



***InDEx***



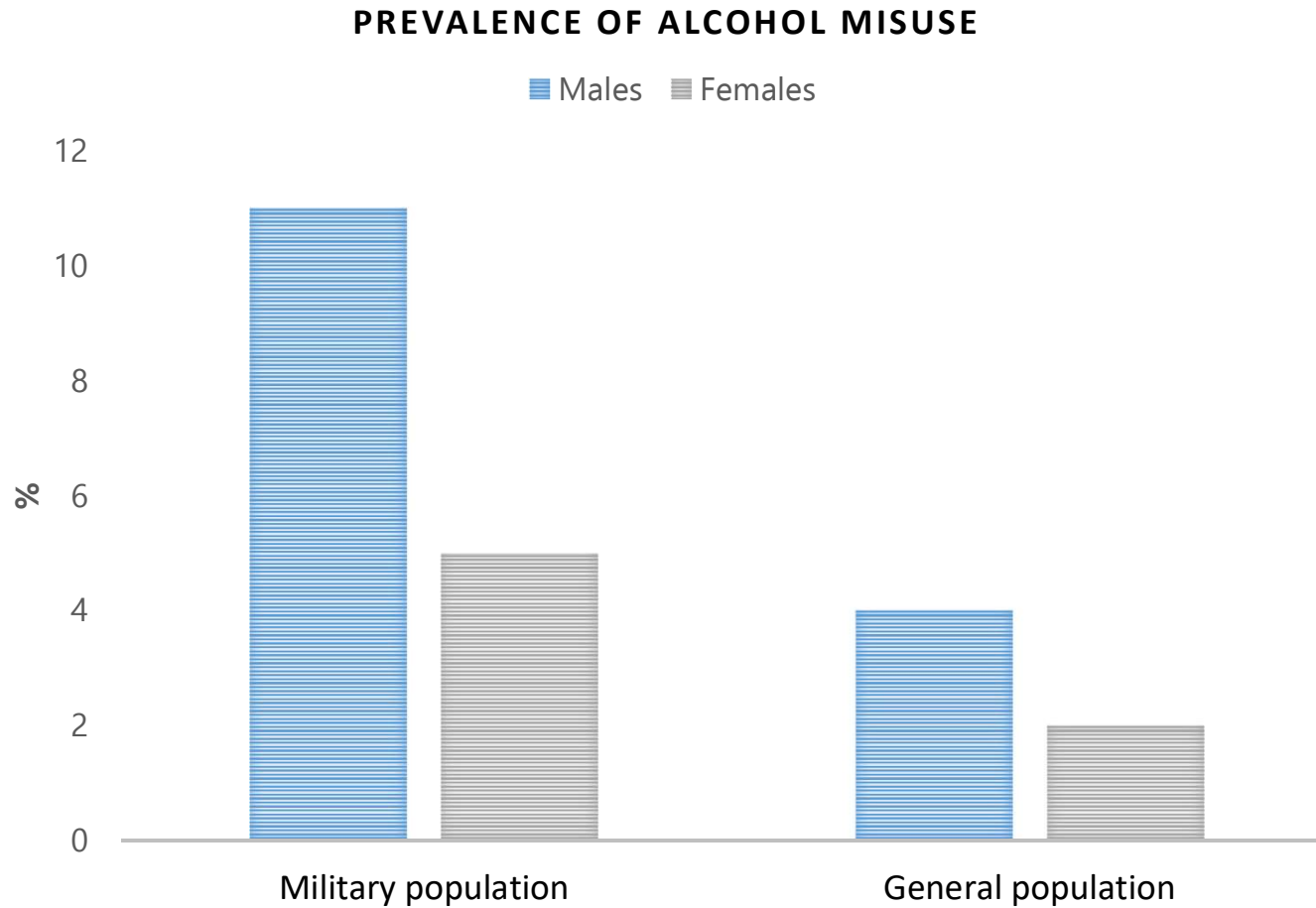
# Social: Managing Alcohol Misuse by Automation

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**Is there a  
problem  
with  
drinking in  
the UK  
military?**

KCMHR cohort study phase 3; Adult Psychiatric Morbidity Survey 2014



# Ministry of Defence

## Alcohol Usage in the UK Armed Forces 1 June 2016 – 31 May 2017

Published 20 July 2017

This one-off report provides statistics on a Defence initiative to introduce an alcohol screening tool (the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C)) and brief advice (an Alcohol Brief Intervention) for all UK Armed Forces Personnel attending routine dental inspections from 1 June 2016. This report includes data collected between 1 June 2016 and 31 May 2017.

### Key Findings

#### ALCOHOL USAGE IN THE UK ARMED FORCES

1 June 2016 - 31 May 2017

##### ALCOHOL SCREENING TOOL



74% (n = 109,459) of Regular UK Armed Forces personnel had completed a questionnaire (AUDIT-C). (1% declined)



This is the first large scale use of the AUDIT-C questionnaire in a military population

##### RISK CATEGORIES

61% scored 5+ indicating that they may potentially be at increasing risk or above of alcohol related harm  
(ranging from poor mood, accidents and reduced fitness, to possible long-term illness)

You would score in this category if you drank:



3 glasses of wine twice a week

OR



4 pints of beer on one occasion in the month

2% scored 10+ indicating that they may potentially be at increasing or higher risk and should be advised to see their GP

You would score in this category if you drank:



5 pints of beer on one occasion in the month

##### ALCOHOL ADVICE



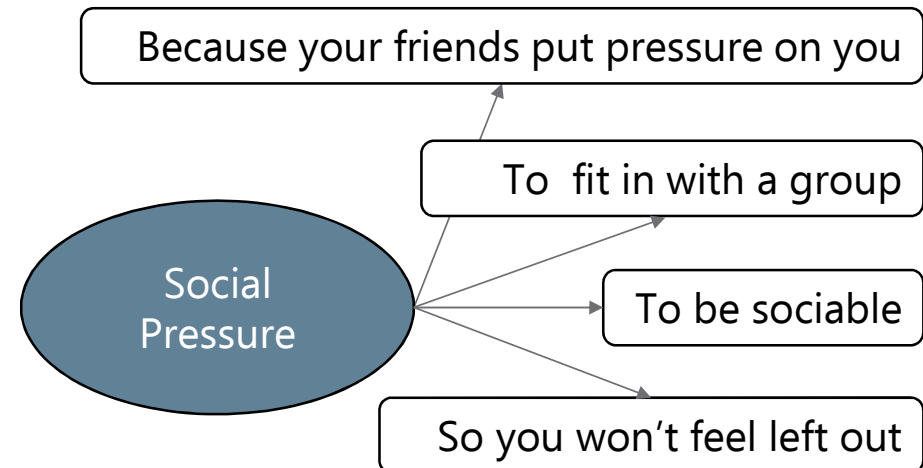
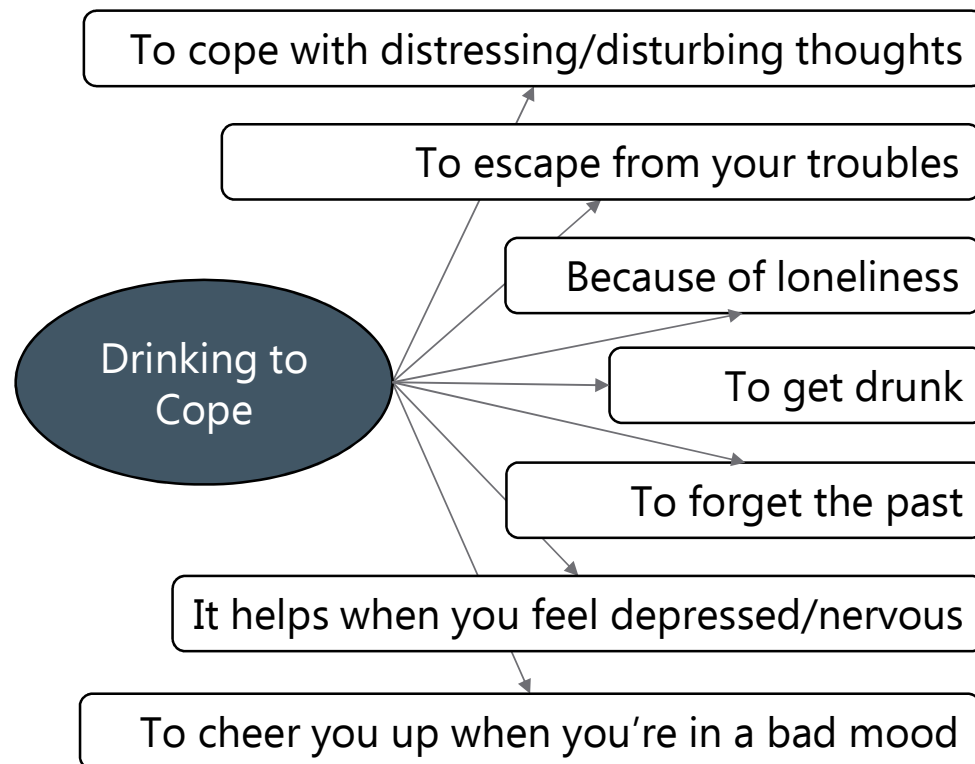
80% of personnel who scored 1+ had been given an alcohol advice leaflet



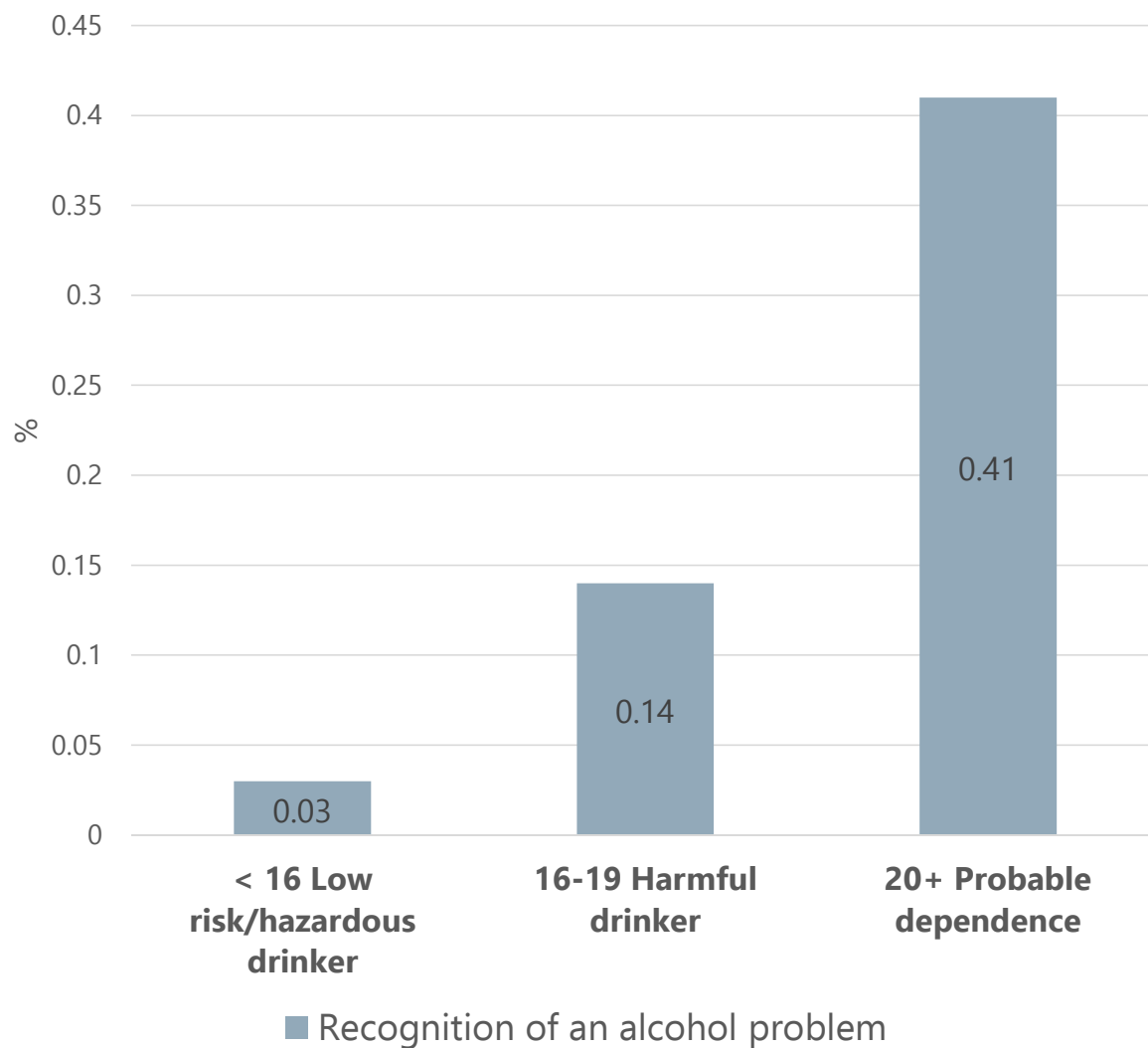
63% of personnel who scored 5+ had been given advice about reducing their drinking (alcohol brief)

# Alcohol Usage According to the Ministry of Defence

# Why do military personnel drink?



Irizar et al. (2019), under review



Hines et al., 2014, Psychiatric Services, 65, 98-105



## The importance of recognition and social norms



# The changing picture of drinking in the UK – a good time to cut down?



## Drinkers Like Me – Adrian Chiles review: the complicated, conflicted world of boozing

★★★★☆

The broadcaster's film about 'nice, regular drinking' soon becomes an analysis of much more, from his physical and mental health to society's difficult relationship with alcohol



▲ Does Adrian love Adrian? "No, no, God no" ... Adrian Chiles. Photograph: Jonathan Young/BBC/Ricochet

**A**drian Chiles has a drinking problem. Or maybe he has an Adrian Chiles problem, alleviated by drinking. Anyway, he's definitely not an alcoholic, he says in his exploration of "nice, regular drinking" in *Drinkers Like Me* - *Adrian Chiles* (BBC Two). He can't be, because he doesn't wake up in a shop doorway at 4am, or in bed with a stranger. He doesn't get into fights or fall over. But here he is at 10.20am



Dry January is the UK's one-month **booze-free** challenge that helps millions **reset their relationship** with alcohol every year.

[Find out more about Dry January](#)

*Adrian Chiles*



# Why mobile health?

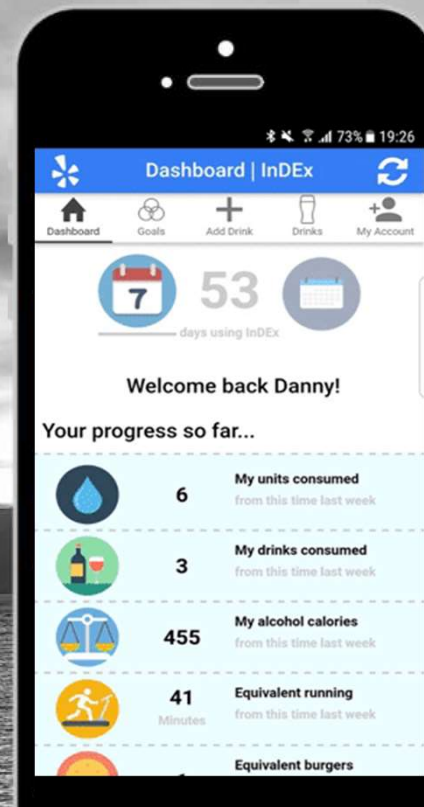


- **Traditional treatment pathways;**
  - Face-to-face;
  - Identification and brief advice;
  - Costly to NHS and issues of underreporting;
- **Strong evidence-base** that computer delivered alcohol interventions are effective (general population);
- **Personalised content** (e.g. text messages, push notifications) can be effective in altering behaviours.

Kaner et al., 2017, Cochrane Systematic Review

# InDEx

Feel better and save money by drinking less alcohol





# How is *InDEx* different to others?

Content tailored to military personnel

Focused on shorter term outcomes e.g. impact on relationship

Content driven by user feedback and interaction

Daily *personalised* text messages and/or push notifications

Weekly assessments of mood and drinking behaviours to inform personalisation

App split into stages using HAPA model

Behavioural Change Theory underpins all of *InDEx* components

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**Machine Learning (Regression/Classification [semi-supervised])**

# *InDEx* Overview



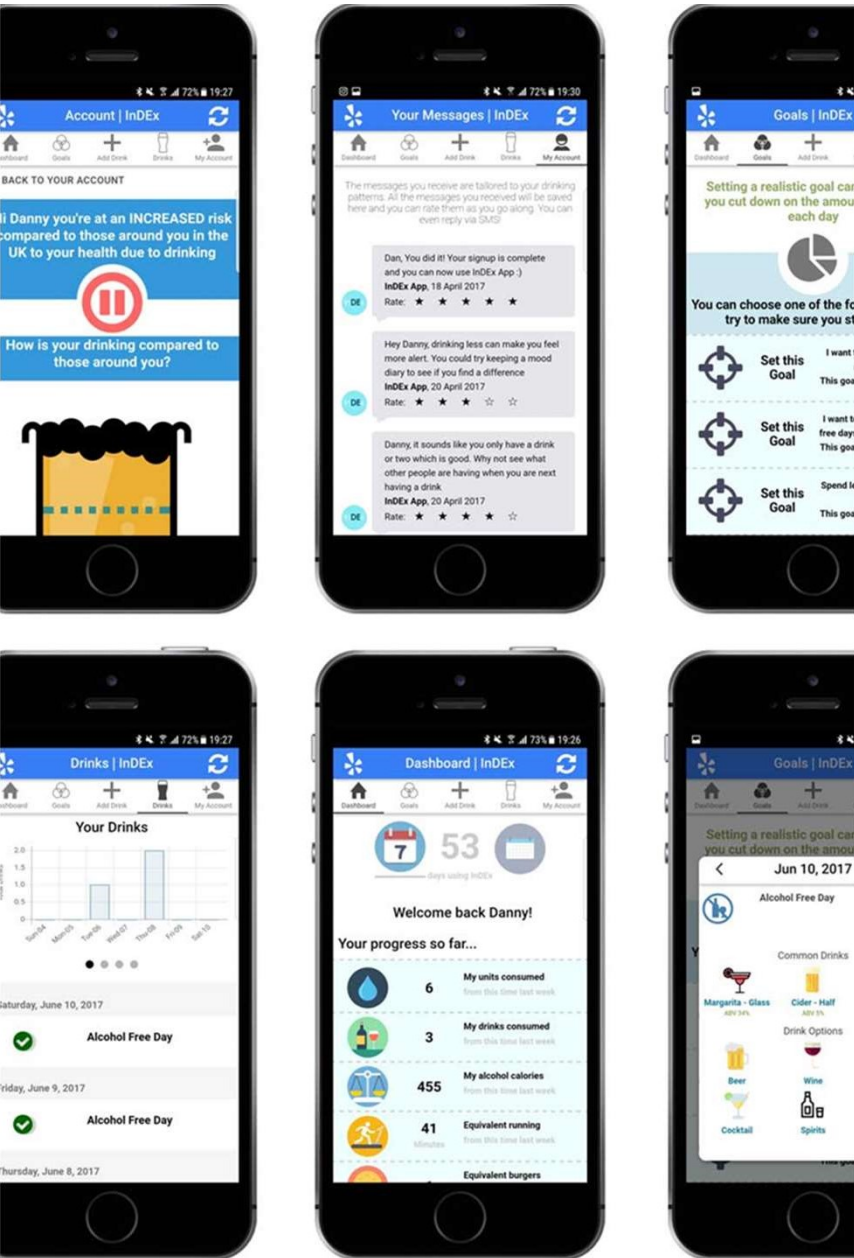
- **Designed as a [minimum] 1-month intervention using a staged approach**
  - **Stage 1:** Normative feedback, promote self-efficacy and self-monitoring;
  - **Stage 2:** Maintenance of self-efficacy and introduce goal/action planning;
  - **Stage 3:** Managing self-efficacy and coping development;
- Codesigned alongside the armed forces community
  - Military specific language/terms;
- Info-graphics – avoids large text blocks!
- User interaction **required**
  - Log alcohol and drink free days;
  - Log mood and mental health state.





# Core modules of *InDEx*

- **Self-monitoring** (drinks, mood, behaviours);
- **Feedback** (visual indicators of drinking behaviours);
- **Goal setting and review;**
- **Notifications** (personalised to drinking habits).







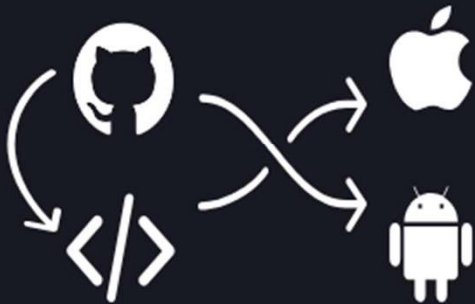
# InDEx Ecosystem

## Deployment

Deployment is automated using GitHub and IONIC build processes to maximise efficiency

Code goes into GitHub "dev" branch. The "master" branch remains production ready and development branch are merged when required.

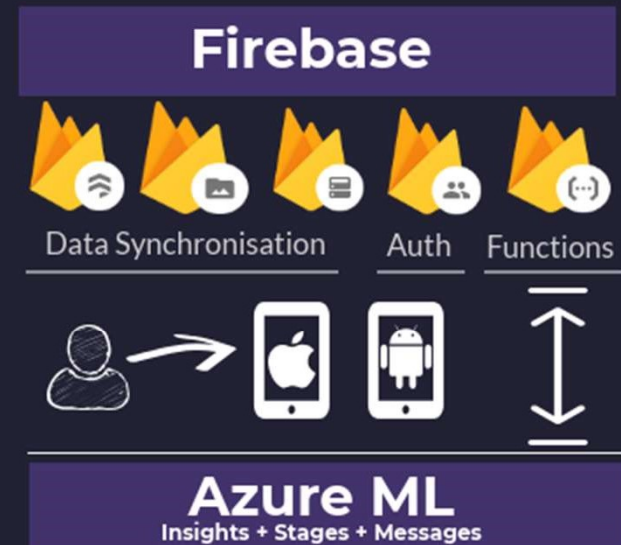
If required, new app builds are generated and submitted automatically to the relevant app store.



Custom build tools to verify code integrity.

## Firebase (BaaS) + MLaaS

Handles API calls, data storage, authentication and predictions (via cloud functions).



## Notifications

A scheduled daily job generates the daily batch of applicable SMS/email message. Interface MLaaS.



User analytics assess the 'best time' of day to send text, email and push notifications.

Push notifications are sent based on MLaaS predictions. Push notifications sent based on user interaction with InDEx.



## Twilio SMS

Facility to send SMS messages to users based on the mobile number provided. Users are able to reply to any message they receive.

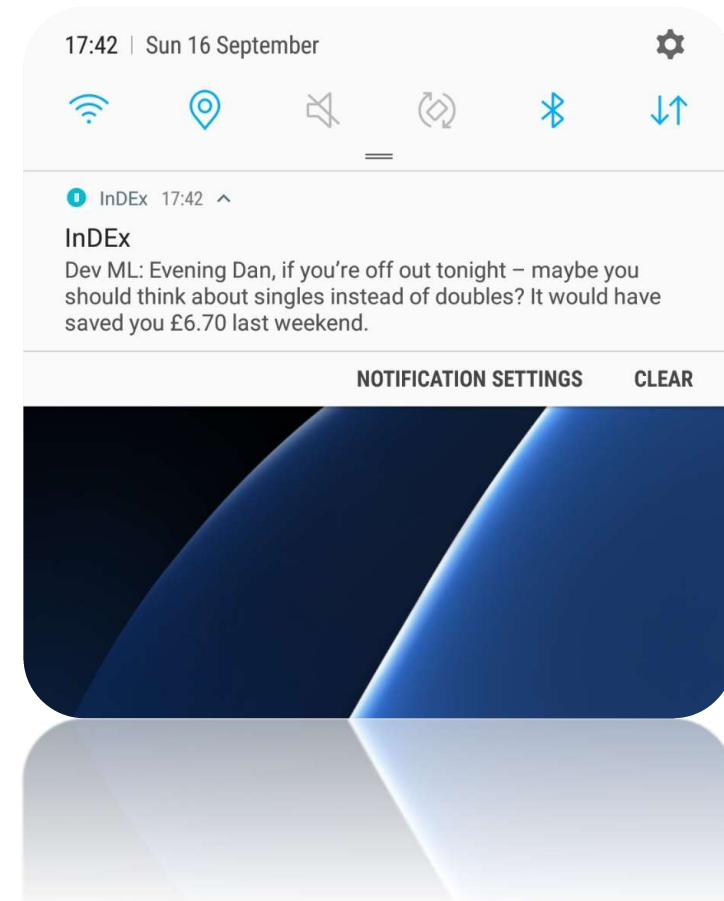
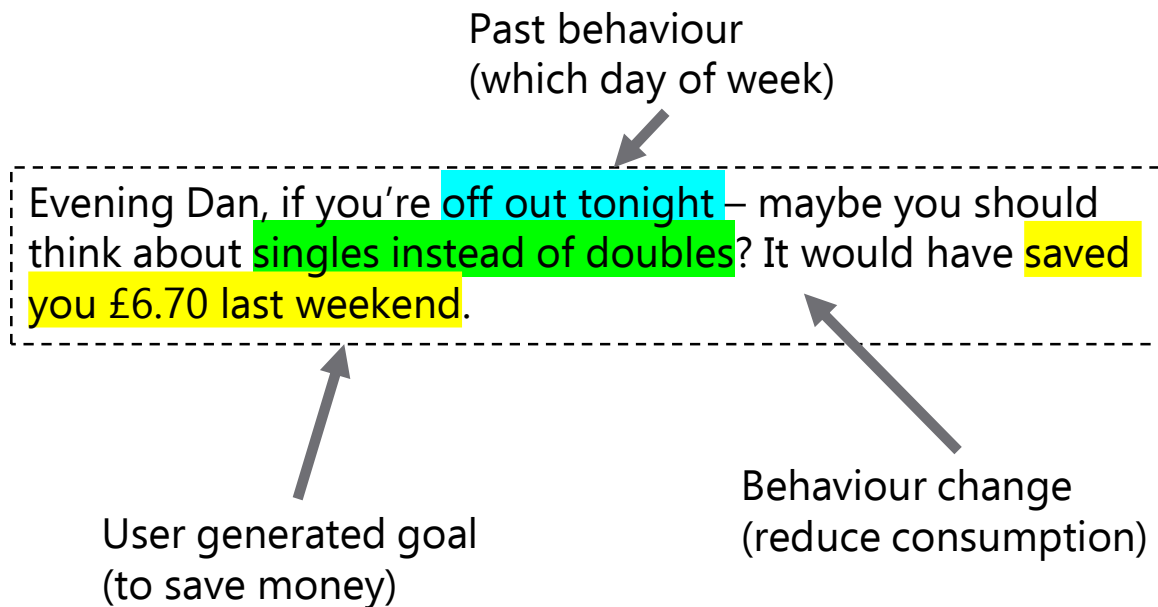
## Authy

Two-factor authentication facility to validate user mobile telephone number. Unique one-time passcodes are generated by the system.

## SendGrid

Email can be used to authenticate the user, provide notifications and provide a digital copy of personalised messages.

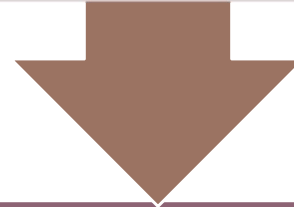
# Personalising the 'message' - Example



# Feasibility Study Sample

Recruited from the King's Centre for Military Health Research Health & Well-being Cohort

Only those drinking hazardously were invited (AUDIT scores 8-19);



137 individuals were contacted via email,  
23% registered for *InDEx*

87% male and 13% female;

16% were aged 25-39 years,  
19% were aged 40-44, 19%  
were aged 45-49, 19% were  
aged 50-54, and 26% were  
aged 55-64;

84% reported serving in the  
military for 12 years or  
more.





# The feasibility study – Engagement

Engagement Measure	Median	Interquartile range
No of sessions	29.0	20.0 – 40.5
Session duration (seconds)	48.8	35.1-73.1
Weeks active	4.0	3.0– 4.0

**71.2% of participants used the app every week (maximum 4 weeks), with 87.1% using the app in the final week**



# Did users change their behaviour?



Reported alcohol consumption	Week 1	Week 2	Week 3	Week 4
<b>Drinking days</b>	4.0	3.0	3.0	3.0
<b>Drink free days</b>	3.0	4.0	4.0	4.0
<b>Units per drinking day</b>	5.6	6.5	4.54	4.7
<b>Units consumed</b>	22.9	20.4	18.1	15.9
<b>Alcoholic drinks per drinking day</b>	2.0	3.0	2.0	2.0
<b>Binge drinking days per week</b>	2.0	2.0	1.0	2.0

# Qualitative feedback on the messaging



"...the texts were quite a good way of kind of reminding myself a little bit. You know if you forget then you get a text and you think ok well maybe I'll try and implement it into your evening or into your day. I found that was quite useful."  
(Participant 16, male)

"I think when you're doing really well...or you're curbing your drinking and the text message is being positive, it kind of spurs you on you know. So like when I was getting text messages during my goal setting, that was really good. And it's just good to be positive then." (Participant 8, female)

# Conclusions and implications



- Measures of engagement were encouraging across a 4-week period
- Most personnel used the app primarily for self-monitoring
  - Use of goal setting was limited
  - Related to perceived need to change drinking
- Potential to deliver *InDEx* on a larger scale to UK serving personnel
- Next steps: Randomised Controlled Trial, public release and further development.



# Thank You

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