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What drives adaptive purchasing behaviours, and what methods can be used to predict and mitigate them during crises?
Meeting note from roundtable chaired by Robin May, Chief Scientific Adviser, Food Standards Agency
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Note on definitions: This roundtable and the wider project uses 'adaptive purchasing behaviours' (APB) to encompass changes in consumer behaviours in reaction to perceived (or real) product shortages. This may also be referred to as 'panic buying' and 'stockpiling' in the literature or colloquially, but APB is preferable to avoid flawed assumptions regarding public 'panic' (Ntontis et al., 2021).

Key points

1. Adaptive purchasing behaviours (APB) are defined as a sudden increase in the buying of goods, provoked by an adverse situation (or the belief that such a situation may be imminent), such as a pandemic or natural disaster (Cooper & Gordon, 2021). This note summarises the current evidence base for the main factors driving APB, as well as research gaps.
2. APB is not usually triggered by a single factor: variables that have been found to affect APB include demographic differences, environmental triggers, distrust in authorities and reactions to mainstream/social media reporting.
3. Future suggested research projects include analysing past APB events for the main drivers in each, investigating optimal 'base level' essential supplies that individuals should be encouraged to have, understanding social/mainstream messaging that may accentuate or reduce APB, and evaluating interventions to reduce impulse APB at purchase points such as supermarkets and petrol stations.
4. A comprehensive synthesis of qualitative and quantitative data sources that may help to predict imminent APB events should be produced to understand the relative strengths of existing sources as well as the potential to develop new ones.

1. What are the main factors that drive APB?

- APB can occur in response to certain stimuli such as images of empty shelves or media reporting, resulting in people over-purchasing products (Bentall et al., 2021). This is motivated by meeting basic needs, such as fuel to drive to work or food to feed families.
- The theory of social amplification of risk (Pidgeon, Kasperson & Slovic, 2003) shows that there is not usually a single trigger for APB; rather, there will be multiple factors, such as mainstream/social media messaging (see point 5), distrust in systems and uncertainty about how a crisis will play out. All these factors interact to produce APB.
- Variables found to influence APB during the pandemic included the amount of disposable income available to a household (Coleman, Daif & Oyebode, 2022), ability to work from home (and therefore ability to shop at more convenient times) and the perceived fear of losing future income (O'Connell, de Paula & Smith, 2021).

- Adaptive purchasers may be distinguished, with different factors motivating those acutely reacting to real or perceived shortages during a crisis and those strategically building up their reserves, such as survivalists.
- Mainstream and social media have both been found to influence APB. Using language such as 'panic' and 'crisis' challenges the idea of social order and suggests a loss of control to some consumers (Phillips et al., 2021). Despite evidence that moderately affluent consumers are the main drivers of APB (see point 3), there is evidence that poorer communities can be scapegoated for APB, as research in Australia has shown.
- Research across multiple countries during the pandemic found that the timing of policy announcements, such as 'lockdowns' or movement restrictions, was one of the largest influences on a country's purchasing behaviours. The public responded to both domestic and international signals to guide their behaviour, with some evidence that signals from 'more similar' comparator countries were stronger drivers (Keane and Neal, 2021). For example, the peak in UK purchases was around mid-March 2020, before the UK government announced restrictions; it has been suggested that the UK public observed the effects of restrictions in countries such as China and Italy, who implemented lockdowns earlier.
- While individual and social factors are important, APB can also be observed because of a change in supply chains. These are particularly sensitive to sudden demand shocks (UK Food Security Report, 2021), which then make it difficult for the public and media to distinguish between product shortages due to lack of production versus those arising from problems in distribution or delivery.

2. What are the factors that could result in APB becoming a critical vulnerability for government/industry sectors?

- The relative importance of the factors discussed above in influencing APB is unknown. As well as the psychological and sociological factors discussed, immediate triggers, such as petrol station queues, empty supermarket shelves and product rationing can affect APB. Future research should investigate the relative strength of these triggers on behaviours to establish which interventions might be most effective to limit APB. In particular, a key unknown is the circumstances under which product rationing is counterproductive (in driving APB, rather than maximising availability).
- The Cabinet Office's Crisis Communication guide (Cabinet Office, 2022) details how the government should communicate to the public to support them in meeting their basic needs, to reduce the likelihood of APB becoming a critical vulnerability. More detailed evidence on specific APB behaviours may enable more targeted guidance to be provided.
- Some countries encourage their citizens to maintain a base level of essential supplies in their homes as part of 'sensible' preparations for extreme weather or conflict. Future research could identify the ideal base levels of essential supplies for individual and community resilience within the UK, and how to best communicate these to the public (Kohn et al., 2013).
- Fuel supply illustrates the factors that could result in disproportionate APB: the 2021 shortages attracted high levels of media attention and resulted in an 85% increase in demand, driving stocks down; however, when a protest group blocked fuel distribution terminals in 2022, there was less media reporting and no increase in demand (DESNZ statistics). Further analysis of these events would be useful to explore the relative significance of APB triggers.

3. What data sources and methodologies could government/industry use or develop to identify and predict APB?

- It is important to combine purchasing data with media monitoring to understand consumption patterns. This should be done in collaboration with industry partners. Data from Kantar (2020) and the Institute of Fiscal Studies (2020) showed extra demand in supermarkets during March 2020 was largely driven by people adding a few extra items to baskets and making more trips, rather than shoppers buying large amounts of the same item in one go. Having continuous insights like this can help government improve their communications and create evidence-based interventions.
- Qualitative research, such as ethnographies, would be particularly valuable on the 'frontlines' of APB, such as with shoppers, supermarket workers, petrol forecourt staff and pharmacy staff. This could be used to find out how experiences of staff shape impulse buying and provide a novel data gathering approach, such as pulse surveys with staff to create awareness of potential spikes in APB.
- Other research has looked for APB signals in internet search terms (such as Google Trend findings; Keane & Neal, 2021) or phone calls (similar to how public health bodies track NHS 111 calls for early signals of flu outbreaks). There are also Bank of England decision maker panel surveys, Kantar statistics on fast-moving consumer goods, ONS data and the FSA consumer insights tracker.

Participants

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References

Average road fuel sales, deliveries and stock levels (2023) *GOV.UK*. Available at: https://www.gov.uk/government/statistics/average-road-fuel-sales-and-stock-levels (Accessed: 07 July 2023).

Bentall, R.P. *et al.* (2021) 'Pandemic buying: Testing a psychological model of over-purchasing and panic buying using data from the United Kingdom and the Republic of Ireland during the early phase of the COVID-19 pandemic', *PLOS ONE*, 16(1). doi:10.1371/journal.pone.0246339.

Coleman, P.C., Dhaif, F. and Oyebode, O. (2022) 'Food shortages, stockpiling and panic buying ahead of Brexit as reported by the British media: A mixed methods content analysis', *BMC Public Health*, 22(1). doi:10.1186/s12889-022-12548-8.

Consumer insights tracker (no date) *Food Standards Agency*. Available at: https://www.food.gov.uk/research/consumer-interests-aka-wider-consumer-interests/consumer-insights-tracker (Accessed: 07 July 2023).

Consumer Panel for food, beverages and household products (no date) *FMCG - Kantar Worldpanel*. Available at: https://www.kantarworldpanel.com/global/Sectors/FMCG (Accessed: 07 July 2023).

Cooper, M.A. and Gordon, J.L. (2021) 'Understanding panic buying through an integrated psychodynamic lens', *Frontiers in Public Health*, 9. doi:10.3389/fpubh.2021.666715.

Crisis communication: A behavioural approach (2022) *GCS*. Available at: https://gcs.civilservice.gov.uk/publications/crisis-communication-a-behavioural-approach/ (Accessed: 07 July 2023).

Decison Maker Panel (2023) *Decision Maker Panel*. Available at: https://decisionmakerpanel.co.uk/ (Accessed: 07 July 2023).

Economic activity and social change in the UK, real-time indicators: 29 June 2023 (2023) *Economic activity and social change in the UK, real-time indicators - Office for National Statistics*. Available at: https://www.ons.gov.uk/economy/economicoutputandproductivity/output/bulletins/economicactivityandsocialchangeintheukrealtimeindicators/29june2023 (Accessed: 07 July 2023).

Keane, M. and Neal, T. (2021) 'Consumer panic in the covid-19 pandemic', *Journal of Econometrics*, 220(1), pp. 86–105. doi:10.1016/j.jeconom.2020.07.045.

Kohn, S. *et al.* (2012) 'Personal disaster preparedness: An integrative review of the literature', *Disaster Medicine and Public Health Preparedness*, 6(3), pp. 217–231. doi:10.1001/dmp.2012.47.

McKevitt, F. (no date) *Accidental stockpilers driving shelf shortages*, *Global site - Kantar Worldpanel*. Available at: https://www.kantarworldpanel.com/global/News/Accidental-stockpilers-driving-shelf-shortages (Accessed: 07 July 2023).

Ntontis, E. *et al.* (2022) 'Is it really "panic buying"? public perceptions and experiences of extra buying at the onset of the COVID-19 pandemic', *PLOS ONE*, 17(2). doi:10.1371/journal.pone.0264618.

O'Connell, M., de Paula, Á. and Smith, K. (2021) 'Preparing for a pandemic: Spending Dynamics and panic buying during the Covid-19 First Wave', *Fiscal Studies*, 42(2), pp. 249–264. doi:10.1111/1475-5890.12271.

Phillips, T. *et al.* (2021) 'The victims, villains and heroes of "panic buying": News media attribution of responsibility for COVID-19 stockpiling', *Journal of Sociology*, 59(2), pp. 580–599. doi:10.1177/14407833211057310.

Pidgeon, N.F., Kasperson, R.E. and Slovic, P. (2003) *The social amplification of risk*. Cambridge: Cambridge University Press.

United Kingdom Food Security Report 2021: Theme 3: Food Supply Chain Resilience (no date) *GOV.UK*. Available at: https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2021/united-kingdom-food-security-report-2021-theme-3-food-supply-chain-resilience (Accessed: 07 July 2023).