Senior Project

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Juul Usage on the University of Tennessee Knoxville Campus and Student Perspectives

Introduction:

Electronic Cigarettes (E-Cigarettes), specifically Juuls, are a relatively new phenomenon in the United States when considered on the grand scheme of nicotine delivery methods. Youth in the United States are becoming more and more addicted to nicotine than ever before, a stark contrast to the decline that was previously seen in the United States (Camenga, 2014). The cause of this reversal has been attributed to the rising popularity of E-Cigarettes and other non-traditional nicotine delivery devices (Willett, 2019). Throughout this paper, students' perspectives on the reasoning behind the rapid rise in the popularity of these devices will be discussed, as well as the policies and dynamics that are occurring behind the scenes. This project focuses on student input due to the rapid increase in youth E-Cigarette usage over the course of the last few years (Willett, 2019). This rapid rise has led to increased legislation on the topic and has many lawmakers and public health officials concerned (Dave, 2019). Focus groups with college-aged students lend a unique perspective on the issue as these students have grown up in the age of E-Cigarettes and are thus able to give their perspectives on the topic as well as provide their reasoning on why they personally use the devices.

What exactly defines an E-Cigarette? The definition found on Cancer.gov is "A device that has the shape of a cigarette, cigar, or pen and does not contain tobacco. It uses a battery and contains a solution of nicotine, flavorings, and other chemicals, some of which may be harmful" (Cancer.gov). This definition helps to show what an E-Cigarette is, but fails to fully encompass the numerous different products that are available that fall under this category. Vaporizers, or vapes, as they are more commonly referred to, are also within this category but do not necessarily look like a traditional cigarette. Most of these products contain a liquid that has nicotine contained within it that turns into a vapor when heated to a specified temperature. Then, the user inhales and thereby absorbs the nicotine contained within. These devices are a far cry from the first "official" E-Cigarette which was made in the early 90s in China. These original E-Cigarettes were constructed differently from any modern devices are today, which will be elaborated upon.

Most of these current devices can be stratified into four different groups, which will require a small history lesson to discuss (Glantz, 2018). The first 'generation' of vapes did, in fact, resemble traditional cigarettes, thin and small with a tip that would sometimes glow when activated to help stimulate the image of a cigarette. This generation was targeted to the adult smoker to help facilitate quitting traditional cigarette usage. The next generation was vape pens. With these pens, different flavorings became more common and a younger audience started to become aware and interested in these devices. The pens were similar in size to the first-generation E-Cigarettes but were marketed more towards a younger crowd with their fruity flavors and styles that started to stray away from the traditional cigarette look. It was the third generation that ultimately moved the furthest from the original intent of being targeted solely towards older traditional smokers. This generation had "mods", devices that looked and acted very differently from the previous two generations. These devices could be used in multiple

different ways with multiple different types of liquid (DeVito, 2018). Rather than using a closed capsule of liquid as the first two generations predominantly did, this third generation required buying small bottles of the liquid which could then be used to refill the tanks of these mods. The sheer number of different modifications that could be done to these vaporizers is astounding. The mod itself was aptly named due to the ‘mod’ifications that could be done to it. Not only were there tanks that could be bought to store the liquid on the device, but every aspect of these tanks could be changed. The amount of liquid stored within, the type of coil that was used in the tank, the battery used to power the device, and even the amount of power sent to the device each time it was activated was all customizable. This was not to mention the variety of flavors of liquids that were available. These flavors no longer came in "Tobacco" or "Menthol"; rather, there were new and exciting flavors that helped to appeal to a wider audience which ultimately would include a younger generation who would be attracted by flavors such as "Fruity Pebbles", "Strawberry Shortcake", and "Caramel Corn," just to name a few. These liquids also varied in the strength of the nicotine contained within, ranging from 0mg/ml to 30mg/ml. These strengths well-exceeded the strength contained within a traditional cigarette comparatively on the top end of the spectrum. This third generation is considered the "boom" of the vape/E-Cigarette industry as this is when the popularity of the devices, especially among the high school and college-aged population, was beginning to peak. Different policies were enacted that stemmed this boom such as bans on the import of certain brands and their E-Liquids. This would lead to the development of the fourth and current generation, that of the "Pods". These Pods are similar in a way to the first two generations, as they are closed capsules of liquids, but are different in a multitude of other ways. The first and foremost difference is that these devices do not look like traditional cigarettes or vape pens as the first two generations did, nor do they look like the large, clunky mods of generation three. These devices opted for a more "sleek" and "stylish" approach to help capture a new audience that may not have been interested in the devices of the previous generations. This design helped to make these devices inconspicuous and easy to hide, which has been part of the issue with them being used within schools and with youth. These devices use a closed system to power the ‘smoke' production. A battery is encased in a pleasing design, then a slot is created at the top of the device to allow for a ‘pod' to be inserted. The pod contains the heating elements, the nicotine liquid, and everything else to create the ‘smoke'. The only thing that the actual device does is provide a power source. This design is pleasing to a vast array of people since it isn't as messy as the third generation was with the liquid fillings, is easy to use, and pods are available online and in an array of different gas stations. It is also possible to simply put an extra pod or two in a pocket, which are the size of a small USB, and carry them with you. The ease of these devices is one of the largest selling points, the other is nicotine.

The nicotine content of these pods varies by brand. The most popular of these pod style vaporizers is a Juul. Juul uses a different method of nicotine delivery than other brands and any of the previous three generations. Rather than using ‘in-solution nicotine' or ‘aqueous nicotine' (free-base nicotine), Juul uses nicotine salts or protonated nicotine. This difference is an important one because the protonated nicotine allows for a "smoother hit", which allows the

company to put much more nicotine in the pods than others (El-Hellani, 2015, Brown, 2015). This “smoother hit” is theorized to be related to the lower alkalinity that protonated nicotine has (sourcewatch). In fact, a Juul pod contains 59mg/ml of nicotine, almost double that of the highest generation of three liquids. The smoothness of the hit makes many first-time users unaware of how much nicotine they are in fact inhaling. A single pod has the equivalent of a pack of cigarettes in nicotine content, yet this fact is lost on most users. Juul recently has come out with a 3% by volume nicotine content pod, which is more in line with the other generation's levels. Pod-based vaporizers also have come under fire recently for their advertising directed seemingly at a younger population. This advertising included flashy and trendy advertisements on social media sites such as Twitter and Instagram. The flavorings also seemed to back their targeted advertising as flavors such as "Mango" and "Crème Brule" were two of the most popular. Recently though, flavors such as these have been pulled from store shelves and are only available online at the official Juul website. While there are numerous other Pod-based devices on the market today such as Phix, Sorin, and Smok, these will not be discussed as intensely as Juul, since Juul owns roughly 68% of the market share of E-Cigarettes and is by far the most popular of the devices available (LaVito, 2018).

Nicotine is one of the most addictive substances in the world (Stolerman, 1995). The chemical composition of the substance is C10H14N2 and contains two ring structures within it that help it to bind to nicotinic receptors within the body (Gorrod, 1999). The drug itself is not carcinogenic (Mishra, 2015). Nicotine does, however, cause a host of health issues such as nausea, difficulty sleeping, and even muscle aches (Mishra, 2015). There have been studies done on the sleeping portion of the side effects that show that those who have been given nicotine have more trouble falling asleep and fail to fully enter and stay in a deep sleep compared to those who are not using the drug (Aleisa, 2011). Nicotine acts the way it does by binding to different nicotinic receptors after entering the bloodstream. The drug can enter the bloodstream via a host of different methods, ranging from inhalation to simply dermal contact (Jain, 2003). While it is true that there is no evidence that nicotine causes any types of cancers within humans, the method of delivery is where the concern is raised (Mishra, 2015). Since tobacco smoke has numerous carcinogens, when someone lights up a cigarette to get their "nicotine fix", they are exposing themselves to numerous cancer-causing agents. Likewise, when an E-Cigarette user starts to use their product, they are exposing themselves through inhalation to a multitude of potentially cancerous agents such as “1-hydroxypyrene (1-HOP), 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol and its glucuronides (total NNAL), 3-hydroxypropylmercapturic acid (3-HPMA), 2-hydroxypropylmercapturic acid (2-HPMA), 3-hydroxy-1-methylpropylmercapturic acid (HMPMA), *S* -phenylmercapturic acid (SPMA)” (Hecht, 2014). This is where there is uncertainty regarding E-Cigarettes and why they are considered so risky at this point in time; there is so little research that has been completed on their long-term effects. A Juul, for example, contains four ingredients (five, if flavoring is considered); glycerol, propylene glycol, nicotine, and benzoic acid (Juul.com). Of these ingredients, none are considered carcinogens at the levels that users are exposed to (Reilly, 2018). The issue arises from the fact that the ingredients are being super-

heated prior to inhalation and can be broken down into different substances that may be carcinogenic such as formaldehyde or lead which can be found in the heating elements (Williams, 2018, Goniewicz, 2014, Hecht, 2014). The studies done on these substances have not yet been published. Because of this lack of evidence, it is unknown what potential harms are being done to Juul and other E-cigarette users at this point. The focus of this section is to discuss nicotine and why the large quantities in products such as Juul are so important. It is not due to nicotine's negative effects (including altering adolescent brain development), but rather how addictive the substance is that leads to the issues observed (Yuan, 2015, Bozinoff, 2018). Because it is so addictive, users are more likely to continue to use the Juul or even make the transition to traditional cigarettes to get their 'fix', even if this means being exposed to a plethora of carcinogens.

The research described here was centered on answers to questions given by focus groups made up of a small number of students on the University of Tennessee's campus who identify as Juul users. While there are other brands of E-cigarettes that are currently on the market, Juul is the most popular. Therefore, for ease of conducting the research, we decided to focus on the Juul brand as this is also what most students who use E-Cigarettes have and/or use (Huang, 2019). The focus group participants were given a meal as well as compensation for their time, which was formatted in a roundtable discussion method. The questions were delivered by the Principal Investigator, Wade Seifert, while the Associate Director for the Center for Health and Education Wellness, Michele Dorsainvil, observed. The questions were brief and open discussion was encouraged by all who attended the sessions. The goal of these focus groups was to learn more about the underlying causes of Juul usage on the University of Tennessee's campus and to help determine what causes students to use E-cigarettes in the first place as well as to continue using them.

The motivation behind this research is to help understand the underlying causes of E-Cigarette usage in our youth today. The factors that contribute to their usage were investigated as well as other potential factors that may have played a role. Once factors such as these are known, it is possible to help address these issues and work to prevent them in the future. It is important to work with these students because, while it is true that traditional cigarette usage on public campuses has been on the decline, E-Cigarette usage has steadily risen as of late (Goniewicz, 2014,McMillen, 2014). Youth are the best demographic group to ask about this reasoning because they are the ones who are doing it first-hand. That is also why research such as this is so important. As of right now, little to nothing is known about potential risk factors for E-Cigarette usage. Almost all the data available are centered on traditional tobacco risk factors, but hardly any mentions e-cigarettes. This research will help shed light on this problem and lead to future research. While research such as this has not yet been done, this is a great starting point as the groups that will be interviewed during the focus groups are of the age that has initially grown up with these products, so they will lend a unique perspective on what caused their initial use. This research will work as a stepping stone to allow future research. The goal of this study was to see

the unique perspective on the topic that students provide that would otherwise be unavailable to researchers.

Methodology:

There are two main portions of this section; how the focus group was created and set up and then how the data were analyzed and used for the creation of this paper. The focus groups were initially planned to be three separate groups of 12 students. These groups were created using a Google form where students could follow a link to sign up for one of the three days that fit into their schedule. The link was advertised on flyers that were distributed throughout campus and put into high-traffic areas such as residence halls, the student health center, and library. The project was approved by the Institutional Review Board (IRB) at The University of Tennessee. Social media was also used to advertise the focus groups effectively. Multiple accounts were used to spread the flyer and information that it contained. Some students would take pictures of the flyer and put it on their own social media, further spreading the message across campus. There were also two different instances where the PI set up a table with information on the focus groups on campus to help recruit. The first of these tabling events occurred at the library located on campus, with the second occurring at the Student Union. These two locations were chosen due to the high foot traffic that goes through and the likelihood of potential participants walking by. Different TVs located across campus were also utilized with the flyer being displayed for an average of ten seconds at a time. These TVs were located in multiple major buildings such as the Student Union, the Library, and multiple Residence Halls. Word of mouth also helped to gather participants, with some of the participants citing referrals from friends as the means by which they heard of the focus groups. Unfortunately, there was a slight under response for the focus groups, and only nine total students signed up for the focus groups; three in the first, six in the second, and none in the final session. This could have been due to the times that the groups were offered since student's schedules are very convoluted and busy. Other reasons for the low response rate will be discussed further in the discussion section.

Following sign-ups for the focus group, students arrived at the Center for Health Education and Wellness. This location was used due to ease of accessibility for students as well as being near the center of campus. This location is easy to locate and has an easily accessible parking garage next door to it. The focus groups themselves were set up in the manner of a cluster of tables arranged in a square with the PI at one of the tables and the participants arranged at the other tables. The room that was used had enough seats to accommodate up to 30 students but due to the small size of each group, the PI rearranged the tables to help ensure a more intimate discussion, since lots of empty seats around the room could prove negative to discussion and the focus group as a whole.

In addition to the focus group participants and the PI, there was one other person in the room who acted as the official recorder for the sessions, Michele Dorsainvil. Ms. Dorsainvil actively transcribed important parts of the groups and took down notes of interest. Aside from the

transcription provided by the recorder, an audio device was also used to record the entirety of the focus group. This was later played back by the PI and transcribed completely. The recording was then deleted to ensure anonymity for all participants. Prior to the start of the focus groups, all participants were required to sign an informed consent form which outlined everything that the group would contain and gave other general information on the session. Lunch was also provided for all participants during the group, as well as a gift card for the on-campus store which was given following the conclusion of the session.

The structure of the focus group was largely informal to help ensure that all participants felt comfortable in the environment that was set up for them. The groups started following the completion of the informed consent with the PI going through a list of questions that had been previously approved by the IRB. Following a question by the PI, it was an open floor for any of the participants to answer. Everyone in the room was encouraged to participate, and there was minimal need for additional prompting by the PI. In both sessions, lunch arrived midway through the focus group and served as an intermission to help break up the monotony of the session. The first group was smaller than the second, so it did not last as long, but the answers provided were still very beneficial and insightful. Following the conclusion of the question list, it was asked of the group if they had any questions for the PI. After answering all of these questions, the PI then explained what would happen next. This consisted of passing out the gift cards and offering to share the finished paper to all involved so they could see what they were contributing their time and energy to. After this was finished, the session was officially over and all participants were allowed to leave.

The methods used to analyze the data collected were not traditional survey methods as most of the questions were not simply yes or no; but rather, qualitative methods were used, as these were free responses where the participants could elaborate as much as they needed or wanted to in order to adequately answer the question. Because of this, it was difficult to put all the data into a single format. Microsoft Excel was eventually decided upon with all of the questions along the X-axis at the top and the Y-axis at the left containing each of the 9 participants. The space to the right of each participant along the Y axis was then filled in with the individual participant's answer to that corresponding question. This allowed for easy data analysis along with stratifications to be formed. This format also allowed for similar students to be grouped together by their answers. These stratifications were simple; the main groups were among those who had previously smoked and those who had not, as well as how long they had been using e-cigarettes. Since there were only nine participants there was no need for any advanced software when calculating percentages for a different question. A calculator was the most complex hardware needed as this was used to determine the percentage of students who answered a certain way for particular questions.

Due to the nature of the data collected, some of the analysis is in a YES/NO/UNCERTAIN format with percentages but the vast majority are short answers from the participants. This has led to much of the results section containing quotes from the participants and some extrapolation

to be done by the PI when conveying these results. These quotes and short answers have been clustered together with similar answers. Percentages and charts are still used for some of these questions, as the clustering methods have allowed for different groups to be established in their answers.

Results:

The results will be displayed in a format fitting how the questions were divided during the focus group. Each question will be displayed individually with some questions having graphics to help show the result of the question. Some of the questions were not asked during the focus groups so they will not have any answers associated with them. These specific questions were not asked due to time constraints, as well as the question no longer being applicable to the focus of the study. Some of the participants did not answer some of the questions, so there will not be 100% participation for every question. Quotes are also included from participants that seemed to be the most relevant to the question that was asked.

Question One: Do you perceive Juuling to be a problem on campus?

8 of the 9 participants answered. 7 said no while one said maybe and was unsure.

"You see it a lot but it doesn't really bother me."

"I don't think it's a problem even if you see it a lot."

"It's not an issue but it's definitely prevalent. It's not as big as something like cigarettes."

Question Two: Is Vaping a problem on campus?

This question was not asked since it was determined that focusing on Juuling specifically would yield better results than broadening the focus to include other E-Cigarettes.

Question Three: Do you partake in Juuling?

All 9 Participants answered yes to this, although one mentioned that they are currently trying to cut back and quit.

Question Four: When did you first start Juuling?

The answers to this question varied. The range is from 9 to 54 months (4.5 years). Two participants did not answer this question. The mean time for the remaining seven participants who did answer was 29 months.

"I worked as a waitress, high stress job. Juul is better than cigs, convenient. Nicotine addiction is easier to handle with a Juul."

"I hated how cigs made my car smell so I switched."

"I smoked swishers before. But my gf gave up soda for lent so I gave up cigars. I bought a Juul to help with that. It's helped me quit."

"My friends all did it. It hurt my throat, I wanted to get past that point."

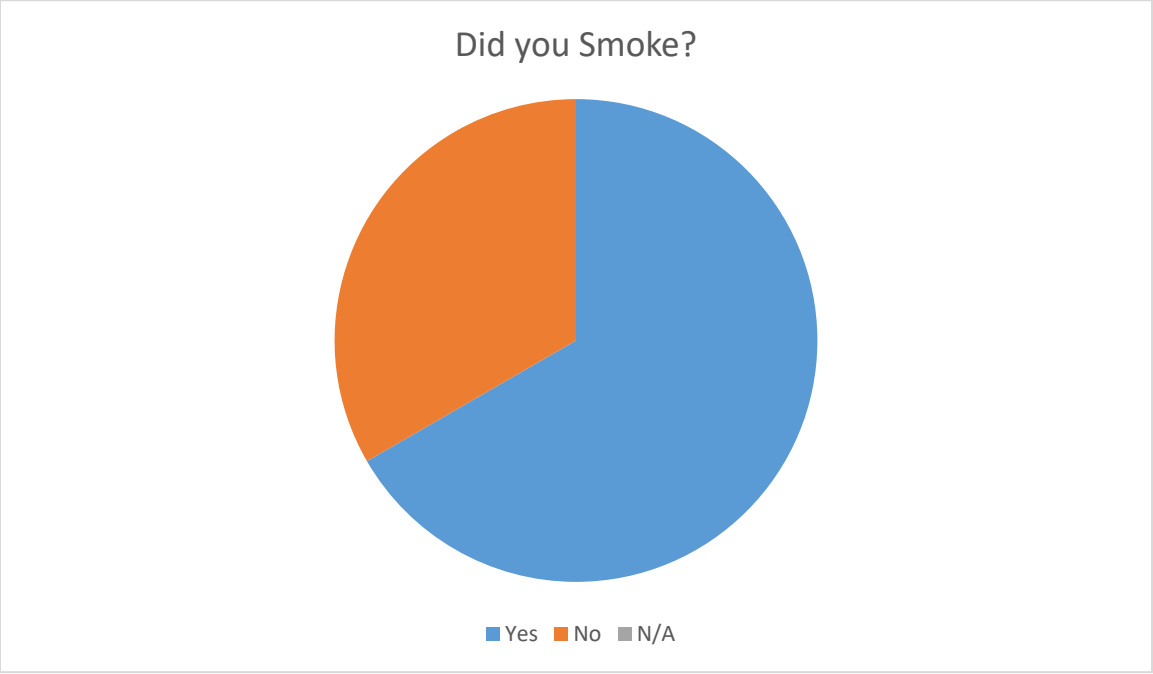
"Junior year of high school, vapes with biggest clouds were "in", first semester in college is when Juul came out and became popular, that's when I got one."

Question Five: When did you first smoke?

The answers to this question also varied in part due to not every participant having previously smoked. The answers to this question also did not align with a specific amount of time but rather a time period. The 5 participants who did answer all said "High school" as when they first smoked.

Question Six: Do you smoke?

All of the participants answered this question with 3 saying no and 6 saying yes (Figure 1).



(Figure 1) More students answered yes to smoking traditional cigarettes than did not.

Question Seven: Did you smoke prior to Juuling (if you Juul)?

All of the participants answered this question with 3 saying no and 6 saying yes. The participants all answered the same that they had on the previous question (Question Six).

Question Eight: What is the appeal to Juuling in your opinion?

"Safer, no smell, more portable and convenient than other vapes."

“I’m able to sit in my apartment and Juul and I wouldn’t do that with a cig. No more dip either, this has helped me quit. It’s much more convenient.”

“Heavy hit with lots of nicotine.”

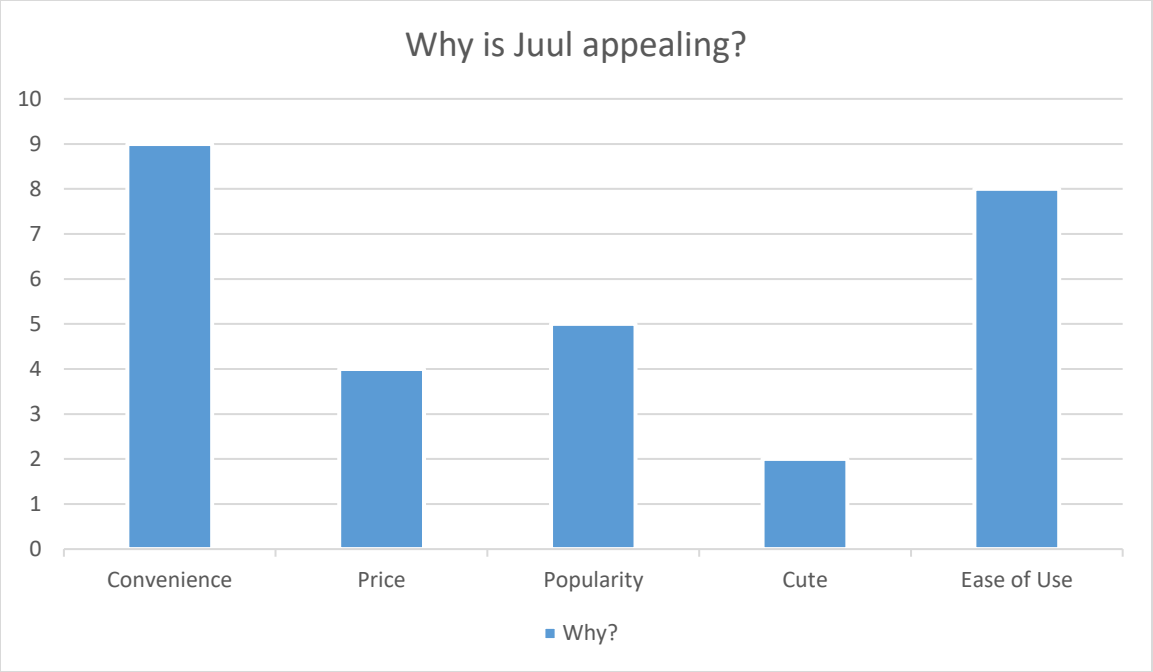
“Going from cigs to Juuls is so much easier. No need for a lighter or anything, just hit it and put it back into your pocket.”

“It’s a well-made product.”

“I think about a Juul before diamonds when people say jewel.”

“Everyone has Juuls.”

“Fairly priced for what it is. We had a vape but even though the juice is cheaper it doesn’t last very long. It does get expensive, but it’s still cheaper than cigarettes.”



(Figure 2)

Question Nine: In your opinion, do you think there are there marketing strategies employed to encourage underage Juuling?

All participants said no to this question.

“No, its bad reasoning. Kids like flavors, they make flavors, that’s not Juuls fault. They don’t have kid friendly names. It’s not the companies fault.”

“No, they may have been going for the 25-26 year olds, but younger kids fell into it as well.”

“No, they didn’t mean to market to high schoolers; technically they can’t even make money off them. It just kind of happened. Having a Juul became a thing, a fad in a way. Trickledown effect. Seeing older friends with a Juul, then the younger ones want one.”

“Cigs had bad commercials when I was a kid, Juul doesn’t do that”

“I’ve never seen an ad.”

“When you’re 16 years old you don’t care about ads, you care about what your buddies are doing.”

Question Ten: What information about the effects of Juuling do you know?

“It can’t be that great for you. Addiction factor.”

“Better than smoking cigs.”

“Long term or short? Short, you get a buzz. Long, there’s not a lot of info.”

“It’s not itself bad but it “gets kids to smoke cigs”. Which is bullsh**” In response: “I agree. I’ve never met someone who went from vaping to cigs.”

“If I hit it an hour straight I feel bad, like I feel like death. We were going through a pod and a half a day with our old Juul, it was overheating. It made us feel bad. Could have been due to the overheating of it. Until we got a new one then it was fine.”

“The effects of Juuling aren’t really noticeable to me.”

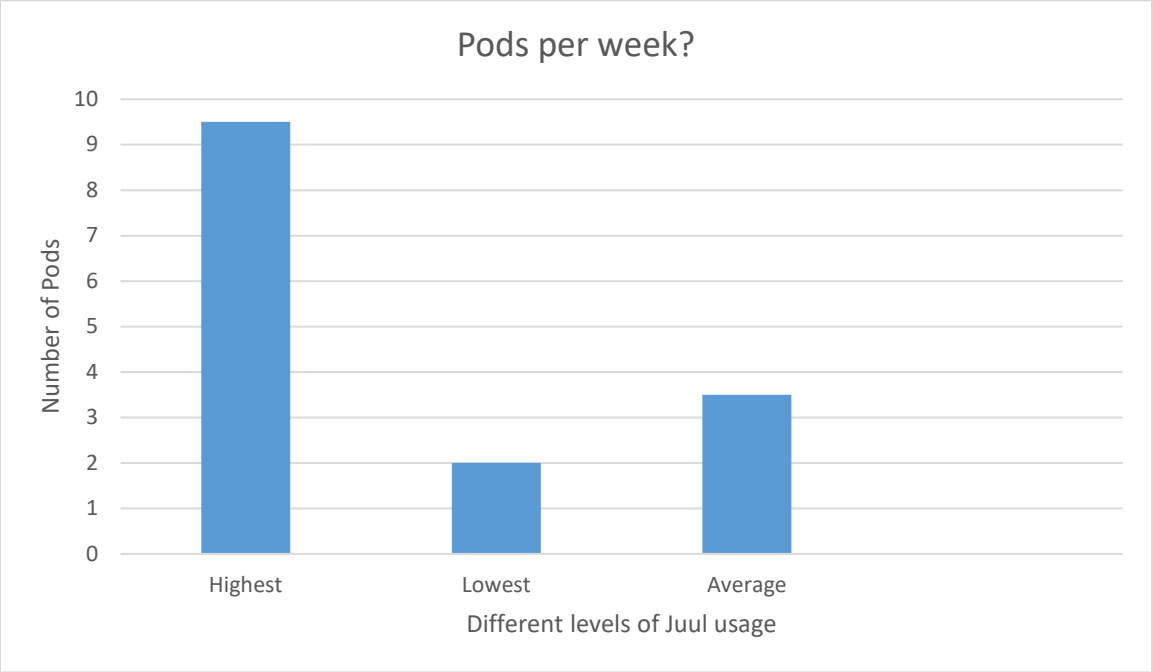
Question Eleven: How long ago did you first learn about Juuls?

This question was not asked due to time constraints.

Question Twelve: How often do you Juul? (How many pods in one week?)

This question was answered differently by almost every participant. The highest usage was a pack of four pods every three days which is roughly 9 and a half pods a week. The lowest usage was 2 pods a week which was by the participant who was trying to quit. The mean of all of the

participants was 6 and a half pods a week (Figure 3).



Question Thirteen: How often do you smoke?

Only four participants responded to this question. One said "Only when I don't have my Juul with me." Another said "When I don't have enough money for pods, I'll buy a pack of cigarettes." The last two both said that they don't anymore since they started Juuling.

Question Fourteen: Does alcohol influence your smoking or Juuling habits?

This question was a unanimous "Yes" from all participants.

"If I'm drinking I need my Juul."

"Your urge to Juul is so much stronger when you drink."

"Being drunk and buzzed at the same time makes you feel drunker."

"It makes you really buzzed."

"People always want to hit it at parties."

"Even the people who "quit" or don't use one want to use it at parties."

"Anytime I drink or go out I would hit it more. Started using a dab pen instead of a Juul."

Question Fifteen: Do you think Juuling is a safer alternative to Tobacco usage? Why?

All Participants said “Yes” to this.

“I haven’t heard of oils or anything in vapes being as bad as toxic items in cigarettes.”

“Smokeless tobacco has an abundance of risks associated with it. A Family history played role in quitting for me. Juul may not necessarily be safer but has less visual effects.”

“Ever since we were little we were told not to smoke. There are facts to back that up. No info on Juuls though.”

“When I quit smoking, I used my Juul a lot, but I started feeling a whole lot better, I felt like I could breathe. I still dipped in the beginning, but started to cut down. As far as how I feel, I feel so much better.”

“I’m very anxious and Juuling has helped me a lot. It helps me calm down. I go to the hookah bar a lot and the last time I went it made me so sick. I never get that when I Juul.”

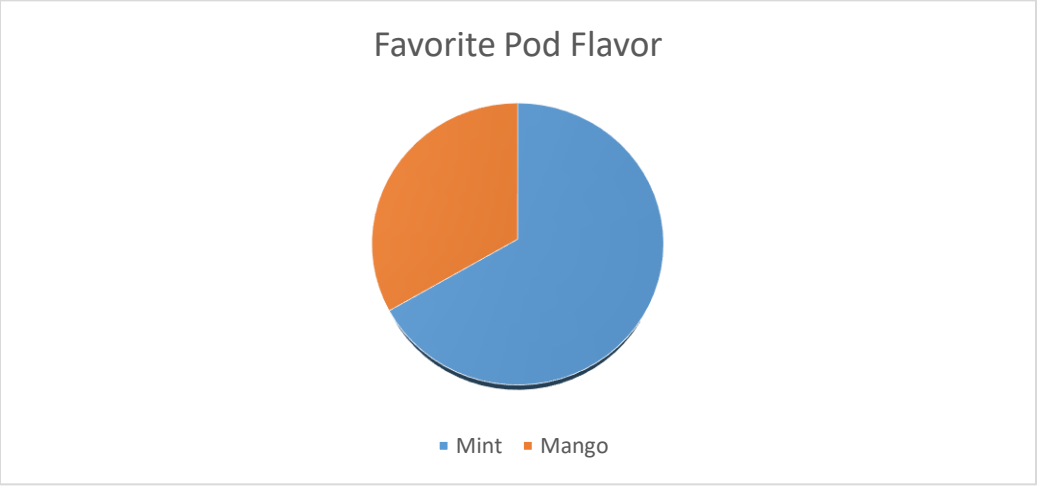
“They’re a better choice. No burn holes in my car due to cigarettes now. Juul won’t do that. Car also doesn’t smell bad now either. Never felt good hitting a cig, but I don’t feel bad hitting it either.”

“If someone blows their Juul on pedestrian walkway it’s annoying but not that bad. Cig smoke on ped walkway is like hell nah though. Even though I smoked it still annoyed me. If someone Juuls and you walk through it though, it’s kinda annoying but it’s not terrible. And you won’t stink afterwards.”

“With cigs I felt like I was just coating my lungs in crap.”

Question Sixteen: What “Flavor” of Juul is the most popular in your opinion?

Of the Nine Participants, six said Mint while 3 said Mango. One of the participants who said Mint also said that he enjoys Tobacco flavor as well.



Question Seventeen: What entices Juul users to choose this brand over other e-cigarettes?

“They’re quality made. Nothing has ever messed up.”

“Small and easy to carry around. No juice. No refills. Easy to change out and easy to get pods. Very accessible. Gas stations carry the pods. Hits harder. Good customer service, if it messes up they’ll send you another one.”

“Convenient, kind of cute.”

“You’re not with the times if you don’t have a Juul.”

“I go back and forth, Juul to mod and vice versa. You definitely look a little differently with a giant vape as opposed to a Juul.”

Question Eighteen: Do you Juul in class?

All participants answered “Yes” to this.

“Big lecture halls especially.”

“You can “zero” a Juul. Hold it in until there’s no vapor”,” it’s in my lungs anyways so who cares.”

“Any class, in my jacket.”

“In my sleeve.”

“You’ll see people charging them on MacBook’s.”

Question Nineteen: Have you ever seen someone Juul in class?

All participants answered “Yes” to this.

“You can listen for the crackle of a hit and you know exactly what it is.”

“Anytime I smell something minty I know exactly what it is.”

Question Twenty: Do you know someone personally who regularly uses a Juul?

All participants answered “Yes” to this.

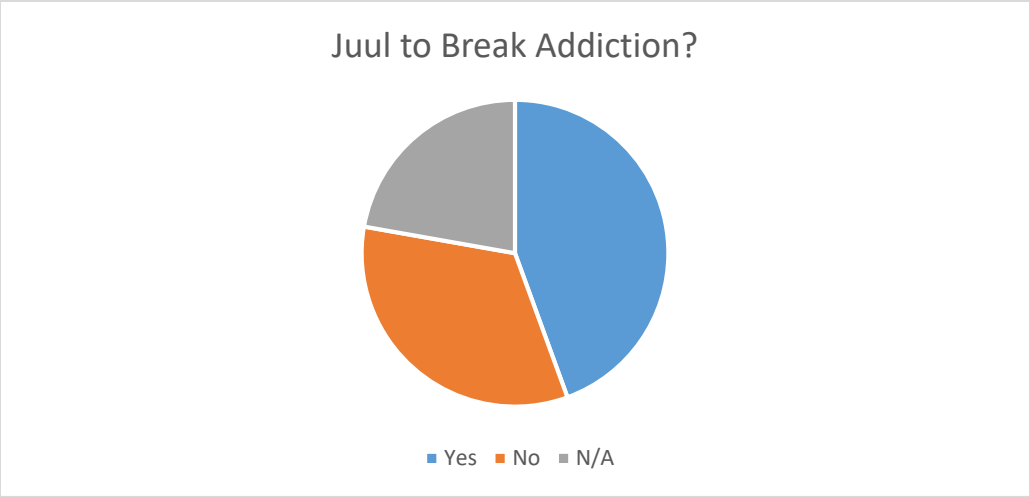
Question Twenty-One: Did you start to Juul to break a tobacco addiction?

Seven of the nine participants answered this question. 3 said “No” while 4 said “Yes”.

“Yes, on spring break I brought 10 cans of dip. Can and a half a day. The Juul helped me to cut back. First couple weeks were hard but it kept cravings away.”

“I still do both sometimes but not as often.”

“Improving the situation. I went from cigs to vape to Juul.”



Question Twenty-Two: Do you feel Juuls are marketed more towards non-tobacco users than those who do use tobacco products?

Six of the nine participants answered this question. Of these six, it was an even split of 3 saying “yes” and 3 saying “no”.

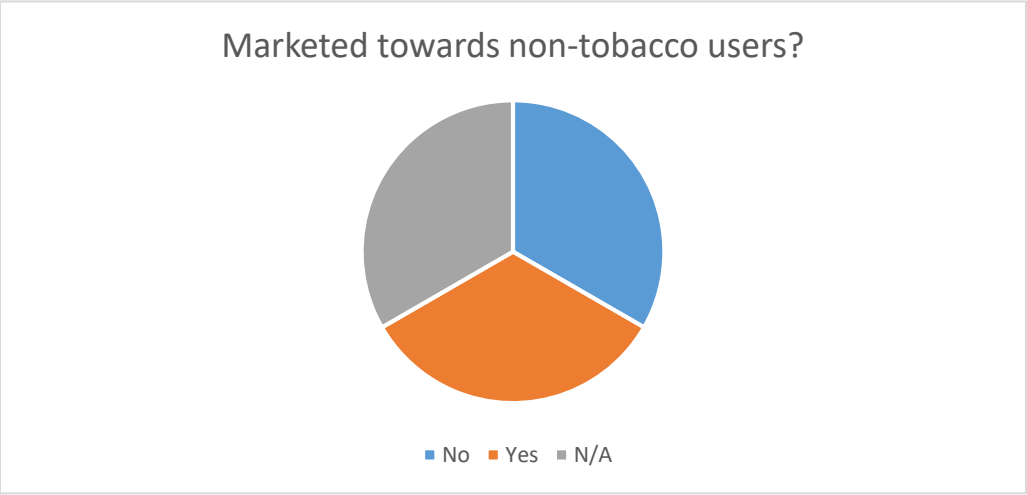
“Juuls intention may be good but most people who get them never used tobacco and they didn’t need a Juul to quit. Not the intention of the company, but it did happen.”

“Great excuse to hide behind. Company likes to make money. If they need to market towards people to make money, they will do it. This means both groups.”

“You can’t fault them for trying to make money. Well, people do. But I don’t.”

“It doesn’t really show smokers on their emails. Just classy people and people by the pools. Showing it’s classier than cigs. If you use it, you’re like these people.”

“The commercial on the radio is smoker’s testimonials about how they’ve quit smoking due to Juuls. I just started hearing it recently.”



Question Twenty-Three: If an educational campaign were to be developed to inform Juul users of the consequences, do you think it be effective in changing behaviors?

Six participants answered “Yes,” while three others said that it depends on how it is done and what is used.

“Yes. It would give us an incentive to quit.”

“It hinges on what results are produced. There’s a lot of people that won’t care, but it might pull some people from it.”

“Ads on snapchat show that people are more likely to start smoking cigs if they Juul. But for me personally I don’t want to smoke cigs are using a Juul. A different approach may work better.”

“A campaign may help prevent new people from starting but I doubt that it would stop the current users.”

“I was worried this was going to be an intervention sort of thing. I wanted to learn more about Juuling and such. An online module in first year studies would help.”

“Maybe, but I don’t know if those people would be interested though.”

“As a smoker, dipper, and Juuler I can say that I wouldn’t care. I wouldn’t quit just from seeing a pamphlet. In my opinion it would be pissing in the wind.”

“As a Juuler, my mindset wouldn’t be changed from an educational pamphlet. It could be worse, I could be using crack or meth.”

“I never smoked anything until my bro got one, then I got one, then my friends all did, then we all had one. So even with a campaign, I think it would still happen.”

Question Twenty-Four: If yes, what details should the education campaign contain?

“Tell me what will happen to me if I keep Juuling.”

“Tell me health risks associated with it. Have a side by side with Juul v cig v nothing. Present info showing which is worst/best. Educate the public and let them make their own decision.”

“Let people make their own decisions. Inform them but let them decide.”

“I was vaping when the popcorn lung sh** came out, and I kept doing it. I care about my health but then again I don’t plan on doing this forever.” In response: “Ya, I don’t see myself doing this past college.”

Additional Questions that were brought up:

Is second hand smoke from a Juul better than cigarette smoke?

“Yes, I think so. Nothing pisses you off worse than having a giant cloud of smoke blown in your face. Juuling isn’t bad, someone could blow it right in my face and I wouldn’t care.”

“Someone could be using their Juul right beside me and it won’t impact me.”

“The clouds from a Juul dissipate faster than a cigarette. Doesn’t linger as long it seems like.”

Should you use a Juul around kids?

“I don’t do it around kids, it’s kind of awkward. I also don’t do it around my little cousin.”

“When my sister had her baby she switched from cigarettes to Juuling. It’s not as dangerous to the kid.”

“Until someone tells me the effects of Juuling or vaping are the same as smoking I won’t be as concerned about it or judge parents for it.”

“My thing is, kids are impressionable. I smoke because that’s all my mom did. I used to use those candy cigarettes bc I saw my mom using them. When my brother got a vape, I got a vape. When a kid gets curious you should probably stop doing it. Don’t breastfeed your child with a Juul in your mouth.” In response: “I agree but also disagree. My mom smoked with me around, but looking back on it I would tell myself hey why are you smoking, you hated when your mom did it? My mom also did drugs, I don’t think her doing these things was bc of her. My buddy in high school gave me a cig.”

Is having a 3% nicotine strength as opposed to 5% a good thing?

“Yes it’s good. Having more control over the amount of nicotine you are consuming.”

“It’s good to have more options. Business catering to demands of customers.”

“I’m glad there’s two options. I don’t endorse people starting to Juul if they don’t already, but it’s good for those who already have.”

“It’s a good way to wean off smoking. 5 to 3 to nothing. Juuls are 5 % for a reason, it’s a pack of cigs.”

“Never had 3%, more options though so that’s good. If you’re talking about marketing to high schoolers, 3% looks good to them.”

What are some of the attitudes towards Juuling?

“People who use Juuls or who have used them, they don’t see it as a bad thing at all. Different generations will have a different perspective on Juuling.”

“My step brother who is two years younger than me had one first. I hit it twice and made fun of him bc it hurt. Now I have a Juul and he doesn’t use anything. Definitely a switch whenever you start using one.”

“Last spring I made fun of one of my friends for having one. Now I do it a lot though. So many more people do it now, it’s not as looked down upon as it once was.”

“My roommate gives me so much shi* for using a Juul but she smokes and drinks. It’s just so common it seems like. It doesn’t mean anything to me when I see someone using a Juul.”

Discussion:

General:

The focus groups produced a lot of interesting information, much of which was unexpected. The format of the groups, a small intimate setting which allowed for open conversation between the PI and the participants, helped to facilitate a welcoming environment for those involved.

For many of the students involved, they had not had open conversations about their Juul usage previously, and this was the first time they had been able to open up and have their voices heard. It was also the first time that many of them were able to talk about nicotine in a non-judgmental context which led to honesty in their answers. The answers varied from one participant to the next and depended a lot upon the background of the participant. For some participants who had been raised around cigarettes and other substances for much of their lives, using a Juul or other form of nicotine delivery was not a far reach. For some of the others who came from “Straight Edge” households, using these devices was unexpected. For almost all of the participants though, their usage could be originally linked back to their peers using the devices around them which then caused them to join in. While many of the participants reported that peer pressure was not a major factor in their start with nicotine, it seemed that merely being around their peers while they used these devices caused them to start. So while they may not have been pressured into usage, their peers did play a role.

The overall development of the groups as they progressed could also clearly be seen by the quality of answers and how the participants responded. In the beginning, many of the participants were wary or unwilling to share many honest opinions they had, but by the end, most of the group was comfortable sharing with one another. This level of comfort not just with each other but also the PI is critical to the success of the groups. A study involving focus groups relies heavily on honesty among the participants.

Attitudes towards the Juul Company:

The attitudes towards Juul on a national scale are those of distrust and wariness, especially from those in power due to Juuls advertisements towards youth (readsludge,focusforhealth). Other companies, such as TRUTH which advocate for the cessation of teen nicotine usage, are also starkly opposed to Juul (TRUTH.com). That is what makes the results from these focus groups that much more interesting; the students do not seem to have a problem with Juul. In fact, it seems that many of the students don't find anything wrong with Juul marketing strategies or how they conduct their business model. This is surprising because according to many of the advocates against Juul, these exact students, along with younger people, are the ones being targeted by Juul.

One of the biggest complaints against Juul is that they are targeting youth with their flavors of pods that they sell (Forbes,CNN). To combat this, Juul pulled the majority of their fruit flavored pods from shelves and made them only available online. According to the results of the groups though, the fruit flavors are not even the most popular. Mint, one of the flavors allowed to stay in stores, is the most popular. Even among the students who said that Mango was their favorite, Mint was unanimously the second favorite flavor. This shows, at least according to this data, that removing fruity flavors would do little to nothing to curb the rising tide of teen usage of Juuls. It was discussed, though, that it seems that the fruity flavors would appeal more to a younger audience and that while this may prevent the introduction of new users into the pool of current users, it will do little to nothing in eliminating use among people who currently use the product.

Juul also came under fire for their advertising methods which were allegedly targeted towards teenagers (Forbes, CNN). However, according to these data, their ads did little to nothing to encourage new usage among teens. It seems that the majority of new users begin using because of exposure from their peers and from being around the devices. This has led to a student's perspective of the company being one of indifference and not one looking to blame them. It is important to note that many of the students do not fault Juul for making a nicotine delivery device. They simply view it as a way for a company to make money, and it is not their fault that youth are becoming hooked on the devices.

Overall, it did not seem that any of the students in the focus groups blamed Juul for their nicotine usage. Rather they accepted that the company made a device that they chose to use, and if not a Juul, it would have been a different nicotine delivery device instead. Many of the participants who had come from smoking cigarettes were actually happy with Juul because it allowed for a

‘cleaner’ way of obtaining nicotine. These thoughts have all led to an attitude that is not for or against Juul but rather just of indifference. This indifference can be attributed to not much information being known on the effects of Juuling, but it can also be viewed that this stems from the idea that if it was not a Juul, it would be another device. It can be compared to whether or not cigarette companies should be viewed in a negative light for producing cigarettes or not, so opinions will change depending on the groups that are being interviewed.

A thought that was echoed among both focus groups was how many companies and advertisements are designed to try and take down Juul, ranging from TV commercials to advertisements on Snapchat. Yet, for all of these advertisements that are seen against Juul, there was only one reported instance of Juul advertising and that was only reported recently and was not a common occurrence. It is very interesting to see the difference in attitude towards Juul in these students compared to some of the advocates that are working against Juul. These advocates say that many of the youth who try Juul did not know that there was nicotine in the device or that they were unaware of the risks (Truth.com). The focus group data has backed that claim up in part; many of the participants had no idea of the risks associated with nicotine. They were aware that the devices delivered nicotine but did not care. This lack of care led from being unaware of the risks that nicotine has.

Student Knowledge of Nicotine and Juuls:

A large portion of this study was devoted to learning what students know about nicotine and Juuls, and it seems the short answer is not as much as may have been expected. That being said, a large amount of knowledge was not expected. This could be due in part to a multitude of reasons which will be further explored.

The knowledge of nicotine seemed very limited in this group of participants. This could be due to a lack of formal education on nicotine in schools growing up, as well as not as many educational campaigns targeting just nicotine. Many former educational promotions focused solely on cigarettes as a whole and would go further in depth on all the carcinogens that they contain. They would not give a breakdown of what nicotine is or what it does though, and this has led to a lack of knowledge on the topic. This lack of knowledge has led many youths to go to e-cigarettes or Juuls because they don not have as many other carcinogens as traditional cigarettes, yet they do still have as much, if not more, nicotine. This is a dangerous path to follow because nicotine does still have a wide array of problems associated with its usage. The lack of knowledge on nicotine can also be attributed to many students not caring about any information or that information not being readily available to them. For many students, if the information is not easily and readily accessible to them, they will not bother trying to learn it. This especially holds true for knowledge that is outside of a classroom such as this. To help students learn more about nicotine, it may be advisable to help encourage promotional campaigns that are easy to read and understand and that can be easily accessed.

It was also discussed in the groups that the lack of knowledge on nicotine did not necessarily mean a lack of caring. Many of the students had just not been given the opportunity to learn about the topic and seemed open to it. They did discuss that scare tactics are an excellent way of ostracizing a group and preventing them from being receptive to more information. What they meant by this is that when an educational campaign uses 'scary information' to try and scare people into quitting their habit, it makes the target audience close off from that information and not listen to it. This can be avoided by providing information that is neutral in how it is presented but still factual and letting the audience decide what to think about it. This allows the audience to draw their own conclusions and make their own choices.

While the overall consensus on knowledge about nicotine was very low, many students seemed to have a better idea of what a Juul is and what they were putting in their bodies. That being said, the amount of information known about Juuls is still very low and further education would be useful. It seemed that many of the participants were aware of what a Juul is and what ingredients were contained within the pods it holds but were not positive about the effects that the device has on them. As one participant mentioned, "Short term effect is I get a buzz, long term I have no idea". This statement, said jokingly, holds a large amount of truth within it, as this was the general consensus among all participants. The knowledge about what was causing the "buzz" was good; they all knew that nicotine was causing the feeling and that different levels of nicotine would cause different levels of "buzzed". It was not known what would happen later on after the buzz had ended though. There was no mention of the risk of nicotine poisoning, the risk to brain development, or any of the other potentially risky ingredients that are contained within a Juul.

While Juul pods only have 5 ingredients (one of which is flavoring which may contain multiple ingredients in itself), the information on these ingredients is limited and many of the participants were not aware of what these ingredients or their risks were. The point that many students would go to when discussing the potentially dangerous long term effects of using a Juul was that there was no information out on the topic. This can be a double-edged sword though because, while there is a chance that the risk to using a Juul is slim, the majority of data and information says that the risk is going to be high, especially in regards to addiction potential (Barrington-Trimis, 2018). Student education on this topic is of the utmost importance because it allows for them to make their own decisions on what they want to do. Many of the participants made it clear that they did not want to be told what to do one way or another but were open to reading and learning more on the topic and making a decision after that. It was also mentioned time and time again that if more information came out with the effects of Juuling clearly outlined, that they would quit if the effects were bad enough. It was also conveyed that this was not something that many of the participants viewed themselves engaging in for the foreseeable future but was rather a 'college-thing'.

The overall risks associated with Juuling seem to not be as well-known as may have been expected, but this is also a relatively new device that has overtaken the market. That is a point that many of the participants also pointed to; that this is a new phenomenon, and that the lack of

knowledge on their part is also due to a lack of knowledge in the scientific community as a whole. As more information is created and distributed, these students said that they were receptive to learning, they just had not been presented with that opportunity yet to do so.

Amount of Pods consumed per week and price:

The number of pods (liquid filled containers used to hold nicotine) consumed per week was variable among all of those involved in the focus groups. This range was associated with an array of factors ranging from amount of nicotine previously used before switching to Juul to what the participant was doing that day to amount of available funds that could be used on the pods.

The amount of previous nicotine used before switching to Juul is an interesting concept to consider. Although there is not a strong correlation in this sample size, it is a small group and it would make sense that those who previously used nicotine would use a Juul in higher amounts than someone who never used nicotine prior to the Juul. For these participants, it was seen that there was a slightly higher usage with Juuls among those who had previously used nicotine but not a strong enough association to say anything definitively. This would make sense though thinking critically about it. If a person has already developed a tolerance towards a drug, in this case nicotine, when they move to a new method of delivery for it, they will need higher amounts than someone who has never previously been exposed to that drug.

What the participant is doing seems to have played a major role in how much they used their Juul and how many pods they would go through. For a regular day, it seemed that even a heavy user would not go through more than a half a pod to a pod. However, even in that 'regular' day, there was a large amount of variation. When the participant was busy with things, they were less likely to be using the device. It seemed that when the participant was absent minded or bored that the device was used. Times such as when playing video games or driving were two that were mentioned often. The driving idea was brought up time and time again as a way to pass the time, especially on long road trips or while stuck in traffic. Video games were mentioned because like driving, the participant's attention was directed towards something else, and the Juul was only used absent mindedly. One participant talked about how they would use it without thinking for an hour or two straight and realize they went through half a pod in that time period. The last major factor that played a role in usage was alcohol. Every single participant responded that alcohol played a direct role in their usage of their Juul. One of the participants went as far as to say that if they were drinking, they had to have it with them. While "having to have it" may be an exaggeration, the amount they all used the devices while under the influence of alcohol was certainly higher. This varied from parties to football games to simply drinking in one's apartment. Every participant agreed though that alcohol played a major role. According to another participant, using the Juul helped to make you feel more intoxicated. Another said that the "cross-fade" would make them dizzy if they used their Juul too much while intoxicated. The mention of alcohol also brought up that many former Juul users who have quit or other students who "do not Juul" would use a Juul when they drank. One participant put it this way, "Even the

people who “quit” or don’t use one want to use it at parties”. The reasoning behind this lies more in the neuroscience area of science and can be traced to different reward centers in the brain as well as the portions that deal with drugs such as nicotine or alcohol. Nicotine also serves to reduce the sedation provided by alcohol letting the user experience a more ‘energetic’ intoxication (Mansvelder, 2002). Since each individual stimulant, nicotine and alcohol, both interact with the brains reward center, the combination acts as a cumulative effect (Lajtha, 2010).

The price of pods also plays a role in the amount that each participant used their Juul. One participant discussed how they now bought refillable liquid to refill their Juul pods rather than buying new pods. This method allowed for them to continue using their Juul but at a much cheaper cost than if they had continued using the actual Juul pods. The only downfall of this method is that the refillable liquid is not made by Juul and is therefore different than what is normally used. Another way to save money is to buy off-brand pods. There are only a few different types of pods available at this point that are not made by Juul since the “Pod” style is still fairly new, and it has to be a specific size to fit in a Juul’s housing. Some of the off-brand pods are available for sale nearby though, and some of the participants talked about purchasing those instead. Although not as well made as a regular Juul pod, there were reports of leaking pods and some tasting funny, the cheaper price tag entices users to switch over. These off-brand pods also come in a variety of tasty flavors that would be banned if they were part of Juul Laboratories. This also serves to attract some of Juul’s customer base. Availability of funds can also impact if some of the participants even used their Juuls. One participants discussed how when funds were running low, they would simply buy a pack of cigarettes instead. A pack of pods traditionally contains 4 pods, each of which contains the same amount of nicotine as a pack of cigarettes. These packs of 4 pods cost roughly $16 but the prices can vary from location to location, with one participant reporting prices exceeding $20 in Memphis, Tennessee. This price tag is what caused the one participant to opt for a single pack of cigarettes when funds were running low. This price can also add up very quickly. For some of the participants who reported using 8 pods or 2 packs a week, that is $32 a week before tax amounting to $1,664 dollars a year. Even the low end of the spectrum of participants, around a pack a week is still going to be $832 a year, a large amount for any college student. When these numbers were brought up, many of the participants were aware of the cost but were okay with the numbers. When brought up, many of the participants said that they thought the price tag was fair since each pod is equivalent in nicotine to a pack of cigarettes. While many of the participants were okay with the prices associated with the pods, it did lead to some of them getting their pods or liquids from sources other than Juul.

Discussion of Each Question:

Q1: Do you perceive Juuling to be a problem on campus?

The vast majority of the answers to this question were no. The few non ‘no’ answers were from participants who answered that it depends on the situation or where that the Juuling was being

done. When compared to cigarette smoke on campus, every participant agreed that Juuling was much better. It was also mentioned that Juuling smoke seems to dissipate more quickly than traditional cigarette smoke, making it less of a nuisance. One participant talked about how when they smoked (prior to Juuling) they would not use it on ped walkway, but now that they use a Juul they are ok with using it. They talked about how nobody wants to have a giant cloud of cigarette smoke blowing into their face but when it comes to a Juul, it is slightly annoying but it is not that bad. It was also questioned whether or not this question was inquiring if it meant that Juuling was a problem or just prevalent. For prevalence, it was unanimously decided that it was very prevalent but that this did not necessarily mean that it was a problem.

Q2: Is Vaping a problem on campus?

This question was not asked.

Q3: Do you partake in Juuling?

This question was answered yes to by every participant. Since a prerequisite to participate in this study was to be a current Juul user, this result was not very surprising, but it did serve to ensure that everyone who was in attendance belonged in the study.

Q4: When did you first start Juuling?

The answers for this question were varied and ranged from 9 to 54 months. The average time was 29 months. This was not very surprising since this would be right around the time that Juul was starting to gain popularity. The age demographic was also something to be considered, as the participant who answered 54 months was a senior in college which means that they were in the later years of high school when they started, similar to the other participants. This is an interesting trend that seemed to hold constant for most of the participants. It seemed that most of the participants started to use the Juul when they were juniors or seniors in high school.

Q5: When did you first smoke?

This question was only answered by those who had previously said that they smoked cigarettes. The earliest time reported was during high school which is when all the participants who answered it said. The participants who answered this also said that they smoked prior to Juuling and not the other way around.

Q6: Do you smoke?

This question was answered by most of the participants and the majority answered no. While the majority of the participants have smoked before, most have quit due to their Juul usage. One participant discussed their experiences with their car smelling poorly and the cigarette burn holes that would be caused by their habit and how they have been trying to quit because of that. Another participant talked about how all of their clothing and such would smell terrible and that was why they were trying to refrain from returning to cigarettes. A few of the other participants

talked about how they would still occasionally smoke but only at social events or with friends if a Juul was unavailable. One participant did admit to smoking when they did not have enough money for a pack of Juul pods. This participant talked about how a pack of cigarettes would be their go-to when they only had a couple dollars available to them. The overall consensus from former smokers though was that the Juul was helping keep them from going back to using traditional cigarettes.

Q7: Did you smoke prior to Juuling?

The majority of participants answered yes to this. It seemed that most of the participants went from traditional cigarettes to Juuls to help break their addiction. It did not seem that any of the participants went from Juuls to cigarettes though if they had never used cigarettes before.

Q8: What is the appeal to Juuling in your opinion?

The answers to this question were varied, but the majority agreed that it was very convenient and that was the biggest appeal to the product. The convenience associated with the product mostly stemmed from how available the pods are to purchase ranging from convenience stores to gas stations to the online order system. The quality of the product was also a big selling point for many of the participants as they discussed how well the product has held up for them and how the pods rarely or never leak. This is in contrast to many other brands that employ the pod system which have a lot of issues with leaking and other problems. Another appeal to Juul that was discussed was how the smell is not unpleasant like a cigarette is. The cloud of vapor also dissipates much more quickly than that of a cigarette as well. Two of the participants also discussed how they viewed the Juul as "Cute" and that is part of the reason why they liked it. While this may sound like an odd way of attracting customers; making the product aesthetically appealing is very important, and if people think the device is attractive or cute, it will help sell the product. One of the last things that was talked about that caused participants to choose Juul was how easy changing pods is and how quickly the device charges. Both of those points were brought up often by different participants. One participant also talked briefly about how great the customer service is for Juul and how they did not have any issues when they contacted them for support.

Q9: In your opinion do you think there are marketing strategies employed to encourage underage Juuling?

The answer to this question was surprisingly a resounding "no" by almost all participants. It seems that the consensus was that the marketing strategies employed are targeted more towards young adults in the 20-30 age range, not those who are in their teens. It is rather a trickledown effect that has caused much of the underage usage, not necessarily Juul marketing towards that age demographic. As one participant put it, when people see their friends using the devices they are more inclined to start using it as well. It's not the commercial that hooks people, it's seeing all their older and "cooler" friends and siblings using the devices that gets them to start. Most of

the participants were defensive of Juul saying that it was not the company's fault that youth were using the devices and they shouldn't be blamed for it. It was agreed that the marketing strategies were not targeting youth.

Q10: What information about the effects of Juuling do you know?

This question was interesting because it goes to the root of the problem when it comes to E-cigarette and Juul usage. The answer was either "nothing" or "very little" from every participant who answered. One participant jokingly said "short term effects are having a nicotine buzz" but then went on to say that "long term I don't know". This is the root of the problem with e-cigarettes and Juuls; there is little to no information on the topic. Many of these participants could list off the risks associated with cigarettes and smokeless tobaccos products but are unaware of the risks and effects of Juuling. This is not their fault though, as there is currently little information on the topic, and the distribution of the little information that is available is abysmal. The fact that these students know so little on the subject goes to reinforce the idea that further information will need to be gathered on these products before it can be deemed that they are "safe" or "unsafe" for use. All of the participants were open to learning more on the effects, which goes to show that their lack of knowledge was not due to a lack of care on the topic but rather just not having the opportunity to learn presented to them yet.

Q11: How long ago did you first learn about Juuls?

This question was not asked.

Q12: How often do you Juul? (How many pods in one week?)

This question had multiple answers ranging from 2 pods a week for the participant who was trying to quit all the way to 8 pods in a week for those who were using the devices a little more heavily. The average amount of pods in a week was 6.5 pods in a week, or roughly one pod a day. This number seemed to vary as many of the participants described their usage being very sporadic and dependent on their behavior that day. For example, one participant discussed how if there was a sports event occurring that day and they would be with friends all day and drinking that they would go through a pod or more easily; but then if it was a "normal" day that they would barely go through half a pod. This sentiment was shared among the majority of the participants. Other participants discussed how when they were not paying attention to what they were doing that they would use it a lot more. When driving was a time that was talked about often, as this seemed to be when a lot of the participants used their Juuls. Another time that was mentioned was when studying or playing video games. The common denominator in the times mentioned was that the participant was not paying attention to what they were doing, and the Juul was used as a mindless habit. One factor that every participant agreed caused extra usage of their Juul, which will be further discussed in question 14, was alcohol consumption.

Q13: How often do you smoke?

Only four participants answered this question, and of the four, the answers were that they mostly do not anymore. The only times that it seemed that they would still smoke is if money was running low or if they were offered a cigarette when they did not have their Juul with them. The answer that they would smoke if they did not have their Juul with them was repeated by two of the participants, showing that not having the device nearby was helping them to return to cigarette usage. The participant who mentioned money talked about how a pack of pods was roughly $17 but a pack of cigarettes is much cheaper so if money was tight they would simply opt for the cigarettes.

Q14: Does alcohol influence your smoking or Juuling habits?

The answer to this question was overwhelmingly yes. Every single participant emphatically said yes to this question. This answer was not just for Juuling either but also included smoking. For those participants who previously smoked, they said that they used to smoke more when they drank, but now that they have a Juul, this has replaced the cigarettes and now they just use their Juul a lot more when they drink. It was discussed about how, at parties and other social gatherings where alcohol was involved, people would use their Juuls much more often. One participant talked about how they "had to have their Juul" if they were drinking. This was said light heartedly but it represented how much more often the device is used when participants were drinking. It was also discussed how even people who quit Juuling or never formally use one would start to use one again when they are drinking. The reasoning behind this was delved into slightly, but for the most part, participants did not have an answer that they could definitively describe. Some discussed how they would become "cross-faded" or feel more drunk, but others said that they just craved the nicotine more when they drank. This was a universally agreed upon statement though, that alcohol directly impacted Juul usage with these participants.

Q15: Do you think Juuling is a safer alternative to Tobacco usage? Why?

The answers were mixed for this question, with some students saying yes outright, but others being a bit more tentative with their answers. The students who answered yes seemed under the impression that, since there is less in the Juuls than there is in cigarettes, they are better. They also gave testimonies about how they have felt since switching over from cigarettes to Juuls and how it has made them feel. None of the participants mentioned any relevant data to support their opinions, it was based on personal beliefs or experiences. Those who answered more hesitantly were on the side of saying yes, but wanted to know more about Juuls before they definitively said one way or another. They did think that it was more than likely that they are safer to use than tobacco but since there is little to no data on the subject it is hard to say definitively.

Q16: What "Flavor" of Juul is the most popular in your opinion?

This question had a nice even split when it came to answers. One focus group all answered "Mango" as the most popular, while the other all said "Mint". Of these groups, each one said the opposite as their second favorite, so it was agreed upon what the top two flavors are. There was

not a clear cut winner for third place though although “Cucumber” seemed to be mentioned some as well. One participant, who was alone in this opinion, was a big fan of Tobacco flavor as well. The reasoning behind these flavors was described by the participants as the simplest of those offered. Mint is simply a minty flavor and doesn’t hold much room for error or dislike. Mango was enjoyable but after a while would get old. The other flavors were just unpleasant or too strong to use a whole pack of four pods. It was also mentioned that flavors such as mango help to entice new users to try the product while flavors such as mint which don’t seem to get old help to keep users with the product.

Q17: What entices Juul users to choose this brand over other e-cigarettes?

This question ties back in its answers to the question that asked about the appeal of Juul. The answers were similar in nature to that question but other brands were also mentioned and compared. For one participant, it was how easy it was to change the pods compared to a traditional vape, which they had to purchase liquid for and refill the tank with the vape. Others talked about how great the customer service is for Juul and other companies are not like that. It was also mentioned how consistent Juuls products are. Every pod is the same and there is little variation in what to expect. This is what the participants held important to them; while some brands have lots of variation in how the product is made or distributed, Juul does not. It was also talked about again with how convenient getting the product is compared to other pod based devices. Juuls are available at almost every gas station making it very easy to get more pods or a new device if need be. Name recognition is also something that was brought up by the participants. While some brands may be a better deal or “hit harder”, not everyone knows what a sorin or a phix is. Almost all college students know what a Juul is though. This name recognition is very beneficial for Juul when new customers are choosing a device to purchase. Since it is such a recognizable name, more people are likely to choose the product without researching the other available devices that they could get instead.

Q18: Do you Juul in class?

The answer to this was a yes for every participant. This was slightly surprising, but every participant said that this was not uncommon. They went on to discuss how often they would do it, how they would do it, and when. It was agreed upon that it was best to do it in a large lecture hall and not in a small discussion class. It was also better if you were wearing a hoodie or something to blow the smoke into. If you listen closely in a large class, you can sometimes hear a pop or crackle noise associated with a Juul. A funny comment made was that it is always obvious who Juuls because when the pop or crackle noise occurs, it is usually other Juul users who recognize the sound and turn to look for the person using it.

Q19: Have you ever seen someone Juul in class?

This question was also answered yes by all participants. This was one of the most surprising aspects of the study. Prior to this question being asked, it was not known to the PI that this was

something that occurred in classrooms on campus. It seemed that the majority of the usage was in lecture hall classrooms and other large attendance classes. Most of the participants talked about how they would use their sleeves to get rid of the vapor or "zero out" the Juul to eliminate the vapor. Zeroing is a new idea that many students have been utilizing to eliminate the vapor. The idea is just to hold the vapor inside of the user's lungs until it is absorbed or just dissipates inside the user, therefore not producing any visible vapor. While one participant said that they did this often to get a better buzz, it is typically used to conceal use of the devices in class or other areas where it is not allowed. This can be looked at as a problem that is unique to E-cigarettes when compared to traditional cigarettes. It would be practically impossible to use a cigarette within a classroom without it being noticed; but for a Juul, it is not very difficult.

Q20: Do you know someone personally who regularly uses a Juul?

Similar to the previous two questions, this answer was a resounding yes. This makes sense because people who use a Juul are typically those who were introduced to the product by a friend and has, in turn, introduced other people to it. These people would more than likely be their friend group, explaining why they all know someone else who uses one. This also goes to show how most students end up developing the nicotine addiction in the first place. It may be easy to ignore one of your friends using a Juul but when everyone around you has one it may be easier to fall subject to peer pressure and start using one.

Q21: Did you start to Juul to break a tobacco addiction?

There were four participants who answered yes to this question. The reasoning behind their usage of a Juul to help break the addiction to tobacco was varied. One of the participants started using a Juul when their significant other asked them to quit tobacco for lent. Another decided that they did not want to risk being exposed to the potential risks that are associated with smokeless tobacco anymore, and they made the switch. The other two who answered yes just talked about how they no longer wanted to be smoking cigarettes; but quitting cold turkey is difficult, and the Juul helped to provide a way to still have nicotine without smoking cigarettes still. The testimonies from all these participants showed that the Juul was beneficial in helping them quit tobacco. This may not hold true in every case or situation but for these participants it did and this is interesting to consider. The fact that they were able to quit tobacco and not return to it, aside from a few relapses that were mentioned, can show that Juul is in fact able to be used as a smoke cessation aid. While it may be used to help quit smoking, every participant was adamant about the devices not being used by anyone who was not already addicted to nicotine.

Q22: Do you feel Juuls are marketed more towards non-tobacco users than those who do use tobacco products?

The answers to this question were relatively split down the middle. Of those who thought that it was marketed towards non-tobacco users, their mindset was that the commercials and emails did not seem to be marketed towards tobacco users, but rather people who only would Juul. It also

didn’t seem to these participants that the way the company advertises or reaches out is marketed towards people who already smoke. The opposite viewpoint, that Juul is marketing more towards tobacco users was supported by the idea that this device is meant as a smoking cessation tool and is not meant for people who do not already smoke. The box that the Juul comes in, the packaging for the pods, and the website all state that this product is meant for the adult smoker. This question is simply a matter of opinion and the opinion was evenly split by all participants who answered.

Q23: If an educational campaign were to be developed to inform Juul users of the consequences, do you think it be effective in changing behaviors?

The majority of participants thought that an educational campaign would be very beneficial in helping change behaviors depending on what the campaign contained. From what was said, it seems that a campaign that is designed to dissuade students from using Juuls and other e-cigarettes would fail, while one that simply presents information on the topic would succeed. It was made overwhelmingly clear that these students did not want to be told what to do and that a campaign that relies on telling students to quit something is not realistically going to work. It is through education that it would succeed. As far as changing behaviors, the participants were more hesitant on this aspect. They agreed that it may help to dissuade new users from trying a Juul or buying one; but as far as current users, they believed that it would not do much to make them quit. They did agree that if details emerged saying that Juuling was absolutely terrible that they would all quit, but as far as regular information goes, it would not dissuade them from continuing their habits.

Q24: If yes, what details should the education campaign contain?

This campaign, in order to succeed, would need to contain all the information that students want to hear, as well as be presented in a manner that students are willing to listen to. It is difficult to gain a report with students through a flyer but that is what has to be done. It is necessary for them to trust the source that the information is coming from as well as think that it can be beneficial to them to listen. That is also why it is important to not put too much information in a campaign to educate students as well. No information is bad but so is too much. Students do not want to listen to or read a ton of information on a subject such as this which means it is necessary to make the information short and concise to keep their attention and ensure they retain everything. That is also why it is important to make sure the information presented is not too complex either. Showing studies on Juuls may be great for an academic audience but for a student audience it is more beneficial to surmise the information in manageable chunks. These are intelligent people and they are all more than willing to learn, especially if it is about the dangers associated with a habit they have. To educate them though, it is necessary to make some adjustments to traditional methods and listen to student feedback such as that which was presented in these groups.

Discussion Take-home message:

This study allowed for a unique perspective into the users of these devices. While there was no 'hard' information gathered in regards to what can happen to users in the long term from these devices or nicotine in general, the psychological effects that occur with users was briefly discussed, as was the reasoning many of the participants chose to use the devices. This study allowed for the reasoning behind the rapid rise and usage of these devices to be investigated from those who are using them. It seems that the majority of users were already using nicotine prior to developing their habit with Juul. Juul has, in fact, seemed to serve its purpose as a smoking cessation aid for these students. For these particular students, Juul is doing what it is advertised to do, break the habit of smoking, even if it hooks users onto a Juul instead. For now, it was argued by the participants that this is better for them than cigarettes or other forms of tobacco. Until more information comes out though, this is a largely unproven claim. That is why this is such a risky topic, the lack of adequate information available that can be used to educate the public, especially the younger demographic who is increasingly becoming hooked on the devices. For those who did not use other nicotine delivery methods prior to developing their habit with the Juul, they mostly seemed to start usage due to friends or acquaintances using the devices. This sort of peer pressure can be seen with other things such as tobacco or alcohol so it is not completely surprising. It is an issue though, since nicotine is incredibly addictive and this hooks the users with Juul indefinitely. While it was argued by the participants that Juuls are not as bad as cigarettes, which may be true, they are certainly not better than refraining from any nicotine. This is why it will be important to develop campaigns to help prevent additional students from starting to use Juuls and other nicotine delivery devices. It was a universal consent among the participants that they would not want anyone else to start using these devices or to develop a nicotine addiction. That leads to the conclusion that it is not the intent of these students to peer pressure their friends into using the devices, it happens by accident when they are around them enough. The response to a potential educational campaign to help educate the student body at the University of Tennessee was mixed, but overall it seemed on the side of being beneficial. The hesitation seemed to stem from those who believed current users would not listen to a campaign like this since they are already hooked. While this sort of dismal outlook may not be completely accurate, it does represent a problem that would have to be addressed. Most current users will not be receptive to flyers and programs that are designed to get them to quit if there is not adequate information to back it. The consensus from participants was that, for there to be any hope of flyers and such succeeding, that it needed to come from an unbiased source that was not pushing an agenda of quitting but rather to educate and let the students make the decisions for themselves. This was repeated often, that a campaign designed to inform rather than to persuade stood the best chance of success. Alcohol usage was also a key factor in the usage of Juuls, and this could be useful in further research or educating students. It was portrayed that alcohol usage combined with the Juul usage led to increased usage of both which can be risky for students. This study served to highlight all the key points that relate to a student's usage of these devices,

and further exploration on the topic will potentially yield more interesting results that could potentially be used to help educate the public on the topic.

Future Directions:

This study was a success in what it was meant to be, a look into the perspectives of students at the University of Tennessee regarding Juuls. However, there was a lot of information that was not gained due to it not being considered prior to the focus groups starting. This does not mean that the study was a failure, just that there is room for improvement in future studies of this type. It would be very interesting to further explore the demographics of participants and to look more in-depth at upbringings and how participants were raised to see if that played any factor in nicotine usage growing up. There was some talk about upbringing which was provided by a couple of the participants but since it was not a question that was asked to every participant it is unable to be used in the data analysis. It did raise the question though to look further in depth at socioeconomic status as well as upbringing to see if those things could serve as risk factors for nicotine usage growing up. Another avenue that could be explored in future studies is holding interviews following the focus groups. This would allow for more in-depth answers to be provided by everyone involved. While the focus groups were great and provided the information they needed to, there were times that a participant seemed inclined to say more but was cut off by another participant. This was not done to be rude, all participants were very cordial with one another, but it just happened incidentally. Interviewing would also allow for more private information to be explored that may otherwise not be brought up in front of an entire group. In future studies, having someone similar in age to the participants act as PI is something that seemed to help a lot in building rapport. Having someone similar in age allowed for participants to feel more comfortable talking about their usage habits and other items that they may have not discussed as openly had the PI been a faculty member at the University or someone who was older than them. The format of the questions asked did very well, but for future studies, it would be beneficial to have all of the questions flow seamlessly into each other rather than one topic swapping to another just to go back to the original topic later down the discussion. This did help at points to get more information that was not brought up the first time around, but it also caused the discussion to seem choppy at times. It was necessary to vary the order the questions were asked at times to fit the flow of the conversation though, which is something that is to be expected. Although there were a few items that could be improved upon or further explored, this study was ultimately a success in what it set out to find.

Conclusion:

The rapid rise of E-Cigarette usage has been impacting many youth in the United States today. The exact cause of this rise has been attributed to advertisements by some companies and peer pressure encouraging youth to start using the products. There are minimal studies available that explore these causes though, which is what led to this study being performed. The study was done by using focus groups consisting of students at the University of Tennessee who identified

as Juul users. These participants were able to supply answers to some of the questions regarding their reasoning for usage of these devices, as well as why they continued to use them. The information provided helps to show what causes youth to become hooked on these devices, as well as why they may continue to use them after getting started. The information will be useful in developing educational material to help potentially stop more students from starting this trend and becoming hooked on nicotine and the different devices used to deliver it. This study was not done to encourage users to quit Juul, but rather to get their perspective on the topic and learn from them. In this regard, the study was a success and has helped show the reasons why students use these devices. This will help in future endeavors to educate the public on this topic and prevent more youth from becoming Juul users. The personal stories and testimonies given during this study have all served to further the knowledge available on this topic and will help numerous people in the coming years.

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