IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

|
CHICAGO TEACHERS UNION, LOCAL 1, |
AMERICAN FEDERATION OF TEACHERS, |
AFL-CIO; DONALD L. GARRETT JR.; |
ROBERT GREEN and VIVONELL BROWN, JR., |
individually and on behalf of all similarly situated |
persons, |
|
                Plaintiffs, |
     v. | **Case No. 12 C 10311**
| **Judge Sarah Ellis**
BOARD OF EDUCATION OF THE CITY OF |
CHICAGO |
|
|
              Defendant |
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F.R.C.P. RULE 26(a)(2)(B) REPORT OF JONATHAN WALKER

Contents

I. INTRODUCTION, QUALIFICATIONS AND ASSIGNMENT

1.   I am an economist. Labor economics is one of my areas of expertise. I have a bachelor's degree in economics from the University of California at Berkeley and a doctorate in economics from the Massachusetts Institute of Technology. As part of my undergraduate and graduate training, I took advanced courses in statistics and econometrics, the use of statistical tools to measure economic phenomena.

2.   I am currently the President and Chief Executive Officer of Economists Incorporated ("EI"). EI was founded in 1981 for the primary purpose of providing microeconomics-related advice to individuals, corporations, non-profit organizations and governments. Among other business activities, EI regularly advises law firms and litigants about economics issues that arise in the context of litigation.

3.   In addition to managing EI, I personally consult about economics topics in litigation matters. I have provided opinion testimony at trial, Teamsters hearings and deposition including testimony related to statistical analyses that I have conducted or supervised. I have been retained in matters involving allegedly discriminatory conduct and other employment-related topics and courts have relied upon my analysis in their written opinions. Exhibit A to this report is a copy of my curriculum vitae wherein I list all of the cases in which I have given opinion testimony.

4.   Robin Potter and Associates, PC retained me on behalf of the Chicago Teachers Union, Local 1 ("CTU") to assess whether the "Turnaround" policies that the Board implemented in 2011 had a disparate impact on African-American employees of the Chicago Public School system and to review and respond to the expert reports that Dr. David Blanchflower prepared in this case on behalf of the Board of Education of the City of Chicago ("the Board").

5.   EI is being compensated for my work in this case at my standard hourly billing rate of $625. Other economists and research staff at EI have assisted me on this matter. EI is being compensated for their time at their standard hourly rates which range from $270 to $425 per hour. Neither my compensation nor EI's compensation for work on this matter depends in any way on the outcome of the litigation.

II. SUMMARY OF OPINIONS

6.   The Board's application of its turnaround policies in 2011 had a disparate impact on

African-American employees in general and teachers and paraprofessionals in particular relative to white employees and white teachers and paraprofessionals. The Uniform Guidelines on Employee Selection Procedures, Part 1607.4 (D) of the U.S. Code of Federal Regulations state that a selection rate for one group that is less than 80% of the selection rate for the highest group shall generally be regarded as evidence of adverse impact. In the case at hand, selection rates for white employees were approximately 30% of the selection rates for African-American employees. African-American employees were twice as likely to be impacted by turnaround as white employees were. The disparate impact is statistically significant to an astronomical confidence level. These racial differences in outcomes are attributable to the segregated nature of the Chicago Public Schools ("CPS") and the disproportionate numbers of African-American employees, teachers and paraprofessionals employed at the particular schools that the Board selected for turnaround. There is a statistically significant negative correlation between African-American representation in a school's workforce and both school performance as measured by historical probationary status and school performance as quantified by the Board. Consequently, selecting schools based on race, historical probationary status or school performance as quantified by the Board would all be likely to cause a disparate impact.

7.   As I explain further in the body of this report, Dr. Blanchflower's analysis confirms that African-American CPS workers were disproportionately impacted by the turnaround policy. Dr. Blanchflower's work shows that the percentage of African-American workers was well above the CPS average in the schools selected for turnaround while the percentage of white workers was well below the CPS average. Dr. Blanchflower acknowledges this fact. Dr. Blanchflower's other conclusion—that there was no discrimination related to the turnaround policy—does not follow from Dr. Blanchflower's analysis. Dr. Blanchflower's analysis does not refute adverse impact of the CPS's 2012 turnaround process, nor does it prove or even imply that the adverse impact was both unintentional and necessary to achieve legitimate Board goals.

8.   Dr. Blanchflower based his conclusion that there was no discrimination on his finding that the variables he used to denote race were not statistically significant in certain of his statistical models. In these models, Dr. Blanchflower attempted to predict either (1) the likelihood that a school would be selected for turnaround after controlling for the school's performance as quantified by the Board or (2) the likelihood that a worker would be impacted by turnaround after controlling for school performance as quantified by the Board. For several reasons, these models

are inadequate to support Dr. Blanchflower's conclusion that there was no discrimination.

9.   First, Dr. Blanchflower's statistical results do not refute the existence of disparate impact. Instead, they attempt to explain disparate impact as being the result of correlation between the racial composition of schools' workforces and their percentage of possible performance points. Even if the disparate impact was wholly attributable to the Board selecting turnaround schools based on percentage of possible performance points, the disparate impact still exists. I understand that disparate impact theory presupposes that a challenged policy or practice may appear to be race neutral but that such a policy may nonetheless be discriminatory if it impacts a protected demographic group disproportionally and is not necessary for legitimate business purposes. I understand further that CTU alleges that turnarounds are neither job-related nor necessary for the Board's legitimate business.[1] Dr. Blanchflower's statistical results do not refute disparate impact or prove business necessity. Thus they are not a logically valid basis for Dr. Blanchflower's conclusion that "there is no evidence that African-American employees were discriminated against in the Chicago Board's decision to select ten schools . . . for turnaround . . ."[2]

10.   The second reason that Dr. Blanchflower's statistical models do not disprove discrimination is that Dr. Blanchflower overstates the meaning of his results. As a matter of basic statistical theory and methodology, classical hypothesis tests like the ones that Dr. Blanchflower ran can either disprove the null hypothesis or fail to disprove the null hypothesis. The tests cannot *prove* the null hypothesis. [3] Failing to disprove something is not the same as proving it. The relationship between failing to disprove and proving is similar to the relationship between not guilty and proven innocent. A finding of not guilty does not mean that the defense attorney has proven that the accused did not commit the crime. Rather, it means that the prosecutor has failed to prove that the accused did commit the crime. Here Dr. Blanchflower's null hypothesis is that race was not a factor in the turnaround selection process. At best, from the Board's perspective, Dr. Blanchflower's models may fail to reject that the turnaround selection process was race neutral. His tests are incapable of establishing that the turnaround selection process actually was race neutral.

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[1] First Amended Complaint, p. 26.
[2] Report of David G. Blanchflower, February 4, 2015 ("Blanchflower February 2015 Report"), p. 7.
[3] Econometric Analysis, Seventh Edition, William H. Greene, p. 109; Introductory Econometrics, 4e, Jeffrey M. Wooldridge, p. 135.

11. I demonstrate in two ways that models such as Dr. Blanchflower's cannot disprove that race had an additional and direct impact on the selection process. In one way, I test for discrimination that Dr. Blanchflower did not consider, discrimination against persons who are neither white nor African-American. I show that Dr. Blanchflower's models indicate statistically significant disparities between white workers' and non-white, non-African-American workers' likelihood of being impacted by the 2012 turnarounds. In the second method, I purposely selected ten CPS schools for hypothetical turnaround based on a combination of probationary status, percentage of possible performance points and number of African-American employees. Then I ran Dr. Blanchflower's model to estimate the likelihood of a workers being impacted by this hypothetical turnaround selection process after controlling for African-American status and the worker's school's percentage of possible performance points. Although this selection process was discriminatory by design and it had an adverse impact on African-Americans, the race variable was not statistically significant. The fact that a race variable is statistically insignificant in a statistical model is not proof that a selection process was race neutral or that discrimination did not occur.

12. The third reason that Dr. Blanchflower's tests do not disprove discrimination is that they do not speak to the Board's reasons for implementing turnarounds at all or for selecting turnaround schools the way that they did. The Board implemented a policy that had an adverse impact on African-American and other non-white employees. Assuming counterfactually that the disparate impact was driven entirely by the Board's use of percentage of possible performance points in the school selection process, Dr. Blanchflower's models still do not address why, despite the adverse impact, the Board chose to implement turnarounds and to select schools for turnaround in the particular way that it did. His tests do not address whether the Board was aware that its practices would have a disparate impact on African-American workers. Nor do they address whether any such awareness had any influence on the decision to have turnarounds or the selection process to use.

13. Dr. Blanchflower's statistical models do not address whether the Board anticipated any legitimate benefit from turnarounds, or if so, how much. They do not address whether there were other tools besides turnaround or other selection methods besides the one they chose, that were likely to achieve similar benefits, if any, than the Board expected from its chosen course. Under these circumstances, Dr. Blanchflower's statistical models are inadequate to support his ultimate

conclusion that "[s]chool performance was used to decide which schools should be turned around, not race."[4] Among other reasons, the models fail to support the conclusion because Dr. Blanchflower's implicit assumption is false that race must either have had a direct impact on selection after controlling for school performance or else must have had no effect at all.

III. FACTUAL BACKGROUND AND RELEVANT ALLEGATIONS

14.   Turnaround also known as reconstitution, is a process in which a governing authority, here the Board, removes and replaces all administrators, faculty and staff from a school, and relieves the local school council of certain duties. After turnaround, "the Board either contracts with a third party to operate the school, assigns the school to the Board's Office of School Improvement or turns it over to one of the nineteen geographic networks that make up the next layer of leadership in the Chicago School Board system."[5] "The Illinois School Code provides that a school may be subject to turnaround if it has been on probation for at least one year and has failed to make adequate progress in correcting deficiencies."[6]

15.   Sometime in the autumn of 2011 the Board began a process identifying schools for turnaround at the end of the 2011/2012 school year. Among the 250 schools that met the Illinois state eligibility requirement for turnaround of having been on probation for at least a year, Jean Claud Brizard, the CEO of CPS at the time initially focused on the 226 schools that the Board categorized as bottom tier based on the Board's quantitative measure of school performance, percentage of possible performance points.[7] The bottom tier was referred to as Level 3 and inclusion was based on having been awarded less than 50% of the total number of performance points that were achievable given the type of school under consideration. Performance points are a metric that are described in the Chicago Public Schools Policy Manual. I demonstrate below that the percentage of possible performance points is highly correlated with the racial composition of schools' workforces.

16.   Having identified 226 schools for further consideration for turnaround, Mr. Brizard reduced the list of candidates to 74 purportedly based exclusively on standardized test scores for

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[4] Blanchflower February 2015 Report, p. 6.
[5] Opinion of the Seventh Circuit of the U.S. Court of Appeals Reversing the District Court Finding Against Class Certification, August 7, 2015, p.2.
[6] Ibid.
[7] Idem at footnote 2.

elementary schools and graduation rates for high schools.[8] Mr. Brizard ultimately recommended ten schools to the Board for turnaround, purportedly based on a lengthy list of quantitative and qualitative considerations.[9] The Board approved all of Mr. Brizard's recommendations. On June 30, 2012 the Board terminated all teachers and staff from the ten schools subject to turnaround.

17.   The CTU challenges the turnaround process under both a disparate impact and a disparate treatment theory. CTU says that the Board targeted schools with high concentrations of African-American employees for turnaround. Further, CTU argues that turnarounds do not serve any legitimate business or public policy purpose.

IV.   DATA

18.   My statistical analyses are largely based on two data files provided by CTU. The first (CBOE0016515.xls) is a 2012 CPS employee roster, which provides each employee's school identification number, race and union status. The second file (CBOE0016505.xls) is a 2008 to 2012 CPS school data set, which provides school level data for CPS high school and elementary schools including information on each school's performance metrics and probation status for each year. Using the school identification fields in each data set, the employee and school level data were combined to form one 2012 dataset that was used for much of the statistical analysis in this report.

V.   ADVERSE IMPACT

19.   Quantitative analyses that my staff has conducted under my direction and supervision show that the 2012 turnarounds had a disparate impact on African-American CPS employees. My first set of analyses show that the CPS was highly segregated. If the school system were not segregated, a turnaround policy would be unlikely to have an adverse impact on any racially defined group of employees. If each school had similar percentages of African-American teachers, paraprofessionals and other types of workers, then it would be impossible for African-Americans to have been disproportionately impacted due to the choice of which particular schools to turnaround. However, CPS schools differ dramatically in terms of racial composition of the workforce. Given the segregated nature of CPS schools, school specific policies may have disparate impact and the 2012 turnaround did have disparate impact.

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[8] Idem, at p. 3.
[9] Idem, at p. 4.

20.   Figure 1 is a bar chart dividing the 577 CPS schools in the discovery data into deciles based on percentage of employees who were African-American as of the time immediately prior to the 2012 turnarounds.[10] The furthest bar to the left represents the 58 schools with the lowest percentage of African-American employees.[11] The furthest bar to the right represents the 57 schools with the highest percentage of African-American employees. The height of each bar represents the percentage of the relevant schools' employees who are African-American. If CPS schools were not highly segregated, there would be little difference in the heights of the bars, but that is not the case. For the lowest decile of schools, 4% of workers were African-American. For the highest decile of schools, 87% of workers were African-American. Figure 1A shows similar information for persons designated as CTU members in the discovery data.

21.   Figure 2 is another bar chart illustrating the segregation in the CPS as of 2012. To construct Figure 2, I sorted schools based on absolute number of African-American employees working at the 577 CPS schools. The first bar pertains to the 57 schools employing the most African-Americans in terms of absolute numbers. The height of the bar represents the sum of these schools' African-American employees as a percentage of the 12,011 African-American employees at all of the CPS's 577 schools. The second bar adds in the next 58 schools in terms of absolute number of African-American employees. In total, it pertains to the 115 schools employing the most African-Americans in absolute numbers. The third bar pertains to the 173 schools that employ the most African-American employees, and so on. Each subsequent bar relates to 57 or 58 more schools than the bar before.

22.   Figure 2 shows that a mere 173 of the CPS's 577 schools (30%) employed well over half of the African-American workers. On average, African-Americans constituted 62% of the workers at these 173 schools while they constituted only 35% of employees across all 577 schools. Figure 2A is similar to Figure 2 except that 2A corresponds to CTU members. Figure 2A shows similar

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[10] In the data produced in discovery, there were 610 unique school identification numbers to which employees were assigned. Thirty-three of these had no teachers assigned to them, leaving 577 that did have teachers assigned to them. Many of the 33 academic centers without teachers were community centers. Throughout the remainder of this report, when I speak of "schools" I refer to academic centers that employ teachers. I exclude academic centers that have school identification numbers but that do not employ teachers. Of the 577 schools, 555 were designated as eligible for probation and 22 were designated as ineligible for probation. These 22 ineligible schools were primarily charter schools.

[11] As 577 is not divisible by 10, I have rounded to the nearest whole number. Some bars represent 57 schools, and some represent 58.

concentration of African-American CTU members into a relatively small number of schools. The 173 schools that employed the most African-American CTU members employed well over half of all African-American CTU members. Across the 577 schools, 28% of CTU members were African-American. At these 173 schools, 58% of CTU members were African-American.

23.   Figures 1, 1A, 2 and 2A show that CPS schools were segregated prior to the 2012 turnaround, so that use of turnaround could have an adverse impact. To see whether the 2012 turnaround had an adverse impact, I compared the rates at which African-Americans were impacted by turnarounds to the rates at which white employees were impacted by turnaround. Here I categorize an employee as impacted if he or she worked at a school that was subject to turnaround. He or she would have been impacted because he or she would have received a termination notice. I have been advised that the CTU treats receipt of termination notice as impact regardless of whether the employee was ultimately rehired.

24.   Figure 3 reports the racial composition of the workforces at all probation-eligible CPS schools, all probation-eligible CPS elementary schools, all probation-eligible CPS High Schools, and the ten individual schools chosen for turnaround in the aggregate as of 2012. I restrict my attention to probation-eligible schools because it is my understanding that the schools that are not probation-eligible are charter schools and other similar type schools over which the Board has less employment-related discretionary authority.[12] African-Americans made up 35% of the workers in all 550 probation-eligible CPS schools, probation-eligible elementary schools and probation-eligible high schools. African-Americans constituted 28% of all persons designated as CTU members at probation-eligible schools, 28% of CTU members at probation eligible elementary schools and 27% of CTU members at probation-eligible high schools. The racial composition of the turnaround schools was quite different.

25.   The schools selected for turnaround employed African-Americans disproportionately. African-Americans constituted the majority of employees at seven of the ten turnaround schools. In an eighth turnaround school, Brian Piccolo, African-Americans were not the majority, but the African-American percentages of all workers and of CTU members were both higher than the

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[12] For purposes of this report, probation-eligible schools are defined as those schools identified as being either "Probation" or "Not Probation" for 2011-2012 Probation status in CBOE0016505. Schools identified as "Not Applicable" or that are not included in this data are not counted as probation-eligible schools.

respective district averages. The only turnaround schools at which the African-American percentage of workers or CTU members were at or below the CPS average were Marquette and Pablo Casals. Across all ten schools selected for turnaround, 62% of all workers and 55% of all CTU members were African-American.

26.   By contrast, white employment was especially low at schools selected for turnaround. While white employees constituted 37% of all workers and 45% of CTU members at CPS's 550 probation-eligible schools, they constituted only 19% of the workers and 26% of the CTU members at the schools selected for turnaround. At eight out of ten schools selected for turnaround, white employees constituted 19% or less of the workforce despite constituting roughly 37% of workers, or approximately twice as high a percentage, across all 550 CPS schools. None of the schools selected for turnaround had above average percentages of white employees in total, and only one of the schools had above average percentages of white CTU members.

27.   Figure 3 shows that the racial composition of the school was correlated with selection for turnaround. The question remains whether the racial differences are significant in both the practical and statistical senses of the word. Figure 4 reports selection rate related information for all employees and for CTU members alone at different stages of the turnaround selection process. The first two rows of Figure 4 concern the rates by race at which CPS employees in total or just CTU members were impacted by the 2012 turnaround. The next two rows show the rates by race at which employees or employee groups at the 550 schools that were eligible for turnaround (*i.e.,* schools on probation or eligible for probation) were impacted. As I discuss, these selection rates indicate significant disparities in selection rates between African-American and white employees. I report results related to the selection of 226 schools for further consideration from among the 550 schools that were turnaround eligible. I report results related to the winnowing of the group of 226 schools that were selected for further consideration down to 74 schools. I also report results related to the 250 schools that met the Illinois state eligibility requirement for turnaround for further consideration from among the 550 schools that were turnaround eligible, and the winnowing of that group down to 74 schools. Finally, I report the results related to the final selection of 10 schools from among these 74.

28.   Figure 4 shows that selection rates for African-American employees were always much higher than for white employees. Comparing African-American to white selection rates for all CPS

employees, regardless of whether they were domiciled at schools, the white selection rate was roughly 29% of the African-American selection rate. The difference between African-American and white selection rate was statistically significant to a virtual certainty. Based on a t-test comparing differences in means, the odds of a disparity as large as the one between all African-American and white employees occurring by chance were less than one in one trillion. Disparities were similarly large when the analysis was limited to employees working at the 550 schools eligible for turnaround. The white selection rate was still approximately 29% of the African-American selection rate, and the odds of such a disparity were also less than one in one trillion. Turning to employees designated as "CTU" in the data as a proxy for teachers and paraprofessionals, the white selection rate was approximately 30% of the African-American selection rate. The likelihood of a disparity this large occurring by chance was less than one in one trillion. As shown on Figure 4, whether the analysis considers all CPS employees as of the time of the 2012 turnarounds or just those employees working at turnaround eligible schools, whether the analysis considers all employees or only CTU members, the white selection rate was always well below 80% of the African-American selection rate and the odds of a disparity as large or larger than the one observed was always less than one in one trillion.

29.   Figure 4 also shows that there were racial disparities as the potentially impacted employees were reduced from those at 550 probation eligible schools to those at the 250 schools that met the Illinois state eligibility requirement for turnaround, and as the potentially impacted employees were reduced from those at the 550 probation eligible schools to those at the 226 schools selected by Dr. Brizard for further consideration. There were also racial disparities as the impacted employees were further reduced to employees at 74 schools selected by Dr. Brizard and finally as the Board ultimately settled on employees at the ten schools selected for turnaround. At each step, racial disparities were statistically significant at the 1% level when analyzing employees in total or CTU members.

30.   Another way to show disparate impact is to conduct logit analysis to estimate the probability of being impacted by the turnaround process as a function of race. Dr. Blanchflower conducted such analysis on behalf of the Board. See for example, Table 5 of Dr. Blanchflower's February 4, 2015 report. Logit analysis is a way to estimate the amount, if any, by which being African-American increased the likelihood of being impacted by turnaround. If being African-American did not affect the likelihood that an employee would be impacted by turnaround, then

the estimated race coefficient in the logit regression should be statistically insignificant. However, if being African-American increases the likelihood of being subject to turnaround, then the estimated race coefficient is likely to be positive. Depending on the sample size, the variability in the underlying data and the magnitude of the effect of race on the probability of being impacted, the estimated race coefficient may be so large as to prove to a statistically significant degree of certainty that the chances of being affected by turnaround were higher for African-American employees. Dr. Blanchflower conducted his analysis to estimate the difference in African-American workers' probability of being impacted compared to all other workers. However, my logit analyses estimate the difference in African-Americans' likelihood of being impacted by turnaround compared to white employees likelihood only.[13]

31.   I report the results of my analysis in Figure 5.[14] I use the same reporting format as Dr. Blanchflower used. As Figure 5 shows, African-American status was a statistically significant factor influencing the probability of being impacted by the 2012 turnaround. African-American status was a statistically significant factor whether the analysis was applied to all employees or just CTU members.[15] The difference between African-American and white workers' probabilities of being impacted by the 2012 turnarounds were statistically significant at the 1% level. The difference between other minorities' and white workers' probabilities of being impacted was statistically significant at the 10% level when the analysis concerned all workers, but it was not statistically significant when the analysis was limited to CTU members.

32.   Logit coefficient estimates can be used to estimate odds ratios, the probability that an African-American employee would be impacted by the 2012 turnaround divided by the probability that a white employee would be impacted and the probability that a non-white/non-African-American worker would be impacted divided by the probability that a white employee would be

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[13] I compare African-American to white by including a variable in the logit analysis that is set to one if a person is some race other than African-American or white. This way the coefficient on the African-American variable estimates the incremental probability of being impacted relative to white employees only.

[14] The logit analysis reported in Figure 5 is based on employees at the 550 probation-eligible CPS schools.

[15] In Figure 5 I also report results after clustering the standard errors. This procedure has the effect of reducing the estimated statistical significance of the coefficient estimates. Dr. Blanchflower did not cluster the standard errors in his February 2015 Report's Table 5, but he did in his Table 6. He also did not cluster the standard errors in his May 2015 Report's Table 3, but he did in his Table 4. Arguably, the adjustment should be made even though the logit regression that I run does not include school specific variables. I include the results with clustered standard errors to demonstrate that the result is the same whether the standard errors are clustered or not.

impacted.[16] For example, an odds ratio of 1.25 (or 125%) would mean that African-American employees' likelihood of being impacted by the turnarounds were 25% higher than a similarly situated white employee's likelihood. In Figure 6, I show the odds ratios for the two logit regressions (one regression for all workers and one for CTU members only).I also show the inverse of the odds ratios. The inverse indicates the probability of a white employee being impacted by the 2012 turnaround as a percentage of the probability of a minority being impacted. The probabilities for white employees were less than 80% of the probabilities for African-American employees regardless of whether the analysis focused on all employees (white employees' probability of being impacted was 28% of African-American employees' probability) or CTU members only (white employees' probability of being impacted was 29% of African-American employees' probability). The probability of a white employee being impacted was approximately 77% of the probability that a non-African-American minority group member would be impacted when the analysis concerned all CPS workers.

33.   In summary, CPS schools were highly segregated as of 2012. I show this in Figures 1, 1A, 2 and 2A as discussed above. Consequently, applying a school-based turnaround policy would have the potential to have adverse impact. The 2012 turnaround did have adverse impact on the CPS's African-American employees. Schools selected for turnaround employed disproportionately many African-Americans. I show this in Figure 3 as discussed above. Viewed at the worker level, white employees were impacted by the 2012 turnaround approximately 29% as frequently as African-Americans when measuring frequency based on selection rates. I show this in Figure 4 discussed above. Although it is traditional to report probabilities showing four or fewer significant digits, I have calculated the probability of disparities as large as we see here to a finer degree of precision. The probability that a race neutral process generated these disparities is less than one in a trillion. Applying logit analysis in the same way that Dr. Blanchflower did also indicates statistically significant racial disparities. The logit analysis indicated that probabilities of white workers being impacted by the 2012 turnaround were approximately 30% of the probabilities that African-American workers would be impacted. I show this in Figure 6 as discussed above.

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[16] For a binary variable such as the race variables here, the odds ratio equals e^x where x is the estimated coefficient of the binary variable.

VI. DR. BLANCHFLOWER'S ANALYSIS

34.   Dr. Blanchflower's analysis is summarized in eight tables that he included in his February 4, 2015 report and eight tables that he included in his May 20, 2015 report. Based on those analyses, Dr. Blanchflower concluded that there was no evidence that African-American employees were discriminated against by the Board's 2012 turnaround policy and that there was no adverse impact after controlling for terminated workers' schools' percentage of performance points. Notwithstanding his opinion that there was no evidence of discrimination, Dr. Blanchflower's analysis actually confirms that there was adverse impact on African-American employees. I understand that adverse impact is itself evidence of discrimination although it is not always conclusive evidence of such. As for his opinion that his analysis actually proved that no discrimination occurred, Dr. Blanchflower was simply wrong. Dr. Blanchflower's analysis is incapable of conclusively disproving unintentional discrimination because that would require analysis of business justifications for the turnaround and reasonable alternatives to it, and Dr. Blanchflower's analysis does not do that. Dr. Blanchflower's analysis is incapable of proving or disproving intentional discrimination because intentional discrimination can occur in situations where statistically significant disparities are eliminated after controlling for other factors. I will review each of Dr. Blanchflower's tables and explain why it is either evidence of adverse impact or insufficient to disprove discrimination. For brevity, I will refer to tables from Dr. Blanchflower's third report (February 2015) and fourth report (May 2015), respectively, by adding a "III" or " IV" to the end of the table number.

35.   Dr. Blanchflower's Table 1-III reports the racial composition as of 2012 of various groups of CPS schools and the ten schools that were turned around. The school groups are all schools, elementary schools, high schools, the 226 schools that Dr. Brizard chose for turnaround consideration, the remaining schools other than those 226, the 74 schools from among the 226 that were selected for even further turnaround consideration, and the remaining 152 schools that were spared further consideration.[17]

36.   Dr. Blanchflower's Table 1-III shows that African-Americans constituted approximately 35% of all workers at CPS schools in 2012. African-Americans were a slightly higher percentage

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[17] Dr. Blanchflower conducted analyses based on all 610 workplaces accounted for in the data. Not all of these workplaces employed teachers, but for purposes of this report I will use Dr. Blanchflower's terminology and refer to all 610 workplaces as "schools."

of workers at high schools, 36%. Dividing all schools into the 226 schools to be considered for turnaround versus all other, the 226 had a far higher percentage of African-American workers than the other schools. At the 226 turnaround contenders, African-Americans constituted 51% of workers. Conversely, white employees constituted only 26% of workers, far lower than their 36% representation among CPS school workers in the aggregate. Of course, the implication of these disparities is that there were disproportionately few African-American employees and disproportionately many white employees at schools that were spared even to be considered for turnaround. At the schools that were not considered for turnaround, only 25% of workers were African-American and 42% were white.

37.   Dr. Blanchflower's Table 1-III also decomposed the 226 schools that were considered for turnaround into the 74 that were subject to further consideration and 152 that were not. The racial differences between these two groups were not as stark as the racial differences between the schools chosen for consideration and those not chosen, but at this stage too, the schools that were chosen for further consideration had in the aggregate a higher percentage of African-American workers and a lower percentage of white workers than the schools that were spared further consideration.

38.   Dr. Blanchflower's Table 1-III does not report the racial composition of the workforce at the 64 schools that were scrutinized for turnaround but ultimately spared. However, he does report the racial composition of the ten turnaround schools and the racial composition for all 74 schools that were scrutinized including the ten turnaround schools. According to Dr. Blanchflower's Table 1-III, the workforce at the ten turnaround schools was 60% African-American and 18% white. This compares to 53% African-American and 24% white for all 74 schools that were scrutinized more thoroughly for turnaround. It follows that the turnaround schools had a higher percentage of African-American workers and a lower percentage of white workers than the 64 schools that were thoroughly scrutinized but spared turnaround.

39.   Comparing the ten turnaround schools to the CPS average shows that the turnaround schools were above average in terms of employment of African-Americans—60% African-American at turnaround schools versus 35% for all CPS schools combined. Similarly, the turnaround schools were below average in terms of employment of white workers—18% at turnaround schools versus 36% for all CPS schools combined.

40.   Dr. Blanchflower's Table 2-III reports the percentage of possible performance points for different school groups and for the turnaround schools. Dr. Blanchflower notes that turnaround schools had low percentages of possible performance points. According to Dr. Blanchflower's table, the average across all CPS schools was 55.5 while the average for turnaround schools was 24.9.

41.   That turnaround schools rated low in percentage of possible performance points does not disprove discrimination. It is reasonable to allow that race, poverty and poor test scores are all correlated, and it is reasonable to allow that percentage of possible performance points may be correlated with these things too since test scores are an input into percentage of possible performance points.

42.   I have tested for correlation between the percentage of CPS schools' workers as of 2012 who were African-American and the schools' 2011 percentage of possible performance points. I report the results in Figure 7 and 7A. Figure 7 is based on schools' percentage of African-American and white workers. Figure 7A is based on schools' absolute numbers of African-American and white workers. There was a negative, statistically significant correlation between African-American workforce representation and schools' 2011 percentage of possible performance points. This was true regardless of whether the analysis was applied to all schools or only to schools that were eligible for turnaround. It did not matter whether African-American representation was measured based on percentage of the workforce or absolute number of employees. Nor did it matter whether the analysis focused on the race of all employees or only CTU members. The correlations were always statistically significant to a very high degree. Correlations may vary between zero and 1 where zero is absence of any relationship and one means that the two variables move in lockstep. A negative correlation indicates that the two variables move in opposite directions. The correlation between number or percentage of staff that was African-American and a school's percentage of possible performance points varied between approximately -0.37 and -0.43. As shown on Figures 7 and 7A, the probability that percentage of African-American employees and percentage of possible performance points are unrelated is less than one in one million. As shown on Figure 7A, the probability that number of African-American employees and percentage of possible performance points are unrelated is also less than one in one million. Similarly, there was a positive, statistically significant correlation between white workforce representation and schools' 2011 percentage of possible performance points. This was

also true regardless of whether the analysis was applied to all schools or only schools that were eligible for turnaround. It did not matter whether white representation was measured in percentage terms or absolute numbers. Selecting based upon percentage of possible performance points could be used as a method to select based on race.

43.   I also conducted analyses showing that probationary status and racial composition of the workforce were correlated. I report these results in Figures 8 and 8A. Figure 8 measures race based on percentage of the workers in different racial groups and Figure 8A measures it based on absolute numbers of employees in different racial groups. The relationship between probationary status and racial composition of the school workforce was even stronger than the relationship between percentage of possible performance points and racial composition of the school workforce. Depending on whether racial composition of the workforce were measured based on percentage of African-Americans or number of African-Americans, whether the analysis focused on all schools or just probation-eligible schools, and whether it was based on all employees or only CTU members, the race correlation coefficient varied between approximately 0.41 and 0.46. As was the case regarding percentage of possible performance points, the probability that percentage or number of African-American employees is unrelated to probationary status is less than one in a million.

44.   Dr. Blanchflower's Tables 3-III and Table 1-IV display the results of logit, probit and Ordinary Least Squares regressions showing that the percentage of African-Americans among a schools' workforce was a statistically significant predictor of a school being chosen for turnaround when the analysis was run on all CPS workplaces accounted for in the discovery data. According to Dr. Blanchflower's analysis, race had a positive but statistically insignificant effect on the likelihood that a school would be selected for turnaround when the analysis was limited to the 226 schools that the Board says it considered for turnaround or when it was limited to the 74 schools that it says it scrutinized more thoroughly. Dr. Blanchflower's Tables 3-III and 1-IV indicate that schools that had higher percentages of African-Americans were more likely to be selected for turnaround. This is why adverse impact occurred.

45.   Dr. Blanchflower's Tables 4-III and 2-IV show the result of logit, probit and Ordinary Least Squares analyses estimating the impact of a school's percentage of African-Americans in its workforce on the school's likelihood of being selected for turnaround after controlling for its

percentage of possible performance points. The percentage of African-Americans in the workforce had a positive but statistically insignificant estimated effect on likelihood of being chosen from among all CPS workplaces for turnaround after controlling for percentage of possible performance points. According to Dr. Blanchflower, the fact that percentage of African-American workers was statistically insignificant in his regression models after controlling for percentage of possible performance points "completely refutes the plaintiffs' claims."[18] Dr. Blanchflower's inference is logically invalid for three reasons.

46.   First, as I discussed above, Dr. Blanchflower's test results cannot prove that the null hypothesis is true. Here, the null hypothesis underlying Dr. Blanchflower's tests is that percentage of African-Americans in the workforce has no effect on likelihood of a school being selected for turnaround after controlling for percentage of possible performance points. Dr. Blanchflower's analysis cannot prove the absence of a race effect after controlling for percentage of possible performance points.

47.   A second reason that Dr. Blanchflower's logic is invalid is that proving the absence of a race effect after controlling for percentage of possible performance points would not prove absence of discrimination anyway. One potential explanation for the statistical results in Dr. Blanchflower's Table 4-III and Table 2-IV is that any effect of race on selection for turnaround was entirely attributable to the correlation between race and percentage of possible performance points. This is the interpretation that Dr. Blanchflower implicitly adopted. However, percentage of possible performance points and race are correlated. The Board could engage in either intentional or unintentional discrimination by selecting schools for turnaround based on percentage of possible performance points without selecting based on race directly. In that case, notwithstanding the discrimination, race would be insignificant in analyses that control for percentage of possible performance points. Government agencies have been found historically to have discriminated by applying unnecessary screens that had adverse impact. Poll taxes were applied to all voters, but the intent and effect were discriminatory. Fire departments have been found to have discriminated against women applicants by using physical fitness tests to screen out applicants notwithstanding that the tests did not validly predict job performance. Determining whether such adverse impact was intentional requires more than a statistical analysis pinpointing the fitness test as opposed to

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[18] Blanchflower February 2015 Report, p. 5.

gender *per se* as the direct cause. Even if Dr. Blanchflower's interpretation of his regression results were the only plausible interpretation, Dr. Blanchflower would have had to have conducted a variety of additional analyses to conclude that the Board did not discriminate. Some of the missing analyses might be within the area of expertise of an economist, such as attempting to establish that turnarounds improve school effectiveness or showing that percentage of possible performance points is a reliable predictor of a school or its students benefiting from the school being subject to turnaround. Others of these missing analyses are outside of the realm of economics, such as assessing the Board's intent in reconstituting any schools at all in light of the alleged absence of evidence that reconstitution benefits students, or in using percentage of performance points as a selection criterion notwithstanding the predictable adverse impact.

48.   Not only may discrimination have occurred even if race had no effect on school selection after accounting for percentage of possible performance points, but Dr. Blanchflower is also wrong that his results prove that race had no effect on school selection after accounting for school performance points. Statistically insignificant results occur by chance and they also occur when the regression model is misspecified. Therefore, two other explanations for Dr. Blanchflower's statistically insignificant race coefficients are chance and that race may have affected the selection decision differently than Dr. Blanchflower modeled it.

49.   Dr. Blanchflower's Tables 5-III and 3-IV report the results of probit, logit and Ordinary Least Squares regressions that estimate the impact of race on a CPS worker's probability of being in a turnaround school. The results show that race was a highly significant predictor of being impacted by the 2012 turnarounds. This was true whether the analysis was conducted on workers at all 610 CPS workplaces that were designated by a school identification number, just workers at the 226 schools that were considered for turnaround or just workers at the 74 schools that were considered more thoroughly. Dr. Blanchflower's Tables 5-III and 3-IV are direct evidence of disparate impact of the 2012 turnaround on the CPS's African-American employees.

50.   Dr. Blanchflower's Tables 6-III and 4-IV add workers' schools' 2011 percentage of possible performance points as an explanatory variable to the same set of regressions reported in his Tables 5-III and 3-IV. In Dr. Blanchflower's Tables 6-III and 4-IV, the race coefficient was statistically insignificant. Dr. Blanchflower's Tables 7-III and 5-IV add schools' 2010 percentage

of possible performance points as well as their 2011 percentage of possible performance points.[19] After either controlling for 2011 percentage of possible performance points (Tables 6-III and 4-IV) or controlling both for 2011 and 2010 percentage of possible performance points (Tables 7-III and 5-IV), Dr. Blanchflower found no statistically significant effect of African-American status on a worker's probability of being directly impacted by the 2012 turnarounds. According to Dr. Blanchflower, "[the] only conclusion statistically is that race played no part in the turnaround decisions; the evidence leads me to the conclusion that turnaround school selection was based on school performance alone."[20] Here Dr. Blanchflower commits many of the same logical errors discussed above concerning his Tables 4-III and 2-IV.

51.   The absence of racial effect after controlling for percentage of possible performance points does not imply the absence of intentional or unintentional discrimination for many of the reasons previously discussed. Schools' percentage of possible performance points was correlated with race. Consequently, workers at schools with higher percentages of African-Americans were impacted disproportionately. It is impossible to tell from Dr. Blanchflower's statistical analysis controlling for percentage of possible performance points whether this adverse impact was intentional or not. If it was unintentional, Dr. Blanchflower does not provide any basis to conclude that the adverse effect was reasonably necessary to achieve some legitimate Board goal or purpose.

52.   Moreover, the absence of a statistically significant effect of African-American status after controlling for employees' schools' percentage of possible performance points does not mean that there is no race effect other than the race effect intertwined with school performance. Statistical insignificance means that no effect was found, not that no effect exists. Statistically insignificant results can occur by chance and they can occur because the model is incorrectly specified. As a matter of statistical theory, classical hypothesis tests cannot prove that the null hypothesis is true.

53.   In the case at hand, race did have a statistically significant effect on likelihood of being impacted by the 2012 turnarounds even after controlling for 2010 and 2011 percentage of school performance points notwithstanding the results that Dr. Blanchflower reports in his Tables 6 and 7.

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[19] In Tables 7-III, 8-III and 5-IV to 8-IV, Dr. Blanchflower repeated his analyses on different worker groups—all workers, Teachers, Non-Teachers, CTU-member teachers and CTU-member non-teachers. Dr. Blanchflower uses the label "Teacher" to refer to those employees with a "tchr" classification in the data and the label "Non-teacher" to refer to those employees with an "esp" classification in the data.

[20] Blanchflower February 2015 Report, p. 6.

Dr. Blanchflower compared African-Americans to all other employees, white, non-white and race unknown. After modifying Dr. Blanchflower's logit model to treat white and non-white/non-African-American employees as two distinct groups, the model indicates a statistically significant disparity between non-white/non-African-American employees and white employees even after controlling for 2010 and 2011 percentage of school performance points. Dr. Blanchflower's model indicates that non-white/non-African-American workers had approximately 78% greater probability of being impacted by the 2012 turnarounds than white workers did. This disparity is statistically significant at the 1% level. I report the results in Figure 9.

54.   African-American status is still statistically insignificant after disaggregating white workers from non-white/non-African-American workers and running Dr. Blanchflower's model controlling for 2010 and 2011 percentage of possible performance points. However, statistical insignificance in Dr. Blanchflower's model does not mean that the probabilities of being impacted were the same regardless of African-American status for all of the reasons stated above. To demonstrate this fact in the context of individual employees' probabilities of being impacted by the 2012 turnarounds, I applied a hypothetical selection process that was based explicitly on both percentage of possible performance points and on African-American status. I discuss this process in the following paragraph. Then I tested Dr. Blanchflower's regression model to see if it would generate a statistically significant race coefficient. It did not. This failure demonstrates that a statistically insignificant race coefficient from Dr. Blanchflower's model does not prove that a selection process was race neutral.

55.   In the hypothetical turnaround process, I selected schools for hypothetical turnaround in multiple steps. I initially identified the 74 probation-eligible schools that had the lowest 2011 percentage of possible performance points. From among these 74 probation eligible schools, I excluded from any further consideration for hypothetical turnaround the 20 schools among these 74 that had the fewest African-American employees. This left 54 schools remaining to choose from for hypothetical turnaround. In the Board's actual turnaround selection process, other factors were considered besides percentage of possible performance points or race. To account for the other unknown factors that affected the Board's turnaround decision, I assigned each of the

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remaining 54 schools a randomly generated number between 1 and 100. [21] I ranked schools based on the sum of the school's randomly assigned number, its 2010 percentage of possible points and its 2011 percentage of possible points. For example, if a school had 20% of 2010 possible performance points, 30% of 2011 possible performance points and its random number was 10, then the number I used to rank the school from among the 54 schools remaining was 60 (30 + 20 + 10). I selected the 10 schools that ranked lowest in this way as my hypothetical turnaround schools.

56.   To recap, in this hypothetical process, I selected schools in three stages, similar to the Board having selected schools in three stages. The first stage was based exclusively on 2011 percentage of possible performance points. This reduced the field of potential turnaround schools to those having the lowest 2011 percentage of possible performance points. The second stage was based exclusively on race. I removed 20 schools from consideration because they had the fewest African-American employees. The third stage was based on 2010 percentage of possible performance points, 2011 percentage of possible performance points and a random element meant to capture the effect of all of the other variables unrelated to either race or percentage of possible performance points that may influence school selection.

57.   Having selected schools for a hypothetical turnaround by a process that was explicitly discriminatory, I ran Dr. Blanchflower's probit model to see if race was statistically significant. I ran the same probit model that Dr. Blanchflower reports in his Tables 7-III and 5-IV which controls for 2010 percentage of possible performance points and 2011 percentage of possible performance points except that I based the analysis on these hypothetical turnaround schools rather than the actual turnaround schools. I report the results in Figure 10. Figures 10A and 10B list the schools excluded and the schools selected for the hypothetical turnaround, respectively.

58.   This hypothetical selection process had adverse impact against African-American employees. The workforce was 62% African-American and 24% white at the hypothetical turnaround schools and 36% African-American and 37% white at the schools that were not selected for hypothetical turnaround. Approximately 3% of African-American employees were selected for hypothetical turnaround and approximately 1% of white employees were selected for

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[21] I included this random element in the hypothetical selection process because Dr. Blanchflower's regressions yielded pseudo-R^2 values of less than 40%. These pseudo-R^2 values indicated that other factors explained more of the differences in selection probabilities than race and percentage of possible performance points did. The randomly assigned number is a proxy for the unidentified factors.

hypothetical turnaround. However, when I ran Dr. Blanchflower's regressions, the African-American status variable was statistically insignificant. Moreover, the African-American coefficient estimate was negative, suggesting that being African-American reduced the odds of being impacted by the hypothetical turnaround albeit to a statistically insignificant degree. This exercise demonstrates that Dr. Blanchflower's model will not necessarily generate a positive, statistically significant race coefficient even if the turnaround selection process is explicitly discriminatory and has an adverse impact against African-Americans. Consequently, it is logically invalid to infer from Dr. Blanchflower's Tables 6-III, 7-III, 4-IV and 5-IV that African-American status did not directly influence the probability of being impacted by the 2012 turnarounds.

59.   Dr. Blanchflower's Tables 8-III and 6-IV, apply probit analysis to estimate the effect of race and percentage of a worker's school's percentage of possible performance points on his or her probability of being impacted by the 2012 and also not rehired. As in his Tables 7-III and 5-IV, Dr. Blanchflower's Tables 8-III and 6-IV report the results of applying this analysis to alternative groups of workers. For each worker group, Dr. Blanchflower applies his analysis once including only the workers' schools' 2011 percentage of possible performance points and then again using both 2010 and 2011 percentage of possible performance points. These analyses cannot disprove intentional or unintentional discrimination for the same reasons that the analyses in Dr. Blanchflower's 6-III, 7-III, 4-IV and 5-IV cannot disprove intentional or unintentional discrimination. In short, the analyses overlook the adverse impact resulting from the correlation between race and school performance points. They cannot establish that the adverse impact was unintentional or that the adverse impact was reasonably necessary to achieve a legitimate business purpose. Moreover, it is a fallacy to conflate statistical insignificance with absence of meaningful effect. Finally, they do not isolate the relative disparities between African-American and white employees but rather group non-white/non-African-American employees together (along with persons whose race is not identified in the data) and try to measure disparities between African-Americans and this aggregated group.

60.   In his fourth report, Dr. Blanchflower added two tables summarizing probit analyses that limited his sample to African-American and white employees only. Dr. Blanchflower's Table 7-IV shows that race had a statistically significant effect on the probability of being impacted by turnaround, but that the estimated effect was statistically insignificant after also controlling for 2011 percentage of possible performance points. Dr. Blanchflower's Table 8-IV, summarizes the

results of probit analyses. The analyses summarized on Table 8-IV estimated the probabilities of being in a turnaround school and not being rehired as a function of race and 2011 percentage of possible performance points. Race was statistically insignificant after controlling for 2011 percentage of possible performance points. As I discussed repeatedly above, the fact that race was insignificant in regressions that controlled for 2011 percentage of possible performance points does not refute either intentional or unintentional discrimination. These findings do not refute that disparate impact occurred, nor do they address whether there was a legitimate business reason to apply the turnaround policy despite the disparate impact.

VII.   CONCLUSION

61.   My analysis of data provided to me by CTU establishes that the 2012 turnaround process had an adverse effect on African-American CPS employees. White employees' selection rate was approximately 30% of that for African-Americans, the C.F.R. test for adverse impact is a selection rate for the favored group that is 80% or less than that of the disfavored group. Disparities this large are statistically significant to a very high confidence level. Applying virtually the same logit analysis as Dr. Blanchflower applied as an alternative way to assess disparate impact also indicated statistically significant disparities in the chances that African-American CPS employees would be impacted by the 2012 turnaround relative to white CPS employees.

62.   Dr. Blanchflower's analysis corroborated the existence of disparate impact. His comparison of the racial make-up of schools showed that schools considered for turnaround had a much higher percentage of African-American employees and a much lower percentage of white employees than the CPS average. Further, his analysis showed that an African-American workers' likelihood of being impacted by the 2012 turnaround was statistically significantly higher than the likelihood for a worker who was not African-American. I understand that it is CTU's position that Dr. Blanchflower's analyses were biased toward a finding of no adverse impact because the proper comparison as a matter of law is between African-American employees and white employees.

63.   Dr. Blanchflower conducted additional analysis which showed that African-American status did not have an independent, statistically significant effect on likelihood of a worker being impacted by the 2012 turnaround after controlling for the worker's schools' percentage of possible performance points. Dr. Blanchflower mistakenly interpreted this result as proving the absence of discrimination. His logic was invalid for several reasons. Perhaps most significantly, Dr.

Blanchflower's various regressions do not refute the existence of adverse impact. They merely posit an explanation for how it occurred. The racial composition of schools' workforces is correlated with their percentage of possible performance points. Consequently, selecting schools for turnaround based on percentage of possible performance points could intentionally or unintentionally cause adverse impact.

64.   Dr. Blanchflower's analyses that control for percentage of possible performance points cannot rule out intentional discrimination because they do not address the reasons that the Board implemented a policy that had foreseeable, adverse impact on African-American employees. Dr. Blanchflower's analyses that control for percentage of possible performance points cannot rule out unintentional discrimination for at least two separate and independent reasons. One is that Dr. Blanchflower's analyses do not establish that turnarounds serve any legitimate business or public policy purpose. Second, assuming that the turnaround did serve a legitimate business or public policy purpose, Dr. Blanchflower's analyses do not show that the disparate impact was necessary to achieve that purpose. Assuming turnarounds were the best method to achieve some legitimate purpose, Dr. Blanchflower's analysis does not address whether selecting schools for turnaround based on percentage of possible performance points advanced that purpose. Assuming that selecting schools for turnaround based on percentage of possible performance points somehow advanced a legitimate purpose, Dr. Blanchflower's analysis still does not consider whether other selection methods that had lesser adverse impact, or none at all, might be equally effective.

65.   In short, Dr. Blanchflower's analysis does not refute adverse impact of the CPS's 2012 turnaround process, nor does it prove or even imply that the adverse impact was both unintentional and necessary to achieve legitimate Board goals.

Jonathan Walker

August 12, 2016

Figure 1
African-American Percentage of Employees by Decile
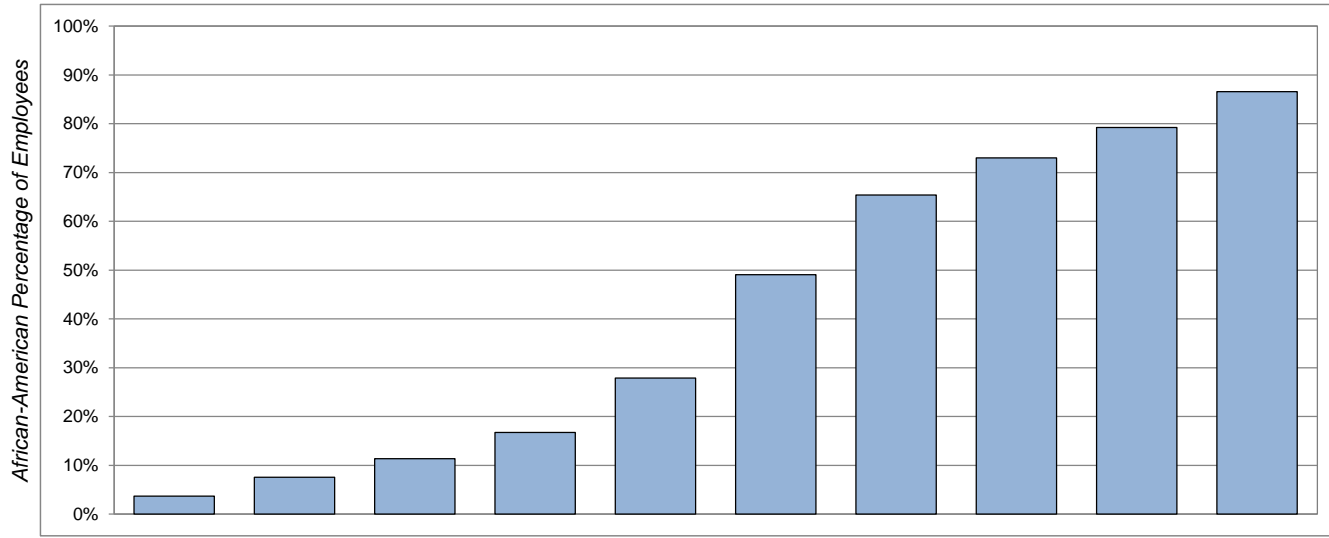
All Employees

Decile:	Lowest 10%	2nd Decile	3rd Decile	4th Decile	5th Decile	6th Decile	7th Decile	8th Decile	9th Decile	Highest 10%
School A-A% of School Employees:	4%	8%	11%	17%	28%	49%	65%	73%	79%	87%
# of Schools:	58	60	56	57	58	58	57	58	58	57

Figure 1A
African-American Percentage of Employees by Decile
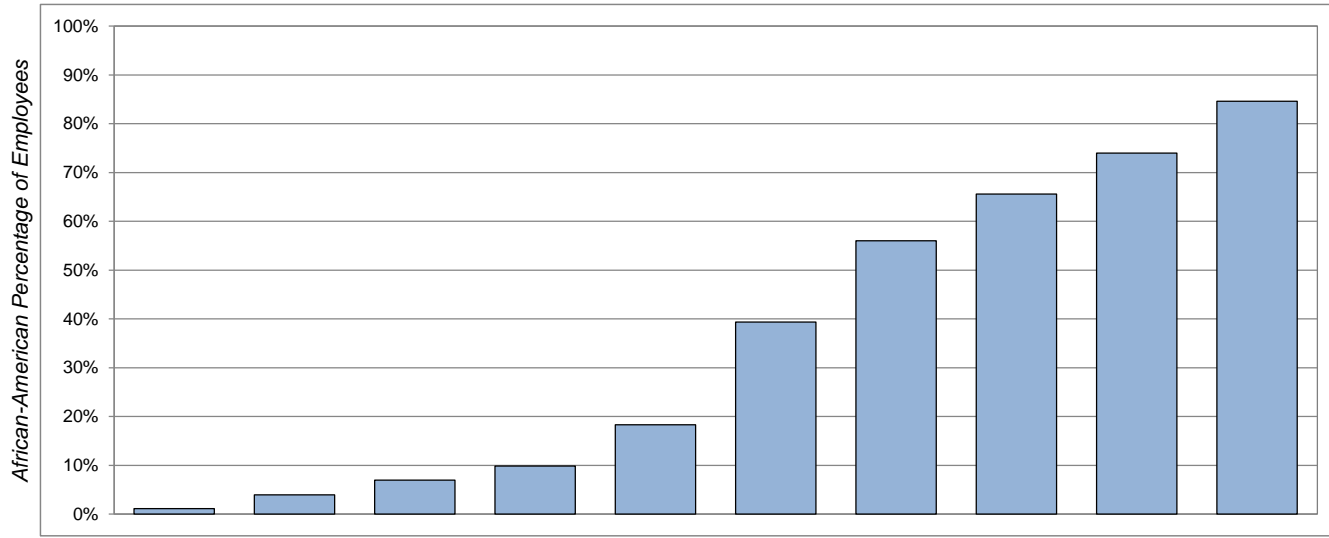
CTU Members

Decile:	Lowest 10%	2nd Decile	3rd Decile	4th Decile	5th Decile	6th Decile	7th Decile	8th Decile	9th Decile	Highest 10%
School A-A% of School Employees:	1%	4%	7%	10%	18%	39%	56%	66%	74%	85%
# of Schools:	59	57	58	57	58	58	59	57	58	56

Figure 2
Cumulative Percentage of African-American Employees by Decile
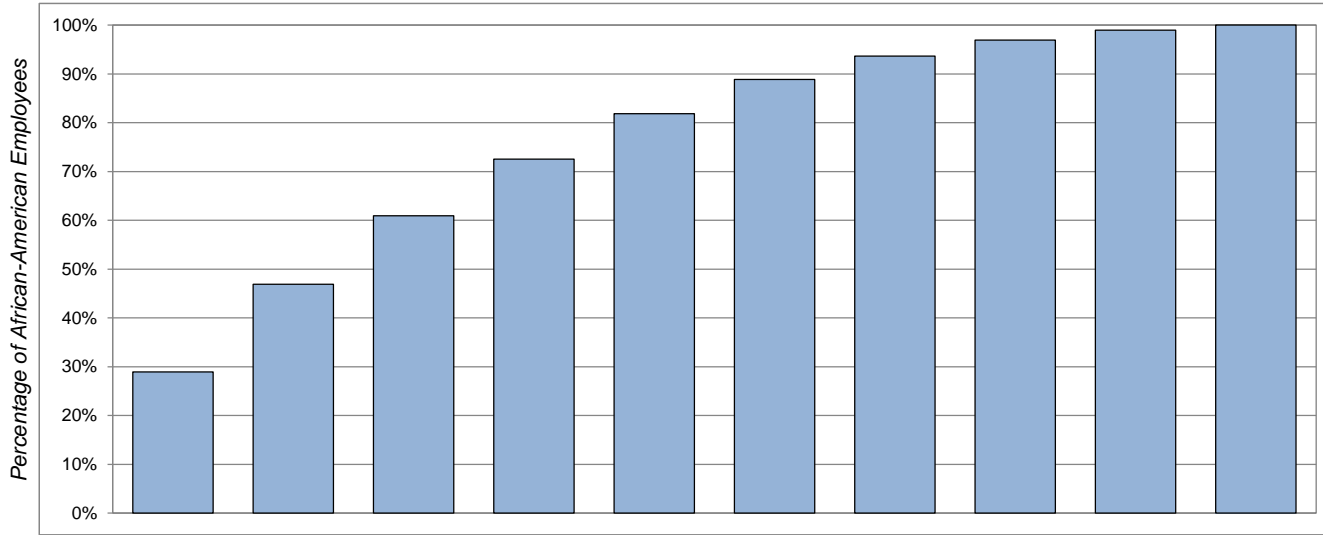
All Employees

Schools:	1 - 57	1 - 115	1 - 173	1 - 230	1 - 288	1 - 346	1 - 403	1 - 461	1 - 519	1 - 577
School A-A% of All A-A Employees:	29%	47%	61%	73%	82%	89%	94%	97%	99%	100%
School A-A% of School Employees:	66%	63%	62%	60%	55%	51%	47%	42%	39%	35%
School A-A% of All Employees:	10%	17%	22%	26%	29%	31%	33%	34%	35%	35%

Figure 2A
Cumulative Percentage of African-American Employees by Decile

CTU Members
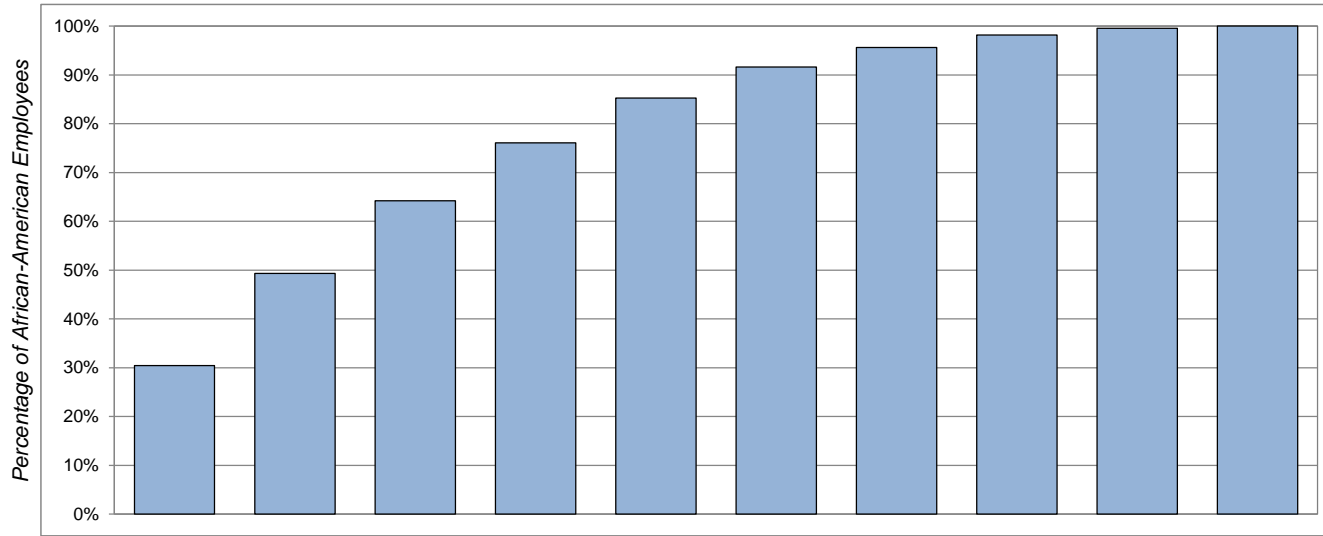
Schools:	1 - 57	1 - 115	1 - 173	1 - 230	1 - 288	1 - 346	1 - 403	1 - 461	1 - 519	1 - 577
School A-A% of All A-A Employees:	30%	49%	64%	76%	85%	92%	96%	98%	100%	100%
School A-A% of School Employees:	61%	59%	58%	53%	48%	43%	39%	34%	31%	28%
School A-A% of All Employees:	9%	14%	18%	21%	24%	26%	27%	28%	28%	28%

Figure 3
Racial Composition of Probation Eligible Schools

School	Number of Schools	African-American Percentage	White Percentage	African-American CTU Percentage	White CTU Percentage
All Schools	550	35%	37%	28%	45%
Elementary Schools	463	35%	35%	28%	42%
High Schools	87	35%	42%	27%	51%
Turnaround Schools	10	62%	19%	55%	26%
Amos A Stagg		89%	4%	87%	6%
Brian Piccolo		44%	19%	35%	32%
Carter G Woodson		86%	9%	81%	13%
Herzl		78%	16%	69%	22%
Marquette		27%	36%	19%	48%
Melville W Fuller		81%	10%	80%	13%
Pablo Casals		27%	33%	17%	43%
Wendell Smith		89%	11%	83%	17%
Chicago Vocational		81%	13%	72%	19%
Edward Tilden		60%	15%	56%	18%

Figure 4
Comparison of African-American and White Selection Rates by Turnaround Selection Stages

Selection Stage	Group	Number of White Employees	Number of Selected White Employees	White Selection Rate	Number of African-American Employees	Number of Selected African-American Employees	African-American Selection Rate	Ratio of White Selection Rate to African-American Selection Rate	P-Value (T-Test)	Number of Schools	Number of Selected Schools
From All Schools to Turnaround	All Employees	13,404	114	0.9%	13,220	377	3.1%	0 29	0.0000	609	10
	CTU Members	11,851	104	0.9%	7,646	217	3.1%	0 30	0.0000	578	10
From Eligible Schools with Teachers to Turnaround	All Employees	12,075	114	0.9%	11,510	377	3.3%	0 29	0.0000	550	10
	CTU Members	10,680	104	1.0%	6,681	217	3.2%	0 30	0.0000	550	10
From Eligible Schools with Teachers to Selection 1 #250	All Employees	12,075	3,884	32.2%	11,510	7,284	63.3%	0 51	0.0000	550	249
	CTU Members	10,680	3,506	32.8%	6,681	4,353	65.2%	0 50	0.0000	550	249
From Eligible Schools with Teachers to Selection 1 #226	All Employees	12,075	3,544	29.3%	11,510	6,822	59.3%	0 50	0.0000	550	226
	CTU Members	10,680	3,196	29.9%	6,681	4,087	61.2%	0.49	0.0000	550	226
From Selection 1 #250 Schools to Selection 2	All Employees	3,884	988	25.4%	7,285	2,232	30.6%	0 83	0.0000	250	74
	CTU Members	3,506	897	25.6%	4,353	1,319	30.3%	0 84	0.0000	249	74
From Selection 1 #226 to Selection 2	All Employees	3,544	988	27.9%	6,822	2,232	32.7%	0 85	0.0000	226	74
	CTU Members	3,196	897	28.1%	4,087	1,319	32.3%	0 87	0.0001	226	74
From Selection 2 to Turnaround	All Employees	988	114	11.5%	2,232	377	16.9%	0 68	0.0001	74	10
	CTU Members	897	104	11.6%	1,319	217	16.5%	0.70	0.0014	74	10

Note: Ineligible schools were identified with a 2011-2012 Probation status of "Not Applicable."
CTU members were identified when union was "Chicago Teachers Union."
Selection 1 #250 represents the 250 schools that met the Illinois state eligibility requirement for turnaround.
Selection 1 #226 represents selection of 226 Level 3 schools from among 555 probation eligible schools with teachers.
Selection 2 represents selection of 74 schools for further Turnaround consideration from among the 226 Level 3 schools.
One school of the 250 (ID 400038 - COMMUNITY CONTR) did not have any teachers employed.

Figure 5
Probability of a Worker Being in a Turnaround School
Logit

Population	Logit	Coefficient (T/Z Stat) [P-Value]	With Clustered Standard Errors Coefficient (T/Z Stat) [P-Value]
All	African-American	1.2678 (11.77) [0.000]	1.2678 (3.62) [0.000]
	Other Minority	0.2695 (2.02) [0.043]	0.2695 (1.70) [0.090]
	Constant	-4.6532	-4.6532
	N	32,753	32,753
	Pseudo R2	0.0321	0.0321
CTU Members	African-American	1.2278 (10.21) [0.000]	1.2278 (3.22) [0.001]
	Other Minority	0.1505 (0.98) [0.325]	0.1505 (1.23) [0.218]
	Constant	-4.6220	-4.6220
	N	23,909	23,909
	Pseudo R2	0.0322	0.0322

Figure 6
Probability of Worker Being in Turnaround School
Odds Ratio
Logit

Population	Logit	Odds Ratio	Inverse Odds Ratio
All	African-American	3.5530	0.2815
	Other Minority	1.3093	0.7637
CTU Members	African-American	3.4139	0.2929
	Other Minority	1.1624	0.8603

Figure 7

Correlation Between Performance Points of Schools and Race of Employees

Percentage of Employees

	African-American Employees	White Employees	African-American CTU Members	White CTU Members
All				
Correlation Coefficient	-0.41558*	0.421*	-0.42833*	0.44777*
P-Value	<.0001	<.0001	<.0001	<.0001
Eligible Schools				
Correlation Coefficient	-0.42984*	0.47327*	-0.43023*	0.45449*
P-Value	<.0001	<.0001	<.0001	<.0001

*The probability that performance points of schools and race of employees is unrelated is less than one in a million.

Figure 7A

Correlation Between Performance Points of Schools and Race of Employees

Absolute Number of Employees

	African-American Employees	White Employees	African-American CTU Members	White CTU Members
All				
Correlation Coefficient	-0.36853*	0.19593	-0.37584*	0.20224
P-Value	<.0001	<.0001	<.0001	<.0001
Eligible Schools				
Correlation Coefficient	-0.4157*	0.19159	-0.42536*	0.18112
P-Value	<.0001	<.0001	<.0001	<.0001

*The probability that performance points of schools and race of employees is unrelated is less than one in a million.

Figure 8
Correlation Between Schools on Probation and Race of Employees
Percentage of Employees

	African-American Employees	White Employees	African-American CTU Members	White CTU Members
All				
Correlation Coefficient	0.41225*	-0.38736*	0.46241*	-0.44057*
P-Value	<.0001	<.0001	<.0001	<.0001
Eligible Schools				
Correlation Coefficient	0.48908*	-0.49047*	0.48769*	-0.46642*
P-Value	<.0001	<.0001	<.0001	<.0001

*The probability that probation status of schools and race of employees is unrelated is less than one in a million.

Figure 8A

Correlation Between Schools on Probation and Race of Employees

Absolute Number of Employees

	African-American Employees	White Employees	African-American CTU Members	White CTU Members
All				
Correlation Coefficient	0.42838*	-0.18273	0.42092*	-0.22318*
P-Value	<.0001	<.0001	<.0001	<.0001
Eligible Schools				
Correlation Coefficient	0.41488*	-0.25475*	0.42249*	-0.24619*
P-Value	<.0001	<.0001	<.0001	<.0001

*The probability that probation status of schools and race of employees is unrelated is less than one in a million.

Figure 9
Probability of a Worker Being in a Turnaround School
Logit

Population	Logit	With Clustered Standard Errors Coefficient (T/Z Stat) [P-Value]
All	African-American	0.1161 (0.31) [0.753]
	Other Minority	0.5768 (3.30) [0.001]
	Points 2011	-0.0542 (-2.18) [0.030]
	Points 2010	-0.1162 (-4.13) [0.000]
	Constant	1.6487
	N	32,478
	Pseudo R2	0.4073
CTU Members	African-American	0.0343 (0.08) [0.933]
	Other Minority	0.5027 (3.51) [0.000]
	Points 2011	-0.0586 (-2.56) [0.010]
	Points 2010	-0.1131 (-3.81) [0.000]
	Constant	1.7104
	N	23,690
	Pseudo R2	0.4129

Figure 10
Probability of a Worker Being in a Hypothetical Turnaround School
Probit

Probit	With Clustered Standard Errors Coefficient (T/Z Stat) [P-Value]
African-American	-0.0976 (-0.67) [0.505]
Points 2011	-0.0512 (-3.50) [0.000]
Points 2010	-0.0528 (-2.64) [0.008]
Constant	1.2566
N	33,418
Pseudo R2	0.4974

Figure 10A
Schools Excluded from Hypothetical Turnaround

School ID	School Name
400038	COMMUNITY CONTR
610192	STOWE
400043	HOPE INSTITUTE CONTR
610383	GREATER LAWNDALE HS
609716	KELVYN PARK HS
610205	TRUMBULL
610253	LATHROP
610021	CASALS
400018	AUSTIN BUS & ENTRP CONTR HS
610256	ROBINSON
610134	POPE
610258	PRICE
609928	FULLER
609916	FERMI
610283	GUGGENHEIM
610004	CULLEN
610241	MARCONI
609981	HEARST
609997	HOLMES
609819	BURKE

Figure 10B
Hypothetical Turnaround Schools

School ID	School Name
609722	MANLEY HS
609885	DEWEY
609991	HERZL
610030	KOZMINSKI
610045	LAWRENCE
610053	MARQUETTE
610065	TILL
610200	THORP, J
610240	HENSON
610334	RABY HS

EXHIBIT A

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Education

Ph.D., Economics, Massachusetts Institute of Technology, 1991

A.B., Economics, University of California, Berkeley, 1983

Fellowships, Honors and Awards

1986:   American Economic Association Doctoral Fellowship

1983:   National Science Foundation Graduate Fellowship

1983:   Honors in General Studies, University of California, Berkeley

Fields of Concentration

Industrial Organization, Labor Economics, Economic History

Professional Experience

2003 – Present: President, Economist Incorporated

2001 – 2002: Principal, Economists Incorporated

1998 – 2000: Senior Vice President, Economists Incorporated

1996 – 1998: Vice President, Economists Incorporated

1990 – 1996: Senior Economist, Economists Incorporated

1988 – 1990: Management Consultant, Monitor Company, Cambridge, Massachusetts

Professional Experience (Continued)

> 1987 – 1988: Visiting Research Fellow, Federal Reserve Bank of Boston, Boston, Massachusetts
>
> 1987: Teaching Assistant, Massachusetts Institute of Technology

Dissertation

> *Essays on the Commercial Banking Industry*

Publications

> "Discounting Lost Future Earnings," *Economists Ink*, Summer 2015 (with Erica Greulich)
>
> "DTB and the Use of Regression Analysis to Assess Market Definition and Competitive Effects," *Antitrust Law Section of the American Bar Association*, Economics Committee Newsletter, Spring 2011 (with Erica Greulich)
>
> "Preparing for Trial: Expert Economic Testimony," *Antitrust Section of the American Bar Association 59th Spring Meeting*, Continuing Legal Education Written Materials, March 2011
>
> "The Single Entity Issue in American Needle and DTB," *Westlaw Journal Antitrust*, Volume 18, Issue 1, April 2010 (with Erica Greulich)
>
> "Event Studies, Toxic Stock and Non-Compete Provisions," *Economists Ink*, Fall 2005
>
> "Statistical Evidence and a Daubert Challenge in a Recent Discrimination Case," *Economists Ink*, Summer 2004
>
> "Price Increases Attributable to Patent Infringement or Entry," *Economists Ink*, Spring 2004 (with Tessie Su)
>
> "Ninth Circuit Expounds on Antitrust Injury," *Economists Ink,* Fall 2003
>
> "The Deterrence Value of Punitive Damages," *Economists Ink,* Fall 2001 (with Laura Malowane)
>
> "Recent Developments in Bank Merger Competition Policy," *Banking Law Review*, Spring 1992 (with Bruce Snapp and David Balto)
>
> "U.S. Bank Merger Competition Policy," *International Merger Law 16,* December 1991 (with Bruce Snapp)
>
> "Not So Safe Harbor for Bank Mergers," *Economists Ink,* Winter 1991

Panels

87th Annual Conference of the Western Economics Association International, "Sports Economics on Trial," June 30, 2012 – Symposium panelist

American Bar Association Antitrust Section Annual Meetings, March 9, 2011 – Presentation concerning preparation for economic trial testimony

American Law Institute – American Bar Association Course of Study, "Antitrust Law in the 21st Century," September 14-15, 2000 – Presentation concerning the economics of professional sports leagues

American Bar Association Antitrust Section Annual Meetings, April 14, 1999 – Presentation concerning the economic foundations of antitrust law

National Economists Club Educational Foundation, "What Effect Will Financial Restructuring Have On Banks?" August 13, 1991 – Moderator

Board Memberships

Economists Incorporated

SF-Marin Food Bank

Expert Reports and Testimony

Chicago Teachers Union et al. v. Board of Education of the City of Chicago – Expert report on behalf of plaintiffs concerning liability

Charles Ridgeway, et al. v. Wal-Mart Stores, Inc. – Expert report on behalf of defendant concerning injury and damages

Daniel Villalpando, et al. v. Exel Direct Inc., et al. – Expert report and deposition testimony on behalf of defendants concerning class damages

United States ex rel. *Landis v. Tailwind Sports Corp., et al.* – Expert report and deposition testimony on behalf of plaintiff concerning damages

The West Virginia Investment Management Board et al. v. The Variable Annuity Life Insurance Company – Expert report and deposition testimony on behalf of defendant concerning damages

In Re Taco Bell Wage and Hour Actions – Expert reports (2), deposition and trial testimony on behalf of defendant concerning liability and remedies

In Re: Processed Egg Products Litigation – Expert reports (4), hearing and deposition testimony on behalf of defendants concerning antitrust damages

Expert Reports and Testimony (Continued)

Peter Sripramot v. Nor Cal Freight Mgmt., Inc., et al. – Expert report on behalf of defendant concerning damages

Moroccanoil Inc., v. Marc Anthony Cosmetics, Inc., et al. – Expert report and deposition testimony on behalf of plaintiff concerning trademark infringement remedies

Isidro Baricuatro, Jr., et al. v. Industrial Personnel and Management Services, Inc., et al. – Expert report and deposition testimony on behalf of defendants concerning Fair Labor Standards Act and contract damages

Ameira Watters v. General Motors LLC, et al. – Expert report on behalf of defendants concerning damages

Louis Cimaglia v. Royal Pontiac Buick GMC Inc., et al. – Expert report on behalf of defendants concerning damages

United States v. Bank of America Corp. et al. – Expert report and deposition testimony on behalf of defendants concerning financial harm

Diane Zwarg v. BB&T Insurance Services of California, Inc., et al. – Trial and deposition testimony on behalf of defendants concerning damages

Ritchie Risk - Linked Strategies Trading (Ireland), Ltd., et al. v. Coventry First LLC, et al. – Expert report and deposition testimony on behalf of defendants concerning economic loss

In Re: BDO Seidman – Expert report and deposition testimony on behalf of defendant concerning damages from alleged breach of professional responsibility

U.S. SEC v. Ralph Cioffi – Deposition testimony on behalf of defendant concerning hedge fund operations

Ultra Internet Media, S.A., et al. v. Caesars License Company, LLC et al. – Expert report on behalf of defendants concerning damages

Lauren Knowles v. Kelly Buick, Inc., et al. – Expert report on behalf of defendants concerning economic loss

Kenneth D. Klaas, et al. v. Vestin Mortgage Inc., et al. – Expert reports (2) on behalf of defendants concerning contract damages

Tyr Sport, Inc. v. Warnaco Swimwear, Inc., United States Swimming, Inc., et al. – Expert report on behalf of defendants concerning antitrust liability

Expert Reports and Testimony (Continued)

United States of America v. Ralph Cioffi and Matthew Tannin – Testimony at criminal trial on behalf of defendants concerning hedge fund operations

Charles M. Felton et al. v. Vestin Realty Mortgage II, et al. – Deposition testimony and testimony at a bench trial on behalf of defendants concerning contract damages

National Union Fire Insurance Co. of Pittsburgh, PA v. Puget Plastics Corporation et al. – Deposition testimony and testimony at a bench trial on behalf of plaintiff concerning lost profits and diminution in business value

Deutscher Tennis Bund, et al. v. ATP Tour Inc. – Expert reports (2), deposition testimony and testimony at a jury trial on behalf of defendant concerning antitrust liability

John Johnson, et al. v. Big Lots Stores, Inc. – Expert reports (2), declarations (2), deposition testimony, and testimony at a bench trial on behalf of defendant concerning alleged violation of Fair Labor Standards Act

MGP Ingredients, Inc. v. Mars, Inc. and S&M NuTec, LLC – Expert report and deposition testimony on behalf of defendant concerning damages

In Re: H Street Building Corporation – Deposition testimony on behalf of defendant concerning damages

In Re: The National Benevolent Association of the Christian Church (Disciples of Christ), et al. – Expert report, rebuttal report and deposition testimony on behalf of plaintiff concerning damages

Chemical Overseas Holdings Inc., et al. v. Republica Oriental Del Uruguay, et al. – Expert report, supplemental report and arbitration testimony on behalf of respondents concerning damages

In Re: Lockheed Meridian, MS Shooting Incident – Expert reports (3) and deposition testimony on behalf of defendant concerning damages

John D. Wee v. Charles Schwab & Co., Inc. – Arbitration testimony on behalf of plaintiff concerning damages

In Re: Robin Singh d/b/a Test Masters – Expert reports (2), declaration and deposition testimony on behalf of plaintiff concerning damages

Patrick J. Cunningham and Anton N. Zanki v. International Business Machines Corporation – Expert report, rebuttal report and deposition testimony on behalf of defendant concerning alleged breach of contract

Expert Reports and Testimony (Continued)

Mark Hodges, et al. v. Greater Canton Ford Mercury, Inc., et al. – Expert report on behalf of defendant concerning punitive damages

In Re: Frank T. Vega – Declaration on behalf of defendant concerning damages

Martin Leach v. Ford Motor Co. – Expert report on behalf of defendant concerning the corporate officer labor market in a breach of contract suit

Westways World Travel, Inc. and Sundance Travel Service v. AMR Corp., et al. – Expert report and deposition testimony on behalf of defendants concerning compensatory damages

Traci A. Savage v. Ford Motor Co. – Expert report on behalf of defendant concerning the economics of punitive damages

Randy Eugene Wheeler v. Ford Motor Co. – Deposition testimony on behalf of defendant concerning lost NFL earnings and other alleged damages

David Braswell v. Holley Performance Products Inc. – Expert report and rebuttal on behalf of defendant concerning antitrust liability and antitrust damages

Ertha Mae Williams v. CSX Transportation Inc., et al. – Deposition testimony on behalf of defendants concerning the economics of punitive damages

R. Straman Co. and Newport Convertible Engineering, Inc. v. Volkswagen of America, et al. – Deposition testimony on behalf of defendants concerning antitrust liability and antitrust injury

Roll International Corporation and Paramount Farms, Inc. v. Unilever United States, Inc. and Conopco, Inc. – Testimony at jury trial on behalf of defendants regarding compensatory damages for alleged breach of contract and false promise

Newhall Land and Farming Co. v. Kerr McGee Operating Corporation, et al. – Deposition testimony on behalf of defendants concerning the economics of punitive damages

Marcia Spielholz, et al. v. Los Angeles Cellular Telephone Company, et al. – Expert report on behalf of defendants concerning remedies in a class action false advertising suit

David N. Orrik v. Stryker Corporation, et al. – Deposition testimony on behalf of defendants concerning the economics of punitive damages

Expert Reports and Testimony (Continued)

Agneta Karlsson, et al. v. Michael A. Savage – Deposition testimony on behalf of defendants concerning the economics of punitive damages and product liability

Homestore, Inc. v. America Online – Expert report and arbitration testimony on behalf of respondent concerning damages from breach of contract

Michael Meitus, et al. v. Dain Rauscher Wessels, Dain Rauscher Corporation and Dain Rauscher Inc. – Arbitration testimony on behalf of claimants concerning the competitive structure of the securities industry and other economic matters

In Re: 1994 Exxon Chemical Plant Fire – Expert report on behalf of defendant concerning the economics of punitive damages

Avis Buchanan, et al. v. Consolidated Stores Corp. – Declaration and deposition testimony on behalf of defendant concerning statistical and other economic analyses in a class action public accommodations suit

State of Alabama v. Exxon Corporation – Affidavit and testimony at post-trial hearing on behalf of defendant concerning the economics of punitive damages

Aspen Knolls Corp., et al. v. McDermott Will & Emery – Expert report on behalf of defendant concerning damages in a legal malpractice suit

Legi-Slate Inc. v. Thomson Information Services Inc. – Expert reports (2) and deposition testimony on behalf of plaintiff concerning damages from breach of contract

United States of America ex rel., *William I. Koch and William A. Presley v. Koch Industries, Inc., et al.* – Expert report, deposition testimony and testimony at jury trial on behalf of defendants concerning economic issues in a False Claims Act suit

Ronald O. Lewis v. Booz-Allen & Hamilton Inc. – Expert reports (4) and deposition testimony on behalf of plaintiff regarding statistics and damages in an employment discrimination suit

Richard Rodgers Mason v. Ford Motor Company – Expert report and deposition testimony on behalf of defendant regarding liability in a product liability suit

Dr. Michael J. Galvin v. The New York Racing Association, Inc., et al. – Expert report and declaration on behalf of defendant regarding commercial damages in breach of due process and tortious interference suit

Expert Reports and Testimony (Continued)

Roll International Corporation and Paramount Farms, Inc. v. Unilever United States, Inc., et al. – Deposition and bench trial testimony on behalf of defendants regarding business valuation and damages in a breach of contract and fraudulent misrepresentation suit

Yvonne Trout, et al. v. John Dalton, et al. – Affidavit and declaration on behalf of the United States concerning prejudgment interest

Willie Brown Jr., et al. v. General Motors Corporation – Testimony at deposition and jury trial concerning lost NFL player earnings

Royer Homes of Mississippi, Inc., et al. v. Redman Homes, Inc., et al. – Affidavits (2), expert reports (2) and deposition testimony on behalf of defendants concerning antitrust liability and damages

W. C. and A. N. Miller Companies v. United States of America – Expert report and deposition testimony on behalf of defendant concerning commercial damages in a Federal Tort Claims Act suit

SMS Systems Maintenance Services, Inc. v. Digital Equipment Corporation – Expert report and deposition testimony on behalf of defendant concerning antitrust damages and liability

Francis W. Murray and FWM Corporation v. National Football League, et al. – Expert report and deposition testimony on behalf of defendants regarding market definition, alleged anticompetitive conduct and alleged antitrust injury

Michael A. Willner v. Dow Jones & Company, Inc., et al. – Deposition testimony on behalf of defendants regarding damages in a breach of contract and unfair dealing suit

Dream Team Collectibles, Inc. v. NBA Properties, Inc. – Expert reports (2) and deposition testimony on behalf of NBA Properties regarding damages and other economic issues in a trademark infringement suit and counter suit

Breezevale Limited v. Timothy L. Dickinson, et al. – Deposition and jury trial testimony on behalf of defendants regarding commercial damages in a legal malpractice suit

Sonja Lumpkin v. Citizens Bank of Maryland, Incorporated – Affidavit on behalf of defendant regarding damages in a wrongful termination suit

Expert Reports and Testimony (Continued)

Carolee Brady Hartman, et al. v. Joseph Duffey – Declarations (7) and live testimony at four Teamsters Hearings on behalf of the defendant, the United States Government, regarding damage estimation in a class action sex discrimination suit

Robert B. Reich v. Charles I. Brown, Peter M. Mazula, and Ronald F. Nuzman – Affidavit and deposition testimony for United States Department of Labor regarding alleged breach of fiduciary responsibility under ERISA

United Farmers Agents Association, Inc. v. Farmers Insurance Exchange, et al. and Thomas J. Vinson, et al. v. Farmers Insurance Exchange, et al. – Affidavit and deposition testimony for plaintiffs regarding antitrust liability

Anthony Brown, et al. v. Pro Football, Inc. – Testimony for defendants, the member clubs of the NFL, at jury trial regarding antitrust damages

Robert E. Connor, et al. v. Harris County, et al. – Deposition testimony and a written declaration for plaintiffs, members of a class of job applicants, regarding a cost defense for allegedly discriminatory employment practices

Laura Kelber against Forest Electric Corp. and Forest Datacom – Affidavit in opposition to defendants' motion for summary judgment in a sex discrimination suit

Selected Consulting Matters

Ernst & Young/KPMG – Antitrust consulting regarding potential consolidation

NASCAR Souvenirs – Consulting for defendants concerning class certification in an antitrust matter

First Databank – Antitrust consulting regarding acquisition of Medi-Span Inc.

Metal Supermarkets – Consulting for plaintiff regarding commercial damages arising from legal malpractice

Vulcan – Antitrust consulting regarding the acquisition of an Atlanta quarry

Brodus v. Children's National Medical Center – Consulting regarding damages in a wrongful termination suit

International Paper – Antitrust consulting regarding photographic paper and other photographic material

Selected Consulting Matters (Continued)

St. Louis Convention and Visitors Commission v. National Football League, et al. – Antitrust consulting regarding franchise relocation

The Baltimore City Paper – Consulting regarding commercial damages allegedly arising from libel

Allied Domecq – Consulting for liquor supplier regarding terminated dealer's lost profits

National Football League – Consulting regarding trademark and antitrust issues in suits between the Dallas Cowboys and its affiliates and the NFL

IndyCar Racing – Antitrust consulting

Albertson's – Antitrust consulting for potential plaintiff in a price-fixing matter

New Orleans Hospitals – Antitrust consulting regarding a joint venture among New Orleans hospitals

General Dynamics – Consulting for plaintiff regarding damages in commercial litigation

Telecom Technical Services, et al. v. ROLM – Consulting for plaintiffs in antitrust litigation

The Boston Herald – Consulting regarding damages allegedly caused by publication of a news story

Automotive Dismantlers and Recyclers Association v. ADP Claims Solutions Group, Inc. – Antitrust consulting regarding used automobile parts databases

Mercy/St. Vincent – Consulting regarding the merger of two hospital systems in Toledo, Ohio

Kalium/IMC – Consulting regarding the merger of Kalium and IMC

Agricultural Chemicals Antitrust Litigation – Antitrust consulting for defendants, Zeneca Corp., Helena Corp. and Terra Corp. in an RPM class action suit

The Clorox Company v. Sterling Winthrop, Inc., et al. – Antitrust consulting for plaintiffs in litigation alleging misuse of trademark protections for anticompetitive gain

Chittenden Corporation – Antitrust consulting regarding a bank holding company's acquisition plans

National Basketball Association – Damage estimation for the NBA in antitrust suit brought against it by Independent Entertainment Group Incorporated

Magic Line Inc. – Merger of ATM networks

Home Shopping Network – Ex-post valuation of contingent contract concerning software and consulting services

Lenfest Group, Comcast Corporation and Telecommunications Incorporated – Consultation regarding Delaware Public Service Commission rules to implement the Telecommunications Technology Investment Act

Worthen Financial Corporation – Acquisition of Union National Bank of Arkansas

Intrust Bank – Merger with Kansas State Bank & Trust

Iowa National Bankshares – Merger with MidAmerica Savings Bank

First National Bank of Kerrville – Acquisition of Bank of Kerrville

Peoples Heritage Financial Group – Acquisitions of Mid Maine Savings Bank, Bank of New Hampshire, CFX, and certain branches of Fleet Bank of Maine

Potash Antitrust Litigation – Antitrust consulting for defendants in a class action suit alleging price fixing in the potash industry

R&D Business Systems, et al. v. Xerox Corporation – Antitrust consulting for plaintiffs in a class action suit alleging tying and monopolization in the copier and printer industries

Society Corp. – Acquisition of Ameritrust

VDDE Holm, Voest Alpina, Bohler – Antitrust consulting in connection with the merger of two European steel manufacturers

McNeil, et al. v. NFL – Estimation of damages resulting from player reservation system

Selected Consulting Matters (Continued)

U.S. Department of Justice v. City of Alhambra, California – Analysis of evidence of discriminatory hiring practices

Christiana Mortgage Brokers, et al. v. Delaware Trust, et al. – Estimation of damages resulting from tortious interference in the mortgage brokerage industry in New Castle County, Delaware

Merger of Two Savings and Loan Assns. – Antitrust consulting in connection with the merger of two thrift institutions

Mid Atlantic Coca-Cola – Analysis of evidence of price fixing and estimation of resulting damages

Professional Societies

American Economic Association

American Bar Association

Industrial Organization Society

Western Economics Association

American Law and Economics Association

Society of Labor Economics

EXHIBIT B

Materials Considered

- Plaintiffs' First Amended Complaint, filed on December 27, 2012 (Doc. #8);

- Opinion from 7th Circuit Court, filed August 7, 2015 (Doc. # 164);

- transcripts of the Deposition of David Graham Blanchflower on March 6, 2015;

- transcripts of the Deposition of David Graham Blanchflower on July 17, 2015;

- transcripts of the Deposition of Ryan Allan Crosby on July 15, 2013;

- a spreadsheet containing information about the schools selected at each cut for turnaround (*CBOE0016498.xlsx*);

- a spreadsheet containing information about performance metrics for schools selected at each turnaround cut (*CBOE0016504.xlsx*);

- a 2012 CPS employee roster, containing information for each employee's school identification number, race, and union status (*CBOE0016515.xlsx*);

- a 2008 to 2013 CPS school data set, containing school level information on performance and probation status (*CBOE0026473.xlsx*);

- a 2008 to 2012 CPS school data set, containing school level information on performance and probation status (*CBOE0016505.xlsx*);

- Report of David G. Blanchflower, filed on November 26, 2013;

- Report of David G. Blanchflower, filed on July 31, 2013;

- Report of David G. Blanchflower, filed on February 5, 2015;

- Report of David G. Blanchflower, filed on May 20, 2015;

- Uniform Guidelines on Employee Selection Procedures, Part 1607.4 (D) of the U.S. Code of Federal Regulations;

- Econometric Analysis, Seventh Edition, William H. Greene, p. 109;

- Introductory Econometrics, 4e, Jeffrey M. Wooldridge, p. 135;

- Technical Advisory Committee Report on Best Practices in Adverse Impact Analyses, The Center for Corporate Equality, September 2010