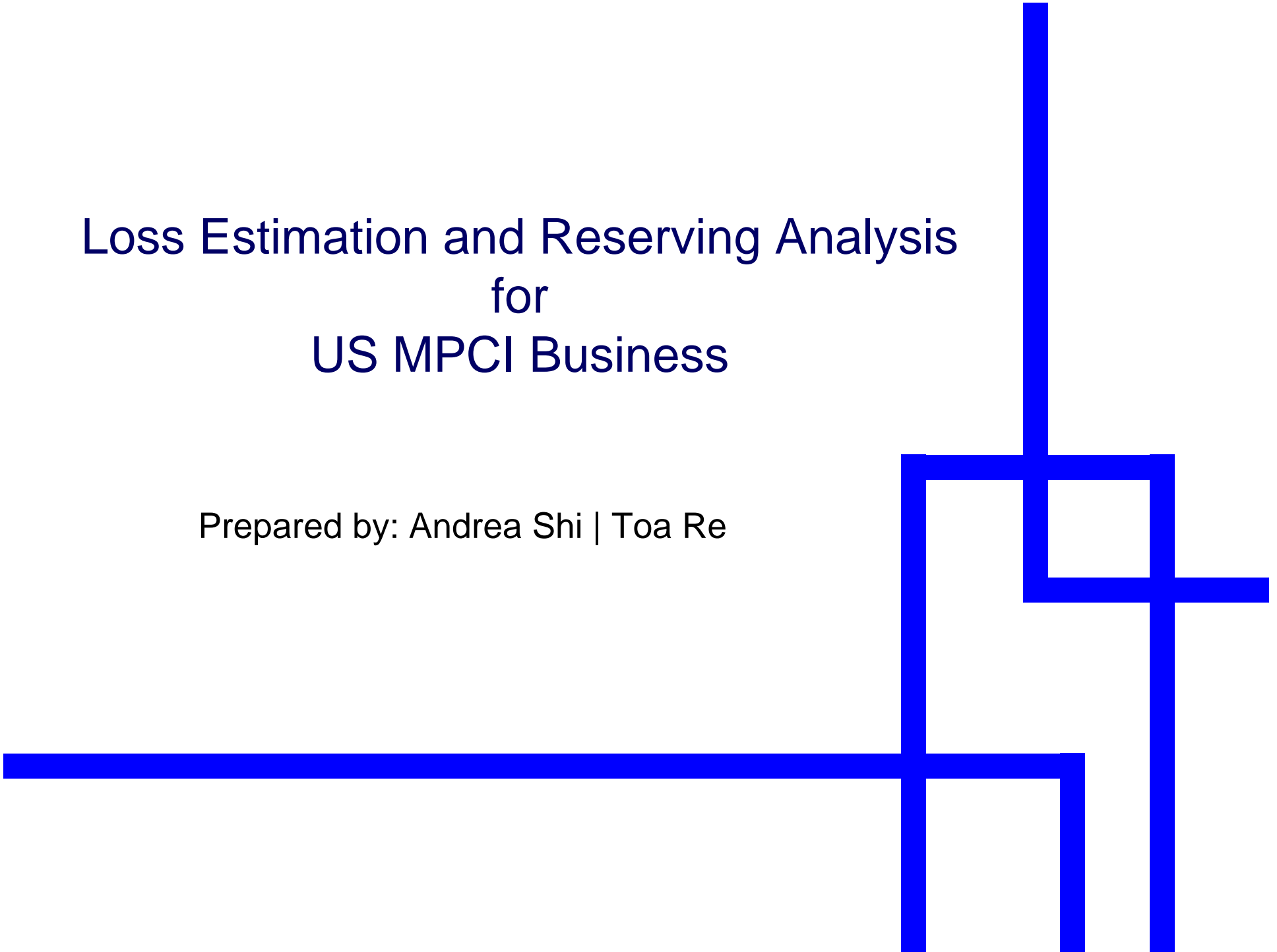


Loss Estimation and Reserving Analysis for US MPCl Business

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US MPCCI Risk Characteristics

- Short tail (dominated by annual crops)
- Correlated risk
 - One drought event usually impacts large geographic area
 - Changes in commodity price affects all revenue policies
- Highly participated with government subsidy (90% of planted acreages insured in 2013)
- Mitigated risk through SRA



Catastrophic Weather Events



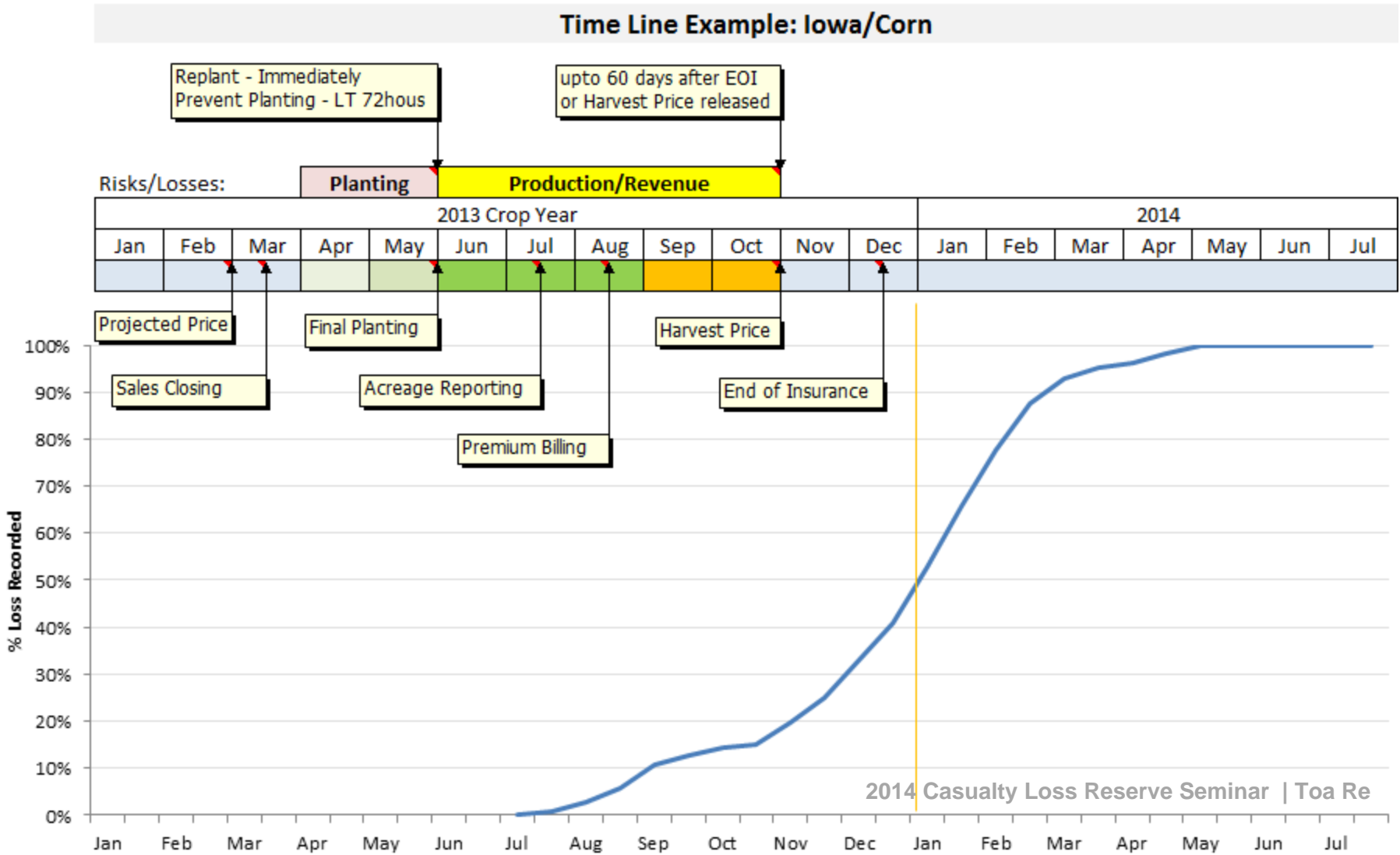


Considerations in Loss Reserve

- Most of the production losses can not be measured until harvest time even though claims from the catastrophic weather events reported earlier in the growing season
- The revenue losses resulted from pure price drop will not be reported until harvest price being announced and production counted
- Delayed reporting for other economic reasons
- Delayed losses recording due to
 - Large volume of the losses
 - Additional reviewing process for large amount (>200K) claims



Incurred, But Not Recorded





Reserving Approaches for Normal/Good Crop Years

- Favorable growing conditions
- Relatively less volatile commodity price
- Uniform distributed IBNR based on priced ELR/ECR
- Growing-stage-weight adjusted IBNR based on priced ELR/ECR



Reserving Approaches for Adverse Crop Years...

- Catastrophic weather events
- Extreme price fluctuation
- Cash calls from AIPs to reinsurers
- Additional case reserve
 - Delayed reporting (eg. 2012)
 - Delayed processing (AIP/RMA eg. 2012&2013)
 - Large claim (>\$200,000)



Reinsurance Loss Estimation

- Estimate RI loss based on AIP's UW G/L bordereau (incurred loss vs. paid)
 - Inherent challenges from AIP's loss estimation
- Estimate additional case reserve using scenario based stochastic modeling with simulated risk exposures by crop, insurance plan, coverage level, ..etc :

$$LR_{MPCI} = f(\Delta Y, \Delta P)$$



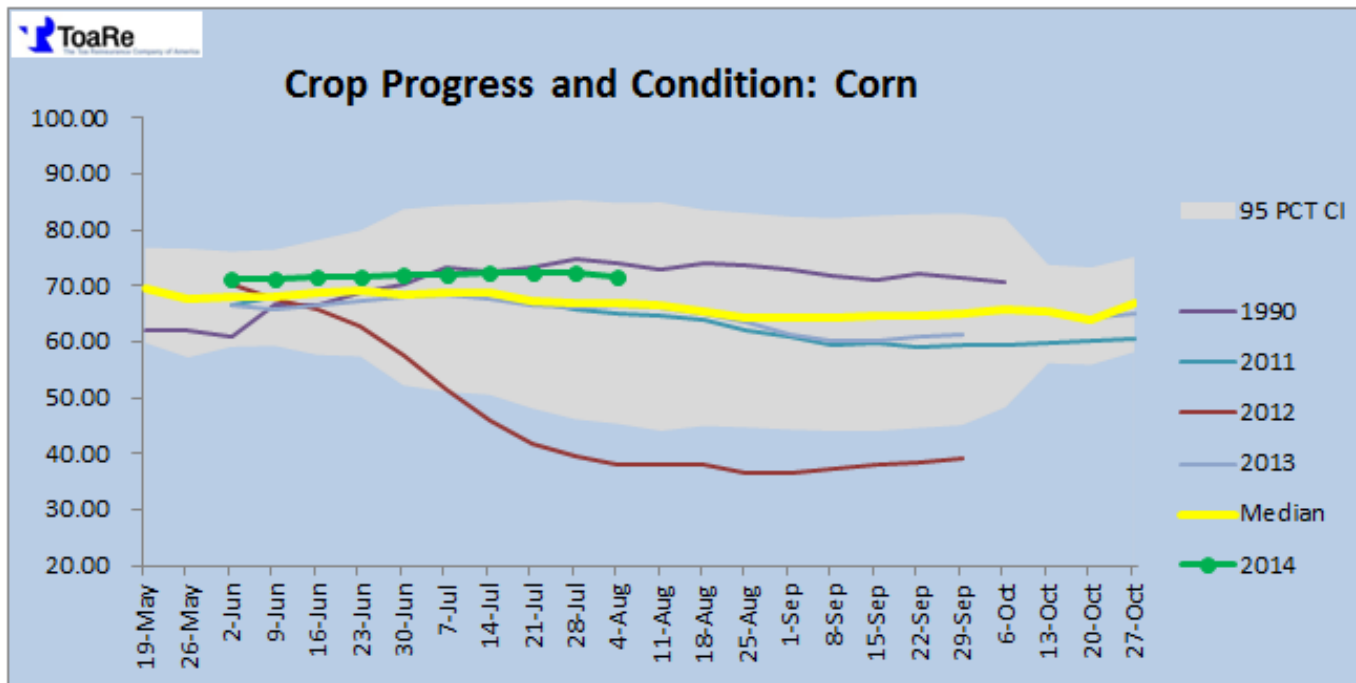
$$LR_{MPCI} = f(\widehat{\Delta Y}, \Delta P)$$

$$\widehat{\Delta Y} = \widehat{Y}_H - Y_{Projected}$$

where \widehat{Y}_H represents estimated Harvesting Yield

$$\widehat{Y}_H = g(I_{TCG}),$$

where I_{TCG} is the **ToaRe Crop Growing Index**

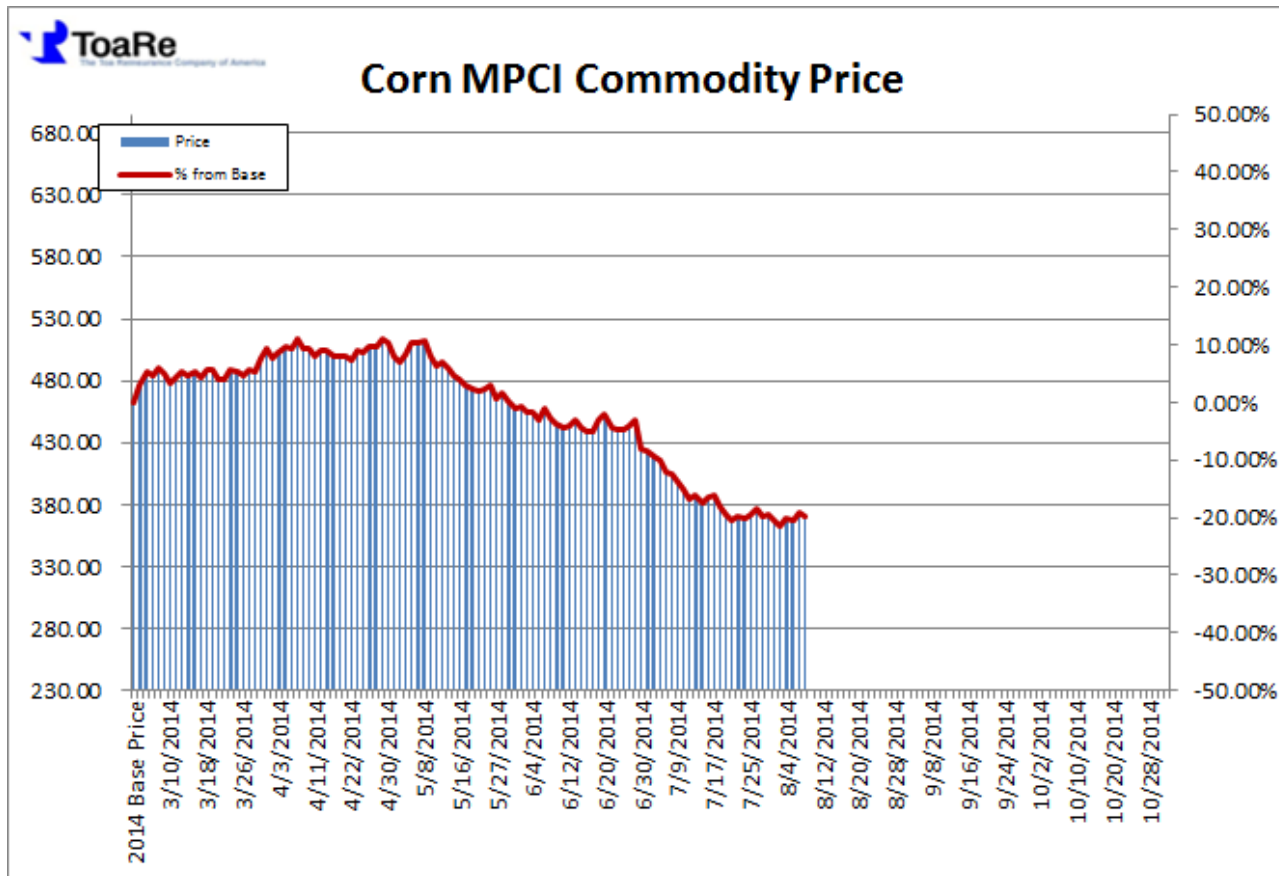




$$\widehat{LR}_{MPCI} = f(\widehat{\Delta Y}, \Delta P)$$

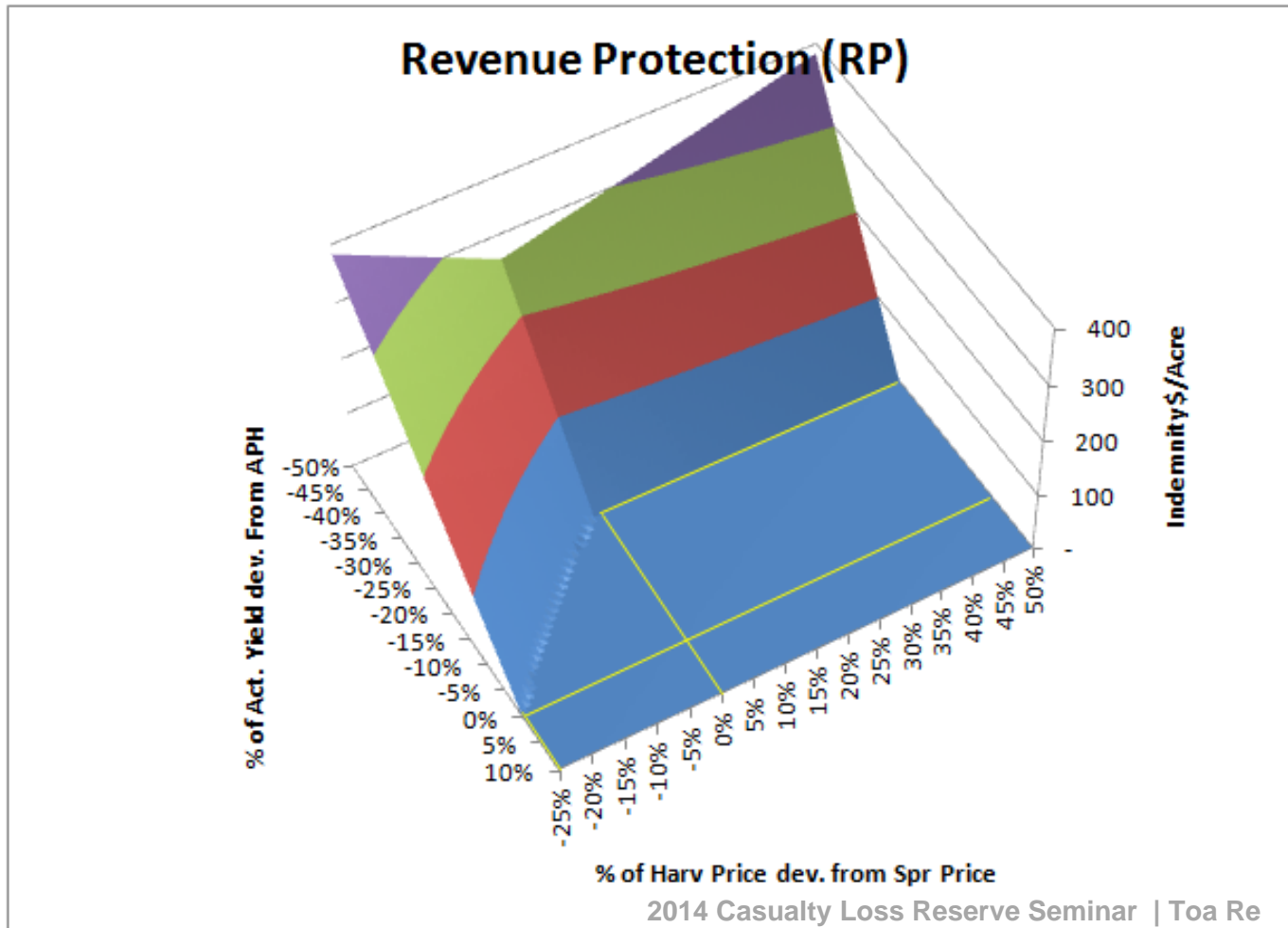
$$\Delta P = P_H - P_{Projected}$$

where $P_{Projected}$ is given



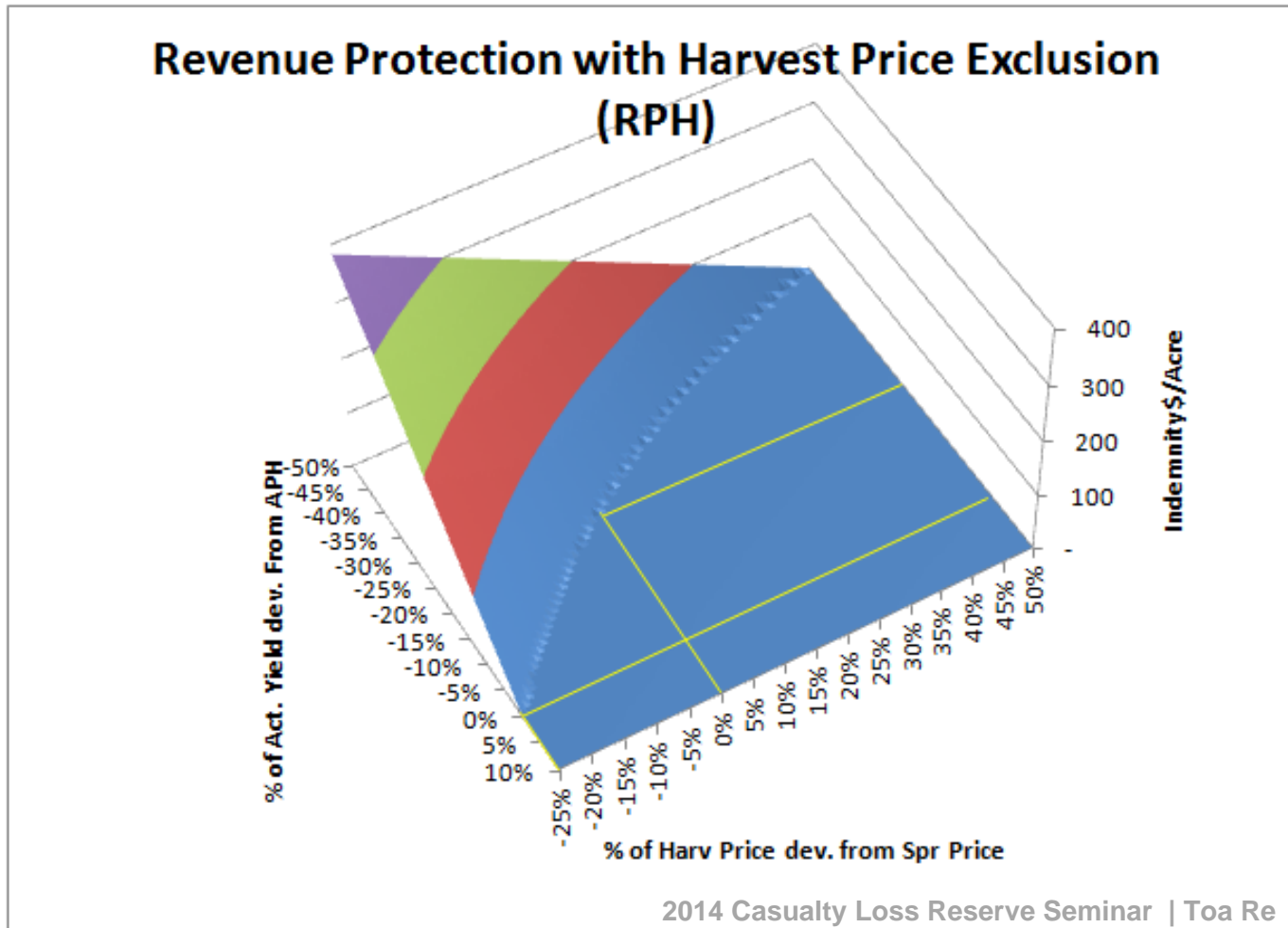


Reinsurance Loss Estimate



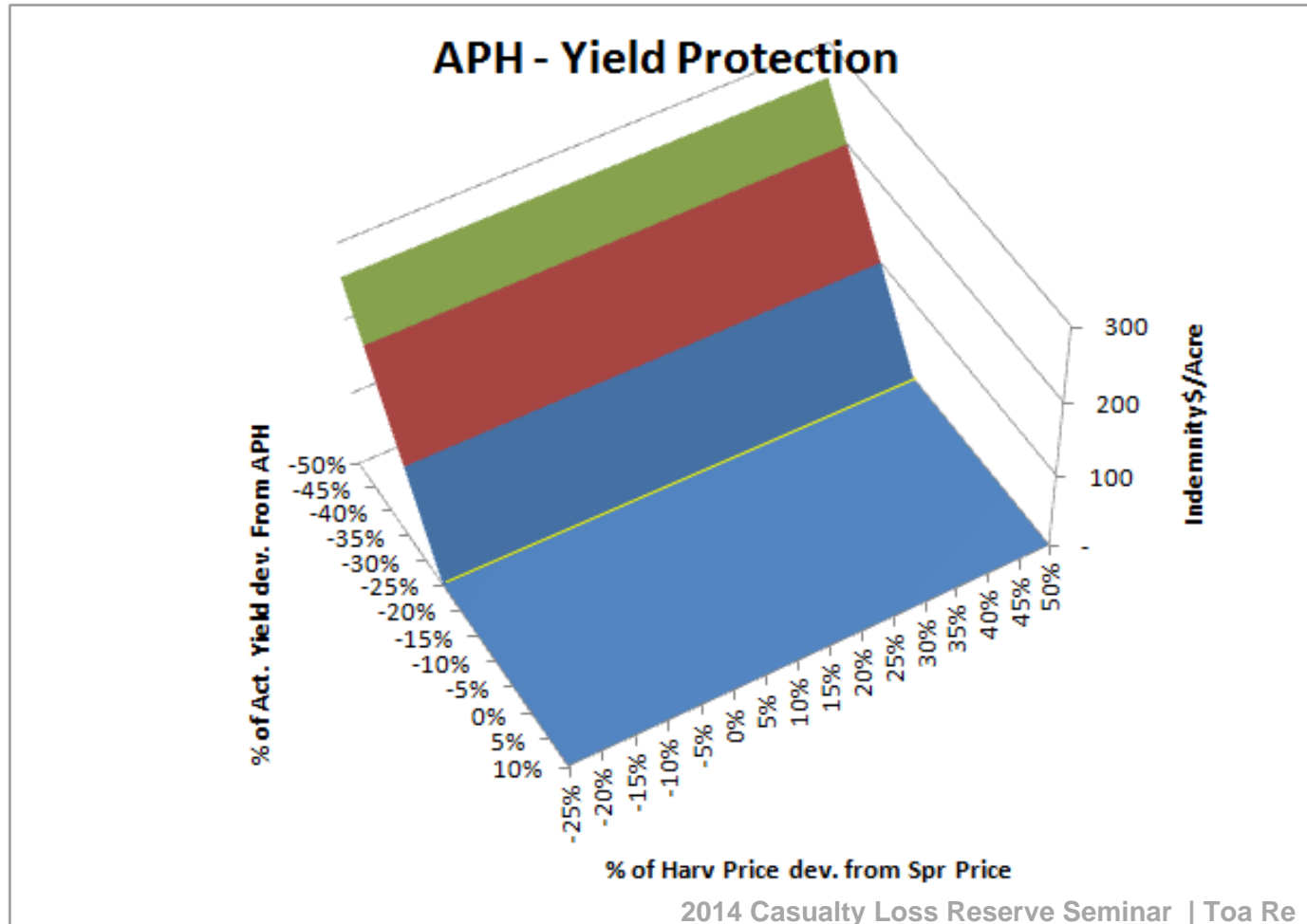


Reinsurance Loss Estimate





Reinsurance Loss Estimate





Reinsurance Loss Estimates

- Estimate gross loss ratio at the state level
- Estimating the net LR at each state level by applying SRA parameters.
- Estimating the net LR for each AIP by their premium by fund and state.
- Overlaying reinsurance structures to estimate the MPCl reinsurance portfolio overall UW results.

Questions...

