



# Statistical Insights: From One-Click Solutions to Advanced Calculations

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**Reporting is  
engineering**

eaZyBI





**Community Day**  
**April 8, 2022**

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**Statistics out-of-  
the-box**

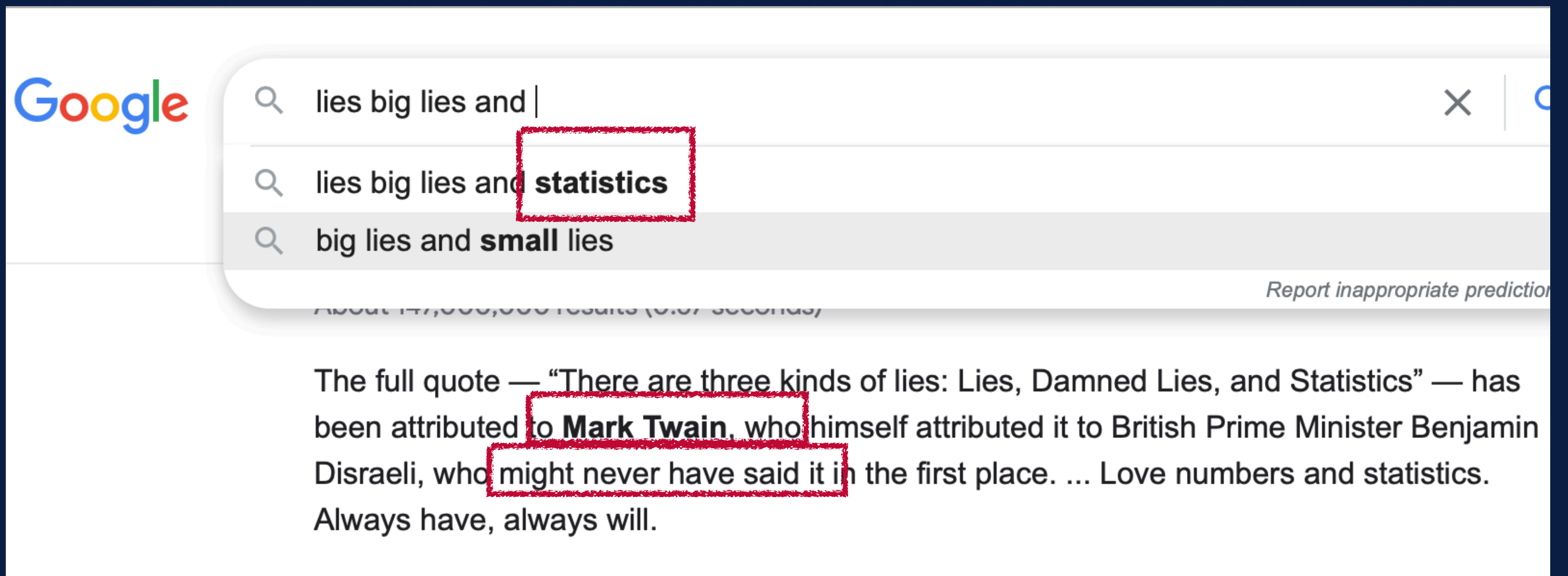
**Interval dimensions,  
scatter charts**

**Statistics with  
MDX functions**



## CONTEXT

# Lies, big lies and ...



The image is a screenshot of a Google search interface. The search bar contains the text "lies big lies and |". Below the search bar, there are three search suggestions: "lies big lies and **statistics**", "big lies and **small** lies", and "big lies and **small** lies". The word "statistics" in the first suggestion is highlighted with a red box. Below the suggestions, there is a link to "Report inappropriate prediction". The search results show "About 147,000,000 results (0.07 seconds)". The first result snippet reads: "The full quote — 'There are three kinds of lies: Lies, Damned Lies, and Statistics' — has been attributed to **Mark Twain**, who himself attributed it to British Prime Minister Benjamin Disraeli, who might never have said it in the first place. ... Love numbers and statistics. Always have, always will." The words "Mark Twain" and "might never have said it in the first place" are highlighted with red boxes.

Google

lies big lies and |

lies big lies and **statistics**

big lies and **small** lies

[Report inappropriate prediction](#)

About 147,000,000 results (0.07 seconds)

The full quote — "There are three kinds of lies: Lies, Damned Lies, and Statistics" — has been attributed to **Mark Twain**, who himself attributed it to British Prime Minister Benjamin Disraeli, who might never have said it in the first place. ... Love numbers and statistics. Always have, always will.

# Averages

Standard measures and custom measures

Columns

Measures

average

Predefined

Average resolution days = show   Average resolution workdays = show   Average closing days = show

Average age days = show   Average age workdays = show   Average days in transition status = show

Average workdays in transition status = show

## Calculated member formula

[Measures].[Average resolution days] =

```
1 CASE WHEN [Measures].[Issues resolved] > 0 THEN
2   [Measures].[Total resolution days] / [Measures].[Issues resolved]
3 END
```

## Define report specific calculated member formula

[Measures].[Average resolution days V2] =

```
1 Avg(
2   Filter(Descendants([Issue].CurrentMember,[Issue].[Issue]),
3     [Measures].[Issues resolved]>0
4   ),
5   [Measures].[Total resolution days]
6 )
```

# Add calculated

Standard calculations of basic statistical functions on **Visible rows**

The screenshot displays a data visualization tool interface. On the left, the 'Rows' pane shows a hierarchy with 'Time' selected, including options for 'Select individual members' and 'All hierarchy level members'. The 'Columns' pane at the top right shows a 'Measures' button. Below this, a row of chart types (Table, Bar, Line, Pie, Scatter, Timeline, Map, Gantt, Gauge) is visible, with 'Table' selected. A toolbar contains icons for various actions and buttons for 'Hide empty', 'Total', and 'Freeze header'. The main table area shows a list of quarters from '+ Q1 2017' to '+ Q1 2019'. A context menu is open over the table, listing actions like 'Drill into', 'Add calculated', 'Select this', 'Remove', 'Order by', 'Top rows', 'Bottom rows', 'Filter rows', and 'Cell formatting'. The 'Add calculated' option is expanded, showing a 'Statistical' submenu with options: 'Average', 'Median', 'Min', 'Max', '% of total', 'Cumulative sum', 'Linear trend', 'Time ago', 'Sparklines', and 'Empty as 0'. The 'Statistical' option is highlighted with a red border.

Pages  
Drag here if needed

Columns  
> Measures

Rows  
Nonempty

Table Bar Line Pie Scatter Timeline Map Gantt Gauge

Hide empty Total Freeze header

Time  
Select individual members  
All hierarchy level members  
Select all members at level  
Year 6 Quarter 22 Month 63  
Day 766  
Weekly edit  
Year 6 Week 218 Day 766  
Add custom hierarchy  
Add members for date range  
Delete members for date range

Issues created

+ Q1 2017  
+ Q2 2017  
+ Q3 2017  
+ Q4 2017  
+ Q1 2018  
+ Q2 2018  
+ Q3 2018  
+ Q4 2018  
+ Q1 2019

Drill into  
Add calculated  
Select this  
Remove  
Order by  
Top rows  
Bottom rows  
Filter rows  
Cell formatting

Statistical  
Average  
Median  
Min  
Max  
% of total  
Cumulative sum  
Linear trend  
Time ago  
Sparklines  
Empty as 0

10

# Standard calculation: average

Dimensions [hide](#)

> Project

> Reporter

> Assignee

> Issue Type

> Priority

> Status

> Resolution

> Affects Version

> Fix Version

> Security Level

> Issue

> Logged by

> Label

> Time

> Week Day

> Transition Status

> Transition

> Transition Author

> Age interval

> Resolution interval

Advanced Roadmaps show 6 dimensions

Agile show 3 dimensions

Custom fields show 15 dimensions

Elements Connect show 1 dimension

Insight show 2 dimensions

Issue links show 1 dimension

Tempo show 3 dimensions

User groups show 4 dimensions

Pages

Drag here if needed

Columns

> Measures

Rows

Drag dimensions here

Table

Bar

Line

Pie

Scatter

Timeline

Map

Gantt

Gauge

Drag at least one dimension to columns and one dimension to rows to query data.



# Standard calculation: linear trend

Issues >

Save

Save as

New

Open

> Transition Author

> Age interval

> Resolution interval

> Week Day

Custom fields show 6 dimensions

Pages

> Time

Columns

> Measures

Rows

Nonempty

< Time

< All hierarchy level members

Select all members at level

Year 9

Quarter 34

Month 99

Day 2136

Weekly 

edit

Year 9

Week 425

Day 2136

Add custom hierarchy

Add members for date range

Delete members for date range

> Drill into or expand

Pages

Table

Bar

Line

Pie

Scatter

Timeline

Map

Gantt

Gauge

Total ▾

Freeze header

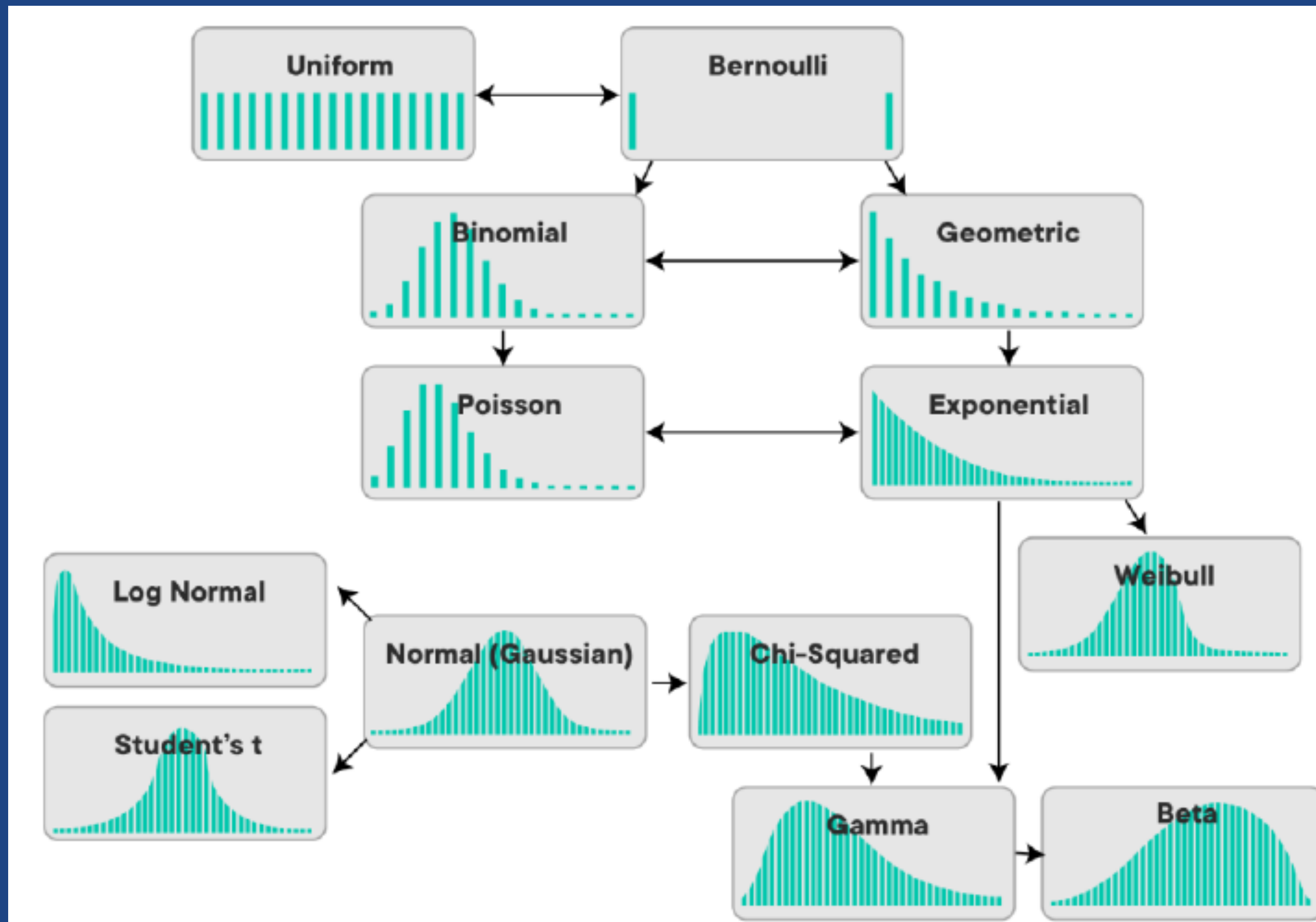
2021 ▾

	Issues created
+ Jan 2021	38
+ Feb 2021	77
+ Mar 2021	74
+ Apr 2021	48
+ May 2021	56
+ Jun 2021	34
+ Jul 2021	42
+ Aug 2021	31
+ Sep 2021	54
+ Oct 2021	60
+ Nov 2021	47
+ Dec 2021	46



# Interval dimensions

Showing the statistical distribution





# Issue age, resolution

## Interval dimensions



Import the **Age interval** and **Resolution interval** dimensions which can be used to analyze the age of unresolved issues and the resolution time of resolved issues by specified time intervals.

```
DateDiffDays(  
  [Measures].[Issue created date],  
  Now()  
)
```

Pages

Drag here if needed

Columns

> Measures

Rows

Nonempty

> Resolution interval

Table

Bar

Line

Pie

Scatter

Timeline

Map

✕

↶

↷

💬

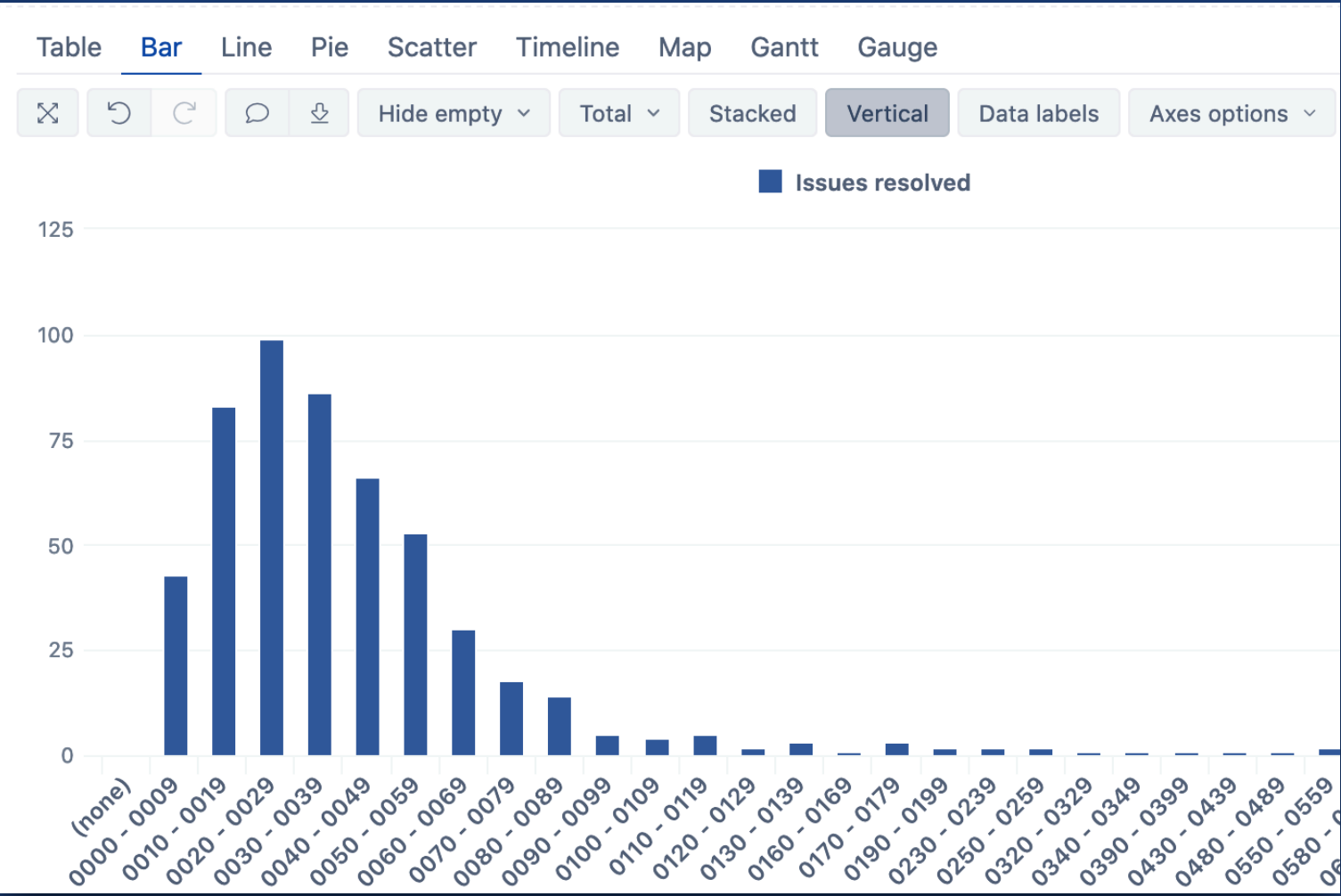
⬇

Total ▾

Freeze header

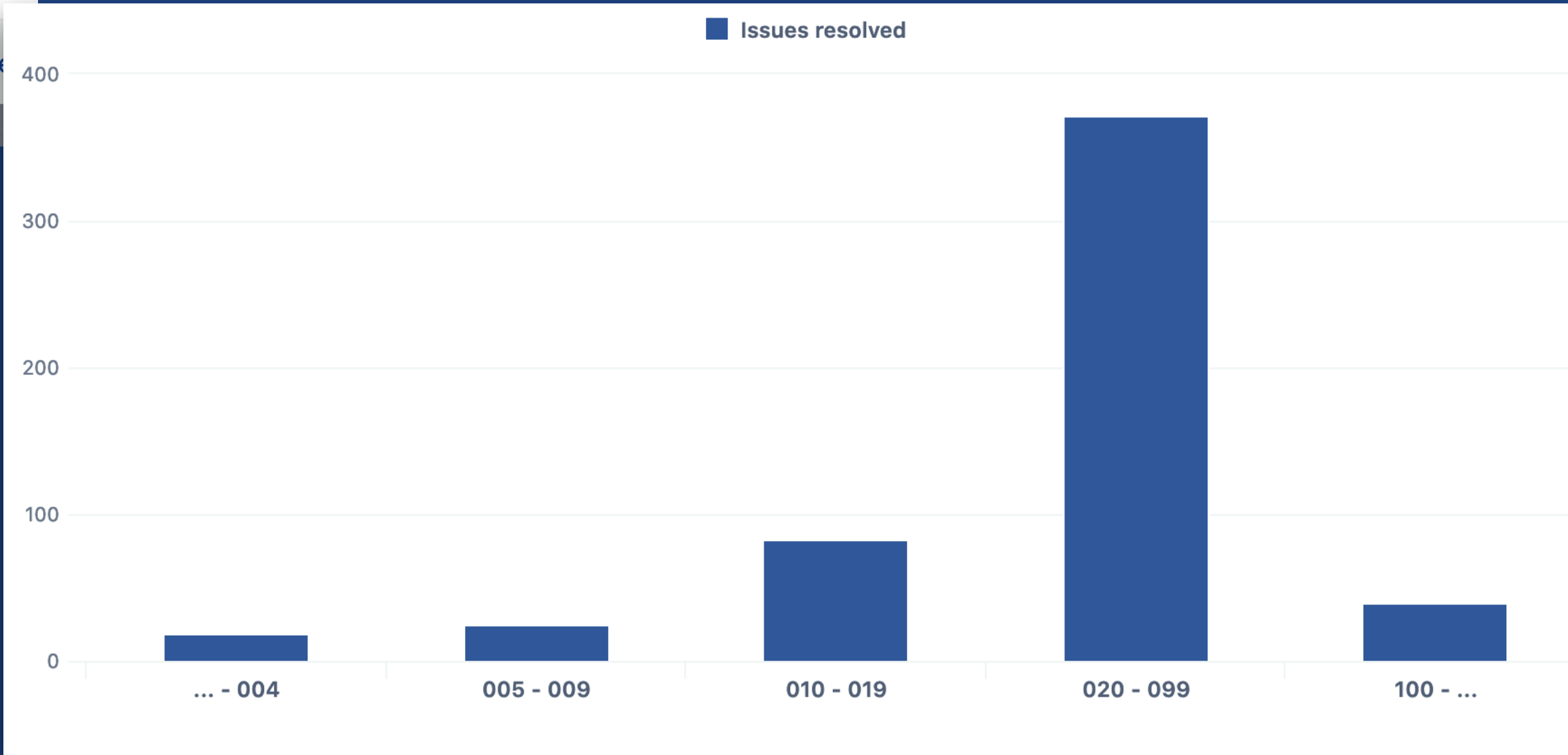
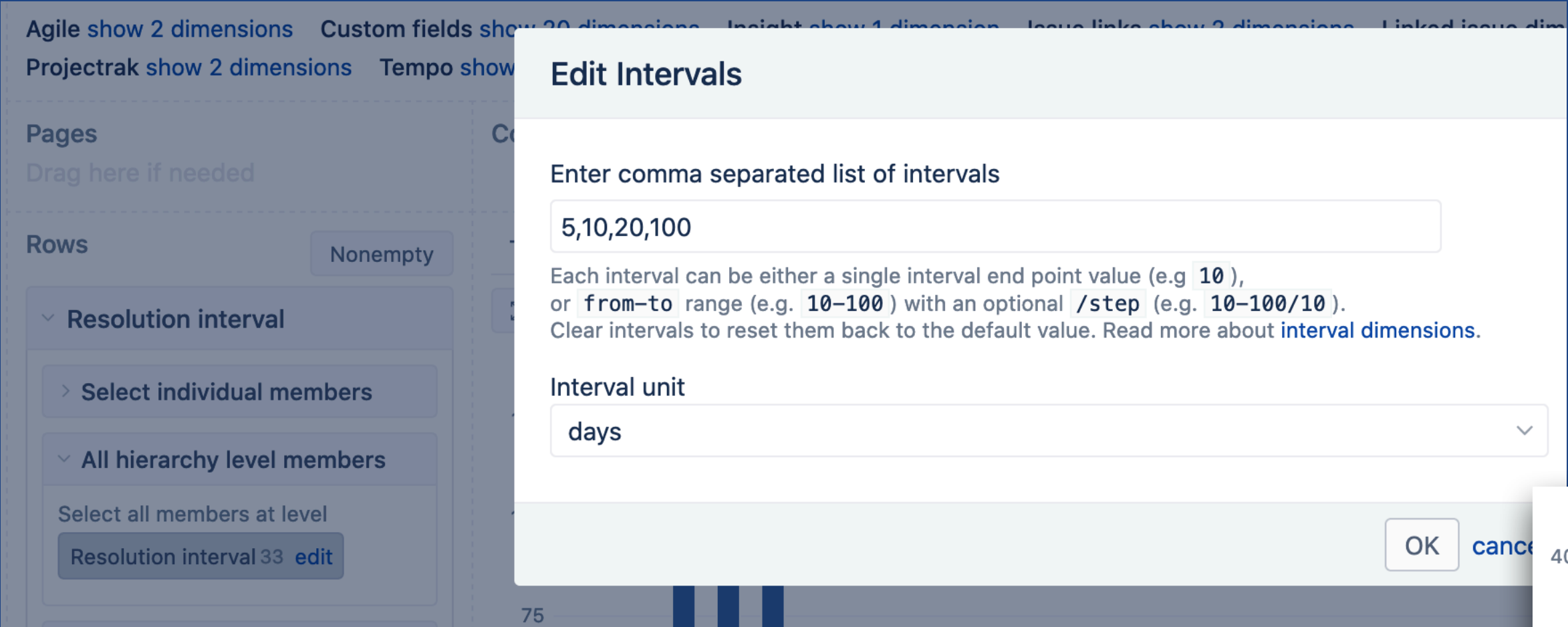
	Issues resolved	Issues created
— All Resolution intervals	536	733
(none)		197
0000 - 0009	43	43
0010 - 0019	83	83
0020 - 0029	99	99
0030 - 0039	86	86
0040 - 0049	66	66
0050 - 0059	53	53
0060 - 0069	30	30

```
DateDiffDays(  
  [Measures].[Issue created date],  
  [Measures].[Issue resolution date]  
)
```





# Interval configuration





# Report optimization use cases with interval dimensions

How many issues spent in a status more than 5 days?

```
1 NonZero(Count(  
2   Filter(Descendants([Issue].CurrentMember,[Issue].[Issue]),  
3     ([Measures].[Days in transition status],  
4     [Transition Status].[In Progress]))>5  
5 )  
6 ))|
```

```
1 ([Measures].[Issues created],  
2 [In Progress intervals].[5 - ...])
```

General License Additional Advanced settings

Advanced settings

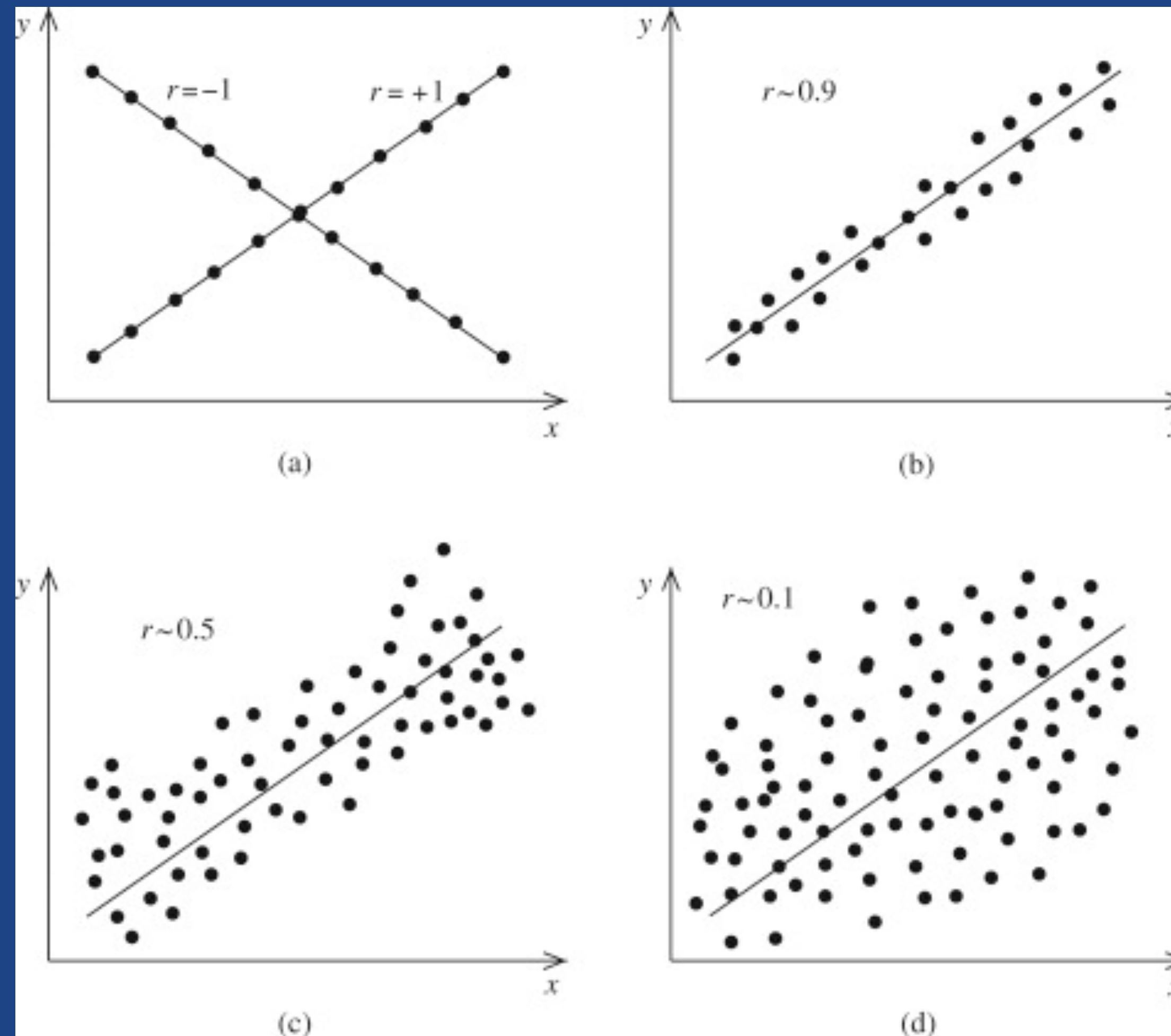
Please see the [advanced settings documentation page](#).

```
1 [jira.customfield_in_progress_intervals]  
2 name = "In Progress intervals"  
3 data_type = "decimal"  
4 time_unit = "seconds"  
5 time_interval = "duration"  
6 intervals = "/10"  
7 interval_unit = "days"  
8 measure = true  
9 dimension = true  
10 javascript_code = ''  
11 var transitto = Date.parse(issue.fields.created);  
12 var statuslist = ["In Progress"];  
13 var sec_in_statuses = null;  
14 var transitfrom = null;  
15 issue.changelog.histories.forEach(function(history){  
16   history.items.forEach(function(historyItem){  
17     if (historyItem.field == "status") {
```

Custom field	Import as dimension	Import as measure	Import as property	Import value changes
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
In Progress intervals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>	

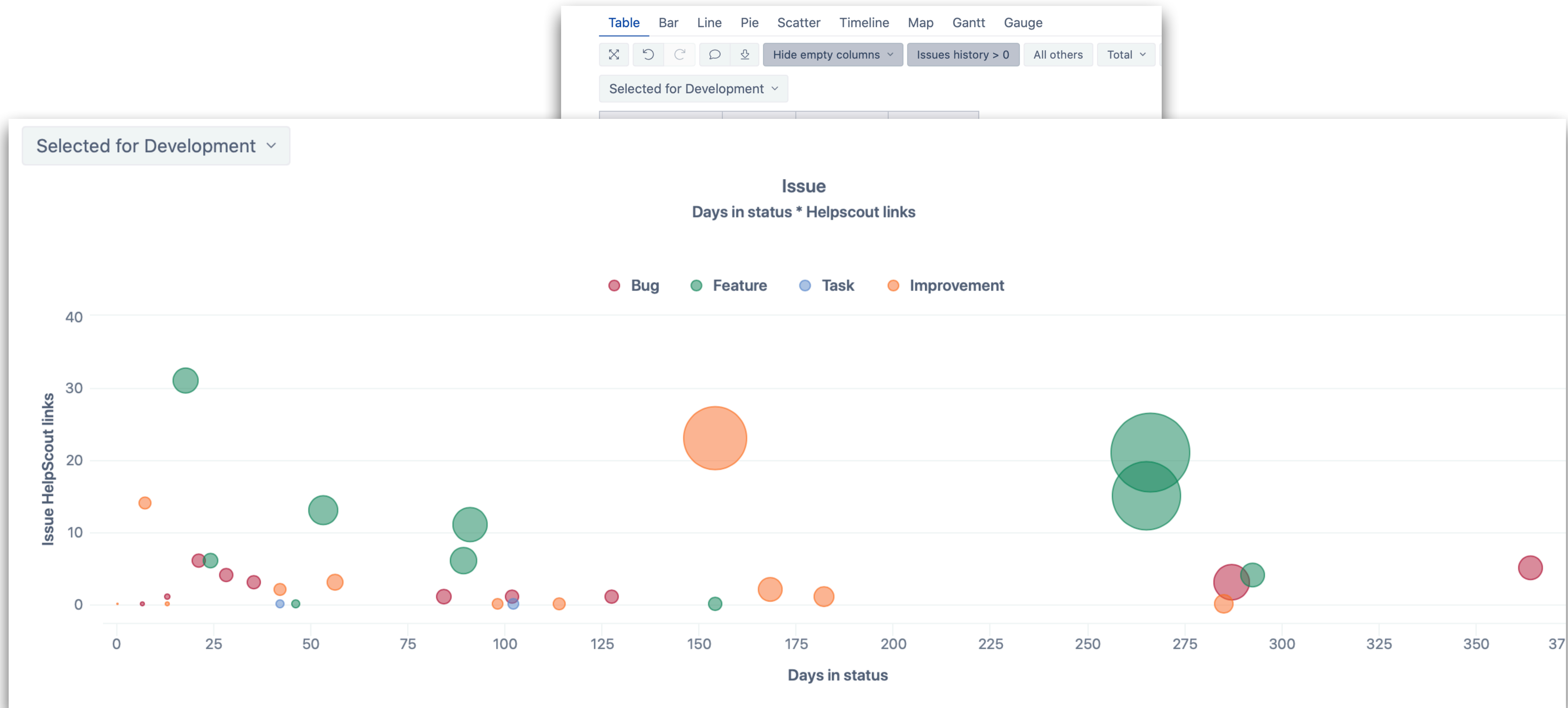


# Showing correlation with scatter chart

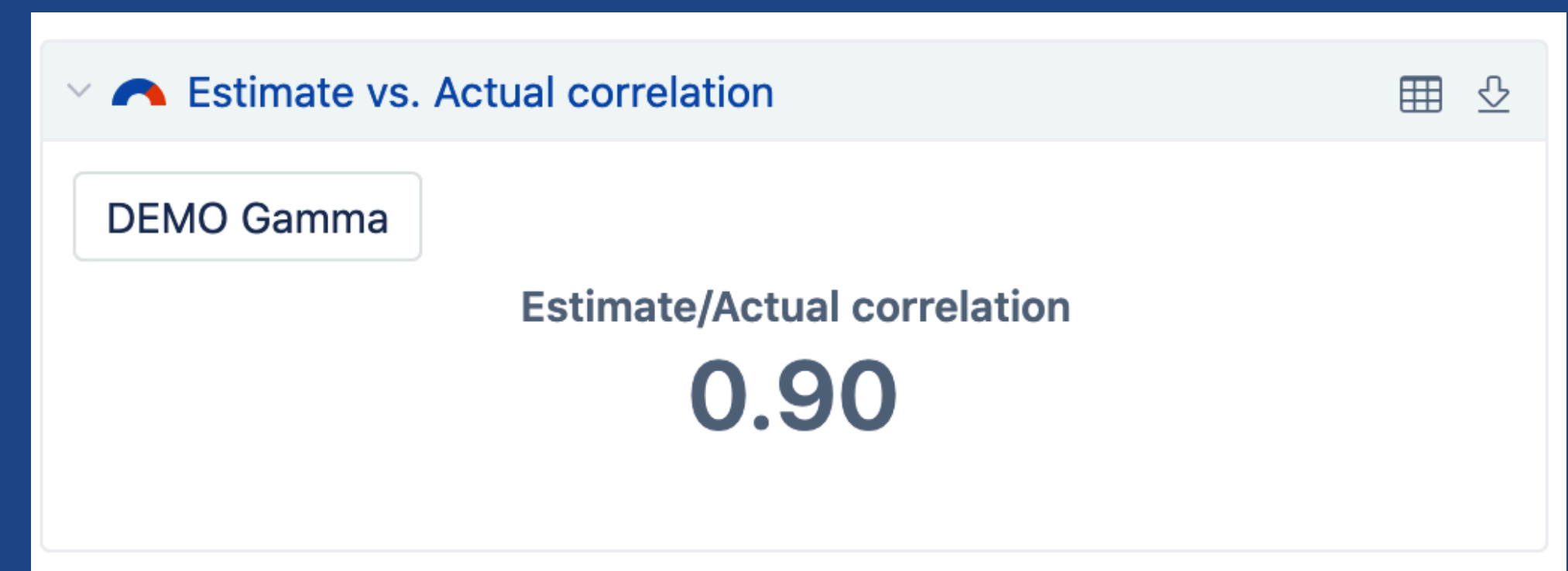
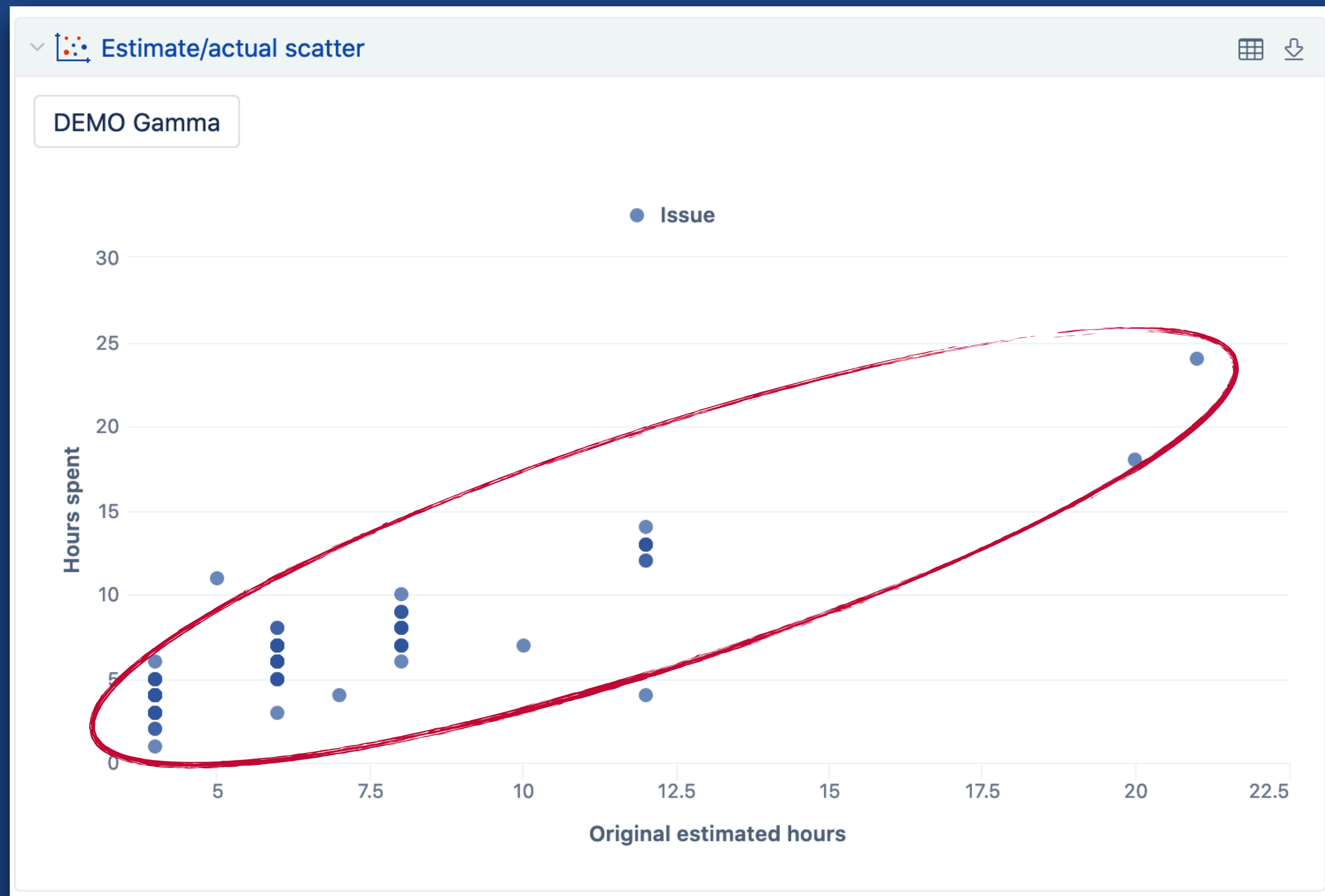




# Scatter chart



# Use cases of correlation



```
1 Correlation(  
2   Filter(Descendants([Issue].CurrentMember,[Issue].[Issue]),  
3     [Measures].[Hours spent]>0  
4   AND  
5     [Measures].[Total resolution days]>0  
6   ),  
7   [Measures].[Hours spent],  
8   [Measures].[Total resolution days]  
9 )
```



# Using MDX in the statistical calculations



# More MDX statistical functions

## Percentile

Quartile, Median

## Deviation

StdDev, Variance

## Linear regression

LinRegPoint, LinRegSlope,  
LinRegVariance

<https://mondrian.pentaho.com/documentation/mdx.php>

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# Monte Carlo chart



[Measures].[ Within FirstQ and ThirdQ ] =

```
1 CASE
2 WHEN
3 -- compare to FirstQ using the calculated measure FirstQ resolution da
4 Val(ExtractString([Resolution interval].CurrentMember.Name,
5 "(\d+) - (\d+)",1)) <=
6 Cache((
7 [Measures].[FirstQ resolution days],
8 [Resolution interval].DefaultMember
9 ))
10 AND
11 Val(ExtractString([Resolution interval].CurrentMember.NextMember.Name,
12 "(\d+) - (\d+)",1))
13 >
14 Cache((
15 [Measures].[FirstQ resolution days],
16 [Resolution interval].DefaultMember
17 ))
18 THEN
```

<https://eazybi.com/accounts/1000/cubes/Issues/reports/559656-monte-carlo-chart-resolution-days>

# Six sigma report

“Not too many cases deviate from the average for too much”

95% of cases should not deviate from the mean for more than three times the standard deviation

```
[Measures].[ Sigma ] =  
1 Stdev(  
2   Filter(Descendants([Issue].CurrentMember,[Issue].[Issue]),  
3     not IsEmpty([Measures].[Item value])  
4   ),  
5   [Measures].[Item value]  
6 )
```

```
[Measures].[ Six-sigma percentage ] =  
1 NonZero(Count(  
2   Filter(Descendants([Issue].CurrentMember,[Issue].[Issue]),  
3     Abs([Measures].[Item value]-  
4       ([Measures].[Average Item value],  
5         [Issue].CurrentHierarchy.DefaultMember)  
6     )  
7     <  
8     3*([Measures].[Sigma],  
9       [Issue].CurrentHierarchy.DefaultMember)  
10    AND  
11    [Measures].[Item count]>0  
12  )  
13 ))  
14 /  
15 [Measures].[Item count]
```

Pages  
Drag here if needed

Columns  
> Measures

Rows  
Nonempty  
> Project

Table Bar Line Pie Scatter Timeline Map Gantt Gauge  
✕ ↺ ↻ ⚙ Total ▾ Freeze header

	Item count	Average Item value	Sigma	Six-sigma percentage
+ DEMO Alfa	179	79.94	191.69	96.65%
+ DEMO Beta	171	45.36	46.90	98.25%
+ DEMO Gamma	171	57.60	134.78	98.25%
+ Demo	15	57.42	87.68	93.33%



# Things to remember

- **Add calculated** feature for report level standard measures
- **Interval dimensions** and **Scatter charts**
- A lot of **MDX functions** for statistics





# Questions?

[community.eazybi.com](https://community.eazybi.com)  
[support@eazybi.com](mailto:support@eazybi.com)



An aerial photograph of a dense urban landscape, likely a major city center, featuring numerous high-rise buildings and a complex network of roads and highways. The image is overlaid with a gradient that transitions from a vibrant red on the left side to a deep blue on the right side. Centered over this background is the text "Thank you!" in a large, white, sans-serif font.

# Thank you!