

WHERE SCHOOLS CLOSE IN CHICAGO

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INTRODUCTION

The Chicago Public School (CPS) system is the third largest school district in the United States.¹ The district served 404,151 students in 2012,² which represents a loss of 22,661 students since 2005.³ CPS is likely to lose more students over time,⁴ albeit in lower numbers than the district has claimed,⁵ due to a reduction in the number of school-aged children in Chicago.⁶

In response to the reduced demand for its services,⁷ CPS closed 130 schools between 2005 and 2013.⁸ CPS closings were justified under a theory that these school actions would encourage more efficient use of public sector resources, better financial management, and improved educational outcomes.⁹ Unfortunately, CPS has failed to achieve these goals.¹⁰

So, if CPS closings do not lead to greater efficiency,¹¹ better

¹ *Chicago Public Schools: At-A-Glance*, CHI. PUB. SCH., http://www.cps.edu/About_CPS/At-a-glance/Pages/At-a-glance.aspx (last visited Feb. 21, 2014).

² *Chicago Public Schools: Stats and Facts*, CHI. PUB. SCH., http://www.cps.edu/About_CPS/At-a-glance/Pages/Stats_and_facts.aspx (last updated Jan. & Aug. 2012).

³ Linda Lutton & Becky Vevea, *Truth Squad: Enrollment Down in CPS, But Not by Much*, WBEZ 91.5, <http://www.wbez.org/news/truth-squad-enrollment-down-cps-not-much-104297> (last visited Feb. 21, 2014).

⁴ See MARISA DE LA TORRE & JULIA GWYNNE, WHEN SCHOOLS CLOSE: EFFECTS ON DISPLACED STUDENTS IN CHICAGO PUBLIC SCHOOLS 11 (Consortium on Chi. Sch. Research ed., 2009), <http://ccsr.uchicago.edu/sites/default/files/publications/crrschoolclosings-fral.pdf>.

⁵ Compare Lutton, *supra* note 3, with ROBERT GEORGE ET AL., CHICAGO CHILDREN AND YOUTH 1990-2010: CHANGING POPULATION TRENDS AND THEIR IMPLICATIONS FOR SERVICES 5 (Chaplin Hall Ctr. for Children at the Univ. of Chi. ed., 2007) (showing that, although there was a decline in the number of six- to twelve-year-olds, other cohorts have stabilized).

⁶ Pew Charitable Trusts, *Closing Public Schools In Philadelphia: Lessons From Six Urban School Districts* 3 (Oct. 19, 2011), http://www.pewtrusts.org/our_work_report_detail.aspx?id=85899365152.

⁷ DE LA TORRE & GWYNNE, *supra* note 4.

⁸ See *infra* Tables 1 & 2 (This article defines CPS closings as any of the following school actions: closings, consolidations, or turnarounds.).

⁹ Noreen S. Ahmed-Ullah et al., *CPS Approves Largest School Closure in Chicago's History*, CHI. TRIB. (May 23, 2013), <http://articles.chicagotribune.com/2013-05-23/news/chi-chicago-school-closings-20130522-1-1-chicago-teachers-union-byrd-bennett-one-high-school-program>.

¹⁰ Noreen S. Ahmed-Ullah & Joel Hood, *CPS Budget For 2013 Has Huge Shortfall*, CHI. TRIB. (May 23, 2013), http://articles.chicagotribune.com/2013-05-23/news/chi-chicago-school-closings-20130522_1_chicago-teachers-union-byrd-bennett-one-high-school-program (last visited on January 4, 2014).

¹¹ Wendy Katten, *School Closings Will Open Door to Other Problems*, CRAIN'S CHI. BUS. (Mar. 20, 2013), <http://www.chicagobusiness.com/article/20130320/OPINION/130319720/school-closings-will-open-door-to-other-problems>.

financial management,¹² or improved educational outcomes,¹³ why are these school actions undertaken? Professors Stephanie Farmer and Chris D. Poulos offer a compelling explanation.¹⁴ Initially, these professors assert that “[d]emocratic control of education . . . empower[s] bureaucratic and special interest groups [such as the Chicago Teachers Union] that seek to limit change.”¹⁵ Farmer and Poulos then go on to argue that “[r]ather than fight through this system, school choice advocates set out to create a new school system to work in tandem with traditional public education.”¹⁶ Lastly, the professors find that the “expansion of choice schools was facilitated by Chicago Public Schools closing neighborhood schools and then leasing 40 percent of the shuttered [buildings] to charter school[s].”¹⁷

This explanation raises at least one major question: where do schools close in Chicago?¹⁸ It is often assumed that schools close disproportionately in disadvantaged parts of the city.¹⁹ The assumption, however, has yet to be substantiated by basic social science research.²⁰

¹² *Id.*

¹³ *Id.*

¹⁴ See Stephanie Farmer & Chris D. Poulos, *Tax Increment Financing in Chicago, IL, Building Neoliberal Exclusion One School at a Time*, 2013 CRITICAL SOC. 1, 6–7.

¹⁵ *Id.* at 6.

¹⁶ *Id.*

¹⁷ *Id.* at 7.

¹⁸ CPS closings are an appropriate focus of analysis for several reasons. For example, Julia Burdick-Will, Micere Keels, and Todd Schuble argue that these school actions should be analyzed because “closed schools represent both a demand for quality education by an underserved population and existing infrastructure that may reduce the cost of opening a new school. This makes analysis of where schools close [in Chicago] an important precursor to any analysis of the location of the new schools.” Julia Burdick-Will et al., *Closing and Opening Schools: The Association Between Neighborhood Characteristics and the Location of New Educational Opportunities in a Large Urban District*, 35 J. URB. AFF. 59, 62 (2013).

¹⁹ See, e.g., Lesli A. Maxwell, *New Infographic Shows Who School Closings Affect*, EDUC. WK. (Apr. 26, 2013, 5:15 PM), http://blogs.edweek.org/edweek/District_Dossier/2013/04/school_closings.html.

²⁰ There are a number of papers that answer related research questions. One example is an unpublished research project that was conducted by students in a 2013 Northwestern University (Ill.) Statistics course. See generally Dan Hill, *Fact Checking Chicago Public Schools Using Algorithms, Statistics and Data Mining*, NW. U. KNIGHT LAB (July 19, 2013), <http://knightlab.northwestern.edu/2013/07/19/fact-checking-chicago-public-schools-using-algorithms-statistics-and-data-mining/> (informally using data mining techniques to “determine if racial demographics predicted schools closings”). This article, in contrast to this earlier research, directly answers the question by using a composition-based

This article, therefore, tests the assumption in order to explain where schools close in Chicago. It does so by introducing a new CPS closings data set.²¹ This data set sheds some light on the phenomenon by identifying 130 schools that closed over time,²² twenty-seven ZIP codes²³ that experienced CPS closings,²⁴ and three demographic characteristics of each ZIP code.²⁵ As a result, the dataset helps to explain how CPS closings relate to race, income, and location.²⁶

The article proceeds in six parts. Part I is the introduction. Part II provides information about CPS closings over time. Part III outlines this article's methodological approach. Part IV explains its research findings. Part V is the discussion. Part VI is the conclusion.

approach to establishing disproportionality. In doing so, it serves as a starting point for more rigorous empirical work that draws on the analysis of variance. Going forward, in keeping with the analysis from a popular statistics textbook, "the null hypothesis [of future research will be] that the populations from which the samples are drawn are equal on the characteristic of interest . . . [i]f the null hypothesis of 'no difference' in the populations is true, then any means calculated from randomly selected samples should be roughly equal in value" As a result, future research may go beyond the basic question to be answered in this article: "are there [*any*] differences between the samples or categories of the independent variable?" Instead, it asks: "are the differences between the samples large enough to reject the null hypothesis and [to] justify the conclusion that the populations represented by the samples are different?" JOSEPH F. HEALY, *STATISTICS: A TOOL FOR SOCIAL RESEARCH* 239 (Lin Marshall et al. eds., 6th ed. 2002).

²¹ See *infra* Tables 3 & 4.

²² See *infra* Tables 1 & 2. This article focuses on this interval because the majority of CPS closings took place after 2004.

²³ See *ZIP Code Tabulation Areas (ZCTAs)*, U.S. CENSUS BUREAU, <http://www.census.gov/ceo/reference/zctas.html> (last updated Dec. 11, 2013) ("ZIP Code Tabulation Areas (ZCTAs) are generalized areal representations of United States Postal Service (USPS) ZIP Code service areas."). See *infra* Table 1. For purposes of this article, the term "ZIP code" refers to both ZIP Code Tabulation Areas and ZIP Code Service Areas.

²⁴ See *infra* Tables 3 & 4.

²⁵ See *infra* Table 4.

²⁶ See *infra* Tables 5, 6, 7, 8, 9 & 10.

I. BACKGROUND

For almost 200 years, Illinois public schools have been subject to local government control.²⁷ This democratic control of education gave local government the legal right to create, to restructure, or to eliminate public school districts.²⁸ The right was conveyed, initially, by the Illinois General Assembly in 1825.²⁹ Subsequent legislative action expanded the right, so as to “permit [new] methods of school district reorganization [, which were] previously unavailable [,] and that provide financial benefits to school districts participating in reorganization.”³⁰ One recent example of these methods, *sua sponte* closings,³¹ grew out of the Chicago School Reform Act (CSRA).³²

The original CSRA was enacted in 1988.³³ This law increased local government control over CPS by decentralizing the district’s bureaucratic structure.³⁴ The 1995 amendments to the CSRA went even further,³⁵ as this legislative action gave each Mayor of Chicago a right to select CPS’s “chief executive officer” . . . and appoint a powerful five-member board of education.³⁶

The CSRA was just the start of an extensive CPS reform

²⁷ See James E. Herget, *Democracy Revisited: The Law and School Districts in Illinois*, 72 J. ILL. ST. HIST. SOC’Y 123, 131 (1979) (“The Illinois ‘Free School Law’ . . . authorized the establishment of school districts and permitted authorities to tax property in support of schools The bill was approved by the legislature and signed by Governor Coles on January 15, 1825.”).

²⁸ *Id.*

²⁹ *Id.*

³⁰ Brandon K. Wright, *Creation, Dissolution and Boundary Changes*, Illinois Institute for Continuing Legal Education 1.1 (2012). Examples include Illinois P.A. 83-686, P.A. 84-1234, and P.A. 86-1334.

³¹ This article uses the term to distinguish between school closings that are initiated by school districts—*of their own accord*—as opposed to adverse school actions that arise from other types of governmental action.

³² See 105 ILL. COMP. STAT. ANN. 5/34-1 (2014) (giving local bodies the power to control what happens in a school district).

³³ Levis Haney, *The 1995 Chicago School Reform Amendatory Act and the CPS CEO: A Historical Examination of the Administration of CEOs Paul Vallas and Arne Duncan* at 87–8, (2011) (unpublished Ph.D. dissertation, Loyola University Chicago) (on file with Loyola University Chicago).

³⁴ *Id.* at 87.

³⁵ See Lonnie Harp, *Governor Signs Bill Putting Mayor in Control of Chicago Schools*, EDUC. WK. (June 7, 1995), <http://www.edweek.org/ew/articles/1995/06/07/37ill.h14.html>. Haney, *supra* note 33, at 88.

³⁶ Jim Carl, “*Good Politics is Good Government*”: *The Troubling History of Mayoral Control of the Public Schools in Twentieth-Century Chicago*, 115 AM. J. EDUC. 305, 305 (2009).

effort,³⁷ which led to the closure and the replacement of underperforming schools.³⁸ Over time, these reforms were codified by statute³⁹ and by rule.⁴⁰ For example, state law and BOE regulations permit the CPS Chief Executive Officer (CPS CEO) “to establish the criteria to be used when making decisions regarding the closing, consolidation[,] or turnaround of schools.”⁴¹ Under this broad grant of authority, the CPS CEO “may close a school for academic reasons or, for non-academic reasons, such as under-enrollment or due to the physical condition of the building.”⁴² However, in reaching a *sua sponte* decision, the CPS CEO must give adequate legal notice, hold public hearings, and consider relevant information about affected schools.⁴³

Beginning with the first *sua sponte* closings in 2002,⁴⁴ these school actions have been challenged on many legal grounds.⁴⁵ For

³⁷ See STUART LUPPESCU ET AL., TRENDS IN CHICAGO’S SCHOOLS ACROSS THREE ERAS OF REFORM: SUMMARY OF KEY FINDINGS 2 (2011).

³⁸ See PAULINE LIPMAN, STUDENTS AS COLLATERAL DAMAGE? A PRELIMINARY STUDY OF RENAISSANCE 2010 SCHOOL CLOSINGS IN THE MIDSOUTH 9 (2007) (“In June 2004, at an event sponsored by the Commercial Club, Mayor Daley announced Renaissance 2010, a plan to close 60–70 schools and open 100 new schools: one-third charter schools, one-third contract schools (similar to charters), and one-third CPS performance schools.”).

³⁹ 105 ILL. COMP. STAT. ANN. 5/34-18 (2014) (“Powers of the [B]oard”); 105 ILL. COMP. STAT. ANN. 5/34-200 (2014) (“School Actions”); 105 ILL. COMP. STAT. ANN. 5/34-225 (2014) (“School [T]ransition [P]lans”); 105 ILL. COMP. STAT. ANN. 5/34-230 (2014) (“School [A]ction [P]ublic [M]eetings and [H]earings”); 105 ILL. COMP. STAT. ANN. 5/34-232 (2014) (“[S]chool [A]ction [A]nnouncement and [N]otice”).

⁴⁰ See, e.g., CHI. BD. OF EDUC., ADOPT A SCHOOL PERFORMANCE, REMEDIATION AND PROBATION POLICY FOR 2011–2012 SCHOOL YEAR (2010); CHI. BD. OF EDUC., ADOPT A POLICY FOR THE REVIEW AND ESTABLISHMENT OF SCHOOL ATTENDANCE BOUNDARIES (2005); CHI. PUB. SCH., SPACE UTILIZATION STANDARDS (2011); CHI. PUB. SCH., GUIDELINES FOR SCHOOL ACTIONS, 2012-2013 SCHOOL YEAR (2012).

⁴¹ See FREDRICK H. BATES, IN RE: THE MATTER OF THE PROPOSAL TO CONSOLIDATE HANS CHRISTIAN ANDERSEN COMMUNITY ACADEMY WITH LASALLE II MAGNET ELEMENTARY 7 (2011).

⁴² *Id.*

⁴³ *Id.* at 11–12.

⁴⁴ *The History of School Closings in Chicago 2002-12*, WBEZ 91.5 (Jan. 16, 2013), <http://www.wbez.org/news/history-school-closings-chicago-2002-12-104383> (“On April 10, 2002, then CPS Chief Executive Officer Arne Duncan announced CPS would permanently close three schools it said were chronically low-performing and not improving: Williams, Dodge[,] and Terrell. The district vowed to open wholly new schools at Williams and Dodge. It said Terrell would remain closed due to declining enrollment.”).

⁴⁵ See Noreen S. Ahmed-Ullah, *Teachers Union Files Third Lawsuit To Stop CPS Closings*, CHI. TRIB. (May 29, 2013), http://articles.chicagotribune.com/2013-05-29/news/chi-teachers-union-files-third-lawsuit-to-stop-cps-closings-20130529_1_cps-closings-buckingham-special-education-center-teachers-union-

example, in the most recent round of litigation, some plaintiffs⁴⁶ argued that “CPS violated the Americans with Disabilities Act by failing to set up an orderly process of closings for special-needs children.”⁴⁷ Other claimants⁴⁸ asserted “that the closings disproportionately affected African American students and special-needs children.”⁴⁹ A third category of litigant⁵⁰ contended “that CPS ignored the recommendations of independent hearing officers who opposed [the 2013 CPS] closings on the grounds that the district did not follow state law or its own guidelines.”⁵¹

Despite these high-profile legal controversies, there is little scholarly work on *sua sponte* closings.⁵² For example, a modest amount of research looks at whether these school actions affect student achievement.⁵³ Another line of scholarship identifies the characteristics of closed schools.⁵⁴ A smaller body of work asks whether demography affects CPS closings.⁵⁵ None of this social

files (last visited on Jan. 4, 2014).

⁴⁶ *Swan v. Bd. of Educ. of Chi.*, 13 C 3623, 2013 U.S. Dist. LEXIS 95877, at *2 (N.D. Ill. July 9, 2013).

⁴⁷ Ahmed-Ullah, *supra* note 45.

⁴⁸ *See* *McDaniel v. Bd. of Educ. of Chi.*, 13 C 3624, 2013 U.S. Dist. LEXIS 95924, at *2–3 (N.D. Ill. July 9, 2013).

⁴⁹ Ahmed-Ullah, *supra* note 45.

⁵⁰ *See* Complaint at 1–2, *Chi. Teachers Union v. Bd. of Educ. of Chi.*, No. 13–13624 (Ill. Cir. Ct. May 29, 2013). Ahmed-Ullah, *supra* note 45.

⁵¹ Ahmed-Ullah, *supra* note 45.

⁵² *See* Burdick-Will et al., *supra* note 18, at 62.

⁵³ *See, e.g.*, GAIL L. SUNDERMAN & ALEXANDER PAYNE, DOES CLOSING SCHOOLS CAUSE EDUCATIONAL HARM? A REVIEW OF THE RESEARCH 5 (Mid-Atlantic Equity Ctr. ed., 2009).

⁵⁴ *See* Burdick-Will et al., *supra* note 18, at 62 (“We located only two studies of school closings. Dean (1982) compared New York schools operating between the mid-1970s to 1980; 58 closed and 762 unclosed schools. She found that two building characteristics (age and operating costs) and three student characteristics (reading scores, percentage white, and percentage free lunch) were significant in determining which schools were closed or left open. Older, more costly, low-performing, higher-minority, and higher-poverty schools were more likely to close. No neighborhood characteristics were included in those analyses. Interestingly, rate of utilization (capacity versus enrollment) was not significant. Colton and Frelich’s (1979) examination of school closings in St. Louis, after a decade of dramatic district-level decline in enrollment (37 closed of 157 schools), also found that many underutilized schools were kept open. They believe that this was accounted for by the lack of an adjacent school [in these areas].”).

⁵⁵ As stated earlier, there are a number of papers that answer related questions. The Burdick-Will et al. article, for example, found that “closed schools were located in significantly more disadvantaged neighborhoods and in neighborhoods that were becoming less disadvantaged than the neighborhoods of left open schools These results indicate that ‘current’ disadvantage is positively associated with the odds of school closure [in Chicago]” *Id.* at 69–

science research, however, indicates whether schools close disproportionately in disadvantaged areas.⁵⁶ Thus, additional work is necessary in order to confirm or deny the claim.

As a result, this article tests the assumption in order to determine where schools close in Chicago. The article does so by introducing a new CPS closings data set. This data set sheds some light on the phenomenon by identifying 130 schools that closed over time,⁵⁷ twenty-seven ZIP codes that experienced CPS closings,⁵⁸ and three demographic characteristics of these ZIP codes.⁵⁹ In the process, this data set helps to explain how CPS closings relate to race, income, and location.⁶⁰

II. METHODOLOGY

This article introduces a new data set that combines publicly available data about CPS closings.⁶¹ This data then is restricted by time period (the interval between 2005 and 2013)⁶² and by the sample population (the twenty-seven ZIP codes that experienced at least one CPS closing).⁶³ Lastly, this data is used to compute population-level averages, subset averages, and ZIP code-level averages.⁶⁴

However, unlike in this author's previous scholarly work,⁶⁵ the mean and the median are computed for each subset and for the sample population.⁶⁶ The mean is the average of a series of

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⁵⁶ See, e.g., Hill, *supra* note 20 (describing how attendance rate is the best predictor of school closings).

⁵⁷ See *infra* Tables 1 & 2.

⁵⁸ See *infra* Tables 3 & 4.

⁵⁹ See *infra* Table 4.

⁶⁰ See *infra* Tables 5–10.

⁶¹ See, e.g., *The History of School Closings in Chicago 2002-12*, *supra* note 44; *Full List of CPS Closures*, WGN WEB DESK, <http://wgntv.com/2013/05/23/full-list-of-cps-closures> (last visited Mar. 1, 2014). See generally CHI. PUB. SCH., CHICAGO PUBLIC SCHOOLS: 2011-2012 CALENDAR & DIRECTORY (2011) (listing all open public schools in an index for the 2011–2012 year).

⁶² See *infra* Tables 1 & 2.

⁶³ See *infra* Tables 3 & 4.

⁶⁴ See *infra* Tables 5–10.

⁶⁵ See, e.g., Randall K. Johnson, *How Tax Increment Financing (TIF) Districts Correlate with Taxable Properties*, 34 N. ILL. U. L. REV. 39, 42 (2013); Randall K. Johnson, *Why Police Learn from Third-Party Data*, 3 WAKE FOREST L. REV. ONLINE 1, 2–3 (2013); Randall K. Johnson, *Do Police Learn from Lawsuit Data?*, 40 RUTGERS L. REC. 30, 32–34 (2012–2013).

⁶⁶ See *infra* Table 4.

numbers,⁶⁷ whereas the median is the middle number.⁶⁸ The mean and the median are both valid measures of central tendency,⁶⁹ although their value often depends on the research question.⁷⁰

Within this context, the article uses both measures of central tendency in order to find out if schools close disproportionately in disadvantaged parts of Chicago. The mean and the median are used for several, inter-related reasons. First, it is unclear whether CPS closings are skewed⁷¹ or normally distributed.⁷² Next, the uncertainty about the distribution of CPS closings counsels for the use of the mean and the median.⁷³ Lastly, these measures may provide a wealth of information, especially about disproportionate treatment within a sample population.⁷⁴

⁶⁷ Anthony McClusky & Abdul Ghaaliq Lalkhen, *Statistics II: Central Tendency and Spread of Data*, 7 CONTINUING EDUC. IN ANAESTHESIA, CRITICAL CARE & PAIN 127 (2007).

⁶⁸ *Id.*

⁶⁹ *Id.*

⁷⁰ *See id.*

⁷¹ *See id.* at 129–30.

⁷² *See id.* at 128–30. *Cf.* HEALEY, *supra* note 20, at 215 (“With small samples, to justify the assumption of a normal sampling distribution and to form a pooled estimate of the standard deviation of the sampling distribution, we must assume that the variances of the populations of interest are equal The assumption of equal variance in the population can be tested by an inferential statistical technique known as the analysis of variance For our purposes here, however, we will simply assume equal population variances without formal testing. This assumption can be considered justified as long as sample sizes are approximately equal.”). This article takes a similar approach to the one that is described by Healey.

⁷³ Michael J. Saks, *Do We Really Know Anything About the Behavior of the Tort Litigation System—And Why Not?*, 140 U. PA. L. REV. 1147, 1250 n.376 (1992) (“Which is the ‘correct’ one to use? The convention among statisticians is to use means to describe the central tendency of ‘normal’ distributions (the familiar bell-shaped curve) and medians to describe the central tendency of skewed distributions. . . . This convention is not arbitrary. It is a solution to the problem of trying to give as meaningful a sense of where a distribution sits as possible using a single number. Because of this convention and its reasoning, some researchers . . . consistently use medians to report the central tendencies [of their subject matter] . . . and eschew means. . . . Other researchers . . . take pains to present both, leaving to their readers the responsibility to make the choice and the interpretation.”) (citations omitted).

⁷⁴ LALIT ROY, ON MEASURES OF RACIAL/ETHNIC DISPROPORTIONALITY IN SPECIAL EDUCATION: AN ANALYSIS OF SELECTED MEASURES, A JOINT MEASURES APPROACH, AND SIGNIFICANT DISPROPORTIONALITY 2 (Cal. Dep’t of Educ., 2012) (“In general, *disproportionality* may be defined as a situation when two or more proportions are not the same or are not within an agreed upon range of values. If two proportions are the same or are within an agreed upon range of values, then it is implied that there is *no disproportionality* between the two proportions. If, on

For the purposes of this article, CPS closings are viewed as disproportionately high whenever the subset average is greater than the population average. By taking this position, the article invokes a composition-based approach to establishing disproportionality.⁷⁵ Composition is one of several ways to identify differential treatment.⁷⁶

It should be noted, however, that this approach will not be useful if it fails to account for selection effects, omitted variables, and other potential issues.⁷⁷ Selection effects, for example, are addressed by focusing on the twenty-seven ZIP codes where CPS closings took place in Chicago (at least, between 2005 and 2013).⁷⁸ In contrast, omitted variables are dealt with by using three definitions of disadvantage: race (Black Population Percentage), income (Per-Capita Income), and location (Geographic Area).⁷⁹ Other potential issues are avoided by using a composition-based approach to establishing disproportionality.⁸⁰ As a result, this article may answer a single research question: Do schools close disproportionately in disadvantaged parts of Chicago?

the other hand, the two proportions are not the same or are outside the agreed upon range of values, then the proportions are considered *disproportionate*.”)

⁷⁵ *Id.* at 6–7 (“*Composition* attempts to answer a question like this: Question: What percentage of all students in a district receiving special education and related services under the identification of the ID category is Black or African-American? Measure: [(Number of Black or African-American students in the ID category)/(Total number of students in all racial/ethnic groups in the ID category)] *100. . . . If the percentage is *higher* in special education than in general education, then the racial/ethnic group is *overrepresented* and if the percentage is *lower* than it is *underrepresented*.”). This article takes an analogous approach that has (1) a different focus of analysis (CPS closings in Chicago) and (2) uses a different computational formula (Subset Average-Population Average=Difference). There is disproportionality if there is any difference between a sample average and a population average.

⁷⁶ Vernon Davies, *The Measurement of Disproportionality*, 23 *SOCIOMETRY* 407, 413–14 (1960) (“Desirable properties of a coefficient to measure degree of disproportionality include: directionality, a value of zero with statistical independence, a value of unity . . . when the differential quotas remain constant, applicability to contingency tables of all sizes, and ease of computation.”). This article focuses on the first property (directionality) and the last property (ease of computation). As such, this article uses a composition-based approach to find out whether schools close disproportionately in disadvantaged parts of Chicago.

⁷⁷ See John Antonakis et al., *On Making Causal Claims: A Review and Recommendations*, 21 *THE LEADERSHIP Q.* 1086 (2010) (discussing how omission of variables, simultaneity, and common-method variance “renders estimates causally uninterpretable” with respect to correlation data).

⁷⁸ See *infra* Tables 3 & 4.

⁷⁹ See *infra* Tables 5–10.

⁸⁰ See ROY, *supra* note 74, at 6–7 (defining a composition-based approach).

III. RESULTS

This article compiles publicly available information about CPS closings. It then analyzes this information using a composition-based approach. This approach requires this article to find that disproportionality exists if a subset average differs from the population average. A subset average is found to be disproportionately high whenever the result is positive, whereas it will be disproportionately low if the difference is negative. This article makes such a finding, only, after subtracting the population average from each subset average.

In this way, the article determines if schools close disproportionately in disadvantaged areas. The results of this analysis are summarized in Sub-Parts A, B, and C (at least for three demographic characteristics that are commonly-equated with “disadvantage” in Chicago (race, income, and location)).

A. *Race*

ZIP codes with majority-black populations (fifteen ZIP codes) had disproportionately high percentages of CPS closings (the difference was 0.81 for the mean, whereas it was 0.77 for the median).⁸¹ In contrast, ZIP codes with populations that were 34.1 percent or less black (twelve ZIP codes) had disproportionately low percentages (the difference was -1.01 for the mean, whereas it was -1.15 for the median).⁸² When these results are compared, this article finds that CPS closed more schools in majority-black ZIP codes than would be expected (from 2005 to 2013).

B. *Income*

ZIP codes with per-capita incomes of \$19,944 or less (fourteen ZIP codes) had disproportionately high percentages of CPS closings (the difference was 0.64 for the mean, whereas it was 0.77 for the median).⁸³ Conversely, ZIP codes with per-capita incomes of \$20,544 or more (thirteen ZIP codes) had mixed results (the difference was -0.68 for the mean, whereas it was zero for the median).⁸⁴ When these results are compared, this

⁸¹ See *infra* Table 5.

⁸² See *infra* Table 6.

⁸³ See *infra* Table 7.

⁸⁴ See *infra* Table 8.

article finds that CPS closed more schools in the lowest-income ZIP codes than would be expected (at least, in the period from 2005 to 2013).

C. Location

ZIP codes on the Southside (seventeen ZIP codes were located entirely in this geographic area) had disproportionately high percentages of CPS closings (the difference was 0.06 for the mean, whereas it was 0.77 for the median).⁸⁵ On the other hand, the ZIP codes on the Northside (ten ZIP codes) had disproportionately-low percentages (the difference was -0.08 for the mean, whereas it was -0.77 for the median).⁸⁶ When these results are compared, this article finds that CPS closed more schools in Southside ZIP codes than would be expected (from 2005 to 2013).

IV. DISCUSSION

This article finds that schools close disproportionately in disadvantaged parts of Chicago. The finding remains true whether disadvantaged areas are defined in terms of race,⁸⁷ income,⁸⁸ or location.⁸⁹ As a result, this finding has positive and normative implications for CPS. Among the positive implications of this finding is that CPS may no longer claim that disadvantaged areas are treated the same as other ZIP codes (at least, in terms of their actual share of CPS closings over time).⁹⁰ The normative implications of this finding, in contrast, are somewhat less apparent. For example, CPS may limit future CPS closings to less disadvantaged ZIP codes. It also could move some of its higher-performing schools to disadvantaged parts of Chicago. A third option would give school construction priority to disadvantaged ZIP codes.

This article recommends that CPS give school construction priority to disadvantaged ZIP codes. CPS should do so for three

⁸⁵ See *infra* Table 9.

⁸⁶ See *infra* Table 10.

⁸⁷ See *infra* Table 5.

⁸⁸ See *infra* Table 7.

⁸⁹ See *infra* Table 9.

⁹⁰ Steve Bogira, *Trying to Make Separate Equal*, CHI. READER (June 13, 2013), <http://www.chicagoreader.com/chicago/segregated-schools-desegregation-city-suburbs-history-solutions/Content?oid=9992386> (arguing that numerous Chicago schools are still racially segregated).

reasons. First, the recommendation addresses a related, but often ignored, issue: inadequate CPS facilities.⁹¹ Second, it provides an appropriate remedy for the differential treatment of disadvantaged areas.⁹² Lastly, this recommendation helps to deter future litigation.⁹³

It also must be recognized that certain special interest groups, such as the Chicago Teachers Union, could oppose this recommendation. This opposition may be overcome in several different ways. CPS, for example, could highlight the fact that “students attending schools in poor conditions had test scores eleven percent lower than students attending schools in excellent conditions and six percent lower than students attending schools in fair conditions.”⁹⁴ The district also may explain “that poor facilities contribute to health problems such as asthma attacks and drowsiness”⁹⁵ Lastly, CPS could point out that a number of “studies have found a correlation between the quality of the school facility and the likelihood that teachers will leave a school.”⁹⁶

Finally, if the recommendation is accepted, CPS will need to

⁹¹ Nadine F. Mompremier, Comment, *Battle for the School Grounds: A Look at Inadequate School Facilities and a Call for a Legislative and Judicial Remedy*, 56 HOW. L.J. 505, 507 (2013) (“Research shows that when it comes to supporting public education [in the United States], facilities funding is often ignored.”).

⁹² *Id.* at 528 (“For example, in Alaska, Arizona, New Mexico, and Idaho, [state legislatures] . . . were ordered to change the methods of financing school construction and other capital expenses.”). Accord John Dinan, *School Finance Litigation: The Third Wave Recedes*, in FROM SCHOOLHOUSE TO COURTHOUSE: THE JUDICIARY’S ROLE IN AMERICAN EDUCATION 96, 100 (Joshua M. Dunn & Martin R. West eds., 2009).

⁹³ See Mompremier, *supra* note 91, at 528 (“Recent cases, based primarily on state adequacy challenges have been successful. These successful cases invoked remedies such as requiring state legislatures to establish an equitable way to fund ‘adequate’ school facilities.”); DAVID ARSEN & MARY L. MASON, THE ROLE OF STATE COURTS IN SECURING SCHOOL FACILITY ADEQUACY AND EQUITY 1 (Mich. State Univ. Policy Report, 31st ed. 2010) (discussing Michigan’s susceptibility to litigation due to the State’s present school facilities funding).

⁹⁴ Mompremier, *supra* note 91, at 510 (citing MUSTAPHA A. BELLO & VIVIAN LOFTNESS, ADDRESSING INADEQUATE INVESTMENT IN SCHOOL FACILITY MAINTENANCE 4 (Carnegie Mellon Univ., 2010)). Accord DOMESTIC POLICY COUNCIL ET AL., EDUCATION & THE AMERICAN JOBS ACT: CREATING JOBS THROUGH INVESTMENTS IN OUR NATION’S SCHOOLS 3 (2011).

⁹⁵ Mompremier, *supra* note 91, at 510. Accord MUSTAPHA A. BELLO & VIVIAN LOFTNESS, ADDRESSING INADEQUATE INVESTMENT IN SCHOOL FACILITY MAINTENANCE 2 (2010).

⁹⁶ Mompremier, *supra* note 91, at 510. Accord BELLO & LOFTNESS, *supra* note 95, at 5.

create an implementation plan. The plan may take several forms. For example, CPS could revamp its *Modern Schools Across Chicago* program.⁹⁷ The district also may issue new BOE regulations, or call for legislative action, so as to codify the recommendation.⁹⁸ Lastly, CPS could negotiate Community Benefits Agreements.⁹⁹

V. CONCLUSION

This article concludes that schools close, disproportionately, in disadvantaged parts of Chicago. The conclusion remains true whether disadvantage is defined in terms of race, income, or location. This conclusion is based, initially, on the fact that ZIP codes with majority-black populations had disproportionately high percentages of these school actions (the difference was 0.81

⁹⁷ See, e.g., *Modern Schools Across Chicago (MSAC)*, AM. INST. OF ARCHITECTS, http://www.aiachicago.org/special_features/2011dea/awards.asp?appId=51 (last visited Mar. 16, 2014) (“The Modern Schools Across Chicago (MSAC) initiative, announced in late 2006, pursues an aggressive capital program to bring new school facilities and major renovation projects online through an innovative funding strategy. With no state capital funding available for over a decade, Chicago Public Schools and the City of Chicago partnered to develop a capital program funded by both CPS General Obligation bonds and Tax Increment Financing bonds. Through this initiative, the Public Building Commission (PBC) was given the authority to spend approximately \$1 billion for the planning, design and construction of 19 projects. Fourteen projects are already complete, and five projects are currently under development. To date, twelve new schools—two high schools and 10 elementary schools—and one renovation have been opened by the PBC in neighborhoods throughout the City of Chicago.”).

⁹⁸ Specifically, CPS could take the same approach as it did when the district codified the Space Utilization Standards. Cf. CHI. PUB. SCHOOLS, CHICAGO PUBLIC SCHOOLS SPACE UTILIZATION STANDARDS 1 (2011).

⁹⁹ See Patricia E. Salkin & Amy Lavine, *Understanding Community Benefits Agreements: Equitable Development, Social Justice and Other Considerations for Developers, Municipalities and Community Organizations*, 26 UCLA J. ENVTL. L. & POL’Y 291, 292 (2008) (“The [Community Benefits Agreements] movement was born in the late 1990s as a mechanism for community groups to organize and work collaboratively to communicate and negotiate directly with developers. CBAs allow community groups to address a multitude of community impacts and opportunities that the host municipality may not have legal authority and/or the political will to discuss otherwise. Usually framed as private agreements (with or without municipal involvement), CBAs may require a developer to mitigate potential impacts of the development. But, often they go even farther, asking the developer to work with the community to improve housing, employment options, and recreational and cultural facilities. As a result, CBAs can empower communities to become active participants in the planning process.”).

for the mean, whereas it was 0.77 for the median).¹⁰⁰ It, later, is supported by a finding that ZIP codes with per-capita incomes of \$19,944 or less experienced more CPS closings (the difference was 0.64 for the mean, whereas it was 0.77 for the median).¹⁰¹ Lastly, the conclusion is substantiated by a third finding: ZIP codes on the Southside had disproportionately-high percentages of CPS closings (the difference was 0.06 for the mean, whereas it was 0.77 for the median).¹⁰² As a result, these findings help to explain where schools close in Chicago.

¹⁰⁰ See *infra* Table 5.

¹⁰¹ See *infra* Table 7.

¹⁰² See *infra* Table 9.

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VI. APPENDIX

TABLE 1: CHICAGO PUBLIC SCHOOL (CPS) CLOSINGS, 2005 TO 2012

ZIP CODE ¹⁰³	2005-2012 CLOSED SCHOOLS, CHICAGO PUBLIC SCHOOLS ¹⁰⁴	WARD ¹⁰⁵ (NEIGHBORHOOD) ¹⁰⁶
60608	De La Cruz Middle School (2007-2008) Gladstone Elementary School (2007-2008) Medill Elementary School (2008-2009)	2, 11, 12, 25, 28 (Bridgeport, Douglas Park, Lawndale, Little Village, McKinley Park, Medical District, Pilsen, South Loop, University Village/Little Italy)
60609	John Farren Elementary School (2005-2006) William T. Sherman Elementary School (2005-2006) Robert Fulton Elementary School (2007-2008) Abbott Elementary School (2008-2009) Princeton Elementary School (2008-2009) Helen McCorkie Elementary	3, 11, 12, 16, 20 (Back of the Yards, Bridgeport, Bronzeville, Fuller Park, Gage Park, McKinley Park, Washington Park)

¹⁰³ ZIP codes have a relatively brief, but very interesting, history. See *ZIP Code*, U.S. POSTAL SERVICE, http://about.usps.com/publications/pub100/pub100_029.htm (last visited Mar. 16, 2014).

¹⁰⁴ See *The History of School Closings in Chicago 2002-12*, *supra* note 44 (displaying an Excel spreadsheet that can be downloaded from the bottom of the webpage to show all school closings in Chicago from 2001–2012); CHI. PUB. SCH., *supra* note 61 (listing all open public schools in an index for the 2011–2012 year).

¹⁰⁵ See Letter from the City of Chicago to author (Aug. 27, 2013) (on file with author) (providing a table listing the ZIP codes contained in each of Chicago's Wards) [hereinafter City of Chicago].

¹⁰⁶ See *Chicago Zip Codes and Neighborhoods*, DREAMTOWN, <http://www.dreamtown.com/maps/chicago-zipcode-map.html> (last visited Mar. 16, 2014) (matching all Chicago neighborhoods with ZIP codes beneath the ZIP code map).

	School (2009-2010) Tilden Career Community Academy High School (2011-2012)	
60610	Schiller Elementary School (2008-2009)	27, 42, 43 (Cabrini Green, Fulton River District, Gold Coast, Goose Island, Industrial Corridor, Lincoln Park, Near North, Old Town, River West)
60612	Ulysses S. Grant Community Academy (2004-2005) Morton Career Academy (2007-2008) Bethune Elementary School (2008-2009) Foundations Elementary School (2008-2009) Nia Elementary School (2008-2009) Best Practice High School (2011-2012) Crane Technical Preparatory High School (2011-2012)	1, 2, 24, 25, 26, 27, 28, 32 (East Garfield Park, Lawndale, Medical District, Tri-Taylor, Ukrainian Village, United Center Park)
60613	John V. LeMoyne Elementary School (2006-2007)	44, 46, 47 (Buena Park, Graceland Cemetery, Graceland West, Lakeview, Lakeview East, North Center, Ravenswood, Wrigleyville)
60615	Jean Baptiste Point DuSable High School (2005-2006) Dyett High School (2011-2012)	3, 4, 5, 20 (Bronzeville, Hyde Park, Kenwood, Washington Park)

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60617	James H. Bowen High School (2005-2006) South Chicago Elementary School (2008-2009) Davis Developmental School (2008-2009) Bartholome De Las Casas Occupational High School (2009-2010) Bowen Environmental Studies High School (2010-2011) Chicago Discovery High School (2010-2011) Global Visions High School (2010-2011) Chicago Vocational Career Academy High School (2011-2012)	7, 8, 10 (Calumet Heights, East Chicago, Jeffery Manor, Pill Hill, South Chicago, South Deering, Stony Island Park)
60618	George Schneider Elementary School (2009-2010) Avondale Elementary School (2010-2011)	1, 30, 31, 32, 33, 35, 39, 47 (Avondale, Industrial Corridor, Irving Park, Logan Square, North Center, Roscoe Village, Saint Ben's, West Lakeview)
60619	Charles S. Deneen Elementary School (2009-2010)	5, 6, 8, 9 (Avalon Park, Burnside, Calumet Heights, Chatham, Grand Crossing, Marynook, Park Manor, West Chesterfield)
60620	John Harvard Elementary School (2006-2007)	6, 17, 18, 21 (Beverly, Beverly View, Brainerd, Auburn Gresham, Princeton Park, West Chatham)

60621	Englewood Academy High School (2004-2005) Reed Elementary School (2008-2009) Guggenheim Elementary School (2011-2012) Amos Alonzo Stagg Elementary (2011-2012)	3, 6, 16, 17, 20 (Englewood, Park Manor)
60622	Anderson Elementary School (2007-2008) Midway Academy (2007-2008) Carpenter Elementary School (2008-2009)	1, 26, 27, 32 (Bucktown, East Village, Fulton River District, Goose Island, Humboldt Park, Industrial Corridor, Noble Square, River West, Ukrainian Village, United Center Park, Wicker Park)
60623	Howland School of the Arts (2004-2005) George W. Collins High School (2005-2006) Johnson Elementary School (2008-2009) Lathrop Elementary School (2008-2009) Herzi Elementary School (2011-2012)	12, 22, 24 (Lawndale, Little Village)
60624	Edward Franklin Frazier Elementary School (2005-2006) Samuel F.B. Morse Tech Elementary School (2005-2006) George Westinghouse Career Academy High School (2006-2007) Applied Arts, Science & Technology Academy (2007-2008) EXCEL Academy	24, 27, 28 (East Garfield Park, Fifth City, Homan Square, Lawndale, West Garfield Park)

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	(2007-2008) Moses Vines Preparatory Academy (2007-2008) John Marshall High School (2009-2010) Richard Wright Elementary School (2011-2012)	
60628	Fenger High School (2008-2009) George W. Curtis Elementary School (2009-2010) Wendell Smith Elementary School (2011-2012)	6, 8, 9, 10, 21, 34 (Cottage Grove Heights, Longwood Manor, Pullman, Roseland, Rosemoor, West Pullman)
60629	Marquette Elementary School (2011-2012)	13, 14, 15, 16, 17, 18, 23 (Chicago Lawn, Ford City, Gage Park, Marquette Park, West Elsdon, Westlawn)
60636	Ralph J. Bunche Elementary School (2004-2005) Robert Lindblom College Prep High School (2005-2006) Nicholas Copernicus Elementary School (2007-2008) Sir Miles Davis Academy (2007-2008) Vernon Johns Middle Academy (2007-2008) William Rainey Harper High School (2007-2008)	15, 16, 17, 18 (Englewood, West Englewood)

60637	Dulles Elementary School (2008-2009)	3, 5, 6, 20 (Grand Crossing, Hyde Park, Park Manor, Washington Park, Woodlawn)
60640	Joan F. Arai Middle School (2005-2006)	40, 46, 47, 48 (Andersonville, Bowmanville, Buena Park, Edgewater, Lakewood Balmoral, Margate Park, Ravenswood, Sheridan Park, Uptown)
60641	Irving Park Middle School (2007-2008)	30, 31, 38, 39, 45 (Belmont Gardens, Cragin, Kelvyn Park, Kilbourn Park, Old Irving Park, Portage Park)
60644	Julia Ward Howe Elementary School (2007-2008)	24, 28, 29, 37 (Lawndale, South Austin)
60649	South Shore Community Academy (2006-2007) Myra Bradwell Elementary School (2009-2010) The High School of Entrepreneurship at South Shore (2010-2011) The High School of Leadership at South Shore (2010-2011) The High School of Technology at South Shore (2010-2011) The High School of the Arts at South Shore (2010-2011)	5, 7, 8 (Jackson Park Highlands, South Shore, Woodlawn)

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60651	Pablo Casals Elementary School (2011-2012) Piccolo Elementary Specialty School (2011-2012)	26, 27, 29, 30, 37 (Humboldt Park, North Austin, South Austin, West Humboldt Park)
60653	Wendell Phillips High School (2009-2010) Fuller Elementary School (2011-2012) Woodson South Elementary School (2011-2012) Price Elementary School (2011-2012)	2, 3, 4 (Bronzeville, North Kenwood, Oakland)
60827	Carver Middle School (2005-2006)	9 (Altgeld Gardens)

TABLE 2: CHICAGO PUBLIC SCHOOL (CPS) CLOSINGS, 2013

ZIP CODE ¹⁰⁷	2013 CLOSED SCHOOLS, CHICAGO PUBLIC SCHOOLS ¹⁰⁸	WARD ¹⁰⁹ (NEIGHBORHOOD) ¹¹⁰
60609	Francis Parkman Elementary School Crispus Attucks Elementary School	3, 11, 12, 16, 20 (Back of the Yards, Bridgeport, Bronzeville, Fuller Park, Gage Park, McKinley Park, Washington Park)
60612	Mary McLeod Bethune Elementary School John Calhoun North Elementary School William H. King Elementary School Victor Herbert Elementary School	1, 2, 24, 25, 26, 27, 28, 32 (East Garfield Park, Lawndale, Medical District, Tri-Taylor, Ukrainian Village, United Center Park)
60615	Miriam G. Canter Middle School Anthony Overton Elementary School	3, 4, 5, 20 (Bronzeville, Hyde Park, Kenwood, Washington Park)
60616	Pershing West Middle School Williams Multiplex Elementary School Williams Preparatory Academy Middle School	2, 3, 4, 11, 25 (Bridgeport, Bronzeville, Chinatown, Douglas, Near South Side, Pilsen, Prairie District, South Loop, The Gap)

¹⁰⁷ See *The History of School Closings in Chicago 2002-12*, *supra* note 44 (displaying an Excel spreadsheet that can be downloaded from the bottom of the webpage to show all school closings, and their respective ZIP codes, in Chicago from 2001–2012).

¹⁰⁸ *Full List of CPS*, *supra* note 61.

¹⁰⁹ City of Chicago, *supra* note 105.

¹¹⁰ *Chicago Zip Codes and Neighborhoods*, *supra* note 106.

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60617	Kate S. Buckingham Special Education Center Robert H. Lawrence Elementary School	7, 8, 10 (Calumet Heights, East Chicago, Jeffery Manor, Pill Hill, South Chicago, South Deering, Stony Island Park)
60620	Garrett A. Morgan Elementary School	6, 17, 18, 21 (Beverly, Beverly View, Brainerd, Auburn Gresham, Princeton Park, West Chatham)
60621	Elihu Yale Elementary School Benjamin Banneker Elementary School	3, 6, 16, 17, 20 (Englewood, Park Manor)
60622	Ana Roque de Duprey Elementary School Jean D. Lafayette Elementary School Elizabeth Peabody Elementary School Alexander von Humboldt Elementary School	1, 26, 27, 32 (Bucktown, East Village, Fulton River District, Goose Island, Humboldt Park, Industrial Corridor, Noble Square, River West, Ukrainian Village, United Center Park, Wicker Park)
60623	Matthew A. Henson Elementary School Ignance Paderewski Elementary Learning Academy Nathaniel Pope Elementary School Roswell B. Mason Elementary School*	12, 22, 24 (Lawndale, Little Village)
60624	Nathan R. Goldblatt Elementary School Guglielmo Marconi Elementary School Edward C. Delano Elementary School Garfield Park Preparatory Academy ES	24, 27, 28 (East Garfield Park, Fifth City, Homan Square, Lawndale, West Garfield Park)

	Horatio May Elementary Community Academy Martin A. Ryerson Elementary School	
60628	Alfred David Kohn Elementary School Jesse Owens Elementary Community Academy Songhai Elementary Learning Institute West Pullman Elementary School	6, 8, 9, 10, 21, 34 (Cottage Grove Heights, Longwood Manor, Pullman, Roseland, Rosemoor, West Pullman)
60636	Arna Wendell Bontemps Elementary School Granville T. Woods Math & Science Academy ES John P. Altgeld Elementary School Elaine O. Goodlow Elementary Magnet School	15, 16, 17, 18 (Englewood, West Englewood)
60637	Betsy Ross Elementary School Dumas Technology Academy Enrico Fermi Elementary School Austin O. Sexton Elementary School	3, 5, 6, 20 (Grand Crossing, Hyde Park, Park Manor, Washington Park, Woodlawn)
60640	Graeme Stewart Elementary School Lyman Trumbull Elementary School Joseph Stockton Elementary School	40, 46, 47, 48 (Andersonville, Bowmanville, Buena Park, Edgewater, Lakewood Balmoral, Margate Park, Ravenswood, Sheridan Park, Uptown)
60642	Near North Elementary School	1, 26, 27, 32 (Ukrainian Village, West Loop, Wicker Park)

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60644	Louis Armstrong Math & Science Elementary School Robert Emmet Elementary School Francis Scott Key Elementary School	24, 28, 29, 37 (Lawndale, South Austin)
60653	William J. & Charles H. Mayo Elementary School	2, 3, 4 (Bronzeville, North Kenwood, Oakland)

TABLE 3: CHICAGO PUBLIC SCHOOL (CPS) CLOSINGS, 2005 TO 2013, BY SHARE AND PERCENTAGE

ZIP CODE ¹¹¹	2005-2012 CLOSINGS ¹¹²	2013 CLOSINGS ¹¹³	2005-2013 CLOSINGS	SHARE (N/130)	% (x100)
60608	3	0	3	0.0231	2.31
60609	7	2	9	0.0692	6.92
60610	1	0	1	0.0077	0.77
60612	7	4	11	0.0846	8.46
60613	1	0	1	0.0077	0.77
60615	2	2	4	0.0308	3.08
60616	0	3	3	0.0231	2.31
60617	8	2	10	0.0769	7.69
60618	2	0	2	0.0154	1.54
60619	1	0	1	0.0077	0.77
60620	1	1	2	0.0154	1.54
60621	4	2	6	0.0462	4.62
60622	3	4	7	0.0538	5.38

¹¹¹ See *The History of School Closings in Chicago 2002-12*, *supra* note 44 (displaying an Excel spreadsheet that can be downloaded from the bottom of the webpage to show all school closings, and their respective ZIP codes, in Chicago from 2001–2012).

¹¹² See *id.* (displaying an Excel spreadsheet that can be downloaded from the bottom of the webpage to show all school closings in Chicago from 2001–2012, and listed after each school name is the school's address).

¹¹³ See *supra* Table 2; *Full List of CPS Closings*, *supra* note 61 (providing a full list of Chicago public school closures in 2013).

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60623	5	4	9	0.0692	6.92
60624	8	6	14	0.1077	10.77
60628	3	4	7	0.0538	5.38
60629	1	0	1	0.0077	0.77
60636	6	4	10	0.0769	7.69
60637	1	4	5	0.0385	3.85
60640	1	3	4	0.0308	3.08
60641	1	0	1	0.0077	0.77
60642	0	1	1	0.0077	0.77
60644	1	3	4	0.0308	3.08
60649	6	0	6	0.0462	4.62
60651	2	0	2	0.0154	1.54
60653	4	1	5	0.0385	3.85
60827	1	0	1	0.0077	0.77
TOTAL (N=27)	80	50	130	1	100
POP. AVG.	Mean: 2.96 Median: 2	Mean: 1.85 Median: 2	Mean: 4.81 Median: 4	Mean: 0.0370 Median: 0.0308	Mean: 3.70 Median: 3.08

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TABLE 4: CHICAGO PUBLIC SCHOOL (CPS) CLOSINGS, 2005 TO 2013, ALL TWENTY-SEVEN ZIP CODES

ZIP CODE ¹¹⁴	% CLOSINGS ¹¹⁵	% BLACK ¹¹⁶	PER-CAPITA INCOME ¹¹⁷	GEOGRAPHIC AREA ¹¹⁸
60608	2.31	15.6	16,440	SOUTHSIDE
60609	6.92	28.5	14,726	SOUTHSIDE
60610	0.77	16.7	68,136	NORTHSIDE
60612	8.46	62.4	21,873	NORTHSIDE
60613	0.77	06.5	52,611	NORTHSIDE
60615	3.08	60.9	33,537	SOUTHSIDE
60616	2.31	25.4	28,271	SOUTHSIDE
60617	7.69	53.9	18,696	SOUTHSIDE
60617	7.69	53.9	18,696	SOUTHSIDE
60618	1.54	02.2	31,554	NORTHSIDE
60619	0.77	97.1	19,944	SOUTHSIDE
60620	1.54	97.5	16,006	SOUTHSIDE

¹¹⁴ See *The History of School Closings in Chicago 2002-12*, *supra* note 44 (displaying an Excel spreadsheet that can be downloaded from the bottom of the webpage to show all school closings, and their respective ZIP codes, in Chicago from 2001–2012).

¹¹⁵ See *id.*; *Full List of CPS Closings*, *supra* note 61 (providing a full list of Chicago public school closures in 2013).

¹¹⁶ *American Fact Finder*, U.S. CENSUS BUREAU, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml###> (last visited Mar. 16, 2014) (providing a search bar where a ZIP code may be entered, which leads to tables containing various types of information, including the percentage of the population broken down by race). It also should be noted that the ZIP codes in this study include different numbers of people. Future research should account for this potential issue through the use of weighting. By doing so, this future research may become even more relevant.

¹¹⁷ *American Fact Finder: Selected Economic Characteristics*, U.S. CENSUS BUREAU, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml###> (last visited Mar. 16, 2014) (providing a search bar where a ZIP code may be entered, which leads to tables containing various types of information, including income. Per-capita income may be accessed by selecting “Selected Economic Characteristics,” and scrolling down to the subject, “Per capita income (dollars)” contained in the table.).

¹¹⁸ This article defines *the Southside* as any ZIP code that is located, in its entirety, south of Madison Street. *The Northside*, at least for the purposes of this article, includes any other ZIP code in the sample population. See, e.g., PENNY BENDER SEBRING ET AL., *TEENS, DIGITAL MEDIA, AND THE CHICAGO PUBLIC LIBRARY* 23 (2013).

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60621	4.62	97.1	12,392	SOUTHSIDE
60622	5.38	08.0	42,577	NORTHSIDE
60623	6.92	34.1	11,767	SOUTHSIDE
60624	10.77	95.8	11,198	NORTHSIDE
60628	5.38	93.9	17,505	SOUTHSIDE
60629	0.77	24.5	14,312	SOUTHSIDE
60636	7.69	94.2	11,570	SOUTHSIDE
60637	3.85	77.4	20,544	SOUTHSIDE
60640	3.08	18.1	35,428	NORTHSIDE
60641	0.77	02.4	22,975	NORTHSIDE
60642	0.77	13.0	44,630	SOUTHSIDE
60644	3.08	94.0	13,921	NORTHSIDE
60649	4.62	93.8	20,566	SOUTHSIDE
60651	1.54	64.2	14,249	NORTHSIDE
60653	3.85	92.3	23,179	SOUTHSIDE
60827	0.77	90.4	16,809	SOUTHSIDE
TOTAL (N=27)	100	1459.9	655,416	N/A
POP. AVG.	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A

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TABLE 5: CHICAGO PUBLIC SCHOOL (CPS) CLOSINGS, 2005 TO 2013, BY BLACK POPULATION PERCENTAGE OF 53.9 OR MORE

ZIP CODE ¹¹⁹	% CLOSINGS	% BLACK ¹²⁰	PER-CAPITA INCOME ¹²¹	GEOGRAPHIC AREA ¹²²
60612	8.46	62.4	21,873	NORTHSIDE
60615	3.08	60.9	33,537	SOUTHSIDE
60617	7.69	53.9	18,696	SOUTHSIDE
60619	0.77	97.1	19,944	SOUTHSIDE
60620	1.54	97.5	16,006	SOUTHSIDE
60621	4.62	97.1	12,392	SOUTHSIDE
60624	10.77	95.8	11,198	NORTHSIDE
60628	5.38	93.9	17,505	SOUTHSIDE
60636	7.69	94.2	11,570	SOUTHSIDE
60637	3.85	77.4	20,544	SOUTHSIDE
60644	3.08	94.0	13,921	NORTHSIDE
60649	4.62	93.8	20,566	SOUTHSIDE
60651	1.54	64.2	14,249	NORTHSIDE
60653	3.85	92.3	23,179	SOUTHSIDE
60827	0.77	90.4	16,809	SOUTHSIDE
TOTAL (N=15)	67.71	1264.9	271,989	N/A
SUBSET AVERAGE	Mean: 4.51 Median: 3.85	Mean: 84.33 Median: 93.8	Mean: 18,133 Median: 17,505	Mean: N/A Median: N/A

¹¹⁹ *Chicago Communities*, CHICAGO REALESTATE LOCAL.COM, <http://www.chicagorealestatelocal.com/chicago-neighborhoods.htm> (last visited Feb. 22, 2014); *Chicago Zip Codes and Neighborhoods*, *supra* note 106.

¹²⁰ *American Fact Finder: ACS Demographic and Housing Estimates*, U.S. CENSUS BUREAU, <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml###> (last visited Mar. 16, 2014) (providing a search bar where a ZIP code may be entered, which leads to tables containing various types of information, including demographic and housing information, which may be accessed by selecting “ACS Demographic and Housing Estimates”).

¹²¹ *American Fact Finder: Selected Economic Characteristics*, *supra* note 117.

¹²² PENNY BENDER SEBRING ET AL., *supra* note 118.

POP. AVERAGE	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A
DIFF. IN AVERAGES	Mean: 0.81 Median: 0.77	Mean: 30.26 Median: 32.9	Mean: (- 6,142) Median: (- 2,439)	Mean: N/A Median: N/A
DISPROPO RTIONATE LY-HIGH DIFF.	Mean: Yes Median: Yes	Mean: Yes Median: Yes	Mean: No Median: No	Mean: N/A Median: N/A

TABLE 6: CHICAGO PUBLIC SCHOOLS (CPS) CLOSINGS, 2005 TO 2013, BY BLACK POPULATION PERCENTAGE OF 34.1 OR LESS

ZIP CODE ¹²³	% CLOSINGS	% BLACK ¹²⁴	PER- CAPITA INCOME ¹²⁵	GEOGRAPHIC AREA ¹²⁶
60608	2.31	15.6	16,440	SOUTHSIDE
60609	6.92	28.5	14,726	SOUTHSIDE
60610	0.77	16.7	68,136	NORTHSIDE
60613	0.77	06.5	52,611	NORTHSIDE
60616	2.31	25.4	28,271	SOUTHSIDE
60618	1.54	02.2	31,554	NORTHSIDE
60622	5.38	08.0	42,577	NORTHSIDE
60623	6.92	34.1	11,767	SOUTHSIDE
60629	0.77	24.5	14,312	SOUTHSIDE
60640	3.08	18.1	35,428	NORTHSIDE

¹²³ *Chicago Communities*, *supra* note 119; *Chicago Zip Codes and Neighborhoods*, *supra* note 106.

¹²⁴ *American Fact Finder: ACS Demographic and Housing Estimates*, *supra* note 120.

¹²⁵ *American Fact Finder: Selected Economic Characteristics*, *supra* note 117.

¹²⁶ PENNY BENDER SEBRING ET AL., *supra* note 118.

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60641	0.77	02.4	22,975	NORTHSIDE
60642	0.77	13.0	44,630	SOUTHSIDE
TOTAL (N=12)	32.31	195	383,427	N/A
SUBSET AVERAGE	Mean: 2.69 Median: 1.93	Mean: 16.25 Median: 16.15	Mean: 31,952 Median: 29,913	Mean: N/A Median: N/A
POPULATION AVERAGE	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A
DIFFERENCE IN AVERAGES	Mean: (-1.01) Median: (-1.15)	Mean: (-37.82) Median: (-44.75)	Mean: 7,677 Median: 9,969	Mean: N/A Median: N/A
DISPROPORTIONATELY-HIGH DIFFERENCE	Mean: No Median: No	Mean: No Median: No	Mean: Yes Median: Yes	Mean: N/A Median: N/A

TABLE 7: CHICAGO PUBLIC SCHOOLS (CPS) CLOSINGS, 2005 TO 2013, BY PER-CAPITA INCOMES OF \$19,944 OR LESS

ZIP CODE ¹²⁷	% CLOSINGS	% BLACK ¹²⁸	PER-CAPITA INCOME ¹²⁹	GEOGRAPHIC AREA ¹³⁰
60608	2.31	15.6	16,440	SOUTHSIDE
60609	6.92	28.5	14,726	SOUTHSIDE
60617	7.69	53.9	18,696	SOUTHSIDE
60619	0.77	97.1	19,944	SOUTHSIDE
60620	1.54	97.5	16,006	SOUTHSIDE

¹²⁷ *Chicago Communities, supra* note 119; *Chicago Zip Codes and Neighborhoods, supra* note 106.

¹²⁸ *American Fact Finder: ACS Demographic and Housing Estimates, supra* note 120.

¹²⁹ *American Fact Finder: Selected Economic Characteristics, supra* note 117.

¹³⁰ PENNY BENDER SEBRING ET AL., *supra* note 118.

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60621	4.62	97.1	12,392	SOUTHSIDE
60623	6.92	34.1	11,767	SOUTHSIDE
60624	10.77	95.8	11,198	NORTHSIDE
60628	5.38	93.9	17,505	SOUTHSIDE
60629	0.77	24.5	14,312	SOUTHSIDE
60636	7.69	94.2	11,570	SOUTHSIDE
60644	3.08	94.0	13,921	NORTHSIDE
60651	1.54	64.2	14,249	NORTHSIDE
60827	0.77	90.4	16,809	SOUTHSIDE
TOTAL (N=14)	60.77	980.8	209,535	N/A
SUBSET AVERAGE	Mean: 4.34 Median: 3.85	Mean: 70.06 Median: 92.15	Mean: 14,967 Median: 14,519	Mean: N/A Median: N/A
POP. AVERAGE	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A
DIFF. IN AVERAGES	Mean: 0.64 Median: 0.77	Mean: 15.99 Median: 31.25	Mean: (- 9,308) Median: (- 5,425)	Mean: N/A Median: N/A
DISPROPOR TIONATELY- HIGH DIFF.	Mean: Yes Median: Yes	Mean: Yes Median: Yes	Mean: No Median: No	Mean: N/A Median: N/A

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TABLE 8: CHICAGO PUBLIC SCHOOLS (CPS) CLOSINGS, 2005 TO 2013, BY PER-CAPITA INCOME OF \$20,544 OR MORE

ZIP CODE ¹³¹	% CLOSINGS	% BLACK ¹³²	PER-CAPITA INCOME ¹³³	GEOGRAPHIC AREA ¹³⁴
60610	0.77	16.7	68,136	NORTHSIDE
60612	8.46	62.4	21,873	NORTHSIDE
60613	0.77	06.5	52,611	NORTHSIDE
60615	3.08	60.9	33,537	SOUTHSIDE
60616	2.31	25.4	28,271	SOUTHSIDE
60618	1.54	02.2	31,554	NORTHSIDE
60622	5.38	08.0	42,577	NORTHSIDE
60637	3.85	77.4	20,544	SOUTHSIDE
60640	3.08	18.1	35,428	NORTHSIDE
60641	0.77	02.4	22,975	NORTHSIDE
60642	0.77	13.0	44,630	SOUTHSIDE
60649	4.62	93.8	20,566	SOUTHSIDE
60653	3.85	92.3	23,179	SOUTHSIDE
TOTAL (N=13)	39.25	479.1	445,881	N/A
SUBSET AVERAGE	Mean: 3.02 Median: 3.08	Mean: 36.85 Median: 18.1	Mean: 34,299 Median: 31,554	Mean: N/A Median: N/A
POP. AVERAGE	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A
DIFF. IN	Mean: (-0.68)	Mean: (-17.22)	Mean: 10,024	Mean: N/A Median: N/A

¹³¹ *Chicago Communities, supra* note 119; *Chicago Zip Codes and Neighborhoods, supra* note 106.

¹³² *American Fact Finder: ACS Demographic and Housing Estimates, supra* note 120.

¹³³ *American Fact Finder: Selected Economic Characteristics, supra* note 117.

¹³⁴ PENNY BENDER SEBRING ET AL., *supra* note 118.

AVERAGES	Median: 0	Median: (-42.8)	Median: 11,610	
DISPROPORTIONATELY-HIGH DIFF.	Mean: No Median: No	Mean: No Median: No	Mean: Yes Median: Yes	Mean: N/A Median: N/A

TABLE 9: CHICAGO PUBLIC SCHOOLS (CPS) CLOSINGS, 2005 TO 2013, BY SOUTHSIDE LOCATION

ZIP CODE ¹³⁵	% CLOSINGS	% BLACK ¹³⁶	PER-CAPITA INCOME ¹³⁷	GEOGRAPHIC AREA ¹³⁸
60608	2.31	15.6	16,440	SOUTHSIDE
60609	6.92	28.5	14,726	SOUTHSIDE
60615	3.08	60.9	33,537	SOUTHSIDE
60616	2.31	25.4	28,271	SOUTHSIDE
60617	7.69	53.9	18,696	SOUTHSIDE
60619	0.77	97.1	19,944	SOUTHSIDE
60620	1.54	97.5	16,006	SOUTHSIDE
60621	4.62	97.1	12,392	SOUTHSIDE
60623	6.92	34.1	11,767	SOUTHSIDE
60628	5.38	93.9	17,505	SOUTHSIDE
60629	0.77	24.5	14,312	SOUTHSIDE
60636	7.69	94.2	11,570	SOUTHSIDE
60637	3.85	77.4	20,544	SOUTHSIDE
60642	0.77	13.0	44,630	SOUTHSIDE
60649	4.62	93.8	20,566	SOUTHSIDE
60653	3.85	92.3	23,179	SOUTHSIDE
60827	0.77	90.4	16,809	SOUTHSIDE
TOTAL	63.86	1089.6	340,894	SOUTHSIDE

¹³⁵ *Chicago Communities*, supra note 119; *Chicago Zip Codes and Neighborhoods*, supra note 106.

¹³⁶ *American Fact Finder: ACS Demographic and Housing Estimates*, supra note 120.

¹³⁷ *American Fact Finder: Selected Economic Characteristics*, supra note 117.

¹³⁸ PENNY BENDER SEBRING ET AL., supra note 118.

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(N=17)				
SUBSET AVERAGE	Mean: 3.76 Median: 3.85	Mean: 64.09 Median: 77.4	Mean: 20,053 Median: 17,505	Mean: N/A Median: N/A
POP. AVERAGE	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A
DIFF. IN AVERAGES	Mean: 0.06 Median: 0.77	Mean: 10.02 Median: 16.5	Mean: (- 4,222) Median: (- 2,439)	Mean: N/A Median: N/A
DISPROPOR TIONATELY- HIGH DIFF.	Mean: Yes Median: Yes	Mean: Yes Median: Yes	Mean: No Median: No	Mean: N/A Median: N/A

TABLE 10: CHICAGO PUBLIC SCHOOLS (CPS) CLOSINGS, 2005 TO 2013, BY NORTHSIDE LOCATION

ZIP CODE ¹³⁹	% CLOSINGS	% BLACK ¹⁴⁰	PER- CAPITA INCOME ¹⁴¹	GEOGRAPHIC AREA ¹⁴²
60610	0.77	16.7	68,136	NORTHSIDE
60612	8.46	62.4	21,873	NORTHSIDE
60613	0.77	06.5	52,611	NORTHSIDE
60618	1.54	02.2	31,554	NORTHSIDE
60622	5.38	08.0	42,577	NORTHSIDE
60624	10.77	95.8	11,198	NORTHSIDE
60640	3.08	18.1	35,428	NORTHSIDE

¹³⁹ *Chicago Communities, supra* note 119; *Chicago Zip Codes and Neighborhoods, supra* note 106.

¹⁴⁰ *American Fact Finder: ACS Demographic and Housing Estimates, supra* note 120.

¹⁴¹ *American Fact Finder: Selected Economic Characteristics, supra* note 117.

¹⁴² PENNY BENDER SEBRING ET AL., *supra* note 118.

60641	0.77	02.4	22,975	NORTHSIDE
60644	3.08	94.0	13,921	NORTHSIDE
60651	1.54	64.2	14,249	NORTHSIDE
TOTAL (N=10)	36.16	370.3	314,522	NORTHSIDE
SUBSET AVERAGE	Mean: 3.62 Median: 2.31	Mean: 37.03 Median: 17.4	Mean: 31,452 Median: 27,265	Mean: N/A Median: N/A
POP. AVERAGE	Mean: 3.70 Median: 3.08	Mean: 54.07 Median: 60.9	Mean: 24,275 Median: 19,944	Mean: N/A Median: N/A
DIFF. IN AVERAGES	Mean: (- 0.08) Median: (- 0.77)	Mean: (- 17.04) Median: (-43.5)	Mean: 7,177 Median: 7,321	Mean: N/A Median: N/A
DISPROPOR TIONATELY- HIGH DIFF.	Mean: No Median: No	Mean: No Median: No	Mean: Yes Median: Yes	Mean: N/A Median: N/A