plante moran | Audit. Tax. Consulting. Wealth Management.

Harnessing Analytics for Business Excellence
Fort Collins Chamber of Commerce

February 6, 2024 | Stewart Zellars & Adam Cerullo

Your Speakers

Your Speakers

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About Plante Moran

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Plante Moran is among the nation's largest certified public accounting and business advisory firms.

We provide clients with audit, tax, business consulting, and wealth management services.

Whether you have a single, specific need or require comprehensive services on a worldwide scale, we have the knowledge, experience, and resources to meet your goals.

Our professionals specialize by industry. This means our clients benefit from the expertise and advice of teams that know their specific challenges and how to combat them. We bring the full resources of the firm to every client.

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Plante Moran overview
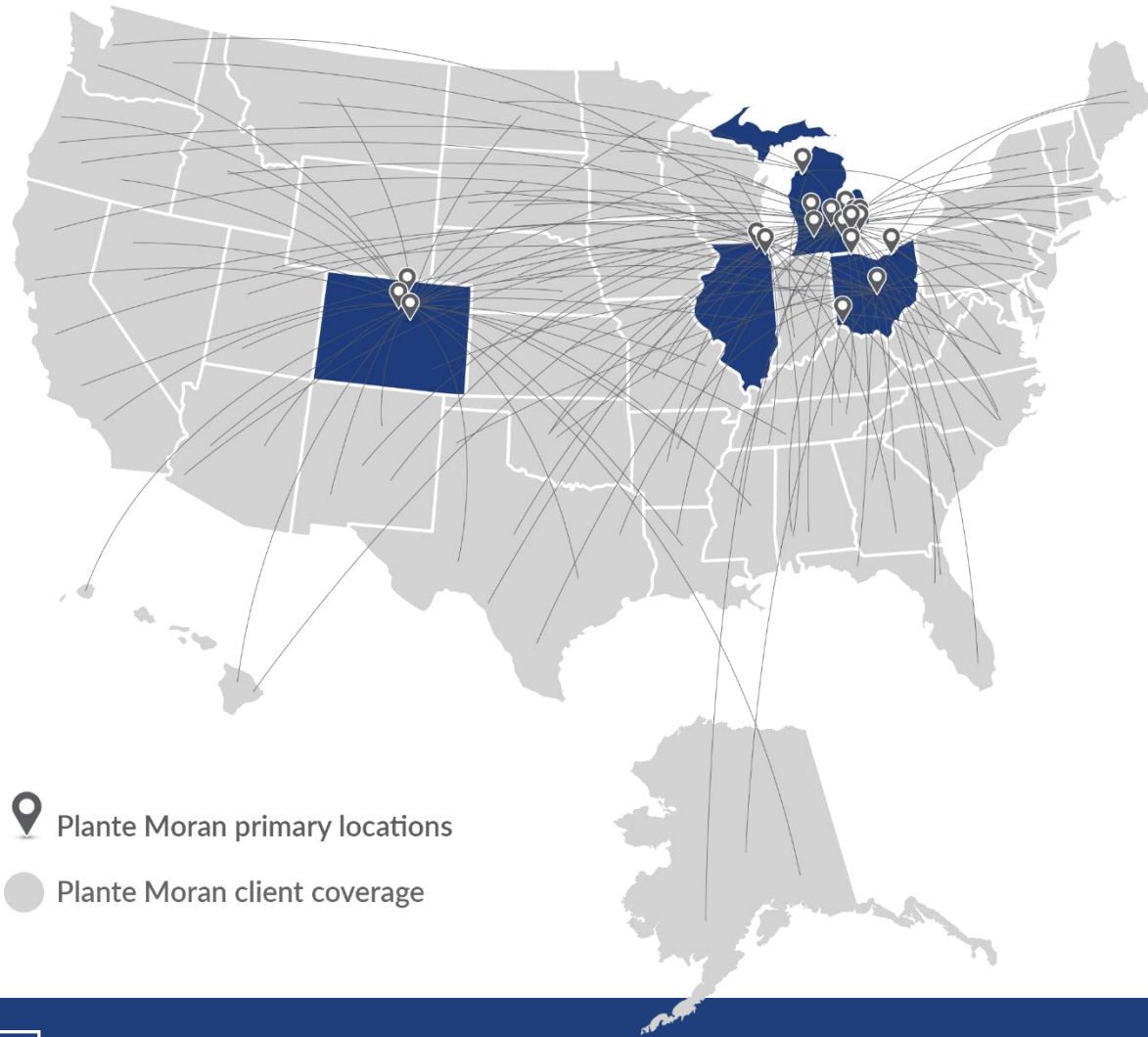
1924	year founded
3,800+	total staff
380+	partners & affiliated entity members
1,300+	number of CPAs
23	offices worldwide

Plante Moran primary locations

Plante Moran client coverage

Clients we serve
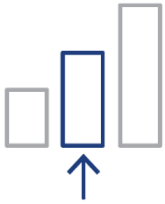
Middle-market companies

Family businesses & family offices

Publicly traded companies

Private equity

Nonprofit sectors

Public sector

Multinational corporations

Individuals

Why Plante Moran

Our business philosophy: There's power in unity

Unlike other accounting firms, we don't have office-level profit centers, meaning our offices don't compete. Instead, we exercise firmwide collaboration — we refer to this as our "one-firm" firm model.

What does that mean for you? It means you receive the collective power of the firm and the expertise you need regardless of location. A relationship with Plante Moran unlocks the entire power of our united firm.

Direct access

Consistent access to the firm's entire depth and breadth of resources

Team of experts

Our best talent serves you regardless of geographical location

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Expertise to support your needs

Firm capabilities

Audit

Financial statement audit

Employee benefit plan audit

International audit

SEC surprise audit

Single audit

Tax

State & local tax

International tax

Personal tax

Mergers & acquisitions tax

Tax controversy services

Tax credits, incentives,
 & deductions

Transfer pricing

Consulting

Business analytics

Commercial real estate advisors*

Cost & margin intelligence

Cybersecurity

Employee benefits consulting

ERP consulting

Finance & accounting solution

Forensic accounting

Group benefits & brokerage services

International services

Investment banking*

Real estate investment advisory

Restructuring & transformation

Risk management

Senior living development consulting*

Strategy

Supply chain & operations

Talent

Technology consulting

Transaction advisory services

Valuation services

Wealth Management*

Business transition services

Estate planning

Family office services

Financial planning

Insurance

Investment advisory

Personal tax planning

Trust

* These services are provided by Plante Moran affiliates: Plante Moran Financial Advisors, P&M Corporate Finance, Plante Moran Realpoint, and Plante Moran Realpoint Investment Advisors

Firm capabilities

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Commercial real estate advisors*
Cost & margin intelligence
Cybersecurity
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ERP consulting
Finance & accounting solution
Forensic accounting
Group benefits & brokerage services
International services
Investment banking*
Real estate investment advisory
Restructuring & transformation
Risk management
Senior living development consulting*
Strategy
Supply chain & operations
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Wealth Management*

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Plante Moran Business Analytics Practice

- Management consultants with analytics expertise
- 40+ analytics staff and growing
- Industry-Focus: M&D, Construction, Healthcare, Pub. Sector, K20
- Geographically distributed staff (CO, MI, IL, FL, TX)
- Tool agnostic/opportunistic by industry segment & customer:

Representative sample of the breadth of technology and tool experience of our consultants.

Business Analytics

Defining Business Analytics

Business analytics is **the process of transforming data into insights to improve business decisions.**

Data management, data transformation, data engineering, data visualization, predictive modeling, data mining, and optimization are some of the tools used to create insights from data.

Business Analytics Services

Analytics advisory

- Strategy & roadmap
- Analytics assessment
- Solution architecture
- Software selection & implementation
- Project & change management

Data management

- System integration
- Data migration/conversion
- Data warehouses & repositories
- Master data management

Business intelligence

- Data discovery & visualization
- Report development
- Reporting services transformation
- KPI dashboards & benchmarking

Performance analytics

- Integrated business planning & forecasting
- Financial & operational decision support modeling
- Industry-specific accelerators

Analytics operations

- Technical & end-user training
- Support & maintenance
- Software optimization
- Upgrades
- Renewals

Data governance

- Data quality
- Metadata management
- Data catalogs
- Business glossaries

Data analytics

- Advanced analytics
- Data science
- Industry-specific solutions

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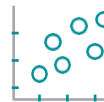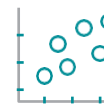
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- Data science
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Where to Start?

Implementing/Enhancing Analytics at your Organization

1. Understand your Analytics Maturity

	Level 1	Level 2	Level 3	Level 4	Level 5
Process Maturity	Chaos	Developing	Aligned	Integrated	Optimized
Skills Maturity	Opportunistic	Confined	Formalized	Ingrained	Leading
Tech. Maturity	Manual	Departmental	Integrated	Sophisticated	Mature

Hindsight: What Happened? (spanning Levels 1–5)

Insight: Why did it Happen? (spanning Levels 3–5)

Foresight: When Will it Happen? (spanning Levels 4–5)

Oversight: How do we make it happen? (Level 5)

Overall Analytics Program Maturity

Level 1
- Data is compiled at an individual level; all one-offs
- Dependent upon spreadsheet & ad-hoc analysis
- Survival-driven
- Difficult for two people to recreate the same results
- No trust in data
- Analysis compiled whenever needed, not readily available

Level 2
- Managers see value in record-keeping
- Department level BI tool selection
- Focus on output vs. data management
- Each department has its own interpretation
- Begin to recognize need for data strategy

Level 3
- Enterprise data management & reporting
- Data quality focus
- Investment in BA analysts & advocate
- Embrace reporting standards data visualization tools
- Focus on answering business questions

Level 4
- C-level leadership
- Self-service BI skill required for all staff
- Mature analytics center of excellence
- Investment in ML, AI and scalable, robust and flexible platforms

Level 5
- Data officer role exists
- Data drives policy
- Platforms drive collaboration
- Shape industry and vendor standards

The Big 2 of Analytics

Data Warehousing

Visualizations

Data Warehousing

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What is a data warehouse?

A data warehouse is a central repository that can contain structured and/or unstructured data from various systems of record

A data warehouse usually contains at least two layers for data: *Staging* and *Production.*

Layers	Contents
Staging	- Raw and unprocessed data - Data from various sources - Extracted, transformed, and loaded (ETL) data - Historical and current data
Production	- Cleaned and transformed data - Optimized for querying and analysis - Aggregated and organized data - Ready for business intelligence and reporting - Used by end-users for decision-making

Why build a data warehouse?

Leveraging well-designed and constructed data marts that encapsulate complete business processes enables more robust and efficient report development. For example:

- Predictable standard framework

- Provides high performance, intuitive retrieval of data, easier Business Intelligence integration

- Removes reporting burden from transactional systems

- Allows "graceful" extensibility of new and existing data

- Provides a basis for mastering data and trend analysis

- Enables enterprise-wide reporting by consolidating data across multiple source systems

- Promotes a single version of the truth, especially if combined with data governance

- Insulates you from changes in both operational and analytical software changes.
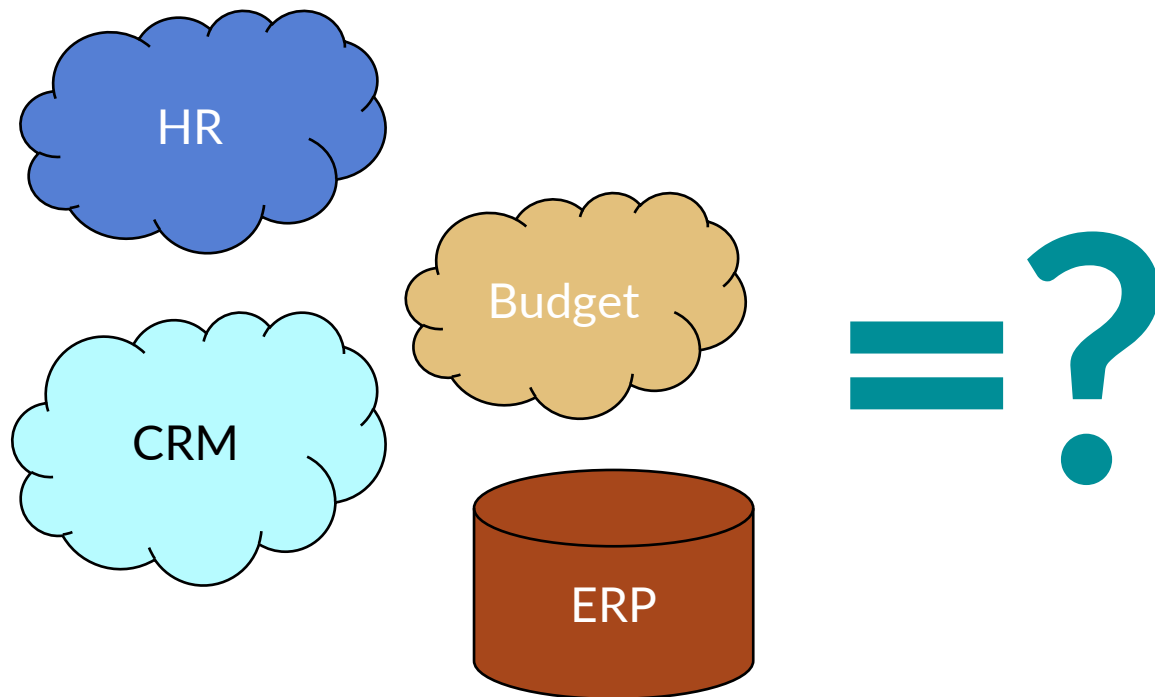
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Case Study #1 | Data Warehousing

Business Need/Process:

"The Bike Company" faced a critical challenge: disparate data sources across various platforms, both on-premises and in the cloud. These sources included:

- Customer Relationship Management (CRM) databases
- ERP transactional data
- Human resource and payroll applications
- Budget forecasts

Each system operated independently with minimal integration. This lack of integration hindered the ability to derive comprehensive insights, impacting decision-making and strategic planning.

The organization recognized the urgent need to unify these data silos to gain a holistic view of their business to drive decision making.
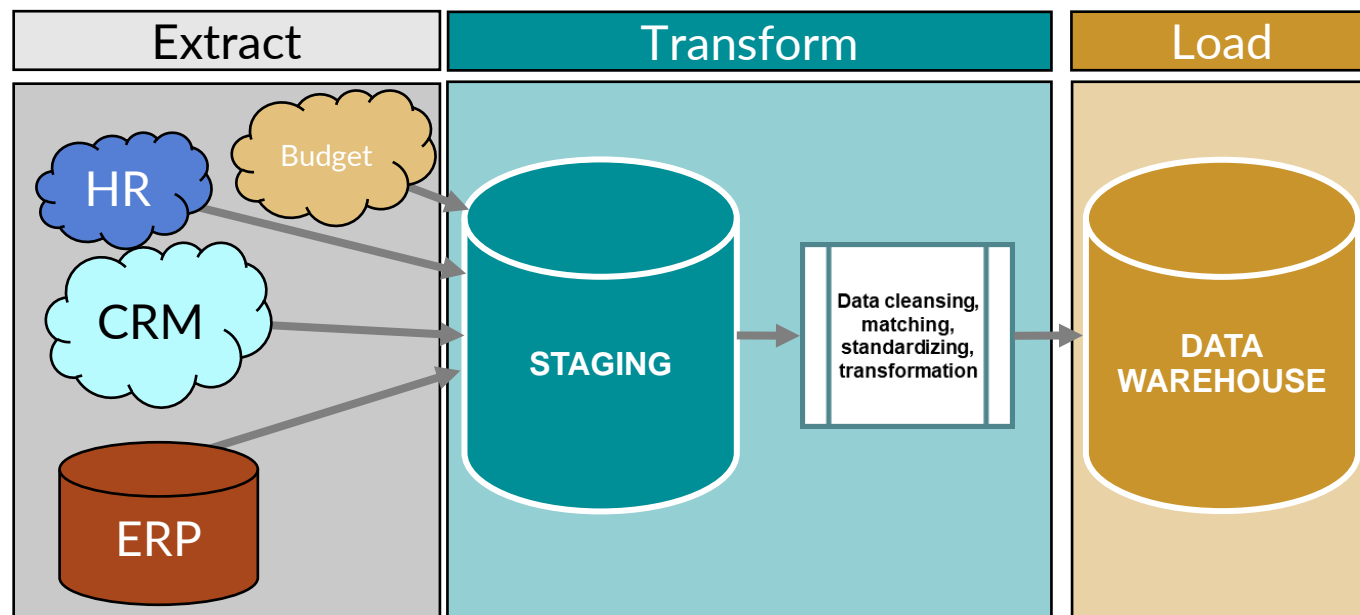
Data preview(s)

	A	B	
	Month	Sales Forecast	
	3/1/2022	120,000	
	4/1/2022	300,000	
	5/1/2022	400,000	
	6/1/2022	750,000	
	7/1/2022	750,000	
	8/1/2022	850,000	
	9/1/2022	1,250,000	
	10/1/2022	1,250,0	
	11/1/2022	750,0	
	12/1/2022	1,000,0	
	1/1/2023	300,0	
	2/1/2023	75,0	
	3/1/2023	125,0	
	4/1/2023	300,0	
	5/1/2023	400,0	
	6/1/2023	750,0	
	7/1/2023	750,0	
	8/1/2023	850,0	
	9/1/2023	1,250,0	
	10/1/2023	1,250,0	
	11/1/2023	750,0	
	12/1/2023	1,000,0	
	1/1/2024	300,0	
	2/1/2024	50,0	

90 %

Results **Messages**

	order_id	Order Number	order_date	quantity	customer_id	product_id
1	1	202400	2023-12-24	2	1868	125
2	2	202401	2022-08-15	3	1186	307
3	3	202402	2022-10-25	4	1312	89
4	4	202403	2023-08-31	5	302	92
5	5	202404	2023-09-06	5	1228	227
6	6	202405	2022-07-10	2	830	279
7	7	202406	2022-12-20	5	1324	157
8	8	202407	2022-12-16	2	374	37
9	9	202408	2022-07-21	5	1792	191
10	10	202409	2022-12-24	5	1783	285
11	11	202410	2022-09-08	5	703	155
12	12	202411	2022-03-16	4	308	231

Results **Messages**

	product_id	product_name	model_year	list_price	std_cost	Type
1	1	Trek 820 - 2016	2016	379.99	116.6569	Budget
2	2	Ritchey Timberwolf Frameset - 2016	2016	749.99	245.9967	Regular
3	3	Surly Wednesday Frameset - 2016	2016	999.99	244.9975	Regular
4	4	Trek Fuel EX 8 29 - 2016	2016	2899.99	1545.695	Premium
5	5	Heller Shagamaw Frame - 2016	2016	1320.99	373.8402	Regular
6	6	Surly Ice Cream Truck Frameset - 2016	2016	469.99	80.36829	Budget
7	7	Trek Slash 8 27.5 - 2016	2016	3999.99	2015.995	Premium
8	8	Trek Remedy 29 Carbon Frameset - 2016	2016	1799.99	2820.584	Premium
9	9	Trek Conduit+ - 2016	2016	2999.99	1682.994	Premium
10	10	Surly Straggler - 2016	2016	1549.00	802.382	Premium
11	11	Surly Straggler 650b - 2016	2016	1680.99	899.3297	Premium
12	12	Electra Townie Original 21D - 2016	2016	549.99	199.6464	Regular
13	13	Electra Cruiser 1 (24-Inch) - 2016	2016	269.99	77.48713	Budget
14	14	Electra Girl's Hawaii 1 (16-inch) - 2015/2016	2016	269.99	48.32821	Budget
15	15	Electra Moto 1 - 2016	2016	529.99	130.3775	Regular
16	16	Electra Townie Original 7D EQ - 2016	2016	599.99	131.9978	Regular
17	17	Pure Cycles Vine 8-Speed - 2016	2016	429.00	89.661	Budget
18	18	Pure Cycles Western 3-Speed - Women's - 2015/2016	2016	449.00	96.535	Budget

Case Study #1 | Data Warehousing

Extract | Transform | Load

Extract: HR, Budget, CRM, ERP

Transform: STAGING → Data cleansing, matching, standardizing, transformation

Load: DATA WAREHOUSE

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Approach: *"The Bike Company"* implemented a holistic solution centered around a data repository.

A data warehouse was established using SQL Server as the relational database supported by ETL tools for integration and connectivity.

Custom API connectors bridged the gap between cloud and on-premises financial and operational systems, ensuring secure and efficient communication.

Technologies

Microsoft SQL Server Integration Services

SQL

API

Benefits:

A data warehouse ensured accuracy in financial & operational reporting, enhanced analytics and efficiency, and drove right-time decision-making.

As *"The Bike Company"* added more tools into their ecosystem, they added those underlying databases to the data warehouse.
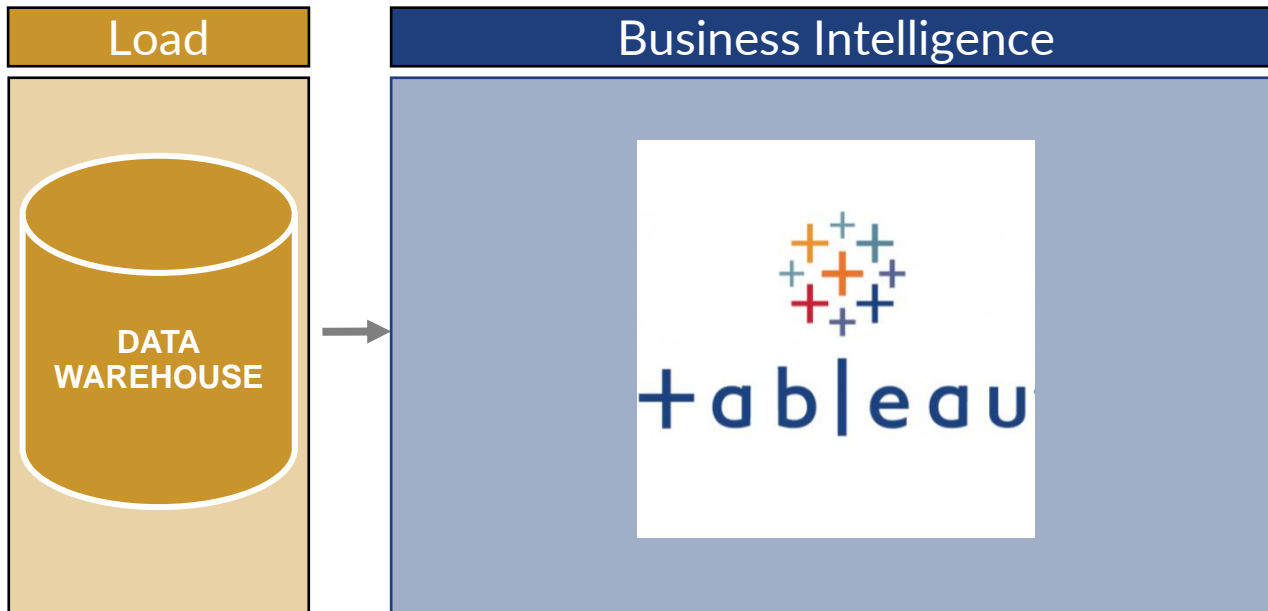
When retiring old systems, ownership of historical data with the data warehouse, creating a centralized source for any type of analysis/data requests.

Visualizations

Case Study #1 | Business Intelligence

Load

DATA WAREHOUSE

Business Intelligence

tableau

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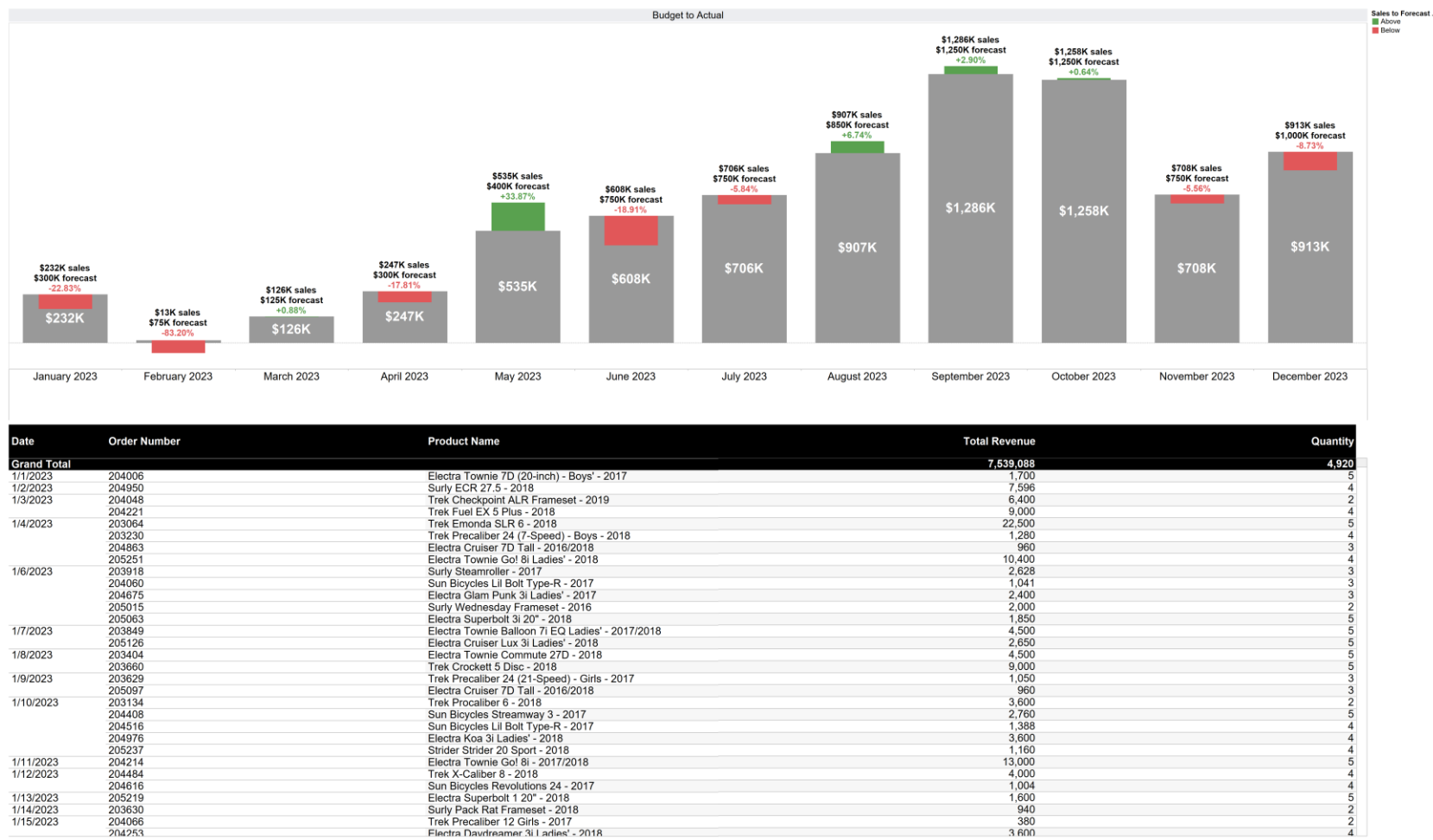
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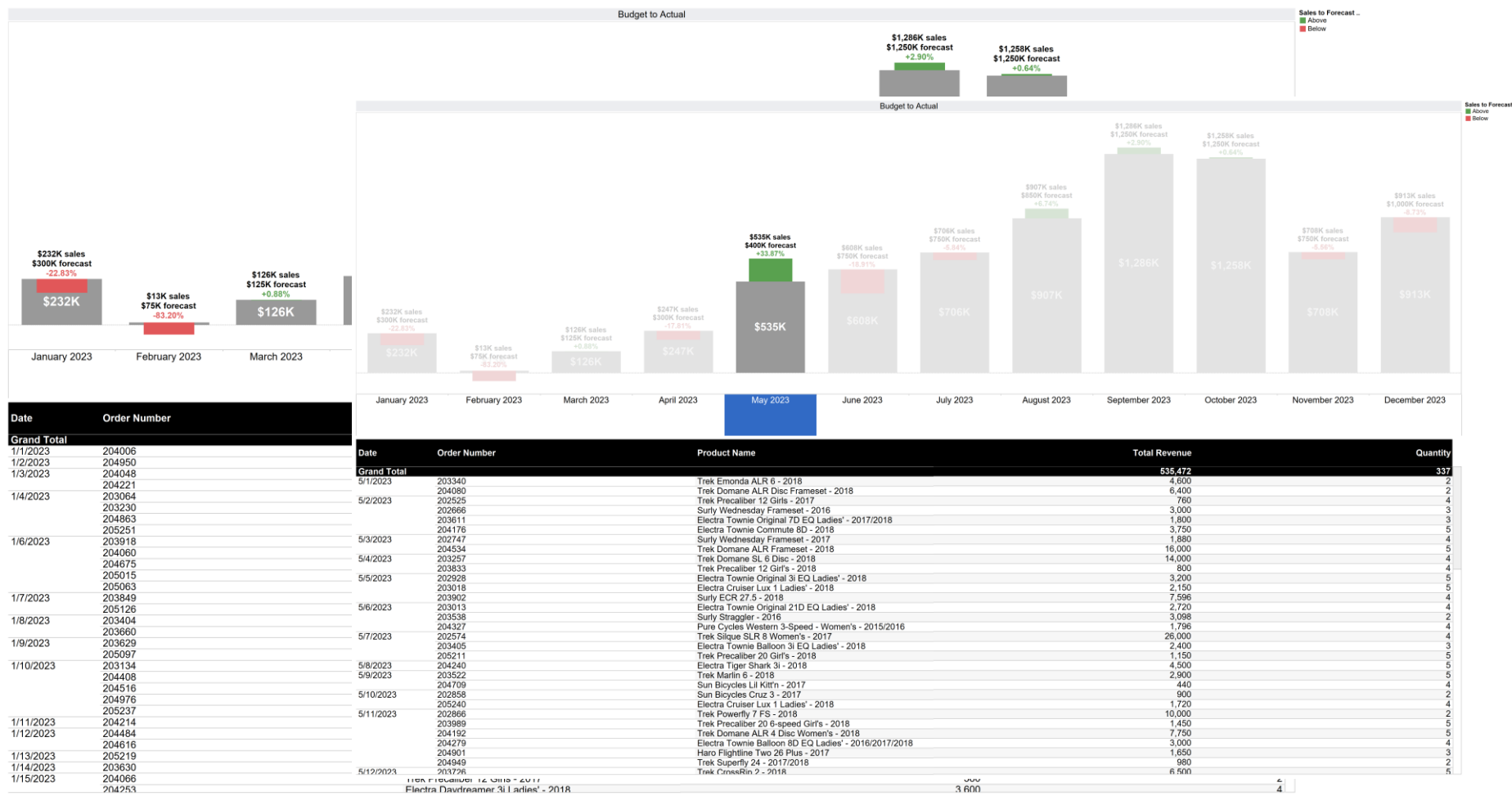
Case Study #1 | Business Intelligence

Business Intelligence

Budget to Actual

Sales to Forecast ..
■ Above
■ Below

Month	Sales / Forecast
January 2023	$232K sales / $300K forecast / -22.83% — $232K
February 2023	$13K sales / $75K forecast / -83.20%
March 2023	$126K sales / $125K forecast / +0.88% — $126K
April 2023	$247K sales / $300K forecast / -17.81% — $247K
May 2023	$535K sales / $400K forecast / +33.87% — $535K
June 2023	$608K sales / $750K forecast / -18.91% — $608K
July 2023	$706K sales / $750K forecast / -5.84% — $706K
August 2023	$907K sales / $850K forecast / +6.74% — $907K
September 2023	$1,286K sales / $1,250K forecast / +2.90% — $1,286K
October 2023	$1,258K sales / $1,250K forecast / +0.64% — $1,258K
November 2023	$708K sales / $750K forecast / -5.56% — $708K
December 2023	$913K sales / $1,000K forecast / -8.73% — $913K

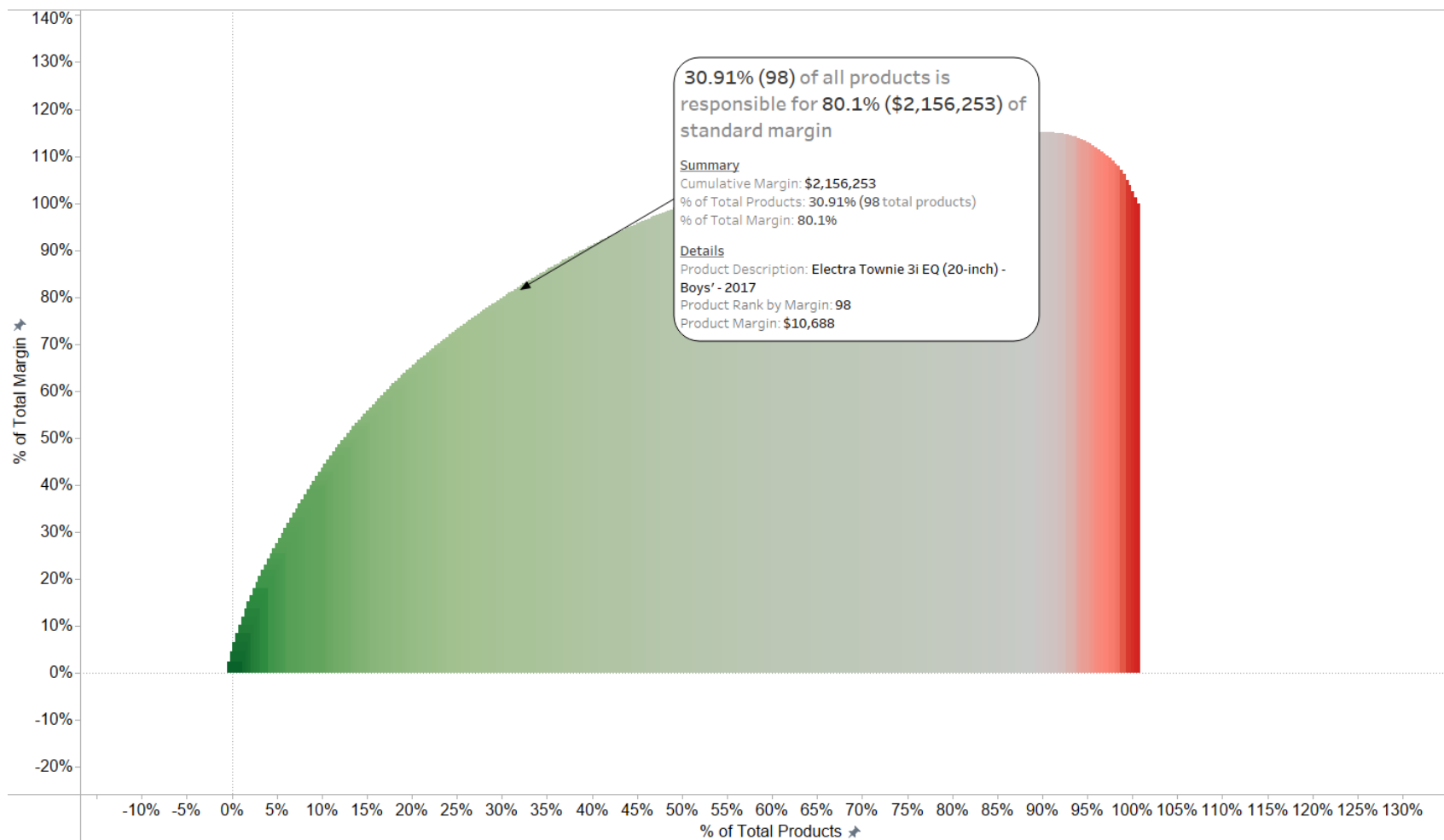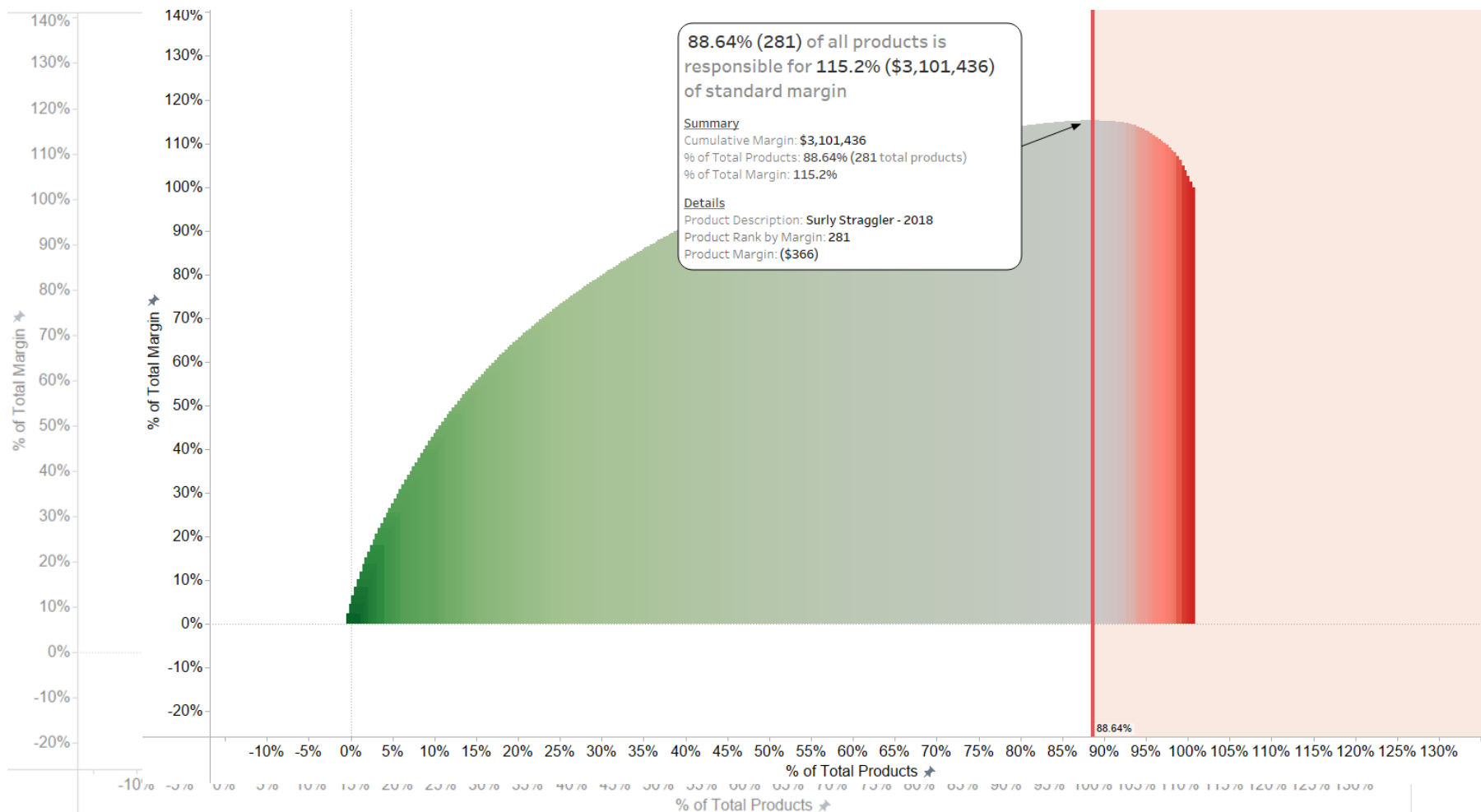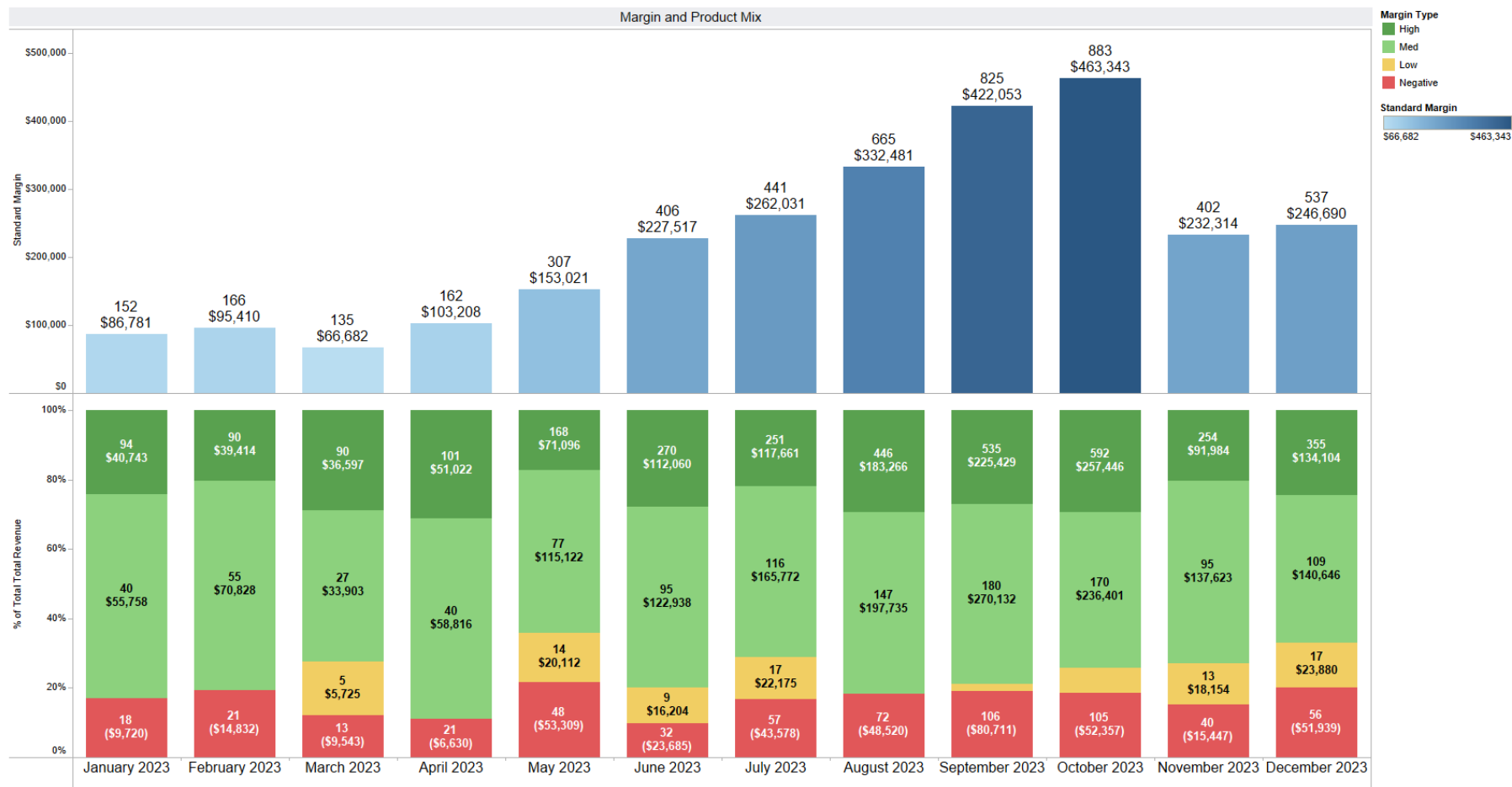| Date	Order Number	Product Name	Total Revenue	Quantity
Grand Total			7,539,088	4,920
1/1/2023	204006	Electra Townie 7D (20-inch) - Boys' - 2017	1,700	5
1/2/2023	204950	Surly ECR 27.5 - 2018	7,596	4
1/3/2023	204048	Trek Checkpoint ALR Frameset - 2019	6,400	2
	204221	Trek Fuel EX 5 Plus - 2018	9,000	4
1/4/2023	203064	Trek Emonda SLR 6 - 2018	22,500	5
	203230	Trek Precaliber 24 (7-Speed) - Boys - 2018	1,280	4
	204863	Electra Cruiser 7D Tall - 2016/2018	960	3
	205251	Electra Townie Go! 8i Ladies' - 2018	10,400	4
1/6/2023	203918	Surly Steamroller - 2017	2,628	3
	204060	Sun Bicycles Lil Bolt Type-R - 2017	1,041	3
	204675	Electra Glam Punk 3i Ladies' - 2017	2,400	3
	205015	Surly Wednesday Frameset - 2016	2,000	2
	205063	Electra Superbolt 3i 20" - 2018	1,850	5
1/7/2023	203849	Electra Townie Balloon 7i EQ Ladies' - 2017/2018	4,500	5
	205126	Electra Cruiser Lux 3i Ladies' - 2018	2,650	5
1/8/2023	203404	Electra Townie Commute 27D - 2018	4,500	5
	203660	Trek Crockett 5 Disc - 2018	9,000	5
1/9/2023	203629	Trek Precaliber 24 (21-Speed) - Girls - 2017	1,050	3
	205097	Electra Cruiser 7D Tall - 2016/2018	960	3
1/10/2023	203134	Trek Procaliber 6 - 2018	3,600	2
	204408	Sun Bicycles Streamway 3 - 2017	2,760	5
	204516	Sun Bicycles Lil Bolt Type-R - 2017	1,388	4
	204976	Electra Koa 3i Ladies' - 2018	3,600	4
	205237	Strider Strider 20 Sport - 2018	1,160	4
1/11/2023	204214	Electra Townie Go! 8i - 2017/2018	13,000	5
1/12/2023	204484	Trek X-Caliber 8 - 2018	4,000	4
	204616	Sun Bicycles Revolutions 24 - 2017	1,004	4
1/13/2023	205219	Electra Superbolt 1 20" - 2018	1,600	5
1/14/2023	203630	Surly Pack Rat Frameset - 2018	940	2
1/15/2023	204066	Trek Precaliber 12 Girls - 2017	380	2
	204253	Electra Daydreamer 3i Ladies' - 2018	3,600	4

Case Study #1 | Business Intelligence

Business Intelligence

Case Study #1 | Business Intelligence

Business Intelligence

30.91% (98) of all products is responsible for 80.1% ($2,156,253) of standard margin

Summary
Cumulative Margin: $2,156,253
% of Total Products: 30.91% (98 total products)
% of Total Margin: 80.1%

Details
Product Description: Electra Townie 3i EQ (20-inch) - Boys' - 2017
Product Rank by Margin: 98
Product Margin: $10,688

Case Study #1 | Business Intelligence

Case Study #1 | Business Intelligence

Business Intelligence

Closing

Key Takeaways

- Use analytics to address business issues and create efficiencies
- **Can be a small project. No need to spend big $ for real value**
- Assessments & quick hits create awareness and appetite; analytics is always a journey
- Analytics should <u>always</u> create real value = business growth, cost-savings, innovation, risk management
- Extracting and centralizing all the data is the biggest lift; the reporting is the fun part!

Benefits of adding analytics

- Enable your organization make better operational and financial decisions

- Near real-time ROI
  - *You may be able to utilize technologies you may already have and aren't fully deploying*
  - *Analytics can help eliminate non-value add activities*

- Stay ahead of your competition

- Streamline required reporting/financial packages required for presentations to the Board or ownership group

Recommended first steps

- It's a marathon — pacing is key (start with a proof of concept)
- Be realistic with your capabilities & analytics maturity
- Focus on the data foundation first.
  - Data sources/quality/accessibility
  - Prioritize and focus on low-hanging fruit. Identify where you can have quick wins.
  - Properly define the KPIs or metrics you want to analyze
  - Start improving and collecting additional data today for use tomorrow
  - Think about data governance throughout the process

- Enterprise business analytics is an *iterative, incremental journey.*
- Tools and capabilities should be added based on *your* needs and not just because it's the "latest and greatest"

Contact Information

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Representative sample of the breadth of technology and tool experience of our consultants.

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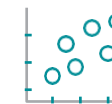
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