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in the Netherlands:
Growing Concerns
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Helen F Ladd
Edward B. Fiske
Nienke Ruijs

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Helen F. Ladd*, Edward B. Fiske** and Nienke Ruijs***

Abstract

The Netherlands has a long history of parental choice and school autonomy. This paper examines why segregation by educational disadvantage has only recently emerged as a policy issue in the Netherlands. In addition, we document the levels and trends of school segregation in Dutch cities. We find segregation levels that are high both absolutely and relative to those in the U.S. cities. Current efforts to limit segregation in Dutch cities inevitably confront the deeply held Dutch value of freedom of education.

Keywords: Dutch education system, segregation, school choice, primary schools, weighted student funding

*Corresponding author
Edgar Thompson Professor of Public Policy
and Professor of Economics
Sanford School of Public Policy
Duke University
Hladd@duke.edu

** Education writer and consultant
Durham, NC
efiske@aol.com

*** Graduate student
University of Amsterdam
nienkeruijs@gmail.com

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The Netherlands differs from most other developed countries, including the United States, with respect to its strong historical commitment to parental choice of schools, its full public funding of all schools regardless of whether they are publicly or privately operated, and the fact that schools have substantial budgetary and operational autonomy. In light of growing policy interest in the United States in giving parents more opportunities to choose schools for their children – in forms such as intra- or inter-district choice and charter schools – and of reform proposals calling for more autonomy for schools (e.g. Fordham Institute, 2006), the Dutch experience has the potential to provide insights for U.S. policy makers about how a system with more parental choice and school autonomy might play out over time.

A country of 16.5 million people, the Netherlands devotes a relatively small share of its GDP to education, and its students do well by international standards. In particular, Dutch students outperform their peers in many other developed countries, including the United States, on international tests such as PISA and TIMSS.¹ Moreover, Dutch students whose mothers have limited education do better on PISA tests than comparable students in other OECD countries. The determinants of these high achievement levels are complex and undoubtedly reflect not only the nature of the country's education system but also its attention to the overall well being of its children. According to a recent UNICEF study, the Netherlands ranks at the top of 21 rich countries in child well being, with the United States and the United Kingdom at the bottom (UNICEF, 2007).²

Of central interest for this paper is the relationship between parental choice and school autonomy on the one hand and segregation of students by educational disadvantage on the other.

¹ TIMSS stands for Trends in Mathematics and Science Study. See http://nces/ed/gov/timss/results03_fourth03.asp. PISA refers to the Program for International Student Assessment sponsored by the Organization for Economic Cooperation and Development. See <http://pisa.acer.edu.au>.

² The UNICEF scale for child well-being uses six measures: material well-being, health and safety, educational well-being, family and peer relationships, behaviors and risks, and subjective well being.

Studies from both the U.S. and around the world have shown that parental choice often leads to more segregated schools than would otherwise be the case. Fiske and Ladd (2000) document such patterns for New Zealand; Cullen, Jacob and Levitt (2005) do so for Chicago; and chapters in Plank and Sykes (2003) provide evidence of greater segregation in countries such as Chile, Sweden and Australia. In addition, charter schools in the U.S. often have a segregating effect (Booker, Zimmer and Budden, 2005; Bifulco and Ladd, 2007; Gill et al, 2001.)

The Dutch context of parental choice is unusual in that for more than 40 years the standard mechanisms described in the literature that often lead to segregation by socio-economic disadvantage were overwhelmed by a different type of affinity or bond, namely religion. As a result of these bonds, and a related commitment to school autonomy, segregation by disadvantage was not an issue of significant policy concern. It was not until the secularization of the Dutch society in the 1950s and the influx of immigrants in the 1960s and 1970s that segregation by student disadvantage became salient in the Netherlands. Significantly, the Dutch are only now becoming aware of how segregated their schools are, especially in the big cities.

Hence, one purpose of this paper is to examine why, despite the country's long history of parental choice, segregation by educational disadvantage has only recently emerged as a policy issue. A second is to document the levels and recent trends of school segregation in the country's largest four cities and in 32 other large Dutch cities. The analysis indicates that segregation levels are very high, both absolutely and relative to comparable measures for the U.S., and that they have been rising. In a final section, we examine how the Dutch commitment to parental choice and school autonomy makes it difficult for policy makers to alter the situation.

Our analysis focuses exclusively on primary schools, which in the Netherlands serve children from age 4 to age 12. This focus is consistent with the Dutch view that primary schools

are the most important part of the education system. In addition, because the Dutch primary school sector has more features in common with the American system and those in other countries than does the Dutch secondary sector, its operations are more comprehensible and relevant to a non-Dutch audience. At the secondary level, Dutch students are tracked into a variety of different high schools with differing program lengths. At that level, the segregation of students is closely connected to student performance in the primary grades and raises a number of issues beyond the scope of this paper.

I. The segregating effects of parental choice

Greater segregation of schools is consistent with the predictions of the following simple choice model in which there are only two types of families: advantaged and disadvantaged. Consider first the advantaged families. The sociology and economics literatures provide at least three reinforcing motivations for such families to choose schools serving children from similarly advantaged families. The first motivation, referred to in the literature as the *outgroup avoidance* theory, is that some advantaged families would prefer to minimize contact with the other group. In the school choice context, that means they would choose to move their children out of schools serving large numbers of the disadvantaged group (Saporito, 2003; Bobo, 1999; Tauber and James, 1982; Wells and Crain, 1992). An alternative motivation, sometimes referred to as “neutral ethnocentrism” posits that members of each group prefer to be with members of their own group. For advantaged families, the school choice behavior associated with this motivation would be indistinguishable from that associated with the out-group avoidance motivation (Bifulco, Ladd and Ross, 2009). The third motivation relates to school quality. To the extent that the quality of schools serving advantaged students is higher than that of schools serving disadvantaged students, perhaps because such schools are able to command more resources and

to attract higher quality teachers, advantaged families who care about quality, once again, have an incentive to select schools serving advantaged students. A variant of this motivation is that advantaged families may prefer the types of programs offered in the schools serving advantaged students to those offered in other schools (Bifulco, Ladd, and Ross, 2009).

The behavior of members of the disadvantaged group is somewhat harder to predict. Ethnocentric preferences would push them to choose schools with other disadvantaged students like themselves. Quality considerations could potentially reinforce this motivation, but only if parents believed that schools serving large concentrations of disadvantaged students would be more attentive than other schools to the particular needs of their children. More generally, quality considerations are likely to cut the other way. To the extent that disadvantaged families perceive that the quality is higher in the schools serving advantaged children, they have an incentive to try to send their children to such schools. However, various considerations, including, for example, transportation costs and capacity constraints, may keep them from doing so. Although the net effect on the behavior of the members of the disadvantaged group is ambiguous, the clear and unambiguous prediction for the advantaged families leads to the overall prediction that, unless policy makers actively intervene in the choice process, parental choice of school is very likely to make schools more segregated than they would otherwise be.³

II. Why segregation has historically not been on the Dutch policy agenda

The twin principles of allowing parents to choose schools for their children and giving schools considerable operational autonomy are deeply embedded in the philosophy and

³ Countering this prediction is the possibility that in situations in which there are high levels of residential segregation the introduction of choice programs that break the link between place of residence and schooling options may lead to less segregation than would arise with neighborhood schools. This mechanism, called the liberation theory (Archibald, 2003) is most applicable when members of the disadvantaged group are restricted in their choice of residential location by discrimination or other barriers.

organization of the Dutch education system. The 1917 Constitution provides for equal funding of all schools regardless of whether they are publicly or privately operated, and its Article 23 gives any group of citizens, including those with specific religious orientations or educational philosophies, the right to establish its own publicly funded school provided it can attract a sufficient number of students. As a result of these policies, only 30 percent of the Dutch primary students now attend what in the U.S. we would call traditional public schools. The other 70 percent attend schools with a religious orientation or a commitment to a specific type of educational program such as a Montessori or Dalton program. In return for their public funding, these privately operated schools are subject to the same general national curriculum guidelines and national teacher salary schedules as the public schools. Municipal governments have historically operated the public schools, but in 2006 operating authority for those schools was turned over to independent boards so as to make them more comparable to the privately operated schools and to preclude any temptation by municipalities to favor public schools. As a result, government policy makers currently have essentially no operational authority for any individual school.⁴

Whether publicly or privately operated, all schools are subject to national accountability standards implemented through the Dutch Inspectorate of Education. For primary schools, the Inspectorate examines both internal school processes and practices and student outcomes as measured by test scores in the students' final year. The internal school processes are rated on an absolute standard, and student achievement is judged in relation to expectations based on the mix of students of students in the school. The reports are public information; and although weak schools are subject to additional visits from the Inspectorate, the Inspectorate cannot close down

⁴ In many ways the Dutch privately operated schools are similar to publicly funded charter schools in the United States. The main difference is the far larger role that the privately operated schools play in the Dutch system..

schools. Only the Minister of Education can do that and only by taking away funding, which it has been reluctant to do, unless the school has too few students.

“Freedom of Education”

Central to the Dutch primary school system is the concept of “freedom of education,” which means that both parents and schools are free to engage in the kind of education of their choosing and to command public funding for their choices subject only to the national controls just described.⁵ As a result, there is no tradition of what in the U.S. we call a “common school” that serves the entire community and promotes a common sense of civic and other values. Instead, the schools reflect what was known as the “pillarization” of the Dutch society.

Until the early 1950s Dutch society was organized around various sub-cultures, or “pillars,” defined by religious affiliation – Protestant, Roman Catholic and secular. Dutch citizens for the most part lived within the confines of their particular pillar, each of which had its own churches, employers, newspapers, hospitals and schools. Communication across the various religious fault lines occurred mainly among leaders at the top of the various pillars. This system of segregation by religious orientation broke down under the secularizing forces that swept through Europe after World War II, and church-going in the Netherlands among native Dutch is now low by U.S. standards, especially in the cities. The one conspicuous exception is education, where nominal pillarization has persisted.⁶ The various boards that operate primary schools

⁵ Strictly speaking, Article 23 applies only to the right to found new schools. In practice, however, it has been interpreted as also giving parents the right to choose the school that their child will attend.

⁶ Why pillarization persisted in education after it disappeared in other areas of Dutch life is a complicated question. One common explanation is the desire of many Dutch parents to enroll their children in schools in which the teaching coincides with their family values broadly defined. Another has to do with finances. Some religious school boards had accumulated financial endowments that they have been eager to maintain in the post-pillarization Dutch society. In a 1995 article Jaap Dronkers lists a number of other explanations, including the fact that religious schools are attractive to some parents because of their “generally middle educational conservatism compared to the generally more progressive tendency of public schools.” (Dronkers, 1995). Three national organizations that oversaw the interests of the three traditional pillars continue to receive public funding for education related activities such as training, conferences and the development of teaching materials.

continue to identify themselves as Protestant, Catholic or public.⁷ It is no longer the case, however, that a Catholic or a Protestant school caters only to students of that religion. Although Protestant and Catholic families are still most likely to enroll their child in a school with the corresponding religious orientation, a recent study based on survey data shows that 29 percent of Protestants and 23 percent of Catholics attend either a non-religious school or a school of another religious persuasion (Denessen et al, 2005, Table 5).

This historical commitment to freedom of education is so strong that the right to set up new schools has been extended to all groups. As a result there are now Islamic, Hindu and Orthodox Protestant schools as well as schools with very specific educational philosophies. Although public schools must admit anyone who applies within a geographically defined catchment area, the private schools are able to limit admissions to pupils whose parents concur with the particular value system of the school. Currently, it is mainly the new types of religious schools that tend to serve pupils of the respective religious orientation almost exclusively (Denessen et al, 2005).

Table 1 provides information on the schools and students in primary schools by school type, both for the big four cities of Amsterdam, Rotterdam, The Hague and Utrecht that are the focus on this study, and for the rest of the country. The table shows that in the big cities public schools are overrepresented and Catholic schools are underrepresented. The “other” category includes, among other, Islamic and Orthodox Protestant schools. [Insert Table 1 about here]

Weighted student funding as a response to disadvantage

Historically, there was considerable socio-economic integration within the schools of the original three pillars, with wealthy and poor Catholics, for example, sitting side by side in the

⁷ These school boards should not be confused with school boards in the U.S. They are typically self-perpetuating boards that are responsible for anywhere from 1 to more than 100 schools. In some ways they are comparable to the charter management organizations that operate groups of charter schools in the United States.

same schools, especially in the smaller communities. Nonetheless, even under that system there were still some concentrations of disadvantaged students. The influx of low skilled immigrants that began in the 1960's (an influx that is described in more detail below) highlighted the issue of educational disadvantage, especially in the large cities where it generated large concentrations of educationally disadvantaged pupils of color. The fact that many of these students lagged behind other students was offensive to the Dutch sense of equity and their desire not to leave any particular group behind. Consistent with their commitments to parental choice and school autonomy, however, the Dutch simply accepted this new form of segregation – based on levels of disadvantage rather than religion – and focused their attention on alleviating the disadvantage itself. They did so by modifying their school funding system so as to minimize any adverse educational impacts of concentrations of disadvantaged students.

Specifically, in the mid-1980s the Dutch added student-based weights to their school funding program under which money follows pupils to the schools they attend. The weights were based on the backgrounds of the students, with additional weights of 0.25 for native Dutch students whose parents had limited education and 0.9 for first and second generation immigrants whose parents had low education. The effect was to direct more resources per pupil to the schools with large concentrations of disadvantaged students than to other schools. Our research has confirmed that schools serving substantial numbers of disadvantaged pupils do, in fact, have more resources, especially teaching slots, than those serving more privileged pupils.⁸ In this way, the Dutch have continued to maintain the commitment to parental choice and school autonomy in the face of growing concentrations of disadvantaged students.

⁸ For a full analysis and discussion of this policy of weighted student funding, see Ladd and Fiske (2009a and 2009b). We document there that the additional resources in the schools with large proportions of weighted students enable them to hire 57 percent more teachers per pupil than schools with few or no weighted students.

III. Why segregation is now emerging as a policy issue

Three factors help to explain why segregation of disadvantaged pupils has now become a salient issue in the Netherlands. First is the influx of large numbers of low-skilled and poorly educated immigrants, especially in the big cities. This influx has led to a proliferation of what the Dutch refer to as “black schools” and placed new pressures on an education system that historically worked well to support a pluralistic society. In addition, the secularization of society permitted the development of a consumer mindset among parents who now make their choices of school based on perceptions of educational quality rather than simply on religion. This change has, as one would expect, led to white flight from black schools. And finally, in the wake of the attacks on the Twin Towers in the United States on September 11, 2001, politicians have been more willing to talk about the potential disadvantages of Islamic schools and, more generally, of the potentially adverse effects of segregated schools on the social integration of immigrants.⁹

Influx of non-Western immigrants¹⁰

Among the immigrants to the Netherlands, the most policy relevant are those from non-Western countries. The four main categories of such immigrants are those from the former Dutch colonies of Surinam and Antilles, and guest workers from Morocco and Turkey. Indonesians are not identified as non-Western immigrants because of their long exposure to Dutch culture and to the Dutch language.¹¹

These immigrants began to arrive during the economic boom of the 1950s and 1960s, when many workers from the former colonies of Surinam and Antilles came to the Netherlands in search of greater economic opportunity. Since then additional immigrants from those countries

⁹ Karsten et al. (2006) highlight these same three points.

¹⁰ This section relies heavily on the OECD background report on immigrant education in the Netherlands (Herweijer, 2009).

¹¹ In addition, immigrants from Japan are not treated as non-Western immigrants.

have moved to the Netherlands to study or to take advantage of the high quality social services. Starting in the 1960s large numbers of unskilled Moroccan and Turkish workers were recruited under contract to work in the Netherlands. Although the initial expectation was that they would return to their home countries, most have stayed. Even after the end of official recruitment of these guest workers in the early 1970s and the introduction of tighter controls on immigration, the size of the immigrant population continued to grow through the process of family reunification and marriage. More recently, these groups of non-Western immigrants have been augmented by asylum seekers from countries such as Somalia and Iran. Figure 1 depicts the rising proportions of migrants from 1972 to 2007. [Insert Figure I about here]

The vast majority of these immigrants have settled in the country's biggest cities. Although non-Western immigrants account for about 10 percent of the overall population, they account for more than 35 percent of the population in Rotterdam, over 30 percent in Amsterdam and The Hague and slightly more than 20 percent in Utrecht. In all four of these cities they account for far higher percentages of the school population.

The policy relevance of these immigrants, particularly those in the four main categories, largely reflects their low skills, limited educational background, low income and limited familiarity with the Dutch language. Of most relevance for the education of their children is that more than 70 percent of the Turkish and Moroccan parents and about 55 percent of the Surinamese and Antillean parents have no more than a junior level secondary education. In contrast, only 20 percent of the parents of native Dutch primary school pupils have comparably low levels of education.(Herweijer, 2009.Table 12).

These low levels of education translate directly into low-skilled jobs or, in many cases, to unemployment. In terms of Dutch language skills, the Turks and the Moroccans are particularly

weak. The Antilleans and the Surinamese have somewhat better language skills because of their former colonial ties. The low socio-economic status of these non-Western immigrants differentiates them from previous immigrants, who have historically been welcome in the Netherlands, and also distinguish them from the three historical pillars of the Dutch society. Although each pillar had its fair share of families with low socioeconomic status (SES), none of the pillars themselves could be categorized as low SES. Thus this new segment of society stands out because its members are a both a different color and typically have very low SES.

Although the presence of immigrants in the big city school systems is undoubtedly at the root of current concerns about school segregation, non-Western immigrants are not currently increasing as a share of the primary school age population in the four big cities. Figure 2 depicts the levels and trends of non-Western immigrants in the 5-10 year old age group (as a proxy for the relevant 4-12 year old age group for primary schools) as a fraction of all children in that age group for each of the four big cities between 2003 and 2008. [Insert Figure 2 about here] The figure shows that the share of non-Western immigrant children exceeds 50 percent in both Amsterdam and Rotterdam and is only slightly less than 50 percent in The Hague, with little movement in the percentages over the five-year period. The share is lower in Utrecht, where it has a slight downward trajectory. In an additional set of 32 big cities, about which we say more below, we observe very little change in the average proportion of (disadvantaged) immigrant children in primary schools over the longer period 1997-2005.

Immigrants and the new consumer mindset in the selection of schools

We have previously alluded to the secularization of the Dutch society, which has opened up new opportunities for families to base schooling decisions not just on religion but on other criteria, including the mix of students in the school and perceptions of school quality. Because

the immigrants differ from the established groups within the Dutch society in that they are overwhelmingly disadvantaged, this secularization has opened the door for the pressures discussed in section I above. The educated native Dutch now have clear incentives – whether they reflect outgroup avoidance, ethnocentrism or a search for quality – to enroll their children in schools with few immigrants. The immigrants, in turn, have mixed incentives, with ethnocentrism leading them to self-segregate and quality-related incentives in some cases leading them to enroll their children in integrated schools.

Survey research confirms these new motivations and behaviors in the Dutch context. In 2003, a group of researchers based at the University of Amsterdam surveyed over 900 parents in neighborhoods that had schools that were significantly whiter or blacker than the neighborhood itself about the choices they made for their children, where black refers to nonwestern immigrants. Among the positive reasons cited for choosing a particular school, ethnicity emerged as most important, but for reasons that differed between native Dutch and immigrant parents respectively. The native Dutch focused on the ethnocentric goal of being with “people like us.” The immigrant parents more frequently mentioned the academic quality of the school and the attention given to the needs of their children. Based on the negative reasons cited for not choosing a particular school, the researchers concluded that both native Dutch and immigrant parents typically deemed the white schools most suitable and the schools serving large proportions of immigrant students (i.e. the ‘black schools’) the least suitable. According to the survey, the native Dutch parents avoided the black schools because of both the mismatch between home and school and their poor academic standards. When immigrant parents avoided a black school they typically did so because of the poor reputation of the school (Karsten et al. 2003; Karsten et al, 2006,pp. 233 and 234).

The more that parental choices are influenced by the ethnic mix of a school's students, the more segregated they are likely to become over time and the more difficult it is for policy makers to ignore the fact that schools are segregated.

Political considerations

Despite the fact that immigrant children are not currently increasing as a share of the student population in the big cities, they are increasingly becoming the focus of political attention. A major catalyst for that attention is undoubtedly the destruction of the Twin Towers in New York City on 9/11/2001, which raised political consciousness about Muslims in many countries, including the Netherlands. In the aftermath of that event a new radical populist, the late Pim Fortuyn, emerged and established a new political party that raised harsh questions about Dutch policy toward immigrants. In so doing, he put the issue of immigrants, especially Muslim immigrants, squarely on the public policy agenda. The views of Fortuyn and, recently, the more extreme views of Geert Wilders have allowed other more moderate politicians to take stronger positions on policies toward immigrants than previously had been possible. One of the central policy concerns became the extent to which the residential and school segregation of immigrants kept them from being successfully integrated into Dutch society (Musterd and Ostendorf, 2007).

Emblematic of these concerns are the fierce debates about the Islamic schools, of which there are more than 40 throughout the country at the primary level and two at the high school level. Almost all of the 7,600 pupils in these primary schools are first or second generation immigrants whose parents have limited education. Like all schools, these Islamic schools follow the standard Dutch curriculum and use Dutch as the language of instruction. The shortage of Muslim educators means that only 20 percent of teachers and 25 percent of the managers in these schools are Muslim. Religious and cultural values are expressed mainly through religious

education classes and policies such as separate gym classes for boys and girls and the wearing of head scarves by girls (Karsten et. al., 2006).

The existence and nature of Islamic schools has been a lightning rod for the general discontent regarding immigrants. Supporters see them as promoting self-esteem and cultural pride, while opponents view them as divisive and undermining of important Dutch values ranging from tolerance to the role of women (Driessen and Merry, 2006). Fears about Islamic fundamentalism following the attacks of September 11 led to accusations that some Islamic schools were promoting anti-democratic values. Although special studies in 2002 and 2003 by the Dutch Inspectorate of Education found no evidence that these schools were seeking to undermine the Dutch legal order or basic values, nevertheless, a number of politicians have continued to call for limiting any expansion of Islamic schools (Karsten et. al. 2006). Significantly, some of the most heated debates regarding Islamic schools takes place between fundamentalists and moderates within the Muslim community itself.

IV. Patterns and trends of segregation of disadvantaged immigrants, 1997-2005.

Much of the recent empirical work on school segregation in the Netherlands has focused on the question of whether schools are “too white” or “too black” relative to the population in the neighborhood (Broekhuizen, Jansen and Slot, 2008; Wolfgram et al, 2009).¹² One of these studies shows, for example, that as of 2005/06 more than half the primary schools in both Amsterdam and Rotterdam were more than 10 percentage points whiter or blacker than the comparable percentage mix of children in the neighborhood. Specifically, in Amsterdam 23 percent of the schools were whiter and 33 percent were blacker, with a third of the latter being

¹² One exception is Van Nimwegen and Esvelt (2006), a long report on Dutch demographics that includes a few pages about primary school segregation based on isolation and dissimilarity indexes.

“too black” (as defined by the authors) in that they were more than 20 percent blacker than the neighborhood. In Rotterdam, 19 percent were whiter and 32 percent were blacker, with almost half of the latter being “too black.” By this measure, The Hague appears to be the least segregated in that close to 60 percent of the schools in that city reflect the demographics of the surrounding neighborhood (Wolfgram et al, 2009).

Although such an approach provides useful information on the extent to which schools reflect the ethnic mix of their surrounding neighborhood, it provides little or no information about the overall degree to which schools are segregated within the city. Whenever the neighborhoods themselves are highly segregated, for example, even if the ethnic mix of students in every school reflected the mix of students within its neighborhood, no schools would emerge as “too white” or “too black.” Yet school segregation would still be very high.

Our empirical analysis follows in the U.S. tradition of segregation research and is designed to measure the extent of segregation across schools within cities regardless of the extent to which it is correlated with residential segregation. We use multiple measures to look at trends over time and to make comparisons to comparable measures in the U.S. where segregation by race has historically been high and the subject of significant policy concern.

Methodology and data

We examine here the extent to which educationally disadvantaged immigrant pupils at the primary level are segregated from other pupils. For this purpose a disadvantaged immigrant is defined as a first or second generation non-Western immigrant whose parents have limited education. Such pupils can be identified through administrative data because of the existence of the system of weighted student funding described above. In particular, these are the students eligible for the additional funding weight of 0.9 because of their educational disadvantage. Our

data cover the years 1997-2005, a period during which the criteria for the weights remained unchanged. We cannot extend the analysis to a more recent year because of the elimination in 2006 of immigrant status as a criterion. Starting in that year, the weights are based solely on the educational attainment of a child's parents.¹³

Drawing on the U.S. literature on school segregation, we use five separate measures that reflect different aspects of the extent to which disadvantaged immigrants are segregated from other students. The five measures are grouped into two categories, and are calculated separately for each city. The measures in the first category highlight the extent to which disadvantaged immigrant pupils are concentrated in schools with other pupils similar to themselves, and hence are isolated from more advantaged students. Note that these measures are likely to be higher in cities with higher proportions of disadvantaged immigrants than in other cities. The measures in the second category highlight the extent to which pupils of the two types are unevenly distributed across schools and are invariant to a city's overall proportion of disadvantaged immigrants.

Measures of isolation

1. Fraction of disadvantaged immigrant pupils in schools with more than 50 percent of such pupils.

¹³ Because we are using information reported for the purposes of school financing, our measures of segregation in this section apply to schools regardless of how many locations the school has. Although most schools have only one location, some have more than one, partly as a consequence of school consolidations in the 1990s. We have also done some comparable analysis based on other data on immigrant status that are available at the level of the school location, but only for the years 2003-06. Despite the use of an immigrant measure that does not specifically adjust for disadvantage, the results are virtually the same as those reported in the text. We had initially hoped to use this other data source – referred to as country of origin data – to extend our analysis to 2008/09. Unfortunately, based on our initial examination of the data as reported by the schools and provided to us by the CFI, we concluded the data are not reliable for the years after 2006; hence we were not able to use it for those years. Specifically, the school level data generated large year-to-year declines after 2006 in the proportions of immigrant pupils – declines that were inconsistent with city-level trends in the proportions of non-Western immigrant school-aged pupils. Officials at the Ministry of Education have since confirmed our conclusion that the post -2006 data appear to be incorrect, but they cannot do anything about it until the new pupil level identifiers are operational. We hypothesize that when the immigrant criterion for the school funding weights was eliminated in 2006, either that schools became less careful in reporting the country of origin information or that the Ministry became less vigilant in checking to see that the schools reported it correctly.

2. *Fraction of disadvantaged immigrant students in schools with more than 70 percent of such students.*

The advantage of these first two measures is their simplicity.

3. *Isolation index (I) : A measure of the extent to which disadvantaged immigrant pupils are in schools with other pupils like themselves.*

This measure, which can be interpreted as the percentage of disadvantaged immigrants in the school of the typical disadvantaged immigrant, is calculated as follows:

$$I = \sum_i (DI_i / DI_{City}) * (DI_i / N_i)$$

where DI_i is the number of disadvantaged immigrants in school i , N_i is the total number of students in the school, and DI_{City} is the number of disadvantaged immigrants in the city. It differs from the previous two measures in that it is based on all disadvantaged immigrants in the city rather than just those in the most highly disadvantaged schools. .

Measures of imbalance

4. *Dissimilarity index (DIS); A measure of the extent to which disadvantaged immigrants are unevenly distributed across schools.*

The index ranges from 0 (complete balance) to 1 (complete segregation) and is often interpreted as the fraction of pupils who would need to be moved among schools to attain balance. This measure is calculated as follows:

$$DIS = 0.5 \sum [(DI_i/DI_{City}) - (AO_i/AO_{City})]$$

where DI is as defined above, and AO_i and AO_{City} refer to all other pupils in the school and in the city respectively. The brackets denote absolute values. Hence the measure is the average deviation (independent of sign) across schools between the shares of the city's total pupils who are disadvantaged immigrants and those who are more advantaged.

5. *Segregation Index (S)*: A gap based measure of segregation that, like the dissimilarity index, measures the extent to which schools are unbalanced.

If disadvantaged immigrant students were evenly distributed among schools the typical advantaged student would attend a school with the average proportion of disadvantaged students in that city. Call that ratio R . The segregation index measures the gap between that maximum ratio and the actual exposure ratio (E) of advantaged students to disadvantaged immigrant students expressed as a fraction of the maximum ratio.¹⁴ Once again, the range is 0 to 1. A value of 0 indicates that there is no imbalance in the sense that the proportion of disadvantaged immigrants is similar across schools and equal to the citywide proportion, while a value of 1 indicates complete imbalance.

Although the interpretation of the segregation index is somewhat less intuitive than that of the dissimilarity index, we include it among our measures so that we can compare levels of segregation in Dutch cities with those in the U.S. based on this measure.¹⁵

Levels and trends in the big four cities

Figure 2 illustrates the level and trends over time in the five measures of segregation aggregated across the four big cities, with the outcomes for each city weighted by the number of primary school pupils each year. [Insert Figure 2 about here.] The top line indicates that close to 80 percent of the disadvantaged immigrant students in the four big cities are in schools with more than a majority of students like themselves and that the percentage increased, but only slightly, over the nine-year period. The proportion of such students in schools with more than 70 percent disadvantaged immigrant is correspondingly lower but still exceeds 60 percent in all

¹⁴ Provide more details and explain why some researcher prefer the segregation index. The main reason is that it can be decomposed, but that is not relevant to this study.

¹⁵ The dissimilarity index is usually higher than the segregation index, but the two measures are quite highly correlated. For example, in a sample of 715 public school districts in the U.S. the correlation between the two measures was 0.86 (Clotfelter, 2004, p. 205)

years, reaching a peak in 2002. Consistent with those two measures, the isolation index indicates that the typical disadvantaged immigrant student living in one of the big four cities was in a school with 70 percent or more disadvantaged immigrant students throughout the period. All of these measures are clearly high. The last one implies, for example, that typical disadvantaged immigrant children have relatively few native Dutch speaking schoolmates, a situation that could make it difficult for them to develop their Dutch language skills.

Although the two measures of imbalance – the dissimilarity index and the segregation index – have different values, they tell the same story, namely that schools in the four big cities were highly unbalanced throughout the period, but not much more so in 2005 than in 1997. The dissimilarity index indicates, for example, that more than 60 percent of the pupils would have to be moved to other schools in order to achieve balance, and the segregation index indicates that the gap between the exposure rate of the typical native Dutch student to disadvantaged immigrant pupils and the maximum possible average exposure rate in each city is 45 percent of the maximum exposure rate. The similar trends across the five measures largely reflect the fact that the share of disadvantaged immigrants in the big four cities has remained relatively constant over time. Had it been growing, the isolation measures might well have risen more than the imbalance measures.

City-specific patterns for the segregation index, as illustrated in Figure 3, tell a somewhat more nuanced story. This figure shows that segregation is lowest in Amsterdam but has been rising somewhat over time, that segregation in the Hague is the highest of the four cities in every year and has been rising, and that segregation in Utrecht has also been rising. Only in Rotterdam has segregation been consistently falling. As we discuss further below, the downward trend in Rotterdam coincides with a downward trend in residential segregation in that city. The

bottom line, though, is that segregation by this measure is rising in three of the four big cities in the Netherlands. Identical patterns emerge for the dissimilarity index (not shown).

Comparisons to segregation in the U.S.

The levels of segregation reported here are high, not only in absolute terms but also relative to segregation levels in the U.S. In a recent study of the 100 largest school districts in the southern and border states in the United States, researchers found that the average enrollment-weighted racial isolation of black students was 0.46, which is far below the comparable measure of immigrant isolation of 0.70 in the big Dutch cities. Similarly, for those same 100 U.S. districts, the researchers reported a white-nonwhite dissimilarity index of 0.43, which is also far below the average of over 0.60 for the Dutch cities (Clotfelter, Ladd and Vigdor, 2006).

Additional comparisons to the U.S. are reported in tables 2 and 3. The entries in table 2 are the percentages of black students in schools with more than 50 percent non-white students in 1972 (a few years after the major initial efforts to desegregate schools in the U.S.) and in 2000 for various regions of the U.S. The increases in many of the percentages over the period reflect the resegregation that was occurring in many parts of the U.S. at the end of the 20th century. Of note is that even the highest percentage in the table – the 78.3 percent for the Northeastern cities in 2000 – is below the comparable average of close to 80 percent in the four big Dutch cities.

[Insert Table 2 about here]

Table 3 compares information for the four major Dutch cities with the five largest school districts in North Carolina, a southern U.S. state that has more than nine million people. The first two columns provide background information on the two sets of districts. We note that the figures for the Dutch cities refer only to primary school students (comparable to elementary and

middle school students in the U.S.), while those for the North Carolina districts refer to all grades. Even if we were to take into account the possibility that school segregation could be somewhat higher in the lower grades than in high schools, it is likely that the segregation indices for the Dutch cities would still far exceed those for the North Carolina districts.

To be sure, some U.S. metropolitan areas feature far higher levels of segregation than those of either North Carolina districts or the 100 districts in the southern and border states to which we just referred. As of 2000, the highest metropolitan wide segregation indices in the U.S. were in Detroit, Michigan (0.630); Monroe, Louisiana (0.590) and Cleveland, Ohio (0.585). (Clotfelter, 2004, Table 2.3). These segregation indices all exceed those reported in Table 3 for the Dutch cities. Such measures are calculated for whole metropolitan areas that include not only central cities with large black populations but also suburban districts that tend to be quite white. As a result, much of the overall segregation reflects differences between, rather than within, districts. For that reason, the overall metropolitan-wide measures are not fully comparable to the city-specific segregation measures for the Dutch cities. The Dutch measures would most likely be somewhat higher than reported in the table if they were based on the cities and their surrounding communities. Thus we conclude that the segregation of disadvantaged immigrant pupils in the four major Dutch cities exceeds that of black students in most major American cities.

Patterns in 32 other large Dutch cities.

In addition to the four largest cities, the Netherlands has many other large and middle sized cities. To present a fuller picture of segregation in the Netherlands, we briefly focus here on the 32 other big cities (formerly 27 but recently expanded to 32) that often work together to

promote their specific interests with the National Government. Two-thirds of these cities have population over 100,000, with the largest being Eindhoven with about 210,000 residents. The smallest, Lelystad, has about 73,000 residents. At about 15 percent, the average proportion of disadvantaged immigrants in primary schools in these 32 cities is far lower than in the big four cities.

For each of the same five measures of segregation used above Table 4 reports both the average and the range across the 32 cities for the years 1997 and 2005. Consistent with their lower proportions of disadvantaged minority pupils, the 32 cities exhibit far lower levels of concentration than the big cities. Still quite high, however, are the two measures of imbalance. Note, for example, that the 2005 average segregation index for the 32 cities is higher than that in all but one of the large North Carolina districts and that the maximum value across the 32 cities (0.49) is just as high as that in Utrecht.¹⁶

The last column of the table shows that segregation has been rising in these 32 cities. The average proportions of disadvantaged immigrant pupils in schools where more than 50 percent or more than 70 percent of students were like themselves increased in both cases by more than 20 percent, and the gap-based segregation index by 15 percent. Although the other two measures increased by smaller percentages, the bottom line is that regardless of the measure, disadvantaged immigrants became increasingly segregated at the primary level in these 32 large cities over this period.

¹⁶ As shown by the ranges in parentheses in each cell, there are large differences in the levels of segregation by each measure across cities. Based on regression analysis of each of the measures across cities, we conclude that the differences in all the measures other than the dissimilarity index are positively associated with differences in the fraction of disadvantaged minority studies in the city, after controlling for total enrollment and the proportion of nonpublic schools in the city. The latter variables enters consistently with a positive sign in all regressions but is never statistically significant.

Trends in residential segregation

Finally, we turn to the trends in residential segregation in the four big Dutch cities so that we can compare them to trends in school segregation. The residential trends are based on publicly available data from the Central Bureau for Statistics (CBS) on the proportions of non-Western immigrants in each neighborhood.¹⁷ Because there are fewer neighborhoods than schools, the levels of neighborhood and school segregation are not directly comparable. In general, all else held constant, the larger are the units of observation, the lower will be the measured segregation. The relevant comparisons are the comparisons in levels across cities and the trends over time.

In Table 5, we report two measures of segregation at the neighborhood level: the dissimilarity index and the gap-based segregation index. Recall that these are measures of unevenness and hence are invariant to the overall percentages of non-Western immigrants either across cities or within cities over time. As before, the values differ between the two measures, but the patterns and trends are relatively comparable, although not identical. We report changes both for the period 1999-2005, which is relatively comparable to the period for which we have calculated school-level segregation, and for an extended period through 2008.

Emerging from the table is first that residential segregation is highest by far in The Hague throughout the period. Amsterdam features the lowest level among the four cities at the beginning of the period but not at the end because of the small increase in Amsterdam and the

¹⁷ The CBS defines non-Western immigrants as first and second generation persons born in Turkey, Africa, Latin America or Asia excluding Japan and Indonesia. Note that this definition is broader than that used for the school analysis in that it includes all persons, not just children, and it includes not only disadvantaged non-Western immigrants (that is those in households for whom the adults have limited education) but also those who are more advantaged. We were not able to restrict the analysis to the four major non-Western groups, almost all of whom are disadvantaged, because that breakdown was available only after 2003. We report data only for 1999 and 2003-2008 to ensure consistent definitions over time. Finally, excluded from the analysis are all neighborhoods with fewer than 50 total residents because for those neighborhoods is withheld for purposes of confidentiality. That exclusion has little influence given that 80 percent of the relevant neighborhoods have more than 1000 inhabitants.

relatively large decrease in Rotterdam during both the 1999-2005 and the full periods. The trends in the other two cities are far less clear. The changes over time in The Hague differ across the two measures but in any case were very small. In Utrecht both measures suggest that segregation increased between 1999 and 2005, but discrepancies between the two measures in the more recent years generate a mixed picture.

Comparing these trends to those in school segregation as shown above in Figure 3 by city, we find that, with the exception of The Hague, the trends in school segregation mimic the trends in residential segregation. Specifically, both school and residential segregation fell in Rotterdam, and rose somewhat in Amsterdam. In Utrecht school segregation increased through 2002 and then declined somewhat, which follows the general pattern of residential segregation. Only in The Hague, where both school and residential segregation are very high, do the patterns diverge; despite the absence of much change in residential segregation in that city between 1999-2005, school segregation increased quite significantly.

Although these trends in residential segregation contribute to our understanding of trends in school segregation, they tell us nothing about causal linkages. A reduction in residential segregation over time need not imply, for example, a reduction in school segregation. This analysis highlights the importance of looking at overall segregation and not just the extent to which the ethnic mix of schools differs from that in their surrounding neighborhoods. As we noted at the beginning of this section, The Hague has the highest percentage of schools that reflect their surrounding neighborhoods and hence, by that measure appears the least segregated. But in terms of overall measures it features the highest levels of both school and residential segregation.

V. Current efforts to restrict segregation

Now that school segregation has been placed on the Dutch policy agenda, officials at both the local and national levels are looking for ways to make the “black” schools less black and the “white” ones less white. In one of the earliest of these efforts, initiated in Gouda in 1981, non-white children, mostly Moroccan, were bussed into white schools in affluent areas. The experiment ended in 1996, however, when major stakeholders, including parents and school boards, withdrew their support (Karsten et al., 2006).

This example highlights the problem faced by Dutch policy makers. The strong national commitment to freedom of education means that public officials have little or no direct authority to intervene to limit parental decisions about where their children will go to school or to force autonomous schools to change their admissions policies, which in the case of privately operated schools includes the right to require parents to subscribe to the particular religious or other values around which the school is organized. The only way changes can be made is in the typical Dutch manner of “polderizing,” or engaging in discussions in which all the relevant groups have an opportunity to have their say and, over time, coming to a consensus about what needs to be done on a voluntary basis.¹⁸

Concerned that segregation in schools undermines relations between various ethnic and other groups in Dutch society, officials in a number of cities have in recent years promoted voluntary agreements with school boards to encourage desegregation. Most of these agreements focus on student enrollment procedures such as establishing a fixed enrollment time rather than allowing parents to enroll their child in a preferred school well before they are old enough to attend, which historically has given more advantaged families an advantage. Other approaches

¹⁸ The term ‘polderizing’ has its origins in the longstanding and continuing Dutch challenge of containing the sea. The construction and maintenance of *polders*, which are low-lying tracts of land enclosed by dikes, was a community effort that gave birth to the political tradition of polderizing.

include providing better information to disadvantaged parents about the options available to them and promoting exchanges and other contact between black and white schools (Ledoux, Felix & Elshof, 2009).

A Dutch institute for multicultural development recently published an inventory listing agreements between the city and schools to reduce segregation in 19 of 35 cities examined, although implementation of the agreements has been slow (Ledoux, Felix and Elshof (2009). At the national level the Department of Education has recently initiated seven pilot projects to identify measures to combat segregation in each of the four largest cities as well as in Eindhoven, Deventer and Nijmegen. Four more cities – Schiedam, Amersfoort, Tilburg and Leiden – were subsequently added to the project, and an initial evaluation is scheduled for 2010 (Ministerie van Onderwijs, 2008).

Some of the pilots build on policies earlier initiated by the cities on their own. By 2004 Rotterdam had introduced a series of measures to combat segregation, including the use of double waiting lists, which allowed oversubscribed schools to give preference to children who would enrich the ethnic mix of the school's students. The city also encouraged local agencies to organize meetings in which parents could visit schools in the neighborhood and join with other parents in enrolling their child at a segregated school together (Peters, Haest & Walraven, 2007). Such parental initiatives have started at 30 schools (Een school dichtbij, 2009).

In 2007 Amsterdam launched 10 different pilots involving initiatives such as agreements between schools in support of voluntary parental initiatives, including a fixed enrollment date. Two new experiments in The Hague focus on supporting parental initiatives and fostering cooperation between black and white schools under which Western and non-Western students from segregated schools can meet each other to promote integration and communication. In

Utrecht experiments have focused on developing standard procedures for enrolling children in primary schools (Ministerie van Onderwijs, 2008). Outside the four big cities, the pilots involve similar measures but most are quite limited in scope (Ministerie van Onderwijs, 2008).

The best-known – and most ambitious – pilot is underway in Nijmegen, where city officials are seeking to combat socio-economic segregation by balancing the distribution of weighted students under a system that in the U.S. would be called “controlled choice” (Ministerie van Onderwijs, 2008). All of the primary schools in Nijmegen, including the religious schools and those with alternative pedagogies, have agreed on a central subscription system in which there is a maximum number of students for each school (Gemeente Nijmegen, 2009b). Parents list the three to six primary schools they most prefer, and efforts are made to accommodate their wishes.

When a particular school is oversubscribed, priority is given to siblings of pupils already enrolled in the school and to children who live nearby. Subsequent priority is then to either advantaged or disadvantaged students – with disadvantage defined by eligibility for weighted student funding – in order to reach a balance of 30 percent disadvantaged and 70 percent advantaged students at a school. If there are fewer places than students within one of the relevant categories, a lottery determines which students are placed in the school (Gemeente Nijmegen, 2009a). The policy also includes efforts to invest additional money in segregated schools that have large numbers of disadvantaged students (Gemeente Nijmegen, 2009b). Because this policy has only been in effect since April 2009, no results are available.

In summary, as of 2009 more than half of the larger cities in the Netherlands were making some form of effort to reduce segregation in their schools. These efforts differ widely in their size and methods, and no single best practice has emerged. The various pilot projects of the

Department of Education could potentially generate some models that are effective and acceptable in the Dutch education context, but progress in reducing segregation is likely to be limited at best.

Of the initiatives now underway, the one in Nijmegen is receiving the most attention because it represents the most aggressive effort to control choice and, if successful, could a model for other cities. The situation in Nijmegen, however, is far from typical. The city has long had a progressive government and the majority of schools are operated by only two large school boards, thus simplifying the negotiation process. Even those boards had to be enticed to participate in the program with a new and favorable deal related to capital spending.

Pessimistic outlook for change

Several reasons are generally cited for the lack of overall progress in combating segregation in primary schools in the Netherlands, starting with residential segregation and with the basic policy problem mentioned at the beginning of this section. The Constitutionally-protected concept of freedom of education means that no one group, including public officials, has the authority to force other stakeholders – whether they be parents or schools – to behave in a certain way. For example, municipal officials cannot even require school boards to accept a fixed time of enrollment. Thus any efforts to reduce segregation will have to reflect the voluntary commitment of a substantial number of stakeholders for whom private interests in maintaining the status quo may well exceed the public benefit to them of reducing segregation.

Other factors include the newness of the conversations regarding segregation, a lack of consensus about the causes and or solutions to the problem, and, importantly, the fact that many Dutch citizens simply do not believe that segregation is a problem (Ledoux, Felix & Elshof,

2009). A 2007 study of 35 cities indicated that the main reason for the lack of programs to combat segregation in education was that segregation was not viewed as a serious concern (Peters, Haest & Walraven, 2007).

VI. Conclusion

The first 40 years of the Dutch experience with parental choice and school autonomy suggested that segregation by educational disadvantage need not emerge as a central characteristic of such a system. That conclusion no longer holds. With the influx of immigrants and the secularization of the Dutch society, the pressures for segregation described in much of the world-wide literature on school choice, have generated a very segregated school system.

Our data show that segregation by immigrant status in primary schools is already high in the Netherlands – and as high, or higher than, in many cities in the U.S. – and that segregation continues to rise in many cities despite little or no increase in the proportion of immigrants in the school age population. Although a number of efforts have been initiated to reduce segregation, especially in the country's largest cities, these efforts have thus far shown little success.

We do not address in this paper the extent to which school segregation represents an educational or social problem. On the one hand, any given level of segregation in the Netherlands could be less problematic from an educational perspective than in the U.S. because the program of weighted student funding helps to offset the adverse educational effects of disadvantage. On the other, it is quite plausible that having such segregated schools is highly counterproductive with respect to the goal of integrating immigrants into Dutch society, which has long been built around principles of inclusiveness and equity.

The longstanding tradition of freedom of education is by no means the only determinant of the high levels of segregation in the Netherlands. Our comparison of school and residential trends suggests that residential segregation is also a contributing factor. Whatever their role in creating the problem, however, the twin aspects of freedom of education – the right of parents to choose their child’s school and the operational autonomy afforded to schools – make it is very difficult for the Dutch to do anything about their high levels of school segregation. Any proposal to reduce segregation, whether through voluntary agreements among schools or governmental policies, will inevitably involve a trade-off with a deeply held Dutch value.

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Table 1. Primary students by school type, 2005/06			
	Big 4 Cities	Rest of country	Whole country
I. Schools and students			
Total schools	596	6,360	6,956
Total students	169,864	1,379,224	1,549,088
III. Students by school type (percent)			
Public	39.1	29.7	30.8
Roman Catholic	22.4	35.6	34.2
Protestant	25.0	24.3	24.4
Special program	6.6	4.7	4.9
Other	6.9	5.7	5.8
Notes. Distribution of students by type of school is based on the 6842 schools for which we can identify the type of school. 581 of these schools are in the big 4 cities. Calculations by authors based on data from the Central Agency for the Financing of Schools (CFI).			

Table 2. Percentages of black students in 50-100 percent nonwhite schools by U.S. region		
	1972	2000
Northeast	69.9	78.3
Border	67.2	67.0
South	55.5	69.0
Midwest	75.3	73.3
West	68.1	75.3
United States	63.6	71.6
Source. Charles Clotfelter, <i>After Brown</i> (Princeton University Press), 2004, Table 2.1, p. 56		

Table 3. Comparison of segregation indices in large cities or districts, The Netherlands and North Carolina, 2005/06

Largest four cities in the Netherlands			
	Total enrollment – primary schools only	Disadvantaged immigrant students (percent)	Segregation index (disadvantaged immigrant vs. all other)
Amsterdam	56,235	45.3	0.42
Rotterdam	50,936	49.5	0.45
The Hague	40,924	37.8	0.57
Utrecht	21,719	30.4	0.49
Largest 5 districts in North Carolina, U.S.A.			
	Total enrollment -- all grades	Non-white students (%)	Segregation index (non-white vs.white)
Charlotte- Mecklenburg	126,720	61.9	0.33
Wake	125,501	44.4	0.12
Guilford	70,237	56.3	0.28
Cumberland	52,514	61.4	0.15
Winston- Salem/Forsyth	51,471	53.0	0.28
Source. Charles Clotfelter, Helen Ladd and Jacob Vigdor, "School Segregation under Color-blind Jurisprudence: The Case of North Carolina." <i>Virginia Journal of Social Policy and the Law</i> . Vol 16, no. 1. Combination of Tables 1 and 2.			

Table 4. Segregation of disadvantaged immigrant pupils, 5 measures for 32 large Dutch cities, 1997 and 2005			
	1997 Average (range)	2005 Average (range)	Percent change in average
<i>Isolation measures</i>			
> 50 percent disadvantaged immigrant	0.289 (0.00 -0.66)	0.350 (0.00-0.63)	21.1
> 70 percent disadvantaged immigrant	0.160 (0.00 – 0.66)	0.197 (0.00-0.53)	23.1
Isolation index	0.370 (0.15-0.61)	0.405 (0.16-0.60)	9.5
<i>Imbalance measures</i>			
Dissimilarity index	0.525 (0.35-0.73)	0.561 (0.36-0.69)	6.9
Segregation index	0.264 (0.09-0.54)	0.304 (0.10-0.49)	15.1
Calculated by the authors. See text for definitions of the five measures.			

Table 5. Trends in residential segregation, non-western immigrants vs. all others at the neighborhood level, four big cities, 1999 and 2003-2008.				
<i>Dissimilarity index</i>				
	Amsterdam	Rotterdam	The Hague	Utrecht
1999	0.363	0.417	0.465	0.396
2003	0.373	0.391	0.467	0.413
2004	0.374	0.387	0.471	0.419
2005	0.382	0.385	0.472	0.413
2006	0.386	0.379	0.473	0.406
2007	0.387	0.375	0.472	0.401
2008	0.384	0.370	0.470	0.394
Change 1999-2005	0.019	-0.032	0.007	0.017
Change 1999-2008	0.021	-0.047	0.005	-0.002
<i>Segregation index</i>				
1999	0.161	0.195	0.283	0.163
2003	0.173	0.192	0.281	0.181
2004	0.176	0.189	0.282	0.190
2005	0.180	0.189	0.282	0.188
2006	0.181	0.186	0.281	0.186
2007	0.182	0.181	0.281	0.187
2008	0.178	0.177	0.276	0.184
Change 1999-2005	0.019	-0.006	-0.001	0.025
Change 1999-2008	0.017	-0.018	-0.007	0.021
Calculated by the authors based on data from the Central Bureau of Statistics. Calculations include all neighborhoods with at least 50 people. In 2005, the numbers of neighborhoods by city were 92 in Amsterdam, 78 in Rotterdam, 107 in the Hague and 96 in Utrecht. The number of neighborhoods differ slightly from year to year.				

Figure 1: Percent of migrants in the Netherlands

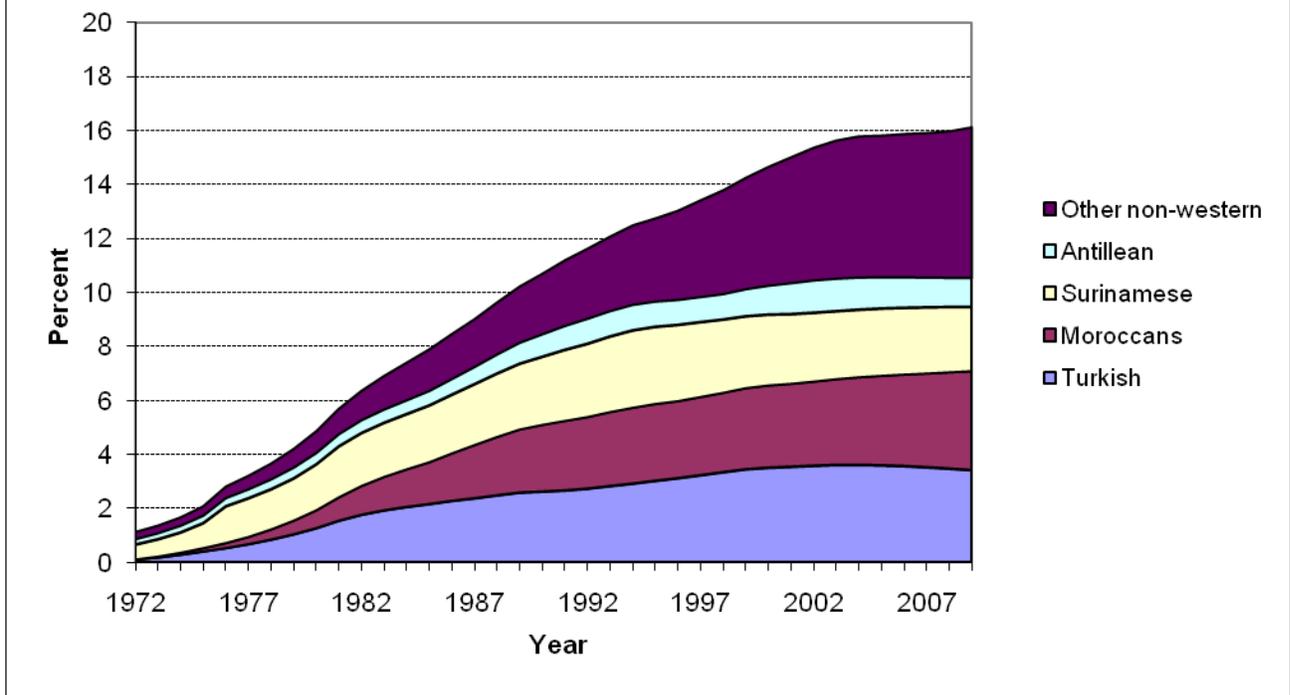


Figure 2. Percent of non-western migrants 5-10 years old, four big cities, 2003-2008 (CBS data)

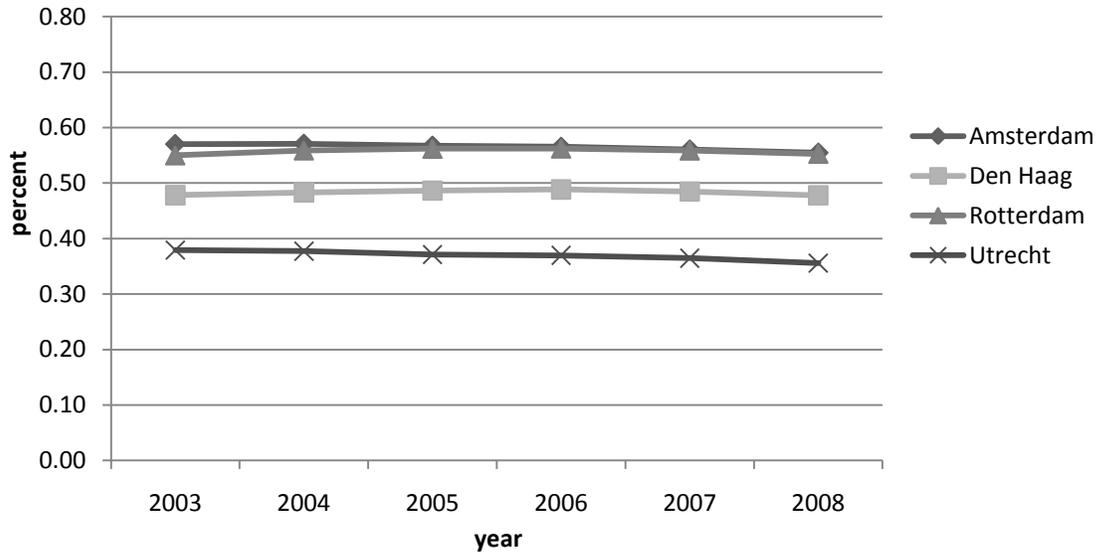


Figure 3. Five measures of segregation of disadvantaged immigrants (DI) vs. all other primary school students, aggregated across the four big cities, 1997-2005

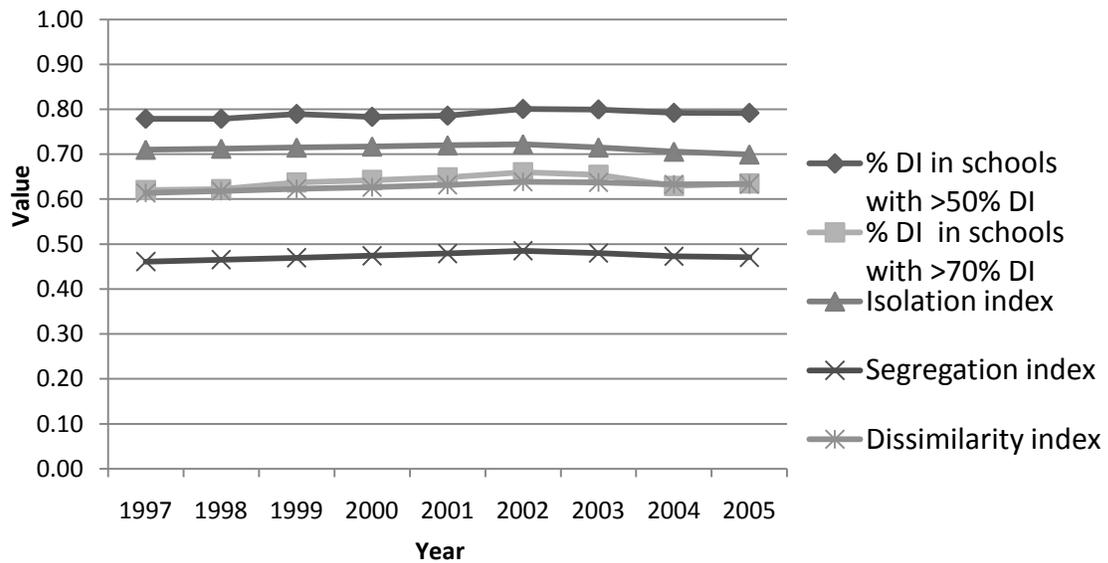


Figure 4. Trends in segregation index of disadvantaged immigrants (DI) vs. all other primary school students, by city, 1997-2005

