



Tableau Dashboards: Connecting the Dots to Student Success

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The Main Goal

- Useful, functional, automated dashboards that
 - Our customers can use to get usable and up-to-date information
 - Support student success
 - Free up our time to do deeper information dives

In this presentation:

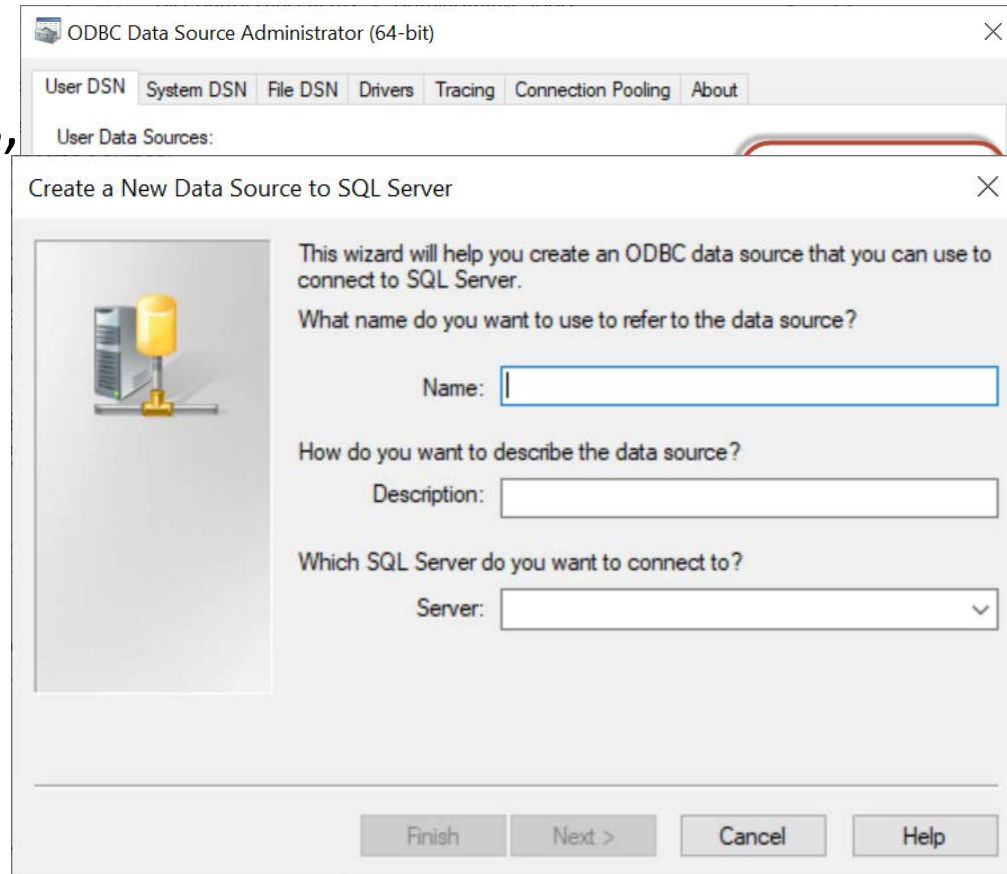
- How to connect to your data warehouse
- The importance of automatically updated tables and complex KPIs that allow for quick access to prepared data
- How Tableau dashboards provide valuable insights with curated visualizations, filters, and KPIs

Connecting to your Data Warehouse

- Step 0 – have a good working relationship with IT
- Have credentials and permissions to access the server(s) data is housed on
- Set up ODBC connection – this sets up an access path to the server data that can be utilized from different tools (e.g. Tableau, Excel, SAS, etc.)

ODBC Connections

- If you have the right access, you can create the ODBC connection yourself
 - Control Panel -> Administrative Tools
 - ODBC Data Sources -> Add
 - Name the connection, specify the path
- If not – talk to IT
- Not always necessary for Tableau



Connecting from Tableau

Tableau - Book1
File Data Server Help

Connect

To a File

- Microsoft Excel
- Text file
- JSON file
- Microsoft Access
- PDF file
- Spatial file
- Statistical file
- More...

To a Server

- Tableau Server
- MySQL
- Oracle
- Amazon Redshift
- Microsoft SQL Server
- More...

Microsoft SQL Server

Server:

Database:

Enter information to sign in to the database:

Use Windows Authentication (preferred)

Use a specific username and password:

Username:

Password:

Require SSL

Read uncommitted data

Initial SQL...

OR

8.1) Vertica

Web Data Connector

Other Databases (JDBC)

Other Databases (ODBC)

Connections

zogotech\zogotech
Microsoft SQL Server

Database

Select Database

Enter database name

- master
- msdb
- scorecard
- tempdb
- ZogoTech
- ZogoTechDev

Other Databases (ODBC)

Connect Using

Generic ODBC requires additional configuration for publishing to succeed. Select DSN (data source name) for cross-platform portability. A DSN with the same name must be configured on Tableau Server.

DSN:

Driver:

Relational Pivot Tables

- Pivot tables contain measures and dimensions all in one wide table. You don't have to write joins.
- Pivot tables have a particular row-level cardinality.
 - Class sections (aggregate measures at the section level)
 - Transcript (measures like grade points and credits)
 - Student Terms (term- and cumulative- measures like completed credits and cumulative completed credits)
- Pivot tables are managed by your IT or data warehouse company who keep these up-to-date.
- Pivot tables might contain measures like completion rate or GPA, but Tableau needs the numerator and denominator of these metrics.

Pivot Table Example (pvt_ClassSections)

dbo.pvt_ClassSections

Columns

- Average Student Age (Computed, float, null)
- Completion Rate (Computed, float, null)
- Conclusion Rate (Computed, float, null)
- Credit Hours (decimal(7,2), null)
- Faculty Contact Hours (decimal(8,2), null)
- GPA (Computed, float, null)
- GPA Credits (decimal(7,2), null)
- Grade Points (decimal(7,2), null)
- Student Contact Hours (decimal(10,2), null)
- Success Rate (Computed, float, null)
- Total Capacity (int, null)
- Total Class Sections (tinyint, null)
- Total Class Size (smallint, null)
- Total Completions (smallint, null)
- Total Conclusions (smallint, null)
- Total Successes (smallint, null)
- Total Withdrawals (smallint, null)
- Utilization Rate (Computed, float, null)
- Withdrawal Rate (Computed, float, null)
- Academic Level (varchar(50), null)
- Academic Level ID (varchar(2), null)
- Academic Level Order (varchar(2), null)
- Academic Year (varchar(9), null)
- Academic Year Order (varchar(4), null)
- Academic Years Ago (varchar(30), null)
- Academic Years Ago Order (int, null)

- Building Name (varchar(30), null)
- Canceled (varchar(7), not null)
- Canceled Order (bit, null)
- Course Number (varchar(7), not null)
- Delivery Method (varchar(40), null)
- Department (varchar(40), null)
- Division (varchar(50), null)
- Dual Credit (varchar(7), not null)
- Dual Credit Order (varchar(7), not null)
- End Time (varchar(7), null)
- Faculty Member (varchar(93), null)
- Faculty Member Order (int, null)
- Instructional Mode (varchar(40), null)
- Location (varchar(100), null)
- Meeting Days (varchar(19), null)
- Number of Weeks (varchar(3), null)
- Number of Weeks Order (smallint, null)
- Room Number (varchar(10), null)
- Section Name (varchar(22), null)
- Section Number (varchar(6), not null)
- Semester (varchar(30), null)
- Semester Order (int, null)

- Start Time (varchar(7), null)
- Subject (varchar(7), not null)
- Subject and Course Number (varchar(15), null)
- Term (varchar(30), not null)
- Term Order (int, not null)
- Utilization Rate Group (varchar(50), not null)
- Utilization Rate Group Order (int, not null)
- Age Count (int, null)
- Age Sum (int, null)
- Non zero GPA Credits (decimal(7,2), null)
- Non zero Grade Points (decimal(7,2), null)

Tableau Calculations

The screenshot shows the Tableau interface. On the left, the 'Measures' pane lists various metrics, with 'GPA' highlighted in green. A context menu is open over the 'Measures' pane, with 'Create' selected. Two dialog boxes are overlaid on the right side of the screen. The top dialog box is titled 'Student Success Rate' and contains the formula $SUM([Total\ Successes]) / SUM([Total\ Class\ Size])$. The bottom dialog box is titled 'Student GPA' and contains the formula $SUM([Non\ zero\ Grade\ Points]) / SUM([Non\ zero\ GPA\ Credits])$. Both dialog boxes indicate that the calculation is valid and show '9 Dependencies'. The background shows a partial view of a pivot table with columns for 'Success Rate' and 'GPA'.

Measures

- # Academic Years Ago O...
- # Age Count
- # Age Sum
- # Average Class Size
- # Average Completion R...
- # Average Student Age
- # Average Unfilled Seats
- # Completion Rate
- # Conclusion Rate
- # Credit Hours
- # Faculty Contact Hours
- # Faculty Member Order
- # **GPA**
- # GPA Credits
- # Grade Points
- # Needed Sections
- # Needed Sections by C...
- # Non Zero Class Size
- # Non zero GPA Credits

Parameters

- # Select Metric

Student Success Rate

$$\frac{SUM([Total\ Successes])}{SUM([Total\ Class\ Size])}$$

The calculation is valid. 9 Dependencies

Student GPA

$$\frac{SUM([Non\ zero\ Grade\ Points])}{SUM([Non\ zero\ GPA\ Credits])}$$

The calculation is valid. 9 Dependencies

going to be
 $SUM(\text{numerator}) /$
 $SUM(\text{denominator}).$

- Ask your IT to add these if they aren't in the pivot table

Design once with selectable metrics

Abc Delivery Method
Abc Department

Measures

- # Grade Points
- # Non zero GPA Credits
- # Non zero Grade Points
- # Number of Weeks Order
- # Rank Unique Select Metric
- # Select Metric
- # Semester Order
- # Student Contact Hours
- # Success Rate
- # Term Order
- # Total Capacity
- # Total Class Sections

Parameters

- # Select Metric

Context menu for 'Select Metric':

- Add to Sheet
- Show Parameter Cont
- Cut
- Copy
- Edit...**
- Duplicate
- Rename
- Hide
- Delete
- Create
- Default Properties
- Folders
- Replace References...
- Describe...

Edit Parameter [Select Metric]

Name: Comment >>

Properties

Data type:

Current value:

Display format:

Allowable values: All List Range

List of values

Value	Display As
1	Number of Sections
2	Course Enrollment
3	Average Class Size
4	Utilization Rate
5	Needed Sections
6	Completion Rate
7	Success Rate
8	Withdrawal Rate
9	Average Unfilled Seats

Interactive Dashboard

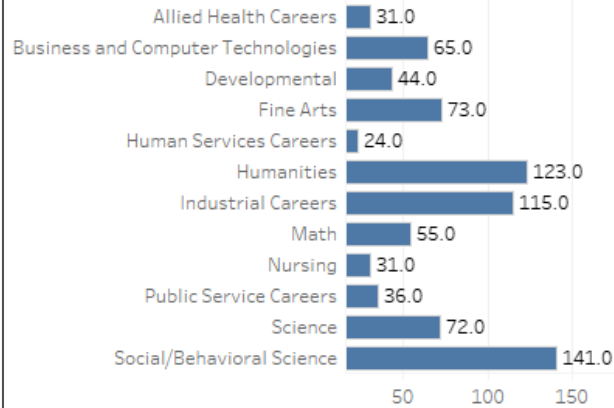
Number of Sections | Fall 2018-2019

Grand Total  810.0

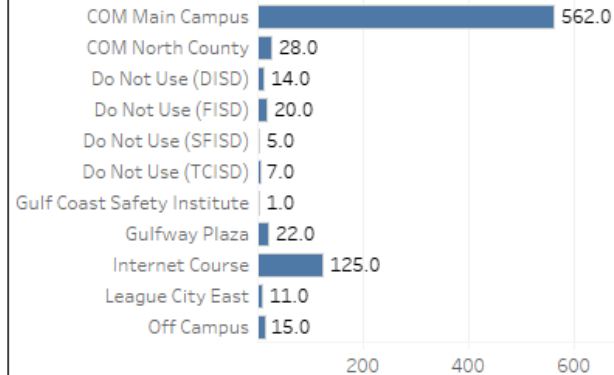
Select Metric

- Number of Sections
- Course Enrollment
- Average Class Size
- Utilization Rate
- Needed Sections
- Completion Rate
- Success Rate
- Withdrawal Rate
- Average Unfilled Seats
- GPA
- Total SCH

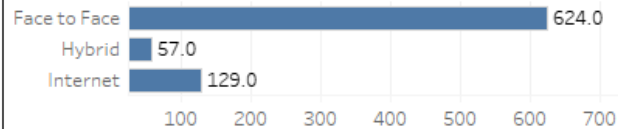
Divisions | Fall 2018-2019



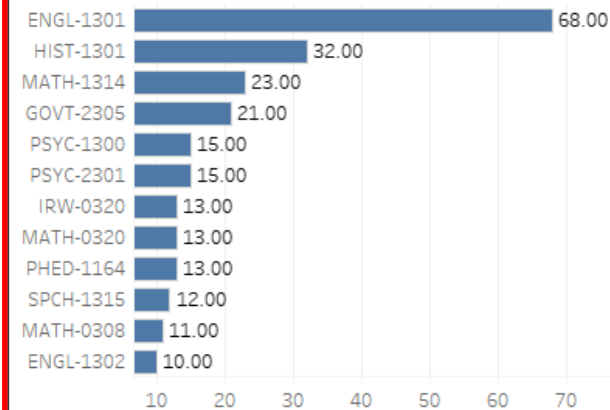
Location | Fall 2018-2019



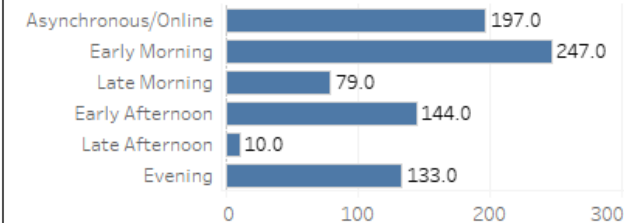
Delivery Method | Fall 2018-2019



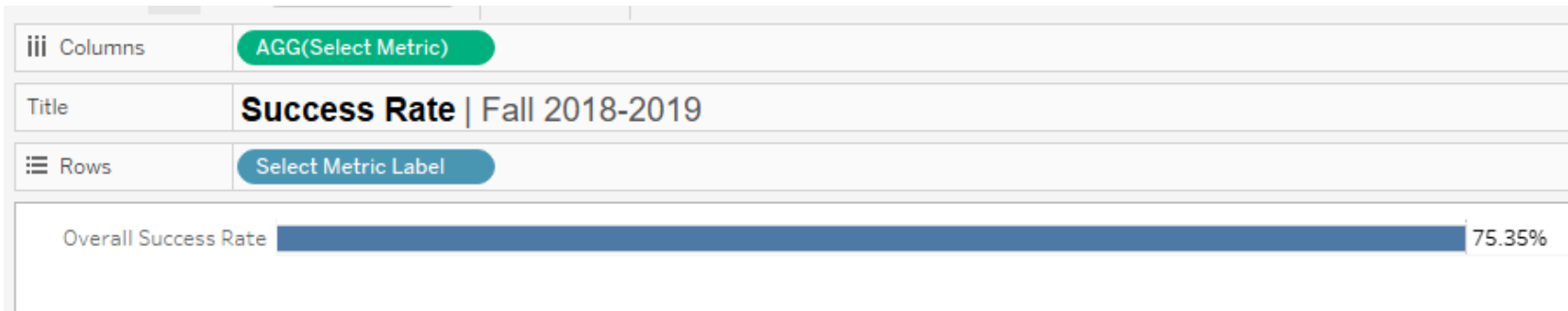
Top Courses by Number of Sections Fall 2018-2019



Time of Day | Fall 2018-2019



Grand Total and Metric Label

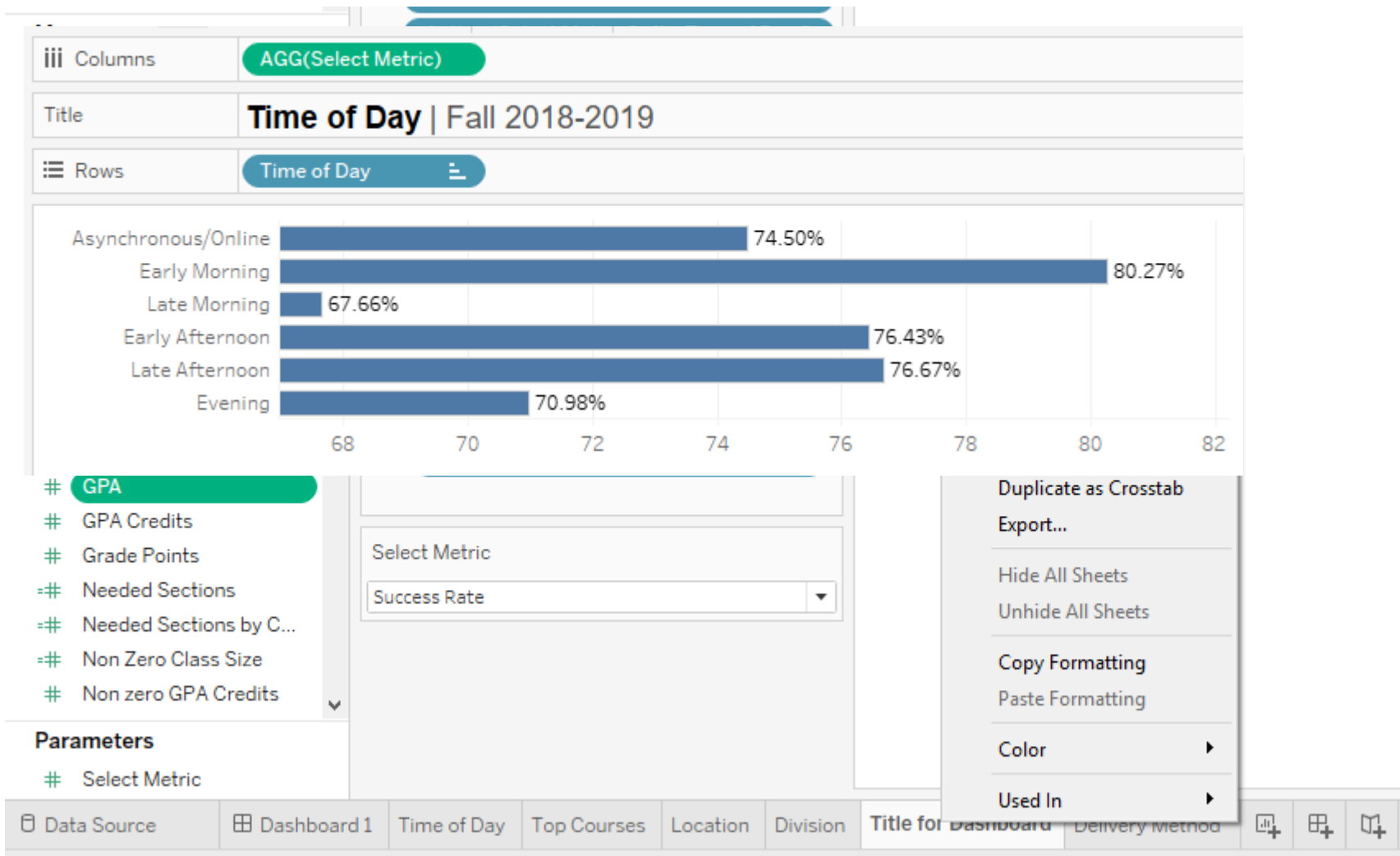


The screenshot shows a 'Select Metric Label' dialog box with a text area containing a SQL CASE statement. The statement is as follows:

```
CASE [Parameters].[Select Metric]
WHEN 3 THEN "Overall Average"
WHEN 4 THEN "Overall Utilization Rate"
WHEN 5 THEN "Total Needed Sections"
WHEN 6 THEN "Overall Completion Rate"
WHEN 7 THEN "Overall Success Rate"
WHEN 8 THEN "Overall Withdrawal Rate"
WHEN 9 THEN "Average Unfilled Seats"
WHEN 10 THEN "Overall GPA"
ELSE "Grand Total"
END
```

At the bottom of the dialog, there is a status bar that reads 'The calculation is valid.' followed by a dropdown menu showing '2 Dependencies'. There are 'Apply' and 'OK' buttons. A second, partially visible dialog box is shown behind it, also with a status bar and buttons.

Pivot Table Reports



Top 12 Report

The screenshot displays a BI tool interface with the following components:

- Data Source:** pvt_ClassSections (ZogoTech)
- Columns:** AGG(Select Metric)
- Title:** Top Courses by Number of Sections
- Dimensions:** Academic Level, Academic Level ID, Academic Level Order, Academic Year, Academic Year Order, Academic Years Ago, Building Name, Canceled, Canceled Order, Course Number, Delivery Method, Department.
- Measures:** Grade Points, Non zero GPA Credits, Non zero Grade Points, Number of Weeks Order, Rank Unique Select Metric (highlighted in red), Select Metric.
- Filters:** Rank Unique Select Metric (selected).
- Filter Configuration Dialog:**
 - Filter Name: Rank Unique Select Metric
 - Filter Type: Rank Unique Select Metric
 - Options: Range of values (selected), At least, At most, Special.
 - Range of values: 1 to 12.
 - Include Null Values:
 - Buttons: Reset, OK, Cancel, Apply.
- Chart:** A bar chart showing a value of 68.00.

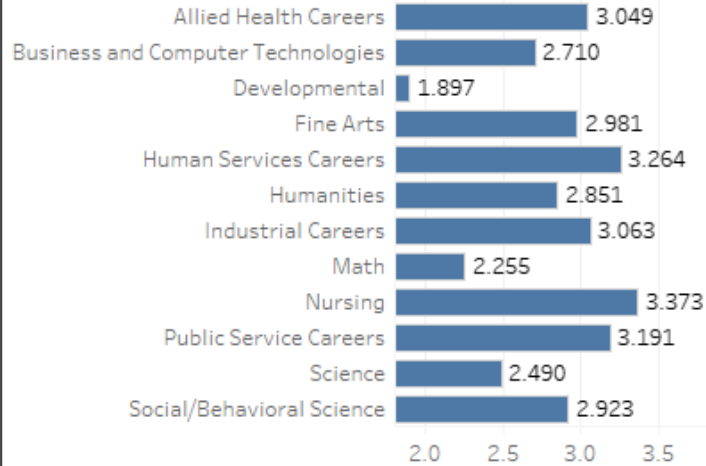
GPA | Fall 2018-2019

Overall GPA  2.802

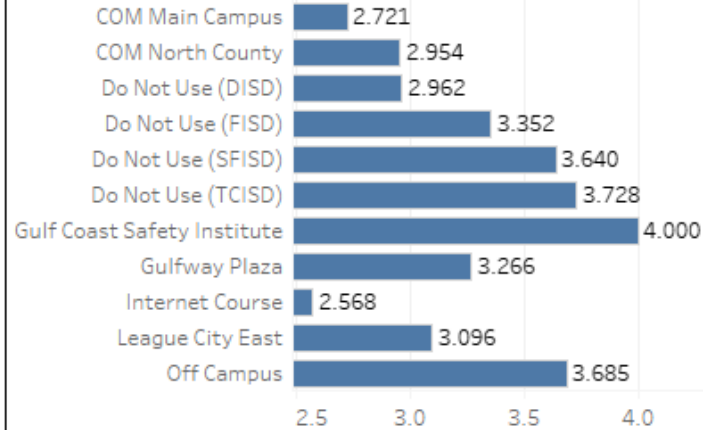
Select Metric

GPA 

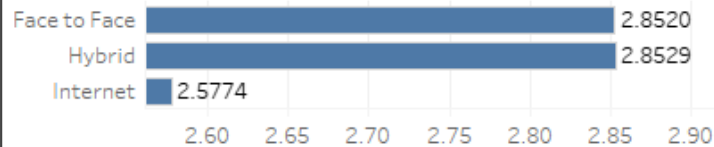
Divisions | Fall 2018-2019



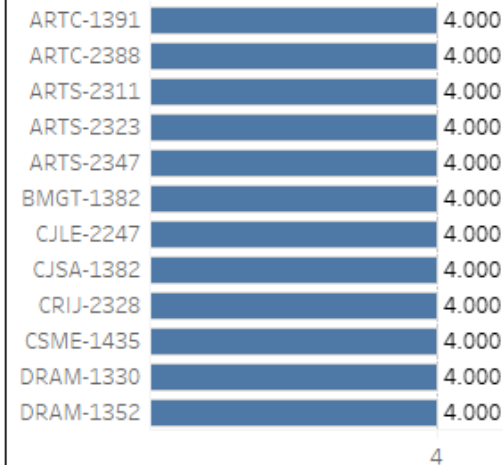
Location | Fall 2018-2019



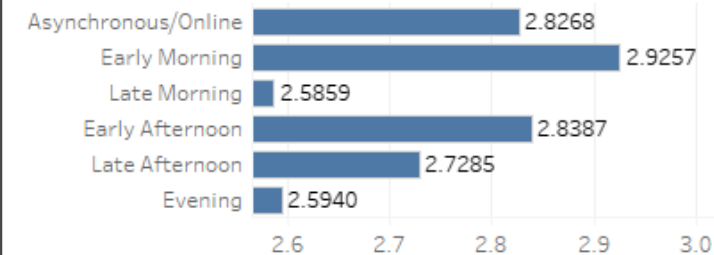
Delivery Method | Fall 2018-2019



Top Courses by GPA Fall 2018-2019



Time of Day | Fall 2018-2019

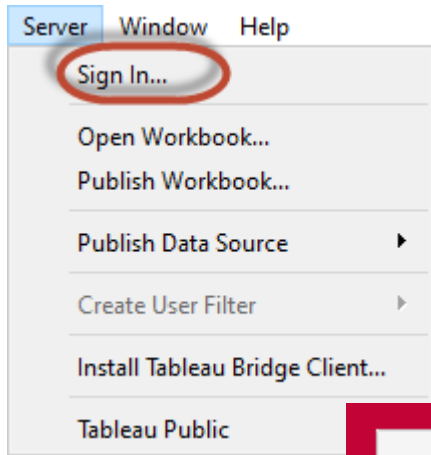


Sharing Dashboards

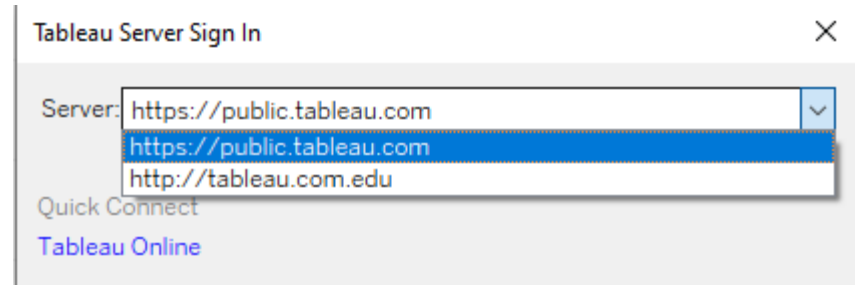
- Tableau Public
 - No student level data
 - Best for high level, long term data
 - Able to embed Dashboards into your own website
- Tableau Server
 - Reporting credentials for automated updates
 - Daily updates possible
 - Better for more granular information

Publish to Public

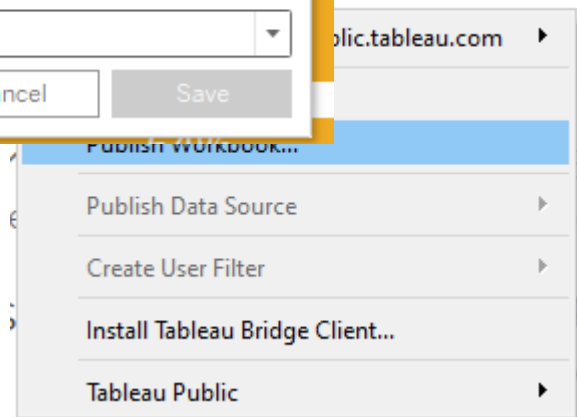
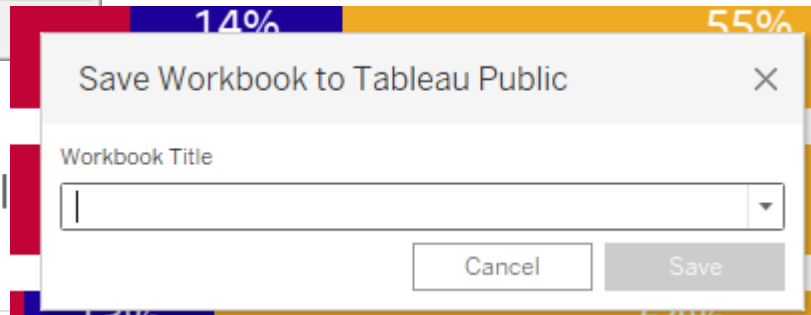
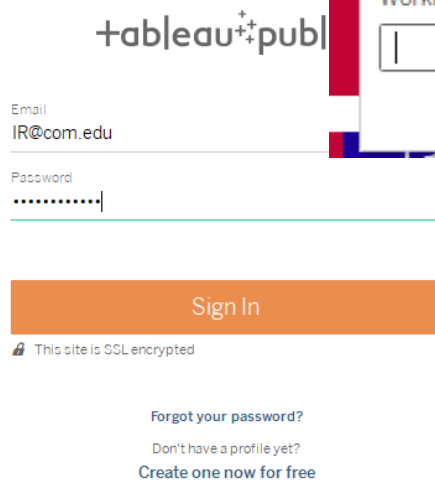
1



2



3



Publish

- Server
- Window
- Sign In...**
- Open Workbook
- Publish Workbook
- Publish Data Source
- Create User Filter
- Install Tableau I
- Tableau Public

Publish Workbook to Tableau Server

Project: Advising

Name: _____

Description: _____

Permissions: _____

Set to existing workbook default [Edit](#)

User/Group	Role
> All Users	(Custom)
Owner	Editor

Cancel

Data Sources

Manage Data Sources

Data Source	Publish Type ⓘ	Authentication
pvt_StudentContacts_ad... Tableau Server will temporarily access the credentials provided for '[zogotech.com.edu]' to confirm it can maintain a live data connection.	Embedded in workbook	Server Run As account

Show Selections

⚠ Specify the workbook name

Publish

Data Reports

Office of Planning, Effectiveness, Analytics and Research

Common Fact Sheets

Course Evaluation System

Data Reports

Economic Impact Study

Procedures for Conducting Research

SPOL

Strategic Planning 2018-2023

Request for Data

Data Discrepancy Alert Form

Student Achievement Data

Surveys

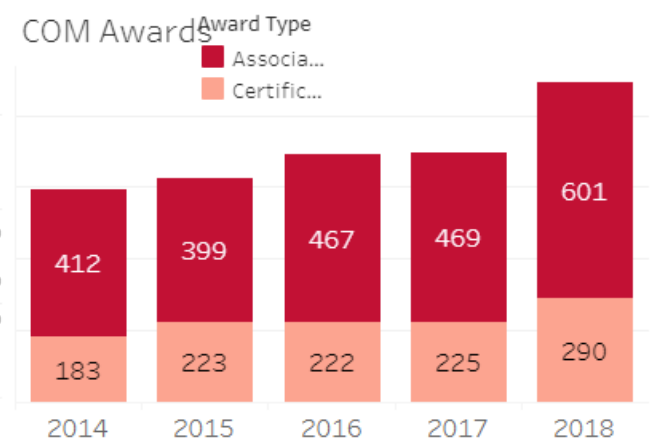
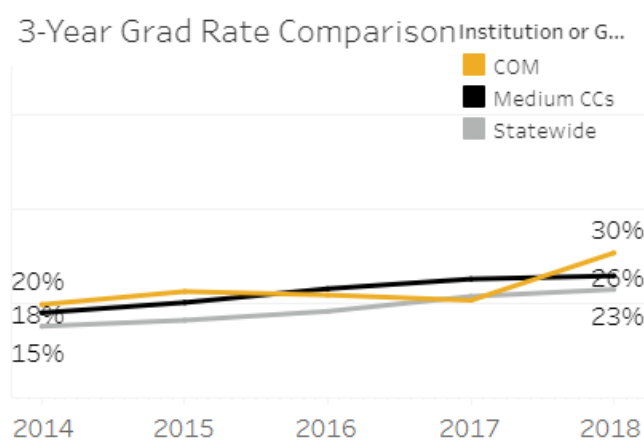
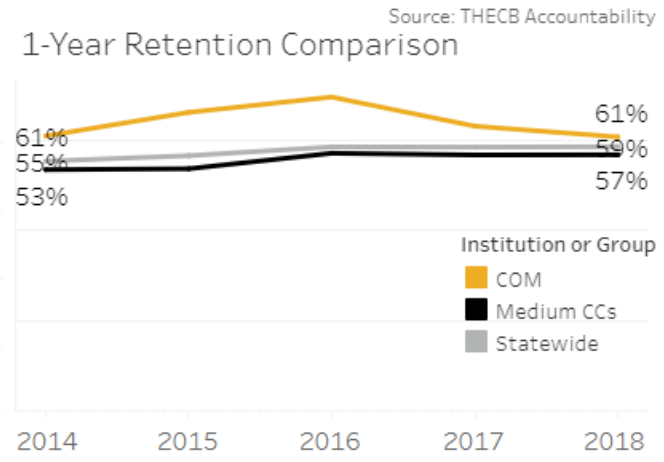
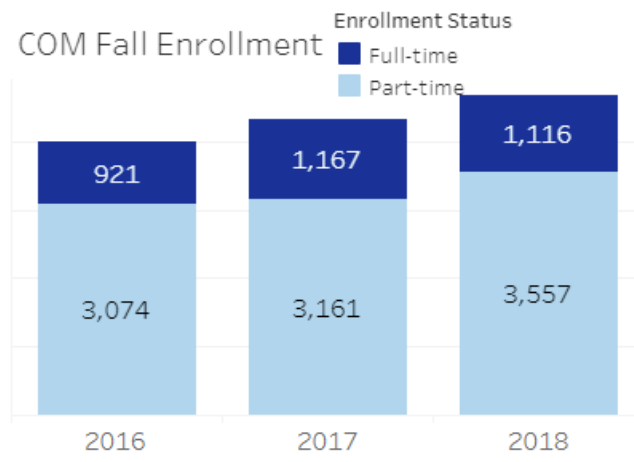
Other Useful Links

Contact

Teri Walker, PhD

Associate Vice President of Planning, Effectiveness, Analytics/Assessment.

Key Indicators



Providing Insights

- Data visualization eases interpretation
- Workload changes
- Stop being the middleman
- Informed campus -> Student Success

Questions and Discussion