



# Voyant Market Assumption and Asset Classes Customization Guide



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## Introduction

The following guide details how to add new sets of market assumptions, asset classes, and asset allocations to the Voyant software and how to use these when building a new financial plan.

Two methods are available for adding new sets of market assumptions, asset classes, and asset allocations to the Voyant software.

Businesses can provide Voyant their own proprietary or preferred sets of market assumptions, asset classes and asset allocations, which can then be released to their entire user base - including advisers and their clients - via their own customized versions (client configurations) of the Voyant software.

Individual users can load their own market assumptions, asset classes, and asset allocations into the Voyant software manually. These market assumptions and assets classes will be available only to the individual user. Whenever a plan is created using customized market assumptions and asset classes, these become associated with the plan and will continue to be used when the plan is shared with clients or colleagues.

## Add a New Set of Market Assumptions to a Client-Specific Configuration of Voyant

Client configurations are versions of the Voyant software customized and usually rebranded for individual businesses. Businesses who use these tailored versions of Voyant can also have added to their client configurations any number of preferred or proprietary sets of market assumptions, asset classes and asset allocations. These assumptions, classes and allocations will then be available to all of the advisers and consumers who use that particular client-tailored version of Voyant.

### Two Files are Required to Define Market Assumptions and Asset Classes

To add new set of market assumptions and asset classes to a client configuration, the Voyant Development Team will need two files from the client:

1. An [investment averages file](#), defining the asset classes together with the average and standard deviation for each;
2. A [correlation coefficients file](#) defining the correlation coefficient matrix between each of the asset classes.

Both files should be provided to Voyant in a comma-separated value (.csv) format.

Optionally, one may define a set of model portfolios to use with the Market Assumptions files, there are two different options one can use:

1. A single model portfolios file, defining the percentage of asset classes that make up the model portfolio;

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2. A model portfolios with holdings file along with a holdings definition file. The holdings definition file defines the asset class that a particular holding (such as a Mutual Fund) belongs to, while the model portfolios with holdings file defines the holdings that makeup each model portfolio.

## I. The Investment Averages File

The investment averages file should contain the average and standard deviations for each asset class in the new set of market assumptions.

Asset classes are defined by their presence as columns in the investment averages file. Each class must be formatted in all caps with an underscore used to represent spaces (e.g. SUB-INVESTMENT\_GRADE\_BONDS). Voyant will parse these column names smartly, for example:

**UK\_LARGE\_CAP\_STOCKS** will be parsed and displayed in Voyant as “**UK Large Cap Stocks**”;

**SUB-INVESTMENT\_GRADE\_BONDS** will be parsed and displayed in Voyant as “**Sub-investment Grade Bonds**”

One asset class, **CASH**, is required.

There is no limit on the number of asset classes; however, fifteen is the recommended maximum. Introducing over fifteen classes may affect their display in the Voyant user interface.

The resulting investment averages file should be similar in format to the example shown on the following page.

## How to Format an Investment Averages File

The following example shows how an investment averages file should be formatted.

- The header row should contain asset classes formatted in all caps, with spaces replaced with underscores.
- Asset classes, which serve as the column headings, must be formatted in all caps with underscores used to represent spaces.
- **CASH** is a required asset class with all other being client defined.
- There is no maximum limit on the number of asset classes; however, having over fifteen classes may affect their display in the Voyant user interface.
- The Investment Averages file should be provided in a comma-separated value (.csv) format. The **mean** and **stddev** rows are required. The **yield rows**, and **growth character** rows are **optional**.
- To specify that the mean data includes yield, specify the following in a row above the start of the data, **#@assumptionsIncludeYield=true**. If the mean data does not include the yield data, or if you do not want to specify yield separately, set the value to **#@assumptionsIncludeYield=false**.
- The table property **#@assumptionsType** (e.g. **#@assumptionsType =ARITHMETIC**) can be used to express whether the expected return data is ARITHMETIC, GEOMETRIC, or some CUSTOM type. If ARITHMETIC is specified, the property **#@useApproximatedGeometricMeanForAverage=true** can be used to configure Voyant to approximate the geometric mean when using the data in the standard Voyant deterministic calculation. Monte Carlo simulations will use the specified ARITHMETIC rates, but the standard deterministic calculation, and other basic simulations such as the Performance Slider will use the approximated geometric mean. The formula used for the approximation comes from <http://www.fffisols.com/basics/rebal.pdf> .  $GR = R - (\text{stdDev}^2/2(1+R))$
- The **growth\_character** row is used to specify the degree to which an asset class contains defensive or growth assets. Use 0 for a completely defensive asset, and 1 for a completely growth asset. Values in between are allowed if the asset class is a mix. This data is used by the risk profiling integration to score a portfolio against a client's risk tolerance.

#@assumptionsIncludeYield=true								
#@assumptionsType =ARITHMETIC								
#@useApproximatedGeometricMeanForAverage=true								
ROW_NAME_ COLUMN	CASH	INVESTMENT_ GRADE_BONDS	SUB-INVESTMENT_ GRADE_BONDS	UK_LARGE_ CAP_STOCKS	UK_MID_AND_SMALL_ CAP_STOCKS	EU_ STOCKS	FOREIGN_ DEVELOPED_MARKETS	EMERGING_ MARKET_STOCKS
mean	0.06306	0.06637	0.05847	0.11992	0.12326	0.11751	0.12108	0.13108
stdev	0.04568	0.03856	0.05382	0.21646	0.13901	0.15684	0.29984	0.37984
interest_yield	0.06306	0.04	0.035	0	0	0	0	0
dividend_yield	0	0	0	0.05	0.055	0.035	0.02	0.01
growth_character	0	0	0	.5	1	1	1	1

## 2. The Correlation Coefficient File

The correlation coefficients file defines the correlation coefficient matrix between each of the asset classes in the market assumptions set. Asset class names used in this file must match, verbatim, those defined in the [investments averages](#) file.

The correlation coefficient indicates the strength and direction of a *linear* relationship between two [random variables](#). The correlation coefficient ranges from +1, indicating a perfect positive linear relationship, to -1, indicating a perfectly negative linear relationship.

One major caveat applies to the use of a correlation coefficient matrix in Voyant. The correlation coefficient must be [positive definite](#). For this reason, the correlation coefficient matrix cannot be random, as random numbers usually result in matrices that are not positive-definite.

One recommended way compute the correlation coefficients for a data set is to use the [Excel CORREL function](#) on the historical prices for each combination of asset classes.

1. Take the historical prices (dating back as far as possible) for each asset class and add them to an Excel spreadsheet.
2. Use Excel functions to compute an average and standard deviation for each asset class.
3. Then using the historical prices for each combination of 2 asset classes, use the [Excel CORREL function](#) to compute the correlation coefficient for the asset pair.

The resulting matrix should be similar in arrangement to the example shown on the following page.



## How to Format a Correlation Coefficients File

The following example shows how a correlation coefficients file should be formatted.

- The header row and row labels must contain asset classes formatted in all caps, with spaces replaced with underscores.
- The names of asset classes must match, verbatim, those defined in the accompanying [Investment Averages](#) file.
- The Correlations Coefficients file should be provided in a comma-separated value (.csv) format.

Please note that the values shown are test data, used only for example.

ROW_NAME_COLUMN	CASH	INVESTMENT_ GRADE_BONDS	SUB- INVESTMENT_ GRADE_BONDS	UK_LARGE_ CAP_STOCKS	UK_MID_AND_ SMALL_CAP_STOCKS	EU_STOCKS	FOREIGN_DEVELOPED_ MARKETS	EMERGING_ MARKET_STOCKS
CASH	1							
INVESTMENT_ GRADE_BONDS	0.655013652	1						
SUB-INVESTMENT_ GRADE_BONDS	0.264688688	0.858094327	1					
UK_LARGE_ CAP_STOCKS	0.17020141	-0.015401517	-0.069555027	1				
UK_MID_AND_ SMALL_CAP_STOCKS	0.13498131	0.158677999	0.251517847	0.811807039	1			
EU_STOCKS	-0.145221244	-0.368226481	-0.380053597	0.745886858	0.512574208	1		
FOREIGN_ DEVELOPED_MARKETS	-0.421563971	-0.608722233	-0.596202994	0.490786035	0.265788454	0.814567391	1	
EMERGING_ MARKET_STOCKS	0.27110336	0.047123961	0.058494641	0.802531265	0.784651382	0.534803304	0.217084165	1

## How to Format a Model Portfolios File

The following example shows how a model portfolios file **without** holdings should be formatted.

- The header row and row labels must contain asset classes formatted in all caps, with spaces replaced with underscores.
- The names of asset classes must match, verbatim, those defined in the accompanying [Investment Averages](#) file.

Please note that the values shown are test data, used only for example.

ALLOCATION_NAME	CASH	INVESTMENT_ GRADE_BONDS	SUB- INVESTMENT_ GRADE_BONDS	UK_LARGE_ CAP_STOCKS	UK_MID_AND_ SMALL_CAP_STOCKS	EU_STOCKS	FOREIGN_DEVELOPED_ MARKETS	EMERGING_ MARKET_STOCKS
Just Cash	1							
Bond Portfolio 1		.5	.5					
Equities 1				.25	.25	.25	.15	.1
Foreign and Emerging							.5	.5

### How to Format a Model Portfolios with Holdings File

The following example shows how a model portfolios file **with holdings** should be formatted.

- The names of holdings must match, verbatim, those defined in the accompanying Holdings Definition file.

Please note that the values shown are test data, used only for example.

ALLOCATION_NAME	CASH	DFA Five-Year Global Fixed Income Portfolio	DFA Short Term Extended Quality	DFA International Core Equity I	DFA Tax-managed US Small Cap	DFA International Core Equity I	DFA International Small Value	DFA Emerging Market Core Equity I
Just Cash	1							
Bond Portfolio 1		.5	.5					
Equities 1				.25	.25	.25	.15	.1
Foreign and Emerging							.5	.5

## How to Format a Holdings Definition File

Voyant supports two different formats for the holdings definition file depending on whether a firm maps a single asset class to a holding, or specifies an allocation of asset classes for a specific holding

The following example shows how the first format, where a holding is mapped to a single investment class.

- The names of holdings in the first column must match, verbatim, those defined specified in the Model Portfolios with Holdings file
- The names of the investment classes in the second column must match those used in the Investment Averages file

Please note that the values shown are test data, used only for example.

HOLDING_NAME	INVESTMENT_CLASS	TICKER	CUSIP	ISIN
CASH	CASH			
DFA Five-Year Global Fixed Income Portfolio	INTERMEDIATE_TERM_BONDS	DFGBX		
DFA Short Term Extended Quality	CORPORATE_BONDS	DFEQX		
DFA Inflation Protected Securities Portfolio	INFLATION_PROTECTED_SECURITIES	DIPSX		
DFA Selectively Hedged Fixed Income	GLOBAL_GOV'T_BONDS_(HDG_USD)	DFSHX		
Templeton Global Bond Fund	WORLD_BONDS	TGBAX		
DFA Tax-Managed U.S. Equity	US_LARGE	DTMEX		
DFA Tax Managed US Marketwide Value II	US_LARGE_VALUE	DTMMX		
DFA Tax-managed US Small Cap	US_SMALL	DFTSX		
DFA International Core Equity I	INTERNATIONAL_CORE_EQUITY	DFIEX		
DFA Tax-Managed International Value	INTERNATIONAL_VALUE_EQUITY	DTMIX		
DFA International Small Value	INTERNATIONAL_SMALL_VALUE_EQUITY	DISVX		
DFA Emerging Market Core Equity I	EMERGING_MKTS	DFCEX		
DFA Real Estate Securities Portfolio	US_REAL_ESTATE	DFREX		
DFA International Real Estate Securities Portfolio	INTERNATIONAL_REAL_ESTATE	DFITX		
ELEMENTS Rogers Intl Commodity Index-Total Rtn ETN	COMMODITIES	RJI		

The following example shows how the second format, where a holding is mapped to an allocation of investment classes

- The names of holdings in the first column must match, verbatim, those defined specified in the Model Portfolios with Holdings file
- The names of the investment classes in the columns at the end must match those used in the Investment Averages file.
- The total value for the percents specified for the asset classes in each row must equal 1.

Please note that the values shown are test data, used only for example.

HOLDING_NAME	TICKER	CUSIP	ISIN	CASH	CORPORATE_BONDS	US_LARGE	US_LARGE_VALUE	US_SMALL
CASH				1				
DFA Five-Year Global Fixed Income Portfolio	DFGBX			.05				
DFA Short Term Extended Quality	DFEQX							
DFA Inflation Protected Securities Portfolio	DIPSX							
DFA Selectively Hedged Fixed Income	DFSHX							
Templeton Global Bond Fund	TGBAX							
DFA Tax-Managed U.S. Equity	DTMEX			.05		.80	.15	
DFA Tax Managed US Marketwide Value II	DTMMX			.025		.25	.725	
DFA Tax-managed US Small Cap	DFTSX			.025				.975
DFA International Core Equity I	DFIEX							
DFA Tax-Managed International Value	DTMIX							
DFA International Small Value	DISVX							
DFA Emerging Market Core Equity I	DFCEX							
DFA Real Estate Securities Portfolio	DFREX							
DFA International Real Estate Securities Portfolio	DFITX							
ELEMENTS Rogers Intl Commodity Index-Total Rtn ETN	RJI							

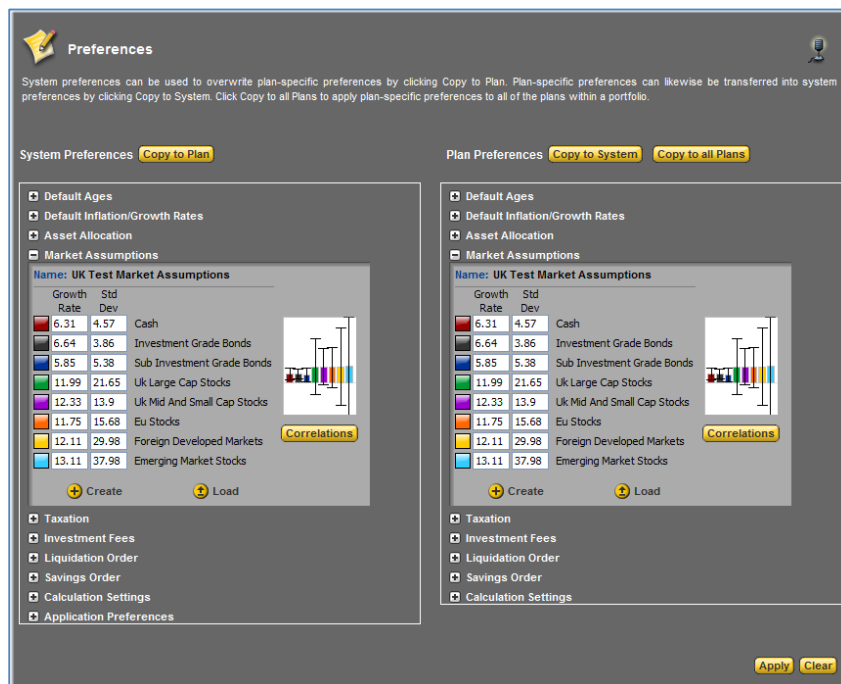
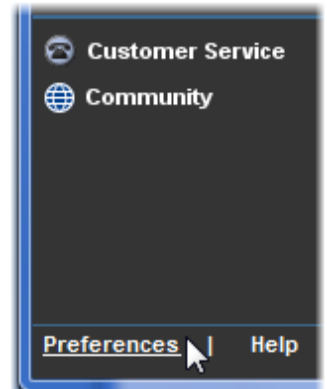
## How to Load a Set of Customized Market Assumptions into Voyant

Any number of customized market assumptions sets can be offered through Voyant. Accessed through preferences, these assumptions can be easily loaded into Voyant where they can be applied to plans individually or used as the software's default market assumptions set.

To load a customized set of market assumptions into Voyant, first open and log into the software. You may select and open an existing client record or choose to create a new one.

1. Click the **Preferences** link, located in the lower-left corner of the screen.

Preferences are the default settings used as new plans are created in Voyant. Information one would normally be required to enter – inflation and growth rates, cost of living adjustments, tax rates, asset liquidation order, and asset allocations – can all be populated instead from Preferences. Preferences provide the defaults, but these values can be edited, where applied, throughout the plan.



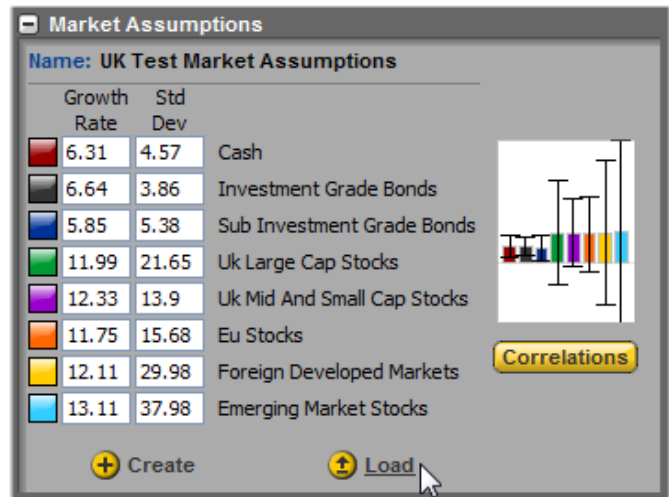
The **Preferences** screen is divided into two sections:

**System Preferences**, on the left, control the general settings for the software. These global settings are used as defaults whenever a new client record is created in Voyant.

**Plan Preferences**, on the right, control the default settings for the individual plan currently open in Voyant. These plan specific preferences can be quite different from the software's system preferences, which are only initial defaults. Plan preferences are applied to plans individually but can be copied to all of the plans within a client record by clicking the **Copy to All Plans** button.

Using these two sections of the **Preferences** screen, market assumptions can be applied to the individual plan currently viewed, copied to every plan within the client record, used by default in every future client record created, or all of the above.

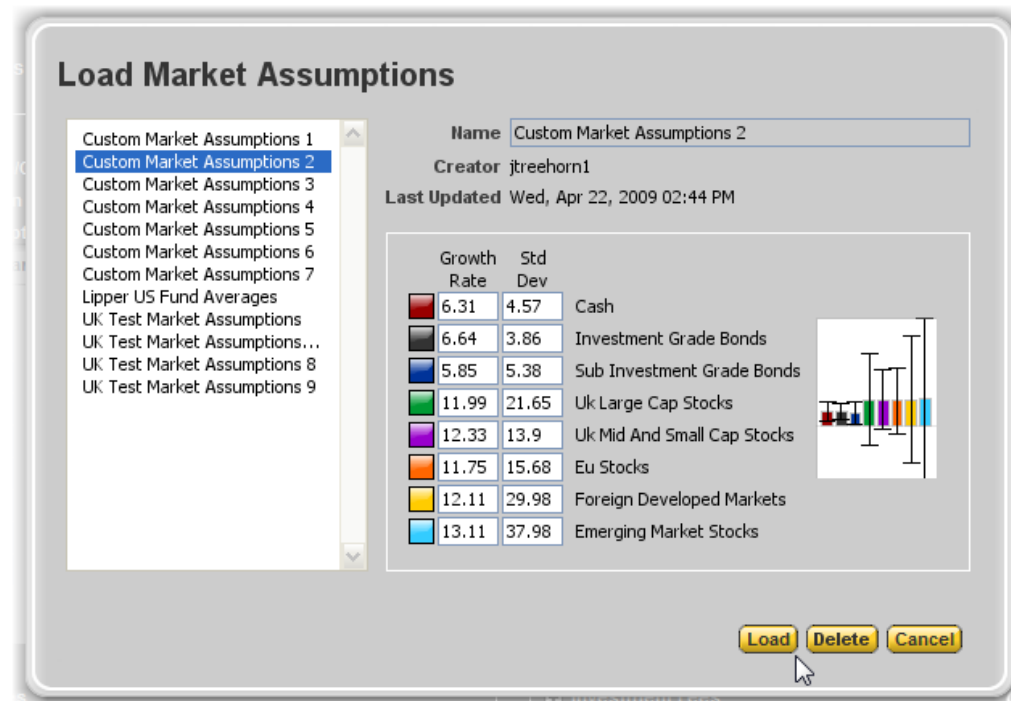
- Expand the **Market Assumptions** panel in either the **Plan Preferences** or **System Preferences**.
- Click the **Load** button.



The **Load Market Assumptions** dialogue will display. A library of market assumptions is listed along the left side of the dialogue.

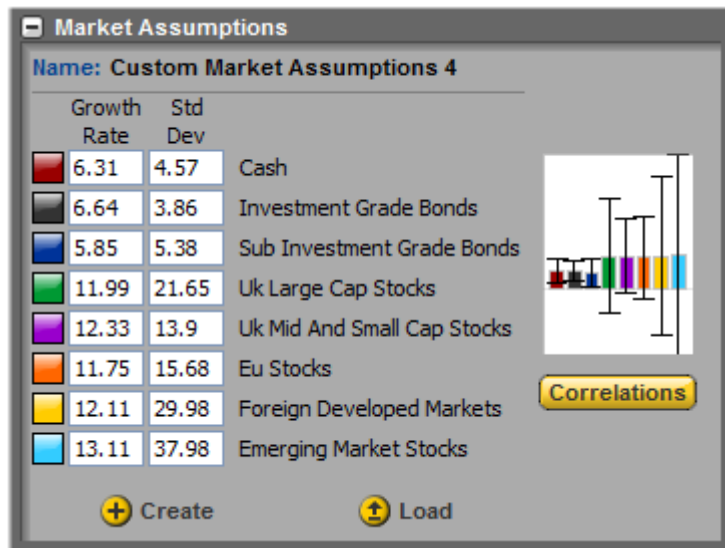
- Select from this library a set of market assumptions for use in the plan or as a system default.

When a set of market assumptions is selected details about these assumptions will be shown in the dialogue. Market assumptions are comprised of asset classes together with the assumed growth rate and standard deviation for each.



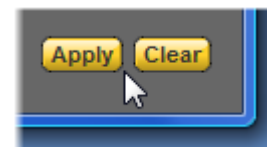
- Click the **Load** button.

The selected market assumptions will be loaded into the plan or used as a system default, depending on which section of **Preferences** was chosen earlier. These assumptions will now appear in the **Market Assumptions** panel.



The same set of market assumptions can also be loaded into the plan or used as a system default by repeating the previous steps (steps 3 through 5) in the **Plan Preferences** or **System Preferences**

- Once these updates are complete, finish by clicking the **Apply** button in the lower right corner of the **Preferences** screen. The updated market assumptions will be saved.



These market assumptions will later be used by Voyant to calculate the growth rate of allocated assets for some or all of the investments within plans and to run **Efficient Frontier, Performance, Historical,** and **Monte Carlo** simulations.



## Add Model Asset Allocation Portfolios to a Client-Specific Configuration of Voyant

Voyant calculates the growth of investments using either a fixed annual growth rate or by applying market assumptions and standard deviations to allocated sets of assets - i.e. asset allocations. Most Voyant simulations, including **Efficient Frontier**, **Historical Performance** and **Monte Carlo**, require that asset allocations be enabled for at least some of the investments in the plans.

Model asset allocation portfolios can be added to client-tailored versions of Voyant.

For example, if a business wishes to offer its Voyant users the option to choose a preconfigured “Morningstar – Low Risk Income” asset allocation portfolio, this model asset allocation could be provided to Voyant for addition to the client’s configuration. Once added, this model portfolio will become available to the client’s entire user base.

A business can provide any number of model asset allocation portfolios to Voyant, for addition to their client configuration. To add model asset allocation portfolios to a client configuration, Voyant will need the name of the model asset allocation portfolios and the percentages of each asset class in these portfolios.

Below is an example of a model asset allocation.

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### **Morningstar - Low Risk Income**

30% Sub-investment Grade Bonds

30% Cash

40% Investment Grade Bonds

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Asset class percentages in the model must equal 100% when totaled.

If the client uses a customized set of market assumptions, the names of the asset classes used in the model should match those used in the market assumptions set.

Unlike the market assumption files discussed earlier in this guide, there are no special file formatting requirements for model asset allocations. Details can be sent to Voyant a variety of file formats – e.g. email, Word document, text file, Excel spreadsheet.

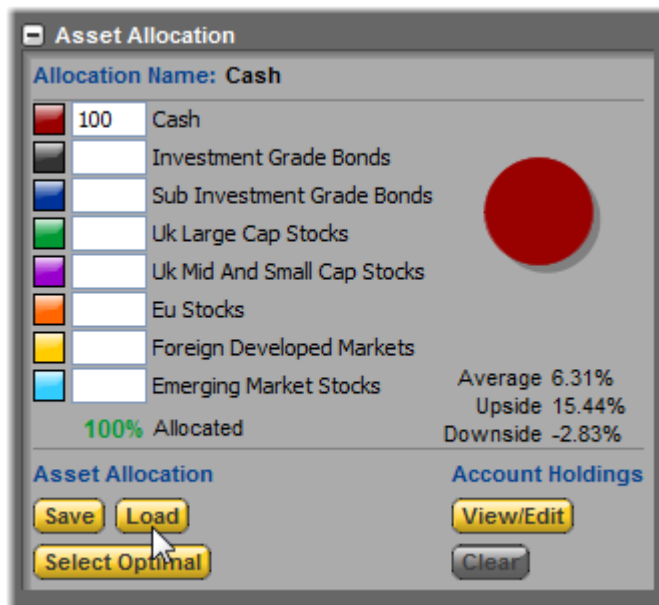
## How to Load Model Asset Portfolios into Voyant

Any number of model asset portfolios can be offered through Voyant. These model portfolios can be easily loaded into the software where they can be:

- Applied to accounts individually on the **Investments** and **Pensions** screens;
- Used during particular stages of the plan on the **Time** screen;
- Set as the default asset allocation for the software or for a plan on the **Preferences** screen.

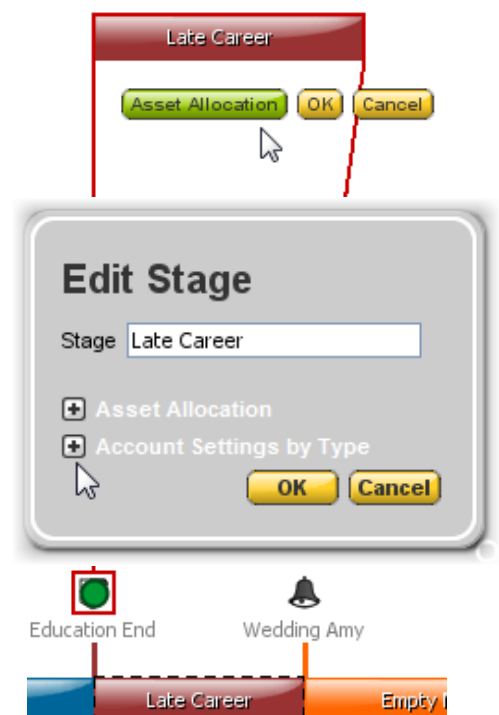
To load a model asset portfolio, go to any of these screens.

1. Expand the **Asset Allocation** panel.
2. Click the **Load** button.

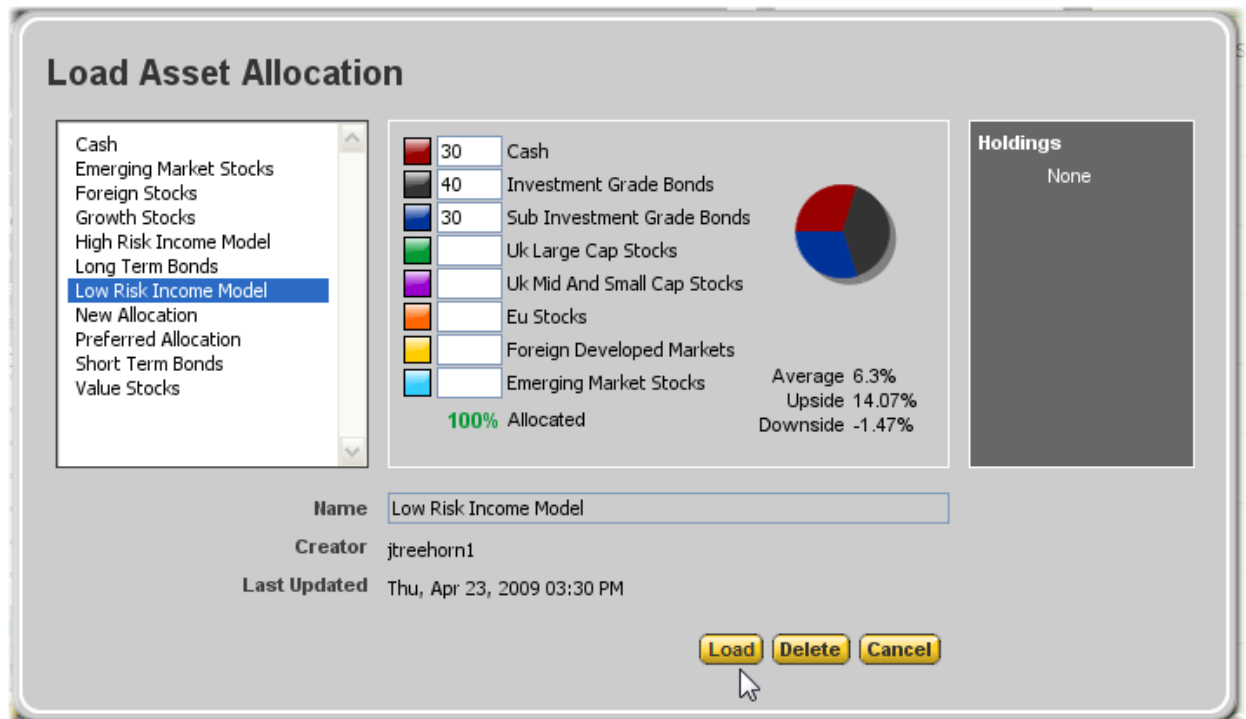


These steps are slightly different when setting allocations by stages. On the **Time** screen, select a stage in the timeline and click the **Asset Allocation** button.

Expand the **Asset Allocation** panel or expand the **Account Settings By Type** panel to set the asset allocation by account type – i.e. Qualified, Taxable, Tax-Deferred, and Tax Free.



The **Load Asset Allocation** dialogue will display. A library of model asset portfolios is listed along the left side of the dialogue.



7. Select from this library a model asset portfolio.

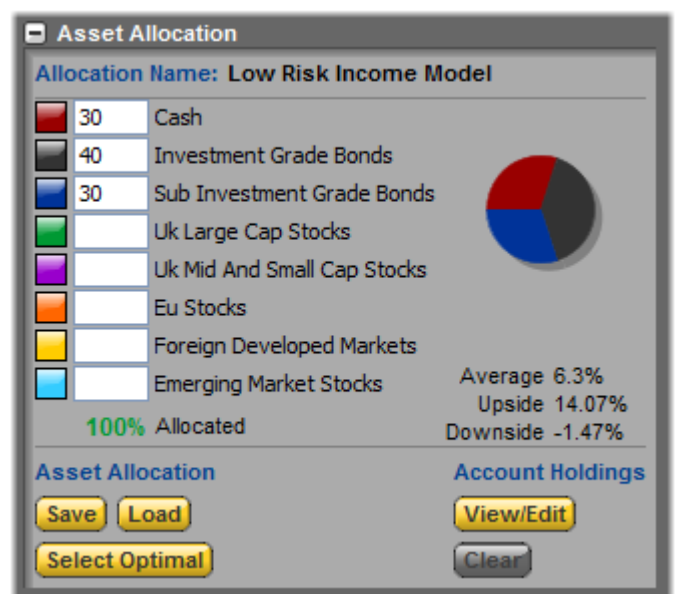
When a model asset portfolio is selected details about this allocation will be shown in the dialogue. These details include the percentages allocated to each asset class, also illustrated in the pie chart, together with the average (blended) growth rate and upside/downside risk in the allocation as based on the software's [market assumptions](#) (addressed earlier in this guide).

8. Click the **Load** button.

The selected model asset portfolio will be loaded and shown in the **Asset Allocation** panel.

Once loaded, the asset portfolio will be applied to the selected investment account or used as the default allocation for a stage, the plan, or for the software, depending on which screen was chosen earlier.

This asset allocation will later be used by the Voyant to calculate growth rate and to run **Efficient Frontier, Performance, Historical, and Monte Carlo** simulations.



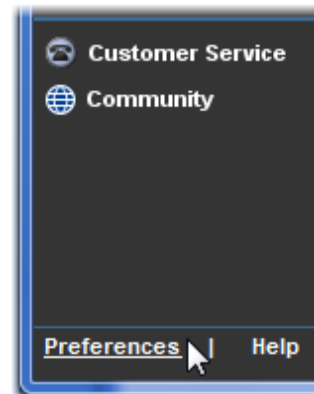
## How to Add a New Set of Asset Classes and Market Assumptions to Voyant Manually

Individual users also have the option to load their own market assumptions, asset classes, and asset allocations into the Voyant software manually. These market assumptions and assets classes will be available only to the individual user. Whenever a plan is created using customized market assumptions and asset classes, these become associated with the plan and will continue to be used when the plan is shared with clients or colleagues.

Before beginning, have the [investment averages](#) and [correlation coefficients](#) files at hand. Both files and their formatting requirements are discussed earlier in this guide.

First, open and log into the Voyant software.

1. Click the **Preferences** link in the lower-left corner of the screen.
2. Beneath **System Preferences**, expand the **Market Assumptions** panel.
3. Click the **Create** button.



The **Save Market Assumptions** dialogue will display.

4. Click the **Load From File** button.

The **Install Market Assumption** dialogue will display.

5. Click the upper open (...) button to locate and select the **Market Assumptions File** (i.e. the [Investment Averages](#) file).
6. Click the lower open (...) button to locate and select the **Market Correlations File** (i.e. the [Correlations Coefficients](#) file).

An example of the new set of market assumptions and related asset classes will display in the **Install Market Assumptions** dialog.

7. Click the **OK** button.

The **Save Market Assumptions** dialogue will display again.

8. Enter a unique **Name** for the new set of market assumptions.
9. Click the **Create** button to load the new set of market assumptions into Voyant.

Once the new set of market assumptions set has been loaded into Voyant, you may then select it as the preferred set of assumptions, for use in the creation of new client files and/or apply these assumptions to the plan you are presently viewing.

Finish by clicking the **Apply** button, located in the lower right corner of the **Preferences** screen, to save these updated market preferences.