

# The Effect of Personal Experiences on Motivated Beliefs, Motivated Reasoning, and Belief Updating: Evidence from A Retail Experiment in Vietnam

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## Abstract

Information provision can act as an effective quality signal preventing market failures. Food labels aim to reduce information asymmetries between consumers and producers, but evidence of their effectiveness is mixed. Past personal experiences can alter beliefs and affect how this information is engaged with, processed, and stored in memory. We implement a lab-in-the-field experiment in Vietnam to study the relative effectiveness of both a certified food safety label and retailer claim on purchasing decisions and belief updating and to evaluate the impact of two domain- and non-domain-specific personal experiences, illness from contaminated vegetables and exposure to chemical defoliants used in the Vietnam War, on food safety beliefs and information processing. We show that subjects exposed to chemical defoliants have significantly lower beliefs in food safety quality, while those who were ill do not hold these beliefs. This suggests that intense out-of-domain experiences can impact belief formation across domains. We find that individuals exposed to chemical defoliants employ several forms of motivated reasoning to avoid or misremember food safety information tied to these past experiences even at a financial cost. Our results suggest that individuals are motivated to maintain these beliefs as a means of self-preservation where the information processing costs of engaging with information tied to these experiences outweigh the perceived benefits. However, unbiased, disconfirmatory feedback mitigates the extent to which subjects engage in endogenous memory formation. This indicates a viable pathway to enhance policy design and information dissemination to improve decision-making and circumvent entrenched beliefs.

**Keywords:** Experience effects; motivated beliefs; motivated reasoning; food labels; credence attributes

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## 1 Introduction

Approximately 80% of individuals in Vietnam do not meet the World Health Organization's (WHO) standard for daily consumption of fruits and vegetables.<sup>1</sup> Consumer confidence in the safe production of vegetables is low (Bui et al., 2016) and chemical residues from pesticide use are of particular concern to many consumers (Hoi et al., 2009). In 2008, the Vietnamese government developed nationwide certification standards for safe vegetable production practices. This program, known as VietGAP (Vietnamese Good Agricultural Practices), follows quality and safety standards developed by the regional intergovernmental organization ASEAN (Association of Southeast Asian Nations) and accounts for all food safety dimensions in the production, transportation, and handling of vegetable products. Vegetables produced under this process are labeled with a certified seal that signals a high food safety standard. To date, vegetables carrying a VietGAP label are widely available in modern retail markets in Vietnam. Yet, vegetable consumption remains insufficient and food safety concerns continue to persist (Ngo et al., 2020).

Labels as informative quality signals can address market failures and reduce information asymmetries, but consumers' information processing is affected by their limited attention focus (Nelson, 1970; Darby and Karni, 1973; Nelson, 1974; Maćkowiak et al., 2023). Empirical evidence of the effectiveness of labeling information has been mixed at best (Jin and Leslie, 2003; Bollinger et al., 2011; Kiesel and Villas-Boas, 2013a; Villas-Boas et al., 2020; Barahona et al., 2023). While the VietGAP label provides information that should allow consumers to differentiate products along food safety dimensions, how this information is conveyed and, perhaps more importantly, how it is processed by consumers determines the effectiveness of labeling policies. Past life experiences, particularly emotionally intense experiences, can alter consumers' beliefs about the expected quality of vegetables in retail environments. When provided with accurate food safety information, consumers with strongly held beliefs may reason in a motivated fashion (Bénabou and Tirole, 2002; Epley and Gilovich, 2016; Zimmermann, 2020) preventing them from engaging with or recalling food safety information and accurately updating beliefs. Therefore, the provision of labeling information alone may be insufficient in increasing consumption of safe produce and updating food safety beliefs in the short and long term.

Vietnam offers a unique setting to evaluate how individuals process labeling information and update beliefs over time for two main reasons. First, consumers may have emotionally intense past experiences that alter their beliefs about food safety quality, making them less likely to engage with bias-correcting information and update beliefs in the short and long term even when this information can improve decision-making. Two emotionally intense experiences are pertinent to this study: 1) illness stemming from the consumption of contaminated vegetables and 2) exposure to chemical defoliants (e.g. Agent Orange) deployed during the Vietnam War. The former experience is domain-specific as it directly affects food safety beliefs while the latter is non-domain-specific but may impact the formation of food safety beliefs due to the intensity of the experience with these herbicides and the long-term

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<sup>1</sup>To put this in context, 29% of Asian countries meet this recommendation while only 11% of European countries and 7% of countries in the Americas reach this standard (Kalmpourtzidou et al., 2020).

health ramifications stemming from exposure. The effect of these experiences, or *experience effects* (Malmendier, 2021b), may alter both the formation of beliefs and the processing of information related to these beliefs. Individuals may hold motivated beliefs and employ cognitive strategies, such as strategic ignorance or endogenous memory formation (Carrillo and Mariotti, 2000; Bénabou and Tirole, 2002), to avoid or misremember information connected to these past experiences.

Second, relatively few labels and claims exist to signal credence qualities in Vietnam's retail markets. The relative absence of both labels and claims (compared to e.g., the U.S.) allows for a more concise analysis of the limits of labeling policies. Three quality signaling schemes are of interest to this study: 1) no labels or claims are available to signal differences in food safety, 2) vegetables are differentiated by a 'Safe Food' voluntary, private-party claim, and 3) vegetables are differentiated by the VietGAP-certified label.

Given a setting where individuals may hold motivated beliefs for food safety quality driven by domain- and non-domain-specific experiences and where relatively few labels and claims exist, this paper attempts to answer the following questions: Why haven't VietGAP food safety labels been more effective in updating food safety beliefs and increasing vegetable purchases and what role does the introduction of competing claims (e.g., 'Safe Food') play? In particular, do prior experiences and (dis)confirmatory feedback impact purchasing decisions and belief updating? Can emotionally intense domain- and non-domain-specific experiences generate motivated beliefs? Do individuals engage in strategies to preserve motivated beliefs even when these strategies come at a financial cost and new information can improve decision-making? Can disconfirmatory feedback mitigate the effects of motivated beliefs?

A large body of literature has evaluated labeling policies and disclosure requirements. Studies that document how information provision can benefit consumers and improve product quality when both consumer experience and information provision are perfectly aligned are the exception (Jin and Leslie, 2003). Others report more nuanced results suggesting that the effectiveness of labels and claims is mixed at best (Bollinger et al., 2011; Kiesel and Villas-Boas, 2013b; Villas-Boas et al., 2020; Barahona et al., 2023). These nuanced findings account for differences in consumer information processing (Kiesel and Villas-Boas, 2013b), heterogeneity in experiences and complex objectives Bollinger et al. (2011), the confoundedness of labels and strategic firm response (Villas-Boas et al., 2020), or consumer responses to multiple policy measures Barahona et al. (2023).

Food safety is a credence quality where there remains unresolved uncertainty in decision-making and ambiguity in the evaluation of outcomes even after consumption. Food safety labels can reduce information asymmetries for consumers but how information is provided and processed determines the extent to which these asymmetries are reduced. Complex regulatory environments and heterogeneity in consumers' prior experiences make it challenging to design natural or quasi-natural market experiences capable of identifying labeling effects separately from price effects or experience effects that alter consumers' information processing and belief updating. Our carefully designed lab-in-the-field retail experiment addresses the complexities and limitations of the existing literature.

Personal lifetime experiences can profoundly influence beliefs, information processing, and

decision-making. Emotionally intense experiences, in particular, can fundamentally restructure or strengthen existing connections in the brain, making them more likely to be tagged and stored in memory (Frey and Morris, 1997). These powerful experiences become firmly rooted memories that persist as available knowledge and may be more readily recalled compared to abstract information. Individuals overweight these experiences when forming beliefs and information provision alone may be insufficient in correcting them (Malmendier, 2021b).

A nascent literature has begun to document the role personal experiences play in the formation and sustained persistence of beliefs over time (Malmendier and Nagel, 2011, 2016; Malmendier and Steiny, 2017; Laudenbach et al., 2019; Botsch and Malmendier, 2023).<sup>2</sup> Malmendier (2021a) identifies four “key features” from this empirical literature exhibited by beliefs stemming from personal experiences. We focus on and empirically test key features 1 (long-lasting beliefs) and 3 (domain specificity) in our study.<sup>3,4</sup> The first feature demonstrates that the effect of experiences on beliefs is long-lasting, shaping beliefs and decisions for years or even decades (Malmendier and Nagel, 2011; Malmendier and Shen, 2024). While the third feature suggests that the influence of past experiences is confined to the same domain. An experience does not affect beliefs in another domain even if the domains are correlated.<sup>5</sup>

Chemical weapons used during the Vietnam War may be a positively correlated domain with food safety as herbicides are a type of pesticide and Vietnamese citizens are notably concerned with pesticide residues on vegetables. The historical relationship between Vietnamese citizens and chemical weapons is a compelling case to examine long-lasting and cross-domain experience effects and their impact on belief formation, information processing, and decision-making. We posit that the initial exposure to chemical defoliants is an intense experience that becomes an emotionally tagged memory. In turn, those with these emotionally charged memories form long-lasting beliefs extending to non-domain-specific food safety beliefs. This is an important implication as experience effects are thought to be domain-specific. When individuals form beliefs about vegetable food safety, the type of stimuli related to chemical defoliants may not become operative. No evidence currently exists to show that cross-domain experience effects are at play in economics.<sup>6</sup> We benchmark this against illnesses stemming from consuming contaminated vegetables, a domain-specific experience, that may shape food safety beliefs.

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<sup>2</sup>Malmendier and Nagel (2011) find that those who experienced low returns in the stock market in their lifetime are less likely to participate in the stock market later on and invest less if they do participate. Malmendier and Nagel (2016) find that individuals who experienced high levels of inflation in their lifetime overweight the probability of inflation occurring in the future. Evidence also suggests that the high inflation experiences have long-lasting effects on homeownership decisions and mortgage choices (Malmendier and Steiny, 2017; Botsch and Malmendier, 2023). Laudenbach et al. (2019) find the experience of living under a communist system has a long-term effect on their beliefs about communism and positive or negative emotional tagging is strongly related to pro or anti-communist sentiments.

<sup>3</sup>The other key features are recency bias and robustness to expert knowledge.

<sup>4</sup>For a comprehensive review of all four features, see Malmendier and Wachter (2021).

<sup>5</sup>Note that there is some debate in theoretical neuroscience as to the categorization of domains and modern brain data suggest that domains may need to be defined in a more abstract manner than the traditional content domains of Weber et al. (1993, 2002) (Spunt and Adolphs, 2017).

<sup>6</sup>Malmendier and Nagel (2011) show that experiences with the stock market affect stock-market decisions and bond-market experiences likewise affect bond-market decisions. However, they do not find evidence of stock-market experiences affecting bond-market decisions or vice versa.

Not only can intense personal experiences shape beliefs but they may also give rise to *motivated beliefs*, or beliefs that individuals hold even if they are implausible or verifiably incorrect (Bénabou, 2015). Individuals may have a demand for distorted beliefs in our context for two main reasons. First, these beliefs may guard individuals from anticipated events that provoke emotions such as fear or anxiety. Second, they may provide an instrumental value, allowing individuals to avoid similarly harmful experiences. Taken together, both the affective impact and instrumental value provided by motivated beliefs may serve as an evolutionary trait as a means of self-preservation.

Individuals can attempt to manage these beliefs, even when faced with disconfirmatory information, through motivated reasoning. First documented by Kunda (1990), motivated reasoning is a set of strategies or mental processes individuals engage in to preserve their beliefs, subject to reasonable constraints. Individuals with intense personal experiences may display motivated beliefs about vegetable food safety and engage in forms of motivated reasoning to preserve them. We test for three particular strategies 1) strategic ignorance, i.e., avoiding information tied to these negative experiences (Carrillo and Mariotti, 2000; Bénabou, 2015), 2) attriting from the experiment to avoid future information, and 3) endogenous memory formation, a cognitive strategy whereby an individual can, within limits, affect the probability of remembering a piece of information (Bénabou and Tirole, 2002; Compte and Postlewaite, 2004).<sup>7</sup>

Empirical studies have recently begun to document motivated beliefs and reasoning in self-image-related domains including intelligence (Chew et al., 2020; Zimmermann, 2020), attractiveness (Eil and Rao, 2011), politics (Thaler, 2019), and earnings (Mayraz, 2011).<sup>8</sup> These studies, with the exception of Thaler (2019), assess motivated beliefs solely in the context of self-image. Beyond ego-threatening conditions, motivated beliefs are likely to exist in environments where self-preservation is needed. Intense personal experiences may modify beliefs and information processing as a method of self-preservation, allowing individuals to avoid potentially negative experiences or disengage with emotionally costly information where the psychological costs can outweigh the expected benefits of engagement.

This paper makes three main contributions. First, we design and conduct a novel lab-in-the-field experiment that 1) evaluates the effectiveness of the VietGAP label at increasing (safer) vegetable consumption and updating food safety beliefs relative to no information provision and a private party “Safe Food” claim, 2) assesses reference-dependent belief adjustment, and 3) captures past personal experiences within and outside the food safety domain and their role in generating and maintaining motivated beliefs. Second, we contribute to the literatures on experience effects and motivated beliefs and reasoning by documenting 1) whether past experiences generate motivated beliefs and 2) how these beliefs lead individuals to engage in cognitive strategies to avoid or misremember information connected to

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<sup>7</sup>Strategic ignorance is often referred to as willful blindness, the two terms are synonymous.

<sup>8</sup>Eil and Rao (2011) show that individuals are more likely to adjust their beliefs when receiving positive information about their self-image than negative information. Chew et al. (2020) find that some individuals distort memories regarding intelligence to the point where negative memories falsely become positive upon recall. Zimmermann (2020) shows that individuals update self-image-relevant beliefs following a signal in the short term but display endogenous memory formation in the long term when receiving a negative signal.

these negative past experiences. Less work has been focused on motivated beliefs unrelated to self-image. However, individuals may be just as likely to protect beliefs generated by personal experiences if they are sufficiently intense and enable individuals' self-preservation. Third, we identify how impartial disconfirmatory feedback leads to information engagement and constrains subjects' abilities to reason in a motivated way.

We find that subjects exposed to chemical defoliants during the Vietnam War viewed the food safety quality of vegetables before the introduction of food safety labels to be 0.29 standard deviations (SDs) lower than those unexposed. This suggests that these subjects hold motivated beliefs within the food safety domain. However, we do not find subjects who had been ill from the consumption of contaminated vegetables to have food safety beliefs that significantly differ from those who have never been ill. This suggests that intense personal experiences can shape long-lasting beliefs across positively correlated domains. While these subjects' stated preferences show that food safety labels are more important to them on average their revealed preference suggests otherwise. We find that those exposed to chemical defoliants have a willingness to pay (WTP) for food safety labeling information that is 0.34 SDs lower than those unexposed and are 14% more likely to have a nonpositive WTP for labeling information. This result suggests that it is cognitively costly to engage with information tied to these negative experiences and participants are more likely to avoid this type of information even if it can lead to improved purchasing choices. This is our first indication that these participants consciously or unconsciously engage in motivated reasoning to protect their beliefs.

Evaluating purchasing decisions and the effectiveness of food safety labels, we find that the establishment of an initial (arbitrary) preference strongly influences final purchase decisions even after introducing food safety labels that allow participants to differentiate the vegetable options across the food safety quality dimension. Overall, we find that the introduction of a food safety quality signal leads to only a 3% increase in total vegetable purchases. The VietGAP label induces a 0.6% increase in vegetable purchases relative to the Safe Food claim. Assessing how individuals update their WTP and food safety beliefs (FSBs) in the short- and long-term, we find that those exposed to chemical defoliants positively update their FSBs in the short-term and these beliefs do not fully revert in the long-term, similar to the model of experience-based learning introduced in [Malmendier and Nagel \(2011, 2016\)](#).

Furthermore, those receiving exogenous, disconfirmatory feedback regarding their initial vegetable preference positively update their WTP and FSBs during the experiment and at follow-up, suggesting that disconfirmatory experiences can lead to greater information retention over time. Comparing the updating processes across the two labels, we find that while there is no meaningful difference between the VietGAP label and Safe Food claim during the experiment, the change in WTP and FSBs is lower at follow-up for the VietGAP label. This is in spite of the fact that label definitions are shown to all participants at the end of the experiment, revealing that the VietGAP label more comprehensively addresses food safety coverage relative to the Safe Food claim.

We document two additional strategies used to avoid or misremember information tied to negative past experiences. First, participants exposed to chemical defoliants assigned to the Safe Food claim, the treatment that makes memories of these experiences more saliently, are

more likely to attrite from the experiment. Second, we find that subjects exposed to chemical defoliants inaccurately recall aspects of the experiment tied to these past experiences but not to unrelated features of the experiment. Those exposed to chemical defoliants who received confirmatory feedback are 19% less likely to correctly recall the label revealed in the experiment and are 31% and 23% more likely to state that they do not recall the revealed label or their purchase choice respectively even when this option is strictly payoff dominated. When asked to recall a donation made to a charity during the experiment, we find no differences between exposed and unexposed subjects. This suggests that these subjects suppress memories connected to this experience even at a financial cost. However, we also find that impartial disconfirmatory feedback can mitigate or reverse these results, leading to more accurate recall. This suggests that impartial feedback that disconfirms prior beliefs leads to greater engagement with information and places greater constraints on the extent to which individuals can engage in motivated reasoning. Future labeling policies need to account for these nuances and prioritize the accessible provision of this type of information.

The remainder of the paper is structured as follows: Section 2 provides context on food safety issues in Vietnam and the historical background. Section 3 describes the experimental setup, timeline, and procedure. Section 4 provides summary statistics for the experimental subjects and tests the treatment randomization. Section 5 presents the results and Section 6 discusses the findings and implications.

## 2 Setting

Consumers may rightfully be concerned with vegetable food safety in Vietnam. Pesticide use per hectare is higher in vegetable production than in all other agricultural sectors in the country (Anh, 2002). Pesticides with high toxicity levels are commonly used in developing countries such as Vietnam, and growers are prone to overapply. Strict food safety requirements from vegetable importers lead to the exclusion of small-scale farmers who typically sell in local markets. Thus, vegetables with high pesticide residue levels make their way to retail markets as growers routinely use banned pesticides, overuse pesticides, and apply too close to the harvest period (Dinham, 2003). Between 2011 and 2016 over 4 million illnesses were reported stemming from foodborne diseases in Vietnam (The World Health Organization, 2023). Nguyen et al. (2022) found pesticide residue in 81% of vegetable samples post-harvest, 23% of which exceeded the maximum residue threshold.

These toxicological findings positively translate to consumer sentiment on food safety issues. De Filippo et al. (2021) surveyed consumers in the capital city of Hanoi and found food safety concerns to be the primary factor for respondents not consuming more fruits and vegetables, roughly double the second leading response (time constraint) and three times higher than issues of affordability. Similarly, Ha et al. (2020) conducted a consumer survey in urban and rural districts of Hanoi and found that one-third of consumers reported reduced vegetable consumption due to food safety concerns. Those who reduced consumption reported a decrease of about 8.5% on average. Consumers may even be skeptical of the quality of vegetables at established retail stores or when labels are available. Figuié (2003) found that 10% of consumers believed they faced health risks when purchasing goods from

supermarkets and 9% believed they still faced health risks when buying goods with a quality seal.

Individuals' food safety perceptions and concerns about pesticide use in particular might be exacerbated by exposure to weapons of chemical warfare during the Vietnam War. Between 1961 and 1971 the U.S. military engaged in a herbicidal warfare program known as Operation Ranch Hand ([Stellman et al., 2003](#)). This program aimed to disperse herbicides over the dense forests of Vietnam to expose enemy troops. Unofficially, it was also used to destroy local food supplies for the Viet Kong ([Westin, 1971](#)). These herbicides, collectively known as the Rainbow Herbicides due to the different colored strips on the barrels (the most famous among them being Agent Orange), contained dioxins and dioxin-like compounds which are classified as persistent organic pollutants according to the [United Nations Environment Program](#). Although not directly linked to food safety (i.e., non-domain-specific), these experiences are of particular interest to this study. Compared to some foodborne illnesses that can be relatively minor and short-lived, exposure often resulted in severe and long-term health ramifications which may play a role in the belief formation process for food safety.

Approximately 4.8 million people were affected by the herbicides employed in this campaign ([Stellman et al., 2003](#)). The long-term effects of exposure are still not well understood. However, exposure to these chemical defoliants has been linked to birth defects in children such as cleft lip and spina bifida ([Stellman and Stellman, 1986](#)), and a myriad of acute and chronic health outcomes including cardiovascular disease mortality ([Humblet et al., 2008](#)) and several forms of cancer ([Bertazzi et al., 2001](#)). [Le et al. \(2022\)](#) found that those living in an area with a one standard deviation increase in exposure to Agent Orange were 19.75% more likely to have medical ailments commonly associated with Agent Orange thirty years later. These experiences can therefore be viewed as more emotionally intense than foodborne illnesses. They may heighten awareness of food safety and can motivate (dis)engagement with food safety information.

### 3 Experimental Design

A main contribution of this study is the design and implementation of a lab-in-the-field retail experiment and the collection of comprehensive primary data on purchase decisions, food safety beliefs, and life experiences. Here we define the experiment treatments and setup, describe the timeline, and explain the experimental procedures.

#### 3.1 Experimental Treatments

We outline our treatment assignments and outcomes of interest in Table 1. The first treatment assignments occurred before the experiment. Individuals were either treated or untreated with two personal experiences that may impact belief formation and engagement with food safety information, namely exposure to chemical defoliants and illness from vegetable consumption. Exposure to chemical defoliants is as good as exogenously assigned and illness from vegetable consumption may be randomly assigned but we recognize that

endogenous selection in purchasing outlets may alter the probability structure of consuming a contaminated vegetable and this selection effect may be correlated with traits such as wealth, risk preferences, etc. This allows us to test whether these experiences generate long-lasting beliefs and domain specificity (i.e., Malmendier (2021a)'s key features 1 and 3). Across these experiences, we begin by investigating whether subjects hold motivated beliefs for food safety information and engage in strategic ignorance to avoid this information.

The second treatment condition is randomly assigned through participants' initial stated preference for two identical vegetables presented in the experiment. Subjects received positive (confirmatory) feedback if their preferred vegetable was revealed to be associated with a food safety label/claim or received negative (disconfirmatory) feedback if their preference was for the vegetable unassociated with the label/claim. Positive feedback can reinforce subjects' existing beliefs, confirming that there is no new information to be learned while negative feedback may motivate learning and engagement with the provided information.

The third treatment condition randomly assigned participants to one of two quality signals with or without an accompanying definition. Thus, there are four information provision treatments 1) Safe Food claim only, 2) VietGAP label only, 3) Safe Food claim and definition, and 4) VietGAP label and definition. This allows us to test the effectiveness of the VietGAP label at increasing purchases and updating consumers' beliefs in the short- and long-term benchmarked against a private-party claim and the conventional no label alternative. It also allows us to test its effectiveness when disclosing the food safety coverage of each label and claim to the experimental subjects. Across all treatment groups, we measure final purchasing decisions, short- and long-term food safety belief updating, and two strategies that may be employed to avoid or misremember food safety information, i.e., attrition and endogenous memory formation.

Given that the life experiences are not necessarily readily observable and we did not want to prime participants before the study by asking them about these experiences, it was assumed that subjects with these experiences would be equally distributed across the two feedback and four information provision treatments. Tables B3 and 2 respectively confirm this random assignment.

### 3.2 Experimental Setup, Timeline, and Procedure

Our experiment was conducted in two stages in December 2022 and February 2023 across 22 wards in and around Hue City, Thua Thien Hue, Vietnam. Hue is located in the North Central region of Vietnam about 100 kilometers south of the 17th parallel, the demarcation line that separated North Vietnam from South Vietnam. Important to the context of this study, Thua Thien Hue was the 3rd most heavily sprayed province in the country with 920,497 gallons of chemical defoliants sprayed over 1,244 square kilometers (approximately 25% of the province) ([The Aspen Institute, 2018](#)).

The experiment was randomized at the ward, residential, household, and subject levels. Twenty-two wards were randomly selected from twenty-eight total wards.<sup>9</sup> Each ward is

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<sup>9</sup>See Appendix Figure A1 for a map of Hue and the twenty-two randomly drawn wards.

TABLE 1: Experiment Treatment Groups and Outcomes of Interest

Heterogeneous Treatment Groups									
Area of Interest	Treatment Assignment Before Experiment			Treatment Assignment During Experiment					
	Life Experiences		Domain-Specific	Initial Preference		Experimental Feedback		Information Provision	
	C: No Exposure CD	T: Exposure CD		C: No Illness	T: Illness	C: Labeled- + Feedback	T: Unlabeled- - Feedback	C: Safe Food	C: No Definition T: VietGAP
Motivated Beliefs	✓	✓							Initial FSBs
MR Strategy 1: Strategic Ignorance	✓	✓						✓	WTP for Information
Purchasing	✓	✓				✓		✓	Initial Purchase
Updated FSBs (Short Term)	✓					✓		✓	Post-Information Purchase
MR Strategy 2: Attrition	✓					✓		✓	△ FSBs
Updated FSBs (Long Term)	✓					✓		✓	Attrition
MR Strategy 3: Endogenous Memory Formation	✓					✓		✓	△ FSBs
								✓	Incentivized Recall

*Notes:* This table displays the heterogeneous treatment assignments used in the experiment and the outcome measures of interest that demonstrate motivated beliefs and reasoning and belief updating across these treatments. “Exposure CD” stands for exposure to chemical defoliants. C refers to a control group while T refers to the corresponding treatment group. MR stands for motivated reasoning and FSBs stand for food safety beliefs.

composed of five to twenty-two residential areas. Three residential areas were randomly selected from each ward and between 36 and 77 households were randomly selected within each ward across the three residential areas conditional on the population of the ward. As we are interested in the experiences and belief formation of those exposed to chemical defoliants, we worked with a local association for the victims of Agent Orange. The association provided a list of households with a member who was exposed to chemical defoliants. We attempted to oversample for this population. In total, 200 households with a member exposed to chemical defoliants were invited to participate out of 1,050 total invited households.

A total of 729 individuals initially participated in the experiment. Each session took around 30 to 60 minutes and each participant was paid up to 70,000 Vietnamese Dong (VND), about \$2.85 USD for their time (approximately 3.25 times the minimum hourly wage rate in Hue). Participants could use this endowment during the experiment and the remainder was paid out to participants at the end.<sup>10</sup> Experiments were conducted at the central buildings in each ward (akin to a town hall) and participants were instructed to arrive at the site at a specified time.

Figure 1 illustrates the timeline of the experiment. Individuals are randomly assigned into pre-experiment life experience treatments at  $t = 0$ . The experiment spans periods one and two, pre- and post-label reveal, where subjects participate in the experiment and complete questionnaires. Post-experiment,  $t = 3$ , a follow-up survey was administered to capture recall and belief updating.

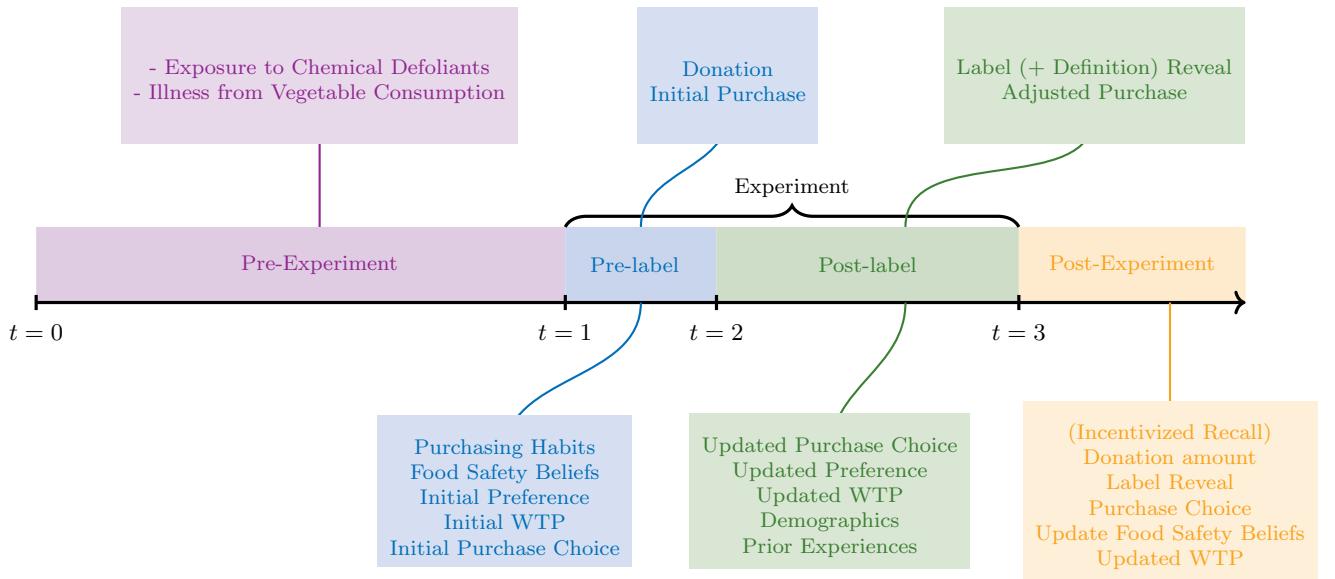


FIGURE 1: Experiment Timeline

The experiment was organized into three main sections 1) pre-experiment questionnaire, 2) experiment, and 3) post-experiment questionnaire. The pre-experiment questionnaire captured information on purchasing habits, food safety concerns, familiarity with food safety

<sup>10</sup>Participants were allowed to leave at any time and could still receive the payment without completing the experiment. Only one participant left before completion.

labels, trust in food safety information sources, and asked respondents to match food safety attributes to each label option (see Figure 3 Panel A).

The experiment starts with a dictator game. Subjects could use their endowment and decide if they wanted to donate part of this endowment to a charity. Subjects could make a donation between 0 to 15,000 VND in 1,000 VND increments. Participants were then asked to imagine they were at a supermarket with the opportunity to purchase one of the two bunches of bok choy that had been set in front of them. Panel A of Figure 2 displays a representative example displayed to participants during the experiment. The bunches of bok choy were as close to identical in size, shape, and color as possible and each bunch weighed approximately 200 grams. Subjects were asked which vegetable they prefer, if any, and their food safety perception and WTP for each, capturing initial preferences and beliefs before the information treatment. Importantly, this first stage is part of our treatment assignment where it randomly assigns participants to receive positive or negative feedback for initially preferring a vegetable that will later be labeled or unlabeled. Subjects then had the opportunity to purchase their preferred bundle of bok choy for 6,000 VND (the market rate) or to not purchase at all.



Panel A: Vegetable Options without Labels

Panel B: Vegetable Options with Label Revealed

FIGURE 2: Bok Choy Presented to Participants Before and After Revealing Food Safety Label

*Notes:* Panel A shows two bundles of bok choy presented to subjects with labels covered. Panel B shows that one bundle (right) is associated with a VietGAP-certified food safety label.

Participants were told that when they returned to the supermarket, they learned that one of the vegetable options received a food safety label or claim (and the supermarket posted definitions depending on treatment). Subjects were then asked how much they would be willing to pay to reveal (or avoid revealing) this information. A label or claim was then revealed to be associated with one of the bunches of bok choy according to the subjects' as-

signed treatment groups as in Figure 2 Panel B.<sup>11</sup> If the subject was in the label/claim and definition treatment groups they were also shown the label definitions as in Figure 3 Panel B. The now-labeled vegetable might coincide with or contradict the subjects' initial preference, and this newly introduced quality signal can provide simple and impartial (dis)confirmatory feedback, which may alter participants' information processing and food safety beliefs. Participants were given time to examine the label/claim (and accompanying definitions) and then had the option to adjust their initial purchase decision given the same price. Preference, food safety beliefs, and WTP were again elicited for each vegetable post-quality signal reveal capturing these adjustments immediately after these signals were received.

You may encounter no label or any of the following three labels when purchasing vegetables in a new retail market. Please examine these labels and indicate whether you believe the label communicates the following: Enumerator: If a participant does not believe that a statement corresponds with a label place an **X** in that cell. If a participant believes that a statement corresponds with the label place a **✓** (check) in that cell. If a participant states that he/she does not know, place a **O** (circle) in that cell.

Label Attributes	(No Label)	✓ ATTP (Safe food)	VietGAP	FAIRTRADE
A39. Growers are prohibited to use pesticides and chemical fertilizers.				
A40. Growers only use fertilizers and pesticides approved by government and comply with application regulations.				
A41. Soil and water samples are analyzed at an accredited facility for maximum allowable levels of pesticide residues, heavy metals, and microorganisms.				
A42. Integrated pest management (IPM) techniques are used to minimize use of pesticides.				
A43. Products are certified and kept separate from other products during harvesting and processing.				
A44. Vegetables are properly packaged to reduce contamination when transporting from production site.				
A45. Workers receive proper safety training and wear protective clothing.				
A46. Traceability required and records of production process kept.				
A47. Fair vegetable prices guaranteed for growers.				

**Definitions:**

Heavy metals: Dense metals that may have higher levels of toxicity (e.g., iron, lead, mercury).

Integrated Pest Management: Combines multiple pest management techniques together to lower pest pressure and decrease the use of pesticides in farm production.

Drip irrigation: Type of irrigation system using tubes that drip water onto soil that save water and nutrients.

Micro sprinklers: Type of irrigation system using sprinklers at low pressure that can increase yields and decrease water use.

Traceability: Ability to track product from raw good to finished product.

Label Attributes	(No Label)	✓ ATTP Safe food	VietGAP	FAIRTRADE
Growers are prohibited to use pesticides and chemical fertilizers.	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Growers only use fertilizers and pesticides approved by government and comply with application regulations.	<b>X</b>	<b>✓</b>	<b>✓</b>	<b>X</b>
Soil and water samples are analyzed at an accredited facility for maximum allowable levels of pesticide residues, heavy metals, and microorganisms.	<b>X</b>	<b>X</b>	<b>✓</b>	<b>X</b>
Integrated pest management (IPM) techniques are used to minimize use of pesticides.	<b>X</b>	<b>X</b>	<b>✓</b>	<b>X</b>
Products are certified and kept separate from other products during harvesting and processing.	<b>X</b>	<b>X</b>	<b>✓</b>	<b>X</b>
Vegetables are properly packaged to reduce contamination when transporting from production site.	<b>X</b>	<b>X</b>	<b>✓</b>	<b>X</b>
Workers receive proper safety training and wear protective clothing.	<b>X</b>	<b>✓</b>	<b>✓</b>	<b>X</b>
Traceability required and records of production process kept.	<b>X</b>	<b>✓</b>	<b>✓</b>	<b>X</b>
Fair vegetable prices guaranteed for growers.	<b>X</b>	<b>X</b>	<b>X</b>	<b>✓</b>

Panel A: Food Safety Matrix Completed by Participants

Panel B: Food Safety Matrix Displayed to Participants

FIGURE 3: Food Safety Definition Matrices

*Notes:* Panel A displays the food safety definition matrices left blank for participants to fill out. Panel B displays the actual food safety definitions for each label/claim. This was shown to participants in the label/claim with definition treatments and was shown to all subjects at the completion of the experiment.

Subjects then completed a post-experiment questionnaire. Participants reported information on prior illnesses stemming from vegetable consumption including the frequency, duration, and intensity of illness, and socio-demographic information. Subjects also reported whether they had been personally affected by chemical defoliants used during Vietnam's

<sup>11</sup>However, if a subject had a strictly positive WTP to avoid the labeling information, no label was shown.

American War.<sup>12</sup> Importantly, all participants, regardless of their information treatment assignment, were shown the definitions of the conventional (no label), Safe Food, VietGAP, and FairTrade labels and asked to state the likelihood of becoming ill from a vegetable associated with each label. There is an unambiguous ranking of these labels across the food safety domain (Figure 3 Panel B). We use this to check whether subjects read and understood the labeling information and ensure that all participants have the same information during the follow-up period.

A key challenge was to minimize attrition in the follow-up period. To encourage participation at follow-up, participants were told at the beginning of the experiment that a phone survey would be conducted about one month later and they had the opportunity to earn up to an additional 30,000 VND ( $\sim \$1.25$  USD) and the survey would take no more than 15 minutes to complete. Participants were again reminded about the follow-up survey and additional payout after the experiment. To ensure completion of the follow-up survey, participants were called up to 3 times. After 3 phone calls, 439 participants completed the follow-up survey. To increase the response rate, participants were contacted a fourth and fifth time and an additional 62 participants completed the survey. A third in-person approach was used to contact the remaining participants. The heads of residential wards contacted participants and asked for them to meet in person to complete the survey. 89 participants completed the follow-up through this third approach for a total of 590 participants. Therefore, the attrition rate was 19%.<sup>13</sup>

Participants were paid 20,000 VND in phone credit for completing the follow-up survey. The survey asked participants to recall aspects of the experiment including the amount given to the charity during the dictator game, revealed vegetable label, purchase decision (e.g., purchase a VietGAP labeled vegetable, no purchase, etc.), and FSBs and WTP after label reveal. Participants were also asked about their current FSBs and WTP for the Safe Food, VietGAP, and FairTrade labeled vegetables and the unlabeled vegetable, capturing long-term adjustments.

Participants were incentivized for recall accuracy. Subjects were told that one question would be randomly selected at the end of the experiment. They were asked to choose a number between 1 and 6 which corresponded with a particular recall question. If the recall response for that question matched what happened during the experiment, the participant would receive an additional 10,000 VND. For each question, participants were given the

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<sup>12</sup>It must be noted that 3.5 days into the experiment (after administering the experiment to subjects across four wards), the provincial government asked for all questions about Vietnam's American War to be removed from the questionnaire (despite prior approval of the questionnaire). These questions were reworded to gain approval for use from the provincial governmental departments without altering their meaning and were included in the follow-up survey. However, information for these questions is missing for those who were not asked them in the experiment and later attrited.

<sup>13</sup>The higher level of attrition is likely due to conducting the follow-up survey via phone calls. In this context, it is common for individuals to ignore calls from unfamiliar phone numbers, leading to lower response rates. Table B5 compares participants by attrition status across observable characteristics, life experiences, information provision treatment, and experimental feedback. Subjects with lower educational attainment were more likely to attrite during the follow-up period. We find no other statistically significant differences across attrition status.

option of stating “I do not recall”. Note that, in terms of monetary payout, this answer is strictly dominated by guessing if a participant truly does not recall.

## 4 Experimental Subjects

The total number of experimental subjects who participated in the experiment was 729 with 590 subjects completing the follow-up survey. Inspection of the data shows some subjects displayed inconsistent preferences and WTP, indicating a lack of understanding of the experimental procedure. We remove these subjects from the dataset. Our final number of participants is 687 in the experimental round and 557 in the follow-up survey.

Table 2 compares the socio-demographics and life experiences of our experimental subjects across each labeling treatment. Subjects in each treatment group are similar in terms of gender, age, agricultural employment, years of education, and disability status, role as the primary shopper for the household, and level of worry. The subjects also do not significantly differ in exposure to chemical defoliants or illness from vegetable consumption. This suggests that our experiment is well balanced and the randomization process was successful. Appendix Tables B1 and B2 confirm these balance tests under assignment to the quality signal treatments (Safe Food versus VietGAP) and definition treatments (no definition versus definition). The final sample consists of subjects who are 30% male, are 59 years of age on average, have an average of 9 years of schooling, and 10% are employed in agriculture. About 9% of the subjects were exposed to chemical defoliants and the average illness index score is 1.64.<sup>14</sup> Given the successful randomized design and nonsignificant differences across treatment groups, it is reasonable to attribute differences in FSBs, WTP, and purchasing decisions to the impact of the experimental treatments.

Table 3 compares subjects across life experiences. Those exposed to chemical defoliants are significantly older than those who only experienced an illness or with no relevant experience. This is not surprising given that the majority of exposure likely occurred during the Vietnam War which officially ended in 1975. Subjects exposed to chemical defoliants are more likely to have a disability than subjects who only became ill or subjects with neither experience. Subjects who have suffered from foodborne illnesses are also younger and less likely to be employed in agriculture on average than participants without either life experience. Given that there is some imbalance across observable demographic variables, it will be necessary to control for these differences in our analysis.<sup>15</sup>

Note that the total number of subjects across columns 2-5 is not equal to the total number of participants in the study. This discrepancy arises from the temporary removal of the questions related to the Vietnam War. Due to this removal and subsequent attrition

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<sup>14</sup>The illness index is constructed by multiplying three distinct measures of illness stemming from the consumption of contaminated vegetables together namely: 1) ever ill from consumption (a binary variable), 2) subjective intensity of illness (measured on a Likert scale from zero to ten), and 3) frequency of illness (a count variable). Results are robust to multiple measures of illness.

<sup>15</sup>Additionally, entropy balance weighting offers a way to achieve greater alignment across observable variables, ensuring that our results are robust. We are re-estimating our results using this method to enhance the balance in our analysis.

TABLE 2: Summary Statistics: Information Provision Treatment Groups

Variables	(1) Total Mean/(SE)		(2) SF Mean/(SE)		(3) VG Mean/(SE)		(4) SF + Def Mean/(SE)		(5) VG + Def Mean/(SE)		(2) – (3) Pairwise t-test Mean Difference		(2) – (4) Pairwise t-test Mean Difference		(3) – (5) Pairwise t-test Mean Difference		(4) – (5) Pairwise t-test Mean Difference	
<b>Individual Characteristics</b>																		
Gender (Male = 1)	0.31 (0.46)	0.33 (0.47)	0.30 (0.46)	0.27 (0.45)	0.35 (0.48)	0.03	0.05	-0.05	-0.08									
Age	59.22 (12.20)	60.17 (11.87)	58.83 (11.27)	58.00 (12.47)	59.99 (13.15)	1.33	2.17	-1.16	-1.99									
Employed in Agriculture	0.10 (0.31)	0.12 (0.32)	0.11 (0.32)	0.09 (0.29)	0.10 (0.30)	0.01	0.03	0.01	-0.01									
Years of Education	8.69 (4.31)	8.67 (3.59)	8.22 (4.58)	8.98 (4.58)	8.90 (4.38)	0.46	-0.30	-0.68	0.08									
Household Income <sup>a</sup>	1.18 (0.43)	1.17 (0.39)	1.15 (0.37)	1.20 (0.49)	1.20 (0.46)	0.02	-0.03	-0.05	0.00									
Disability	0.06 (0.24)	0.07 (0.25)	0.06 (0.23)	0.06 (0.24)	0.06 (0.24)	0.01	0.00	-0.01	0.00									
Primary Shopper for HH	0.67 (0.47)	0.65 (0.48)	0.69 (0.46)	0.71 (0.46)	0.64 (0.48)	-0.04	-0.06	0.04	0.06									
Person Who Worries <sup>b</sup>	3.87 (0.98)	3.86 (1.01)	3.82 (1.01)	3.83 (0.99)	3.96 (0.90)	0.04	0.02	-0.15	-0.13									
<b>Life Experiences</b>																		
Exposure to Chemical Defoliants	0.09 (0.29)	0.11 (0.31)	0.07 (0.26)	0.10 (0.30)	0.09 (0.28)	0.03	0.01	-0.01	0.01									
Illness Index	1.64 (5.38)	1.88 (6.32)	1.39 (4.11)	1.82 (6.25)	1.50 (4.49)	0.49	0.06	-0.11	-0.32									
Observations	687	169	180	175	163	349	344	343	338									

Notes: Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . <sup>a</sup> household income captured on equally spaced 5-point range between 0 and 80 million VND. <sup>b</sup> measured on 5-point Likert scale where 1 means "Strongly Disagree" and 5 means "Strongly Agree".

between data collection periods, we lack information on exposure to chemical defoliants for 101 subjects. Therefore, we do not compare these subjects across life experiences even if they reported a prior illness as we cannot accurately confirm whether or not they had been exposed to any chemical defoliants.

## 5 Results

We present the results in the same order as presented in Table 1. Table 4 presents summary statistics to understand the importance of food safety and information sources for participants across these life experiences. We find that those exposed to chemical defoliants have lower initial evaluations for food safety ( $p < 0.01$ ) and have a stronger belief that food safety labels are important when purchasing vegetables ( $p < 0.05$ ) compared to those with a prior illness or those who did not have these experiences. Those exposed to chemical defoliants have greater trust in food safety information provided by retailers than those without either of these past experiences. Taken together, these summary statistics suggest that those exposed to chemical defoliants should be more responsive to the provided food safety labels and claims. We now turn to understanding whether those with these past life experiences of interest hold motivated beliefs in the food safety domain.

*RESULT 1: Subjects who had been exposed to chemical defoliants (non-domain-specific experience) have more (negatively) distorted food safety beliefs than those unexposed. In contrast, participants who become ill from contaminated vegetables (domain-specific experience) do not hold differing food safety beliefs than those without these experiences.*

To test whether these life experiences affect food safety beliefs we run a simple OLS regression of the initial average food safety beliefs for the presented vegetables before revealing the food safety labels on the life experiences.<sup>16</sup> Table 5 reports the regression results.<sup>17</sup> We find that those exposed to chemical defoliants, the out-of-domain experience, have food safety beliefs that are, on average, about one-third of a standard deviation lower than those unexposed. Whereas, we find no significant effect for the domain-specific experience of past illnesses. This effect holds when demographic controls are included. This finding demonstrates that emotionally intense experiences can generate long-lasting effects on beliefs in a domain not directly related to the experience at hand. Given these distorted food safety beliefs compared to the unexposed, an investigation is warranted to determine whether those exposed to chemical defoliants are more likely to engage in cognitive strategies to maintain these beliefs.

We next seek to understand the extent to which subjects with these prior life experiences value food safety labeling information. Additionally, we test whether those exposed to chemical defoliants, who hold these motivated beliefs, employ motivated reasoning. While

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<sup>16</sup>We also run an ordered logit model using the unstandardized measure of food safety beliefs. The results are robust and even strengthened under this alternative specification.

<sup>17</sup>See Appendix Figure A3 for a distribution of initial FSBs across those affected and unaffected by chemical defoliants.

TABLE 3: Summary Statistics: Personal Life Experiences

Variables	Mean/(SE)	(1) Total	(2) Exposure CD Mean/(SE)	(3) Illness Mean/(SE)	(4) None Mean/(SE)	(2)–(3) Pairwise t-test Mean Difference	(2)–(4) Pairwise t-test Mean Difference	(3)–(4) Pairwise t-test Mean Difference
Gender (Male = 1)	0.31 (0.46)	0.37 (0.49)	0.32 (0.47)	0.28 (0.45)	0.05	0.09	0.04	
Age	59.22 (12.20)	63.08 (12.94)	55.60 (12.71)	58.89 (11.80)	7.47***	4.19**	-3.29**	
Employed in Agriculture	0.10 (0.31)	0.10 (0.30)	0.05 (0.21)	0.11 (0.31)	0.05	-0.01	-0.06*	
Years of Education	8.69 (4.31)	9.69 (4.21)	9.41 (4.14)	8.63 (4.36)	0.28	1.06*	0.78	
Household Income <sup>a</sup>	1.18 (0.43)	1.27 (0.45)	1.19 (0.54)	1.17 (0.41)	0.08	0.10	0.02	
Disability	0.06 (0.24)	0.17 (0.38)	0.06 (0.23)	0.05 (0.21)	0.12**	0.13***	0.01	
Primary Shopper for HH	0.67 (0.47)	0.65 (0.48)	0.70 (0.46)	0.69 (0.46)	-0.05	-0.04	0.01	
Person Who Worries <sup>b</sup>	3.87 (0.98)	3.88 (0.94)	3.89 (0.93)	3.86 (1.00)	-0.00	0.03	0.03	
Observations	687	52	88	446	140	498	534	

Notes: Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . ‘‘Exposure CD’’ stands for exposure to chemical defoliants. <sup>a</sup> household income captured on equally spaced 5-point range between 0 and 80 million VND. <sup>b</sup> measured on 5-point Likert scale where 1 means ‘‘Strongly Disagree’’ and 5 means ‘‘Strongly Agree’’.

TABLE 4: Summary Statistics: Initial Food Safety Beliefs and Motivation to Engage with Food Safety Labels Across Life Experiences

Variables	(1) Exposure CD Mean/(SE)	(2) Illness Mean/(SE)	(3) None Mean/(SE)	(1)–(2) Pairwise t-test Mean Difference	(1)–(3) Pairwise t-test Mean Difference	(2)–(3) Pairwise t-test Mean Difference
<b>Initial Food Safety Beliefs (Pre-Label Reveal)</b>						
Initial Average Food Safety Belief	6.39 (1.67)	7.18 (1.49)	7.16 (1.55)	-0.79***	-0.77***	0.02
<b>Motivation to Engage with Food Safety Label<sup>a</sup></b>						
Food Safety Label Important when Purchasing Vegetables	4.02 (0.93)	3.65 (1.01)	3.69 (1.12)	0.37**	0.34**	-0.04
Concerned about Vegetable Food Safety	4.00 (0.79)	4.06 (0.85)	4.06 (0.93)	-0.06	-0.06	0.00
<b>Trust in Information Sources<sup>a</sup></b>						
Certifying Agency	3.78 (0.92)	3.70 (1.05)	3.57 (1.01)	0.08	0.21	0.13
Retailer	2.35 (0.99)	2.12 (0.96)	2.07 (0.88)	0.23	0.28**	0.05
Own Experience	3.87 (0.72)	3.77 (1.00)	3.88 (1.01)	0.10	-0.01	-0.11
Observations	46	77	464	123	510	541

Notes: "Exposure CD" stands for exposure to chemical defoliants. <sup>a</sup> measured on 5-point Likert scale where 1 means Strongly Disagree and 5 means Strongly Agree.  
Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

TABLE 5: OLS Regressions of Initial Belief of Vegetable Food Safety Quality

	(1)	(2)
Exposure to Chemical Defoliants	-0.333** (0.154)	-0.287* (0.159)
Illness Index	-0.003 (0.007)	-0.002 (0.007)
Demographic Controls		✓
R <sup>2</sup>	0.172	0.195
Observations	573	572

*Notes:* Initial belief of food safety is normalized with mean zero and standard deviation one. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Results include enumerator, team leader, and ward-level fixed effects. Robust standard errors in parentheses.  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

food safety labeling information could alleviate food safety concerns, subjects may engage in strategic ignorance if the information is linked to these negative past experiences, forgoing an opportunity to become more informed.

**RESULT 2:** *Subjects exposed to chemical defoliants have a lower WTP and are more likely to have nonpositive WTP for food safety information.*

Recall that participants could pay to reveal the food safety label (and definition) or pay to forgo this information. If participants are concerned with food safety quality they should be more willing to pay to know which vegetable is associated with a label. On the other hand, if this information is tied to painful memories of past experiences then the subjective processing costs of engaging with this information may exceed the benefits. Participants may forgo this information even at a financial cost despite the fact that it allows them to make a more informed choice. This would constitute strategic ignorance, where subjects reveal a negative ex-ante value for the labeling information.

In Table 6 we report the WTP for the labeling information. Columns 1-2 display the standardized WTP for labeling information while columns 3-4 report the results of a linear probability model where  $WTP \leq 0$  takes a value of one and zero otherwise.<sup>18</sup> In the first two columns, we find that those exposed to chemical defoliants have a WTP for the labeling information that is 0.344 SD lower than those unexposed on average. This revealed preference contradicts the stated preference for food safety labels presented in our above summary statistics. Again, we find no significant effect for the in-domain experience of prior illnesses. In columns 3-4, we find that individuals exposed to chemical defoliants are 14% more likely to have a nonpositive WTP for the information compared to those unexposed. While those

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<sup>18</sup>See Appendix Figure A4 for a distribution of WTP for labeling information across those affected and unaffected by chemical defoliants.

exposed to chemical defoliants believe the vegetables to be less safe, given the opportunity to become more well-informed about vegetable quality from a positive signal, they are more reticent to do so. Indeed, these participants are less likely to pay for this information and in some cases are even willing to pay to avoid this information. This finding suggests that some individuals with this intense personal experience engage in our first strategy of motivated reasoning, strategic ignorance, to avoid information tied to these experiences.

TABLE 6: Regressions of WTP for Labeling Information

	WTP		Nonpositive WTP	
	(1)	(2)	(3)	(4)
Exposure to Chemical Defoliants	-0.379*** (0.130)	-0.344** (0.136)	0.135** (0.061)	0.145** (0.064)
Illness Index	-0.002 (0.007)	-0.003 (0.008)	0.003 (0.004)	0.004 (0.004)
Safe Food Label	-0.066 (0.111)	-0.050 (0.113)	0.017 (0.050)	0.011 (0.051)
Safe Food Label + Def	-0.036 (0.109)	-0.043 (0.109)	-0.013 (0.050)	-0.011 (0.050)
VietGAP Label + Def	-0.134 (0.101)	-0.127 (0.101)	0.028 (0.053)	0.027 (0.053)
Demographic Controls			✓	✓
R <sup>2</sup>	0.252	0.265	0.263	0.271
Observations	573	572	573	572

*Notes:* WTP for labeling information is standardized with mean zero and standard deviation one (columns 1 and 2) or nonpositive with  $WTP \leq 0 = 1$  and 0 otherwise (columns 3 and 4). Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Results include enumerator, team leader, and ward-level fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

We now inspect initial preferences for the vegetables used in the experiment, determine the role this reference point plays in updating vegetable preferences, and evaluate the effectiveness of the VietGAP label compared to both the Safe Food claim and the conventional unlabeled option at increasing vegetable purchases.

**RESULT 3:** *The (arbitrary) establishment of an initial preference is the greatest determinant of purchase choice. The heterogeneity in information provision (e.g., accuracy versus accessibility) has a limited effect on adjusted purchase choice.*

Figure 4 displays participants' food safety preferences across the vegetable options and initial purchase decision before introducing the food safety labels. Panel A displays these

choices conditional on initially preferring the labeled option while Panel B conditions on preferring the unlabeled option. We find that the arbitrary establishment of an initial preference serves as a strong reference point where gains and losses are evaluated from, so much so that even when food safety considerations are taken into account there is no switching from this initial preference to the alternative vegetable option when purchasing.

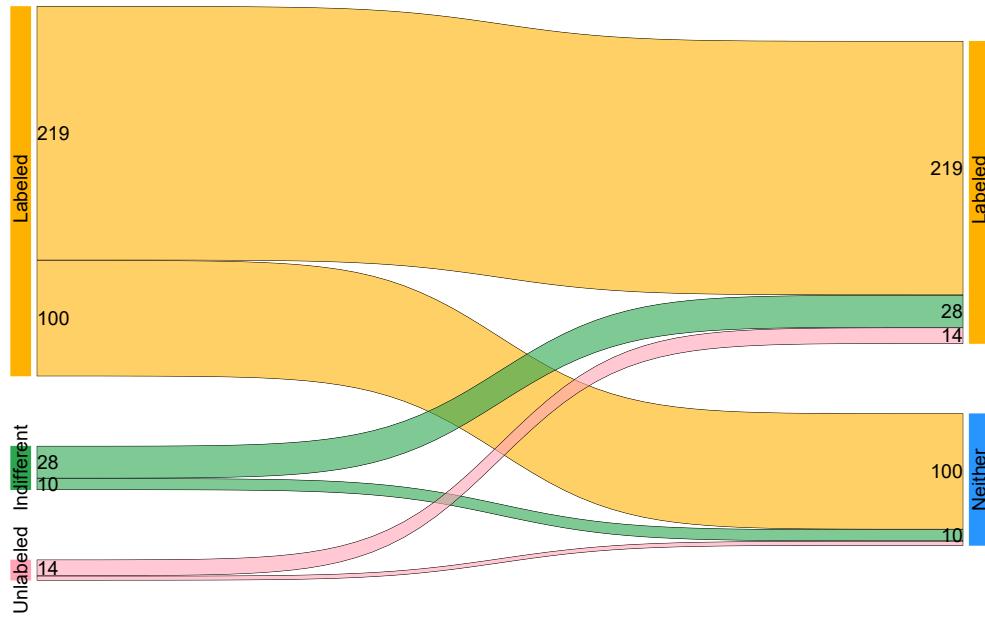
Figure 5 displays the change from initial purchase to final purchase after revealing the labeling information. In general, we find the introduction of a food safety label leads to an overall increase in vegetable purchases of 3%, with the VietGAP label only increasing vegetable purchases by 0.6% relative to the Safe Food claim (see Figure A2).

We now examine how individuals update their food safety beliefs and willingness to pay for the labeled vegetable products and their beliefs of the labels/claims independent of these products across our treatment groups in the short- and long-term.

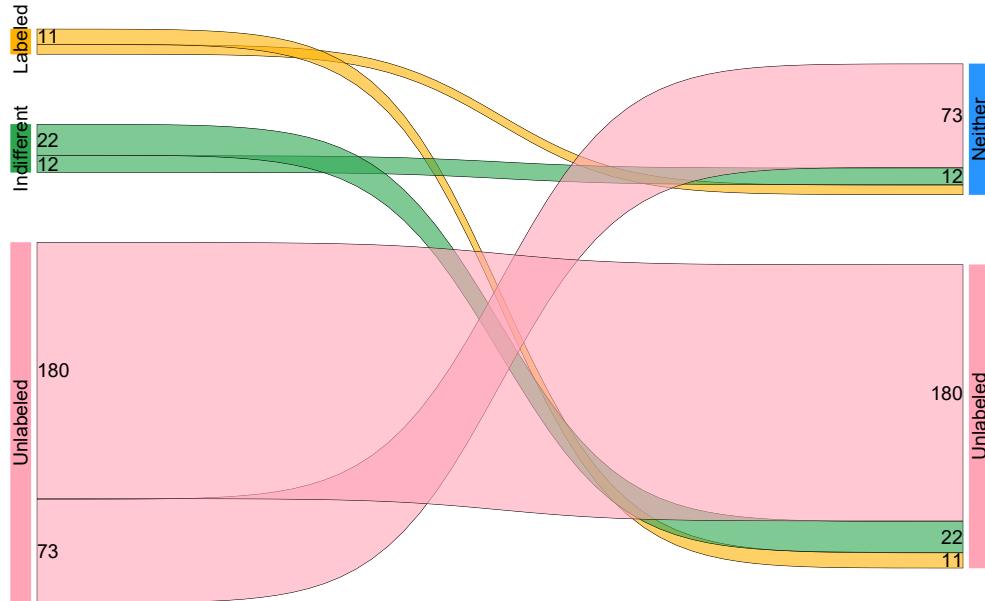
**RESULT 4:** *Subjects assigned to the VietGAP treatments have lower food safety beliefs for vegetables under this label at follow-up than those assigned to the Safe Food treatments. Participants previously exposed to chemical defoliants positively update food safety beliefs for the labeled products initially but these beliefs regress over time. Whereas, those who received negative feedback positively update these beliefs which are retained at follow-up. When comparing the beliefs for the labels and claims in general, subjects align their beliefs with the provided information in the short term but revert to their initial beliefs in the long term.*

Table 7 displays the change in WTP (columns 1-3) and FSBs (columns 4-6) across each time period in the experiment. We find that those who were exposed to chemical defoliants significantly increase their FSBs by 0.87 points on average (on an 11-point scale) for the labeled vegetable after the food safety label is revealed compared to those unexposed. This is likely reflected in the low initial beliefs in food safety quality among those exposed to chemical defoliants. Columns 5 and 6 reveal that those exposed to chemical defoliants may begin to revert toward their initial beliefs but their FSBs at the follow-up period are significantly higher compared to their initial beliefs ( $p < 0.1$ ). We do not detect any significant change in WTP for those exposed to chemical defoliants relative to those unexposed.

Subjects who had an initial preference for the vegetable unassociated with a food safety label/claim (i.e., those who received exogenous, negative feedback on their vegetable preference) positively update both their WTP and FSBs during the experimental session to a larger degree than those who received positive feedback. Not only do these results hold at follow-up but these differences increase over time (with the exception of WTP between follow-up and post-label reveal), suggesting that this disconfirmatory experience led to greater retention of the information treatment. We also examine differences in WTP and FSBs over time across the information provision treatments. Initially, we find no significant differences in WTP or FSBs for subjects exposed to the VietGAP label and Safe Food claim regardless of whether or not a label definition was presented. However, we find that WTP and FSBs (with the exception of column 2) are lower at follow-up for the VietGAP label than the Safe Food claim and the presentation of the definitions does not alter this result despite the fact



(a) Initial Food Safety Preferences and Purchase Decisions Conditional on Initial Preference for Vegetable Associated with Label/Claim



(b) Initial Food Safety Preferences and Purchase Decisions Conditional on Initial Preference for Unlabeled Vegetable

FIGURE 4: Initial and Final Purchase Decisions

*Notes:* Panel A displays the number of subjects with the initial food safety preference (left) and initial purchase decision (right) conditional on initially preferring the vegetable associated with a label/claim prior to the reveal of experimental food safety labels/claims. Panel B displays the number of subjects with the initial food safety preference (left) and initial purchase decision (right) conditional on initially preferring the unlabeled vegetable prior to the reveal of experimental food safety labels/claims.

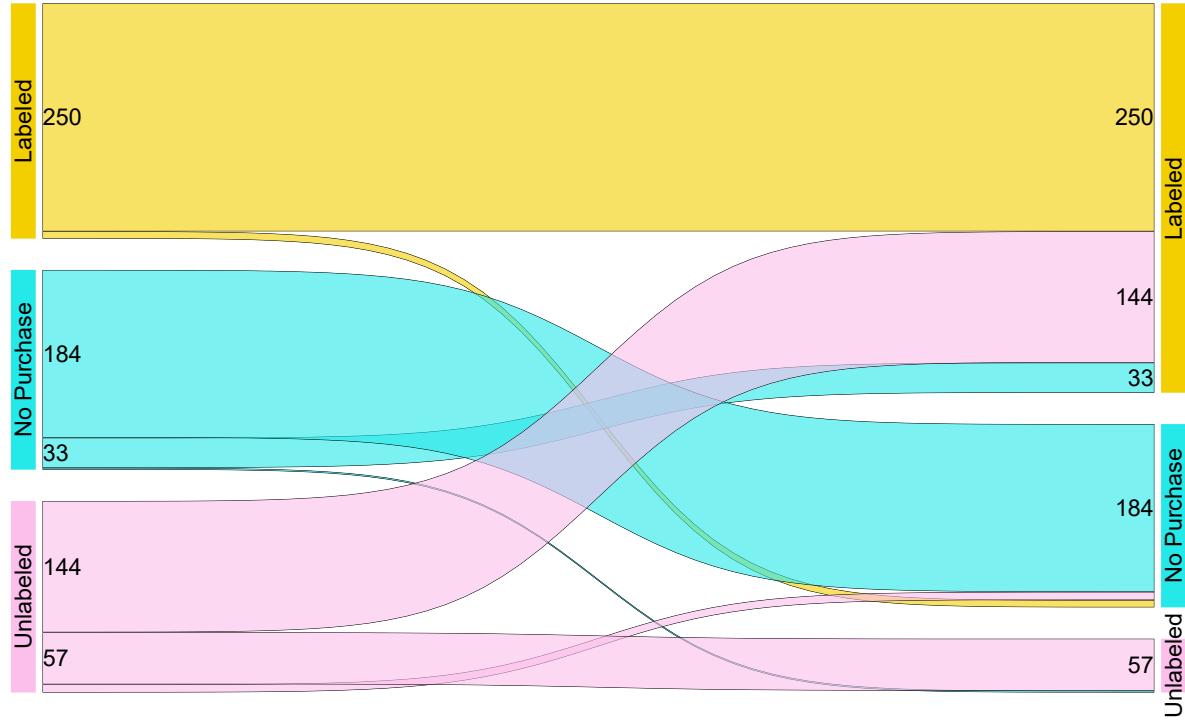


FIGURE 5: Initial and Final Purchase Decisions

*Notes:* This figure displays the number of subjects that make initial purchase decision (left) and final purchase decision (right) of vegetable product associated with a label/claim, an unlabeled vegetable product, or chose not to purchase during retail experiment.

that the definitions clearly illustrate the comprehensive food safety coverage provided by the VietGAP certification relative to the Safe Food claim. This finding suggests that an intuitive and easily interpretable label can lead to greater retention over time compared to a more comprehensive but less intuitive label even when the quality differences are made explicit.

Next, we explore how subjects update their beliefs of the labels/claims independent of their association with a vegetable product over time. Table 8 displays the summary statistics for beliefs of the VietGAP label and Safe Food claim over time by our life experiences of interest.<sup>19</sup> Initially, those exposed to chemical defoliants have more favorable beliefs about the food safety labels/claims with a significantly more favorable impression of the VietGAP label compared to those without either of the life experiences of interest. Immediately after the experiment, subjects hold more favorable beliefs for both the Safe Food claim and the VietGAP label and correctly perceive the VietGAP label to be the safer label/claim on average ( $p < 0.01$ ). While those exposed to chemical defoliants initially held more favorable beliefs for the VietGAP label than those without these life experiences, we find this reverses in the long term. At follow-up, participants have similar or more positive beliefs for the Safe Food claim than the VietGAP label although we only detect a significant difference for those without either life experience ( $p < 0.01$ ) which may be due to a lack of statistical power.

We more formally test the differences in the beliefs of the labels through regression analysis in Tables 9 and 10 to assess what factors impact belief adjustments across these labels/claims over time. Table 9 compares the normalized difference in beliefs between the VietGAP label and Safe Food claim at the end of the experiment (columns 1 and 2) and during the follow-up survey (columns 3 and 4). We also include an indicator variable that is equal to one if a participant initially held equal or more favorable views for the Safe Food claim compared to the VietGAP label which attempts to capture a reference or inflection point from which gains and losses from holding this belief are perceived once the experimental treatments are provided. In columns 1 and 2, we find limited evidence that differences in beliefs between the label and claim after the experiment are driven by life experiences or experimental treatments. Only the assignment to the VietGAP label and definition treatment positively increases the VietGAP label belief relative to the Safe Food claim by two-tenths of a standard deviation.

The belief change during the follow-up survey documented in the summary statistics can be explained by subjects' initial beliefs (columns 3 and 4). Those who held more favorable initial views of the Safe Food claim have a differential belief between the VietGAP label and Safe Food claim which is one-fourth of a standard deviation lower on average. While we also explore interactions across the treatments and reference point, we do not detect statistically significant differences, which may be attributed to a lack of power. This finding suggests that initial beliefs tend to dominate over information provision in the long term.

Table 10 displays the normalized differences in beliefs of a label/claim between the follow-up period and the end of the experiment. In columns 1 and 2 we find that those who may have experienced a loss from their belief reference point hold lower beliefs for the VietGAP label in

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<sup>19</sup>Table B4 also provides summary statistics for beliefs of the labels/claims over time by experimental feedback.

TABLE 7: OLS Regressions of Difference in WTP and FSBs over Time

	$\Delta WTP$			$\Delta FSBs$		
	Post–Pre (1)	Follow-up–Pre (2)	Follow-up–Post (3)	Post–Pre (4)	Follow-up–Pre (5)	Follow-up–Post (6)
Exposure to Chemical Defoliants	43.301 (373.070)	-466.713 (534.858)	-396.971 (499.084)	0.870*** (0.259)	0.584* (0.346)	-0.129 (0.348)
Illness Index	-5.437 (20.460)	-21.995 (21.187)	-32.735 (28.182)	0.015 (0.016)	-0.014 (0.024)	-0.036* (0.021)
Initial Preference (Unlabeled = 1)	1235.021*** (187.256)	1575.013*** (239.298)	296.509 (246.213)	1.603*** (0.143)	2.062*** (0.229)	0.493** (0.203)
VietGAP Label	132.791 (265.429)	-344.758 (360.528)	-791.594** (347.318)	0.062 (0.194)	-0.657** (0.306)	-0.751*** (0.277)
Safe Food Claim + Def	-229.102 (235.829)	-217.207 (331.668)	-127.369 (345.940)	0.208 (0.193)	0.003 (0.283)	-0.224 (0.252)
VietGAP Label + Def	-48.559 (251.732)	-534.392 (331.069)	-560.405* (338.815)	-0.089 (0.204)	-0.829*** (0.317)	-0.751*** (0.276)
Demographic Controls	✓	✓	✓	✓	✓	✓
$R^2$	0.194 572	0.182 550	0.129 550	0.304 571	0.264 550	0.194 549
Observations						

*Notes:* *Pre* refers to the period *before* the food safety labels are revealed to subjects while *Post* is the period immediately *after* the labels are revealed. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Includes enumerator, team leader, and ward fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

TABLE 8: Summary Statistics: Beliefs of Food Safety Labels over Time by Life Experiences

Variables	(1) Exposure CD Mean/(SE)	(2) Illness Mean/(SE)	(3) None Mean/(SE)	(1)–(2) Pairwise t-test Mean Difference	(1)–(3) Pairwise t-test Mean Difference	(2)–(3) Pairwise t-test Mean Difference
<b>Initial Beliefs</b>						
Safe Food Claim	5.44 (3.33)	4.96 (3.27)	4.93 (3.31)	0.48	0.52	0.03
VietGAP Label	5.92 (3.38)	5.01 (3.67)	4.41 (3.75)	0.91	1.52***	0.61
<b>Post-Experiment Beliefs</b>						
Safe Food Claim	7.65 (2.28)	7.17 (2.21)	7.72 (2.31)	0.48	-0.07	-0.55*
VietGAP Label	8.35 (2.16)	8.68 (1.66)	9.00 (1.32)	-0.33	-0.66***	-0.32*
<b>Beliefs at Follow-up</b>						
Safe Food Claim	8.21 (1.01)	7.70 (1.91)	8.05 (1.77)	0.51*	0.15	-0.35
VietGAP Label	7.85 (1.37)	7.74 (2.15)	7.72 (2.10)	0.11	0.14	0.02
Observations	52	75	446	120	491	521

Notes: “Exposure CD” stands for exposure to chemical defoliants. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. Initial label beliefs measured on a nine-point scale while post-experiment and follow-up label beliefs measured on a ten-point scale. Standard deviations in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

the long term compared to their short-term post-experiment beliefs. While the coefficient for exposure to chemical defoliants is positive and significant at the 10% level, this is attributed to muted changes in beliefs over time for this group rather than more favorable long-term updating for the VietGAP label. We do not detect any similar patterns across beliefs for the Safe Food claim or unlabeled options. Again, we do not find any statistically significant differences captured by interactions across the treatments and initial reference point.

If the labels/claims introduced during the experiment are connected to negative memories of these past experiences, subjects may actively avoid future information tied to these memories. We test whether or not participants with these experiences are more likely to attrite from the follow-up survey. Recall that subjects received an additional payment for completing the follow-up survey and were reminded of the survey, the additional payout, and the minimal time cost at both the beginning and end of the main experiment. Therefore, attriting comes at a financial cost that may be exceeded by the benefits of avoidance of information tied to these experiences.

**RESULT 5:** *Subjects exposed to chemical defoliants assigned to the Safe Food claim treatment are more likely to attrite.*

Table 11 reports the likelihood of attriting across the life experience and experimental treatments. In column 1, we find that those exposed to chemical defoliants are more likely to attrite at follow-up but not at a statistically significant level. Columns 2-3 include an interaction between exposure to chemical defoliants and the food safety label/claim treat-

TABLE 9: Difference in Food Safety Label Beliefs within Periods

	$\Delta$ Period 2 Label Beliefs		$\Delta$ Period 3 Label Beliefs	
	(1)	(2)	(3)	(4)
Exposure to Chemical Defoliants	-0.072 (0.128)	-0.060 (0.207)	0.067 (0.141)	-0.014 (0.390)
Initial Preference (Unlabeled = 1)	0.027 (0.075)	0.055 (0.155)	0.051 (0.086)	-0.069 (0.147)
Illness Index	-0.003 (0.008)	-0.003 (0.008)	0.008 (0.009)	0.008 (0.009)
VietGAP Label	0.040 (0.099)	0.038 (0.098)	0.043 (0.116)	0.029 (0.117)
Safe Food Claim + Def	0.058 (0.104)	0.057 (0.104)	0.009 (0.116)	0.010 (0.117)
VietGAP Label + Def	0.205* (0.107)	0.204* (0.109)	0.132 (0.115)	0.123 (0.115)
Belief SF Claim $\geq$ Belief VG Label (Yes = 1)	-0.099 (0.102)	-0.069 (0.136)	-0.255*** (0.087)	-0.318*** (0.119)
Exposure to Chemical Defoliants $\times$ Initial Preference		0.173 (0.555)		0.399 (0.450)
Exposure to Chemical Defoliants $\times$ Belief SF Claim $\geq$ Belief VG Label		-0.069 (0.290)		0.019 (0.395)
Initial Preference $\times$ Belief SF Claim $\geq$ Belief VG Label		-0.049 (0.178)		0.156 (0.174)
Exposure to Chemical Defoliants $\times$ Initial Preference $\times$ Belief SF Claim $\geq$ Belief VG Label		-0.114 (0.617)		-0.335 (0.499)
Demographic Controls	✓	✓	✓	✓
R <sup>2</sup>	0.344	0.344	0.220	0.222
Observations	572	572	550	550

*Notes:* Dependent variables are standardized differences in beliefs of VietGAP food safety label and Safe Food claim post-experiment (columns 1 & 2) and at follow-up (columns 3 & 4). Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Belief SF Claim  $\geq$  Belief VG Label is binary variable equal to one if the initial belief of food safety coverage of the Safe Food claim is greater than or equal to the initial belief in the food safety coverage of the VietGAP label. Robust standard errors in parentheses. Results include enumerator, team leader, and ward-level fixed effects. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

TABLE 10: Difference in Label/Claim Beliefs over Time

	$\Delta$ VietGAP		$\Delta$ SF		$\Delta$ Unlabeled	
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure to Chemical Defoliants	0.256*	0.579	0.079	0.438	0.019	0.186
	(0.151)	(0.409)	(0.132)	(0.267)	(0.128)	(0.252)
Initial Preference (Unlabeled = 1)	0.080	0.138	0.040	0.188	-0.045	0.020
	(0.086)	(0.155)	(0.086)	(0.154)	(0.077)	(0.136)
Illness Index	0.005	0.006	0.001	0.001	0.018**	0.017**
	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.007)
VietGAP Label	0.018	0.021	0.021	0.031	0.124	0.128
	(0.120)	(0.123)	(0.108)	(0.110)	(0.106)	(0.108)
Safe Food Claim + Def	0.107	0.106	0.137	0.137	0.177*	0.177*
	(0.119)	(0.120)	(0.118)	(0.118)	(0.107)	(0.107)
VietGAP Label + Def	-0.004	0.006	0.051	0.066	0.122	0.127
	(0.122)	(0.123)	(0.113)	(0.114)	(0.107)	(0.108)
Belief SF Claim $\geq$ Belief VG Label (Yes = 1)	-0.292***	-0.243*	-0.122	-0.015	-0.005	0.024
	(0.102)	(0.145)	(0.099)	(0.133)	(0.087)	(0.119)
Exposure to Chemical Defoliants $\times$ Initial Preference			-0.486		-0.558	
			(0.591)		(0.371)	
Exposure to Chemical Defoliants $\times$ Belief SF Claim $\geq$ Belief VG Label			-0.353		-0.405	
			(0.459)		(0.355)	
Initial Preference $\times$ Belief SF Claim $\geq$ Belief VG Label			-0.055		-0.182	
			(0.187)		(0.184)	
Exposure to Chemical Defoliants $\times$ Initial Preference $\times$ Belief SF Claim $\geq$ Belief VG Label			0.373		0.474	
			(0.669)		(0.504)	
Demographic Controls	✓	✓	✓	✓	✓	✓
$R^2$	0.161	0.164	0.242	0.246	0.349	0.351
Observations	550	550	550	550	550	550

*Notes:* Dependent variables are standardized differences in beliefs of labels/claims between the follow-up and post-experiment. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Belief SF Claim  $\geq$  Belief VG Label is binary variable equal to one if the initial belief of food safety coverage of the Safe Food claim is greater than or equal to the initial belief in the food safety coverage of the VietGAP label. Robust standard errors in parentheses. Results include enumerator, team leader, and ward-level fixed effects. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

ments to capture differences in attrition for those exposed to chemical defoliants across the treatments. Here, we find that those who were exposed to chemical defoliants and were assigned to the Safe Food claim treatment are 10% more likely to attrite ( $p < 0.1$ ) while those exposed and assigned to the VietGAP label are less likely to attrite. This outcome may be attributed to the Safe Food claim serving as a more salient link to this life experience. If so, this suggests a trade-off exists between these labels. While participants have more favorable beliefs about the Safe Food claim for those who did not attrite, the VietGAP label does not as easily stimulate recall of these experiences, leading to future information avoidance. This detected trade-off points to important implications in the conveyance of labeling information that can improve total welfare.

One caveat of this analysis is the collection of the exposure to chemical defoliant data. As stated above, due to governmental constraints, the majority of this data was collected in the second survey wave. Therefore, the majority of individuals in our sample who were exposed to chemical defoliants self-selected into the follow-up survey which introduces bias into the above-described attrition results. To minimize the selection bias in our estimates, we include results using only subjects in the first wave where exposure status was recorded. We present the results in Table C1. We find qualitatively similar results, however, the coefficients of interest are much larger which is expected given the self-selection bias. This confirms our initial findings.

Participants with these life experiences can engage in another form of motivated reasoning, endogenous memory formation, at the time of the follow-up survey. Subjects could manipulate the probability of recalling, or suppress, the parts of the experiment associated with these negative experiences. Recall that in the follow-up survey participants were incentivized to accurately recall aspects of the experiment related and unrelated to these past experiences but could state “I do not recall” guaranteeing forfeiture of an additional payout if one of these questions was randomly selected.

**RESULT 6:** *Subjects exposed to chemical defoliants are less likely to accurately recall labeling information and purchase choices. These subjects also state “I do not recall” more frequently compared to unexposed subjects.*

To test whether those exposed to chemical defoliants are less accurate in their recall of events tied to their past experiences and suppress these memories, we run a linear probability model of participants’ recall of aspects of the experiment related to subjects’ past experiences, namely the experimental label and purchase choice. We report the results of these regressions in Table 12. Columns 1-2 display the recall accuracy, i.e. the probability of accurately recalling the label or purchasing choice while columns 3-4 report the probability of stating “I do not recall”. Panel A reports the recall of the label revealed during the experiment. In our preferred specification, subjects exposed to chemical defoliants who received confirmatory feedback are 19% less likely to correctly recall the label revealed during the experiment. In addition, those unexposed to chemical defoliants who received disconfirmatory feedback are 10.1% less likely to accurately recall the label. Again, in this specification, we do not find a significant effect on recall for those who had suffered from foodborne illnesses due to

TABLE 11: Regressions of Attrition

	(1)	(2)	(3)
Exposure to Chemical Defoliants	0.047 (0.038)	0.100* (0.056)	0.101* (0.057)
Initial Preference (Unlabeled = 1)	-0.018 (0.015)	-0.017 (0.015)	-0.017 (0.015)
Illness Index	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
VietGAP Label	0.000 (0.015)	0.012 (0.015)	0.014 (0.016)
Exposure to Chemical Defoliants × VietGAP Label		-0.128** (0.059)	-0.139** (0.059)
WTP for Labeling Information (1000 VND)			-0.004 (0.003)
Positive Difference in FSBs Between Purchased and Unpurchased Vegetable			-0.006** (0.003)
Negative Difference in FSBs Between Purchased and Unpurchased Vegetable			0.007 (0.021)
Demographic Controls	✓	✓	✓
R <sup>2</sup>	0.224	0.233	0.241
Observations	572	572	572

*Notes:* Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Results include enumerator, team leader, and ward-level fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

vegetable consumption.

In columns 3-4, we find that those exposed to chemical defoliants who received confirmatory feedback are 31% more likely to state “I do not recall” than to select one of the label options. This suggests that these subjects suppress this memory, engaging in endogenous memory formation, as it is tied to this painful experience. If subjects truly forgot the information they might as well guess a label instead of responding with “I do not recall” as the latter is a strictly dominated choice yielding a lower expected payoff.

Panel B reports the recall of the final purchasing choice made by the subjects. In columns 1-2, we find a negative but nonsignificant coefficient for exposure to chemical defoliants and confirmatory feedback on purchase recall accuracy. Those unexposed to chemical defoliants whose initial preference was for the unlabeled vegetable are 12% less likely to accurately recall their purchase decision.

We now examine the role that disconfirmatory feedback can play in constraining subjects’ ability to engage in motivated reasoning.

**RESULT 7:** *Participants exposed to chemical defoliants who received disconfirmatory feedback are more likely to accurately recall and less likely to state “I do not recall” than those who did not.*

An important finding in terms of effective information communication and behavior change is the effect of disconfirmatory feedback on information engagement for those who would otherwise disengage. In column 2, the estimated coefficients on the interaction terms suggest that subjects exposed to chemical defoliants who received disconfirmatory feedback are much more likely to correctly recall both the experimental labels and purchase decisions than those exposed to chemical defoliants who received confirmatory feedback. Summing these estimates, we find the total effect of those exposed to chemical defoliants who received disconfirmatory feedback for their initial preference, to only be 4% less likely to accurately recall the experimental label and 12% more likely to accurately recall their purchase choice than those who were unexposed and received confirmatory feedback, i.e., those who do not have an incentive to disengage with the information. In column 4, the coefficients on the interaction terms show that subjects exposed to chemical defoliants who received disconfirmatory feedback are much less likely to state “I do not recall” for both the experimental labels and purchase decisions than those exposed to chemical defoliants who received confirmatory feedback. Again summing these estimates, we find that individuals are only 4% more likely to state they do not recall the experimental label and 14% less likely to not recall their purchase decision than those unexposed who received confirmatory information. From a policy perspective, this result implies that if we want to convey information to individuals who may hold distorted beliefs that make a lasting impression, providing disconfirmatory feedback in an unbiased manner can negate the impact of these beliefs and increase engagement with and recall of information.

One may be concerned that subjects did not realize that “I do not recall” was strictly payoff-dominated or that those exposed to chemical defoliants differ in their ability to recall

TABLE 12: Regressions of Recall Accuracy for Food Safety Label and Purchase Decision

	Recall Accuracy		“I don’t recall”	
	(1)	(2)	(3)	(4)
<i>Panel A: Recall Label</i>				
Exposure to Chemical Defoliants	-0.152*	-0.185**	0.302***	0.306***
	(0.085)	(0.083)	(0.097)	(0.094)
Initial Preference (Unlabeled = 1)	-0.093**	-0.101***	0.055	0.067
	(0.038)	(0.038)	(0.045)	(0.045)
Illness Index	0.007*	0.005	-0.001	0.000
	(0.004)	(0.004)	(0.004)	(0.004)
Exposure to Chemical Defoliants ×				
Initial Preference	0.224*	0.248**	-0.332**	-0.333**
	(0.122)	(0.124)	(0.138)	(0.144)
<i>Panel B: Recall Purchase</i>				
Exposure to Chemical Defoliants	-0.112	-0.141	0.227**	0.232**
	(0.110)	(0.113)	(0.100)	(0.103)
Initial Preference (Unlabeled = 1)	-0.116***	-0.124***	-0.000	0.007
	(0.043)	(0.044)	(0.041)	(0.042)
Illness Index	0.006	0.005	-0.003	-0.002
	(0.004)	(0.004)	(0.003)	(0.003)
Exposure to Chemical Defoliants ×				
Initial Preference	0.368**	0.387***	-0.371***	-0.381***
	(0.145)	(0.143)	(0.128)	(0.131)
Demographic Controls		✓		✓
Observations	552	551	552	551

*Notes:* Recall Accuracy takes on value equal to one when participant correctly recalls experimental label or purchase choice and zero otherwise. “I do not recall” takes on value equal to one when participant states “I do not recall” and zero otherwise. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Results include enumerator, team leader, and ward-level fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

information than others that is not observable rather than suppression of these memories. We run a falsification test to account for this possibility.

**RESULT 8:** *Subjects exposed to chemical defoliants are not any more likely to inaccurately recall or suppress memories of the donation, the aspect of the experiment unrelated to these past experiences.*

Subjects were incentivized to recall their donations made to a charity during the dictator game in the experiment. As this portion of the experiment is not tied to these past experiences, we would expect no significant difference in recall accuracy or response of “I do not recall” for this portion of the experiment across the experiences of interest. We report the results of this falsification test in Table 13. We find that past life experiences and experimental feedback had no significant impact on how well subjects recall donations made during the dictator game. This strengthens our initial findings, suggesting that subjects repress memories tied to negative events.

TABLE 13: Regressions of Recall Accuracy for Donation

	Recall Accuracy		“I don’t recall”	
	(1)	(2)	(3)	(4)
Exposure to Chemical Defoliants	-0.052 (0.101)	-0.032 (0.107)	0.018 (0.083)	-0.022 (0.084)
Initial Preference (Unlabeled = 1)	-0.007 (0.044)	-0.010 (0.044)	0.005 (0.039)	0.006 (0.039)
Illness Index	-0.002 (0.004)	-0.004 (0.004)	0.002 (0.004)	0.003 (0.004)
Initial Preference ×				
Exposure to Chemical Defoliants	0.079 (0.139)	0.079 (0.142)	0.019 (0.111)	0.037 (0.110)
Demographic Controls			✓	✓
R <sup>2</sup>	0.140	0.154	0.102	0.118
Observations	552	551	552	551

*Notes:* Recall Accuracy takes on value equal to one when participant correctly recalls donation amount and zero otherwise. “I do not recall” takes on value equal to one when participants states “I do not recall” and zero otherwise. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Results include enumerator, team leader, and ward-level fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Another concern may be that subjects, particularly those exposed to chemical defoliants, did not understand or engage with the labels after they were presented in the experiment. Appendix Table B6 reports participants’ average subjective likelihood of becoming ill from consuming vegetables associated with each label option after seeing all labels and their

definitions. While those exposed to chemical defoliants have a higher perceived likelihood of becoming ill from consuming vegetables under the VietGAP label than those unexposed on average, the mean subjective probability of illness for both those exposed and unexposed to chemical defoliants aligns with the food safety ranking of these labels as presented in the experimental definitions. We can therefore rule out that misunderstanding or disengagement with these labels during the experiment drives these results.

## 6 Discussion & Conclusion

A growing body of literature has documented the mixed effectiveness of food labels to decrease information asymmetries between consumers and producers and influence purchasing and consumption decisions. More nascent sets of literature have come to recognize the outsized effect personal experiences can have on beliefs, information processing, and decision-making and the demand for and maintenance of motivated beliefs. We implement a lab-in-the-field experiment to analyze these seemingly disparate topics. Specifically, we assess the effectiveness of the government certified VietGAP food safety label on purchasing decisions, consumption, and belief updating relative to a private party Safe Food claim and the conventional unlabeled option. We then evaluate the impact of two personal experiences, prior illness from the consumption of contaminated vegetables and exposure to chemical defoliants used in the Vietnam War, on food safety beliefs and information processing. We evaluate whether these experiences can generate distorted beliefs for food safety and the ways in which individuals reason in a motivated fashion to avoid or inaccurately recall information tied to memories of these personal experiences.

The introduction of food safety labels and claims in our experimental setting modestly increases total vegetable purchases, with no significant discernable difference between the VietGAP label and the Safe Food claim. However, we do document that the establishment of an initial, arbitrary preference strongly influences final purchase decisions even after the introduction of food safety labels, suggesting that this initial preference becomes a strong reference point from which gains and losses are evaluated. While subjects view both the VietGAP label and Safe Food claim similarly during the experiment, over time, they hold more favorable views of the Safe Food claim relative to the VietGAP label despite the fact that all participants received information showing that the VietGAP label more comprehensively addresses food safety issues by the conclusion of the experiment. This finding demonstrates that a more intuitively understood label/claim can lead to more positive consumer sentiment in the long term than a more accurate label.

While it has been over sixty years since chemical weapons were first sprayed across South Vietnam, those exposed to the herbicides deployed during this military operation are still affected to this day. Not only do these individuals face negative health consequences but they also form beliefs and process and store information connected to this experience differently than those unexposed. We show that those exposed to these defoliants hold distorted beliefs about the average food safety quality of vegetables than those unexposed. We postulate that these individuals have a demand for these distorted beliefs as they provide a means of self-preservation. Our estimation results show that those exposed to chemical defoliants

have an initial average expected belief in the food safety quality of vegetables that is 0.29 SD lower than those unexposed. In comparison, individuals who had previously been ill from contaminated vegetables did not significantly differ in their food safety perceptions from those who had never been ill. While not previously detected in the literature, this finding suggests that significantly intense personal experiences can have undue influence on non-domain-specific beliefs.

Not only can intense personal experiences impact belief formation, but we also document evidence that individuals with these experiences employ strategies to avoid or incorrectly recall information designed to improve decision-making when the information is tied to these experiences and emotionally challenging. Individuals are seemingly motivated to maintain the beliefs they form from these experiences. We postulate that this arises as a method of self-preservation that can take on two forms. Individuals can maintain these beliefs to safeguard themselves from experiencing similarly distressing experiences in the future and to eschew painful memories of the experience which have negative psychological consequences.

Food safety labels can activate memories of exposure to chemical defoliants and create a need for self-preservation by avoiding or misremembering this information. Our results show that subjects exposed to chemical defoliants have a lower value for food safety labeling information and are more likely to have a nonpositive WTP suggesting that they engage in strategic ignorance to avoid engaging with information connected to these painful past experiences. Subjects exposed to chemical defoliants who were assigned to the Safe Food claim treatment, the treatment that may facilitate easier retrieval of the experience, are more likely to attrite from the experiment. We also find evidence that those exposed to chemical defoliants are more likely to engage in endogenous memory formation. These participants are less likely to correctly recall the experimental labels revealed during the experiment even when they are financially incentivized for accuracy. These subjects were also more likely to state that they do not recall the label or purchase choice from the experiment even when this choice is payoff-dominated suggesting that they suppress this information even at a financial cost. We again do not find statistically significant effects for the within-domain experience. These results suggest that individuals can be sufficiently motivated to maintain their beliefs, differentially seeking out and processing information, if they've faced a significantly intense out-of-domain experience. As a falsification test, we elicit recall of a charitable donation made during the experiment and find that those exposed to chemical defoliants do not significantly differ in their recall accuracy. This provides additional evidence that our results are driven by the effects of these personal experiences rather than differences in cognitive ability.

Our results provide a first indication that personal experiences can lead to the formation of motivated beliefs. Importantly, our findings suggest that if the experiences are emotionally intense enough they can alter beliefs in seemingly unrelated domains. These findings can provide a greater understanding of the theoretical underpinning of belief formation and expand our understanding of the set of conditions that give rise to motivated reasoning and impede information processing.

We also show that providing unbiased disconfirmatory feedback allows for greater engagement with information and constrains the extent to which individuals can engage in endogenous memory formation. This result indicates a viable and low-cost pathway to en-

hance policy design and information dissemination to improve decision-making in areas where strongly held beliefs are likely to exist.

Future research aimed at assessing the impact of personal experiences on motivated beliefs can provide greater evidence of both domain- and non-domain-specific experience effects. Our general empirical methodology can be applied in contexts where individuals have faced negative personal experiences and information threatens a sense of self-preservation. This analysis specifically can be enhanced by using a continuous measure of defoliant exposure through the construction of an exposure opportunity index rather than a self-reported binary measure. Additionally, while we find that subjects exposed to chemical defoliants have more inaccurate recall of aspects of the experiment tied to this personal experience, we do not investigate alternative levels of financial compensation that may provide a greater incentive for recall accuracy. If the stakes are high enough, the monetary benefit may overcome the costs of recalling information tied to this powerful emotional experience.

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# Appendices

## A Figures

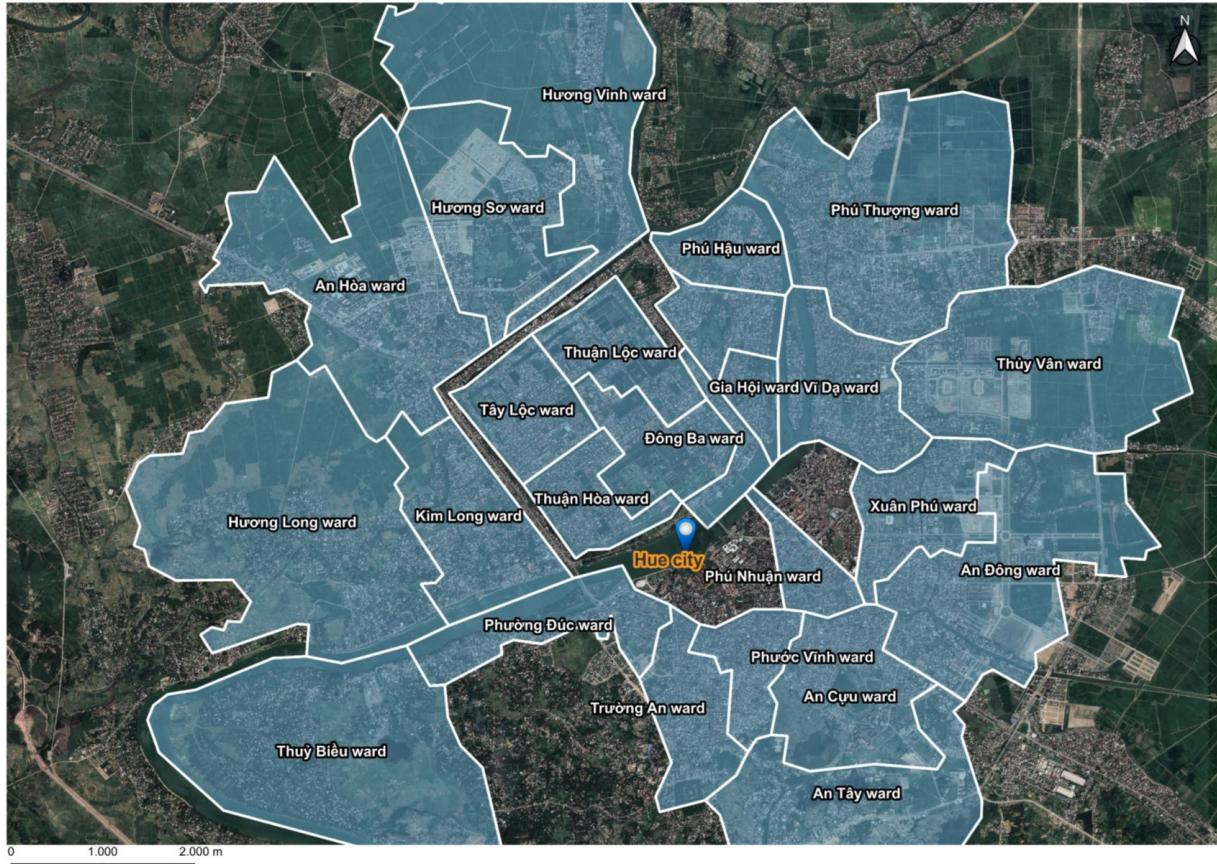
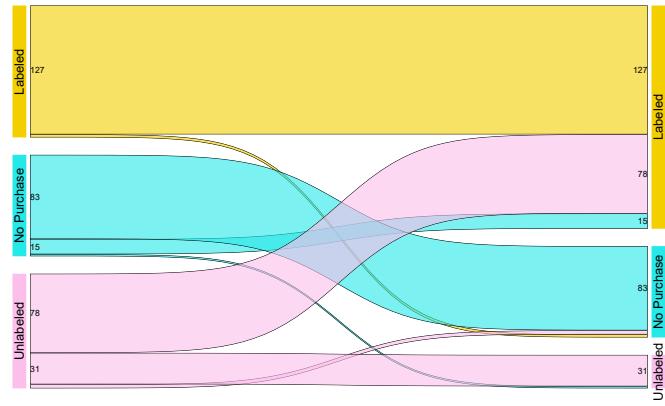
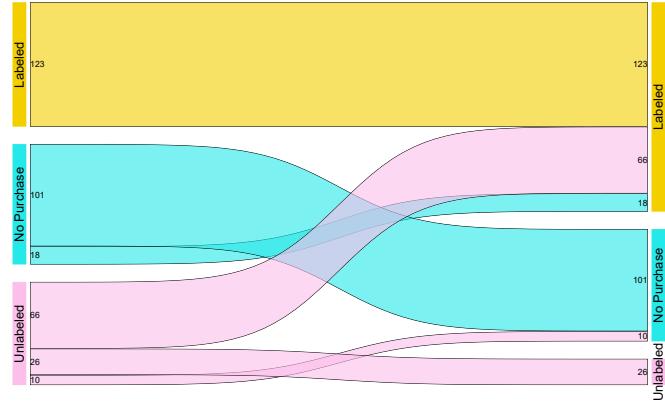


FIGURE A1: Map of Hue and Randomly Selected Wards

*Notes:* This figure displays the city of Hue, Vietnam highlighting the twenty-two randomly selected wards in the experiment.



(a) VietGAP Label Treatment



(b) Safe Food Claim Treatment

FIGURE A2: Initial and Final Purchase Decisions Across Label Treatments

*Notes:* Number of subjects that make initial purchase decision (left) and final purchase decision (right) of labeled or unlabeled vegetable product or choose not to purchase during retail experiment. Panel A displays purchasing decisions for subjects in the VietGAP label treatment while Panel B displays purchasing decisions for those in the Safe Food claim treatment.

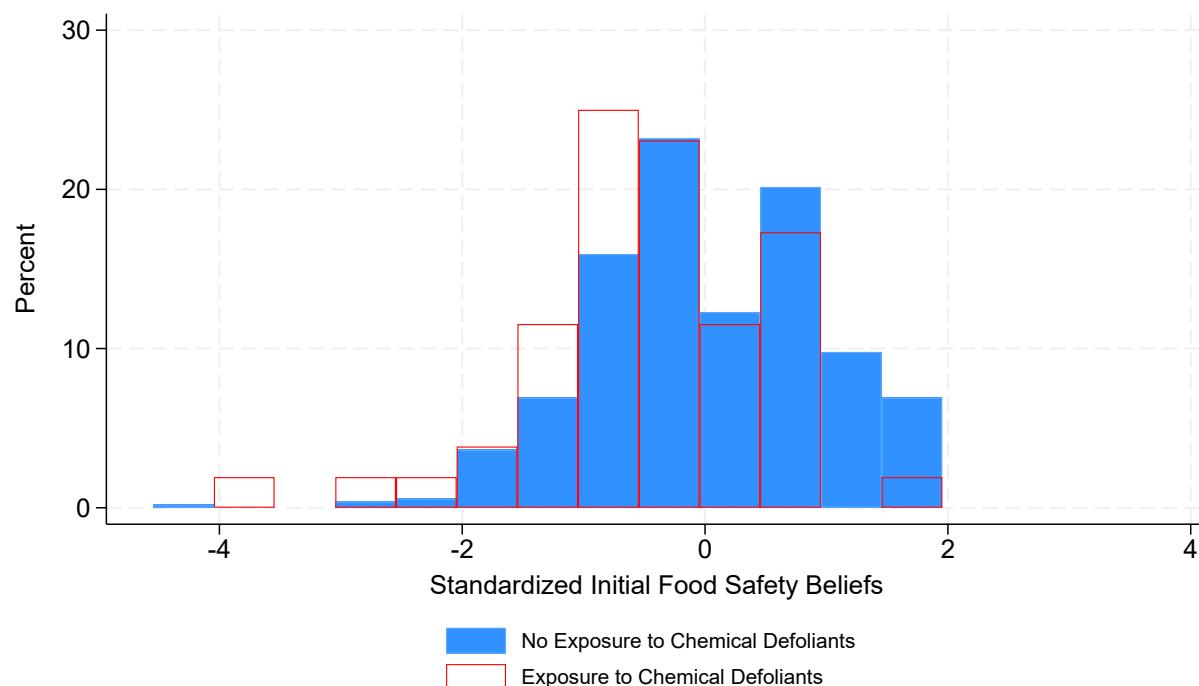


FIGURE A3: Histogram: Standardized Initial FSBs by Exposure to Chemical Defoliants

*Notes:* This figure shows the average standardized initial food safety beliefs for participants exposed and unexposed to chemical defoliants across the two vegetable options before the introduction of safe food labels (and definitions) in the experiment. The initial measure captured food safety beliefs on an 11 point Likert scale with 0 corresponding to “very unsafe” and 10 corresponding to “fully safe”.

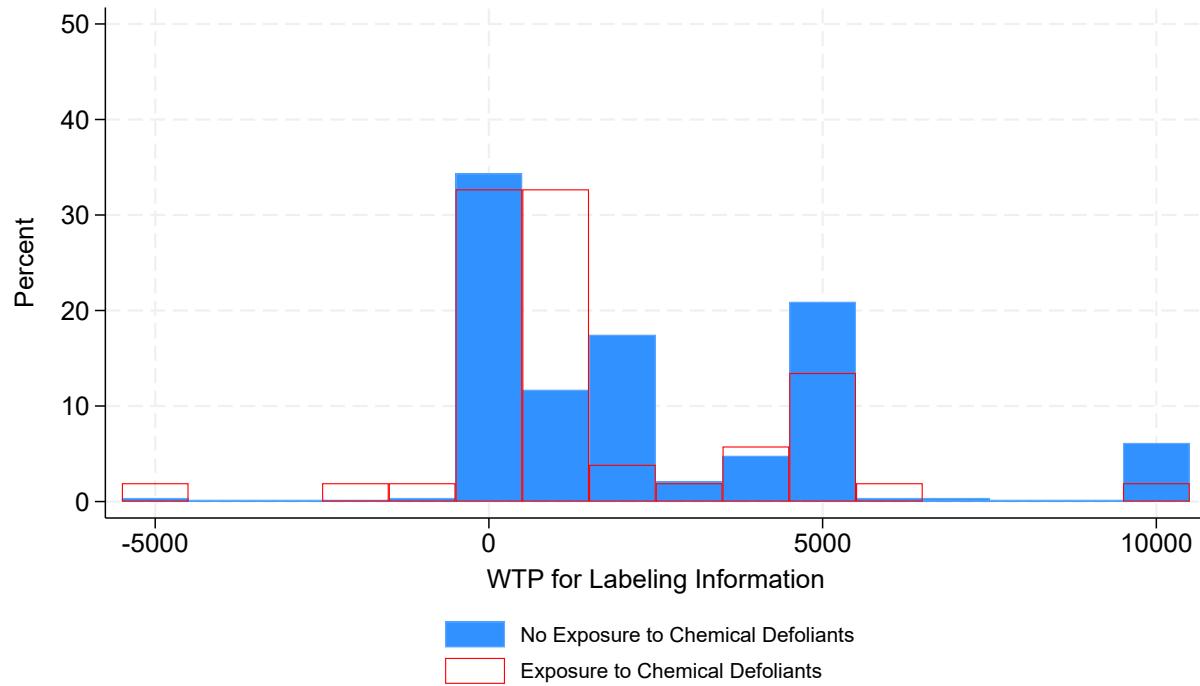


FIGURE A4: Histogram: WTP for Labeling Information by Exposure to Chemical Defoliants

*Notes:* This figure shows subjects' WTP for food safety labeling information for participants exposed and unexposed to chemical defoliants before the introduction of safe food labels (and definitions) in the experiment. The initial measures captured WTP to obtain the food safety labeling information on a 1000 VND scale between 0 and 10,000 VND and WTP to avoid the food safety labeling information on a 1000 VND scale between 0 and 10,000 VND.

## B Summary Statistics and Balance Checks

TABLE B1: Summary Statistics: Label Treatment

Variables	(1) Total Mean/(SE)	(2) SF Mean/(SE)	(3) VG Mean/(SE)	(2)-(3) Pairwise t-test Mean Difference
<b>Individual Characteristics</b>				
Gender (Male = 1)	0.31 (0.46)	0.30 (0.46)	0.32 (0.47)	-0.02
Age	59.22 (12.20)	59.06 (12.21)	59.39 (12.20)	-0.32
Employed in Agriculture	0.10 (0.31)	0.10 (0.31)	0.11 (0.31)	-0.00
Years of Education	8.69 (4.31)	8.83 (4.12)	8.54 (4.49)	0.28
Household Income <sup>a</sup>	1.18 (0.43)	1.18 (0.44)	1.17 (0.41)	0.01
Disability	0.06 (0.24)	0.06 (0.25)	0.06 (0.23)	0.01
Primary Shopper for HH	0.67 (0.47)	0.68 (0.47)	0.67 (0.47)	0.01
Person Who Worries <sup>b</sup>	3.87 (0.98)	3.85 (1.00)	3.89 (0.96)	-0.04
<b>Life Experiences</b>				
Exposure to Chemical Defoliants	0.09 (0.29)	0.10 (0.30)	0.08 (0.27)	0.02
Illness Index	1.64 (5.38)	1.85 (6.27)	1.44 (4.29)	0.41
Observations	687	344	343	687

*Notes:* Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . <sup>a</sup> household income captured on equally spaced 5-point range between 0 and 80 million VND. <sup>b</sup> measured on 5-point Likert scale where 1 means “Strongly Disagree” and 5 means “Strongly Agree”.

TABLE B2: Summary Statistics: Definition Treatment

	(1) Total Mean/(SE)	(2) No Definition Mean/(SE)	(3) Definition Mean/(SE)	(2)–(3) Pairwise t-test Mean Difference
<b>Individual Characteristics</b>				
Gender (Male = 1)	0.31 (0.46)	0.31 (0.46)	0.31 (0.46)	-0.00
Age	59.22 (12.20)	59.48 (11.57)	58.96 (12.82)	0.52
Employed in Agriculture	0.10 (0.31)	0.11 (0.32)	0.09 (0.29)	0.02
Years of Education	8.69 (4.31)	8.44 (4.13)	8.94 (4.48)	-0.50
Household Income <sup>a</sup>	1.18 (0.43)	1.16 (0.38)	1.20 (0.47)	-0.04
Disability	0.06 (0.24)	0.06 (0.24)	0.06 (0.24)	-0.00
Primary Shopper for HH	0.67 (0.47)	0.67 (0.47)	0.68 (0.47)	-0.01
Person Who Worries <sup>b</sup>	3.87 (0.98)	3.84 (1.01)	3.90 (0.95)	-0.06
<b>Life Experiences</b>				
Exposure to Chemical Defoliants	0.09 (0.29)	0.09 (0.29)	0.09 (0.29)	-0.00
Illness Index	1.64 (5.38)	1.62 (5.29)	1.66 (5.47)	-0.04
Observations	687	349	338	687

*Notes:* Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . <sup>a</sup> household income captured on equally spaced 5-point range between 0 and 80 million VND. <sup>b</sup> measured on 5-point Likert scale where 1 means “Strongly Disagree” and 5 means “Strongly Agree”.

TABLE B3: Summary Statistics: Experimental Feedback

Variables	(1)	(2)	(3)	(2)–(3)
	Total Mean/(SE)	Initial Pref. Unlabeled Mean/(SE)	Initial Pref. Labeled Mean/(SE)	Pairwise t-test Mean Difference
<b>Individual Characteristics</b>				
Gender (Male = 1)	0.31 (0.46)	0.31 (0.46)	0.31 (0.46)	-0.01
Age	59.22 (12.20)	58.91 (11.31)	59.51 (12.97)	-0.60
Employed in Agriculture	0.10 (0.31)	0.10 (0.30)	0.11 (0.31)	-0.00
Years of Education	8.69 (4.31)	8.92 (4.17)	8.47 (4.44)	0.45
Household Income <sup>a</sup>	1.18 (0.43)	1.19 (0.45)	1.17 (0.41)	0.02
Disability	0.06 (0.24)	0.05 (0.22)	0.07 (0.26)	-0.02
Primary Shopper for HH	0.67 (0.47)	0.66 (0.47)	0.68 (0.47)	-0.02
Person Who Worries <sup>b</sup>	3.87 (0.98)	3.81 (1.02)	3.91 (0.94)	-0.10
<b>Life Experiences</b>				
Exposure to Chemical Defoliants	0.09 (0.29)	0.08 (0.27)	0.10 (0.30)	-0.02
Illness Index	1.64 (5.38)	1.96 (6.07)	1.35 (4.63)	0.61
Observations	687	329	358	687

*Notes:* Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . <sup>a</sup> household income captured on equally spaced 5-point range between 0 and 80 million VND. <sup>b</sup> measured on 5-point Likert scale where 1 means “Strongly Disagree” and 5 means “Strongly Agree”.

TABLE B4: Summary Statistics: Beliefs of Food Safety Labels over Time by Experimental Feedback

Variables	(1) Initial Pref. Mean/(SE)	(2) Unlabeled Mean/(SE)	(1)–(2) Initial Pref. Labeled Mean/(SE) Pairwise t-test Mean Difference
<b>Initial Beliefs</b>			
Safe Food Claim	5.06 (3.34)	4.62 (3.35)	0.45*
VietGAP Label	4.69 (3.81)	4.24 (3.71)	0.45
<b>Post-Experiment Beliefs</b>			
Safe Food Claim	7.57 (2.28)	7.71 (2.23)	-0.14
VietGAP Label	8.91 (1.32)	8.83 (1.53)	0.07
<b>Beliefs at Follow-up</b>			
Safe Food Claim	8.00 (1.71)	8.04 (1.76)	-0.04
VietGAP Label	7.79 (1.97)	7.66 (2.14)	0.13
Observations	295	392	687

*Notes:* Initial label beliefs measured on a nine-point scale while post-experiment and follow-up label beliefs measured on a ten-point scale. Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

TABLE B5: Summary Statistics: Attrition

Variables	(1) Total Mean/(SE)	(2) Attrition Mean/(SE)	(3) No Attrition Mean/(SE)	(2)–(3) Pairwise t-test Mean Difference
<b>Individual Characteristics</b>				
Gender (Male = 1)	0.31 (0.46)	0.37 (0.48)	0.30 (0.46)	0.07
Age	59.22 (12.20)	60.81 (13.39)	58.85 (11.88)	1.95
Employed in Agriculture	0.10 (0.31)	0.12 (0.32)	0.10 (0.30)	0.01
Years of Education	8.69 (4.31)	7.70 (4.19)	8.92 (4.31)	-1.22***
Household Income <sup>a</sup>	1.18 (0.43)	1.18 (0.51)	1.18 (0.41)	0.01
Disability	0.06 (0.24)	0.08 (0.28)	0.06 (0.23)	0.03
Primary Shopper for HH	0.67 (0.47)	0.64 (0.48)	0.68 (0.47)	-0.04
Person Who Worries <sup>b</sup>	3.87 (0.98)	3.82 (1.03)	3.88 (0.97)	-0.05
<b>Life Experiences</b>				
Exposure to Chemical Defoliants	0.09 (0.29)	0.19 (0.40)	0.09 (0.28)	0.10
Illness Index	1.64 (5.38)	1.74 (6.85)	1.62 (4.97)	0.12
<b>Label Treatments</b>				
Safe Food Label	0.25 (0.43)	0.25 (0.43)	0.25 (0.43)	0.00
VietGAP Label	0.26 (0.44)	0.25 (0.44)	0.26 (0.44)	-0.01
Safe Food Label + Def	0.25 (0.44)	0.27 (0.45)	0.25 (0.43)	0.02
VietGAP Label + Def	0.24 (0.43)	0.23 (0.42)	0.24 (0.43)	-0.01
<b>Experimental Feedback</b>				
Initial Preference (Unlabeled = 1)	0.43 (0.50)	0.43 (0.50)	0.43 (0.50)	0.00
Observations	687	130	557	687

Notes: Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . <sup>a</sup> household income captured on equally spaced 5-point range between 0 and 80 million VND. <sup>b</sup> measured on 5-point Likert scale where 1 means “Strongly Disagree” and 5 means “Strongly Agree”. significance.

TABLE B6: Summary Statistics: Subjective Likelihood of Illness Across Labels

Variables	(1) Exposure CD Mean/(SE)	(2) No Exposure CD Mean/(SE)	(1)–(2) Pairwise t-test Mean Difference
VietGAP	1.65 (2.16)	1.04 (1.37)	-0.61***
Safe Food	2.35 (2.28)	2.36 (2.30)	0.01
FairTrade	4.08 (2.74)	3.78 (2.95)	-0.30
No Label	5.58 (3.01)	5.69 (2.85)	0.12
Observations	52	521	573

*Notes:* Subjective likelihood of illness measured on 11-point Likert scale from 0 to 10 with 0 corresponding to “will not be sick” and 10 corresponding to “will be sick”. “Exposure CD” stands for exposure to chemical defoliants. Standard deviations in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## C Regressions

TABLE C1: Regressions of Attrition

	(1)	(2)	(3)
Exposure to Chemical Defoliants	0.136 (0.156)	0.474** (0.263)	0.455* (0.281)
Initial Preference (Unlabeled = 1)	-0.080 (0.079)	-0.105 (0.079)	-0.108 (0.078)
Illness Index	-0.000 (0.006)	-0.001 (0.005)	-0.002 (0.005)
VietGAP Label	0.002 (0.075)	0.064 (0.081)	0.053 (0.081)
Exposure to Chemical Defoliants × VietGAP Label		-0.647** (0.263)	-0.607** (0.281)
WTP for Labeling Information (1000 VND)			-0.022 (0.014)
Positive Difference in FSB Between Purchased and Unpurchased Vegetable			-0.020* (0.011)
Negative Difference in FSB Between Purchased and Unpurchased Vegetable			0.022 (0.047)
Demographic Controls	✓	✓	✓
<i>R</i> <sup>2</sup>	0.280	0.332	0.365
Observations	118	118	118

*Notes:* Number of observations is limited to subjects whose exposure to chemical defoliants was captured during the experimental period and not the follow-up survey. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and zero otherwise. Exposure to chemical defoliants is a binary variable equal to one if a participant was exposed to chemical defoliants and 0 otherwise. The illness index captures the frequency and duration of illnesses stemming from vegetable consumption. Results include enumerator, team leader, and ward-level fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## D Questionnaires

Enumerator: \_\_\_\_\_

ID enumerator (*on name tag*): \_\_\_\_\_

Editor: \_\_\_\_\_

ID editor: \_\_\_\_\_

Team leader: \_\_\_\_\_

ID team leader: \_\_\_\_\_

## H O U S E H O L D Q U E S T I O N N A I R E

**COV0a. Name of household head :** \_\_\_\_\_

**COV0b. Name of Respondent:** \_\_\_\_\_

### Visit

a. First visit	
COV1. Date	____ / ____ / 2022
COV2. Starting time	____ : ____
COV3. End time	____ : ____
COV4. Result of visit	1. completed _____ 2. partially completed, _____ 3. Respondent not available _____

### Result of Interview

COV5. Checking by Team leader	COV6. Supervision by Team leader	COV7. Checking by editor
1. Checked and no errors _____ 2. Checked and corrections done _____ 3. Checked but without corrections _____ 4. Not checked, _____	1. Yes 2. No	1. Data entered, without error _____ 2. Data entered and corrected _____ 3. Data entered without corrections, _____ 4. Data not entered and only manual editing, _____ 5. Data not entered and not edited, _____

### A. LOCATION OF HOUSEHOLD

1. Ward		Number      ____
---------	--	------------------

### B. GENERAL INFORMATION ON RESPONDENT

1. ID of household ( <i>ID enum.HH#</i> )	_____
2. Group number ( <i>Treatment/Control</i> )	1. Safe Food/No Def 2. VietGap/No Def 3. Safe Food/Def 4. VietGap/Def
3. Status respondent	1. Household head    2. Spouse of head    3. Child of head    4. Parent of head    5. Sibling of head 6. Other, _____
4. Cell phone number	_____

### **Introduction to respondent**

We are enumerators from a project conducted by researchers at UC Davis (U.S.) and The University of Gottingen (Germany) and would like to learn more about your purchasing habits for vegetables. We will conduct a survey and experiment that will take no more than 45 minutes.

You will receive up to 70,000 VND for participating in our study today. Your answers throughout will determine how much of this money you will receive at the end of today. For instance, you can use some of this money to purchase vegetables during the experiment. Please consider making purchasing choices about vegetables similar to ones you would make in a new retail market. New retail markets include supermarkets (e.g., Coopmart), convenience stores and minimarkets (e.g., Winmart+), safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue), and malls. In contrast, you could also be purchasing your vegetables from more traditional or local markets, street vendors, or directly from a grower. Of course, you, family members, or friends might also grow your own vegetables and you might not purchase vegetables at all. Don't worry we will explain this to you again when we ask you specific questions throughout.

One month from now we will do a follow-up phone survey with you where you have the opportunity to earn an additional 30,000 VND in phone credit. It is anticipated that this follow-up survey will take no more than 15 minutes.

In general, we assure you that all information you give during the interview is kept strictly confidential. Data will be used for scientific purposes only, will not be shared with any outside person, and reported in a way that does not reveal your identity.

Do you have any questions? Do you consent to participating in this study?

### **Interview rules:**

- *Introduce yourself in a nice way and politely inform the respondent of the purpose of the interview.*
- *Ask the respondent if he/she agrees to be interviewed. If he/she really does not want to, thank them and move to the next participant.*
- *Ask the respondent if he/she has understood the question in case you observe that the respondent may have difficulties or is uncertain about the question.*  
*Always try to maintain a good atmosphere, if the respondent gets tired offer to have a short break and then continue.*
- *Read out question by question slowly and carefully.*

## Part 1: Pre-Experiment Questionnaire

### SECTION A- Purchasing Habits, Food Safety and Food Safety Label Knowledge

**A1. Does your household purchase vegetables from new retail markets? Remember, new retail markets include supermarkets (e.g., Coopmart), convenience stores and minimarkets (e.g., Winmart+), safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue), and malls.** *Enumerator: If yes, skip to A5. If no, continue to A2.*

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

**A2. Where does your household source your vegetables from?** *Enumerator: Check all that apply.*

1. Local markets or street vendors\_\_\_\_\_
2. Direct from grower \_\_\_\_\_
3. Friends & Family \_\_\_\_\_
4. Home garden \_\_\_\_\_
5. I do not consume vegetables \_\_\_\_\_
6. Other (specify): \_\_\_\_\_

**A3. Why doesn't your household purchase vegetables from new retail markets?** *Enumerator: Please remind respondents that new retail markets include supermarkets (e.g., Coopmart), convenience stores and minimarkets (e.g., Winmart+), safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue), and malls. Check all that apply.*

1. Affordability/Price \_\_\_\_\_
2. Food safety concerns \_\_\_\_\_
3. I cannot access new retail markets\_\_\_\_\_
4. I do not consume vegetables \_\_\_\_\_
5. I don't trust new retail markets \_\_\_\_\_
6. Obtain enough from friends & family \_\_\_\_\_
7. Produce enough at home \_\_\_\_\_
8. Source enough directly from grower \_\_\_\_\_
9. Prefer to purchase from wet markets or street vendor \_\_\_\_\_
10. Other (specify): \_\_\_\_\_

**A4. Has anyone in your household ever purchased vegetables in new retail markets?** *Enumerator: Please remind respondents that new retail markets include supermarkets (e.g., Coopmart), convenience stores and minimarkets (e.g., Winmart+), safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue), and malls.*

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

*If yes, continue with A5. If no, skip A5 and continue with the next questions in the table.*

**A5. What types of new retail markets does/did your household source vegetables from?** *Please remind respondents that new retail markets include supermarkets (e.g., Coopmart), convenience stores and minimarkets (e.g., Winmart+), safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue), and malls. Check all that apply.*

1. Mall \_\_\_\_\_
2. Minimart/Convenience store (e.g., Winmart+) \_\_\_\_\_
3. Safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue) \_\_\_\_\_

4. Supermarket (e.g., Coopmart, Winmart) \_\_\_\_\_  
 5. Other (specify): \_\_\_\_\_

**Please indicate how much you agree with the following statements regarding your vegetable purchasing decisions based on prior experience and on what you can observe at point of purchase.**  
*Enumerator: Please show scale provided to the participant.*

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
<b>A6.</b> Affordability is an important factor when purchasing vegetables.					
<b>A7.</b> Appearance and presentation is an important factor when purchasing vegetables.					
<b>A8.</b> Specific varieties are an important factor when purchasing vegetables.					
<b>A9.</b> Ease of preparation is an important factor when purchasing vegetables.					
<b>A10.</b> A food safety label is an important factor when purchasing vegetables.					
<b>A11.</b> Freshness or harvest date is an important factor when purchasing vegetables.					
<b>A12.</b> Nutrition is an important factor when purchasing vegetables.					
<b>A13.</b> The origin of the product and who grew it is an important factor when purchasing vegetables.					
<b>A14.</b> How long the vegetable will last is an important factor when purchasing vegetables.					
<b>A15.</b> Taste is an important factor when purchasing vegetables.					
<b>A16.</b> My relationship with /knowledge about the producer is an important factor when purchasing vegetables.					

Please indicate how much you agree or disagree with statements about food safety in general.

Enumerator: Please show scale provided to the participant.

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
<b>A17.</b> I am concerned about food safety when consuming fish.					
<b>A18.</b> I am concerned about food safety when consuming fruit.					
<b>A19.</b> I am concerned about food safety when consuming meat.					
<b>A20.</b> I am concerned about food safety when consuming rice and grains.					
<b>A21.</b> I am concerned about food safety when consuming vegetables.					

Please state your level of concern regarding the following food safety dimensions when purchasing vegetables at new retail markets. Enumerator: Please explain scale to the participant.

Risk Source	Level of concern				
	Low.....	Very low concern (1)	Little concern (2)	Concern (3)	High concern (4)
<i>General Food Safety Issues</i>					
<b>A22.</b> Pesticides and chemical fertilizers applied when growing					
<b>A23.</b> Heavy metals in soil and water used for growing (e.g., iron, lead, mercury)					
<b>A24.</b> Bacteria in soil and water used for growing					
<b>A25.</b> Manure applied when growing					
<b>A26.</b> Pesticide residue on vegetables after harvest					
<b>A27.</b> Improper handling by farm laborers and marketers after harvest					
<b>A28.</b> Limited traceability of vegetable origin and production methods					
<b>A29.</b> Limited inspection of food safety procedures					

<b>A30.</b> No certification of food safety information					
<b>A31.</b> Fraud in certification or providing wrong information on labels of vegetables					

**What is your level of trust in the accuracy of information about vegetable production and handling provided from the following sources? Enumerator: Please explain scale to the participant.**

Sources of Information	Trust in sources of information				
	Low.....	Very low trust (1)	Low trust (2)	Trust (3)	High trust (4).....High
<i>Sources of food safety information</i>					
<b>A32.</b> Information provided by the certifying agency					
<b>A33.</b> Information provided by the retailer					
<b>A34.</b> Information provided by friends and family					
<b>A35.</b> Information provided by grower					
<b>A36.</b> Information provided by handler/marketer					
<b>A37.</b> Your own experience growing and handling vegetables.					

**A38. Have you seen or heard of any vegetable labels used in new retail markets in Vietnam? If yes, which ones? Enumerator: Please remind respondents that new retail markets include supermarkets (e.g., Coopmart), convenience stores and minimarkets (e.g., Winmart+), safe food or organic shops (e.g., organic food Que Lam; HESA – Selected Safe food in Hue), and malls.**

**Allow respondent to state labels unprompted and check all labels mentioned. Do not read labels out loud.**

1. ASEANGAP \_\_\_\_\_
2. FairTrade \_\_\_\_\_
3. GlobalGAP \_\_\_\_\_
4. HACCP \_\_\_\_\_
5. PGS Organic \_\_\_\_\_
6. Safe food \_\_\_\_\_
7. USDA Organic \_\_\_\_\_
8. VietGAP \_\_\_\_\_
9. WinEco\_\_\_\_\_
10. Organic\_\_\_\_\_
11. (Yes) Don't remember which one\_\_\_\_\_
12. No Label \_\_\_\_\_
13. Other (Specify) \_\_\_\_\_

You may encounter no label or any of the following three labels when purchasing vegetables in a new retail market. Please examine these labels and indicate whether you believe the label communicates the following: Enumerator: If a participant does not believe that a statement corresponds with a label place an ✗ in that cell. If a participant believes that a statement corresponds with the label place a ✓ (check) in that cell. If a participant states that he/she does not know, place a O (circle) in that cell.

Label Attributes	(No Label)	✓ ATTP (Safe food)		
<b>A39.</b> Growers are prohibited to use pesticides and chemical fertilizers.				
<b>A40.</b> Growers only use fertilizers and pesticides approved by government and comply with application regulations.				
<b>A41.</b> Soil and water samples are analyzed at an accredited facility for maximum allowable levels of pesticide residues, heavy metals, and microorganisms.				
<b>A42.</b> Integrated pest management (IPM) techniques are used to minimize use of pesticides.				
<b>A43.</b> Products are certified and kept separate from other products during harvesting and processing.				
<b>A44.</b> Vegetables are properly packaged to reduce contamination when transporting from production site.				
<b>A45.</b> Workers receive proper safety training and wear protective clothing.				
<b>A46.</b> Traceability required and records of production process kept.				
<b>A47.</b> Fair vegetable prices guaranteed for growers.				

**Definitions:**

**Heavy metals:** Dense metals that may have higher levels of toxicity (e.g., iron, lead, mercury).

**Integrated Pest Management:** Combines multiple pest management techniques together to lower pest pressure and decrease the use of pesticides in farm production.

**Drip irrigation:** Type of irrigation system using tubes that drip water onto soil that save water and nutrients.

**Micro sprinklers:** Type of irrigation system using sprinklers at low pressure that can increase yields and decrease water use.

**Traceability:** Ability to track product from raw good to finished product.

## Part 2: Experiment

## **SECTION B: Experiment**

## Dictator Game

**Remember, you will receive up to 70,000 VND at the end of this survey and up to 30,000 VND in phone credit in a follow up survey conducted after one month. Before we give you the opportunity to purchase vegetables, we would like to give you the opportunity to donate up to 15,000 VND to the Agency of Victims of Agent Orange in Thua Thien Hue Province, a non-profit organization that supports residents with disabilities as a result of exposure to Agent Orange, if you so choose. You can donate amounts in 1000VND denominations (e.g., 0, 1,000, 2,000...15,000). Enumerator: Remind participant that the amount donated, if any, will be subtracted from their received payment at the end of today's experiment.**

**B1. How much would you like to donate, if any?**

1

### *Donation amount (VND)*

Now imagine you are at a new retail market (e.g., supermarket like Coopmart) and have the opportunity to purchase the two bunches of bok choy displayed in front of you. Please examine these vegetables and think about which one you would like to purchase, if any, just as if you were purchasing them in a retail setting. Each bunch of vegetables is approximately 200g in weight.

**ENUMERATOR: DO NOT STATE THAT ONE OF THE VEGETABLES IS LABELED**

**B2. Enumerator:** Please mark which vegetable is on the left or right (FROM ENUMERATOR VIEW) on the table.

Labeled \_\_\_\_\_ (1: left, 2: right)

Unlabeled \_\_\_\_\_ (1: left, 2: right)

**B3. Please state if you prefer one of these bunches of bok choy. If so, please point at the option you prefer. (FROM ENUMERTOR VIEW)**

1. Left \_\_\_\_\_  
2. Right \_\_\_\_\_

**B3a. If yes (1. or 2.) why**

*Enumerator: Please briefly state in ENGLISH (e.g., a*

3. I like them both \_\_\_\_\_

**B4. What is your perception of food safety or how safe it would be to prepare and eat these vegetables after purchase? How would you rate each vegetable in terms of food safety quality on a scale from 1 to 10?**

**B5. What would be the maximum you would be willing to pay for each vegetable (200g)?**

Willingness to Pay (VND) Please circle response											
Left	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Right	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000

You now have the opportunity to purchase one of these two vegetables with the money you were endowed with. The price of the bok choy is 6,000 VND. If you do not prefer either of these two vegetables you may also keep the remaining money.

**B6. Would you like to purchase either and which option if any would you like to purchase?**

*Enumerator: Explain to the participant that, they can select one bunch of bok choy, but that they cannot buy both bunches.*

1. Left \_\_\_\_\_
2. Right \_\_\_\_\_
3. Neither \_\_\_\_\_

Imagine you return to the supermarket and learn that one of the vegetable options has qualified for ...:

(if respondent is in group 1): a Safe food label.

(if respondent is in group 2): a VietGap label

(if respondent is in group 3): a Safe food label. The supermarket also provides a label definition.

(if respondent is in group 4): a VietGap label. The supermarket also provides a label definition.

**B7. Would you rather know (have this information revealed) or don't know (avoid having this information revealed)? Please check one.**

1. Know \_\_\_\_\_ (Enumerator: Ask B7a)
2. Don't know \_\_\_\_\_ (Enumerator: Ask B7b)

**B7a. If you want to know, how much would you be willing to pay to reveal this information (in 1,000 VND denominations and up to 10,000VND)?** *Enumerator: Explain that any amount greater than 0 will be subtracted from your final pay.*

Willingness to Pay (VND) Please circle response											
B7a: Pay to know	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000

- An amount of 0 will result in revealing the information.. **If the respondent is in group 1 or 2, please only reveal the label. If the respondent is in group 3 or 4, please reveal the label and the definition.**

(if respondent is in group 1): a Safe food label.

(if respondent is in group 2): a VietGap label

(if respondent is in group 3): a Safe food label. The supermarket also provides a label definition.

(if respondent is in group 4): a VietGap label. The supermarket also provides a label definition.

**B7b. If you do not want to know, how much are you willing to pay to avoid having this information revealed (in 1,000 VND denominations and up to 10,000VND)? Enumerator: Explain that any amount greater than 0 will be subtracted from your final pay.**

Willingness to Pay (VND) Please circle response												
B7b: Pay to avoid	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	

- If the respondent did not want to pay any (0), please ask if he/she wants to change the response and pay an amount greater than 0. If not, please reveal the information. **If the respondent is in group 1 or 2, please only reveal the label. If the respondent is in group 3 or 4, please reveal the label and the definition.**
  - (if respondent is in group 1): a Safe food label.
  - (if respondent is in group 2): a VietGap label
  - (if respondent is in group 3): a Safe food label. The supermarket also provides a label definition.
  - (if respondent is in group 4): a VietGap label. The supermarket also provides a label definition.
- If the respondent chose an amount greater than 0, please do not reveal the label or the information.

Please take a moment and examine each option once more. You can adjust your prior decision, e.g., you can decide whether or not to exchange the bok choy you just purchased or not to purchase any. The price did not change and is still 6,000 VND.

**B8. Would you like to adjust your purchase (e.g., change your option purchased or no longer make any purchase)?**

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

**B9. Enumerator: Please mark which option the participant wanted to purchase now (final choice).**

1. Labeled \_\_\_\_\_
2. No purchase \_\_\_\_\_
3. Unlabeled \_\_\_\_\_

**B10. Enumerator: Please mark which vegetable is on the left or right (FROM ENUMERTOR VIEW) on the table.**

Labeled \_\_\_\_\_ (1: left, 2: right)

Unlabeled \_\_\_\_\_ (1: left, 2: right)

**B11. Please state again if you prefer one of these bunches of bok choy. If so, please point at the option you prefer. (FROM ENUMERTOR VIEW)**

1. Left \_\_\_\_\_
2. Right \_\_\_\_\_

**B11a. If yes (1. or 2.) why \_\_\_\_\_**

*Enumerator: Please briefly state in ENGLISH (e.g., appearance, weight, freshness, food safety)*

**If no, do you like them equally or do like neither?**

3. I like them both \_\_\_\_\_
4. I don't like either \_\_\_\_\_

**B12. What is your perception of food safety or how safe it would be to prepare and eat these vegetables after purchase? How would you rate each vegetable in terms of food safety quality on a scale of 0 to 10 where 0 means completely unsafe and 10 means fully safe?**

Food Safety Scale Please circle response											
Labeled	0	1	2	3	4	5	6	7	8	9	10
Unlabeled	0	1	2	3	4	5	6	7	8	9	10
0 = very unsafe										10 = fully safe	

**B13. What is the maximum you would be willing to pay for each vegetable (200g) now?**

Willingness to Pay (VND) Please circle response											
Labeled	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Unlabeled	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000

### Part 3: Post-Experiment Questionnaire

## **SECTION C: Illnesses from Vegetables**

**If you think back to the past, there may have been times when you previously became ill from eating contaminated foods. We would now like to ask you questions specifically about times when you became ill through the consumption of contaminated vegetables. Enumerator: Becoming ill could include food poisoning but also becoming ill from use of pesticides, allergic reactions, etc.**

**C1. Have you ever gotten ill from consuming bok choy or any other vegetables?** Enumerator: If yes, continue to C2, if no, show sheet with labels and accompanying attributes and continue to C8.

1. Yes, from consuming bok choy\_\_\_\_\_
  2. Yes, from consuming other vegetables (Which one?) \_\_\_\_\_
  3. Yes, but I do not know from which food \_\_\_\_\_
  4. No\_\_\_\_\_

**C2. According to your memory, approximately how many times have you gotten sick from consuming vegetables previously until now?**

1. 1 \_\_\_\_\_
  2. 2 \_\_\_\_\_
  3. 3 \_\_\_\_\_
  4. 4 \_\_\_\_\_
  5. 5 \_\_\_\_\_
  6. 6 or more

**C3. Think about the time you became most ill from consuming a contaminated vegetable. On a scale from 0 to 10, where 0 is no discomfort and 10 is extreme discomfort, how ill did you feel from consuming a contaminated vegetable?**

Intensity of Illness Please circle response										
0	1	2	3	4	5	6	7	8	9	10
0 = no discomfort						10 = extreme discomfort				

**C4. When you became most ill from consuming a contaminated vegetable, how long were you sick for?**

(in hours)

*Enumerator: If participant states days, recalculate in hours.*

**C5. Did you experience long-term effects or develop a disability from consuming contaminated vegetables?**

1. Yes \_\_\_\_\_  
2. No \_\_\_\_\_

**C6. Continuing to think about the time you became most ill from consuming a contaminated vegetable, do you know where the vegetable was sourced from? Enumerator: Please check all that apply.**

1. Direct from grower \_\_\_\_\_
  2. Friends & Family \_\_\_\_\_
  3. Home garden \_\_\_\_\_
  4. Hypermarket \_\_\_\_\_
  5. Mall \_\_\_\_\_
  6. Minimart/Convenience store \_\_\_\_\_
  7. Safe food shop \_\_\_\_\_
  8. Street vendor \_\_\_\_\_
  9. Supermarket \_\_\_\_\_
  10. I don't know \_\_\_\_\_
  11. Other (specify) \_\_\_\_\_

**C7. Continuing to think about the time you became most ill from consuming a contaminated vegetable, what kind of label was on the vegetable?**

1. ASEANGAP \_\_\_\_\_
  2. FairTrade \_\_\_\_\_
  3. GlobalGAP \_\_\_\_\_
  4. HACCP \_\_\_\_\_
  5. PGS Organic \_\_\_\_\_
  6. Safe Vegetable \_\_\_\_\_
  7. USDA Organic \_\_\_\_\_
  8. VietGAP \_\_\_\_\_
  9. WinEco \_\_\_\_\_
  10. Label, but don't remember which \_\_\_\_\_
  11. No Label \_\_\_\_\_
  12. Other (Specify) \_\_\_\_\_

We previously asked you about several food labels and would like to present you with the definitions for each of these before we conclude our survey with a few additional demographic questions. Please take a few minutes and examine each of the labels and their attributes.

*Enumerator: Show respondent sheet with labels and accompanying attributes if they don't already have it in front of them. **Each participant needs to now see the label definitions (see next page).***

**C8. What do you think, how likely would it be that you would get ill from purchasing, preparing and consuming vegetables with either of these label options? Please indicate on a scale of 0 to 10 representing food safety quality, where 0 means there is certainty you *will not* get sick and 10 means there is certainty that you *will* get sick.**

Label Attributes	(No Label)	✓ ATTP Safe food	 VietGAP	 FAIRTRADE
Growers are prohibited to use pesticides and chemical fertilizers.	✗	✗	✗	✗
Growers only use fertilizers and pesticides approved by government and comply with application regulations.	✗	✓	✓	✗
Soil and water samples are analyzed at an accredited facility for maximum allowable levels of pesticide residues, heavy metals, and microorganisms.	✗	✗	✓	✗
Integrated pest management (IPM) techniques are used to minimize use of pesticides.	✗	✗	✓	✗
Products are certified and kept separated from other products during harvesting and processing.	✗	✗	✓	✗
Vegetables are properly packaged to reduce contamination when transporting from production site.	✗	✗	✓	✗
Workers receive proper safety training and wear protective clothing.	✗	✓	✓	✗
Traceability required and records of production process kept.	✗	✓	✓	✗
Fair vegetable prices guaranteed for growers.	✗	✗	✗	✓

## SECTION D: Demographics

We would now like to ask you a few additional demographic questions.

1	2	3	4	5	6	7	8
Gender	Age	Relation to household head	Marital status	Education completed	Years that you went to school?	Work status	Ethnic group
Code 1		Code 2	Code 3	Code 4		Code 5	Code 6
<b>CODES:</b>							
<b>Code 1:</b> 1. Male 2. Female							
<b>Code 2:</b> 1. Head 2. Spouse or Partner 3. Son/Daughter 4. Stepson or stepdaughter 5. Grandchild 6. Sibling 7. Cousin 8. Other							
<b>Code 3:</b> 1. Married 2. In a union 3. Separated 4. Widowed 5. Single 6. Divorced 7. No Answer							
<b>Code 4:</b> 1. Don't go to school 2. Primary 3. Secondary 4. High School 5. Undergraduate 6. Graduate							
<b>Code 5:</b>							
<u>Agricultural Occupation</u>							
1. Engaged in own agriculture 2. Engaged in fishing hunting or collecting 3. Casual/temporary/seasonal labor 4. Permanently employed							
<u>Non-agricultural occupation</u>							
5. Non-farm self-employed 6. Casual/temporary/seasonal labor 7. Permanently employed 8. Government official 9. Housewife 10. Student 11. Performing only (one time) occasional and light work 12. Monk (religious service) 13. Joined army							
<u>No occupation and other</u>							
14. Unemployed 15. Unable to work due to disability 16. Unable to work- other reasons 17. Taking care of disabled/impaired household member 18. Other 19. No Answer							
<b>Code 6:</b> 1. Kinh 2. Tày 3. Thái 4. Hoa 5. Kmer 6. Muong 7.Nùng 8. Hmông 9. Other							

9	10	11	12
Religion or feel close to any?	Disabled Person (If No, skip to 12)	What level of difficulty does disability cause your every day life?	Are you the primary food shopper for the household?
Code 2	Code 1	Code 3	Code 1
<b>CODES:</b>			
<b>Code 1:</b> 1. Yes 2. No			
<b>Code 2:</b> 1. Buddhist 2. Hoa Hao Buddhist 3. Muslim 4. Christian 5. Caodaist 6. Animist 7. No Religion 8. Other 9. No Answer			
<b>Code 3:</b> 1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Decline to answer			

**D13. Do you have any children? Enumerator: If yes, go to D14. If no, skip to D15.**

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

**D14. How many children (alive) do you have?**

**D15. How many people currently live in your household?**

**D16. Where were you born?**

Location	
a. Province	
b. District	
c. Ward	
d. Residential group/village	
e. Hamlet	

**D17. Between what years did you live there?**

**D18. Between what years did your parents live there?**

**D19. How many sources of income does your household have?**

 (number)

*Enumerator: Please explain that several people in the household could receive a salary, or the household might have other sources of income (e.g., rental income, benefits or allowance).*

**D.20 On average, what is your household's monthly income (in million VND)?**

1. 0 – 20
2. 21 – 40
3. 41 – 60
4. 61 – 80
5. 80 >

*Enumerator: Please check with respondent that he/she included all sources of monthly income in his or her family and not just his or her own monthly income.*

**D21.** If you think about yourself carefully, are you generally a person who is fully prepared to take risks or do you try to avoid taking risk? Please respond on a scale of 0 to 10 where 0 means unwilling to take risks and 10 means fully prepared to take risks.

Risk Scale <i>Please circle response</i>										
0	1	2	3	4	5	6	7	8	9	10
0 = unwilling to take risks						10 = fully prepared to take risk				

**Please indicate how much you agree or disagree with the following statements.** *Enumerator: Please show scale provided to the participant.*

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
<b>D22.</b> I trust information in a certified label.					
<b>D23.</b> I am concerned about my health.					
<b>D24.</b> I pay attention to the foods I eat.					
<b>D25.</b> I am interested in learning new information.					
<b>D26.</b> I am a person that worries a lot.					
<b>D27.</b> I am skeptical about information provided voluntarily by a brand (e.g., manufacturer or retailer) .					

## SECTION E: Exposure to Chemical Defoliants

**E1. Have you personally been affected by Agent Orange or other chemical defoliants used during Vietnam's American War? Enumerator: If yes continue to E2, if no skip to E3. If Decline to answer, skip to E8.**

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_
3. Decline to answer \_\_\_\_\_

**E2. Can you tell us what year and where you were exposed to Agent Orange or other chemical defoliants?**

Year	Location
	a. Province
	b. District
	c. Ward
	d. Residential area/ village
	d. Hamlet

**Do you have relatives or friends that have been affected by Agent Orange or other chemical defoliants used during Vietnam's American War? If yes, on a scale of 0-10 where 0 means not close at all and 10 means very close, how close do you feel to the affected friend/relative? Can you tell us what year and where your relatives or friends were exposed?**

Friend or Relative	Closeness (0-10)	Year	Location				
			Province	District	Ward Village	Residential area/ village	Hamlet
E3.							
E4.							
E5.							
E6.							
E7.							

*Enumerator: Please fill out as much as the respondent remembers.*

**Please indicate how much you agree or disagree with the following statements about Agent Orange and other chemical defoliants used during Vietnam's American War. Enumerator: Please show scale provided to the participant.**

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
<b>E8.</b> I know what Agent Orange and other chemical defoliants are.					
<b>E9.</b> I am aware of the health effects of Agent Orange and other chemical defoliants.					

**We have reached the end of the survey. Thank you for your time and cooperation with us today! You may keep all of the remaining money and produce (if applicable). Please do not share what we discussed during this time with anyone else as it may impact the results of the study. As a reminder, we will contact you again in approximately one month. If you participate in this follow-up interview, you have the opportunity to receive an additional 30,000 VND. We anticipate that the follow-up will not take more than 15 minutes to complete.**

*Enumerator: Fill out pay out sheet and ask the respondent to take it to the team leader station. Make sure the respondent takes the bok choy if he/she bought it.*

## **SECTION F: INTERVIEW SESSION NOTES**

**F1. Results of Interview:** *Enumerator: Please check right number.*

1. Completed \_\_\_\_\_ *(Enumerator: Skip to F3.)*
2. Partially completed \_\_\_\_\_
3. Not completed \_\_\_\_\_

**F2. Reason for partially or not completed:** *Enumerator: Please check right number.*

1. Participant did not show \_\_\_\_\_
2. Respondent was seriously ill \_\_\_\_\_
3. Respondent refused to be interviewed \_\_\_\_\_
4. Respondent needed to leave/left \_\_\_\_\_
5. Other: \_\_\_\_\_

**F3. Cooperation level of respondent?** *Enumerator: Please circle number.*

1	2	3	4	5
Very good	Good	Adequate	Poor	Very Poor

**F4. Did the respondent have difficulties understanding the questions?** *Enumerator: Please check right number.*

1. Yes, a lot \_\_\_\_\_
2. Yes, somewhat \_\_\_\_\_
3. No \_\_\_\_\_

**F5. In which section did the respondent have most difficulties?**

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## Part 4: Follow-up Questionnaire

Enumerator: \_\_\_\_\_

ID enumerator: \_\_\_\_\_

Editor: \_\_\_\_\_

ID editor: \_\_\_\_\_

Team leader: \_\_\_\_\_

ID team leader: \_\_\_\_\_

**COV8a. Name of household head :** \_\_\_\_\_

**COV8b. Name of Respondent:** \_\_\_\_\_

**Make sure that the respondent matches the respondent listed for the original survey/experiment. If not, ask if you could speak to her/him instead. Respondents are asked to recall information and answers from the original survey and it is important that you talk to the person that participated in the experiment. If the original respondent is not available, ask if you could call back to talk to him/her. Use a new copy of the survey when you do call back.**

### Visit

	<b>First call</b>		<b>Second call</b>		<b>Third call</b>
<b>COV9. Date</b>	_____ / _____ / 2023	<b>COV13. Date</b>	_____ / _____ / 2023	<b>COV17. Date</b>	_____ / _____ / 2023
<b>COV10. Starting time</b>	_____ : _____	<b>COV14. Starting time</b>	_____ : _____	<b>COV18. Starting time</b>	_____ : _____
<b>COV11. End time</b>	_____ : _____	<b>COV15. End time</b>	_____ : _____	<b>COV19. End time</b>	_____ : _____
<b>COV12. Result of visit</b>	1. completed _____ 2. partially completed _____ 3. Respondent not available _____	<b>COV16. Result of visit</b>	1. completed _____ 2. partially completed _____ 3. Respondent not available _____	<b>COV20. Result of visit</b>	1. completed _____ 2. partially completed _____ 3. Respondent not available _____

### Result of Interview

<b>COV21. Checking by Team leader</b>	<b>COV22. Supervision by Team leader</b>	<b>COV23. Checking by editor</b>
1. Checked and no errors _____ 2. Checked and corrections done _____ 3. Checked but without corrections _____ 4. Not checked, _____	1. Yes 2. No	1. Data entered, without error _____ 2. Data entered and corrected _____ 3. Data entered without corrections, _____ 4. Data not entered and only manual editing, _____ 5. Data not entered and not edited, _____

### A. LOCATION OF HOUSEHOLD

1. Ward		Number _____
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### B. GENERAL INFORMATION ON RESPONDENT

1. ID of household	_____
2. Group number (Treatment/Cntrl)	1. Safe Veg/No Def 2. VietGap/No Def 3. Safe Veg/Def 4. VietGap/Def

3. Status respondent	1.Household head 2.Spouse of head 3. Child of head 4.Parent of head 5. Sibling of head 6.Other,_____
4. Cell phone number	_____

### **Introduction to respondent**

We are enumerators from a project conducted by researchers at UC Davis and The University of Gottingen and would like to ask you some follow-up questions based on the experiment and survey you previously participated in. This survey should take no more than 15 minutes.

You will receive up to 30,000 VND in phone credit for participating in our study today. You will receive 20,000 VND for completing all the answers in the survey. You also have the opportunity to receive an additional 10,000 VND depending on your answers to the survey questions. Don't worry we will explain this to you again when we ask you specific questions throughout.

In general, we assure you that all information you give during the interview is kept strictly confidential. Data will be used for scientific purposes only, will not be shared with any outside person, and reported in a way that does not reveal your identity.

Do you have any questions? Do you consent to participating in this study?

Do you have any questions? Shall we proceed?

### **Interview rules:**

- ***Ensure that respondent is the same person that completed initial survey.***
- ***If respondent is not available call again two additional times.***
- ***Introduce yourself in a nice way and politely inform the respondent of the purpose of the interview.***
- ***Ask the respondent if she or he agrees to be interviewed. If she/he really does not want, ask whether you can call back later.***
- ***Ask the respondent if she or he has understood the question in case you observe that the respondent may have difficulties or is uncertain about the question.***  
*Always try to maintain a good atmosphere, if the respondent gets tired offer to have a short break and then continue.*
- ***Read out question by question slowly and carefully.***
- ***Give respondents endowment at end of survey.***

## **SECTION E: Exposure to Chemical Defoliants**

*Justification for this section: Prior exposure to pesticides, herbicides, or chemical defoliants may affect perceptions of food safety. Individuals that have personally experienced negative health effects or know someone that has experienced negative health effects as a result of exposure may have intensified personal biases and food safety concerns. These beliefs may not be changed by information alone.*

*Instead, individuals may revert back to their initial beliefs even when presented with information that conflicts with their personal beliefs. Individuals who have been exposed to pesticides, herbicides, or who have a close relationship to one or several people exposed to pesticides, herbicides, or chemical defoliants may have different beliefs and purchasing habits than others not directly affected. These individuals will likely react differently to information provided on food labels, have a different willingness to pay for food safety information, be less likely to shop at certain retail markets, consume fewer vegetables overall, and may change their beliefs about food safety information differently than those unaffected.*

**E1. Can you tell me if you were personally affected by pesticides, herbicides, or chemical defoliants (e.g., Agent Orange) in the past (e.g., experienced negative health effects or developed a disability)?**

*Enumerator: If yes continue to E3. If Decline to answer, skip to E8.*

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_
3. Decline to answer \_\_\_\_\_

**Can you tell me if you have relatives or friends that affected by pesticides, herbicides, or chemical defoliants (e.g., Agent Orange) in the past (e.g., experienced negative health effects or developed a disability)? If yes, on a scale of 0-10 where 0 means not close at all and 10 means very close, how close do you feel to the affected friend/relative?**

Friend or Relative	Closeness (0-10)
E3.	
E4.	
E5.	
E6.	
E7.	

Please indicate how much you agree or disagree with the following statements about Agent Orange and other chemical defoliants. Enumerator: Please show scale provided to the participant.

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
<b>E8.</b> I know what Agent Orange and other chemical defoliants are.					
<b>E9.</b> I am aware of the health effects of Agent Orange and other chemical defoliants.					

#### SECTION G: Recall

I am going to ask you some questions about the experiment you previously participated in. In the experiment you were asked to imagine yourself in a modern retail setting and choose whether or not to purchase two different bunches of bok choy. Do you remember this? You will receive up to 30,000 VND in phone credit today. You will receive 20,000 VND for answering all of the questions in this survey and may receive an additional 10,000 VND if you correctly recall your answers to some of the questions we previously asked. We will randomly select one of your answers at the end of the survey. If you correctly recalled your answer to this question, you will receive the full 30,000VND. Please try to answer all questions as carefully and correctly as possible to ensure that you will obtain the full 30,000 VND. Do you have any questions?

G1.

We previously gave you 70,000 VND where you were allowed to donate up to 15,000 VND for charity purposes in Thua Thien Hue Province. You were allowed to donate amounts in 1,000 VND denominations (e.g., 0, 1,000, 2,000...15,000). Do you remember how much money you gave to the organization? If you do not remember, you may also respond that you do not recall.

	Donation amount (VND)	I do not recall _____
--	-----------------------	-----------------------

G2. In the initial survey we gave you the option to purchase one of two different bunches of bok choy. We later revealed that one of the vegetables qualified for a food safety label. Do you remember whether you saw a food safety label prior to having the opportunity to reassess your purchasing choice? Enumerator: Please give all options

1. I saw a Safe Food label \_\_\_\_\_

2. I saw a VietGAP label \_\_\_\_\_
3. I saw a Fairtrade label \_\_\_\_\_
4. I saw no label \_\_\_\_\_
5. I do not recall \_\_\_\_\_

**G3. Do you recall your final purchasing choice? Enumerator: Please give all options**

1. I purchased the vegetable with the Safe Food label \_\_\_\_\_
2. I purchased the vegetable with the VietGAP label \_\_\_\_\_
3. I purchased the vegetable with the Fairtrade label \_\_\_\_\_
4. I purchased the vegetable without a label \_\_\_\_\_
5. I did not purchase any vegetable \_\_\_\_\_
6. I do not recall \_\_\_\_\_

**G4. What was your food safety ranking after you had the option to see which vegetable received a label? Remember that we used a ranking on a scale of 0 to 10 where 0 means very unsafe and 10 means fully safe did you give to each vegetable in terms of food safety? If you do not remember, you may also respond that you do not recall. Enumerator: If the respondent chose not to view the labels, record the higher ranking in the first row and the lower ranking in the second row as indicated below.**

Food Safety Scale Please circle response												
G4a: Labeled (higher rating if no label)	0	1	2	3	4	5	6	7	8	9	10	I do not recall
	G4b: Unlabeled (lower rating if no label)	0	1	2	3	4	5	6	7	8	9	10
0 = very unsafe												10 = fully safe

**G5. After being presented with the option of knowing which vegetable was associated with a food label, what was your maximum willingness to pay (in VND) for each vegetable (200 g)? If you do not remember, you may also respond that you do not recall. Enumerator: If the respondent chose not to view the labels, record the higher willingness to pay in the first row and the lower willingness to pay in the second row as indicated below.**

Willingness to Pay (VND) Please circle response												
G5a: Labeled (higher)	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	I do not recall

WTP if no label)												
G5b: Unlabeled (lower WTP if no label)	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	I do not recall

G6. At present time, please rank the previously presented options (whether you would be choosing any of the vegetable options or not choosing any) and clearly indicate which option you would prefer or if you are indifferent between choosing several options. The lowest number indicates the most preferred option while the highest number indicates the least preferred option. For example, if you would choose 1. Fairtrade 2. None 3. Safe Food 4. Unlabeled 5. VietGAP, Fairtrade would be the most preferred; VietGAP the least preferred; and you are indifferent between none of the options and the Safe Food label option.

1. Fair Trade \_\_\_\_\_
  2. Safe Food \_\_\_\_\_
  3. VietGAP \_\_\_\_\_
  4. Unlabeled \_\_\_\_\_
  5. None \_\_\_\_\_

**G7. At the present time, what ranking on a scale of 0 to 10 where 0 means very unsafe and 10 means fully safe do you give each of the following vegetable options?**

**G8. At the present time, what is your maximum willing to pay (in VND) for each of the following vegetable options (200g)?**

Willingness to Pay (VND) Please circle response											
FairTrade	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Safe Vegetable	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
VietGAP	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000
Unlabeled	0	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000

## **SECTION H: Subjective Poverty Question**

**H1. Concerning your household food consumption in the last year:**

1. It was less than adequate for your households needs \_\_\_\_\_
2. adequate for your household needs \_\_\_\_\_
3. more than adequate for your household needs \_\_\_\_\_

**H2. Concerning your household income, would you say that you are better off than last year?**

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

**H3. Would you say that your household always had enough financial resources to provide the necessities of life (in terms of health, food, clothing schooling, ect.)?**

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

Thank you for completing our follow-up questionnaire. Please do not discuss this survey with others as it may affect the results. In addition to the 20,000 VND you will receive for completing the questionnaire with us today, we will also now determine if you will receive the additional payout. Here is how the additional payout will work. You will provide me with a number between 1 and 6. Each of those numbers corresponds with a question you just answered. However, I cannot reveal which questions they correspond to. If your answer to that question is the same as in the previous survey, you will receive an additional 10,000 VND. Do you understand? Do you have any questions?

*Enumerator: Ask respondent to reply with a number between 1 and 6.*

- *If the respondent says 6, he/she will automatically receive the additional 10,000 VND.*
- *If the respondent says 1, compare the answer from G1 to the entry in Q1 on the "List of survey participants" sheet.*
- *If the respondent says 2, compare the answer from G4a to the entry in Q4a on the "List of survey participants" sheet.*
- *If the respondent says 3, compare the answer from G4b to the entry in Q4b on the "List of survey participants" sheet.*
- *If the respondent says 4, compare the answer from G5a to the entry in Q5a on the "List of survey participants" sheet.*
- *If the respondent says 5, compare the answer from G5b to the entry in Q5b on the "List of survey participants" sheet.*

*Then:*

- *If answer is incorrect, participant receives 20,000 VND*
- *if answer is correct, participant receives 30,000 VND.*

*Inform participant of the amount (in phone credit) he/ she will receive.*

**I1. Amount respondent received.** *Enumerator: Check the correct response.*

1. 20,000 VND \_\_\_\_\_
2. 30,000 VND \_\_\_\_\_

**I2. Can you receive the payment from this phone number?** *Enumerator: If no, continue to I3.*

1. Yes \_\_\_\_\_
2. No \_\_\_\_\_

**I3. If you cannot receive the payment from your phone, what is the phone number of a family member we can send the payment to instead?**

*Enumerator: Inform the respondent that the survey is completed and thank them for their time. Inform the respondent approximately when he/she can expect to receive the payment.*

*Transfer the appropriate amount by end of day.*