

# State of Emergency on Childhood Trauma

Ronald A. Hummons<sup>1</sup> 

The problem of childhood exposure to crime and violence, which we previously called the Childhood Trauma Impact, was declared a “national crisis” and is estimated to be one of the most damaging and costly public health and public safety problems in our society. Nevertheless, thus far, no one knows how much it actually costs us. This Article aims to answer this daunting question and provide an empirical economic analysis of the cost of the Childhood Trauma Impact problem to the state and society. Children whose lives are touched by crime are left with deep scars that gravely affect their mental and physical health, as well as their life outcomes. Such negative corollaries inflict hefty costs on the state and society at large. In fact, our analysis reveals a total annual cost of more than \$496 billion. Despite the severity and cost of the problem, our society has done little to help affected children recover. The analysis presented in this Article will form the basis for an evidence-based argument as to the unparalleled economic benefits of investment in early intervention efforts to alleviate the injurious and costly outcomes for children affected by crime exposure.

The U.S. has sustained 338 weather and climate disasters since 1980 where overall damages/costs reached or exceeded \$1 billion (including CPI adjustment to 2022). The total cost of these 338 events exceeds \$2.295 trillion. In 2022 (as of October 11), there have been 15 weather/climate disaster events with losses exceeding \$1 billion each to affect the United States. These events included 1 drought event, 1 flooding event, 10 severe storm events, 2 tropical cyclone events, and 1 wildfire event. Overall, these events resulted in the deaths of 342 people and had significant economic effects on the areas impacted. The 1980–2021 annual average is 7.7 events (CPI-adjusted); the annual average for the most recent 5 years (2017–2021) is 17.8 events (CPI-adjusted). The National Centers for Environmental Information (NCEI) is the Nation's Scorekeeper in terms of addressing severe weather and climate events in their historical perspective. As part of its responsibility of monitoring and assessing the climate, NCEI tracks and evaluates climate events in the U.S. and globally that have great economic and societal impacts. NCEI is frequently called upon to provide summaries of global and U.S. temperature and precipitation trends,

extremes, and comparisons in their historical perspective. Found here are the weather and climate events that have had the greatest economic impact from 1980 to 2022.

The total of the cost of Childhood Trauma during the same time frame is 20.8 trillion dollars. With that being the case, which is the most costly for the United States. The financial impact is clear.

## I. Introduction

For several decades, the problem of childhood exposure to crime and violence has been flagged as a monumental issue. We have previously named the problem the Comprehensive Childhood Crime Impact, or Childhood Trauma Impact for short.<sup>1</sup> In 2012, Attorney General Eric E. Holder's Task Force on Children Exposed to Violence declared the problem “a national crisis and a threat to the health and well-being of our nation's children and of our country.”<sup>(2)</sup> Even over thirty years prior, in 1979, the U.S. Surgeon General Julius B. Richmond referred to the same problem as a “public health crisis of the highest priority.”<sup>(3)</sup> Others have estimated the problem to be one of the most costly public health and public safety problems in our society today.<sup>(4)</sup> But how much does it actually cost us? In today's world, crime penetrates the lives of children from all different directions. Children can witness violence at school, in their neighborhoods, or even in the “safety” of their own homes. Children may also be affected indirectly, such as when a parent falls victim to crime or is incarcerated. Children's unique developmental, social, and cultural characteristics make them particularly vulnerable to crime's destructive forces.<sup>(5)</sup> Childhood crime exposure leaves deep scars that gravely affect the mental and physical health, as well as the life outcomes, of affected children.<sup>(6)</sup> Despite the severity of the Childhood Trauma Impact problem and its devastating effect on millions of children nationwide, little has been done at a policy level to heal these open wounds.<sup>(7)</sup> The majority of children harmed by crime do not receive the much-needed services that facilitate recovery from trauma. <sup>(8)</sup> At present, there are no effective mechanisms in place to identify affected children and refer them to these vital services. Although resources for affected children exist in most states, access is obstructed by myriad bureaucratic



hurdles and flaws in the system's design.(9) The ramifications of this ongoing state of neglect go beyond compromising the well-being of individual children and have a spill-over effect on society. With millions of children across the nation untreated and hindered from conducting a healthy and productive lifestyle, and with heightened risk for acute health problems, substance use, criminal behavior, and repeat victimization, community safety is inevitably compromised.(10) More than that, these adverse outcomes of imposing proportions carry hefty costs that are inevitably shouldered by society as a whole and unnecessarily burden public funds.(11) This challenge comes at a time when states' revenues are already stretched to their limit; indeed, many states are facing severe budget deficits that amount to a serious fiscal crisis, and every dollar counts.(12)

Although the attention given to the Childhood Trauma Impact problem and its costs has repeatedly recurred over the years, thus far, no one has demonstrated empirical knowledge concerning the exact level of financial expenditure associated with the Childhood Trauma Impact problem. The issue remains an elusive mystery. This gap in knowledge stems from many sources, including the compartmentalized approach through which the problem has been examined, the scarcity of relevant systematic nationally representative datasets, the co-occurrence of the Childhood Trauma Impact with other life adversities, and the broad range of methodological hurdles and limitations involved in the analytical process.(13) Additionally, for some, it may be convenient to overlook the sums of money being spent each year due to the ongoing neglect of affected children.(14)

It is often said that "money talks." Perhaps it is worth experimenting with having its voice heard on behalf of our children. This Article takes on the challenge of pursuing a data-driven economic analysis of the Childhood Trauma Impact problem, assessing the broad range of cost elements associated with the problem.

It is essential to clarify that this Article's objective is not to offer solutions to the Childhood Trauma Impact problem. Nevertheless, it adds another critical block to the foundation upon which an empirically informed plan to address this devastating problem can be established.(15) Ultimately, the analysis presented in this Article forms the basis for developing an evidence-based argument as to the unparalleled opportunity for long-term fiscal savings and economic benefits of investment in early intervention efforts that will facilitate recovery of affected children and alleviate the risk for injurious outcomes.

Part II of the Article outlines the Childhood Trauma Impact problem and the states' ongoing failure to effectively respond to the problem. Part III provides a detailed explanation of the methodology used for the economic analysis of the Childhood Trauma Impact problem and the economic model's design at its foundation. In Part IV, this Article presents data-driven estimates of the prevalence of the problem in our society. Part V expounds on the adverse outcomes associated with the Childhood Trauma Impact. It assesses empirical evidence on the level of risk posed to affected children is analyzed, and the potential costs accrued by the risk outcomes. Conclusions follow.

## II. THE PROBLEM

The Childhood Trauma Impact problem consists of two integral and interlocking elements.(16) The first is the unique effect crime exposure has on children due to their distinct developmental attributes. The second is the manner in which society addresses and treats children once exposed to crime. This Part will expound on these two critical components in order to fully depict the Childhood Trauma Impact problem.

### A. The Unique Effect of Crime on Children

The term "Childhood Trauma Impact" reflects the distinct effect of direct and indirect crime exposure on children and the destructive impact of such exposure on their lives and on society as a whole.(17) The Childhood Trauma Impact concept rests on empirical and scientific studies that identify relevant developmental, social, and cultural differences between children and adults, all of which significantly amplify and expand children's vulnerability to the effects of crime exposure.(18) The most visible difference is the smaller physical stature of most children, which increases their vulnerability to threats posed by larger perpetrators.(19) Despite common misperceptions, however, children are not merely miniature adults.(20) The plasticity of a child's central nervous system leads the human brain to be extremely malleable during childhood (21) and dramatically increases the effect of early experiences.(22) Exposure to crime and violence during childhood causes heightened stress levels and overstimulation of specific brain structures, which can lead to chemical imbalances in the child's brain and abnormal neurological development.(23) Children are also at a critical stage of their emotional and cognitive development. Their identity is not yet formed, their personality traits are in transitory stages, and they are less mentally stable than adults.(24) This state of psychological immaturity makes it difficult for children to process and cope with trauma without external assistance.(25) As a result, there is an increased risk that damage caused by crime exposure at this delicate developmental stage will disrupt

developmental trajectories and progression through age-appropriate milestones.<sup>26</sup> Such damage can become permanently embedded in the individual's core personality structure.<sup>27</sup> Children are in the midst of undergoing legal socialization, a process that unfolds during childhood and adolescence and through which children develop an inclination towards compliance with the law and cooperation with legal actors.<sup>28</sup> Exposure to crime and violence and the criminal justice system's failure to protect children from these harmful experiences are likely to interfere with affected children's legal socialization.<sup>29</sup> Disruption of this fundamental developmental process may explain a proclivity towards criminal behavior and illicit substance use in individuals affected by crime during childhood.<sup>30</sup> As a consequence of their social and psychological immaturity, children are dependent on adults for their survival and basic psychical and emotional needs.<sup>31</sup> They have little choice over their living environment and the people with whom they associate. Additionally, they do not have the capacity or resources to remove themselves from harmful circumstances induced by crime and violence.<sup>32</sup> When victimization, a substance use disorder, or incarceration incapacitates a caregiver, the result often deprives dependent children of the care, guidance, and protection essential for their development.<sup>33</sup> Moreover, such caregivers' ability to make coherent decisions on behalf of their children as their legal guardians and fully consider the children's best interests is inevitably diminished.<sup>34</sup> Empirical evidence shows that one of the prime corollaries of the aforementioned differences between adults and minor children is the expansion of crime-induced harm beyond the conventional direct victimization.<sup>35</sup> Hence, even when a criminal offense is not committed directly against the body of the child and the child is "only" indirectly exposed, such exposure can leave acute and often long-lasting marks on the child.<sup>36</sup> In response to these imperative findings, we have designed the Childhood Trauma Impact concept to incorporate the full range of direct and indirect forms of crime exposure that commonly affect children. When evaluating the exact forms of crime exposure to be included under the Childhood Trauma Impact umbrella, the primary criterion used is the presence of significant empirical evidence to support and demonstrate potential harm to the child, which rises to a level similar to that caused by the "gold standard" of direct victimization.<sup>37</sup>

Through the meticulous review of over 150 studies, which examine different aspects of the effect of crime exposure on all of the child's life facets, we identified five exposure categories that met this rigorous standard: direct child victims,<sup>38</sup> children exposed to family crime,<sup>39</sup> children exposed to community

crime,<sup>40</sup> children with a victimized parent,<sup>41</sup> and children affected by parental incarceration.<sup>42</sup> As science evolves and advances, this list could potentially change to adapt to new findings, relying on similar harm-based criteria. B. The States' Response A principal factor influencing the level of harm caused by the Childhood Trauma Impact is how affected children are addressed, identified, managed, and treated.<sup>43</sup> In order to construct a potent response to affected children at the policy level, policymakers must account for the paramount differentiating factors between children and adults outlined above. In previous papers, we published the results of a fifty-state survey designed to gain a better understanding of the existing state responses to the Childhood Trauma Impact problem.<sup>44</sup> It helped measure the states' ability to meet the unique developmental needs of minor children.<sup>45</sup> The survey took on the monumental task of meticulously mapping out the state-level statutory provisions that address the Childhood Trauma Impact problem.<sup>46</sup> It gathered data on statutory eligibility criteria for therapeutic services and resources for children directly and indirectly exposed to crime in each of the fifty states and the District of Columbia.<sup>47</sup> The survey aimed to answer fundamental questions: what resources are statutorily available on the state level? Which state agencies are charged with responding to affected children? Are there mechanisms to identify affected children? Which categories of children are statutorily eligible for services and resources? The survey's outcomes were insightful and surprising. The results largely refuted the original hypothesis that children under most of the Childhood Trauma Impact categories are not formally recognized by law, and thus are ineligible to receive services to facilitate their recovery.<sup>48</sup> Instead, the survey found that resources and services are theoretically available for affected children in most states.<sup>49</sup> Furthermore, eligibility for services and resources is recognized by law in most states for many categories of exposure to crime, with the marked exception of children affected by parental incarceration.<sup>50</sup> Nevertheless, in practice, myriad bureaucratic labyrinths and system design flaws—including flaws in inter-agency coordination, extensive access barriers, ineffective utilization of resources, and insufficient account for the minor children's distinct needs—obstruct access to these services and resources.<sup>51</sup> As a result, most children harmed by crime cannot access available resources, so they never receive much-needed services and treatment to facilitate recovery from trauma caused by exposure to crime. Thus, these children carry dire and costly outcomes throughout their childhood and into adulthood.<sup>52</sup>

Despite the wealth of statutory provisions acknowledging the eligibility of Childhood Trauma Impacted children for state resources, only a marginal fraction is geared explicitly towards minor children and designed to accommodate their unique developmental needs. The legislature intended most of the identified statutes to address the general adult population, with children included as an afterthought and without any account for the substantial differences between adults and minor children outlined above.<sup>53</sup> Indeed, “absent such vital developmentally-oriented accommodations, available policies are inevitably expected to have diminished efficacy.”<sup>54</sup> Moreover, “the vast majority—if not all—of the identified services and resources rely solely on parental initiative, and require the child’s parent or guardian to actively seek and apply for assistance.”<sup>55</sup> None of the responding states reported an effective referral system designed to identify children affected by the Childhood Trauma Impact and refer them to services for any of the categories of children included in the survey.<sup>56</sup> Lack of transparency in the system further aggravates the consequences of the exclusive dependence on parental initiative. The survey process unveiled an abundance of technical difficulties that obscure access to imperative information required to obtain available resources.<sup>57</sup> These pose a colossal hurdle in parents’ and guardians’ ability to identify and utilize the available services when seeking assistance.<sup>58</sup> Once again, we experienced the most notable difficulties collecting data on children affected by parental incarceration. In some states, up to five different agencies had to be contacted to obtain and confirm the needed information.<sup>59</sup> The survey further revealed that lack of transparency and ineffective communication is not only external—i.e., towards the general public—but also internal—i.e., among the stakeholders within the system itself.<sup>60</sup> The different players on the field were often found to be “speaking different languages” when it came to the terminologies and definitions used.<sup>61</sup> The survey observed unwarranted inconsistency in the understanding of the division of labor, scope of responsibility, expected standard of service and care, level of accessibility to existing services, and amount of information publicly available.<sup>62</sup> A clear demonstration of the deficiency in communication within the system is found in the numerous examples, uncovered by the survey, in which resources were statutorily available to affected children, yet unknown to service providers and advocates who serve these children, or even to government agencies entrusted with serving the relevant populations.<sup>63</sup> No methodical attempts for standardization, model policies, or guidelines for “best practices” to ensure a minimum level of care were identified at the national or state levels.<sup>64</sup> Absent fluent communication among all the governmental and

nongovernmental players involved, any coordinated interagency response for effectively combating the Childhood Trauma Impact problem, as warranted by the Attorney General Task Force, is doomed to fail.<sup>65</sup>

The survey identified another major systemic design flaw: improper division of labor and budget distribution under the Victims of Crime Act (“VOCA”).<sup>66</sup> VOCA is the primary federal act that governs assistance and services to victims of crime and allocates funds to support such services on the state and federal level.<sup>67</sup> It facilitates federal funding to state entities through two primary sources: the federal Victim Compensation Program and the states’ Victim Assistance Programs.<sup>68</sup> The Victim Compensation Programs allow eligible victims to receive reimbursement for costs associated with the harms caused by crime.<sup>69</sup> The Victim Assistance Programs are government-funded programs that provide a variety of services to victims of crime.<sup>70</sup> At present, the vast majority of statutory provisions that explicitly provide counseling services for the relevant categories of children exposed to crime are funded through reimbursement from the states’ Victim Compensation Programs.<sup>71</sup> Yet, by design, these programs are not equipped to provide effective recourse commensurate with the problem’s scale.<sup>72</sup> Compensation programs are severely underfunded, allocated with a negligible sliver of federal VOCA funds—only 7% of the total VOCA budget in 2017, amounting to \$133 million, for all states and territories combined.<sup>73</sup> The application process for VOCA funding is long and tedious, and programs in most states do not have the capacity to process large volumes of applications.<sup>74</sup> Most importantly, compensation agents do not have direct access to affected children and thus do not have the capabilities or resources to pursue effective outreach, identification, or referral efforts.<sup>75</sup> At the same time, Victim Assistance Program grants are allocated 93%, or \$1.8 billion, of the federal VOCA budget.<sup>76</sup> The act prioritizes funds to services dedicated to child victims.<sup>77</sup> In theory, the act permits the grants to support various local services and programs, including services to “secondary victims,” such as children affected by indirect crime exposure.<sup>78</sup> Yet, the funded programs’ eligibility criteria do not seem to be regulated by any overarching policies (either by law or internal protocols).<sup>79</sup> No state has reported protocols that assure that funds are distributed to all categories of affected children.<sup>80</sup> Every state that provided information on this issue in our survey stated that eligibility criteria depend on each individual program and case-by-case examination.<sup>81</sup> No state could provide information about specific programs or services that accommodate the different categories of children affected by the Childhood Trauma Impact.<sup>82</sup>

Publicly available lists of VOCA funded programs in each state include only very general information and do not specify whether eligibility criteria cover “secondary victims.”<sup>83</sup> Under these circumstances, an increased burden is thrust upon the underfunded and unequipped Victim Compensation programs in a manner that prevents the maximization of the existing resources. As a result, lack of transparency is further deepened, and accessibility of any relevant services that may be available for Childhood Trauma Impacted children is severely hindered. There could be more benign reasons for suboptimal utilization of services and resources by Childhood Trauma Impacted children. The affected child or parent may not fully comprehend the severity of the harm endured and the long-term implications of avoiding treatment. Some can obtain services elsewhere through medical insurance, urgent care, or child protective services.<sup>84</sup> Others are not interested in obtaining assistance from government agencies due to negative past experiences or general distrust common to marginalized communities.<sup>85</sup> Yet, one can only wonder whether these persistent and recurring system design flaws and administrative roadblocks are not entirely coincidental; instead, it may be the manifestation of political forces aiming to disincentivize the use of resources to generate some level of short-term fiscal savings. As the analysis presented below demonstrates, such short-term savings are likely to result in epic long-term costs borne by taxpayers and society.

### III. METHODOLOGY

After gaining an understanding of the nature and scope of the problem, the next step is to design an economic model that will enable us to conduct an evidence-based cost analysis of the Childhood Trauma Impact problem and yield an estimate of the cost of the problem to the state and society. Nevertheless, even more important than producing the bottom-line financial figures, a paramount objective of the analysis process is to provide a clear and comprehensive understanding of the multitude of cost components that must be integrated into the calculation and the complexity of the nexus between these components. To this end, detailed documentation of the methodology and a breakdown of the work process are vital. The ideal study enabling one to make the most precise determination on the economic cost of crime exposure would require summoning a nationally representative sample of children, randomizing different types of crime and violence exposures among them, and then following these children into adulthood, recording data on factors like their health, employment, criminal involvement, and substance use. Then, one could calculate the costs of the observed outcomes. Such a study, however, is

unfeasible and unethical. The design of our study necessitated overcoming numerous methodological challenges and limitations—facing “real world” constraints—while making tough compromises to reach our objectives. First, it is important to clarify that statistically proving a direct causal relationship between crime exposure and adverse outcomes is highly unlikely. Only the improbable, nationally representative, randomized controlled trial described above would allow the establishment of a causal relationship between exposure and outcomes. Barring such a research endeavor, all studies need to account for the nature of this field, which is characterized by frequent co-occurrence of confounding factors and circumstances. Childhood crime exposure often overlaps with other serious life adversities, such as poverty, social marginalization, structural racism, and family dysfunctions, as well as cultural and language barriers.<sup>86</sup> As shown in the next section, even the Childhood Trauma Impact categories themselves are not mutually exclusive and often coincide. While these limitations should not detract from the pronounced risk established in empirical studies to children affected by the Childhood Trauma Impact, it is important to remain conscious and mindful of these constraints and the improbability of absolute accuracy in results. Second, the adverse outcomes associated with the Childhood Trauma Impact form an intricate web. Each outcome affects the others in a reciprocal, often cyclical pattern.<sup>87</sup> Under these circumstances, it is necessary to ensure that each cost element is counted only once during the analysis to avoid an overestimation of the total cost. Such distortion would negatively impact the credibility and accuracy of the analysis and consequently lessen the weight and persuasion power of the economic argument. Third, the adverse effect of the Childhood Trauma Impact is characterized by substantial heterogeneity. The specific effect on each child may vary depending on the type, severity, timing, and frequency of the exposure, as well as the child’s characteristics, such as age, gender, socio-economic status, level of familial support, and the child’s emotional capacity.<sup>88</sup> The presently available empirical data and studies do not enable adequate reflection of this variance in the cost analysis. We have taken several measures to obtain the most realistic cost estimates under these conditions. Throughout our analysis, the guiding principle is always to choose the most conservative estimate and err on the side of undercounting. To this end, we selected the lowest level of exposure from each study to calculate the attributable risk—in most cases, the effect of one exposure was used. Similar principles guided the valuation of monetary costs of each outcome. Additionally, we calculated the adjusted prevalence using both the upper and lower bounds of the 95% confidence interval of the odds ratio. We also

reported the variance in the estimated cost for each category based on these intervals. Fourth, the analysis relies on existing datasets and studies. While the data used were not specifically tailored for this study, we have made adjustments and inferences to assure the most effective and appropriate utilization of these preexisting sources. Like any social science, and even medical research, a range of limitations and methodological complexities affects all the studies used in our analysis.<sup>(89)</sup> Variances in study results are affected by differences in study design, variable definitions, sample size and characteristics, and the exact models and methodologies applied. To minimize the limitations' impact on our model as much as possible, we have carefully screened the studies incorporated into our analysis and have relied on the most methodologically rigorous available studies. These studies are based on relatively large samples; they use sophisticated statistical tools and sensitivity tests to control for competing causes for the negative outcomes and to distill the specific effect attributed to the Childhood Trauma Impact. Additionally, when more than one study of equal methodological rigor was available, we opted to rely on the most conservative finding (whether in the estimated level of risk or appraised costs) to avoid inflation on our bottom-line financial figures. Fifth, at present, the field of childhood exposure to crime and violence is severely understudied. Comprehensive nationally representative data in the field is scarce and limited. We had to integrate several different datasets to include all the variables needed for our model since no existing dataset was sufficiently inclusive.<sup>90</sup> Still, we encountered many gaps in information concerning variables like: When did the exposure occur? When did the outcome first appear? And how long did each outcome persist? As aforementioned, such missing information hinders the ability to account for the heterogeneity of the effect of childhood crime exposure. To overcome these gaps, we again took the approach of selecting the most conservative value to avoid overestimation. We also focused the initial analysis on one specific cohort (U.S. population born in the year 2002) to limit the margins of error. Only outcomes supported by studies of sufficient rigor and quality were counted.<sup>91</sup> For some categories of exposure, such as the prevalence of parental victimization, no data currently exist altogether, and thus had to be excluded from the analysis. Furthermore, even when data sources and studies did exist, significant drawbacks materialized. For example, most risk studies calculate the lifetime odds to experience the outcome, while cost studies and budget documents calculate annual costs. This incompatibility added to the complexity of the analysis process and narrowed the range of studies that could effectively be incorporated. Also, most available risk

studies do not rely on nationally representative data. To mitigate the problem, we attempted to use Adverse Childhood Experiences ("ACE") studies and data whenever possible;<sup>92</sup> despite their limitations,<sup>93</sup> they rely on very large samples and are considered a widely-acceptable resource in the field. Nevertheless, these issues clearly highlight the urgent need for more data-driven research in this field. A. The Economic Model In light of the aforementioned challenges, our economic model was designed to confront the limitations and aims to produce the most realistic results under these imperfect circumstances. We decided to apply the methodology known as the "bottom-up approach" in the model's design.<sup>94</sup> This approach aims to identify and enumerate all of the ways in which childhood crime exposure can inflict costs on society, estimate and quantify each of these costs, and aggregate the costs.<sup>95</sup> The application of this approach allows us to paint a more finely detailed picture of the wide range of elements incorporated in the cost estimate, thus contributing to a deeper understanding of the problem and the scope and reach of its effect. At the same time, we recognize that it is virtually impossible to account for all of the potential cost elements associated with the problem, especially under the existing constraints of the availability of empirical data.<sup>(96)</sup> The designed model consists of three core variables: Prevalence of exposure, attributable risk, and cost. The prevalence of exposure represents the proportion of children in the population exposed to at least one of the Childhood Trauma Impact categories. Nationally representative data (NetSCEV III),<sup>97</sup> combined with official census data,<sup>98</sup> was used to assess the prevalence of the Childhood Trauma Impact and translate it to concrete numbers. Attributable risk represents the increase in the probability of experiencing each adverse outcome specifically attributed to the Childhood Trauma Impact.<sup>99</sup> Since every individual in our society, whether exposed to crime or not, has a certain risk of experiencing any of these outcomes, empirical medical and social science studies were used to estimate the percentage by which childhood exposure to crime increased one's likelihood to experience the outcome.<sup>100</sup> In other words, the attributable risk variable represents the proportion of exposed individuals with an outcome beyond the proportion among the nonexposed, after controlling for confounding risk factors.<sup>101</sup> Cost is a calculation of the monetary value linked with each of the adverse outcomes associated with the Childhood Trauma Impact. In other words, it is an appraisal of the lifetime cost placed on the state and society of a child experiencing the outcome. To this end, state and federal budget documents, as well as secondary studies, were used. All cost figures in this article are adjusted to 2017 dollars.<sup>102</sup>

The most arduous segment of the analysis was the estimation of the attributable risk variable. For our analysis, we needed to extract the marginal effect of childhood crime exposure—i.e., by how much does risk increase due to exposure? One approach to the problem is to use naïve estimations. This method involves comparing the proportion of the group of exposed children experiencing each outcome against the proportion of individuals experiencing the same outcome in the unexposed group.<sup>104</sup> The problem with this approach is that it does not take into account any covariates that may contribute to the difference between the two groups. This problem is particularly severe in this area of study, characterized by high rates of co-occurring and competing risk factors. Take the example of asthma as a possible outcome. While individuals who experienced crime exposure in childhood are more likely to develop asthma,<sup>105</sup> perhaps this same group is also more likely to live in substandard housing with mold that contributes to the development of asthma.<sup>106</sup> In this case, some of the increase in the risk for asthma may be attributed to housing conditions rather than solely to crime exposure. Thus, using the naïve methodological approach risks overestimating the effect of crime exposure on the outcomes and consequently inflating the final cost estimate. To address this challenge and properly account for the commonality of confounding risk factors and covariates, we selected a different methodological approach that relies on adjusted odds ratios.<sup>107</sup> Odds ratio “represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure.”<sup>108</sup> The odds ratio can also be used “to determine whether a particular exposure is a risk factor for a particular outcome, and to compare the magnitude of various risk factors for that outcome.”<sup>109</sup> The statistical analysis that manufactures an odds ratio, a multivariate logistics regression analysis, takes into account covariates by using statistical controls.<sup>110</sup> In other words, when comparing the odds of one group experiencing an outcome with the odds of another, the analysis adjusts its estimates by discounting the effect of other possible causal factors. Some of the common controls incorporated in studies that calculate odds ratios are age, sex, income, and race.<sup>111</sup> Comparing the difference in the odds ratio of experiencing an outcome in the unexposed population with that of the population of children exposed to crime allows us to calculate the attributable risk variable. This method helps filter and distill the actual effect of crime exposure from that of other co-occurring factors. Hence, it provides a more accurate estimate of the association of the studied outcomes and crime exposure. Odds ratio methodologies are widely used

in epidemiology and medical studies, and therefore were presented in most of the studies that our analysis relied upon to measure the outcomes of exposure.<sup>112</sup> Nevertheless, the use of the odds ratio is uncommon in economic studies. The odds ratio remains relatively “unfamiliar to non-researchers, and their relationship to probability implications is not well understood by researchers.”<sup>113</sup> Some consider them hard to interpret and view them as misleading.<sup>114</sup> To overcome this challenge and make our results more accessible to a wide, diverse audience, we have converted the odds ratio results reported in the analyzed risk studies to a linear probability model, also known as relative risk (“RR”), using the methodology proposed by Zhang et al. (1998).<sup>115</sup> We then compared the calculated RR for the population of exposed children against the probability of the outcome in the unexposed group to calculate the attributable risk associated with crime exposure. Multiplying the attributable risk probability with the total population of exposed children allowed us to compute the adjusted prevalence variable, representing the estimated number of children exposed to crime and who have experienced (or will experience) a specific outcome measured by our study. Like any statistical estimate, there are limitations to the external validity that can be extrapolated from the statistical results of one single study. For all the reasons discussed above, there is limited ability to generalize the findings from the study population to the general population. In light of these limitations, we took several precautionary measures. Before using any of the studies’ results, we verified that the magnitude of the reported effect was in line with estimates reported in other similar studies, if these existed. Furthermore, the range of the 95% confidence interval was calculated and reported for each outcome.

Focusing the cost analysis on a single birth cohort was another measure applied to reduce the margin of error. We selected the cohort of individuals living in the United States born in 2002 (entering adulthood (i.e., turning eighteen) in 2020). The analysis will measure the costs of the negative outcomes attributed to childhood crime exposure for the duration of their adult life, accounting for the life expectancy of the cohort estimated at 76.9 years (or 58.9 adult years).<sup>116</sup> By focusing on one birth cohort, we aim to limit the possible range of some of the unknown variables discussed above. For similar reasons, we have selected to count only costs accrued during adulthood to overcome the fact that the age of first exposure is unknown to us. While some children are exposed in their first years of life and suffer consequences throughout childhood, others experience first exposure in their late teens, close to the transition to adulthood.<sup>117</sup> Thus, while Part V thoroughly discusses childhood outcome costs like juvenile

delinquency, early intervention for developmental delays, special education programs, and child protective services, they will not be tallied in the total cost estimate. Ultimately, the cohort analysis allows us to calculate average costs per individual, which can later be extrapolated to some degree to draw inferences as to the estimated costs for the total population of individuals affected by the Childhood Trauma Impact in the United States.<sup>118</sup> To clarify the analytical process, the box below provides a concrete demonstration of the methodology's application on one sample outcome—asthma.

#### IV. PREVALENCE

To commence our investigation, we first must gain an understanding of the size of the problem. How many individuals in our society are affected? This Part endeavors to provide a data-driven answer to this question. The analysis process necessitates first defining the scope and boundaries of each of the Childhood Trauma Impact categories of crime exposure, then estimating the prevalence of exposure under each of these categories, and finally translating the prevalence percentages into the concrete numbers of affected children in our society. Since our cost analysis focuses on the 2002 birth cohort, we also present a specific drill-down calculation of the prevalence of the Childhood Trauma Impact exposure in that group.

Due to the aforementioned scarcity of empirical studies in the field, few data sources exist that measure the number of children affected by crime across the nation.<sup>119</sup> To provide the most accurate prevalence indicators for each of the Childhood Trauma Impact categories of exposure outlined below, we utilized the raw data of the National Survey of Children's Exposure to Violence (NetSCEV III).<sup>120</sup> We designed a customized analysis model of this nationally representative dataset that reflects the specific categories and definitions of the Childhood Trauma Impact.<sup>121</sup>

A. Direct Victimization The first, most conventional, and commonly recognized form of crime exposure is direct victimization. It occurs when an act defined by law as a criminal offense is committed against the child's person. As a result, the child can be physically injured or suffer emotional and mental impairments. The analysis found that 52.31% of minor children nationwide become the direct victims of a violent crime during their childhood years. Our definition of violent crime includes physical assault with or without a weapon, sexual assault, kidnapping, violent bullying, or attempts to commit any of these acts against the child. When the percentages are applied to the total U.S. population estimates, they result in a figure of 38.8 million minor children who fell victim to a violent crime nationwide,

2.1 million of whom are in the 2002 birth cohort.<sup>122</sup> Boys are affected at a higher rate than are girls, 56.14% compared to 48.3%.<sup>123</sup> This is the category in which the difference between boys and girls is most significant, amounting to nearly eight percentage points.

B. Exposure to Family Crime The most well-known manifestation of indirect crime exposure is witnessing family crime and violence.<sup>124</sup> These are cases where the child witnesses a crime committed in the home, among immediate family members, but does not suffer direct physical harm as a result of the witnessed crime.<sup>125</sup> The presence of crime and violence in the home disrupts the sense of safety, security, and stability that such an environment is meant to foster in a child, vital for healthy development.<sup>126</sup> Affected children are often preoccupied with the fear of losing a parent, whether it is the battered parent who is in imminent danger of being severely injured or killed<sup>127</sup> or the batterer who may be incarcerated or even executed.<sup>128</sup> Profound guilt frequently burdens children because of their developmentally ego-centric thinking; they are inclined to hold a belief that they are at fault for causing the violence or could/should have done something to prevent it.<sup>129</sup> Affected children also describe deep confusion and ambivalence towards both parents, including "fear and empathy" towards the abuser and "compassion coupled with a sense of obligation to protect" the abused.<sup>130</sup> The rattling presence of violence in the home can lead to an erroneous conceptualization of aggression as a functional and legitimate part of intimate relationships and family dynamics<sup>131</sup> and a belief in an intrinsic dominance and privilege of men.<sup>132</sup> This ongoing exposure to aggression in the immediate environment was shown to put the child at potential risk of adopting anti-social rationalization for their own abusive behavior or abuse perpetrated against them,<sup>133</sup> thus contributing to the creation of an intergenerational cycle of violence.<sup>134</sup> Preoccupation with the dysfunctional dynamics associated with intrafamilial violence is also likely to make the parents themselves less available as effective caregivers, with the abusers perceived as "unpredictable and frightening" while the abused parents are distracted by basic issues of safety and survival for themselves and their children.<sup>135</sup> The cumulative effect of these factors leads experts in the field to conclude that childhood exposure to family violence "has the potential to induce catastrophic and long-term trauma in the child witness."<sup>136</sup> They further warn that the fact that a child does not exhibit distinct symptoms does not necessarily mean that s/he is unaffected by the violence, as the child may still develop physical or emotional symptoms later in life.<sup>137</sup> Our analysis found that more than one in every five children, or a total of 22.95%, is exposed to family



violence. Family violence includes violent physical assault of a parent by a spouse, violent assault of a sibling by a parent (beyond spanking), other types of violent altercations between immediate family members at home, and violent property destruction. When translated to numerical figures, more than 17 million children living in the U.S. witness a crime in their own home before turning eighteen, 138 with more than 900,000 in the 2002 birth cohort.<sup>139</sup> This is the only category in which girls experience a slightly higher risk of exposure, at 24%, compared to 21.93% of boys.

C. Exposure to Community Crime Even when the child's home environment is violence-free, the child could be exposed to community crime. "The child may witness criminal activity outside the home, among nonrelatives (for example, in the neighborhood or school). Although the child is not directly physically injured, significant harm can result from the traumatic exposure."<sup>140</sup> Negative effects have been documented for children who witnessed violence directly through sight or sound, as well as those who only heard about the violence in retrospect.<sup>141</sup> Children living in economically impoverished families and communities are particularly prone to this form of crime exposure.<sup>142</sup> Like the home, the neighborhood and school are considered to be part of the child's primary safe haven.<sup>143</sup> Exposure to crime and violence in this environment can cause a loss of the protective and comforting qualities necessary for developing the child's sense of security and trust.<sup>144</sup> The inability to feel safe in their school and neighborhood can be interpreted by a child to mean that the world is unsafe and that "relationships are too fragile to trust because one never knows when violence will take the life of a friend or loved one."<sup>145</sup> These feelings can often lead to a state of hypervigilance, where the child is constantly wired and anticipates an outbreak of violence.<sup>146</sup> Alternatively, the child may resort to believing that s/he is unworthy of being kept safe, affecting self-esteem, and the perception of self-worth.<sup>147</sup> It may also lead the child to believe that violence is "normal,"<sup>148</sup> and feel compelled to resort to aggression, gangs, or criminal activity to avoid being targeted and viewed as weak.<sup>149</sup> Living in a community saturated with crime and violence may also negatively affect parents' caretaking due to their own feelings of helplessness, fear, and grief. "Efforts to protect the child may be exhibited in authoritarian and restrictive parenting practices, as well as in certain precautions that may heighten the child's anxiety."<sup>150</sup> Other parents may yield to the sense of helplessness and cease any efforts to protect the child. Nationally, community violence affects 34.87%, or 25.8 million, of children (36.83% of boys and 32.81% of girls).<sup>151</sup>

In the 2002 birth cohort, community violence affected 1.4 million individuals. This measure includes witnessing assault(s) (with or without a weapon), shooting(s), bombing(s) or violent street riots, and witnessing trade in illegal drugs. D. Parental Victimization When the child's parent is a victim of a violent crime, the child is often affected in some way by proxy. Parental victimization can inflict harm even when the child does not perceive the committing of a crime through his/her own senses and is not considered a witness to the crime against the parent.<sup>152</sup> "Simply put, the well-being of a child is inextricably linked to the well-being of the adults in his or her life," hence if caregivers are victims of violence, this also impacts the children.<sup>153</sup> The most extreme parental victimization scenario is homicide cases, where a child loses a parent to crime. The more common cases concern parents who have experienced violent victimization in childhood or adulthood and suffer harmful implications that spill over to their children.<sup>154</sup> Parental victimization is most severe when the parent does not receive treatment and services to facilitate recovery.<sup>155</sup> Victimized parents are more likely to suffer from a range of mental health problems and poorer states of physical health than nonvictimized caregivers.<sup>156</sup> Some evidence shows that victimization may also affect parenting skills and the interaction between parent and child.<sup>157</sup> Survivors of victimization may have difficulties establishing clear generational boundaries with their children, be overpermissive as parents, or conversely exhibit restrictive parenting practices and be more inclined to use harsh physical discipline.<sup>158</sup> Crime-induced trauma can compromise a parent's ability to play a stable, consistent role in the child's life and be emotionally available, sensitive, and responsive to their children.<sup>159</sup> A victimized parent who is depressed or overwhelmed may have difficulty meeting young children's need for structure or managing that child's developmental inability to understand and control their own emotions, thus impacting their children's experience of emotional expression.<sup>160</sup> The quality of attachment between parent and child has also been found to be affected.<sup>161</sup> A victimized parent, particularly in cases of ongoing victimization, may be "living in constant fear." Subsequently, "they may deny their children normal developmental transitions and the sense of basic trust and security that is the foundation of healthy emotional development."<sup>162</sup> As a result, parental victimization has considerable detrimental consequences to child development, outcomes, behavior, and the child's relationship with the parent, even absent awareness or direct exposure to the criminal act committed against the parent.

As of December 2020, there is no known data on the state or national level that measures the number of children affected by parental victimization in the United States. This is the only category for which estimation of the extent of exposure is entirely unknown.<sup>163</sup> We hope that increased awareness of parental victimization's cumulative impact on children will result in future attempts by state agencies and empirical scientists to assess prevalence. E. Parental Incarceration The fifth and final form of crime exposure identified under the Childhood Trauma Impact umbrella is parental incarceration. It occurs when a child is separated from a primary caregiver as a result of confinement in a correction facility. The incarceration of a parent normally causes major negative economic, social, and psychological consequences to the child and may have life-long repercussions. When the incarcerated parent is the primary caregiver, the family's life is fundamentally disrupted. The child is usually uprooted and may be separated from the incarcerated parent and his/her siblings, other relatives, and friends. The child is at risk of being moved frequently among caregivers and even becoming a ward of the state.<sup>164</sup> Maintaining a close relationship and regular contact with the incarcerated parent over time is a significant challenge.<sup>165</sup> If the child is too young to fully understand the reasons for the parent's "disappearance," destructive feelings of self-blame and anger can emerge.<sup>166</sup> The remaining caregiver is often unable to render necessary support and find a suitable way to convey the information to the child in an age-appropriate manner. Economic hardship is another likely possibility due to the added legal expenses involved and the loss of income or social benefits.<sup>167</sup> The negative stigma and shame associated with parental incarceration also impact the children left behind.<sup>168</sup> This is the most controversial and seldom recognized group of Childhood Trauma Impacted children due to the strong association with the parents' perceived moral wrongdoing and blameworthiness.<sup>169</sup> Children suffering from parental incarceration are often referred to as the "invisible victims" of crime, as they are forced to bear the consequences of their parents' criminal behavior and the system's inability, or possibly unwillingness, to address their needs and mitigate the displayed harms.<sup>170</sup> At present, there is no systematic national data collection on the parental status of inmates by the Department of Corrections. Only 40% of states collect such data in one form or another.<sup>171</sup> Our analysis reveals that 4.77% of children are estimated to be affected by either paternal or maternal incarceration at some point during childhood, amounting to approximately 3.5 million children,<sup>172</sup> with more than 190,000 in the 2002 birth cohort.<sup>173</sup> Parental incarceration affects boys (5.16%) slightly more than

girls (4.36%). Additionally, this form of exposure has a particularly high prevalence among children of color and minority groups due to the disproportionate representation of these groups in the incarcerated population.<sup>174</sup> F. The Bottom Line Overall, an astonishing 64.12%, or 47.56 million<sup>175</sup> (2.58 million in the 2002 birth cohort)<sup>176</sup> children living in the United States today are affected by at least one form of crime exposure during their childhood. Going one step further and applying these percentages to the total U.S. population, we can conclude that approximately 198 million individuals have been exposed to at least one category of the Childhood Trauma Impact during childhood.<sup>177</sup> Boys are at a higher risk of exposure at 66.49% than girls, at 61.64%.

Our findings also reinforce the fact that the aforementioned categories are not mutually exclusive. It is often the case that children experience poly-victimization and suffer from multiple forms of direct or indirect crime exposures.<sup>181</sup> Over 25 million children, comprising 33.94% of children in the United States, are affected by two or more different types of exposure; 2.08%, or 1.5 million children, are impacted by four or more of the categories included in this study.<sup>182</sup> Such cumulative exposure was found to aggravate the harmful impact on the child even further.<sup>183</sup>

These overwhelming figures make it clear that the Childhood Trauma Impact problem is vast and expansive, rather than an isolated occurrence reserved for marginalized populations. As determined by the Attorney General Task Force, the problem is "not limited to one community or one group of children. It occurs among all ethnic and racial groups; in urban, suburban, and rural areas; in gated communities and on tribal lands."<sup>185</sup> In fact, our analysis establishes that each and every child living in the U.S. is more likely than not to be stung by the venom of crime at one point or another during their tender childhood years.<sup>186</sup> V. RISKS AND COSTS<sup>187</sup> Once we have a better image of the prevalence of the Childhood Trauma Impact problem and a data-driven estimate of the number of affected children across the nation, we can proceed to grasp the risks looming in these children's future. A thorough evidence-based understanding of the type and nature of the risk outcomes associated with the Childhood Trauma Impact will also enable us to identify and estimate the potential costs these outcomes may accrue. Although each child is different, medical and social science studies have found a significant array of adverse outcomes closely associated with the Childhood Trauma Impact. The observed harms were found to infiltrate all life's disciplines, ranging from increased involvement with the criminal justice system and

heightened risk for substance use to physical and mental health problems.<sup>188</sup> Association with unfavorable life outcomes was also identified, including poor educational achievements, higher unemployment and homelessness rates, and inferior economic well-being.<sup>189</sup> Yet, as previously explained, there is substantial heterogeneity in the type and level of harm endured by each affected child.<sup>190</sup> The gaps created by the states' failure to provide an effective solution to the Childhood Trauma Impact further exacerbate the problem. "Without services or treatment, even children who appear resilient and seem to recover from exposure to violence still bear emotional scars that may lead them to experience health and psychological problems years or decades later, also known as the 'sleeping effect.'"<sup>191</sup> Furthermore, the mere lack of response can further compound the caused harm by fostering a sense of isolation and betrayal.<sup>192</sup> A. Criminal Justice Increased involvement with the criminal justice system among Childhood Trauma Impacted children is one of the more thoroughly researched outcomes. Such involvement with the system can result from engagement in delinquent acts, criminal activity once reaching adulthood, or repeat victimization.<sup>193</sup>

The empirical evidence on the effect of Childhood Trauma Impact exposure on criminal justice involvement varies quite substantially in comparison to other outcomes in this section. Where involvement in the juvenile justice system is concerned, results range from approximately 50% increased odds for juvenile arrests and offending among children affected by direct victimization to 80–200% increase among children exposed to family violence.<sup>194</sup> Exposure to most of the Childhood Trauma Impact categories increases the likelihood of adult arrest by approximately 50–60%.<sup>195</sup> Increased odds for criminal offending is evaluated at around 80% for both children affected by direct victimization and those affected by parental incarceration.<sup>196</sup> The most significant effect is found on violent adult offending, for which the increase in risk more than doubles (and even triples according to some studies).<sup>197</sup> A similar effect is found in the probability of perpetrating domestic violence.<sup>198</sup> The increase in revictimization attributed to exposure ranges from a 60–240% greater likelihood of becoming a victim of domestic violence during adulthood<sup>199</sup> to a 43–237% greater likelihood of experiencing sexual assault.<sup>200</sup>

Nevertheless, it must be noted that no deterministic forces are causing affected individuals to commit these crimes. Other than rare cases of duress, automatism, and extreme mental incapacitation, Childhood Trauma Impacted individuals make conscious and willful choices to break the law. Yet, "the choices a person

makes are shaped by the choices a person has."<sup>201</sup> As clearly demonstrated throughout this section, the Childhood Trauma Impact influences the range of life choices laid before affected children and increases the odds of tipping the scale towards unlawful choices. There are a multitude of expenses that stem from an increase in criminal and delinquent activities. Law enforcement responds to the scene of the incident when reported and may initiate an investigation, depending on the circumstances. In many cases, arrests can be made.<sup>202</sup> The per-case cost of police response is estimated to be generally low, under \$170, except for arson and murder cases, where the average cost stands at approximately \$2,300.<sup>203</sup> If the suspect is indicted, the costs of prosecution and the judicial process are also added. These costs are estimated at \$2,000 on average per violent crime and \$500 per property crime.<sup>204</sup> Another study tallies the combined cost of law enforcement, prosecution, and the judicial process to range between \$3,200 for theft cases and \$446,000 for murder cases<sup>205</sup>—violent crimes such as assault and robbery range between \$9,800 and \$15,700 per case.<sup>206</sup> Pre-conviction detention costs should also be considered in some cases, which are evaluated to range on average between \$75–\$155 a day for each individual detained.<sup>207</sup> Post-conviction, the costs of sentencing are added. The national annual average cost of prison stay per person is calculated at \$34,400.<sup>208</sup> In juvenile cases, the cost is significantly higher—estimated at an average annual cost of \$150,000 per youth—though this will not be added to the analysis.<sup>209</sup> Probation and parole are substantially less costly alternatives. For adults, the average cost of probation is estimated at \$1,400, and parole at \$3,130 per year.<sup>210</sup> On the other end of the gamut, we have the costs associated with the victims, whether medical expenses, lost wages for missed workdays, childcare costs, property damages, crime victim services, victim assistance programs, and victim compensation costs. Depending on the type of offense, the average crime victim costs are estimated to range from several hundred dollars to over \$1 million per case.<sup>211</sup> Additionally, the upsurge in the volume of criminal activity associated with those exposed to crime is expected to cause an increase in prevention costs and the law enforcement resources required to maintain public safety over time.<sup>212</sup> To calculate the attributable risk for adult offending under our analysis model, we have chosen to rely on a study that specifically measures the relationship between different types of direct and indirect forms of childhood crime exposure and criminal offending.<sup>213</sup> The study is one of the only studies in this field based on a large national longitudinal sample (N > 12,000).<sup>214</sup> It should be noted that the study measured whether participants committed a crime during the twelve months that preceded the interview. Therefore,

there is a likelihood of undercounting (see Table 5). For the cost variable for each crime category, we accounted for the average expenditure on criminal justice costs, including all local, state, and federal government funds spent on police protection, legal and adjudication services, incarceration, and other corrections programs. To that we added the average direct victim costs, including immediate medical costs and damage/loss of property. We counted one single crime as the lifetime cost under each category, although recidivism is common based on the National Institute of Justice statistics.<sup>215</sup> We have again selected to err on the side of undercounting. For the measure of re-victimization, there were fewer available studies that allowed the calculation of the precise risk attributed to Childhood Trauma Impact exposure. We have identified two robust studies on the topic. The first study evaluated the increase in odds for sexual victimization during adulthood associated with childhood crime exposure, measured at 77%.<sup>216</sup> This study omitted statistical figures essential in calculating the attributable risk, such as the prevalence of the outcome in the unexposed group and a confidence interval for the results.<sup>217</sup> Thus, it could not be incorporated into our analysis. The second study assessed the increase in domestic violence victimization associated with exposure. This study calculated the effect of exposure on revictimization for women only.<sup>218</sup> Therefore, it has allowed us to estimate the costs of re-victimization for the female population exclusively, and only where domestic violence victimization is concerned.<sup>(219)</sup> Although Childhood Trauma Impacted male and female children may be prone to repeat victimization of other crime types during their lifetime, we could not find sufficiently rigorous studies on this topic to include in our analysis. Moreover, the existing studies show that children who experience more than one crime exposure during childhood are found to have substantially greater odds of revictimization, up to 730%.<sup>(220)</sup> While we remained consistent in our selection of the most conservative estimate, one should consider severe undercounting in this category due to the lack of data. The calculated costs for this category consist of the average direct victim costs of the respective crimes.

### **B. Substance Use and Use Disorders**

Children affected by the Childhood Trauma Impact were found to have higher rates of substance use and use disorders during adolescence and adulthood, including tobacco, alcohol, prescription drugs, and illicit drugs.<sup>231</sup> Additionally, studies have found the age of the first initiation of use to be younger and the likelihood of using intravenously injected drugs to be greater.<sup>232</sup> Even one exposure to any of the Childhood Trauma Impact categories will increase the

odds of an individual ever using an illicit drug by 60–70%, compared to individuals who were never exposed.<sup>233</sup> The odds of using injected drugs are estimated to increase by 30–60%.<sup>234</sup> When looking at specific categories of exposure, such as exposure to family violence and direct victimization, some studies estimate that such exposure increases the risk of illicit drug use by as much as 90–100%.<sup>235</sup> The risk of an individual binge drinking or developing an alcohol use disorder doubles with any single exposure compared to nonexposed peers.<sup>236</sup> Exposure among children to family violence was found to elevate the probability of early initiation of substance use (before the age of fourteen) by 80%; meanwhile, children exposed to community violence experienced a 110% increase in the probability of early initiation of substance use.<sup>237</sup> Recovery from a substance use disorder could require long term treatment, either residential or outpatient. For example, the most efficacious treatment for opioid use disorder is the chronic use of medications such as buprenorphine or methadone,<sup>238</sup> which carries an average cost that ranges from \$115 to \$270 per week.<sup>239</sup> That accumulates to a minimum of \$5,980 per patient each year. In addition to the direct costs of treatment, individuals suffering from substance addiction were found to have higher medical costs than those of the general population. The difference for Medicaid users was found to be approximately \$14,460, while Medicare users are estimated at \$17,900 annually.<sup>240</sup> Lost productivity costs are also added, as substance use and addiction often hamper one's ability to integrate into the workforce, hold a stable position, and perform other routine daily tasks.<sup>241</sup> The measures of the attributable risk of alcoholism and illicit drug use both rely on the original ACE studies.<sup>242</sup> While the sample in these studies is not nationally representative, the sample of the original dataset is very large. Moreover, subsequent studies that relied on state-collected ACE data under the Behavioral Risk Factor Surveillance System ("BRFSS") supported and replicated the results.<sup>243</sup> While the effect of a single crime exposure on smoking was found to be statistically nonsignificant in the original ACE study, a newer study with a larger sample established a statistically significant effect that justified the inclusion of smoking as one of our study outcomes.<sup>244</sup> The calculated costs for each category include medical treatment and loss of productivity C. Mental Health From a mental health perspective, affected children were found to have an increased risk of suffering from depression, Post Traumatic Stress Disorder ("PTSD"), anxiety, developmental and behavioral problems, aggression, attention disorders, personality disorders, suicide risk, attachment disorders, and deficit in social adaptation.<sup>257</sup> These conditions may affect the child in the short-term, immediately after the exposure incident, or in the long-

term through adulthood.<sup>258</sup> In some cases, symptoms may appear years after exposure, as the child struggles to process the experience without adequate facilitation.<sup>259</sup> The most comprehensive and reputable studies to examine the effect of childhood crime exposure and other childhood adversities on mental and physical health are the ACE studies. These studies have found that the odds of attempting suicide increased by 80% among exposed individuals compared to those not exposed.<sup>260</sup> Likelihood of suffering from depression increases by 50%.<sup>261</sup> The risk of having difficulties controlling anger increases by 40%.<sup>262</sup> The risk of suffering from anxiety and high stress levels is elevated by 20%.<sup>263</sup> Furthermore, there is a 10% increase in the risk of experiencing hallucination disorders compared to nonexposed individuals.<sup>264</sup> Additional evidence is available on the effect of parental incarceration on the mental health of children.<sup>265</sup> Broadly speaking, meta-analysis has found exposure to parental incarceration to at least double the risk of experiencing mental health problems.<sup>266</sup> The likelihood of attempted suicide is more than 150% greater among children with an incarcerated parent.<sup>267</sup>

Moreover, for this group, the risk of resorting to self-injurious behavior is elevated by 95%,<sup>268</sup> experiencing mental health problems (i.e., depression, anxiety, withdrawal) is increased by 86%,<sup>269</sup> and suffering from PTSD is elevated by 72%.<sup>270</sup> The costs associated with mental health problems include the medical care required for recovery and loss of productivity caused by the often long-lasting and debilitating effect of mental illnesses. The cost of treatment varies significantly depending on the nature and severity of the condition, as well as the type and length of the chosen treatment.<sup>271</sup> One data point that we were able to obtain is the cost of PTSD treatment, which is estimated at \$9,000 per individual for the first year, reduced by nearly half during the second year of treatment, and then slowly decreases by about \$100 per year.<sup>272</sup> When hospitalization or residential treatment is required, the costs substantially increase.<sup>273</sup> The attributable risk analysis of the mental health outcomes also relies on the original ACE studies' findings.<sup>274</sup> In these studies and most others, PTSD does not appear as an independent condition but instead is included under the broader categories of anxiety and depression symptoms.<sup>275</sup> The calculated costs reflect the average lifetime cost of medical treatment for the respective conditions, including "psychiatric service costs (e.g., counseling, hospitalization), non-psychiatric medical costs (e.g., emergency room treatment), and prescription drug costs."<sup>276</sup> For incidences of attempted suicide, we also account for the cost of loss of productivity due to the incident.

#### D. Physical Health

When it comes to physical health, a strong link was established between childhood exposure to crime and life-threatening health conditions, such as cancer, lung, heart, liver, and skeletal diseases, sexually transmitted diseases, diabetes, and obesity.<sup>264</sup> According to the ACE studies' findings, exposure to any one of the Childhood Trauma Impact categories increases the risk of contracting a sexually transmitted disease by 40%.<sup>264</sup> The risk for chronic bronchitis or emphysema increases by 60%.<sup>264</sup> The odds of obesity among exposed individuals are 30% higher.<sup>264</sup> For chronic and potentially fatal conditions such as cancer, stroke, diabetes, and asthma, the probability is elevated by 20% compared to those not exposed.<sup>264</sup> The risk of hepatitis and coronary heart disease increases by 10%. The odds of reaching a state of disability were found to increase by at least 30%. For some categories of exposure, the risk for disability is even higher, with a 90% increase among children affected by parental incarceration and a 120–140% increase for children affected by direct victimization. The added costs linked with the increased risk for health conditions associated with the Childhood Trauma Impact are a highly complex matter that involves many variables. One study has estimated the healthcare costs of an individual affected by child abuse to be approximately \$7,500 per year higher than those of an individual who has not experienced abuse.<sup>294</sup> In the same study, less conservative models stipulate that the cost difference can be as high as \$10,800 to \$14,500 a year.<sup>295</sup> Our analysis accounts for the average medical treatment costs of the conditions found to have a statistically significant association with a single exposure to crime in the original ACE studies. Here too, we do not have data about the duration of each condition or the number of outbreaks. Thus, for singular conditions such as skeletal fractures, sexually transmitted diseases ("STDs"), or myocardial infarction (heart attack), we counted the treatment of only one occurrence. For chronic long-term conditions, such as asthma or diabetes, we counted average lifetime treatment cost in adulthood. Several health conditions were not found to have a statistically significant effect on individuals having a single crime exposure; their effect, however, was significant for individuals with multiple exposures.<sup>296</sup> Although the effect of these conditions would undoubtedly influence the total cost for the cohort due to the high prevalence of poly-victimization, to assure the most conservative estimate, we opted not to incorporate these conditions in the analysis absent a more recent and robust study to establish a statistically significant effect. These conditions include severe obesity, stroke, hepatitis, and jaundice.<sup>297</sup>

One should also consider that Childhood Trauma Impacted individuals are more than twice as likely as unexposed individuals to rely on Medicaid for their medical care.<sup>314</sup> As a result, a significant portion of the mental and physical health costs delineated above will be borne by the state and by taxpayers.

### E. Education

The costs of the educational outcomes were not directly incorporated into our analysis. This is due to several reasons. First, many of the concrete costs associated with educational outcomes are incurred during the childhood years. As previously explained, we have refrained from accounting for costs incurred prior to the age of eighteen due to the wide disparity in the age of first exposure, which leads to significant variance and increases the risk of error.<sup>315</sup> Second, educational outcomes were shown to have a direct effect on productivity and economic well-being outcomes, such as employment and earning capacity.<sup>316</sup> As such, there is a high risk of “double counting” costs when accounting for two outcomes with such a level of interdependence. Under these circumstances, the calculation of the costs of decreased productivity is meant to encapsulate the effect of some of the educational outcomes described above. Despite the exclusion of this category of outcomes from the cost analysis, a detailed explanation of the educational outcomes associated with the Childhood Trauma Impact and their potential costs is of paramount importance to obtain the full picture of the challenges endured by affected children. Many studies have found that Childhood Trauma Impacted children, as a group, do not perform as well as their peers in academic settings. They are prone to a lower grade-point average (“GPA”), poorer reading and math skills, school disengagement, slower academic progress, and grade incompleteness.<sup>317</sup> This effect was found to carry on to adulthood and higher education settings.<sup>318</sup> Changes in brain structures that result from traumatic exposure to crime affect cognitive capacities and therefore explain the elevated risk for inferior educational outcomes.<sup>319</sup> Reduced cognitive capacities due to exposure impacts skills integral to the learning process, such as memory, attention, concentration, executive functions, visual/spatial perceptual reasoning, and verbal comprehension.<sup>320</sup> Furthermore, children affected by the Childhood Trauma Impact were shown to have deficits in the omnibus IQ.<sup>321</sup> Studies found that affected children scored on average five to ten IQ points lower than peers in their cohort when controlling for alternative explanatory factors.<sup>322</sup> This gap was shown to remain, and even to increase, as exposed children approach adulthood.<sup>323</sup> The range of scientific studies investigating the effect of

the Childhood Trauma Impact on education yields several interesting findings. Exposed children are at a higher risk of suffering from ADD/ADHD—the effect ranges from a 40% increase in risk for children exposed to family violence to a 63% increase for children affected by direct victimization.<sup>324</sup> Another study estimates the likelihood of having an attention disorder at a 90% increase compared to nonexposed children.<sup>325</sup> Childhood Trauma Impact exposure is attributed to a 50% increase in poor language and literacy skills and a 60% increase in poor math skills.<sup>326</sup> High school graduation rates were found to be 30–45% lower as a result of exposure to any one of the Childhood Trauma Impact categories.<sup>327</sup>

Early intervention is needed for many affected children to cope with learning obstacles. In Pennsylvania, for example, such programs cost the state approximately \$5,800 a year per child.<sup>328</sup> The most significant portion of the costs associated with educational underperformance among children affected by the Childhood Trauma Impact is not the direct costs of services required for them, but rather its rolling effect on other life outcomes. Exposure to crime undermines academic performance and potential educational achievement, bearing on the odds of successful participation in the labor force, employment stability over time, and occupational status; all of these factors directly impact, if not determine, future earnings and economic productivity.<sup>329</sup> In fact, studies estimate that each additional year of education increases potential annual income by approximately \$1,500.<sup>330</sup> F. Productivity & Economic Wellbeing It is well documented that the Childhood Trauma Impact is most prevalent among children coming from lower socio-economic backgrounds.<sup>331</sup> Strong evidence, however, establishes that even when controlling for background and other covariates, violence exposure in childhood can lead to diminished economic wellbeing in adulthood, including higher rates of unemployment, income deficit, higher rates of poverty and homelessness, higher utilization of public assistance, lower rates of healthcare coverage, and a greater reliance on Medicaid.<sup>332</sup> Empirical studies indicate the average income deficit of adults who have been affected by direct victimization during childhood to be at \$5,000<sup>333</sup>–\$6,000<sup>334</sup> a year at peak earning.<sup>335</sup> This group of children was also found to be twice as likely to fall below the poverty line and rely on Medicaid for healthcare coverage<sup>336</sup> and to be 80% more likely to experience homelessness.<sup>337</sup> A similar study estimated the annual deficit among children exposed to parental incarceration at \$2,953 during young adulthood (rather than peak earning).<sup>338</sup> Several studies have found Childhood Trauma Impact exposure to double the risk of unemployment in

adulthood.<sup>339</sup> The category of productivity and economic well-being is the most complicated to define and calculate, as it encompasses some degree of intangibility. It is also the costliest category of all the delineated outcomes. The category of reduced earnings comprises approximately 78% of the total estimated annual cost.<sup>340</sup> Considering the previously discussed disadvantages in educational and professional attainments, as well as medical limitations, the reduced earnings category compounds the average difference in income attributed to crime exposure after controlling for background characteristics.<sup>(341)</sup> The study we relied on for this calculation is not optimal; it focuses on children affected by different categories of maltreatment, rather than by the full scope of Childhood Trauma Impact exposures and thus required stipulation.<sup>(342)</sup> Nevertheless, this is the most reliable source we could identify that provides an in-depth look into this colossal outcome that affects Childhood Trauma Impact exposed children throughout their adulthood. Moreover, the fact that over 80% of the affected group is exposed to direct victimization helps support the relative validity of the stipulation.<sup>343</sup> The increased use of state and federally funded public assistance, such as unemployment stipends, food stamps, disability, and the like, is added to the productivity costs. The use of public assistance programs is estimated to be 65– 100% higher among Childhood Trauma Impacted children in comparison to unexposed individuals, even after controlling for background information.<sup>344</sup> The odds of experiencing disability increase by 30% for individuals who experienced one exposure during childhood compared to unexposed children.<sup>345</sup> These cost categories are imperative to address, as they amount to substantial sums borne entirely by the state and federal government and thus funded by the entire population of taxpayers. The average total annual spending for the major welfare programs<sup>346</sup> for each eligible family is estimated at \$14,204.<sup>347</sup> As for disability assistance, the monthly stipend ranges from \$600–\$1,500, at an average of \$1,196.<sup>348</sup> Unfortunately, the complex manner in which eligibility, duration, and value of assistance is determined prevents us from establishing a reliable average lifetime cost estimate per individual that could be plugged into our model and tallied. Therefore, it could not be incorporated into the total estimated cost.

### G. The Bottom

Line Dollar after dollar, the costs associated with the Childhood Trauma Impact pile one on top of the other. At first glance, some of these cost figures appear to be negligible when viewed in isolation. It is clearly shown, however, that when summed together, considering the high prevalence rates and the large

number of costly adverse outcomes threatening the millions of children affected by the Childhood Trauma Impact, the bottom line is of colossal proportions. When the total cost of all Childhood Trauma Impacted adults in the United States today is calculated, it sums up to over \$496.4 billion every single year.<sup>351</sup> This amounts to ~2.3% of the total national GDP on the United States in 2019.<sup>352</sup> These results are even more astounding considering the fact that this is an extremely conservative analysis that consciously undercounts or excludes many cost components for the sake of avoiding over-estimation, including the exclusion of the entire group of children affected by parental victimization, for which data is currently unavailable.

### H. Sensitivity Testing

To test the veracity of our estimates, we compared the results of our analysis to those of similar studies in the field.<sup>353</sup> To date, there are no studies that attempt to measure the cost of the full scope of the Childhood Trauma Impact. Therefore, the comparison was conducted against studies that evaluate the cost of sub-categories that fall under the Childhood Trauma Impact umbrella or similar types of crime exposure. All the comparison studies applied a “bottom-up” approach, similar to the methodology used in this study. The selected studies have included a per victim lifetime cost calculation, which enables a leveled comparison. Naturally, differences are expected due to the variation in the measured phenomena, the difference in definitions, the methodologies used in the analysis, and the specific cost elements tallied in the process. Because a one-to-one comparison is impossible, a broader conceptual evaluation is needed to identify and understand the sources of existing disparities. Only one comparison study measured the cost of indirect crime exposure (exposure to intimate partner violence),<sup>354</sup> while the remaining three studies focused on direct exposure to child maltreatment<sup>355</sup> and rape.<sup>356</sup> The child maltreatment studies covered physical and emotional neglect, as well as emotional abuse, which were not included in our analysis.<sup>357</sup> The rape study assumed that first exposure occurred at age 18, rather than during childhood.<sup>358</sup> It should be noted that the three studies examining direct exposure have counted the costs of medical care, loss of productivity, and property loss that directly resulted from the exposure, which were not accounted for in our analysis.

The most seemingly similar study reaches an almost identical estimate to ours.<sup>359</sup> Yet, this study counts the cost of short-term healthcare, child welfare, and special education, which in culmination comprises nearly 25% of the total estimate.<sup>360</sup> These costs were not included in our analysis. At the same time, Fang et

al. did not account for the costs associated with substance use.<sup>361</sup> Moreover, their estimate of the criminal justice costs associated with exposure was lower, which appears to stem from the difference in the methodology of calculating the attributable risk of adult criminal behavior, lack of differentiation between the cost of property and violent crime, and no account for the increase in risk for revictimization among exposed children.<sup>362</sup> One surprising finding is the lower cost estimate obtained by the rape study.<sup>363</sup> Rape is considered to be among the most severe forms of direct victimization, and its long term adverse effect is established in a plethora of studies. <sup>364</sup> On the other hand, our study averages the effect of a broad range of crime exposures of various characteristics and levels of severity. One may expect the averaged effect to be somewhat diluted, which will consequently lower the cost estimate associated with the predicted harm. Yet our estimate is almost double that provided by Peterson et al.<sup>365</sup> The difference between estimates seems to stem entirely from a difference in methodology in the way the Peterson study calculated productivity loss, which does not incorporate the calculation of lifetime lost wages.<sup>366</sup> Additionally, Peterson's paper addresses sexual victimization that occurred during adulthood rather than childhood.<sup>367</sup> Considering the relevant differences between children and adults discussed in Part II, such distinction is expected to affect the calculated attributable risks for some outcomes, and therefore alter the cost estimate.<sup>368</sup> The most extreme estimate emerges from the child maltreatment study by Peterson et al., which exceeds our estimate four-fold.<sup>369</sup> This difference is almost entirely due to the use of the new VSL and monetized QALY methodologies in that study.<sup>370</sup> These methodologies reflect "valuations of morbidity and mortality that aim to include intangible costs such as pain and suffering experienced not only by the affected individual but the wider community."<sup>371</sup> Following our guidelines for establishing the most conservative estimate, these cost elements were excluded from our study.

## VI. CONCLUSION

In an ideal world, the safety and wellbeing of our children would be a first order national priority. Legislators and policymakers would be motivated to act for the sole reason of bettering the lives of children and providing the optimal conditions to improve children's life outcomes. At the very least, the prospect of protecting children from harm or helping them heal from trauma would be a sufficient cause to bring the state into action. Nevertheless, the reality is that children do not have voting power, and their voices are rarely heard in the political debate. Although their sweet faces grace election campaigns, they are not present to negotiate their share when the

national budget is distributed. In the political sphere, the wellbeing of children only rarely appears to have sufficient, independently intrinsic value to incentivize concrete state action and a substantial investment of funds. Unfathomably, even the notion that the nation's future is inseparable from the success and productivity of its next generation seems to be too intangible and remote from a policy perspective and a more direct "upside" is required to support any governmental financial investment in the wellbeing of children.<sup>376</sup> Unsurprisingly, monetary investments will be required to fix our broken system. In today's reality, where public funds are stretched to the limit, and most states are experiencing budgetary deficits that amount to a fiscal crisis, and some are nearing a state of bankruptcy,<sup>377</sup> the political support required to execute such an investment is hard to come by. One argument that has proven effective in the past to incentivize investment in such social causes is demonstrating the concrete potential for long-term fiscal savings, which serve as an upside when state budgets are tallied.<sup>378</sup> One parallel area, where substantial change has been observed in recent years, is the decrease in prison populations in many states across the nation.<sup>379</sup> The incentive for this change was the potential for a substantial reduction in the costs of new prison construction and operations of corrections facilities. This was coupled with empirical evidence that reduction in the prison population, if done in accordance with specific guidelines, is unlikely to cause an increase in crime rates.<sup>380</sup> Additionally, it relied on evidence showing that rehabilitation programs and alternative sentencing are less costly options that prove to be as or more effective in controlling crime.<sup>381</sup> Thus, public safety is not expected to be compromised. This campaign has borne fruit, as evidence emerged that the states which succeeded in prison population reduction were saving money without causing an increase in crime rates. For example, a 1.6% reduction in state of Nevada's prison population from 2008–2009 saved the state \$38 million and prevented Nevada from spending \$1.2 billion on prison construction.<sup>382</sup> Similarly, an investment in a work-release program by the state of Minnesota saved the state \$1.25 million due to a decrease in the prison population. Minnesota prisoners who received job training paid \$459,819 more in income taxes than those who were not part of the program.<sup>383</sup> Early intervention in cases of children affected by the Childhood Trauma Impact is hypothesized to have the potential to yield a similar effect. This is due to the severe long-term adverse outcomes shown to be borne by affected children and the monumental costs tied to these outcomes, as established in this Article. In fact, the estimated annual costs of mass incarceration range between \$80–182 billion,<sup>384</sup> which is less than half of the estimated



annual costs of the ongoing neglect of the Childhood Trauma Impact problem. The evidence-based cost estimates presented above can now be compared against the costs of potential intervention policies that enable the effective and timely identification and treatment of Childhood Trauma Impacted children. Such a cost/benefit analysis will allow the development of a cost-effective policy proposal that will be appealing to budget-conscious policymakers and stakeholders while advancing the interests and wellbeing of affected children and society as a whole. Since the muffled cries of millions of children across the nation have yet to awaken policymakers to act, perhaps money will “talk” on their behalf and incentivize change.

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