The burden of Group B *Streptococcus* for pregnant women, stillbirths and children

Paper 2: Maternal colonization with Group B *Streptococcus* and serotype distribution worldwide: systematic review and meta-analyses

Supplementary information

Contents

Supplementary Table S1: Search terms

Matern* OR pregnan* OR Antenatal OR Antepartum OR Vagin* OR Recto-Vagin* OR vagino-rectal OR rectovaginal OR Obstetric*OR Pregnancy {MeSH} OR Vagina {MeSH} AND Streptococcus agalactiae OR group b streptococc* OR Streptococc* group B OR Streptococcus agalactiae {MeSH} AND Epidemiolog* OR Prevalence OR Colonis* OR Coloniz* OR Frequenc* OR Screen* OR Carriage OR Serotyp* OR Rate OR Epidemiology {MeSH} OR Prevalence {MeSH} OR Screening {MeSH}
AND
Streptococcus
Streptococcal
Streptococci AND (Group AND B) or Agalactiae
Streptococcus Agalactiae MeSH Terms

Supplementary Table S2: Maternal GBS colonization: study characteristics of unpublished data

Country	Investigator	Years	Colonization	Serotypes	Number of women tested
South Africa	Cutland	2014-2016	Y	Y	4649
Mozambique	Madrid	2014-2015	Y	Y	320
Morocco	Bassat	2013	Y	N	347
Guatemala	Asturius		Y	N	990
India	Gaind	2015-2016	Y	N	400
India	Kumar	2003-2006	Y	Y	657
Bangladesh	Saha	2012-2013	Y	Y	1166
India	Anthony		Y	N	72
Overall					8601

Supplementary Table S3: Maternal GBS colonization: study characteristics by analysis type

Study Characteristics	Number of studies
Colonization prevalence	317
Serotype distribution	119
Selective enrichment / High sensitivity selective agar	249
Samples included rectal site	215
Timing of swab described as before 35 weeks	94
Timing of swab described as at delivery	82
Published before year 2000	45
Described inclusion of a Rural population	31
Contributed to adjustment factor analysis	39
Unpublished data sets	8
Total	390

Supplementary Table S4: Study Characteristics: Maternal GBS Colonization in pregnancy

Region	Country	Author	Year	Gestational age when swab taken	Sample Site for Swab	Selective enrichment / agar*	Women tested (n)	GBS Colonized (n)	Prevalence (%)
Australia and New	Australia	Gilbert[1]	2002	throughout	Recto/perianal and vaginal	Y	1096	296	27
Australia and New	Australia	Hiller[2]	2005	32/36/labor	Recto/perianal and vaginal	Y	865	168	19
Australia and New	Australia	Taylor[3]	2006	throughout pregnancy	Recto/perianal and vaginal	Y	168	43	26
Australia and New Zealand	New Zealand	Grimwood[4]	2002	35-37	Recto/perianal and vaginal	Y	240	52	22
Caribbean	Dominica	Fernandez[5]	2006	delivery	Recto/perianal and vaginal	Y	207	90	43
Caribbean	Trinidad	Orrett[6]	2004	3rd trimester	Recto/perianal and vaginal	Y	405	130	32
Caribbean	Trinidad	Orrett[7]	2003	3rd trimester	Recto/perianal and vaginal	Y	201	66	33
Caribbean	Trinidad	Orrett[8]	1994	3rd trimester	Recto/perianal and vaginal	Y	204	64	31
Caribbean	Cuba	Cruz[9]	2014	35-37	Recto/perianal and vaginal	Y	120	33	28
Central America	Mexico	Gonzalez[10]	2002	3rd trim	Recto/perianal and vaginal	N	691	97	14
Central America	Mexico	Gonzalez[11]	2004		Recto/perianal and vaginal	N	98	8	8
Central America	Mexico	Solorzano-Santos[12]	1989	throughout pregnancy	Vaginal	Y	340	35	10
Central America	Mexico	Lourdes-Collado[13]	1981	38	Cervical/rectal	Y	200	8	4
Central America	Mexico	Ocampo-Torres[14]	2000	labor	Recto/perianal and vaginal	N	910	78	9
Central America	Guatema	Asturius	2016	>35 weeks	Recto/perianal and vaginal	Y	990	155	16
Eastern Africa	Zimbabw	Mavenyengwa[1	2010	20/26wk/delivery	Recto/perianal and vaginal	Y	672	142	21
Eastern Africa	Zimbabw	Mavenyengwa[1	2006	20-30	Recto/perianal and vaginal	Y	300	138	46
Eastern Africa	Zimbabw	Mavenyengwa[1	2006	20-30	Recto/perianal and vaginal	Y	100	60	60
Eastern Africa	Zimbabw	Whitney[17]	2004	20-32	Vaginal	Y	210	25	12
Eastern Africa	Zimbabw	Moyo[18]	2000	throughout	Recto/perianal and vaginal	Y	206	65	32

Eastern Africa	Zimbabw	Mason[19]	1996	?	Vaginal	N	399	86	22
Eastern Africa	Zimbabw	Mason[20]	1989	labor	Cervical/urethral	N	81	16	20
Eastern Africa	Malawi	Gray[21]	2011	3rd trimester	Recto/perianal and vaginal	Y	1857	390	21
Eastern Africa	Malawi	Dzowela[22]	2005	>34wks	Recto/perianal and vaginal	N	97	16	16
Eastern Africa	Kenya	Seale[23]	2016	delivery	Recto/perianal and vaginal	Y	526	47	9
Eastern Africa	Kenya	Seale[23]	2016	delivery	Recto/perianal and vaginal	Y	5470	608	11
Eastern Africa	Kenya	Seale[23]	2016	delivery	Recto/perianal and vaginal	Y	1971	279	14
Eastern Africa	Tanzania	Ernest[24]	2015	28-42wks	Recto/perianal and vaginal	N	295	28	9
Eastern Africa	Tanzania	Joachim[25]	2009	>37	Recto/perianal and vaginal	Y	300	69	23
Eastern Africa	Ethiopia	Woldu[26]	2014	35-37	Recto/perianal and vaginal	Y	300	22	7
Eastern Africa	Ethiopia	Alemseged[27]	2015	3rd trim	Vaginal	Y	139	19	14
Eastern Africa	Ethiopia	Mohammed[28]	2012	35-37	Recto/perianal and vaginal	Y	139	29	21
Eastern Africa	Ethiopia	Gebremeskel[29	2015	35-37	Recto/perianal and vaginal	Y	150	17	11
Eastern Africa	Ethiopia	Mengist[30]	2016	35-37weeks	Recto/perianal and vaginal	Y	126	24	19
Eastern Africa	Mozambique	De Steenwinkel [31]	2008	35-37	Recto/perianal and vaginal	Y	113	2	2
Eastern Africa	Mozambi	Madrid	2016	34-37wks (200),	Recto/perianal and vaginal	Y	320	68	21
Eastern Africa	Ethiopia	Woldu[26]	2014	35-37	Recto/perianal and vaginal	Y	300	22	7
Eastern Asia	China	Yim[32]	1995	16-24weeks	Vaginal	N	367	4	1
Eastern Asia	China	Tsui[33]	2009	booking	Recto/perianal and vaginal	Y	1002	104	10
Eastern Asia	China	Wang[34]	2015	35-37	Recto/perianal and vaginal	N	863	56	6
Eastern Asia	China	Lu[35]	2014	35-37	Recto/perianal and vaginal	N	2850	201	7
Eastern Asia	China	Yanmin Ma[36]	2000	3 periods <20/20-	Vaginal	Y	1039	115	11
Eastern Asia	China	Zhang[37]	1995	delivery	Vaginal	N	600	48	8
Eastern Asia	China	Liang[38]	1986	>37wks	Cervical/rectal	Y	168	32	19
Eastern Asia	China	bsq[39]	2015	36-38 weeks	Recto/perianal and vaginal	Y	350	32	9
Eastern Asia	China	gxm[40]	2015	34-37 weeks	Recto/perianal and vaginal	N	1394	52	4
Eastern Asia	China	xax[41]	2015	35-37	Vaginal	N	600	52	9
Eastern Asia	China	wcl[42]	2015	35-37weeks	Recto/perianal and vaginal	Y	1282	106	8
Eastern Asia	China	zqn[43]	2015	36-39	Vaginal	Y	460	38	8
Eastern Asia	China	hr[44]	2015	35-37 weeks	Vaginal	Y	1305	157	12

Eastern Asia	China	zlh[45]	2015	35-37 weeks	Recto/perianal and vaginal	Y	10141	923	9
Eastern Asia	China	wj[46]	2015	35-42	Recto/perianal and vaginal	N	484	31	6
Eastern Asia	China	xdy[47]	2015	36-38 weeks	Recto/perianal and vaginal	Y	268	42	16
Eastern Asia	China	cy[48]	2015	35-37weeks	Recto/perianal and vaginal	Y	719	70	10
Eastern Asia	China	tlj[49]	2013	35-37	Recto/perianal and vaginal	Y	1580	110	7
Eastern Asia	China	whj[50]	2013	34-38	Recto/perianal and vaginal	Y	426	81	19
Eastern Asia	China	ch[51]	2013	35-37	Recto/perianal and vaginal	Y	500	72	14
Eastern Asia	China	sdh[52]	2013	35-38	Recto/perianal and vaginal	N	221	21	10
Eastern Asia	China	zy[53]	2013	36-38	Recto/perianal and vaginal	Y	300	25	8
Eastern Asia	China	wx[54]	2013	34-36	Rectal only	N	2776	60	2
Eastern Asia	China	hyj[55]	2013	35-37	Recto/perianal and vaginal	N	445	17	4
Eastern Asia	China	hgc[56]	2013	35-37	Recto/perianal and vaginal	Y	652	49	8
Eastern Asia	China	Xie[57]	2016		Vaginal	Y	200	20	10
Eastern Asia	China	Yan[58]	2016	?	Recto/perianal and vaginal	Y	398	21	5
Eastern Asia	China	Yang[59]	2014	>37wks	Vaginal	N	354	22	6
Eastern Asia	China	Li[60]	2016	35-37	Recto/perianal and vaginal	N	12200	2529	21
Eastern Asia	China	Fu[61]	2004	>35weeks	Recto/perianal and vaginal	Y	374	56	15
Eastern Asia	S.Korea	Kim[62]	2012	35-37	Recto/perianal and vaginal	Y	1845	169	9
Eastern Asia	S.Korea	Lee[63]	2010	35-37	Recto/perianal and vaginal	Y	2624	211	8
Eastern Asia	S.Korea	Hong[64]	2010	35-37	Recto/perianal and vaginal	Y	1205	121	10
Eastern Asia	S.Korea	Uh[65]	1997	delivery	Recto/perianal and vaginal	Y	459	27	6
Eastern Asia	S.Korea	Yook[66]	2013	35-37 weeks	Recto/perianal and vaginal	Y	5095	410	8
Eastern Asia	S.Korea	Kim[67]	2015	>20 weeks	Recto/perianal and vaginal	Y	107	8	7
Eastern Asia	Japan	Terakubo[68]	2002		Vaginal	Y	1404	187	13
Eastern Asia	Japan	Matsubara[69]	2002	28wks	Vaginal	Y	583	48	8
Eastern Asia	Japan	Kubota[70]	2002	22-36	Vaginal	N	4025	408	10
Eastern Asia	Japan	Morozumi[71]	2015	36-39wks	Vaginal	Y	1226	154	13
Eastern Europe	Hungary	Losonczi[72]	2002	36-37 weeks	Recto/perianal and vaginal	N	245	67	27
Eastern Europe	Hungary	Abrok[73]	2015	pregnancy	Vaginal	Y	100	27	27
Eastern Europe	Ukraine	Perebendyuk[74	2013		Recto/perianal and vaginal	Y	52	10	19
Eastern Europe	Bulgaria	Kovachev[75]	2003	18wk/24wk	Vaginal	N	110	18	16

Eastern Europe	Czech	Motlova[76]	2004	delivery	Recto/perianal and vaginal	Y	586	172	29
Eastern Europe	Slovenia	Lucovnik[77]	2016	throughout (84% 35-	Vaginal	Y	1064	184	17
Eastern Europe	Slovenia	Lucovnik[77]	2016	throughout (84% 35-	Recto/perianal and vaginal	Y	464	73	16
Eastern Europe	Poland	Brzychczy-Wloch[78]	2013	35-37	Recto/perianal and vaginal	Y	3363	953	28
Eastern Europe	Poland	Romanik[79]	2014	37-40wks	Recto/perianal and vaginal	Y	80	23	29
Eastern Europe	Poland	Brzychczy-wloch [80]	2012	35-37	Recto/perianal and vaginal	Y	1176	353	30
Eastern Europe	Poland	Romanik[81]	2011	35-40	Recto/perianal and vaginal	Y	80	22	28
Eastern Europe	Poland	Kociszewska-Najman[82]	2010	>36 weeks	Recto/perianal and vaginal	Y	2212	252	11
Eastern Europe	Poland	lysakowska[83]	2011	35-37	Recto/perianal and vaginal	Y	105	31	30
Eastern Europe	Poland	Strus[84]	2009	as per CDC (35-37)	Recto/perianal and vaginal	Y	340	61	18
Eastern Europe	Poland	Krasnianin[85]	2009	delivery	Vaginal	Y	100	19	19
Eastern Europe	Poland	Brzychczy-wloch[86]	2009	35-37	Recto/perianal and vaginal	Y	1176	353	30
Eastern Europe	Poland	Brzychczy-wloch[87]	2008	3rd trimester	Recto/perianal and vaginal	Y	250	43	17
Eastern Europe	Poland	Brzychczy-wloch[87]	2008	3rd trimester	Vaginal	Y	223	30	13
Eastern Europe	Poland	Elzbieta[88]	2009	delivery	Recto/perianal and vaginal	Y	100	19	19
Eastern Europe	Poland	Kowalska[89]	2003	32-37	Recto/perianal and vaginal	Y	1678	331	20
Eastern Europe	Poland	Polish neonatal surveillance network	2016		Recto/perianal and vaginal	N	631	78	12
Eastern Europe	Poland	Pruss[90]	2015	35-37weeks	Recto/perianal and vaginal	Y	1111	250	23
Eastern Europe	Russia	Zatsiorskaya[91]	2014	12-18weeks	Recto/perianal and vaginal	N	491	30	6
Melanesia	Fiji	Gyaneshwar[92]	1987	<28 weeks	Vaginal	N	440	9	2
Middle Africa	Central	Brochet[93]	2009	third trimester	Vaginal	N	1000	175	18
Middle Africa	DRC	Mitima[94]	2014	3rd trim	Vaginal	Y	509	103	20
Middle Africa	Gabon	Capan-	2014	delivery	Recto/perianal and vaginal	Y	549	106	19

Northern Africa	Tunisia	Ferjani[96]	2005	3 groups 1st/2nd/3rd	Recto/perianal and vaginal	Y	300	39	13
Northern Africa	Tunisia	Ben Hamouda [97]	2008	labor >34wks	Vaginal	N	207	27	13
Northern Africa	Tunisia	Jerbi[98]	2007	term labor	Recto/perianal and vaginal	Y	294	38	13
Northern Africa	Egypt	Shabayek[99]	2009	35-40wks	Vaginal	Y	150	38	25
Northern Africa	Egypt	Abdelmoaty[100	2009	35-41wks	Recto/perianal and vaginal	Y	150	39	26
Northern Africa	Egypt	Sadaka[101]	2017		Recto/perianal and vaginal	Y	200	53	27
Northern Africa	Morocco	Mahmoud[102]	2010	Del	Recto/perianal and vaginal	Y	240	56	23
Northern Africa	Morocco	Benbachir[103]	1983	throughout	Recto/perianal and vaginal	Y	35	7	20
Northern Africa	Morocco	Bassat	2013	32 weeks – delivery	Recto/perianal and vaginal	Y	347	82	24
Northern America	USA	Towers[104]	2010	late3rd trim + delivery	Recto/perianal and vaginal	Y	1472	296	20
Northern America	USA	Panda[105]	2009	35-37	Recto/perianal and vaginal	Y	350	106	30
Northern America	USA	Turrentine[106]	2008	35-37	Recto/perianal and vaginal	Y	5198	1325	25
Northern America	USA	Chen[107]	2006	35-37	Recto/perianal and vaginal	Y	2963	743	25
Northern America	USA	Whitney[17]	2004	20-32	Vaginal	Y	69	15	22
Northern America	USA	Campbell[108]	2000	labor	Recto/perianal and vaginal	Y	3307	856	26
Northern America	USA	Bland[109]	2001	>35 weeks	Recto/perianal and vaginal	Y	2111	574	27
Northern America	USA	Lin[110]	2011	>32 weeks	Recto/perianal and vaginal	Y	5497	1031	19
Northern America	Canada	Delport[111]	2009	?	Recto/perianal and vaginal	Y	1460	322	22
Northern America	Canada	Spaetgens[112]	2002	35-37	Recto/perianal and vaginal	Y	1207	235	19
Northern America	Canada	Lavergne[113]	2006	35-37	Recto/perianal and vaginal	Y	949	201	21
Northern America	Canada	Wenman[114]	2001		Vaginal	N	1672	184	11
Northern America	Canada	Davies[115]	2001	36	Recto/perianal and vaginal	Y	1207	235	19
Northern Europe	Lithuania	Barcaite[116]	2012	labor 5.3% <34 wks	Recto/perianal and vaginal	N	970	148	15
Northern Europe	Iceland	Bjarnadottir[117]	2003	23-36	Recto/perianal and vaginal	Y	280	68	24
Northern Europe	Ireland	Whitney[17]	2004	20-32	Vaginal	Y	203	24	12
Northern Europe	Denmark	Stokholm[118]	2014	36	Vaginal	Y	442	44	10
Northern Europe	Denmark	Hansen[119]	2004	36-41	Recto/perianal and vaginal	Y	58	22	38
Northern Europe	UK	Hassan[120]	2011	34-40	Recto/perianal and vaginal	Y	100	19	19
Northern Europe	UK	Afshar[121]	2011	34-37	Recto/perianal and vaginal	Y	650	170	26
Northern Europe	UK	Jones[122]	2006	from 34 wks	Recto/perianal and vaginal	Y	748	159	21

Northern Europe	Norway	Brigtsen[123]	2015	35-37wks	Recto/perianal and vaginal	Y	1682	439	26
Northern Europe	Sweden	Hakansson[124]	2008	delivery	Recto/perianal and vaginal	Y	1569	356	23
South America	Brazil	Castellano-Filho[125]	2010	labor	Recto/perianal and vaginal	Y	221	21	10
South America	Brazil	Zusman[126]	2006	35-37	Vaginal	Y	598	107	18
South America	Brazil	Pogere[127]	2011	35 or more	Recto/perianal and vaginal	Y	273	59	22
South America	Brazil	Benchetrit[128]	1982	labor	Recto/perianal and vaginal	Y	86	22	26
South America	Brazil	Giraldo[129]	2012	in labor - (49 preterm)	Recto/perianal and vaginal	Y	45	7	16
South America	Brazil	Rocchetti[130]	2011	35-37	Recto/perianal and vaginal	Y	405	103	25
South America	Brazil	Linhares[131]	2011	20 weeks or more	Recto/perianal and vaginal	Y	213	21	10
South America	Brazil	Pires[132]	2010	>32wks	Recto/perianal and vaginal	Y	198	30	15
South America	Brazil	Costa[133]	2008	pregnancy at term , mean 39 weeks 4	Recto/perianal and vaginal	Y	201	41	20
South America	Brazil	Marconi[134]	2010	35-37 weeks	Recto/perianal and vaginal	Y	405	103	25
South America	Brazil	Borger[135]	2005	32-41 weeks	Recto/perianal and vaginal	Y	167	32	19
South America	Brazil	Kiss[136]	2013	not described	Recto/perianal and vaginal	Y	105	16	15
South America	Brazil	Simoes[137]	2007	delivery	Recto/perianal and vaginal	Y	316	46	15
South America	Brazil	Beitune[138]	2007	35-37	Recto/perianal and vaginal	Y	101	20	20
South America	Brazil	Beitune[139]	2006	35-37	Recto/perianal and vaginal	Y	106	15	14
South America	Brazil	Benchetrit[140]	1981	delivery	Recto/perianal and vaginal	Y	42	11	26
South America	Brazil	Chaves[141]	2008	35wks	Recto/perianal and vaginal	Y	102	25	25
South America	Brazil	Nunes[142]	2015	34-37 mainly	Recto/perianal and vaginal	N	144	58	40
South America	Brazil	Siqueira[143]	2015	32-37	Recto/perianal and vaginal	Y	411	58	14
South America	Argentin	Ronchi[144]	2011	35-37	Recto/perianal and vaginal	Y	324	21	6
South America	Argentin	Oviedo[145]	2013	35-37	Recto/perianal and vaginal	Y	3125	293	9
South America	Argentin	Quiroga[146]	2008	35-37	Recto/perianal and vaginal	Y	1105	84	8
South America	Argentin	Larcher[147]	2005	35-37	Recto/perianal and vaginal	Y	1228	17	1
South America	Argentina	Di Bartolomeo [148]	2005	>35wks	Recto/perianal and vaginal	Y	1203	113	9
South America	Argentin	Toresani[149]	2001	26-40	Vaginal	Y	531	17	3
South America	Chile	Abarzua[150]	2014	35-37	Recto/perianal and vaginal	Y	1181	167	14

South America	Chile	Valdes[151]	2003	35-37	Recto/perianal and vaginal	N	1658	102	6
South America	Peru	Tamariz Ortiz[152]	2004	26-40 weeks	Recto/perianal and vaginal	Y	238	26	11
South America	Uruguay	Laufer[153]	2009	32-41	Recto/perianal and vaginal	Y	300	52	17
South America	Venezuel	Amesty[154]	2007	not described	Recto/perianal and vaginal	Y	100	18	18
South America	Venezuel	Riera[154]	1993	Term	Vaginal	Y	171	56	33
South America	Venezuel a	Pina-Carruyo [155]	1979	2nd/3rd trimester	Vaginal	Y	122	34	28
South America	Colombi	Garcia[156]	2011	35-37.6	Recto/perianal and vaginal	N	130	1	1
South America	Colombi	Ceballos[157]	2014	mean 35.4	Recto/perianal and vaginal	Y	182	32	18
South America	Paragua	Ortiz[158]	2013	35 -37 weeks	Recto/perianal and vaginal	Y	203	48	24
South-eastern Asia	Thailand	kovavisarach[15	2007	28-42	Recto/perianal and vaginal	Y	320	58	18
South-eastern Asia	Thailand	Werawatakul[16	2001	labor	Vaginal	Y	901	56	6
South-eastern Asia	Thailand	Tor-Udom[161]	2006	35-37wks	Recto/perianal and vaginal	Y	406	65	16
South-eastern Asia	Thailand	Whitney[17]	2004	20-32	Vaginal	Y	200	24	12
South-eastern Asia	Thailand	Whitney[17]	2004	20-32	Vaginal	Y	200	29	15
South-eastern Asia	Myanmar	Turner[162]	2012	during labor	Recto/perianal and vaginal	Y	549	47	9
South-eastern Asia	Thailand	Kovavisarach[1	2008	35-37	Recto/perianal and vaginal	Y	302	47	16
South-eastern Asia	Myanmar	Whitney[17]	2004	20-32	Vaginal	Y	226	16	7
South-eastern Asia	Vietnam	Goto[163]	2005	throughout pregnancy	Vaginal	N	505	22	4
South-eastern Asia	Malaysia	Raj[164]	2009	35-37	Recto/perianal and vaginal	N	56	18	32
South-eastern Asia	Malaysia	Lim[165]	1997	delivery	Vaginal	Y	196	19	10
South-eastern Asia	Singapor	Chua[166]	1995	throughout	Vaginal	N	326	46	14
South-eastern Asia	Singapor	Chow[167]	1981	delivery	Vaginal	Y	204	36	18
South-eastern Asia	Philippin	Whitney[17]	2004	20-32wks	Vaginal	Y	200	15	8
Southern Africa	South	Cutland[168]	2009	Labor	Vaginal	Y	3964	830	21
Southern Africa	South	Kwatra[169]	2014	20-25 / 26-30 / 31-35	Recto/perianal and vaginal	Y	521	148	28
Southern Africa	South	Cutland	2016	delivery	Vaginal	Y	4649	811	17
Southern Africa	South	Bolukaoto[170]	2015	16-38wks	Recto/perianal and vaginal	Y	413	128	31
Southern Africa	South	Madzivhandila[1	2011	Labor	Vaginal	Y	2561	551	22
Southern Africa	South	Monyama[172]	2016	>16 weeks	Recto/perianal and vaginal	Y	413	128	31

Southern Africa	South	Chukwu[173]	2015	16-38	Recto/perianal and vaginal	Y	413	128	31
Southern Africa	South	Dangor[174]	2016	26-37	Recto/perianal and vaginal	Y	284	72	25
Southern Asia	India	Sharmila[175]	2011	35-37	Recto/perianal and vaginal	Y	300	7	2
Southern Asia	India	Kulkarni[176]	2001	delivery	Recto/perianal and vaginal	Y	317	8	3
Southern Asia	India	Hajare[177]	2012	29-40wks	Vaginal	N	200	15	8
Southern Asia	India	Madhavi[178]	2011	3rd trim	Vaginal	N	200	15	8
Southern Asia	India	Goyal[179]	2004	35-37	Vaginal	Y	304	4	1
Southern Asia	India	Dalal[180]	1999	throughout pregnancy	Vaginal	Y	507	49	10
Southern Asia	India	Mani[181]	1984	delivery	Vaginal	Y	325	19	6
Southern Asia	India	Kishore[182]	1986	delivery	Vaginal	N	212	1	0
Southern Asia	India	Nagar[183]	2007	35-77 or delivery	Vaginal	Y	150	19	13
Southern Asia	India	Rajaratnam[184	2013	35-37wks	Vaginal	N	349	29	8
Southern Asia	India	Konikkara[185]	2014	35-37weeks	Recto/perianal and vaginal	Y	50	8	16
Southern Asia	India	Konikarra	2013	35-37 weeks	Vaginal	Y	150	19	13
Southern Asia	India	Muthusami[186]	2007	3rd trimester	Vaginal	N	77	4	5
Southern Asia	India	Gaind	2016	>37weeks	Recto/perianal and vaginal	Y	400	38	10
Southern Asia	India	Anthony	2016	35-37 weeks	Recto/perianal and vaginal	N	72	18	25
Southern Asia	India	Kumar	2016	>34 weeks	Recto/perianal and vaginal	Y	657	42	6
Southern Asia	India	Chaudhary[187]	1981	delivery	Vaginal	Y	100	16	16
Southern Asia	India	Dechen[188]	2010		Vaginal	N	524	25	5
Southern Asia	India	Das[189]	2003	delivery	Vaginal	Y	200	15	8
Southern Asia	India	Patil[190]	2013	delivery >35weeks	Recto/perianal and vaginal	Y	905	110	12
Southern Asia	India	Khatoon[191]	2016	delivery	Recto/perianal and vaginal	Y	300	6	2
Southern Asia	India	Chaudhary[191]	2016	3rd trimester	Recto/perianal and vaginal	Y	300	45	15
Southern Asia	Pakistan	Chaudhry[192]	2010	delivery >37wks	Vaginal	Y	200	17	9
Southern Asia	Pakistan	Kirmani[193]	1994	delivery	Vaginal	Y	60	7	12
Southern Asia	Pakistan	Ahktar[194]	1987	delivery	Vaginal	Y	202	47	23
Southern Asia	Pakistan	Hafeez[195]	1997	3rd trimester	Vaginal	N	200	9	5
Southern Asia	Pakistan	Munir[196]	2016	3rd trimester	Vaginal	N	200	28	14
Southern Asia	Banglad	Chan[197]	2013	>30	Recto/perianal and vaginal	Y	1219	94	8
Southern Asia	Banglad	Saha	2016	>30 weeks, delivery	Recto/perianal and vaginal	Y	1166	172	15

Southern Asia	Iran	Hadavand[198]	2015	35-37	Recto/perianal and vaginal	N	210	7	3
Southern Asia	Iran	Tajbakhsh[199]	2013	>35wks	Vaginal	Y	285	27	9
Southern Asia	Iran	Shirazi[200]	2014	35-37	Vaginal	N	980	48	5
Southern Asia	Iran	Absalan[201]	2013	?	Recto/perianal and vaginal	N	250	49	20
Southern Asia	Iran	Jahromi[202]	2008	>24wks in labor	Recto/perianal and vaginal	Y	1197	110	9
Southern Asia	Iran	Hamedi[203]	2012	in labor (8% <34wks)	Recto/perianal and vaginal	N	200	12	6
Southern Asia	Iran	Seyyed[204]	2013	>37 weeks	Recto/perianal and vaginal	Y	178	36	20
Southern Asia	Iran	Hassanzadeh[2	2011	labor- mean 38.2	Recto/perianal and vaginal	Y	310	43	14
Southern Asia	Iran	Moghaddam[20	2010	3rd trim	Recto/perianal and vaginal	Y	201	25	12
Southern Asia	Iran	Fatemi[207]	2010	labor	Vaginal	Y	330	68	21
Southern Asia	Iran	Mansouri[208]	2008	35-37	Vaginal	Y	602	55	9
Southern Asia	Iran	Aali[209]	2007	term, delivery	Vaginal	N	105	7	7
Southern Asia	Iran	Rabiee[210]	2006	>20 weeks	Vaginal	N	544	145	27
Southern Asia	Iran	Bornasi[211]	2016	35-37	Vaginal	N	500	60	12
Southern Asia	Iran	Goudarzi[212]	2015	35-37	Recto/perianal and vaginal	Y	100	17	17
Southern Europe	Bosnia	Numanovic[213]	2017		Vaginal	N	100	7	7
Southern Europe	Croatia	Muller-Vranjes [214]	2011	35-37	Recto/perianal and vaginal	Y	59	12	20
Southern Europe	Croatia	Trischler-Ceke[215]	2010	35-37	Recto/perianal and vaginal	Y	404	59	15
Southern Europe	Spain	Leibana-Martos[216]	2015	35-37	Recto/perianal and vaginal	Y	1180	188	16
Southern Europe	Spain	Dadvand[217]	2011	36	Recto/perianal and vaginal	Y	7976	1359	17
Southern Europe	Spain	Marimon[218]	2005	35-37	Recto/perianal and vaginal	Y	7084	1276	18
Southern Europe	Spain	Ramos[219]	2009	35-37	Recto/perianal and vaginal	Y	1416	204	14
Southern Europe	Spain	Bayo[220]	2002	35-40	Vaginal	Y	623	44	7
Southern Europe	Spain	Mestres[221]	2008	from 24 weeks	Recto/perianal and vaginal	Y	5670	1028	18
Southern Europe	Spain	RojoBezares[22	2016	35-37	Recto/perianal and vaginal	Y	2730	375	14
Southern Europe	Italy	Berardi[223]	2014	35-37	Vaginal	Y	3630	874	24
Southern Europe	Italy	Savoia[224]	2008	35-37	Recto/perianal and vaginal	Y	400	73	18
Southern Europe	Italy	Roccasalva[225	2008	35-37	Recto/perianal and vaginal	Y	60	7	12

Southern Europe	Italy	Busetti[226]	2007	35-37	Recto/perianal and vaginal	Y	5020	901	18
Southern Europe	Italy	Lijoi[227]	2007	35-37	Recto/perianal and vaginal	Y	1273	209	16
Southern Europe	Italy	De Luca[228]	2016	delivery	Recto/perianal and vaginal	Y	241	96	40
Southern Europe	Greece	Prifti[229]	2012	?	Vaginal	N	2793	93	3
Southern Europe	Greece	Daskalakis[230]	2006	22-25wks	Vaginal	N	1197	150	13
Southern Europe	Greece	Tsolia[231]	2003	>35wks or delivery	Recto/perianal and vaginal	Y	1014	67	7
Western Africa	Gambia	Suara[232]	1994	Del	Recto/perianal and vaginal	Y	136	30	22
Western Africa	Gambia	Le Doare[233]	2016	del	Recto/perianal and vaginal	Y	750	253	34
Western Africa	Nigeria	Uhiara[234]	1993	Del	Recto/perianal and vaginal	N	100	14	14
Western Africa	Nigeria	Dawodu[235]	1983	Del	Vaginal	Y	225	44	20
Western Africa	Nigeria	Onipede[236]	2012	35-40wks	Vaginal	Y	150	20	13
Western Africa	Nigeria	Olanisebe[237]	1986	28-36wks	Vaginal	Y	500	8	2
Western Africa	Nigeria	Onile[238]	1980	delivery	Vaginal	Y	388	71	18
Western Africa	Nigeria	Onwuezobe[239	2016	35-37	Recto/perianal and vaginal	Y	150	2	1
Western Africa	Nigeria	Nwachukwu[240	2006	3rd trimester	Recto/perianal and vaginal	N	200	18	9
Western Africa	Senegal	Denis[241]	1979	delivery	Vaginal	N	100	6	6
Western Africa	Senegal	Brochet[93]	2009	third trimester	Vaginal	Y	797	159	20
Western Africa	Ghana	Vinnemeier[242]	2015	>35	Recto/perianal and vaginal	Y	103	24	23
Western Africa	Ghana	Vinnemeier[242]	2015	>35	Recto/perianal and vaginal	Y	399	73	18
Western Africa	Togo	Balaka[243]	2005	29-40	Vaginal	N	306	13	4
Western Africa	Togo	Mounerou[244]	2015	34-38	Vaginal	N	200	5	3
Western Africa	Togo	David-	1991	delivery	Recto/perianal and vaginal	Y	106	4	4
Western Africa	Ghana	Enweronu-Laryea[246]	2011	>28wks	Recto/perianal and vaginal	Y	100	19	19
Western Africa	Ivory	Faye-Kette[247]	1991	throughout	Vaginal	N	150	29	19
Western Asia	Turkey	Karadag[248]	2013	24-44	Recto/perianal and vaginal	Y	300	9	3
Western Asia	Turkey	Yenisehirli[249]	2006	35-37	Vaginal	Y	671	98	15
Western Asia	Turkey	Kadanali[250]	2005	22-40	Recto/perianal and vaginal	Y	150	48	32
Western Asia	Turkey	Eren[251]	2005	delivery	Recto/perianal and vaginal	Y	500	46	9
Western Asia	Turkey	Barbaros[252]	2005	delivery	Recto/perianal and vaginal	Y	300	24	8
Western Asia	Turkey	Yucesoy[253]	2004	35-37 - or preterm	Recto/perianal and vaginal	Y	200	13	7

Western Asia	Turkey	Arisoy[254]	2003	35-37	Recto/perianal and vaginal	Y	310	33	11
Western Asia	Turkey	Altoparlak[255]	2004	22-40 (mean31.4)	Vaginal	N	150	41	27
Western Asia	Turkey	Akman[256]	2001	35-37	Recto/perianal and vaginal	Y	100	10	10
Western Asia	Turkey	Celebi[257]	1992	delivery	Vaginal	Y	76	4	5
Western Asia	Turkey	gokalp[258]	1986	delivery	Recto/perianal and vaginal	Y	100	7	7
Western Asia	Turkey	gokalp[259]	1985	delivery	Recto/perianal and vaginal	Y	40	4	10
Western Asia	Turkey	gokalp[260]	1988	delivery >37 wks	Recto/perianal and vaginal	Y	110	9	8
Western Asia	Turkey	Ayata[261]	1994	labor	Recto/perianal and vaginal	Y	114	10	9
Western Asia	Turkey	Alp[262]	2016	?	Recto/perianal and vaginal	Y	215	21	10
Western Asia	Kuwait	Al-Sweih[263]	2005	delivery	Recto/perianal and vaginal	Y	847	124	15
Western Asia	Kuwait	Al-Sweih[264]	2004	35-37	Recto/perianal and vaginal	Y	110	18	16
Western Asia	Kuwait	Ghaddar[265]	2014	35-37	Recto/perianal and vaginal	N	1391	288	21
Western Asia	United	Sidky[266]	2002	delivery	Recto/perianal and vaginal	Y	891	192	22
Western Asia	United	Amin[267]	2002	delivery	Recto/perianal and vaginal	Y	563	57	10
Western Asia	Saudi	Zamzami[268]	2011	delivery	Recto/perianal and vaginal	Y	326	103	32
Western Asia	Saudi	El-Kersh[269]	2002	>28 wks	Recto/perianal and vaginal	Y	217	66	30
Western Asia	Saudi Arabia	Gosling and Morgos[270]	1983	delivery	Recto/perianal and vaginal	Y	115	16	14
Western Asia	Saudi	uduman[271]	1985	delivery	Vaginal	N	260	24	9
Western Asia	Saudi	Al-	1991	33wks	Recto/perianal and vaginal	Y	1939	334	17
Western Asia	Saudi	Khan[273]	2015	>35 weeks	Vaginal	Y	1328	178	13
Western Asia	Lebanon	Seoud[274]	2010	del - mean 38+4	Recto/perianal and vaginal	N	775	137	18
Western Asia	Lebanon	Chaaya[275]	1996	delivery 32-42wks	Vaginal	N	166	13	8
Western Asia	Lebanon	Ghaddar[265]	2014	35-37	Vaginal	Y	168	31	18
Western Asia	Jordan	Sunna[276]	1991	3rd trimester	Recto/perianal and vaginal	Y	500	152	30
Western Asia	Israel	Eisenberg[277]	2006	labor	Recto/perianal and vaginal	Y	629	86	14
Western Asia	Israel	Marchaim[278]	2003	>35 wks delivery	Recto/perianal and vaginal	Y	681	84	12
Western Asia	Israel	Eidelman[279]	1990	delivery	Vaginal	Y	446	17	4
Western Asia	Israel	Drai-Hasid[280]	2015	delivery	Recto/perianal and vaginal	Y	436	77	18
Western Europe	France	Chhin[281]	2013	34-38	Vaginal	N	3046	471	15

Western Europe	France	Van Der Mee-Marquet[282]	2009	35-38	Vaginal	Y	500	39	8
Western Europe	France	Honderlick[283]	2010	3rd trim	Vaginal	Y	11718	1663	14
Western Europe	France	Mereghetti[284]	2007	34-38wks	Vaginal	N	1460	87	6
Western Europe	France	Chhuy[285]	2005	>34wks	Vaginal	N	1674	116	7
Western Europe	France	Jaureguy[286]	2003	35-37wks	Recto/perianal and vaginal	Y	370	57	15
Western Europe	France	Volumenie[287]	2001	35-37	Vaginal	N	3906	559	14
Western Europe	Belgium	El Aila[288]	2009	35-37	Recto/perianal and vaginal	Y	150	36	24
Western Europe	Germany	Kunze[289]	2015	delivery	Recto/perianal and vaginal	Y	784	133	17
Western Europe	Germany	Kunze[290]	2011	35-37	Recto/perianal and vaginal	Y	869	183	21
Western Europe	Germany	Brimil[291]	2006	?	Recto/perianal and vaginal	Y	210	34	16
Western Europe	Netherlands	Valkenberg-van den Berg[292]	2006	35-37	Recto/perianal and vaginal	Y	1702	365	21
Western Europe	Switzerla	Capanna[293]	2013	35-37weeks	Recto/perianal and vaginal	Y	760	124	16
Western Europe	Switzerla	Rausch[294]	2009	?	Recto/perianal and vaginal	Y	1316	276	21
Western Europe	Austria	Hafner[295]	1998	34 weeks	Recto/perianal and vaginal	Y	3569	520	15
Western Europe	Reunion	Dahan-	2011	>24wks	Vaginal	N	17430	2911	17

Supplementary Table S5: Study Characteristics: Maternal GBS Colonization in pregnancy with serotype data.

Region	Country	Author	Year	No. of isolates	Serotypes								
					Ia/Ib	Ia	Ib	II	III	IV	V	VI-IX	NT
Australia and New Zealand	Australia	Taylor[297]	2006	19	7	5	2	0	9	0	0	1	2
Australia and New Zealand	Australia	Ko[298]	2015	408	218	187	31	40	142	5	113	6	9
Australia and New Zealand	New Zealand	Grimwood[299]	2002	52	21	11	10	3	15	0	10	2	0
Central America	Mexico	Gonzales[11]	2004	31	24	0	0	5	2	0	0	0	0
Central America	Mexico	Solorzano-Santos[12]	1989	33	22	19	3	4	1	0	0	0	6
Central America	Mexico	Gonzalez - Pedraza[10]	2002	101	62	62	0	26	13	0	0	0	0
Central America	Mexico	Ocampo-Torres[14]	2000	78	53	0	0	15	10	0	0	0	0
Eastern Africa	Zimbabwe	Moyo[18]	2000	92	13	10	3	1	38	3	34	0	2
Eastern Africa	Zimbabwe	Moyo[300]	2002	117	23	17	6	5	53	6	28	0	2
Eastern Africa	Malawi	Gray[21]	2011	390	95	71	24	40	152	1	93	3	6
Eastern Africa	Kenya	Seale[23]	2016	915	308	194	114	80	350	18	156	3	0
Eastern Africa	Mozambique	Madrid	2016	64	15	9	6	3	6	3	20	0	17
Eastern Asia	China	Wang[34]	2015	56	19	10	9	3	18	0	8	0	8
Eastern Asia	China	Lu[35]	2014	201	67	43	24	14	84	1	30	4	1
Eastern Asia	China	Shen[301]	2000	155	43	39	4	55	40	0	6	0	11
Eastern Asia	China	Shen[302]	1998	22	8	5	3	7	4	1	0	0	2
Eastern Asia	China	tjj[303]	2015	56	19	10	9	3	18	0	8	0	8
Eastern Asia	China	Yan[304]	2016	231	76	52	24	12	83	0	49	5	6

Eastern Asia	China	Lu[305]	2015	160	51	33	18	10	72	0	23	1	3
Eastern Asia	China	Van Elzakker[303]	2009	58	18	13	5	2	19	0	15	2	0
Eastern Asia	S.Korea	Seo[306]	2010	145	42	26	16	8	51	0	35	9	0
Eastern Asia	S.Korea	Lee[307]	2010	315	68	38	30	14	138	0	64	26	5
Eastern Asia	S.Korea	Lee[63]	2010	318	72	35	37	19	111	0	87	29	0
Eastern Asia	S.Korea	Hong[64]	2010	177	35	23	12	10	63	4	43	0	22
Eastern Asia	S.Korea	Oh[308]	2009	42	13	11	2	2	12	0	11	4	0
Eastern Asia	S.Korea	Uh[65]	1997	29	21	7	14	0	6	0	0	0	2
Eastern Asia	S.Korea	Lee[307]	2010	318	72	35	37	19	111	0	87	29	0
Eastern Asia	Japan	Wakimoto[309]	2011	198	59	26	33	13	15	1	17	91	2
Eastern Asia	Japan	kimura[310]	2013	139	36	10	26	18	17	2	29	38	1
Eastern Asia	Japan	terakubo[68]	2002	187	28	16	12	3	19	0	16	105	0
Eastern Asia	Japan	Matsubara[69]	2002	48	10	4	6	4	5	0	3	22	0
Eastern Asia	Japan	Morozumi[71]	2015	154	56	24	32	7	26	5	27	32	1
Eastern Europe	Romania	Cristea[311]	2011	257	63	51	12	29	84	7	60	0	14
Eastern Europe	Romania	Usein[312]	2009	13	3	1	2	5	3	0	2	0	0
Eastern Europe	Romania	Usein[312]	2009	39	12	6	6	7	11	6	3	0	0
Eastern Europe	Czech Republic	Motlova[76]	2004	172	38	38	0	0	57	0	24	0	0
Eastern Europe	Poland	Romanik[313]	2014	23	10	10	0	0	5	0	7	0	0
Eastern Europe	Poland	Brzychczy-wloch[80]	2012	353	99	71	28	53	123	17	61	0	0
Eastern Europe	Poland	Brzychczy-wloch[314]	2010	100	32	25	7	14	29	7	18	0	0
Eastern Europe	Poland	Wolski[315]	2009	100	30	0	0	7	32	0	0	0	9
Eastern Europe	Poland	Brzychczy-wloch[86]	2009	353	99	71	28	53	124	18	60	0	0

Middle Africa	Central African Republic	Brochet[93]	2009	88	31	24	7	20	15	0	22	0	0
Middle Africa	Gabon	Belard[316]	2015	109	39	14	25	7	30	0	33	0	0
Northern Africa	Algeria	Bergal[317]	2015	44	2	2	0	11	10	0	21	0	0
Northern Africa	Morocco	Benbachir[103]	1983	15	7	6	1	3	4	0	0	0	1
Northern America	USA	Campbell[318]	2000	856	289	225	64	155	183	0	179	2	11
Northern America	USA	Croak[318]	2003	145	36	25	11	17	24	5	46	1	16
Northern America	Canada	Davies[115]	2001	118	34	24	10	10	18	0	33	0	23
Northern America	Canada	Davies[115]	2001	233	78	53	25	30	48	5	45	1	26
Northern America	Canada	Teatero[116]	2017	102	36	24	12	13	26	6	20	1	0
Northern Europe	Lithuania	Barcaite[116]	2012	148	51	44	7	16	51	13	11	3	3
Northern Europe	Ireland	Meehan[319]	2014	18	5	4	1	3	7	0	2	1	0
Northern Europe	Ireland	Whitney[17]	2004	20	8	7	1	1	6	0	4	0	1
Northern Europe	Ireland	Dore[320]	2003	87	23	15	8	13	30	2	14	0	5
Northern Europe	UK	Jones[321]	2006	159	66	41	25	15	42	0	30	0	0
Northern Europe	Norway	Brigsten[322]	2015	426	109	67	42	59	106	0	72	17	3
Northern Europe	Sweden	Hakansson[124]	2008	356	85	39	46	57	85	53	68	5	3
Northern Europe	Sweden	Berg[323]	2000	114	30	15	15	13	36	3	25	0	7
South America	Brazil	Benchetrit[324]	1982	31	20	10	10	5	3	0	0	0	3
South America	Brazil	Soares[325]	2013	39	6	4	2	3	15	0	10	0	0
South America	Brazil	Palmeiro[326]	2010	30	17	12	5	6	1	1	2	0	3
South America	Brazil	Simoes[137]	2007	47	20	9	11	9	3	3	4	0	8
South America	Argentina	Oviedo[145]	2013	112	55	45	10	11	24	0	13	5	4
South-eastern Asia	Thailand	Whitney[17]	2004	24	5	5	0	3	3	0	12	0	1
South-eastern Asia	Thailand	Whitney[17]	2004	28	5	4	1	4	6	0	2	9	2
South-eastern Asia	Myanmar	Turner[162]	2012	66	12	11	1	16	8	4	8	19	3
South-eastern Asia	Myanmar	Whitney[17]	2004	14	2	2	0	5	0	0	5	0	2
South-eastern Asia	Malaysia	Dhanoa[327]	2010	200	26	23	3	11	24	20	38	47	34
South-eastern Asia	Malaysia	Eskandarian[17]	2015	49	6	6	0	5	2	0	9	27	0
South-eastern Asia	Malaysia	Suhaimi[328]	2017	12	7	7	0	0	2	0	2	1	0
South-eastern Asia	Philippines	Whitney[17]	2004	15	2	1	1	4	5	0	2	1	1

Southern Africa	South Africa	Kwatra[169]	2014	507	134	120	14	22	93	0	36	0	0
Southern Africa	South Africa	Cutland	2016	811	365	305	60	77	210	20	113	0	26
Southern Africa	South Africa	Madzivhandila[171]	2011	541	199	163	36	61	202	20	55	0	4
Southern Africa	South Africa	Chukwu[173]	2015	128	44	33	11	20	38	11	14	0	0
Southern Africa	South Africa	Dangor[174]	2016	72	39	39	0	0	14	0	12	0	0
Southern Asia	India	Mani[181]	1984	19	10	4	6	8	1	0	0	0	0
Southern Asia	India	Kumar	2016	54	41	29	12	0	3	0	3	0	2
Southern Asia	India	Chaudhary	2016	45	8	6	2	9	10	0	9	3	6
Southern Asia	Bangladesh	Chan[197]	2013	94	26	23	3	7	9	0	28	20	4
Southern Asia	Bangladesh	Saha	2016	172	71	69	2	24	20	1	40	16	0
Southern Asia	Iran	Beigverdi[329]	2014	41	3	0	3	6	27	0	2	0	2
Southern Asia	Iran	jannati[330]	2012	56	9	4	5	7	6	7	11	12	4
Southern Asia	Iran	Bornasi[331]	2016	60	15	11	4	10	27	0	8	0	0
Southern Asia	Iran	Sadeh[332]	2016	30	7	5	2	6	15	0	2	0	0
Southern Europe	Portugal	Martins[331]	2000	269	56	42	14	46	59	6	59	5	38
Southern Europe	Spain	Leibana-Martos[216]	2015	188	48	42	6	31	52	8	35	9	5
Southern Europe	Spain	Puertas[333]	2010	150	38	38	0	15	50	11	21	3	10
Southern Europe	Spain	Liebana [334]	2010	188	46	38	8	23	53	11	31	12	12
Southern Europe	Spain	Perez-Ruiz[335]	2003	31	13	9	4	4	12	0	2	0	0
Southern Europe	Spain	Rojo-Bezares[222]	2016	65	16	8	8	9	22	2	16	0	0
Southern Europe	Italy	Savoia[336]	2008	73	21	16	5	4	23	6	19	0	0
Southern Europe	Greece	Daskalakis[230]	2006	67	21	13	8	18	15	2	6	5	0
Western Africa	Gambia	Suara[232]	1994	32	6	0	0	9	2	1	12	0	2
Western Africa	Gambia	Le Doare[233]	2016	237	36	20	16	39	24	0	130	0	0
Western Africa	Senegal	Brochet[93]	2009	75	17	13	4	9	16	0	33	0	0
Western Africa	Ghana	Vinnemeier[242]	2015	24	7	2	5	3	7	0	5	0	2
Western Africa	Ghana	Vinnemeier[242]	2015	72	28	25	3	6	14	0	21	0	3
Western Asia	Turkey	Ekin[337]	2015	56	9	9	0	10	7	2	0	7	21

Western Asia	Turkey	Yenisehirli[249]	2006	98	31	7	24	2	33	3	18	0	11
Western Asia	Turkey	Ekin[338]	2006	72	24	24	0	0	0	6	4	0	23
Western Asia	Turkey	Eren[251]	2005	54	16	14	2	16	10	1	0	0	11
Western Asia	Kuwait	Udo[339]	2013	154	21	16	5	16	30	5	59	6	17
Western Asia	Kuwait	boswihi[340]	2012	143	16	11	5	16	30	5	55	5	16
Western Asia	Kuwait	Al-Sweih[263]	2005	124	14	11	3	10	33	1	27	17	22
Western Asia	United Arab Emirates	Amin[267]	2002	57	14	12	2	2	10	15	7	0	9
Western Asia	Lebanon	Seoud[274]	2010	137	29	20	9	15	22	1	31	0	39
Western Asia	Lebanon	Hannoun[341]	2009	76	14	0	0	10	15	6	9	22	0
Western Asia	Israel	Marchaim[342]	2006	72	18	10	8	22	15	2	10	1	4
Western Asia	Israel	Bisharat[343]	2005	104	21	12	9	23	26	0	18	0	16
Western Europe	France	Van Der Mee-Marquet[344]	2009	39	13	10	3	0	16	0	7	0	0
Western Europe	France	Lamy[345]	2006	42	12	5	7	3	22	0	2	0	3
Western Europe	Belgium	El Aila[288]	2009	122	26	13	13	13	25	15	25	0	18
Western Europe	Germany	Kunze[289]	2015	165	52	40	12	25	46	8	32	2	0
Western Europe	Germany	Kunze[290]	2011	156	54	25	29	19	43	9	23	0	6
Western Europe	Germany	Von Both[346]	2003	146	37	26	11	22	43	4	19	0	21
Western Europe	Netherlands	Muller[347]	2008	39	8	0	0	3	2	2	2	0	0
Western Europe	Netherlands	Van Elzakker[348]	2009	92	30	24	6	12	20	7	14	7	0
Western Europe	Switzerland	Frohlicher[349]	2014	364	95	70	25	38	107	14	93	17	0

Supplementary Table S6: Maternal GBS colonization prevalence, by country

Country	Pregnant women tested (n)	Crude Prevalence (%)	95% CI	Selective methods only (%)	95% CI2	Adjusted (%)	95% CI3
Argentina	7516	6.2	2.7-9.7	6.8	2.7-11.0	6.4	2.9-10.0
Australia	2129	23.8	18.1-29.6	23.8	18.1-29.6	23.8	18.1-29.6
Austria	3569	14.6	13.4-15.7	14.6	13.4-15.7	14.6	13.4-15.7
Bangladesh	2385	11.2	4.3-18.1	11.2	4.3-18.1	11.2	4.3-18.1
Belgium	150	24	16.9-31.1	24	16.9-31.1	24	16.9-31.1
Bosnia and Herzegovina	100	7	1.5-12.5				
Brazil	4340	19.2	16.3-22.1	18.2	15.5-21.0	20.8	16.9-24.7
Bulgaria	110	16.4	9.1-23.7				
Canada	6495	18.6	13.9-23.3	20.5	19.2-21.9	20.5	19.2-21.9
Central African Republic	1000	17.5	15.1-19.9				
Chile	2839	10.1	2.3-17.9	14.1	12.1-16.2	14.1	12.1-16.2
China	44716	9.2	7.0-11.3	9.8	8.4-11.2	11.3	9.7-12.9
Colombia	312	9	0.0-25.4	17.6	11.8-23.4	17.6	11.8-23.4
Croatia	463	15.2	11.8-18.5	15.2	11.8-18.5	15.2	11.8-18.5
Cuba	120	27.5	19.2-35.8	27.5	19.2-35.8		
Czech Republic	586	29.4	25.6-33.1	29.4	25.6-33.1	29.4	25.6-33.1
DRC	509	20.2	16.7-23.8			28.7	24.7-32.7
Denmark	500	23.2	0.0-50.6	37.9	24.9-51.0	25.1	1.7-48.5
Dominican Republic	207	43.5	36.5-50.4	43.5	36.5-50.4	43.5	36.5-50.4
Egypt	500	26	22.0-30.0	26.3	21.5-31.1	29.2	23.2-35.2

Ethiopia	1154	12.4	8.3-16.6	12.3	7.5-17.0	13.5	8.7-18.2
Fiji	440	2	0.6-3.5				
France	22674	11.4	8.3-14.5	15.4	11.6-19.2	15.6	9.3-21.9
inc Reunion Island	40102	12.1	9.2-14.9			20.7	9.6-31.8
Gabon	549	19.3	15.9-22.7	19.3	15.9-22.7	19.3	15.9-22.7
Gambia	886	28.4	16.9-39.8	28.4	16.9-39.8	28.4	16.9-39.8
Germany	1863	18.4	15.2-21.5	18.4	15.2-21.5	18.4	15.2-21.5
Ghana	602	19.1	15.9-22.4	19.1	15.9-22.4	19.1	15.9-22.4
Greece	5004	7.4	2.3-12.5	6.6	5.0-8.2	13.4	4.1-22.8
Guatemala	990	15.7	13.3-18.0	15.7	13.3-18.0	15.7	13.3-18.0
Hungary	345	27.2	22.4-32.1			38	28.1-47.9
Iceland	280	24.3	19.1-29.5	24.3	19.1-29.5	24.3	19.1-29.5
India	6599	7.6	5.7-9.5	7.4	4.1-10.7	9.6	6.8-12.3
Iran	5992	12.4	9.3-15.5	13.8	9.8-17.8	15.7	11.6-19.7
Ireland	203	11.8	7.1-16.5			16.7	11.4-22.1
Israel	2192	11.8	5.6-17.9	14.3	11.5-17.1	12.1	7.1-17.2
Italy	10624	21.3	17.1-25.4	20.6	15.9-25.2	23.2	15.3-31.0
Ivory Coast	150	19.3	12.7-25.9				
Japan	7238	11.1	9.1-13.1			16.2	12.1-20.2
Jordan	500	30.4	26.3-34.5	30.4	26.3-34.5	30.4	26.3-34.5
Kenya	7967	11.5	9.0-14.0	11.5	9.0-14.0	11.5	9.0-14.0
Kuwait	2348	17.4	12.6-22.2	14.8	12.5-17.1	14.8	12.5-17.1
Lebanon	1109	14.6	7.8-21.4			26.2	19.3-33.1
Lithuania	970	15.3	12.9-17.6				
Malawi	1954	20.4	17.5-23.4	21	19.1-22.9	21.2	19.3-23.0
Malaysia	252	20.1	0.0-42			13.8	8.7-18.8
Mexico	2239	9.1	5.7-12.5			17.9	11.3-24.5
Morocco	622	23.3	19.9-26.7	23.3	19.9-26.7	23.3	19.9-26.7
Mozambique	433	11.4	0.0-30.5	11.4	0.0-30.5	11.4	0.0-30.5

Myanmar	775	8.1	6.1-10.1	8.6	6.1-11.0	8.9	6.8-11.0
Netherlands	1702	21.4	19.5-23.4	21.4	19.5-23.4	21.4	19.5-23.4
New Zealand	240	21.7	16.3-27.1	21.7	16.3-27.1	21.7	16.3-27.1
Nigeria	1713	10.7	5.1-16.3	1.3	0.0-3.6	14.5	6.3-22.7
Norway	1682	26.1	24.0-28.2	26.1	24.0-28.2	26.1	24.0-28.2
Pakistan	862	12.1	5.8-18.5			19.9	6.1-33.8
Paraguay	203	23.6	17.6-29.7	23.6	17.6-29.7	23.6	17.6-29.7
Peru	238	10.9	6.8-15.1	10.9	6.8-15.1	10.9	6.8-15.1
Philippines	200	7.5	3.6-11.4			10.5	6.0-15.0
Poland	12625	21.5	17.2-25.8	23.2	18.4-28.1	23.1	18.7-27.6
Reunion Island	17430	16.7	16.1-17.3			35.8	35.1-36.5
Russia	491	6.1	3.9-8.3			9.2	6.5-11.8
S.Korea	11335	8.3	7.4-9.2	8.3	7.4-9.2	8.3	7.4-9.2
Saudi Arabia	4185	18.9	13.8-24.0	23.2	14.7-31.7	22.1	17.2-27.0
Senegal	897	13.2	0.0-27.0			28.4	25.2-31.5
Singapore	530	15.4	12.0-18.7			25	18.8-31.2
Slovenia	1528	16.8	14.9-18.7	15.7	12.3-19.1	20.2	11.6-28.8
South Africa	13218	25.3	22.1-28.5	29.5	27.4-31.5	28.9	26.6-31.2
Spain	26679	15	12.9-17.2	16.3	14.9-17.7	15.5	13.8-17.2
Sweden	1569	22.7	20.6-24.8	22.7	20.6-24.8	22.7	20.6-24.8
Switzerland	2076	18.7	14.1-23.3	18.7	14.1-23.3	18.7	14.1-23.3
Tanzania	595	16.1	2.9-29.4	23	18.1-27.9	23	18.1-27.9
Thailand	2329	13.6	8.7-18.4	16.5	14.1-18.8	15.7	11.4-20.0
Togo	612	3.4	1.8-5.0	3.8	0.0-7.9	6.5	1.5-11.4
Trinidad	810	32.1	28.8-35.4	32.1	28.8-35.4	32.1	28.8-35.4
Tunisia	801	13	10.6-15.4	13	10.1-15.8	17.4	9.6-25.2
Turkey	3336	10.8	7.8-13.8	9.6	6.7-12.5	10.5	7.1-13.8
UK	1498	22.8	18.8-26.9	22.8	18.8-26.9	22.8	18.8-26.9

USA	20967	24.3	21.5-27.1	24.4	21.6-27.3	24.7	21.9-27.5
Ukraine	52	19.2	7.8-30.7	19.2	7.8-30.7		
United Arab Emirates	1454	15.8	4.6-27.0	15.8	4.6-27.0	15.8	4.6-27.0
Uruguay	300	17.3	12.9-21.8	17.3	12.9-21.8	17.3	12.9-21.8
Venezuela	393	26.3	17.6-34.9	18	10.0-26.0	34.5	17.3-51.7
Vietnam	505	4.4	2.5-6.2				
Zimbabwe	1968	29.9	20.1-39.6	39.3	23.2-55.3	34.6	21.6-47.7
Overall	300,176	15.2	14.4-16.0	17.4	16.4-18.5	18	16.9-19.1

Supplementary Table S7: Maternal GBS colonization prevalence: comparison of sample site.

country	Author	Year	Total tested	Positive with Vaginal swabs alone	Positive with vaginal and rectal swabs included
Australia	Gilbert[1]	2002	1096	238	296
Australia	Law[350]	2013	278	52	64
Austria	Hafner[295]	1998	3569	326	520
Belgium	El Aila[288]	2009	150	28	36
Belgium	El Aila[351]	2010	100	9	17
Czech Republic	Motlova[76]	2004	586	127	172
France	Jaureguy[286]	2003	370	41	90
Greece	Tsolia[231]	2003	1014	60	67
India	Sharmila[175]	2011	300	2	7
India	Kulkarni[176]	2001	317	3	8
India	Patil[190]	2013	905	68	110
India	Chaudhary[191]	2016	300	32	45
Iran	Moghaddam[206]	2010	201	22	25
Iran	Goudarzi[352]	2015	100	14	17
Ireland	Kieran[353]	1998	501	100	126
Malawi	Dzowela[22]	2005	97	14	16
Netherlands	Hoogkamp-Korstanje[354]	1982	762	60	102
Poland	Brzychczy-wloch[80]	2012	1176	313	353
Saudi Arabia	Zamzami[268]	2011	326	95	103

South Africa	Kwatra[169]	2014	521	99	148
Thailand	Kovavisarach[355]	2007	320	43	58
USA	Dillon[356]	1982	2540	434	895
USA	Philipson[357]	1995	94	17	29
USA	Jamie[358]	2004	200	55	67
USA	Quinlan[359]	2000	222	44	54
USA	Badri[360]	1977	789	81	162
USA	Platt[361]	1995	870	105	146
Zimbabwe	Moyo[18]	2000	206	52	65

Supplementary Table S8: Maternal GBS Colonization prevalence: studies included in comparison of culture methods

(Selective enrichment with conventional selective agar alone*)

Country	Author	Year	Comparison*	Total tested	Positive with Selective agar alone	Positive with addition of selective enrichment
Belgium	El Aila[351]	2010	SE vs SA	100	13	17
Belgium	El Aila[288]	2009	SE vs SA	150	22	45
Canada	Elsayed[362]	2003	SE vs SA	639	98	125
China	Xie[57]	2016	SE vs SA	200	16	20
South Africa	Monyama[172]	2016	SE vs SA	413	58	128
Spain	Bosch-Mestres[363]	2003	SE vs SA	388	32	54
Spain	Bosch-Mestres[363]	2003	SE vs SA	473	57	75
USA	Silver[364]	1996	SE vs SA	1222	209	293
USA	Orsello[365]	2003	SE vs SA	145	21	35
Venezuela	Diaz[366]	2008	SE vs SA	60	19	21

*SA=Conventional selective agar of low sensitivity (e.g. Colombia CNA or NNA)

Supplementary Table S9: Maternal GBS colonization prevalence: studies included in comparison of culture methods

Selective enrichment with unselective agar alone

Country	Author	Year	Total tested	Positive with Non selective agar alone	Positive with Addition of Selective Enrichment
Canada	Elsayed[362]	2003	639	79	125
China	Xie[57]	2016	200	12	20
Ireland	Thinkhamrop[367]	2003	203	7	24
Myanmar	Thinkhamrop[367]	2003	226	1	16
Thailand	Thinkhamrop[367]	2003	200	6	24
Thailand	Thinkhamrop[367]	2003	200	16	29
USA	Altaie[368]	1994	952	86	166
USA	Philipson[357]	1995	383	50	76
USA	Nguyen[369]	1998	524	55	87
USA	Baker[370]	1976	460	43	82
USA	Mason[371]	1976	54	4	12
USA	Platt[361]	1995	651	35	78
USA	Thinkhamrop[367]	2003	68	11	13

*A = Non-selective agar

Supplementary Table S10: Maternal GBS serotype distribution by UN sub-region

Region	No of Samples	Serotype prevalence (%)							
		Ia/Ib**	**Ia**	**Ib**	**II**	III	IV	V	VI/VII/VIII/IX*
Australia and New Zealand	468	48	33	11	7	35	1	16	2
Central America	237	70	63	4	20	10	0	0	0
Eastern Africa	1551	25	18	8	6	36	2	27	0
Eastern Asia	2937	30	16	12	7	29	0	16	11
Eastern Europe	1387	28	21	6	11	34	3	15	0
Middle Africa	197	36	20	15	14	22	0	28	0
Northern Africa	58	25	22	0	24	24	0	24	0
Northern America	1378	34	25	9	15	22	2	26	0
Northern Europe	1306	30	20	10	13	29	4	17	1
South America	241	50	30	17	13	16	0	10	1
South-eastern Asia	365	18	16	1	14	12	3	20	20
Southern Africa	2029	39	34	5	8	27	2	11	0
Southern Asia	553	32	22	7	14	25	0	14	6
Southern Europe	966	27	21	6	14	29	4	18	2
Western Africa	433	25	17	6	14	16	0	40	0
Western Asia	958	25	18	6	14	23	4	19	3
Western Europe	1117	29	19	10	11	28	4	16	1
Overall	16181	32	21	8	11	25	1	18	2

*Also includes NT6, II-IV-X, R, and JM9

** 7 studies did not differentiate between Ia and Ib

Supplementary Table S11: Maternal GBS serotype distribution by country

Country	No of Samples	Serotype prevalence (%)							
		Ia/Ib**	**Ia**	**Ib**	**II**	III	IV	V	VI/VII/VIII/IX*
Algeria	**44**	5	5	0	25	23	0	48	0
Argentina	**108**	51	42	9	10	22	0	12	5
Australia	**416**	53	42	8	6	40	1	15	2
Bangladesh	**262**	36	33	2	11	11	0	26	15
Belgium	**104**	25	13	13	13	24	14	24	0
Brazil	**133**	50	27	21	16	14	1	10	0
Canada	**404**	37	25	12	13	23	2	25	0
Central African Republic	**88**	35	27	8	23	17	0	25	0
China	**900**	33	23	11	11	36	0	14	1
Czech Republic	**172**	22	22	0	0	33	0	14	0
France	**78**	32	18	12	3	49	0	11	0
Gabon	**109**	36	13	23	6	28	0	30	0
Gambia	**267**	16	8	7	21	10	0	50	0
Germany	**440**	32	20	11	15	30	5	17	0
Ghana	**91**	38	23	11	10	23	0	28	0
Greece	**67**	31	19	12	27	22	3	9	8
India	**110**	51	31	18	20	11	0	8	1
Iran	**181**	17	10	8	16	44	2	11	3
Ireland	**119**	30	22	8	13	36	2	17	0
Israel	**156**	25	14	11	29	26	1	18	0
Italy	**73**	29	22	7	6	32	8	26	0
Japan	**722**	26	11	15	6	11	1	12	39
Kenya	**915**	34	21	13	9	38	2	17	0
Kuwait	**366**	14	10	4	11	25	3	38	7
Lebanon	**174**	24	20	9	14	21	4	22	14
Lithuania	**145**	35	30	5	11	35	9	8	2

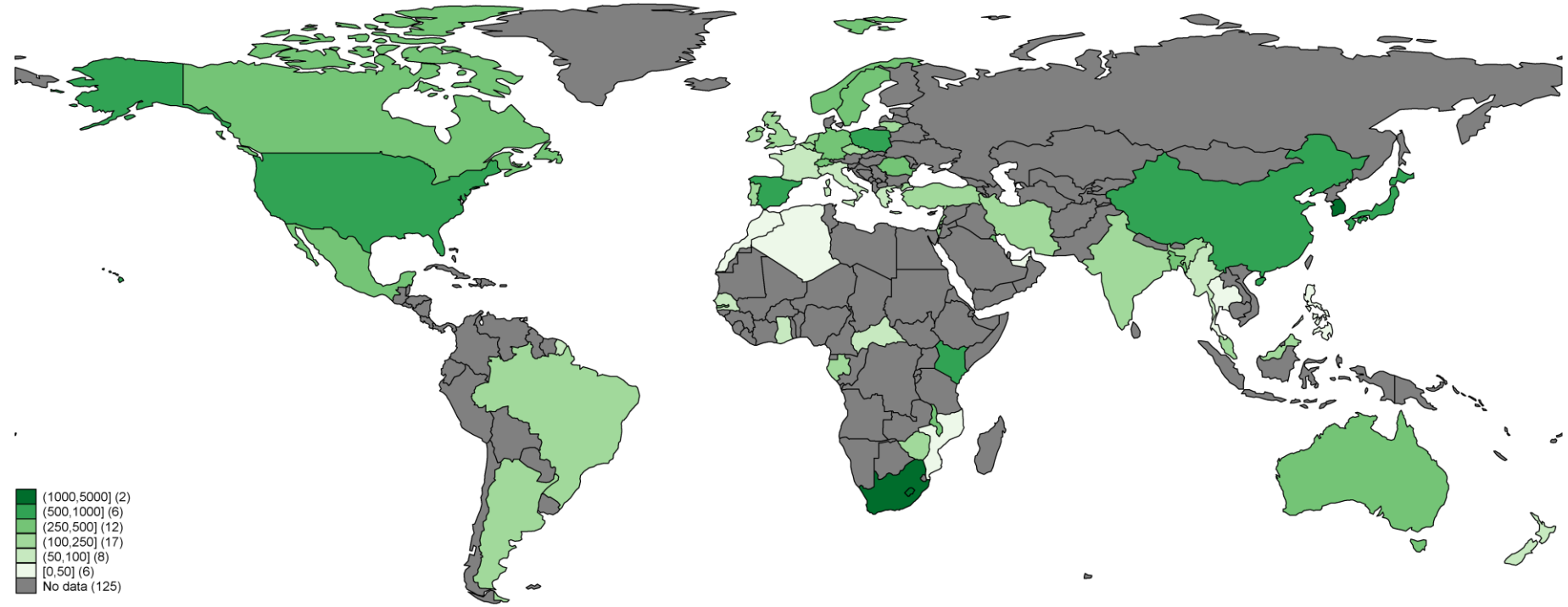
Malawi	**384**	25	19	6	10	40	0	24	1
Malaysia	**227**	21	21	1	7	10	5	22	31
Mexico	**237**	70	63	4	20	10	0	0	0
Morocco	**14**	50	43	7	21	29	0	0	0
Mozambique	**47**	32	19	13	6	13	6	43	0
Myanmar	**75**	19	17	1	28	7	5	24	15
Netherlands	**131**	28	26	7	11	13	7	10	4
New Zealand	**52**	40	21	19	6	29	0	19	4
Norway	**423**	26	16	10	14	25	0	17	4
Philippines	**14**	14	7	7	29	36	0	14	7
Poland	**920**	29	22	7	11	34	4	15	0
Portugal	**231**	24	18	6	20	26	3	26	2
Romania	**295**	26	19	9	17	33	5	17	0
South Korea	**1315**	29	14	11	5	37	0	22	6
Senegal	**75**	23	17	5	12	21	0	44	0
South Africa	**2029**	39	34	5	8	27	2	11	0
Spain	**595**	27	22	4	14	32	5	17	3
Sweden	**460**	25	12	13	15	28	9	20	1
Switzerland	**364**	26	19	7	10	29	4	26	5
Thailand	**49**	20	18	1	14	18	0	29	16
Turkey	**214**	37	28	7	13	20	4	6	1
UK	**159**	42	26	16	9	26	0	19	0
USA	**974**	32	24	8	17	21	2	28	0
United Arab Emirates	**48**	29	25	4	4	21	31	15	0
Zimbabwe	**205**	17	13	4	2	44	4	31	0
Overall	**16181**	32	21	8	11	25	1	18	2

*Also includes NT6, II-IV-X, R, and JM9

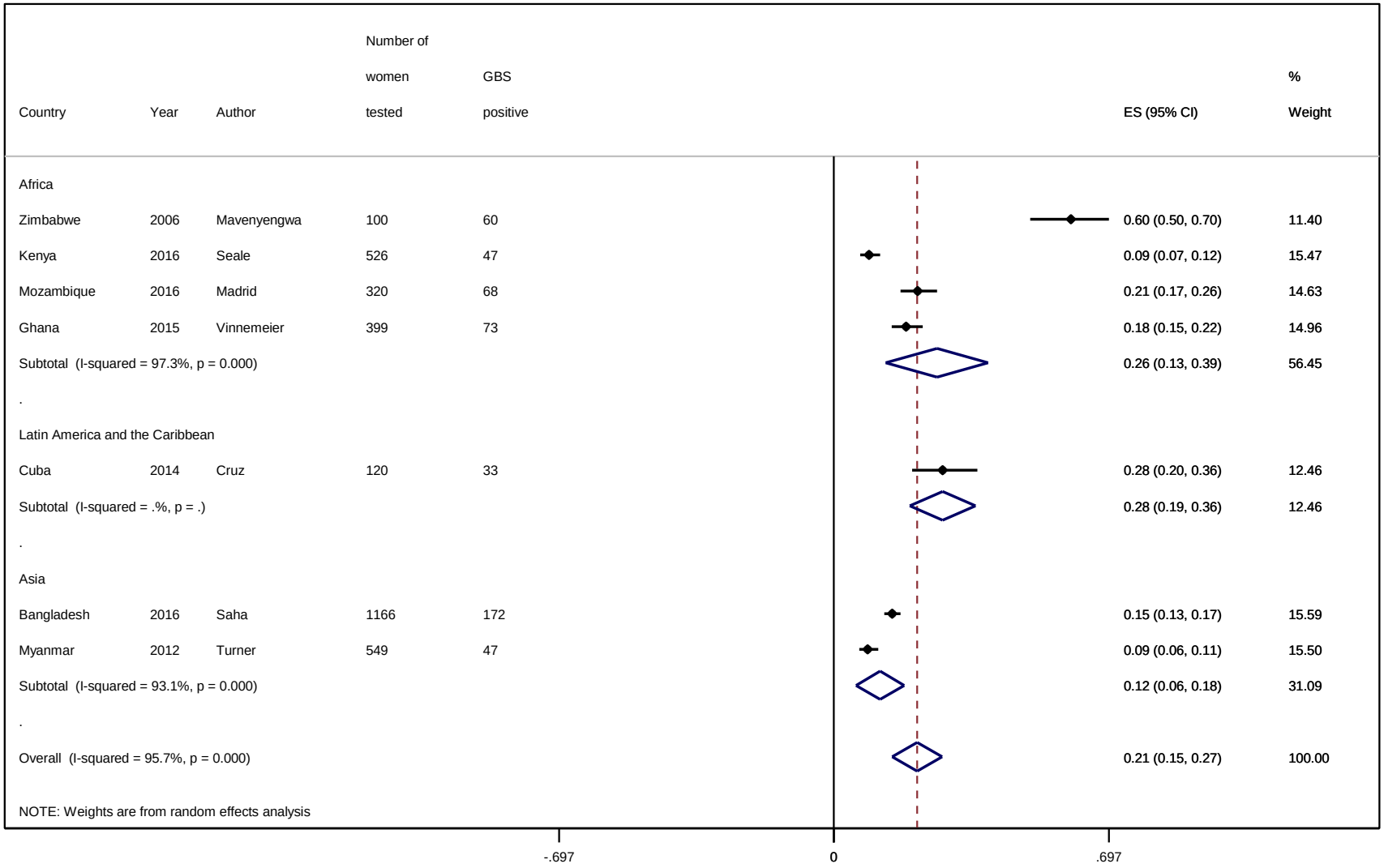
** 7 Studies did not differentiate between Ia and Ib

Non-typeable isolates excluded

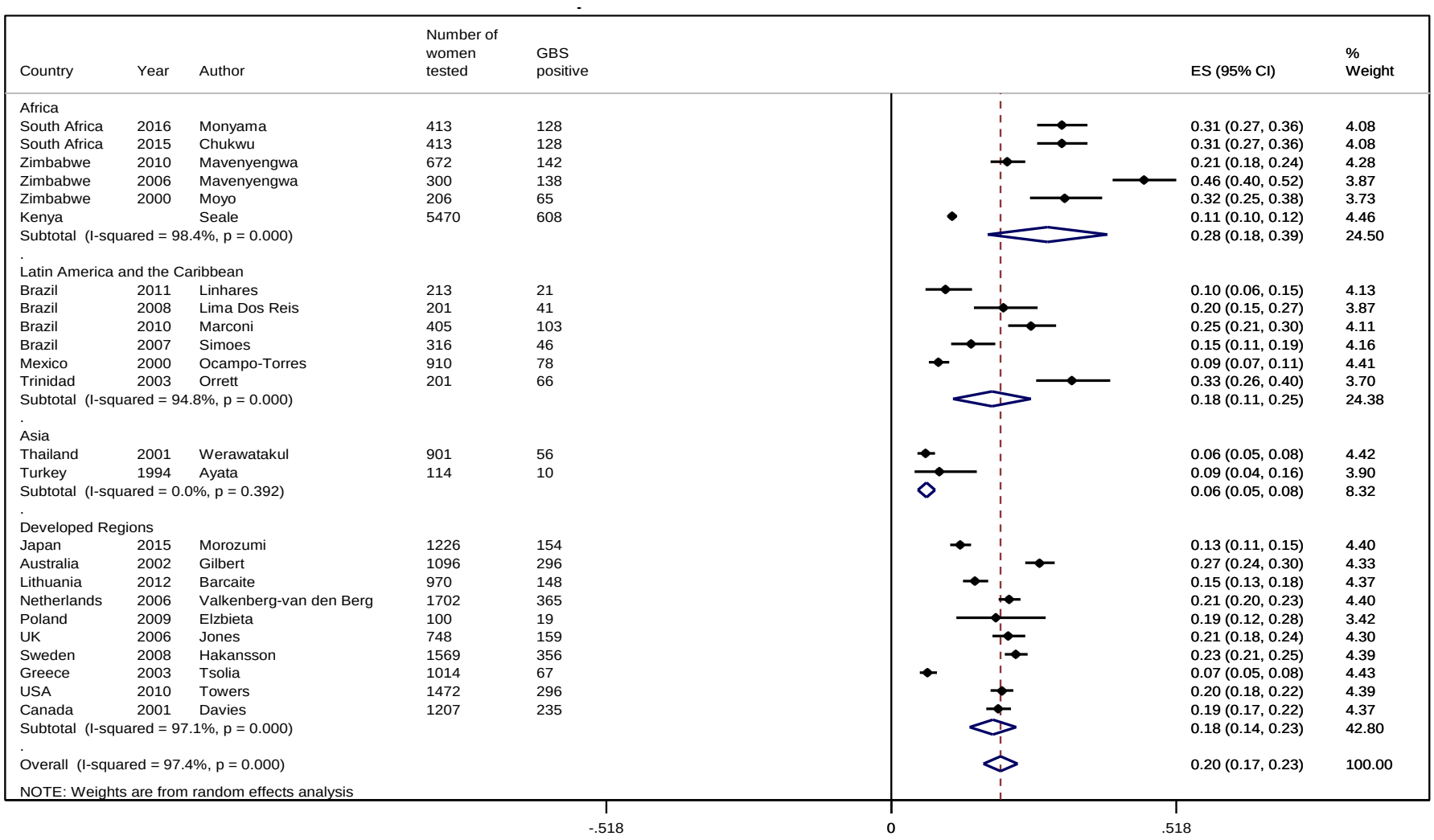
Supplementary Figure S1: Global distribution of maternal GBS colonization serotype data



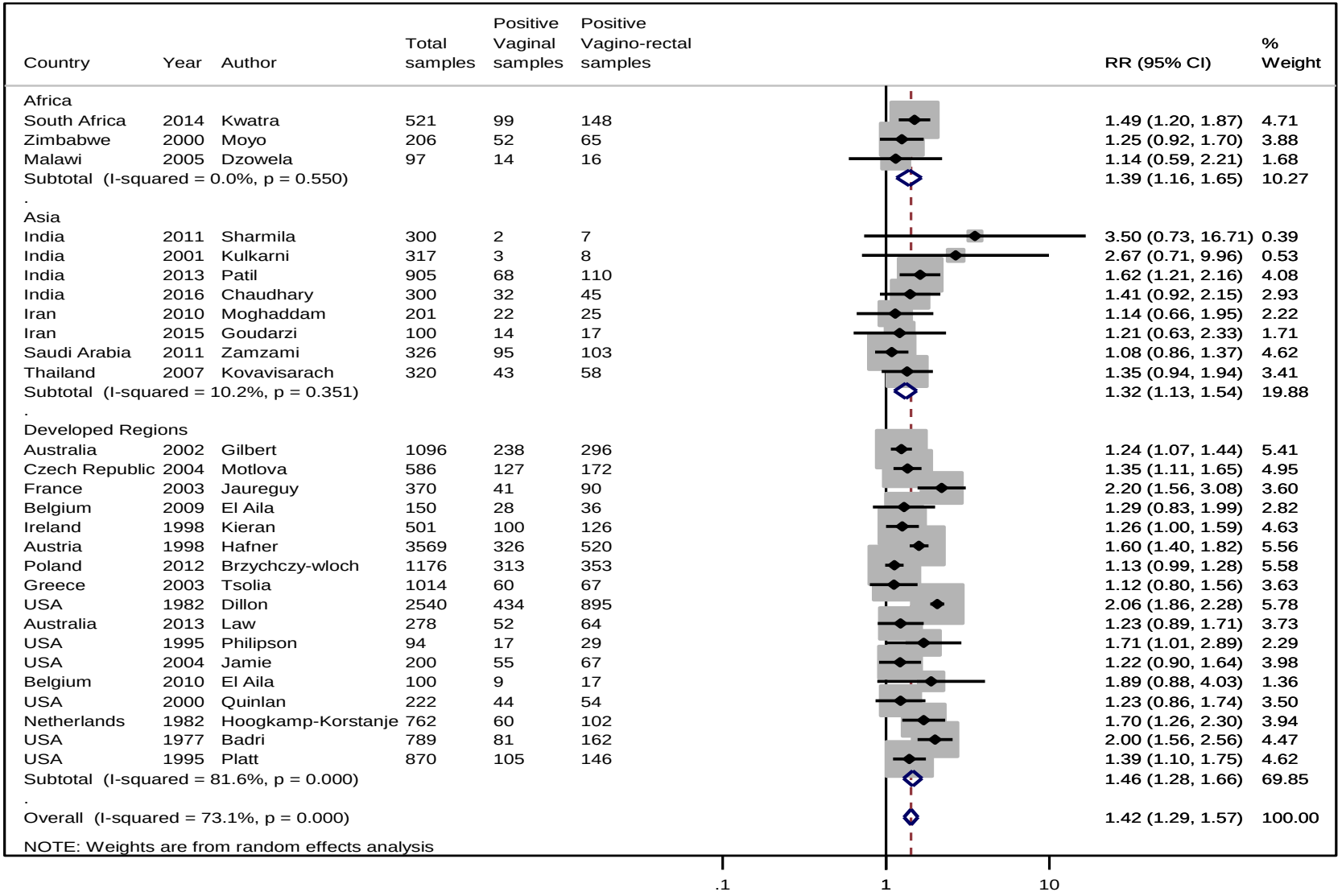
Supplementary Figure S2: GBS Colonization prevalence: Setting described as rural



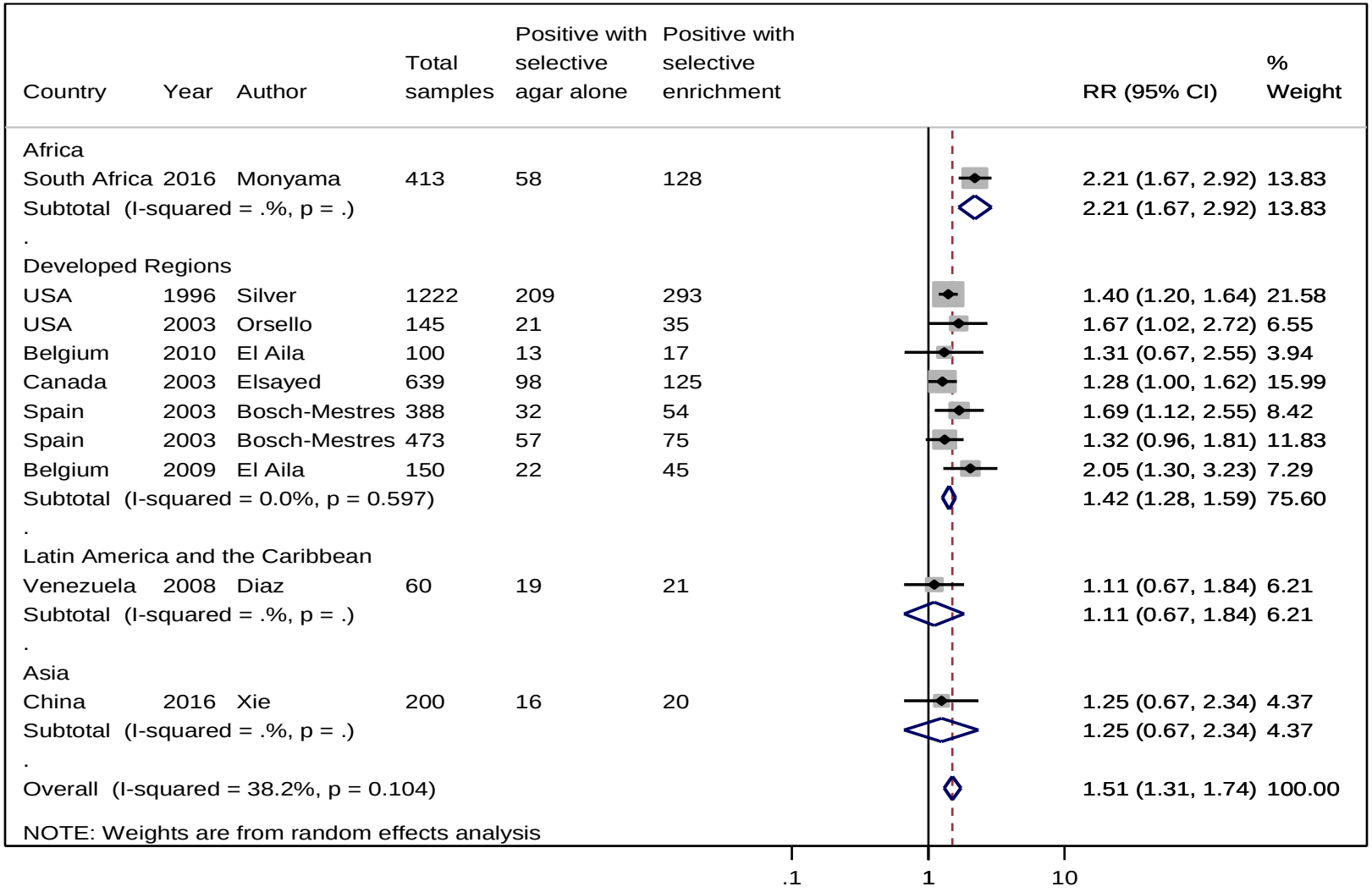
Supplementary Figure S3: GBS Colonization prevalence: setting described as mixed rural/urban



Supplementary Figure S4: Risk ratio for comparison between sampling site (inclusion of rectal swab sample).

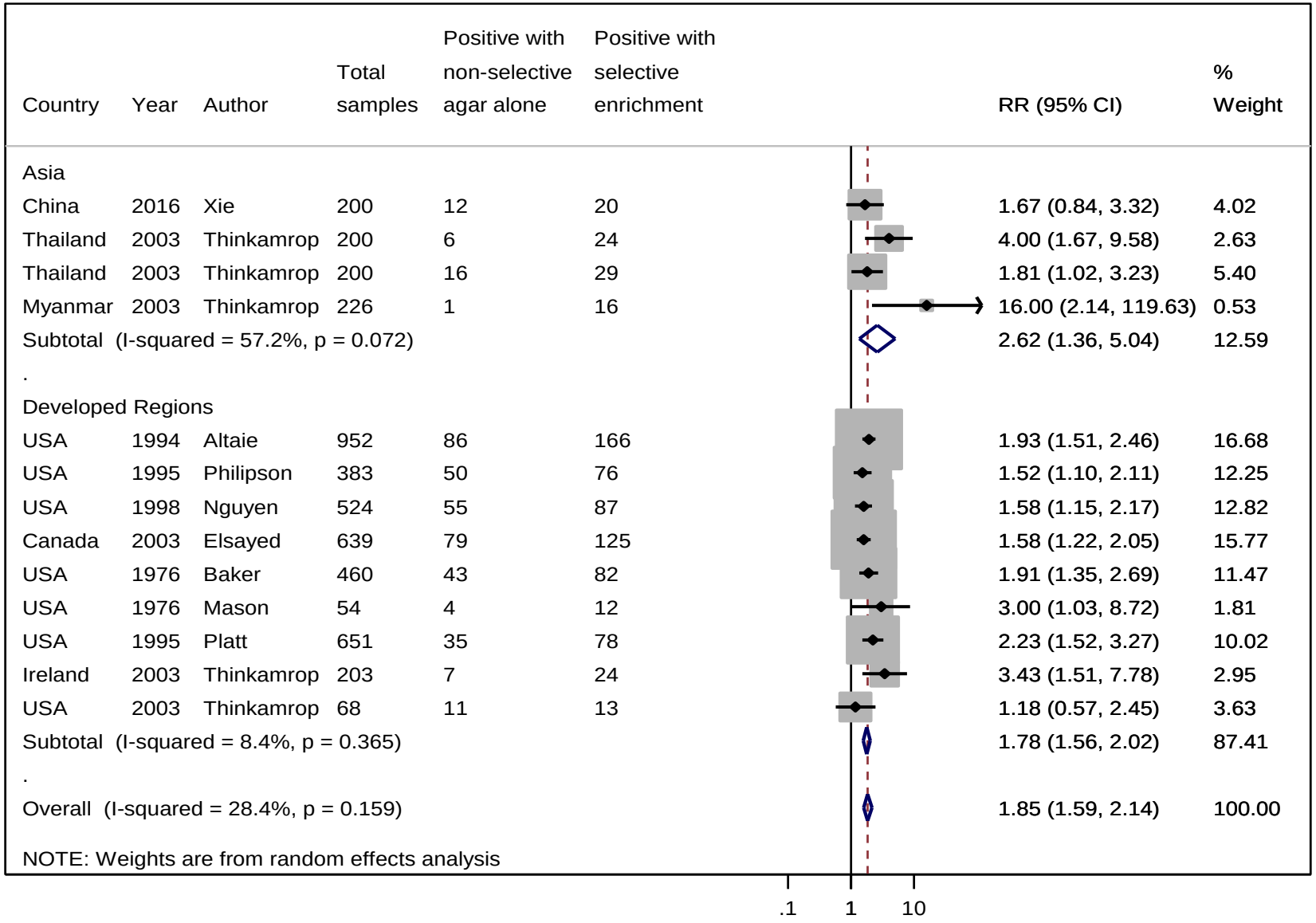


Supplementary Figure S5: Risk ratio for selective enrichment compared to selective conventional agar* alone without enrichment.

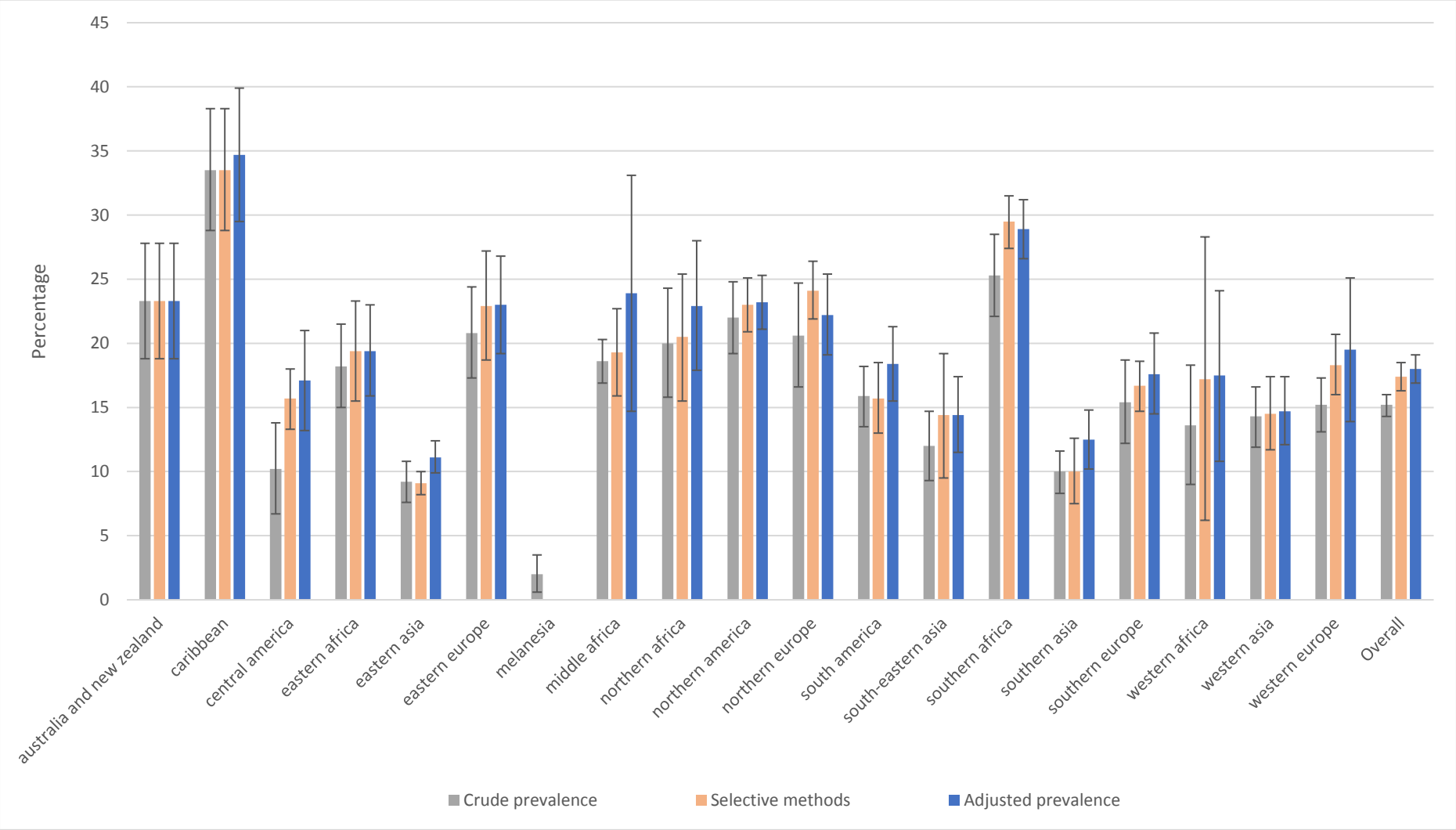


*Includes conventional agar with blood agar including antibiotics (Colombia CNA Agar (Colistin-Nalidixic Acid)), not including selective agars of proven high sensitivity (chromogenic agars, Strepto B etc)

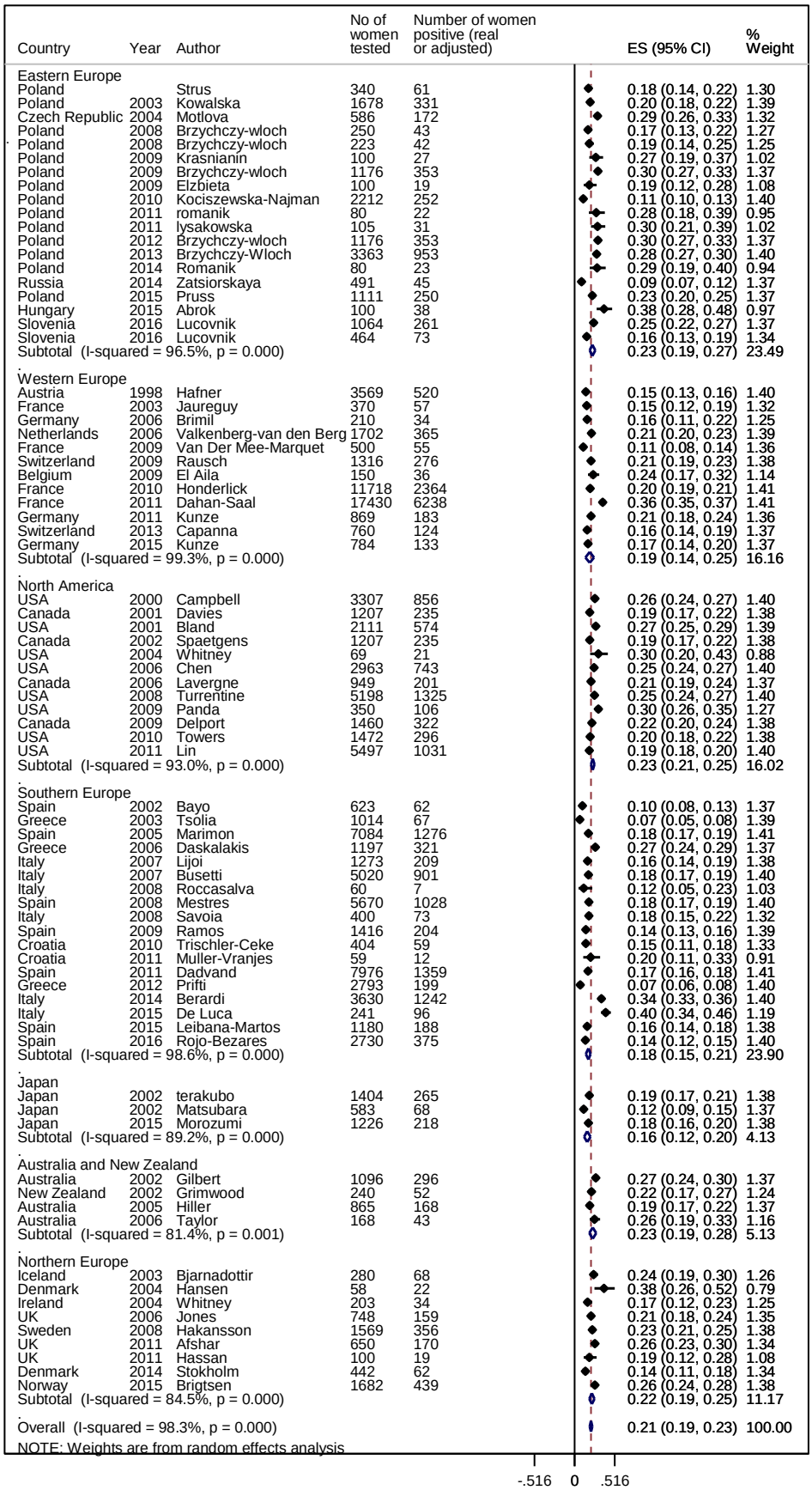
Supplementary Figure S6: Risk ratio for detection with selective enrichment compared to unselective agar alone



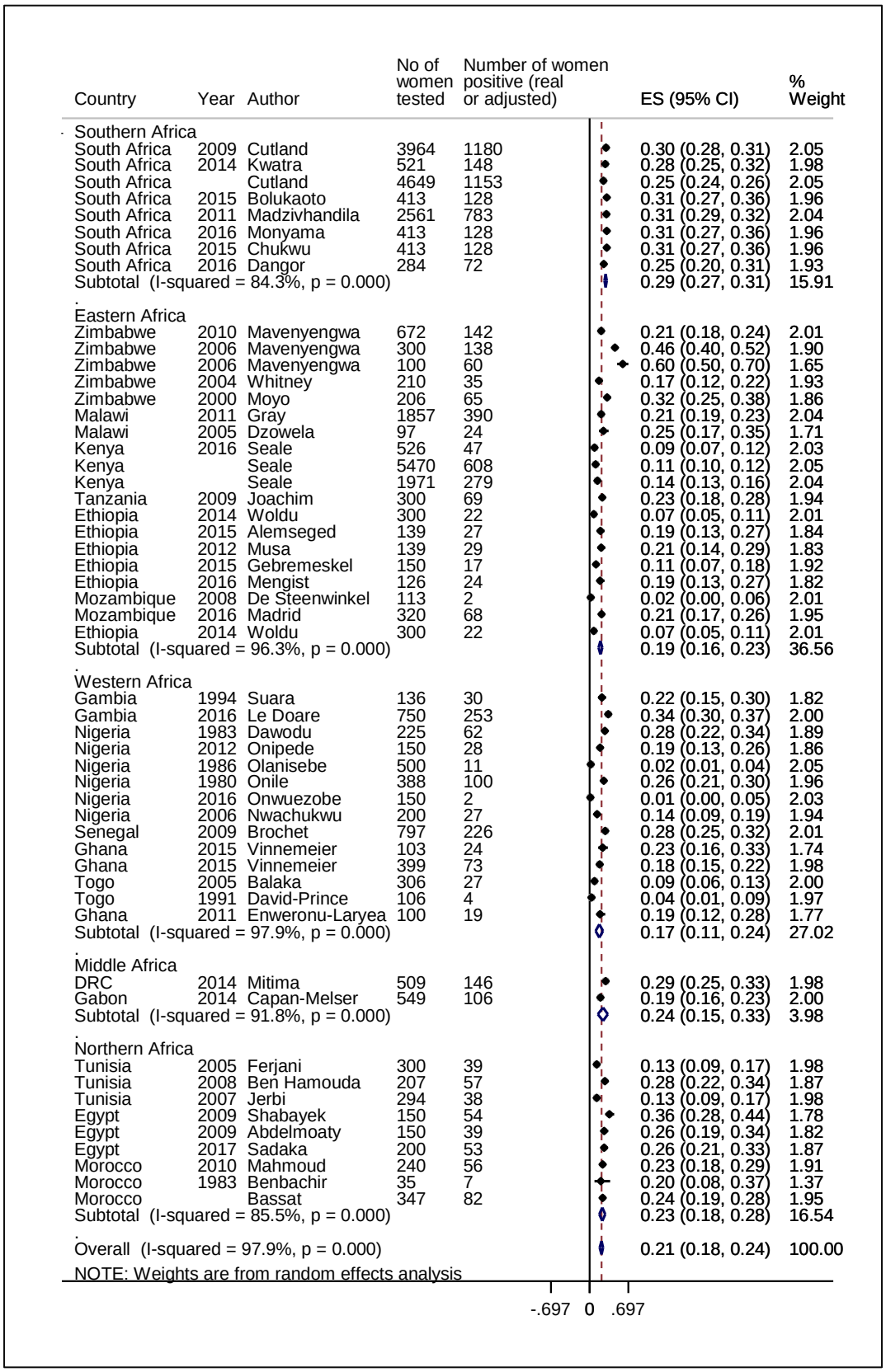
Supplementary Figure S7: Maternal GBS prevalence by sub-region



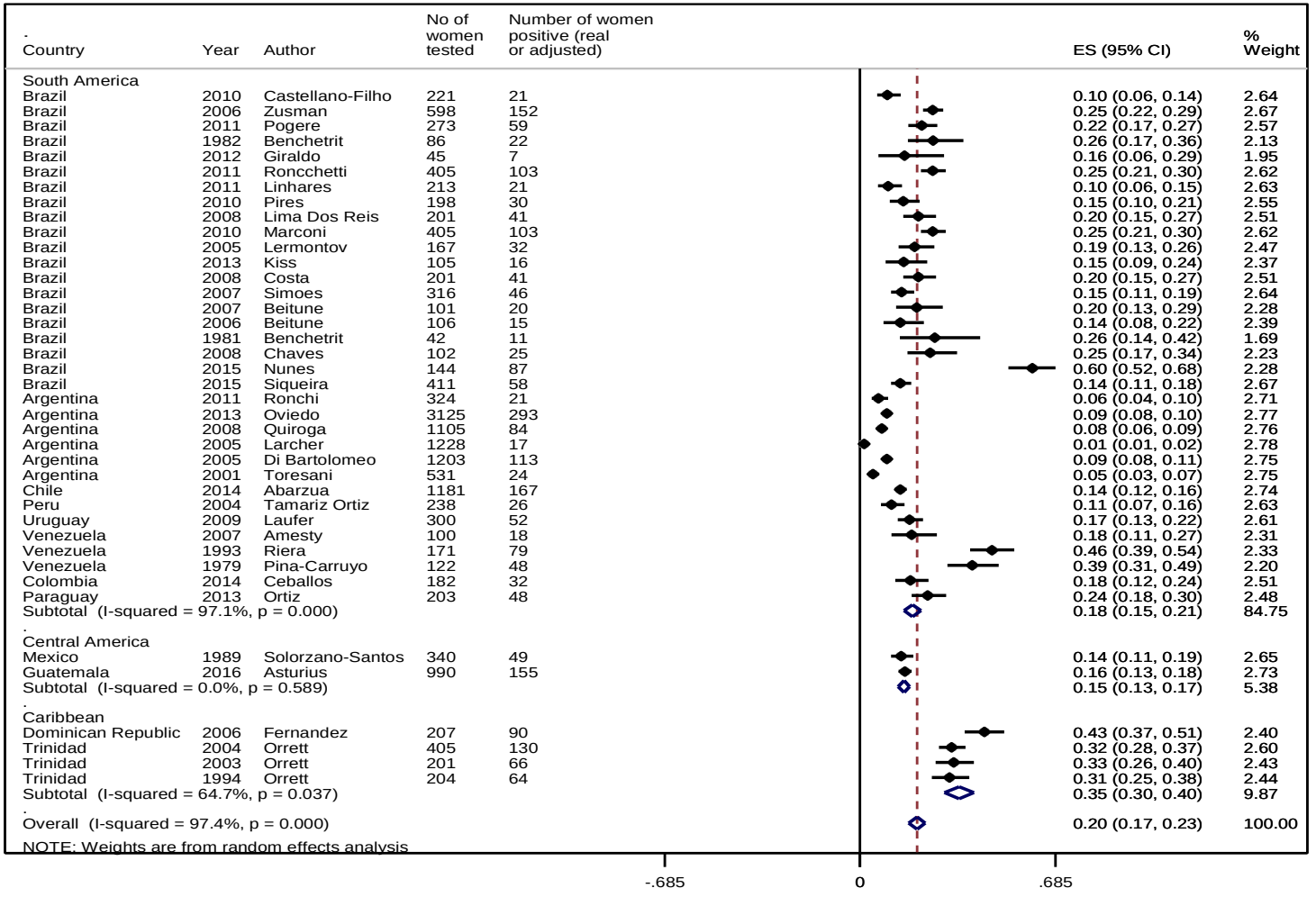
Supplementary Figure S8: Maternal GBS prevalence in developed region: adjusted



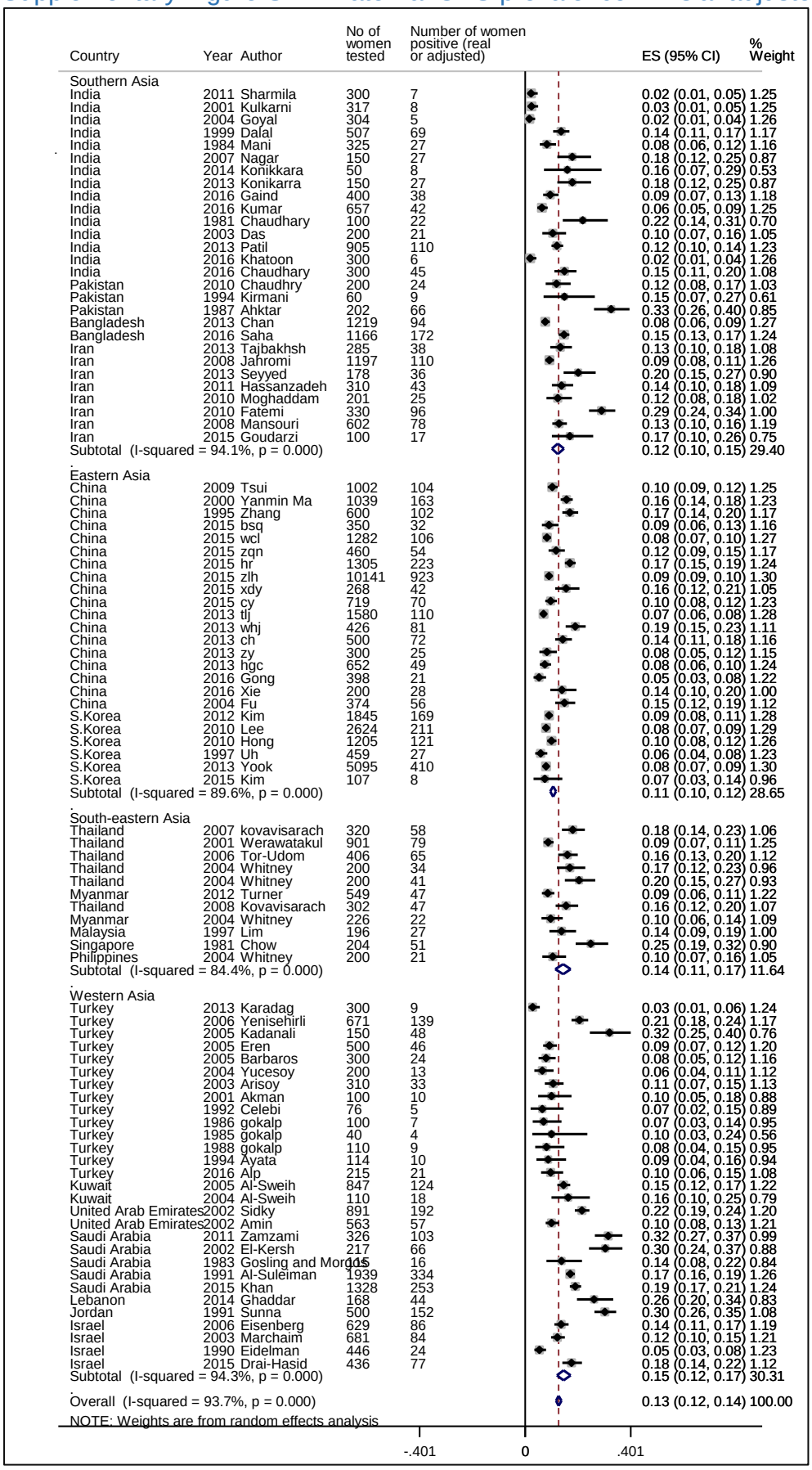
Supplementary Figure S9: Maternal GBS prevalence in Africa: adjusted



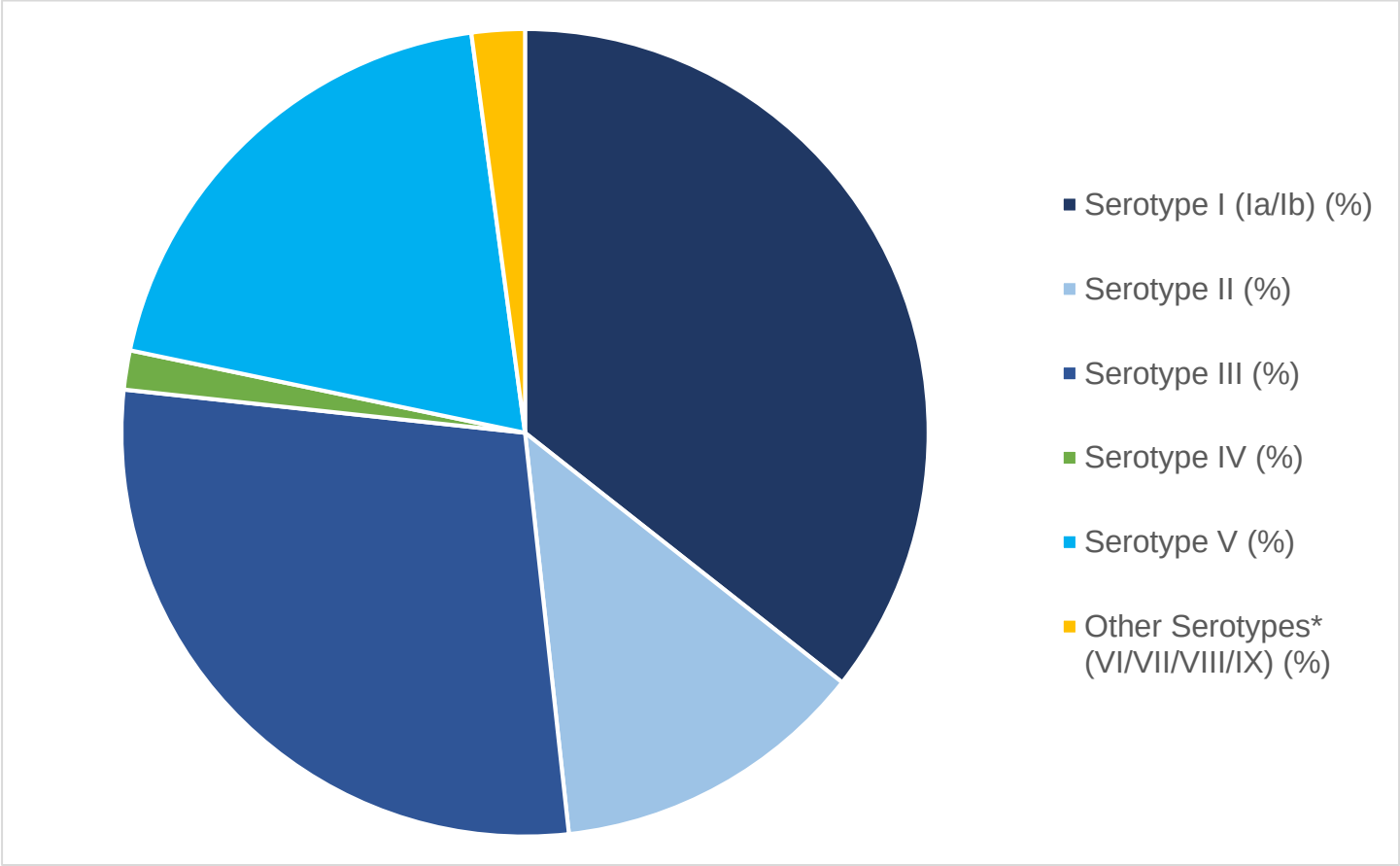
Supplementary Figure S10: Maternal GBS prevalence in Latin America and the Caribbean: adjusted `



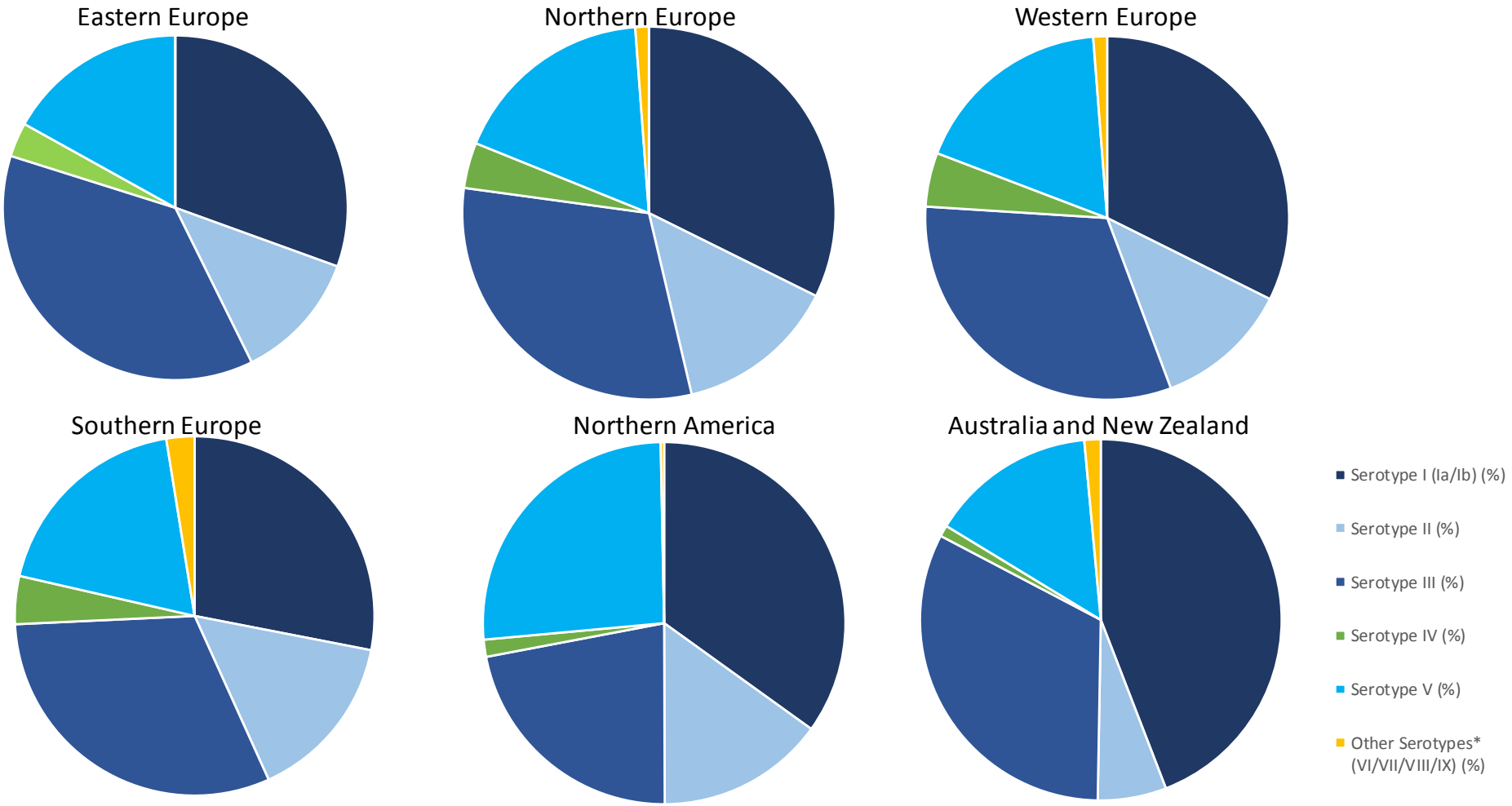
Supplementary Figure S11: Maternal GBS prevalence in Asia: adjusted`



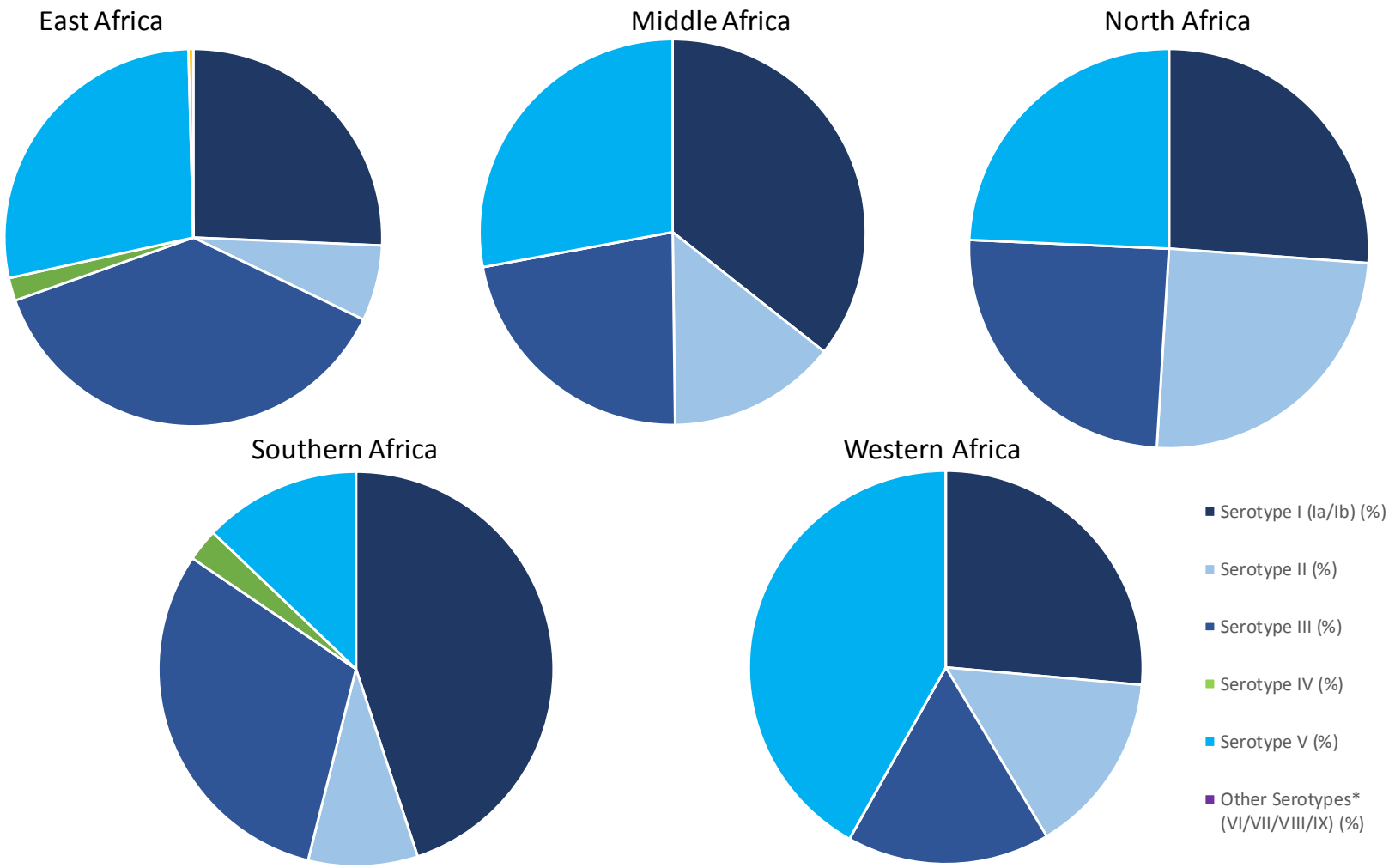
Supplementary Figure S12: Maternal GBS colonization serotypes distribution worldwide



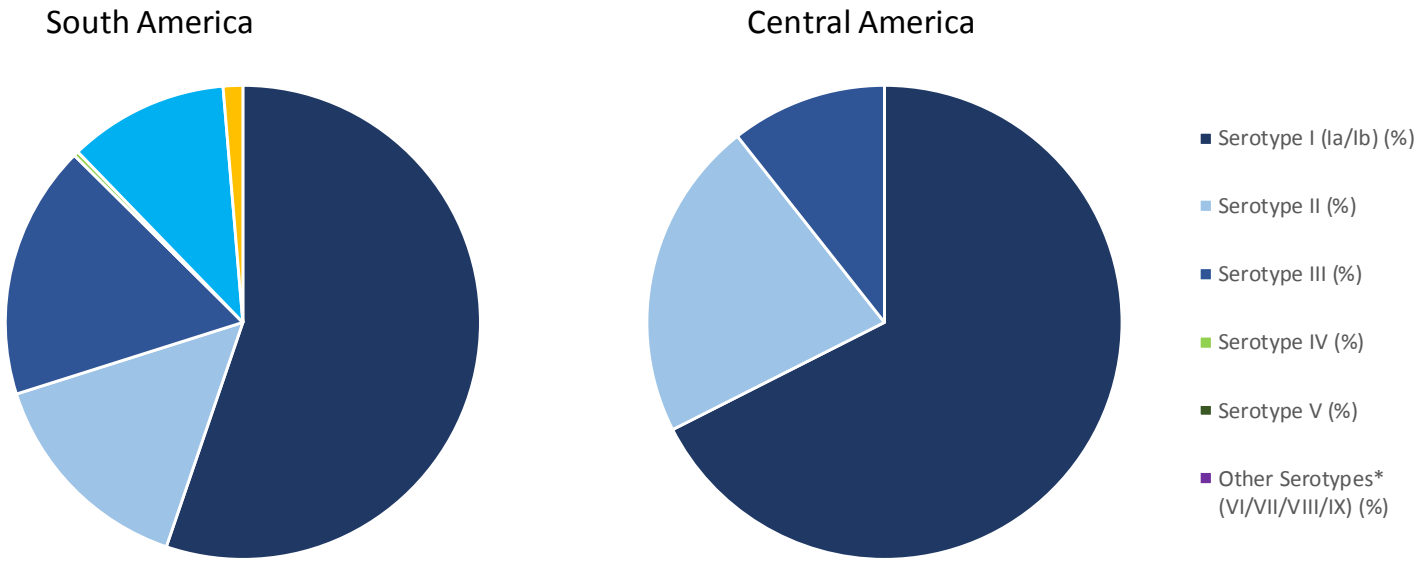
Supplementary Figure S13: GBS maternal colonization serotypes distribution in developed regions



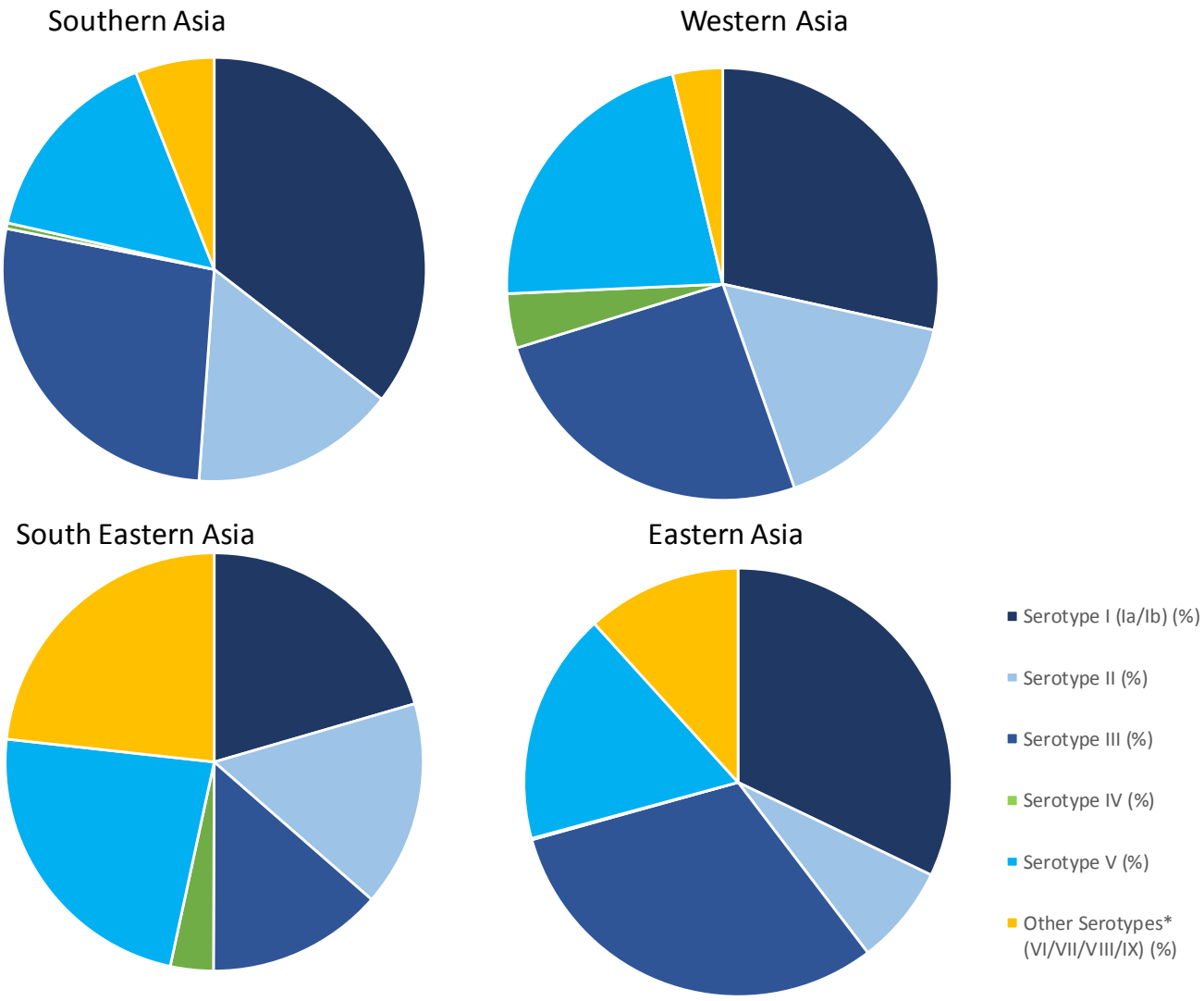
Supplementary Figure S14: GBS maternal colonization serotypes distribution in Africa



Supplementary Figure S15: GBS maternal colonization serotypes distribution in South and Central America



Supplementary Figure S16: GBS maternal colonization serotypes distribution in Asia



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