Rate Information

Visvero has prepared and included below (Appendix D) a comprehensive rate card for Allegheny County, which conveys exact hourly rates for each labor category / job title that is referenced. In addition to the basic categories, Visvero has also included "sub categories" which reflect progressive experience levels within each job role (Junior, Mid-level, Senior). We believe this will allow the county to select exactly the right resource for a given task, and achieve maximum value across the total team of resources.

Visvero's proposal will remain valid for 90 calendar days. Our budget is comprehensive, including all direct and administrative costs including salary, benefits, travel, and training.

Appendix B –Application Form

APPLICANT INFORMATION

Organization or Individual/Title: Visvero, Inc.
If the applicant is an organization, provide name and title of authorized representative: **Rebecca Purcell**
Address: 2121 Noblestown Rd., Suite 106, Pittsburgh, PA 15205
Telephone: 412 927 5319 FAX: 412 921 9986
Email: rpurcell@visvero.com
Website: http://www.visvero.com

APPLICATION INFORMATION

Date Submitted 11/15/2017
Check the components for which you are seeking to be qualified:

☒ Simple Design

☒ Complex Development

Rate Requested (provide rate for proposed component(s); include additional information if needed to clarify your response): Our typical bill rates for tableau work are $65/hr to $95/hr for Simple Development Our typical bill rates for tableau work are $85/hr to $105/hr for Complex Development

REFERENCES

Provide the name and contact information (email and telephone number) of 3 references for whom you have produced Tableau visualizations and/or dashboards. Include your relationship with each reference and the time frame of the relationship. One of the 3 references may be someone with whom you jointly developed a Tableau product.

1. Shane Baumgartner, PNC Financial Services, [redacted]
2. Sanku Saha, Samsung Telecommunication, [redacted]
3. Rich McAdams [redacted]

EXAMPLES OF WORK

Submit at least two examples of Tableau work completed independently and completely by the Applicant as well as (optional) examples of work to which the Applicant contributed. Examples must be submitted electronically – links are preferable but other electronic submissions are acceptable.
Describe each example (maximum of 300 words total), including the topic, purpose, data source and functionality. If submitting examples to which you contributed, please describe your

contribution to the work: The following to applications are attached herewith for quick reference. The details of the applications are attached as a separate annexure. **Project 1** was developed for a large Pittsburgh based bank to manage counterparty risk. The applications were to enable the bank categorize and analyse various risk sources. The Data was sourced from the corporate Oracle EDW and transaction applications. **PROJECT 2** was developed for the above mentioned bank to enable their compliance reporting for OCC and BASEL II reporting. Following the financial crisis federal government entrusted OCC with the responsibility of conducting periodic checks on banks health by closely monitoring the credit profile and sources of institutional debt. Tableau applications were running against a combination of corporate ODS as well as the credit transaction reports and a third party credit data source. **Project 3** was developed for a global top 5 telecom company managing the health of the operations and the network services. The data is sourced directly from the network switches and the corporate finance application. Details of the three works is attached herewith along with examples additional UI in Tableau and custom Java UI .

QUALIFICATIONS

The first seven questions must be answered by ALL applicants. Applicants for simple design should also answer question #8 and complex development applicants should also answer questions #9, #10 and #11. Applicants for both components must answer all 11 questions. All Applicants must response to the following seven questions, not exceeding 200 words for any one question.

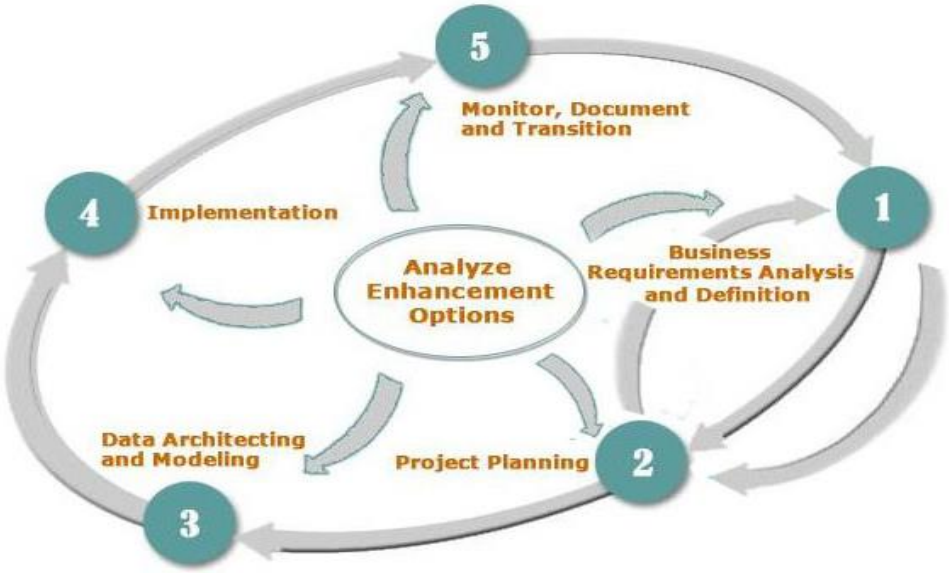
1. Provide evidence that you are fluent with Tableau and its various uses, including advanced calculations and parameters, data manipulation and dashboard actions. You may discuss your experience, examples, training or anything else that demonstrates that you meet these criteria.

   Visvero has been involved with the data visualization since 2003. We have implemented over 100 projects and provided staff augmentation support for an additional 57 projects to help deploy innovative visualizations within and outside Tableau platform. Besides Tableau technical skills the company continually upgrades the skills of the team by participating in data visualization best practices from leading schools. Currently two of our executives Arvind Handu and Samir Sikri have **Advanced Certificates in Data Visualization from Harvard University**. **In addition the practice team has attended several best practices trainings and sessions led by Stephen Few, one of the authorities on the subject. Additionally, 2 of the specialists proposed under this scope have acquired advanced certifications from Tableau and Have worked extensively on Pentaho.**

2. We seek Applicants who are responsive and able to complete projects in a timely manner. How will you manage your time to ensure responsiveness and timeliness? Provide examples if possible.

   The timely delivery of projects is a function of skills, exclusive focus, clear requirements and an effective process. Visvero will ensure that the person engaged on the project will have the necessary

skills and exclusive focus on the project. Our current available team includes resources with extensive (over 5 years on Tableau platform) experience on the platform. Our teams follow a **well-established methodology QuikWIN based on core Agile principles**. The emphasis of the methodology is on peer development practices and short run sprints. As long as the county resources will be accountable to the methodology and the project commitments we'd be glad to make financial commitments for the timely completion of the engagements. The key features of our development approach are listed in Appendix C – QuikWin Development



3. Describe an example of when you worked across multiple data sources, using data blending or joins to integrate the data. This has been a standard requirement in nearly all our engagements. In the aforementioned banking application data was housed in corporate EDW in Oracle, C& IB applications using Oracle and Excel. The sourced third party data was in flat files transmitted nightly. In yet another we used data blending where data from third party system coming via two disparate excel files needed to be compared with SQL Server Master data tables to achieve to map the Sales and Zip Codes that are assigned to them. In general it has been our experience to use the data joining vs data blending since data joining presents data to Tableau engine as one data source and one has more flexibility working with one source rather than with Multiple data sources where secondary data source may not have the ability to use measure names and Measure Values

4. Describe your experience with/ability to create dynamic maps, including maps with custom layers that summarize data at geographic levels not provided by Tableau (e.g., Census tract, municipality). You may include an example of a map via link or electronic submission. If you do not share an

example, please describe the programs and/or steps necessary to prepare data for display in Tableau. We've created multiple applications using the custom charts for various applications in finance vertical. Some example screenshots are attached in Annexure – A. Additionally our teams have an extensive expertise on D3 technology and we have been able to integrate several custom chart types in the application.

5. Discuss your knowledge of basic design principles, including your experience, examples and/or training. AS mentioned elsewhere our Practice Directors and several other team members have the **Certifications in Data Visualization from Harvard University**. In visualizations our key philosophy is simplicity and ease of access to the core information. Some of these are evident from the attached Charting examples. Our team members have also attended **Advanced Data Visualization courses presented by Stephen Few. The team also has certifications from Tableau, Qlik and Pentaho.**

6. How will you provide innovative products while staying within the constraints of DHS's standard color/font scheme? Our developers have worked extensively for the State DHS alongside Deloitte Consulting, the State's consulting partner for visualization applications. We believe that the key to delivering revealing visualizations lies in the storyboarding and selection of charts as well as appropriate selection of the content drill down, color /font schemes are a less important aspects of the visual element for the effectiveness of data story telling. In our prior engagements this has not been a problem. We believe that we can develop an effective strategy to develop compelling visualizations should the lack of palette become a constraint.

Simple Design Applicants must respond to the following question (200 words maximum).

7. Describe your experience and expertise in integrating graphics with reports (online), retaining interactivity within this context. If you have included an example as an attachment, please refer to this example and describe your process. We have integrated Tableau reports with external and internal websites to flow the parameter from Tableau to use the Account or an employee info for better interactivity across IT platforms.

Complex Development Applicants must respond to the following three questions (200 word maximum each):

8. Describe your experience working with a data warehouse. A functional data warehouse development has been a part of ALL our the Business Intelligence implementations including the Tableau and non-Tableau BI tools e.g. in the banking application mentioned else where our team was a part of the OBIEE data warehouse design as well as the Tableau application development. For a large local area retailer, our team developed Microsoft SSAS cubes from a combination of existing data store and several transaction systems and the applications were developed in MSBI. In another local Financial services company, our team created MSBI applications from a trading system on

Microsoft SQL Server and several other Oracle ODSs. For a large regional pharmaceutical company the Business Intelligence applications were created using Tableau, Qlik and Business Objects from SAP BW and WoltersKluwer data feeds. Visvero has teams of developers with extensive experience in architecture, modeling and design of Data Warehouse and front-end applications on a variety of tools including Tableau.

9. Explain and give examples of how you are able to create dashboards from live data tables, not just data extracts. Typically in the situations where our teams have been presented with well-defined and self-contained data views our teams have made the decision to use the live connection to the data source, Alternately the live connection strategy has also been effectively deployed in the event of the less voluminous data source, OR a highly optimized data source like Hadoop / HANA and the like.

10. Provide evidence that you are experienced with performance optimization techniques, allowing for efficient data manipulation that does not slow dashboard function for the end user. A few of the applications developed by our teams have had the data volume sizes, frequency and complexity several times the data volume available via the county DWH e.g. the device data refreshed every 5 minutes from several million devices online across the world. OR transactions loyalty analytics for a few million users for a large multinational airline and its partner airlines. OR tracking various mutations of a bacteria across a multinational footprint. Where possible, we've relied on standard Tableau functionality e.g. Use of Quick Filters, Cascading filters and similar techniques to improve the user engagement of the data., often we've been successful in creating innovative strategies to enhance the performance.

ATTACHMENTS

In addition to this document and examples of your work, please submit the following attachments with your Application:

- Abbreviated Application
- Allegheny County Vendor Creation Form
- MWDBE Participation Statement Form
- MWDBE Waiver Request Form
- W9 Form

CERTIFICATION

Please read the below statement and check the box to indicate agreement with its content.

☒ By submitting this proposal, I certify and represent to the County that all submitted materials are my work and that all responses are true and accurate.

Appendix E – Application Examples

Below find examples of Visvero's Tableau and Custom Dashboard

CHC DASHBOARDS Overview

STATE OF PA DASHBOARDS – WILL BE MADE AVAILABLE PENDING PERMISSION FROM THE STATE OF PA AND ITS CONSULTING PARTNER DELOITTE

PA - DHS DASHBOARDS Overview

STATE OF PA DASHBOARDS – WILL BE MADE AVAILABLE PENDING PERMISSION FROM THE STATE OF PA AND ITS CONSULTING PARTNER DELOITTE

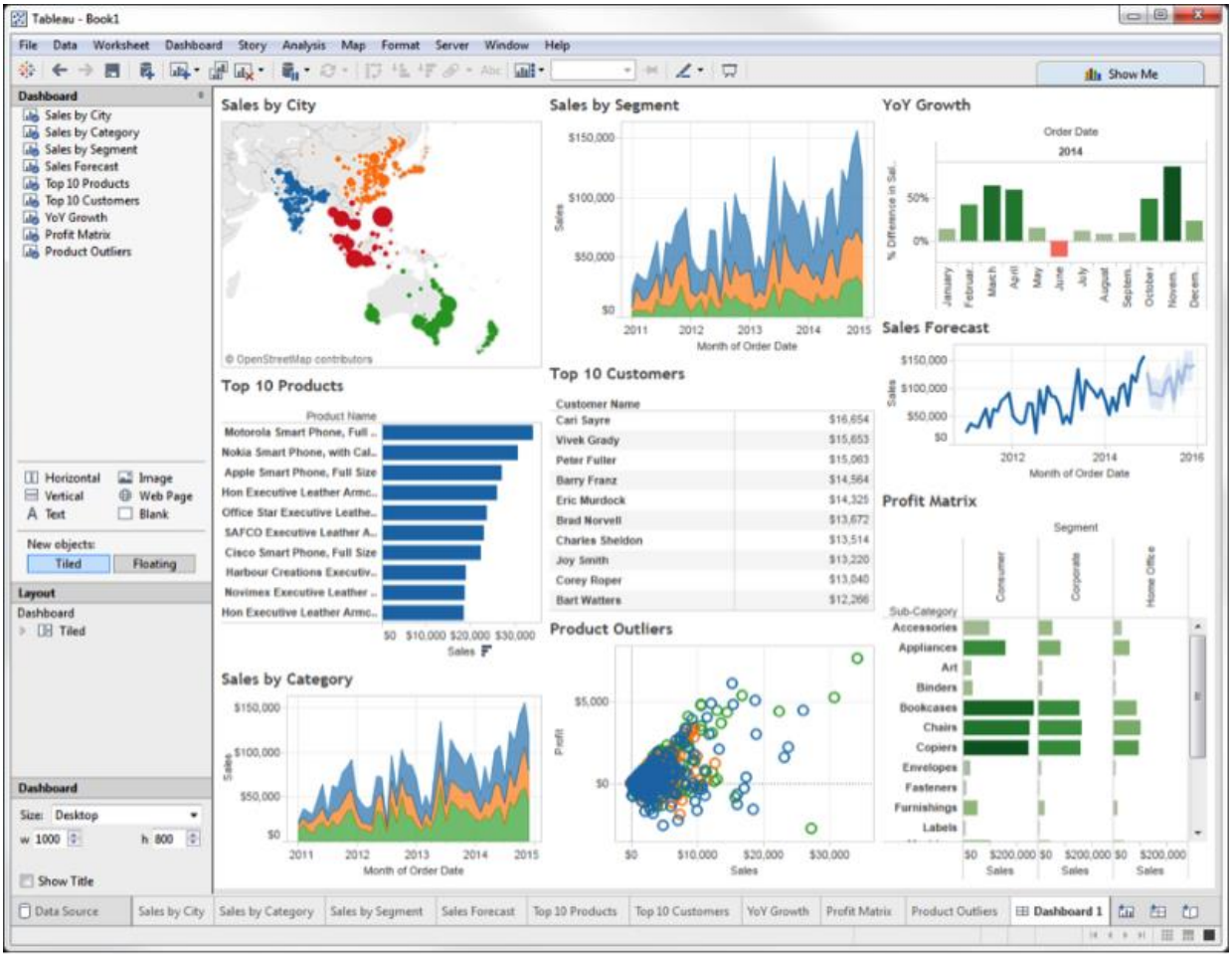


Figure 1 - Smart phone sales in regions

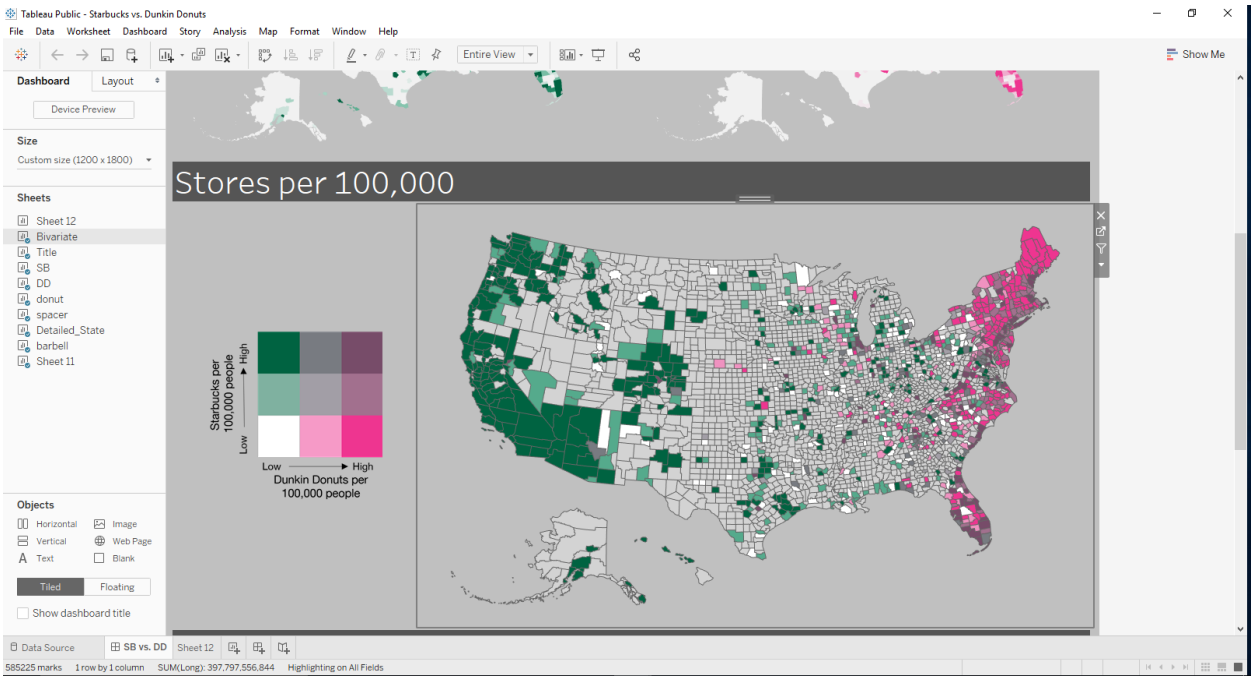


Figure 2 - Satrbucks vs Dunkin' Donuts New Visualization

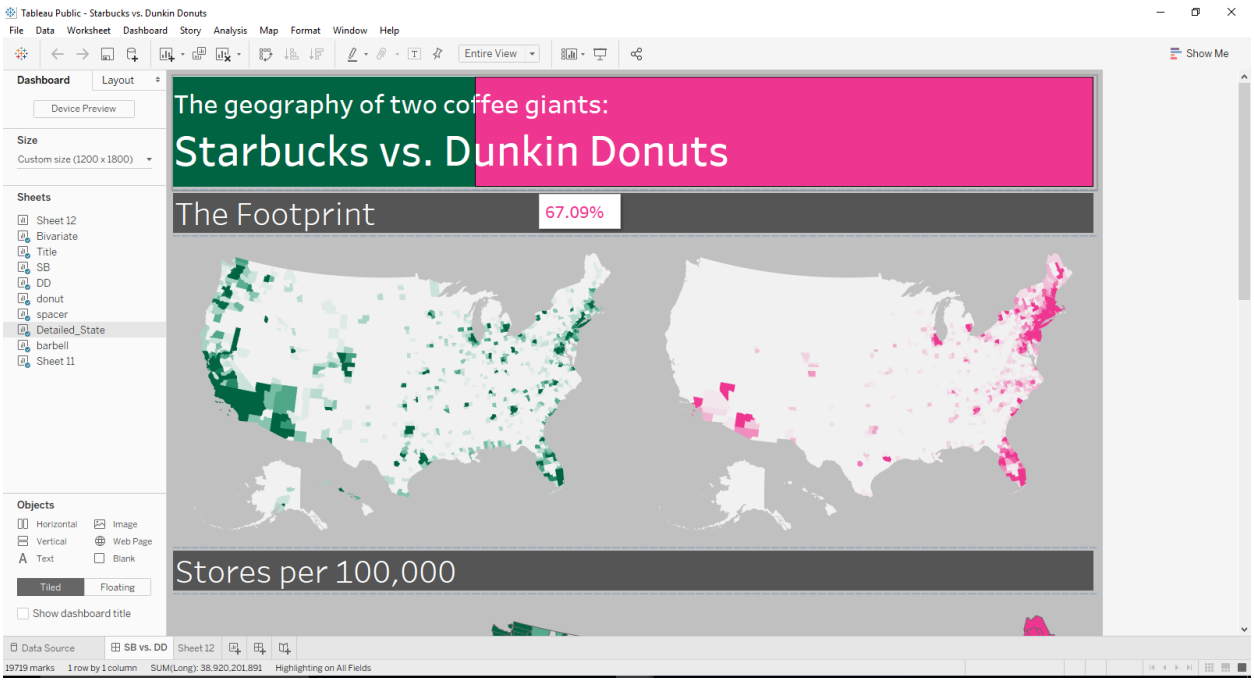


Figure 3 - Starbucks vs Dunkin' Donuts Comparisons

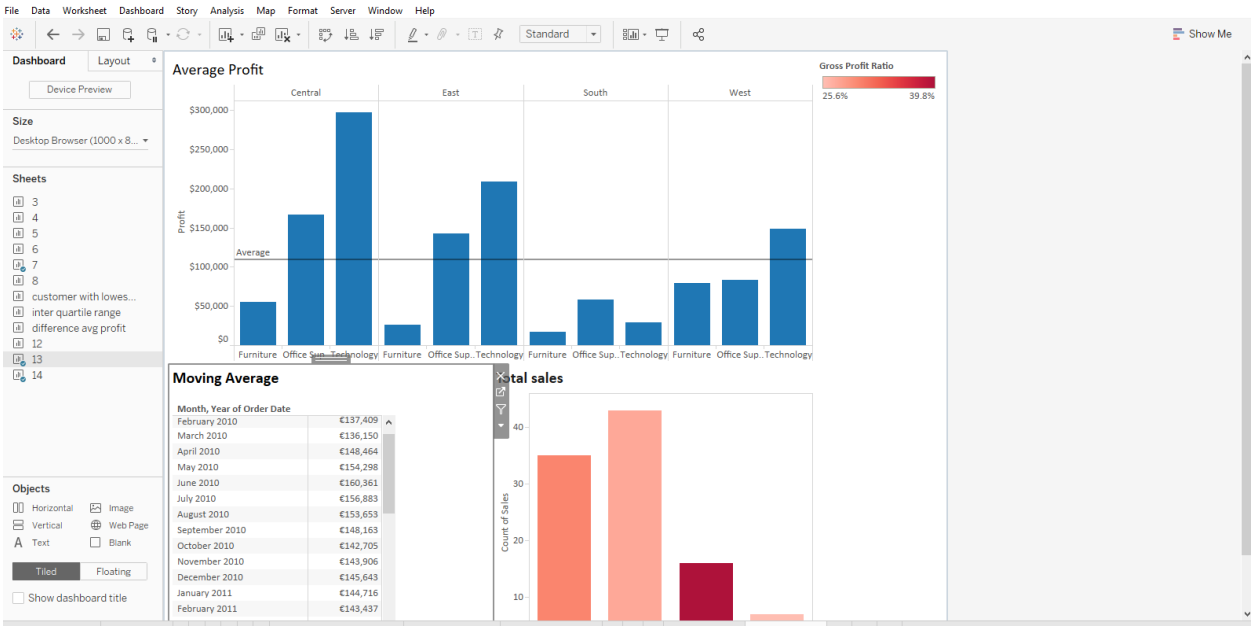


Figure 4 - Moving average profitability

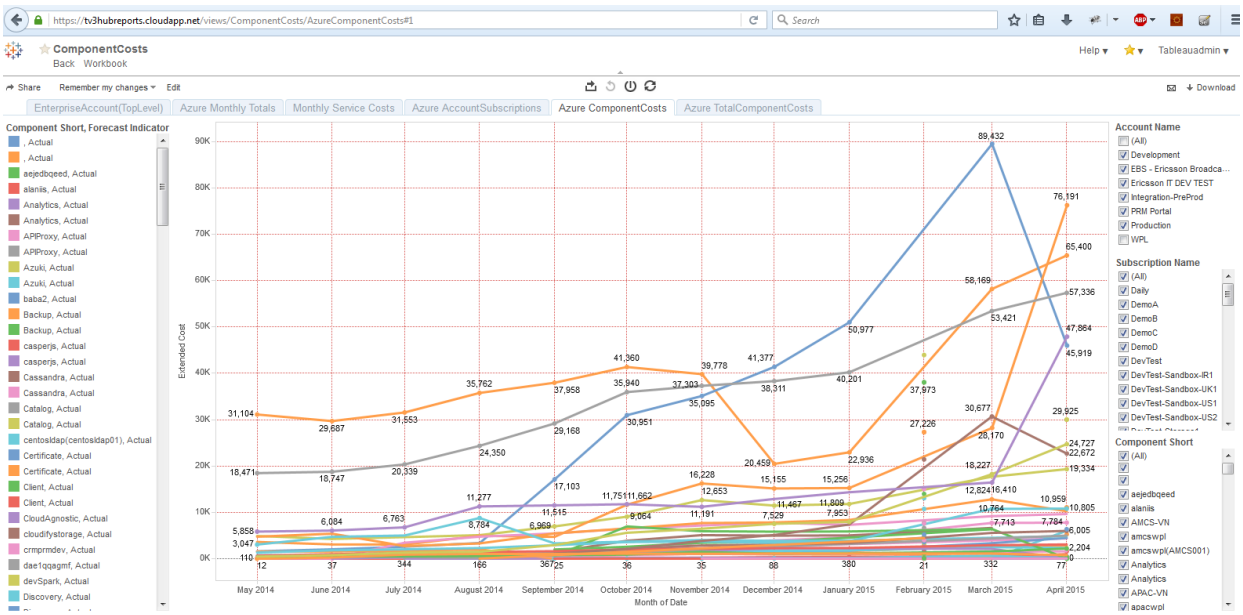


Figure 5: ERICSSON DEVICE TICKET HISTORY

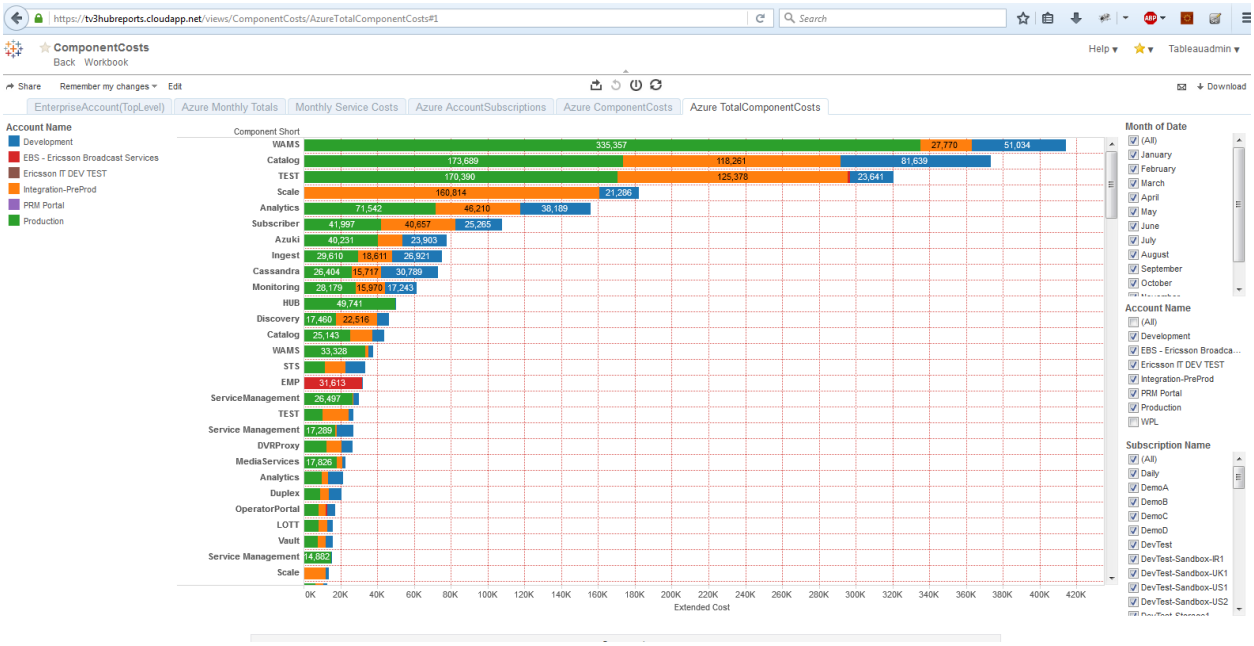


Figure 6: ERICSSON COMPONENT COST BY UNIT

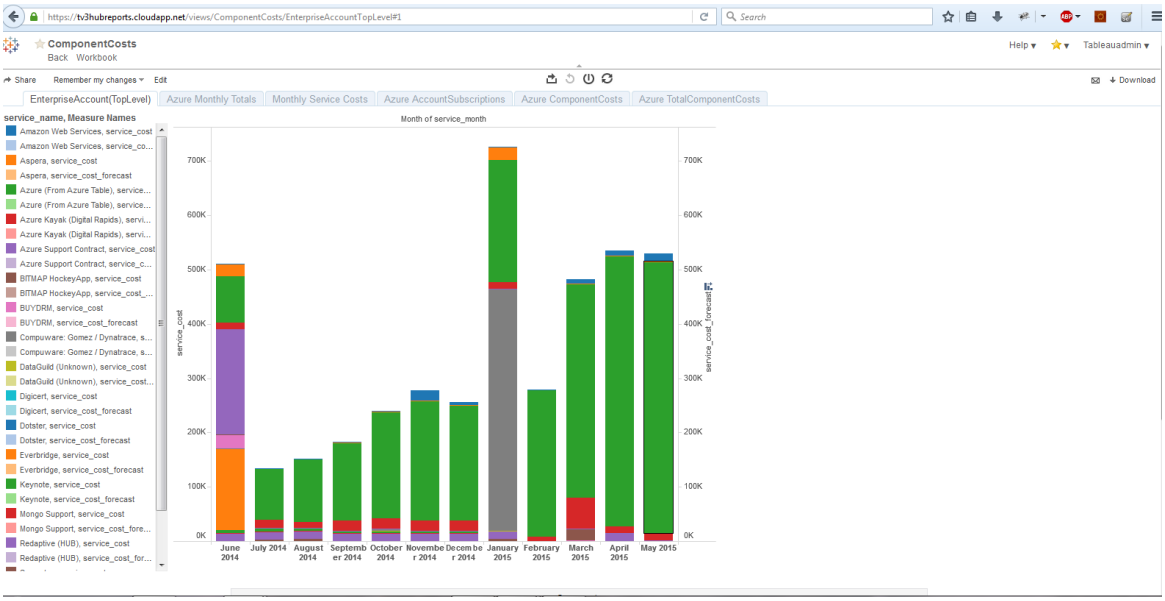


Figure 7: ERICSSON COMPONENT COSTS

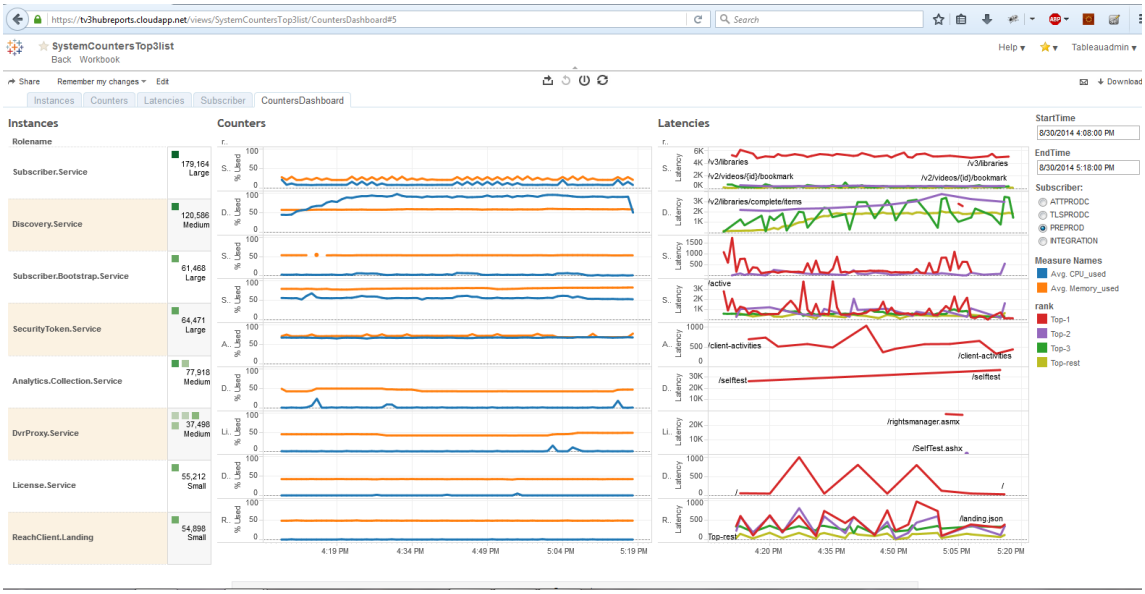


Figure 8: ERICSSON DEVICE DATA LATENCY

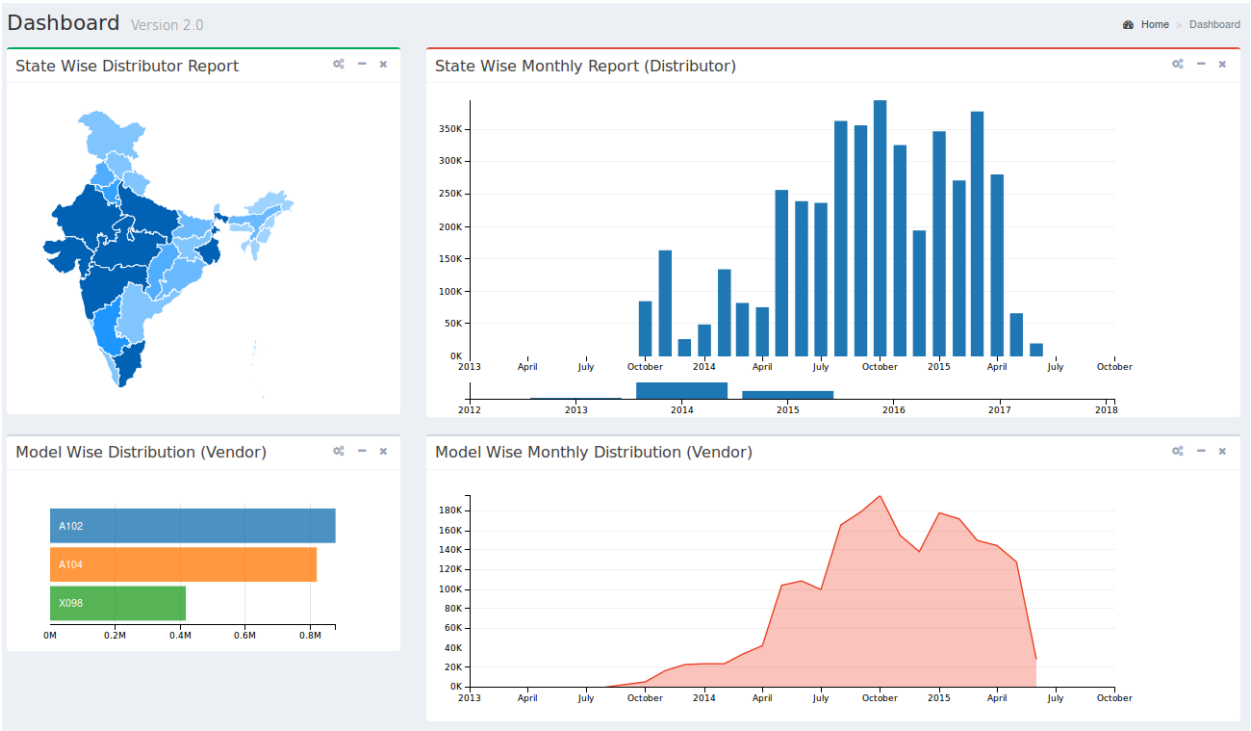


Figure 9: INDIA SALES (CUSTOM - TABLEAU)

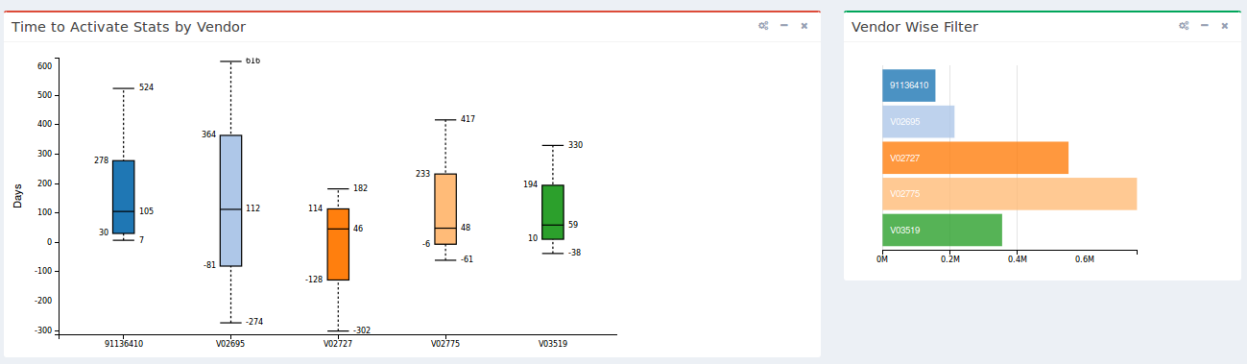


Figure 10: ADDITIONAL CHART TYPE

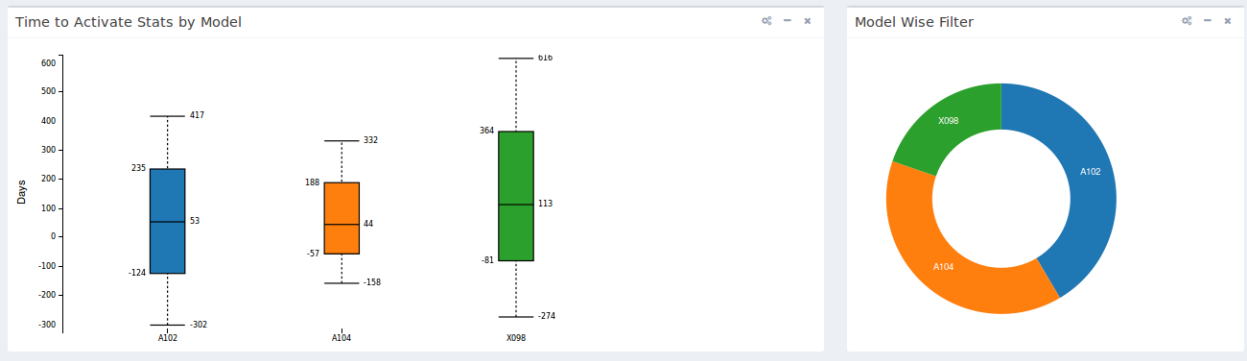


Figure 11: ACTIVATION STATS - ADDITIONAL CUSTOM CHARTS

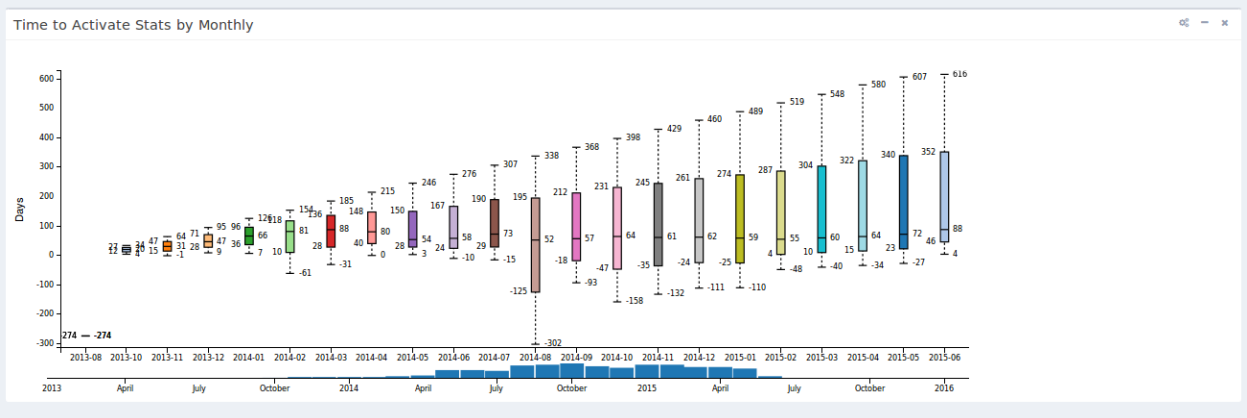


Figure 12: DEVICE ACTIVATION STATS - CUSTOM CHART TYPE

Other Tableau Examples

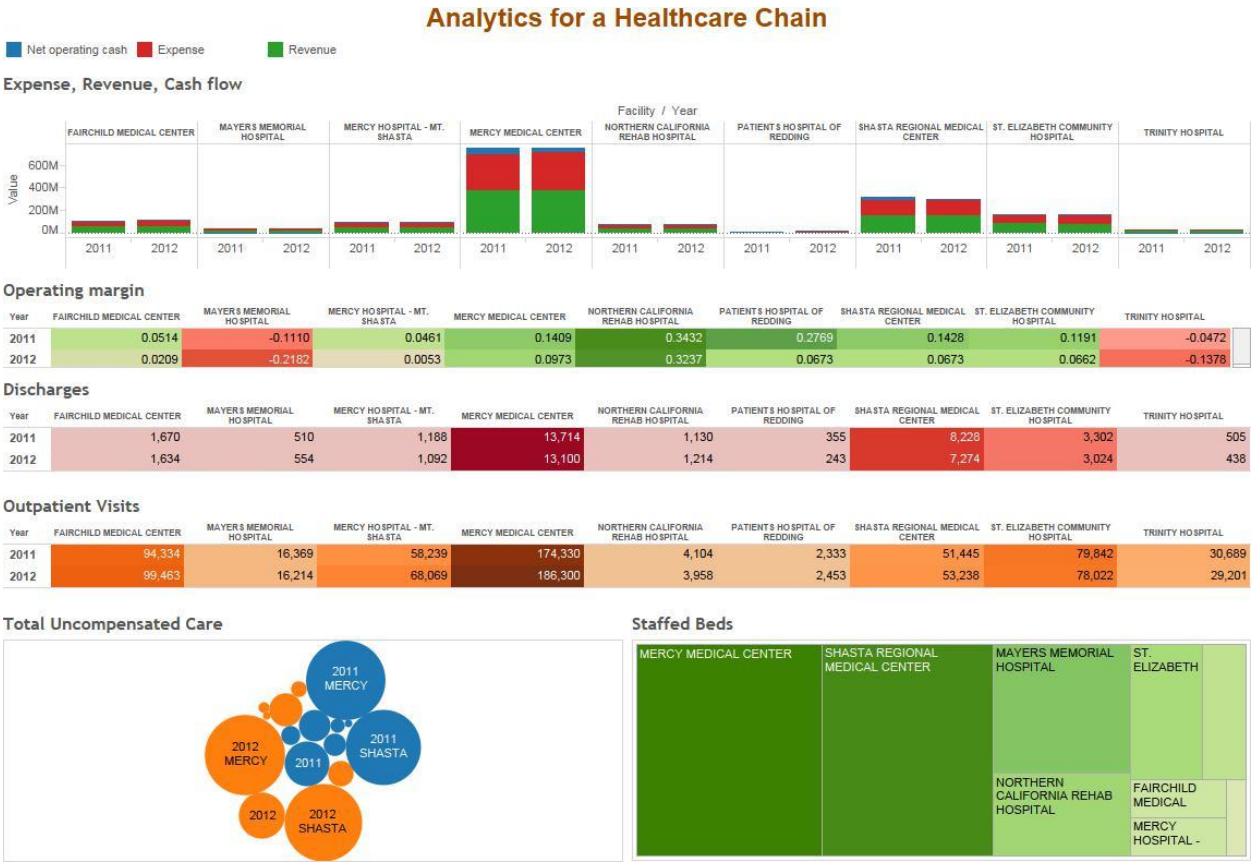


Figure 13: HOSPITAL ANALYTICS DASHBOARD

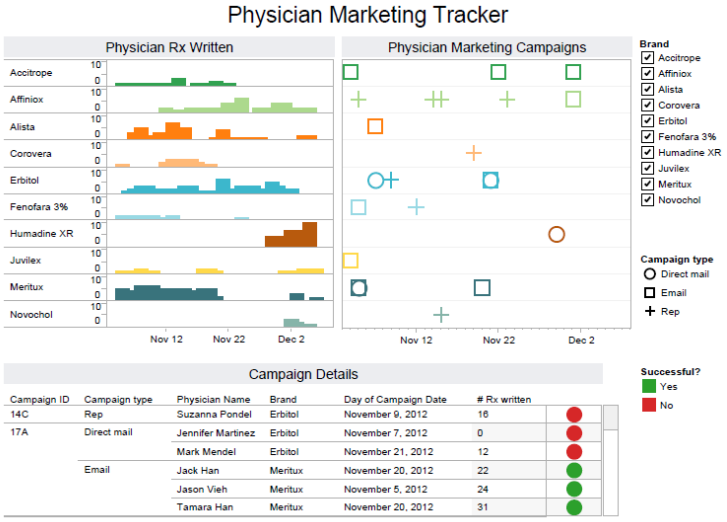
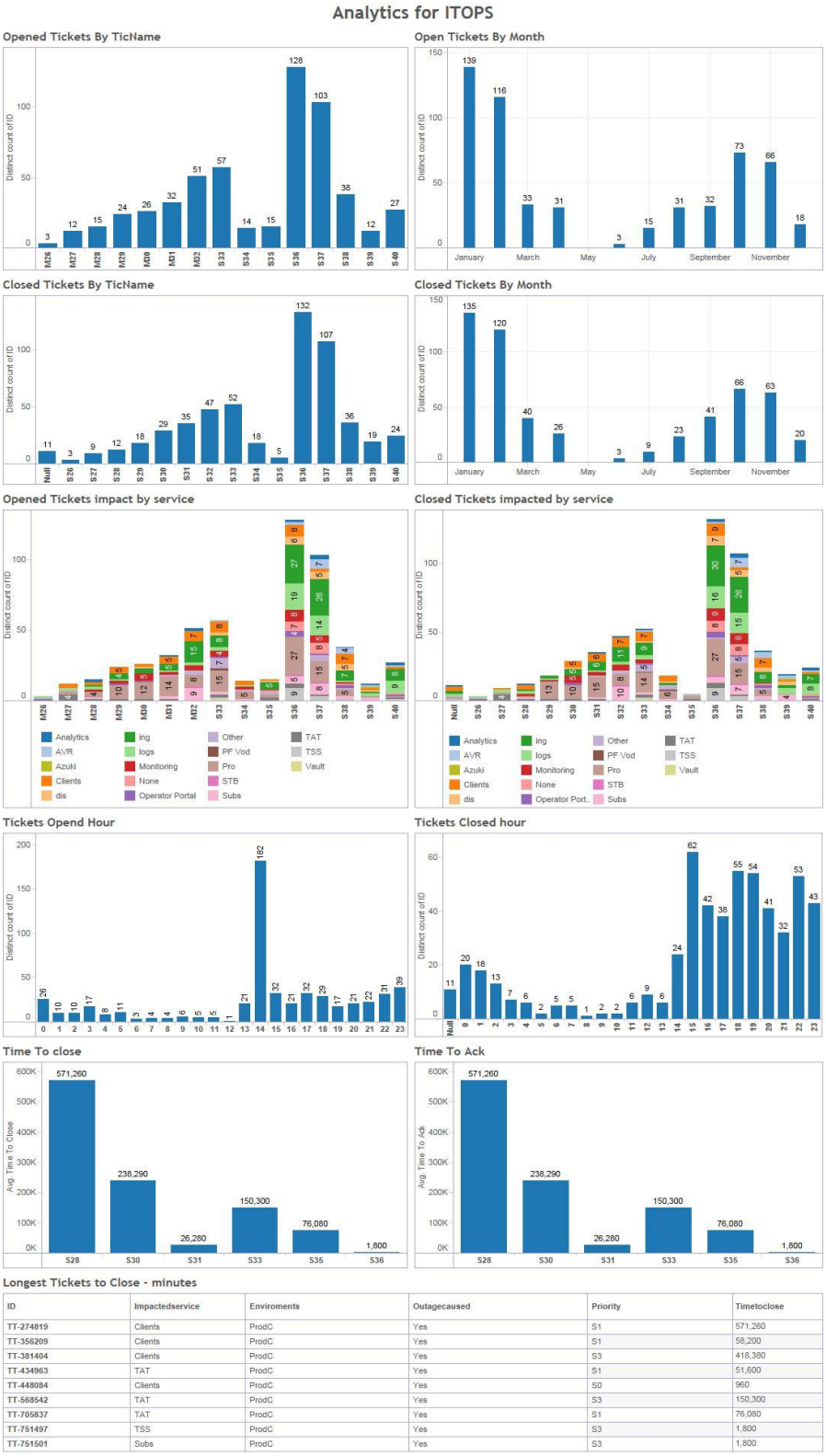


Figure 14: PHARMACEUTICAL PERFORMANCE DASHBOARD



Longest Tickets to Close - minutes

ID	Impactedservice	Enviroments	Outagecaused	Priority	Timetoclose
TT-274819	Clients	ProdC	Yes	S1	571,260
TT-356209	Clients	ProdC	Yes	S1	58,200
TT-381404	Clients	ProdC	Yes	S3	418,380
TT-434963	TAT	ProdC	Yes	S1	51,600
TT-448084	Clients	ProdC	Yes	S0	960
TT-568542	TAT	ProdC	Yes	S3	150,300
TT-705837	TAT	ProdC	Yes	S1	76,080
TT-751497	TSS	ProdC	Yes	S3	1,800
TT-751501	Subs	ProdC	Yes	S3	1,800

Figure 15: IT OPERATIONS DASHBOARD FOR A TOP 5 CONSULTING CO.

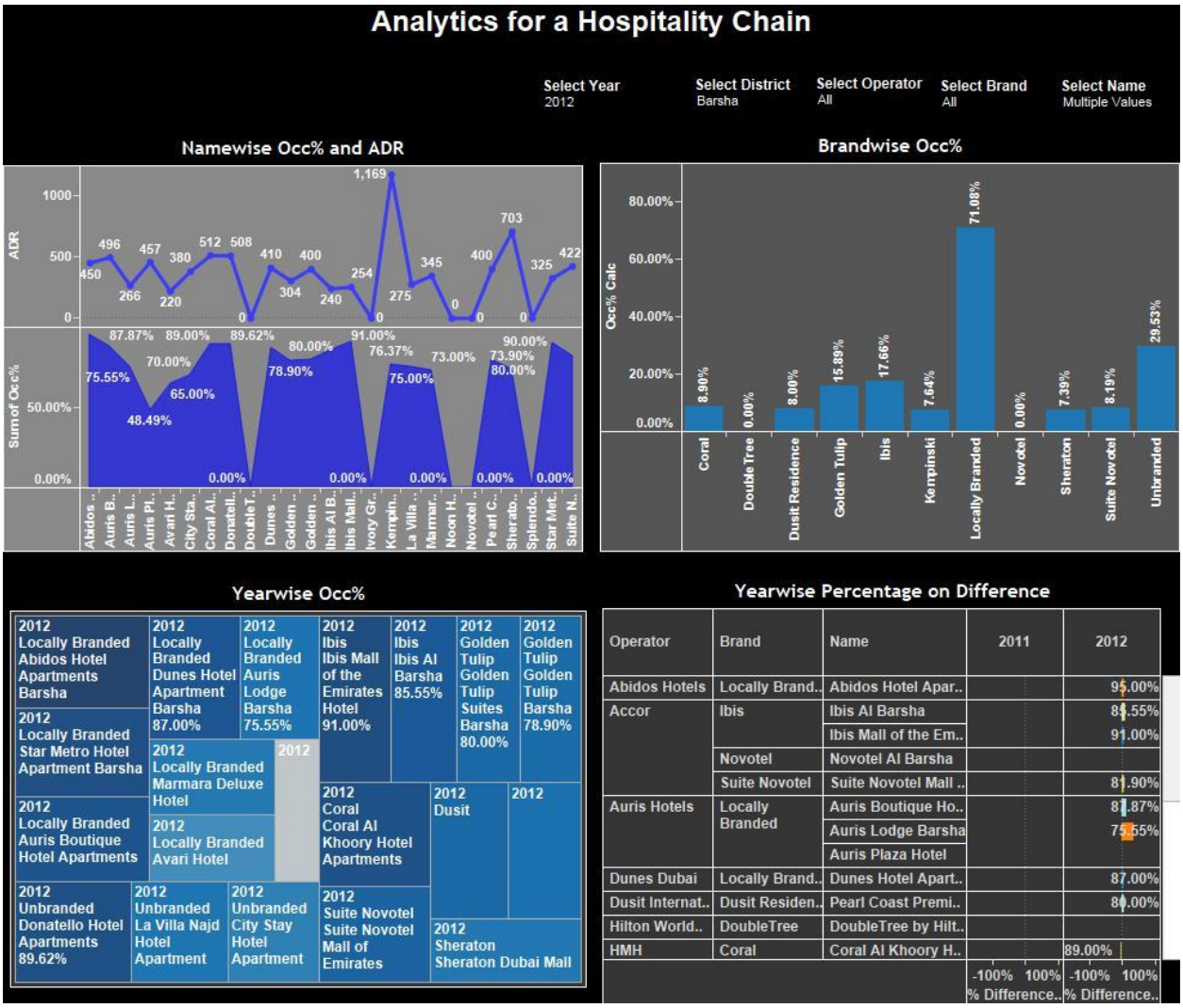


Figure 16: COMPETITIVE BRAND ANALYSIS FOR A UAE HOSPITALITY GROUP

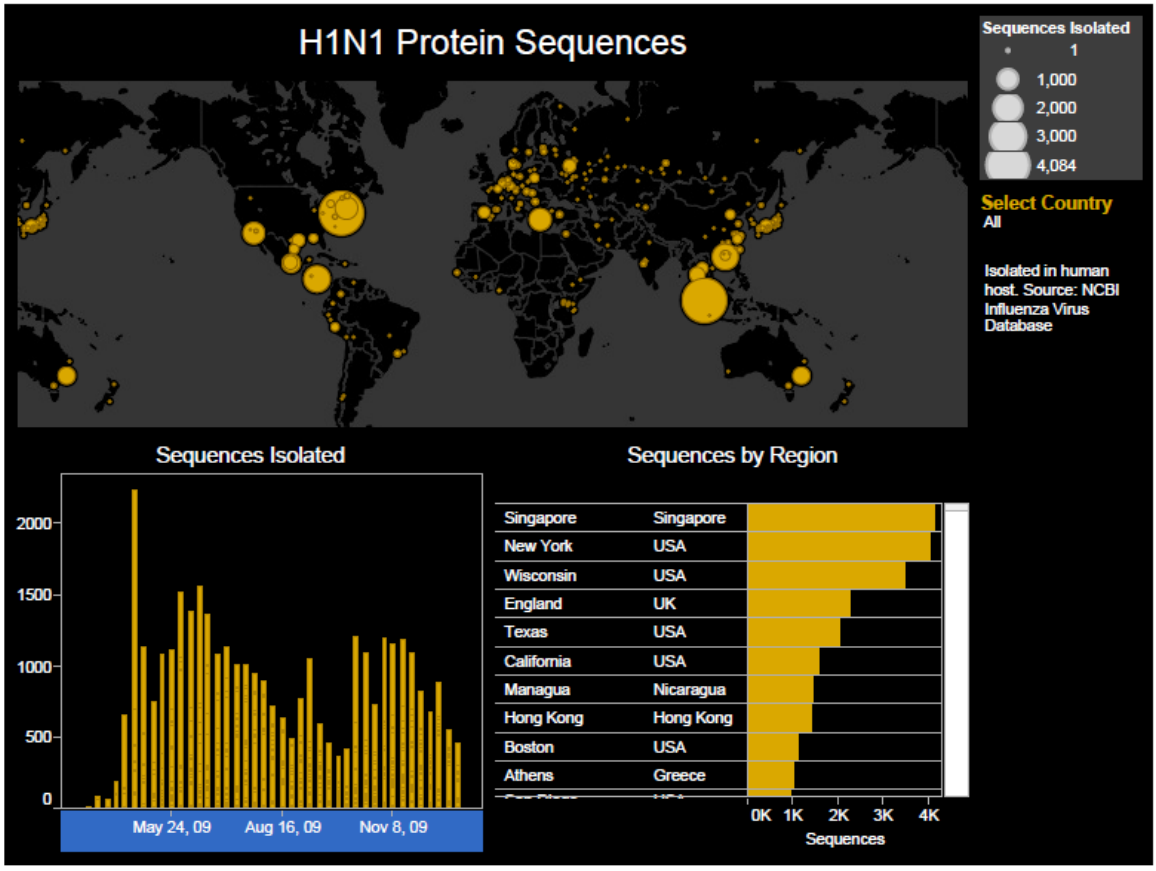


Figure 17: H1NI PROTIEN MUTATION ACROSS THE WORLD

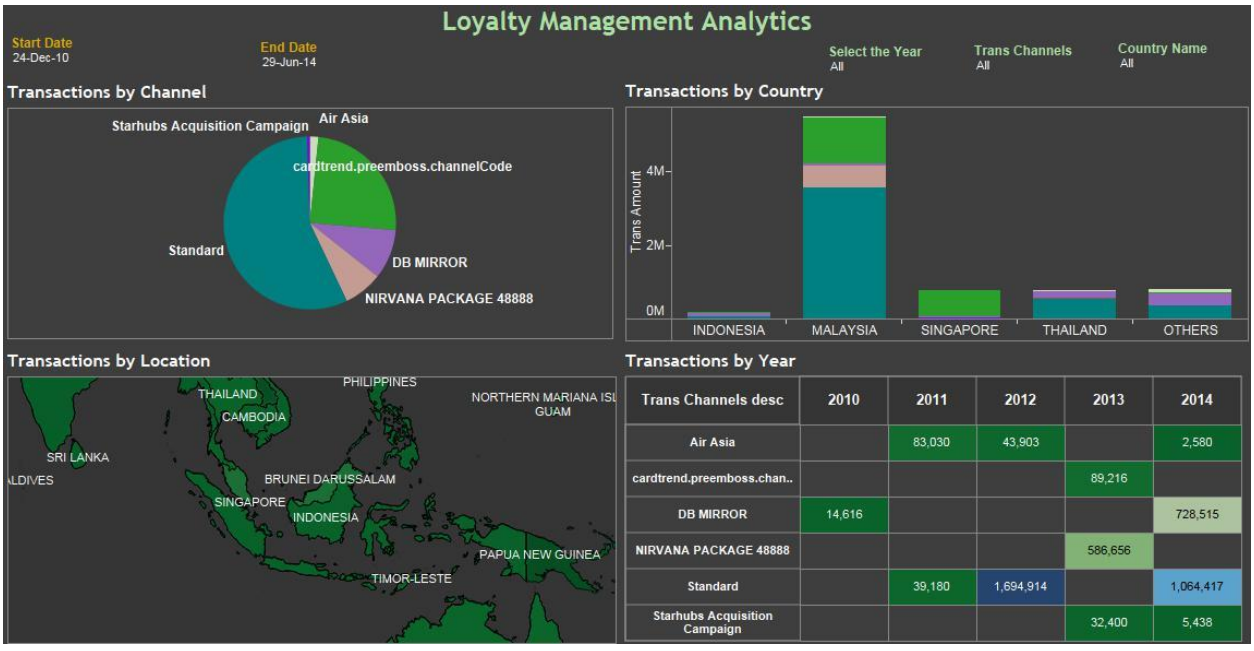
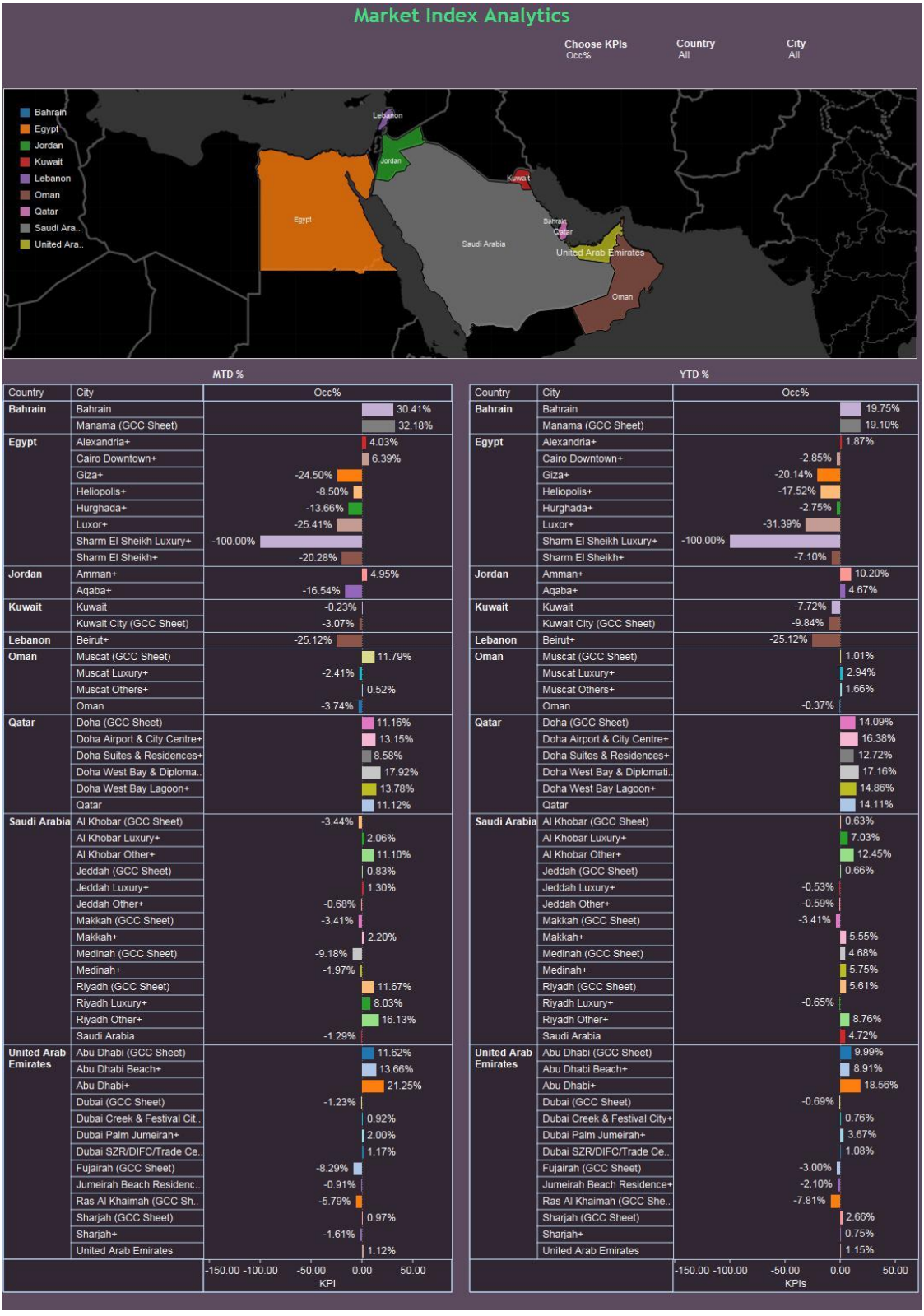


Figure 18: AIR ASIA (MALAYASIA) LOYALTY CARD TRACKING



Country	City	MTD % Occ%	YTD % Occ%
Bahrain	Bahrain	30.41%	19.75%
	Manama (GCC Sheet)	32.18%	19.10%
Egypt	Alexandria+	4.03%	1.87%
	Cairo Downtown+	6.39%	-2.85%
	Giza+	-24.50%	-20.14%
	Heliopolis+	-8.50%	-17.52%
	Hurghada+	-13.66%	-2.75%
	Luxor+	-25.41%	-31.39%
	Sharm El Sheikh Luxury+	-100.00%	-100.00%
	Sharm El Sheikh+	-20.28%	-7.10%
Jordan	Amman+	4.95%	10.20%
	Aqaba+	-16.54%	4.67%
Kuwait	Kuwait	-0.23%	-7.72%
	Kuwait City (GCC Sheet)	-3.07%	-9.84%
Lebanon	Beirut+	-25.12%	-25.12%
Oman	Muscat (GCC Sheet)	11.79%	1.01%
	Muscat Luxury+	-2.41%	2.94%
	Muscat Others+	0.52%	1.66%
	Oman	-3.74%	-0.37%
Qatar	Doha (GCC Sheet)	11.16%	14.09%
	Doha Airport & City Centre+	13.15%	16.38%
	Doha Suites & Residences+	8.58%	12.72%
	Doha West Bay & Diploma.. / Diplomati..	17.92%	17.16%
	Doha West Bay Lagoon+	13.78%	14.86%
	Qatar	11.12%	14.11%
Saudi Arabia	Al Khobar (GCC Sheet)	-3.44%	0.63%
	Al Khobar Luxury+	2.06%	7.03%
	Al Khobar Other+	11.10%	12.45%
	Jeddah (GCC Sheet)	0.83%	0.66%
	Jeddah Luxury+	1.30%	-0.53%
	Jeddah Other+	-0.68%	-0.59%
	Makkah (GCC Sheet)	-3.41%	-3.41%
	Makkah+	2.20%	5.55%
	Medinah (GCC Sheet)	-9.18%	4.68%
	Medinah+	-1.97%	5.75%
	Riyadh (GCC Sheet)	11.67%	5.61%
	Riyadh Luxury+	8.03%	-0.65%
	Riyadh Other+	16.13%	8.76%
	Saudi Arabia	-1.29%	4.72%
United Arab Emirates	Abu Dhabi (GCC Sheet)	11.62%	9.99%
	Abu Dhabi Beach+	13.66%	8.91%
	Abu Dhabi+	21.25%	18.56%
	Dubai (GCC Sheet)	-1.23%	-0.69%
	Dubai Creek & Festival Cit.. / City+	0.92%	0.76%
	Dubai Palm Jumeirah+	2.00%	3.67%
	Dubai SZR/DIFC/Trade Ce..	1.17%	1.08%
	Fujairah (GCC Sheet)	-8.29%	-3.00%
	Jumeirah Beach Residenc.. / Residence+	-0.91%	-2.10%
	Ras Al Khaimah (GCC Sh.. / She..	-5.79%	-7.81%
	Sharjah (GCC Sheet)	0.97%	2.66%
	Sharjah+	-1.61%	0.75%
	United Arab Emirates	1.12%	1.15%

-150.00 -100.00 -50.00 0.00 50.00 KPI

-150.00 -100.00 -50.00 0.00 50.00 KPIs

Figure 19: CUSTOM CHART OVERLAY FOR MIDDLE EAST MARKET PERFORMANCE DASHBOARD

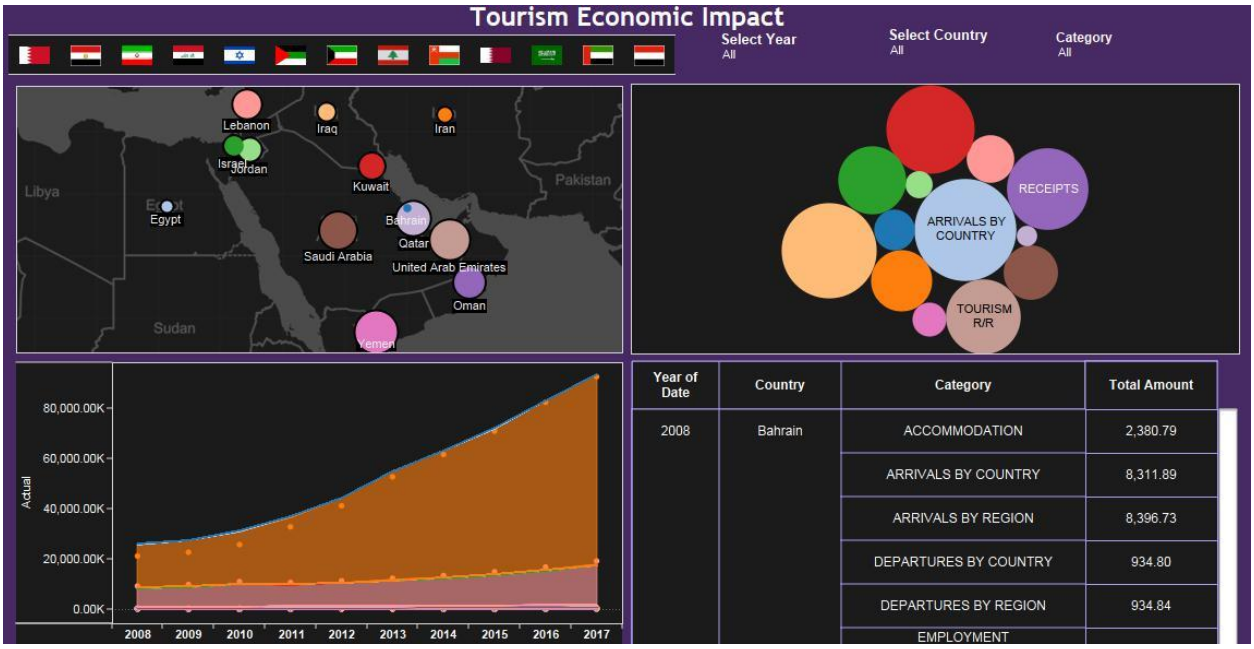
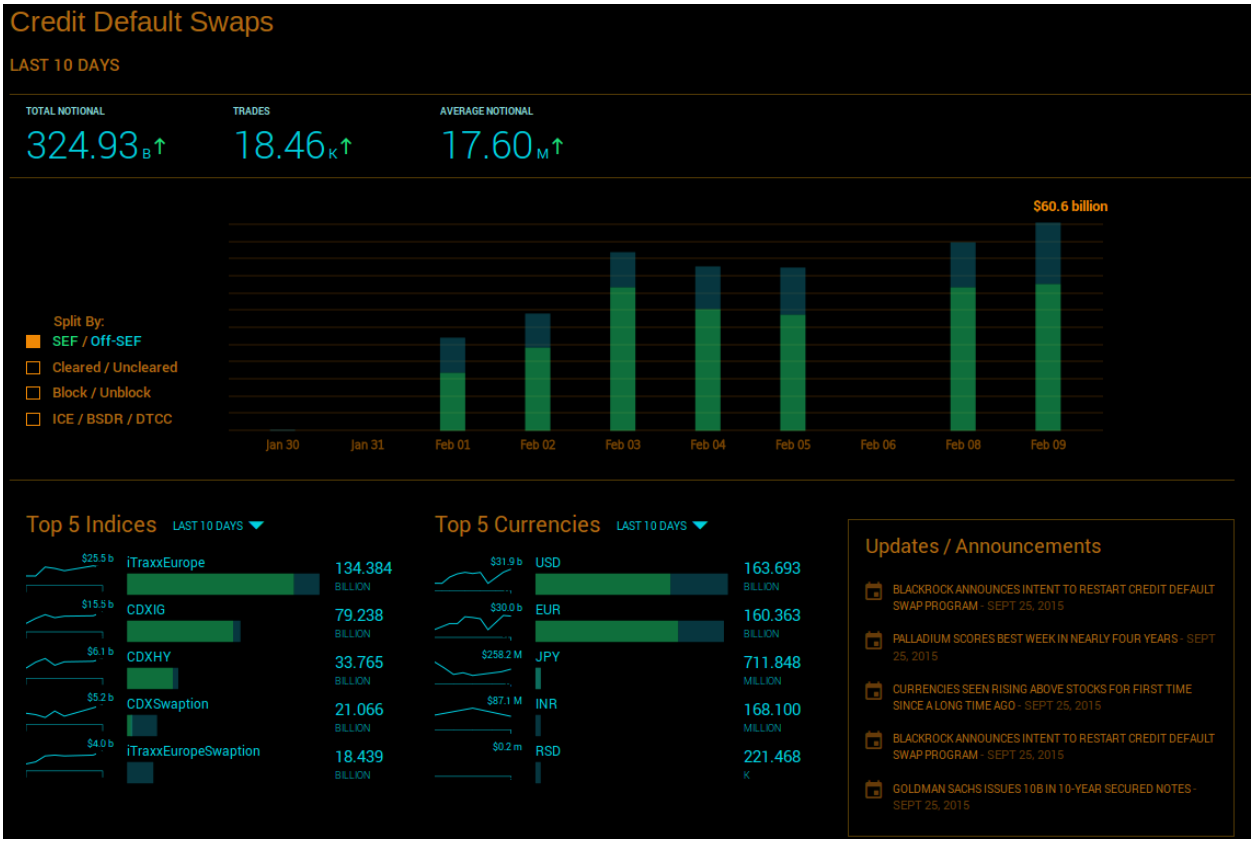


Figure 20: DEPARTMENT OF TOURISM VISITOR ANALYSIS

Custom Data Visualizations in – D3

CREDIT DEFAULT SWAPS ACROSS MARKETS – CUSTOM VISUALIZATION APPLICATION USING D3JAVA OBJECTS


Credit Dimensional Analysis
DATE RANGE
2016-02-01
2016-02-08
PRODUCT
2 SELECTED
Currency
2 SELECTED
TENOR
2 SELECTED
SEF
ON
TERM
8 SELECTED
BLOCK
Y
Source
DTCC
SUBMIT
Split By:
SEF / Off-SEF
Cleared / Uncleared
Top 5 / Others
TOTAL NOTIONAL
$55.0 Billion
Jan 30
Jan 31
Feb 01
Feb 02
Feb 03
Feb 04
Feb 05
Feb 06
Feb 07
Feb 08
$240.7 Billion
3M
6M
1Y
18M
2Y
3Y
4Y
5Y
6Y
9Y
10Y
20Y
25Y
28Y
30Y
Others


Credit Default Swaps
LAST 10 DAYS
TOTAL NOTIONAL
324.93B↑
TRADES
18.46K↑
AVERAGE NOTIONAL
17.60M↑
$60.6 billion
Split By:
SEF / Off-SEF
Cleared / Uncleared
Block / Unblock
ICE / BSDR / DTCC
Jan 30
Jan 31
Feb 01
Feb 02
Feb 03
Feb 04
Feb 05
Feb 06
Feb 08
Feb 09
Top 5 Indices
LAST 10 DAYS
$25.5 b
iTraxxEurope
134.384
BILLION
$15.5 b
CDXIG
79.238
BILLION
$6.1 b
CDXHY
33.765
BILLION
$5.2 b
CDXSwaption
21.066
BILLION
$4.0 b
iTraxxEuropeSwaption
18.439
BILLION
Top 5 Currencies
LAST 10 DAYS
$31.9 b
USD
163.693
BILLION
$30.0 b
EUR
160.363
BILLION
$258.2 M
JPY
711.848
MILLION
$87.1 M
INR
168.100
MILLION
$0.2 m
RSD
221.468
K
Updates / Announcements
BLACKROCK ANNOUNCES INTENT TO RESTART CREDIT DEFAULT SWAP PROGRAM - SEPT 25, 2015
PALLADIUM SCORES BEST WEEK IN NEARLY FOUR YEARS - SEPT 25, 2015
CURRENCIES SEEN RISING ABOVE STOCKS FOR FIRST TIME SINCE A LONG TIME AGO - SEPT 25, 2015
BLACKROCK ANNOUNCES INTENT TO RESTART CREDIT DEFAULT SWAP PROGRAM - SEPT 25, 2015
GOLDMAN SACHS ISSUES 10B IN 10-YEAR SECURED NOTES - SEPT 25, 2015

APPENDIX F - 2017 RATE CARD - VISVERO

Thank you for considering Visvero, Inc as your partner for your IT project success.

Visvero prides itself on being able to provide highly valuable services at highly competitive bill rates that are among the lowest in the industry. We are able to offer these by keeping our overheads low and offering additional fulfillment opportunities to our specialists in addition to the financial compensation.

This rate card identifies our typical per-engagement billing rates. Actual quotes will vary based on the project specific factors e.g. reuse value of the engagement, seniority of the consultant, skill enhancement, complexity, volume agreements, history etc.

PROFESSIONAL FEE RATES (List by Labor Category)	**$ RATE RANGE PER HOUR**		
Technical Management Roles			
Project Manager	$ 95.00	to	$ 105.00
Senior Architect	$ 90.00	to	$ 115.00
Architect	$ 90.00	to	$ 105.00
Individual Contributor / Developer Roles			
Reports Developer – SSRS, Crystal, BO WEBI and	$65.00	to	$80.00
Business Intelligence Specialist (Qlik, Tableau, Spotfire, Cognos, MSBI, OBIEE, BO, Microstrategy And other BI tools)	$ 70.00	to	$ 95.00
Big Data – Hadoop, Hive, PIG, NoSQL Hbase,	$100.00	to	$120.00
Technology Premium Skills** Microstrategy			
Design, Architecture and Modeling Roles			
Data Modeling	$80.00	to	$105.00
Technology Premium Skills** Big Data Solutions Architects			
Systems Management Roles			
Database Administrator	$ 65.00	to	$ 90.00
Databases Design Engineer (Oracle/Sybase/SQL Server/MS Access)	$ 65.00	to	$ 80.00