National Council on Compensation Insurance, Inc.

Workers Compensation Industry Reserve Analysis

Presented by

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Overview of NCCI Analysis

- Computations based on NAIC Annual Statement Schedule P Part 1D Accident Year data evaluated 12/31/2007

- Data used is private carrier* workers compensation net combined indemnity and medical reported losses and LAE

- Loss development factors are analyzed and selected for paid loss & LAE, paid+case loss & LAE, and incurred loss & LAE

- Analyze and select ultimate incurred loss and LAE ratios

- Redundancy/Deficiency = Reported – NCCI Selected Ultimate

*Maine and Minnesota state funds are included again this year due to their tax reporting status

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Challenges in Estimating Industry Reserves

- Reserve adequacy estimate for "AY 1997 & prior" period

- The impact of reinsurance usage on reserve estimates

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Improvements and Additions

- Estimated reserve adequacy of "AY 1997 & prior" period

- Evaluated additional prior period diagnostics

- Reviewed alternative tail factor methods

- Made appropriate adjustments to link ratios to reflect reinsurance usage

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Key Results

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Summary of Changes in
NCCI AY Loss & LAE Ratio Selections

AY	@2006 Loss & LAE Ratio Selections	@2007 Loss & LAE Ratio Selections	Change
1998	99.0%	101.0%	2.0%
1999	106.0%	108.0%	2.0%
2000	103.5%	105.0%	1.5%
2001	93.0%	93.5%	0.5%
2002	78.0%	79.0%	1.0%
2003	72.0%	72.0%	0.0%
2004	65.0%	65.0%	0.0%
2005	63.0%	61.0%	-2.0%
2006	63.0%	63.0%	0.0%
2007	n/a	67.0%	n/a

@2006 and @2007 reserve selections include Maine and Minnesota state funds

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Reasons for Changes in NCCI Selected Loss & LAE Ratios

- Indicated 'incurred tail factor' increased from 1.035 to 1.055

- Loss development link ratios decreased for recent reports

- NCCI increased selected loss & LAE ratios for older AYs

- Indications moderated for more recent AYs, so NCCI selections were less affected

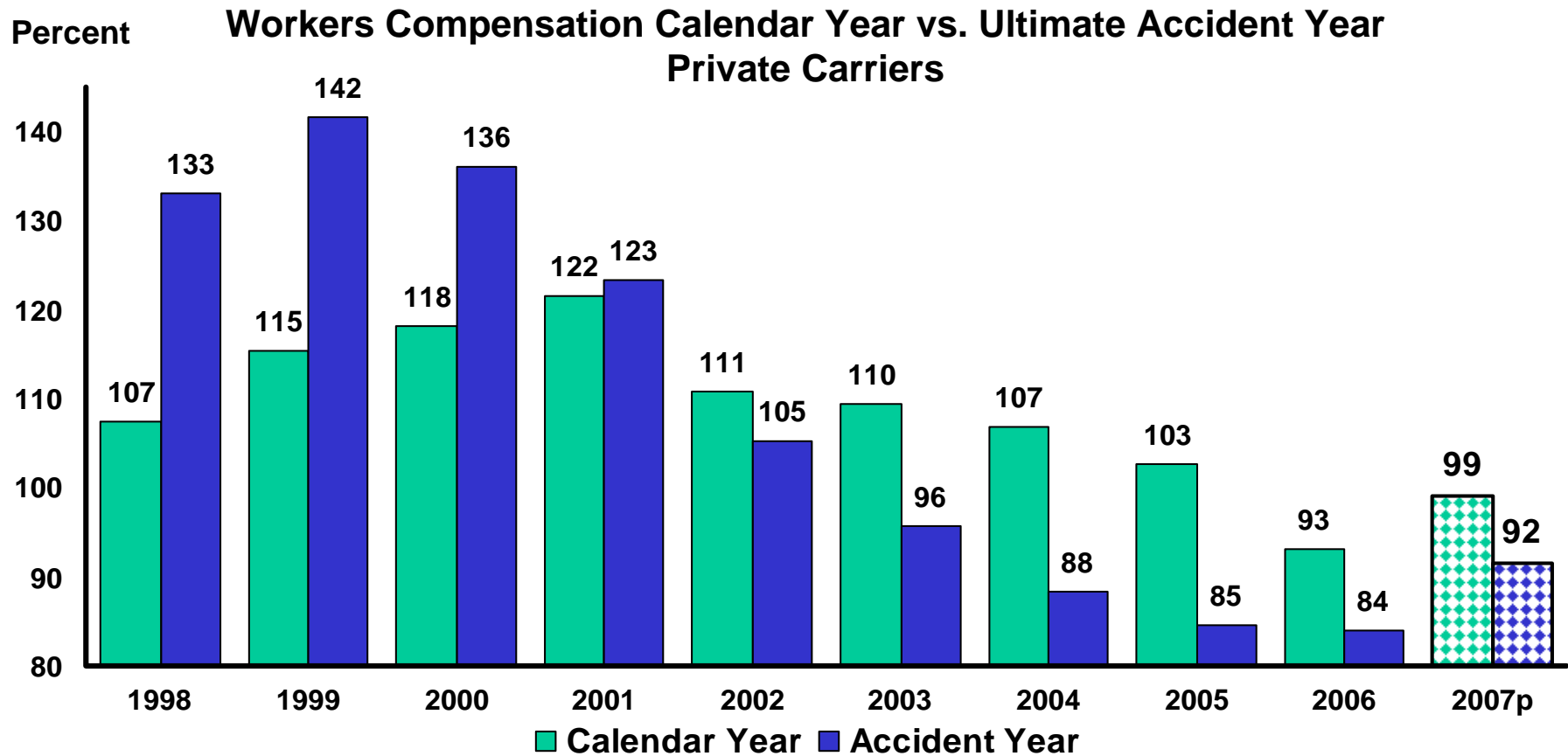**NCCI**

NCCI CW Reserve Analysis
Tail Factor Method

- Start with Incurred (incl. IBNR) loss only tail factors from countrywide ratemaking (Financial Data) @ 10th report

- Convert incurred loss tail factor @ 10th report to paid and paid+case tail factors using Schedule P conversion ratios

- Incorporate LAE from Schedule P LAE incurred-to-loss ratios @ 10th

- Result is Loss & LAE tail factors @ 10th report

  - Paid tail factor changed from 1.155 to 1.175

  - Paid + Case tail factor changed from 1.067 to 1.084

- Considered alternative tail factor methods in this year's analysis, although incumbent method was selected

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Alternative Tail Factor Methods

- Start with Incurred (incl. IBNR) loss only tail factors from countrywide ratemaking (Financial Data) @ 19th report

- Options for bridging from 10th to 19th report:

  - Incurred (incl. IBNR) link ratios from 10th to 19th; convert @10th (selected method)

  - Convert to paid @19th and incorporate paid link ratios from 10th to 19th

  - Convert to paid+case @19th and incorporate paid+case link ratios from 10th to 19th

- Incorporate LAE from Schedule P LAE incurred-to-loss ratios @ 10th

- Result is Loss & LAE tail factors @ 10th report

- Changes in tail factors for alternative methods were higher than incumbent method

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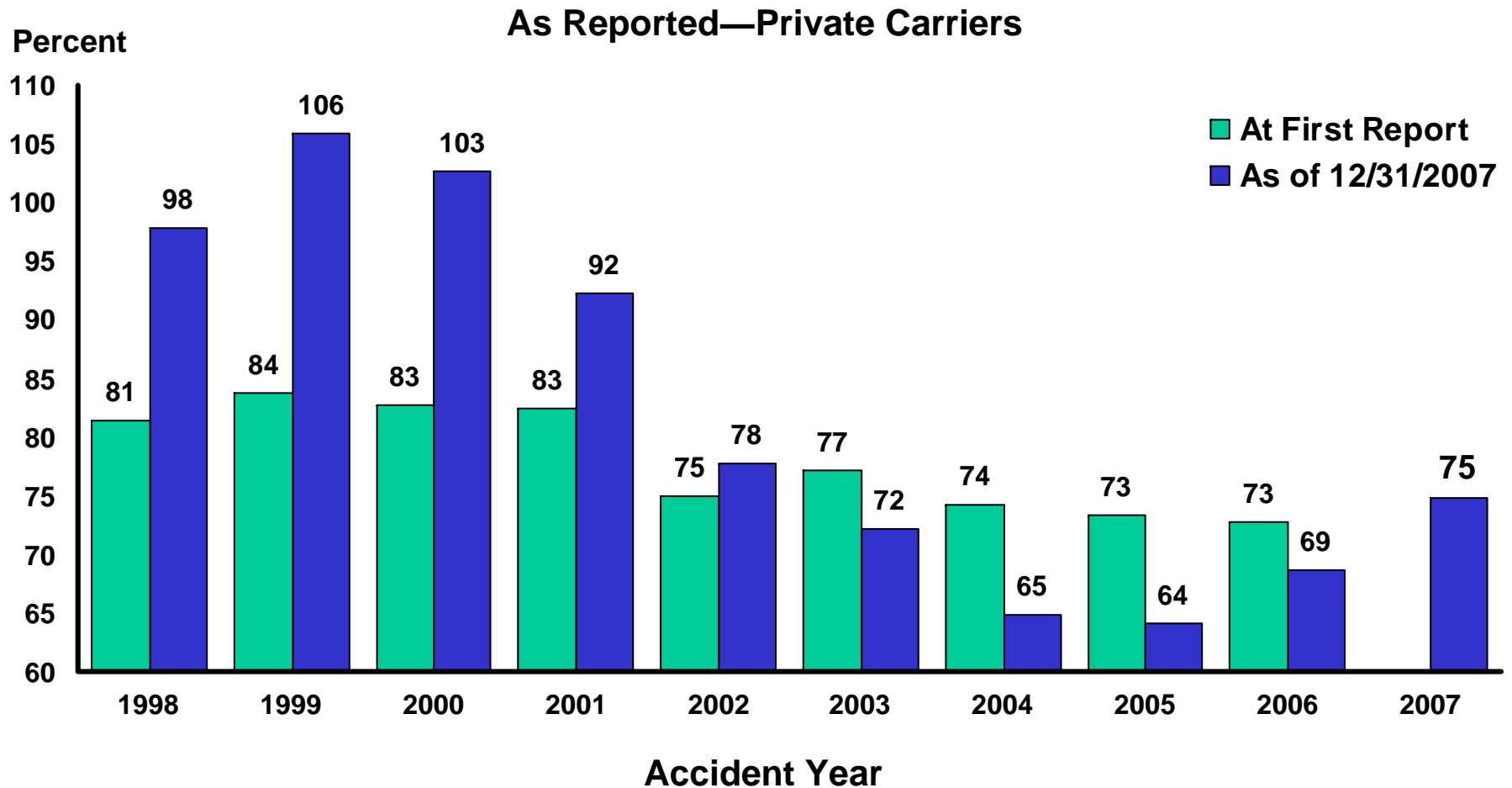# Accident Year Combined Ratio—
Another Underwriting Gain in 2007

Percent

**Workers Compensation Calendar Year vs. Ultimate Accident Year
Private Carriers**

	Calendar Year	Accident Year
1998	107	133
1999	115	142
2000	118	136
2001	122	123
2002	111	105
2003	110	96
2004	107	88
2005	103	85
2006	93	84
2007p	99	92

■ Calendar Year ■ Accident Year

p Preliminary
Accident Year data is evaluated as of 12/31/2007 and developed to ultimate
Source: Calendar Years 1998–2006, *Best's Aggregates & Averages*;
        Calendar Year 2007p and Accident Years 1998–2007p, NCCI analysis based on Annual Statement data
Includes dividends to policyholders

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# Workers Compensation
Accident Year Loss and LAE Ratios

As Reported—Private Carriers

Percent

Legend:
- At First Report
- As of 12/31/2007

Data values:

Accident Year	At First Report	As of 12/31/2007
1998	81	98
1999	84	106
2000	83	103
2001	83	92
2002	75	78
2003	77	72
2004	74	65
2005	73	64
2006	73	69
2007		75

Accident Year

Reported Loss and LAE ratios

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Workers Compensation
Accident Year Loss and LAE Ratios

NCCI Selections—Private Carriers
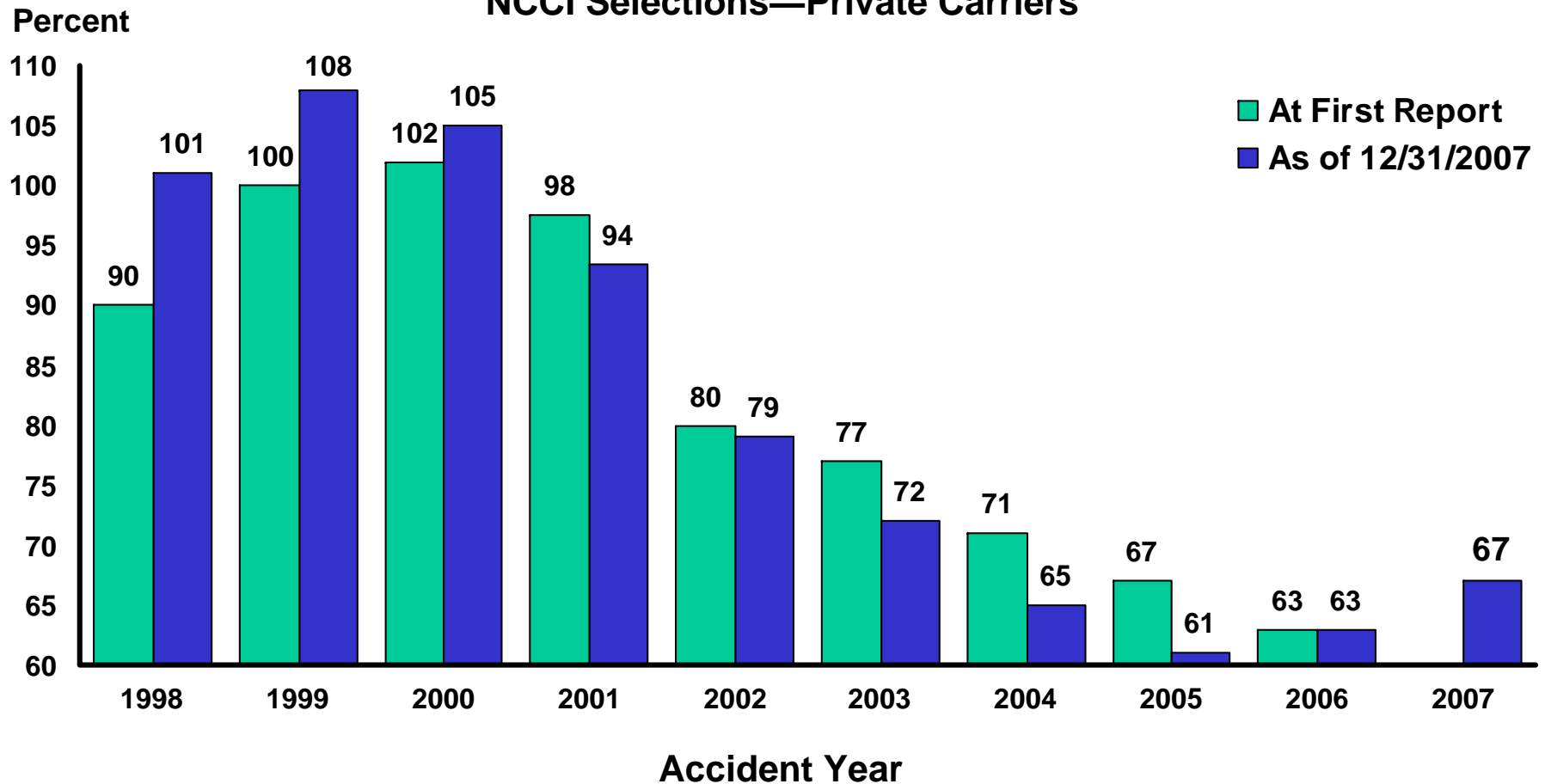
Selected Loss and LAE ratios

Reserve Strengthening by Accident Year

WC Loss & LAE, As Reported by Private Carriers*
During Calendar Year 2007

Accident Year	Total Reserve Strengthening (billions)
Prior	1.9
1998	0.2
1999	0.3
2000	0.3
2001	0.4
2002	0.1
2003	0.0
2004	-0.7
2005	-1.4
2006	-1.6
2007	n/a

*Includes Maine and Minnesota state funds

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Comparison of the Deficiency at Different Evaluation Dates

WC Loss & LAE Reserves – Private Carriers*
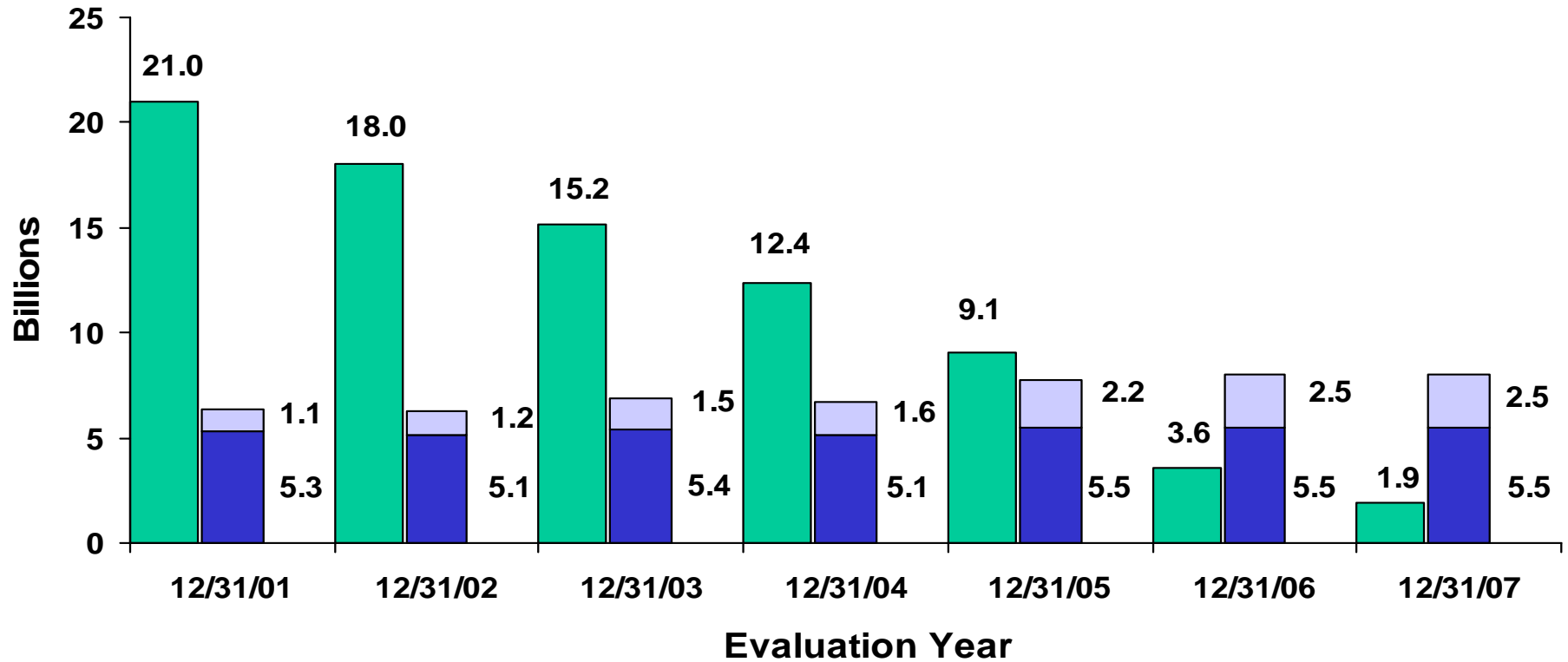
Legend: ■ Tabular Reserve Discount ■ Non-Tabular Reserve Discount ■ Deficiency

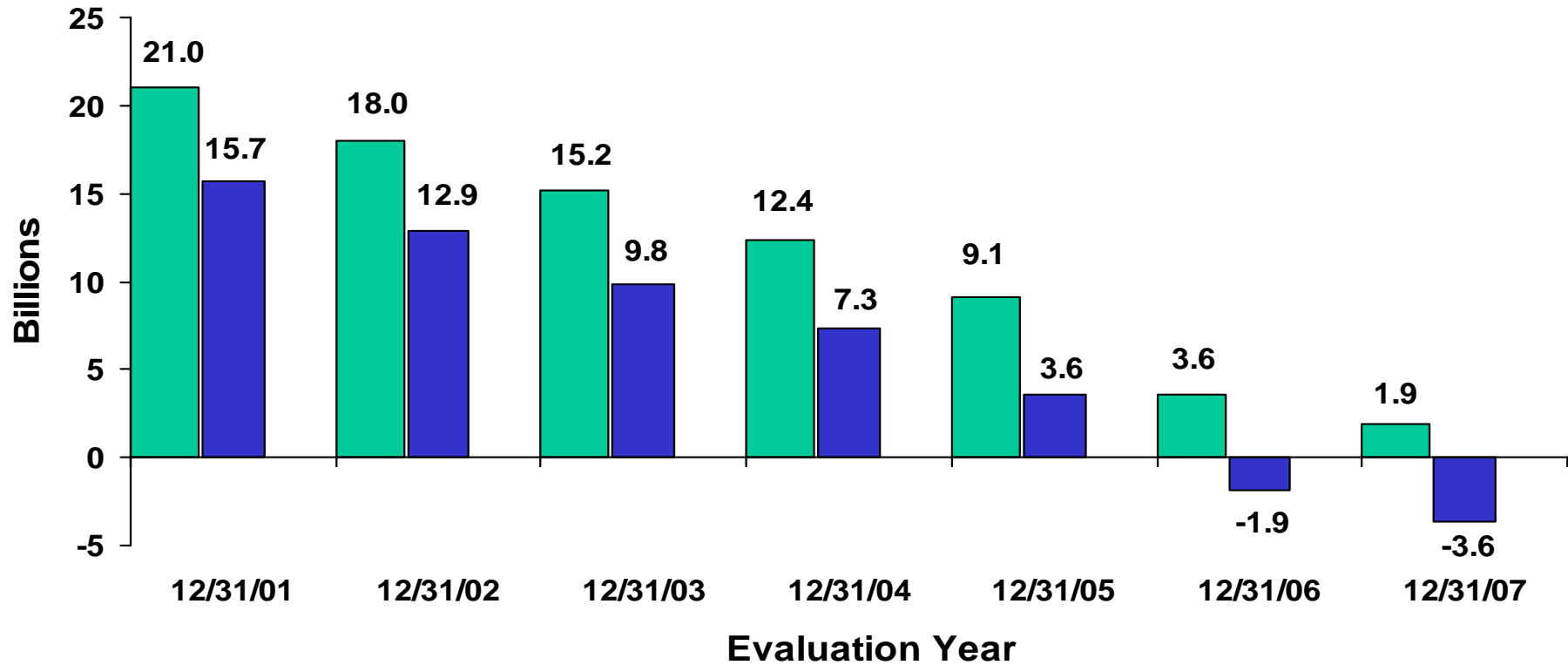*@12/04 through @12/07 include Maine and Minnesota state funds
Considers all reserve discounts as deficient
Figures are based on the respective Annual Statement data for each evaluation date and NCCI latest selections

Comparison of Deficiency Definitions

WC Loss & LAE Reserves – Private Carriers*

Legend: ■ Deficiency Excess of Tabular Reserve Discount ■ Deficiency

X-axis: Evaluation Year (12/31/01, 12/31/02, 12/31/03, 12/31/04, 12/31/05, 12/31/06, 12/31/07)
Y-axis: Billions

Values:
- 12/31/01: Deficiency 21.0, Excess 15.7
- 12/31/02: Deficiency 18.0, Excess 12.9
- 12/31/03: Deficiency 15.2, Excess 9.8
- 12/31/04: Deficiency 12.4, Excess 7.3
- 12/31/05: Deficiency 9.1, Excess 3.6
- 12/31/06: Deficiency 3.6, Excess -1.9
- 12/31/07: Deficiency 1.9, Excess -3.6

*@12/04 through @12/07 include Maine and Minnesota state funds
Excess Deficiency is equal to Deficiency less Tabular Reserve Discount
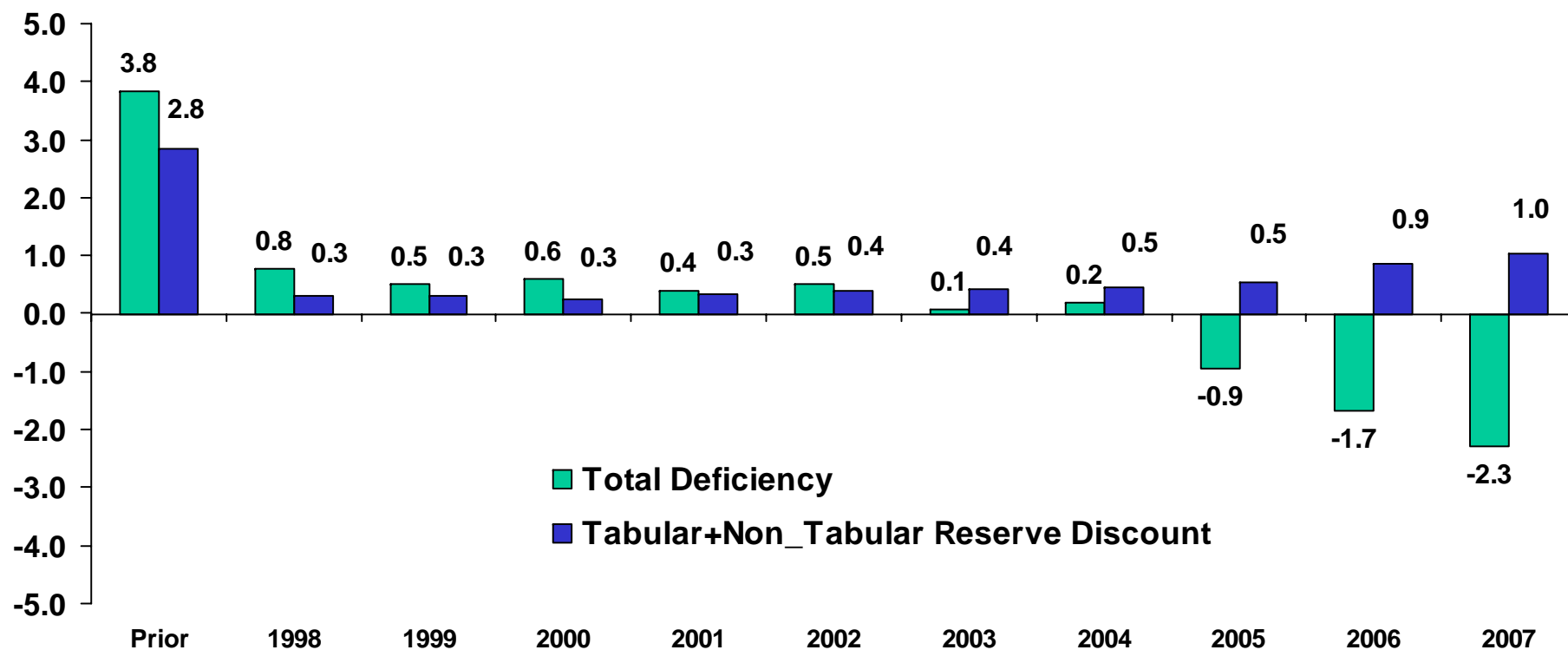Figures are based on the respective Annual Statement data for each evaluation date and NCCI latest selections

Reserve Deficiency and Reserve Discount by Accident Year as of 12/31/2007

WC Loss & LAE Reserves – Private Carriers*

Billions

Bar chart showing Total Deficiency (green) and Tabular+Non_Tabular Reserve Discount (blue) by accident year:

Accident Year	Total Deficiency	Tabular+Non_Tabular Reserve Discount
Prior	3.8	2.8
1998	0.8	0.3
1999	0.5	0.3
2000	0.6	0.3
2001	0.4	0.3
2002	0.5	0.4
2003	0.1	0.4
2004	0.2	0.5
2005	-0.9	0.5
2006	-1.7	0.9
2007	-2.3	1.0

Legend:
- ■ Total Deficiency
- ■ Tabular+Non_Tabular Reserve Discount

Accident Year

Deficiency considers all reserve discounts as deficient
*Includes Maine and Minnesota state funds

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Prior Period
Adequacy Analysis

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Prior Period Reserve Adequacy Overview

- In previous analyses, "prior period" reserve deficiency was equal to the discount

- Similar to last year, prior period adequacy was estimated using open claim counts multiplied by average outstanding (o/s) reserve

- Source of claim count distribution is NCCI Financial Call data @2006, by accident year for NCCI states

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Prior Period Reserve Adequacy Method

- Determine distribution of open claims for 10th-20th reports from @2006 Financial Call data (preliminary)

- Allocate Schedule P prior period open claims to AY, corresponding to 10th-20th reports

- Estimate average o/s reserve using Schedule P data case and bulk reserves for 7th-10th reports

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Prior Period Reserve Adequacy Method

- Estimate average outstanding reserve for each year for 11th-20th reports by trending average o/s for 7th-10th report

- Trend options used: 0%, 2%, 3%, and 4% annual trend, based on trend in average o/s between 7th-10th reports (also used 0% trend as lower bound)

- Methods used for average o/s for claims > 20th report:

  - Assume open claims > 20th report have same average o/s as trended 15th report

  - Assume open claims > 20th report have same average o/s as trended 20th report

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Prior Period Reserve Adequacy Method

- Multiply average outstanding reserve by outstanding claim counts for each AY to get total outstanding reserve

- Sum each AY total outstanding reserve for prior period to get "additional prior period reserve excluding tabular discounts"

- Subtract carried prior period reserve excluding tabular discounts

- Selected $1.0B additional inadequacy, using the same 3% trend as last year's analysis

- The change in prior period reserve adequacy, from $2.6B @06 to $1.0B @07 is almost entirely due to prior period reserve strengthening

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Prior Period Reserve Adequacy Method

AY	Sch P Average Reserve	Years for Trend	**Trend** Factor	(A) Projected Average Reserve	Fin'l Data Open Claim Distribution	(B) Projected Open Claim Counts	(A)x(B) (000) Indicated L+LAE Reserve (000)
1	19,091						
2	31,298						
3	38,915						
4	56,994						
5	61,207						
6	60,727						
7	62,662						
8	75,857						
9	81,596						
10	94,049						
11		2.5	1.08	84,565	6%	16,794	1,420,142
12		3.5	1.11	87,102	6%	15,623	1,360,752
13		4.5	1.14	89,715	5%	14,861	1,333,247
14		5.5	1.18	92,406	5%	13,776	1,272,956
15		6.5	1.21	**95,178**	6%	15,223	1,448,874
16		7.5	1.25	98,034	6%	16,460	1,613,669
17		8.5	1.29	100,975	6%	17,355	1,752,440
18		9.5	1.32	104,004	7%	18,821	1,957,494
19		10.5	1.36	107,124	6%	16,251	1,740,863
20		11.5	1.40	110,338	5%	14,699	1,621,868
prior to age 20				**95,178**	42%	113,471	10,799,955

Age 11 and prior					100%	273,333	**26,322,261**
Avg 7-10	78,541						

Annual Trend Factor   **1.03**

Prior to age 20 =   **age 15**

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Prior Period Reserve Adequacy Results of Alternative Methods

Method[1]	Trend	Additional AY 1997 & Prior Period Reserve Deficiency[2]
Age 15	2%	-1.1B
Avg 11-20	0%	0.1B
Age 15	3%	1.0B[3]
Avg 11-20	4%	2.7B
Age 20	4%	4.9B

[1]Method for estimating the average o/s for all claims older than 20 years

[2]Excludes Tabular Discounts

[3]Selection was rounded to 1.0; indication is 0.6B

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Prior Period Reserve Adequacy Method

- NCCI Estimated Additional Prior Period Deficiency   (1.0B)

    plus

- Prior Period Reserve Discounts   (2.8B)

    equals

- AY 1997 & Prior Period Deficiency   (3.8B)

Reinsurance Usage

Reinsurance Usage

- Reinsurance usage surveys performed for @2003 analysis

- Reinsurance usage varies by AY; peaked in 2001

- Observed low link ratios for AY 2000 and 2001 for $4^{th}/5^{th}$ and $5^{th}/6^{th}$ (and some $6^{th}/7^{th}$ link ratios in this year's analysis)

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Reinsurance Usage

- Follow up surveys confirmed that low link ratios are due to reinsurance usage and are not likely to continue for recent AYs

- NCCI selected 3 year average link ratio for paid and paid+case for most reports (except 4th/5th and 5th/6th)

- 4th/5th and 5th/6th link ratios were selected using actuarial judgement to avoid understating future development on recent AYs

- Impact of selecting 3 year average compared to 2-year average on ultimate loss indications for reserving :

  - Increases paid indication 0.4% on recent AYs

  - Increases paid+case indication 0.5% on recent AY

Methods Analysis

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NCCI Uses a Variety of Methods to Estimate Ultimate Losses

- Paid losses and LAE

- Paid losses, case reserves, and LAE

- Incurred losses (including company IBNR estimates)

- Bornhuetter-Ferguson

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Comparison of Methods
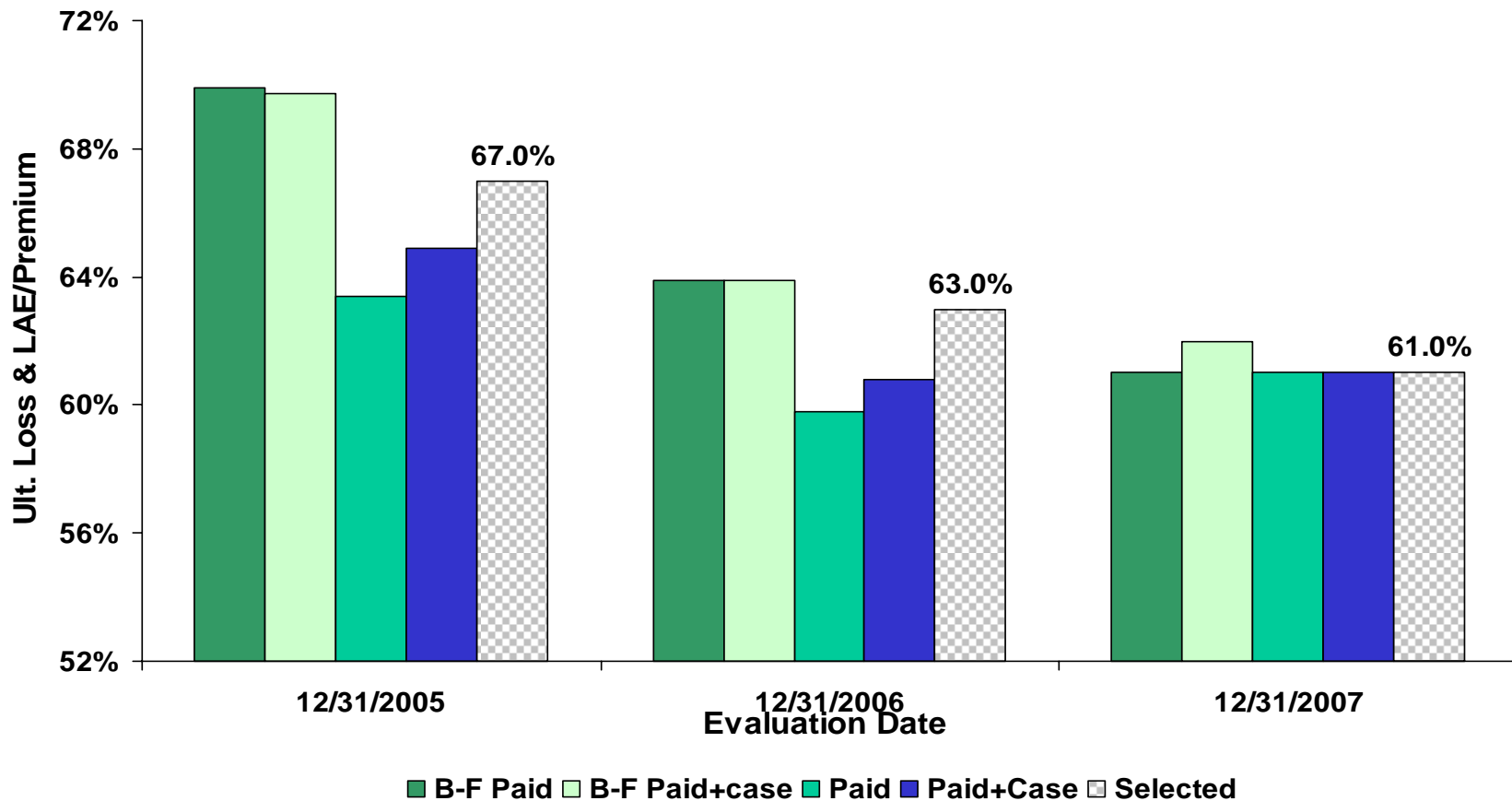# Accident Year 2007

WC Loss & LAE Reserves – Private Carriers*
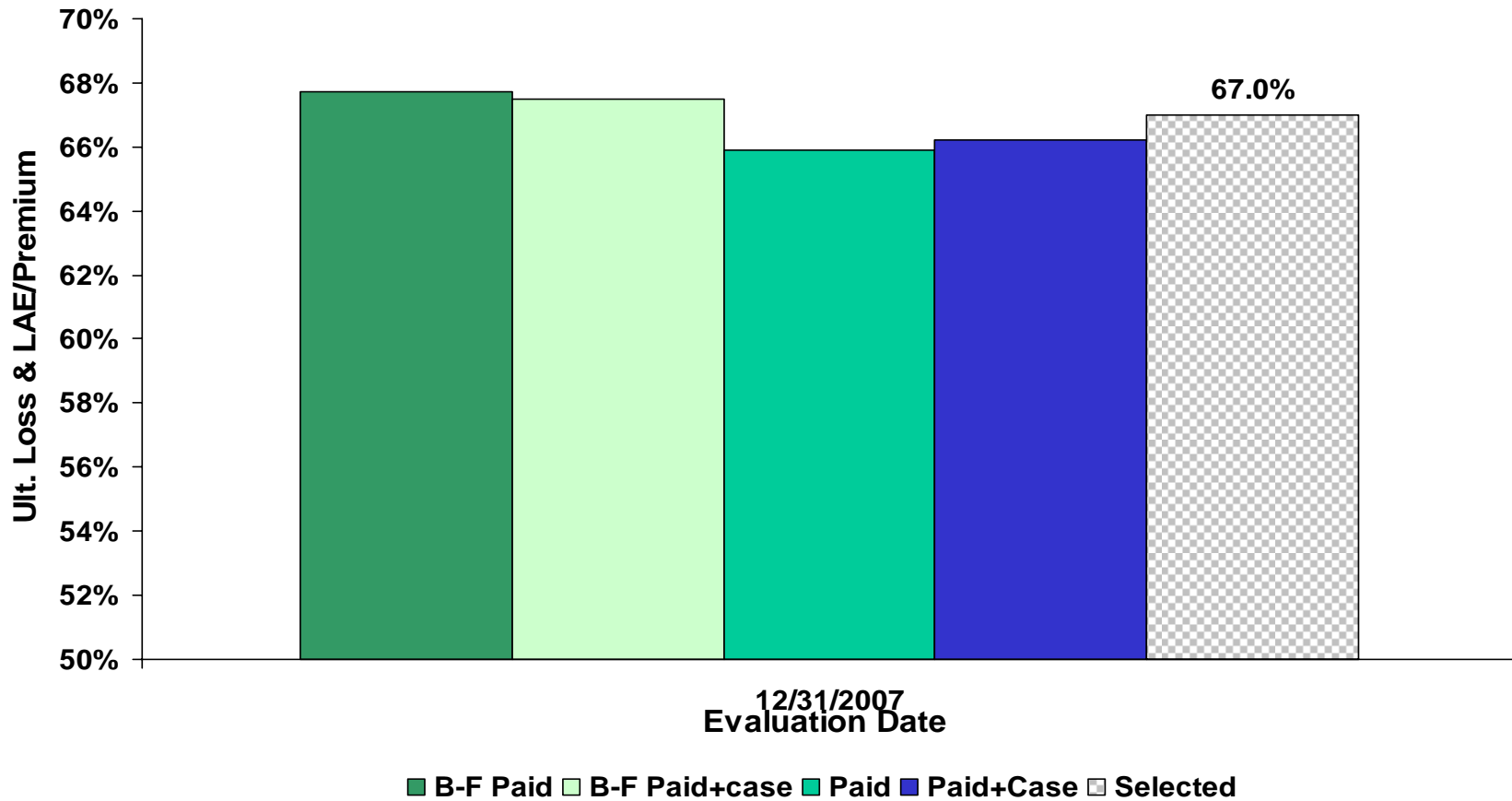
All methods include LAE
*Includes Maine and Minnesota state funds

Comparison of Methods
Accident Year 2006
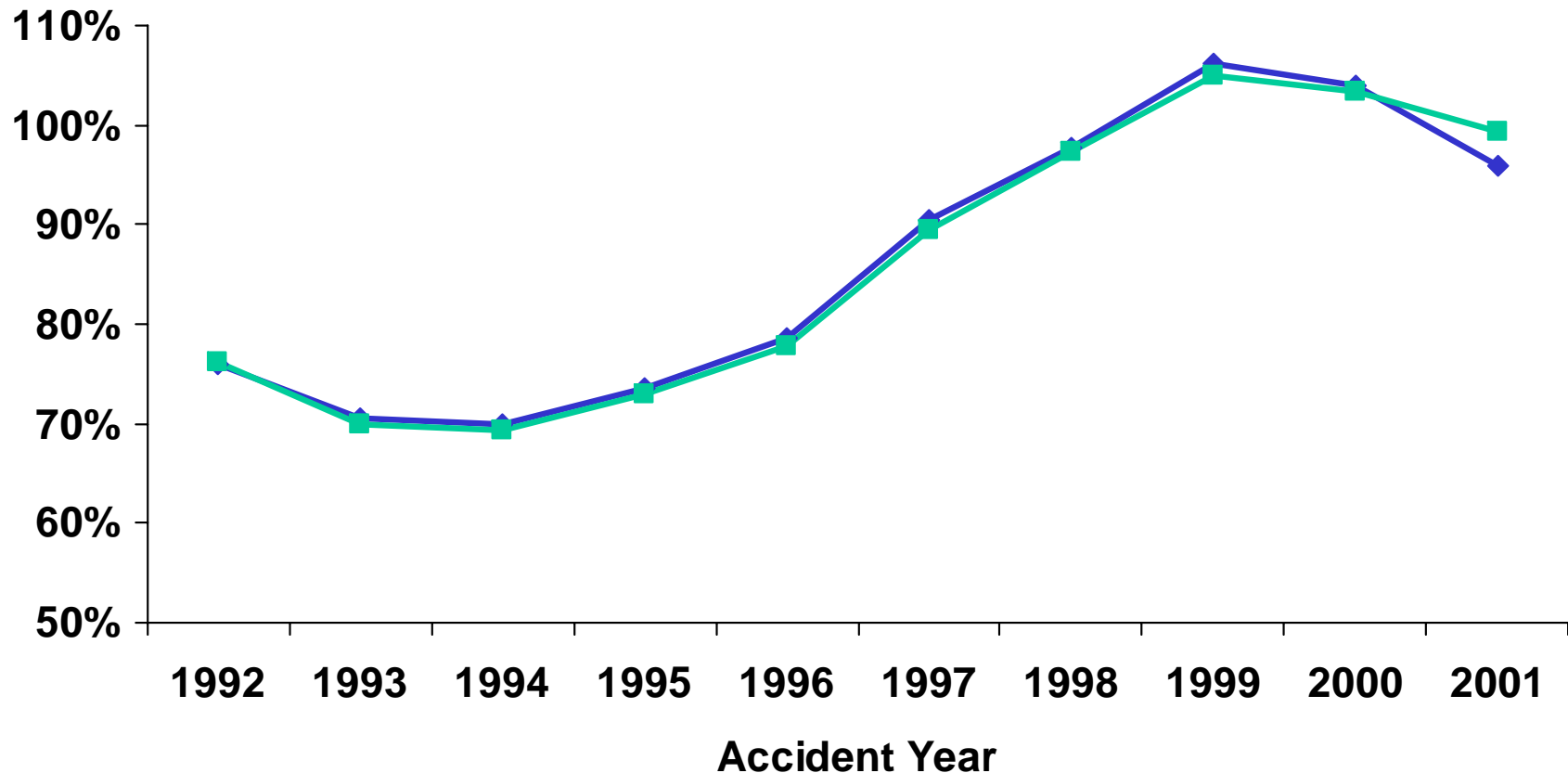
WC Loss & LAE Reserves – Private Carriers*
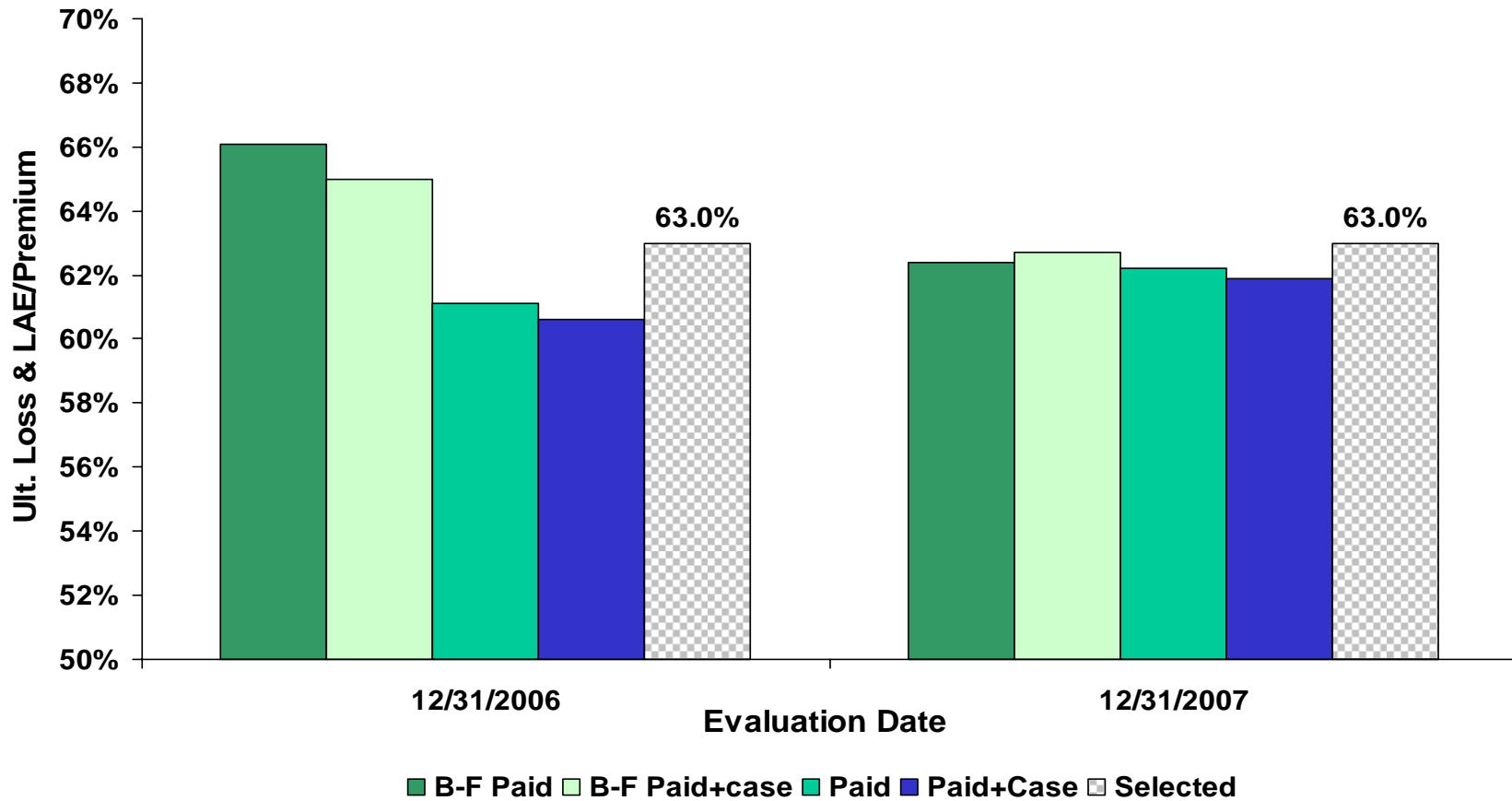
All methods include LAE

*Includes Maine and Minnesota state funds

Comparison of Methods
Accident Year 2005

WC Loss & LAE Reserves – Private Carriers*

All methods include LAE

*Includes Maine and Minnesota state funds

Comparison of Methods
Accident Year 2004
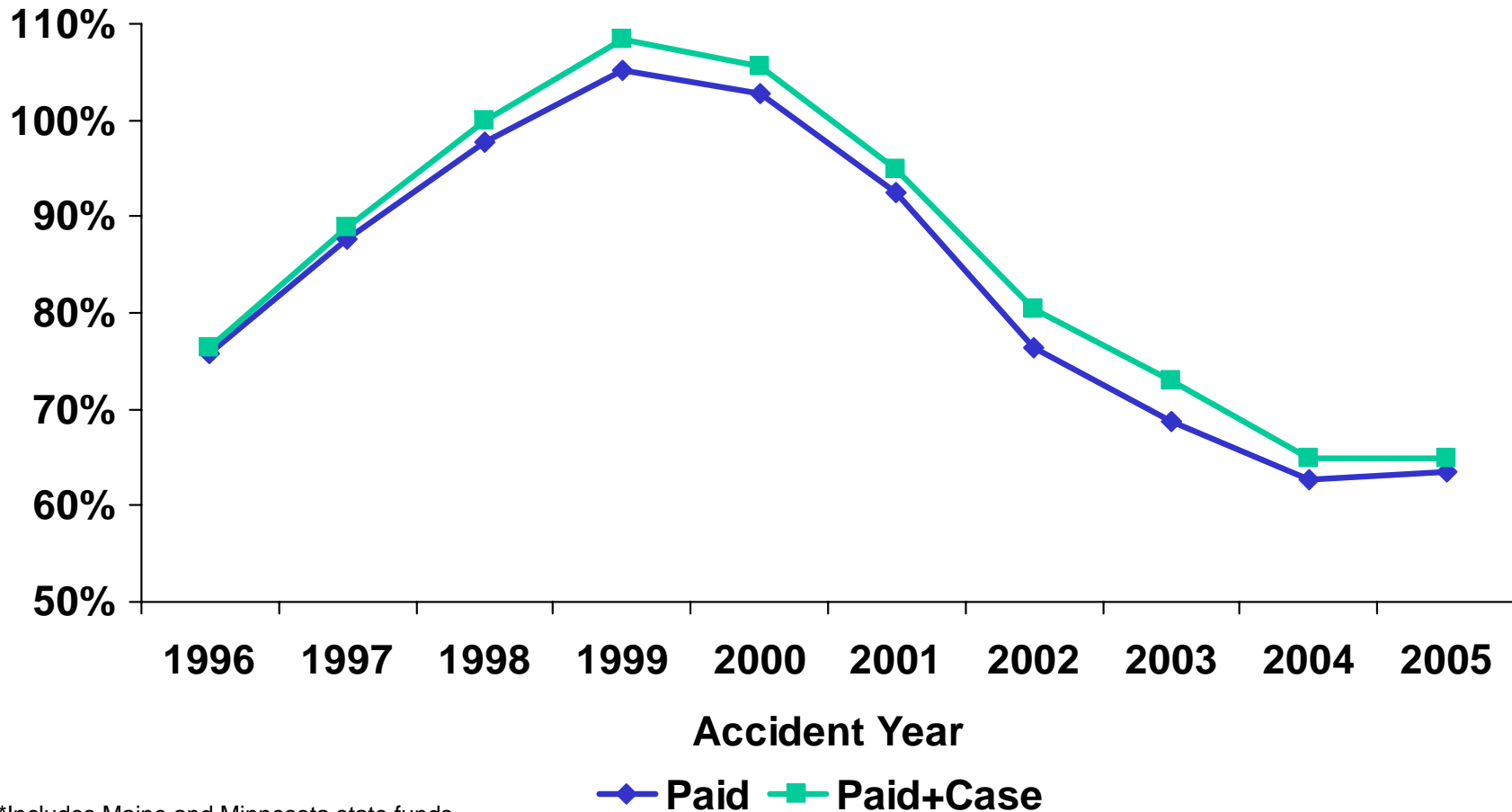
WC Loss & LAE Reserves – Private Carriers*
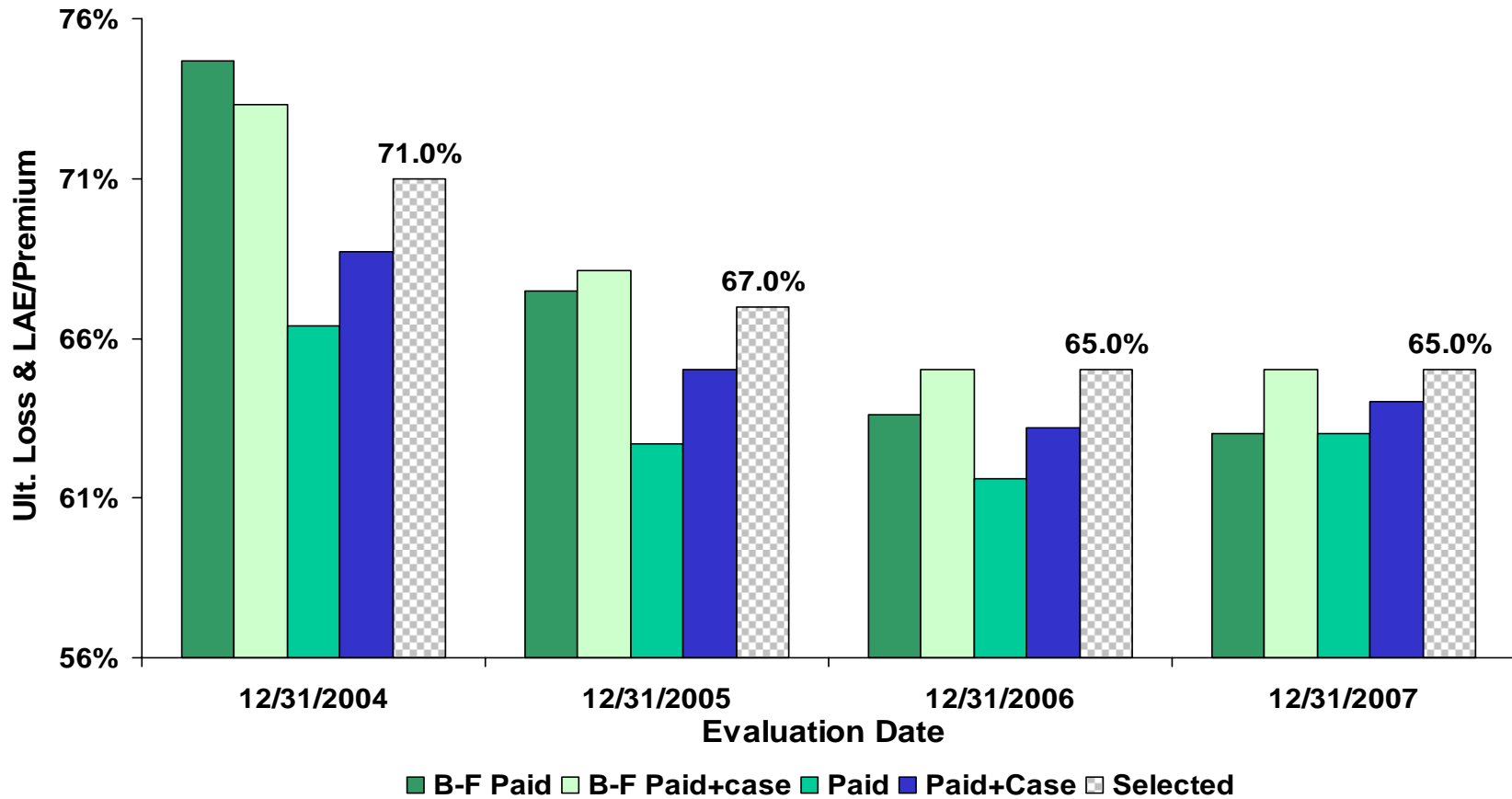
All methods include LAE
*Includes Maine and Minnesota state funds

Paid vs. Paid+Case Loss and LAE Ratios Valued as of 12/01 (1992-2001)

WC– Private Carriers

Paid ◆ Paid+Case ■

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Paid vs. Paid+Case Loss and LAE Ratios Valued as of 12/04 (1995-2004)

WC– Private Carriers*
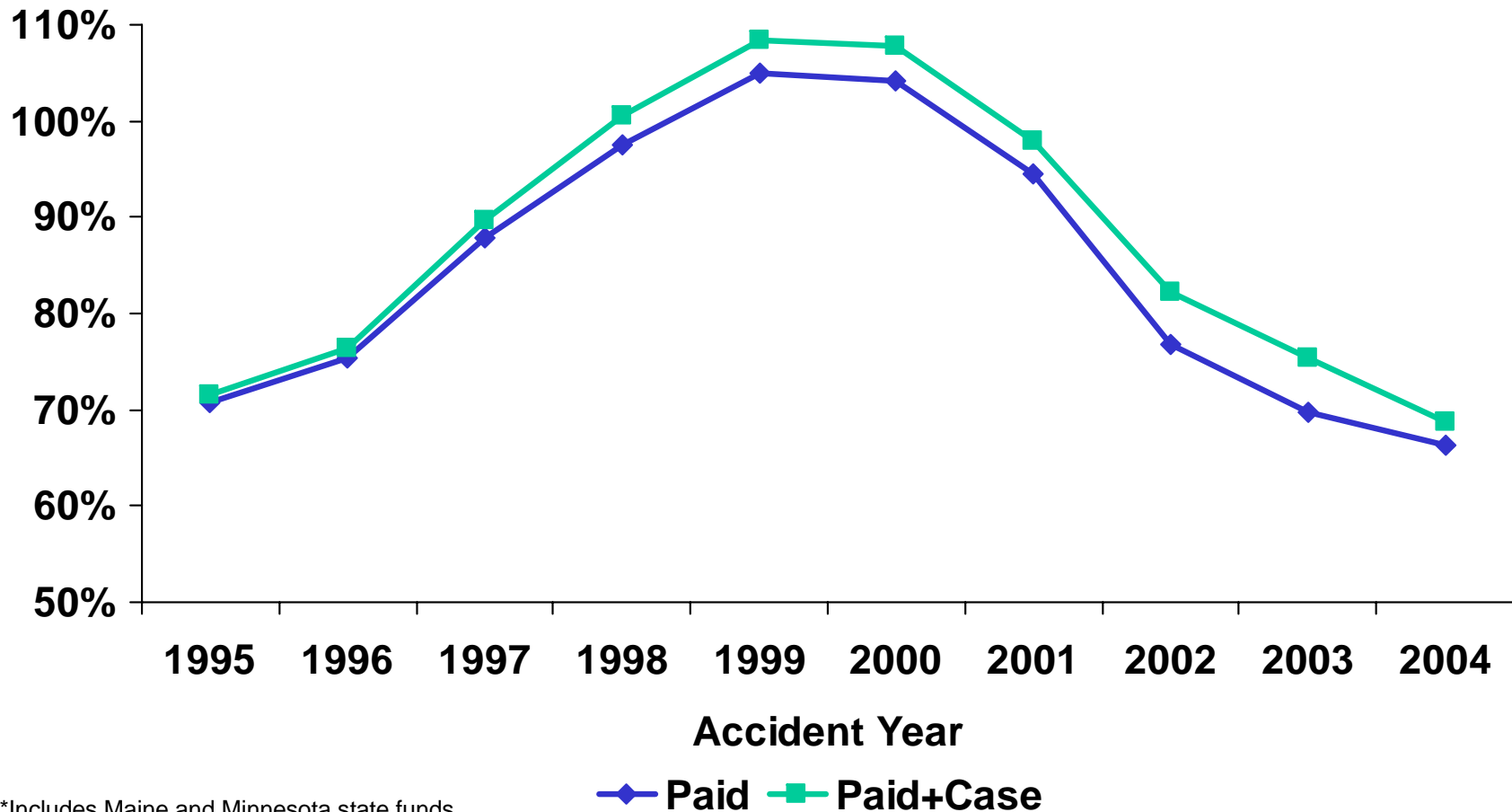
*Includes Maine and Minnesota state funds

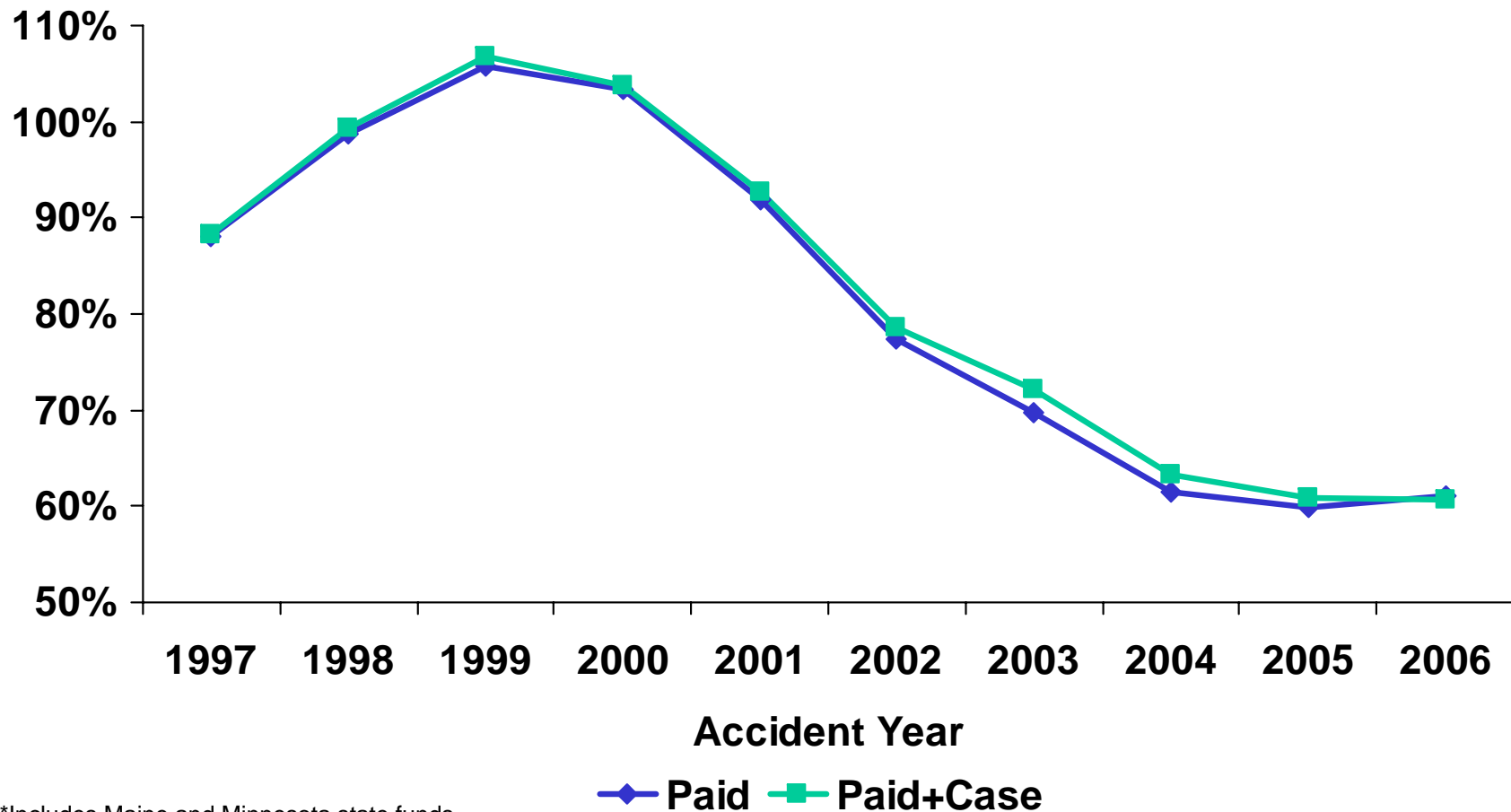# Paid vs. Paid+Case Loss and LAE Ratios Valued as of 12/05 (1996-2005)

WC– Private Carriers*

Accident Year

Paid ◆ Paid+Case ■

*Includes Maine and Minnesota state funds

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Paid vs. Paid+Case Loss and LAE Ratios Valued as of 12/06 (1997-2006)
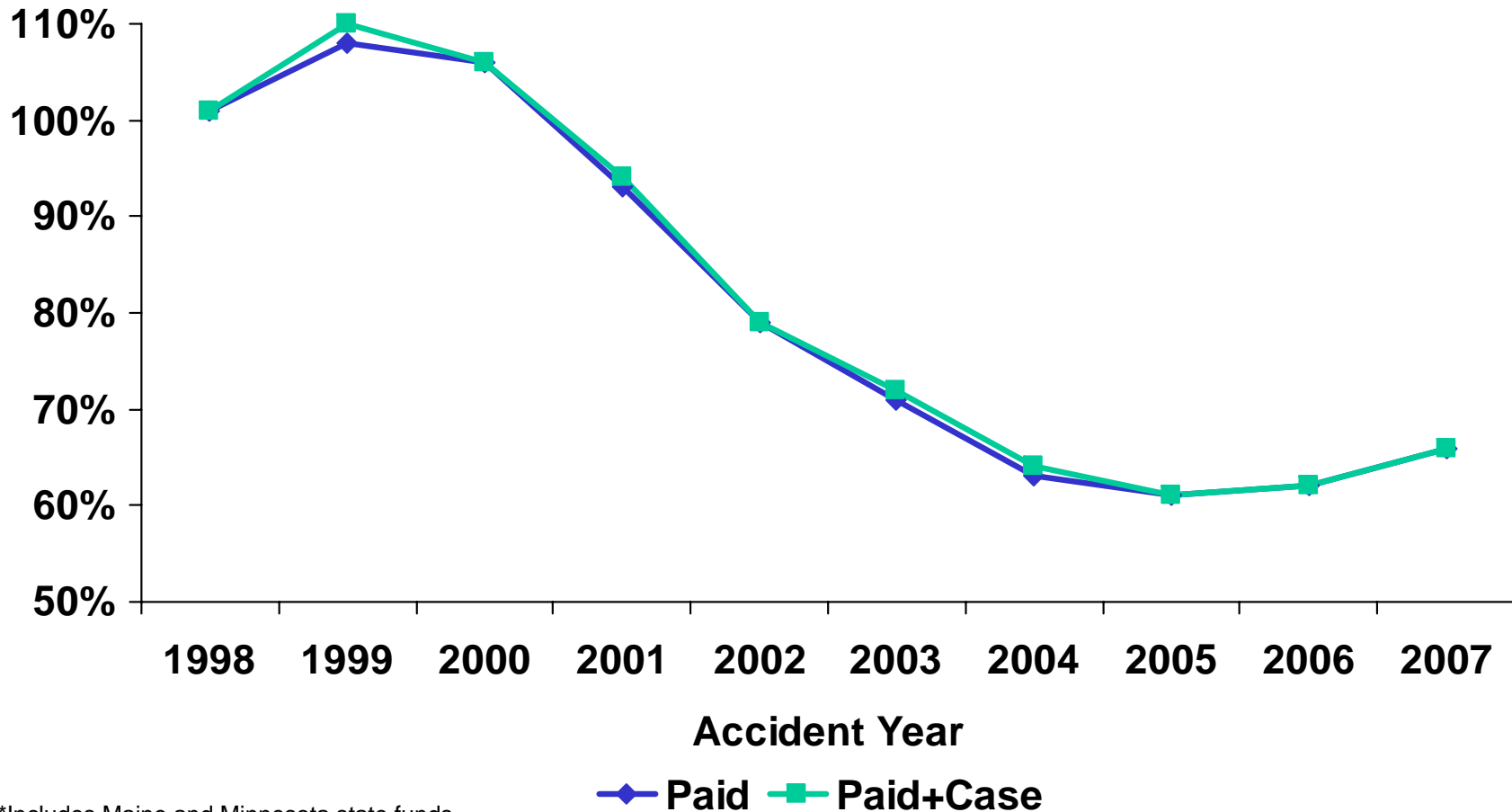
WC– Private Carriers*

*Includes Maine and Minnesota state funds

Paid vs. Paid+Case Loss and LAE Ratios Valued as of 12/07 (1998-2007)

WC– Private Carriers*

*Includes Maine and Minnesota state funds

Questions and Answers?