# This Morning's Breakfast, Last Night's Game: Detecting Extraneous Influences on Judging

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# Behavioral Judging

- Trilogy

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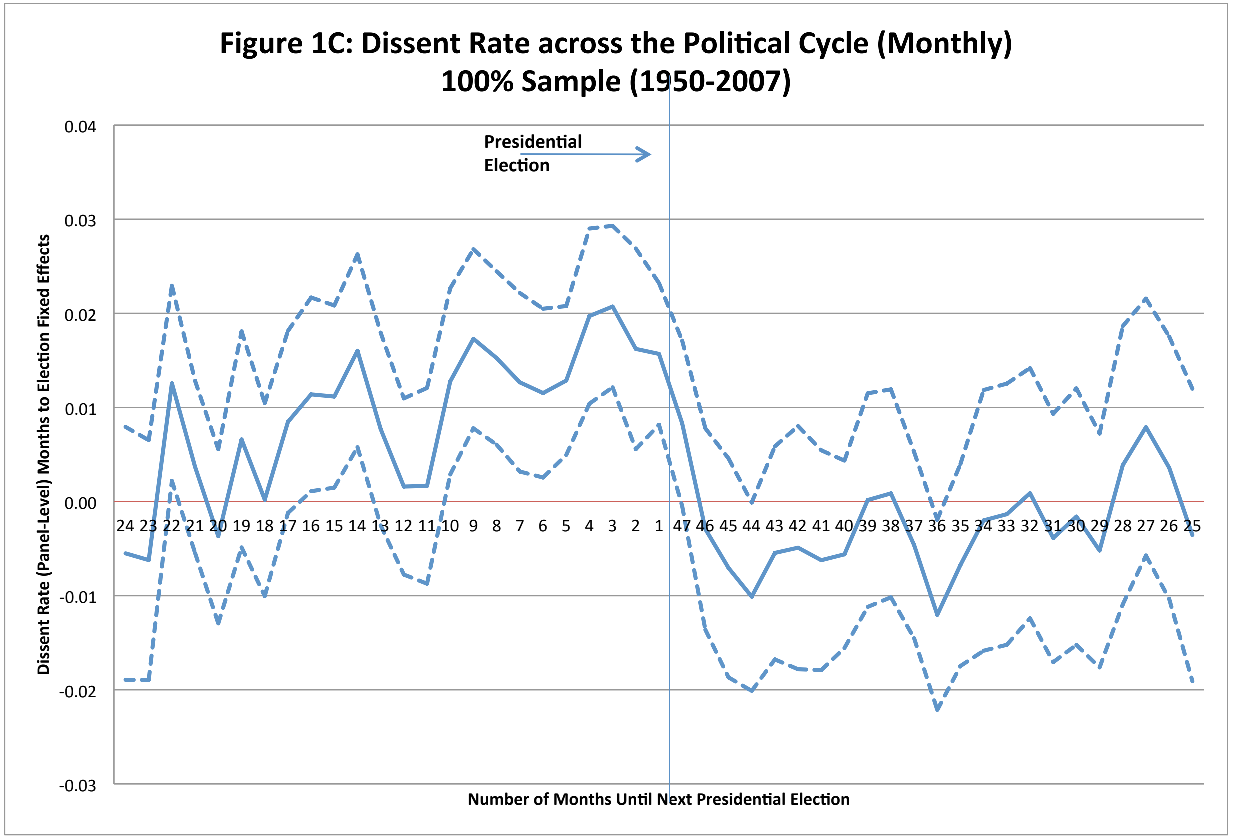
- Trilogy
  - Priming

# Behavioral Judging

- Trilogy
  - Priming Ideology? Electoral Cycles Without Electoral Incentives Among U.S. Judges



# Behavioral Judging

- Trilogy
  - Judgment under the Gambler's Fallacy

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- Trilogy
  - Judgment under the Gambler's Fallacy

How people often imagine a sequence of coin flips:

0101001011001010100110100

A real sequence of coin flips:

0101011111011000001001101

# Behavioral Judging

- Trilogy
  - Judgment under the Gambler's Fallacy: Evidence From Asylum Courts, Loan Officers, and Baseball Umpires

| Dependent Variable | Grant | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Lagged Grant | -0.0159*** | -0.0116*** | -0.0156*** |
| | (0.00422) | (0.00401) | (0.00422) |
| Applicant Controls | Yes | Yes | Yes |
| Num prev asylums granted by judge | Yes | Yes | Yes |
| Num prev asylums granted in city | Yes | Yes | Yes |
| Judge-specific time trends | No | Yes | No |
| Time of day | No | No | Yes |
| N | 106071 | 106071 | 106071 |
| $R^2$ | 0.125 | 0.167 | 0.126 |

# Behavioral Judging

- Trilogy
  - Priming
  - Gambler's Fallacy
  - Extraneous Factors
    - Mood

# Behavioral Judging

- Trilogy
  - Priming
  - Gambler's Fallacy
  - Extraneous Factors
    - Mood
      - NFL
      - Weather

# Highlights

- Detect *intra*-judge variation unrelated to case facts
- After city's NFL team wins or when weather good
  - Federal district judges: more lenient sentencing
    - E.g., 1 month shorter sentences after win
  - Immigration judges: more asylum grants
- NFL wins reflected in Twitter mood
  - Weather factors that predict mood also affect decisions
    - Video-teleconference cases: judge is the affected agent
- Implications for legal system design: should accept *intentional* randomness as well

# 1. Background
## Inter- vs. Intra-Judicial Variation

- **Inter**-judicial variation (for same case, or large randomly drawn samples)
  - Widely documented: e.g., judicial panels; IJs
  - Rejects naïve theory that "the law" decides case
  - But: consistent with other "rational" theories (e.g., Dworkin)
- **Intra**-judicial variation rejects "rational" theories
  - Same judge, (statistically) identical case, different result
  - Cf. caricature of Frank (1930): "What the judge had for breakfast"

# 1. Background
## Literature on intra-judicial variation

- Experiments (e.g., Rachlinski et al.): race, …
- Field evidence: exists, but: clean?
  - Meals → Israeli parole decisions (Danziger et al.)
    - But: is case order random?
  - Elections → US appellate judge politicization (Berdejo & Chen)
    - But: is it extrajudicial?
  - Workload → fewer opinions etc. (Huang)
    - But: adjusting to workload may be "legally correct"
  - …

# 2. Research Design
## Basics

To identify intra-judge variation, use:

– **Large sample** of relatively homogenous cases so we can "average out" confounding factors
  - Federal sentencing; Immigration courts (asylum)

– **Extraneous factors** that are
  1. **Plausibly exogenous** to cases
     - True for sports outcomes and weather at least for given judge, year, week of the year, day of the week
  2. **Plausible** influences on decision (following slide)

# Judge Reid

*"Judge Reid is best avoided on a Monday following a weekend in which the USC football team loses."*

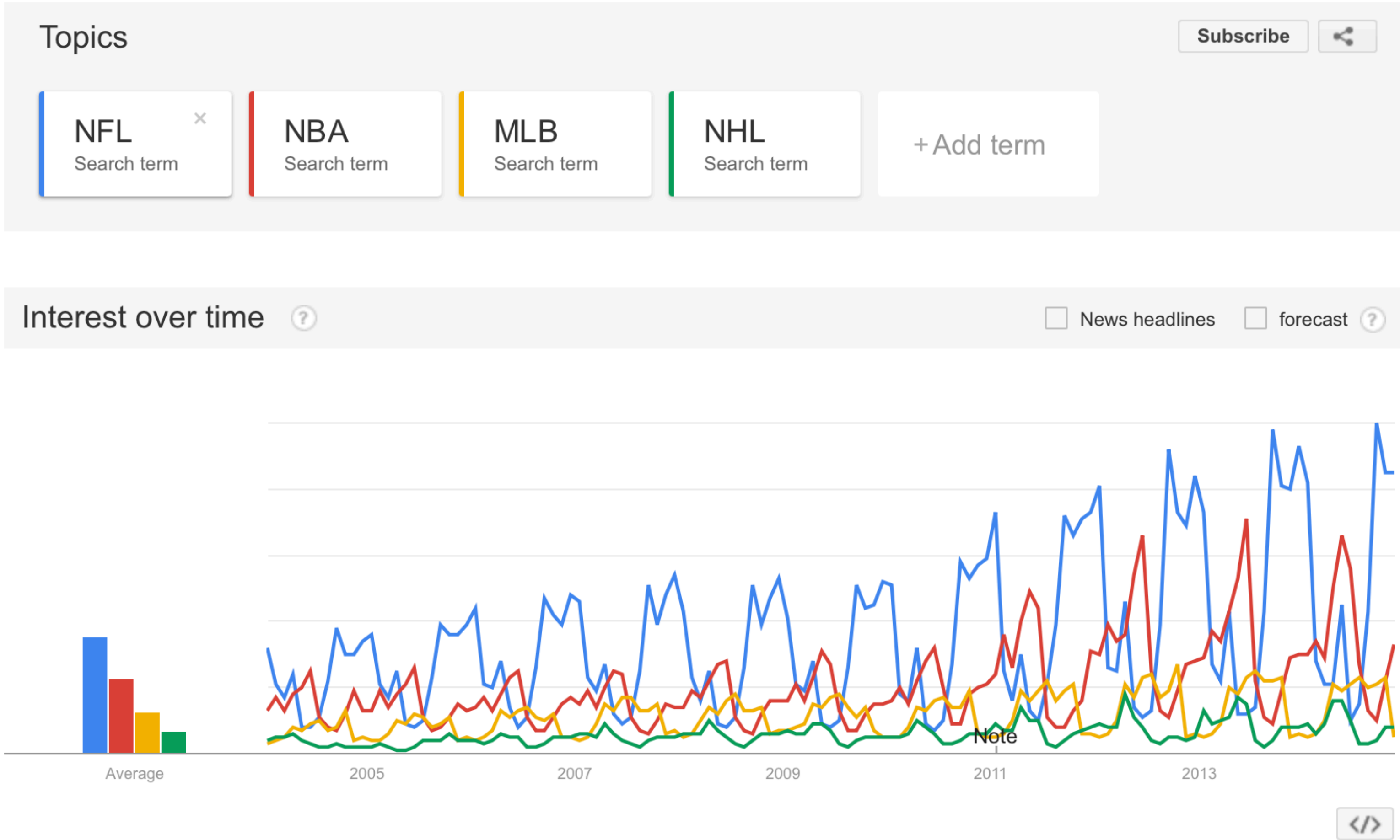
Morris Wolf, California Courts and Judges (1996)

# 2. Research Design
## Plausibility: Sports & Weather

- Sports found to predict
  - stock returns (Edmans et al. 2007),
  - elections (Healy et al. 2010),
  - domestic violence (Card/Dahl 2011),
  - …
- Weather found to predict
  - College enrollment (Simonsohn 2009)
  - Financial decisions via risk attitudes (Bassi et al 2013)
  - …

# 3. Data
## Sports

- Focus on NFL



# 3. Data
## Sports

- Focus on NFL
  - Few games, so each one matters
  - Season is short, so little seasonal heterogeneity
  - Almost all games played on Sundays, so little day-of-week heterogeneity
  - Cf. college football: Saturday games (2-day lag), few judge-college matches (3k)
- Other pro sports same sign, mixed significance

# 3. Data

## Decision data

- Federal sentencing: 900k district court decisions (TRAC)
  - 63k (58k) on (Mon)days after NFL games
  - Case covariates: trial yes/no, charge type (felony etc.), department (drug crimes etc.)
- Asylum: 434k immigration judge decisions (FOIA)
  - 24k (22k) on (Mon)days after NFL games
  - Case covariates: lawyer yes/no, defensive/affirmative, origin
    - According to one estimate: 7 minutes per case (Saslow 2014)

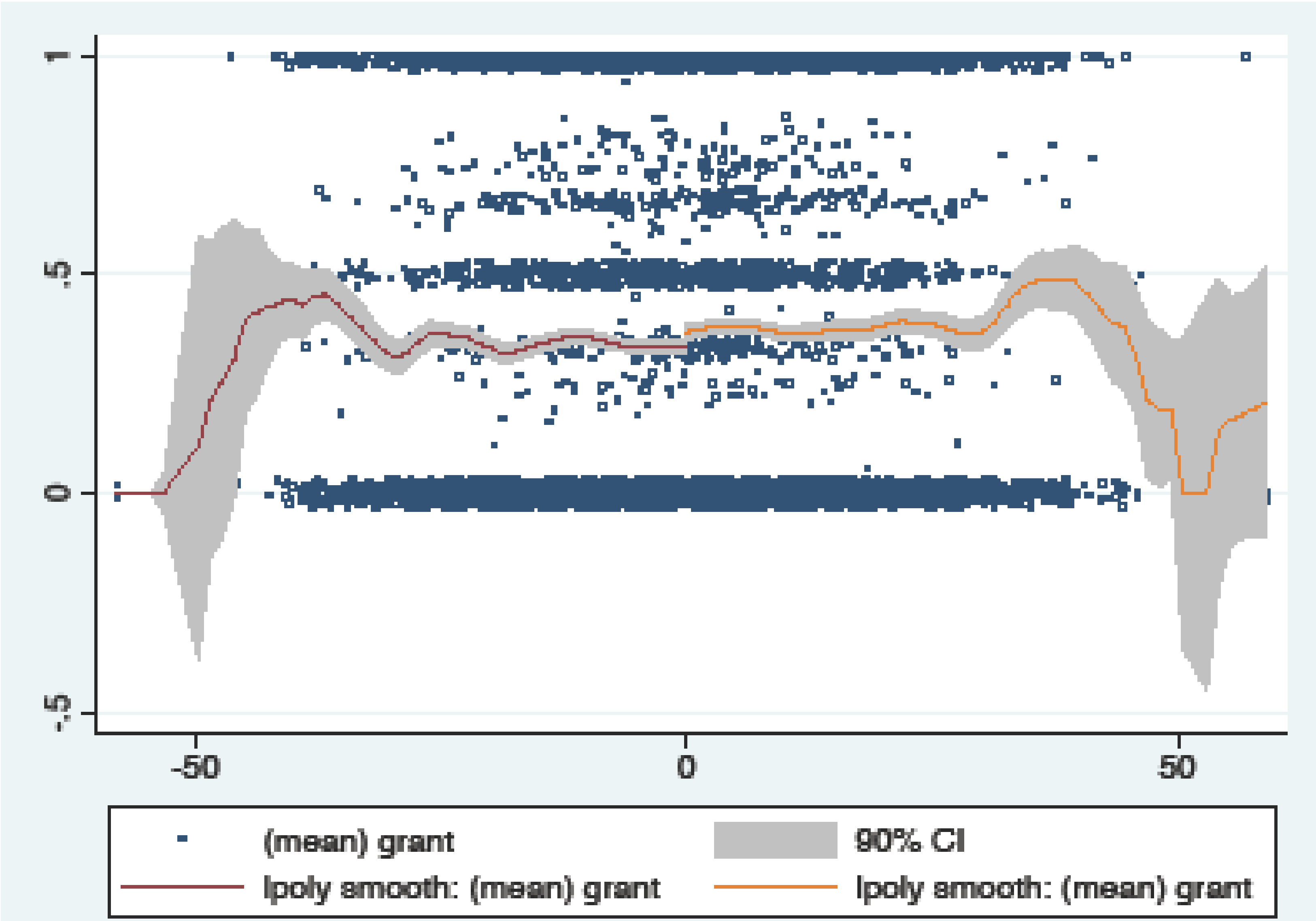
# 3. Data

## Sports-decision match

Match teams to decisions by city

- Noisy: cities divided (e.g., Giants vs. Jets)
  - Measurement error bias results to 0
- Not specific to judge
  - Agnostic about channels: judge may care about
    - Sports
    - Lawyers' arguments, and lawyers care about sports
    - …
  - In either case, it is an extraneous influence
- Video-teleconferencing for asylum applicants without lawyers

# NFL & Asylum: grant rates by point difference



# 4. Results
## Estimating equation (OLS)

$$\text{Outcome}_{ijcts} =$$

$$\boldsymbol{\delta}\, T_{cts} + FE_{JudgeXCityXSeason} + \beta X_{ijcts} + DOW_t + WEEK_t + \varepsilon_{ijcts}$$

# 4. Results
## NFL & sentencing

| Dependent variable | Any Prison | Prison Months | Death Sentence | Life Sentence | Fine, $ | Probation Months |
|---|---|---|---|---|---|---|
| (1) Yesterday's Win | -0.003 | -0.44 | 0.00003 | -0.0003 | -17320 | 0.27 |
| | (0.002) | (0.53) | (0.00006) | (0.0003) | (40493) | (0.12) |
| (2) Yesterday’s Loss | 0.0008 | 0.50 | -0.00005 | 0.00002 | 15589 | -0.12 |
| | (0.0018) | (0.60) | (0.00005) | (0.0004) | (44033) | (0.11) |
| P-value of (2)-(1)>0 | 0.05 | 0.09 | 0.87 | 0.27 | 0.13 | 0.04 |
| N | 900,490 | 900,490 | 900,490 | 900,490 | 163,223 | 900,490 |

**Fixed effects: JudgeXCityXSeason**; Week (1-52); DOW (Mon-Fri).
Case controls: department, charge type, trial yes/no.
OLS. Clustering by city.

# 4. Results
## NFL & asylum

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent variable | Grant Rate$_{ijco}$ | | Grant Ratio$_{ijc}$ | |
| Yesterday's NFL Win | 0.011 | 0.008 | 0.013 | 0.013* |
| | (0.009) | (0.008) | (0.009) | (0.007) |
| JudgeXCityXSeason FE | Yes | | Yes | |
| Week FE | Yes | | Yes | |
| Application controls | No | Yes | No | Yes |
| N | 16,502 | 16,496 | 13,508 | 13,504 |
| Clustering | City and judge | | | |

More precise at higher levels of aggregation (city-day and judge-day)

# 4. Results
## NFL & asylum

- Grant vs. Grant Ratio (lower variance vs. lower N)

| Y | X | | Y | X |
|---|---|---|---|---|
| Y | X | | Y | X |
| 1 | 1 | | 0.5 | 1 |
| 0 | 1 | | | |
| 1 | 1 | | 0.5 | 1 |
| 0 | 1 | | | |
| 0 | 0 | | 0 | 0 |

# 4. Results
## Weather & asylum

| Dep. var.: grant rate (judgeXday) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Rain present | -0.006* | -0.006* | -0.004 | -0.003 |
| | (0.003) | (0.003) | (0.003) | (0.003) |
| Highwinds present | -0.018 | -0.013 | -0.017 | -0.028 |
| | (0.013) | (0.014) | (0.015) | (0.019) |
| Snow present | -0.007 | -0.012 | -0.012* | -0.012** |
| | (0.007) | (0.007) | (0.007) | (0.006) |
| Rain/Wind/Snow continuous | Yes | Yes | Yes | Yes |
| *p*-value from joint F-Test | 0.02 | 0.06 | 0.03 | 0.01 |
| Other controls | Judge FE | + App. controls | + Time FE | + Origin FE |
| N | 131720 | 127437 | 127437 | 127437 |
| $R^2$ | 0.12 | 0.16 | 0.17 | 0.26 |

# 5. Additional tests

- Sports-city match: continuous measure of % following team from Facebook
- Weather: hedonic measure sensitive to seasonal expectations etc.
- Case covariates: sentencing commission recommendation
- Game covariates: importance of game for playoffs
- Discretion: great effect post mandatory sentencing guidelines?

# 5. Additional tests

- Sports-city match: continuous measure of % following team from Facebook (similar results)
- Weather: hedonic measure sensitive to seasonal expectations etc.
  - Twitter data
    - "Pulse of the nation: US mood throughout the day inferred from twitter" (Mislove et al 2010)
    - Daily for 1 year in 8 cities
- Case covariates: sentencing commission recommendation
- Game covariates: importance of game for playoffs
- Discretion: great effect post mandatory sentencing guidelines?

# 6. Sentiment

- Step 1: LASSO weather variables using Tweet outcome, 8 cities, one year.
- Step 2: Regress outcome directly on selected weather variables across all cities, all years.

# 6. Sentiment
## NFL & twitter

| | Tweet Mood |
|---|---|
| Yesterday's NFL Win | 0.239*** |
| | (0.0512) |
| | |
| N | 1217 |
| R-sq | 0.414 |
| P-value of (1)>0 | 0.00 |

Tweet Mood: 9 point scale

Standard errors in parentheses
= "* p<0.10 ** p<0.05 *** p<0.01"

**<u>Fixed effects: CityxSeason</u>**; Week (1-52); DOW (Mon-Fri).
Case controls: department, charge type
OLS. (Clustering by city or none). Weights to account for the twitterer being sampled from city population.

# 6. Sentiment
## Weather & twitter

| | Tweet Mood |
|---|---|
| Ground Fog * Hail | -0.113*** |
| | (0.0192) |
| Snow * Thunder | -0.0879*** |
| | (0.0263) |
| Max Temperature^2 | 0.00185** |
| | (0.000685) |
| Precipitation (mm) * High Winds | -0.000594*** |
| | (0.0000982) |
| N | 25182 |
| R-sq | 0.414 |

**21 Lasso-selected weather characteristics also include:**

- Freezing Rain
- Drizzle * Heavy Fog
- Ground Fog * Minutes of Sun
- Hail * Ground Fog
- Hail * Mist
- Hail * Torando
- Heavy Fog * Drizzle
- Ice * Smoke
- Mist * Hail
- Freezing Rain * Ground Fog
- Freezing Rain * Freezing Rain
- Smoke * Ice
- Thunder * Snow
- Tornado * Hail
- Minutes of Sun * Ground Fog
- Sun * Min Temperature
- Min Temperature * Minutes of Sun

Standard errors in parentheses = "* p<0.10 ** p<0.05 *** p<0.01"

**Fixed effects: CityXSeason**; Week (1-52); DOW (Mon-Fri).
Case controls: department, charge type
OLS. Clustering by city.

# 6. Sentiment
## Weather & sentencing

| | Any Prison | Prison Months | Death Sentence | Life Sentence | Fine, $ | Probation Months | Deviate Above | Deviate Below | Trial (Falsification) |
|---|---|---|---|---|---|---|---|---|---|
| Ground Fog * Hail | 0.00280 | 4.239 | -0.000107 | 0.00319 | -96839.9 | -0.529 | -0.00208 | 0.0722* | -0.00340 |
| | (0.0233) | (6.251) | (0.000195) | (0.00438) | (66031.6) | (0.657) | (0.0524) | (0.0383) | (0.0156) |
| Snow * Thunder | 0.00660 | -3.352 | -0.0000668 | -0.00308** | -38422.3 | -0.448 | -0.0114 | -0.0110 | -0.00398 |
| | (0.0143) | (2.902) | (0.0000462) | (0.00146) | (40598.1) | (0.570) | (0.0143) | (0.0328) | (0.00896) |
| Max Temperature^2 | -0.0000920 | -0.00395 | 0.000000805 | -0.00000431 | -1262.8 | 0.00450 | -0.0000930 | 0.000150 | -0.000134* |
| | (0.000103) | (0.0371) | (0.00000256) | (0.0000262) | (2218.6) | (0.00421) | (0.000196) | (0.000258) | (0.0000741) |
| Precipitation (mm) * High Winds | 0.0000202 | -0.0000593 | -0.000000201* | -0.000000956 | -59.87 | -0.000405 | -0.0000322 | -0.000130 | -0.00000189 |
| | (0.0000291) | (0.0119) | (0.000000113) | (0.00000912) | (86.73) | (0.00158) | (0.0000751) | (0.000152) | (0.0000264) |
| N | 916170 | 916004 | 916170 | 916170 | 314582 | 916161 | 194022 | 194021 | 916138 |
| R-sq | 0.141 | 0.117 | 0.005 | 0.015 | 0.085 | 0.090 | 0.051 | 0.103 | 0.041 |
| P-value from joint F-Test | 0.05 | 0.43 | 0.05 | 0.03 | 0.73 | 0.24 | 0.00 | 0.20 | 0.63 |

Standard errors in parentheses
= "* p<0.10 ** p<0.05 *** p<0.01"

**Fixed effects: CityXSeason**; Week (1-52); DOW (Mon-Fri).
Case controls: department, charge type
OLS. Clustering by city and year.

# 6. Sentiment
## Weather & asylum

| | Grant Ratio | Defensive Ratio (Falsification) | Lawyer Ratio (Falsification) |
|---|---|---|---|
| Blowing Snow * Ground Fog | -0.163*** | -0.0415 | -0.00904 |
| | (0.0458) | (0.104) | (0.0515) |
| Dust * Ground Fog | 0.138* | -0.0894 | -0.0115 |
| | (0.0791) | (0.100) | (0.0539) |
| Snow * Thunder | -0.00174 | 0.00660 | -0.0182 |
| | (0.0230) | (0.0315) | (0.0158) |
| Snow * Minimum Temperature | -0.00620 | 0.00666* | 0.00182 |
| | (0.00384) | (0.00358) | (0.00338) |
| N | 388131 | 461000 | 461000 |
| R-sq | 0.187 | 0.325 | 0.150 |
| P-value from joint F-Test | 0.00 | 0.21 | 0.90 |

Standard errors in parentheses
= "* p<0.10 ** p<0.05 *** p<0.01"

**<u>Fixed effects: CityXSeason</u>**; Week (1-52); DOW (Mon-Fri).
Case controls
OLS. Clustering by city and year.

# 6. Sentiment
## Weather & asylum

| | Grant Ratio | Grant Ratio |
|---|---|---|
| Restriction | Video-teleconference without Lawyers | Video-teleconference without Lawyers |
| Fixed Effects | JudgeXCityXSeason | CityXSeason |
| N | 2350 | 2506 |
| R-sq | 0.434 | 0.203 |
| P-value from joint F-Test | 0.00 | 0.00 |

Standard errors in parentheses
= "* p<0.10 ** p<0.05 *** p<0.01“

**Fixed effects:** Week (1-52); DOW (Mon-Fri).
Case controls
OLS. Clustering by city and year.

# Behavioral Judging

- Trilogy
  - Priming
  - Gambler's Fallacy
  - **Extraneous Factors**
    - Mood
      - NFL wins increase mood, asylum grants, and sentencing leniency
      - Weather factors that predict daily mood also affect asylum grants and sentencing leniency but not pre-determined controls
    - Judge or litigant?
      - Video/teleconference (detainee is remote from the judge)