

Supplementary File 1: Summary of content research reviewed into digital alcohol marketing.

Author(s)	Digital channel(s)/brands	Summary of methods	Summary of findings
Atkinson et al. (2014) and (2016)	Facebook pages and Twitter accounts of Smirnoff, Budweiser, Strongbow, Fosters, and WKD.	Marketing and user-created posts rated against a coding frame which included measures of design, topics, tone, suggested associations, ethical practice, and adherence to CAP code. Supplemented with thematic analysis.	Social media appeared a key part of multi-platform marketing. Many creative strategies and topical associations were used to appeal to audiences. Interaction blurred the distinction between marketing and user content. Marketing mostly adhered to the guidelines, although subtle references to drunkenness were present. No content was aimed at under 18s and age-affirmation process were present on Facebook, however there was possible appeal through indirect associations. Little reference to responsible drinking.
Barry et al. (2015a)	Twitter and Instagram accounts of 22 alcohol brands.	Male and female Accounts aged 13, 15, 17, 19 and 21 years old on both sites. Tested whether accounts could interact or follow and receive marketing updates for 30 days.	All profiles could access alcohol marketing on both sites, however, only those aged 21+ could follow marketing on Twitter. All Instagram profiles could follow and receive updates, and even experienced interaction from the marketers. Quantity of updates received intensified at weekends.
Barry et al. (2015b)	YouTube channels of 16 brands associated with 30 day underage alcohol use.	Fictitious male profiles aged 14, 17, and 19 years old attempted to access and subscribe to channels of the 16 alcohol brands.	All accounts could subscribe to the 16 alcohol marketing channels on YouTube. On average, two thirds of the channels were successfully viewed by the underage accounts.
Brooks (2010)	Websites, Facebook, Bebo, and YouTube marketing by WKD, Lambrini, Smirnoff, and Carling.	Case studies to evaluate the nature and content of marketing through each channel. Content compared to CAP code on alcohol advertising.	All websites and social media accounts featured interactive and appealing content, some of which contravened the spirit of the CAP code or may appeal to those under the legal purchasing age. The effectiveness of age verification processes was questionable, while previously banned TV adverts featured on YouTube. There was evidence that consumers also developed branded pages themselves which celebrated higher-risk or underage consumption.
Burton et al. (2013)	Twitter accounts of Smirnoff, Guinness, Absolut, Malibu, Bacardi, and Grey Goose. Marketing compared to six social marketing accounts that promoted lower-risk use.	Marketing rated against a coding frame which included measures of activity and connectedness, efficiency of communications, likely influence; interactivity, embedded associations, and promotion of drinking message.	Compared to social marketing, alcohol marketing had more followers, was more likely to use interactive features (e.g. hashtags), have content forwarded to others (e.g. retweeted), be associated with positive stimuli (e.g. celebrities, social events, and real world tie ins), and make connections to other forms of marketing. Most marketing explicitly promoted or implicitly encouraged consumption, while only a small proportion promoted neutral messages, or lower-risk consumption.

Carah (2014)	Facebook pages of 20 most popular alcohol brands on social media in Australia.	Mixed-method quantitative analysis of predetermined content, and qualitative case study examples of marketing.	Brand activities on Facebook appeared global and continuous for audience, volume, frequency, interaction, and timing of posts. There was heavy emphasis on interaction, as marketing invest significant time and resources into creating 'real-world' promotional activities and engaging with consumers in ways which embed consumption into everyday life. There was only limited evidence promoting lower risk consumption.
Carah et al. (2015)	Forty items of content from the 20 most popular alcohol brands on Facebook in Australia in 2012	Four coders rated items against the Advertising Standards Board (ASB) and Alcohol Beverages Advertising Code (ABAC) for alcohol marketing.	Seventy-six breaches were identified by at least two coders, including encouraged excessive consumption, inappropriate language, derogatory comments, sexist statements, implying alcohol can enhance mood or sociability, and depictions of under 25 year olds.
Carroll and Donovan (2002)	Six websites for brands available in Australia.	Qualitative analysis of whether alcohol marketing websites adhered to the ABAC (see above).	Content on alcohol marketing websites contravened the spirit of the ABAC, including attractiveness to young people, suggested changes in mood or environment, and references to hazardous activities (e.g. driving).
Centre for Alcohol Marketing and Youth (2004)	Brand websites for 74 companies based on marketing expenditure and sales.	Websites reviewed over three-week period to assess presence of content considered attractive to youth.	Websites, particularly beer and spirit brands, featured games, downloadable and interactive content (e.g. branded screensavers), cartoons, and other content that is likely to appeal to those under the purchase age. Although websites had age-affirmation gateways they had no way of validating whether age was correct. Visitation analytics estimated 13% of visits to alcohol websites were initiated by persons under the age of consumption.
Chester et al. (2010)	360 degree view of multiple digital marketing strategies across brands, including; Social media, videos, mobile, and immersive advertising.	Ethnographic and case study approach to explore digital alcohol marketing.	Digital content is extensive and key part of 360 degree marketing strategies. Innovation means that marketing now exists across a range of channels including social media (e.g. blogs, games, fan pages, widgets, review features), videos (viral and online commercials), mobile (websites and applications), and immersive reality. Digital technology offers powerful tools. Engagement or befriending consumers helps to integrate brands into personal and social relationships, whilst data collection allows for enhanced behavioural targeting. Age verification processes appear ineffective.

Gordon (2011)	Websites of 10 leading lager, spirits, RTD, and cider or perry brands.	Recorded ten set features about site design and content (e.g. games). Case studies compared content to ASA ethical marketing codes.	Twenty-seven brands had a website. Websites featured sophisticated content, including sports and music sections, games, downloads and competitions. Evidence suggested content may breach ASA code, including appeal to under 18s, sexual suggestion, links to driving and implying daring behaviour.
Griffiths and Casswell (2010)	Depictions of alcohol on personal Bebo social networking profiles ($n = 150$, 16-18 year olds). New Zealand	Cyberspace ethnography	Through Bebo, young people were exposed to and participating with viral alcohol marketing. Marketing content was easily shared with others (regardless of age) or appropriated into social media profiles to reflect a desirable drinking identity. Digital marketing also helped to extend the lifespan of a marketing message (e.g. television adverts), particularly when users created or uploaded their own user-generated branding.
Jones et al. (2014)	Twenty-five alcohol brand websites, based on market trends and sales density in Australia.	Coders rated whether site had age-affirmation gateway, characteristics, and responses to entry attempts by underage consumers.	Twenty-two websites had gateways, although three did not. Seven only had an age statement with Yes/No responses, and did not request full date-of-birth. Only thirteen had detailed age filters and denied entry to under age participants. Two requested full information, but allowed entry regardless of age supplied. No websites restricted multiple entry attempts.
Mart et al. (2009)	Facebook features for the 10 top selling beer, spirit, and other brands popular with young people in the USA.	Created one underage and one overage account with 'interests' associated with alcohol. Assessed adverts, pages, applications, events, and groups on Facebook.	There was one alcohol advert for every eight observed. Pages had global audiences and contained high levels of co-created content. Brands had a range of applications (e.g. 'send shots' to friends). Over 4,000 events were associated with the alcohol brands, with most centring on promotions or real-world events. Over 10,000 groups were found for the beer and spirit brands. Alcohol marketing for all five areas could be accessed by the underage user.
Moreas et al. (2014)	Facebook pages of five alcohol brands and five Midland based nightclubs mentioned in focus groups and noted in industry sales records.	Netography qualitative evaluation of Facebook pages.	Alcohol brands and nightclubs used Facebook to communicate and co-produce content with young adults which may encourage consumption. The interactive, real time nature of social media means that Facebook marketing has blurred the roles of, and inter-relationship between, advertisers and consumers. Pages make use of real world tie ins, promotions, offers, and competitions and attempt to embed consumption in everyday conversations.

Nhean et al. (2014)	Facebook pages for 898 alcohol brands across 16 product categories.	Systematic search for sponsored Facebook pages for 898 alcohol brands over 16 beverage types.	Identified 1,017 alcohol-branded pages on Facebook. The greatest number were for beer brands, followed by wine, and vodka. Smirnoff was the most represented brand, followed by Johnnie Walker, Absolut, and New Belgium.
Nicholls (2012)	Facebook and Twitter accounts for 12 leading brands in the UK.	701 posts captured from Facebook and Twitter timelines of 12 alcohol brands in November 2011. Thematic coding analysed marketing practice.	Marketing featured real world tie ins, games and apps, events, and time-specific references to drink. Promotion of responsibility was limited, not highly visible, or strategically ambiguous. Marketing created real-time conversations about alcohol, embedded drinking in routine behaviour, and contained content that is likely to contravene the spirit of regulatory codes (e.g. personal and social success).
Purves et al. (2014)	Facebook, Twitter, Pinterest, Tumblr and YouTube for six alcohol brands (Budweiser, Bulmers, Dragon Soup, Malibu, Smirnoff, and WKD).	Used cyberethnographic (qualitative observations) to analyse content over a seven day period. Coded range of marketing practices.	Brands used social media to distribute advertising, solicit feedback, and encourage participation. Brands used social media to create associations with events (e.g. sport), popular culture (e.g. television), and celebrities consistent with brand personality. Social media also allowed consumers to co-create and reinforce marketing message (e.g. using brand to reinforce own personality and engaging in brand led conversations). There were links between offline and digital marketing (e.g. augmented reality packaging).
Siegel et al. (2016)	Alcohol marketing during 12 television programmes that are both popular with young people and available to watch online over a four week period.	Created standardised protocol for accessing, viewing and coding alcohol advertisements. Four coders above legal drinking age and four below. Coded name, type of advert (e.g. sponsor, banner, embedded,	Nine of the 12 online shows contained alcohol advertisements, with six of the show carrying at least one per episode. Alcohol marketing represented 7% of all adverts observed. For six shows the proportion of advertisements for alcohol was over 10%. There was no different the amount of alcohol marketing exposure for underage and legal age viewers of each show. No age verification or affirmation was required for any of the shows.
Williams and Schmidt (2013).	105 English language internet websites which sell alcohol.	Websites assessed for; products offered, average prices, promotion, policy statements, age verification methods, and payment or delivery.	Websites sold variety of alcohol products, including those at heavily discounted or cheap prices. Age verification methods were unlikely to prevent sales to minors, while delivery and payment methods were either illegal or against rules of transporting alcohol.

Winpenny et al. (2013)	Facebook, Twitter and YouTube pages for five alcohol brands (Fosters, Tia Maria, Stella Artois, Carling and Magners.	Assessed type and quantity of updates, links to other marketing content, responsible drinking or age control messages. Used a 14 year old and 24 year old account to test age verification.	All brands had Facebook and Twitter accounts although only Fosters, Magner's and Tia Maria had YouTube channels. Content had considerable user-engagement ('likes' or 'views') and contained a range of content including competitions and applications, sport and music references, demonstrations of recipes, and comedy videos. Age restrictions prevented underage profile accessing content on Facebook, but content on Twitter and YouTube could be viewed by all.
------------------------	--	---	--
