

GMO Labeling and Consumer Perceptions

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INTRODUCTION

Farmers have rapidly been adopting genetically modified crop varieties but consumers have a mixed view of this technology. The debate on whether to require mandatory labeling of genetically modified organisms (GMOs) on food labels was partially settled on July 29th, 2016 when President Obama signed “S. 764: Biotechnology Disclosure Act” into public law. The law mandates (a) the disclosure of bioengineered ingredients to consumers via a weblink, a symbol, or a phone number and (b) that a study assess the ability of consumers to access this disclosure information¹. This work analyzes survey responses from 525 adults to investigate whether U.S. consumers are able to obtain information per the disclosure methods allowed in the legislation. The survey probes further to investigate consumer perceptions of genetically modified organisms and if consumers would use the tools available to access disclosure about bioengineered ingredients.

AIM

The purpose of this study was to:

1. Explain the ability of consumers to access GMO disclosure through the methods ordered the National Biotechnology Disclosure Act.
2. Describe to what extent consumers would utilize QR Codes to determine if ingredients were GMO.
3. Describe consumer attitudes towards various publicized concerns over GMOs.

METHODS

A survey conducted in October 2016.

- Adults recruited by Qualtrics LLC
- Questions focused on personal and household demographics, 12 questions pertaining to this analysis, as well as three other survey sections focused on other food labeling issues.
- Statistical analysis performed in Stata Version 14.
 - Pairwise t-tests
 - Regression Analysis
 - Summary Statistics
 - Demographic Weighting

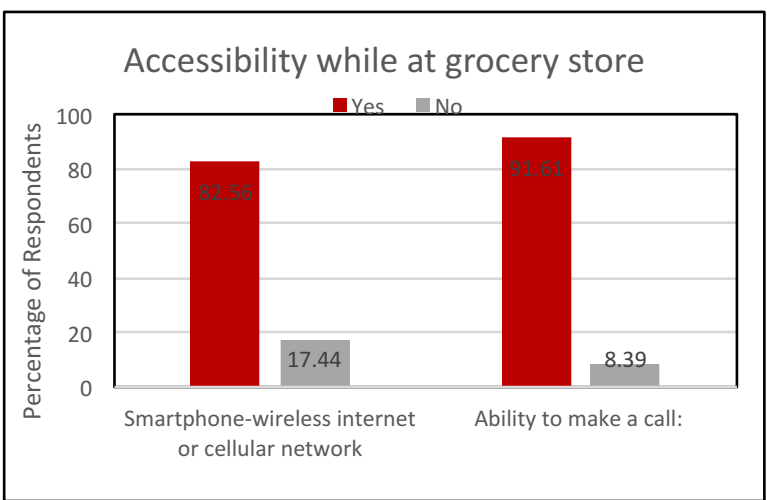
RESULTS

Demographics:

Table 1. Sample Characteristics (n=525)			
Characteristic	Sample%	Census %	
Age	18-64	84.5	83.1
	65+	15.6	16.9
Income	< \$25,000	34.4	22.1
	\$25,000 - \$49,999	23.7	23
	\$50,000+	41.84	54.9
Race	White	77.2	72.4
	Black	11.4	12.6
	Other or Multiple	11.4	15
Education	High School or Less	33.2	40.5
	Some College/Assoc. Deg.	32.5	29.3
	College or More	34.3	30.6
Male	49.13	49.2	
Household Size	2.71	2.65	

*Percentages after results are weighted by race, income, gender, age.

Disclosure Accessibility:



- 4.86 percent of participants responded no to both modes of accessing GMOs above.
- Of the 4.8 percent answering no, 58.6 percent of those respondents were in the lowest income group.
- Income was only demographic factor significantly different between groups for both these questions.

Usefulness of QR Codes?

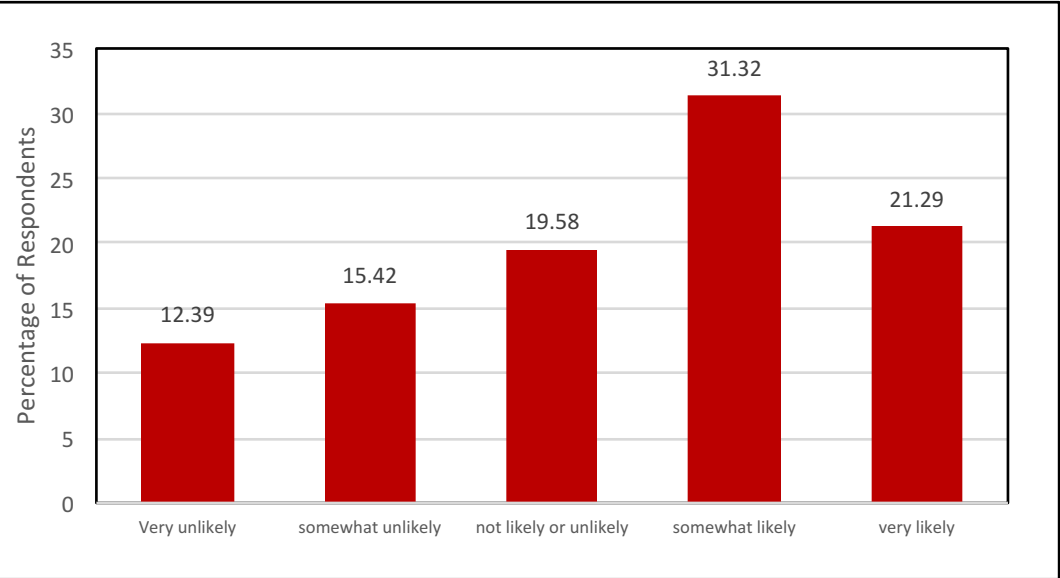


Figure 2. Response to “How likely is it that you would scan QR Codes with your smartphone to determine if ingredients were genetically modified?” (N = 525)

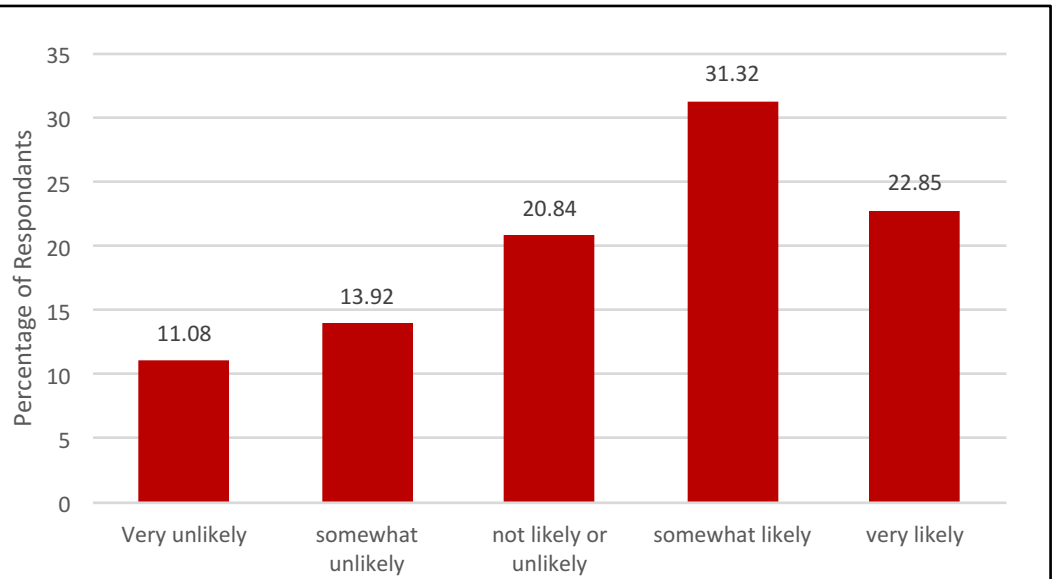


Figure 3. Response to “How likely is it that you would scan QR Codes with an in-store scanner to determine if ingredients were genetically modified?” (N = 525)

Interest in GMOs

Table 3: Importance of Publicized GMO Concerns						
Publicized Concern	Average	Statistical Differences**				
Unknown long-term health effects	4.15					
Increased risk of antibiotic resistance	4.01	A				
Unknown or unanticipated toxins produced	4	A				
Increased use of pesticides	3.97	A				
Unknown long term environmental effects	3.91	A	B			
Genetic contamination of the environment	3.83		B	C		
Increased use of herbicides	3.82		B	C	D	
Unknown or unanticipated allergens introduced	3.78		B	C	D	E
Risks to wildlife & Insects	3.77			C	D	E
Spread of disease resistance to weeds	3.69					F
Risks to species diversity	3.69					F
Spread of herbicide tolerance to weeds	3.67					F
Spread of pest resistance to undesirable weeds	3.65					F
Control of agriculture by biotechnology companies	3.64					F
Ethical issues with genetic modification of nature	3.62					F
Damage to topsoil	3.51					G

Question: “When it comes to Genetically Modified Ingredients (GMOs), how important are the following publicized concerns to you?”
*Rating scale: 5= Very Important, 4= Very Important, 3= Moderately Important, 2= Somewhat Important, 1= Not Important
**Criteria that share a common letter have ratings that are not statistically different from one another at the 5% level

CONCLUSIONS

- The survey showed consumers do have the technological capabilities to access the biotechnology disclosure with 95 percent able to access through wireless internet, cellular networks, or phone calls while in the grocery store they most often shop.
- Not only do consumers have the technological capabilities, over 50 percent responded they are somewhat likely or very likely too scan QR codes to access this via their smartphones or in-store scanners.
- Consumers have serious concerns about GMOs and in particular, their long-term health impacts even though major science organizations consider the technology safe (National Academies of Science², American Medical Association³, American Cancer Association⁴, Food and Drug Administration⁵)

FUTURE RESEARCH

- Explain geographic locations impact on the ability to access GMO information or perceptions of GMOs. Differences may exist between rural, suburban, and urban populations.
- Explain GMO concerns’ impact on purchasing behavior.

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