***Modelling and simulation studies – potential impact of restrictive policies***

Four publications explored the impact of food marketing by simulating the potential effect of marketing restrictions, all four demonstrate an impact on outcomes of interest for this review.

Brown (1) determined that an intervention restricting HFSS TV advertising before 9.30pm would reduce children’s energy intake by an average of 115kJ/day (approximately 27.5kcal) and BMI by an average of 0.352kg/m2. These benefits would be greater in the most disadvantaged children (-132kJ/day and -0.395kg/m2) than in the least disadvantaged (-97kJ/day and -0.299kg/m2) based on differences in TV viewing time. Mytton (2) estimated that if all HFSS advertising before 9pm was withdrawn, this would decrease caloric intake by 9.1kcal (95% UI 0.5-17.7kcal) which would reduce the number of UK children (5-17 years) with overweight (including obesity) by 3.6% (95% UI 1.1%-7.4%). As with the Australian model, the UK simulation anticipated that such a policy would be more effective in the most disadvantaged groups based on differences in BMI and television viewing, with the estimated reduction in obesity approximately 2-fold greater among children in the least affluent social grade compared with the most affluent.

Dubois (3) estimated the impact of a total ban on advertising for crisps in the UK and the model predicted a 15.1% reduction in expenditure to £85.62m (95% CI 82.44-88.26) and a 15.24% fall in quantity sold to 12.55m Kg (95% CI 12.05-12.97). These reductions in purchasing were anticipated to have an impact on health, with the ban estimated to lead to a 15.23% reduction in the total quantity of energy purchased by households, from 313.70bn kJ (95% CI 310.22-316.37) to 265.94bn kJ (95% CI 256.46-274.18). Lopez (4) reported on a simulation whereby all advertising for carbonated soft drinks was prohibited found that this would lead to a decline in the market share of all such drink brands (e.g., Coke regular from 2.36% to 1.81%) and a concurrent increase in market share for alternatives (e.g., fruit juice, bottled water, milk) from 86.72% to 89.54%.

**References**

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2. Mytton OT, Boyland E, Adams J *et al.* (2020) The potential health impact of restricting less-healthy food and beverage advertising on UK television between 05.30 and 21.00 hours: A modelling study. *PLOS Medicine* **17**, e1003212.

3. Dubois P, Griffith R, O'Connell M (2018) The Effects of Banning Advertising in Junk Food Markets. *Review of Economic Studies* **85**, 396-436.

4. Lopez RA, Liu YZ, Zhu C (2015) TV advertising spillovers and demand for private labels: the case of carbonated soft drinks. *Applied Economics* **47**, 2563-2576.