Rockets and Votes

Yael Elster

Harvard University

July 2019
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In particular, Israeli citizens have been exposed to massive rocket attacks since 2001.
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In particular, Israeli citizens have been exposed to massive rocket attacks since 2001.

Analyzing the effects of rocket attacks on voting behavior in Israeli national elections can contribute to understanding the relationship between acts of violence and political decision-making worldwide.
Research Question

Whether and which features of rocket attacks from the Gaza Strip affect voting patterns in Israeli elections between 1999 and 2015?
Relying on a micro-level dataset of claims for rocket-related property damages as a proxy for the severity of the rocket attacks, I find that an additional 1,000 claims in a locality increases right-bloc parties’ vote-share by 4 percentage points.
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This finding is highly robust to various changes, including in the set of election rounds and localities included in the analysis.
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This finding is highly robust to various changes, including in the set of election rounds and localities included in the analysis.

Rocket attacks closer to election date, initial exposure of the locality to direct rocket fire, greater geographical proximity to the impact point and large-scale attacks all yield stronger effects on election outcomes.
Related Literature

- Effectiveness of terrorism

- Electoral effects of politically-motivated violence

- Political effects of the mere threat of terrorist attacks vs. the effects of actual attacks
  - Brodeur (2015), Jones and Olken (2009)
Effectiveness of terrorism

- Pape (2003); Abrahms (2006; 2012)

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Crucially, however, Getmansky and Zeitzoff (2014) did not have data on actual rocket attacks.
Threat vs. Actual Exposure

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Timeline

May 17, 1999

January 28, 2003

March 28, 2006

February 10, 2009

January 22, 2013

March 17, 2015

First rocket hit in southern Israel
Timeline

May 17, 1999
April 12, 2001
First rocket hit in southern Israel
January 22, 2013
January 28, 2003
August 15, 2005
March 28, 2006
Pullout from Gaza
December 27, 2008
February 10, 2009
Operation “Cast Lead” (23 days)
November 14, 2012
January 22, 2013
November 14, 2012
January 22, 2013
July 8, 2014
March 17, 2015
Operation “Pillar of Defense” (8 days)
Operation “Protective Edge” (50 days)
<table>
<thead>
<tr>
<th>Date</th>
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</tr>
</thead>
<tbody>
<tr>
<td>May 17, 1999</td>
<td>Pullout from southern Lebanon</td>
</tr>
<tr>
<td>May 24, 2000</td>
<td>First rocket hit in southern Israel</td>
</tr>
<tr>
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</tr>
<tr>
<td>August 15, 2005</td>
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    - Elster, Zussman and Zussman (2019)

For each claim: location, date and monetary compensation

Covers: 2000-2015

About 10,000 claims

Total compensation awarded: about 200 million NIS (roughly 50 million US dollars)

Claims for property damages caused by rocket hits from Lebanon

Mostly during the Second Lebanon War

About 18,000 claims

Total compensation awarded: about 300 million NIS

These data will not be part of the main analysis in this paper

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Quarterly Number of Rocket-Related Claims
Q2/1999-Q1/2015

"Cast Lead"
"Pillar of Defense"
"Protective Edge"

0 500 1,000 1,500 2,000 2,500

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Distribution of Rocket-Related Claims

In 148 localities whose residents filed at least one claim between 1999 and 2015.

![Bar chart showing the distribution of rocket-related claims across different number of localities.](chart.png)

- 102 localities had 1-10 claims
- 37 localities had 11-100 claims
- 5 localities had 101-1,000 claims
- 4 localities had Above 1,000 claims
Data

- Voting Data

Source: the Israeli Central Elections Committee

Covers the six rounds of national elections held in Israel between 1999 and 2015

For each polling station, the data include the total number of eligible voters, voter turnout, and support for each political party.

Most of the analysis in this paper aggregates the electoral data to the locality-level.

There are about 1,200 localities with voters.
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For example, in 1999:

- Left bloc: Labor, Meretz, Chadash, Raam, Am Echad and Balad
- Center bloc: haMerkaz and Shinui
- Right bloc: Likud, Shas, Israel Baaliya, Mafdal, Yahadut haTorah, haIchud haLeumi and Israel Beteinu

Until the 2006 election round, this classification into blocs is based on Arian and Shamir (2008) and has been previously used by Berrebi and Klor (2008) and by Gould and Klor (2010)

In later election rounds, the classification of parties into blocs is taken from Getmansky and Zeitzof (2014) and Jha and Shayo (2016)
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Support for Political Blocs in Israel
1984-2015 Election Rounds

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Methodology

- In this paper I explore the causal effects of rocket attacks on voting patterns in the Israeli elections for parliament between 1999 and 2015.
- The identification strategy relies on the temporal and spatial variation in the intensity of the rocket attacks.
  - Two graphical illustrations of the effect of rocket attacks on support for the right political bloc.
  - Then I turn to describing the empirical strategy.
Support for the Right Bloc and Rocket-Related Claims

2003-2015 Election Rounds Relative to 1999

Change in right bloc vote share relative to 1999

Rocket-related claims in the locality since 1999 (in logs)
Support for the Right by First Date of Exposure
1984-2015 Election Rounds

Localities Exposed to Direct Rocket Fire by

Mean right-bloc vote-share index (1999=1)

Election year


Never
Election Equation

\((Right\ share)_{lt} = \alpha + \beta (Claims)_{lt} + \delta_l + \theta_t + \varepsilon_{lt}\)

- **Right share** is the right-bloc vote-share in locality \(l\) at election year \(t\) (i.e. the number of votes for the right political bloc divided by the number of valid votes in a locality in a given election)
\[(Right\ share)_{lt} = \alpha + \beta(Claims)_{lt} + \delta_l + \theta_t + \epsilon_{lt}\]

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(Right share)\_lt = \alpha + \beta (Claims)\_lt + \delta_l + \theta_t + \varepsilon_{lt}

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- \( \varepsilon_{lt} \) is a well-behaved error term clustered at the locality level
- estimated by OLS using locality population as weights
Effect of Rocket Attacks on Support for the Right Bloc
1999-2015 Election Rounds

<table>
<thead>
<tr>
<th>Dependent variable: right share</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
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<tr>
<td>Rocket-related claims</td>
</tr>
<tr>
<td>(/1,000)</td>
</tr>
<tr>
<td>Locality FEs</td>
</tr>
<tr>
<td>Election year FEs</td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
</tbody>
</table>
Robustness Checks

The results are robust to:

- Omitting in turn each election round
- Omitting in turn each of the four localities which suffered the largest number of attacks (more than 1,000 claims)
- Excluding areas in Israel facing a different terrorist threat
- Including data on Hezbollah’s rockets and terror-related civilian fatalities
- Using alternative weights
- Adding locality-specific time trends
- Including initial controls
## Excluding Election Rounds

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Baseline (1)</th>
<th>Exclude 1999 (2)</th>
<th>Exclude 2003 (3)</th>
<th>Exclude 2006 (4)</th>
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</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040***</td>
<td>0.040***</td>
<td>0.034***</td>
<td>0.033***</td>
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<tr>
<td></td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.010)</td>
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<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>5,831</td>
<td>5,749</td>
<td>5,754</td>
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<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.978</td>
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Excluding Election rounds (Cont.)

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<td>0.043***</td>
<td>0.053***</td>
<td>0.041***</td>
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<tr>
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<td>(0.008)</td>
<td>(0.015)</td>
<td>(0.006)</td>
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# Excluding Localities

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<td>0.036***</td>
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<td>(0.009)</td>
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<tr>
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</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.976</td>
<td>0.976</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)
Excluding Localities (Cont.)

<table>
<thead>
<tr>
<th>Rocket-related claims (/1,000)</th>
<th>Baseline (1)</th>
<th>Exclude Ashqelon (2)</th>
<th>Exclude Be’er-Sheba (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.040***</td>
<td>0.038***</td>
<td>0.038***</td>
<td></td>
</tr>
<tr>
<td>(0.007)</td>
<td>(0.008)</td>
<td>(0.008)</td>
<td></td>
</tr>
</tbody>
</table>

Locality FEs | Yes | Yes | Yes |
Election year FEs | Yes | Yes | Yes |
Observations | 6,901 | 6,895 | 6,895 |
R-squared | 0.976 | 0.976 | 0.976 |
Robustness Checks

The results are robust to:

- Omitting in turn each election round
- Omitting in turn each of the four localities which suffered the largest number of attacks (more than 1,000 claims)
- Excluding areas in Israel facing a different terrorist threat
- Including data on Hezbollah’s rockets and terror-related civilian fatalities
- Using alternative weights
- Adding locality-specific time trends
- Including initial controls
## Excluding Areas

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Exclude Northern Localities (2)</th>
<th>Exclude West Bank (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.042*** (0.009)</td>
<td>0.038*** (0.007)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>3,995</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.977</td>
<td>0.977</td>
</tr>
</tbody>
</table>
Robustness Checks

The results are robust to:

- Omitting in turn each election round
- Omitting in turn each of the four localities which suffered the largest number of attacks (more than 1,000 claims)
- Excluding areas in Israel facing a different terrorist threat
- Including data on Hezbollah’s rockets and terror-related civilian fatalities
- Using alternative weights
- Adding locality-specific time trends
- Including initial controls
## Other Terrorist Threats

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Baseline (1)</th>
<th>Lebanese Threat (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims</td>
<td>0.040***</td>
<td>0.040***</td>
</tr>
<tr>
<td>(/1,000)</td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Lebanese rocket</td>
<td></td>
<td>0.009**</td>
</tr>
<tr>
<td>-related claims</td>
<td></td>
<td>(0.004)</td>
</tr>
</tbody>
</table>

Locality FEs: Yes, Yes
Election year FEs: Yes, Yes
Observations: 6,901, 6,901
R-squared: 0.976, 0.976
### Other Terrorist Threats

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Baseline (1)</th>
<th>Lebanese Threat (2)</th>
<th>Civilian Fatalities (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims</td>
<td>0.040***</td>
<td>0.040***</td>
<td>0.035***</td>
</tr>
<tr>
<td>(/1,000)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>Lebanese rocket</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-related claims</td>
<td>0.009**</td>
<td></td>
<td>0.006</td>
</tr>
<tr>
<td>-related fatalities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocket-related fatalities</td>
<td></td>
<td>0.007</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locality FEs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Election year FEs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.976</td>
<td>0.976</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)
### Other Terrorist Threats

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Baseline (1)</th>
<th>Lebanese Threat (2)</th>
<th>Civilian Fatalities (3)</th>
<th>Non-rocket Terrorism (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims</td>
<td>0.040***</td>
<td>0.040***</td>
<td>0.035***</td>
<td>0.035***</td>
</tr>
<tr>
<td>(/1,000)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.009)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Lebanese rocket</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-related claims</td>
<td>0.009**</td>
<td></td>
<td>0.006</td>
<td>0.007</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.005)</td>
<td></td>
</tr>
<tr>
<td>Rocket-related fatalities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.007</td>
<td></td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.010)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other terror-related fatalities</td>
<td></td>
<td></td>
<td></td>
<td>0.007**</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>(0.004)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.976</td>
<td>0.976</td>
<td>0.976</td>
</tr>
</tbody>
</table>
The results are robust to:

- Omitting in turn each election round
- Omitting in turn each of the four localities which suffered the largest number of attacks (more than 1,000 claims)
- Excluding areas in Israel facing a different terrorist threat
- Including data on Hezbollah’s rockets and terror-related civilian fatalities
- **Using alternative weights**
- Adding locality-specific time trends
- Including initial controls
## Alternative Weights

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Baseline Weights</th>
<th>Without Voters as Baseline Weights</th>
<th>Eligible Voters as Baseline Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (1,000)</td>
<td>0.040***</td>
<td>0.039***</td>
<td>0.040***</td>
</tr>
<tr>
<td>(0.007)</td>
<td>(0.008)</td>
<td>(0.007)</td>
<td></td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.958</td>
<td>0.977</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)
The results are robust to:

- Omitting in turn each election round
- Omitting in turn each of the four localities which suffered the largest number of attacks (more than 1,000 claims)
- Excluding areas in Israel facing a different terrorist threat
- Including data on Hezbollah’s rockets and terror-related civilian fatalities
- Using alternative weights
- Adding locality-specific time trends
- Including initial controls
Adding Locality-specific Time Trends

<table>
<thead>
<tr>
<th>Dependent variable: right share</th>
<th>Locality-specific Linear Time Trend</th>
<th>Locality-specific Quadratic Time Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040*** (0.007)</td>
<td>0.031*** (0.010)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.987</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)
Robustness Checks

The results are robust to:

- Omitting in turn each election round
- Omitting in turn each of the four localities which suffered the largest number of attacks (more than 1,000 claims)
- Excluding areas in Israel facing a different terrorist threat
- Including data on Hezbollah’s rockets and terror-related civilian fatalities
- Using alternative weights
- Adding locality-specific time trends
- Including initial controls
# Including Initial Controls

**Dependent variable: right share**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Initial Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td><strong>0.040</strong>* (0.007)</td>
<td><strong>0.056</strong>* (0.015)</td>
</tr>
<tr>
<td>Log locality population (95’)</td>
<td>0.014*** (0.003)</td>
<td></td>
</tr>
<tr>
<td>Pct 0-19 years old (95’)</td>
<td>0.018*** (0.001)</td>
<td></td>
</tr>
<tr>
<td>Pct born abroad (95’)</td>
<td>0.004*** (0.001)</td>
<td></td>
</tr>
<tr>
<td>Pct BA holders (95’)</td>
<td>-0.003*** (0.001)</td>
<td></td>
</tr>
<tr>
<td>Pct employed (95’)</td>
<td>-0.007*** (0.001)</td>
<td></td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>5,607</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.436</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)

Rockets and Votes

06/05 40 / 69
A remaining concern about the analysis is that the location of rocket hits may be endogenous to the political orientation of localities.
A remaining concern about the analysis is that the location of rocket hits may be endogenous to the political orientation of localities. Thus, I reverse the roles of the dependent and independent variables of the estimated equation.
## Reverse Causality

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>right share</th>
<th>rocket-related claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040***</td>
<td></td>
</tr>
<tr>
<td>Lagged right bloc vote share</td>
<td>(0.007)</td>
<td>-0.001 (0.007)</td>
</tr>
<tr>
<td>Locality FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FE</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>5,690</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.373</td>
</tr>
</tbody>
</table>
Next, I exclude from the analysis observations of localities in election years beyond the first elections following the initial attack on the locality.
Next, I exclude from the analysis observations of localities in election years beyond the first elections following the initial attack on the locality.

It turns out that the impact of initial attacks is particularly strong.
## Initial vs. Later Rocket Attacks

<table>
<thead>
<tr>
<th></th>
<th>Baseline (1)</th>
<th>Initial Attacks (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable: right share</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040***</td>
<td>0.078***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.025)</td>
</tr>
</tbody>
</table>

*P*-value for the difference between coefficients: 0.028

<table>
<thead>
<tr>
<th></th>
<th>Initial Attacks (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)

Rockets and Votes

06/05 44 / 69
Getmansky and Zeitzoff (2014) find that voters in municipalities which entered rocket range between 1999 and 2009, increased their support for right-bloc parties by 2 to 6 percentage points.
Getmansky and Zeitzoff (2014) find that voters in municipalities which entered rocket range between 1999 and 2009, increased their support for right-bloc parties by 2 to 6 percentage points. They thus claim that the mere threat of an attack affects voting.
Getmansky and Zeitzoff (2014) find that voters in municipalities which entered rocket range between 1999 and 2009, increased their support for right-bloc parties by 2 to 6 percentage points. They thus claim that the mere threat of an attack affects voting. However, Getmansky and Zeitzoff (2014) did not have data on actual rocket attacks.
Getmansky and Zeitzoff (2014) find that voters in municipalities which entered rocket range between 1999 and 2009, increased their support for right-bloc parties by 2 to 6 percentage points. They thus claim that the mere threat of an attack affects voting. However, Getmansky and Zeitzoff (2014) did not have data on actual rocket attacks. The data I use on claims for rocket-related property damages allow me to proxy for the severity of the attacks across different locations within rocket range, and to further investigate this issue.
First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[(Right \ share)_{it} = \alpha + \beta(Range)_{it} + \delta_i + \theta_t + \epsilon_{it}\]
First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[(\text{Right share})_{it} = \alpha + \beta(\text{Range})_{it} + \delta_i + \theta_t + \epsilon_{it}\]

- \textit{Right share} is the right bloc vote share in municipality \(i\) at election year \(t\)
First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[(Right \ share)_{it} = \alpha + \beta(Range)_{it} + \delta_i + \theta_t + \varepsilon_{it}\]

- **Right share** is the right bloc vote share in municipality \(i\) at election year \(t\)
- **Range** is a binary indicator of whether municipality \(i\) is within rocket range one day before election \(t\)
Threat vs. Actual Exposure

First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[(Right \ share)_{it} = \alpha + \beta(Range)_{it} + \delta_i + \theta_t + \varepsilon_{it}\]

- **Right share** is the right bloc vote share in municipality \(i\) at election year \(t\)
- **Range** is a binary indicator of whether municipality \(i\) is within rocket range one day before election \(t\)
- \(\delta\) is a fixed-effect for a municipality (either an urban locality, a local council, or a regional council)
First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[
(Right\ share)_{it} = \alpha + \beta(Range)_{it} + \delta_i + \theta_t + \epsilon_{it}
\]

- **Right share** is the right bloc vote share in municipality \( i \) at election year \( t \)
- **Range** is a binary indicator of whether municipality \( i \) is within rocket range one day before election \( t \)
- \( \delta \) is a fixed-effect for a municipality (either an urban locality, a local council, or a regional council)
- \( \theta \) is an election year fixed-effect
First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[(Right \ share)_{it} = \alpha + \beta (Range)_{it} + \delta_i + \theta_t + \varepsilon_{it}\]

- Right share is the right bloc vote share in municipality \(i\) at election year \(t\)
- Range is a binary indicator of whether municipality \(i\) is within rocket range one day before election \(t\)
- \(\delta\) is a fixed-effect for a municipality (either an urban locality, a local council, or a regional council)
- \(\theta\) is an election year fixed-effect
- \(\varepsilon_{it}\) is a well-behaved error term clustered at the municipality level
First, I conduct an analysis similar to that Getmansky and Zeitzoff (2014) carried out. I estimate the following equation for the years 1999-2009:

\[( \text{Right share})_{it} = \alpha + \beta (\text{Range})_{it} + \delta_i + \theta_t + \varepsilon_{it} \]

- **Right share** is the right bloc vote share in municipality \( i \) at election year \( t \)
- **Range** is a binary indicator of whether municipality \( i \) is within rocket range one day before election \( t \)
- \( \delta \) is a fixed-effect for a municipality (either an urban locality, a local council, or a regional council)
- \( \theta \) is an election year fixed-effect
- \( \varepsilon_{it} \) is a well-behaved error term clustered at the municipality level
- estimated by OLS using municipality population as weights
### Threat vs. Actual Exposure

**Dependent variable:** right share

**Level of analysis:** Municipality

**Election rounds included:** 1999-2009

Maximum rocket range is based on Getmansky and Zeitzoff (2014)

<table>
<thead>
<tr>
<th>In rocket range</th>
<th>$0.024^{**}$</th>
<th>(0.011)</th>
</tr>
</thead>
</table>

- Municipality FEs: Yes
- Election year FEs: Yes
- Observations: 1,000
- R-squared: 0.979
### Threat vs. Actual Exposure

**Dependent variable:** right share

<table>
<thead>
<tr>
<th>Level of analysis</th>
<th>Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election rounds included</td>
<td>1999-2009</td>
</tr>
</tbody>
</table>

Maximum rocket range is based on Getmansky and Zeitzoff (2014)

<table>
<thead>
<tr>
<th>In rocket range</th>
<th>(1)</th>
<th>(2)</th>
<th>Rocket-related claims in the municipality (/1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.024**</td>
<td>0.014</td>
<td>0.045***</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.009)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Municipality FEs</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.979</td>
<td>0.980</td>
</tr>
</tbody>
</table>
### Threat vs. Actual Exposure

**Dependent variable: right share**

<table>
<thead>
<tr>
<th>Level of analysis</th>
<th>Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election rounds included</td>
<td>1999-2009</td>
</tr>
</tbody>
</table>

Maximum rocket range is based on Getmansky and Zeitzoff (2014) and claims submitted to ITA.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In rocket range</td>
<td>0.024**</td>
<td>0.014</td>
<td>0.011</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Rocket-related claims in the municipality (/1,000)</td>
<td>0.045***</td>
<td>0.049***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.009)</td>
<td></td>
</tr>
</tbody>
</table>

Municipality FEs: Yes, Yes, Yes
Election year FEs: Yes, Yes, Yes
Observations: 1,000, 1,000, 1,000
R-squared: 0.979, 0.980, 0.980
### Threat vs. Actual Exposure

**Dependent variable:** right share

<table>
<thead>
<tr>
<th>Level of analysis</th>
<th>Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Election rounds included</strong></td>
<td>1999-2009</td>
</tr>
<tr>
<td>Maximum rocket range is based on</td>
<td>Getmansky and Zeitzoff (2014)</td>
</tr>
<tr>
<td>Claims Submitted to ITA</td>
<td>Media Coverage</td>
</tr>
<tr>
<td>(<strong>1</strong>) (**) (0.011) (0.011) (0.012) (0.011)</td>
<td></td>
</tr>
<tr>
<td>Rocket-related claims in the municipality (/1,000)</td>
<td>0.045*** (0.009) 0.049*** (0.009) 0.049*** (0.009)</td>
</tr>
<tr>
<td>Municipality FEs</td>
<td>Yes Yes Yes Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes Yes Yes Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1,000 1,000 1,000 1,000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.979 0.980 0.980 0.980</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)
<table>
<thead>
<tr>
<th><strong>Dependent variable:</strong> right share</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level of analysis</strong></td>
</tr>
<tr>
<td>Locality</td>
</tr>
<tr>
<td><strong>Election rounds included</strong></td>
</tr>
<tr>
<td>1999-2015</td>
</tr>
<tr>
<td><strong>Maximum rocket range</strong></td>
</tr>
<tr>
<td>is based on</td>
</tr>
<tr>
<td>Claims</td>
</tr>
<tr>
<td>Submitted to ITA</td>
</tr>
<tr>
<td>Media Coverage</td>
</tr>
<tr>
<td>(5)</td>
</tr>
<tr>
<td>(6)</td>
</tr>
<tr>
<td>In rocket range</td>
</tr>
<tr>
<td>-0.006</td>
</tr>
<tr>
<td>(0.006)</td>
</tr>
<tr>
<td>Rocket-related claims in the locality (/1,000)</td>
</tr>
<tr>
<td>0.042***</td>
</tr>
<tr>
<td>(0.009)</td>
</tr>
<tr>
<td>Locality FEs</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>6,901</td>
</tr>
<tr>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
<tr>
<td>0.976</td>
</tr>
<tr>
<td>0.976</td>
</tr>
</tbody>
</table>
Using the exact location of the rocket attacks, I disaggregate the baseline analysis to the neighborhood level (locality SA).
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This is a further advancement relative to what has been done in the literature before.
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At this level of spatial disaggregation it is easier to argue that the precise locality-SA in which a rocket falls is exogenous.
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At this level of spatial disaggregation it is easier to argue that the precise locality-SA in which a rocket falls is exogenous.

First, I replace the locality-level dependent variable with a locality-SA level.
Using the exact location of the rocket attacks, I disaggregate the baseline analysis to the neighborhood level (locality SA). This is a further advancement relative to what has been done in the literature before. At this level of spatial disaggregation it is easier to argue that the precise locality-SA in which a rocket falls is exogenous. First, I replace the locality-level dependent variable with a locality-SA level. Then, I explore how far the rocket effects persist, by creating boundaries around the location of the attack.
### Disaggregation of the Effect of Rocket Attacks by Location

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Disaggregated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>right share in the locality</strong></td>
<td><strong>right share in the locality-SA</strong></td>
</tr>
<tr>
<td>Rocket-related claims in the locality (/1,000)</td>
<td>0.040*** (0.007)</td>
<td>0.041*** (0.004)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Locality-SA FEs</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>13,558</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.964</td>
</tr>
</tbody>
</table>

**Dependent variable:** right share in the locality-SA

---

Yael Elster (Harvard University)  
Rockets and Votes

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Disaggregation of the Effect of Rocket Attacks by Location

- Sub District
- Natural Area
- Municipality: Urban locality
- SA: neighborhood
- Neighborhood
- Municipality
- Natural Area
- Sub District
Disaggregation of the Effect of Rocket Attacks by Location

- Sub District
- Natural Area
- Municipality: Regional council
- SA: rural localities

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Rockets and Votes
Disaggregation of the Effect of Rocket Attacks by Location
Disaggregation of the Effect of Rocket Attacks by Location

**Dependent variable: right share in locality-SA**

<table>
<thead>
<tr>
<th>Rocket-related claims in:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locality-SA</td>
<td>0.155***</td>
<td>(0.049)</td>
</tr>
<tr>
<td>Municipality</td>
<td>0.027***</td>
<td>(0.010)</td>
</tr>
<tr>
<td>Natural Area</td>
<td>0.027**</td>
<td>(0.013)</td>
</tr>
<tr>
<td>Sub District</td>
<td>0.002</td>
<td>(0.020)</td>
</tr>
</tbody>
</table>

Locality-SA FEs Yes
Election year FEs Yes

Observations 13,558
R-squared 0.972
### Disaggregation of the Effect of Rocket Attacks by Time

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Dependent Variable: right share in locality-SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months before elections</td>
<td>0.441*** (0.108)</td>
</tr>
<tr>
<td>A year before elections</td>
<td>0.441*** (0.172)</td>
</tr>
<tr>
<td>Since previous elections</td>
<td>0.137** (0.039)</td>
</tr>
</tbody>
</table>

- Locality-SA FEs: Yes
- Election year FEs: Yes
- Observations: 13,558
- R-squared: 0.972
### Disaggregation of the Effect of Rocket Attacks by Scale

**Dependent variable:** right share in locality-SA

| Claims in locality-SA a year before elections |  
|---------------------------------------------|---|
| 1-10                                        | 0.019*** |
| 11-100                                      | 0.036*** |
| Above 100                                   | 0.042**  |

<table>
<thead>
<tr>
<th>Locality-SA FEs</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>13,558</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.972</td>
</tr>
</tbody>
</table>
Additional 1,000 rocket-related claims for property damages in a locality increases right-bloc parties' vote-share by 4 percentage points.
Conclusion

- Additional 1,000 rocket-related claims for property damages in a locality increases right-bloc parties’ vote-share by 4 percentage points.
- This result is robust to various changes and is not driven by reverse causality.
Conclusion

- Additional 1,000 rocket-related claims for property damages in a locality increases right-bloc parties’ vote-share by 4 percentage points.
- This result is robust to various changes and is not driven by reverse causality.
- Recent attacks, initial exposure and geographical proximity lead to larger shift to the right.
Additional 1,000 rocket-related claims for property damages in a locality increases right-bloc parties’ vote-share by 4 percentage points.

This result is robust to various changes and is not driven by reverse causality.

Recent attacks, initial exposure and geographical proximity lead to larger shift to the right.

Voting patterns are mainly driven by actual exposure and not by the mere threat of rocket attacks.
Different political blocs
Alternative Outcomes

- Different political blocs
- Parties within the right political bloc
Alternative Outcomes

- Different political blocs
- Parties within the right political bloc
- Turnout rate and number of eligible voters
## Alternative Outcomes

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Right share (1)</th>
<th>Center share (2)</th>
<th>Left share (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040*** (0.007)</td>
<td>-0.034*** (0.008)</td>
<td>0.003 (0.010)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.882</td>
<td>0.754</td>
</tr>
</tbody>
</table>
## Alternative Outcomes

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Right share (1)</th>
<th>Likud share (2)</th>
<th>Ultra-Orthodox share (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040*** (0.007)</td>
<td>0.095*** (0.022)</td>
<td>-0.014 (0.016)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.878</td>
<td>0.976</td>
</tr>
</tbody>
</table>

Yael Elster (Harvard University)

Rockets and Votes

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<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Right share (1)</th>
<th>Turnout rate (2)</th>
<th>Eligible Voters (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocket-related claims (/1,000)</td>
<td>0.040*** (0.007)</td>
<td>0.005 (0.006)</td>
<td>-0.031 (0.029)</td>
</tr>
<tr>
<td>Locality FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Election year FEs</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>6,901</td>
<td>6,901</td>
<td>6,901</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.976</td>
<td>0.927</td>
<td>0.997</td>
</tr>
</tbody>
</table>
The rocket threat shifted political support in Israel from the center to the right, mainly to the "Likud" party and did not affect turnout.
### Summary Statistics

#### Between election rounds

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Claims</td>
<td>16</td>
<td>324</td>
<td>4,671</td>
<td>3,267</td>
<td>2,345</td>
</tr>
<tr>
<td>Compensation (NIS millions)</td>
<td>0.7</td>
<td>6.5</td>
<td>58.0</td>
<td>74.3</td>
<td>58.5</td>
</tr>
</tbody>
</table>

#### Property damage data

**By election round held in**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum rocket range (km)</td>
<td>10.9</td>
<td>10.9</td>
<td>38.3</td>
<td>67.6</td>
<td>136.1</td>
</tr>
</tbody>
</table>

#### Media Coverage

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum rocket range (km)</td>
<td>12</td>
<td>12</td>
<td>40</td>
<td>85</td>
<td>160</td>
</tr>
</tbody>
</table>

#### Voting data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible voters (millions)</td>
<td>4.7</td>
<td>5.0</td>
<td>5.3</td>
<td>5.7</td>
<td>5.9</td>
</tr>
<tr>
<td>Turnout (%)</td>
<td>66.7</td>
<td>59.2</td>
<td>60.4</td>
<td>63.3</td>
<td>67.6</td>
</tr>
<tr>
<td>Right bloc vote share (%)</td>
<td>53.8</td>
<td>39.4</td>
<td>52.1</td>
<td>46.2</td>
<td>45.8</td>
</tr>
<tr>
<td>Localities with voters</td>
<td>1,152</td>
<td>1,148</td>
<td>1,155</td>
<td>1,183</td>
<td>1,194</td>
</tr>
</tbody>
</table>
Monthly Number of Rocket-Related Claims