



Matrix Fields



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CHICAGO MEDICINE &
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CENTER FOR
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REDCap Matrix Fields

Q: What is a matrix of fields in REDCap?

REDCap can display a matrix group of fields in either Single Answer format (i.e. radio buttons) or Multiple Answer format (i.e. checkboxes). A matrix allows you to display a group of similar multiple choice fields in a very compact area on a page. This makes data entry forms and surveys much shorter looking. Using matrix fields is especially desirable on surveys because survey respondents are much less likely to leave a survey uncompleted if the survey appears shorter, as opposed to looking very long, which can feel daunting to a respondent. So having compact sections of questions can actually improve a survey's response rate. A matrix can have as many rows or columns as needed. Although the more choices you have, the narrower each choice column will be. Any field in a matrix can optionally have its own branching logic and can be set individually as a required field. A matrix can also optionally have a section header.

(Below is a general example of a common matrix layout. A matrix of fields will look slightly different in REDCap than here on the Help page.)

Rate the following ice cream flavors:

	Hate it	Dislike it	Indifferent	Like it	Love it
Chocolate					
Butter Pecan					
Vanilla					

Q: How do I create a matrix of fields using the Online Designer?

Navigate to the Online Designer and click the "Add Matrix of Fields" button that will appear either above or below each field. It will open up a pop-up where you can set up each field in the matrix. You can supply the field label and variable name for each field in the matrix, and you may also designate any as a required field. You have the option to display a section header above the matrix. You will also need to set the answer format for the matrix, either Single Answer (Radio Buttons) or Multiple Answers (Checkboxes), and then the matrix choice columns. Setting up the choices is exactly the same as for any normal multiple choice field in the Online Designer by providing one choice per line in the text box. Lastly, you will need to provide a matrix group name for your matrix of fields. The matrix group name is merely a tag that is used to group all the fields together in a single matrix group. The matrix group name can consist only of lowercase letters, numbers, and underscores, and the group name must not duplicate any other matrix group name in the project. Once you have provided all the requisite information for the matrix, click the Save button and the matrix will be created and displayed there with your other fields in the Online Designer.

Q: How do I create a matrix of fields using the Data Dictionary?

In a data dictionary, creating a matrix of fields is as easy as creating any regular radio button field or checkbox field. Create your first field in the matrix as either a radio or checkbox field type (since matrix fields can only be either of these) by adding it as a new row in the data dictionary. You must provide its

variable name and form name (as usual), then set its field type as either "radio" or "checkbox". Then set its field label in column E, its multiple choice options in column F, and then lastly in column P you must provide a Matrix Group Name. (The matrix group name is how REDCap knows to display these fields together as a matrix. Without a matrix group name, REDCap will merely display the fields separately as normal radio buttons or checkboxes.) The matrix group name is merely a tag that is used to group all the fields together in a single matrix group. The matrix group name can consist only of lowercase letters, numbers, and underscores, and the group name must not duplicate any other matrix group name in the project. After you have created your first field for the matrix and have given it a matrix group name, you may now create the other fields in the matrix in the rows directly below that field. (To save time, it is probably easiest to simply copy that row and paste it as the next immediate row in the Data Dictionary. Then you only need to modify the variable name and label for the new row.) Once you have created all your fields for the matrix, you can upload your data dictionary on the "Data Dictionary Upload" page in your REDCap project, and those fields will be displayed as a matrix on your data collection instrument. NOTE: All fields in a matrix must follow the following rules: 1) must be either a "radio" or "checkbox" field type, 2) must have the **exact** same choices options in column F, 3) must have the same matrix group name in column P. If these requirements are not met, the "Upload Data Dictionary" page will not allow you to upload your data dictionary until these errors are fixed.

Q: How do I convert existing non-matrix multiple choice fields into a matrix of fields?

Any existing group of radio button fields or checkbox fields in a REDCap project might possibly be converted into a matrix of fields. In order for fields to be grouped together into a matrix, the following things are required: 1) those fields must all be a Radio Button field or all be a Checkbox field, 2) they must have the **exact** same multiple choice options (same option label AND same raw coded value), and 3) they must all be adjacent to each other on the same data collection instrument (or if not, they can be moved first so that they are adjacent). A matrix can be created only if those three conditions are met. The conversion of regular checkbox/radio fields into a matrix of fields cannot be done in the Online Designer but only using the Data Dictionary. To accomplish this, you will first need to download the existing data dictionary for the project, which can be done on the "Upload Data Dictionary" page. Secondly, go to column P (i.e. Matrix Group Name) and provide **every** field that you wish to be in the matrix with a matrix group name. The matrix group name is merely a tag that is used to group all the fields together in a single matrix group. The matrix group name can consist only of lowercase letters, numbers, and underscores, and the group name must not duplicate any other matrix group name in the project. The group name is not ever displayed on the form/survey during data entry, but is used only for design and organizational purposes. The matrix group name can be any value (even an arbitrary value), but it may be helpful to name it something related to the fields in the group (e.g. "icecream" if all the matrix fields are about ice cream). Once you have added the matrix group name in column P for each field, you can upload your data dictionary on the "Data Dictionary Upload" page in your REDCap project, and those fields will now be displayed as a matrix on your data collection instrument instead of separate fields.




Matrix Examples

REDCap can display a matrix group of fields as either Single Answer (Radio Buttons) or Multiple Answers (Checkboxes). The first matrix below displays a group of fields as radio buttons, while the second matrix displays a group as checkboxes. Using a section header is optional when building a matrix. The field labels on the left-hand side of each field will always be given the same width, but the width of each individual choice column will vary depending on how many choices exist. Thus the more choices you have, the narrower each choice column will be.





The following qualities are important in my supervisor:		Extremely Important	Very Important	Somewhat Important	Slightly Important	Not Important at All
1)	BELIEVABLE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> reset
2)	APPROACHABLE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> reset
3)	HONEST	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> reset
4)	SUCCESSFUL	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> reset
5)	QUALIFIED	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> reset


Please let us know your weekly schedule for the following:		Monday	Tuesday	Wednesday	Thursday	Friday
6)	Gym (Weight Training)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7)	Aerobics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8)	Eat Out (Dinner/Lunch)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9)	Drink (Alcoholic Beverages)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Online Designer View

   Matrix group: weekly_schedule

Please provide the patient's weekly schedule for the activities below.

	Monday	Tuesday	Wednesday	Thursday	Friday
 Variable: gym Gym (Weight Training)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Variable: aerobics Aerobics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Variable: eat Eat Out (Dinner/Lunch)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Variable: drink Drink (Alcoholic Beverages)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

 **Edit Matrix of Fields** ✕

You may add or edit a matrix (i.e. grid) of project fields on this data collection instrument by completing the fields below. By providing all necessary info below and clicking Save, the new matrix of fields will be added to the form on this page. A Field Label and Variable name must be provide for each field in the matrix, and you must also set the Choices (i.e. matrix column headers) and answer format (Single Answer vs. Multiple Answers) for the entire matrix. [View a matrix example](#) or [Read more about matrix fields on the Help & FAQ](#).

Matrix Header Text (optional)

Please provide the patient's weekly schedule for the activities below.

Matrix Rows Enable auto naming of variable based upon its Field Label?

Each row represents a different field with its own label and variable name.

Field Label	Variable Name <small>ONLY letters, numbers, and underscores</small>	Required?*
<input type="text" value="Gym (Weight Training)"/>	<input type="text" value="gym"/>	<input type="checkbox"/> ✕
<input type="text" value="Aerobics"/>	<input type="text" value="aerobics"/>	<input type="checkbox"/> ✕
<input type="text" value="Eat Out (Dinner/Lunch)"/>	<input type="text" value="eat"/>	<input type="checkbox"/> ✕
<input type="text" value="Drink (Alcoholic Beverages)"/>	<input type="text" value="drink"/>	<input type="checkbox"/> ✕

Matrix Column Choices

Choices (one choice per line)

0, Monday
1, Tuesday
2, Wednesday
3, Thursday
4, Friday

[How do I manually code the choices?](#)

Other Matrix Info

Answer Format:

Matrix group name: ONLY letters, numbers, and underscores
 [What is a matrix group name?](#)