An investigation into the effects of a relaxation of the current Sunday Trading Legislation on the Co-operative's convenience stores

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Project Background

The 2015 July Budget proposed a devolution of control of Sunday trading hours to city mayors and local authorities. The effects the changes could have on the Co-operative convenience stores were unknown. This research sought to forecast the financial impact the changes would have on their convenience stores and give advice on how to best mitigate losses.

Data and Methods

The approach to forecasting employed two different models; a Geospatial Model and a Multi-linear regression Model. Scotland has no restrictions on Sunday trading so was used as a control variable in both models.

Geospatial Model: This model employed various buffers between 500m and 10km to examine the impact of supermarkets of varying size on the 'Post 4pm Sunday turnover' in both Scotland and Yorkshire. The model forecasted turnover for Yorkshire, based on the assumption the stores would take the same as equivalent stores in Scotland that have the same proximity to supermarkets of varying sizes, if there was a relaxation in the laws. The model was then applied to the rest of the UK.

Multi-linear regression Model: This model provided a store by store forecast using a combination of three predictive variables 'Beers Wines and Spirits sales', '10-11am turnover' and 'Grocery sales' to provide an accurate model with an adjusted R-squared value of .856 to predict a turnover loss to the convenience sector of -£31.78M. The results gave a store by store forecast. The forecasted stores to suffer the largest loss of takings are the stores that currently take a higher percentage of Sunday takings post 4pm.

Key findings

Geospatial Model: The results suggested that the closer a given Co-operative convenience store is to a supermarket competitor (particularly supermarkets sized 10,000+ square feet) the higher the takings were during the times the supermarket was closed. This is due to customers who would have used the supermarket then shopping at the Co-operative. The effect is different over different sized buffers and against different sized competitors. The buffer and competition size that represented the largest losses was a 10km buffer with a 10,000+ square foot competitor intersect. National turnover losses to the Co-operatives' convenience stores were forecasted as £33.25M. Following the geospatial analysis it was decided a more in depth statistical review was needed in order to make forecasts for individual stores.

Multi-linear regression Model: This model provided accurate store by store forecasts. The national forecasts were very similar to the first model further validating both forecasts. The forecasted annual losses for the Co-operatives convenience stores were -£31.78M, however when the model was applied to the Co-operative stores over 280 square meters there were forecasted gains in turnover of £90.64M. This forecast is likely to be an overestimation due to the model not being purpose built for forecasting for stores over 280 square meters. Although possibly inaccurate the predicted gains for the stores over 280 square meter highlights one of a number of ways the impact of the changes can be mitigated against.
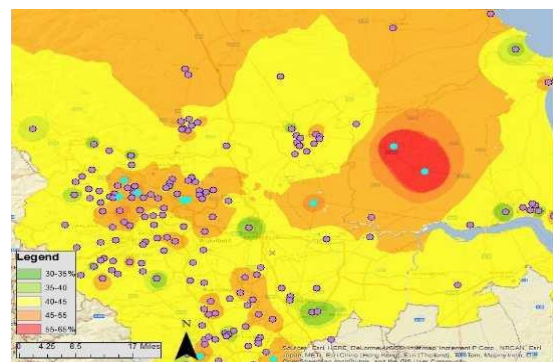
"Post 4pm" Inverse Distance Weighting of Yorkshire

Value of the Research

This research effectively forecast the potential losses to the Co-operative convenience stores of £31-£33M. The possible gains have also been demonstrated with a forecast for stores over the size of 280 square meters. The method to mitigate against such losses were fully examined to form the advice given to the Co-operative as a result of the potential changes in the Sunday Trading Laws. Whilst it appears the new laws will not be brought in nationally rather there will be a devolution, the multi-linear regression model enabled a store by store forecast that will enable the Co-operative to assess the impact on the individual stores where the laws are brought in to place.