

Draft HAWC Training: Data Pivot (ER Array-Style) Visualization

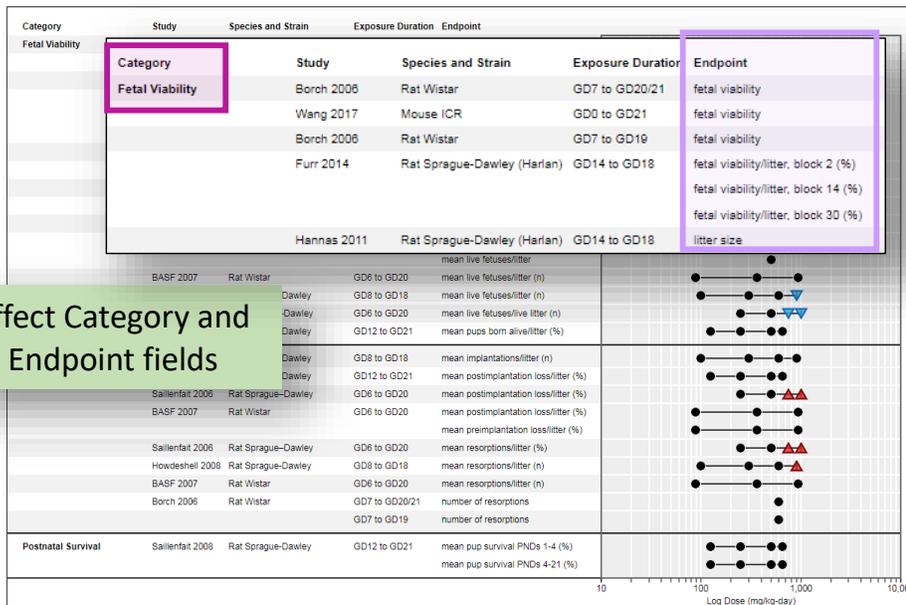
Orientation to a data pivot (ER array-style) visualization: Examples from fields used in the DiBP visualizations

Common fields used in an ER array-style data pivot and the extraction pages in HAWC from which they are drawn are illustrated in the screenshots below. Please note that it is important that entries for these fields are consistent, as this saves time cleaning up the visualizations afterward.

❖ Category and Endpoint

Category is the EFFECT from the ENDPOINT page.

Endpoint is the ENDPOINT NAME from the ENDPOINT page.



Effect Category and Endpoint fields

Endpoint name*

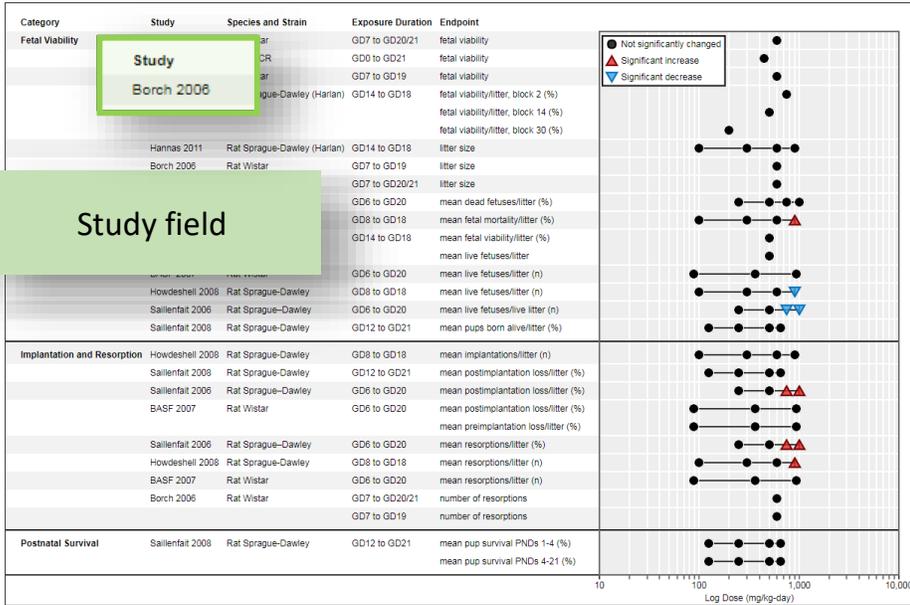
Short-text used to describe the endpoint. Should include observation-time, if multiple endpoints have the same observation time.

System: Organ (and tissue):

Effect: Effect subtype:

Relevant biological system: Relevant organ; also include tissue if relevant: Effect subtype, using common-vocabulary:

❖ **Study:** This is the SHORT CITATION from the STUDY DETAILS page.

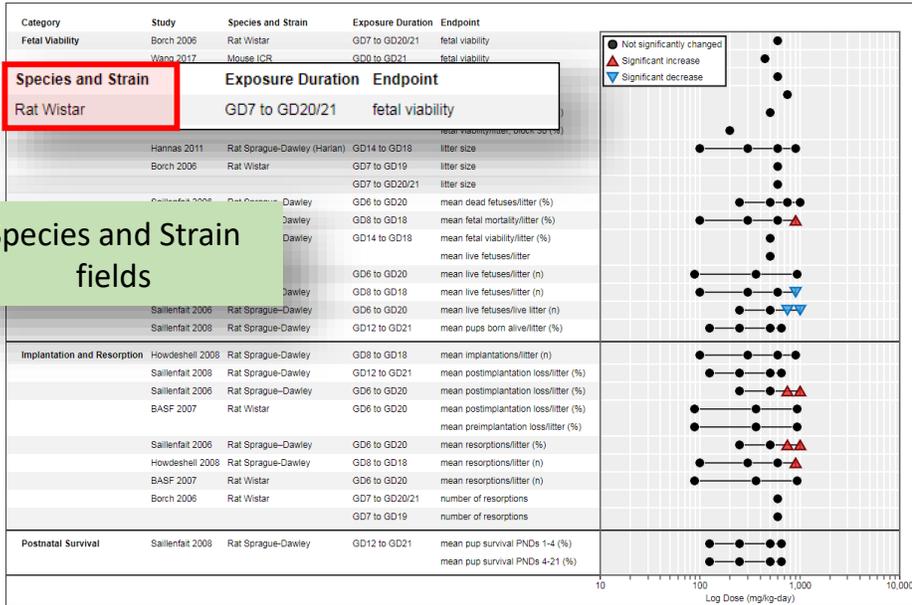


Study field

Short citation*
Borch 2006
How the study should be identified (i.e. Smith et al. (2012), etc.)

Internal study identifier
Reference descriptor for assessment-tracking purposes (for example, "[Author, year, #EndNoteNumber]")

❖ **Species and Strain:** This is the SPECIES and STRAIN (concatenated) from the ANIMAL GROUP page.



Species and Strain fields

Name*

Short description of the animals (i.e. Male Fischer F344 rats, Female C57BL/6 mice)

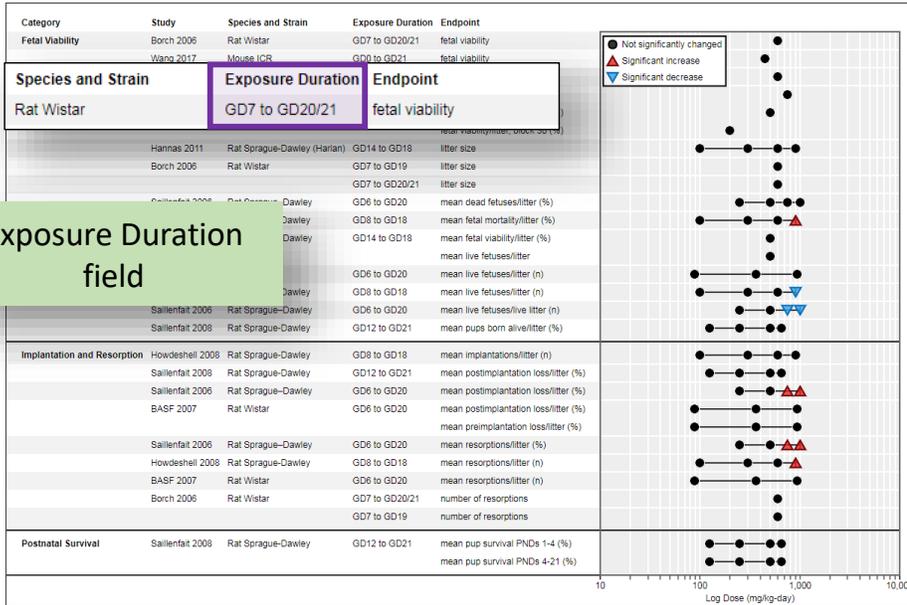
Species* + Strain* + Sex*

Animal source

Lifestage exposed Lifestage assessed Observation duration (days)

Textual life-stage description when exposure occurred (examples include: "parental, PND18, juvenile, adult, continuous, multiple")
 Textual life-stage description when endpoints were measured (examples include: "parental, PND18, juvenile, adult, multiple")
 Numeric length of observation period, in days (fractions allowed)

❖ **Exposure Duration:** This is EXPOSURE DURATION from the DOSING REGIME page.



Exposure Duration field

Route of exposure*

Exposure duration (days)

Exposure duration (text)

Primary route of exposure. If multiple primary-exposures, describe in notes-field below

Length of exposure period (fractions allowed), used for sorting in visualizations

Text-description of the exposure duration (ex: 21 days, 104 wks, GD0 to PND9, GD0 to weaning)

Number of Dose Groups*

Positive control

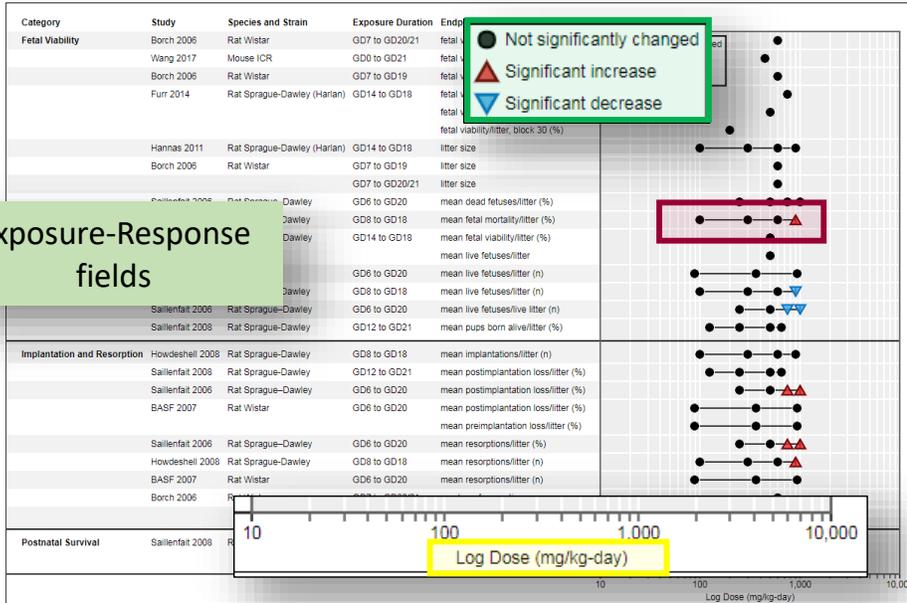
Negative control*

Number of dose groups, plus control

Was a positive control used?

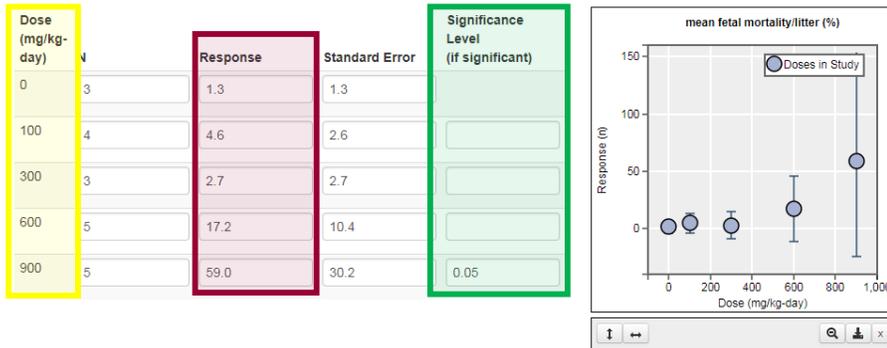
Description of negative-controls used

❖ **Exposure-Response:** This represents DOSE and the SIGNIFICANCE of each dose from the ENDPOINT page.



Dose-response data

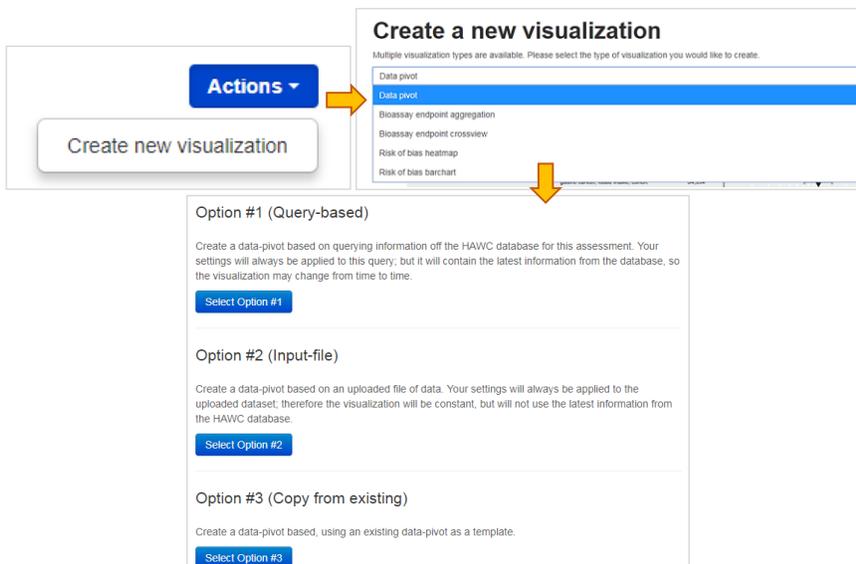
For continuous data, if variance is not-reported, ensure the "variance type" input-field above is "NR", and then variance can be left blank; otherwise it is required. If any data are not reported, leave those fields blank.



Creating a data pivot (ER array-style) from scratch

Step 1. Create new data pivot.

- ❖ On the Assessment landing page, click 'Visualizations' under the **Available Modules** menu on the left side of the screen.
- ❖ Choose 'Create new visualization' from the **Actions** menu. This page allows you to select the type of visualization you would like to create.
- ❖ Select 'Data pivot'. After selecting data pivot, HAWC will present three options for creating the data pivot.
- ❖ Select Option 1 to create a data pivot from scratch. Option 3 allows you to create a new visualization using an existing visualization as a template.
- ❖ *All fields with an asterisk are required and must be populated in order to save.*



Step 2. Define the visualization: Modify the export style and pertinent settings.

- ❖ Change the 'Export style' to **One row per Endpoint/Result**. The other export style is used for the traditional data pivot
- ❖ Enter the 'Title' to describe the visualization. As the title is changed, HAWC will modify the 'URL name' field automatically. URLs for visualizations within the same project cannot be the same. Modify the URL further if needed. Remember that spaces or special characters cannot be used.

- ❖ **'Preferred units'** is an optional field that allows display of only those extracted data with doses in particular units. The menu of available doses lists all dose units currently available in the entirety of the HAWC database—not just those used in the assessment. If you are interested in displaying all data results regardless of units, skip this field. This field can be revisited and edited at any time.

For DiBP, we did not need to filter for specific units because all dose are provided in mg/kg-day.

- ❖ For a new visualization, the **'Settings'** field will default to undefined. As the visualization is edited, this settings field will automatically populate to reflect the selections and changes made. Users do not need to do anything with this field.

*Note that if users create a visualization using Option 3 (i.e., use an existing visualization as a template), HAWC copies the settings from the existing visualization to create the new visualization.

- ❖ Enter text in the **'Caption'** field with notes related to the content of the visualization. This information will display at the bottom of the visualization preview in HAWC and on the assessment visualization home page.
- ❖ By default, the **'Published studies only'** box is checked when this first page is opened. Uncheck this box if the studies in the assessment have not been consistently identified as published. A study can be identified as published on the 'Study details' page for that study, but it is not a required field.

*Note that a "published study" in HAWC is a study extraction that is available to the public from HAWC.

- ❖ Update the **'Prefilter'** options if needed.

For DiBP visualizations, we prefiltered the Effect field (e.g., Fetal Viability, Implantation and Resorption, and Postnatal Survival).

- ❖ Click **'Save'** to submit the changes.

The table of data selected to include in the visualization will be displayed. On this screen, there is also a **'Settings'** tab and **'Visualizations'** tab. Clicking the Visualizations tab at this point will result in an error message indicating that the data exist, but settings need to be modified. This error will resolve once additional required settings are defined.

Step 3. Modify Settings for descriptive text columns and visualization data ('Descriptive text columns' and 'Visualization data' subtabs).

These first two subtabs must be completed for HAWC to display a visualization. Remaining tabs—'[Data filtering and ordering](#)', '[References](#)', '[Styles](#)', and '[Other settings](#)'—are optional subtabs that can be used to further format and refine the visualization.

- ❖ Choose the '[Descriptive text columns](#)' subtab.
 - Under '**Column header**', use the drop-down menus to select each HAWC data field that you would like to add to the visualization. If additional column headers are necessary, add new rows by clicking the 'New row' button in the top right. It might be helpful to view the table headings on the '[Data](#)' tab for a reference to data field names.

For the DiBP visualizations, we chose effect, study name, species strain, duration exposure, and endpoint name.

- To modify how the field names are displayed on the visualization, indicate those changes for each field in the '**Display name**' column.

For the DiBP visualizations, we chose Category, Study, Species and Strain, Exposure Duration, and Endpoint.

- If desired, use '**Header style**' and '**Text style**' to edit the format of the text in the column headers or the body of the visualization. Vary the width of columns by entering the number of '**Maximum width (pixels)**'.

For DiBP, for the effect (or Category), we used a header style (left justified) for the column headers and for the Category names, which bolded the text.

- The '**On-click**' columns allow users to specify fields that will have an active link when contents of those fields are clicked in the HAWC visualization. On-click gives you the option to open details of the *study*, *experiment*, *animal group*, and *endpoint*.

For the DiBP visualizations, we chose to have an active link for the study, animal group, and endpoint.

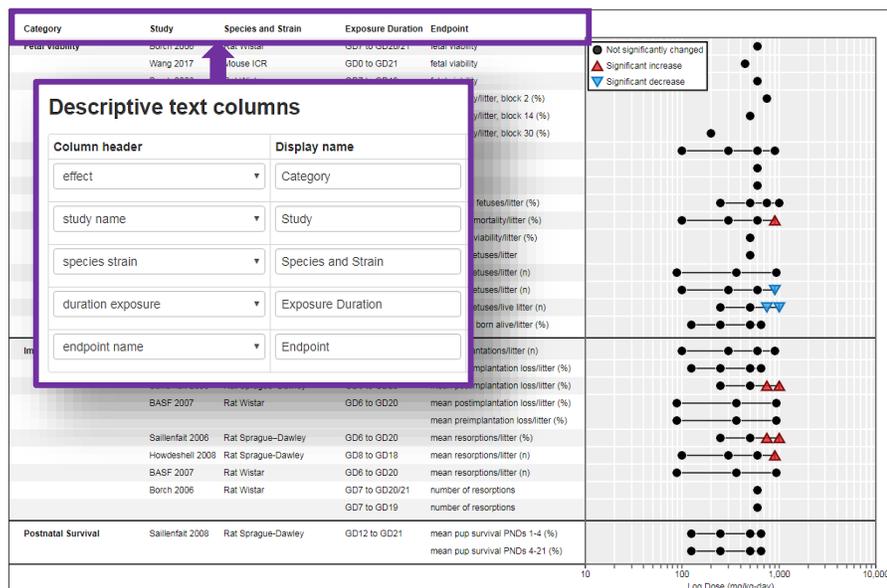
- The order of description columns can be changed using the 'move up' and 'move down' arrows under '**Ordering**'. Columns can be removed using the 'x' under '**Ordering**'.

Settings: Descriptive text columns

Descriptive text columns

New row

Column header	Display name	Header style	Text style	Maximum width (pixels)	On-click	Ordering
effect	Category	Left-just hea	Left-just hea		---	↑ ↓ ✕
study name	Study	Left-just hea	normal blac		Show study	↑ ↓ ✕
species strain	Species and Strain	Left-just hea	normal blac		Show animal group	↑ ↓ ✕
duration exposure	Exposure Duration	Left-just hea	normal blac		---	↑ ↓ ✕
endpoint name	Endpoint	Left-just hea	normal blac		Show endpoint (comp	↑ ↓ ✕



❖ Choose the *'Visualization data'* subtab.

- The **'Visualization type'** is forest plot.
- Add the appropriate number of new rows for the data point options, which correspond to the number of doses (not including the control) used in studies.
- Use the Dose Level options as the column headers.

For DiBP, we selected Dose 2, Dose 3, Dose 4, and Dose 5 as columns headers. We did not display a marker for Dose 1 because it is the control.

- By default, HAWC will add a 'legend name' and a black circle 'marker style' in the visualization legend for each data point. Modify the default legend names if desired. A legend can also be modified within the *'Other settings'* subtab.
- Specify the appropriate **'Data point error-bar options'**.

For DiBP, we selected 'low_dose' and 'high_dose', which adds a line between the markers from the low dose to the high dose.

- **'Conditional formatting'** of data point options is used to format data point markers based on their value. In the case of an ER array-type visualization, conditional formatting is used to indicate significance and whether the result was a significant increase or decrease.
 - Click the 'Create' button to begin conditional formatting for the first data point (or use 'Enable' to modify conditional formatting).
 - Click the 'Add' button to set up the first condition.

For DiBP, we kept the doses with nonsignificant results as black circle markers and used a blue down triangle to indicate a result that was a significant decrease, and used a red up triangle to indicate a result that was a significant increase.

- Add the 'condition field' that corresponds with dose level. For example, the 'condition field' for the first data point is Significant 2, which corresponds to Dose 2. Select the 'condition type' (discrete style). Modify the markers as desired. Click 'Save and close' to enable conditional formatting.
- Repeat this process for the remaining dose levels.

Example: For DiBP, visual #3, for Dose 2 and Dose 3, significance is "No" or unspecified in all cases, so we kept the marker in the base style. For Dose 4 and Dose 5, the marker was kept as the base style where significance is "No" or unspecified. Where significance is "Yes" and decreasing, we used a blue down triangle. Where significance is "Yes" and increasing, we used a red up triangle.

- **‘On-click’** allows users to specify data points that will have an active link when that point is clicked in the HAWC visualization. On-click gives you the option to open details of the *study*, *experiment*, *animal group*, and *endpoint*.

For the DIBP visualizations, we chose to show the complete endpoint when any of the dose levels is selected.

- Click ‘Update data pivot settings’ to save the updates to ‘*Descriptive text columns*’ and ‘*Visualization data*’ subtabs. HAWC will now show you the current visualization with the selected column headers and data points. The remaining subtabs are used to further format and refine the visualization.

Data Settings Visualization

Settings: Visualization data

Descriptive text columns
Visualization data
Data filtering and ordering
References
Styles
Other settings

Visualization type

Forest plot

Data point options

New row

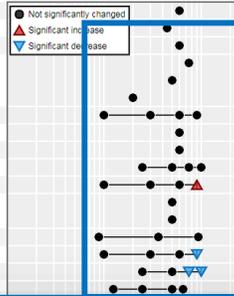
Column header	Legend name	Marker style	Conditional formatting	On-click	Ordering
Dose 2	Dose 2	base	Enabled Edit	Show endpoint (complete)	↑ ↓ ✕
Dose 3	Dose 3	base	Enabled Edit	Show endpoint (complete)	↑ ↓ ✕
Dose 4	Dose 4	base	Enabled Edit	Show endpoint (complete)	↑ ↓ ✕
Dose 5	Dose 5	base	Enabled Edit	Show endpoint (complete)	↑ ↓ ✕

Data point error-bar options

Column header	Legend name	Line style
Low range: low_dose	dose range	reference line
High range: high_dose		

Update data-pivot settings
Cancel

Category	Study	Species and Strain	Exposure Duration	Endpoint
Fetal Viability	Borch 2006	Rat Wistar	GD7 to GD20/21	fetal viability
	Wang 2017	Mouse ICR	GD0 to GD21	fetal viability
	Borch 2006	Rat Wistar	GD7 to GD19	fetal viability
	Furr 2014	Rat Sprague-Dawley (Harian)	GD14 to GD18	fetal viability/litter, block 2 (%)
				fetal viability/litter, block 14 (%)
				fetal viability/litter, block 30 (%)
	Hannas 2011	Rat Sprague-Dawley (Harian)	GD14 to GD18	litter size
	Borch 2006	Rat Wistar	GD7 to GD19	litter size
				GD7 to GD20/21
	Sailenfath 2006	Rat Sprague-Dawley	GD6 to GD20	mean dead fetuses/litter (%)
	Howdeshell 2008	Rat Sprague-Dawley	GD8 to GD18	mean fetal mortality/litter (%)
	Hannas 2012	Rat Sprague-Dawley	GD14 to GD18	mean fetal viability/litter (%)
				mean live fetuses/litter
	BASF 2007	Rat Wistar	GD6 to GD20	mean live fetuses/litter (n)
	Howdeshell 2008	Rat Sprague-Dawley	GD8 to GD18	mean live fetuses/litter (n)
Sailenfath 2006	Rat Sprague-Dawley	GD6 to GD20	mean live fetuses/litter (n)	
Sailenfath 2008	Rat Sprague-Dawley	GD12 to GD21	mean pups born alive/litter (%)	

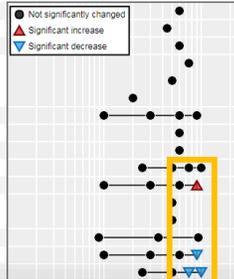


Data point options

Column header	Legend name	Marker style	Conditional formatting	On-click	Ordering
Dose 2	Dose 2	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕
Dose 3	Dose 3	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕
Dose 4	Dose 4	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕
Dose 5	Dose 5	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕

Conditional formatting: Dose 4

Condition field	Significant 4
Condition type	discrete-style
Style for No:	base
Style for :	---
Style for Yes - ↑:	triangle up red
Style for Yes - ↓:	triangle down blue



Data point options

Column header	Legend name	Marker style	Conditional formatting	On-click	Ordering
Dose 2	Dose 2	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕
Dose 3	Dose 3	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕
Dose 4	Dose 4	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕
Dose 5	Dose 5	base	Enabled <input type="button" value="Edit"/>	Show endpoint (complete)	↑ ↓ ✕

Step 4. Modify the 'Data filtering and ordering' subtab of Settings, which allows users to apply additional data filters, sort data rows, add extra spacing and/or lines within the plot area, and customize individual rows of data.

- ❖ Choose the 'Data filtering and ordering' subtab.
 - Row filters determine which components of the data set are displayed on the figure. One or multiple filter criteria can be added. For each criterion, identify 'field name', 'filter type', and 'value'. If multiple criteria are added, the appropriate filter logic must be specified.

For DiBP, no additional filters were applied. We had previously filtered the data to include the effect categories of interest.
 - Row sorting specifies the order in which rows of data will appear. Sorting priority is based on the order in which the fields are listed. Specify sorting order for each field as either ascending or descending. To adjust ordering priority, use the 'move up' and 'move down' arrows under 'Ordering'. Remove fields using the 'x' under 'Ordering'.

For DiBP, we sorted by effect category and then by endpoint.
 - Additional row spacing adds extra spacing and/or lines within the plot area. To use this option, the 'row index' or line number for each row of data needing a horizontal line and/or added space must be determined. Keep in mind that these lines and added spaces are static and might need to be revisited if data are added, removed, or resorted.

For DiBP, visual #3, we added black lines to separate the 3 effect categories (at 17, 27, and 29).
 - Row-level customization of individual rows of data can be performed after other filtering and sorting is complete. Note that any changes applied here to sorting, filtering, or styles will override previously defined settings.

For DiBP, no row-level customizations were made. Customizations to individual rows is most useful for traditional data pivots because each result has its own row.
- When modifications to the 'Data filtering and ordering' subtab are complete, click 'Update data pivot settings' to save updates and display the visualization.

Settings: Data filtering and ordering

Row filters

New row

Use filters to determine which components of your dataset should be displayed on the figure.

Field name	Filter type	Value	Ordering
---	contains		↑ ↓ ✕
---	contains		↑ ↓ ✕

Filter logic

Should multiple filter criteria be required for ALL rows (AND), or ANY row (OR)?

AND OR

Row sorting

New row

Sorting determines the order which rows will appear; sorts can be overridden using the manual override table below.

Field name	Sort order	Ordering
effect	<input checked="" type="radio"/> Ascending <input type="radio"/> Descending	↑ ↓ ✕
endpoint name	<input checked="" type="radio"/> Ascending <input type="radio"/> Descending	↑ ↓ ✕

Additional row spacing

New row

Add additional-space between rows, and optionally a horizontal line.

Row index	Show line?	Line style	Extra space?	Delete
-1	<input checked="" type="checkbox"/>	reference line	<input type="checkbox"/>	✕
17	<input checked="" type="checkbox"/>	solid black	<input checked="" type="checkbox"/>	✕
27	<input checked="" type="checkbox"/>	solid black	<input checked="" type="checkbox"/>	✕
29	<input checked="" type="checkbox"/>	reference line	<input checked="" type="checkbox"/>	✕

Row-level customization

Refresh

Reset

Row-level customization of individual rows after filtering/sorting above. Note that any changes to sorting or filtering will alter these customizations.

Description	Include	Row index	Override text style	Override line style	Override symbol style
Fetal Viability Borch 2006 Rat Wistar GD7 to GD20/21 fetal viability	<input checked="" type="checkbox"/>		---	---	---

Category	Study	Species and Strain	Exposure Duration	Endpoint	
Fetal Viability	Borch 2006	Rat Wistar	GD7 to GD20/21	fetal viability	●
	Wang 2017	Mouse ICR	GD0 to GD21	fetal viability	●
	Borch 2006	Rat Wistar	GD7 to GD19	fetal viability	●
	Furr 2014	Rat Sprague-Dawley (Harian)	GD14 to GD18	fetal viability/litter, block 2 (%)	●
				fetal viability/litter, block 14 (%)	●
				fetal viability/litter, block 30 (%)	●
	Hannas 2011	Rat Sprague-Dawley (Harian)	GD14 to GD18	litter size	●
	Borch 2006	Rat Wistar	GD7 to GD19	litter size	●
			GD7 to GD20/21	litter size	●
	Sailenfalt 2006	Rat Sprague-Dawley	GD6 to GD20	mean dead fetuses/litter (%)	●
Implantation and Resorption	Howdeshell 2008	Rat Sprague-Dawley	GD8 to GD18	mean fetal mortality/litter (%)	▲
	Hannas 2012	Rat Sprague-Dawley	GD14 to GD18	mean fetal viability/litter (%)	●
				mean live fetuses/litter	●
	BASF 2007	Rat Wistar	GD6 to GD20	mean live fetuses/litter (n)	●
	Howdeshell 2008	Rat Sprague-Dawley	GD8 to GD18	mean live fetuses/litter (n)	●
	Sailenfalt 2006	Rat Sprague-Dawley	GD6 to GD20	mean live fetuses/live litter (n)	▼
	Sailenfalt 2008	Rat Sprague-Dawley	GD12 to GD21	mean pups born alive/litter (%)	●
	Howdeshell 2008	Rat Sprague-Dawley	GD8 to GD18	mean implantations/litter (n)	●
	Sailenfalt 2008	Rat Sprague-Dawley	GD12 to GD21	mean postimplantation loss/litter (%)	●
	Sailenfalt 2006	Rat Sprague-Dawley	GD6 to GD20	mean postimplantation loss/litter (%)	▲
BASF 2007	Rat Wistar	GD6 to GD20	mean postimplantation loss/litter (%)	●	
			mean preimplantation loss/litter (%)	●	
Sailenfalt 2006	Rat Sprague-Dawley	GD6 to GD20	mean resorptions/litter (%)	▲	
Howdeshell 2008	Rat Sprague-Dawley	GD8 to GD18	mean resorptions/litter (n)	▲	
BASF 2007	Rat Wistar	GD6 to GD20	mean resorptions/litter (n)	●	

● Not significantly changed
▲ Significant increase
▼ Significant decrease

Row sorting

Sorting determines the order which rows will appear; sorts can be overridden using the manual override table below.

Field name	Sort order	Ordering
effect	<input checked="" type="radio"/> Ascending <input type="radio"/> Descending	<input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="✕"/>
endpoint name	<input checked="" type="radio"/> Ascending <input type="radio"/> Descending	<input type="button" value="↑"/> <input type="button" value="↓"/> <input type="button" value="✕"/>

Additional row spacing

Add additional-space between rows, and optionally a horizontal line.

Row index	Show line?	Line style	Extra space?	Delete
-1	<input checked="" type="checkbox"/>	reference line	<input type="checkbox"/>	<input type="button" value="✕"/>
17	<input checked="" type="checkbox"/>	solid black	<input checked="" type="checkbox"/>	<input type="button" value="✕"/>
27	<input checked="" type="checkbox"/>	solid black	<input checked="" type="checkbox"/>	<input type="button" value="✕"/>
29	<input checked="" type="checkbox"/>	reference line	<input checked="" type="checkbox"/>	<input type="button" value="✕"/>

Step 5. Modify the 'References' subtab of Settings, which facilitates addition of references lines, reference ranges, and labels to the visualization.

Commented [MD1]: No screenshots for this step

- ❖ Choose the 'References' subtab.

The 'References' subtab facilitates addition of **references lines**, **reference ranges**, and **labels** to the visualization.

These additions are not likely to be useful for an ER array-style data pivot.

- A vertical **reference line** can be added to a value on the x-axis by entering a 'reference line value' and 'line style'.
- A shaded vertical **reference range** can be added corresponding to a range of values on the x-axis by entering a reference line range and style.
- **Labels** can be added anywhere within the plot area. Enter a label into the text box. While still in update mode, click the visualization tab to view the position of the label. Drag the label to the desired position.
- When modifications to the 'References' subtab are complete, click 'Update data pivot settings' to save updates and display the visualization.

Step 6. Modify the 'Styles' subtab of Settings, which allows users to add, update, or delete styles available for the visualization.

- ❖ Choose the 'Styles' subtab.

The 'Styles' subtab allows users to add, update, or delete styles available for the visualization. Changes to styles in one visualization will not affect styles used in other visualizations unless a style-modified visualization is used as a template.

For DiBP, we did not add any new styles.

- Styles can be modified for **symbols**, **lines**, **text**, and the **rectangles** used in bar charts.
- HAWC does not allow modifications to **symbol**, **line**, or **rectangle types**, but users can edit attributes such as fill color, fill opacity, stroke or border width, and stroke color for each existing symbol type. For example, to change the opacity of the blue up-triangle symbol, select the blue up-triangle from the list of symbols and select 'Update'. Reduce the fill opacity to the desired level. As updates are selected, changes to the symbol are reflected in the top-left corner. When modifications are complete, click 'Save and close' to submit the changes.

- For **text**, font size, font color, and text alignment can be changed for base text, header text, title text, and others. HAWC allows two font styles—Arial and Times New Roman—but font style is selected on the *'Other settings'* subtab.
- When modifications to the *'Styles'* subtab are complete, click 'Update data pivot settings' to save updates and display the visualization.

Settings: Styles

Data Settings Visualization

Descriptive text columns Visualization data Data filtering and ordering References **Styles** Other settings

Symbols

base

+ New Update Delete

Lines

base

+ New Update Delete

Texts

Left-just header

+ New Update Delete

Left-just header

.text

Name: Left-just header

Font Size: 12

Fill: █

Fill opacity: 1

Type: start

Type: bold

Rotation: 0

.text

Rectangles

base

+ New Update Delete

█

Update data-pivot settings Cancel

Step 7. Modify the 'Other settings' subtab of Settings, which allows users to modify various aspects of the plot area, including the legend.

- ❖ Choose the 'Other settings' subtab.

The 'Other settings' subtab allows users to modify various aspects of the plot area, including the legend.

- An optional '**Title**' field is provided and by default contains only the word "Title." This title sits directly above the visualization. This default text should be modified or deleted.

For DiBP, we did not add this additional title.

- The '**X-axis label**' field defaults to "Axis label." This label sits directly below the visualization. Modify this default label as appropriate.

For DiBP, we used Log Dose (mg/kg-day).

- To enter an **x-axis minimum and maximum**, enter the minimum and maximum values you would like to use, separated by a comma. Otherwise, leave blank to show the full range of values.

For some DiBP visualizations, minimum and maximum ranges were added to center results within the plot area.

- To merge descriptions and reduce repetitive text that occurs for some fields, check the '**Merge descriptions**' box and indicate up to which field you would like to merge.

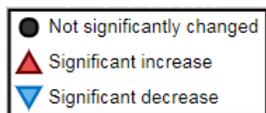
For DiBP, we merged up to Exposure Duration.

- HAWC provides default settings for other features such as plot size, font style, plot padding, and background highlighting (or shading), and these can also be modified as needed.

For DiBP, we may have increased plot padding at the top to better fit the legend.

- Modifications to **Legend Settings** are made at the bottom of this page.

For DiBP, we modified the legend as follows.



- Layout of the legend can be modified by changing the **'number of columns'**.
- **'Border width'** can be modified by sliding the number bar to the desired location.
- **'Border color'** can be changed by expanding the color square, selecting the color family from the color strip on the right-hand side of the color square, and then dragging the black dot within the color square to the desired shade. Click *'choose'* when finished to save changes.
- An **x-location** and **y-location** can be specified to move the legend to a different spot on the visualization. Alternatively—while still in update mode—click the *'Visualization'* tab. Manually drag the legend to the desired position and return to the *'Other settings'* subtab.
- **Legend items** can be added, edited, or deleted.
- Clicking the *'New'* button will open a **Modify Legend Entry** box with four fields in which to add the legend name, symbol style, line style, or rectangle style that will display in the legend. Make the desired additions and click **'Save and close'**.
- To *Edit* or *Delete* a legend item, you must first choose the legend item of interest from the drop-down list.
 - ✓ Clicking *Edit* will open a **Modify Legend Entry** box with four fields that you can use to edit the legend name, symbol style, line style, or rectangle style that will display in the legend. Make the desired changes and click **'Save and close'**.
 - ✓ *Delete* will immediately delete a legend item and will not give you a warning prior to the item being deleted.
 - ✓ Once the legend items are set, you can change the order of the items using the up and down arrows in between the *New* and *Edit* buttons.
- When modifications to the *'Other settings'* subtab are complete, click *'Update data pivot settings'* to save updates and display the visualization.

Settings: Other settings

Data Settings Visualization

Descriptive text columns Visualization data Data filtering and ordering References Styles **Other settings**

Plot width	<input type="text" value="400"/>
Minimum row height	<input type="text" value="12"/>
Font style	<input type="text" value="Arial"/>
Title	<input type="text" value="Test Title"/>
X-axis label	<input type="text" value="Log Dose (mg/kg-day)"/>
Show x-axis ticks	<input checked="" type="checkbox"/>
Show y-axis ticks	<input checked="" type="checkbox"/>
Logscale	<input checked="" type="checkbox"/>
Axis minimum and maximum (ex: "1,100")	<input type="text" value="10,10000"/>
Plot padding top	<input type="text" value="25"/>
Plot padding right	<input type="text" value="25"/>
Plot padding bottom	<input type="text" value="40"/>
Plot padding left	<input type="text" value="20"/>
Merge descriptions	<input checked="" type="checkbox"/>
Merge descriptions up to	<input type="text" value="Exposure Duration"/>
Merge aggressively	<input checked="" type="checkbox"/>
Highlight background text	<input checked="" type="checkbox"/>
Highlight background text color	<input type="text" value=""/>

Legend item

Not significantly changed

Not significantly changed

Significant increase

Significant decrease

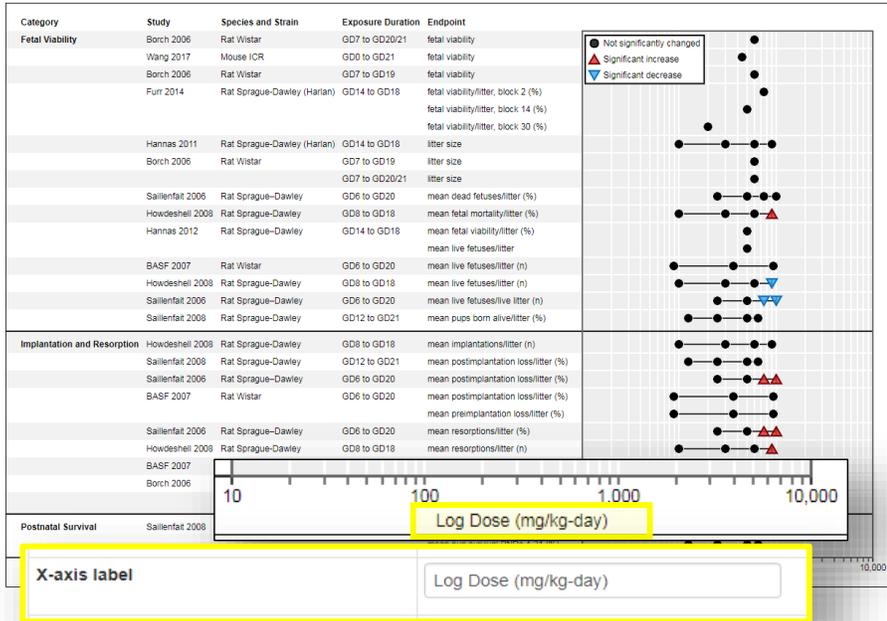
New ↑ ↓ Edit

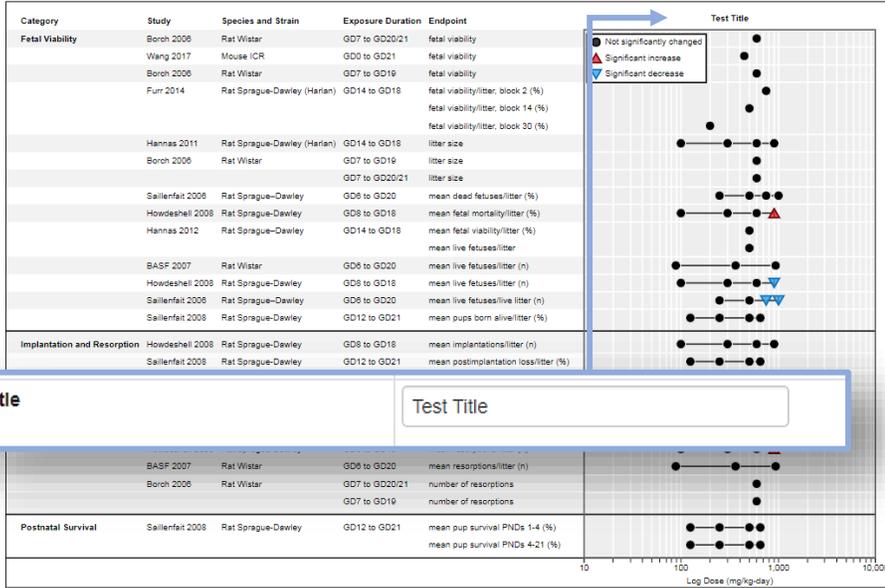
Legend Settings

Show legend	<input checked="" type="checkbox"/>
Number of columns	<input type="text" value="1"/>
Border width	<input type="text" value="5"/>
Border color	<input type="text" value=""/>
X-location on figure	<input type="text" value="4"/>
Y-location on figure	<input type="text" value="6"/>
Legend item	<input type="text" value="Not significantly changed"/>

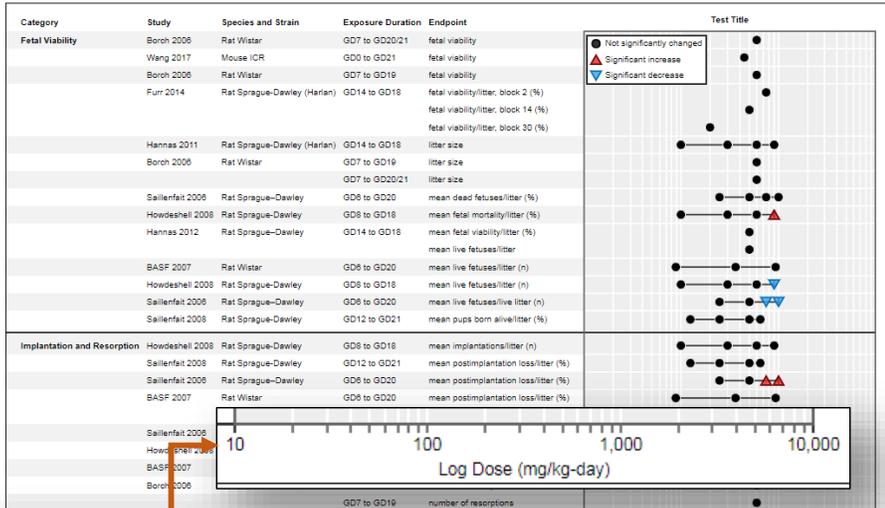
- Not significantly changed
- ▲ Significant Increase
- ▼ Significant decrease

New ↑ ↓ Edit Delete

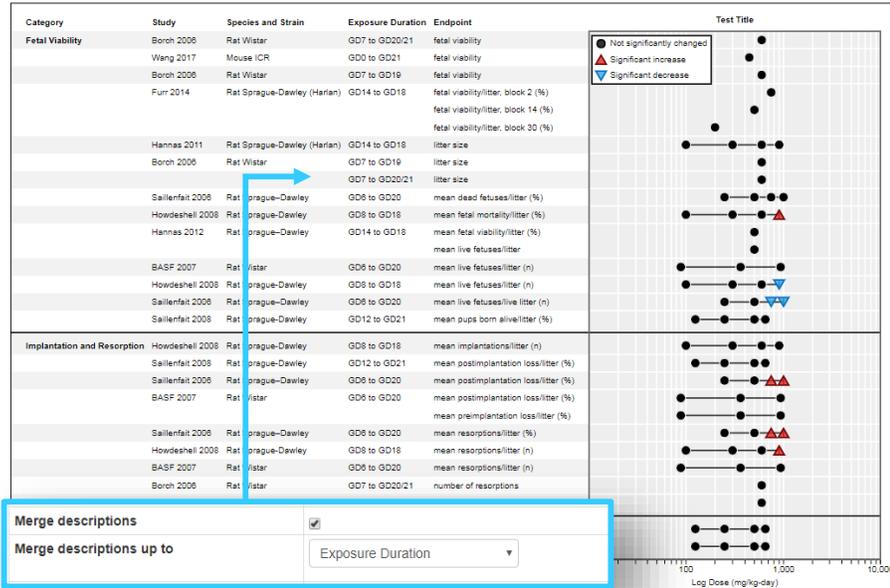
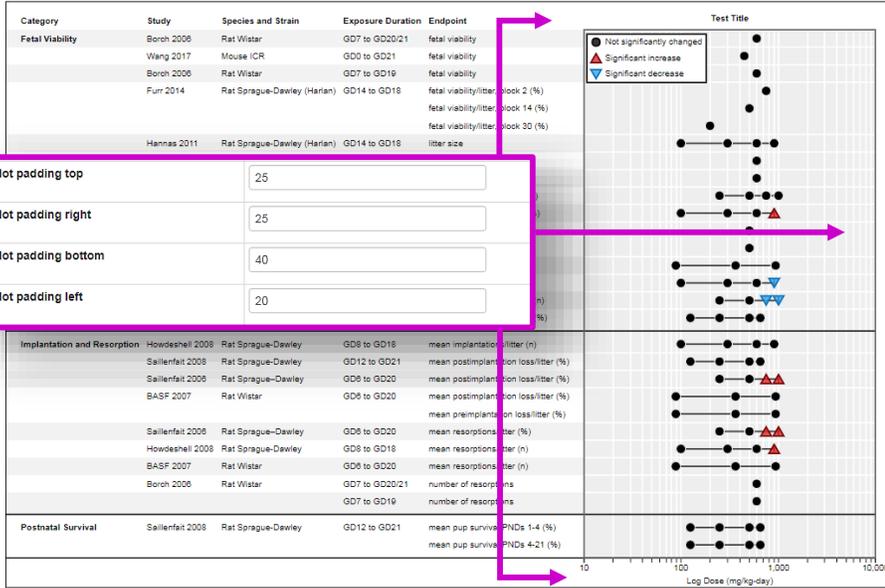


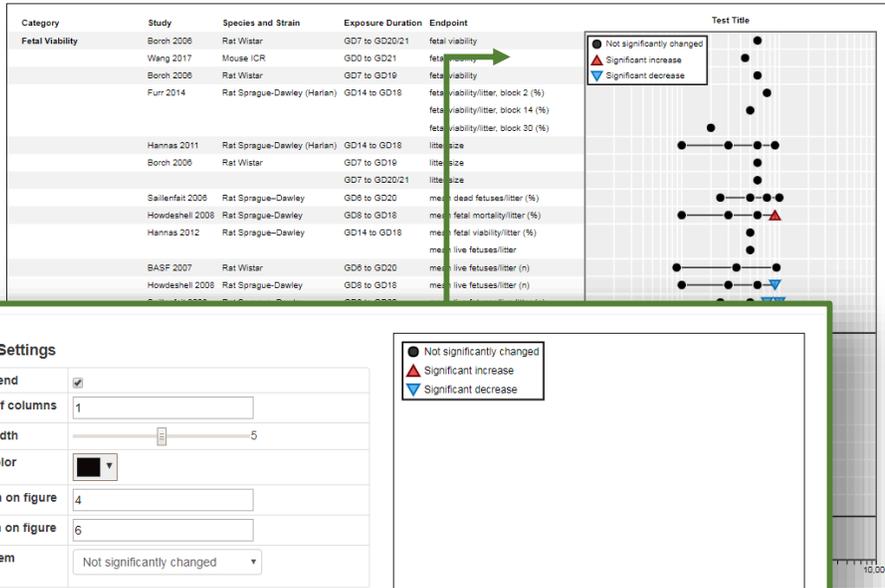


Title



Axis minimum and maximum (ex: "1,100")





Legend Settings

Show legend

Number of columns

Border width

Border color

X-location on figure

Y-location on figure

Legend item

- Not significantly changed
- Significant increase
- Significant decrease