NAIC National Association of Insurance Commissioners

The CENTER for INSURANCE POLICY and RESEARCH

CIPR TRIA Policy Workshop

NAIC 2019 SUMMER NATIONAL MEETING

August 4, 2019

NAIC Official Perspective

- State insurance regulators have supported the Terrorism Risk Insurance Act (TRIA) since its inception and its subsequent reauthorizations.
- ***The NAIC recommends prompt Congressional action on a long-term TRIA reauthorization of 7-10 years*** to help ensure economic stability through the availability of terrorism coverage for commercial policyholders, lenders, builders, and the businesses that operate in urban centers and other areas prone to a terrorist attack.
- A federal partnership with private insurers has provided a measure of security and certainty to the broader economy and ensured the widespread availability of property and casualty insurance for terrorism risks. It does so with minimal financial risk to the U.S. government as the program provides a mechanism to reimburse the federal government for its expenditures.

https://www.naic.org/documents/government_relations_terrorism_risk_insurance.pdf?37

Given this – goal today to establish foundational understanding of program to target relevant policy research surrounding 2020 renewal & beyond

- **U.S. Terrorism commercial insurance market in context (since TRIA)**
  - Scope, Availability, Affordability
  - Risk Management
- **Loss sharing Scenarios and Implications (CIPR analysis of RAA Trip Model)**
  - Understanding TRIP loss sharing through similar events in varying geographical risks
  - Revisiting risk management
  - Uninsured loss extent
  - Recoupment and affordability
- **Terrorism and TRIA moving forward**
  - Evolving nature of terrorism threats
  - Cyber
  - International perspectives
- **Defining future policy research questions**

What is a terrorist act?

Certified act of terrorism (TRIP):

(i) to be an act of terrorism;
(ii) to be a violent act or an act that is dangerous to—(I) human life: (II) property; or (III) infrastructure;
(iii) to have resulted in damage within the United States, or outside the United States in the case of—(I) an air carrier or vessel described in paragraph (5)(B); or (II) the premises of a United States mission;
(iv) and to have been committed by an individual or individuals, as part of an effort to coerce the civilian population of the United States or to influence the policy or affect the conduct of the United States Government by coercion

Excludes:

- Acts of war
- **Aggregate losses from the act < $5,000,000**

https://www.naic.org/documents/committees_c_tiiwg_2015_model_bulletin.pdf?99

- Since original passage of TRIA no certified acts of terrorism in the U.S.

- Broader definition of acts of terrorism for non-certified acts:
  - As the use of force or violence – of any person or group, whether acting alone or on behalf of or in connection with any organization – for political, religious, or ideological purposes, including the intention to influence any government and/or to put the public in fear for such purposes

  (Marsh & McClennan, 2019)

Loss distribution from 9/11 attacks (what would have been a certified act)

Business interruption	$15.3	33%
Property - other	8.7	19
Liability - other	5.5	12
Property - WTC 1 and 2	5.1	11
Aviation liability	5.1	11
Workers comp	2.8	6
Event cancellation	1.4	3
Life	1.4	3
Aviation hull	1.0	2
Total	**$46.3 billion (2)**	

Nearly 2/3rd of commercial losses from the act were direct property and business interruption losses

[note, not all business line losses here would be TRIA-eligible]

(1) Adjusted to 2018 dollars by the Insurance Information Institute using the U.S. Department of Labor BLS Calculator.
(2) Loss total does not include March 2010 New York City settlement of up to $657.5 million to compensate approximately 10,000 Ground Zero workers or any subsequent settlements.
Source: Insurance Information Institute.

Source: https://www.iii.org/article/background-on-terrorism-risk-and-insurance

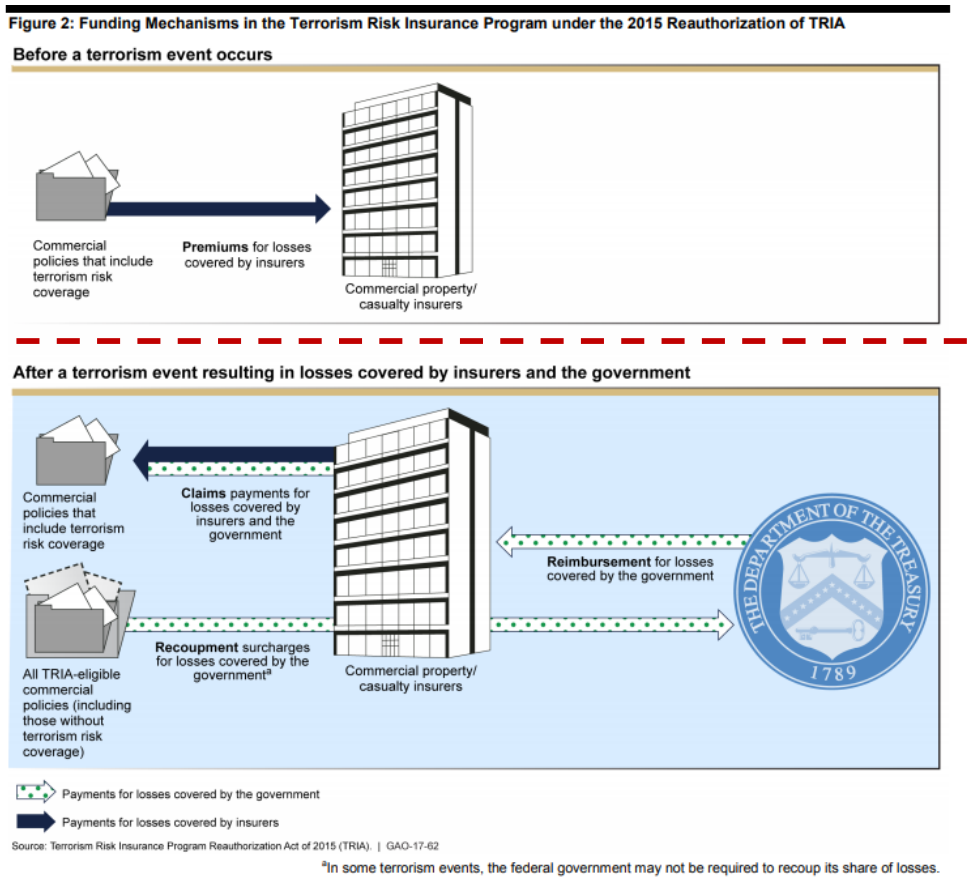
Scope, Availability, Affordability, & Risk Management

U.S. Terrorism Commercial Insurance Market

Key Take-Aways

- Roughly $3-4 billion in annual premium – approximate to other catastrophic risk markets such as flood and earthquake
- NAIC & FIO data generally converge on overall market aspects:
  - Relatively high take-up rates of coverage in most higher risk markets; but significant heterogeneity in take-up across geographies and lines of business with some evidence of take-up rates connected to relative affordability
  - Heterogeneity in premiums by geography and lines of business with relatively significant percentages only charging implicitly for coverage
- Risk management practices are in place, but to a somewhat limited extent

Scope of the Commercial Terrorism Insurance Market



Source: GAO (2017)

FIO 2018 Data Call (2017 TRIP Eligible DEP - $209 billion)	Terrorism Risk Insurance Premium (billions)	Percent of TRIP Eligible DEP
Non-Small*	$2.4	1.4%
Small*	$0.2	1.9%
Captive	$0.8	9.2%
Alien Surplus Line	$0.2	2.1%
Total	**$3.6**	

Source: FIO (2018)

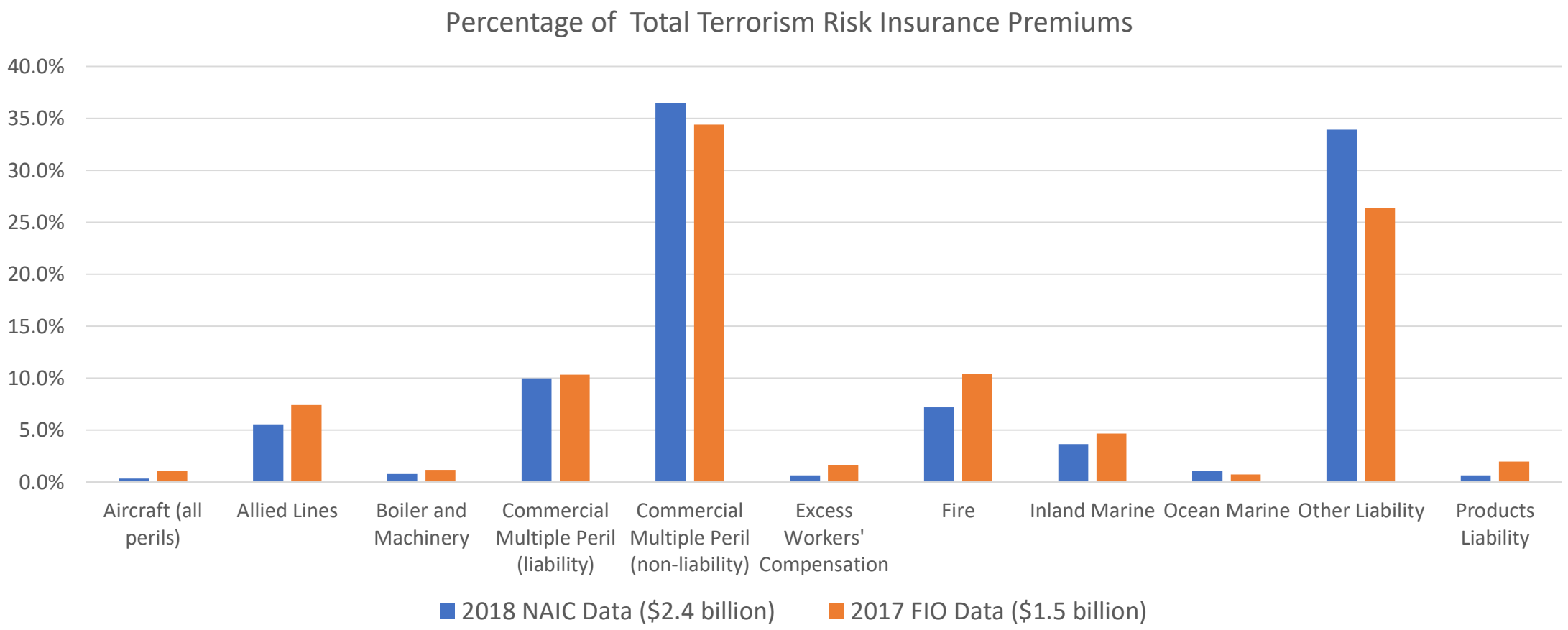
** Workers Compensation represents $1.1 of total $2.6 billion in premiums*

NAIC 2019 Data Call (2018 TRIP Eligible DEP - $157 billion)	Terrorism Risk Insurance Premium (billions)	Percent of TRIP Eligible DEP
Non-Small**	$2.2	1.5%
Small**	$0.2	1.5%
Total	**$2.4**	

Note: NAIC data is preliminary

*** Does not include Workers Compensation premiums*

Terrorism Premiums by TRIP Eligible LOB's



Note: NAIC data is preliminary

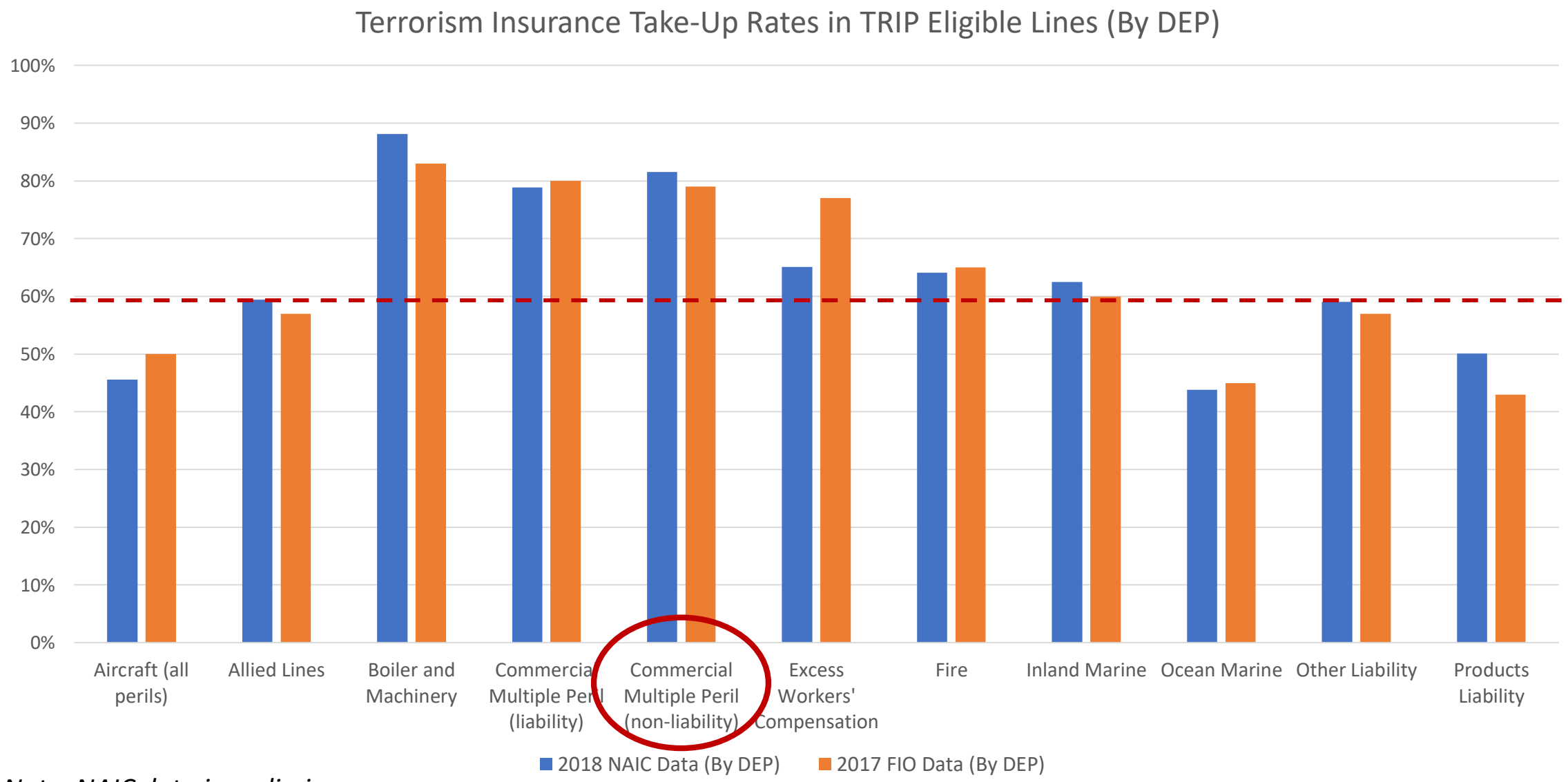
Availability & Take-up rates

Figure 16: 2017 Terrorism Risk Insurance Take-Up Rates By Policy Count, DEP, and Policy Limits (By Insurer Category)

	Policy Count	DEP	Property Limits	Liability Limits
Alien Surplus Lines Insurers	17%	40%	30%	68%
Non-Small Insurers	79%	66%	72%	69%
Small Insurers[81]	N/A	55%	74%	43%
All Insurer Categories	**78%**	**63%**	**72%**	**62%**

Source: 2018 TRIP data call

Source: FIO (2018)

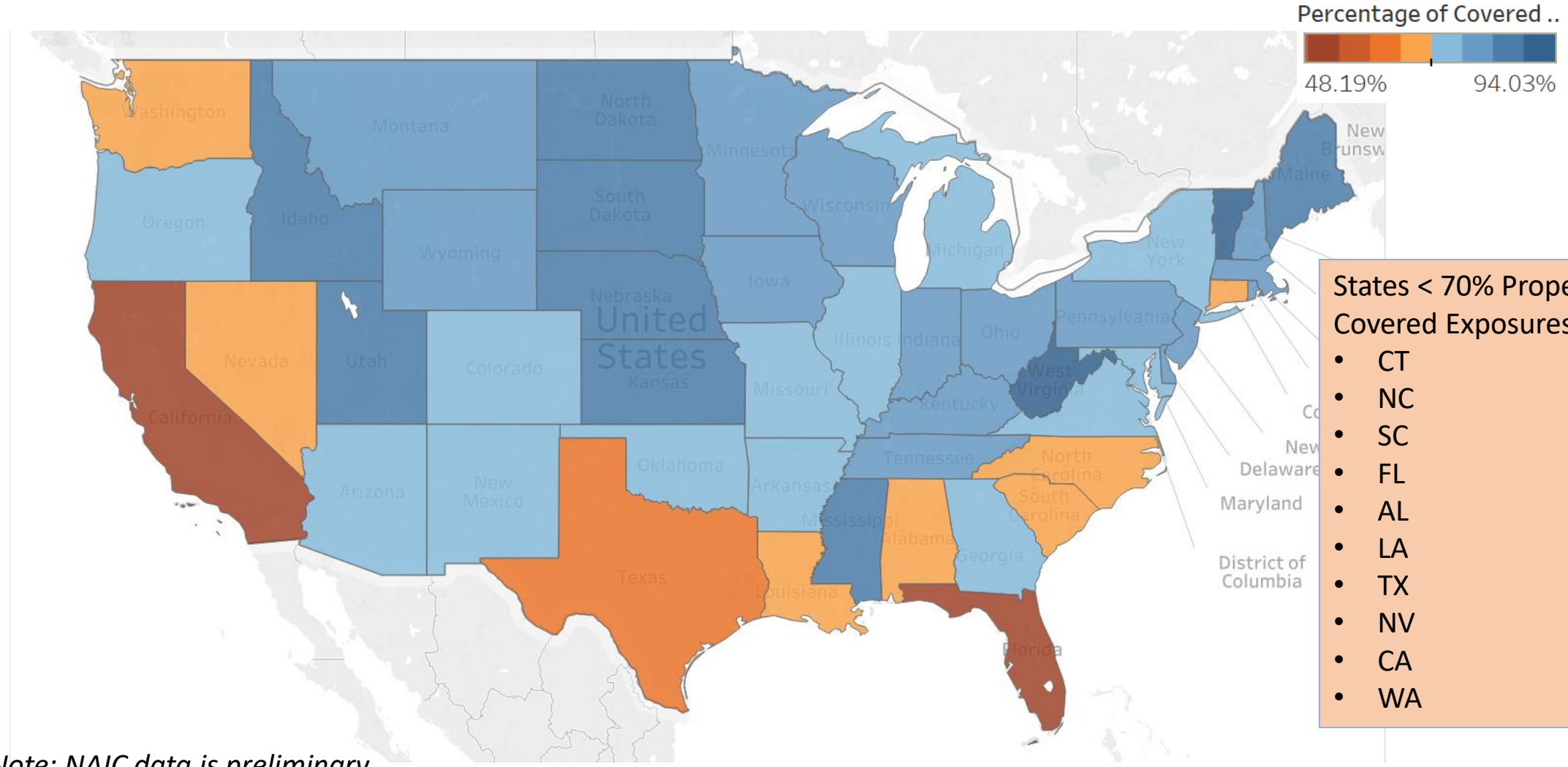


Note: NAIC data is preliminary

AM Best (2017) Risk Ranking	Metropolitan Area	FIO 2017 Take-up Rates (by Policy Property Limits)
Tier 1	New York	82
(Highest Risk)	Chicago	87
	Los Angeles	89
	San Francisco	71
	Washington DC	90
Tier 2	Atlanta	86
	Baltimore	85
	Boston	83
	Buffalo	80
	Cleveland	80
	Dallas	80
	Denver	81
	Detroit	72
	Houston	58
	Las Vegas	84
	Miami	58
	Minneapolis/St. Paul	87
	Newark	72
	Orlando	57
	Philadelphia	88
	Phoenix	88
	San Diego	54
	San Jose	76
	Seattle	76
	St. Louis	84
	Tampa/St. Petersburg	58

Data Source: FIO (2018)

State Percentage of Property Covered Exposures

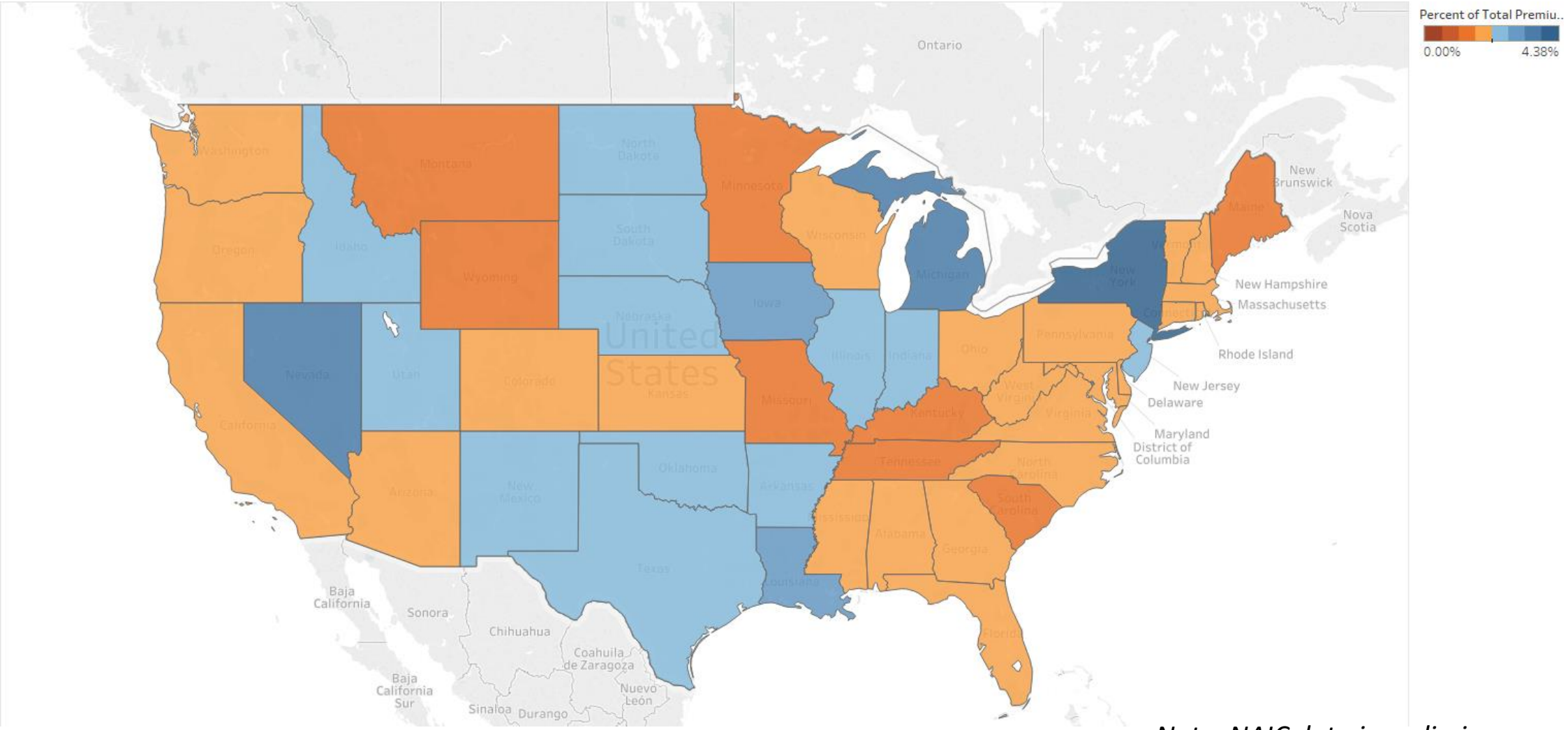


States < 70% Property Covered Exposures:

- CT
- NC
- SC
- FL
- AL
- LA
- TX
- NV
- CA
- WA

Note: NAIC data is preliminary

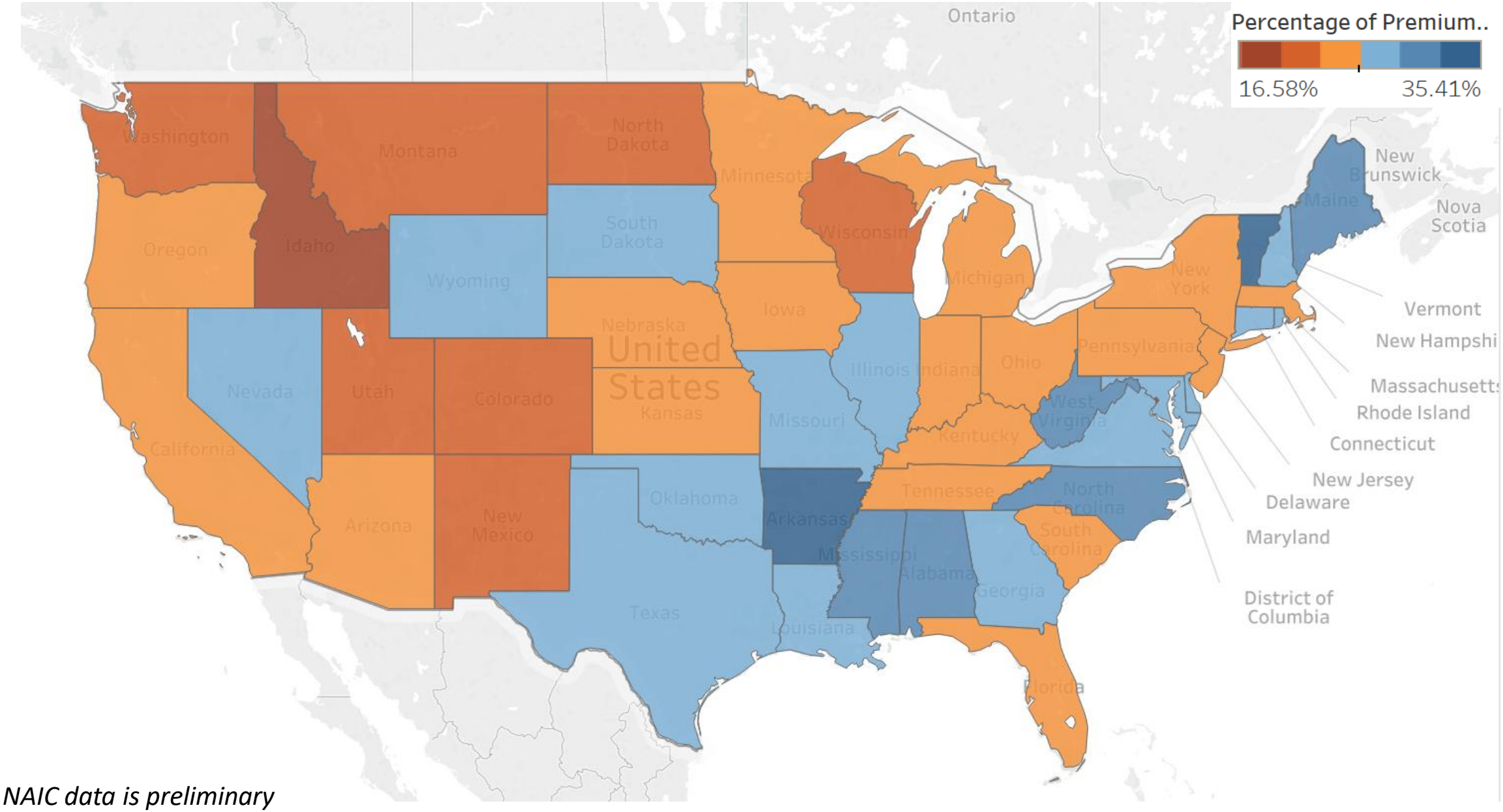
Affordability - Percent of Total Premium Charged for Terrorism Coverage by State



Note: NAIC data is preliminary

Note: Total Premiums here are only those for explicit terrorism coverage

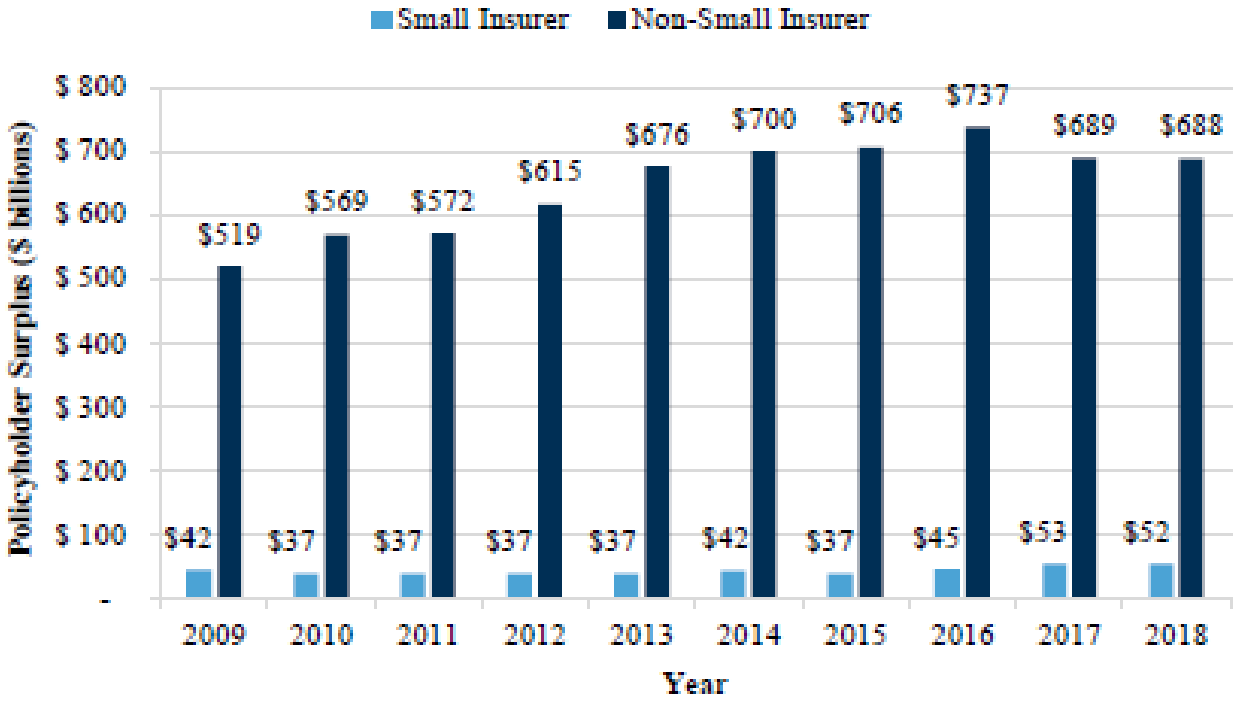
Percentage of Premium with Implicit Charge for Terrorism Coverage



Note: NAIC data is preliminary

Insurer Terrorism Risk Management – **roughly $740 billion in dedicated P&C commercial industry capital** to support all lines of business including terrorism

Figure 5: 2009-2018 Policyholder Surplus Comparison
Small Insurers vs. Non-Small Insurers



Source: S&P Global

Source: FIO (2019)

Insurer Terrorism Risk Management

- **Internal (ORSAs, ERMs) and External (RBC, Agency Ratings) assessments of capital adequacy**
  - ORSA view – quantification, where present, is done through scenario analysis (fairly detailed analyses but typically limited to a 5-6 ton truck explosion). Resulting projected loss is quantified net of TRIP and reinsurance.
  - "As part of the ERM process, insurers should have a risk catalog of potential terror events and the potential losses created. Composite companies should include their exposures to life and health policies along with their property/casualty exposures when cataloging their potential events and losses" (AM Best, 2017)
  - **No current NAIC RBC calculation required**. However, existing evidence suggests insurers undertaking this capital adequacy analysis anyway considering TRIP (GAO, 2017)
  - AM Best determines a terrorism risk amount, which may be added to required capital in its Best's Capital Adequacy Ratio (BCAR) model. (AM Best, 2017)

- **Underwriting best-practices**
  - Charge for terrorism risk coverage generally represents a small percentage of the overall commercial P/C premium (2-3% on average as shown earlier), if explicitly charged at all
  - Location-based risk limits are developed where applicable, but historical data and models are limited.
  - Incentives for policyholder mitigation?

Insurer Terrorism Risk Management (cont'd)

- **Reinsurance, Alternative financing, & self-insurance** (captives)
  - Recently more private reinsurance capacity has been observed for conventional terrorism risk (FIO, 2018)
    - Many insurers are obtaining terrorism risk reinsurance in connection with reinsurance placements for natural catastrophe risks
    - ***Private reinsurance remains more heavily concentrated in the exposure retained by participating insurers above their TRIP deductibles, i.e., their co-pay share***
    - NBCR exposures are less likely to be supported by private reinsurance than is the case with losses arising from conventional acts of terrorism
    - The combined property and workers' compensation private conventional-only terrorism reinsurance capacity was estimated to be $2.5 billion per cedent program
    - Limiting factors to further development of private reinsurance capacity - aggregation risks; difficulty of modeling potential terrorism exposure from both a frequency and severity standpoint
  - While terrorism risks are already traded in the reinsurance and capital markets, terrorism risk transfer remains nascent.
    - PoolRe (UK) issued first stand-alone terrorism risk CAT bond in 2019
    - FIFA issued terror risk securitization for 2006 World Cup in Germany
  - Captives continue to write broad-based terrorist risks (Marsh & McClennan, 2019)

Key Take-Aways

- Roughly $3-4 billion in annual premium – approximate to other catastrophic risk markets such as flood and earthquake
- NAIC & FIO data generally converge on overall market aspects:
  - Relatively high take-up rates of coverage in most higher risk markets; but significant heterogeneity in take-up across geographies and lines of business with some evidence of take-up rates connected to relative affordability
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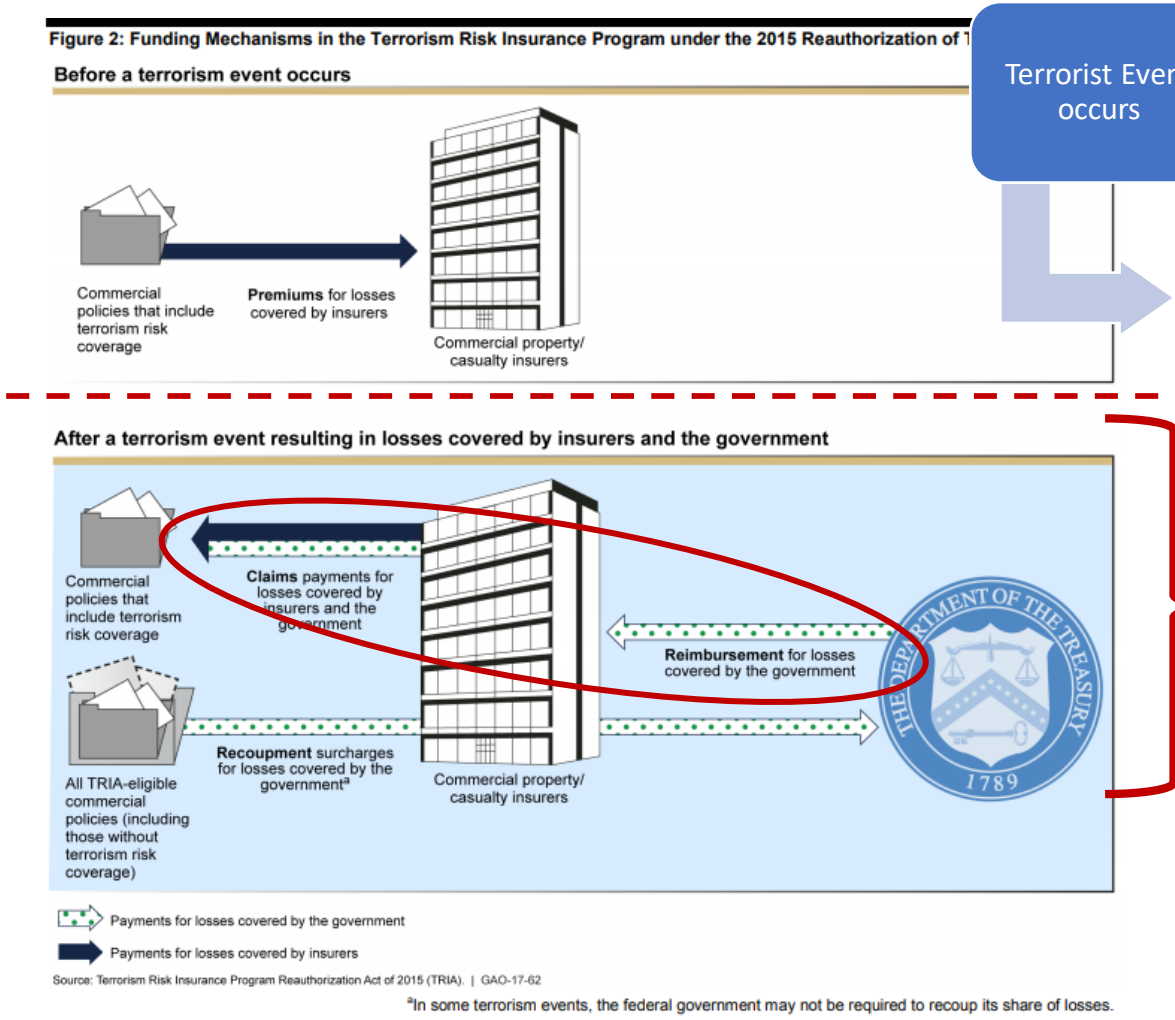
- Risk management practices are in place, but to a somewhat limited extent

Capital Adequacy,
Uninsured Losses,
Premium affordability

Loss Sharing Scenarios & Implications

Key Take-Aways

- Various conventional terrorist scenarios run *(CIPR analysis of RAA TRIP model)* illustrate it takes relatively large amounts of insured losses prior to TRIP loss-sharing being activated beyond the insurer's deductible responsibilities of the program
- This highlights the potential capital adequacy of insurers responsible for the material loss amounts in these scenarios
- Additionally, relatively large amounts of uninsured losses exist for all conventional terrorist scenarios (20-25%), with even more significant uninsured losses (40% or more) for large-scale and NBCR events
- Recoupment aspects of the program subjected to all policyholders can be quantified through the scenarios to understand affordability implications



Terrorist Event occurs

- If > $5 million in losses and certified by the secretary of the Treasury in consultation with the secretary of Homeland Security and the U.S. attorney general *(excludes WC coverage)

Program Trigger

- TRIP is "switched on" only if the insurance industry's **aggregate insured losses** exceed $200 million in a given year. (2020)

Insurer Deductible

- Each insurer is responsible for paying out a portion of its claims – the "deductible" or "individual company retention level" – before any federal involvement. **An insurer's deductible equals 20 percent of an insurer's annual direct earned premiums from the year prior to a certified event from covered TRIA lines.**

Risk Sharing above Deductible

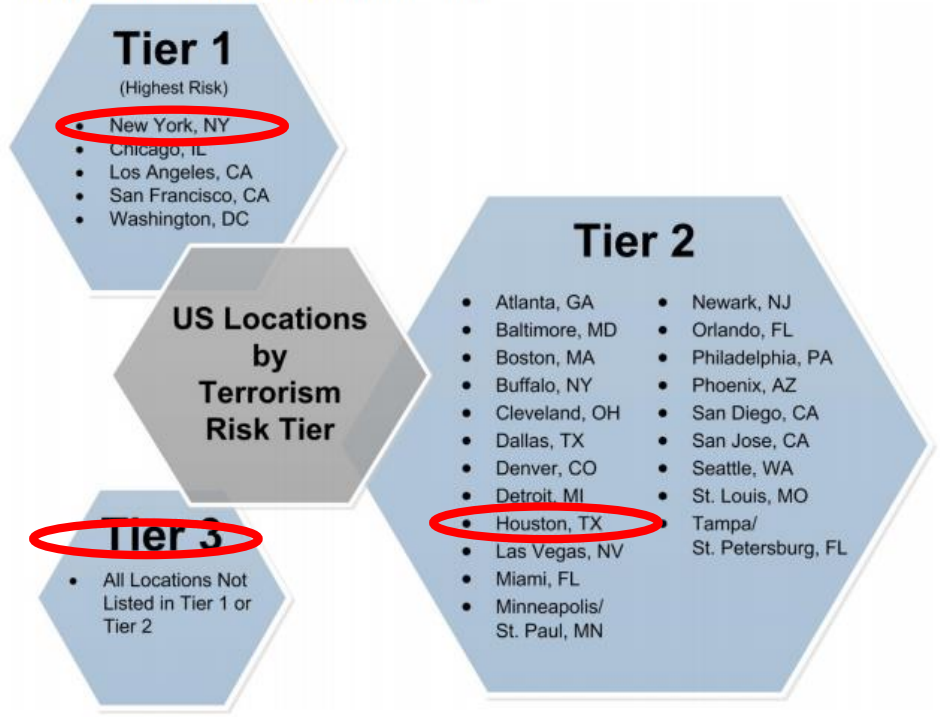
- For each insurer's losses above its deductible, the insurer covers 20 percent and the federal government covers 80 percent

All losses – insurer and government – capped at $100 billion

Source: GAO (2017)

Modeled Loss Scenarios

Appendix 1: U.S. Locations by Terrorism Risk Tiers

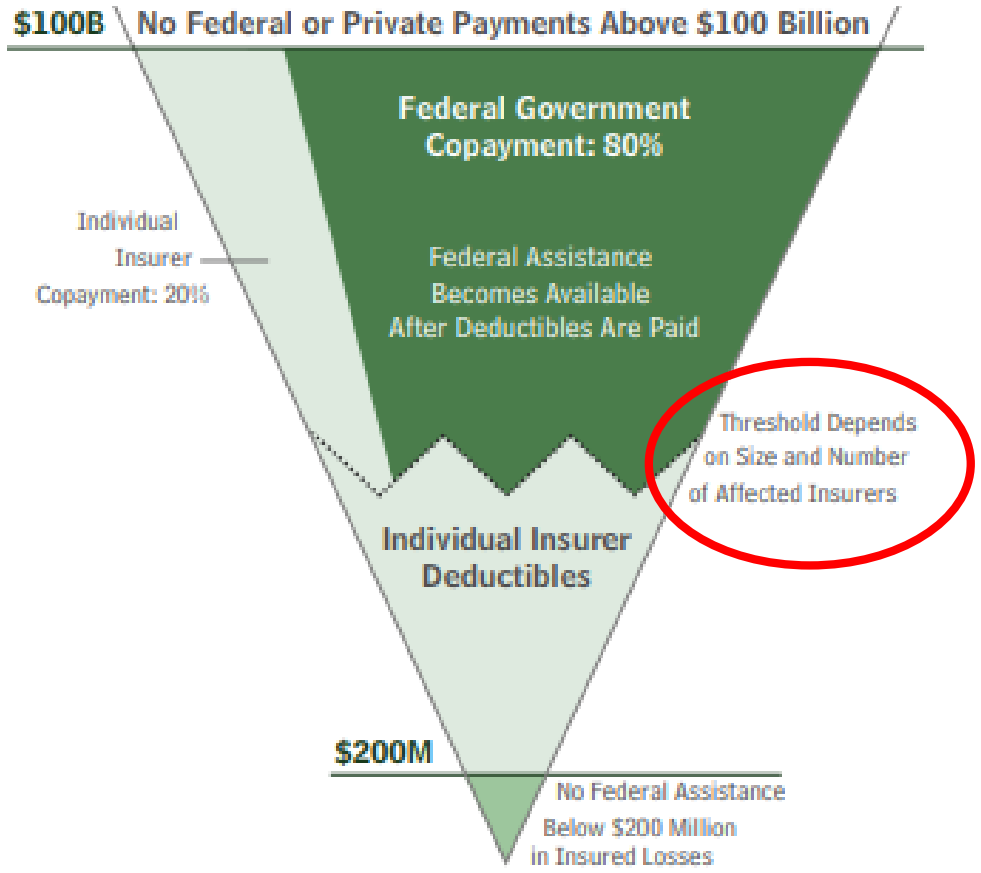


Source: AM Best (2017)

Bomb Size	Rel. Freq.	Cell Size
Bomb - 600 lb.	100%	Two
Bomb - 1 Ton	9%	Six
Bomb - 2 Ton	2%	Eight
Bomb - 5 Ton	1%	Nine
Bomb -10 Ton	0.4%	Ten

Source: RMS

And dirty Bomb events for Tier 1 and Tier 2 Locations



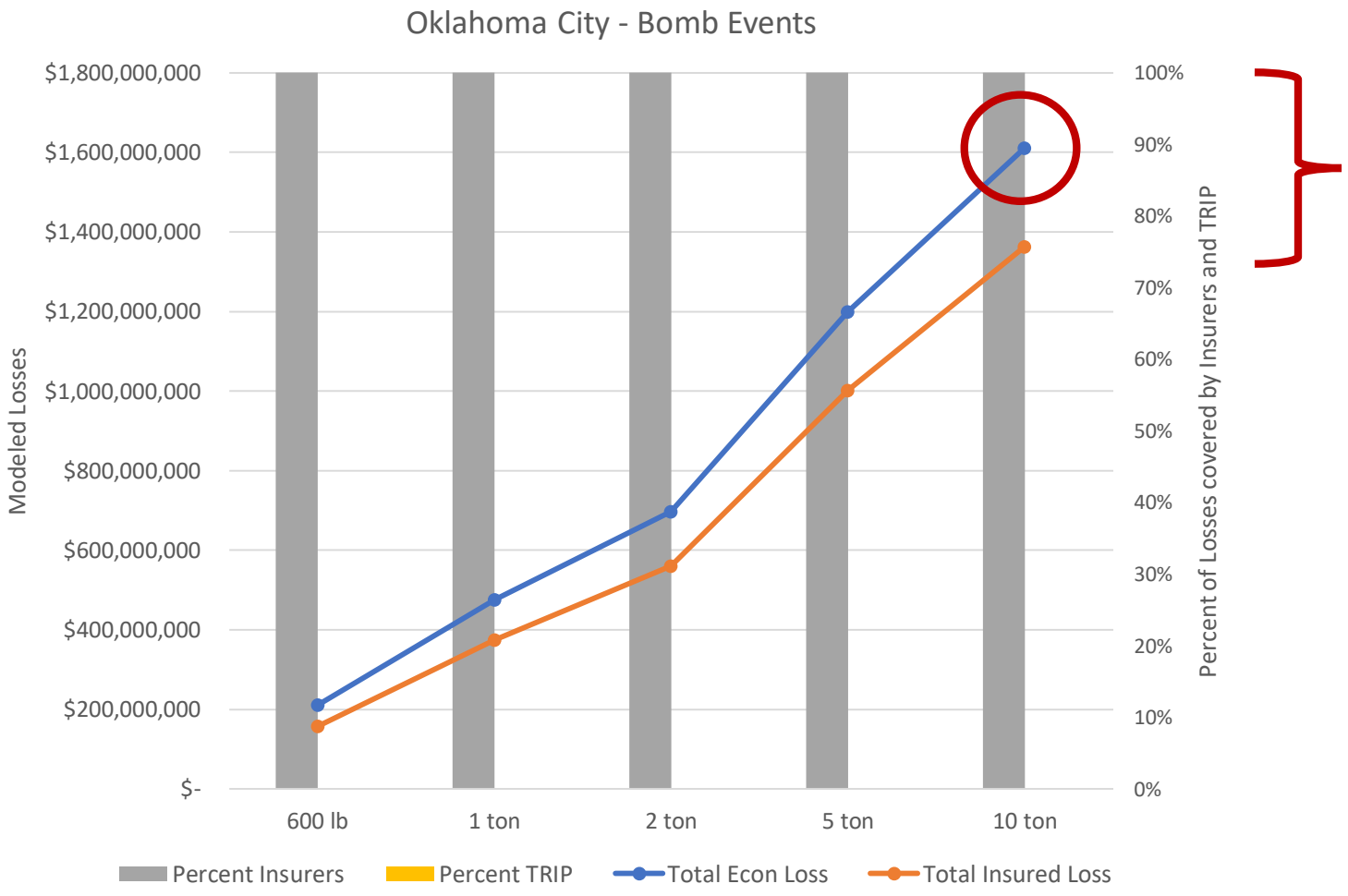
Source: Congressional Budget Office.

CBO (2015)

CIPR analysis of RAA TRIP model

Note: Results to be presented are subject to model and insurer loss allocation assumptions utilized

“Tier 3 Risk” – Oklahoma City

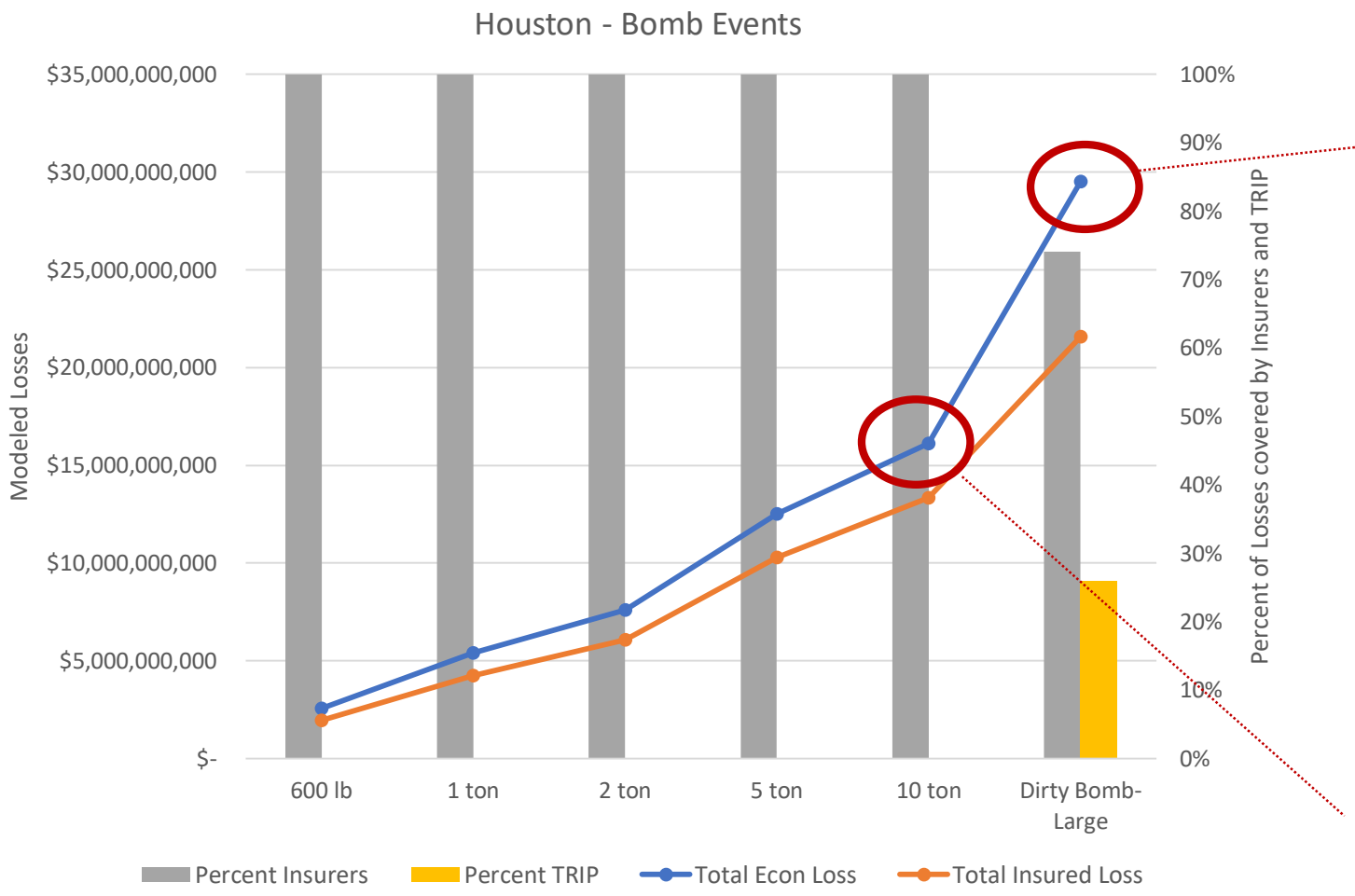


A 10-ton bomb in Oklahoma City generates $1.6 billion of total economic losses:

- ❑ Property (42%); WC (48%); Liability (10%)
- ❑ 15% of total losses are uninsured ($250K)
- ❑ Given the individual insurer threshold deductible share, **100% of insured losses** for the event ($1.3 billion) are covered by insurers
- ❑ For all modeled events in Oklahoma City (bomb, aircraft, conflagration), TRIP loss sharing is never activated. ***Insurers in OK City bear all the terrorism risk for these modeled events***

(Note: liability loss assumptions by RAA)

"Tier 2 Risk" – Houston



A large Dirty bomb in Houston generates $29.5 billion of total economic losses:

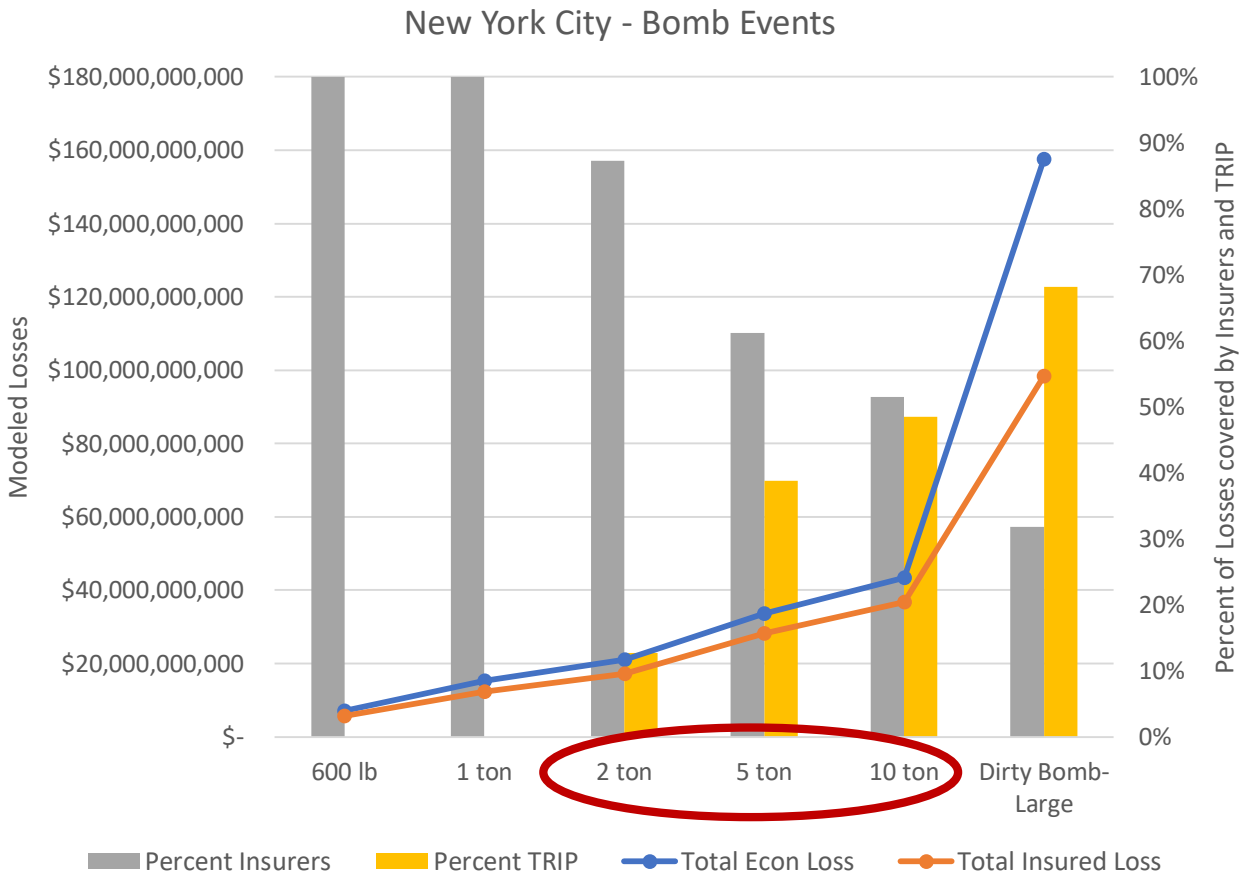
- ❑ Property (84%); WC (1%); Liability (15%)
- ❑ 27% of total losses are uninsured ($7.9 billion)
- ❑ TRIP is enacted in this scenario with **73% of insured losses** for the event ($15.8 billion) covered by insurers and **27% covered by TRIP** ($5.8 billion)
- ❑ *In Houston, insured losses need to be > $14.3 billion for TRIP to kick-in. Commercial property insurers in Houston bear all the terrorism risk for modeled events below this amount.*
- ❑ Hurricane Harvey as a reference point was $16-19 billion in insured losses (III.org)

A 10-ton bomb in Houston generates $16.1 billion of total economic losses:

- ❑ Property (54%); WC (36%); Liability (10%)
- ❑ 17% of total losses are uninsured ($2.7 billion)
- ❑ Given the individual insurer threshold deductible share, **100% of insured losses** for the event ($13.3 billion) are covered by insurers

(Note: liability loss assumptions by RAA)

“Tier 1 Risk” – New York City

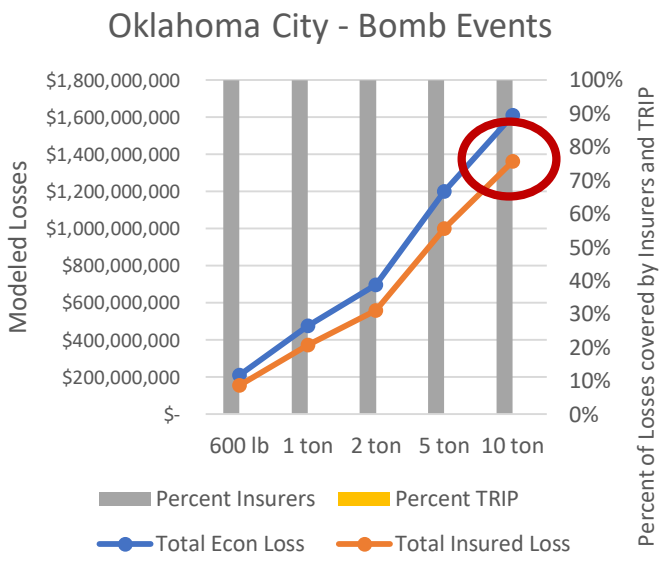


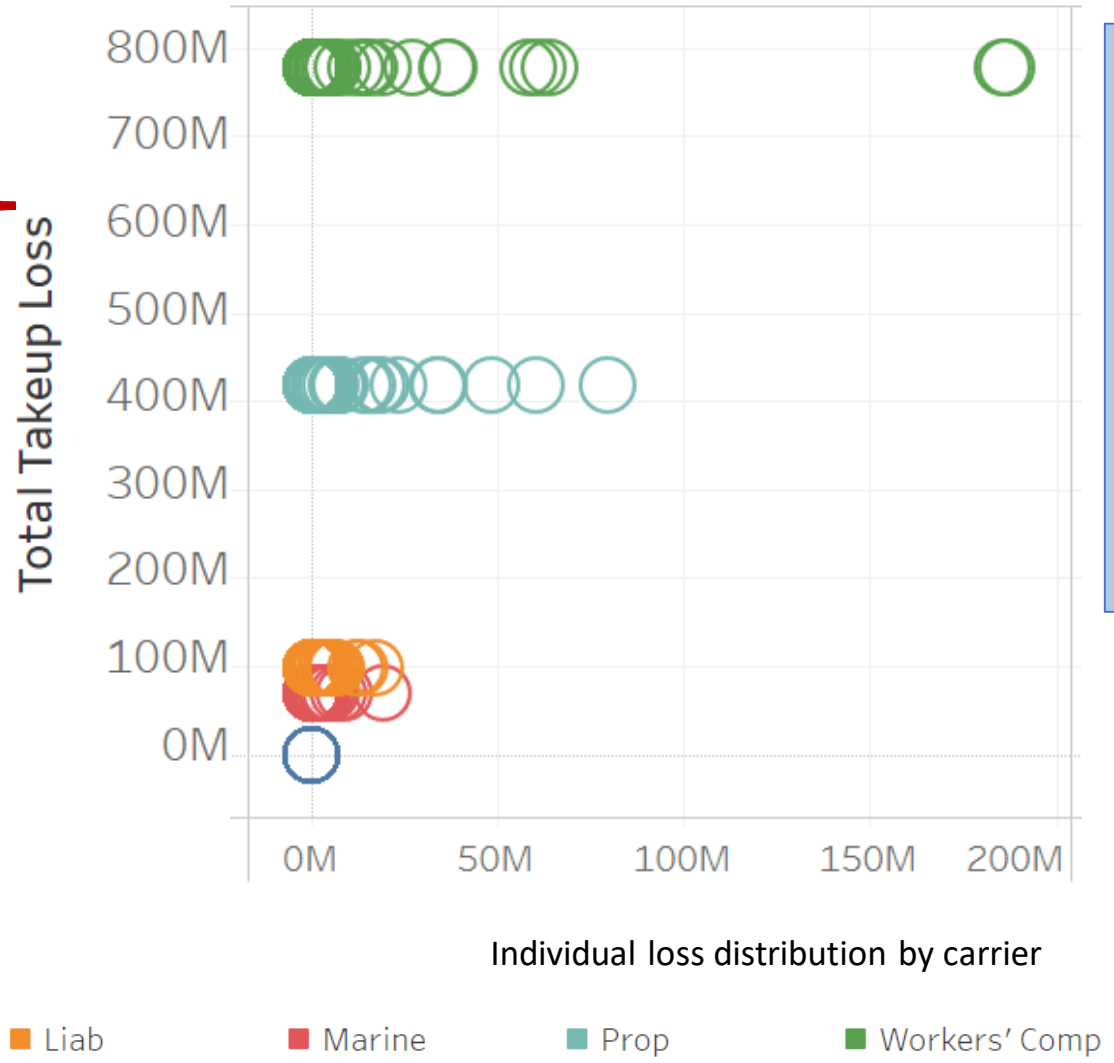
In NYC, TRIP loss sharing kicks-in for 2-ton, 5-ton, and 10-ton modeled bomb events with total economic losses ranging from $21 to $43 billion:

- ❑ Property (57-70%); WC (20-33%); Liability (10%)
- ❑ 15-18% of total losses are uninsured ($3.8-$6.7 billion)
- ❑ TRIP covers **14%** ($2.4 billion); **40%** ($11.1 billion); and **49%** ($18.0 billion) of insured losses respectively for **2-ton, 5-ton, and 10-ton modeled bomb events respectively**
- ❑ *Similar to Houston, insured losses need to be > $14.2 billion for TRIP to kick-in. Commercial property insurers in NYC bear all the terrorism risk for modeled events below this amount.*

(Note: liability loss assumptions by RAA)

Oklahoma City Individual Insurer Loss Distribution





By LOB individual insurer loss distributions for the $1.3 billion of total insured losses from 10-ton bomb event range from:

- ❑ WC - $0 - $186.8 million
- ❑ Prop - $0 - $79.8 million
- ❑ Liability - $0 - $17.3 million
- ❑ Marine - $0- $19.5 million **[Note: Marine rolls up into Property for total losses reported in graph]**

How well-capitalized are these individual insurers?

Role of reinsurance - more heavily concentrated in co-pay vs. deductible?

(Note: liability loss assumptions by RAA)

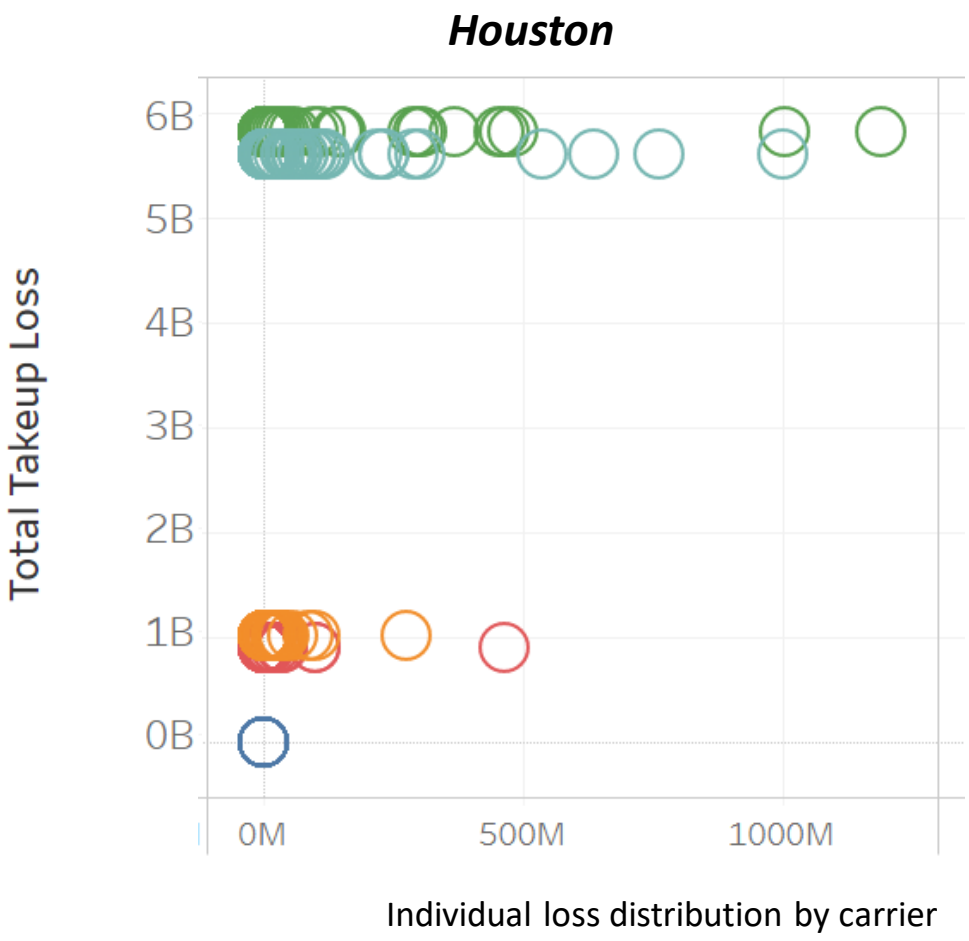
Assessing Capital Adequacy – Deductible to Surplus Ratio

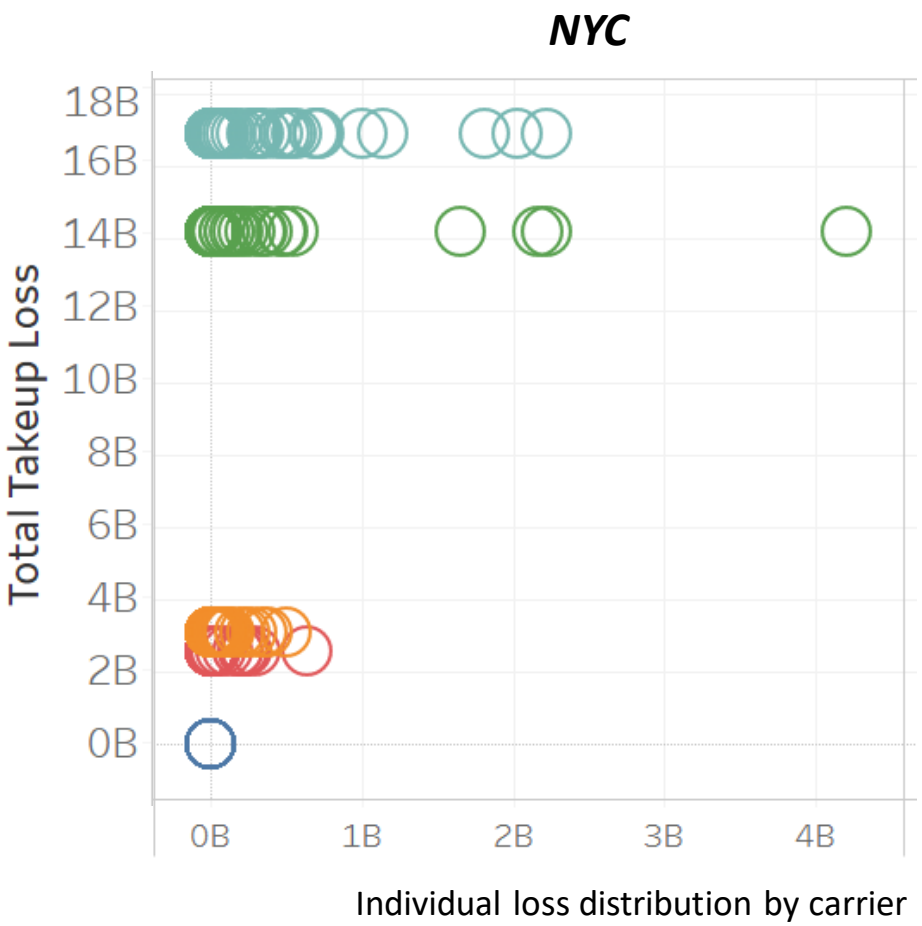
2017 PHS Size Category	2017 PHS of Groups in the Category	Number of Insurer Groups	Baseline Deductible at 20%	No. of Grps Exposure > 15% of PHS	No. of Grps Exposure > 20% of PHS	No. of Grps Exposure > 25% of PHS
>$1B	661,990,625,283	83	35,610,614,547	16	9	4
>$500 mn to $1B	32,116,165,529	44	2,948,331,745	9	4	1
>$300 mn to $500 mn	14,703,107,953	37	1,169,493,079	7	2	1
>$100 mn to $300 mn	21,798,157,900	119	2,084,591,347	27	14	8
>$50 mn to $100 mn	5,784,778,747	83	648,446,686	23	13	8
<$50 mn	6,375,831,239	416	717,146,235	109	73	45
Grand Total	742,768,666,651	782	43,178,623,639	191	115	67

Event Deductible Exposure as a % of Policyholders Surplus (PHS) (Capital)

- **15% is of Concern, i.e., this ratio considered to be relatively high measure of exposure to terrorism**
- **191 of 782 of overall insurer groups meet this threshold ratio**

Houston and NYC Individual Insurer Loss Distribution for 10-ton bomb events – *several modeled individual insurer losses over $1 billion*

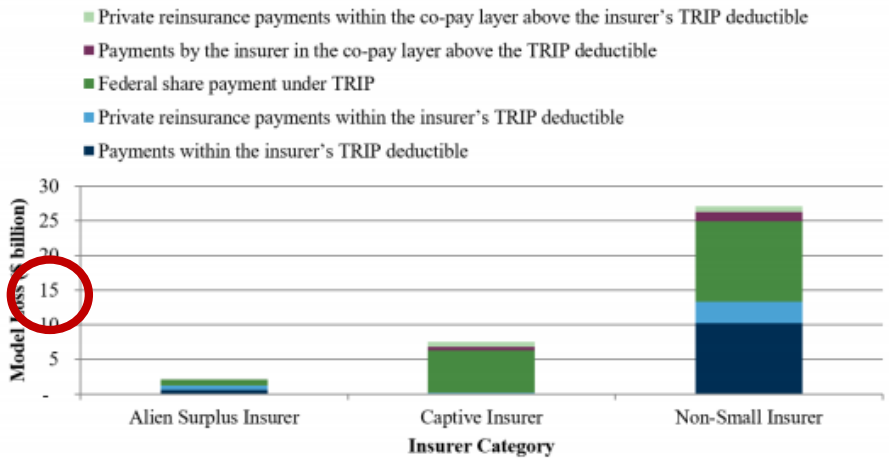




Aircraft Liab Marine Prop Workers' Comp

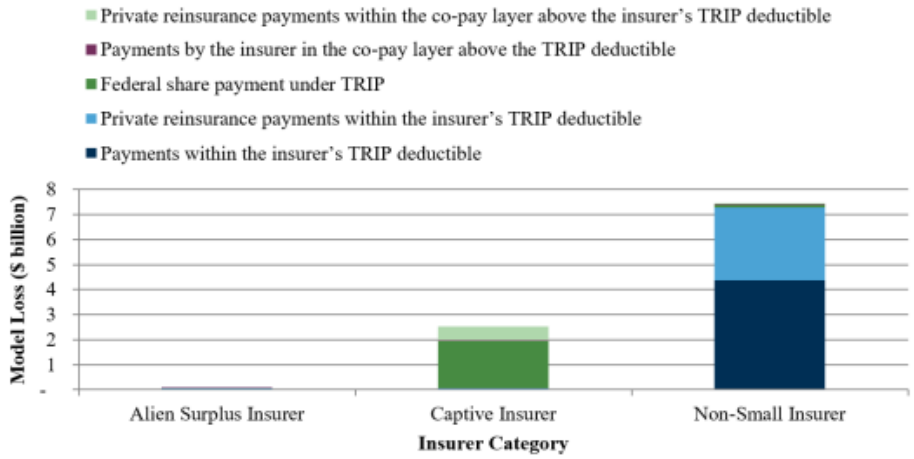
FIO (2018) Loss Scenarios – NYC & Chicago

Figure 33: Total Insured Loss Payments Resulting from 2016 Modeled Loss Scenario By Insurer Category (New York City)



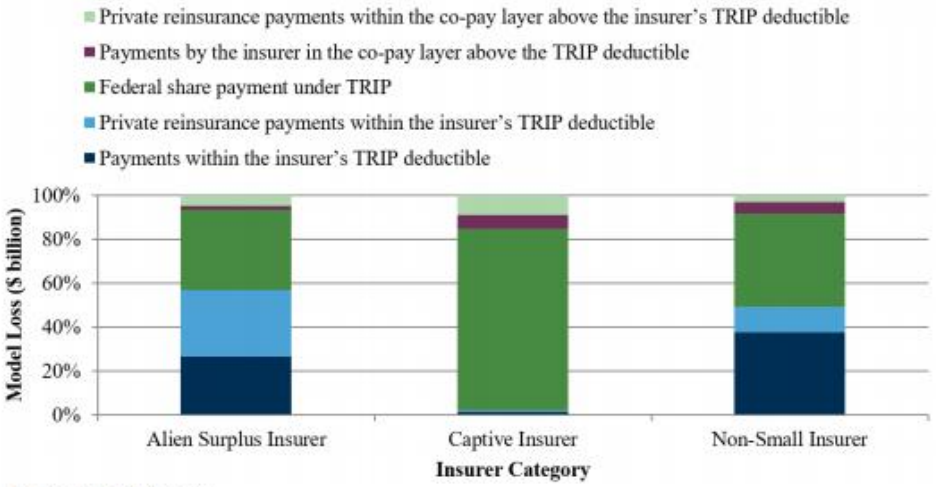
Source: 2017 TRIP data call

Figure 35: Total Insured Loss Payments Resulting from 2017 Modeled Loss Scenario By Insurer Category (Chicago)



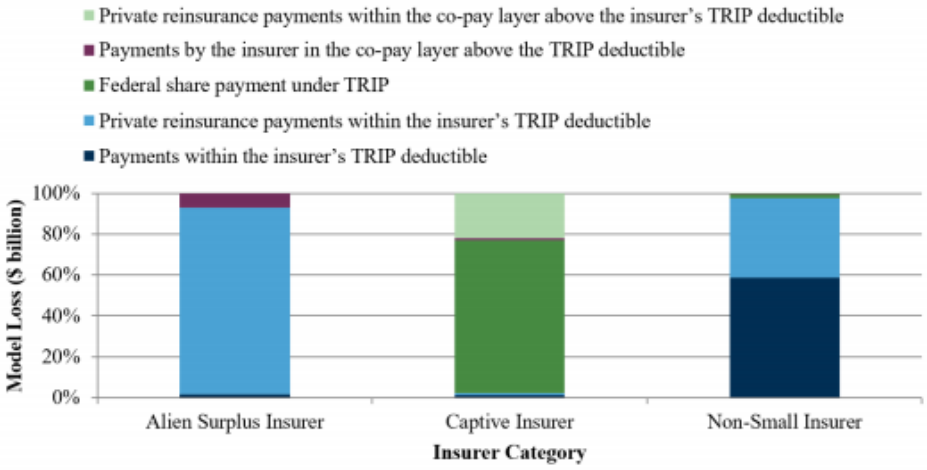
Source: 2018 TRIP data call

Figure 34: Distribution of Loss Payments Arising from 2016 Modeled Loss Scenario Within Each Insurer Category (New York City)



Source: 2017 TRIP data call

Figure 36: Distribution of Loss Payments Arising from 2017 Modeled Loss Scenario Within Each Insurer Category (Chicago)



Source: 2018 TRIP data call

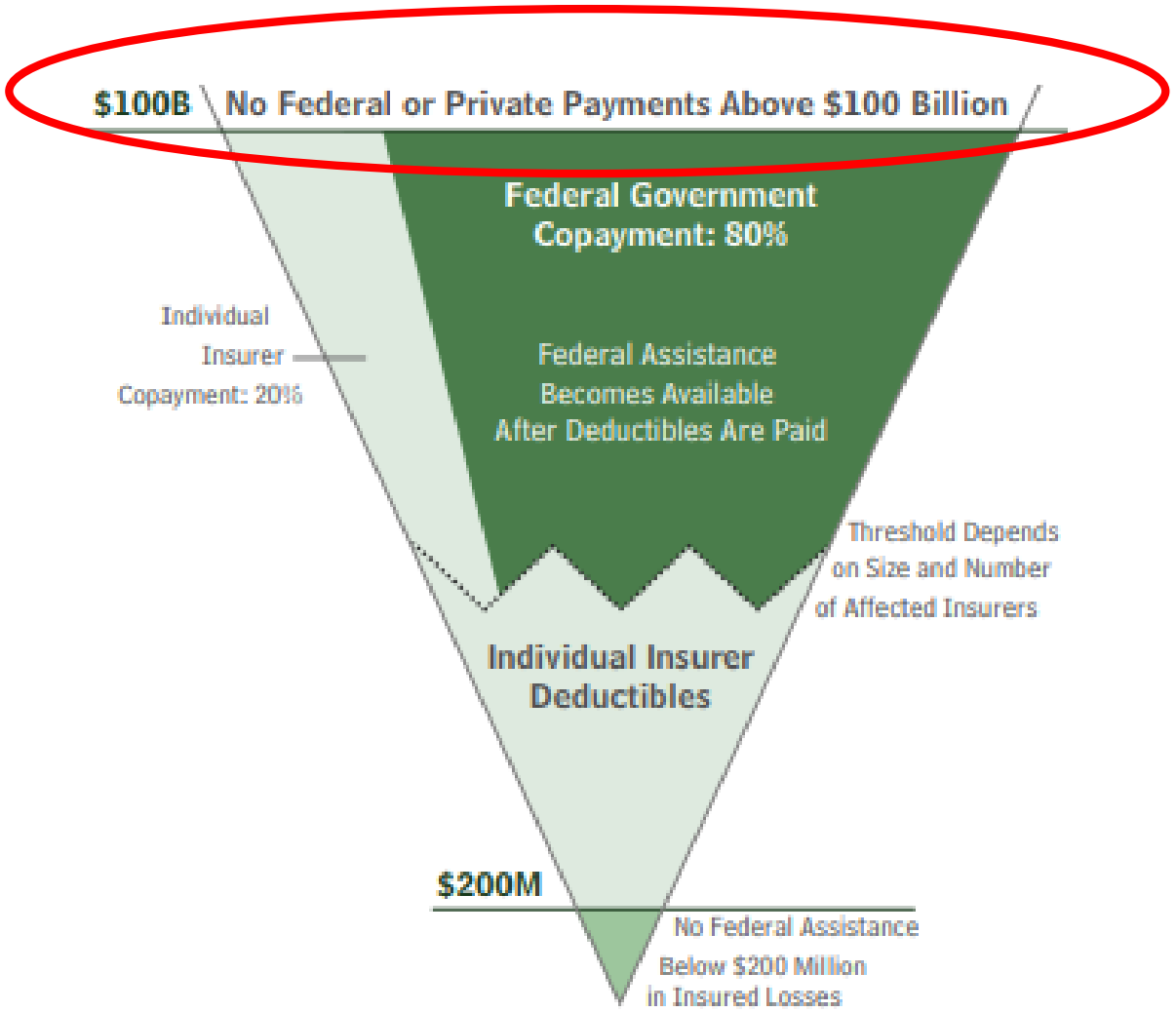
Source: FIO (2018)

Focusing on non-small insurer results:

FIO's NYC scenario is similar to the 5-ton truck bomb results shown with relatively significant TRIP loss sharing beyond the $14.2 billion deductible level

FIO's Chicago example with model insured losses of $7-8 billion is similar to Houston and OKC results shown with relatively limited TRIP loss sharing

Reinsurance plays a key role in transferring losses from commercial insurers



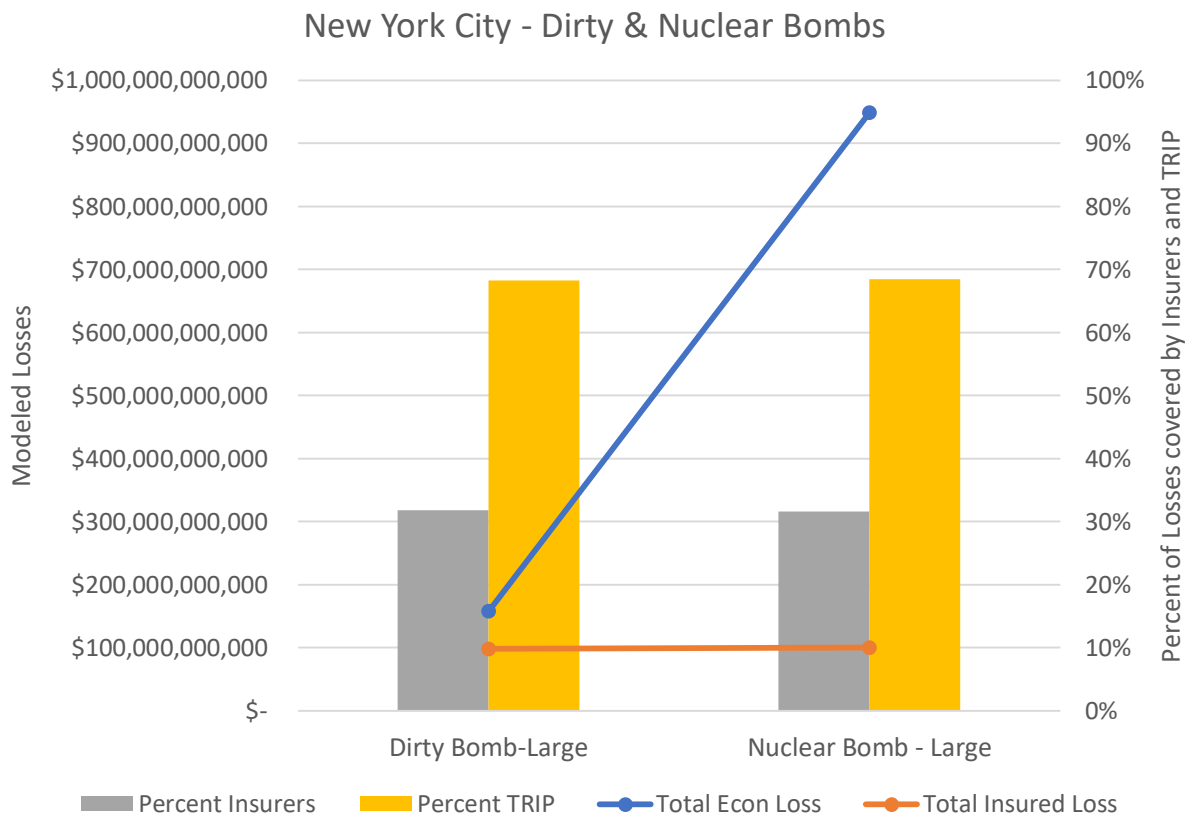
Source: Congressional Budget Office.

CB0 (2015)

CIPR analysis of RAA TRIP model

Note: Results to be presented are subject to model and insurer loss allocation assumptions utilized

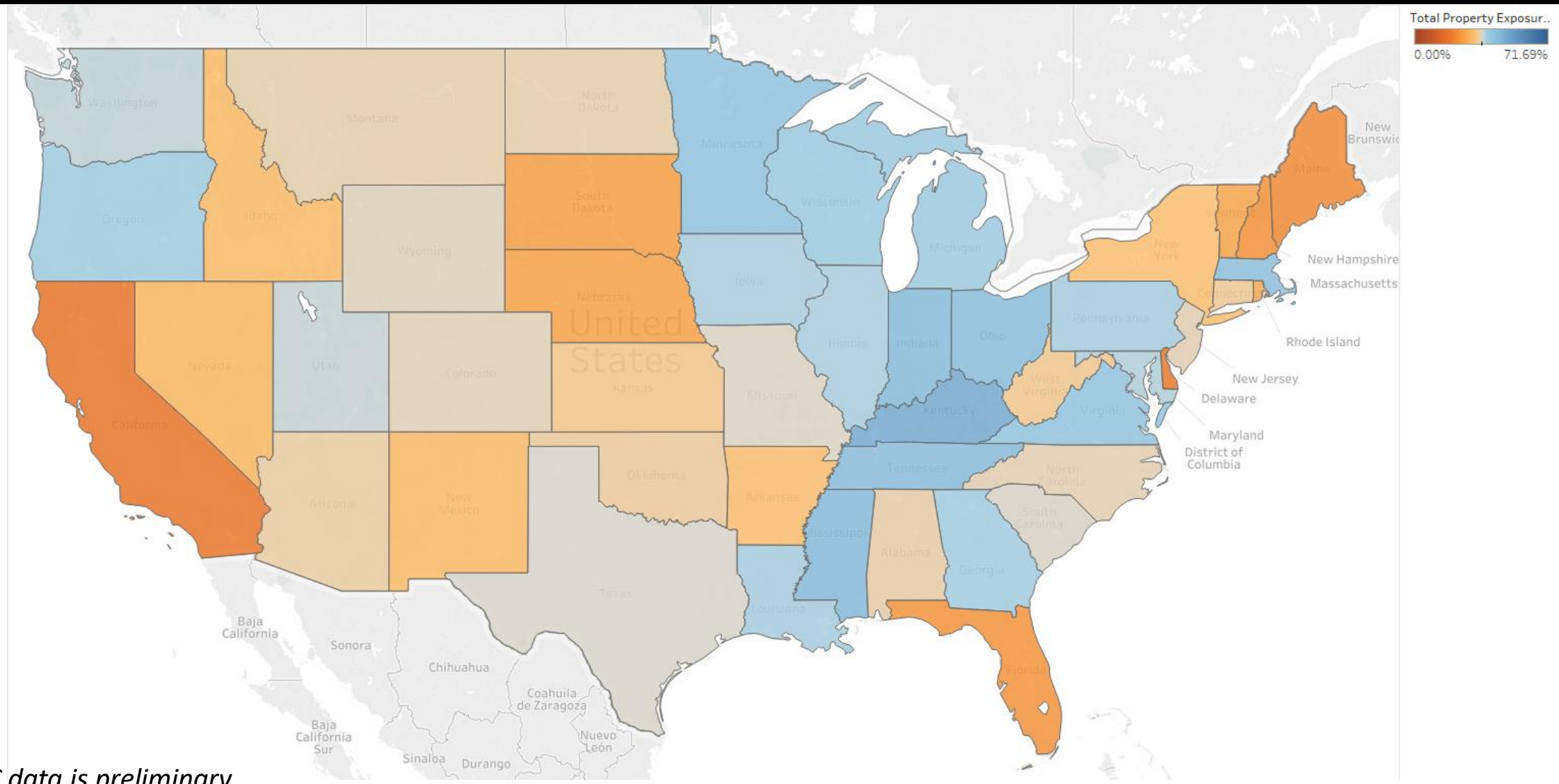
NBCR type events – Large Amounts of Uninsured Losses



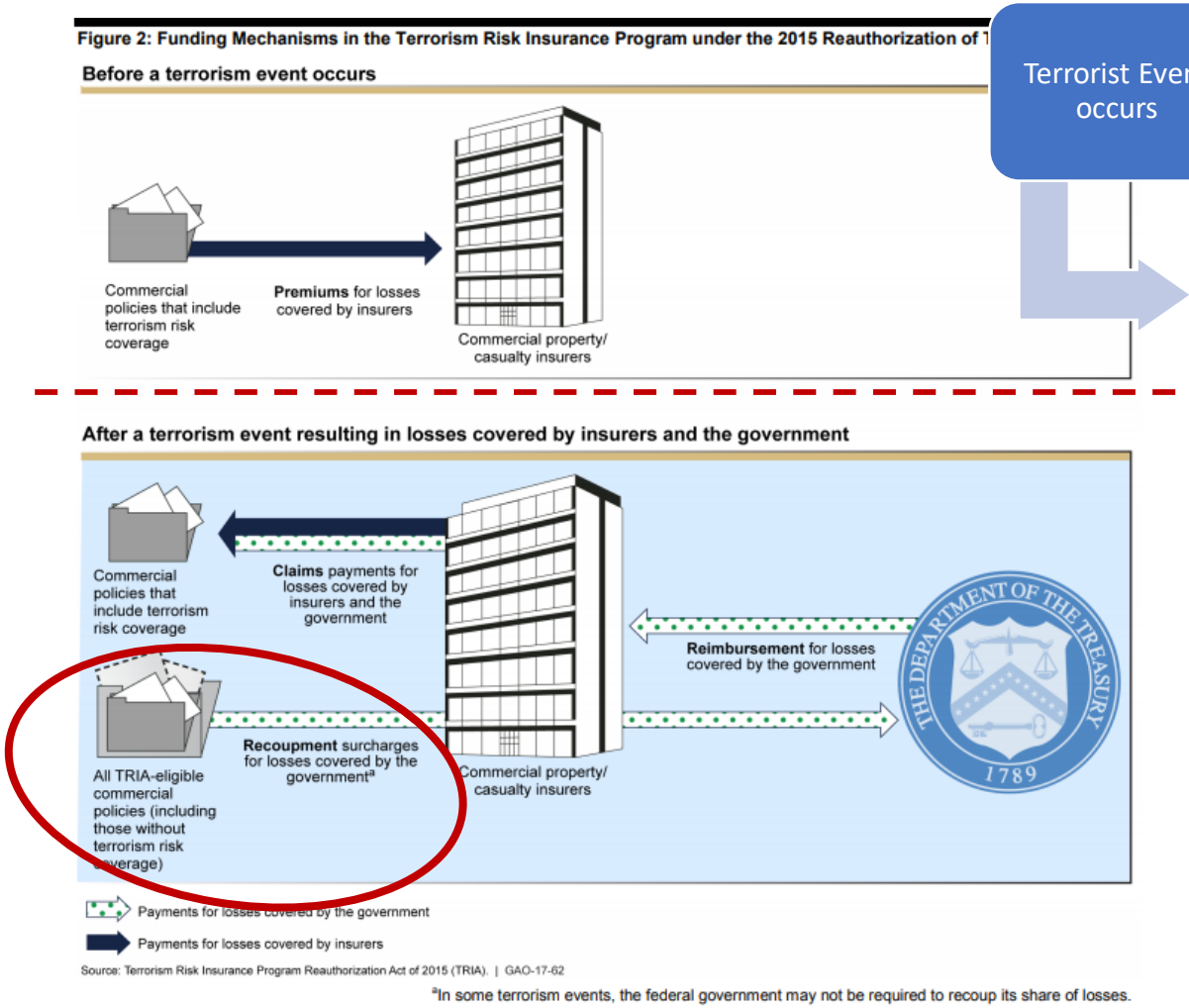
Given the program cap of $100 billion:

- ❑ Large events such as NBCR, generate large amounts of uninsured losses
- ❑ **Uninsured losses in NYC for a dirty bomb are estimated at nearly $60 billion (38% of total) and almost $850 billion for a large nuclear bomb (90% of total)**
- ❑ A large nuclear bomb in Houston (not shown) also generates $67 billion of uninsured losses (40% of the total)
- ❑ These uninsured amounts are likely underestimated given that NBCR exclusions are not completely captured in the model scenarios (**potentially up to 50% of policies excluded from NBCR type events**)

Total Property Exposure with Terrorism Coverage where NBCR is not included



Note: NAIC data is preliminary



Terrorist Event occurs

- If > $5 million in losses and certified by the secretary of the Treasury in consultation with the secretary of Homeland Security and the U.S. attorney general *(excludes WC coverage)

Program Trigger

- TRIP is "switched on" only if the insurance industry's **aggregate insured losses** exceed $200 million in a given year. (2020)

Insurer Deductible

- Each insurer is responsible for paying out a portion of its claims – the "deductible" or "individual company retention level" – before any federal involvement. **An insurer's deductible equals 20 percent of an insurer's annual direct earned premiums from the year prior to a certified event from covered TRIA lines.**

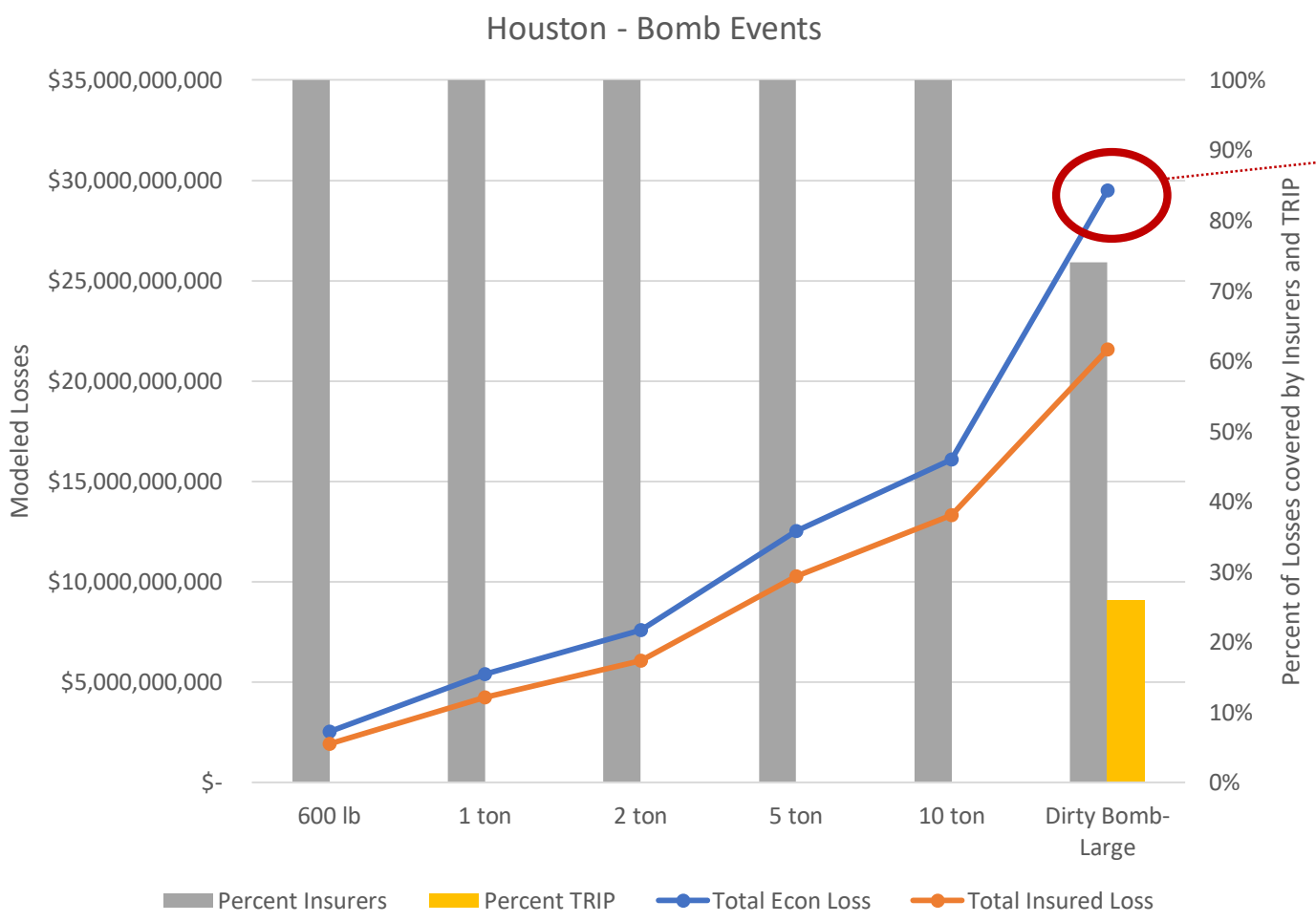
Risk Sharing above Deductible

- For each insurer's losses above its deductible, the insurer covers 20 percent and the federal government covers 80 percent

All losses – insurer and government – capped at $100 billion

Source: GAO (2017)

Recoupment Extent Example



A large Dirty bomb in Houston generates $29.5 billion of total economic losses:

- ❑ TRIP is enacted in this scenario with **73% of insured losses** for the event ($15.8 billion) covered by insurers and **27% covered by TRIP** ($5.8 billion)
- ❑ However, this $5.8 billion in TRIP loss sharing is subject to mandatory recoupment by the treasury at 140% of the loss
- ❑ ***Thus a total of $8.1 billion will be surcharged <u>across all TRIA-eligible commercial policyholders</u>, adding to existing premiums even for those not impacted by the event as well as those without terrorism coverage***

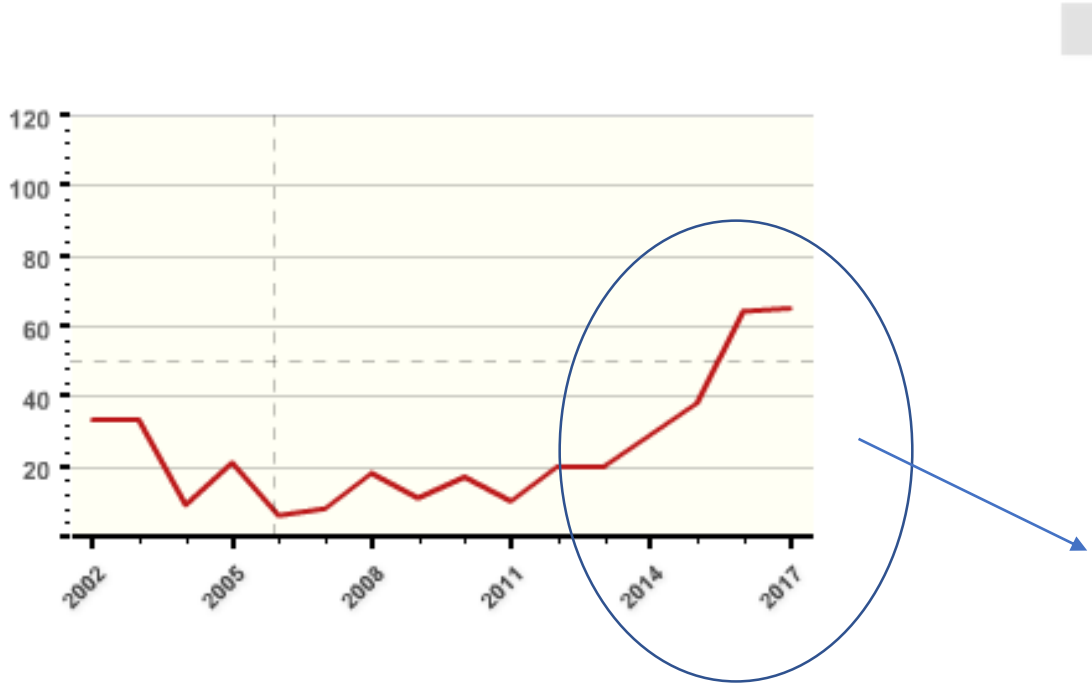
Key Take-Aways

- Various conventional terrorist scenarios run *(CIPR analysis of RAA TRIP model)* illustrate it takes relatively large amounts of insured losses prior to TRIP loss-sharing being activated beyond the insurer's deductible responsibilities of the program
- This highlights the potential capital adequacy of insurers responsible for the material loss amounts in these scenarios
- Additionally, relatively large amounts of uninsured losses exist for all conventional terrorist scenarios (20-25%), with even more significant uninsured losses (40% or more) for large-scale and NBCR events
- Recoupment aspects of the program subjected to all policyholders can be quantified through the scenarios to understand affordability implications

Evolving nature of threat, Cyber, International perspectives

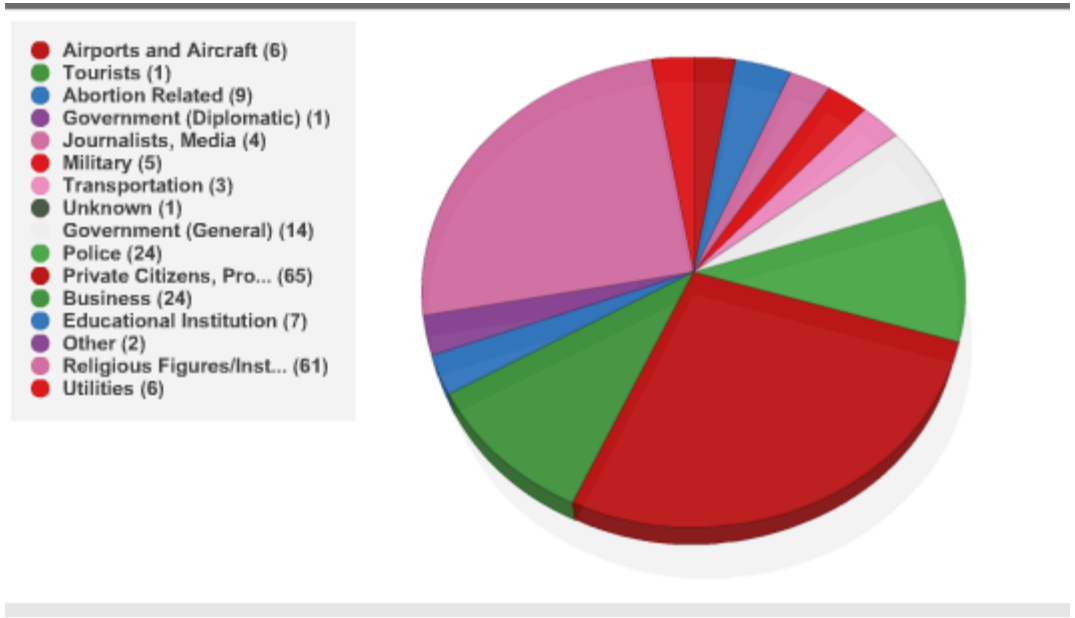
Terrorism and TRIA moving forward

Recent U.S. Terrorist events



Recent data highlights events that are not clearly described as acts of terrorism under TRIP – e.g., mass shootings in schools, religious institutions, and public setting

Total of 216 incidents by target type from 2013 to 2017



https://www.start.umd.edu/gtd/

Less adverse impact on direct property damage

Exhibit 3

Notable US Terrorist Attacks Since 1991

Incident	State	Year	Total Fatalities	Total Injured	Total Property Losses
Port Authority Bus Station Pipe Bombing	New York	2017	0	5	<$1 million
Pickup Truck Driving Into Crowd on Bike Path	New York	2017	8	11	<$1 million
San Bernardino Office Party Shooting	California	2015	14	22	<$1 million
Navy Reserve Facility & Military Recruiting Center Shooting	Tennessee	2015	5	3	<$1 million
Boston Marathon Bombing	Massachusetts	2014	3	264	$2.5 million
Washington Navy Yard Headquarters	District of Columbia	2013	12	8	<$1 million
Fort Hood Military Base	Texas	2009	13	42	<$1 million
9/11 Attacks (WTC and Pentagon)	NY, PA, D.C.	2001	2,982	6,000	$25 billion
2001 Anthrax Attacks	Various States	2001	5	17	<$1 million
Centennial Olympic Park Bombing	Georgia	1996	2	111	<$1 million
Oklahoma City Bombing	Oklahoma	1995	168	680	$650 million
1993 WTC Garage Bombing	New York	1993	6	1,042	$500 million

Source: A.M. Best data and research

Source: AM Best 2018

- **These losses all fall under the TRIP certification and trigger levels.**
- **Insurers developing stand-along coverage to include active assailant coverage and non-damage business interruption**

"the greatest risk to our surplus is a substantial regional event that does not reach the ever escalating TRIA trigger level of $200 million. Given the more recent examples of terror events in the U.S., there is a great risk that a terror event that impacts one of our hospitals could fail to trigger TRIA but could exhaust both our reinsurance layers and our capital and surplus" (FIO, 2019 pg. 38)

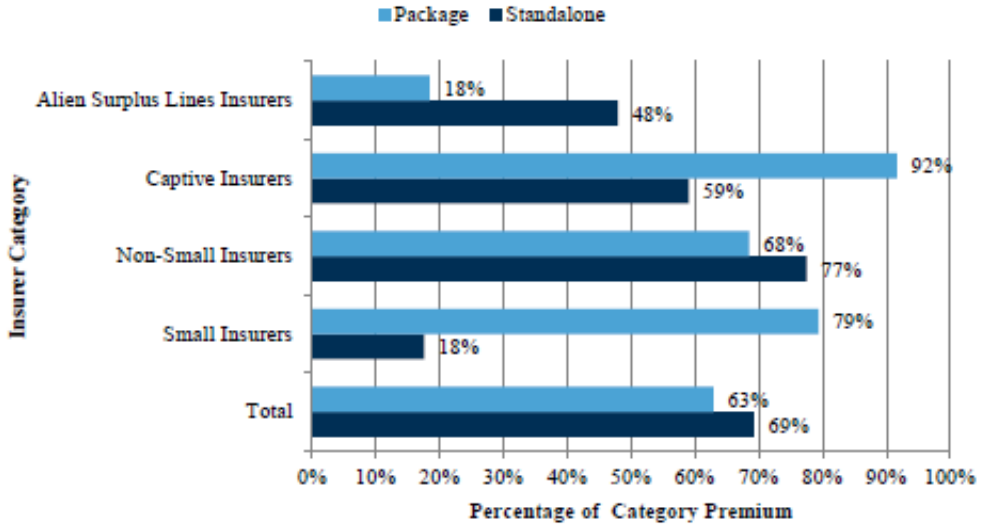
Cyber

2016 U.S. Department of Treasury Guidance:

- Insurance lines that are regulated under TRIP and that include cyberisk components are subject to the program
- Stand-alone cyber liability policies are also subject to TRIP requirements

(source: III.org)

Figure 17: 2018 Take-Up Rates for Terrorism Risk Insurance under Cyber Policies (By TRIP-Eligible DEP)



Source: 2019 TRIP Data Call

Source: FIO (2019)

Figure 16: 2018 TRIP-Eligible DEP for Cyber Policies

	Standalone Cyber Policies		Package Cyber Policies		All Cyber Policies	
	Cyber DEP	% of Total TRIP-Eligible DEP	Cyber DEP	% of Total TRIP-Eligible DEP	Cyber DEP	% of Total TRIP-Eligible DEP
Alien Surplus Lines Insurers	$ 271,043,782	23.0%	$ 229,050,798	16.6%	$ 500,094,778	19.6%
Captive Insurers	31,859,621	2.7%	81,523,378	5.9%	113,295,633	4.4%
Non-Small Insurers	854,606,675	72.6%	955,050,926	69.2%	1,808,746,723	70.8%
Small Insurers	19,866,915	1.7%	114,186,636	8.3%	134,053,551	5.2%
Total	**$1,177,376,993**	**100%**	**$1,379,811,738**	**100%**	**$2,556,190,685**	**100%**

Source: 2019 TRIP Data Call

Source: FIO (2019)

Cyber Terrorism Market Scope

Terrorism - international in nature

- Israel: Government coverage, No involvement of private insurers
- Spain: Government coverage sold by private insurers on its behalf
- France: Public-private risk sharing; Unlimited government reinsurance
- U.K.: Public-private risk sharing; unlimited government debt issuance
- Germany: Public-private risk sharing; limited government reinsurance

Defining Relevant Policy Research Questions

- Further utilizing the collected market data
  - Market quality control checks between FIO and NAIC
  - Assessing coverage declines, especially for high risk geographic areas and small and medium size commercial entities
  - Implicit Charge = No charge?
- Can we better assess potential solvency issues for a “probable” scenario with more granular data? Or draw more insights from existing risk management tools?
- Can models develop scenarios to assess cyber terrorist attacks? Events less than $200 million in lower risk areas?
- Can we achieve better clarification on the process for certification?

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