Curbing Suburban Sprawl: Adding the Education Variable to the Housing + Transportation Model

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The European Conference on Sustainability, Energy & the Environment 2016
Official Conference Proceedings

Abstract
In urban planning, there is considerable discourse about how to curb suburban sprawl, increase densities in the urban core and reduce the need to develop greenfields while accommodating population growth in metropolitan areas. One economic model that helps quantify the cost of suburban living versus urban living within US metropolitan areas is the "H + T Affordability Index" as developed by CNT. While this is a good tool for understanding the two variables, if the goal is to actually change housing decisions, other important variables that weigh heavily in this very personal choice must be considered. In many United States metropolitan areas, one such variable is whether the middle income and upper income population relies on private or public education within a specific neighborhood. When looking at urban neighborhood income statistics versus the income statistics of the neighborhood school, there is often a disparity (i.e., considerably higher poverty in the school versus the neighborhood as a whole) which is an indication that the upper income and middle income residents are choosing to pay for private education and have opted out of the neighborhood school. While the origins of these patterns may differ, studies indicate that there is a tipping point of poverty within schools above which all students suffer academically. Using Dallas Texas, USA and its first, second, and third ring suburbs as my study area, I demonstrate the impact of the education variable on the H + T + E model. This additional level of analysis can be useful to urban planners as they attempt to make urban living more conducive to all demographic groups while simultaneously improving the sustainability of the existing suburban footprint.

Keywords: urban planning, real estate development, suburban sprawl, education

Introduction

In the field of sustainable urban planning, we are often looking for ways to curb suburban sprawl, increase densities in the urban core and reduce the need to develop greenfields while accommodating population growth in metropolitan areas.

However, urban planners, real estate developers, and city planners who are focused on sustainability sometimes ignore important variables that are pulling our cities outward. There is a tendency to focus on idealistic goals as though they will naturally occur and the assumption that most people must share the vision of the livable dense core. Urban development is envisioned as a kind of high-quality, utopian society that is transit oriented, with cultural and ethnic diversity, interspersed income and wealth all of which are living in harmony. When children are part of the vision at all, they are tightly controlled and participating in high-quality educational programs, enhanced by ready access to cultural amenities including the arts, entertainment and sports. Jobs and shopping are accessed by walking, transit, or bicycle. Relatively few people have need or desire for a personal automobile.

Yet, as we transition from mid-20th century development to the urban utopia of the future, we experience an urban reality that is quite different: outdated and deteriorated utility systems and poor transit coverage, with no financial ability to maintain the first or expand that later. Private automobiles are prized possessions and remain necessary for daily life; the added density creates congestion and pollution. The population is often self-segregated by economic factors, zoning or both, with the wealthy abandoning the impoverished public school districts while the middle class families flee to the suburbs. Racial and ethnic tensions can be high, particularly when they are correlated to income disparity. Antiquated zoning and resident resistance to change prevents implementation of redevelopment solutions.

Understanding the complexity of the consumer decision-making process for individual households and corporations is necessary before a wide-spread cultural shift toward urban density can occur.

Housing and Transportation Costs

One important factor cited as a reason for suburban expansion is the affordability of housing. The incremental cost of workplace transportation much be factored into the cost of living of the suburban landscape. The disparity in transportation costs is often most notable in dense urban settings with good public transit that still serve as a centralized business district for professional jobs versus outlying areas that are not transit served. CNT, a USA based consultancy, has taken the first step toward quantifying these costs and have developed an online tool that can be used for corporate relocation purposes when looking at the need to house a significant workforce. However, the actual practical use of the index routinely includes a first step of identifying which school districts the employment base will find acceptable and once the shortlist of cities is identified, the relative affordability of the housing plus transportation can be applied to determine locations that fit the demographic mix and compensation structure of the company.

I have looked a means of incorporating the Education variable to the index in such a way that will incorporate this first step into the model while giving greater guidance to cities and school districts as they attempt to stay viable in attracting high-quality jobs.

H + T Affordability Index as developed by CNT

The purpose of the H + T Affordability Index is stated below:

> "By taking into account the cost of housing as well as the cost of transportation, H+T provides a more comprehensive understanding of the affordability of place. Dividing these costs by the representative income illustrates the cost burden of housing and transportation expenses placed on a typical household. While housing alone is traditionally deemed affordable when consuming no more than 30% of income, the H+T Index incorporates transportation costs—usually a household's second-largest expense—to show that location-efficient places can be more livable and affordable."
> http://htaindex.cnt.org/map/

What the index tells us is useful. It is true that where commuters have viable options of public transportation, eliminating the cost of a personal automobile can remove a significant expense from household budgets. As suggested by their model, these two factors should be considered as a whole. However, in metropolitan areas that were largely developed after the widespread use of personal automobiles, public transportation was not effectively built into their urban plans, therefore, rather than encouraging people to move into the urban core, the data results promote establishing business nodes far into the suburban landscape because there is no effective urban core where transit works without supplement by a personal automobile.

Complexity of Housing Decisions

While the H + T Affordability Index is a good tool for understanding the two variables, if the goal is to actually change housing decisions, other important variables that weigh heavily in this very personal choice must be considered.

Some of those variables include:

- Proximity to Employment
- Rent versus Own
- House and Lot Pricing/Value
- Transportation Options
- Friends and Family
- Neighborhood Safety
- Quality, Age, and Condition of the Built Environment
- Proximity to Shopping Centers
- Public School Quality

Some of these factors can be said to fall into the price of housing or the cost of transportation. In addition, if all school districts were equal, that factor would be included in the taxation structure. But all public school districts are not equal and families must choose their best option.

Three School Options

For most USA families, the choice of education is between 1) urban tax-funded schools, 2) private tuition schools, and 3) suburban tax-funded schools. Let us consider characteristics of each.

USA Urban Tax-Funded Schools

- High population density (1)
- Large district (1)
- Inexperienced Teaching Staff (1)
- District-wide economic disparity (1)
- Higher racial, ethnic, and religious diversity (1)
- Factionalized infighting on school boards (1)
- Poor urban students experience more health problems (1)
- Higher student, teacher, and administrative mobility (1)
- Higher immigrant population (1)
- Higher linguistic diversity (1)
- Transportation problems (1)
- Teachers are less likely to live within the neighborhood (1)

(1) Kincheloe 2010

USA Private Tuition Schools

- Families pay for tuition and extracurricular activities and supplies
- Strong PTA organizations
- Strong Performance
- High Parental Involvement
- Good Community Involvement
- Limited Scholarships
- Minimal Ethnic and Cultural Diversity
- Highly Like-Minded Communities Based on School Selection
- Many Include Religious Instruction

USA Suburban Tax-Funded Schools

- Tax-Funded/Families pay only for extracurricular activities and supplies
- Strong PTA organizations
- Strong Performance
- High Parental Involvement
- Good Community Involvement
- Some Ethnic and Cultural Diversity
- Like-Minded Communities
- Generally considered acceptable across multiple demographic segments

The Tipping Point

"… there is evidence that such (middle-class) students learn less when they attend high-poverty schools – those where more than 50 percent of the students are poor." (2) "The Coleman Report found the tipping point to be 40 percent poor. That's the guideline used by some school districts when they seek to keep their schools economically balanced." (2)

(2) Michael J. Petrilli, The Diverse Schools Dilemma: A Parent's Guide to Socioeconomically Mixed Public Schools, 2012

The references cited above, and specifically the Coleman Report findings, are still used today when school districts attempt to balance schools from an economic perspective. Whether the number is 40% or 50%, evidence exists to suggest that above a threshold, schools are dealing with socioeconomic issues related to poverty so much of the time that all of the students scores suffer, including those of middle-class students.

Metropolitan Dallas Example

Using Dallas, Texas, USA and the first, second and third ring suburbs in a northeasterly direction as the study area, I demonstrate the impact of the education variable on the H + T + E model. The chart below shows the percent of economically disadvantaged students attending high school campuses in the Dallas ISD (Urban), Garland ISD, Richardson ISD, Plano ISD, Wylie ISD, Frisco ISD, and Allen ISD.

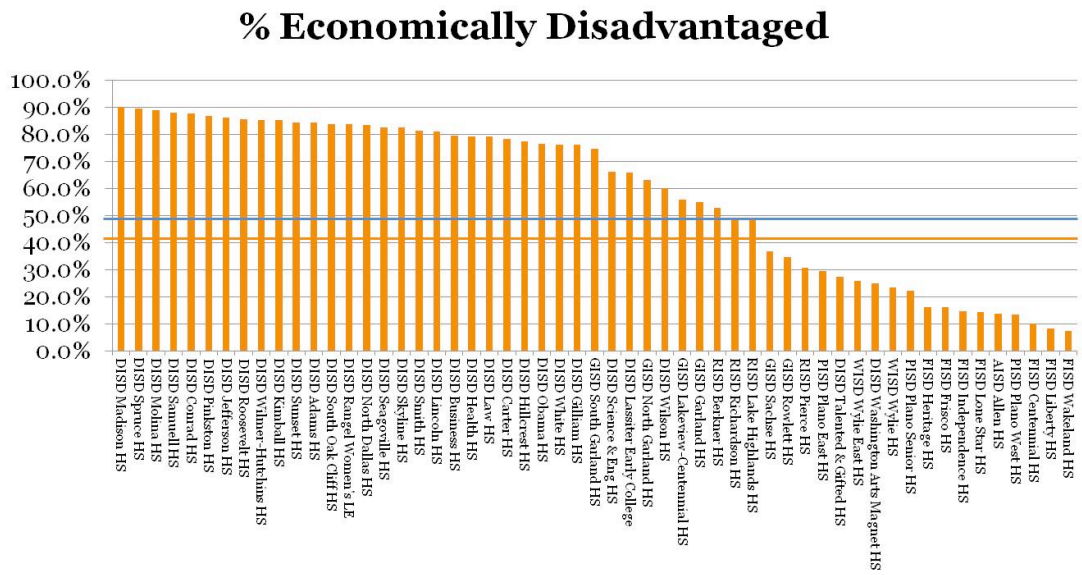
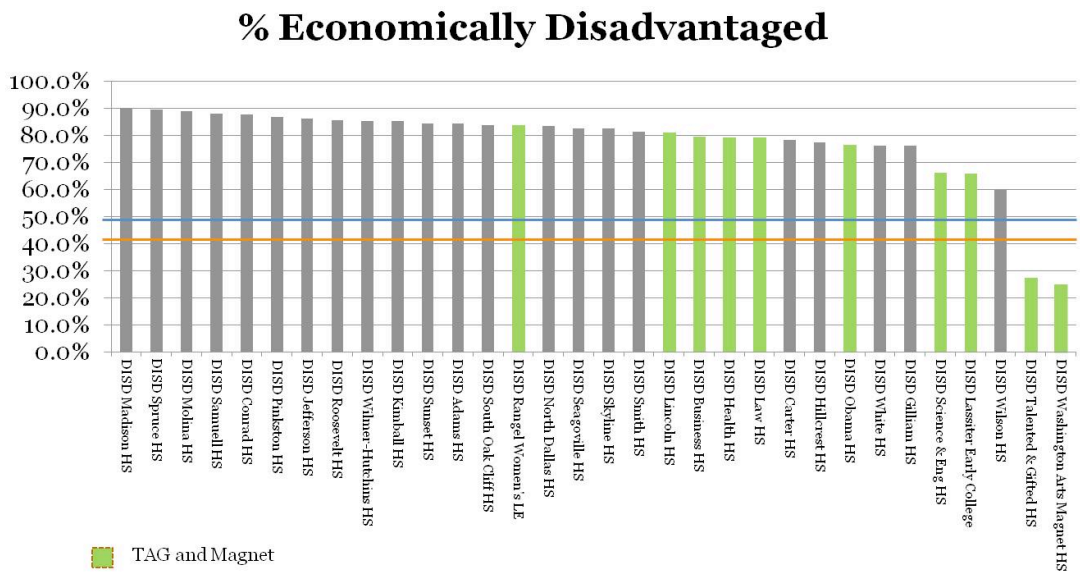


Figure 1: Economically Disadvantaged Students [3]

[3] https://rptsvr1.tea.texas.gov/perfreport/src/2015/campus.srch.html

The horizontal lines indicate the 40% to 50% markers as indicated by Coleman and Petrilli. Many of the schools are well above the Tipping Point and several are operating well below the threshold.

The next chart demonstrates this same data for the Dallas ISD alone.

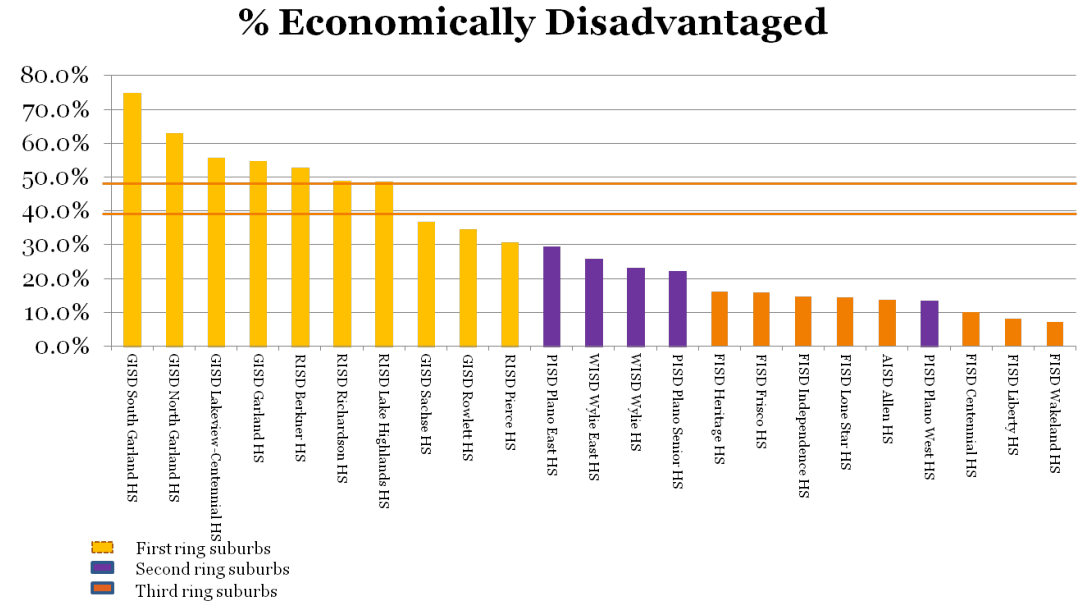


Economically Disadvantaged Students – Dallas ISD only [3]

(3)https://rptsvr1.tea.texas.gov/perfreport/src/2015/campus.srch.html

The data shows only two schools, the talented and gifted and arts magnet schools, operating within an acceptable range of impoverished students. The remainder of the district includes high schools with 60% to 90% economically disadvantaged students which marks campuses for which those who can do so have and will continue to avoid.

The next chart shows the same data for the suburban districts.



Economically Disadvantaged Students – Suburban ISDs [3]

(3)https://rptsvr1.tea.texas.gov/perfreport/src/2015/campus.srch.html

What is telling about the suburban chart is that, without intervention, the suburban districts are susceptible to the same fate as the urban district, forcing the school choice further and further from the center.

Application to the Index

Adding the variable to the index, for broad use for corporate relocation and urban planning purposes, we can take the following steps:

- Determine the Average Cost of Private Education Within the Region.
- Determine Whether the % Economically Disadvantaged is Above 40% Threshold For the Neighborhood School or District if District Wide School Choice is Offered.
- If Above 40%, add Average Private Tuition for typical household for average number of children.

  H + T + E
- If Below 40%, the cost of tax-funded schools is already included in the cost of real estate, so do not make an adjustment.

  H + T = H + T + E

Index Application Example: Dallas and Suburban ISDs [4]

- Average Texas Private-Tuition School Cost: $8,278
- Total Number of Children Aged 5 – 17: 666,823
- Total Households: 1,165,595
- Children Per Household: 0.572

(4)www.census.gov/quickfacts/table/PST045214/48085,48113

Average Annual Cost Per Household

	Housing	Transportation	H + T	Education	H + T + E
Dallas	$15,120	$11,267	$26,387	$4,735	$31,122
Garland	$15,060	$12,380	$27,440	$4,735	$32,175
Richardson	$18,336	$12,026	$30,362	$4,735	$35,097
Plano	$20,676	$12,543	$33,219		$33,219
Wylie	$18,984	$13,775	$32,759		$32,759
Allen	$22,620	$13,659	$36,279		$36,279
Frisco	$24,372	$13,469	$37,841		$37,841

(5) http://htaindex.cnt.org/ (6) Education variable not from index.

In the example above, the Dallas ISD as well as the first ring suburban districts, having surpassed the threshold, require an adjustment, whereas, the second and third ring suburban areas do not require the private school adjustment. Adding the index adjustment negates any savings in household expense by choosing urban and first ring districts.

This methodology works from the perspective of corporations and municipalities looking at household averages, where not every household has school-aged children. However, individual housing decisions are not made based fractions of children. When a full tuition for each child is applied to the model, the more school-aged children a family has, the more economic incentive they have to choose an outlying school district.

	H + T	Education Cost Per Child	H + T + E	With 2 Children	H + T + E	With 3 Children	H + T + E
Dallas	$26,387	$8,278	$34,665	$16,556	$42,943	$24,834	$51,221
Garland	$27,440	$8,278	$35,718	$16,556	$43,996	$24,834	$52,274
Richardson	$30,362	$8,278	$38,640	$16,556	$46,918	$24,834	$55,196
Plano	$33,219		$33,219		$33,219		$33,219
Wylie	$32,759		$32,759		$32,759		$32,759
Allen	$36,279		$36,279		$36,279		$36,279
Frisco	$37,841		$37,841		$37,841		$37,841

In this example, one can easily see that the cost of educating becomes almost as large a cost as housing and transportation combined if a family has three or more children. In these cases, opting for a suburban household may be the only viable choice.

Conclusions and Opportunities

In looking at this data, one might conclude that the case for suburban sprawl is well-supported by the addition of the education variable. The purpose of bringing this to light, however, is to more closely model consumer behavior so that as policy-makers, urban planners, and real estate developers, we can understand and seek to reverse the pattern in ways that will incentivize individuals to choose the urban setting for their families. Education options play a major role in consumer choice for families with children.

This additional level of analysis can be useful to urban planners as they attempt to make urban living more conducive to all demographic groups while simultaneously improving the sustainability of the existing suburban footprint.

Some opportunities include:

H + T Index as a Sustainability Tool
- Add the Education Variable to make the model more closely resemble actual decision-making

School District Resiliency
- Focus on economic balance by campus.
- Parent training and support beginning at Early Childhood.

City Resiliency
- Use zoning to ensure a diversity of income levels by school.
- Streamline the approval process for urban redevelopment.
- Be a strong partner to the school district.
- Attracting the middle-class back to the urban core must include a focus on income balance within the tax-funded schools.

Sustainable Real Estate Development
- Seek opportunities for gentrification in areas nearing the 40% threshold.

References

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