



Excellence Delivered **As Promised**

Effects of Retirement Practices on Depreciation

Ned W. Allis, CDP
Supervisor, Depreciation Studies
Gannett Fleming, Inc.

Vancouver, BC
May 21, 2013



Effects of Retirement Practices on Depreciation

- **Retirement Practices**
 - Impact on Depreciation Parameters
 - Impact on Rate Base
- **Retirement Issues**
 - Impact on Depreciation Parameters
 - Impact on Rate Base





Gannett Fleming

*Excellence Delivered **As Promised***

Retirement Practices

Model

- **Model impact of retirements**
 - Account 364, Poles Towers and Fixtures
 - New pole costs on average \$2,000 to install today
 - Cost inflation of 3% per Year
 - 20% of replacement costs are for removal, 80% for new asset
- **Depreciation Studies**
 - Conducted every 5 years
 - 1940 through 2010
 - Actuarial data for life analysis



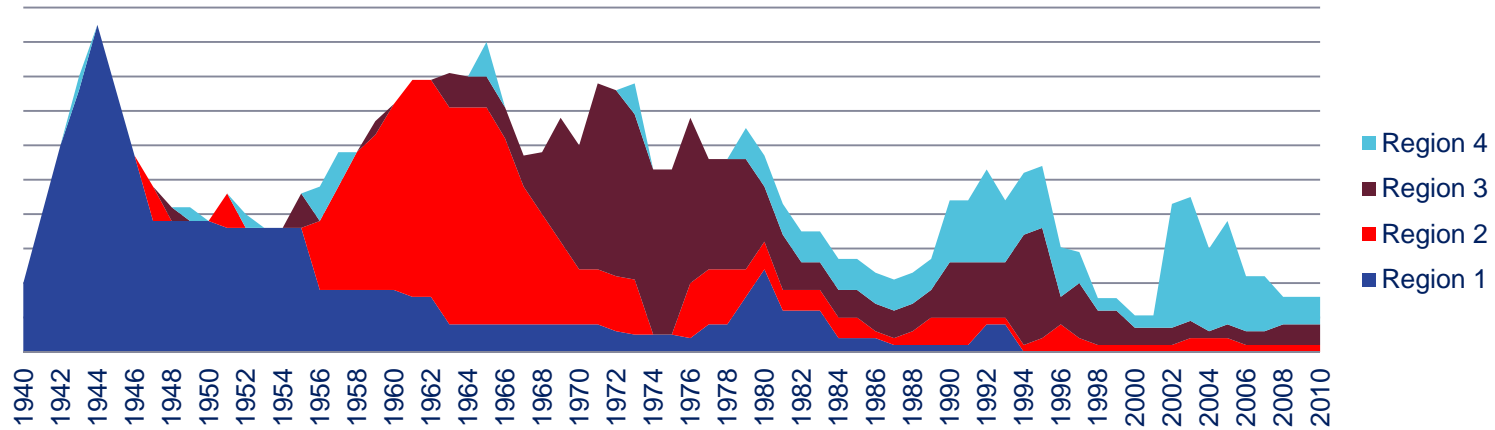
Model

- **Electric Utility**
- **Four regions**
 - Region 1 – Urban
 - Region 2 – Suburban, strong growth in 1960s
 - Region 3 – Suburban, strong growth in 1970s
 - Region 4 – Rural, but some growth in 1990s, 2000s

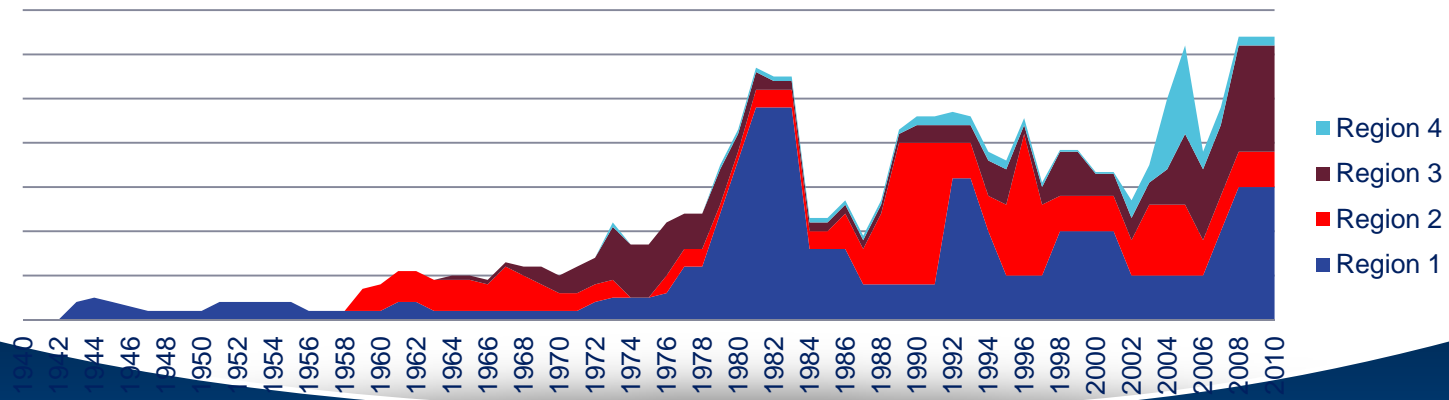


Model

Growth, by Region



Pole Retirements, by Region



Gannett Fleming

*Excellence Delivered **As Promised***

Baseline Case

- **Actual vintage and cost information for each pole retirement**
 - **Retirements reported as they occur**
 - **Accounting data matches the field**
-
- **What is the estimated depreciation expense in 2010?**

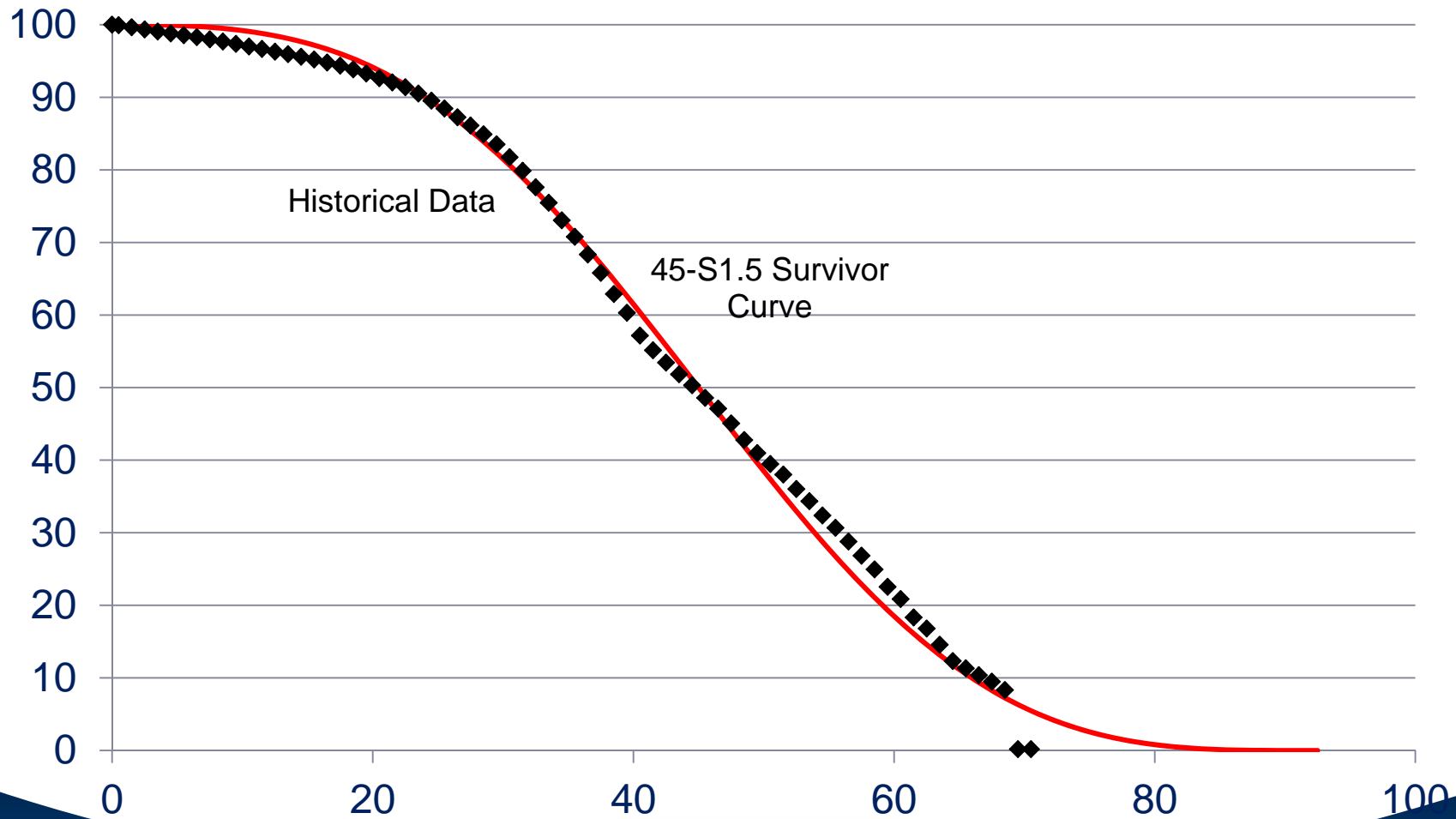


Survivor Curve

- **Actuarial data**
 - Aged retirements
- **Develop original life table**
 - Compare retirements to exposures by age
- **Fit Iowa survivor curves to historical data**



Survivor Curve



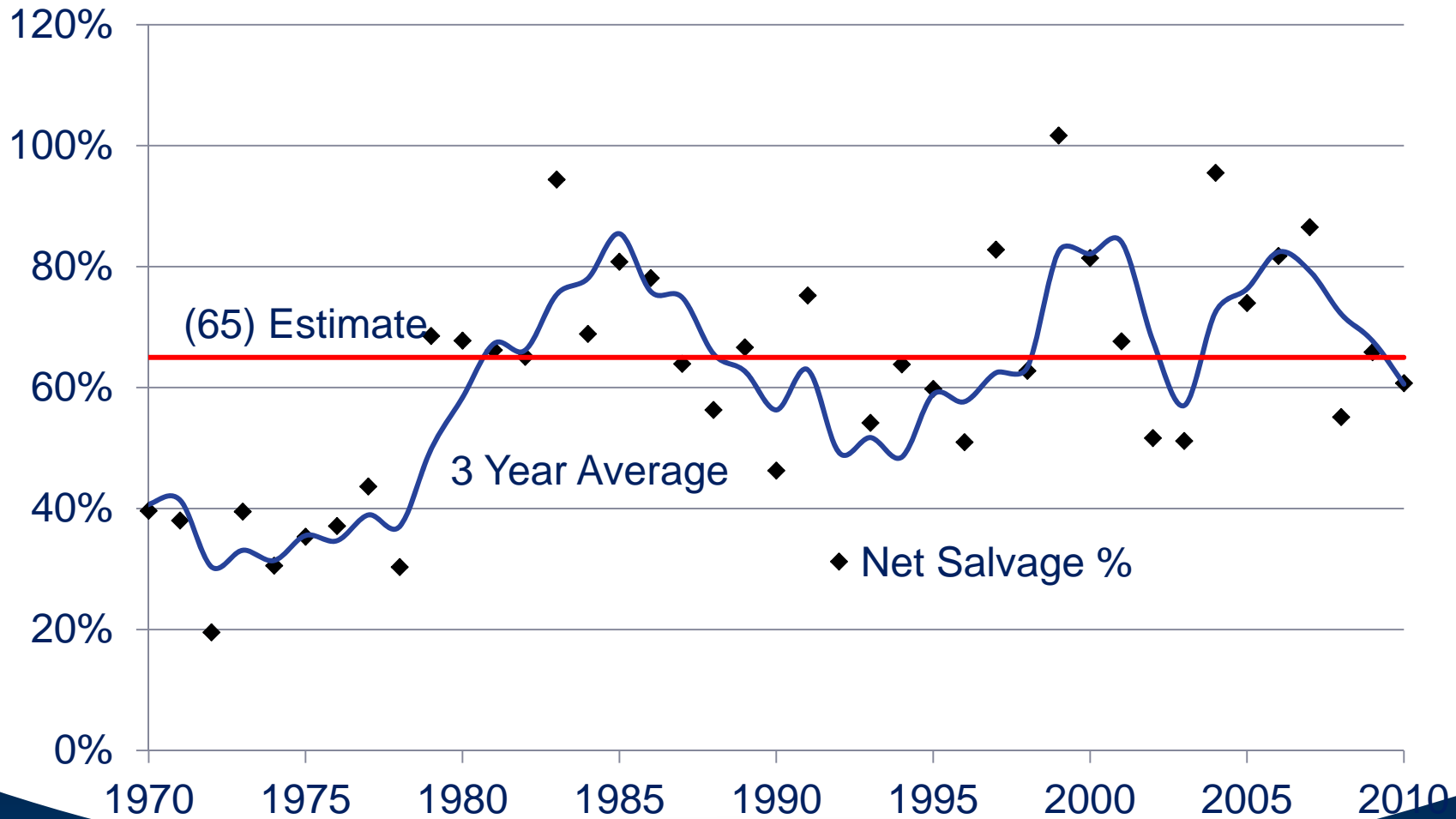
Net Salvage

- **Analysis of historical data**
 - Retirements
 - Cost of Removal
 - Gross Salvage
- **Expressed as percent of retirements**

$$\frac{(\text{Gross Salvage} - \text{Cost of Removal})}{\text{Retirements}}$$



Net Salvage



Gannett Fleming

Excellence Delivered *As Promised*

Depreciation Expense

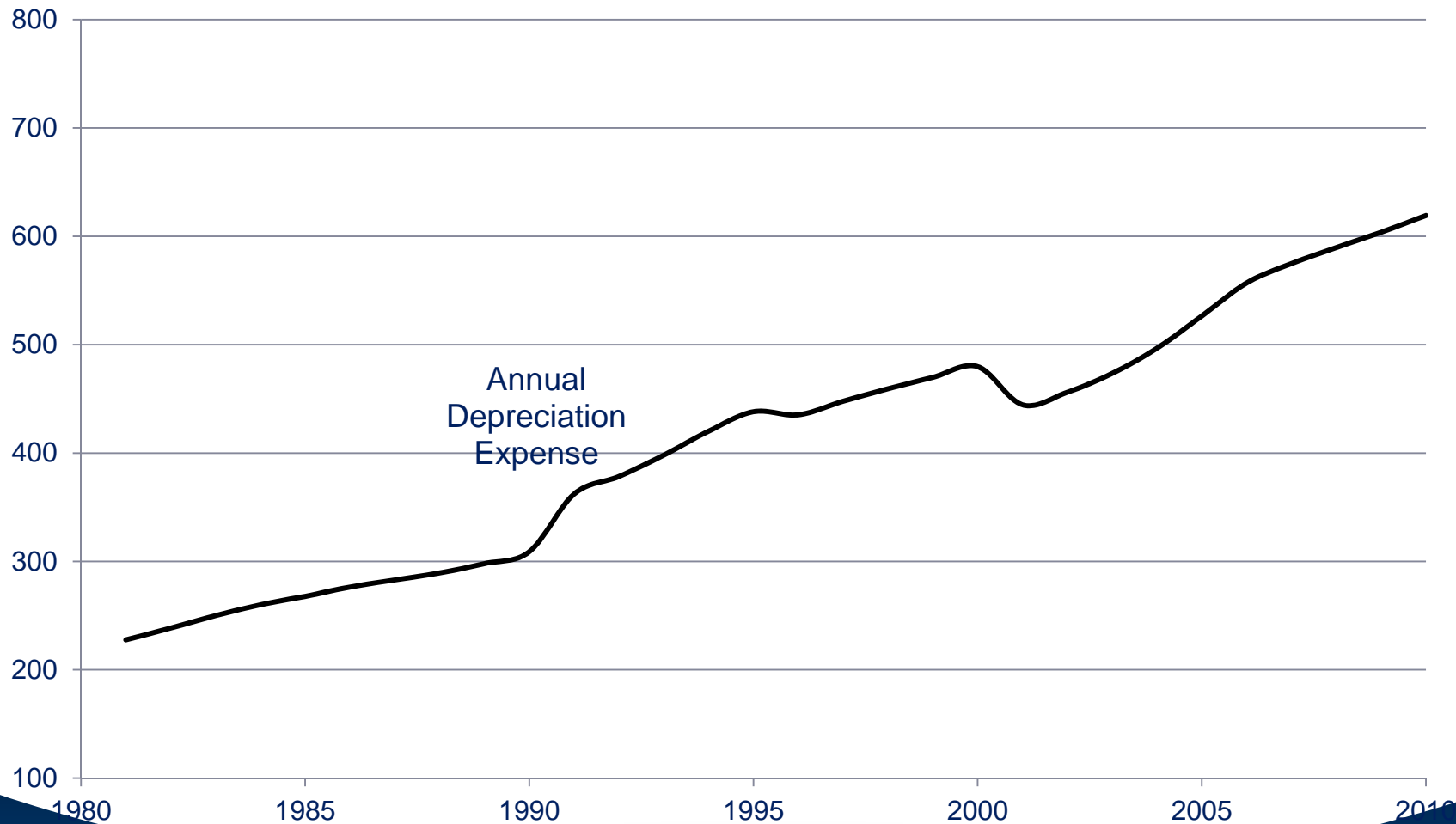
- **Average Service Life – Broad Group**
- **Remaining Life Technique**
- **Annual Accrual at 12/31/2010**

$$\begin{aligned} &= \frac{(100\% - \text{Net Salvage } \%) \times \text{Cost} - \text{Book Reserve}}{\text{Average Remaining Life}} \\ &= \frac{(100\% - (-65\%)) \times \$17,276,468 - \$9,452,796}{30.11} \\ &= \$632,792 \end{aligned}$$

$$\text{Depreciation Rate} = \frac{\$632,792}{\$17,276,468} = 3.66\%$$



Annual Depreciation Expense, 1981 - 2010



Gannett Fleming

*Excellence Delivered **As Promised***



Gannett Fleming

*Excellence Delivered **As Promised***

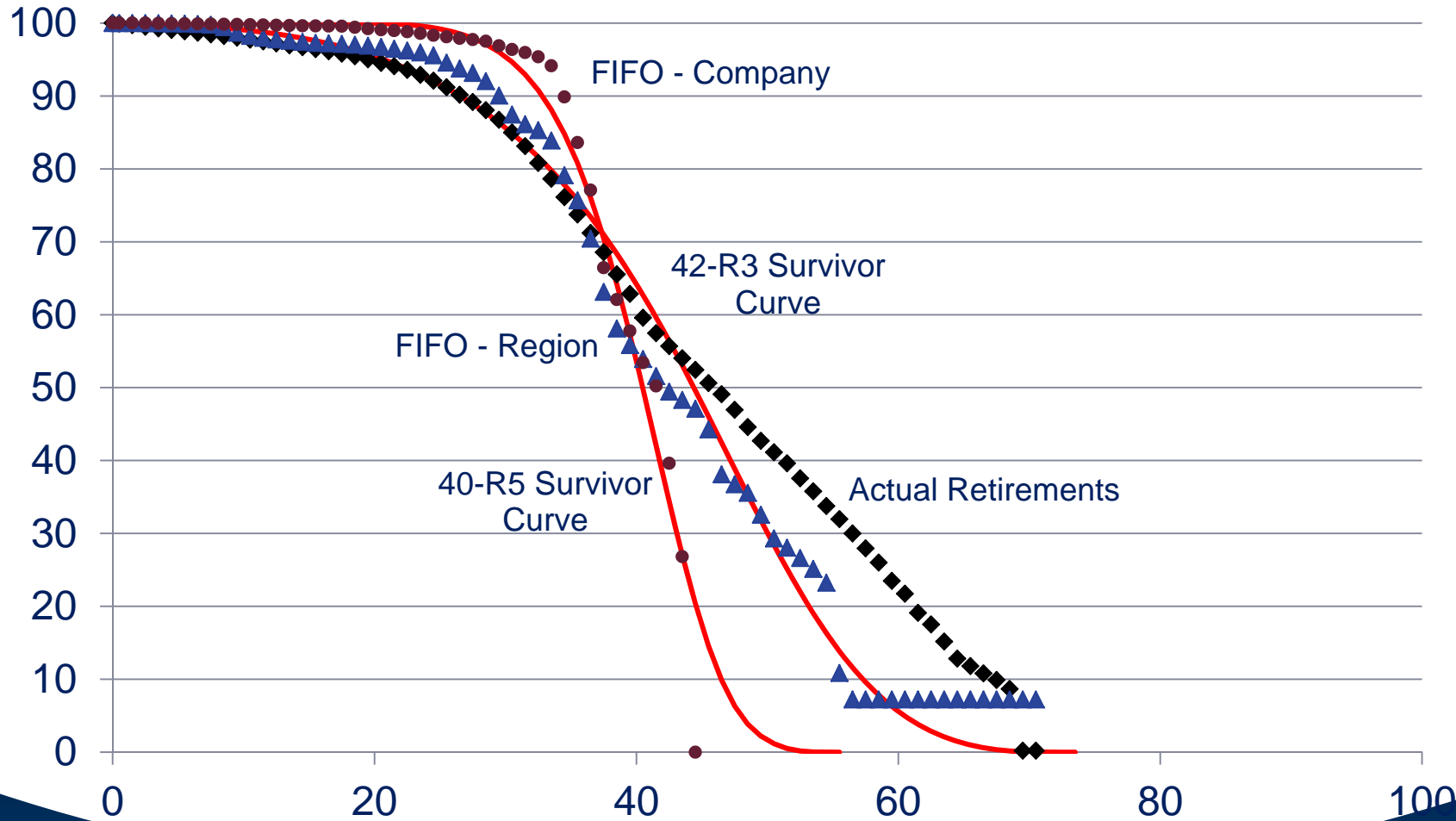
Retirement Practices

Retirement Scenarios

- **Actual Retirements**
- **FIFO**
- **Survivor Curve, Units**
 - Two scenarios
 - R1 Curve
 - R3 Curve
- **Deflated Cost**
 - Based on curve and inflation index
- **Two scenarios for each method**
 - Region
 - Company



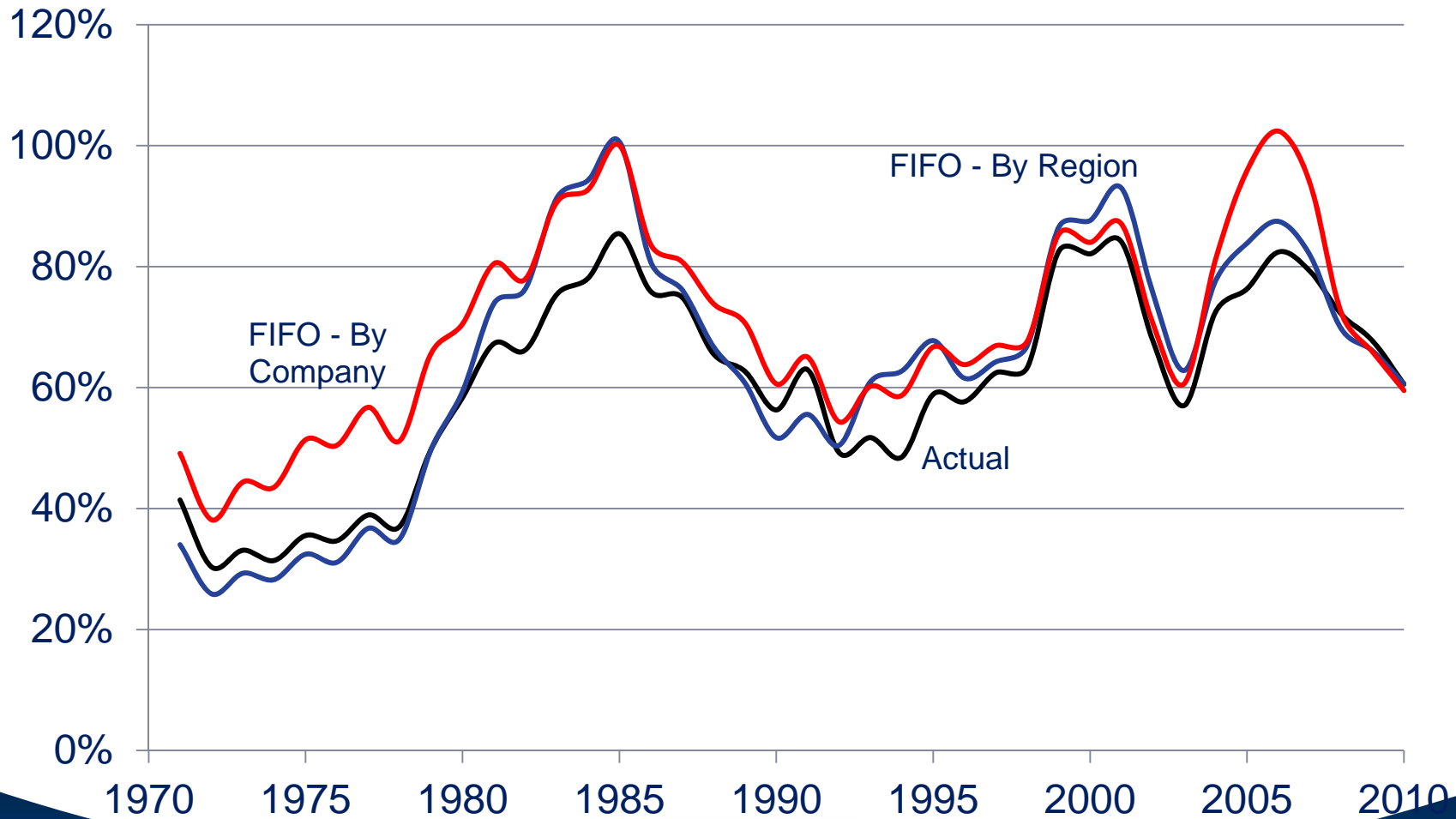
Life Analysis Comparison – Actual to FIFO



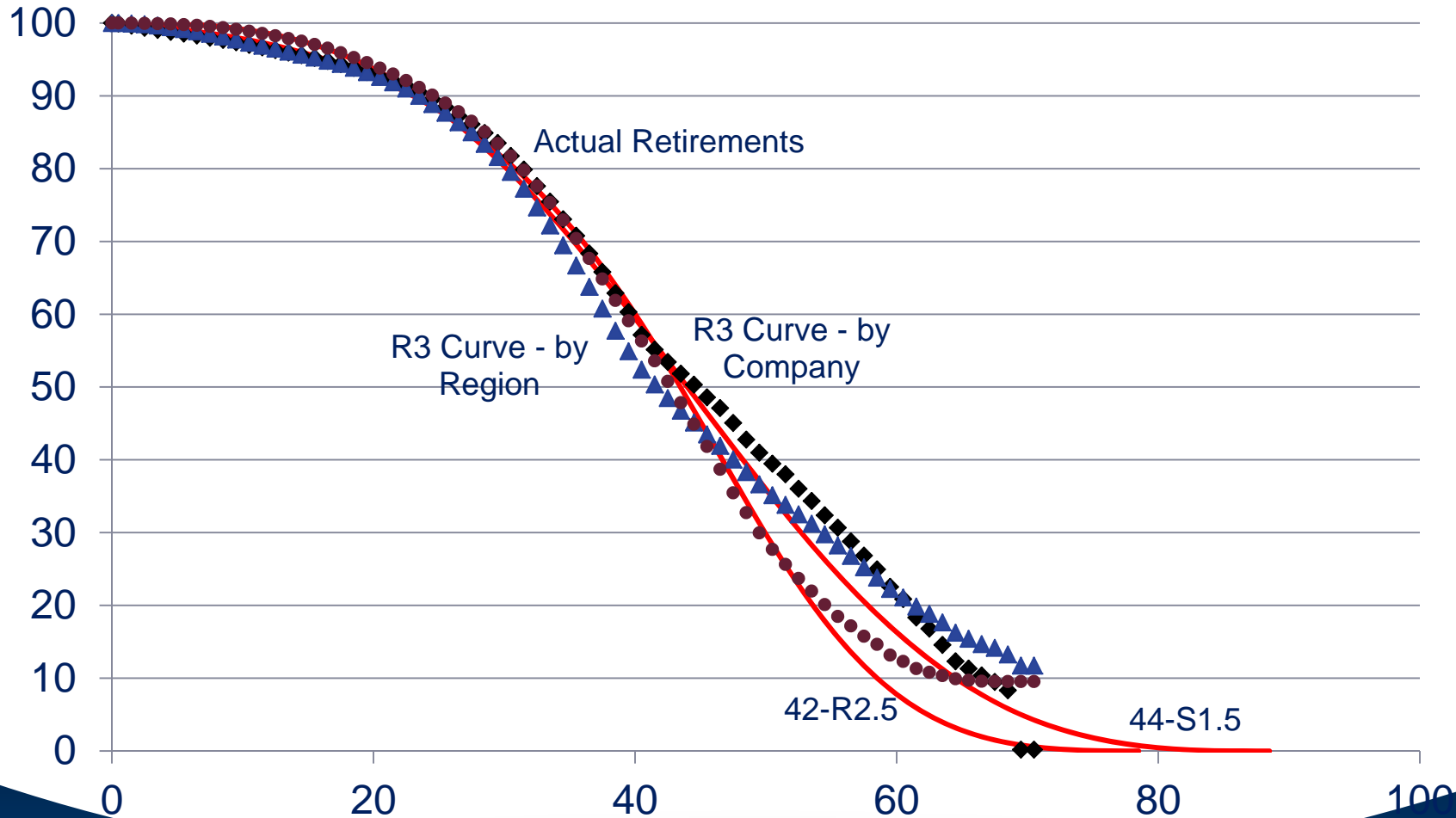
Gannett Fleming

Excellence Delivered *As Promised*

Net Salvage Comparison – Actual to FIFO



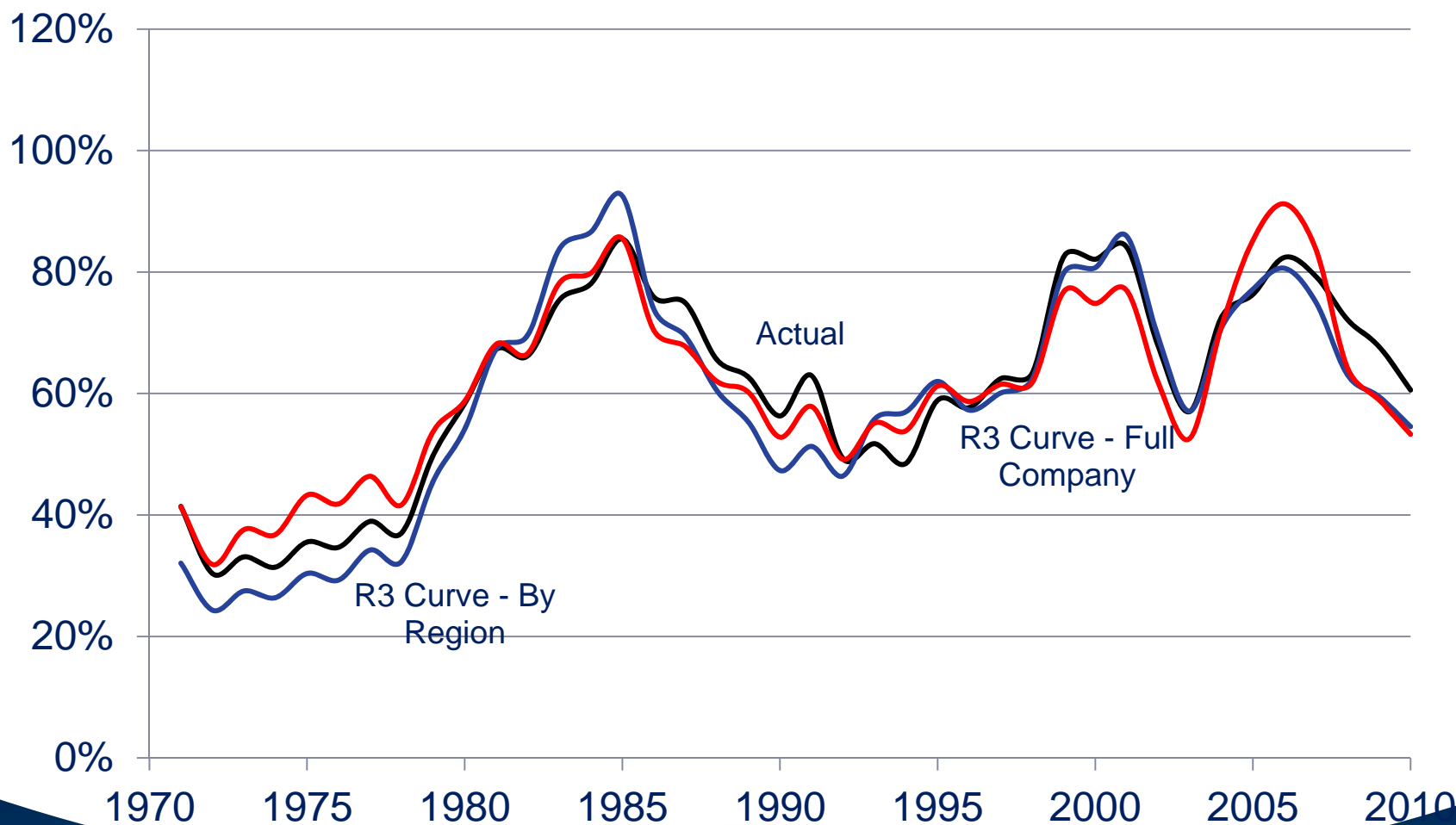
Life Analysis Comparison – Actual to R3 Curve



Gannett Fleming

Excellence Delivered *As Promised*

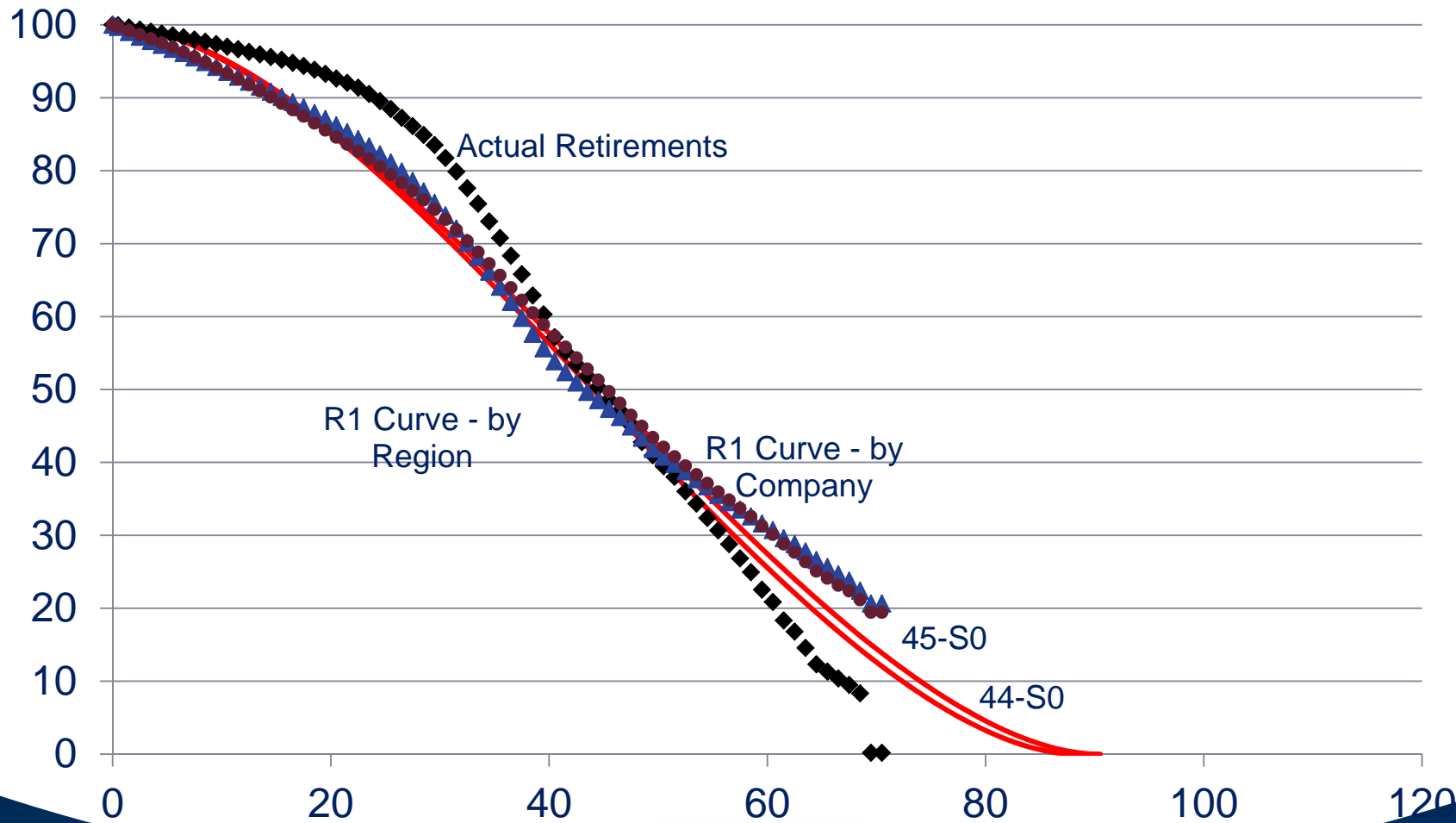
Net Salvage Comparison – Actual to R3 Curve



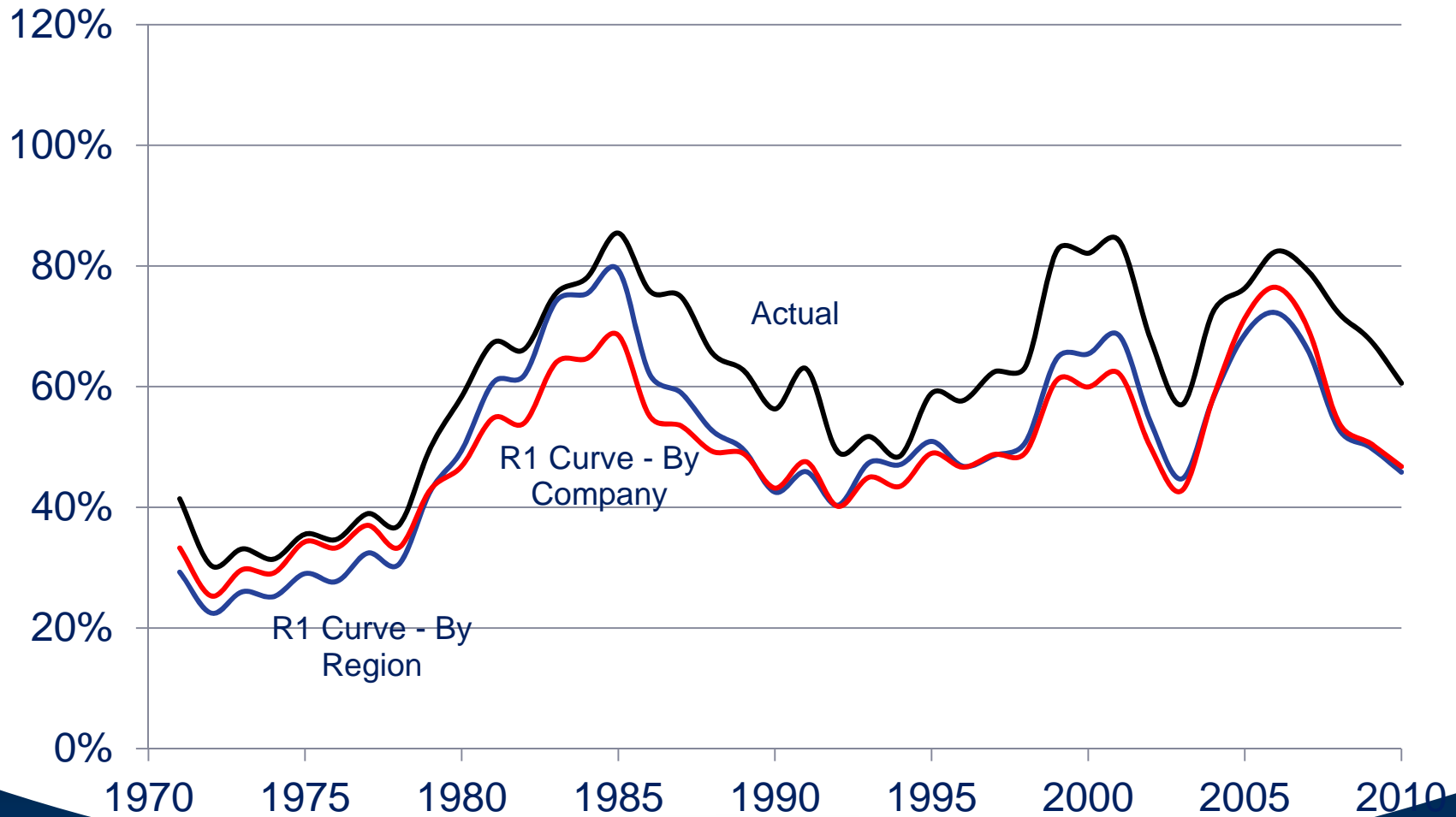
Gannett Fleming

Excellence Delivered *As Promised*

Life Analysis Comparison – Actual to R1 Curve



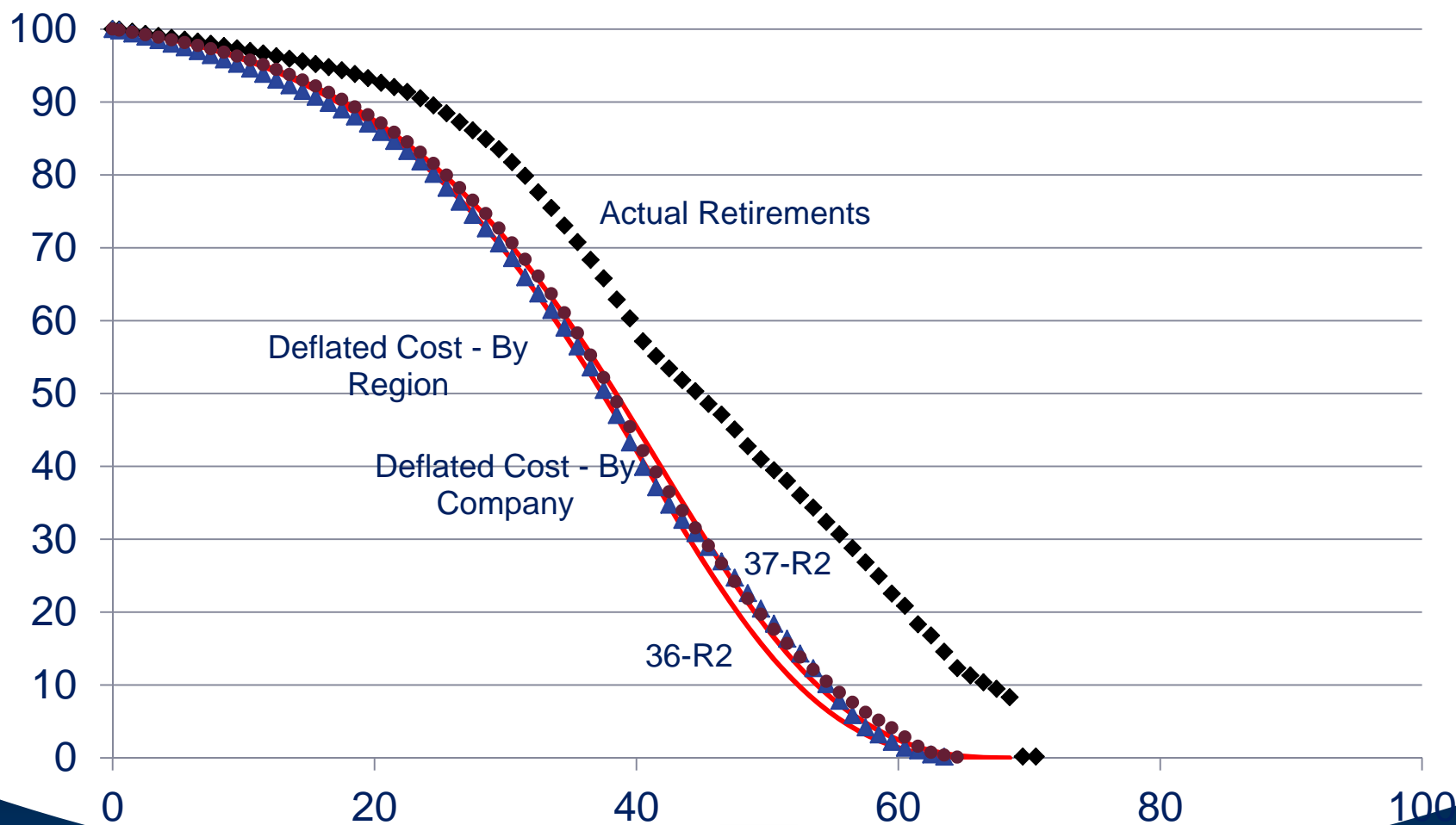
Net Salvage Comparison – Actual to R1 Curve



Gannett Fleming

Excellence Delivered *As Promised*

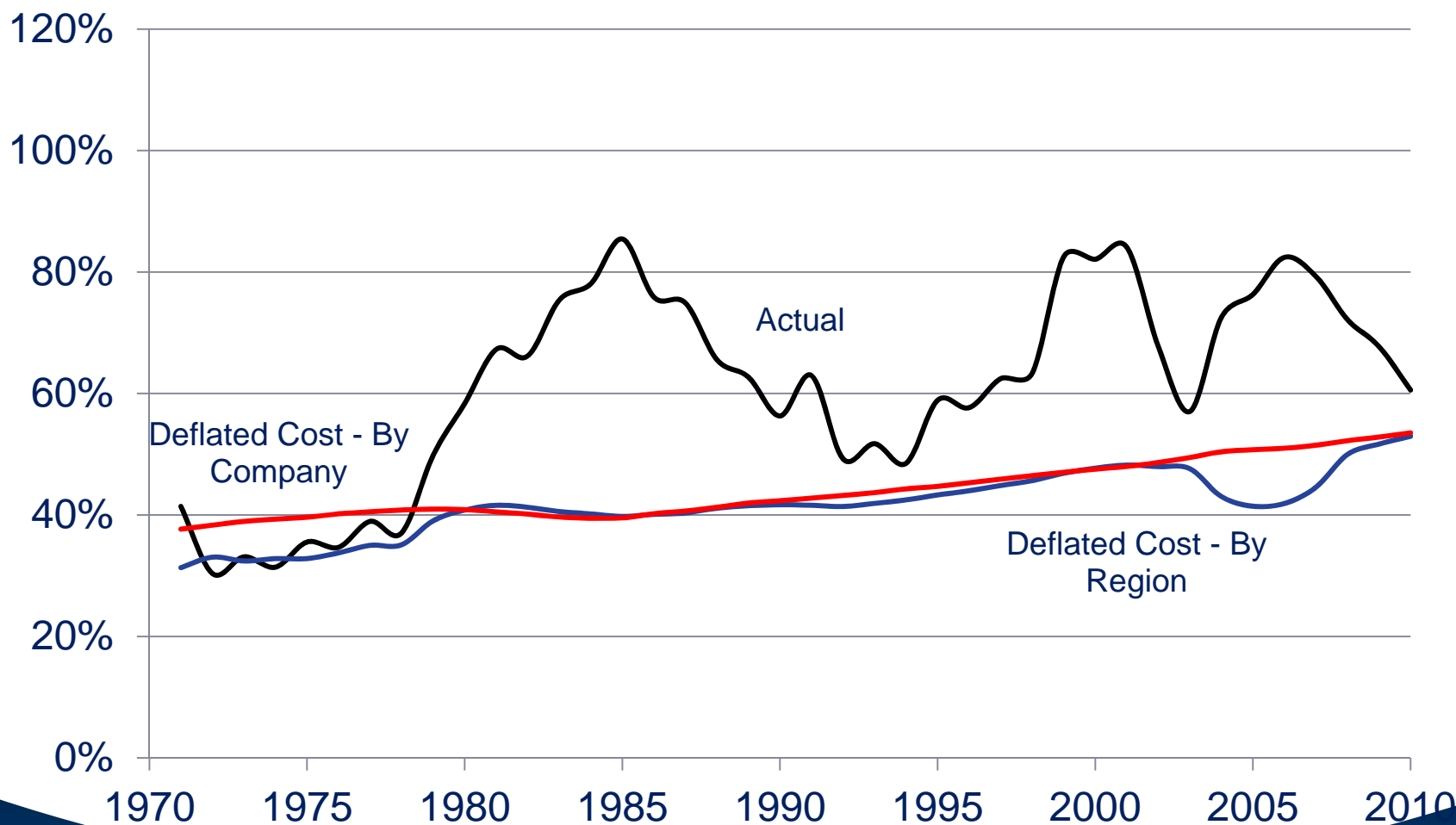
Life Analysis Comparison – Actual to Deflated Cost



Gannett Fleming

Excellence Delivered *As Promised*

Net Salvage Comparison – Actual to Deflated Cost



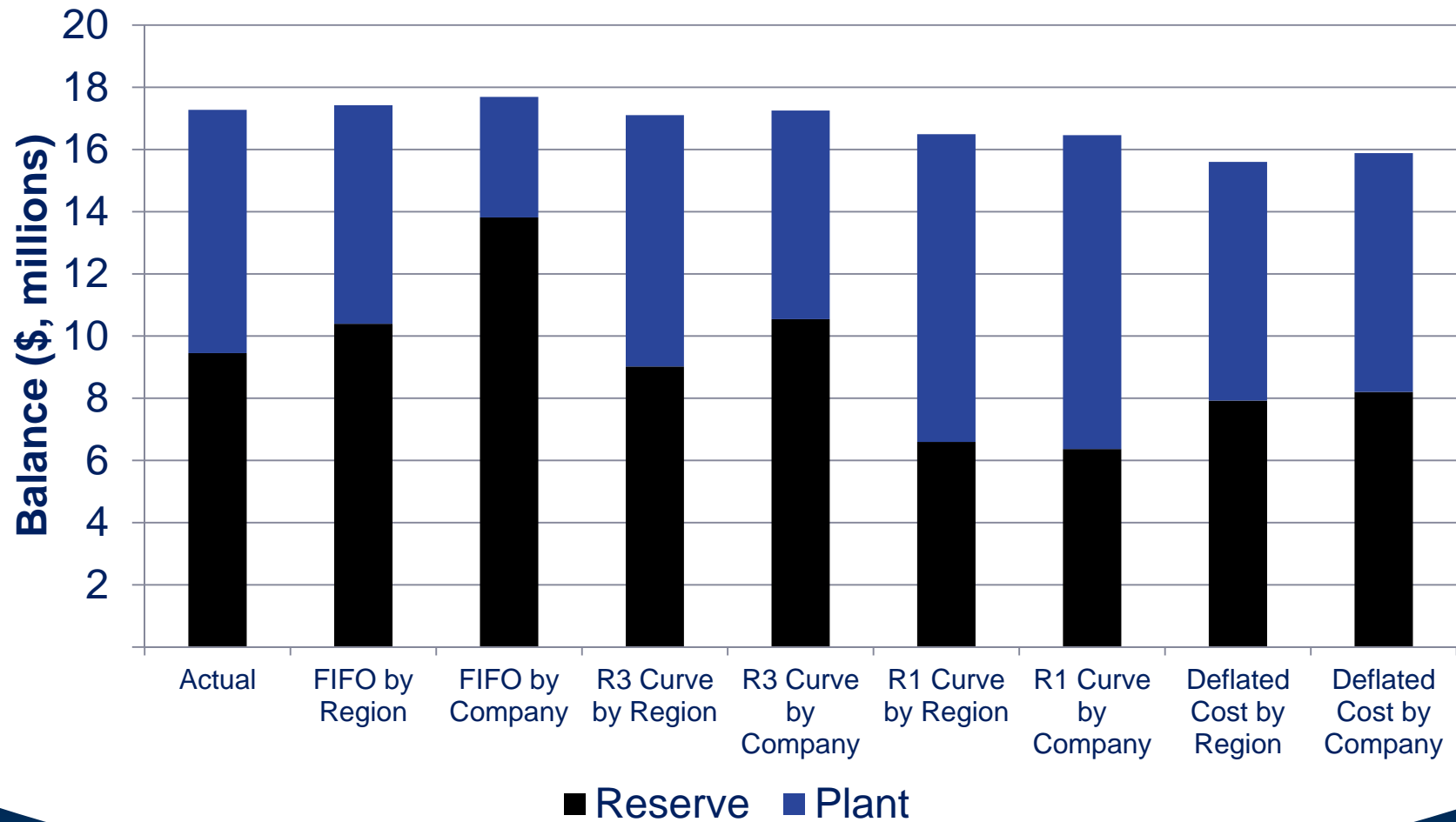
Gannett Fleming

Excellence Delivered *As Promised*

Depreciation Parameters, 2010

	Survivor Curve	Net Salvage	Depr Rate	Depreciation Expense	% Variance from Actual
Actual	45-S1.5	(65)	3.66%	\$632,792	-
FIFO – By Region	42-R3	(65)	3.94%	\$685,938	8.4%
FIFO – By Company	40-R5	(70)	3.92%	\$693,773	9.6%
R3 Curve – By Region	44-S1.5	(60)	3.64%	\$623,331	-1.5%
R3 Curve – By Company	42-R2.5	(60)	3.61%	\$622,518	-1.6%
R1 Curve – By Region	44-S0	(50)	3.47%	\$571,983	-9.6%
R1 Curve – By Company	45-S0	(50)	3.41%	\$561,693	-11.2%
Deflated Cost – By Region	36-R2	(45)	4.04%	\$629,874	-0.5%
Deflated Cost – By Company	37-R2	(45)	3.86%	\$612,652	-3.2%

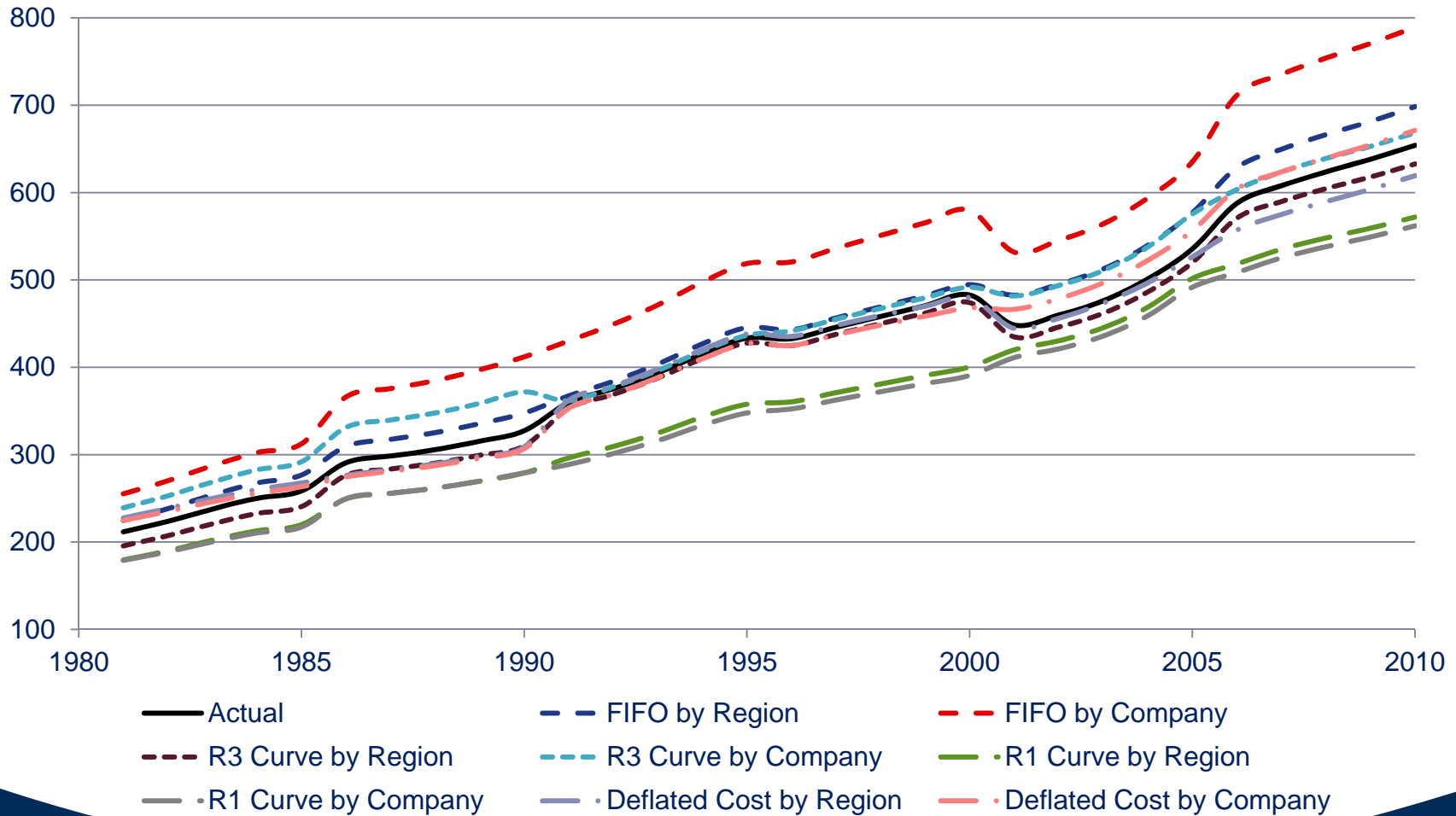
Plant and Reserve Balances at 2010



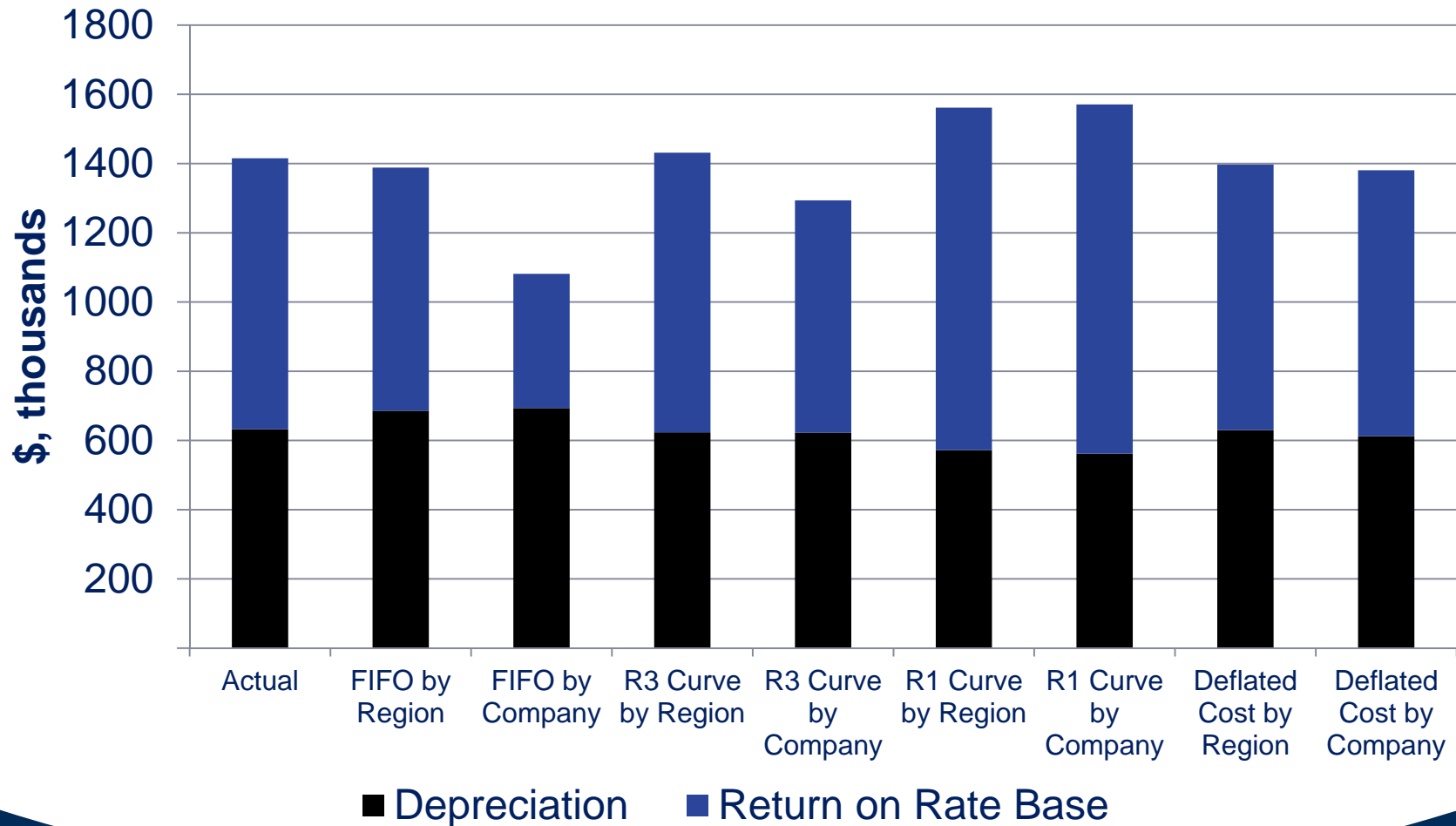
Gannett Fleming

Excellence Delivered *As Promised*

Depreciation Expense, 1981 - 2010



Depreciation and Return at 2010



Gannett Fleming

*Excellence Delivered **As Promised***

Retirement Methods

- **Effect of retirement practices:**
 - Plant and reserve balances
 - Rate base
 - Service lives
 - Net salvage
 - Depreciation expense
 - Return on rate base





*Excellence Delivered **As Promised***

Retirement Issues

Retirement Issues

- **In previous section, everything was recorded correctly**
- **What happens when things go wrong?**
- **Scenarios modeled:**
 - Unrecorded retirements
 - Incorrect vintage retirements
 - Incorrect vintage balances in database



Unrecorded Retirements

- **Retirements not reported**
- **Software issues**
- **Conversion issues**
- **Work orders with additions and removal cost but no retirements**

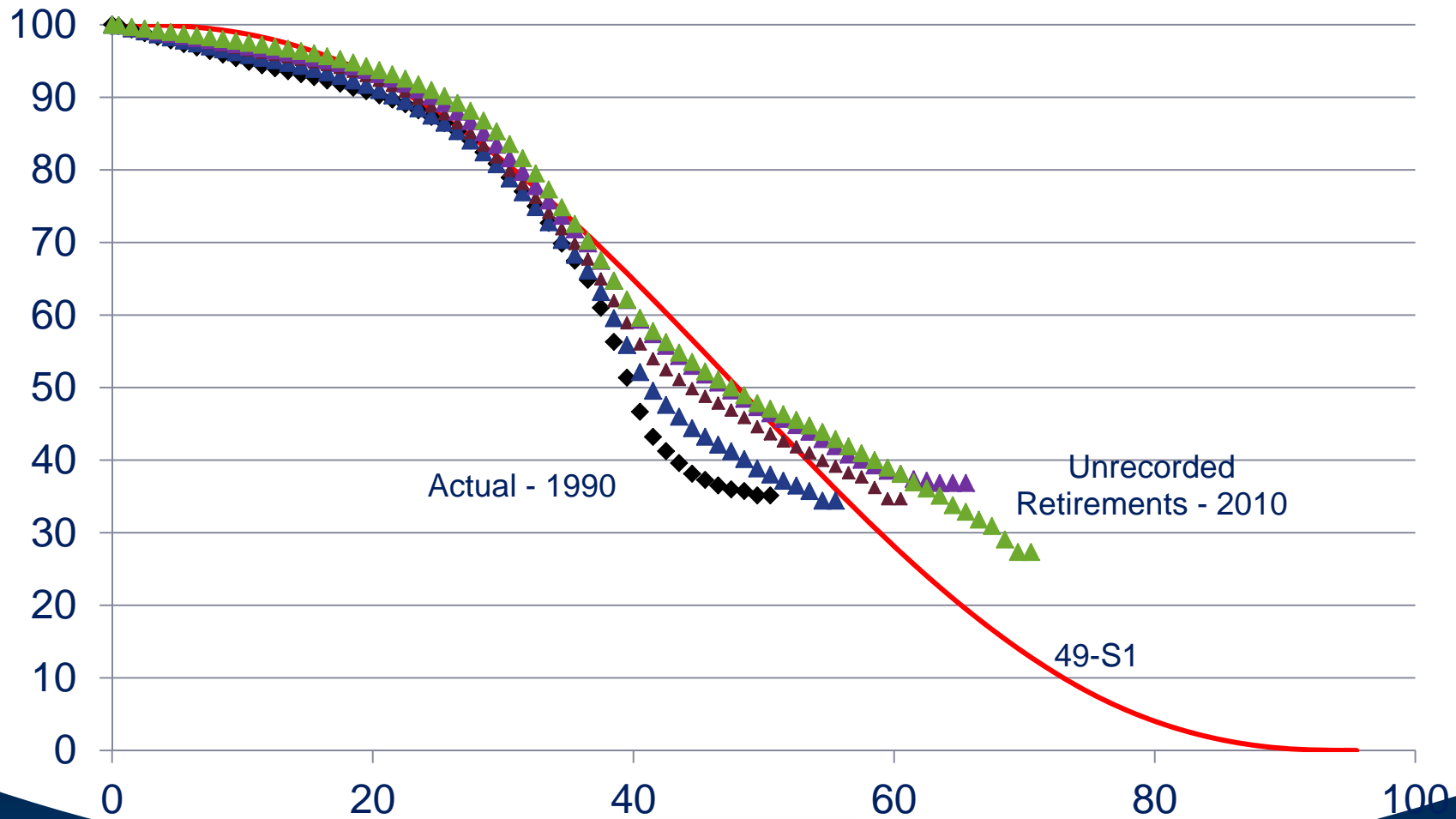


Unrecorded Retirements - Model

- **Conversion to new Accounting System in 1991**
 - Region 1 – Failure to report 50%
 - Region 2 – Failure to report 20%
 - Region 3 – Failure to report 0%
 - Region 4 – Failure to report 50%



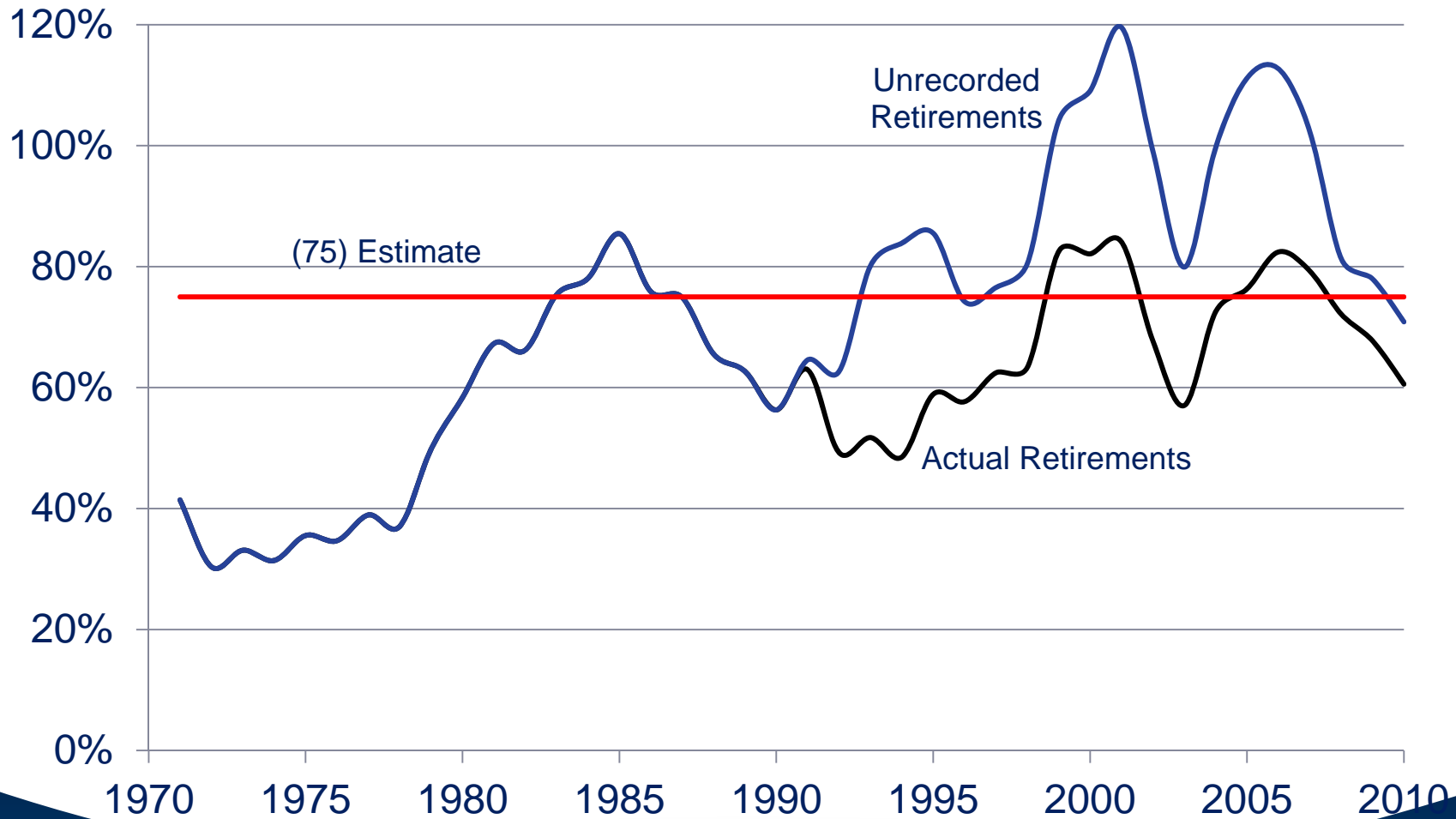
Unrecorded Retirements – Life Analysis



Gannett Fleming

Excellence Delivered *As Promised*

Unrecorded Retirements - Net Salvage Analysis



Gannett Fleming

Excellence Delivered *As Promised*

Depreciation Parameters, 2010

	Survivor Curve	Net Salvage	Depr Rate	Depreciation Expense	Pct Diff from Actual
Actual	45-S1.5	(65)	3.66%	\$632,792	-
Unrecorded Retirements	49-S1	(75)	3.53%	\$629,499	-0.5%



Gannett Fleming

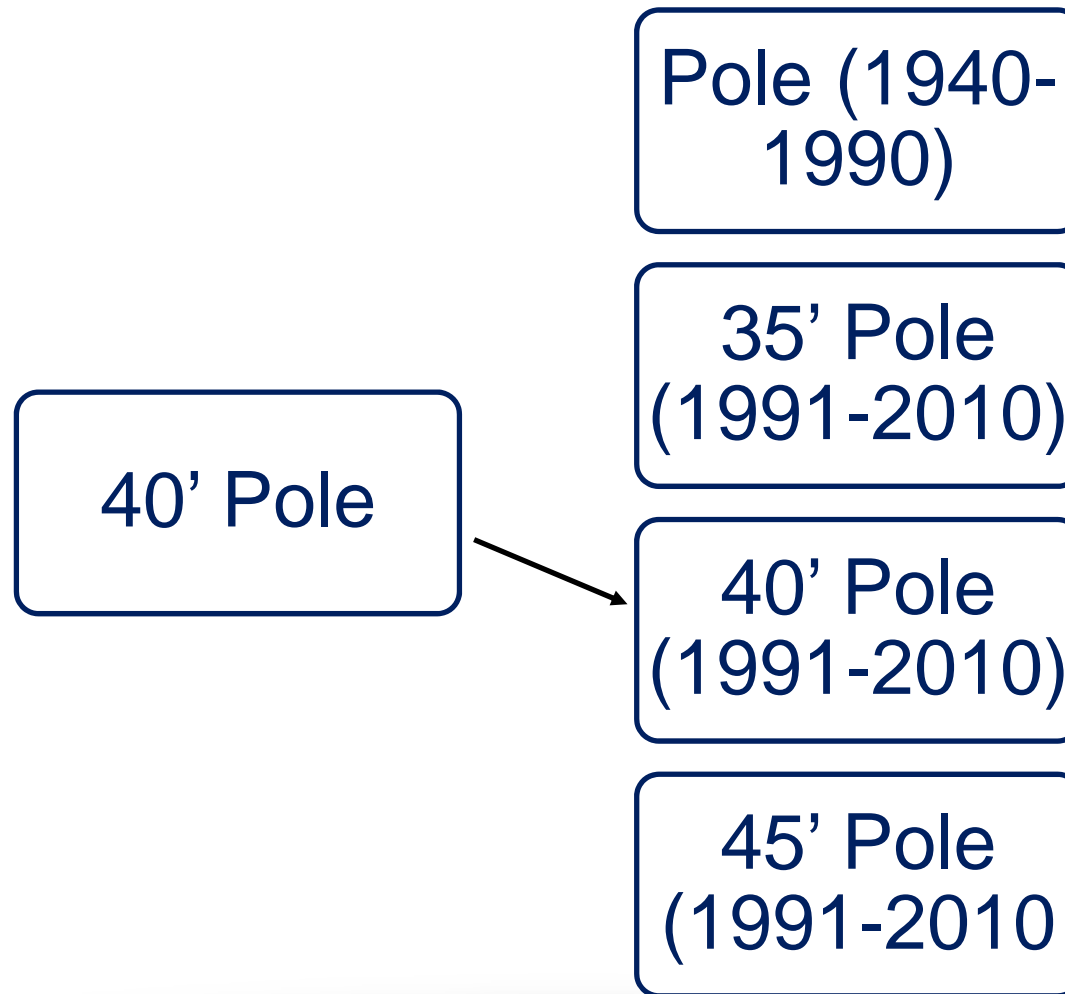
Excellence Delivered *As Promised*

Incorrect Vintage Retirements

- **Fixed Asset system configuration issue**
- **Retirement units**
- **Example**
 - Historical Data
 - Retirement Unit – Poles
 - Current Retirement Units
 - 35 foot poles, 40 foot poles, 45 foot poles, etc.
 - What is retired when you replace 40 foot pole?



Incorrect Retirements

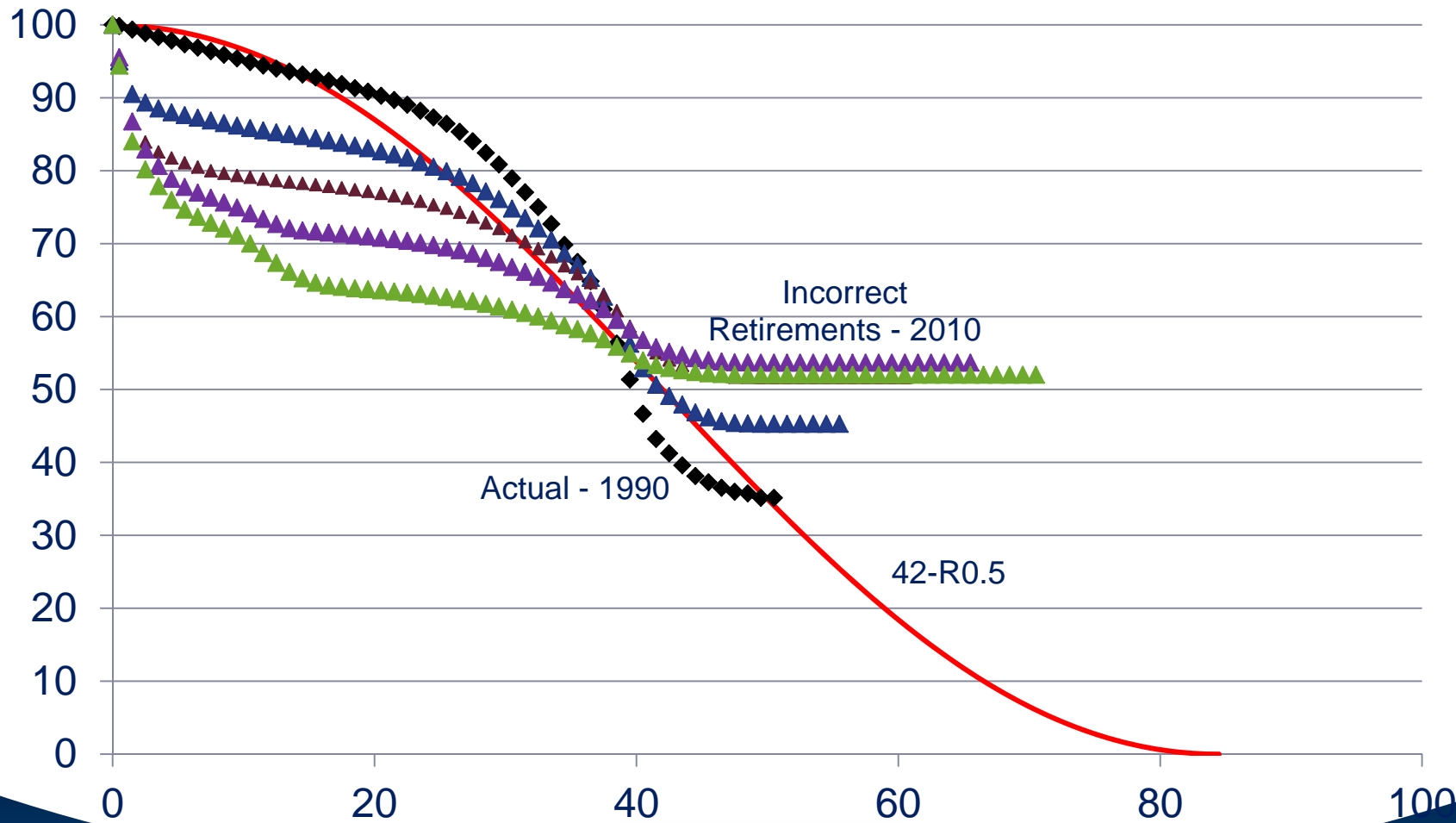


Scenario

- **Retirement units modified in 1991**
 - System conversion in 1990
 - Poles recorded by type, size and region
 - Automated retirements by R2.5 curve
 - Retirements only made from vintages 1991 and later



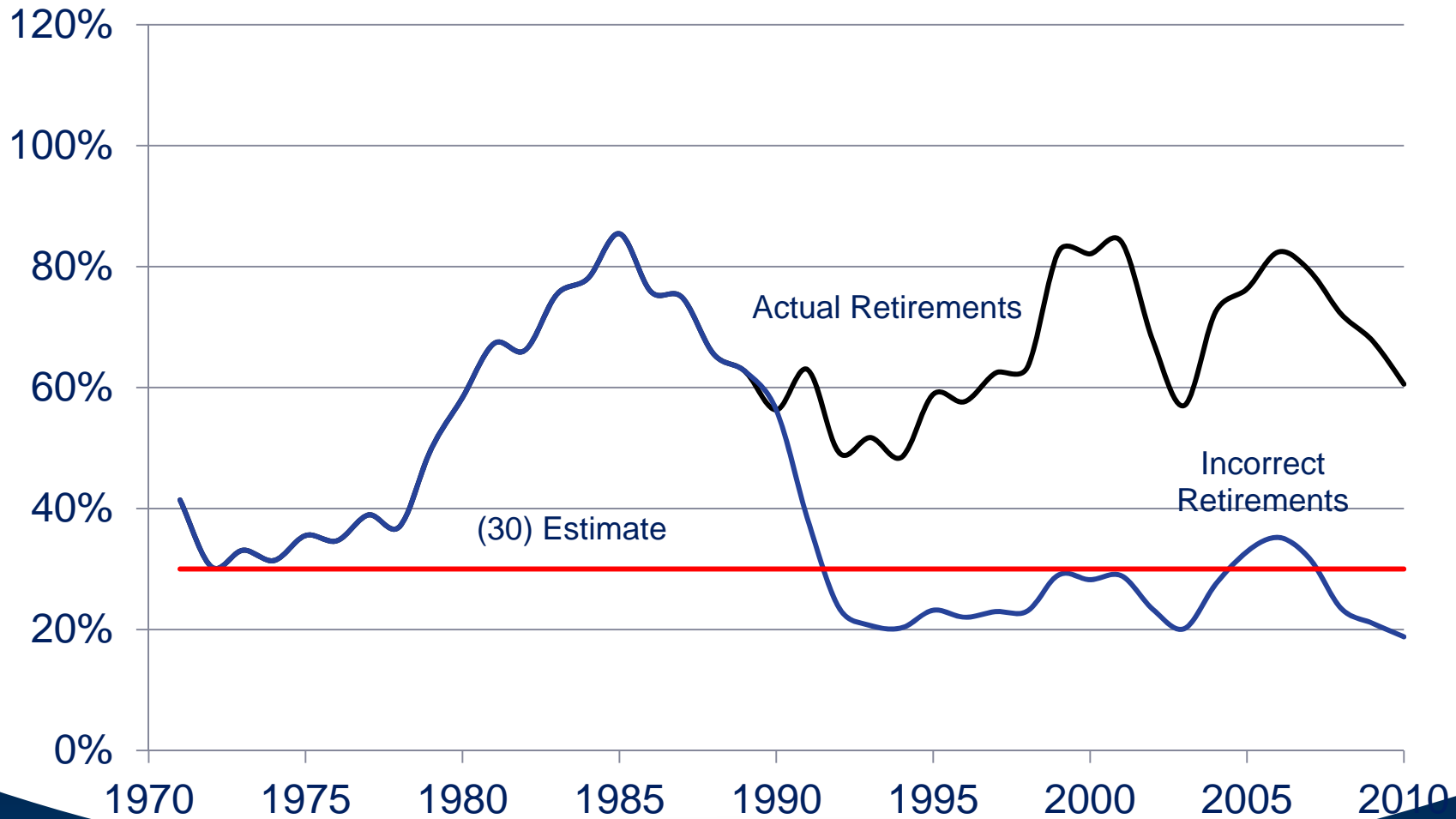
Incorrect Retirements – Life Analysis



Gannett Fleming

Excellence Delivered *As Promised*

Incorrect Retirements - Net Salvage Analysis



Gannett Fleming

Excellence Delivered *As Promised*

Depreciation Parameters, 2010

	Survivor Curve	Net Salvage	Depr Rate	Depreciation Expense	Pct Diff from Actual
Actual	45-S1.5	(65)	3.66%	\$632,792	-
Unrecorded Retirements	49-S1	(75)	3.53%	\$629,499	-0.5%
Incorrect Retirements	42-R.05	(30)	3.73%	\$496,537	-21.5%

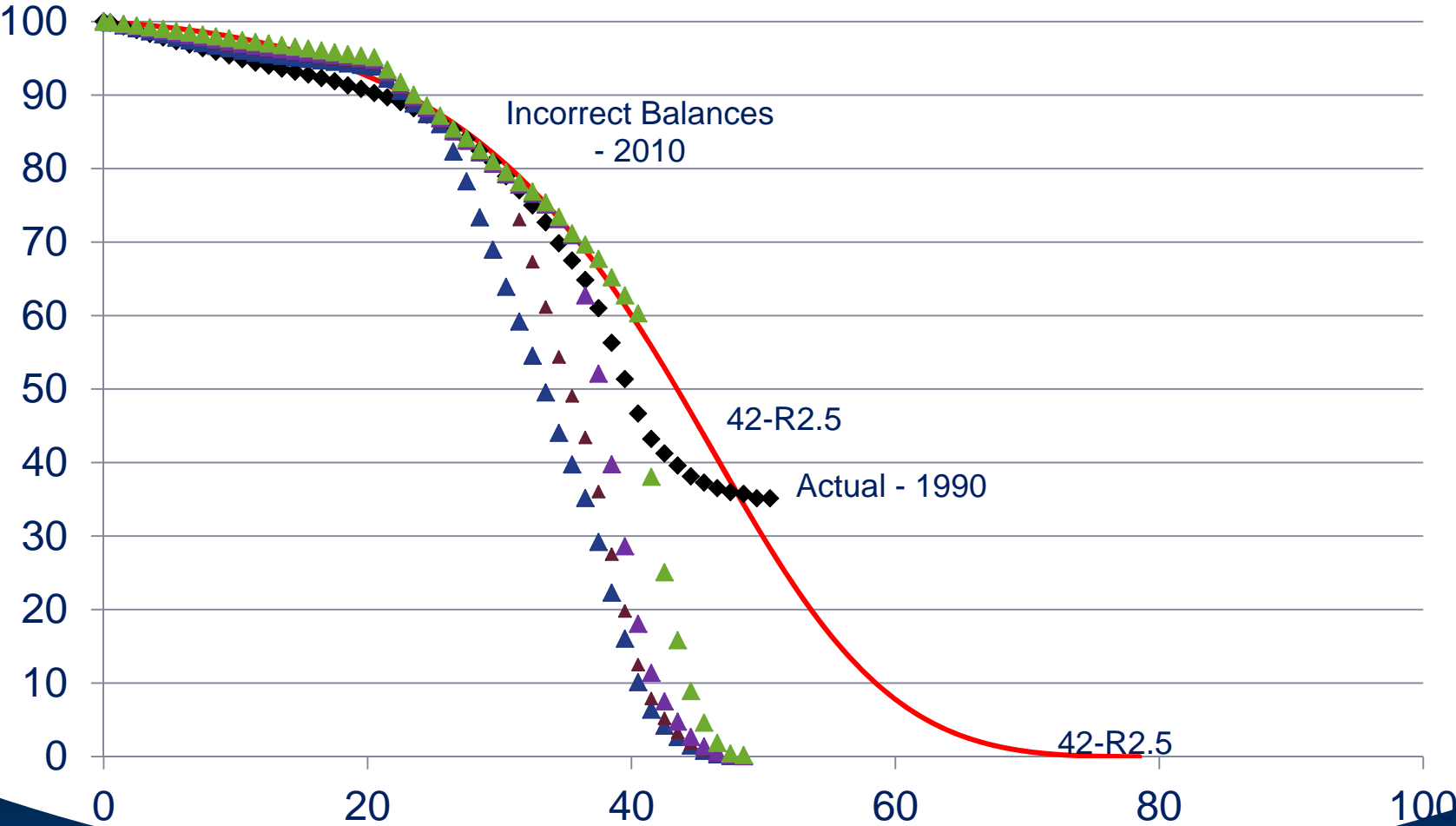


Incorrect Vintages

- **System conversion in 1990**
- **All vintages grouped into 1970 vintage**



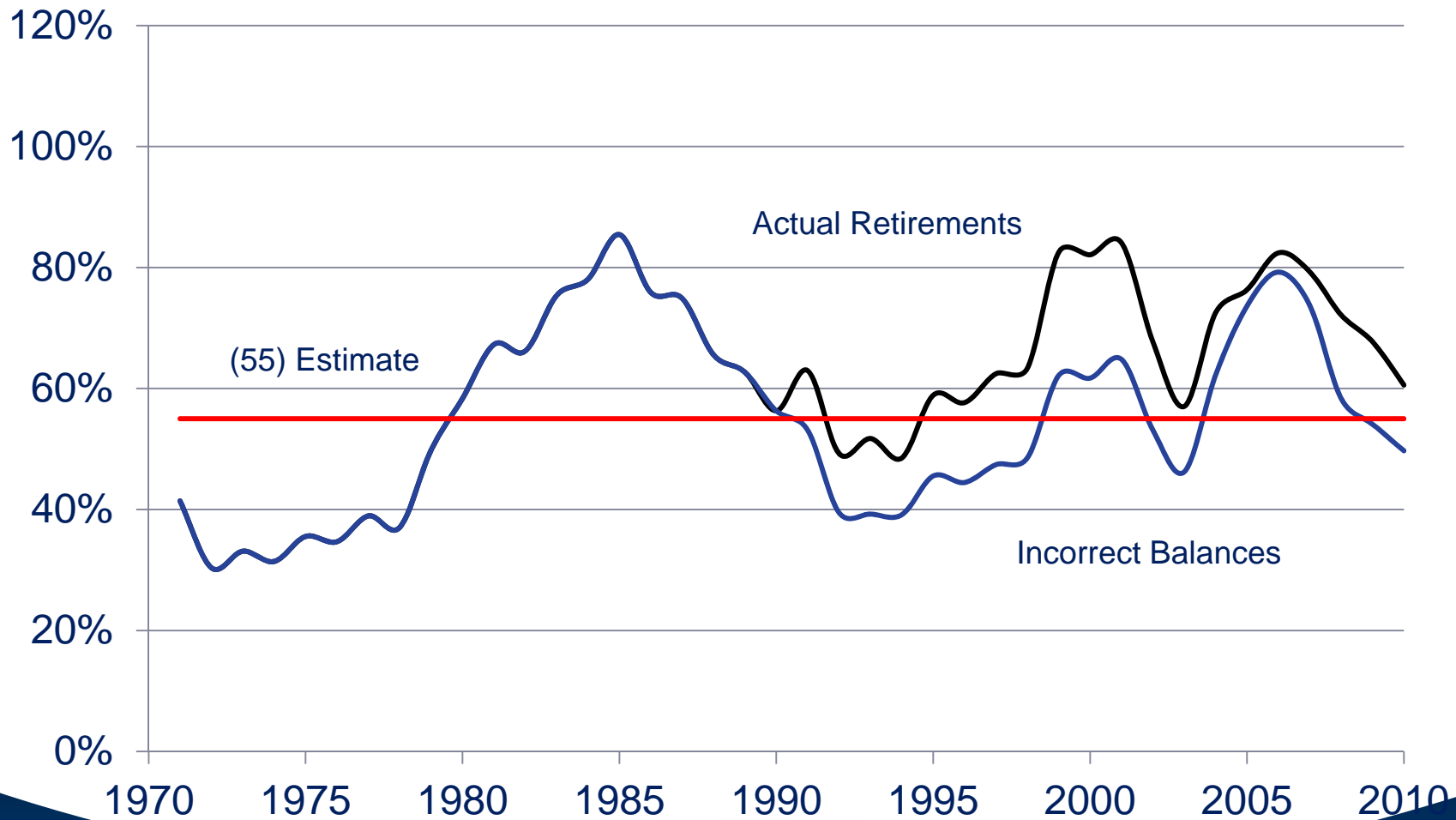
Incorrect Balances – Life Analysis



Gannett Fleming

*Excellence Delivered **As Promised***

Incorrect Balances - Net Salvage Analysis



Gannett Fleming

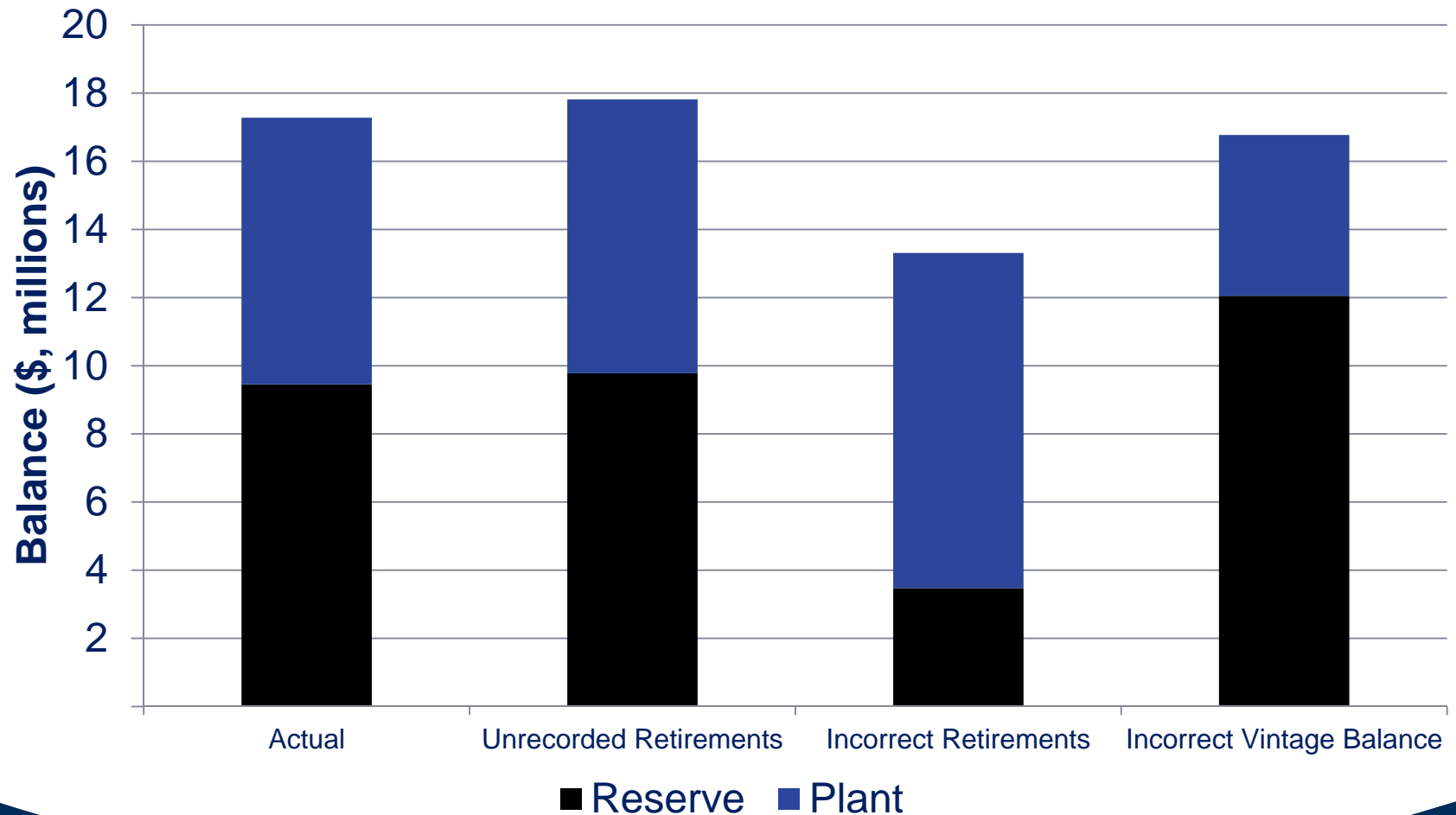
Excellence Delivered *As Promised*

Depreciation Parameters, 2010

	Survivor Curve	Net Salvage	Depr Rate	Depreciation Expense	Pct Diff from Actual
Actual	45-S1.5	(65)	3.66%	\$632,792	-
Unrecorded Retirements	49-S1	(75)	3.53%	\$629,499	-0.5%
Incorrect Retirements	42-R0.5	(30)	3.73%	\$496,537	-21.5%
Incorrect Vintage Balances	42-R2.5	(55)	3.23%	\$541,557	-14.4%



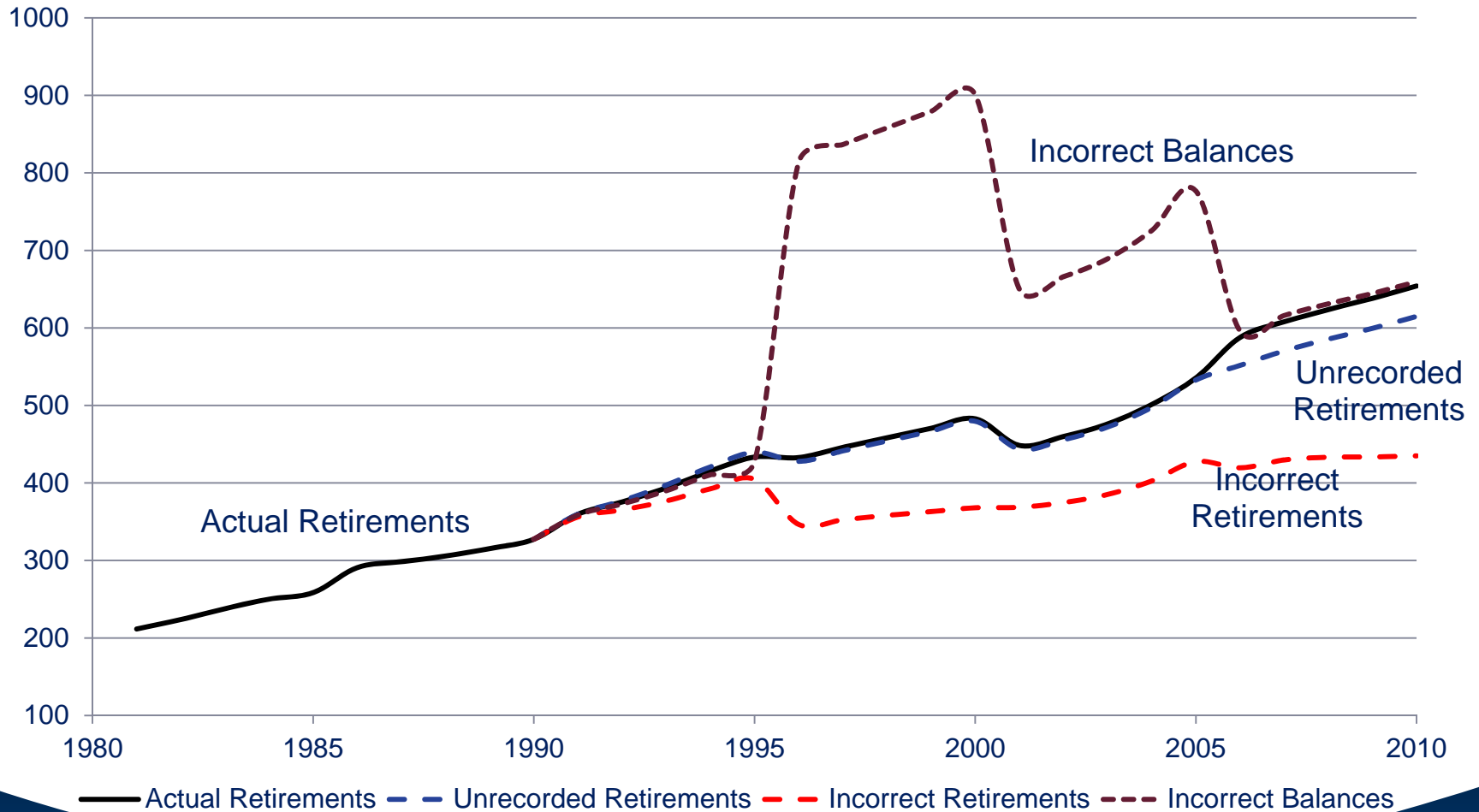
Plant and Reserve Balances at 2010



Gannett Fleming

Excellence Delivered *As Promised*

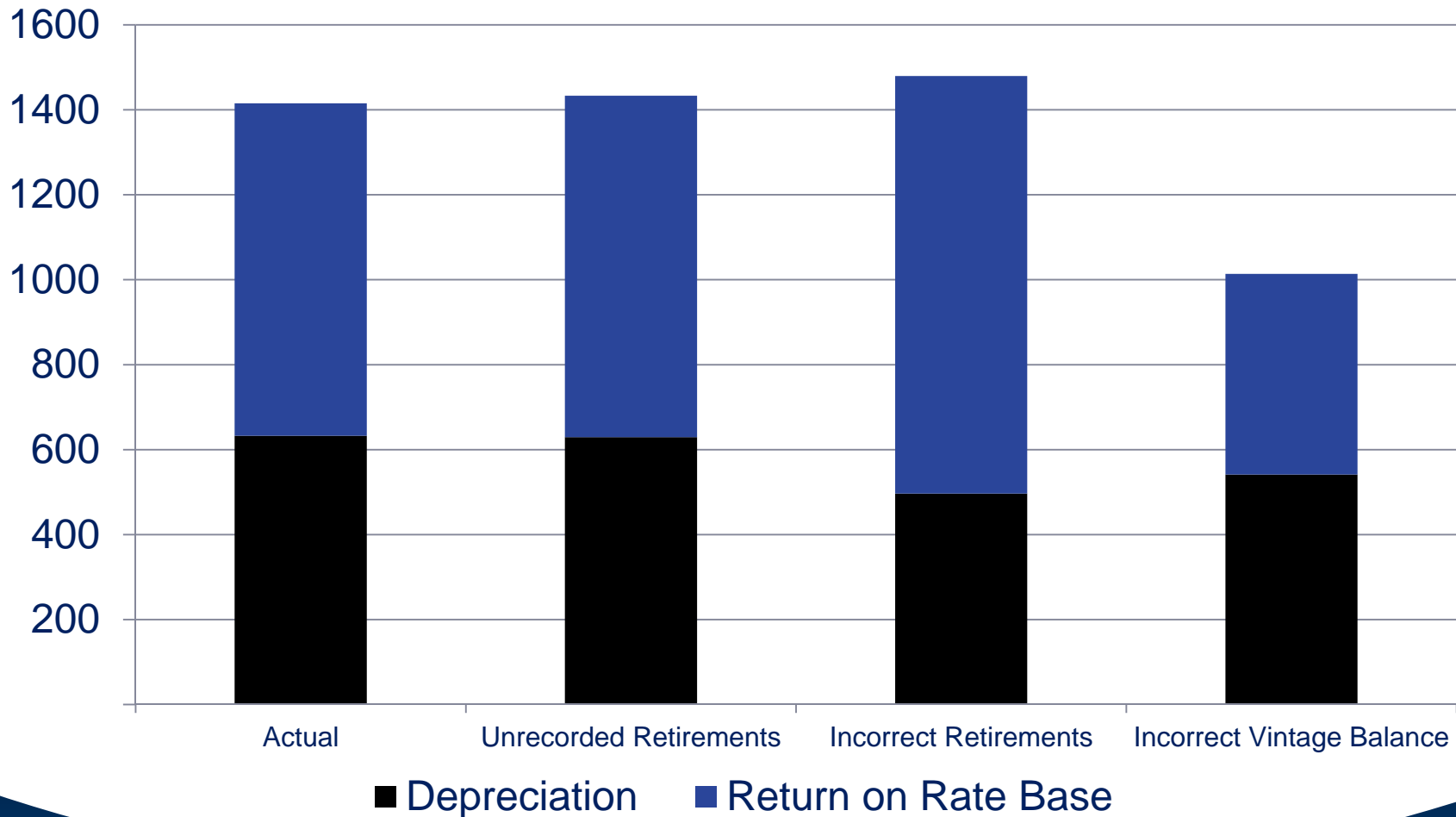
Depreciation Expense, 1981 - 2010



Gannett Fleming

Excellence Delivered *As Promised*

Depreciation and Return on Rate Base



Gannett Fleming

Excellence Delivered *As Promised*

Retirement Issues

- **Input to retirement model impacts depreciation and rate base**
 - Retirements
 - Initial state (balances)
- **Process needs to be implemented correctly**
 - Retirements need to be recorded
 - Recorded retirements need to agree to database





*Excellence Delivered **As Promised***

Questions?