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## ETHNIC SEGREGATION AND THE ROLE OF PUBLIC HOUSING IN AMSTERDAM

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### ABSTRACT

Dutch cities are characterized by moderate levels of ethnic (and social) segregation if compared with other countries in the Western world. Dutch cities are also famous for their large share of public housing in the total stock. Not surprisingly these two features are frequently supposed to be causally related. However, in this contribution this association is challenged on the basis of a review of existing and well-described segregation situations, and on the basis of an empirical GIS analysis of micro-level data from the Amsterdam population register. Ethnic segregation may also develop within the large public housing sector.

**Key words:** Ethnic segregation, public housing, Amsterdam, GIS analysis, micro level, location quotient

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### SEGREGATION AND PUBLIC HOUSING

Segregation refers to the spatial separation of population categories, the poor and the affluent, the young and the old, single person households and family households, coloured people and whites. Segregation finds expression in an unequal spatial distribution of the population categories involved, a compression at certain places and a thinning at other places.

Like many others, Dutch planners and politicians believe that segregation is something that has to be countered as much as possible. Segregation would contribute to a lack of understanding of each other and therefore stimulate xenophobic reactions and racism rather than mitigate them (Smith 1993). Furthermore, segregation would contribute to the perpetuation of social stratifications and prevent full participation in society. It is assumed that the disproportionate distribution causes *extra* negative effects for the individual members of certain population categories, such as specific ethnic groups. A spatial concentration of people with few prospects to participate and integrate socially in mainstream society would result in even fewer opportunities for each individual (Massey & Denton 1993). Wilson (1987) stresses that living in a ghetto will result in extra social isolation. De Lannoy and Kesteloot (1990, pp. 143-144) argue that "residential differentiation is not only the result of class differences, but is also one of the

causes that result in the continuation and reproduction of these differences". A spatial clustering of less well-off people would reduce an individual's opportunities to escape from that situation. On the one hand, arguments are derived from the so-called 'negative example idea': these people are considered to be confronted with the wrong examples in life, to have experienced a 'wrong' socialization process. On the other hand, this is also considered as a consequence of the stigmatization of certain neighbourhoods: employers would avoid employing people who live in a stigmatized area.

Assuming these hypotheses are well founded it seems legitimate to try to avoid sharp segregation as much as possible. In the Netherlands, research has repeatedly shown that the levels of social and ethnic segregation are relatively moderate (Musterd & Ostendorf 1994, Brecbaart *et al.* 1996). Urban managers tend to associate these low levels with the presence of a large public housing sector and with the allocation in this sector. Approximately 42% of the entire stock of housing is public housing, of overall good quality and relative equality in terms of rent level. The share of public housing in the large cities is even higher. For a long time the allocation has not been based on means testing, but on needs in terms of household size. In addition, until recently the income differences of households were only moderate and individual rent subsidies were widely available. Finally, there was a severe quantitative housing shortage as well.

As a consequence the conditions seemed to be met whereby strict allocation rules could be applied and fairly mixed populations within the public housing sector could be realized. No doubt the situation described will have contributed to the reduction of the speed of moving and spatial segregation processes. It simply takes more time to distinguish between types of residential milieus that are relatively similar than to select between dissimilar types. This is even more true when household incomes differ only slightly, compared to situations in which the differences are large.

However, there are reasons to have one's doubts about the strength of the relation between the moderate level of segregation on the one hand and public housing – particularly its volume – on the other. The actual differentiation within the public housing sector is one of the reasons. Experiences elsewhere give other reasons why the relationship may be weaker than expected, or why it may be even spurious. Finally, the recent changes in the conditions of equality in the spheres of housing and incomes may stimulate segregation, irrespective of the share of public housing. The reduction of the tension on the housing market may already have resulted in segregation at the micro level.

Within the framework presented here, we formulate the following research question: *can we find evidence to challenge the hypothesis that the relatively moderate level of segregation in Dutch cities is strongly associated with the volume of the public housing stock?*

In this article the discussion is focused upon ethnic segregation in particular. First, we look for evidence from the literature. Subsequently we present some of the results of a new empirical analysis of ethnic segregation on the basis of micro-level data from the Amsterdam population register. Finally, conclusions are drawn.

#### EVIDENCE FROM THE RELEVANT LITERATURE

There are various reasons to question the 'large public housing sector-moderate segregation thesis' and to expect an increase in segregation in the Netherlands in the future, irrespective of the large share of public housing in the stock. The evidence can be structured in three segments. The first type of arguments is based on analyses of the recent history of segregation in Dutch cities. The second type discusses literature in which the segregation

process within the public sector is evaluated. The third type points at (other) underlying mechanisms of segregation including the recent changes in this respect.

The process of settlement of ethnic immigrants in Dutch cities, particularly settlement in the public housing sector, is fairly recent and still dynamic. It was only 25 years ago, that Turkish and Moroccan labour migrants settled in lodging housing in the central parts of the city. Only just over a decade ago these immigrant families started to get access to the public housing stock in substantial numbers. It is true that their patterns of segregation, when summarized through measures such as the Index of Dissimilarity (ID) and compared over time, showed a large stability over the previous three decades. But these patterns tend to be caused by entirely different housing situations. To state that the public rental stock explains the low levels of segregation, disregards the fact that some 15-20 years ago it was the private rental stock that was responsible for the almost identical levels of segregation, as expressed through the IDs.

In general the segregation process is related to the variation of the housing supply and housing demand. The greater the opportunity to choose, the sharper the segregation. Segregation may be considered at different levels of scale. In discussions about recent trends in housing, the public sector is frequently referred to as one homogeneous sector, distinguishable from other sectors. It must be admitted that significant population shifts occurred with regard to these sectors. With an increase in the owner occupier sector and a decrease in the (cheaper parts of the) private rental sector in the Netherlands, the relative status position of the public rental sector on the housing market has decreased. There is ample evidence that the share of low income households living in the public housing sector increased considerably (Meusen & Van Kempen 1994). This process parallels experiences in other countries such as Britain, Sweden or France (Forrest & Murie 1990). One of the results of that loss of status is that public housing is now increasingly and disproportionately, though not exclusively, a home for low income ethnic immigrants. Evidence from the US or Canada (Peach & Byron 1993) provides additional indications of the general character of this process of change. The process of increasing concentration of ethnic groups in the public housing stock is fairly recent and does not seem to have

come to a halt yet. However, the fact that the population growth of the past ten years must be ascribed almost entirely to the immigrant population, and the fact that they gained access to public housing in particular, does not imply that segregation within the sector does not occur. In fact, some of the international literature explicitly focuses upon segregation *within* the public housing sector. Peach and Byron (1993) argued that the concentration of black single-parent households in the least desirable parts of the public sector results from a combination of class, gender, family structure and race factors. Murdie (1994) also noted the general trend of intra-sectoral segregation. He discussed three major reasons for segregation within the public housing sector. One reason had to do with the 'grading' or categorization of applicants as what he calls 'disreputable' and the assignment of these applicants to the poorest housing. The second factor was a choice of area preference argument that gives recognition to the fact that minorities may wish to live near others from the same group, either for cultural reasons or as a defence against racism. The third reason was the 'constrained choice' argument. Those who are most desperately in need of a place to live will take the first offer, whereas those who are not as desperate will wait longer and probably will end up with better housing as a result. This is based on the premise that a vacancy chain is likely to start in the least desirable, so-called 'problem estates', and those in greatest need are likely to be the poorest households, often recipients of relief, and immigrants. Again, segregation within the public housing sector is regarded as an ordinary feature which develops where at least some differentiation exists within the public housing supply as well as within the household categories.

Another argument why the anti-segregation effect of a large stock of public housing should not be overestimated lies in the actual segregation of several ethnic groups within the public housing stock in Dutch cities. In Amsterdam, the Surinamese show large concentrations in the south-eastern part of the city, whereas Turks and Moroccans mainly are found in other parts of the city. All three groups are subject to housing allocation mechanisms in the same rental stock. Several reasons for their separation were given in the literature (Van Amersfoort 1992). One explanation, for example, is the availability of vacant public housing at particular locations during peaks of immigra-

tion, and subsequent self-segregation processes, perhaps based on selective information chains within groups of identical origin. Whatever the reasons, it is obvious that in Amsterdam segregation within the public housing sector is widespread.

Other mechanisms are important too if we want to understand the population segregation process. One of these mechanisms refers to the effects of the ideological discussion in the Netherlands regarding segregation. In our view this discussion does not differ much from the debate in other countries in Europe and will therefore put more or less identical pressures on segregation processes (cf. Smith 1993, pp. 131-133). The prevailing ideology among a large segment of the population – recurrently brought into discussion by the Conservatives shortly before major elections are held, and alluding to 'ghettoization' and 'the rise of an urban ethnic underclass' – is feeding xenophobia and pressing claims for a spatial dispersion policy. The call for dispersion, because concentrations would imply 'risks', may have the opposite effect and stimulate the development of heightened spatial segregation between population categories, also within the public housing sector, rather than help to push back segregation.

In addition, several conditions that may have helped to prevent the rise of sharp segregation in the past have considerably changed recently. Many of these changes are related to privatization of government functions, deregulation and decentralization and are part of the general process in which a shift from public to private, from state to market has changed the conditions (Musterd & Ostendorf 1994; Van Kempen 1995). Income inequality has increased rapidly during the late 1980s and early 1990s (SCP 1996). Subsidy cuts are commonplace, and housing allocation has increasingly come to be income related. Also, housing associations have recently become much more independent of the national government, implying an increase in their own responsibilities, and hence more attention to operating according to financial objectives rather than ideological motives. In the meantime, housing shortage has declined, among other things due to the continued suburbanization of white middle class households.

As a result of all these changes, relative choice and probably also segregation within the public sector will have increased, or is expected to increase steadily. We recall that an increase in choice for some of the households automatically

results in a decrease of choice for the rest of the households. Expressions of relative preference will go hand in hand with 'constrained choice' effects. Still, choice and constraint are relative concepts. Belonging to the less well-off implies that constraints predominate. But that does not mean there is no choice opportunity at all. Besides, not all constraints are negatively experienced by all people involved and in all situations.

In summary, there is a strong argument to doubt the thesis that a large public housing stock, and neutral housing distribution rules will provide sufficient and stable conditions to oppose the rise of sharp patterns of segregation. In our view the potential of public housing and housing allocation within that sector as instruments to prevent (ethnic) segregation has been strongly overestimated.

#### NEW EMPIRICAL ANALYSIS

So far, our doubts are based on either the literature or indirect analyses. In order to get some further underpinning, we also present an empirical analysis of the spatial segregation of specific population categories which is based on micro-level data and supports the view that a large public housing stock and so-called random allocation are insufficient conditions to prevent segregation from occurring.

It was decided that research be carried out on the segregation patterns of specific groups known to have access to public housing and which are comparable in socio-economic terms. Such a study will have to take place at several spatial levels, including the micro level. The question to answer is: *are the residential patterns of specific (comparable) ethnic groups identical up to the micro level, or can a significant increase in the segregation from the macro level to the micro level be observed?*

Such a study may offer several insights. For example, if the housing allocation system functions as a perfect anti-segregation mechanism, a mixture of people from several ethnic origins, but of identical status, would be revealed, even at the smallest scale, if these areas are – as is frequently the case – homogeneous in terms of their housing structure. However, if certain population groups are able to express their relative preference and as a result other groups are faced with an increase in 'constrained choice' – as may have been the case in the previous years – the effects of it will first show up at the micro level: social and cultural ho-

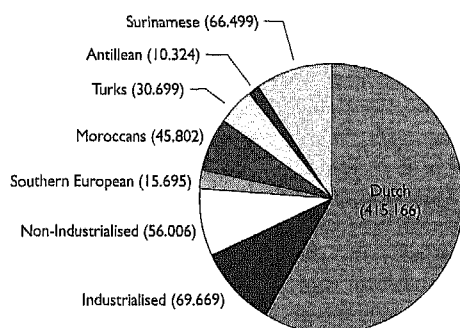
mogeneity and community processes will start with the selection of neighbours.

We concentrate on the Turkish and Moroccan populations currently living in Amsterdam. Over the past few years these population categories were able to escape from the cheaper parts of the private rental sector and gained access to the public housing sector. This is a general process that occurred across the country. Whereas in 1982 in the Netherlands only 40% of the Turks and Moroccans could be found in the public rental sector, that percentage had increased in 1990 to 80% (Rapportage Huisvesting Minderheden 1993). They appear to live in the same neighbourhoods, at first sight in a mixed situation, despite the fact that their cultural backgrounds are quite dissimilar. However, their economic situation shows many parallels. Since they are relatively established immigrants it may be expected that they will be the first to express some choice, some socio-cultural preference, if the opportunity presents itself.

The next section presents the data and comments about the methods employed in measuring segregation. The section thereafter presents empirical analyses with special attention to the scale used to describe the patterns of ethnic segregation and the mixture of Turks and Moroccans up to the micro level.

#### DATA AND METHODS

The empirical data for the analysis were derived from the Population Register of Amsterdam, showing the situation as of 1 January 1994 (for more details, see Van Daalen *et al.* 1995). At that time the (formal) Amsterdam population comprised almost 710,000 people. Eight different population categories are distinguished, defined on the basis of the country of origin of the individual or the country of origin of one of his/her parents. The number of persons in each of these eight categories was expressed at the aggregate level of the postcode (zipcode): 16,299 populated areas with on average 40 persons living in each area. No less than 42% of the population is labelled 'immigrant' (fig. 1). Approximately 10% of the population originates from other industrialized countries; thus, 32% belongs to the so-called minorities. The four largest categories classified as 'minorities' are Surinamese, people from various non-industrialized countries, Moroccans and Turks. Our focus here is on a comparison of the Moroc-



Source: O+S, municipality of Amsterdam

Fig. 1. Amsterdam's population in eight categories according to country of origin of self and/or one of both parents, 1 Jan. 1994.

can and Turkish categories.

To measure segregation we employed the so-called *Index of Dissimilarity* (ID), an often-used method developed by Duncan & Duncan (1955). The formal definition of the ID is:

$$ID = 0.5 * \sum_{i=1}^n \left| \frac{x_i}{X} - \frac{y_i}{Y} \right| * 100$$

where:

- X = total number of persons of population category X
- $x^i$  = number of persons of this category in area i
- Y = total number of persons of population category Y
- $y_i$  = number of persons of this category in area i
- i = one of n areas
- n = number of areas

In fact the ID is accepted as the standard to compare levels of segregation (cf. Peach forthcoming). The index is based on the difference between the distributions of two – in our case population – groups over territories. If in each territory the two groups are represented proportionally, the index is 0. Complete segregation is expressed by an index of 100. In that case the two groups are separated completely and live in different territories. Perhaps the great popularity of the ID results from the simple interpretation as the percentage share of one of both groups (the ID is a symmetric measure) which has to move to make the distribution

the same as for the other group. If the two groups together form the entire population, the index is called *Index of Segregation* (IS).

The ID is dependent on the scale at which it is measured. In an early discussion Woods (1976) showed some possible effects of a change of the scale at which the ID is calculated. He illustrated that correlation coefficients could even be as low as .7 when comparing IDs for a set of different ethnic groups, calculated at block level and track level.

However, the differences between IDs as measured at different scales also contain useful information. From the differences between the index scores of two hierarchical areal subdivisions, one can deduct the extra effects of the lower level patterns by calculating the difference between the ID scores:  $ID_{II} - ID_I$ . This difference shows which part of the segregation is already accounted for at the higher level (I), and which part is added by the more detailed lower level (II).

A disadvantage of the ID is that the measure cannot be used usefully when the number of areal units is relatively large compared to the number of persons belonging to a certain category. In such situations artificially high ID scores may show up. Therefore, in this study we only apply the measure at the macro and intermediate levels of scale.

There is yet another reason to analyze the micro level in a different way. The ID is an aspatial measure. Although the measure shows the number of persons that have to move to reach an equal distribution for the two groups, it says nothing about the distances that have to be bridged by these moves. The ID has the same value, both when the areas of concentration of the first group are near areas of concentration of the second group, and when these concentrations are far apart.

At the micro level, it is especially interesting to give the analysis a more spatial character because this is the level that fits well with the direct living environment of the persons involved. At this level therefore, topological analyses of proximity and adjacency can give insight into processes of social interaction between population groups and the amount of segregation that results from these processes.

We present two forms of analysis at the micro level. Both forms use a subdivision of the occupied territory of Amsterdam in 13,645 postcode areas. We obtained this subdivision by carrying out a simulation on the basis of one single point location that was available for each postcode area. We per-

formed this simulation – using GIS – by creating Thiessen polygons around the point locations and correcting the outer boundaries of some polygons for the shape of the occupied territory. Polygons with fewer than 20 inhabitants were removed. The 13,645 resulting ‘six-position postcode areas’ cover 97% of the Amsterdam population. On average these postcode areas have about 50 inhabitants.

We start the analyses at this postcode area level by presenting pictures of *location quotients* (LQ) for the Moroccan and Turkish groups. LQs represent the ratio of the share of a group in a subarea, relative to the share of that group in the total area involved. This offers a possibility to inspect and judge concentrations of each group visually. Then we turn to a more robust and systematic way to describe the patterns of concentration of the two groups. For that purpose a ‘*confrontation map*’ was constructed by performing a GIS-based topological analysis on the two maps of location quotients (Van Daalen *et al.* 1995). In the map, each of the 13,645 areas was given a code based on combinations of (1) an overrepresentation of Moroccans (or Turks) in the area itself, and (2) a possible overrepresentation of the other ethnic category in the same area or in a neighbouring (adjacent) area. The map is

mainly used as an intermediate layer for a subsequent quantitative analysis of segregation.

#### EMPIRICAL EVIDENCE

In this section we first discuss the ID scores at macro and intermediate levels of territorial subdivisions of Amsterdam. Thereafter we shift attention to the segregation characteristics at the lowest (micro) level.

*Segregation at macro and intermediate levels*—IDs were calculated at three different levels of scale (table 1). The first (macro) level refers to the census tracts (111 units with on average 7,000 inhabitants). The second (still macro) level, the neighbourhood, offers a slightly more detailed insight: 369 units with 2,000 people, on average. The smallest unit for which IDs usefully can be calculated is an (intermediate level) artificial grid of 250m x 250m (1,216 inhabited cells with on average 500 persons). The grid subdivision is not nested in the neighbourhood level. It is not evident therefore whether the difference between the IDs for both levels can be interpreted as additional segregation. To check this we calculated the IDs for two grid positions, the second a shift of the

Table 1. *Index of Dissimilarity, Turks and Moroccans in Amsterdam, 1st Jan 1994, three scales and relative contribution of each of the levels.*

Moroccans relative to:	Neighb. I (111)	Neighb. II (369)	Grid (1,216)
Turks	12 (55%)	16 (18%)	22 (27%)
Southern Europeans	32 (80%)	35 (8%)	40 (12%)
Dutch	40 (82%)	45 (10%)	49 (8%)
Surinamese	41 (89%)	44 (7%)	46 (4%)
Non-industrialized	42 (90%)	44 (4%)	47 (6%)
Industrialized	45 (85%)	48 (6%)	53 (9%)
Dutch Antilleans	54 (90%)	56 (3%)	60 (7%)
Non-Moroccans (IS)	38 (84%)	42 (9%)	45 (7%)
Turks relative to:			
	Neighb. I (111)	Neighb. II (369)	Grid (1,216)
Moroccans	12 (55%)	16 (18%)	22 (27%)
Southern Europeans	35 (86%)	38 (7%)	41 (7%)
Dutch	43 (84%)	47 (8%)	51 (8%)
Surinamese	42 (89%)	44 (4%)	47 (7%)
Non-industrialized	43 (90%)	45 (4%)	48 (6%)
Industrialized	48 (89%)	41 (6%)	54 (5%)
Dutch Antilleans	54 (90%)	57 (5%)	60 (5%)
Non-Turks (IS)	40 (89%)	42 (4%)	45 (7%)

first over 125 meters in both the X- and the Y-direction. Both grids gave identical results. We regard this as a justification to interpret the difference in ID with the neighbourhood level as additional segregation at the grid level.

As a rule the index at a lower scale does not add much to the index at a higher level. We cannot conclude that the spatial segregation of either Turks or Moroccans relative to other population categories is more heightened if analyzed at a far more detailed level. These findings do not seem to indicate that Turks or Moroccans try to separate from other categories and suggest that segregation patterns result from mechanisms which operate on a fairly macro level of scale. In this context one would think of the general character of the hous-

ing allocation process, in combination with the fact that, generally, neighbourhoods are relatively homogeneous in terms of price and quality of the (public) housing stock. The only appreciable, and in fact largest, increase in ID value shows up in the comparison of Turks and Moroccans themselves. The ID value increases from 12 at the census tract level till 22 at the grid level. While still a low score, the increase could indicate a stronger separation at a more detailed level. Twenty-seven per cent of the ID score is attributable to the grid level, relative to the neighbourhood level.

The suggestion that sharper segregation may occur at a more detailed level is also given by a visual inspection of the maps of figure 2. Here the spatial distributions of Turks and Moroccans are

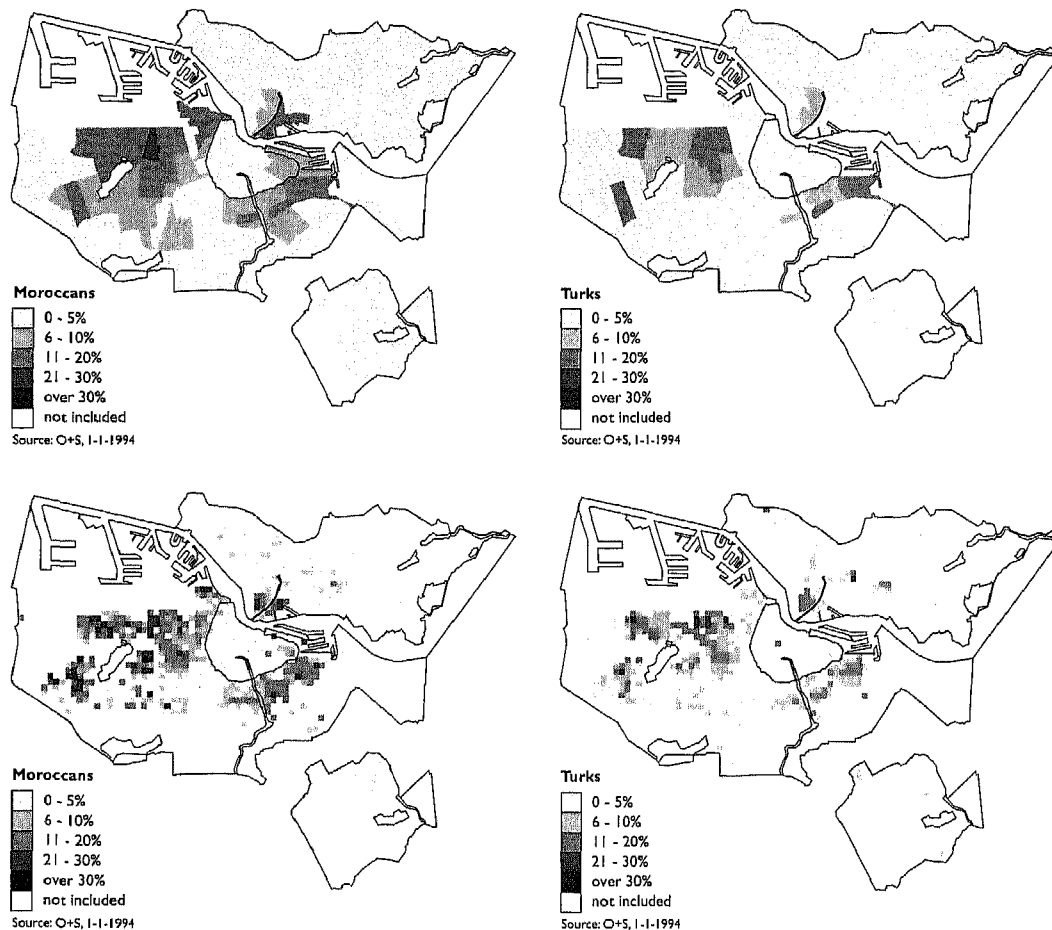


Fig. 2. Spatial patterns of Turks and Moroccans at two different scales.

Source: Data provided by City of Amsterdam, Department O + S.



compared for the 111 census tracts and the 1,216 grid cells. The first two maps (crude level) show most similar patterns, whereas the second pair of maps (more detailed level) turns out to be some-

what less similar.

*Segregation at a micro level*—As stated earlier, at the micro level of scale the ID index becomes unreli-

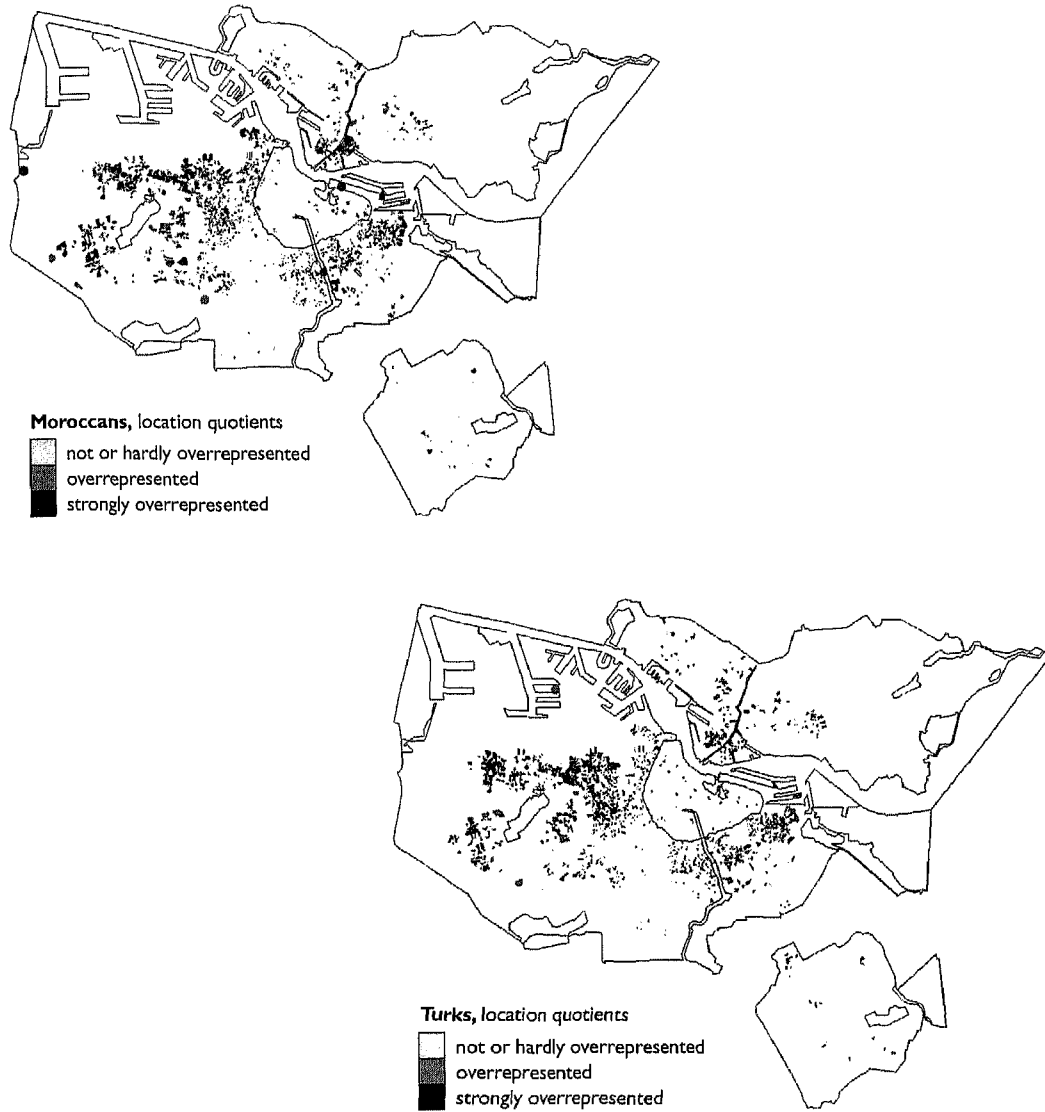


Fig. 3. Location quotient categories for Turks and Moroccans on the basis of 'six-position postcode areas' ( $n = 13,645$ ).

Table 2. *Frequencies and population shares of Moroccans and Turks in close proximity to each other; Amsterdam, 1st Jan. 1994.*

	N of areas	Moroccans	Turks
Two-in-one	856	13,411 (29.6%)	10,032 (33.0%)
Adjacent MT	1,107	15,492 (34.1%)	1,985 (6.5%)
Adjacent TM	1,020	2,547 (5.6%)	10,127 (33.3%)
Other	10,662	13,920 (30.7%)	8,250 (27.1%)

able and should not be used anymore. At this level it is most useful to take a more spatial view.

To start with, figure 3 shows the patterns of relative overrepresentation of Turks and Moroccans, expressed as categories of Location Quotients. We defined the classifications in such a way that the two maps can be compared directly. This was done with help of the binomial distribution. As 6.4% of the Amsterdam population is Moroccan, 93.6% is non-Moroccan. For Turks these percentages are 4.3% and 95.7%. The average number of persons in a postcode area is 52.1. In a randomly selected postcode area we therefore expect the percentage to be binomially distributed with a standard deviation of  $\sqrt{(p \cdot q)/n}$ . That is for Moroccans,  $\sqrt{(6.4 \times 93.6)/52.1} = 3.4\%$  and for Turks, 2.8%. We now define percentages larger than two standard deviations above the mean as concentrated, and larger than four standard deviations above the mean as strongly concentrated. This categorizes Moroccans as concentrated if their share is above  $6.4 + 2 \times 3.4 = 13.2\%$  (or the LQ is above  $13.2/6.4 = 2.1$ ) in an area, and as strongly concentrated if the share is above 20.0% (LQ above 3.1). In the same way Turks are categorized as concentrated above 9.9% (LQ above 2.3) and strongly concentrated above 15.5% (LQ above 3.6).

The first conclusion from these maps is that the patterns of concentration of Turks and Moroccans are highly similar, suggesting the existence of almost identical spatial distributions, which is in accordance with the modest ID values we saw at the intermediate (grid) level. Secondly, some details are more clearly visible now. One detail worth mentioning is the relative absence of Turks and Moroccans in the inner city, and also in the older inner parts of the 19th century ring around the inner city. The latter area has long been one of the most important residential districts for both population categories. Apparently the gentrifica-

tion in the inner city, urban renewal in the inner city and adjacent parts of the 19th century ring as well as the improved access of Turks and Moroccans to more recently built public houses have left their marks in the city in terms of the actual population distribution. The process of family reunification has certainly attributed to these shifts. Turks and Moroccans initially arrived as single persons, but were eventually unified with their – large – families. Given the norms underlying the allocation rules, these large families more or less had to be housed in the post-war public housing stock, since that stock was the only one with large dwellings.

In the second part of the analysis at the micro level, we carried out a topological analysis to trace whether Turks and Moroccans primarily live mixed at the level of six-position postcode areas, or whether a certain separation of their living areas can be observed. Nowadays GIS offer possibilities to perform such topological analyses routinely. With GIS we created a map in which four codes are distinguished, briefly referred to as:

- (a) 'two-in-one', with a concentration of Moroccans and Turks in the same postcode area;
- (b) 'adjacent MT', with a concentration of Moroccans and in an adjacent area (but not the same area) a concentration of Turks;
- (c) 'adjacent TM', with a concentration of Turks and in an adjacent area (but not the same area) a concentration of Moroccans;
- (d) 'other', all other areas.

The map is an intermediate result. We use it for subsequent calculations to establish the level of mixing displayed by both population groups. By coupling the level of spatial mixing to the size of the population in each area, table 2 can be derived. This tabulation gives core information about the mixing of Moroccans and Turks.

The first conclusion drawn from the tabulation

is again that Moroccans and Turks usually live close to each other. No less than 73% of the Turks and 69% of the Moroccan population in Amsterdam live close to each other: concentrated in the same or neighbouring small postcode areas (for comparison, the corresponding percentages for the Antillean and Surinamese groups are only 59% and 44%). We interpret these results as evidence that Moroccans and Turks are oriented in the same segments of the housing market.

However, most frequently, both categories do not live within the same area (two-in-one). For Moroccans and Turks it holds that only 30% and 33%, respectively, live in a highly mixed setting, whereas 40% of each group live near each other albeit somewhat separated (compare the percentages for Antillean and Surinamese groups who live separately – only 16% and 21%, respectively).

So, finally, at the smallest scale of the six-position postcode, a separation of the population shows up. Moroccans and Turks live close to each other, but are generally not mixed at the postcode level. These spatial patterns support our view that public housing as such is an insufficient condition for the understanding of the segregation of types of households. The first impressions of current and ongoing research in this field suggest that their separation has to be attributed to cultural and social segregation (self-segregation or constrained choice segregation). The segregation between Turks and Moroccans does not appear to cover large contiguous areas yet.

## CONCLUSIONS

In this contribution we have presented support for our doubts about the strength of the relation between a large public housing sector and moderate segregation. First, we derived arguments on the basis of existing data and international experience as reflected in the literature. Secondly, we added support on the basis of an empirical analysis of recent population data on the detailed postcode level for the municipality of Amsterdam.

It was reconfirmed that Amsterdam has no ghettos of Turkish or Moroccan people. Even at the level of 250x250 meter grid cells, the IDs are relatively moderate, albeit not extremely low when compared with other European cities. On the basis of IDs, it turns out that the segregation of Turks relative to other population categories, and that of Moroccans relative to other categories, appear to

be most similar and not too sharp. That similarity is also expressed by the modest ID score for the differences between the spatial distributions of Turks and Moroccans themselves.

In general, if measured at the macro (census tract, neighbourhood) or intermediate (grid) levels of aggregation, the separation between population categories can be highly attributed to the segmentation and differentiation of the housing market and to the income differences between the households involved. At these levels the spatial distribution of public housing seems to be an important factor, although it should be realized that the period of entry into the Netherlands turns out to be important too. The intermediate level does not seem to add much to the knowledge which was already built up at the macro level. Analysis at the intermediate level, however, holds an indication for the possible existence of sharper segregation at the micro level of the six-position postcode.

This was indeed confirmed by the micro-level analysis where we found a significant difference between the spatial patterns of Turks and Moroccans. The interpretation of the segregation at a micro level is most complicated. Turks and Moroccans turn out to be segregated at the very micro level of the six-position postcode, but the majority turns out to be mixed at a somewhat higher level in which also adjacent postcode areas are taken into account. The analyses point to the direction of an increase in residential segregation if the ability to express cultural preference increases somewhat (see also Boal 1976). This seems to be particularly true for Moroccans whose culture is tightly knit, and this may well have contributed to the self-segregation at the micro level (Mik 1987). Perhaps also the behaviour of specific housing associations must be taken into account, since these may, formally and informally, also affect the spatial distributions of specific population categories.

If we assume that our interpretation will receive additional support, it means that with an increase in choice for certain immigrant groups (also when restricted to choice aimed at cultural homogeneity), and automatically an increase in 'constrained choice' for the other immigrant groups, spatial segregation will increase, also within the public housing sector. In a city such as Amsterdam an increase in opportunities to express socio-cultural preferences may develop for population categories such as Turks, Moroccans

and Surinamese. This may have repercussions on, for example, the group of recent immigrants and refugees, who may be left with a more constrained choice set of residential alternatives, albeit in the public housing sector.

On the basis of the analysis of the existing liter-

ature and the micro-level empirical analysis presented here, we conclude that ethnic (and social) segregation is influenced by a wide variety of factors. A large public housing stock will not prevent the increase in segregation.

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