REDCap

Research Electronic Data Capture

New Features

& Improvements

NEW FEATURES:

Alerts & Notifications: The Alerts & Notifications feature allows you to construct alerts and send customized email notifications. These notifications may be sent to one or more recipients and can be triggered or scheduled when a form/survey is saved and/or based on conditional logic whenever data is saved or imported. When adding/editing an alert, you will need to 1) set how the alert gets triggered, 2) define when the notification should be sent (including how many times), and 3) specify the recipient, sender, message text, and other settings for the notification. For the message, you may utilize customized options such as rich text, the piping of field variables (including Smart Variables), and uploading multiple file attachments.

While similar in many respects to Automated Survey Invitations, Alerts & Notifications allow for greater complexity and have more capabilities. For example, alerts apply to both data entry forms and surveys, and they also allow for more options regarding who can be the recipient of a notification (project users, survey participants, etc.).

If you have "Project Setup & Design" privileges, you will see an "Alerts & Notifications" link on the left-hand project menu under Applications. Please read the instructions on that page to explore all the powerful options when building your alerts.

Create new alert

You may define the settings for your alert in Steps 1-3 below. After clicking the Save button at the bottom, your alert will immediately become active and may be triggered at any time thereafter. If you would like to remove or stop using an alert, it may be deactivated at any time. You may modify an existing alert at any time, even after some notifications have already been sent or scheduled.

Title of this alert: [add optional title]

👉 STEP 1: Triggering the Alert

How will this alert be triggered?
- ◉ When a record is saved on a specific form/survey*
- ○ When a record is saved on a specific form/survey with conditional logic*
- ○ Using conditional logic during a data import or data entry

Trigger the alert...

when [-- choose an instrument/survey -- ▼] [is saved with any form status ▼] (excludes data imports)

* The alert will not be re-triggered if the form/survey is saved again, unless it is set to send Every time in Step 2 below.

🕐 STEP 2: Set the Alert Schedule

When to send the alert?
- ◉ Send immediately
- ○ Send on next [Day ▼] at time [   ] 🕐 H:M
- ○ Send after lapse of time: [   ] days [   ] hours [   ] minutes
- ○ Send at exact date/time: [MM/DD/YYYY HH:MM 📅🕐]

Send it how many times?
- ◉ Just once (once per event - note: will send on every instance for repeating instruments/events)
- ○ Every time the form/survey in Step 1 is saved (excludes data imports)
- ○ Multiple times: Send every [0] [days ▼] after initially being sent

✉ STEP 3: Message Settings

Email From:
* must provide value

[Display name (optional)] [jaguilar@peds.bsd.uchicago.edu ▼]

Email To:
* must provide value

[Select recipients]

➕ Show more options   Or manually enter emails: [jane@example.com; john@mysite.org]

Subject:
* must provide value

[   ]

Message:
* must provide value

☑ **Prevent piping of data for Identifier fields** [?]

Paragraph ▾	**B**	*I*	🔗	≡ ≡ ≡ ≡	↶ ↷	🔲

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[   ]

In the subject or message, you may use [✏ Piping] and [⚡ Smart Variables]

Example: Hi [first_name]! Please complete this survey: [survey-link:followup_survey]

[📎 Add attachments]

Optional

Alert expiration:

[MM/DD/YYYY HH:MM 📅🕐]

This alert will be auto-deactivated at the specified date/time above. Note: This will cause any already-scheduled notifications not to be sent after the expiration time.

[Save] [Cancel]

Rich text editor for field labels and section headers: For any field on an instrument in the Online Designer, users may optionally utilize the rich text editor for styling field labels or section headers with many text-formatting options. The rich text editor allows users to change the color of text (including background color), create tables, add text of varying sizes, bullet lists, and more. For any field labels that were originally created without the rich text editor, users may optionally enable the rich text editor for any field by clicking the 'Use the Rich Text Editor' checkbox. It may also be disabled afterward at any time just the same. Rich text is enabled by default for any new fields being created via the Online Designer.

- The rich text editor is also available when composing survey invitations. This includes composing Automated Survey Invitations or invitations to be sent via the Participant List or via the Survey Options on data entry forms.
- The rich text editor is also available for the Survey Confirmation Email option on the Survey Settings page.
- Note: The PDF export of surveys/instruments will *not* reflect all the styling of the rich text editor, so keep in mind that line breaks and paragraphs should be represented well in PDFs, but other text-formatting options, such as large text, bullet points, and colors are not able to be translated into the PDF export of the instrument. This is a current limitation in REDCap.
- Examples of rich text formatting:

Paragraph Heading 1

Paragraph Heading 2

Paragraph Heading 3

Paragraph Heading 4

Paragraph Heading 5

Paragraph Heading 6

email hyperlink: test@email.com website hyperlink: website.com

bold *italics* text colors background colors

align left   align center   align right

    ->increase indent
<-decrease indent

- bullet list1
- bullet list2
- bullet list3

1. numbered list1
2. numbered list2
3. numbered list3

Rich text formatting available in these locations:

Edit Field

You may add a new project field to this data collection instrument by completing the fields below and clicking the Save button at the bottom. When you add a new field, it will be added to the form on this page. For an overview of the different field types available, you may view the ⊞ Field Types video (4 min).

Field Type: Descriptive Text (with optional Image/Video/ ▼)

Question Number (optional)
Displayed only on the survey page

Field Label ☑ Use the Rich Text Editor ?

Heading 1 ▼ **B** *I* 🔗 ≡ ≡ ≡ ≡ ↶ ↷ ⤢
☰ ☷ ⇤ ⇥ ⊞▼ A ▼ A ▼ 🔍 <> Iₓ

Paragraph Heading 1

Paragraph Heading 2

Paragraph Heading 3

Paragraph Heading 4

Variable Name (utilized in logic, calcs, and exports)

rich_text_editor_examples ☐ Enable auto naming of variable based upon its Field Label?
ONLY letters, numbers, and underscores

How to use [♦] Smart Variables ⚡Piping

Optional file attachment, image, audio, or video:

▶ **Embed an external video** (provide video URL) ?

e.g. https://youtube.com/watch?v=E1cCuWMupz0,
https://vimeo.com/62730281,
http://example.com/movie.mp4

Display format of video: ○ Inline ◉ Inside popup

– or –

📄 **Survey Instructions**
(Displayed at top of survey after title)

Paragraph ▼ **B** *I* 🔗 ≡ ≡ ≡ ≡ ↶ ↷ ⤢
☰ ☷ ⇤ ⇥ ⊞▼ A ▼ A ▼ 🔍 <> Iₓ

Please complete the survey below.

Thank you!

◉ **Survey Completion Text**
(Displayed after survey is completed as 'thank you' text or as acknowledgement text)

Paragraph ▼ **B** *I* 🔗 ≡ ≡ ≡ ≡ ↶ ↷ ⤢
☰ ☷ ⇤ ⇥ ⊞▼ A ▼ A ▼ 🔍 <> Iₓ

Thank you for taking the survey.

Have a nice day!

Missing Data Codes: Fields that have a blank/missing value may be marked with a custom 'Missing Data Code' to note why the value is blank. These missing codes may be used to aid in data analysis by specifying why a field lacks a value. To enable this feature below, enter both the codes AND their labels for all the categories of missing data that you wish to use in this project. The missing codes should be coded just like the choices of a multiple choice field with code + comma + label, in which the codes can only have letters, numbers, dots, dashes, and underscores (e.g., '-999, Not asked' or 'UNK, Unknown'). If no codes are entered, this feature will remain disabled.

- USAGE: After your missing data codes have been set up, you will see an 'M' icon next to each field when viewing a data entry form. Click the icon to open your list of missing data codes, and select one. Once selected, it will save the missing code as the literal data value for the field. Missing data codes can be used for any field type (e.g., date, slider, file upload fields). Since a missing data code is saved as the field value, this means that the field's missing data code can then be optionally exported in a data export or viewed in a report (if you so choose - this is an option when creating a report). Entering a missing data code must be done manually by a user via the user interface or through a data import (API or Data Import Tool), in which you may import the missing data codes as the fields' values in your data import file.
- TIP: When defining your missing data codes, please keep in mind to make sure that your missing code will never clash/overlap with a real value on a field in your project. For example, it you have an integer field where '-999' is a possible value, then you should not use -999 as a missing data code. This is because REDCap will not be able to know if this is a real value or if it is a missing code used to denote that the field is blank. Below to the right are some optional suggestions for missing data codes that you might consider using, but feel free to use whatever missing data codes that you wish.
- NOTE: Behavior with branching logic - If a field should be hidden by branching logic, REDCap will typically ask the user (except on surveys) if they wish to delete the value of the field being hidden. But if the field has a missing data code saved for it, it will still hide the field but will not remove the missing data code as the field's value. This allows a field to still be "blank" and have a missing code while being hidden by branching logic.
- LOGIC: Because missing data codes are stored as the literal field values, they may be used and referenced in logic throughout REDCap (i.e., logic for report filters, Data Quality rules, Survey Queue, Automated Survey Invitations, branching logic). For example, if you want to display a field on a form only if the previous field is blank and is marked with the missing data code 'NASK', your branching logic might be the following: [field] = 'NASK'. Additionally, a special function 'isblankormissingcode()' may be used in logic as a catch-all for determining if a field's value is truly blank or if it contains a missing data code. E.g. isblankormissingcode([age]), in which if age has a value of UNK (which might be a missing data code in a project), then it will return TRUE. And if the field has any non-blank/non-null value that is also not a missing data code, it will return FALSE.
- ACTION TAG: By default, the missing data code functionality is enabled for ALL fields in the project, but it can be disabled on a field-by-field basis by adding the action tag @NOMISSING for an individual field, in which this will hide the 'M' icon for the field on the data entry form and thus prevent usage of the missing data codes for the field.
- DATA EXPORTS: Please be aware that if you are exporting Missing Data Codes in your data into a statistical analysis package, the CSV data might not load correctly in this statistical analysis package and might throw an error. You might need to manually modify the syntax file before loading it into the stats package in order to allow your Missing Data Codes to be accepted for certain data types, such as date fields. Otherwise, you might want to try exporting your data without the Missing Data Codes.

- When creating/editing a report, a new option exists under the "Addition report options" section: "Display any Missing Data Codes in place of blank values (where applicable)". This option will allow users (based on their preference) to show or not show the Missing Data Codes (if they have been saved for any field in any record) in the report or export. Note: In PDF exports of data collection instruments, any Missing Data Codes will be represented as blank values in the PDF.
- Changes for Data Quality Rules
  - DQ rule A and B (for finding blank values) will continue to return only truly blank values and thus will not return fields with missing data codes saved as the value.
  - New rule - DQ "Rule I (Fields containing missing data codes)" has been added as a new rule for specifically finding fields with missing data codes saved as the value.
  - DQ rule F (Hidden fields that contain values) will ignore fields that have a missing data code saved as the value because it is allowable for such fields to be hidden by branching logic while still maintaining a missing data code as a value.
- All the missing data codes are displayed for reference at the top of the Codebook page.
- Standard list of missing data codes available:
  - NI   No information
  - INV   Invalid
  - UNK   Unknown
  - NASK   Not asked
  - ASKU   Asked but unknown
  - NAV   Temporarily unavailable
  - MSK   Masked
  - NA   Not applicable
  - NAVU   Not available
  - NP   Not present
  - QS   Sufficient quantity
  - TRC   Trace
  - UNC   Unencoded
  - DER   Derived
  - PINF   Positive infinity
  - NINF   Negative infinity
  - OTH   Other

Additional customizations

Ⓜ **Missing Data Codes: Set up your missing data codes for this project**
Fields that have a blank/missing value may be marked with a custom 'Missing Data Code' to note why the value is blank. These missing codes may be used to aid in data analysis by specifying why a field lacks a value. To enable this feature below, enter both the codes AND their labels for all the categories of missing data that you wish to use in this project. The missing codes should be coded just like the choices of a multiple choice field with *code* + *comma* + *label*, in which the codes can only have letters, numbers, dots, dashes, and underscores (e.g., '-999, Not asked' or 'UNK, Unknown'). If no codes are entered, this feature will remain disabled.
Read more detailed instructions.

Missing Data Codes

| NI, No information |
| UNK, Unknown |
| NASK, Not asked |
| 999, missing |

Add code from standardized list of missing data codes (optional suggestions):

Add	NI	No information
Add	INV	Invalid
Add	UNK	Unknown
Add	NASK	Not asked
Add	ASKU	Asked but unknown
Add	NAV	Temporarily unavailable

File Version History for File Upload fields: This feature allows a new file to be uploaded onto a File Upload field that already has a file uploaded for it. If a file has already been uploaded, the field will have a new link "Upload new version", and after being clicked, it will allow the user to upload another file without having to delete the existing one. The old/existing file will not be deleted but will still be accessible as an older version of that file in the Data History popup (by clicking the "H" icon next to the field). Within the Data History popup, a user may view, download, or delete any existing version of the file that exists, in which all versions of the file will be displayed in a table format and listed in chronological order with regard to being uploaded.

Initial file upload:

New file version upload:

View data history:

Upload history shown for all files:

New Action Tag @HIDDEN-PDF: Hides the field only in the downloaded PDF of one or more instruments (including blank PDFs, PDFs with data, and compact PDFs with data). Note: Other @HIDDEN action tags will not hide fields inside PDF exports, so @HIDDEN-PDF must be used specifically to hide fields in PDFs.

Action Tags: https://redcap.uchicago.edu/redcap_v9.5.6/Design/action_tag_explain.php

@ Action Tags

REDCap®

Action Tags are an excellent way to customize the data entry experience for surveys and forms. They are special terms that begin with the '@' sign that can be placed inside a field's Field Annotation when adding or editing a field. Each action tag has a corresponding action that is performed for the field when displayed on data entry forms and survey pages. Below is a comprehensive list of all available action tags that you may use. You can use as many as you want for a single field, but if you do use more than one tag for a field, make sure to put a space or line break between them. Because the action tags are used as part of the Field Annotation, they are not displayed anywhere on the page. To start using Action Tags, navigate to the Online Designer in a project, and when adding or editing a field, add the tag into the Action Tag/Field Annotation text box in the Edit Field popup.

All available action tags and their descriptions:

@APPUSERNAME-APP	In the REDCap Mobile App, it sets a field's value to the app username of the current mobile app user - i.e., their username in the mobile app, which is not necessarily the same as their REDCap server username that can be captured using @USERNAME. NOTE: For use only in the REDCap Mobile App.
@BARCODE-APP	Allows the REDCap Mobile App to capture the value of a barcode or QR code by scanning it with the device's camera. NOTE: For use only in the REDCap Mobile App.
@CHARLIMIT	Sets the maximum number of characters that can be entered into a Text field or Notes field, and also displays the number of characters remaining. The format must follow the pattern @CHARLIMIT=??, in which ?? is the desired max character count (alternatively, the number value can be inside single or double quotes). NOTE: This action tag cannot be used at the same time as @WORDLIMIT for the same field. NOTE: This action tag does *not* get applied during any data imports (via API or Data Import Tool) but only operates when viewing survey pages and data entry forms.
@DEFAULT	Sets a field's initial value. This allows a field to have a specified default value when viewing the field on a survey or data entry form that has not yet had any data saved for it (i.e., when the form status icon is gray or when a survey page has not had any data entered yet). The format must follow the pattern @DEFAULT="????", in which the desired default value should be inside single or double quotes. For checkbox fields, simply separate multiple checkbox values with commas - e.g., @DEFAULT='1,3,6'. For text fields, you may even perform Piping inside the default value to pipe data from another field in the project - e.g., @DEFAULT='Name: [first_name] [last_name], DOB: [dob]'. NOTE: The default value does *not* get applied during any data imports (via API or Data Import Tool) but only operates when viewing survey pages and data entry forms. NOTE: If being used on a date or datetime field, the date value inside the quotes must be in Y-M-D format - e.g., @DEFAULT='2007-12-25' - regardless of the field's set date format.
@HIDDEN	Hides the field on the survey page, the data entry form, and in the REDCap mobile app. Field will stay hidden even if branching logic attempts to make it visible.
@HIDDEN-APP	Hides the field only on the form ONLY on the REDCap Mobile App. Field will stay hidden even if branching logic attempts to make it visible.
@HIDDEN-FORM	Hides the field only on the data entry form (i.e., not on the survey page). Field will stay hidden even if branching logic attempts to make it visible.
@HIDDEN-PDF	Hides the field only in the downloaded PDF of one or more instruments (including blank PDFs, PDFs with data, and compact PDFs with data). Note: Other @HIDDEN action tags will not hide fields inside PDF exports, so @HIDDEN-PDF must be used specifically to hide fields in PDFs.
@HIDDEN-SURVEY	Hides the field only on the survey page (i.e., not on the data entry form). Field will stay hidden even if branching logic attempts to make it visible.
@HIDEBUTTON	Hides the 'Now' or 'Today' button that is typically displayed to the right of date, time, and date/time fields.
@HIDECHOICE	Hides one or more choices of a multiple choice field. This action tag is useful if you wish to retire a particular choice after utilizing it for a while in data collection, thus allowing you to hide the choice from that point afterward without orphaning any of the choice's data, which would happen if you simply deleted the choice. The format must follow the pattern @HIDECHOICE='??', in which the coded values should be inside single or double quotes for the choice(s) you wish to hide. If more than one choice needs to be hidden, then provide all the coded values separated by commas. For example, to hide the choice 'Monday (1)', you would have @HIDECHOICE='1', but if you wanted to additionally hide 'Tuesday (2)', you would have @HIDECHOICE='1,2'. NOTE: If the hidden choice has already been selected for a given record, then the choice will not be hidden on the survey or form for that record/event. NOTE: Hidden choices will still appear in reports and data exports. NOTE: This action tag can only be utilized for the following field types: Checkbox, Radio, Drop-down, Yes-No, and True-False. NOTE: This action tag works only in limited fashion with a matrix of fields, in which it will simply hide the checkbox/radio for a field in the matrix but still display the column for that choice in the matrix.

New API method: "Import Repeating Instruments and Events": Allows users to import a list of the repeated instruments and repeating events for a project as a means of setting which instruments and events should be repeatable.

API Documentation: https://redcaptest.uchicago.edu/api/help/?content=imp_repeating_forms_events

Method Name: Import Repeating Instruments and Events

Description: This method allows you to import a list of the repeated instruments and repeating events for a project. This includes their unique instrument name as seen in the second column of the Data Dictionary, as well as each repeating instrument's corresponding custom repeating instrument label. For longitudinal projects, the unique event name is also needed for each repeating instrument. Additionally, repeating events must be submitted as separate items, in which the instrument name will be blank/null to indicate that it is a repeating event (rather than a repeating instrument).

URL: https://redcap.uchicago.edu/api/

Supported Request Method: POST

Permissions Required: To use this method, you must have API Export privileges in the project.

Parameters (case sensitive)
- **Required**
  - **token**
    The API token specific to your REDCap project and username (each token is unique to each user for each project). See the section on the left-hand menu for obtaining a token for a given project.
  - **content**
    repeatingFormsEvents
  - **format**
    csv, json, xml [default]
  - **data**
    Note: Super API Tokens can also be utilized for this method instead of a project-level API token. Users can only be granted a super token by a REDCap administrator (using the API Tokens page in the REDCap Control Center).
- **Optional**
  - **returnFormat**
    csv, json, xml - specifies the format of error messages. If you do not pass in this flag, it will select the default format for you passed based on the 'format' flag you passed in or if no format flag was passed in, it will default to 'xml'.

Returns: Number of repeated instruments or repeated events that have been imported

IMPROVEMENTS:

• If a user is viewing a data entry form that has been enabled as a survey and then clicks "Compose survey invitation" in the survey options at the top right of the page, if they compose and send an invitation that is marked to be sent "Immediately", it will display a popup to inform the user that it is recommended that they leave the page very soon before the respondent has a chance to enter any data on the survey page. This is done because if the respondent begins entering data on the survey immediately after receiving the invitation, and then the user (while still viewing the data entry form) saves the form, the user could unwittingly erase the respondent's data values that were just entered.

• If the Universal "From" Email Address option is being utilized for the system, the sender's email address now gets set as the Display Name in the email received. In previous versions, no Display Name is ever set for outgoing emails. So instead of the recipient only seeing that the sender is no-reply@vumc.org (assuming this to be the catch-all universal address, for example), it instead will appear to be from "joe.user@gmail.com <no-reply@vumc.org>. This is an improvement because it provides the recipient with more context with regard to who the sender is.

• The Codebook now denotes if an instrument is enabled as a survey, in which it is noted immediately to the right of the instrument name.

• Added links to "select all" or "deselect all" for the checkbox options on the "Copy Project" page.

• Added support for Traditional Chinese in exported PDFs. Previous versions only supported Simplified Chinese in exported PDFs of instruments/surveys if the project encoding was set to "Chinese (UTF-8)". Note: The only difference between the two Chinese encoding options are the fonts embedded inside exported PDFs; it does not affect other exported file types, such as CSV files.

• Force e-Consent signature fields to be erased when modifying responses - The e-Consent Framework setup on the Survey Settings page has a new option to allow users to specify up to five signature fields in the current survey, in which it will force all signature field values to be erased in the survey if the participant clicks Previous Page button while on the certification page (i.e., the last page of the survey). In many situations when using e-Consent, it is required that if the participant completes all the survey responses and gets to the certification page but then decides to go back to modify some responses, the field (or multiple fields) where they supplied their signature must first be erased, thus forcing them to re-sign the survey before they complete it. This new e-Consent Framework option helps to comply with this particular situation. Note: Only freeform text fields, signature fields, and number fields may be used as e-consent signature fields here, and those fields must be Required fields.

• If a URL is included in a message posted on REDCap Messenger (including those sent via General Notifications from an administrator), the URL will be displayed as a clickable link to the user in the Messenger panel.

• In a project with repeating instruments, the Record Home Page now displays a count of total instances of a given repeating instrument next to the instrument name in the tables of instances displayed at the bottom of that page.

• Line breaks may be preserved in data values in CSV data exports - When creating/editing a report, the section "Additional report options" contains a new setting: "Remove line breaks/carriage returns in all text data values (only applicable for CSV Raw and CSV Label data exports)". This setting will be enabled by default

for all existing reports and for any new reports being created. The option will effectively not be enabled when exporting Reports A and B in order to be consistent with their current behavior in previous versions. This option is only used for CSV data exports and not for reports or exports to statistical analysis packages.

• Links to the Online Designer, Data Dictionary Upload page, and Codebook were added to the left-hand project menu for easier navigation. Also, a new section "Project Home and Design" was added on the left-hand menu to contain all these links, as well as the Project Home and Project Setup page links.

• Major performance improvement when loading the Participant List page for projects with surveys. For projects with thousands of records or more, this page should be significantly faster.

• New options added to Secondary Unique Field functionality - In the "Additional Customizations" popup on the Project Setup page, users may now choose to optionally display the Secondary Unique Field's value in conjunction to displaying a record name on various project pages (in previous versions it was always displayed regardless). If left unchecked, the uniqueness of the value will still be checked during data entry or import, but the Secondary Unique Field's value will not be displayed next to the record name anywhere (e.g., in record lists, record status dashboards, reports). A second option has also been added that dictates whether or not the field label of the Secondary Unique Field will be displayed next to the value (if the value is set to be displayed next to a record name).

• New records can now be created directly from the Record Status Dashboard. If record auto-numbering is enabled, it will display an "Add new record" button, otherwise it will display a text field for users to enter a new record name to create.

• On the Survey Settings page, the "Redirect to a URL" option now allows the Smart Variable [survey-url] to be used - e.g., [survey-url:other_survey].

• Performance improvement for projects using record auto-numbering, in which the process of generating the record name of the next potential record is much faster, especially for projects with many records.

• Performance improvement for record searching on the "Add/Edit Records" page when entering part of a record name in the "Enter a new or existing [Record ID]" text box. For projects with thousands of records or more, this functionality should be much faster.

• Performance improvement for when REDCap is generating the record list cache for a project, especially for projects with Data Access Groups. For each project, REDCap maintains a record list in a database table that is used throughout a project. This record list improves overall performance, especially for large projects. Every few days the record list cache is automatically rebuilt internally. The process of rebuilding the record list is now more efficient, faster, and less error-prone than in previous versions.

• The "Cancel" button on data entry forms now displays a confirmation prompt after being clicked to ask the user if they truly wish to cancel and lose all their changes.

• The Data History Popup for File Upload fields now provides more detailed information, such as the filename of the uploaded file.

• The email "display name" for most outgoing emails is now automatically populated and thus is able to be displayed in the recipient's email client. Previous versions did not use the display name but left it blank for outgoing emails. For user requests that are triggered by users, such as production change requests, API token requests, etc., the user's first and last name from their My Profile page will be used automatically as the display name in those emails. For emails originating from REDCap administrators that are automated by the system, the email display name will the "Name of REDCap Administrator" setting (from the General

Configuration page) or else the "Contact name to display on Home page" (from the Home Page Configuration page), which is dependent upon the type of email being sent.

• When copying a project, there are now separate options for copying users and/or user roles. In previous versions, these were combined as a single choice "Copy users and roles", but now users may decide to copy one or the other.

• When enabling an instrument as a survey or editing an existing survey's survey settings, it now displays a "Save Changes" button at the top of the page (next to the Cancel button) so that the user does not necessarily have to scroll all the way to the bottom to submit the page.

• Improvements and changes when exporting data from REDCap into SAS: Full integration of the Missing Data Code functionality in the SAS data export syntax file to prevent issues when loading data containing Missing Data Codes into SAS. Note: The SAS Pathway Mapper file has been removed and is no longer utilized. Users exporting data to SAS will now need to manually modify the path of the CSV data file in their .SAS syntax file to reflect its locally saved path on the device.

• When using the Data Resolution Workflow and exporting all data queries in a CSV file, the following attributes are now all exported as their own separate columns in the CSV file: record name, event name, data access group, data quality rule, and field name. In previous versions, some of these attributes existed together in a single column and thus were harder to parse out individually. Additionally, the following columns have been added to the CSV export file: Current Query Status, Time Raised, and Time Resolved.