Variation in fruit and vegetable purchasing patterns in Leeds: using novel loyalty card transaction data

Victoria Jenneson[1], Becky Shute[2], Darren Greenwood[1], Graham Clarke[1], Stephen Clark[1], Tim Rains[2] and Michelle Morris[1]

[1]*University of Leeds, Leeds, United Kingdom and*
[2]*Sainsburys, London, United Kingdom*

Abstract

Introduction: Traditional dietary assessment methods in research can be challenging, with participant burden to complete an interview, diary, 24 h recall or questionnaire and researcher burden to code the food record to obtain a nutrient breakdown. Self-reported assessment methods are subject to recall and social desirability biases, in addition to selection bias from the nature of volunteering to take part in a research study. Supermarket loyalty card transaction records, linked to back of pack nutrient information, present a novel opportunity to use objective records of food purchases to assess diet at a household level. With a large sample size and multiple transactions, it is possible to review variation in food purchases over time and across different geographical areas.

Materials and methods: This study uses supermarket loyalty card transactions for one retailer's customers in Leeds, for 12 months during 2016. Fruit and vegetable purchases for customers who appear to shop regularly for a 'complete' shop, buying from at least 7 of 11 Living Cost and Food Survey categories, were calculated. Using total weight of fruits and vegetables purchased over one year, average portions (80g) per day, per household were generated. Descriptive statistics of fruit and vegetable purchases by age, gender and Index of Multiple Deprivation of the loyalty card holder were generated. Using Geographical Information Systems, maps of neighbourhood purchases per month of the year were created to visualise variations.

Results: The loyalty card holder transaction records represent 6.4% of the total Leeds population. On average, households in Leeds purchase 3.5 portions of fruit and vegetables per day, per household. Affluent and rural areas purchase more fruit and vegetables than average with 22% purchasing more than 5 portions/day. Conversely poor urban areas purchase less, with 18% purchasing less than 1 portion/day. Highest purchases are in the winter months, with lowest in the summer holidays. Loyalty cards registered to females purchased 0.4 portions per day more than male counterparts. The over 65 years purchased 1.5 portions per day more than the 17–24 year olds. A clear deprivation gradient is observed, with the most deprived purchasing 1.5 portions less per day than the least deprived.

Discussion: Loyalty card transaction data offer an exciting opportunity for measuring variation in fruit and vegetable purchases. Variation is observed by age, gender, deprivation, geographically across a city and throughout the seasons. These insights can inform both policymakers and retailers regarding areas for fruit and vegetable promotion.

Conflict of Interest

There is no conflict of interest