

Relational Participant Management Databases: an in-house development approach

For researchers considering investing in in-house information technology capacity, this Methodology Bits shares guidelines and tips used by the C-UHS Survey Research Unit (SRU) when developing participant management databases for our projects. The aim of a participant management relational database is to develop a flexible structure that functions as a relational platform for primary data collection operations and reporting.

What is a relational database?

It is a set of structured tables linked by a common ID number (e.g. participant ID). Its relational structure allows us to identify and access data in relation to another piece of data in the database without having to reorganize the database structure. This way you can easily produce reports and queries based on information from multiple tables. For example, you might want to report on research participants by randomization group.

When should you use a relational participant management database in research?

They are most crucial for research projects that have a large number of participants, multiple points of contact, a complex intervention, and/or if the research population is hard to reach and requires several points of contact.

What are the advantages of participant management databases?

Among other things, a database can help you: (a) organize large amounts of data in a user-friendly format, (b) organize staff communications, (c) tailor participant recruitment strategies, (d) streamline scheduling and reporting, (e) achieve high recruitment and follow-up rates.

What are the advantages of in-house development?

It tends to be more cost effective since research projects rarely follow a predictable pattern and databases require frequent timely updates.

Participant ID	First name	Last name	Gender identity	...
4003	Melanie	Klein	Female	
4004	Sigmund	Freud	Male	
4005	Carl	Jung	Male	

Participant ID	Home phone	Cell Phone	Email	...
4003	416.456.9216			
4004		647.596.5216	FreudS@gmail.ca	
4005	647.258.3216	647.987.3156		

Participant ID	Contact reason	Contact date	Contact Outcome
4003	Baseline Survey	12-Aug-2018	Interview scheduled
4004	Contact info update	05-Oct-2017	Phone number updated
4005	12-month survey	25-May-2018	Left voice message

What are the disadvantages of relational participant management databases?

The most common disadvantages are (a) the amount of maintenance and updates to the design, (b) if outsourced; it can be costly and may not be as useful if you are unable to have it updated in a timely manner.

Important: You should understand that your database is only as strong as your operator. A well designed database will not generate useful information unless data is being entered accurately. Strong staff training and on-going monitoring and support should be a built-in and expected process. Staff with a high capacity for attention to detail are ideal candidates for database related work.

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Information that can be hosted in a secure relational participant management database:

Starting with the basics, you would usually record **participant demographics** such as name, date of birth, gender identity, etc. You can add layers to the demographic information, for example organization name or neighbourhood/area. You can also add specific demographic information that can help you better engage with participants, such as accessibility needs and language preferences.

A detailed record of **contact information** will also be extremely useful. Past and current contact information should be flagged allowing space for notes and indirect contact information such as a shelter name and/or family and friends' contact information.

A well-organized **contact history** table is essential. This would likely be one of the most frequently used tables in your database. It is useful to include contact date, time, reason for contact and contact outcome. It is also useful to include an open ended notes field.

The participant management database should also record structured information about the **participant's involvement with the study** such as participant status (e.g. recruited into study), data collection history, honoraria distribution history, randomization information, withdrawal information, etc.

Examples of reports you can output from a relational participant management database:

- Reports that assist with project management, such as: recruitment and follow-up rates, interpretation requirements, interview location, interview mode, etc.
- Reports that assist with scheduling, such as reports by: interview due date, type of contact information available, etc.
- Reports that assist with finances, such as: travel tokens and honoraria distribution.
- Reports that assist with Research Ethics Board submissions, such as: case closing information and adverse event reports.

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What development software should I use?

There are many options to choose from. The SRU uses Microsoft Access since it is supported by our organization and offers all the necessary features we need. Some core features to look for include:

- Friendly interface that allows users to have a sense of intuitiveness
- The ability to be used by multiple users at the same time
- Readily available training manuals and videos
- Powerful report and query capabilities
- Ability to password-protect the database
- Ability to host large quantities of information
- Availability of technical support

General Tips

- The database should be set up so that certain tables, fields, queries, and reports can be hidden and locked. This protective feature can prevent users from accidentally deleting valuable information that has been entered into the database.
- Design the forms interface for the primary users of the database. If used mainly for recruitment purposes, design the main form so all the information the recruiters will need (e.g. participant name, contact information, interview history) are organized together and any other information that is not needed for recruitment is kept separate.
- Set field size limits and use formats to reduce both hard-drive storage and data entry error.
- When designing your database, plan to avoid data redundancy (i.e. entering the same information on different tables). This will potentiate the database response time and help avoid computer errors and data inconsistencies.
- Back up your database according to a predetermined schedule (e.g. weekly) to prevent the accidental loss of data.

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