



SERVICES
EXPO

IT Innovation in Support of Sandia's Mission

SAND2014-16683PE



ASK

Analytics for Sandia Knowledge

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What is ASK?



Vision

A decision support system
that will enable timely,
informed, and integrated
decisions



*Discover, Analyze,
Visualize Information*

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Why ASK?

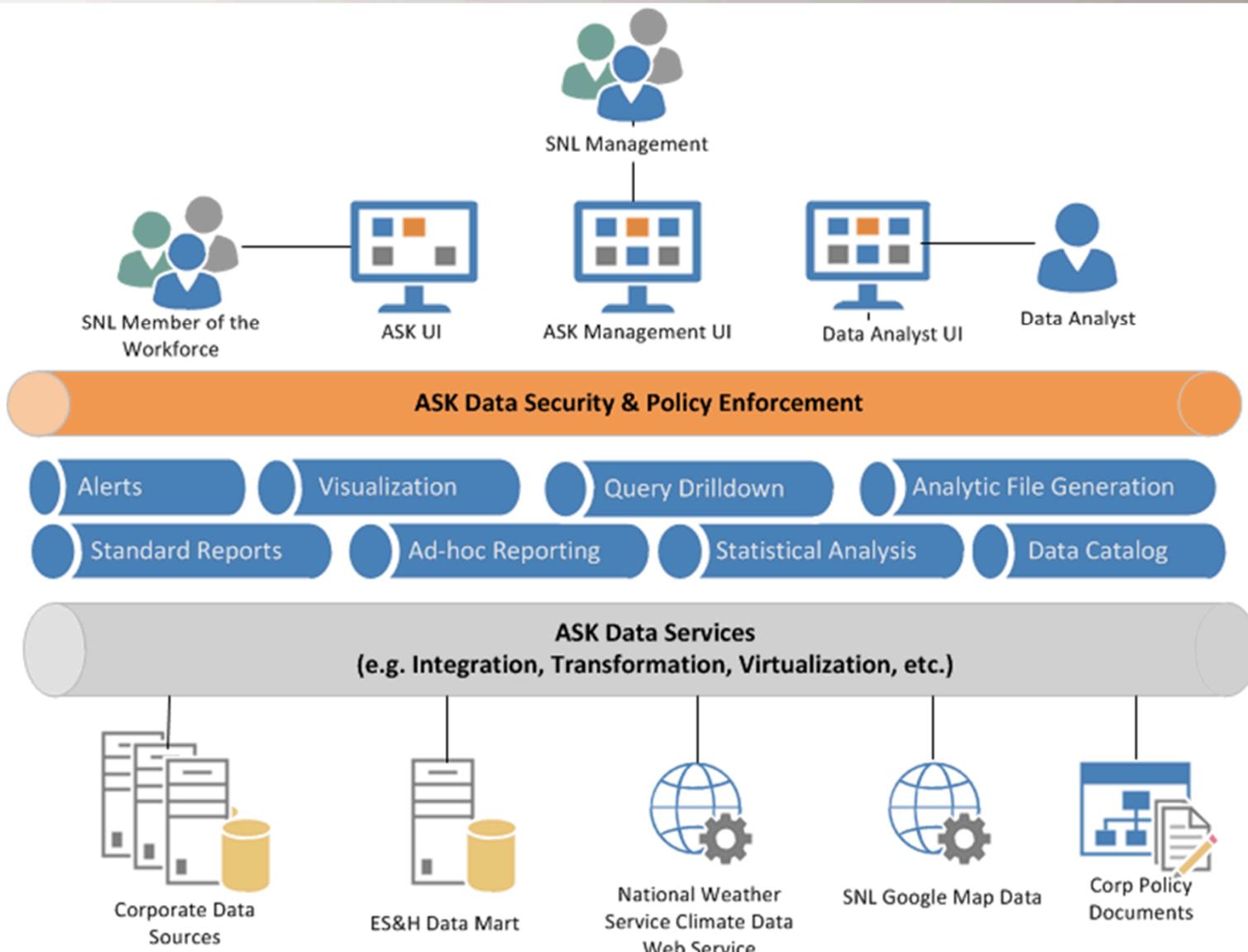
PROBLEMS

- Can't find information
- Can't integrate data
- Can't get access to data
- Must Protect Info
- Poor Data Quality
- Analyses take too long



SOLUTIONS

- Streamline Data Discovery & Acquisition
- Establish Governance
- Enable Analytics
- Provide Natural Language Search





Analytics for Sandia Knowledge

Enabling timely, informed, and integrated decisions involving complex and interdependent issues.

FY14

Understand Data Analytics Needs

Develop Proof-of-Concept

Predictive Model

Foundational Technologies

FY15

Implement Initial Framework and Applications

Establish Data Governance

Deploy Foundational Technologies

FY16

Business Intelligence and Self-Service Analytics

Prototype Predictive and Big Data Analytics

Non-Traditional Data Sources

FY17

Seamless Integration to Advanced Analytics

Analytics for Big Data

External Data Sources

Big Data Sources

Text Analytics

data ANALYTICS

data GOVERNANCE

data MANAGEMENT

A Quick Look: the FY14 Proof-of-Concept

Provide capabilities to
find, collect, assess, and analyze data
to support development of an
ES&H Predictive Model

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Selection	Preview	Quality	Data Analysis	
	Available Data		Description	
<input type="checkbox"/>	Foreign Travel Locations		A view containing summary data of employees that have visited a foreign country	
<input type="checkbox"/>	foreign_trv_loc_12mo		Number of foreign travel locations visited in the last 12 months	
<input checked="" type="checkbox"/>	foreign_trv_loc_24mo		Number of foreign travel locations visited in the last 24 months	
<input checked="" type="checkbox"/>	foreign_trv_loc_36mo		Number of foreign travel locations visited in the last 36 months	
<input type="checkbox"/>	foreign_trv_loc_48mo		Number of foreign travel locations visited in the last 48 months	
<input type="checkbox"/>	foreign_trv_loc_60mo		Number of foreign travel locations visited in the last 60 months	
<input type="checkbox"/>	ES&H Incidents		A view containing summary data of ES&H incidents by employee and by the set of a manager's subordinates.	
<input type="checkbox"/>	emp_incidents_12mo		Number of ES&H incidents this person has had in the prior 12 months to the OBSERVATION_DATE.	
<input checked="" type="checkbox"/>	emp_incidents_24mo		Number of ES&H incidents this person has had in the prior 24 months to the OBSERVATION_DATE.	
<input checked="" type="checkbox"/>	emp_incidents_36mo		Number of ES&H incidents this person has had in the prior 36 months to the OBSERVATION_DATE.	
<input type="checkbox"/>	emp_incidents_48mo		Number of ES&H incidents this person has had in the prior 48 months to the OBSERVATION_DATE.	
<input type="checkbox"/>	emp_incidents_60mo		Number of ES&H incidents this person has had in the prior 60 months to the OBSERVATION_DATE.	
<input type="checkbox"/>	mgr_emp_incidents_12mo		If this person is or has been a manager, the number of ES&H incidents that occurred in their organization in the prior 12 months to the OBSERVATION_DATE	
<input type="checkbox"/>	mgr_emp_incidents_24mo		If this person is or has been a manager, the number of ES&H incidents that occurred in their organization in the prior 24 months to the OBSERVATION_DATE	
<input type="checkbox"/>	mgr_emp_incidents_36mo		If this person is or has been a manager, the number of ES&H incidents that occurred in their organization in the prior 36 months to the OBSERVATION_DATE	
<input type="checkbox"/>	mgr_emp_incidents_48mo		If this person is or has been a manager, the number of ES&H incidents that occurred in their organization in the prior 48 months to the OBSERVATION_DATE	
<input type="checkbox"/>	mgr_emp_incidents_60mo		If this person is or has been a manager, the number of ES&H incidents that occurred in their organization in the prior 60 months to the OBSERVATION_DATE	
<input checked="" type="checkbox"/>	emp_incidents_future_6mo		Number of ES&H incidents this person has had in the 6-month period following the OBSERVATION_DATE	
<input type="checkbox"/>	mgr_emp_incidents_future_6mo		If this person is or has been a manager, the number of ES&H incidents that occurred in their organization in the 6-month period following the OBSERVATION_DATE	
<input type="checkbox"/>	Badging and Hosting		A view representing badge counts and visitor hosting counts within a period of time.	
<input type="checkbox"/>	Person and Org Information		A view containing employee human resources data by observation date.	
<input type="checkbox"/>	Training Compliance		A view representing training compliance within a period of time.	
<input type="checkbox"/>	Expense Report Travel Days		A view containing summary data of employee business travel from the ExpenseReport application.	
<input checked="" type="checkbox"/>	NWIS Device Ownership		A view containing summary data of employees and their device ownership	
<input checked="" type="checkbox"/>	all_device_count		Total number of devices assigned to person in NWIS	
<input checked="" type="checkbox"/>	computer_device_count		Total number of computer devices assigned to person in NWIS	
<input checked="" type="checkbox"/>	mobile_device_count		Total number of mobile devices assigned to person in NWIS	

Select data from observation date:

06/30/2012

through:

03/31/2013

[Export Selected Data](#)

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Preview of selected data for observation dates from 06/30/2012 to 03/31/2013

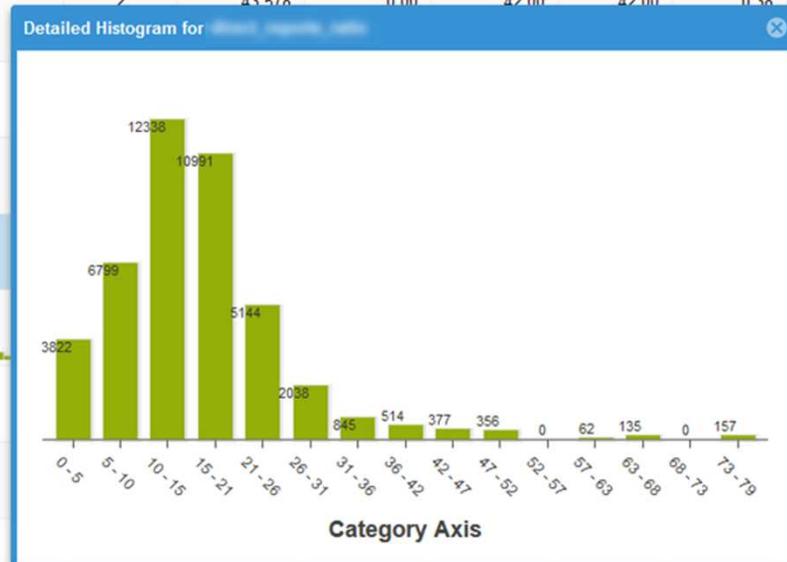
SNL Random Id	Observation Date	avg_downtime_min	avg_downtime_sec	avg_incidents_min	avg_incidents_sec	avg_incident_resolution_time_min	avg_incident_resolution_time_sec	count
130996569	06/30/2012	1	1	0	0	0	0	0
130996569	09/30/2012	1	1	0	0	0	0	0
130996569	12/31/2012	1	1	0	0	0	0	0
130996569	03/31/2013	1	1	0	0	0	0	0
743726412	06/30/2012	0	0	0	0	0	0	0
743726412	09/30/2012	0	0	0	0	0	0	0
743726412	12/31/2012	0	0	0	0	0	0	0
743726412	03/31/2013	0	0	0	0	0	0	0
1470973369	06/30/2012	0	0	0	0	0	0	0
1470973369	09/30/2012	0	0	0	0	0	0	0
1470973369	12/31/2012	0	0	0	0	0	0	0
1470973369	03/31/2013	0	0	0	0	0	0	0
2048135934	06/30/2012	0	0	0	0	0	0	0
2048135934	09/30/2012	0	0	0	0	0	0	0
2048135934	12/31/2012	0	0	0	0	0	0	0
2048135934	03/31/2013	0	0	0	0	0	0	0
2943228614	06/30/2012	0	0	0	0	0	0	0
2943228614	09/30/2012	0	0	0	0	0	0	0
2943228614	12/31/2012	0	0	0	0	0	0	0
2943228614	03/31/2013	0	0	0	0	0	0	0
3263327908	09/30/2012							0
3263327908	12/31/2012							0
3263327908	03/31/2013							0
4020867458	06/30/2012	14	14	0	0	0	0	0

III



ANALYTICS FOR SANDIA KNOWLEDGE

Selection	Preview	Quality	Data Analysis											
Summary of quality for selected data for observation dates from 06/30/2012 to 03/31/2013														
Field	Histogram	Concerns ↓	Observations	Minimum	Maximum	Range	Mean	Std. Deviation	Unique	Outliers	Extremes	% Complete		
image_px_px_3000		2	43,578	0.00	42.00	42.00	0.37	2.03	36	516	329	87.91		
image_px_px_3000		2	43,578	0.00	42.00	42.00	0.38	2.04	35	475	303	76.83		
img_pxWidth_pxHeight_3000									0.12	3	563	563	100.00	
img_pxWidth_pxHeight_3000									21.58	221	1216	518	100.00	
img_pxWidth_pxHeight_3000									9.89	56	902	226	100.00	
img_pxWidth_pxHeight_3000									6.44	2373	359	0	100.00	
img_pxWidth_pxHeight_3000									18.65	197	352	158	100.00	
img_pxWidth_pxHeight_3000									11.20	145	430	213	100.00	
img_pxWidth_pxHeight_3000									0.87	20	384	52	100.00	
img_pxWidth_pxHeight_3000														
img_pxWidth_pxHeight_3000														
img_pxWidth_pxHeight_3000														
img_pxWidth_pxHeight_3000														
img_pxWidth_pxHeight_3000														
img_pxWidth_pxHeight_3000														
img_pxWidth_pxHeight_3000														



Data analysis for observation dates from 06/30/2012 to 03/31/2013



Data Analysis: Scatter Plot (2 numerical variables)

X-axis

 show only predictor fields

view:

Person and Org Information

 show all fields

field:

[redacted]



Y-axis

 show only predictor fields

view:

Person and Org Information

 show all fields

field:

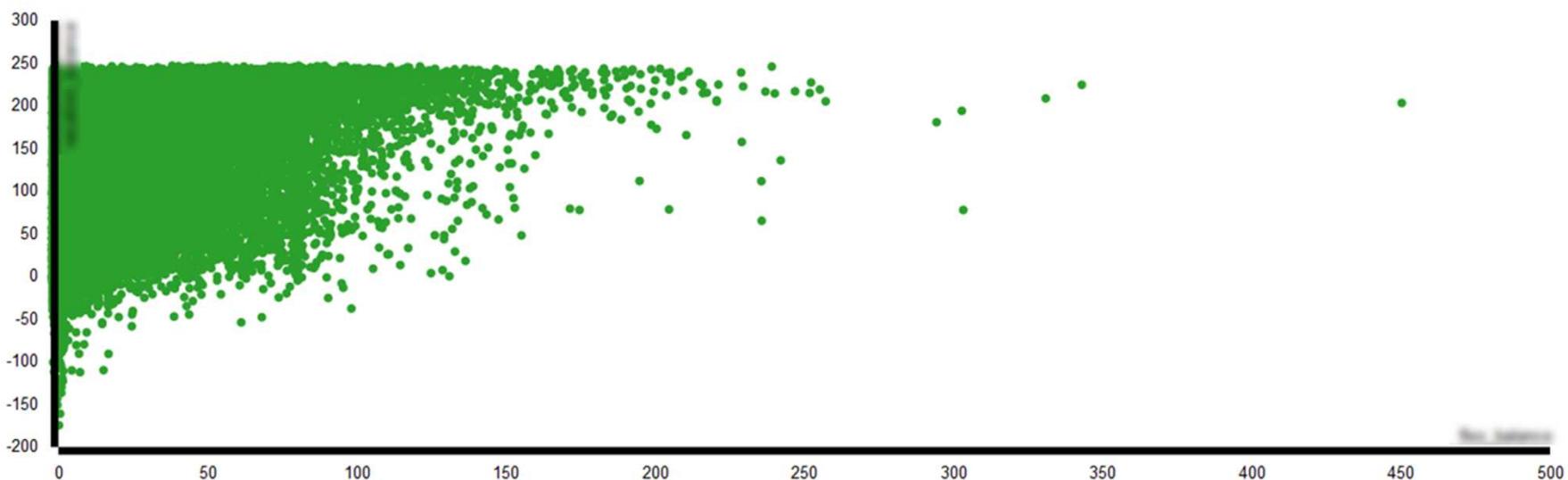
[redacted]



Perform Analysis

Scatter Plot with X-axis: **Person_and_Org** Y-axis: **Person_and_Org**

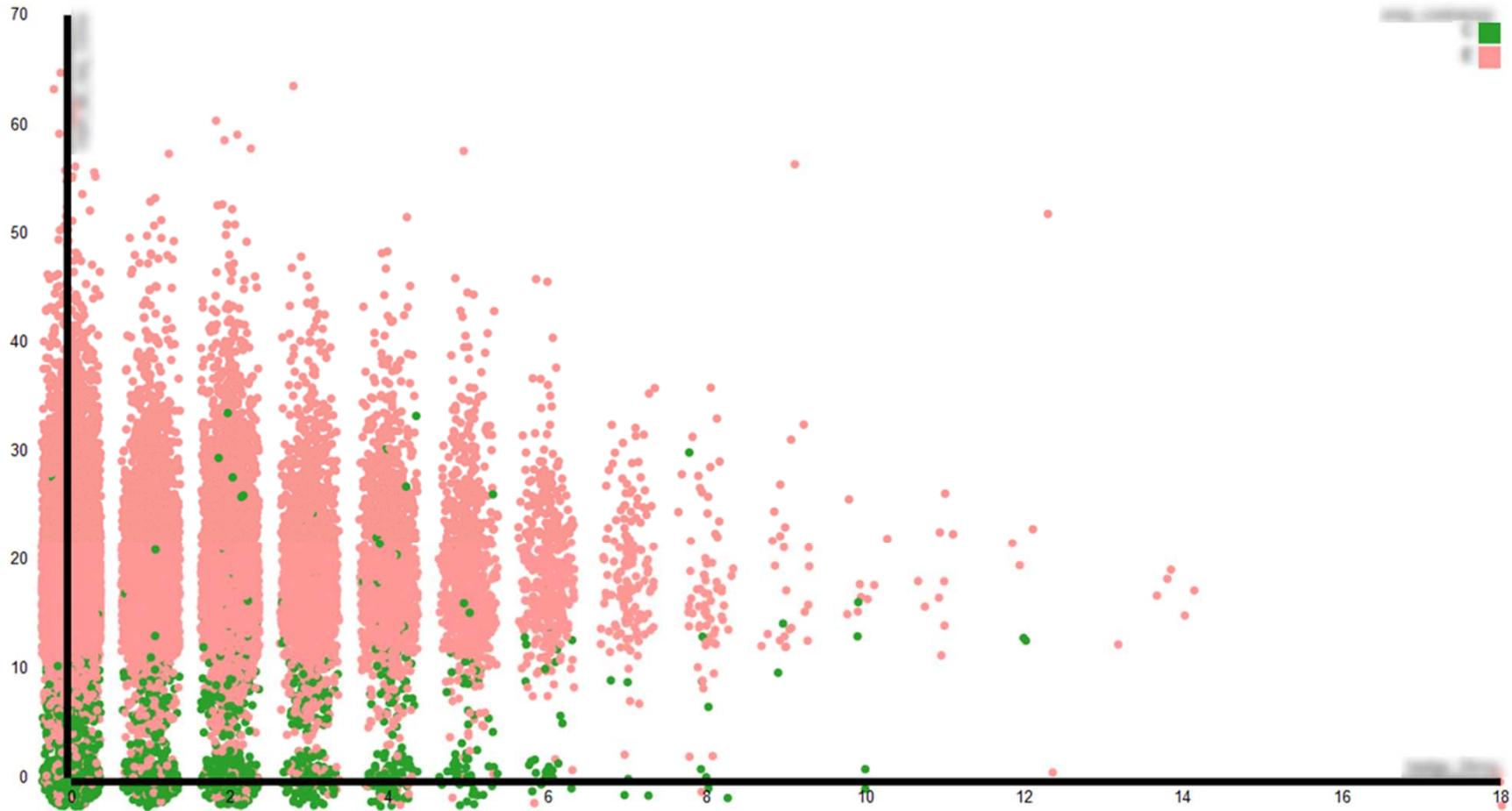
Jitter:



Data analysis for observation dates from 06/30/2012 to 03/31/2013

Scatter Plot with X-axis: Y-axis: Color:

Jitter:



Data analysis for observation dates from 06/30/2012 to 03/31/2013

Bivariate Grouping Percentage Analysis with Predictor: ~~Age~~ ~~Time to age~~ Target: ~~Number~~ ~~Time~~

Show Details

(for now, assumption is that NO is a desirable outcome)

Bin Contents	Desirable Outcome Ratio
0.005479 to 0.986301	-1.44
0.994521 to 2.060274	-1.18
2.071233 to 3.268493	-1.06
3.282192 to 5.052055	-1.10
5.068493 to 7.024658	-1.01
7.043836 to 8.484932	1.09
8.49589 to 10.230137	1.08
10.235616 to 12.410959	1.29
12.416438 to 18.430137	1.16
18.435616 to 31.019178	1.41

Selection

Preview

Quality

Data Analysis

Data analysis for observation dates from 06/30/2012 to 03/31/2013

Bivariate Grouping Percentage Analysis with Predictor:  Target: 

Show Details

(for now, assumption is that NO is a desirable outcome)

Bin Contents	Desirable Outcome Ratio
0.0 to 1.0	1.19
2.0 to 2.0	1.08
3.0 to 3.0	-1.26
4.0 to 5.0	-1.24
6.0 to 14.0	-1.37

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Coming Soon: Answers to Questions

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HOME BUSINESS INTELLIGENCE CENTER DATA EXPLORATION DATA ANALYTICS APPLICATION

How many slips, trips and falls in my organization?

ASK

Your Input:

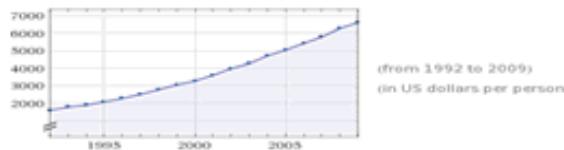
[search term] within [all catalogs] ([Change?](#))

Summary:

median	\$6161
highest	\$15 010 (Pennsylvania)
lowest	\$0 (Hawaii and District of Columbia)
distribution	

(2009)

Distribution Plots:



Related Searches:

[query](#), [eh&s](#), [accidents](#), [vacation](#), [org 0000](#), [incidents](#)

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ASK – Ambitious, Transformational

Learn More About ASK at the Analytics Booth



VP Champion:

Mike Vahle, CIO and VP 9000

Milestone Owner:

Joselyne Gallegos, Director 9500

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