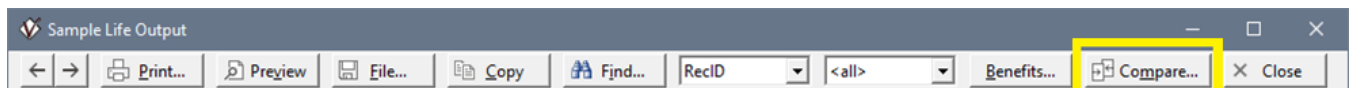


ProVal version 3.18 introduces a sample life comparison feature, power editing of valuation assumptions, and plan constants specified by multiple coded fields. Full details plus many other new features are described below.


### Sample Lives

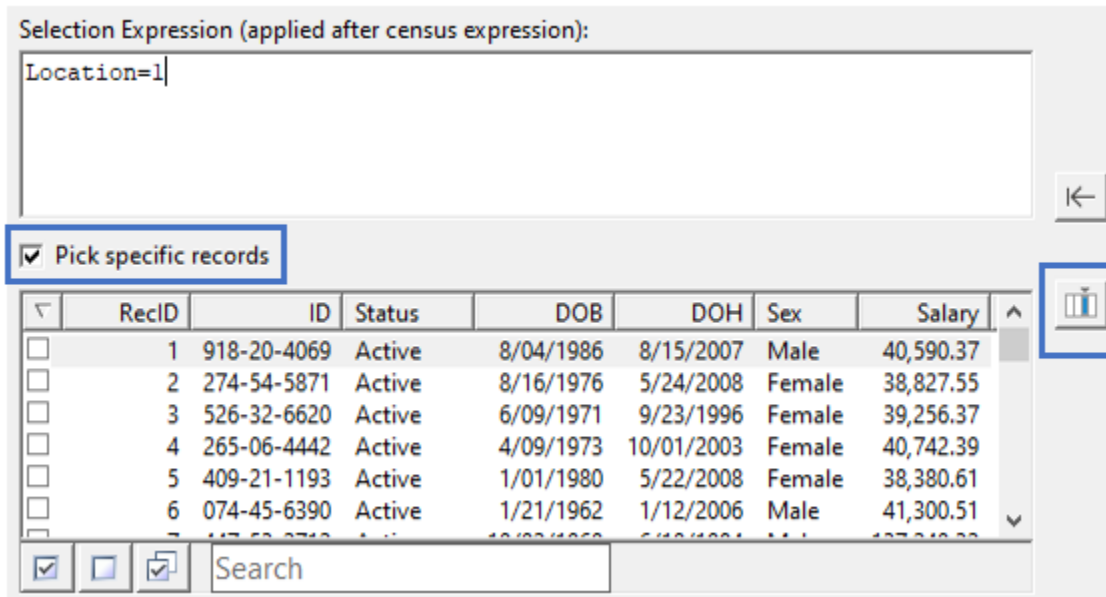
- ◆ **Comparing sample lives.** You can now compare sample life results for the same person using two sets of assumptions. Simply run a sample life, click Compare, and select the alternate assumptions (e.g., prior year assumptions).



The results are displayed side by side with differences highlighted in blue, so they are easy to spot at a glance.

Summary Results				
[Run 1] - 1/1/2022 Valuation				
[Run 2] - <Comparison>				
	[Run 1]	[Run 2]	[Run 1]	[Run 2]
	RecID: 1		RecID: 747	
Status	Active	Active	Inactive	Inactive
Attained Age	24.41	24.41	63.58	63.58
Decrement age				
Hire age	21.03	21.03		
Service from hire	3.38	3.38		
Beneficiary age			69.58	69.58
Current salary	36,435	36,435		
Expected Benefit Obligation	36,516	23,708	122,737	113,355
PV of Salary	597,430	526,962		
PV of Service	8.98	8.28		
PV of Employee Contributions				
Expected Benefit Payments	0	0	10,559	10,559

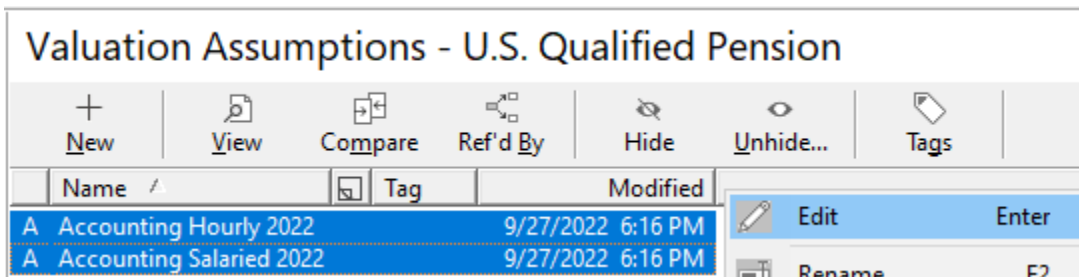
- ◆ **Selecting sample lives.** You can now identify sample life records by perusing the participant data without knowing the RecID or anything else about the record. Simply check "Pick specific records," scroll through the data, and select the records you want to run. To find records that cover important cases, such as male/female, inactive payment forms, active benefit groups, over/under integration, new hire, over normal retirement age, etc., you can filter the list using the Search box and/or the Selection Expression. Use the  button to control which database fields are displayed.



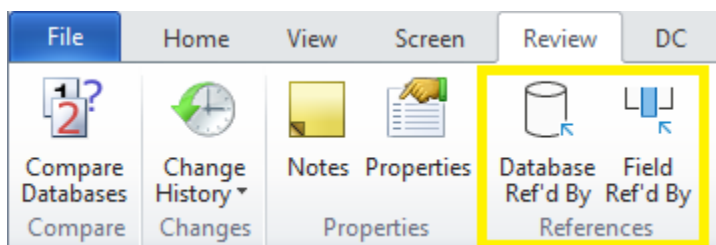
You can pick specific records everywhere sample lives are available in ProVal, including Valuations, Core Projections, Gain/Loss Analysis, and more.

## Interface


- ◆ **Editing more than one set of valuation assumptions.** To update multiple valuation assumptions at once, simply select multiple assumptions in the library, press Enter to edit, make your changes, and replace. Only changed parameters are saved back to the original valuation assumptions. This might be useful, for example, for year-end accounting valuations where you might need to update the valuation interest rate and get results for multiple plans for the same client in a short period of time.

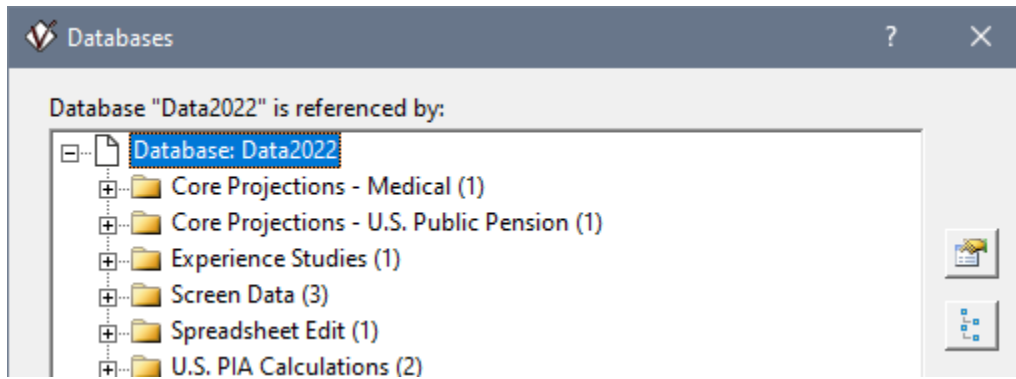


- ◆ **Database and other references.** On a database's Review tab:
  - Clicking "Database Ref'd By" tells you which valuations, core projections, etc. this database is used by without having to close the database and click "Ref'd By"
  - Clicking "Field Ref'd By" tells you which census specifications, benefit definitions, etc. the selected field (or fields) is used by

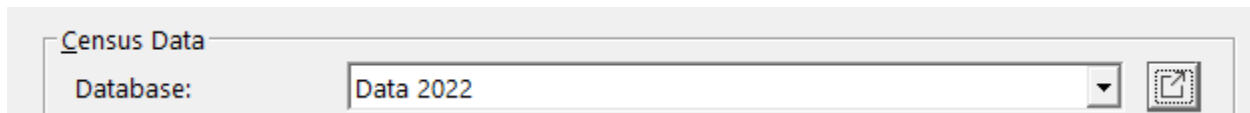


What's more, all references (not just database references) are now grouped into folders by type. If desired, you can expand the folders to reveal the actual entries that make the

references. You can even click the  button to open an entry read-only, just like in sample lives, and explore where the reference occurs.



- ◆ **Save as New and Substitute** has been extended to Define Field by Expression and Define Field by Table within Expression Sets. For instance, you can revise an expression within an expression set, save it as new while swapping out the original expression, but retaining its position. Similarly, Save As New and Substitute has been extended to Contribution Definitions within Plan Definitions.
- ◆ A new backdoor button in Valuations and Core Projections lets you open the database, for example, to find specific records, make data changes because of excluded records, etc.




- ◆ **Data defaults.** In Census Specifications, a new populate button has been added to data defaults that lets you copy in data defaults from another set of Census Specifications. You have full control over whether to copy all of the defaults or individually select which defaults to copy.
- ◆ Ctrl+Shift+C has been added as a keyboard shortcut for Copy with Titles throughout ProVal.

## Output & Reporting



- ◆ Now when a row is highlighted yellow in a table (such as Sample Lives, Exhibits, Output, etc.), you can click the specific cell you are interested in to add a darker shading to that cell. This can make it easier to reorient if you temporarily scroll off the page. A third click will remove all shading.

Year	Member Age	Interest Discount	Prob. of Remaining Active	Prob. of Decrement	Election Factor	Payment Form Value	Projected Benefit	Cumulative Attribution b.o.y.	Cumulative Attribution e.o.y.	Liability	Normal Cost
2045	58	0.276657	0.563368	0.049952	1.000000	17.821855	31,576.19	14,082.75	15,135.29	1,954.00	146.04
2046	59	0.262234	0.534165	0.049947	1.000000	17.468454	34,846.58	15,541.32	16,702.87	1,899.41	141.96
2047	60	0.248563	0.506390	0.199771	1.000000	17.105713	38,284.78	17,074.73	18,350.89	7,344.28	548.91
2048	61	0.235605	0.404186	0.199739	1.000000	16.733946	41,404.99	18,466.32	19,846.49	5,877.70	439.30
2049	62	0.223322	0.322506	0.349506	1.000000	16.356666	44,677.95	19,926.04	21,415.31	8,204.27	613.18

- ◆ **Individual results** from a Valuation or Core Projection can now be saved separately for each inactive benefit defined in Census Specifications. Multiple runs are no longer needed when results are needed by individual and benefit.
- ◆ **Viewing output.** When you select different Valuations or Core Projections in the library, ProVal is now smarter about retaining the following output settings:
  - If a particular subtotal or sensitivity is selected for each run, that subtotal or sensitivity is retained when adding another Valuation/Core.

- When benefit detail is selected and every available benefit is selected, ProVal now assumes that when changing or adding another Valuation/Core to view, that all benefits in the new run(s) should also be displayed.
- ◆ **Exhibit go-to buttons.** When viewing Exhibits (for Valuation Sets or Forecasts),  buttons now take you to the underlying Asset & Funding Policy, Forecast Assumptions, and Valuations/Core Projections. This makes it quick to double check an assumption without backtracking from what you are currently viewing.

```

Valuations Included in Baseline Gain or Loss Event:
  FA valuation 2013 (1/23/2020 4:41 PM) 
Asset & Funding Policy: Assets (7/10/2013 3:00 PM) 

```

## Plan Constants

- ◆ Plan constants can now be defined by separate coded fields. For example, you could set some plan constants by Employer type with 10 codes and set other plan constants by Employee class with 20 codes, without having to create a master coded field with the 200 permutations of type and class.

Set values for Plan Constants


Employer X | EmployeeClass X | + |

Based on coded field:

## All Plans

- ◆ **Negative sensitivities.** When running Valuation Sensitivities, you can now control whether each economic assumption can drop below 0. In low interest rate environments, it may be desirable for some assumptions to drop below 0, however, in other cases such as COLAs or salary scale, a floor of zero might be appropriate.

— Economic Assumptions —

Vary	Assumption	Set	Allow Negative Rates?
<input checked="" type="checkbox"/>	Interest Rates	Misc.	Yes 
<input type="checkbox"/>	Salary Inflation	Misc.	No
<input type="checkbox"/>	COLAs*	Misc.	No
<input type="checkbox"/>	Increase & Crediting Rates*	Misc.	No
<input type="checkbox"/>	Conversion Factors Interest*	Misc.	No

- ◆ **Funding Sensitivities.** A new exhibit called Funding Sensitivities was added to Valuation Sets. This exhibit summarizes the funding liabilities (in Qualified mode, the PPA not-at-risk liability) under each sensitivity set defined in the underlying Valuation(s). If the interest rate sensitivity set was run, the exhibit will also calculate the effective duration.
- ◆ **Accounting Sensitivities.** The Accounting Sensitivities exhibit was extended to the ASC 715 and CICA accounting standards. This exhibit summarizes the accounting liabilities under each sensitivity set defined in the underlying Valuation(s). If the interest rate sensitivity set was run, the exhibit will also calculate the effective duration on a PBO basis.

## Pension Plans

- ◆ **Headcounts.** Projected headcounts have been improved to avoid double counting emerging inactive participants who are eligible for more than one benefit. For example, consider a participant eligible for two benefits:

	Benefit A		Benefit B	
	Life Annuity	J&S	Life Annuity	Lump Sum
Election Probability	0.75	0.25	0.75	0.25
Headcount	0.75	0.25	0.75	0

ProVal now determines the total emerging inactive headcount as 1 for this example. This is based on the maximum total headcount across benefits:

$$\text{Maximum [1 from Benefit A, and 0.75 from Benefit B]} = 1.$$

Previously, ProVal simplistically determined the headcount for decrementing inactives as 1.75 by adding the headcount across benefits.

- ◆ **Optional payment forms.** ProVal now supports optional payment forms that were previously disallowed (such as modified cash refund and life insurance) if the conversion factor is specified by table.
- ◆ **Cash balance benefit formula components** now support mid-year timing for pay credits and interest timing.
- ◆ **Life insurance mortality.** A new option lets you specify whether to use pre-commencement or post-commencement mortality during the life insurance coverage period.

Assume  mortality during coverage period

- ◆ The J&S fraction payable to member only can now be based on a table. This allows “pop-ups” to vary by retirement age.

## Accounting

- ◆ **Long roll forwards.** When using ASC 715 or IAS 19 as the accounting standard in a Valuation Set or a Forecast, ProVal now allows the accounting measurement date to be up to 15 months later than the valuation date.
- ◆ **Benefit payment overrides.** Benefit payment overrides for rolling forward accounting liabilities to the measurement date may now be entered as the actual amount for the roll forward period. Previously, ProVal required an annualized amount which was often awkward to work with.

Override roll forward benefit payments with  amounts

- ◆ **Life expectancy** calculations are now detailed in sample life reports.
  - For inactive participants, a new sample life report has been added.
  - For active participants, the expected future working lifetime sample life report has been expanded to include the life expectancy calculation.
- ◆ **IAS Attribution.** In OPEB and Universal modes, new parameters have been added to make it easier to attribute benefits to periods of service based on the guidance issued by IFRS in 2021. These parameters, found under the Attribution button of a Benefit Definition, give you much greater control over when the attribution period should begin.

## US Qualified Pension Plans

### ◆ Government Forms.

- The Government Forms Extract was updated to reflect changes to the Schedules MB & SB made in 2022 which required reporting plan expenses and normal cost on separate lines. (This was originally released in a 3.17 update but included here in case you missed it.)
- A new exhibit was added to Valuation Sets to summarize the projection of expected benefit payments as required by the Schedules SB and MB in 2023. Underlying Valuations must be rerun in ProVal 3.18 to see this exhibit.

### ◆ Participant counts.

- ProVal now allows you better control over which records to include in headcounts used for reporting and calculations such as at-risk loads. Under the PBGC premium topic of Valuation Assumptions, you may now specify a coded field to indicate which participants should be excluded from headcounts. For example, this makes it much easier to manage participants with multiple records.

- ProVal now tracks counts split between in-pay status or not-in pay status regardless of the Benefit in receipt selection from the Asset & Funding policy (previously, splits were only available if based on Status code) for the valuation year. Underlying Valuations/Core projections must be rerun in ProVal 3.18 to see these splits in Val Set & Forecast output.
- ◆ **415 Limit.** A new validation was added to Valuations. Participants impacted by the 415 limit will now be displayed as part of the warning messages. This allows you to easily identify records that you may wish to inspect more closely. This warning can be turned off under the Valuation Assumptions > Regulatory Date > U.S. Maximum Benefits.. button.

WARNING! 3 active (or vested valued as active) records have at least one benefit impacted by the 415 limit on or after the valuation date using baseline assumptions:

49, 236, 257

## US Public Pension Plans

- ◆ **Non-indexed liability.** A new funding liability was added that lets you exclude COLAs. This may be useful if you have a contribution policy that treats the indexed portion of the liability

differently. To code the non-indexed liability, go to the Liability Methods topic of Valuation Assumptions.

Non-Indexed liability based on Entry Age Normal - Level % of salary

- ◆ **Future amortizations.** On the Funding Amortization Bases topic of the Asset & Funding Policy, you can now specify future amortizations as either “open” or “closed” depending on whether the plan is unfunded or in surplus. There is also a new option available when the plan is in surplus that allows you to eliminate closed bases and amortize the surplus (only available if surplus bases are specified as open).

Future bases:

Future amortization varies if unfunded or in surplus

	Type if Unfunded	Amortization Years if Unfunded	Type if Surplus	Amortization Years if Surplus
Assumption change	Closed	10	Open	
Gain or loss	Closed	10	Open	
Active benefit change	Closed	10	Open	
Inactive benefit change	Closed	10	Open	
Funding method change	Closed	10	Open	

Amortization payment increase rate: 0.03

Open parameters:

Fixed amortization year: 2030

Minimum amortization years for forecast: 30

Special treatment when in surplus:

None

Eliminate closed bases and do not amortize surplus

Eliminate closed bases and amortize surplus

## US Multiemployer Pension Plans

- ◆ **Negative assets.** If an accumulated funding deficiency is allowed, assets may now be projected to negative values. This is useful when certifying if a plan is projected to become insolvent. Previously, ProVal forced contributions to prevent negative assets from occurring.

Allow an accumulated funding deficiency

Do not make additional contributions to avoid plan assets becoming negative

## US Defined Contribution Plans

- ◆ **ADP/ACP testing.** A new ADP/ACP tool determines ADP and ACP ratios, the thresholds for passing the tests, and determines whether the plan passed.
- ◆ **HCE/NHCE determination.** A new HCE/NHCE Determination tool flags which records are highly compensated employees per the general rule or top paid election. This is also useful for defined benefit pension plans.



## OPEB Plans

- ◆ **LTD plans.** Mortality and recovery rate scaling factors may now be entered by duration since disability.
- ◆ **Spouse benefits**
  - **Lapse assumption.** The lapse assumption specified in Valuation Assumptions for a spouse benefit may now be based on either the member or spouse age (previously, spouse age was always used).

Table lookup for spouse benefit based on member age and sex

member

spouse

- **Age differences** between spouses may now be specified by table in Valuation Assumptions.

## Canadian Registered Pension Plans

- ◆ **Manitoba minimum contributions.** ProVal now supports the Manitoba minimum required contribution calculations that changed effective for valuation dates on or after December 31, 2021. To reflect the amendments to the funding regulations, go to the Minimum Funding Amortization Bases topic of the Asset & Funding Policy, select Manitoba as the Applicable Provincial Law, check the box to apply the new law, and enter the provision for adverse deviation for the current year.

Manitoba Additional Parameters

Apply 2021 Amendments to Pension Benefit Act

Provision for adverse deviations (PfAD):  %

- ◆ The Minimum Required Contribution exhibit has been updated to display the interest rates used to develop the solvency liability.

## German Pension Plans

- ◆ A new option has been added to lump sum payment forms without life contingencies to pay lump sums on a fixed date in the calendar year after the calendar year of decrement.

## Census Data

- ◆ **Viewing errors.** You can now view records that have been flagged with a specific error or warning (or any number of errors and warnings). For example, records flagged as "vested with immediate payment form," as depicted below.

Screen Review DC

Select Records with Errors

Error - Vested with immediate payment form

Choose Multiple Errors

View Error Log View Errors for this Record

45

	Sex	Status	DOB	DOH	Salary	AccBen	Form	Sp
50	Female	Terminated Vested	11/11/1978			44,546.30	J&S 50% annuity	1/

- ◆ **Data encryption.** Database files for clients opened in ProVal 3.18 will automatically be encrypted.



## Forecasting

- ◆ **Experience benefit payments.** In pension modes, experience benefit payment timing and first year override amounts (found on the Forecast Analysis topic of the Asset & Funding Policy) can now be set separately for annuities, life insurance and lump sum payments. This added control is useful in reducing gains and losses associated with payment timing since ProVal assumes annuities are paid middle of year, life insurance is paid end of year, and lump sums at beginning of year when calculating expected benefit payments. In addition, the ability to enter a first year override for lump sum payments is useful if settlement accounting is applicable. Previously, ProVal used an estimated lump sum amount if there was an experience benefit payment override.

Experience benefit payments			
	Annuities	Life Insurance	Lump sums
Fraction of year to date made:	<input type="text" value="0.5"/>	<input type="text" value="0.5"/>	<input type="text" value="0.5"/>
Override first year benefit payments:			
<input type="checkbox"/> Plan year:	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Fiscal year:	<input type="text"/>	<input type="text"/>	<input type="text"/>

## Nondiscrimination Testing

- ◆ **Optional forms when determining accrual rates.** For most valuable accrual rates, you can now select which optional form (or normal form) to use. For example, if your retirement benefit has a normal form of a single life annuity but an optional form of 50% J&S, you can now select the J&S benefit as the most valuable benefit. This avoids having to create a new Plan Definition in this situation for purposes of accrual rate calculations.
- ◆ **Backdoor buttons** have been added in the Accrual Rate tool to take you directly to plan definitions, census specifications, and valuation assumptions without having to fully exit the tool.

## Experience Studies

- ◆ **Batch execution.** Experience studies may now be executed in batch, letting you run them all at once rather than having to run them individually. This is especially useful when you must rerun a complex set of experience studies after making a change or correction.

## Performance

- ◆ Importing data from Excel files has been sped up. In a test with 100,000 records, an import was about 1.55 times faster (previously 7m30s, now 4m50s).
- ◆ Deterministic and Stochastic Forecasts have been sped up. In a test of one stochastic forecast, the run was now about 1.07 times faster.

## Licensing

- ◆ The license manager interface has been refreshed to show more details about the current license and any supplemental licenses such as the WinTech Grid Platform, ProVal PS, etc.

## 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.