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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

DARRYL DUNSMORE, ANDREE ANDRADE, ERNEST ARCHULETA, JAMES CLARK, ANTHONY EDWARDS, REANNA LEVY, JOSUE LOPEZ, CHRISTOPHER NORWOOD, JESSE OLIVARES, GUSTAVO SEPULVEDA, MICHAEL TAYLOR, and LAURA ZOERNER, on behalf of themselves and all others similarly situated,

Plaintiffs,

v.

SAN DIEGO COUNTY SHERIFF'S DEPARTMENT, COUNTY OF SAN DIEGO, SAN DIEGO COUNTY PROBATION DEPARTMENT, and DOES 1 to 20, inclusive,

Defendants.

Case No. 3:20-cv-00406-AJB-DDL

REBUTTAL EXPERT REPORT OF MATTHEW B. ROSS

Judge: Hon. Anthony J. Battaglia
Magistrate: Hon. David D. Leshner

Trial Date: None Set

I, Matthew B. Ross, Ph.D., declare:

1. A true and correct copy of my expert rebuttal report is attached hereto as **Exhibit A**.

2. I have had the opportunity to review the report of Dr. Brian L. Withrow. The opinions expressed therein do not change the opinions I expressed in my expert report.

3. The information and opinions contained in my rebuttal report are based on evidence, documentation, and/or observations available to me. I reserve the right to modify or expand these opinions should additional information become available to me. The information contained in this rebuttal report are a fair and accurate representation of the subject of my anticipated testimony in this case.

Dated: October 2, 2024

Matthew B. Ross

Matthew B. Ross, Ph.D.

Exhibit A

Expert Witness Rebuttal Report

Title: Expert Report of Matthew B. Ross, Ph.D.

Date: October 2, 2024

Pursuant to: Dunsmore v. State of California et al. (Case No. 3:20-cv-00406-AJB-DDL)

Prepared for: Rosen Bien Galvan & Grunfeld LLP

Prepared by: Matthew B. Ross, PhD as CEO and Owner of Matthew B. Ross LLC.

Matthew B. Ross LLC is a limited liability corporation providing technical analysis and expert witness services. The company was formed in the State of Delaware and is currently registered and operating in the States of Massachusetts and New Jersey.

Expert Witness Rebuttal Report

Dr. Brian Withrow's analysis fundamentally misrepresents key aspects of the literature on statistically testing policing data for racial profiling, including the relevant legal frameworks and methodologies. His report demonstrates a reliance on outdated approaches, flawed assumptions, and selective citation of the available research. This rebuttal addresses these deficiencies and provides a more accurate interpretation of the data and methodologies involved.

While Dr. Withrow discusses five statistical methods in the introduction to his report that could have been used to assess racial profiling, he ultimately applies the least sophisticated of these: the population-based benchmark. This method is widely recognized as inadequate for assessing disparities in policing data. Population-based comparisons, which rely on residential Census data to evaluate disparities in stops or arrests, fail to account for critical factors such as situational contexts, police exposure rates, and differences in police-citizen interactions. These gaps severely limit the conclusions one can draw from this approach. By contrast, causal inference models—two of which Dr. Withrow mentions but does not use—offer far more nuanced insights. They account for these factors and help isolate the role race plays in stops, searches, and arrests, going beyond simple descriptive statistics. The core issue with Dr. Withrow's analysis is that he identifies more rigorous methods but proceeds to apply an outdated and flawed approach, undermining the validity of his conclusions. In contrast, my report employs several of the advanced techniques Dr. Withrow mentions but neglects to use, yielding compelling evidence of disparities in stops and arrests based on race.

Dr. Withrow acknowledges in his analysis that Black and Hispanic individuals constitute 5.5% and 34.9% of the residential population, respectively, yet account for 10.1% and 38.3% of arrests. While my descriptive statistics vary slightly due to Dr. Withrow's inclusion of 2020 RIPA data—data not requested in discovery—and the inclusion of CAD events not limited to deputy-initiated activities, his broader observation that minorities are overrepresented in both stops and arrests aligns with my findings. We agree that overrepresentation alone is not necessarily indicative of racial bias. The key difference between our analyses lies in my use of the more rigorous causal tests of discrimination that Dr. Withrow identifies but fails to apply. These methods address the shortcomings of population-based benchmarking by allowing us to rule out alternative explanations and focus on the role of discrimination and disparate treatment.

My report finds smaller relative disparities, with Black and Hispanic motorists 6.4% more likely to be stopped and 26.2% more likely to be arrested. While these disparities are smaller in relative magnitude than those noted by Dr. Withrow, they are identified using much more robust statistical models that control for compositional differences between minority and majority populations. As a result, we are left with few plausible explanations beyond racial discrimination and disparate treatment. Dr. Withrow's decision to not apply these more rigorous methods renders his findings both incomplete and unreliable.

Ultimately, Dr. Withrow's conclusion that we cannot learn anything from this data is not only incorrect but also dismissive of the sophisticated tools now available to test for racial bias in policing. His reliance on antiquated methods and refusal to engage with modern causal inference techniques undermines the rigor and objectivity needed for a thorough and accurate analysis of racial disparities in law enforcement. This rebuttal will highlight these shortcomings and demonstrate the efficacy of

using modern, statistically sound approaches to understand the true extent and impact of racial profiling in policing.

1. Differences in Training and Expertise

The statistical and econometric training of economists differs significantly in both scope and rigor. At its core, economics is the study of resource allocation under scarcity from that of criminologists. Economists are often embedded across various departments and disciplines due to the generalizability of our analytical tools. For example, I hold appointments in both the School of Public Policy and the Department of Economics at Northeastern University, along with an additional affiliation at the Center for Race and Justice within the School of Criminology & Criminal Justice. It is common for economists to have interdisciplinary roles in departments like education, business, health, and criminology. This is especially common at top-tier institutions like the University of Pennsylvania and UC Irvine, two of the highest ranked criminology departments, where several economists have primary appointments. This interdisciplinary presence is largely due to economists' advanced training in statistical and econometric techniques, particularly in causal inference, which allows us to address complex policy issues across multiple fields.

In contrast, criminologists rarely hold primary appointments outside of their discipline, as their training tends to be more specialized and descriptive. Their empirical training, while rich in institutional training, often lacks the rigor necessary for more advanced quantitative analyses. Dr. Withrow's report is a clear example of this, as it reflects a naïve understanding of inferential statistics and relies on outdated empirical designs.

2. Evolution of Empirical Methodologies in Policing Research

I also want to address the evolution of methodologies used to evaluate racial disparities in policing. My "preponderance of the evidence" approach—often referred to as the "Connecticut Model"—was the first to apply rigorous econometric tests of discrimination to statewide policing data. Since its introduction, this model has become the standard in many U.S. jurisdictions for evaluating racial profiling. Initially, criminologists resisted this approach, but over time, even the very scholars cited by Dr. Withrow have adopted frameworks like mine.

For instance, Dr. Robin Engel, prominently referenced in Dr. Withrow's report, recently published studies in 2023 and 2024 that closely follow the methods I developed.[1] Similarly, my colleague at Northeastern, Dr. Jack McDevitt, also cited by Dr. Withrow, has adopted a nearly identical methodology to my own in his most recent work published in 2020 and 2024.[2] Despite these leading

[1] For example, see: Engel, R. et al. (2024). *Pennsylvania State Police Traffic Stop Study: 2023 Annual Report, January 1 – December 31, 2023*. University of Cincinnati Report prepared for the Pennsylvania State Police. https://www.pa.gov/content/dam/copapwp-pagov/en/psp/documents/cdr/cdr_2023.pdf. Brown, M. et al. (2023). *Assessment of Colorado Springs Police Department Use of Force*. Transparency Matters Report prepared for the Colorado Springs Police Department. https://static1.squarespace.com/static/5b7ea2794cde7a79e7c00582/t/65d435e0b59a1e63e239f36e/1724162908357/Transparency-Matters-Report.pdf.

[2] For example, see: Iwama, J. and McDevitt, J. (2022). *Douglas County Pedestrian and Traffic Stop Study, 2020-2021*. Northeastern University Report prepared for the Douglas County Criminal Justice Coordinating Council. https://www.dgcoks.gov/sites/default/files/media/groups/cjcc/pdf/douglas-county-pedestrian-and-traffic-stop-study-2020-2021.pdf.

criminologists shift towards modern approaches more like my own, Dr. Withrow's analysis is rooted in methods that are outdated and far less effective at evaluating racial bias in law enforcement. His reliance on antiquated statistical techniques stands in stark contrast to the sophisticated models now widely preferred by the field.

It is also worth noting that the U.S. Department of Justice's Civil Rights Division has shifted away from using criminologists as experts in recent years, instead relying on economists and scholars with advanced training in econometrics. Recent DOJ experts (for example, Dr. Jonathan Mummolo, Dr. Dean Knox, Dr. Roman Rivera, Dr. Jeffrey Fagan, Dr. John MacDonald, and myself), rely heavily on advanced econometric techniques like those included in my expert report. In contrast, Dr. Withrow's report relies only on simple descriptive statistics and methods that are no longer considered best practice in this area of research by the field in general and by the DOJ, in particular.

3. Differences in Professional Experience and Objectivity

Another key distinction between Dr. Withrow's professional experience and my own is the nature of our engagements and affiliations. Dr. Withrow's CV lists numerous reports (38) and consulting engagements (33), many of which were commissioned by policing agencies or law firms representing them. His publication, "Defending the Racial Profiling Accusation: The Case for the Social Scientist as an Expert Witness", implies a long history of defending police departments against such claims. The article reads more like a guide to dismissing racial profiling allegations and an advertisement for his consulting services, rather than a serious scholarly work on racial profiling analysis. Dr. Withrow's CV notably lacks any mention of expert witness work or public testimony.

In contrast, I have authored over a dozen independent analyses of racial profiling and secured nearly $3 million in associated grant funding through my university, all of which is listed on my CV. Importantly, I have never worked directly for or been paid by a policing agency; my engagements have been primarily with state or federal entities seeking unbiased, independent analyses of policing data. This distinction is crucial. While Dr. Withrow's work appears tailored to defending against racial profiling allegations regardless of the patterns in the underlying data, I have maintained a strict commitment to an objective, data-driven approach. The findings from my reports reflect the data itself and are based purely on the outcomes of a rigorous analysis, with some reports identifying evidence of racial disparities and others not. In contrast, the vast majority of Dr. Withrow's reports conclude that there is no racial bias, even when the data reveal clear patterns of disparate treatment. Further, many of his reports were commissioned by policing agencies or peace officer unions with the explicit purpose of defending against allegations of disparate treatment.[3] This alone raises significant concerns about the objectivity of his conclusions.

McDevitt, J. et al. (2022). *Assessing Arrest & Traffic Stop Patterns in Portland, ME: An Analysis of Portland Police Department Data.* Northeastern University Report prepared for the Portland Police Department. https://cloudup.com/cZKsh_mMGoi.

[3] For example, Dr. Withrow recently released two reports critical of the California Racial and Identity Profiling Advisory (RIPA) analysis, in which he employs antiquated and flawed methods in an attempt to refute more rigorous findings of disparate treatment identified in independent reports. These reports were commissioned by the Peace Officers Research Association of California (PORAC), a lobbying and professional organization representing law enforcement interests. See: Dr. Withrow, B. L. (2023). *A Critical Analysis of the Racial & Identity Profiling Advisory Board's Annual Report (2022).* Sacramento, CA, USA: Peace Officers Research Association of California.

Key Issues with Dr. Withrow's Report

1. Misinterpretation of California Law

Dr. Withrow's report includes an extended and flawed discussion of California Assembly Bill 953 (AB 953), which is not at issue in this case, as the Plaintiff's claim is based on California Government Code 11135. Nevertheless, addressing his misinterpretation of AB 953 is crucial because it reveals a lack of objectivity and misrepresentation of the facts. Dr. Withrow asserts that California law requires proof that race must be the sole motivator for an enforcement action and that officers must fully know an individual's race before initiating such action. This not only mischaracterizes AB 953 but is also intentionally misleading.

AB 953 defines racial profiling as the consideration or reliance on race "to any degree" in deciding whom to stop or how to conduct law enforcement activities after a stop. The law does not require that race be the sole motivator; it only states that race cannot be a factor "to any degree." Furthermore, AB 953 does not require that officers have complete knowledge of an individual's race before initiating an enforcement action. For instance, consider an officer who disproportionately stops vehicles for window tint violations, believing these violations are more common among minority motorists whom the officer suspects might be more likely to carry contraband. According to AB 953, this behavior would qualify as racial profiling, despite the officer not being able to observe the driver's race due to the window tint. Even though the officer had a legitimate enforcement reason (window tint violation) and a legitimate goal (finding contraband), using race as a factor in making that stop still violates the law.

In the scholarly literature, we differentiate between taste-based discrimination (e.g., an officer stops minorities due to personal bias) and statistical discrimination (e.g., an officer stops minorities because they believe minorities are more likely to be guilty). AB 953 does not distinguish between these types of discrimination; it effectively prohibits both.

Ultimately, Dr. Withrow's interpretation of AB 953 is overly restrictive and misaligned with the law's intent, which aims to address racial bias in policing even when race is considered to any degree—not just when it is the sole motivator.

2. Misrepresentation of Statistical Models and Data

Dr. Withrow's discussion of the Classic Probability Model demonstrates a fundamental misunderstanding of statistical theory. He claims that for inferential statistics to be reliable, all outcomes must be equally possible—an erroneous assertion. In fact, modern statistical models, such as quasi-experimental methods like the veil of darkness or fixed effects models, are explicitly designed to handle non-randomness in social data. These methods are widely accepted in research on policing and were central to my analysis. For example, I used detailed geographic controls to account for

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Dr. Withrow, B. L. (Accepted / In Press). *Efficacy of the California Department of Justice 2021 Police/Resident Contact Data Set for Evaluating Police Officer Performance.* Sacramento, CA, USA: Peace Officers Research Association of California.

differences in police activity across patrol districts and neighborhoods—something Dr. Withrow incorrectly claims cannot be measured in any analysis of these data.

Additionally, Dr. Withrow suggests that no police dataset is adequate for testing racial profiling, dismissing decades of research and numerous studies funded by the DOJ and federal grants. While I acknowledge the importance of context, it is precisely why I requested detailed narrative information during discovery and employed quasi-experimental methods that directly address this issue. Dr. Withrow's failure to leverage the narrative data provided is not due to the dataset's insufficiency, but rather his strategic decision to make the argument that the data are inadequate for the intended purpose. These datasets contain ample information on the context and the sequence of events during police encounters, contrary to his claim. Hundreds of published studies have used similar datasets to conduct robust racial profiling analyses, highlighting the weakness of Dr. Withrow's position.

Dr. Withrow also falsely claims that the RIPA dataset lacks key contextual variables such as time of day and location. This is simply untrue. The RIPA data includes detailed information on the circumstances surrounding each stop, including the time, location, and the officer's justification. This contextual data is critical for understanding reasonable suspicion stops and other discretionary categories, and Dr. Withrow's failure to engage with it either reflects a lack of familiarity or a deliberate omission, both of which significantly undermine his conclusions.

Finally, Dr. Withrow asserts that there is little correspondence between the RIPA and CAD datasets and that each has its own reporting rules. While it's true that CAD data encompasses a broader range of enforcement actions, my report highlights clear evidence of underreporting by the San Diego County Sheriff's Department into the RIPA system. According to the mandated reporting requirements and by nature of both databases, the volume of CAD incidents associated with vehicle and subject stops should roughly equal the volume of stops in RIPA. As I illustrate in my report, this is very clearly not the case. This suggests a lack of compliance with California's racial profiling reporting requirements and raises questions about the department's adherence to the law. Dr. Withrow's failure to investigate this possibility further weakens the reliability of his analysis.

3. Incorrect Focus in Arrest Analysis

Dr. Withrow's analysis of arrest data is fundamentally flawed because it is incorrectly specified. Instead of analyzing the probability of arrest as a function of race and relevant situational factors (i.e., the likelihood of being arrested given one's race and the context of the encounter), he analyzes the probability of race among those who have already been arrested (i.e., the likelihood that a person of a certain race is arrested, given that they have already been arrested). This shift in focus does not address the core issue of racial bias. According to his own definition, addressing racial bias requires examining the probability of arrest based on race and other contextual factors (i.e., P[arrest | race & circumstances]), not P[race | arrest].

To make this point more explicit, consider the simplified distinction between P[race | arrest] (Dr. Withrow's actual statistic, i.e. the probability of race among those arrested) and P[arrest | race] (Dr. Withrow's stated objective statistic, i.e. the probability of arrest by race). By Bayes' Theorem (a mathematical rule that has been ubiquitous to inferential statistics and probability theory since its formalization in 1763), P[arrest | race] = [P[race | arrest] * P[arrest]] / P[race]. In other words, the probability of arrest given race is not simply the reverse of the probability of race given arrest; it needs

to be adjusted based on the overall likelihood of arrest and the overall racial composition of the population. Dr. Withrow acknowledges that the correct focus should be on P[arrest | race] (or more accurately P[arrest | race & circumstances]), but he instead focuses on P[race | arrest], which is inherently biased because it needs to be scaled by the ratio of P[arrest] to P[race]. To make matters worse, Dr. Withrow's analysis implicitly assumes that P[race | arrest] is equivalent to P[arrest | race & circumstances], which introduces an even larger bias into his findings.

While Dr. Withrow's report suggests that the correct probability to analyze is the likelihood of arrest based on race and context, his actual analysis examines the wrong probability, which leads to biased conclusions about racial profiling. By contrast, my analysis correctly estimates the appropriate probability: the likelihood of arrest given the individual's race and the situational context of the interaction with law enforcement (i.e., P[arrest | race & circumstances]). My approach provides a much more accurate and nuanced understanding of potential racial bias in police enforcement actions.

4. Outdated Methodologies and Dismissal of Disparities

Population-based benchmarking refers to comparing the proportion of minorities involved in specific police enforcement actions—such as stops, searches, or arrests—with the residential share of minorities within a community. Dr. Withrow's reliance on this method—one of the most outdated and criticized approaches in the field—is particularly perplexing, especially given his earlier discussion of more sophisticated techniques. Population-based benchmarks are widely recognized for their limitations, including the inability to account for transient populations, differential police exposure, and various situational variables. Despite acknowledging these shortcomings, Dr. Withrow opts for this method, neglecting to utilize more advanced techniques, such as multivariate models and dynamic benchmarks, which have become standard in contemporary policing research.

Recent work by scholars like myself as well as Drs. McDevitt and Engel, whom Dr. Withrow himself cites, illustrates the effectiveness of these more advanced methods. These researchers have successfully integrated multivariate models and quasi-experimental designs that consider important variables like driving patterns, time of day, and geographic context—approaches that are notably absent from Dr. Withrow's analysis. His failure to incorporate these modern techniques raises significant questions about the validity of his findings.

Although Dr. Withrow recognizes disparities in police contacts and arrests among Black and Hispanic motorists, he does not adequately investigate the causes of these disparities. While both Dr. Withrow and I agree that population-based benchmarks are flawed and likely to overestimate racial disparities, his analysis curiously relies solely on these tests despite acknowledging their limitations. In contrast, I employ several modern and more rigorous tests of disparate treatment, which reveal significant evidence of racial discrimination, even when using extremely conservative statistical models. Dr. Withrow's reluctance to engage in a thorough disparity analysis, despite his clear understanding of the range of more rigorous tests available, suggests a troubling willingness to obscure the facts.

Furthermore, my analysis highlights underreporting within California's RIPA database, underscoring the San Diego County Sheriff's Department's failure to fully comply with the statute and its neglect of equity issues in enforcement policy. While my findings indicate smaller disparities due to the application of these advanced methodologies that account for many of factors Dr. Withrow is concerned about, I still find compelling evidence of racial discrimination.

Conclusion

Dr. Withrow's report is deeply flawed, both in its methodology and its interpretation of the data. By relying on outdated techniques, misrepresenting the legal and statistical context, and failing to account for key variables, his conclusions are incomplete and misleading. A more thorough analysis, incorporating modern statistical methods and the full context of the available data, would provide a clearer and more accurate picture of racial disparities in law enforcement.

In short, Dr. Withrow's report does little to advance our understanding of racial profiling by the San Diego County Sheriff's Department and fails to meet the standards of modern research.