family mosaic

HOW TO TAKE CONTROL

A how-to guide for housing research into health

June 2015

Family Mosaic: an introduction

Family Mosaic is one of the largest housing providers in London and the South East.

We provide affordable homes to rent and buy as well as services to thousands of people who need extra support.

We have around 25,000 homes for rent and serve more than 45,000 people.

We provide a range of opportunities for our customers such as training, employment and access to learning.

We partner local communities to make our neighbourhoods better places to live.

www.familymosaic.co.uk

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How to take control

If we as housing providers want to be taken as serious partners to those working in health, we need to build a strong, credible evidence base, using consistent, high quality methodologies.

As a sector, we need to be able to demonstrate the value of our work – which is often inventive and pioneering – by being able to evidence data, and not just point at a pile of heart-warming case studies.

Our pilot study, *Health Begins At Home*, is using a randomised control trial (RCT) to collect evidence that will make our case to the health sector. RCTs are designed to generate reliable diagnoses of the impact of interventions. They are most widely associated with testing new medical treatments or drugs.

We hope this guide will support other social housing providers to gather evidence of the impact they can have, and have had, in improving the health of their residents through housing.

SUMMARY

In 2013, we developed a new service model to improve the health and wellbeing of our older residents, and reduce NHS costs in the process. To understand whether it works, we've been running a randomised control trial in collaboration with the London School of Economics.

The trial involves 546 tenants, all of whom are over 50 years old and live in London. Each had their health assessed before joining the study, and then again at 9 and 18 months into the study. Each has been assigned to one of three groups:

- control group: the tenants receive no additional support;
- group two: tenants have quarterly meetings with their neighbourhood manager, and are signposted to relevant available health and wellbeing services;
- group three: tenants have full support from an assigned health worker, with regular personalised support meetings, which might include being accompanied to attend relevant local health and wellbeing services.

This approach enables us to conduct a rigorous analysis of the impact of this new service, from a more scientific perspective. We want to be able to generate a robust evidence base about the role housing can play in supporting the health of our residents.

Social housing providers are good at developing new services for their residents and their communities. As a sector, however, we're not good at capturing the outcomes of these services, and evaluating their impact in a robust, methodical manner. At a time of austerity, it is vital we know which services work, and which don't, so we know how to best invest our resources.

If we want to be taken seriously as partners for the health sector, we have to be clear about what we can do, and what we can't. And this has to be backed up by a strong, credible evidence base, built using high quality methodologies.

In the spirit of transparency and shared learning, this report is a practical explanation of the approach we used for this research. Our hope is it might serve as a platform for housing providers to work together in making a more robust, evidence-based case for the impact they can have on health, and the lives of their residents.

DESIGN PRINCIPLES

The most important part of any research is designing it right. While there are many different ways of designing a research study, one way surpasses the others empirically: the randomised control trial (RCT).

That's not to say other research methods don't have their place: sometimes presented as a hierarchy of evidence, each approach has its own value (figure 1 - see also the Scientific Maryland Scale, which offers a more detailed breakdown of what is required in terms of causal evidence). Anecdotal or case study evidence, for example, can provide real life insights into an individual's experiences. What they cannot robustly demonstrate is what causes what: in other words, does the intervention work?

When it comes to understanding the impact of housing on health, that's what we're most interested in. Indeed, it is not just the impact on health that this methodology can be applied to, but all services that housing providers offer.

With an RCT, you split your sample – the group of people participating in your study –into different groups on a random basis. At the minimum, you will have two groups: the intervention group, and the control group. The former will comprise people in receipt of the new service or initiative you're testing (for example, a handyperson service); the latter will continue to receive the existing service (i.e. they won't receive the service you are testing).

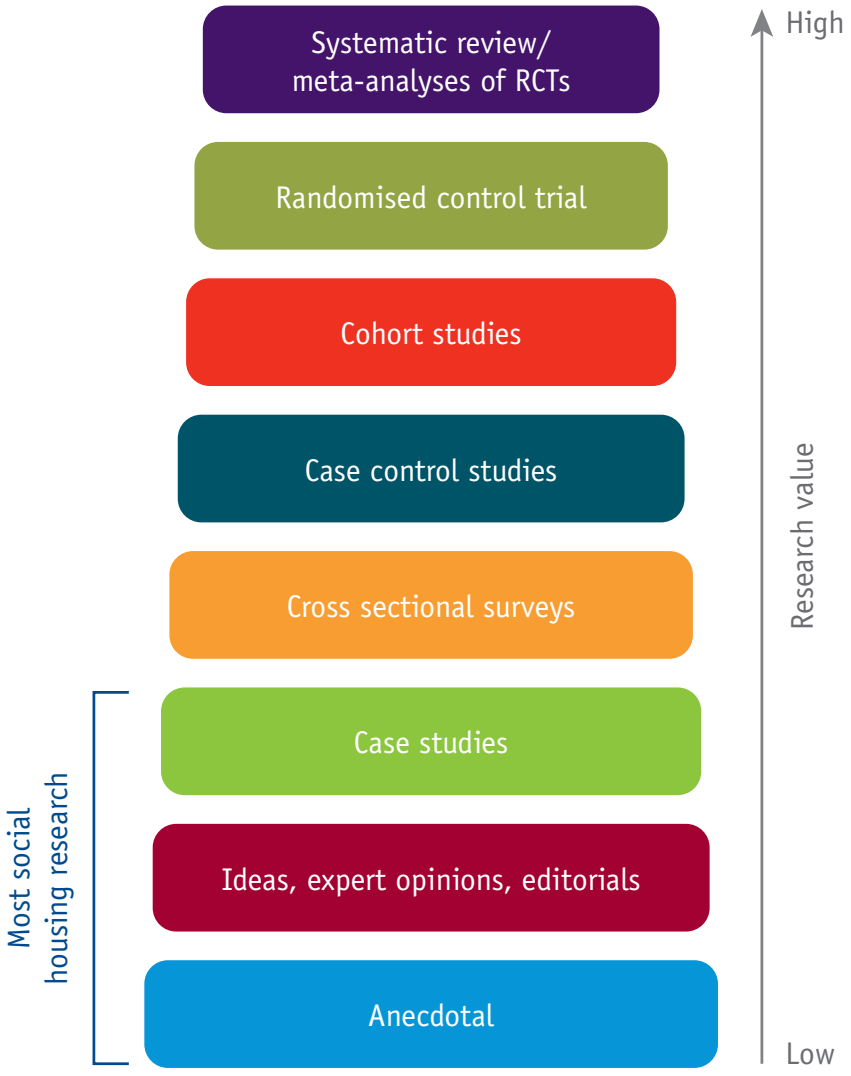
Our research has three groups:

- group 1 (control group): receiving no extra support;
- group 2 (part intervention): receive signposting support from their neighbourhood manager;
- group 3 (full intervention); receive intensive support from a specialised team.

All these groups should be assessed over time: you need to conduct a baseline assessment of their health, so you know where they're starting from, and then assess them again to see if anything has changed. If you just assessed the difference your new service or initiative made on people receiving the service, you might note some change over time.[1] So you might conclude that your intervention has made a difference.

1 - as long, that is, as you use a pre-post design: see page 20 for more on this.

Figure 1: Hierarchy of evidence



There might, however, have been a range of other factors that have affected your results: perhaps the delivery of local health services improved; or maybe there was an improvement in transport networks, so people found it easier to access community services. Maybe the weather was better. Some, or all, of these factors might have had an impact on your final results. Or they might be the sole reason why there was an improvement at all.

A control group, however, overcomes this uncertainty. Your control group will be affected by all these other factors, whether the improved transport networks or more effective delivery of local health services. What they won't have experienced is the new intervention you're testing.

By comparing how the control and intervention groups change over time, you can see whether the latter reacts in a different way (i.e. whether the change in the intervention group is greater or smaller than the control group). If they do, then you can say with much more confidence that your intervention was the cause of this.

Challenges for the housing sector

As a sector, we do research, but it tends to be limited in its scope: we conduct a study on a new service, carry out an evaluation and apply the lessons we've learned. For those working in health, it's a different ball game. If RCTs are the gold standard, then systematic reviews and meta-analyses are platinum (as long as the RCT evidence they're assessing is of top quality).

If the social housing sector wants to demonstrate its impact to its health partners, we will need more than our solitary study, RCT or not. We will all need to use robust methodologies when we evaluate services, so we can build a collective evidence base demonstrating the tangible difference housing can have on health.

For some in housing, though, RCTs may not feel appropriate. Our focus is on improving people's lives, and providing support to whoever we feel most needs it. How, they may say, can we prevent a group of people from receiving a service that could benefit them, just for the sake of research? How could we turn them away?

RANDOMISED CONTROL TRIALS: THE BENEFITS TO YOUR ORGANISATION

- Provides guidance as to how to develop and refine the service offer.
- Identifies what works, and what doesn't work.
- Evidences the most cost effective approach to use.
- Demonstrates whether the new initiative represents value for money.
- Provides robust evidence of impact in order to justify further investment.
- Raises awareness of your work, both internally and externally.

Reconciling operational priorities to support those in need with research priorities of retaining the integrity of a specific project is a challenge. It requires flexibility, and an ability to respond appropriately to issues that might arise during the research period.[2]

Some providers already develop services in a similar manner to the RCT model: they try a new service out in one area first and, if it's successful, roll it out more widely afterwards. In those areas where the new service isn't introduced, you have a ready-made control group (although there are a few caveats to this approach, see pages 18-19).

Another benefit of using an RCT is financial, allowing us to identify whether a service is working, so we know whether to invest our money into it or not. The testing, learning and adapting model also helps us to apply the evidence from the research to create the most cost effective service, something of particular relevance in an era of austerity.

2 - Our research was initially designed with three sample groups. We realised we needed a fourth group because of the severe level of health needs of some of the participants. See page 18 for further details.

RESEARCH ISSUES

The value of working with local health bodies cannot be underestimated, especially clinical commissioning groups (CCGs) and directors of public health. Hackney and Islington CCG both sit on our project board, and are closely involved in the research. Sharing knowledge and expertise has helped to foster understanding as to how housing and health operate. It has also given us access to invaluable resources, like community nurses.

Data issues

The research would have benefitted from access to aggregated, group-level anonymized NHS data. Unfortunately, despite gaining consent from the research participants to access and share anonymized data, we weren't able to access it. Partly this was a question of timing: our study started in the midst of the recent NHS restructure where responsibility for data handling was unclear. Accessing this data may be a challenge, but it will hugely benefit future research.

Language issues

One key challenge that crops up repeatedly for health and housing partners is the communication chasm between us. Sometimes it can feel like we're speaking different languages.

For health sector professionals to take us seriously, we need to get to grips with their terminology. RCTs are one way of doing this: they are, after all, the preferred design of clinical research. When we use RCTs to prove impact, we're starting to speak the same language.

Simultaneously, we also need to design our research aims so they align with NHS and public health objectives, which have been summarised by the National Housing Federation as being:[3]

- outcomes – what has changed?
- impact – what difference will these changes make?
- cost-effectiveness – is it worth the financial investment? And how does it compare to other services that are available?

Using RCTs to demonstrate these three objectives is an essential first step in getting the right quality, and right type, of evidence which will, in turn, help us get our foot in the health sector door.

3 - See "Prescription for Success: How housing can make the economic case to health"

Figure 2: The three stages of a randomised control trial

As outlined in the Cabinet Office Behavioural Insights Team's paper, **Test, Learn, Adapt: Developing Public Policy with Randomised Control Trials**

STAGE 1: TEST

Designing the project
The first step in any research is to define exactly what you're researching. This might sound obvious, but a lack of precision at this stage can make or break your whole project.

Ask yourself three questions:

- what do you want to find out?
- what intervention or service do you want to test?
- what outcome are you hoping for?

This is what we wanted to find out:

> How effective were two different levels of intervention in improving the health and wellbeing of residents aged over 50 years old?

We were also hoping to see an additional outcome: a reduction in NHS usage, in order to save the NHS £3 million a year, as we had outlined in our *Health, Wealth and Wellbeing* manifesto in 2012.

Our next step was to develop this question into a hypothesis (see box). This is a statement or possible answer you will test throughout your research.

DESIGNING YOUR PROJECT:

NULL & ALTERNATIVE HYPOTHESES

Our **null hypothesis** (which is set up to be rejected, as we can never 'prove' something is true without observing all possible cases in all possible scenarios):

> The health and wellbeing service provided to the treatment groups will return no significant mean differences in mean health score for the dependent variables between the two treatment groups and the control group.

Our **alternative hypothesis** (which outlines the direction we hope the results will go):

> The health and wellbeing service provided to the treatment group will return a significant mean difference in mean health score for the dependent variables between the two treatment groups and the control group.

NB - not disproving the null does not mean it is true: you might just not have enough evidence to reject it.

Your research question might be a bit more focused than ours. For example, you might want to test your home improvement or adaptations service and see what impact it has on reducing the number of falls in the home amongst your residents over 70 years old.

By being specific, you can develop your null and alternative hypotheses in the knowledge that you are clear about what your research is trying to find out. If you can't write your null and alternative hypotheses, then it's probably a sign that you need to rethink your research question.

Picking your sample

You're most likely not going to be able to test your whole tenant population, so the next step is to pick your sample.

First, there's the issue of size. If your sample size is too small, then you may not have sufficient data to capture any significant changes. Ideally, the sample size should be as large as possible, so you end up with statistically robust findings.

One way of determining the sample size you will need for your research to generate statistically significant results is to use a simple power calculation (see appendix 1).[4]

The second issue to consider when picking your sample is defining who your participants will be. This will depend on your research question. Who will be receiving this new service? Your residents? Are there particular demographics you're focusing on? Are you looking at a particular geographical area?

The final consideration is to think about how you will randomise your participants. Will they be randomly assigned to the different groups? Or will they be grouped together by area, or by treatment centre?

This is a vital consideration when it comes to the analysis stage. Choosing to randomise your sample by group might be more convenient, but is less efficient data-wise.

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4 - in this context, significance refers to the likelihood the results occurred as a product of the particular intervention, rather than by chance.

MONEY MATTERS

Before you go any further, take a reality check: do you have the financial and staff resources to carry out this research?

RCTs can be expensive, especially when they involve setting up a new service to evaluate. To reduce potential costs, you can:

- *make the most of the skills you already have:* as a care and support provider, we used our knowledge and experience in developing a team of health support workers. How can you use your existing skills or staff experience in the service you want to test?

- *access service grants:* while local commissioners are unlikely to fund the research, they are more likely to take an interest in funding your service if you'll be conducting robust impact assessments of the service;

- *access research grants:* link up with local academic partners to access grant funding. It won't pay for the service, but it might help you to buy-in any research skills you need.

- *find a suitable partner:* by collaborating with local authorities or other housing providers, you can share the costs of developing and evaluating a service.

However, if you have a service already running and some in-house research skills, they can be low-cost. RCTs should be extremely cost effective. By robust evaluation, and finding out what works, and what doesn't, we can assess whether the service is working effectively and worth the money we are investing.

Another way of looking at it – as the Cabinet Office's Behavioural Team suggests – is to ask, what are the costs of not doing an RCT?[5] In other words, how much money might we be wasting on a service if we don't do an RCT?

5 - Laura Haynes, Owain Service, Ben Goldacre, David Torgeson, "Test Randomised Controlled Trials", Cabinet Office: Behavioural Insights Team

DESIGNING YOUR PROJECT:

ETHICAL ISSUES

One step we took to minimise the risk of harm to participants was a protocol during the initial health screening phase for people in group 1 and, in some cases, group 2.

If we identified anyone from these groups who had a severe health need, we would move them over to group 3, where they would receive a suitable level of support.

We couldn't, though, just include these people in the group 3 analysis, as this would skew the overall results. They hadn't, after all , been placed there randomly.

So we decided that anyone who was moved out of groups 1 or 2 for health reasons would be placed into group 3b. They would receive the same treatment as group 3 participants, but would not be included in our final analysis.

It will require a few additional steps when you analyse the results and an adjustment to the power calculations. This removes the effects these pre-defined groups might have on the outcome.

Getting approval

To make sure your RCT conforms to the correct research standards, you'll need to ask a professional body to review it.

The first area you'll need to focus on is ethics: RCTs come with a host of ethical concerns. For example, the use of a control group means some people will be excluded from receiving a service that could benefit them. This needs to be carefully justified.

Similarly, you will need to consider issues around confidentiality and informed consent in the handling and analysis of sensitive data. You'll also need to be clear about the steps you're taking to reduce any potential harm to the participants.

It's essential to get ethics approval before you start your research. One effective way of doing this is by partnering with a local university, and then applying for

ethics approval from their in-house committees. Or they might signpost you to research committees, and support you through the process.

If you intend to gather NHS data, such as GP or hospital usage, then you might need to apply for specific approval. You can check whether you'll need this through the integrated research application system.[6] This rigorous process can take several months to complete, so you should consider this well in advance of your planned start date.

Partnering with a university is not only an effective way to get ethical approval for your study, it's also hugely beneficial in producing credible research whose outcomes are more likely to be respected by people working in health.

By partnering with the London School of Economics, we know our research is robust and credible. Once the research is finished, we will make it available for peer review and publication in academic journals, helping to promote social housing as a respected source of credible scientific evidence.

6 - See www.myresearchproject.org.uk

Sample and allocation

To be able to make robust statements about causality and significance, your sample should be as unbiased and representative as possible of the broader target population.

Probability sampling methods allow each member of the population you're studying to have an equal chance of being included in the research. One way is to pick out residents at random from a list. One way not to do this is to pick residents who happen to be visiting your office.

For a sample of 100 people, begin by compiling an alphabetical list of the eligible participants. Then, assign each a random number before picking out the highest or lowest 100 numbers. Pick a few spares: if any of the first 100 don't want to take part, you'll have a randomised back up available.

It is, of course, always possible that even with this random sampling technique, there will be an element of self-selection. When people refuse to take part, for example, this can start to jeopardise the random nature of your selection.

DESIGNING YOUR PROJECT:

REPRESENTATIVE SAMPLING

71%

of residents in our initial scoping survey reported one or more long term health conditions

92%

of residents in our research study reported one or more long term health conditions

It's also worth bearing in mind how representative your sample actually is, as this might affect your results and the veracity of your findings. We're aware that our sample group have particularly high health needs (see box). So we hope that if the new service can make a difference to our research participants, then it should be able to make an impact with our wider population of residents who are over 50 years old.

To be able to do this, though, you'll need to have an understanding of the average health status of your target population (in our case, residents over 50 years old).

An initial scoping study is one way of doing this. You might also be able to use the information that your local Health and Wellbeing Board publishes about the general health status of the local population as a point of reference.

Recruiting your participants

Once you've finalised the list of potential participants, your next challenge is to get them to participate. It's not an easy process. These are some of the lessons from our research project:

- *manage the message:* one key difficulty in recruiting people is that some would be in the control group and wouldn't receive the proposed service. You have to manage people's expectations when you're recruiting them and ensure you have their full consent to participate in a study where they may not receive a service.
- *be realistic:* initially, we aimed to have 600 people from two areas in our study. We ended up with 546 participants from five local authorities. We had to contact 3,000 people to get this number.
- *recruitment takes time*: it took us 18 months to recruit 546 people. We hadn't expected this. Next time, we'll include this in our project plans.
- *door knocking works:* trying to recruit people by phone or post had limited success. It was only by visiting people in their properties that we were able to get more people to sign up. This was especially the case for our most vulnerable residents.
- *incentives can help:* to encourage participation, be clear about the benefits of taking part. We had two: financial incentives (two

DESIGNING YOUR PROJECT:

RECRUITMENT ISSUES

Here's an extract from the recruitment script we used when visiting potential participants in their homes:

> "As a resident of X, we invite you to take part in a study which will look at different aspects of your health over 18 months.
>
> Some people taking part in the study will receive some extra health services, while some will not.
>
> At the end of the study, we will test to see which health interventions have helped to improve health. If we can show that the service works, then we can expand it more widely."

DESIGNING YOUR PROJECT:

THE CASE OF MR A

We met Mr A as we were door knocking for our recruitment drive. His property was in a poor state. He told us initially that his main difficulties were to do with finances.

As we were going through his health assessment, however, it became evident that Mr A had a number of health issues and long term health conditions which were not being managed.

He wasn't registered with a local GP, despite having sickle cell anaemia. Instead, he was attending A&E every time he was in crisis.

He was given an allocated support worker, who helped him register with a local GP. The support worker also gave him information about his condition and referred him to our welfare rights team. He is now receiving the correct benefit and is reducing his rent arrears.

£25 shopping vouchers, and entry into a £500 prize draw); and the opportunity to be part of a new research project.

Random allocation
As well as using randomisation to get our sample population, we also use randomisation to create our different research groups. This is what makes this research a randomised control trial. If your unit of randomisation is areas, or groups, as opposed to individuals, the same principles should apply.

In our study, we conducted the initial baseline health assessment before we assigned the grouping. This meant we were able to move participants to our 3b group if they had serious health problems, and recalibrate the randomisaation to make sure there was equal assignment to each group. We maintained the randomisation throughout the study, so if anyone started to present severe health needs, and required additional support, we removed them from the study and moved them to group 3b.

We used a simple random number generator to randomise allocation,

removing the possibility of interference or bias.

Getting the data

A well-designed assessment is the foundation of any successful RCT. Your first step is to know exactly what it is you want to find out, or what outcome you want to measure.

It's a good idea to use standardised, established measures, because:

- the more they've been used and tested, the more likely they are to be robust and credible – and to produce credible results;
- you're more likely to find national or local level data around these metrics, meaning you can produce comparative assessments of your findings.

In our research, we have used established measurements of wellbeing, such as the Office for National Statistics and the Short Warwick-Edinburgh mental wellbeing scale. We also used questions from the census 2011 around self-reported health.

Having determined what to ask, you'll then need to ascertain when to ask the questions. Crucially,

DESIGNING YOUR PROJECT:

DATA ENTRY RULES

A well-structured, consistent method for recording data is invaluable.

As far as possible, all data should be recorded electronically and in a standardised format.

Data entry options for individual questions should be restricted.

So, for example, if the response to a specific question should be a number, then the data entry system should be set up so that only numbers can be entered.

Your aim is to create a clean data set that can be analysed with ease.

your research should be planned in advance, because you need to have a baseline measure in place. This is a measure of your participants' health status before they participate in the study. If you don't have this, you can't capture the full impact the new service has had.

This approach is called pre-post design. You assess your participants immediately before they take part in the study, and then immediately it closes.

In our study, we have been assessing our participants at three intervals: at the beginning, after nine months and then at 18 months. Our aim was to build a picture of how people's health changed over this 18 month period.

The middle assessment had some unexpected benefits. It acted as a checkpoint, so we could see how the assessments were working, learn from this and adapt our final assessments. We were able to implement these before it was too late.

The third step in getting the data is how to ask the questions. Assessments should be conducted with as much objectivity as possible. This is why we carry out all of our assessments blind: this means the assessor does not know which group the participant is in, and stops them from expecting certain results according to the group the individual is in.

This expectation might influence the way the assessor interprets the participant's responses. By removing this knowledge, we remove the potential risk to the integrity of the results.

Speak to me

Whilst the randomisation and hard data might allow you to establish causality, it might not be able to tell you why you're getting the results.

In other words, what was it about the intervention that actually led to these results? Here, some more qualitative investigation will be key, through interviews, focus groups and other ways of enabling participants to divulge their experiences. This will be central to the future learning and adapting that you undertake.

STAGE 2: LEARN

Analysing the data
When it comes to analysing the data, we need to go beyond means and percentages, and use a realm of analysis called inferential statistics. This is where statistical significance comes into play: it will help us establish how likely it is that the results occurred because of the intervention rather than as a result of chance or random variation.

To get to this level of statistical detail, though, you may need to buy external expertise, or to tie-in with your in-house research and analytics teams. If, though, you can demonstrate significant changes, then you're half way to making a strong case about the role of housing in supporting health.

The fundamental aim of our research has been to assess the value of the interventions we've made by examining their ability to produce statistically significant changes in health. We have an additional, more practical aim: funding. As funding from sources like Supporting People reduces, we need to make the case for financial investment in our services, so housing continues to be commissioned as service providers.

We don't just need to show that our interventions work: we also need to demonstrate how cost effective they are. With NHS funding diminishing, it is increasingly important that we can use our research to make our case.

Here you need to assess multiple factors, such as:

- what costs to the NHS are you preventing or reducing?
- how much are your services costing to provide?
- if you're providing multiple different services, which is the most cost effective?

In order to do this, you must keep a track of the costs of providing the intervention.

A common measure used in measuring the cost utility of interventions is QALYs (Quality Adjusted Life Years). These assess the quality and quantity of life produced by an intervention. A degree of health economics expertise is required for such calculations. You may be able to source this expertise from any academic partnerships you've established.

STAGE 3: ADAPT

Applying the learning
Once you've analysed the data, and publicised your findings, you need to think about their implications for your service.

If the service is shown to be cost effective, don't just stop there. Examine the data in more detail: which element of the service was the most cost effective? Which element was the least? It's unlikely that every element of the service was perfect. By digging deeper into the data, you can improve and refine the service.

What, though, if the findings show the service isn't working well? What should you do then?

Again, examine the data in more detail. There may be elements of the service that are working, but others that are not, and it might be that the latter elements are having a greater impact on the overall result. Or was the research design at fault: did, for example, you have a large enough sample size to capture significant results?

If you're confident the RCT was well designed and was a fair test of whether the new service or intervention worked, and the data shows that it wasn't, then the RCT wasn't a waste of time. Far from it.

Finding out a service isn't working effectively, or achieving your intended outcomes, is just as valuable as finding out a service works. It provides a real, albeit challenging, opportunity for you to consider how you can re-allocate your resources or refine your service to make it more effective.

Making use of your qualitative research might also help make such decisions, and to understand why the interventions didn't result in any significant improvements.

It is, after all, worthwhile reminding yourself of the question we posed earlier: "what are the costs of not doing an RCT?"

APPENDIX

Power calculations

In order to calculate the sample size you need to carry out a study which will yield statistically significant results, you require three key figures:

- Alpha (chance of Type I error): usually set at 0.05.
- Power (1- chance of Type II error): usually set at 0.8.
- Effect size (expected change caused by intervention): can be found from two key sources: pilot study results or published findings from similar studies. You can calculate the power with online tools like G* Power or DSS power calculator.

There is a general lack of literature which explores the effect sizes in results from similar health studies. As such, whilst not ideal, Cohen's guidance on which effect sizes to use can be taken as starting point:

- Small effect size: 0.20 (sample size required: approximately 310 per group).
- Medium effect size: 0.50 (sample size required: approximately 51 per group).
- Large effect size: 0.80 (sample size required: approximately 21 per group).

So, erring on the side of caution, and estimating a small-medium effect, you would need roughly 100 participants per group. It is worth working with an academic to carry out these calculations accurately as the considerations are slightly different dependent on whether you randomise by individual or group.

Whilst it then may be tempting to aim for a very high sample size, this will simply result in very small effects, or changes, demonstrating as significant, when in reality, such small changes aren't of real clinical or real-life significance. You therefore need to consider these effect sizes in light of the cost of the interventions being provided; a small effect size may be more justifiable if the intervention is low cost, or indeed even your business as usual approach.

If our study yields statistically significant results at the 18 month point, we will be able to use the effect sizes from our study as a basis for estimating expected effects we can have in future.

This report has been endorsed by:

We are grateful for the advice, support and insights provided by the health pilot project board members:

Public Health Hackney
Public Health Islington
London School of Economics

For further information contact Joanna Birch:
T 020 7089 1046
M 07960 821 007
E Joanna.Birch@familymosaic.co.uk

Research by Jemma Mouland

Edited and designed by Matthew Grenier