An economic evaluation of ‘delivering assisted living lifestyles at scale’ (dallas)

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Introduction: why ‘mhealth’?
Development of a digital health strategy has been prioritised by the National Health Service (NHS)[1]. It is hoped that this will be a cost-effective mode of healthcare delivery as changing population demographics are becoming untenable for a growing elderly population[2]. Mobile health (mhealth) is the raising awareness of health information using mobile and wireless devices[3]. As the UK has been ranked as the fourth most successful for successful wireless digital health technology[4], the flexibility these devices provide for users and service providers alike provides a means to engage with population groups that are harder to reach. However, complexity surrounding capturing mhealth value and impact on health and broader well-being outcomes is challenging[5].

Study aim
Launched in 2012, ‘delivering assisted living lifestyles at scale’ (dallas) was a large-scale intervention examining digital health for integrating preventative care for daily life. This study investigated general UK population value for mobile health (mhealth) lifestyle apps seeking to improve an individual’s sense of the 6Cs (connectedness, control, choice, collaboration, community and contribution) for future inclusion in the NHS digital agenda.

Method: Contingent valuation (CV)
CV is a form of stated preference methodology used to estimate welfare gains[6]. Participants are presented with hypothetical scenarios relating to a change in the provision of a good or service and are asked to estimate the value of those changes. Surveys are used to directly ask participants to report their WTP or willingness-to-accept (WTA) the gain or loss of a specified good/service. This is regarded as an indicator and measure of the demand for the good. This allows a direct valuation for which the Cs could be used within a cost benefit analysis (CBA)[5].

An open-ended WTP question confirmed the participants absolute WTP for access to the app and the marginal WTP question asked participants to consider the maximum they would be willing to pay for improvements through the use of ‘mhealth’ technologies. This allows for the identification of an individual’s demand for the product (i.e. how much they are willing to pay for the change in their circumstances). Stat2Se statistical software package was used to analyse the data [7]. In order to estimate a demand function for the 6Cs and the mean WTP, linear regression analyses was used.

Results
September – October 2015 a total of 2002 respondents were surveyed as two cohorts (general UK population and ‘dallas-like’ cohorts). The general UK representative cohort consisted of 1697 respondents. Based on the UK general population, 49% of the cohort were male, 51% were female. The age range for respondents was 18 to 89 years. The majority of respondents (84%) were from the UK. 88% of the sample were in a relationship whilst 62% had children. The Dallas-like cohort consisted of 305 respondents. 28% were male, 72% were female. The age range for respondents had an average age of 46 years. Similarly to the UK general population cohort, 67% were in a relationship and 63% had children. Across cohorts absolute WTP exceeded marginal WTP (Table 2).

Table 2: Absolute and marginal WTP across cohorts

<table>
<thead>
<tr>
<th>Variable</th>
<th>General UK population (n=1697)</th>
<th>Dallas-like (n=305)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Absolute WTP</td>
<td>Marginal WTP (£/month)</td>
</tr>
<tr>
<td>Control</td>
<td>13.3</td>
<td>13.3</td>
</tr>
<tr>
<td>Collaboration</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Community</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Choice</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Contributions</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Control</td>
<td>5.00</td>
<td>5.00</td>
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</tbody>
</table>

Table 3 illustrates that for the general UK population cohort, respondents who felt they ‘disagree’, were ‘neutral’ or ‘agree’ to the statement that they feel connected to healthcare providers were more likely to pay more (p<0.05) for the ‘optimal’ scenario presented to them compared to the reference scenario. For social care services was a predictor of higher WTP. In the dallas-like cohort the only predictor was sense ‘control’. Higher levels of control over health management acted as an inverse indicator of WTP (relative to ‘strongly disagree’).

Socio-demographic analysis highlighted the following trends:
Both cohorts: respondents aged had a higher WTP (p<0.05) relationship with WTP and younger respondents will pay more for the health connections app. General health was a positive predictor of WTP, with those respondents who describe themselves in better health, being more likely to pay more for the health connections app yet another cohort illustrated that long-term illness was a factor influencing WTP;
General population: income level was a significant, positive predictor of higher WTP up to £30,000. Dallas-like: no relationship between income and WTP;
General population: current monthly payments on phone, internet and additional features (i.e. subscriptions), had an overall positive trend with WTP; Dallas-like cohort: owning a computer or smartphone, having regular access to the internet and the total monthly payment for phones, internet usage were not indicators for paying higher WTP. For both cohorts, previous amount spent on health apps acts as a significant positive predictor of WTP.

Conclusion
Mhealth apps such as ‘healthy connections’ may be an attractive ‘preventative’ healthcare intervention for older individuals seeking them out, some may need to be produced to make the same appeal for those suffering from a long-term illness. The success of this form of intervention and service will depend heavily on its integration with other aspects of a person’s existing healthcare ecosystem to ensure that those already burdened with regular medication and illness do not feel further burdened in their daily lives. The results demonstrate that whilst uniform preferences and valuations for mhealth apps may not have been identified, there may be certain sub-groups of individuals who see merit in this form of healthcare delivery and would benefit from future targeted efforts.

References