

Data Analytics

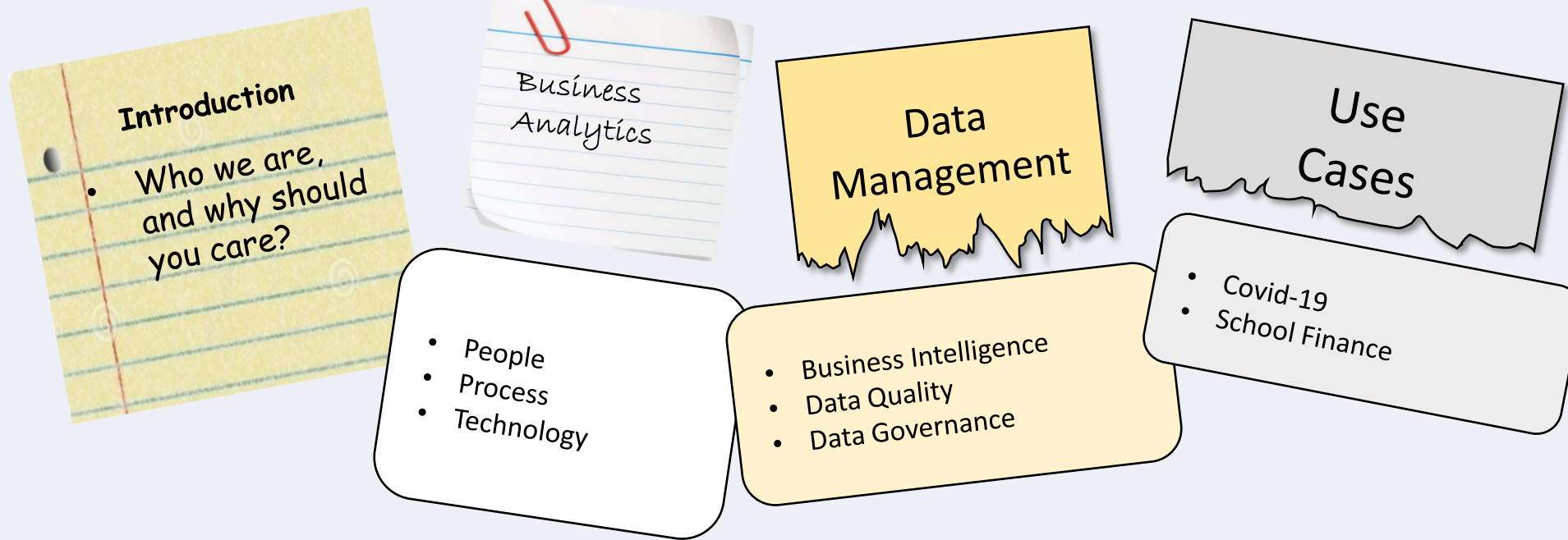
Finding Value within the Hype

Mark Richards and Tim Deskin



IGFOA 2020 ANNUAL CONFERENCE WEBINAR SERIES

Agenda



Mark and Tim



Tim Deskin
Partner
Business Analytics

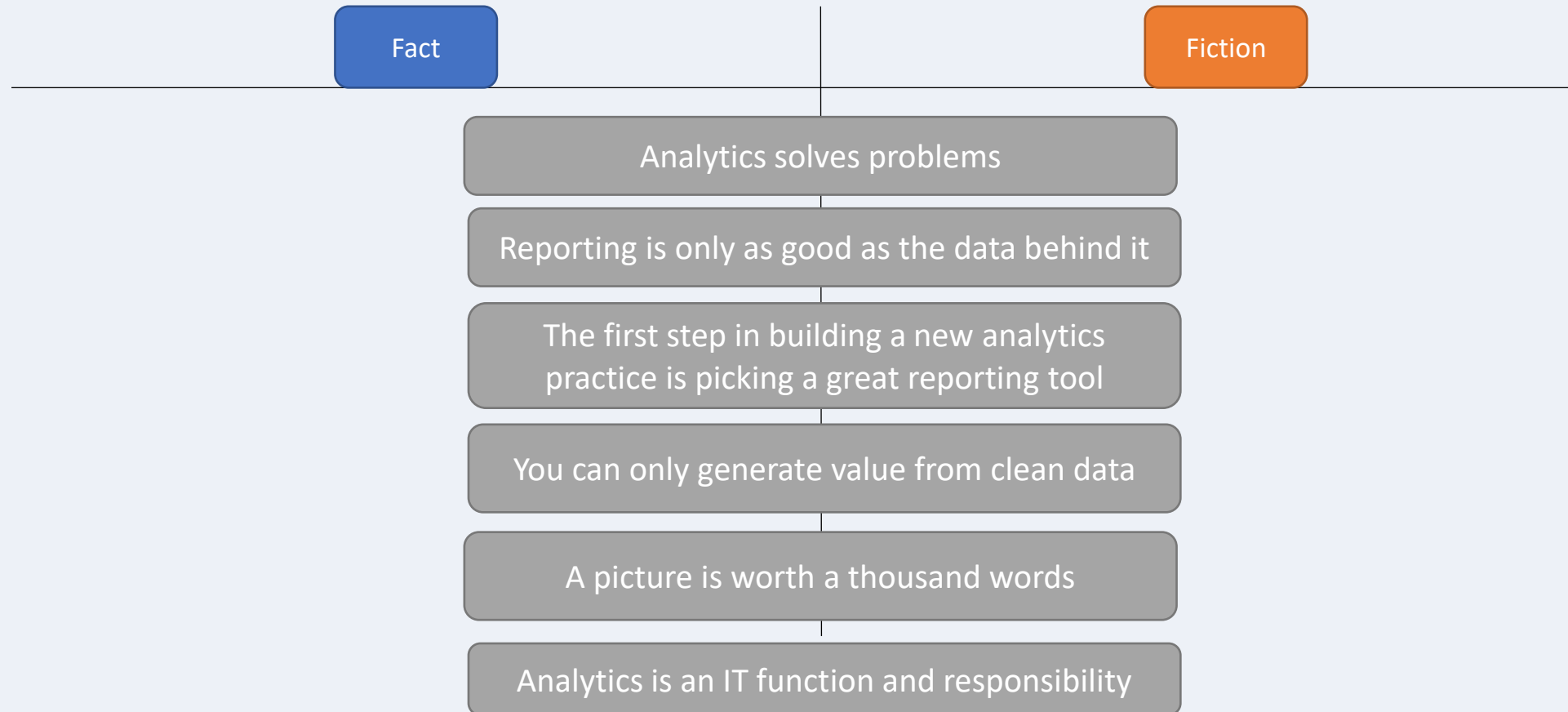


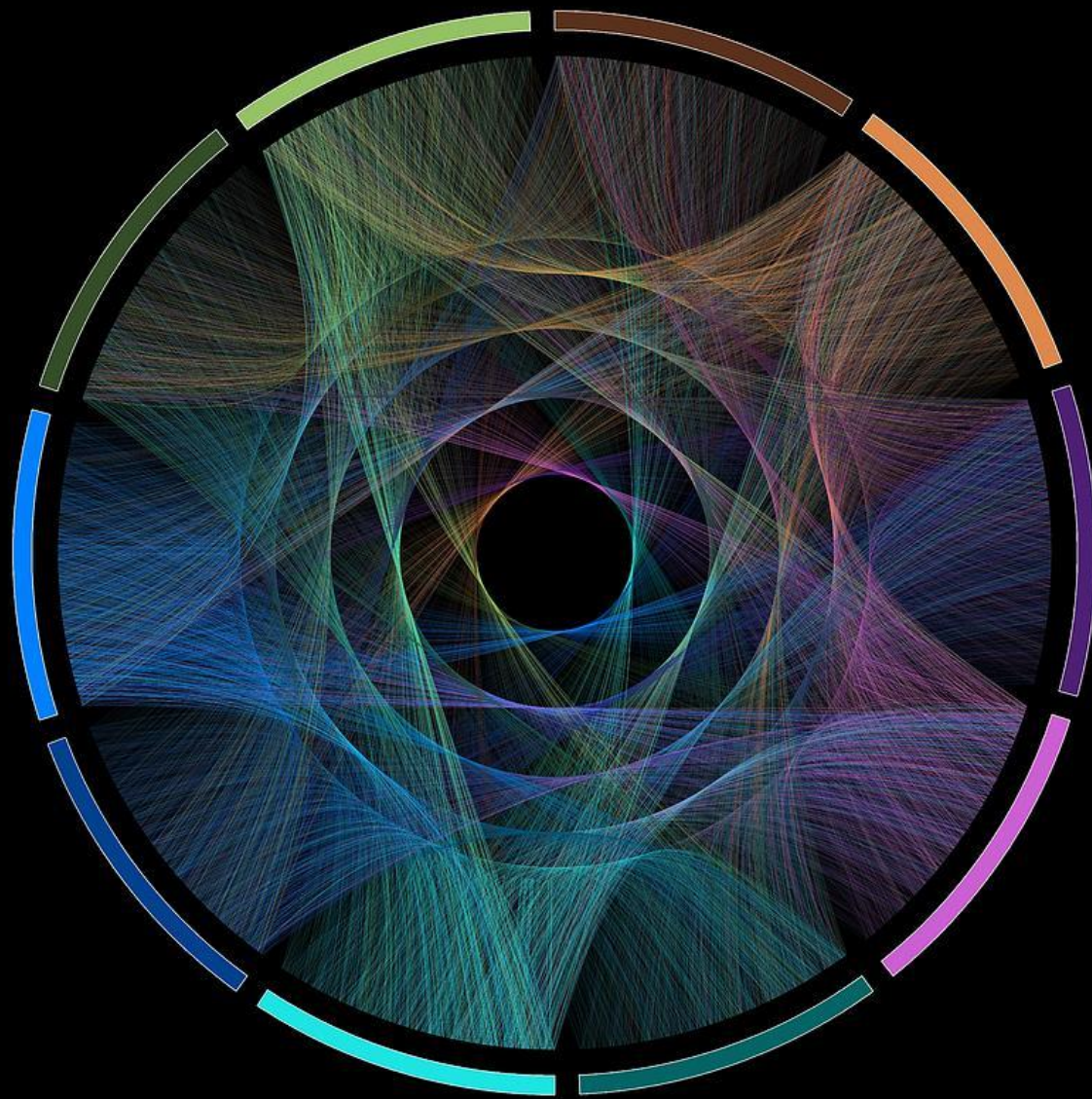
Mark Richards
Partner
Business Analytics

The Power of Data Analytics



Analytics: Fact or Fiction





Beautiful but Useless

Color Popularity for New Cars in North America 2000-2015

Hover to see the change in rank over time.



Inspired by: <http://www.datagraver.com/case/evolution-of-car-color-in-north-america-since-2000>

● Denotes "Other" colors

TOP 10 FIFA WORLD CUP COUNTRIES BY GOALS SCORED

TOP COUNTRIES

DISTRIBUTION OF GOALS SCORED BY COUNTRY IN EACH WORLD CUP EDITION

WORLD CUP EDITIONS



I have a headache

#SPORTSVIZSUNDAY

RODRIGO CALLONI | VISUAL ANALYTICS
@TABLEAUVING

DATASOURCE | KAGGLE
THANKS TO KEN FLERIEGE SANKEY TEMPLATE

Some Typical Trends

We want to move to the cloud

We want to get into big data

We need a data lake

Our current reporting is no good

We want some cool visualizations

The real question.....

Why?

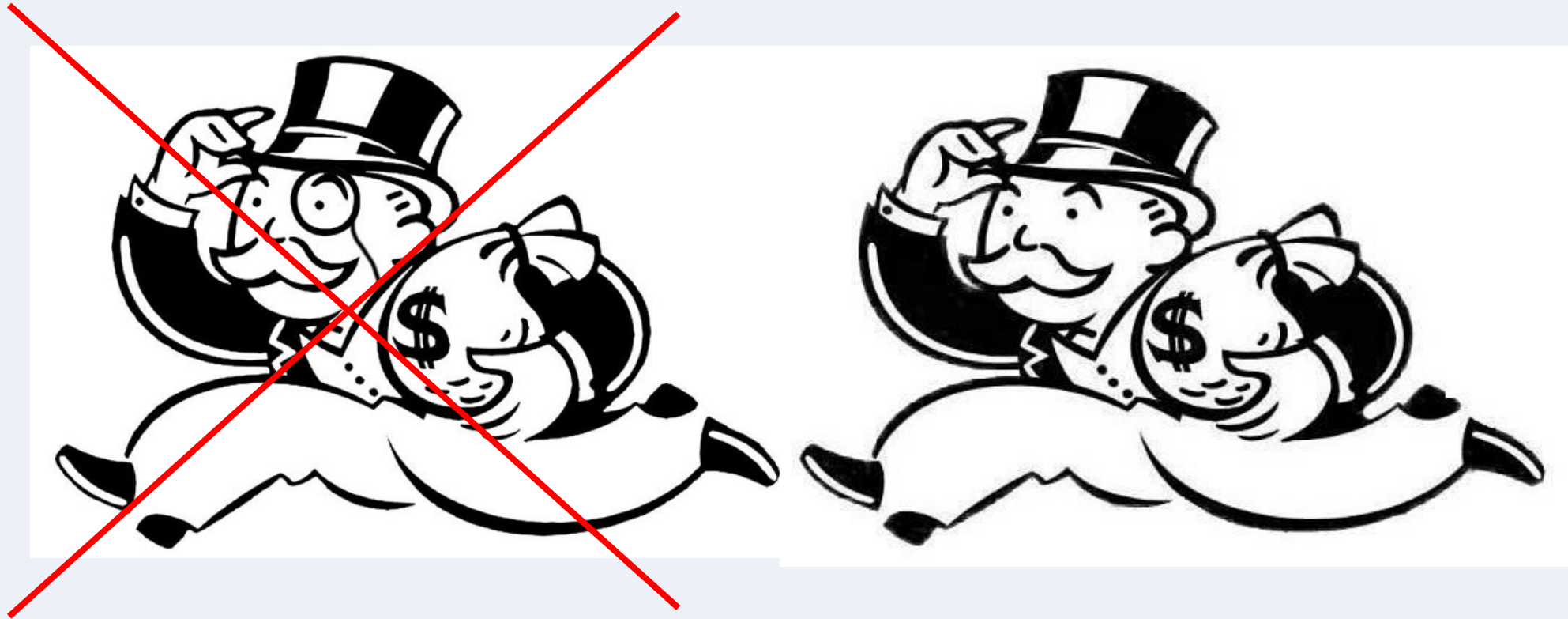
It is no longer enough to have just an IT reason. Successful analytics projects must meet a business need

People See What They Expect to See



IGFOA 2020 ANNUAL CONFERENCE WEBINAR SERIES

People See What They Expect to See



People Hear What They Expect to Hear



~~“Mirror, Mirror on the Wall”~~

“Magic Mirror on the Wall”

~~“Luke, I am your father”~~

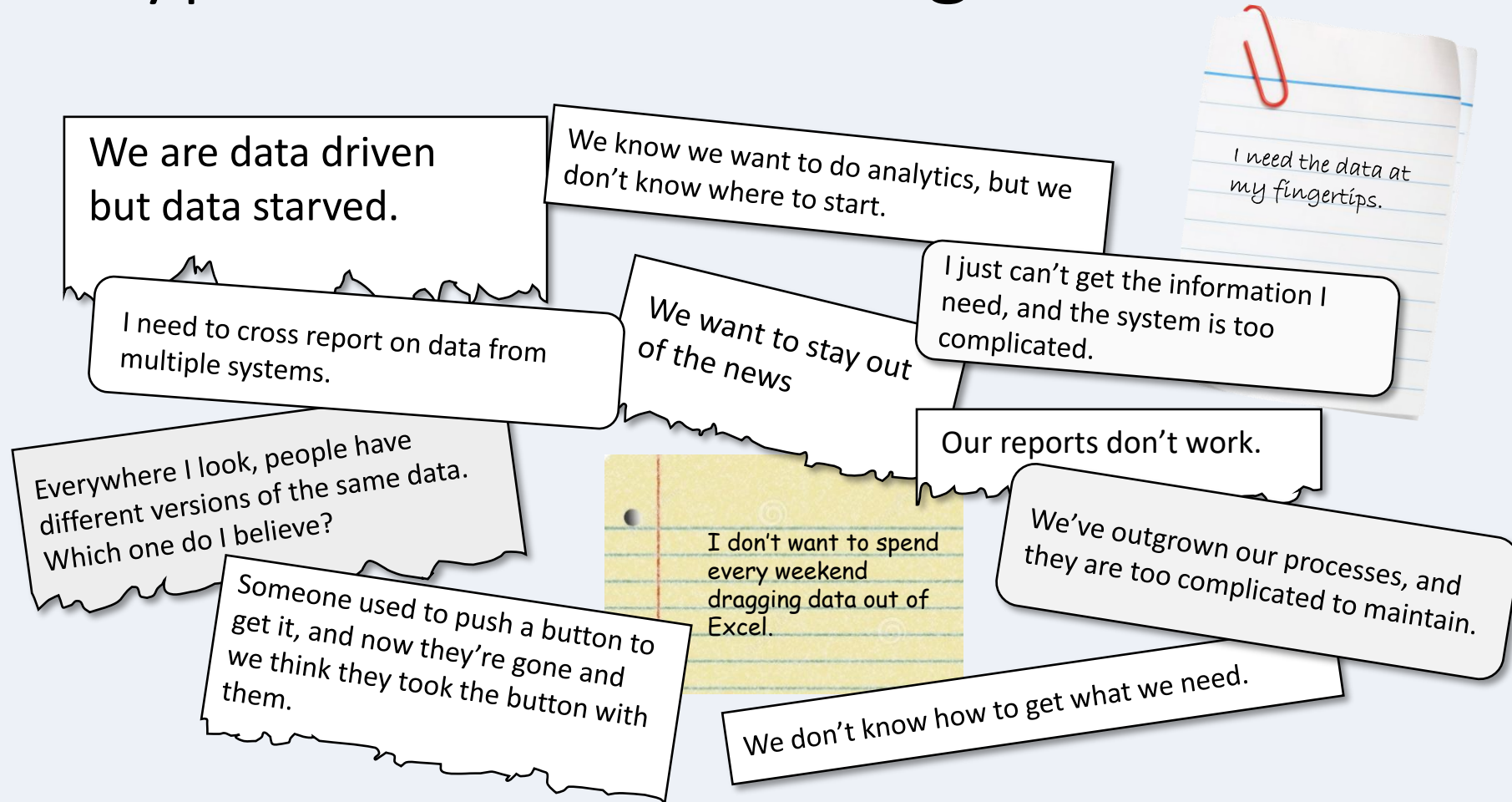
“No, I am your father”



For whom the bell polls.....

Poll question 1

Some Typical Client Challenges



The Three Key Questions



What

Why

How

With budget cuts, I need to utilize my resources efficiently

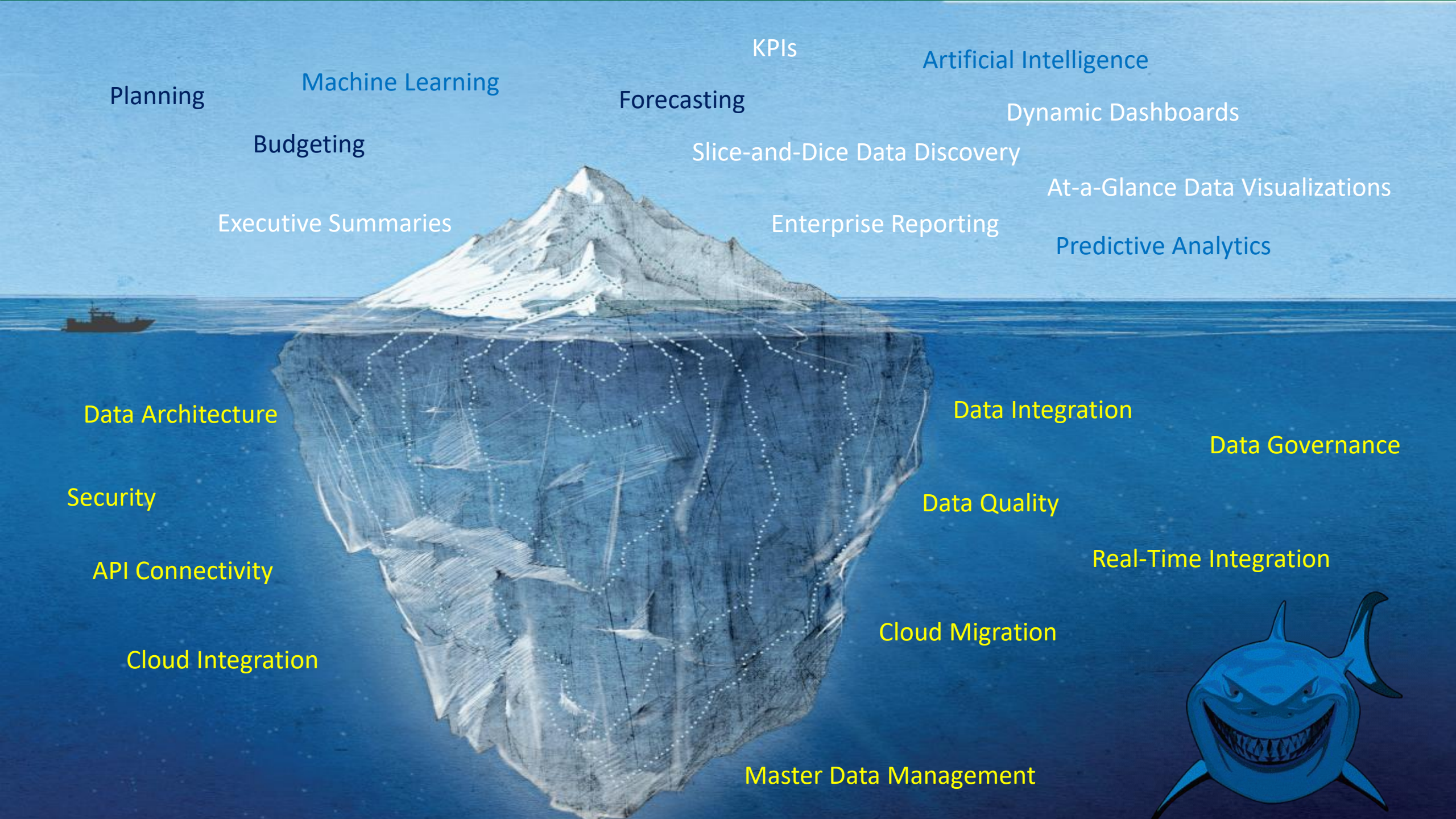
I need an efficient way to monitor my budget and resources

We have manual tasks that need to be automated

I spend hours creating a report manually, surely this could be automated

My boss needs to know basic KPIs, if only there was one place they could get it

If only I could push a button to...



Planning

Machine Learning

KPIs

Artificial Intelligence

Forecasting

Dynamic Dashboards

Budgeting

Slice-and-Dice Data Discovery

At-a-Glance Data Visualizations

Executive Summaries

Enterprise Reporting

Predictive Analytics

Data Architecture

Data Integration

Data Governance

Security

Data Quality

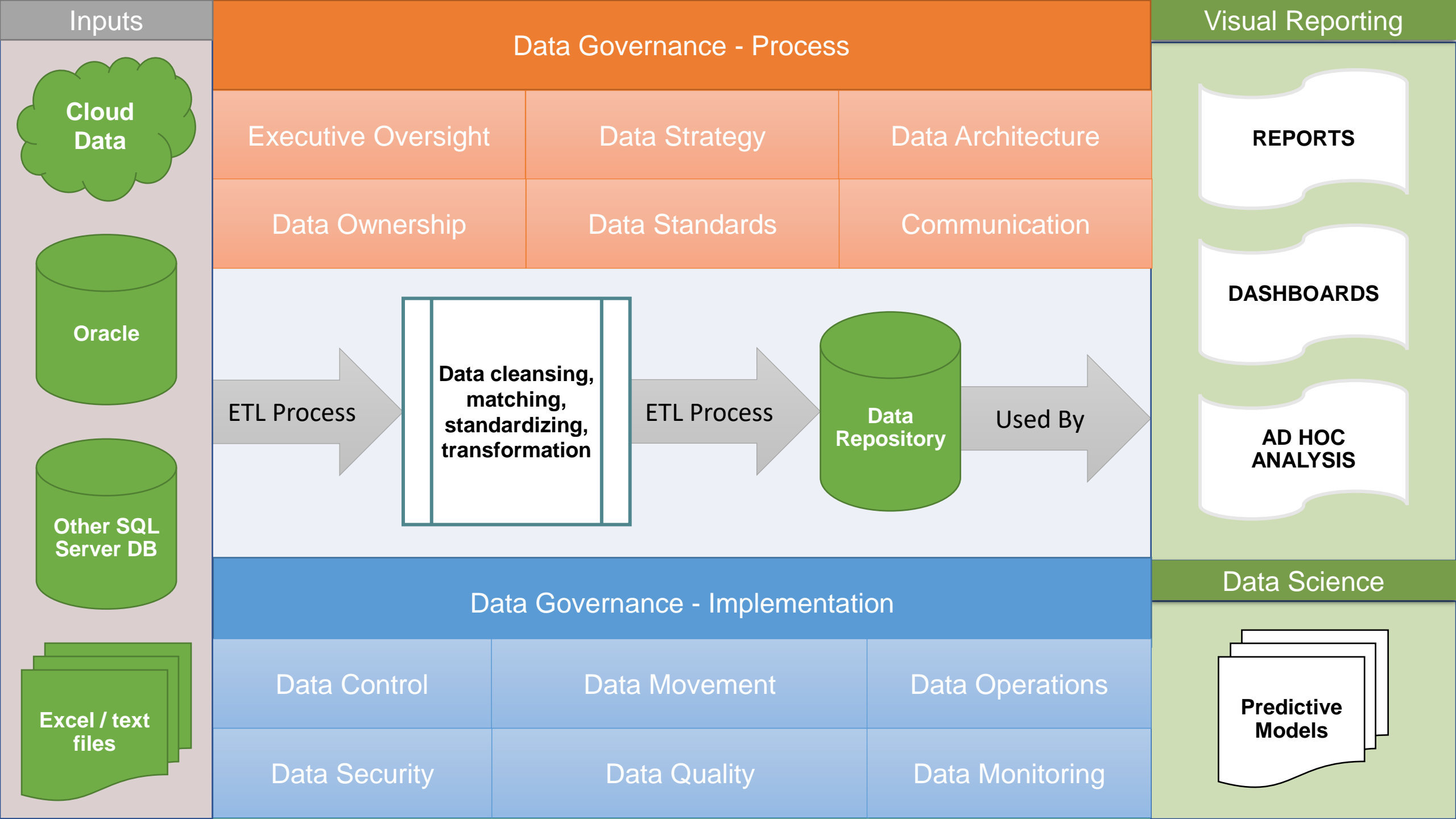
API Connectivity

Real-Time Integration

Cloud Integration

Cloud Migration

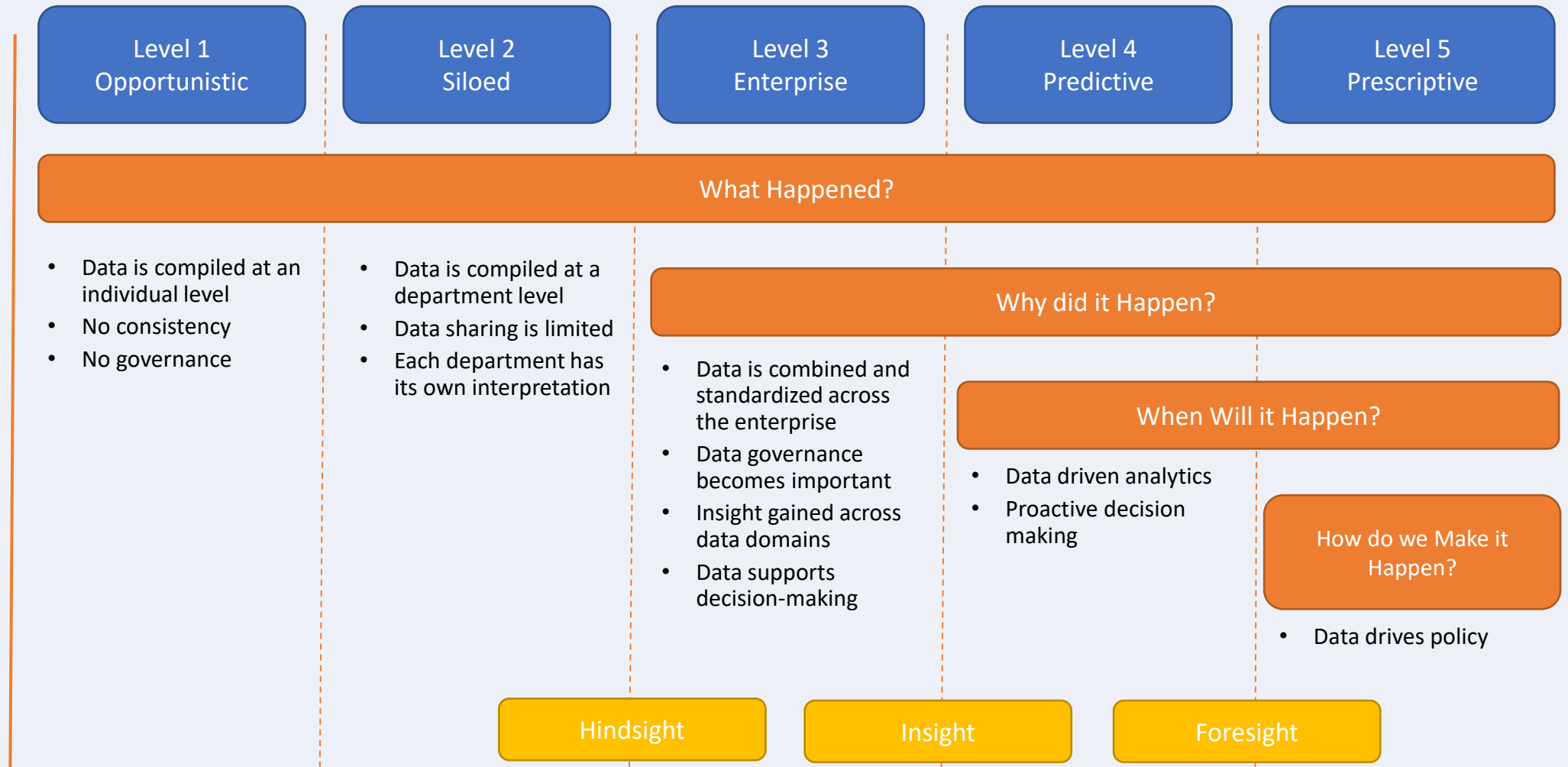
Master Data Management



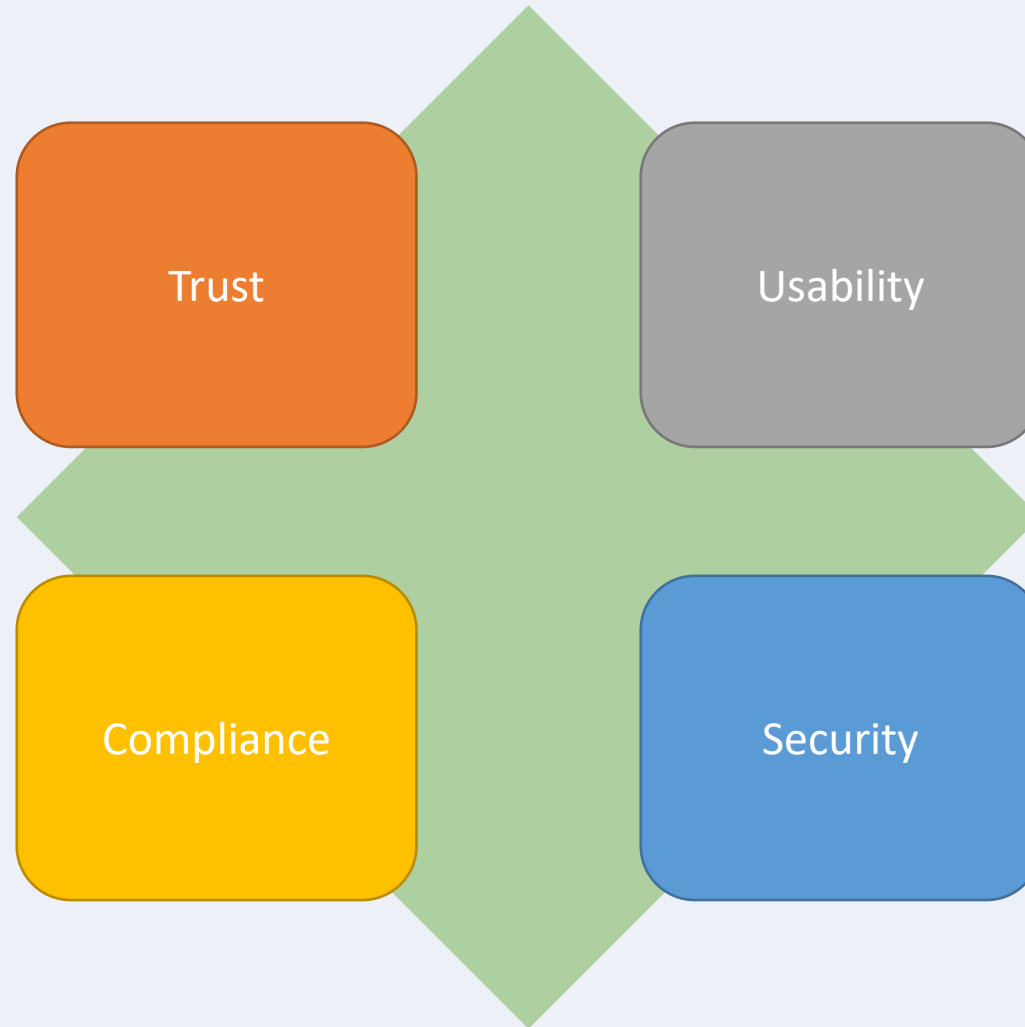
What is Data Governance

Data Governance defines structures and frameworks that allow the organization to make better decisions

Data Governance – Levels of Maturity



Accountability



Transparency



For whom the bell polls.....

Poll question 2

Model for Need

Annual Statistical Report

State District Totals

	2012/2013 Actual	2013/2014 Budget		2012/2013 Actual	2013/2014 Budget
1 Area in Square Miles	53,161		CURRENT EXPENDITURES		
2 ADA	436,471		Instruction:		
3 ADA Pct Change over	1%		49 Regular Instruction	6,479	1,686,537,994
4 4 Qtr ADM	460,019		50 Special Education	8,947	324,617,344
5 Prior Year 3 Qtr ADM	457,205		51 Career Education	118,943,800	117,311,478
6 Assessment	43,026,338,796		52 Adult Education	10,070,524	8,711,412
7 M&O Mills	25.66		53 Compensatory Education	134,031,022	140,615,309
8 URT Mills	25.00		54 Other	168,646,509	172,174,604
9 M&O Mills in Excess of URT	0.66		55 Total Instruction	2,472,977,282	2,449,968,141
10 Dedicated M&O Mills	0.07		District Level Support:		
11 Debt Service Mills	11.66		56 General Administration	90,140,529	99,941,156
12 Total Mills	37.39		57 Central Services	113,221,755	107,896,953
13 Total Debt Bond/Non Bond	3,664,363,962		58 Maintenance & Operations Of Plant	431,897,342	445,527,064
State and Local Revenue			59 Student Transportation	198,701,214	200,740,192
14 Property Tax Receipts (Incl URT)	1,568,431,329	1,598,462,176	60 Other District Support	16,485,032	15,690,489
15 Other Local Receipts	216,727,570	120,116,487	61 Total District Support Services	850,445,873	869,795,854
16 Revenue From Interm Srcs	3,398,842	2,793,353	School Level Support:		
17.1 Foundation Funding (Excl URT)	1,833,154,771	1,882,257,775	62 Student Support Services	211,181,149	221,899,251
17.2 98% of URT X Assessment less Net Revenues	17,202,336	9,001,344	63 Instructional Staff Support Service	350,716,342	358,900,996
18 Student Growth Funding	35,476,686	9,322,552	64 School Administration	222,205,979	225,121,619
19 Declining Enrollment Funding	10,233,450	13,108,382	65 Total District Support Services	784,103,470	805,921,866
20 Consolidation Transfers (Additions)	0	1,017,000			

1 thru 13 exists on multiple spreadsheets
Need to standardize and integrate

function_cd between '1000' and '1199' and
(object_cd between '60000' and '69299' or
object_cd between '69400' and '69000')

((fund_cd = '1000' and
function_cd between '2000' and '2850') or
(fund_cd between '1110' and '1999' and
function_cd between '2900' and '2950'))
and object_cd between '65000' and '66570'

Profiling

Column Profiling

All 674484 rows. Last run on: Mar 21, 2014 10:19:52 AM CDT

Column	Unique Values	% Unique	Nulls	% Null	Datatype	Documented
[-] csv_salaries						
Employee_ID	674484	100.00	-	-	- Integer(7) [100.00]	string(10)
Name	619932	91.91	-	-	- String(42) [100.00]	string(100)
Title	46319	6.87	6	-	- String(75) [100.00]	string(100)
Department	14131	2.10	8	-	- String(75) [100.00]	string(100)
Gender	8	-	4	-	- Fixed Length String(1) [100.00]	string(5)
Hire_date	13739	2.04	5	-	- Date Time [100.00]	date/time(29,9)
Annual_salary	159250	23.61	1	-	- Integer(7) [100.00]	decimal(10)
Entity	141	0.02	-	-	- String(65) [100.00]	string(100)
Entity_Type	11	-	-	-	- String(19) [100.00]	string(100)

Details

Show: Values

Value	Frequency	Percent	Chart
F	383854	56.91%	
M	290592	43.08%	
U	24	0.00%	
0	5	0.00%	
NULL	4	0.00%	
m	2	0.00%	
N	2	0.00%	
f	1	0.00%	

Profiling

Column Profiling

All 674484 rows. Last run on: Mar 21, 2014 10:19:52 AM CDT

Column	Unique Values	% Unique	Nulls	% Null	Datatype	Documented
[-] csv_salaries						
Employee_ID	674484	100.00	-	-	- Integer(7) [100.00]	string(10)
Name	619932	91.91	-	-	- String(42) [100.00]	string(100)
Title	46319	6.87	6	-	- String(75) [100.00]	string(100)
Department	14131	2.10	8	-	- String(75) [100.00]	string(100)
Gender	8	-	4	-	- Fixed Length String(1) [100.00]	string(5)
Hire_date	13739	2.04	5	-	- Date Time [100.00]	date/time(29,9)
Annual_salary	159250	23.61	1	-	- Integer(7) [100.00]	decimal(10)
Entity	141	0.02	-	-	- String(65) [100.00]	string(100)
Entity_Type	11	-	-	-	- String(19) [100.00]	string(100)

Details

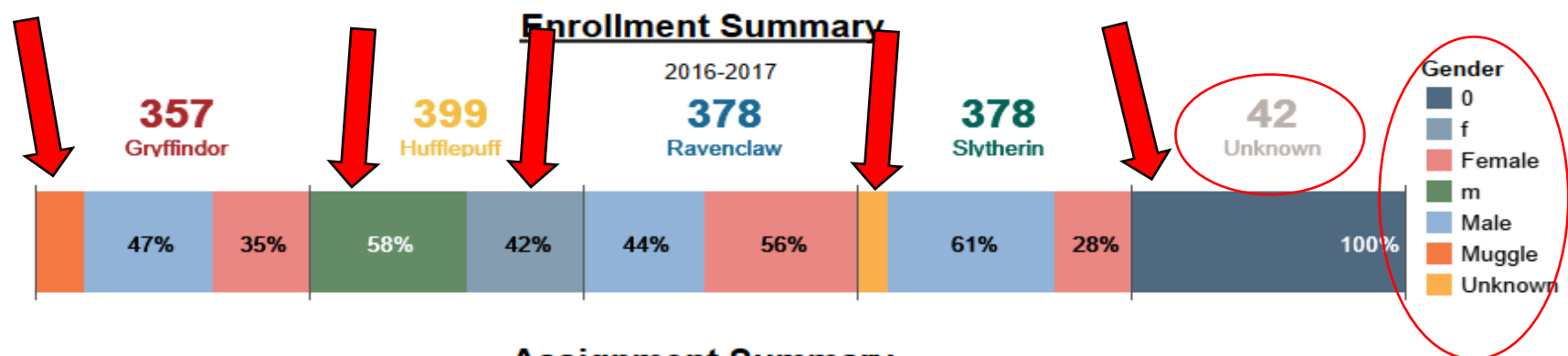
Show: Values

Value	Frequency	Percent	Chart
Appraisal District	262	0.04%	
City	107973	16.01%	
Community College	24633	3.65%	
County	41516	6.16%	
School District	193629	28.71%	
State	150588	22.33%	
Transit	10774	1.60%	
University	80348	11.91%	
University Hospital	56469	8.37%	
University Hospital	6352	0.94%	
university	1940	0.29%	



Hogwart's Overview

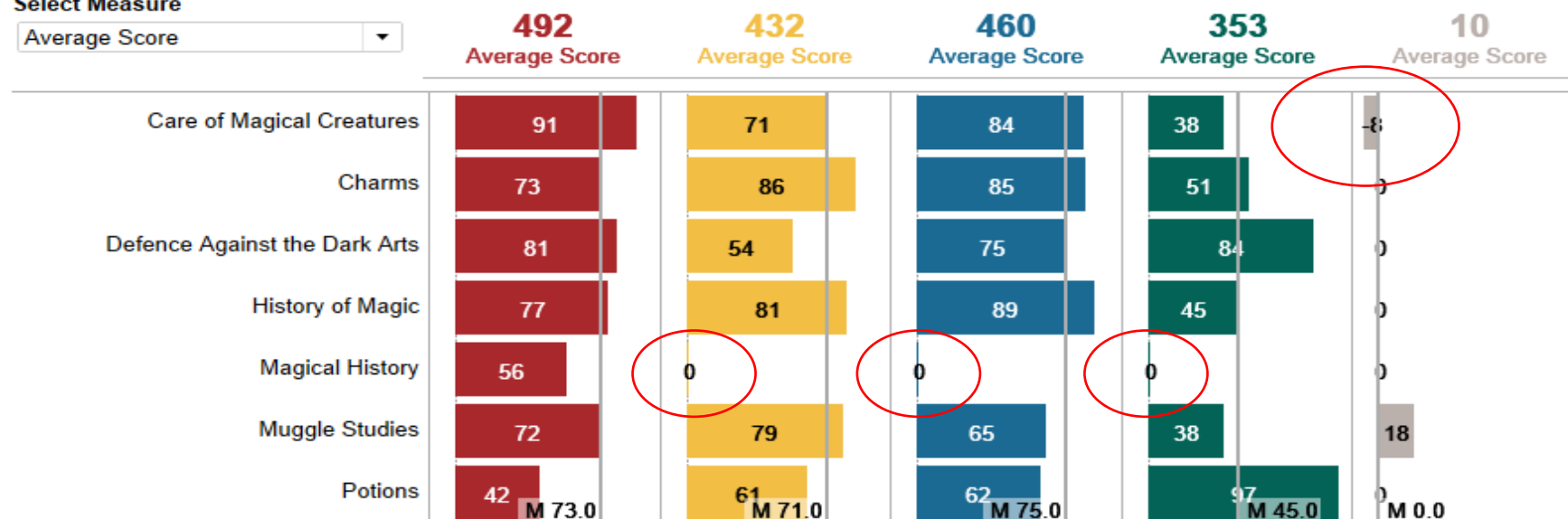
Year
☐ 2014-2015
☐ 2015-2016
☒ 2016-2017



Assignment Summary

Select Measure

Average Score





Hogwart's Office

Salary Summary



\$2,058,500 in Salaries

Albus Dumbledore	\$750,000	36%
Rubeus Hagrid	\$458,000	22%
Severus Snape	\$340,000	17%
Minerva McGonagall	\$286,500	14%
Poppy Pomfrey	\$224,000	11%

Quidditch Cup Summary



			# of Wins	Year Last Won
Gryffindor			92	2019
Gryfindor			-1	2029
Hufflepuff			2	
Ravencla..			37	2006
Slytherin		CHEATER!!!	128	2015
Unknown			3	2001

Oregon Health Authority

Pain Point

- Agencies purchased BI licenses on their own (not leveraging bulk pricing)
- Agencies didn't have resources to manage architecture
- IT found it difficult to support siloed agencies

Action

- Discovery Workshops per Agency
- Plante Moran consultants delivered with IT in attendance for a consistent message
- Licenses and professional services purchased through IT (reimbursed by agency)
- IT manages Tableau Server. Agencies have project folders they manage

Outcome

- Quick win with a usable published workbook at the conclusion of workshop
- Exposed to best practices around: analytic strategy, data governance, data prep, dashboard design, dashboard development, Tableau Server environment, onboarding consumers, professional development
- Leveraging bulk pricing and reducing need for multiple servers and staff hours to manage multiple servers

Total Cases

20,225



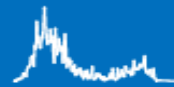
Deaths

339



Recovered Cases

4,065



Positive Tests

19,162



Negative Tests

412.0K



Total Tests

431.2K



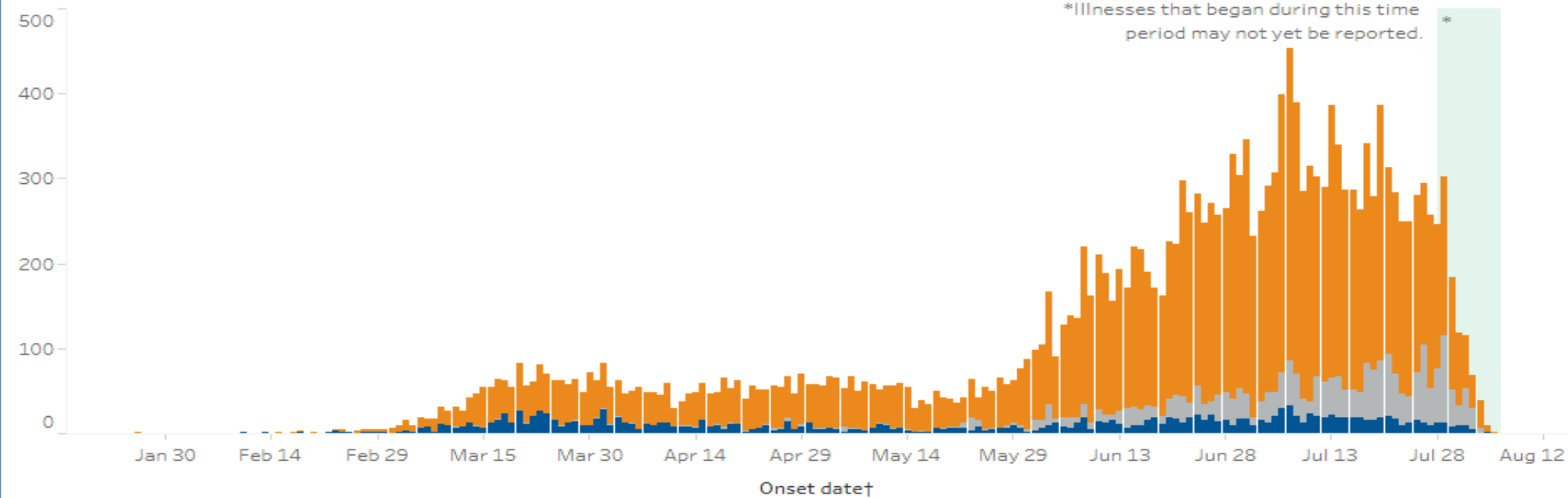
[Oregon's Epi Curve](#)

[View total persons tested](#)

Data current as of 12:01am 8/6/2020

Oregon's Epi Curve: COVID-19 cases

This chart shows the number of Oregonians who have been identified as COVID-19 cases and whether they were ever hospitalized for their illness.†



Total Cases	Hospitalized	Not Hospitalized	Hospitalization Status Unknown
20,225	1,743	16,349	2,133

*Illnesses that began during this time period may not yet be reported.



When people say we want to “flatten the curve,” this is the curve they are talking about.

We want to slow the number of new cases of COVID-19 so our healthcare system isn't overwhelmed and can provide care to everyone who needs it. Staying home except for essential needs and practicing social distancing are important ways we can flatten the curve.

Please note: The light blue shaded area shows the past 10 days, and not all people who got sick during this time period have been reported yet to OHA.

Enter or drag the cursors to change the onset date range.

January 26, 2020

August 7, 2020

Not Hospitalized

Hospitalized

Hospitalization Status Unknown

Total Cases

20,225



Deaths

339



Recovered Cases

4,065



Positive Tests

19,162



Negative Tests

412.0K



Total Tests

431.2K



Testing and Outcomes by County

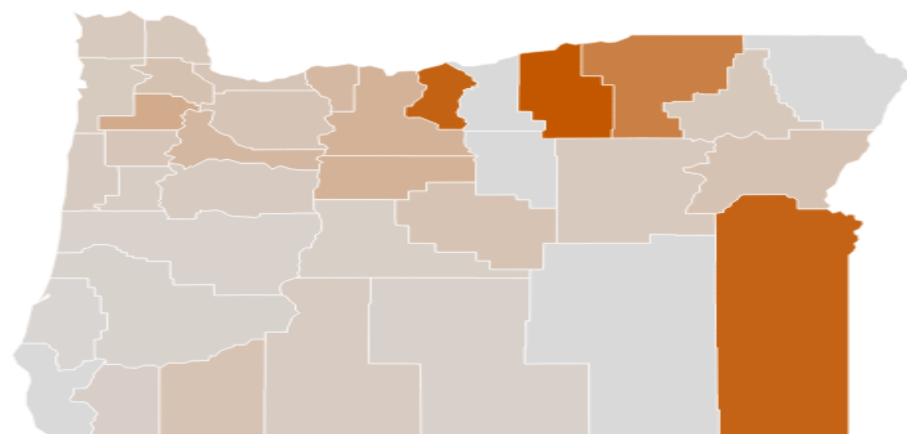
Trends in Test Positivity by County

Data current as of 12:01am 8/6/2020

Oregon's Trends in COVID-19 Testing and Test Positivity

This map shows the percent of COVID-19 tests that were positive during the past week for each county in Oregon. Hover over a county in the map below to see the total number of people tested and the percent of those tests that were positive during the past week. The county graphs to the right show the weekly trends in the percent of COVID-19 tests that were positive since March 1st. Use the toggle to switch to weekly trends in COVID-19 testing for each county since March 1st.

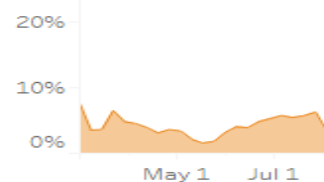
Percent Positivity ☒ Total Persons Tested



Percent Positivity: 0.0% 34.9%

Counties without any reported testing in the past week will not appear on the map.

Oregon, statewide



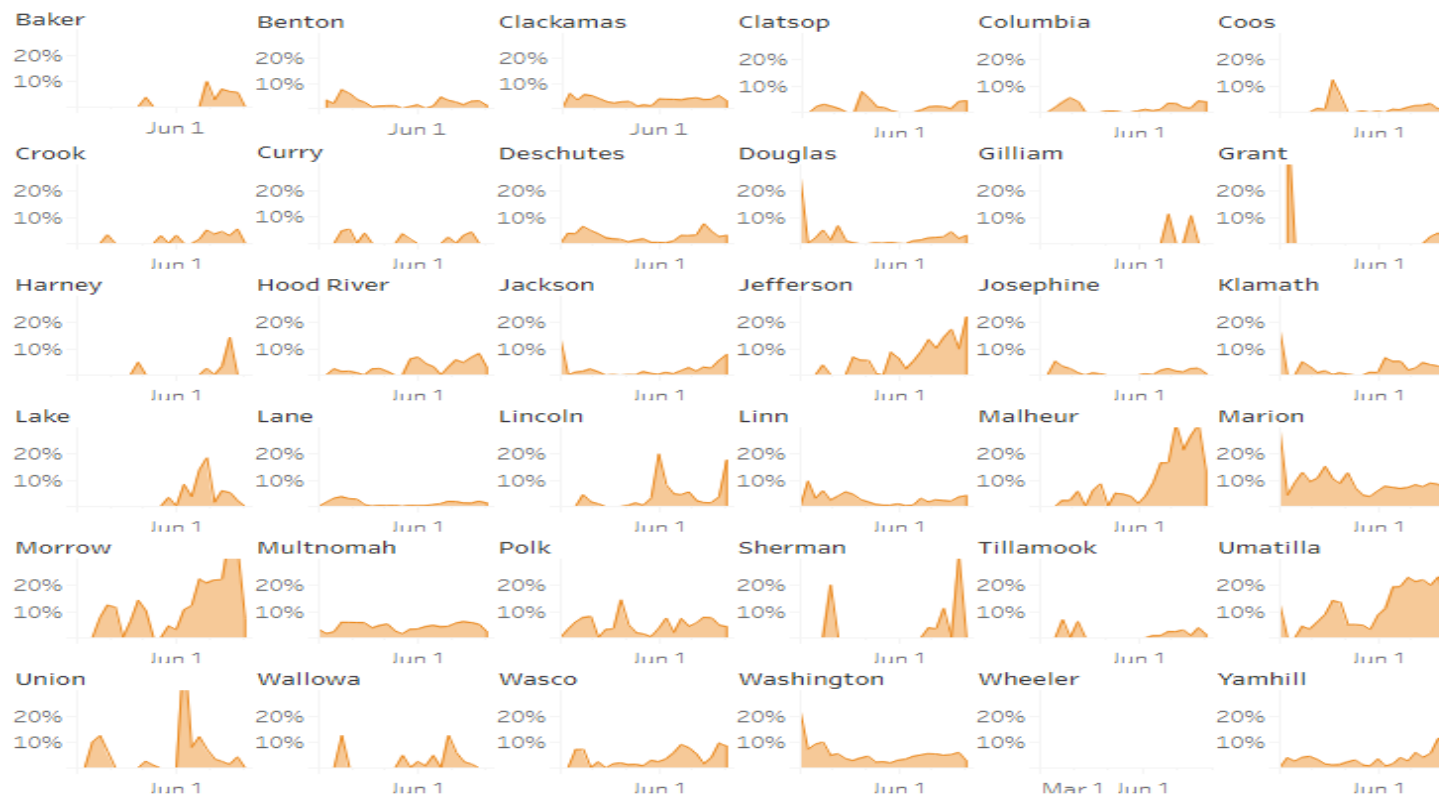
Clackamas, Multnomah, and Washington



Marion and Polk



Weekly trends in percent of COVID-19 tests that are positive. Data will load slowly, please be patient. Hover over the graph to learn more about each week.





California Department of Corrections & Rehabilitation

Pain Point

- Required to produce an annual report for the public this report took many hours to produce
- 165+ page Annual report
- No timely use of data

Action

- Plante Moran engaged with a series of Professional Services: Design Session, Dashboard development, Transfer of Knowledge Session, Tableau Training

Outcome

- Tableau workbook automatically updates monthly and provides data in a more timely manner
- Correction facility staff have access to timely summary data to support their work and reporting
- Staff have regained time to focus on new projects and now have a skill set to develop new content
- Dashboards provide data exploration which has reduced time staff spend on data requests



California Department of Corrections and Rehabilitation
Office of Research
Offender Data Points



About Us

Summary

In-Custody

Admissions

Releases

Parole

Data Sources

Summary of Offender Data Points for Month-end 12/31/2018

Select Month
December 2018

Select County/Countries
All

Select Location(s)
All

19,188

In-Custody Population
As of Month-end 12/31/2018

6,140

Total Parole Population
As of Month-end 12/31/2018

2,803

Overall Admissions
As of Month-end 12/31/2018

3,449

Overall Releases
As of Month-end 12/31/2018

-0.9%

Change from In-Custody
Prior Month



-0.3%

Change from Parole Population
Prior Month



+1.2%

Change from Overall Admissions
Prior Month



+8.0%

Change from Overall Releases
Prior Month



Female 12.8%
Male 87.2%

Female 20.8%
Male 79.2%

Female 6.2%
Male 93.8%

Female 8.6%
Male 91.4%

Click here to view In-Custody Data Exploration

Summary of In-Custody Offender Data Points for Month-end 12/31/2018

Data filtered based on user selections throughout the report.

Select Month-end
December 2018

Select Controlling County
All

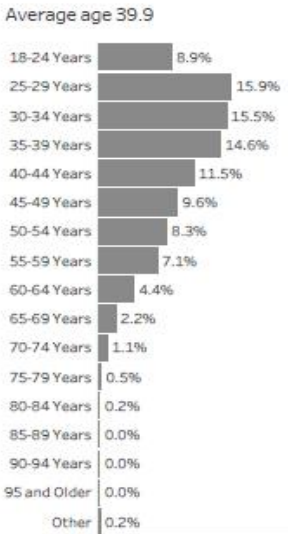
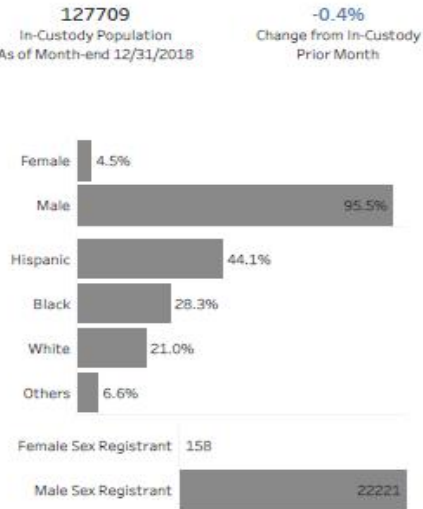
Select Location(s)
All

In-Custody December 2018
Low to High by Controlling County
Small to Large circles represent population by Location

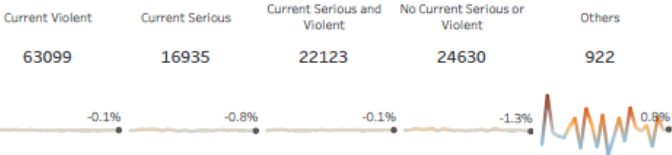


In-Custody December 2018 not included on map

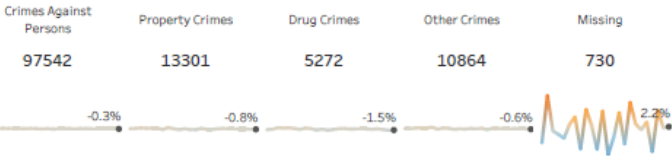
COCF Facilities	1987
Community Prisoner Mother Program	15
Female Community ReEntry Facility	198
Private CCF Facilities	1965
Public CCF Facilities	1667
Sacramento Control Office	1246
State Hospitals	198



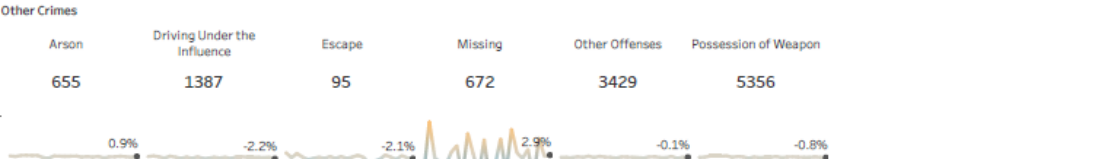
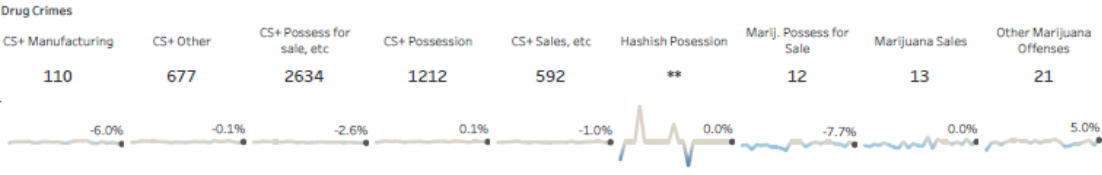
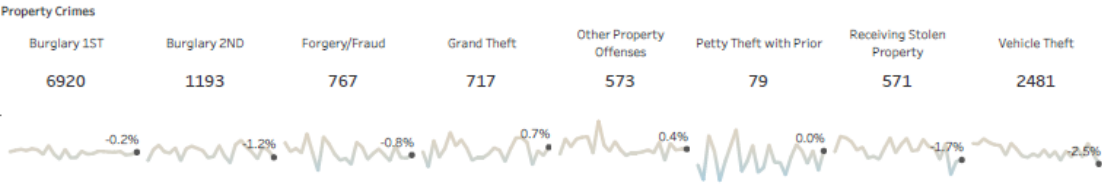
In-Custody Population by Serious and Violent Status
As of Month-end December 2018



In-Custody Population by Offense Category
As of Month-end December 2018



In-Custody Population by Offense Group
As of Month-end December 2018



For whom the bell polls.....

Poll question 3

Practical Examples

Questions?

Engage with our analytics team if interested:

Tim Deskin, Plante Moran | Partner | Management Consulting |
tim.deskin@plantemoran.com | Mobile: 303.229.1937

Mark Richards, Plante Moran | Partner | IT Consulting |
mark.richards@plantemoran.com | Mobile: 512.689.7737

DISCLAIMERS AND COPYRIGHT NOTICE

The information and opinions conveyed at IGFOA conferences, institutes, and seminars are obtained from sources believed to be reliable, but IGFOA makes no guarantee of accuracy. Opinions, forecasts and recommendations are offered by individuals and do not represent official IGFOA policy positions. Nothing herein should be construed as a specific recommendation to buy or sell a financial security. The IGFOA and speakers specifically disclaim any personal liability for loss or risk incurred as a consequence of the use and application, either directly or indirectly, of any advice or information presented herein.

Unless otherwise indicated, all materials are copyrighted by the Illinois Government Finance Officers Association. The enclosed materials may not be reprinted, reproduced, or presented in any format without express written authorization.

© 2020

Illinois Government Finance Officers Association 800 Roosevelt Road, Building C, Suite 312 Glen Ellyn, IL 60137 Phone: 630-942-6587 Email: info@igfoa.org Visit <http://www.igfoa.org>