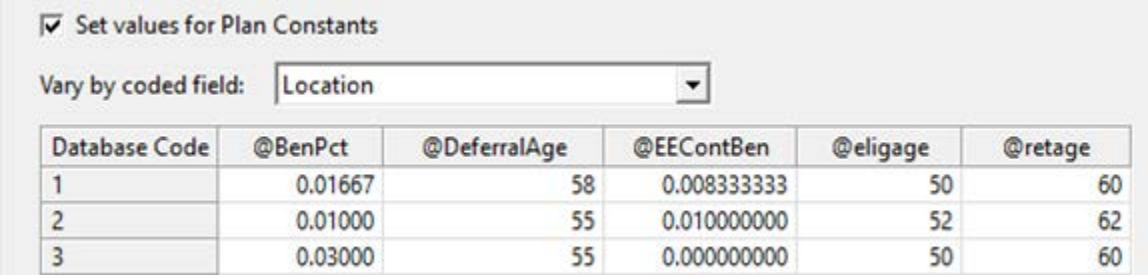
What's New in version 3.14 February 2020

ProVal version 3.14 introduces plan constants, data default sample lives, a salary definition bonus assumption, and many other features listed below.

Interface

- **Plan Constants.** Plan Constants simplify the setup of large plans whose benefits vary by benefit multiplier, eligibility age, deferral age, etc. Previously, these plans required dozens or even hundreds of Benefit Definitions. With Plan Constants, you can see all the key variations in one place and reduce the number of benefits dramatically. Reducing the number of benefits also enhances performance, reducing the amount of memory, disk space, and processing time required for Valuations, Core Projections, and downstream operations.



Database Code	@BenPct	@DeferralAge	@EEContBen	@eligage	@retage
1	0.01667	58	0.008333333	50	60
2	0.01000	55	0.010000000	52	62
3	0.03000	55	0.000000000	50	60

For more, see Plan Constants on page 11.

- **Valuation and Core Projection settings at a glance.** Valuation and Core Projection setup screens now show more settings at a glance. For example, you can easily see the database, selection expression, subtotal fields, and individual results database without having to click deeper.

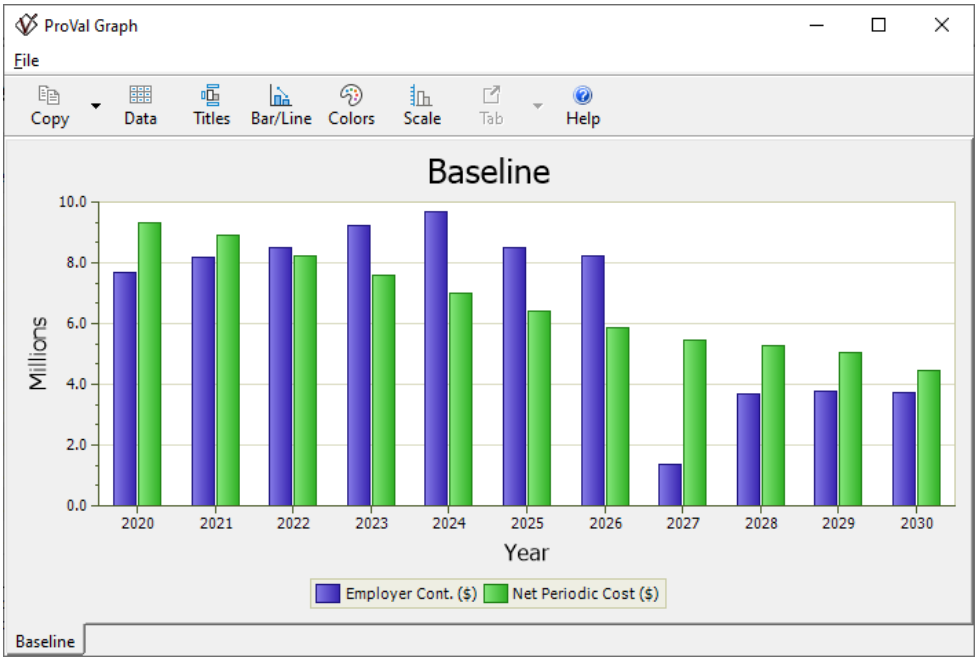
- **Easier-to-read tables.** Table rows are now formatted with alternating colors to make it easier to read across rows in sample lives, valuation output, etc. Additionally, if you hover over a row, the entire row highlights in blue.

Year	Member Age	Interest Discount	Prob. of Remaining Active	Eligi-bility	Prob. of Decrement	Election Factor	Payment Form Value	Projected Benefit	PV Benefits
2020	31	1.000000	1.000000	1	0.063771	1.000000	0.799908	5,779.00	294.79
2021	32	0.934579	0.935604	1	0.058115	1.000000	0.856454	6,754.23	293.95
2022	33	0.873439	0.880607	1	0.052961	1.000000	0.917035	7,833.08	292.61
2023	34	0.816298	0.833341	1	0.048263	1.000000	0.981949	9,024.98	290.95
2024	35	0.762895	0.792483	1	0.043981	1.000000	1.051510	10,340.15	289.11

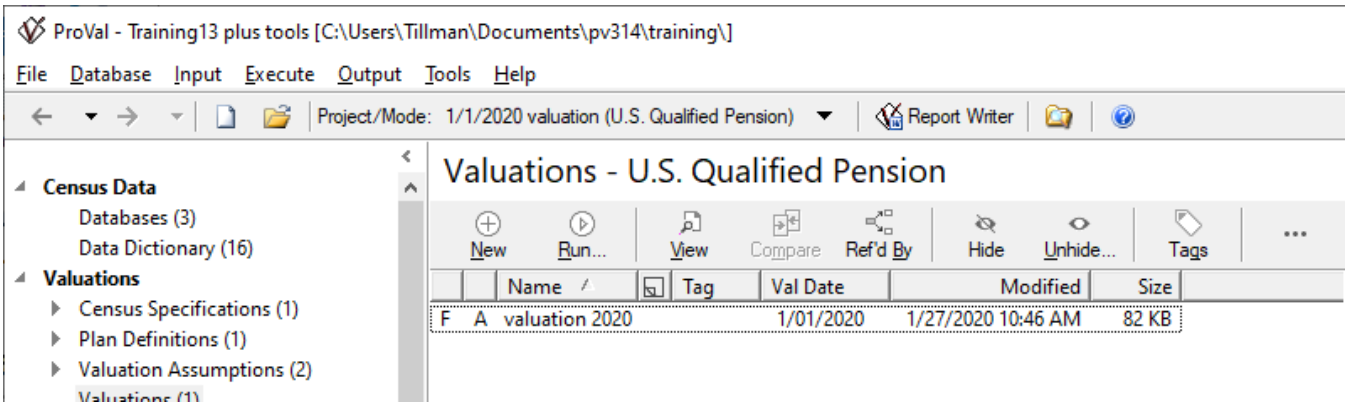
Furthermore, clicking on a row temporarily adds a yellow highlight which can be useful when reading across a wide table and scrolling left and right.

Year	Member Age	Interest Discount	Prob. of Remaining Active	Beginning of year Salary	Adjusted Salary	PV Salary	Interest Discount	Prob. of Remaining Active
2020	33	0.889996	0.880607	50,741.20	50,741.20	39,767.78	0.889996	0.880607
2021	34	0.839619	0.833341	52,263.44	52,263.44	36,568.15	0.839619	0.833341
2022	35	0.792094	0.792483	53,831.34	53,831.34	33,791.04	0.792094	0.792483
2023	36	0.747258	0.756962	55,446.28	55,446.28	31,362.97	0.747258	0.756962
2024	37	0.704961	0.728447	57,109.67	57,109.67	29,327.31	0.704961	0.728447

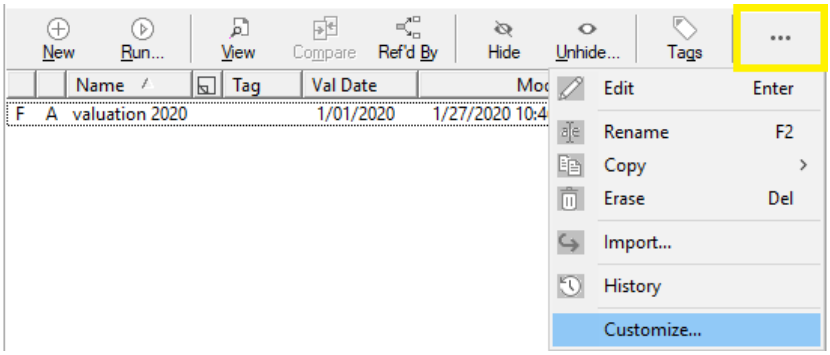
- **Refreshed graphs.** ProVal graphs have been made more appealing, easier to create with smarter defaults and simpler setup options, and more straightforward to customize. In particular, floating bar charts for stochastic results are much easier to create, labeled much more clearly, and allow scenarios to be shown side-by-side in different colors.



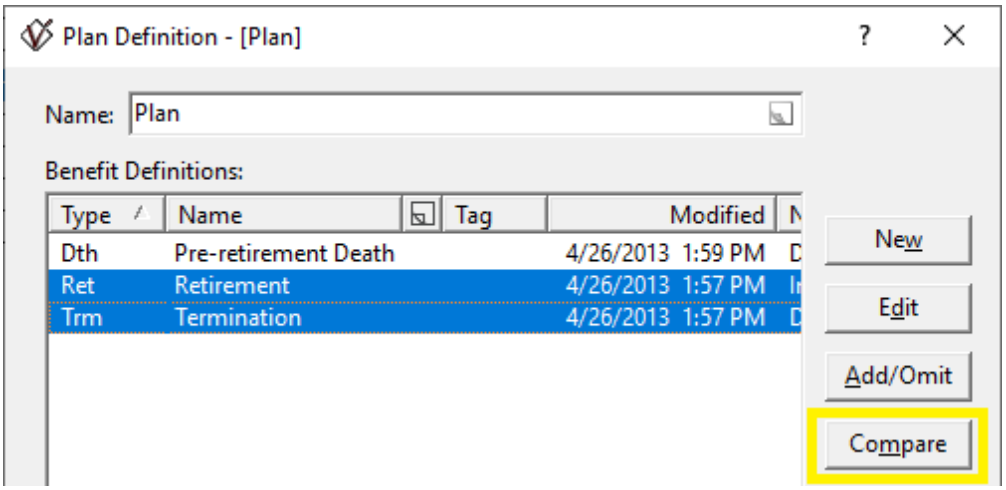
- **Cleaner and customizable main screen.** ProVal's main screen has a cleaner, less cluttered, look.



What's more, the library toolbar is now customizable so you can show the commands you use most frequently and hide the ones you don't.

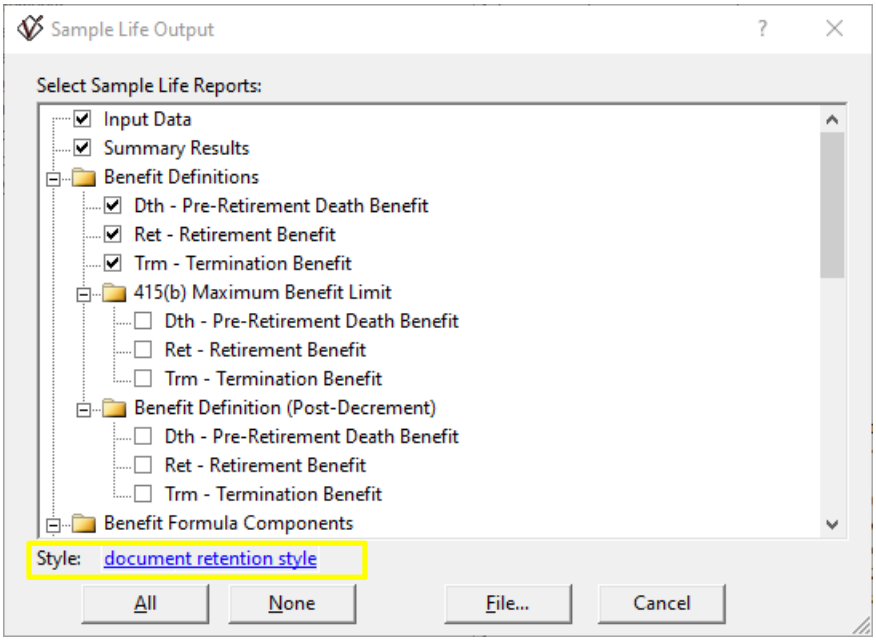


- You can now compare Benefit Definitions from within a Plan Definition without having to exit and go to the Benefit Definition library.



Sample Lives

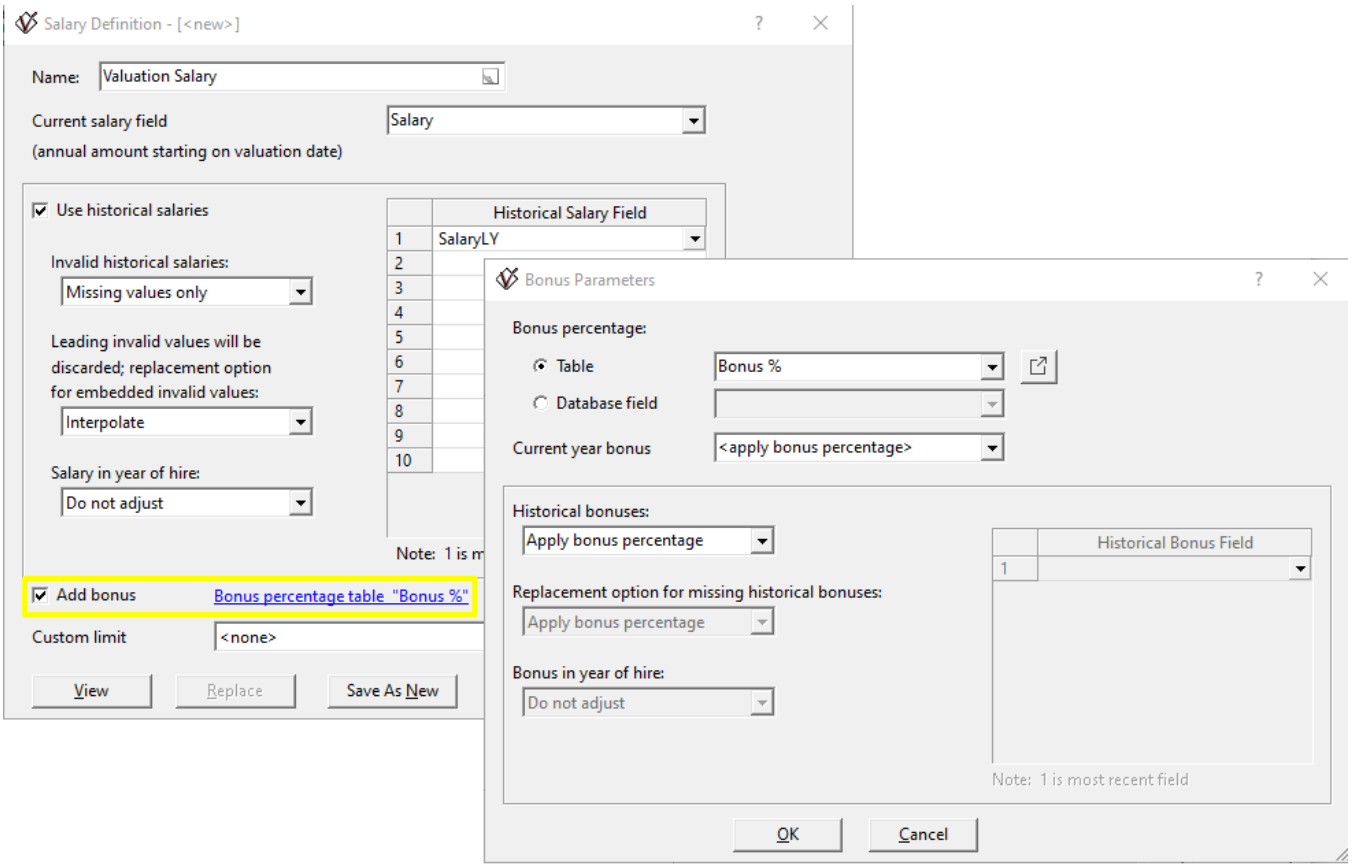
- **Data default sample lives.** A new Data Default report is available in sample lives, which shows how these expressions are evaluated, including intermediate results, just like when running an Expression Set. You can even run Data Default sample lives directly in Census Specifications so you can check them as you define them. This eliminates the need to set up an Expression Set with equivalent expressions just to check that they are working correctly.
- **Style for printing/saving sample lives.** When printing or saving sample lives, you can now use a style library to quickly recall which reports are selected. This avoids having to select these manually and ensures you're consistent each time.



All Plans

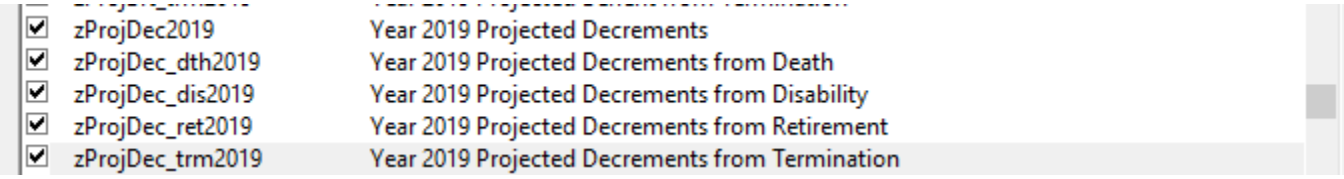
- **Bonuses as a percent of pay.** Salary Definitions can now assume bonuses as a percentage of base pay, and optionally specify actual historical bonuses. Including bonuses along with base pay in a single Salary Definition, rather than as two separate Salary Definitions, is useful when the current year bonus amount is not a good basis for projecting future bonuses.

  For more, see Salary Enhancements on page 13.

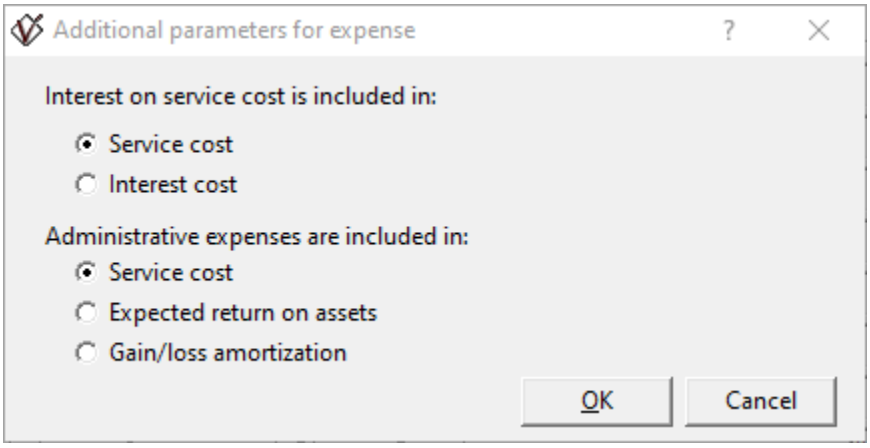


- In individual results, all results now have a default field name, even results associated with a given benefit. This eliminates the need to make up your own names for these, one by one.

- Valuation individual results are now available for projected decrements by year.



- In Asset & Funding Policies, you now have more flexibility in determining service cost:
  - Interest on service cost may now be included in either service cost or interest cost.
  - Administrative expenses may now be included in service cost, expected return on assets, or the gain/loss amortization amount.

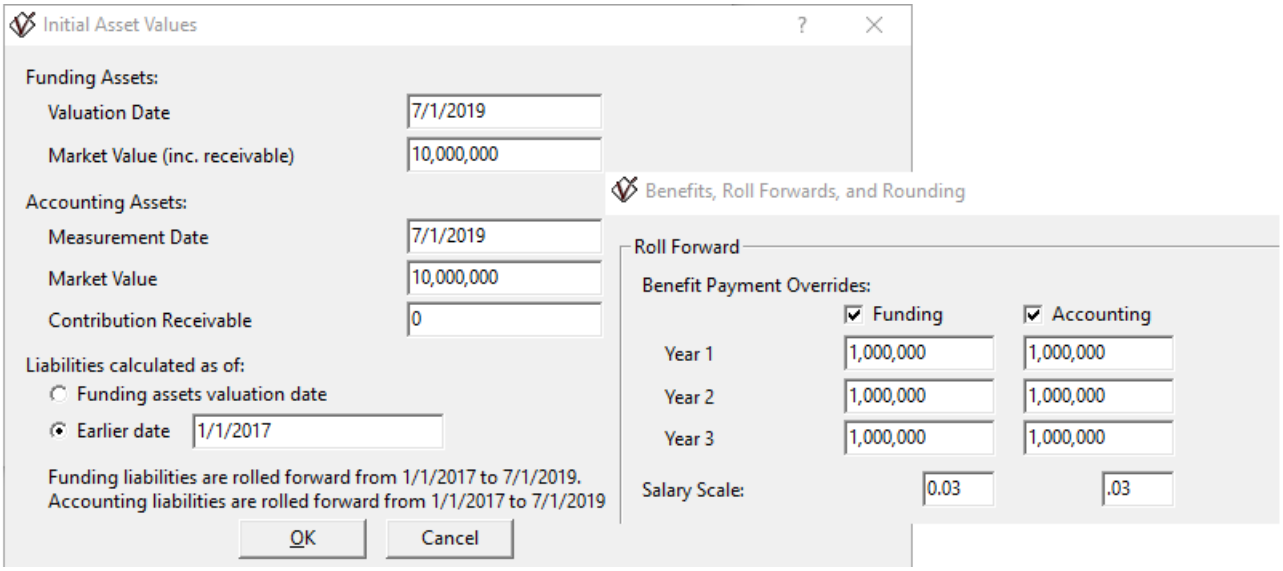


- Additional output variables are now available for the ASC715 and IAS19 accounting standards. These variables include the average benefit timing on PBO and service cost and which interest cost method is used. If the individual spot rate interest method is used, the effective interest rates for service cost and interest on PBO are also available.
- When accounting results are rolled forward to a measurement date under the ASC715 and IAS19 accounting standards, the measurement date benefit payments exhibit now includes the EBO benefit payments.
- In Valuation Assumptions, the maximum compensation limit for PVFS and valuation salary can now vary by coded field.
- In Salary Definitions, the custom limit can now vary by coded field. This is useful, for example, if your plan has a pay cap that varies by group.
- In Valuation and Projection Assumptions, a second salary merit scale can be specified. If specified, next year's salary will be salary x (1+inflation) x (1+merit1) x (1+merit2).

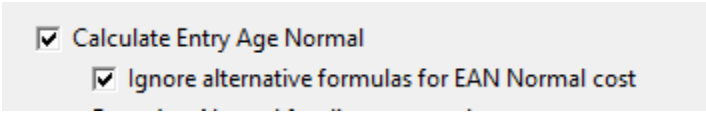
  For more, see Salary Enhancements on page 13.
- In Valuation Assumptions, a new Entry Age Normal option lets you calculate the PVFS at entry using actual, rather than assumed, pays prior to the valuation date.
- In Custom Operators, covered compensation operators can now reference a database field to specify the freeze date for wage base increases.

US Public Plans – Pension & OPEB

- **GASB 30 month roll forward.** Valuation Sets using the GASB accounting standard can now roll forward liability results up to 30 months. That is, the measurement date may now be up to 2.5 years after the date liabilities are calculated as of. In addition, you can override benefit payments for each year of the roll forward period.



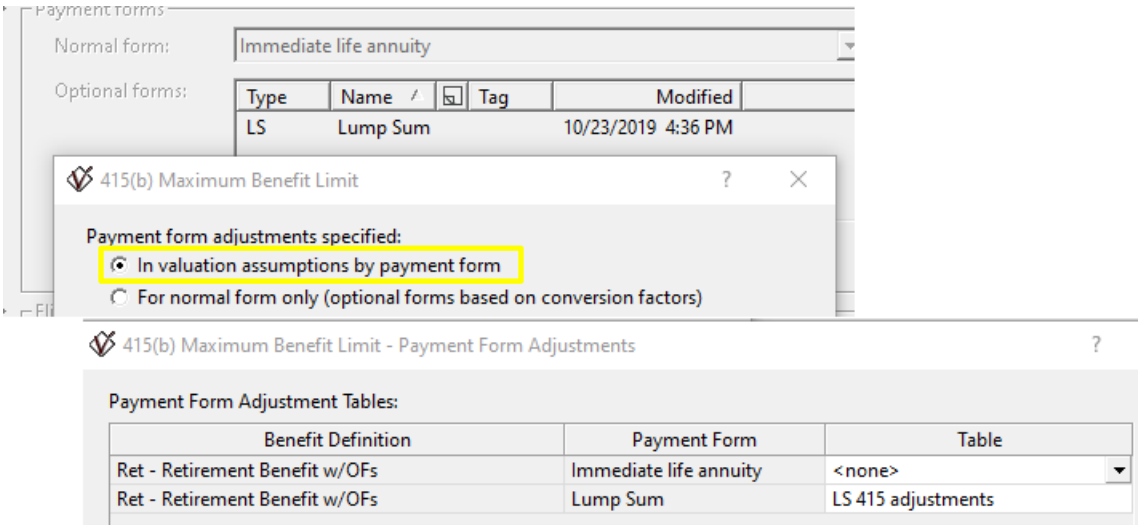
- In Valuation Assumptions, the accounting Entry Age Normal liability method has a new option to ignore any alternative EAN Normal Cost formulas. This permits plans that use alternative normal cost formulas to run funding and GASB accounting in one valuation or core projection.



- In Asset & Funding Policies using the GASB accounting standard, new parameters let you override the average expected service lives (AESL) and specify its rounding. This lets you, for example, run a separate run to get AESL to reflect certain lives (e.g., ignore spouses of living retirees in an OPEB valuation or ignore additional beneficiaries of deceased employees in a pension valuation), and then override the original valuation's AESL results with that new figure.
- In Valuation Assumptions (for US Public Pension mode only), you can specify that the interest rate is a "statutory fixed rate", indicating that the resulting liabilities can be aggregated with liabilities from other runs at different interest rates. When aggregating runs in a Valuation Set or Forecast, the interest rate from the "non-statutory" runs is used to calculate contribution requirements. This is useful, for example, to aggregate a valuation at 4% for select inactive benefits with another valuation at the plan's funding rate of 7% for all other benefits, with 7% used for contribution requirements.
- When the measurement date is later than the valuation date, the Entry Age Normal Cost is now rolled forward using the salary scale instead of the discount rate. Similarly, if the valuation date is later than the liability calculation date, the method used to roll forward the funding normal cost is dependent on the actuarial cost method selected and uses either the salary scale or discount rate (or both in the case of pure unit credit).
- Valuation Sets that vary by group now permit GASB end of year events.

US Qualified Pension Plans

- **415(b) limits by payment form.** Benefit Definitions that apply the 415(b) maximum benefit limit can now specify payment form adjustments in Valuation Assumptions. This lets you have different limit adjustments for different optional forms, most notably for lump sums. It also avoids having to create a new Plan Definition when these adjustments change because of a change in assumptions. This feature is also available in U.S. Public mode.

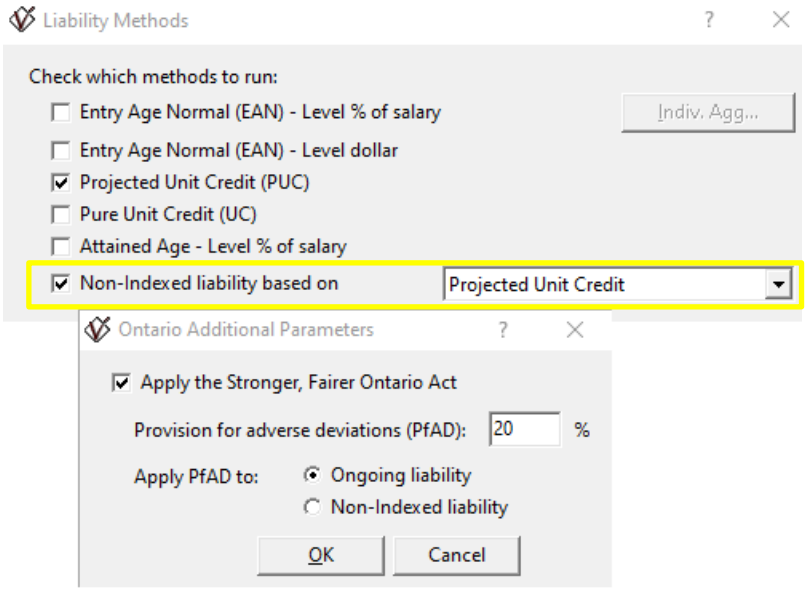


OPEB Plans

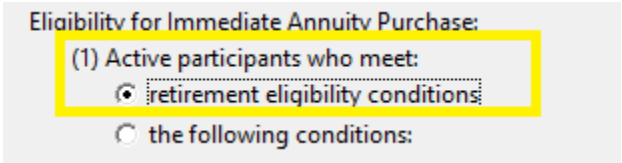
- **#MemPmtAge**. A new #MemPmtAge Benefit Formula Operator lets you refer to the member's payment age in spouse benefits. This simplifies spouse benefit formulas that are intended to vary based on the member's age, for example, if the spouse premium is assumed to change after the member reaches Medicare eligibility.
- Long Term Disability assumptions now support the new 2009-2015 Canadian tables.

Canadian Registered Pension Plans

- **Non-indexed liability.** In Valuation Assumptions, a non-indexed (no COLA) liability can now be calculated per a selected cost method. In Asset & Funding Policies under Ontario provincial law, a new option let you apply PfAD to this non-indexed liability.



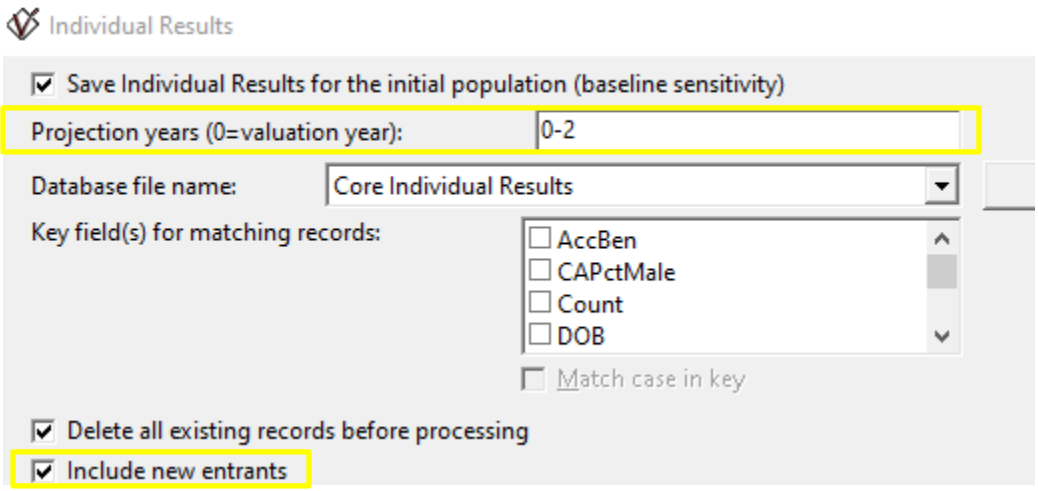
- In Valuation Assumptions, the annuity purchase eligibility for actives can now reference the eligibility requirements defined in the retirement Benefit Definitions.



- Lump factor components (in Canadian mode only) can now reference a Payment Form where the deferral period is set by a table.
- In Valuation Assumptions, a new checkbox has been added to the Transfer Value and Annuity Purchase topics to zero out pre-commencement mortality.
- In Asset & Funding Policies, Canadian letters of credit can now be decreased by the maximum allowed amount, if permitted.

Forecasting

- **Individual results for multiple years & new entrants.** Core Projection individual results can now be saved for multiple years, for example, the first 3 years (0-2). Additionally, individual results can now include new entrants.



- In Projection Assumptions, the Alternate Benchmark (previously called the Asset Benchmark) can now apply to COLAs. This allows COLAs to vary with a benchmark that is different than inflation.
- The Asset & Funding Policy > Forecast Analysis topic now lets you specify the fraction of year to the average date experience benefit payment are made. This is useful if the plan pays a lot of lump sums since ProVal calculates lump sum experience benefit payments at the beginning of year. Previously, when assets were rolled forward, all experience benefit payments were assumed to be paid mid-year.
- In Stochastic Assumptions, if the accounting expected return on assets varies based on the asset mix, the return's time horizon can now be specified. The choices are the length of the capital market simulation, the length of the forecast, or a user specified amount.
- In Stochastic Assumptions, if the accounting discount rate is based on a full yield curve, a scalar spread can now be added to the full yield curve. This is useful, for example, if a plan assumes that both funding and accounting liabilities are valued with a corporate bond yield curve, but you would like to add a spread to one of the curves.
- In Capital Market Simulations, custom simulations now can import a 3rd yield curve (in addition to government and corporate curves). This "custom" yield curve is available to be referenced in Stochastic Assumptions.

Mortality Tables

- **Survivor mortality "Approach 2".** In pension modes, a new Valuation and Projection Assumption option allows survivor mortality to be applied only after member death. This supports Approach 2 (defined by the Pub-2010 and Pri-2012 mortality reports published by the Society of Actuaries) for valuing Joint & Survivor annuities.

  For more, see Mortality Approaches from Pub-2010 and Pri-2012 on page 16.

- **IRS 2018-2021+(MP16-19) dynamic mortality tables** have been added to ProVal's Mortality library (this was released with a 3.13 update but included here in case you missed it).
- **SOA mortality improvement scale MP-2019** has been added to ProVal's Mortality Improvement Scales library (this was released with a 3.13 update but included here in case you missed it).
- **IRS 2019, 2020, and 2021 generational mortality tables** have been added to ProVal's Mortality library.

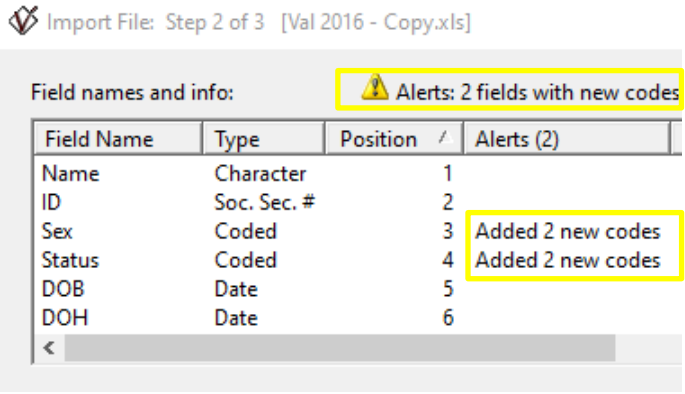
Census Data

- **Character data.** Define Field by Expression now lets you define character fields and has new character operators #CONCAT, #LEFT, #RIGHT, #LEN, and #FIND to manipulate strings. For example, these operators could be used to combine first and last name fields into a single field, without having to copy into Excel, do the concatenation, and paste back into ProVal. These character operators are also available in other expressions throughout ProVal, where appropriate.

```
Character Operators
-------------------------------------------------------------------------------

a #CONCAT b      combines a and b into one character string
a #LEFT b        returns a characters from the start of string b
  #LEN a         returns the number of characters in string a
a #FIND b        returns the position of string a within string b
a #RIGHT b       returns a characters from the end of string b
```

- When importing data, ProVal displays an alert if new codes will be added to any coded fields. You can then easily determine whether these codes are legitimate or not, and revise or cancel the import as appropriate. Previously, it was too easy to miss this important checkpoint.



- Find Duplicates now honors the sort order of the open database to let you control which records are assigned DupID=1, 2, 3, etc. For example, you may want DupIDs to be assigned based on sorting by status code after having combined data from multiple sources. If no database is currently open (i.e., Find Duplicates accessed through the Database menu), you can still control the sort order by clicking the Sort Order button.
- In Merge Data, the target database now defaults to the <current database>, instead of a named database, so the entry can be used on the currently open database without needing to be updated.

Experience Studies

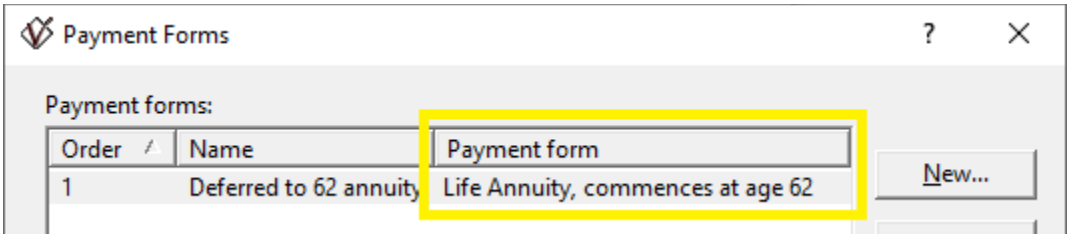
- **Vested valued through active.** Experience Studies now have explicit support for the "Vested valued through active" status, along with separate results for these participants.

Gain/Loss Analysis

- Continuing active and inactive sources no longer require that the associated database fields exist in all valuations if not relevant. For example, if you evaluate a continuing active source for the "salary" field, the gain/loss will now run even if an inactive valuation is included whose database does not contain "salary".

Administrative Factors

- In the Payment Form topic, additional details about each payment form are displayed (commencement age, temporary period, etc.) to give you a sense of how things are set up without having to click into each one.



System

- **Grid administration.** A new File > Grid Administration command gives you real-time monitoring of your WinTech Grid Platform, providing a snapshot of the current load on the various Grid Agent servers. This includes statistics on how many processors are currently being used on each server, how many jobs are currently using grid resources, and which jobs they are. If there is a job that is tying up grid processors and blocking other jobs from running, you can deescalate its priority or even stop the job.
- **Network interruptions.** ProVal can now usually recover from brief (e.g., a few seconds) network connection issues automatically. If a file operation doesn't work after several attempts in a few seconds, ProVal will offer an explicit Retry option before giving up. For example, you could restore a lost VPN connection and click Retry to continue a run in progress.
- A single download, pv314.exe, can now be used to both install and update ProVal 3.14. Updates automatically detect the folder where ProVal 3.14 was previously installed. This eliminates the need to unzip files into the ProVal installation folder, potentially dealing with permissions to c:\program files (x86)\ or shadow copies in Windows' virtual store.

ProVal PS API

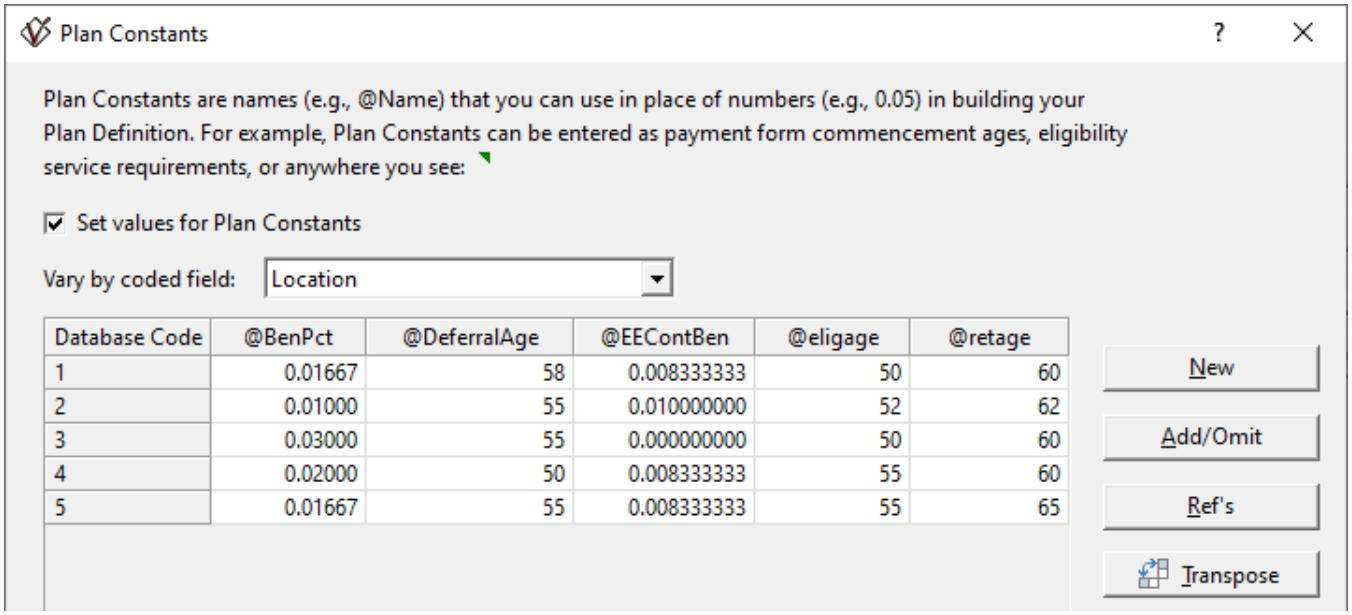
- New API functions ***Out2HTML*** and ***Out2CSV*** format exhibit data as HTML and comma delimited character vectors, respectively.

Changes Log

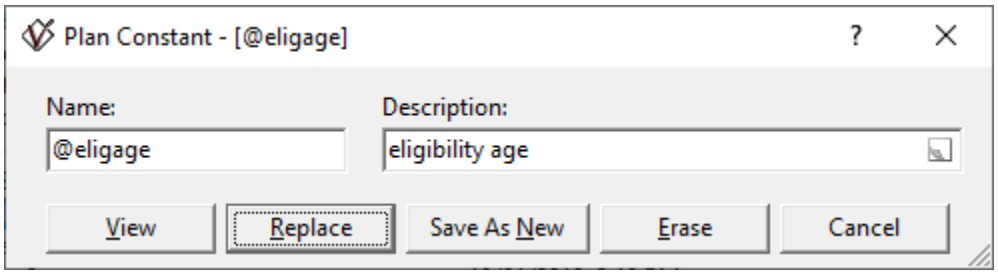
- Be sure to read the changes log (see the "changes log.doc" file in the ProVal directory) about updates to certain calculations that may change results.

Plan Constants

Plan Constants are names (e.g., @BenPct) that you can use in place of numbers (e.g., 0.03) when building your Plan Definition. Plan constants reduce the complexity associated with coding plans that have many tiers of participants. For example, a large public system may have very similar benefits that vary in small ways such as the benefit multiplier, eligibility age or deferral age. Additionally, plan constants allow key provisions that apply to a particular tier to be coded and viewed in a central location. For example:



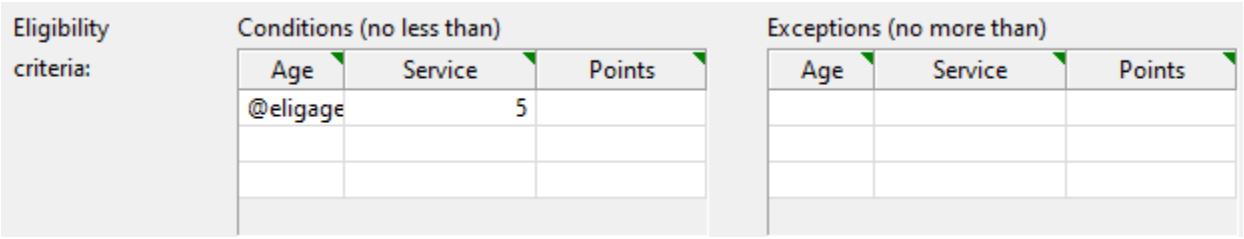
The Plan Constants library allows you to define Plan Constants. Give each Plan Constant a Name (limited to 30 characters) and optionally enter a Description. The name may contain letters, digits, and underscores. All names must start with @, if you don't type in the @, ProVal will automatically add it for you. A Plan Constant must be created first before you can reference it (for example, you can't create a new Plan Constant while editing a Benefit Definition).



Plan Constants can be referenced anywhere you see and can be used to specify:

- Benefit definitions > eligibility conditions and exceptions
- Benefit formula components > constant component type > constant values
- Benefit formula components > accrual definition type > constant and variable accrual rates
- Accrual basis components > constant component type > constant values
- Payment form definitions > commencement age and deferral period
- OPEB plan definitions > full eligibility conditions

Here is an example defining benefit definition eligibility conditions. Previously, this may have required multiple different benefit definitions, one benefit definition for each eligibility age requirement.



Plan Constant values are assigned in your Plan Definition and vary by a coded field as depicted above. The numeric values must adhere to the same validation rules that would apply if plan constants were not used (so in this case, the eligibility age must be between 15 and 99). Usually, this means that Plan Constant values cannot be missing -- with eligibility conditions and exceptions being a special case.

When viewing the Plan Constants topic, any Plan Constants already referenced by the Plan Definition will automatically be listed. You can also create **New** Plan Constants or **Add/Omit** existing Plan Constants. Click the **Ref's** button to see where Plan Constants are used within the Plan Definition, or to **Edit** the library entries using the Plan Constants. Click the **Transpose** button to switch the display from codes by plan constants to plan constants by codes, or vice versa.

Salary Enhancements

ProVal 3.14 contains enhancements for specifying salary including:

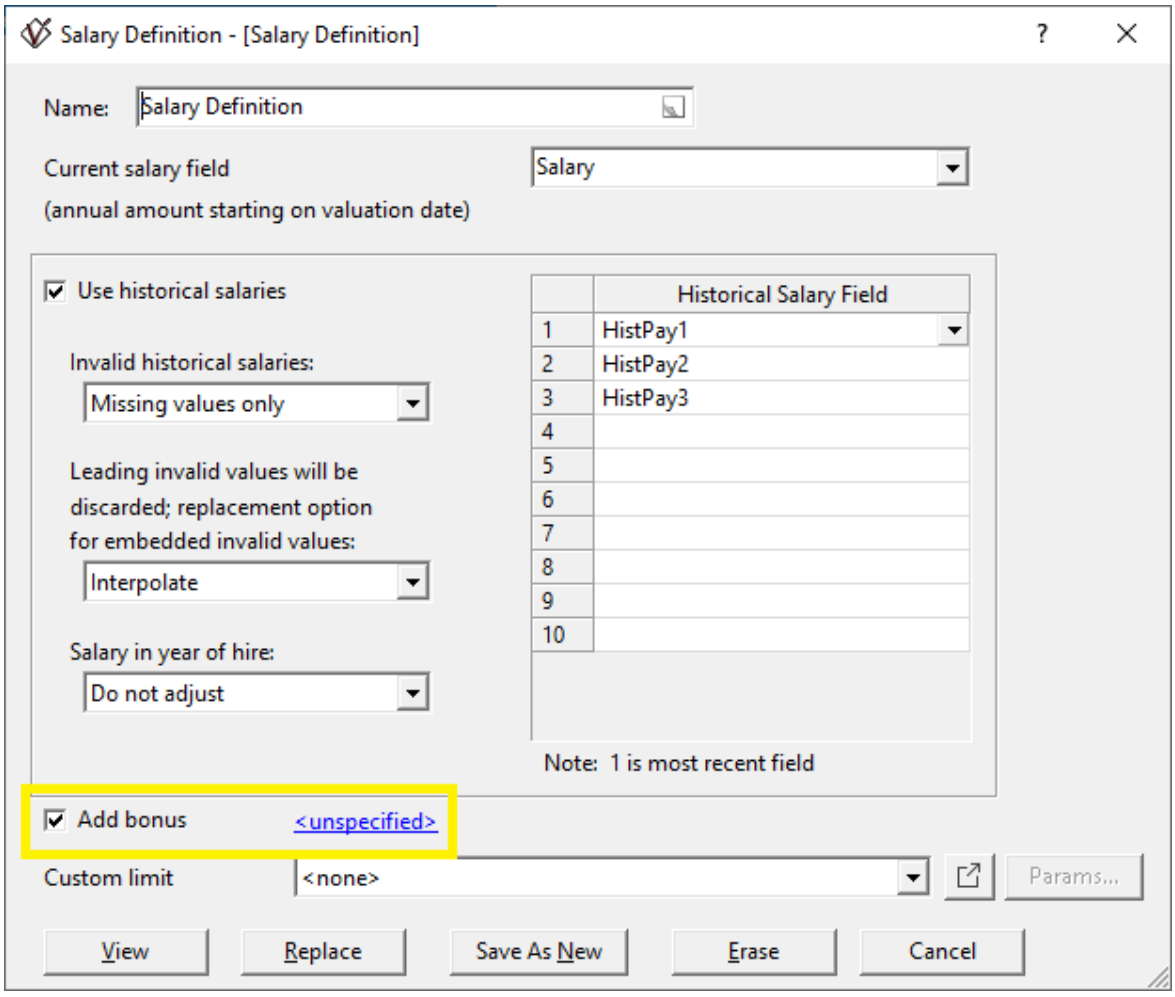
- Bonus parameters
- Additional salary merit scale

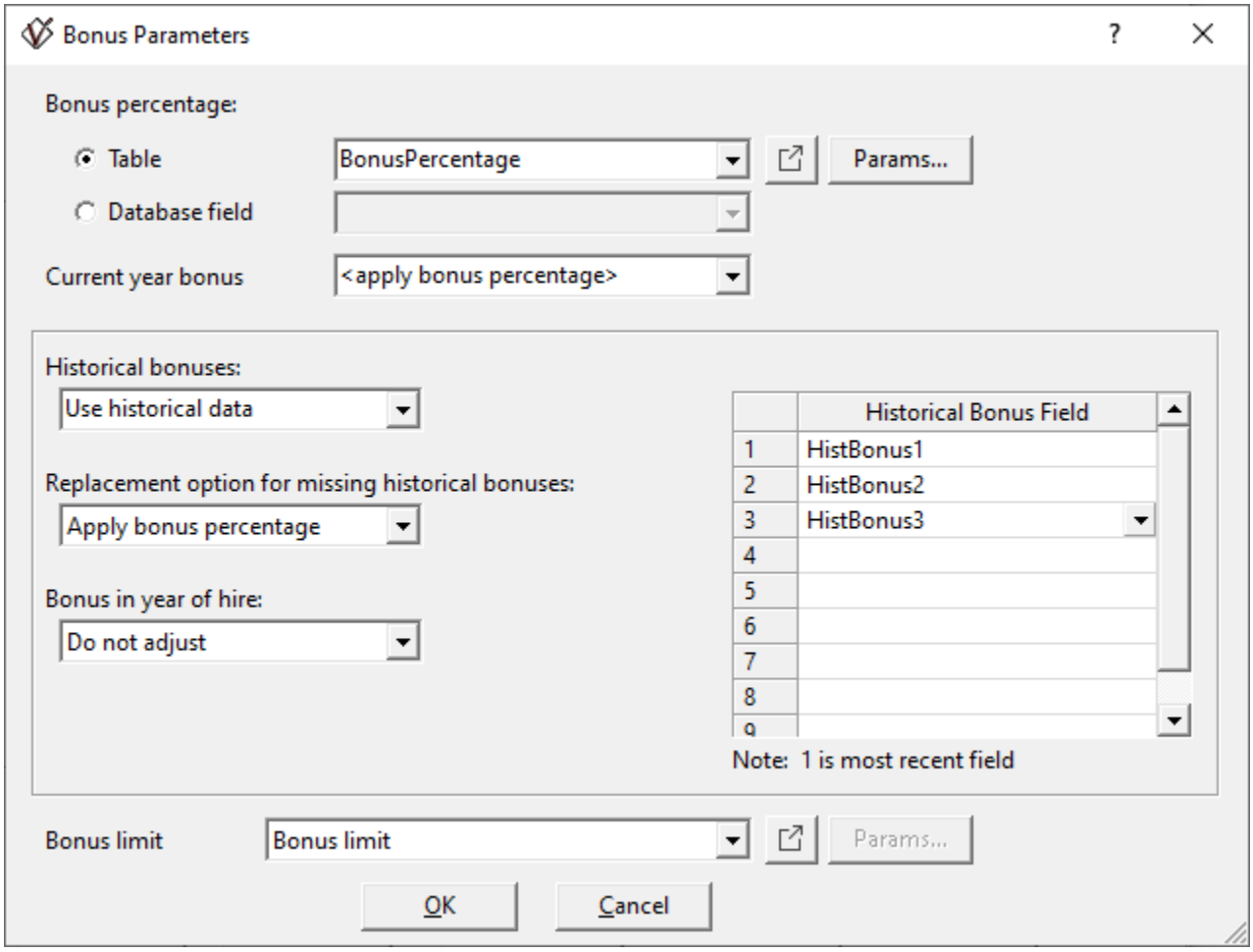
Below are more details on each of these enhancements.

Bonus parameters

New bonus parameters allow flexibility regarding future, current and past total compensation. For example, it directly handles the situation where total compensation includes bonus pay but the current year bonus differs from future bonus expectations. This enhancement may also be used for other cases with multiple salary pieces such as applying an overtime assumption which is based on an age by service schedule.

To use this new feature, fill out the Salary Definition screen with information related to the base salary. Then, to access the new bonus parameters, select the 'add bonus' checkbox and click on the link to the right.





Future bonuses

Future bonus amounts must be specified as a percentage of base salary. This may be a table (which may be age and/or service based and may vary by coded field) or a database field.

Current year bonus

If known, the current year bonus amount may be specified as a database field. If this field is not input, then the bonus percentage will be used.

This input is useful if the current year bonus is known, but you do not want it to affect pay in future years. Pay in future years will be based on the specified percentage of base pay, without regard to the current year bonus amount.

Historical bonuses

If specifying historical data for base pay, there are three options for historical bonuses.

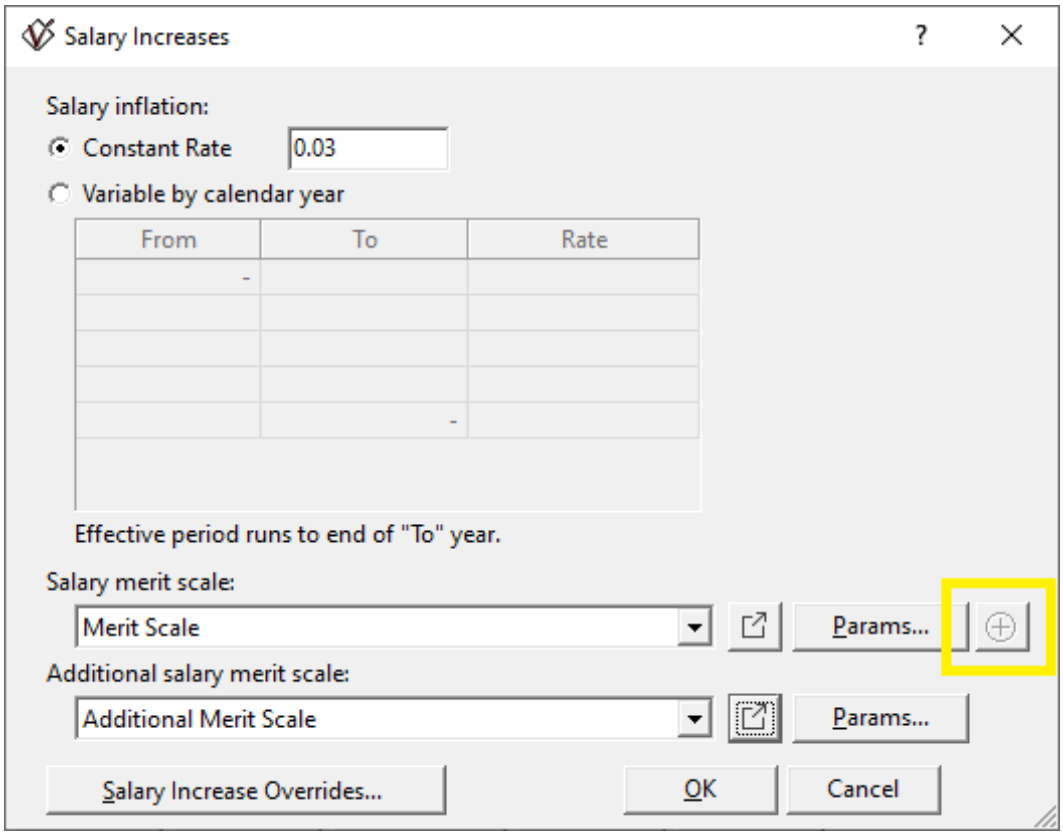
- If your data contains separate amounts for historical base pay and historical bonus pay, select 'use historical data' and specify the historical bonus fields.
- If your data contains only base historical pay, select 'apply bonus percentage' to calculate historical bonuses based on the bonus percentage.
- If your data contains only one pay field that includes both base and bonus, select 'included in historical salaries' to indicate that no additional bonus should be added to the historical base salary amounts.

Bonus limit

A custom regulatory table may be used to limit the bonus amount. This table may vary by coded field.

Additional Salary Merit Scale

In Salary Increases, you may now specify a second salary merit scale. This is useful for service based merit scales that are based on separate service definitions. To input a second scale, click the '+' button to the right of the primary merit scale. Inputs for the 'additional salary merit scale' will then be displayed. The choice list and parameters will be the same as those available for the primary merit scale.

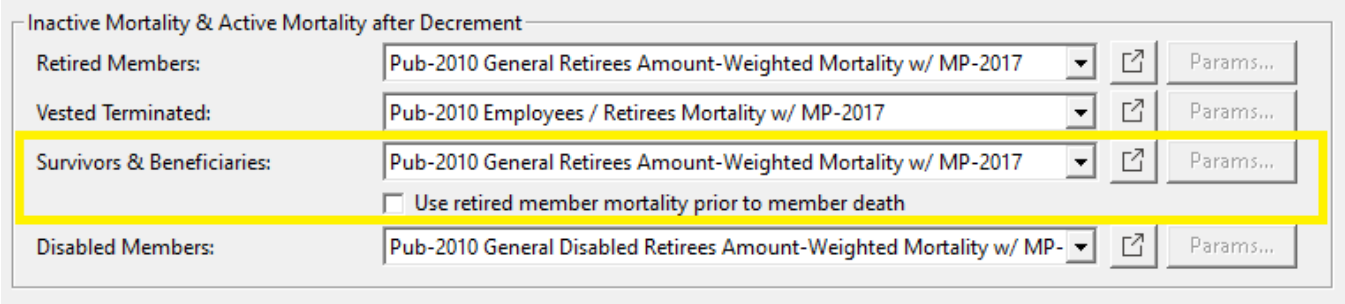


This additional merit scale will be applied on top of the original merit scale, resulting in a total salary increase rate of (1+inflation) x (1+merit1) x (1+merit2).

Mortality Approaches from Pub-2010 and Pri-2012

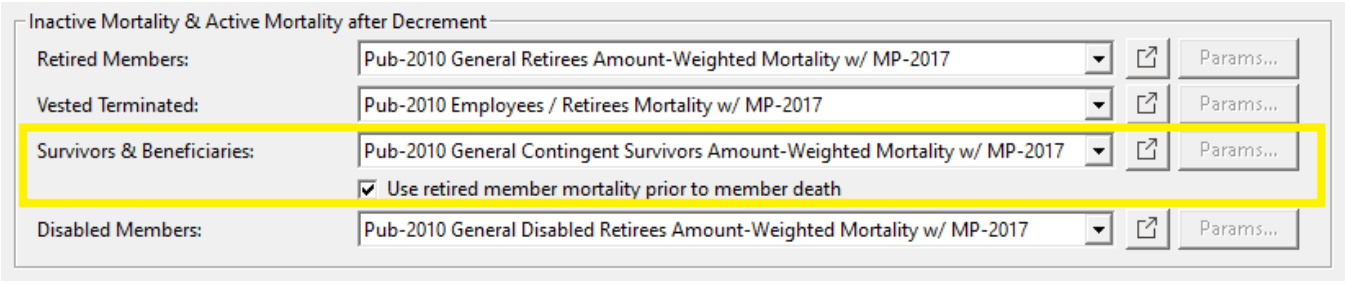
The Pub-2010 and Pri-2012 mortality reports specify 3 alternative approaches for contingent life mortality. Here's how you can apply these approaches in ProVal:

Approach 1: To use retiree mortality throughout the spouse's life, you can use a setup along these lines:

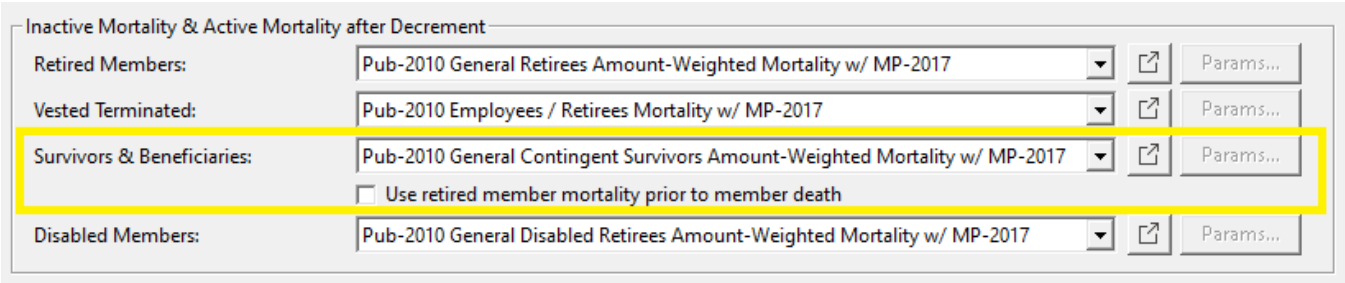


Please note that the above setup applies retiree mortality to both current and future survivors. If you would like to use the survivor mortality for current survivors and the retiree mortality for future survivors, you need to set up the Survivors & Beneficiaries mortality to vary by coded field.

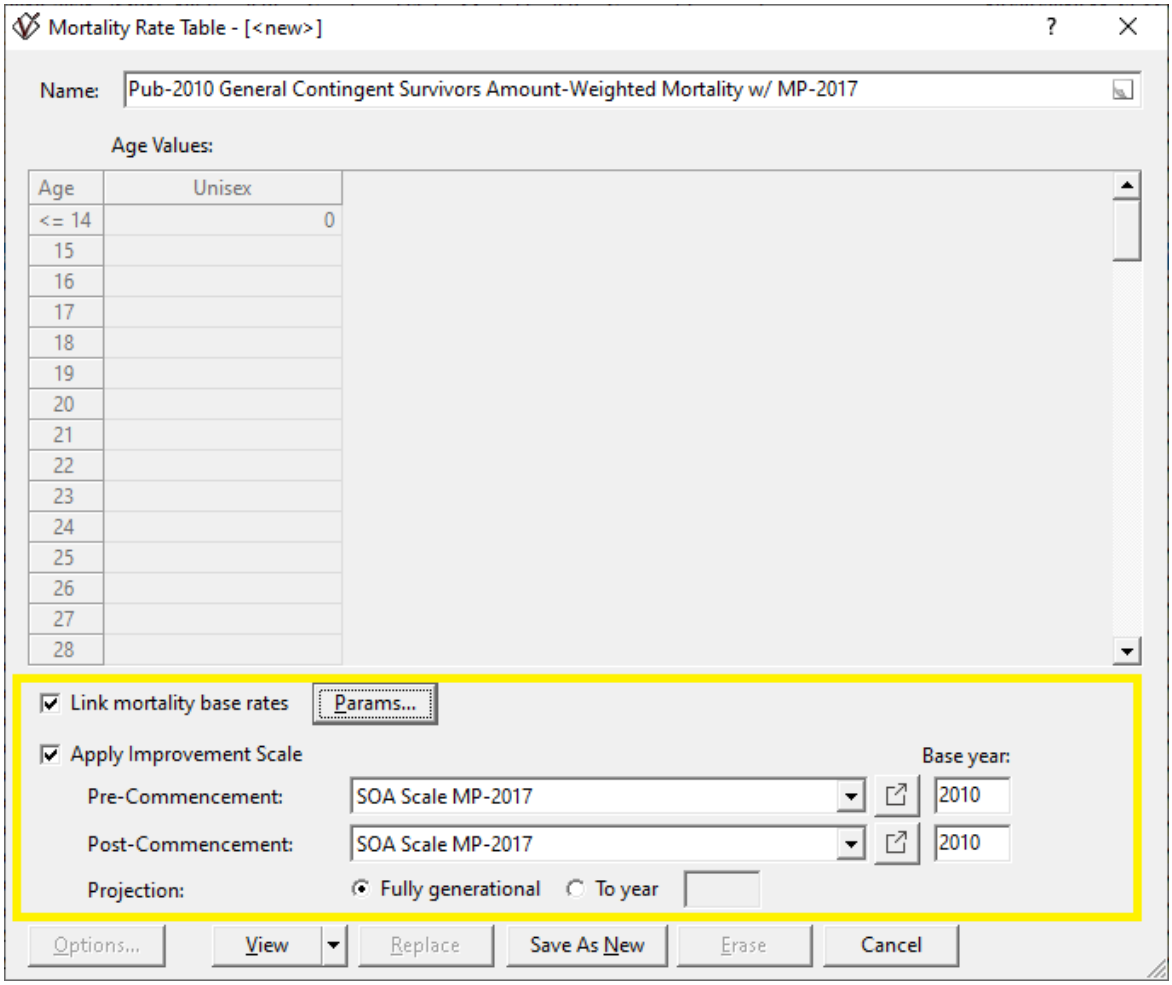
Approach 2 (new in 3.14, pension modes only): To use retiree mortality for the spouse while the member is alive and the survivor mortality after the member dies, you can use a setup along these lines:



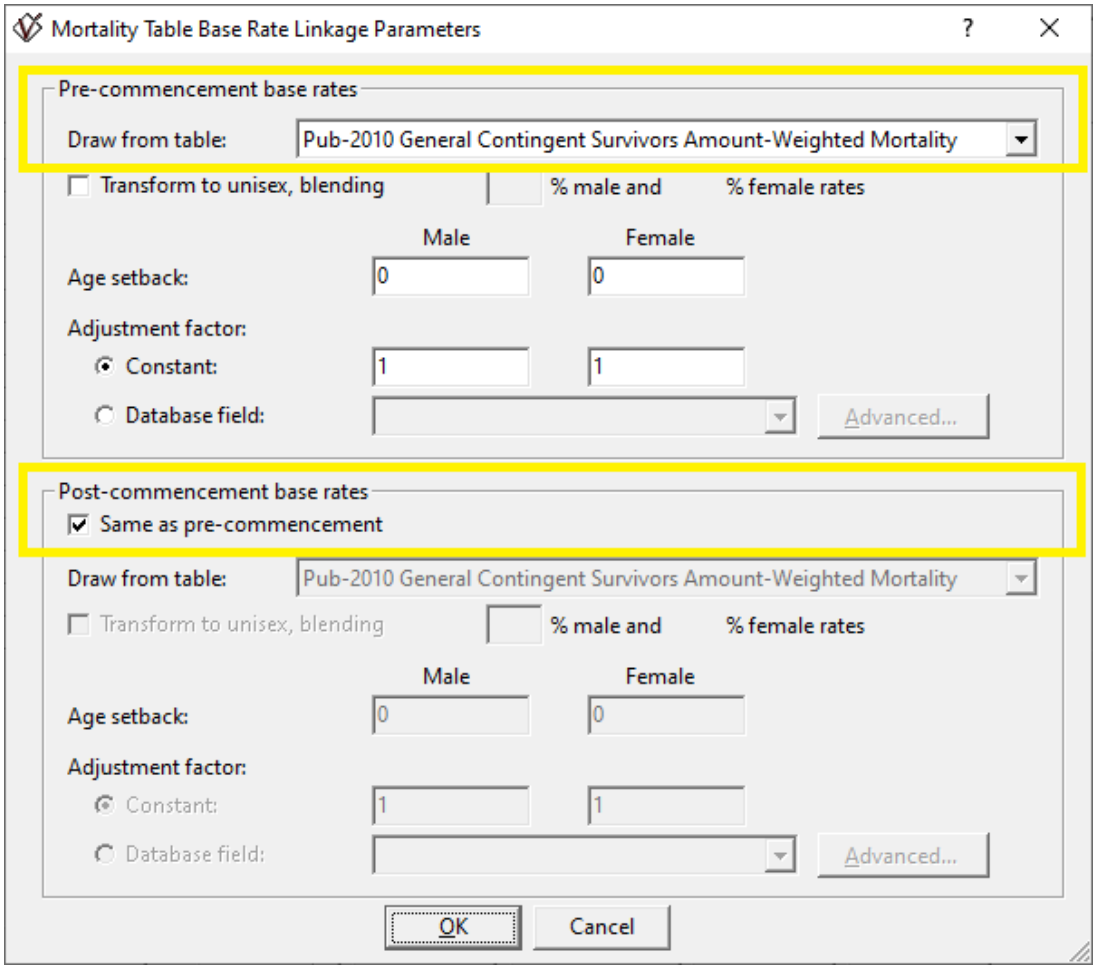
Approach 3: To use survivor mortality throughout the spouse's life, you can use a setup along these lines:



In the setups shown above, we applied the MP-2017 improvement scale to the base tables from Pub-2010 in order to match the example immediate Joint-and-100%-Survivor annuities from Table D-9 of the Pub-2010 report. For example, to create "Pub-2010 General Contingent Survivors Amount-Weighted Mortality w/ MP-2017", add a new table, select the MP-2017 improvement scale and check "Linked mortality base rate":

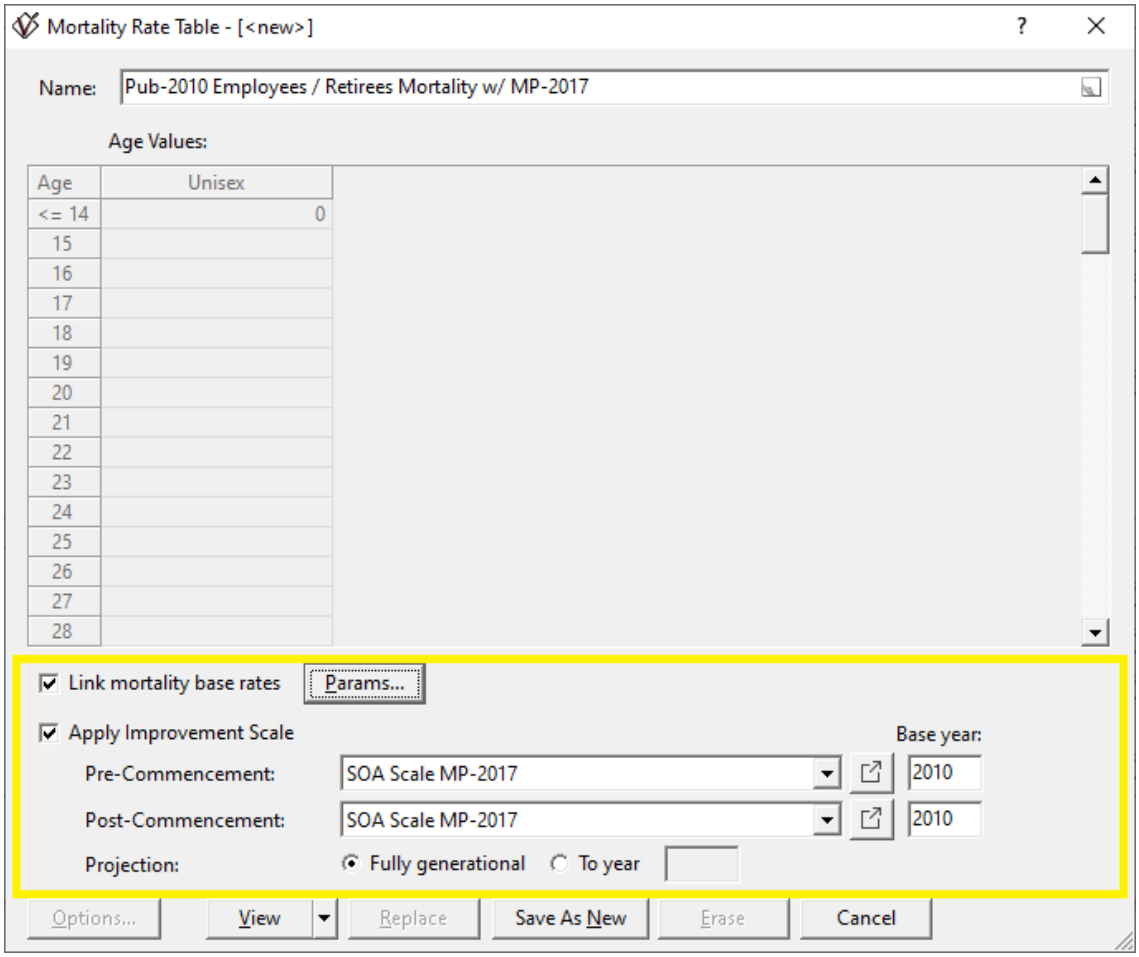


Then link it to the published survivor mortality table (both pre- and post-commencement):

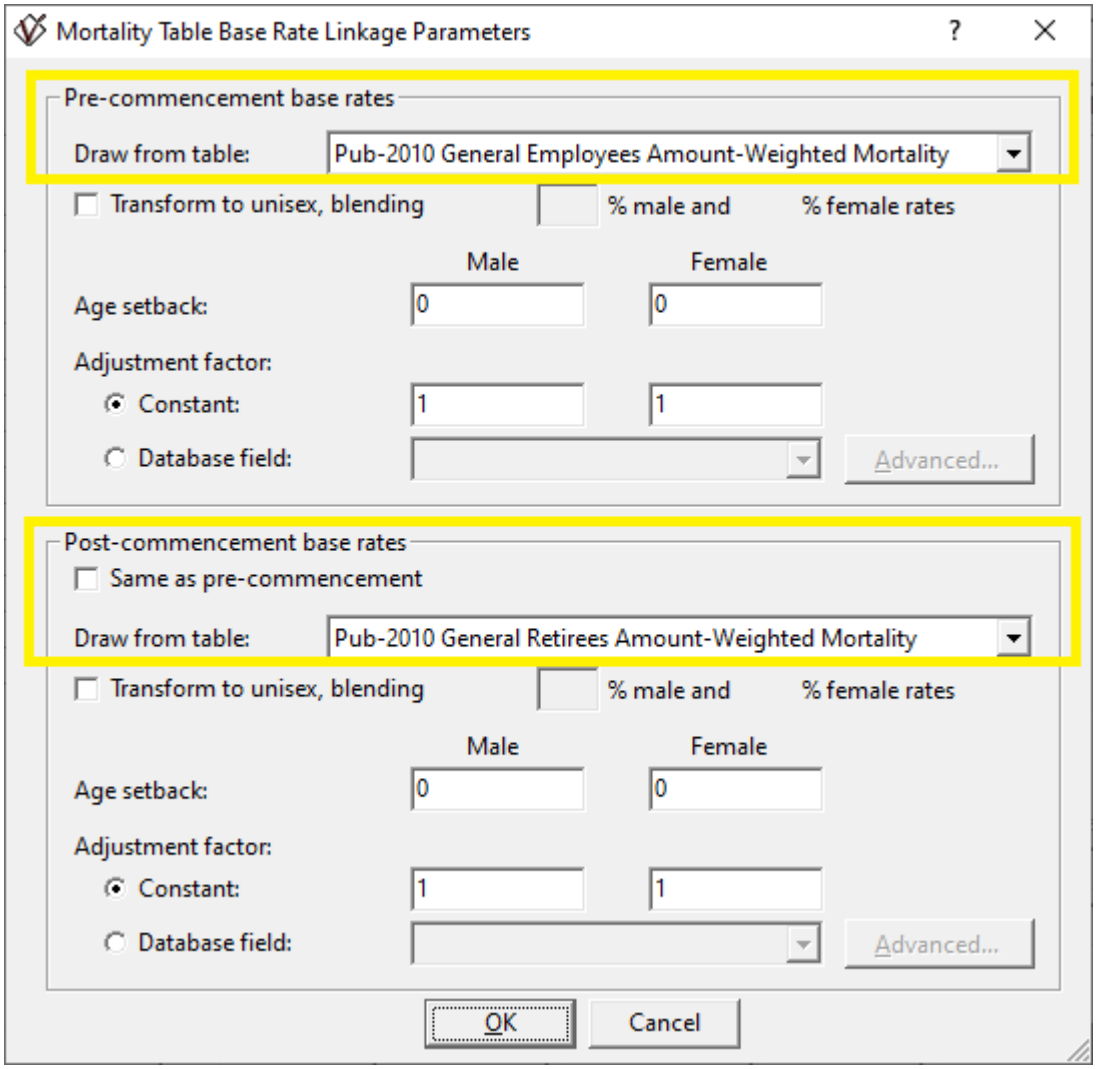


In addition, we used a custom table for the Vested Terminated mortality in order to match the example deferred single life annuity values from the Pub-2010 report. The deferred annuity values in that report assume employee mortality pre-commencement and retiree mortality post-commencement, with commencement assumed at age 62. For users interested in duplicating this methodology, here's how we went about creating this table:

Step 1: Create a new table. Select the MP-2017 improvement scale and check the "Linked mortality base rates" box:



Step 2: Click “Params...” and select the appropriate pre- and post-commencement tables:


Mortality Table Base Rate Linkage Parameters
Pre-commencement base rates
Draw from table:
Pub-2010 General Employees Amount-Weighted Mortality
Transform to unisex, blending
% male and
% female rates
Male
Female
Age setback:
0
0
Adjustment factor:
Constant:
1
1
Database field:
Advanced...
Post-commencement base rates
Same as pre-commencement
Draw from table:
Pub-2010 General Retirees Amount-Weighted Mortality
Transform to unisex, blending
% male and
% female rates
Male
Female
Age setback:
0
0
Adjustment factor:
Constant:
1
1
Database field:
Advanced...
OK
Cancel