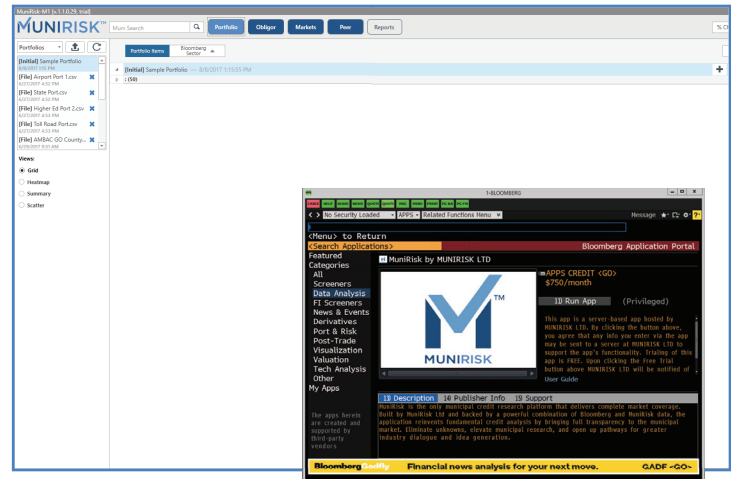



UPLOADING PORTFOLIOS & WATCH LISTS

Run the Application

1. Run **APPS CREDIT <GO>** on your Bloomberg Terminal®.
2. Click Run App on the Storefront screen.
3. Once the application has loaded **A**, you can set up your workspace and begin credit analysis on a portfolio or a watch list.

A

Upload a Portfolio

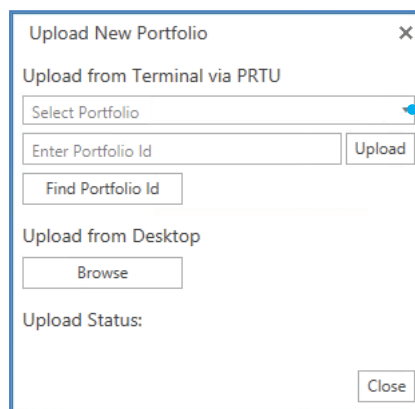
Click  to upload a portfolio or watch list.

Import from PORT

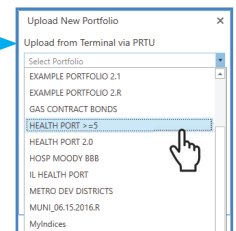
Select a portfolio via PRTU or find / input a portfolio ID. **C**

Upload from Desktop

You can also upload a security list (Excel or CSV file) from your desktop. Click **Browse** **C** and follow the prompts. **D** depicts how files should be formatted.


C

Dropdown menu for selecting a portfolio.



Run a Portfolio

Once uploaded, the portfolio appears timestamped in the Portfolio List. **A** Remove a portfolio by clicking X.

Click  to run a list and pull in data.

Use the **Grid View** to begin portfolio-level analysis, or try **Heatmap**, **Summary** or **Scatter Plot Views**.

D

	A	B	C
1	CUSIP	Weight	Position
2	717817QQ6	0.01421484	491700
3	167593RG9	0.0130151	450200
4	646039VP9	0.0104566	361700
5	117569GN	0.01060693	366900
6	41981TFR9	0.0019196	66400
7	389532FW	0.01322614	457500
8	493230MN	0.0101993	352800
9	678331DD8	0.01376096	476000
10	72202RAX	0.0017895	61900
11	75845HKN	0.01309893	453100
12	735000RD5	0.01073702	371400
13	79739GBY1	0.0104248	360600

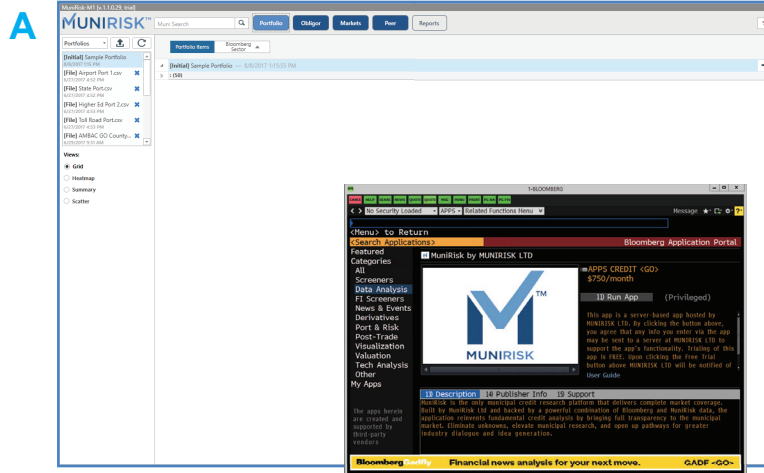
> For a portfolio or watch list, Excel or CSV file must include CUSIPs or ISINs and positions and/or weights in the first three columns respectively.

Note: You do not need both weight and position to view your portfolio; however, you will require weight in order to compare two portfolios (see Summary View).

SEARCHING FOR A SINGLE SECURITY

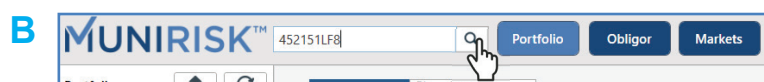
Run the Application

1. Run **APPS CREDIT <GO>** on your Bloomberg Terminal®.
2. Click Run App on the Storefront screen.
3. Once the application has loaded **A**, you can now search for a single security.



Enter a Security Identifier

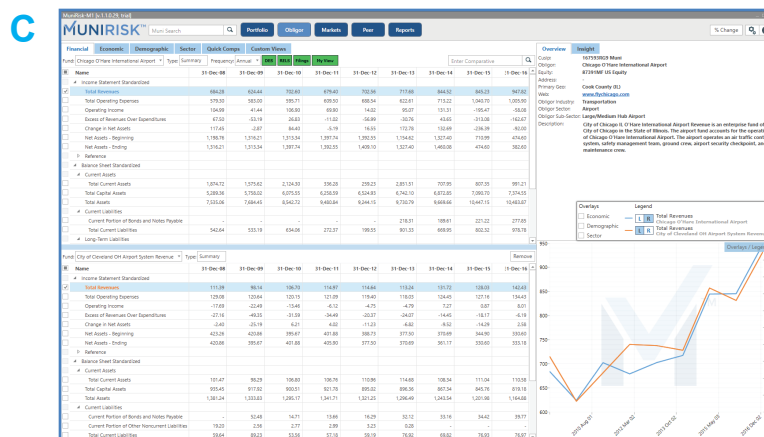
Use the search field in the fixed navigation bar next to the MuniRisk™ logo to look up a single CUSIP or ISIN. **B** Click the search button.



Begin Credit Analysis

The application will immediately jump you to the **Obligor View C** where you can access full financial, economic, demographic and sector data on the obligor related to that CUSIP.

From there, move into **Markets View** to compare credit fundamentals to market performance. Or run a credit report in **Reports View**.



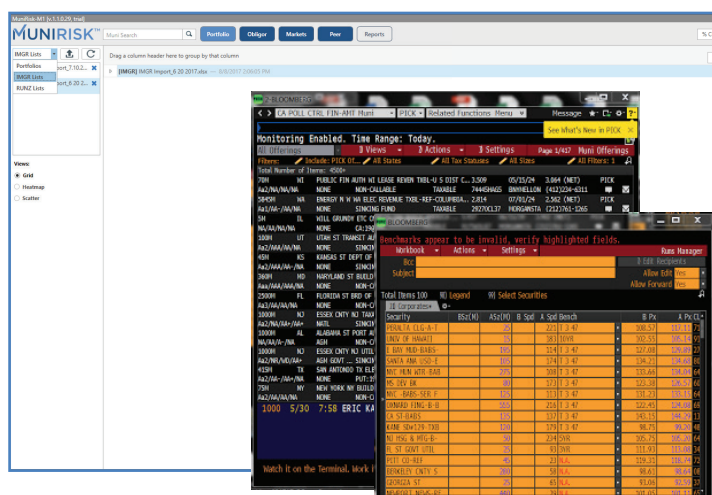
UPLOADING BID LISTS & OFFER LISTS FROM RUNZ

Run the Application

1. Run **APPS CREDIT <GO>** on your Bloomberg Terminal®.

2. Click Run App on the Storefront screen.

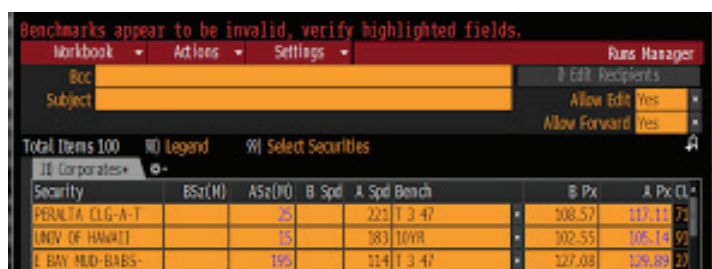
3. Once the app has loaded **A**, select RUNZ lists from the dropdown. Now, you're ready to set up your workspace to begin analysis of a bid list or offer list.

A

Export to Excel


In RUNZ Manager, click Settings dropdown and pull in any dealer-specific fields* (e.g., ask size, bid size, bid spread, benchmark). **B**

Click Action dropdown and select *Export to Excel -- All Columns*. **B** Save to your desktop as an Excel file. **C**

B

> *Note: other non-dealer-specific reference data, e.g., last trade date, last trade price, ratings, will automatically be pulled in to your workspace.

Upload from Desktop

Upload the bid or offer list from your desktop. Click the upload button  and select the file. **D**


C

	A	B	C	D	E	F	G	H	I
1	Security	BSz	ASz	B Spd	A Spd	Bench	B Px	A Px	CUSIP
2	IL ST TXB-PENSION	30	373	10YR			89.59	90.59	452151LF8
3	CHICAGO-B-REF-TXBL		1190	430	T 3 47		90.17	90.67	167486SD2
4	CHICAGO-REF-B		1535	424	T 3 47		80.9	81.93	167486PG8
5	RIVERSIDE ELEC-BABS		1950	154	T 3 47		145.45	146.18	788874SG5

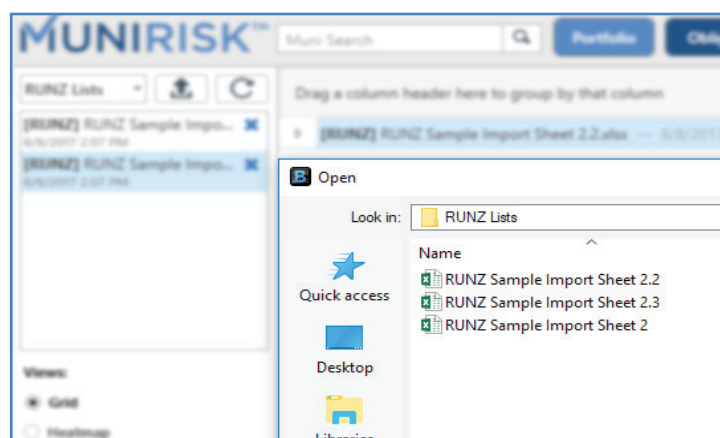
> Example offer list above. A bid or offer list must include CUSIPs (or ISINs). Per Bloomberg limitations, there is a maximum number of columns (30) that you can export at a time.

Run a Bid List

Once uploaded, the bid list appears timestamped in the RUNZ List. **A** Remove a list by clicking X.

Click  to run a list and pull in data.

Move into **Scatter Plot** to begin analyzing bids/offers.

D

UPLOADING BID LISTS & OFFER LISTS FROM IMGR

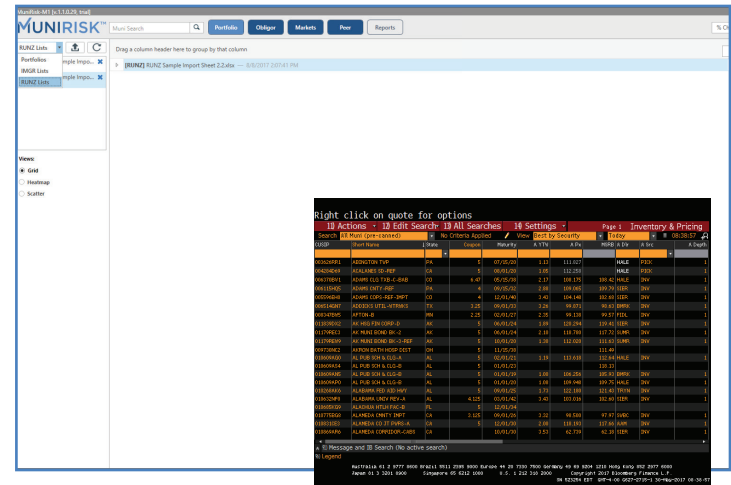
Run the Application

1. Run **APPS CREDIT <GO>** on your Bloomberg Terminal®.

2. Click Run App on the Storefront screen.

3. Once the app has loaded **A**, select IMGR lists from the dropdown. Now, you're ready to set up your workspace to begin analysis of a bid list or offer list.

4. Run IMGR on the Terminal®.

A

Export to Excel

In IMGR, click Edit Search and select Edit Columns to make sure CUSIP / ISIN appears in the export. **B**


Click Action dropdown and select *Export to Excel -- All Columns*. **B** Save to your desktop as an Excel file. **C**

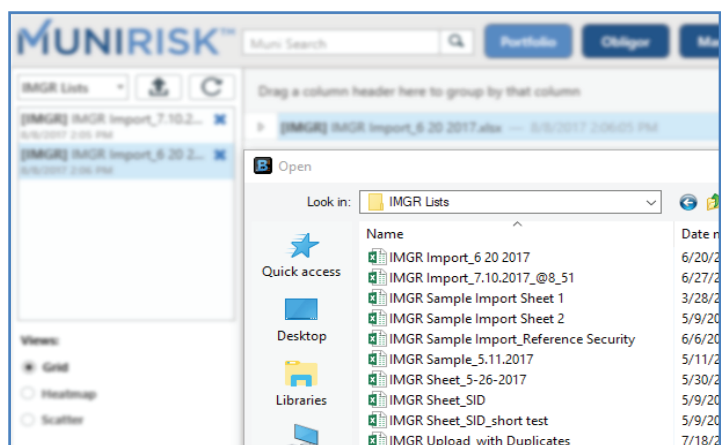
B**C**

	A	B	C	D	E	F	G	H	I
1	Security	BSz	ASz	B Spd	A Spd	Bench	B Px	A Px	CUSIP
2	IL ST TXB-PENSION		30		373	10YR	89.59	90.59	452151LF8
3	CHICAGO-B-REF-TXBL		1190		430	T 3 47	90.17	90.67	167486SD2
4	CHICAGO-REF-B		1535		424	T 3 47	80.9	81.93	167486PG8
5	RIVERSIDE ELEC-BABS		1950		154	T 3 47	145.45	146.18	768874SG5
6	ST LOUIS IDA-LIBR-A1		50		146	3YR	110.38	111.52	79164TAS1
7	CENT WEBER SWR-C-BABS		110		71	3YR	110.8	111.53	155888CL2

> Example offer list above. A bid or offer list must include CUSIPs (or ISINs). Per Bloomberg limitations, there is a maximum number of columns (30) that you can export at a time.


Upload from Desktop

Upload the bid or offer list from your desktop. Click the upload button  and select the file. **D**

D

Run a Bid List

Once uploaded, the bid list appears timestamped in the IMGR List. **A** Remove a list by clicking X.

Click  to run a list and pull in data. Depending on list size, this may take ~60 seconds.

Move into **Scatter Plot** to begin analyzing bids/offers.

GETTING TO KNOW PORTFOLIO VIEW

Conduct portfolio-level credit surveillance, risk monitoring and analysis via four workspaces:

Grid View

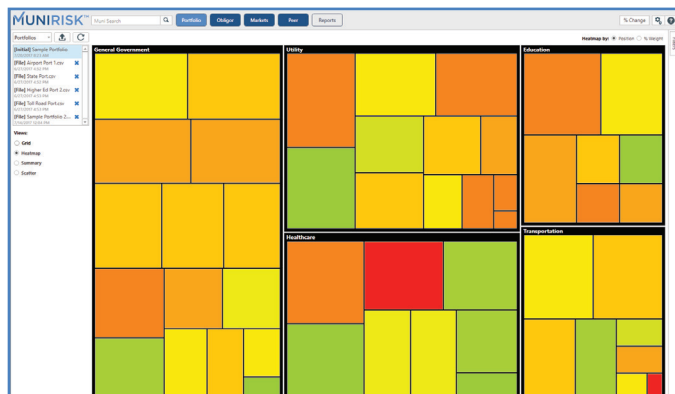
Analyze and track specific risk metrics associated with your portfolio or watch list in a simple grid view.

CUSIP	Position	Weight	Full Name	Rating	Risk Metrics
1000000000000000000	100.000000	100.000000	US GOVERNMENT BOND	AAA	0.000000
1000000000000000000	100.000000	100.000000	US GOVERNMENT BOND	AAA	0.000000
1000000000000000000	100.000000	100.000000	US GOVERNMENT BOND	AAA	0.000000

Jump to **Obligor View** for single security analysis by clicking a CUSIP. For further details, see *Portfolio View: Grid View User Guide*.

Heatmap View

Get a quick and customizable visual assessment of layered risk.



Jump to **Obligor View** for single security analysis by clicking a square. For further details, see *Portfolio View: Heatmap View User Guide*.

Summary View

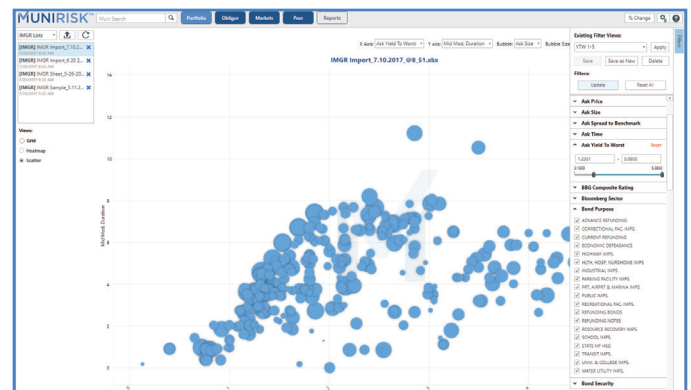
Run a summary report on your portfolio or watch lists (or compare portfolio vs. index) in a variety of formats.



For further details, see *Portfolio View: Summary View User Guide*.

Scatter Plot View

Access an extremely efficient visual and/or filter-based representation of relative value analysis and targeted layered risk analysis.



For further details, see *Portfolio View: Scatter Plot User Guide*.

PURPOSE

Analyze and track specific risk metrics associated with your portfolio or watch list in a simple grid view. Accessible in Portfolio View.

HOW TO USE THIS FEATURE

- Add/remove columns by clicking the Columns button. **A**
- Customize your view by dragging/dropping column headers in your preferred order.
- Stratify your portfolio by grouping criteria. Drag/drop one or more column headers to Portfolio Items Bar. **B**
- Sort columns in ascending/descending order within groupings **C** by clicking on column headers.
- Click on a CUSIP to jump to the **Obligor View** and begin deep dive analysis. **D**
- Toggle to Heatmap, Summary or Scatter Plot Views for further portfolio-level analysis. **E**
- Click the Filters button to drill into credits with specific attributes **F**, e.g., set a minimum and maximum for e.g., Days Cash on Hand. See the Managing Filters User Guide for more details on filters.

QUICK TIPS

Add a Security to the Grid

Click the plus button (not pictured), enter CUSIP and % weight. **A**

Search for a Single Security

Use the Search Bar on the top left to look up a single CUSIP as an alternative to uploading a portfolio. **F**

View Security Master Details

The application offers multiple credit metrics to organize your view by. For full security master details, click the Columns button or see our Data Guide at www.munirisk.com/application-user-guides.

Another Way to Columns Menu

While under the Settings Menu, you'll see an alternate way to access columns visibility for the Grid View.

The screenshot displays the MUNIRISK application interface in the Portfolio View: Grid View. The top navigation bar includes tabs for Portfolio, Obligor, Markets, Peer, and Reports. A search bar is located at the top left. The main content area shows a table of portfolio items with columns for CUSIP, Position, % Weight, Full Name, Bloomberg Sector, Obligor Name, Next Call Date, Primary State, S&P Rating, BBG Composite Rating, Last Price, Net YTW, Net YTM, Mid Mod. Duration, and Bond Security. A 'Columns' button (A) is in the top right corner. A 'Filters' button (F) is on the far right. A 'Portfolio Columns Visibility' dialog (A) is open, showing a list of columns with checkboxes for visibility. A 'Views' panel (E) on the left shows 'Grid' selected. A 'Higher Education' section (D) is also visible.

PURPOSE

Use smart filters to make your analysis more efficient. The filtering options offer countless ways to slice-and-dice data. They can be found in both the Grid View and Scatter Plot View.

HOW TO USE THIS FEATURE

- In Grid View, click the pop-out Filters menu **A** to quickly narrow your view to securities that fit specific attributes.

CUSIP	Position	Full Name	Bloomberg Sector	Obligor Name	Next Call Date	Primary Rating	S&P Rating	Moody's Rating	Fitch Rating	BBG Composite Rating	Credit Enhancement	Last Price
167938029	Muni	CHTEN 5 1/1/2033, 167938029	Airport	Chicago O'Hare International Airport	1/1/2033	IL	A	A	A	A	-	\$116.2
167938029	Muni	CHTEN 5 1/1/2033, 167938029	Airport	Chicago O'Hare International Airport	1/1/2033	IL	A	A	A	A	-	\$116.2
167938029	Muni	CHTEN 5 1/1/2033, 167938029	Airport	Chicago O'Hare International Airport	1/1/2033	IL	A	A	A	A	-	\$116.2

A

Existing Filter Views:

Save Save as New Delete

Filters:

Update Reset All

- % Weight
- BBG Composite Rating
- Bloomberg Sector
- Bond Purpose
- Bond Security
- Call Indicator
- Coupon Frequency
- Coupon Rate
- Coupon Type
- Credit Enhancement
- CUSIP
- Date of Last Price
- DCOH 2014
- DCOH 2015
- DCOH 2016
- Include Empty Values

- In Scatter Plot View, click the pop-out Filters menu **B** to quickly isolate and identify attractive offerings or outliers for further research.

B

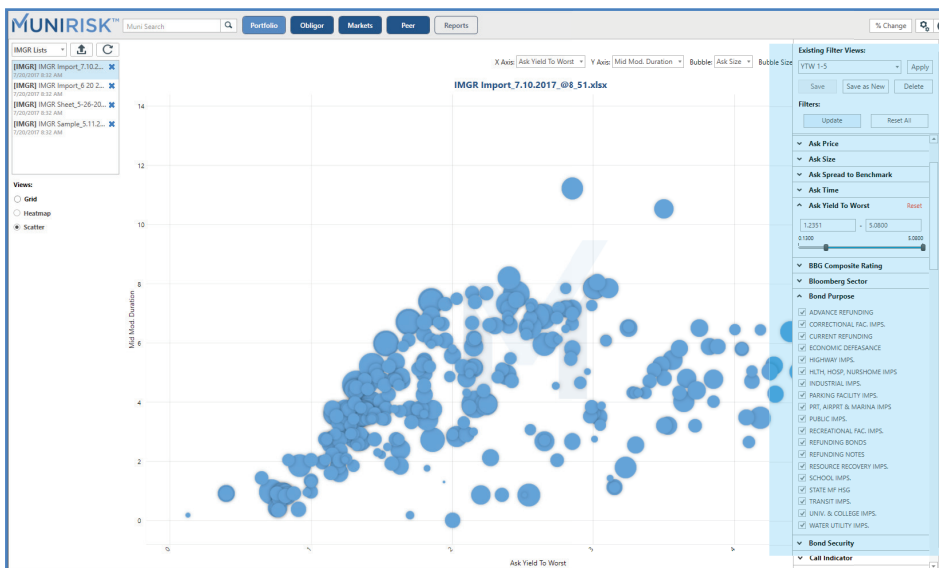
Existing Filter Views:

Save Save as New Delete

Filters:

Update Reset All

- Ask Price
- Ask Size
- Ask Spread to Benchmark
- Ask Time
- Ask Yield To Worst
- BBG Composite Rating
- Bloomberg Sector
- Bond Purpose
- ADVANCE REFUNDING




PURPOSE

Run a summary report on your portfolio or watch lists (or compare portfolio vs. index) in a variety of formats, including tables, bar charts / histograms and pie charts.

HOW TO USE THIS FEATURE

- From the Grid or Heatmap View, select Summary **A** to populate the report of the portfolio or bulk security list you are currently running (depicted below by blue bars).
- Select multiple criteria to group by (either via the Summary Views shortcut button or the Settings Menu). **B** Both the table and the chart will update based on your selections.

Compare your portfolio to another in the form of exposure breakdowns.

- Note: the comparative portfolio must already be saved to the Portfolios List **C**. You must run the comparative portfolio  first before it can appear in the chart.
- Click Comparative Portfolios **D** to select from your list of portfolios. The second portfolio will appear in the bar chart (depicted below by orange bars). Click Portfolio Summary Report **F** to download a PDF report.
- Toggle to Grid, Heatmap or Scatter Plot Views for further portfolio-level analysis. **A**

QUICK TIPS

Compare by Weight

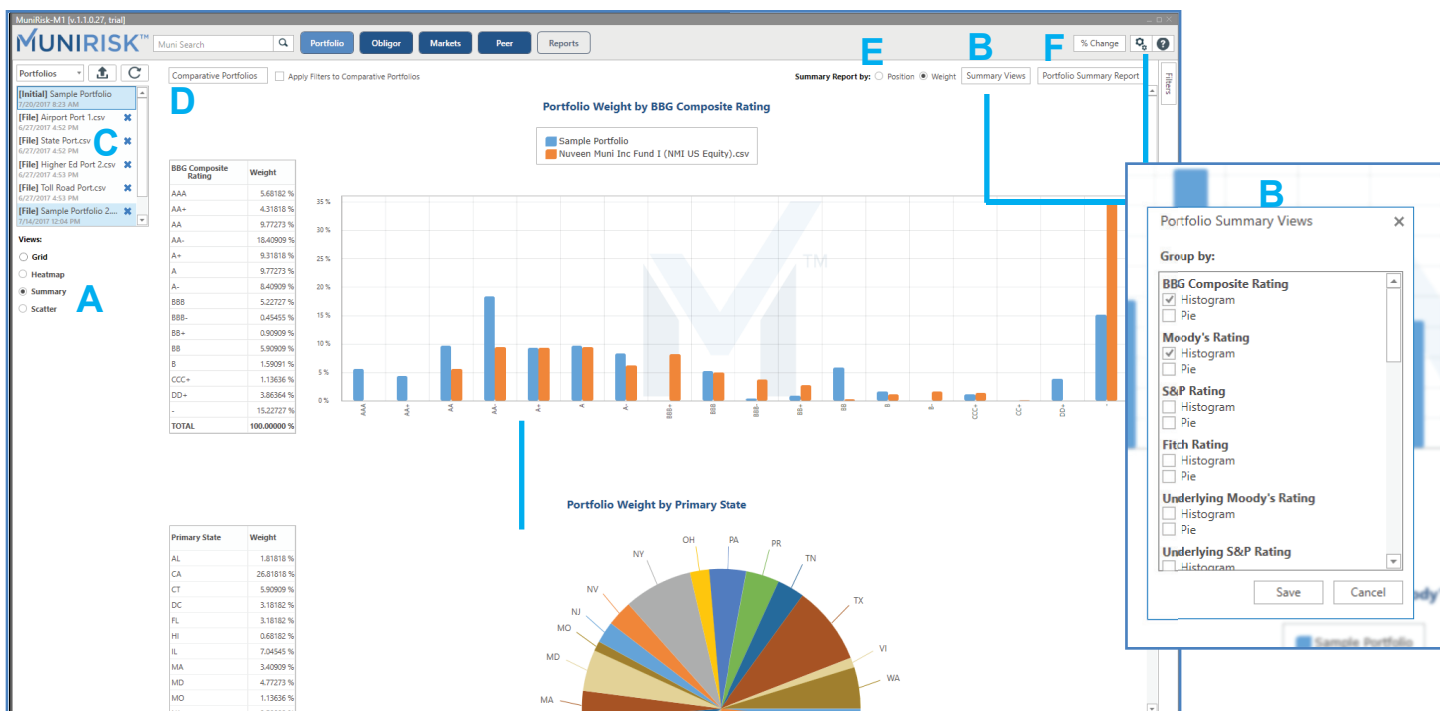
Remember to set comparative portfolios by weight. **E**

Benchmark Your Portfolio

Upload an index or mutual fund to conduct a quick assessment of your portfolio or target portfolio.

Absolute Value or % Change

Throughout the application, you can elect to view data in absolute value terms or by percentage. Simply click the % Change button on the top right of the screen. Click again to switch back to Absolute Value. **F**



PURPOSE

Select the Heatmap View to get a quick and customizable visual assessment of layered risk. [A](#)

HOW TO USE THIS FEATURE

- Each square represents a position in your portfolio.
- Square size indicates % weight or position size of the portfolio.
- Color-coding functionality lets users visualize risk quickly. Color denotes level of risk: red=high, green=low.
- Customize your view using the Settings Menu. [B](#) Group securities by sector, rating, geographic location or other key risk buckets.
- Click on any square to jump to the **Obligor View** and begin deep dive credit analysis. [C](#)
- Toggle to Grid, Summary or Scatter Plot Views for further portfolio-level analysis. [A](#)

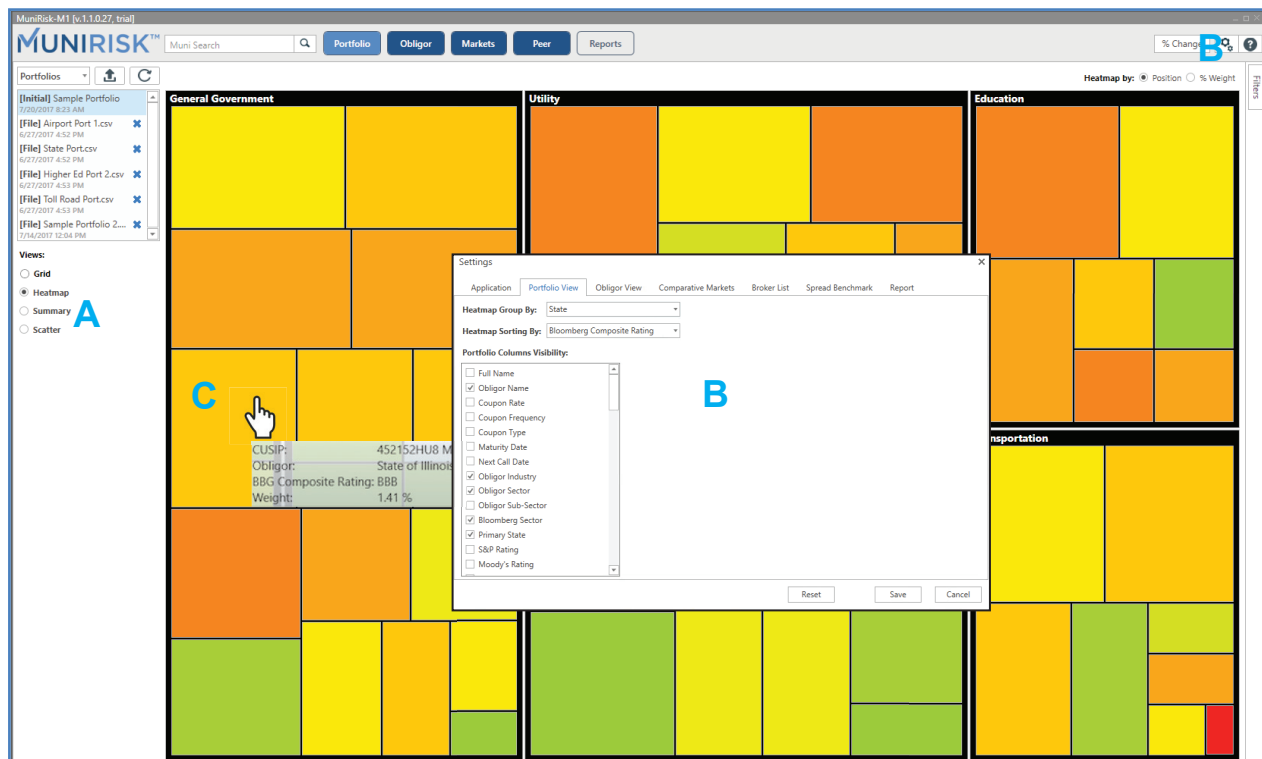
QUICK TIPS

Access Settings Menu to Customize the Heatmap

Click the gear button at the top right of the screen and select the Portfolio View tab. Here, you can select grouping and sorting for the Heatmap. Click OK to apply changes. [B](#)

Hover Over Squares for More Info

Mouse over any square for a brief overview of that security. [C](#)



PURPOSE

Select Scatter Plot View to quickly isolate and identify attractive offerings. Conduct relative value analysis on offerings or pinpoint outliers in portfolio holdings to maximize returns. [A](#)

HOW TO USE THIS FEATURE

- Select Portfolio, RUNZ or IMGR Views from the dropdown. Run a list by clicking [C](#). [B](#)
- Select Scatter Plot. [A](#)
- Set the X and Y axes. [C](#)
- Click the Filters button. [D](#) Using the pop-out menu, filter attributes, use the slider to set minimum and maximum for e.g., Ask Yield to Worst. [E](#)
- Set bubble size [C](#) and adjust your view to your liking using the smart filters. See separate User Guide for Managing Filters.
- Toggle to Grid, Heatmap or Summary Views for further portfolio-level analysis. [A](#)

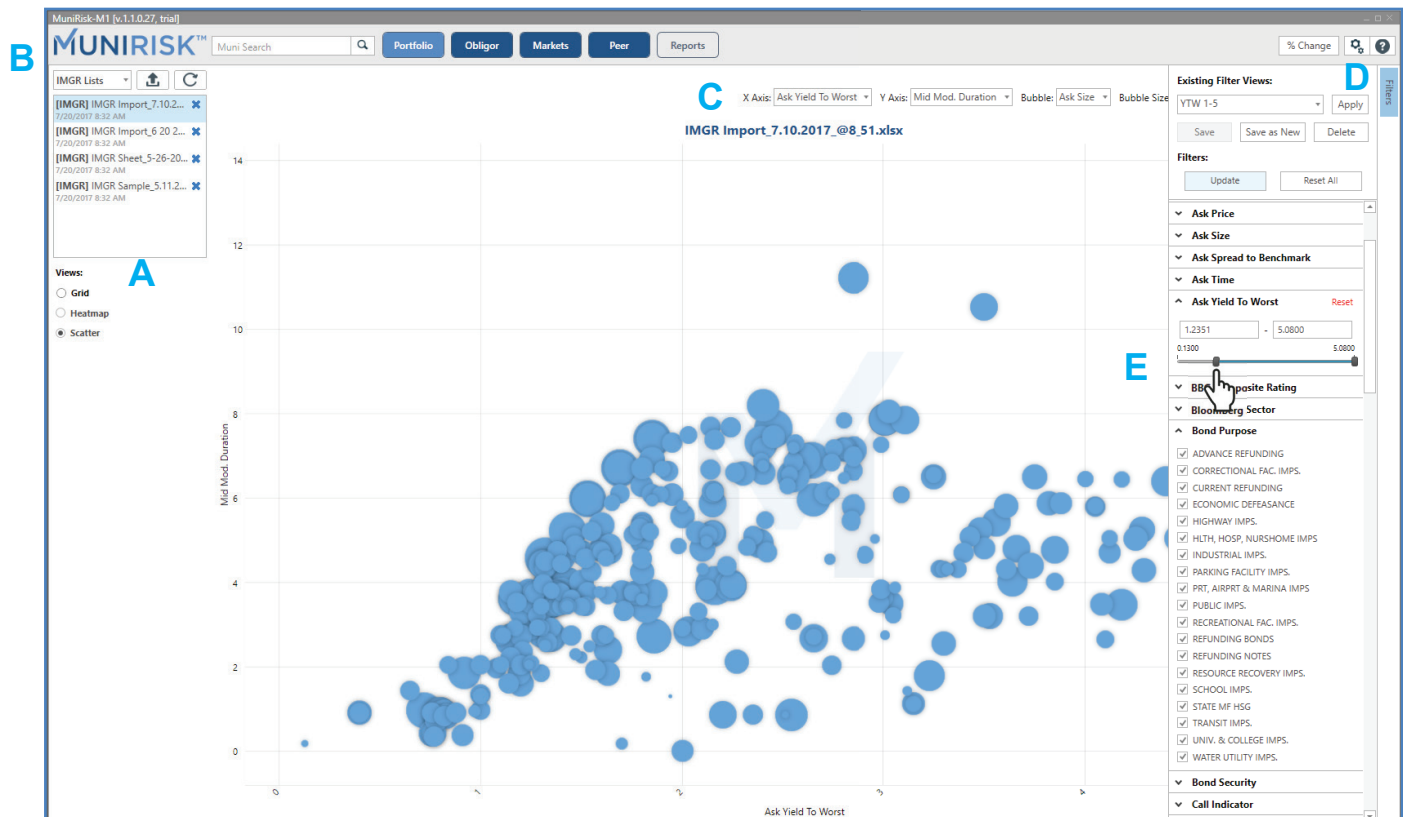
QUICK TIPS

Filters

Smart filters [D](#) are also accessible in Grid View. Drill down to the attributes you care about most for extremely efficient analysis.

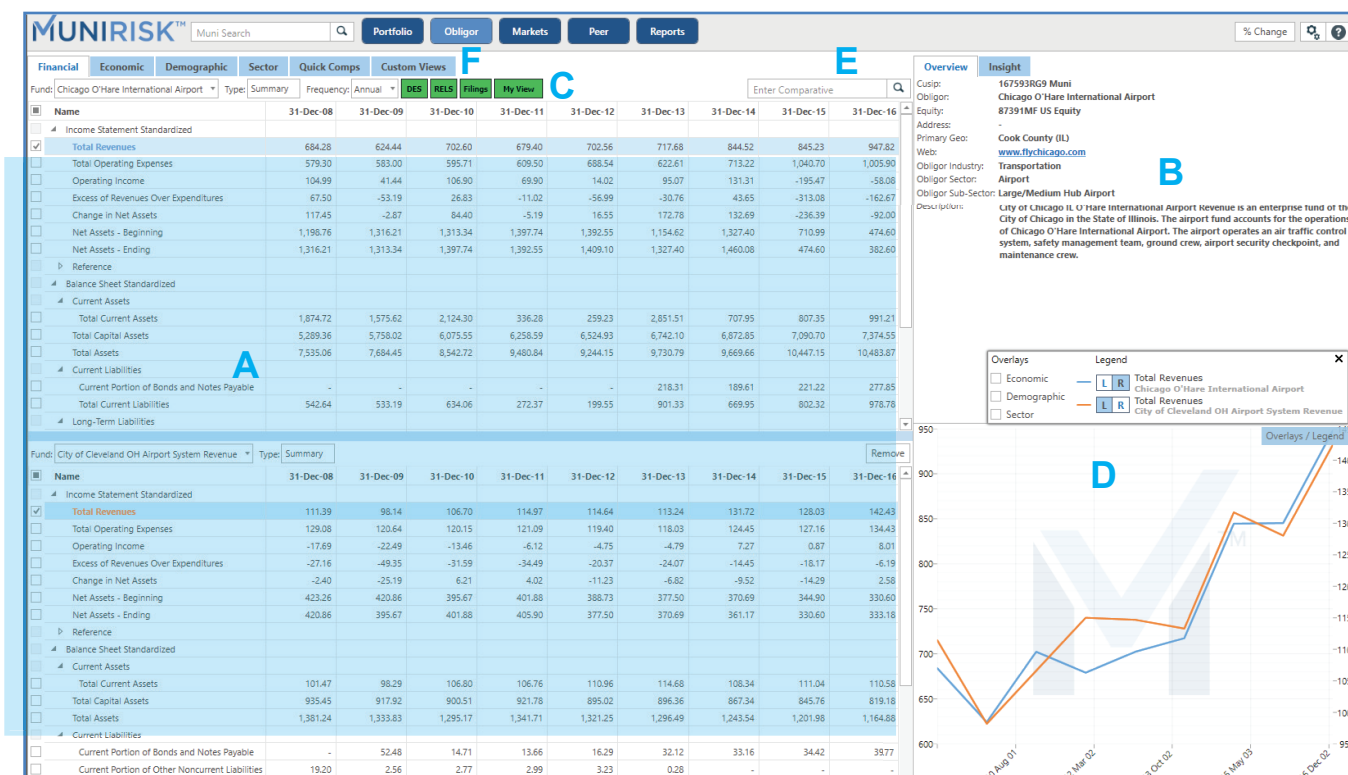
Assessing an Offer List

You can now upload bid or offering lists as an Excel file (export from IMGR or the RUNZ manager). Click the up-arrow to upload a list and follow the prompts. See the Getting Started - IMGR or Getting Started - RUNZ User Guides for more details.



GETTING TO KNOW OBLIGOR VIEW

Analyze a single security. Pull from hundreds of data series to assess credit fundamentals and conduct comparative analysis in Obligor View.



Understanding the Workspace

DATA A

Access financial, economic, demographic and sector-level data for over 48,000 obligors. Learn how each tab works using the full suite of Obligor View User Guides.

OVERVIEWS B

View obligor-level descriptions. *(Insights coming soon)*

TERMINAL CONNECT C

Click the colored buttons to view obligor disclosures and additional analytics on the Terminal®. Input your own insights into Notes.

CHARTING D

Use the charting tools to slice-and-dice data and visualize trends. Overlay data points to show relationships across financial, economic, demographic, and/or sector data.

COMPARATIVE ANALYSIS E

Run comparative analytics via One-on-One or Peer Group functionality. Add a second obligor by entering its CUSIP in the Comparative Search Bar or click the Quick Comps tab for peer analysis.

CUSTOM VIEWS F

Build, save and share selected financial and economic data series related to an obligor for a customized, efficient view of the data that matter most to you.

EXAMINE FINANCIAL DATA IN OBLIGOR VIEW

How to View Financials

Access financial statements for over 48,000 obligors and 127,000+ funds. [A](#)

Select exact fund name from list of options.

- Choose from multiple statement types.
 - View either as reported or standardized.
 - Select period – annual, quarterly or both.
 - Check / uncheck data points to chart them.
 - Change chart axes, change line color and overlay other metrics using the Overlays / Legend button.
- See Charts User Guide for additional details.

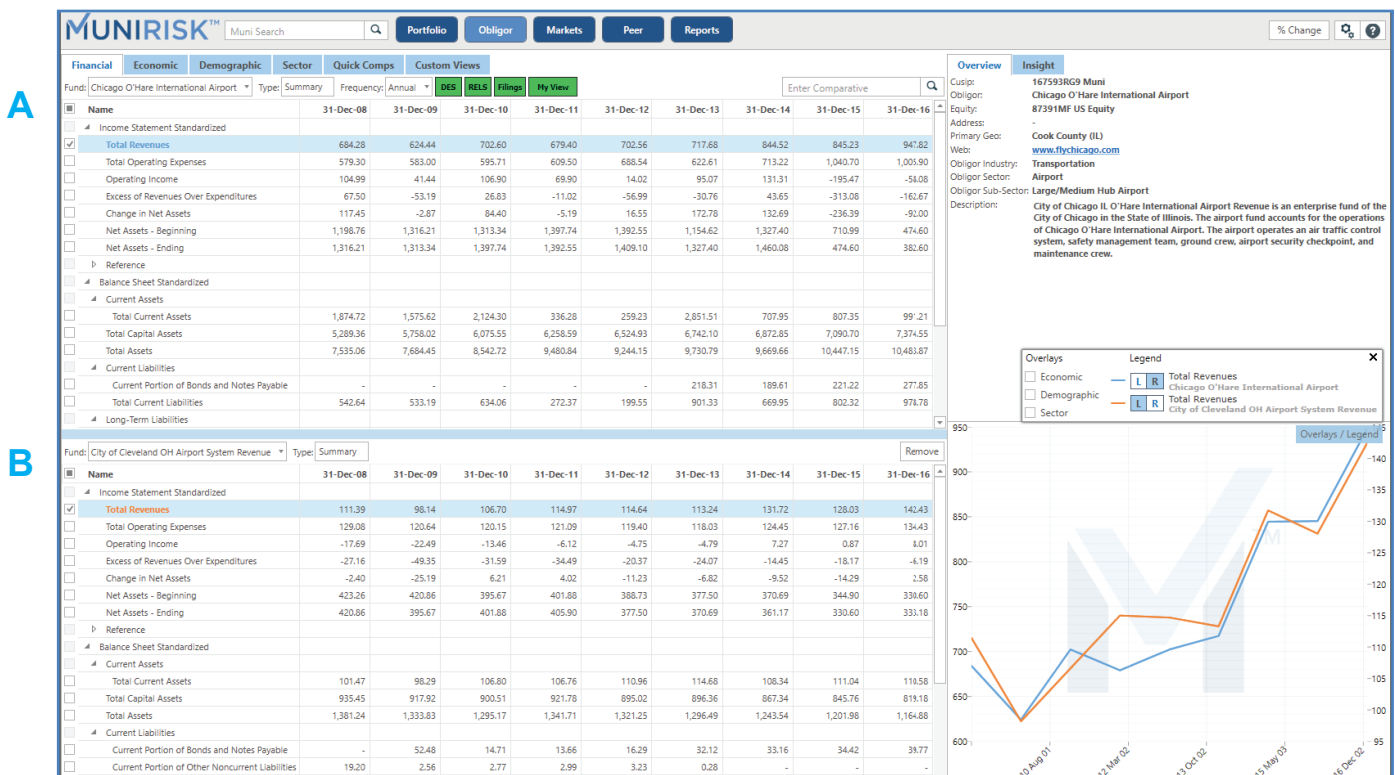
QUICK TIP

Financial Data Coverage

Data includes income statements, balance sheets, cash flow statements, pension fund statements, debt structure, endowment data.

Custom View

Create a custom view of your preferred data series using the Custom Views Tab. See separate User Guide for details.



Run Quick Peer Analysis

Drill into credit fundamentals of one obligor, compare it to a peer, or pull up similar entities.

- For one-on-one obligor comparison, plug in a CUSIP to the Comparative Search Bar (search field next to My View key). Credit data populates below the original obligor. [B](#)
- Check / uncheck data points. Click the Overlays / Legend button on top of the chart to change axes and line colors.

EXAMINE FINANCIAL DATA IN OBLIGOR VIEW, CONT'D

Run Quick Peer Analysis, Cont'd

For a multi-peer view, click **Quick Comps**. Comparatives are listed below the original obligor with full credit information and reference data provided. [C](#)

- Change Statement Type, View (% or Absolute Value) and/or Period using the dropdown menus. Click GO to apply changes.
- Add an obligor using the *Add Obligor* button along the right side of the screen (not pictured). Delete obligors from the grid by using the X buttons.
- Modify columns by clicking the *Columns* button along the right side of the screen (not pictured) and check / uncheck criteria to customize your workspace.

MUNIRISK™

Muni Search

Q

Portfolio

Obligor

Markets

Peer

Reports

Financial

Economic

Demographic

Sector

Quick Comps

Custom Views

Primary Obligor Name:

Chicago O'Hare International Airport

Type:

General

Obligor Ticker:

87391MF US Equity

View:

Absolute

Comp Name:

Large and Medium Hub Airports in United States

Period:

2015

GO

Name	Obligor Ticker	State	Obligor Industry	Obligor Sector	Obligor SubSec
Chicago O'Hare International Airport	87391MF US Equity	IL	Transportation	Airport	Large/Medium Hub
Louis Armstrong New Orleans International Airport	✕ 76324MF US Equity	LA	Transportation	Airport	Large/Medium Hub
Omaha Airport Authority	✕ 27784MF US Equity	NE	Transportation	Airport	Large/Medium Hub
Indianapolis Airport Authority	✕ 16290Z US Equity	IN	Transportation	Airport	Large/Medium Hub
San Diego County Regional Airport Authority	✕ 19983MF US Equity	CA	Transportation	Airport	Large/Medium Hub
Dallas/Fort Worth International Airport	✕ 42775MF US Equity	TX	Transportation	Airport	Large/Medium Hub
Norfolk Airport Authority/VA	✕ 43943MF US Equity	VA	Transportation	Airport	Large/Medium Hub
Burbank-Glendale-Pasadena Airport Authority	✕ 27071MF US Equity	CA	Transportation	Airport	Large/Medium Hub
Raleigh Durham Airport Authority	✕ 28515MF US Equity	NC	Transportation	Airport	Large/Medium Hub
San Francisco City & County Airport Comm-San Francisco International Airport	✕ 27231MF US Equity	CA	Transportation	Airport	Large/Medium Hub
Metropolitan Washington Airports Authority	✕ 4522Z US Equity	DC	Transportation	Airport	Large/Medium Hub
Rhode Island Airport Corp	✕ 3630163Z US Equity	RI	Transportation	Airport	Large/Medium Hub
Minneapolis-St Paul Metropolitan Airports Commission	✕ 22590Z US Equity	MN	Transportation	Airport	Large/Medium Hub
Metropolitan Nashville Airport Authority/The	✕ 27543MF US Equity	TN	Transportation	Airport	Large/Medium Hub
Memphis-Shelby County Airport Authority	✕ 27539MF US Equity	TN	Transportation	Airport	Large/Medium Hub
Louisville Regional Airport Authority	✕ 29614MF US Equity	KY	Transportation	Airport	Large/Medium Hub

QUICK TIPS

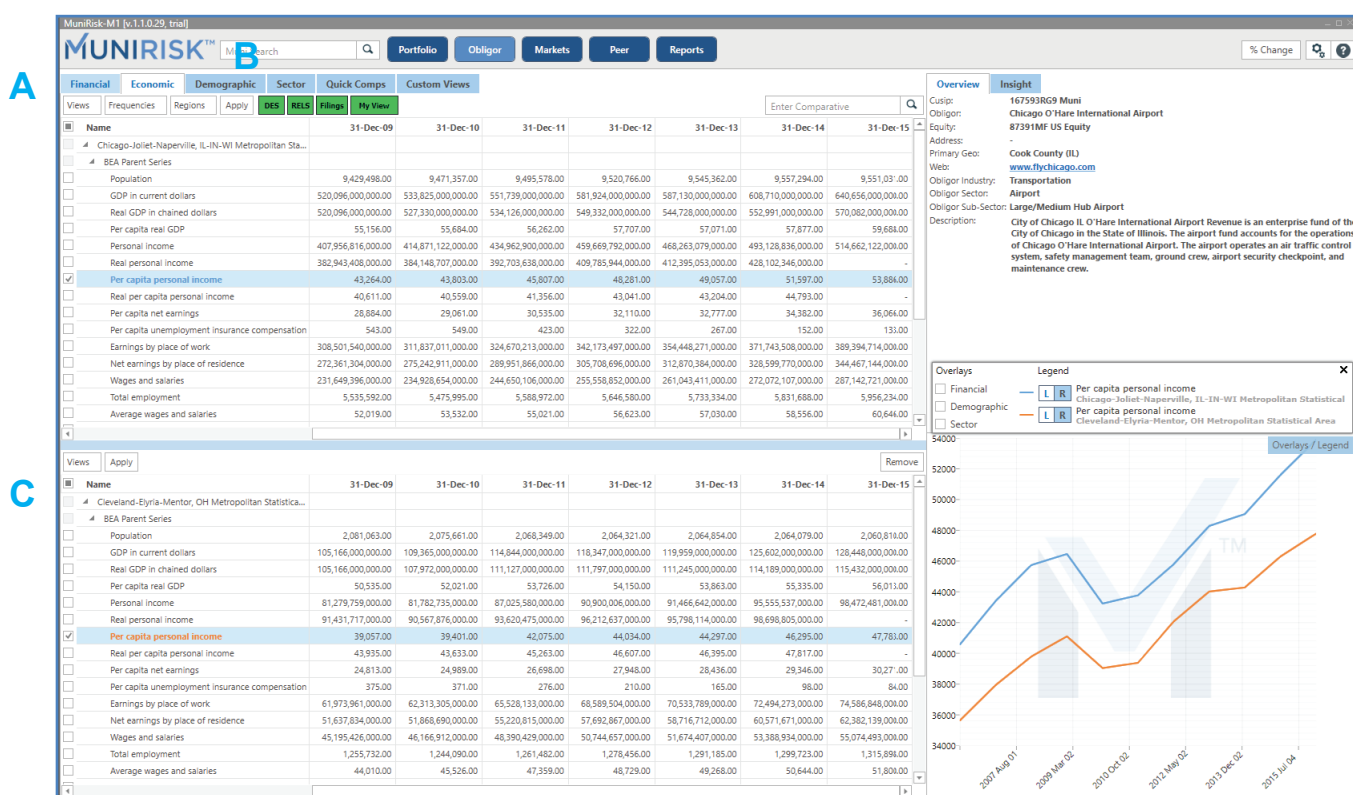
Download a Credit Report Click the **Reports View** button in the navigation bar.

Full Data Coverage Details See our Data Guide at www.munirisk.com/application-user-guides.

EXAMINE SOCIOECONOMIC DATA IN OBLIGOR VIEW**How to Track Socioeconomic Trends**

Pull up economic **A and demographic **B** time series data for local regions down to the city – and even school district – level. (Economic tab pictured below)**

- Data is geo-mapped to the selected obligor. Compare county / MSA / state / national performance.
- Filter by frequency – annual, quarterly or both.
- Check / uncheck data points to chart them. Overlay, e.g., financial data using the *Overlays / Legend* button above the chart. See Charts User Guide for additional details.

**Run Peer Analysis**

Drill into credit fundamentals of one obligor, compare it to a peer, or pull up similar entities.

- For one-on-one obligor comparison, plug in a CUSIP to the Comparative Search Bar (search field next to My View key). Credit data populates below the original obligor. **C**
- Check / uncheck data points. Click the *Overlays / Legend* button on top of the chart to change axes and line colors.

QUICK TIPS

Economic Data Coverage includes housing statistics, employment & labor statistics, wage data, income & earnings, GDP, inflation and much more.

Demographic Data Coverage includes household by type, marital status, school enrollment, educational attainment, employment status, civilian labor force, income and benefits, health insurance coverage, housing occupancy, sex & age, race, total housing units. For full details on our data coverage, visit www.munirisk.com/application-user-guides.

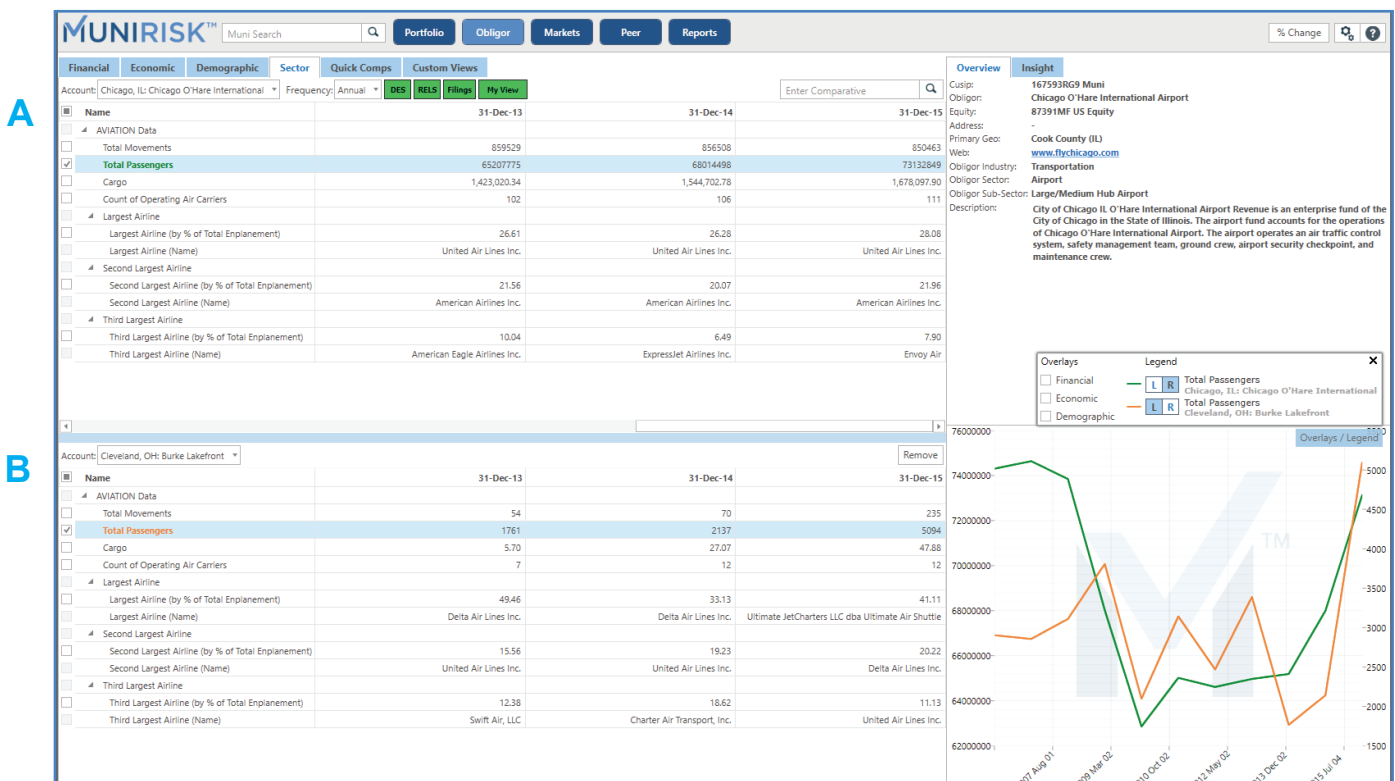
EXAMINE SECTOR DATA IN OBLIGOR VIEW

How to Track Sector-Specific Operational Metrics

- Select the exact account from the dropdown (issuers may have multiple). **A**
- Filter by frequency.
- Check / uncheck data points to chart them. Overlay, e.g., financial data using the Overlays / Legend button above the chart. See Charts User Guide for additional details.

QUICK TIP

Sector Data Coverage includes hospital & health systems, airports, higher ed, housing data, school districts. Also, within the Financial Tab's Statement Type dropdown, you can find additional operational data for utilities, hospitals, senior living, transportation, school districts pulled directly from CAFRs.



Run Peer Analysis

Drill into credit fundamentals of one obligor and compare it to a peer.

- For one-on-one obligor comparison, plug in a CUSIP to the Comparative Search Bar (search field next to My View key). Credit data populates below the original obligor. **B**
- Check / uncheck data points. Click the Overlays / Legend button on top of the chart to change axes and line colors.

HOW TO USE THE CHARTING TOOL

Slice-and-Dice Data & Visualize Trends

In **Obligor View**, check data points to chart them. Overlay data points to show relationships across financial, economic, demographic and/or sector data.

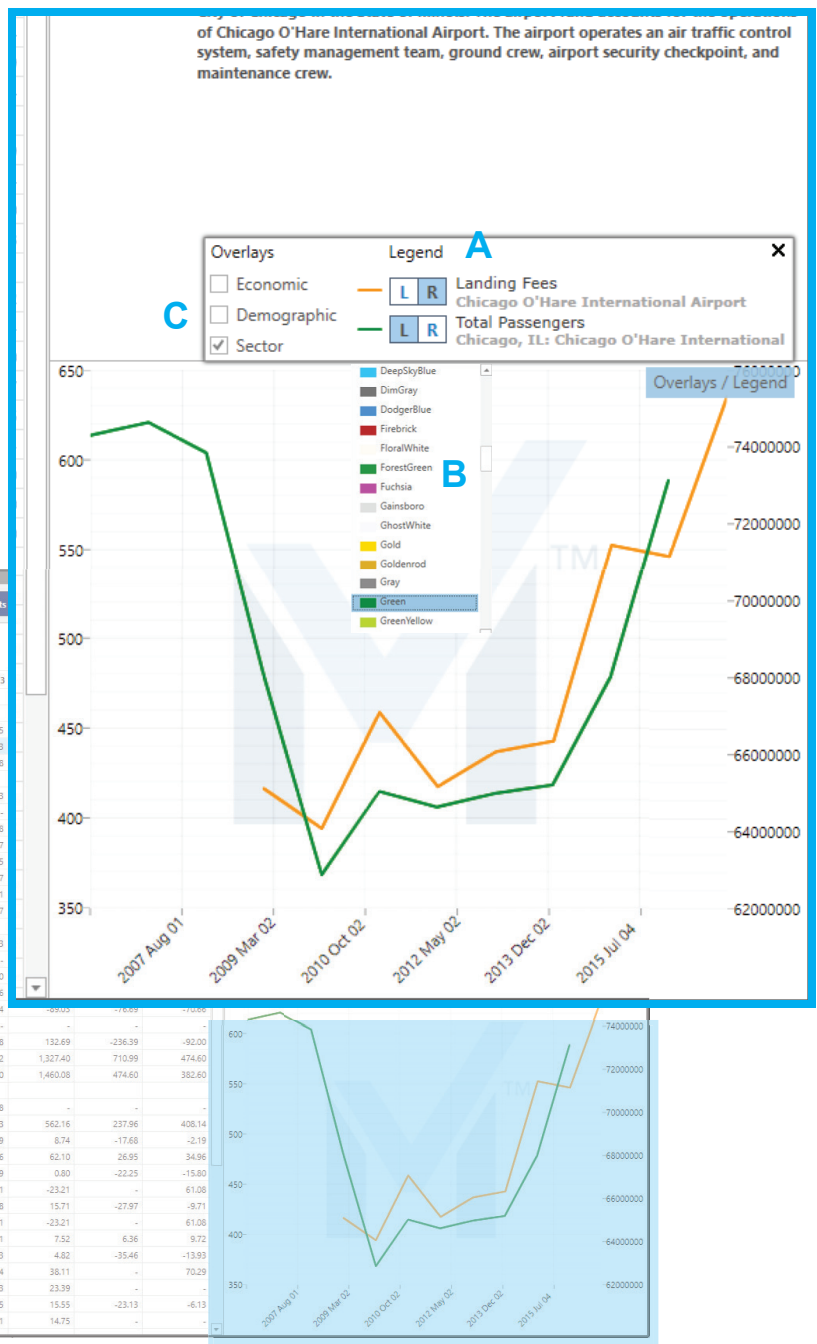
Click the Overlays / Legend button on the chart to:

- Change chart axes (click L or R). **A**
- Change line color (click the line next to L / R button for a color dropdown menu). **B**
- Overlay other metrics using the Overlays / Legend button **C**. Check off any of the Overlay options you prefer (while on, e.g., the Financials tab, you will see Economic, Demographic and Sector options).
- The last data selection(s) you made under other tab(s) will appear in the chart. To change a data point, navigate to the respective tab and select the right line item. Remember to deselect data points you no longer need.

MUNIRISK™ (v1.10.29, trial)							
Muni Search							
Portfolio Obligor Markets Peer Reports							
Financial Economic Demographic Sector Quick Comps Custom Views							
Fund: Chicago O'Hare International Airport							
Type	Income Statement	Frequency	Annual	DES	RELS	Filings	My View
Name	31-Dec-08	31-Dec-09	31-Dec-10	31-Dec-11	31-Dec-12	31-Dec-13	
Income Statement Standardized							
Revenues							
Facility Rental Revs	267.79	230.16	243.72	261.85	265.66	274.79	
Landing Fees	416.49	394.28	458.88	417.55	436.91	442.83	
Total Revenues	684.28	624.44	702.60	679.40	702.56	717.68	
Expenses							
Salaries and Employee Benefits	-	-	-	-	-	162.23	
Pension Expenses	-	-	-	-	-	-	
Maintenance & Repairs	100.34	82.52	85.45	94.52	88.79	85.48	
Contractual Services	61.51	54.77	57.98	65.30	74.31	81.07	
Depreciation and Amortization	150.79	176.72	185.08	178.45	216.76	196.35	
Other Operating Expenses	266.66	267.00	266.18	271.15	308.69	97.47	
Total Operating Expenses	579.30	583.00	595.71	609.50	688.54	622.81	
Operating Income	104.99	41.44	106.90	69.90	14.02	95.07	
Non-Operating							
Interest Expense	224.11	228.71	238.78	269.78	266.73	270.53	
Investment Income	-45.29	-12.78	-10.79	-26.01	-21.61	-	
Net Other Non-Operating (G/L)	-141.34	-121.31	-147.92	-162.85	-174.12	-144.70	
Excess of Revenues Over Expenditures	67.50	-53.19	26.63	-11.02	-56.99	-30.76	
Capital Contributions	-49.95	-50.32	-57.57	-59.74	-73.54	-203.54	
Other Adjustments	-	-	-	53.91	-	-	
Change in Net Assets	117.45	-2.87	84.40	-5.19	16.55	172.78	
Net Assets - Beginning	1,198.76	1,316.21	1,313.34	1,397.74	1,392.55	1,154.62	
Net Assets - Ending	1,316.21	1,313.34	1,397.74	1,392.55	1,409.10	1,327.40	
Income Statement Ratios							
Change in Net Assets - 3 Year Geometric Gr...	-	-	-	-	-	26.98	

QUICK TIP

Comparative Analysis Using Charts In **Obligor View**, add a second obligor for by entering its security identifier in the Comparative Search Bar. Chart data points as directed above.



BUILD, SAVE AND SHARE CUSTOM VIEWS

- In **Obligor View**, select the Custom Views Tab. **A** Click Edit to get started.

Name	31-Dec-11	31-Dec-12	31-Dec-13	31-Dec-14	31-Dec-15	31-Dec-16
Financial [Chicago O'Hare International Airport]						
Facility Rental Revs	261.85	265.66	274.75	292.09	299.18	312.59
Landing Fees	417.55	436.91	447.93	552.43	546.05	635.22

- The Custom Views Editor window will appear. To create a new view, click New **B** and give your view a name. (Saved views appear on the left. Click saved views to edit. Duplicate a view with Copy or delete a view altogether.)

Custom Views Editor

Custom Views

- Health Care View
- Higher Education View
- Local GO View (Cities and School Districts)
- Local GO View 1 (Ratios)
- Mike's view
- Monthly Employment Data
- Monthly Outlying State
- My HY View (Charter Schools)
- Per Capita Personal Income
- Personal Income
- Personal Income (sub-factors)
- RPP
- Senior Living Template
- State Pension View
- Test View To Check Settings
- Transportation View
- Utility Sector View (Verizon)

Selected Custom View

View Name: Local GO View (Cities and School Districts)

Available Series:

- Financial
 - GO (State/Local/School Dist/Dev Dist)
 - GO General Fund
 - Income Statement (STD)
 - Revenue
 - Expenses
 - Other Financing Sources & Uses
 - Change in Fund Balance
 - Balance Sheet (STD)
 - Key Reference Items
 - Key Ratios (STD)
 - GO Govt Wide Statement
 - GO Total Governmental Fund
 - Pension
 - Key Ratios (STD)
 - Key Reference Items
 - Income Statement (STD)
 - Balance Sheet (STD)
 - GO Debt Service Fund

Selected Series:

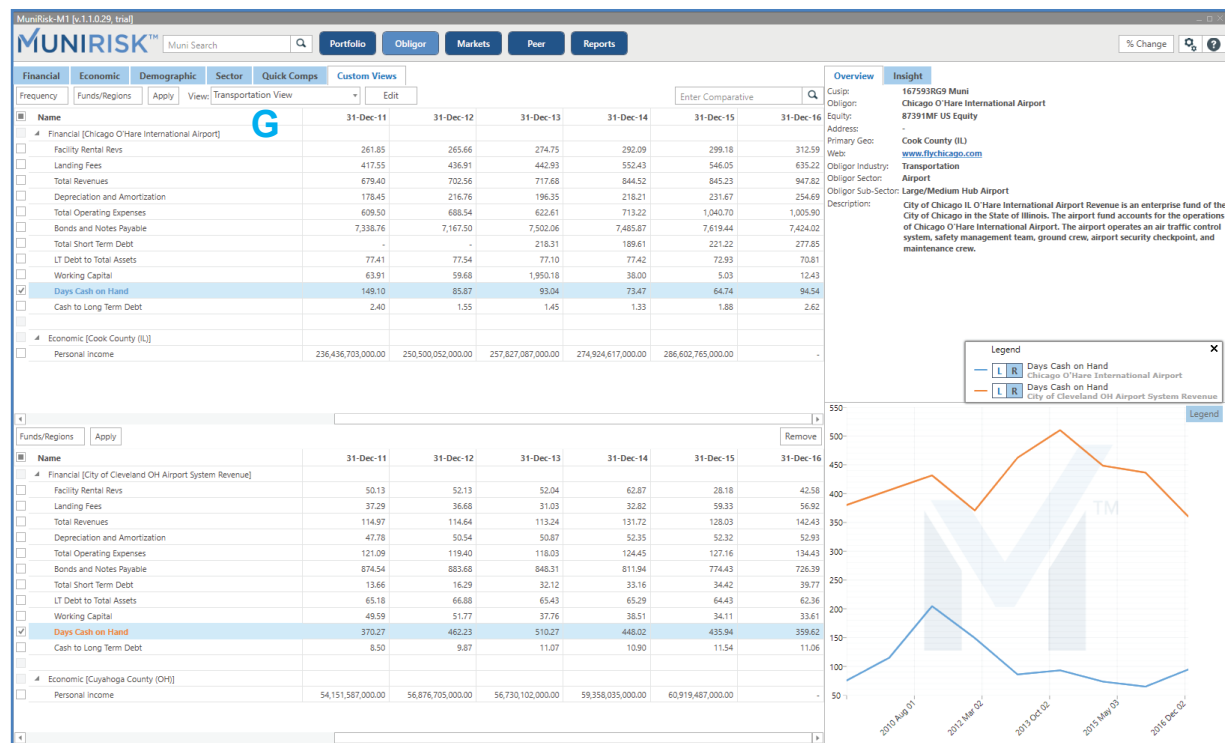
- Financial
 - Sales and Use Taxes GO.GEN.IS.STD.REVENUE.IS.SALES_AND_USE.TAX.REVS
 - Property Tax Revenues GO.GEN.IS.STD.REVENUE.IS.PROPERTY.TAX.REVENUES
 - Charges for Services GO.GEN.IS.STD.REVENUE.IS.GEN.FD.CHARGES_FOR_SERVICES
 - Total GF Revenues GO.GEN.IS.STD.REVENUE.IS.TOTAL_GEN.FD.REVENUES
 - Intergovernmental GO.GEN.IS.STD.REVENUE.IS.GEN.FD.INTERGOVTL.GRANTS
 - Net Change in Fund Balances GO.GEN.IS.STD.FUND.BALANCE.IS.NET.CHANGE.FUND.BALANCES
 - Fund balances - Ending GO.GEN.IS.STD.FUND.BALANCE.IS.GEN.FD.FUND.BALANCES_ENDING
 - Total Assets GO.GEN.BS.STD.ASSETS.BS.TOT.ASSET
 - Total Liabilities GO.GEN.BS.STD.LIABILITIES.BS.TOTAL.LIABILITIES
 - Property Tax Revenues GO.GOV.IS.STD.REVENUE.IS.PROPERTY.TAX.REVENUES
 - Charges for Services GO.GOV.IS.STD.REVENUE.IS.CHARGES_FOR_SERVICES
 - Total Operating Revenues GO.GOV.IS.STD.REVENUE.IS.SALES_AND_USE.TAX.REVS
 - Change in Net Assets GO.GOV.IS.STD.FUND.BALANCE.IS.CHANGE_IN_NET_ASSETS
 - Net Assets Ending GO.GOV.IS.STD.FUND.BALANCE.IS.NET_ASSETS_ENDING
 - Total Debt Outstanding GO.GOV.REF.STD.DEBT.BS.TOTAL.DEBT_OUTSTANDING
 - Total Debt Due Within One Year GO.GOV.REF.STD.DEBT.BS.TOTAL.DEBT_DUE_WITHIN_1_YEAR
 - Full Market Value - Current Year GO.GOV.REF.STD.AV.MV.BS.FULL.MARKET.VALUE
 - Full Market Value per Capita GO.GOV.REF.STD.AV.MV.BS.FULL.MARKET.VALUE_PER_CAPITA
 - Assessed Value - Current year GO.GOV.REF.STD.AV.MV.BS.ASSESSED.VALUE
 - Top 10 Taxpayers as % of AV GO.GOV.REF.STD.AV.MV.BS.TOP_10_TEN_TAXPYR_PERC_ASSD_VAL
 - Pension Funding Ratio GO.PEN.RATIOS.STD.PENSION_FUNDING_RATIO
 - Overfunded (underfunded) Pension GO.PEN.REF.STD.IS.OVER_UNDERFUND_PENSION_EXP
 - Fair Value of Plan Assets GO.PEN.REF.STD.IS.FAIR_VALUE_PLAN_ASSETS
 - Projected Benefit Obligation GO.PEN.REF.STD.IS.PROJECTED_BENEFIT_OBLIGATION
 - Total Operating Expenses GO.GEN.IS.STD.EXPENSES.IS.TOT_OPER_EXP
- Economic
 - County BEA_PLAL_PL.SUB.PER.CAP_INC_POP.PCR.STATE
 - State BEA_PLAL_PL.SUB.PER.CAP_INC_POP.PCR.STATE
 - National BEA_PLAL_PL.SUB.PER.CAP_INC_POP.PCR.NATIONAL
 - National BEA_GDP_AL.GDP_CURR.NATIONAL
 - State BEA_GDP_AL.GDP_CURR.STATE
 - Metro SA BEA_GDP_AL.GDP_CURR.METRO_SA

Buttons: Up, Down, Delete, Clear All, Save, Cancel

- Plug keywords into the search field **C** to find preferred data series or data groups by name. You can also manually select data series or groups with the expandable/collapsible data tree.
- Click the >> button **D** to pull your selected data point into the View Template widget to the right. G >> pulls in an entire data group.
- Use the Up / Down keys to the right to re-order data series or groups to your liking. Click Delete to remove a series or Clear All to start building the template from scratch again. **E**
- Click Save to save a new view or to apply edits to an existing one. **F**
- Click the Download button next to any of the Saved Views to download and share a view (.cv file) with a colleague. **B**
- Upload a view (.cv file) from someone by saving to your desktop and clicking the Upload button. **B**

BUILD, SAVE AND SHARE CUSTOM VIEWS, CONT'D

- The example Transportation View below depicts how preferred financial data series / data groups appear in the Custom Views tab.

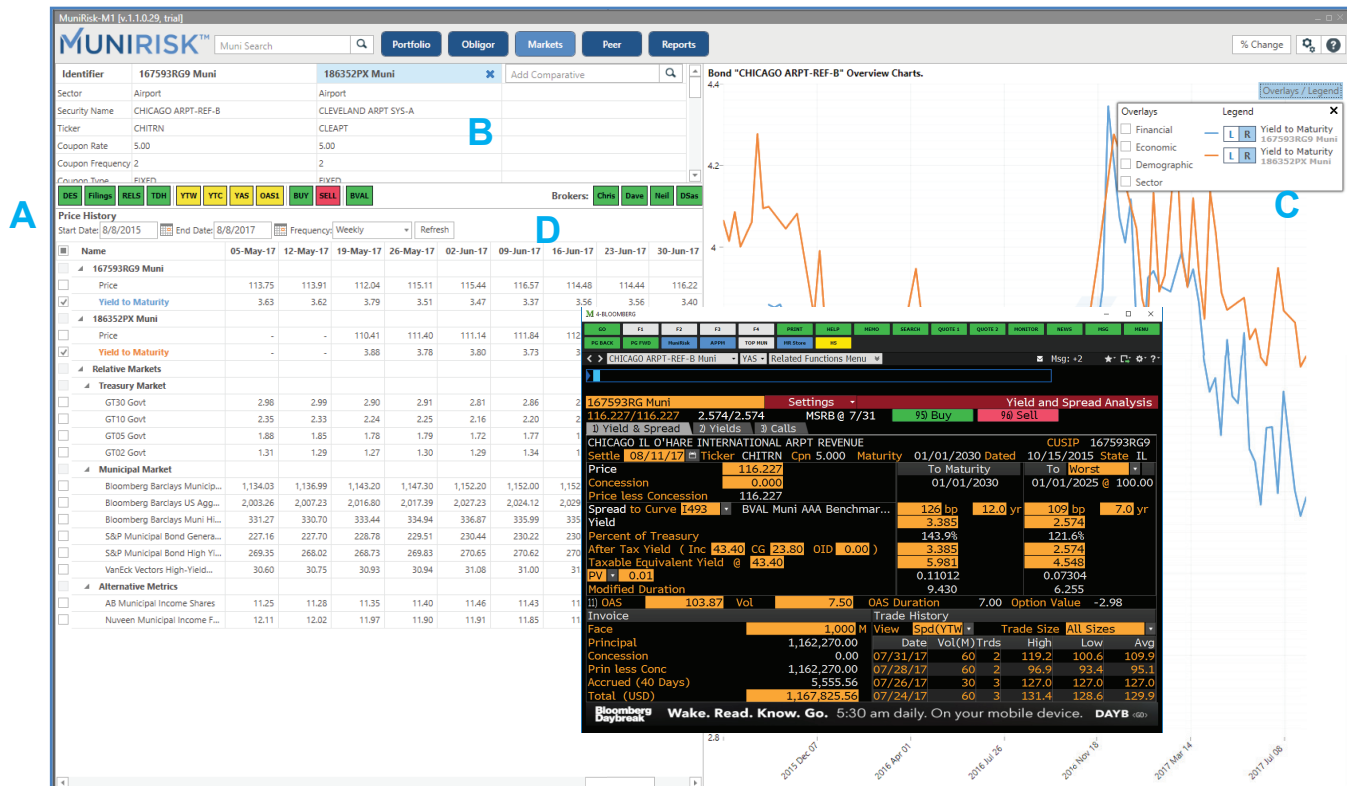


- Conduct credit analysis following the same instructions listed in the user guides for Financials, Socioeconomic and Sector Tabs.
- Choose from multiple Custom Views by clicking the View dropdown menu **G**.

COMPARE CREDIT FUNDAMENTALS TO MARKET PERFORMANCE

From Obligor View, click Markets View to get a 360-view of your credit alongside up-to-date market performance and trade data. Note: To access Markets View, you must first pull up a single security in Obligor View.

- Chart price, yield, spread, as well as trade activity. Adjust time period and frequency as needed. **A** Visualize their performance using the chart. **C** See the Charts User Guide for further details.
- Compare performance with similar bonds. Plug in a comparative bond's CUSIP **B**. Add up to two comparatives bonds.
- Overlay markets data with credit data by using the Overlays / Legend button above the chart. **C**
- Enter Buy and Sell Tickets with seamless Bloomberg integration via Terminal Connect.
- Run other high value muni functions such as YTW, YTC or YAS (depicted below). **A** See Terminal Connect User Guide for full details on functions you can run from the app.
- Program Broker buttons **D** to IB Chat and execute / exchange ideas with key contacts.

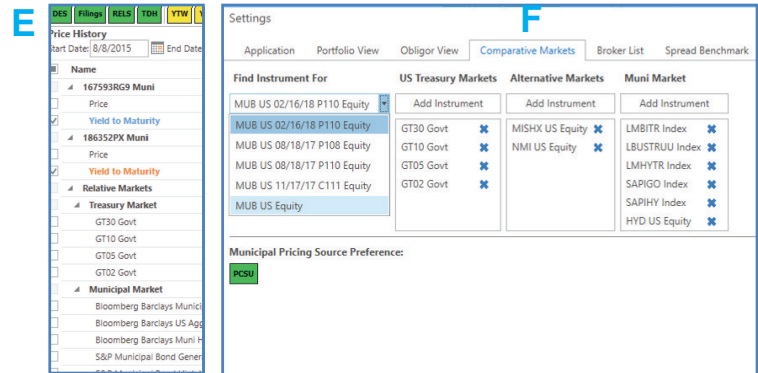


COMPARE FUNDAMENTALS TO MARKET, CONT'D

Monitor Relative Market Trends

Benchmark your bond with treasuries, municipal indices, ETFs, as well as alternative markets. **E** Set the markets you want to follow using the Comparative Markets tab under the Settings Menu. **F**

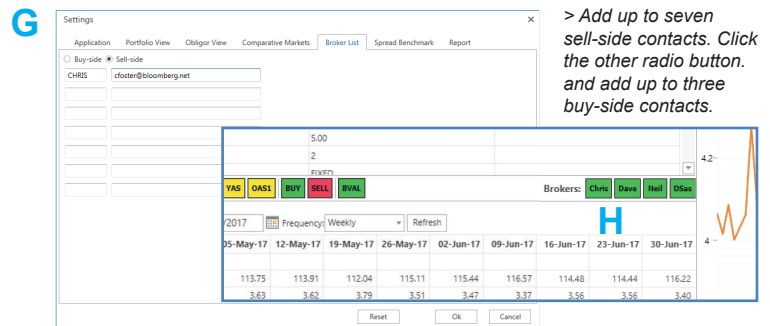
- Key in a security's identifier (CUSIP, Equity, Index, ETF, Treasury, etc.) and hit ENTER.
- Select the relevant security from the list of results.
 - Click the Add Instrument button for the relevant section you want to add it to.
- Remove a market with the X. Click OK to save settings.



“Speed Dial” Key Contacts

Under the Settings menu **G**, program contact Broker List buttons within Markets View to IB them **H**

- Enter the button's label in the first field (e.g., firm initials, contact's first name) and the corresponding Bloomberg email in the second field.
- Click OK to save.

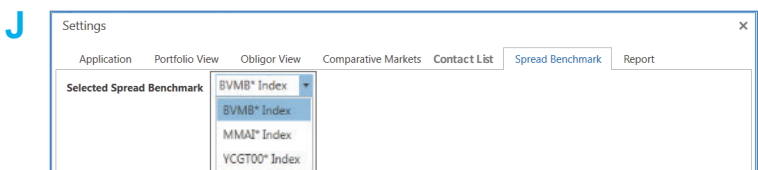


Set Spread Benchmark

Under the Markets View, you can view a bond's price, yield and spread (as well as trade activity). Based on your preference, you can set a selected Spread Benchmark from the following options:

- BVMB* Index (BVAL Municipal AAA benchmark)
- MMAI Index (Municipal Markets Advisors)
- YCGT00* Index (U.S. Treasury Actives Curve)

Simply make your selection in the Settings Menu. **J**



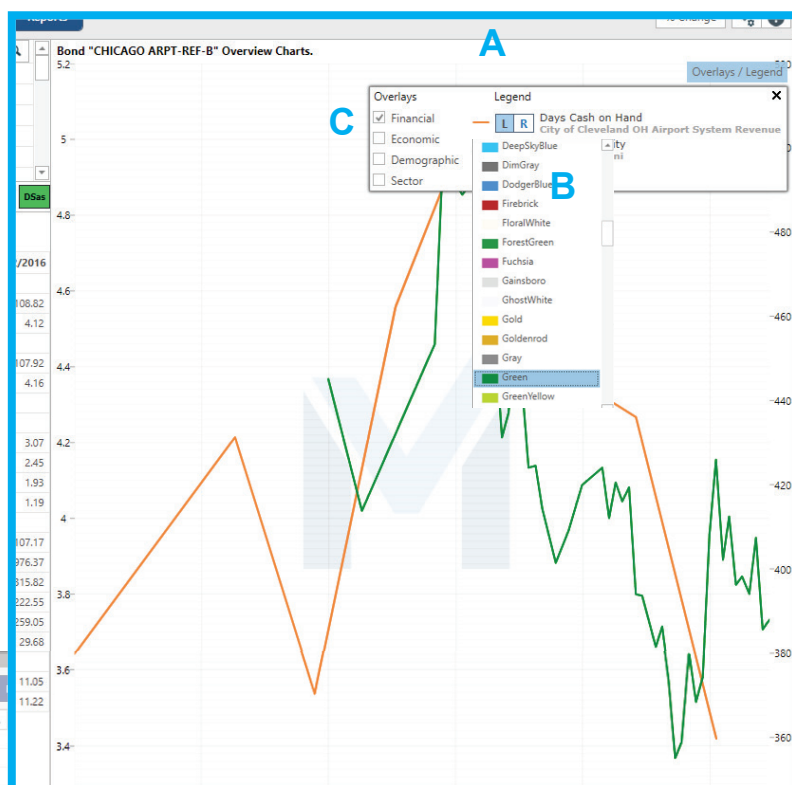
HOW TO USE THE CHARTING TOOL

Slice-and-Dice Data & Visualize Trends

In **Markets View**, check data points to chart them. Overlay data points to show relationships between market data and financial, economic, demographic and/or sector data.

Click the Overlays / Legend button on the chart to:

- Change chart axes (click L or R). **A**
- Change line color (click the line next to L / R button for a color dropdown menu). **B**
- Overlay credit metrics using the Overlays / Legend button. **C** Check off any of the Overlay options you prefer -- financials, economic, demographic and/or sector. The last data selection(s) you made under those tab(s) will appear in the chart.
- To change a data point, navigate to the respective tab and select the right line item. Remember to deselect data points you no longer need.



Munirisk-M1 [v1.1.0.29, trial]

Muni Search

Portfolio Obligor Markets Peer

Identifier	167593RG9 Muni	186352PX Muni	Add Comparative
Sector	Airport	Airport	
Security Name	CHICAGO ARPT-REF-B	CLEVELAND ARPT SYS-A	
Ticker	CHITRN	CLEAPT	
Coupon Rate	5.00	5.00	
Coupon Frequency	2	2	

Price History

Start Date: 8/8/2008 End Date: 8/8/2017 Frequency: Monthly Refresh

Name	5/2016	6/2016	7/2016	8/2016	9/2016	10/2016	11/2016	12/2016
167593RG9 Muni								
Price	119.63	120.36	121.99	121.46	120.00	117.14	111.24	108.82
Yield to Maturity	3.21	3.14	3.00	3.03	3.15	3.38	3.90	4.12
186352PX Muni								
Price	114.38	116.51	115.98	113.41	114.66	113.90	110.00	107.92
Yield to Maturity	3.57	3.37	3.41	3.64	3.52	3.58	3.95	4.16
Relative Markets								
Treasury Market								
GT30 Govt	2.65	2.29	2.18	2.23	2.32	2.58	3.04	3.07
GT10 Govt	1.85	1.47	1.45	1.58	1.60	1.83	2.38	2.45
GT05 Govt	1.37	1.00	1.03	1.20	1.15	1.31	1.84	1.93
GT02 Govt	0.88	0.58	0.66	0.81	0.76	0.84	1.12	1.19
Municipal Market								
Bloomberg Barclays Municip...	1,134.23	1,152.27	1,152.97	1,154.53	1,148.77	1,136.71	1,094.32	1,107.17
Bloomberg Barclays US Agg...	1,991.90	2,027.69	2,040.51	2,038.18	2,036.98	2,021.40	1,973.59	1,976.37
Bloomberg Barclays Muni HL...	321.15	331.13	333.30	334.50	335.39	331.23	311.52	315.82
S&P Municipal Bond Genera...	227.63	231.07	230.97	231.35	230.37	228.44	220.28	222.55

QUICK TIP

Comparative Analysis Using Charts In **Markets View**, add up to two securities for comparison within the chart.



DOWNLOAD A CREDIT REPORT

MuniRisk™'s standard report template pulls credit and market data from the database to generate a customizable PDF report.

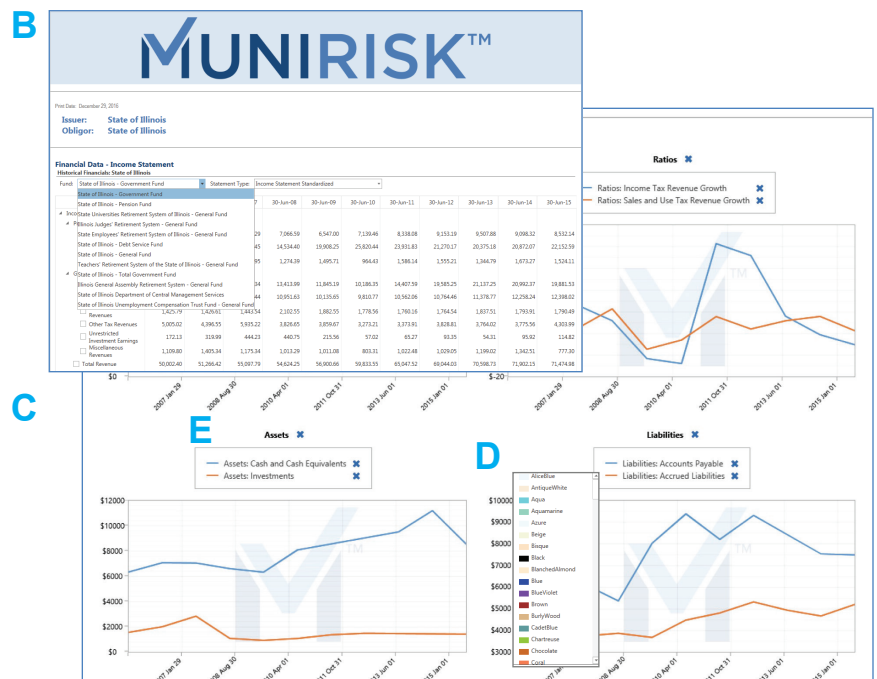
The template includes a credit overview page **A** as well as financial, economic and market data pages.

- To run a report, you must first select a security and have viewed it in **Obligor** and/or **Markets Views**.
- Once a security is selected, click the **Reports View** button.
- Scroll to customize the report. Adjust data filters with dropdown menus. **B**
- Select / de-select line items from, e.g., the income statement or balance sheet, to set charts to your preference. **C**
- Change the color of each line using the dropdown menu. **D**
- Click the X next to data type or data series in chart legends to remove it from the report. **E**
- Click the Export to PDF button to save and/or print the report. **A**

QUICK TIP

Run a Report Quickly

Plug a CUSIP into the Search Bar on the top left of the screen to look up a single security. The app will take you to **Obligor View**. From there, click **Reports View** to download and print for review on-the-go.



ACCESS HIGH VALUE MUNI FUNCTIONS VIA IN-APP SHORTCUTS

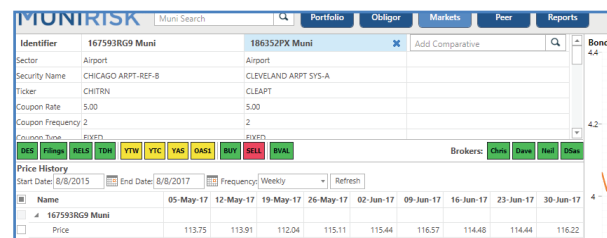
Shortcuts in Obligor View

DES	DES	Obligor description
RELS	RELS	Related securities / entities
FILINGS	FILINGS	Obligor financial and event disclosures
MY VIEW	NOTE	Rich-text workspace to capture and share ideas, charts, etc.

QUICK TIP

IB Chat Key Contacts

Program contact “jump buttons” within Markets View to IB them. Click the Settings Menu (gear icon at the top right of the screen), go to the Broker List tab and input contact information.



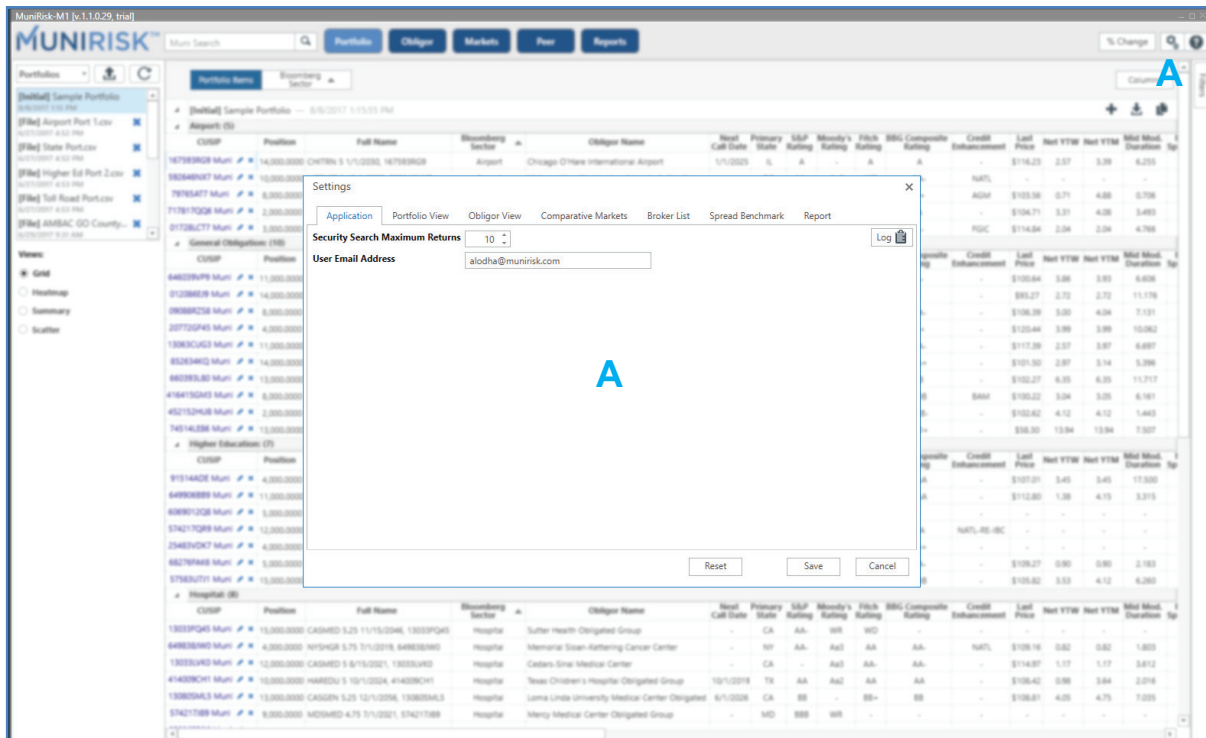
Enter the button's label in the first field (e.g., firm initials) and your contact's Bloomberg email in the next.

Shortcuts in Markets View

DES	DES	Security description	YAS	YAS	Yield and spread analysis
FILINGS	FILINGS	Security financial and event disclosures	OAS1	OAS1	Option-adjusted spread analysis
RELS	RELS	Related securities / entities	BUY	BUY	Buy a security
TDH	TDH	Trade history	SELL	SELL	Sell a security
YTW	YTW	Yield to worst analysis	YTW	BVAL	Bloomberg Valuation
YTC	YTC	Yield to call analysis			

CONFIGURE YOUR WORKSPACE

Click the Settings button **A** within the application's fixed navigation bar to open the Settings window and make the workspace your own. Adjust your portfolio heatmap or summary views. Select your own benchmarks. Communicate quickly with key contacts by setting up shortcuts to the Terminal®.

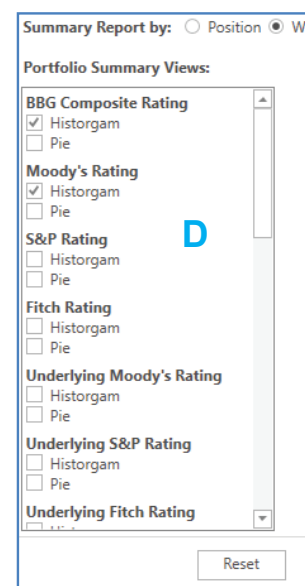
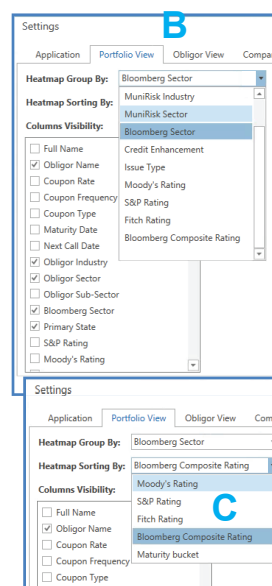


1. General Application Settings

- Search Returns: Set the number of search returns to a smart security search. Maximum is 100.
- Corporate Email Address: While this is optional, to expedite technical support, we recommend all users provide their primary email. *We respect your privacy. Please read our Privacy Policy at www.munirisk.com/privacy-policy/.*

2. Portfolio View Settings for Heatmap: Customize your Heatmap View to assess layered risk. Select the metric to group your portfolio by, **B** then select the metric you prefer to sort by, **C** (Note: use the Columns button as a shortcut to this menu.)

3. Portfolio View Settings for Summary: Choose the metrics you would like to view portfolios by and graph format. **D** (Note: use the Summary Views button as a shortcut to this menu.)



CONFIGURE YOUR WORKSPACE, CONT'D

4. Obligor View: *Update coming soon.*5. Comparative Markets: In **Markets View**, monitor relative market trends across treasuries, municipal indices, ETFs, as well as alternative markets. **E**

- Set the markets you would like to appear below the bond you are underwriting. **F**
- Key in a security's identifier (CUSIP, Equity, Index, ETF, Treasury, etc.) and hit ENTER.
- Select the relevant security from the list of results. Click the Add Instrument button for the relevant section you want to add it to.
- Remove a market with the X. Click OK to save settings.

6. Broker List: Program contact Broker List buttons within **Markets View** to IB them. **G**

- Enter the button's label in the first field (e.g., firm initials, contact's initials) and the corresponding Bloomberg email in the second. **H**
- Click OK to save.

7. Spread Benchmark: Under the **Markets View**, you can view a bond's price, yield and spread (as well as trade activity). Based on your preference, you can set a selected Spread Benchmark **J** from the following options:

- BVMB* Index (BVAL Municipal AAA benchmark)
- MMAI Index (Municipal Markets Advisors)
- YCGT00* Index (U.S. Treasury Actives Curve)

8. Report *Coming Soon*