 Mendez-Martinez R, BMC Infect Dis 2014; 14: 104 Nyitray AG, J Infect Dis 2011; 203: 49 Torres-Ibarra L, Prev Med 2014; 69C: 157
Peru	Blas MM, PLoS One 2015; 10: 124 Quinn R, AIDS Res Hum Retroviruses 2012; 28: 1734
USA	Baken LA, J Infect Dis 1995; 171: 429 Baldwin SB, J Infect Dis 2003; 187: 1064 Berry JM, Dis Colon Rectum 2009; 52: 239 Caussy D, Int J Cancer 1990; 46: 214 Chin-Hong PV, J Infect Dis 2004; 190: 2070 Chin-Hong PV, Ann Intern Med 2008; 149: 300 Colón-López V, PLoS ONE 2014; 9: 132 Conley L, J Infect Dis 2010; 202: 1567 Critchlow CW, AIDS 1998; 12: 1177 Fife KH, Sex Transm Dis 2003; 30: 246 Friedman HB, J Infect Dis 1998; 178: 45 Gandra S, HIV AIDS Auckl 2015; 7: 29 Goldstone S, J Infect Dis 2011; 203: 66 Hood JE, Int J STD AIDS 2016; 27: 353 Kiviat NB, AIDS 1993; 7: 43 Moscicki AB, AIDS 2003; 17: 311 Nyitray AG, J Infect Dis 2011; 203: 49 Palefsky JM, Genitourin Med 1997; 73: 174 Palefsky JM, J Infect Dis 1998; 177: 361 Palefsky JM, AIDS 2005; 19: 1407 Wiley DJ, PLoS ONE 2013; 8: 131 Wilkin TJ, J Infect Dis 2004; 190: 1685

(Continued)

Table 33 – Continued

Country	Study
HPV prevalence and type distribution in oral specimens collected from healthy population	
General sources	Systematic review and meta-analysis was performed by ICO HPV Information Centre until July 2012. Pubmed was searched using the keywords oral and papillomavirus. Inclusion criteria: studies reporting oral HPV prevalence in healthy population in Europe; n > 50. Exclusion criteria: focused only in children or immunosuppressed population; not written in English; case-control studies; commentaries and systematic reviews and studies that did not use HPV DNA detection methods.
HPV prevalence and type distribution in invasive oral cavity squamous cell carcinoma	
General sources	Based on systematic reviews and meta-analysis performed by ICO. Reference publications: 1) Ndiaye C, Lancet Oncol 2014; 15: 1319 2) Kreimer AR, Cancer Epidemiol Biomarkers Prev 2005; 14: 467
Americas	
Argentina	González JV, Medicina (B Aires) 2007; 67: 363 Ribeiro KB, Int J Epidemiol 2011; 40: 489
Brazil	Oliveira MC, Auris Nasus Larynx 2009; 36: 450 Ribeiro KB, Int J Epidemiol 2011; 40: 489 Rivero ER, Braz Oral Res 2006; 20: 21
Canada	Herrero R, J Natl Cancer Inst 2003; 95: 1772 Lingen MW, Oral Oncol 2013; 49: 1 Noble-Topham SE, Arch Otolaryngol Head Neck Surg 1993; 119: 1299
Cuba	Herrero R, J Natl Cancer Inst 2003; 95: 1772 Ribeiro KB, Int J Epidemiol 2011; 40: 489
Mexico	Anaya-Saavedra G, Arch Med Res 2008; 39: 189 Ibieta BR, Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005; 99: 311
USA	Chuang AY, Oral Oncol 2008; 44: 915 Furniss CS, Int J Cancer 2007; 120: 2386 Ha PK, Clin Cancer Res 2002; 8: 1203 Harris SL, Head Neck 2011; 33: 1622 Holladay EB, Am J Clin Pathol 1993; 100: 36 Hooper JE, Appl Immunohistochem Mol Morphol 2015; 23: 266 Liang XH, J Oral Maxillofac Surg 2008; 66: 1875 Lingen MW, Oral Oncol 2013; 49: 1 Lohavanichbutr P, Arch Otolaryngol Head Neck Surg 2009; 135: 180 Paz IB, Cancer 1997; 79: 595 Schlecht NF, Mod Pathol 2011; 24: 1295 Schwartz SM, J Natl Cancer Inst 1998; 90: 1626 Smith EM, Int J Cancer 2004; 108: 766 Walline HM, JAMA Otolaryngol Head Neck Surg 2013; 139: 1320 Zhao M, Int J Cancer 2005; 117: 605
Venezuela	Miller CS, Oral Surg Oral Med Oral Pathol 1994; 77: 480 Premoli-De-Percoco G, J Oral Pathol Med 2001; 30: 355
HPV prevalence and type distribution in invasive oropharyngeal squamous cell carcinoma	
General sources	Based on systematic reviews and meta-analysis performed by ICO. Reference publications: 1) Ndiaye C, Lancet Oncol 2014; 15: 1319 2) Kreimer AR, Cancer Epidemiol Biomarkers Prev 2005; 14: 467
Americas	
Argentina	Ribeiro KB, Int J Epidemiol 2011; 40: 489
Brazil	Cortezzi SS, Cancer Genet Cytogenet 2004; 150: 44 Ribeiro KB, Int J Epidemiol 2011; 40: 489
Canada	Nichols AC, J Otolaryngol Head Neck Surg 2013; 42: 9
Cuba	Herrero R, J Natl Cancer Inst 2003; 95: 1772 Ribeiro KB, Int J Epidemiol 2011; 40: 489

(Continued)

Table 33 – Continued

Country	Study
USA	Agoston ES, Am J Clin Pathol 2010; 134: 36 Chaturvedi AK, J Clin Oncol 2011; 29: 4294 Cohen MA, Acta Otolaryngol 2008; 128: 583 D'Souza G, J Clin Oncol 2014; 32: 2408 D'Souza G, N Engl J Med 2007; 356: 1944 Ernster JA, Laryngoscope 2007; 117: 2115 Furniss CS, Int J Cancer 2007; 120: 2386 Hooper JE, Appl Immunohistochem Mol Morphol 2015; 23: 266 Isayeva T, Hum Pathol 2014; 45: 310 Jordan RC, Am J Surg Pathol 2012; 36: 945 Kerr DA, Am J Surg Pathol 2015; 39: 1643 Kingma DW, Anticancer Res 2010; 30: 5099 Kong CS, Int J Radiat Oncol Biol Phys 2009; 74: 553 Lohavanichbutr P, Arch Otolaryngol Head Neck Surg 2009; 135: 180 Posner MR, Ann Oncol 2011; 22: 1071 Schlecht NF, Mod Pathol 2011; 24: 1295 Schwartz SM, J Natl Cancer Inst 1998; 90: 1626 Sethi S, Int J Cancer 2012; 131: 1179 Smith EM, Int J Cancer 2004; 108: 766 Steinau M, Emerging Infect Dis 2014; 20: 822 Strome SE, Clin Cancer Res 2002; 8: 1093 Tezal M, Arch Otolaryngol Head Neck Surg 2009; 135: 391 Walline HM, JAMA Otolaryngol Head Neck Surg 2013; 139: 1320 Zhao M, Int J Cancer 2005; 117: 605
HPV prevalence and type distribution in invasive hypopharyngeal squamous cell carcinoma	
General sources	Based on systematic reviews and meta-analysis performed by ICO. Reference publications: 1) Ndiaye C, Lancet Oncol 2014; 15: 1319 2) Kreimer AR, Cancer Epidemiol Biomarkers Prev 2005; 14: 467
Americas	
Argentina	Ribeiro KB, Int J Epidemiol 2011; 40: 489
Brazil	Miranda FA, J Histochem Cytochem 2009; 57: 665 Ribeiro KB, Int J Epidemiol 2011; 40: 489
Canada	Fliss DM, Laryngoscope 1994; 104: 146
Chile	Gheit T, J Med Virol 2014; 86: 642 Torrente MC, Acta Otolaryngol 2005; 125: 888
Cuba	García-Milián R, Acta Otolaryngol 1998; 118: 754 Ribeiro KB, Int J Epidemiol 2011; 40: 489
USA	Brandwein MS, Ann Otol Rhinol Laryngol 1993; 102: 309 Chernock RD, Mod Pathol 2013; 26: 223 Furniss CS, Int J Cancer 2007; 120: 2386 Paz IB, Cancer 1997; 79: 595 Schlecht NF, Mod Pathol 2011; 24: 1295 Shen J, Mod Pathol 1996; 9: 15 Zhao M, Int J Cancer 2005; 117: 605

10 Glossary

Table 34: Glossary

Term	Definition
Incidence	Incidence is the number of new cases arising in a given period in a specified population. This information is collected routinely by cancer registries. It can be expressed as an absolute number of cases per year or as a rate per 100,000 persons per year (see Crude rate and ASR below). The rate provides an approximation of the average risk of developing a cancer.
Mortality	Mortality is the number of deaths occurring in a given period in a specified population. It can be expressed as an absolute number of deaths per year or as a rate per 100,000 persons per year.
Prevalence	The prevalence of a particular cancer can be defined as the number of persons in a defined population who have been diagnosed with that type of cancer, and who are still alive at the end of a given year, the survivors. Complete prevalence represents the number of persons alive at certain point in time who previously had a diagnosis of the disease, regardless of how long ago the diagnosis was, or if the patient is still under treatment or is considered cured. Partial prevalence, which limits the number of patients to those diagnosed during a fixed time in the past, is a particularly useful measure of cancer burden. Prevalence of cancers based on cases diagnosed within one, three and five years are presented as they are likely to be of relevance to the different stages of cancer therapy, namely, initial treatment (one year), clinical follow-up (three years) and cure (five years). Patients who are still alive five years after diagnosis are usually considered cured since the death rates of such patients are similar to those in the general population. There are exceptions, particularly breast cancer. Prevalence is presented for the adult population only (ages 15 and over), and is available both as numbers and as proportions per 100,000 persons.
Crude rate	Data on incidence or mortality are often presented as rates. For a specific tumour and population, a crude rate is calculated simply by dividing the number of new cancers or cancer deaths observed during a given time period by the corresponding number of person years in the population at risk. For cancer, the result is usually expressed as an annual rate per 100,000 persons at risk.
ASR (age-standardised rate)	An age-standardised rate (ASR) is a summary measure of the rate that a population would have if it had a standard age structure. Standardization is necessary when comparing several populations that differ with respect to age because age has a powerful influence on the risk of cancer. The ASR is a weighted mean of the age-specific rates; the weights are taken from population distribution of the standard population. The most frequently used standard population is the World Standard Population. The calculated incidence or mortality rate is then called age-standardised incidence or mortality rate (world). It is also expressed per 100,000. The world standard population used in GLOBOCAN is as proposed by Segi [1] and modified by Doll and al. [2]. The age-standardised rate is calculated using 10 age-groups. The result may be slightly different from that computed using the same data categorised using the traditional 5 year age bands.
Cumulative risk	Cumulative incidence/mortality is the probability or risk of individuals getting/dying from the disease during a specified period. For cancer, it is expressed as the number of new born children (out of 100, or 1000) who would be expected to develop/die from a particular cancer before the age of 75 if they had the rates of cancer observed in the period in the absence of competing causes.
Cytologically normal women	No abnormal cells are observed on the surface of their cervix upon cytology.

(Continued)

Table 34 – Continued

Term	Definition
Cervical Intraepithelial Neoplasia (CIN) / Squamous Intraepithelial Lesions (SIL)	SIL and CIN are two commonly used terms to describe precancerous lesions or the abnormal growth of squamous cells observed in the cervix. SIL is an abnormal result derived from cervical cytological screening or Pap smear testing. CIN is a histological diagnosis made upon analysis of cervical tissue obtained by biopsy or surgical excision. The condition is graded as CIN 1, 2 or 3, according to the thickness of the abnormal epithelium (1/3, 2/3 or the entire thickness).
Low-grade cervical lesions (LSIL/CIN-1)	Low-grade cervical lesions are defined by early changes in size, shape, and number of ab-normal cells formed on the surface of the cervix and may be referred to as mild dysplasia, LSIL, or CIN-1.
High-grade cervical lesions (HSIL / CIN-2 / CIN-3 / CIS)	High-grade cervical lesions are defined by a large number of precancerous cells on the sur-face of the cervix that are distinctly different from normal cells. They have the potential to become cancerous cells and invade deeper tissues of the cervix. These lesions may be referred to as moderate or severe dysplasia, HSIL, CIN-2, CIN-3 or cervical carcinoma in situ (CIS).
Carcinoma in situ (CIS)	Preinvasive malignancy limited to the epithelium without invasion of the basement membrane. CIN 3 encompasses the squamous carcinoma in situ.
Invasive cervical cancer (ICC) / Cervical cancer	If the high-grade precancerous cells invade the basement membrane is called ICC. ICC stages range from stage I (cancer is in the cervix or uterus only) to stage IV (the cancer has spread to distant organs, such as the liver).
Invasive squamous cell carcinoma	Invasive carcinoma composed of cells resembling those of squamous epithelium
Adenocarcinoma	Invasive tumour with glandular and squamous elements intermingled.
Eastern Europe	References included in Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, and Ukraine.
Northern Europe	References included in Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, and United Kingdom of Great Britain and Northern Ireland.
Southern Europe	References included in Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Montenegro, Portugal, Serbia, Slovenia, Spain, The former Yugoslav Republic of Macedonia.
Western Europe	References included in Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Netherlands, and Switzerland.
Europe PREHDICT	References included in Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The former Yugoslav Republic of Macedonia, Turkey, Ukraine, and United Kingdom of Great Britain and Northern Ireland.

Acknowledgments

This report has been developed by the Unit of Infections and Cancer, Cancer Epidemiology Research Program, at the Institut Català d'Oncologia (ICO, Catalan Institute of Oncology) within the PREHDICT project (7th Framework Programme grant HEALTH-F3-2010-242061, PREHDICT). The HPV Information Centre is being developed by the Institut Català d'Oncologia (ICO). The Centre was originally launched by ICO with the collaboration of WHO's Immunisation, Vaccines and Biologicals (IVB) department and support from the Bill and Melinda Gates Foundation.

Institut Català d'Oncologia (ICO), in alphabetic order

Albero G, Barrionuevo-Rosas L, Bosch FX, Bruni L, de Sanjosé S, Gómez D, Mena M, Muñoz J, Serrano B.

7th Framework Programme grant PREHDICT project: health-economic modelling of PREvention strategies for Hpv-related Diseases in European Countries. Coordinated by Drs. Johannes Berkhof and Chris Meijer at VUMC, Vereniging Voor Christelijk Hoger Onderwijs Wetenschappelijk Onderzoek En Patientenzorg, the Netherlands.
(http://cordis.europa.eu/projects/rcn/94423_en.html)

7th Framework Programme grant HPV AHEAD project: Role of human papillomavirus infection and other co-factors in the aetiology of head and neck cancer in India and Europe. Coordinated by Dr. Massimo Tommasino at IARC, International Agency of Research on Cancer, Lyon, France.
(http://cordis.europa.eu/project/rcn/100268_en.html)

International Agency for Research on Cancer (IARC)

Note to the reader

Anyone who is aware of relevant published data that may not have been included in the present report is encouraged to contact the HPV Information Centre for potential contributions.

Although efforts have been made by the HPV Information Centre to prepare and include as accurately as possible the data presented, mistakes may occur. Readers are requested to communicate any errors to the HPV Information Centre, so that corrections can be made in future volumes.

Disclaimer

The information in this database is provided as a service to our users. Any digital or printed publication of the information provided in the web site should be accompanied by an acknowledgment of the HPV Information Centre as the source. Systematic retrieval of data to create, directly or indirectly, a scientific publication, collection, database, directory or website requires a permission from the HPV Information Centre.

The responsibility for the interpretation and use of the material contained in the HPV Information Centre lies on the user. In no event shall the HPV Information Centre be liable for any damages arising from the use of the information.

Licensed Logo Use

Use, reproduction, copying, or redistribution of PREHDICT or HPV Information Centre logos are strictly prohibited without explicit written permission from the HPV Information Centre.

Contact information:

ICO/IARC HPV Information Centre
Institut Català d'Oncologia
Avda. Gran Via de l'Hospitalet, 199-203
08908 L'Hospitalet de Llobregat (Barcelona, Spain)
e-mail: info@hpvcentre.net
internet address: www.hpvcentre.net

