Supporting Information

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SI Methods

We obtained the data on air rage incidents and boarding patterns for flights directly from the airline after entering into a confidentiality agreement. We matched these data to a population of flights from a proprietary dataset purchased from OAG Worldwide. We spoke with the airline's Director of Corporate Security to connect 34 onboard incidents that we could not initially match to the population of flights. Results not including these 34 corrected incidents are consistent with those reported in the paper. We were unable to match 197 incidents in the airline's database to a flight in the population of flight data, because of some combination of incomplete data from the purchased dataset, human error in the recording of incidents, and the fact that data were not collected by OAG Worldwide for flights from very small, regional airports. We also deleted 59,000 flights over the sample time period from the purchased flight data because of missing departure dates.

The airline defines a disruptive passenger as causing one or more crew members to become less able to maintain order in the cabin. The airline uses many categories for incident type (Table 1); the airline designates each incident as only one type.

In 7.8% of incidents, there was more than one incident tied to a specific flight. We coded flights with multiple onboard incidents as a flight with an incident, rather than including multiple rows in the dataset for the same flight. We also conducted our analyses excluding these flights with multiple incidents and the effects are consistent with those reported in the paper. Note that of all flights with onboard incidents, only four flights also had incidents that occurred at the departure airport (before boarding), suggesting that the incidents we observe onboard are not simply the result of a generally belligerent set of passengers.

The airline provided the gender of the disruptive passenger for 41.8% of cases, and also provided (only) the first name to researchers to maintain customer confidentiality. A research assistant coded the remaining disruptive passengers' gender, and was unable to do so in a small percentage of onboard incidents with gender-neutral first names (3.02%).

Our dataset included some plane details, such as the plane make and model; where possible, we supplemented this information with plane details from the airline's website and other sites, such as www.seatguru.com. For this airline, flights recorded by OAG Worldwide as having a three-cabin plane (e.g., first class, business class, and economy class) were very rare, less than 0.03% of flights. In addition, one plane model for this airline, representing ~3.6% of all flights, was configured in both a two- and three-cabin layout. The OAG Worldwide dataset did not indicate which layout was used for each flight, but the airline website indicated that only a third of the actual planes of this model number in their fleet had a three-cabin layout. However, no incidents of air rage were reported by passengers in business class on these three-cabin or potential three-cabin planes, precluding further analysis of the predictors of air rage in such "three-class" planes. For the analyses reported in the paper, we recoded these flights—those with a three-cabin or potential three-cabin layout—such that the first and business classes were both coded as first class seats, and the physical dimensions of first and business class were averaged.

We did not have access to individual passenger data or how fully flights were sold; however, examining annual reports for the organization demonstrated that customer yield (the percentage of seats that are unsold on flights) was similar and low (~3–5%) during the years we examined.

Tables S1 and S2 contain correlation matrices and descriptive statistics. Table S3 contains robustness checks with additional controls (month of the year, day of week, time of day, and flight frequency), as well as reports odds ratios for all of the global flight regions. Results are consistent with those reported in the main text.

We also sought to identify other possible markers of inequality and status. First, we attempted to explore how the availability of "economy plus" seating, which allows economy passengers to upgrade to slightly roomier seats, could alter perceptions of inequality among economy class passengers. Unfortunately, this feature was implemented by the airline in specific planes—not in entire plane models—over a period of years, making it impossible for us to examine this question because our dataset indicates only which plane model, but not which specific plane, is used for each flight. Second, we attempted to identify employee behaviors that might accentuate perceptions of inequality among economy class passengers, such as gate agents' reminders not to use the first class boarding lane, and flight attendants' use of curtains to separate first class and economy cabins or reminders not to use first class washrooms. Unfortunately, however, these employee-level data were not tracked by the airline.

Table S1. Flight level variable descriptives and correlations (all flights)

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Economy incident (= 1)	0.0008	0.0284	1.000							
2. Economy seats on aircraft	77.3954	54.5150	0.043							
3. Flight distance in miles	828.7911	1071.8160	0.046	0.793						
4. Flight delay in hours	0.1831	0.5285	0.011	0.062	0.076					
5. Economy seat width (cm)	44.7551	2.1920	0.006	0.023	0.102	0.062				
6. Economy seat pitch (cm)	80.0689	4.9370	0.022	0.478	0.489	0.046	-0.155			
7. Cabin area [height × width (m^2)]	5.9459	2.4896	0.041	0.912	0.794	0.055	-0.081	0.676		
8. International flight (= 1)	0.3328	0.4712	0.015	0.260	0.381	0.074	0.135	0.234	0.276	
9. First class present (= 1)	0.4608	0.4985	0.025	0.661	0.530	0.066	0.206	0.317	0.613	0.296

Table S2. Flight level variable descriptives and correlations (only flights with first class)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. First class incident (= 1)	0.0003	0.0168	1.000										
2. Economy incident (= 1)	0.0015	0.0392	−0.001										
3. First class seats on aircraft	14.2108	7.6034	0.022	0.038									
4. Economy seats on aircraft	116.3521	58.2437	0.021	0.038	0.925								
5. Flight distance in miles	1443.3130	1322.5140	0.022	0.041	0.777	0.714							
6. Flight delay in hours	0.2206	0.5919	0.002	0.011	0.050	0.045	0.060						
7. First class seat width (cm)*	52.2694	1.2478	0.002	0.005	0.229	0.272	0.120	−0.007					
8. Economy seat width (cm)	45.2445	0.7398	0.004	0.008	0.097	0.153	0.100	−0.000	−0.497				
9. Economy seat pitch (in cm)	81.7603	6.7471	0.008	0.016	0.509	0.348	0.405	0.046	0.337	−0.366			
10. Cabin area [height × width (m^2)]	7.5961	2.7509	0.019	0.035	0.916	0.867	0.736	0.049	0.276	0.172	0.640		
11. International (= 1)	0.4837	0.4997	0.007	0.011	0.228	0.151	0.350	0.055	−0.045	−0.013	0.243	0.212	
12. Front boarding (= 1)	0.8616	0.3453	−0.019	−0.035	−0.877	−0.762	−0.736	−0.060	0.089	−0.084	−0.627	−0.873	−0.273

*Seat pitch data are not available for first class because many first class seats had their own pods/beds.

Table S3. Robustness logistic regression models predicting onboard incidents

Variable	Model 1	Model 2	Model 3
Dependent variable	Economy class incident	Economy class incident	First class incident
Dataset	All flights	Flights with first class	Flights with first class
Predictor variables			
Economy seats	1.0008 (0.0012)	1.0034** (0.0015)	—
First class seats	—	—	1.0389*** (0.0152)
Economy seat width (cm)	0.9542* (0.0230)	1.2755** (0.0928)	—
Economy seat pitch (cm)	0.9874 (0.0100)	1.0120 (0.0128)	—
First class seat width (cm)[†]	—	—	0.8014 (0.1095)
Flight distance in miles	1.0004**** (0.0000)	1.0004**** (0.0001)	1.0003** (0.0002)
Flight delay (h)	1.1450**** (0.0167)	1.1324**** (0.0174)	1.0263 (0.0556)
Cabin area (m^2)	1.1282*** (0.0522)	1.1298** (0.0602)	1.5079*** (0.2090)
International (1 = yes)	0.6348 **** (0.0679)	0.6321**** (0.0736)	0.6985 (0.1682)
First class present (1 = yes)	4.0358**** (0.4860)	—	—
Boarding from front (1 = yes)	—	2.3452*** (0.6018)	14.5774*** (14.9644)
Departure time (hours since midnight)	1.0610**** (0.0108)	1.0555**** (0.0113)	1.0719**** (0.0174)
Flight frequency	1.0000 (0.0000)	0.9999** (0.0000)	0.9999 (0.0001)
Month (April base category)			
August	0.7926** (0.0936)	0.7856** (0.0959)	0.8886 (0.2329)
December	0.7004*** (0.0873)	0.6772*** (0.0899)	0.7176 (0.2120)
February	0.7985* (0.0963)	0.7899* (0.0998)	1.3023 (0.3466)
January	0.9545 (0.1060)	0.9552 (0.1104)	0.7830 (0.1973)
July	0.8626 (0.0936)	0.8311 (0.0940)	0.7973 (0.2373)
June	1.0048 (0.1045)	0.9678 (0.1053)	1.0626 (0.3235)
March	0.8410 (0.0955)	0.8274 (0.0981)	1.1010 (0.3162)
May	0.8737 (0.0928)	0.8737 (0.0942)	1.3086 (0.3785)
November	0.9916 (0.1345)	0.9484 (0.1394)	1.1489 (0.2955)
October	0.8826 (0.1034)	0.8466 (0.1046)	0.8678 (0.2486)
September	0.8073 (0.0991)	0.7895* (0.1005)	0.5751 (0.2080)
Day of week (Friday base category)			
Monday	1.1156 (0.0947)	1.0852 (0.0956)	1.1615 (0.2278)
Saturday	0.9791 (0.0851)	0.9246 (0.0847)	1.0270 (0.2346)
Sunday	0.8935 (0.0831)	0.8771 (0.0847)	1.0171* (0.2239)
Thursday	0.9819 (0.0917)	0.9391 (0.0932)	1.1982 (0.2734)
Tuesday	0.9835 (0.0828)	0.9529 (0.0840)	0.8530 (0.2079)
Wednesday	1.1212 (0.1025)	1.1259 (0.1076)	0.9695 (0.1967)
Departure region–Arrival region (North East Asia–North America base category)			
Western Europe–North America	2.7185*** (0.7986)	2.3992*** (0.6798)	2.2256 (1.4225)
Caribbean–Caribbean	—	—	—
Caribbean–North America	4.3515**** (1.6960)	2.6477** (1.0756)	1.3763 (1.2952)
Central America–North America	5.0667**** (1.9621)	3.0136*** (1.2487)	2.7034 (2.3901)
Lower South America–Lower South America	4.5467*** (2.5514)	3.1730** (1.7454)	1.4500 (1.8677)
Lower South America–North America	1.6300 (0.6397)	1.5842 (0.6269)	0.5646 (0.2442)
Upper South America–North America	2.1686 (1.0466)	1.6923 (0.8105)	3.0285 (2.8611)
Middle East–North America	1.6573** (0.3753)	1.6140** (0.3628)	2.3261** (0.9126)
North America–North East Asia	1.1166 (0.2305)	1.0902 (0.2263)	1.3890 (0.5479)
North America–Western Europe	1.5173 (0.4418)	1.3800 (0.3893)	1.2410 (0.7806)
North America–Caribbean	4.3375**** (1.7686)	2.5632** (1.1050)	3.1779 (2.9010)
North America–Central America	4.3579**** (1.7757)	2.5610** (1.1041)	1.2651 (1.3415)
North America–Lower South America	0.8515 (0.1796)	0.8302 (0.1696)	0.2969 (0.2746)
North America–Upper South America	3.5670*** (1.4991)	2.7456*** (1.0720)	—
North America–Middle East	1.7707*** (0.3936)	1.7261*** (0.3786)	1.8967* (0.7141)
North America–North America	2.5737** (0.9614)	1.6259 (0.6388)	1.3173 (1.1065)
North America–Southwest Pacific	0.3888**** (0.0597)	0.3661**** (0.0592)	0.8155 (0.1967)
Southwest Pacific–North America	0.9666 (0.1519)	0.8753 (0.1456)	1.6312* (0.4083)
McFadden's pseudo R^2	0.1080	0.0630	0.0758

Values presented are odds ratios with robust SEs. The full dataset represented ~150–300 unique arrival and departure airports, and between 500 and 1,000 unique flight routes. SEs are adjusted clusters based on plane route (i.e., the specific departure airport and arrival airport combination). All models include fixed effects for flight regions. Observations were dropped because they were in a flight region that had no incidents. Flights with first class present are ~46.1% of the population of flights. No flights without first class boarded from the middle of the plane. *$P < 0.10$, **$P < 0.05$, ***$P < 0.01$, ****$P < 0.0001$.

[†]Seat pitch data are not available because many first class seats had their own pods/beds.