

A hand is holding a round, silver-colored plate. The plate contains a meal consisting of yellow corn kernels, a piece of browned meat, a slice of orange cheese, and a salad with green lettuce, tomatoes, and other vegetables. A large, semi-transparent white rectangular area is overlaid on the lower half of the plate, partially obscuring the food. The background is plain white.

# PROTECT THE PLATE – INSIGHTS INTO CONSUMER PLATE WASTE

## RESEARCH TEAM

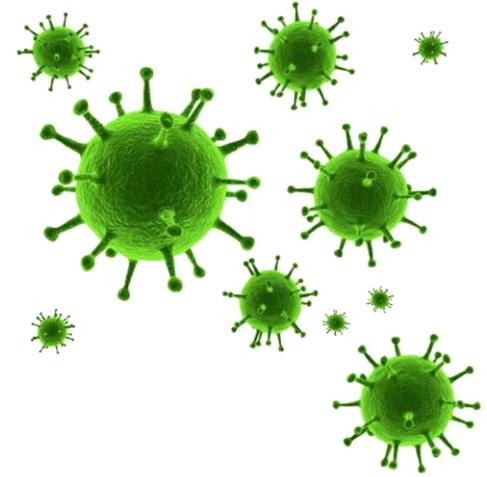
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# COVID-19 IMPACT ON THE HOSPITALITY SECTOR

- COVID-19 has significantly impacted the hospitality sector. Cost saving measures are essential<sup>1</sup>, for businesses, but also for customers.
- Addressing food waste is a practical action to save businesses money. For every dollar invested in activity to reduce food waste the hospitality sector can realize 14 dollars of benefit<sup>2</sup>.
- As the hospitality sector redefines itself, tapping into consumer values will be crucial.
- Offering customers innovative and circular solutions can accelerate food waste minimisation in the sector

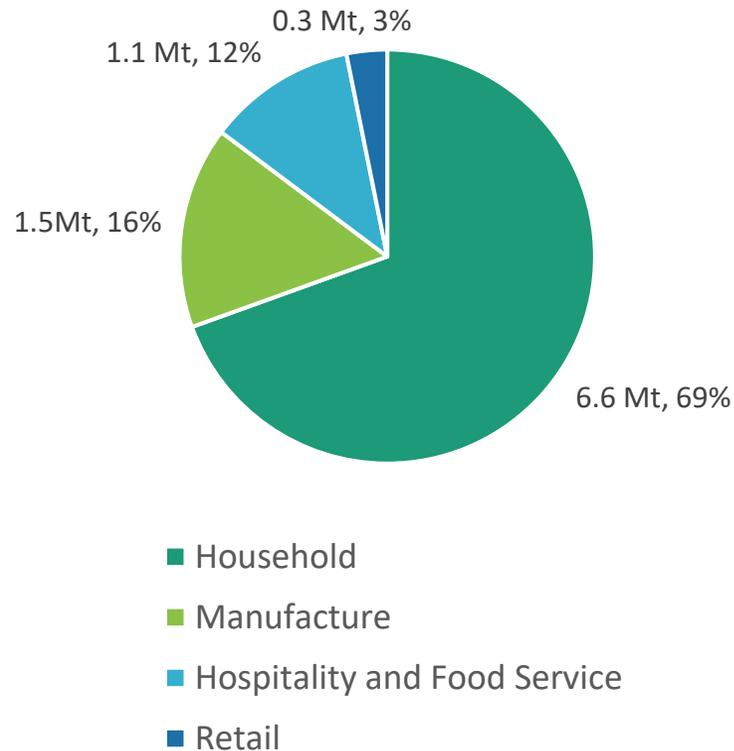


(1)Deloitte, 2020. Impact of COVID-19 on the hospitality industry. Available from: <https://www2.deloitte.com/nl/nl/pages/consumer/articles/impact-of-covid-19-on-the-hospitality-industry.html>

(2)Hanson, C., Mitchell, P., 2017. The business case for reducing food loss and waste. Available from: [https://champions123.org/wp-content/uploads/2017/03/report\\_-\\_business-case-for-reducing-food-loss-and-waste.pdf](https://champions123.org/wp-content/uploads/2017/03/report_-_business-case-for-reducing-food-loss-and-waste.pdf)

# PLATE WASTE MAKES UP 34% OF HOSPITALITY LEVEL FOOD WASTE

Post farm-gate food waste in the UK (2018)



WRAP (2020), Food surplus and waste in the UK – key facts

Interventions to date have focussed on how food service operators can reduce the food waste they produce:

- The Hospitality and Food Service Action Plan (April 2019)
- ‘Guardians of Grub’ (Initiated in May 2019)

Not all food waste is produced in the kitchen – a significant amount is produced by consumers.

The food customers don’t eat i.e. ‘plate waste’ makes up around 34% of food waste in the sector.

## WHAT CAN THE HOSPITALITY SECTOR DO TO SUPPORT CUSTOMERS TO REDUCE PLATE WASTE?

**Understand what motivates customers**

# MOTIVATORS FOR BEHAVIOUR CHANGE TO REDUCE PLATE WASTE

## WHAT WE KNOW:

- Plate waste in restaurants may be attributable to a lack of customer awareness for food waste issues<sup>1,2,3</sup>.
- The way food waste reduction messages are communicated is important to encourage pro-environmental behaviour change<sup>3</sup>.
- Messaging campaigns at a food service level can increase consumer awareness and encourage behaviours to reduce food waste<sup>3</sup>.
- Consumer attitudes concerning food waste when eating out-of-home are not well understood<sup>4</sup>.

## WHAT WE THINK:

- Out-of-home food waste may be influenced by characteristics of the eating occasion<sup>5,6</sup>
- There may be specific motivational factors which encourage customers to reduce waste<sup>6,7</sup>

## AIM

To understand the effect of situational dining and motivational factors on out-of-home plate waste in cafés and restaurants.

Findings will support restaurant and café managers to communicate with consumers on issues they are engaged with to lead to more effective plate waste reduction.

(1) Quested, T. E., Parry, A. D., Easteal, S., Swannell, R., 2011. Food and drink waste from households in the UK. Nutrition Bulletin. 36, 460–467.

(2) Neff, R.A., Spiker, M.L., Truant, P.L., 2015. Wasted food: US consumers' reported awareness, attitudes, and behavior. PloS One. 10, 1-16.

(3) Chen, H.S., Jai, T.M., 2018. Waste less, enjoy more: forming a messaging campaign and reducing food waste in restaurants. J Qual Assur Hospit Tourism 19, 495-520.

(4) Secondi, L., Principato, L., Giovanni, M., 2019. Can digital solutions help in the minimization of out-of-home waste? An analysis from the client and business perspective. Brit Food J. Vol. ahead-of-print.

(5) WRAP, 2013. Understanding Out of Home Consumer Food Waste. Available from: <https://wrap.org.uk/sites/files/wrap/OOH%20Report.pdf>

(6) Lorenz-Walther, B.A., Langen, N., Göbel, C., Engelmann, T., Bienge, K., Speck, M., Teitscheid, P., 2019. What makes people leave LESS food? Testing effects of smaller portions and information in a behavioral model. Appetite. 139, 127-144.

(7) Filimonau, V., Matute, J., Kubal-Czerwinska, M., Krzesiwo, K., Mika, M., 2019. The determinants of consumer engagement in restaurant food waste mitigation in Poland: An exploratory study. J Cle Pro. 247.

# SURVEY METHODOLOGY AND PARTICIPANT DEMOGRAPHICS

Data from “Consumer Food Waste in Restaurants/Cafés” questionnaire was used to analyse:

- Dining factors and their relationship on food waste
- Motivational factors which may encourage consumers to reduce their out-of-home food waste

The questionnaire aimed to be nationally representative and was administered to through Research Now Market Research Company.

Data collection was held over a two-week period using Qualtrics survey software and exported to Microsoft Excel. The subset of the questionnaire that was of interest was extracted from the full data and analysed using STATA.

Table 1: Demographic characteristics of participants

Characteristic <sup>1</sup>	Males (n= 476)	Females (n=525)
Age (y)		
18-24	42(8.82)	64(12.19)
25-34	76(15.97)	119(22.67)
35-44	102(21.43)	105(20.00)
45-54	100(21.01)	119(22.67)
>55	156(32.77)	118(22.48)
Level of education		
Schooling not complete	48(10.08)	39(7.43)
Completed secondary	98(20.59)	113(21.52)
Tertiary certificate	159(33.40)	160(30.48)
University degree	171(35.92)	213(40.57)
Income level		
<40,000	104(21.84)	202(38.47)
40,000-79,999	174(36.56)	165(31.43)
>80,000	130(27.30)	75(14.28)
Prefer not to say	68(14.29)	83(15.81)

<sup>1</sup> n(%)

# DINING FACTORS HAVE AN EFFECT ON PLATE WASTE

Table 2: Factors effecting the proportion of participants who left food on their plate during the last occasion where participants dined out-of-home

Factors	Proportion (95% CI)	P value <sup>1</sup>
Purpose of eating		
Functional	0.308 (0.256-0.366)	0.237
Social	0.361 (0.326-0.398)	
Other	0.303 (0.202-0.427)	
Price of meal		
Cheap	0.280 (0.219-0.352)	0.009
Mid-range	0.342 (0.308-0.377)	
Expensive	0.467 (0.366-0.571)	
Eating occasion		
Breakfast	0.275 (0.232-0.324)	<0.001
Lunch	0.244 (0.160-0.353)	
Dinner	0.427 (0.384-0.471)	
Snack	0.175 (0.098-0.292)	
Other	0.444 (0.134-0.805)	
Length of meal (h)		
<0.5	0.228 (0.170-0.300)	<0.001
0.5-1.0	0.286 (0.239-0.338)	
1.0-1.5	0.391 (0.341-0.444)	
>1.5	0.452 (0.383-0.525)	

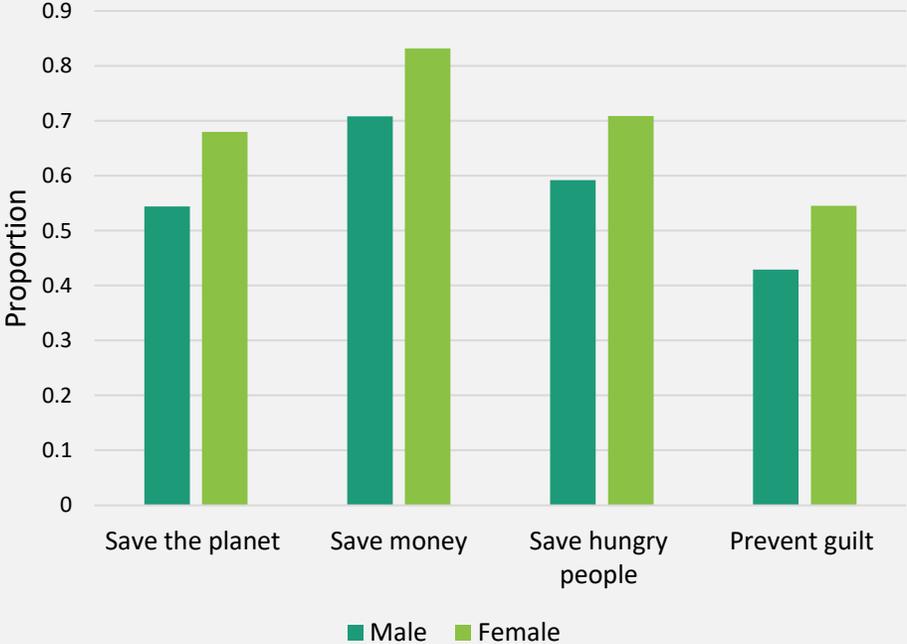
<sup>1</sup> Determined using Chi-squared test

A statistically significantly greater proportion ( $p < 0.05$ ) of participants reported plate waste if the meal was more expensive, longer in duration and at dinner time.

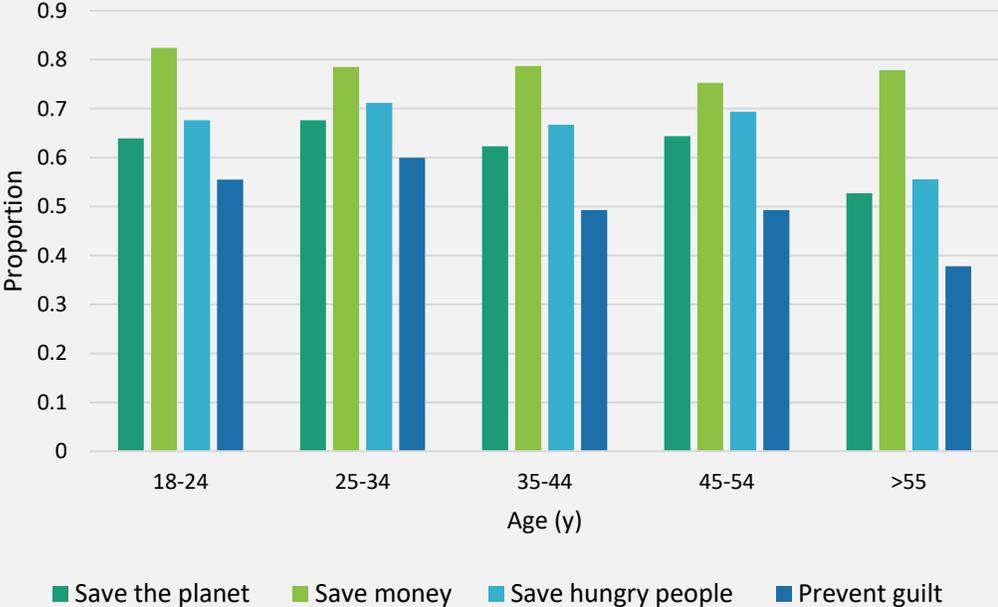
- Longer meal (>1.5 hours)  $p < 0.001$
- More expensive  $p = 0.009$
- Consumed for dinner  $p < 0.001$

# WHAT MOTIVATES CONSUMERS TO REDUCE PLATE WASTE?

Irrespective of age or sex, saving money was the most important factor motivating participants to reduce out-of-home food waste, followed by saving hungry people, saving the planet and lastly, preventing guilt.



**Figure 1:** Factors that would encourage participants to reduce out of home food waste, by sex



**Figure 2:** Factors that would encourage participants to reduce out of home food waste, by age

# WHAT DOES THIS MEAN FOR INNOVATIVE WASTE MANAGEMENT?

## KNOW YOUR TARGET

New Zealand consumers are highly motivated to reduce out-of-home food waste to save money. New Zealand café and restaurant operators are also motivated by cost savings<sup>1</sup>.

Initiatives aimed at reducing food waste **should be framed as a cost saving opportunity** as this motivation resonates with both the business communicating the message and the consumer.

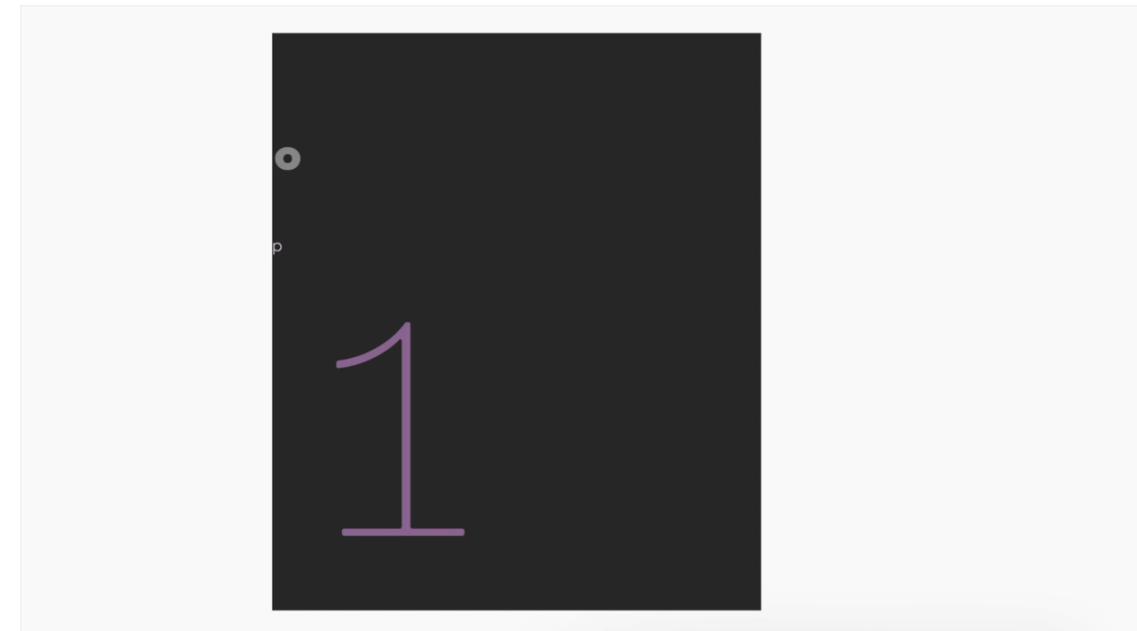
WRAP's hospitality and food service resource pack



[https://www.wrap.org.uk/sites/files/wrap/UK%20LFHWHospitalityResourcePack\\_0.pdf](https://www.wrap.org.uk/sites/files/wrap/UK%20LFHWHospitalityResourcePack_0.pdf)

## FOOD REDISTRIBUTION APPS

If restaurants and cafés lead by example, consumers will be more likely to act upon their requests to reduce food waste<sup>2</sup>.



(1)Chisnall, S.J., 2018. A Taste for Consumption: Food Waste Generation in New Zealand Cafés and Restaurants. University of Otago. Available from: <http://hdl.handle.net/10523/7942>

(2)Dief, M. E., Font, X., 2010. The determinants of hotels' marketing managers' green marketing behavior. J. Sustain. Tour., 18, 157–174; Chen, H.S., Jai, T.M., 2018. Waste less, enjoy more: forming a messaging campaign and reducing food waste in restaurants. J Qual Assur Hospit Tourism 19, 495-520.

# MAKE ZERO WASTE THE 'NEW NORMAL'

## CIRCULAR SOLUTIONS



**'Good to Go'**  
achieved a  
**42% reduction**  
in food waste

## POSITIVE MESSAGING CAMPAIGNS

Love Food Hate Waste ran the 'CompleAT' campaign for households<sup>1</sup>.

**DON'T JUST EAT IT  
COMPLEAT IT**

'CompleAT' when dining out-of-home by proactively offering:

- a doggy bag
- a choice in portion size
- Information about portion size
- ordering an entrée as a main
- placing orders course-by-course.

Benefits:

- Positive customer perception
- Reductions in waste cost
- Cost savings for customers

(1) <https://www.lovefoodhatewaste.com/dont-just-eat-it-compleat-it>

# SUMMARY

- Situational dining factors have a statistically significant effect on plate waste.
- More customers leave food if a meal is more expensive, >1.5 hours and at dinner.
- Saving money motivated the largest proportion of consumers to reduce plate waste.
- Business owners and consumers are driven by cost-saving motivators, this is important in the face of COVID-19.
- Interventions by the hospitality sector should highlight cost-saving to consumers.
- Consumers are also motivated by saving hungry people and saving the planet.
- Businesses can role model positive behaviour to encourage customers to support their efforts to reduce food waste and provide circular solutions such as doggy bags and circular packaging.

