Evaluation of the MEAM pilots – Update on our findings

A report by FTI Consulting and Compass Lexecon for Making Every Adult Matter (MEAM)

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17 February 2014

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Terms of reference

In 2011 Making Every Adult Matter ("MEAM") asked FTI Consulting LLP ("FTI Consulting") and Compass Lexecon to perform an evaluation of three service pilots in Cambridgeshire, Derby and Somerset. The purpose of the pilots was to coordinate existing local services so as to provide better support to individuals suffering from multiple needs and exclusions — a group that in the past has tended to "fall between the gaps", and suffered accordingly. We were introduced to MEAM by Pro Bono Economics ("PBE").

We produced a report in June 2012 summarising the work performed by the pilots and the results of our evaluation after one year. This report updates our evaluation now that the pilots have been operating for two years.

This report has been peer reviewed by Grant Fitzner, Director of Analytics at the Centre for Workforce Intelligence, and we are grateful for his comments, advice and insights.

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Contents

Introduction

Context to our work

Previous publications have suggested that in England there are approximately 60,000 people facing multiple needs and exclusions.[1] These individuals experience a combination of problems such as homelessness, substance misuse, mental health problems and offending. Their multiple needs mean that they also face ineffective contact with services, which are often designed to deal with one problem at a time and to support people with a single, severe condition rather than multiple problems, some of which may fall below service thresholds. These individuals live chaotic lives at the margins of our communities, resulting in significant costs for them and for wider society.[2]

In 2010, MEAM began to support three pilot programmes to improve the coordination of existing local services for this group. The pilots operated in Cambridgeshire, Derby and Somerset (Mendip and Sedgemoor). Each pilot area employed a coordinator to engage with clients and ensure the best possible route through existing services, for example by helping clients to gain access to housing, treatment for substance misuse, or mental health assessments. The MEAM website includes detailed case studies and videos explaining how coordinators help clients.

The pilot areas started to work with clients in late 2010 and early 2011. Each area established a caseload of up to 15 clients and in total the pilots worked with 69 people in the first 12 months. The pilot areas collected data on client wellbeing and service use, which they provided to us. In June 2012, we produced a report that analysed the impact of the pilots on the wellbeing and service use of clients in the first year of the programme (which we shall refer to as "Year One").[3] In that report, we compared the wellbeing and service use of 39 clients after participating in the pilot with their wellbeing and service use before enrolling. We also described the organisation of each pilot area and provided advice for other local areas seeking to set up a similar service.

We found that nearly all clients showed significant improvements in wellbeing across three quantitative measures. We also recorded changes in the use and cost of local services. Some costs decreased in Year One, for example, criminal justice costs in the Cambridgeshire and Somerset pilot areas. Other costs increased as people accessed the help they needed. In Cambridgeshire, the reduction in crime costs was large enough to lead to an overall cost reduction. The total cost of service use in Year One increased in the other two areas.

1 Making Every Adult Matter (MEAM) (2009).

2 Page, A. and Hilbery, O.J. (2011).

3 Battrick, Edwards, Moselle and Watts (2012).

Continuation after the pilot period

At the end of the first year the formal pilot period ended. However, MEAM worked with the pilot areas to ensure that all services were able to continue. All three services operated for at least a further year, expanding their caseloads and supporting existing and new clients to tackle their multiple needs. In Cambridgeshire, the service recruited a second member of staff, doubled its caseload and confirmed a package of joint-funding from statutory agencies. In Derby, the service strengthened its strategic engagement and was supported financially by a grant from the public sector. In Somerset, the service was funded by the district council and operational responsibility was given to the Elim Connect Day Centre.

We shall refer to this period of activity as "Year Two". We agreed with the pilot areas that we would continue to collect and analyse Year Two data for clients who had been part of the caseload in Year One.

Data collected during Year Two

We requested the same set of data from the pilot areas for Year Two as collected during Year One. In some cases this data was not available:

(1) The Somerset pilot did not provide data for the Year Two analysis.

(2) There are some clients in the Cambridgeshire and Derby pilot areas for whom we have also not been able to collect data during Year Two, for example because he or she has moved to another area or cannot be contacted.

(3) There are some clients for whom we have only 11 months of data for Year Two because local services did not have access to the most recent data at the time of our analysis. We have extrapolated this data to the full 12 months.

In order to make like-for-like comparisons, we present our results in this report only for those clients for whom we have data for both Year One and Year Two. We summarise and update the Year One results for all clients in Appendix 1.

Excluding clients who have not provided data for Year Two may result in a phenomenon known as 'survivorship bias', as we explain in the next section. We discuss later in this report the extent to which survivorship bias may have affected our analysis.

The future of tackling multiple needs

MEAM is pleased that all three pilot services are continuing to operate as successful coordinated interventions in their localities, and it is now working to expand the implementation of coordinated interventions across the country. It has developed the "MEAM Approach" to support local areas interested in designing a coordinated response for people with multiple needs. Further information is available at www.theMEAMapproach.org.uk.

Summary of Year Two findings

Client wellbeing

In both Cambridgeshire and Derby, client wellbeing for nearly all clients improved by a statistically significant amount between the date on which clients enrolled in the pilots and the most recent wellbeing assessments. In Cambridgeshire, improvements tended to take place in the first year of the pilot and wellbeing scores have since remained broadly flat. In Derby, wellbeing scores improved substantially in both Year One and Year Two.

Service use

The total cost of client service use during Year Two was lower than during the pre-enrolment ("baseline") period in both areas. In Cambridgeshire, the total cost of client service use fell slightly in the first year of the pilot and then more significantly in the second year. In Derby, the cost of client service use increased significantly in the first year of the pilot, and then fell back below the baseline in the second year. Both areas showed a significant reduction in crime costs. The overall service use cost reduction in Year Two compared to the baseline was 26.4% (£958 per client per month) in Cambridgeshire, and 15.8% in Derby (£484 per client per month).

Survivorship bias

We explain the issue of survivorship bias and present our full analysis of this issue later in this report. In brief, survivorship bias would arise if those participants for whom we could not collect data had different characteristics from those for whom data was collected. That would lead to a bias in the observed results, with the programme appearing more or less successful than it actually was. We have undertaken a series of tests to explore the possibility of survivorship bias in the results of this evaluation. In summary, we were able to collect Year Two data for the majority of Cambridgeshire clients, and we have found no evidence of survivorship bias in the results for Cambridgeshire. In Derby, the number of clients for whom we have not been able to collect Year Two data is significantly higher and may have resulted in a survivorship bias.

The table below summarises our findings.

Table 1: Summary of findings

	Wellbeing	Service use
Cambridgeshire	Year One improvement maintained in Year Two No evidence of survivorship bias	Year One cost reduction increased in Year Two to 26.4% against the baseline. No evidence of survivorship bias
Derby	Wellbeing improved in Year One and again in Year Two Possible survivorship bias	Costs increased in Year One then decreased against the baseline by 15.8% in Year Two Possible survivorship bias

Limitations due to small samples sizes

The main constraint on our Year Two analysis is that Year Two data was not available for any of the clients in the Somerset pilot area, and was available for only a small sample of clients in the Derby area. We therefore place more reliance upon the data provided by the Cambridgeshire pilot.

In Year One, we reached similar conclusions on wellbeing for all three pilot areas. However, our findings relating to service use differed by area; Cambridgeshire was the only area in Year One in which the overall costs of service use decreased. Our Year Two service use results for Cambridgeshire may therefore not be representative of clients in the Derby and Somerset areas.

There are two individuals included in our analysis whose service use and wellbeing may have been affected by factors other than the programme. We present our analysis including these two clients but explain in Appendix 2 the effect if they are instead excluded.

Given the relatively small samples of individuals for whom we have data, it will be interesting to see the results of future evaluations of services working with adults with multiple needs that are able to work with a greater number of people, for example, the work being undertaken as part of the Big Lottery's Fulfilling Lives programme.

Findings: Client wellbeing

Introduction

We evaluated the ongoing impact of the pilot programmes on client wellbeing by comparing wellbeing before each client entered the pilot, at the end of Year One and at the end of Year Two.

As in Year One, wellbeing was assessed using three measures:

- **The NDT Assessment:**[4] This assessment is completed by the service coordinator and scores the client's behaviour across ten areas. This includes the level of engagement with frontline services, the risk of self harm and the extent of alcohol and drug abuse.
- **The Warwick-Edinburgh Mental Well-Being Scale© ("WEMWBS"):**[5] The WEMWBS questionnaire is completed by the client and measures fourteen aspects of their mental wellbeing.
- **The Outcomes Star™:**[6] The service coordinator and client completed the Outcomes Star™ homelessness questionnaire together to measure the client's progress towards goals such as maximising their independence.

The questionnaires for each measure are included at Appendices 3, 4 and 5.

Cambridgeshire results

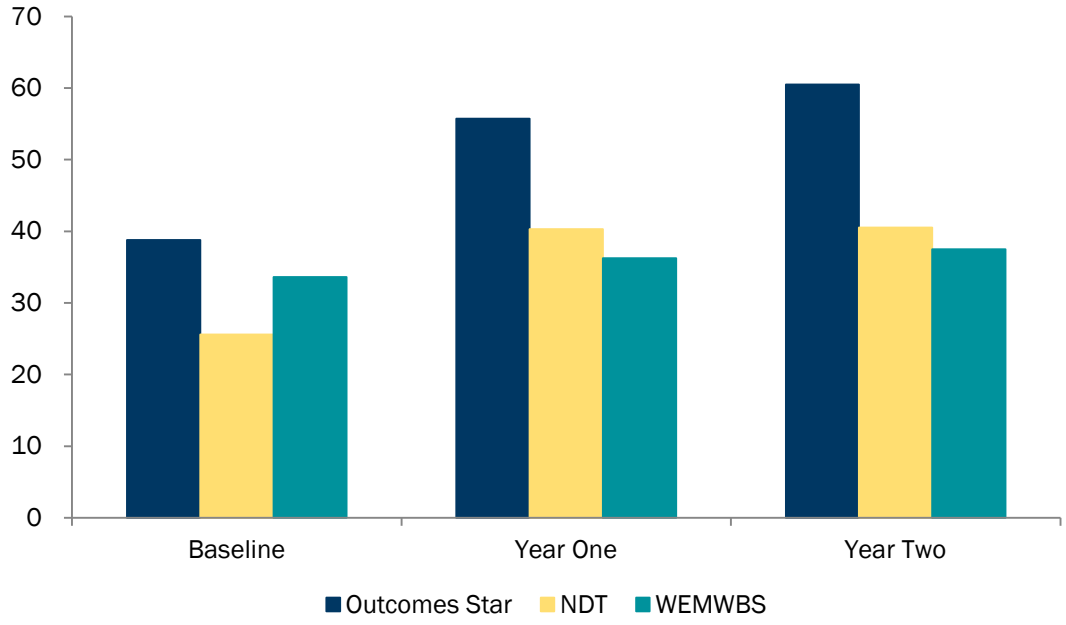
In Year One, we tracked the wellbeing of 14 clients. Of these, nine or ten provided wellbeing data in Year Two, depending upon the measure. The chart below shows the change in average wellbeing measures over time. Higher scores indicate improved wellbeing.

4 The NDT Assessment framework was developed by South West London and St George's Mental Health Trust and its partners as part of the Merton Adults Facing Chronic Exclusion pilot and uses a set of behavioural indicators to define individuals facing multiple needs and exclusions. Any area using the NDT Assessment framework in full or in part must acknowledge copyright to the South West London and St George's Mental Health Trust.

5 The Warwick-Edinburgh Mental Well-Being Scale was funded by the Scottish Executive National Programme for improving mental health and well-being, commissioned by NHS Health Scotland, developed by the University of Warwick and the University of Edinburgh, and is jointly owned by NHS Health Scotland, the University of Warwick and the University of Edinburgh.

6 The Outcomes Star™ is a suite of tools for supporting and measuring change when working with vulnerable people. There are 14 versions of the tool, including the homelessness star used in MEAM pilots. The Outcomes Star™ was developed by Triangle Consulting Social Enterprise Limited. Further information is available at http://www.outcomesstar.org.uk.

Figure 1: Average Cambridgeshire wellbeing measures over time



Note: The NDT scale has been inverted, so that an increase in the size of the bar represents an increase in wellbeing.

At the end of Year Two, most clients' wellbeing scores remained similar to those at the end of Year One, with no statistically significant differences between the years. This suggests that improvements made in Year One were maintained in Year Two (and that where the average score has deteriorated slightly during Year Two, this is most likely due to random variation).

The final Outcomes Star™ and NDT scores show a substantial and statistically significant improvement compared to the baseline scores, indicating a very high level of confidence that they represent real changes and not random variation.[7] The improvement in WEMWBS scores over the same period was not statistically significant. The less significant improvement in WEMWBS scores may be because people actually measure their wellbeing in relative terms. That is, individuals may acclimatise to an improvement in their current situation.

The charts below show the average performance against each measure. The results for particular measures vary by indicator.

7 This improvement is statistically significant at the 1% level in the case of NDT and Outcomes Star™ scores.

Figure 2: Cambridgeshire Outcomes Star™ results (n = 10)

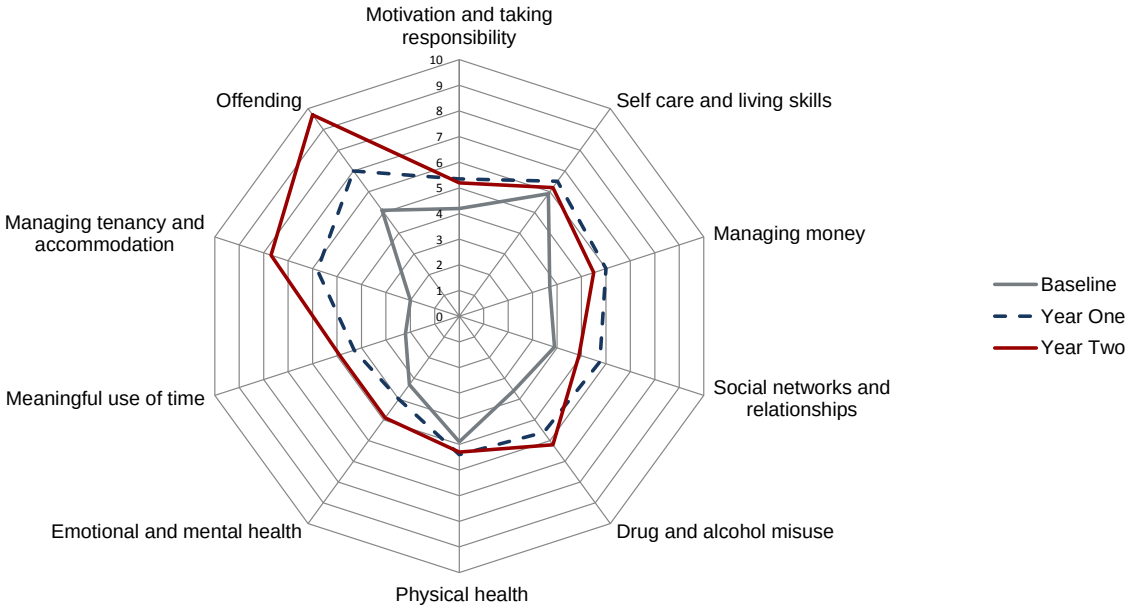
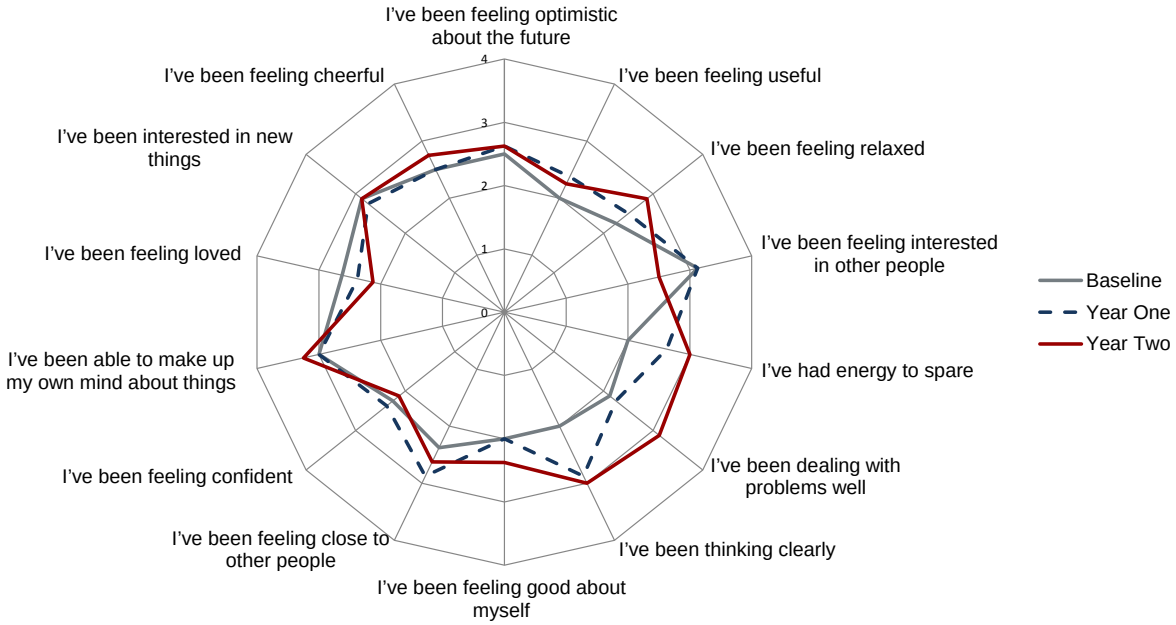


Figure 3: Cambridgeshire NDT results (n = 10)

Figure 4: Cambridgeshire WEMWBS results (n = 9)



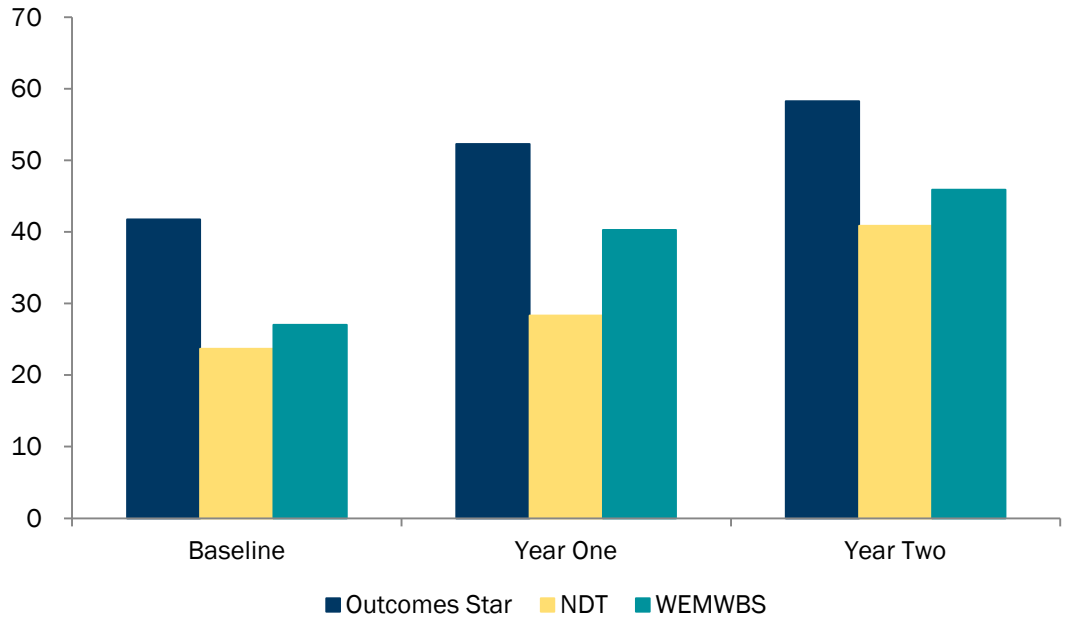
Derby results

In Year One, we tracked the wellbeing of 12 clients. Of these, four to six provided wellbeing data in Year Two, depending upon the measure. Due to the small number of clients for whom we have Year Two data, our findings for Derby are likely to be sensitive to extreme results of any one client, to random variation and to survivorship bias (which we discuss further below). The patterns in the data that we present here may therefore not be a reliable indicator of the success of the Derby pilot.

The Derby clients for whom we have data have shown a significant improvement in wellbeing during Year Two in the NDT and WEMWBS measures. All indicators are now above the level at the start of the pilot and at the end of Year One. Given the small sample size (only 4-6 individuals provided Year Two data), it is difficult to perform any tests of statistical significance. However, in performing our survivorship bias analysis, we identify one approach to increase our sample size which enables us to show a statistically significant improvement in wellbeing (see below).

The chart below shows the change in average wellbeing measure over time for those clients who provided Year Two data. Higher scores again indicate improved wellbeing.

Figure 5: Average Derby wellbeing measures over time



Note: The NDT scale has been inverted, so that an increase in the size of the bar represents an increase in wellbeing.

The results for particular measures vary by indicator. For example, in the Outcomes Star, on average, clients showed a large improvement in the areas of "Self care and living skills", "Drug and alcohol misuse" and "Meaningful use of time" during Year Two, but "Offending" deteriorated.

The charts below show the average performance on each measure.

Figure 6: Derby Outcomes Star™ results (n = 4)

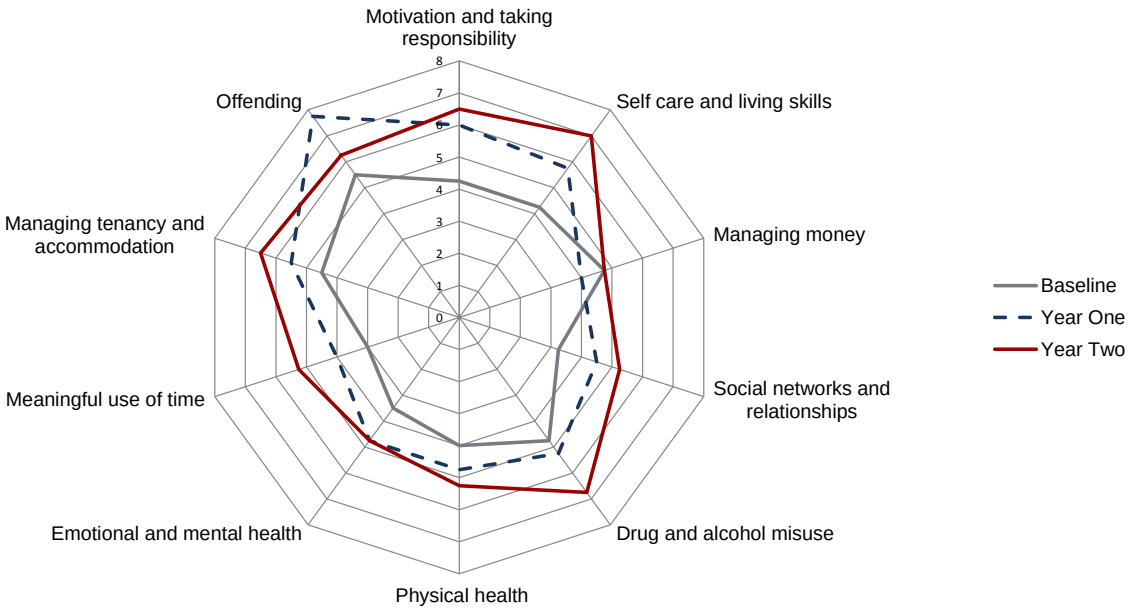


Figure 7: Derby NDT results (n = 6)

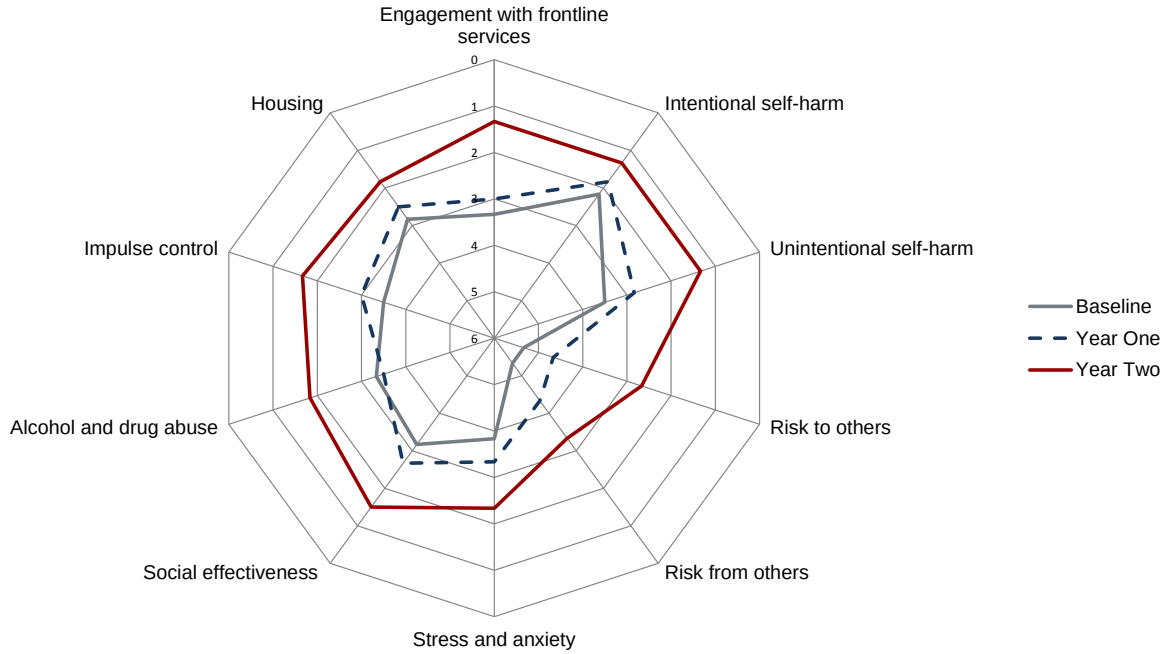
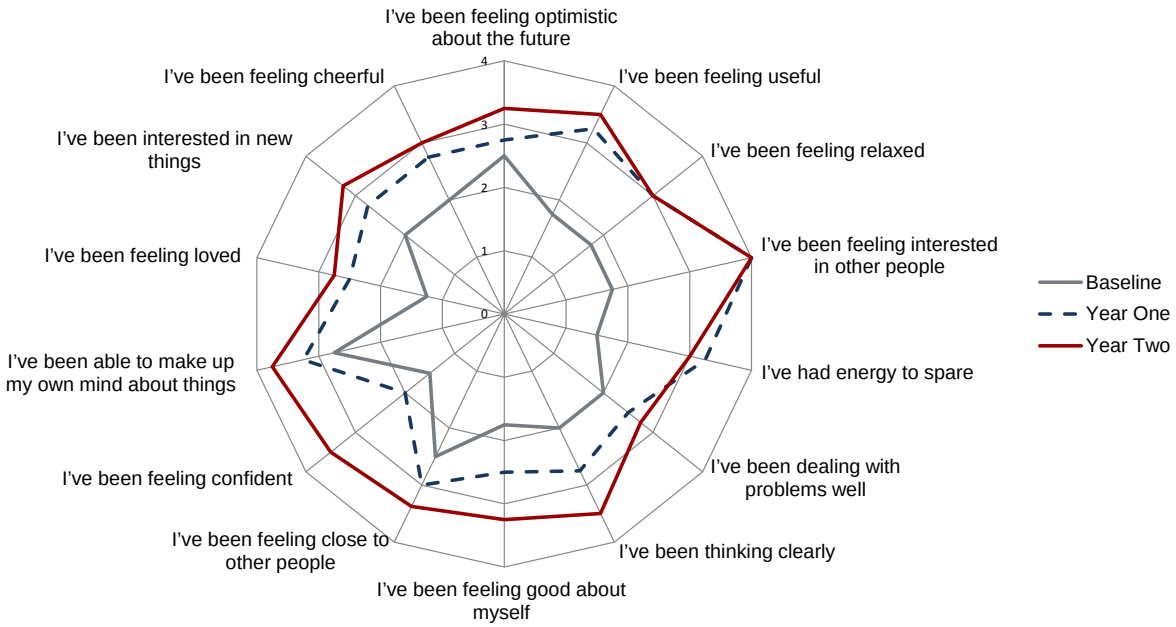


Figure 8: Derby WEMWBS results (n = 4)



Wellbeing survivorship bias

Four of the Cambridgeshire clients for whom we collected data in Year One (29%) did not provide wellbeing data for Year Two. Six to eight of the Derby clients for whom we collected data in Year One (50% to 66%) did not provide data for Year Two. We therefore tested for survivorship bias in both areas.

The section on survivorship bias sets out our analysis to assess the likely impact of any such bias. We conclude that there is no evidence of survivorship bias in the Cambridgeshire wellbeing results, and a possible bias in the Derby results. Such a bias may have increased the observed improvement in wellbeing in Derby. As we explain in that section, one approach to exploring this survivorship bias is to assume that clients who did not provide data in Year Two would have performed identically to their Year One results. While this reduces the size of the improvement in recorded wellbeing, this approach increases our sample size and allows us to perform statistical tests. We calculate that the improvements in all three wellbeing measures under this assumption are significant.[8]

[8] This improvement is statistically significant at the 1% level in the case of NDT and WEMWBS scores and at the 10% level in the case of Outcomes Star™ scores.

Findings: Service use costs

Introduction

As in Year One, we collected monthly data directly from local services, including each client's:

- involvement with the criminal justice system (such as arrests);
- use of health and mental health services (such as A&E attendances);
- use of drug and alcohol services (such as treatment programmes); and
- housing situation (such as the use of hostels).

We use the same data for the year prior to enrolment as a 'baseline' to estimate clients' service use had they not participated in the pilot.

The approach we have taken to measure and analyse client service use is similar to that used in Year One. We have again assessed the cost of service provision using published unit cost data. Since our first report, we have updated these costs to rely upon more recently published data that reflect costs at 2012 levels. We have also amended an error in the housing costs used in our previous report. This error does not change our conclusions that service use costs decreased in Year One in Cambridgeshire, and increased in Derby and Somerset, but does mean that figures are different from the previous report. The effects of the programme in Year One were slightly more positive than we had previously reported in Cambridgeshire and Somerset, and less positive in Derby. We provide details of the error and the revised figures in Appendix 1.

Appendix 6 sets out the detailed service use data that we summarise in this section. We set out the updated unit costs at Appendix 7.

Cambridgeshire results

In Year One, we tracked the service use of 15 clients. Of these, 13 provided consent to collect service use data during Year Two. We exclude from our analysis two clients who did not provide consent. One client died in February 2013 after the end of Year Two. We include this client in our analysis.

The table below shows the average monthly cost of service use of the 13 clients in Cambridgeshire during the baseline period, Year One and Year Two:

Table 2: Monthly cost of service use in Cambridgeshire (n = 13)

	Baseline	Year One	Year Two
Crime	£2,103	£1,501	£1,231
Drug and alcohol	£137	£189	£145
Health	£168	£153	£164
Mental health	£614	£1,059	£519
Housing	£604	£438	£610
Total	**£3,625**	**£3,342**	**£2,668**
Percentage change compared to baseline		**(7.8)%**	**(26.4)%**

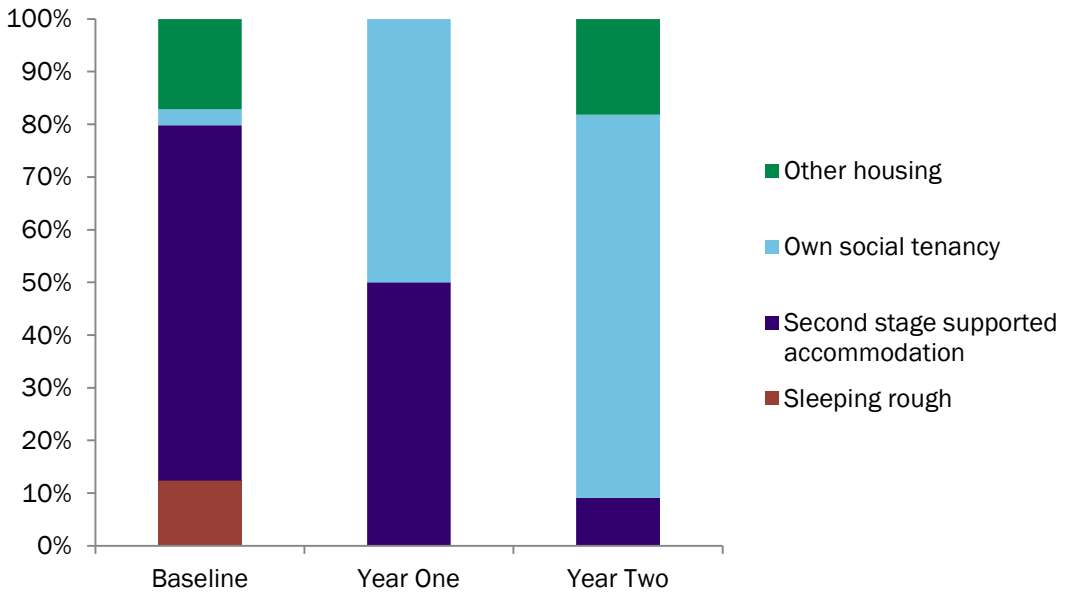
The table above shows that there has been a significant fall in crime and mental health costs, with other costs remaining broadly constant.

The fall in crime costs can be attributed to a significant fall in the number of times participants were arrested. Arrests fell from an average of 0.7 times per month in the baseline period (£1,463) to an average of 0.2 times in Year Two (£423). This was partly offset by an increase in prison costs from £194 to £397 per month over the same period. Other crime-related service use has not changed significantly.

Mental health costs are mainly the costs of nights spent in mental health hospitals. The cost of mental health hospitals was £514/month before the programme, rising to £946 /month in Year One, largely due to one client being supported to spend the entire year in a mental health hospital. In Year Two, these costs fell to £439/month, largely driven by this client being discharged from hospital half way through Year Two.

Housing costs decreased in Year One because some clients moved from second stage supported accommodation into their own social tenancies. This trend towards social tenancies continued during Year Two. Overall, housing costs in Year Two were broadly similar to the baseline period due to some use of more expensive temporary accommodation. The chart below shows the housing used by clients in the last month of each period.

Figure 9: Housing use in Cambridgeshire at the end of each period



Derby results

In Year One, we tracked the service use of 13 clients. Of these, seven provided consent to collect service use data in Year Two. The others were not contactable to provide consent. Due to the small number of clients for whom we have been able to collect Year Two data, our findings for Derby are likely to be sensitive to extreme results of any one client, to random variation and to survivorship bias (which we discuss further below). The patterns in the data that we present here may therefore not be a reliable indicator of the success of the Derby pilot.

The Derby clients for whom we have data showed a significant increase in the costs of service use during Year One. Our analysis shows that their service use costs have fallen significantly in Year Two, taking service use below the level it was before the programme started.

Table 3: Monthly cost of service use in Derby (n = 7)

	Baseline	Year One	Year Two
Crime	£1,145	£1,971	£913
Drug and alcohol	£191	£182	£75
Health	£304	£617	£245
Mental Health	£200	£512	£561
Housing	£1,217	£1,031	£781
Total	**£3,058**	**£4,313**	**£2,574**
Percentage change compared to baseline		**+41.0%**	**(15.8)%**

The table above shows that there has been a significant fall in crime, drug and alcohol, health and housing costs relative to the baseline and Year One.

The decrease in crime costs can be attributed to a significant fall in the number of times participants were arrested and the number of nights spent in prison. On average, clients were arrested 0.4 times per month before enrolling in the pilot (at a cost of £761), increasing to 0.6 times (£1,276) during Year One, then falling to 0.2 times (£358) during Year Two. Prison costs were £159/month before the program, rose to £428/month in Year One, then fell to £159/month in Year Two. The large variation in costs over time is likely to be a result of the small sample.

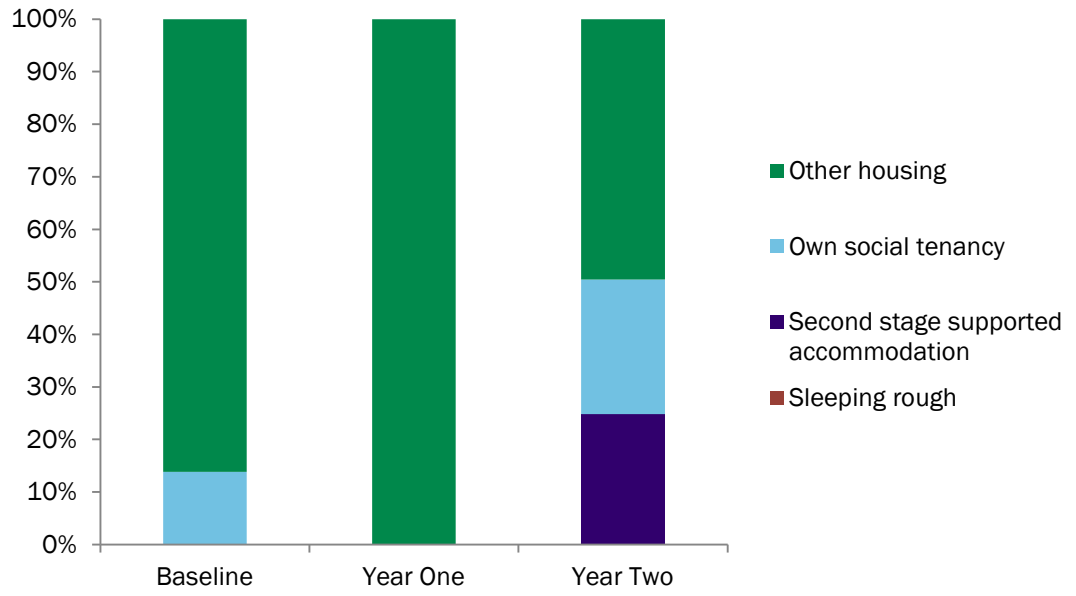
The decrease in drug and alcohol costs can be attributed to a reduction in the number of one-to-one drug or alcohol therapy sessions, and a decrease in the use of substitute prescriptions. The cost of one-to-one sessions fell from £105/month in Year One to £45/month in Year Two, while the cost of substitute prescriptions fell from £74/month in Year One to £30/month in Year Two.

In Year One, A&E costs were an average of £131/month, and the cost of nights in hospital £410/month. In Year Two, these costs reduced to zero because none of the participants spent any nights in hospital or visited A&E. These reductions in health costs were partially offset by an increase in outpatient appointment costs, which increased from £76/month to £245/month.

Housing costs decreased in Year One as clients reduced their use of direct access hostels and other similar housing and increased their use of cheaper second stage supported accommodation and took up their own social tenancies. This trend continued into Year Two with fewer clients sleeping in direct access hostels. Overall housing costs decreased significantly from the baseline period.

The chart below sets out the forms of housing used by clients at the end of each period. It is noticeable from this chart that the clients in Derby made significant use of 'other housing', which includes staying with friends and forms of emergency accommodation such as direct access hostels. The chart shows an increase in the use of second stage supported accommodation and own social tenancies between the baseline and Year Two. While this chart shows a decrease in social tenancies in Year One, this is because the data shows a 'snapshot' at the year end, at a time when social tenancies were particularly low. Our analysis shows that there was a general trend of increased social tenancies during both Years One and Two, even though this is not evident from the final month of Year One.

Figure 10: Housing use in Derby at the end of each period



Service use survivorship bias

Two of the Cambridgeshire clients for whom we collected data in Year One (13%) did not provide data for Year Two. Six of the Derby clients for whom we collected data in Year One (46%) did not provide data for Year Two. Survivorship bias may therefore have a significant effect on our results for Derby, but is likely to have had only a limited impact for Cambridgeshire.

We have therefore only performed survivorship bias analysis for Derby. The following section sets out this analysis. We conclude that there may be an element of survivorship bias in the Year Two service use results for Derby.

Survivorship bias

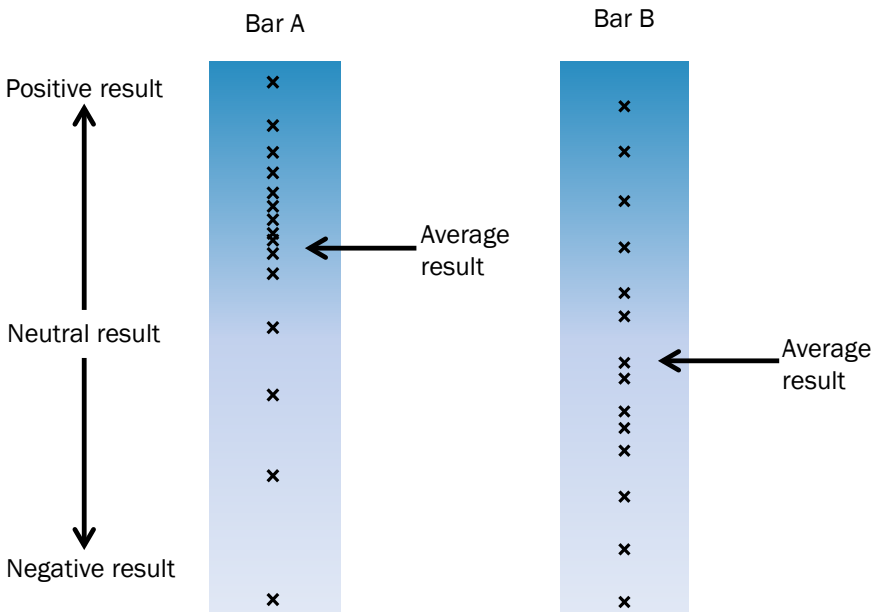
What is survivorship bias?

Survivorship bias occurs when those participants for whom we could not collect data have different characteristics to those for whom data was collected, leading to a bias in the observed results. For example, if participants for whom we have no data experienced a lesser benefit from the programme, then looking at those who remain in the programme in Year Two may lead to conclusions that are positively biased.

Survivorship bias may result in programmes appearing either more or less successful than they actually are. Consider, for example, a treatment programme for individuals who suffer from substance misuse. If we consider only the successes of those who have continued to attend treatment for a set period, and ignore the experiences of those who started to attend but then stopped attending, we are likely to conclude that the programme is more successful than it really is. Consider also a training programme designed to help individuals to find employment. If we consider the experiences of those that continue to attend the programme after one year, and exclude from our analysis the individuals who stopped attending when they found employment, we are likely to conclude that the programme is less successful than it really is.

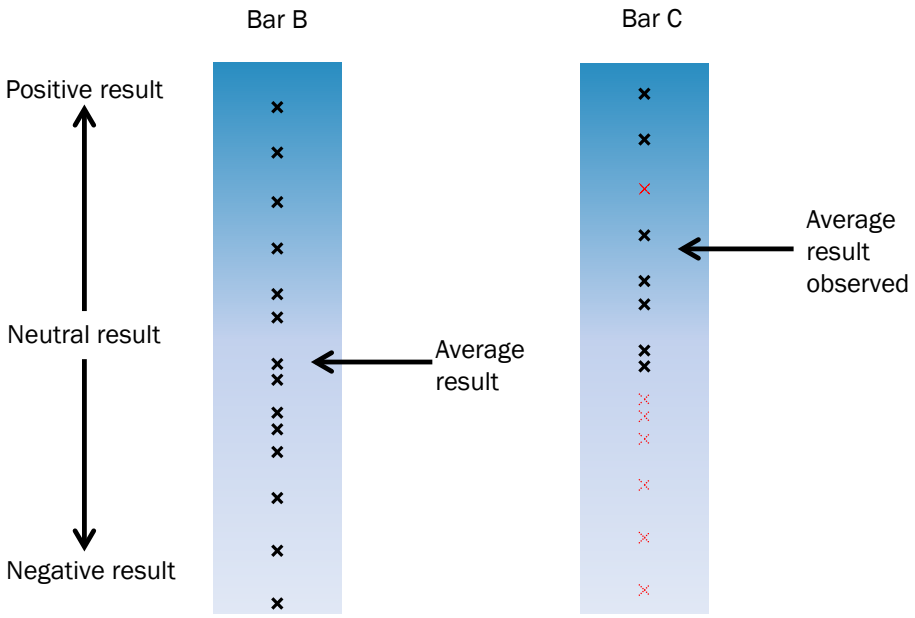
The diagrams below illustrate how survivorship bias can affect an evaluation. The vertical bars indicate the spectrum of possible outcomes for each client, ranging from highly negative at the lower end to highly positive at the top end. The crosses indicate where individual participants might sit on this scale. (These results are purely illustrative and do not reflect our evaluation.) A programme is successful where crosses tend to be in the top half of the bar. Bar A shows the outcome of a successful study. Bar B shows the outcome of a less successful study.

Figure 11: Possible outcomes of two studies



The diagrams above illustrate the situation where all participants in the study provide data. In practice, this may not be the case (and was not the case in our evaluation). Bar C below includes the same data as Bar B, except that some of the crosses are now in red, indicating that these individuals took part in the programme, but data was not available for them.

Figure 12: Effect of survivorship bias on observed results



If an evaluator considered only the data available in Bar C, they would conclude that the programme was successful, because the clients for whom data is available all performed well. However, had the evaluator known about the performance of all participants, the evaluation would have been less positive, because in this explanatory example there was a clear bias in terms of the clients who did and did not provide data.

Our approaches to assessing survivorship bias

We considered three approaches to identifying potential survivorship bias in the evaluation of the MEAM pilots. We explain these three approaches below and then summarise our findings with respect to wellbeing and service use.

First approach: Coordinator expectations

Our analysis of coordinator expectations consisted of three steps:

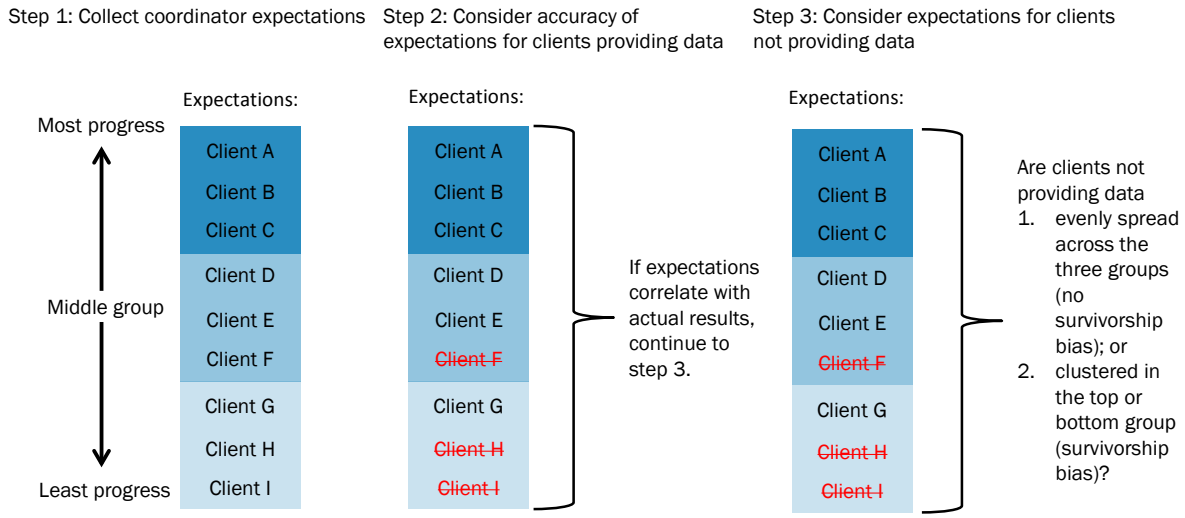
(1) At the end of Year One, we asked service coordinators to provide *ex ante* information on the expected improvements in wellbeing and service use of each client before the start of Year Two. Each coordinator divided their clients into three groups: those they expected to show the most significant progress, those they expected to show the smallest amount of progress and a third, middle group.

(2) At the end of Year Two, we checked how accurate these expectations were for those clients who provided data during Year Two. If the expectations were not accurate, we were unable to use this approach to assess survivorship bias.

(3) If the coordinator's expectations were accurate for those clients who provided Year Two data, we assessed whether those clients who did not provide data were evenly spread across the three groups. If they were, then this suggests that survivorship bias did not significantly affect our findings. If, however, they were clustered in one or more of the groups, then our analysis might be affected by survivorship bias.

The diagram below illustrates this approach.

Figure 13: Using coordinator expectations to assess survivorship bias

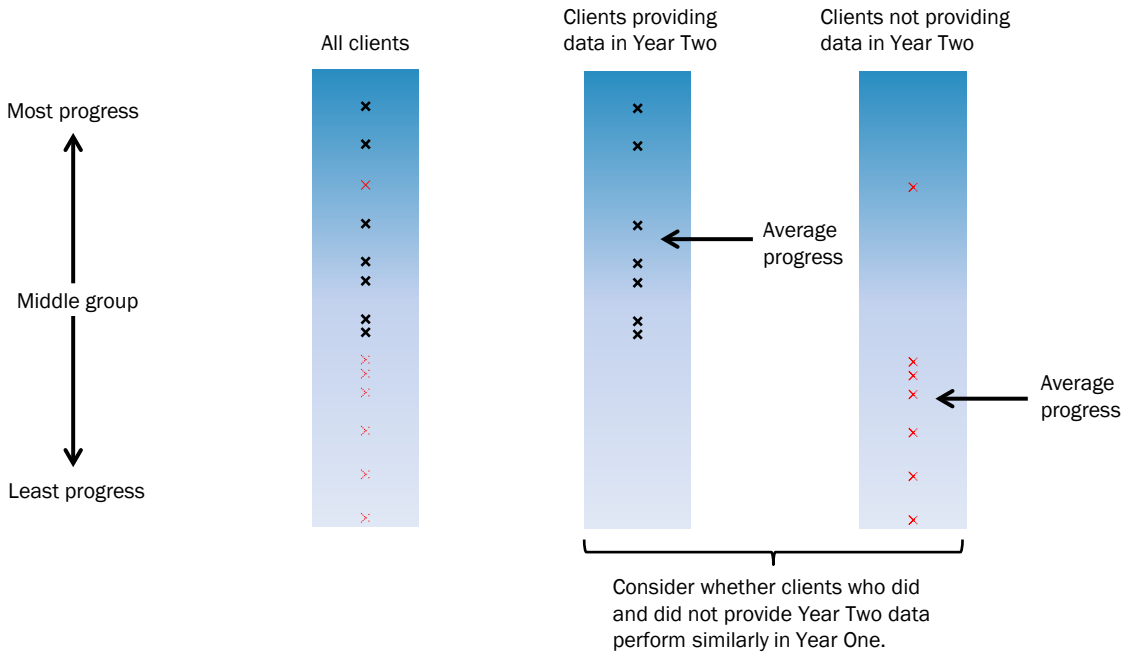


Second approach: Performance during Year One

As an alternative approach, we looked at the Year One 'track record' of clients to determine whether the programme had previously been more or less successful for those clients providing data during Year Two than for those who did not provide this data. If clients providing Year Two data demonstrated similar progress during Year One compared to clients not providing Year Two data, then this suggests that survivorship bias does not significantly affect our results. However, if the two groups showed markedly different performance during Year One, then our analysis might be affected by survivorship bias.

The diagram below illustrates this approach.

Figure 14: Using Year One performance to assess survivorship bias



Third approach: Coordinator views

We discussed the situations of each client for whom we do not have Year Two data with the relevant service coordinator to determine whether, in their view, there is a reason to think that the pilot had a different effect on the wellbeing and service use of clients who did provide Year Two data compared to its effect on those who did not.

Analysis of survivorship bias: Wellbeing

The results of the three survivorship bias tests described above are set out in the table below.

Table 4: Analysis of survivorship bias in wellbeing results

Test	Cambridgeshire	Derby
Coordinator expectations	**Inconclusive:** The coordinator's expectations of clients' progress in Year Two did not correlate with actual outcomes. We could therefore not rely upon this approach.	**No evidence of bias:** For those clients providing data, coordinator expectations of the change in wellbeing during Year Two correlated reasonably well with the actual change in wellbeing. The *ex ante* expectations showed that, on average, those clients who ultimately did not provide data were not expected to perform differently to those who did.
Performance during Year One	**No evidence of bias:** Clients who did and did not provide data for Year Two showed similar wellbeing improvements during Year One (although baseline levels differed).	**Possible bias:** Clients who provided data for Year Two showed smaller wellbeing improvements during Year One than those who did not provide data for Year Two.
Coordinator views	**No evidence of bias:** The Cambridgeshire coordinator confirmed that the reasons for the lack of data for some clients were not, in his view, linked to these clients making limited progress during Year Two.	**No evidence of bias:** The Derby coordinator confirmed that the reasons for the lack of data for some clients were not, in her view, linked to these clients making limited progress during Year Two.
Overall conclusion	**No evidence of bias**	**Possible bias**

One additional approach to analysing the potential scale of any survivorship bias is to assume that clients who did not provide data in Year Two would have performed identically to their Year One results. In Cambridgeshire, this assumption has a relatively small effect on our results because there were relatively few clients for whom we have not been able to collect wellbeing data. In Derby, this assumption leads to a slightly smaller improvement in wellbeing measures between the baseline and Year Two. As mentioned earlier in the report, the increased sample size also allows us to undertake tests to explore the statistical significance of these wellbeing changes.

Analysis of survivorship bias: Service use

We have Year Two service use data for almost all Cambridgeshire clients for whom we have this data in Year One. Survivorship bias is therefore unlikely to have a significant effect on our analysis of the Cambridgeshire pilot and so we have only tested for survivorship bias in our Derby service use analysis.

The results of the three survivorship bias tests described above are set out in the table below.

Table 5: Analysis of survivorship bias in service use results

Test	Cambridgeshire	Derby
Coordinator expectations	N/A	**Inconclusive:** The coordinator's expectations of clients' progress in Year Two did not correlate with actual outcomes. We could therefore not rely upon this approach.
Performance during Year One	N/A	**Possible bias:** Clients from Derby who provided data during Year Two showed a significantly greater increase in service use during Year One than those who did not provide this data. It is therefore possible that there is an element of survivorship bias in the Year Two results for Derby.
Coordinator views	N/A	**No evidence of bias:** The Derby coordinator confirmed that the reasons for the lack of data for some clients were not, in her view, linked to these clients making limited progress during Year Two.
Overall conclusion	N/A	**Possible bias:** Outcomes during Year One indicate a possible bias. The direction of this bias is unclear. Clients providing data during Year Two tended to show a greater increase in service use costs during Year One that those who did not continue to provide data, suggesting our results might be negatively biased. However, closer examination of the data reveals that, of the clients who remained in the programme for two years, those who showed comparatively higher levels of cost increase in Year One tended to go on to show larger service use reductions the following year, meaning that the bias may actually act in the opposite direction.

One additional approach to analysing the potential scale of any survivorship bias is to assume that clients who did not provide data in Year Two would have continued to make the same use of services as during Year One. In Cambridgeshire, this assumption has relatively little impact on our results because there were few clients for whom we were not able to collect data. In Derby, following this approach we calculate a decrease in service use costs from the baseline to Year Two of 1.6%, rather than the 15.8% reduction we calculate for only those clients providing Year Two data. This shows that the potential effect of survivorship bias on our service use analysis could be significant for the Derby pilot.

Appendix 1 – Year One findings

In this appendix we summarise and update our findings for all 39 clients included in our Year One analysis. This contrasts to the remainder of this report where we consider only those clients for whom we have both Year One and Year Two data.

Wellbeing

The table below summarise our Year One wellbeing findings, including those clients for whom we do and do not have Year Two data. This data is the same as that set out in our previous report.

Table 6: Improvement in wellbeing by measure

	Outcomes Star™	NDT	WEMWBS
Cambridgeshire (n = 14)			
Baseline score	43.2	33.7	37.2
Year One score	58.4	19.2	37.9
Improvement	**35%**	**43%**	**2%**
Derby (n = 12)			
Baseline score	38.8	34.8	26.8
Year One score	59.9	28.1	42.1
Improvement	**55%**	**19%**	**57%**
Somerset (n = 10)			
Baseline score	43.6	26.7	34.4
Year One score	63.4	17.3	44.1
Improvement	**42%**	**35%**	**28%**

Notes: Three clients did not provide Year One wellbeing data. The increases in Outcomes Star™ and WEMWBS scores, and the decrease in NDT scores, all denote an improvement in wellbeing.

Service use

The table below summarises our Year One service use findings, including those clients for whom we do and do not have Year Two data. This data differs to that set out in our earlier report for two reasons. First, it corrects an error identified in the unit costs for 'own social tenancy' housing used in our earlier analysis where a weekly rate had been used as a nightly figure. Second, it uses updated unit costs at 2012 levels and additional unit cost research now available to us. This data therefore replaces the figures published in our previous report.

Table 7: Monthly cost of service use

	Baseline	Year One
Cambridgeshire (n = 15)		
Crime	£2,250	£1,554
Drug and alcohol	£135	£172
Health and mental health	£746	£1,211
Housing	£478	£432
Total	**£3,609**	**£3,369**
Percentage change compared to baseline		**(6.7)%**
Derby (n = 13)		
Crime	£1,508	£2,783
Drug and alcohol	£93	£76
Health and mental health	£649	£1,208
Housing	£486	£655
Total	**£2,809**	**£4,722**
Percentage change compared to baseline		**68.1%**
Somerset (n = 11)		
Crime	£868	£549
Drug and alcohol	£0	£413
Health and mental health	£146	£267
Housing	£107	£285
Total	**£1,120**	**£1,514**
Percentage change compared to baseline		**35.2%**

Appendix 2 – Discussion of two Cambridgeshire clients

In Cambridgeshire, there are two clients who became parents during Year Two. While we have a complete set of data for these clients, becoming a parent is likely to have a significant effect on a client's wellbeing and service use. As a result, it is possible that changes in the wellbeing of these two clients are due to a change in lifestyle caused by having a child, as opposed to participation in the pilot. However, we also note that these clients were still supported by the Cambridgeshire coordinator during Year Two, and that their lives might have been very different without his input.

In the main body of this report we have presented our analysis including these two clients. We consider in this appendix whether excluding these two individuals affects our conclusions. In summary, if the new parents are excluded, an improvement is still seen across all three measures of wellbeing in Cambridgeshire between the baseline and Year Two. However, the measured improvements in wellbeing are lower than if we include the two new parents in the analysis. For service use, excluding these two clients, we calculate a slightly smaller reduction in service use costs compared to when these clients are included.

Wellbeing

If the two new parents are excluded, an improvement is still seen across all three measures of wellbeing. However, the improvements in the wellbeing measures are smaller than those observed when the two new parents are included. The table below shows this analysis.

Table 8: Improvement in wellbeing by measure

	Outcomes Star™	NDT	WEMWBS
Including new parents			
Baseline score	38.8	34.4	33.6
Year Two score	60.5	19.5	37.5
Improvement	56%	43%	12%
Excluding new parents			
Baseline score	39.5	33.5	34.9
Year Two score	56.0	20.5	35.6
Improvement	42%	39%	2%

Note: The increases in Outcomes Star™ and WEMWBS scores, and the decrease in NDT scores, all denote an improvement in wellbeing.

The improvement in the NDT measures from the Baseline to Year Two is statistically significant at the 1% level, both including and excluding the new parents. The improvement in Outcomes Star™ scores is statistically significant at the 1% level, including the new parents, and statistically significant at the 5% level, excluding the new parents. The improvement in WEMWBS scores was not statistically significant in either case.

Service use

If the two clients who became new parents are excluded, then our analysis would show a 25.1% decrease in service use costs from the baseline level to Year Two, as opposed to the 26.4% decrease observed when these parents are included, as shown in the table below.

Table 9: Monthly cost of service use in Cambridgeshire, with and without new parents (n=13, 11)

	Baseline	Year One	Year Two
Including new parents			
Crime	£2,103	£1,501	£1,231
Drug and alcohol	£137	£189	£145
Health	£168	£153	£164
Mental health	£614	£1,059	£519
Housing	£604	£438	£610
Total	**£3,625**	**£3,342**	**£2,668**
Percentage change compared to baseline		**(7.8)%**	**(26.4)%**
Excluding new parents			
Crime	£2,159	£1,503	£1,280
Drug and alcohol	£125	£176	£157
Health	£167	£166	£152
Mental health	£669	£1,251	£615
Housing	£600	£480	£582
Total	**£3,719**	**£3,576**	**£2,785**
Percentage change compared to baseline		**(3.8)%**	**(25.1)%**

Appendix 3 – The NDT Assessment

The service coordinator should select one statement that best applies to the person being assessed. All scores should be based on the past one month.

A: Engagement with frontline services

Score	Description
0	Rarely misses appointments or routine activities; always complies with reasonable requests; actively engaged in tenancy/treatment.
1	Usually keeps appointments and routine activities; usually complies with reasonable requests; involved in tenancy/treatment.
2	Follows through some of the time with daily routines or other activities; usually complies with reasonable requests; is minimally involved in tenancy/treatment.
3	Non-compliant with routine activities or reasonable requests; does not follow daily routine, though may keep some appointments.
4	Does not engage at all or keep appointment.

B: Intentional self harm

Score	Description
0	No concerns about risk of deliberate self-harm or suicide attempt.
1	Minor concerns about risk of deliberate self-harm or suicide attempt.
2	Definite indicators of risk of deliberate self-harm or suicide attempt.
3	High risk to physical safety as a result of deliberate self-harm or suicide attempt.
4	Immediate risk to physical safety as a result of deliberate self-harm or suicide attempt.

C: Unintentional self harm

Score	Description
0	No concerns about unintentional risk to physical safety.
1	Minor concerns about unintentional risk to physical safety.
2	Definite indicators of unintentional risk to physical safety.
3	High risk to physical safety as a result of self-neglect, unsafe behaviour or inability to maintain a safe environment.
4	Immediate risk to physical safety as a result of self-neglect, unsafe behaviour or inability to maintain a safe environment.

D10: Risk to others

Score	Description
0	No concerns about risk to physical safety or property of others.
2	Minor antisocial behaviour.
4	Risk to property and/or minor risk to physical safety of others.
6	High risk to physical safety of others as a result of dangerous behaviour or offending/criminal behaviour.
8	Immediate risk to physical safety of others as a result of dangerous behaviour or offending/criminal behaviour.

E: Risk from others

Score	Description
0	No concerns about risk of abuse or exploitation from other individuals or society.
2	Minor concerns about risk of abuse or exploitation from other individuals or society.
4	Definite risk of abuse or exploitation from other individuals or society.
6	Probably occurrence of abuse or exploitation from other individuals or society.
8	Evidence of abuse or exploitation from other individuals or society.

F: Stress and anxiety

Score	Description
0	Normal response to stressors.
1	Somewhat reactive to stress, has some coping skills, responsive to limited intervention.
2	Moderately reactive to stress; needs support in order to cope.
3	Obvious reactiveness; very limited problem solving in response to stress; becomes hostile and aggressive to others.
4	Severe reactiveness to stressors, self-destructive, antisocial, or have other outward manifestations.

G: Social effectiveness

Score	Description
0	Social skills are within the normal range.
1	Is generally able to carry out social interactions with minor deficits, can generally engage in give-and-take conversation with only minor disruption.
2	Marginal social skills, sometimes creates interpersonal friction; sometimes inappropriate.
3	Uses only minimal social skills, cannot engage in give-and-take of instrumental or social conversations; limited response to social cues; inappropriate.
4	Lacking in almost any social skills; inappropriate response to social cues; aggressive.

H: Alcohol and drug abuse[9]

Score	Description
0	Abstinence; no use of alcohol or drugs during rating period.
1	Occasional use of alcohol or abuse of drugs without impairment.
2	Some use of alcohol or abuse of drugs with some effect on functioning; sometimes inappropriate to others.
3	Recurrent use of alcohol or abuse of drugs which causes significant effect on functioning; aggressive behaviour to others.
4	Drug/alcohol dependence; daily abuse of alcohol or drugs which causes severe impairment of functioning; inability to function in community secondary to alcohol/drug abuse; aggressive behaviour to others; criminal activity to support alcohol or drug use.

I: Impulse control

Score	Description
0	No noteworthy incidents.
1	Maybe one or two lapses of impulse control; minor temper outbursts/aggressive actions, such as attention-seeking behaviour which is not threatening or dangerous.
2	Some temper outbursts/aggressive behaviour; moderate severity; at least one episode of behaviour that is dangerous or threatening.
3	Impulsive acts which are fairly often and/or of moderate severity.
4	Frequent and/or severe outbursts/aggressive behaviour, e.g., behaviours which could lead to criminal charges / Anti Social Behaviour Orders / risk to or from others / property.

J: Housing

Score	Description
0	Settled accommodation; very low housing support needs.
1	Settled accommodation; low to medium housing support needs.
2	Living in short-term / temporary accommodation; medium to high housing support needs.
3	Immediate risk of loss of accommodation; living in short-term / temporary accommodation; high housing support needs.
4	Rough sleeping / “sofa surfing”.

9 Drugs include illegal street drugs as well as abuse of over-the-counter and prescribed medications.

Appendix 4 - The Warwick-Edinburgh Mental Well-being Scale

This question is to be completed by the client.

Questionnaire content

Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the last 2 weeks

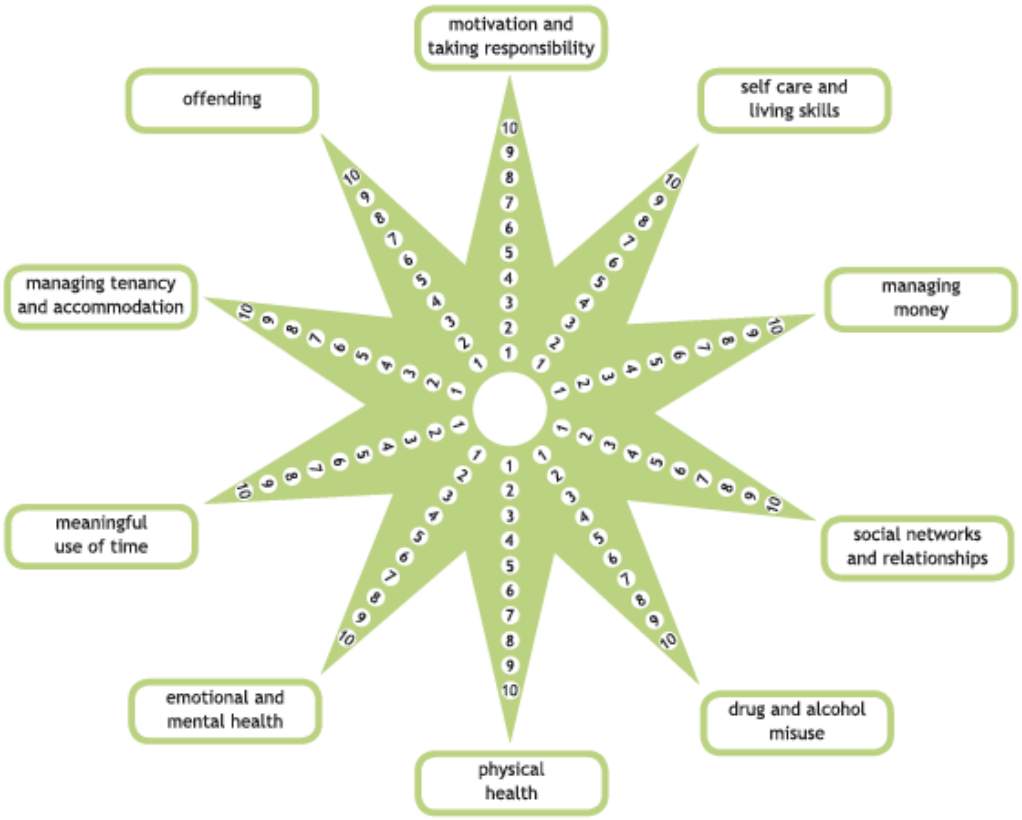
STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

The Warwick-Edinburgh Mental Well-Being Scale was funded by the Scottish Executive National Programme for improving mental health and well-being, commissioned by NHS Health Scotland, developed by the University of Warwick and the University of Edinburgh, and is jointly owned by NHS Health Scotland, the University of Warwick and the University of Edinburgh.

Appendix 5 - The Outcomes Star™ assessment

The diagram below illustrates the components of the Outcomes Star™ assessment. For further information, please see the user guide to the Homelessness Outcomes Star™, available online at: www.outcomesstar.org.uk/homelessness



The Outcomes Star™ is a suite of tools for supporting and measuring change when working with vulnerable people. There are 14 versions of the tool, including the homelessness star used in MEAM pilots. The Outcomes Star™ was developed by Triangle Consulting Social Enterprise Limited. Further information is available at http://www.outcomesstar.org.uk.

Appendix 6 – Detailed service use data

Table 11: Average monthly service use costs in Cambridgeshire (n = 13)

	Average monthly cost per client (£)			
	Baseline	**Year One**	**Year Two**	**Increase / (reduction) from baseline to Year Two**
Arrests	1,463	934	423	(1,039)
Attended magistrates court	334	239	285	(49)
Attended crown court	79	87	79	0
Other crime costs	227	241	443	216
Recorded offending	**2,103**	**1,501**	**1,231**	**(872)**
Drug and alcohol treatment	30	43	21	(9)
Rehab and Detox	0	0	124	124
Other drug and alcohol costs	107	147	0	(107)
Drugs and alcohol	**137**	**189**	**145**	**8**
Visit to GP	34	29	44	10
Nights in hospital	47	28	32	(15)
Visited A&E	69	81	65	(4)
Nights in mental health hospitals	514	946	439	(76)
Other health and mental health costs	118	128	103	(15)
Health and mental health	**782**	**1,213**	**683**	**(99)**
Nights sleeping in a direct access hostel	0	113	58	58
Nights sleeping in second stage supported accommodation	395	236	87	(308)
Own social tenancy	200	48	298	98
Other housing costs	8	41	167	159
Housing	**604**	**438**	**610**	**6**
Total	**3,625**	**3,342**	**2,668**	**(958)**

Table 12: Average monthly service use costs in Derby (n = 7)

	Average monthly cost per client (£)			
	Baseline	**Year One**	**Year Two**	**Increase / (reduction) from baseline to Year Two**
Arrests	761	1,276	358	(402)
Attended magistrates court	208	232	95	(113)
Attended crown court	0	0	270	270
Other crime costs	176	463	189	13
Recorded offending	**1,145**	**1,971**	**913**	**(232)**
Drug and alcohol treatment	85	108	45	(40)
Rehab and Detox	0	0	0	0
Other drug and alcohol costs	106	74	30	(76)
Drugs and alcohol	**191**	**182**	**75**	**(116)**
Visit to GP	0	0	0	0
Nights in hospital	171	410	0	(171)
Visited A&E	129	131	0	(129)
Nights in mental health hospitals	151	394	439	287
Other health and mental health costs	52	194	366	314
Health and mental health	**504**	**1,129**	**805**	**301**
Nights sleeping in a direct access hostel	549	389	308	(241)
Nights sleeping in second stage supported accommodation	0	220	163	163
Own social tenancy	58	414	224	166
Other housing costs	610	8	85	(525)
Housing	**1,217**	**1,031**	**781**	**(436)**
Total	**3,058**	**4,313**	**2,574**	**(484)**

Appendix 7 – Unit costs

We have calculated the cost of providing services to the client group based upon publicly available unit cost data from a range of sources. In the tables below we set out the unit costs we use in our analysis.

Some of the unit costs we rely upon were published in 2012. Other costs were published in earlier years. Where this is the case, we have adjusted for inflation using the GDP deflator. For further discussion of this adjustment, please see the Technical Appendix to our First Report.

Due to differences in service provision and wage rates, unit costs vary across the country. We assume national average values in the majority of cases.

Table 13: Criminal justice system unit costs assumed

Service	Unit cost	Basis	Source
Arrest	£2,149	£1,930 plus inflation.	Think Family (2010), page 10.
Other police contact	£17	We use this category for police cautions, contact with the police as a victim of crime, contact with probation officers and any other police contact. We assume that other police contact comprises one hour of a police constable's time. The average police constable's salary is £31,032 (pay band 5). We assume that the average constable works for 40 hours a week, 47 weeks a year. One hour of a police constable's time therefore costs approximately £17.	Winsor (2011). Table 1.1.
Magistrates court attendance	£1,003	£760 plus inflation. This compares to £746 stated in Think Family (2010).	Home Office (1999), page 2.
Crown court attendance	£11,344	£8,600 plus inflation. This is an average cost for both guilty and not guilty pleas across all indictable offenses. This compares to £10,858 stated in Think Family (2010).	Home Office (1999), page 2.
Nights in prison	£74	We calculate this figure from an annual figure of £26,978, which is an average cost across a prison population of 84,753 individuals. This estimate includes direct resource expenditure only. It excludes overheads met centrally by the National offender Management System, for example property costs (including depreciation), major maintenance, prisoner escort and custody service and central HQ overheads. Our estimate compares to costs of: (1) £113 stated in Think Family (2010); (2) £65 (£23,700 per annum) for a male local prison stated in SEU (2002); (3) £102 (£27,343 per annum) stated in the HMPS annual report and accounts 2007-2008, Appendix 5 – Statistical Information; and (4) £99 (£36,268 per annum) in Home Office (2002). Some of these comparable figures may include indirect costs.	NOMS (2011), page 4.
Nights in police custody	£74	We assume the same unit cost for a night in police custody as for a night in prison.	N/A

Table 14: Health unit costs assumed

Service	Unit cost	Basis	Source
Visit to GP	£36	The average cost of an 11.7 minute surgery consultation. This figure excludes qualification costs of £6.	Curtis (2012), page 183.
Visit to A&E	£269	We have assumed that 50% of A&E visits require an ambulance. The national average cost of an accident and emergency treatment not leading to admission. We have therefore added 50% of the cost of an ambulance call out.	Curtis (2012), page 109.
Outpatient appointment	£163	The national weighted average of all outpatient procedures.	Curtis (2012), page 109.
General contact with the community mental health team	£39	NHS reference costs figure.	Curtis (2011), page 200.
Intervention from CMHT (therapy session)	£104	We use the cost of a CBT session.	Curtis (2011), page 94.
Nights in hospital	£294	The NHS Institute for Innovation and Improvement website states that the bed day cost used by health organisations and the Department of Health is generally between £250 and £300 (in 2009 terms). This estimate includes fixed overhead costs of heating, lighting, laundry and provision of food for the patient occupying the bed, and an average cost for medicines and staff. We adopt the midpoint of this range and apply inflation. This compares to an excess bed day tariff of £308 (NHS 2011).	NHS Institute for Innovation and Improvement website.
Nights in mental health hospitals	£376	The weighted average of all adult mental health inpatient bed day costs.	Curtis (2012), page 47.

Table 15: Drug and alcohol treatment unit costs assumed

Service	Unit cost	Basis	Source
One-to-one contact with drug /alcohol team	£49	We use the cost of a 55 minute clinic consultation with an alcohol case worker in A&E (excluding qualification costs of £7) as a proxy.	Curtis (2012), page 69.
Group contact with drug/alcohol team	£14	We use the cost of a group CBT session of two hours with twelve participants as a proxy.	Curtis (2012), page 57.
Week on substitute prescriptions	£53	Total cost of substitute prescriptions for one week.	Curtis (2012), page 68.
Nights in inpatient detox and rehab (drugs or alcohol)	£122	Curtis (2012) provides two possible reference points for the cost of a night in a detox or rehab centre: (1) The average cost of a detox unit across both NHS and voluntary organisations. (2) The average cost across 34 residential rehabilitation centres. We did not distinguish between detox and rehabilitation in our data collection and therefore we use the average value in our analysis.	Curtis (2012), pages 66 and 67.

Table 16: Housing unit costs assumed

Service	Unit cost	Basis	Source
Rough sleeping	£0	We assume that there is zero cost associated with rough sleeping. In reality, lack of accommodation might result in health and crime costs to society possibly not captured in the data we have collected (for example if they do not result in a hospital appearance or police intervention).	N/A
Direct access hostel (night)	£48	We use the figure for 'homeless single people in temporary accommodation' from the Capgemini evaluation of the Supporting People Programme. This category includes people in "homeless refuge, homeless hostel, B&B or other temporary accommodation". We calculate a daily unit cost from an annual figure of £16,085 (including £8,283 support costs and £7,802 housing costs).	Ashton and Hempenstall (2009), pages 144 and 151.
Second stage supported accommodation (night)	£27	We use the figure for "homeless single people in settled accommodation" from the Capgemini evaluation of the Supporting People Programme. This category includes people in "supported lodgings, supported housing, floating support, accommodation based-service or teenage parent accommodation". We calculate a daily unit cost from an annual figure of £9,019 (which includes £4,973 support costs and £4,046 housing costs).	Ashton and Hempenstall (2009), pages 144 and 150.
Own social tenancy (week)	See right	We use the average 'eligible' rent as at February 2012 for a one bedroom property with a Local Authority landlord, adjusted for inflation. Cambridgeshire: £72.59 Derby: £61.49	Local Authority figures.
Own private rented sector tenancy (week)	See right	We use Local Housing Allowance rates for one bedroom properties as at February 2012, adjusted for inflation. Cambridgeshire: £115.38 per week Derby: £84.23 per week	DirectGov and the Valuation Office Agency.
Room in shared private rented sector property (week)	See right	We use Local Housing Allowance rates at the single room rate as at February 2012, adjusted for inflation. Cambridgeshire: £76.19 per week Derby: £53.00 per week	DirectGov and the Valuation Office Agency.

Appendix 8 - List of sources

Ashton and Hempenstall (2009), Research into the financial benefits of the Supporting People programme 2009, Capgemini, for Communities and Local Government, London.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/16136/1274439.pdf

Curtis (2012), Unit costs of health and social care 2012, University of Kent.
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