Litigation Environment and Inequality
Empirical Evidence from Four Data Sets

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Summary

Empirical evidence on the relation between trial outcome (actual and perceived) and income inequality

- The empirical analysis is motivated by the Bronx Jury hypothesis, according to which jury trials are a vehicle for the redistribution of wealth[1]
- Evidence of a relation between (actual and perceived) jury trial outcomes and income inequality in cross-section is provided from four publicly available data sets
  - The propensity of observing a nuclear verdict in trucking (jury award in excess of $10 million) increases with income inequality (state-level data)
  - Damage awards in jury trials increase with income inequality (county level)
  - The court is perceived (by the defense bar) as being more likely to side with the plaintiff where income inequality is high (county level)
  - The court is less likely to be perceived as fair and reasonable (by corporate attorneys) where income inequality is high (state level)
- Exploratory analysis indicates that the demonstrated cross-sectional link between jury trial outcome and income inequality has grown stronger over time

1) The hypothesis originates in the Tom Wolfe novel The Bonfire of the Vanities (1987) where a lawyer referred to juries in the Bronx as "vehicles for redistributing wealth"

Caveats

Bronx Jury hypothesis and ecological fallacy

- Kohler-Hausmann (2011[1]) provides evidence in support of the Bronx Jury hypothesis when associating case-level tort trial outcomes with county-level income inequality
- In contrast to Kohler-Hausmann (2011), the following analysis is based entirely on aggregate data, either at the level of the county or the state
  - The ecological inference fallacy cautions against drawing inferences on individual behavior from aggregate data
  - From this perspective, the findings are not direct evidence for the Bronx Jury hypothesis – rather, the findings are merely consistent with this proposition
- Further, as Kohler-Hausmann (2011), the following statistical analysis relies on cross-sectional variation, and no inference can be drawn about the impact of time variation
  - A relation between time variation in jury trial outcome and income inequality is proposed based on differences in cross-sectional evidence across years

1) Kohler-Hausmann, Issa (2011) "Community Characteristics and Tort Law: The Importance of County Demographic Composition and Inequality to Tort Trial Outcomes," Journal of Empirical Legal Studies

Caveats

Methodology

- The econometric approach to modeling the influence of income inequality on (actual or perceived) trial outcome presupposes that there is no contemporaneous influence of the legal system on economic conditions[1]
  - This assumed exogeneity may not hold for long time windows, as the legal system is a major determinant of economic prosperity[2]
- There is a possibility that economic conditions are not causal to trial outcomes, but that the observed relation is established by a common cause
  - In the presence of a common cause, the measurement error of the explanatory variable (here, income inequality) may be correlated with the measurement error of the dependent variable (here, actual or perceived trial outcome) and thus with the error term of the regression equation
  - Such correlation gives rise to regression dilution, which biases the strength of the estimated relation toward zero

1) Econometrically, simultaneity can be addressed via an instrumental variables approach

2) See, for instance, La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer (2008) "The Economic Consequences of Legal Origin," Journal of Economic Literature 46: 285-332, http://faculty.tuck.dartmouth.edu/images/uploads/faculty/rafael-laporta/Economic_Consequences_JEL_final.pdf

Caveats

Suitability of poverty rate as a measure of cross-sectional variation in income inequality

- At state level, the preferred measure of income inequality is the Gini index[1]
  - At county level, the Gini index is unavailable and the poverty rate is used instead[2]
  - The poverty rate is an imperfect measure for quantifying differences in income inequality in cross-section, as the income level that defines the U.S. poverty threshold does not vary geographically
    - A hypothetical county the household incomes of which are strict multiples of a poorer county's household incomes, will have a lower poverty rate in spite of identical within-county income inequality
  - The resulting negative bivariate relation between poverty rate and median household income (see Appendix) attenuates a potential positive relation between median jury trial damage award and poverty rate – this is because the damage award scales (at least to a degree) with local median household income

1) The Gini index is the ratio of the area between the line of perfect equality and the observed Lorenz curve of income distribution. A Gini index of zero means perfect equality, and a (hypothetical) Gini index of one means all income is concentrated in one household. Empirical data is available from the U.S. Census Bureau (https://www.census.gov/topics/income-poverty/income-inequality/about/metrics/gini-index.html)

2) For information on the poverty rate, see the U.S. Department of Health & Human Services (https://aspe.hhs.gov/poverty-guidelines). Empirical data is available from the U.S. Census Bureau (https://www.census.gov/library/publications/2019/demo/p60-266.html)

Data Sets

All data sets employed in the analysis are in the public domain

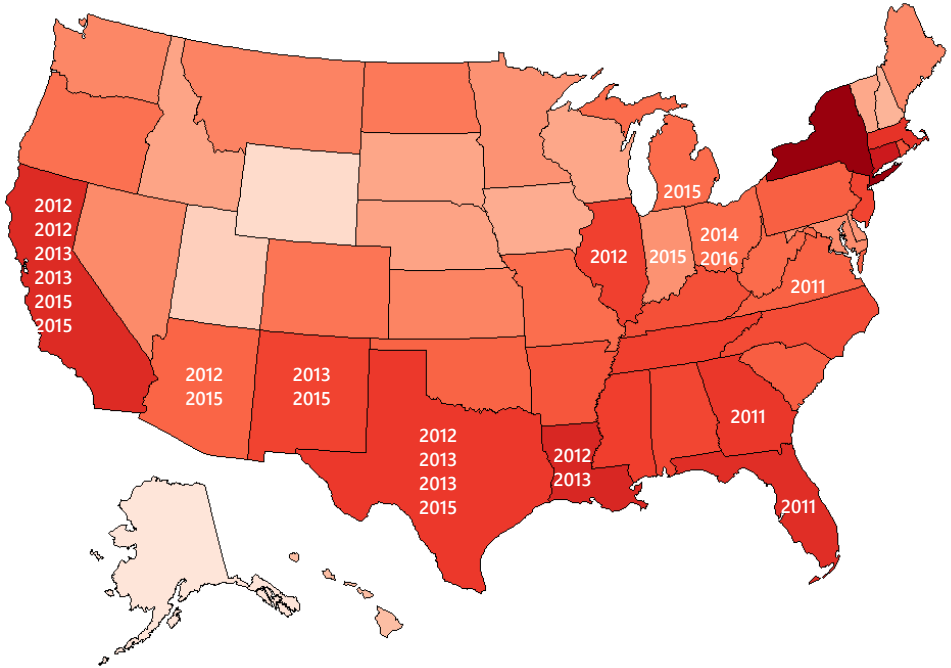
Data Source	Nature of Data Set	Number of Observations
Nuclear Verdicts. U.S. Nuclear Trucking Verdicts, 2011-2016, Carr Allison, https://www.carrallison.com/wp-content/uploads/Carr-Allison_US-Nuclear-Trucking-Verdicts-2011-2016.pdf	The data sets reports jury verdicts of $10 million or more in trucking for the period 2011-2016, broken down by U.S. state. In the analysis, the state count of trucking fatalities serves as a measure of exposure. Income inequality of the state is represented alternatively by the contemporaneous one-year and five-year Gini indexes and the poverty rate. For the purpose of eliminating a potential time trend in income inequality, the Gini indexes and the poverty rate are transformed into state ranks for the year	299 observations. There are 24 nuclear verdicts, observed in 12 states over six years. The remaining state-years enter the analysis with zero counts. The District of Columbia is not included
Jury Awards. Civil Justice Survey of State Courts (CJSSC), 2005 Collection,[1] Appendix Table 4, Bureau of Justice Statistics (BJS), https://www.bjs.gov/index.cfm?ty=dcdetail&iid=242	Median final damage awards for plaintiff winners in jury trials and, in a sensitivity analysis, bench trials. Also analyzed is the number of plaintiff winners in the total number of jury trials. The trials comprise tort and contract cases (and no real property cases). The awards are prior to any post-trial adjustments or appeals and include compensatory and punitive damages, costs and fees, and interest. Income inequality is measured by the contemporaneous county poverty rate. State fixed effects are included	46 observations for the 75 most populous counties. 73 observations for the 95 counties outside the 75 most populous counties – there is no median award for 22 counties due to no plaintiff having won
Venue Orientation. Venue Maps, The Harmonie Group, accessed on April 22, 2020, https://www.harmonie.org/venue-maps	Information on court orientation (defense-oriented, neutral, or plaintiff-oriented) for the District of Columbia and counties of 50 states. The counties are mapped to FIPS codes and then linked to District of Columbia and county poverty rates and median household incomes for the calendar year 2018. State fixed effects are included in the analysis	3,116 observations
Lawsuit Climate. Lawsuit Climate Survey (Harris Poll), 2019, U.S. Chamber Institute for Legal Reform, https://www.instituteforlegalreform.com/research/2019-lawsuit-climate-survey-ranking-the-states	The Harris Poll scores and ranks U.S. states on how fair and reasonable the states' liability systems are perceived by U.S. corporate attorneys. In the analysis, the results of the 2019 survey were used, and each state is represented by its rank (rather than its score). Income inequality of the state is measured alternatively by the 2018 one-year and five-year Gini indexes, and the poverty rate	50 observations

1) A detailed version of this data set is available for scholars at research institutions, https://www.icpsr.umich.edu/icpsrweb/NACJD/studies/23862

Propensity of Nuclear Verdicts and Inequality

States with higher inequality are hypothesized to be more liable to experiencing nuclear verdicts in trucking

- In the chart, darker red coloring indicates higher income inequality as measured by the 2015 five-year Gini index
- Nuclear verdicts are displayed by state and calendar year occurrence (2011-2016)
- There is no manifest trend in the count of nuclear verdicts within the 2011-2016 time window



Verdicts in excess of $10 million are commonly referred to as nuclear verdicts. The nuclear verdicts data set was published by Carr Allison, and accessed on March 29, 2020 (https://www.carrallison.com/wp-content/uploads/Carr-Allison_US-Nuclear-Trucking-Verdicts-2011-2016.pdf). Income inequality is measured by the 2015 five-year Gini index, U.S. Census Bureau, www.census.gov. The Gini index is the ratio of the area between the line of perfect equality and the observed Lorenz curve of income distribution. A Gini index of zero means perfect equality, and a (hypothetical) Gini index of one means all income is concentrated in one household

Propensity of Nuclear Verdicts and Inequality

Empirical quantification using state-level data of income inequality

- The state count of nuclear verdicts is analyzed in a statistical count model that accommodates a preponderance of zeros
  - In a so-called hurdle model, a binary logit distribution (positive count vs zero count) is combined with a negative binomial distribution (of positive counts)
  - Exposure to nuclear verdicts is represented by the number of trucking fatalities[1]
- The empirical analysis relies solely on cross-sectional variation
  - There is no time trend manifest in the annual count of nuclear verdicts during the 2011-2016 time window
- Income inequality for the state is represented by three alternative contemporaneous measures, which are the one-year and five-year Gini indexes and the poverty rate
  - In order to eliminate the influence of a potential time trend in the measures of income inequality, their ranks across states within the calendar year are used

1) Although nuclear verdicts do not presuppose a fatality, the number of trucking fatalities is a reliable measure of highway safety

Propensity of Nuclear Verdicts and Inequality

The count of nuclear verdicts, adjusted for exposure, is related to three measures of income inequality

- Hurdle NB (Negative Binomial) Model
  - The hurdle component provides evidence for an impact on the propensity of observing a positive count (vs. zero count) for all three measures of inequality
  - By contrast, the NB component offers no evidence that variation among positive counts is related to any of the three measures of income inequality, possibly due to the small number of positive counts in the data set

Hurdle Component	Coefficient	*z* - Value	Significance
Gini Index One-Year	-0.069	-3.364	0.001
Intercept	-1.282	-3.337	0.001
NB Component	**Coefficient**	***z* - Value**	**Significance**
Gini Index One-Year	-0.284	-1.369	-
Intercept	-4.148	-3.256	0.01
Log(*theta*)	11.02	0.282	-
Wald Test	*Chi-squared* (2)	13.191	0.01
Akaike Information Criterion: 156.4			
Count of predicted nuclear verdicts: 23.1			

2011-2016, 50 states. The Carr Allison data set was accessed on March 29, 2020 (https://www.carrallison.com/wp-content/uploads/Carr-Allison_US-Nuclear-Trucking-Verdicts-2011-2016.pdf). Exposure was measured by the number of state trucking fatalities (National Highway Traffic Safety Administration, https://cdan.nhtsa.gov/). No trucking fatalities are available for Alaska in 2011. The contemporaneous Gini index for the state and year was transformed into a state rank for the year to eliminate a possible time trend in income inequality. A lower rank (i.e., higher rank value) indicates less inequality. The Gini index data is from the U.S. Census Bureau (www.census.gov). The parameter theta represents overdisperson (relative to the Poisson distribution)

Propensity of Nuclear Verdicts and Inequality

The count of nuclear verdicts, adjusted for exposure, is related to three measures of income inequality

Hurdle Component	Coefficient	*z* - Value	Significance
Gini Index Five-Year	-0.069	-3.370	0.001
Intercept	-1.279	-3.330	0.001
NB Component	**Coefficient**	***z* - Value**	**Significance**
Gini Index Five-Year	-0.282	-1.234	-
Intercept	-4.239	-3.108	0.01
Log(*theta*)	10.64	0.099	-
Wald Test	*Chi-squared* (2)	12.882	0.01
Akaike Information Criterion: 156.7			
Count of predicted nuclear verdicts: 22.9			

Hurdle Component	Coefficient	*z* - Value	Significance
Poverty Rate	0.195	3.116	0.01
Intercept	-5.497	-5.417	0.001
NB Component	**Coefficient**	***z* - Value**	**Significance**
Poverty Rate	-0.042	-0.170	-
Intercept	-5.528	-1.437	-
Log(*theta*)	8.299	0.124	-
Wald Test	*Chi-squared* (2)	9.739	0.01
Akaike Information Criterion: 160.5			
Count of predicted nuclear verdicts: 22.1			

2011-2016, 50 states. The 2011-2016, 50 states. The Carr Allison data set was accessed on March 29, 2020 (https://www.carrallison.com/wp-content/uploads/Carr-Allison_US-Nuclear-Trucking-Verdicts-2011-2016.pdf). Exposure was measured by the number of state trucking fatalities (National Highway Traffic Safety Administration, https://cdan.nhtsa.gov/). No trucking fatalities are available for Alaska in 2011. The contemporaneous Gini index and the poverty rate for the state and year were transformed into state ranks for the year to eliminate a possible time trend in income inequality. A lower rank (i.e., higher rank value) indicates less inequality. The Gini index and the poverty rate data are from the U.S. Census Bureau (www.census.gov). No value for the poverty rate is available for Wyoming in 2014. The parameter theta represents overdisperson (relative to the Poisson distribution)

Interpretation of Findings

Cross-sectional variation in income inequality accounts for 25-40 percent of nuclear verdicts

- Income inequality is able to explain variation between zero and non-zero counts in a given state and year, but is unable to explain variation among positive counts
- The contemporaneous one-year Gini index has the most explanatory power and highest predictive accuracy (predicting a count of 23 nuclear verdicts; actual is 24), and the poverty rate has the least explanatory power yet still acceptable accuracy
- Eliminating the influence of variation in income inequality across states (resulting in all states having rank 25.5) delivers a predicted 40 (27) percent decline in the count of nuclear verdicts based on the one- and five-year Gini indexes (poverty rate)
- In conclusion, cross-sectional variation in income inequality around the baseline is able to explain between 25 and 40 percent of the observed nuclear verdicts

Magnitude of Damage Awards in Jury Trials and Inequality

Empirical quantification using data of the 2005 Civil Justice Survey of State Courts (CJSSC)

- The 2005 CJSSC offers data on trial outcomes for a sample of 46 of the 75 most populous counties, and a set 95 counties outside the 75 most populous counties
  - The data set provides county-level information on median damage awards in jury trials and bench trials, and the number of respective trials won by plaintiffs
  - The data for the 95 less populous counties is sparse, as 10 counties had no jury trial and another 18 had only one trial; 22 counties had no plaintiff winning
- The (natural logarithm of the) median damage award in jury trials and bench trials is related in a linear model to income inequality, represented by the poverty rate
  - Influence related to the state in which the county is located is controlled for
- The count of jury trials won by plaintiffs is related to the poverty rate using a negative binomial count model
  - The high prevalence of zero counts in the set of 95 less populous counties calls for a hurdle model, which adds a binary logit component to the count model

Magnitude of Damage Awards in Jury Trials and Inequality

Evidence from the 2005 Civil Justice Survey of State Courts (CJSSC)

- For the most populous counties, it is shown that a one percentage point (one standard deviation)[1] higher poverty rate translates into a 6 (45) percent higher median damage award[2]
- For the less populous counties, the null hypothesis of no relation of the median damage award to inequality cannot be rejected, possibly due to sparse data

Most Populous Counties	Coefficient	*t* - Value	Significance
Poverty Rate	0.058	2.305	0.05
Intercept	2.941	5.220	0.001
Analysis of Variance	*F* (22,23)	2.380	0.05

Less Populous Counties	Coefficient	*t* - Value	Significance
Poverty Rate	-0.009	-0.112	-
Intercept	3.078	1.813	0.1
Analysis of Variance	*F* (33,39)	1.083	-

1) Among the most populous counties, one standard deviation in the poverty rate equals 5.2 percentage points

2) The findings agree with Kohler-Hausmann (2011) where "contingent on the jury having found the defendant liable…both county poverty rate and the level of low-end inequality emerge as statistically significant predictors of the level of damages awarded to the plaintiff." 46 (73) observations for the most (less) populous counties. "Most populous" refers to the 46 county sample from the 75 most populous counties. "Less populous" refers to the 95 counties outside the 75 most populous counties. Damage awards include compensatory and punitive damages; real property cases are not included. The dependent variable (damage awards) is used in logarithmic form. The effect of a change in the poverty rate by 1 unit (that is, 1 percentage point) equals exp(0.058)-1 or about 6 percent. State fixed effects are included (also in the analysis of variance). Diagnostic charts where residuals are plotted against the dependent variable and, alternatively, the poverty rate, do not indicate misspecification following the inclusion of state fixed effects

Propensity of Plaintiff Winning in Jury Trials and Inequality

There is no evidence of a link between the propensity of the plaintiff winning and the poverty rate[1]

Most Populous Counties: NB (Negative Binomial) Model

Variable	Coefficient	*z* - Value	Significance
Poverty Rate	0.003	0.430	-
Intercept	-0.782	-6.884	0.001
theta	20.73	3.098	0.01
Wald Test	*F* (44,45)	0.185	-

Less Populous Counties: Hurdle NB Model

Hurdle Component	Coefficient	*z* - Value	Significance
Poverty Rate	-0.050	-0.918	-
Intercept	1.904	2.323	0.05
NB Component	**Coefficient**	***z* - Value**	**Significance**
Poverty Rate	**-0.000**	**-0.009**	-
Intercept	-0.649	-3.559	0.001
Log(*theta*)	4.049	2.922	0.01
Wald Test	*Chi-squared* (2)	0.8424	-

1) The findings agree with Kohler-Hausmann (2011) where "no measure of county-level demographic composition or inequality measure emerged as a statistical significant predictor of the odds of plaintiff success."
46 (95) observations for the most (less) populous counties. "Most populous" refers to the 46 county sample from the 75 most populous counties. "Less populous" refers to the 95 counties outside the 75 most populous counties. For the less populous counties, the number of observations (counties) exceeds the number of observation in the model that was used to explain the median jury award. This difference in the number of observations is due to 22 counties having no plaintiff winning a trial. The large number of counties (among the less populous) with no trial won by a plaintiff calls for the use of a hurdle model. Only tort and contract cases (and no real property cases) are included

Magnitude of Damage Awards in Bench Trials and Inequality

There is no evidence that damage awards in bench trials are sensitive to the poverty rate

- The hypothesis of no association between the median damage award in bench trials and the poverty rate cannot be rejected, consistent with the Bronx Jury hypothesis

Most Populous Counties	Coefficient	*t* - Value	Significance
Poverty Rate	0.026	1.297	-
Intercept	9.853	21.864	0.001
Analysis of Variance	*F*(22,23)	2.380	0.05

Less Populous Counties	Coefficient	*t* - Value	Significance
Poverty Rate	-0.009	-0.112	-
Intercept	3.078	1.813	0.1
Analysis of Variance	*F*(33,39)	1.083	-

45 (57) observations for the most (less) populous counties. "Most populous" refers to the 46 county sample from the 75 most populous counties. "Less populous" refers to the 95 counties outside the 75 most populous counties. One county among the most populous recorded no plaintiff winning a trial. Among the less populous counties, 38 recorded no plaintiff winning a trial. For the less populous counties, $0.5 was added to the median damage award to avoid a discontinuity at zero for the natural logarithm—there is one county with one trial won by a plaintiff and an award equal to zero. State fixed effects are included (also in the analysis of variance). Diagnostic charts where residuals are plotted against the dependent variable and, alternatively, the poverty rate, do not indicate misspecification following the inclusion of state fixed effects. Only tort and contract cases (and no real property cases) are included

Kohler-Hausmann (2011) Median Damage Award Data Set

In a sensitivity analysis, the data set of the 2001 Civil Justice Survey of State Courts (CJSSC) is analyzed

- Kohler-Hausmann (2011), in studying data of the 2001 CJSSC, associates tort trial damage awards[1] with aggregate, county-level income inequality
  - The case-level data set of 4,899 jury trials comprises the same sample of 46 (of the 75 most populous) counties that was employed in the analysis of the 2005 CJSSC presented above
- In a hierarchical model,[2] Kohler Hausmann (2011) applies three alternative measures of income inequality, which are the poverty rate, the ratio of the 90th percentile of household income to the median, and the ratio of the median to the 10th percentile[3]
- The analysis the 2005 CJSSC presented above is repeated using the county-level aggregation of the 2001 CJSSC data set employed by Kohler-Hausmann[4]
  - Again, the (natural logarithm of the) median damage award in jury trials is related to the poverty rate (and state-specific influence) and, alternatively, to the two household income ratios employed in Kohler-Hausmann (2011)

1) "Damage awards were calculated as jury-awarded compensatory and punitive damages, including any fees or costs awarded" (Kohler-Hausmann, 2001); 2) The hierarchical model has a three-level nested structure. The court outcomes are nested in the county, and the counties are nested in the state; 3) The county-level measures of inequality are based on the year 2000; 4) In Kohler-Hausmann (2001), only the trial outcome constituted case-level data, whereas jury composition was represented by county-level aggregates of income inequality

Kohler-Hausmann (2011) Median Damage Award Data Set

The county-level aggregates do not deliver evidence of a link between trial outcome and income inequality

Most Populous Counties	Coefficient	*t* - Value	Significance
Poverty Rate	0.050	1.625	-
Intercept	2.352	4.030	0.001
Analysis of Variance	*F*(22,23)	3.572	0.01

Most Populous Counties	Coefficient	*t* - Value	Significance
Ratio of 90th Percentile to Median	-0.017	-0.069	-
Intercept	2.969	4.135	0.001
Analysis of Variance	*F*(22,23)	3.097	0.01

Most Populous Counties	Coefficient	*t* - Value	Significance
Ratio of Median to 10th Percentile	0.239	1.510	-
Intercept	2.097	2.901	0.01
Analysis of Variance	*F*(22,23)	3.507	0.01

The dependent variable (damage awards) is used in logarithmic form. The effect of a change in the poverty rate by 1 unit (that is, 1 percentage point) equals exp(0.050)-1 or about 5.2 percent (based on unrounded regression coefficient). State fixed effects are included (also in the analysis of variance). Diagnostic charts where residuals are plotted against the dependent variable and, alternatively, the applicable measure of income inequality, do not indicate misspecification following the inclusion of state fixed effects

Kohler-Hausmann (2011) Median Damage Award Data Set

Interpretation of findings

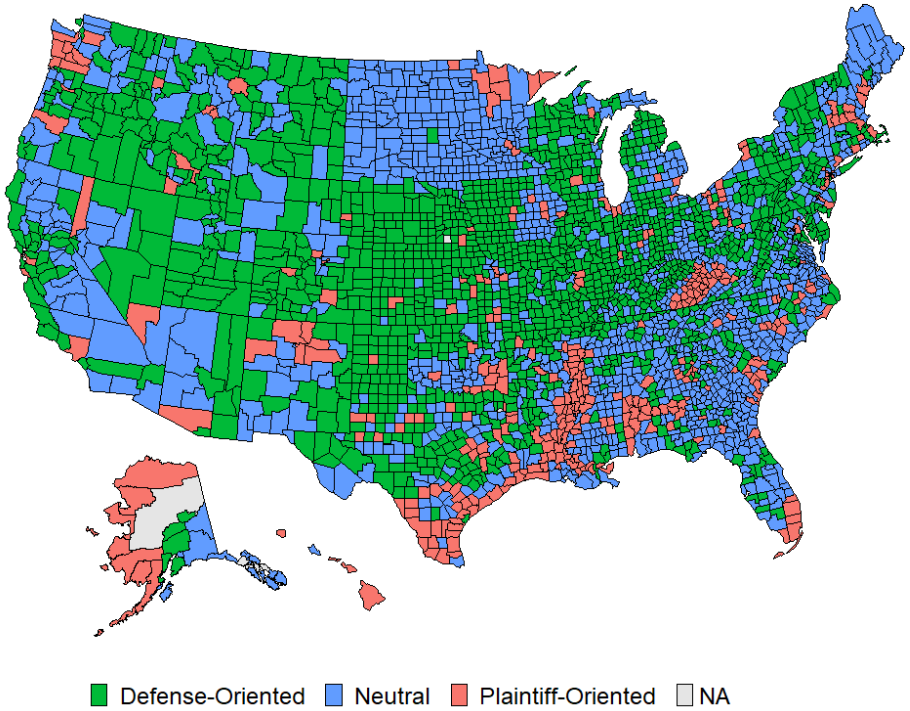
- In contrast to the statistical significance reported in Kohler-Hausmann (2011) for the granular model (4,899 observations), the aggregate model (46 observations) does not reject the null hypothesis of no relation between damage award and inequality
  - Clearly, the granular model in Kohler-Hausmann (2011) has considerably greater statistical power, that is, greater ability to reject the null hypothesis[1]
- The regression coefficient of the poverty rate (0.050)[2] is similar to the coefficient estimated above for the 2005 CJSSC (0.058), albeit smaller and associated with a higher standard error (0.031, as compared to 0.025 for the 2005 CJSSC)
  - This finding is indicative of the relation between jury trial outcome and income inequality having strengthened as income inequality has increased
  - From 2001 to 2005, the mean (median) of the poverty rates across the 46 counties rose to 13.14 (12.45) percent from 10.56 (10.15) percent
  - For the general evolution of U.S. income inequality over the past couple of decades, see the Appendix

1) Further, the absence of evidence is not evidence of absence; 2) The effect of a change in the poverty rate by 1 unit (that is, 1 percentage point) equals exp(0.050)-1 or about 5.2 percent (based on unrounded regression coefficient). This compares to an estimate of about 6 percent for the 2005 CJSSC

Perception of Judicial Process and Inequality

The Venue Maps of The Harmonie Group classify counties as plaintiff-oriented, neutral, or defense-oriented

- There are 379 (12%) plaintiff-oriented counties, 1,483 (48%) defense-oriented counties, and 1,254 (40%) neutral counties
- Counties not classified are coded NA



The Harmonie Group Venue Maps data set was accessed on April 22, 2020 (https://www.harmonie.org/venue-maps). There are 3,116 county-level observations, comprising the 50 states and the District of Columbia

Perception of Judicial Process and Inequality

There is evidence that the perceived U.S. county court orientation is associated with the poverty rate

- The Venue Maps classification of counties as plaintiff-oriented, neutral, or defense-oriented is analyzed in an ordered response model
- Evidence of a link between perceived court orientation and county inequality is provided for the poverty rate, and the poverty rate weighted by median income[1]

Variable	Coefficient	*t* - Value	Significance
Poverty Rate	0.077	10.22	0.001
Intercept (Defense|Neutral)	-0.022	-0.079	-
Intercept (Neutral|Plaintiff)	2.533	8.940	0.001
Likelihood Ratio Test	*Chi-squared* (50)	708.9	0.001
Akaike Information Criterion	5260		

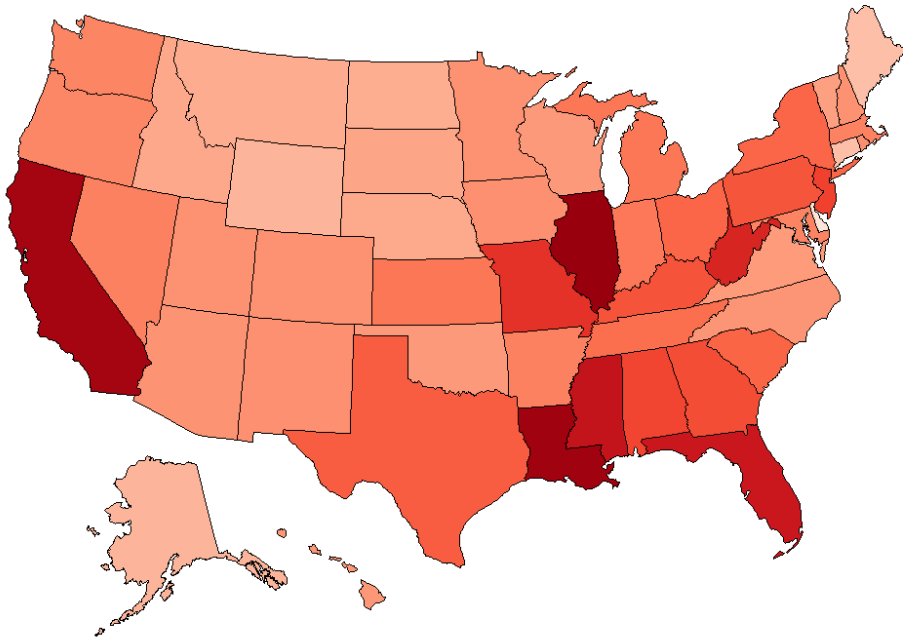
Variable	Coefficient	*t* - Value	Significance
Poverty Rate Weighted	0.356	12.08	0.001
Intercept (Defense|Neutral)	1.356	4.041	0.001
Intercept (Neutral|Plaintiff)	3.932	11.43	0.001
Likelihood Ratio Test	*Chi-squared* (50)	756.4	0.001
Akaike Information Criterion	5212		

1) The weighting of the poverty rate by the median household income is for the purpose of countering the influence of the negative bivariate relation between median household income and poverty rate (see Appendix). The Harmonie Group Venue Maps data set was accessed on April 22, 2020 (https://www.harmonie.org/venue-maps). There are 3,116 county-level observations, comprising the 50 states and the District of Columbia. State fixed effects are included (also in the Likelihood Ratio test). Poverty rate and median household income data are from calendar year 2018 (U.S. Census Bureau, www.census.gov)

Perception of Judicial Process and Inequality

Survey score of state liability system based on the 2019 Chamber of Commerce Harris Poll

- The Chamber of Commerce Lawsuit Climate Survey (Harris Poll) scores U.S. states on how fair and reasonable the liability system is perceived by corporate attorneys
- The chart displays a heat map of the 2019 Harris Poll score, where darker red coloring indicates that the judicial process is perceived as less fair and reasonable
- There have been 12 Harris Polls since 2002



There are 50 U.S. state observations. The Chamber of Commerce Lawsuit Climate Survey is available from the U.S. Chamber Institute for Legal Reform (https://www.instituteforlegalreform.com/research/2019-lawsuit-climate-survey-ranking-the-states)

Perception of Judicial Process and Inequality

There is evidence that the perceived court outcome is associated with inequality at the state level

- States are ranked based on the 2019 Chamber of Commerce Harris Poll and related to three alternative measures of income inequality of calendar year 2018 (one-year and five-year Gini indexes, and poverty rate) in an ordered response model
- There is evidence of a link between the perceived court outcome and inequality

Variable	Coefficient	*t* - Value	Significance
Gini Index One-Year	76.72	4.263	0.001
Likelihood Ratio Test	*Chi-squared* (1)	22.94	0.001
Akaike Information Criterion	468.26		

Variable	Coefficient	*t* - Value	Significance
Gini Index Five-Year	70.38	4.208	0.001
Likelihood Ratio Test	*Chi-squared* (1)	21.05	0.001
Akaike Information Criterion	470.15		

Variable	Coefficient	*t* - Value	Significance
Poverty Rate	0.3155	3.486	0.001
Likelihood Ratio Test	*Chi-squared* (1)	12.80	0.001
Akaike Information Criterion	478.40		

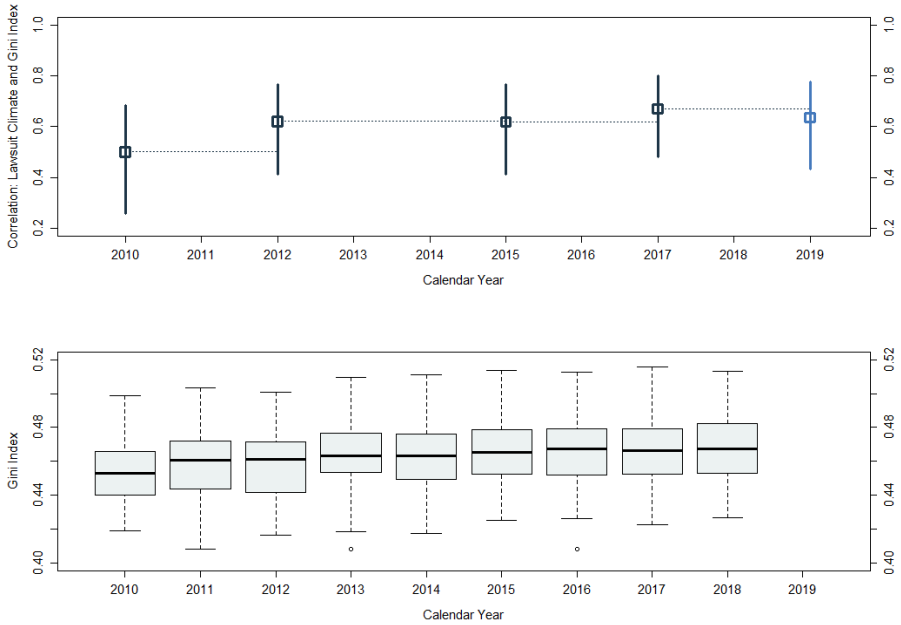
There are 50 U.S. state observations. A higher state rank (i.e., lower state value) indicates that the state scores higher on the judicial process being fair and reasonable. The Chamber of Commerce Lawsuit Climate Survey is available from the U.S. Chamber Institute for Legal Reform (https://www.instituteforlegalreform.com/research/2019-lawsuit-climate-survey-ranking-the-states). Gini index and poverty rate data are from calendar year 2018 (U.S. Census Bureau, www.census.gov)

Time Variation in Perceived Trial Outcome and Inequality

There is indication that the relation between perceived trial outcome and income inequality has grown stronger

Top panel: Rank correlation coefficients (surrounded by 95 percent confidence intervals) between state survey score in Harris Poll and one-year Gini index. For 2019, the 2018 Gini index values substitute for the as yet unavailable 2019 readings

Bottom panel: Box plots of the state Gini indexes employed in estimating the correlations above. The thick horizontal bar signifies the median of state Gini index values



The top panel displays for each Chamber of Commerce Lawsuit Climate Survey published since 2010 the Spearman rank correlation between the state rank in the Survey and the one-year Gini index of income inequality. A higher state rank (i.e., lower state value) indicates that the state scores higher on the judicial process being fair and reasonable. For the 2019 Survey, the 2018 Gini index substitutes for the yet unpublished 2019 values. The bottom panel depicts box plots for the 50 state values of the one-year Gini index. The horizontal bar of the boxplot signifies the median value, the box comprises the center 50 percent of the data, and (here) the whiskers extend to the range of observed values. The Chamber of Commerce Lawsuit Climate Survey is available from the U.S. Chamber Institute for Legal Reform (https://www.instituteforlegalreform.com/research/2019-lawsuit-climate-survey-ranking-the-states). Gini index data is available from the U.S. Census Bureau (www.census.gov)

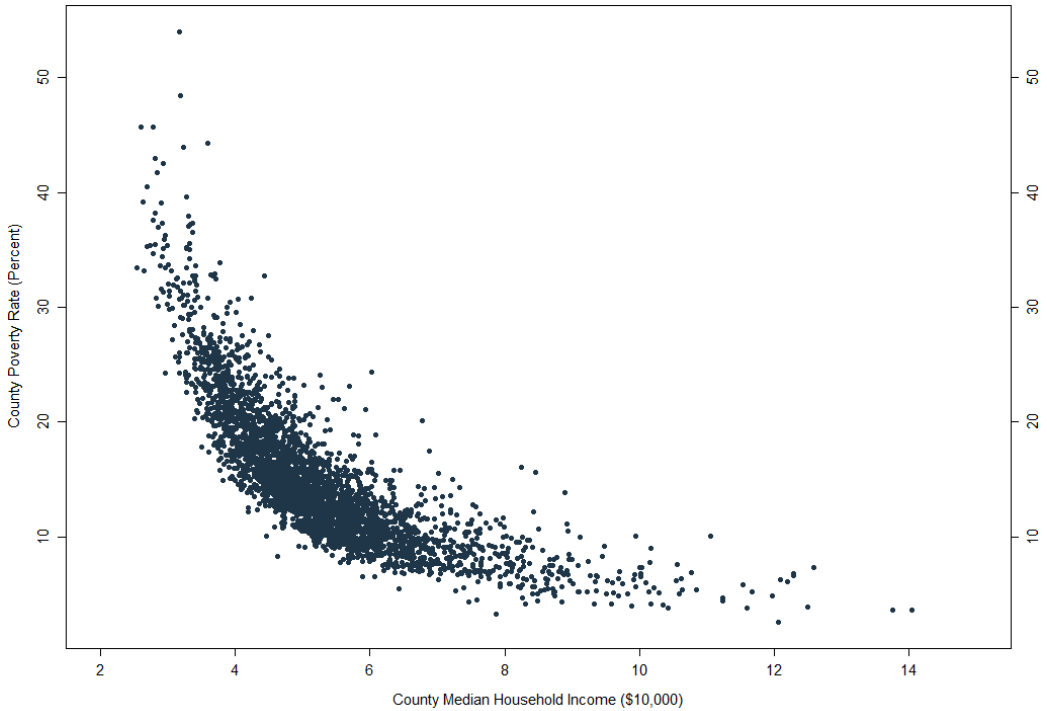
Conclusion

The empirical evidence for actual and perceived court outcomes rests on cross-sectional variation

Data Set	Narrative	Nature of Evidence
Nuclear Verdicts. Nuclear verdicts in trucking, state level, 2011-2016 (Carr Allison)	There is evidence that income inequality (as measured by the one-year and five-year Gini indexes) and the poverty rate contribute to the propensity of observing one or more nuclear verdicts in a given state and year. Based on the Gini indexes, which offer the highest explanatory power and greatest predictive accuracy, cross-sectional variation in income inequality around the baseline is able to explain 40 percent of the observed nuclear verdicts	Hurdle Negative Binomial model, using one-year and five-year state Gini indexes and the state poverty rate
Jury Awards. Median final damage awards for plaintiff winners in jury trials, county level, 2005 (Bureau of Justice Statistics)	For the most populous counties, there is evidence that (at the margin) one percentage point (one standard deviation) of poverty rate translates into a six percent (45 percent) contribution to the median damage award. There is indication that the strength of the relation between median damage award and the poverty rate increased from the prior, 2001 Bureau of Justice Statistics survey to the latest available, 2005 survey	Log-linear model using the county poverty rate. State fixed effects are included
Venue Orientation. Court orientation (liberal, conservative, or neutral), county level, 2020 (The Harmonie Group)	There is evidence that the poverty rate increases the propensity that a court is perceived by the defense bar as plaintiff-oriented (rather than neutral). Further, there is evidence that the poverty rate, when weighted by the median household income, increases the propensity that a court is perceived by the defense bar as neutral (rather than defense-oriented) and as plaintiff-oriented (rather than neutral)	Ordered logistic model, using the county poverty rate and, alternatively, the county poverty rate weighted by the county median household income. State fixed effects are included
Lawsuit Climate. Lawsuit Climate Survey, state level, 2019 (Chamber of Commerce)	There is evidence that income inequality (as measured by the one-year and five-year Gini indexes) and the poverty rate contribute to a state being ranked low by corporate attorneys on having a fair and reasonable liability system. Among the three employed measures of income inequality, the one-year Gini index offers the highest explanatory power. There is indication that the strength of the relation between state ranking and the (one-year) Gini index increased from since 2010	Ordered logistic model, alternatively using the one-year and five-year state Gini indexes and the state poverty rate

Poverty Rate and Median Household Income (Counties)

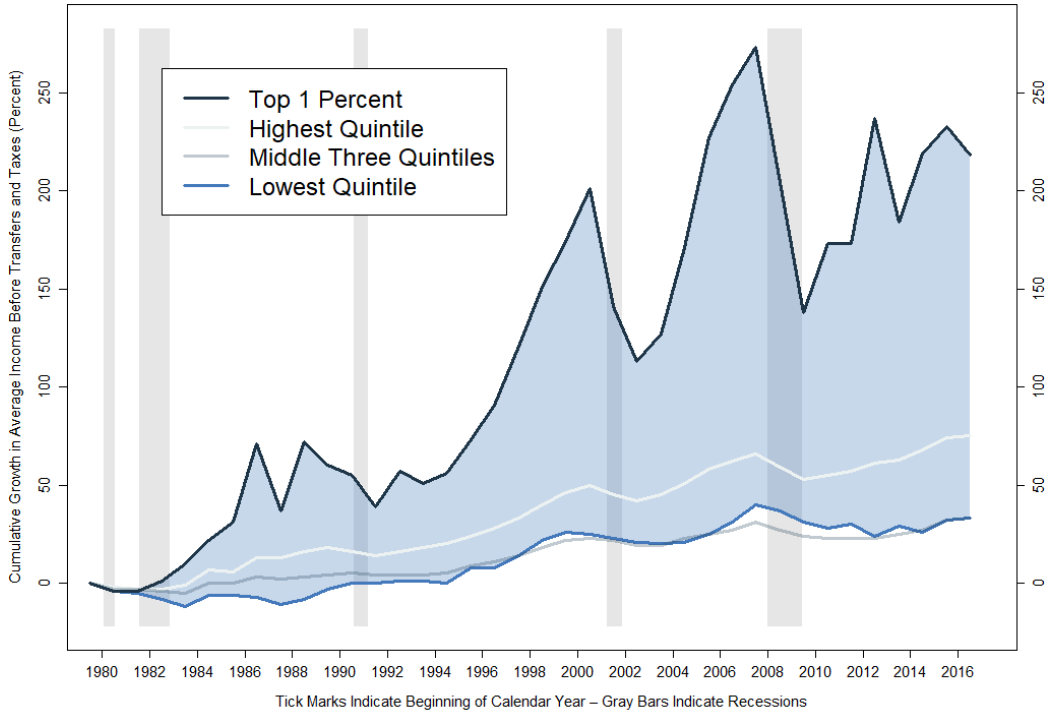
The lack of geographic variation in the poverty threshold contributes to a negative bivariate relation



County level data for 2018. 3,193 observations. Poverty rate and median household income data are the U.S. Census Bureau (www.census.gov)

Appendix
Cumulative Income Growth by Income Group

There has been a marked increase in inequality over the past decades, intermittently dampened by recessions



1977-2016. Data is inflation-adjusted using the PCE Deflator
Source: Congressional Budget Office, The Distribution of Household Income, 2016, July 2019, https://www.cbo.gov/publication/55413

Thank you

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CONNING®

Social Inflation

Casualty Loss Reserve Seminar

Hartford CT, September 8, 2020

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CASUALTY VERDICT TRENDS

How Bad Have Things Gotten Over the Past Two Decades?

Largest Verdicts of 2000

$ in millions

Rank	Amount	Type
1	**$351.1**	Breach of Contract
2	222.8	Securities Fraud
3	127.5	Housing discrimination
4	122.6	Negligence
5	117.8	Wrongful death
6	105.0	Products liability (Bridgestone/Firestone)
7	105.0	Sexual abuse (school)
8	105.0	Products liability (Bridgestone/Firestone)
Average	$157.1	
Median	$120.2	

Prepared by Conning, Inc. Source: VerdictSearch

How Bad Have Things Gotten Over the Past Two Decades?

Largest Verdicts of 2010

$ in millions

Rank	Amount	Type
1	**$1,300.0**	Intellectual property (infringement)
2	676.8	False advertising (nursing home)
3	636.2	Breach of contract
4	625.5	Intellectual property
5	505.1	Products liability (pharma)
6	269.4	Breach of contract
7	257.7	Products liability (pharma)
8	253.4	Gender discrimination
Average	$565.5	
Median	$565.3	

Prepared by Conning, Inc. Source: VerdictSearch

How Bad Have Things Gotten Over the Past Two Decades?

Largest Verdicts of 2019

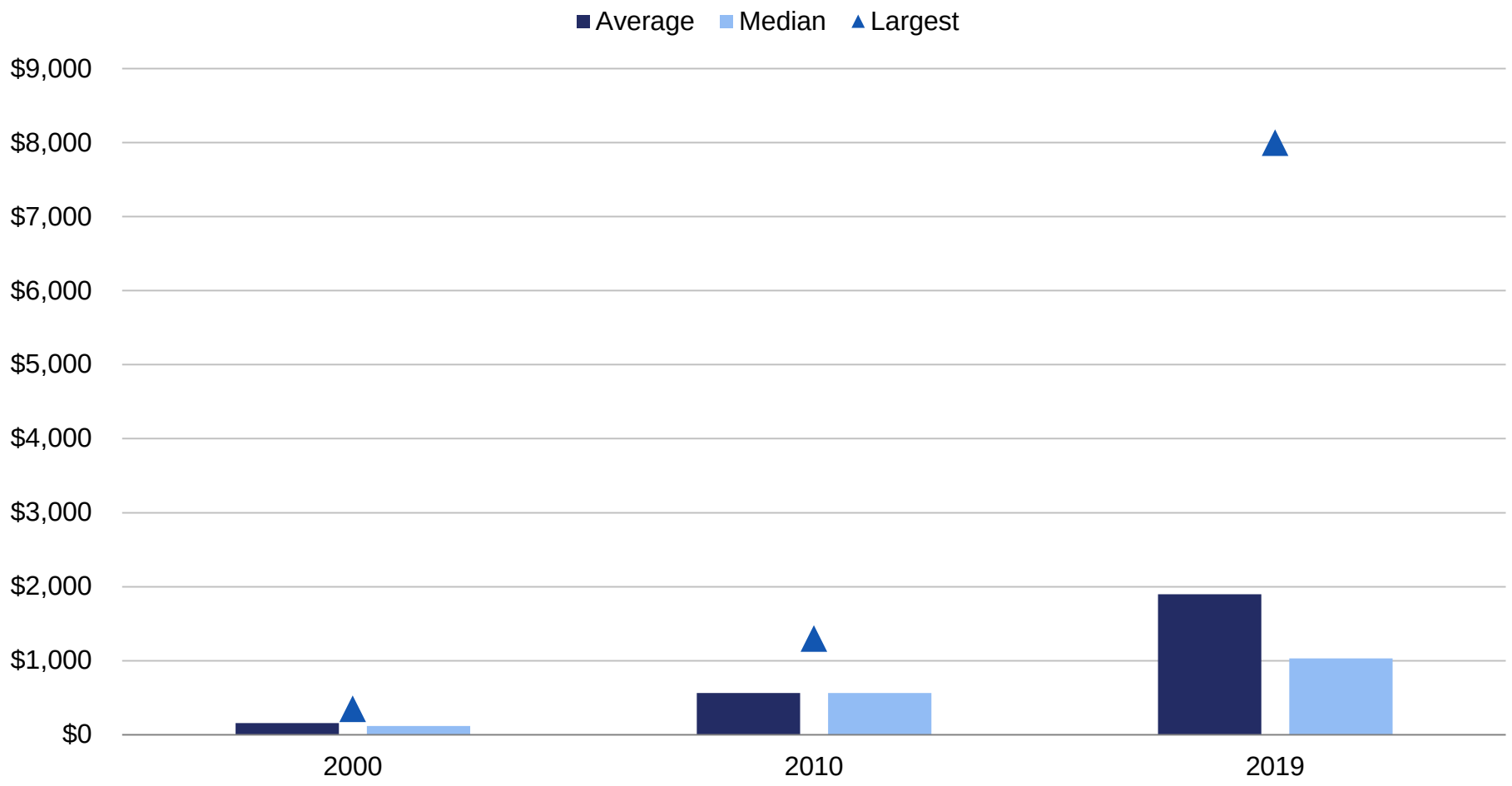
$ in millions

Rank	Amount	Type
1	**$8,001.8**	Products Liability (Risperdal)
2	2,055.2	Products Liability (Roundup)
3	1,127.0	Motor Vehicle
4	1,065.9	Breach of Contract
5	1,000.0	Intellectual Property
6	752.0	Intellectual Property
7	700.0	Wrongful Death
8	495.1	Wrongful Death
Average	$1,899.6	
Median	$1,033.0	

Prepared by Conning, Inc. Source: VerdictSearch

Big Changes in Casualty Verdicts Over the Past Two Decades

$ in millions



Prepared by Conning, Inc. Source: VerdictSearch

What Goes into a Liability Loss/Claim/Verdict?

Simple Equation

Economic Damages

- Lost income
- Medical costs
- Other financial losses

Noneconomic Damages

- Physical and mental pain & suffering
- Loss of consortium
- Loss of enjoyment of life

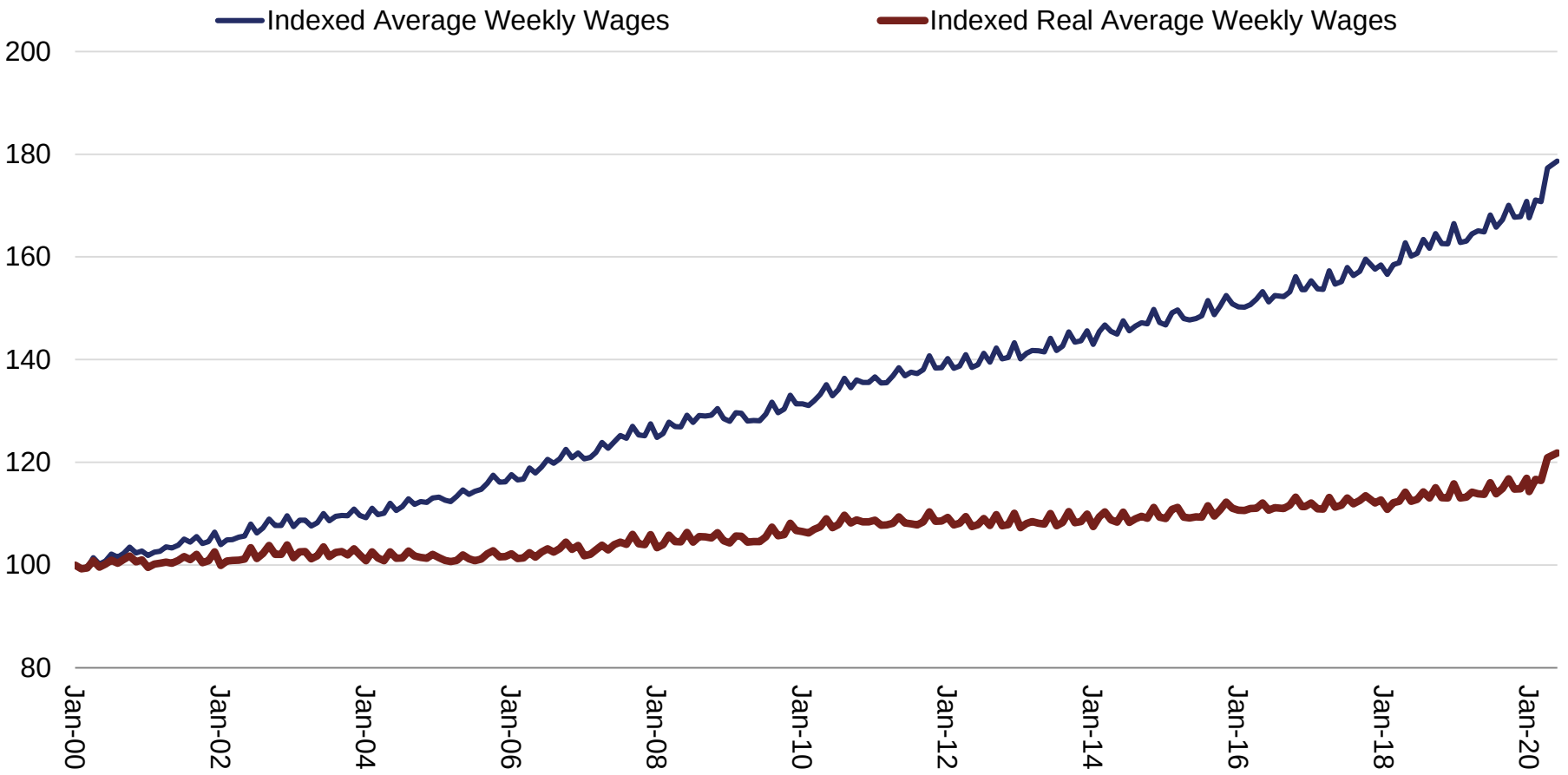
Punitive Damages

- Intended to deter and/or punish
- May be appropriate if compensatory damages are inadequate to the situation because the defendant acted in an egregious fashion

Trend in U.S. Wages

Average Wages

Indexed to 2000

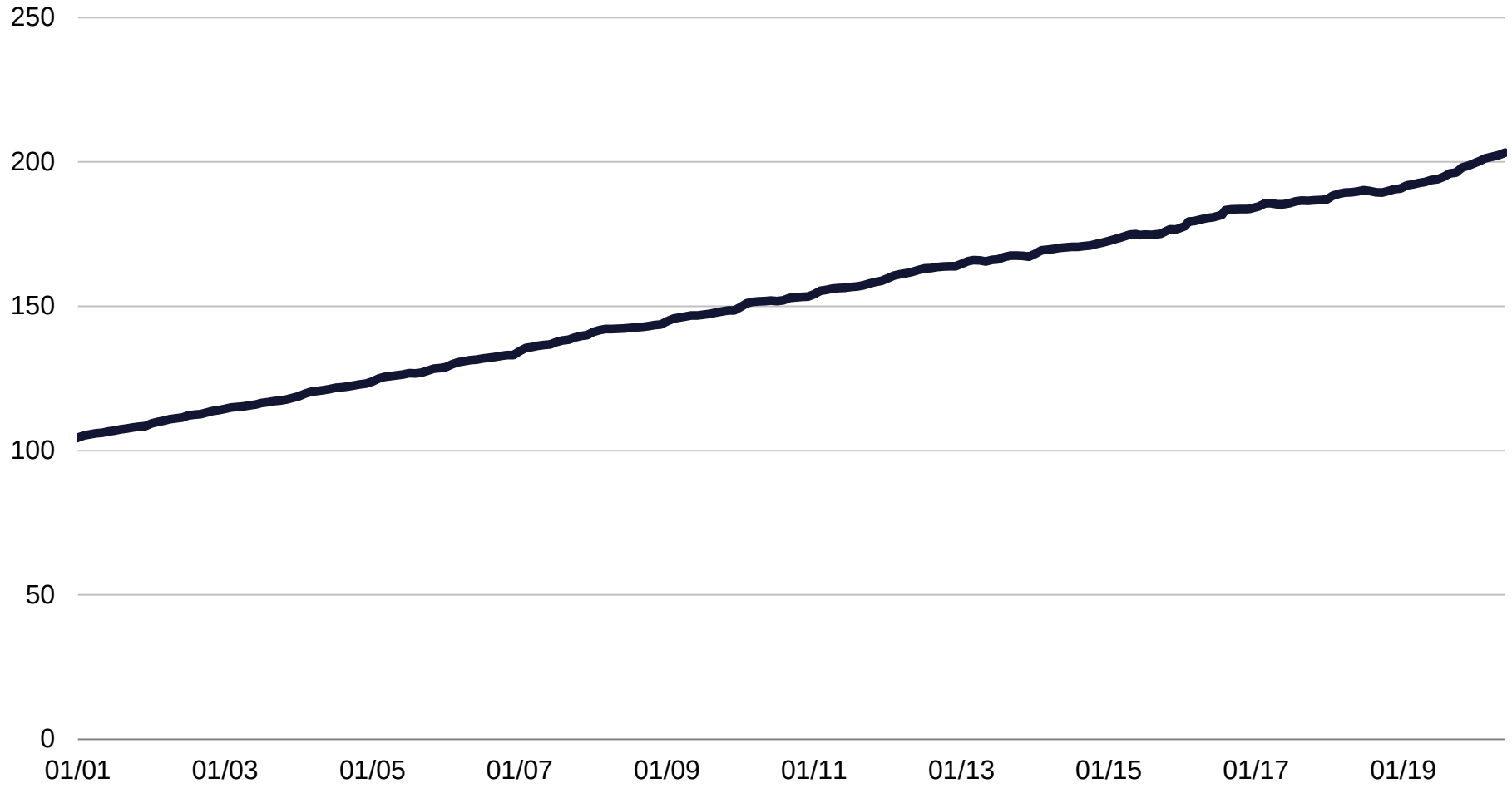


Prepared by Conning, Inc. Source: Bureau of Labor Statistics, Department of Labor

Trend in U.S. Medical Care Costs

CPI Medical Care

Indexed to 2000



Prepared by Conning, Inc. Source: Bureau of Labor Statistics, Department of Labor

Anything else?

It’s in the headlines

SOCIAL INFLATION

Social Inflation

What is social inflation?

No single definition

- For our purposes: “Social inflation is an increase in insurance losses caused by factors such as higher jury awards, more liberal treatment of work comp claims by work comp boards, and new concepts of tort and negligence.”
- Is it new?
- What are some of the drivers of social inflation?

Social Inflation Is Not a New Phenomenon

"The latest new kind of inflation is alleged to be "social inflation"—due to the extra expense of cleaning up air and water, fostering "consumerism," meeting other social goals. And when the doctors of the sick body politic get around to it, they might possibly come to believe that the cure for social inflation is to clamp a lid on Federal spending."

—Paul Poirot, Foundation for Economic Education, 1972

What Factors Underlie Social Inflation?

Survey Says:

“Not My Fault”

True or not…

- People generally look for causes when (bad) things happen; even children ask “Why?”
- People want to believe they are in control of their lives and not at the mercy of the world
- “Compensation culture”—used to (pejoratively) describe a “Where there’s blame, there’s a claim” culture of litigiousness in which compensation is routinely and improperly sought
- “It’s time for us to say, “Enough is enough.” Make a commitment to yourself, your career and your future to always accept responsibility for your actions. Wipe the words “not me” out of your vocabulary”…**CEO of a health insurer in a college commencement speech, 2004**
- “Company fined a record $3.6 million for chronic malfunctions that have led to billing and enrollment errors for customers. Company agreed to the fine amount but denied it violated any state laws or regulations and settled the investigation only “to avoid the uncertainty, distractions, and expense of litigation,” according to the settlement agreement”…**Same company in 2016, but under a different CEO who spoke to the same college in 2013…**

Corporate Malfeasance

Just to name a few…

Plaintiff Attorneys

Other side of the legal coin

American courts operate according to the adversary system of justice, so we need plaintiff attorneys

Paradox of our legal system

- Defendants with good liability insurance have the power
- Plaintiffs, i.e., the injured party, have to wait

Have you heard of:

- Rob Bilott
- Level Insurance

(Social) Media Influence

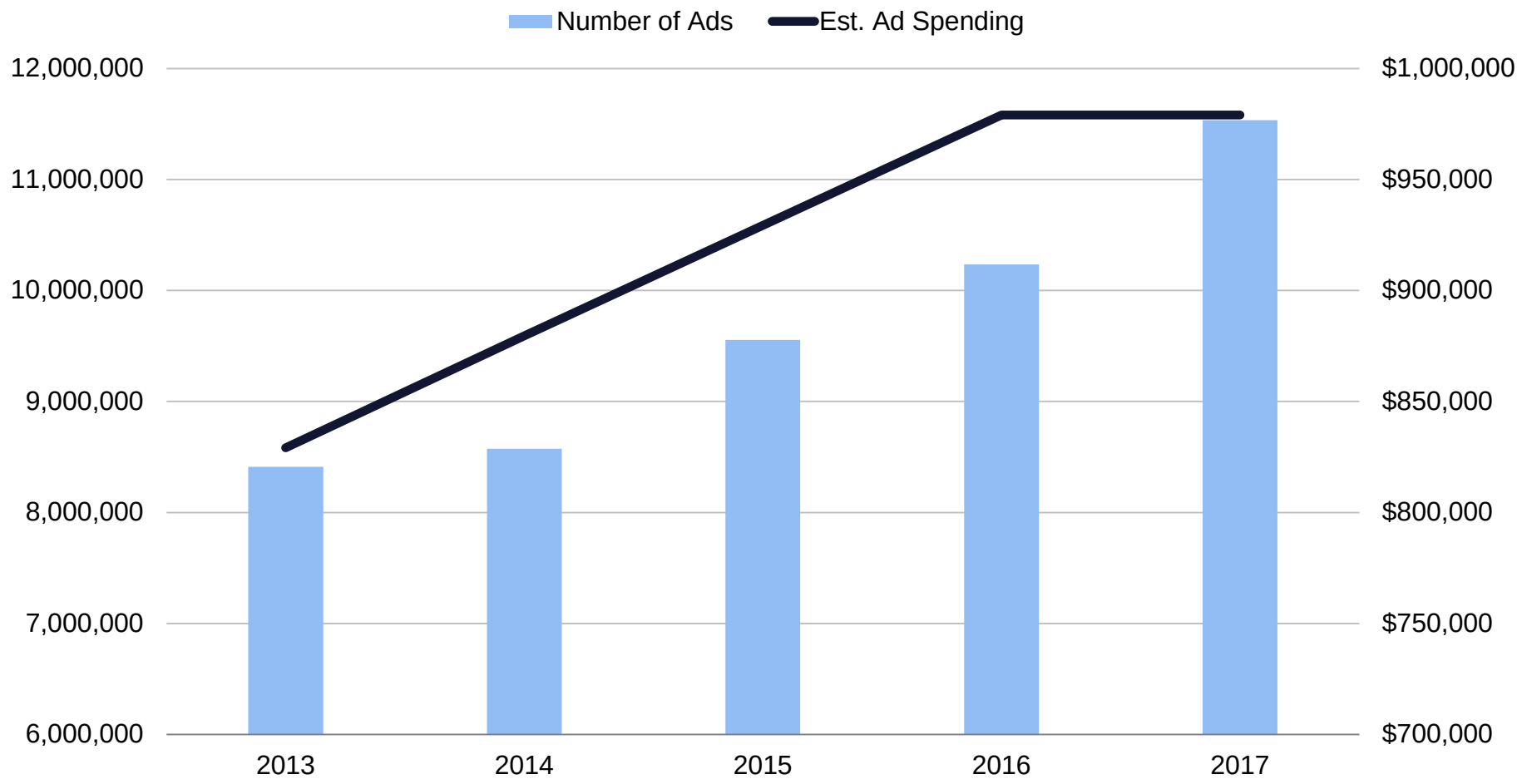
24/7/365 …

- Media fuels concerns about new exposures.
- Barrages the public with reports of huge sums changing hands (government enforcement actions, blockbuster class-action lawsuits).
- Jurors may be tempted to use social media or the Internet to find out further information about the trial other than the evidence presented. This can lead them to forming an opinion about the facts that is not based on the evidence presented in court.
- Attorneys are advised to identify the social media accounts of jurors and study their public posts; build it into the voir dire process.

Legal Advertising

Legal Services TV Advertising, U.S.

$ in thousands



2017 data are annualized from 2017Q1 without seasonal adjustment

Prepared by Conning, Inc. Source: X Ante analysis using Kantar Media CMAG data.

Third-Party Litigation Funding

Firm	Where Do They Fund	Capital Invested/Committed	Year Founded
Bentham IMF	U.S., Canada, Australia, Hong Kong, Singapore, and New Zealand	AUD 558 million investment concluded and ongoing. U.S. investments constitute over AUD 163 million in capital commitments.	2001 US Market 2011
Brickell Key Asset Management	U.S.	$400 million private mandate to invest in U.S. and international litigation claims	2012
Burford Capital	U.S., UK, Australia, Canada, Singapore, the Cayman Islands, the British Virgin Islands and others	Current investment portfolio of $1.5 billion, comprised of $982 million in balance sheet assets plus a further $564 million in undrawn commitments	2009
Harbour Litigation Funding Ltd	Australia, BVI, Bermuda, Canada, Germany, Hong Kong, Isle of Man, Jersey, New Zealand, St Kitts & Nevis, Netherlands, UK, and U.S.	Funds total £760 million	2007
Lake Whillans	U.S.	n/a	2013
LexStone Capital	U.S.	n/a	2009
Longford Capital	U.S.	$556.5 million	2011
Parabellum Capital	U.S.	$125 million under management (as of 3/2017)	2012
Privati Capital	U.S.	n/a	2001
Redress Solutions PLC	U.K. and U.S.	n/a	2007
Rembrandt Funding	U.S.	n/a	2004
Therium Capital Management Ltd	U.K., U.S., Spain, Norway, and Germany	$11 billion of claims funded	2009

Prepared by Conning, Inc. Source: company websites

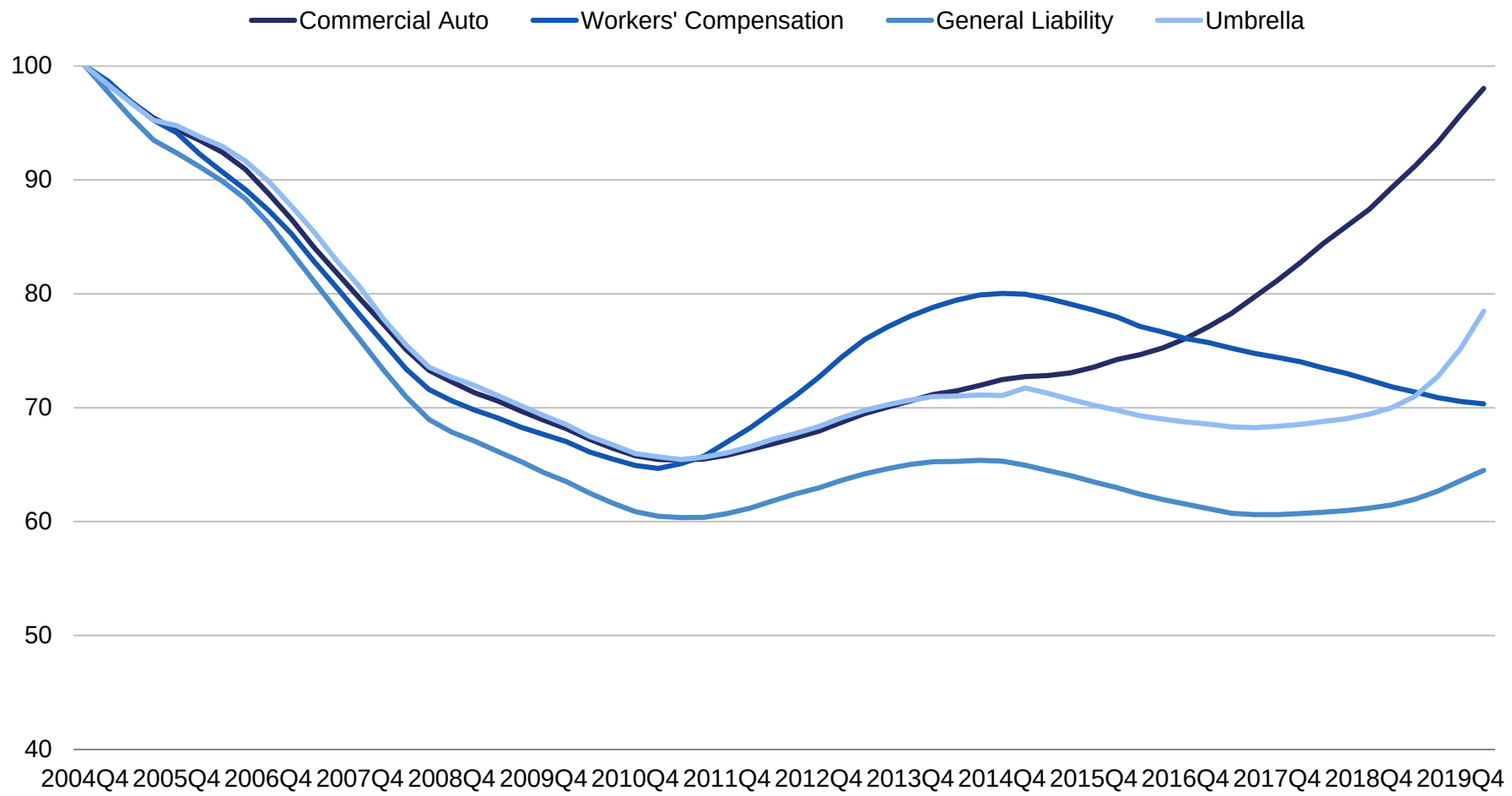
Millennials

72 Million Strong

- Overtook Boomers in population in 2019
- Have found their way onto juries
- Passionate about issues, not institutions
- Per YPulse, among the biggest problems Millennials face:
  - Climate/environment
  - Debt
  - Social media
  - Economy
  - Racism/discrimination
  - Cost of living
- Ignore them at your own peril

How Has the P/C Industry Responded to Social Inflation?

Not too worriedly…



Indexed to 2004 Q4

Prepared by Conning, Inc. Source: Council of Insurance Agents & Brokers

MPL VERDICT TRENDS

How Bad Have Things Gotten for MPL Over the Past Two Decades?

Largest Verdicts of 2000

$ in millions

Rank	Amount	Insured/State
13	**$80.1**	Hospital/Doctor – TX
19	55.8	Doctor – NY
27	46.0	Hospital/Doctor – NY
30	44.7	Military hospital – TX
32	41.4	Hospital/Doctor – NY
34	40.6	Hospital/Doctor – TX
38	34.5	Hospital/Doctor – NY
41	32.3	Hospital – NY
50	25.6	Hospital/Doctor – CA
72	17.2	Hospital/Doctor - NY
Average	$41.8	
Median	$41.0	

Prepared by Conning, Inc. Source: VerdictSearch

How Bad Have Things Gotten for MPL Over the Past Two Decades?

Largest Verdicts of 2010

$ in millions

Rank	Amount	Insured
24	**$95.0**	Nurse – PA
63	36.8	Doctor – FL
83	29.2	Doctor – FL
100	23.4	Doctor - FL
Average	$46.1	
Median	$33.0	

Prepared by Conning, Inc. Source: VerdictSearch

How Bad Have Things Gotten for MPL Over the Past Two Decades?

Largest Verdicts of 2019

$ in millions

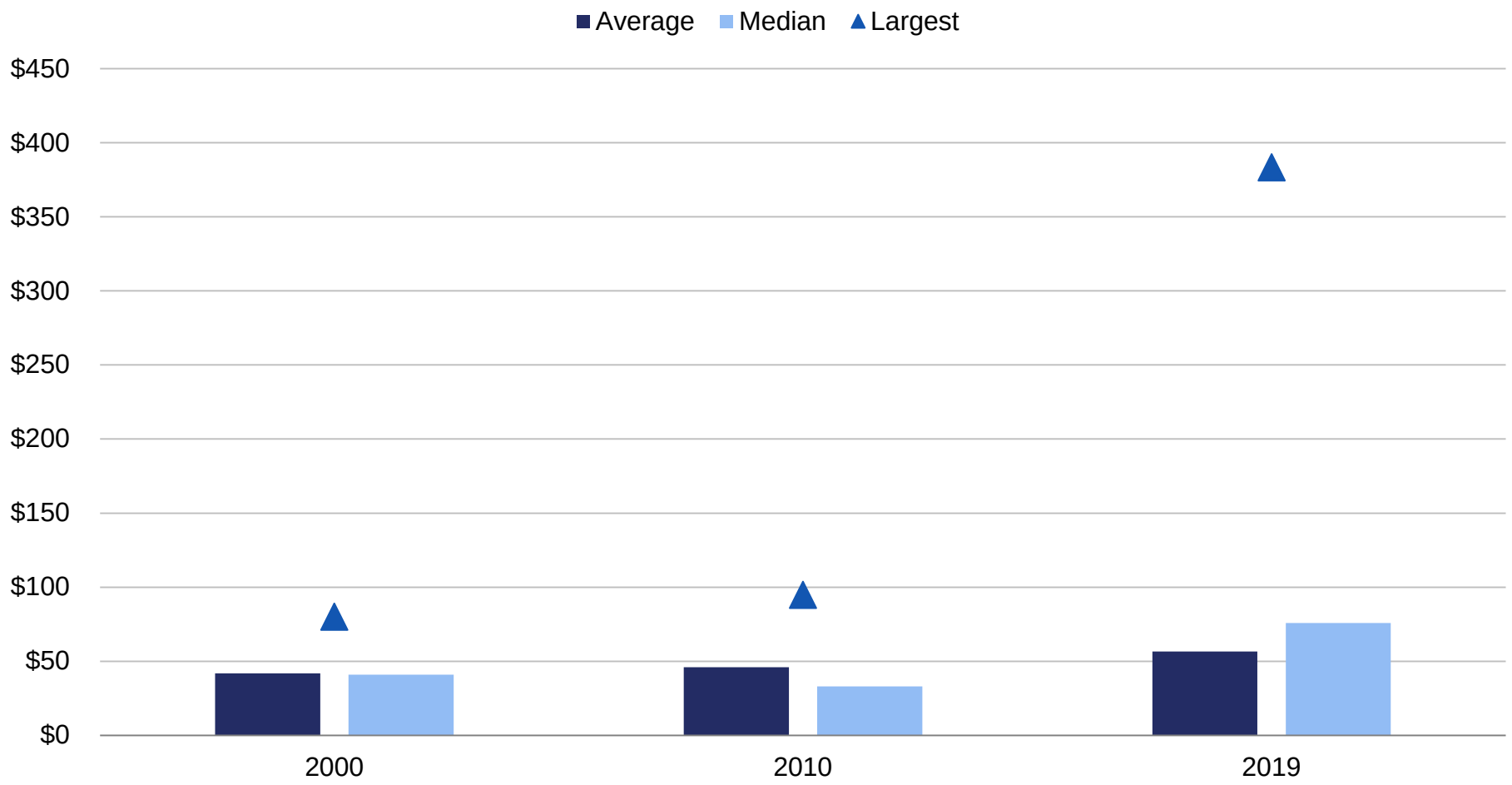
Rank	Amount	Insured
10	**$229.6**	Hospital - MD
25	100.7	Doctor/Hospital – IL
44	48.6	Hospital – NV
45	46.8	Doctor – NY
71	32.5	Doctor/Hospital – NY
77	30.6	Doctor/Hospital – MA
79	30.0	Hospital – AL
82	28.5	Doctors – NY
83	28.1	Hospital – NY
93	24.5	Doctor – FL
95	23.6	Hospital - IL
Average	$56.7	
Median	$30.6	

Prepared by Conning, Inc. Source: VerdictSearch

Big Changes in MPL Over the Past Two Decades

Medical Malpractice Verdicts

$ in millions



Prepared by Conning, Inc. Source: VerdictSearch

What Is Happening in MPL?

Most, if not all the, same reasons as other casualty lines…

- …AND several factors (somewhat) unique to health care including:
  - Consumer experience
  - Lack of transparency
  - Relentless rising costs
  - Size and power of the legacy stakeholders

Health Care Consumer Experience

Does any of this sound familiar?

- “Didn’t I fill out this form the last time I was here?”
- “I’ve been waiting 45 minutes. When will I see the doctor?”
- “Our next available opening is in three weeks.”
- “Can you explain this charge to me?”

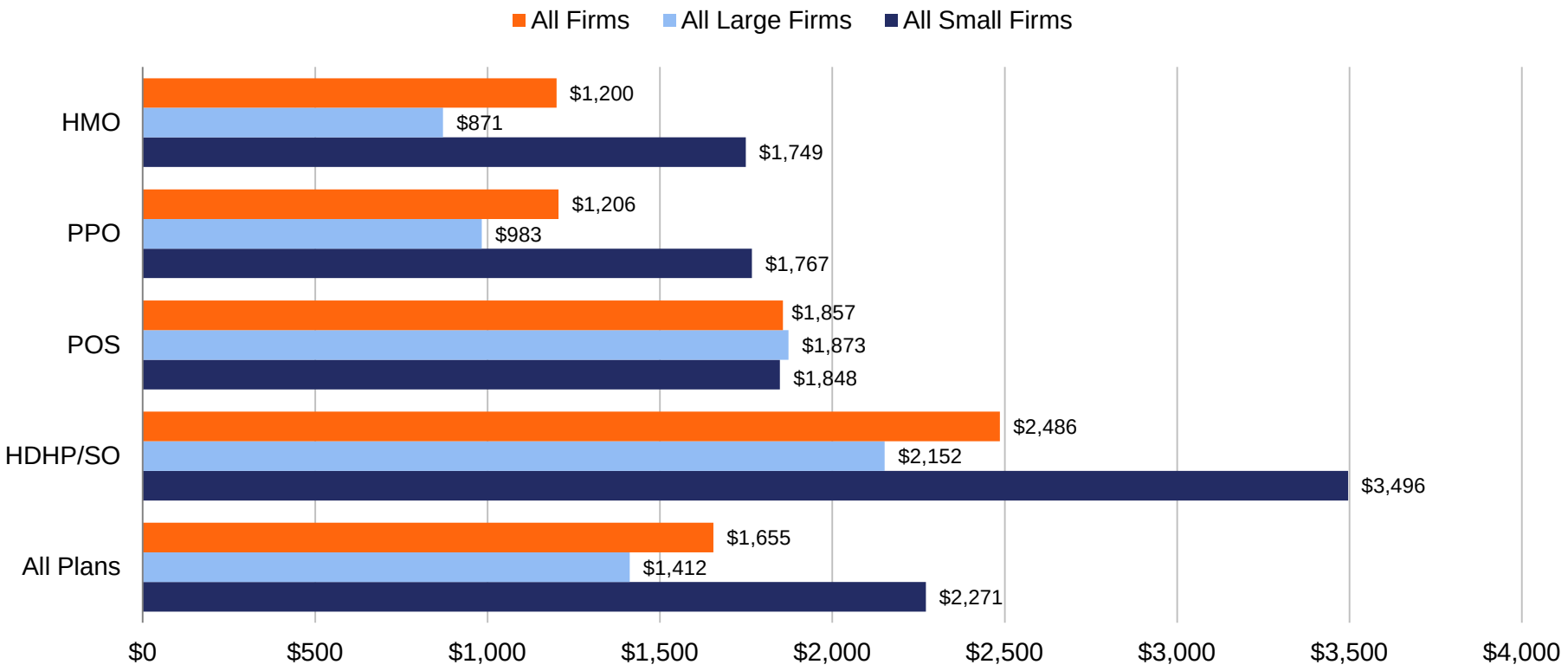
Lack of Transparency

And can people really be smart shoppers?

- “For the most part, consumers remain in the dark about what they will be asked to pay after visiting a primary-care doctor or undergoing an inpatient procedure.” (Modern Healthcare)
- Think about the experience when you buy
  - Groceries
  - A car
  - Health care
- Even if you can find list-price data (“chargemaster”), it is usually not relevant to patients
- “Excuse me doc, are you in my network?”
- And then there is always surprise billing
- Is Trump’s Executive Order a step in the right direction?

Rising Deductibles

Among Covered Workers with a General Annual Deductible for Single Coverage, Average Deductible, by Plan Type and Firm Size, 2019



- As recently as 2009, the average single deductible $826. In 2019 it was $1,655.
- One in eight workers have a deductible of at least $3,000.
- As deductibles have surged, a growing number of low-income workers are enrolling their children in Medicaid and CHIP.
- The financial strain is pushing millions of seriously ill Americans to ration their health care

Note: Estimate is statistically different between All Small Firms and All Large Firms estimate within plan type [p <.05]. Small firms have 3-199 workers and Large firms have 200 or more workers. Average general deductibles are for in-network providers

Prepared by Conning, Inc. Source: Kaiser Family Foundation

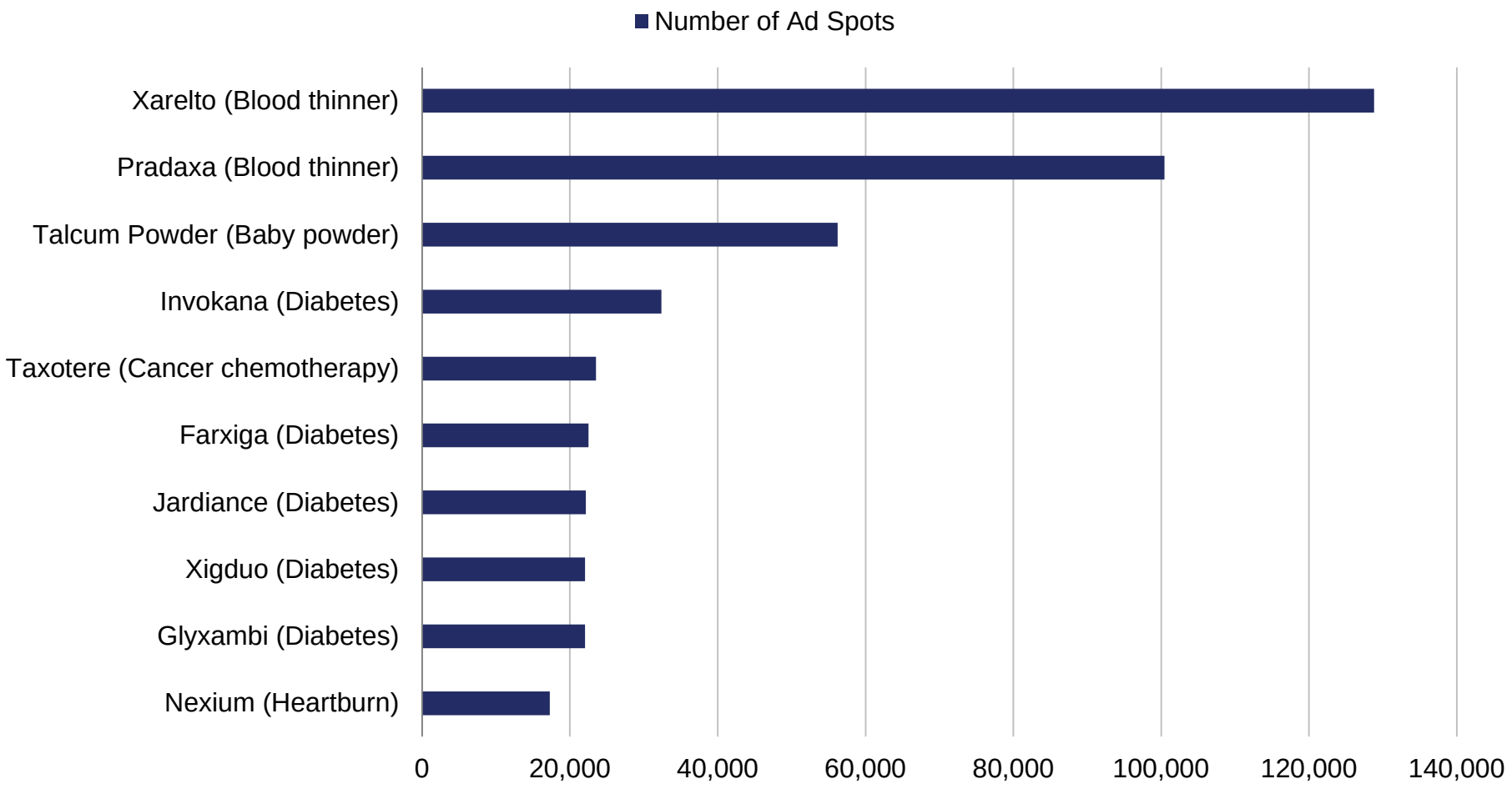
Increasing Costs of Drugs

Relentlessly increasing…

- According to the BLS, the cost of prescription drugs increased 92% from 2000 to 2019
- In the first six months of 2020, prices increased for more than 857 brand and generic drugs
  - Average hike – 6.8% (3.5x the rate of inflation)
- Largest price changes 2014-2019
  - Anaphylaxis +96%
  - Rheumatoid arthritis +92%
  - Diabetes +58%
  - HIV +42%
  - Asthma +35%
- Generics can actually drive price increases
  - Nitrostat—went from 80 cents to $1.25 per tablet
  - One year later, generic nitroglycerin priced at $1.00 per tablet

And Reasons to Be Scared of Drugs…

Think about advertisements from plaintiff attorneys



Prepared by Conning, Inc. Source: Kantar CMAG data via X Ante

How Big (and Profitable) Are BIG Health Insurers?

Largest Health Insurers of 2019

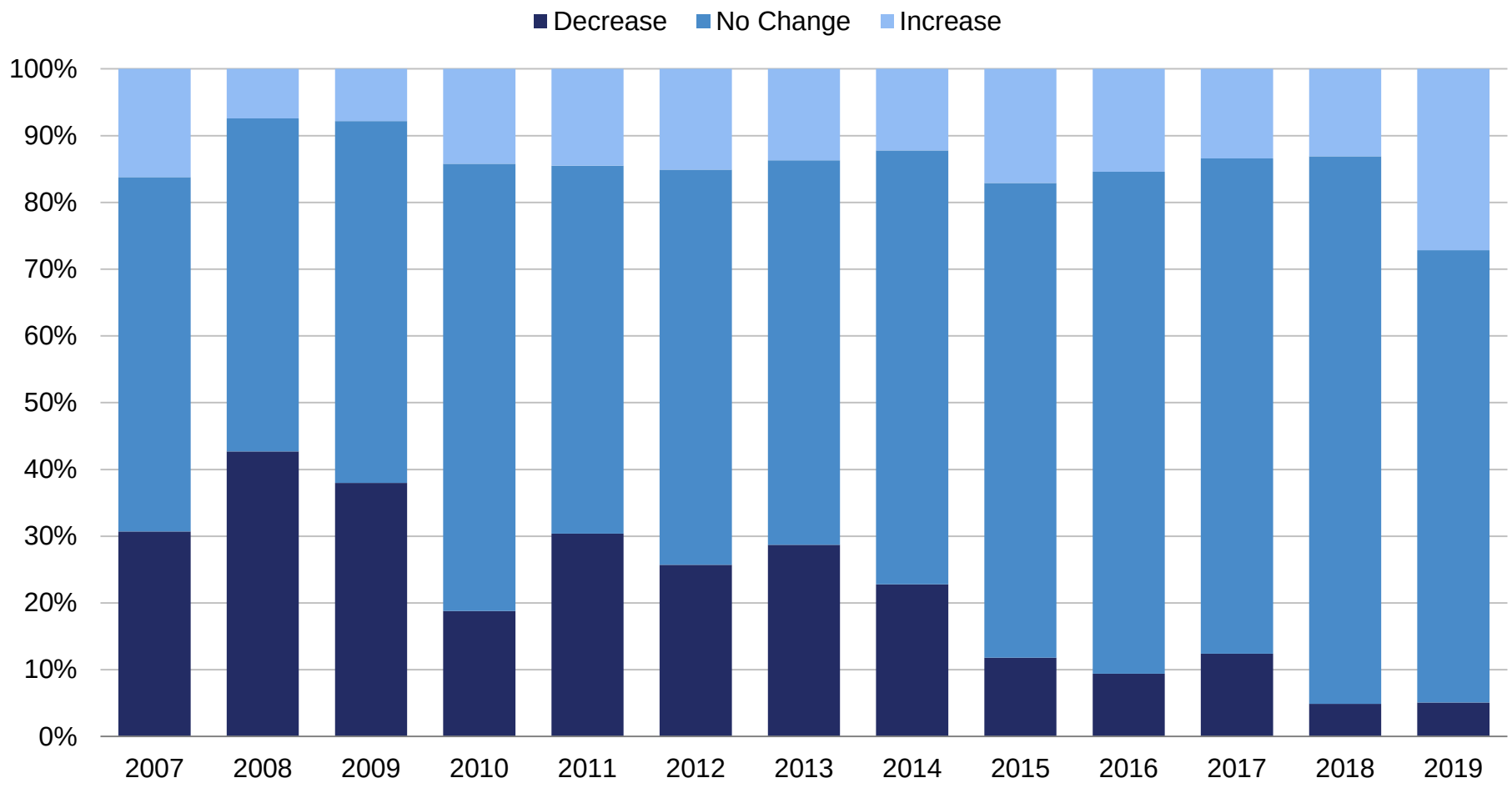
$ in billions

Rank	Company	Revenue	Profit
1	CVS	$256.8	$6.6
2	UnitedHealth	242.2	13.8
3	Cigna	140.2	5.1
4	Anthem	104.2	4.8
5	Centene	74.6	1.9
6	Humana	64.9	2.7
7	Molina	16.2	0.7

Prepared by Conning, Inc. Source: ©2020 S&P Global Market Intelligence

How Has the MPL Industry Responded?

Physicians' Rate Activity



Prepared by Conning, Inc. Source: *Medical Liability Monitor*

So for MPL, a Small Line of Business

It appears the U.S. health care system may be contributing to social inflation

- The U.S. health care system has unique challenges.
- These challenges could be causing a lack of faith in, and ANGER with, the system.
- Because MPL is a function of health care, we can probably expect current loss trends to continue or worsen.

In Conclusion…

Social inflation looks to be real, but…

- It has been with us for a long time and only recently has the industry been responding via pricing.
- While there are some common elements of social inflation, each line of business likely has its own unique drivers.
- Can the P/C industry switch from playing defense to playing offense?
- What impact could COVID-19 have on social inflation? Might it make things better or worse?

Questions?

Thank You!

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