Causal Project

Calls to increase the federal minimum wage to $15 has gained traction in recent policy debates in the United States. Politicians in both parties have come out in favor or against the substantial proposed increase in the Federal minimum wage, more than double the current minimum wage. To support their positions, they turn to economists. The issue is that there is no consensus on the labor market effect of increasing the minimum wage. Some researchers find that there is a negative effect on teen employment (Allegretto et al. 2017, Callaway and Sant'Anna 2020), whereas others find no effect when the overall population is considered (Author and jazz). Consequently, there is no consensus on one of the most interesting claims for increasing the Federal minimum wage: an increase in the wage would lead to a decrease in crime. To answer this question, many economists first studied the effect of an increase in the minimum wage on employment and then look at the effect of changes to the employment level on crime rates. The reason is that economic theory suggests that people choose to commit more crimes when unemployment increases. On the other hand, the theory also suggests that increasing the minimum wage can raise wages for worker, thus increasing the opportunity cost of committing crime. In either case, to evaluate the impact of increasing minimum wage on crime rates, economists need to do so indirectly by first studying the effects on employment.

The issue is that there is there might be an overstatement or understatement of the effect of minimum wage on overall crime rates. For example, just because the unemployment rate increased does not mean that there will necessarily be an increase in crime. If the minimum wage were to increase, then the opportunity cost of committing crime also increases. In addition, the cost of committing crime also increases when someone is unemployment, albeit to a lesser extent. If an unemployed worker were to be caught committing a crime, they might be put in jail and are now losing out on the potential of getting employed at $15 per hour. On the other hand, even if unemployment were to not change, the effect of a wage increase might lead to an increase in crime. Assuming that there is no significant changes in the employment level, then workers are earning more and becoming "richer". This could lead to an increase in crime because the profitability of committing a crime has, in theory, increased. Instead of looking at the indirect effect of minimum wage increase on crime rates, this paper focuses on observing the direct effect by using the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) program and a new research method developed by Callaway and Sant'Anna (2020).

Describing the Data and Methodology

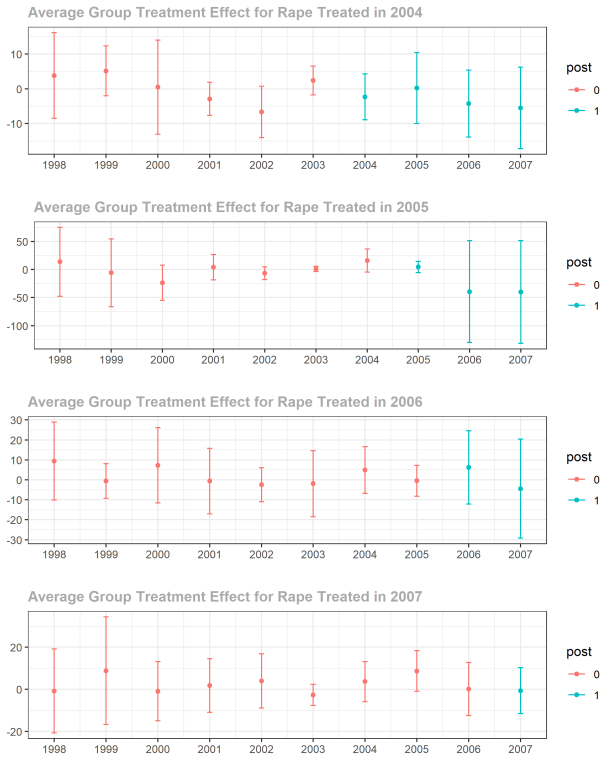
The primary data source for this paper is the UCR provided by Justin McCrary containing the criminal arrest rate by counties in all 50 states plus D.C. from 1997 to 2007. However, following Callaway and Sant'Anna (2020), this paper will observe only 29 states. The UCR collects the number of offenses that have come to the attention of law enforcement for violent and property crime, as well as data concerning clearances of these offenses which is not used. The FBI defines violent crimes as offenses that involve for or threat of force, whereas property crimes do not. The offenses that are considered in this paper are: murder, manslaughter, rape, robbery, burglary, larceny, and vehicle theft. These crimes are grouped based on their motive for committing the crime, rather than the violent and non-violent distinction made by the FBI. The first group is crimes committed for financial reasons (robbery, burglary, larceny, and vehicle theft) and the second is non-financially motivated crimes (murder, manslaughter and rape).

In order to perform the analysis, this paper uses the method proposed and developed by Callaway and Sant'Anna (2020) called the difference-in-difference with multiple time periods, rather than the regular difference-in-difference (DID) method. The period from 1997 to 2007 has a federal minimum wage that has remained at $5.15 an hour but some states have increased their minimum wage throughout this period, and at different times. Therefore, the states that have seen an increase in their minimum wage are part of the

treated group, whereas the others are part of the untreated group. The states that had a minimum wage greater than the 2009 federal minimum wage of $7.25 were dropped during this period were dropped, leaving only 29 states to be observed. Although there are two groups, a treated and untreated group, the regular DID method will not work for this analysis. The regular DID method requires that there be two groups but also two time periods. In period one, neither group is treated. In period two, one group gets treated and the other does not. The issue is that these states have increased their minimum wage at different time periods, therefore making it difficult to conduct a regular DID. The Callaway and Sant'Anna method allow for a difference-in-difference method to be used over multiple treatment time periods.

Performing the Analysis

Non-Financially Motivated Crimes



The above graph represents the group-time average treatment effect of increasing the minimum wage on the number of rapes per capita and indicates that there is no statistically significant effect. In fact, there is no statistically significant effect on any of the other non-financially motivated crimes whose graphs can be seen in the Appendix. These results are unsurprising as there is no economic motivation to commit these crimes. The only way for there to be to be a statically significant effect is if there is a significant number of these crimes started as financially motivated crimes and escalated to non-financially motivate crime. For example, a criminal committing a crime of burglary gets startled and accidentally kills the homeowner. He is arrested for, and the crime is reported as, murder. In this scenario, the criminal escalated the criminal act of burglary to murder without intending to do so. Therefore, if there was a significant increase in the number of burglaries and an increase in the number of murders, then it could be theorized that the minimum wage increase has indirectly positively affected the murder rate because of an increase in burglary. However, it is not the case as evidenced in the graphs.

In contrast to the lack of statistically significant effect on non-financially motivated crimes, there is some evidence of a positive effect on financially motivated crimes. As shown in the plots below, larceny has two

group-time average treatment effects that are statistically different from 0, whereas vehicle theft, burglary, and robbery have one. This seems to provide evidence refuting the claim that increases in the minimum wage will decrease crime. It is important to note that the cause of the increase in crime rates cannot be determined from the graphs alone. As mentioned above, an increase in the minimum wage might lead to an increase in unemployment or an increase in profitability in committing a financially motivated crime, thus increasing the crime rate. Yet, the small number of group-time average treatment effects that are statistically different from 0 seems to suggest that the aggregated group-time average treatment effects are going to be statistically insignificant.

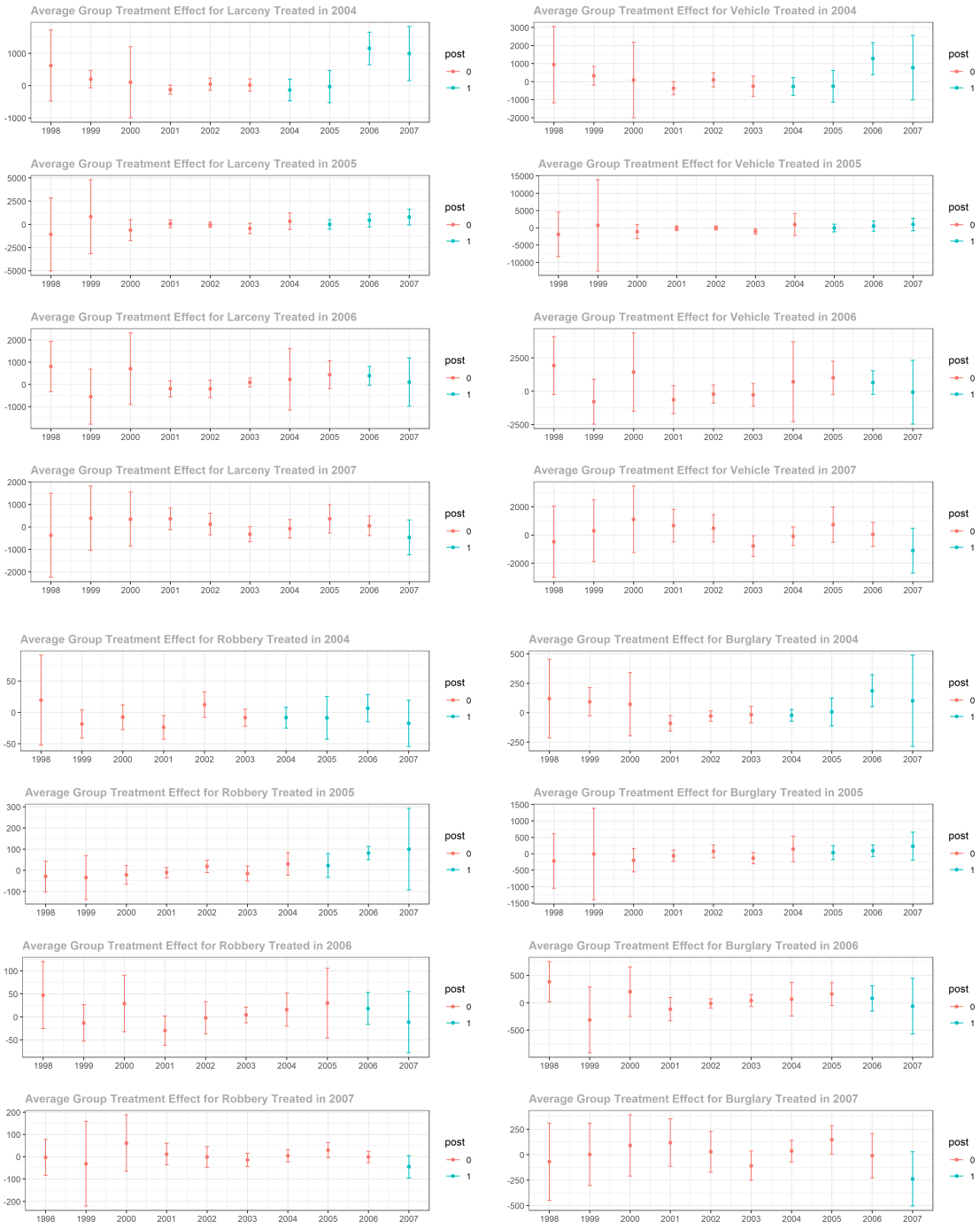
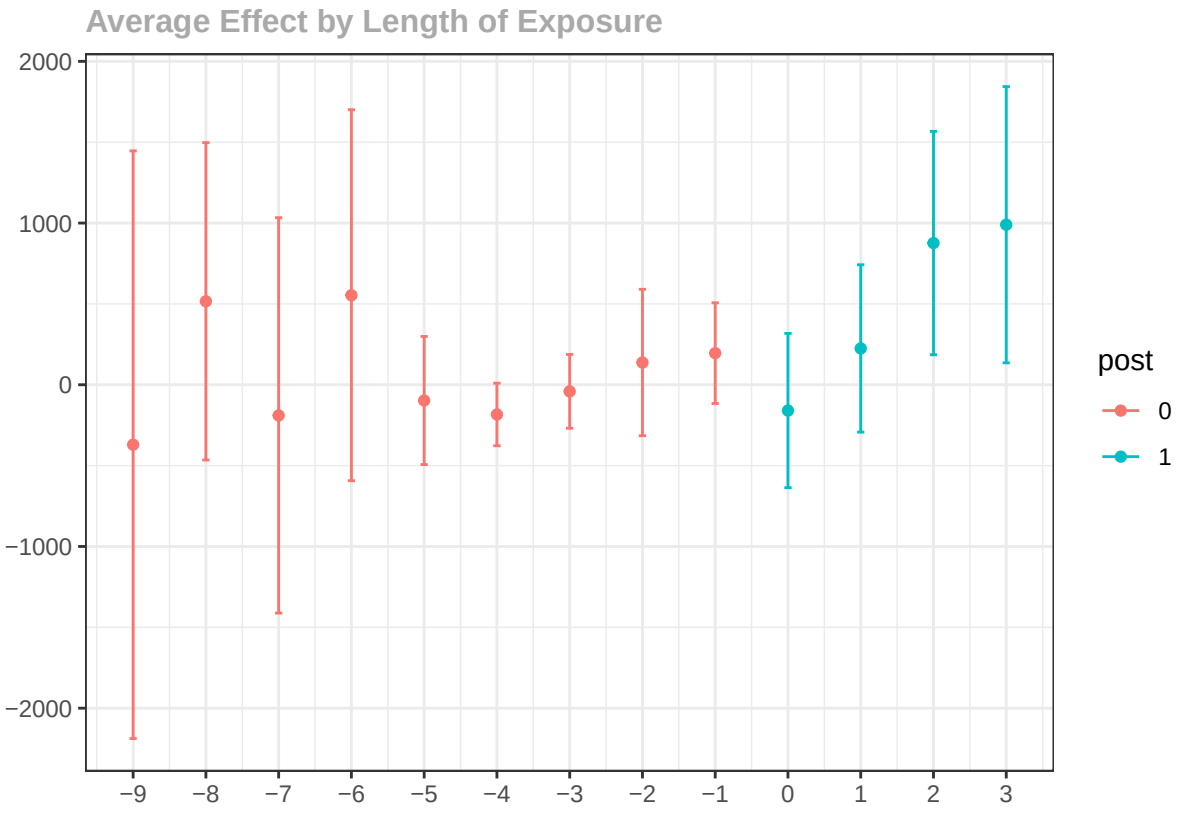
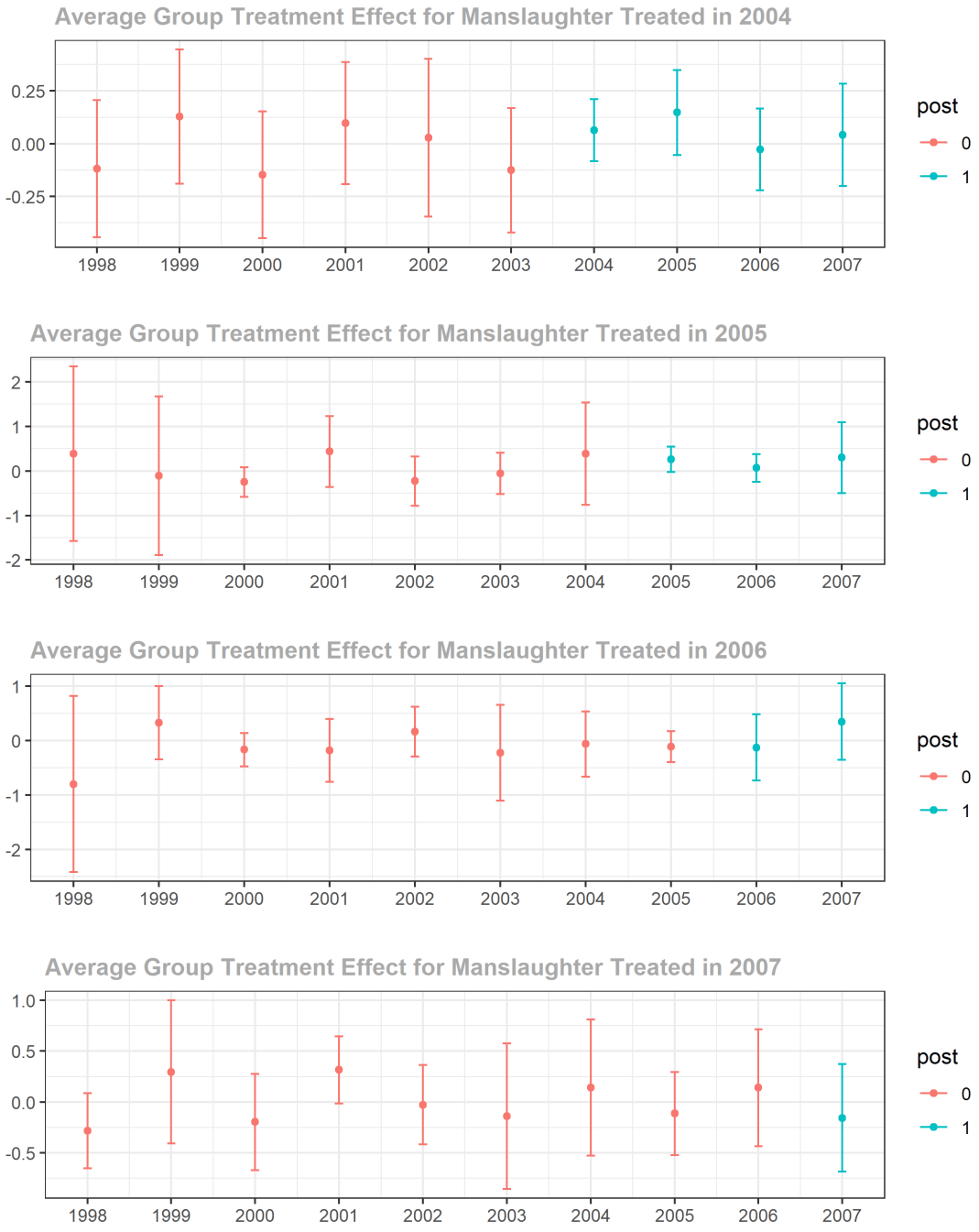


Table 1: Minimum Wage Aggreagted Treatment Effect Estimates

	Violent Crimes			Non-Violent Crimes			
	Murder	Manslaughter	Rape	Vehicle	Robbery	Larceny	Burglary
Overall ATT	-1.478	0.103	-13.414	379.817	0.103	482.794	58.842
95% CI	(-1.05,0.31)	(-0.024, 0.076)	(-9.37, 2.67)	(-165.03, 354.94)	(-4.37, 13.57)	(14.11, 227.28)*	(-37.72, 67.14)



Appendix


Average Group Treatment Effect for Manslaughter Treated in 2004
0.25
0.00
-0.25
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1
Average Group Treatment Effect for Manslaughter Treated in 2005
2
1
0
-1
-2
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1
Average Group Treatment Effect for Manslaughter Treated in 2006
1
0
-1
-2
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1
Average Group Treatment Effect for Manslaughter Treated in 2007
1.0
0.5
0.0
-0.5
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1


Average Group Treatment Effect for Murder Treated in 2004
2.5
0.0
-2.5
-5.0
-7.5
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1


Average Group Treatment Effect for Murder Treated in 2005
4
0
-4
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1


Average Group Treatment Effect for Murder Treated in 2006
15
10
5
0
-5
-10
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1


Average Group Treatment Effect for Murder Treated in 2007
4
0
-4
-8
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
post
0
1