



## Mind Genomics: Accelerating and Scaling Our Understanding of the Everyday Mind and its Prospects for Efforts in Nutrition

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### Abstract

We present the newly emerging science of Mind Genomics, which studies the way we make decisions in everyday life. Mind Genomics defines a topic, creates four relevant questions, creates four answers to each question, for a total of 16 elements. The subject evaluates a unique set of 24 vignettes, combinations of 2-4 elements, at most one answer to each question, rating the vignette on a scale. The scale may judge amount of (e.g., perceived fullness, liking, etc.), or may require the subject to choose an emotion. Each subject tests a different set of combinations. All combinations are created by experimental design, ensuring statistical independence. The analysis of the results reveals how each answer or element 'drives' the rating. A measure of response time, collected at the same time, shows the degree of psychological engagement. Finally, Mind Genomics reveals new-to-the-world mind-sets of people, with different ways of looking at the topic. Mind Genomics finishes with a personal viewpoint identifier, new people to be assigned to a mind-set. We finish with the vision of scaling the process, to understand the algebra of the mind for the world of foods and nutrition, and to correlate the mind-sets with exogenous behavior, both economics-oriented and health-related, respectively.

**Keywords:** Mind Genomics; Experimental Design; Inner Psychophysics; Conjoint Measurement; Part-worth Utility; PVI; Mind-sets; Segmentation; Response-time; Consideration-time

### Abbreviations

MS: Mind-Set; RT: Response Time.

### Introduction

Studies on nutrition and health related beliefs, attitudes and behaviours fall into a number of different categories. The most common are qualitative discussions led by a moderator, with one or several participants discussing the topics set up ahead of time according to the moderator's script. Surveys about attitudes and behaviors are used almost as frequently. The objective of these discussions and surveys is to understand the broad framework of how people think about health and nutrition; what they do, what

they would like to do, and so forth. At a somewhat deeper level are behavioral studies, either observation studies of what people report that they have done (epidemiologically oriented), what people do on a daily basis (observational), or even how people react in certain situations with well-defined test stimuli and protocols of measurement (experimental).

In ordinary, everyday situations, we often 'weigh our options' before making decisions. Using this rational thought process, we often choose the option that is most feasible and aligned with our values. During severe weather and natural disasters, the fear we experience as a result of the life-threatening conditions at-hand of-

ten change the way our values influence our reactions. Much more research is needed before we know daily quantitative nutritional requirements adequate to formulate cost-effective, nutritionally complete, and environmentally friendly commercial feeds for defined cultural conditions [1]. Continuing accumulation of scientific evidence demonstrates that nutrition is one of the most important determinants of health for the individual, and that specific nutritional habits of various populations can significantly decrease the overall risk of several chronic diseases [2].

Dual system and dual process views of the human mind have contrasted automatic, fast, and non-conscious with controlled, slow, and conscious thinking. Covering different aspects of consumer decision making, we discuss the conditions under which different types of processes are evoked, how they interact and how they apply to consumers' processing of marketing messages, the evaluation of product-related information, and purchasing behavior [3]. Neuroscientific techniques allow consumer researchers to understand the fundamental neural underpinnings of psychological processes that drive consumer behavior and elucidate the "black box" that is the consumer's mind [4]. Over their lifespan, consumers develop a pragmatic expertise in marketplace metacognition and marketplace interactions. Marketplace metacognition and social intelligence refer to people's beliefs about their own mental states and the mental states, strategies, and intentions of others as these pertain directly to the social domain of marketplace interactions [5]. The available research now clearly suggests that marketers can enhance their consumers' product experiences by ensuring that the sound symbolism of the brand name, as well as any shape symbolism of/on the labeling, and even the very shape of the packaging itself, sets up the right (i.e., congruent) product-related sensory expectations in the mind of the consumer [6].

In terms of the psychology of what can be learned, the foregoing approaches, discussion/survey, direct observation, and experimentation measure what people verbalize. The research can report in tabular and graphic form what happens. Yet, missing is a deeper, almost empathic understanding of what the person is experiencing. The words are processed by the subject, but much of the information is lost in the process of test design, test execution, and reportage. An experienced psychologist might probe deeply and evince more information, but even the interaction between the subject and the psychologist is superficial, mediated by the back-and-forth discussion.

The cognitive and motor behavior that people perform in the course of pursuing a goal can induce a mind-set that persists to influence the strategy they use to attain very different goals in unrelated situations [7]. There has been a recent swell of interest in marketing as well as psychology pertaining to the role of sensory experiences in judgment and decision making. Within marketing, the field of sensory marketing has developed which explores the role of the senses in consumer behavior [8]. Despite a century of intensive research into the human mind, our understanding of how people in everyday life actually make choices and solve problems is surprisingly limited [9].

The evolutionary bases of memory, attitude formation/change, emotions, perception (our five senses), personality, and decision making are addressed next, along with specific links to consumer research [10]. The emergent literature on consumer brand engagement, largely conceptual, offers various definitions of the construct, though without much consensus [11]. Consumer research generally focuses on the consumption of tangible objects and experiences, which are concrete. However, consumers often consume in their minds by fantasizing, dreaming, or imagining that they possess some desired object or that they are living some experience. In this article, the term 'consumption dreams' is used to refer to mental representations of consumption objects that consumers desire and experiences that they want to realize [12].

The COVID-19 pandemic, accompanied by lockdowns and social distancing mandates, has disrupted the consumer habits of buying as well as shopping. Consumers are learning to improvise and learn new habits [13]. COVID-19 is a public health issue that has affected every aspect of our society [14], and has led to significant changes in how businesses act and consumers behave [15].

Mind Genomics approaches the topic of knowledge development from a completely different direction. The ingoing assumption is that the task is to recognize ideas as relevant to a certain topic, rather than to create these ideas or recite them, in the language of experimental psychology. That is, more can be learned by presenting the subject with a test stimulus and asking a simple question. People have an easier time reacting to a stimulus rather than 'producing' the stimulus, viz., recognizing that one has seen something rather than recalling what one has seen. Furthermore, rather than presenting single ideas, allowing the subject to vary the judgment criterion, Mind Genomics presents combinations of

ideas, the combinations dictated by experimental design. No effort is made to blend the ideas, but rather they are presented 'as is,' one above the other, in centered format. It is the task of the subject to respond to these combinations, to 'recognize' and then 'judge' the degree to which the combination fits a specific criterion.

A research school in the traditional sciences will feel that Mind Genomics departs from the standard approaches of science, viz., to 'isolate,' 'reduce noise,' and 'measure.' That is entirely correct. The underlying objective of Mind Genomics, at least in a metaphoric sense, is to take a 'picture of the idea,' much as the MRI takes a 'picture' of underlying tissue. Both Mind Genomics and MRI take snapshots of the underlying 'tissue,' (the underlying idea by Mind Genomics, the actual tissue by the MRI). Both then re-compose the idea or the tissue by combining the pictures taken from different vantage points (people and vignettes for Mind Genomics, actual images for the MRI).

## Materials and Methods

The best way to understand the Mind Genomics application is to see it applied to a topic related to health and nutrition. The process follows a set of well-defined steps:

- **Step 1:** Identify the topic. The topic is the current attitudes and behaviors of gluten-free buyers during the early days of the Covid-19 pandemic, May 15-17, 2020.
- **Step 2:** Select four questions which suggest a narrative. Table 1 shows the four questions, A-D.
- **Step 3:** Select four answers to each question, presenting a different facet in each answer. These answers need not be researched, because the Mind Genomics system is iterative. It is more important to surface these answers, knowing that the future rapid, simple, and knowledge-building iterations make it unnecessary to be 'right the first time.' Table 1 shows the four answers to each question, the answers coming from a discussion among people who sell gluten-free foods and talk with customers.
- **Step 4:** Create a short introduction to the topic, sufficient to alert subjects to the topic, but not detailed enough to communicate the topic in depth. That communication will occur through the answers, or 'elements,' A1-D4.
- **Step 5:** Create a simple scale, anchored at both ends, easy to use. Table 1 shows both the introduction (subject's orientation) to the topic, as well as the rating scale.
- **Step 6:** Combine the answers or elements according to an experimental design of 24 different vignettes, so that each vignette comprises 2-4 answers or elements, at most one answer from a question. The experimental design ensures that the 16 elements appear an equal number of times and are statistically independent of each other. Each subject, in turn, evaluates a unique set of 24 vignettes, ensuring that the combinations 'cover the design space,' a property not possessed by any other currently used methods [16].
- **Step 7:** Invite respondents to participate. One may invite people by social media, invite colleagues, students, and so forth. These voluntary participants will 'dribble in,' with the unhappy consequence that the actual effort of fielding the Mind Genomics experiment may take a week for 50 respondents to participate in what is essentially a 4-5-minute interview by internet. A more effective method is to partner with a so-called 'online panel provider,' which maintains a group of millions of respondents, experienced in surveys, and ready to participate. Best practices in market research are moving towards the use of these panelists primarily because they are the most efficient available option. With a group of 50-60 respondents, the actual fieldwork takes less than one hour.
- **Step 8:** The actual experiment lasts 4-5 minutes, as noted above. Each respondent agrees to participate, completes a short 3-question classification (age, gender, third question related to the topic), and reads and evaluates the unique set of 24 vignettes, rating the vignettes on a rating scale shown in table 1. The Mind Genomics program records the underlying design for each vignette, defined as a binary code (1 when an element is present in the vignette, 0 when the element is absent), and then records the rating (5-point scale), and the number of seconds elapsing between the appearance of the vignette on the screen, and the rating.
- **Step 9:** The ratings on the 5-point scale are converted to a simple binary scale, following the analysis conventions of marketing research. The binary transformation converts ratings 1-3 to 0, and ratings 4-5 to 100. The transformation makes the rating an easier-to-understand no/yes question. That no/yes question is simple to explain to people. A small random number (less than 1) is added to the transformed numbers, to provide a very slight bit of variation, so that the OLS (ordinary least-squares) regression will never encounter the case that the transformed numbers for a single respondent are either all 0's, or all 100's.

- **Step 10:** The data from each individual respondent are first subject to an OLS regression, individual by individual. The result generates a simple model for each individual: Binary Rating =  $k_0 + k_1(A1) + k_2(A2) \dots k_{16}(D4)$ . The 16 coefficients for the 56 subjects generate a 56-row x 17-column data matrix. That matrix, without the additive constant, is used for k-means clustering, to identify first, two 'homogeneous groups' among the 56 respondents, and then three 'homogeneous groups' among the 56 respondents. The method is called k-means clustering [17]. The results here will present only the outcome after generating three clusters, or 'mind-sets', groups of subjects whose patterns of coefficients are similar, meaning that they look at the world the same way, at least for the topic of food behavior among those who are gluten intolerant.
- **Step 11:** Using OLS regression, create 'grand models,' relating the presence/absence of the 16 elements (coded 0 or 1) to the binary transformed rating. For these data, create the models or equations for total panel, for males versus females, for younger respondents (age 18-21) versus older respondents (age 22+), and finally for each of the three mind-sets; mind-set 1, 2, and 3, respectively.
- **Step 12:** Using the same logic for modeling, this time however with response time (RT) as the dependent variable, relate the presence/absence of the 16 elements to the response time. All response times of 9 seconds or longer were converted to 9 seconds because it was unclear whether the subject was doing something else, multi-tasking, which would interfere with the Mind Genomics experiment. The equation takes on the same form as the equation for the binary ratings versus elements, with the only difference being that the additive constant is not estimated for response time. The assumption is that without any elements in the vignette the response time would be 0, by definition.
- **Step 13:** In order to discover these mind-sets in the population among new people who have not participated in this study, create the PVI, the personal viewpoint identifier [17]. The PVI creates a short questionnaire comprising six elements, selected from the original 16 elements. These six elements are presented as new questions, answered by either 1 = That is NOT me, or 2 = That IS me. Each of the 64 possible patterns of responses assigns the new person to one of the three mind-sets.

## Results and Discussion

### Identifying the mind-sets

Table 1 shows the instructions (top panel) and the coefficients from OLS regression for the total panel, genders and ages. The ad-

ditive constant shows the estimated percent of respondents who are likely to say that the vignette 'describes me,' in the absence of elements. Since all vignettes comprised elements by the underlying experimental design, the additive constant is a purely estimated parameter. Its practical use comes by considering it as a baseline of readiness to 'agree' in the absence of elements. Seen in that fashion, the additive constants suggest that males are ready to agree whereas females are not (additive constant 66 vs 31), whereas age shows a sharp drop in basic agreement for the oldest respondents (additive constant 20).

Only positive coefficients are displayed in the tables, as these coefficients demonstrate the elements which drive positive agreement (rating of 4,5 on the 5-point scale). The negative and 0 coefficients are blanked out in the interest of allowing the patterns to emerge more clearly. There are a great number of blank cells, corresponding to elements which are not perceived to describe the subjects. The strongest elements, coefficients of 8 or higher, are shaded. These elements drive agreement and can be considered to be statistically significant based upon the t-statistic.

The sparseness of strong performing elements and the great number of blank cells suggests no clear pattern in the data. That is, subjects do agree with the statements, the elements in the vignette. Furthermore, the elements which convey little information or are not relevant emotionally fail to describe most people. The clearest example is element D2: Support local or independent grocery stores...more so now, than before.

Table 2 shows the coefficients for the three mind-sets emerging from clustering the coefficients (but not the additive constant). These mind-sets show many more significant coefficients. The most important outcome, however, is that the strong performing, significant and positive coefficients, 'tell a story' that is presented for each mind-set. The name for each mind-set emerges from the commonality of the strong performing coefficients, and not from any knowledge used by the k-means clustering program.

Table 3 shows the response times for the total panel and for each of the three mind-sets. Noteworthy about the data is the long response times for the elements, perhaps because the subjects were gluten-intolerant, and focused on the choice of foods with more attention than the typical person. The elements which strongly engage the subjects, viz., exhibit response times for each element of 2.0 seconds or longer, are congruent with the definition of the mind-set. Recall, however, that the definition of the mind-set was

based upon the pattern of coefficients for ‘description’, viz. 4-5 or like me. The data suggests congruence of personal definition and engagement, a congruence not seen in other studies with food and with the ordinary food consumer as subject.

Everyday life has been disrupted due to Covid-19 and the resulting shelter in place order. This situation has changed how we eat which can be an added challenge to those that maintain a gluten free diet.  
 Please help us by taking this survey so that we may better understand the behaviors of people trying to maintain a gluten-free diet during a time of social distancing.  
 During this time of Covid-19, how well do these statements describe your food behavior?  
 1=Not me ... 5=Yes, that’s me

Coefficients for key groups after transformation (1-3 →0; 4-5 → 100)		Tot	Male	Fem	A25-34	A35-44	A45+
Base Size		56	15	41	14	16	26
Additive Constant		41	66	31	44	79	20
<b>Question A: How has Covid-19 changed the way you are currently eating most of your meals?</b>							
A1	Eating habits haven’t changed...still go to the grocery store						6
A2	Flexible...rarely go out to get food...cook with ingredients still in pantry						7
A3	Rely on carry-out and delivery more now, then before						3
A4	In crisis mode...seldom leave home...stocked up on ready-to-eat packaged foods			2			6
<b>Question B: How has Covid-19 affected the number of meals you cook at home?</b>							
B1	Cook when I feel like it...just like before	6		12	6		14
B2	Cook more meals now...not comfortable with restaurants preparing meals	1		4	9		6
B3	Too much effort to cook now...ordering delivery is easier	4		8	14		3
B4	Nothing has changed...I cook the same amount	8	2	11	12		13
<b>Question C: When cooking at home during this time, what is your most common source to find gluten-free recipes?</b>							
C1	More use of cookbooks/magazines when cooking gluten-free						3
C2	More creative...browse popular recipe sites and cooking apps			1			3
C3	More ideas from social media (Pinterest, Instagram, etc.)	5		12			17
C4	Don’t use any additional resources when I cook			1			
<b>Question D: During this current Covid-19 pandemic, how are you shopping for your foods and ingredients?</b>							
D1	No change...shop at supermarkets or grocery stores	5		7		6	7
D2	Support local or independent grocery stores...more so now, than before						
D3	Rely on online grocery delivery services (Instacart)	2		5		9	1
D4	Shop at different locations for specific foods	3		7		8	5

**Table 1:** Performance of elements by total panel, genders and ages. The table shows only coefficients which are positive. Statistically significant coefficients are shown in shaded cells.

Coefficients for the mind-sets after binary transformation (1-3 → 0; 4-5 → 100)		Total	MS 1	MS 2	MS 3
	Base Size	56	22	12	22
	Additive Constant	41	47	41	36
	Mind-set 1 - Fortress mentality				
A4	In crisis mode...seldom leave home...stocked up on ready-to-eat packaged foods		16	13	
A2	Flexible...rarely go out to get food...cook with ingredients still in pantry		12		
	Mind-set 2 - Focus on acquiring food (how - shopping)				
D4	Shop at different locations for specific foods	3		20	
D3	Rely on online grocery delivery services (Instacart)	2		16	
D2	Support local or independent grocery stores...more so now, than before			15	
C3	More ideas from social media (Pinterest, Instagram, etc.)	5		15	14
D1	No change...shop at supermarkets or grocery stores	5	1	10	4
C2	More creative...browse popular recipe sites and cooking apps			8	2
	Mind-set 3 - Focus on preparing food (how - cooking vs ordering)				
B4	Nothing has changed...I cook the same amount	8	2	1	19
B1	Cook when I feel like it...just like before	6	1	4	16
C3	More ideas from social media (Pinterest, Instagram, etc.)	5		15	14
B3	Too much effort to cook now...ordering delivery is easier	4	4		13
C1	More use of cookbooks/magazines when cooking gluten-free				12
	No Mind-Set				
B2	Cook more meals now...not comfortable with restaurants preparing meals	1	6		7
C4	Don't use any additional resources when I cook			1	3
A1	Eating habits haven't changed...still go to the grocery store			1	
A3	Rely on carry-out and delivery more now, then before		6		

**Table 2:** Performance of elements by total panel and the three emergent mind-sets. The table shows only coefficients which are positive. Statistically significant coefficients are shown in shaded cells.

Response Time in Seconds - By Mind-Set		RT
Total Panel		
B1	Cook when I feel like it...just like before	2.1
C2	More creative...browse popular recipe sites and cooking apps	2.0
Mind-Set A - Fortress mentality		
B1	Cook when I feel like it...just like before	2.3
C2	More creative...browse popular recipe sites and cooking apps	2.1
C1	More use of cookbooks/magazines when cooking gluten-free	2.0
C4	Don't use any additional resources when I cook	2.0
Mind-Set 2 - Focus on acquiring food (how - shopping)		
C2	More creative...browse popular recipe sites and cooking apps	2.2
C3	More ideas from social media (Pinterest, Instagram, etc.)	2.0
Mind-Set 3 - Focus on preparing food (how - cooking vs ordering)		
D4	Shop at different locations for specific foods	2.3
D1	No change...shop at supermarkets or grocery stores	2.0

**Table 3:** Response time (RT) for elements which engage.

### Assigning new respondents to the previously identified mindset segments

Figure 1 shows the PVI, the personal viewpoint identifier, created for this study. The PVI emerges from the data from the three mind-sets (Table 2). The underlying algorithm maps the responses of each individual to the likely mind-set.

The PVI360 website provides a template for inputting study information, as shown in Figure 1. The template is an Excel spreadsheet that researchers fill out and submit on the website. Using the information that researchers provide in the spreadsheet, the PVI software program creates a survey with 6 questions for each respondent. The program uses a weighting approach to determine

which elements have the highest impact on segment membership, which ensures that the elements chosen to represent each mindset are accurately able to do so. Respondents access the survey through the unique survey link: <https://www.pvi360.com/TypingToolPage.aspx?projectid=1257&userid=2040>. Figure 2 shows the questions that are presented to respondents on the opening screen. The survey takes about 2-3 minutes to complete. After respondents have completed the survey, the program uses decision tree analysis to identify segment membership for each respondent. This is determined based on patterns of response and an assessment of best fit, dictated by the analysis [17]. Respondents are redirected to the results screen and their mindset is revealed to them, as shown in figure 3.

ID	QuestionCode	QuestionText	Mindset1	Mindset2	Mindset3
1	xxx0	Maintaining a gluten-free diet during the COVID-19 pandemic			
2	xxx1	MindSet Name	Fortress mentality	Focus on acquiring food	Focus on preparing food
			Individuals in this mindset segment are trying to stay at home as much as possible during the COVID-19 pandemic. They make sure to stock-up on ready-to-eat foods and they rarely leave their home.	Individuals in this mindset segment are doing a lot of food planning. They are mainly focused on aspects of food shopping that pertain to food planning. Individuals in this mindset segment are looking for different recipes online and on social media. They are also looking for different places to buy food, rather than purchasing all of their food from the same source.	Individuals in this mindset segment are focused on food preparation. They are cooking a little bit less than usual because delivery is an easier option for them right now. However, they are still cooking fairly often, and they are generally getting their ideas from social media and cookbooks/magazines.
3	xxx2	MindSet Feedback			
4	xxx3	Mindset Video			
5	xxx4	Mindset Link			
6	xxx5	Additive Constant		47	41
7	xxx6	In the PVI there are two Answers: Anchor for Answer on Left - Anchor for Answer on Right	That IS me	That is NOT me	36
ID	QuestionCode	QuestionText	Mindset1	Mindset2	Mindset3
1	E1	Eating habits haven't changed...still go to the grocery store		0	1
2	E2	Flexible...rarely go out to get food...cook with ingredients still in pantry		12	0
3	E3	Rely on carry-out and delivery more now, then before		6	0
4	E4	In crisis mode...seldom leave home...stocked up on ready-to-eat packaged foods		16	13
5	E5	Cook when I feel like it...just like before		1	4
6	E6	Cook more meals now...not comfortable with restaurants preparing meals		6	0
7	E7	Too much effort to cook now...ordering delivery is easier		4	0
8	E8	Nothing has changed...I cook the same amount		2	1
9	E9	More use of cookbooks/magazines when cooking gluten-free		0	0
10	E10	More creative...browse popular recipe sites and cooking apps		0	8
11	E11	More ideas from social media (Pinterest, Instagram, etc.)		0	15
12	E12	Don't use any additional resources when I cook		0	1
13	E13	No change...shop at supermarkets or grocery stores		1	10
14	E14	Support local or independent grocery stores...more so now, than before		0	15
15	E15	Rely on online grocery delivery services (Instacart)		0	16
16	E16	Shop at different locations for specific foods		0	20

Figure 1: PVI template used for inputting study information into the software program.

<p>Everyday life has been disrupted due to Covid-19 and the resulting shelter in place order. This situation has changed how we eat which can be an added challenge to those that maintain a gluten free diet. Please help us by taking this survey so that we may better understand the behaviors of people trying to maintain a gluten-free diet during a time of social distancing.</p> <p>The information I am giving you is about my attitudes towards a specific topic(s). As part of the exercise, I am giving you information about myself. This information will be used to provide better choices in products and services, based on your answers.</p> <p><input type="checkbox"/> I Agree to Participate <input type="checkbox"/> I Do Not Agree to Participate</p> <p>Follow Up for Research and Marketing Purposes *Required  <input type="radio"/> Allow <input type="radio"/> Not Allow</p> <p>Day Of Week Taken *Required          DAY</p> <p>Approximate Time Taken *Required          SELECT RANGE</p> <p>If you were given an Admin code enter it below          Enter Admin Code if you were given one</p> <p>If you were given a Respondent code enter it below          Enter Respondent Code if you were given one</p> <p>Email address *Required          Enter Email</p> <p>Year of Birth *Required          YEAR</p> <p>Country *Required          United States</p> <p>Postal Code *Required          Enter Postal Code</p> <p>Gender *Required          GENDER</p> <p>Ethnicity *Required          NOT SPECIFIED</p>	<p><b>MAINTAINING A GLUTEN-FREE DIET DURING THE COVID-19 PANDEMIC PVI</b>  <b>11.05.2020.1</b></p> <p>No Specialty Questions for This Study</p> <p><b>SUPPORT LOCAL OR INDEPENDENT GROCERY STORES...MORE SO NOW, THAN BEFORE</b>  <input type="radio"/> THAT IS ME  <input type="radio"/> THAT IS NOT ME</p> <p><b>RELY ON ONLINE GROCERY DELIVERY SERVICES (INSTACART)</b>  <input type="radio"/> THAT IS ME  <input type="radio"/> THAT IS NOT ME</p> <p><b>TOO MUCH EFFORT TO COOK NOW...ORDERING DELIVERY IS EASIER</b>  <input type="radio"/> THAT IS ME  <input type="radio"/> THAT IS NOT ME</p> <p><b>NOTHING HAS CHANGED...I COOK THE SAME AMOUNT</b>  <input type="radio"/> THAT IS ME  <input type="radio"/> THAT IS NOT ME</p> <p><b>SHOP AT DIFFERENT LOCATIONS FOR SPECIFIC FOODS</b>  <input type="radio"/> THAT IS ME  <input type="radio"/> THAT IS NOT ME</p> <p><b>IN CRISIS MODE...SELDOM LEAVE HOME...STOCKED UP ON READY-TO-EAT PACKAGED FOODS</b>  <input type="radio"/> THAT IS ME  <input type="radio"/> THAT IS NOT ME</p>
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Figure 2: Opening screen of PVI360 survey.

**Study Name**  
 MAINTAINING A GLUTEN-FREE DIET DURING THE COVID-19 PANDEMIC  
 FORTRESS MENTALITY

**Mindset 1 Feedback**  
 INDIVIDUALS IN THIS MINDSET SEGMENT ARE TRYING TO STAY AT HOME AS MUCH AS POSSIBLE DURING THE COVID-19 PANDEMIC. THEY MAKE SURE TO STOCK-UP ON READY-TO-EAT FOODS AND THEY RARELY LEAVE THEIR HOME.

**Mindset 1 Video**  
**Mindset 1 Link**

**Mindset 2 Name**  
 FOCUS ON ACQUIRING FOOD

**Mindset 2 Feedback**  
 INDIVIDUALS IN THIS MINDSET SEGMENT ARE DOING A LOT OF FOOD PLANNING. THEY ARE MAINLY FOCUSED ON ASPECTS OF FOOD SHOPPING THAT PERTAIN TO FOOD PLANNING. INDIVIDUALS IN THIS MINDSET SEGMENT ARE LOOKING FOR DIFFERENT RECIPES ONLINE AND ON SOCIAL MEDIA. THEY ARE ALSO LOOKING FOR DIFFERENT PLACES TO BUY FOOD, RATHER THAN PURCHASING ALL OF THEIR FOOD FROM THE SAME SOURCE.

**Mindset 2 Video**  
**Mindset 2 Link**

**Mindset 3 Name**  
 FOCUS ON PREPARING FOOD

**Mindset 3 Feedback**  
 INDIVIDUALS IN THIS MINDSET SEGMENT ARE FOCUSED ON FOOD PREPARATION. THEY ARE COOKING A LITTLE BIT LESS THAN USUAL. BECAUSE DELIVERY IS AN EASIER OPTION FOR THEM RIGHT NOW. HOWEVER, THEY ARE STILL COOKING FAIRLY OFTEN, AND THEY ARE GENERALLY GETTING THEIR IDEAS FROM SOCIAL MEDIA AND COOKBOOKS/MAGAZINES.

**Mindset 3 Video**  
**Mindset 3 Link**  
 Leave this page

Figure 3: PVI results displayed for respondents upon completion of the survey.



## Conclusion

This study provides a way for understanding the broad framework of how people think about nutrition and health; what they do, what they would like to do, and so forth. Mind Genomics grants us the ability to identify mind-sets in the population, and then create a short, easy-to-administer tool to assign new respondents to these mind-set segments. This tool, the PVI, makes it possible to extend the application of the science to new people, and validate the initial results. Mind Genomics allows us to scale knowledge rapidly and inexpensively, using a 'ground up' approach, to ultimately build a 'Wiki of the Mind'.

The study focuses on attitudes and behaviors of gluten-free consumers during the early days of the COVID-19 pandemic. The study reveals that different individuals display different attitudes and behaviours in a given situation, and these differences form the basis of our segmentation. The three mind-sets that emerged from this study are as following: (Mind-set 1) Fortress mentality, (mind-set 2) Focus on acquiring food, (mind-set 3) Focus on preparing food. This study may inform companies of the different mind-set segments as they pertain to gluten-free consumers during the COVID-19 pandemic. It can provide insight on how to produce and where to sell gluten-free products, as well as how to orient consumers using different methods of communication.

## Conflict of Interest

No conflict of interest exists.

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