



Ultimate  
Risk  
Solutions

*Enlighten Strategic Thinking*



# PortfolioPolis<sup>TM</sup>

Insurance Portfolio Pricing and Optimisation Platform

***Turning Insight into Competitive Advantage***

New York, January 28th, 2020



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## .. .In a nutshell... **PortfolioPolis** is

- A tool built for actuaries, underwriters, product R&D teams
- Allowing them to **model and optimize** Insurance Portfolios... meaning:
  - **Evaluate** how pricing and underwriting decisions perform
  - **Compare** to competitors' prices and underwriting strategies
  - **Identify** business opportunities or risk classes to avoid
  - **Create** strategies to allow a company to meet or exceed targets
- Not a black box... The focus is on **data-driven strategic decisions** about pricing and business development
- Not tied to consulting services that drive costs up... Users are in control

Empowerment by URS = ½ day training + begin using + create your own analytical process + design the solutions yourself
- Accessible to companies of **any size**



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## Why is **Ultimate Risk Solutions** doing this?

**“Future belongs to data driven companies...”** Guy C. + many others

- “An **analytical arms race** is disrupting the traditional insurance company business model and changing the imperatives for success.” CAS Magazine July 2017
- “Despite a wealth of available data, decision-makers can often still be **starved of true insight...** [what is needed is] a cultural change...” CAS Magazine same article
- “Sooner or later a competitor with a data-driven, risk-taking group of **smart creatives and leadership** that encourages them will [target] the non-innovating competitor’s book of business, with good data supporting it.” CAS May 2015

The challenge is going from **THEORY** to **PRACTICE**



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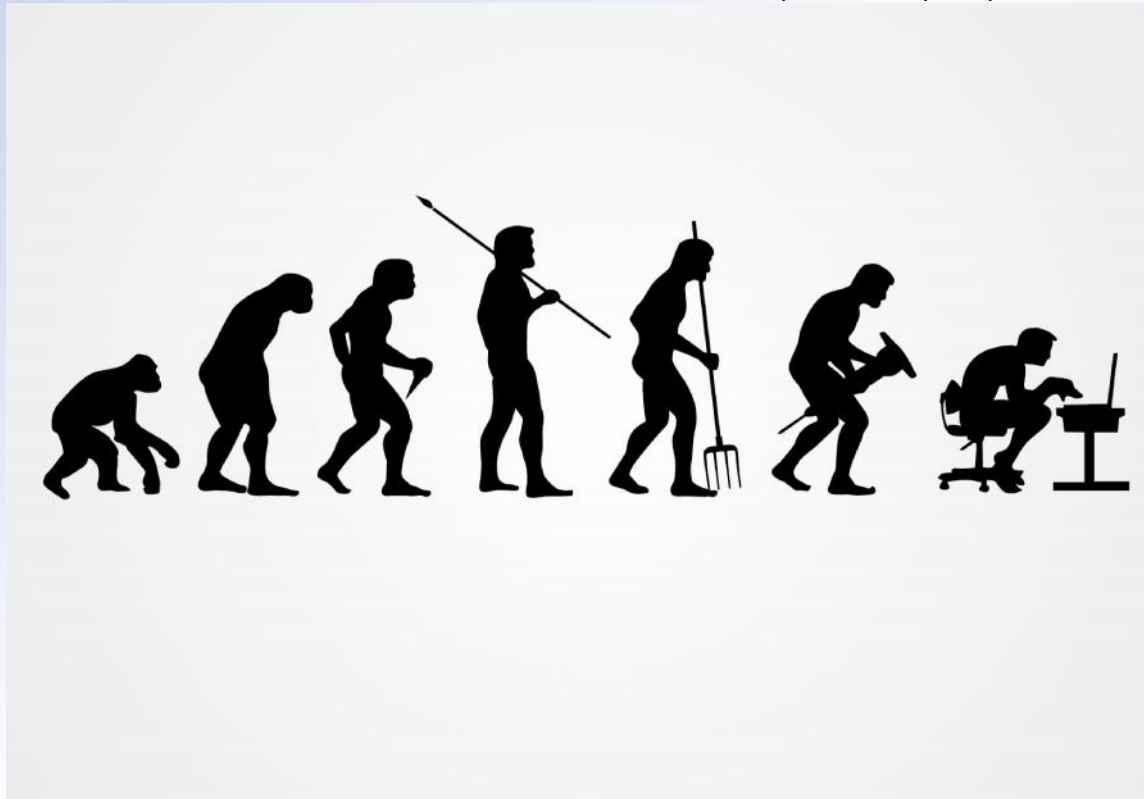
## **Purpose** of our conversation today...

- A candid dialogue about product development and objectives for PortfolioPolis
- A “focus group” on practitioners’ needs
- Who should URS target in this launch?
- How should the product be deployed and priced?
- Your personal level of interest in an extended/no obligation trial license
- **Thank you!...** in advance for your valuable input

## Preface

The evolution of actuarial science in the last 50 years...

*a personal perspective...*

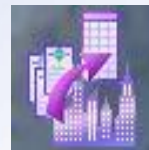


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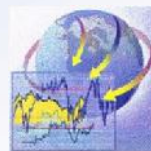
# URS Product Suites **Evolution**



**PredictiM** – GLM Analytics



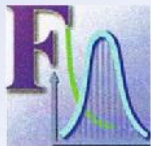
**PortfolioPolis** – Portfolio Pricing & Optimization



**Predictable Dynamics** – Economic Scenario Generator



**Res-Solver** Suite – Deterministic & Stochastic Loss Reserving



**Risk Explorer** Suite – DFA & Capital Modeling

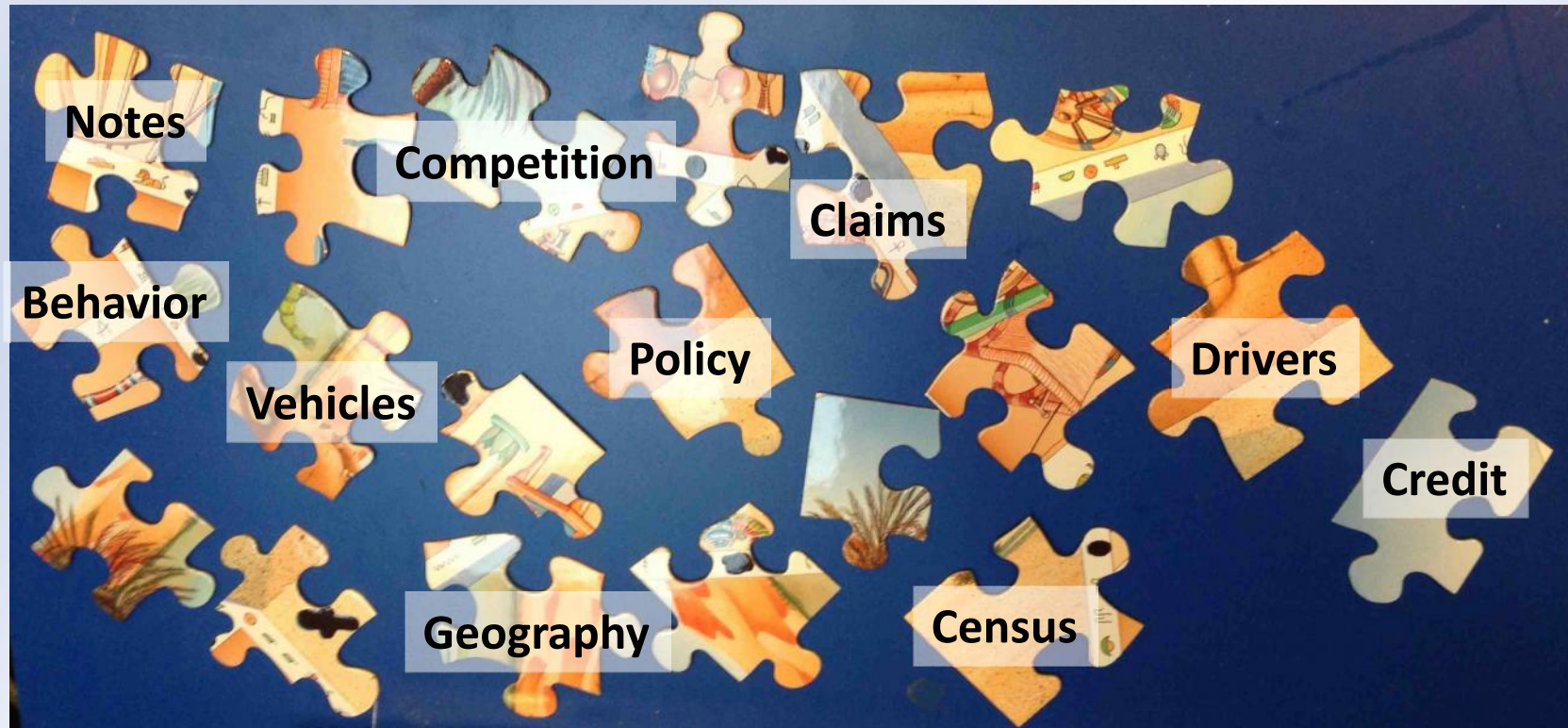


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What does Portfolio**Polis** do for you?...

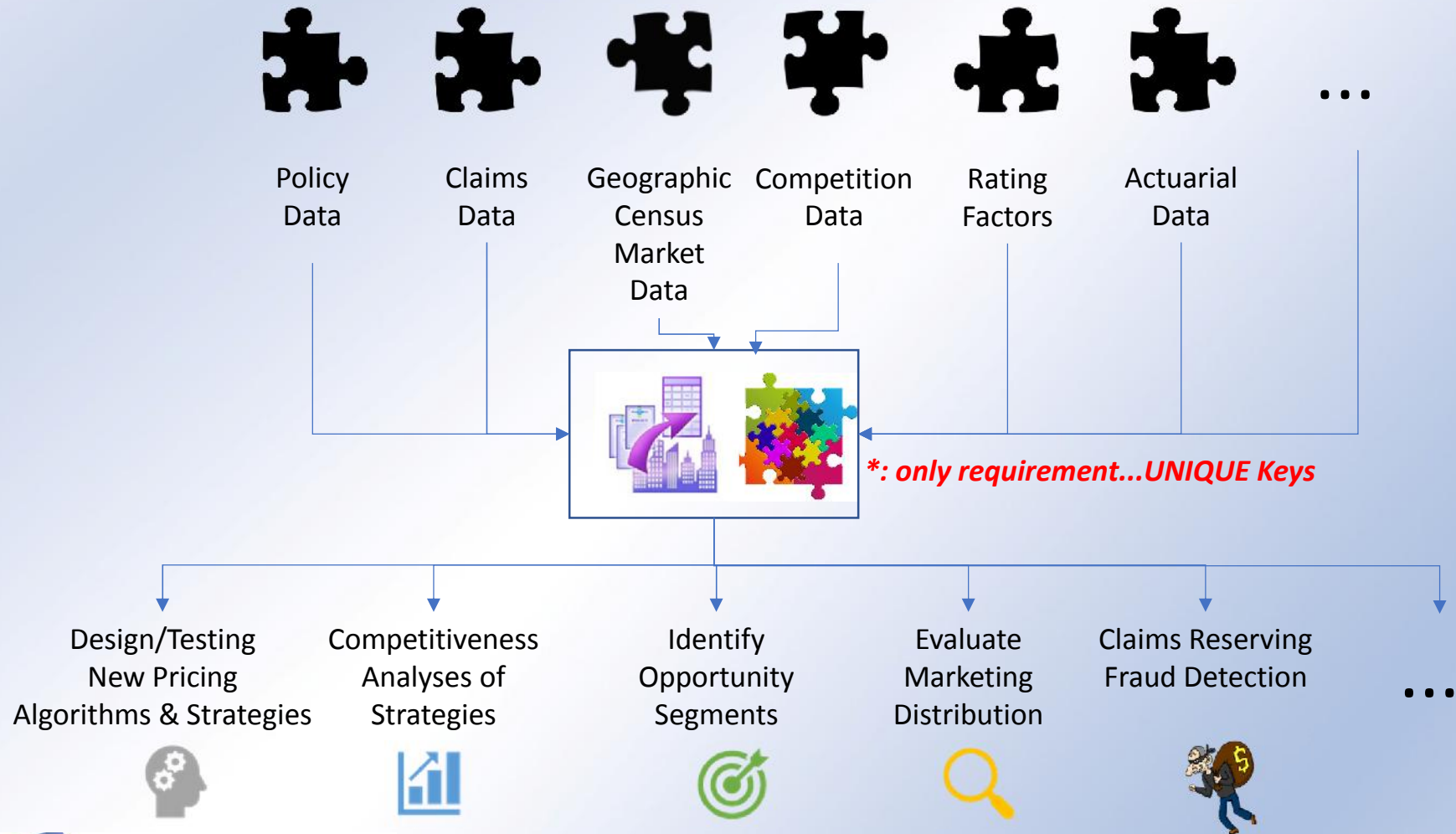
*Making sense of the puzzle...*



Portfolio**Polis** = The Power of **Relational Database** + **Portfolio Modeling**

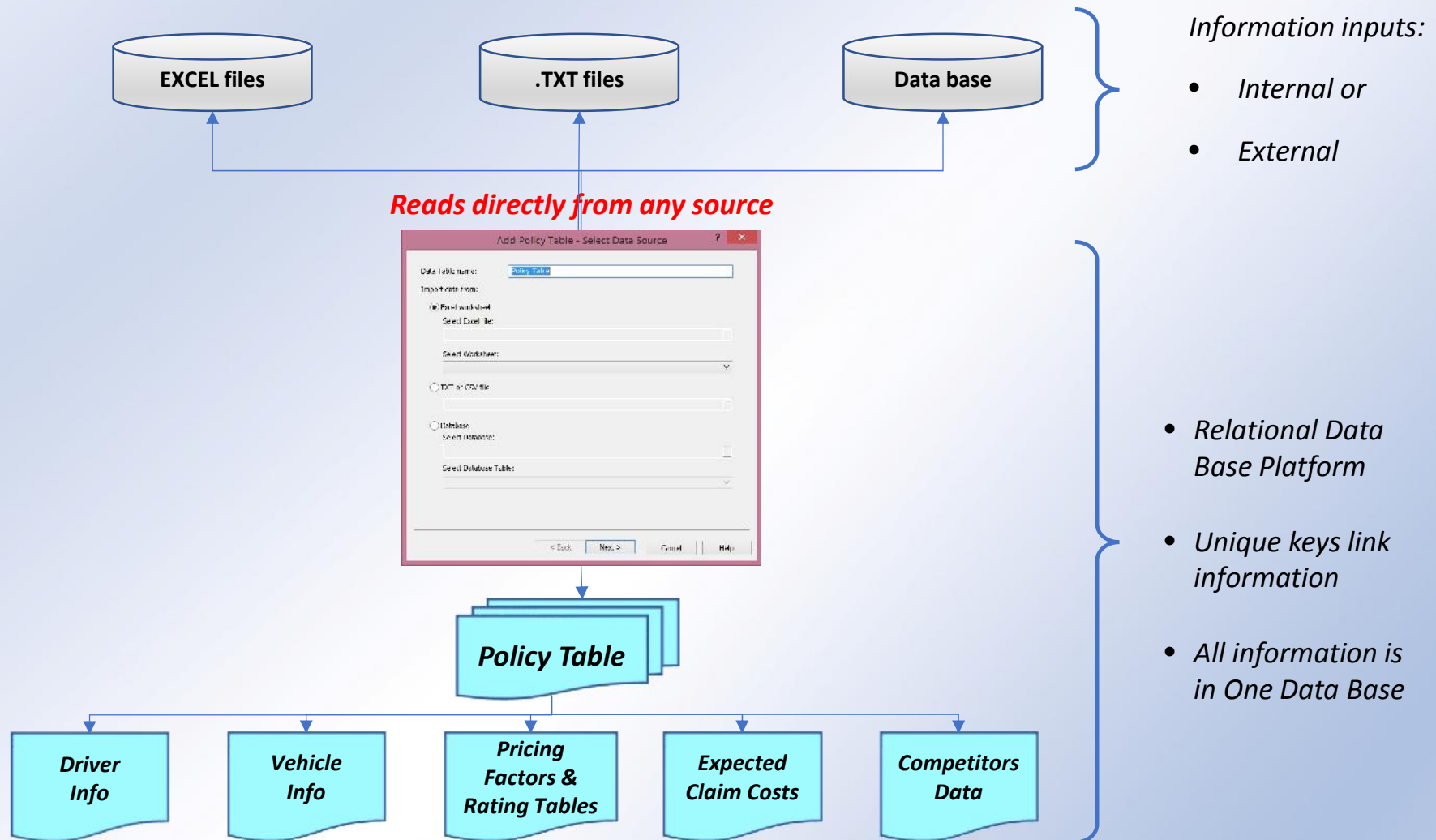
## What does Portfolio**Polis** do for you?...(continued)

# Insurance Portfolio Modeling

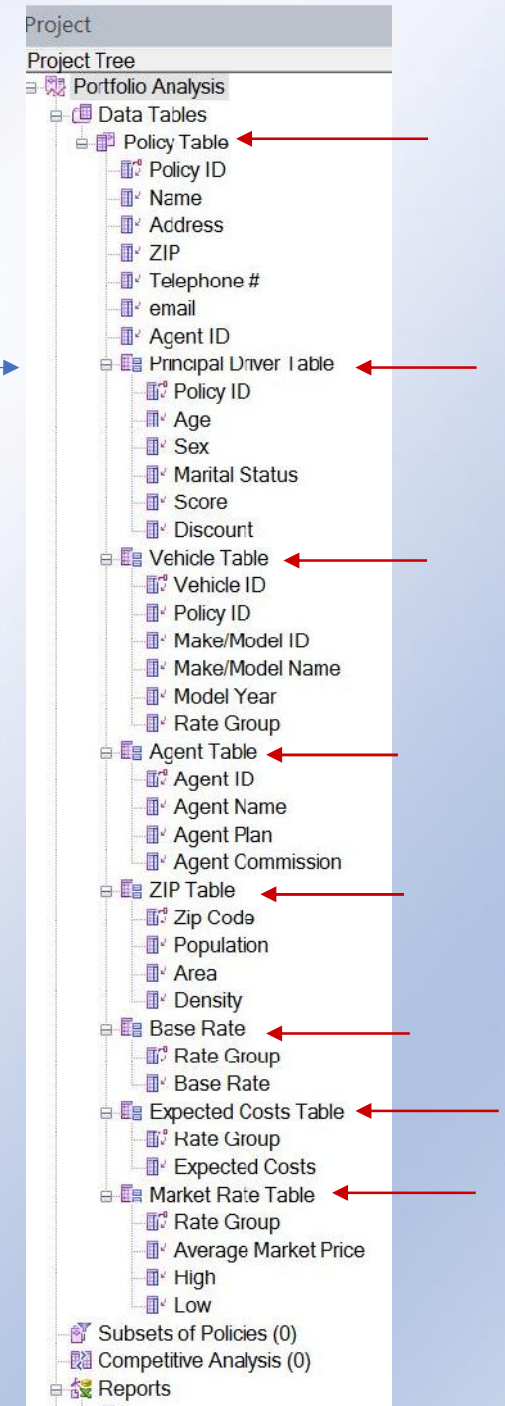
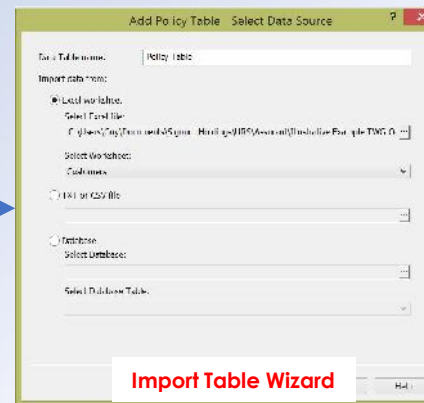
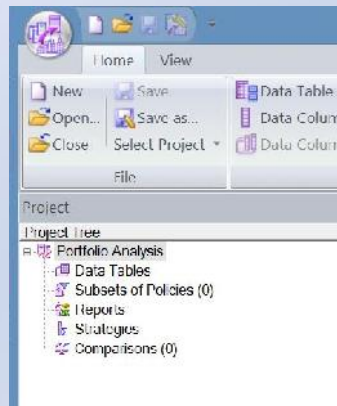




## Simple Example of Building Model in Portfolio**Polis**



# Importing data tables from diverse sources is a one step process



- Policy table is at the top of the hierarchy, each customer is separately identified
- Unlimited number of supporting table can be added, groups can collaborate in model building
- Each table having a unique key, information from various sources can be brought together
- No programming required...so focus remains on identifying relevant data sources
- Data tables are easily updated with "RESET" option
- Structures are easily and quickly manipulated, reordered or reproduced
- Great transparency and ease of auditing



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Home View

New Save Data Table Report Subsets of Policies Reports  
Open... Save as... Data Column Strategy Competitive Analysis Strategies  
Close Select Project Data Column Group Comparison Comparisons

File Add Edit

Project

Project Tree

Portfolio Analysis

Data Tables

Policy Table

Policy ID (unique key)

Name

Address

ZIP

Telephone #

email

Agent ID

Driver Table

Driver ID (unique key)

Policy ID

Age

Sex

Marital Status

Driving Experience

Claim Free Years

Vehicle Table

Vehicle ID (unique key)

Policy ID

Make/Model ID

Make/Model Name

Model Year

Rate Group

Base Rate Table

Rate Group (unique key)

Base Rate

Agent Table

Agent ID (unique key)

Agent Name

Agent Plan

Agent Commission

Expected Cost Table

Rate Group (unique key)

Expected Costs

ZIP Table

Zip Code (unique key)

Population

Area

Risk Factor

Density

Market Rate Table

Rate Group (unique key)

Average Market Price

High

Low

Strategy-Specific Data Columns

Imp... Nu... Policy Table/Policy ID (unique key)

Imp... Cat... Policy Table/Name

Imp... Cat... Policy Table/Address

Imp... Nu... Policy Table/ZIP

Imp... Nu... Policy Table/Telephone #

Imp... Cat... Policy Table/email

Imp... Nu... Policy Table/Agent ID

Imp... Nu... Driver Table/Driver ID (unique key)

Imp... Nu... Driver Table/Policy ID

Imp... Nu... Driver Table/Age

Imp... Cat... Driver Table/Sex

Imp... Cat... Driver Table/Marital Status

Imp... Nu... Driver Table/Driving Experience

Imp... Nu... Driver Table/Claim Free Years

Imp... Nu... Vehicle Table/Vehicle ID (unique key)

Imp... Nu... Vehicle Table/Policy ID

Imp... Nu... Vehicle Table/Make/Model ID

Imp... Cat... Vehicle Table/Make/Model Name

Imp... Nu... Vehicle Table/Model Year

Imp... Nu... Vehicle Table/Rate Group

Imp... Nu... Base Rate Table/Rate Group (unique key)

Imp... Nu... Base Rate Table/Base Rate

Imp... Nu... Agent Table/Agent ID (unique key)

Imp... Cat... Agent Table/Agent Name

Imp... Cat... Agent Table/Agent Plan

Imp... Nu... Agent Table/Agent Commission

Imp... Nu... Expected Cost Table/Rate Group (unique key)

Imp... Nu... Expected Cost Table/Expected Costs

Imp... Nu... ZIP Table/Zip Code (unique key)

Imp... Nu... ZIP Table/Population

Imp... Nu... ZIP Table/Area

Imp... Nu... ZIP Table/Risk Factor

Scri... Nu... ='Population'/'Area'

Imp... Nu... Market Rate Table/Rate Group (unique key)

Imp... Nu... Market Rate Table/Average Market Price

Imp... Nu... Market Rate Table/High

Imp... Nu... Market Rate Table/Low

Window Snip

## Example of Project Screen

ZIP Table

Zip Code

Population

Area

Risk Factor

Density

Imp... Nu... ZIP Table/Zip Code (unique key)

Imp... Nu... ZIP Table/Population

Imp... Nu... ZIP Table/Area

Imp... Nu... ZIP Table/Risk Factor

Scri... Nu... ='Population'/'Area'

- Define any field
- Automatic update
- Unlimited data manipulation
- Up or Down the project tree
- Unlimited file size

## Example – Importing tables and supporting tables

# Many ways of associating data tables and performing calculations No coding...all done through “wizards”

## Calculations between columns

## Groupings in “Bins” or “Bands”

## Joining data with unique keys

- Once table are imported, new data elements are added
- Rating algorithms can use data from diverse sources
- Parameters of associations or calculations are easily revised
- Wizard tools minimize errors and facilitate audits by displaying formulas on screen
- Unlimited ability to create new columns, new associations, new calculations.... A boost to innovation

## Aggregate data from other tables



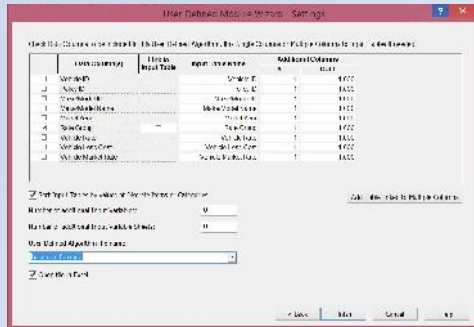
Example of creating columns by joining/banding/calculations



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# URS Translator™... A patented code generator extending ability to create new pricing or analytical tools

*Launch User-Defined Wizard*



*Select Input/Define Output*

	A	B	C
1			
2		Output Value:	830
3			
4	#	Data Column Name	Value
5	1	Rate Group	18
6			
7			

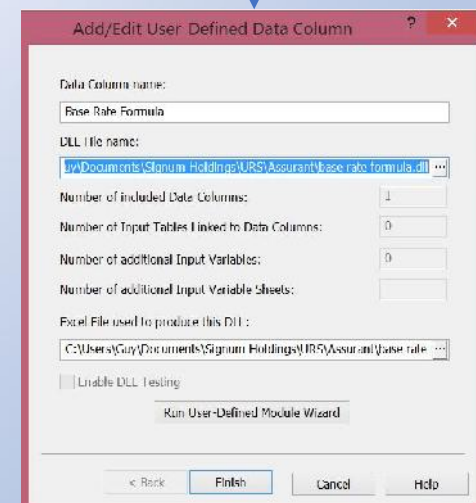
*Model any process through power of EXCEL*

	A	B	C
1			
2			
3		Rate Group	18
4		Base Rate	830
5		IF(RG<=10,200+C3*20,200+RG*35)	
6			
7			

*One step translation to machine code*



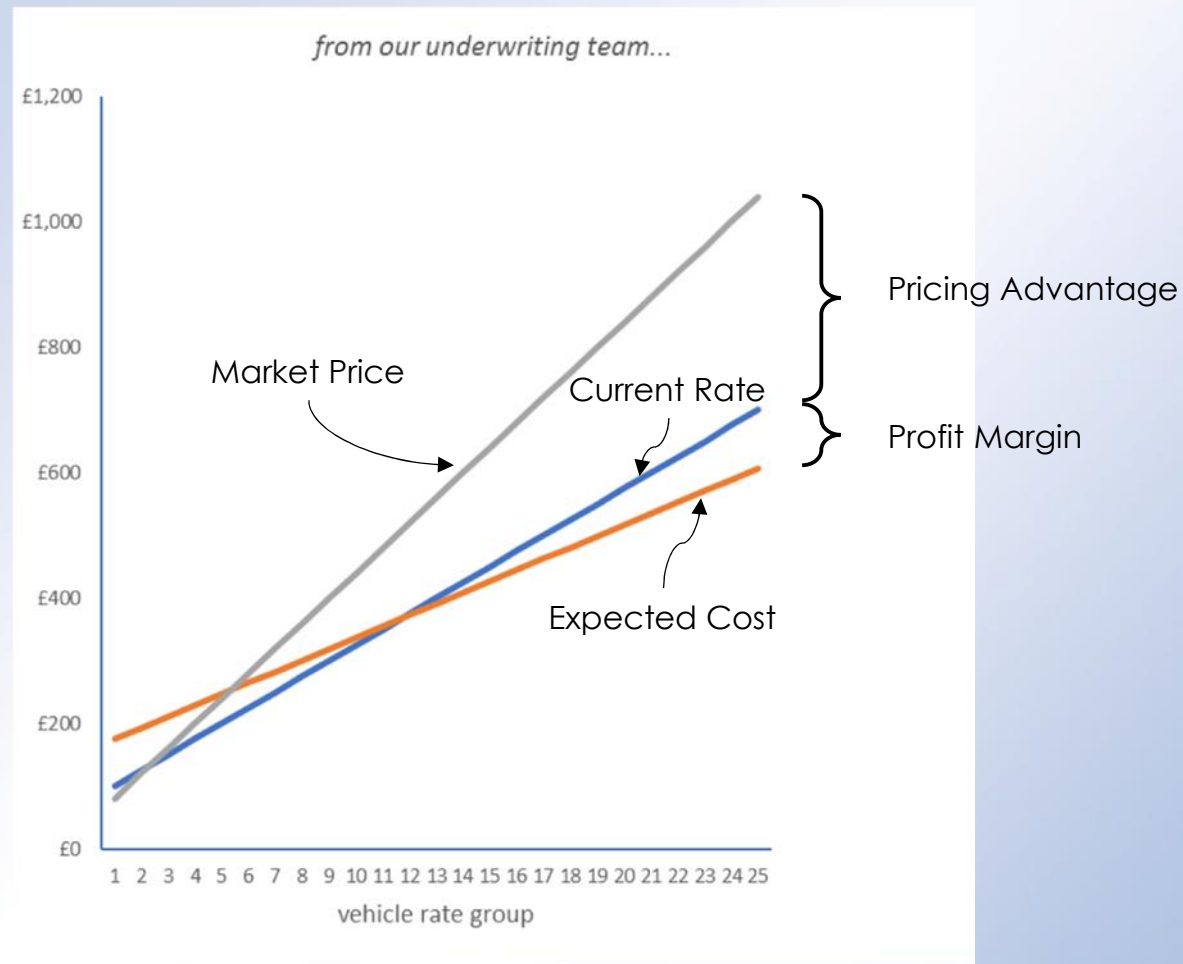
*One click to integrate the new process into the model*



- URS Translator allow users to create new processes or calculations in EXCEL
- Any EXCEL function can be used... No limit to complexity of models
- Translation to DLL machine code is instant
- Processing speed is super fast no matter the complexity of the procedure
- No other technology in the market provides this functionality

## Example of User-defined column and URS\_Lookup()

# Illustrative Pricing Model



How do we proceed...?

# Amending Base Rate Formula



Change Base Rate Formula Properties

General

Actions

Gain/Loss Summary

Actions:

New Base Rate Formula

Add...

Edit...

Remove

Show Report

Move Up

Move Down

Show Report for All Actions

OK Cancel Apply Help

Add/Edit Action

Action name:

New Base Rate Formula

Action Type:

Change Pricing Algorithm:

ants/signum Holdings/UCS/Asses int/Policy Base Rate New.cl

Change Premiums by: 0.00%

Cancel Policies

Change User-Defined or Scripted Data Columns

Apply to Subset of Policies: All Policies

OK Cancel

View Report

Report name: Sales Report

✓ Show Portfolio Totals ✓ Show Gains/Losses from Current Portfolio Strategy: Change Base Rate Formula

✓ Show Policy Level Details ✓ Show Gained Clients in Blue Action: New Base Rate Formula

✓ Show Subtotals ✓ Show Lost Clients in Red

Policy ID	Policy Count	Dealer ID	Policy Base Rate	Policy Net Rate	Policy Loss Cost Net	Profit Margin	Policy Market Rate Net	Price Advantage
Portfolio Totals	50	256	14,875	12,794	14,486	-1,572	10,480	-4,905
Strategy/Action Totals	50		20,060	17,027	14,486	3,001	19,480	580
Gains/Losses	0		5,385	4,733	0	4,733	0	5,385
Policy Level Detail								
1	1	1	525	498	456	43	790	235
2	1	1	175	168	204	-38	200	-25
3	1	1	400	380	360	14	560	160
4	1	1	150	143	186	-44	150	-10
5	1	1	125	118	168	-49	120	-5
6	1	1	150	143	186	-44	160	-10
7	1	1	200	190	222	-32	240	-40
8	1	1	125	119	168	-49	120	-5
9	1	2	150	143	186	-44	160	-10
10	1	2	134	116	148	-40	130	-4

OK



# Strategies Are Used to Test Pricing/Rules Changes

- Strategies are defined as Actions:

- New Price
- New Algorithm
- Cancellations, etc...

- Actions can apply to all policies, subset of policies or even one policy

- Results are instantly available

- All Strategies are maintained in the Policy Table as additional data elements

- Strategies can include entry in new markets, customer sensitivity factors or exit from specific segments

- New Strategies can be added as variations of existing Strategies or brand-new ones

- The user defines the performance measures used to compare Strategies, such as sales, profits, return on capital, etc...

General Rate Increase Properties

General

Strategy name: General Rate Increase

☐ Policy Table contains Data Column with "Cannot Cancel" flags

Select Data Column containing "Cannot Cancel" flags:

☐ Overrule "Cannot Cancel" flags for selected Subset of Policies:

☐ Policy Table contains Data Column with "Cannot Increase" flags

Select Data Column containing "Cannot Increase" flags:

☐ Overrule "Cannot Increase" flags for selected Subset of Policies:

OK Cancel Apply Help

Add/Edit Action

Action name: General Increase 10%

Action Type:

☐ Change Pricing Algorithm:

☒ Change Premiums by: 10.000%

☐ Cancel Policies

☐ Change User-Defined or Scripted Data Columns

Apply to Subset of Policies: All Policies

OK Cancel

View Report

Report name: Sales Report

☒ Show Portfolio Totals ☒ Show Gains/Losses from Current Portfolio Strategy: General Rate Increase

☒ Show Policy-Level Details ☒ Show Gained Clients in Blue Action: General Increase 10%

☒ Show Subtotals ☒ Show Lost Clients in red

Policy ID	Policy Count	Dealer ID	Policy Base Rate	Policy Net Rate	Policy Loss Cost	Profit Margin	Policy Market Rate	Price Advantage
63	1	8	275	220	276	56	300	-85
64	1	8	250	200	258	58	320	-70
65	1	9	375	360	348	-48	520	-145
66	1	9	525	420	456	-36	760	-235
67	1	9	475	380	420	-40	680	-205
68	1	10	275	220	276	56	300	-85
69	1	10	350	280	320	50	480	-130
50	1	10	150	120	180	-66	160	-10
Sub-Totals Dealer Totals 1								
Current Portfolio	8	8	1,850	1,750	1,956	-199	2,320	-470
Strategy/Action	8	8	2,035	1,933	1,956	23	2,320	-285
Gains/Losses	0	0	185	178	0	178	0	185
Sub-Totals Dealer Totals 2								
Current Portfolio	4	8	1,200	1,140	1,176	-36	1,600	-400
Strategy/Action	4	8	1,320	1,254	1,176	78	1,600	-280
Gains/Losses	0	0	120	114	0	114	0	120
Sub-Totals Dealer Totals 3								
Current Portfolio	7	21	2,275	2,161	2,184	-23	3,080	-805
Strategy/Action	7	21	2,503	2,377	2,184	180	3,080	-578
Gains/Losses	0	0	228	216	0	216	0	228
Sub-Totals Dealer Totals 4								

OK

## Example of creating strategies

# Competitive Analysis at the Policy Level... Point and click...

Competitive Analysis (1) Properties

Competitors Premiums

Competitiveness Indicators

Select Data Source:

Im Holdings\URS\Assurant\Illustrative Example 1 WG Oct 11 19.xls

Policy ID	Policy Market Rate
1	150
2	200
3	500
4	150
5	120
6	150
7	240
8	120
9	150
10	120

Select Data Column in Policy Table that represents Policy Premium:

Policy base rate

OK Cancel Apply Help

Add/Edit Competitiveness Indicator

Competitiveness Indicator Name:

Deviation

Indicator Type:

☒ Ratio of Company Premium to Average Premium over selected Competitors

☐ Rank of Company Premium among selected Competitors

Select of Policies: All Policies

Check boxes to select Competitors to which this Indicator applies:

☒ Market Price

View Competitiveness Indicator Column...

OK Cancel

Add/Edit Report

Report name:

Competitive Analysis

Check Data Columns to be included in the Report:

☒ Policy ID

☒ Price Differential

Select from list

Add...

Full...

Remove

Move Up

Move Down

Include in Report:

☒ Totals for Portfolio

☒ Policy-level Details

Subtotals by:

OK Cancel

View Report

Report name: Competitive Analysis

☐ Show Portfolio Totals

☒ Show Policy-level Details

☐ Show Subtotals

Policy ID	Price Differential
1	69.08%
2	87.50%
3	71.43%
4	93.75%
5	104.17%
6	93.75%
7	83.33%
8	104.17%
9	93.75%
10	104.17%
11	70.13%
12	67.50%
13	70.13%
14	72.42%

OK

## Summary of functionalities:

- Import competitors' premiums
- Creation of multiple Competitiveness Indicators such as premium variance and rankings
- Visualize at the policy level, subset of policies of all policies using filters

## Example of creating Competitive Analysis

Easily Produce reports with one-click and export anywhere...

**Add/Edit Report**

Report name: Sales Report by Dealer

Check Data Columns to be included in the Report:

- ☒ Dealer ID
- ☒ Dealer Name
- ☒ Dealer Group
- ☒ Sales
- ☒ Dealer Commissions

Select from list

Add...

Edit...

Remove

Move Up

Move Down

Include in Report:

☒ Totals for Portfolio ☒ Policy Level Details

☒ Subtotals by:

- ☐ Dealer Name
- ☐ Dealer Plan Factor
- ☒ Dealer Group
- ☐ Sales
- ☐ Dealer Commissions

OK Cancel

**View Report**

Report name: Sales Report by Dealer

☒ Show Portfolio Totals

☒ Show Policy-Level Details

☒ Show Subtotals

Sales Report by ...

Dealer ID	Dealer Name	Dealer Group	Sales	Dealer Commissions
Portfolio Totals			0	2,009
Policy Level Detail				
1	Dealer001	Low Cost Dealers	1,525	78
2	Dealer002	Low Cost Dealers	475	24
3	Dealer003	Low Cost Dealers	1,700	85
4	Dealer004	Low Cost Dealers	600	30
5	Dealer005	Low Cost Dealers	1,475	74
6	Dealer006	High Cost Dealers	1,250	250
7	Dealer007	High Cost Dealers	875	175
8	Dealer008	High Cost Dealers	750	150
9	Dealer009	High Cost Dealers	1,050	210
10	Dealer010	High Cost Dealers	4,975	995
Sub-Totals Dealer Group				
Low Cost Dealers			6,775	289
High Cost Dealers			8,900	1,700

OK

- Any data in PortfolioPolis can be extracted and copied elsewhere
- Report specifications are kept and can be easily updated or modified
- Data can be supplied to other applications

	A	B	C	D	E	F	G	H
1	Dealer ID	Dealer Name	Dealer Group	Sales	Dealer Commissions			
2	Portfolio Totals	0	0	14675	2009			
3	Policy Level Detail							
4	1 Dealer001	Low Cost Dealers		1,525	78			
5	2 Dealer002	Low Cost Dealers		475	24			
6	3 Dealer003	Low Cost Dealers		1700	85			
7	4 Dealer004	Low Cost Dealers		600	30			
8	5 Dealer005	Low Cost Dealers		1,475	74			
9	6 Dealer006	High Cost Dealers		1,250	250			
10	7 Dealer007	High Cost Dealers		875	175			
11	8 Dealer008	High Cost Dealers		750	150			
12	9 Dealer009	High Cost Dealers		1,050	210			
13	10 Dealer010	High Cost Dealers		4,975	995			
14	Sub Totals Dealer Group							
15	Low Cost Dealers	0	0	6,775	289			
16	High Cost Dealers	0	0	8,900	1,700			
17								

RG Table Base Rate Dealer Table Exported Cost Market pricing model **Sales Report**



## Example of creating and exporting report

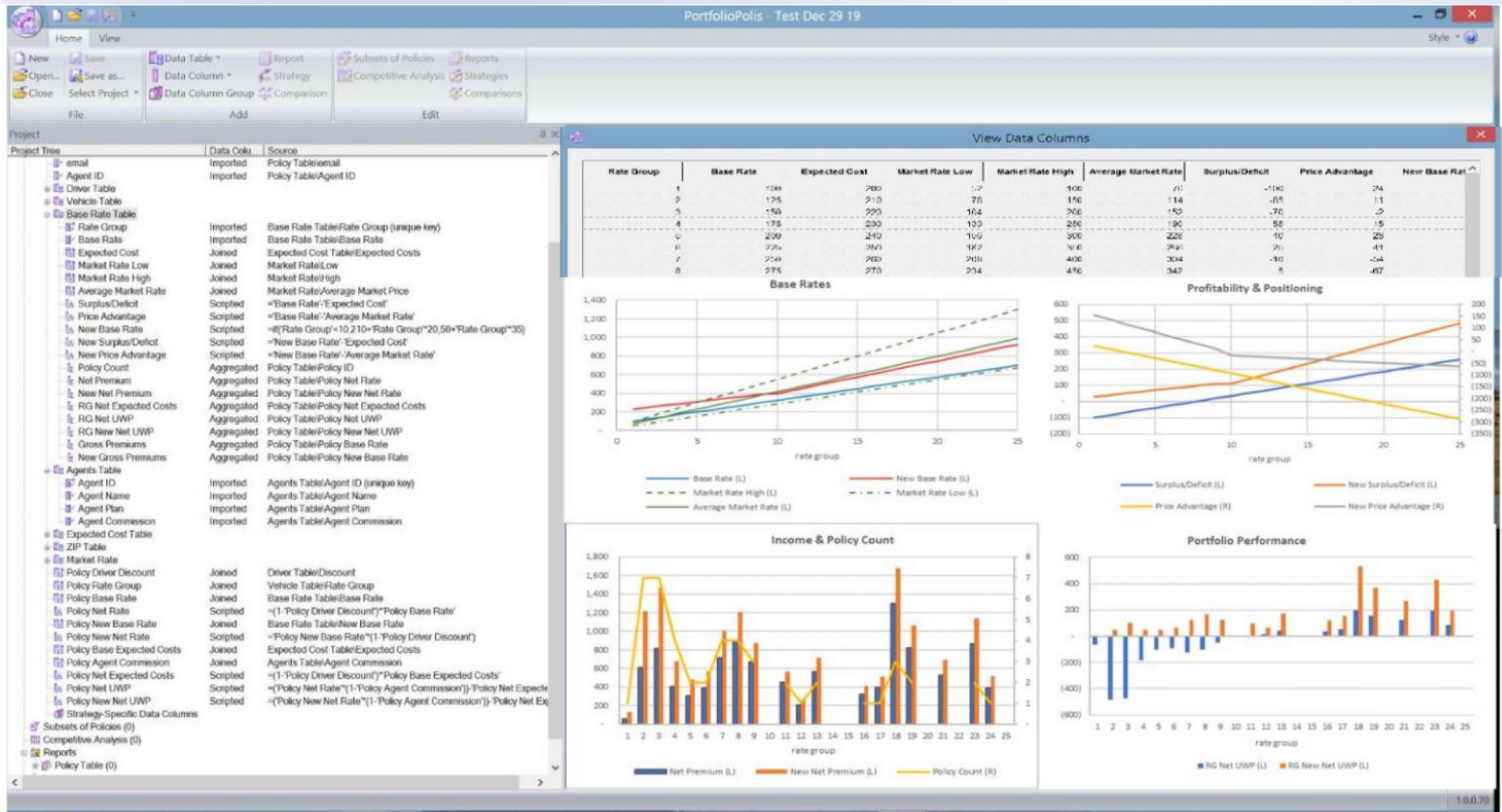
## Coming **Enhancements**

- Visualization



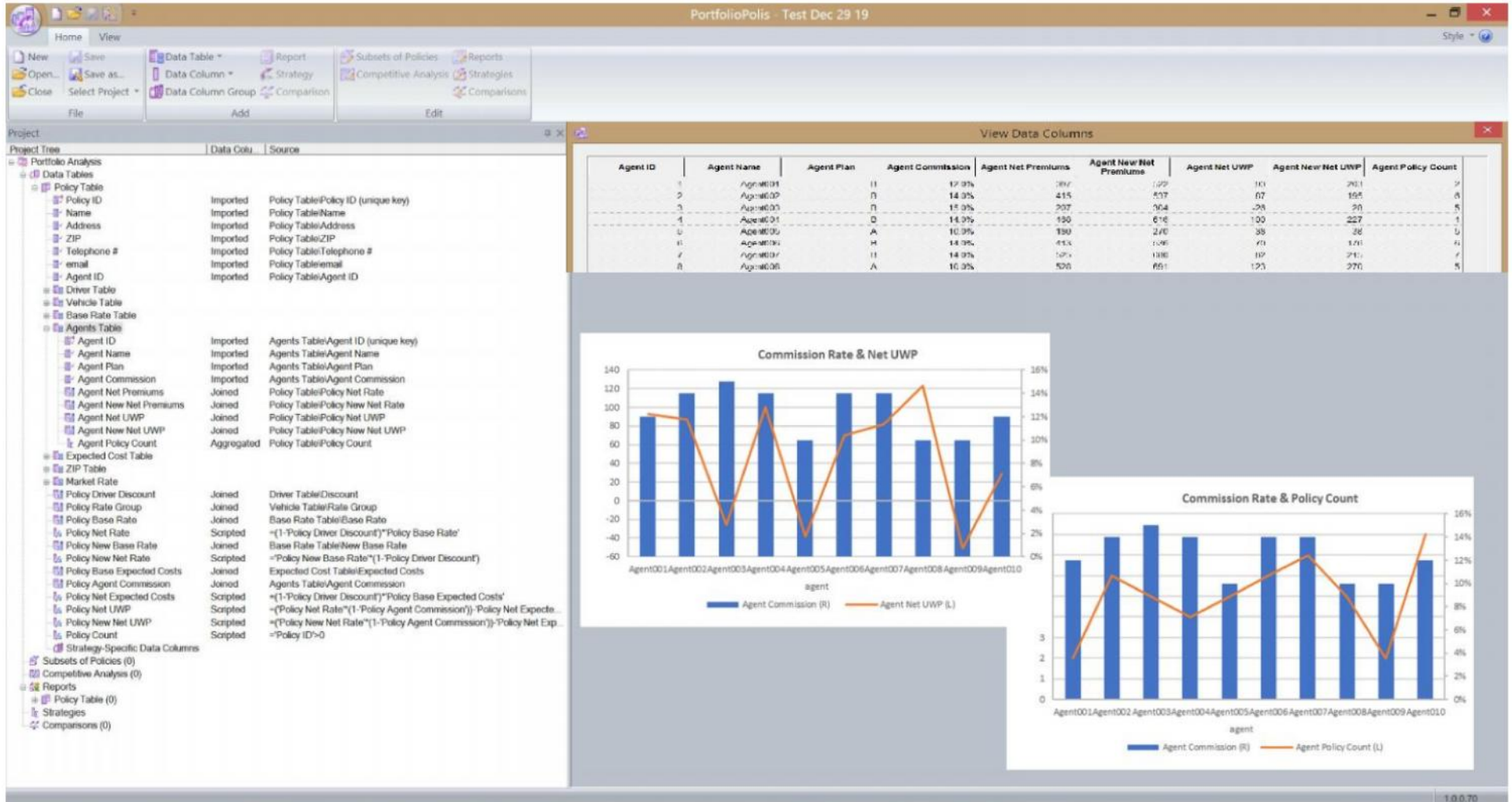
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# Example of Outputs #1: Rating Plan Performance



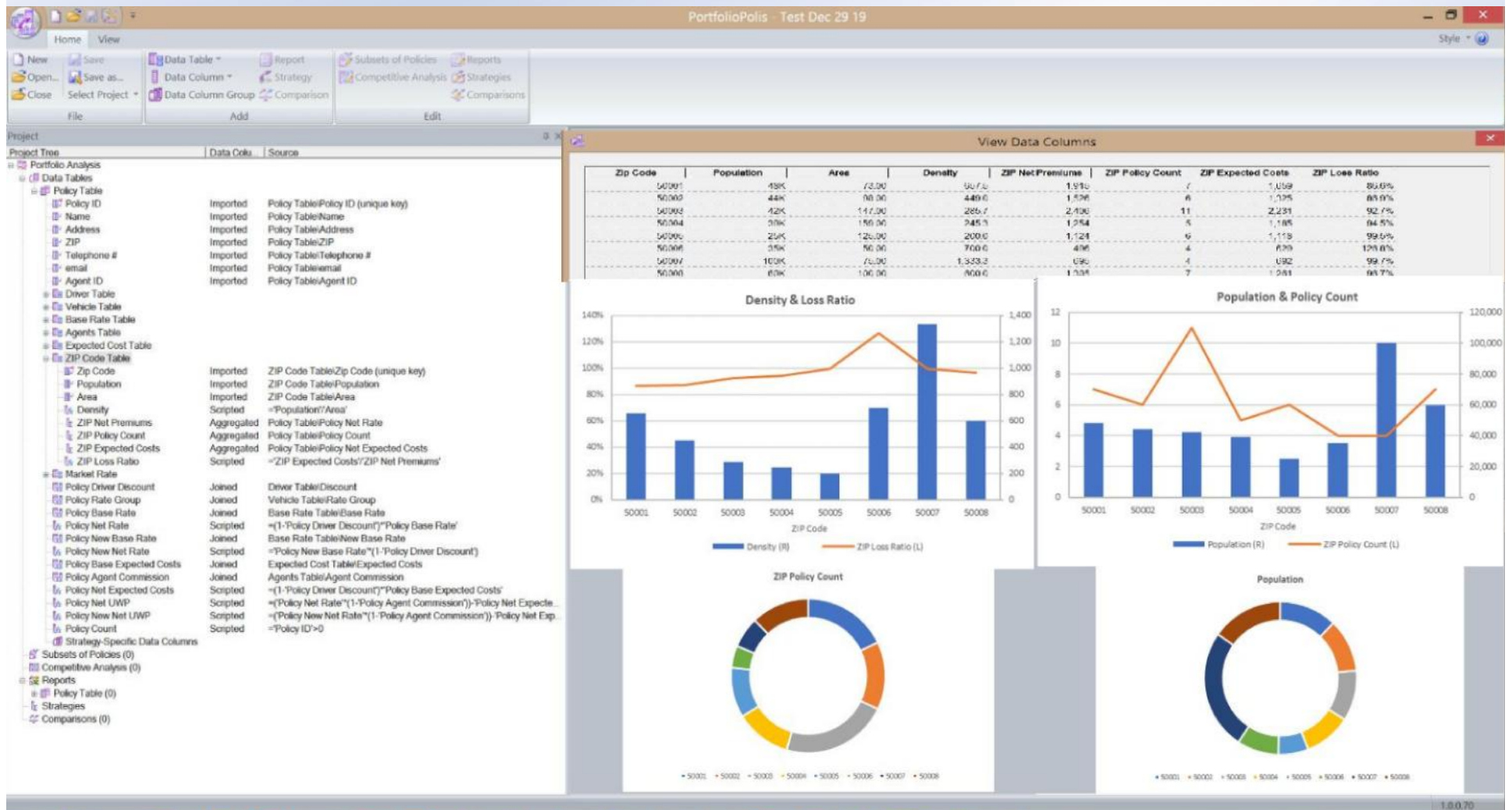
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## Example of Outputs #2: Agency Performance



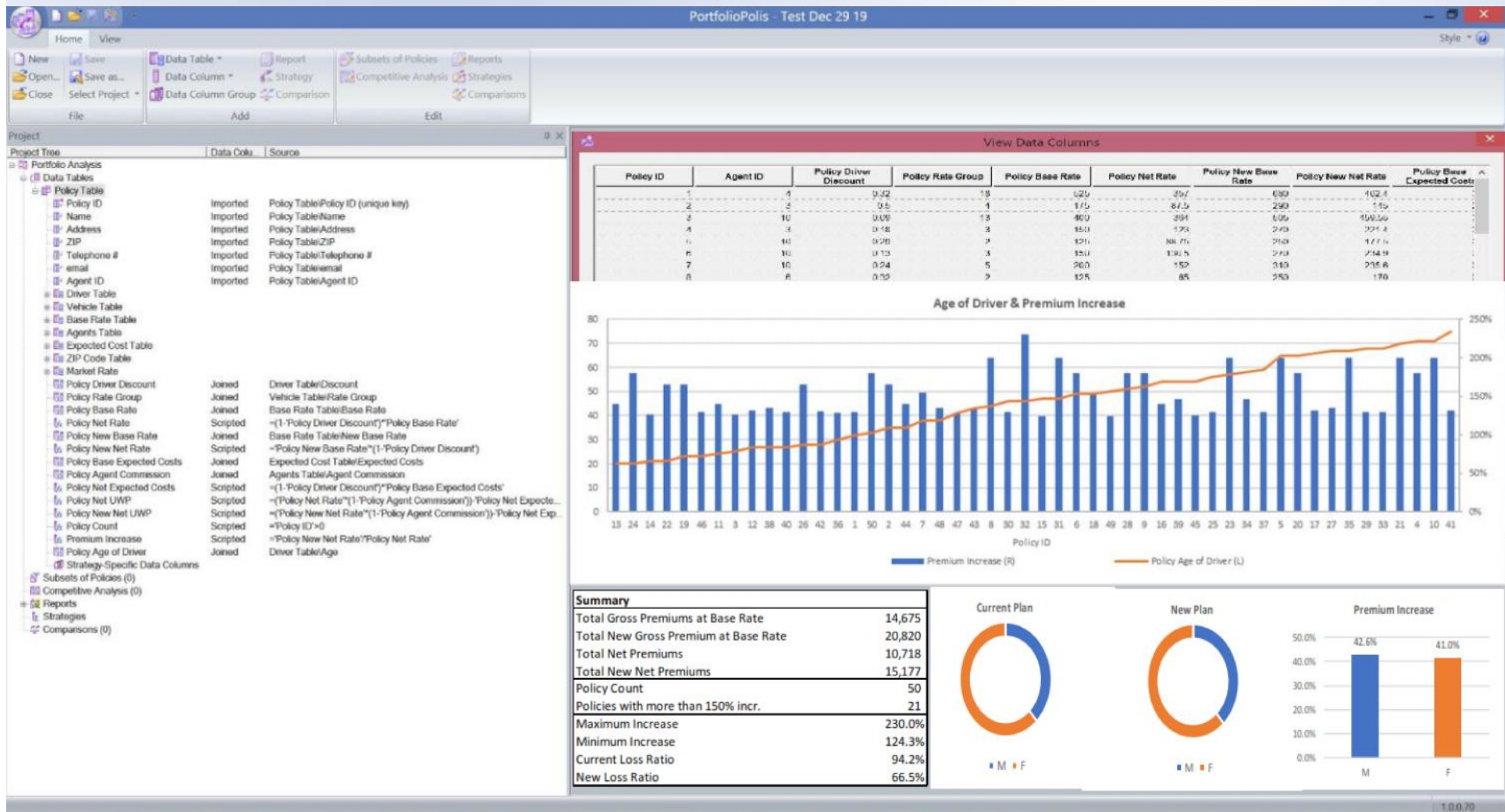
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# Example of Outputs #3: Demographic/Geographic Analysis





## Example of Outputs #4: Comparing Strategies



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Comment from our **first** PortfolioPolis client...

*Eric has replicated our rate algorithm in PortfolioPolis and is working on documentation at this point. Our next step is start building the analysis components for rate changes and market comparisons. **It is amazing how much time this tool has saved us!***

**Karen Hopkins-Lee**  
VP, Operation  
Stratford Underwriting  
December 13<sup>th</sup>, 2019

# Conclusion

- The battle is fought in the field of **data analytics**
- **Data savvy** companies identify opportunities and capture their competitors' books of business
- The data is all around us...what is needed is the tool and the ability to create **insight**
- With the advances in computation and availability of data... There is **no better time** to be an actuary, data analyst or business development manager
- Leaders who **empower** their troupes and allow them to be **creative** will come out ahead
- URS is offering opportunity to **pioneers** willing to get into the game.



## Our **Mission**

*“We are committed to deliver **the most advanced and easy to use** financial risk modeling technologies that meet the needs of corporate decision makers”*

**Alex Bushel**  
Founder and CEO