

Youth Crime Before and After the Beginning of COVID-19: A Survey of Middle and High School Students in the United States

Methodology

The analysis, entitled, *Youth Crime Before and After the Onset of COVID-19: Evidence from 8th, 10th, and 12th Grade Students in the United States*, examines the effect of the first year of the pandemic on youth crime by comparing self-reported non-lethal criminal activity among nationally representative samples of two eighth, 10th-, and 12th-grade students.

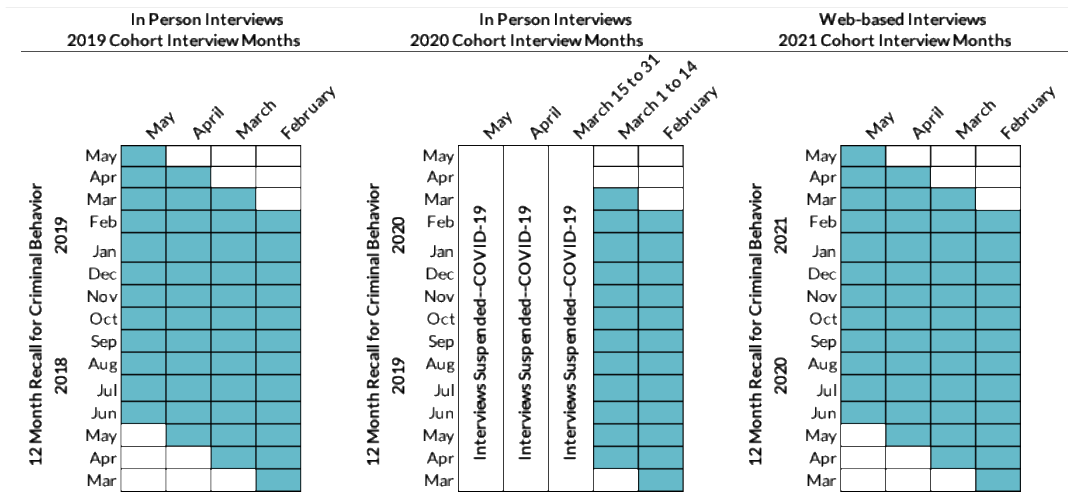
DATA

The report is based on individual-level, restricted-use data from surveys of nationally-representative samples of eighth, 10th, and 12th graders from 2019 to 2021 in the Monitoring the Future (MTF) study. The MTF study has been a vital source of information about changes in youth attitudes, substance use, and criminal behavior for several decades. It was launched in 1976 as a survey of high-school seniors and expanded in 1991 to also include eighth and 10th grade students.¹ The report offers new insights about recent changes in self-reported youth criminal behavior by combining data from independent samples of eighth, 10th, and 12th grade students, some of whom were surveyed during spring 2021 and some of whom were surveyed prior to mid-March 2020 (i.e., in 2019 and the first few months of 2020). This yields a meaningful comparison because, by definition, all students surveyed in 2021 were exposed to the first year of the COVID-19 pandemic, while those surveyed before mid-March 2020 had not experienced that phenomenon. Additionally, as summarized in Appendix Figure 1, because MTF survey participants were asked to provide confidential reports on their participation in several forms of non-lethal criminal activity during the preceding twelve months, students in 2021 reported on crime between spring 2020 and spring 2021, which coincides with the first year of the pandemic, a period that encompassed the

¹ Miech, R. A., Johnston, L. D., Patrick, M. E., O'Malley, P. M., & Bachman, J. G. (2024). Monitoring the Future National Survey Results on Drug Use, 1975-2023: Overview and Detailed Results for Secondary School Students. *Institute for Social Research*. <https://monitoringthefuture.org/wp-content/uploads/2024/01/mtfoverview2024.pdf>

widespread closing of U.S. businesses and schools during and their gradual reopening in many communities over the subsequent year.

Appendix Figure 1. Interview Schedule and Recall Period (Shaded) for Self-Reported Criminal Behavior in the MTF



The survey procedures applied in the MTF before and after spring 2020 were very similar, with the exception that, because many school-aged youth attended school remotely during the 2020-2021 school year, the MTF introduced a web-based version of the survey to collect data from the 2021 cohort. In contrast, as documented in Appendix Figure 1, the 2019 and 2020 cohorts were interviewed in person within school settings. The impact of this change in survey mode in the MTF on estimates of offending cannot be assessed directly, but comparisons of web- and person-based survey estimates from other datasets suggest that the difference are minimal.²

This report is based on individual-level data that includes geographic codes for respondents' counties and states. Using these codes, data on theoretically relevant state

²Gnambs, T., & Kaspar, K. (2015). Disclosure of sensitive behaviors across self-administered survey modes: a meta-analysis. *Behavior Research Methods*, 47, 1237-1259. <https://doi.org/10.3758/s13428-014-0533-4>; Gomes, H. S., Farrington, D. P., Maia, Â., & Krohn, M. D. (2019). Measurement bias in self-reports of offending: A systematic review of experiments. *Journal of Experimental Criminology*, 15, 313-339. <https://doi.org/10.1007/s11292-019-09379-w>; Kleck, G., & Roberts, K. (2012). What survey modes are most effective in eliciting self-reports of criminal or delinquent behavior?. *Handbook of Survey Methodology for the Social Sciences*, 417-439. https://doi.org/10.1007/978-1-4614-3876-2_24

and county conditions were linked to MTF youth, including county-level data on demographic and socioeconomic conditions³ and school closures.⁴

MEASURES

Outcome Variables: Youth Offending

The MTF surveyed youth about how often (ranging from “none” to “five or more times”) they engaged in several forms of criminal activity during the preceding twelve months.⁵ Because most youth who engage in crime do so infrequently, the analyses focus primarily on assessing recent changes in offending prevalence (i.e., whether youth reported having engaged in one or more crimes during the preceding twelve months). These analyses are supplemented by also assessing changes in offending variety—the number of different types of crimes youth reported that they committed in the past 12 months—which has been shown to be a preferred measure to offending frequency.⁶ For this report, the focus is on questions that were asked of respondents in all three grade levels surveyed in the MTF. To gauge participation in violent crime, youth were asked how often they had “hurt someone badly enough to need bandages or a doctor.” Youth also were asked about how often they had engaged in several property crimes, specified as having “taken something of value below \$50,” “taken something of value above \$50,” or “gone into some house or building when you weren’t supposed to be there.” These three items were combined to form an overall property crime scale (alpha =.65). The four individual items for property and violent crime were also combined to create scales for overall offending (alpha=.66).

VARIABLES

Predictor Variables

The key predictor variable in the study is a binary indicator of whether respondents were interviewed before spring 2020 (i.e., February 2019 through mid-March 2020) or after spring 2020 (i.e., February – June 2021). This strategy yields a comparison of reported criminal behavior between two samples of middle- and high-school students, one of which was exposed to the events of 2020 and reported on criminal behavior for a recall

³ U.S. Census Bureau. (2024). *American Community Survey Data*. <https://www.census.gov/programs-surveys/acs/data.html>

⁴ Parolin, Z., & Lee, E.K. (2021). *U.S. School Closure & Distant Learning Database. Overview and Codebook*. <https://osf.io/tpwqf/>

⁵ Baumer, E. P., Cundiff, K., & Luo, L. (2021). The contemporary transformation of American youth: An analysis of change in the prevalence of delinquency, 1991–2015. *Criminology*, 59(1), 109-136. <https://doi.org/10.1111/1745-9125.12264>; Osgood, D. W., Wilson, J. K., O'malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, 635-655. <https://doi.org/10.2307/2096397>; Staff, J., Osgood, D. W., Schulenberg, J. E., Bachman, J. G., & Messersmith, E. E. (2010). Explaining the relationship between employment and juvenile delinquency. *Criminology*, 48, 1101-1131. <https://doi.org/10.1111/j.1745-9125.2010.00213.x>

⁶ Sweeten, G. (2012). Scaling criminal offending. *Journal of Quantitative Criminology*, 28, 533-557. <https://doi.org/10.1007/s10940-011-9160-8>

period that encompassed spring 2020 through spring 2021, and one that was not exposed to the events of 2020 and reported on criminal behavior for a recall period from spring 2018 to mid-March 2020 (see Appendix Figure 1).

To isolate changes in crime associated with the first year of the pandemic, the study included several individual- and county-level factors that could differ between those interviewed before and after spring 2020. The individual-level control variables encompassed grade level (eighth grade, 10th grade, 12th grade), age, sex, and race/ethnicity (Asian/Pacific Islander, Hispanic, Native American/American Indian, non-Hispanic Black, non-Hispanic White). Multiple indicators of youths' family environments were incorporated, including the highest level of education attained by the mother or father (ranging from "high school graduate or less" to "graduate school"), and whether youth lived in a two-parent family. To control for individual differences in the propensity for risk-taking behavior, the analyses included a measure that combined two items that capture how much respondents "like to test myself every now and then by doing something a little risky," and "get a real kick out of doing things that are a little dangerous" (alpha = .69).

The study also accounted for differences in geographic conditions that have been linked to crime,⁷ including community size and density (large metropolitan statistical area [MSA], small MSA, non-MSA), and six county variables drawn from the American Community Survey (ACS): (1) the share of the population ages 15 to 29; (2) an index of immigrant concentration that combines percent foreign born, percent Hispanic, and percent Asian (alpha = .77); (3) percent non-Hispanic Black; (4) residential segregation (dissimilarity index for non-Hispanic White and non-Hispanic Black residents); (5) an index of socioeconomic disadvantage that combines percent below poverty, median household income, percent of civilian labor force unemployed, and percent 25 and older who have a college degree (alpha = .85), and (6) the Gini index of income inequality.

Potential Mediators

Another important question addressed in the study is whether any observed differences in levels of criminal behavior between youth surveyed before and after spring 2020 can be explained by changes in other factors, including modes of school attendance, levels of attachment to school, rates of substance use, and the degree to which they socialized with their peers in unstructured settings. These were labeled as potential mediators given the cross-sectional nature of the data.

Prior to spring 2020, by design all respondents in the MTF attended school in person, but the youth in the 2021 cohort reported a mixture of in-person and remote school

⁷ e.g., Baumer, E. P., Fowler, C., Messner, S. F., & Rosenfeld, R. (2022). Change in the spatial clustering of poor neighborhoods within US counties and its impact on homicide: An analysis of metropolitan counties, 1980-2010. *The Sociological Quarterly*, 63(3), 401-425. <https://doi.org/10.1080/00380253.2020.1867485>; Land, K. C., McCall, P. L., & Cohen, L. E. (1990). Structural covariates of homicide rates: Are there any invariances across time and social space? *American Journal of Sociology*, 95(4), 922-963. <https://doi.org/10.1086/229381>

attendance, which could be relevant to observed changes in offending. Capitalizing on this variation, the study incorporates an indicator of school attendance mode during the preceding year that contrasts youth who reported attending school fully in person, with youth who attended school primarily in a remote fashion, and with youth who attended both in person and remotely.

Differences in attachment and commitment to school were measured with a six-item scale that combines youths' stated expectation of going to college, how many hours they "spend in an average week on homework," over the past year, how often they "enjoyed being in school," and during the past four weeks, "how many whole days of school they skipped or cut," "how often they skipped a class when they weren't supposed to," and their self-reported grade point average ($\alpha=.54$).

Two measures of youth substance use were included as potential mediators. The first item is a three-item scale of the frequency of respondent's alcohol consumption, including the number of occasions "they had more than a few sips of alcoholic beverages in the past twelve months," they had more than a few sips of alcoholic beverages in the past 30 days," and "they had 5 or more drinks a single sitting during the last two weeks ($\alpha=.89$). The second is a multi-item scale of other drug use ($\alpha=.69$) that measures the number of occasions respondents had used seven different drugs (i.e., cannabis, LSD, psychedelics, cocaine, amphetamines, tranquilizers, and inhalants). Supplementary analyses of the individual items that represent the frequency of alcohol consumption and cannabis use in the past twelve months were also estimated because these measures of substance use exhibited the greatest change among youth during the first year of the pandemic.

The study also includes a measure of "unstructured socializing" among youth,⁸ which is a five-item scale that indicates how often (1=once or twice a month or more; 0=never/few times a year) youth spend time with peers without adult supervision: riding around in a car for fun, going to parties, getting together with friends informally, spending evenings out for fun and recreation, or going on dates ($\alpha = .57$). In supplementary analyses, regression models were estimated that included only items for the two forms of unstructured socializing that changed the most during the first year of the pandemic—going to parties and spending evenings out for fun and recreation.

Potential Moderators

An important feature of the study is its examination of whether changes in youth offending after spring 2020 varied by individual- and county-level factors. To assess that possibility, the study included several potential moderating variables. Some of these also serve as control variables, which are described above including race-ethnicity, sex, grade level, parental education, and county socioeconomic disadvantage. Additionally, the

⁸ Osgood, D. W., Wilson, J. K., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, 61, 635-655.
<https://doi.org/10.2307/2096397>

study also included as a potential moderator county-level rates of school closures, which reflect the share of schools in a youth's county that experienced a 75% or greater reduction in cell phone-measured visits during the first year of the pandemic compared to 2019. This county-level measure is based on aggregated mobile phone tracking of visits to schools.⁹

SAMPLE

The full MTF sample of eighth, 10th, and 12th graders for 2019, 2020, and 2021 consisted of 86,612 respondents; about one-third of the eighth and 10th graders, and one-sixth of the 12th graders were randomly allocated to complete the questionnaire that contained questions about youth offending, yielding a maximum sample of 24,572 respondents available for analysis (4,468 12th graders; 10,468 10th graders; and 9,636 eighth graders). Missing data was minimal (e.g., 5-7%) on most of the predictor variables, but selected measures contained more substantial missingness, especially during 2021 due to a technical glitch during the first six weeks of web-based data collection (i.e., uncertain transitions between screens) that prevented respondents from viewing selected questions in full. Fortunately, this issue had minimal impact on the analysis presented in this report, as the findings and conclusions drawn are substantively identical when we use only cases for which there is no missing data or all cases after applying multiple hot deck imputation¹⁰ to impute the missing data. The consistency across these estimations is logical given that survey data were not significantly related to the key measures and relationships examined in our study. To maximize statistical power, we report results based on the imputed data, applying von Hippel's (2020)¹¹ two-stage test to determine that 20 imputations were sufficient to maximize the efficiency of point estimates and standard errors.

ANALYTIC APPROACH

In this report, changes in offending before and after spring 2020 were estimated using regression models for categorical outcomes, which are appropriate given the non-linear distribution of the crime outcome variables.¹² All regression models estimated account for the complex survey design of the MTF by incorporating clustering, strata, and sample weight variables provided by the MTF study. We examine recent changes in youth

⁹ Parolin, Z., and Lee, E.K. (2021). *U.S. School Closure & Distant Learning Database. Overview and Codebook.* <https://osf.io/tpwqf/>

¹⁰ Andridge, R. R., & Little, R. J. (2010). A review of hot deck imputation for survey non-response. *International Statistical Review*, 78(1), 40-64. <https://doi.org/10.1111/j.1751-5823.2010.00103.x>

¹¹ von Hippel, P. T. (2020). How many imputations do you need? A two-stage calculation using a quadratic rule. *Sociological Methods & Research*, 49(3), 699-718. <https://doi.org/10.1177/0049124117747303/>

¹² Long, J. S., & Freese, J. (2014). *Regression models for categorical dependent variables using Stata* (third edition). College Station, Texas: Stata Press.

offending by analyzing marginal effects and applying the framework articulated by Mize and colleagues¹³ for assessing interactions and mediation in non-linear models.

SUMMARY OF RESULTS

Though results from this study are shown in Figures 1 to 5 of the report, the supplemental appendix summarizes eight key findings. Note that the full set of estimates from these findings are available by request.

1. The prevalence of youth crime was historically low in the years leading up to the COVID-19 pandemic (results shown in Figure 1). Between 1991 and 2019 youth offending variety declined by 38% and offending prevalence decreased by 33%.
2. Youth crime decreased substantially during the first year of the COVID-19 pandemic (shown in Figures 2a and 2b). Non-lethal property crime declined by 23% and violent crime declined by 24% and between spring 2020 and spring 2021.
3. During the first year of the COVID-19 pandemic, crime dropped for middle- and high-school youth regardless of their sex, race/ethnicity, and their parents' educational attainment.
4. Several key risk factors for youth crime, including the frequency of unstructured socializing and substance use, decreased significantly during the first year of the COVID-19 pandemic (shown in Figures 3a and 3b). The frequency of youth going out with friends decreased by 11%, the frequency of attending parties declined by 22%, the frequency of alcohol consumption dropped by 19%, and the frequency of cannabis use fell by 11%.
5. In regression models assessing mediation, changes in unstructured socializing and substance use accounted for about 20% of the overall reduction in youth crime during first year of the COVID-19 pandemic.
6. There was no evidence that youth committed more crimes during the first year of the COVID-19 pandemic because they were less attached to school. In addition, there was no support in the findings that the retreat from in-person schooling facilitated criminal behavior.
7. During the first year of the COVID-19 pandemic, youth living in socioeconomically disadvantaged counties experienced the smallest reductions in crime (shown in Figures 4a and 4b). The prevalence of property crime decreased by 13.9% among youth from disadvantaged counties, compared to a 30.9% decline among youth from affluent counties. Violent

¹³ Mize, T. D. (2019). Best practices for estimating, interpreting, and presenting non-linear interaction effects. *Sociological Science*, 6, 81-117. <https://doi.org/10.15195/v6.a4>; Mize, T. D., Doan, L., & Long, J. S. (2019). A general framework for comparing predictions and marginal effects across models. *Sociological Methodology*, 49(1), 152-189. <https://doi.org/10.1177/0081175019852763>

crime decreased by 5% among youth from disadvantaged counties, compared to a 39% reduction among youth from affluent counties.

During the first year of the COVID-19 pandemic, youth property crime declined the most among youth from counties in which a larger share of schools closed (shown in Figures 5a and 5b). Property crime decreased by 36.5% among youth from counties with high levels of school closure, compared to 15.5% among youth from counties with low levels of school closure. However, youth violent crime dropped regardless of the county-level **rate** of pandemic-related school closures.