Use Case

Issue:

- Determine compound annual gross return for a certain project
- Decide what investment proves to be more profitable between two options

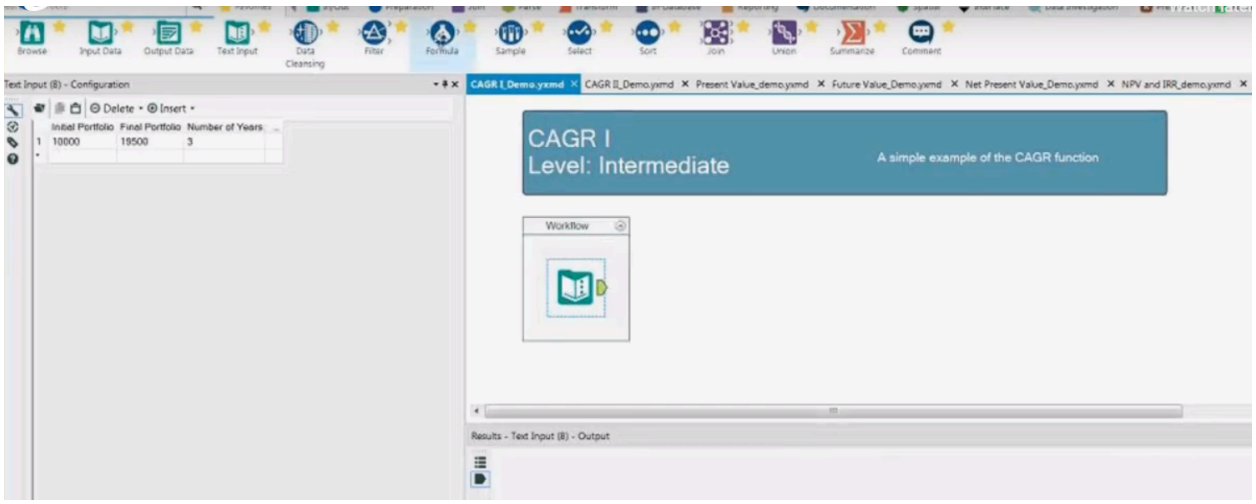
Goals:

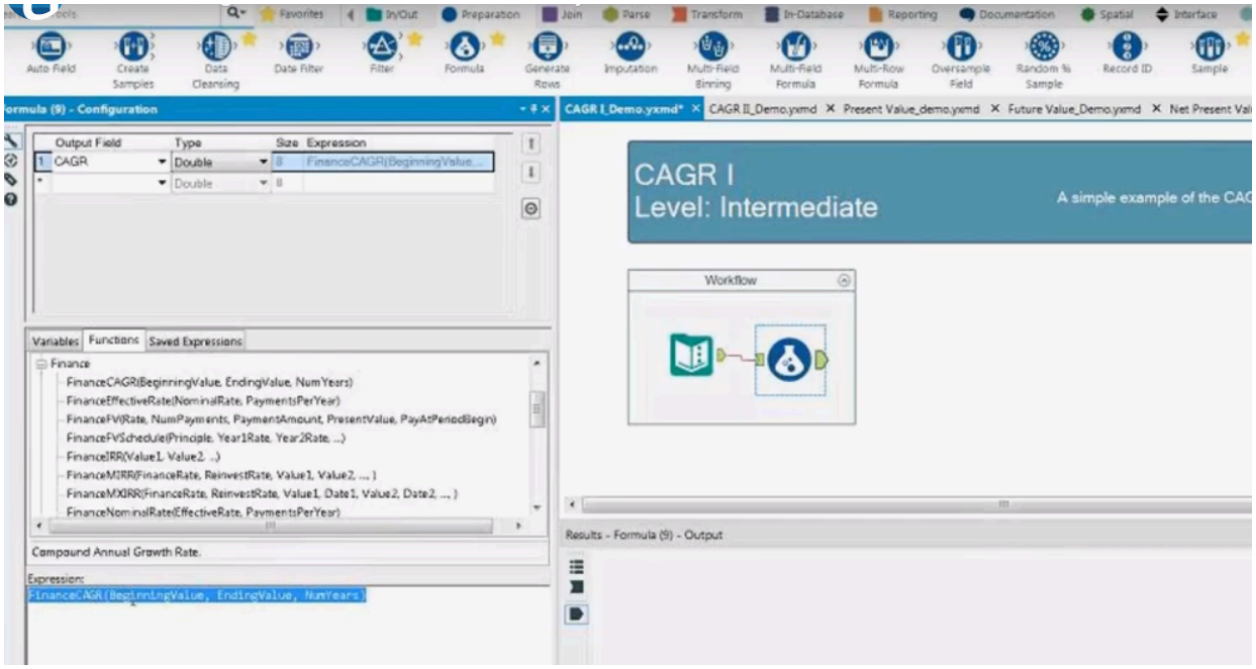
- Understand financial functions, how to construct them in Alteryx, and how to evaluate them to make better business decisions

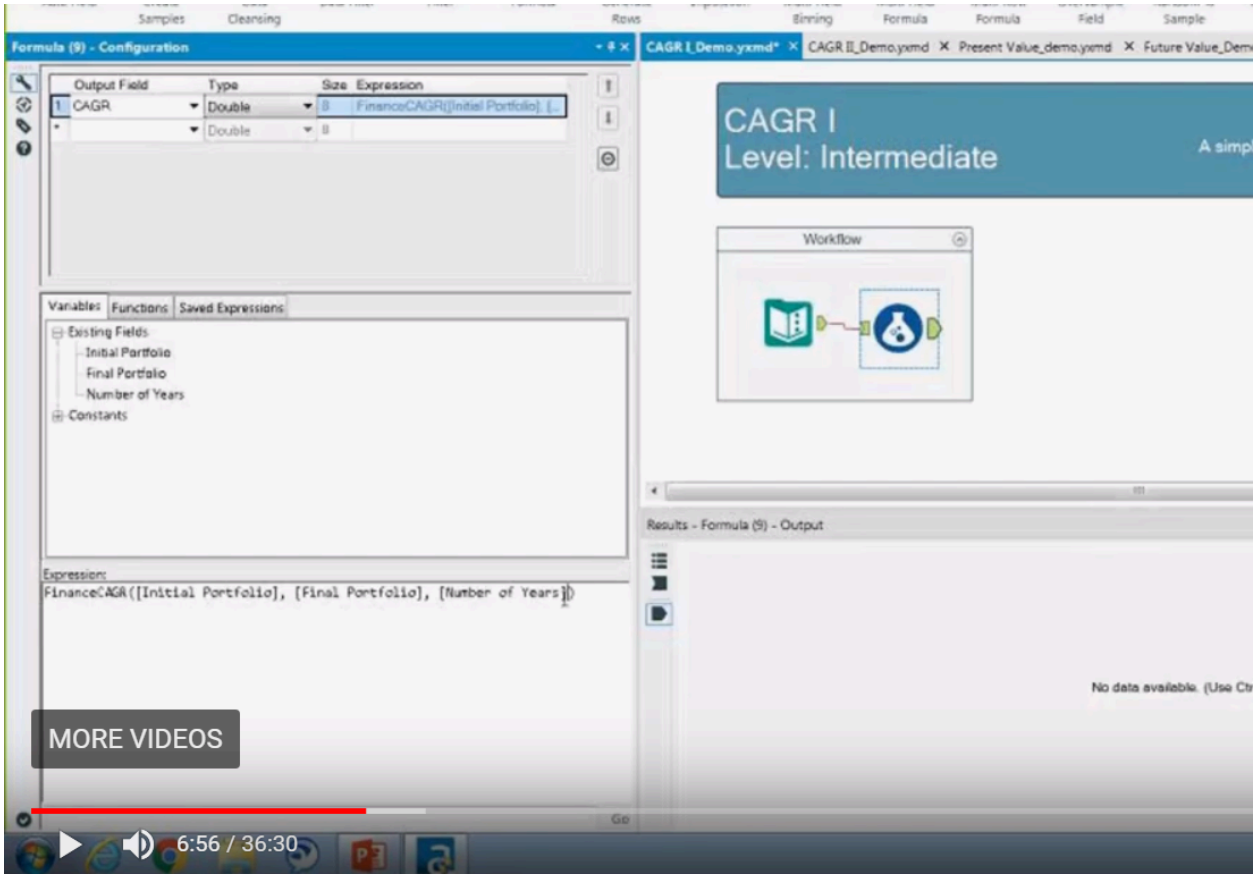
Compound Annual Gross Rate (CAGR)

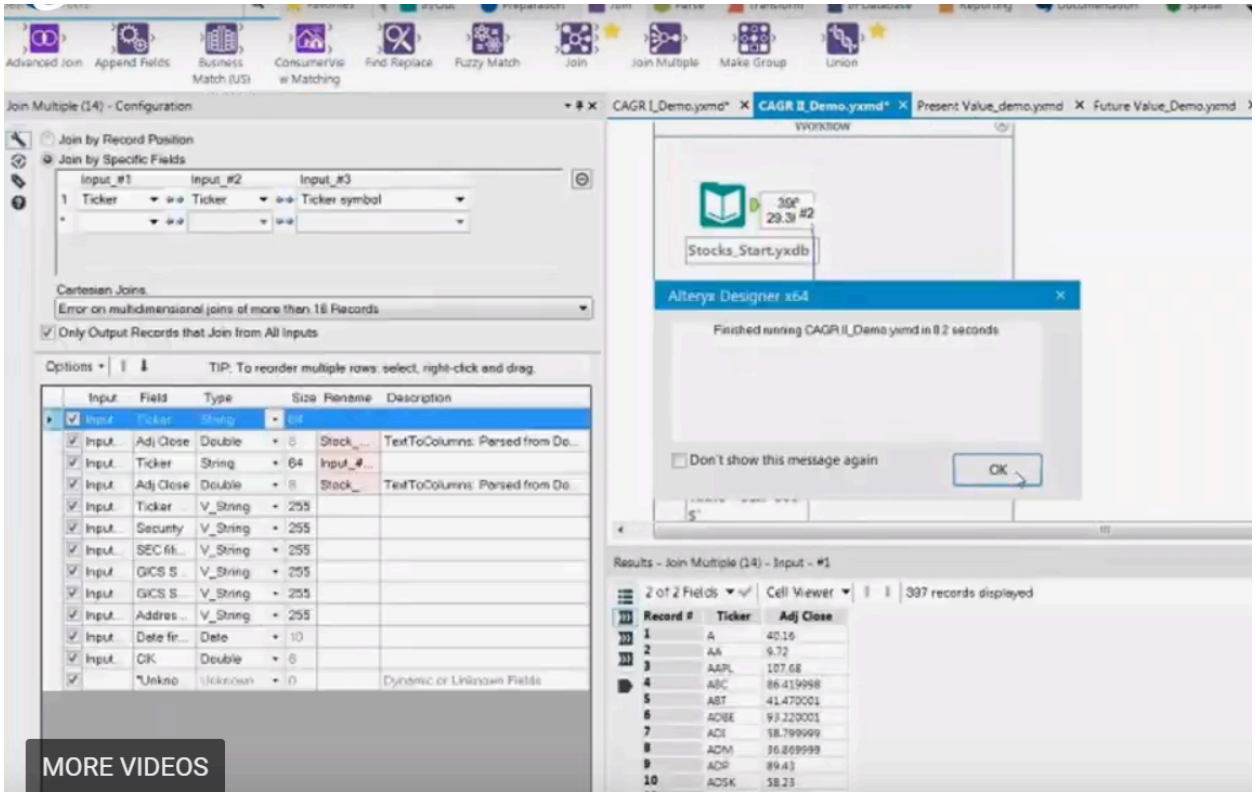
- Mean annual growth rate of an investment over a specified period of time
- Ending Value = investment value at the end of a period
- Beginning Value = investment value at the beginning of a period
- Result: represents the rate the investment would have grown, if grown at a steady rate
  - Not a true return rate

$$CAGR = \left(\frac{Ending\ Value}{Beginning\ Value}\right)^{\left(\frac{1}{\#years}\right)} - 1$$

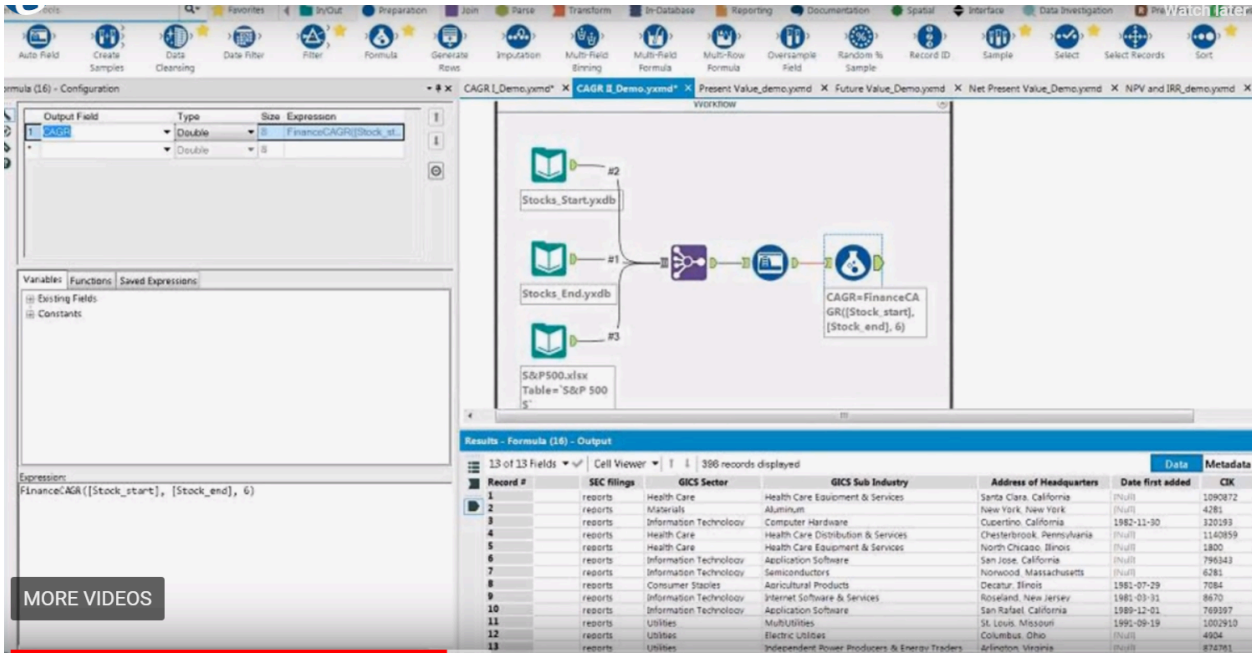

Text Input (8) - Configuration
Initial Portfolio
Final Portfolio
Number of Years
10000
19500
3
CAGR I_Demo.yxmd
CAGR II_Demo.yxmd
Present Value_demo.yxmd
Future Value_Demo.yxmd
Net Present Value_Demo.yxmd
NPV and IRR_demo.yxmd
CAGR I
Level: Intermediate
A simple example of the CAGR function
Workflow
Results - Text Input (8) - Output


Formula (9) - Configuration
Output Field
Type
Size
Expression
CAGR
Double
Variables
Functions
Saved Expressions
Finance
FinanceCAGR(BeginningValue, EndingValue, NumYears)
FinanceEffectiveRate(NominalRate, PaymentsPerYear)
FinanceFV(Rate, NumPayments, PaymentAmount, PresentValue, PayAtPeriodBegin)
FinanceFVSchedule(Principle, Year1Rate, Year2Rate, ...)
FinanceIRR(Value1, Value2, ...)
FinanceMIRR(FinanceRate, ReinvestRate, Value1, Value2, ...)
FinanceMXIRR(FinanceRate, ReinvestRate, Value1, Date1, Value2, Date2, ...)
FinanceNominalRate(EffectiveRate, PaymentsPerYear)
Compound Annual Growth Rate.
Expression:
FinanceCAGR(BeginningValue, EndingValue, NumYears)
CAGR I_Demo.yxmd*
CAGR I
Level: Intermediate
Workflow
Results - Formula (9) - Output

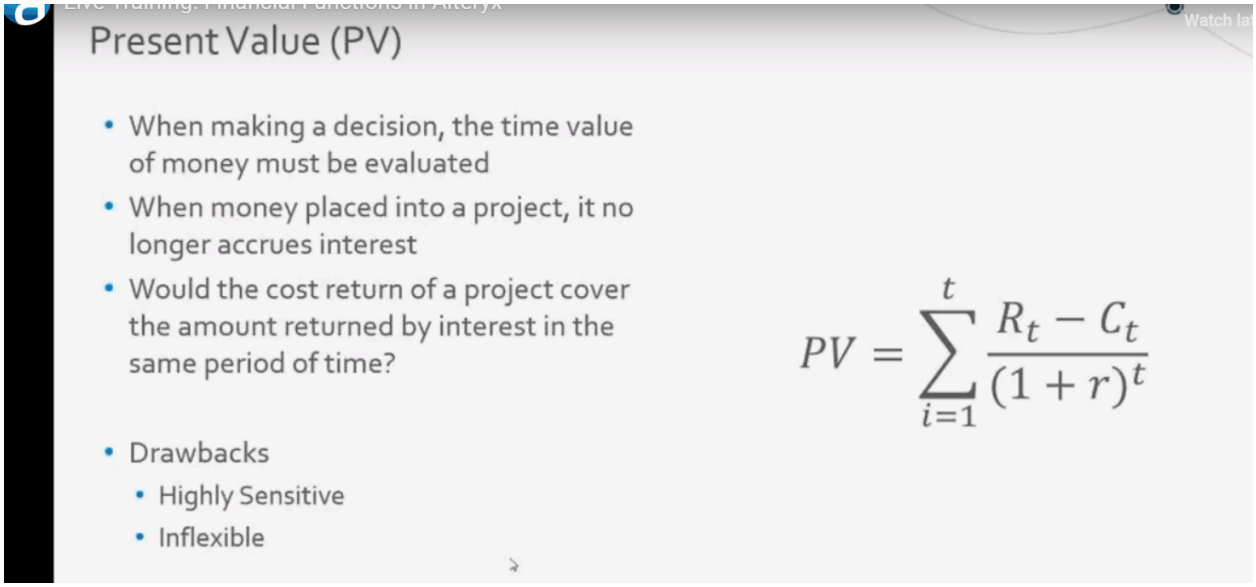

Formula (9) - Configuration
Output Field
Type
Size
Expression
CAGR
Double
Variables
Functions
Saved Expressions
Existing Fields
Initial Portfolio
Final Portfolio
Number of Years
Constants
Expression:
FinanceCAGR([Initial Portfolio], [Final Portfolio], [Number of Years])
CAGR I_Demo.yxmd*
CAGR II_Demo.yxmd
Present Value_demo.yxmd
CAGR I
Level: Intermediate
Workflow
Results - Formula (9) - Output
No data available.
MORE VIDEOS
6:56 / 36:30

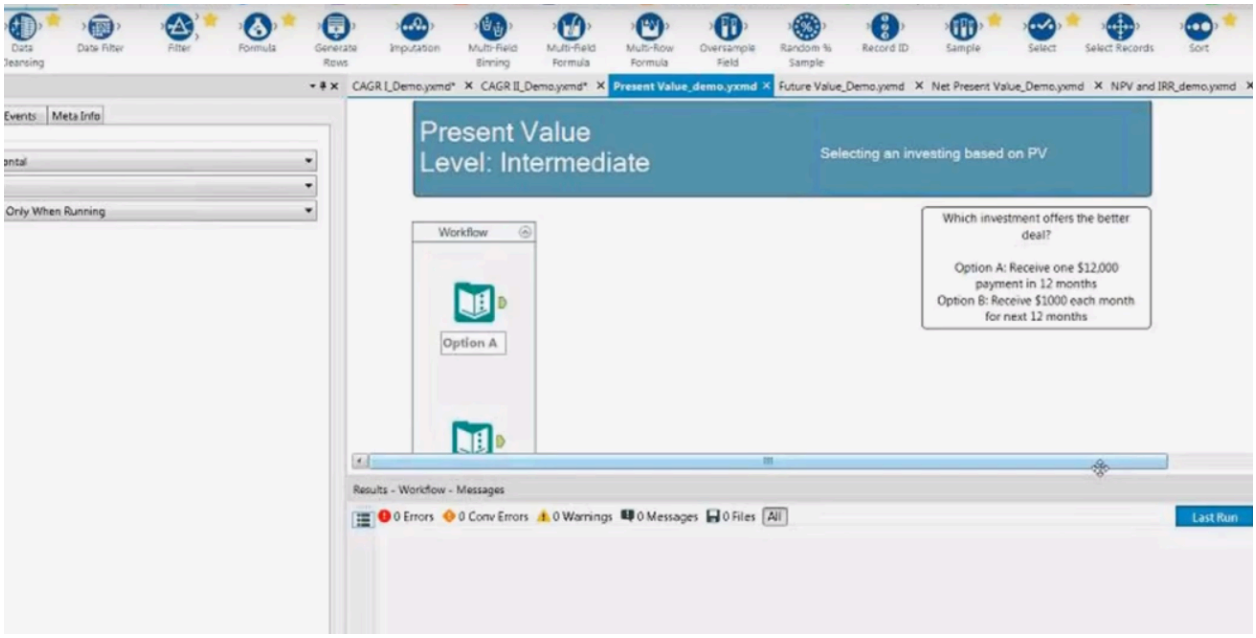


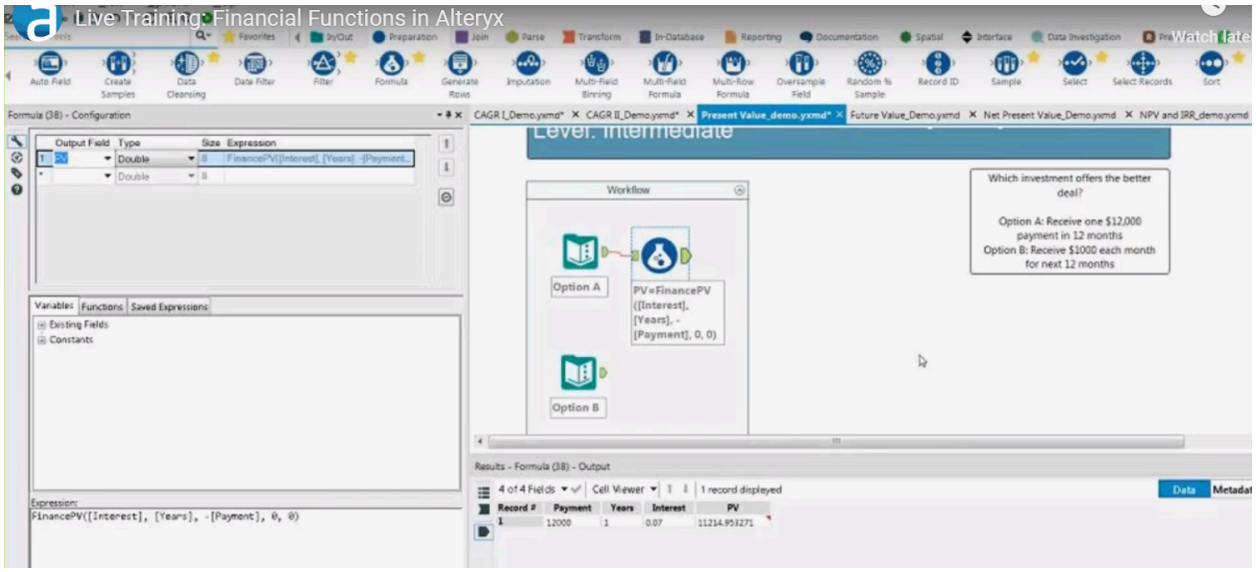
This example required us to separately join data sets.

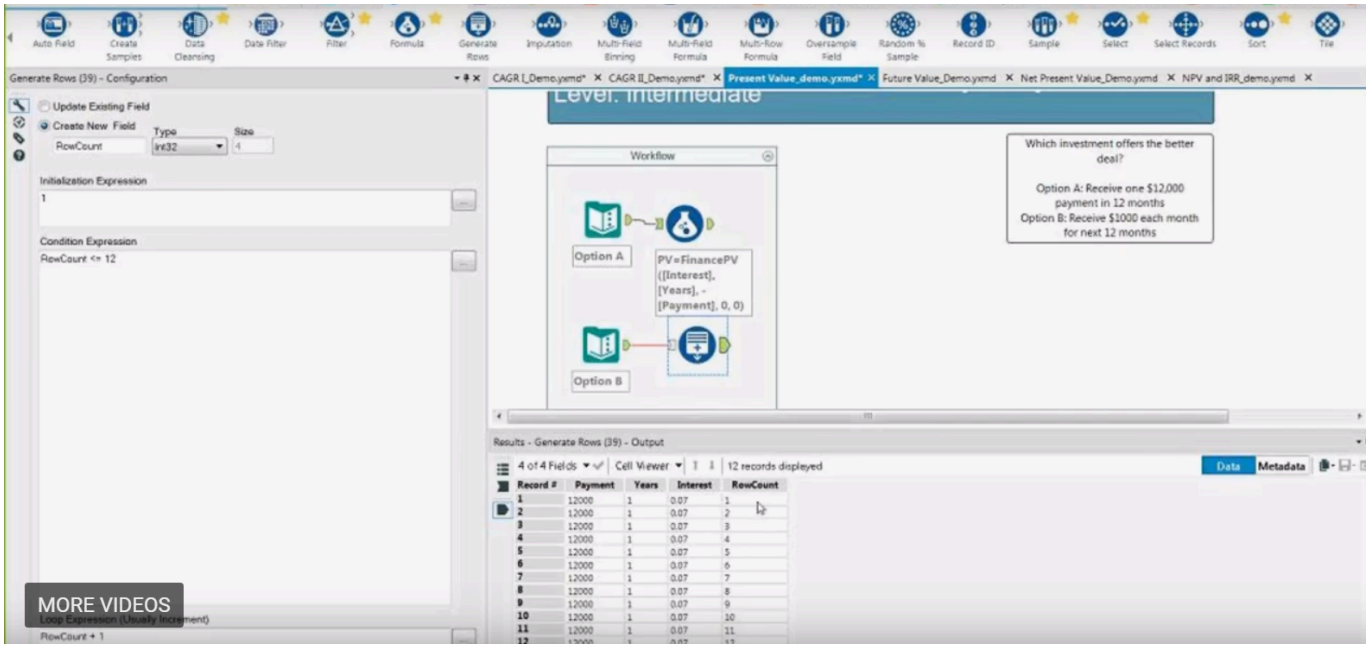


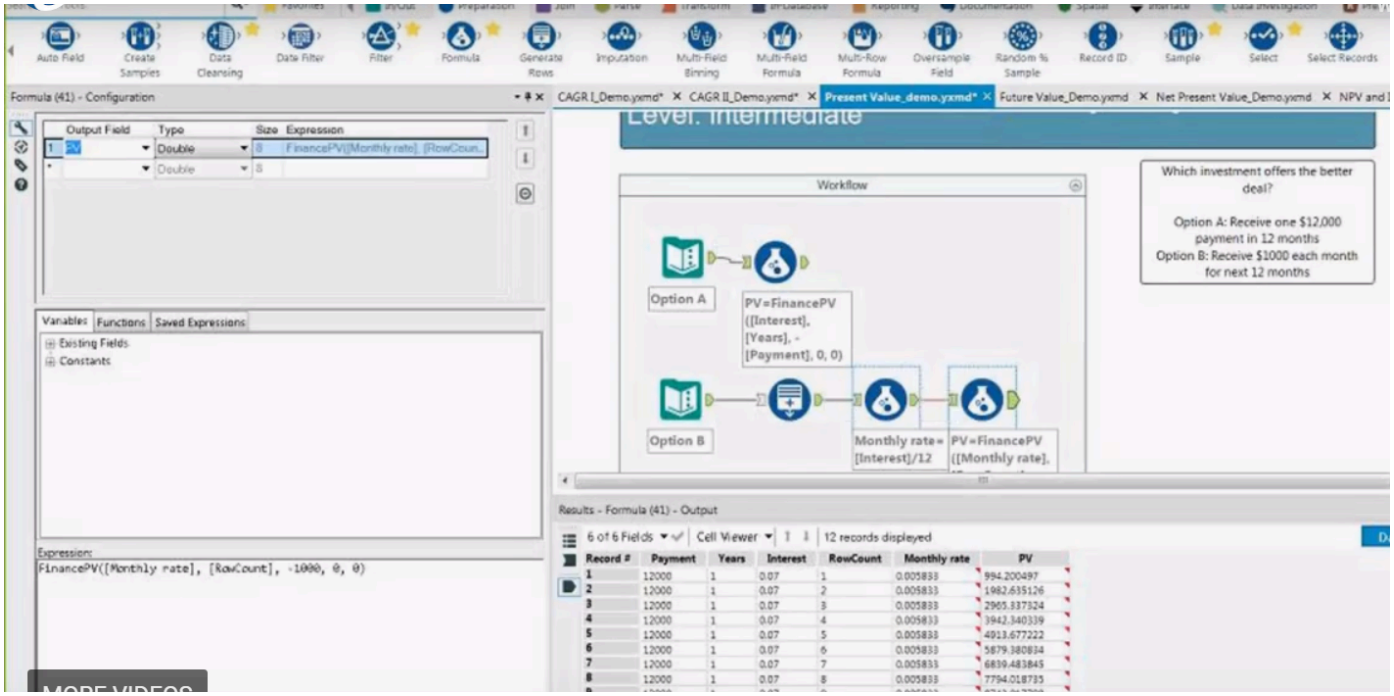
Inputting into the formula after joining the necessary fields.


Present Value (PV)
When making a decision, the time value of money must be evaluated
When money placed into a project, it no longer accrues interest
Would the cost return of a project cover the amount returned by interest in the same period of time?
Drawbacks
Highly Sensitive
Inflexible
$PV = \sum_{i=1}^{t} \frac{R_t - C_t}{(1+r)^t}$

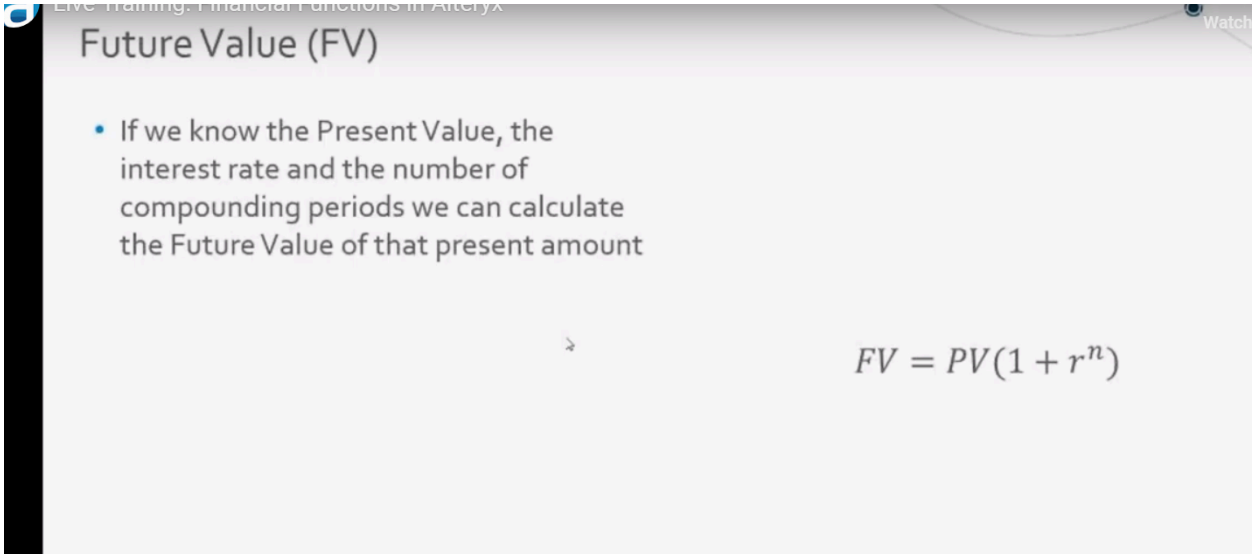

Present Value
Level: Intermediate
Selecting an investing based on PV
Which investment offers the better deal?
Option A: Receive one $12,000 payment in 12 months
Option B: Receive $1000 each month for next 12 months
Workflow
Option A
Results - Workflow - Messages
0 Errors
0 Conv Errors
0 Warnings
0 Messages
0 Files
All
Last Run

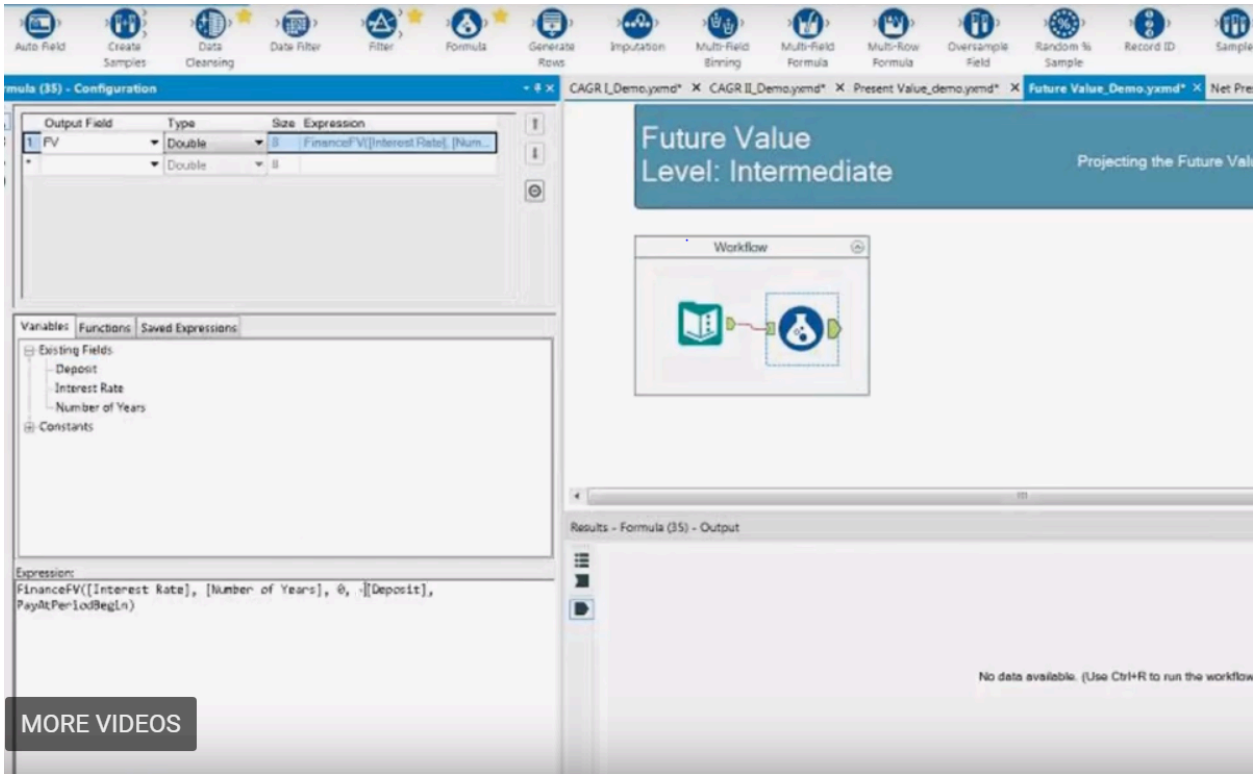

Live Training: Financial Functions in Alteryx
Watch Late
Level: Intermediate
Workflow
Option A
Option B
PV=FinancePV ([Interest], [Years], -[Payment], 0, 0)
Which investment offers the better deal?
Option A: Receive one $12,000 payment in 12 months
Option B: Receive $1000 each month for next 12 months

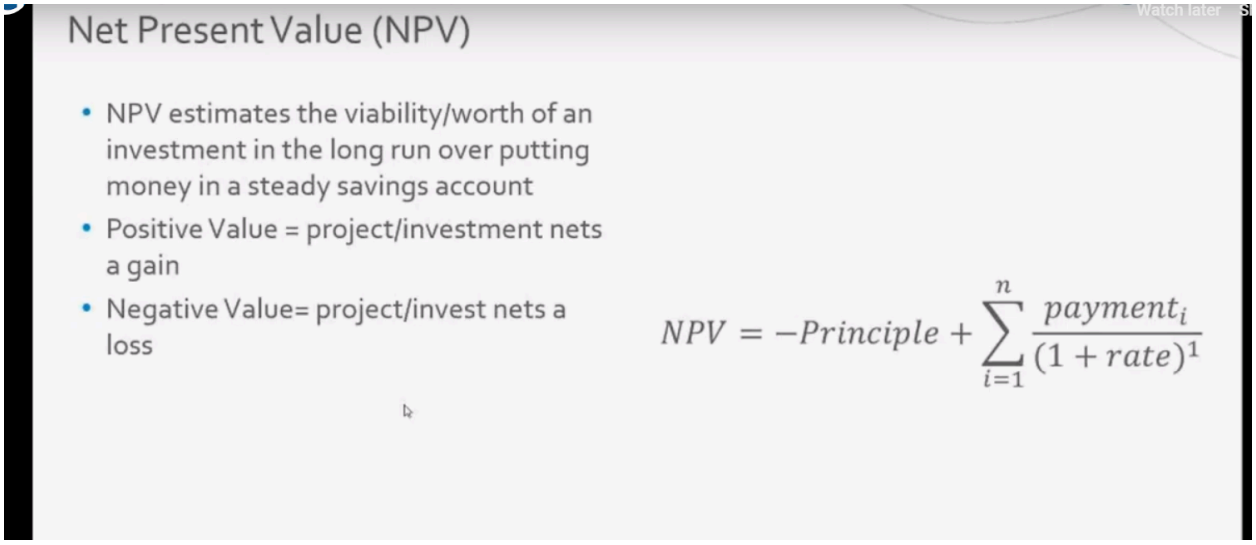

Level: Intermediate
Workflow
Option A
Option B
PV=FinancePV ([Interest], [Years], -[Payment], 0, 0)
Which investment offers the better deal?
Option A: Receive one $12,000 payment in 12 months
Option B: Receive $1000 each month for next 12 months
MORE VIDEOS

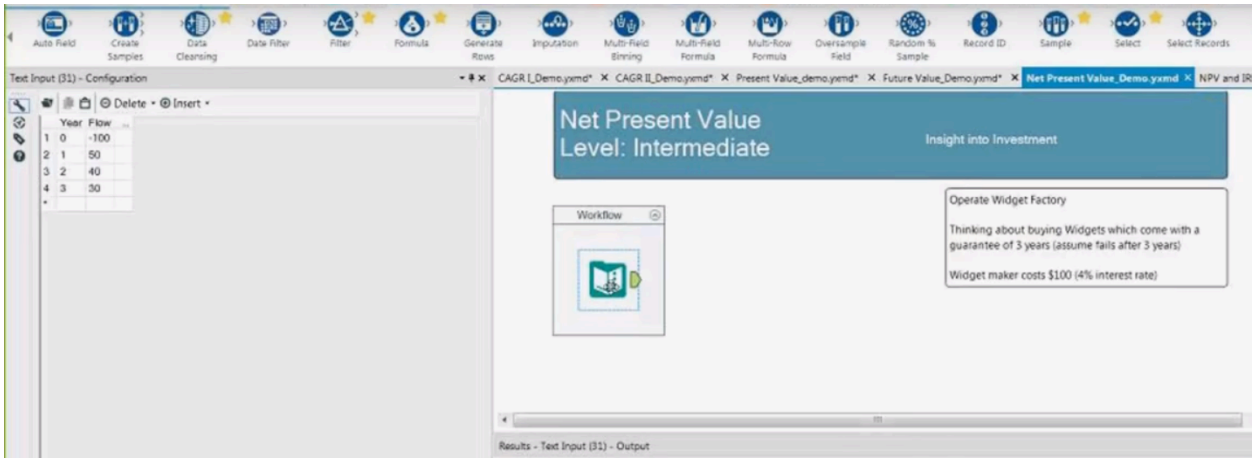


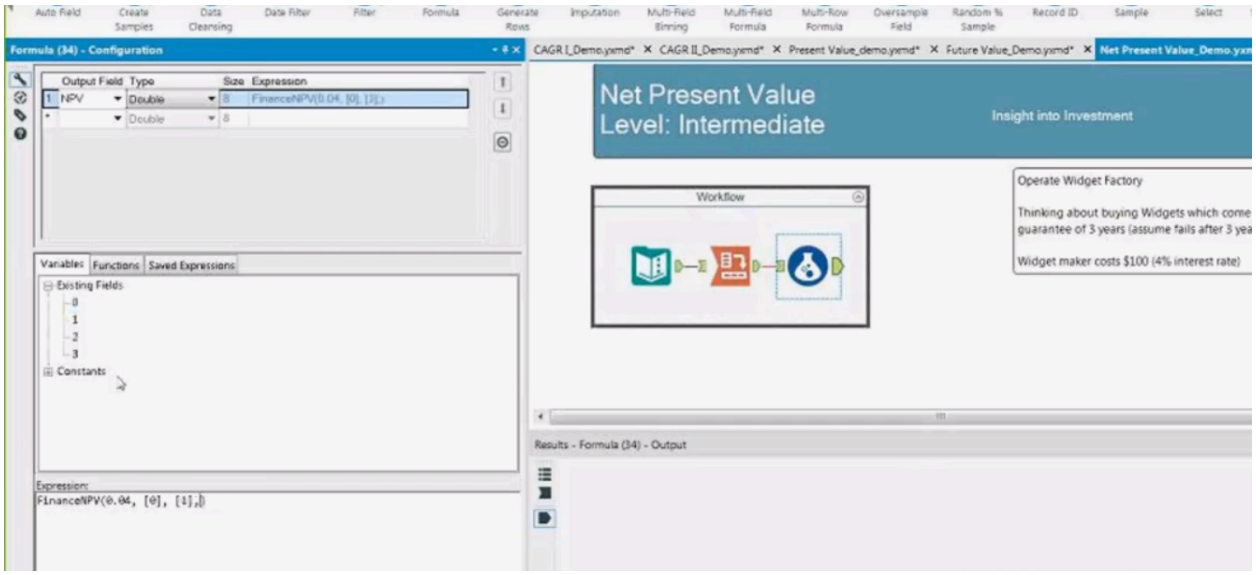
Row count for second example used to generate rows for each month. Later inputted into this monthly present value formula.




Auto Field
Create Samples
Data Cleansing
Date Filter
Filter
Formula
Generate Rows
Imputation
Multi-Field Binning
Multi-Field Formula
Multi-Row Formula
Oversample Field
Random % Sample
Record ID
Sample
mula (35) - Configuration
Output Field
Type
Size
Expression
1
FV
Double
8
FinanceFV([Interest Rate], [Num...
Double
8
CAGR I_Demo.yxmd*
CAGR II_Demo.yxmd*
Present Value_demo.yxmd*
Future Value_Demo.yxmd*
Net Pre
Future Value
Level: Intermediate
Projecting the Future Val
Workflow
Variables
Functions
Saved Expressions
Existing Fields
Deposit
Interest Rate
Number of Years
Constants
Expression:
FinanceFV([Interest Rate], [Number of Years], 0, -[Deposit],
PayNtPerIodBegIn)
Results - Formula (35) - Output
No data available. (Use Ctrl+R to run the workflow
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Watch later
Net Present Value (NPV)
• NPV estimates the viability/worth of an investment in the long run over putting money in a steady savings account
• Positive Value = project/investment nets a gain
• Negative Value= project/invest nets a loss
$NPV = -Principle + \sum_{i=1}^{n} \frac{payment_i}{(1+rate)^1}$





[0] initial cost

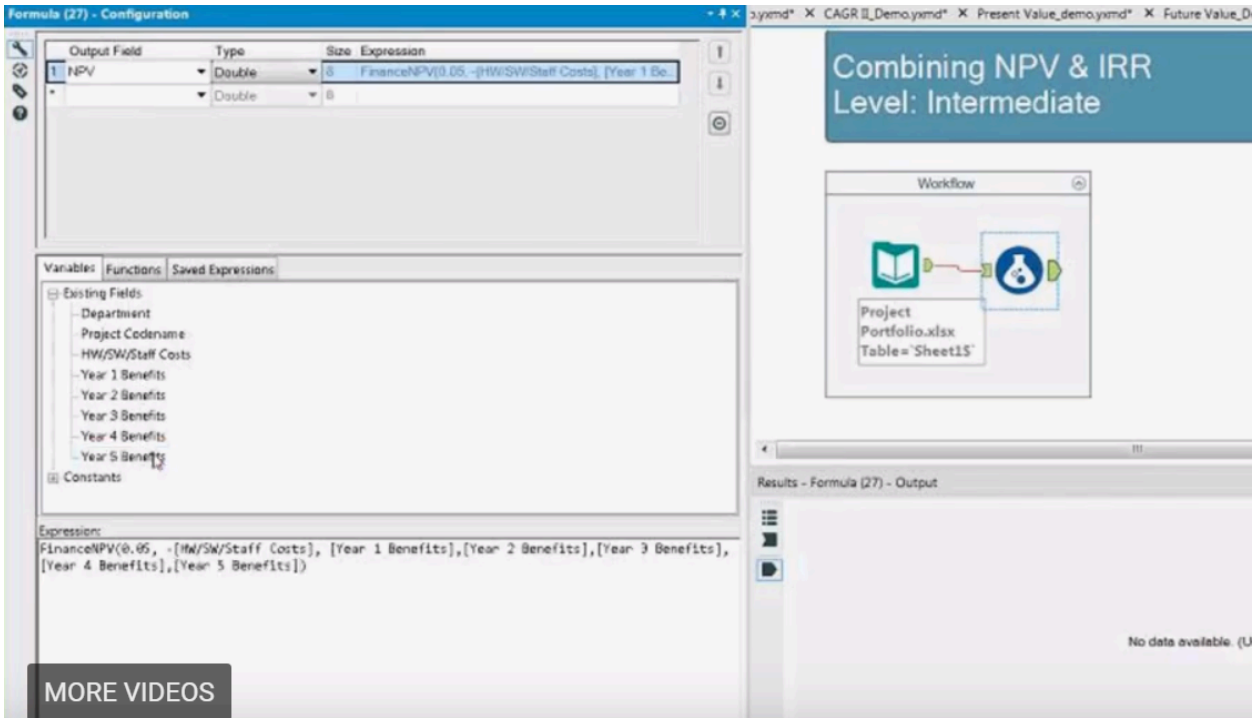
[1] cash flows after

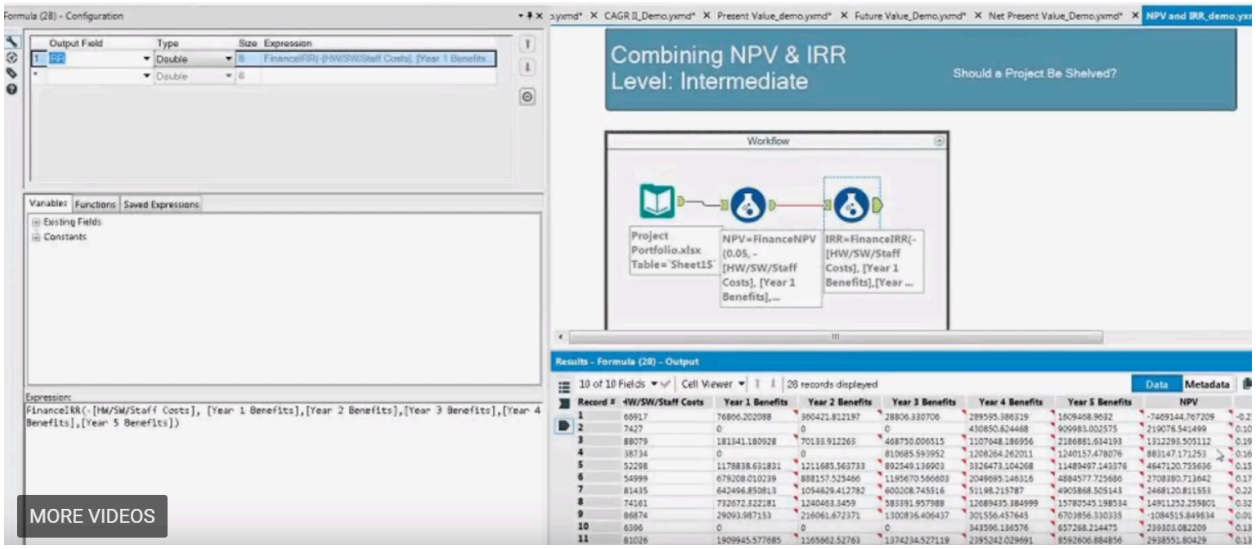
Internal Rate of Return (IRR)

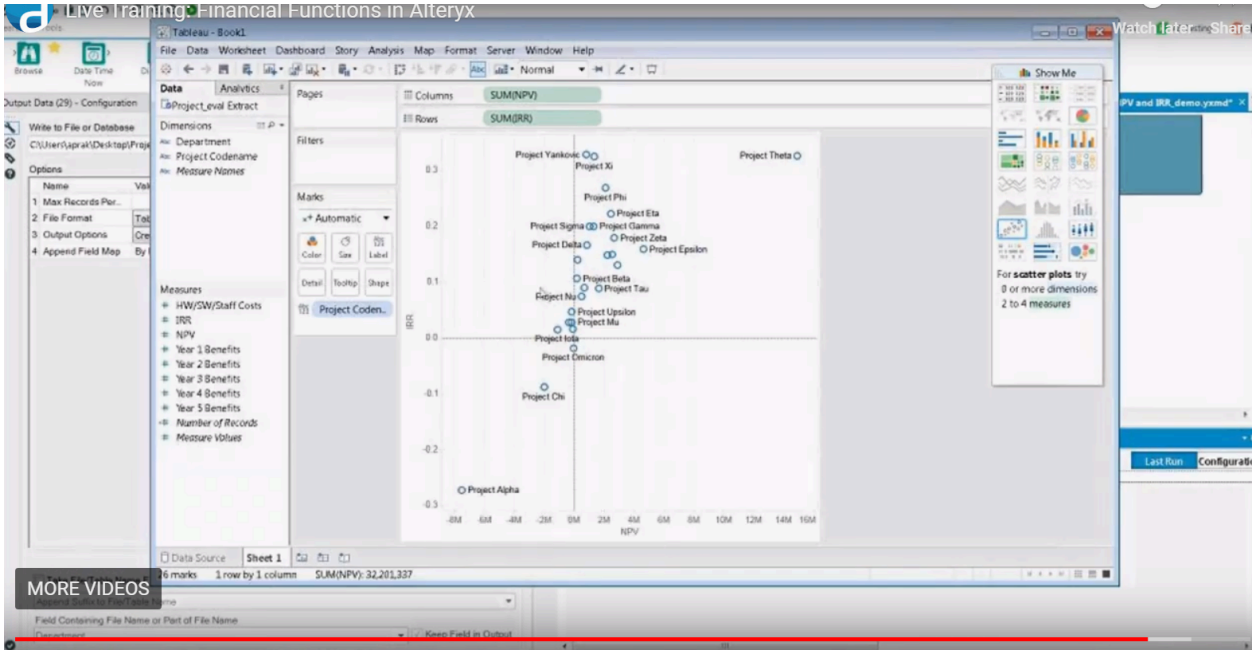
- IRR is the rate that makes NPV=0
- Continually feed IRR values into NPV until it returns as 0
- The value of IRR given to achieve the NPV will represent percent of earning on an investment
- IRR should be greater than cost of funds
  - If the IRR=4% and money borrowed to fund the project costs 5% then it will be unprofitable

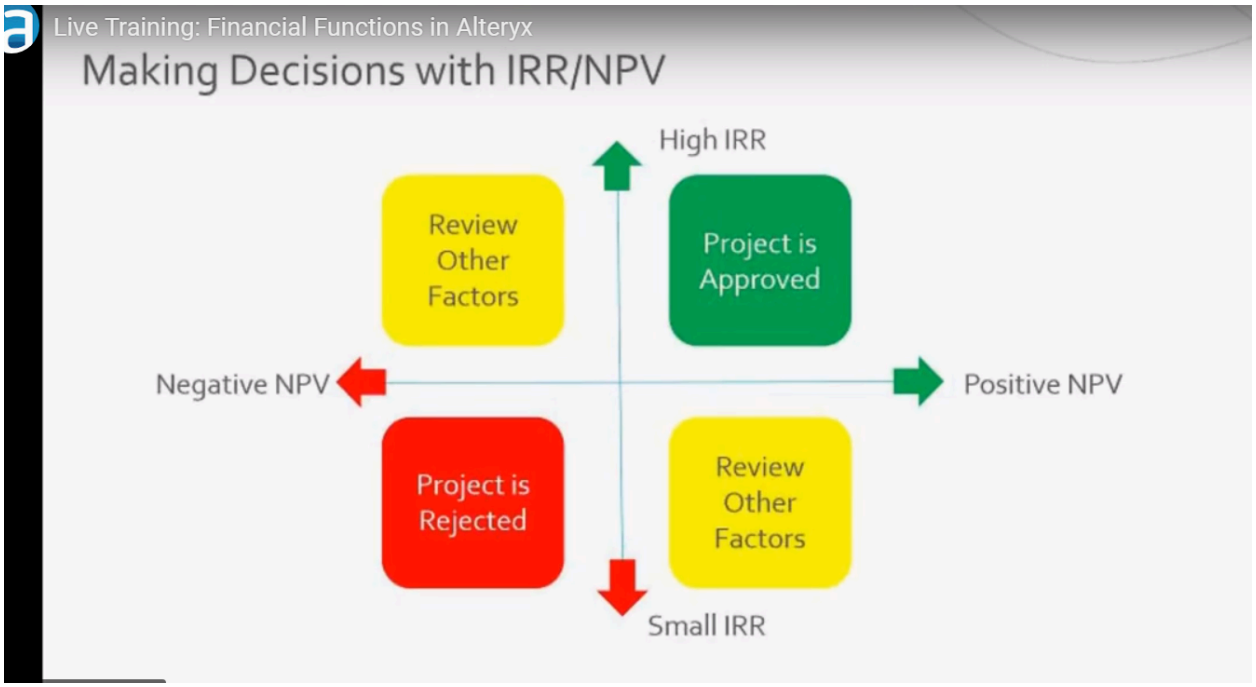
Internal Rate of Return Variants

- IRR Assumptions
  - Investment is held until it matures
  - The cash flows are periodic
  - All intermediate cash flows are re-invested at the IRR
- Variants
  - **IRR**- Internal Rate of Return where NPV is zero
  - **XIRR**- The IRR where the periodicity between cash flows is not equal
  - **MIRR** – The IRR where the reinvestment rate is not equal to IRR
  - **MXIRR** – The MIRR where the periodicity between cash flows is not equal.


Formula (27) - Configuration
Output Field
Type
Size
Expression
NPV
Double
FinanceNPV(0.05,-[HW/SW/Staff Costs], [Year 1 Be...
Variables
Functions
Saved Expressions
Existing Fields
Department
Project Codename
HW/SW/Staff Costs
Year 1 Benefits
Year 2 Benefits
Year 3 Benefits
Year 4 Benefits
Year 5 Benefits
Constants
Expression:
FinanceNPV(0.05, -[HW/SW/Staff Costs], [Year 1 Benefits],[Year 2 Benefits],[Year 3 Benefits], [Year 4 Benefits],[Year 5 Benefits])
Combining NPV & IRR
Level: Intermediate
Workflow
Project Portfolio.xlsx Table='Sheet1$'
Results - Formula (27) - Output
No data available.
MORE VIDEOS


Formula (28) - Configuration
Combining NPV & IRR
Level: Intermediate
Should a Project Be Shelved?
Workflow
Project Portfolio.xlsx Table='Sheet1$'
NPV=FinanceNPV(0.05,-[HW/SW/Staff Costs], [Year 1 Benefits],...
IRR=FinanceIRR(-[HW/SW/Staff Costs], [Year 1 Benefits],[Year ...
Results - Formula (28) - Output
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Watch Later
Share
Tableau - Book1
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Data
Analytics
Project_eval Extract
Dimensions
Department
Project Codename
Measure Names
Measures
HW/SW/Staff Costs
IRR
NPV
Year 1 Benefits
Year 2 Benefits
Year 3 Benefits
Year 4 Benefits
Year 5 Benefits
Number of Records
Measure Values
Pages
Filters
Marks
Automatic
Columns
SUM(NPV)
Rows
SUM(IRR)
Project Yankovic
Project Xi
Project Theta
Project Phi
Project Eta
Project Sigma
Project Gamma
Project Zeta
Project Delta
Project Epsilon
Project Beta
Project Nu
Project Tau
Project Upsilon
Project Mu
Project Iota
Project Omicron
Project Chi
Project Alpha
IRR
NPV
Show Me
For scatter plots try
0 or more dimensions
2 to 4 measures
Data Source
Sheet 1
6 marks
1 row by 1 column
SUM(NPV): 32,201,337
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Making Decisions with IRR/NPV
High IRR
Review Other Factors
Project is Approved
Negative NPV
Positive NPV
Project is Rejected
Review Other Factors
Small IRR