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Data Visualization Using Oracle Analytics

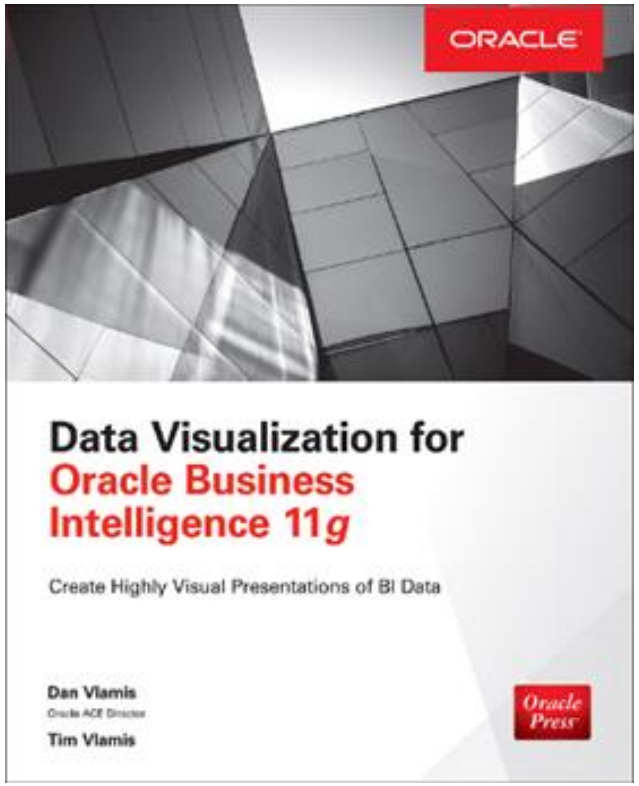
Dan Vlamis, Jonathan Clark, and Tim Vlamis

March 15, 2023

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

Tim Vlamis – Vice President & Analytics Strategist

- 15+ years with Vlamis. Expert in data visualization and machine learning
- MBA Kellogg School of Management (Northwestern University)
- BA Economics Yale University

Jonathan Clark – Senior Consultant

- 20+ years with Vlamis in all aspects of infrastructure, analytics, and warehousing
- US Navy Veteran

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Agenda

- Review frameworks and best practices
- New Interface and developer tab
- DV interface: filter bar filters, dashboard filter views (prompts), visualizations as filters
- Multi-layer Combo Visualizations
- Parameters (dynamic variables)
- QUESTIONS and COMMENTS at all TIMES!

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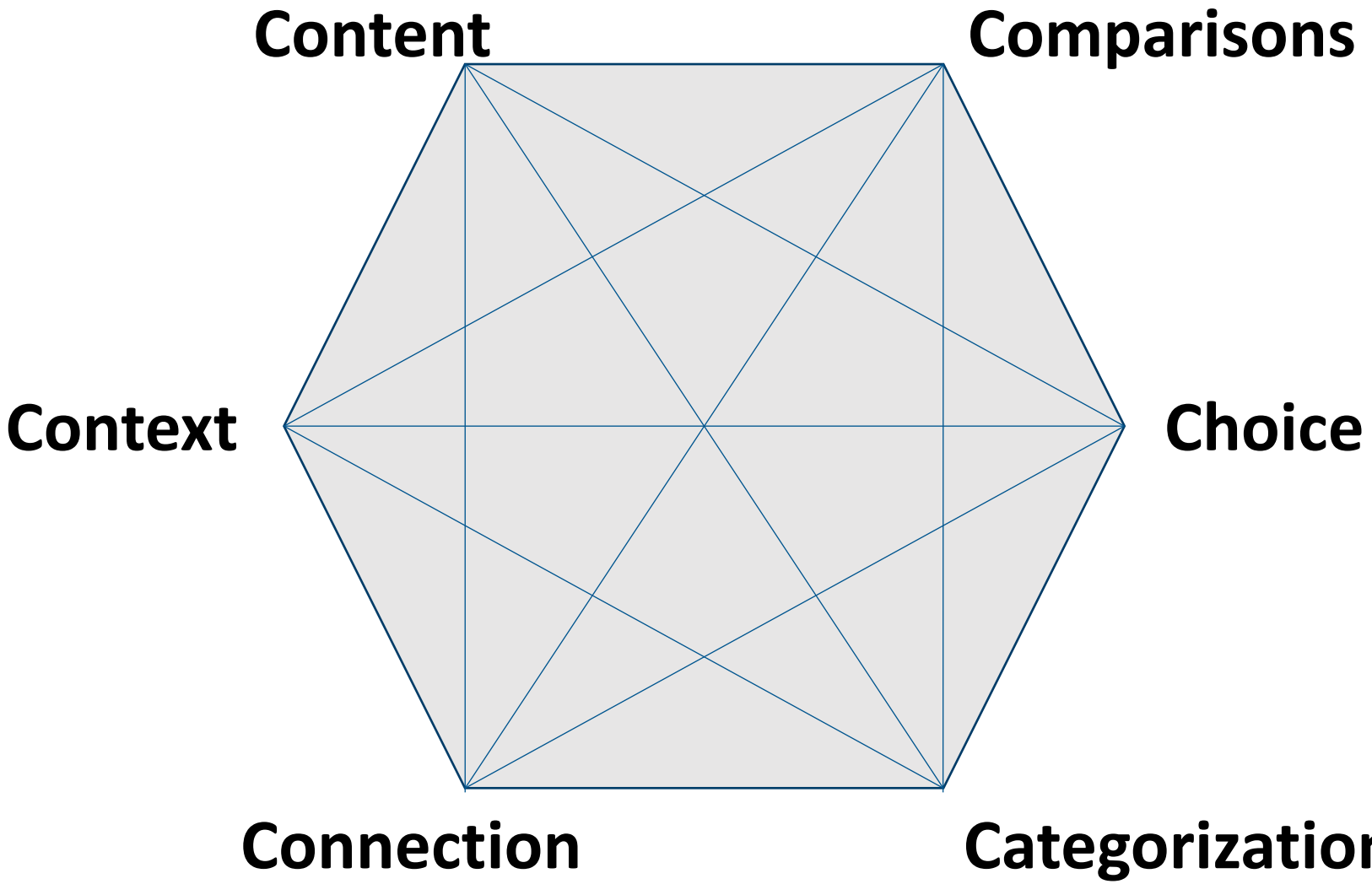
Great Dashboards Balance 6 Requirements



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Jonathan’s New Interface Slides

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Filters

- Use filter bar for complex dependencies
- Use Dashboard Filters view on canvas for hierarchical cascades

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OAC DV Filter Matrix

	Filter Bar	Dashboard Filter View	Viz as Filter
Able to see members	Yes	No	Yes
Has Apply Button	No	Yes	No
Has Reset Button	Yes	Yes	No
Able to be limited by other columns	Yes	Only within view	Config current selections
Set default value	No	Yes	No
Selection required by user option	No	Yes	No
Single click dynamic change	No	No	Yes
Display measure values and graphs	No	No	Yes
"Drop down" appearance	Yes	Yes	No
Auto display filter in canvas visualizations	No	No	Yes
Able to “pin” to all canvases	Yes	No	No

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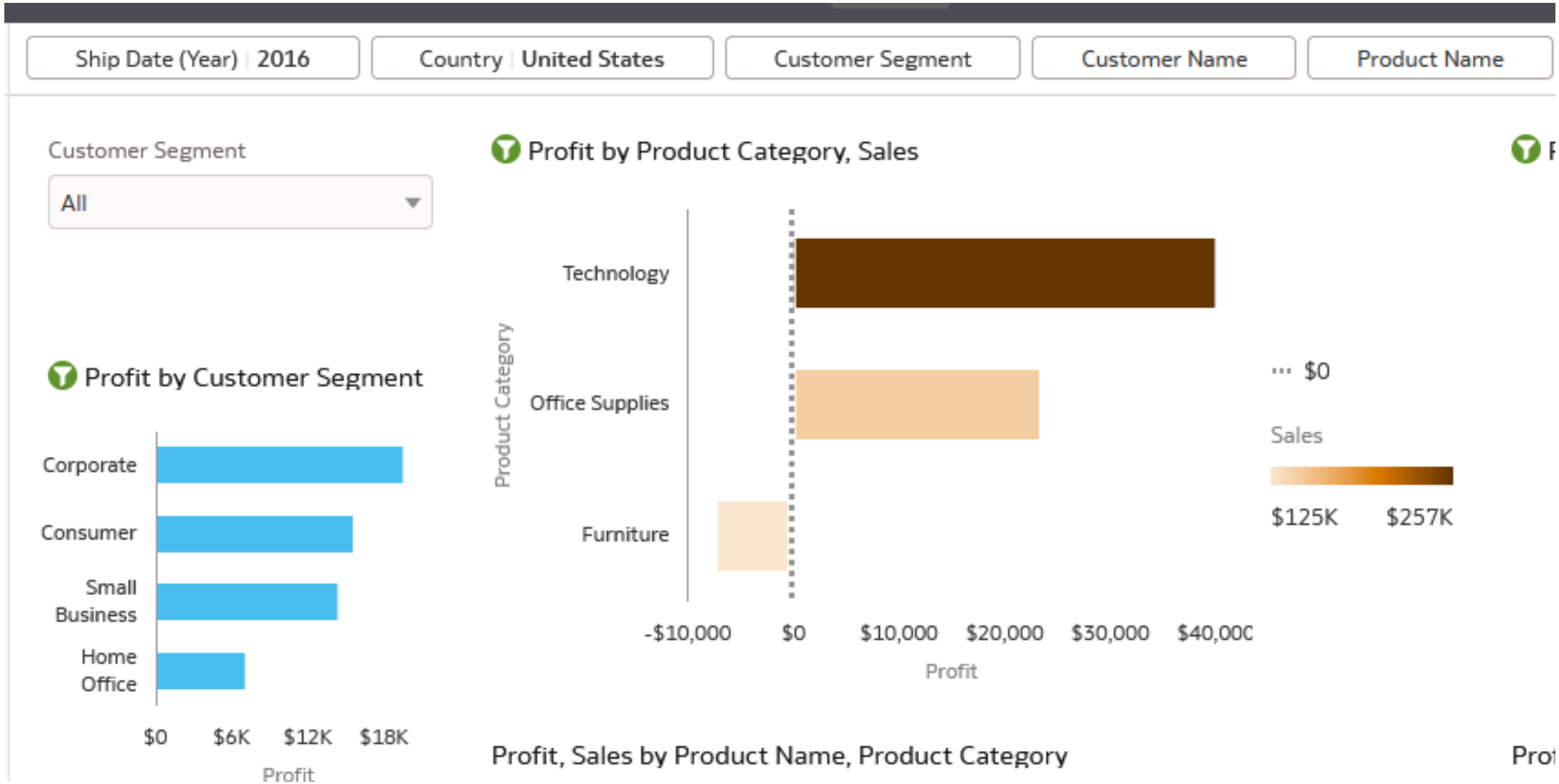
OAC DV Filter Matrix



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New Interface

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Developer Tab

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30 years of learnings – front end

- People love large tables of numbers 😍😘😚
- It’s really difficult to get insights 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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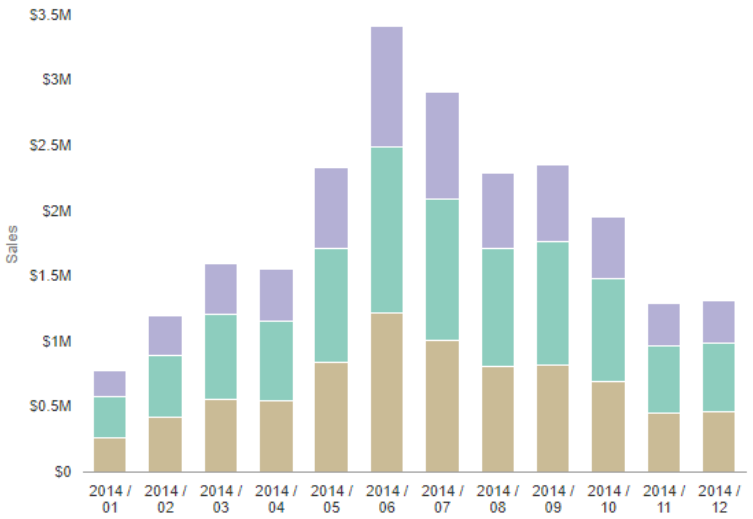
Answers are Easy to Find in Graphs

Total Sales 2014

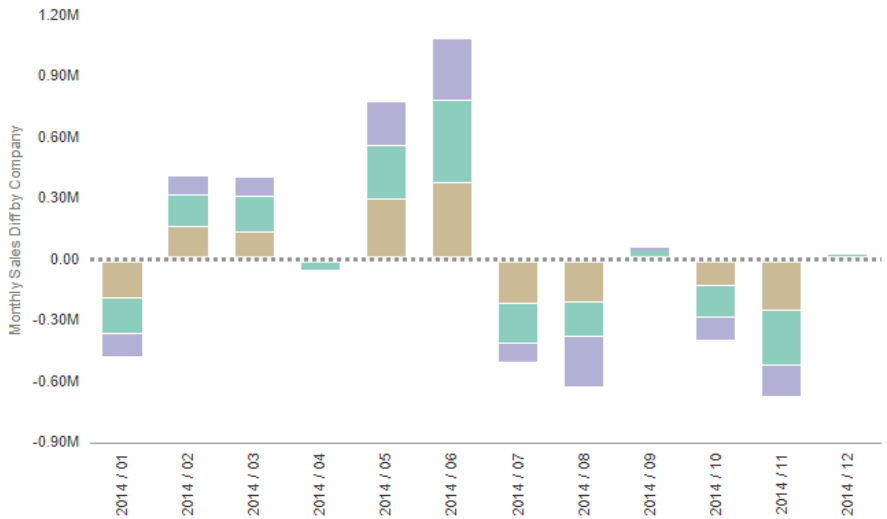
$23,000,000

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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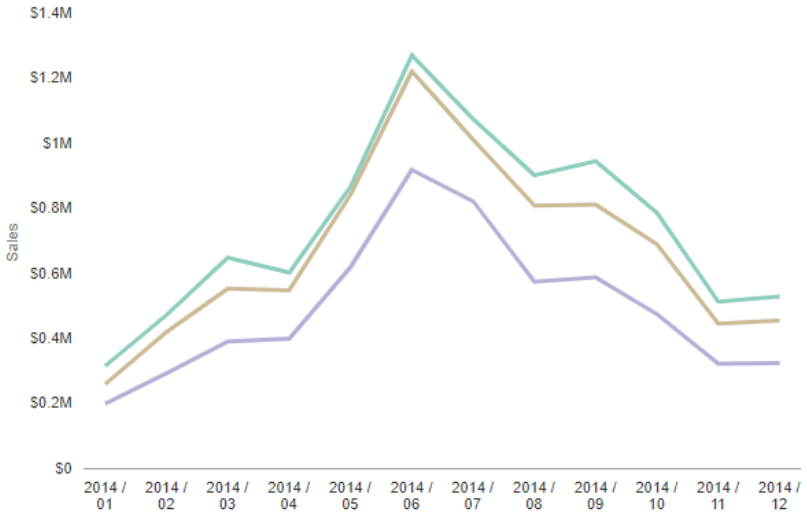

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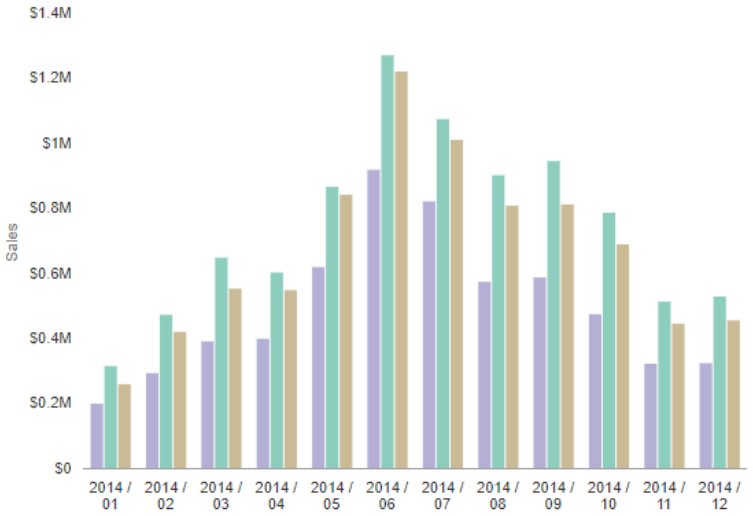

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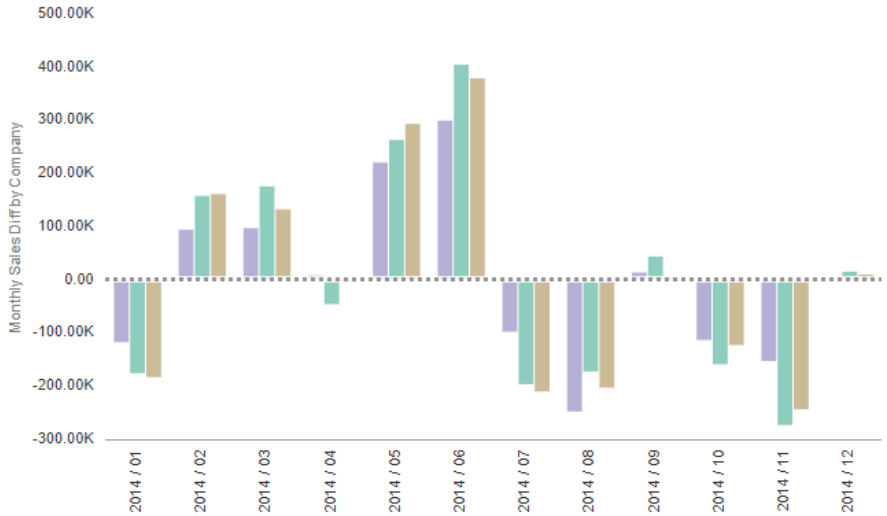

What was the highest monthly sales for a company?

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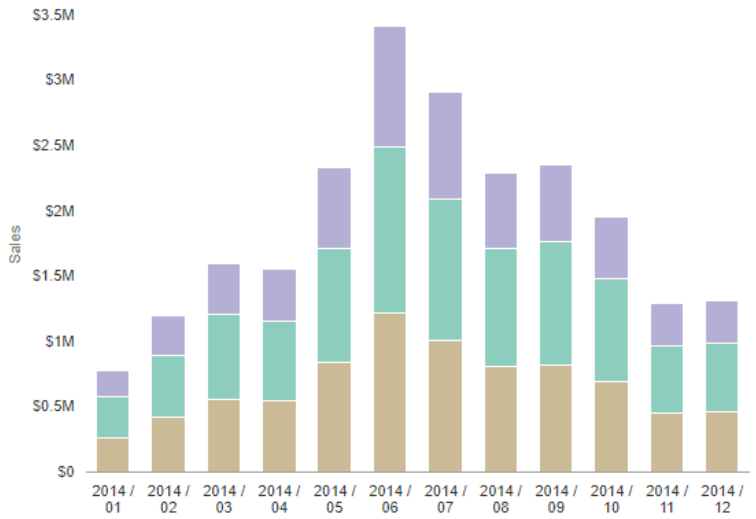

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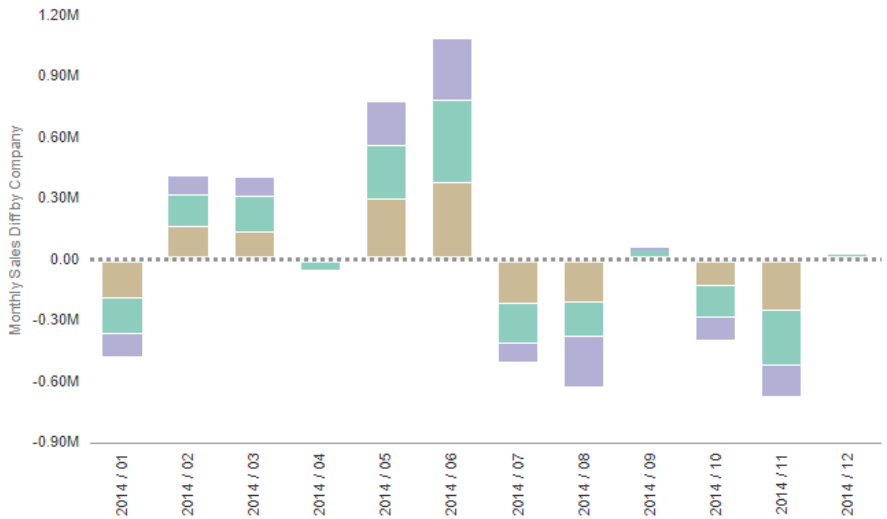

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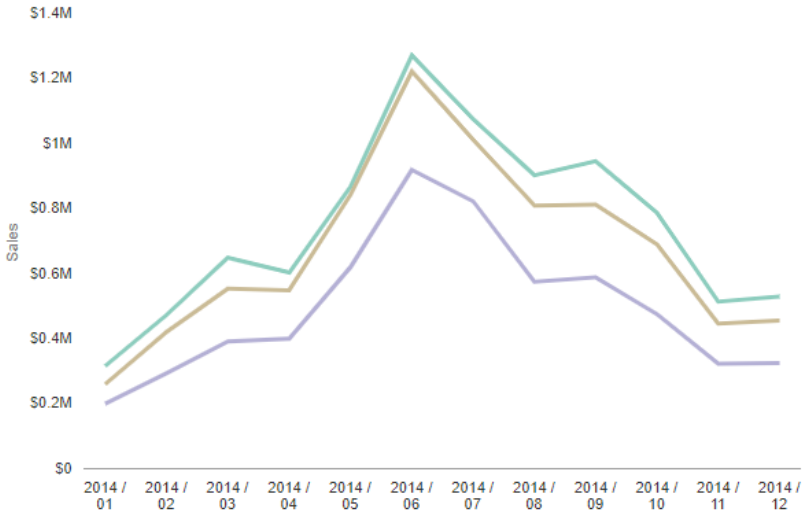

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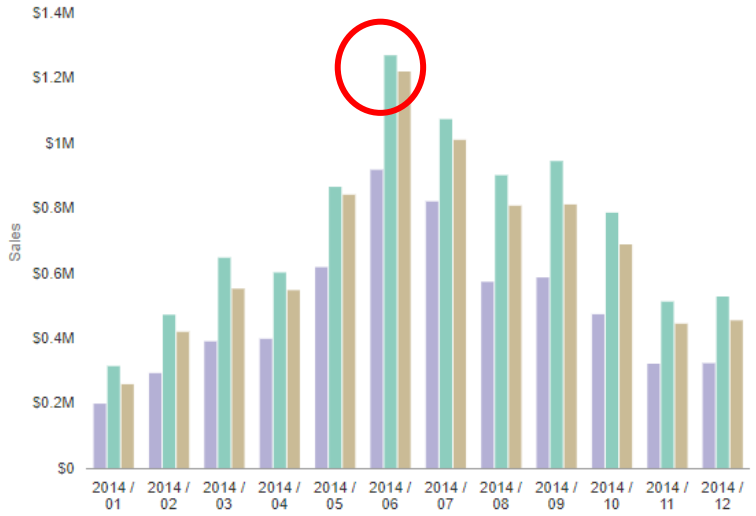

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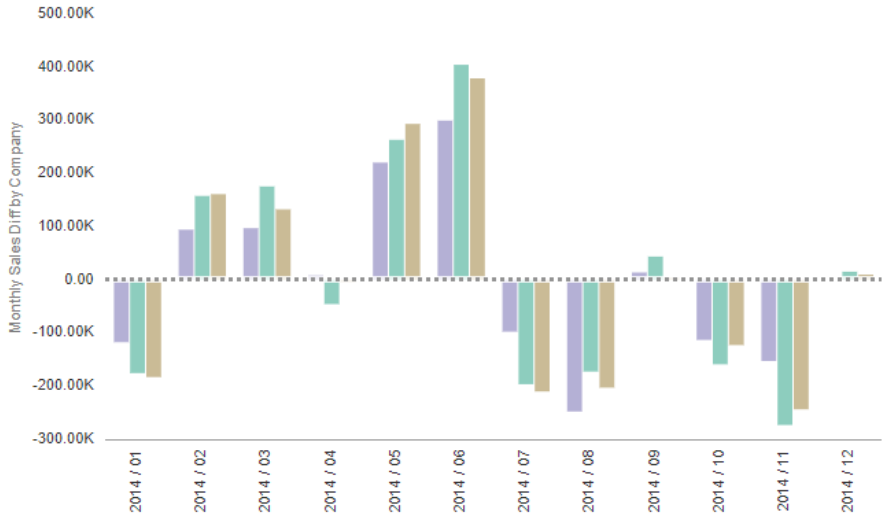
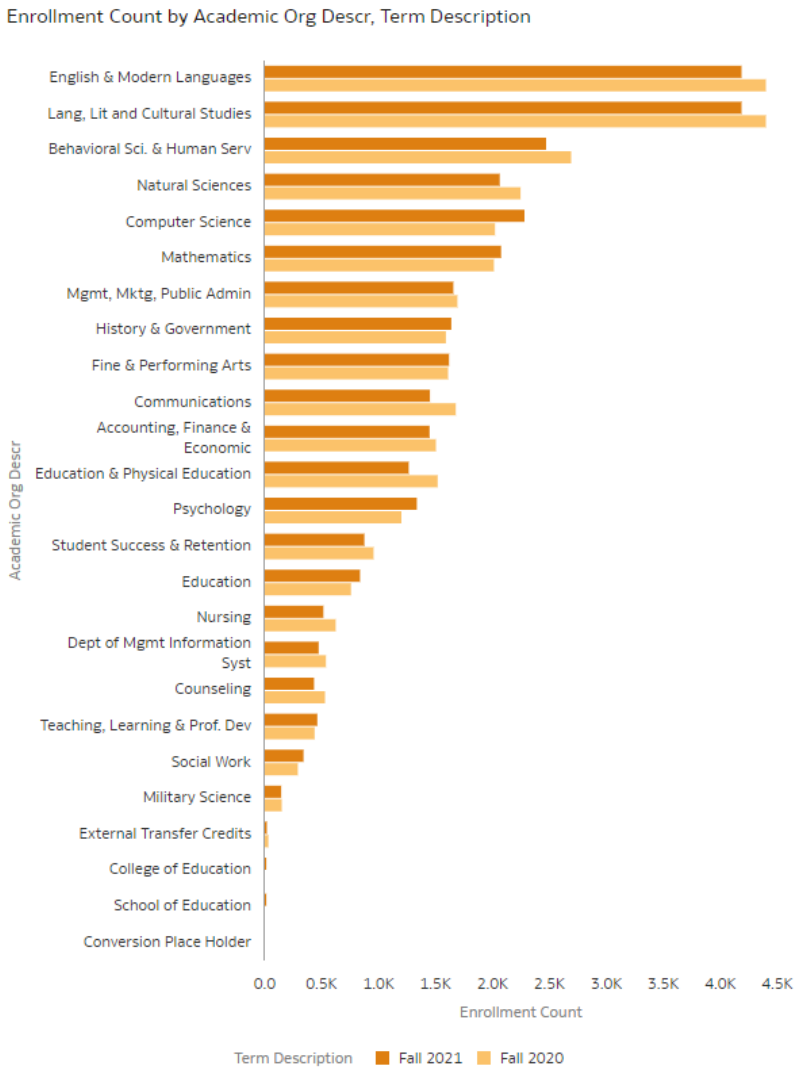
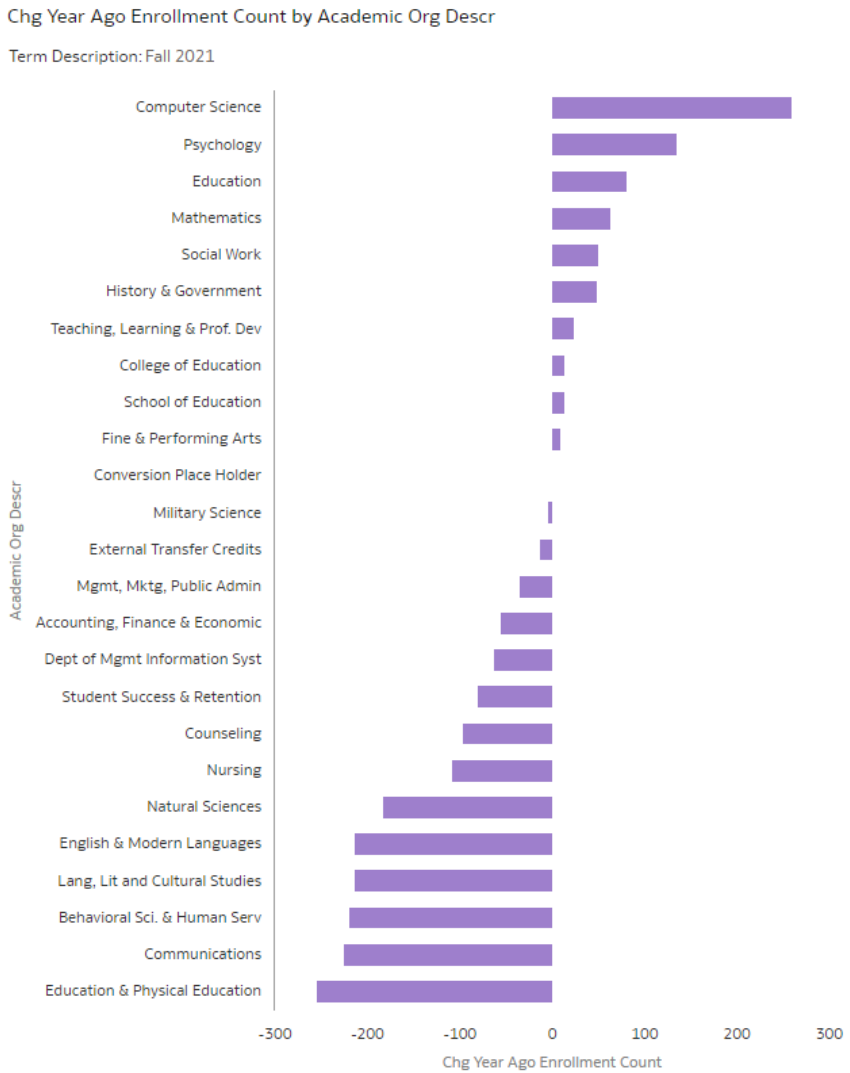


Use Difference Graphs





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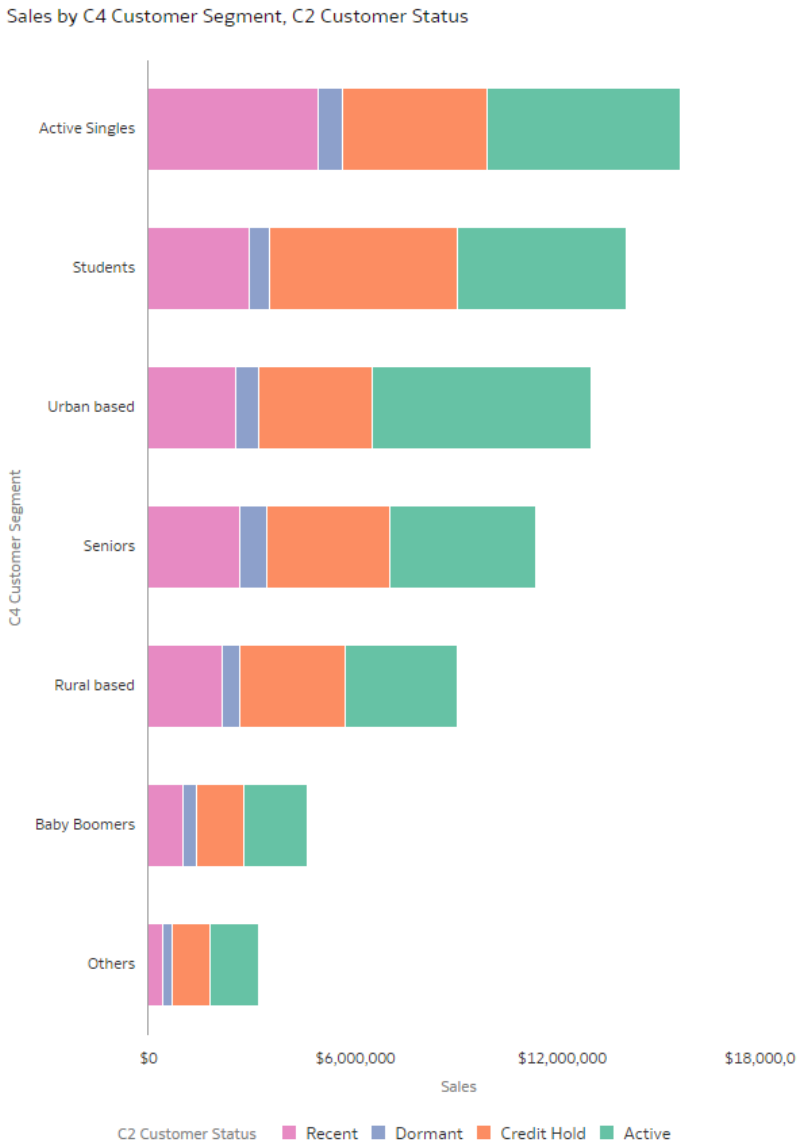
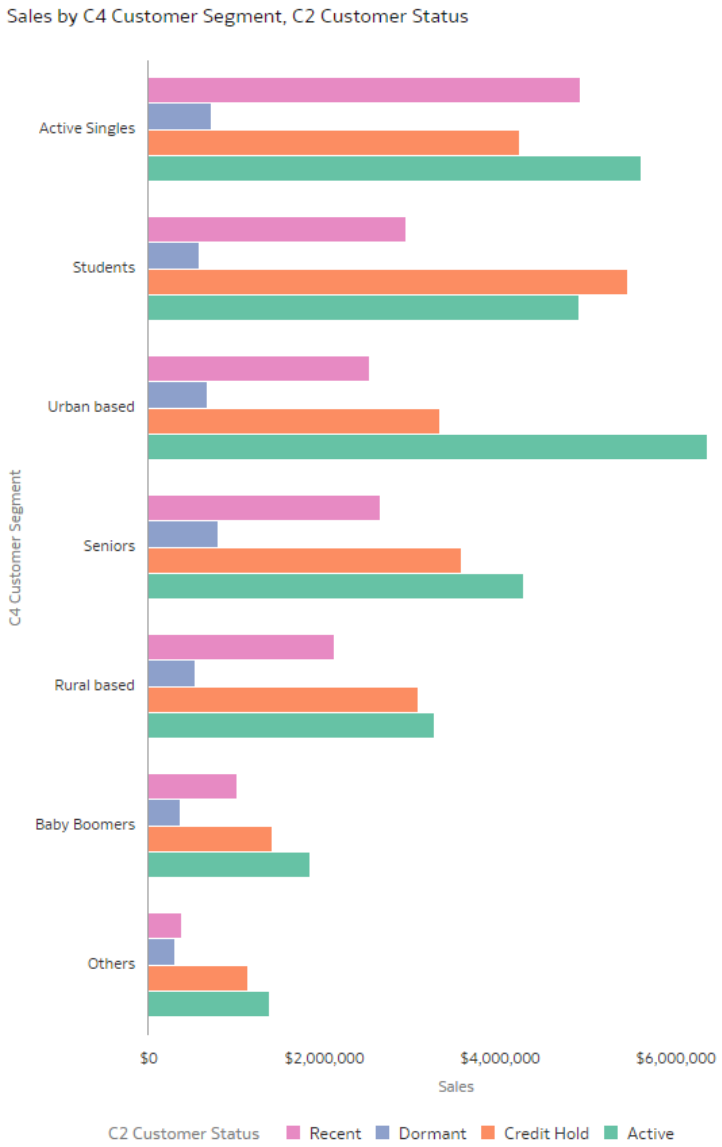
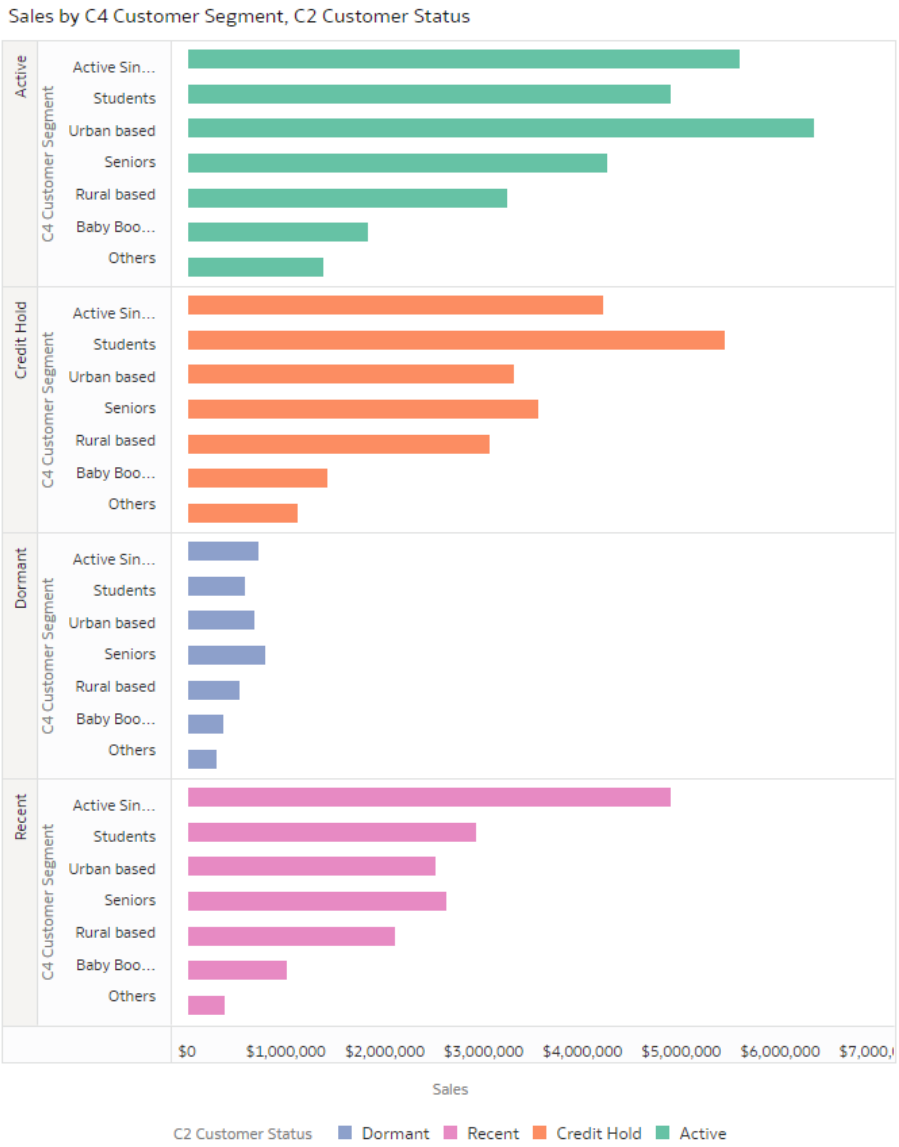
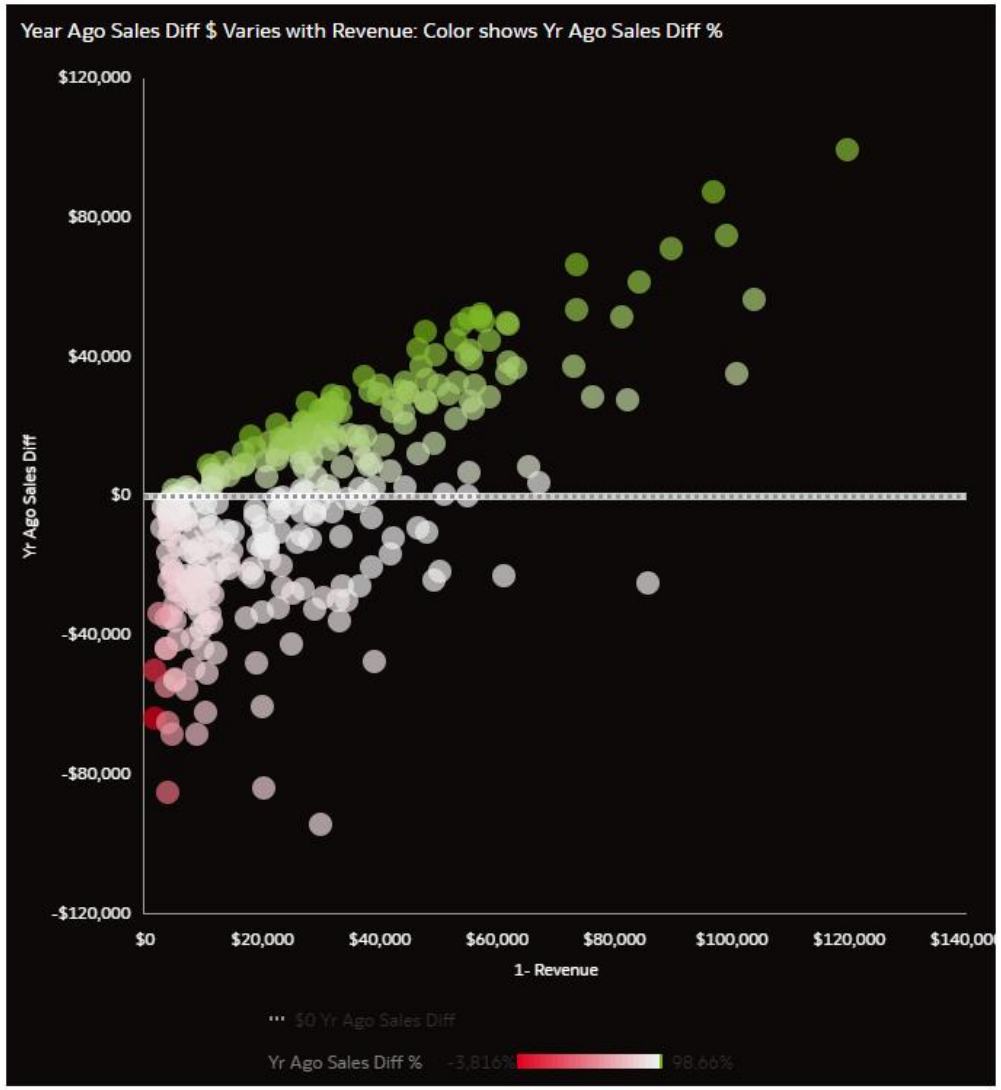
Multi-dimensions Need Multiple Graphs

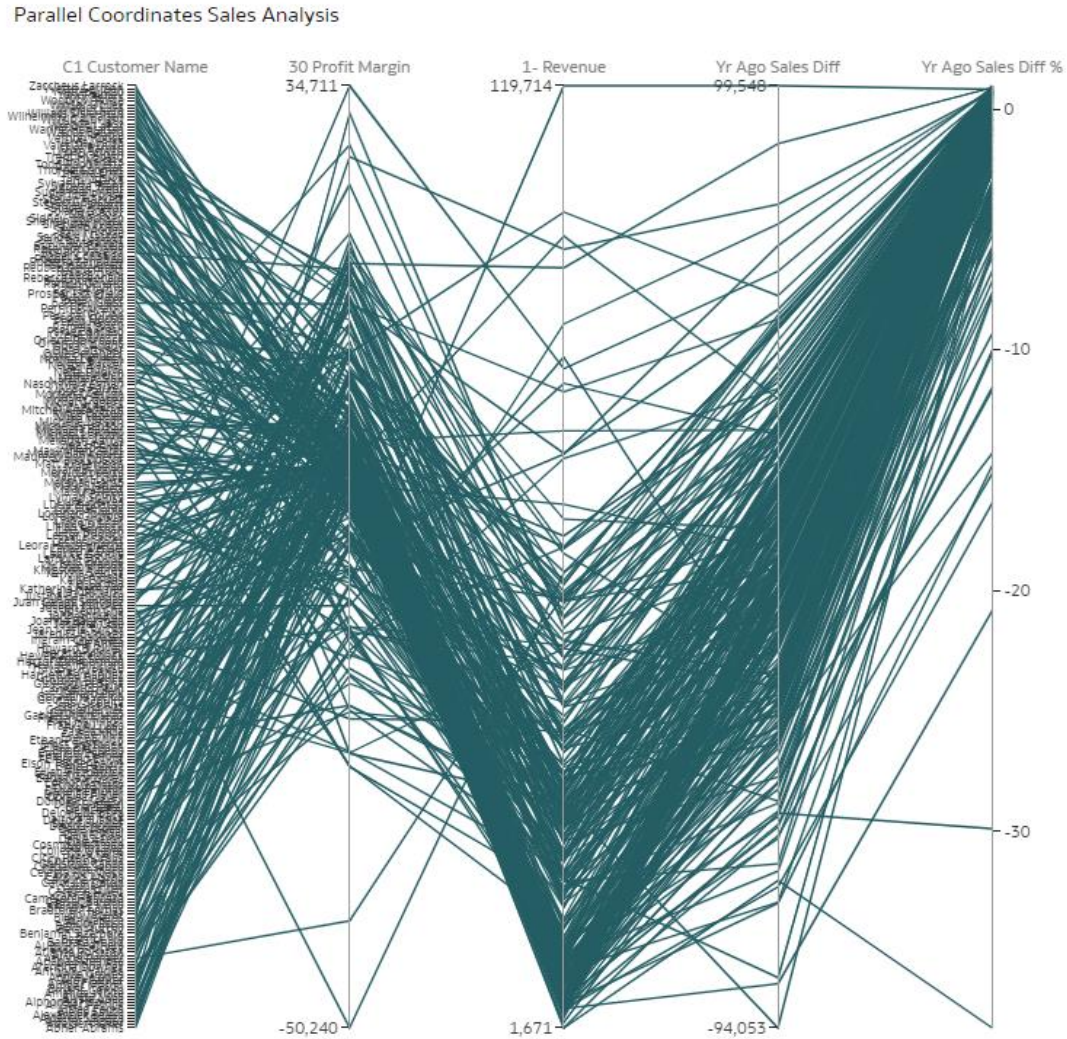






Use Linked Brushing to Find Outliers





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

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

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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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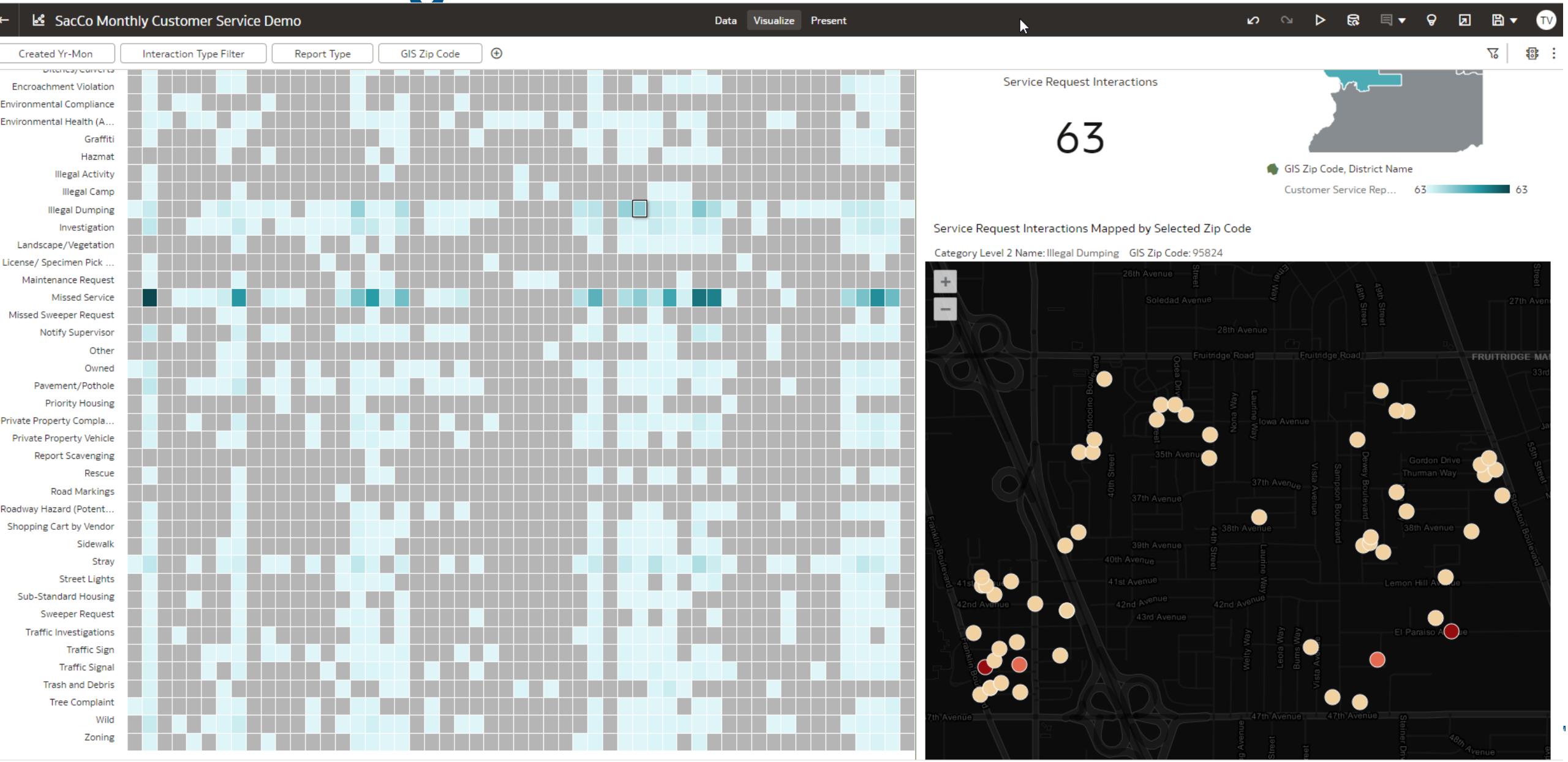
Data Organization Drives Value



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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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