Temperature and Decisions: Evidence from 207,000 Court Cases

Online Appendix

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A Online Appendix

Table A.1: Extended fixed effect estimates: 6 AM - 4 PM average

	(1) Preferred	(2) 1-Day lag	(3) 1-Day lead	(4) All
$Temperature_t/1000$	-1.075***	-1.454***	-1.208***	-1.617***
	[0.274]	[0.406]	[0.382]	[0.486]
$Temperature_{t-1}/1000$	-	0.361	-	0.372
	-	[0.278]	-	[0.277]
$Temperature_{t+1}/1000$	-	-	0.139	0.159
	-	-	[0.260]	[0.260]
$Airpressure_t$	-0.00494	-0.00500	-0.00515	-0.00523
	[0.00518]	[0.00518]	[0.00516]	[0.00516]
$Dewpoint_t$	0.000723***	0.000765***	0.000780***	0.000777***
	[0.000213]	[0.000217]	[0.000217]	[0.000222]
$Precipitation_t$	0.0616	0.0590	0.0625	0.0600
	[0.0822]	[0.0821]	[0.0820]	[0.0818]
$Windspeed_t$	0.000738	0.000771	0.000820	0.000866
	[0.000490]	[0.000485]	[0.000548]	[0.000543]
$Skycover_t$	-0.00292	-0.00159	-0.00186	-0.000343
	[0.00501]	[0.00515]	[0.00538]	[0.00551]
$Ozone_t$	0.493***	0.503***	0.485***	0.494***
	[0.160]	[0.160]	[0.157]	[0.157]
CO_t	0.00572	0.00547	0.00552	0.00523
	[0.00389]	[0.00389]	[0.00385]	[0.00384]
PM_{25t}	-0.00000866	-0.0000104	-0.0000130	-0.0000153
	[0.0000987]	[0.0000986]	[0.000100]	[0.0000999]
F-statistic	3.41	3.07	2.99	2.73
P-value	0.0026	0.0036	0.0044	0.0059
Observations	206,924	206,924	206,924	206,924

Notes: The unit of analysis is an immigration case. Dependent variable is a dummy taking value one if decision is favourable to applicant, zero otherwise. Temperature is the 6 AM to 4 PM average in the city in which the case is adjudicated, on the day of adjudication, in Fahrenheit. The temperature measure is divided by 1000 to reduce decimal places. All regressions control for weather, pollution and time fixed effects. Weather covariates include dew point, air pressure, wind speed, precipitation and cloud cover measured as 6 AM to 4 PM averages in the city in which the case is adjudicated, on the day of adjudication. Pollutant covariates include controls for ozone, carbon monoxide and PM_{25}, measured as calendar daily averages at the air quality monitoring station closest to the courthouse of adjudication, on the day of adjudication. Time fixed effects include day of week and year dummies relating to the day of adjudication. Regressions also include city-month fixed effects, name of judge adjudicating case, type of application and nationality of applicant. Sample is all cases adjudicated at all 42 mainland US federal immigration courthouse locations from 1 January 2000 to 30 September 2004. Standard errors are clustered on city-month in brackets. * significant at 10% ** significant at 5% *** significant at 1%.

Table A.2: Heterogeneity by gender of judge

	(1) Whole sample	(2) Female	(3) Male
$Temperature_t/1000$	-1.075***	-1.128**	-1.064***
	[0.274]	[0.494]	[0.330]
Observations	206,924	72,229	134,695
Hausman test	3.65**		
P-value	0.0325		

Notes: Column (1) re-states column (1) of Table 2, the preferred specification. Column (2) re-estimates this specification only on cases adjudicated by a female judge. Column (3) re-estimates this specification only on cases adjudicated by a male judge.

Table A.3: Non-linear estimates

	(1) Temperature	(2) Heat Index	(3) HI>65
X ≤20	0.0144	0.00428	-
	[0.0176]	[0.0162]	-
X ∈ [20-25)	0.00642	-0.00409	-
	[0.0131]	[0.0118]	-
X ∈ [25-30)	0.0273**	0.0167	-
	[0.0121]	[0.0108]	-
X ∈ [30-35)	0.00434	-0.00507	-
	[0.0113]	[0.00981]	-
X ∈ [35-40)	0.0129*	0.00590	-
	[0.00752]	[0.00595]	-
X ∈ [40-45)	0.0174***	0.0116*	-
	[0.00665]	[0.00639]	-
X ∈ [45-50)	0.0108*	0.00659	-
	[0.00555]	[0.00496]	-
X ∈ [50-55)	-	-	-
	-	-	-
X ∈ [55-60)	-0.0105**	-0.00776*	-
	[0.00448]	[0.00420]	-
X ∈ [60-65)	-0.0120**	-0.00613	-
	[0.00541]	[0.00463]	-
X ∈ [65-70)	-0.0186**	-0.00926	-
	[0.00678]	[0.00562]	-
X ∈ [70-75)	-0.0206**	-0.00632	0.00204
	[0.00889]	[0.00657]	[0.00628]
X ∈ [75-80)	-0.0255**	-0.00932	-0.00162
	[0.0105]	[0.00942]	[0.00799]
X ∈ [80-85)	-0.0482***	-0.0285***	-0.0217**
	[0.0120]	[0.0107]	[0.00974]
X ∈ [85-90)	-0.0631***	-0.0369***	-0.0312***
	[0.0184]	[0.0113]	[0.0102]
X ∈ [90-95)	-	-0.0259*	-0.0207
	-	[0.0146]	[0.0143]
X ≥ 95	-	-0.0701***	-0.0634***
	-	[0.0202]	[0.0206]
Observations	206,924	206,924	67,194

Notes: The unit of analysis is an immigration case. Dependent variable is a dummy taking value one if decision is favourable to applicant, zero otherwise. Temperature bins are indicators for every 5 °F of 6 AM to 4 PM temperature in the city of which the case is adjudicated, on the day of adjudication, with the 50 - 55 °F bin as the reference category. All regressions control for weather, pollution and time fixed effects. Weather covariates include dew point, air pressure, wind speed, precipitation and cloud cover measured as 6 AM to 4 PM averages in the city in which the case is adjudicated, on the day of adjudication. Pollutant covariates include controls for ozone, carbon monoxide and PM_{25}, measured as calendar daily averages at the air quality monitoring station closest to the courthouse of adjudication, on the day of adjudication. Time fixed effects include day of week and year dummies relating to the day of adjudication. Regressions also include city-month fixed effects, name of judge adjudicating case, type of application and nationality of applicant. Sample is all cases adjudicated at 42 mainland US federal immigration courthouse locations from 1 January 2000 to 30 September 2004. Column (2) repeats the specification in column (1) replacing the temperature variable with heat index. Column (3) re-estimates specification in column (2) but only on cases adjudicated on days when heat index exceeded 65 °F. Standard errors are clustered on city-month in brackets. * significant at 10% ** significant at 5% *** significant at 1%.

Table A.4: Alternative standard errors

	(1) City-week	(2) Year-month	(3) City-year	(4) City	(5) Judge	(6) Judge-month	(7) City and week	(8) Eicker-White	(9) Newey-West
$Temperature_t/1000$	-1.075***	-1.075***	-1.075***	-1.075***	-1.075***	-1.075***	-1.075***	-1.075***	-1.075***
	[0.297]	[0.242]	[0.313]	[0.306]	[0.271]	[0.273]	[0.320]	[0.197]	[0.196]
Observations	206,924	206,924	206,924	206,924	206,924	206,924	206,924	206,924	206,924

Notes: The unit of analysis is an immigration case. Dependent variable is a dummy taking value one if decision is favourable to applicant, zero otherwise. Temperature is the 6 AM to 4 PM average in the city in which the case is adjudicated, on the day of adjudication, in Fahrenheit. The temperature measure is divided by 1000 to reduce decimal places. All regressions control for weather, pollution and time fixed effects. Weather covariates include dew point, air pressure, wind speed, precipitation and cloud cover measured as 6 AM to 4 PM averages in the city in which the case is adjudicated, on the day of adjudication. Pollutant covariates include controls for ozone, carbon monoxide and PM_{25}, measured as calendar daily averages at the air quality monitoring station closest to the courthouse of adjudication, on the day of adjudication. Time fixed effects include day of week and year dummies relating to the day of adjudication. Regressions also include city-month fixed effects, name of judge adjudicating case, type of application and nationality of applicant. Sample is all cases adjudicated at 42 mainland US federal immigration courthouse locations from 1 January 2000 to 30 September 2004. Standard errors in brackets are clustered on city-week in column (1), year-month in column (2), city-year in column (3), city in column (4), judge in column (5), judge-month in column (5), city and week in column (6). Eicker-White and Newey-West standard errors reported in columns (7) and (8) in brackets. * significant at 10% ** significant at 5% *** significant at 1%.

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Table A.5: Randomization test

	Immigration				Parole		
	(1) Type of app.	(2) Middle East applicant	(3) Female judge	(4) Number of cases	(5) Type of app.	(6) Female judge	(7) Number of cases
$Temperature_t/1000$	0.241 [0.233]	0.131 [0.136]	-0.0216 [0.358]	0.747 [1.350]	0.901 [0.681]	-0.505 [1.584]	5.284** [1.688]
Judge FE	Y	Y	N	Y	Y	N	Y
Nationality FE	Y	N	Y	N	N	N	N
Type of application FE	N	Y	Y	N	N	Y	N
Observations	168,794	168,794	168,794	74,929	18,461	18,461	9,472

Notes: The unit of analysis is an immigration case. Dependent variable in columns (1) and (5) is a dummy for type of application, in column (2) is a dummy taking value one if an applicant is Middle Eastern origin, zero otherwise, in columns (3) and (6) is a dummy that takes value one if case is adjudicated by a female judge, zero otherwise and in columns (4) and (7) is total number of cases heard by each judge in each day. Temperature is the 6 AM to 4 PM average in the city in which the case is adjudicated, on the day of adjudication, in Fahrenheit. The temperature measure is divided by 1000 to reduce decimal places. All regressions control for weather, pollution and time fixed effects. Weather covariates include dew point, air pressure, wind speed, precipitation and cloud cover measured as 6 AM to 4 PM averages in the city in which the case is adjudicated, on the day of adjudication. Pollutant covariates include controls for ozone, carbon monoxide and PM_{25}, measured as calendar daily averages at the air quality monitoring station closest to the courthouse of adjudication, on the day of adjudication. Time fixed effects include day of week and year dummies relating to the day of adjudication. Regressions also include city-month fixed effects. Each specification contains other controls as indicated. Sample is all cases adjudicated at 42 mainland US federal immigration courthouse locations from 1 January 2000 to 30 September 2004. Standard errors are clustered on city-month in brackets. * significant at 10% ** significant at 5% *** significant at 1%.

Figure A.1: Non-linear randomization test: Asylum application
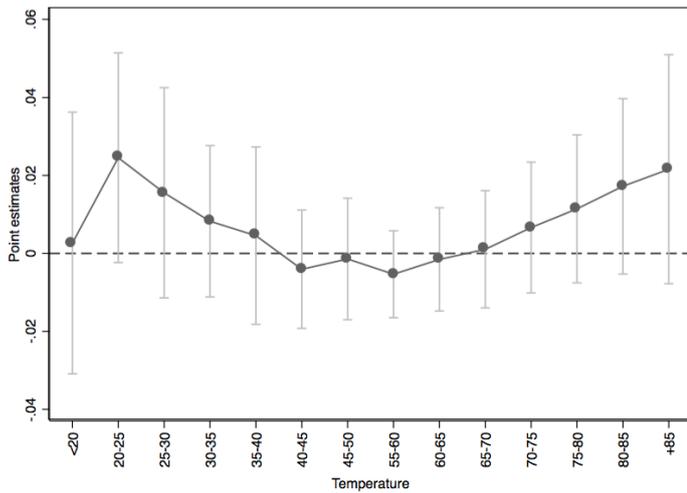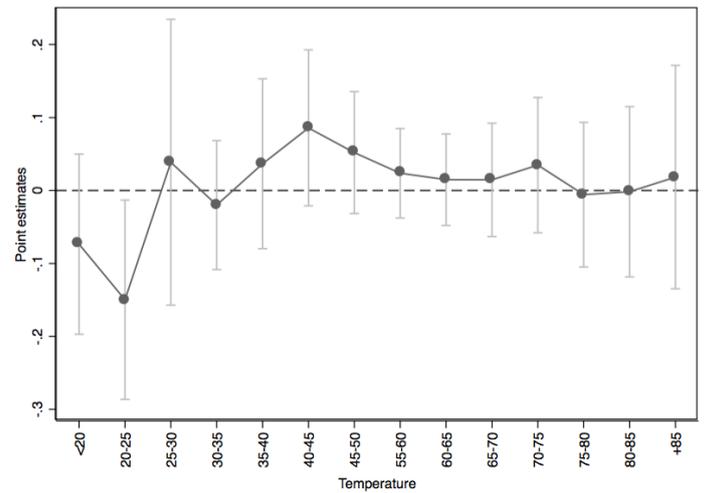
(a) Middle East
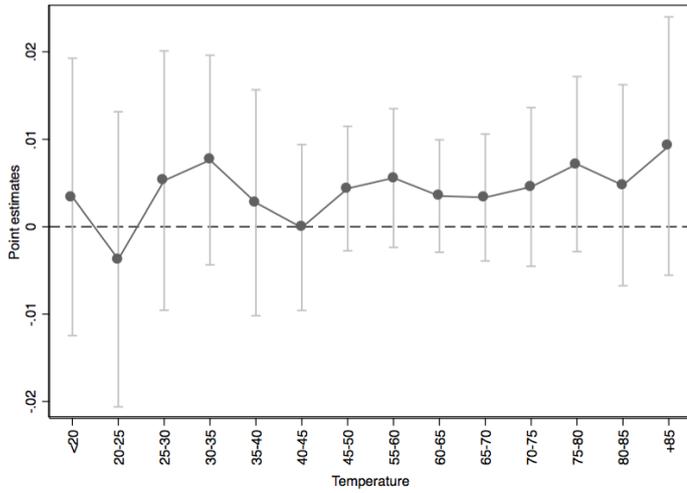
(b) Female judge
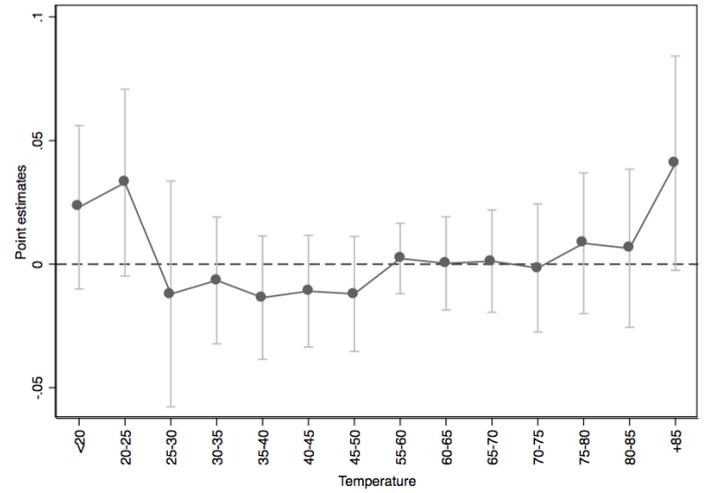

(c) Type of application

(d) Total cases

Notes: These figures plot the coefficients for the temperature indicator variables from estimation of the non-linear specification reported in column (1) of Table A.3 using different dependent variables. The dependent variable is in panel (a) a dummy taking value one if an applicant is Middle Eastern origin, zero otherwise in panel (b) a dummy taking value one if a judge is female, in panel (c) a dummy for type of application and in panel (d) the total number of cases heard by a judge on a day. Grey lines show the 95 percent confidence interval based on standard errors clustered on city-month.

Figure A.2: Timing of exposure

(a) Type of application
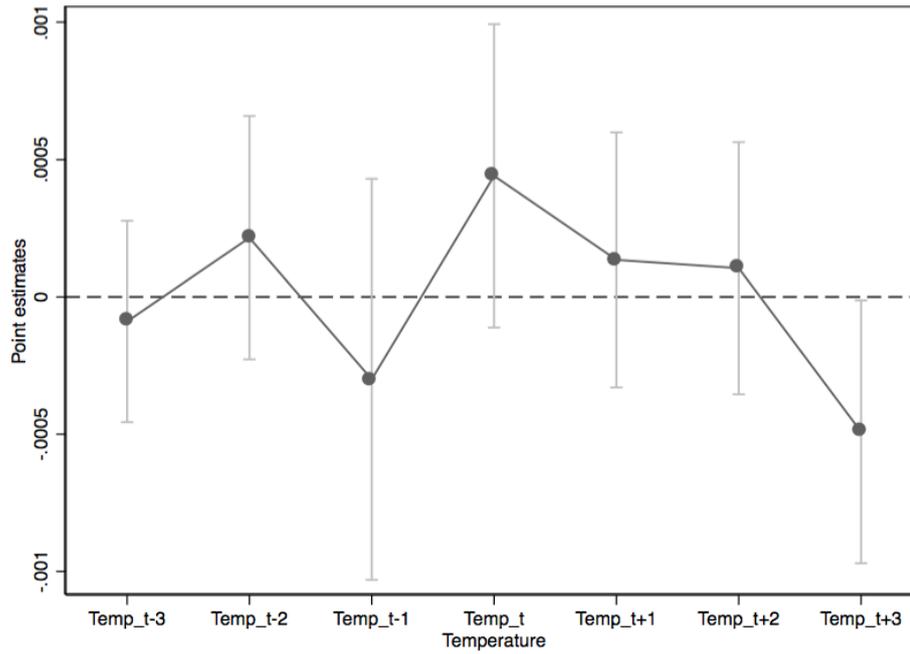
(b) Total number of cases
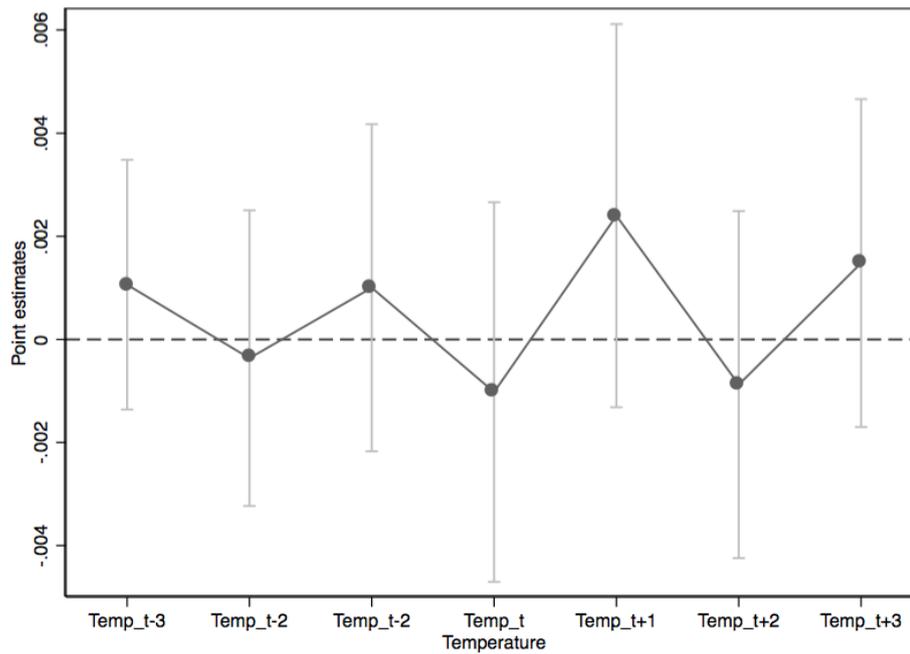
Notes: These figures plot the coefficients that result from running the specification in columns (1) and (4) of Table A.5 but including three lags and three leads of the temperature variable. Grey lines show the 95 percent confidence intervals based on standard errors clustered on city-month.