

Sentencing motonormatively

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Abstract

The necessity of cars for everyday life—especially in rural and suburban areas—means that road-related risks and harms might be perceived as more acceptable. I consider this motonormativity in the sentencing context, with the hypothesis that judges might sentence defendants for motor vehicle offenses differently by virtue of decreased blameworthiness. Using Pennsylvania sentencing data, I show that the most serious road harms, such as homicides caused by motor vehicles and crimes against persons involving driving under the influence of alcohol (DUI), are punished more seriously than non-vehicular offenses. These differences are mainly attributable to structural differences in sentencing guidelines, reflecting policymakers’ choices rather than individual judicial discretion. Non-homicide and non-DUI vehicular offenses are punished less severely, due to a mixture of different sentencing guideline characteristics and different discretionary treatment of those cases at sentencing. I argue that the bifurcation in sentencing outcomes reflects the social view of driving while intoxicated or causing death as particularly serious offenses, while simultaneously downplaying the harms that result from “normative” driving. I use an instrumental variable analysis to show that local car dependence does not influence sentencing decisions; macro-level policy decisions and broader norms around driving are comparatively more influential.

Introduction

Motor vehicles are both common and essential parts of everyday life and common sources of death and injury to pedestrians, cyclists, and other drivers. Peculiarly, crimes against persons involving vehicles are often separate statutory offenses from their non-vehicular counterparts. Homicide committed with a car becomes “vehicular homicide,” often subject to separate sentencing rules and guidelines. The instruments of a crime are relevant to sentencing in many contexts, such as an enhancement for using a firearm, for example. But vehicular crimes are quite uniquely set apart as a different type of offense. Certain types of vehicular offenses, particularly those involving intoxication, are further set for especially harsh condemnation. This pattern might be read as

evidence of the motonormativity of sentencing law—the construction of road harms as different and perhaps more acceptable than similar harms and risks from other sources (Walker et al. 2023; Loader 2026). By focusing on only the worst forms of driving for individual punishment, this sentencing system might also normalize other harmful impacts of driving. Similarly, the general dependence upon cars might cause sentencing decisionmakers and policymakers to view motor vehicle defendants as less blameworthy when engaged in “normative” (i.e., not drunk or particularly egregious) driving.

In this paper, I examine how sentencing outcomes might reflect motonormativity from both sentencing policy and sentencing decision-making—that is, Bushway and Forst’s (2013) type B and type A discretion, respectively. Drawing upon Pennsylvania sentencing data, I first use Oaxaca-Blinder decompositions to understand how different legal architectures contribute to different sentencing outcomes between vehicular homicides and aggravated assaults and their non-vehicular counterparts. I then use a similar decomposition technique to examine what drives harsher sentences for intoxicated driving defendants, compared to non-intoxicated ones. Finally, using an instrumental variable 2SLS regression, I estimate the effects of local car dependence on sentencing outcomes for vehicular homicides and aggravated assaults. Ultimately, I find that motor vehicle offenses are punished more harshly in cases where the harm or conduct is particularly egregious: homicides or intoxicated drivers. These harsher punishments are primarily due to structural sentencing differences, not different decision-making by judges (though that does contribute). Other driving offenses (non-intoxication, non-death) are treated less severely than their non-driving counterparts, which is driven by a mixture of different case characteristics and different treatment of those at sentencing. Contextually, the car dependence of a local area does not seem to impact sentencing outcomes for vehicular offenses.

The impacts of vehicles and motonormativity

Motor vehicles enable a great deal of everyday American life: commuting to school and work, traveling to community amenities like parks, and participating in the local economy. More than two-thirds of American workers commute using a private motor vehicle (Burrows and Burd 2024). Motor vehicles are also a public health threat. Each year, more than one million people die from road traffic—a world-leading cause of death for those aged 5-29 (Loader et al. 2025). In the United States during 2024, motor vehicle collisions killed almost 40,000 people and injured more than 2 million (National Highway Traffic Safety Administration 2026). These are just the most serious impacts. Even more mundane impacts caused by vehicles, such as noise, speeding, and

poorly-parked cars, can cause people to see their neighborhoods as less hospitable and less safe (Loader et al. 2025). These costs are not evenly distributed. As with other public health risks, those from racially- and class-marginalized communities are at a greater threat of injury and death (Schmitt 2020). In locations where more miles are driven and more cars are privately owned, there are a higher proportion of road deaths (Ahangari et al. 2017). Cars are both a key part of and a major threat to everyday life in the US.

Despite the magnitude of these risks, they are largely accepted in everyday political and social life. Walker et al. (2023) termed this cognitive bias “motonormativity”—a willingness to accept risks and harms from motor vehicles that would not be accepted to nearly such an extent from other causes. Survey research has shown, in both the UK (Walker et al. 2023) and US (Goddard 2024), that members of the public will accept risks such as pollution, obstruction and inconvenience of the public, and public health harms from cars in much greater measure than from other sources. In the context of criminal punishment for road harms, Loader (2026) defined “motonormative punishment” as a focus on punishing and blaming individual bad drivers, rather than considering the deeper structural and cultural roots of motor vehicle harms. Harms that come from “normal” driving are accepted, in a way they would not be if caused by other means. Motonormative punishment, in promoting hostile social solidarity (Carvalho and Chamberlen 2018) towards the most egregiously harmful drivers, allows other drivers to overlook the risks of their own “normal” driving. A turn away from traditional criminal justice responses to automotive harm in favor of design-based regulation of automobiles and drivers might de-emphasize this focus on “bad” drivers only (Loader 2026). Traditional criminological study has not focused on the role of cars, as Loader pointed out; this paper contributes to filling that gap in some small way.

Of course, cars have not been absent from criminology and criminal justice. They have often been studied, though, not as sources of harm in their own right but as the setting for other forms of policing (Loader 2025). As Seo (2019) and Headworth (2023) have argued, the spread of the motor vehicle throughout American life and culture transformed policing and criminal justice more broadly. Driving is enmeshed in regulations, such as insurance, inspections, and traffic laws. This legal architecture allows police to stop automobiles in the service of other aims, such as searching for drugs, firearms, or wanted people (Seo 2019; Headworth 2023; Loader 2025). Similarly, driving has been used as a site of punishment for other offenses. For example, most suspensions and revocations of licenses in the US are not for safety-related infractions but for collateral consequences for non-driving offenses (Headworth 2023). As with other criminal justice outcomes,

there are well-documented racial disparities in the enforcement of traffic laws, which usually takes place via police traffic stops (Pierson et al. 2020; Aggarwal et al. 2025; Goncalves and Mello 2021). These disparities make calls for greater enforcement of road harms particularly fraught, though automated enforcement represents a growing possibility to more equitably deter dangerous driving behaviors (Stagoff-Belfort et al. 2025; Gao et al. 2025).

The enforcement and punishment of motor vehicle crime

The punishment of motor vehicle offending can be characterized as generally lenient, with specific pockets of harshness for certain behaviors, notably driving under the influence of alcohol or drugs. This leniency is perhaps best examined in the certainty and severity of punishment separately. In other words, while statutory penalties for causing road harms remain high, very few drivers who cause harm are eventually punished. The certainty of punishment for road offenses hinges upon moral luck (Kyd and Cammiss 2020), even more so than many other criminal offenses. For example, speeding is usually only a minor traffic infraction or summary offense, but if the driver were to kill a pedestrian while speeding, they would face a major felony charge. This gap, rooted in a focus on the results of the offense rather than the danger posed, means that some reckless and dangerous behavior on the roads is barely punished at all (Kyd and Cammiss 2020). If drivers are charged, prosecutors might select less culpable offenses to charge them with and seek lower sentences (King 2020). Some scholars have gone so far as to claim that this punishment landscape constitutes a state of exception where, à la Agamben, a non-driver may be killed by a driver with impunity (Braun and Randell 2022)

At the same time, many sentencing structures do provide for strict punishments for drivers who kill or maim. In many US jurisdictions, homicide by a motor vehicle is a separate statutory offense to other forms of homicide that attracts a higher punishment. For example, in this study's site of Pennsylvania, homicide and aggravated assault by vehicle (75 PA Cons Stat § 3732-3732.1) are separate offenses from the general offenses of involuntary manslaughter (18 PA Cons Stat § 2504) and aggravated assault (18 PA Cons Stat § 2702). Homicide committed by a motor vehicle driven while intoxicated is also a separate offense (75 PA Cons Stat § 3735). Pennsylvania's guidelines assign an offense gravity score (OGS) to each offense as a sentencing baseline. The score for motor vehicle homicide is higher than that for involuntary manslaughter: 12, compared to 10, and 17 if the motor vehicle homicide is committed while DUI (all in the absence of other aggravating factors). The base level for aggravated assault with a motor vehicle is 11, compared to 10, and 16 if DUI; similarly, these comparisons are also in the absence of all other aggravating

factors. Empirical research has found that sentences for vehicular and non-vehicular homicides are relatively similar; average sentence lengths were similar for involuntary manslaughter and homicide by vehicle in a study using 1995-2000 data from Philadelphia (Auerhahn 2007). While this study is dated and Philadelphia might not be representative of more rural, car-dependent areas, it offers evidence that if a driver reaches the point of sentencing, the punishment might be akin to a similar non-driving offense.

In a motonormative penal system, the most focus is given to “bad” drivers, rather than to the harms caused by everyday or “normal” driving. This focus is most clear in how the most egregious offenses, such as homicide and driving while intoxicated, have been separated out and treated as their own forms of criminality. Regulations surrounding driving and alcohol in the US only slowly came into being over the course of the 20th century, as many activist movements called for greater attention to and enforcement against drunk driving (Lerner 2011). Blood alcohol limits remained quite high into the 1960s; the cultural perception of drunk driving shifted from acceptable to unacceptable over the last decades of the century, though conflicted attitudes still persist in the US (Lerner 2011). Arrests for DUI and punishments for it rose steadily through this time period (Lerner 2011; Stringer 2019). As with regular traffic enforcement, racial disparities arose in DUI enforcement (Kagawa et al. 2021) and in DUI sentencing (Denning et al. 2025; Kingsnorth et al. 1993; Knoth and Ruback 2021). DUI is perhaps an exception to Kyd and Cammiss’ (2020) observation about moral luck; it is one offense where the reckless behavior itself is punished.

Yet, as Loader (2026) argued more generally, individual punishment has had mixed results at reducing harms from DUI, compared to more regulatory approaches. Using a judge instrumental-variable design, Rahman and Weatherburn (2021) found that serving a prison sentence does not reduce the risk that DUI offenders will commit another DUI offense. But, contrary to this finding, another study employing a regression-discontinuity design shows that harsher sanctions for higher BAC levels did cause reductions in re-offending (Hansen 2015). One way to potentially reconcile these results is that punishment deters, but imprisonment less so. Regulatory approaches have shown considerable promise. Traffic statutes that curtail one’s ability to drive as a penalty for DUI lead to fewer road traffic deaths at the county level (Wright and Lee 2021). License suspension can help reduce recidivism, as shown in other countries (Choi et al. 2019). Some evaluations have found that only pre-conviction administrative suspensions reduce fatalities, not postconviction suspensions (Wagenaar and Maldonado-Molina 2007). Repeat license suspension can help reduce recidivism for DUI recidivists (Singichetti et al. 2024). Ignition interlock devices can reduce recidivism, too

(Zeithammer et al. 2025; Willis et al. 2004; McCartt et al. 2018; McGinty et al. 2017). By removing dangerous drivers and dangerous driving from the road, these approaches reduce road harm.

Sentencing and car dependence

This paper brings together the literature on motonormativity to examine how car-dependence might impact sentencing for motor vehicle crimes and comparable non-vehicular offenses. This specific area is understudied, as many sentencing analyses, particularly of US data, exclude DUI and driving offenses entirely (Silver et al. 2023; Ulmer and Bowman 2025; Ulmer and Galvin 2025). We can hypothesize that car dependence might affect sentencing for motor vehicle offenses for several reasons. First, while there is not an explicit provision to consider the needs of the offender to use their vehicle in Pennsylvania law, drivers in Pennsylvania and other states may apply for limited licenses to allow them to work, study, or access medical care if their license is otherwise suspended (Commonwealth of Pennsylvania 2026). Certain violations, such as DUIs, exclude a driver from these limited licenses. Other jurisdictions make these considerations, too. For example, England and Wales allow drivers who would otherwise be banned due to accumulating points on their license to argue that such a ban would cause ‘exceptional hardship’ (Sentencing Council of England and Wales, n.d.). Hence, the car-dependence of the defendant might itself impact their sentence.

More broadly, car-dependence in a community might reduce the perceived blameworthiness of the defendant in a motor-vehicle crime. This contextual factor would then impact how severely they are punished. A wide array of research shows that sentencing decisions are affected by local court contexts (Ulmer and Johnson 2004; Johnson 2005, 2006). Many of these local contexts involve the structural characteristics of the local area. For example, rural areas differ in their use of incarceration (Ruhland and Holmes 2023) and the imposition of fines and fees (Kirk et al. 2022). Hence, in communities where cars occupy a different role, sentencing for vehicular crime may also differ; courtroom actors likely perceive the role of automobiles and their attendant risks differently. Of course, prosecutors’ charging decisions are shaped by same factors (Bowman et al. 2024), as are the decisions police make in deciding to arrest someone or not. As an example of the latter, cultural norms in local settings are associated with different levels of DUI enforcement (Stringer 2024); local areas with universities, for example, are likely to have lower levels of DUI enforcement.¹ As a result,

¹ A note of caution—this study used county-level UCR data, with which there are well-documented issues (Maltz and Targonski 2002).

car-dependence might not only impact the final sentence, but also the legally relevant case characteristics (such as the charge or the sentencing guidelines) used in reaching that sentence. At each of these stages, I hypothesize that car-dependence might be associated with greater leniency for driving offenses (compared to comparable non-road harms)—that is, more motonormative sentencing.

Present study

This study's first goal is to understand the differences in sentencing outcomes between serious driving harms (i.e., homicide and aggravated assault) and those similar offenses in non-driving contexts. On the one hand, judges might sentence these offenses differently. Drawing on theories of motonormativity, I hypothesize that judges will sentence drivers more leniently for these offenses than those who caused similar harms via other means. But the underlying legal and extralegal case characteristics of these cases might also differ. For example, defendants convicted of driving offenses might have less severe criminal histories. The sentencing commission might have provided for harsher, not more lenient, penalties for these driving offenses. The first research question I address is thus: to what degree do different distributions of case characteristics, versus differential treatment of those characteristics at sentencing, impact sentencing differences between serious driving harms and similar non-driving offenses? Of course, many of these legal characteristics are endogenous. The creation of sentencing guidelines, for example, reflects discretionary choices (Bushway and Forst 2013), and the choices of prosecutors, defense attorneys, and judges can affect legal variables such as criminal history or offense severity scores (for example, via plea bargaining or deciding upon a certain enhancement). Hence, this analysis is not separating out the innate differences in severity between driving and non-driving offenses from the effects of discretion; instead, I am separating the relative contributions of one type of discretion (upstream choices that shape the cases before the court) from another type (how judges choose to sentence).

My second goal is to understand how different treatment of “normal” driving versus “bad” driving affects these differences. To do so, I specifically examine the differences in case characteristics and treatment of those characteristics between serious driving offenses committed while intoxicated and those committed while not intoxicated, both compared to similar non-driving harms. Drawing on the history of DUI enforcement and legislation in the US, I hypothesize that DUI-involved offenses will attract comparatively harsher sentencing in both the legally-constructed case characteristics and their treatment at sentencing. This analysis's final goal is to understand to what degree car dependence in the local community contributes to these outcomes. I hypothesize

that communities with greater levels of car dependence will sentence defendants comparatively more leniently for serious harms caused via driving. In more motonormative settings, the harms of driving will seem less serious.

The setting for this study is Pennsylvania. Prosaically, the Pennsylvania Commission on Sentencing publishes some of the most accessible and widely-used case-level sentencing data; it would be an understatement to say that many criminological studies of sentencing rely upon Pennsylvania's data. Hence, these data are accessible and easy to use. It is also a theoretically interesting site. Pennsylvania has a highly structured but wholly advisory guideline system, in which we can observe the influences of both type A and type B discretion (Bushway and Forst 2013) in shaping sentencing outcomes. Philadelphia and its surrounds constitute a major dense urban area, one that is relatively walkable and relatively well-served by public transit. The state has several smaller cities with regional public transit, most notably Pittsburgh. Much of the state's middle is highly rural and almost entirely dependent upon car transportation. As a result, we might expect different underlying levels of car dependence throughout the state, providing needed variation for this study.

Methods and data

The data for this study come from the Pennsylvania Commission on Sentencing's general release files for 2001 through 2023. These contain all cases sentenced in the Court of Common Pleas (the trial court of general jurisdiction) and reported by the counties to the Commission. I focus on cases of involuntary manslaughter or aggravated assault, whether committed by vehicle or not.² During the study period, there are 2,937 homicide sentences and 34,415 aggravated assault sentences. Pennsylvania's sentencing grid sets a standard range of recommended sentence length based upon an offense gravity score (OGS) for the offense of conviction and the defendant's prior record score (PRS) based upon previous criminal convictions. Judges are required to calculate these guidelines, but the guidelines are wholly advisory in terms of what sentence the judge imposes. The guideline recommendation will be either a non-custodial sentence or a duration of incarceration.³ These data contain key legal variables that may affect sentencing, including OGS, PRS, whether a case was resolved via plea or trial, and whether the defendant is subject to sentencing enhancements

² The vehicular offense is generically termed "homicide," but it matches the *mens rea* for involuntary manslaughter specifically.

³ Pennsylvania uses an indeterminate sentencing system; the guidelines apply only to the calculation of the minimum term that must be served before the parole board considers an individual for release. The judge may set any maximum term provided it is at least twice the minimum and no greater than the statutory maximum.

for certain conduct.⁴ The data also contain information on the defendant (such as age, sex, and race/ethnicity)⁵, the county and judge who imposed the sentence, and the ultimate disposition of the case. I supplement these data with county contextual information from the Census Bureau’s American Community Survey (e.g., U.S. Census Bureau 2023), accessed via the censusapi package (Recht 2017), and the Pennsylvania Secretary of the Commonwealth’s Office (for election data).

To address my first and second research questions, the relative contributions of differing case characteristics, I use Oaxaca-Blinder decomposition (Oaxaca and Ransom 1999; Oaxaca 1973; Blinder 1973). This method estimates what proportion of the difference in outcomes between two groups, $g = (A, B)$, is attributable to different underlying covariates and what proportion of the difference is due to different treatment of those covariates (in this case, by the sentencing process). In the two decompositions here, those groups are vehicular and non-vehicular cases, and vehicular cases involving intoxication and those not involving intoxication. I model the expected sentencing outcome with a linear model for case Y_i in group g as:

$$Y_{ig} = \alpha + \beta_1 OGS + \beta_2 PRS + \beta_3 Trial + \beta_4 Sex + \beta_5 Race + \beta_6 Age + \varepsilon$$

The decomposition takes these expected sentences, $E(Y_{ig}) = E(Y_{ig}|X_{ig}, \beta_g)$, where β_g are the coefficients for the model and X_{ig} are the covariates for group g , and estimates the difference in sentence length between the two groups, Δ :

$$\Delta = \{E(Y_{iA}|X_{iA}, \beta_A) - E(Y_{iB}|X_{iB}, \beta_A)\} + \{E(Y_{iB}|X_{iB}, \beta_A) - E(Y_{iB}|X_{iB}, \beta_B)\}$$

This process has been used in criminology to study, for example, racial disparities in case processing (Omori and Petersen 2020) and pretrial detention (Galvin et al. 2025). These decompositions can be calculated for any underlying generalized linear model—in this case, I fit a decomposition predicting the length of incarceration, both based upon several defendant and case characteristics.⁶ I implement the decompositions using the GeneralOaxaca package in R (Nicosia and Baillargeon-Ladouceur 2015). In both, I include the offense gravity score, prior record score, whether a case went to trial, and the defendant’s age, sex, and race as predictors. In the first decomposition, I examine differences between vehicular and non-vehicular offenses (homicides and

⁴ Most of these enhancements, such as the use of a firearm or selling drugs in a school zone, are very unlikely to apply to driving offenses.

⁵ Since Pennsylvania sentencing data systematically undercounts Hispanic defendants (Goldrosen et al. 2026), I use the predictrace package in R to identify likely Hispanic defendants using surname analysis (Kaplan 2023).

⁶ Given that the rates of custodial sentences are so high in this sample, I focus on the length of sentence imposed. Non-custodial sentences are in and of themselves a decision to sentence a defendant to zero months of incarceration, so I retain them in my sample as “true zeroes,” rather than employing a Tobit model of some sort (Fischman and Schanzenbach 2012).

aggravated assaults). In the second, I look at differences between non-alcohol-involved and alcohol-involved driving offenses.

For the third research questions, I use an instrumental variable analysis via two-stage least squares (2SLS) to predict how car dependence influences sentencing. Since the sentencing treatment of motor vehicle offenses might (at least in theory) affect how cars are used, I make use of an instrumental variable to help avoid this endogeneity. In particular, I use the persons-per-square mile population density of a county in 1920 (from US Census data) as an instrument for car dependence, which I operationalize as the percentage of workers in the county who regularly use a car, truck, or van to commute to work (from American Community Survey data). For an instrumental variable to be useful and credible, it must both have a strong first-stage relationship to the endogenous variable and only affect the outcome variable via that predictor. A county's 1920 population density and present-day car usage are highly correlated ($r=0.82$). The F-statistics for the first-stage regressions (given in Table 4 below) well exceed the commonly suggested threshold of 10 (Keane and Neal 2024), indicating that this instrument has a strong first-stage relationship.

The exclusion restriction, though, poses several challenges. Areas that were more densely populated in 1920 are more likely to be urban today. This urban-ness, I am hypothesizing, affects sentencing through car dependence. Of course, cities have other relevant characteristics that can affect sentencing. Cities are more racially diverse, more liberal, and can have higher poverty rates, all of which might impact sentencing contexts (Hester and Sevigny 2016; Durante 2021; Helms and Jacobs 2002; Wang and Mears 2010). To “block off” these paths by which 1920s-era density might affect modern sentencing, I include controls for the percentage of Black residents, percentage of Hispanic residents, percentage of residents with income below the federal poverty line, and percentage of Republican presidential voters. I also include controls for a defendant's race, sex, age, and criminal history, whether the case went to trial, and year-of-sentencing fixed effects. Finally, following Bushway and Morrison Piehl (2001), I include the minimum guidelines sentence length on the right-hand side, but with a slope fixed at one.⁷ I use robust standard errors clustered at the county-level, to reflect potential within-county dependence due to the effects of courtroom communities.

⁷ In effect, I am estimating the difference in actual sentence length imposed and the minimum guidelines sentence as the outcome variable.

Results

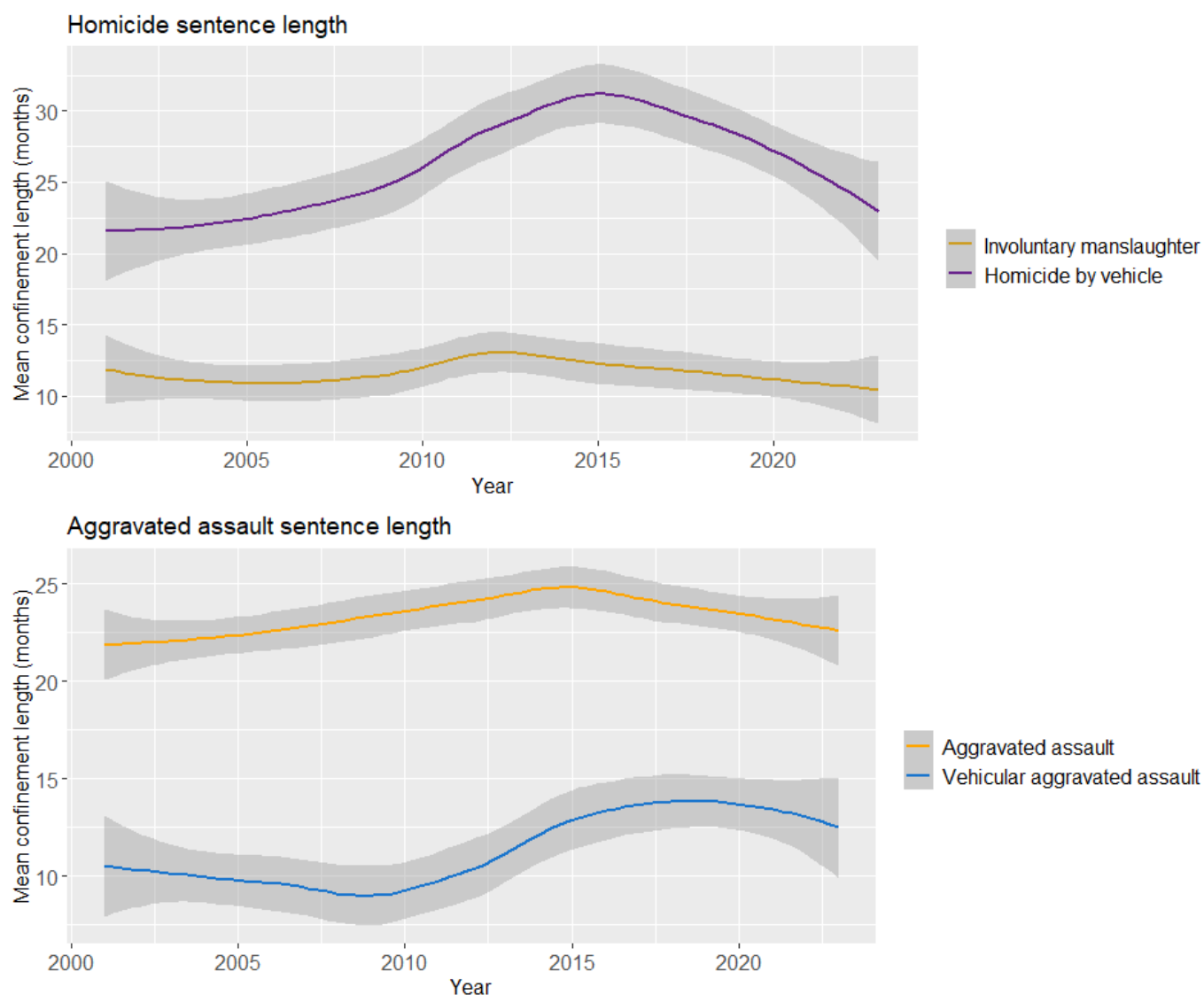
As shown in Table 1, amongst all vehicular homicides and involuntary manslaughters, vehicular homicide defendants receive lengthier sentences than non-vehicular negligent homicides; the reverse is true for aggravated assaults. Defendants in driving cases of both kinds generally have less extensive criminal records, are less likely to have been convicted at trial, and are less likely to be Black. They are more likely to be sentenced for multiple counts.

Table 1: Summary statistics of sample

	Homicide sample		Aggravated assault sample	
	Vehicular N=1,797	Non-vehicular N=1,140	Vehicular N=2,190	Non-vehicular N=29,385
Proportion incarcerated	90.8%	76.9%	77.8%	86.0%
Minimum term of incarceration (months)	25.6 (17.0)	11.6 (10.9)	11.4 (12.6)	23.3 (27.2)
Offense gravity score	8.0 (1.7)	6.5 (0.89)	7.4 (1.3)	8.4 (1.9)
Prior record score	0.71 (1.5)	0.80 (1.6)	1.0 (1.7)	1.8 (2.1)
Convicted at trial	9.7%	10.1%	3.0%	10.4%
Male defendant	82.0%	73.5%	81.2%	84.8%
Black defendant	13.9%	24.1%	13.1%	45.3%
Hispanic defendant	6.2%	5.6%	5.6%	11.0%
Age at sentencing	33.8 (12.4)	34.5 (12.9)	35.8 (12.5)	32.2 (11.2)
Multiple counts	74.7%	49.3%	76.7%	59.0%

As shown in Figure 1, the directional differences between vehicular and non-vehicular offense sentences (greater for homicides, lesser for aggravated assaults) have remained quite consistent over time. Vehicular offenses saw a rise in sentencing severity from 2010 through 2015, though this peak has receded. This trend mirrored, though was greater in magnitude than, a similar rise then decline in sentence lengths for non-vehicular involuntary manslaughter and aggravated assault.

Figure 1: Time trends in sentencing



I then move to the Oaxaca-Blinder decomposition of sentencing outcomes for vehicular and non-vehicular homicides and aggravated assaults. The relative contributions of different underlying covariates and different treatments of those covariates are summarized in Table 2. For homicides, the greater sentences for vehicular offenses are mostly attributable to different underlying legal variables, specifically the greater offense gravity score assigned to vehicular homicides. For aggravated assaults, though, the difference between lower sentences for vehicular assaults and higher sentences for non-vehicular ones is driven by different characteristics and different treatment of those characteristics in near-equal measure. In other words, a more punitive sentencing structure

influences more serious sentences for vehicular homicide, while both structure and judges' decision-making influence less serious sentences for vehicular assaults.

Table 2: Oaxaca-Blinder decomposition of sentence length differences between vehicular and non-vehicular offenses

	Homicides	Aggravated assaults
Difference in sentence length (vehicular minus non-vehicular)	14.05 months	−11.9 months
Difference attributable to different characteristics	10.66 months (75.9%)	−5.49 months (46.2%)
Difference attributable to different coefficients	3.38 months (24.1%)	−6.40 months (53.8%)

Then, I perform a similar Oaxaca-Blinder decomposition, estimating the differences in sentencing outcomes between vehicular offenses involving intoxication and those not involving intoxication. As shown in Table 3, the greater sentence lengths for DUI homicides are driven almost evenly by both more serious legal and non-legal case characteristics and more serious treatment of those characteristics, with slightly greater attributable to the latter. These results seem to indicate that both different legal structures and harsher discretionary treatment of intoxication offenses drive their more serious sentencing. But for aggravated assaults, this difference is due almost entirely to differences in case characteristics, not how those characteristics are treated at sentencing. When the harm is lesser (i.e., without death), intoxication offenses do not seem to attract harsher discretionary treatment.

Table 3: Oaxaca-Blinder decomposition of sentence length differences between intoxication and non-intoxication vehicular offenses

	Homicides	Aggravated assaults
Difference in sentence length (intoxication minus non- intoxication)	23.36 months	5.63 months
Difference attributable to different characteristics	10.53 months (45.0%)	5.25 months (93.2%)
Difference attributable to different coefficients	12.84 months (55.0%)	0.38 months (6.8%)

Finally, I turn to the instrumental variable estimation of the influence of car dependence on sentencing for motor vehicle offenses. The results for these models, for homicides and aggravated

assaults, are displayed in Table 4. Judges sentence defendants more harshly in intoxication cases, even above the already-higher sentencing guidelines minimum.⁸ In line with other research, defendants convicted after trial attract a trial penalty at sentencing. Racial differences in sentence length run somewhat counter to expectation, with Black defendants receiving shorter sentences for both offense types, and Asian defendants also receiving shorter sentences for vehicular homicide. County characteristics, including car dependence, are largely non-significant, with the exception of conservatism in the homicide model (associated with shorter sentences) and percentage Hispanic population in the aggravated assault model (associated with longer sentences).

Table 4: 2SLS results predicting sentence length, vehicular offenses only

	(1) Homicides	(2) Aggravated assaults
Intercept	23.46 (20.36)	18.62 (23.52)
Intoxicated during offense	22.62 (0.59)***	9.68 (1.00)***
Prior record score	3.13 (0.18)***	3.86 (0.30)***
Convicted at trial	2.68 (0.62)***	3.62 (1.08)***
Def. race: Asian	-4.75 (2.18)*	-0.19 (1.33)
Def. race: Black	-1.73 (0.77)*	-1.66 (0.59)**
Def. race: Hispanic	1.36 (1.50)	-0.11 (0.64)
Def. sex: F	-1.91 (0.76)*	-0.87 (0.62)
Def. age	0.0008 (0.026)	-0.002 (0.020)
County percent Black	-0.098 (0.15)	-0.27 (0.15)
County percent Hispanic	0.078 (0.11)	0.36 (0.17)*
County percent below poverty line	-0.036 (0.11)	0.092 (0.13)
County percent Republican	-0.095 (0.048)*	-0.035 (0.084)
County percent car commuter	-0.12 (0.22)	-0.14 (0.27)
Year FEs	Y	Y
First-stage F statistic	794.15	736.67
***= $p < 0.001$, **= $p < 0.01$, *= $p < 0.05$		

⁸ I also tested whether intoxication interacted with the county's car dependence; no such interaction was significant.

Discussion and conclusion

As this paper is a preliminary draft and conference paper, I forgo a full discussion and note a few potential points for discussion below.

- Vehicular homicides consistently attract more serious sentences than equivalent non-vehicular homicides, but largely due to different legal characteristics such as a higher guidelines range. This result indicates that type B discretion (Bushway and Forst 2013) is responsible for this difference, while lower sentences for vehicular aggravated assaults are due to both differences in characteristics and treatment.
- Higher sentences for intoxication are driven by different legal characteristics for aggravated assault but different treatment of those characteristics for homicide. Taken together with the above, these would indicate that policymakers (e.g., the legislature and sentencing commission) have recognized the specific harms of homicide and intoxication but focused on these aspects of motor vehicle harms specifically, to the exclusion of others. Also, in the instrumental variable model, judges still sentence more harshly (even accounting for the guidelines) in intoxication offenses. This pattern could be connected to the broader idea, from Loader (2026), that motonormative punishment separates out bad drivers from normative, good (though still objectively dangerous) driving.
- Car dependence at the county level seems to have no impact on sentencing outcomes for vehicular homicides and aggravated assaults, as the instrumental variables analysis showed.
- The main limitation of these findings is the focus on the final stage of the criminal justice process, sentencing. In most theoretical accounts of motonormativity and punishment, we would expect motonormativity bias to impact earlier stages, too, such as arrest and charging. I cannot account for potential endogeneity from these stages. As such, I might be underestimating the impacts of car dependence and motonormativity on ultimate sentencing outcomes and failing to find a true effect.
- Another interpretation of the null effect of county car dependence on sentence length is that norms of car dependence are cultural, beyond the local context, and persist even in relatively less car-dependent places. Alternatively, criminal justice actors such as attorneys and judges may themselves rely upon car transportation more, regardless of local context. Hence, drivers' perceived blameworthiness in their eyes might be less intense across different

counties. I am unable to directly measure this perceptual process—a key shortcoming of much contextual sentencing research, as Lynch (2019) highlighted.

- In broader perspective, this sentencing analysis is perhaps an object lesson for Loader's (2026) claim that focusing on bad drivers is an ineffective way to combat road harms. Over this 23-year period, 1,797 people were sentenced for vehicular homicide in Pennsylvania. During that same time period, motor vehicle traffic killed 31,759 people in Pennsylvania (CDC National Center for Health Statistics 2024). Only a small portion of road harms are being addressed through criminal justice means.

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