

***Consumer behavior toward organic labels:***  
*Implications for sustainable food policy and  
environmental education*

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# 0. Introduction and outline

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- ▶ Organic label is the one of food labels, which are commonly accessible in developed countries.
- ▶ Research questions:
  - ▶ How many consumers use these labels as indicators to choose better products?
  - ▶ Are their decisions based on accurate understanding of what they really mean?
- ▶ Evidence from two sample surveys in Japan and California

# 0. Introduction and outline

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- ▶ 1. What is eco-labelling?
- ▶ 2. Empirical evidence
- ▶ 3. Discussions

# 1. What is eco-labelling?

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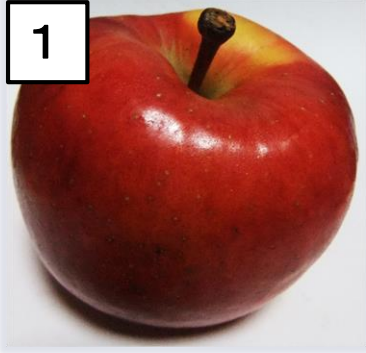
- ▶ Organic label is the one of eco-labelling which:
  - ▶ Reduce information asymmetry between sellers and buyers.
  - ▶ Among many product attributes (ex. taste, flavor, place of origin, production process..), especially about “**credence attributes**” which we never know without information (before buying and after consuming). (Ex. Non-GMO, cholesterol, organic, CFP,WFT..)



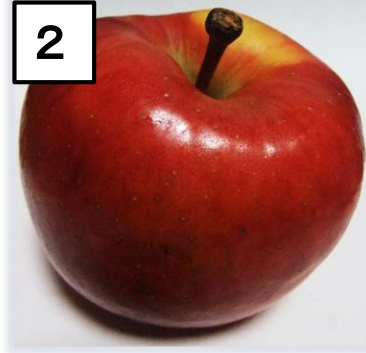
# Example:

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- ▶ 3 apples ▪ ▪ ▪ **2 actual alternatives?**



***Gala apple***  
Import  
**\$1.30 /LB**



***Fuji apple***  
California  
**\$1.80 /LB**



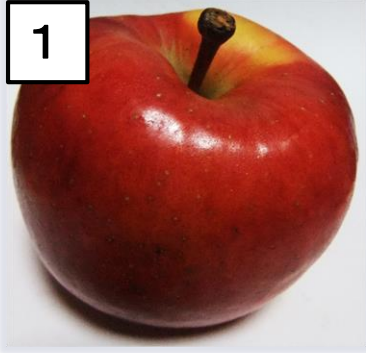
***Fuji apple***  
California  
**\$1.80 /LB**

- Imagine that you are going to buy apples, and face the following 3 kinds of apples.
- As you can see in dairy shopping, they differ in Type, Place of origin, Price.

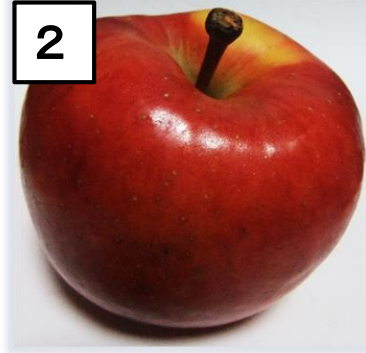
# Example: With additional information

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- ▶ 3 apples ▪ ▪ ▪ **3 alternatives!**
- ▶ We can identify 3<sup>rd</sup> from 2<sup>nd</sup>.



***Gala apple***  
Import  
**\$1.30 /LB**



***Fuji apple***  
California  
**\$1.80 /LB**

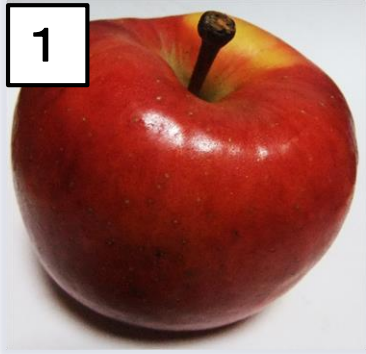


***Fuji apple***  
California  
**\$1.80 /LB**

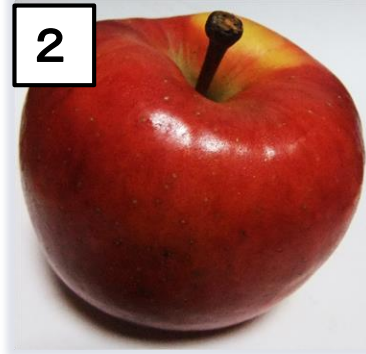
- With additional information, now we have 3 alternatives.
- Because we can identify 3<sup>rd</sup> one from the 2<sup>nd</sup>.

# Example: Consumers' heterogeneity

- ▶ When organic-label provided,
  - ▶ 3 alternatives for the people who knows what "ORGANIC" means.



***Gala apple***  
Import  
**\$1.30 /LB**



***Fuji apple***  
California  
**\$1.80 /LB**



***Fuji apple***  
California  
**\$1.80 /LB**

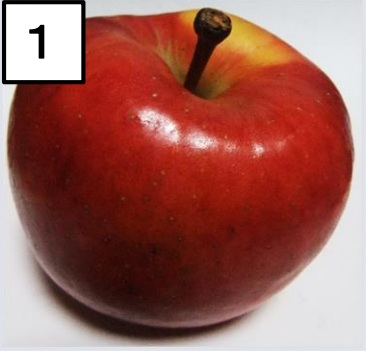
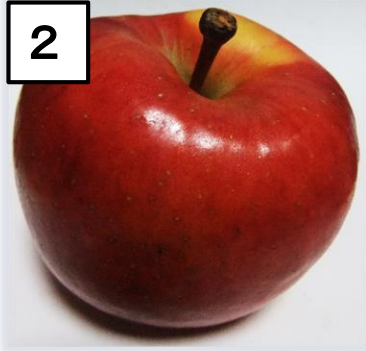

- Consumers' knowledge heterogeneity in the real world.

I have three alternatives

Who knows "ORGANIC"

# Example: Consumers' heterogeneity

- ▶ When organic-label provided,
  - ▶ 3 alternatives for those people who knows what "ORGANIC" means.
  - ▶ 2 alternatives for those people who doesn't know "ORGANIC".

<p>1</p>  <p><b>Gala apple</b> Import <b>\$1.30 /LB</b></p>	<p>2</p>  <p><b>Fuji apple</b> California <b>\$1.80 /LB</b></p>	<p>2</p>  <p><b>Fuji apple</b> California <b>\$1.80 /LB</b></p>	<p>This additional information is nonsense for him</p>
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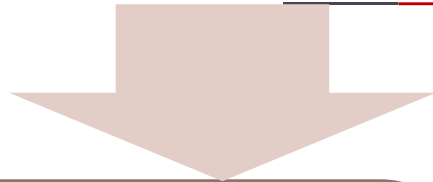
Who doesn't know "ORGANIC"

3<sup>rd</sup> apple is the same as 2<sup>nd</sup> apple.  
I have two actual alternatives.

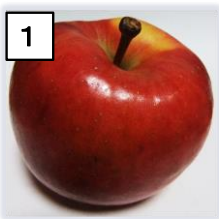


# Example: Knowledge is important

- ▶ Even though organic-label provided,
  - ▶ There are still information asymmetry between seller and the consumers who doesn't know what "ORGANIC" means.

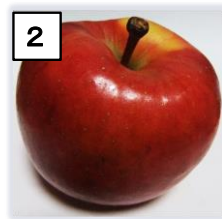


## 2 alternatives



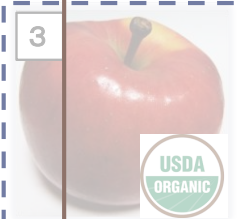
1

*Gala apple*  
Import  
**\$1.30 /LB**



2

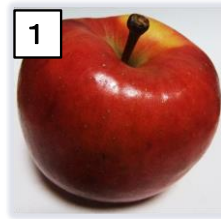
*Fuji apple*  
California  
**\$1.80 /LB**



3

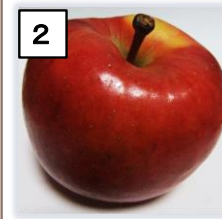
*Fuji apple*  
California  
**\$1.80 /LB**

## 3 alternatives



1

*Gala apple*  
Import  
**\$1.30 /LB**



2

*Fuji apple*  
California  
**\$1.80 /LB**



3

*Fuji apple*  
California  
**\$1.80 /LB**

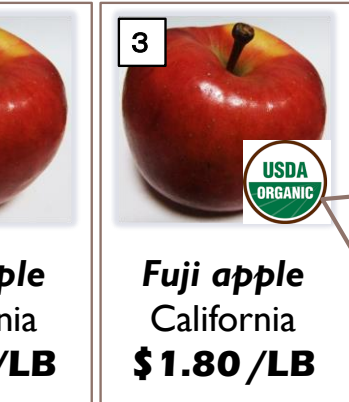
Who doesn't know  
"ORGANIC"


- Even if he has an environmentally friendly idea by his nature, his idea couldn't be revealed in the market,
- Because of his lack of knowledge.

Who knows  
"ORGANIC"

# Example: +Educational approach

- ▶ Consumer education is supportive to choose better products.
  - ▶ Eco-labelling could be more powerful to increase market efficiencies and equities among consumers with their knowledge.



<b>ORGANIC</b>	"Organic" means the <u>non-use</u> of prohibited agricultural chemicals and fertilizers for no less than <u>3 years before sowing or planting</u> . (under the federal organic standard)
It is prohibited by law to claim "organic" without <u>a certification by a third-party</u> .	
	After being certified, producers <u>may</u> display "USDA ORGANIC" seal. But there is <u>no requirement</u> to display. This seal is <u>voluntary</u> .

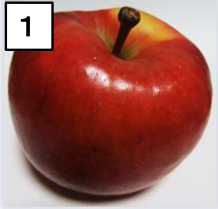
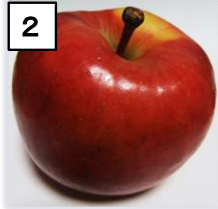


Who doesn't know "ORGANIC"

Who knows "ORGANIC"

# Example:

- ▶ Organic-label (on-site information) coupled with knowledge (education)
  - ▶ Reduce information asymmetry between seller and the **all** consumers who are interested in sustainability.
- ▶ Potential demand would be **actual demand** with eco-labelling and knowledge.

## 3 alternatives for all

 <b>1</b> <i>Gala apple</i> Import <b>\$1.30 /LB</b>	 <b>2</b> <i>Fuji apple</i> California <b>\$1.80 /LB</b>	 <b>3</b> <i>Fuji apple</i> California <b>\$1.80 /LB</b> 
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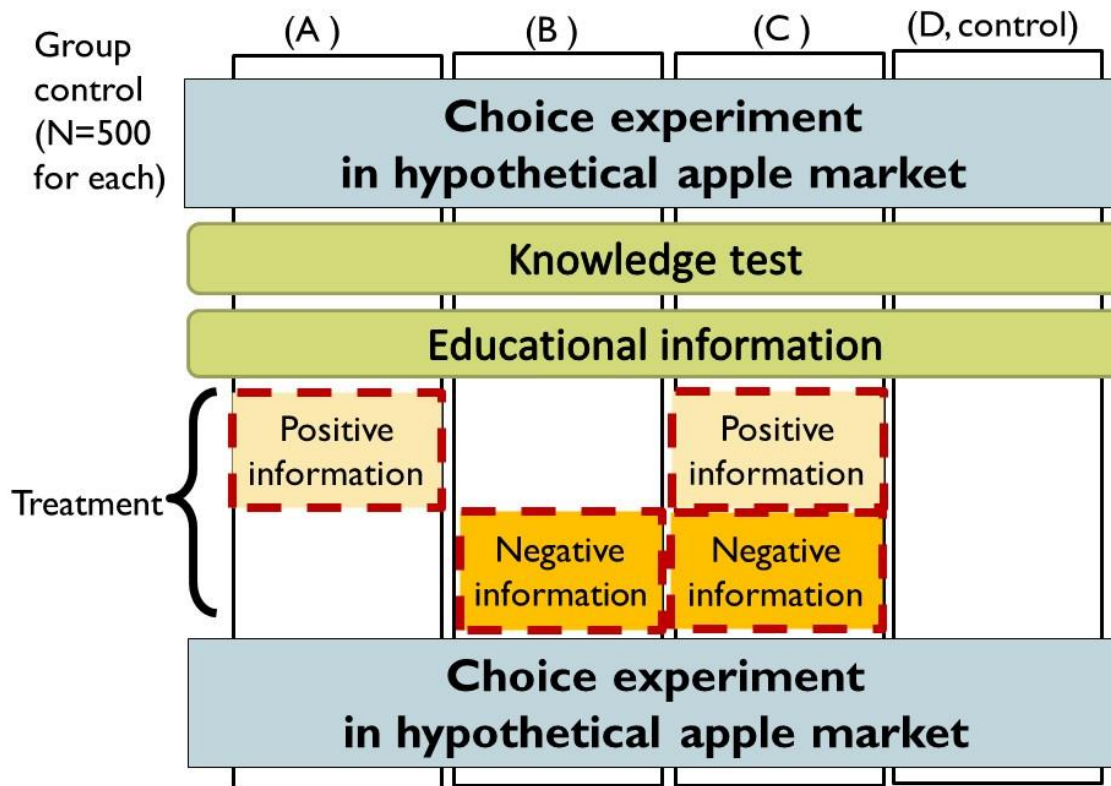
- ▶ Past studies say that consumers have **10~20%** **additional willingness to pay** for sustainable food in generally. (ex. MSC)
- ▶ **More** in the case of organic foods.

Who didn't know,  
but now knows  
"ORGANIC" mean.

Who knows  
"ORGANIC"

## 2. Empirical evidence

- ▶ Findings from two surveys conducted in 2010
  - ▶ N=2,067 in Japan, N=2,072 in California
  - ▶ Respondents were assigned to the one of the 4 groups at random.



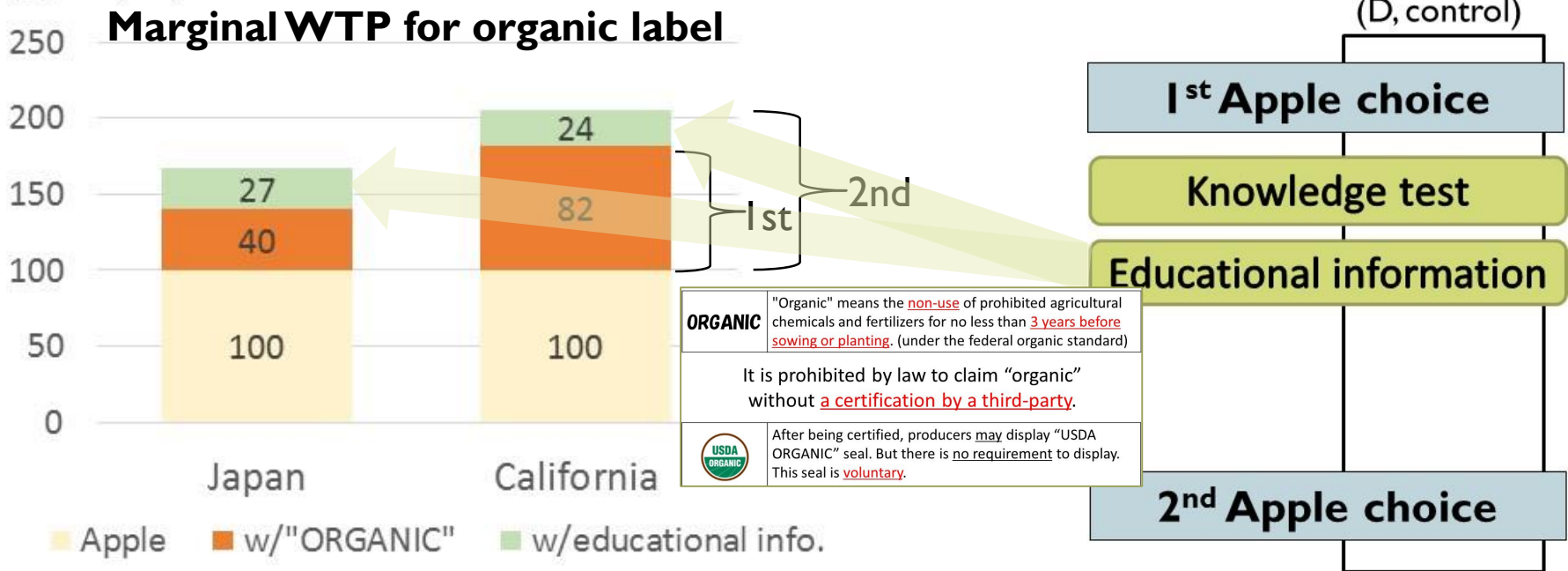
Questionnaire contains:

- ▶ 2 conjoint analysis in order to statistically estimate their preferences for organic label using hypothetical response data.
- ▶ Knowledge test to identify their pre-knowledge level about “ORGANIC”.
- ▶ After Educational information, treatment groups received additional information.

▶ Response data of D group respondents:

- ▶ They have **40% (Japan)** and **80% (California)** additional willingness to pay for “organic” attributes basically.
- ▶ With educational information (the definition of the labels), their WTP increased by **27% (Japan)** and **24% (California)**.

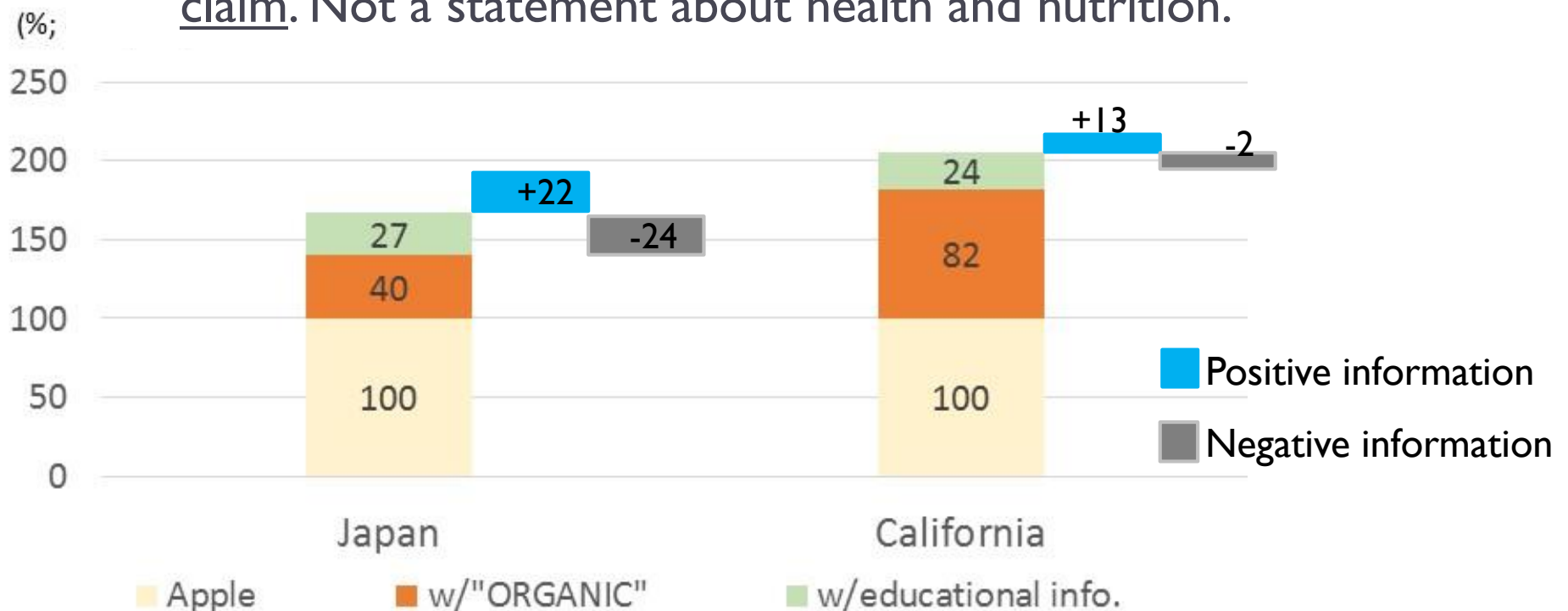
(%; cent; JPY)



▶ The treatment effects were observed (A, B, C, and D):

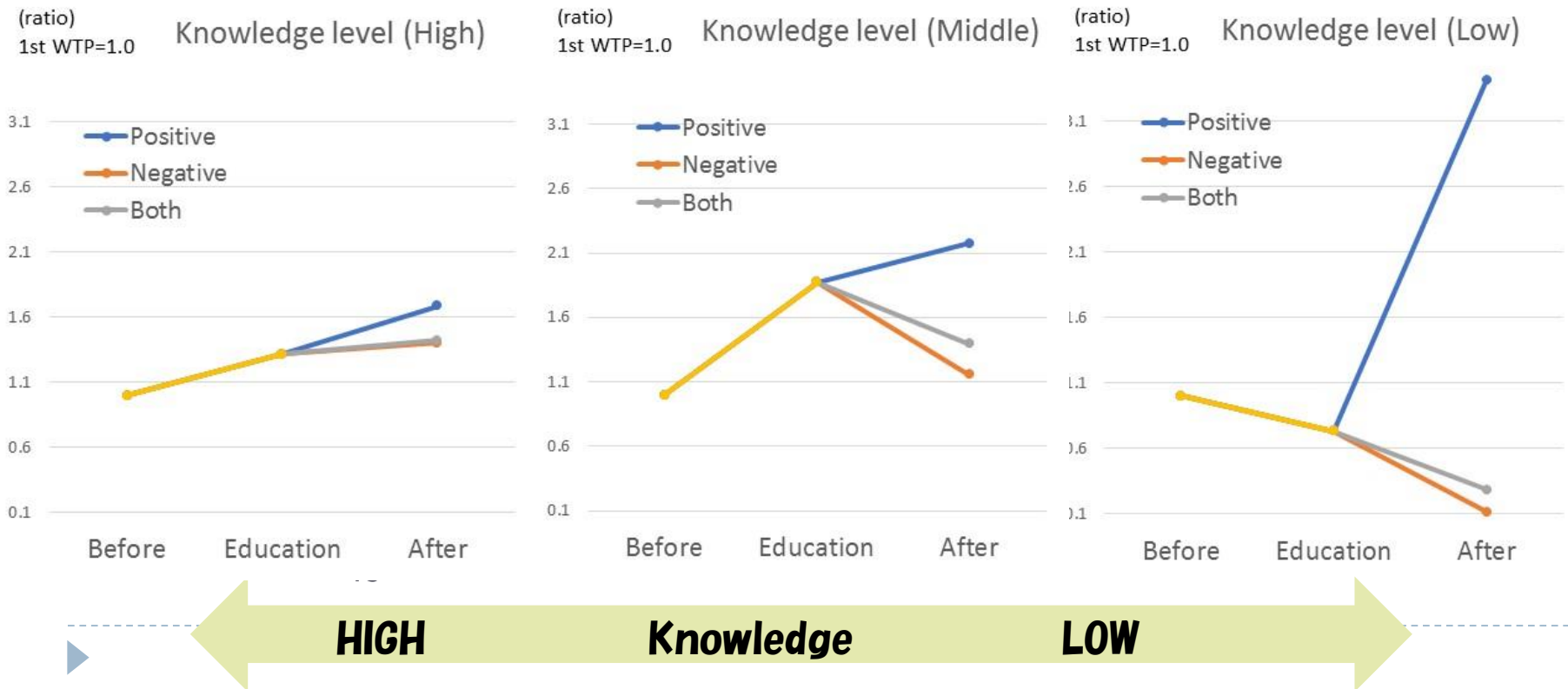
■ Positive framing: Organic is an agricultural production method that promotes environmental sustainability.

■ Negative framing: Organic is not a food safety/health/nutritional claim. Not a statement about health and nutrition.



## ▶ Knowledge heterogeneity among consumers

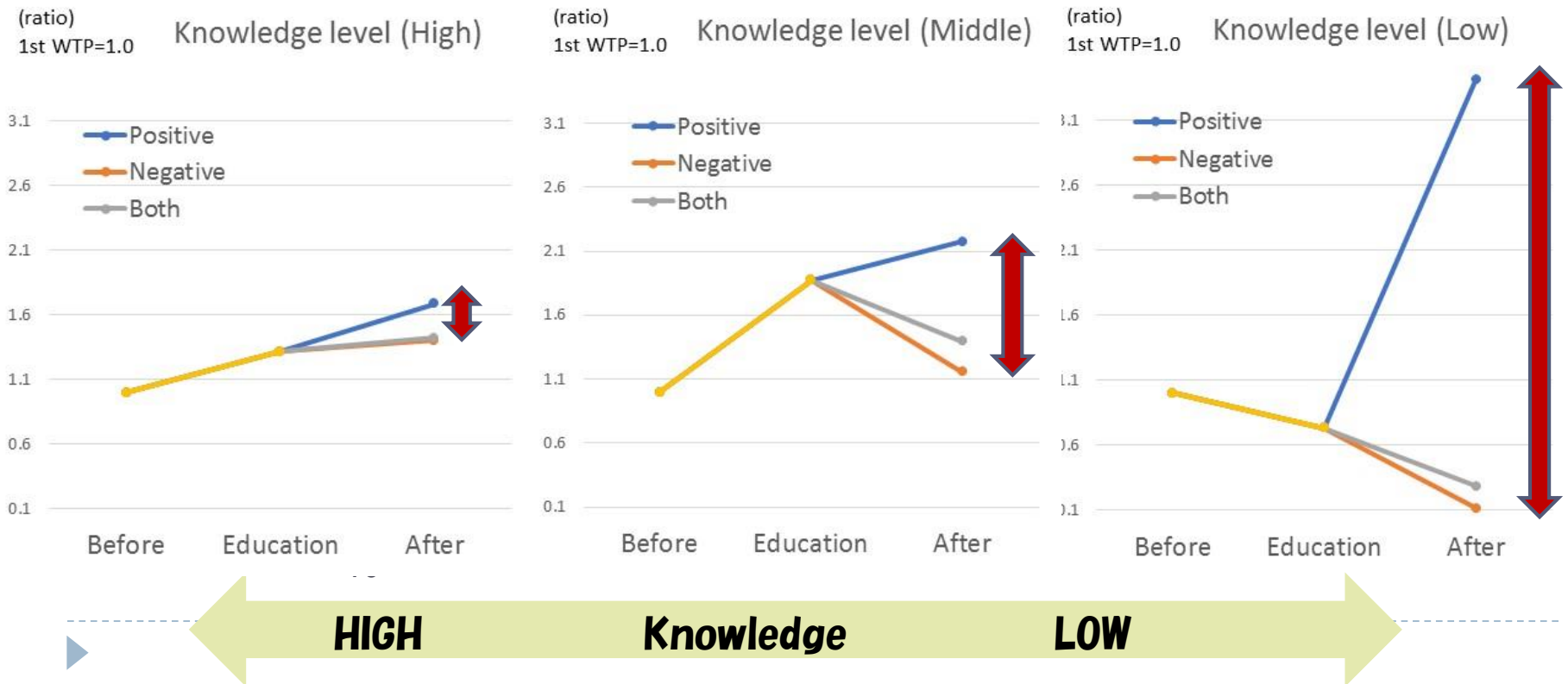
- ▶ affects their reaction to new information.
- ▶ The lower level of knowledge may cause consumers' sensitive reaction to different framings.





## ▶ Knowledge heterogeneity among consumers

- ▶ affects their reaction to new information.
- ▶ The lower level of knowledge may cause consumers' sensitive reaction to different framings.



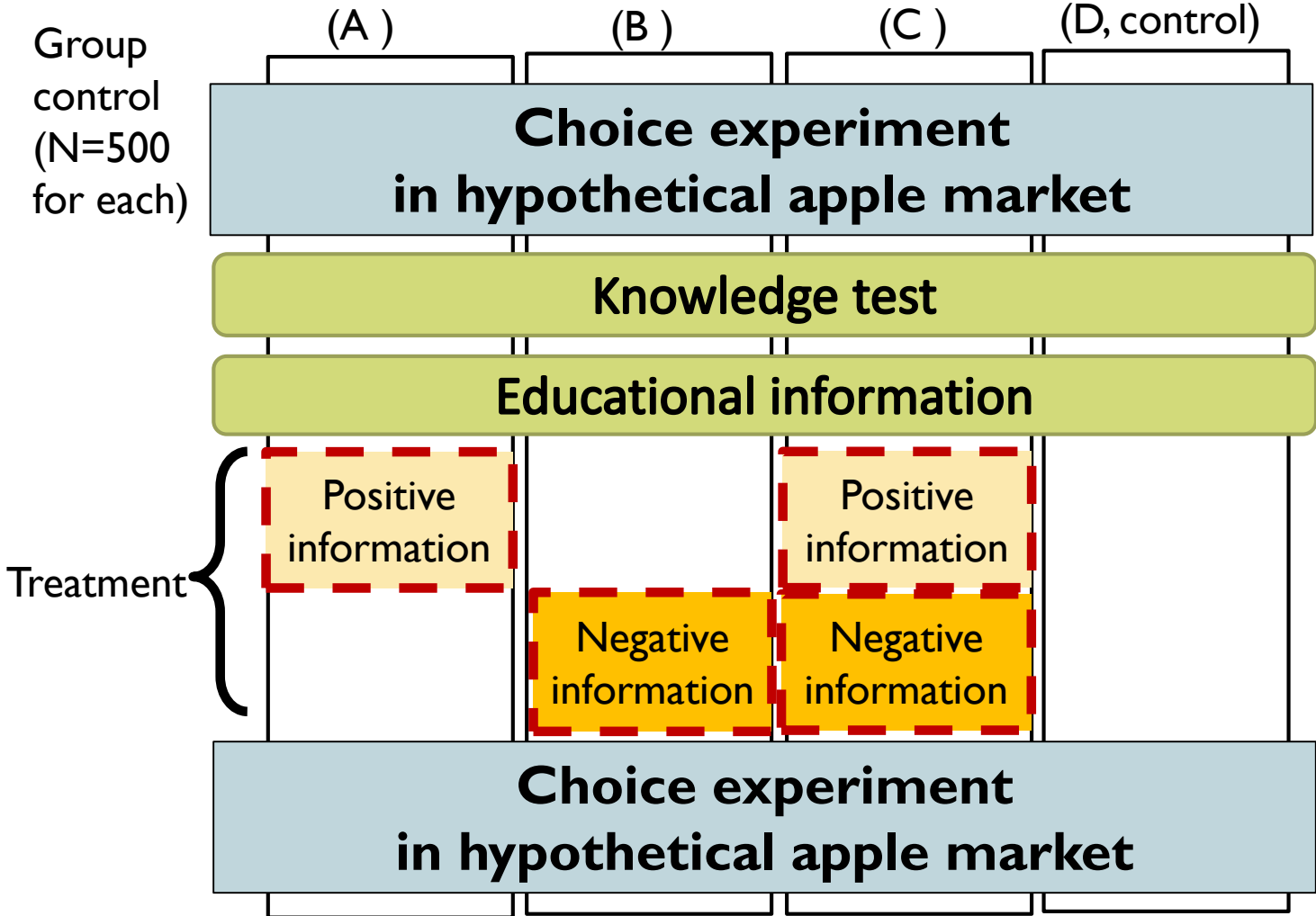


# 3. Discussions

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- ▶ When designing public policies,
  - ▶ we tend to think about that from the governments' or producers' point of views.
  - ▶ Command & control for firms/producers
  - ▶ Economic incentives for firms/producers
- ▶ Consumers?
  - ▶ The end users who choose and consume these foods are consumers.
  - ▶ We shouldn't leave it behind away from policy discussions even though there are a lot of ambiguity and uncertainty among consumers' decisions.
  - ▶ How do we design the future system with consumer behaviors and information?

# For reference



# オーガニックアップルの消費者調査

- ▶ 日本(2010年1月), カリフォルニア州(2011年11月)で調査を実施
  - ▶ 購買頻度や表示への信頼などは同程度
  - ▶ 実際の購買時に重視する消費者の割合は, 加州の方が多い
  - ▶ 加州よりも日本の消費者の方が, 有機農産物のイメージに誤解がある

ORGANIC FOOD:	カリフォルニア州	日本
購買頻度 [very much, some what]	51% [13, 39]	52% [6, 46]
表示を信頼 [very much, some what]	65% [16, 50]	67% [6, 60]
<b>重視度合い</b> [very much, some what]	<b>45%</b> [15, 29]	<b>33%</b> [2, 31]
「ORGANIC」のイメージ(最も強い)		
<b>Healthier</b>	<b>37%</b>	27%
Expensive / cost more to grow	29%	29%
<b>Environmental friendly</b>	<b>17%</b>	<b>5%</b>
<b>Food safety</b>	12%	<b>35%</b>
More nutritious	4%	1%
Other	1%	2%

# 基本情報：有機認証の表示ルールについて

**ORGANIC** "Organic" means the non-use of prohibited agricultural chemicals and fertilizers for no less than 3 years before sowing or planting. (under the federal organic standard)

It is prohibited by law to claim "organic" without a certification by a third-party.



After being certified, producers may display "USDA ORGANIC" seal. But there is no requirement to display. This seal is voluntary.



This seal means that the product is certified by QAI. QAI is a private certifier and strictly follows the federal organic standard.

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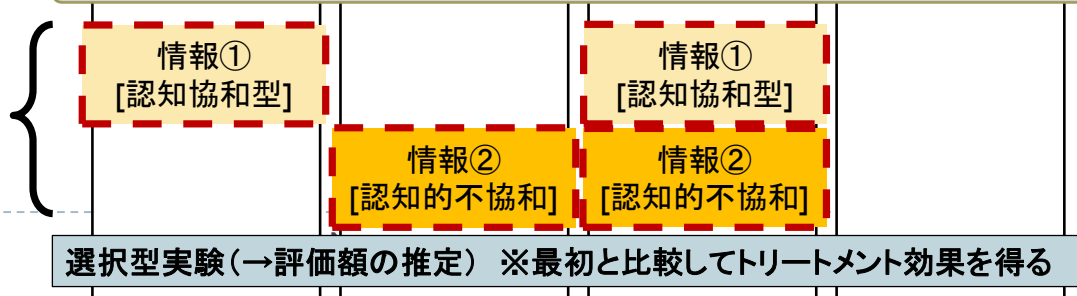
重視項目(品種, 産地, 生産者情報)の購買頻度・重視度・信頼・イメージ

(推定) ※ベースとなる普段の評価額の推定

に関する〇×クイズ(回答後に正解提示)知識(7問)」「料理・保存の知識(7問)」

ラベルリテラシーに関する〇×クイズ(回答後に正解提示)7問  
※上位25%=知識(高), 中位50%=知識(中), 下位25%=知識(低)に分類

## 基本情報：有機認証表示のルール



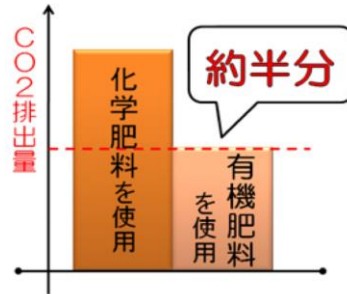
# トリートメントに用いた情報①②

## 情報① 認知的協和性が高い

有機農業は、農地を肥沃に回復させ、**CO2排出量**も少ない農法です。

化学肥料を用いない有機農法には、化学肥料を使い続けて弱くなった農地を肥沃に回復させる働きがあります。

また、化学肥料を使う農法と比較して、**二酸化炭素排出量もおおよそ半減**するといわれています。



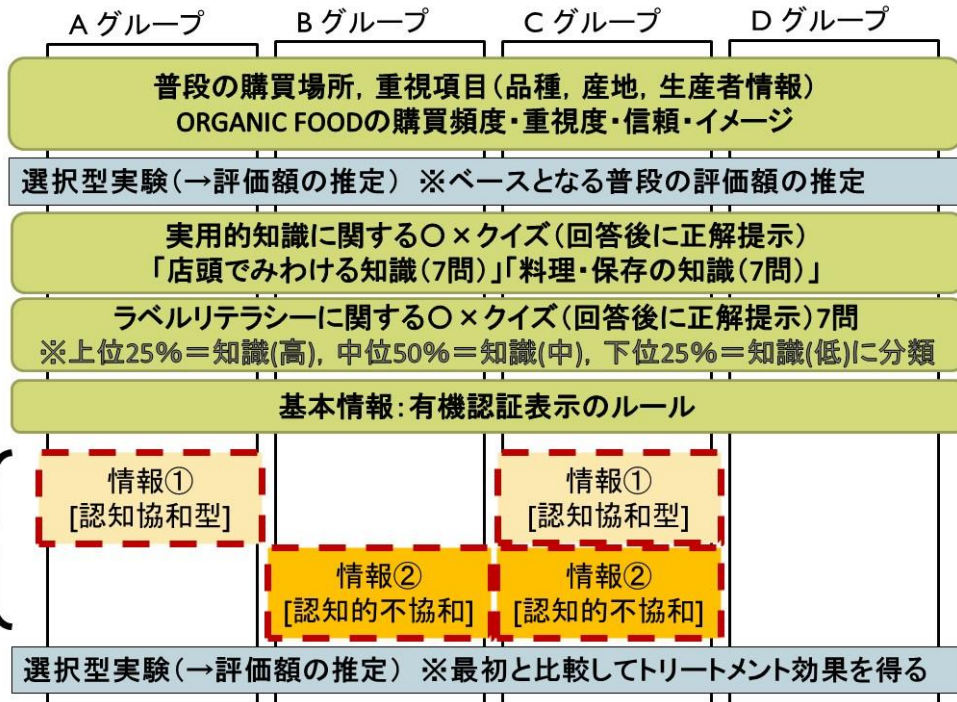
## 情報② 認知的不協和が生じる

有機農産物を生産する第一の目的は、**「食品安全」ではありません。**

有機農産物を生産する主な目的は、「**環境にやさしい農業**（農業の自然循環機能の維持増進）」です。

農林水産省が有機農産物の定義を定めた「有機農産物の日本農林規格」には、**食品安全に関する記述はありません。**

有機農業  
||  
自然循環機能  
の維持増進



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## ▶ 日本の調査の概要

- ▶ 期間: 2010年1月29日～2月1日
- ▶ 方法: インターネット調査(マイボイスコム)
- ▶ 対象: 日本在住の20歳以上の成人男女のうち, りんご購買層(全体の8割程度)→有効回答2,067名

## ▶ 情報効果の検証

- ▶ 無作為に4グループに分割して, 別々にトリートメントを行う
- ▶ 情報①: 有機＝環境の基準(第一の目的は環境)
- ▶ 情報②: 食品安全についての基準とは異なる(←認知的不協和)

## ▶ 消費者の知識水準による効果の違いを検証

- ▶ もともと表示についての知識量が多かった消費者
- ▶ 平均的な消費者
- ▶ ほぼ知識のない消費者
  - 知識水準による情報効果の違いが顕著に表れた

- ▶ 出版: 「消費者の知識と信念の更新」日本経済研究, 2013年

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## ▶ カリフォルニア州での調査の概要

- ▶ 期間: 2011年11月15日～24日
- ▶ 方法: インターネット調査 (Lightspeeds GMI)
- ▶ 対象: カリフォルニア州在住の20歳以上の成人男女のうち, りんご購買層 (全体の8割程度) → 有効回答2,072名

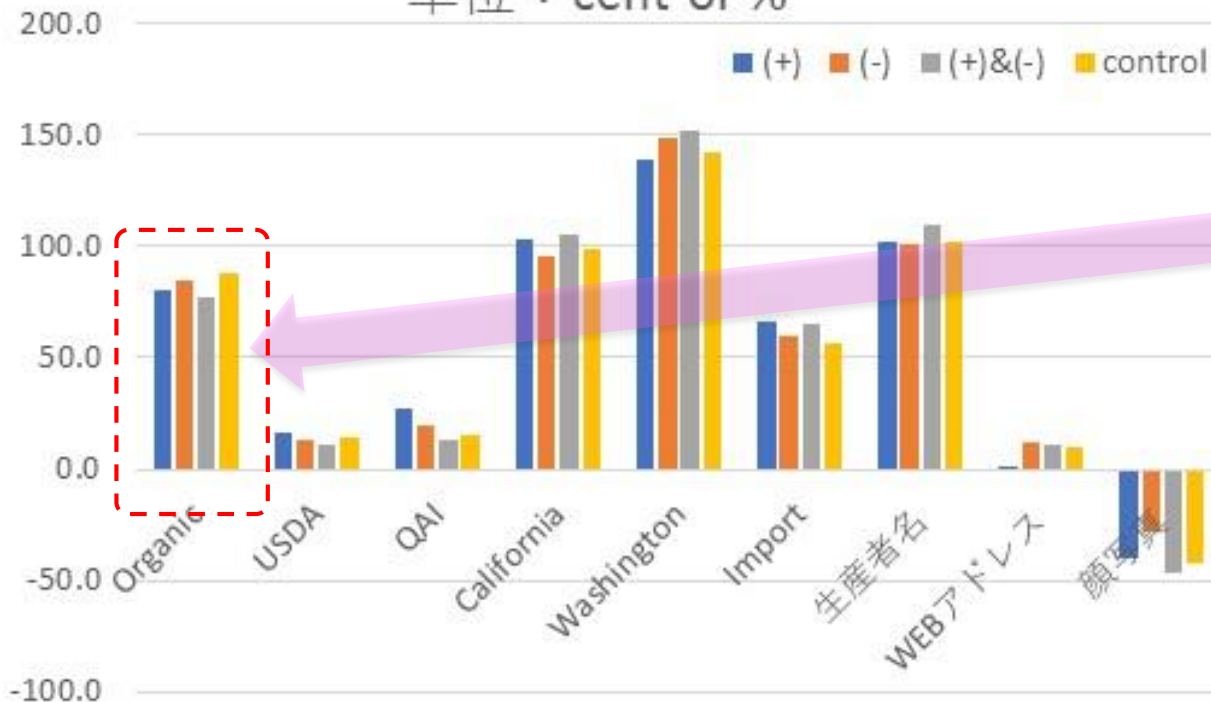
## ▶ 日本と同様の調査を実施

- ▶ カリフォルニア州の消費者の方が:
  - オーガニックに対する支払意思額は高い (日本は+50%; 加州+100%)
  - 認知的不協和が少ない?
- 細かい分析はまだ. 知識水準やその他個人属性との関連など.

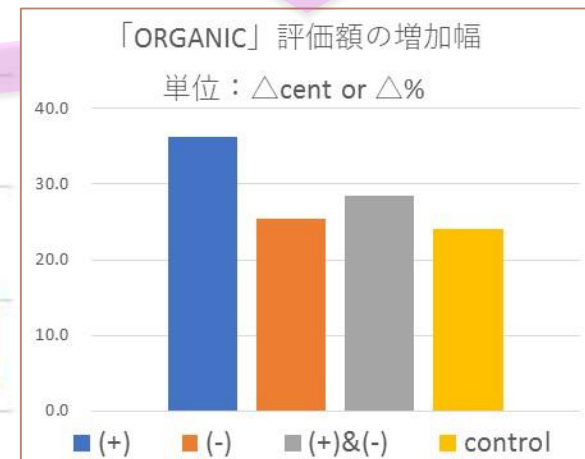
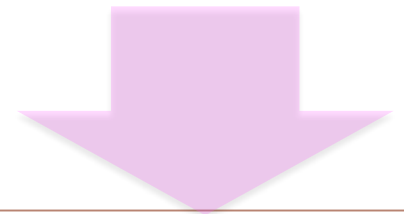
## ▶ 各属性に対する評価の概観

評価額 (1回目・コントロール前)

単位：cent or %



トリートメント後の評価額は  
20%~35%程度の増加





## ▶ Age, Gender, Education, Income, Ethnicity, City

性別と年齢(Q2)	Male	Female
20's	220	217
30's	226	251
40's	213	206
50's	135	140
60's and over	211	253
Total	1005	1067

Annual income (Q4)	
<\$20,000	348
\$20,000-\$30,000	255
\$30,000-\$40,000	296
\$40,000-\$50,000	202
\$50,000-\$60,000	212
\$60,000-\$70,000	173
\$70,000-\$80,000	145
\$80,000-\$90,000	115
\$90,000-\$100,000	121
\$100,000<	205

Education (Q3)	
less than high school	19
high school	268
some college (No degree)	661
2-year college degree	252
4-year college degree	614
Master-level degree (MS, MA, etc)	207
Doctorate-level degree (PhD)	51

Ethnicity (Q5)		%	統計(概算)
Caucasian	1221	58.9%	40%
African American	100	4.8%	6%
American Indian or Native American	20	1.0%	1%
Asian	223	10.8%	13%
Hispanic	465	22.4%	38%
Other	43	2.1%	5%

▶ 他に、普段の食品購入場所など

購買場所 (Q8)	1st	2nd	3rd
General Supermarket (e.g. Safeway, Kroger)	1018	356	225
Grocery Stores	467	510	296
Natural Foods market (e.g. Whole Foods, Trade	168	234	282
Wholesale Club (e.g. Costco, Sam's Club)	127	257	265
Supercenter (e.g. Wal-Mart, Super Target)	107	295	215
Farmers Market	107	192	348
Food Stores (e.g. Ranch99)	38	87	111
Commisary	22	7	11
Co-ops	11	13	13
Delivery Service	4	3	13
Delicatessen Stores (e.g. Deli)	1	12	15
Convenience Store (e.g. 7-Eleven)	1	5	26
Gas Station	1	1	6
No Available	0	100	246

# For reference

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