

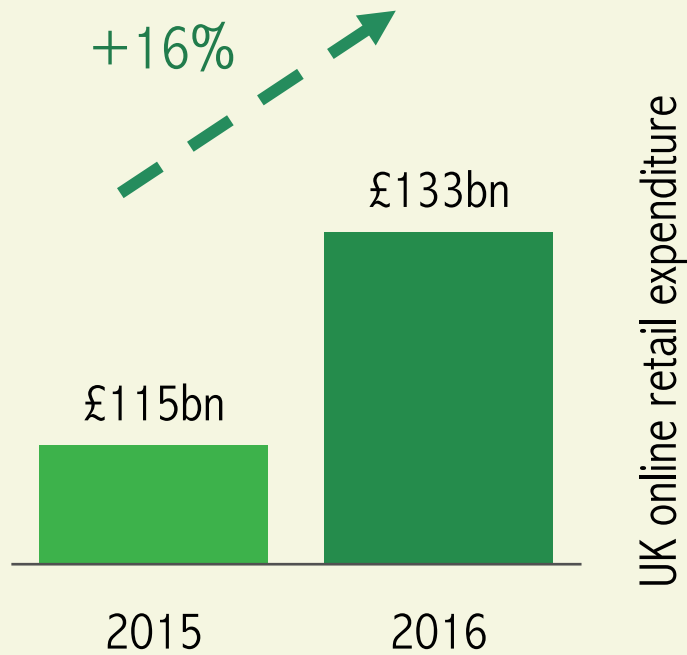
Online Grocery Shopping: Identifying Change in Consumption Practices

Jo Munson

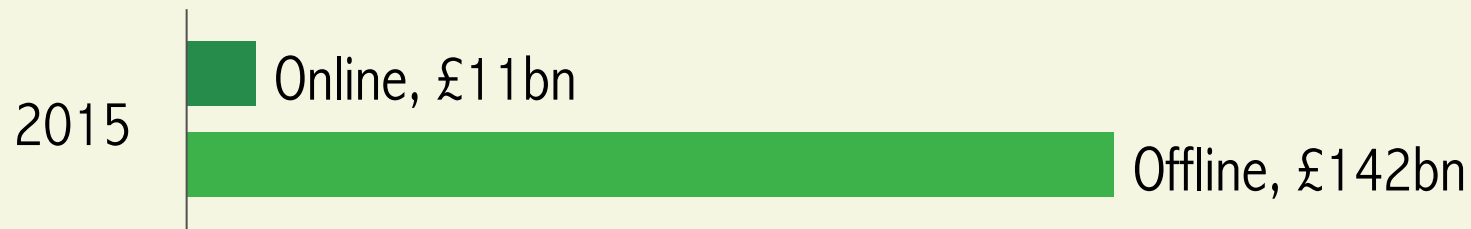
Thanassis Tiropanis

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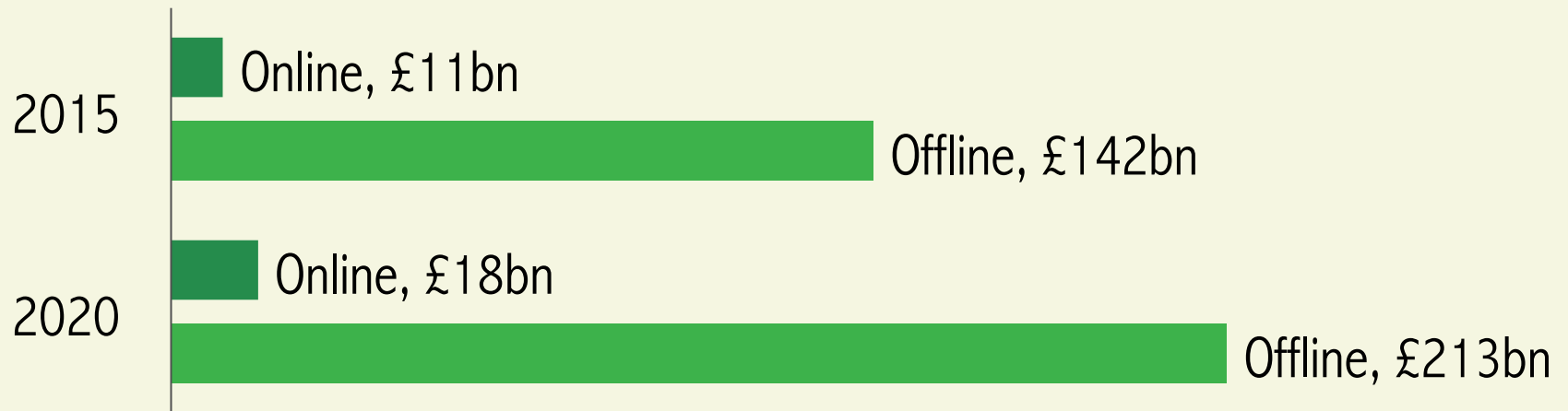
E-commerce is big business, not least in the UK



UK **online** grocery market is relatively small...



...but projected to grow rapidly



Insight into online grocery consumer behaviour invaluable for **retailers**

- Customer retention
- Personalisation
- Complementary service provision
- Increasing LTV in low margin industry
- Multi-channel planning



...and good for **governments, academia** and **consumers** too

- Town planning and policy design for governments
- Better quality services for consumers
- Socio-technical understanding of consumer behaviour in academia



The problem...

- Lack of good quality data

Most research conducted is:

- Synthetic lab-based
- Survey / 'intention' based



Arrivals		
1996	Tesco	Arri
1998	ASDA	Arri
1999	Sainsbury's	Arri
2001	Ocado	Arri
2006	Iceland	Arri
2009	Waitrose	Arri
	Morrisons	DeLa

The opportunity... and another problem

- Access to WM Morrisons Plc (Morrisons) Google Analytics account

But...

- No comparable offline dataset available through Morrisons
- Most comprehensive publicly available data covering online and offline grocery shopping in UK: ONS LCF survey



Aims of this study

- Are there **differences** in consumption behaviours in **online** and **offline** grocery shopping in the UK?
- Is the **Morrisons sample representative** of online grocery shopping at the national level?
- Are online grocery shoppers **price sensitive**?
- Are online grocery **baskets stable**?

Methodology & results

- Are there differences in consumption behaviours in online and offline grocery shopping in the UK?
- Is the Morrisons sample representative of online grocery shopping at the national level?

Dataset descriptions

Morrisons sample

- 986,973 transacted food and drink items from 41,201 users/households

National level 'population'

- Living Costs and Food (LCF) survey of 4,760 households, mapped back to general population

Variables used to compare Morrisons sample with national statistics

Variable	
Food category	Bread & cereals, Fruit & veg., Meat, Fish, Dairy & eggs, Confectionary, Non-alcoholic Drinks, Other
Food freshness	Fresh, Not Fresh
Region	NE, NW, E/W Midlands, SE, SW, East of England, Yorkshire, London, Wales, Scotland

Comparing online and offline baskets

Null hypothesis 1

At the **national level**, the distribution of revenue between food categories for **online** and **offline** transactions is the same

Result of χ^2 test

- Strong evidence to reject null hypothesis
- Confectionary & Meat overweight in offline sample
- Other & non-alcoholic drinks overweight in online sample

Comparing Morrisons sample with 'population'

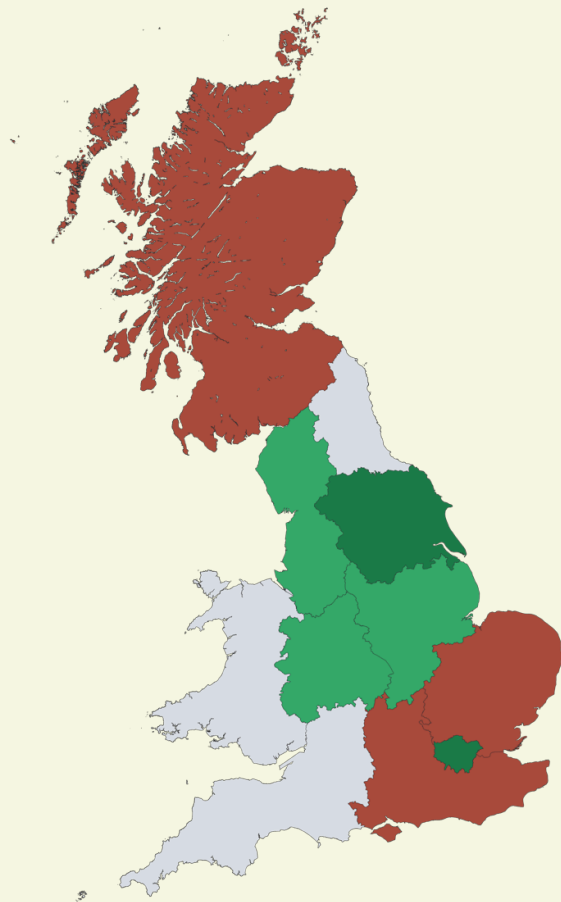
Null hypothesis 2

The distribution of revenue between food categories for the **online LCF 2016** and **online Morrisons sample** transactions is the same

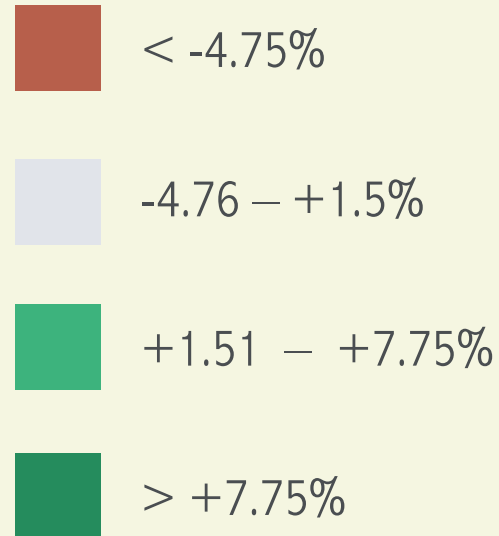
Result of χ^2 test

- Some evidence to reject null hypothesis
- Bread and cereals overweight in Morrisons sample

How does the Morrisons sample compare to the UK population distribution?



Sample distribution relative to population



Comparing re-weighted Morrisons sample with 'population'

Null hypothesis 3

The distribution of revenue between food categories for the **online LCF 2016** and **re-weighted online Morrisons sample** transactions is the same

Result of χ^2 test

- Insufficient evidence to reject null hypothesis
- Re-weighted sample not significantly different from 'population'

Comparing proportion of fresh and non-fresh products in online and offline baskets

Null hypothesis 4

The distribution of revenue between fresh and non-fresh for the **offline LCF 2016** and **re-weighted online Morrisons sample** transactions is the same

Result of χ^2 test

- Sufficient evidence to reject null hypothesis
- Proportion of fresh products is larger in Morrisons sample

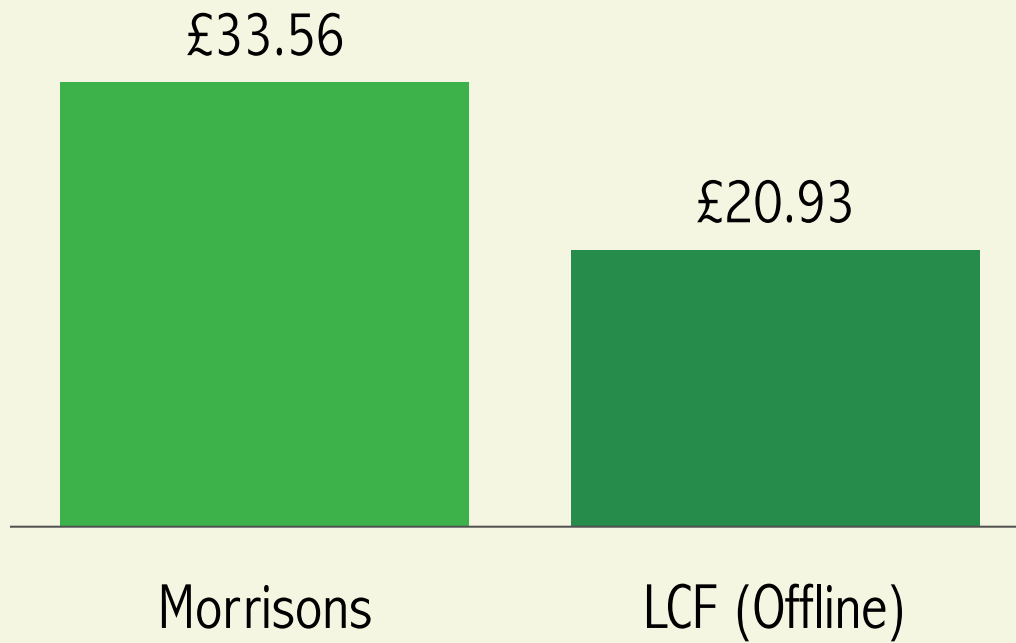
Methodology & results

- Are online grocery shoppers price sensitive?
- Are online grocery baskets stable?

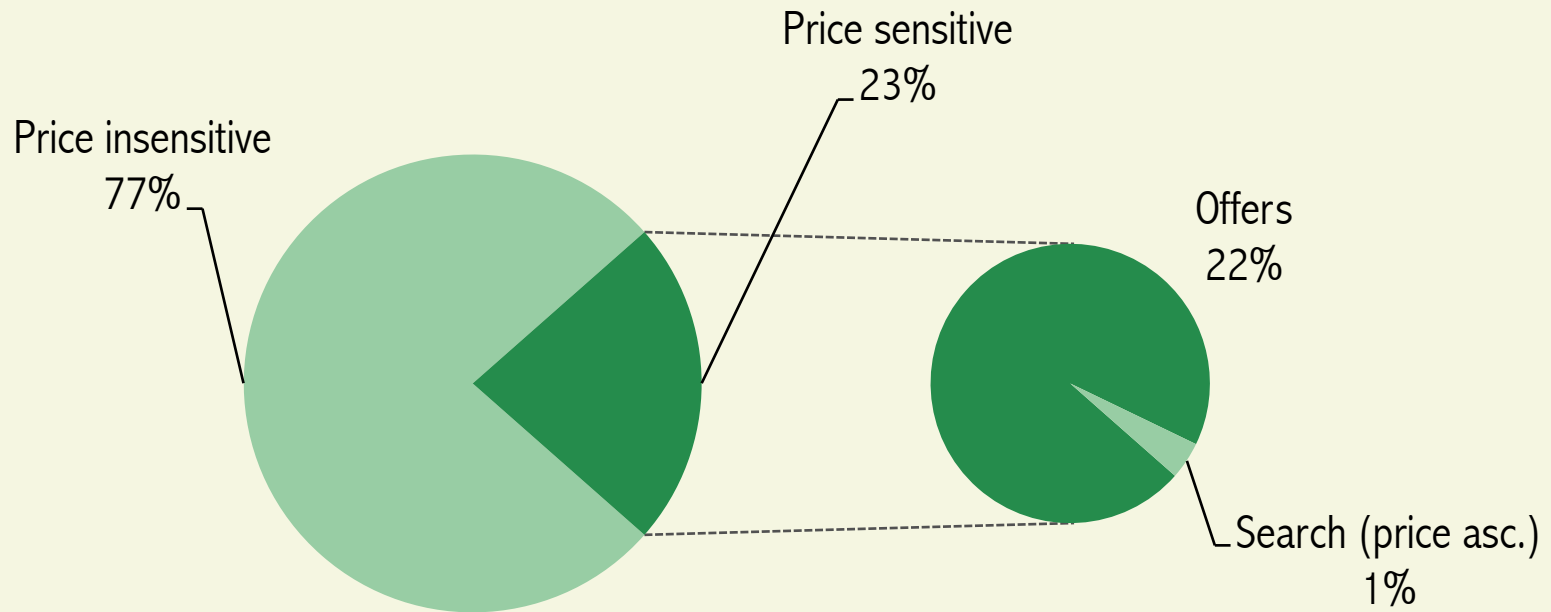
Last page visited before adding products to basket

Price sensitive	Stable
Offers	Shopping list
Flash sales	Favourites
Sort by price ascending	Suggested order
	Previous order

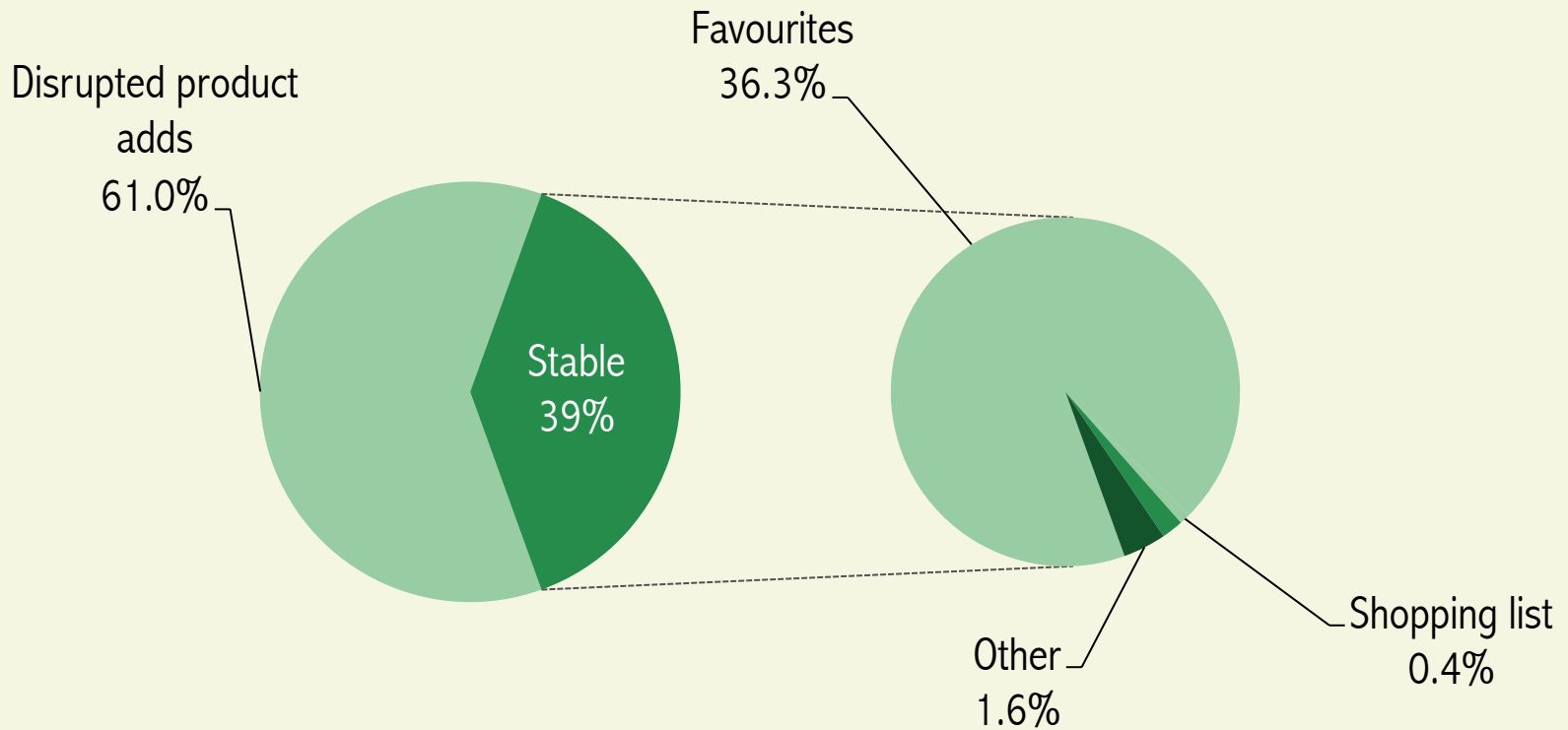
Average basket value



Morrisons specific behaviour: Price sensitivity



Morrisons specific behaviour: Basket Stability



Conclusions, implications & future work

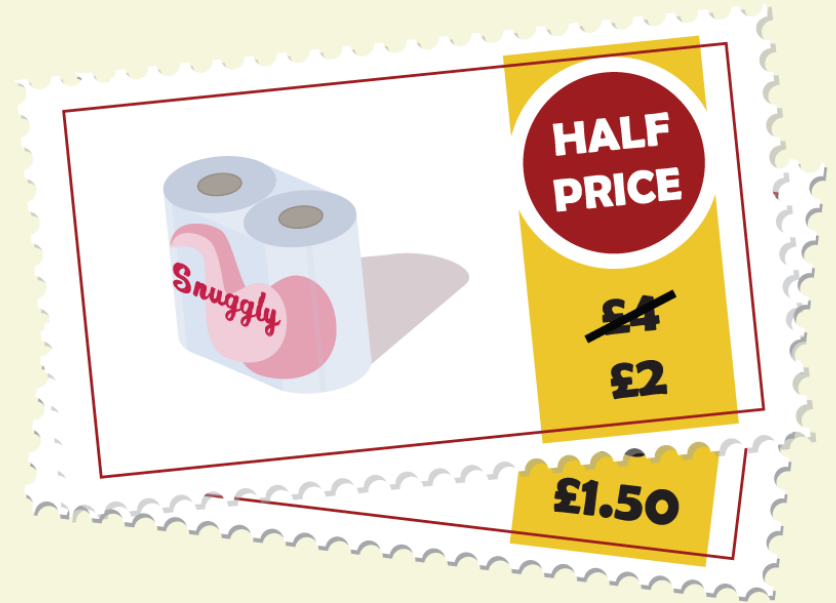
Conclusions

- **Differences** in basket consumption between online and offline grocery shopping in the UK
- Re-weighting Morrisons offers potential to represent national-level behaviour



Conclusions

- Some evidence that **online** consumers **spend more** on **fresh** products than offline, contrary to popular belief
- Some evidence consumers are **not** as **price-sensitive** as retailers / current research suggests



Future work

- Examine behaviour by **location, device, time**
- How the capacity to edit baskets affects basket composition
- Qualitative investigation
- Towards a 'Theory of online grocery shopping behaviour'



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