

Supplemental Information

SUPPLEMENTAL TABLE 4 Sample Characteristics of the 2018–2019 KCTC Student Surveys, Overall and by Year (*n* = 132 803)

	<i>n</i> (132 803)	2018				2019		<i>P</i> ^a
		Percentage (95% CI)	<i>n</i>	Percentage (95% CI)	<i>n</i>	Percentage (95% CI)		
							100%	
Sex							.67	
Girl	66 840	50.5 (50.2 to 50.8)	30 734	50.6 (50.2 to 51.0)	36 106	50.4 (50.1 to 50.8)		
Boy	65 517	49.5 (49.2 to 49.8)	30 049	49.4 (49.0 to 49.8)	35 468	49.6 (49.2 to 49.9)		
Grade							.25	
Sixth	38 587	29.1 (28.9 to 29.4)	17 596	28.9 (28.5 to 29.3)	20 991	29.3 (29.0 to 29.6)		
Eighth	37 877	28.6 (28.3 to 28.8)	17 545	28.8 (28.5 to 29.2)	20 332	28.4 (28.1 to 28.7)		
10th	31 791	24.0 (23.8 to 24.2)	14 592	24.0 (23.6 to 24.3)	17 199	24.0 (23.7 to 24.3)		
12th	24 247	18.3 (18.1 to 18.5)	11 165	18.3 (18.0 to 18.6)	13 082	18.3 (18.0 to 18.6)		
Race and/or ethnicity							.001	
White	94 415	71.3 (71.0 to 71.5)	43 632	71.7 (71.3 to 72.0)	50 783	70.9 (70.6 to 71.2)		
Black	8047	6.1 (5.9 to 6.2)	3553	5.8 (5.7 to 6.0)	4494	6.3 (6.1 to 6.5)		
Hispanic	8879	6.7 (6.6 to 6.8)	4001	6.6 (6.4 to 6.8)	4878	6.8 (6.6 to 7.0)		
Other ^b	21 156	16.0 (15.8 to 16.2)	9689	15.9 (15.6 to 16.2)	11 467	16 (15.7 to 16.3)		
Urbanicity ^c							<.0001	
Urban	66 851	50.7 (50.4 to 51.0)	29 216	48.2 (47.8 to 48.6)	37 635	52.8 (52.4 to 53.2)		
Rural	65 036	49.3 (49.0 to 49.6)	31 371	51.8 (51.4 to 52.2)	33 665	47.2 (46.8 to 47.6)		
Current cigarette smoking							<.0001	
No	119 933	96.8 (96.7 to 96.9)	54 561	96.6 (96.4 to 96.7)	65 372	97.0 (96.8 to 97.1)		
Yes	3970	3.2 (3.1 to 3.3)	1933	3.4 (3.3 to 3.6)	2037	3.0 (2.9 to 3.2)		
Current other tobacco use ^d							.01	
No	116 402	94.8 (94.7 to 95.0)	53 056	94.7 (94.5 to 94.8)	63 346	95.0 (94.8 to 95.1)		
Yes	6350	5.2 (5.0 to 5.3)	2995	5.3 (5.2 to 5.5)	3355	5.0 (4.9 to 5.2)		
Parental education							.02	
High school or lower	23 430	17.8 (17.6 to 18)	10 784	17.8 (17.5 to 18.1)	12 646	17.8 (17.5 to 18.1)		
Some college	15 741	12.0 (11.8 to 12.1)	7268	12.0 (11.8 to 12.3)	8473	11.9 (11.7 to 12.1)		
College	71 042	54.0 (53.7 to 54.2)	32 816	54.2 (53.8 to 54.6)	38 226	53.7 (53.4 to 54.1)		
Do not know or does not apply	21 425	16.3 (16.1 to 16.5)	9636	15.9 (15.6 to 16.2)	11 789	16.6 (16.3 to 16.8)		
Language most used at home							.003	
English	115 304	89.7 (89.6 to 89.9)	53 272	90.0 (89.7 to 90.2)	62 032	89.5 (89.3 to 89.8)		
Spanish	10 406	8.1 (7.9 to 8.2)	4631	7.8 (7.6 to 8.0)	5775	8.3 (8.1 to 8.5)		
Another language	2778	2.2 (2.1 to 2.2)	1299	2.2 (2.1 to 2.3)	1479	2.1 (2.0 to 2.2)		

^a Rao-Scott χ^2 test was conducted to detect significant group differences. —, not applicable.

^b Includes Asian American, American Indians and/or Alaska Native, Native Hawaiians and/or other Pacific Islander; and multiple races.

^c A binary indicator was created to classify each zip code as urban (metropolitan) versus rural (micropolitan, small town, and rural) on the basis of the RUCA system.

^d Past 30-d use of cigars (ie, cigars, cigarillos, and little cigars) and smokeless tobacco products.

SUPPLEMENTAL TABLE 5 Sensitivity Analysis of Changes in Current E-cigarette Use Among Youth From 2018 to 2019 for Schools Included in Both the 2018 and 2019 KCTC Student Surveys ($n = 118\,769$)

Sensitivity Analysis Schools in Both Years, $n = 118\,769$	Prevalence of Current E-Cigarette Use			
	Percentage (95% CI)		Change Across Years	
	2018	2019	Change	P^b
Overall	8.0 (7.8 to 8.2)	12.4 (12.1 to 12.6)	4.4 (4.0 to 4.7)	<.0001
Sex				
Girl	7.1 (6.8 to 7.4)	11.9 (11.5 to 12.3)	4.8 (4.3 to 5.3)	<.0001
Boy	8.9 (8.5 to 9.2)	12.8 (12.4 to 13.2)	4.0 (3.4 to 4.5)	<.0001
Grade				
Sixth	1.1 (0.9 to 1.2)	2.2 (1.9 to 2.4)	1.1 (0.8 to 1.4)	<.0001
Eighth	5.1 (4.8 to 5.5)	8.3 (7.9 to 8.7)	3.1 (2.6 to 3.7)	<.0001
10th	12.0 (11.4 to 12.5)	18.5 (17.9 to 19.1)	6.5 (5.7 to 7.4)	<.0001
12th	16.9 (16.2 to 17.6)	25.1 (24.3 to 25.9)	8.2 (7.1 to 9.3)	<.0001
Race and/or ethnicity				
White	8.7 (8.4 to 8.9)	13.7 (13.4 to 14.1)	5.1 (4.6 to 5.5)	<.0001
Black	5.4 (4.6 to 6.2)	7.1 (6.2 to 7.9)	1.6 (0.4 to 2.8)	.03
Hispanic	4.2 (3.5 to 4.9)	8.5 (7.7 to 9.4)	4.4 (3.2 to 5.5)	<.0001
Other ^b	7.2 (6.7 to 7.8)	9.9 (9.2 to 10.5)	2.7 (1.8 to 3.5)	<.0001
Urbanicity ^c				
Urban	9.5 (9.1 to 9.8)	11.3 (10.9 to 11.7)	1.8 (1.3 to 2.3)	<.0001
Rural	6.6 (6.3 to 6.9)	13.3 (13 to 13.7)	6.7 (6.2 to 7.2)	<.0001
T21				
Non-T21 area	7.1 (6.8 to 7.3)	12.8 (12.5 to 13.1)	5.7 (5.3 to 6.1)	<.0001
T21 area	10.5 (10.0 to 11.0)	11.2 (10.7 to 11.7)	0.7 (0.0 to 1.4)	.16
Current cigarette use				
No	6.2 (6 to 6.4)	10.4 (10.2 to 10.7)	4.2 (3.9 to 4.6)	<.0001
Yes	59.1 (56.8 to 61.4)	71.8 (69.7 to 73.9)	12.7 (9.6 to 15.8)	<.0001
Current other tobacco use ^d				
No	5.4 (5.2 to 5.6)	9.3 (9.1 to 9.6)	4.0 (3.6 to 4.3)	<.0001
Yes	54.6 (52.8 to 56.5)	69.6 (67.9 to 71.3)	15.0 (12.5 to 17.5)	<.0001
Parental education				
High school or lower	7.8 (7.2 to 8.3)	13.7 (13 to 14.4)	5.9 (5.1 to 6.8)	<.0001
Some college	9.5 (8.8 to 10.2)	16.3 (15.4 to 17.1)	6.7 (5.6 to 7.9)	<.0001
College	9.0 (8.7 to 9.4)	13.1 (12.8 to 13.5)	4.1 (3.6 to 4.6)	<.0001
Do not know or does not apply	3.2 (2.9 to 3.6)	5.3 (4.9 to 5.8)	2.1 (1.5 to 2.7)	<.0001
Language most used at home				
English	8.3 (8.1 to 8.6)	12.9 (12.6 to 13.2)	4.6 (4.2 to 5.0)	<.0001
Spanish	4.4 (3.7 to 5.0)	8.1 (7.3 to 8.9)	3.7 (2.7 to 4.7)	<.0001
Another language	6.1 (4.7 to 7.6)	6.0 (4.7 to 7.4)	-0.1 (-2.1 to 1.9)	.68

^a Multivariable logistic regressions were performed to examine the changes in e-cigarette use, in which the survey year 2018 serves as the reference. The models were adjusted by sex, grade, race and/or ethnicity, T21 area, urbanicity, current cigarette smoking, current other tobacco use, parental education, and language used most often at home.

^b Includes students who are Asian American, American Indian and/or Alaskan Native, Native Hawaiian and/or other Pacific Islanders, and multiple races.

^c A binary indicator was created to classify each zip code as urban (metropolitan) versus rural (micropolitan, small town, and rural) on the basis of the RUCA system.

^d Past 30-d use of cigars (ie, cigars, cigarillos, and little cigars) and smokeless tobacco products.

SUPPLEMENTAL TABLE 6 Changes in Current E-cigarette Use Among Youth by Grade and Urbanicity-T21 Group From 2018 to 2019, 2018–2019 KCTC Student Survey (*n* = 132 803)

Urbanicity-T21 Groups	Prevalence of Current E-Cigarette Use % (95% CI)			<i>P</i> ^a
	2018	2019	Change	
Urban Non-T21 Region				
Sixth grade	1.3 (0.9 to 1.6)	2.6 (2.2 to 3.0)	1.3 (0.8 to 1.9)	.0008
Eighth grade	6.3 (5.6 to 7.1)	9.8 (9.0 to 10.5)	3.4 (2.4 to 4.5)	<.0001
10th grade	11.4 (10.4 to 12.5)	16.8 (15.7 to 18.0)	5.4 (3.8 to 7.0)	<.0001
12th grade	17.6 (16.1 to 19.2)	25.0 (23.5 to 26.5)	7.4 (5.2 to 9.5)	<.0001
Urban T21 region				
Sixth grade	1.0 (0.6 to 1.3)	1.1 (0.8 to 1.4)	0.1 (−0.3 to 0.6)	.72
Eighth grade	5.5 (4.7 to 6.2)	8.1 (7.3 to 8.9)	2.7 (1.6 to 3.7)	.01
10th grade	19.8 (18.3 to 21.3)	19.1 (17.8 to 20.4)	−0.7 (−2.6 to 1.2)	.98
12th grade	29.3 (27.4 to 31.3)	27.0 (25.3 to 28.6)	−2.4 (−4.9 to 0.1)	.93
Rural non-T21 region				
Sixth grade	1.0 (0.8 to 1.3)	2.3 (1.9 to 2.6)	1.2 (0.8 to 1.6)	<.0001
Eighth grade	4.4 (3.9 to 4.9)	8.9 (8.3 to 9.5)	4.5 (3.7 to 5.3)	<.0001
10th grade	9.6 (8.9 to 10.3)	20.2 (19.3 to 21.1)	10.6 (9.4 to 11.7)	<.0001
12th grade	13.0 (12.1 to 13.9)	26.3 (25.2 to 27.5)	13.3 (11.9 to 14.7)	<.0001
Rural T21 region				
Sixth grade	1.2 (0.4 to 1.9)	4.1 (2.8 to 5.5)	3.0 (1.4 to 4.6)	<.0001
Eighth grade	2.9 (1.6 to 4.3)	6.6 (4.8 to 8.3)	3.6 (1.5 to 5.8)	<.0001
10th grade	11.6 (9.5 to 13.6)	15.1 (12.5 to 17.6)	3.5 (0.2 to 6.8)	.02
12th grade	15.5 (12.4 to 18.5)	20.8 (17.5 to 24.2)	5.3 (0.8 to 9.9)	.18

^a Multivariable logistic regressions were performed to examine the changes in e-cigarette use (dependent variable), in which the survey year 2018 serves as the reference. The models were adjusted by sex, grade, race and/or ethnicity, current cigarette smoking, current other tobacco use, parental education, and language used most often at home.