
Oklahoma Municipal Retirement Fund

ANALYSIS OF DEMOGRAPHIC EXPERIENCE

During the Years 2012-2016

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Prepared by

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Actuarial Terms and Concepts

Credibility

- Volume of data
- Recentness of data
- Market cycles
- Treatment of unusual data

Risk

Exposure

- Actively employed participants
- Relevance of decrement
- Participant "Life Years"

Overview

Demographic Experience Reviewed

- Termination
- Retirement
- Pay Increase

Other Demographic Experience (not reviewed)

- Mortality
- Disablement
- Disabled Life Mortality

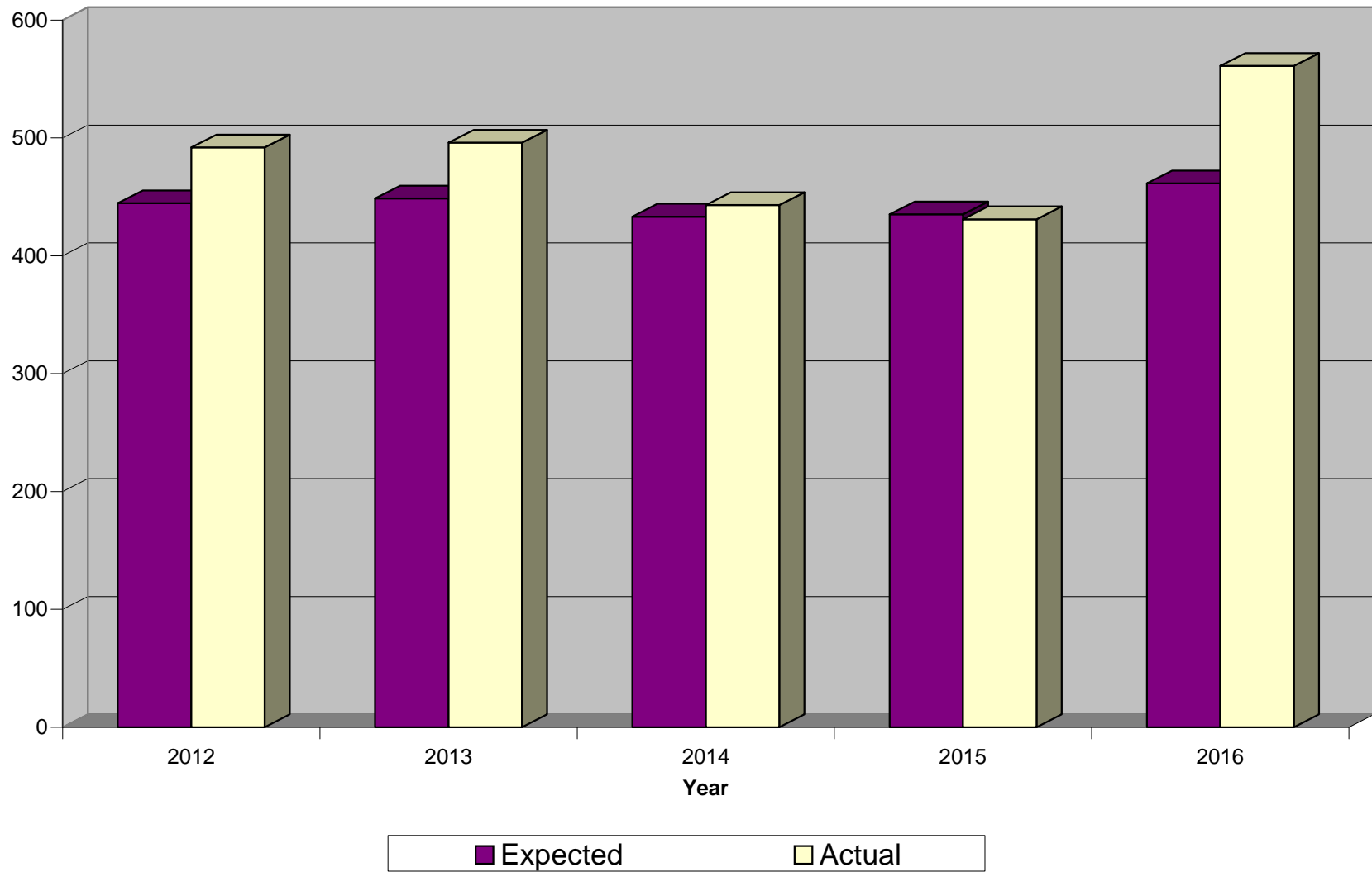
Economic Experience (not reviewed)

- Investment Return
- Inflation
- (Pay Increase)

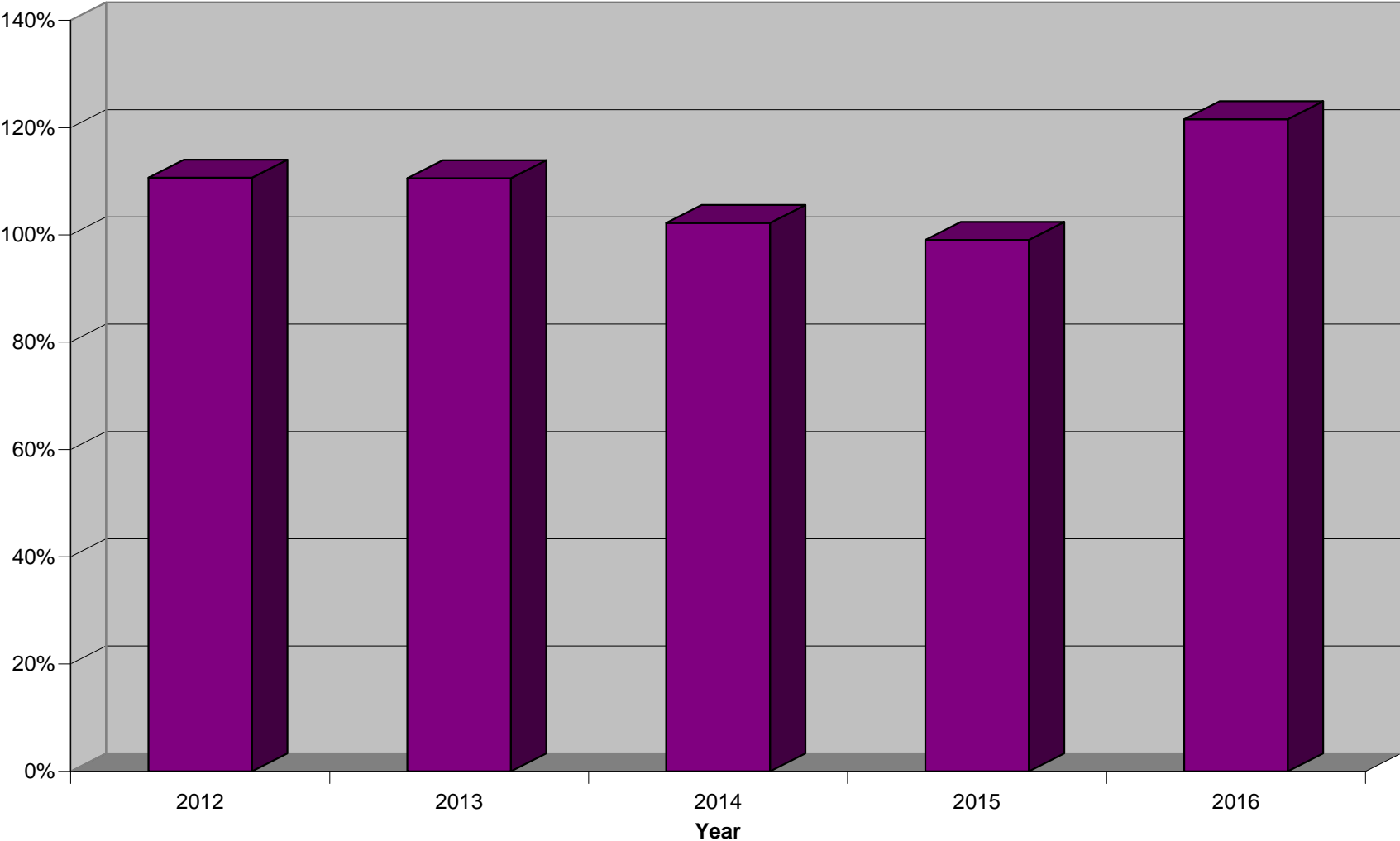
Termination Experience

(15,635 Participant Life Years Exposed)

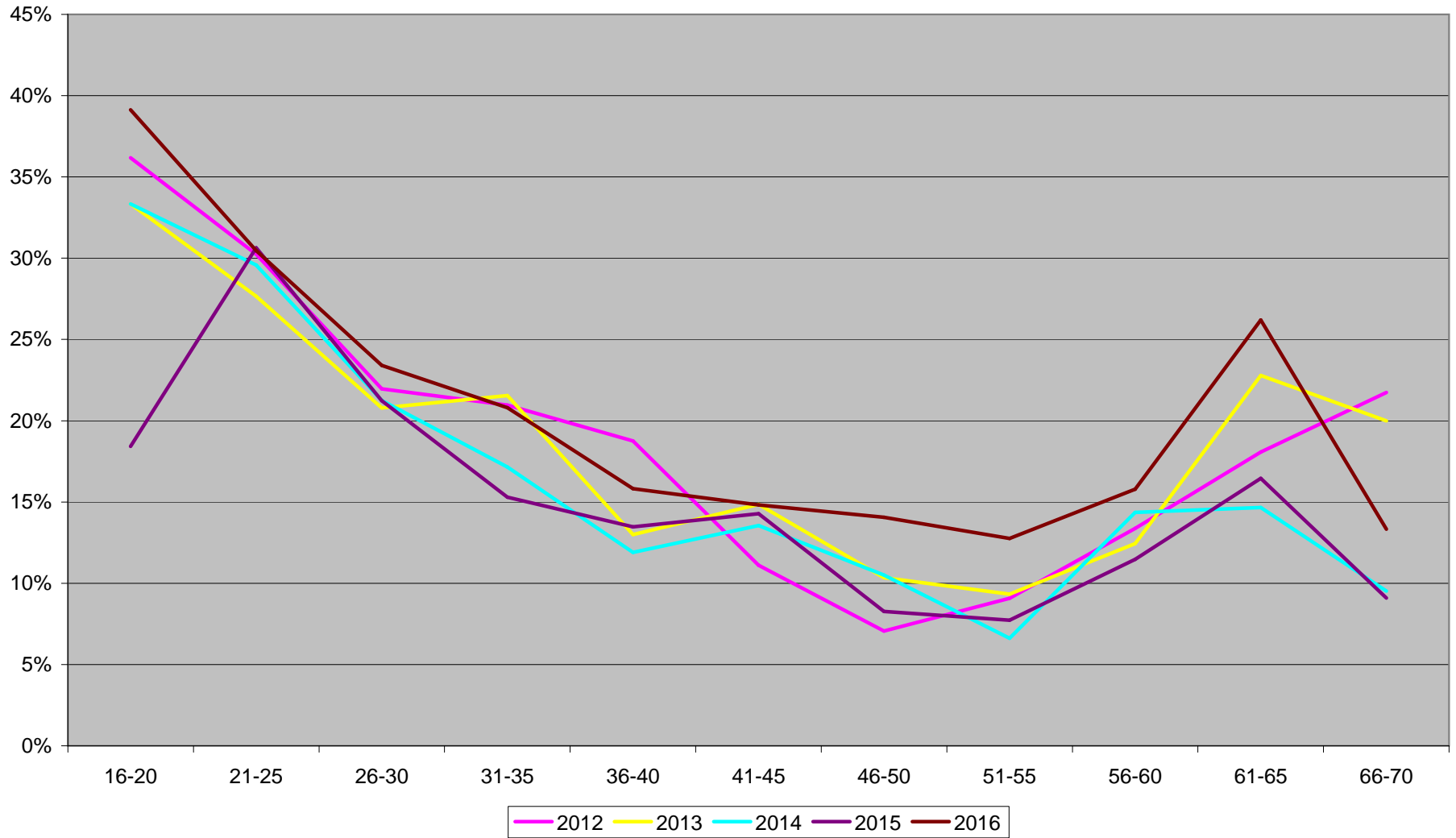
Actual Versus Expected Terminations



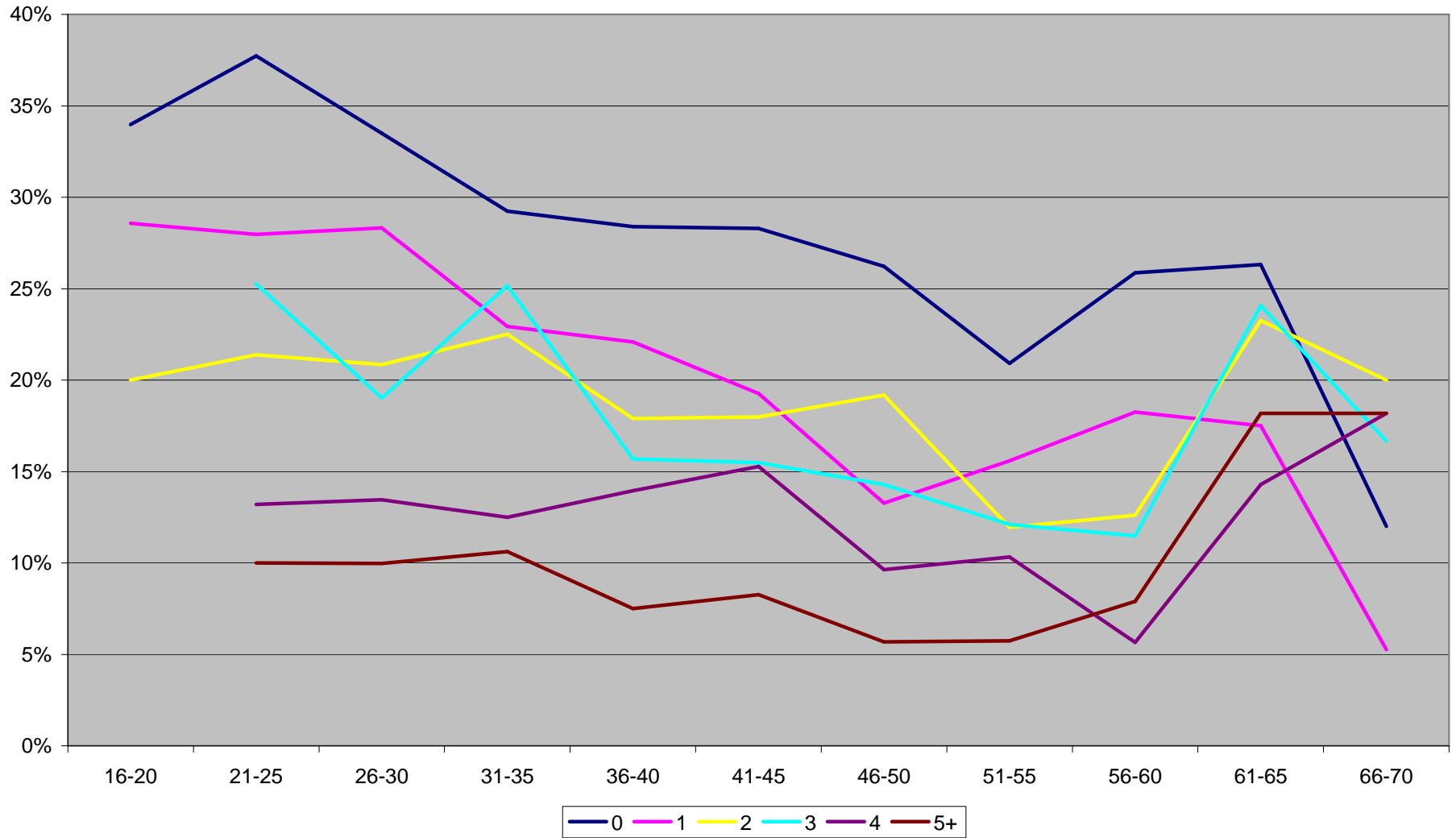
Ratio of Actual Versus Expected Terminations



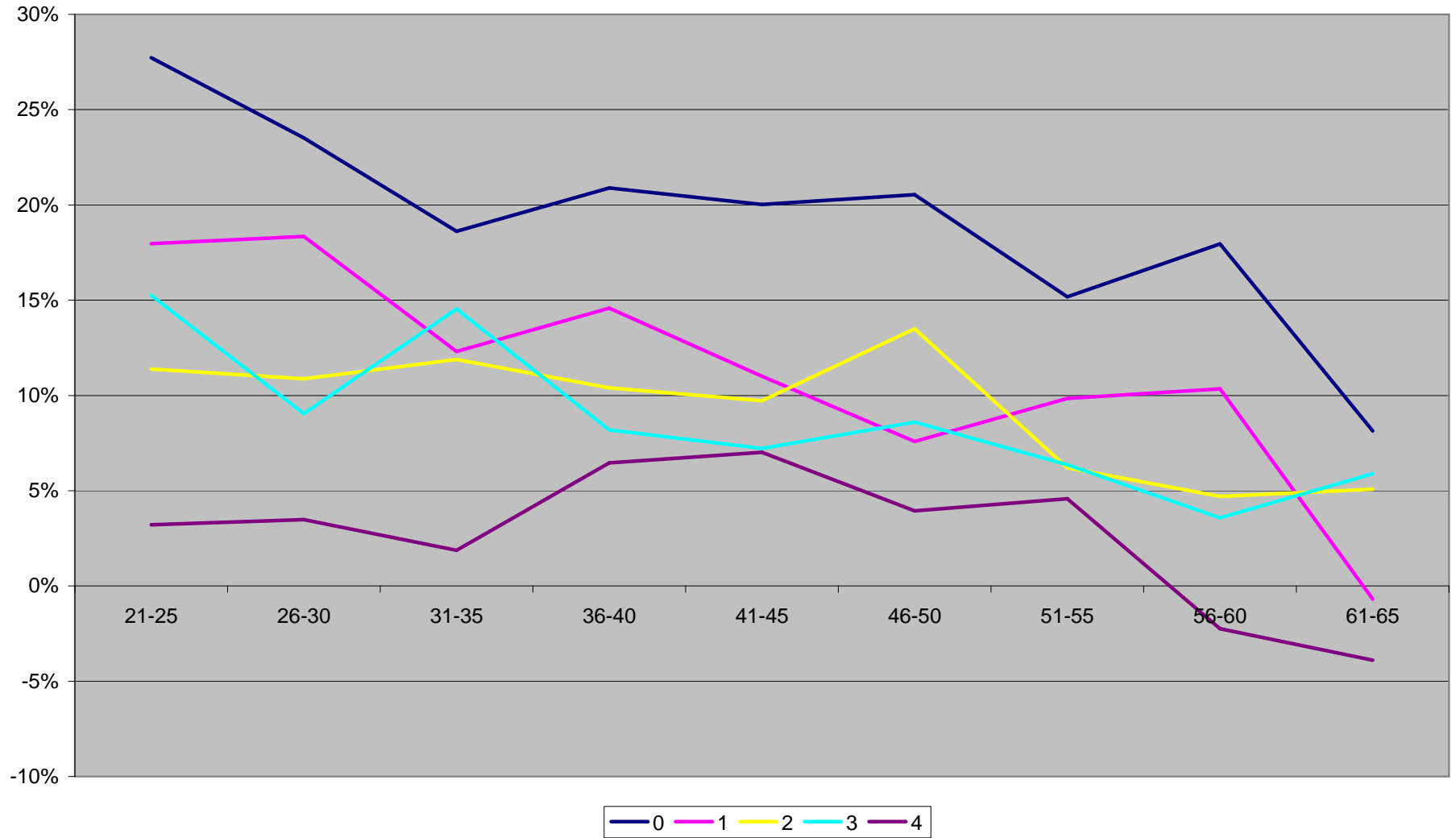
Termination Rates by Age



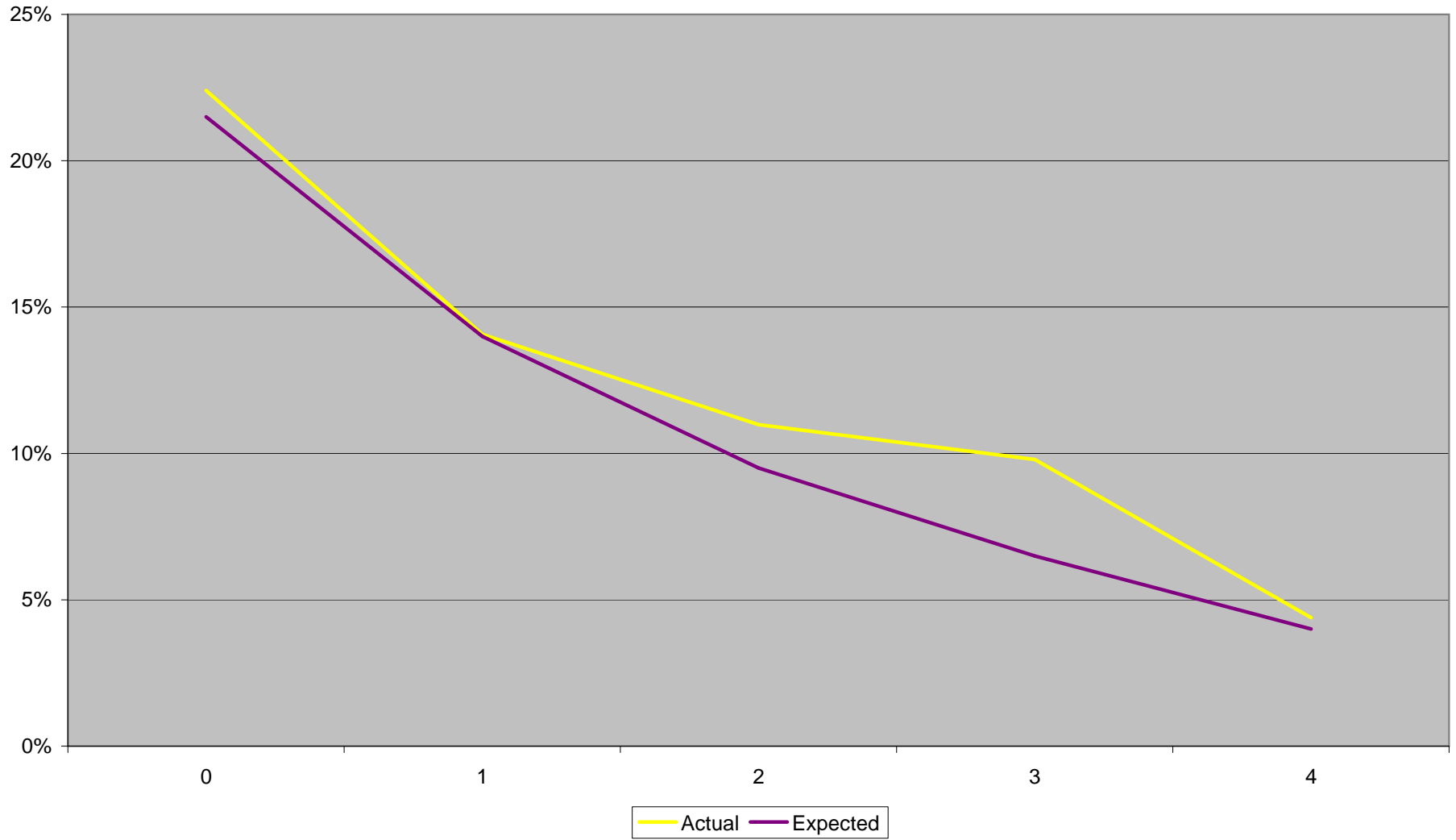
Termination Rates by Age and Service



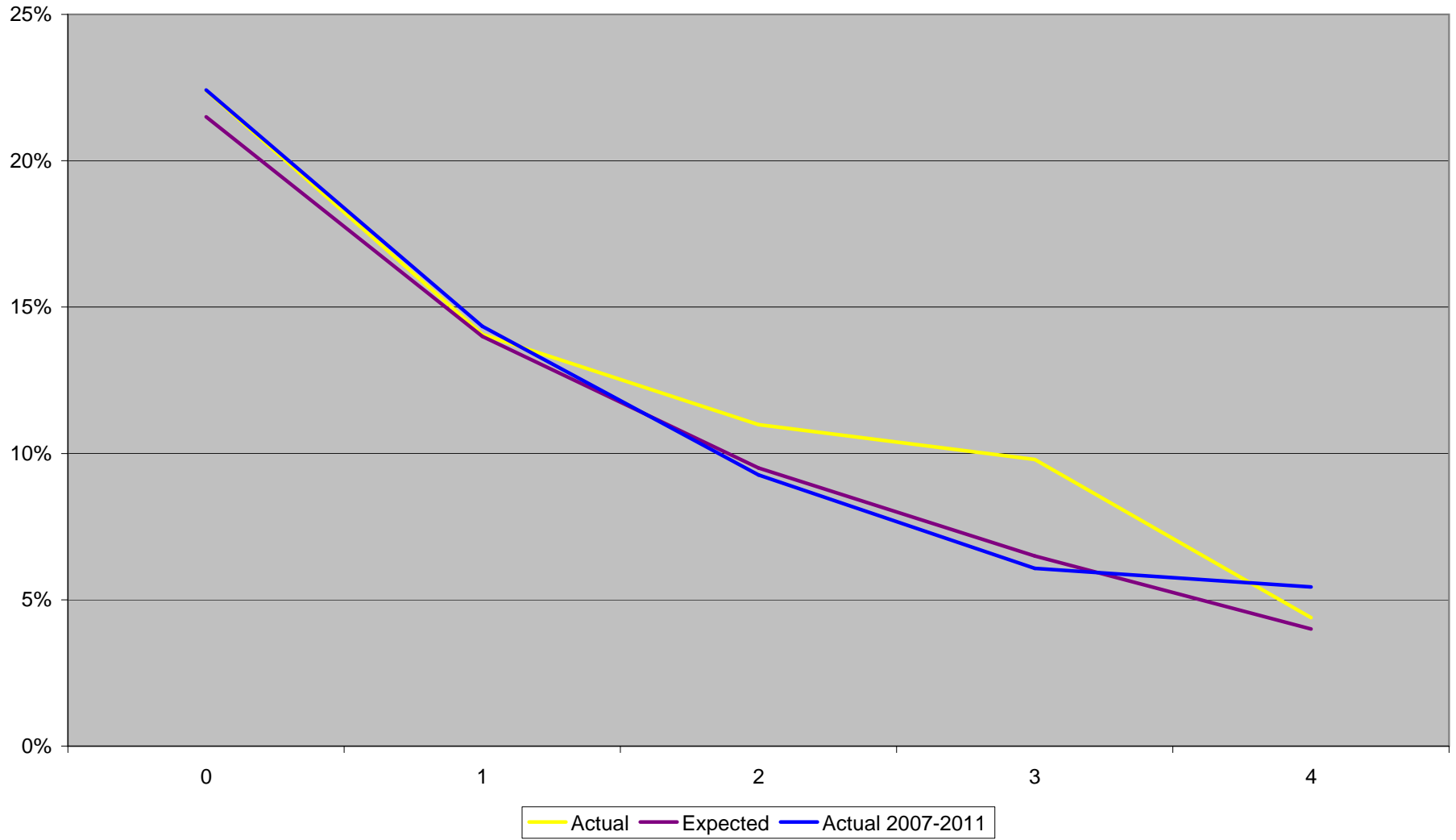
Incremental Termination Rates by Service Group



Incremental Termination Rates by Service Group



Incremental Termination Rates by Service Group



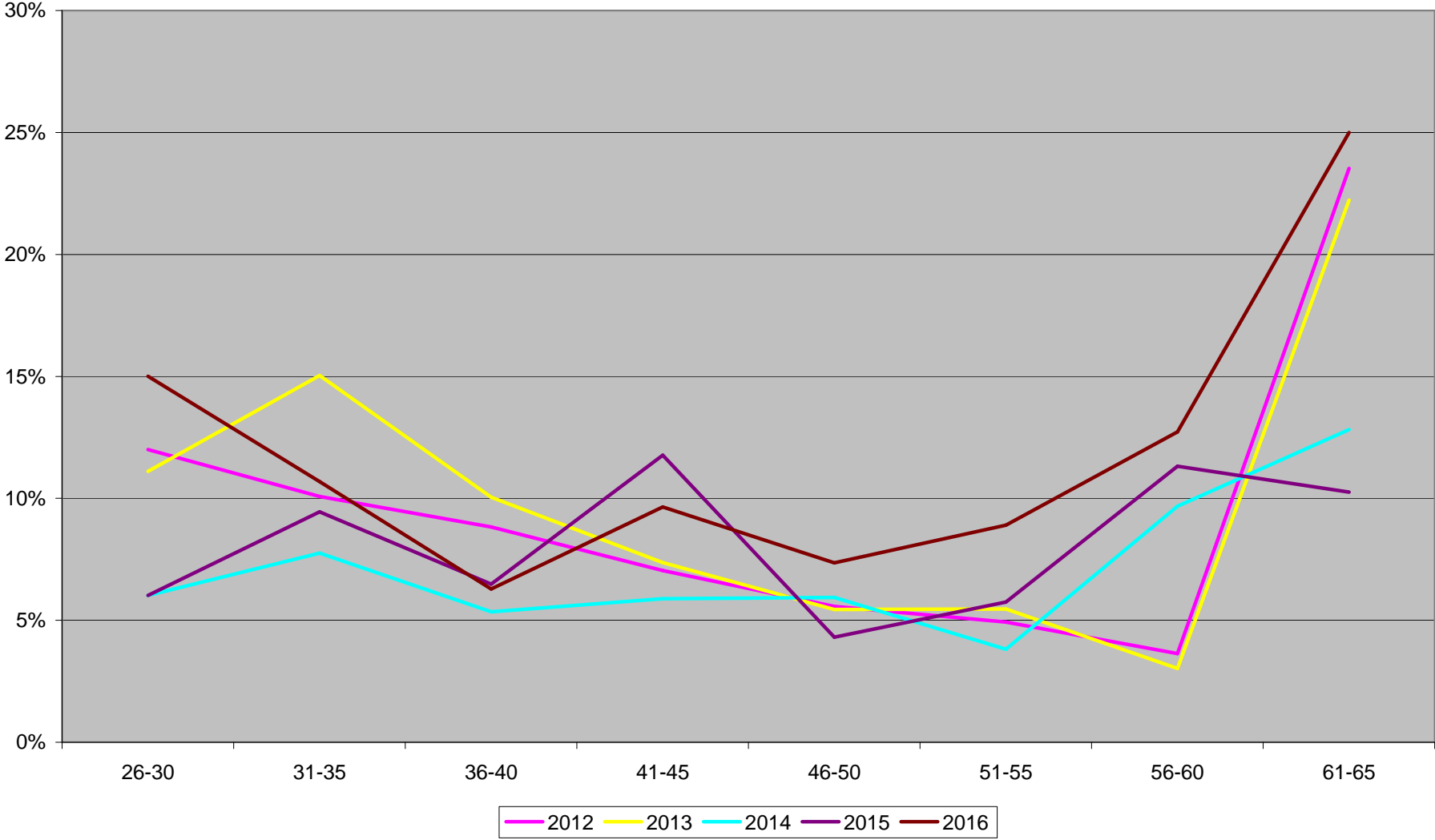
Termination Experience Recommendations

Level service increment (independent of age)

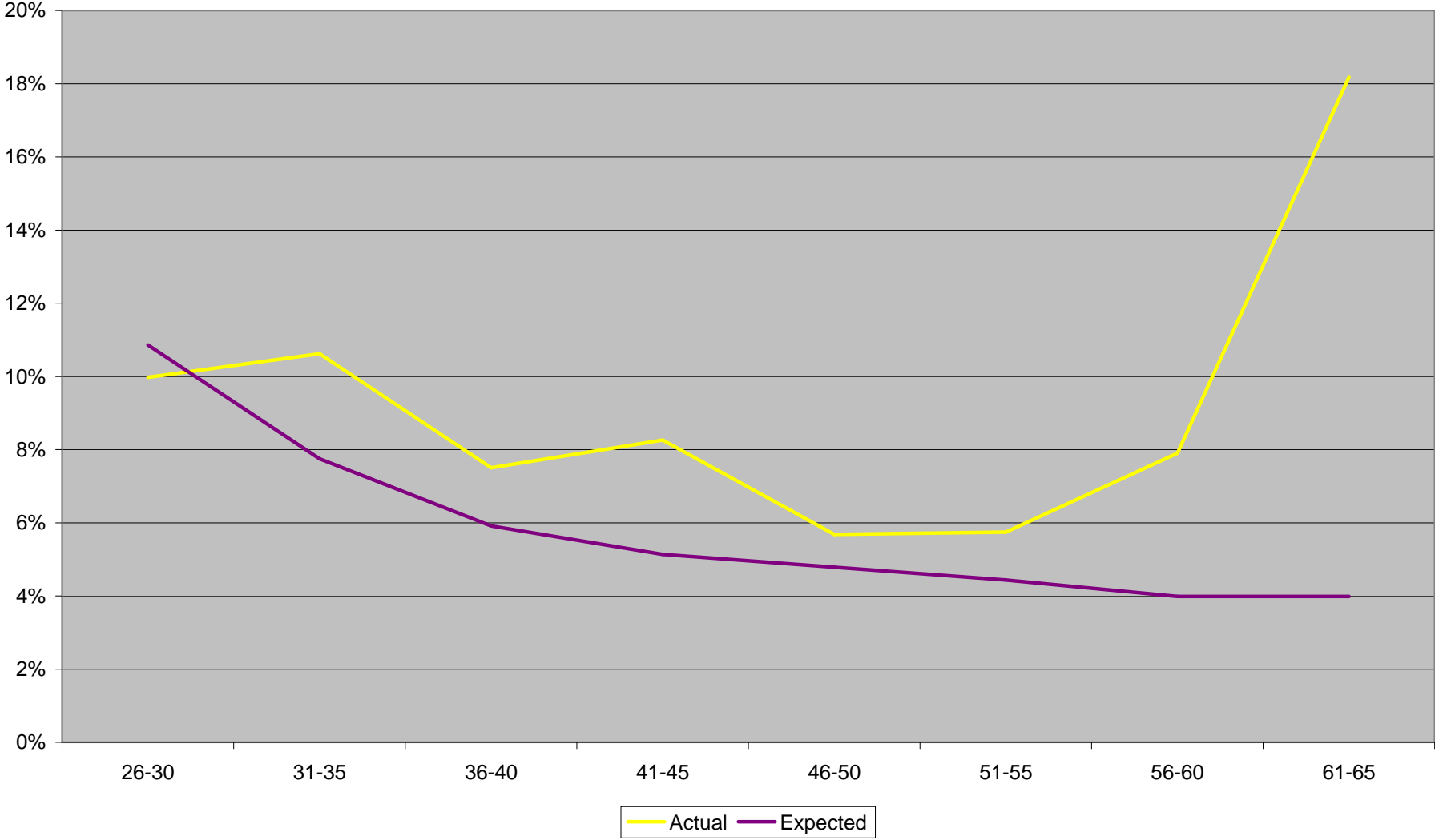
Minor increases to incremental service rates

	0	1	2	3	4
Assumption	21.5%	14.0%	9.5%	6.5%	4.0%
2001-2006 experience	20.5%	14.0%	9.9%	7.0%	3.1%
2007-2011 experience	22.4%	14.3%	9.3%	6.1%	5.4%
2011-2016 experience	22.4%	14.1%	11.0%	9.8%	4.4%
Recommendation	22.5%	14.0%	10.0%	7.0%	4.0%

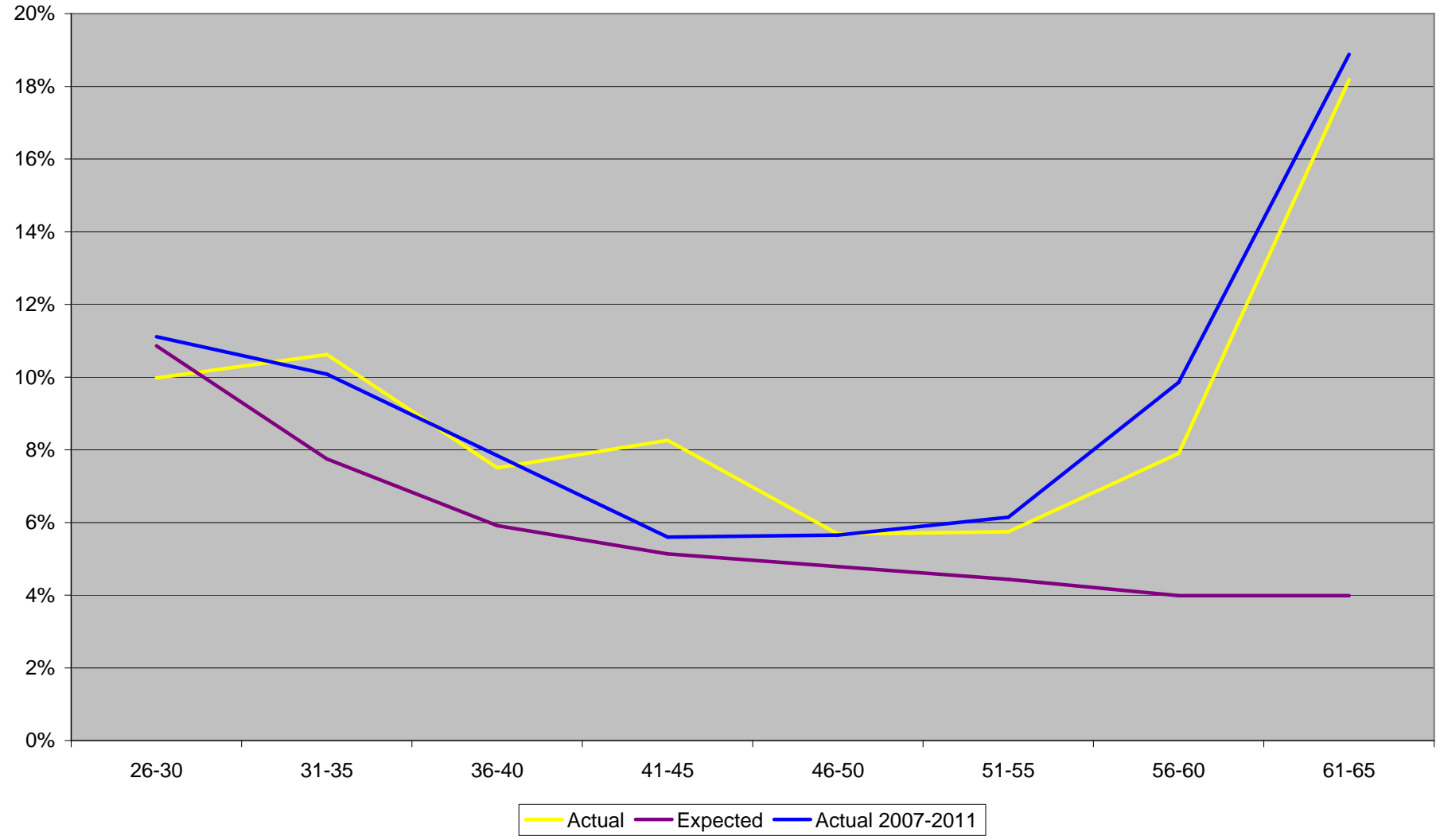
Termination Rates by Age, 5+ Years of Service



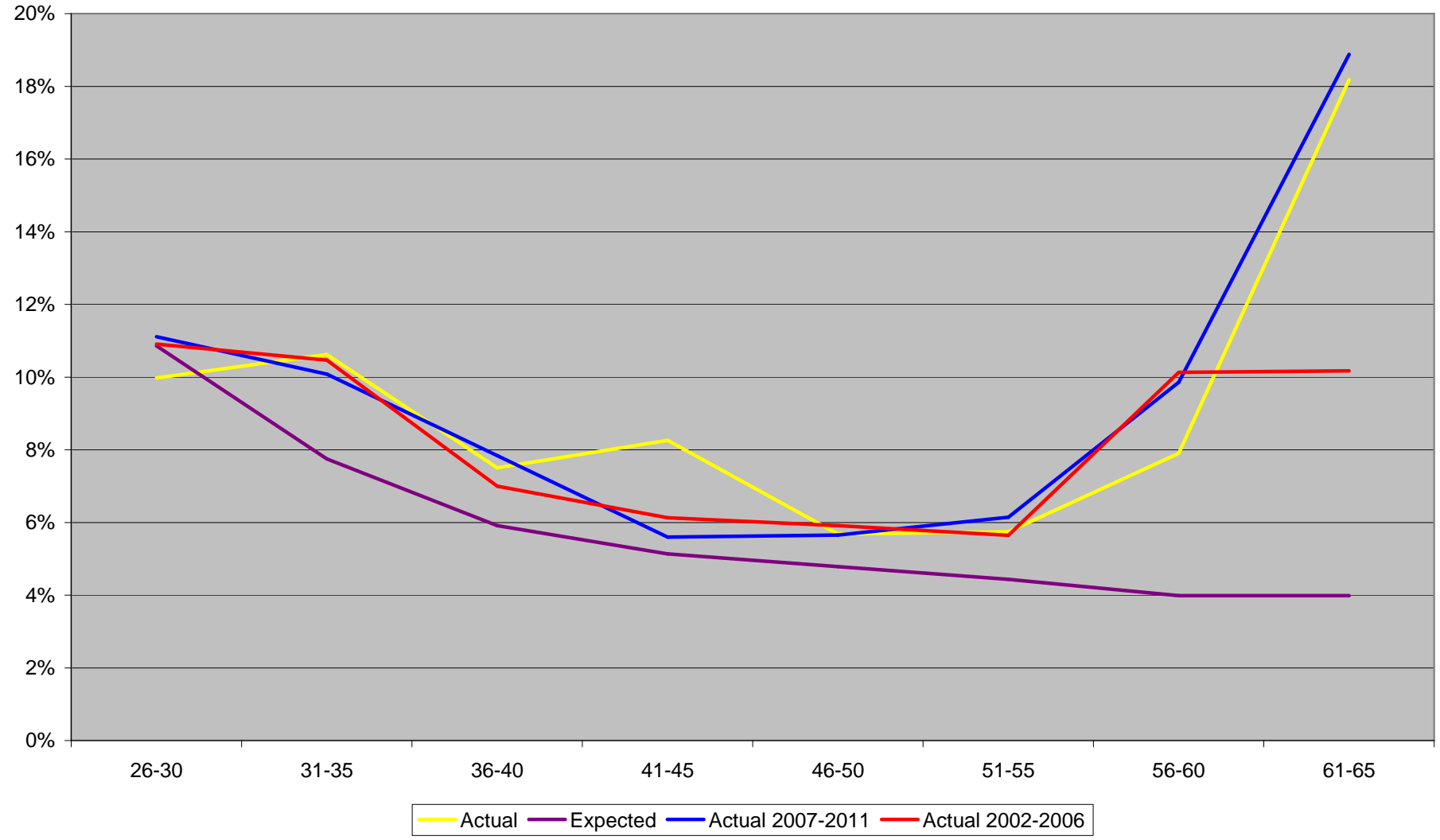
Actual Versus Expected Termination Rates by Age, 5+ Years of Service



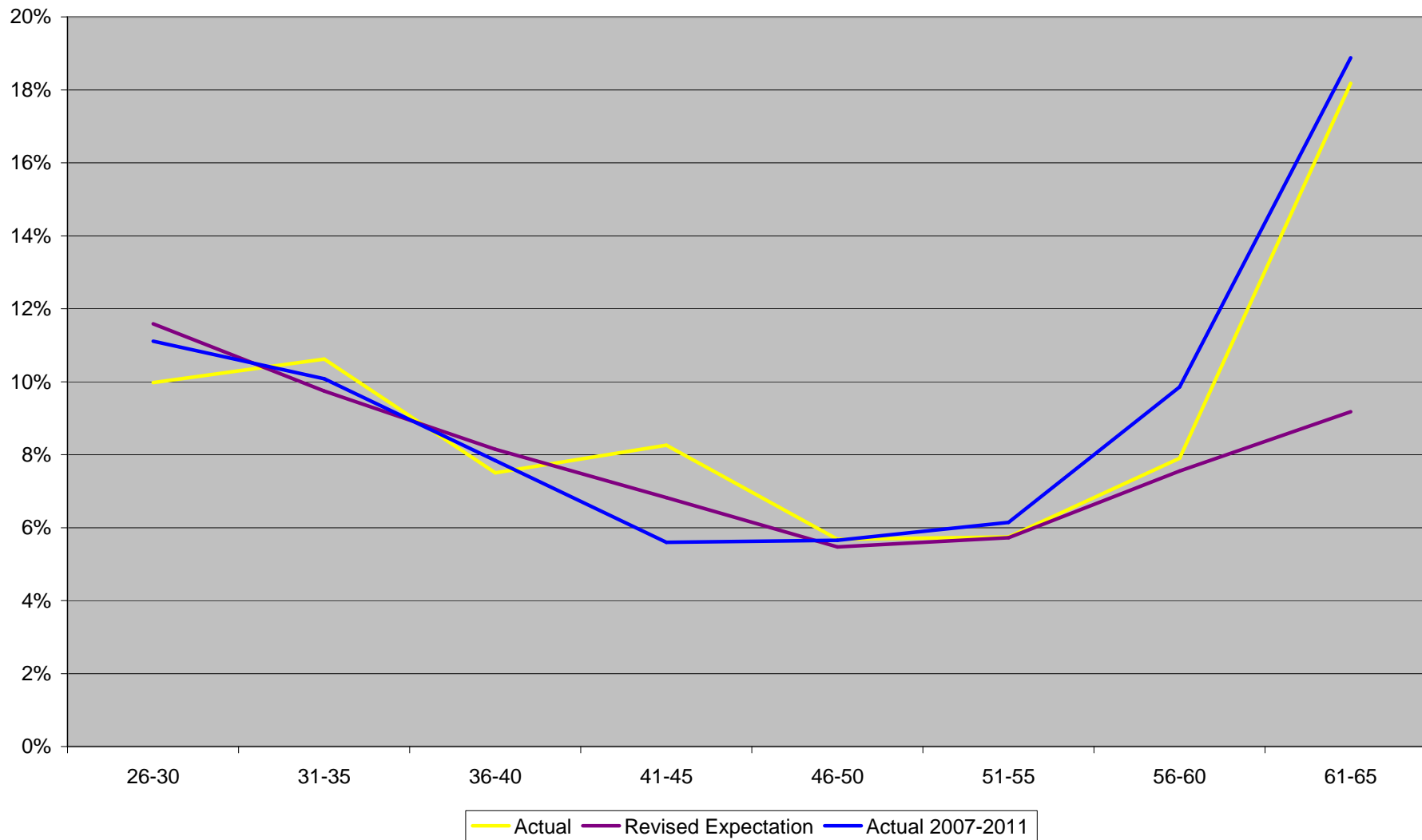
Actual Versus Expected Termination Rates by Age, 5+ Years of Service



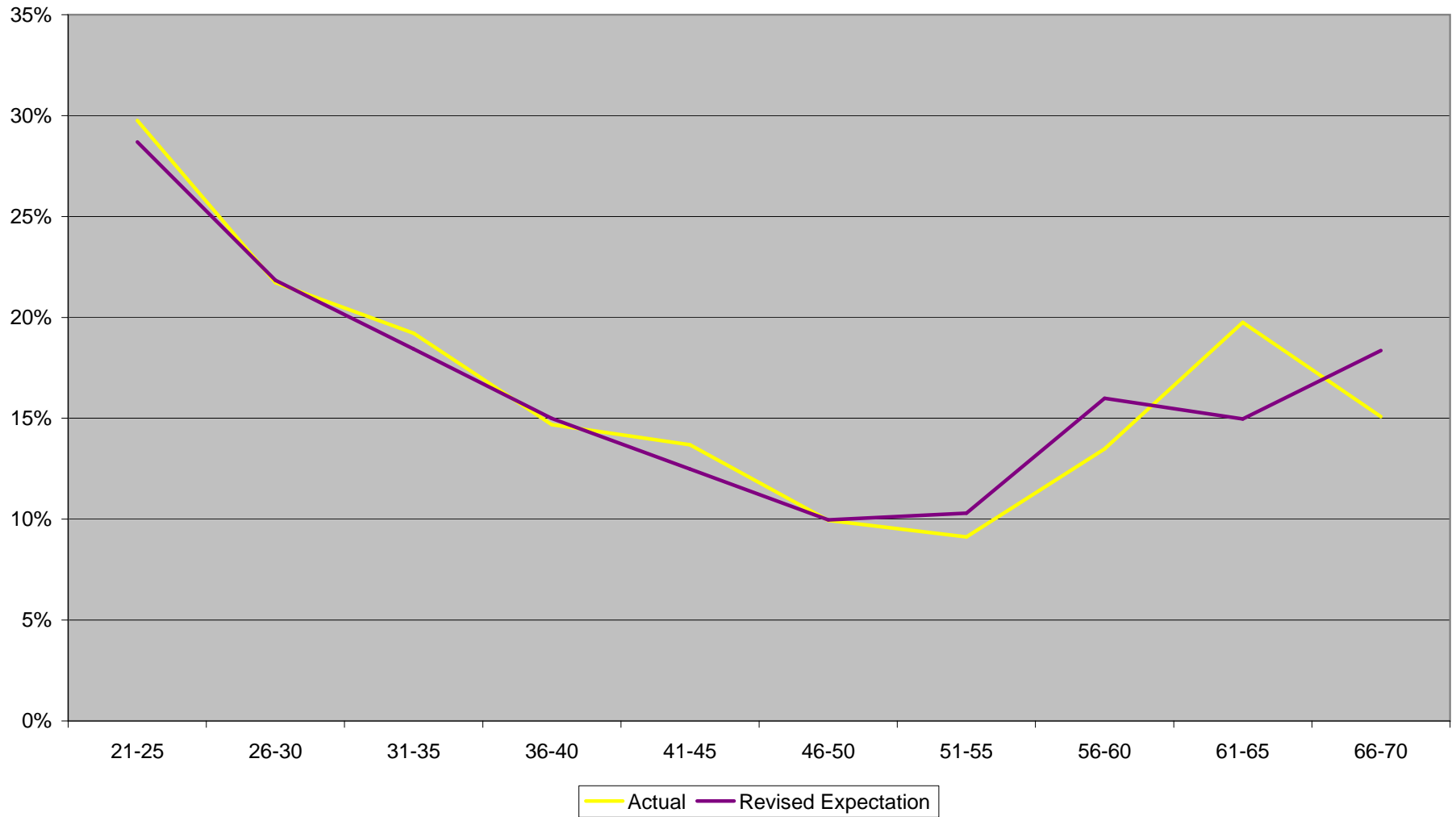
Actual Versus Expected Termination Rates by Age, 5+ Years of Service



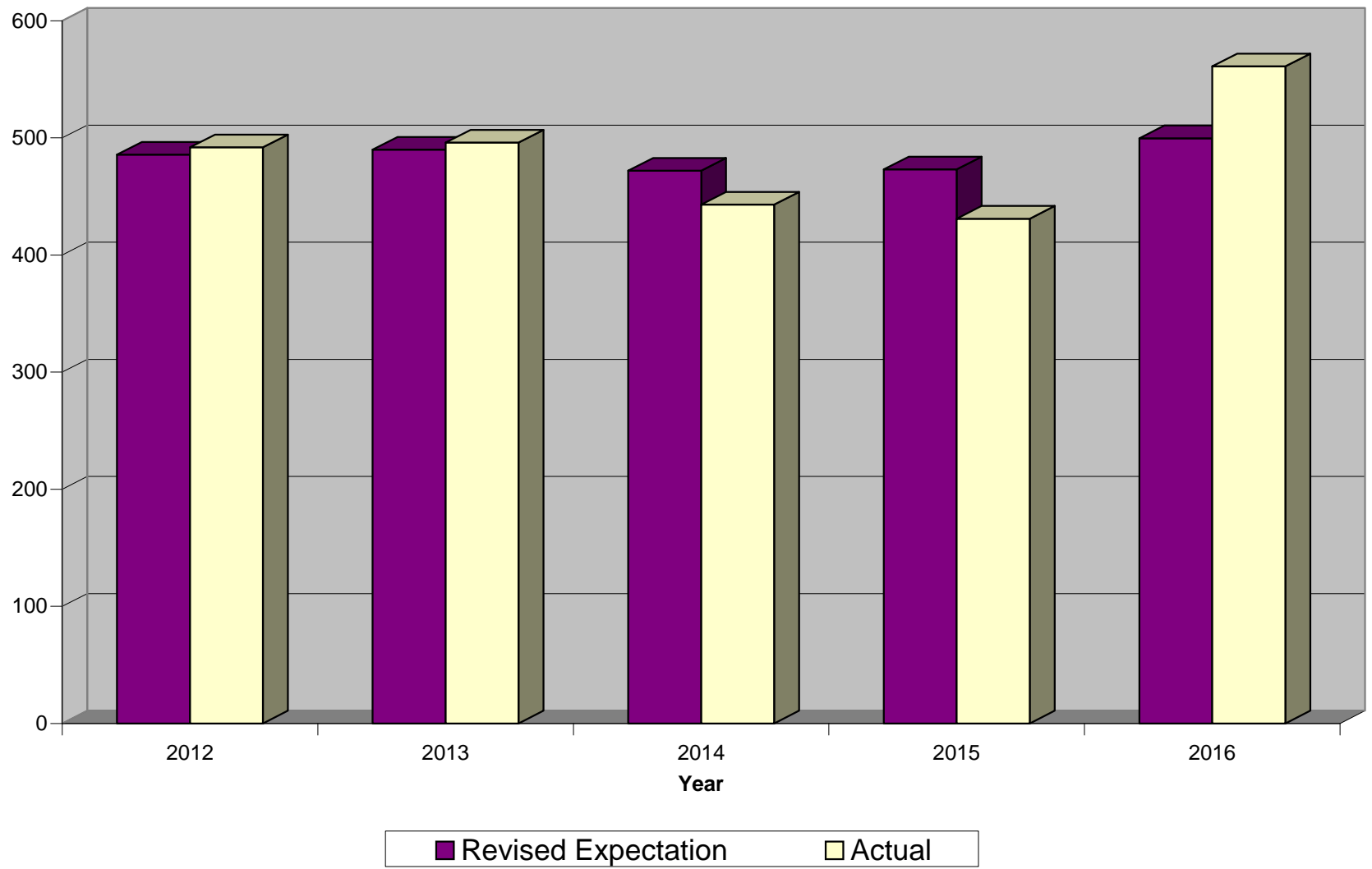
Actual Versus Expected Termination Rates with New Ultimate Rates, 5+ Years of Service



**Actual Versus Expected Termination Rates with New Select and Ultimate Rates
All Service Groups**



Actual Versus Expected Terminations with New Select and Ultimate Rates



Termination Experience Recommendations

Revise ultimate rates to adopt asymmetric U-shape

Ultimate rate bottoms out at age 50

Rates geometrically progress over 15-year intervals

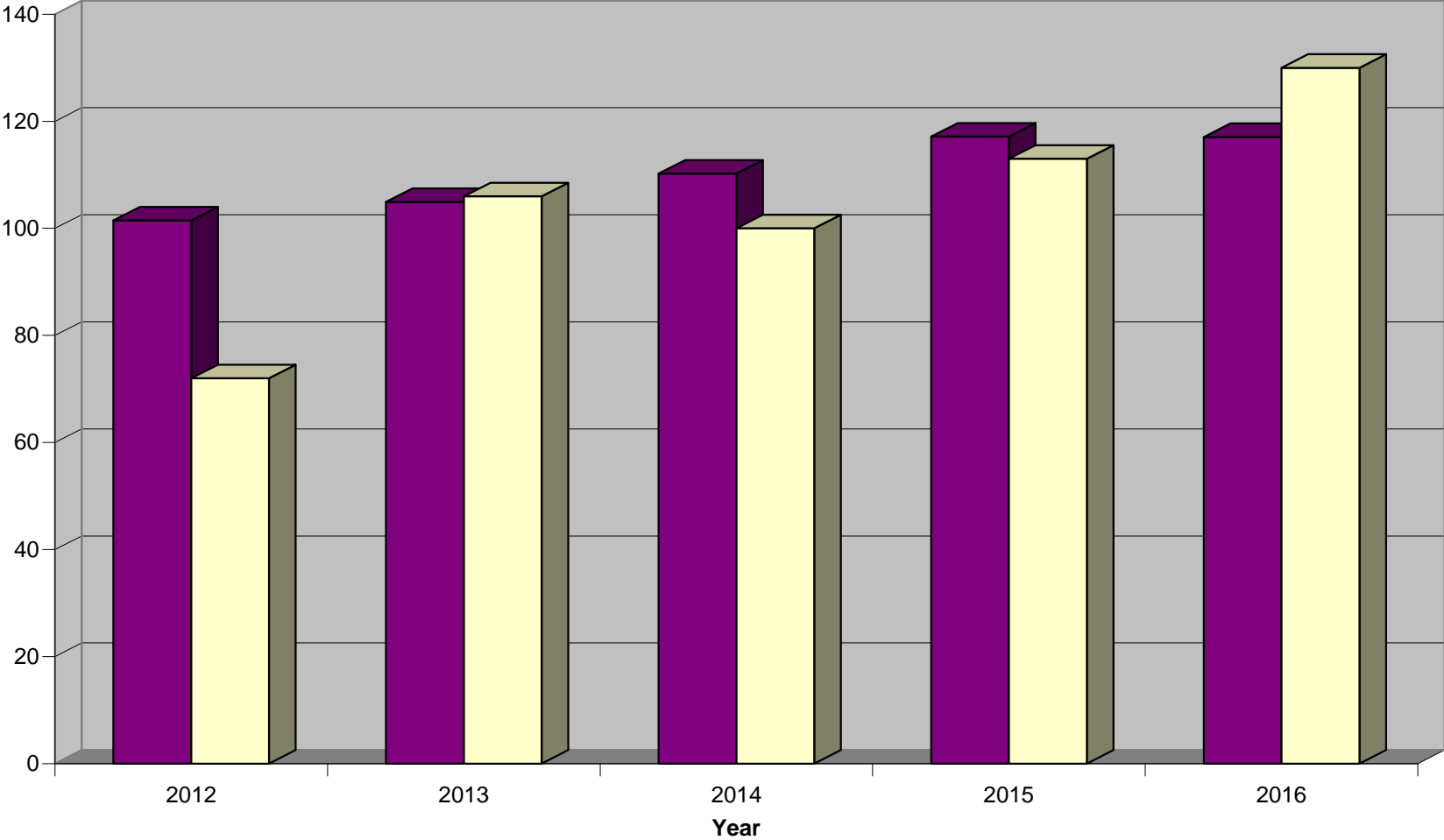
- from 15% at age 20 to 9% at age 35
- from 9% at age 35 to 5% at age 50
- from 5% at age 50 to 10% at age 65

Ultimate rate levels out at 10% for ages 65 and above

Retirement Experience

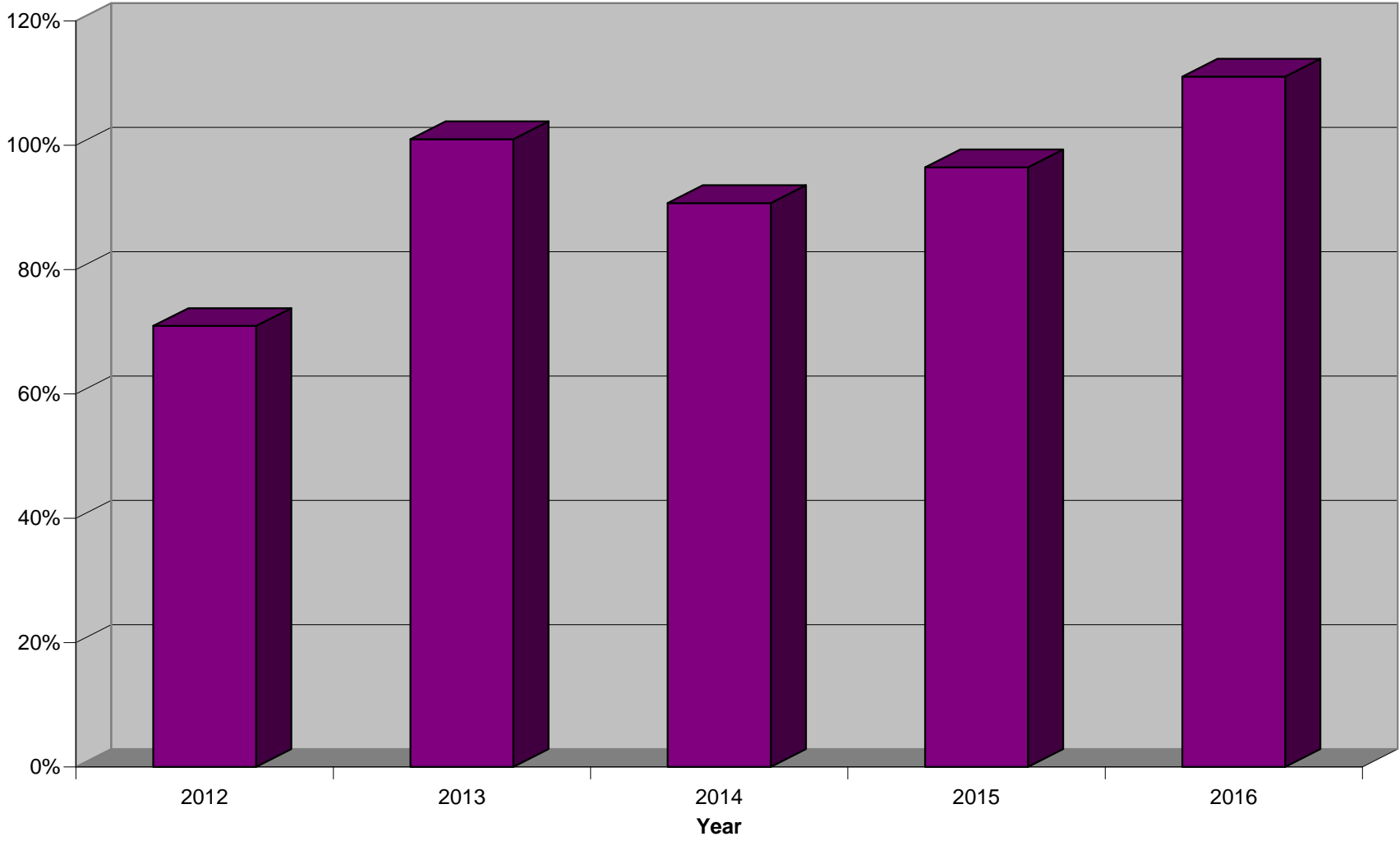
(3,935 Participant Life Years Exposed)

Actual Versus Expected Retirements

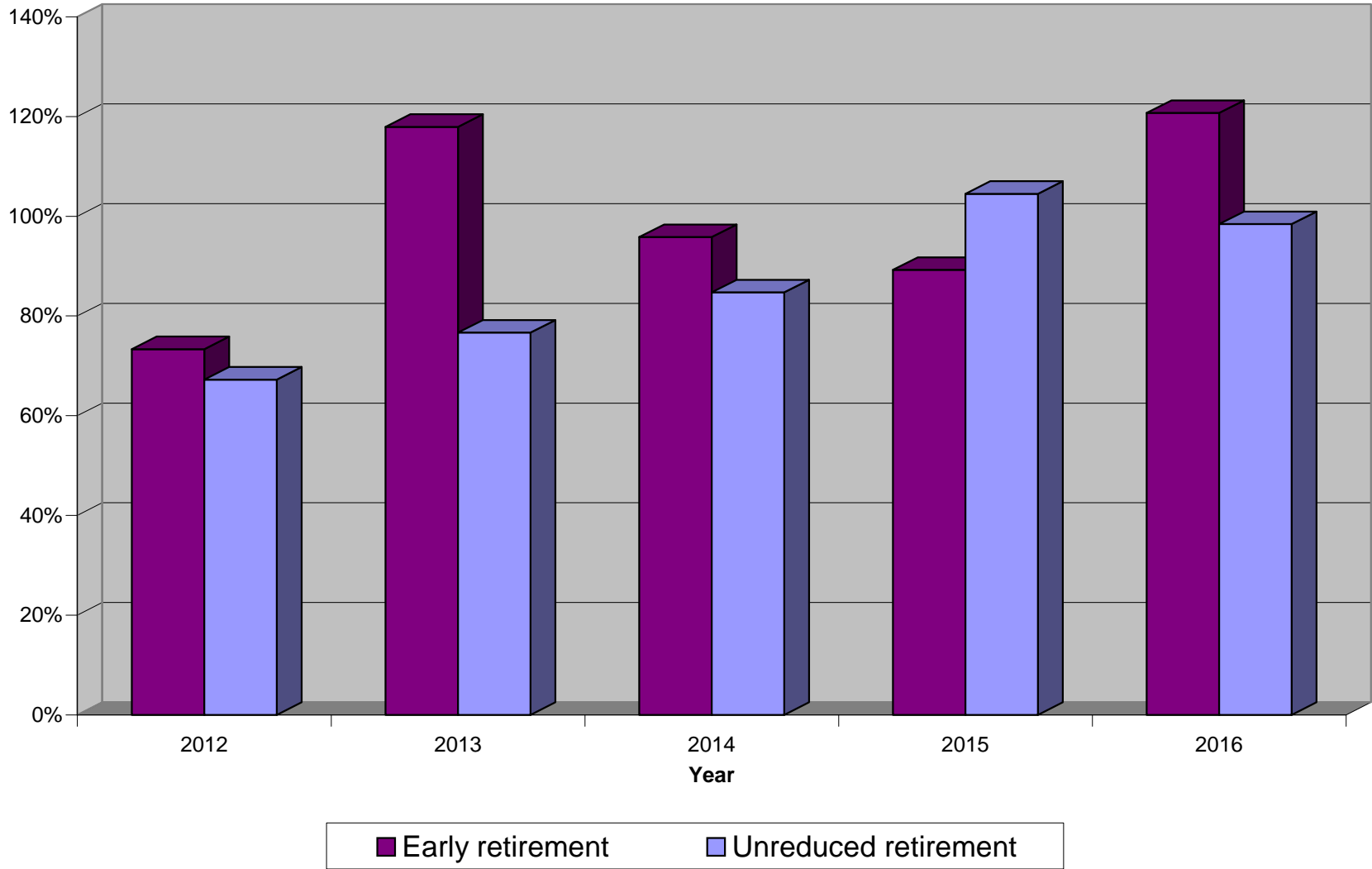


Expected Actual

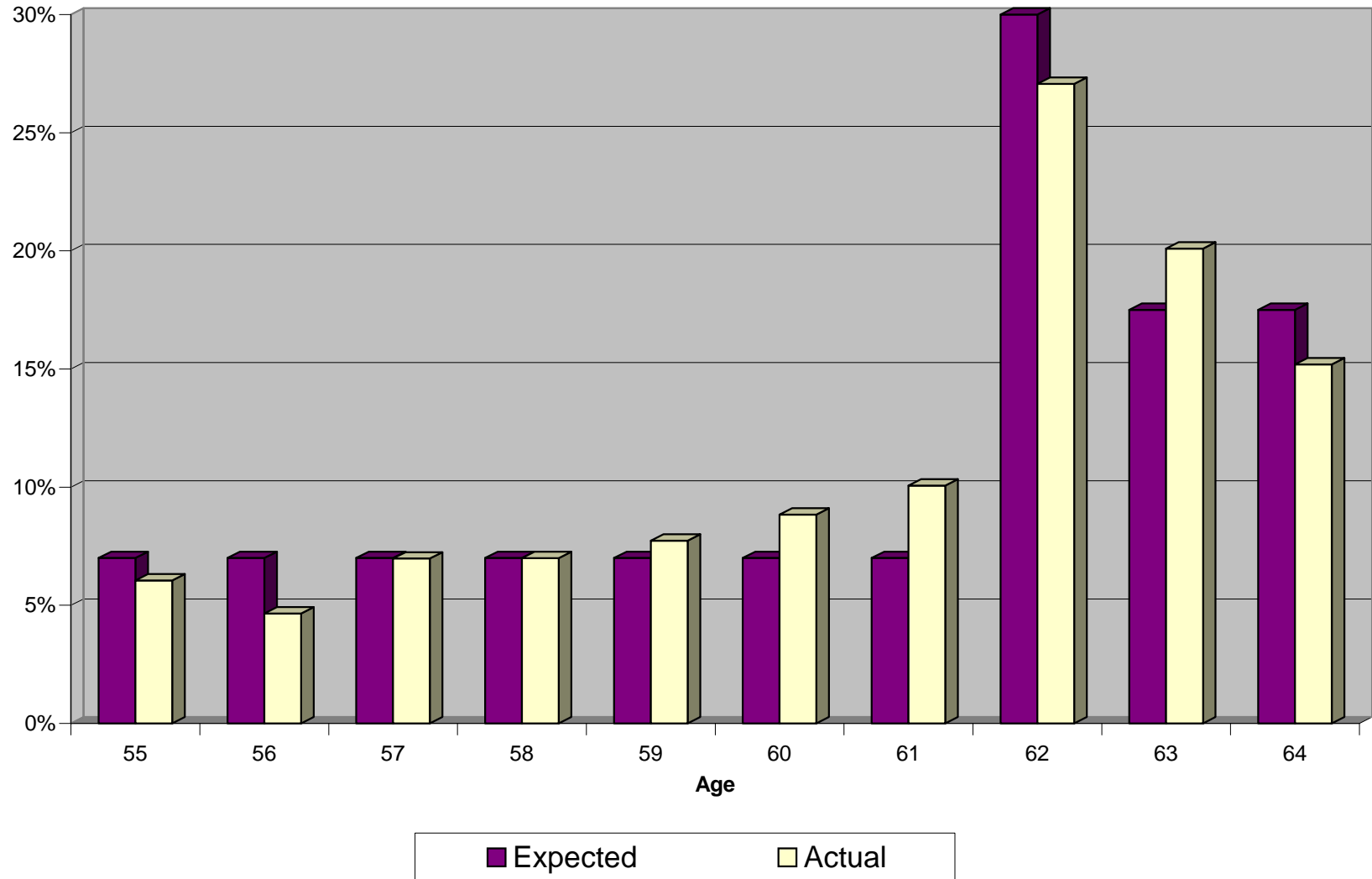
Ratio of Actual Versus Expected Retirements



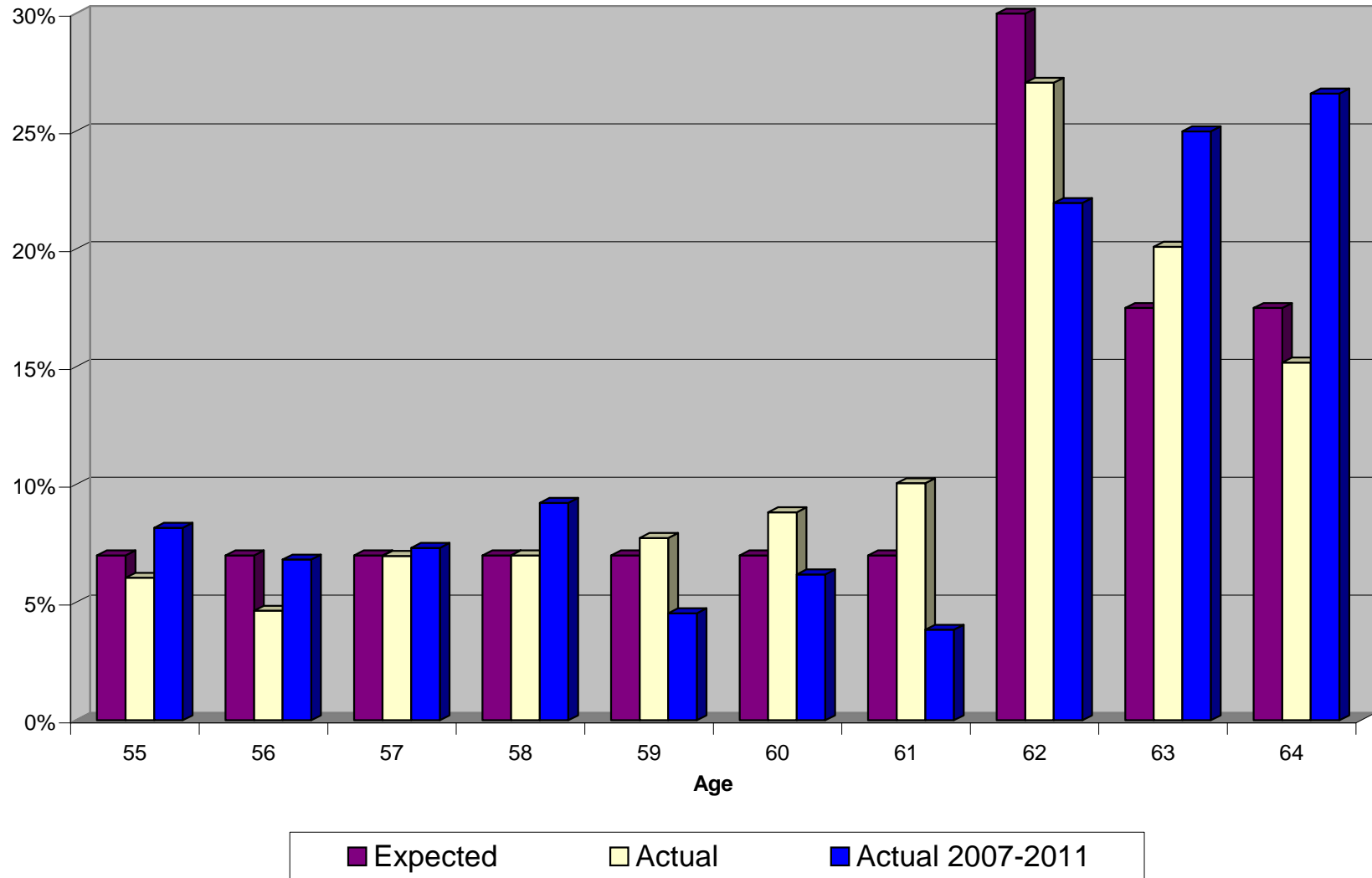
Ratio of Actual Versus Expected Retirements



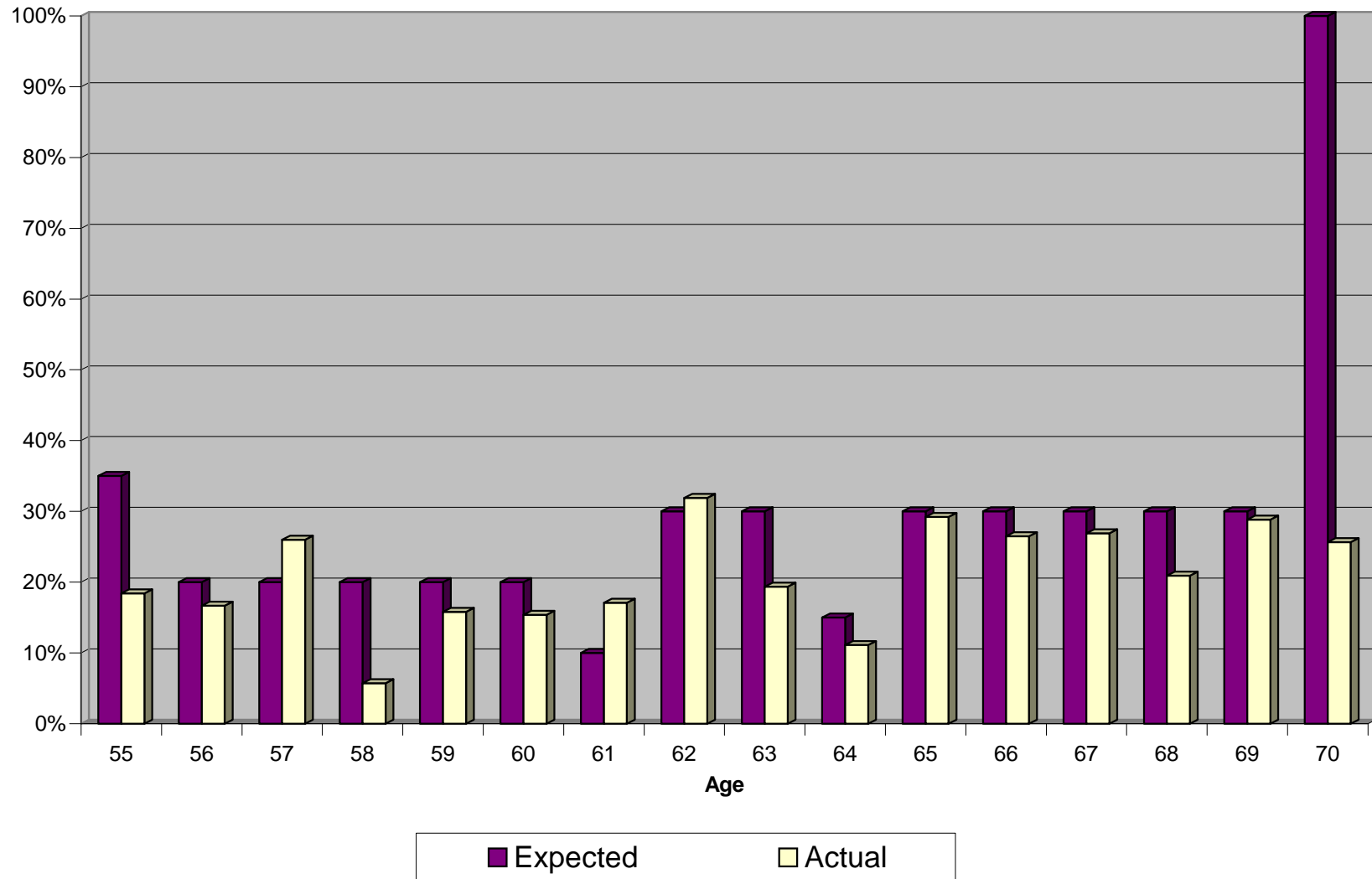
Early (Reduced) Retirement Rates by Age



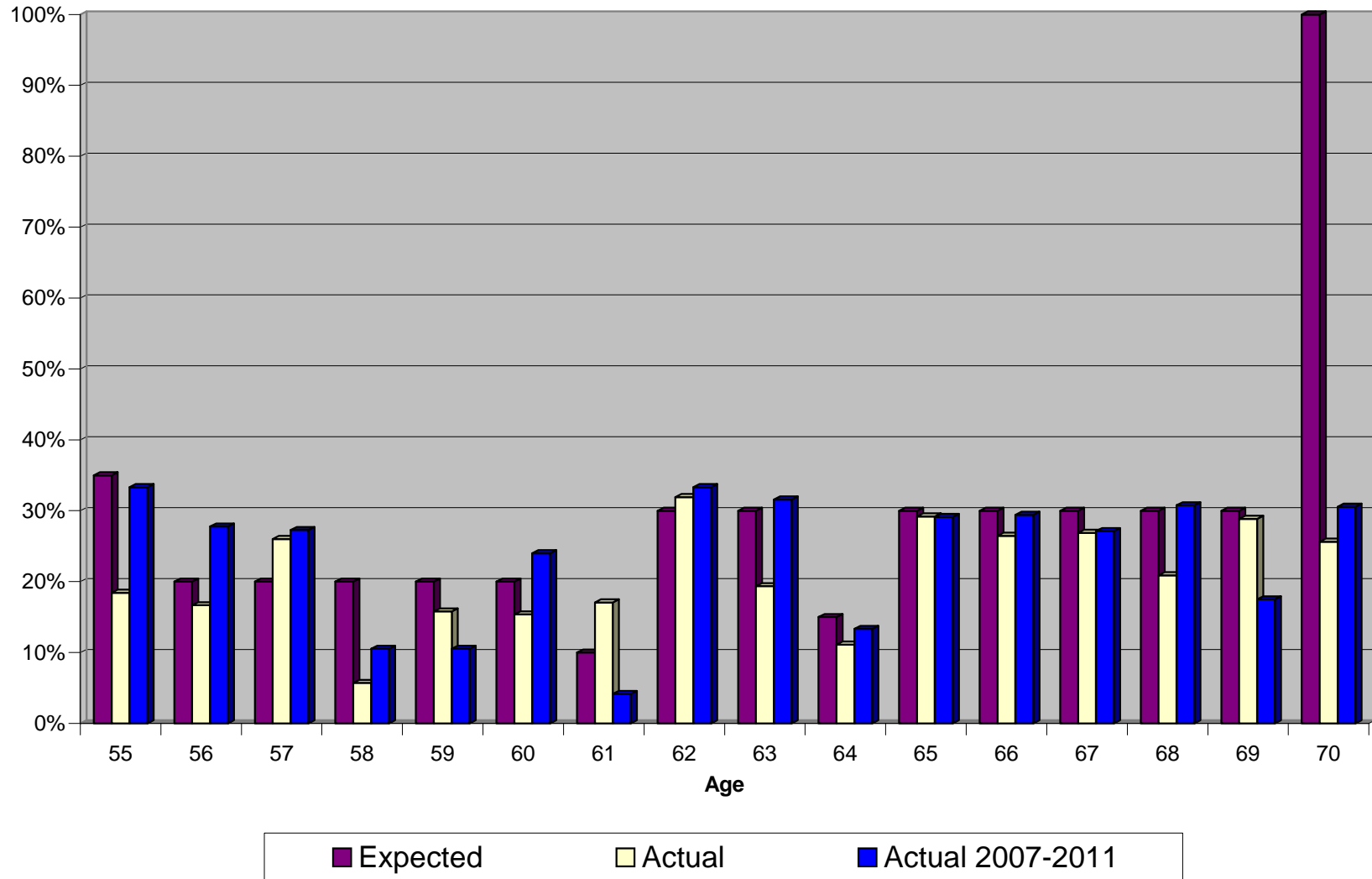
Early (Reduced) Retirement Rates by Age



Unreduced Retirement Rates by Age



Unreduced Retirement Rates by Age



Unreduced Retirement Experience

Possible revisions

	Current	Revised
55	35%	25%
56	20%	17%
57	20%	17%
58	20%	17%
59	20%	17%
60	20%	17%
61	10%	17%
62	30%	30%
63	30%	20%
64	15%	15%
65	30%	30%
66	30%	25%
67	30%	25%
68	30%	25%
69	30%	25%

Retirement Experience Recommendations

No change to early retirement rates

Evaluate credibility of unreduced retirement experience
(908 life years)

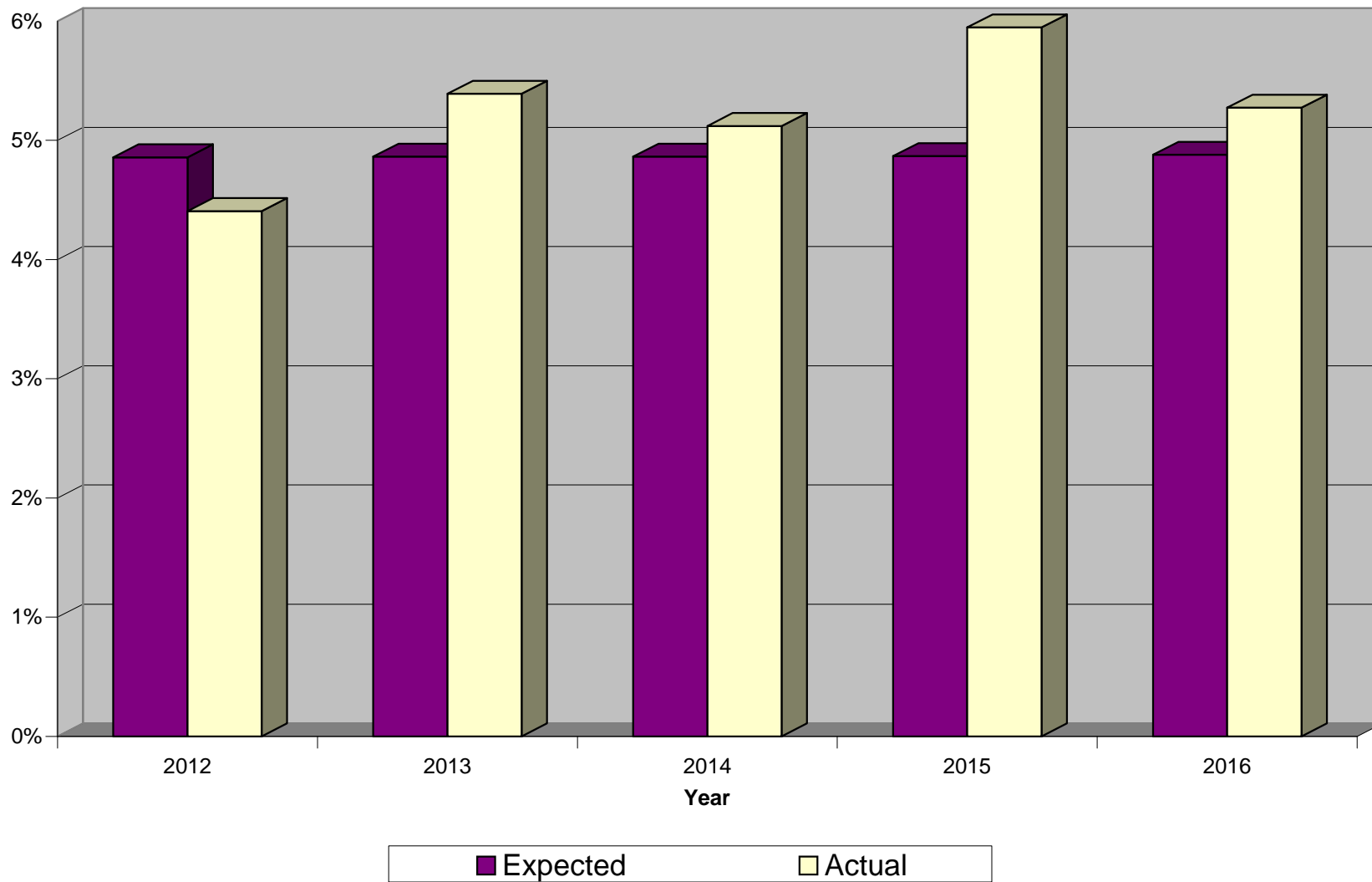
Possible changes if deemed credible

Age group	55-61	62-64	65-69
Actual retirements	50	24	137
Expected retirements	60.70	27.45	152.10
Revised expectation	53.28	24.35	134.78
Recommended	yes	yes	no

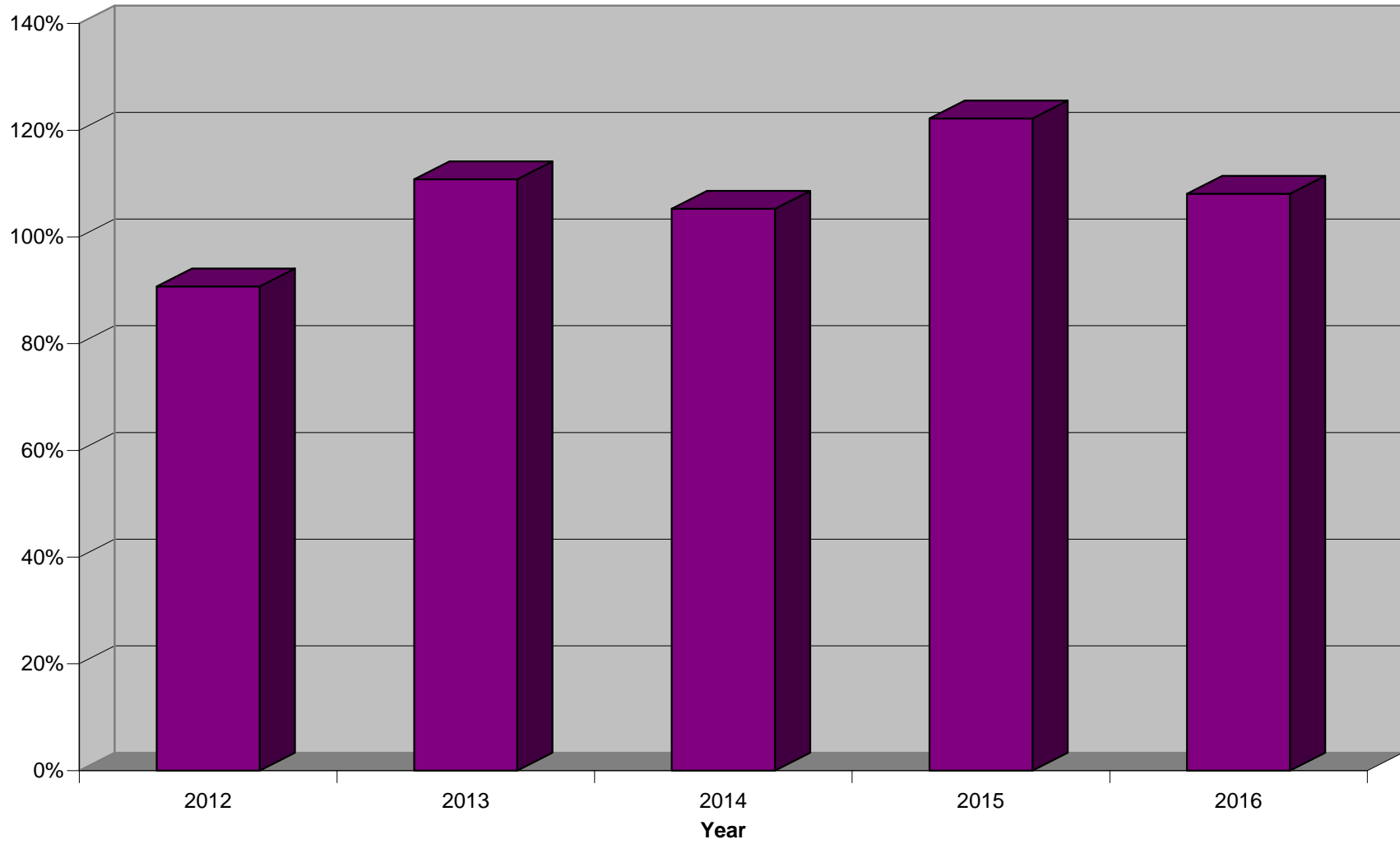
Pay Increase Experience

(13,596 Participant Life Years Exposed)

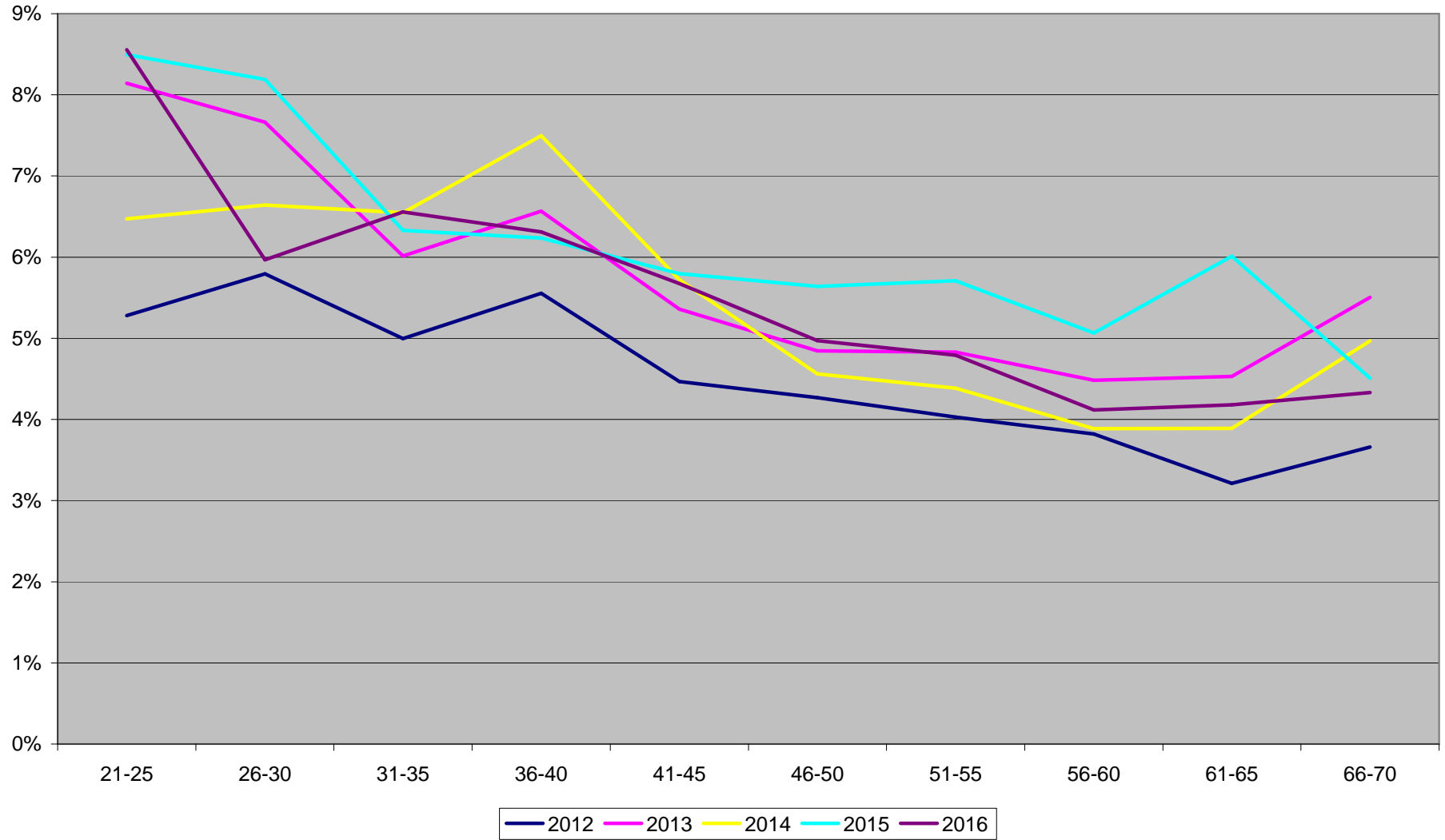
Actual Versus Expected Pay Increases



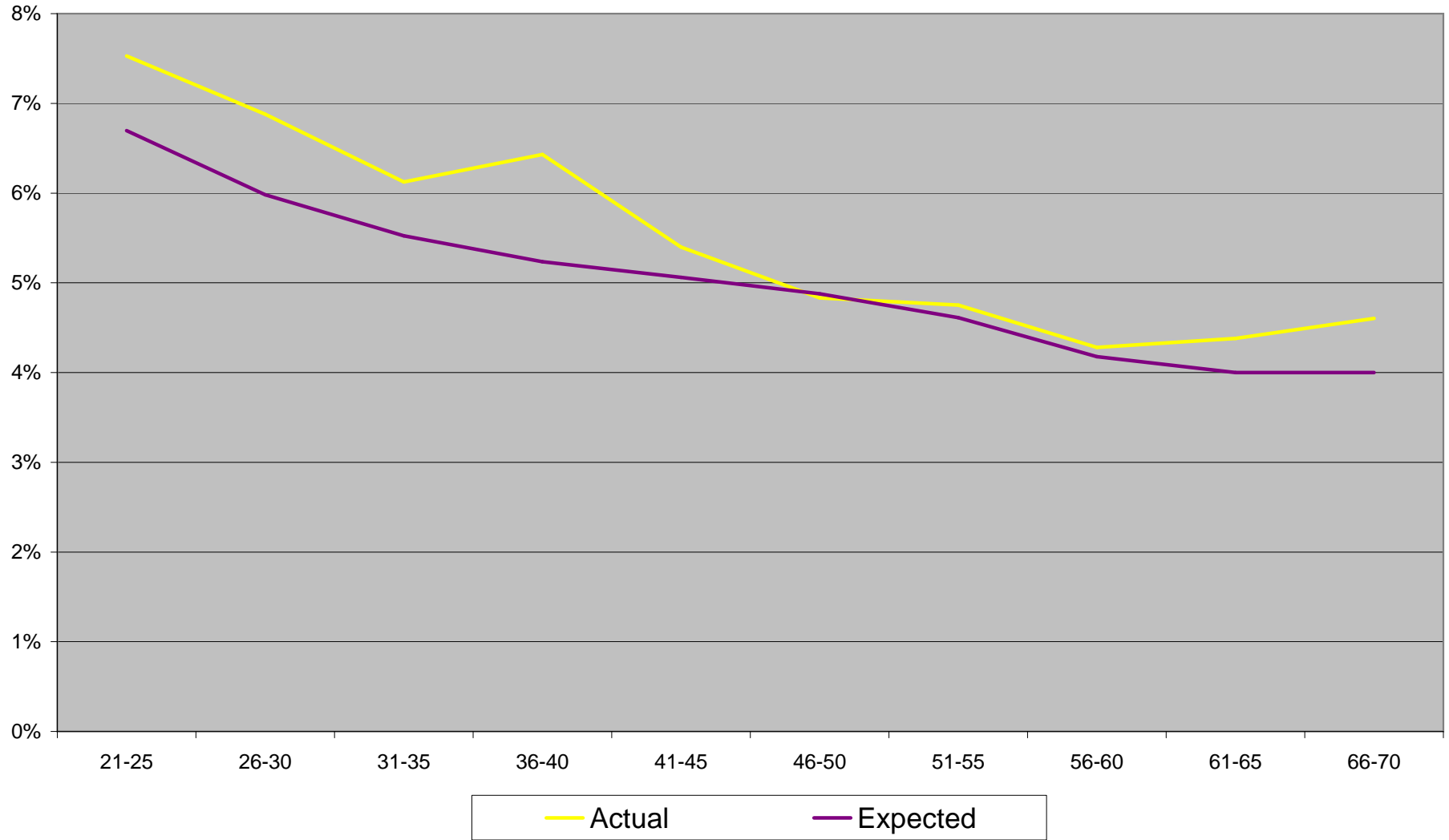
Ratio of Actual Versus Expected Pay Increases



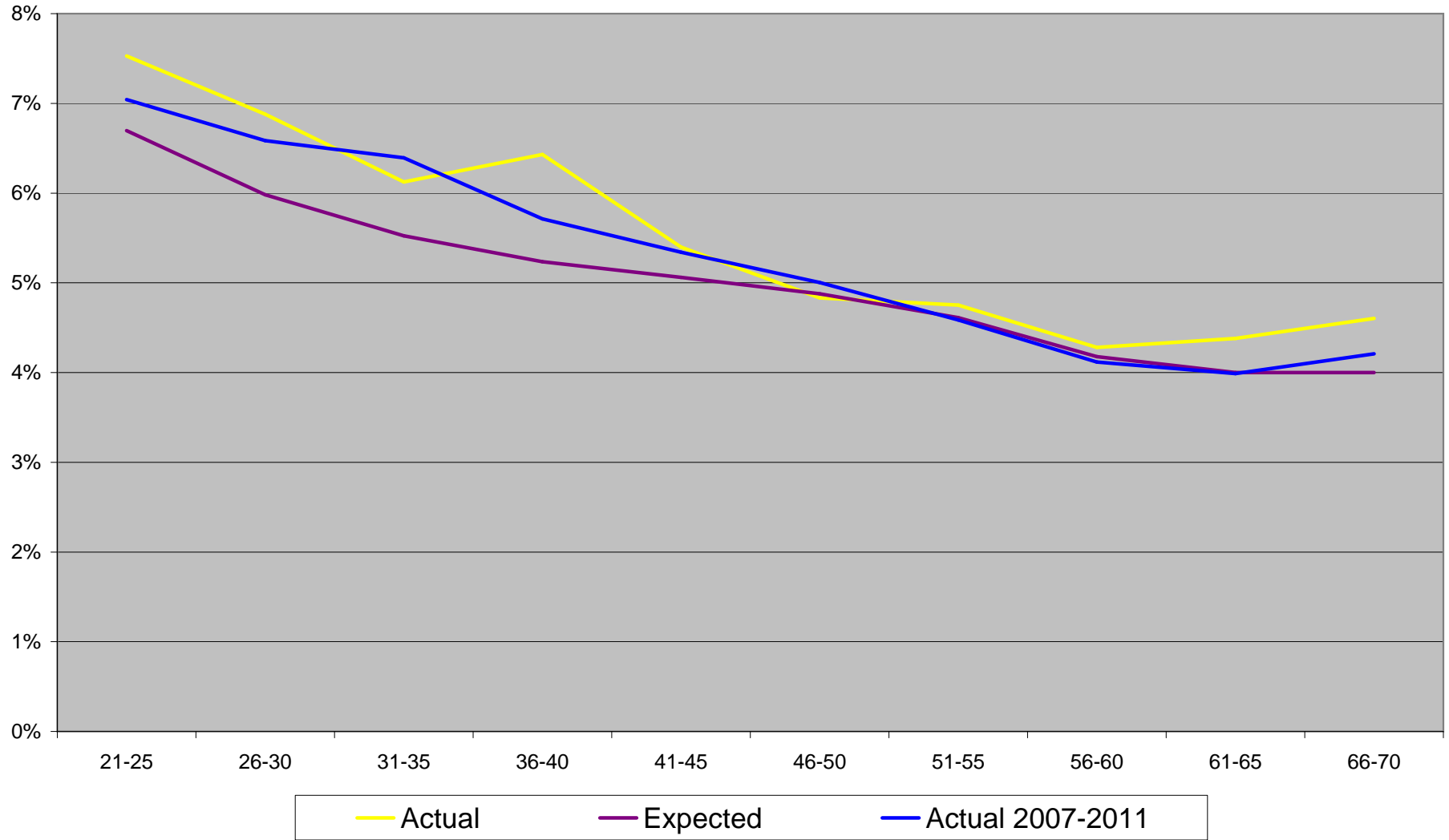
Year by Year Pay Increases by Age



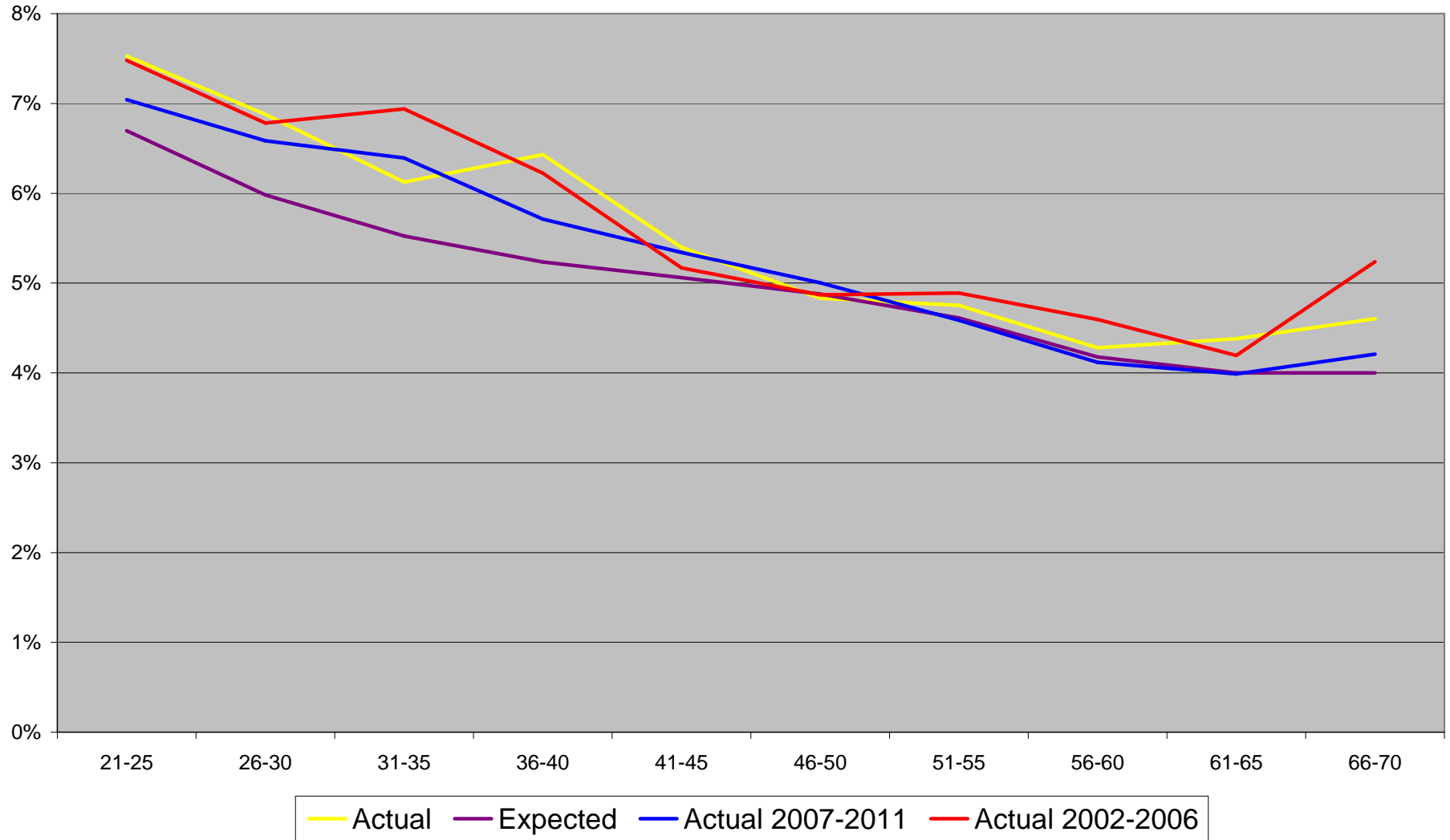
Average Pay Increases by Age



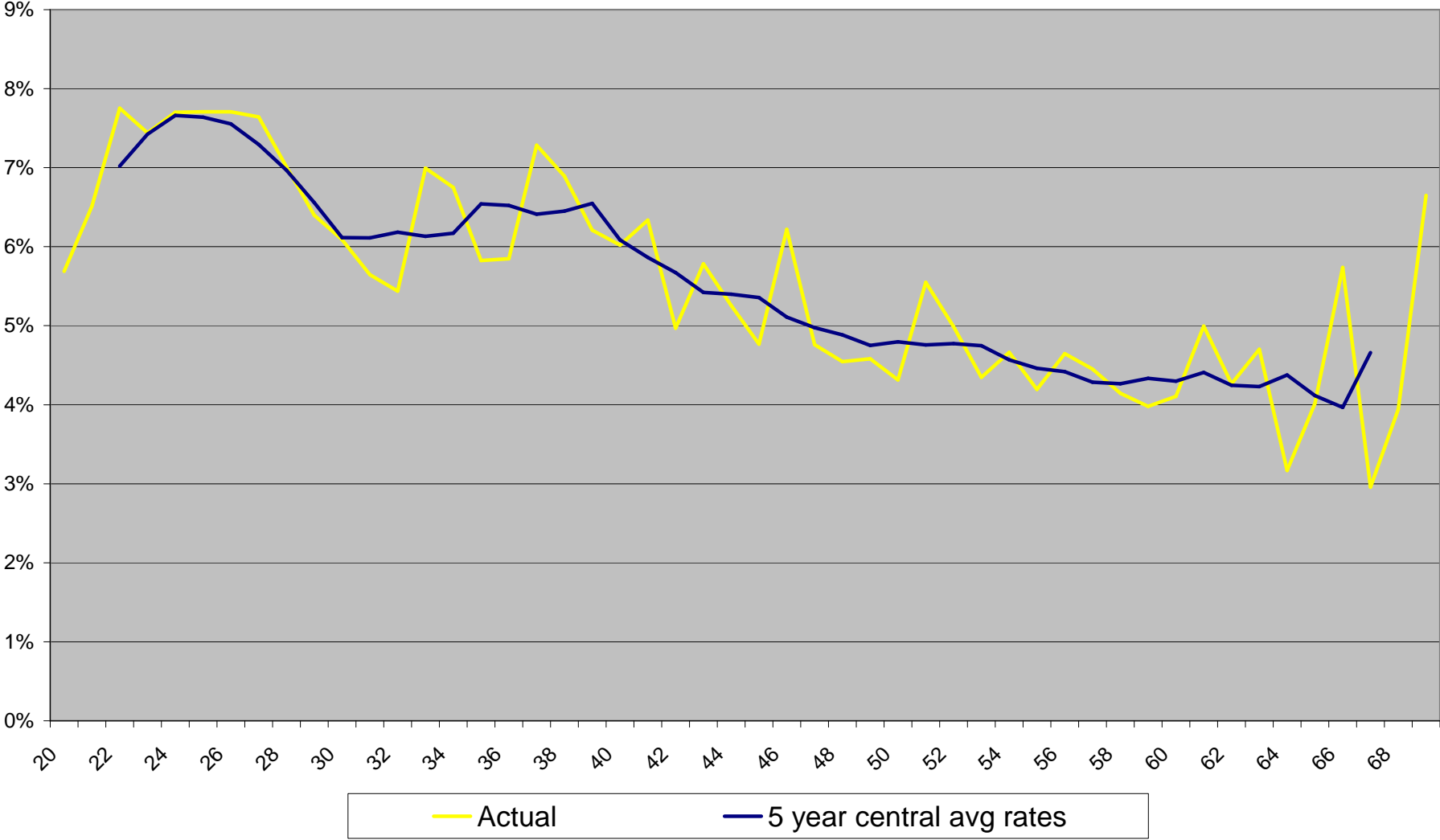
Average Pay Increases by Age



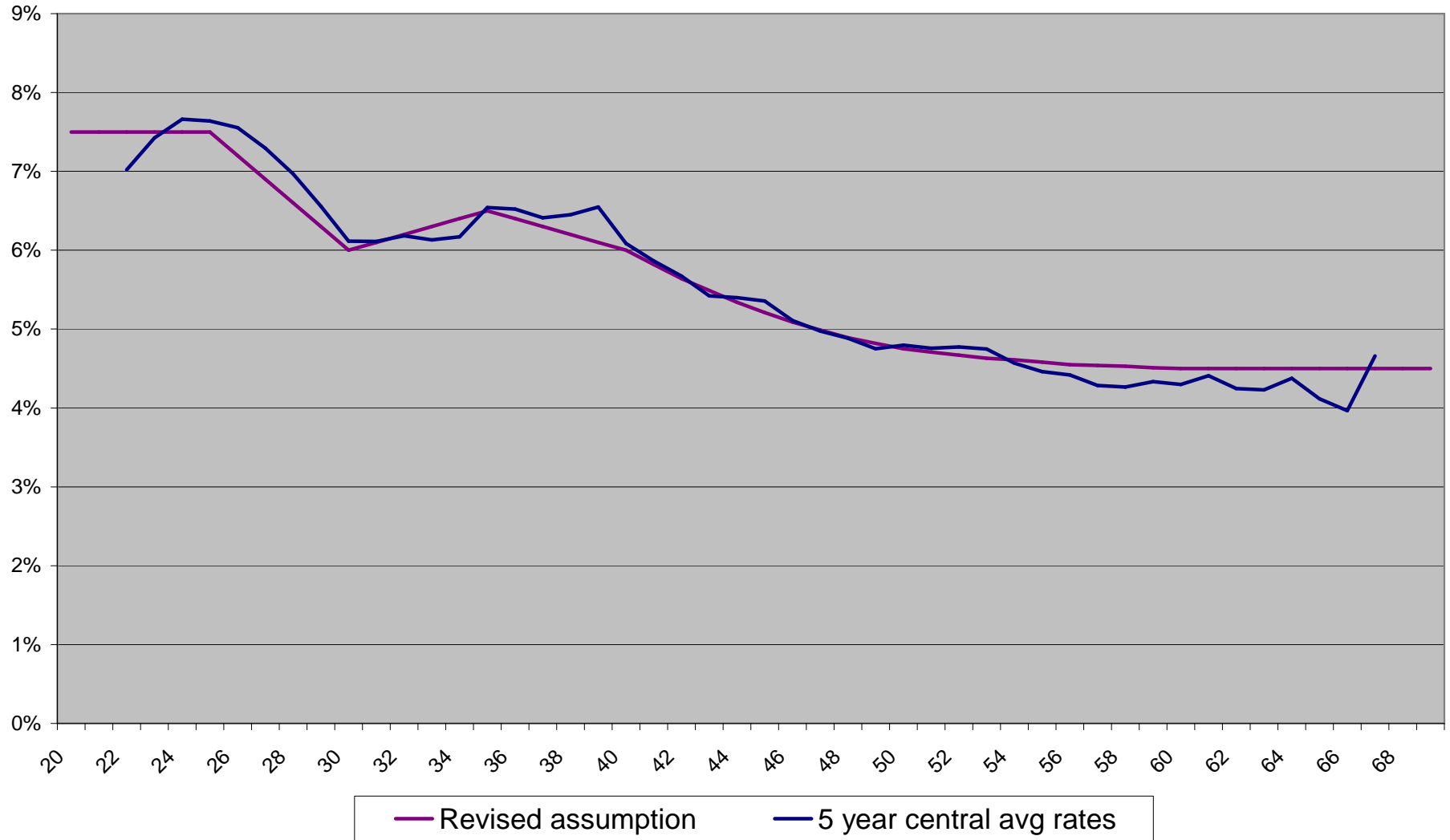
Average Pay Increases by Age



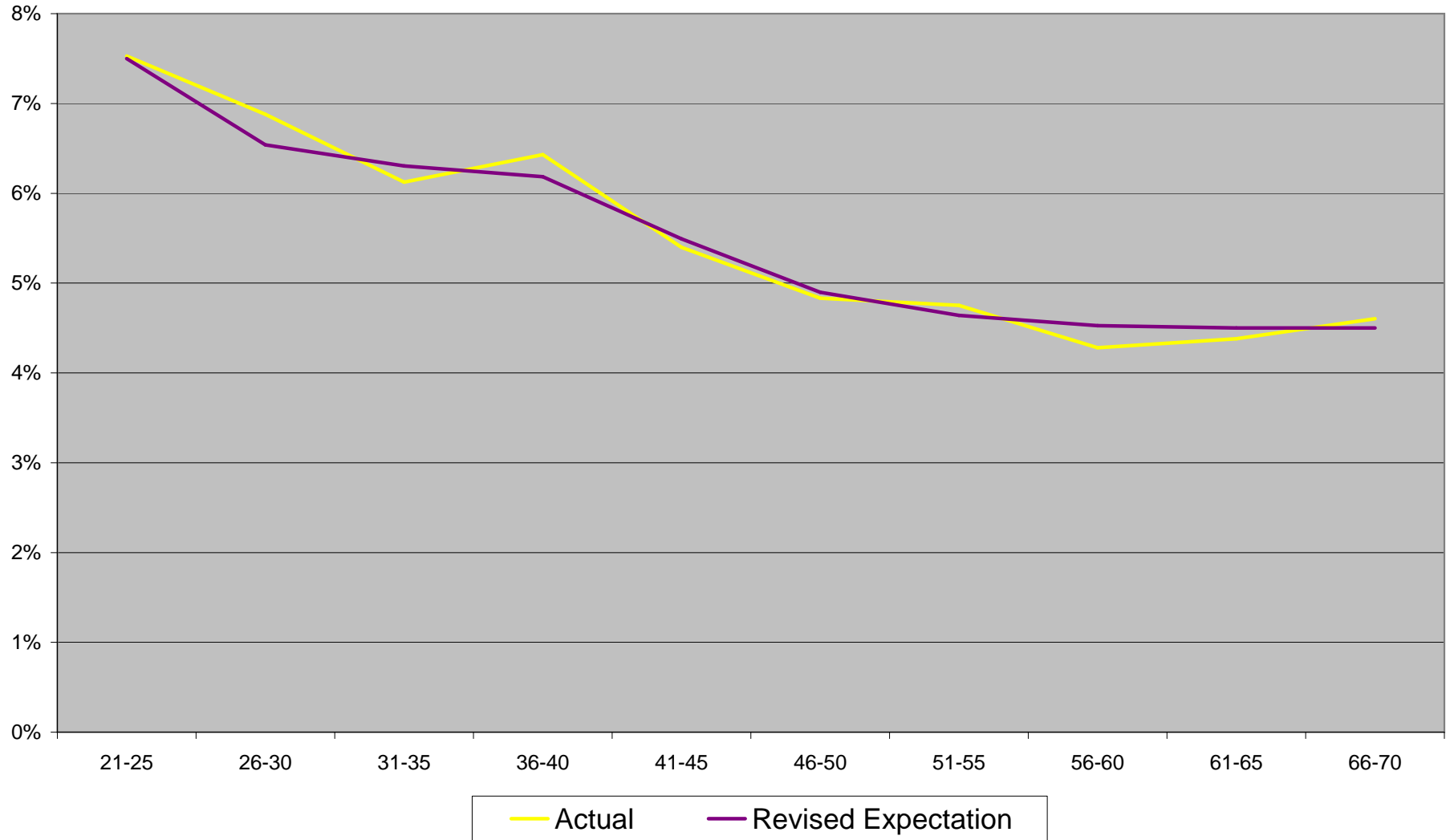
Average Pay Increases by Age



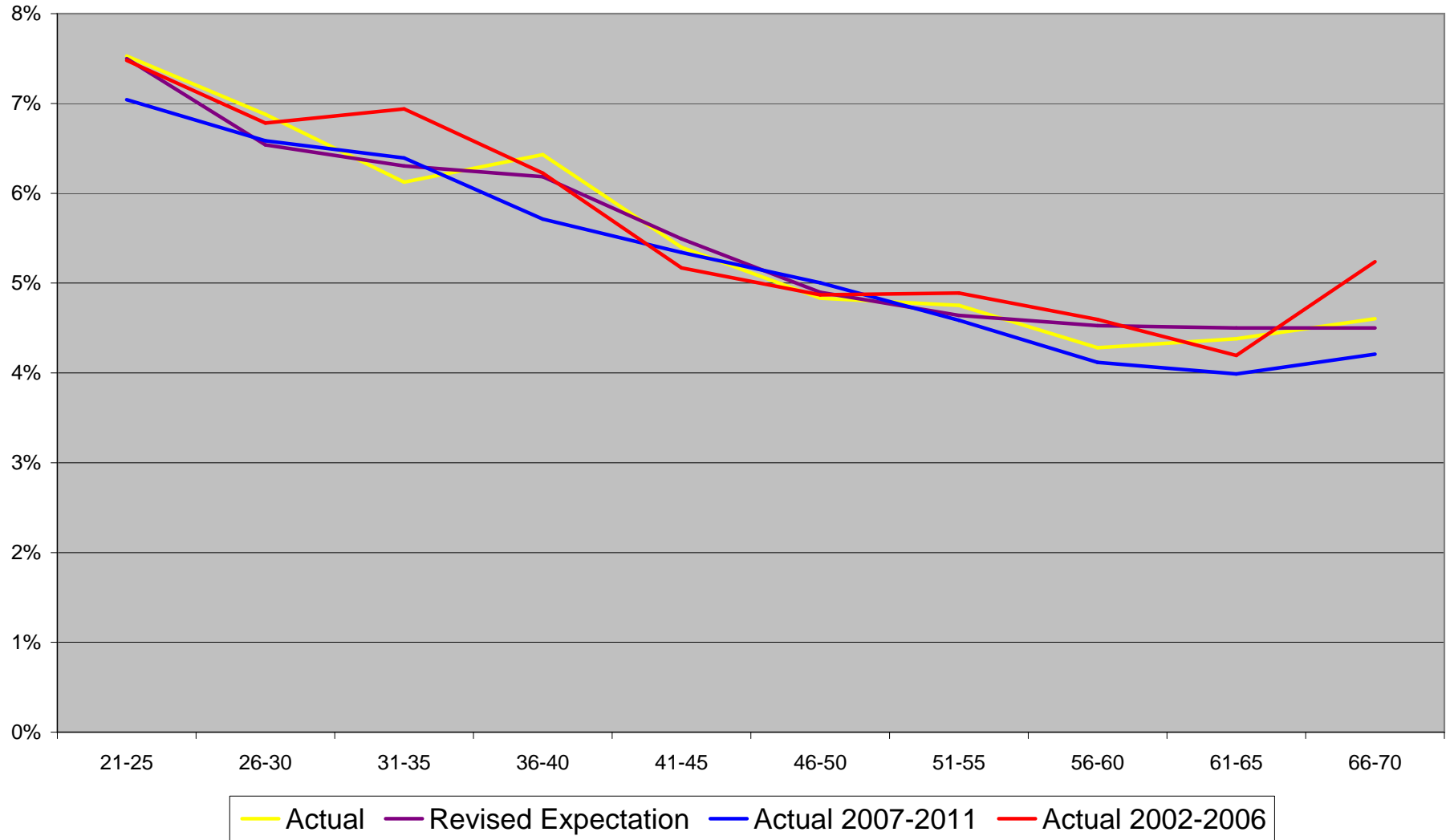
Average Pay Increases by Age



Average Pay Increases by Age



Average Pay Increases by Age



Pay Increase Experience Recommendations

Adjust shape of pay increase curve

Parallel shift to reflect future expectations?

Summary

Higher termination rates (cost reduction)

Lower unreduced retirement rates (cost reduction)

Higher pay increase rates (cost increase)

Other changes to consider

- Mortality: cost increase?
- Investment return: cost increase?
- Inflation: cost decrease for COLA cities?

Implementation

Do not adopt cost reduction assumptions in isolation if cost increase changes are expected soon

Review economic assumptions in conjunction with other OkMRF advisors

Adopt recommended demographic changes and lower return assumption for 2018 valuation?

Delay implementation until new mortality table becomes available?