

Extended Abstract

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Paper/Poster Title	Seasonality in soft fruit supply: distributional impact on demand and nutrient purchases
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Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	<i>200 words max</i>
<p>The production of soft fruits in Scotland, the main fruit category produced in the country, has a marked seasonality. This has a mirroring effect on nutrition and diet quality every year. However, the extent to which seasonality affect soft fruit purchases (demand), nutrient supply, and different income groups has not been studied. The study relied on time series for 6 main soft fruits constructed from the Kantar Worldpanel dataset for the period 2013 to 2021. Two main analyses were conducted: 1) seasonality analysis, and 2) estimation of an incomplete demand system by socioeconomic groups augmented by seasonal and trend terms. The results show strong seasonal patterns in the purchases of soft as well as significant average seasonal gaps were found in prices. Periods of low and high supply were reflected in quantity demanded and per capita nutrient supply. A strategy by retailers to maintain constant supply of soft fruits or reduce the price gaps during peak and off-peak seasons could help to reduce the impact of seasonality on household food security.</p>	
Keywords	Demand for soft fruits, Scotland, Seasonality
JEL Code	D12 Consumer Economics: Empirical Analysis see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	<i>100 – 250 words</i>
<p>Seasonality is a complex term and has largely been associated with locally produced foods, especially fruits and vegetables (Macdiarmid, 2014). DEFRA (2012) defines seasonal food as one that is produced during the natural production period for the country or region where it is produced. It can also be defined in two contexts: globally seasonal, where the food is produced in the natural production season and consumed anywhere in the world; and locally seasonal, where the food is produced during the natural season and consumed within the same climatic environment it was produced without high-energy use for climate modification or storage (Brooks et al., 2012). The production of soft fruits in Scotland, the main fruit category produced in the country, has a marked seasonality. This has a mirroring effect on nutrition and diet quality every year. However, the extent to which seasonal variations in supply affect soft fruit purchases (demand) and per capita nutrient supply, by different income groups has not been studied. The two main motivations for this topic are: (1) the need to understand the extent to which consumers' purchases of soft fruit follow locality and seasonal patterns; and (2) whether this affects the purchase quantity/nutrient</p>	



demanded for it, and therefore, getting consumers closer/far daily recommended intake.

Methodology

100 – 250 words

The study relied on time series for 6 main soft fruits constructed from the Kantar Worldpanel dataset for the period 2013 to 2021. These are Blackberry, Blueberry, Cherries, Grapes, Raspberry, Strawberry, and Other fruits. Two main empirical approaches were adopted: 1) estimation of a dummy variable seasonality model, and 2) estimation of an incomplete Linquad demand system by socioeconomic groups augmented by seasonal and trend terms. Results were compared by seasons (Summer, Winter, Autumn, and Spring) and income groups (less than £30,000, £30,000 – 50,000 and above £50,000 annual household income).

Results

100 – 250 words

The results show strong seasonal patterns in the purchases of soft fruit despite the possibility of getting out-of-season supply from elsewhere. In addition, some fruits showed significant increasing trend in prices. Significant average seasonal gaps in prices, range from 13.8 - 219.0 per cent between peak and off-peak seasons. In general, soft fruit purchases are very low during spring periods. Consumers are less sensitive to prices (expenditure) during booms (harvest periods) but extremely sensitive to prices (expenditure) during scarcity periods (low supply). Cherries had the largest range of sensitivity to prices whilst grapes had the least. Using seasonal gaps in the prices, household quantity and nutrient purchases had cyclical patterns, reducing significantly during low supply. It can be concluded that seasonality in soft fruit prices influence both quantity demanded and nutrient purchases negatively.

Discussion and Conclusion

100 – 250 words

Seasonality in perishable produce like soft fruits is mirrored by the prices consumers pay for at retail shops. Across all income groups, peak prices are usually recorded in the spring and the trough prices in autumn. This explains the increased reaction by consumers to price changes in the spring for raspberry, strawberries, cherries, blueberries, and blackberries especially among those earning above £50,000.

The implication of the results is that it exposes the inaccuracies in food demand elasticities that ignore the effect of seasonality in price elasticities. Using average elasticities could mis-represent the reaction of consumers to price changes.

Consumers reaction to soft fruit prices vary significantly depending on the season of the year. This could potentially affect pricing policies and dietary goals. Accounting for seasonal differences in price elasticities, especially for perishable foods, is important both for policy accuracy and to understand consumer behaviour. For instance, Herrmann & Roeder (1998) found that seasonal variables have significant impact on price elasticities in Germany. A strategy to maintain the same price elasticities all year round would help to stabilise consumers' diet.

Seasonal patterns also have significant impact on both diet quality and nutrient intake (Fahey et al., 2003). Purchases of soft fruits are higher at low elasticities or when prices are low. Total average daily intake of fruit and vegetable consumption was found to vary significantly by the season of the year (Capita & Alonso-Calleja, 2005). At higher

elasticities and or higher prices, demand is low, and the nutritional benefits derived from soft fruit are masked.

A strategy by retailers to maintain constant supply of soft fruits or reduce the price gaps during peak and off-peak seasons could help to reduce the impact of seasonality of household food security.