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SOFTWARE SOLUTIONS

Advanced Analytics Techniques in Oracle Cloud

Lessons Learned from 30 years of projects

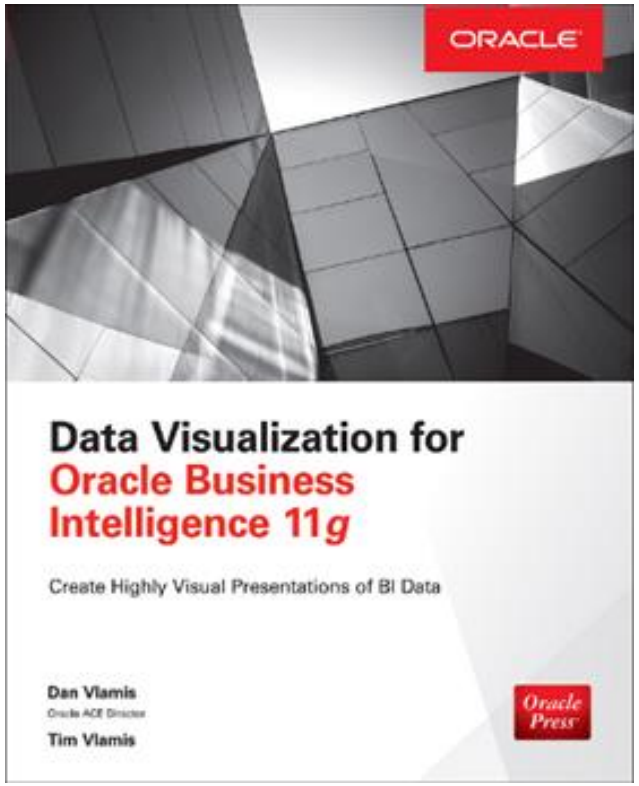
Dan and Tim Vlamis

October 20, 2022

www.vlamis.com

Vlamis Software Solutions

- Founded in 1992 in Kansas City, Missouri
- 400+ Enterprise Clients
- Consults in :
  - Enterprise Business Intelligence & Analytics
  - Analytic Warehousing
  - Machine Learning and Predictive Analytics
  - Data Visualization
  - ETL and data integration
- Vlamis consultants average 15+ years
- www.vlamis.com (blog, papers, newsletters, services)
- Co-authors of book "Data Visualization for OBI 11g"



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Presenters Background

Dan Vlamis – President

- Founded Vlamis Software Solutions in 1992, lead the practice
- 30+ years in business intelligence, dimensional modeling
- AnDOUC Board Member since 2008, direct A&D Summit 2023
- BA Computer Science Brown University
- @dvlamis

Tim Vlamis – Vice President & Analytics Strategist

- 30+ years in business modeling and valuation, forecasting, and scenario analyses
- Instructor for Oracle University's Data Mining Techniques and Oracle R Enterprise Essentials Courses
- Professional Certified Marketer (PCM) from AMA
- MBA Kellogg School of Management (Northwestern University)
- BA Economics Yale University
- tvlamis@vlamis.com

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30 years of learnings – front end

- People are bad at reading numbers from tables

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Simple Pivot Table with Easy Questions

2014 Monthly Sales by Company

	2014 / 01	2014 / 02	2014 / 03	2014 / 04	2014 / 05	2014 / 06	2014 / 07	2014 / 08	2014 / 09	2014 / 10	2014 / 11	2014 / 12	Grand Total
D4 Company	Sales	Sales	Sales	Sales	Sales	Sales	Sales	Sales	Sales	Sales	Sales	Sales	
Genmind Corp	$202,019	$296,178	$393,254	$401,352	$621,749	$921,152	$823,760	$576,288	$590,033	$477,079	$324,569	$326,255	$5,953,688
Stockplus Inc.	$317,533	$475,312	$650,825	$605,253	$868,347	$1,272,701	$1,076,425	$904,047	$947,674	$788,834	$515,927	$531,188	$8,954,066
Tescare Ltd.	$261,837	$422,774	$555,255	$550,912	$844,094	$1,222,869	$1,012,856	$810,286	$814,160	$691,479	$447,950	$457,773	$8,092,246
Grand Total	$781,389	$1,194,264	$1,599,334	$1,557,516	$2,334,190	$3,416,722	$2,913,041	$2,290,621	$2,351,868	$1,957,392	$1,288,446	$1,315,216	$23,000,000

- What was the highest monthly sales for a company?
- Which month had the largest drop in sales for a company?
- In which month(s) did Tescare have a greater gain than Stockplus?
- Is there a seasonal pattern to sales for all companies?

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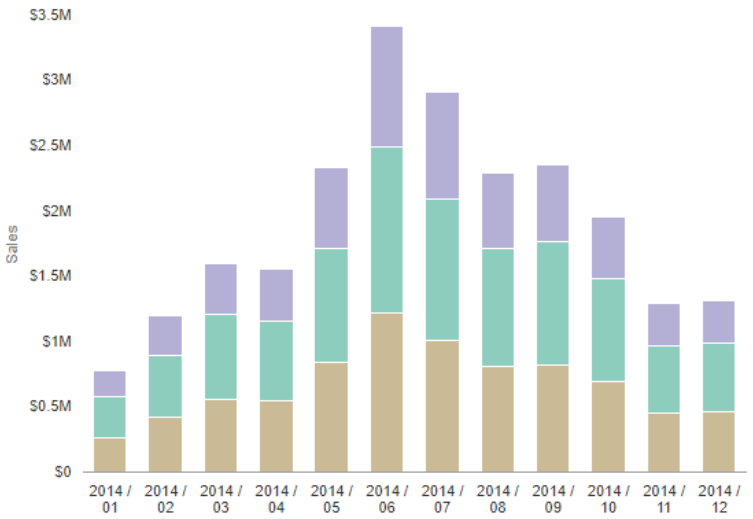
Answers are Easy to Find in Graphs

Total Sales 2014

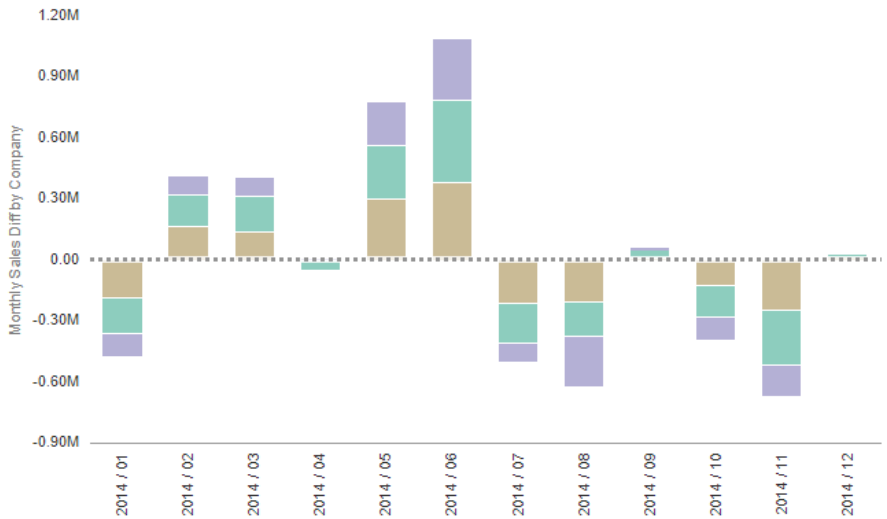
$23,000,000

Genmind Corp	Stockplus Inc.	Tescare Ltd.
$5,953,688	$8,954,066	$8,092,246
2014 Sales	2014 Sales	2014 Sales

2014 Monthly Sales by Company



Difference from Previous Month Sales by Company



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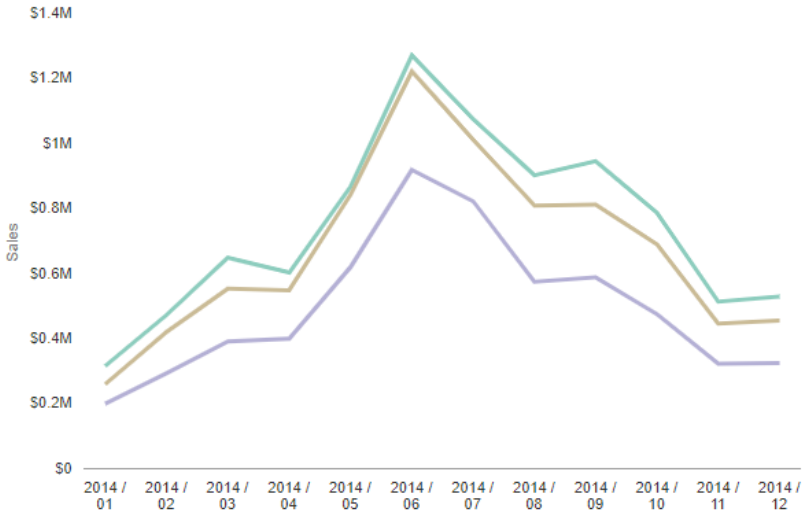

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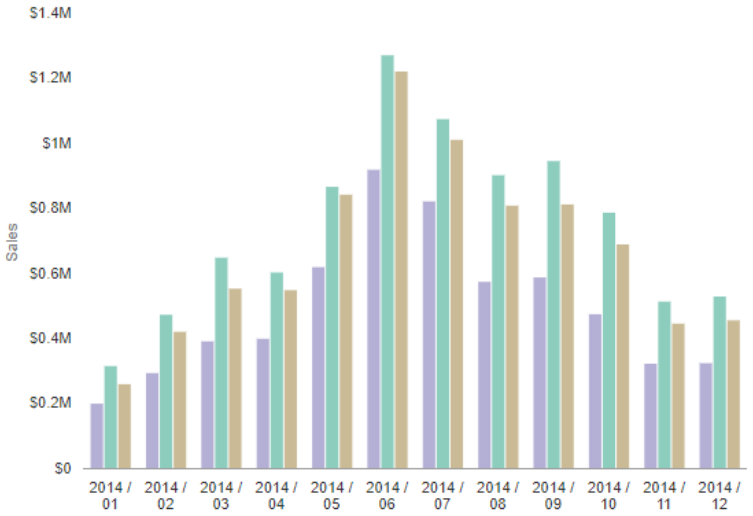

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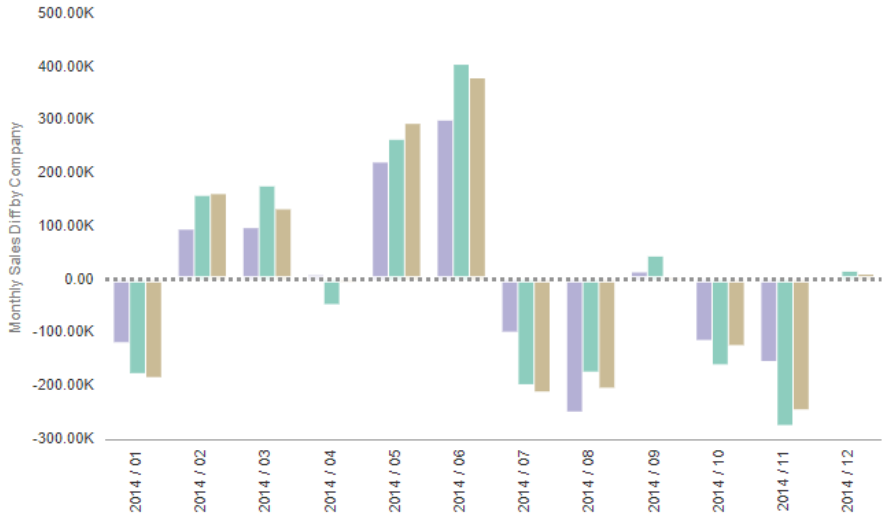

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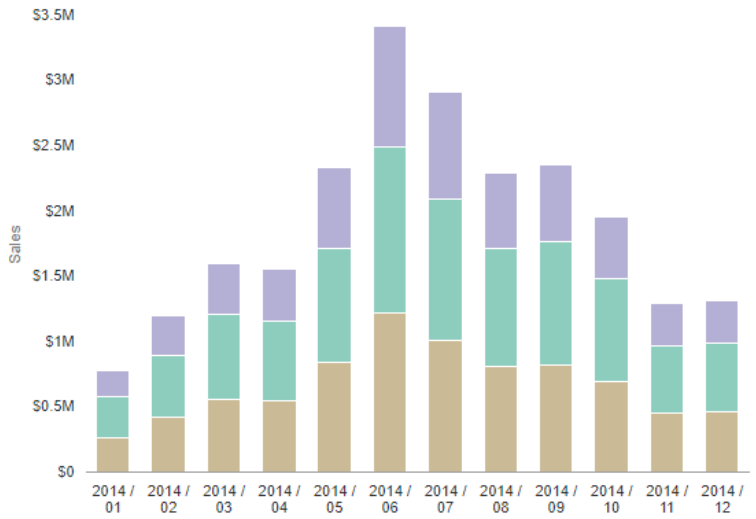

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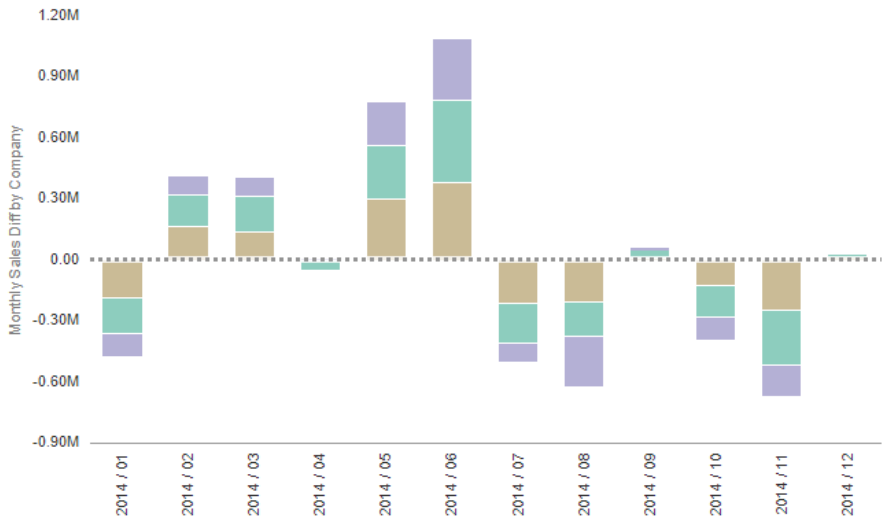

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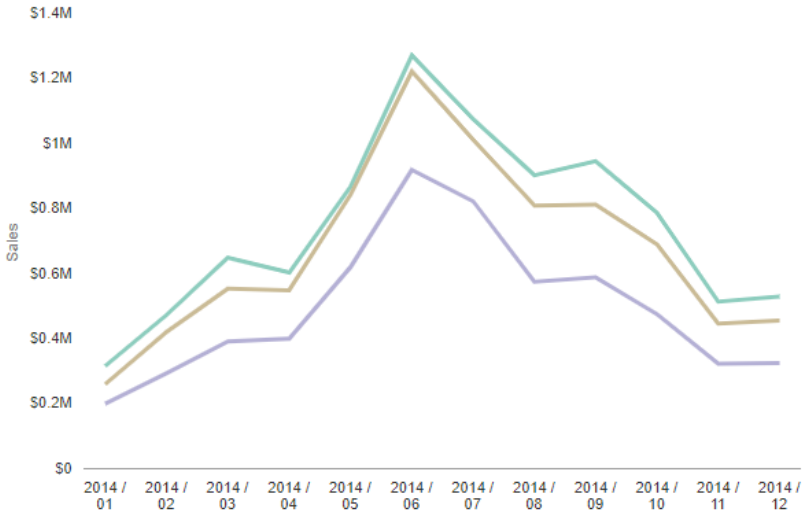

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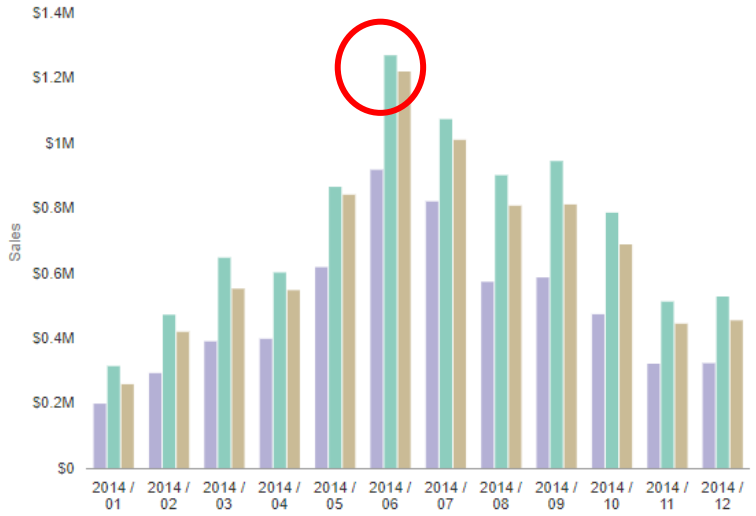

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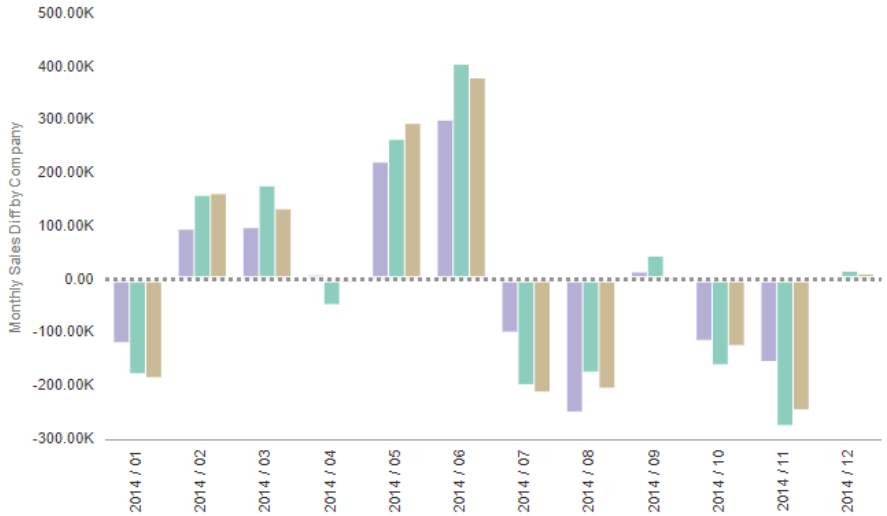
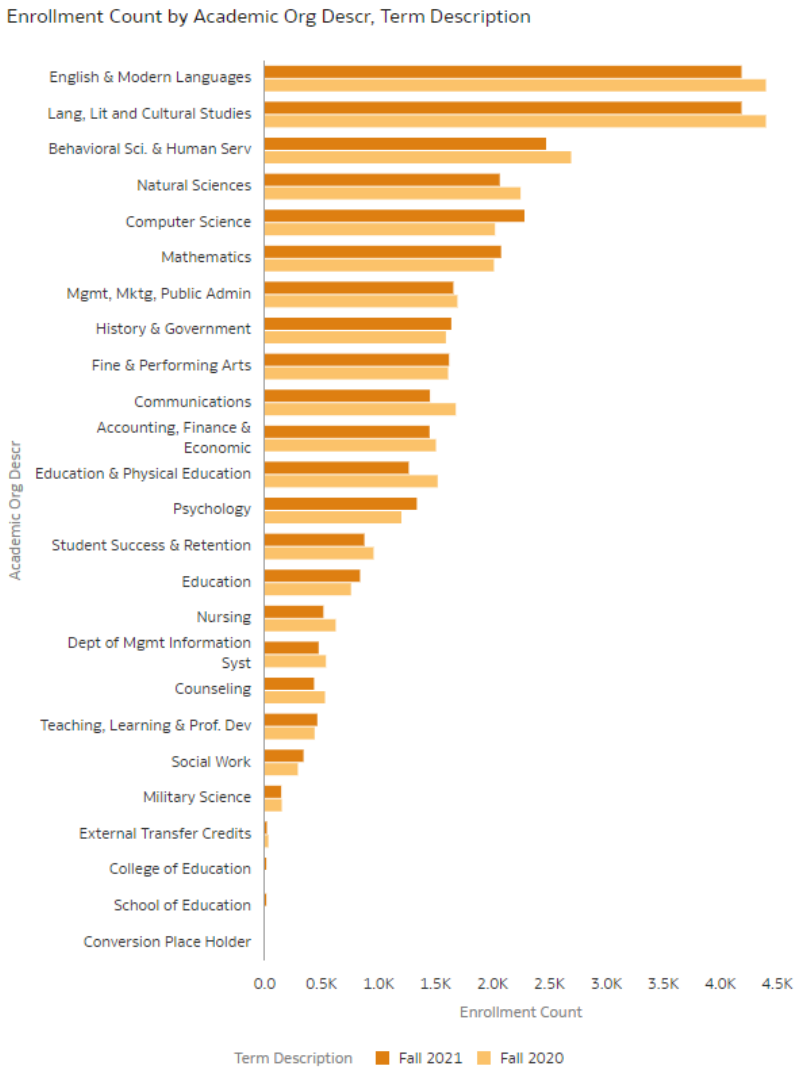
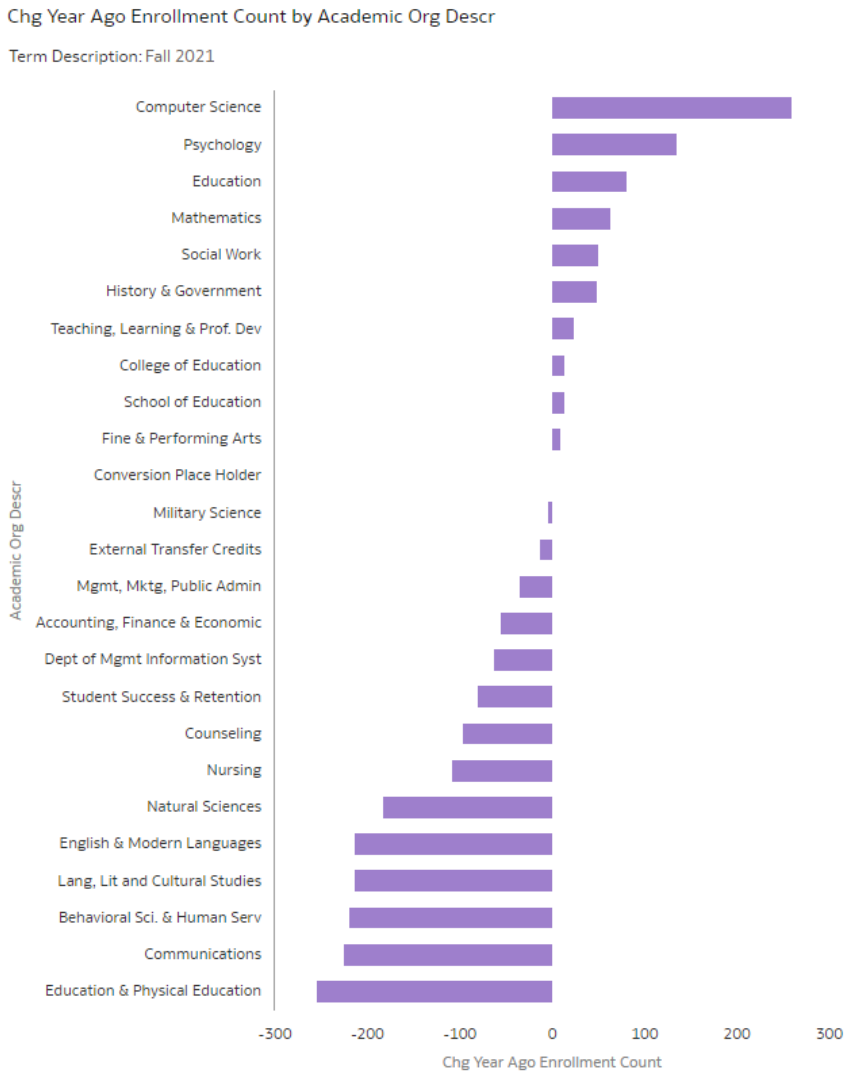


Use Difference Graphs





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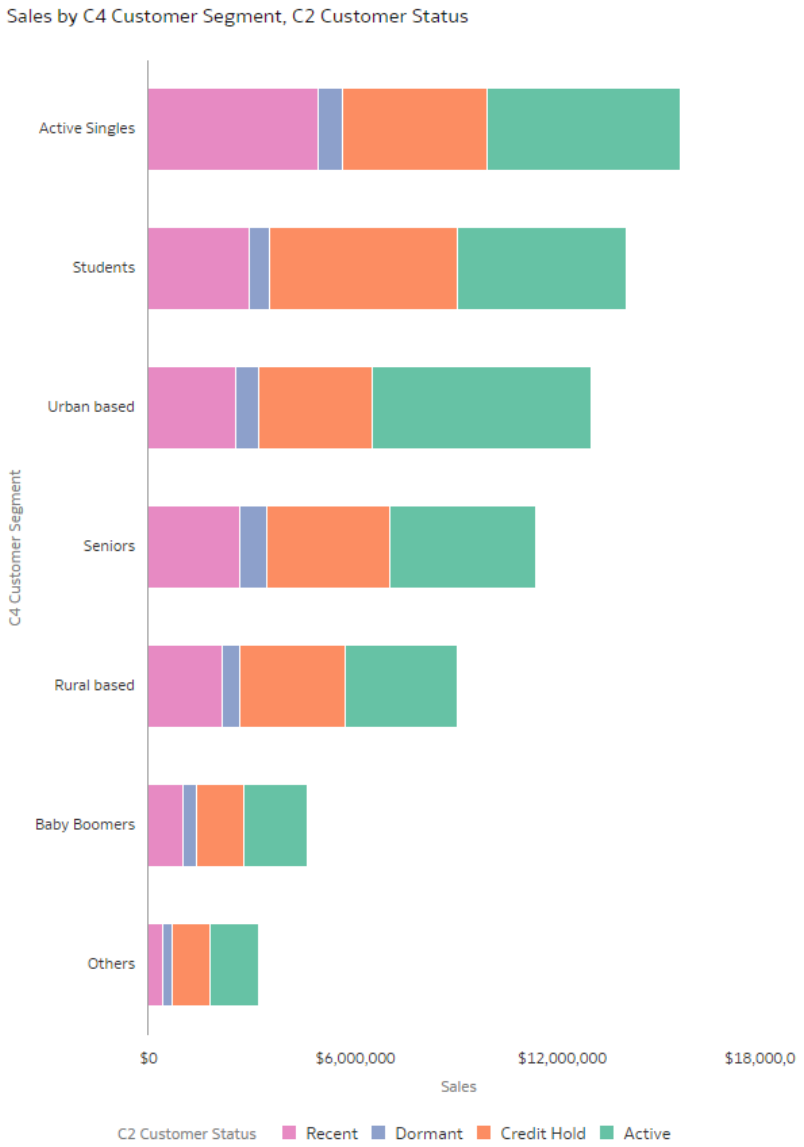
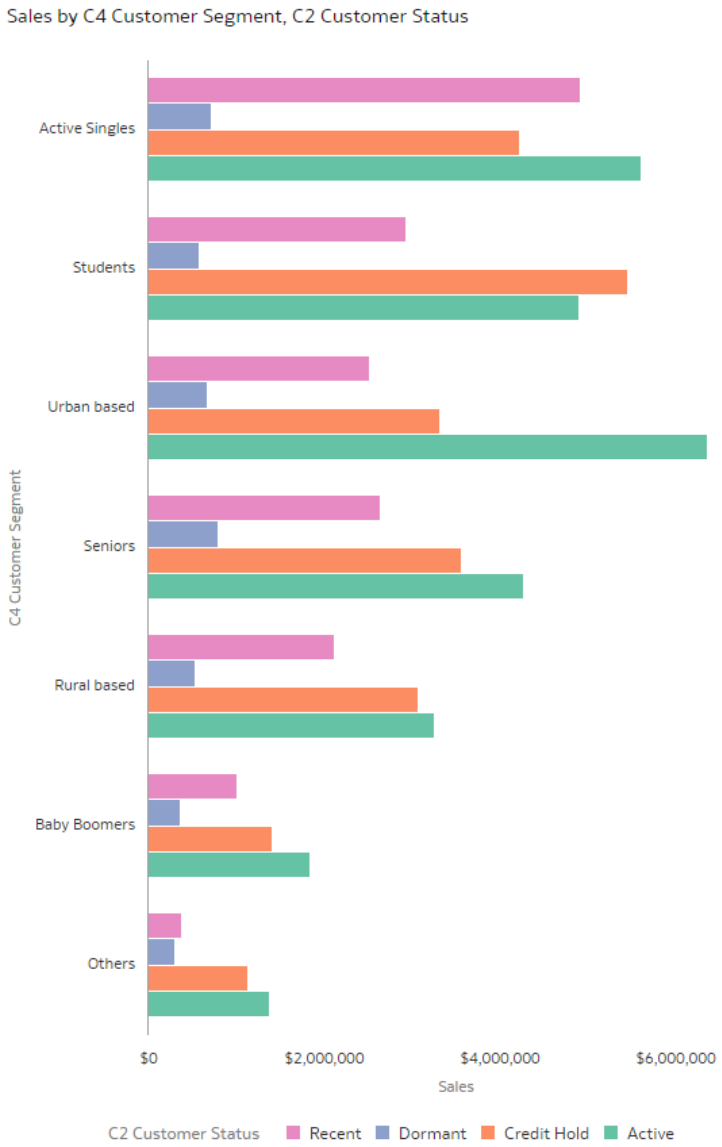
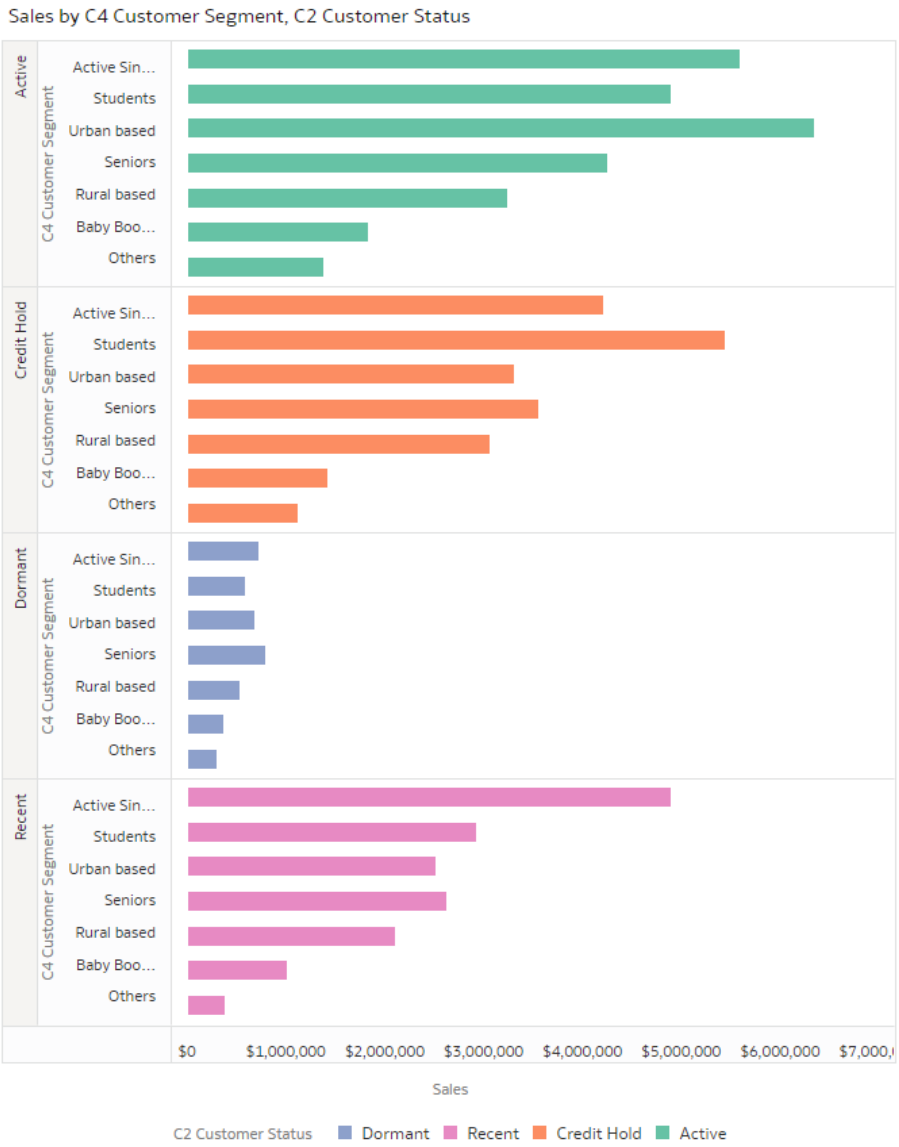
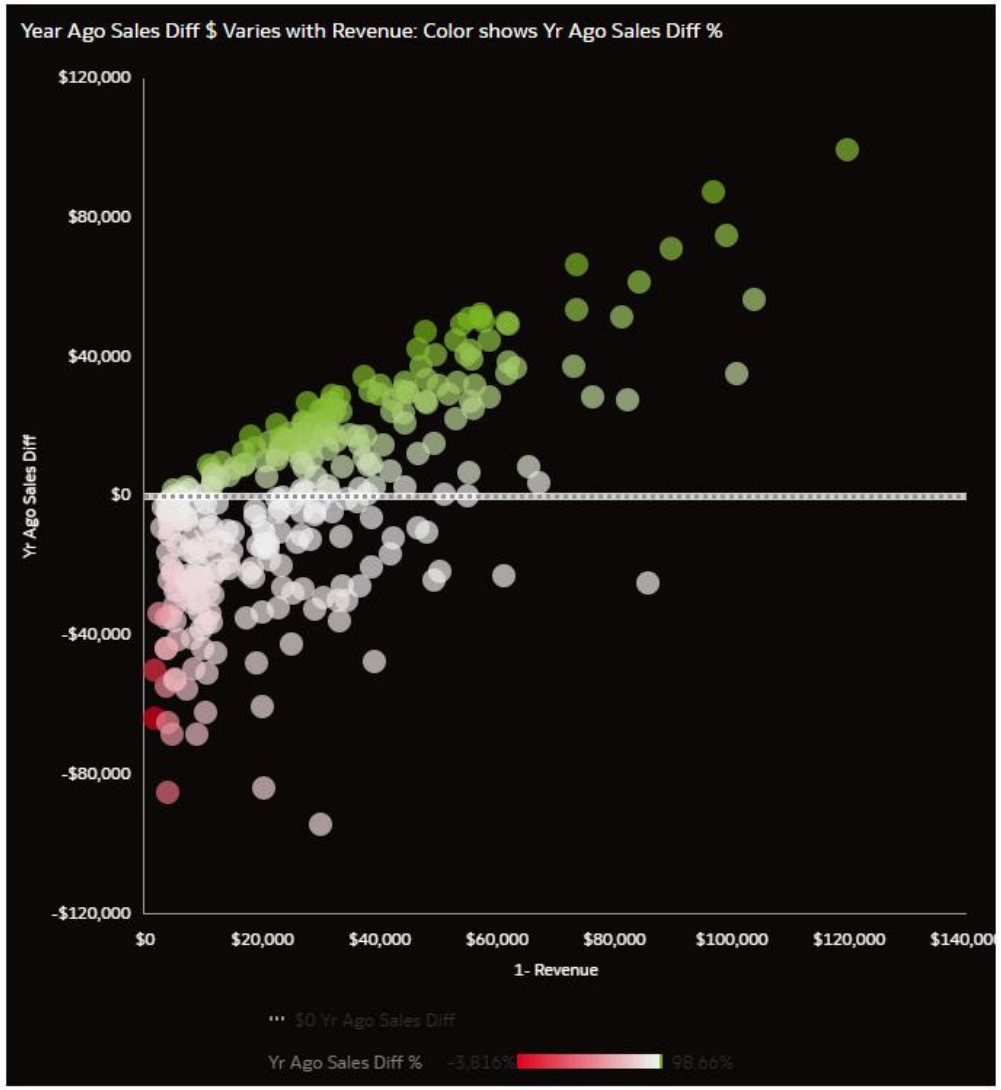
Multi-dimensions Need Multiple Graphs

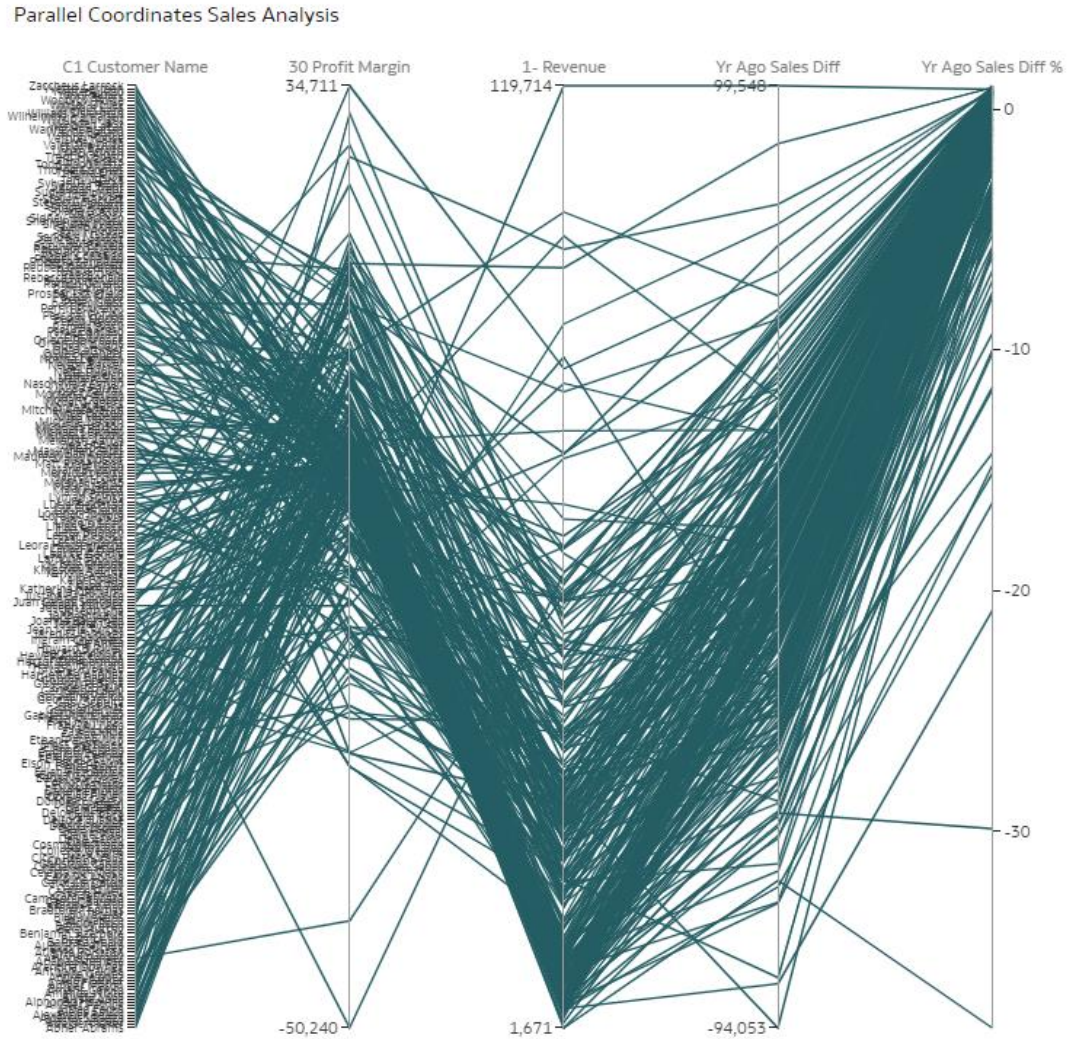






Use Linked Brushing to Find Outliers





C1 Customer Name	30 Profit Margin	1- Revenue	Yr Ago Sales Diff	Yr Ago Sales Diff %
Abner Abrams	$1,453	$11,460	$7,760	67.7%

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Invest in Training

- Consistent training over time yields strong systems
- Make training come alive with live data

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Three Areas to Start Analytics Improvements

- Problem
  - Define and dive into problem solving to deliver value
- Assessment
  - Use methodologies and tools to assess overall situation and recommend
- Project
  - Define a deliverable and get done quickly

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Machine Learning has Non-linear Returns

- Machine learning workshop at Beckman Coulter – millions of dollars in savings from a single finding in 4 day workshop
- Sentiment analysis done during assessment for Equity Residential. Executives shocked that residents liked them
- Using market basket at New Breed Logistics for warehouse picking operations improvement

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Whiteboard Data Modeling

- Identified grain and dimensions at Wesco
- Defined data model at West Corporation
- Challenge at Tivo because of complexity and different opinions

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Data Organization and Quality

- Migrating with dirty data and inconsistent sources is expensive
- Custom hierarchies at P&G made high level analytics challenging
- Currently working with Bowie State University on data quality
- Oracle Analytics exposes dirty data

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ADW and its tools

- Speed of warehouse project at FSCJ
- Auxiliary tools from Oracle:
  - Spatial Studio
  - Graph Studio
  - Data Miner and OML Notebooks
  - Data Actions
  - APEX
- Data loading, data catalog, enable “analytic warehouses”

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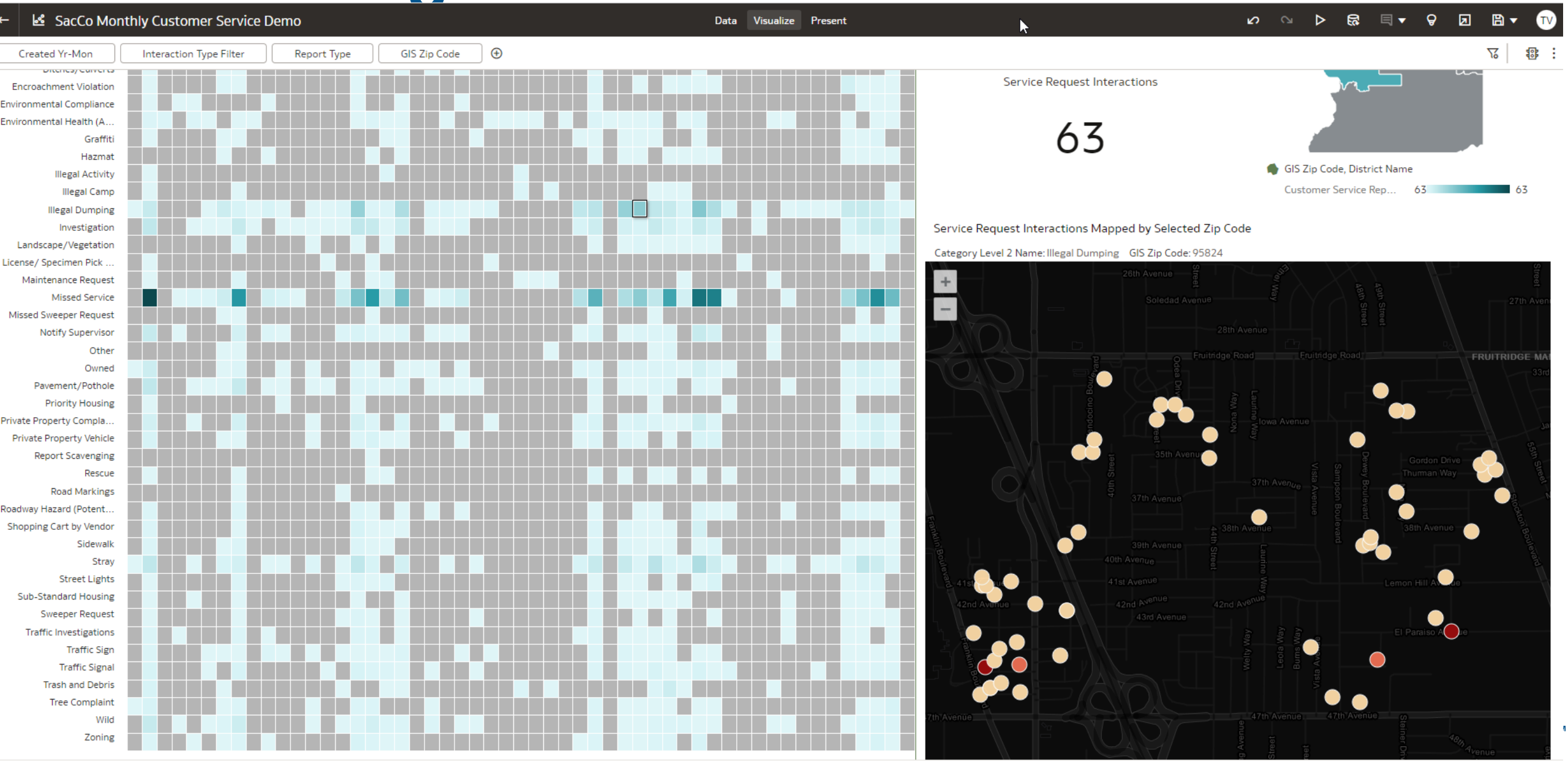
Data Organization Drives Value



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30 years of learnings – project management

- National Petroleum Council - better analysis is not always welcome.
- King county - Visual standards help drive equity-based, objective, non-biased decision making.
- Sacramento county - better reporting and dashboards can be built but public officials must be willing to effect change to adopt these tools.
- Certegy – People resist change. Exacerbated by lack of top leadership.
- Union Pacific – Analytic tools save manpower. Insistence on specific look can cost a lot of money.

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30 years of learnings – back end

- Tivo - calculations can be very complex and exist at multiple grains. Tough to program. Lesson – invest upfront in modeling and not boiling the ocean.
- Large retailer – Don’t bite off too much complexity in first phase. Need to deliver value before business conditions change.
- Technical(multiple) - ADW can simplify the job of DW development.
- Fact table design and number of dimensions is key to design.
- Invest in organizing data: conformed dimensions, definitions, quality. Analytical understanding starts with good data.

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OAC Data Manipulation Tips

- Push data manipulation "down the stack"
  - Prototype in front end
  - Experiment in data preparation/multi-table data sets
  - Consolidate and standardize in RPD
  - Better performance in tables or ETL
- Use Insights to learn new calculations
- Can use count distinct aggregation method to count items

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Analytics and Data
ORACLE USER COMMUNITY

Analytics and Data Summit 2023

March 14-16, 2023
Oracle Conference Center
Redwood Shores, California

Call for abstracts is open!

www.andouc.org

Thank You!!

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- Dan Vlamis dvlamis@vlamis.com

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