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Food waste and the 'green' consumer

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ABSTRACT

While the literature on food waste has examined mainstream consumers, it has tended to overlook 'green' consumers. Based on a survey with 346 respondents, techniques such as cross tabulations, non-parametric tests and the ordered probit regression model were used to analyse the data. Variables such as age, making an effort to reduce food waste, guilt and anxiety about wasting food, along with knowledge of expiry dates, were associated with lower levels of food waste. Surprisingly, eating organic food was not linked with a lower propensity to waste food. There did not appear to be a large gap between attitudes towards food waste and actual behaviours. Higher income households, with young children, who eat out a lot, were more likely to waste food. A good deal of food was thrown away due to spoilage, the short shelf-life of fresh food and because people forgot about food left in the fridge. A limitation of the survey is the reliance on self-reported data for food waste. The findings have practical implications for public policy makers who wish to reduce the economic and environmental burden of food waste.

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1. Introduction

Our decisions around food not only affect our personal health, but the health of our ecosystems as well. Food waste gives rise to a heavy environmental burden. In the developed world, households discard billions of food each year. The Food and Agricultural Organization (FAO) of the United Nations states that the percentage of food wasted corresponds to around 30% of global food production (Gustavsson et al., 2011). Scholars have highlighted the negative externalities linked to food waste and its impact on the triple bottom line (Campoy-Muñoz et al., 2017). More than 95% of the food waste ends at landfill sites, where it is converted into methane and other greenhouse gasses. Its effect on climate change is catastrophic (Melikoglu et al., 2013). According to Garnett (2011, p. 528), "addressing food waste offers considerable theoretical scope for emissions reduction, particularly since wasted food represents a waste of all the emissions generated during the course of producing and distributing that food". In addition, the amount of global food waste is more than enough to feed all the hungry people in the world (Melikoglu et al., 2013), so reducing food waste can enhance global food security.

Consumers are gaining greater awareness of the need to adopt more sustainable lifestyles. 'Green' consumers typically engage in environmentally-friendly behaviours (Connolly and Prothero, 2008) and there is a well-established literature on the 'green' consumer. Lacking from the literature is the explicit link between the con-

sumption of 'green' food and reduction in food waste. To help reduce food waste, this study examines 'green' (sustainability-oriented) consumers, their attitudes and behaviours towards food waste in the home. This study addresses three limitations in the literature. Firstly, most studies explore generalised attitudes towards food waste and market segmentation studies, with a few exceptions (Mallinson et al., 2016), are rare in the literature. Aschemann-Witzel et al. (2015) recommend that future research should explore food waste consumer behaviour in greater depth, by focusing on specific segments, foods and contexts. Secondly, Prothero et al. (2011) argue that consumer research should focus more on those who support the ideals for sustainability yet don't engage in reduced consumption, thereby furthering an understanding of why the 'attitudes-behaviour gap' persists. Given that the 'attitudes-behaviour gap' is an ongoing debate in the literature (Ajzen and Fishbein, 2005), it is worthwhile to explore this issue in the context of 'green' consumers. Thirdly, there is a scarcity of scholarly research on food waste in Australia, apart from a few studies (Edwards and Mercer, 2012; Morgan, 2009; Pearson et al., 2013; Reynolds et al., 2014). This deficiency led Edwards and Mercer (2012, p. 176) to state that "food waste is a growing area of concern yet to be adequately addressed in Australia". The purpose of this paper is to examine the determinants of food waste in a niche segment.

2. Literature review

2.1. Green consumption

The focus of this research is on 'green' consumers, those who value sustainability-related attributes in their food purchase and food

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management decisions. 'Green' consumers are conventionally defined as consumers who engage in consumer practices that are viewed as environmentally-friendly (Connolly and Prothero, 2008). Such practices are wide-ranging, such as reducing consumption (Huttunen and Autio, 2010); using public transportation; recycling; buying products with less packaging; buying second-hand goods; eating less meat; buying locally grown food; organic food; fair-trade items and other products that have a reduced environmental impact (Connolly and Prothero, 2008; Gilg et al., 2005). The concept of the green consumer has been subsumed under terms such as ethical consumption (Peattie, 2010). For instance, becoming a vegetarian or eating less meat can reduce carbon emissions and pressure on natural systems (FAO (Food and Agriculture Organization of the United Nations, 2006).

In studying 'green' consumers, it is important to take the heterogeneity of consumers into consideration (Tan et al., 2016; Verain et al., 2015). Consumers are often motivated to support organic and/or local agriculture because they believe they are more sustainable than conventional agriculture (Brown et al., 2009; Zepeda and Li, 2006). Locally produced foods, or short food supply chains, are part of alternative agro-food networks (AAFN) and they generally signify distinctive, high quality foods (Renting et al., 2003). Embeddedness is central to the study of local foods (Chen and Scott, 2014) and it can refer to social embeddedness (such as interactions with vendors at a farmer's market), spatial embeddedness (such as buying fresh, local produce) and natural embeddedness (such as a reduction in the use of chemicals and food miles). Local food production complements organic food production. There is some overlap in the associations with organic and local food, such as taste, healthiness, animal welfare and environmental friendliness, hence particular consumers are likely to favour both local and organic attributes (Hempel and Hamm, 2016). In contrast to local foods, organically produced food has become part of global food supply chains (Renting et al., 2003). Furthermore, organic food is generally labelled with national or international organic certification logos. Organic agriculture is based on four key principles: the principle of health, ecology, fairness and care (IFOAM (International Federation of Organic Agriculture Movements).

The adoption of organic and locally grown food, including the values, motivations and demographic characteristics of food consumers, has been studied extensively (Baker et al., 2004; Berlin et al., 2009; Chambers et al., 2007; Lockie et al., 2002; Zepeda and Deal, 2009). Studies have shown that product taste, quality, healthiness and sustainability are important criteria for purchasing organic and local foods (Didier and Sirieix, 2008; Palovita, 2010; Torjusen et al., 2001). However, environmental arguments alone may not persuade consumers to eat ecologically (Tobler et al., 2011). While many studies provide valuable information on who purchases organic and local food and why, we extend the analysis to include the effect of such consumption on levels of food waste.

2.2. Food waste – defined

Scholarly research on food waste has grown in recent years (Gjerris and Gaiani, 2013; Neff et al., 2015). Food waste is not a trivial issue but there is still no standardised definition of food waste. Household food waste has been defined by the *Waste Resources Action Program* (WRAP) as "food and drink thrown away that was, at some point prior to disposal, edible" (WRAP (Waste & Resources Action Program, 2009), p. 4). Jørisen et al. (2015, p. 2699) defines avoidable food waste as "products that are still fit for human consumption at the time of discarding, or products that would have been edible if they had been eaten in time". Food is wasted due to consumer concern over quality, aesthetic or safety standards (Thyberg and Tonjes, 2016) or because too much food and drink was cooked, prepared or served, and not used in time (WRAP (Waste & Resources Action Program, 2009)). In the present study, we adopt the defini-

tion proposed by WRAP (Waste & Resources Action Program) (2009) and Jørisen et al. (2015) and explore avoidable food waste that occurs in the household, at the end of the food value chain.

2.3. Drivers of food waste and solutions

The drivers of food waste include the modernisation of societies, economic growth, urbanization, globalisation, cultural factors and socio-demographic factors (Thyberg and Tonjes, 2016). Several studies have explored the effect of socio-demographic variables on food waste (see Thyberg and Tonjes, 2016 for a review). The presence of young children in the household can support organic food purchase due to health concerns of parents (Hill and Lynchehaun, 2002), but lead to more food waste, due to the demands of 'fussy' children (Jørisen et al., 2015). Stancu et al. (2016) found that lower amounts of food waste were associated with older consumers, fewer members in the household and lower income. Females are less likely than males to waste food (Barr, 2007), and more likely to purchase local and organically produced food due to a sensitivity to healthy and sustainable food products (Cholette et al., 2013). However, income and gender has been highly debated in the literature on food waste (Principato et al., 2015). Studies have found that low-income and price-conscious consumers are less likely to waste food due to budget constraints and/or thriftiness (Koivupuro et al., 2012). However, the relationship between income and food waste is complex and Setti et al. (2016) found that mid-to-low income consumers purchase higher amounts of lower quality food and waste more food. Price is the main barrier to the purchase of organic food (Pearson et al., 2010). Hence, one would expect organic food consumers to waste less in order to avoid the monetary loss associated with wasting quality food. In contrast to organic food, local food is not expected to be more expensive than non-local/conventional food (Sirieix et al., 2011). Yet, research has found that consumers who buy local products tend to significantly limit the frequency of wasting vegetables (Setti et al., 2016). Jørisen et al. (2015) found the food waste decreases when people shop in local markets and grow their own food. Recent studies have shown that individuals with high environmental concern and high civic consciousness waste less food (Barr, 2007; Melbye et al., 2016; Parfitt et al., 2010).

Given the discrepancy between people's attitudes and their behaviour, also known as the 'knowledge-action' gap and the 'value-action gap' (Frederiks et al., 2015), research on behavioural constraints is a strong theme in the food waste literature. Consumers waste food due to a variety of food management and shopping behaviours, such as lack of meal planning, poor cooking skills, poor use of left-overs and improper food storage habits (Aschemann-Witzel et al., 2015; Stancu et al., 2016; Stefan et al., 2013). Household shopping practices, particularly the size of the store in which groceries are purchased, and the frequency of shopping, have been shown to affect wastage (Jørisen et al., 2015). Date labelling is an important research topic. Studies show that consumers do not fully understand 'use by' and 'best before' dates (Van Boxstael et al., 2014) and that up to 20% of the food wasted could be linked to confusion over date labelling (WRAP (Waste & Resources Action Program, 2009). Parizeau et al. (2015) along with the earlier WRAP study, found that eating outside the home affects food waste, since food is left uneaten at home (WRAP (Waste & Resources Action Program, 2007, 2009). Given the complexity of the food waste issue, scholars (Parizeau et al., 2015; Priefer et al., 2016) propose that a multi-stakeholder approach is required to reduce food waste, involving industry, government and individuals.

3. Methods

This study used a quantitative study. The research questions and procedures are presented in the next section.

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