

Comments on “The Social Network Effects of Drone Strikes”

For

NBER, Economics of National Security Workshop

Jacob N. Shapiro¹

¹Princeton University

July 19, 2020

Summary

- ▶ Big motivating question: how do people respond to drone strikes?

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars
 - ▶ Major implications for understanding subnational conflict

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars
 - ▶ Major implications for understanding subnational conflict
 - ▶ How badly do these kinds of combat actions disrupt local communities?
 - ▶ Is there evidence that disruptions locally have widespread effects through communications networks?

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars
 - ▶ Major implications for understanding subnational conflict
 - ▶ How badly do these kinds of combat actions disrupt local communities?
 - ▶ Is there evidence that disruptions locally have widespread effects through communications networks?
- ▶ This paper:

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars
 - ▶ Major implications for understanding subnational conflict
 - ▶ How badly do these kinds of combat actions disrupt local communities?
 - ▶ Is there evidence that disruptions locally have widespread effects through communications networks?
- ▶ This paper:
 - ▶ Study impact of drone strikes on cellular communications and mobility patterns in Yemen from 2010-12

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars
 - ▶ Major implications for understanding subnational conflict
 - ▶ How badly do these kinds of combat actions disrupt local communities?
 - ▶ Is there evidence that disruptions locally have widespread effects through communications networks?
- ▶ This paper:
 - ▶ Study impact of drone strikes on cellular communications and mobility patterns in Yemen from 2010-12
 - ▶ 12B call data records
 - ▶ 74 drone strikes

Summary

- ▶ Big motivating question: how do people respond to drone strikes?
- ▶ Why we care:
 - ▶ One of the main ways major powers engage in small wars
 - ▶ Major implications for understanding subnational conflict
 - ▶ How badly do these kinds of combat actions disrupt local communities?
 - ▶ Is there evidence that disruptions locally have widespread effects through communications networks?
- ▶ This paper:
 - ▶ Study impact of drone strikes on cellular communications and mobility patterns in Yemen from 2010-12
 - ▶ 12B call data records
 - ▶ 74 drone strikes
 - ▶ Unambiguously the main communication channel, so no worries about substitution into e-mail, online forums, etc.

Findings

- ▶ Clear evidence of calling cascades triggered by strikes, people called by those close to strikes share the news on further

Findings

- ▶ Clear evidence of calling cascades triggered by strikes, people called by those close to strikes share the news on further
 - ▶ Q: Is that similar to other localized shocks?

Findings

- ▶ Clear evidence of calling cascades triggered by strikes, people called by those close to strikes share the news on further
 - ▶ Q: Is that similar to other localized shocks?
- ▶ After strike tend to call people who are physically closer, talked to more often under normal circumstances, and more central in the network

Findings

- ▶ Clear evidence of calling cascades triggered by strikes, people called by those close to strikes share the news on further
 - ▶ Q: Is that similar to other localized shocks?
- ▶ After strike tend to call people who are physically closer, talked to more often under normal circumstances, and more central in the network
 - ▶ Q: What theory of communicant selection does this support/rule out?

Findings

- ▶ Clear evidence of calling cascades triggered by strikes, people called by those close to strikes share the news on further
 - ▶ Q: Is that similar to other localized shocks?
- ▶ After strike tend to call people who are physically closer, talked to more often under normal circumstances, and more central in the network
 - ▶ Q: What theory of communicant selection does this support/rule out?
- ▶ Strikes displace more civilians compared to other kinds of violence

Findings

- ▶ Clear evidence of calling cascades triggered by strikes, people called by those close to strikes share the news on further
 - ▶ Q: Is that similar to other localized shocks?
- ▶ After strike tend to call people who are physically closer, talked to more often under normal circumstances, and more central in the network
 - ▶ Q: What theory of communicant selection does this support/rule out?
- ▶ Strikes displace more civilians compared to other kinds of violence
 - ▶ Q: Magnitude relative to population is unclear: 4,519 move out of how many whose home location is w/in 15k of a strike?

Some Broader Context

- ▶ Been working on related topics in Afghanistan for several years with Josh Blumenstock, Gabe Cadamuro, Mike Callen, and Tarek Ghani

Some Broader Context

- ▶ Been working on related topics in Afghanistan for several years with Josh Blumenstock, Gabe Cadamuro, Mike Callen, and Tarek Ghani
- ▶ There it's clear some major events have a big impact on how people talk during the day

Some Broader Context

- ▶ Been working on related topics in Afghanistan for several years with Josh Blumenstock, Gabe Cadamuro, Mike Callen, and Tarek Ghani
- ▶ There it's clear some major events have a big impact on how people talk during the day
- ▶ But evidence of impact from average events elusive so far

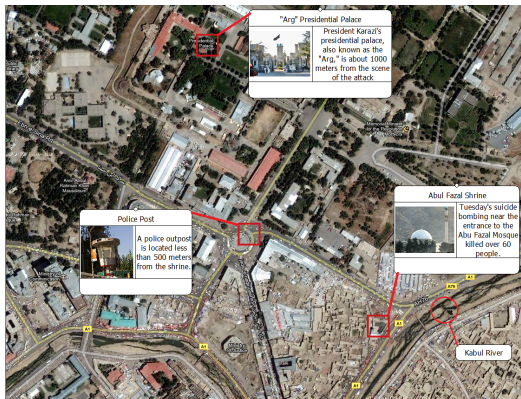
Some Broader Context

- ▶ Been working on related topics in Afghanistan for several years with Josh Blumenstock, Gabe Cadamuro, Mike Callen, and Tarek Ghani
- ▶ There it's clear some major events have a big impact on how people talk during the day
- ▶ But evidence of impact from average events elusive so far
 - ▶ CDR seems to do a poor job (AUC .6) of predicting known small-scale shocks (e.g. job loss, cash drop, death in the family, etc.) across all kinds of ML models in an aggregate-featurize-predict framework

Some Broader Context

- ▶ Been working on related topics in Afghanistan for several years with Josh Blumenstock, Gabe Cadamuro, Mike Callen, and Tarek Ghani
- ▶ There it's clear some major events have a big impact on how people talk during the day
- ▶ But evidence of impact from average events elusive so far
 - ▶ CDR seems to do a poor job (AUC .6) of predicting known small-scale shocks (e.g. job loss, cash drop, death in the family, etc.) across all kinds of ML models in an aggregate-featurize-predict framework
 - ▶ Null results on daily event studies for average impact of common forms of combat violence

Information Transmission in Afghanistan – A (much, much) simpler analysis

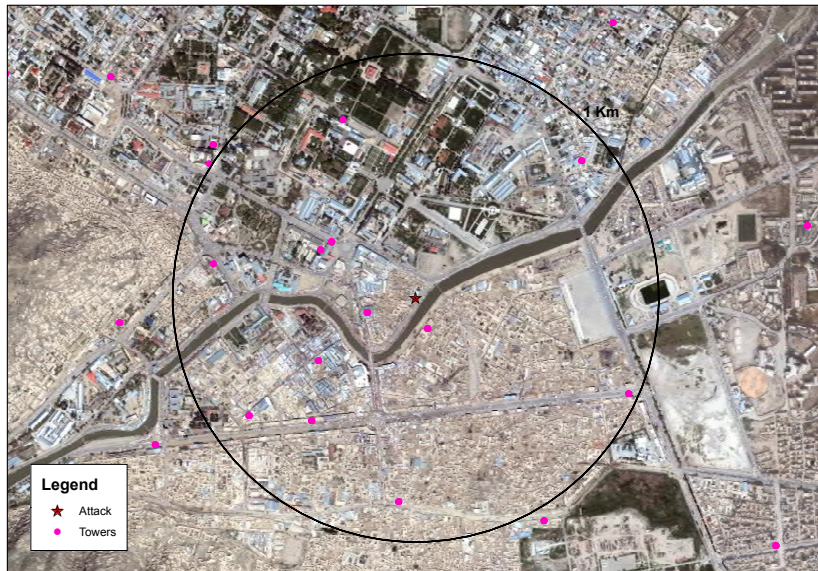


- ▶ 12/6/2011
- ▶ 11:45 a.m. local time.
- ▶ Suicide bomber on bicycle attacks Shiite worshippers in central Kabul

Bombings at the Abul Fazal shrine, Kabul (December 6, 2011)



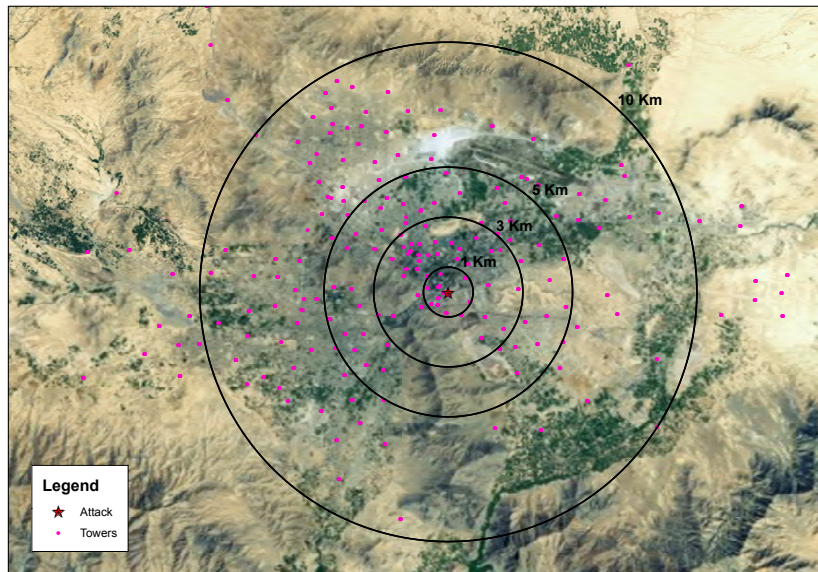
0 0.15 0.3 0.6 Kilometers



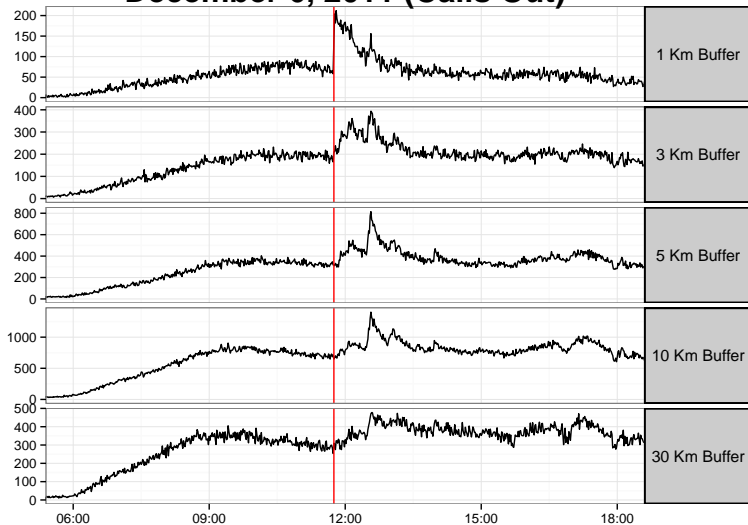
Bombings at the Abul Fazal shrine, Kabul (December 6, 2011)



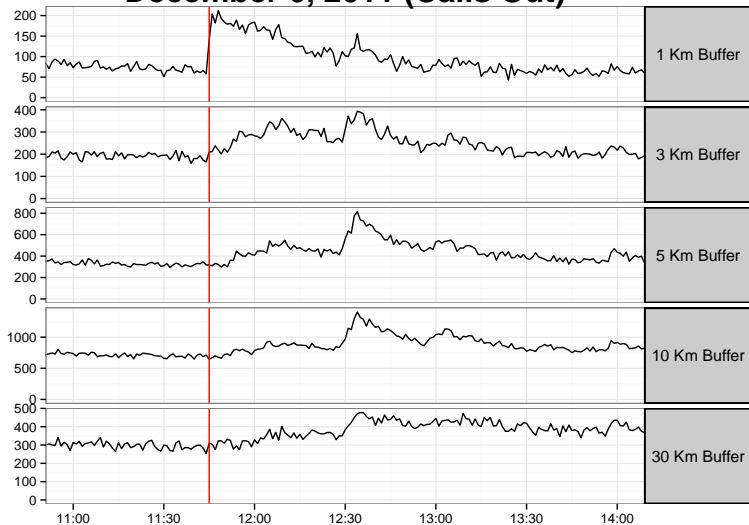
0 1.5 3 6 Kilometers



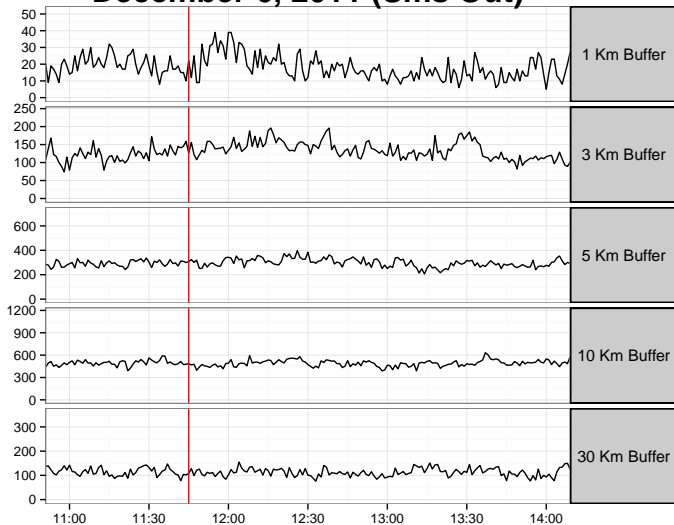
December 6, 2011 (Calls Out)



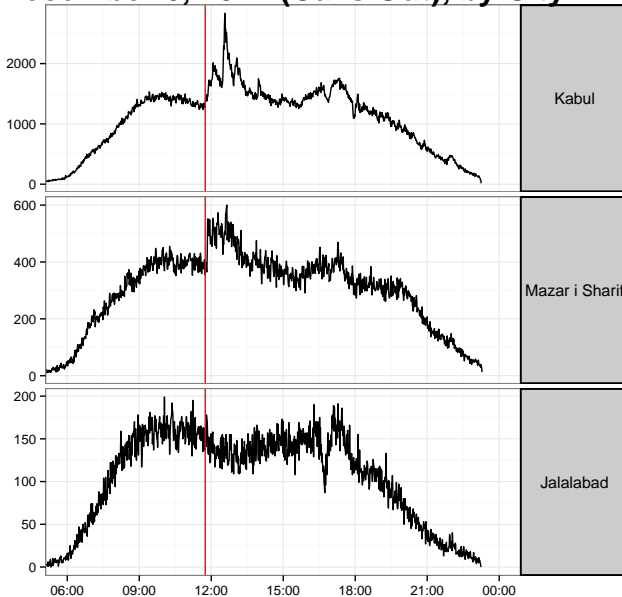
December 6, 2011 (Calls Out)



December 6, 2011 (Sms Out)



December 6, 2011 (Calls Out), by City

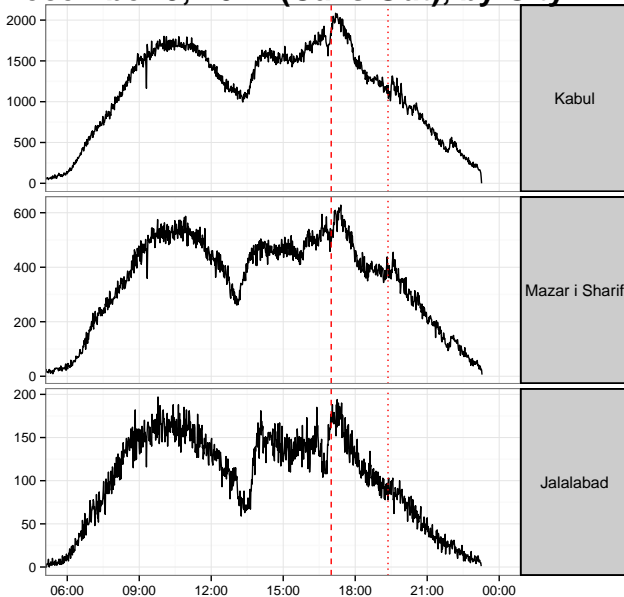


But What About Other Kinds of Events?

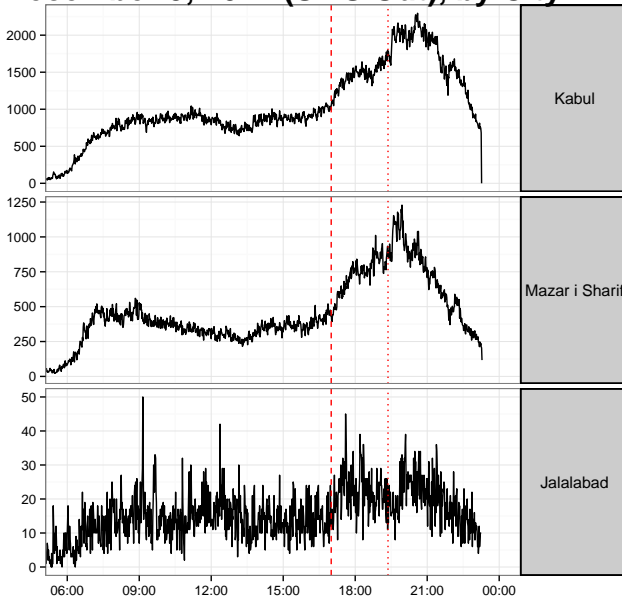


- ▶ 12/9/2011
- ▶ Approx. 19:22 p.m. local time.
- ▶ Afghan soccer team defeats heavily favored Nepal to advance to finals of South Asia Football Federation championship

December 9, 2011 (Calls Out), by City

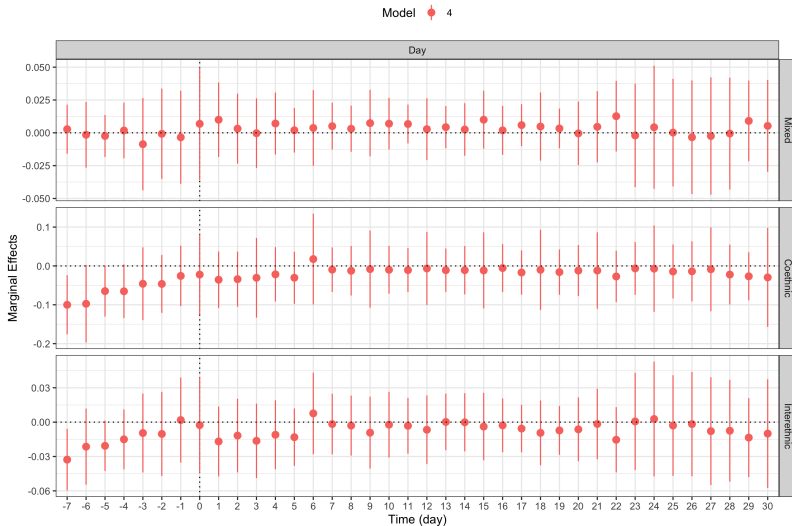


December 9, 2011 (SMS Out), by City



Event studies on log(call volume) - Daytime

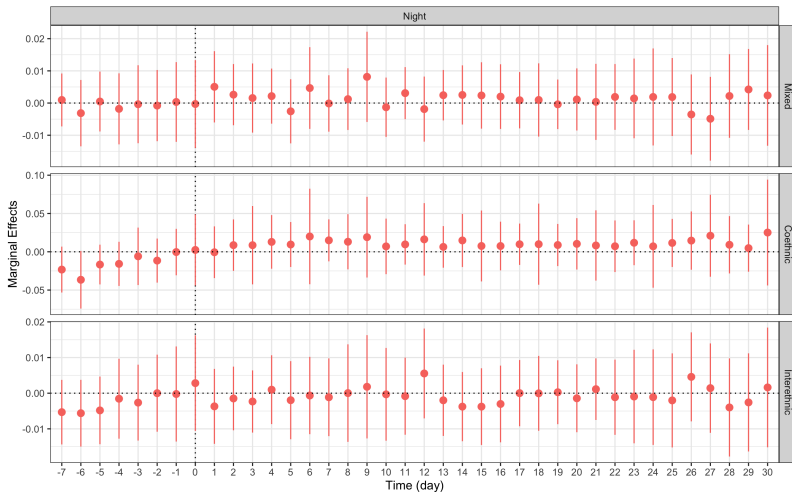
Coefficient Plots: Top 50 Highest Casualty Events (Excluding Kabul)



Event studies on log(call volume) - Nighttime

Coefficient Plots: Top 50 Highest Casualty Events (Excluding Kabul)

Model 4



Leaves me with a few broader questions

- ▶ Impact of drone strikes compared to what? Do these generate unusual patterns relative to other events?

Leaves me with a few broader questions

- ▶ Impact of drone strikes compared to what? Do these generate unusual patterns relative to other events?
- ▶ Does the communications response to reveal underlying social structures in way linked to e.g. ethnicity, social capital, nature of economic activity?

Leaves me with a few broader questions

- ▶ Impact of drone strikes compared to what? Do these generate unusual patterns relative to other events?
- ▶ Does the communications response to reveal underlying social structures in way linked to e.g. ethnicity, social capital, nature of economic activity?
- ▶ Can we predict who will be called in the post-strike cascade based on typically pre-strike call timing and duration between people, or other dyadic traits?

Leaves me with a few broader questions

- ▶ Impact of drone strikes compared to what? Do these generate unusual patterns relative to other events?
- ▶ Does the communications response to reveal underlying social structures in way linked to e.g. ethnicity, social capital, nature of economic activity?
- ▶ Can we predict who will be called in the post-strike cascade based on typically pre-strike call timing and duration between people, or other dyadic traits?
- ▶ Is there something deeper to be learned here about motivations for communication? For example, do calling cascades stop when the events hit broadcast media (which implies it's about sharing news) or not (in which case talking may be more about processing the news)?