What Results in Death?

Analysis of Social Conflict in Africa, 1990–2011

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STAT 222: MA Capstone Final Presentation

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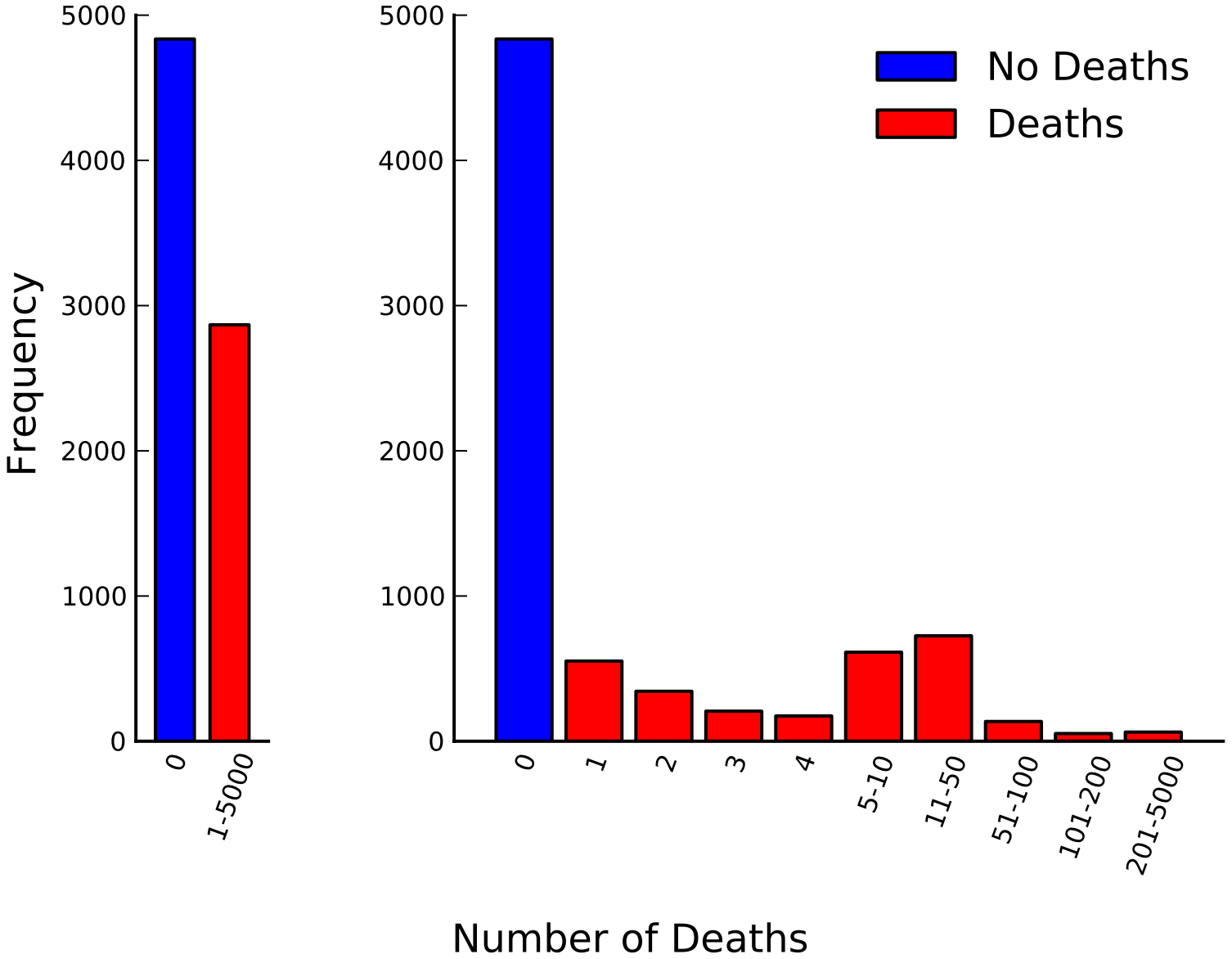
Data Sources

- Social Conflict in Africa Database (SCAD)
  - Cullen Hendrix and Idean Salehyan
  - Hosted by Climate Change and African Political Stability (CCAPS) at the Robert S. Strauss Center for International Security and Law at the University of Texas at Austin
- Correlates of War Project (COW)
  - National Material Capabilities
  - World Religions
- Polity IV Project
  - Measures democracy/autocracy for government regime type

Research Questions

1. What differentiates an episode of social conflict that results in deaths from an episode of social conflict that does not result in deaths?
2. Is there a way to predict the number of deaths that will result from an episode of social conflict?

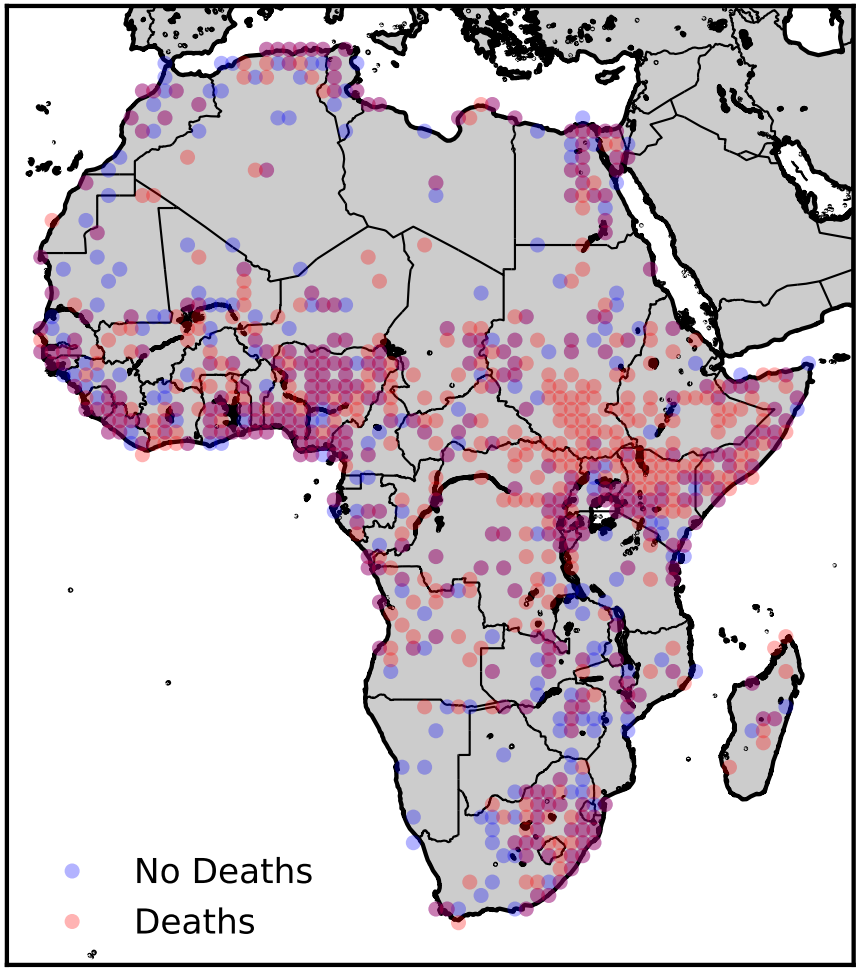
Figure 2: Distribution of the Number of Deaths



Question #1

What differentiates an episode of social conflict that results in deaths from an episode of social conflict that does not result in deaths?

Figure 6: Map of Superimposed Deaths and No Deaths



Question #2

Is there a way to predict the number of deaths that will result from an episode of social conflict?

Binary Prediction

- Predict a binary, death/no-death indicator
- Separate dataset into train (70%) and test (30%)
- Logistic regression
  - Location
  - Event type
  - Central government target
  - Primary issue
  - National capability score
- Compare to KNN

Prediction Accuracy

Table 4: Logistic Regression Prediction Accuracy

	Predicted as No Deaths	**Predicted as Deaths**
No Deaths	957 (89.36%)	114 (10.64%)
Deaths	170 (30.41%)	389 (69.59%)

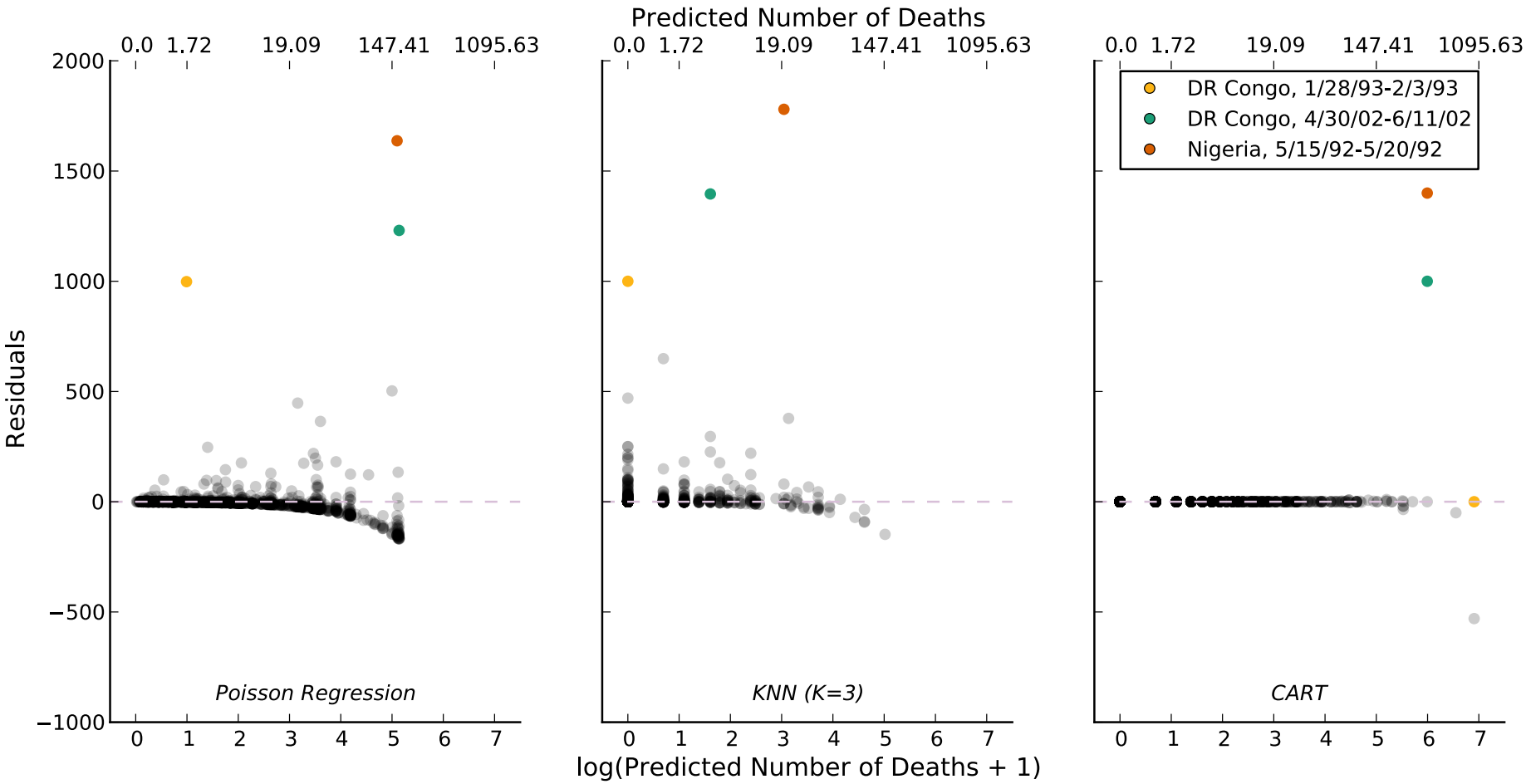
Table 5: KNN Prediction Accuracy (K=10)

	Predicted as No Deaths	**Predicted as Deaths**
No Deaths	990 (92.44%)	81 (7.56%)
Deaths	225 (40.25%)	334 (59.75%)

Number of Deaths Prediction

- Predict the actual number of deaths
- Use same train/test sets from before
- Poisson regression
  - Similar model selection process as logistic
  - Same set of variables minimizes prediction error
- Compare to KNN and CART Decision Tree

Figure 7: Prediction Accuracy (Fitted Values vs. Residuals)



Conclusions

- Conflict escalation is complicated
  - Escalation involves a variety of factors, supporting the existing literature
- Modeling a death/no-death indicator seems successful & consistent across methods
- Modeling absolute number of deaths is less consistent across methods
  - Results are promising regardless

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Table 3: Number of Death/No Death Conflicts by Regime Type

	Strong Autocracy	**Weak Autocracy**	**Middle Ground**	**Weak Democracy**	**Strong Democracy**	**Total**
No Deaths	798 (18.95%)	1401 (33.27%)	74 (1.76%)	1010 (23.98%)	928 (22.04%)	4211 (100.0%)
Deaths	247 (11.68%)	605 (28.62%)	22 (1.04%)	753 (35.62%)	487 (23.04%)	2114 (100.0%)