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# Willingness to Pay for Organic versus Conventional Orange Juice

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# Willingness to Pay for Organic versus Conventional Orange Juice

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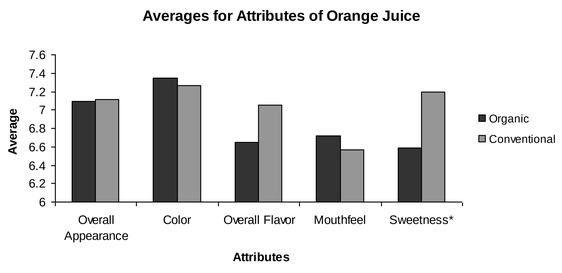
## OBJECTIVES

•To determine if consumers can identify a taste difference between conventionally and organically produced orange juice .
•To estimate willingness to pay for conventionally and organically produced orange juice.
•To determine if sensory characteristics influence willingness to pay for organic orange juice.

## DATA

•100 consumers in a food sensory lab
•Sampled organic and conventional orange juice (unlabeled, with random identifiers)
•Rated sensory characteristics of both juices
•Completed set of choice-based conjoint questions based on juice (identified by random identifier), production method, and price
•In conjoint, both juices were identified as organic and conventional.
•Order of product sampling and conjoint questions were varied to reduce potential bias.




## SENSORY RESULTS:

Participants rated both products on a 9 point scale (with 1 being the worst and 9 being the best).
There were no significant differences in the ratings for Overall Appearance, Color, Overall Flavor, and Mouthfeel (texture).
The conventionally produced orange juice was rated significantly higher for sweetness at the 95% confidence level.

## MODEL

U(A)=$\beta_1$price+ $\beta_2$organic production method (OPM)+ $\beta_3$organic sensory rating*OPM+ $\beta_4$organic sensory rating*price+ $\beta_5$conventional sensory rating*OPM+ $\beta_6$conventional sensory rating*price+$\beta_7$gender*OPM+ $\beta_8$age*OPM+ $B_9$race*OPM+ $\beta_{10}$ethnicity*OPM+ $\beta_{11}$income*OPM+ $\beta_{12}$gender*price+ $\beta_{13}$age*price+ $\beta_{14}$race*price+ $\beta_{15}$ethincity*price+ $\beta_{16}$income*price+ $\beta_{17}$expenditure*OPM+ $\beta_{18}$expenditure*price

Results from logit estimation with selection of organic product as dependent variable.

| Variable | Coefficient | Std. Error |
|---|---|---|
| Price | -0.757* | 0.161 |
| Organic Production Method (OPM) | 2.410* | 0.803 |
| Sensory rating of organic product*OPM | -0.034** | 0.020 |
| Sensory rating of organic product *Price | 0.013* | 0.004 |
| Sensory rating of conventional product*OPM | -0.018 | 0.017 |
| Sensory rating of conventional product*Price | 0.004 | 0.003 |
| Gender *OPM | 0.135 | 0.195 |
| Age*OPM | -0.188 | 0.317 |
| Race (Caucasian)*OPM | -0.816* | 0.238 |
| Ethnicity (Hispanic)*OPM | -0.630* | 0.221 |
| Income*OPM | 0.690* | 0.302 |
| Gender*Price | -0.066 | 0.040 |
| Age*Price | 0.151* | 0.066 |
| Race (Caucasian) *Price | 0.122* | 0.471 |
| Ethnicity (Hispanic) *Price | 0.036 | 0.442 |
| Income*Price | -0.238* | 0.060 |
| Percent spent on organic food*OPM | 0.430 | 0.268 |
| Percent spent on organic food*Price | 0.083 | 0.051 |

Price premium for organic orange juice product based on different demographics. X indicates a characteristic was used to determine premium.

| Age = over 30 | Male | Caucasian | Hispanic | Income over $30,000 | Spends 10% or more of food budget on organics | Price Premium |
|---|---|---|---|---|---|---|
| | | | | | | $0.94 |
| | x | | | | | $1.15 |
| x | x | | | | | $0.86 |
| x | x | x | | | | -$0.39 |
| x | x | x | x | | | -$1.36 |
| x | x | x | x | | x | -$0.70 |
| x | x | x | x | x | x | $0.36 |
| | x | x | | | | -$0.10 |
| x | | x | | | | -$0.60 |
| | | x | x | x | | $1.03 |
| x | x | x | x | x | | -$0.30 |
| x | | x | x | | | -$1.56 |
| | | x | x | | | -$1.28 |
| | | x | | | | -$0.31 |
| x | x | | x | | | $0.47 |
| | | | x | | | -$0.02 |

## RESULTS

•Price is significant and negative – as price increases, likelihood to pick the product decreases
•Production method is significant and positive, indicating that if the product is labeled as organic, the consumer is more willing to purchase the product.
• Interaction variables on the sensory characteristics of the organic products were significant, indicating that holding price or production method constant, consumers were more likely to choose the product if they rated the taste , texture, appearance and/or smell higher.
•Caucasians and Hispanics were less likely to select the organic product.
•Those with lower incomes and those below the age of 30 were less likely to choose the organic product

## CONCLUSIONS:

•Price premiums were calculated using the following formula:
WTP= -($\beta_2$ +$\beta_3$orate +$\beta_5$crate +$\beta_7$gender +$\beta_8$age +$\beta_9$white +$\beta_{10}$hisp +$\beta_{11}$inc +$\beta_{12}$genderprice +$\beta_{13}$ageprice+$\beta_{17}$expend) / ($\beta_1$ +$\beta_4$ +$\beta_6$ +$\beta_{12}$ +$\beta_{13}$ +$\beta_{14}$ +$\beta_{15}$ +$\beta_{16}$ +$\beta_{18}$), (the items in denominator will becomes zero with the corresponding demographic dummy being zero)
•The highest calculated premium was $1.15 for males, under the age of 30, who were neither Caucasian nor Hispanic, had income of less than $30,000 and did not currently spend 10% of their food budget on organics.
•The lowest calculated discount was $1.56, which would be needed to convince a female over the age of 30, who was Caucasian and Hispanic, had income less than $30,000 and did not spend 10% of their food budget on organics.