



Cruisin' for a Bruisin': The Effects of US Cruise Missile Strikes Since the Gulf War

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Problem

Current focus: effect of bombing

- Target type affects campaign success (Pape 1996, Horowitz and Reiter 2001, Allen and Machain 2017)
- Regime type/troop presence affects bombing duration (Allen 2007, Martinez Machain 2015)

Under-examined: *how* of bombing

- International factors - signaling/deterrent value, relative cost
- Domestic factors - financial cost, inter-branch relations, casualty aversion
- Geographic factor - target type and location
- Operational factors - immediacy of desired response, role of other forces

Solution

Develop new dataset on US cruise missile strikes from 1991-2018

When

- What conflicts
- Conflict cycle

Where

- Launch locations
- Target locations

How

- Launch platforms
- Target types

Value-added:

- Weapon where entire universe of cases known
- Integration with current air power datasets and variables

Goal is to convince you

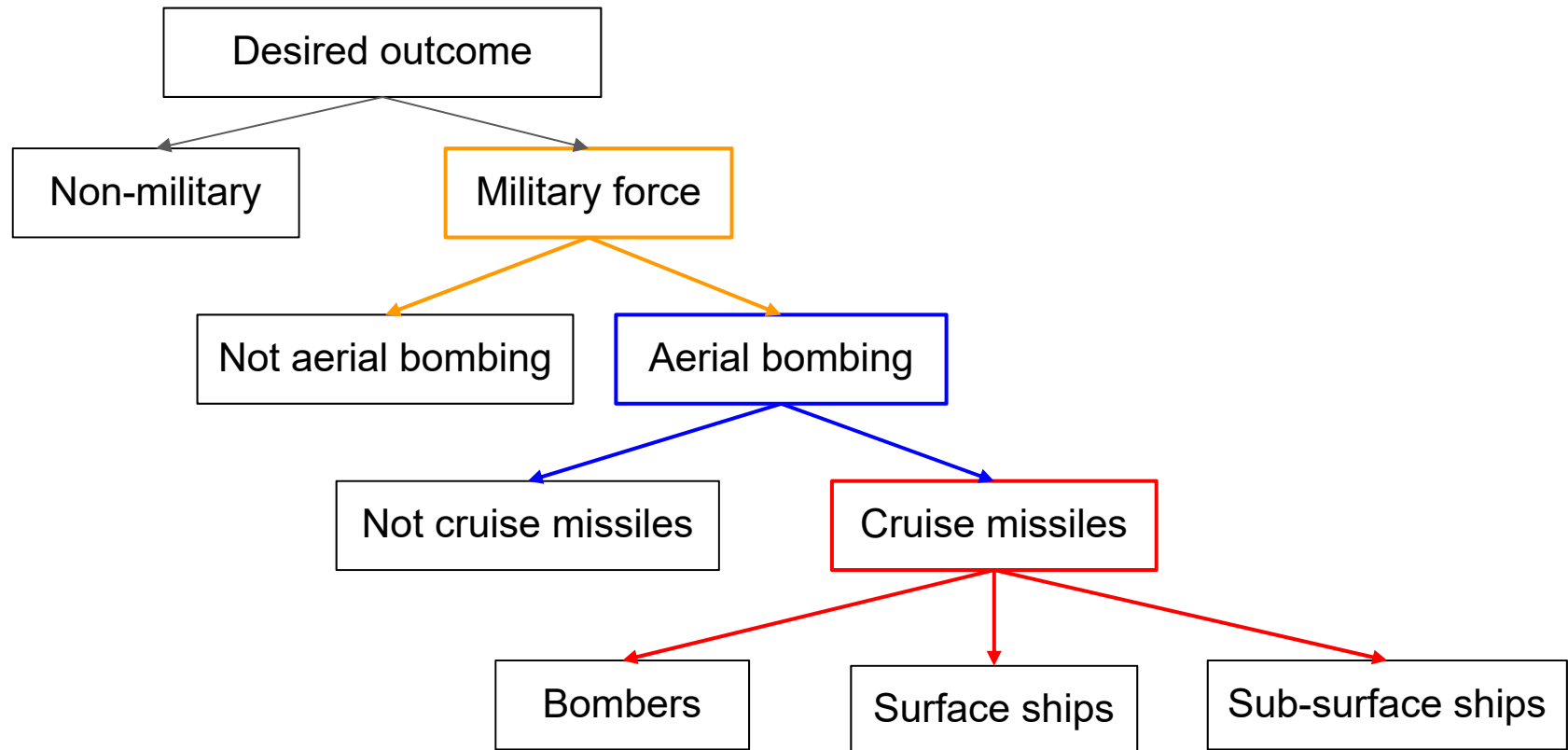
The *how* of military force is under-examined

Aerial bombing is a data-rich starting point

New data on universe of cruise missile strikes can tell us about choices regarding:

- Platforms
- Targets
- Geography
- Efficacy

Means of Military Force



Means of Military Force

Variation in means of military force

“what I think would scare the shit out of these al Qaeda guys more than any cruise missile...would be the sight of US Commandos, ninja guys in black suits, jumping out of helicopters into their camps, spraying machine guns. Even if we don't get the big guys, it will have a good effect.”

- President Clinton to JSOC Chairman Shelton (1998)

“don't let these SOF guys through the door because they're dangerous...they are going to do something to embarrass [the country]”

- former JSOC Commander Downing on Operation Infinite Reach (1998)

Variation in means of aerial bombing

“[with] the C.I.A.'s armed drones tied up with the bombing campaign in Pakistan...cruise missiles were all that was available”

- Pentagon official on Yemen strike (2009)

“The TLAM played an important role in the air campaign as the only weapon system used to attack central Baghdad in daylight.

- DOD Summary Report of 1991 Gulf War

“[a nuclear fabrication plan near Baghdad] was a perfect candidate for a strike by cruise missiles because of the need for pinpoint accuracy and because Baghdad is so heavily defended”

- Pentagon official on retaliation for attempted HW Bush assassination (1993)

Variation in means of cruise missile strikes

“we don't need to use the submarines. I believe we can use surface ships...we have conventional cruise missiles on surface ships today. I believe that the surface navy provides the effective way to do that and it provides flexibility because...we can put the ships where we need to in times of crisis...where we don't create the ambiguity that is the problem of the nuclear submarine force.”

- General Hyten before Syria airbase bombing (2017)

	Missiles Fired	Pape (1996)	Horowitz and Reiter (2001)	Allen (2007)	Martinez Machain (2015)	Allen and Machain (2017)	Allen and Machain (2018)
Iraq (1991)	~288	●	●	●	●	●	●
Iraq (1993)	66						●
Bosnia (1995)	13		●	●	●		
Iraq (1996)	31		●	●	●		●
Afghan/Sudan (1998)	73/6						●
Iraq (1998)	415		●	●	●		●
Serbia/Yugoslavia (1999)	~470			●	●	●	●
Afghanistan (2001)	~50			●	●	●	●
Iraq (2003)	~802/64			●	●	●	●
Somalia (2008)	5						
Yemen (2009)	2						
Libya (2011)	112						
Syria (2014)	47						
Yemen (2016)	5						
Syria (2017)	59						
Syria (2018)	85						

New Data

Unit of analysis: missile incident (n ≈ 180)

Covariates

Launch platform	Missile count
Launch location	Date
Target location	Campaign/war

Unit of analysis: military campaign (n ≈ 18)

Covariates

Launch platforms	Missile count
Political outcome	Multilateral campaign
Non-state target	Non-bombing forces

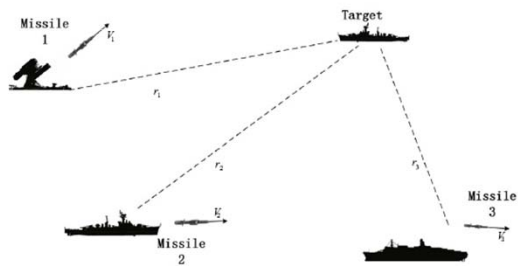


Figure 1 Scenario of a cooperative salvo attack

Structure of the data

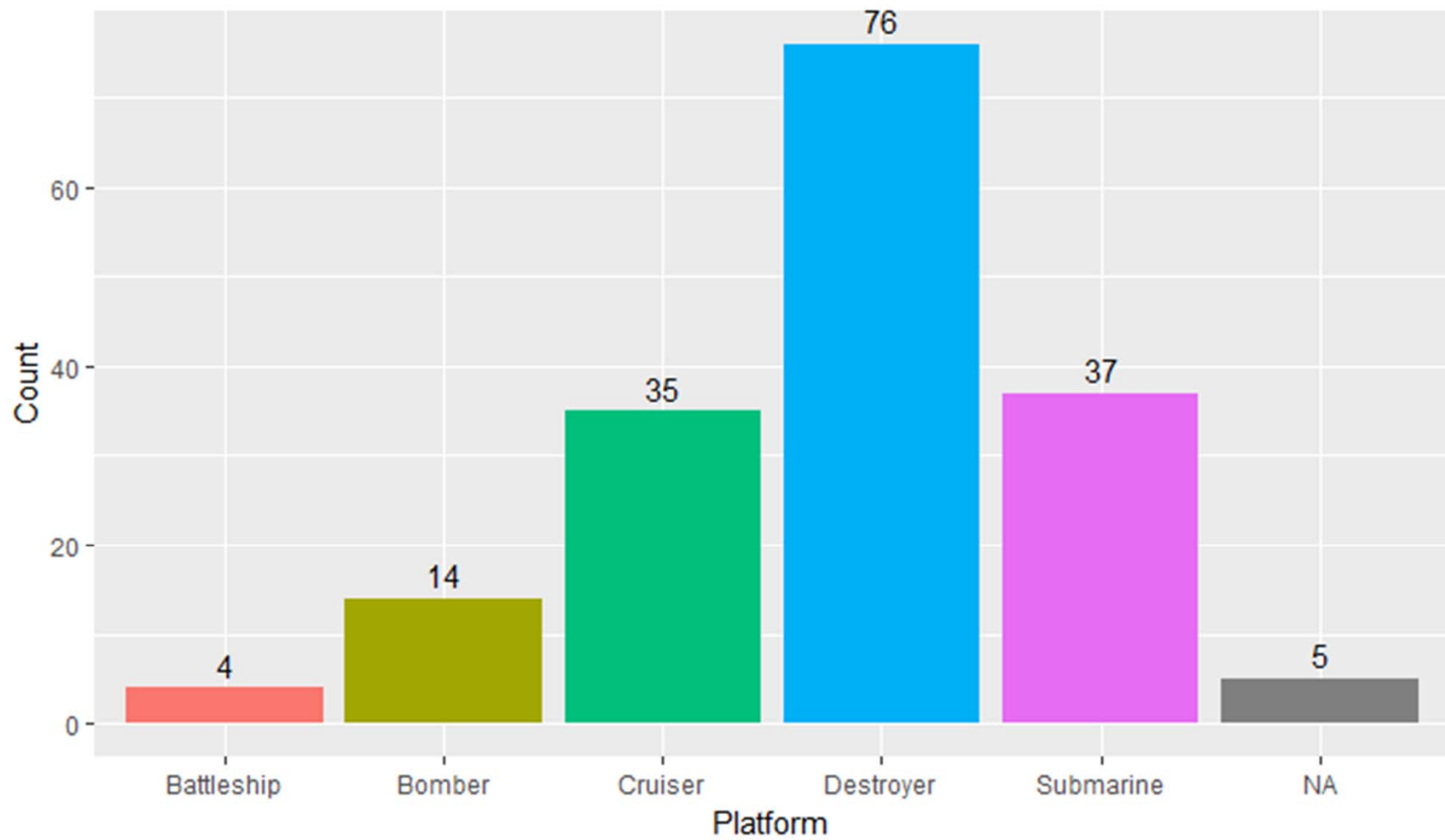
- Unit of analysis - cruise missile-incident (one vessel to one target)
- Variables
 - Descriptive info about cruise missile-incident
 - Dates of cruise missile-incident
 - Name and dates of broader military operation
 - Name and dates of broader war
 - Number of missiles fired
 - Platform information
 - Vessel type (Destroyer, submarine)
 - Vessel name (USS Gonzales, USS Nitze)
 - Vessel location (sea or departing air base)
 - Target information
 - Actor type (state, non-state)
 - Actor name (Iraq, Al Qaeda)
 - Geographic location (specific lat-long)

Observations (n)	171
Military operations	14
Target countries	9
Launch vessels	79
Geographic targets	40
Precise missile count	33/171
Estimated missile count	42/171
Unknown missile count	96/171

Platforms

Operation	Missiles Fired	Bombers	Surface Ships	Sub-surface ships
Iraq (1991)	~288	●	●	●
Iraq (1993)	66		●	
Bosnia (1995)	13		●	
Iraq (1996)	31	●	●	●
Afghan/Sudan (1998)	73/6		●	●
Iraq (1998)	415	●	●	●
Serbia/Yugoslavia (1999)	~470	●	●	●
Afghanistan (2001)	~50	●	●	●
Iraq (2003)	~802/64	●	●	●
Somalia (2008)	5			●
Yemen (2009)	2		?	?
Libya (2011)	112		●	●
Syria (2014)	47		●	
Yemen (2016)	5		●	
Syria (2017)	59		●	
Syria (2018)	85	●	●	●

Tomahawk Launch Incidents per Platform (1991-2017)

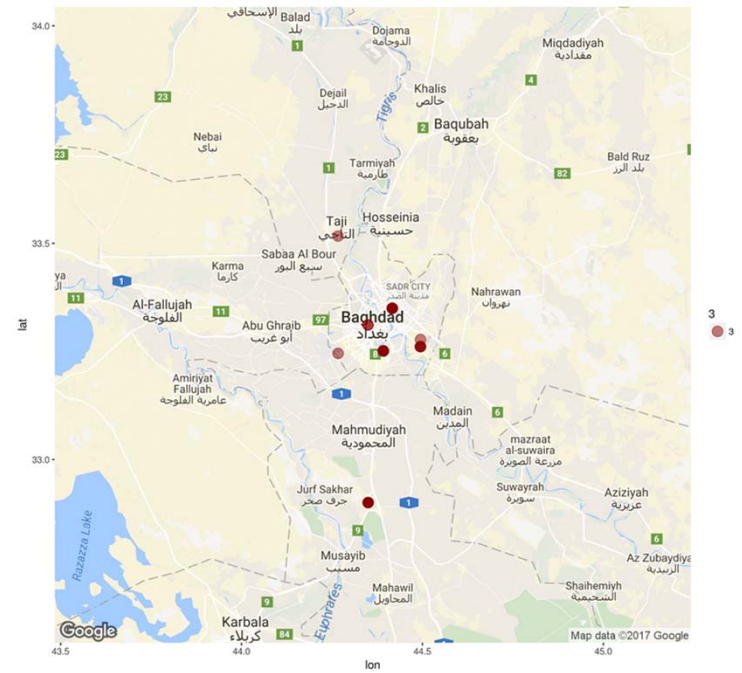
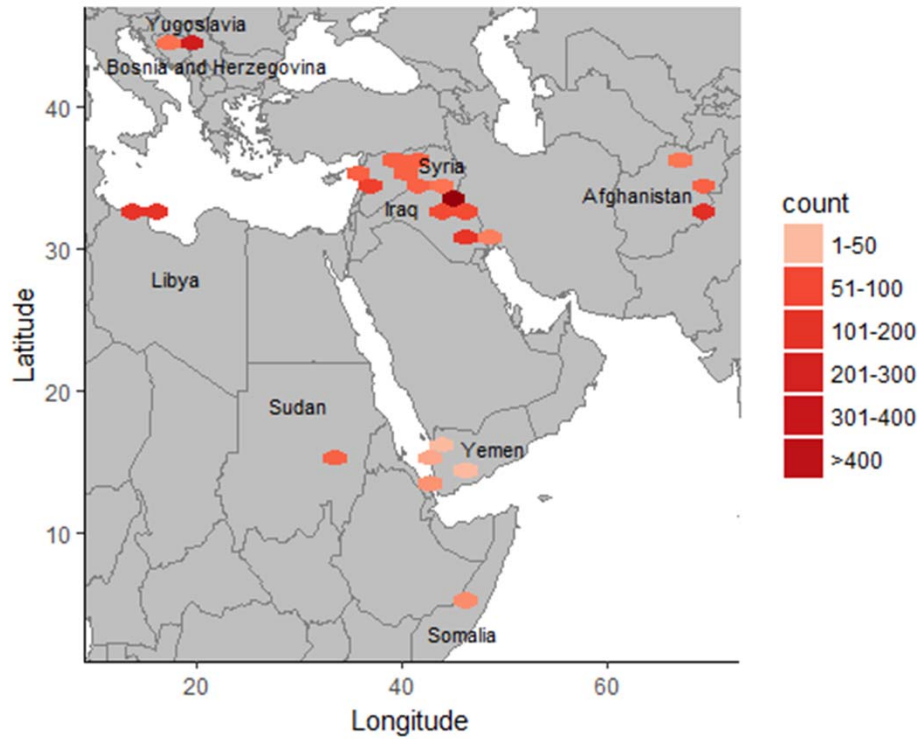


Platforms

<u>Platform</u>	<u>Response Time</u>	<u>Visibility</u>	<u>Ally dependence</u>	<u>Loiterability</u>	<u>Vulnerability</u>	<u>Service Branch</u>
Bomber	Low	High	Medium	Medium	High	Air Force
Surface ship	High	High	Low	High	Low	Navy
Submarine	Medium	Low	Low	Low	Low	Navy

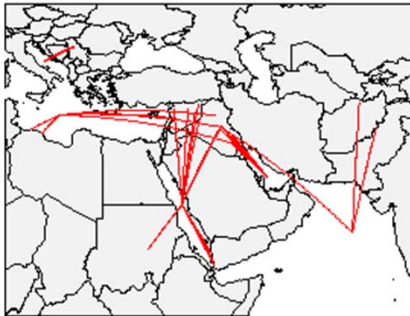
Targets

Cruise Missile Strikes (1991-2018)

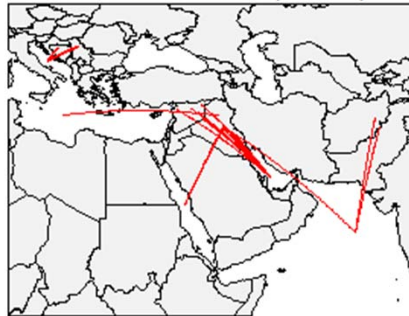


Geography

Destroyer Tomahawk Paths (1991-2017)



Cruiser Tomahawk Paths (1991-2017)



Bomber Tomahawk Paths (1991-2017)



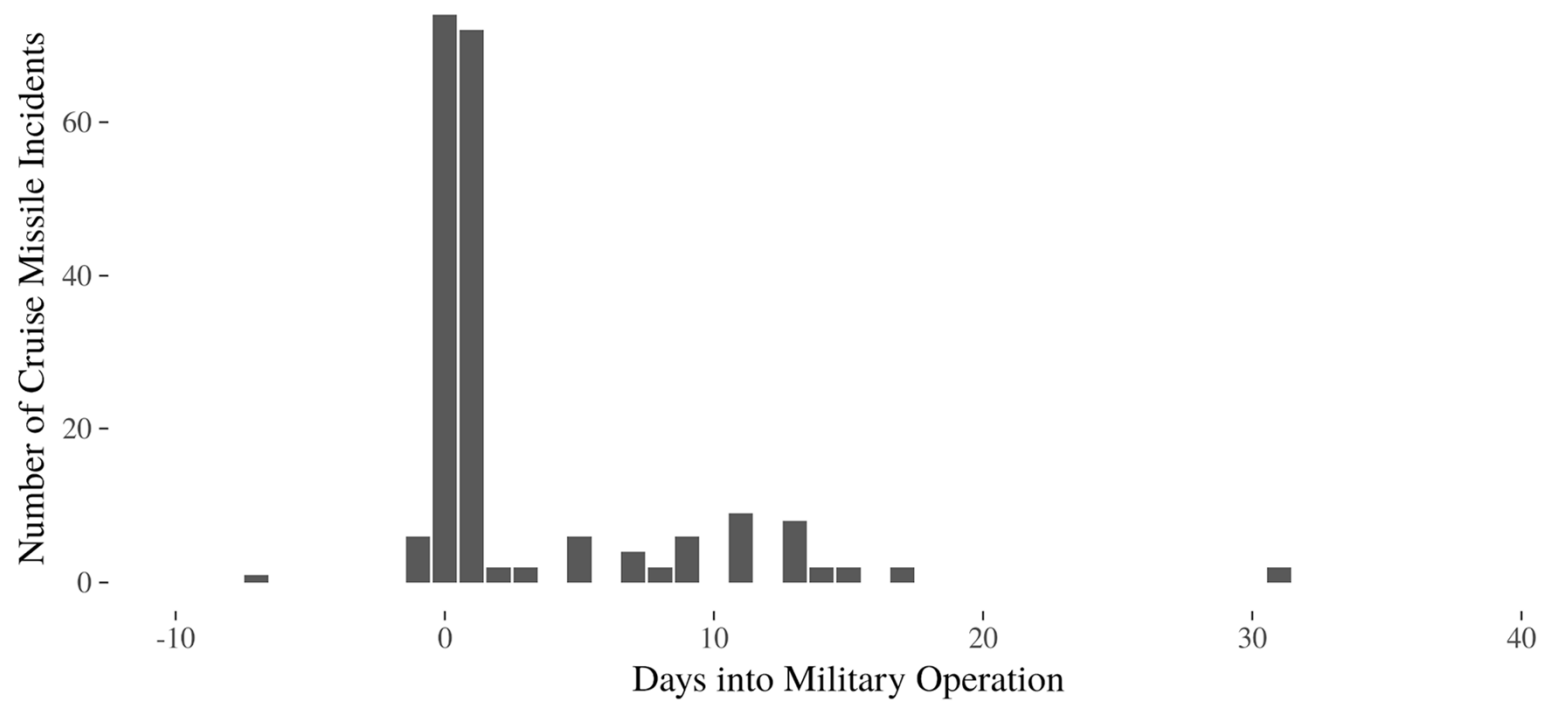
Submarine Tomahawk Paths (1991-2017)



<u>Launch Location</u>	<u>Count</u>
Adriatic Sea	10
Arabian Sean	36
Barksdale Air Force Base	1
Guam	8
Mediterranean Sea	19
Naval Support Facility Diego Garcia	2
Persian Gulf	53
Red Sea	24
Strait of Hormuz	3
Total	157

Geography

Timing of US Cruise Missile Strikes During Military Operation (1991-2017)



Efficacy

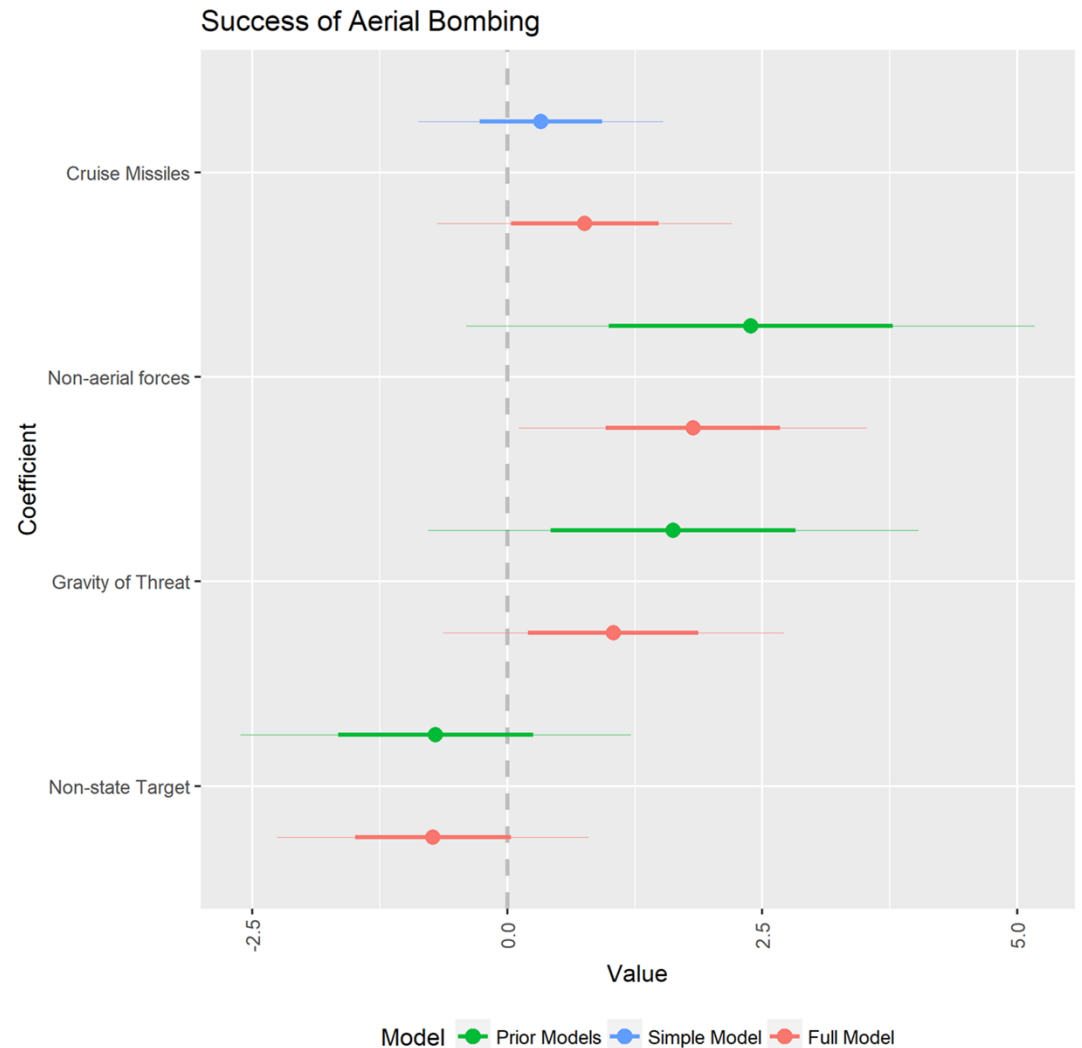
Is new technology better?

Unit of analysis: US bombing campaign

DV: Bombing outcome

EV: Type of bombing

Finding: Cruise missiles do not result in better outcomes than non-cruise missile bombings



Takeaways and Conclusion

New dataset on the complete universe of US cruise missile strikes

Contributes to research on the conduct of international conflict

Allows us to ask:

- Why choose one tool over another?
- How do tool and target influence each other?
- How does geography influence choice of tool?