

BACKGROUND

- Use of flavored e-cigarettes is a public health concern.
- Present estimates suggest there are approximately 7,500 e-cigarette flavors on the market.
- Patterns of flavored e-cigarette use among adult vapers remain relatively unexplored.
- In addition, cross-national comparisons of such behaviors are sparse.
- This study examined use of single vs. multiple flavors, differences in preferred e-cigarette flavors, and correlates of changes in flavor use among a sample of daily/weekly adult vapers in four countries.

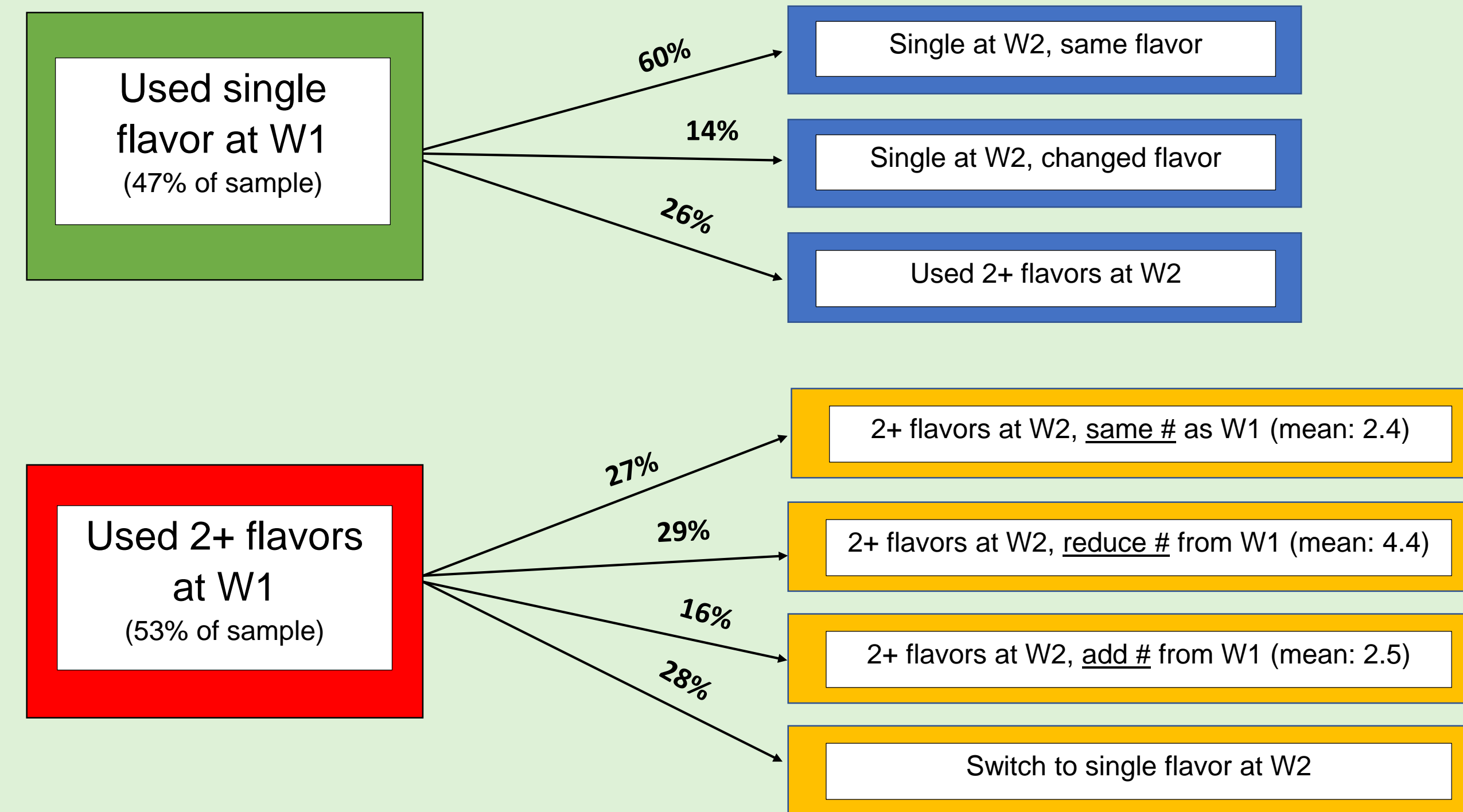
METHODS

- Data were from the ITC 4-Country Smoking and Vaping Surveys, a web survey conducted in 2016 (Wave 1) and 2018 (Wave 2) among adult (≥18 years) cigarette smokers, former smokers, and/or at-least-weekly vapers recruited from Canada, the United States, England, and Australia.
- Daily/weekly vapers (n=1,105) were asked about their past 30-day use of 11 e-cigarette flavors at each wave (classified into: unflavored/tobacco, menthol/mint, fruit, candy (including chocolate), and others (including clove/spice, coffee, alcoholic and non-alcoholic beverage flavors)).
- Users of multiple flavors were asked to report the single flavor they used most often (preferred flavor).
- Vapers were further classified according to single versus multiple flavor use at each wave.
- Descriptive assessments of preferred flavor use and changes in flavor use among single vs. multiple flavor users were conducted across survey waves.
- Multivariable logistic regression models assessed correlates of transitioning between single and multiple flavor use, adjusting for sociodemographic, country of origin, tobacco product use status, and vaping behaviors.
- All analyses were weighted. Survey weights were calibrated to nationally-representative surveys in each country according to age, sex, geographic region, and smoking and vaping prevalence.

RESULTS

- Among those who used a single flavor at Wave 1, most preferred using unflavored/tobacco (47%), followed by menthol/mint (22%), fruit (15%), other flavors (10%), and candy (6%).
- Among those who used 2+ flavors at Wave 1, most preferred fruit (32%), followed by candy (24%), unflavored/tobacco (19%), menthol/mint (14%) and other flavors (11%).
- Stability in preferred e-cigarette flavor varied over time according to flavor category:
 - 72% of unflavored/tobacco flavor users at W1 reported this as their preferred flavor at W2
 - 65% of menthol/mint flavor users at W1 reported this as their preferred flavor at W2
 - 61% of fruit flavor users at W1 reported this as their preferred flavor at W2
 - 61% of candy flavor users at W1 reported this as their preferred flavor at W2
 - 39% of "other" flavor users at W1 reported this as their preferred flavor at W2

Transitions between single vs. poly-flavor use among daily/weekly vapers at Wave 1 (n=1,105)



RESULTS

Adjusted logistic regression analyses examining correlates of transitions from a) single flavor use to single flavor use, b) single flavor user to multiple flavor use, c) multiple flavor use to multiple flavor use, and d) multiple flavor use to single flavor use (n=1,105)

		a) W1 single flavor user --> W2 single flavor user			b) W1 single flavor user --> W2 multiple flavor user			c) W1 multiple flavor user --> W2 multiple flavor user			d) W1 multiple flavor user --> W2 single flavor user		
		aOR	95%L	95%U	aOR	95%L	95%U	aOR	95%L	95%U	aOR	95%L	95%U
Age	18-24	0.37	0.12	1.18	2.07	0.71	6.05	1.98	0.83	4.71	0.54	0.20	1.45
	25-39	0.42**	0.22	0.79	0.88	0.34	2.30	1.55	0.82	2.95	1.95	0.96	3.96
	40-54	0.68	0.36	1.27	0.88	0.39	1.98	1.28	0.69	2.40	1.51	0.71	3.20
	55+	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
Gender	Male	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	Female	1.39	0.81	2.37	0.49*	0.25	0.93	1.14	0.70	1.83	0.93	0.55	1.57
Ethnicity	White	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	Non-white	1.13	0.56	2.26	0.33**	0.15	0.72	1.97*	1.10	3.52	0.50	0.24	1.06
Education	Low	0.79	0.40	1.54	1.80	0.70	4.63	0.92	0.49	1.72	0.91	0.45	1.86
	Moderate	1.32	0.76	2.32	1.05	0.47	2.34	0.90	0.53	1.51	0.73	0.40	1.33
	High	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
Country	Canada	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	United States	1.74	0.90	3.37	0.62	0.27	1.43	0.69	0.35	1.34	1.07	0.56	2.06
	England	1.46	0.78	2.74	0.93	0.39	2.22	1.01	0.54	1.91	0.42*	0.18	0.97
	Australia	0.71	0.34	1.50	0.86	0.36	2.05	2.10*	1.16	3.81	0.45*	0.23	0.87
Smoking status	Exclusive vaper	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	Dual user	1.02	0.63	1.65	1.10	0.57	2.10	0.92	0.56	1.51	1.09	0.63	1.88
Frequency of vaping	Daily	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	Weekly	1.00	0.58	1.73	1.40	0.72	2.72	1.10	0.60	1.99	0.70	0.38	1.29
Preferred flavor, W1	Unflavored/tobacco	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	All other flavors	0.16***	0.06	0.43	3.09*	1.15	8.32	1.37	0.61	3.11	2.76**	1.28	5.98
	Menthol/mint	0.53	0.26	1.08	1.19	0.37	3.88	1.52	0.74	3.14	1.51	0.60	3.79
	Fruit	0.24***	0.13	0.47	0.72	0.27	1.93	2.67**	1.37	5.20	2.34*	1.17	4.69
	Candy	0.10***	0.04	0.22	1.04	0.34	3.17	4.21***	1.96	9.04	1.55	0.65	3.68
Device type	Closed system	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	Open system	0.77	0.45	1.32	0.71	0.33	1.51	1.70	0.90	3.19	1.15	0.55	2.39
	Multiple device user	0.19***	0.09	0.37	1.19	0.51	2.73	2.29*	1.13	4.64	1.86	0.79	4.39
# of add'l tob prods used	0	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF	REF
	1	0.45**	0.26	0.81	0.90	0.38	2.13	2.39*	1.12	5.09	0.69	0.29	1.65
	2+	0.14***	0.04	0.45	0.14**	0.03	0.55	4.15***	1.83	9.42	1.37	0.54	3.49

*p<0.05, **p<0.001, ***p<0.0001

CONCLUSION

- Among daily/weekly vapers in this sample, just over half used more than one e-cigarette flavor in the past month. Preferred flavor varied based on whether adult vapers used multiple flavors.
- Most who started with a single flavor stayed with that flavor, while users of multiple flavors exhibited more diverse transitions. Specific transition patterns were associated with sociodemographic and behavioral correlates.

DISCLOSURES

KMC has received payment as a consultant to Pfizer, Inc., and has served as paid expert witness in litigation filed against the tobacco industry. GTF has served as an expert witness on behalf of governments in litigation involving the tobacco industry. MLG has received a research grant from Pfizer and served as a member of scientific advisory board to Johnson & Johnson. All other authors have no conflicts of interest to declare.

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