

E-TABLE 1: Original questions in German from the LuftiBus in the school parental questionnaire (grey background) and from the children's questionnaire (white background).

POPULATION CHARACTERISTICS
<p>Country of birth of the participant and country of origin of the parents</p> <ul style="list-style-type: none">• In welchem Land wurde das befragte Kind geboren? → Schweiz <input type="checkbox"/> Anderes Land <input type="checkbox"/>• Aus welchem Land stammt die Mutter des Kindes? → Schweiz <input type="checkbox"/> Anderes Land <input type="checkbox"/>• Aus welchem Land stammt der Vater des Kindes? → Schweiz <input type="checkbox"/> Anderes Land <input type="checkbox"/> <p>Physical activity</p> <ul style="list-style-type: none">• Welche der folgenden Aussagen trifft am besten auf Ihr Kind zu? → Mein Kind ist nicht sehr aktiv und verbringt die meiste Zeit mit ruhigen Aktivitäten. (z.B. Computer, Fernsehen, Smartphone, Nintendo, Gameboy, Bücher lesen, Musik hören) <input type="checkbox"/> → Mein Kind ist körperlich mässig aktiv und verbringt seine Zeit mit ruhigen aber auch aktiveren Aktivitäten. <input type="checkbox"/> → Mein Kind ist körperlich sehr aktiv und immer „auf Trab“. <input type="checkbox"/> <p>Parental education</p> <ul style="list-style-type: none">• Welche Ausbildungen haben Mutter und Vater des Kindes abgeschlossen? (Bitte kreuzen Sie alles Zutreffende an.) Mutter / Vater → Die obligatorische Schule <input type="checkbox"/> <input type="checkbox"/> → Berufslehre, Berufsschule <input type="checkbox"/> <input type="checkbox"/> → Handelsschule oder technische Schule <input type="checkbox"/> <input type="checkbox"/> → Lehrkräfte-Seminarien (z.B. Kindergarten, Primarschule, Musiklehrkräfte, Turn- und Sportlehrkräfte) <input type="checkbox"/> <input type="checkbox"/> → Universität, Hochschule oder Fachhochschule <input type="checkbox"/> <input type="checkbox"/> <p>Parental smoking</p> <ul style="list-style-type: none">• Raucht die Mutter? → Nein <input type="checkbox"/> Ja, nur im Freien <input type="checkbox"/> Ja, z.T. auch in der Wohnung <input type="checkbox"/>• Hatte die Mutter geraucht, als sie mit dem befragten Kind schwanger war? → Ja <input type="checkbox"/> Nein <input type="checkbox"/>• Raucht der Vater oder sonst jemand im Haushalt? → Nein <input type="checkbox"/> Ja, nur im Freien <input type="checkbox"/> Ja, z.T. auch in der Wohnung <input type="checkbox"/> <p>Parental history of asthma</p> <ul style="list-style-type: none">• Leidet die Mutter oder der Vater des Kindes an Asthma oder braucht sie/er einen Asthma-Spray zum Inhalieren? → Nein, keiner von beiden <input type="checkbox"/> Ja, die Mutter <input type="checkbox"/> Ja, der Vater <input type="checkbox"/> Ja, beide <input type="checkbox"/>
SELF-REPORTED SMOKING BEHAVIOUR
<ul style="list-style-type: none">• Hast du schon einmal Zigaretten (aus dem Päckchen oder selbst gedreht) geraucht? → <input type="checkbox"/> Nein, ich rauche nicht → <input type="checkbox"/> Ja, ein- oder zweimal ausprobiert → <input type="checkbox"/> Ja, selten, weniger als einmal in der Woche → <input type="checkbox"/> Ja, mindestens einmal in der Woche, aber nicht jeden Tag → <input type="checkbox"/> Ja, jeden Tag• Hast du schon einmal Shisha geraucht? → <input type="checkbox"/> Nein, ich rauche nicht → <input type="checkbox"/> Ja, ein- oder zweimal ausprobiert → <input type="checkbox"/> Ja, selten, weniger als einmal in der Woche → <input type="checkbox"/> Ja, mindestens einmal in der Woche, aber nicht jeden Tag → <input type="checkbox"/> Ja, jeden Tag• Hast du schon einmal E-Zigaretten oder E-Shisha (mit oder ohne Nikotin) geraucht? → <input type="checkbox"/> Nein, ich rauche nicht → <input type="checkbox"/> Ja, ein- oder zweimal ausprobiert → <input type="checkbox"/> Ja, selten, weniger als einmal in der Woche → <input type="checkbox"/> Ja, mindestens einmal in der Woche, aber nicht jeden Tag → <input type="checkbox"/> Ja, jeden Tag

RESPIRATORY SYMPTOMS AND DISEASES

Cough apart from colds

- Hast du manchmal Husten auch ohne dass du eine Erkältung hast?

→ Nein, nie Ja, manchmal Ja, häufig

Cough more than others

- Hustest du mehr als andere Kinder in deinem Alter?

→ Nein, ich huste nicht mehr als andere Ja, ich huste mehr als andere

Rhinitis apart from colds

- Hattest du in den letzten 12 Monaten eine laufende, verstopfte oder juckende Nase, ohne erkältet zu sein?

→ Nein Ja

Dry mouth often when waking up

- Hast du am Morgen manchmal einen trockenen Mund und/oder Halsweh?

→ Nein, nie Ja, aber nur, wenn ich erkältet bin Ja, recht oft

Wheeze

- Hattest du in den letzten 12 Monaten beim Atmen manchmal pfeifende oder keuchende Geräusche im Brustkorb?

→ Nein Ja

Dyspnoea

- Hast du manchmal Atemnot, Mühe mit Ein- oder Ausatmen, Mühe genug Luft zu bekommen oder ein Enge- oder Druck-Gefühl im Brustkorb?

→ Nein, nie Ja, manchmal Ja, häufig

Wheeze induced by exercise

- Hattest du in den letzten 12 Monaten jemals pfeifende oder keuchende Geräusche im Brustkorb während oder nach körperlicher Anstrengung (Rennen, Velofahren)?

→ Nein Ja

Hay fever

- Hattest du in den letzten 12 Monaten Heuschnupfen?

→ Nein Ja

Asthma diagnosis

- Hat dir ein Arzt jemals gesagt, dass du Asthma hast?

→ Nein Ja Ich weiss nicht

E-TABLE 2: English translation of the questions from the LuftiBus in the school parental questionnaire (grey background) and from the children's questionnaire (white background).

POPULATION CHARACTERISTICS
<p>Country of birth of the participant and country of origin of the parents</p> <ul style="list-style-type: none"> • In which country was the questioned child born? → Switzerland <input type="checkbox"/> Other Country <input type="checkbox"/> • From which country is the mother of the child? → Switzerland <input type="checkbox"/> Other Country <input type="checkbox"/> • From which country is the father of the child? → Switzerland <input type="checkbox"/> Other Country <input type="checkbox"/> <p>Physical activity</p> <ul style="list-style-type: none"> • Which of the following statements applies best to your child? → My child is not very active and spends most of her time with quiet activities. (Computer, TV, Smartphone, Nintendo, Gameboy, reading books, listening to music) <input type="checkbox"/> → My child is moderately active physically and spends his time with quiet but also more active activities <input type="checkbox"/> → My child is physically very active and always "on the go" <input type="checkbox"/> <p>Parental education</p> <ul style="list-style-type: none"> • What training did the mother and father of the child complete? (Please tick all that apply.) Mother / Father → Compulsory schooling <input type="checkbox"/><input type="checkbox"/> → Vocational training, vocational school <input type="checkbox"/><input type="checkbox"/> → Commercial school or technical school <input type="checkbox"/><input type="checkbox"/> → Teacher seminars (such as kindergarten, primary school, music teachers, gymnastics and sports teachers) <input type="checkbox"/><input type="checkbox"/> → University or college <input type="checkbox"/><input type="checkbox"/> <p>Parental smoking</p> <ul style="list-style-type: none"> • Does the mother smoke? → No <input type="checkbox"/> Yes, only outdoors <input type="checkbox"/> Yes, also indoors <input type="checkbox"/> • Had the mother smoked when she was pregnant with the questioned child? → Yes <input type="checkbox"/> No <input type="checkbox"/> • Does the father or any other person in the household smoke? → No <input type="checkbox"/> Yes, only outdoors <input type="checkbox"/> Yes, also in the apartment <input type="checkbox"/> <p>Parental history of asthma</p> <ul style="list-style-type: none"> • Does the child's mother or father suffer from asthma or does he / she need an inhaled asthma spray? → No, neither one <input type="checkbox"/> Yes, mother <input type="checkbox"/> Yes, father <input type="checkbox"/> Yes, both <input type="checkbox"/>
<p>SELF-REPORTED SMOKING BEHAVIOUR</p> <ul style="list-style-type: none"> • Have you ever smoked cigarettes (from the pack or self-rolled)? → <input type="checkbox"/> No, I do not smoke → <input type="checkbox"/> Yes, tried once or twice → <input type="checkbox"/> Yes, rarely, less than once a week → <input type="checkbox"/> Yes, at least once a week, but not every day → <input type="checkbox"/> Yes, everyday • Have you ever smoked shisha? → <input type="checkbox"/> No, I do not smoke → <input type="checkbox"/> Yes, tried once or twice → <input type="checkbox"/> Yes, rarely, less than once a week → <input type="checkbox"/> Yes, at least once a week, but not every day → <input type="checkbox"/> Yes, everyday • Have you ever smoked e-cigarettes or e-shisha (with or without nicotine)? → <input type="checkbox"/> No, I do not smoke → <input type="checkbox"/> Yes, tried once or twice → <input type="checkbox"/> Yes, rarely, less than once a week → <input type="checkbox"/> Yes, at least once a week, but not every day → <input type="checkbox"/> Yes, everyday

RESPIRATORY SYMPTOMS AND DISEASES

Cough apart from colds

- Do you cough even without having a cold?
→ No, never Yes, sometimes Yes, often

Cough more than others

- Do you think that you cough more than other children your age?
→ No, I do not cough more than others Yes, I cough more than others

Rhinitis apart from colds

- In the past 12 months, have you had a problem with sneezing or a runny or blocked nose when you did not have a cold or flu?
→ No Yes

Dry mouth often when waking up

- Do you sometimes have a dry mouth and / or sore throat in the morning?
→ No, never Yes, but only if I have a cold Yes, often

Wheeze

- In the past 12 months, have you had wheezing or whistling in the chest?
→ No Yes

Dyspnoea

- Do you sometimes have shortness of breath, trouble inhaling or exhaling, trouble getting enough air or chest tightness?
→ No, never Yes, sometimes Yes, often

Wheeze induced by exercise

- In the past 12 months, has exercise made you wheeze?
→ No Yes

Hay fever

- In the past 12 months, have you had hay fever?
→ No Yes

Asthma diagnosis

- Has any doctor told you that you have asthma?
→ No Yes I don't know

E-TABLE 3: Prevalence of self-reported smoking among 6 to 17-year-olds.

	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16-17 years
Males	N=48	N=137	N=149	N=142	N=141	N=141	N=192	N=288	N=265	N=188	N=52
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<u>Cigarettes</u>											
Never	47 (98)	136 (99)	149 (100)	138 (98)	137 (97)	135 (97)	179 (93)	246 (86)	198 (75)	121 (65)	25 (48)
1-2 times	1 (2)	1 (1)		3 (2)	4 (3)	5 (3)	13 (7)	40 (14)	53 (20)	46 (24)	12 (23)
< Once/week									6 (2)	13 (7)	4 (8)
≥ Once/week									6 (2)	5 (3)	2 (4)
Everyday									1 (0)	2 (1)	9 (17)
<u>Shishas</u>											
Never	48 (100)	134 (99)	147 (99)	141 (99)	140 (100)	136 (97)	177 (92)	238 (83)	175 (66)	104 (55)	23 (44)
1-2 times		2 (1)	1 (1)	1 (1)		4 (3)	15 (8)	45 (16)	73 (28)	56 (30)	17 (33)
< Once/week								4 (1)	11 (4)	26 (14)	11 (21)
≥ Once/week									4 (2)	2 (1)	1 (2)
Everyday									1 (0)		
<u>ESDs</u>											
Never	48 (100)	136 (100)	147 (99)	140 (98)	137 (99)	135 (96)	173 (90)	230 (80)	173 (65)	97 (51)	27 (52)
1-2 times			1 (1)	1 (1)	2 (1)	4 (3)	17 (9)	51 (18)	82 (31)	85 (46)	21 (40)
< Once/week						2 (1)	2 (1)	4 (1)	6 (2)	4 (2)	3 (6)
≥ Once/week				1 (1)				2 (1)	4 (2)	1 (1)	1 (2)
Everyday										1 (1)	
<u>Any product</u>											
Never								198 (69)	137 (51)	71 (38)	20 (38)
1-2 times	47 (98)	134 (98)	147 (99)	136 (96)	135 (96)	127 (90)	155 (81)	82 (29)	103 (39)	81 (42)	14 (27)
< Once/week	1 (2)	3 (1)	2 (1)	5 (4)	6 (4)	12 (9)	35 (18)	6 (2)	11 (4)	27 (14)	7 (13)
≥ Once/week						2 (1)	2 (1)	2 (1)	12 (4)	6 (3)	2 (4)
Everyday				1 (1)					2 (1)	3 (2)	9 (17)

	6 years	7 years	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16-17 years
Females	N=57	N=157	N=111	N=118	N=148	N=158	N=206	N=292	N=261	N=196	N=41
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<u>Cigarettes</u>											
Never	57 (100)	155 (99)	110 (100)	116 (99)	147 (99)	157 (99)	202 (98)	273 (94)	230 (88)	147 (76)	19 (46)
1-2 times		1 (1)		1 (1)	1 (1)	1 (1)	4 (2)	16 (6)	26 (10)	35 (18)	11 (27)
< Once/week								1 (0)	2 (1)	6 (3)	5 (12)
≥ Once/week								1 (0)	1 (0)	2 (1)	2 (5)
Everyday									2 (1)	4 (2)	4 (10)
<u>Shishas</u>											
Never	57 (100)	156 (100)	111 (100)	118 (100)	145 (98)	156 (99)	198 (96)	268 (92)	208 (80)	123 (63)	19 (46)
1-2 times					3 (2)	2 (1)	6 (3)	22 (8)	42 (16)	60 (31)	9 (22)
< Once/week							1 (1)	1 (0)	11 (4)	10 (5)	11 (27)
≥ Once/week										1 (1)	2 (5)
Everyday											
<u>ESDs</u>											
Never	57 (100)	157 (100)	109 (100)	118 (100)	148 (100)	158 (100)	201 (97)	253 (87)	219 (85)	133 (68)	25 (61)
1-2 times							4 (2)	36 (12)	33 (12)	56 (28)	13 (32)
< Once/week							1 (1)	2 (1)	9 (3)	7 (4)	2 (5)
≥ Once/week											1 (2)
Everyday											
<u>Any product</u>											
Never								239 (82)	187 (72)	102 (52)	12 (29)
1-2 times	57 (100)	156 (99)	111 (100)	117 (99)	144 (97)	155 (98)	193 (94)	50 (17)	59 (22)	73 (38)	12 (29)
< Once/week		1 (1)	0 (0)	1 (1)	4 (3)	3 (2)	11 (5)	2 (1)	12 (5)	15 (8)	9 (22)
≥ Once/week							2 (1)	1 (0)	1 (0)	2 (1)	4 (10)
Everyday									2 (1)	4 (2)	4 (10)

ESDs: electronic smoking devices.

E-TABLE 4: Socio-demographic risk factors for 13 to 17-year-olds self-reported occasional or frequent smoking of cigarettes, shishas or electronic smoking devices (N=1527)

	Crude		Adjusted	
	OR	(95% CI)	aOR	(95% CI)
Age, per year increase	2.0	(1.7 - 2.2)	2.0	(1.8 - 2.3)
Sex, male	1.9	(1.5 - 2.3)	2.1	(1.7 - 2.6)
Socioeconomic position index	0.9	(0.8 - 1.0)	1.0	(0.9 - 1.1)
Urbanization degree				
Large urban area	1.4	(1.2 - 1.8)	1.2	(0.9 - 1.6)
Small urban area	ref.		ref.	
Rural area	1.4	(0.9 - 2.1)	1.8	(1.2 - 2.9)
Paternal current smoking	1.6	(1.3 - 2.0)	1.5	(1.2 - 1.9)
Maternal current smoking	1.9	(1.5 - 2.5)	1.7	(1.3 - 2.3)

OR: odds ratio. aOR: adjusted odds ratio. CI: confidence interval. The adjusted model includes all the variables in the table. Goodness of fit p value was 0.499.

E-TABLE 5: Socio-demographic risk factors for adolescents aged 13 to 17 years self-reported occasional or frequent smoking of cigarettes, shishas or electronic smoking devices, sensitivity analysis including highest parental education (N=799).

	Crude		Adjusted	
	OR	(95% CI)	aOR	(95% CI)
Age, per year increase	2.0	(1.7 - 2.2)	1.8	(1.5 - 2.1)
Sex, male	1.9	(1.5 - 2.3)	2.2	(1.6 - 3.0)
Socioeconomic position index	0.9	(0.8 - 1.0)	1.0	(0.8 - 1.1)
Urbanization degree				
Large urban area	1.4	(1.2 - 1.8)	1.0	(0.7 - 1.5)
Small urban area	ref.		ref.	
Rural area	1.4	(0.9 - 2.1)	1.4	(0.8 - 2.3)
Paternal highest education				
Elementary school	1.5	(0.9 - 2.3)	1.2	(0.7 - 2.2)
Professional school	1.3	(0.9 - 1.8)	1.1	(0.7 - 1.6)
Business or technical school	1.1	(0.7 - 1.7)	1.0	(0.6 - 1.6)
Teaching degree or university	ref.		ref.	
Maternal highest education				
Elementary school	1.4	(0.9 - 2.1)	1.0	(0.6 - 1.8)
Professional school	1.3	(0.9 - 1.9)	1.1	(0.7 - 1.7)
Business or technical school	1.2	(0.7 - 1.8)	1.0	(0.6 - 1.7)
Teaching degree or university	ref.		ref.	
Paternal current smoking	1.6	(1.3 - 2.0)	1.5	(1.0 - 2.1)
Maternal current smoking	1.9	(1.5 - 2.5)	1.5	(1.0 - 2.3)

OR: odds ratio. aOR: adjusted odds ratio. CI: confidence interval. The adjusted model includes all the variables in the table. Goodness of fit p value was 0.414.

E-TABLE 6: Association between frequency of active smoking and respiratory symptoms in the past 12 months, all tables are adjusted for age and sex, and additionally (a) is adjusted for asthma diagnosis (b) for hay fever (c) for asthma diagnosis and parental smoking, and (d) for hay fever and parental smoking.

(a)

	Cough apart from colds		Cough more than peers		Dyspnoea		Wheeze		Exercise ind. wheeze	
	aOR	(95% CI)	aOR	(95% CI)	aOR	(95% CI)	aOR	(95% CI)	aOR	(95% CI)
Frequency of smoking any product										
Occasional	1.3	(1.0 - 1.6)	1.4	(0.8 - 2.4)	1.4	(1.0 - 1.8)	2.1	(1.5 - 3.1)	1.9	(1.3 - 2.6)
Frequent	1.7	(0.9 - 3.2)	3.0	(0.9 - 9.5)	2.2	(1.1 - 4.5)	2.0	(0.8 - 5.3)	3.2	(1.5 - 6.7)

(b)

	Rhinitis apart from colds		Dry mouth often when waking-up	
	aOR	(95% CI)	aOR	(95% CI)
Frequency of smoking any product				
Occasional	1.1	(0.9 - 1.4)	1.6	(1.1 - 2.3)
Frequent	1.9	(1.1 - 3.5)	2.6	(1.2 - 5.8)

(c)

	Cough apart from colds		Cough more than peers		Dyspnoea		Wheeze		Exercise ind. wheeze	
	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI
Frequency of smoking any product										
Occasional	1.2	(0.9 - 1.6)	1.4	(0.8 - 2.5)	1.3	(1.0 - 1.8)	2.2	(1.5 - 3.2)	1.9	(1.4 - 2.7)
Frequent	1.5	(0.8 - 2.9)	2.7	(0.7 - 10.0)	2.1	(1.0 - 4.5)	2.6	(1.0 - 7.0)	3.4	(1.6 - 7.5)

(d)

	Rhinitis		Dry mouth when waking up	
	aOR	95% CI	aOR	95% CI
Frequency of smoking any product				
Occasional	1.1	(0.9 - 1.5)	1.6	(1.1 - 2.3)
Frequent	2.1	(1.1 - 3.9)	2.5	(1.1 - 5.7)

aOR: adjusted odds ratio. CI: confidence interval. The reference category for frequency of smoking any product is "never". We tested for effect modification between smoking and age and between smoking and sex, and compared models with and without the interaction term using a likelihood ratio test. We found a stronger effect of smoking in girls than in boys for (a) dyspnoea (occasional smoking aOR among girls 1.7, 95% CI 1.1-2.4, among boys 1.0, 95% CI 0.6-1.6; frequent smoking aOR among girls 5.1, 95% CI 1.8-14.8, among boys 1.1, 95% CI 0.4-3.1; p value for interaction 0.012) and for (b) dry mouth often when waking up (occasional smoking aOR among girls 2.6, 95% CI 1.6-4.2; among boys 1.0, 95% CI 0.6-1.6; frequent smoking aOR among girls 4.1, 95% CI 1.2-13.7; among boys 1.8, 95% CI 0.7-5.2; p value for interaction 0.014). Goodness of fit p-values were: (a) cough apart from colds 0.567, cough more than others 0.934, dyspnoea 0.466, wheeze 0.211, exercise induced wheeze 0.653; (b) rhinitis 0.539, dry mouth when waking up 0.180; (c) cough apart from colds 0.466, cough more than others 0.876, dyspnoea 0.547, wheeze 0.458, exercise induced wheeze 0.626; (d) rhinitis 0.441, dry mouth when waking up 0.107.

E-TABLE 7: Number of missing values per variable among 13 to 17-year-olds from the LuftiBus in the school study.

	n	(%)
Sex	0	(0)
Age	0	(0)
Overweight or obese	26	(2)
Socioeconomic position index	332	(21)
Urbanisation degree	0	(0)
Children's questionnaire		
Paternal current smoking	31	(2)
Maternal current smoking	35	(2)
Cough apart from colds	5	(0)
Cough more than others	30	(2)
Rhinitis apart from colds	23	(1)
Dry mouth often when waking-up	33	(2)
Dyspnoea	1	(0)
Wheeze	35	(2)
Exercise triggered wheeze	11	(1)
Hay fever	4	(0)
Asthma diagnosis ever	29	(2)
Parental questionnaire		
Sport apart from school	280	(18)
Physical activity	288	(18)
Child country of birth	274	(17)
Father country of origin	286	(18)
Mother country of origin	283	(18)
Highest paternal education	746	(47)
Highest maternal education	727	(46)
Maternal smoking during pregnancy	284	(18)
Parental history of asthma	287	(18)

E-TEXT BOX 1: Sample selection of the study population.

- Eligible: all school-aged children (6 to 17 years) living in the canton of Zurich, Switzerland, between 2013-2016.
- Invited to participate: All schools in the canton of Zurich (N=490)
- Agreed to participate: 37 schools
- Participated: We collected information on 3913 children, of whom we excluded 34 who lacked of consent, 324 who did not complete a children's questionnaire, and 67 who did not have information on active smoking.
- Analysed: 3488 participants, of whom 1905 were 6-12 years old and 1583 were 13-17 years old.