



**SelectActuarial**  
SERVICES

# State of Tennessee

**Presentation of Actuarial Studies as of June 30, 2020**

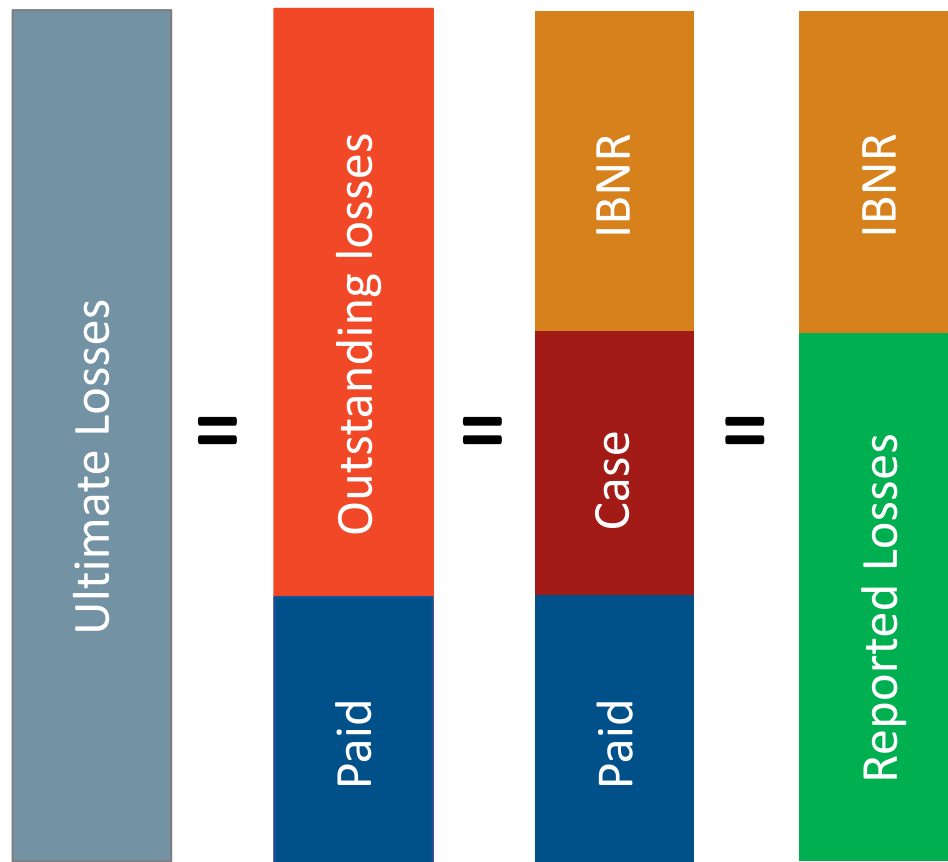
a straightforward approach to quantifying risk

# Annual Actuarial Study

## Objectives:

- Estimate ultimate and outstanding losses as of 6/30/20 (Loss Reserve Analysis)
- Forecast losses for 2021/22
- Allocate the forecast losses to various departments of the State
- Provide an allocation of the administrative expenses

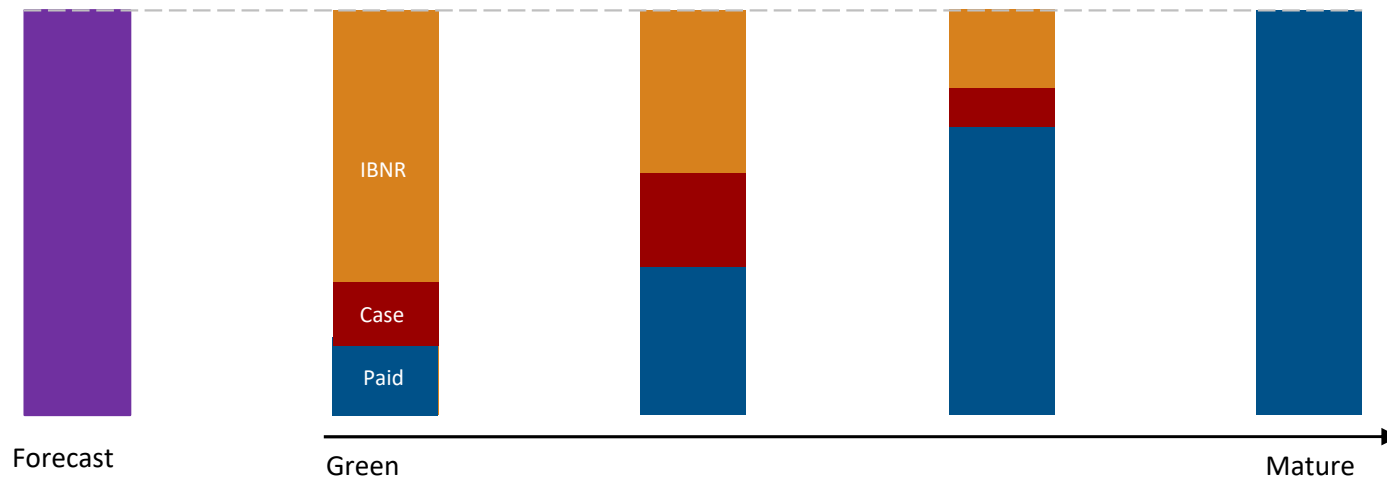
# Terms Defined



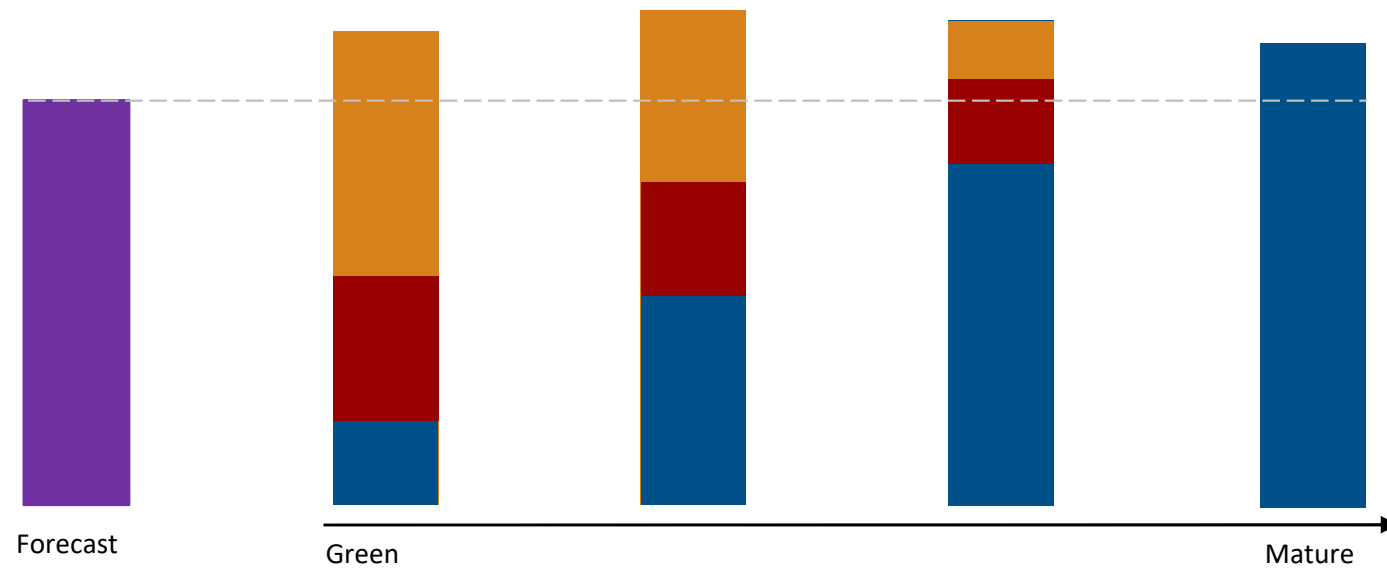
- **Ultimate Losses:** The total amount that will eventually be paid on all losses for a particular accident period (i.e. the cost to close all claims).
- **Paid Losses:** Dollars paid as of the latest available evaluation date on losses incurred through that date.
- **Outstanding Losses:** The losses not yet paid. Equal to the difference between the ultimate losses and the paid losses. These are also equal to the sum of the case reserves and the IBNR reserves.
- **Case Reserve:** Reserves established on individual claims by the case adjusters, as of the latest available evaluation. The case reserve plus the amount paid to date represents the adjuster's best estimate of the ultimate value of a particular claim.
- **Reported Losses:** Paid losses plus case reserves as of the latest available evaluation.
- **IBNR:** This is the dollar amount which we have estimated will be added to the reported losses between the date when the losses were compiled and final settlement of all claims for the accident period.

# Loss Development

In a perfect world...

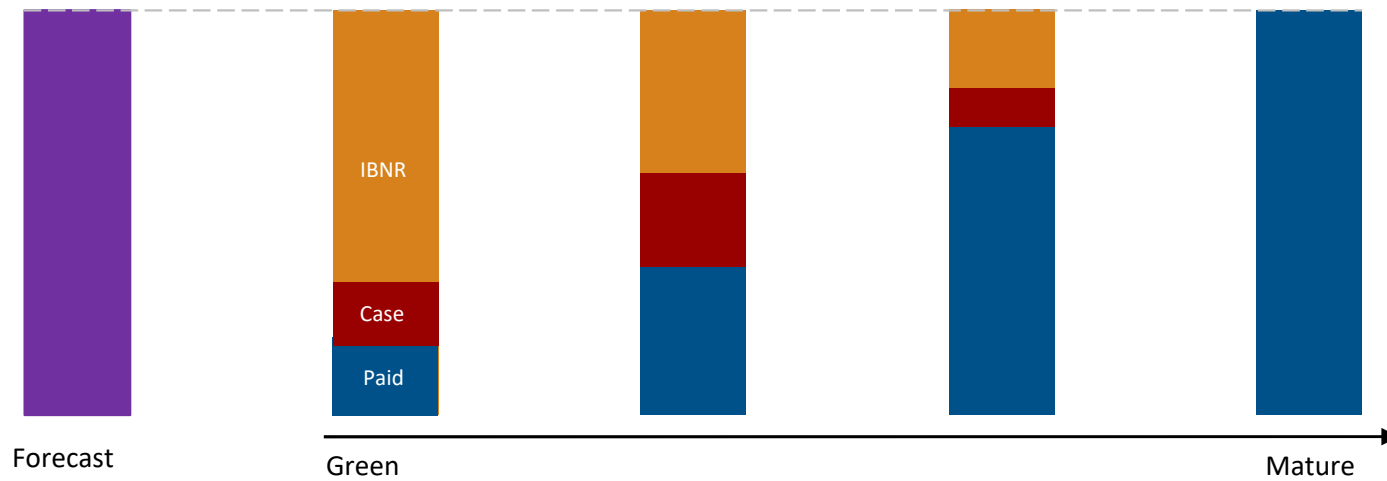


Reality...

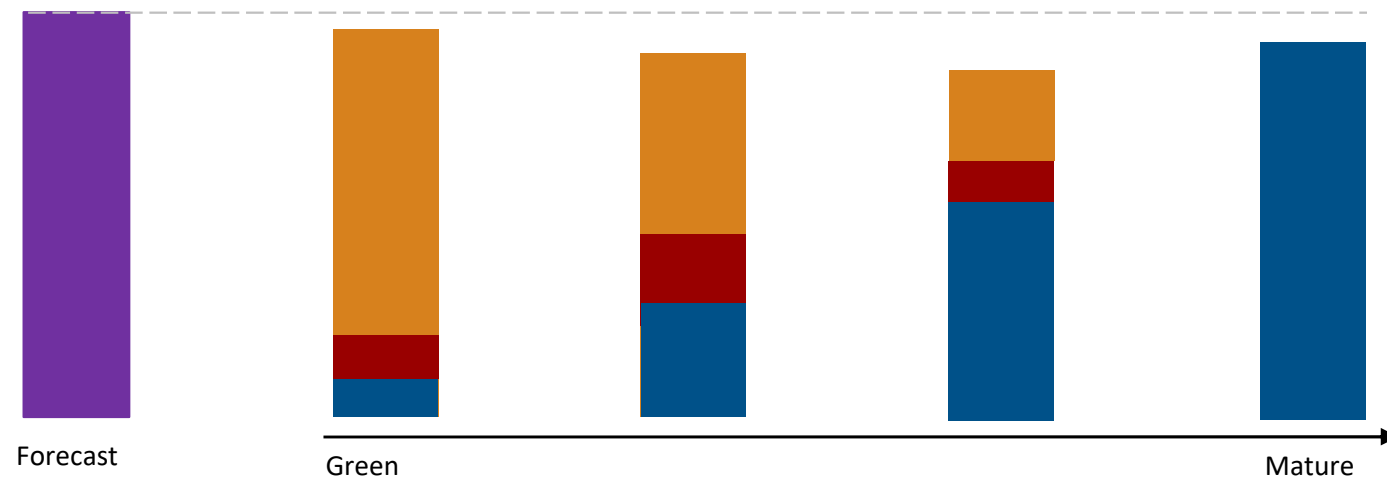


# Loss Development

In a perfect world...



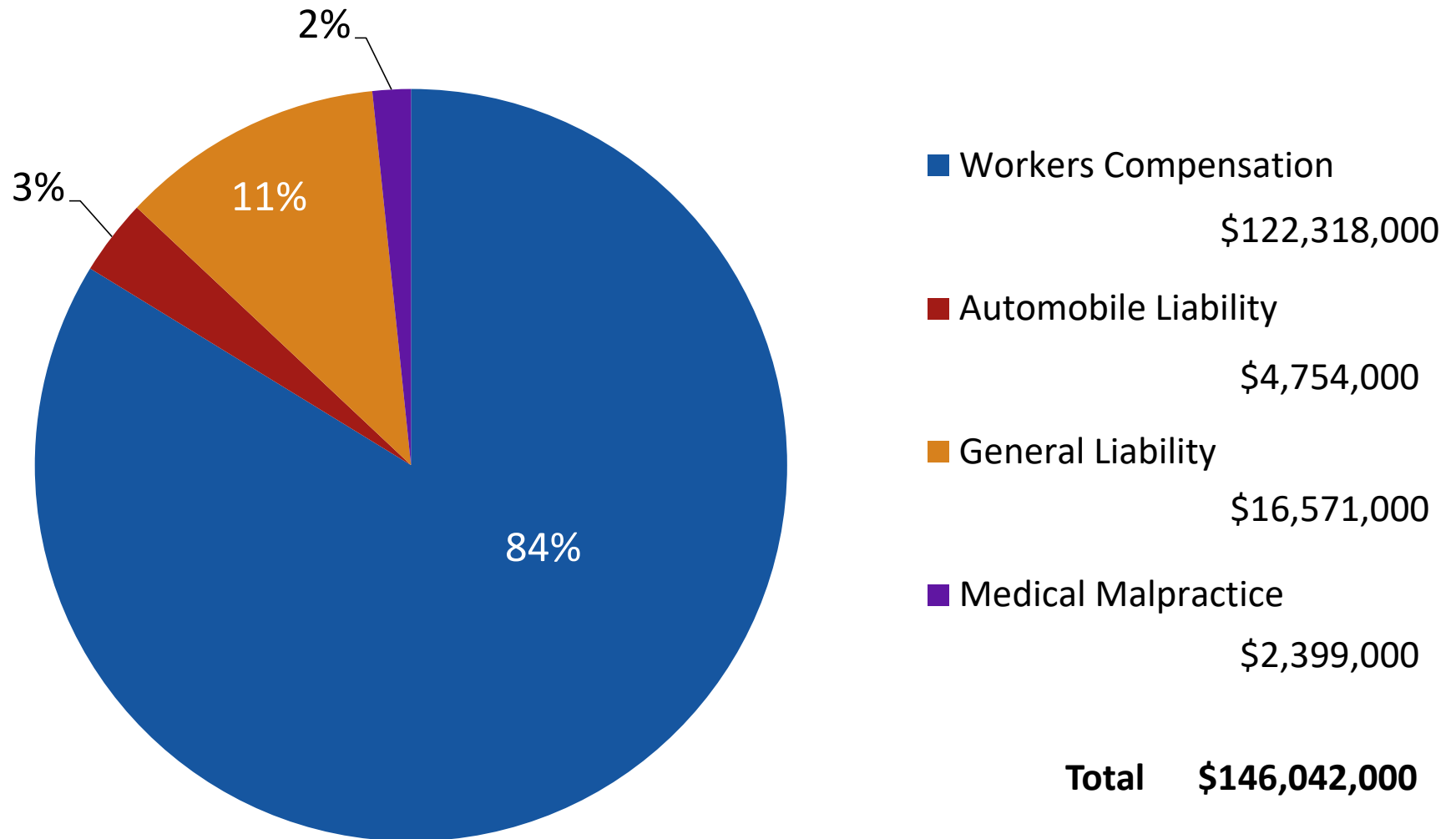
Reality...



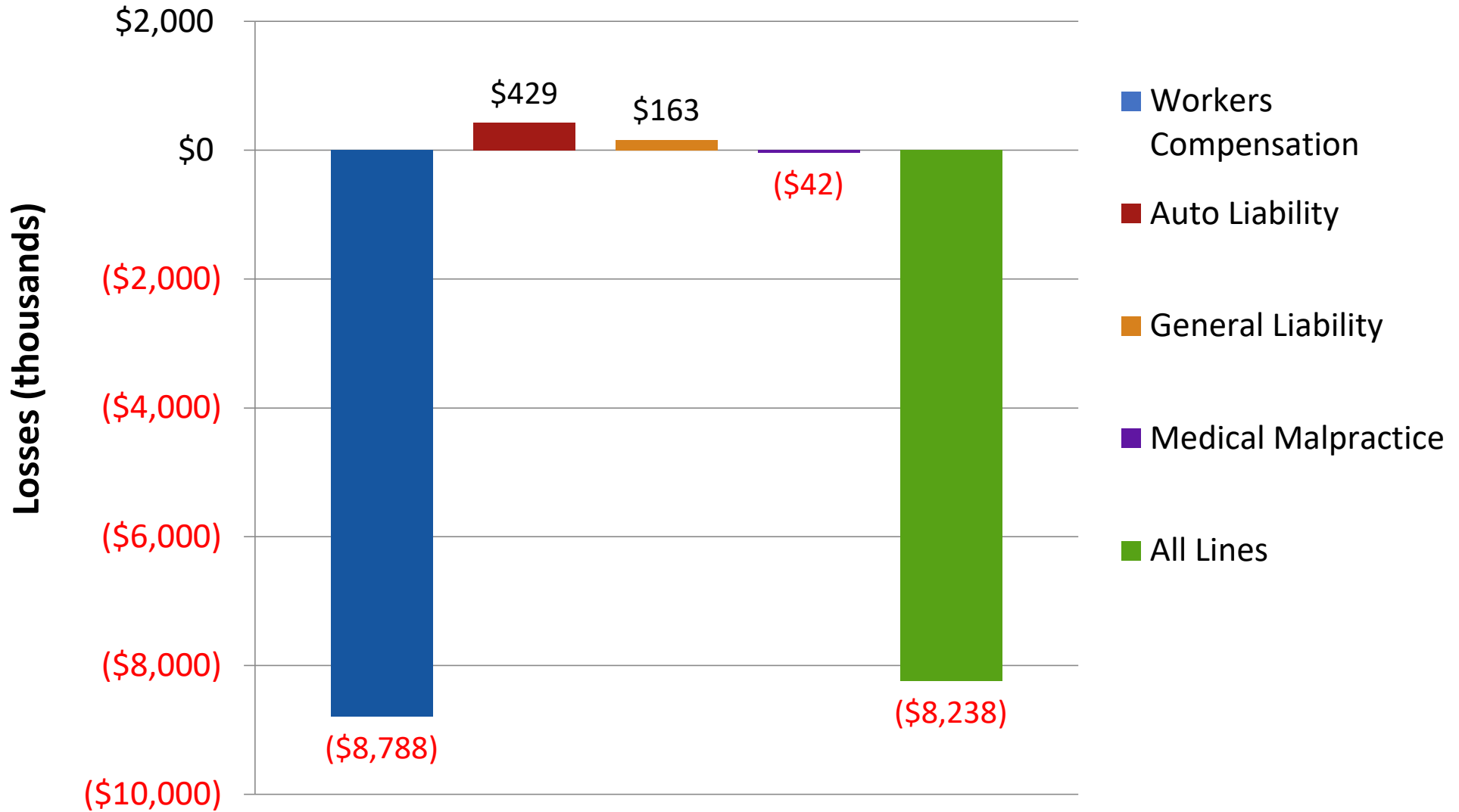
# Loss Reserve Analysis

- Purpose is to estimate the total amount of money required to pay for all outstanding losses as of 6/30/20
- Comparisons to the prior year's analysis are provided
- Used State's own loss development triangles
- Losses are limited for Liability and Medical Malpractice

## Undiscounted Outstanding Losses As of June 30, 2020



## Change in Ultimate Losses by Line\*



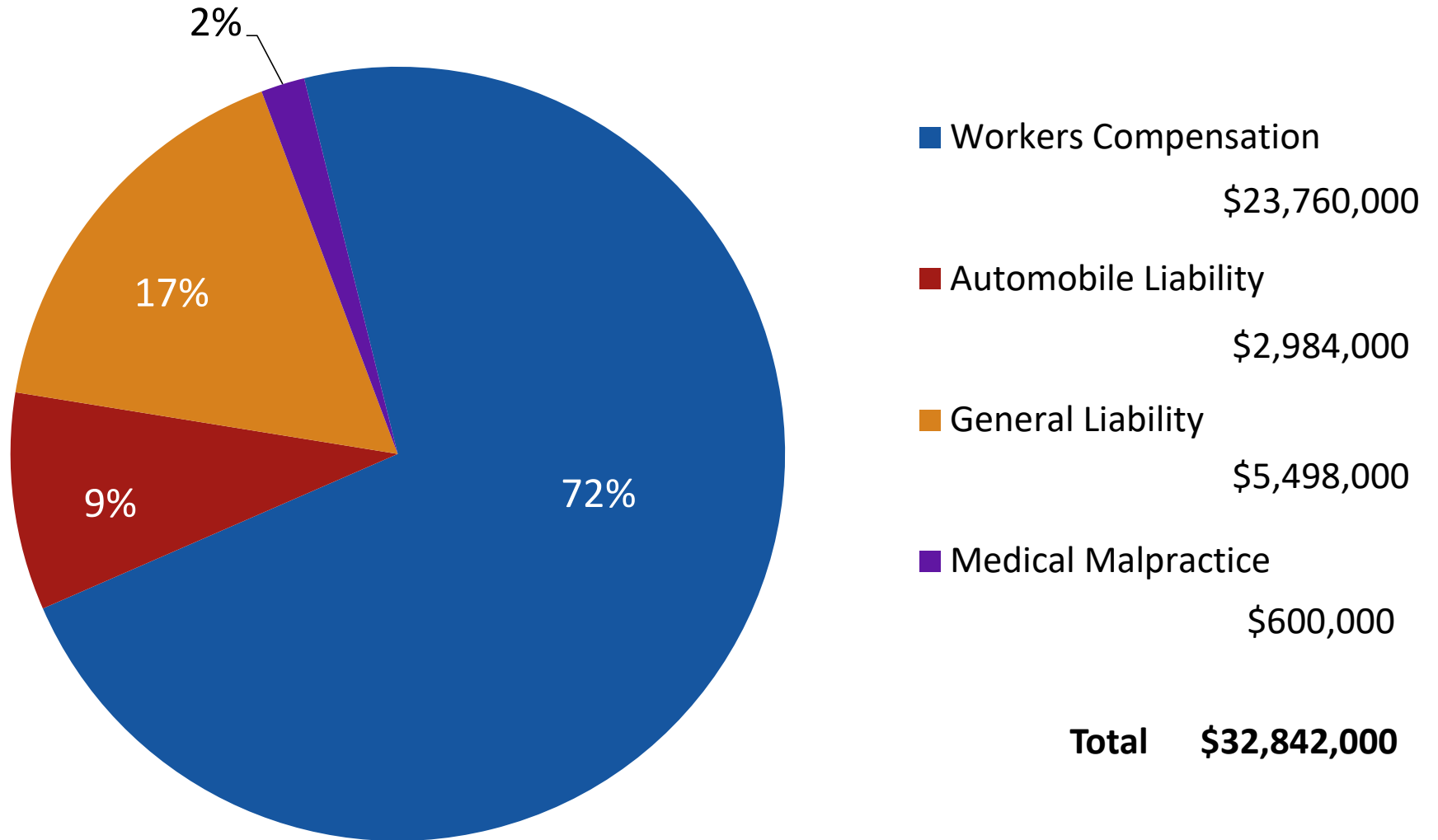
\*Incurred through 6/30/2020



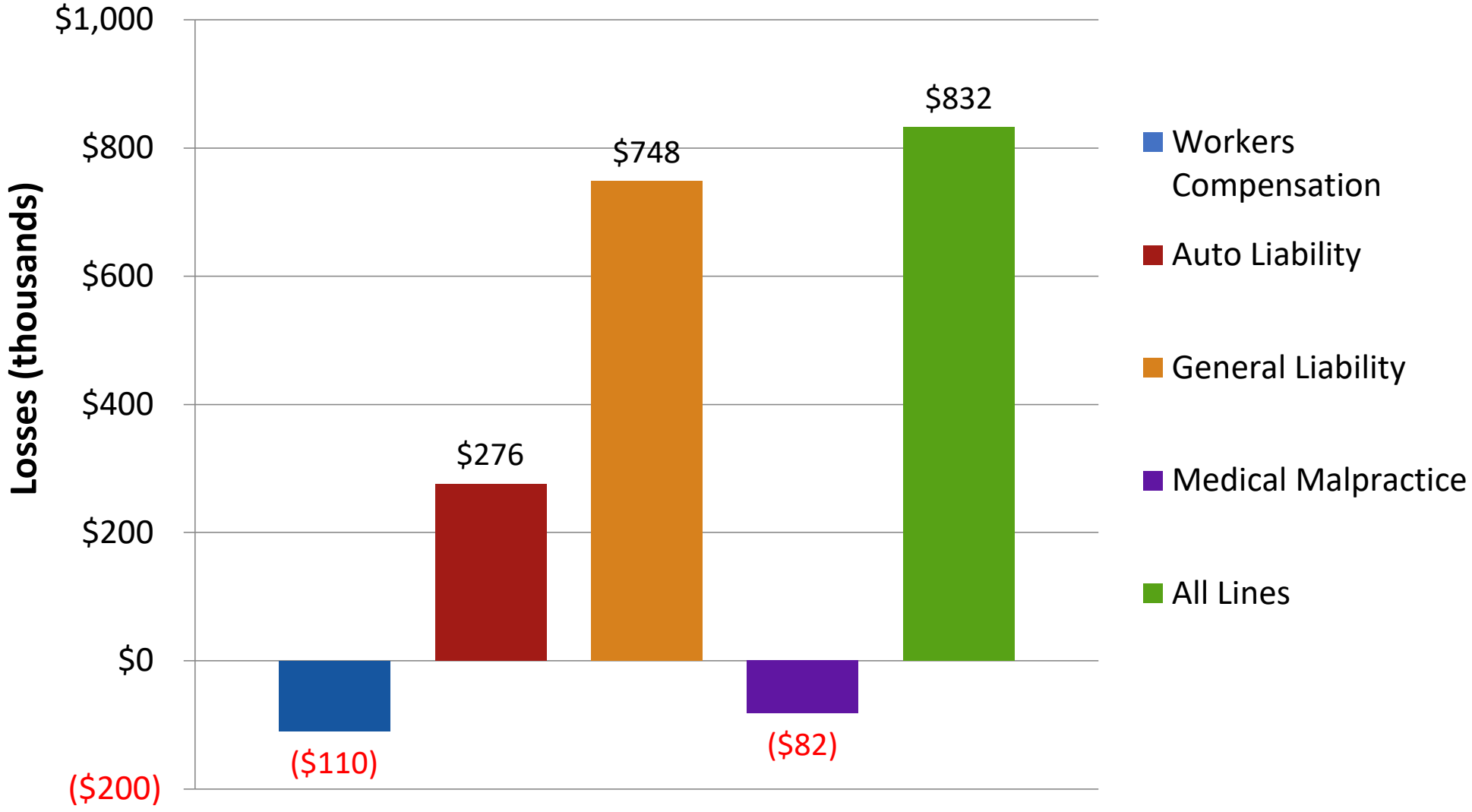
# Loss Forecast

- Purpose is to estimate the total amount of money required to pay for all losses occurring during a particular period (2021-22, for example)
- Useful for budgeting
- Allocated to various agencies

## Discounted (1.0%) 75<sup>th</sup> Percentile 7/1/21-22 Forecast Losses



# Changes in Discounted 75th Percentile Forecast Losses By Line\*



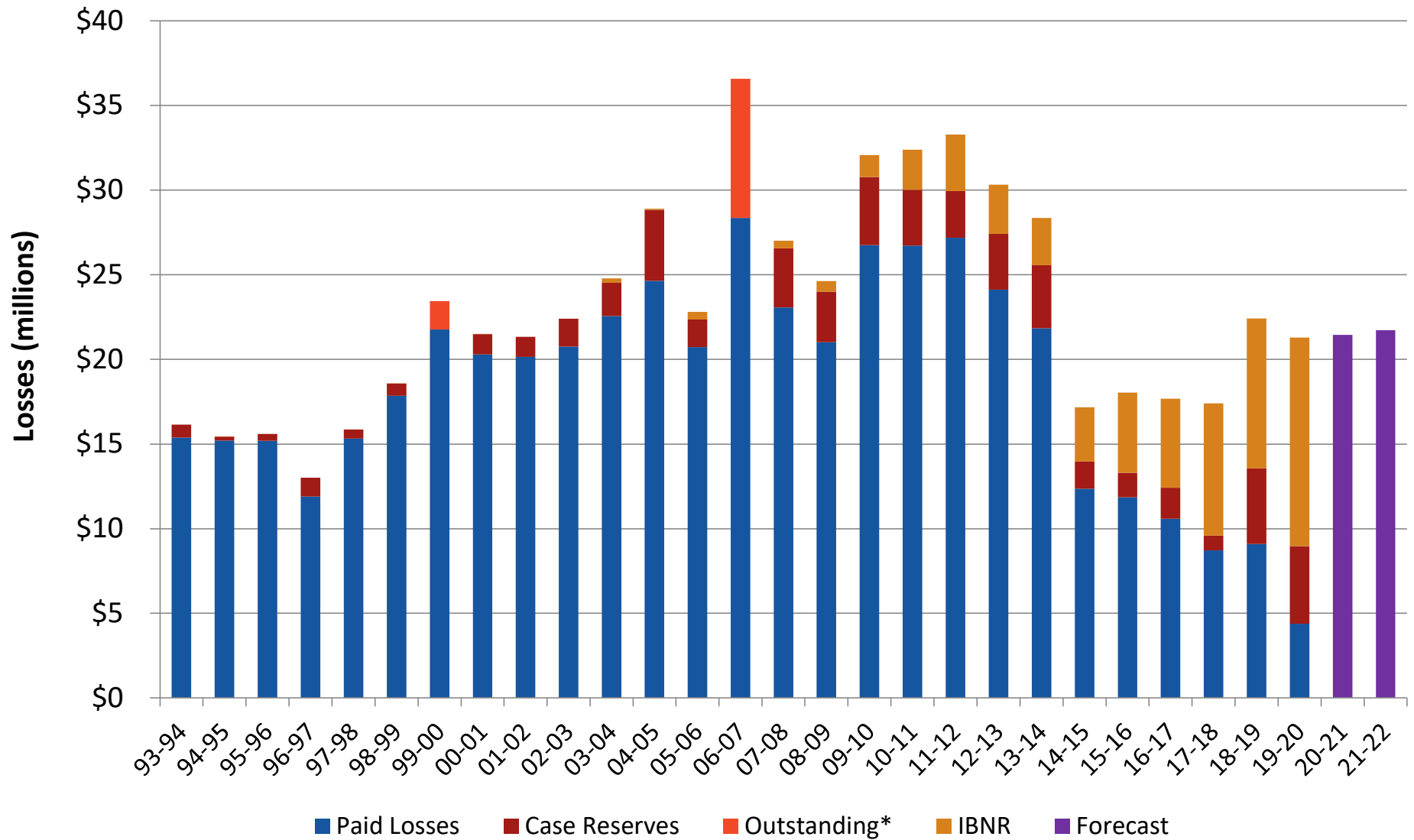
\*Changes from 2020/21 forecast disc. @ 1.5% to 2021/22 forecast disc. @ 1.0%

# Line of Business Results

## Workers Compensation Loss Reserve Analysis Summary of Change from 6/30/19 to 6/30/20

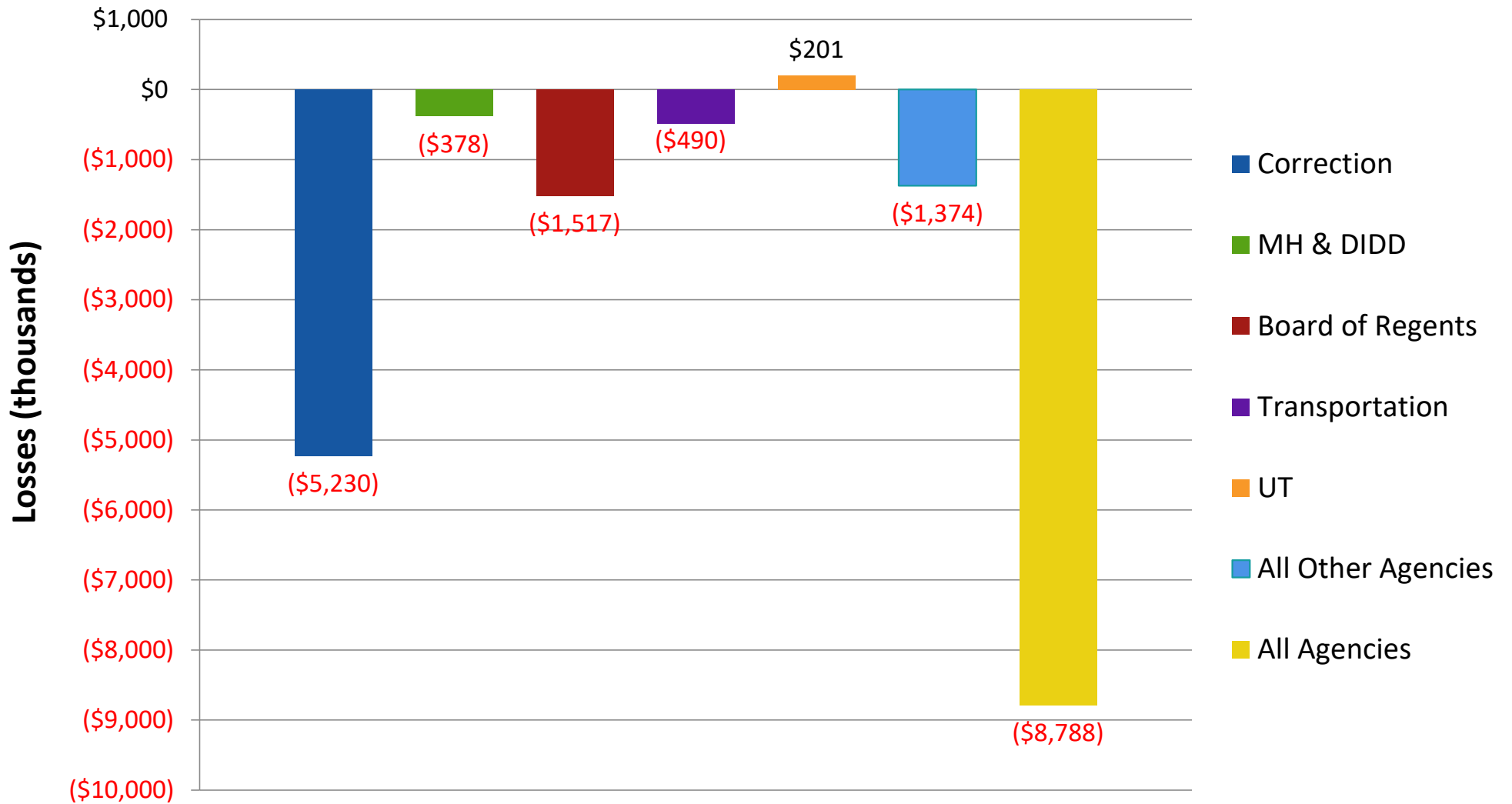
<b>1)</b>	<b>Required Reserve as of June 30, 2019, Discounted at 1.5%</b>		<b>\$111,940,000</b>
2)	Backing out of discounting	+	15,547,000
<hr/>			
3)	Undiscounted Required Reserve as of June 30, 2019		127,487,000
4)	Forecast Losses for 2019/20 as of June 30, 2019	+	22,158,000
5)	Change in Ultimate Losses for All Years Combined through 2019/20	-	8,788,000
6)	Total Payments During 2019/20 on All Accident Years	-	18,542,000
<hr/>			
7)	Undiscounted Required Reserve as of June 30, 2020		122,318,000
8)	Discounting	-	10,463,000
<hr/>			
<b>9)</b>	<b>Required Reserve as of June 30, 2020, Discounted at 1.0%</b>		<b>111,855,000</b>

## Workers Compensation Ultimate and Outstanding Losses as of June 30, 2020



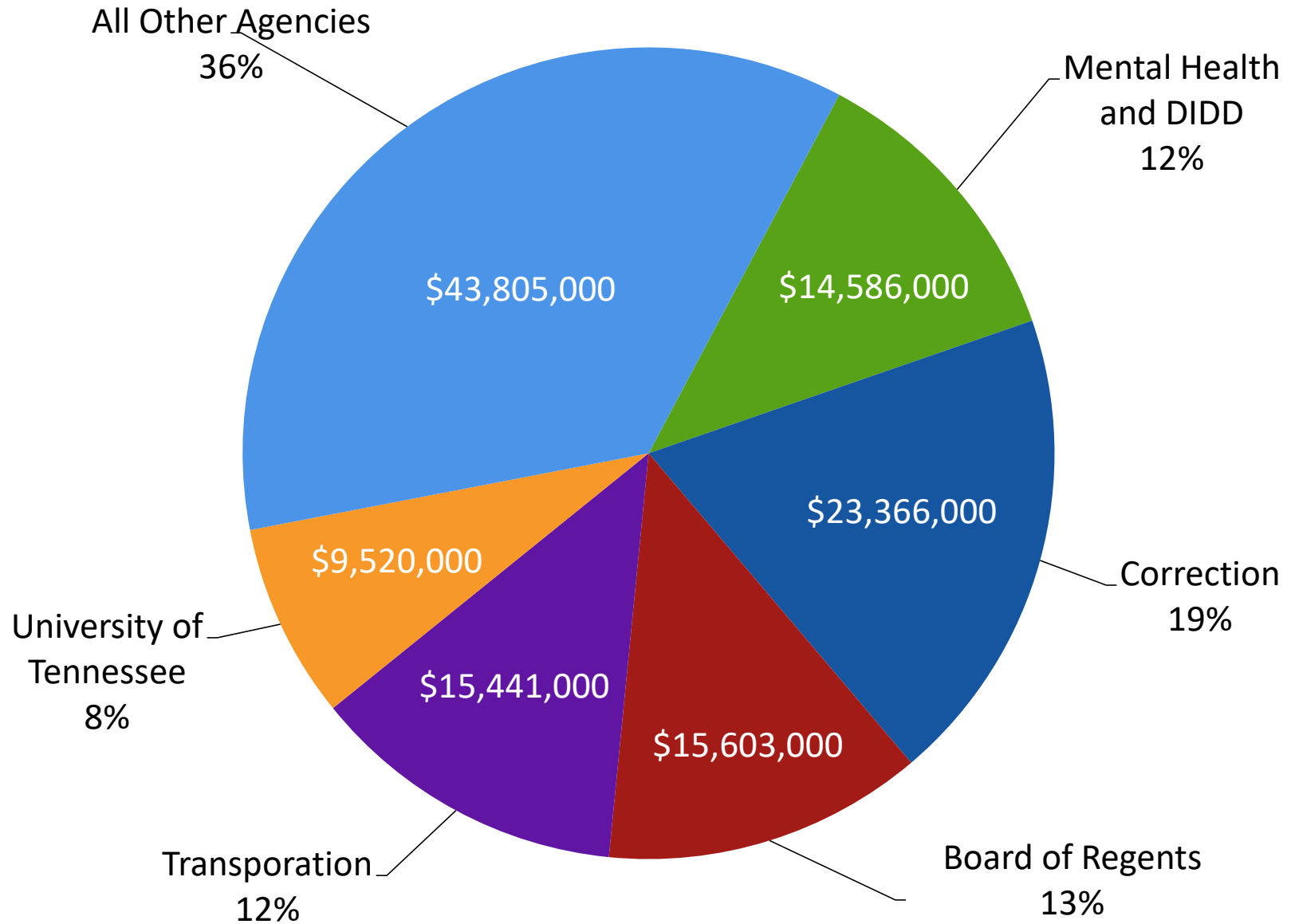
\* Shown for years with negative IBNR

## Change in Ultimate Losses\*



\* Incurred through 6/30/2020

# Undiscounted Outstanding Losses





## Workers Compensation Loss Forecast

<b>1)</b>	<b>Discounted 75%-tile Forecast for 2020/21 (Prior report, discounted at 1.5%)</b>	<b>\$23,870,000</b>
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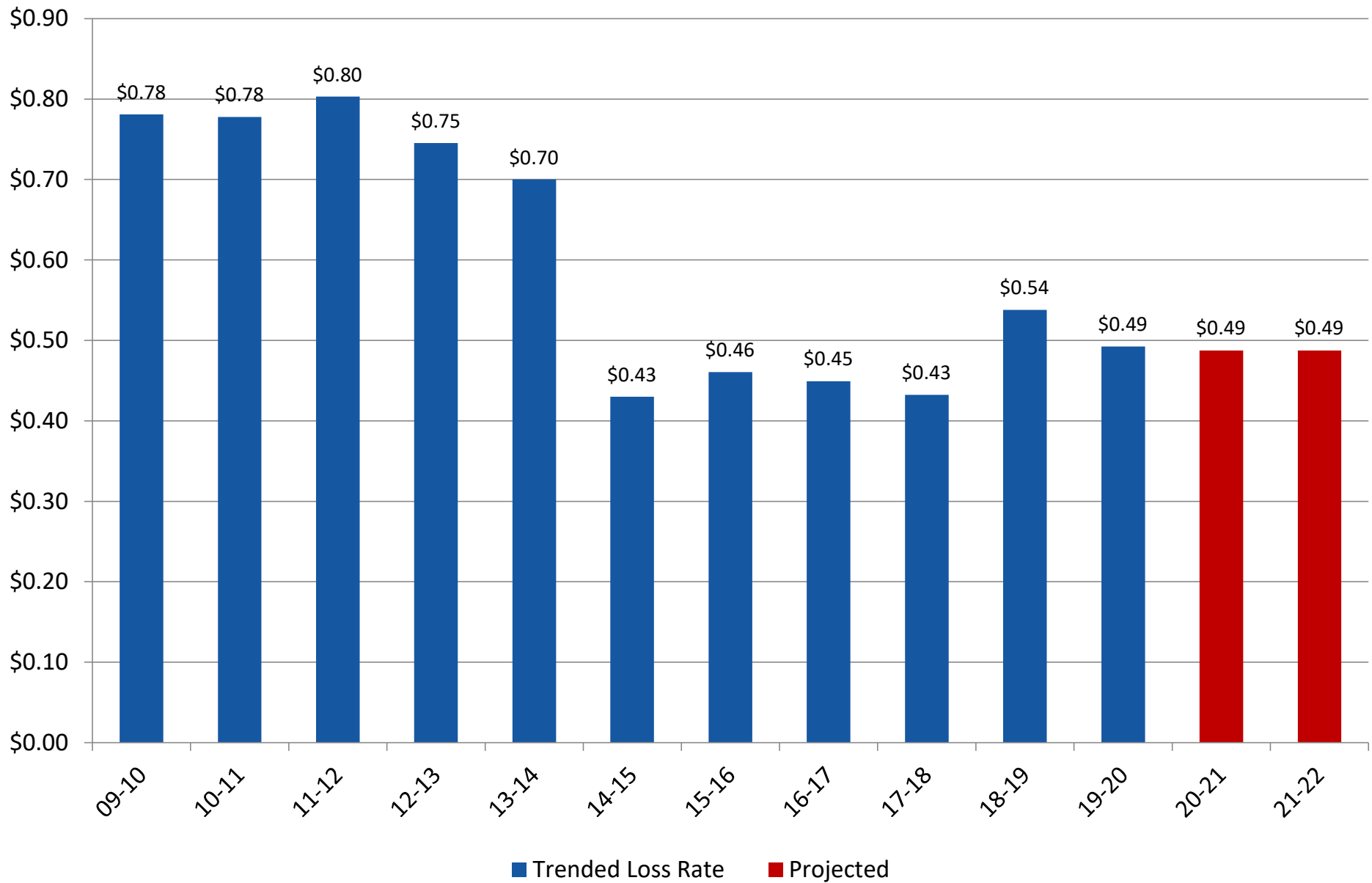
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*Approximate Change Due to:*

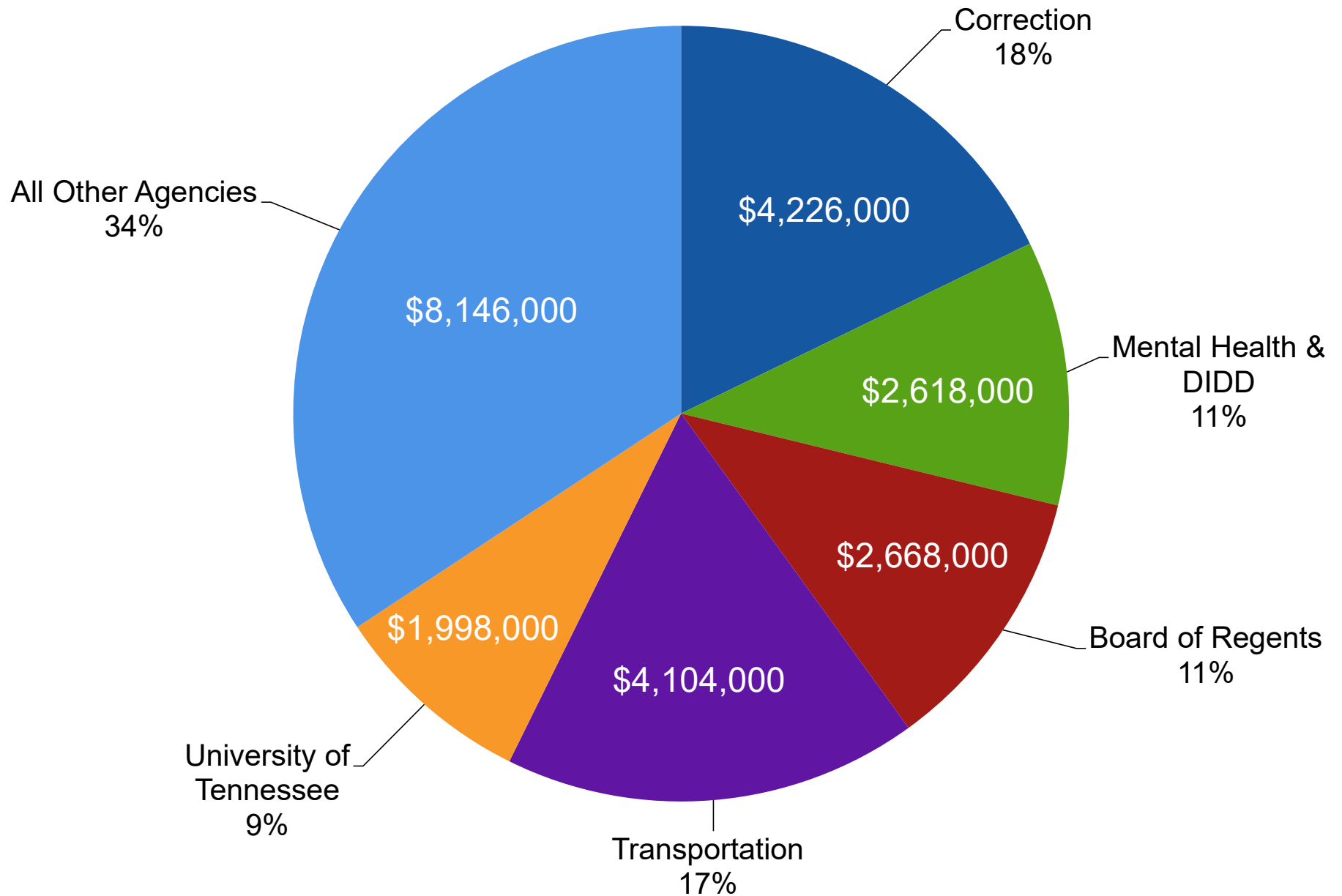
2)	Change in Exposure	+	1,404,000	
3)	Inflation	+	113,000	
4)	Experience	-	2,284,000	
5)	Modeling Differences	+	80,000	
6)	Payout Pattern	+	13,000	
7)	Interest Rate Change	+	564,000	

<b>8)</b>	<b>Discounted 75%-tile Forecast for 2021/22 (Current report, discounted at 1.0%)</b>	<b>23,760,000</b>
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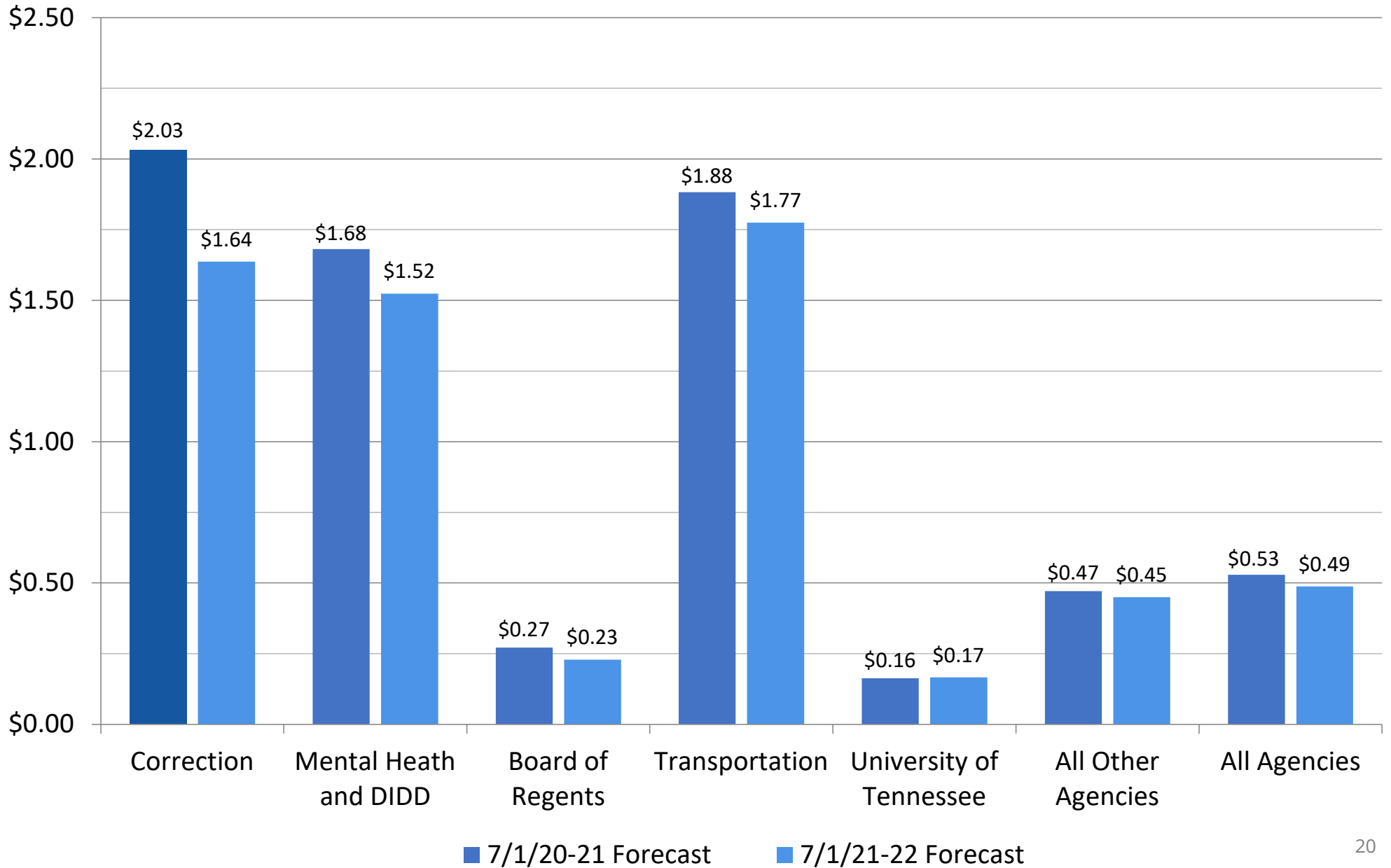
# All Agencies Combined Cost Per \$100 Payroll at 7/1/21-22 Level



## 7/1/21-22 Discounted (1.0%) 75<sup>th</sup> Percentile Forecast Losses



# Comparison of Agency Costs Per \$100 payroll



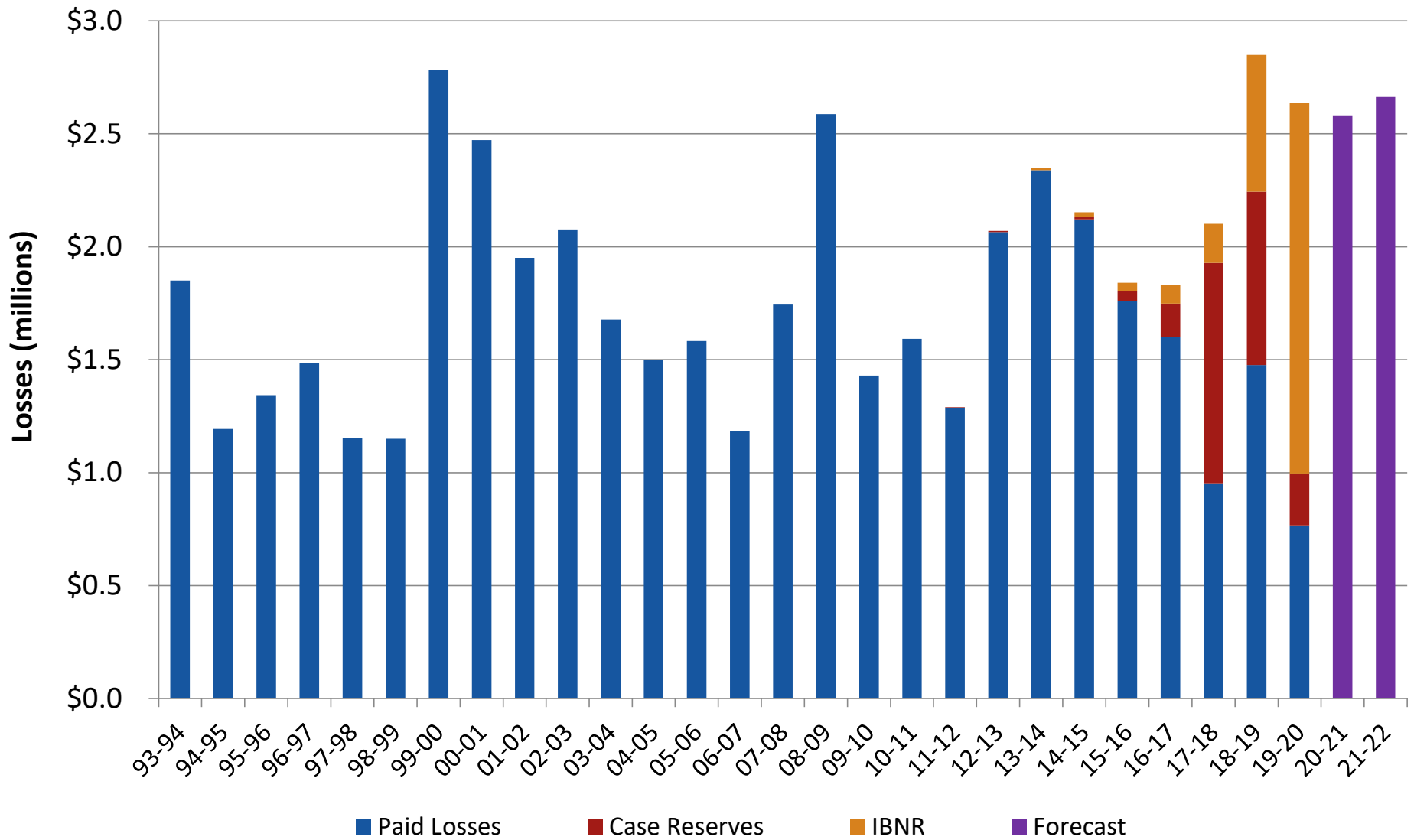
## Auto Liability Loss Reserve Analysis

### Summary of Change from 6/30/19 to 6/30/20

1)	Required Reserve as of June 30, 2019, Discounted at 1.5%		<b>\$4,411,000</b>
2)	Backing out of discounting	+	103,000
<hr/>			
3)	Undiscounted Required Reserve as of June 30, 2019		4,514,000
4)	Forecast Losses for 2019/20 as of June 30, 2019	+	2,332,000
5)	Change in Ultimate Losses for All Years Combined through 2019/20	+	429,000
6)	Total Payments During 2019/20 on All Accident Years	-	<b>2,524,000</b>
<hr/>			
7)	Undiscounted Required Reserve as of June 30, 2020		4,754,000
8)	Discounting	-	<b>70,000</b>
<hr/>			
9)	Required Reserve as of June 30, 2020, Discounted at 1.0%		<b>4,684,000</b>

# Automobile Liability

## Ultimate and Outstanding Losses as of June 30, 2020



# Auto Liability Loss Forecast

**1) Discounted 75%-tile Forecast for 2020/21** **\$2,708,000**  
**(Prior report, discounted at 1.5%)**

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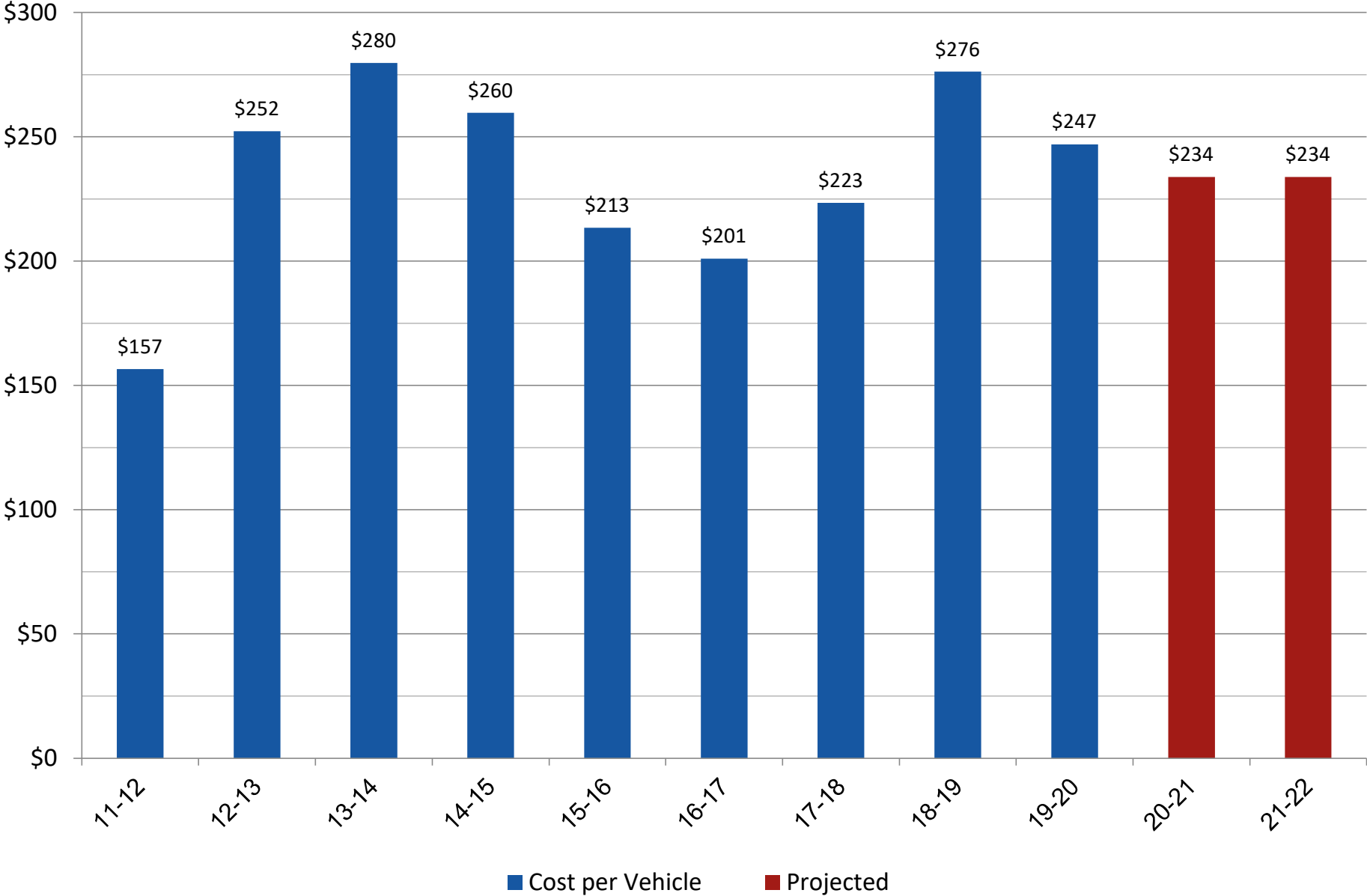
*Approximate Change Due to:*

2)	Change in Exposure	+	43,000	 + 276K
3)	Inflation	+	80,000	
4)	Experience	+	119,000	
5)	Modeling Differences	+	9,000	
6)	Payout Pattern	-	7,000	
7)	Interest Rate Change	+	32,000	

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**8) Discounted 75%-tile Forecast for 2021/22** **\$2,984,000**  
**(Current report, discounted at 1.0%)**

# Automobile Liability Cost Per Vehicle at 7/1/21-22 Level





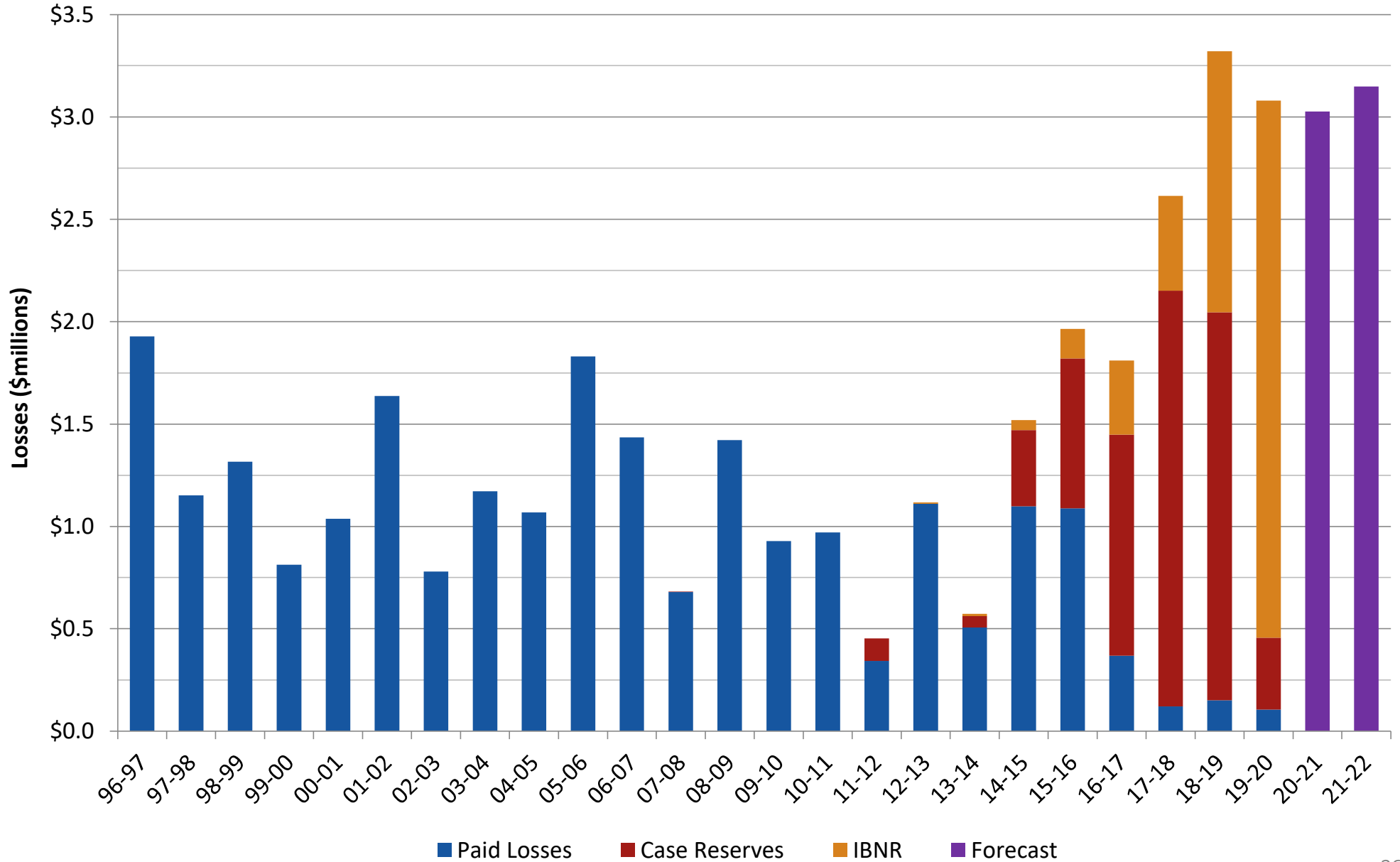
# General Liability Loss Reserve Analysis

## Summary of Change from 6/30/19 to 6/30/20

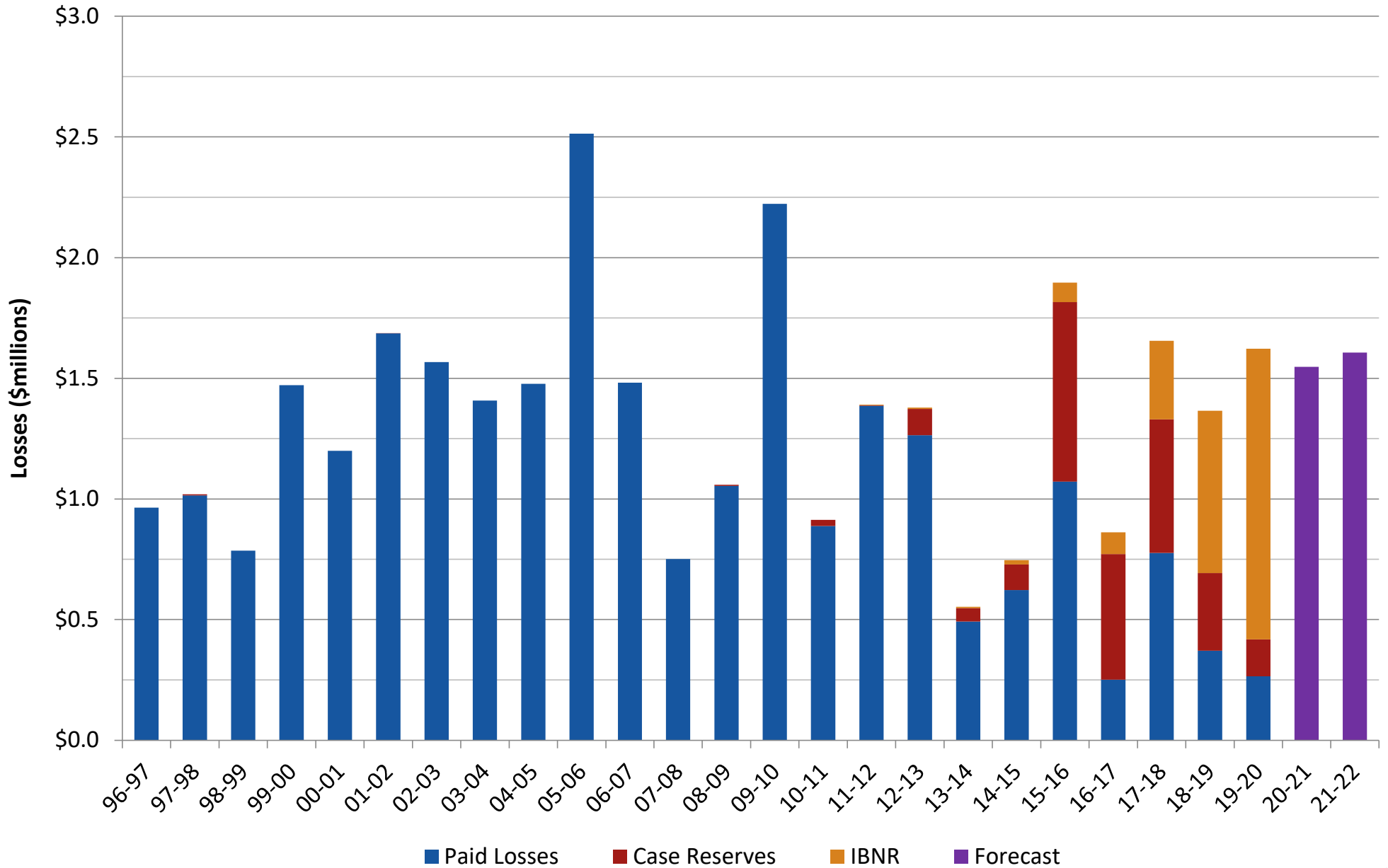
		<u>TDOT</u>		<u>All Other</u>		<u>Total</u>	
1)	<b>Required Reserve as of June 30, 2019, Discounted at 1.5%</b>						
		<b>\$8,763,000</b>		<b>\$5,511,000</b>		<b>\$14,274,000</b>	
2)	Backing out of discounting	+	338,000	+	217,000	+	555,000
3)	Undiscounted Required Reserve as of June 30, 2019		9,101,000		5,728,000		14,829,000
4)	Forecast Losses for 2019/20 as of June 30, 2019	+	2,470,000	+	1,527,000	+	3,997,000
5)	Change in Ultimate Losses for All Years Combined through 2019/20	+	742,000	-	579,000	+	163,000
6)	Total Payments During 2019/20 on All Accident Years	-	748,000	-	1,660,000	-	2,408,000
7)	Undiscounted Required Reserve as of June 30, 2020		11,564,000		5,007,000		16,571,000
8)	Discounting	-	281,000	-	130,000	-	411,000
9)	<b>Required Reserve as of June 30, 2020, Discounted at 1.0%</b>		<b>11,283,000</b>		<b>4,877,000</b>		<b>16,160,000</b>

## General Liability - Transportation

### Ultimate and Outstanding Losses as of June 30, 2020



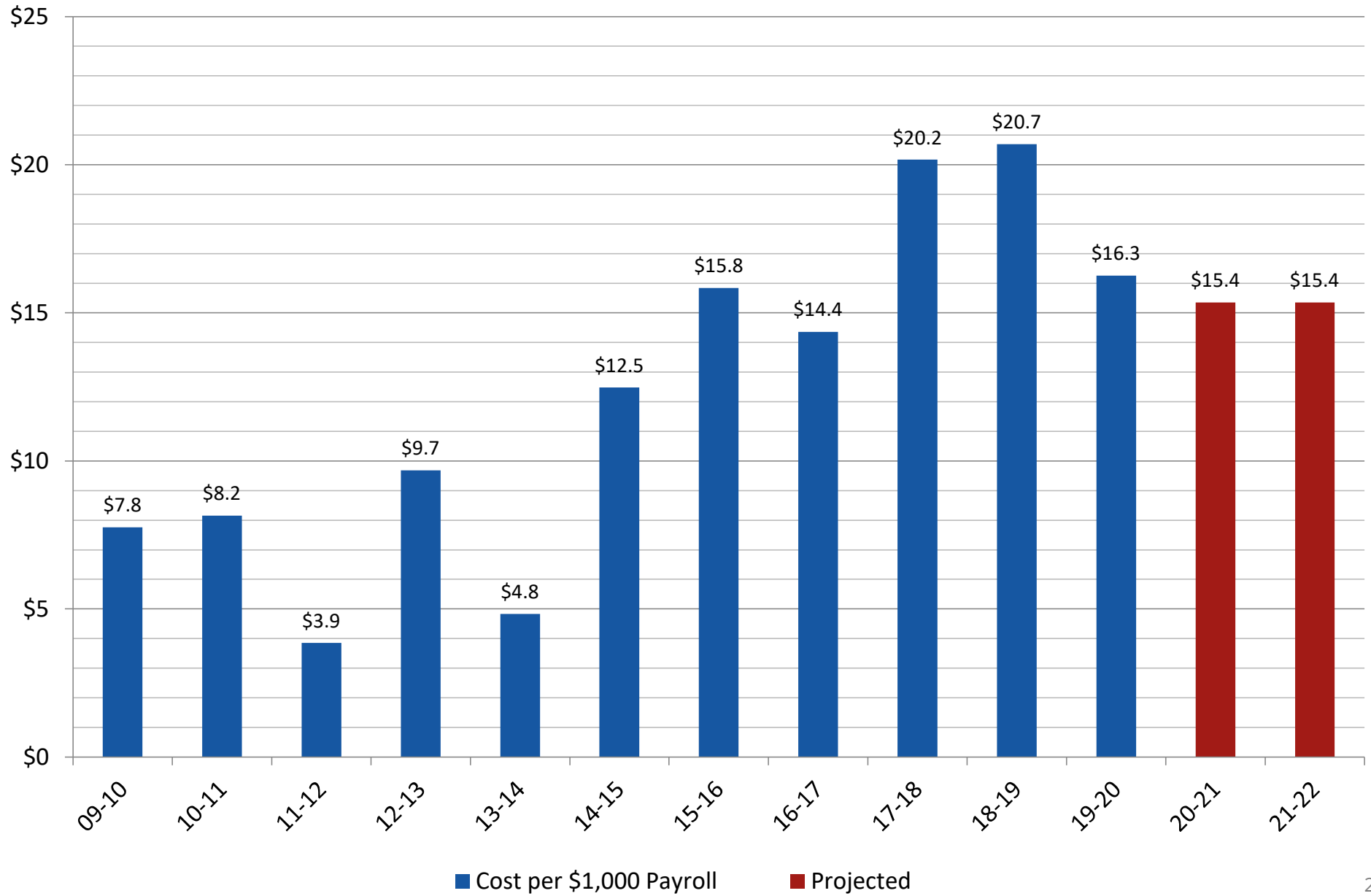
## General Liability – Other Than Transportation Ultimate and Outstanding Losses as of June 30, 2020



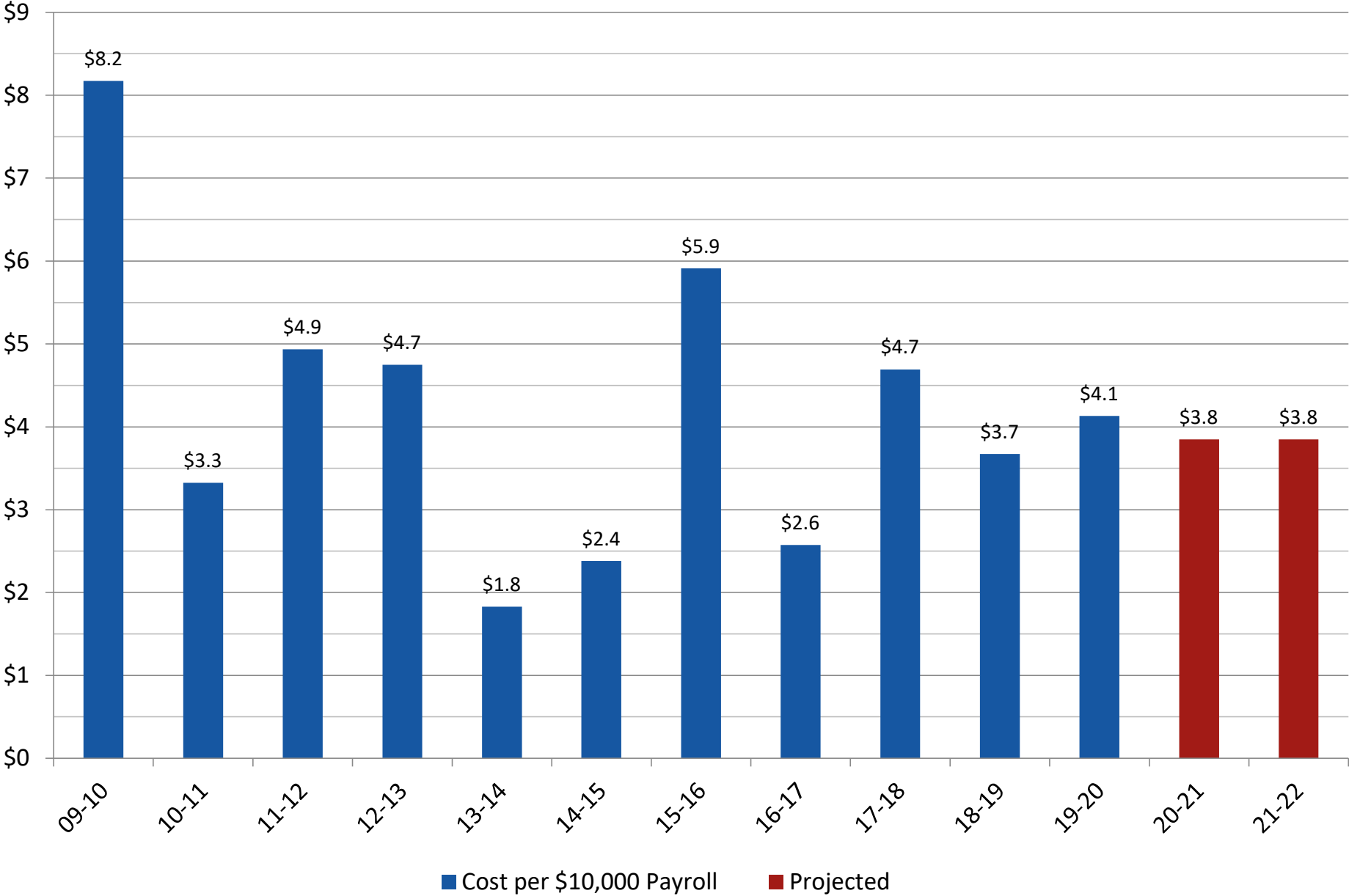
# General Liability Loss Forecast

		<u>TDOT</u>		<u>All Other</u>		<u>Total</u>			
<b>1)</b>	<b>Discounted 75%-tile Forecast for 2020/21 (Prior report, discounted at 1.5%)</b>			<b>\$2,880,000</b>		<b>\$1,870,000</b>		<b>\$4,750,000</b>	
<i>Approximate Change Due to:</i>									
2)	Change in Exposure	-	112,000	-	3,000	-	115,000	} + 748K	
3)	Inflation	+	83,000	+	52,000	+	135,000		
4)	Experience	+	625,000	-	20,000	+	605,000		
5)	Modeling Differences	+	81,000	-	22,000	+	59,000		
6)	Payout Pattern	-	37,000	-	2,000	-	39,000		
7)	Interest Rate Change	+	68,000	+	35,000	+	103,000		
<b>8)</b>	<b>Discounted 75%-tile Forecast for 2021/22 (Current report, discounted at 1.0%)</b>			<b>3,588,000</b>		<b>1,910,000</b>			<b>5,498,000</b>

## General Liability – Transportation Cost per \$1,000 Payroll at 7/1/21-22 Level



# General Liability – Other than Transportation Cost per \$10,000 Payroll at 7/1/21-22 Level

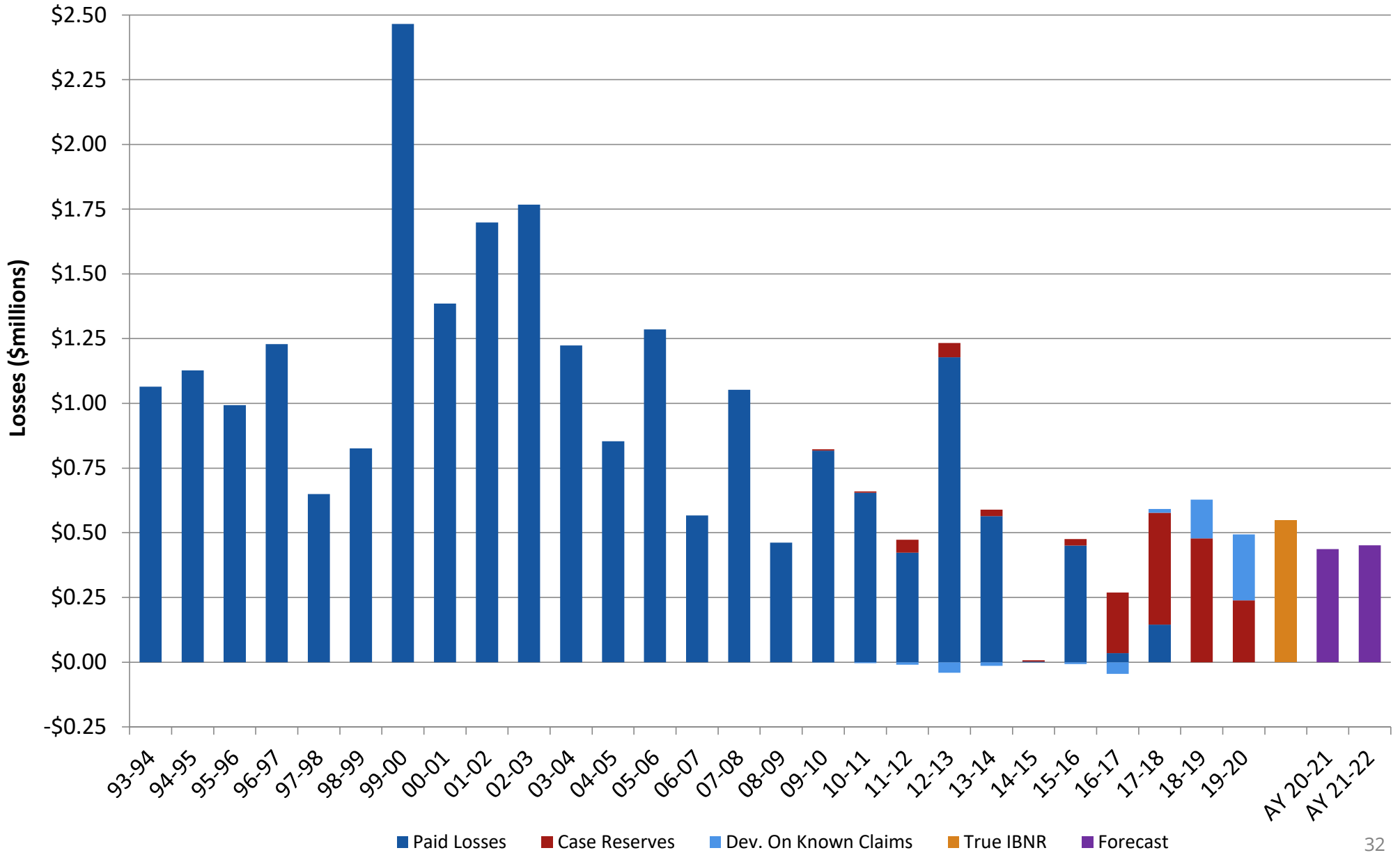


## Medical Malpractice Loss Reserve Analysis Summary of Change from 6/30/19 to 6/30/20

1)	<b>Required Reserve as of June 30, 2019, Discounted at 1.5%</b>		<b>\$3,067,000</b>
2)	Backing out of discounting	+	133,000
<hr/>			
3)	Undiscounted Required Reserve as of June 30, 2019		3,200,000
4)	Forecast Losses for 2019/20 as of June 30, 2019	+	514,000
5)	Change in Ultimate Losses for All Years Combined through 2019/20	-	42,000
6)	Total Payments During 2019/20 on All Accident Years	-	1,273,000
<hr/>			
7)	Undiscounted Required Reserve as of June 30, 2020		2,399,000
8)	Discounting	-	75,000
<hr/>			
9)	<b>Required Reserve as of June 30, 2020, Discounted at 1.0%</b>		<b>2,324,000</b>

# Medical Malpractice

## Ultimate and Outstanding Losses as of June 30, 2020





# Medical Malpractice Loss Forecast

**1) Discounted 75%-tile Forecast for 2020/21** **\$682,000**  
**(Prior report, discounted at 1.5%)**

*Approximate Change Due to:*

2)	Change in Exposure	+	22,000	} - 82K
3)	Inflation	+	22,000	
4)	Experience	-	139,000	
5)	Modeling Differences	-	3,000	
6)	Payout Pattern	+	4,000	
7)	Interest Rate Change	+	12,000	

**8) Discounted 75%-tile Forecast for 2021/22** **600,000**  
**(Current report, discounted at 1.0%)**

# Questions?

Thank you for having us!

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