Kennesaw State University
College of Science and Mathematics
Department of Statistics and Analytical Sciences

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Analysis of At-Risk Behaviors Compared to Public Health Funding in 2011–2016 in 18–24 Year Olds

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Abstract

- The purpose of the study was to determine whether a correlation exists between increases in public health funding levels via the Affordable Care Act (ACA) and the percentage of casual and daily smokers, binge drinking habits, body mass index (BMI), and health care coverage of individuals 18–24 years of age in the Behavioral Risk Factor Surveillance System (BRFSS). Increases in funding should in theory decrease negative behaviors, and the ACA increased the amount of public health funding available to tackle negative behaviors, which were tracked via the BRFSS. We hypothesized that there should have been a decrease in negative behaviors as more funding was allotted to public health. We examined our hypothesis by analyzing changes in reported behaviors tracked in the BRFSS during the years of the ACA implementation, 2011–2016, in this age group. Also, public health funding data from Americas Health Ranking was merged with the 2015-2016 BRFSS data by state, and a survey logistic regression model between the outcomes and public health funding was created to examine the association between funding levels and negative behaviors on a state level. Our trend results suggest that both smoking and binge drinking decreased by a significant factor during the years when funding increased; the number of people covered by health care plans increased; and BMI showed no significant changes. In the logistic model, decreases in smoking and BMI were associated with increases in public funding.

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Methods

- We used data from the Behavioral Risk Factor Surveillance System (BRFSS) to estimate the proportion of certain behaviors in participants age 18-24 from 2011-2016.
- BRFSS is a weighted random sample collected by the Centers for Disease Control and Prevention through telephone surveys of over 400,000 persons every year. BRFSS data, which is de-identified and publicly available (https://www.cdc.gov/brfss/annual_data/annual_dat a.htm), was imported into SAS by year.
- From the BRFSS dataset, we estimated the percentage of participants who were casual and daily smokers, reported binge drinking, obese by body mass index (BMI), covered by health care, and reported good health status for each year from 2011-16 for participants age 18-24 years using **proc surveyfreq**.
- Scatter plots from these estimates were then generated using **proc sgplot**.
- Public health funding, collected by Americas Health Ranking, (https://www.americashealthrankings.org/) was download from their website in an Excel spreadsheet and imported into SAS.
- Estimates from BRFSS were then merged with public health funding by year. A survey logistic regression model using **proc survey** logistic for each outcome was created to examine the correlation between public health funding and the health behaviors.

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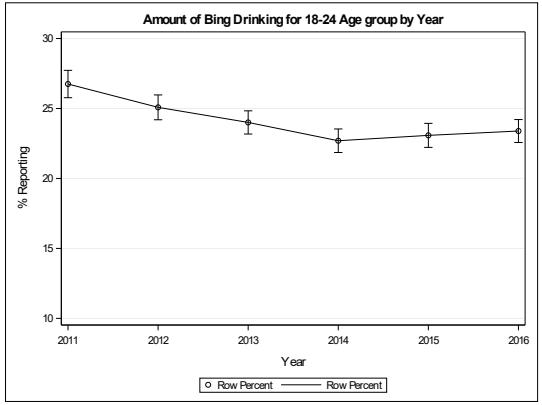
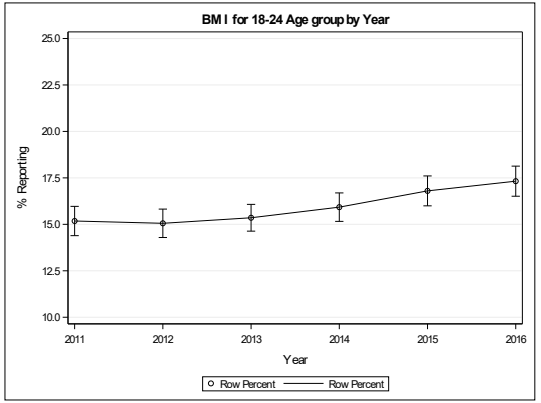
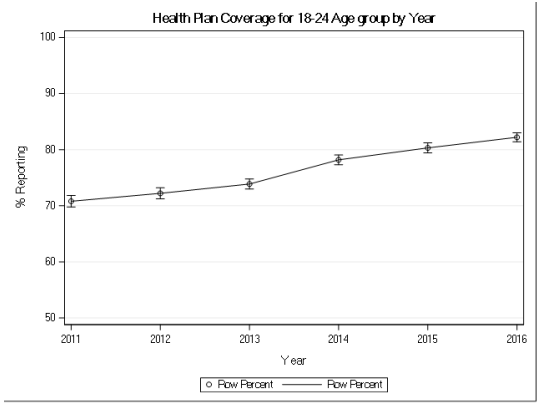
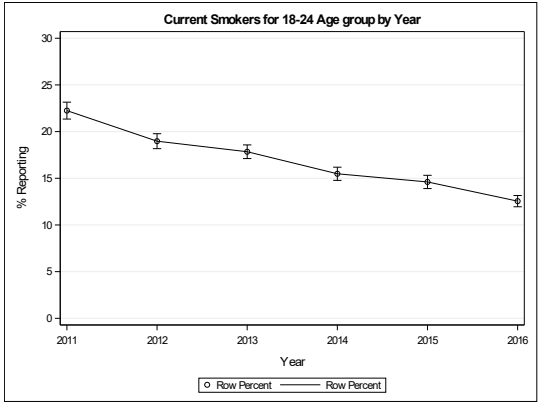
Results









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Frequency Table for Trend Estimates

Trends in Health Outcomes and Behaviors

Year	Public Health Funding in Billions	Percent Reported Binge Drinking	Binge Drinking LCI	Binge Drinking UCI	Percent of Casual or Daily Smokers	Smoking UCI	Smoking LCI	Percent Covered by Health Insurance	Health Care Coverage LCI	Health Care Coverage UPC	Percent Obese Per Reported BMI	Obesity LCI	Obesity UCI
2011	74.3	26.75	25.77	27.73	22.25	23.15	21.34	70.81	69.80	71.82	15.18	14.39	15.97
2012	77.4	25.08	24.19	25.97	18.97	19.77	18.17	72.22	71.24	73.20	15.06	14.29	15.82
2013	78.3	24.00	23.17	24.83	17.84	18.57	17.11	73.88	72.99	74.77	15.35	14.63	16.07
2014	79.4	22.70	21.85	23.54	15.48	16.19	14.78	78.19	77.31	79.06	15.93	15.16	16.69
2015	81.7	23.08	22.22	23.94	14.61	15.32	13.90	80.32	79.44	81.20	16.80	16.00	17.60
2016	82.2	23.39	22.57	24.21	12.55	13.15	11.95	82.21	81.41	83.02	17.32	16.51	18.13

Estimates

Estimates for Associations between Behaviors and Funding

Estimates						
Label	Estimate	Standard Error	DF	t Value	Pr > |t|	Exponentiated
2015 Smoking	-0.1196	0.04165	22462	-2.87	0.0041	0.8873
2015 Obesity	-0.1476	0.04128	22462	-3.58	0.0004	0.8628
2015 Bing Drinking	-0.01254	0.03137	22462	-0.4	0.6894	0.9875
2016 Smoking	-0.03502	0.03145	24736	-1.11	0.2656	0.9656
2016 Obesity	-0.08525	0.03092	24736	-2.76	0.0058	0.9183
2016 Bing Drinking	-0.03087	0.02533	24736	-1.22	0.2229	0.9696

Conclusions

- From 2011 to 2016, the trend results for the 18-24 year old age group suggest:
  - Both smoking and binge drinking decreased by a significant factor during the years when funding increased.
  - The number of people covered by health care plans increased
  - BMI showed no significant changes.
- In the survey logistic model for this age group, decreases in BMI were associated with increases in public funding in both years. Decreases in smoking were associated with increases in public funding in 2015 but not 2016.