

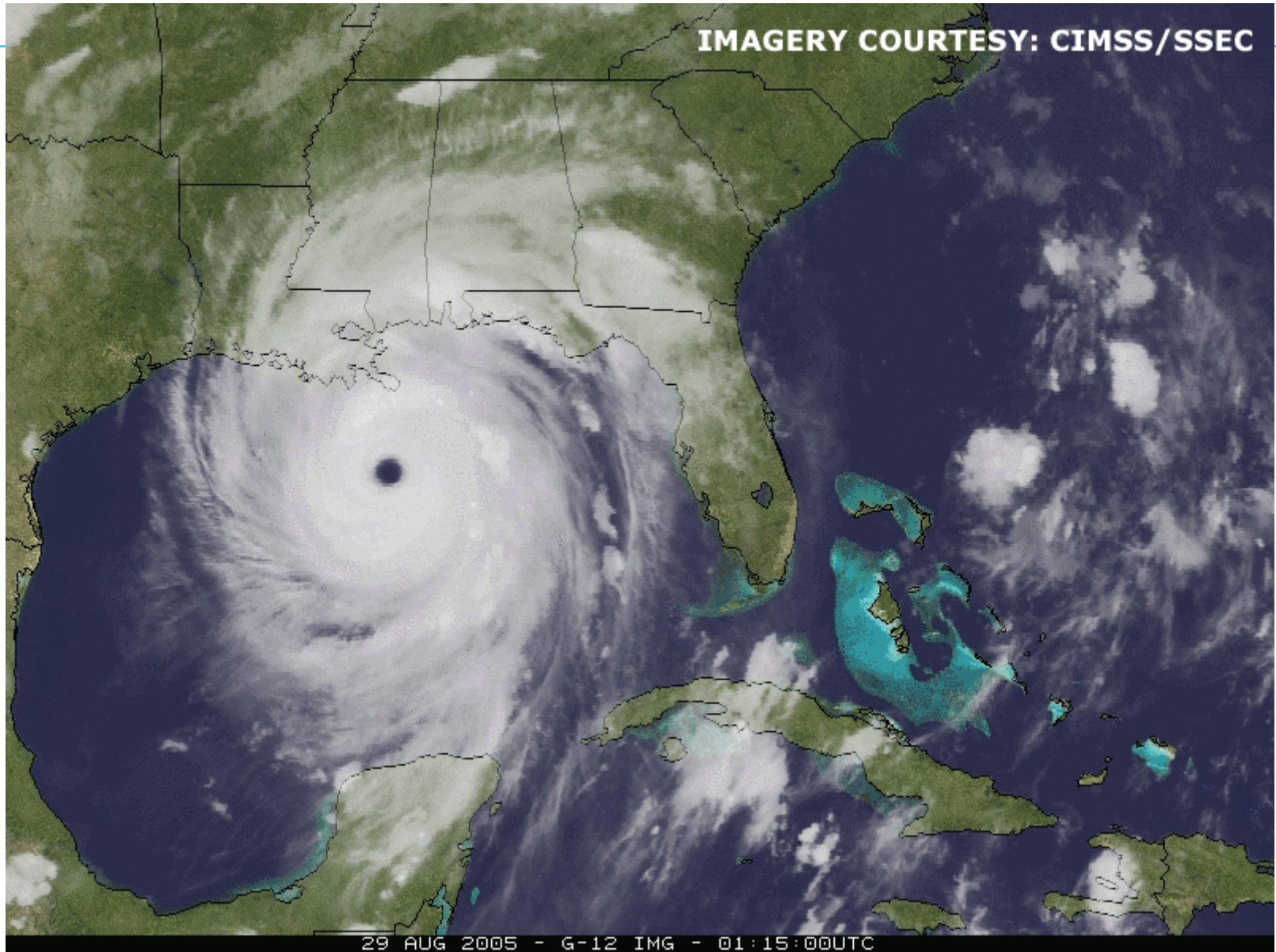
Hurricane Katrina:

The Financial Impact on Insurers and the Implications for the Industry

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This document is incomplete without the accompanying discussion; it is confidential and intended solely for the information and benefit of the immediate recipient hereof.



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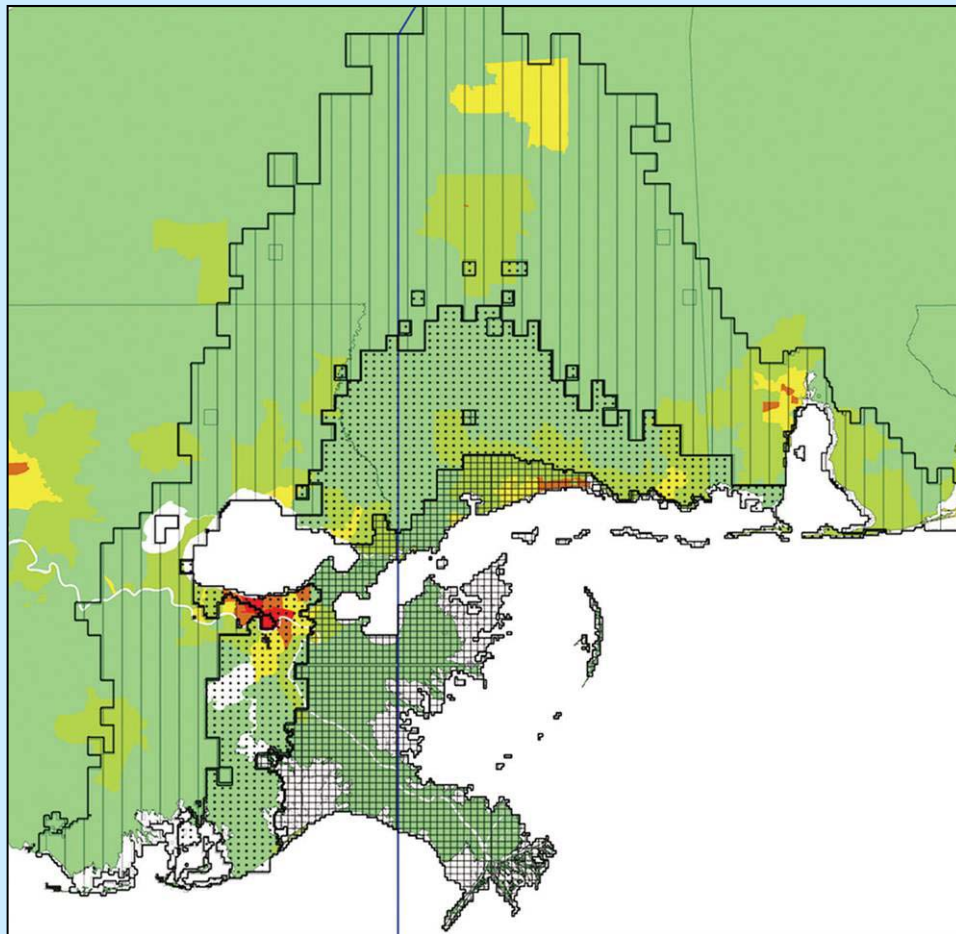
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Hurricane Katrina: Agenda

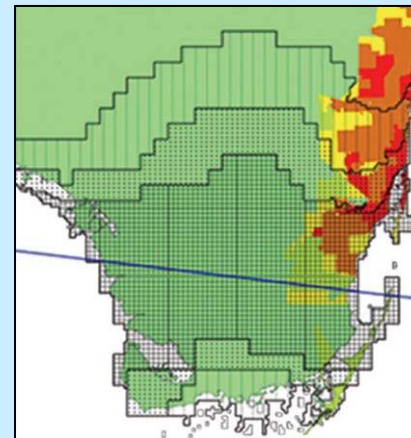
- The Storm
- Insurance Industry Loss
 - Personal Lines
 - Commercial Property
 - Marine and Energy
 - Liability
- Implications for the Insurance Industry
- Putting the Katrina Loss in Perspective
- Opinion / Reserve Report wordings

Katrina was a larger storm than Andrew, with damaging winds affecting more coastline

Hurricane Katrina



Hurricane Andrew



Wind Speed (MPH)

- 80 - 100
- 100 - 120
- 120 - 200

Households per Square Mile

- 2,500 to 10,000
- 1,000 to 2,500
- 250 to 1,000
- 50 to 250
- 0 to 50

Source: Wind speeds — Risk Management Solutions;
Household counts — Applied Geographic Solutions, Simi Valley, CA

The Path Forecasts...



Source: RMS Report, "Hurricane Katrina: Profile of a Super Cat" October 2005.

By all measures, Katrina was a major hurricane event

- Very strong storm — third most powerful storm (lowest central pressure) recorded at landfall
- Very wide radius of hurricane force winds
 - Radius was ~125 miles at landfall
 - Widest recorded radius of any category 4 hurricane
- Storm surge was remarkable
 - Due to shallowness of Gulf Coast and low central pressure
 - Storm surge in New Orleans (Lake Pontchartrain) was reported at 22 feet
 - Storm surge along the Mississippi coast was a record 29 feet
 - Total devastation to coastal communities
 - Surge carried inland as far as five miles

Our current estimate of insured losses is \$39.9 to \$54.6 billion

Katrina Insured Losses (\$ billions)

	Low Estimate	High Estimate
Personal Property Lines		
Homeowners/Property	14.0	17.0
Automobiles	1.0	2.0
Watercraft	0.2	0.3
<i>Total</i>	<i>15.2</i>	<i>19.3</i>
Commercial Property Lines		
Property	13.5	16.0
Business Interruption	6.0	9.0
Automobiles/Trucks	0.2	0.3
<i>Total</i>	<i>19.7</i>	<i>25.3</i>
Marine & Energy	4.0	6.0
Liability	1.0	3.0
Other	0.0	1.0
Total All Lines	39.9	54.6

- Note that as of December 2, insurers and reinsurers had reported \$34.5 billion of Katrina losses (plus \$6 billion on Rita and \$7.5 billion on Wilma).

The insured loss will be shared between primary insurers, reinsurers and capital markets participants

Katrina Insured Losses — Towers Perrin Estimates (\$ billions)

	Low Estimate	High Estimate
Primary Insurers	18.8	28.9
Reinsurers	20.7	24.0
Capital Markets	0.4	1.6
Total	39.9	54.6

- We expect that a number of primary insurers will have losses that exceed their catastrophe reinsurance limits
 - Eventually, reinsurers' overall share is capped
- Most industry loss warranties attach at an industry loss of \$20 – \$25 billion; some attach as low as \$15 billion, some as high as \$40 billion

A number of issues add to the uncertainty of the ultimate cost of Katrina claims

- Due to unprecedented scale of damage, demand surge will drive up prices of home and commercial property repairs
- Storm surge is considered flood rather than wind, but ambiguity traditionally resolved in favor of the insured
- Greater proportion of commercial losses, which are more complex
- Additional living expenses and business interruption coverage losses will depend on how long recovery takes
- Some areas remained inaccessible to adjusters for weeks
- Mold may contribute to damages, especially where power was out for extended time
- Liability claims are a wildcard; negligent care, errors and omissions, and pollution claims are likely
 - U.S. Chamber of Commerce considers Louisiana, Mississippi and Alabama to be among the top five most unfavorable legal climates

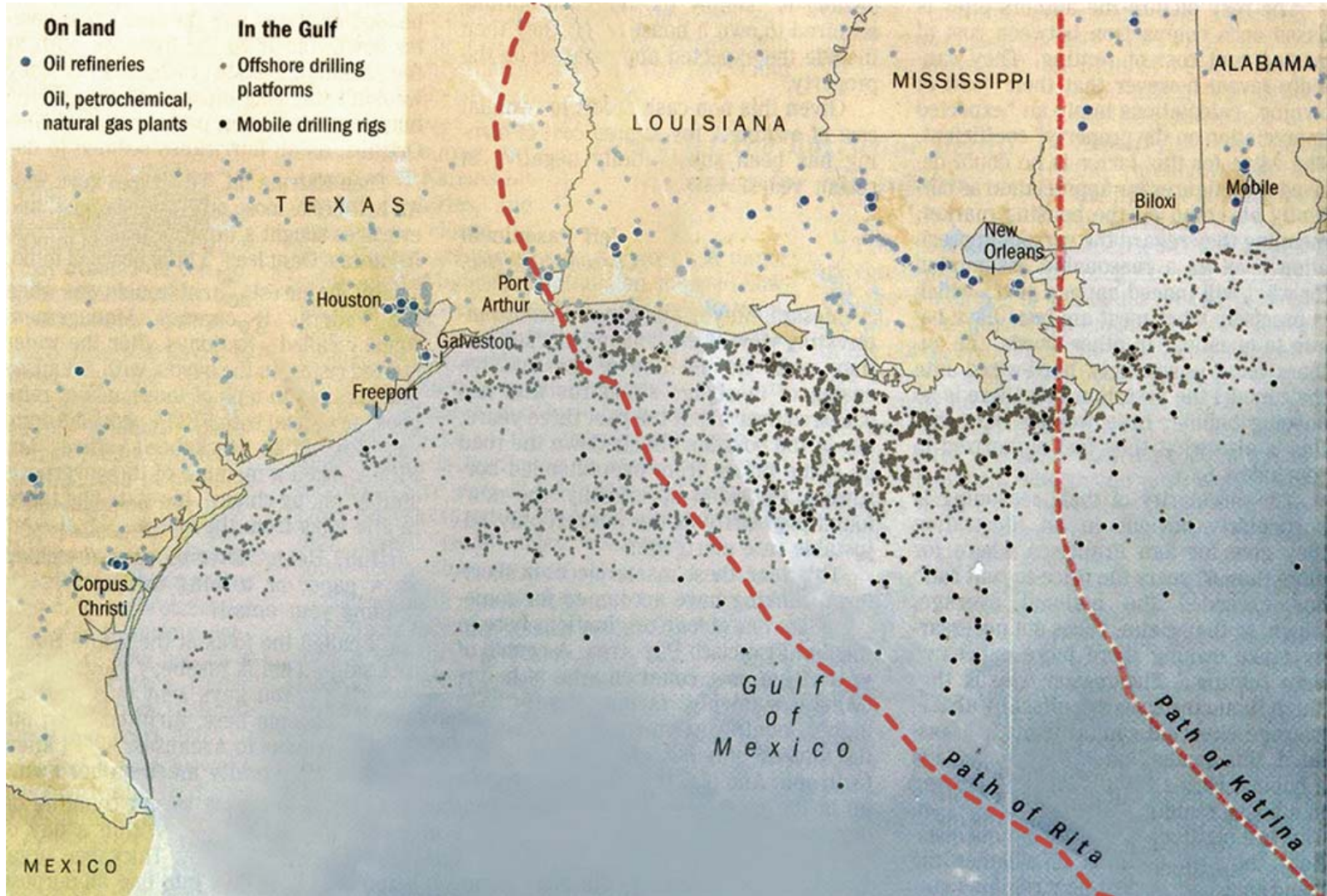
Our estimate of personal lines losses is \$15.7 to \$19.3 billion

- Estimate assumes that damage due to flooding in New Orleans will not be covered by homeowners policies
 - Many properties not severely damaged by wind, significantly damaged by flood from levee breaks
- Mississippi's losses could rival Louisiana's
- Over a million homeowners claims: \$14.0 – \$17.0 billion
 - Additional living expense payments will be unusually high
 - Represents 27% – 33% of countrywide industry \$51 billion homeowners premium
- Roughly 250,000 auto claims: \$1.0 – \$2.0 billion
 - Many autos used to evacuate, but many left behind as well
 - About 1% of industry \$156 billion personal auto premium
- Roughly 15,000 boat claims: \$0.2 – \$0.3 billion

Our estimate of commercial property losses is \$19.7 to \$25.3 billion

- Commercial losses larger than in Andrew
 - Apartment buildings, hotels along coast destroyed
 - Many tall buildings in New Orleans damaged
 - Superdome and Casino “boats” were large losses
- Property: \$13.5 – \$16.0 billion
 - Includes wind and privately insured flood
- Business Interruption: \$6.0 – \$9.0 billion
- Automobiles/Trucks: \$0.2 – \$0.3 billion
- Property and business interruption loss represents 50% – 65% of estimated industry countrywide commercial property premium of \$38 billion

The offshore energy sector has significant exposure on the Texas and Louisiana Gulf Coast



Sources: *The Wall Street Journal*, September 22, 2005; Rita's path courtesy of NOAA — National Hurricane Center

Our estimate of marine and energy losses is \$4.0 to \$6.0 billion

- Majority is energy
 - 250 platforms affected by Katrina
 - 18 platforms reported lost/16 severely damaged
 - Largest known loss is Shell Oil Mars platform; value is \$500 million
 - 60 drilling rigs affected by Katrina
 - Five rigs reported lost
 - Pipeline damage substantially less than in Ivan
 - Business interruption will be substantial part
 - Energy losses from Ivan last year were significant
 - Energy losses from Rita may also be significant
- Marine and energy loss is 40% – 60% of estimated industry premium of \$10 billion

Our estimates do not include other lines of insurance that may be affected by Katrina

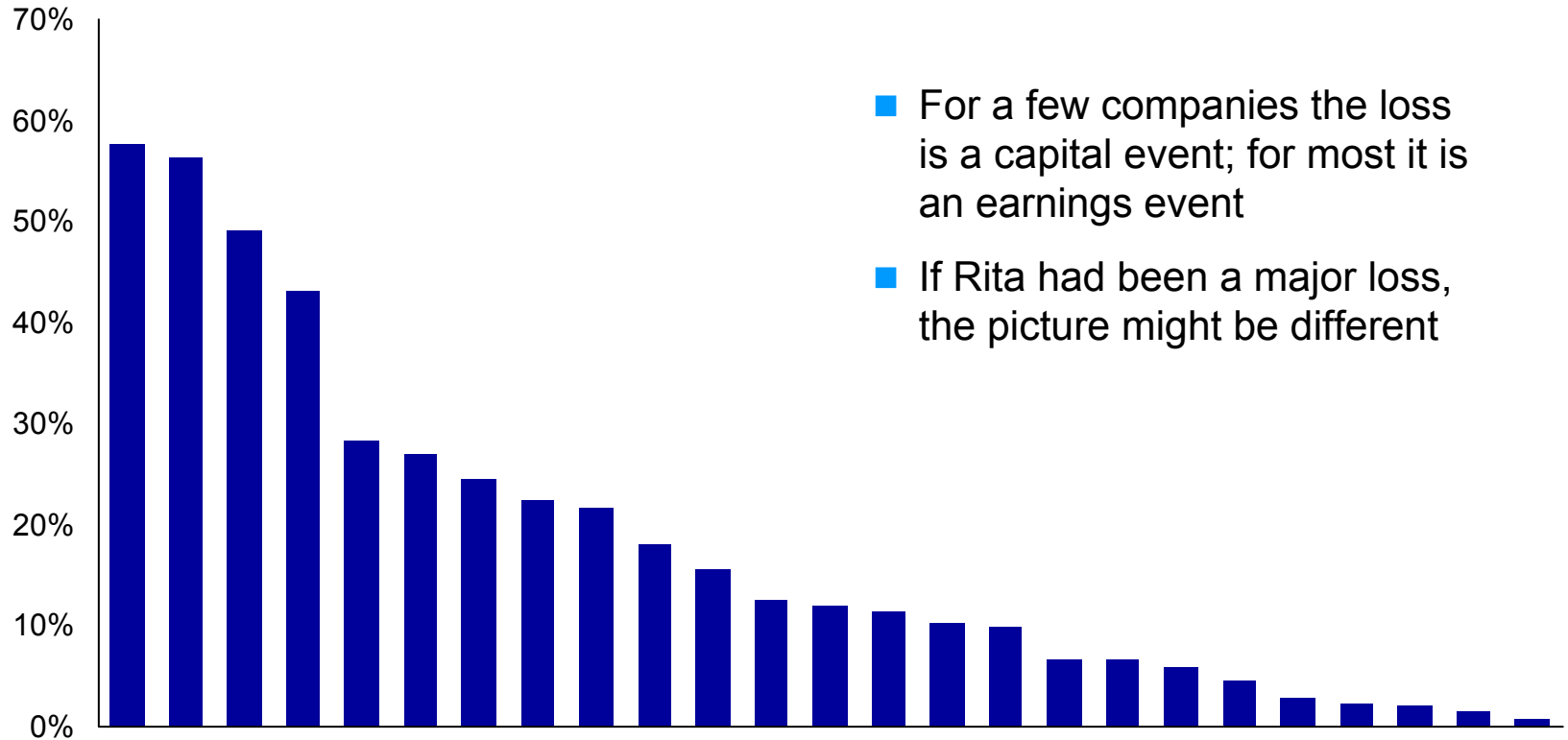
- Financial guaranty insurers will have some losses
 - Local utilities, airports, hospitals where revenue is temporarily suspended
 - Special revenue bonds where the source of revenue has been destroyed
- Private mortgage insurers will have losses from uninsured homeowners who don't have the resources to rebuild
- Health insurers will be called on to pay for injuries and illnesses emanating from the storm
- Life insurers will have some losses from the 1,000+ fatalities

The impact of Katrina will vary by line of business

- Property catastrophe reinsurance prices will rise further, as models are recalibrated; retrocessional market will pull back substantially
- Homeowners market in the Gulf Coast states is likely to be difficult, with significant regulatory issues
 - Resistance to needed price increases
 - Restrictions on withdrawals
 - Proposals for state-run “facilities”
- Commercial property prices will rise in catastrophe-prone areas; availability will be an issue; coverages for business interruption and flood will be more restricted
- Commercial property prices in non-cat-prone areas may fall, as competition for “less risky” business intensifies
- Marine and energy market likely to be in significant turmoil, as major players reconsider their position
 - Capacity will be substantially reduced in the short run

Based on our estimate of losses, a small number of companies will suffer serious reductions in capital

**Estimated After-Tax Loss as Percent of Capital
Sample of 25 Companies**



- For a few companies the loss is a capital event; for most it is an earnings event
- If Rita had been a major loss, the picture might be different

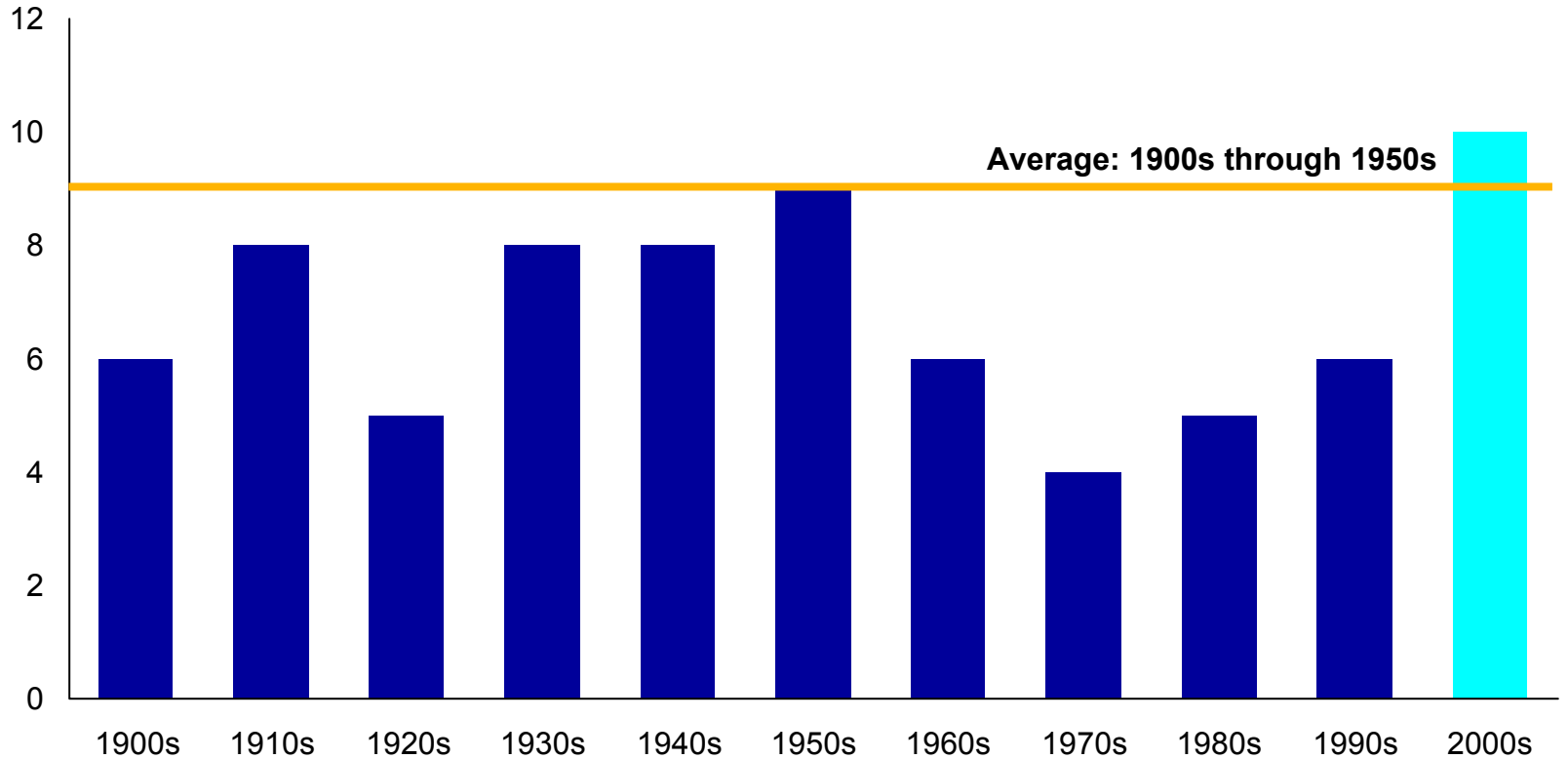
- Sample reflects companies with estimated after-tax loss in excess of \$250 million; includes both primary and reinsurance companies; companies vary in size

Will Katrina spark new market entrants?

- After Andrew there was a compelling need for new entrants
 - Cat Ltd
 - IPC Re
 - Mid Ocean Re
 - Partner Re
 - Renaissance Re
 - Tempest Re
- After 9/11 there was room for new market entrants
 - Allied World
 - Arch Capital
 - Aspen Re
 - AXIS
 - Endurance
 - Montpelier Re
- *After Katrina there is not as much of a compelling case for new formations, but so far we have (plus 3):*
 - *Amlin Bermuda*
 - *Ariel Re*
 - *Ascendant Re*
 - *Blue Ocean Re*
 - *Castellum Re*
 - *Flagstone Re*
 - *Hiscox Bermuda*
 - *New Castle Re*
 - *Omega Re*

The frequency of U.S. hurricanes is returning to levels experienced prior to the 1960s

Number of Major (3, 4, 5) Hurricanes Hitting the U.S. by Decade



Source: Hurricane data from the National Hurricane Center; figure for 2000s is extrapolated from actual experience to date

- Globally, no trend in overall hurricane frequency is evident in historical data

When past losses are adjusted to today's exposures and values, there is no discernable trend in losses

Insured Losses from Past Hurricanes — Adjusted for Inflation, Growth in Coastal Properties, Real Growth in Property Values and Increased Property Insurance Coverage

Year	Hurricane	Major Landfall	Estimated Insured Losses At 2005 Levels (\$ billions)
1926	Number 6	Florida	65.3
1992	Andrew	Florida	31.3
1900	Number 1	Texas	21.1
1915	Number 2	Texas	20.8
1965	Betsy	Louisiana	14.5
1928	Number 4	Florida	13.1
1919	Number 2	Florida	12.6
1938	Number 4	New York	12.4
1954	Hazel	North Carolina	11.0
1909	Number 9	Florida	10.1

- **Conclusion:** the build-up of insured property in coastal areas is the real issue
 - More properties; higher real value
- On an all-perils basis, Katrina was perhaps a one-in-fifty-year event
- Wilma may also crack the top ten (current estimates \$8-12 billion)

Risk management implications

- Good news: no failures!
- Bad news: loss exceeds reinsurance limits!

- Exposure management implications
 - Need for even better exposure data
 - Better appreciation of model limitations

- Volatility management implications
 - Catastrophe losses will be an ongoing source of volatility
 - Reassessment of the value of higher reinsurance layers
 - Greater use of capital markets to achieve risk diversification
 - Federal reinsurance program?

Katrina will spawn at least three major policy debates

- Natural disaster risk management and financing
 - Too much has been constructed in hurricane and flood prone areas; should restrictions be placed on reconstruction?
 - Should insurance continue to be made available in the most exposed areas?
 - Should insurance rates be socialized to maintain affordability, even if this reduces economic incentives to mitigate future losses?
 - Who decides how and what gets rebuilt?
- Affordability and under-insurance in catastrophe-prone areas
 - What is the appropriate government response to systematic lack of insurance in vulnerable areas?
 - How do we prevent the poor and sick from suffering disproportionately?
- Role of government in financing very large catastrophic losses
 - Should there be a federal disaster reinsurance program?
 - Can private market mechanisms be developed to handle mega-events?

Possible Katrina (or any issue) wordings – Advisory Note being drafted on Relevant Comments

- Wording 1
 - No material exposure
- Wording 2
 - Material exposure, but not material relative to total reserves. May be used restricted by class/year.
- Wording 3
 - Material (issue) exposure. Increases uncertainty but less than “fundamental” uncertainty.
- Wording 4
 - Material (issue) exposure. “Great deal” of uncertainty, beyond normal range of uncertainty at this stage of development