



# NCCI's New Class Ratemaking

CAS Spring Meeting  
New Orleans  
May 4, 2009

Presented by  
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Jim Davis, ACAS, MAAA

# Agenda

- Comparison of New vs. Current Methodologies
- Test State Illustrations
  - Description of Analysis
  - Presentation of Results in 4 Test States
- Discussion
- Appendix

# Comparison of Methodologies

## Loss Limits

- **Current Method:**  
Limits vary by state. Average limit is approximately \$750K
- **New Method:**  
\$500K for every state.

### Advantages:

- Reduced loss limit of \$500K will enhance stability by class code.
- Practical considerations – aligns with Large Loss Call 31

# Comparison of Methodologies

## Loss Development

### ➤ Current Method:

Claims are developed by Serious, Non-Serious, and Medical categories based on injury type.

5 Reports of Unlimited Losses

### ➤ New Method:

Claims are developed by Likely to Develop and Not Likely to Develop categories for indemnity and medical separately.

Expanding to 10 Reports of Losses, Limited at \$500K

# Comparison of Methodologies

## Loss Development

Likely vs. Not Likely Development Groupings based on a combination of claim characteristics:

- Injury Type
- Open vs. Closed @ 1<sup>st</sup> report
- Part of Body @ 1<sup>st</sup> report

Advantages

- Increased accuracy and stability

# Comparison of Methodologies

## Expected Excess Provision

### ➤ Current Method

Actual excess losses are spread within each industry group

### ➤ New Method

Expected excess losses are calculated by class code based on the 7 Hazard Group (HG) mapping. The following factor is applied to each class code:  $1 / (1 - \text{Excess Ratio @500K for HG})$

### Advantages

- Enhances stability and improves class equity.

# Comparison of Methodologies

## Class Credibility

- **Current Method**
  - Class credibility assigned to Serious, Non-serious and Medical pure premiums
- **New Method**
  - Class credibility assigned to Indemnity and Medical pure premiums.
  - Assigned credibility by class will remain approximately the same.

# Comparison of Methodologies

## Industry Groups (IG)

### ➤ Current Method

- Changes are based upon compilation of class indicated losses by industry group (IG), which are computed using the CURRENT methodology.
- Changes by IG includes actual excess losses.
- Changes are tempered by credibility constants.

### ➤ New Method

- Changes based upon compilation of class indicated losses by IG, which are computed using the NEW methodology.
- Changes by IG includes expected excess losses.
- New uniform credibility constant results in slightly lower IG credibility.



# Comparison of Methodologies

## Other Features that Remain the Same

- Overall statewide change based upon Financial Data
- 5 policy periods of WCSP data for determining class Indicated pure premiums.
- 3-way credibility procedure for combining the Indicated, National, and Present-on-Rate Level pure premiums.
- The swing limit procedure by state.

# Comparison of Methodologies

## Future Filings: More Stability

While we do not yet have the data to test class changes under the new methodology from one filing to the next, we anticipate improvement in stability under the new methodology for the reasons cited earlier:

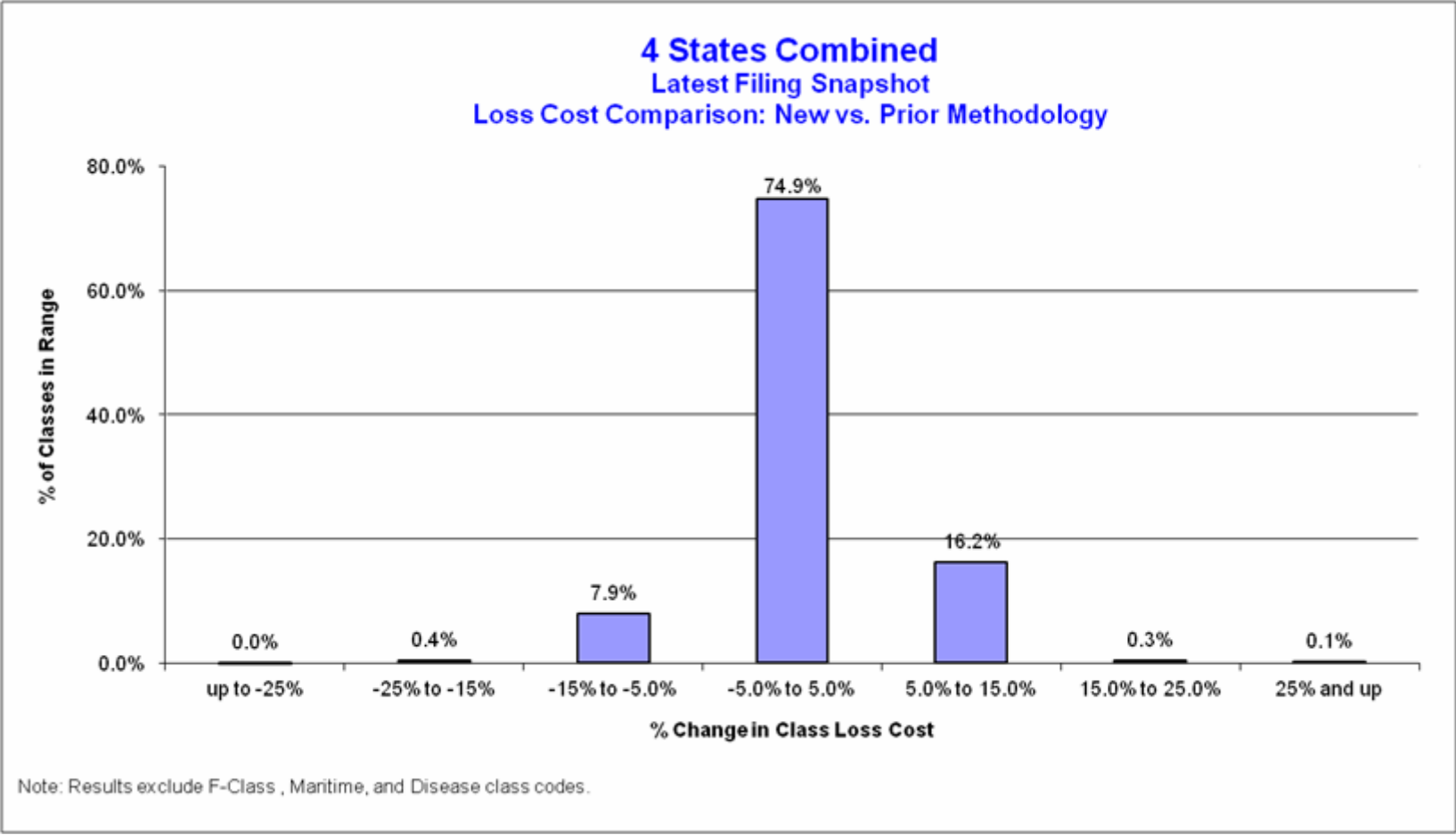
- Lower loss limit (\$500k) mitigates impact of large claims.
- Less divergence in LDFs (for the 4 development groupings) in a given filing
- Less variability in LDFs from one filing to the next due to the use of capped losses in the development triangles
- Use of expected excess (by HG) as opposed to actual excess losses (by IG), which can be volatile from year to year.
- Fine tuned class and IG credibility formulas.

# Test State Illustrations

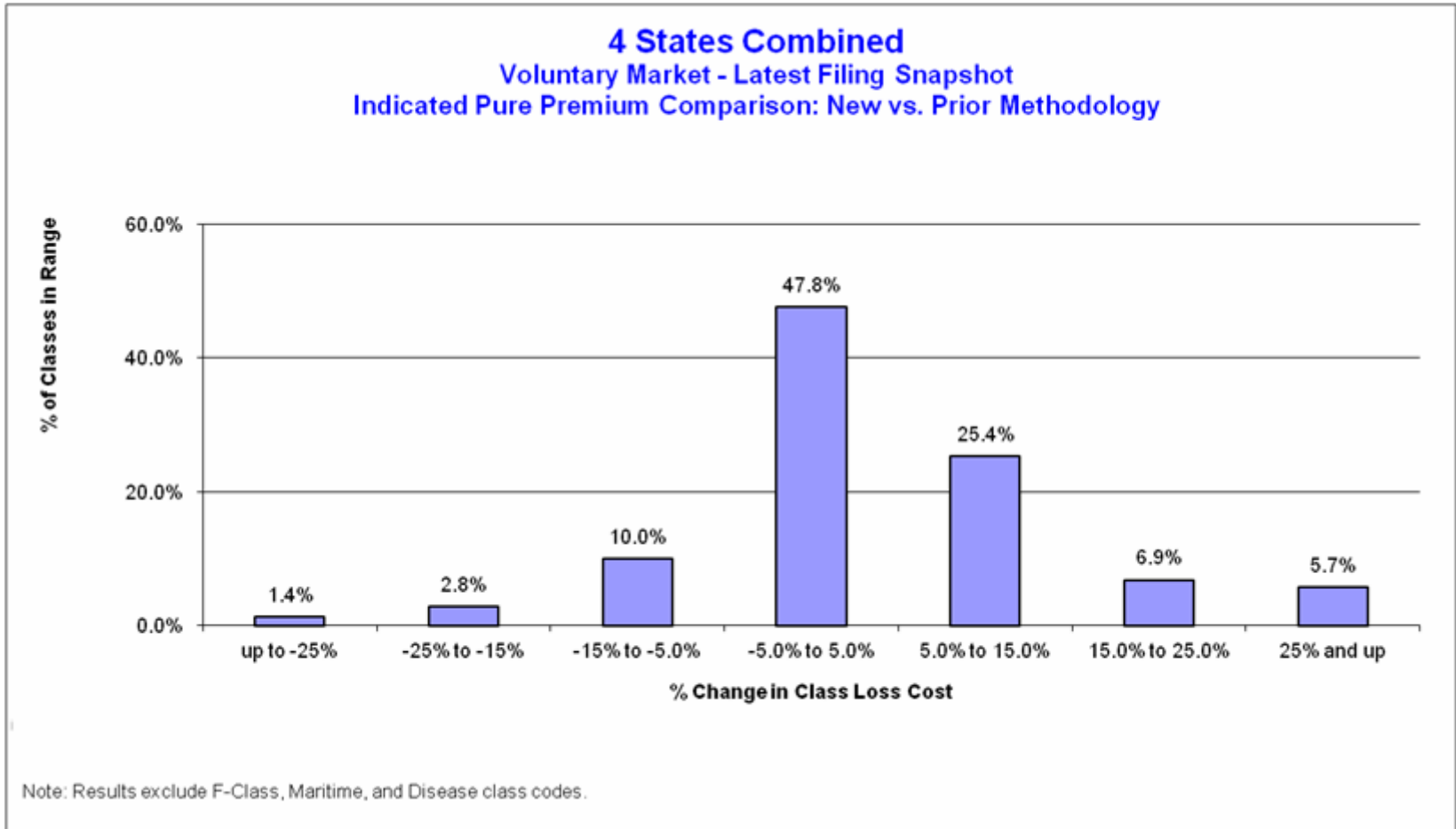
## Description of Analysis

- Objective – Illustrate the 1<sup>st</sup> year impact of implementing the new methodology.
- NCCI reproduced the latest filing (2009) in certain test states using the new methodology.
- The analysis used the same five years of reconciled payroll and losses by class code as was used in the 2009 filing.
- In each case the original filed amount was achieved. Thus the impact of the “new” methodology on statewide premium was 0% for each test state.
- The 1<sup>st</sup> year impact on loss costs and indicated pure premiums by class was computed.
- Results were examined by industry group, and across all classes in the state.

# Estimated Impact in First Year Loss Cost Changes



# Estimated Impact in First Year Indicated Pure Premiums Changes



# Estimated Impact in First Year

## General Observations

- In this analysis Class Relativities are a zero sum exercise as the current and the new methodology target the same state-specific overall change.
- Loss cost changes by class code were modest, with nearly 75% of all class code changes between [-5%, +5%] from current to new methodology.
- 25% of class codes had meaningful changes beyond +/- 5%.
- Less than 1% of class codes changed by more than +/-15%.
- Two of the test states use swing limits of 25%. The other two use swing limits of 20% and 15%.
- Indicated pure premiums vary more than loss costs, having about 48% of all class codes between [-5%, +5%].

# Test State Illustrations

## Results By State Across Industry Groups

Industry Group Change: Snapshot of New to Current

	<u>State 1</u>	<u>State 2</u>	<u>State 3</u>	<u>State 4</u>	<u>Straight Average</u>
Manuf.	-0.3%	0.0%	4.4%	2.2%	1.6%
Contr.	-0.7%	-1.9%	-3.8%	-2.0%	-2.1%
O & C	-0.7%	0.5%	-0.3%	1.4%	0.2%
G & S	-0.5%	0.6%	0.1%	2.3%	0.6%
Misc.	3.7%	2.0%	0.1%	-1.6%	1.1%
Total	0%	0%	0%	0%	0%

# Test State Illustrations

## Observations by Industry Group

- Consistent with the past large state/small state analysis presented in the past, the Contracting IG change exhibited a decrease across all 4 states.
- Goods and Services and the Miscellaneous groups exhibited an increase across 3 of the 4 states.
- The next 2 slides illustrate the following:
  - Manufacturing contains the most classes.
  - Contracting contains the most premium volume.



# Test State Illustrations

## Manufacturing Contains the Most Classes

### Distribution of Class Codes By Industry Group

	<u>State 1</u>	<u>State 2</u>	<u>State 3</u>	<u>State 4</u>	<u>Straight Average</u>	<u>Percentage</u>
Manuf.	271	257	254	249	258	48%
Contr.	87	82	80	80	82	15%
O & C	21	20	20	25	22	4%
G & S	113	112	115	121	115	21%
Misc.	65	59	62	64	63	12%
Total	557	530	531	539	539	100%

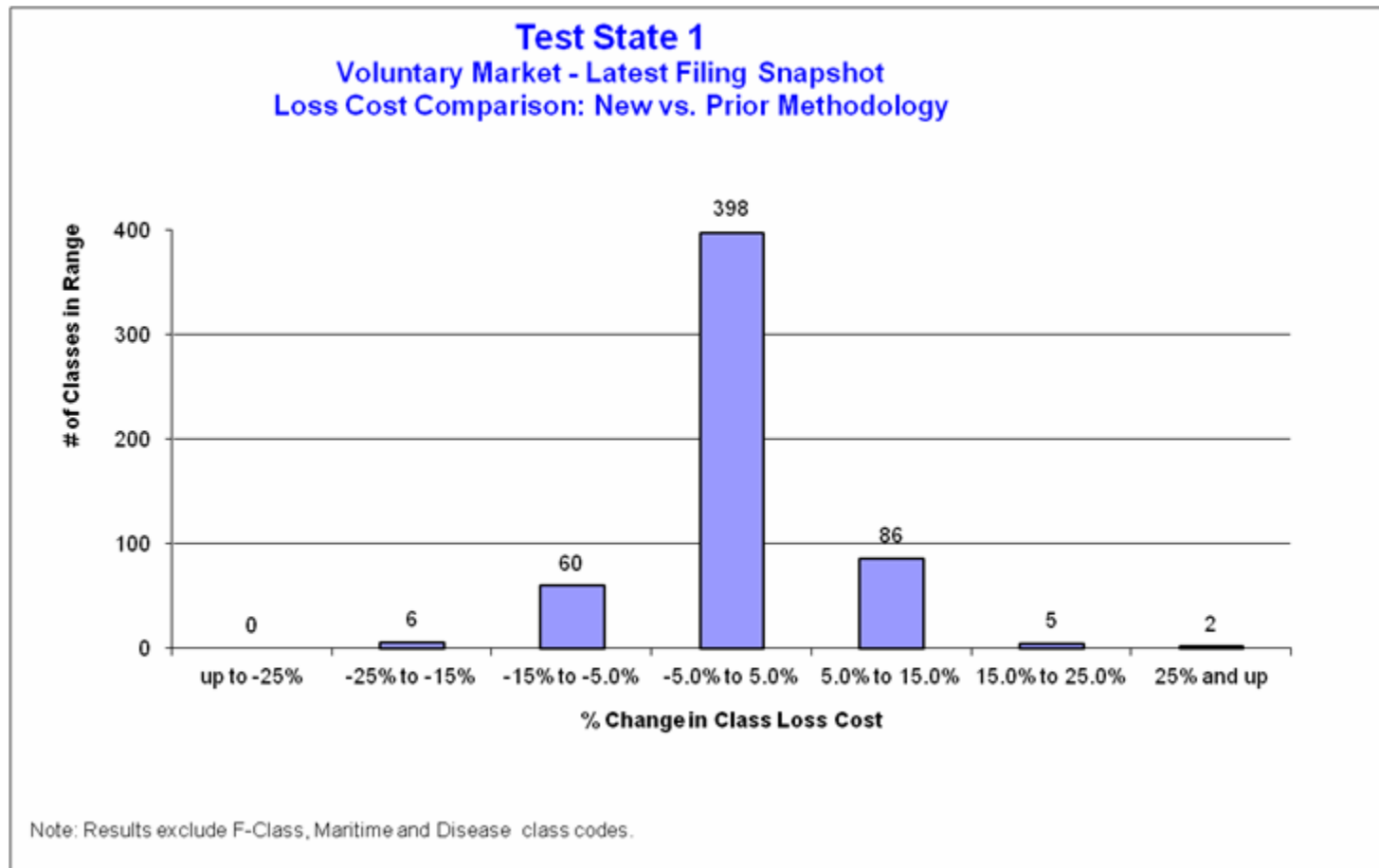
# Test State Illustrations

## Contractors Contain the Most Premium Volume

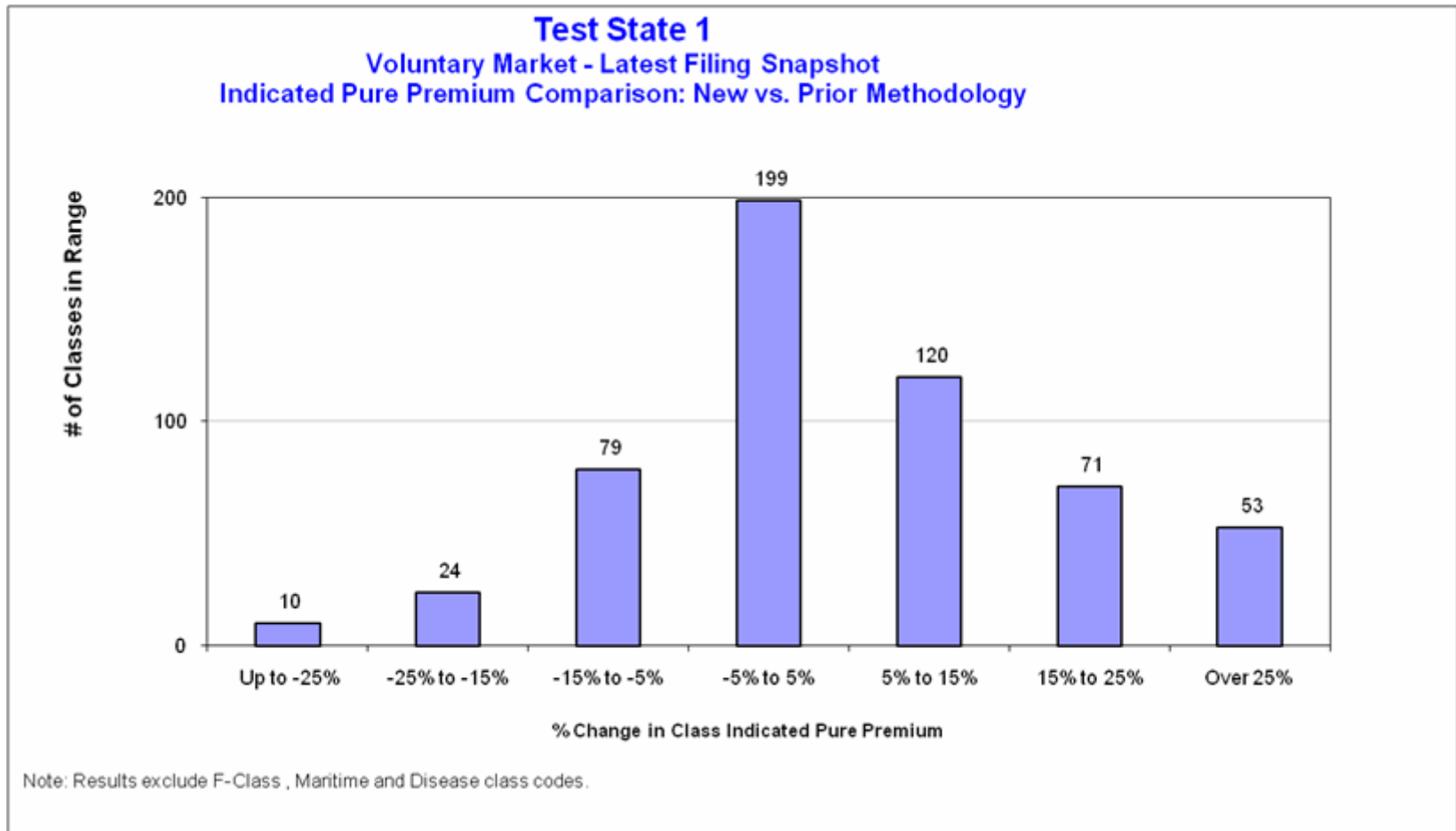
### Distribution of Premium By Industry Group

	<u>State 1</u>	<u>State 2</u>	<u>State 3</u>	<u>State 4</u>	<u>Wtd. Avg.</u>
Manuf.	15%	21%	21%	8%	19%
Contr.	28%	29%	25%	41%	29%
O & C	13%	11%	12%	10%	11%
G & S	27%	25%	27%	27%	26%
Misc.	18%	14%	15%	14%	15%
Total	100%	100%	100%	100%	100%

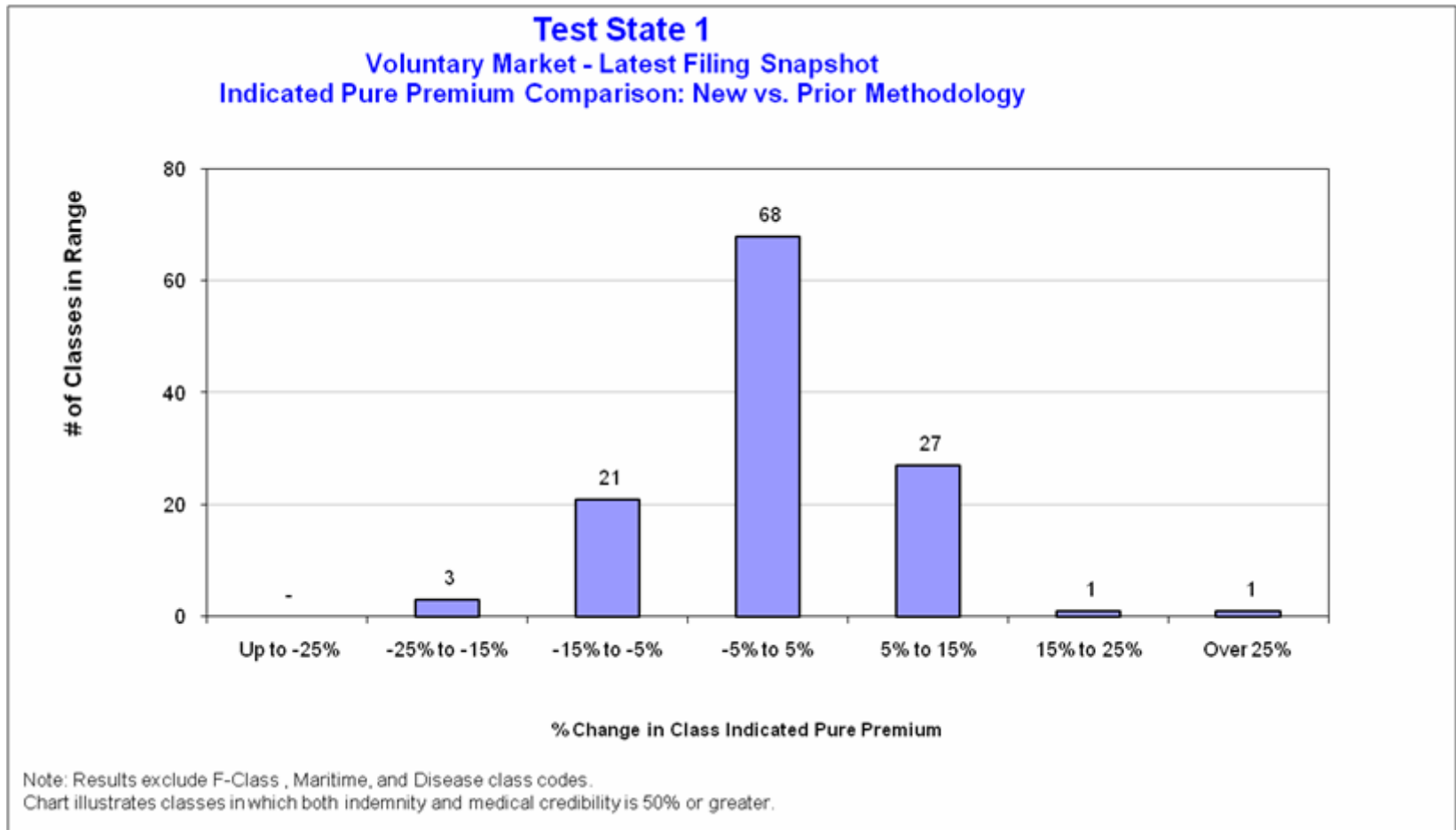
# State 1: Loss Cost Changes All Classes



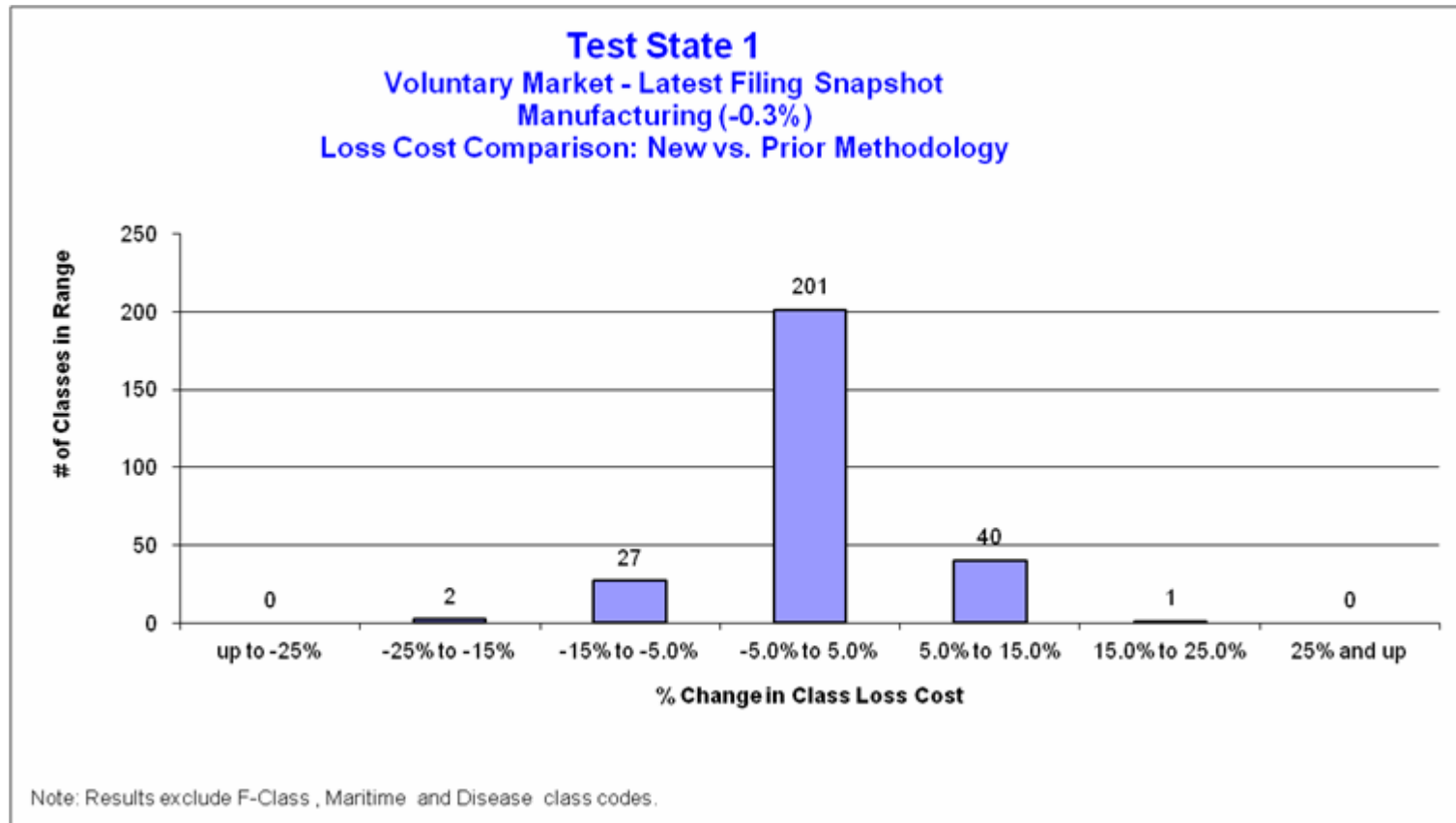
# State 1: All Classes Indicated Pure Premium Changes



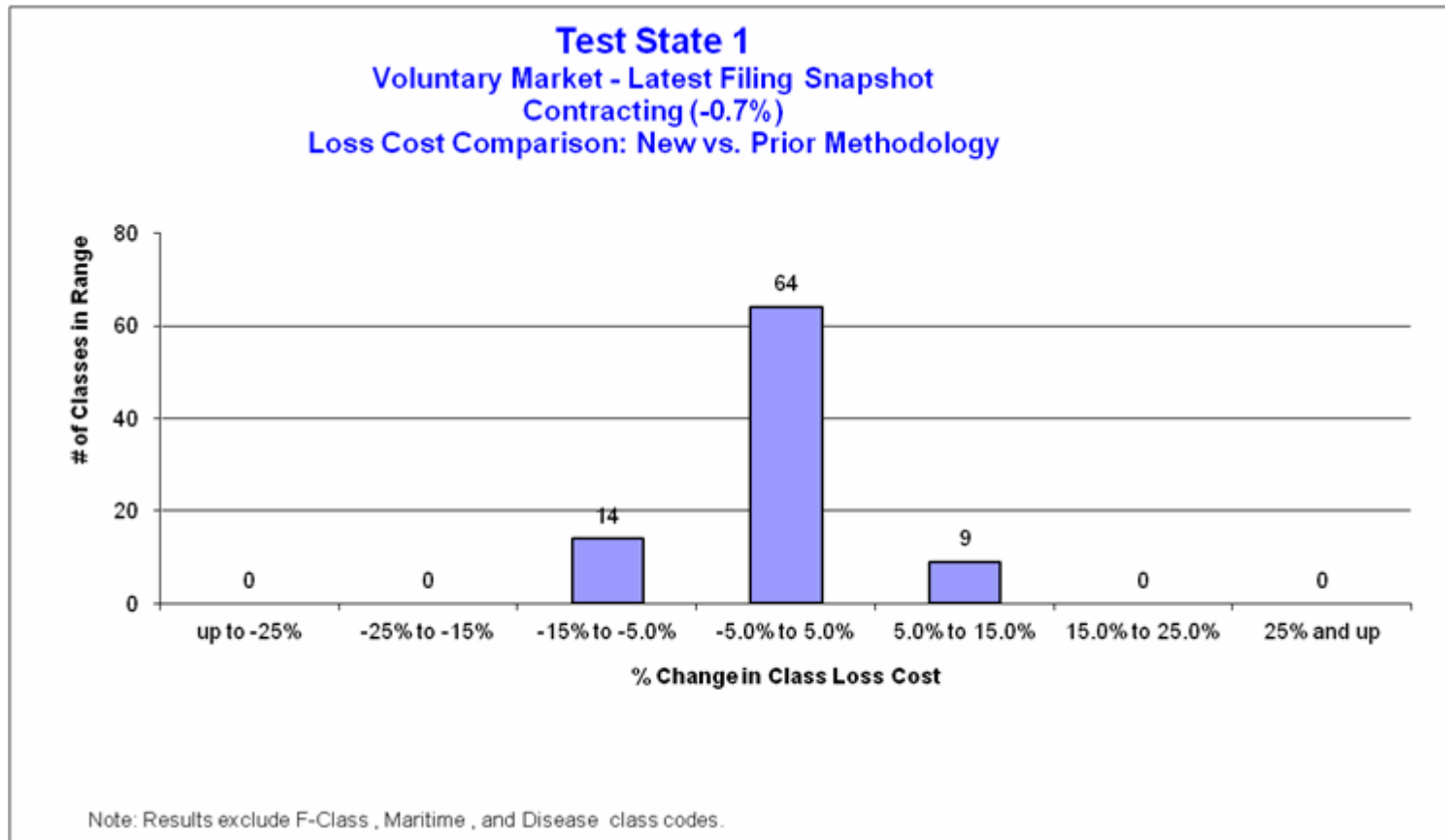
# State 1: High Credibility Classes Indicated Pure Premium Changes



# State 1: Loss Cost Changes Manufacturing

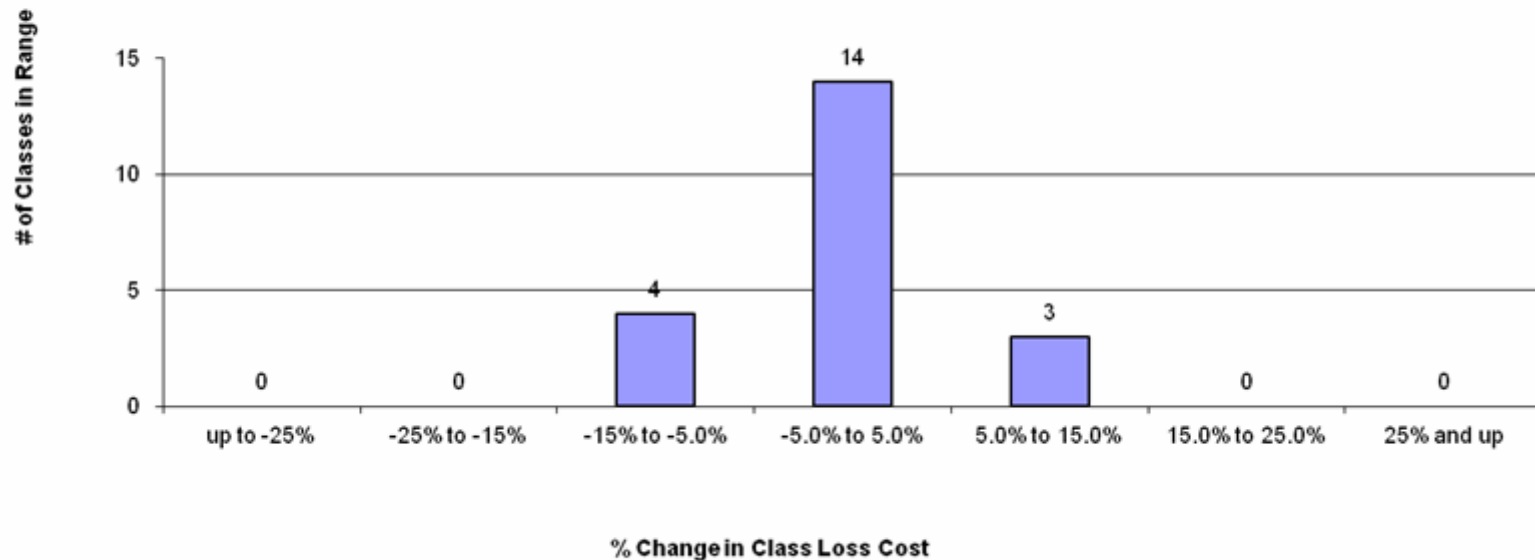


# State 1: Loss Cost Changes Contracting



# State 1: Loss Cost Changes Office & Clerical

**Test State 1**  
Voluntary Market - Latest Filing Snapshot  
Office and Clerical (-0.7%)  
Loss Cost Comparison: New vs. Prior Methodology

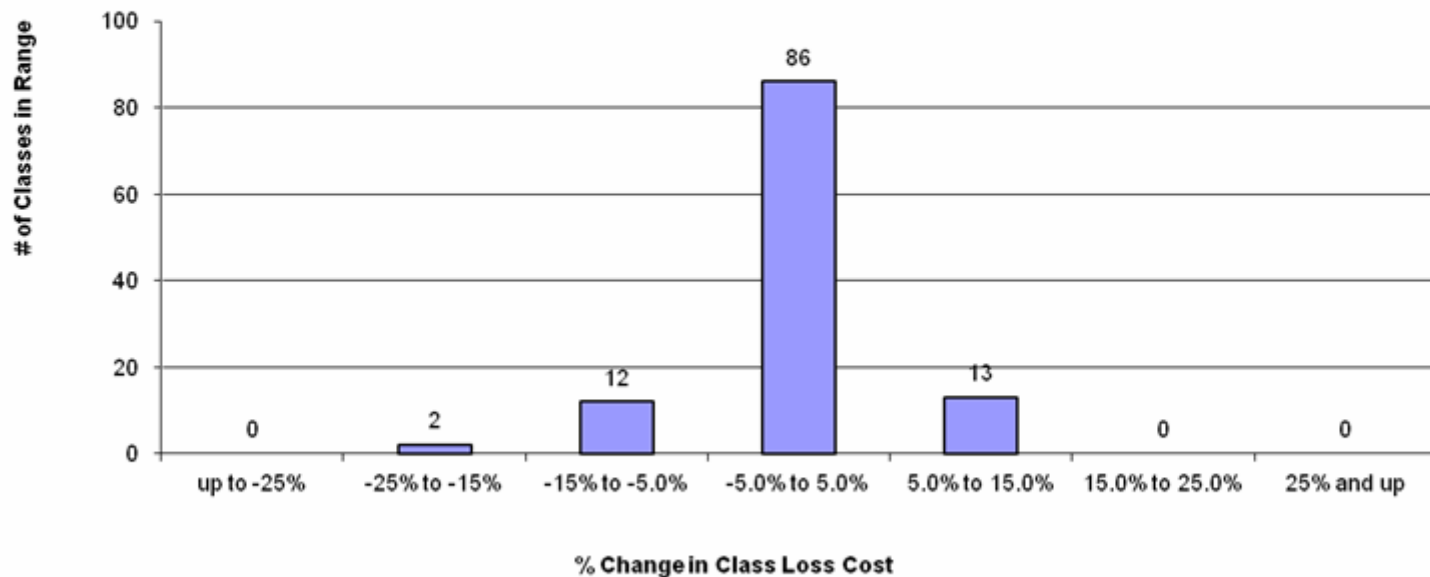


Note: Results exclude F-Class , Maritime , and Disease class codes.



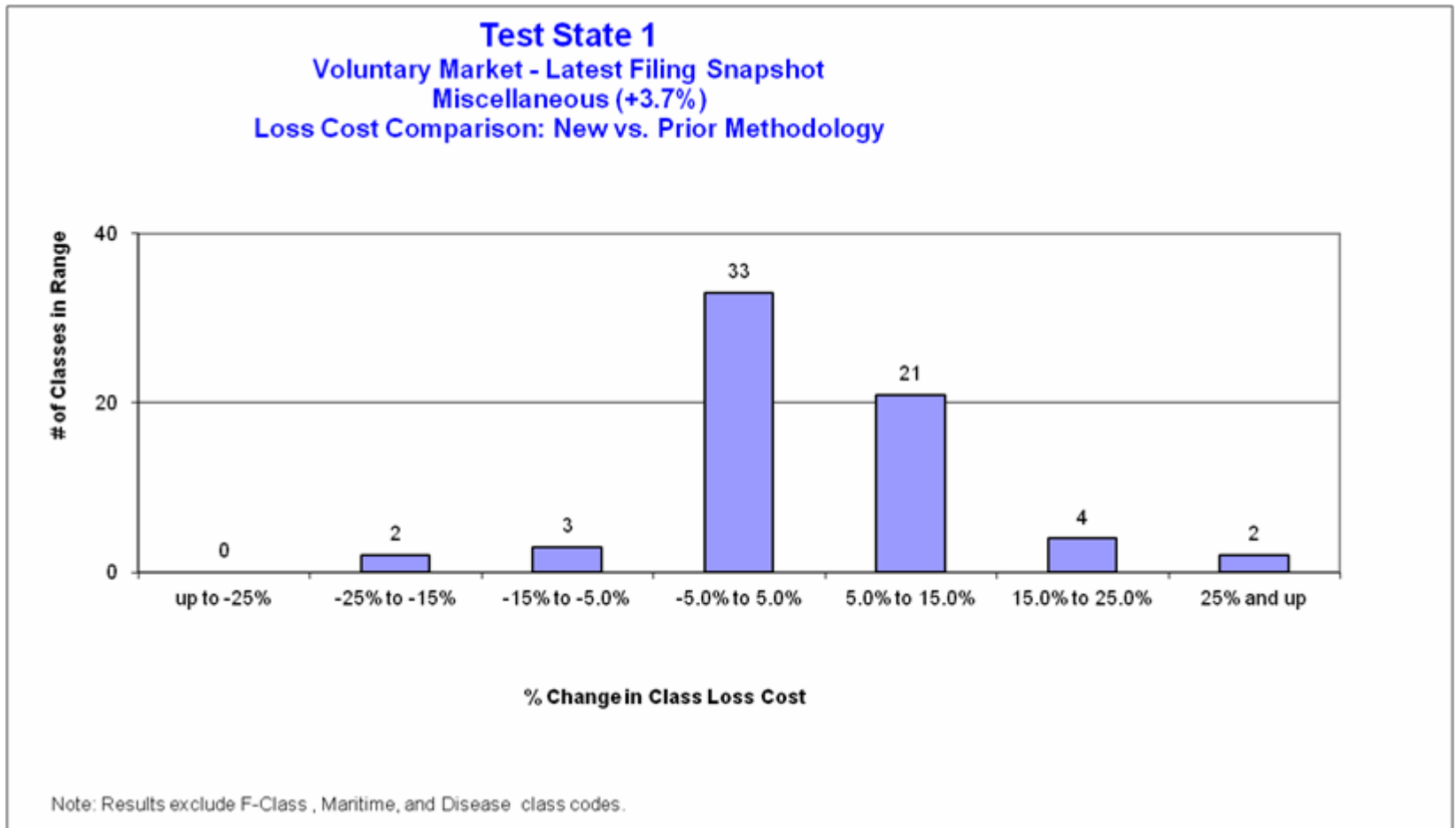
# State 1: Loss Cost Changes Goods & Services

**Test State 1**  
Voluntary Market - Latest Filing Snapshot  
Goods and Services (-0.5%)  
Loss Cost Comparison: New vs. Prior Methodology



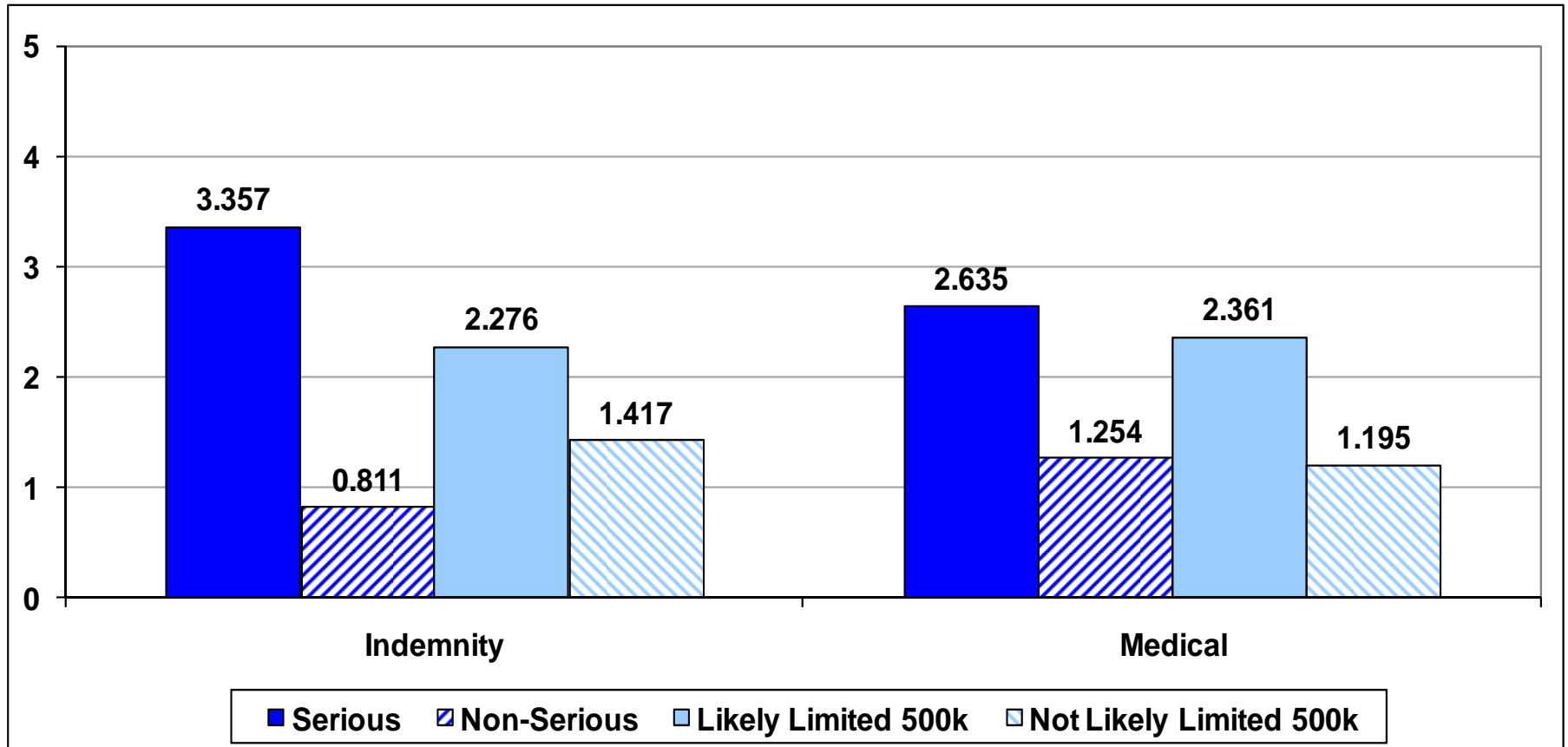
Note: Results exclude F-Class , Maritime and Disease class codes.

# State 1: Loss Cost Changes Miscellaneous



# State 1: Loss Development Comparison

## 1<sup>st</sup> to Ultimate LDF's



# Distribution of Class Loss Cost Changes Manufacturing

% change in class Loss Cost	State 1	State 2	State 3	State 4
up to -25%	0%	0%	0%	0%
-25% to -15%	1%	0%	0%	0%
-15% to -5.0%	10%	4%	1%	2%
-5.0% to 5.0%	74%	92%	51%	76%
5.0% to 15.0%	15%	4%	48%	21%
15.0% to 25.0%	0%	0%	0%	0%
25% and up	0%	0%	0%	0%
Total	100%	100%	100%	100%

# Distribution of Class Loss Cost Changes Contracting

% change in class Loss Cost	State 1	State 2	State 3	State 4
up to -25%	0%	0%	0%	0%
-25% to -15%	0%	0%	0%	0%
-15% to -5.0%	16%	18%	24%	25%
-5.0% to 5.0%	74%	73%	75%	70%
5.0% to 15.0%	10%	9%	1%	4%
15.0% to 25.0%	0%	0%	0%	1%
25% and up	0%	0%	0%	0%
Total	100%	100%	100%	100%

# Distribution of Class Loss Cost Changes Office & Clerical

% change in class Loss Cost	State 1	State 2	State 3	State 4
up to -25%	0%	0%	0%	0%
-25% to -15%	0%	0%	0%	0%
-15% to -5.0%	19%	5%	20%	8%
-5.0% to 5.0%	67%	90%	80%	72%
5.0% to 15.0%	14%	5%	0%	20%
15.0% to 25.0%	0%	0%	0%	0%
25% and up	0%	0%	0%	0%
Total	100%	100%	100%	100%

# Distribution of Class Loss Cost Changes Goods & Services

% change in class Loss Cost	State 1	State 2	State 3	State 4
up to -25%	0%	0%	0%	1%
-25% to -15%	2%	0%	1%	1%
-15% to -5.0%	11%	9%	3%	3%
-5.0% to 5.0%	76%	85%	92%	79%
5.0% to 15.0%	12%	6%	4%	16%
15.0% to 25.0%	0%	0%	0%	0%
25% and up	0%	0%	0%	1%
Total	100%	100%	100%	100%

# Distribution of Class Loss Cost Changes Miscellaneous

% change in class Loss Cost	State 1	State 2	State 3	State 4
up to -25%	0%	0%	0%	0%
-25% to -15%	3%	0%	0%	0%
-15% to -5.0%	5%	7%	3%	16%
-5.0% to 5.0%	51%	68%	79%	75%
5.0% to 15.0%	32%	25%	18%	9%
15.0% to 25.0%	6%	0%	0%	0%
25% and up	3%	0%	0%	0%
Total	100%	100%	100%	100%



# Transition Plan for New Methodology

- In 1<sup>st</sup> year of implementation (2009/2010 filings):
  - State indicated pure premiums in year 1 will be based on the new methodology.
  - National and Present-On-Rate level pure premiums in year 1 will be based on the latest approved loss costs (which reflect the current methodology).
  
- NCCI will begin using updated (for new methodology) National pure premiums in the 2<sup>nd</sup> year of implementation (2010/2011 filings).
  
- This approach introduces the new methodology in a gradual fashion and enhances stability.

# Illustration of New "A-Sheet"

## Prototype Example of Individual Class Experience New Class Ratemaking "A-sheet"



**NCCI STATE**

Not Actual Data

EFFECTIVE 10/1/2009

CLASS 0005		FARM: NURSERY EMPLOYEES & DRIVERS							
Industry Group: Goods and Services Hazard Group: C		CONVERTED LOSSES							
POLICY PERIOD	PAYROLL	INDEMNITY LIKELY		INDEMNITY NOT-LIKELY		MED LIKELY AMOUNT	MED NOT-LIKELY AMOUNT	TOTAL AMOUNT	TOTAL PURE PREM.
		CASES	AMOUNT	CASES	AMOUNT				
1/00 through 12/00	104,289,411	12	971,971	149	809,635	2,017,212	1,344,808	5,143,626	4.93
1/01 through 12/01	95,212,252	9	720,051	145	938,682	1,809,371	1,206,248	4,674,352	4.91
1/02 through 12/02	91,875,470	9	2,936,167	113	789,619	2,159,868	1,439,912	7,325,566	7.97
1/03 through 12/03	95,694,758	5	965,850	125	956,498	3,678,125	2,452,083	8,052,556	8.41
1/04 through 12/04	100,221,377	4	1,472,083	152	1,044,262	2,324,077	1,549,385	6,389,807	6.38
5 YR. TOTAL	487,293,268	39	7,066,122	684	4,538,696	11,988,653	7,992,436	31,585,907	6.48
		INDEMNITY				MEDICAL		TOTAL	
		CRED.	PURE PREM.*	CRED.	PURE PREM.*			PURE PREM.*	
Indicated Pure Premium		75%	2.381	100%	4.100			6.48	
Pure Premium Indicated by National Relativity		12%	1.220	0%	3.035			4.26	
Pure Premium Present on Rate Level		13%	1.872	0%	3.967			5.84	
Pure Premium Derived by Formula			2.176		4.100			6.28	

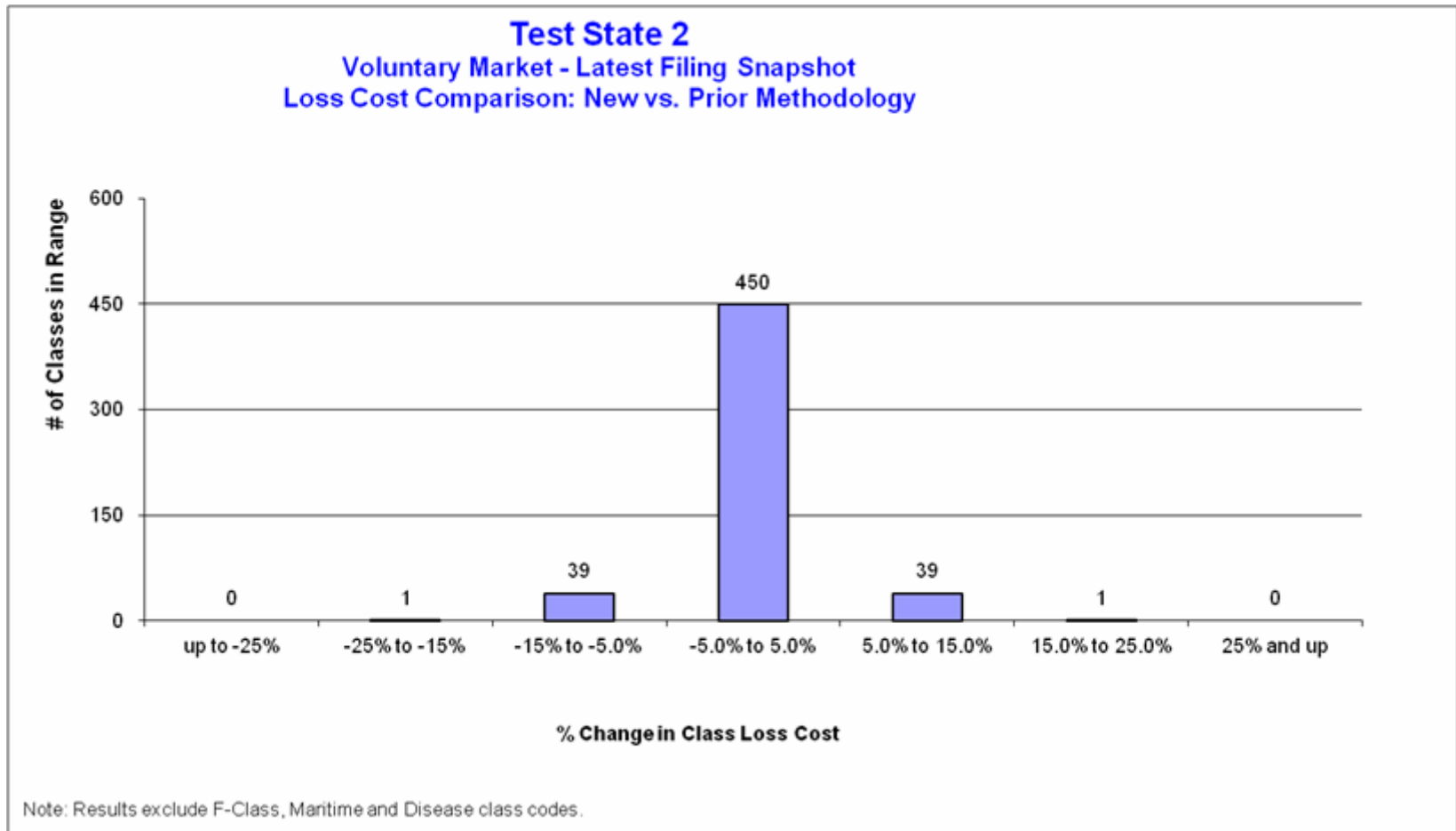


# Q & A

# Appendix

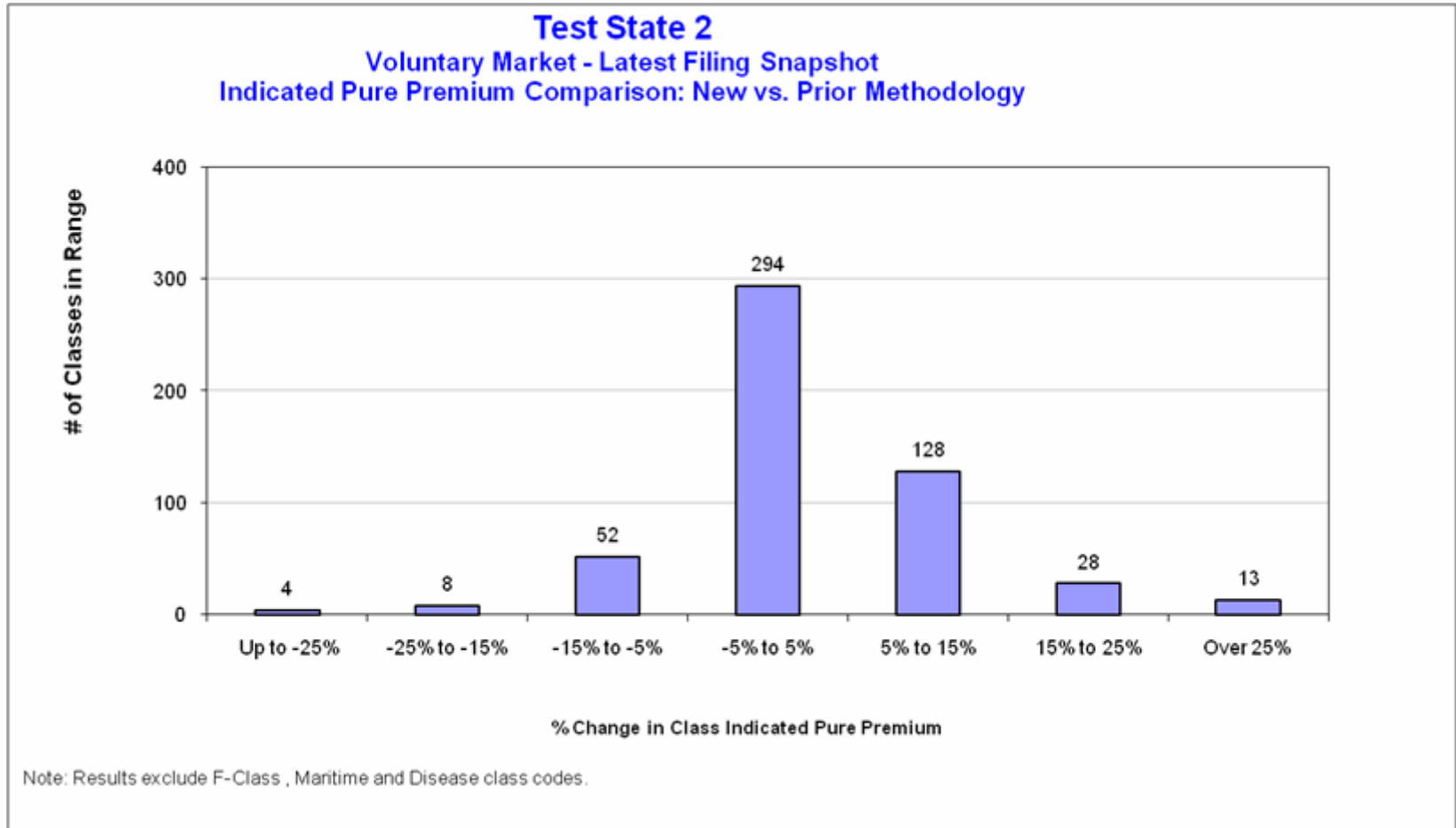
## States 2, 3, and 4: Graphs and Illustrations

# State 2: Loss Cost Changes All Classes

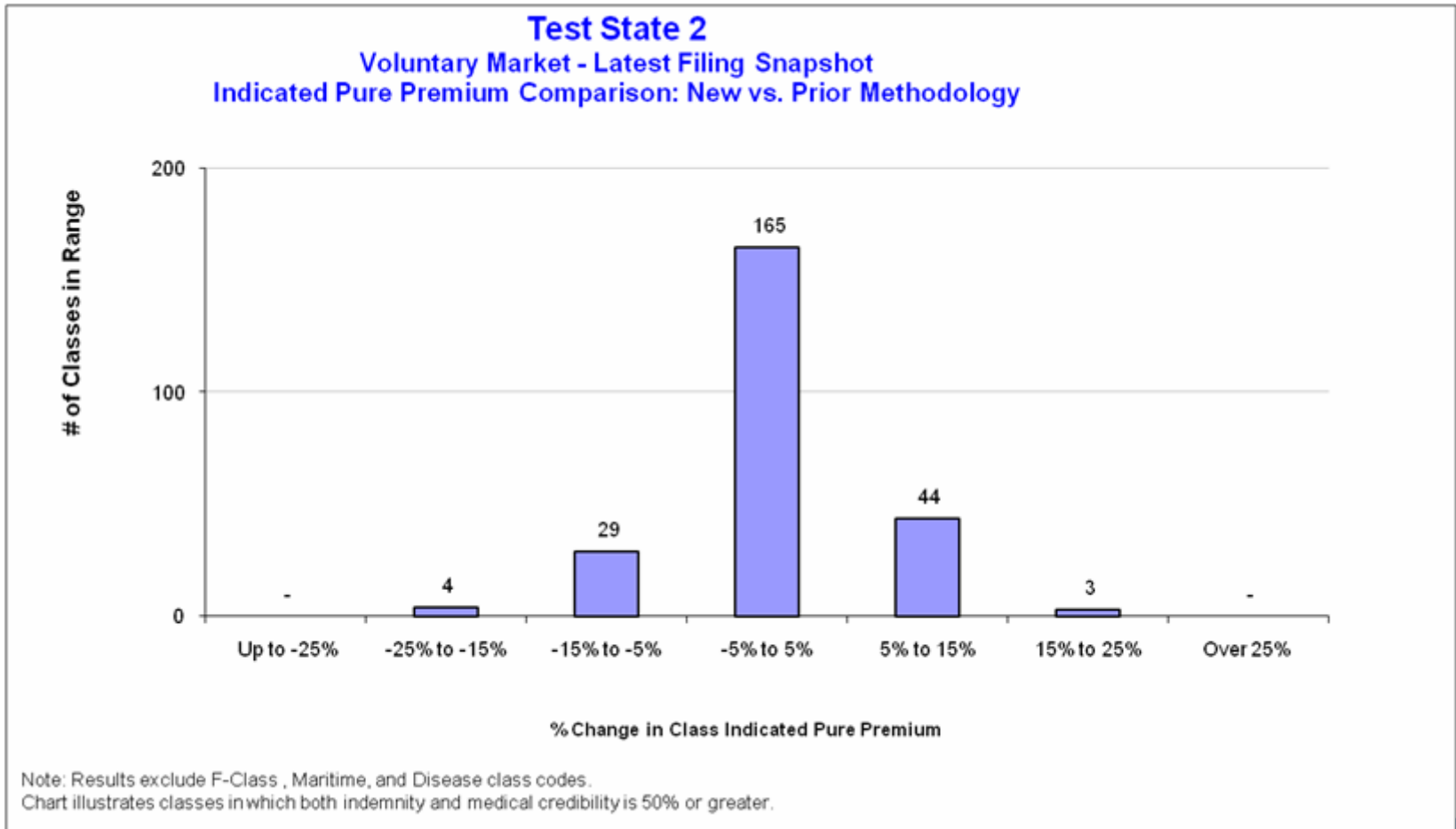


# State 2: All Classes

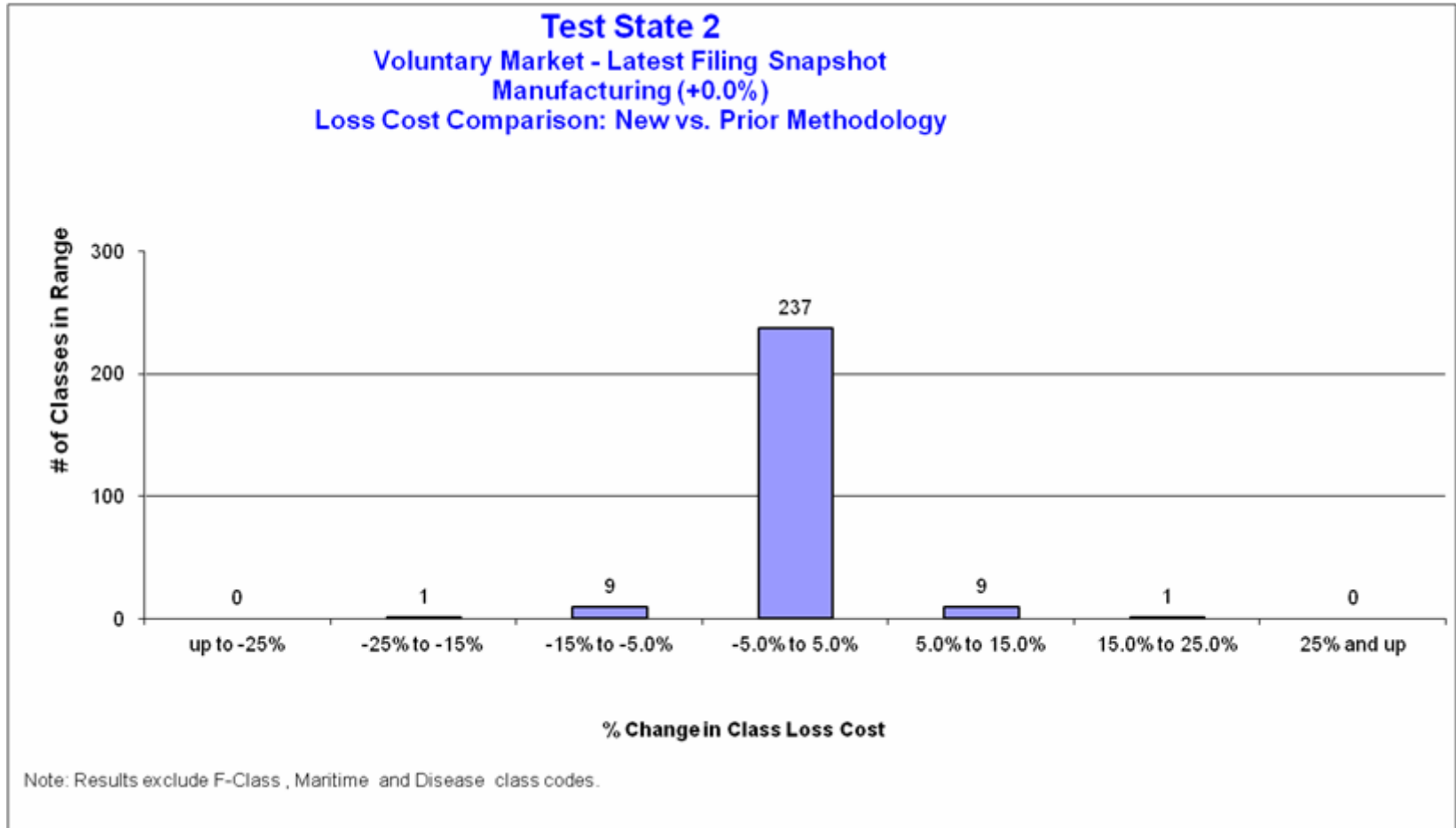
## Indicated Pure Premium Changes



# State 2: High Credibility Classes Indicated Pure Premium Changes

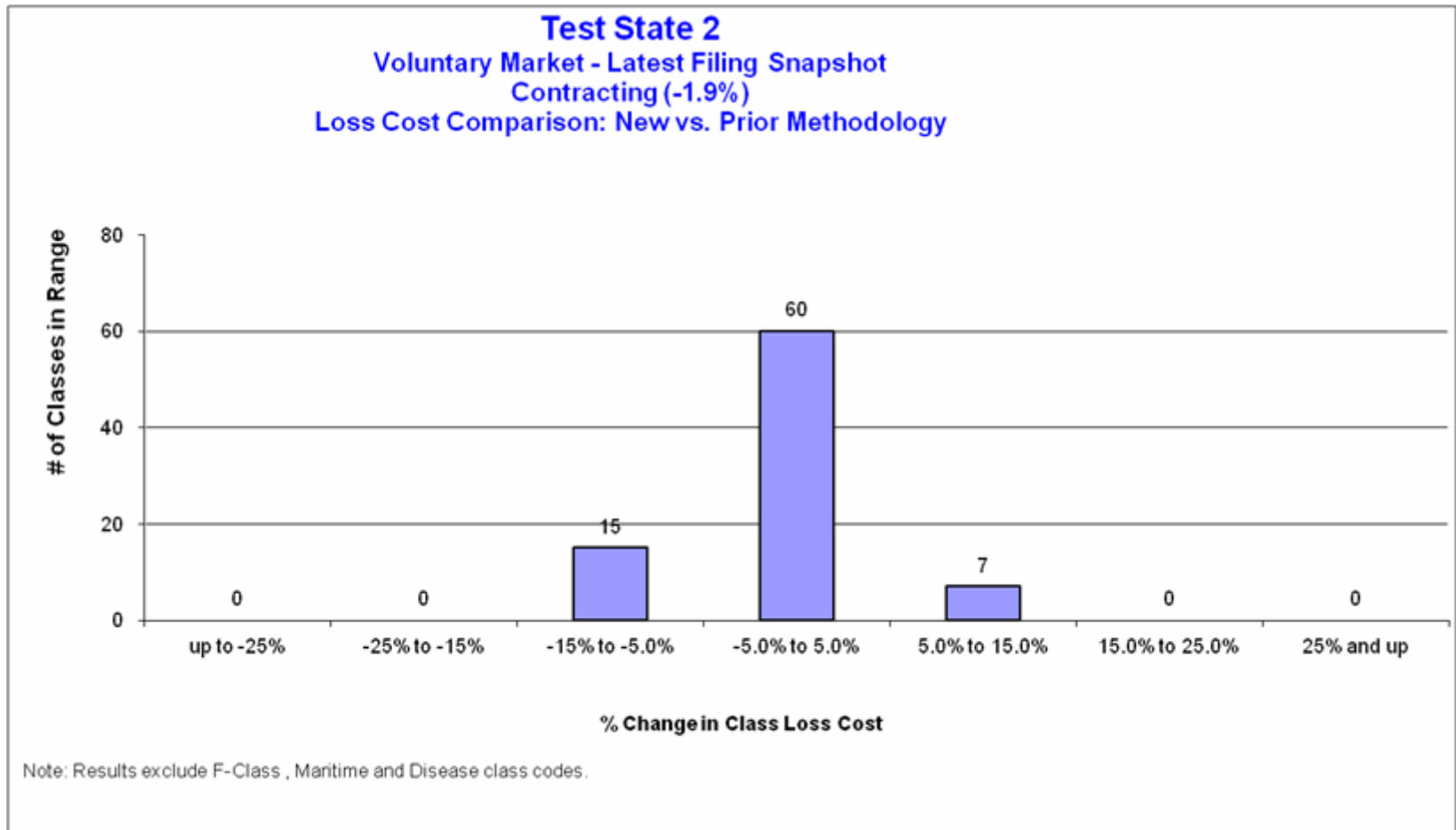


# State 2: Loss Cost Changes Manufacturing

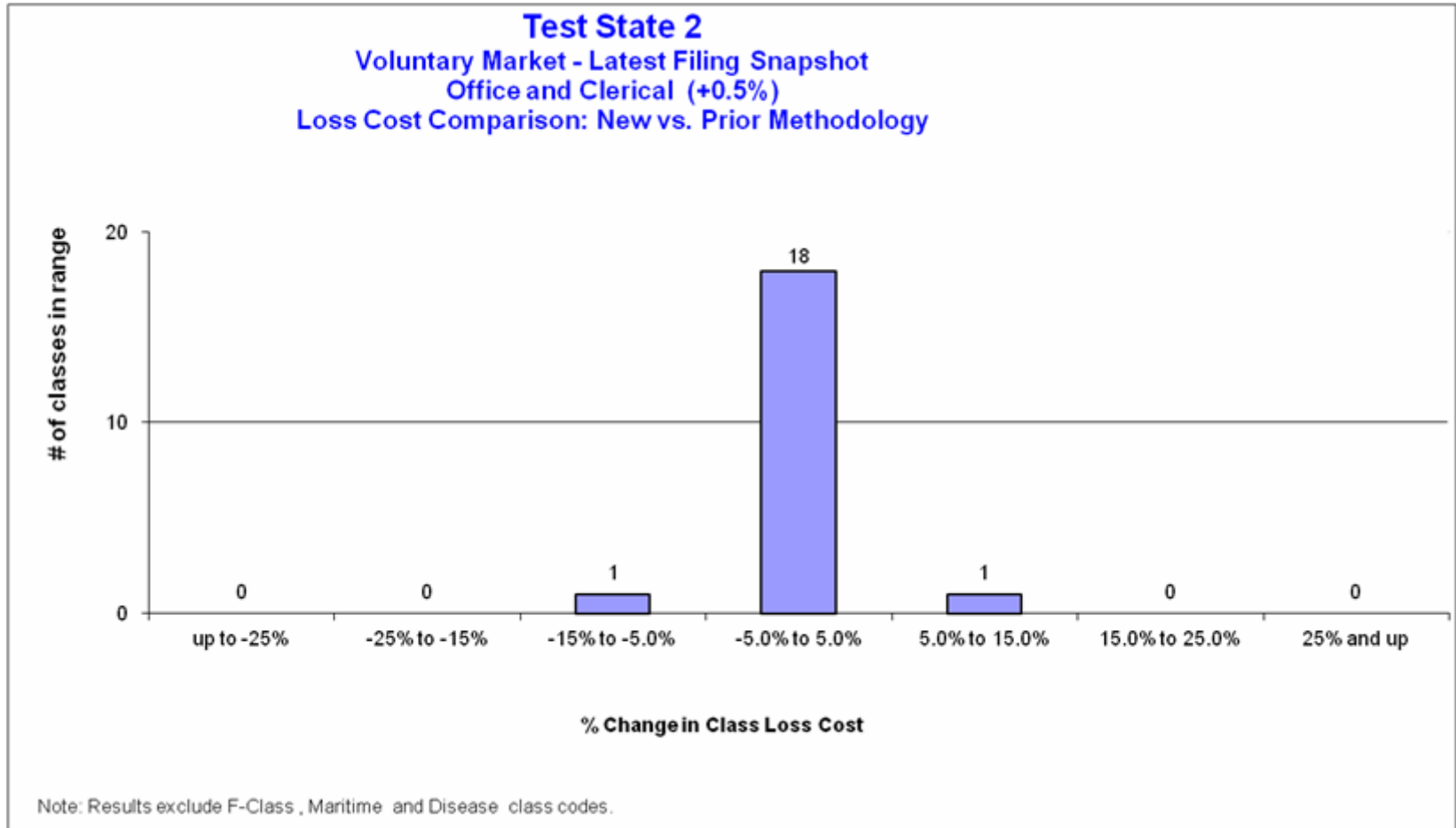




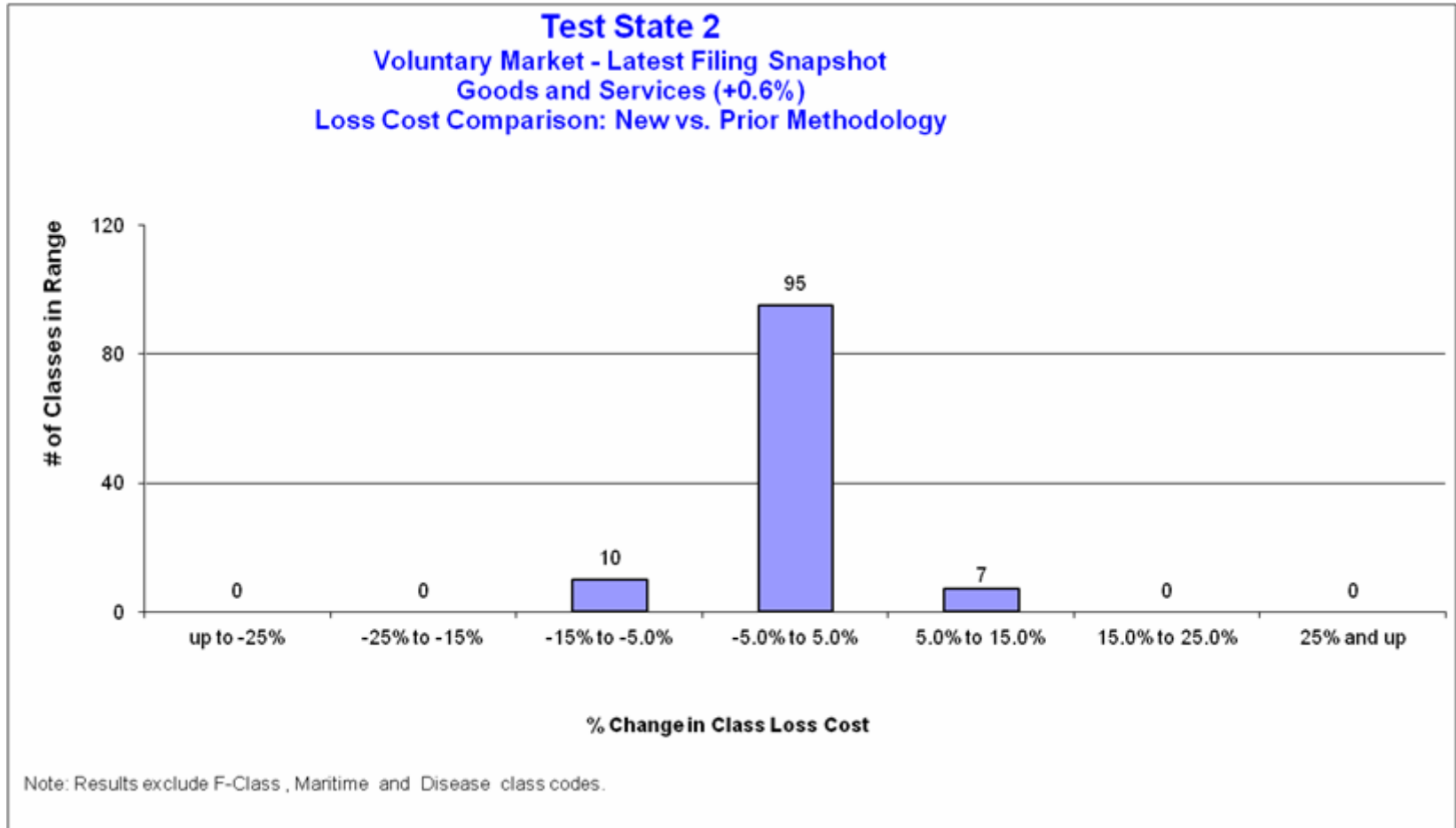
# State 2: Loss Cost Changes Contracting



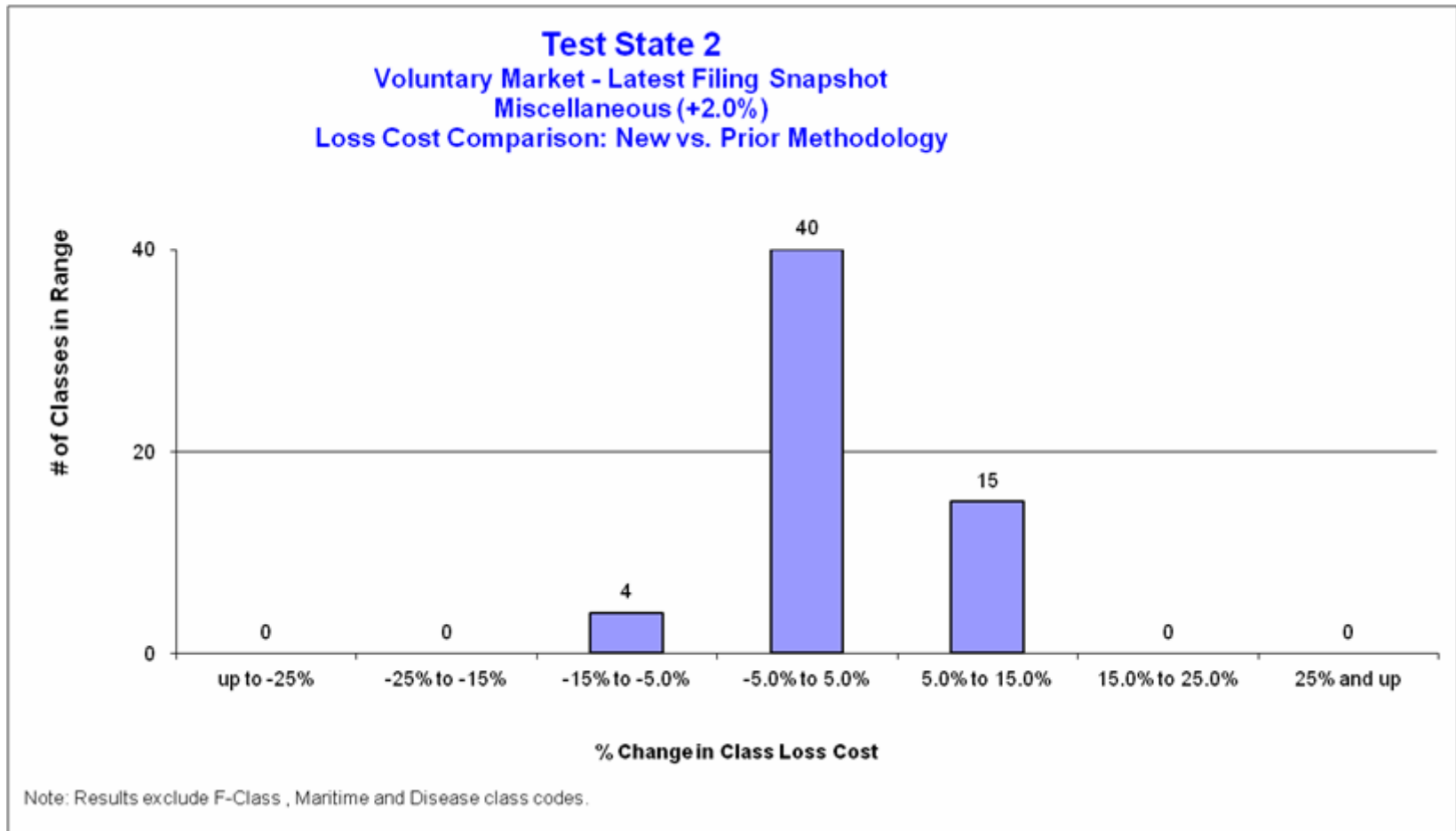
# State 2: Loss Cost Changes Office & Clerical



# State 2: Loss Cost Changes Goods & Services

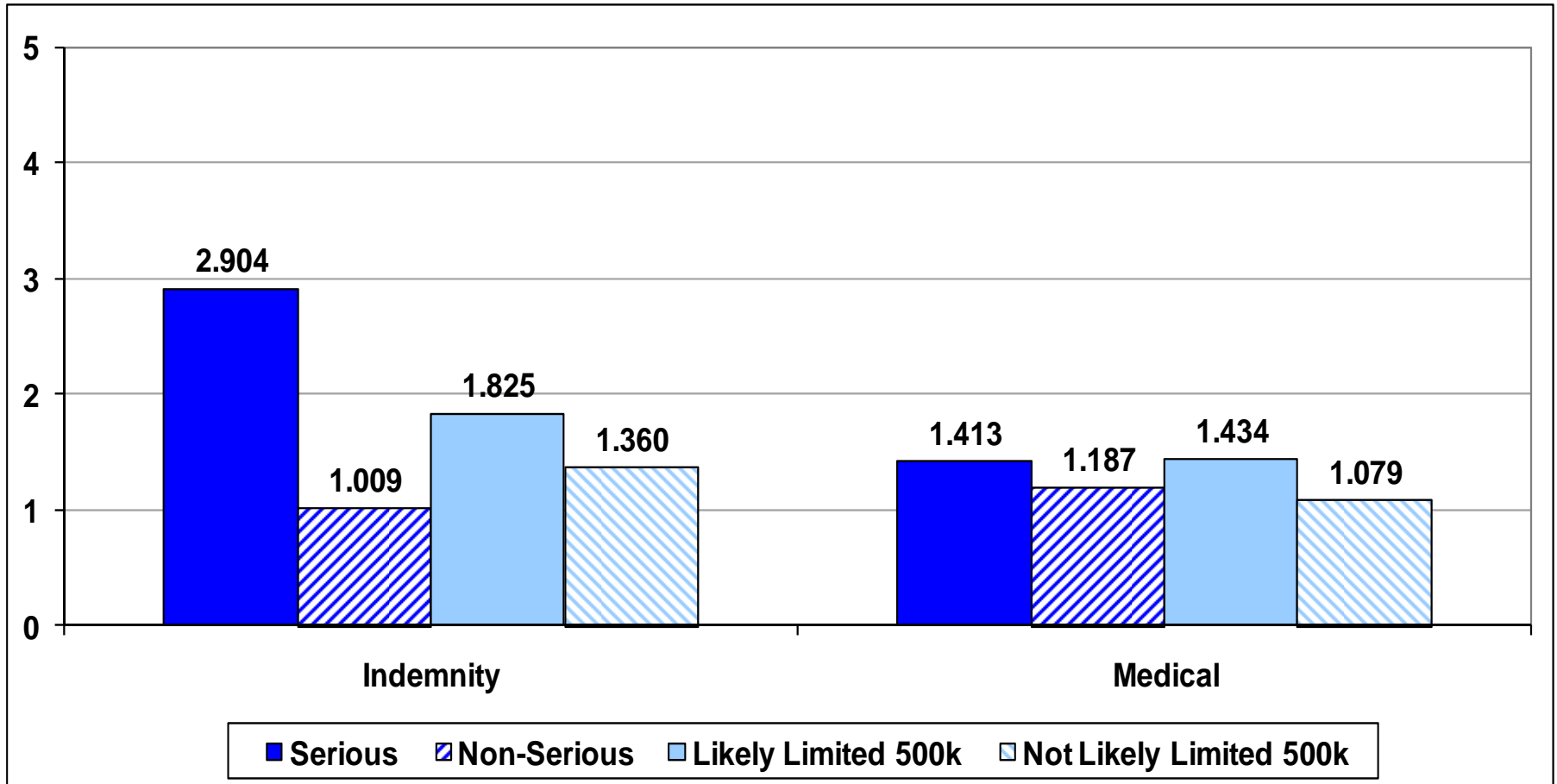


# State 2: Loss Cost Changes Miscellaneous

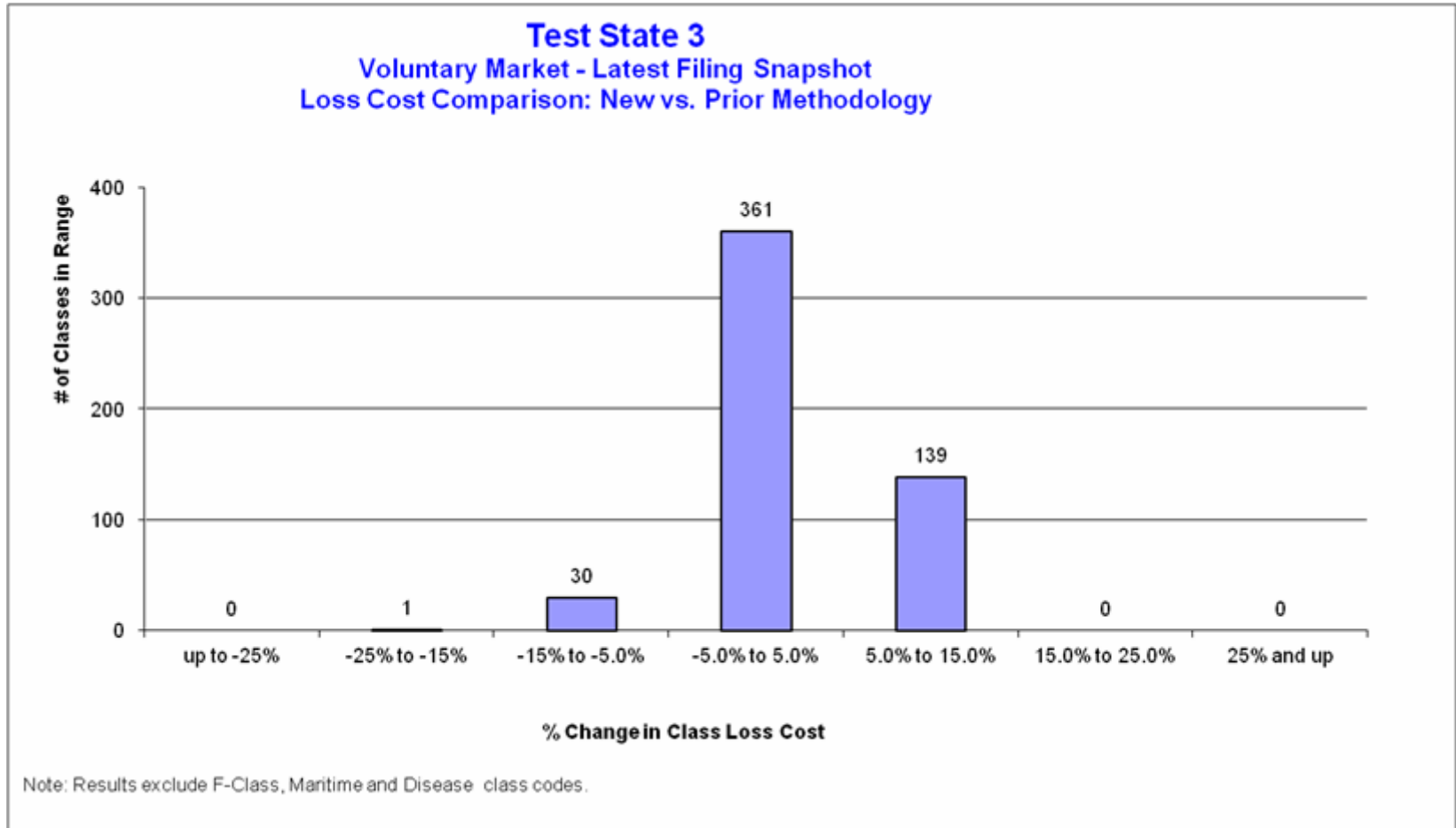


# State 2: Loss Development Comparison

## 1<sup>st</sup> to Ultimate LDF's

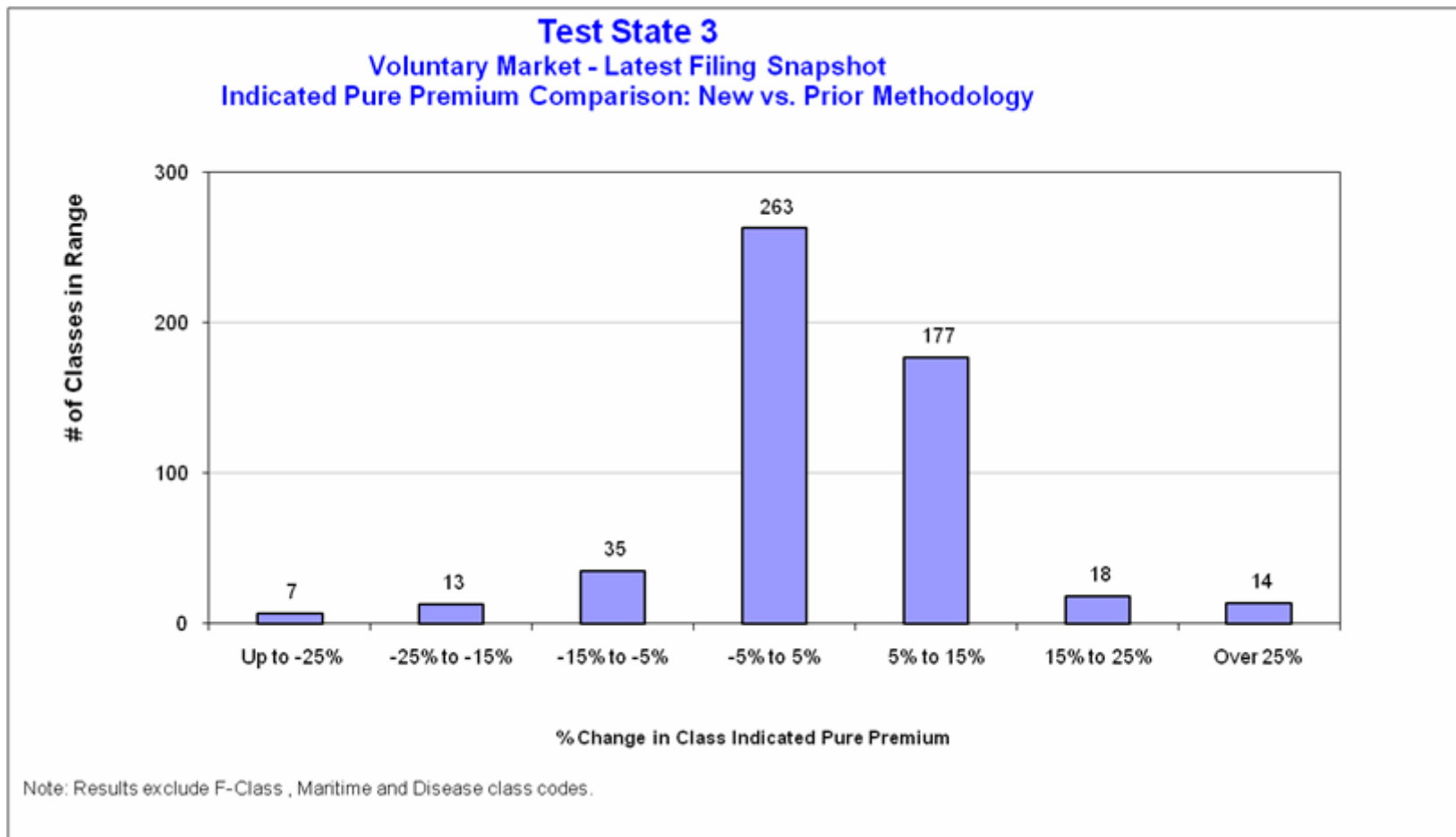


# State 3: Loss Cost Changes All Classes



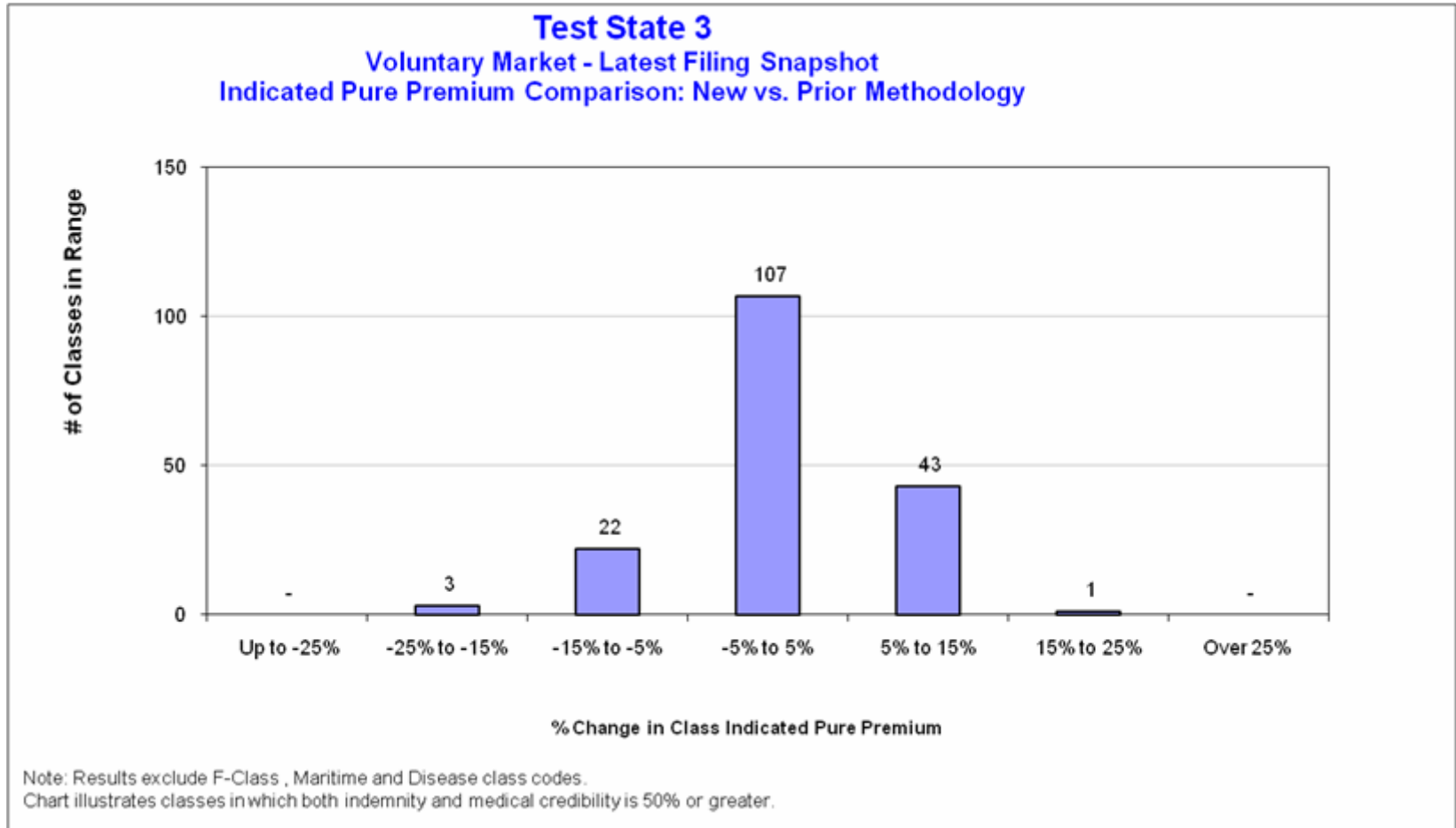
# State 3: All Classes

## Indicated Pure Premium Changes



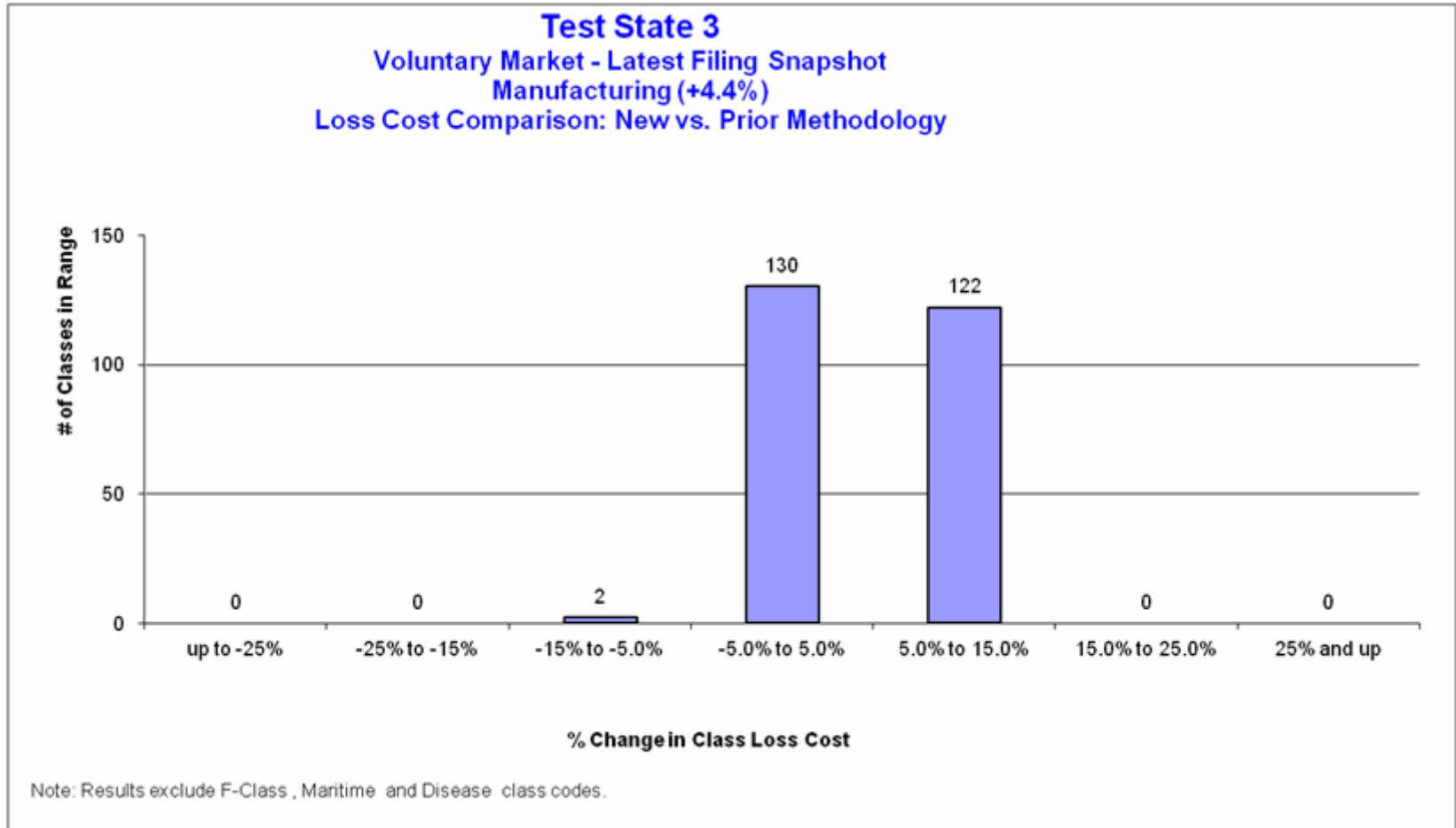
# State 3: High Credibility Classes

## Indicated Pure Premium Changes

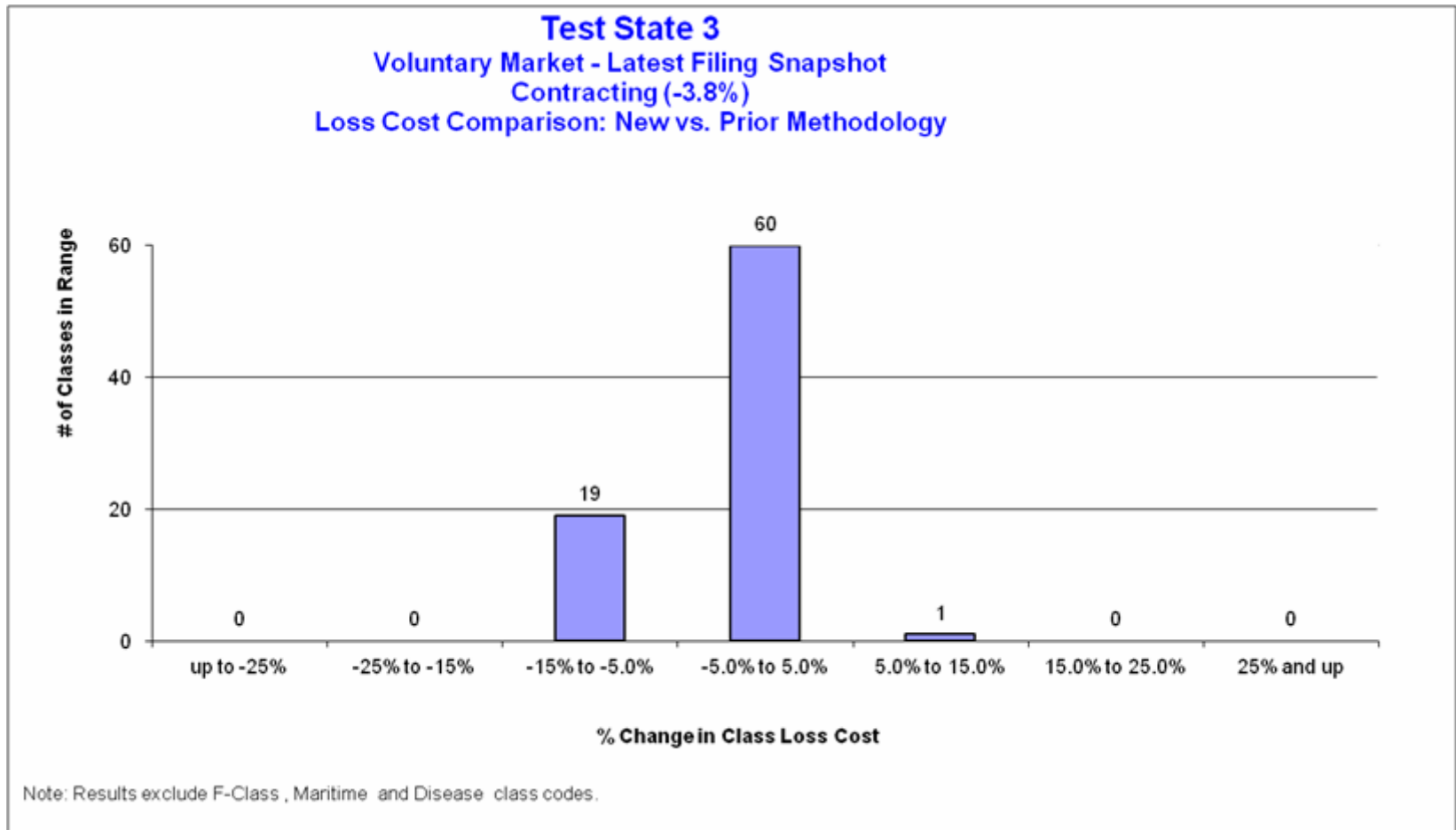




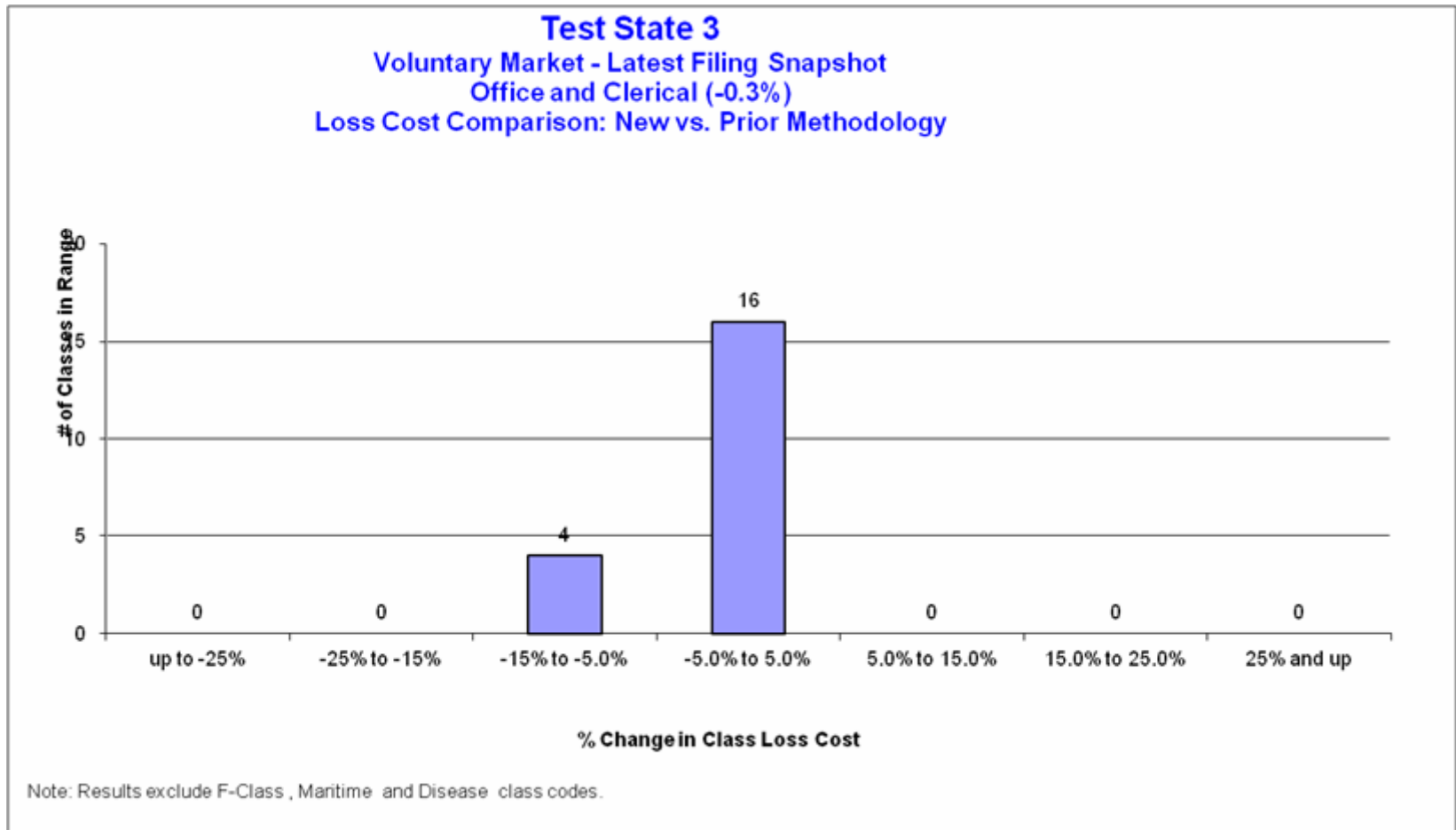
# State 3: Loss Cost Changes Manufacturing



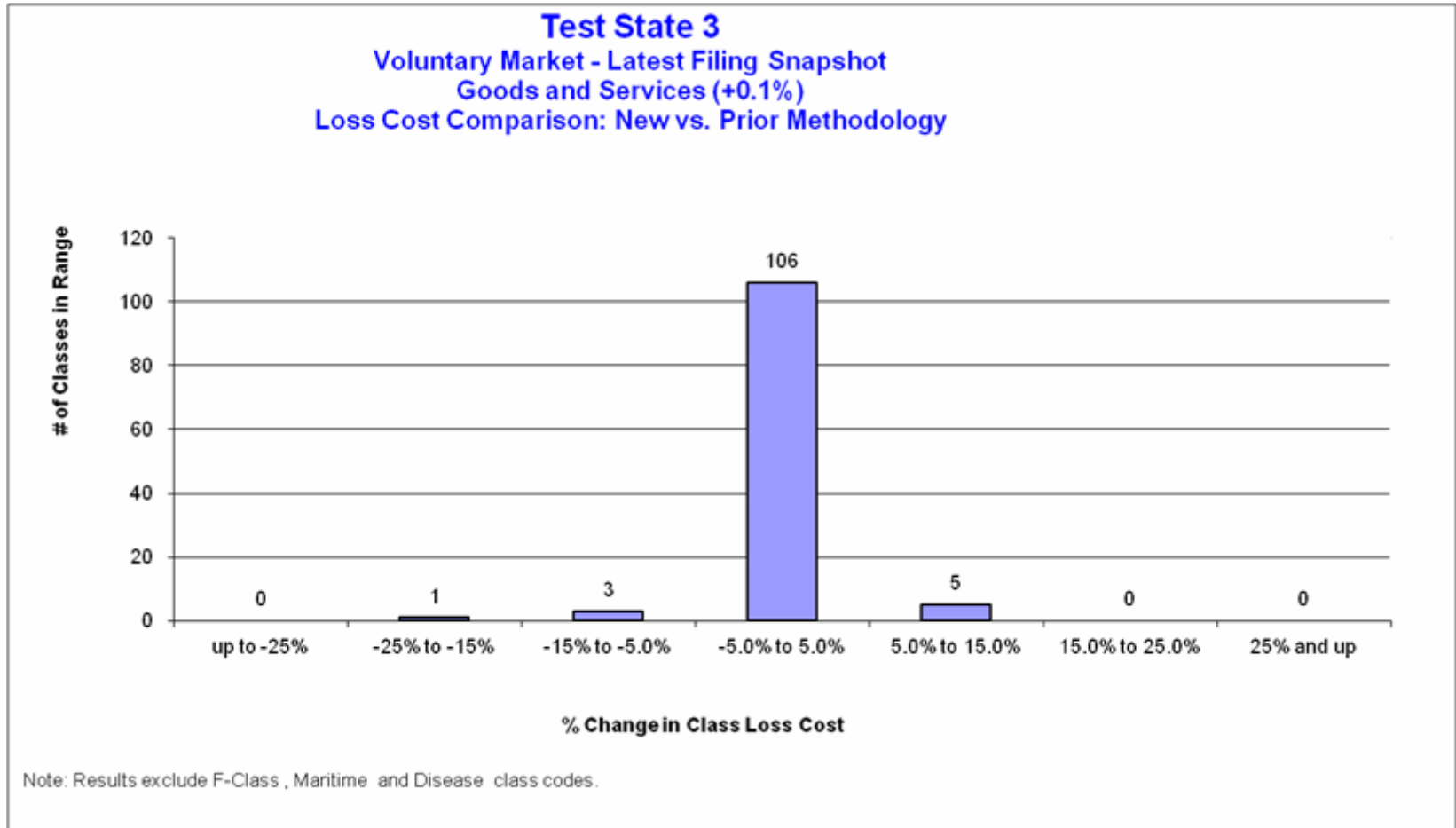
# State 3: Loss Cost Changes Contracting



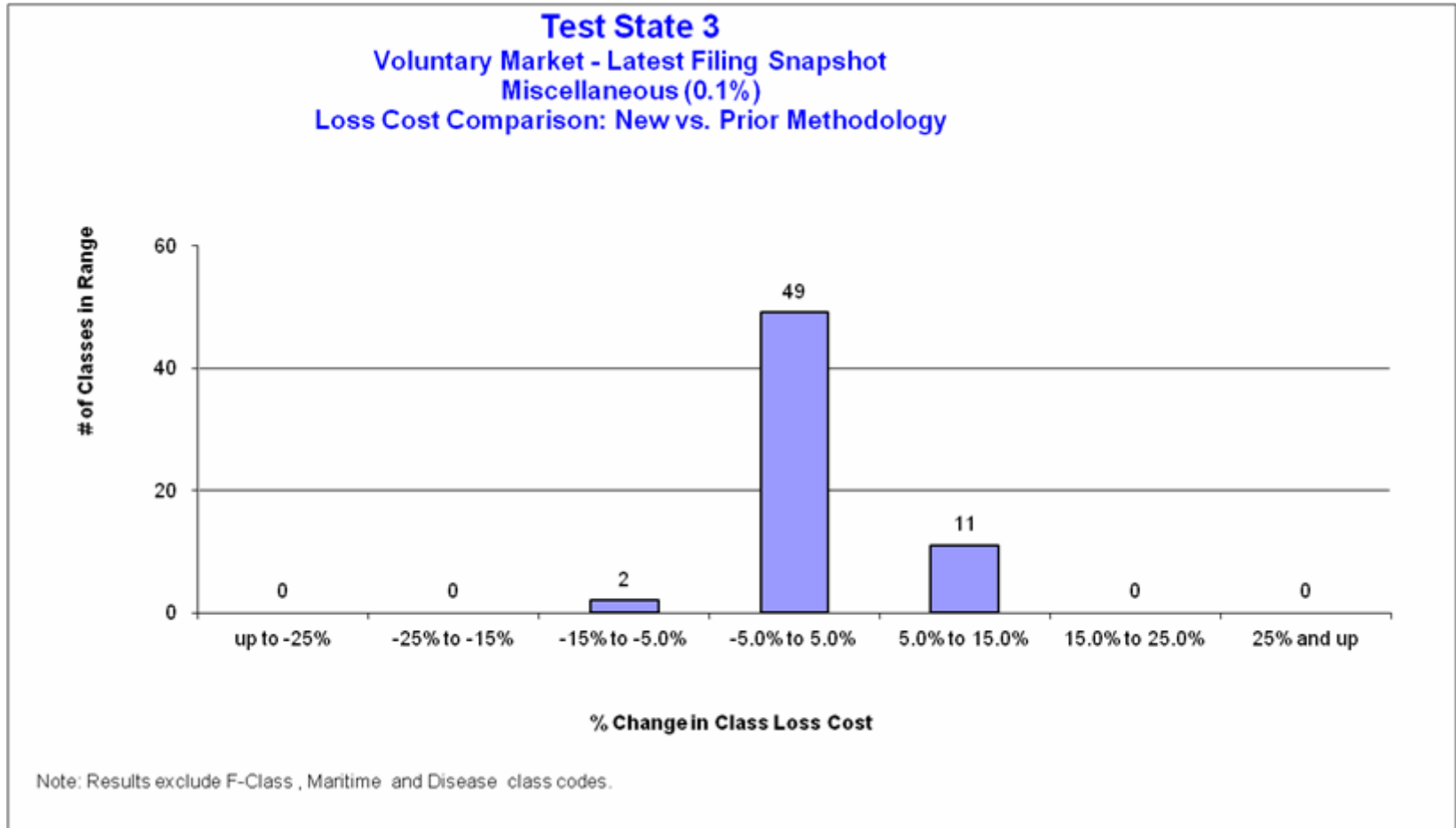
# State 3: Loss Cost Changes Office & Clerical



# State 3: Loss Cost Changes Goods & Services

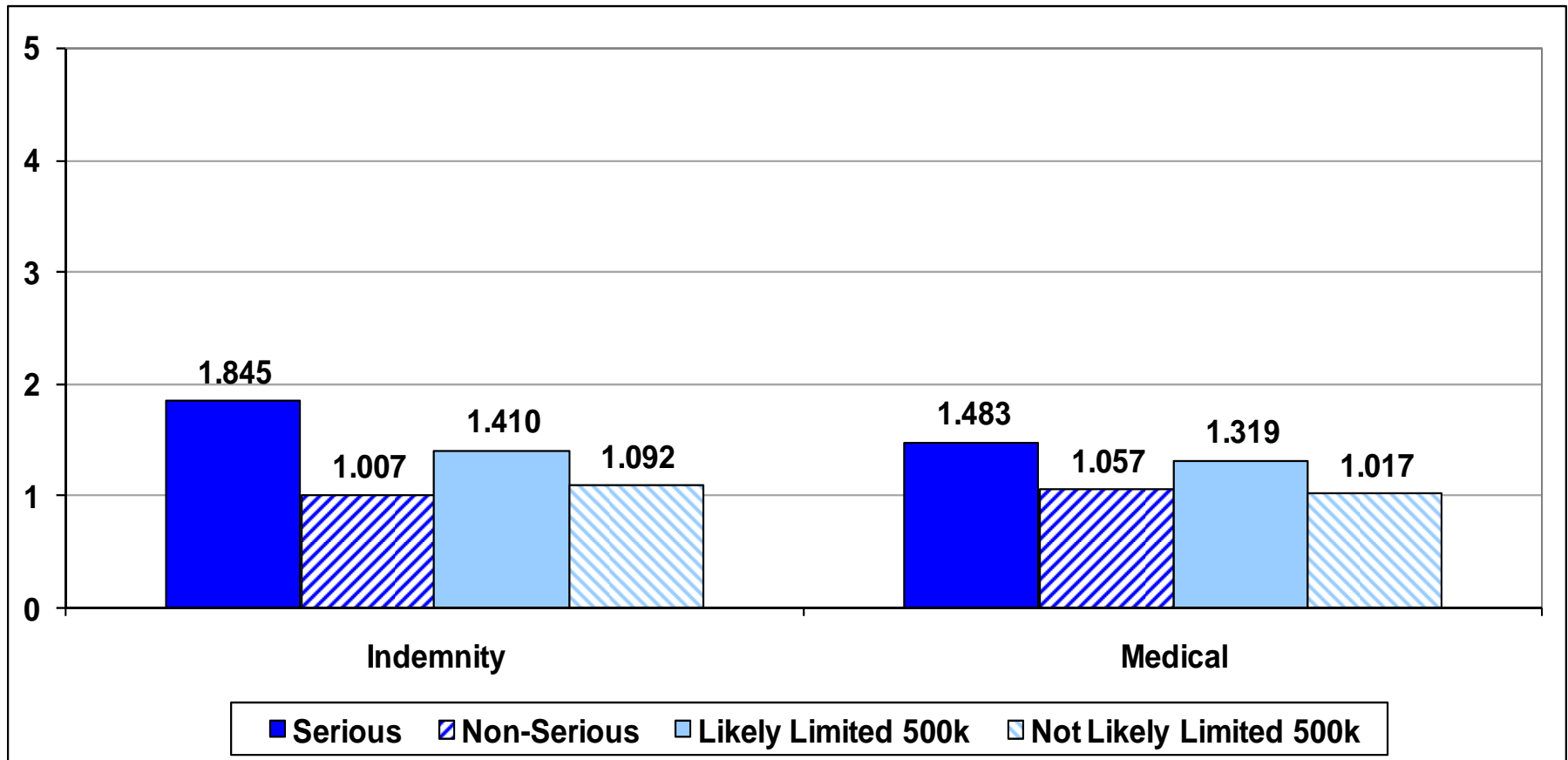


# State 3: Loss Cost Changes Miscellaneous

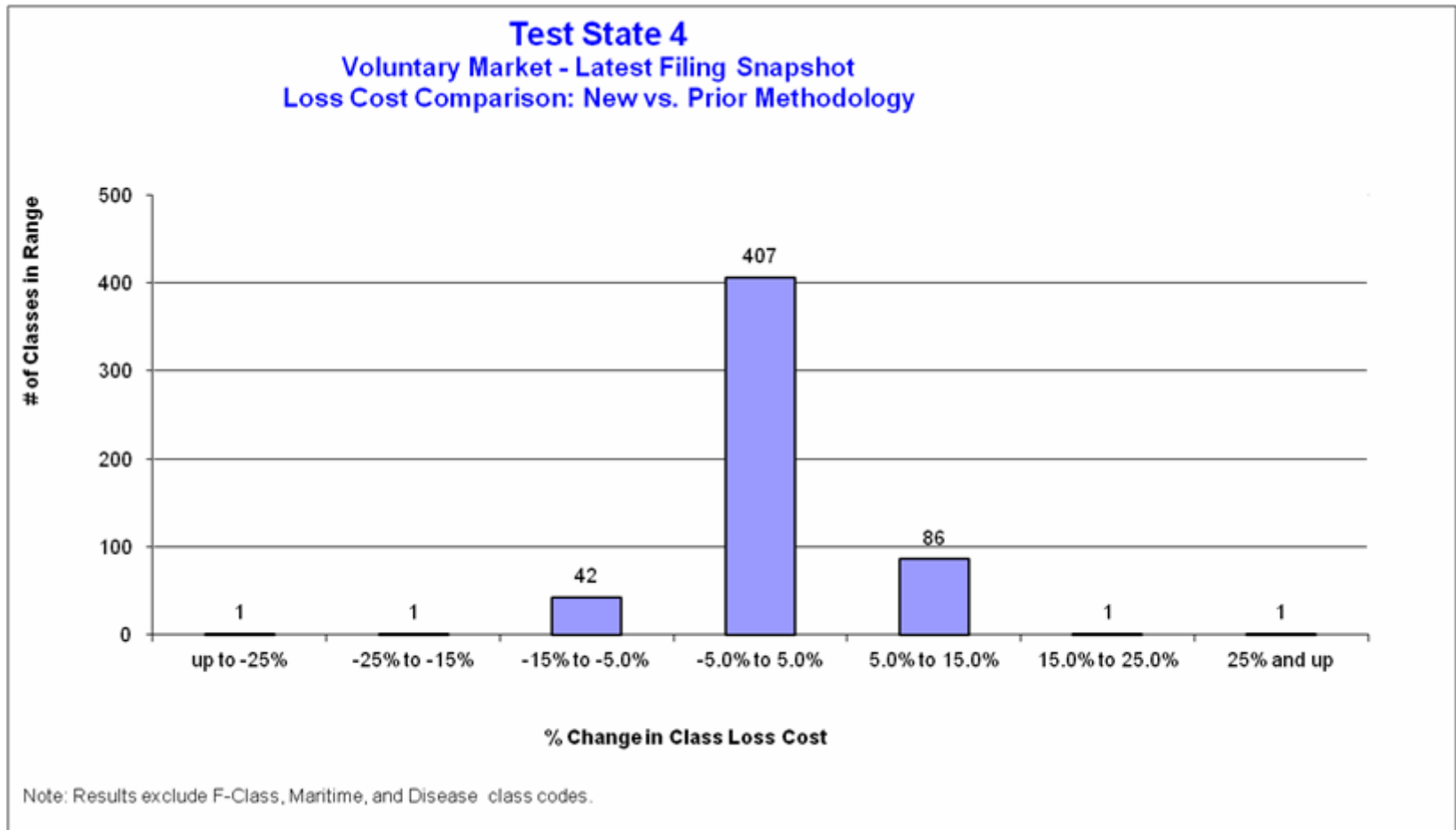


# State 3: Loss Development Comparison

## 1<sup>st</sup> to Ultimate LDF's

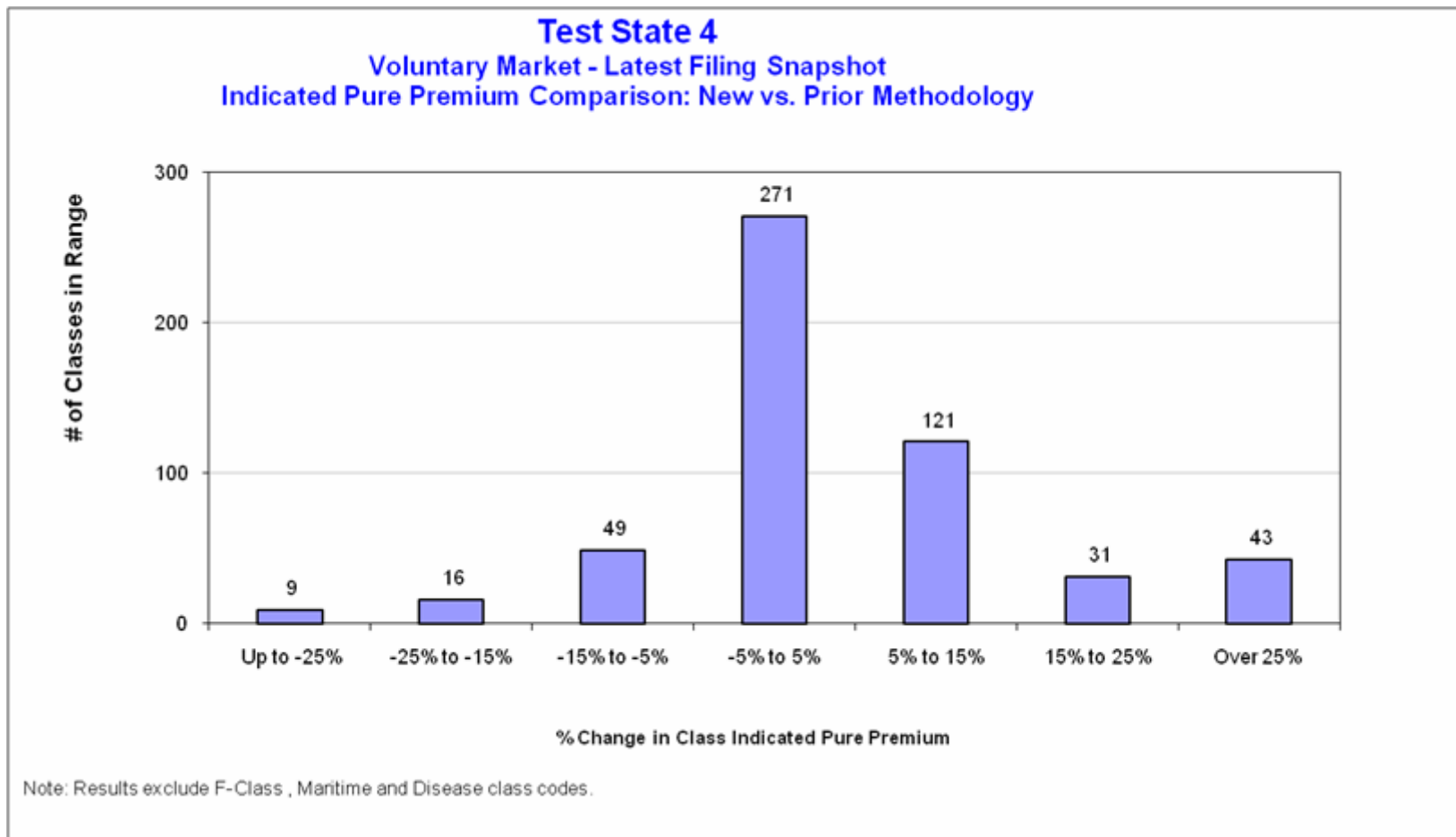


# State 4: Loss Cost Changes All Classes



# State 4: All Classes

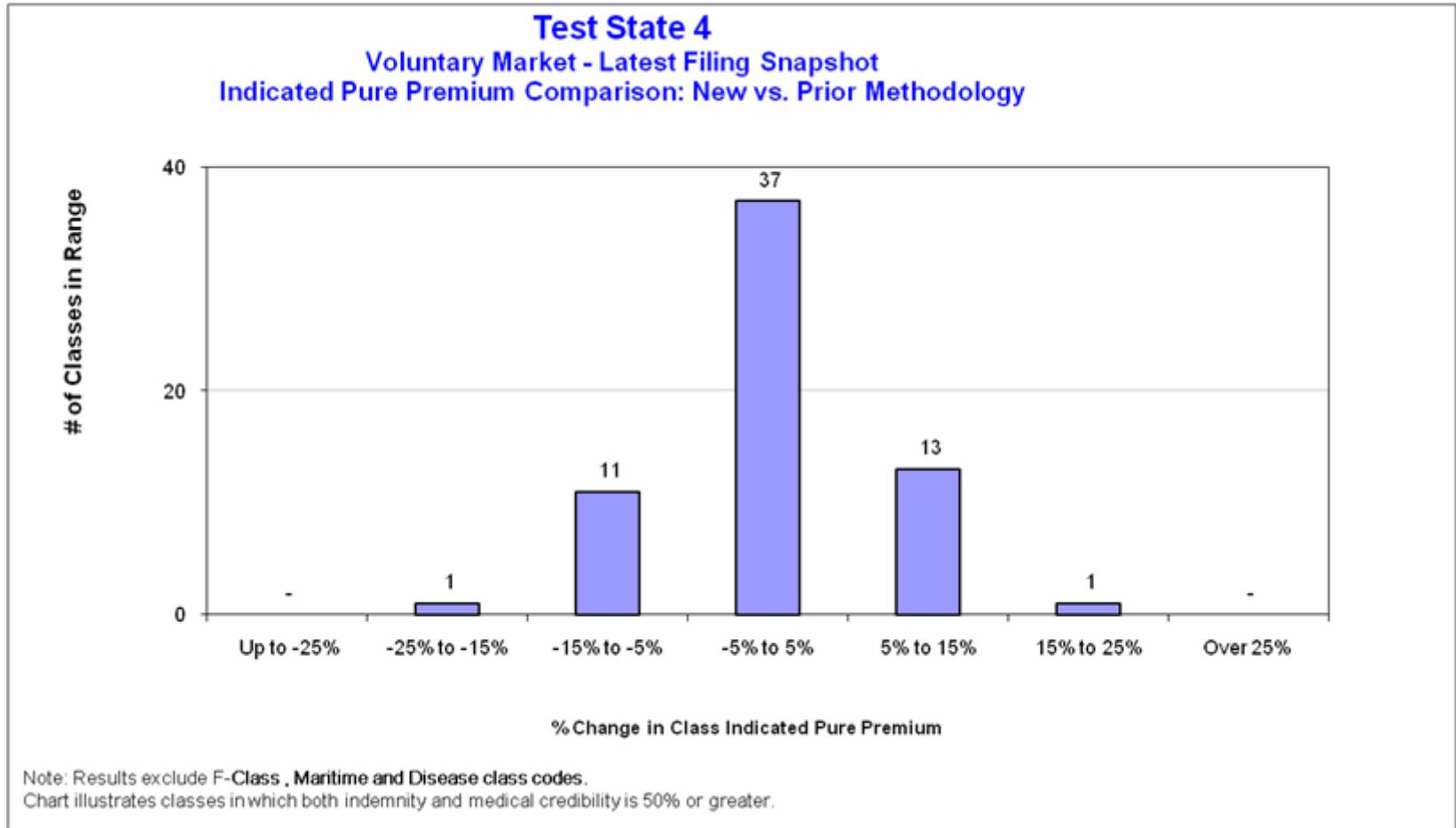
## Indicated Pure Premium Changes



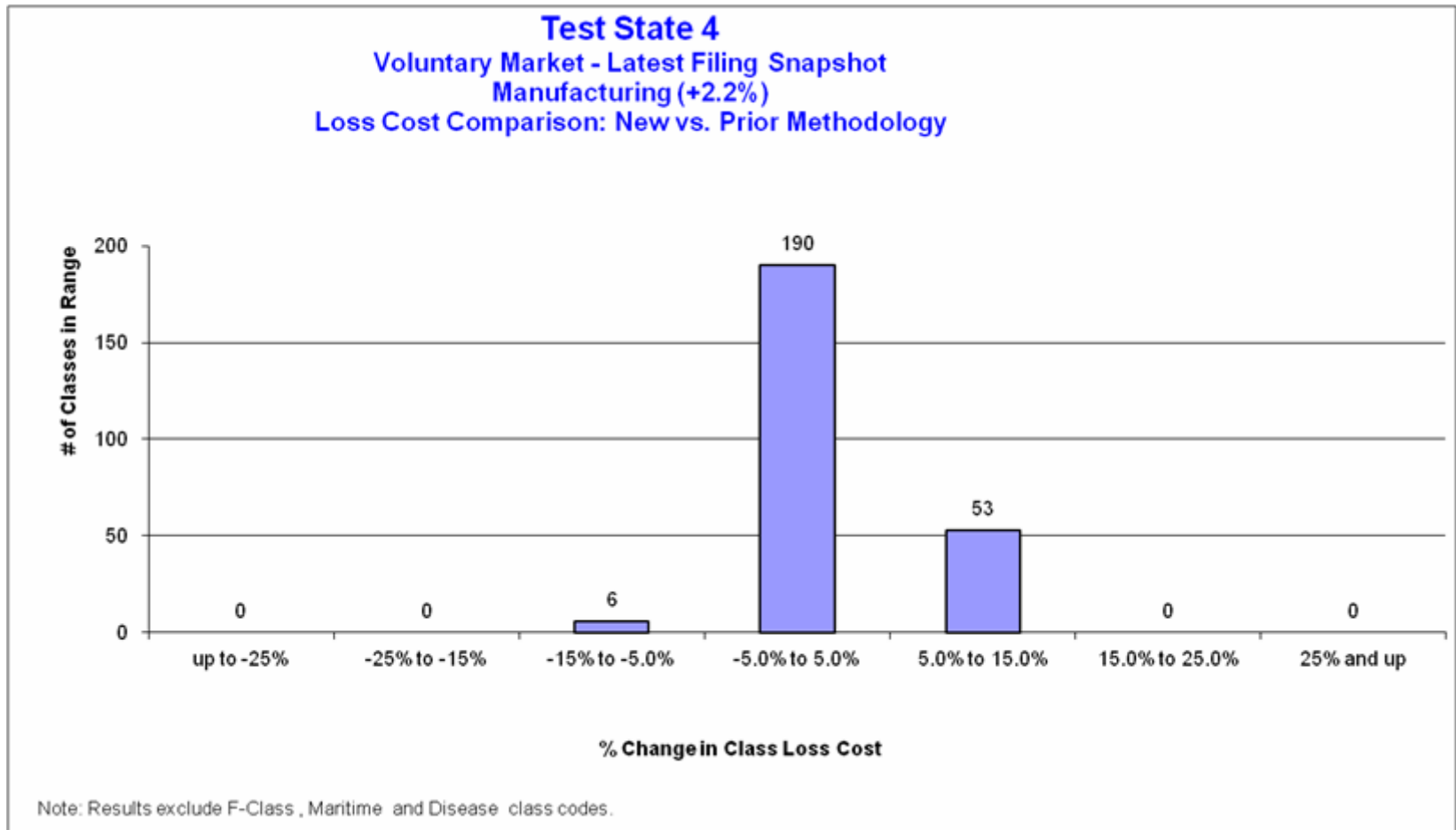


# State 4: High Credibility Classes

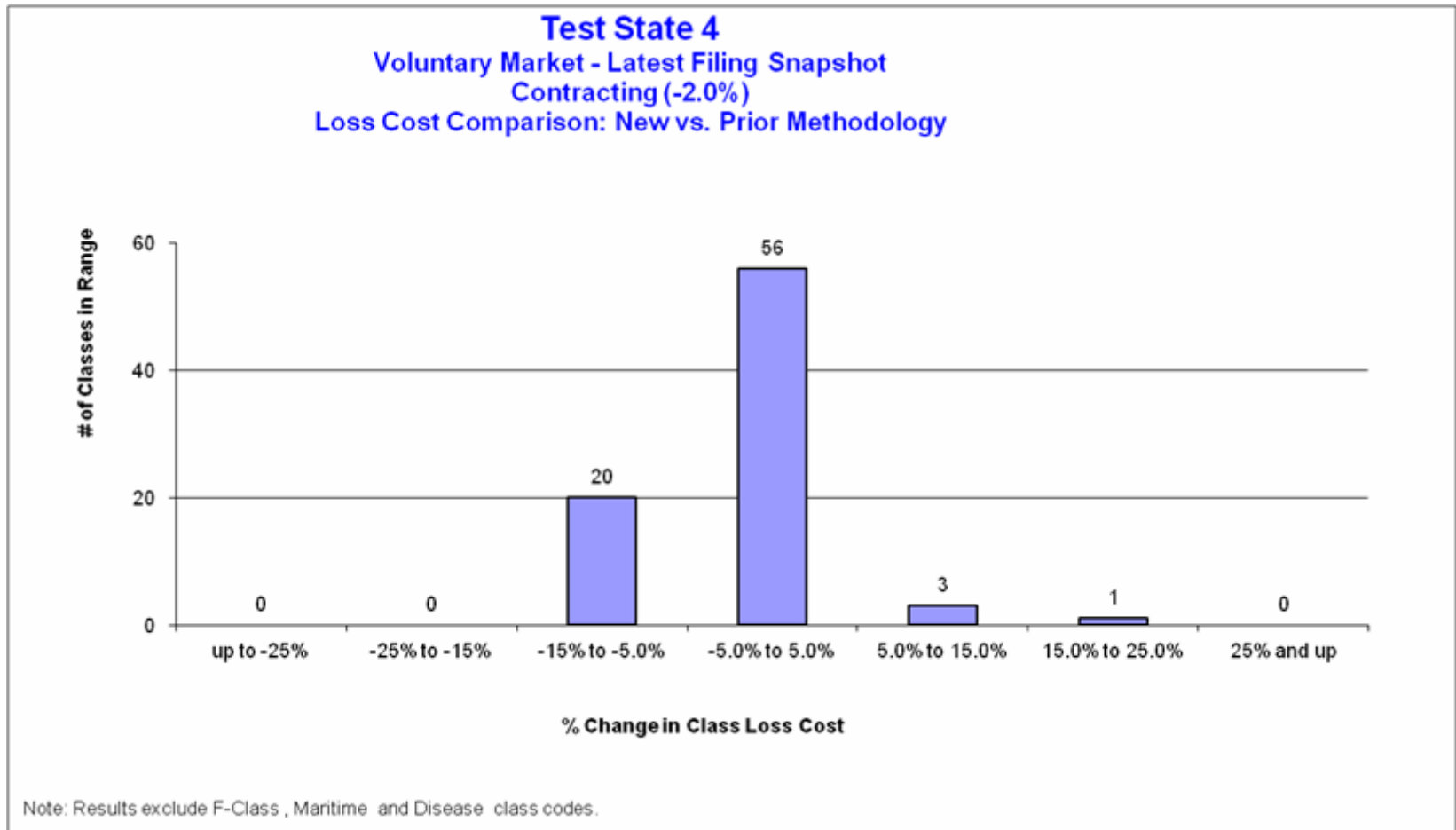
## Indicated Pure Premium Changes



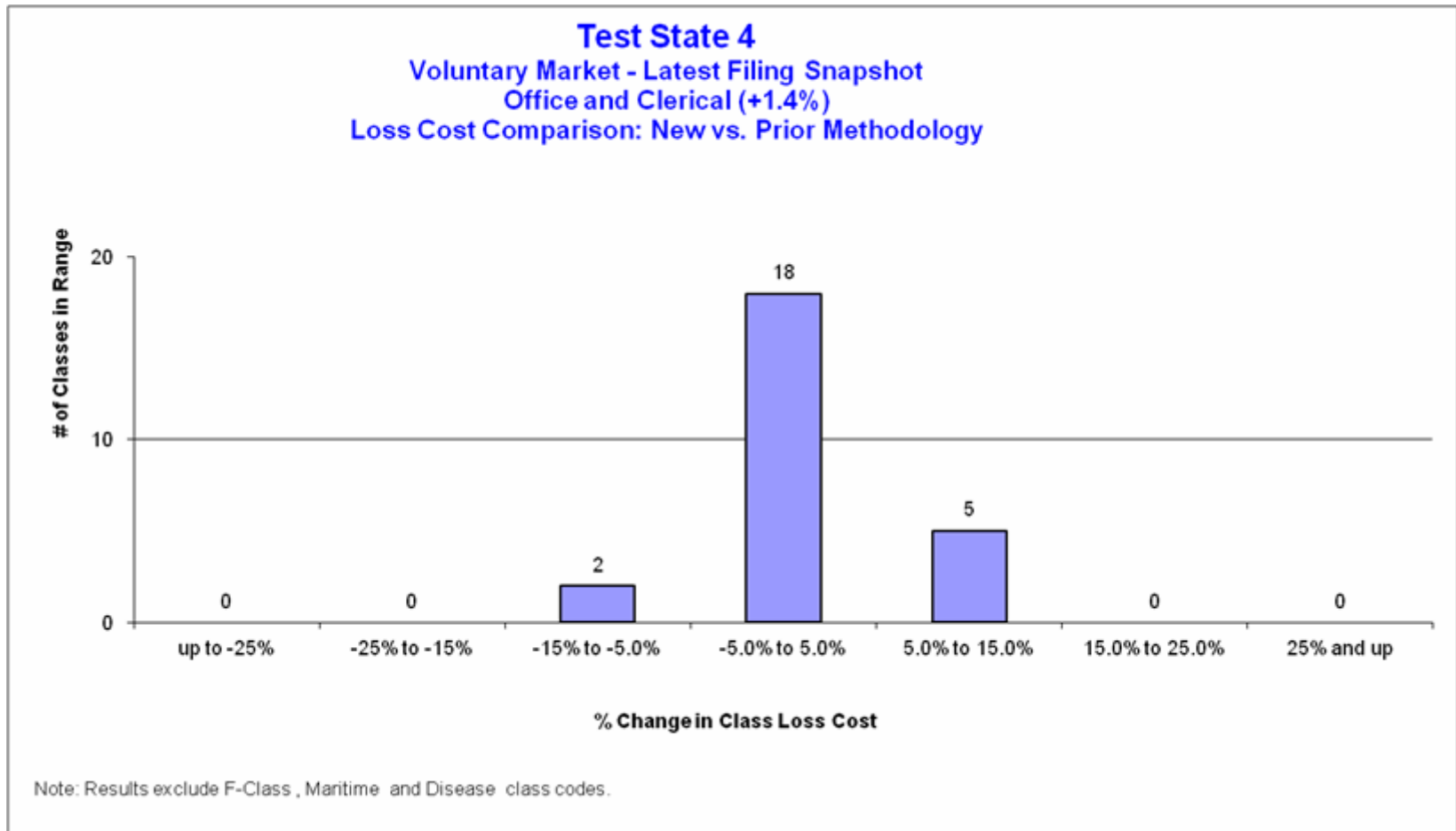
# State 4: Loss Cost Changes Manufacturing



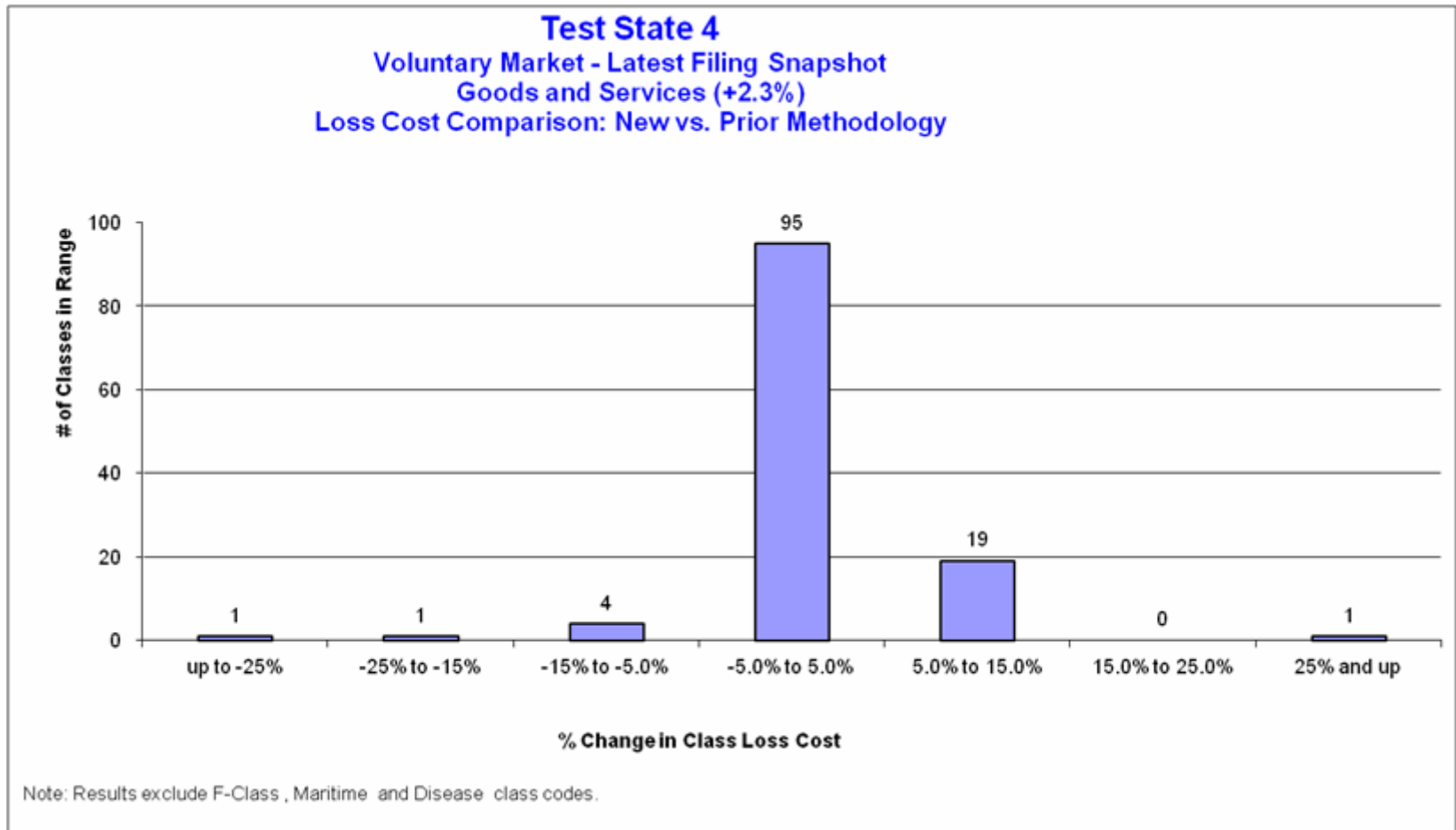
# State 4: Loss Cost Changes Contracting



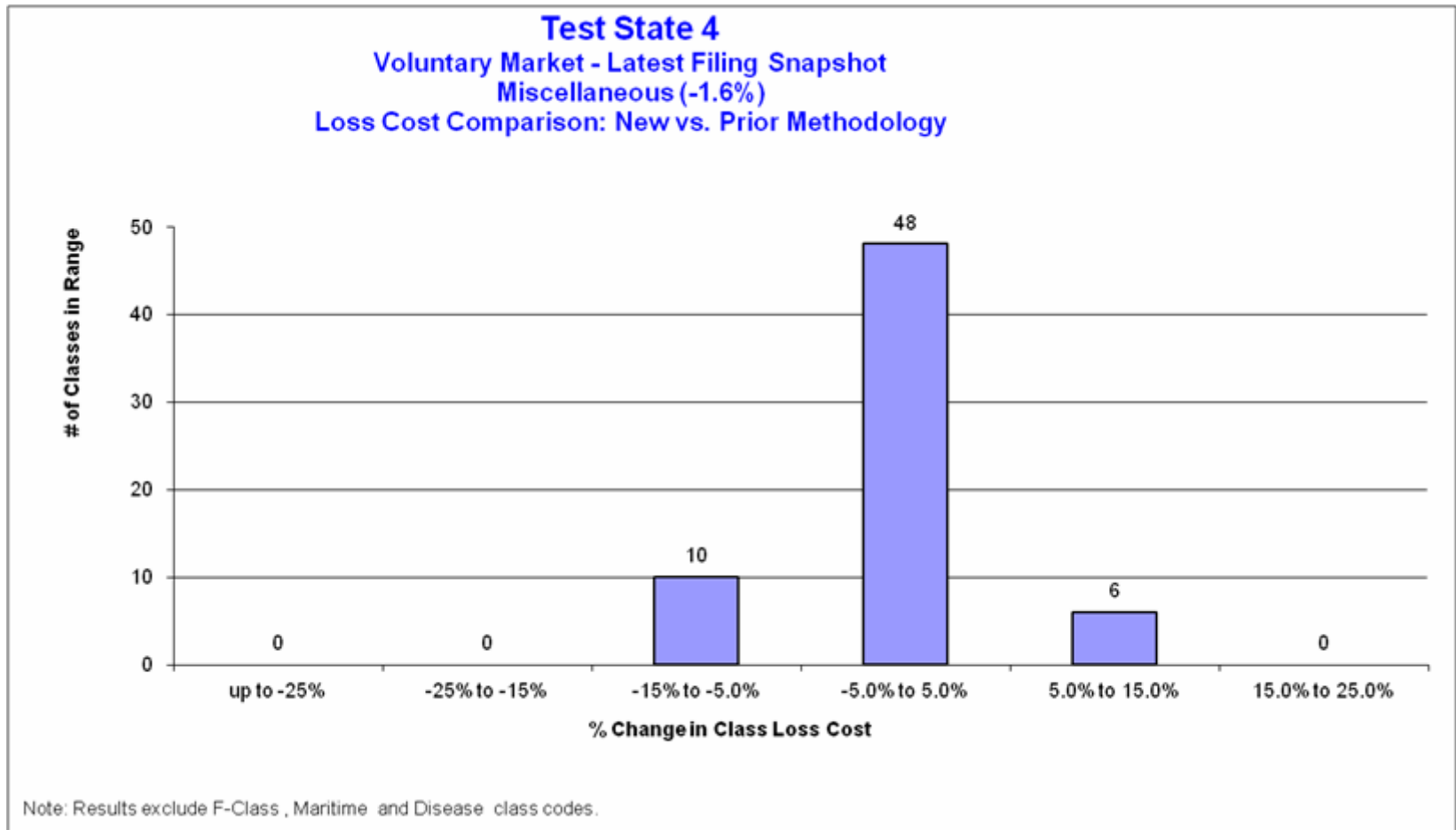
# State 4: Loss Cost Changes Office & Clerical



# State 4: Loss Cost Changes Goods & Services



# State 4: Loss Cost Changes Miscellaneous



# State 4: Loss Development Comparison

## 1<sup>st</sup> to Ultimate LDF's

