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Adults' beliefs about eating the USDA vegetable subgroups: A Reasoned Action Approach Elicitation

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Abstract

A healthy diet includes quantity (e.g. cups per day) and a variety of vegetables. The Dietary Guidelines recommends consuming vegetables from five subgroups (dark green, red/orange, beans/peas/lentils, starchy, and other vegetables). Despite being introduced almost 20 years ago most Americans are not eating within all of the subgroups, therefore thepurpose of this study was to assess if there are differences in beliefs pertaining to eating within the vegetable subgroups,using the Reasoned Action Approach. A nationwide convenience sample of adults (19-59 years old) were recruited via Forthright Access. Volunteers were sent an online survey and randomized to one of six groups: one of the five vegetable subgroups, or an overall vegetable group. Participants (n=180; 30 per group) were informed of the recommendation for their group and given several examples (Appendix 1). Four types of beliefs were elicited using open-ended questions (behavioral, injunctive normative, descriptive normative and control beliefs). Next, belief types were blinded by group and coded into distinct categories by two independent coders. No demographic variables differed between groups. There were no significant differences in the average number of behavioral, injunctive normative, descriptive normative or control beliefs between groups (all p's>0.05). There were also no significant differences in the distribution of the belief types (all p's>0.05). Taste and enjoyment, health benefits, and cost were common factors reported for consuming all vegetable subgroups. Adults appeared to be generally unaware of the differences in nutrient profiles and health benefits of different vegetable subgroups, therefore public health interventions should be developed to overcome this lack of awareness.

Keywords

Reasoned Action Approach, Vegetables, Beliefs

Adults' Beliefs about Eating the USDA Vegetable Subgroups: A Reasoned Action Approach Elicitation

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Abstract

A healthy diet includes quantity (e.g., cups per day) and a variety of vegetables. The Dietary Guidelines for Americans recommend consuming vegetables from five subgroups (dark green, red/orange, beans/peas/lentils, starchy, and other vegetables). Despite being introduced almost 20 years ago most Americans are not eating from all of the subgroups; therefore, the purpose of this study was to assess if there are differences in beliefs pertaining to eating within the vegetable subgroups, using the Reasoned Action Approach. A nationwide convenience sample of adults (19-59 years old) were recruited via Forthright Access. Volunteers were sent an online survey and randomized to one of six groups: one of the five vegetable subgroups, or an overall vegetable group. Participants (n = 180; 30 per group) were informed of the recommendation for their group and given several examples. Four types of beliefs were elicited using open-ended questions (behavioral, injunctive normative, descriptive normative and control beliefs). Next, belief types were blinded by group and coded into distinct categories by two independent coders. No demographic variables differed between groups. There were no significant differences in the average number of behavioral, injunctive normative, descriptive normative or control beliefs between groups (all ps > .05). There were also no statistically significant differences in the distribution of the belief types (all ps > .05). Taste and enjoyment, health benefits, and cost were common factors reported for consuming all vegetable subgroups. Adults were unaware of the differences in nutrient profiles and health benefits of different vegetable subgroups; therefore, public health interventions should be developed to overcome this lack of awareness.

Keywords: Reasoned Action Approach; vegetables; beliefs; USDA Dietary Guidelines

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Introduction

Consuming an adequate number of vegetables can reduce an individual's risk of developing chronic diseases such as certain types of cancers, weight gain and obesity, coronary heart disease (CHD), type 2 diabetes, and all-cause mortality (Kalmpourtzidou, Eilander, & Talsma, 2020; Lapuente, Estruch, Shahbaz, & Casas, 2019; Wang, et al., 2021). Despite these benefits, almost 90% of adults in the United States (U.S.) do not meet vegetable recommendations, which is around 2 to 3.5 cups per day (USDA & HHS, 2020). Eating a variety of vegetables also has direct health benefits. In a prospective cohort of elderly Dutch men (n = 730) although over time the quantity of consumed vegetables was not significantly associated with cancer incidence, total cancer risk was inversely associated with the variety of vegetables consumed (Jansen, et al., 2004). Certain types of vegetables also contain unique health benefits. For example, starchy vegetables such as plantains contain phenolics, flavonoids, carotenoids, sterols, biogenic amines, and antimicrobial

components (Ghag, & Ganapathi, 2019). Some starchy vegetables also contain resistant starch, which promotes microbial fermentation processes through the large intestines, as well as the production of beneficial short-chain fatty acids (Mullins, & Arjmandi, 2021). Green leafy vegetables and red and orange vegetables which are rich in β-carotene and vitamin C are also associated with having a lower risk of CHD (Bhupathiraju, et al., 2013).

To promote variety, the Dietary Guidelines for Americans (DGA) and the U.S. Department of Agriculture (USDA) recommend (based on age, activity level, and gender) consuming a weekly number of vegetables from five subgroups. The development of the vegetable subgroups was influenced by recommendations from the National Academy of Medicine and first appeared in 2005 in the 6th edition of the DGA (DGA & HHS, 2010; Institute of Medicine, Food and Nutrition Board, 2004; Institute of Medicine, Food and Nutrition Board, 2005). The subgroups include: dark green vegetables (average recommendation is 2 cups per week/common examples include broccoli, spinach, and kale), red and orange vegetables (average recommendation is 6 cups per week/common examples include carrots, red and orange bell peppers, sweet potatoes, and tomatoes), beans, peas, and lentils (average recommendation is 2 cups per week/common examples include black beans, chickpeas, kidney beans, and split peas), starchy vegetables (average recommendation is 6 cups per week/common examples include white potatoes and yam), and finally there is an 'other vegetable' group for vegetables that do not fit into the first four groups (average recommendation is 5 cups per week/includes vegetables not in the other groups such as asparagus, avocados, mushrooms, and onions).

Despite being introduced almost 20 years ago little progress has been made towards promoting the vegetable subgroups. The 'other vegetable' group is most consumed among adults with an average of about 3.5 cups/week (70% of the recommendation). On average adults consume close to half of the other group recommendations: dark green vegetables [adults consume about 1 cup/week (50% of the recommendation)]; starchy vegetables [adults consume about 3 cups/week (50% of the recommendation)]; beans, peas, and lentils [adults consume about 1 cup/week (50% of the recommendation)]; and red and orange vegetables [adults consume about 2.5 cups/week (42% of the recommendation)] (USDA & HHS, 2020).

Theories and models of behavior change provide health behavior researchers and practitioners with a conceptual framework towards reifying psychosocial constructs that can be influenced and changed by small group and community interventions. The Reasoned Action Approach (RAA) (along with its precursors the Theory of Planned Behavior (TPB) and Theory of Reasoned Action) is among the most utilized theories in health behavior research and has been extensively used to understand and change dietary behaviors such as vegetable intake. For example, a meta-analysis on interventions based on the TPB reported on average a weighted effect size (δ^) of 0.50 (Steinmetz et al., 2016). Systematic reviews and meta-analyses also show the constructs of the RAA typically have a medium to large impact on changing both behavioral intentions and dietary behaviors (Hackman, & Knowlden, 2014; McDermott, Oliver, Simnadis, et al., 2015; McDermott, Oliver, Svenson, et al., 2015). The RAA posits behaviors are determined by one's behavioral intentions (or willingness/motivation) and perceived behavioral control (PBC) (or capacity and autonomy). In turn, behavioral intentions are determined by one's attitude toward the behavior (or how one values a

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behavior), perceived norms concerning the behavior (or social pressure which includes injunctive and descriptive norms), and PBC (Fishbein, & Ajzen, 2010).

The RAA has been used to study the determinants of vegetable consumption across many settings and contexts (Blanchard, et al., 2009; Canova, Bobbio, & Manganelli, 2020; Branscum, & Sharma, 2014; Kothe, & Mullan, 2015). In addition, specific types of vegetables have been studied using the RAA such as organic vegetables (Dorce, da Silva, Mauad, de Faria Domingues, & Borges, 2021), dark-green leafy vegetables (Sheats, Middlestadt, Ona, Juarez, & Kolbe, 2013), and soy-foods (Rah, Hasler, Painter, & Chapman-Novakofski, 2004). However, a limitation across these studies is that generalized measures were only used to evaluate the core RAA constructs (attitudes, perceived norms and PBC). Generalized measures are advantageous in some respect, because they can reveal the nature of each construct using a small number of survey items (usually 3 to 6 items). Items such as "<Behavior x> is important to me," "Most people who are important to me want me to <do behavior x>" and "I can control over whether or not I can <do behavior x>" all represents one's overall or *generalized* perceived attitude, perceived norm, and PBC, respectively.

However, as Shulman et al. (2017) note, only evaluating generalized statements gives little practical information to researchers and practitioners who are interested in developing behavior change interventions. Therefore, for each construct it is also recommended to use formative assessments to identify how specific belief patterns form ones' attitudes, perceived norms and PBC. Attitudes are formed by behavioral beliefs which include specific positive and negative consequences individuals identify with a behavior. Perceived norms are formed by two types of normative beliefs: injunctive beliefs, which are expectations one has that individuals or groups will approve or disapprove of a behavior; and descriptive beliefs which take into consideration whether other important people are also performing, or not performing, a behavior. Finally, PBC is formed by control beliefs, which are facilitating or inhibiting factors that may be present and impact the performance of a behavior (Fishbein, & Ajzen, 2010).

To date, a few studies have elicited beliefs toward vegetable consumption based on the RAA's constructs. In a study of lower-income older adults, the authors reported their top behavioral beliefs (health benefit and medicinal properties; increased nutrient intake; good taste), normative beliefs (doctor/nurse/nutritionists; family/friends) and control beliefs (food assistance programs and other monetary support; expensive cost; food preparation skill). This pertained to eating both fruits and vegetables however, so the results cannot be fully generalized to vegetable intake (Jung, Shin, Kim, Hermann, & Bice, 2017). Additionally, the authors only elicited beliefs about injunctive norms, and left out open-ended questions about descriptive norms (Jung, et al., 2017). Similar beliefs were elicited in another study with middle school students (Middlestadt, et al., 2013). In this study, beliefs were elicited about students' asking their parents for fruits and vegetables. Researchers reported their top behavioral beliefs (will make me healthier; will upset my parents; my parents will buy them; will make me eat things I don't like), normative beliefs (parental figures; siblings; teachers) and control beliefs (worried parents will say no; having a higher cost), but again the behavior pertained to eating both fruits and vegetables, and the authors failed to elicit descriptive normative beliefs.

In conclusion, public health and nutrition interventions focused on promoting vegetable consumption should focus on both

quantity and quality. Quality can be targeted using the USDA vegetable subgroups, because the subgroups represent categories of vegetables that have unique nutrient profiles and health benefits. In addition, targeted messages about the vegetable subgroups should be created as adults consume them in different amounts, as they are more likely to consume the other vegetable group, and less likely to consume red and orange vegetables. Whereas some research has been conducted about the factors that shape overall vegetable consumption, little research has been published about the beliefs that shape adults' consumption of the USDA vegetable subgroups. Therefore, the purpose of this qualitative study was to conduct a formative assessment to examine and compare underlying behavioral, normative and control beliefs of the five vegetable subgroups.

Methods

Participants and Procedures

Participants included a national convenience sample of adults between the ages of 19 and 59 who were recruited via Forthright Access (https://www.forthrightaccess.com), a third-party paneling service. Those who chose to participate were sent a link to an online survey (Qualtrics) and first prompted to complete a consent form. Participants were then randomly assigned to one of six groups: either the 'overall vegetable' group (standard condition), or one of the five vegetable subgroups (dark green condition; red/orange condition; beans/peas condition; starchy condition; other condition). To assure participants understood how to answer the open-ended questions, special instructions were given. All participants were first informed of which condition they were randomized, and the recommendation for that group. Directions for all of the surveys can be found in Appendix 1. Figure 1 shows the 'standard condition' and an example of one of the vegetable sub-groups (beans/peas condition).

Four major types of beliefs were elicited for each group. Behavioral beliefs were elicited by asking instrumental attitude questions and experiential attitudes questions as presented below (all questions for the overall vegetable recommendation were asked as eating the recommended amount each day).

What do you see as the advantages of eating the recommended amount of <vegetable subgroup> every week, for the next month?

What do you see as the disadvantages of eating the recommended amount of <vegetable subgroup> every week, for the next month?

What would you enjoy about eating the recommended amount of <vegetable subgroup> every week, for the next month?

What would you hate about eating the recommended amount of <vegetable subgroup> every week, for the next month?

Injunctive normative beliefs were evaluated using the following questions:

When it comes to you eating the recommended amount of <vegetable subgroup> every week, for the next month, there might be individuals or groups who would think you should or should not perform this behavior.

Please list the individuals or groups who would approve of you or support you eating the recommended amount of <vegetable subgroup> every week, for the next month.

Please list the individuals or groups who would disapprove or not support you eating the recommended amount of <vegetable subgroup> every week, for the next month."

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Figure 1
Directions for participants to answer open-ended questions

Standard Condition

The following questions are in regards to you meeting the United States Department of Agriculture (USDA) vegetable recommendations every day, for the next month.

For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.
For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.

--Generally, 1 cup of raw, cooked, and juiced vegetables are considered to be 1 cup of vegetables for daily intake.
--2 cups of raw leafy salad greens also count as 1 cup of vegetables.

Example for a Vegetable Sub-Group (Peas/Beans condition)

Many people understands that the United States Department of Agriculture (USDA) makes recommendations for healthy eating habits. For example, the USDA recommends we all eat a certain amount of vegetables every day.

For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.
For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.

--Generally, 1 cup of raw, cooked, and juiced vegetables is considered to be 1 cup of vegetables for daily intake.
--2 cups of raw leafy salad greens are also counted as 1 cup of vegetables.

On the other hand, many people do not know there are also recommendations for eating certain kinds of vegetables.

Take for example Beans, Peas, and Lentils.

Beans, Peas, and Lentils include but are not limited to: black beans, bayo beans, fava beans, garbanzo beans, mung beans, white beans, black-eyed peas, split peas, red lentils, green lentils, brown lentils.

Beans, Peas, and Lentils DO NOT include: green lima beans, green peas, bean sprouts, snow peas, wax peas, or green beans.

These recommendations are also for <u>every week</u>, not every day.

For Men and Women between the ages of 19-59 years, eating 1 to 3 cups of Beans, Peas and Lentils is recommended every week.

Descriptive normative beliefs were evaluated using the following questions:

> **Sometimes, when we are not sure what to do, we look to see what others are doing.**
>
> **Please list the individuals or groups who you think are most likely to eat the recommended amount of <vegetable subgroup> every week.**
>
> **Please list the individuals or groups who you think are least likely to eat the recommended amount of <vegetable subgroup> every week.**

Finally, control beliefs were evaluated using the following questions:

> **Please list any factors or circumstances that would prevent you from eating the recommended amount of <vegetable subgroup> every week, for the next month.**
>
> **Please list any factors or circumstances that would enable you from eating the recommended amount of <vegetable subgroup> every week, for the next month.**

A qualitative analysis was conducted to evaluate and interpret each type of belief. To start, beliefs were exported to a Microsoft excel sheet and blinded. Next, a code book containing the initial content categories was generated from factors related to overall vegetable consumption reported in previous peer reviewed studies (Cox, Anderson, Lean, & Mela, 1998; Jung, Shin, Kim, Hermann, & Bice, 2017; Verain, Sijtsema, Taufik, Raaijmakers, & Reinders, 2020). Categories were coded by two independent coders, and the first 15 responses were coded together in the 'Attitudes' category to ensure code definitions were clear. Both coders also covered what to do in case a response did not fit into an established code. In some cases, the coders would discuss broadening a definition of a pre-existing code, and in other cases a new code was created. For example, the initial code 'taste' was expanded to 'taste/enjoyment' based on codes that appeared to be similar (e.g., 'the taste'; 'very tasty'; 'I like them'; 'enjoy the taste'). After the initial process, coders then independently coded 15 additional responses in the 'Attitudes' category, and again communicated with each other to ensure the definitions and procedures stayed consistent. Afterwards, the coders coded the remaining beliefs for each category.

Percentage agreement was used to judge inter-rater reliability and was expressed as a "%" (% agreement = number of agreements / (number of all codes x 100)) (Sharma, & Petosa, 2023). After the first round of coding the inter-rater reliability was moderately high: behavioral beliefs (81%), injunctive normative beliefs (90%), descriptive normative beliefs (86%), and control beliefs (80%). To reconcile differences, a third coder was used to code discrepancies. The original coders were then asked to recode the discrepant codes, which resulted in a near perfect inter-rater reliability: behavioral beliefs (98%), injunctive normative beliefs (99%), descriptive normative beliefs (98%), and control beliefs (99%). To complete the process, a third coder again recoded the remaining discrepancies and decided on the final codes. Using an analysis of variance (ANOVA), the total number of belief types were compared across groups. A $\chi 2$ test was used to evaluate the between-group differences in the distribution of beliefs between groups.

Finally, a modal set of beliefs was determined to identify which were most salient and important. As Fishbein and Ajzen (2010; pp. 102-103) note, there is no definitive method for this procedure; however, researchers can use one (or a combination) of three methods. First one can use a set number of the most frequently mentioned beliefs (i.e., 10 or 12). Second, one can set a threshold at which a certain number of respondents identify a belief, thus

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making it important (i.e., 25% of respondents had the same belief). Third, a researcher can use a set threshold of all the beliefs (i.e., using 75% of all responses elicited). Fishbein and Ajzen (2010) identify the third criterion as most important; therefore, in this study, the top 75% of codes were used to select the most important and salient beliefs for each group. Additionally, it was possible for participants to report the same codes within each belief category. For example, a participant could have responded with behavioral beliefs such as *I like the taste; I enjoy eating them; they are tasty*. In these cases, the code was only counted once for each participant.

In Tables 2-5, two factors are presented for each code to help determine whether it met the threshold for the modal set of beliefs. First, the '% of total code' represents the percentage that code within the category. For example, for behavioral beliefs in the overall group there were 24 of the 114 total codes from taste/enjoyment, which represents 21% of all the codes in the category. Second, the '% of sample reported' represents how many participants reported that same code. Using the aforementioned example (behavioral beliefs in the overall group) 24 participants reported taste/enjoyment, which represents 80% of the sample (n = 30 per group).

Results

Behavioral Beliefs

Overall, 180 adults participated in this study (n = 30 in each group). No demographic variable including gender (Pearson's χ^2 (9.357, df = 10) = 0.499), age (F (5, 174) = 0.990, p = .425)) and race (Pearson's χ^2 (1.233, df = 5) = 0.942) were different between groups (Table 1).

Figure 2

Common responses from participants for each type of behavioral belief

Taste/Enjoyment - The taste; very tasty; I like them; enjoy the taste.

Health Benefits – Helps with physical health; Improvement in my health; Consistency in overall health; It would be healthy for me.

GI Discomfort - Sometimes they give me a stomach ache; Might bother my stomach; Stomach trouble.

Weight Control/Loss - Maintain a good body weight; I will probably lose weight; Healthy weight; Help me lose weight.

Cost - I'd also have to spend a lot of money on them; More costly to eat by the recommended amount; It can become very expensive; It could be costly.

Vitamins/Minerals - Give me vitamins that I may be lacking; Increasing the amount of vitamins; Provide the body with important vitamins; Most are high vitamin/nutrients.

Convenience - It's harder to prepare vegetables for meals than it is to use other types of convenience foods; I also might have trouble finding them in my local grocery store; Takes time to prepare.

Figure 3
Common responses from participants for each type of injunctive normative belief

Family – Family; Wife; My husband; My kids.

Doctors/Health Care Staff – Doctors; Dietitians; Nutritionists; Medical professionals.

Friends – Friends.

Food Industry - Beef or other meat producers; People that sell processed food; People who profit on the sale of unhealthy foods.

Vegetarians – Vegetarians**.**

There were no statistically significant differences for the number of behavioral beliefs reported between groups (mean beliefs (SD): standard (3.8 beliefs (1.7)); beans/peas beliefs (3.6 (1.3)); dark green (3.9 beliefs (1.5)); other (3.3 beliefs (1.6)); red/orange (3.4 beliefs (1.7)) starchy (3.4 beliefs (1.7); (F (5, 174) = 0.774, p = .570)). Whereas each group had a slightly different set of modal beliefs there was no statistically significant difference in the distribution of beliefs between groups (Table 2) (Pearson's χ^2 (23.906, df = 35) = 0.922). Taste/enjoyment, health benefits, and weight control/weight loss were salient beliefs across all groups. Having vitamins and minerals was salient in the beans/peas, green leafy, other, and starchy groups, gastrointestinal discomfort was salient in the standard, beans/peas, green leafy, and red/orange groups, convenience was salient in the other and red/orange groups, and cost was only salient in the standard group.

Figure 4
Common responses from participants for each type of descriptive normative belief

People who value fitness/health – People that eat healthy; Very health /nutrition conscientious people; Physically fit people; Athletes.

Children- School children; Children; Kids.

Doctors/Health Care Staff – My doctor; Nutritionists; Dietitians; Medical professionals.

Family – My dad; My family; My wife.

Low Income – Low-income families; Low-income people; Poor people.

Friends – My friends; My discord group.

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Figure 5
Common responses from participants for each type of control belief

Cooking Skills - I don't know how to cook them; Not having the ability to cook vegetables; Inability to cook.
Cost - Produce is expensive; Lack of funds; I could not afford to.
Motivation - Lack of motivation; Willpower; It's hard to change food eating habits.
Accessibility - Lack of availability; Not having them at home; I am not near many grocery stores with fresh vegetables.
Digestive Issues - Stomach problems; GI problems; The amount of painful gas it would give me.

Injunctive Normative Beliefs

There were no statistically significant differences for the number of injunctive normative beliefs reported between groups (standard (2.2 beliefs (2.0)); beans/peas (2.0 beliefs (1.5)); dark green (2.5 beliefs (1.5)); other (2.0 beliefs (1.8)); red/orange (1.7 beliefs (2.1)) starchy (2.8 beliefs (2.6); (F (5, 174) = 1.408, p = .224)). Again, the modal beliefs between groups were mostly the same, and there was no statistically significant difference in the distribution of beliefs between groups (Table 3) (Pearson's χ^2 (34.435, df = 25) = 0.099). Family and doctors and other health care personnel were salient beliefs across all groups. Friends was salient in the overall, other, red/orange, and starchy groups, vegetarians were salient in the beans/peas, green leafy, other, and starchy groups, and the food industry was salient in the red/orange and starchy groups.

Descriptive Normative Beliefs

There were no statistically significant differences for the number of descriptive normative beliefs reported between groups (standard (2.8 beliefs (2.5)); beans/peas (2.2 beliefs (2.1)); dark green (3.2 beliefs (2.0)); other (2.2 beliefs (2.3)); red/orange (2.9 beliefs (2.8)) starchy (3.2 beliefs (2.3); (F (5, 174) = 1.175, p = .323)). The modal beliefs between groups were again mostly the same, and there was no significant difference in the distribution of beliefs between groups (Table 4) (Pearson's χ^2 (29.534, df = 30) = 0.490). People who value fitness or health, children, doctors and other health care personnel, and family were salient beliefs across all groups. Low-income individuals were salient in the overall, green leafy, red/orange, and starchy groups, and friends was salient in the beans/peas, other, red/orange, and green leafy groups.

Control Beliefs

There were no statistically significant differences for the number of control beliefs reported between groups (standard (2.5 beliefs (2.4)); beans/peas (2.1 beliefs (1.4)); dark green (2.4 beliefs (1.4)); other (2.0 beliefs (2.0)); red/orange (2.6 beliefs (2.5)) starchy (2.8 beliefs (2.4); (F (5, 174) = 0.686, p = .635)). The modal beliefs between groups varied, but there was no statistically

significant difference in the distribution of beliefs between groups (Table 5) (Pearson's χ^2 (22.253, df = 25) = 0.621). Cost was the only consistent salient belief across all groups. Cooking skills was salient in the overall, beans/peas, green leafy, and starchy groups, motivation was salient in the overall, beans/peas, other, red/orange, and starchy groups, and accessibility was salient in the green leafy, other, red/orange, and starchy groups.

Discussion

The purpose of this study was to conduct a formative assessment to examine and compare the underlying behavioral, normative and control beliefs of the five vegetable subgroups. Results from this study suggest there were in fact no differences in the number, or types of beliefs elicited from each subgroup. Many beliefs were similar to other studies that have documented motives and barriers towards overall vegetable consumption, as taste and enjoyment, health benefits, and cost are commonly reported beliefs in the existing literature (Jung, Shin, Kim, Hermann, & Bice, 2017; Verain, Sijtsema, Taufik, Raaijmakers, & Reinders, 2020). However, there were a few factors that help set this study apart from the existing literature. First is the attention we gave to eliciting both types of normative beliefs: injunctive and descriptive. Social norms have long been studied as an important determinant of human behavior, given the social nature of human beings, and our innate drive to comply with societal norms (Ostrum, 2000). However, the types of social norms (i.e., injunctive and descriptive) have varied in the literature, and differences between them are not always recognized (Chung, & Rimal, 2016; Rimal, & Lapinski, 2015; Shulman, Rhodes, Davidson, Ralston, Borghetti, & Morr, 2017). Although injunctive norms are commonly elicited in studies using the RAA framework, eliciting descriptive norms are rarely done (Erbe, Middlestadt, Lohrmann, & Beckmeyer, 2020; Jung, Shin, Kim, Hermann, & Bice, 2017). Second, whereas many studies elicit beliefs for different behaviors, rarely do studies attempt to identify the significant modal set of beliefs that are important for future research and intervention development, using the criteria set by Fishbein and Ajzen (2010). This is important because it helps demonstrate a systematic way of selecting beliefs for intervention development, rather than guessing or arbitrarily choosing beliefs.

One way to interpret the results from this study is by considering the current overall recommendation for vegetables as a 'behavioral category.' In social and behavioral science research a behavioral category represents a collection of behaviors that have a common goal. As Pryor (2022) notes, behavioral categories are useful for social and behavioral scientists, because it is an efficient way to study inter-related behaviors at the same time. With regards to overall vegetable consumption, this includes the sub-recommendations as five distinct, yet interrelated, behaviors that contribute to the overall behavior (vegetable consumption) being enacted. One of the potential consequences of studying a behavioral category however is that theoretically beliefs may be less accurate, because what motivates one sub-behavior may not be consistent with all sub-behaviors. We did not observe this in our study, however, and in fact, the same beliefs were mostly present for each subgroup. This could suggest that tailored messages may not be needed to promote different types of vegetables, and the same types of beliefs can likely influence all the behaviors in similar ways.

However, a competing conclusion could be that individuals did not have unique or

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distinct beliefs due to a lack of awareness of each vegetable subgroup, and that interventions promoting the unique nutrients of each sub-group could help adults in that realization. This seems to be a trend in different government initiatives. For example, Healthy People 2030 outlines two national goals for promoting vegetable consumption: Goal NWS-07 addresses increasing daily vegetable consumption from 0.76 cup equivalents to 0.84 cup equivalents (per 1000 calories), but Goal NWS-08 only addresses increasing the variety of dark green vegetables, red and orange vegetables, and beans and peas from 0.31 cup equivalents to 0.33 cup equivalents (per 1000 calories) (Office of Disease Prevention and Health Promotion, 2020). Interestingly, the DGA promotes the vegetable subgroups to encourage variety for vegetable consumption, in addition to showing current consumption levels and providing examples for each group. However, the DGA does not explicitly give separate benefits for each sub-group. Because dietitians and public health educators use the DGA as a teaching framework, this could translate into existing models of education that do not highlight separate benefits of eating different kinds of vegetables, despite there being some. There is one exception, however, with regards to the beans, peas, and lentils group. This group is unique in that whereas it is a vegetable subgroup, given its nutrient profile, foods within the group are also contained within the Protein Group of MyPlate. However, the benefit of 'having a higher protein content' for this group was not apparent, which shows adults in this sample were either unaware of this fact, or the belief was not important to them.

Limitations

One should note that this study contained some limitations. Although these data did come from a national sample of adults, the sample was a convenience sample which limits its generalizability. Moreover, the respondents may have given socially desirable beliefs, which could bias our results. Our sample was also predominantly White/Caucasian, and therefore, future studies should determine if behavioral, normative and control beliefs are different among other racial and ethnic groups. We also did not evaluate the level of familiarity (e.g., knowledge) participants had with the vegetable sub-group for which they were assigned. The sample in this study was also small (n = 30 per group); therefore, we may not have had the necessary power to detect statistical differences. Additionally, separate analyses were not feasible based on participant characteristics such as gender or race, again due to the small sample in this study. Finally, although the survey was developed using guidelines from Fishbein and Ajzen (2010), the survey was not initially assessed for face or content validity.

Implications for Health Behavior Research

Whereas the results from this study are important for intervention development, Fishbein and Azjen (2010) recommend translating these results first to a follow-up quantitative study to evaluate the strength of association each belief has at influencing attitudes, perceived norms and PBC. As previously mentioned, constructs of the RAA are evaluated in two ways: generalized and formative methods. To measure constructs using formative methods, Fishbein and Ajzen (2010) first suggest conducting an elicitation of beliefs, which is outlined in this study. Researchers can next create survey items based on the modal set of beliefs and create "value-expectancy" questions that contain both belief-based questions and value-based items (Fishbein & Azjen, 2010). For

example, 'taste/enjoyment' was the top behavioral belief for each vegetable group in this study. Therefore, the following survey items could be created from this belief (example using the standard group). Outcome evaluation items are value-based items connected to belief-based items in the RAA.

Behavioral belief$_1$: If I ate the recommended amount of vegetables every day for the next month, I would enjoy the taste. <Likely/Unlikely>
Outcome evaluation$_1$: For me, enjoying the taste of my food is <Important/Unimportant>

Along with generalized survey items, the formative survey items will allow researchers and practitioners to understand which beliefs have the greatest strength of association for enacting each behavior.

Ethics Approval

All research activities were approved by Miami University's Institutional Review Board.

Conflict of Interest

The authors report no conflicts of interest.

Discussion Questions

In this study we found no differences in beliefs related to vegetable sub-group consumption. How can public health interventions help to inform the public better, so that individuals understand certain vegetables have unique benefits?

When promoting vegetables to the general public, how useful is it to promote weekly sub-group recommendations? Is this a higher order skill that should be reserved for individuals with a preexisting knowledge base related to nutrition, or should be taught to everyone?

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Table 1

Demographics of sample

Overall (n = 30)	Beans/Peas (n = 30)	Green Leafy (n = 30)	Other (n = 30)	Red/Orange (n = 30)	Starchy (*n* = 30)
Age: 43.6 years (+/-12.9)	Age: 38.8 years (+/-11.7)	Age: 42.2 years (+/-12.0)	Age: 39.0 years (+/-11.5)	Age: 40.6 years (+/-10.8)	Age: 38.0 years (+/-12.7)
Female: n=16 (53%) Male: n=14 (47%)	Female: n=11 (37%) Male: n=19 (63%)	Female: n=13 (43%) Male: n=17 (57%)	Female: n=15 (50%) Male: n=15 (50%)	Female: n=17 (57%) Male: n=13 (43%)	Female: n=18 (60%) Male: n=12 (40%)
White/Caucasian: n=22 (73%) Black/African American: n=5 (17%) Asian; n=0 Native Hawaiian OR Pacific Islander: n=0 American Indian OR Alaskan Native: n=0 Multiracial: n=3 (10%) Prefer not to say: n=0	White/Caucasian: n=21 (70%) Black/African American: n=2 (7%) Asian; n=2 (7%) Native Hawaiian OR Pacific Islander: n=0 American Indian OR Alaskan Native: n=0 Multiracial: n=5 (17%) Prefer not to say: n=0	White/Caucasian: n=21 (70%) Black/African American: n=2 (7%) Asian; n=3 (10%) Native Hawaiian OR Pacific Islander: n=0 American Indian OR Alaskan Native: n=0 Multiracial: n=4 (13%) Prefer not to say: n=0	White/Caucasian: n=18 (60%) Black/African American: n=4 (13%) Asian; n=0 Native Hawaiian OR Pacific Islander: n=0 American Indian OR Alaskan Native: n=1 (3%) Multiracial: n=6 (20%) Prefer not to say: n=1 (3%)	White/Caucasian: n=19 (63%) Black/African American: n=6 (20%) Asian; n=2 (7%) Native Hawaiian OR Pacific Islander: n=0 American Indian OR Alaskan Native: n=0 Multiracial: n=3 (10%) Prefer not to say: n=0	White/Caucasian: n=18 (60%) Black/African American: n=3 (10%) Asian; n=2 (7%) Native Hawaiian OR Pacific Islander: n=1 (3%) American Indian OR Alaskan Native: n=0 Multiracial: n=5 (17%) Prefer not to say: n=1 (3%)

Table 2

Behavioral beliefs reported across each group

Overall (n = 114 codes)			Beans/Peas (n = 107 codes)			Green Leafy (n = 116 codes)			Other (n = 98 codes)			Red/Orange (n = 101 codes)			Starchy (n = 103 codes)		
Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported
Taste/ Enjoyment -24	**21%**	**80%**	**Taste/ Enjoyment-27**	**25%**	**90%**	**Taste/ Enjoyment-27**	**23%**	**90%**	**Taste/ Enjoyment-28**	**29%**	**93%**	**Taste/ Enjoyment-22**	**22%**	**73%**	**Taste/ Enjoyment-27**	**26%**	**90%**
Health Benefits-19	**17%**	**63%**	**GI Discomfort-18**	**17%**	**60%**	**GI Discomfort-18**	**16%**	**60%**	**Health Benefits-22**	**22%**	**73%**	**Health Benefits-17**	**17%**	**57%**	**Weight Control/ Loss- 19**	**18%**	**63%**
GI Discomfort-15	**13%**	**50%**	**Health Benefits-17**	**16%**	**57%**	**Health Benefits-17**	**15%**	**57%**	**Weight Control/ Loss-11**	**11%**	**37%**	**Weight Control/ Loss-16**	**16%**	**53%**	**Health Benefits-14**	**14%**	**47%**
Weight Control/ Loss-15	**13%**	**50%**	**Vitamins/ Minerals-15**	**14%**	**50%**	**Vitamins/ Minerals-16**	**14%**	**53%**	**Vitamins/ Minerals-10**	**10%**	**33%**	**GI Discomfort-14**	**14%**	**47%**	**Vitamins/ Minerals-14**	**14%**	**47%**
Cost- 14	**12%**	**47%**	**Weight Control/ Loss-13**	12%	43%	**Weight Control/ Loss-16**	14%	53%	**Convenience**-9	9%	30%	**Convenience**-10	10%	33%	**Convenience**-11	11%	37%
Vitamins/ Minerals-13	11%	43%	Cost-6	6%	20%	Cost- 6	5%	20%	Cost-8	8%	27%	Cost- 9	9%	30%	Cost-8	8%	27%
Convenience-10	9%	33%	Convenience-6	6%	20%	Convenience-6	5%	20%	GI Discomfort-7	7%	23%	Vitamins/ Minerals-8	8%	27%	GI Discomfort- 8	8%	27%
Other-5	4%	17%	Other-5	5%	17%	Other-5	4%	17%	Other-3	3%	10%	Other- 5	5%	17%	Other- 2	2%	7%

Note.
* Modal set of beliefs are bolded for each group
**Overall: Modal set of beliefs equal to 76% of all codes.
**Beans/Peas: Modal set of beliefs equal to 84% of all codes.
**Green Leafy: Modal set of beliefs equal to 82% of all codes.
**Other: Modal set of beliefs equal to 81% of all codes.
**Red/Orange: Modal set of beliefs equal to 79% of all codes.
**Starchy: Modal set of beliefs equal to 83% of all codes.

Table 3

Injunctive normative beliefs reported across each group

Overall (n = 52 codes)			Beans/Peas (n = 44 codes)			Green Leafy (n = 52 codes)			Other (n = 42 codes)			Red/Orange (n = 38 codes)			Starchy (n = 65 codes)		
Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported
Family- 19	**37%**	**63%**	**Family- 15**	**34%**	**50%**	**Family- 15**	**29%**	**50%**	**Family- 16**	**38%**	**53%**	**Family- 14**	**37%**	**47%**	**Family- 17**	**26%**	**57%**
Doctors/ Health Care Staff- 17	**33%**	**57%**	**Vegetarians- 9**	**20%**	**30%**	**Vegetarians- 12**	**23%**	**40%**	**Doctors/ Health Care Staff-9**	**21%**	**30%**	**Doctors/ Health Care Staff-7**	**18%**	**23%**	**Doctors/ Health Care Staff- 9**	**14%**	**30%**
Friends- 6	**12%**	**20%**	**Doctors/ Health Care Staff- 9**	**20%**	**30%**	**Doctors/ Health Care Staff-12**	**23%**	**40%**	**Vegetarians- 7**	**17%**	**23%**	**Food Industry-5**	**13%**	**17%**	**Friends- 9**	**14%**	**30%**
Food Industry- 5	10%	17%	Friends- 5	11%	17%	Friends- 7	13%	23%	**Friends- 7**	**17%**	**23%**	**Friends- 4**	**11%**	**13%**	**Vegetarians-8**	**12%**	**27%**
Vegetarians- 3	6%	10%	Food Industry- 2	5%	7%	Food Industry- 1	2%	3%	Food Industry- 1	2%	3%	Vegetarians- 3	8%	10%	**Food Industry-7**	**11%**	**23%**
Other- 2	4%	7%	Other- 4	9%	13%	Other- 5	10%	17%	Other- 2	5%	7%	Other- 5	13%	17%	Other- 15	23%	50%

Note.
* Modal set of beliefs are bolded for each group
**Overall: Modal set of beliefs equal to 82% of all codes.
**Beans/Peas: Modal set of beliefs equal to 74% of all codes.
**Green Leafy: Modal set of beliefs equal to 75% of all codes.
**Other: Modal set of beliefs equal to 93% of all codes.
**Red/Orange: Modal set of beliefs equal to 77% of all codes.
**Starchy: Modal set of beliefs equal to 83% of all codes.

Table 4

Descriptive normative beliefs reported across each group

Overall (n = 59 codes)			Beans/Peas (n = 45 codes)			Green Leafy (n = 61 codes)			Other (n = 49 codes)			Red/Orange (n = 52 codes)			Starchy (n = 53 codes)		
Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported
People who value fitness/ health-25	**42%**	**83%**	**People who value fitness/ health-18**	**40%**	**60%**	**People who value fitness/ health-21**	**34%**	**70%**	**People who value fitness/ health-12**	**24%**	**40%**	**People who value fitness/ health-17**	**33%**	**57%**	**People who value fitness/ health-22**	**42%**	**73%**
Children- 10	**17%**	**33%**	**Children- 5**	**11%**	**17%**	**Children- 7**	**11%**	**23%**	**Children- 10**	**20%**	**33%**	**Children- 8**	**15%**	**27%**	**Children- 7**	**13%**	**23%**
Doctors/ Health Care Staff-5	**8%**	**17%**	**Doctors/ Health Care staff- 5**	**11%**	**17%**	**Doctors/ Health Care staff- 7**	**11%**	**23%**	**Doctors/ Health Care staff- 6**	**12%**	**20%**	**Doctors/ Health Care staff- 7**	**13%**	**23%**	**Low Income- 6**	**11%**	**20%**
Family- 4	**7%**	**13%**	**Family- 5**	**11%**	**17%**	**Family- 7**	**11%**	**23%**	**Family- 6**	**12%**	**20%**	**Family- 4**	**8%**	**13%**	**Doctors/ Health Care staff- 3**	**6%**	**10%**
Low Income- 4	**7%**	**13%**	**Friends- 1**	**2%**	**3%**	**Friends- 4**	**7%**	**13%**	**Friends- 5**	**10%**	**17%**	**Low Income- 2**	**4%**	**7%**	**Family- 3**	**6%**	**10%**
Friends- 1	2%	3%	Low Income- 0	0%	0%	**Low Income- 3**	**5%**	**10%**	Low Income- 2	4%	7%	**Friends- 1**	**2%**	**3%**	Friends- 1	2%	3%
Other- 10	17%	33%	Other- 11	24%	37%	Other- 11	18%	37%	Other- 8	16%	27%	Other- 13	25%	43%	Other- 12	23%	40%

Note.
* Modal set of beliefs are bolded for each group
**Overall: Modal set of beliefs equal to 81% of all codes.
**Beans/Peas: Modal set of beliefs equal to 75% of all codes.
**Green Leafy: Modal set of beliefs equal to 79% of all codes.
**Other: Modal set of beliefs equal to 78% of all codes.
**Red/Orange: Modal set of beliefs equal to 75% of all codes.
**Starchy: Modal set of beliefs equal to 79% of all codes.

Table 5

Control beliefs reported across each group

Overall (n = 51 codes)			Beans/Peas (n = 49 codes)			Green Leafy (n = 50 codes)			Other (n = 40 codes)			Red/Orange (n = 45 codes)			Starchy (n = 53 codes)		
Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported	Name & Count	% of Total Code	% of Sample Reported
Cooking Skills- 17	**33%**	**57%**	**Cooking Skills- 15**	**31%**	**50%**	**Cost- 15**	**30%**	**50%**	**Cost- 12**	**30%**	**40%**	**Cost- 13**	**29%**	**43%**	**Cooking Skills- 15**	**28%**	**50%**
Cost- 15	**29%**	**50%**	**Motivation- 14**	**29%**	**47%**	**Cooking Skills- 13**	**26%**	**43%**	**Motivation- 9**	**23%**	**30%**	**Motivation- 12**	**27%**	**40%**	**Cost- 14**	**26%**	**47%**
Motivation- 7	**14%**	**23%**	**Cost- 8**	**16%**	**27%**	**Accessibility- 9**	**18%**	**30%**	**Accessibility- 9**	**23%**	**30%**	**Accessibility- 10**	**22%**	**33%**	**Motivation- 10**	**19%**	**33%**
Accessibility- 6	12%	20%	Accessibility- 6	12%	20%	Motivation- 8	16%	27%	Cooking Skills- 7	18%	23%	Cooking Skills- 8	18%	27%	**Accessibility- 7**	**13%**	**23%**
Digestive Issues- 4	8%	13%	Digestive Issues- 5	10%	17%	Digestive Issues- 5	10%	17%	Digestive Issues- 2	5%	7%	Digestive Issues- 2	4%	7%	Digestive Issues- 7	13%	23%
Other- 2	4%	7%	Other- 1	2%	3%	Other- 0	0%	0%	Other- 0	0%	0%	Other- 0	0%	0%	Other- 0	0%	0%

Note.
* Modal set of beliefs are bolded for each group
**Overall: Modal set of beliefs equal to 76% of all codes.
**Beans/Peas: Modal set of beliefs equal to 76% of all codes.
**Green Leafy: Modal set of beliefs equal to 74% of all codes.
**Other: Modal set of beliefs equal to 76% of all codes.
**Red/Orange: Modal set of beliefs equal to 78% of all codes.
**Starchy: Modal set of beliefs equal to 86% of all codes.

Appendix 1

Directions for all surveys

Overall	Beans/Peas	Green Leafy	Other	Red/Orange	Starchy
The following questions are in regards to you meeting the United States Department of Agriculture (USDA) vegetable recommendations every day, for the next month. **For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.** **For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.** **--Generally, 1 cup of raw, cooked, and juiced vegetables are considered to be 1 cup of vegetables for daily intake.** **--2 cups of raw leafy salad greens also count as 1 cup of vegetables.**	**Many people understands that the United States Department of Agriculture (USDA) makes recommendations for healthy eating habits. For example, the USDA recommends we all eat a certain amount of vegetables every day.** **For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.** **For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.** **--Generally, 1 cup of raw, cooked, and juiced vegetables is considered to be 1 cup of vegetables for daily intake.** **--2 cups of raw leafy salad greens are also counted as 1 cup of vegetables.** **On the other hand, many people do not know there are also recommendations for eating certain kinds of vegetables.** **Take for example Beans, Peas, and Lentils.** **Beans, Peas, and Lentils include but are not limited to: black beans, bayo beans, fava beans, garbanzo beans, mung beans, white beans, black-eyed peas, split peas, red lentils, green lentils, brown lentils.** **Beans, Peas, and Lentils DO NOT include: green lima beans, green peas, bean sprouts, snow peas, wax peas, or green beans.** **These recommendations are also for every week, not every day.** **For Men and Women between the ages of 19-59 years, eating 1 to 3 cups of Beans, Peas and Lentils is recommended every week.**	**Many people understands that the United States Department of Agriculture (USDA) makes recommendations for healthy eating habits. For example, the USDA recommends we all eat a certain amount of vegetables every day.** **For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.** **For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.** **--Generally, 1 cup of raw, cooked, and juiced vegetables is considered to be 1 cup of vegetables for daily intake.** **--2 cups of raw leafy salad greens are also counted as 1 cup of vegetables.** **On the other hand, many people do not know there are also recommendations for eating certain kinds of vegetables.** **Take for example Dark Green Vegetables.** **Dark Green Vegetables include but are not limited to: broccoli, turnip greens, bok choy, collard greens, kale, spinach, swiss chard, arugula, basil, dark green leafy lettuce, mixed greens, and romaine.** **Dark Green Vegetables DO NOT include: iceberg lettuce, brussel sprouts, cucumber, zucchini, avocado, seaweed, cabbage, fiddlehead ferns, chives, or alfa sprouts.** **These recommendations are also for every week, not every day.** **For Men and Women between the ages of 19-59 years, eating 1.5 to 2.5 cups of Dark Green Vegetables is recommended every week.**	**Many people understands that the United States Department of Agriculture (USDA) makes recommendations for healthy eating habits. For example, the USDA recommends we all eat a certain amount of vegetables every day.** **For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.** **For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.** **--Generally, 1 cup of raw, cooked, and juiced vegetables is considered to be 1 cup of vegetables for daily intake.** **--2 cups of raw leafy salad greens are also counted as 1 cup of vegetables.** **On the other hand, many people do not know there are also recommendations for eating certain kinds of vegetables.** **For example, there are specific recommendations about eating:** **<u>Dark Green Vegetables</u> which includes broccoli, spinach, mixed greens, and romaine.** **<u>Red and Orange Vegetables</u> which includes carrots, sweet potatoes, and tomatoes.** **<u>Beans, Peas, and Lentils</u> which includes black beans, black-eyed peas, and lentils.** **<u>Starchy Vegetables</u> which includes corn, green peas, and white potatoes.** **Not all vegetables fit into these groups however, so there is a recommendation for these 'Other Vegetables'.** **"Other" Vegetables include but are not limited to: avocado, bamboo shoots, bean sprouts, cabbage, nopales, cauliflower, cucumber, green or wax beans, green**	**Many people understands that the United States Department of Agriculture (USDA) makes recommendations for healthy eating habits. For example, the USDA recommends we all eat a certain amount of vegetables every day.** **For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.** **For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.** **--Generally, 1 cup of raw, cooked, and juiced vegetables is considered to be 1 cup of vegetables for daily intake.** **--2 cups of raw leafy salad greens are also counted as 1 cup of vegetables.** **On the other hand, many people do not know there are also recommendations for eating certain kinds of vegetables.** **Take for example Red and Orange Vegetables.** **Red and Orange Vegetables include but are not limited to: carrots, red chili peppers, pumpkins, red and orange bell peppers, sweet potato, tomatoes, vegetable juice, and any variety of winter squash (acorn, butternut, hubbard, kabocha)** **Red and Orange Vegetables DO NOT include: radishes, red cabbage, yellow squash, beets, or rutabaga.** **These recommendations are also for every week, not every day.** **For Men and Women between the ages of 19-59 years, eating 4 to 7.5 cups of Red and Orange Vegetables is recommended every week.**	**Many people understands that the United States Department of Agriculture (USDA) makes recommendations for healthy eating habits. For example, the USDA recommends we all eat a certain amount of vegetables every day.** **For Women between the ages of 19-59 years, eating 2 to 3 cups of vegetables is recommended every day.** **For Men between the ages of 19-59 years, eating 3 to 4 cups of vegetables is recommended every day.** **--Generally, 1 cup of raw, cooked, and juiced vegetables is considered to be 1 cup of vegetables for daily intake.** **--2 cups of raw leafy salad greens are also counted as 1 cup of vegetables.** **On the other hand, many people do not know there are also recommendations for eating certain kinds of vegetables.** **Take for example Starchy Vegetables.** **Starchy Vegetables include but are not limited to: breadfruit, cassava, corn, green peas, plantains, hominy, and white potatoes.** **Starchy Vegetables DO NOT include: zucchini, bitter melon, eggplant, spaghetti squash, yellow squash, or kohlrabi.** **These recommendations are also for every week, not every day.** **For Men and Women between the ages of 19-59 years, eating 4 to 8 cups of Starchy Vegetables is recommended every week.**

			bell peppers, mushrooms, okra, onions, summer squash, and zucchini. **“Other” Vegetables DO NOT include 100% vegetable juice, water chestnuts, or tapioca.** **For Men and Women between the ages of 19-59 years, eating 3.5 to 7 cups of these 'Other' Vegetables is recommended every week.**	