Investigating Tradeoffs and Mechanisms Between Time Scarcity and Healthfulness Of Food Choices

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Disclaimers:

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The analysis, findings, and conclusions expressed in this presentation should also not be attributed to Circana (formerly IRI).

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Motivation and Objectives

Poor diet quality

- Few U.S. adults meet recommendations for health eating. Only 9% and 12% meet guidelines for vegetables and fruits, respectively (CDC, Lee-Kwan et al. 2015).
- Is poor diet quality related to time pressures and so-called convenience foods?

Diet quality, time scarcity, convenience foods: Two stylized facts

- Time pressures/constraints: strongly linked to poorer diet quality
- Convenience foods: more expensive and less healthy

Objectives

1. Use the scanner data to document preferences for convenience and healthiness attributes.
2. Design lab experiments to explore behavioral mechanisms for time scarcity's impact on food choices.
3. Use results from 1 and 2 to investigate policy implications.

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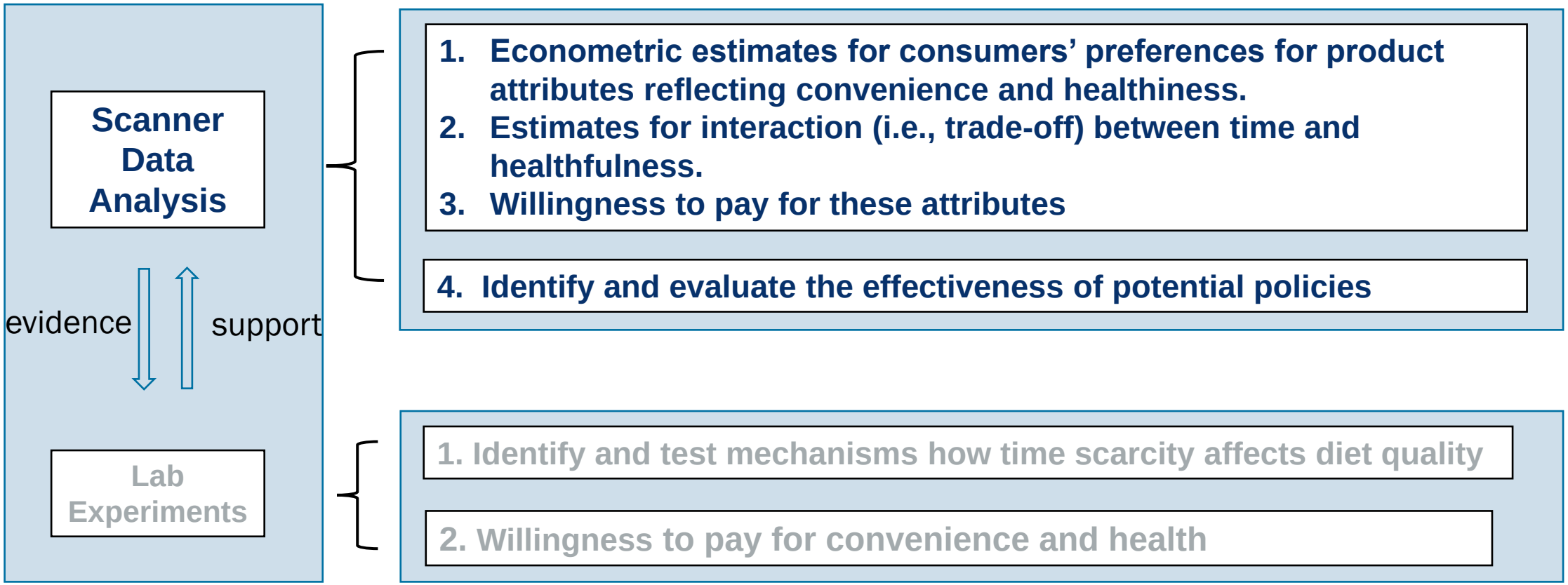
Project Overview: 2 parts (scanner data and lab experiments)



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Scanner Data Analysis

Data (Oatmeal and soup as examples)

- IRI/Circana InfoScan Retail Data from 2017 to 2018
- IRI/Circana Consumer Network Panel (IRI-CNP) household data from 2017 to 2018
- IRI/Circana IRI MedProfiler consumer health data

- Guiding Star stars and points

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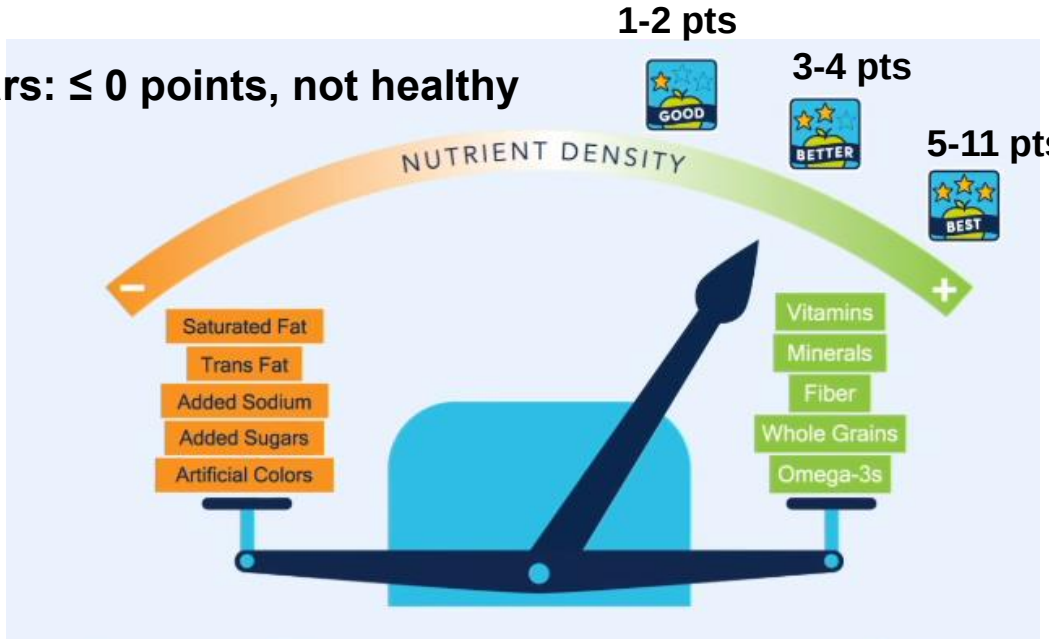
Key variables 1: **Healthfulness (**Guiding Stars and Points)



nutrients to limit (- points)

nutrients to encourage (+ points)

Points/stars transformed to categorical variables:

Oatmeal (e.g., **added sugars**):

- Healthy: GS=3;
- Unhealthy: GS=0,1

Soup (e.g., **added sodium**):

- Healthy: Points=0;
- Unhealthy: Points<0

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Key variable 2: **Cooking time**

Oatmeal:

Quick:

- Instant
- Quick-cook (1-minute)

Slow:

- “Old fashioned”
- Steel cut

Soup:

Quick: Ready-To-Serve Wet Soup

Slow: Condensed Wet Soup

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Model

Mixed Logit Model

$$U_{ijt} = \lambda_i P_{jt} + \alpha Healthfulness_j + \beta Quick_j + \boldsymbol{\delta} Healthfulness_j * Quick_j + \gamma_t + \gamma_b + \gamma_s + \varepsilon_{ijt}$$

- P_{jt}: is the package price of product j of at time t (year-quarter)
- $Healthfulness_j$: healthfulness of product j, guiding stars or points or binary variable;
- $Quick_j$: cooking time measurement, 0=slow, 1=quick.
- $\gamma_t, \gamma_b, \gamma_s$: time(year-quarter) , brand, state fixed effect
- ε_{ijt}: i.i.d. error term following Type I Extreme Value distribution.

Control function

$$P_{jt} = \lambda\, IV_{P_{jt}} + \alpha Healthfulness_j + \beta Quick_j + \boldsymbol{\delta} Healthfulness_j * Quick_j + \gamma_t + \gamma_b + \gamma_s + r_{ijt}$$

IV for price: $IV_{P_{jt}}$, Hausman type, Average regional price

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Descriptive results

Table 1: Number of Products Categorized by Cooking Time and Healthfulness

	Cooking Time	Healthfulness		Total
		Unhealthy	Healthy	
Oatmeal	Slow	2	26	28
	Quick	28	21	49
	Total	30	47	77
Soup	Slow	12	7	19
	Quick	30	5	35
	Total	42	12	54

Healthy share:
Slow (93%)
VS
Quick (43%)

Healthy share:
Slow (37%)
VS
Quick (14%)

Takeaways

- Oatmeal is healthier than soup.
- The slow-cooking products are healthier than quick cooking products.
- There may exist tradeoff between cooking time and healthfulness of food.

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Results Preview: Quick-Cooking VS Healthfulness

Oatmeal

Consumers prefer…

- quick-cooking BUT unhealthy oatmeal
- healthy BUT slow-cooking oatmeal

There exists tradeoff between quick-cooking and healthfulness for oatmeal.

Soup

Consumers prefer…

- slow-cooking AND unhealthy soup
- quick-cooking AND healthy soup

There exists NO tradeoff between quick-cooking and healthfulness for soup

Why different? (a) Sodium v. sugar; (b) Perhaps quick and slow soup are too similar.

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Results

Mixed Logit Model Results: **Oatmeal**

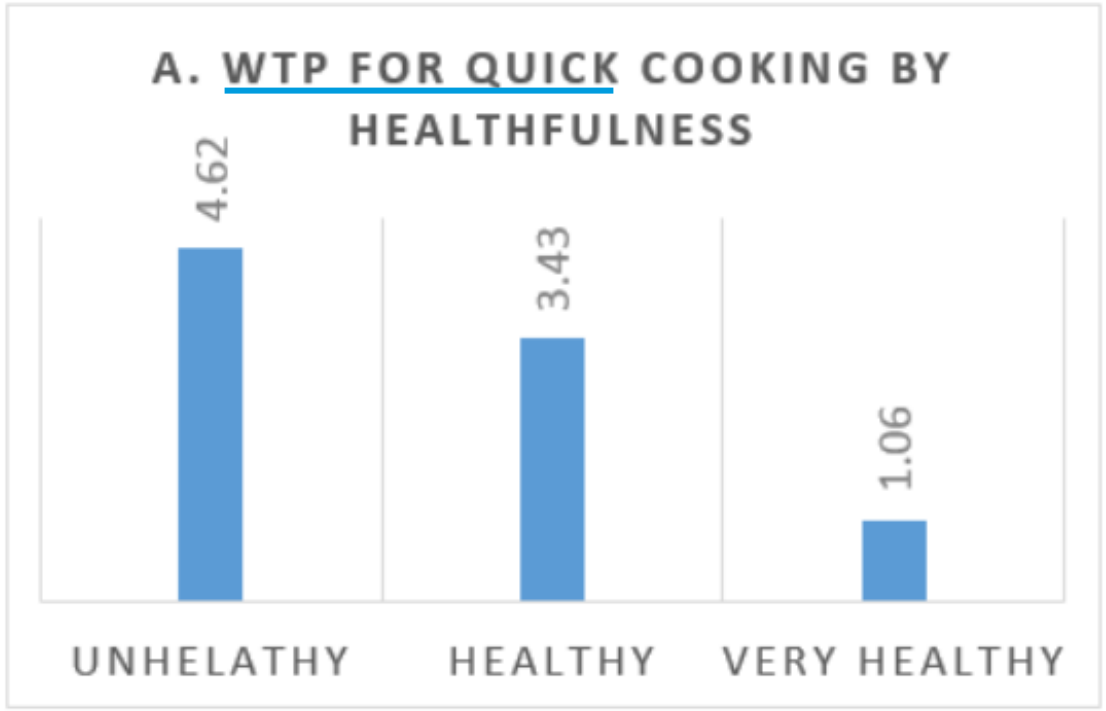
Variables	(1) Mean	(2) Standard Deviations
Price	-0.374***	0.275***
	(0.00352)	(0.00385)
Healthfulness	0.612***	
	(0.0101)	
Quick	1.727***	
	(0.0291)	
Healthfulness * Quick	-0.444***	
	(0.0103)	
Residual from Control Function	0.0827***	
	(0.00677)	
Brand FE	YES	YES
Year-Quarter FE	YES	YES
State FE	YES	YES
Observations	5,990,847	5,990,847

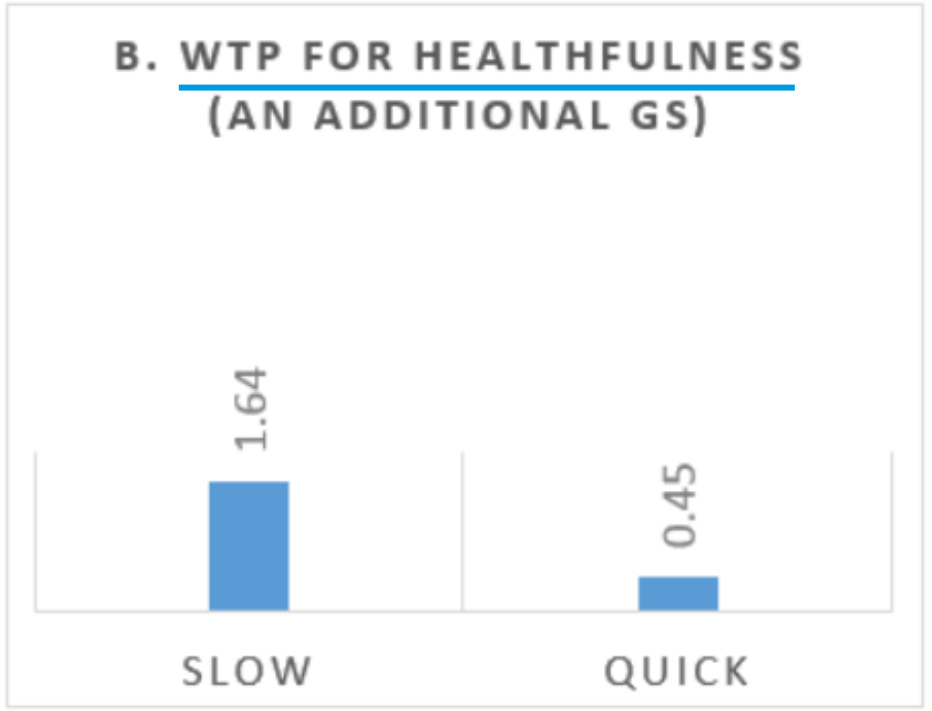
Takeaways:

- Consumers prefer quick-cooking oatmeal and healthy oatmeal.
- There exists tradeoff between cooking time and healthfulness.
- As healthfulness ⬆, the preference for quick cooking ⬇

Oatmeal Results: WTP for Quick-cooking and Healthfulness

($/Package)





Takeaways:

- higher WTP for quick-cooking oatmeal with lower healthfulness
- higher WTP for healthfulness in slow-cooking oatmeal instead of quick-cooking options.

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Results

Mixed Logit Model Result: **Soup**

VARIABLES	(1) Mean	(2) Standard Deviation
Price	-3.045***	1.863***
	(0.00705)	(0.00524)
Healthfulness	-0.587***	
	(0.00695)	
Quick	-0.417***	
	(0.0140)	
Healthfulness * Quick	0.732***	
	(0.00967)	
Residual from Control Function	2.110***	
	(0.00782)	
Brand FE	YES	
Year-Quarter FE	YES	
State FE	YES	
Observations	39,928,357	

Takeaways:

- Consumers prefer slow-cooking and unhealthy soup.
- NO tradeoff between quick cooking and healthfulness.

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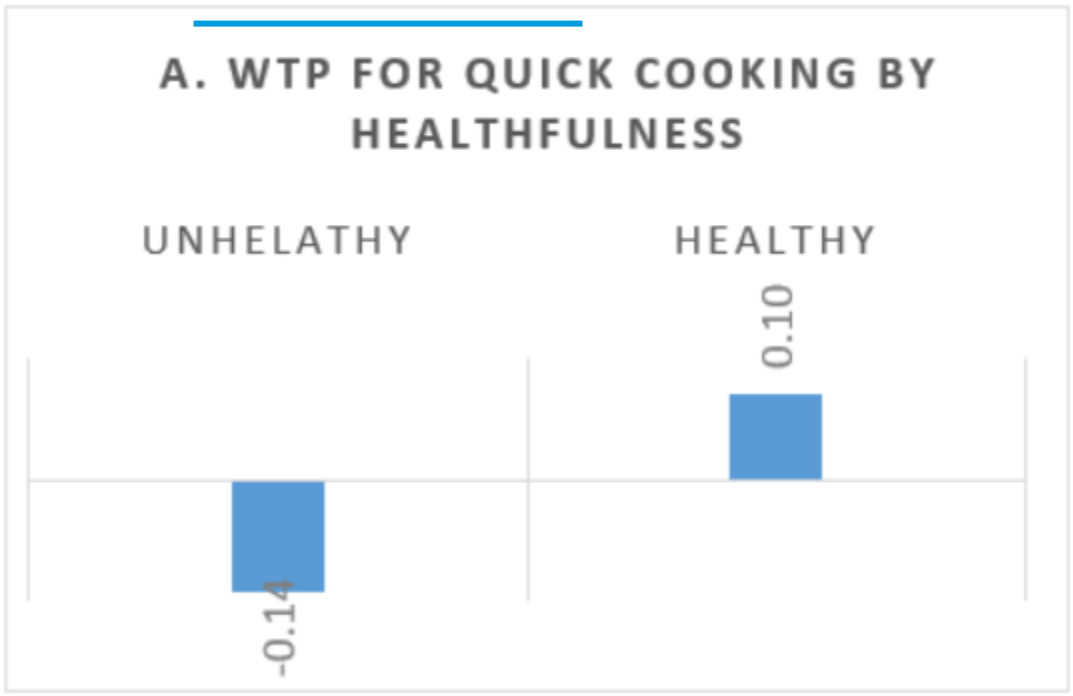
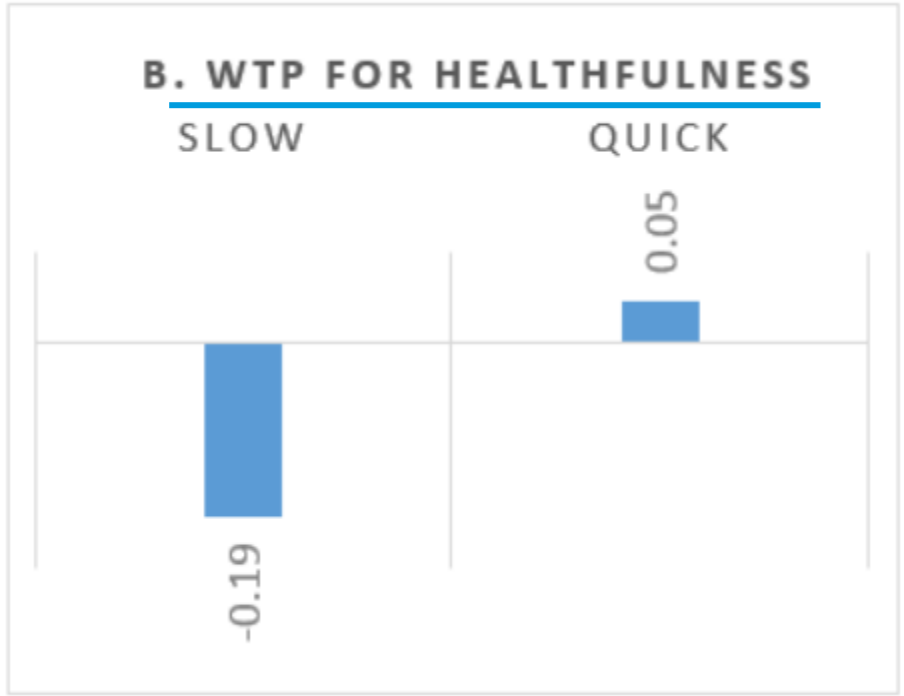
Soup Results: WTP for Quick-cooking and Healthfulness

($/Package)





Negative WTP

- for quick-cooking when it is unhealthy soup
- for healthfulness when it is slow-cooking soup

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Next Steps:

- Refine econometric models.
- Investigate consumer heterogeneity.
- Expand product categories.
- Conduct counterfactual analysis and evaluate effectiveness of policies.

Thank you! Questions? Comments?

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