Likelihood: Dynamic Analysis

Overview

Dynamic Sensitivity analysis for Likelihood is used to dynamically change the likelihoods of the threats to determine how these changes affect the likelihoods of the events.

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".

The bars at the left represent the likelihood of the sources, while the bars at the right are the likelihood of the events.



By dragging the source's likelihoods back and forth in the left column, the likelihoods of the events will change in the right column.

All Participants	Sources In		Events In	
Human Factor	Sources 🛤	59.58%	Late Train Running	35.48%
Environmental		19.94%	Degradation of Intelligent Monitoring System Physical Assets	11.17%
Infrastructure	\triangleright	23.38%	Line Closure	27.22%
Terrorism		5.36%	Failed Integration with Future Monitoring System Network	15.55%
Technology		13.97%	Intelligent Event Monitoring Network Shut Down	18.55%
			Major Train Work Accident	17.64%
			Minor Train Work Accident	14.67%
			Major Train Public Accident	17.69%

The black markers on the source and event bars indicate the original sources' and events' likelihoods.

Human Factor	\bigcirc
	\bigcirc

After temporarily changing the likelihoods of one or more of the sources, you can press the 🔰 reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.

	Intelligent Event London Underground Monitoring Dynamic Analysis for All Participants					
── Sources	All Participants Sources 1 × Inadequately Trained Staff 10.479	Events (x 6 Late Train Running 37.70%				
Inadequately Trained Staff Disregarding or Not Following Proper	Disregarding or Not Following 45.189	6 Degradation of Intelligent 6.30%				
Lack of Situational Awareness Engineers Failure to Properly Install E	Engineers Failure to Properly 13.979	Failed Integration with Future 7.56%				
Flooding of Intelligent Event Monitorin Lightning Striking Signaling Infrastruct		Intelligent Event Monitoring 21.97% Major Train Work Accident 25.85%				
- Infrastructure - Minor Electrical Power Shortage		Minor Train Work Accident 21.45% Major Train Public Accident 26.09%				
Dynamic Analysis for the Events Likelihoods due to Human Factor						

You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:

韋 🚠 Local Global	Simulate	d Results	
Sources	All Participants		
oources	Local	Global	
<mark>⊟</mark> – Sources			
- Human Factor	59.58%	59.58%	
- Inadequately T	10.47%	6.24%	
Disregarding o	45.18%	26.92%	
Lack of Situati	15.42%	9.19%	
Engineers Fail	13.97%	8.32%	
Environmental	19.94%	19.94%	
— Flooding of Int	2.03%	0.4%	
Lightning Striki	1.08%	0.22%	
- Infrastructure	23.38%	23.38%	
— Minor Electrica	19.22%	4.49%	
— Major Electrica	7.91%	1.85%	

You can hide the Sources Hierarchy at the left using



Click to show/hide the toolbar options: =



DIDN'T SEE WHAT YOU ARE LOOKING FOR? Try enabling the Advanced Mode switch at the bottom of the page, this will show the advanced options on this page.

Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the button will open a window where you can select a participant or a group.



You can use the prev $\left| \begin{array}{c} \\ \\ \end{array} \right|$ and the next $\left| \begin{array}{c} \\ \\ \end{array} \right|$ buttons to cycle through each participant or group.

Filter Events

By default, all events are displayed.

Show all events				
Show all events				
Show top 5 events b				
Show top 10 events				
Show top 25 events				
Advanced				
Show bottom 5 even				
Show bottom 10 eve				
Show bottom 25 eve				
Select/deselect events				
Filter by event attrib				
Show risks only				
Show opportunities				

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

Advanced		
Select top	✓ Events based on All Participants ✓	priorities
	ОК	Cancel

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

Events Components

Checking the Show Components displays the breakdown of each of the source's contributions or share to the likelihoods of each of the events

Sour	ces 🗶	Events 🗶	
Human Factor	59.58%	Late Train Running	35.48%
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Infrastructure	23.38%	Line Closure	27.22%
Terrorism	5.36%	Failed Integration with Future Monitoring System Network	15.55%
Technology	13.97%	Intelligent Event Monitoring Network Shut Down	18.55%
		Major Train Work Accident	17.64%
		Minor Train Work Accident	14.67%
		Major Train Public Accident	17.69%

The breakdown colors of the event bars at the right corresponds to each of the sources at the left.

Active Sorting (Keep Sorting)

Active Sorting is only enabled when Events are Sorted by Likelihoods.

Checking the Active Sorting checkbox actively re-sorts the events as the source likelihoods are being adjusted.

	Show Decimals: So Vulnerability V 2 V	ort Sources by: Sort E None V Prior	vents by: ✓ Active ☐ Show Components	
	Intelliger	nt Event London Dynamic Analysis	Underground Monitoring for All Participants	
[All Participants]		LIKen	noous	
	Sources Ix		Events IF	
Human Factor		59.58%	Late Train Running	35.48%
Environmental		19.94%	Line Closure	27.22%
L				
Infrastructure		23.38%	Intelligent Event Monitoring Network Shut Down	18.55%
Terrorism		5.36%	Major Train Public Accident	17.69%
Technology		13.97%	Major Train Work Accident	17.64%
			Failed Integration with Future Monitoring System Network	15.55%
			Minor Train Work Accident	14.67%
			Degradation of Intelligent Monitoring System Physical Assets	11.17%

When the Active Sorting is OFF, the initial sorting of the events will be remembered.

Change Events Color

Clicking on the event bar will open a color picker where you can select and change the color assignment.

	Sources Ix
Human Factor	59.58%
Environmental	19.94%
Infrastructure	23.38%
Terrorism	5.36%
Technology	13.97%

Events 🚛	
Late Train Running	35.48%
Degradation of Intelligent Monitoring System Physical Assets	11.17%
line line	
Line Closse	27.22%
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You can also change colors from the Events and Threats/Sources Grid.

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Advanced Mode Options



4. Show Markers

Checking the Show Markers checkbox displays red and blue markers on the events bars indicating the likelihood when the selected source is dragged to the maximum (100%) or minimum (0%) respectively.

	Sources 🕽		Events 🕽	
Human Factor	-	59.58%	Late Train Running	35.48%
Environmental		19.94%	Degradation of Intelligent Monitoring System Physical Assets	11.17%
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The selected source in the example above is the "Human Factor" as indicated by its light gray background. When the

"Human Factor" bar is dragged to the maximum (100%), the events' bars at the right will be filled up to where the red marker is. When it is dragged to the minimum (0%), the events bars at the right will be filled up to where the blue marker is.

Depending on the event, red might be on the right and blue on the left, or vice-versa.