

Wisconsin Charter Schools Study

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The Political Economy of School Choice

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Abstract

In this paper, we analyze the complex political economy of school choice, primarily as it has developed in Wisconsin, although we believe the models we develop will generalize to other locales. We focus specifically on how these various forms of choice interact and *compete with each other*. Most striking to us was that school choices, particularly charter schools, have expanded beyond the inner city and urban areas to include mid-sized cities and smaller towns. To explain this expansion of choice, we develop a theory derived from spatial economic theory. Spatial theory, which explains firm placement relative to customer and supplier location, is applicable to school districts and schools. The empirical data we analyze, in addition to our rich case study materials, include the growth and expansion in charter schools; and, for Wisconsin, the use of open enrollment by charter-school districts. The results are startling in terms of how well they seem to conform to our abstract spatial-economic theory. An exception is the creation of virtual charter schools that draw on a market defined only by the borders of the state.

The Political Economy of School Choice

I Introduction

Public school choice has moved far beyond the idea that families could only choose public services by moving (Tiebout 1956). Magnet and private “contract” schools in the 1970s, open enrollment in the 1980s, and vouchers and charter schools in the early 1990s all provide a substantial array of choices for parents in some places, in addition to their assigned public school. Home schooling provides an additional alternative for some families.

In this paper, we analyze the complex political economy of school choice, primarily as it has developed in Wisconsin, although we believe the models we develop will generalize to other locales. We focus specifically on how these various forms of choice interact and *compete with each other*. For example, we argue that throughout Wisconsin (and many other states), charter schools give districts competitive leverage to reshape their educational programs and enhance their financial conditions. In doing so they may be in competition with other choice programs (such as vouchers), but use others to their advantage (such as open enrollment).

Most striking to us was that school choices, particularly charter schools, have expanded beyond the inner city and urban areas to include mid-sized cities and smaller towns. This study is part of a larger project that included a number of qualitative case studies in numerous charter-school districts. Our report below and the theoretical explanations we offer were inspired by those case studies and subsequent quantitative analysis. In our discussions with educators in these districts we tried to understand why they would deviate from the traditional public school formats with which they were most

accustomed. Why charter schools? Why offer unique schools in middle-class communities seemingly distant from the pressures of inner-cities?

Wisconsin provides a classic micro-case study of these questions. Milwaukee has several competing choice programs and has multiple chartering authorities, including a set of “non-instrumentality” charter schools that have no union employees. Outside Milwaukee, the competitive environment is driven primarily by open enrollment, which allows students to go to districts other than their home district. Charter schools may be used to attract these students to acquire the considerable state aid that follows the student. Some districts seek to accomplish this either by attracting students from other districts or by marketing to drop-outs, home school, or private school children whose parents would be less likely to consider a traditional public school. In Wisconsin, enrolling just half of the 20 thousand home school students would net \$52.9 million in transfer payments.

To explain this expansion of choice, we develop a theory derived from spatial economic theory. Spatial theory, which explains firm placement relative to customer and supplier location, is applicable to school districts and schools. That is because families experience costs in transporting their children, and school staff also must travel to work. The profit maximization economic theory—not applicable to free public schools—is adapted to both school district decisions and initiatives to create schools.

The empirical data we analyze, in addition to our rich case study materials, include the growth and expansion in charter schools; and, for Wisconsin, the use of open enrollment by charter-school districts. The results are startling in terms of how well they seem to conform to our abstract spatial-economic theory.

Rather than following a traditional paper format by presenting the issues and theory first, we present the paper more in historical sequence as the research developed.

We first provide basic background on charter schools and discuss the research issues and questions in the paper. Second, we briefly outline the development of choice in Wisconsin, focusing on the growth and form of charter schools. We then introduce a spatial theory of firm locations and then modify the theory to apply to schools. That is followed by descriptive evidence of charter school growth along spatial dimensions. Finally, we end with a surprise – that may blow all our estimates and theory, and may also affect the future course of education in America.

II Background on Charter Schools

The Concept of Charter Schools. The use of “charter” in charter schools was a late development in the life of school choice. The original use of the term “charter” in connection with education seems to have been Ray Budde, who, in 1988, wrote *Education by Charter: Restructuring School Districts*. The idea was to give schools the same kind of grant European monarchs had given to early explorers. Another early use included the Philadelphia school restructuring projects in the early 1990s, which was called “chartering.”

Charter schools entered school law in 1991 when Minnesota passed the United States’ first charter school law (see Nathan, 2002, for this history). Ted Kolderie is widely credited with being the first to bring disparate strands of school choice ideas into the workable form now recognized as charter schools (Kolderie 1990). Since that time, 39 other states have adopted charter school laws. In early 2004, nearly 3,000 charter schools were in operation (CER (The Center for Educational Reform) 2004).

In some ways, charter schools are the middle-way response in the twenty-plus year arguments over school choice. While they are not the free-range schools of choice that some voucher proponents have advocated (e.g. Friedman or Chubb and Moe—

charter schools are still moderately to heavily regulated), neither are they the traditional, shop-worn school down the street. Laws vary considerably from state to state, but many similarities exist. In exchange for considerable flexibility in their operation and curriculum, charter schools agree to certain standards of accountability with an authorizing authority. They are public schools in that they are funded by some combination of state and local funding (the actual amount varies widely by state and district) and that charter schools, in most states, must admit any student that a similarly-situated traditional public school would admit. Depending on the state, private schools may convert to public charter schools. While charter schools, to date, may not be religious, some states, including Wisconsin, allow religious schools to become charter if they drop religious instruction. Charter laws usually require charter schools to have teachers that are state-credentialed (Shober, Manna, and Witte 2003).

Charter schools are, however, a response to a number of criticisms leveled at the traditional public education system. First, charter schools pick up elements of the “private school” ethic. Private schools maintain a mystique that, although difficult to quantify or verify empirically, is often mentioned as an advantage such schools have over the traditional system. For example, Coleman and Hoffer (1987) argued that a school’s “mission” was a critical difference in private schools. In our own work, we have noted that many of the (anecdotally) more successful charter schools have a driving sense of mission, tied to the charter school’s curricular or student focus. That sense of mission seems always to be shared by a majority of teachers in the school (see Vanourek, *et al.*, 1998, for similar results in Arizona). Traditional public schools have a much more difficult time cultivating a sense of mission, if only because they are often older

organizations with pre-existing standard operating procedures and norms, and they usually have little control over who they hire and fire.

Further, students (or, by proxy, parents) choose to go to a private school. The act of choosing may indicate that parents are more likely to be involved in their children's education, which creates a different, perhaps more motivated, pool of students. In most states, charter schools may not be selective in admissions based on academics, but many states do allow charter schools to offer special programs that would attract certain students (e.g. at-risk or gifted and talented). In our own work, we have found charter school officials who work hard to create a "selection effect" in their school. These attempts range from creating (legal) application procedures worthy of an elite Eastern prep school to heavy advertising during key periods of the school year when the local district allows parents to choose their school.

Second, charter schools can appeal to under-served segments of the student population with, if not innovative, different curriculum than the traditional school. One criticism of the traditional public school is that the curriculum is for the most part fixed. While this curriculum is probably helpful for most students most of the time, there may be significant share of students and parents who do not believe the standard curriculum is the best option. Charter schools may facilitate school districts bringing in students who would not otherwise be in the public school at all. In our experience, most charter schools' teaching practices look strikingly traditional, but often charter schools' curricula is much different than the district's selected curricula, particularly if the school did not convert from a traditional school.

Third, charter schools may easily try different governance structures. Critics of the traditional public school system have charged that it is resistant to change,

particularly organizational change (Elmore and McLaughlin 1988; Chubb and Terry Moe 1990). Because charter schools are almost always exempt from district organization requirements (an essential feature of charter schools), school governance varies from one charter school to the next. Proponents of charter schools have often emphasized teacher and administrator autonomy (Hassel 1999; Kolderie 1993). Some have suggested charter schools as a way to improve democratic practice in normally structured environments (Johnson and Landman 2000; Smith 2001).

These governance characteristics seem to be true in Wisconsin as well. As part of our study, we conducted a teacher survey of both charter and non-charter public school teachers in districts with charter schools. We received more than 2,350 responses. Although charter school teachers had a variety of reasons they said they taught in charter schools, “autonomy” was by far the most prevalent answer (54 percent of charter teachers mentioned this in our open-ended questions). Charter schools, therefore, often try to reduce hierarchies. For example, one school we visited for this project was organized (and legally registered) as a cooperative, so there was no principal, only a lead teacher. Many employed a democratically-selected school council with broad powers.

Charter Laws in Wisconsin. In most states, charter school laws have become more flexible overtime with regards to opening and operating charter schools. Often, these amendments have increased the number of charters a state may open, increased the exemptions from the state’s school code, and increased fiscal support. Wisconsin’s charter school law follows this pattern. Wisconsin’s charter school program began in 1993, and it has been revised in each legislative session since. At that time ten school districts could establish two charter schools each. In only one school district, Stevens Point, did any charter schools open. In 1995, the law was amended to allow all school

districts to charter schools and allowed unlimited charters. In 1997, the legislature again changed the law to allow the City of Milwaukee, the University of Wisconsin–Milwaukee, and the Milwaukee Area Technical College to authorize charters. In 2001, the legislature permitted the University of Wisconsin–Parkside (near Milwaukee) to authorize charters. In the most recent session, the legislature attempted to expand chartering authority to all University of Wisconsin campuses, but the governor vetoed the bills.

Wisconsin’s law is among the more flexible in the country because it leaves a number of issues unspecified. For example, while law explicitly sets the amount of funding given to charter schools in the Milwaukee area, it implies that all other school districts may set the per-pupil funding in charter contracts.

Although not initially related to charter schools, during this liberalization process, Wisconsin’s legislature enacted an inter-district open-enrollment program in 1998. An open enrollment seems to have had a significant impact on the existence of charter schools in some school districts.

Research Issues and Questions. This paper is part of larger project on charter schools in Wisconsin and the nation. The specialized focus of the Wisconsin project was to study charter schools in two contrasting environments: the “high-choice” environment in the Milwaukee area; and the “low-choice” areas in the rest of the state. This is important because charter schools might have better or worse chances of succeeding in each area, for very different reasons. In the high-choice area, starting charter schools would be looked on not as odd or radical, but rather as simply yet another form of choice. They would also have access to a broad set of choice resources to help provide knowledge, and physical and monetary support. On the other hand, these same schools

may have difficulty attracting students because of the intense competition from other forms of choice. Low-choice areas are exactly the opposite. Because of the lack of choice, charter schools may be misunderstood or overtly resisted because of their unique and “radical” look. They also would lack the support networks in high-choice areas. However, if they begin, they may prosper in their effort to attract students because they are the only non-traditional game in town.

In the larger project, availing ourselves of this natural between-district variance, we consider three broad sets of research issues: charter school initiation; charter school performance; and the general competitive effects produced by various sets of choice options. This paper deals with the first and third of these issues, which are inextricably related.¹

We try to answer a series of questions related to why charter schools are created in the first place. Why do school districts, or other authorizing agents, encourage or allow the development of charter schools? And what motivates the initiators of the schools themselves? This is a two-way interactive process. If authorizers (often school districts), either encourage or at least acquiesce to requests from initiators, charter schools are likely to emerge. On the other hand, if they continually deny charters to potential new schools, or offer no support, in Wisconsin they can block charter creation. Similarly, even if districts actively encourage charter schools, if school-level groups fail to come forward with ideas and energy to suggest new schools, districts will be thwarted.

There are also more general issues, concerning the political economy of choice. The primary research issues involve integrating theories of choice—how various choice

¹ Another paper deals with test-score performance. A second version of that paper will be given in August at a conference in Madison and will be put up on our website. Another paper at this conference (APSA) deals specifically with the question of why and how school districts begin and expand charter schools.

options come together to enhance competition. Specifically, charter schools provide competitive options, and open enrollment laws provide for transfer of students across boundaries and from private schools and home-schooled families. How do these policies come together to promote competition in “markets” that were completely non-existent ten years ago? For us that is a fascinating question.

III Choice and Charter Schools in Wisconsin

Attending a charter schools is the last in a series of educational choice options for parents in Milwaukee and elsewhere in the state. The Milwaukee Public Schools (MPS) district was one of the first school districts in the country to use magnet schools to help desegregate its schools in 1976. There remains an extensive magnet program in which more than half its 140 schools allow some specialization of study. Magnet schools were quickly followed in 1978 by a program to allow city students of color to attend public schools in the suburbs. Vouchers for low-income students attending secular private schools were added in 1990, and expanded to parochial schools in 1995. A statewide charter law was enacted in 1993 and an open-enrollment law in 1998.

Until recently, choice in school districts other than Milwaukee was much less extensive. Charter schools changed that. For most districts in the state, charter schools approved by local school boards are the primary alternative to traditional public or private schools. The expansion and characteristics of charter schools, including their geographic location are all relevant to understanding the political economy of educational choice.

Expansion of Wisconsin Charter Schools. Table 1 highlights the growth in both charter schools and enrollment over the past decade. The number of schools has increased from 1 in 1994 to 134 in 2003–04. Enrollment has increased from an estimated

343 students in 1995-96 (the first year of reliable data) to 20,131 in 2003-04. Of this total, 60 percent are charter school students in Milwaukee.² Of the new schools, the majority (106) were new startup schools and 46 were conversion schools. There have been 16 closings, 13 of which were in startup charter schools. Of the 426 public school districts in the state, 67 have charter schools. There are also a small number of charter schools chartered by regional education service organizations. Most districts have granted one charter, with 20 districts granting two or more charters. (Approximately two percent of all public school students in the state attend charter schools in Wisconsin.) With the continued growth in the number of charter schools, demand for charter schools appears to be increasing.

The Characteristics of Charter Schools. What type of schools become charter schools in Wisconsin? Before addressing theoretically the expansion of charter schools, it is beneficial to understand the makeup of charter schools. To do this, we look at how they are initiated, their size and grade-levels, the curricular foci of the schools, and which students they serve.

² This percentage is skewed by the fact that in Milwaukee there are five middle- and high-school charter schools with enrollments over 800. These account for the majority of charter students in the city. Note also that school attendance figures are approximate because some schools' data are missing.

Table 1. Expansion of Wisconsin Charter Schools, 1993-2004

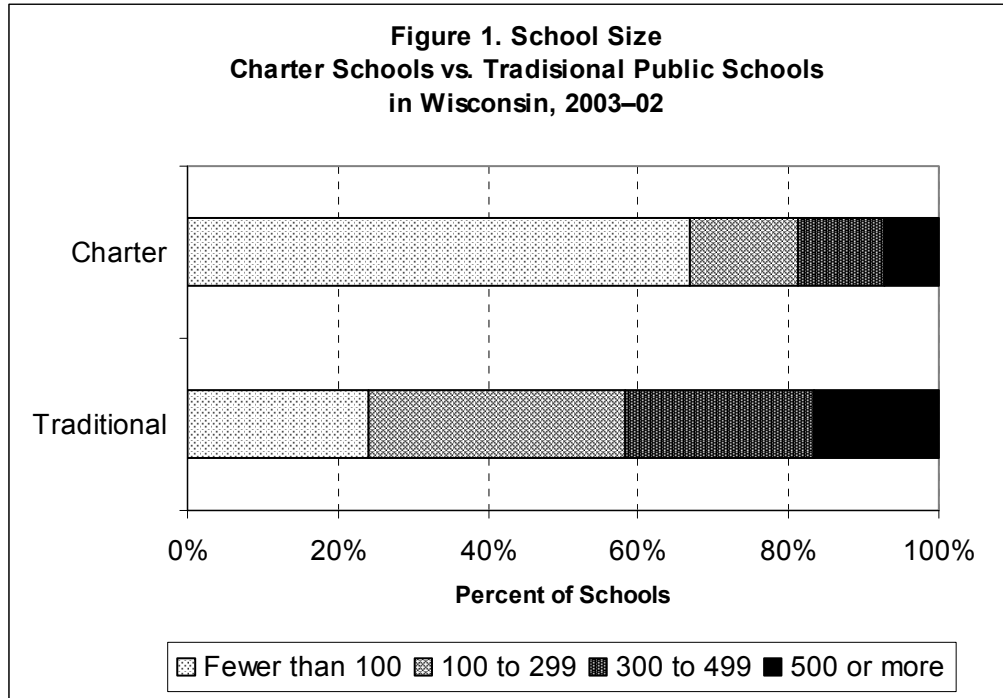
Year	Additions		Closings		Total	
	Startup	Conversions	Startup	Conversions	Schools	Enrollment*
1993-94	0	0	0	0	0	0
1994-95	1	0	0	0	1	0
1995-96	3	4	0	0	8	343
1996-97	2	3	0	0	13	764
1997-98	5	0	0	0	18	1217
1998-99	13	8	1	0	38	1658
1999-00	13	3	1	0	53	3936
2000-01	28	10	2	0	89	10072
2001-02	12	10	1	0	110	15312
2002-03	21	3	3	1	130	19037
2003-04	12	1	5	2	136	20137
Total	110	42	13	3	---	-----

SOURCE: Wisconsin Department of Public Instruction, 2004.

* These numbers underestimate the number of students in charter schools because a handful of smaller charter schools do not appear in official school enrollment counts, usually in earlier years. In 1994-95, the total enrollment was probably between 40 and 60.

Size

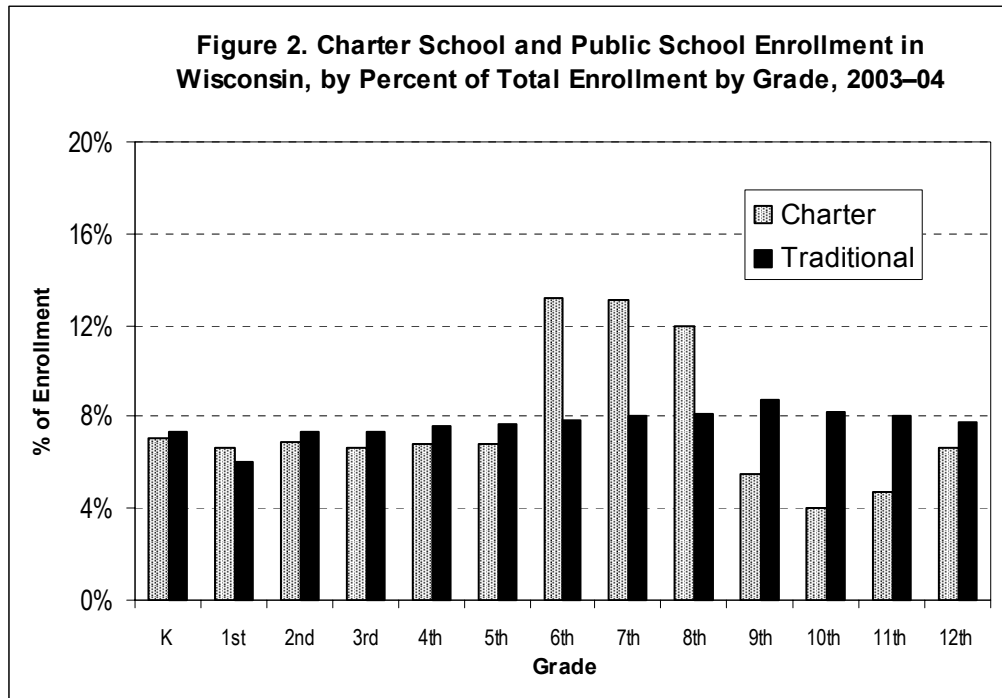
As is common across the U.S., charter schools in Wisconsin tend to be smaller than traditional public schools (RPP International, 2000: pp. 20-21). Figure 1 illustrates that over 67 percent of charter schools in Wisconsin have fewer than 100 students. This compares with 14 percent of all public schools in Wisconsin. About seven percent of the state's charter schools have over 500 students, compared with 17 percent of the state's public schools. Schools that are labeled as serving at-risk students are predominantly small schools, with 89 percent of these schools having an enrollment of fewer than 100 students.



Grade Level

In Figure 2 we compare statewide public school enrollment with charter school enrollment. As a percent of total enrollment, charter school students tend to be enrolled in the middle school grades of 6th, 7th and 8th.³ In fact, 38 percent of all charter school students are enrolled in one of these three grade levels. In other public schools, 24 percent of the students are enrolled in these grades. Therefore, parents selecting charter schools have more options in some years than in others.

³ This also seems to be a national characteristic of charter schools although the data are difficult to compare in that RPP International breakdown grades by school level and charters tend to have more complexities in grade structure than traditional schools. See RPP International, 2000, pp. 22-23.



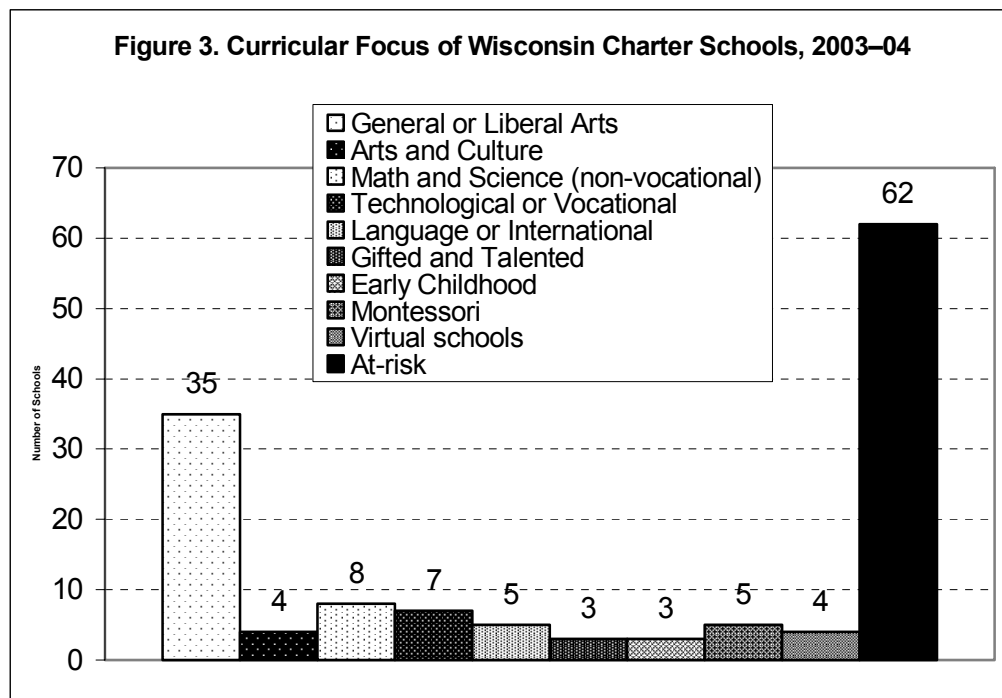
Curricular Foci

Support for charter schools come from a belief that they will provide innovative programs, improve educational quality, and enhance parental involvement and satisfaction. Given their greater autonomy from educational bureaucracies, charter schools are designed to be centers of innovation, both in terms of governance structure and curriculum. Proponents contend that charter schools can utilize different curricular foci and methods of teaching and, as a result, can better educate children than can their traditional public school counterparts.⁴

⁴ In an earlier paper we analyzed the meaning of “innovation.” We stressed that the idea of “innovation” has not been thought through very well. What we have found useful is to conceptualize “innovation” as consisting of three very distinct issues. One form of innovation, probably the first that would come to most people is that innovation means *invention* – a new concept for a school or a new form of teaching that has not been in existence before. But another meaning for the word might be *adoption* of an existing but non-traditional curricular focus or pedagogical approach. The latter may become important in very traditional school districts where diverse learning environments and choice do not exist. In that context “innovation” means that school missions and curricula extend beyond the traditional form of schools, whether they are invented or adopted. See Dickman, Van Dunk, Schlomer, Weimer, and Witte, 2003.

In 1997-98, eight out of the 18 charter schools, which enrolled 36% of all charter school attendees, were educating at-risk students. In 2003-04, 62 out of 136 schools were identified as focusing on at-risk students. Of the charter schools that have opened in the past two years, 19 are for at-risk students. The average enrollment in these schools is 46 students, compared to 224 for other charter schools. Figure 3 displays the curricular focus by charter school for the 2003-04 school year. After at-risk foci, which contain many different program models, general liberal arts curriculum schools are by far the next largest. Taken as a whole, the range of offerings is extensive compared to the traditional formats of many traditional public schools.

One important issue is the extent to which charter schools throughout the state provide unique alternatives to traditional schools. We have shown elsewhere that in Milwaukee charter schools overlap with other choice offerings (Dickman et al. 2003). However, in other districts with substantial numbers of charter schools (Appleton,



Stevens Point, La Crosse, Eau Claire) there is no doubt that charter schools are the major vehicle for providing non-traditional approaches to education and creating at-risk alternative schools. We doubt very much that the non-Milwaukee charters will duplicate existing approaches because these districts simply do not have the range of choices that have developed in Milwaukee over the last 25 years.

Who Attends Charter Schools?

In order to prevent charter schools from selecting their student bodies, and **some** state statutes require that charter schools' racial and ethnic compositions mirror that of the district wherein the charter school is located. Table 2 displays the 2000-01 and 2001-02 racial breakdown of Wisconsin charter schools compared to the state's other public schools. In total, the percent of non-white enrollment in charter schools was 54 and 56 percent compared to 19 and 20 percent for all public schools for those respective years.⁵ However, that figure masks several important distinctions when you breakdown the figures into types of districts. Because Milwaukee is the only large, urban school district in the state, and thus has the greatest percentage of non-white enrollment, we also compare Milwaukee charters to Milwaukee non-charters and the same for charters outside of Milwaukee. By concentrating on the "White" column, in the first year Milwaukee charters have only 14 percent white compared to 19 percent for non-charters, however this is reversed for 2001-02 to 22 percent and 18 percent. On the other hand in non-Milwaukee school districts, charters have about 30 percent more minority students than other schools in these districts.

⁵ This is an increase over the 27% non-white students in charter schools in 1997-98 reported by RPI International (2000, 32-33).

Table 2. Race and Income of Wisconsin Charter and Non-Charter School Students

Panel A: 2000-01

	RACE					INCOME	
	African-American	Asian	Hispanic	Native American	White	Free-Lunch	No. of Schools
State %	10.0	3.3	4.5	1.4	80.7	24.1	
Charter %	35.72	4.32	12.93	1.12	45.77	30.33	N=90
Non-Charter %	9.75	3.28	4.45	1.39	81.12	24.46	N=2148
Milwaukee Charter %	60.64	3.18	20.89	1.32	13.96	44.55	N=12
Milwaukee Non-Charter %	61.36	4.38	14.58	.92	18.76	68.37	N=205
Non-Milwaukee Charter %	10.23	5.79	4.78	.91	78.28	15.79	N=78
Non-Milwaukee Non-Charter %	3.45	3.14	3.21	1.45	88.74	19.10	N=1943

Panel B: 2001-02

	RACE					INCOME	
	African-American	Asian	Hispanic	Native American	White	Free-Lunch	No. of Schools
State %	10.1	3.4	5.0	1.4	80.2	26.1	
Charter %	37.79	4.41	12.84	1.25	43.72	35.52	N=111
Non-Charter %	9.67	3.33	4.82	1.43	80.75	25.88	N=2173
Milwaukee Charter %	55.39	3.73	17.37	.78	22.27	46.12	N=23
Milwaukee Non-Charter %	61.59	4.33	15.65	.91	17.53	72.59	N=205
Non-Milwaukee Charter %	9.32	5.50	5.50	1.27	78.41	18.45	N=88
Non-Milwaukee Non-Charter %	3.60	3.22	3.56	1.49	88.14	20.42	N=1968

Data for Milwaukee charter school demographics includes non-instrumentality charter schools.

There are also quite different trends when comparing low-income levels among charter and non-charter schools in Milwaukee and in non-Milwaukee charters. Using the percent of students who qualify for free or reduced-price lunch as our gauge, Milwaukee charter schools have 24 to 26 percent fewer free-lunch qualified students than non-charters. But, non-Milwaukee charters have only 2 or 3 percent fewer free-lunch qualified students than other non-Milwaukee charter district schools. One reason for this anomaly may be that many more non-Milwaukee charters are at the high school level, and high school students consistently fail to sign up for, and thus are not counted as qualifying for free lunch.

These patterns can be interpreted in several ways. One interpretation, putting a positive spin on charters, is that they create more diverse schools by adding non-poor students in Milwaukee and by serving a greater proportion of non-white and poor students in the non-Milwaukee charter schools. The negative spin would be that in Milwaukee charters could be interpreted as cherry picking non-poor students, while in non-Milwaukee districts they could be accused of concentrating non-white students who may be having academic problems. We prefer the positive interpretation because our case studies clearly highlight the concern for and need to better address at-risk student problems outside of Milwaukee. In addition, many of the charter schools in Milwaukee were attempting to provide challenging academic environments that would explicitly attract students who might have left the system without that focus.

Geographic Dispersion of Charter Schools. Table 3 and Figure 4 highlight the growth in charter schools by the size of the district, and Figure 5 portrays their location on a map of Wisconsin. The table is divided by district size. Milwaukee is singled out

because it has 37 charter schools in the year 2003. While it is apparent is that charter schools are dispersed among many sizes of districts. For example, there are 38 charter schools in districts with fewer than 2,000 students. This is noteworthy even though 75 percent of the districts in Wisconsin fall into this category. Figure 5 confirms that charter districts are dispersed throughout the state. Of distinctive importance for this study is the presence of charter schools in a number of mid-size cities (for Wisconsin) ranging from 25 thousand to 70 thousand people. These cities, such as Appleton, Eau Claire, Stevens Point, and La Crosse, have largely middle-class populations and until recently very traditional schools. They all have created not one, but a number of diverse charter schools.

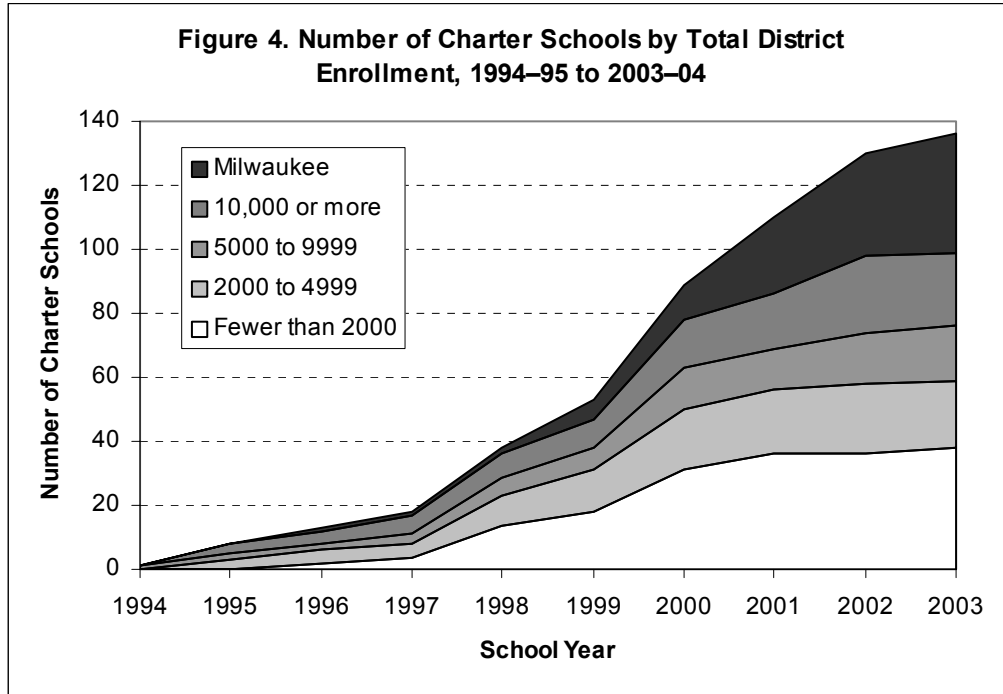
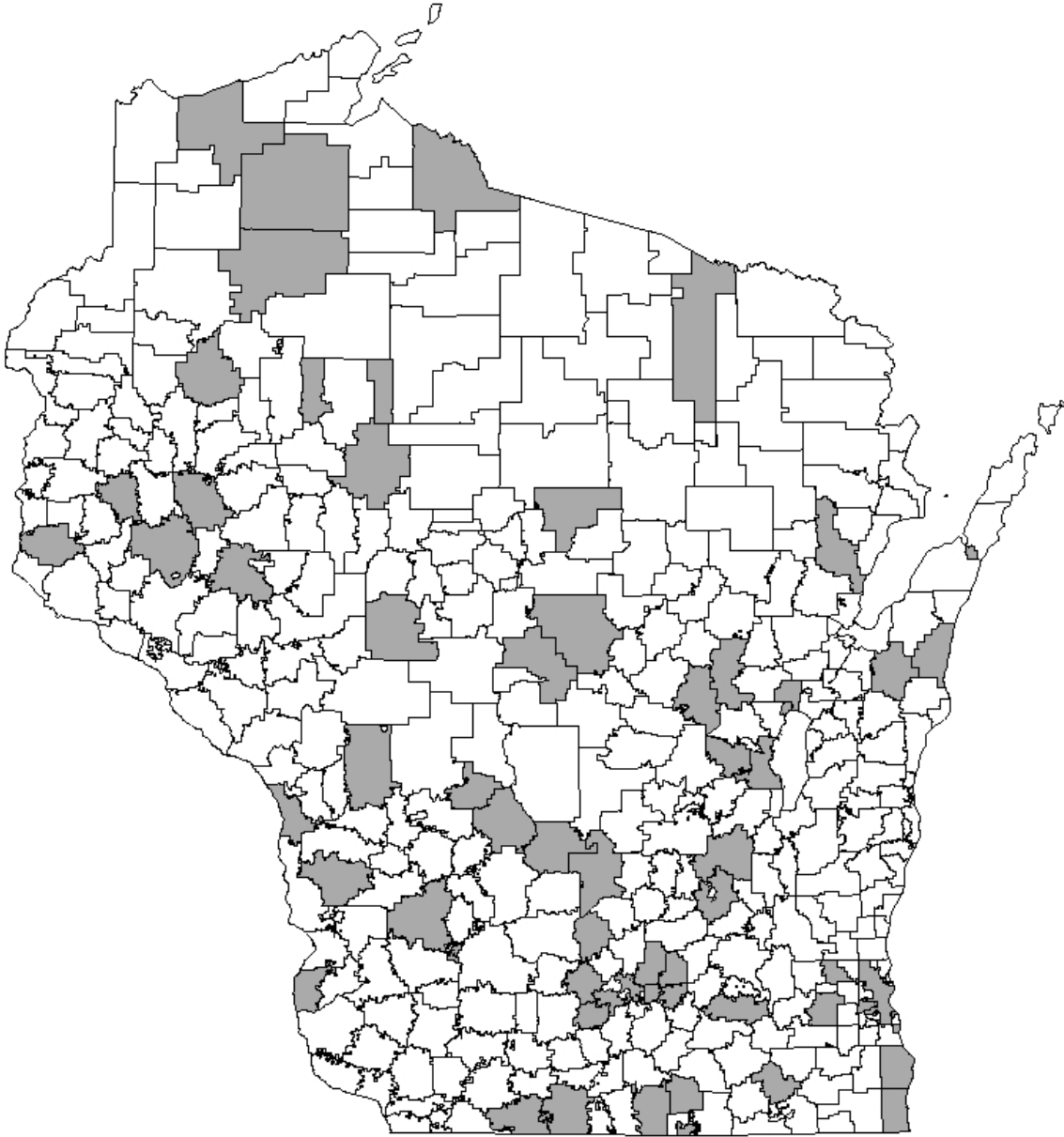


Table 3. Number of Charter Schools by Total Enrollment of District, 1994–2004

Year	Total District Enrollment				Milwaukee	Total Schools
	Fewer than 2,000	2,000 to 4,999	5,000 to 9,999	10,000 or more		
1994-95	0	0	1	0	0	1
1995-96	0	3	2	3	0	8
1996-97	2	4	2	4	1	13
1997-98	4	4	3	6	1	18
1998-99	14	9	6	7	2	38
1999-00	18	13	7	9	6	53
2000-01	31	19	13	15	11	89
2001-02	36	20	13	17	24	110
2002-03	36	22	16	24	32	130
2003-04	38	21	17	23	37	136

SOURCE: Wisconsin Department of Public Instruction, 2004.

Figure 5. Charter Districts in Wisconsin, 2003–04



IV A Spatial Theory of School Choice

Schools in the traditional sense—as brick and mortar structures—are inherently geographically bounded in that their “customers” have to be transported to and from the buildings. Transportation is limited by both the money parents are willing to pay and the time they are willing to spend in transit. Thus a spatial theory of educational competition may provide some leverage in explaining the expansion and distribution of schools, choice and otherwise. Such a theory is available in the literature and research on economic development and industrial location (Shaffer, Steven Deller, and Dave Marcouiller 2004) We proceed by first presenting the elements of the theory of the firm necessary to apply it to educational choice and school location, and then modify the theory to fit the characteristics of school districts and schools.

Spatial Location of Firms. The primary theory begins with a conventional profit maximizing function but one that includes space as a variable, and thus introduces transportation costs of inputs to a business and outputs from it as costs to be included in the profit equation. Such an equation is presented in Figure 6. The primary equation, without transportation, involves revenue depicted as price times product demand $[(P_i D_i (P_i))]$, minus fixed costs (f), minus marginal costs of producing the firm’s output $[vq(x_i)]$. The standard non-spatial maximization function would not include the last two terms depicting transportation costs.

There are two ways firms may approach this spatial profit maximization problem. The first, *cost minimization*, assumes firms will be able to sell their total output to a given point market, which thus assumes away a demand curve based on space. The solution to this problem locates the firm in a position that minimizes the transportation costs of inputs (workers and goods), trading that off against minimizing costs of transporting goods to customers. Although total costs are included (such as the price of labor and capital), minimizing transportation is the first priority. We will not pursue this set of theories because we believe the second approach, *demand maximization*, much better fits educational choice decisions.

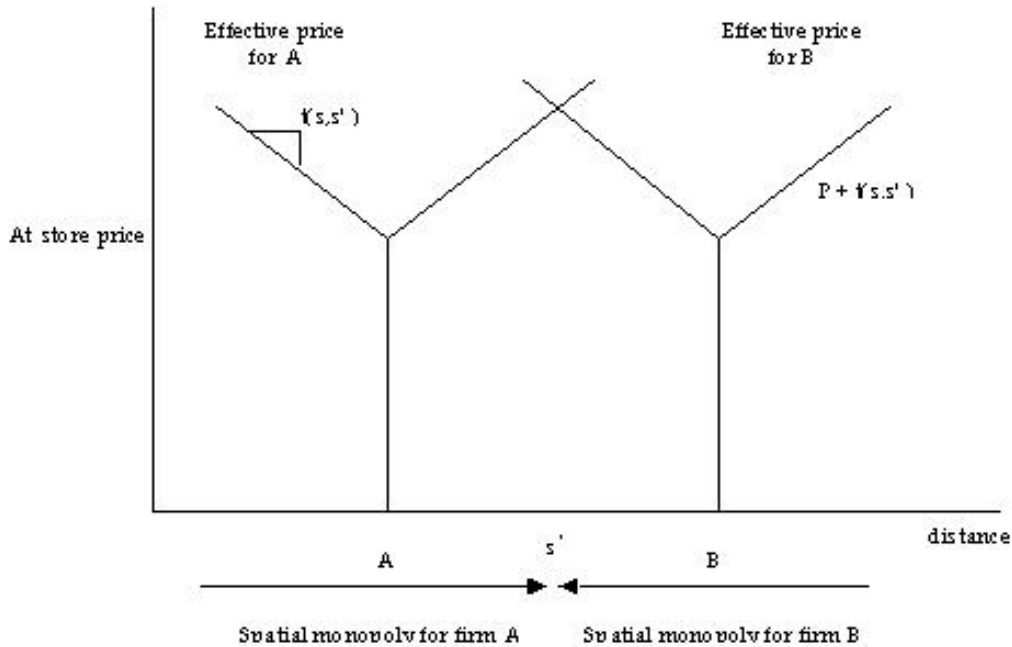
Under demand maximization, firms, select a site to control as large a market as

Figure 6. Profit Maximization

(1.1) Standard Profit Maximization	$\Pi = \sum_{i=1}^m P_i D_i(P_i) - f - vq(x_i)$
(1.2) Less Cost of Transport (Output) to Market	$- \sum_{i=1}^m t(s, s^i) D_i(P_i)$
(1.3) Less Cost of Transport (Input) to Firm	$- \sum_{i=1}^n d(s, s^i) x_i$

Π	= profit
P_i	= price charged at market $i = 1 \dots m$
$D_i(P_i)$	= demand for the firm's product at market $i = 1 \dots m$
s^i	= spatial location of market $i = 1 \dots m$
$t(s, s^i)$	= cost of transporting one unit of the good from firm location (s) to market location
f	= fixed costs facing the firm to produce the good
v	= constant marginal cost of producing one unit of the good
x_i	= production inputs from market $i = 1 \dots n$
$d(s, s^i)$	= cost of transporting one unit of input from market location to firm location (s)
$q(x_i)$	= output level of the firm

Figure 7. Locational Interdependence from Schaffer, et al, 2004.



possible. In contrast to cost minimization, location itself provides some monopoly control over demand. The basic assumptions of this approach were first described by Greenhut (Greenhut 1956) a half century ago and are reproduced in (Shaffer, Steven Deller, and Dave Marcouiller 2004, 45).

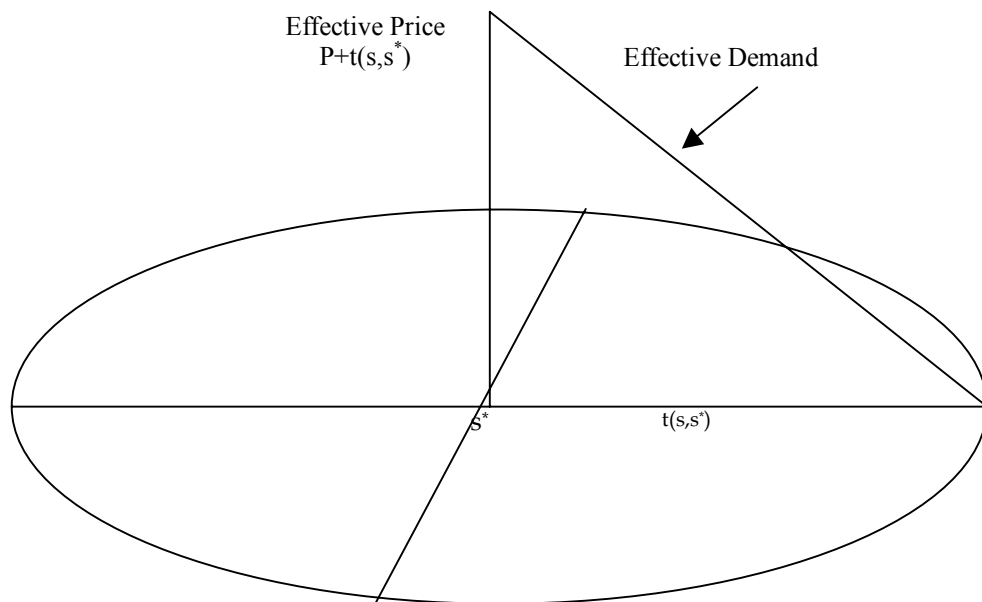
1. The firm sells to a spatially distributed market, not to a single point.
2. Customers and resources are uniformly distributed over a homogenous plane
3. Customers make their purchase decisions on the basis of minimizing the delivered/effective price
4. There are uniform transportation rates in all directions from any site; these rates can vary among sites, but they are the same in any direction from any given site.
5. Abnormal profits can exist and will attract competitors.
6. There are no barriers to entry.

We adopt this model because it appears that, with reasonable modifications for public schools (which operate differently than a firm), every assumption applies to school districts that choose to be competitive. The model can be understood by decomposing the effective price of good to a customer into the at-store price for the product and the

cost of transportation for the customer to get to the store. If the customer is right next to the store, the effective price and the at-store price are equal. The basic process, and the competitive effect on location of two firms are depicted in Figure 7. The price above the at-store price represent transportation costs and the horizontal axis represents distance. As the customer moves from the left side, closer to firm A, their effective price declines until they live next to the firm and they pay the at-store price. They then move up and away until they reach point s^* . At that point they are affected by firm B because they can lower their costs to by buying from firm B until again they pay only the at-store price. At some point on the extreme, the customer simply will not buy the good because transportation costs will be prohibitive.

Perhaps more interesting is the effect of this game on the firm's decision to site its physical plant. Assuming two firms will split a market along the same road, customers will be best served (with the least travel time) if each firm locates in the middle of its half

Figure 8. Lösch Demand Cone from Schaffer, et al, 2004.

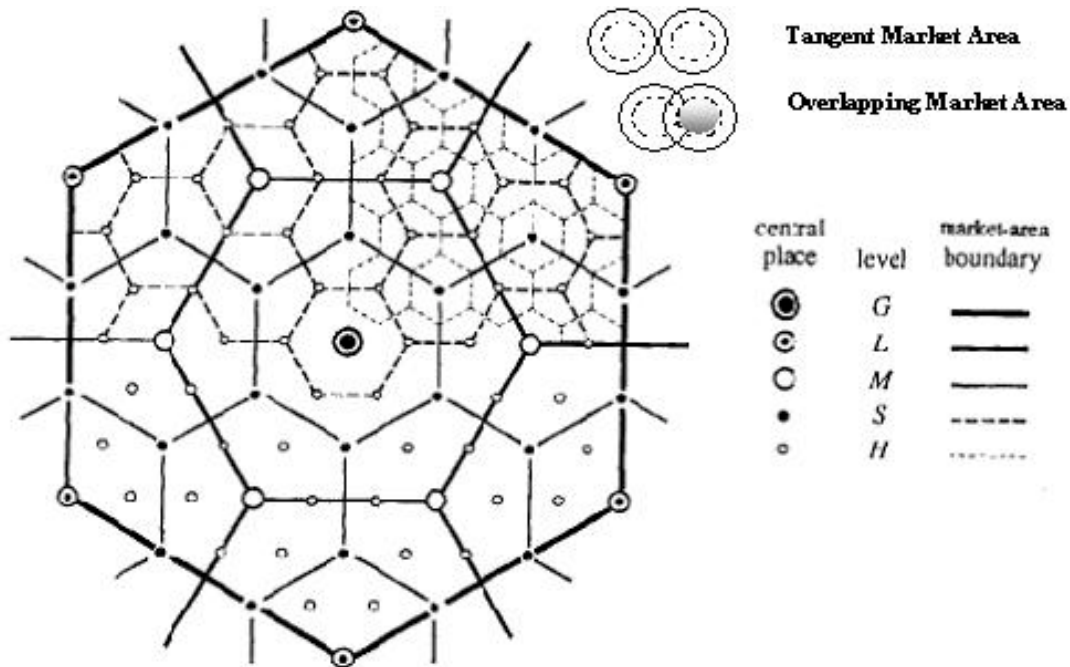


of the road. Customers on the ends of the road will have the same travel time as those customers in the middle of the road. Although socially optimal (minimized travel time), the firms may realize that customers at the far ends of the road do not have an option to travel to the other competitor—the other firm is farther away. Therefore, each firm can eat into the other's market share by moving toward the center of the road. The firm will not lose its customer base at the far end of the road, and it will gain some customers from the middle of the road. If the other firm follows suit, both firms will arrive at the midpoint of the road, which is the least optimal outcome for customers. This game and its result was first developed by Harold Hotelling in his depiction of two refreshment vendors on a long beach (Hotelling 1929).

Another way to depict the demand that develops from this model is in what is known as a Lösch Demand Cone drawn in Figure 8. The effective price is again a function of the at-store price, P , and the transportation cost borne by the customer, $t(s, s^*)$. The firm is located at s^* . As the customer is located farther away, at s , the demand drops until it is zero where transportation costs simply overcome the value of the good. This range defines the circular market for the firm.

One final aspect of this spatial theory is necessary to understand the functioning of spatial location. The demand curve and location depend on population density and the type of firm under consideration. For example, low-capital firms that can be built cheaply and use low-cost labor (e.g. gasoline-convenience stores and discount retailers), may be located very close to together in very dense populations. Obviously they will be located closer together in Chicago than in Montana because all people need to buy gas and junk on a regular basis. Firms with high capital or labor costs, however, will not be

Figure 9. Central Place Hierarchy from Schaffer, et al., 2004.
 (Tangent and Overlapping Area Diagram Added)



as densely located (hospital complexes, for example). They are costly to build and operate, and people will travel far to get the services when needed.

Again, these assumptions can also be depicted graphically as they are in Figure 9. The graph represents overlapping markets as hexagons rather than tangent or overlapping Lösch circles for simplicity of display. The thicker and darker lines represent firms in industries with larger market demand ranges. Thus the most capital/labor intense industry (G) has a monopoly over the entire market, while the firms with the smallest market ranges (H) are depicted by the smallest hexagons, many of which would occupy the total market space. The firms are located at their respective centers as in the Lösch cones.

Application to Schools. Traditional school location decisions with fixed district boundaries also take into account many of the features of the spatial model of firm location. For example, elementary schools are more numerous than high schools and

thus draw on a much smaller area. Why? Parents will object to the “costs” of transporting small children less than older children, and high schools cost much more to build and run than elementary schools because of the subjects taught, the equipment needed, and the range of services provided (extracurricular, for example). Second, in more densely populated areas (large cities) schools of all kinds will be closer together than in rural areas. Rural students routinely spent hours on buses decades before busing was used for integration purposes. Third, it is not at all strange to consider the basic transportation cost structure as relevant to schools. This applies both to customers (cost to families and districts of transporting children), and to the market range for the firm’s inputs, which are primarily its personnel (school staff; 80 percent). As with students, school staff are in part affected by the distance they travel from their homes.

There are of course some differences between the model of the firm and its application to schools. The primary difference may be the fundamental assumption concerning profit maximization. Is it appropriate to conceive of the primary motive of school creators or personnel as maximizing profit? Probably not, and very few schools would be able to achieve the incentive effects of profits even if it is what drives teachers. Schools are either public organizations or they are non-profit – so who would benefit from the profits?

However, the problem of profits need not eliminate the application of this theory for two reasons: 1) it is not clear that school *districts* under certain circumstances may not be interested in maximizing revenues instead of profits; and 2) more realistic motivations driving schools can be modeled in place of profits with close to the same theoretical results. We describe each in turn.

The initiation of most schools of choice, including charter schools, but also magnets and other forms of schools, are the legal authority of school boards. Why and how would school boards use the creation, and location of schools as a way to maximize revenues? First, school districts operate under a number of taxpayer induced budget constraints. Thus if each additional student required raising taxes to cover the full costs of that student, there would be no purpose in pursuing additional students that would mean more work for teachers, larger class sizes and additional grief from taxpayers. But that is often not the case. There may be considerable economies of scale that keep marginal costs low relative to fixed costs. That will always be the case when capacity is down and there are numerous vacant seats in classrooms. Thus more taxpayer money may not be needed. As important, in education there are numerous sources of revenue from outside the district that are based on per-student enrollment. The largest of these is per-pupil state aid. In many states this averages over 50 percent of per-student expenditures and may well exceed the marginal cost of an additional student (hence increasing net revenue). There are in addition other potential sources of revenue for specific types of students, especially students with disabilities, and students designated at-risk.

This has ramifications for districts that want to increase revenues under two different scenarios. With fixed district boundaries, which means that students attend public schools only in their districts, a district still could attempt to attract students from private schools, home schoolers, or students who have dropped out of school. In many states, including Wisconsin, districts may also receive partial state aid for students who attend or use partial services, such as home schoolers who participate in extra-curricular activities, or private school students who take selective public school classes.

Second, competition for students may be broadly increased when there are open enrollment options that allow students to cross district lines with the state and other aid following the student. Under that condition, which applies in various forms in almost all states, the students described above are still potential customers but regardless of where they reside. In addition, districts can now begin to attract regular public school students residing in other districts.

But the role of districts alone may not be enough to induce spatial competition, especially when it comes to charter schools. Our research has clearly indicated that the type of unique schools or programs districts may wish to create using charter schools or other forms are often started and require the enthusiastic support of particular educational entrepreneurs, be they principals, teachers, or parents. And, as stated above it is difficult to force these people into the profit maximizing assumption. Charter schools may have some very strong incentives to reach a minimal level of students because that will be defined in their charter, but above that point, they are likely to have perverse student incentives in that they may not receive significant additional money for students above that threshold. So what of the supply-side of the equation? Even if school boards have the power to create schools, where is the internal motivation of the schools to make them succeed?

The question leads to a general question about what motivates teachers and school personnel to create and/or work to make a school a success. We have found in both teacher surveys of charter and non-charter teachers and in case studies, that several aspects of charter schools may serve as theoretical proxies for the profit motivation. Those who found and work in charter schools are clearly enamored with the *unique mission of the school* – the specialized product they produce using their charter. This

applies to Montessori teachers, individually guided instruction, classical curricula, and at-risk schools of many kinds. They are proud of that product, and intellectually and emotionally attached to it. Second, they are universally interested in the *overall quality* of the educational result. Thus in the basic profit equation, revenue generated by price times quantity of goods sold, $[(P P_i D_i (P_i))]$, can be replaced by a function involving *uniqueness* and *quality*.

We also posit that these same characteristics will substitute for effective price on the demand side of the equation. We believe, especially since public education is more or less free to all customers, that families may well, if allowed, select schools based on a unique characteristic that appeals to them and the overall perceived quality of education (however defined) they believe will result. Thus schools will be motivated to provide these services to the customer markets that will accept them. The spatial model will still apply and schools will follow the lead of districts that will attempt to maximize district revenue by acquiring outside aid for students.

Putting together district motivations and school utility functions, we formally state the theory in Figure 10, which parallels the firm equation in Figure 6. In this district revenue, R , is maximized by acquiring aid (A_i) as a function of demand for educational utility $[D_i (EU_i)]$. Costs are the same as in the firm function except that output, x_i in Figure 6 is replaced by student enrollment, e_i in (2.1). Transportation costs affect inputs (example teacher travel) and outputs (student travel). The L \ddot{o} sch Curve (Figure 8) is identical for schools except that the price (P_i) should be replaced by expected educational utility $[D_i (EU_i)]$.

Figure 10. District Revenue Maximization.

(2.1) District Revenue Maximization	$\mathbf{R} = \sum_{i=1}^m A_i D_i(EU_i) - f - vq(e_i)$
(2.2) Less Cost of Student Transportation (output)	$- \sum_{i=1}^m t(s, s^i) D_i(EU_i)$
(2.3) Less Cost of Teacher Transportation (input)	$- \sum_{i=1}^n d(s, s^i) x_i$
(2.4) School Demand	$EU_i = f(UN_i, Q_i)$

R	= Total district revenue
A_i	= Average outside aid per school $i = 1 \dots m$
$D_i(EU_i)$	= Demand for school ($i = 1 \dots m$) based on expected utility of school ($i = 1 \dots m$), (EU_i)
UN_i	= Uniqueness of school (i), Q_i = Quality of school (i)
s^i	= Spatial location of market $i = 1 \dots m$
$t(s, s^i)$	= Cost of transporting one student from school s to home s_i
f	= Fixed cost of schools
v	= Constant marginal cost of educating one student
x_i	= Teachers $i = 1 \dots n$
$d(s, s^i)$	= Cost of transporting teacher from home s_i to school s
$q(e_i)$	= Number of students in school (enrollment)

The theory applied to education also seems to conform well to the original Greenhut assumptions (above). Clearly, schools draw from full market areas. We can assume that both students and school inputs (teachers, primarily) are spread relatively homogeneously across each district. Travel distances matter for families and teachers, and transportation costs can be assumed to be uniform.⁶ While the last two assumptions are not certain, districts that lose students will have incentives to enter “the market,” and losses may help convince reluctant school boards that they should initiate competitive

⁶ Parents’ decisions to enroll their children in a Milwaukee voucher school and keep them there depended, in part, on the distance of the school from home (Witte 2000).

charter schools. What would the theory predict in terms of this type of competition? The theory suggests five hypotheses:

1. That districts would be motivated to pursue students of all types to increase revenues.
2. That they would target students and locate school with regards to transportation costs and space. They would locate schools near borders of districts, for example.
3. They would market those schools in the most densely populated districts that are closest to them.
4. They would likely create schools that are small and inexpensive, with narrow drawing ranges to fit niche markets not provided in alternative school districts, or that might attract non-public school attending students (see Figures 8 and 9).
5. There would be an equilibrium condition after which no further schools would be created because of the limits on travel families would endure (See Figure 7).

We believe that to some degree each of these conditions is being fulfilled in a number of districts in Wisconsin. The final section of the paper provides evidence for that result, along with some implications that the theory would depict.

V Some Suggestive Evidence

As with most theories in the social sciences, we do not expect our theory of competition to explain all that happens in the charter school world. However, there is evidence that a number of school districts in Wisconsin are attempting to maximize their student enrollment of non-attending, private school, home-schooled, and students from other districts. The latter is accomplished using the state open enrollment law, which allows student aid to follow the student. State aid for students is about \$5,092 per student in a state where the average per pupil expenditure is \$9,483 (from federal, state, and local sources) (National Education Association 2004).

Evidence for this conclusion comes from a number of sources. Interviews with district superintendents and school officials during our case studies were one source. In one district a superintendent told a story of how a charter Montessori school was initiated. He said that six years ago a group of teachers and parents approached him about starting a Montessori charter school. He told them that he and his very traditional board would not approve such a school. He then said that the group started a private Montessori school instead. It now enrolls 173 students. He then multiplied 173 by the state aid at current rates and showed the interviewer the figure. “That is what we are losing. Three years ago another group came with the same request, and I gave full approval and got it through my board.” The same district had set up a high technology high school program that was geared at attracting students from the local Catholic high school and other smaller public school districts as well as several other charters.

More rigorous evidence can be gleaned from analysis of open enrollment flows in the state. In a companion paper we present sophisticated multi-variate analysis of these flows (Witte, Paul Schlomer, and Arnold Shober 2004). The basic pattern, however, can be conveyed by mapping those flows from school districts in proximity to districts employing multiple charter schools to attract outlying students. Figure 11 depicts such a map, highlighting 5 cities. In each case, there are considerable net flows from non-charter districts on the fringes of the charter districts. As is clear, charter districts draw students under open enrollment from districts closer to them. Also, in densely populated areas, such as Appleton, the students come from even closer distances than, say, in Eau Claire.

Figure 11. Open Enrollment Draws for Five Mid-sized Districts, 2001–02

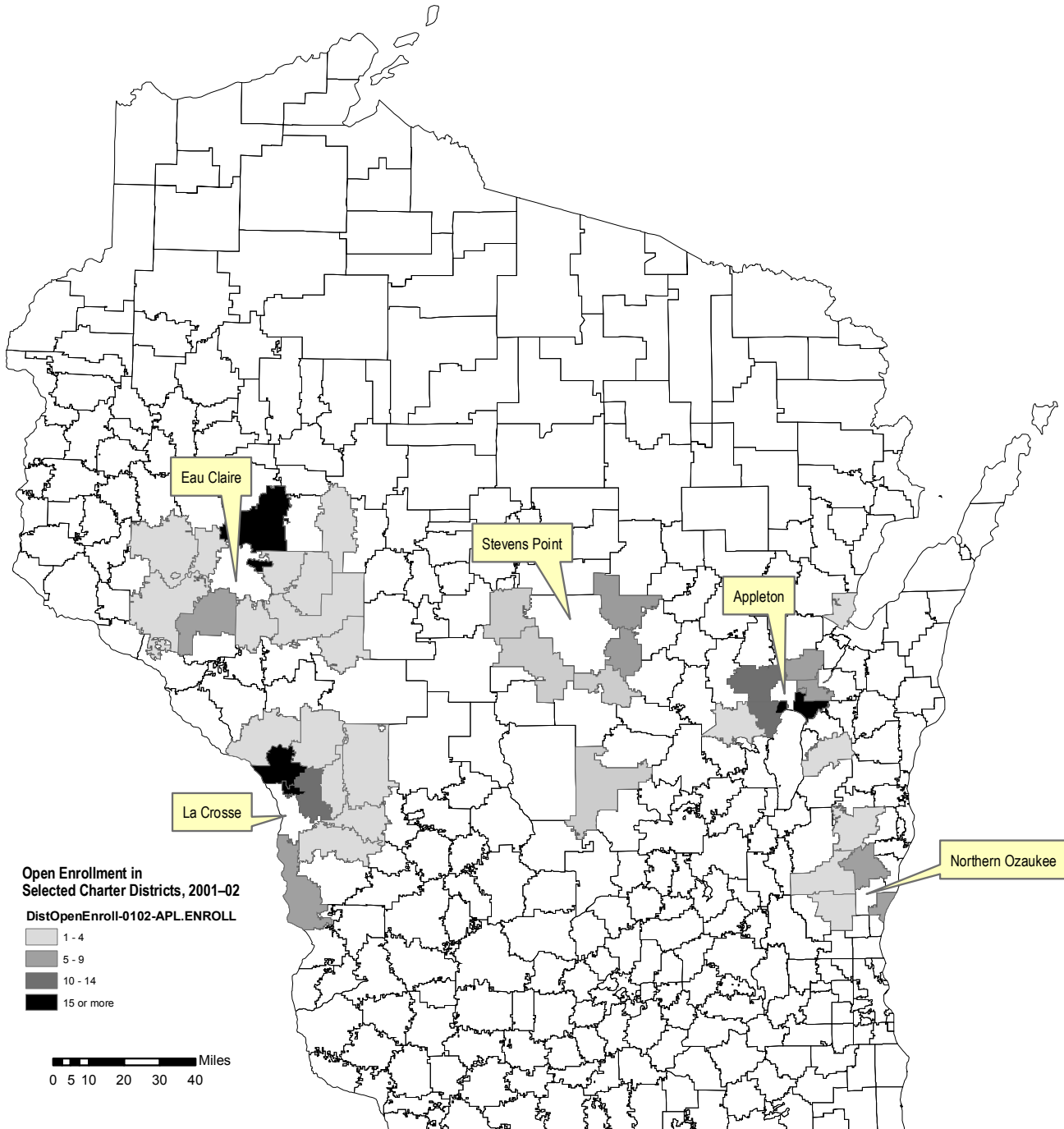


Table 4. Generalized Market Area Boundaries, 2001–02

<i>Year</i>	Mean Distance of Sending Open Enrollment Districts for X Percent of Open Enrollment Students			<i>Area</i> (sq. mi.)	<i>Density</i> (enrollment / sq. mi.)
	25%	50%	75%		
Appleton	3.4 mi	8.6	8.6	43.9	331.9
Eau Claire	16.2 mi	16.2	22.5	192.2	56.3
La Crosse	11.9 mi	16.2	22.5	83.9	87.4
Northern Ozaukee	5.6 mi	8.3	10.4	62.3	13.7
Stevens Point	13.5 mi	15.3	22.1	371.3	20.7

For the highlighted charter markets in Figure 11, we can begin to delineate actual charter market areas as spatial economic theory suggests. Examining open enrollment data from 2001–02, five charter districts drew from their surrounding districts in a distinct circular pattern we can describe as market areas or trade areas. While more realistic trade areas depend heavily on topographic and transportation conditions, we can get a generalized market area for each of these charter districts by examining the distribution of its incoming open enrollment students. Table 4 shows the estimated market area for each of these five districts. The results clearly indicate that the two districts located in the most densely populated areas (Appleton and the Fox River Valley and Northern Ozaukee in the Milwaukee suburbs) have much tighter drawing markets than the more isolated communities of Eau Claire, La Crosse and Stevens Point.⁷

In a simple attempt to see if the distance/density predictions fit open enrollment across the state, we regresses the number of open enrollment transfers into a district on the distance from the district of the students and the population density of the home district. And as the regression in Table 5 indicates, more densely populated districts lose

more students. As the districts are farther away, they lose fewer students. Both of these results conform to spatial theory.

The declining losses of students as a function of distance may be responsible for the leveling off in the number of charter school statewide as a sort of distance equilibrium sets in. If the number of districts interested in charter schools does not grow, distance factors for families will limit the movement of students, and losing school districts may simply accept their losses. If of course they retaliate and try to also compete, then competition should spread to fill in the spaces between these aggressive districts. However, before that happens, we must account for another factor that our spatial model does not.

Current spatial theories of the firm collapse in the face of computer and Internet-based *virtual schools* created in the last several years in two school districts. There were

Table 5. Number of Open Enrollment Transfers by Distance and Population Density of Home District, 2001–02

$$ENR = \beta_0 + \beta_1(DISTANCE) + \beta_2(DENSITY) + \varepsilon$$

$$\text{Enrollment} = 3.962 + (0.023)(DENSITY) - (0.326)(DISTANCE) + e$$

$$\text{SE:} \quad (0.276) \quad (0.001) \quad (0.043)$$

$$\text{t:} \quad 14.33 \quad 16.00 \quad -7.60$$

$$\text{p-value:} \quad (0.000) \quad (0.000) \quad (0.000)$$

$$R^2: 0.154$$

ENR is the number of students transferring due to open enrollment in 2001
DISTANCE is a size-adjusted estimate of distance to the destination district (miles from center of home district to center of destination district)
DENSITY is the density (students per sq. mi.) of the home district

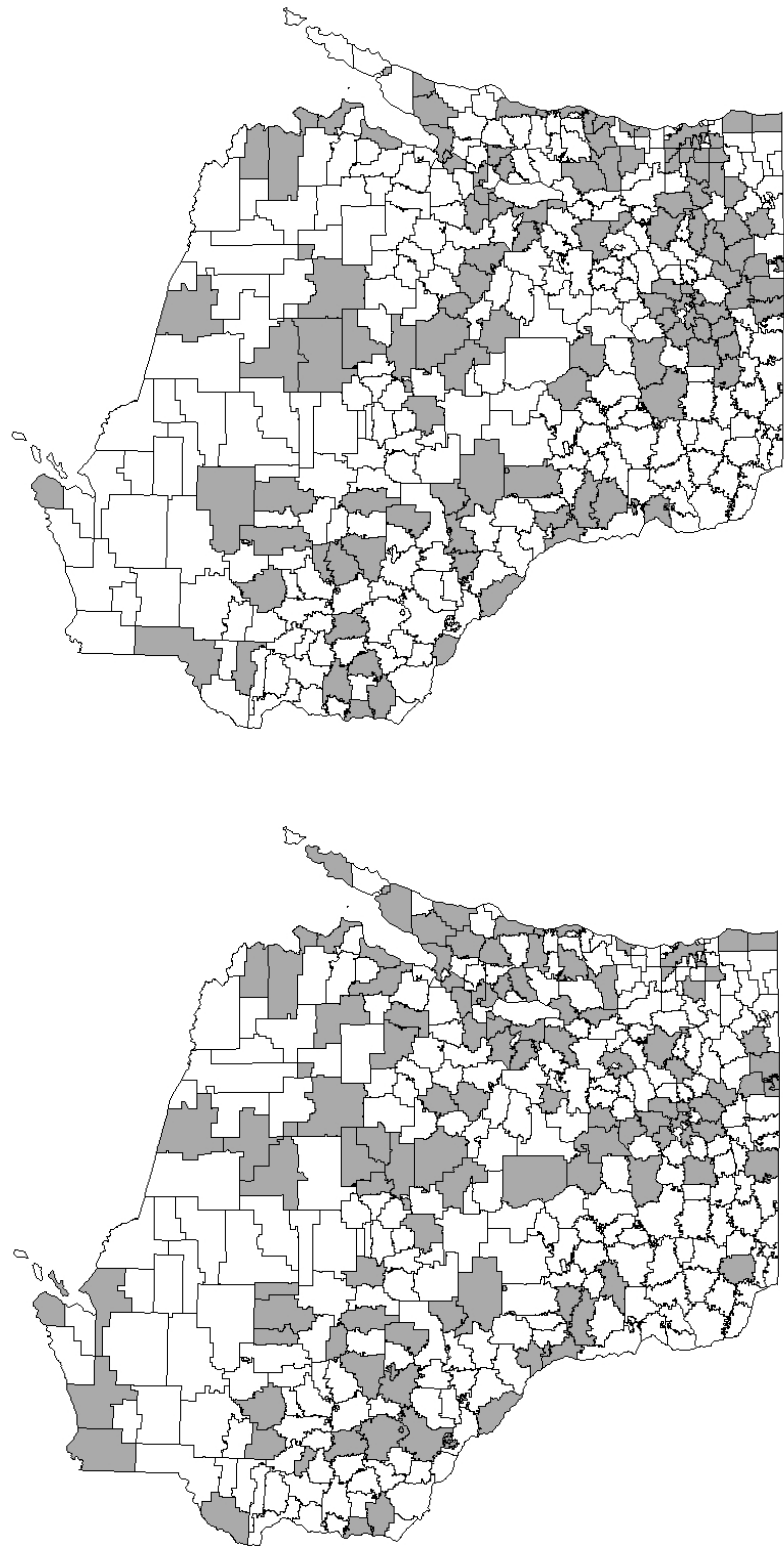
**Error includes additional random distance adjustment error due to district geographic irregularity.*

only two such schools functioning in the state as of 2003–04 (with an additional one to open in 2004–05).⁸ There is dramatic evidence of their enrollment effects in Figure 12, which presents two maps after the advent of virtual schools in the Appleton and Ozaukee school districts in 2003–04. These can be compared to these districts as shown in Figure 11. The creation of *virtual schools* delivering computer based instruction to students throughout the state changes their open enrollment intake in dramatic fashion. Although this does not necessarily indicate the basic motivations of districts as revenue maximizers are incorrect,⁹ it does suggest that in the future our spatial theories may need to be altered. That is the subject of a future paper.

⁸ Several schools, charter and traditional, already use computer-delivered instruction in limited situations, usually for at-risk students. Virtual schools are different because any Wisconsin student may enroll.

⁹ Indeed, as one might guess, the creation of these schools, and another to open this fall, has created a storm of opposition from teachers' unions, school boards associations, and public school district superintendents, especially in districts losing students. Even the district superintendent cited above in terms of the Montessori school complained bitterly about these schools because he was losing two students to them, yet he had to pay for their disability education.

Figure 12. Districts Sending Students to Appleton (left) and Northern Ozaukee (right) through Open Enrollment after Virtual Schools, 2003-04.



VI Conclusions

The theme of this paper is that educational choice programs in Wisconsin are interacting to produce a perhaps unexpected degree of competition for students. This competition has existed for some time in Milwaukee, but is clearly now occurring throughout the state. Schools districts are using the state open enrollment law and charter schools to attract students in private schools, home schoolers, dropouts, and public school students in other districts.

We explain this competition with a spatial economic theory modified to fit the decision-making processes in public school districts and charter schools. We posit that competitive school districts will attempt to maximize revenues by acquiring per pupil aid from outside the district using charter schools to attract students currently not attending district schools. The motivation and attraction of schools are also considered in the theory that is developed. It is unrealistic to assume that schools will act as profit maximizers, but not unrealistic to assume they will try to maximize their success by stressing a unique educational product and high educational quality. Our case studies found this to be the case for those who initiated charter schools, and analysis of open enrollment data indicates that a number of districts with numerous charter schools are succeeding in attracting students to these unique schools.

It is quite remarkable how expansion of “conventional” (bricks and mortar) charter schools creates competition along the lines predicted by spatial economic theories. We demonstrated a significant relationship between distance from a school district and population density in defining markets for schools. But we also introduce a new factor that may reshape the entire landscape of school enrollment in Wisconsin and elsewhere. Current spatial theories of the firm collapse in the face of computer and

internet –based virtual schools. We show the results of changing open enrollment patterns from markets based on distance and density to markets that include all corners of the state. We leave you with the question—is the wave of the future?

References

- Budde, Ray. 1988. *Education by Charter: Restructuring School Districts*. Andover: The Regional Laboratory for Educational Improvement of the Northeast Islands.
- CER (The Center for Educational Reform). 2004, 08/12. "Charter Schools," Charter Schools: Fast Facts <<http://www.edreform.com/>>.
- Chubb, John, and Terry Moe. 1990. *Politics, Markets, and America's Schools*. Washington, D.C: Brookings Institution Press.
- Coleman, James S., and Thomas Hoffer. 1987. *Public and Private High Schools*. New York, New York: Basic Books.
- Cullen, Julie B., Brian A. Jacob, and Steven D. Levitt. 2000. The Impact of School Choice on Student Outcomes: An Analysis of the Chicago Public Schools. Unpublished Manuscript. Working Paper 7888. Washington, DC, National Bureau of Economic Research
- Dickman, Anneliese, Emily Van Dunk, John Witte, Paul Schlomer, and David Weimer. 2003. "Charter Schools in Wisconsin: Assessing Form and Performance." Paper presented at the American Political Science Association 2003 Annual Meeting - August 28-31, Philadelphia, Penn.
- Elmore, Richard F., and Milbrey W. McLaughlin. 1988. *Steady Work: Policy, Practice, and the Reform of American Education*. Santa Monica, California: RAND Corporation.
- Friedman, Milton. 1962. *Capitalism and Freedom*. Chicago, Illinois: Brookings Institution Press.
- Greenhut, Melvin L. 1956. *Plant Location in Theory and Practice*. Chapel Hills, N. Car.: University of North Carolina Press.
- Hassel, Bryan C. 1999. "Charter Schools: A National Innovation, an Arizona Revolution." In *School Choice in the Real World: Lessons from Arizona Charter Schools*, edited by Scott Milliman Robert Maranto, Frederick Hess, 68-95. Boulder, Colo.: Westview Press.
- Hotelling, Harold. 1929. "Stability and Competition." *Economic Journal*, 39, no. 1: 41-57.
- Johnson, Sarah M., and Johnathan Landman. 2000. "'Sometimes Bureaucracy Has Its Charms': The Working Conditions of Teachers in Deregulated Schools." *Teachers College Record*, 102, no. 1, Feb.: 85-124.
- Kolderie, T. 1990. *Beyond Choice to New Public Schools: Withdrawing the Exclusive Franchise in Public Education*. Washington, DC: Progressive Policy Institute.

- . 1993. *The States Begin to Withdraw the Exclusive*. St. Paul, Minn.: Center for Policy Studies, Public Services Redesign Project.
- Nathan, Joseph. 2002. *Charter Schools: Creating Hope and Opportunity for American Education*. Jossey Bass.
- National Education Association. 2004. *Rankings and Estimates*. Washington, D.C.: Author.
- RPP International, Office of Educational Research and Improvement/U.S. Department of Education. 2000. *The State of Charter Schools 2000: National Study of Charter Schools Fourth Year Report*.
- Shaffer, Ron, Steven Deller, and Dave Marcouiller. 2004. *Community Economics: Linking Theory and Practice*, 2. Ames, Iowa: Iowa State Press.
- Shober, Arnold, Paul Manna, and John F. Witte. 2003. "Analyzing State Charter School Laws and Their Influence on the Formation of Charter Schools in the United States." Paper presented at the American Political Science Association, Philadelphia, Penn.
- Smith, Kevin, and Kenneth J. Meier. 1995. *The Case Against School Choice: Politics, Markets, and Fools*. Armonk, New York: S.E. Sharpe.
- Smith, Stacey. 2001. *The Democratic Potential of Charter Schools*. New York, NY: Peter Land.
- Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *Journal of Political Economy*, 64, no. 5: 416-24.
- Vanourek, Gregg, Brunno V. Manno, Jr. Chester E. Finn, and Louann A. Bierlein. 1998. "Charter Schools as Seen by Students, Teachers, and Parents." In *Learning from School Choice*, edited by E. Peterson and Bryan C. Hassel, 187-211. Washington, DC: Brookings Institution.
- Witte, John. 2000. *The Market Approach to Education: An Analysis of America's First Voucher Program*. Princeton, NJ: Princeton University Press.
- Witte, John, Paul Schlomer, and Arnold Shober. 2004. "Going Charter: A Study of District Competition in Wisconsin." Paper presented at the American Political Science Association 2004 Annual Meeting, Chicago, Ill.