



# Determinants of consumers' stated preferences for functional foods or nutraceuticals rich in omega-3 or lycopene

**Gale West, Ph.D.**

**In collaboration with Driss Lkasski, M.S. & Dr. Clément Yélou**  
Département d'économie agroalimentaire et des sciences de la consommation  
Université Laval, Québec, QC

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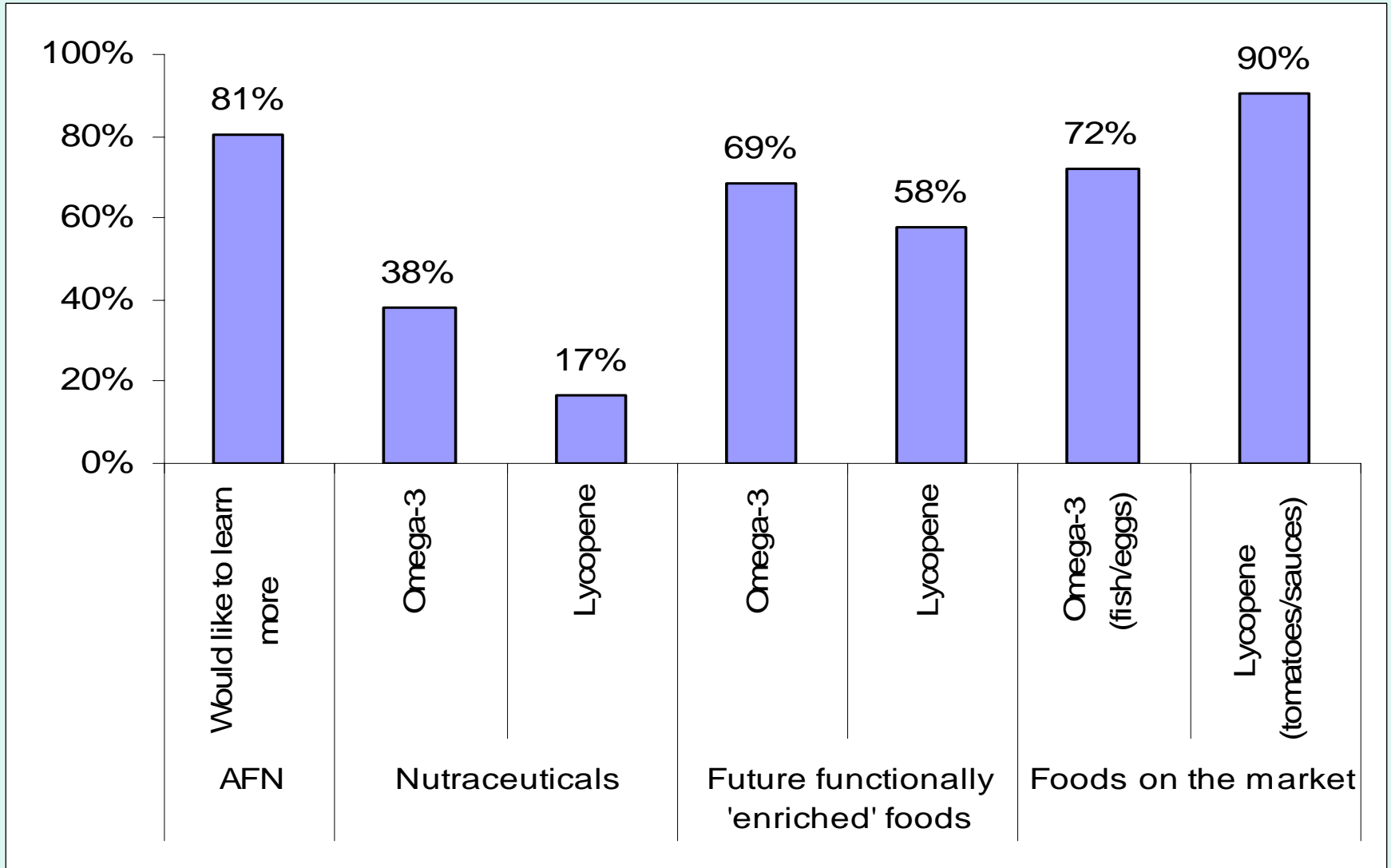
# Canadian consumers know the link : **foods → health !**

25% totally agree, "There are foods that contain active components that can help reduce the risk of illness and improve health status."  
(64% somewhat agree)

- W/out help, almost no one can name a « functional » food or food component.
  - Fibre (10%)
  - Broccoli (9%)
  - Milk products (7%)
  - Green leafy veggies (7%)
  - Tomatoes (6%)
- With help, many can link foods or food components with diseases.
  - Carrots / Eye health (58%)
  - Cranberry / Infections (48%)
  - Calcium / Osteoporosis (43%)
  - Fibre / Colon cancer (37%)
  - Fish oils / Brain function (18%)

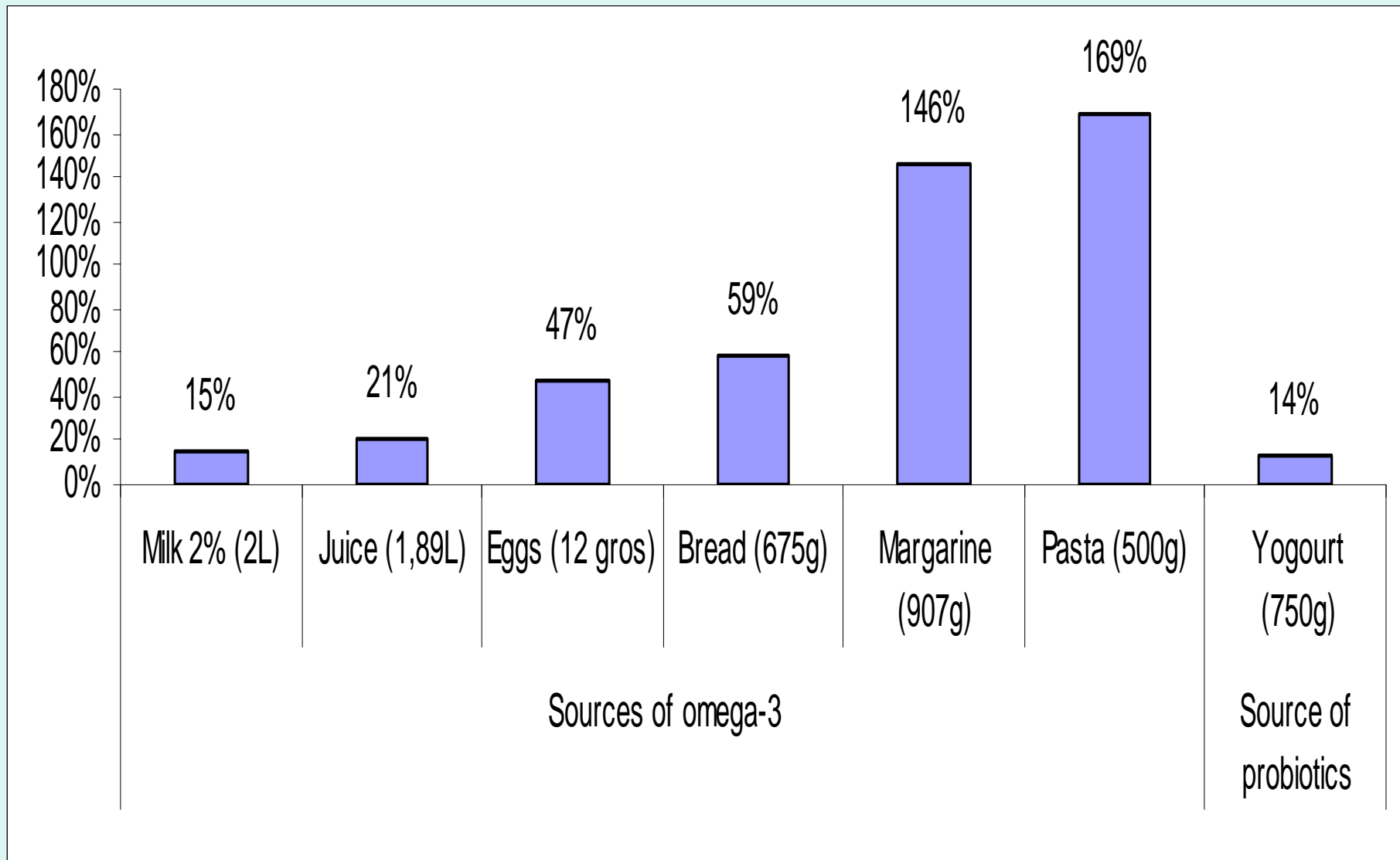
# Consumer interest in FFN is high

(Canada-wide survey for AgCan by Décima, 2004)



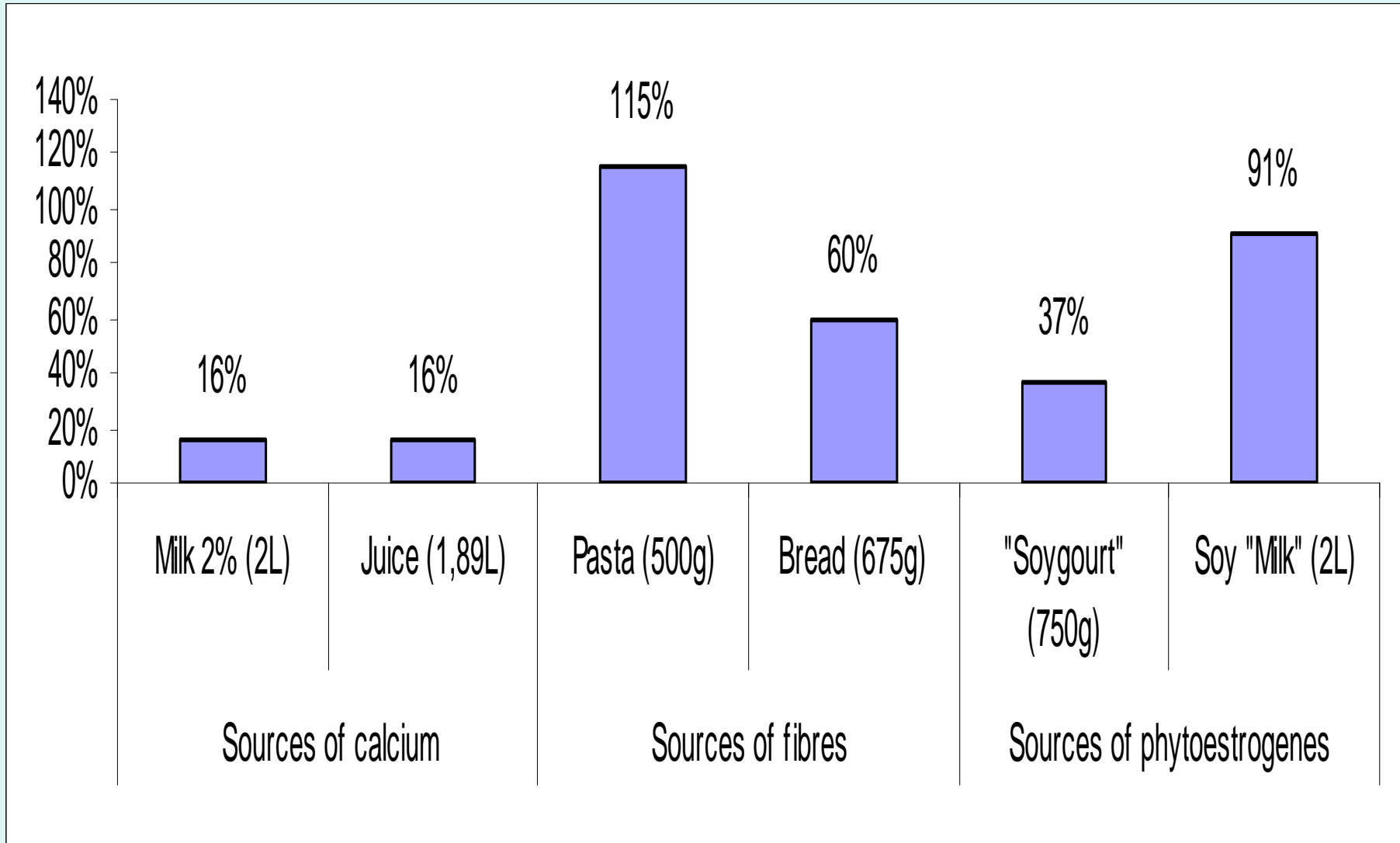
# Additional cost of a « functional » diet

(Data from 14 June 2005)



# Additional cost of a « functional » diet

(Data from 14 June 2005)



# Interest in FFN is associated with attitudes.

- Believe health claims / benefits
  - Milner,2000b; Urala,2003; Pferdekamper,2003; Verbeke,2005
- Trust / know product information
  - Hamilton,1996; Hogbin,1999; IFIC,1999; Urala,2004; Larsen, 2003
- Agree with production methods
  - Child,1998; Larsen,2002; West et al.,2004; Verbeke,2005

# Interest in FFN is associated with socio-demographics.

	Authors	Results
Sex	<ul style="list-style-type: none"> <li>- Childs ('97)</li> <li>- IFIC ('99,'00,'02)</li> <li>- Koster ('02)</li> <li>- Verbeke ('04)</li> <li>- Gilbert ('97)</li> <li>- Beardsworth ('02)</li> <li>- Kubberod ('02)</li> </ul>	Women
Age	<ul style="list-style-type: none"> <li>- Childs ('97)</li> <li>- Gilbert ('97)</li> <li>- IFIC ('99,'00,'02)</li> </ul>	Over 40 years
Education	<ul style="list-style-type: none"> <li>- Childs ('97)</li> <li>- Gilbert ('97)</li> <li>- IFIC ('99,'00,'02)</li> </ul>	College/university
Revenue	<ul style="list-style-type: none"> <li>- Childs ('97)</li> <li>- Poulsen ('99)</li> <li>- IFIC ('99,'00,'02)</li> </ul>	\$75,000 +
Kids < 18	<ul style="list-style-type: none"> <li>- Verbeke, salle, et Viaene ('00)</li> <li>- Gilbert ('00)</li> </ul>	Kids in hshld
Family history	<ul style="list-style-type: none"> <li>- Childs ('97)</li> <li>- Milner ('00)</li> <li>- Wrick ('95)</li> </ul>	History of illness (heart/cancer)

# Problem with previous studies

Treat all products independently

ex., CLA 2% milk, CLA yogurt, CLA beef, etc.

**Reality:** If a consumer is interested in CLA, they can get CLA in a variety of products.

- \* choose desirable functional health component
- \* then choose among products that deliver that component



# Survey

## Spring 2004

**Population of interest:** All Canadians (18+yrs)

**Telephone questionnaire:** by Decima for AgCan

30,332 random-digit calls

2,012 respondents (9 % response rate)

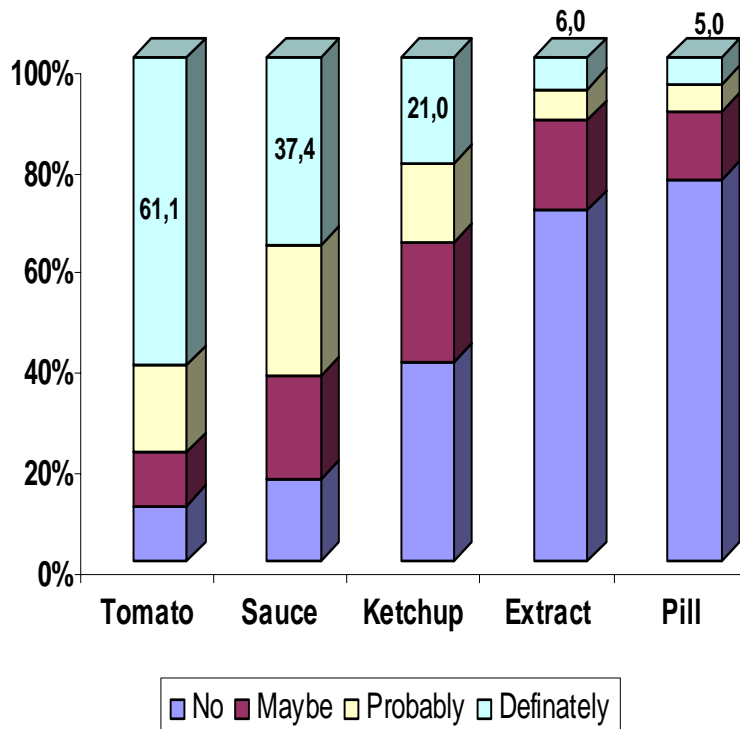
**Spit samples:** (after removing missing data)

n=728 for interest in lycopene products

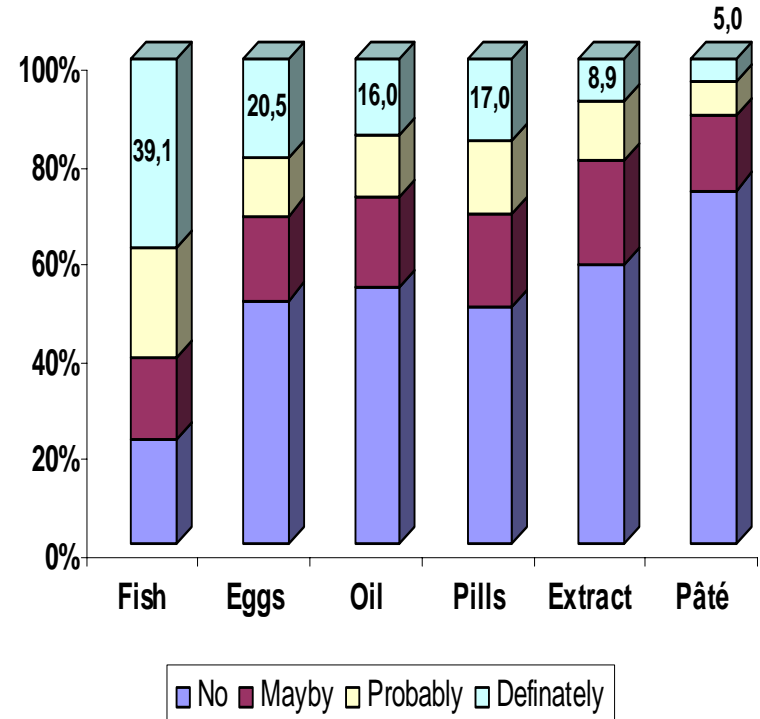
n=741 for interest in omega-3 products

# Dependant variables

Probability will purchase lycopene products  
(n=728)



Probability will purchase omega-3 products  
(n=741)



# Econometric model

**Assume:** purchase decision is affected by multiple interactions among product characteristics (taste, odour, price, packaging, availability, etc.)

Multivariate probit

$$Y_j^* = X_j^* \beta_j + \varepsilon_j \quad \varepsilon_j \approx \square (0, \Omega) \quad \Omega = \begin{pmatrix} 1 & \rho_{12} & \rho_{13} & \rho_{14} & \rho_{15} \\ \rho_{12} & 1 & \cdot & \cdot & \cdot \\ \rho_{13} & \rho_{23} & 1 & \cdot & \cdot \\ \rho_{14} & \cdot & \cdot & 1 & \cdot \\ \rho_{15} & \cdot & \cdot & \cdot & 1 \end{pmatrix}$$

$$Y_j = \begin{cases} 0 & \text{si } Y_j^* \leq 0 \\ 1 & \text{si } Y_j^* > 0 \end{cases}$$

Lycopene purchase, j =  
Tomatoes, Ketchup, Sauce,  
Extract, Pill.

Stated purchase probability	Recoded purchase probability
0 : No	0 : Probably not
1 : Maybe	
2 : Probably	1 : Probably
3 : Definitely	

Similar to « seemingly unrelated regression » (SUR )

“Functional foods” are NOT competing with nutraceuticals in a system of choice!

- Omega-3 sources are divided:
  - Foods: fish, fish oil, fish pâté, omega-3 eggs
  - Nutraceuticals: extract or pills
- Lycopene sources are divided:
  - Foods: tomatoes, tomato sauce, ketchup
  - Nutraceuticals: extract or pills

# Functional Foods: Beliefs & demographic effects

	Omega-3				Lycopene		
	Fish	Eggs	Oil	Pâté	Tomato	Sauce	Ketchup
Blv control health	positive	positive	positive				
Blv food role hlth				positive			
Blv FF benefits		positive	positive	positive	positive	positive	
Blv nutra. benefits			positive				
Blv label info.				positive		positive	
Blv media info.				positive			positive
Family illnesses				negative			
Age 18-34		positive				positive	positive
Age 35-54			positive				positive
Education	positive			negative	positive	positive	negative
Sex				positive			positive
Kids < 18 yrs.							
Less 50 000 \$				negative		positive	
50 to 75 000 \$		negative					positive
75 to 100 000 \$							positive
Quebec		positive	negative	positive	positive	positive	
Ontario		positive	negative	negative		positive	positive
Atlantic provinces	positive	positive					positive
Prairie provinces			negative	negative			positive

# Nutraceuticals: Beliefs & demographic effects

	Omega-3		Lycopene	
	Extract	Pills	Extract	Pills
Blv control health	positive			
Blv food role hlth				
Blv FF benefits	positive			
Blv nutra. benefits	positive	positive	positive	positive
Blv label info.			positive	
Blv media info.			positive	positive
Family illnesses		positive		
Age 18-34			positive	positive
Age 35-54		positive		positive
Education	negative	negative	negative	negative
Sex				positive
Kids < 18 yrs.				
Less 50 000 \$				negative
50 to 75 000 \$	negative			
75 to 100 000 \$	negative			negative
Quebec	positive	positive		
Ontario	positive	positive	negative	negative
Atlantic provinces		positive	negative	negative
Prairie provinces		positive	negative	

# Conclusions

1. F-foods & nutraceutical are separate mkts.
  - Whole foods preferred over processed
2. Determinants OFTEN unique to products.
3. Some general tendencies:
  - Must believe f-foods for f-foods & blv nutra. for nutra.
  - Need media for new or less acceptable products
  - Mid-age, more likely nutraceutical pills.
  - Higher ed., less likely nutraceuticals.



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Merci !



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