Does Trouble in the Economy Lead to Trouble at School?

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Abstract

In this study, I attempt to identify whether deteriorating macroeconomic health can lead primary and secondary students to get into more trouble at school. Previous literature suggests that family-level job loss increases child problem behavior, mostly by increasing internalizing problem behaviors such as anxiety, depression, and social withdrawal. I suggest that this follows children into the classroom, leading to increased disciplinary actions by schools. Using county-level data in Arkansas from the fifteen school years between 2004 and 2018, I employ multiple regression and fixed-effect models to examine the effects of changes in unemployment on various disciplinary outcomes (out-of-school suspensions, in-school suspensions, expulsions, and corporal punishment) for students in primary and secondary schools. Due to inconsistencies in Arkansas' discipline data, the results presented in this paper should be approached with skepticism. Only one result is consistent among the regression models I test—when county unemployment rises the usage of corporal punishment rises. This may not be evidence that student misbehavior increases when the economy is poor, rather it may suggest that teachers and administrators are substituting other disciplinary measures with corporal punishment.

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1 Introduction

Times are tough when the economy is poor—families become strained when a member loses work or their assets decline in value. When we think about recessions we often think of those who become unemployed, can't find work, or lose money in financial markets. Only secondarily do we consider how tough economic times affect children. Though children may not have any personal stake in the well-being of the economy, the economy does affect children indirectly through their parents, communities, and media exposure. In this paper, I set out to examine one facet of how reverberations from business cycles affect children—how it may affect their behavior. I operationalize this question by measuring whether changes in unemployment rates at the county, state, and national-level have any effect on discipline rates in Arkansas schools. I hypothesize that as the state of the economy worsens and unemployment rises, children of parents who lose jobs will act out and get into more trouble at school. Additionally, I believe perceptions of economic strain may increase problem behaviors in school for children whose parents remain employed. Because I believe there are multiple pathways that may influence problem behaviors in children, the specific models I propose allow for direct and indirect effects of changes in unemployment on student discipline rates.

If rising unemployment underlies some increases in school discipline, there are problematic implications for school achievement and discipline gaps. Given that black and hispanic workers see larger increases in unemployment than white workers during economic recessions, the consequent hypothetical effect on student discipline would hit students of color particularly hard (Hoynes, Miller, & Schaller, 2012). These are students who are documented to have lower test scores and higher rates of discipline when compared to white students in aggregate, so if they were to be disciplined further both divides would widen (Gregory, Skiba, Noguera, 2010). Because many discipline measures result in missed instructional time, suspended students may fall behind in school.

But falling behind in school may be the least of these students' concerns in the long run. In their paper on disparities in student discipline by race Barrett, McEachin, Mills, & Valant (2017) document the expansive literature examining the associations between student discipline and multiple distressing outcomes that extend beyond the classroom:

> Being suspended from school is correlated with lower academic achievement (Arcia, 2006; Beck Muschkin, 2012; Raffaele Mendez, Knoff, Ferron, 2002; Raffaele Mendez, 2003; Skiba Rausch, 2004), lower probability of on-time graduation (Ekstrom, Goertz, Pollack, Rock, 1986; Raffaele Mendez, 2003; Suh, Suh, Houston, 2007; Wehlage

Rutter, 1986), and greater contact with the juvenile justice system via the "school-to-prison pipeline" (Morgan, Salomon, Plotkin, Cohen, 2014; Fabelo et al., 2011; Nicholson-Crotty, Birchmeier, Valentine, 2009; Skiba, Arredondo, Williams, 2014).

Clearly, being excluded from school via discipline is unfavorable. As more light is shone on the negative consequences of suspensions, it will become increasingly important to understand how student behavior changes so that more appropriate methods for the modulation of student behavior may be developed. I believe that there is an economic factor affecting student behaviors that is worthwhile to understand.

In the paper that follows, I explore the usage of Arkansas' four main disciplinary tools (out-of-school suspensions, in-school-suspensions, expulsions, and corporal punishment) and their relationships with unemployment and other county covariates. Using multiple regression and fixed-effects models, I attempt to determine whether changes in the economy affect student discipline rates, and find some puzzling results. Ultimately, I can not assert that there is a relationship between unemployment and discipline rates one way or another. Some discipline rates may increase while others decrease in response to unemployment changes as they are typically used for different types of misbehavior. Additionally, administrators may substitute between discipline types. The only result that is consistent in all models is that corporal punishment rises when unemployment rises.

The paper will progress in the following order: Section 2 contains a discussion of different discipline measures and trends in their current use. Section 3 is a review of related literature. In section 4, I build on prior literature by developing a theory for how deteriorating economic health may affect student behavior. I discuss the data I have arranged and explore relationships within it in section 5. Then I lay out my empirical strategy in section 6. In section 7, I discuss the results from regressions I run. Finally, in section 8, I reflect on my results and how further research may be conducted.

2 Student Discipline Measures and Current Discipline Trends

Educators wield multiple disciplinary tools to address student misbehavior, the most prevalent of which include out-of-school suspension (OSS), in-school suspension (ISS), and expulsion. OSS is defined as "dismissal from school for a period of time that does not exceed ten (10) days" as opposed to expulsion, which is a dismissal lasting longer than ten days (Safe Supportive Learning, 2019). ISS, on the other hand, is the removal of a student from their classroom and placement in an in-school suspension center where various behavior-changing strategies may be implemented (Mendez, Knoff & Ferron 2002; as cited in Blomberg, 2004). A much less favorable school discipline measure, still in use in 19 states including Arkansas as of 2019, is corporal punishment (Blankenship, 2019). In theory, ISS would be used to punish to lesser problem behaviors while OSS, corporal punishment, and expulsion would be used to punish more severe problem behaviors, however, one study found that discipline severity rarely coincided with the severity of student misbehavior (Skiba, Peterson, Williams, 1997; as cited in Blomberg 2004).

If the brevity and lack of specificity of Arkansas' laws regarding ISS, OSS, expulsion, and corporal punishment are generalizable across states, one might see why discipline is prescribed in such non-uniformity. In the report "Arkansas School Discipline Laws and Regulations," prepared by the Safe Supportive Learning organization for the U.S. Department of Education, only a few clauses state the appropriate use of discipline measures.

Regarding ISS, " a teacher may remove a student from class... in order to maintain effective discipline in the classroom," and:

> A teacher may remove from class a student: (1) Who has been documented by the teacher as repeatedly interfering with the teacher's ability to teach the students in the class or with the ability of the student's classmates to learn; or (2) Whose behavior the teacher determines is so unruly, disruptive, or abusive that it seriously interferes with the teacher's ability to teach the students in the class or with the ability of the student's classmates to learn.

Regarding OSS and expulsion:

> Student discipline policies shall include without limitation the following offenses: (A) Willfully and intentionally assaulting or threatening to assault or abuse any student or teacher, principal, superintendent, or other employee of a school system; (B) Possession by students of any firearm or other weapon prohibited upon the school campus by law or by policies adopted by the school district board of directors; (C) Using, offering for sale, or selling beer, alcoholic beverages, or other illicit drugs by students on school property; and (D) Willfully or intentionally damaging, destroying, or stealing school property by students.

As for law regarding the use of corporal punishment, Arkansas only states that school districts using the method must draft and adhere to their own policies which "shall include provisions for administration of the punishment, including that it be administered only for cause, be reasonable, follow warnings that the misbehavior will not be tolerated, and be administered by a teacher or school administrator." So there is considerable room for interpretation and implementation of corporal punishment policy across districts.

Because the laws and policies guiding the assignment of disciplinary measures allow room for much discretion at the district-level and ultimately the classroom-level, the use of discipline can be overprescribed for minor ailments. It has been shown that OSS has been used increasingly to punish minor offenses (Amuso, 2007; Dupper, 1998; as cited in Allman & Slate, 2011). In fact, most discipline problems resulting in OSS fall into the categories of insubordination, defiance, or other nonviolent offenses (Skiba, Peterson, & Williams 1997; Mendez et al. 2002; as cited in Blomberg 2004). In the Arkansas school years of 2007 through 2016, disorderly conduct accounted for 28.7% of discipline referrals, insubordination accounted for 23.8%, and "other" infractions (representing minor, non-violent infractions) accounted for 28.1% (Anderson, 2018). What is particularly troublesome is that these measures are disproportionately being taken against students of color.

A well-known topic within education research is the "achievement-gap," the measured difference in standardized test scores between white and racial-minority students; increasingly prevalent in education research is the discussion about a "discipline-gap," the disparity between discipline rates of white versus racial-minority students. Based on nationwide public-school data from the Civil Rights Data Collection for the 2013-2014 school year, the U.S. Department of Education reports that black K-12 students are 3.8 times more likely to be suspended than their white peers (2016). In Arkansas the discipline disparities do not deviate strongly from the national trend: black students receive 3.07 times more discipline referrals than white students. Furthermore, students who receive free or reduced-price lunch get discipline referrals 2.5 times as often as students who do not (Anderson, 2018).

3 Existing Literature

Literature regarding the effects of economic downturns has not widely explored the impact of downturns on children, however, there is a need to understand how children are affected given the implications for their performance and behavior in school. The most closely related literature of which there exists a sizable work is in the realm of family-level job-loss and its effects on children (Elder, 1974; McLoyd, 1998; as cited in Gassman-Pines, 2015). A host of studies follow in the footsteps of Conger et al. (1992) after the authors proposed a theoretical framework whereby economic pressures could affect a family by primarily increasing parents' depressed mood which then alters their child-rearing behaviors, consequently affecting the development of adolescent boys. They found that objective conditions like unstable work affected parental emotions and behaviors through their associations with perceptions of pressures like inability to pay bills. Their model coincided with previous literature which identified that depressed affect and negative mood were positively related to hostile behavior towards intimates and reduced effort in effective parenting (Berkowitz 89; Downey and Coyne 1990; as cited in Conger et al., 1992). This model would become the "family stress model" and is referenced as a framework in studies on the effects of various family economic measures on child behavior that I include for review. Subsequent literature on various effects of economic downturns provides further evidence for the parental pathways of influence on adolescent development proposed in the model.

There are four primary studies that I have identified which used different measures of family economic strain, both objective and subjective, to predict behavioral problems in children using school suspensions, the Child Behavior Checklist (CBCL) or a derivative of the CBCL, the Behavioral Problems Index (BPI). Two of the studies directly relate to school behavior (suspensions and teacher evaluated BPI scores), while the other two measure CBCL and BPI in the home setting.

Among the first to examine the Great Recession and child behavioral outcomes were Leininger and Kalil (2014). On the basis that evidence from the Great Recession suggested that much "economic strain" arose not from economic shocks but from "worry and uncertainty" about the future, Leininger and Kalil (2014) tested a model where a composite measure of subjective perceptions of economic strain was the key predictor of child behavior problems as measured by the Behavioral Problems Index. The authors also considered the effects of variables from the family stress model on child BPI.

For both white and black children, the correlation between 'economic strain' and BPI was much higher for internalizing behaviors than externalizing behaviors. Economic strain increased internalizing

behavior problems for white children and was statistically significant in all specifications (controls for sociodemographics, objective economic conditions, and psychosocial context were progressively tested). For black children, the bivariate regression of problem behavior on economic strain produced positive and statistically significant correlations for both internalizing and externalizing behaviors, but the results were not robust to the addition of controls. For both groups of children coefficients on externalizing behavior were positive, but only the bivariate regression of black children's behavior on economic strain had significant results.

In line with the family stress model, Leininger and Kalil also measured the correlations of family conflict and parenting stress with internalizing and externalizing behavior problems and find positive and significant associations. Family conflict was significant for both internalizing and externalizing behaviors in white children but not black children; parenting stress was significant for both behavior types in white and black children.

Gennetian, Wolf, Hill, and Morris (2015) also lean on the family stress model as a framework to examine the effects of intra-year income instability on the odds of a student ever being suspended or expelled. After controlling for a host of SES characteristics, they find that family income instability predicted adolescent expulsion and suspension primarily among low-income, older, and racial-minority adolescents. The results are not particularly compelling given that the data is observational and the suspension variable is a dummy, especially considering that the groups they identify as seeing increased suspension and expulsion have been identified as being more likely to be suspended in general. The authors also acknowledge omitted variable bias concerning families with higher intra-year income instability.

Schneider, Waldfogel, and Brooks-Gunn (2015) recognize, but diverge from the family stress model in their study on the great recession's impact on behavior problems of nine-year-olds. Like Leininger and Kalil, Schneider et al. proposed a model based on the hypothesis that uncertainty about the national economy rather than changes to the local economy drove child behavior problems. Importantly, Schneider et al. make the case that CSI is useful as an exogenous measure of strain to families, independent of their objective financial circumstances.

Their primary model tested the correlation between the Consumer Sentiment Index (CSI) and internalizing and externalizing problem behaviors from the BPI, and controlled specifications included local unemployment rates, city fixed effects, and various other measures. The authors found that

"greater uncertainty as measured by the CSI was associated with higher rates of all 4 behavior problems for boys (in both maternal and child reports)," but not for girls. Links between the CSI and boys' behavior problems were concentrated in single-parent families and were somewhat explained by parenting behaviors. Worsening CSI also significantly increased the odds that a boy with a single parent would use drugs or alcohol. Notably, the authors assert that their findings demonstrate that local unemployment rates had fewer associations with problem behavior—contradicting the models I propose in my empirical strategy. Their data, however, comes from 20 cities across 15 states that had populations above 200,000, which might disproportionately represent labor markets that experience lower rates of unemployment relative to other parts of their states or the nation at large. Their samples may not capture enough variability in unemployment to measure against child BPI scores.

Finally, Hill, Morris, Castells, and Walker (2011) address how low-income families' job losses affected their children's BPI scores using a quasi-experimental design and instrumental variable (IV) methods. Leveraging a random treatment experimental employment program and IV methods Hill et al. examine the effects of maternal job loss on class behavior. Their methodology controls for the endogeneity of parental job loss that is present in previous family-level literature. Also, their measures of child behavior come from a child's teacher who scored them on the Behavior Problems Index (BPI) whereas in the study done by Schneider, Waldfogel, and Brooks-Gunn, BPI was gathered by interviewing mothers and children, and in Leininger's and Kalil's study BPI was scored on a questionnaire by mothers. They estimate a causal effect of sustained job loss and find a single job loss has the effect of a one-half standard deviation increase in problem behavior for children.

So, while the research on the effects of a worsening economy or family-level job loss is limited, there is enough to scaffold out a theory for how children's school behaviors will be affected by rises in unemployment.

4 Theory

As noted in the literature review, much of the study of economic downturns on child outcomes is based on family-level job loss. Some studies have examined other family-level economic effects on child behavior using the family stress model as a guiding framework (Leininger and Kalil 2014; Gennetian et al. 2015; Schneider et al. 2015) and generally find support for the model. Three authors who wrote a comprehensive review of the literature relating economic downturns to child development propose extending this model to allow for the child to be affected by additional pathways. Gassman-Pines, Gibson-Davis, and Ananat (2015) suggest that effects on children should be conceptualized and further researched at the 'community' level given that most children are not directly affected by family economic shocks. They propose a theoretical framework where economic downturns affect all children through their effects on "structural changes to communities, changes in the economic and psychological well-being of individuals in those communities who are continuously employed, and strains on social networks." They also suggest that "some children, particularly adolescents" could be directly affected by downturns.

To guide this framework, Gassman-Pines et al. build on Bronfenbrenner's ecological systems theory, which proposes that individuals develop within dynamic and proximal social systems (Bronfenbrenner, 1979; as cited in Gassman-Pines et al., 2015). The nested systems, listed in order of intimacy to the individual are the: microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

The microsystem, which most previous child development literature regarding economic downturns essentially focused on, comprises a child's relationships with family, friends, peers, teachers, etc. The mesosystem is made up of interacting microsystems—it is in this system where a child might be affected by exposure to family friends or neighbors who have fallen on tough economic times. Gassman-Pines et al. indicate that little research has been done on the effect of economic downturns on social networks, effectively the mesosystem. The next system is the exosystem, which is made up of the larger networks that affect individuals in a child's microsystem like a parent's workplace. Changes in the exosystem affect the child indirectly by affecting individuals within their microsystem. The macrosystem is the furthest removed system that nevertheless affects child development, which includes dominant cultural beliefs, and the political and economic systems that the individual is subject to. Finally, the chronosystem is the unique time period in which a child develops.

Gassman-Pines et al. compiled a host of evidence for community-level effects as well as wide

cultural effects on child behavior during economic downturns. Adults who remained employed throughout downturns were paid less and had more psychological distress during downturns (Blanchflower & Oswald, 1994; Catalano et al., 2011; as cited in Gassman-Pines et al., 2015). Moreover, continuously employed adults exhibited lower levels of well-being and less optimal mood during downturns (Dooley et al., 1988; as cited in Gassman-Pines et al., 2015). These changes were linked to effects in child behavior across domains (McLoyd, 1998; Lovejoy et al., 2000; as cited in Gassman-Pines et al., 2015)

More directly, increases in citywide unemployment rates and decreases in the national consumer confidence index predicted increases in mothers' reports of harsh parenting (Brooks-Gunn et al., 2013; Lee et al., 2013; as cited in Gassman-Pines et al., 2015). And most significantly, if a child's classmate was directly affected by parental job loss, that classmate may have exhibited increased behavior problems (Hill et al., 2011). One study even identifies peer-effects; students' disruptive classroom behaviors increased their classmates' disruptive behaviors (Sacerdote, 2011, as cited in Gassman-Pines et al., 2015). While there is considerable evidence that suggests child behavior could be negatively affected by poor economic times, there remain a few reasons why child behavior could improve during these times.

In theory, there are a few ways that higher unemployment could lead to reductions in student discipline rates. The most convincing way that this could occur is if increased student internalizing problem behaviors decreased misbehavior. If students with increased internalizing behaviors (which include anxiety, depression, and social withdrawal) become withdrawn at school, they may be less likely to get in trouble. One might imagine that these students are less likely to be insubordinate, the largest category of student discipline referrals. These students may also be less likely to interact in ways leading to other school disturbances.

There is also the possibility that unemployed parents, who have increased free time, may adopt a greater involvement in their children's lives, decreasing their likelihood to misbehave in school. A less optimistic take is that students, knowing their parents are home, try harder not to get sent home for poor behavior.

Additionally, there exists some evidence that students graduate high school at higher rates during periods of higher unemployment, suggesting that students take school more seriously when their work alternatives look poor (Mordechay, 2017). If students actively try to behave better in response to a weak economy this could also lower suspension rates.

Overall, I expect there to be a net increase in discipline rates as unemployment rates increase. I hypothesize that through various pathways, economic downturns influence child behavior and schools end up with a concentration of children both directly and indirectly affected by downturns who, in turn, exhibit increased problematic internalizing and externalizing behaviors. I postulate that the measured behavioral effects that declining economies have on individual children can lead to discipline-worthy behaviors as children interact in the school setting.

5 Data

To determine whether there is a causal link between unemployment and discipline rates, I will analyze data from Arkansas in the period between the school years of 2004 and 2018[1]. Discipline and unemployment data are made publicly available by Arkansas' Department of Education (ADE) and Arkansas' Division of Workforce Services (ADWS), respectively. Discipline data is reported as year-end counts of out-of-school suspensions (OSS), in-school suspensions (ISS), expulsions, and corporal punishment uses for each of Arkansas' 75 counties. To standardize interpretation of discipline counts for counties with differing enrollments, I express OSS, ISS, expulsions, and corporal punishment as a rate per number of enrollees. OSS, ISS, and corporal punishment are expressed as rates per hundred enrollees in a county, whereas expulsions—a far rarer disciplinary measure—are expressed as a rate per 1000 enrollees in a county. To ensure compatibility with the discipline data that is reported as a total throughout a school year, I calculate the average unemployment rates for counties during the ten months that school is in session in Arkansas (August-May). Using data from the FRED database, I calculate a school year average for state and national unemployment rates as well. I transform unemployment rates into counts of unemployed individuals per hundred people to improve the interpretability of my regressions.

For the robustness of my dataset, I include relevant covariates at the county-level which are available from the ADE. In addition to the counts of enrollment I mention above, I also include counts of students by race (White, Asian, Black, Hispanic, or Other), counts of students receiving free or reduced-price lunch (FRPL), and an indicator variable for urban counties (as classified by Arkansas' Office of Management and Budget). I then transform these variables into rates per hundred students in a given county, again, for ease of regression interpretation.

I assemble fifteen school years' worth of data for the seventy-five counties which brings my dataset to 1,125 county-year observations of all aforementioned variables. While the dataset is robust, the format of the data comes with limitations. Because discipline data is reported as year-end counts of suspensions and expulsions, I cannot measure intra-year fluctuations in unemployment and suspensions. Additionally, suspensions are not disaggregated by grade level, student race, or student gender. Limitations aside, there are still several interesting relationships within the data.

[1]In this paper and subsequent tables and figures, I refer to school years by the year in which they begin

First, counties differ a lot in how they discipline their students (see Figure 1). OSS rates range from 0.2 to 53.6 suspensions per hundred students. ISS rates range from 0 to 118 suspensions per hundred students. (It is likely that counties with ISS rates of zero simply do not have an ISS program or the resources available to facilitate one.) Expulsion rates range from 0 to 22.8 expulsions per hundred students. And corporal punishment rates range from 0 to 106 uses per hundred students. In 2018, there were only three counties that did not use corporal punishment.

Unfortunately, it appears that the distributions of discipline measures are influenced by the distributions of race within counties. In Figure 2 the relationships between the racial composition of a county and its OSS rate are pictured. Many counties are comprised almost entirely of either white or black students. Together, white and black students make up more than 90% of Arkansas' school population: 69.48% of Arkansas' students are white and 21.07% are black. The proportion of a county that is white or black is highly correlated with its OSS rate (see Table 4)

Next to discuss are the bivariate relationships between unemployment rates and discipline measures. In Figure 3, the scatterplots of county-year unemployment and different discipline measures are pictured with an overlaid linear model. There are weak positive associations between county unemployment and county OSS rates and corporal punishment rates, and weak negative associations between county unemployment and ISS and expulsion rates.

When observations are grouped by county, unemployment rates have an ambiguous relationship with OSS rates. Most counties have lower OSS rates when their unemployment rates are higher (see Figure 4). One interesting trend apparent in Figure 4 is that the counties with higher OSS rates are more likely to exhibit a positive association between unemployment and OSS rates.

When the data is seperated by year rather than county, a different relationship is apparent. The bivariate relationship between unemployment and OSS rates for each county observation in a given year is pictured in Figure 6. Counties with higher unemployment have higher rates of OSS and it isn't difficult to imagine omitted variables that may be associated with both unemployment and student discipline referrals in a given county. Even with the limited characteristics I observe in my data, trends emerge in counties with differing unemployment rates.

In Table 1, I split my sample into thirds by unemployment in a county-year observation forming low, medium, and high unemployment subsets. Among the 375 lowest county-year unemployment rates the average rate is 4.23; for the middle band that rate is 6.27; for the high band, it is 9.13. Compared

to the low unemployment subset, the high unemployment subset has a higher OSS rate but a lower ISS rate—possibly suggesting some substitution between the measures. The high unemployment subset has double the average proportion of enrolled black students and half the total average enrollment. There is also a modestly higher percentage of students in high unemployment counties that receive free or reduced-price lunch, possibly rising if more students qualify as a result of parental unemployment. When subsetting the population by suspension rates rather than unemployment rates the difference in school makeup is even more pronounced.

In Table 2, I identify 120 county-year observations with statistical outlier OSS rates above 20.69 and compare the demographics of this subset to those of the standard-range county-year observations. In high-suspension counties, the average county unemployment rate is 0.54% higher than the unemployment rate for standard-range-suspension counties. The high-suspension group also has expulsion rates and enrollment counts that are slightly more than double the measures in the standard group. Particularly striking is the vast difference in proportions of black students between high and standard suspension counties—the former is 62.13%, the latter is 16.16%. This is in line with national and state-level findings from the U.S. Department of Education and Arkansas' Office for Education Policy—black students are far likelier than their white peers to receive OSS referrals. High suspension counties also include a much larger share of students receiving free or reduced-price lunch—80.31% versus 63.73%.

Valuable trends in unemployment and discipline can be observed from afar as well. In Figure 5, state discipline averages for the four discipline measures are compared against state and national unemployment rates over time. Between 2004 and 2009, the discipline measures appear to move in the same direction as unemployment measures, but thereafter the trend reverses for OSS and ISS while expulsions stay flat. Corporal punishment, on the other hand, appears to move more closely with unemployment over the whole period. Perhaps the most compelling visual here is the sharp increase in corporal punishment alongside the spike in unemployment at the beginning of the great recession, especially considering the overall downtrend in corporal punishment over time.

Note the pronounced increase in OSS and ISS rates beginning in 2012; in a 2018 report on Arkansas' student discipline, Kaitlin Anderson attributes this rise to increased reporting of discipline referrals rather than an increase in student misbehavior. Indeed, in 2013 the Arkansas State Legislature passed Act 1329 which mandated increased discipline reporting standards (Blankenship, 2019). It appears that reporting of expulsions and corporal punishment were unaffected.

6 Empirical Strategy

To determine whether unemployment rates have any effect on student discipline rates, I will use a multiple-regression model employing county and year fixed-effects, and county-level covariates, clustering standard errors at the county level (Model 3). To see how results change as I approach this preferred specification and to test the inclusion of year or county invariant factors, I will test a pooled OLS regression (Model 1) and a county fixed-effect model that includes time trends rather than time fixed-effects (Model 2). I will run each of these models using the four discipline measures (OSS, ISS, expulsion, corporal punishment) separately as dependent variables. First, I will explicitly state the models.

In the equation below, CountyUR, StateUR, and USUR represent the county, state, and national unemployment rates, respectively. The variable X_{it} is a composite vector of the following covariates for county i during time t: an urban indicator, the percentage of the population eligible for free or reduced-price lunch, the total enrollment, and four racial composition variables including the percentage of the population that is white, asian, black, or hispanic.

$$Y_{it} = \alpha + \beta CountyUR_{it} + \eta StateUR_t + \nu USUR_t + \sigma X_{it} + \varepsilon_{it} \tag{1}$$

The next equation differs from the first by the addition of time-trends, time and time squared, along with county-specific intercepts given by the fixed-effect δ_i which absorbs the urban county indicator in the composite term X_{it} and any other county-invariant factors. The included time-trends account for statewide trends in discipline changes and the county fixed-effects accommodate the wide variation in discipline rates across counties.

$$Y_{it} = \alpha + \beta CountyUR_{it} + \eta StateUR_t + \nu USUR_t + \sigma X_{it} + \tau Time_t + \upsilon Time_t^2 + \delta_i + \varepsilon_{it} \tag{2}$$

In the third specification, I replace time-trends with time fixed-effects (γ_t). This absorbs the state and national unemployment rates along with any other year-invariant factors. The regression is written as:

$$Y_{it} = \alpha + \beta CountyUR_{it} + \sigma X_{it} + \delta_i + \gamma_t + \varepsilon_{it} \tag{3}$$

As noted in the data section, there is a large jump in the statewide average OSS and ISS rates between the 2013 and 2014 school years in response to legislative Act 1329 (Figure ref). If all counties were underreporting suspensions at the same rate before the passage of Act 1329, and all counties fully reported suspensions after the act's passage, then the year-effects would soak up the one-time shift in suspension rates and the regression in Model 3 would likely approximate the effects of county-level unemployment on county-level discipline rates. To test whether the sample validity is preserved despite the reporting shift, I run the Model 3 regression separately on the observations from the periods before and after the passage of Act 1329. In an attempt to circumvent the reliability issue caused by the reporting shift, I test one other model.

In this model, I supplement the previous regression with an interaction term between county unemployment rates and a time dummy variable for the years after the passage of Act 1329. Doing so allows the coefficient on unemployment in each regression to vary before and after the reporting shift occurs. This removes any bias either period exerts on the coefficient of unemployment in the previous model by separating the effects of each time period.

$$Y_{it} = \alpha + \beta_1 CountyUR_{it} + \beta_2 (CountyUR \times PostDummy)_{it} + \sigma X_{it} + \delta_i + \gamma_t + \varepsilon_{it} \tag{4}$$

If severe reporting disparities existed before Act 1329 this would call into question the internal validity of previous models. To improve the quality of my data, I expunge the counties that appear to have been underreporting suspensions and re-run Model 4. I systematically exclude counties that had a reporting discontinuity between 2013 and 2014 using cutoffs for counties whose OSS rate jumps by some amount. I use 2.5, 3, 4, and 5 as cutoffs to create four samples that I test separately. At my discretion, I create one more sample by removing counties manually. I do this because a hard

discontinuity cutoff may not exclude counties with lower overall OSS rates that may significantly rise proportionally but not nominally. It also appears that some counties may have adjusted their reporting standards very expediently which resulted in a sharp increase in OSS in between the 2012-2013 and 2013-2014 school years, so I manually exclude these counties as well.

7 Results

In my preferred specification with county and year fixed-effects (Model 3), I find that a one-percentage-point increase in county unemployment causes a 0.384 unit decrease in OSS per hundred students ($p < 0.013$), a 2.086 unit decrease in ISS per hundred students ($p < 0.001$), a 0.078 unit increase in expulsions per 1000 students ($p < 0.133$), and a 0.595 unit increase in corporal punishment per hundred students ($p < 0.069$). These effects are nearly identical in my county fixed-effect model with time trends (see Table 5). In both specifications only the effects of county unemployment on OSS and ISS are significant. In the median enrollment county-year that had 3,282 students, these coefficients imply that if county unemployment rose by one-percentage-point out-of-school suspensions would be expected to fall by about 13 and in-school suspensions would be expected to fall by about 68 in a given year.

The differences in coefficients between my county fixed-effect model with time-trends and my county and year fixed-effects model are generally very slight, suggesting that the former model includes enough covariates and estimates time trends well enough to approximate the year fixed-effects. In this model, the coefficients on county unemployment are nearly identical to the county and year fixed-effects model and are similarly significant. The advantage of the time-trend model is that I can also examine the effects of changes in state and national unemployment rates. The coefficients on state and national unemployment rates are significant only in the modeling of OSS rates but are quite interesting. If the coefficients are to be believed, they would suggest that the effect of a one-percentage-point state unemployment rise is a reduction of OSS by roughly one per hundred students, while the effect of a one-percentage-point rise in national unemployment raises OSS by about half a suspension per hundred students.

Some doubt should be cast on these estimates because the exogenous rise in discipline between 2013 and 2014 due to legislative Act 1329 is not fully accounted for by year fixed effects due to variability in underreporting. When I estimate my primary model on the four discipline measures separately in the periods before the act was passed (2004-2013) and after the act was passed (2014-2018), the coefficients of interest change dramatically (see Table 6). The coefficient of county unemployment's effect on OSS, which was previously negative and significant, becomes positive in both periods and is significant at the 5% level in the latter period. The only other significant coefficient in these regressions is the small positive effect of county unemployment on expulsions during the first period. In both of the periods,

three of the four disciplinary measures increase with county unemployment.

I use two additional specifications, as described in the empirical strategy section, to reduce the error caused by inconsistently underreported suspensions in the first period. In the first specification, I run a regression that allows the effects of unemployment on discipline measures to vary in the periods before and after the reporting shift (Model 4). In regressions on each of the four discipline measures, each period's unemployment coefficient counteracts, to some degree, the effect of the other period (Table 7). This raises the question of whether the relationship between suspensions—if any relationship does exist—is equally strong when unemployment is decreasing as it is in the second period. The coefficients on unemployment for OSS and ISS are negative and significant, however, the net effect of unemployment changes on OSS is positive for years in the latter period. To take my analysis one step further, I run this model on a dataset that excludes the counties that improperly reported OSS in the first period.

The results reported in the second specification shown in Table 7 are from regressions ran on counties whose OSS rate did not increase by more than 3 between 2013 and 2014. When higher discontinuity cutoffs are used to limit the data (which increases the number of included counties), the coefficient on OSS becomes more negative as it approaches the effect measured in the model using the unrestricted sample. Conversely, when I manually remove counties and run the same model, the coefficient on OSS in the first period becomes larger and more positive. Perhaps the strongest evidence to be found in this specification is that the coefficients of unemployment on ISS and corporal punishment are relatively stable and significant in all restricted samples.

Unfortunately, due to the unreliability of Arkansas' discipline data, none of the results I have presented are particularly compelling. The coefficient of unemployment on corporal punishment is the only coefficient that does not change signs in any of the regression models. Though the magnitude of the coefficient varies roughly from 0.1 to 1.7, it remains positive in all specifications. Quite striking is the story told by Figure 5—if it is true—when unemployment jumps in Arkansas and nationwide as the Great Recession rattles the economy, the reported usage of corporal punishment spikes even as the method sees declining use over time. If other discipline rates decline in response to unemployment rises, one possibility is that less severe punishments are being replaced by corporal punishment. If that were the case, it may suggest that tough economic times may affect discipline rates not only by affecting student behavior, but also by shifting the discipline regime.

8 Conclusion

In my investigation, I uncover mixed effects of unemployment changes on different discipline measures. The only consistent result in all regressions is that corporal punishment appears to increase as unemployment increases, but this result may be more telling of teacher and administrator behavior than of student behavior. Due to the large reporting shift following the passing of Act 1329 which mandated reporting standards for discipline measures, the results from regressions I conducted should be met with skepticism.

Even if discipline reporting were consistent across time, this research would not constitute a full examination of the subject at hand. Theory and prior research suggest that children of different ages, gender, and race react differently to rising unemployment and due to the limited scope of my data I was unable to sift through differential group effects. If unemployment did have sizable and significant positive effects on discipline rates for any particular group, it would be important for communities and schools to mitigate these effects to keep children in their classrooms.

When a child is sent home for getting in trouble, parents or relatives may need to take work off to provide care for the child which is especially unfortunate when the labor market is poor. Aside from the cost to caregivers, the students themselves incur a cost for not being in their classrooms. They pay with test scores in the short run and worse life outcomes in the long run. This would be especially troubling if there were positive effects of unemployment on discipline rates for particular racial groups, which I cannot reject the possibility of based on my analysis.

Further research will be necessary to determine whether student behavior is sensitive to economic pressures. If no further research on this specific aspect of student discipline follows though, a couple of lessons can be taken from this paper. First, educators, administrators, and policymakers will need to ensure that data being produced by schools is reliable if researchers are to make good use of it. Second, if researchers are to make use of data they will need access to it. Arkansas is one of only a handful of states that make their data easily available. Though data might not paint a pretty picture of many of the settings it illustrates, its availability and thus researchability can only provide further insight and understanding about these settings, and that will lead to improvements in them.

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9 Tables

Table 1: Characteristics of Low, Medium, and High Unemployment County-year Observations

	Low		Medium		High	
	Mean	SD	Mean	SD	Mean	SD
County Unemployment	4.23	0.62	6.27	0.66	9.13	1.36
OSS per 100 Students	8.50	7.11	9.02	8.51	10.10	8.95
ISS per 100 Students	20.96	15.74	18.94	16.07	18.77	15.02
OSS as a Proportion of All Suspensions	32.44	17.78	36.25	19.18	38.04	18.57
Corporal Punishment per 100 Students	7.54	12.06	9.87	10.79	13.39	14.19
Expulsions per 1000 students	6.60	10.8	7.08	11.94	6.90	18.15
Percentage of County-years Urban	36.53	48.21	25.60	43.70	17.87	38.36
Total Enrollment	8,141	11,577	6,249	8,780	4,423	4,737
FRPL %	64.08	14.52	63.91	12.90	68.51	13.77
White %	73.41	19.93	70.81	22.44	64.23	26.48
Asian %	1.10	1.20	0.80	0.92	0.54	0.65
Black %	14.07	19.05	20.20	22.75	28.93	27.39
Hispanic %	9.04	9.43	6.68	7.96	4.99	6.55
Other Race %	2.38	2.02	1.52	1.58	1.30	1.31

Note: Observations for unemployment in a county-year were arranged from lowest to highest and split into thirds (375 obs.) to create low-, medium-, and high-unemployment groupings.

Table 2: Comparisons between High- and Standard-OSS Counties

	All Counties		High-OSS Counties		Standard-OSS Counties	
	Mean	SD	Mean	SD	Mean	SD
County Unemployment Rate	6.54	2.22	7.11	2.33	6.47	2.20
OSS per 100 Students	9.21	8.25	28.97	7.09	6.85	4.23
ISS per 100 Students	19.55	15.63	36.99	18.58	17.47	13.86
OSS as a Proportion of All Suspensions	35.58	18.65	46.80	12.65	34.24	18.8
Corporal Punishment per 100 Students	10.26	12.65	10.44	12.66	10.24	12.65
Expulsions per 1000 students	0.69	1.40	1.34	2.32	0.61	1.22
Percentage of Urban Counties	26.67	44.24	25.83	43.95	26.76	44.30
Total Enrollment	6,271	8,945	11,397	16,994	5,659	7,200
FRPL %	65.50	13.90	80.31	15.30	63.73	12.61
White %	69.48	23.41	32.00	14.72	73.96	19.99
Asian %	0.81	0.98	0.71	0.59	0.82	1.01
Black %	21.07	24.08	62.13	16.40	16.16	19.79
Hispanic %	6.90	8.22	4.13	3.89	7.23	8.54
Other Race %	1.74	1.73	1.03	0.87	1.82	1.78

Note: High-OSS counties include all county-year observations (120 obs.) with suspension rates above 20.69 OSS per 100 students, the cutoff for statistical outliers. Standard-OSS counties include any county-year observations with OSS rates below 20.69 (1,005 obs.)

Table 3: Differences between Counties with Unemployment Positively vs. Negatively Correlated with OSS

	All Counties		Positive Correlation between Unemployment and OSS		Negative Correlation between Unemployment and OSS	
	Mean	SD	Mean	SD	Mean	SD
County Unemployment Rate	6.54	2.22	6.90	2.28	6.47	2.20
OSS per 100 Students	9.21	8.25	12.46	10.92	8.52	7.39
ISS per 100 Students	19.55	15.63	21.64	15.22	19.11	15.69
OSS as a Proportion of Suspensions	35.58	18.65	36.18	17.73	35.45	18.84
Corporal Punishment per 100 Students	10.26	12.65	11.28	12.31	10.05	12.71
Expulsions per 1000 Students	0.69	1.40	0.77	1.79	0.67	1.30
Percentage of Urban Counties	26.67	44.24	23.07	42.24	27.42	44.63
Total Enrollment	6,271	8,945	8,443	14,076	5,816	7,365
FRPL %	65.50	13.90	67.65	14.93	65.05	13.63
White %	69.48	23.41	69.68	26.30	69.44	22.77
Asian %	0.81	0.98	0.67	0.53	0.84	1.04
Black %	21.07	24.08	19.82	26.31	21.32	23.59
Hispanic %	6.90	8.22	8.07	11.79	6.66	7.25
Other Race %	1.74	1.73	1.75	1.42	1.73	1.778

Note: There are thirteen counties that exhibit a positive correlation (195 obs.) and 62 counties that exhibit a negative correlation (930 obs.)

Table 4: Correlations between Key Variables

	OSS Rate	ISS Rate	Expulsion Rate	CP Rate	County Unemployment	State Unemployment	National Unemployment	Total Enrollment	FRPL %	White %	Asian %	Black %	Hispanic %	Other %
OSS Rate	1.00	0.55	0.20	0.20	0.11	-0.12	-0.10	0.14	0.43	-0.66	-0.10	0.70	-0.11	-0.17
ISS Rate		1.00	0.16	0.16	-0.05	-0.24	-0.20	-0.06	0.33	-0.44	-0.07	0.40	0.09	0.01
Expulsion Rate			1.00	0.03	0.02	-0.06	-0.08	0.07	0.07	-0.22	-0.04	0.23	-0.03	-0.05
CP Rate				1.00	0.21	0.09	0.07	-0.25	0.28	-0.05	-0.24	0.15	-0.21	-0.22
County Unemployment					1.00	0.77	0.74	-0.19	0.17	-0.20	-0.25	0.30	-0.23	-0.29
State Unemployment						1.00	0.96	0	-0.08	0.03	-0.01	0	-0.06	-0.13
National Unemployment							1.00	0	-0.03	0.01	-0.01	0	-0.3	-0.05
Total Enrollment								1.00	-0.31	-014	0.50	0.01	0.27	0.28
FRPL %									1.00	-0.57	-0.23	0.56	0.02	0
White %										1.00	0.04	-0.92	-0.18	0.10
Asian %											1.00	-0.24	0.40	0.33
Black %												1.00	-0.22	-0.31
Hispanic %													1.00	0.39
Other %														1.00

Table 5: Regression Results for OSS, ISS, ER, & CP as Dependent Variables in Selected Models

	Pooled OLS (1)				County Fixed-Effects, Time Trends (2)				County and Year Fixed-Effects (3)			
	OSS	ISS	ER	CP	OSS	ISS	ER	CP	OSS	ISS	ER	CP
County Unemployment	0.209 (0.140)	0.518 (0.331)	0.035 (0.057)	0.683* (0.309)	-0.358* (0.155)	-2.035** (0.616)	0.082 (0.099)	0.592 (0.537)	-0.384* (0.154)	-2.086*** (0.394)	0.078 (0.052)	0.595 (0.326)
State Unemployment	1.839*** (0.444)	-5.319*** (0.980)	0.070 (0.091)	0.513 (0.879)	-1.071** (0.347)	0.002 (0.992)	0.027 (0.125)	-1.464* (0.716)				
National Unemployment	0.850** (0.343)	2.241** (0.754)	-0.142 (0.076)	-0.557 (0.725)	0.460* (0.181)	0.368 (0.570)	-0.098 (0.070)	1.020** (0.355)				
Urban Indicator	0.180 (0.501)	1.016 (1.191)	0.172 (0.108)	-0.290 (1.228)								
FRPL %	0.080** (0.023)	-0.008 (0.051)	-0.005 (0.004)	0.029 (0.036)	-0.023 (0.045)	-0.136 (0.101)	-0.017 (0.010)	-0.072 (0.086)	-0.020 (0.025)	-0.130* (0.065)	-0.016 (0.009)	-0.071 (0.054)
Total Enrollment x 100	0.018*** (0.002)	-0.025*** (0.004)	0.000 (0.000)	-0.018*** (0.005)	-0.055 (0.042)	-0.121 (0.074)	0.003 (0.008)	-0.012 (0.043)	-0.053 (0.016)	-0.115** (0.041)	0.003 (0.005)	-0.015 (0.033)
White %	0.304** (0.097)	-0.665* (0.296)	-0.014 (0.022)	0.540** (0.201)	0.099 (0.248)	0.479 (0.783)	-0.56 (0.060)	-0.643 (0.527)	0.122 (0.155)	0.620 (0.397)	-0.055 (0.052)	-0.762* (0.328)
Asian %	0.390** (0.185)	-0.446 (0.591)	-0.060 (0.04)	-0.423 (0.456)	-0.249 (0.424)	-0.509 (0.863)	-0.048 (0.089)	-1.100 (0.779)	-0.120 (0.332)	-0.134 (0.849)	-0.030 (0.112)	-1.225 (0.702)
Black %	0.502*** (0.094)	-0.369 (0.285)	-0.000 (0.021)	0.559** (0.194)	0.435 (0.310)	1.554 (0.924)	-0.065 (0.064)	0.627 (0.487)	0.460** (0.164)	1.701*** (0.420)	-0.064 (0.056)	0.493 (0.348)
Hispanic %	0.281** (0.103)	-0.316 (0.315)	-0.009 (0.023)	0.418 (0.208)	0.049 (0.325)	0.042 (0.999)	-0.071 (0.101)	-0.479 (0.662)	0.064 (0.201)	0.168 (0.513)	-0.071 (0.068)	-0.616 (0.424)
Time					0.793** (0.233)	1.609* (0.649)	-0.94 (0.086)	-0.805 (0.474)				
Time^2					-0.046** (0.015)	-0.033 (0.043)	0.007 (0.005)	0.020 (0.020)				
N	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125
R^2	0.53	0.27	0.07	0.12	0.28	0.17	0.00	0.03	0.81	0.65	0.24	0.6

Note: OSS = out-of-school suspensions; ISS = in-school suspensions; ER = Expulsion Rate; CP = Corporal Punishment. OSS, ISS, and CP are expressed as counts of suspensions/counts of corporal punishment per 100 students. ER is expressed as a count of expulsions per 1000 students. Unemployment and percent (%) variables are expressed as counts per 100 individuals or students, respectively. The reported R^2 is overall.
*p<0.05, **p<0.01, ***p<0.001

Table 6: Regression Results for OSS, ISS, ER, & CP as Dependent Variables in Pre- and Post-Act-1329 Time Periods

	County and Year Fixed-Effects (2004 - 2013) (3)				County and Year Fixed-Effects (2014 - 2018) (3)			
	OSS	ISS	ER	CP	OSS	ISS	ER	CP
County Unemployment	0.172 (0.162)	-0.708 (0.395)	0.175* (0.074)	0.101 (0.331)	1.478* (0.593)	1.284 (1.463)	-0.208 (0.166)	0.496 (0.561)
FRPL %	0.082 (0.047)	-0.104 (0.114)	-0.026 (0.021)	-0.014 (0.096)	0.034 (0.033)	0.013 (0.082)	-0.208 (0.166)	-0.018 (0.031)
Total Enrollment x 100	-0.015 (0.023)	-0.087 (0.056)	0.002 (0.011)	0.011 (0.047)	0.027 (0.066)	-0.038 (0.162)	0.032 (0.018)	0.062 (0.062)
White %	0.206 (0.187)	0.637 (0.457)	-0.068 (0.085)	0.651 (0.382)	-0.181 (0.394)	-0.798 (0.973)	-0.025 (0.110)	-0.249 (0.373)
Asian %	-0.450 (0.405)	-1.072 (0.988)	-0.249 (0.185)	-0.843 (0.826)	0.624 (1.235)	4.482 (3.051)	0.503 (0.346)	0.620 (1.169)
Black %	0.059 (0.196)	0.406 (0.479)	-0.108 (0.090)	1.536*** (0.401)	0.334 (0.487)	1.700 (1.203)	-0.143 (0.136)	0.454 (0.461)
Hispanic %	0.116 (0.230)	0.370 (0.561)	-0.138 (0.105)	0.814 (0.469)	-0.331 (0.565)	-1.569 (1.394)	0.187 (0.158)	-0.199 (0.535)
N	750	750	750	750	375	375	375	375
R^2	0.85	0.71	0.23	0.79	0.91	0.85	0.56	0.95

Note: OSS = out-of-school suspensions; ISS = in-school suspensions; ER = Expulsion Rate; CP = Corporal Punishment. OSS, ISS, and CP are expressed as counts of suspensions/counts of corporal punishment per 100 students. ER is expressed as a count of expulsions per 1000 students. Unemployment and percent (%) variables are expressed as counts per 100 individuals or students, respectively. The reported R^2 is overall.
*p<0.05, **p<0.01, ***p<0.001

Table 7: Regression Results for OSS, ISS, ER, & CP as Dependent Variables in Post-Act-1329 Interacted Models

	County and Year Fixed-Effects, Post-Act-1329 Dummy Interaction (4)				County and Year Fixed-Effects, Post-Act-1329 Dummy Interaction, Restricted Sample (4)			
	OSS	ISS	ER	CP	OSS	ISS	ER	CP
County Unemployment	-0.385*	-2.087***	0.078	0.595	0.003	-1.984***	0.112	1.679**
	(0.153)	(0.394)	(0.052)	(0.326)	(0.161)	(0.548)	(0.061)	(0.508)
County Unemployment, Dummy Interaction	0.962***	0.932	-0.203*	-0.491	-0.349	1.025	-0.122	-0.589
	(0.262)	(0.673)	(0.089)	(0.557)	(0.227)	(0.775)	(0.086)	(0.718)
FRPL %	-0.012	-0.123	-0.017	-0.075	-0.050	-0.120	-0.021	-0.161
	(0.025)	(0.065)	(0.009)	(0.054)	(0.028)	(0.097)	(0.011)	(0.090)
Total Enrollment x 100	-0.040*	-0.101*	0.000	-0.022	-0.006	-0.067	0.002	-0.048
	(0.016)	(0.042)	(0.005)	(0.035)	(0.012)	(0.042)	(0.005)	(0.039)
White %	0.052	0.553	-0.040	-0.726*	0.032	0.608	0.010	-1.135**
	(0.155)	(0.400)	(0.053)	(0.331)	(0.118)	(0.403)	(0.044)	(0.373)
Asian %	-0.241	-0.251	-0.005	-1.163	-0.675**	-0.620	-0.027	-1.536
	(0.332)	(0.0853)	(0.053)	(0.706)	(0.248)	(0.845)	(0.094)	(0.785)
Black %	0.405*	1.647***	-0.052	0.521	0.261*	1.319**	-0.001	0.846*
	(0.164)	(0.422)	(0.056)	(0.349)	(0.128)	(0.437)	(0.049)	(0.405)
Hispanic %	0.011	0.117	-0.060	-0.589	-0.210	-0.147	0.016	-1.489**
	(0.200)	(0.514)	(0.068)	(0.425)	(0.158)	(0.537)	(0.060)	(0.497)
N	1,125	1,125	1,125	1,125	870	870	870	870
R^2	0.81	0.65	0.24	0.64	0.86	0.64	0.27	0.66

Note: OSS = out-of-school suspensions; ISS = in-school suspensions; ER = Expulsion Rate; CP = Corporal Punishment. OSS, ISS, and CP are expressed as counts of suspensions/counts of corporal punishment per 100 students. ER is expressed as a count of expulsions per 1000 students. Unemployment and percent (%) variables are expressed as counts per 100 individuals or students, respectively. The reported R^2 is overall.
*p<0.05, **p<0.01, ***p<0.001

10 Figures

Figure 1: Distributions of Discipline Rates

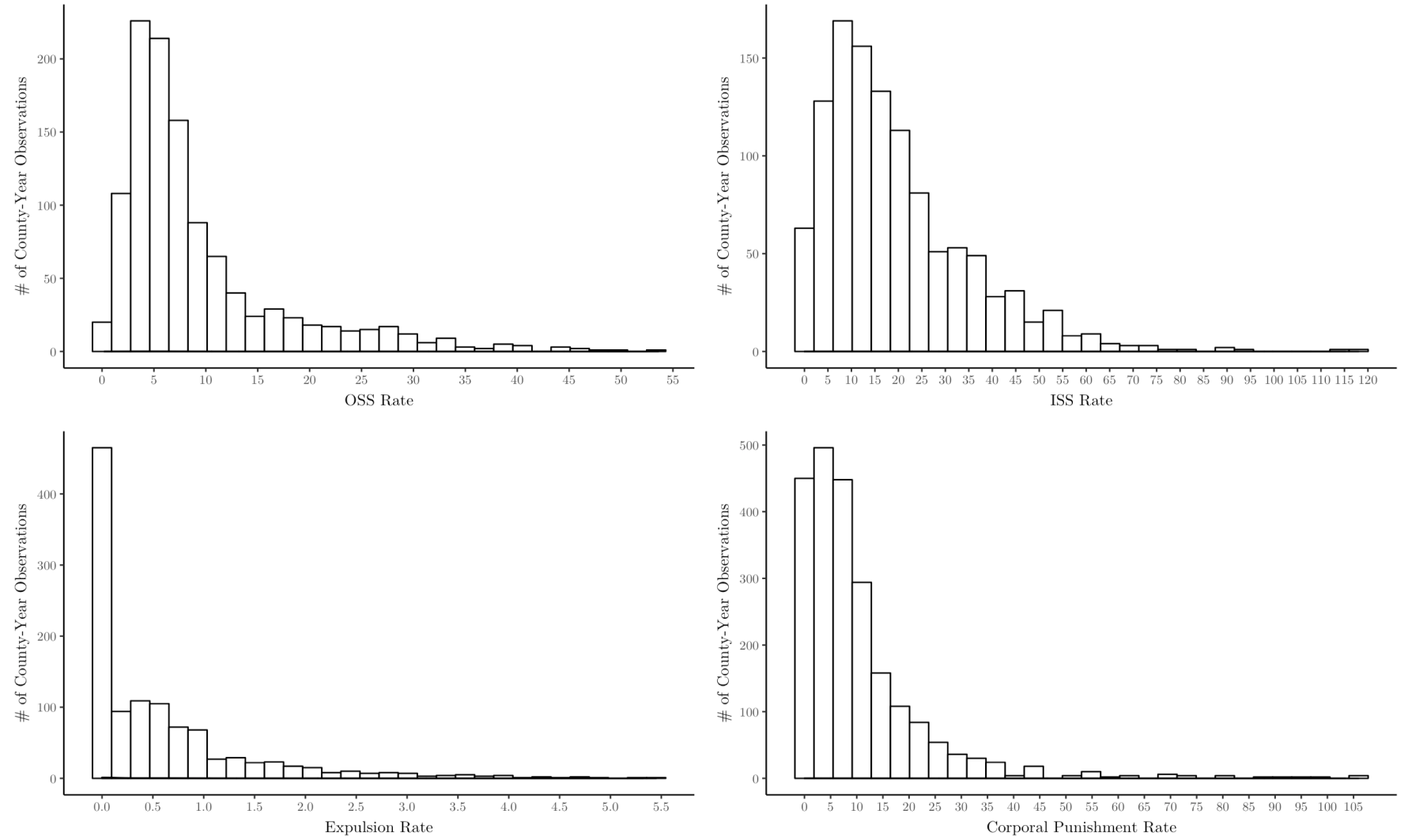


Figure 2: Relationship between School Racial Composition and OSS Rate

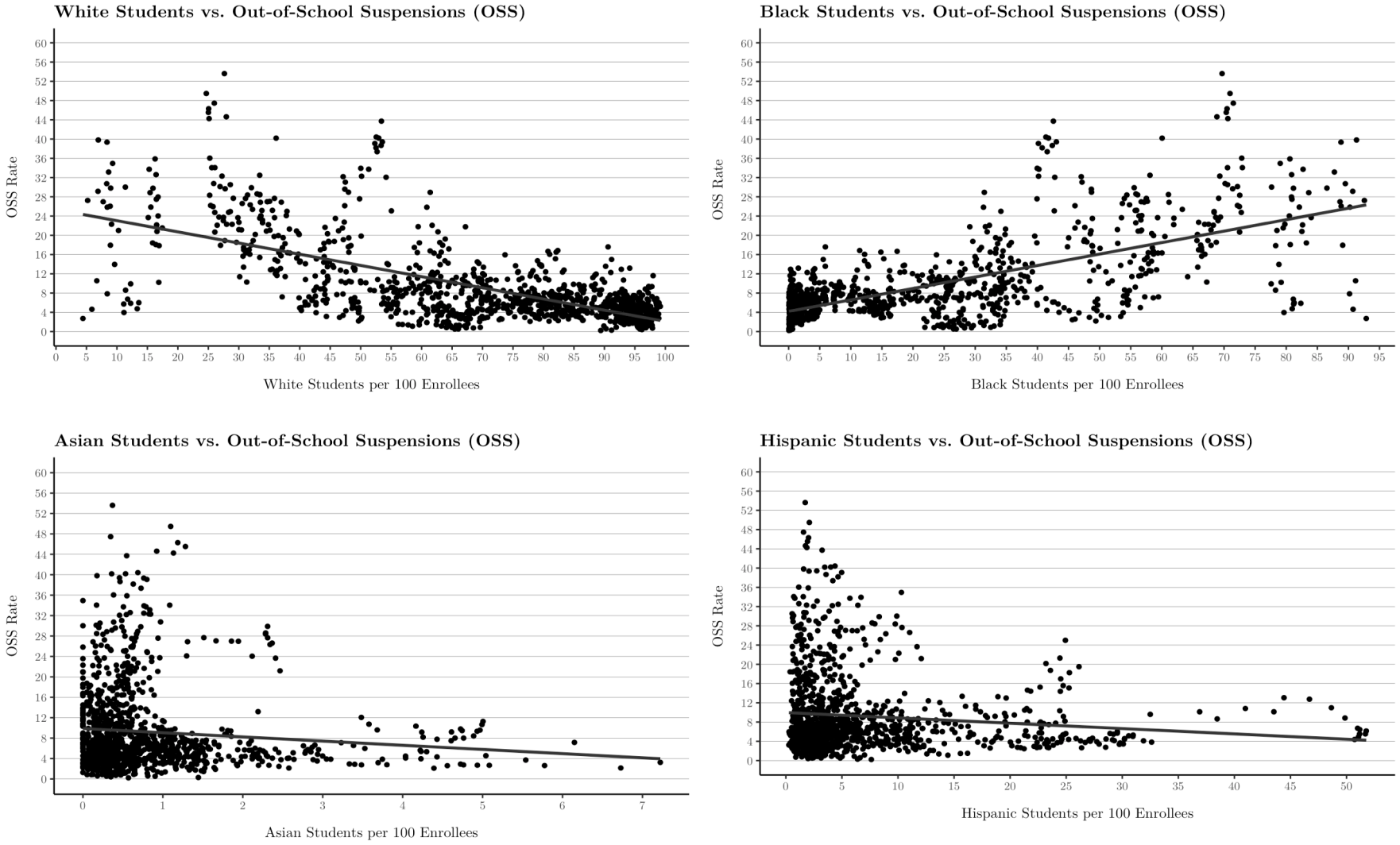


Figure 3: Relationship between Unemployment and Discipline Type

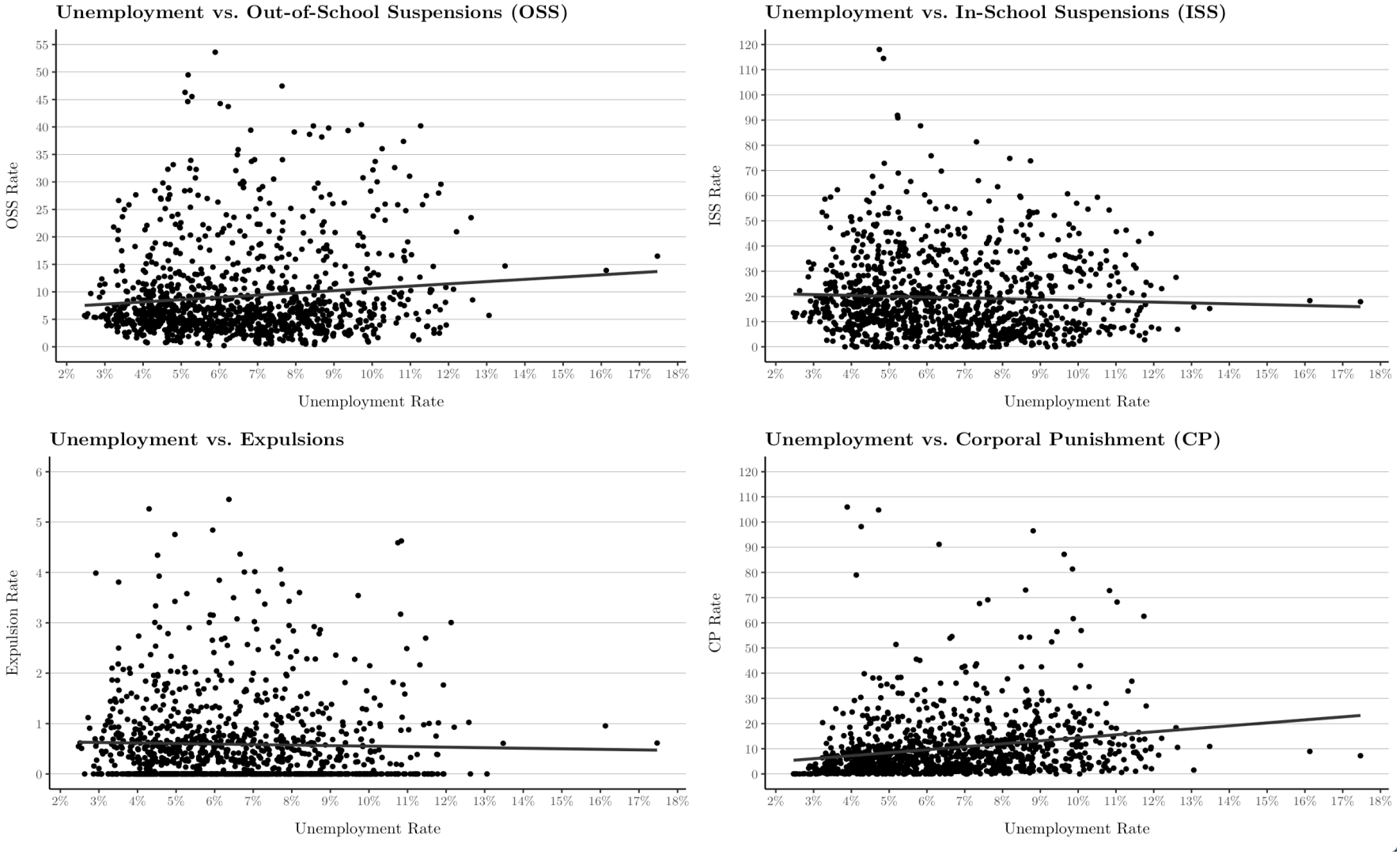


Figure 4: Within County Relationships between Unemployment and OSS

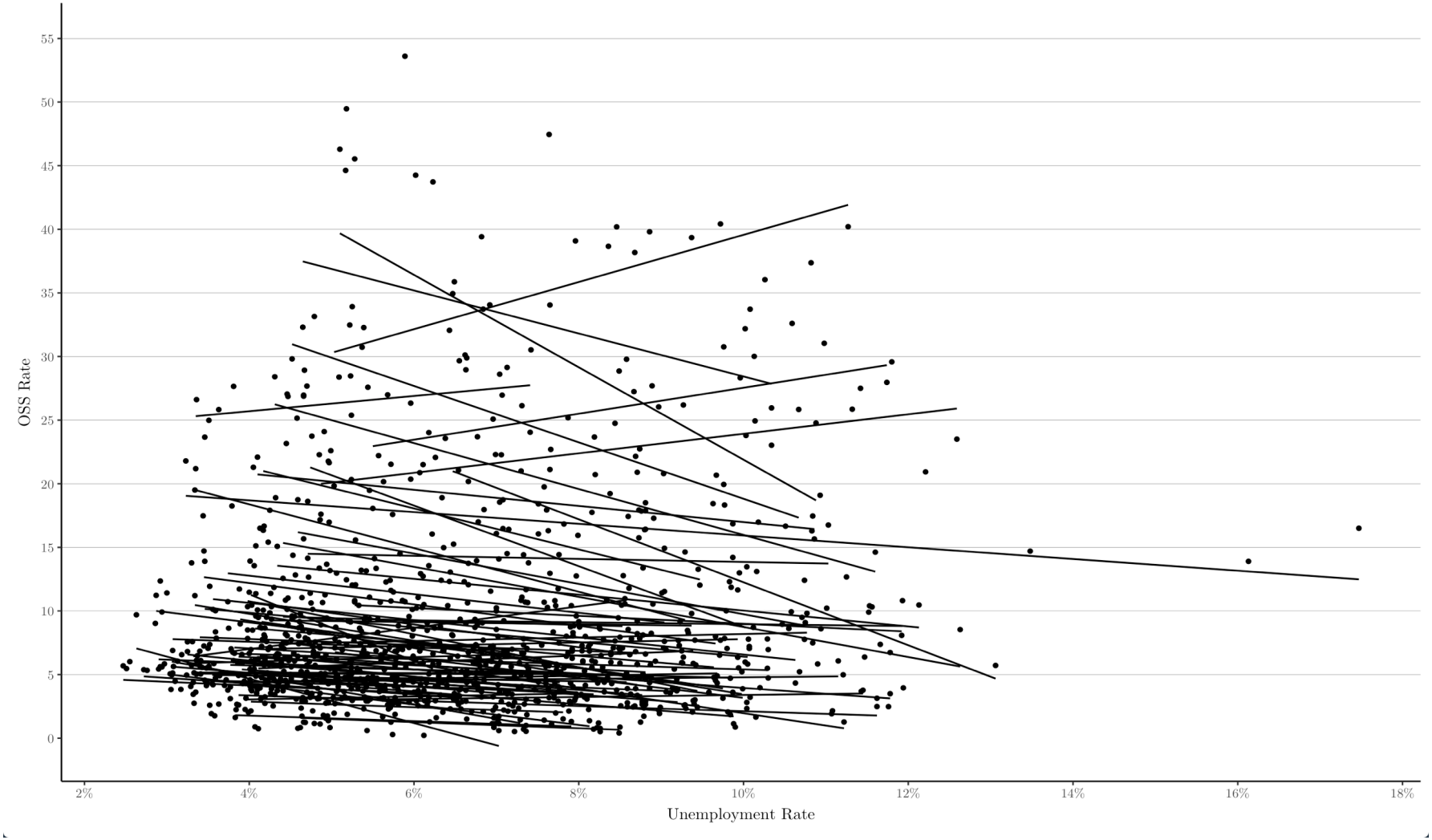
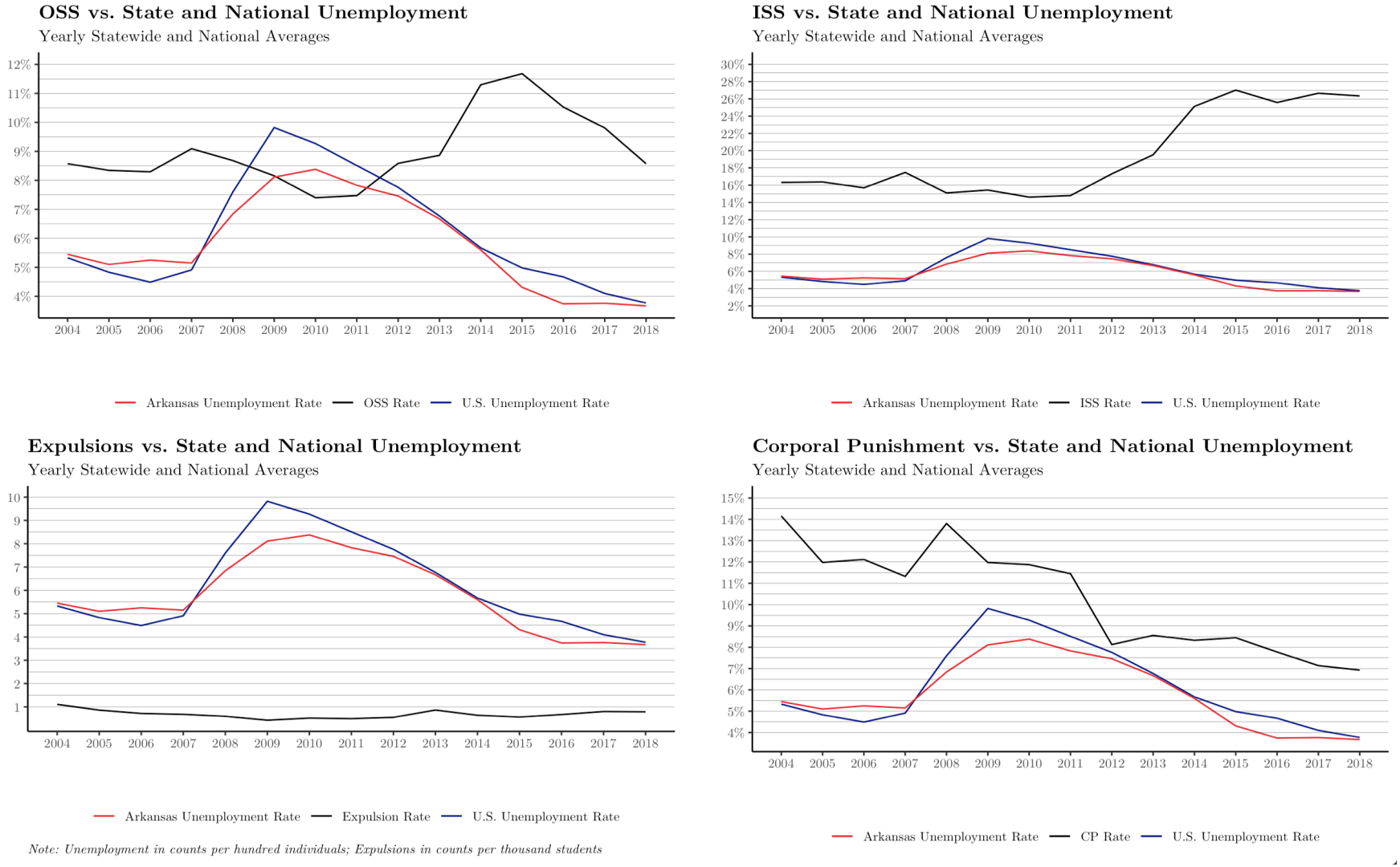


Figure 5: Time Trends for Unemployment and Discipline Type in Arkansas



Note: Unemployment in counts per hundred individuals; Expulsions in counts per thousand students

Figure 6: Relationship between Unemployment and OSS for All Arkansas Counties in a Given Year