

# How Non-Income Factors Distort the CPS Tier System

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## Abstract

*In designing its socioeconomic diversity policy, CPS decided to use a 6 factor model – income and 5 other factors -- to measure the socioeconomic status of each student. This paper explores the effects of these non-income factors on the Tier system.*

*We sorted all of Chicago's census tracts by median household income only, from lowest to highest – and then put the lowest 25% of school age children in Tier 1, the next 25% of school age children in Tier 2 and so on. We then compared each census tract's actual Tier with what it would have been using income only. Fully 30% of all school age children in Chicago or approximately 128,000 were moved to a different Tier when factors other than income were removed. In many cases these non-income factors create arbitrary distortions that punish Chicago's middle class by moving lower income residents to higher Tiers that require much better academic performance to gain admissions to a competitive Selective Enrollment school.*

*We also found that 84% of Tier 3 and Tier 4 school age children are lower middle class (e.g., with a median household income of less than \$75,000). While policy makers assume that upper Tier students are wealthy, these income levels are hardly enough for most Tier 3 and 4 residents to view private school as a realistic alternative should they have academically talented children that do not secure a spot at a Selective Enrollment school.*



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## Introduction

In 2010 CPS implemented a policy of socioeconomic diversity in its admissions decisions to all of its test-in schools (e.g., classical and gifted elementary schools, Academic Centers, and Selective Enrollment High Schools). Proponents of socioeconomic diversity claim that the educational outcomes of low income students (as measured by eligibility for free or reduced lunch), improve when they attend a school with a predominantly middle class student population (e.g., a maximum of 50% low income) – without damaging the achievement of more advantaged students.

**Fully 30% of all school age children in Chicago or approximately 128,000 were moved to a different Tier when factors other than income were removed.**

In designing its socioeconomic diversity policy, CPS decided to use a 6 factor model to measure the socioeconomic status of each student. This model incorporates census data on median household income – as well as 5 non-income factors -- parental educational attainment, percent of owner occupied housing, percent of single parent households, percent of non-English speakers, and the neighborhood school's ISAT performance.

All 6 factors were assigned weights and each of the City of Chicago's approximately 800 census tracts was assigned a socioeconomic score depending on the favorability of these factors. Unfavorable characteristics including lower median household income, a higher percent of single parent households, a lower percent of owner occupied homes, lower adult educational attainment, a higher percent of non-English speakers, and lower ISAT scores would lower the socioeconomic score. Twenty-five percent of school age children living in the census tracts with the lowest socioeconomic scores were grouped into Tier 1, the next 25% into Tier 2, and so on – with Tier 4 students deemed to live in neighborhoods with the most favorable socioeconomic characteristics.

CPS currently admits 30% of students to any test-in school based on their academic qualifications regardless of where they live. This portion was reduced from the 40% used in the first year of this new system's implementation -- and from the recommendation of their socioeconomic diversity consultant that 50% be admitted solely on academic qualifications. The remaining 70% of students are now admitted by socioeconomic Tier, with each of the four socioeconomically based Tiers receiving 17.5% of the spots.

There are large gaps between the scores of students admitted by Tier to the most competitive schools – with higher Tier students needing significantly higher scores (e.g., better academic performance), to gain admission. For example, in the most recent admissions cycle, Tier 4 students needed to score more than 50 points higher than Tier 1 students on the 900 point admissions scale to get into five of the nine Selective Enrollment High Schools.



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## Our Methodology and Findings

To see the effects of non-income factors on the Tier groupings, we sorted all of Chicago's census tracts by median household income only, from lowest to highest – and then put the lowest 25% of school age children in Tier 1, the next 25% of school age children in Tier 2 and so on. In an “income only” model, all census tracts with median household incomes below \$36,000 would be placed in Tier 1; all between \$36,000 and \$47,000 in Tier 2 and so on as shown in the table below.

Figure 1. Income Only Model

| Tier   | Median Household Income of Tract |
|--------|----------------------------------|
| Tier 1 | Less than \$36,000               |
| Tier 2 | \$36,000-\$47,000                |
| Tier 3 | \$47,000-\$60,000                |
| Tier 4 | \$60,000+                        |

We then compared each census tract's actual Tier with what it would have been using income only. The results were surprising to say the least. *Fully 30% of all school age children in Chicago (approximately 128,000 students) were moved to a different Tier when factors other than income were removed.*

Under CPS' system, many families with relatively low incomes were moved one Tier higher, and some were even moved two Tiers higher, simply because they had “positive” non-income factors. Other families had relatively high incomes, but were moved one Tier lower, and some were even moved two Tiers lower, because they exhibited “negative” non-income factors. This is not just an academic exercise. The higher the Tier, the lower the chances of obtaining a spot in a top Selective Enrollment school.

### The “Losers”

(e.g., census tracts in a higher Tier than is justified by income)

#### From Tier 1 to Tier 2/Tier 3

We found 23,579 school age children from 51 census tracts who would be in Tier 1 if income was the only consideration, but are in Tiers 2 or 3. Assuming that income was the only factor, the highest median household income that a Tier 1 census tract would have would be \$36,000. We found 46 tracts in Tier 2 with median incomes lower than \$36,000 and 5 tracts in Tier 3 with median incomes lower than \$36,000. These “losing” tracts were mostly found in Chinatown, Chatham and Brighton Park.

*Higher % of owner occupied homes (38% vs. 26%) & lower % of non-English speakers (25% vs. 34%).* These 51 census tracts had an average of 38% owner occupied homes with 25% of the population speaking a language other than English. This compares to an average of 26% owner occupied homes and 34% of the population speaking a language other than English in Tier 1 as a whole.



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### **From Tier 2 to Tier 3/Tier 4**

We found 22,940 school age children from 41 census tracts who would be in Tier 2 if income was the only consideration, but were in Tier 3 or 4. The highest income for Tier 2 would be about \$47,000 if only income was used to assign tracts to Tiers. But we found 38 tracts in Tier 3 with incomes between \$36,000 and \$47,000, and even 3 tracts in Tier 4 with similar incomes. Many of these “losing” tracts are in Rogers Park, Galewood, Portage Park, and Chatham.

*Higher % owner occupied homes (51% vs. 38%).* On average the percent of owner occupied homes for these 41 census tracts was 51% in comparison to an average of 38% for Tier 2 census tracts as a whole.

### **From Tier 3 to Tier 4**

We found 21,753 school children from 35 census tracts would be in Tier 3 if only income was considered but were in Tier 4. The highest income for Tier 3 would be about \$60,000 if only income was used. We found 35 tracts in Tier 4 with incomes lower than \$60,000. Many of these “losing” tracts are near Midway Airport, and on the Northwest side between Belmont and Irving Park, Chatham, Mt. Greenwood, Portage Park and Rogers Park.

*Lower % single parent households (27% vs. 44%) & higher % owner occupied homes (62% vs. 50%).* On average the 35 census tracts in this group had 27% single parent households and 62% owner occupied homes – which compares to a Tier 3 average of 44% of single parent households and 50% owner occupied homes.

## **The “Winners” (e.g., census tracts in a lower Tier than is justified by income)**

### **From Tier 2 to Tier 1**

We found 20,789 school age children from 32 census tracts who would be in Tier 2 if income was the only consideration, but are in Tier 1. The highest Tier 1 income, when only income is used as a ranking factor would be \$36,000. Yet we found 32 census tracts currently grouped in Tier 1 by CPS with a higher median household income, one that would have placed them in Tier 2 if only income was used. We even found two Tier 1 tracts that would have been placed in Tier 3! Many of these “winning” tracts are found in Humboldt Park and Little Village.

*Higher % of non-English speaking (65% vs. 34%).* These 32 census tracts have an average % non-English speaking of 65% which compares to an average of 34% for Tier 2 as a whole.

### **From Tier 3 to Tier 1/Tier 2**

We found 20,550 school age children from 30 census tracts would be in Tier 3 if only income was considered but were in Tier 1 or 2. The highest Tier 2 income would be about \$47,000 if income was the only factor. But we found 28 census tracts placed in Tier 2 by CPS where the median income is higher than \$47,000 and should have been placed in Tier 3. We even found 6 Tier 2 census tracts where the median income was above \$60,000 and would have been placed in Tier 4 in an income only scenario. These “winning” tracts are located mostly in Humboldt Park, Logan Square, and Woodlawn.



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**School age children living in areas with a modest median income and high percent of owner occupied homes (e.g., the bungalow belt) are being penalized by the use of % owner occupied homes in the current model.**

*Higher % of single parent households (53% vs. 37%).* The average % of single parent households for these 30 census tracts was 53% in comparison to 37% for Tier 3 census tracts, thus putting them in a lower Tier.

### **From Tier 4 to Tier 2/Tier 3**

We found 18,705 students from 45 census tracts who would be in Tier 4 if only income was considered but were in Tier 2 or 3. The highest Tier 3 income would be \$60,000 under an income only scenario. We found 45 current Tier 3 census tracts that had median incomes over \$60,000 including 3 that had median incomes above \$100,000. *In fact, these 45 census tracts had an average median household income of about \$72,000 – way above the Tier 3 median household income average of \$55,000!* Many of these “winning” tracts are in North Kenwood, Bronzeville, Oakland, Avondale, and South Shore.

*Higher % of single parent households (46% vs. 23%) and lower % of owner occupied homes (44% vs. 57%).* The average % of single parent households for these 45 census tracts was 46% in comparison to 23% for Tier 4 and the % of owner occupied homes was 44% vs. 57% for Tier 4.

## **Problems with CPS’ Tier Model**

**Problem 1: Double Counting.** The incorporation of non-income factors causes distortions. For example, research<sup>1</sup> has shown that some of these factors such as percent of single parent households and median household income are very closely related – so they’re not independent variables in a statistical sense. The incorporation of dependent variables into any mathematical model introduces distortion including double counting. For example, low income households which are also single parent households are given an additional “downgrade” (e.g., being moved to a lower Tier than is justified) – even though having a low income is caused in part by being a single parent household.

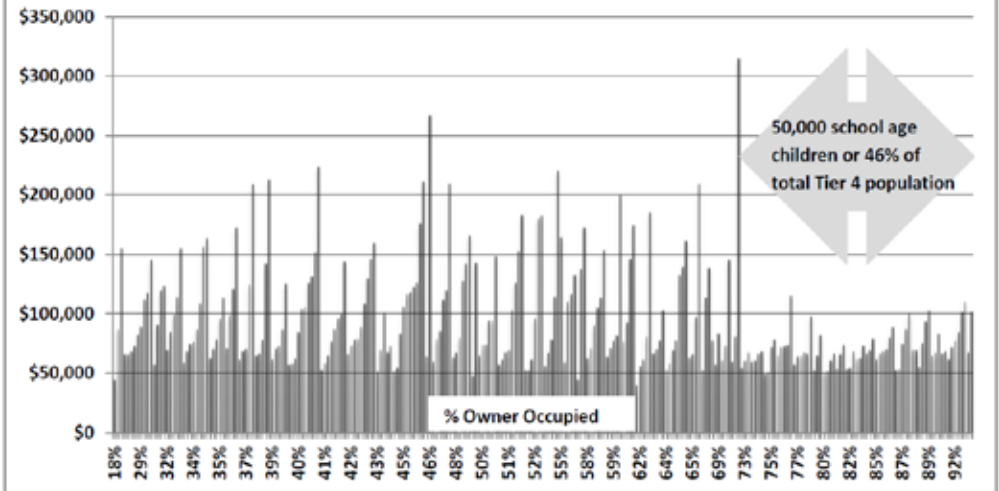
**Problem 2: Arbitrary Weighting of Factors.** It’s unclear how to weigh the importance of non-income variables. What is the relative weight that should be assigned to median household income vs. percent of owner occupied homes vs. percent of non-English speaking residents, etc. in determining socioeconomic advantage or disadvantage? Are the weights in the current model valid? No one knows.

**Problem 3: Use of Inappropriate Factors.** We discovered that the median household income of Tier 4 school age children living in the census tracts with the highest percent of owner occupied homes (e.g., 72% owner occupied and above) was modest – averaging \$71,000. About 50,000 school age children from Tier 4 – or 46% of all the children in this Tier are in this category. On the other hand the wealthier school age children from Tier 4 live in areas with a lower percent of owner occupied homes. Does the presence of these rental units produce a socioeconomic disadvantage? With a lack of clear evidence demonstrating this, school age children living in areas with a modest median income and high percent of owner occupied homes (e.g., the bungalow belt) are being penalized by the use of % owner occupied homes in the current model.



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Figure 2. Tier 4 Median Household Income vs. % Owner Occupied



### CPS' Tier Model: A Leap of Faith?

CPS' multifactor model is unusual. In fact, "socioeconomic diversity" is a relatively new concept – and the vast majority – among the very few school districts even using such a plan – are only using income. In addition, CPS' socioeconomic consultant is a first time developer of a multifactor socioeconomic diversity model<sup>2</sup>. Thus the Tier system currently used by CPS to select 70% of all students for its coveted test-in programs (including Selective Enrollment schools), in the 3rd largest school system in the country is untested – and as we have found -- fundamentally unsound.

**84% of Tier 3 and Tier 4 school age children are lower middle class**



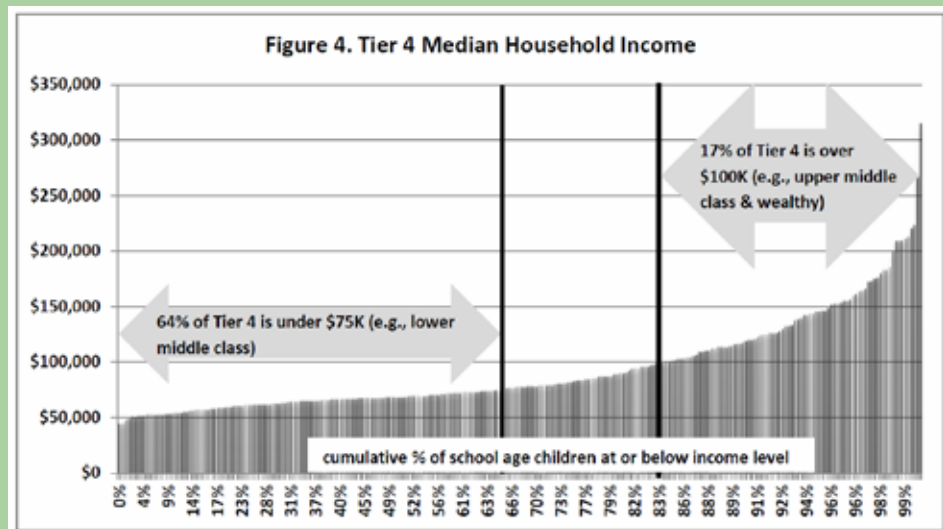
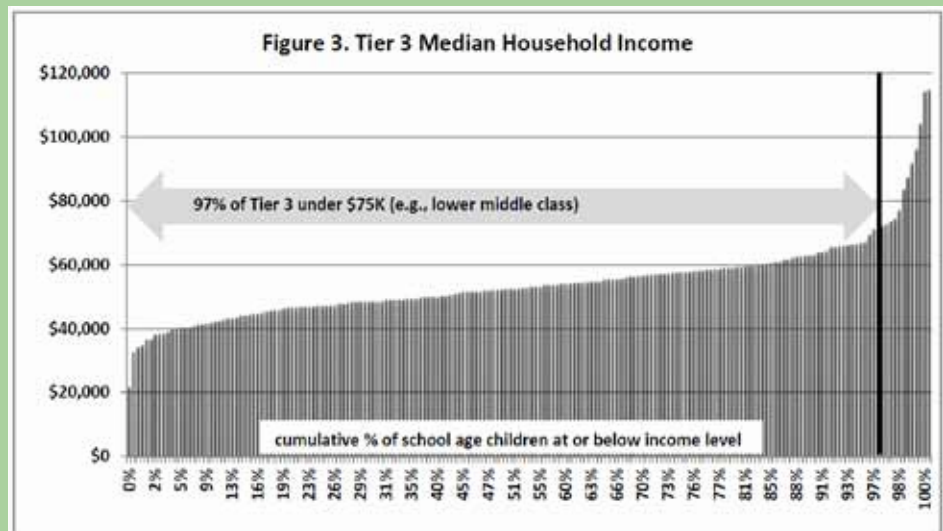


## 84% of Tier 3 AND Tier 4 school age children are LOWER middle class

Sociologists<sup>3</sup> have defined household incomes of between \$35,000 to \$75,000 as lower middle class and ones with \$100,000 or more as upper middle class.

**Using this definition, about two thirds – 64% of Tier 4 school age students – are lower middle class – with a median income below \$75,000; only 17% are upper middle class – with a median household income above \$100,000. About 97% of Tier 3 students are lower middle class with a median household income of less than \$75,000, with most less than \$60,000. Thus a combined 84% of Tier 3 and Tier 4 school age children are lower middle class.**

Although many policy makers mistakenly believe that Tier 4 families are “wealthy”, these income levels are hardly enough for the vast majority of Tier 4 (and Tier 3) residents to view private school as a realistic alternative should their children not secure a spot at a Selective Enrollment High School.



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## Conclusion

CPS' use of non-income factors makes a huge difference in how school age children are grouped into a Tier. If income only was used, 30% of all school age children in Chicago – approximately 128,000 in total – would be in a different Tier.

The research supporting the use of non-income factors in a socioeconomic diversity model is thin. Little is known about which factors if any beyond income should be included and how these factors should be weighed. Most troubling is the inclusion by CPS of factors like % of owner occupied homes which penalize modest income Chicago area households that have decided to invest in the City of Chicago – without evidence that the presence of rental units provides any academic or socioeconomic disadvantage. Other factors, such as the % of single parent households along with median household income is clearly double counting since a single parent household will almost always have a lower median household income than a household with two parents.

The data shows that the use of non-income factors has created serious distortions that have picked arbitrary winners and losers. It is difficult to understand why a lower middle class family living near Midway Airport (or in Portage Park or Chatham) has had their chances to attend a competitive Selective Enrollment High School whittled down, simply because they own their own home with two parents living in it.

Moreover, this socioeconomic diversity experiment is being conducted at the expense of a mainly lower middle class population of Chicago residents. Students in Tiers 3 and 4 must score significantly higher than those in lower Tiers to be accepted to a competitive Selective Enrollment school. However, approximately 97% of Tier 3 and 64% of Tier 4 school age children – or 84% of school age children in Tier 3 and 4 -- are lower middle class with a median household income of less than \$75,000.

These residents have limited resources and cannot afford a private school – should they decide to remain in Chicago -- after finding that the Tier system penalizes their academically talented children.

Clearly, the current Tier system is deeply flawed and these flaws have serious implications for the City of Chicago as a whole. In 2011, 86% of CPS students were low income (eligible for free or reduced lunch) while only 14% were middle class<sup>4</sup>. Is the Tier system helping Chicago maintain and grow its small sliver of middle class students? Or is it encouraging middle class parents with talented children to pack up and leave?

<sup>1</sup>Casion, 1982, Lindblad-Goldberg, 1989, Amato & Keith, 1991. According to research “When income is considered, substantially fewer differences arise between the intellectual development, academic achievement, and behavior of children in single-parent and two-parent families. Lack of income has been identified as the single most important factor in accounting for the differences in children from the various family forms”.

<sup>2</sup> *Kahlenberg Court Testimony*, United States of American (plaintiff) vs. The Board of Education of the City of Chicago (defendant), docket 80C 5124, January 28, 2009, p. 862.

<sup>3</sup> *Society in Focus: An Introduction to Sociology*, William E. Thompson and Joseph Hickey, Pearson Education, 2012. Thompson and Hickey defines lower middle class (32% of households) as having an income of between \$35,000 and \$75,000. These individuals are “semi-professionals” with some college education. Upper middle class households (15% of households) are highly educated professionals and managers with household incomes of over \$100,000.

<sup>4</sup>*Illinois Interactive Report Card*, Northern Illinois University, with support from the Illinois State Board of Education, updated Sunday, July 29, 2012.

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