Distributive justice of housing in Amsterdam

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Abstract | In this paper, an analytical model for measuring match and mismatch between social housing units and their tenants is presented and applied to the social rented housing sector of Amsterdam, The Netherlands. Through the use of a large set of unique micro-data combining housing unit and household characteristics, mismatches on two key dimensions of physical adequacy and affordability and for different household types and parts of the city can be revealed. Empirically assessing the (mis)match of social housing units at a small scale—where socio and spatial (mis)matches manifest—creates opportunities for innovation in the analysis of effects of market mechanisms and local housing allocation policies. An improved understanding of these mismatches based on a strong empirical base can be related to and evaluated against different principles of distributive justice. The findings for the case of Amsterdam show that the famous large social housing stock incorporates significant mismatches. Households in the least popular parts of the city comparatively do not live affordably and large inequities exist between households based on length of residence. These findings offer a basis for further exploration of the complex of housing allocation, changing housing distributions and the resulting outcomes in terms of distributive justice.

6.1 Introduction

The provision of an adequate supply of affordable and suitable housing is considered to be a major challenge faced by growing cities, in particular in combination with planning policies designed to restrict sprawl and deliver more compact cities (Addison, Zhang, & Coomes, 2013; Whitehead, 2007). The availability, affordability and accessibility of housing is important to citizens (Bratt et al., 2013), but also impact the quality, sustainability and economic vitality of cities, by influencing whether and where people can secure housing. Over the past years, cities across the world are perceived to have become less equitable (Marcuse et al., 2009). The decline of affordable housing as a result of rapid inflation of housing prices, in particular, is seen as a threat to working households receiving low and moderate incomes. Increasing inequities in job security and pay (Raco, 2008) further worsens the housing market position for many.

The importance of having access to decent and affordable housing is stressed by numerous governments and is being addressed, for example, by the declaration of housing as a social right (Bengtsson, 2001; Un-Habitat, 2011). These social rights are largely unenforceable by court, but mean the advancement of adequate housing through policies is (or ought to be) an object of government concern (Turner & Elsinga, 2005). Marcuse (1978), however, argued that formulated policy goals, like “a decent home in a suitable living environment” in the United States’ 1949 Housing Act, have not necessarily resulted in the implementation of logical and focused policies to reach such goals. Next to repairing market failures and influencing housing opportunities of citizens, housing policies may also pursue other, sometimes conflicting ends. Policies may aim for broad economic efficiency goals, the advancement of labor mobility (Andrews et al., 2011), and the promotion of owner-occupied housing (Andrews et al., 2011; Harloe, 1995; Yung, 2007). Pursuits of broad homeownership through fiscal policies (e.g. mortgage interest tax deduction), for example, stimulate house price inflation and negatively impact overall affordability. Rent controls can also lead to a decrease in housing supply and negatively impact the availability of affordable housing. While housing is regarded a basic necessity for households, it remains a commodity that is exchanged through markets (Bengtsson, 2001) and is almost nowhere provided for free.

Specific characteristics of the good of housing—e.g. its spatially fixedness, heterogeneity, high costs, limited number of transactions, and long production
time—lead to market failure and a lack of adequate affordable housing for parts of the population. Central in the efforts of administrations to correct for market failures are policies to advance and enable the construction and management of social housing. In the post-war period, social rented sectors in many countries expanded quickly as social housing was seen as the answer to an overall shortage of housing. After this “golden age” of social housing, the sector has been under threat of processes of liberalization and privatization since the late 1970s (Harloe, 1995; Scanlon et al., 2015) and focus has been directed in particular to the promotion of owner-occupied housing. Within the social rented sector, the role of social housing providers has changed, while increasingly “state-support is (…) used to leverage private investment into socially oriented projects” (Blessing, 2015, p. 200).

In this paper, an analytical model is developed to assess the distribution of social housing across households and neighborhoods. Two key dimensions related to the basic individual need to housing, affordability and adequacy (Yung & Lee, 2012), are included in the model. These two dimensions are intertwined because the access to adequate yet unaffordable housing would mean that in order to secure the one basic human need (i.e. adequate housing) another basic human need (e.g. clothing, food, transport, etc.) could not be satisfied (Yung & Lee, 2012). Therefore, instead of focusing on either affordability or physical adequacy, both dimensions are jointly analyzed. The distribution of the scarce good of social housing is assessed to ascertain “who gets what” (Cohen, 1987). By implementing the analytical model with the use of a unique set of micro-data on household and housing unit characteristics that have never before been combined, we aim to gain insight in whether mismatches occur between households and housing units for different groups of households and in different parts of cities. We expect an improved understanding of these mismatches established using a strong empirical base can be related to and evaluated against different principles of distributive justice. Distributive justice is about the comparative allotment of goods, duties, opportunities, etc.; about the material principle for the allotment of the good (Frankena, 1966). The housing (mis)matches to be observed provide insights into “who gets what”; it shows the relative shares different households receive of the scarce good of housing. Consequently, different standards of justice may be applied to judge the distribution. Which standard to use may also depend on the type of good that is distributed (Frankena, 1966). The approach conducted in this paper will be evaluated against how it identifies mismatch and to what extent the approach enables the interpretation of the match between the housing
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stock and its tenants in terms of distributive justice.

Amsterdam’s large and tightly rent controlled social housing stock (about 45 percent of the total housing stock) attracts vast attention from the (international) research community (e.g. Fainstein, 2008, 2010; Gilderbloom et al., 2009). Despite the quantity of social housing, rent increase restrictions, and a heightened focus on selecting the appropriate households through filtering, concerns about access to affordable housing and processes of gradual privatization and residualization persist (e.g. Fainstein, 2010; Kadi & Musterd, 2014; Klomp & Kromhout, 2013). Other concerns regard the efficiency of the use and management of available means (Boelhouwer & Priemus, 2014; Conijn & Schilder, 2011; Hakfoort, van Leuvensteijn, & Renes, 2002; Nieboer & Gruis, 2014; Priemus, 2003). Amsterdam is a typical growing city with high demand for housing, but is also an extreme case in regards to the very large social rented sector (even compared to other Dutch cities) and tight rent control. In the Netherlands there has been considerable debate surrounding the mismatch of social housing as far back as the 1990s (Dieleman & van Kempen, 1994). A recent wave of this debate has increasingly been focused on inexpensive mismatch and differences in the degree and type of mismatch between regions (Ministry of the Interior, 2011). As the large social rented sector is to some extent considered prototypical in light of the provision of affordable housing, this case study can provide insights in the allocative and distributive mechanisms of social housing to achieve certain outcomes and optimize social returns. In the next section, the analytical model applied for the empirical assessment of the occurrence of match and mismatch between households and dwellings in the social rented sector will be presented. Thereafter, context on social housing in Amsterdam is provided, followed by a discussion on the methods and data. The empirical analysis of adequate housing provision and distribution in Amsterdam is subsequently presented, after which the pros and cons of the applied approach for the assessment of social housing distribution in relation to the match and mismatch of housing will be discussed.

6.2 Assessing Mismatch

Matching Households and Houses

An assessment of the match between households and housing units in the existing social housing stock will be conducted by combining two measures, covering the financial and physical match between households and dwellings. A relative residual income measure and a room stress measure are applied, both separately and in combination. The relative residual income measure,
based on the normative minimum budgets determined by the Dutch budget research institute (Nibud, 2012), determines the degree to which a household’s monthly income is sufficient for housing-related costs and other necessary expenses (Heylen & Haffner, 2012, 2013) relative to the composition of the household. Relative affordability is determined by dividing the residual income by the disposable household income, after determining the residue based on the disposable income minus the housing and other necessary expenses of a household. This results in a percentage of the household income that is a surplus (positive) or a shortage (negative). For example, a score of -10 implies that the concerning household has a gap of 10 percent between income and expenditure. The disposable household income includes housing subsidies received by low-income households.

The degree of room stress is calculated by dividing the actual numbers of rooms by the required number of rooms, minus one (see also Clark, 1992; Clark et al., 2000; Huang, 2003). The required number of rooms is determined based on the household size and composition. Two rooms are allotted to a single adult or a couple (two adults). One room is added to the initial two-room requirement for each additional adult or couple. Children younger than 10 years old are factored as being able to share a room, as are children aged 10 to 18 of the same-sex. A change has been made in comparison to the original definition as developed by the Panel Studies of Income Dynamics for the U.S. (see Huang, 2003) in order to be more applicable to the Amsterdam context. In line with the standard applied by Soaita (2014), a one-room apartment (studio) is also regarded appropriate for a single-person household. A score of zero refers to a household that lives in a suitable house with as many rooms as needed. A negative score refers to room stress and a positive score indicates a household being more spaciously housed.

The measures of relative residual income and room stress are combined in a housing match matrix (see figure 6.1). The two measures have an incorporated norm score of 0. A negative residual income refers to a situation in which the household’s income is not enough to cover housing and other necessary costs, and a negative room stress refers to a situation of overcrowding.

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1 (1) residue = disposable household income – (housing expenses + other necessary expenses); (2) residual income (%) = (residue/disposable household income) * 100.
2 Room stress = (number of rooms / required number of rooms) – 1.
3 For analytical purposes two adults living in one unit (male/male; male/female; female/female) are seen as a couple. We assume that if they are not a couple, the lay-out of the housing unit will be suitable for living as “friends”.
(i.e. less rooms than required for the household). While the levels of the other necessary costs are debatable, the measure, which makes use of a continuous scale, leaves space to assess the outcome for different thresholds (e.g. a residual income score of −10 instead of 0). The measures, including incorporated norms, have been discussed in several meetings with researchers, policy analysts and representatives of housing associations. However, the measures and accompanying norms, such as what is deemed necessary non-housing expenses, remain both socially constructed and contested and differ greatly over time and space. Furthermore, the measures do not take into account individual differentiation of housing needs or preferences, for example resulting from psychological and socio-cultural differences (Ytrehus, 2000). The matrix does, however, enable comparison of different groups of households and geographical areas.

Every household or aggregate of households can be placed within the matrix. Comparing different neighborhoods, housing estates or groups of households enables us to analyze the relative position of those aggregates of households. The corners of the matrix resemble combinations of the extremes of both the relative residual income and room stress. These scores give an indication of injustice in the housing market. The center of the matrix reflects adequate and relative effective scores on both axes. Ideally, the majority of households would be located in the center of the matrix, reflecting an adequate match between income and housing costs and other necessary expenses, and between the size of the unit and the size and composition of the household. Given the volatility of household income and composition, needs change over time while characteristics of housing units remain stable in most cases. Though the existence of great volatility and “friction mismatch” make the valuation of the housing distribution more difficult, the matrix provides a method to assess socio-spatial inequities and compare different geographical areas and household groups.

**Data and Methods**

While the analysis in this paper is limited to the city of Amsterdam, households may consider a larger geographic area during their decision-making processes. This is encouraged by the social housing waiting list, which combines the city of Amsterdam and neighboring municipalities, including Zaandam and Amstelveen. Enlarging the geographical scale of the empirical analysis of this study would also increase the differences in accessibility within the study area, while the bundle of spatial (dis)advantages like access to schools and
(perceived) safety in a neighborhood, may already vary greatly within a city. In this paper the spatial scale is limited to that of the municipality of Amsterdam, enabling a more in-depth analysis. The whole municipality is considered an adequate area to reside. Still, within the boundaries of the municipality, location does matter due to the apparent differences in the quality between different living environments.

The data-set contains data from 2012 on all social housing units in Amsterdam and its tenants. While part of the social housing stock is reserved for students, they can also apply for regular social housing. The housing allowance for younger households, however, is limited and in practice the long waiting lists provide the average student none or very few non-student social housing options. The housing unit data are provided by the Federation of Amsterdam Social Housing Associations (AFWC) and the Platform Woningcorporaties Noordvleugel Randstad (PWN) and includes variables on the housing units themselves (i.e. floor space, number of rooms) and pricing (i.e. rent, service costs). The non-public household microdata stem from the Centre for Policy-Related Statistics (CvB), which is part of Statistics Netherlands (CBS) and includes variables on household composition (number of household members, their sex and age) and disposable household income. Student housing is also...
regulated and for a major part provided by housing associations. Students live in a very specific and temporary situation in which their income often primarily exists of a student allowance, support from parents and part-time student jobs. Many students are not required to declare their income for taxes and therefore their inclusion in this study would distort the results. Excluding students provides more clarity for the remaining sample. Therefore, only data on housing that are not shared and units that are rented out by housing associations in Amsterdam are used. Furthermore, cases of households with a yearly taxable household income lower than €6,000 and a gross household income lower than €8,000 have been excluded. The demarcated income levels are lower than income levels of those receiving welfare as not to exclude welfare recipients or low wage earning households. Filtering out student based on registration data could have resulted in excluding households with part-time students.

The total population, under the aforementioned constraints, consists of 149,107 cases of connected households and housing units. Housing units uninhabited on January 1, 2012 and cases of which household data and housing unit data could not be linked are excluded. The data-set includes 3 percent liberalized housing units. These units are let out by housing associations, but are not social housing because the rent is higher than €665 per month. In accompaniment to the quantitative analysis, several discussion meetings, presentations and a workshop have been used to validate methodological decisions and to receive feedback on the interpretation of results from fellow researchers, policy analysts and housing associations representatives.

6.3 Context: Social Housing in Amsterdam

During the Second World War, housing construction in Amsterdam halted and housing was damaged and destroyed. Social housing, constructed by municipal corporations and housing associations, was seen key to tackling the housing shortage and to providing inexpensive housing to limit demands for higher wages, which had been kept low in order to improve international competitiveness. High birth-rates and immigration after de-colonization in the post-war period (i.e. Indonesia in the late 1940s and Suriname in the mid-1970s) led to years of rapidly increasing housing demand (Harloe, 1995). After these decades of rapid population growth, suburbanization resulted in a population decline in Amsterdam. In the mid-1980s, however, the number of inhabitants started to grow again which added to an increased demand resulting from a decrease in average household size. Since 2008, the population growth has
accelerated, showing the largest influx of inhabitants in the city’s history (OIS Gemeente Amsterdam, n.d.). In the same period, the average household size increased slightly for the first time in decades. For the duration of the entire post-war period, the social rented sector has retained its dominant position in Amsterdam. The relative share of social housing, however, has been in decline in recent years, while the owner-occupied housing sector in particular has increased.

The increased demand for housing in Amsterdam over recent decades was accompanied by processes of gentrification in the central parts of the city (Area 1 in figure 6.2). Area 2 in figure 6.2 primarily consists of nineteenth century neighborhoods in which real estate values have also been increasing recently. The most-eastern parts of Area 2, the IJburg neighborhood, are comprised of newly added land and mixed neighborhoods with, for Amsterdam standards, a relatively large quantity of single-family housing. These types of units in IJburg provide an alternative for middle-class families to move into single-family housing within city borders instead of moving to more distant suburbs (Boterman, Karsten, & Musterd, 2010). Major parts of the area outside of the A10 ringway and north of the river IJ have not experienced significant property value increases, which may lead to a growing divide and increasing polarization (Savini et al., 2016). Parts of this outer ringway area have been

![Figure 6.2 Housing market areas for policy agreements](Source: AFWC, 2013; made by authors)
subject to different place-based policies and large scale restructuring programs from the 1990s onwards (Aalbers, 2011; Musterd & Ostendorf, 2008). The restructuring included the demolition of social housing, to be replaced by mixed housing (i.e. mixed-tenure and mixed-income). For example, parts of the city districts New-West, North, South-east and East have been addressed by a national policy targeting the country’s 40 neighborhoods with the largest concentrations of social problems (e.g. criminality, unemployment, high school dropout rates, etc.).

**Affordable and Adequately Sized Housing**

Access to affordable housing in the Netherlands is primarily ensured through the broad provision of social housing (32 percent of the total stock) by housing associations and, to a lesser extent, private landlords. Since 1995, housing associations no longer receive direct subsidies for the construction of social housing, as part of a broader shift of decentralization and deregulation in the Dutch housing system (Hoekstra, 2003). The large housing stock provides a cash flow that can be used for investments in new constructions and maintenance, while the sale of units also provides capital for re-investment (Elsinga & Lind, 2013). Housing associations, however, still have access to government-backed loans for social investments, resulting in lower interest-rates (Priemus & Gruis, 2011).

The rent of most rental housing, including many privately owned units, is controlled. The maximum allowed rent is determined through a housing valuation system and annual rent increases are bound to a maximum. Yearly maximum allowed rent increases are also limited to the previous year’s inflation + 1.5 percent. These rent controls aim to secure affordability and protect households from sharp rent increases. Yearly rent increases are usually outpaced by overall rent developments and real estate values, resulting in a gap between new and long-term tenants. In 2013, income-dependent rent increases were introduced in the Netherlands, aiming to nudge higher income households to move out of the sector over time. Two years earlier, after negotiations with the European Commission, the target group for social housing was determined at households who earn a maximum income of €33,000, to be indexed annually. At least 90 percent of all social housing units rented each year by housing associations have to be allocated to households from this target group. Some households receive priority, for example, because of pregnancy, and some housing units are reserved for specific groups, such as students, the elderly or people with disabilities.
Considerably less steering has taken place concerning unit suitability in terms of number of rooms or floor space. National regulation for physical suitability does not exist. On the municipal level, norms may apply in order to match larger dwellings to larger households. To simplify housing allocation rules and increase household choice, such norms were abolished in Amsterdam in 2012 (AFWC, 2013). The norms were replaced by a single negotiated target number for large households (five or more persons) to be suitably housed. To illustrate the difference between municipalities, in Utrecht, norms on the suitable allocation based on the number of rooms in relation to household size were installed in 2013 (Kromhout & Zeelenberg, 2014). The “Van groot naar beter” program attempted to encourage small households to move to smaller dwellings. The policy especially targeted older households and provided a premium for moving, sometimes complemented by search and moving assistance (City of Amsterdam, AFWC, Huurdersvereniging Amsterdam, & Amsterdam City Districts, 2011). The program has been largely unsuccessful, mainly due to older households often paying very low rent, which meant moving to a smaller unit could result in a rent increase. In an updated version of the policy household meeting the conditions will keep the same rent (City of Amsterdam, AFWC, Tenants’ Union Amsterdam, & Amsterdam City Districts, 2015).

The allocation model in the Netherlands has changed since the 1990s from a distribution based on need to a choice-based model of allocation existing within a need-based framework (R. van Kempen & Idamir, 2003). Eligible households can choose which dwellings to enroll to inhabit. In total 273,032 households were on the waiting list for social housing in 2012, of whom 141,118 already lived in Amsterdam. On average, an available unit is offered to 9.2 households before it is accepted (AFWC, 2013). Households may prefer to wait for a better opportunity, as they will lose their position on the waiting list once they accept a dwelling. Accessibility to the social rented sector is further limited as a result of a decrease in number of new constructions. Total housing construction in Amsterdam was at a low of approximately 2,500 units in 2012, compared to 2007 and 2008 when over 5,500 housing association units were completed. In total, 1,828 units were sold in 2012 versus 20,000 units (9 percent of the total stock) sold between 1998 and 2012 (AFWC, 2013).

Another issue related to the accessibility of social housing is that households that are not eligible may also lack opportunities on the private rental and owner-occupied housing markets (Jonkman & Janssen-Jansen, 2015d).
Another characteristic of the Dutch social housing system is that once a household has entered the sector, the contract has no fixed end and there are no mechanisms in place to force households to vacate if their income rises above a certain level. In 2011, however, income dependent rent increases were installed. Additional annual rent increases of +2 percent and +4 percent were allowed for households with a yearly income exceeding €34,678 and €43,000, respectively (2014 price levels), a measure taken to nudge higher income households out of social housing.

6.4 Social Housing Distribution in Amsterdam

In this section, the match between households and dwellings of the social rented sector in Amsterdam is assessed on their physical and financial adequacy for different groups of households and different divisions of the city (i.e. city districts, neighborhoods and housing estates).

Types of Households

The analysis of the almost 150,000 units reveals that 77 percent of all the households live in a house that well fits their required number of rooms, and more households live under-occupied (16 percent) than over-occupied (6.5 percent). The share of households with room stress seems relatively small. The impact of the room stress on these households, however, may be substantial. This is reflected by concerns of the municipality and housing associations on the lack of large dwellings suitable for large households (van Veen, 2008). Figure 6.3 further shows that a large share of 38 percent of the households have a relative residual income below zero; these households earn less than their costs of housing plus estimated other necessary expenses. This large and alarming percentage raises different questions, for example, about the share of poverty that is induced by housing, the budgeting decisions (trade-offs) between different necessary goods these households need to make, and what other sources of income or assistance they have. Almost 34 percent of the renters live relatively inexpensively (residual income of at least 25 percent). The remaining 28 percent of the households live affordably and are housed with financial efficiency. Combining the two measures reveals that almost 22 percent of the households are housed, from a financial and spatial perspective, both appropriately and efficiently, meaning they are situated in the center four cells of the matrix. About 6 percent of the households are living relatively inexpensively and spaciously, while roughly 3 percent of the households live over their means and are over-occupied. Scores in the two other corners are also expected to reflect trade-offs between affordability and size. Households
may (temporarily) accept to pay more for a relatively spacious dwelling (6 percent) or live affordably in more restrictive spaces (2 percent). However, as a result of the difference between old and new rents, moving to a smaller dwelling does not necessarily result in a decrease in rent.

The highest number of households living outside their means is found among single-person households under 65 and single parents with young children (see table 6.1). While the highest number of households living best within their means is found among couples with children. Categories in which many households are expected to be dual-earners more frequently live with greater affordability. A larger share of older households are financially, adequately and efficiently housed.

Room stress rarely occurs among multi-person households without children (see table 6.2). In studio apartments, there is no room stress among households as studios are considered to be appropriate for single-person households. In general, older households and households without children live more spaciously than households with children. Households with older children live with more space than those with younger children. By far the highest rate of under-

Figure 6.3 Housing match matrix for social housing in Amsterdam (in %) (Source: AFWC, 2012, CBS/CvB, 2012, calculation by authors)
occupancy occurs for the household type Two or more person household (no children), all 65 or older. This group of households has already been the aim of an aforementioned municipal and housing association initiative, “Van groot naar beter”, to tempt small households to move to smaller dwellings, making suitable dwellings available for larger families (City of Amsterdam, 2013).

Older households more often have an appropriate affordability score, but tend to live spaciously in comparison to other types of households. Household wealth-data show these older households have the highest average savings, although a third (multi-person households) to half (single-person households) of the elderly do not have savings at all or only a buffer of no more than €5,000. The lower percentage of elderly households with an income in excess of at least a quarter of the household income is the result of low pensions. The average rent for these households is low for elderly single-person households (€398). For elderly multi-person households (€444) it is comparable to the average for all households (€441). These findings show the importance of household life-stages. Moving may not be an effective way to align housing consumption to changing needs for certain households, especially if the mismatch is expected to be temporary.

Dividing the population by years of residence (see table 6.3) shows that half of the tenants resided without moving for over 10 years. Longer-term tenants have more often acquired capital exceeding a small buffer of up to €5,000 and a residual income of at least 25 percent. Also a lower percentage of these households have to deal with a negative residual income. Room stress, however, is most common for households with 2–10 years of residence. The share of households with room stress decreases again for longer-term tenants. There is a sharp increase of households with under-occupancy in the category of 10 years and over. The variances amongst different lengths of residence likely results from different life-stages of households and a rent control system that creates a divide between rent levels for new and long-term tenants. A significant number of new tenants have a negative relative residual income. These households may benefit from subsidized housing paying below market rents, but still do not live affordably.

**Neighborhoods and Housing Estates**

The map of the average relative residual income per neighborhood (see figure 6.4) depicts five neighborhoods in which, on average, households do not live affordably. These are Bijlmer-East (−2.16) and Bijlmer-Centre
### Table 6.1
Average relative residual income for different types of households in the SHA housing stock of Amsterdam in 2012 (in %) (Source: AFWC, 2012, CBS/CvB, 2012, calculation by authors)

<table>
<thead>
<tr>
<th>Household type</th>
<th>&lt; 0</th>
<th>0 - 25</th>
<th>≥ 25</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single person, 30–</td>
<td>44</td>
<td>26</td>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td>Single person, 30 to 65</td>
<td>44</td>
<td>22</td>
<td>34</td>
<td>30</td>
</tr>
<tr>
<td>Single person, 65+</td>
<td>35</td>
<td>44</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>Two or more person household (no children), all 30–</td>
<td>42</td>
<td>18</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>Two or more person household (no children), not all 30– or 65+</td>
<td>30</td>
<td>21</td>
<td>48</td>
<td>21</td>
</tr>
<tr>
<td>Two or more person household (no children), all 65+</td>
<td>29</td>
<td>46</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Couple with children, youngest child 12–</td>
<td>41</td>
<td>26</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td>Couple with children, youngest child 12+</td>
<td>30</td>
<td>27</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>Single parent, youngest child 12–</td>
<td>47</td>
<td>34</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>Single parent, youngest child 12+</td>
<td>30</td>
<td>46</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>28</td>
<td>33</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table 6.2
Average room stress for different types of households in the SHA housing stock of Amsterdam in 2012 (in %) (Source: AFWC, 2012, CBS/CvB, 2012, calculation by authors)

<table>
<thead>
<tr>
<th>Household type</th>
<th>&lt; 0</th>
<th>0 - 0.8</th>
<th>≥ 0.8</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single person, under 65</td>
<td>x</td>
<td>87</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>Single person, 65+</td>
<td>x</td>
<td>79</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>Two or more person household (no children), all 30–</td>
<td>8</td>
<td>75</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>Two or more person household (no children), not all 30– or 65+</td>
<td>3</td>
<td>68</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>Two or more person household (no children), all 65+</td>
<td>58</td>
<td>42</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Couple with children, youngest child 12–</td>
<td>30</td>
<td>69</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Couple with children, youngest child 12+</td>
<td>12</td>
<td>88</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Single parent</td>
<td>19</td>
<td>81</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>77</td>
<td>16</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table 6.3
Average household capital, relative residual income and room stress for different lengths of residence in the social housing stock of Amsterdam in 2012 (in %) (Source: AFWC, 2012, CBS/CvB, 2012, calculation by authors)

<table>
<thead>
<tr>
<th>Years of residence</th>
<th>Household capital (* €1,000)</th>
<th>Residual income (%)</th>
<th>Room stress</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 5</td>
<td>5-20</td>
<td>20-50</td>
<td>0 ≥ 50</td>
</tr>
<tr>
<td>&lt; 2</td>
<td>72</td>
<td>16</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>2-5</td>
<td>70</td>
<td>17</td>
<td>7</td>
<td>6</td>
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<tr>
<td>5-10</td>
<td>66</td>
<td>18</td>
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<td>7</td>
</tr>
<tr>
<td>≥ 10</td>
<td>52</td>
<td>22</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>19</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>
(–1.02) in South-east, Kolenkit (–0.64) in West, De Omval (–7.34) in East and Buiksloterham (–5.63) in North. De Omval and Buiksloterham are two neighborhoods with larger concentrations of student housing. With the study’s set minimum income limit of €8,000, more of the households living in student studio apartments were expected to be filtered out. A significant part of the households living in independent student housing have a higher income than the set minimum income.

The other three neighborhoods are post-Second World War housing estates. The Bijlmer (Amsterdam South-east) is an early seventies grand CIAM-inspired city district, with relatively large apartments in a green, park-like environment and separated traffic flows. Since the 1990s, this district has been redeveloped. Most of the large flats have been demolished and replaced by a mixture of housing and tenure types. Restructuring also took place in Kolenkit, a post-war neighborhood built at the end of the 1940s. Both Bijlmer-East and Kolenkit were part of the Krachtwijken national policy focused on the 40 neighborhoods considered most problematic, due to a complex of social problems such as high rates of school drop-outs, unemployment, crime, etc. (Ministry of Housing Spatial Planning and the Environment, 2007). Neighborhoods in which households on average live very affordably are located in centre, south and major parts of east and the borders of west. These areas in the center and south are considered very popular, while some neighborhoods at the border of Amsterdam have higher stocks of desired single-family housing. Part of the city center has a relatively low average occupancy score (see figure 6.5), while households at the borders of the city in north and west are living most spaciously. This again may result from the large quantity of single-family units.

Making differentiations between housing estates instead of neighborhoods somewhat changes the patterns of affordability. Housing estates are clusters of units grouped by housing associations, ranging from a single building to a couple of streets. Boundaries are mostly drawn based on spatial proximity, building period, and type of housing. Only larger housing estates are included in the analysis to secure the privacy of tenants. Figure 6.6 shows that an average neighborhood score (see figure 6.5) can reveal more extreme scores of different estates within that neighborhood. In all parts of the city there are estates with negative relative residual income scores, though South-east again stands out. In most housing estates within the ringway south of the IJ and in parts of North and New-West, households on average live very affordably.
Figure 6.4 Average relative residual income per neighbourhood in Amsterdam (year 2012) (Source: AFWC, 2012; CBS/CvB, 2012, Sources basic layer files: CBS, 2008; CBS, 2009; Ministerie van Verkeer en Waterstaat, 2011; Kadaster, 2013; calculations and mapping by authors)

Figure 6.5 Average room stress per neighbourhood in Amsterdam (year 2012) (Source: AFWC, 2012; CBS/CvB, 2012, Sources basic layer files: CBS, 2008; CBS, 2009; Ministerie van Verkeer en Waterstaat, 2011; Kadaster, 2013; calculations and mapping by authors)
with a residue of 10 percent to 25 percent of their income. An average residue of more than 25 percent of a household income only occurs in two smaller housing estates in the Stadionbuurt in south.

Assessing different city districts—out of a total of eight districts focus is given to Centre, New-West and South-east—reveals variances for different household groups (see table 6.4). There are markedly more single-person households in Centre, and more 65+ households in New-West. In Centre, the highest share lives relatively affordably, while in South-east the highest share of households has a negative relative residual income. For different household groups there are large differences between the city districts. Strikingly, there is a considerable difference between 65+ households living unaffordable in New-West (28 percent) and South-east (47 percent). Couples with children live much more often very affordably in Centre (51 percent over 32 and 29 percent). Single-person households live relatively expensively in all districts.

The findings show a greater housing mismatch within the A10 ring way south of the IJ compared to the other parts of the city. Households in Amsterdam South-east suffer from the highest affordability problems and are less effectively matched than other segments of housing market area 3 in figure 6.2. Next to a low average household income, the rents are comparatively high in south-east. High rents are the result of relatively large apartments, recent large-scale restructuring in these neighborhoods resulting in further rent-increases and moderately high tenant turnover. Every time a house is rented to a new tenant, rents can be raised up to the maximum allowed amount, which depends on the characteristics of the unit. This increase is often significantly more than what is possible through annual rent increases. Years of restructuring may have upgraded Amsterdam South-east, but affordability problems related to low household incomes and relatively high rents (Aalbers, 2011) seem to have persisted. Though part of the relatively high rent is explained by the size of the dwellings, the implicit subsidy of the gap between rents charged and market rents for similar dwellings is lower in south-east than in more central parts of the city. Average taxation values per square meter are over three times higher in those areas, while social rents have a relatively flat distribution with similar rents for similar units in different locations.

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4 See the spatial distribution of housing taxation values per square meter at https://maps.amsterdam.nl/woningwaarde/, showing the lowest values in south-east and parts of north and a clear divide between centre and the rest of the city.
Figure 6.6 Average relative residual income per social housing estate in Amsterdam (year 2012) (Source: AFWC, 2012; CBS/CvB, 2012, Sources basic layer files: CBS, 2008; CBS, 2009; Ministerie van Verkeer en Waterstaat, 2011; Kadaster, 2013; calculations and mapping by authors)

<table>
<thead>
<tr>
<th>Household type</th>
<th>Center</th>
<th>New-West</th>
<th>Southeast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-25</td>
<td>25</td>
<td>Share</td>
</tr>
<tr>
<td>Single person, under 65</td>
<td>39</td>
<td>22</td>
<td>39</td>
</tr>
<tr>
<td>Single person, 65 or older</td>
<td>38</td>
<td>38</td>
<td>25</td>
</tr>
<tr>
<td>Two or more person household (no children), all under 65</td>
<td>26</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>Two or more person household (no children), all 65 or older</td>
<td>27</td>
<td>46</td>
<td>28</td>
</tr>
<tr>
<td>Couple with children</td>
<td>29</td>
<td>21</td>
<td>51</td>
</tr>
<tr>
<td>Single parent</td>
<td>33</td>
<td>39</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>26</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 6.4 Average relative residual income for different types of households in three city districts in the SHA housing stock of Amsterdam in 2012 (%) (Source: AFWC, 2012, CBS/CvB, 2012, calculation by authors)
6.5 Evaluating Match and Mismatch Against Distributive Justice
Our aim was to gain insight in whether mismatches occur between households and housing units for different groups of households and in different parts of the city. We argue that an improved understanding of these mismatches based on a strong empirical base can be related to and evaluated against different principles of distributive justice. We applied an analytical model in which the match between household and dwelling has been assessed on two primary dimensions of housing: affordability and adequacy. To explore the merits of this model, it has been applied to the case of social rented housing stock of Amsterdam in the year 2012. In this section, we reflect on the merits of the applied analytical model in regards of: (1) how the analytical model relates to distributive justice literature and how results can inform such theories; (2) the way match and mismatch in social housing distribution are observed; (3) the way different standards can be applied in order to value the observed distribution in terms of justice.

Distributive Justice Literature
Distributive justice is usually centered around the question “who gets what?”. It is primarily concerned with the relative improvements in a localized context in which quantifiable and scarce resources are allotted. Distributive justice is primarily about the outcome and thus relates more closely to approaches of substantive justice (e.g. Boyne & Powell, 1991; Fainstein, 2005; Sen, 2009) than about approaches focused on communicative processes referred to as procedural justice (e.g. Healey, 2003; Hillier, 1998; Pearsall & Pierce, 2010). It is also more closely related to contextualized approaches (e.g. Sen, 2009) that include behavior and agency (Sen, 2009) than to deontological approaches seeking universal principles of justice and just basic institutions (e.g. Rawls, 1971). Still, distributive justice may include (or require) elements of just procedures as well (Rawls, 1971; Sen, 2009). Just outcomes resulting from a procedurally unjust design will be hard to reach and maintain (Fainstein, 2009).

Different scholars have criticized distributive approaches to justice. Young (1990), for example, has argued that the logic of distribution does not fit non-quantifiable, relational and social “goods”. For example, the allocation of rights does not fit the distributive logic since rights are relationships about doing rather than about receiving or owning. Rights could also be allocated to all without concerns of scarcity. A focus on distributions of quantifiable goods could in turn result in disregarding several other dimension of social
justice. The Just City literature, next to equity, distinguishes diversity and democracy as key dimensions for the assessment of the social justice of a city (Fainstein, 2010). Diversity is situated even more at the core of Young’s (1990) contribution, while Fraser (1995) has emphasized the importance of recognition as the leading principle. Another critique voiced is that the focus on outcomes has limited attention for more structural socio-economic injustices that are the result of political-economic structures. A just distribution could hide a structural deficit of the total amount of a good (Fraser, 1995). Because of the highly individualist approach of distributive justice, underlying (unjust) class structures could also be overlooked (MacPherson, 1978; Simpson, 1980). “The call for distributive justice is a necessary but not sufficient aspect of such a normative pitch. It fails to address the causes of injustice, which are structural and lie in the role of power” (Marcuse, 2009, p. 91). Sen (2009) argues for a broad conception of outcome, for example, by incorporating processes of choice.

Housing is a quantifiable scarce good to which households have both a need and individual desires and preferences (King, 1998). It is both a market commodity and a public good. While housing is primarily distributed through markets, many states intervene in housing as a public good (Bengtsson, 2001). The importance of housing is stressed by regarding adequate housing as a right (Bengtsson, 2001; Bratt et al., 2013; Hartman, 1998). A right is defined by Waldron (2007; see also King, 2000; Yung & Lee, 2012) as a legitimate claim individuals have against others. This legitimate claim depends on the basic need of the individual. Different scholars have related basic needs to different (often related or overlapping) fundamental ends like human dignity (Waldron, 1991), freedom and opportunities for good living (Nussbaum, 2011; Sen, 1980, 2009; Stone, 1993), human flourishing (Friedmann, 2011; King, 2003), and physical health and autonomy (Doyal & Gough, 1991). Housing, for example functions as a means for the furtherance of at least three out of the ten key capabilities identified by Nussbaum (2000): “bodily health”, “bodily integrity”, and “control over one’s environment” (see also Basta, 2016b; King, 2000). Central to the capabilities approach is the understanding that different individuals have different abilities to transfer goods into fundamental ends of good living (Sen, 2009). The aim would thus be “enhancing the intrinsic capabilities of the individuals for which the extrinsic nature of the good is meant for” (Basta, 2016b, p. 14).
As in many other countries (Bengtsson, 2001), housing in the Netherlands is regarded a social right. The Dutch constitution states: “Advancement of sufficient housing is object of concern of the government” (Grondwet, art. 22.2). The Housing Act sets the rights and duties of housing associations as primary providers of housing to those “who because of their income or because of other circumstances have difficulty finding appropriate housing” (Woningwet, Art. 46.1). The aim is the provision of housing to households with a certain need, primarily related to their income as the primary source for acquiring housing in the owner-occupied or private rental housing markets.

**Match/Mismatch: Who Gets What?**
Cohen (1987, pp. 20–21) distinguishes four dimensions of distributive justice: “There are (i) things allotted—(...) receipts—to (ii) persons—or recipient units—whose relative shares can be described (iii) by some functional rule and judged (iv) by some standard.” The first three out of four dimensions of distributive justice as identified by Cohen, together describing who gets what, have been included in the model for assessing match and mismatch in this paper. The match observed for different (aggregates of) households describes the relative distribution of receipts (i.e. housing) over recipient units (i.e. households).

The social housing stock in Amsterdam, which is the pool of receipts distributed in the analysis of this paper, consists of varying units which can be regarded shares of the total pool which are allotted to households in different amounts. In contrast to many other goods, however, the options for the allocation of shares are restricted by characteristics of the housing stock. Units are largely indivisible, spatially fixed and heterogeneous (Bengtsson, 2001). The pool of receipts of social housing is furthermore determined by boundaries set through policy. Whether a dwelling may be liberalized (i.e. converted into private rental housing), for example, depends on the total number of points assigned to a dwelling based on certain characteristics. Housing associations determine whether to liberalize or sell units if a tenant has moved out. For this paper, the pool is further narrowed based on ownership (only housing association owned units are included) and social living condition in housing units (dorms are excluded). Collecting data from the housing stock at a single moment in time does not capture changes occurring within the pool of receipts. The housing match matrix applied in this paper is focused on two key dimensions of the receipts that relate to the basic individual need to housing: affordability and adequacy (Yung & Lee, 2012). By applying relative measures
of affordability and physical adequacy, the relative allotment of the scarce good to different households with different needs can be compared. The use of micro-data provides the opportunity to look into the socio-spatial distribution of social housing on a small scale.

The recipient units considered are households registered in municipal records as residents of social housing units that are part of the pool of receipts. Also, boundaries apply for recipient units. The primary entry requirement for social housing consists of a maximum yearly household income of €34,678 (price level 2014). Ninety percent of new renters have to fall within this boundary. For current tenants, additional income boundaries determine the level of (income dependent) rent increases but not eligibility. The model for assessing match and mismatch by limiting the analysis to the current social housing stock provides insight in the current use of the social housing stock, but non-social housing tenants who may also have a significant need for housing are excluded. Opportunities for further research are to extend the analysis with data recorded from additional years in order to include changes in the housing supply, demand and match. Other tenures could be included in the analysis to achieve a better understanding of how different tenures provide adequate housing to different parts of the population.

The functional rule, describing the relation between recipients and recipient units, is one of need. This broad rule is operationalized through the income boundary for new tenants. Additional criteria may apply for the eligibility of specific units; units may, for example, be reserved for students or the elderly. General guidelines also prescribe housing associations to appropriately match households to dwellings based on their income, in order to minimize housing allowance expenditure. The allocation system, however, to a great extent remains based on household choice with few restrictions besides the income boundary and allocation based on waiting time. In the model for assessing match and mismatch, the relation between recipients and recipient units is described through the relative measures for affordability and adequacy. While the allocation system is aimed at adequately matching housing units and households in order to efficiently utilize scarce recourses, significant mismatch is observed. Mismatch can occur in regards to both affordability (Dieleman & van Kempen, 1994; R. van Kempen & Priemus, 2002) and physical adequacy (Arnott & Igarashi, 2000; Batten, 1999; Soaita, 2014). It can arise from (a) an imperfect allocation, (b) changes in the household characteristics or (c) changing housing costs.
By observing differences in mismatch based on lengths of residence, to some extent distinction can be made between mismatch resulting from (a) an imperfect allocation and mismatch with other causes (b and c). The analysis showed a significant gap between short and long-term tenants because new rents are rising more quickly than rents for current tenants. Differences for different types of households reflect different life-stages. Adding a temporal dimension and analyzing changes over time would further enable the ability to distinguish the development of different types of mismatch and observe whether the relative positions of different groups of households are changing. A large part of the dynamism that determines household opportunities is not displayed. Supply and regulatory changes only become apparent slowly over time, while in reality these shifts can have an immediate significant impact on individual households. For example, the change in the social housing target group boundary of 2011 will only have a small impact on the match and mismatch within the total housing stock in the first years, while it immediately excludes middle-income households from entering the social rented sector.

**Standards of Distributive Justice**

Whether inequities, like those identified in the empirical exploration in this paper, are cases of distributive injustice depends on the understanding of justice and the standard applied. A case of perfect procedural justice (e.g. a lottery) per definition results in a just outcome (Rawls, 1971). In the case of distributive justice, however, a standard is required: “Distributive justice involves a moral judgement of an allotment of receipts among recipient units” (Cohen, 1987, p. 24). Next to standards of justice there are other types of standards to which a distribution could be judged, like beneficence (Hume, 1776) and efficiency (Cohen, 1987; Storper, 2011). Standards of distributive justice include equality standards, merit standards (Frankena, 1966), priority standards (Crisp, 2003), among which is Fainstein’s (2010) principle of prioritizing those least well off, and sufficiency standards seeking to provide individuals with enough (e.g. Frankfurt, 1987).

As described above, the social right to housing is concerned with the advancement of sufficient housing and the ability to serve households “who because of their income or because of other circumstances have difficulty finding appropriate housing” (Art. 46.1). While there are other standards that could be applied, we briefly discuss two standards of justice that relate to these aims of social housing provision and distribution: sufficiency and priority. A sufficiency standard is concerned with providing households with enough:
enough to be able to “live a life which is sufficiently good” (Crisp, 2003, p. 762). Sufficiency standards prioritize providing enough over concerns for equality (Frankfurt, 2015). A priority standard could be applied by looking at the extent to which households meet certain standards of sufficiency in regards to social housing. Positive scores on the relative residual income and room stress measures could serve as levels of sufficiency, but other levels could be chosen as well. A sufficiency standard resonates with the objective to allocate housing to households that have difficulty finding appropriate housing because of their income (also considering other necessary expenses).

In contrast to sufficiency standards, prioritarian standards value favoring the least well off (Casal, 2007), in line with Rawls (1971) difference principle and Fainstein’s (2010) principle of favoring those least well off. Similar to the sufficiency principle, moral concern is restricted to providing people with enough to live a sufficiently good life. Below this threshold, however, priority should be given to those least well off. A priority standard could be applied by, (a) looking at the extent to which households are served with a significant need and (b) assessing the extent to which the position of the least well off is prioritized. Need could—similar to what is stated in the Housing Act—be defined in terms of income. Inequality between Amsterdam South-east and other city districts may not be a specific point of concern in relation to the sufficiency principle. The occurrence of sufficiency could be increased without decreasing spatial inequality. Concern in regards of the priority standards, however, could be aimed at improving the position of the households in Amsterdam Southeast. The added value of a longitudinal approach is further affirmed as that would provide the possibility to follow the relative position of different groups and neighborhoods (including those least well off) over time. Despite the earlier discussed critiques to distributive justice and the obvious limitations of a focus on material distributions, the approach provides opportunities for a detailed account of distributive outcomes on a small scale. Especially, adding a longitudinal perspective would enable for a better understanding of the development of match and mismatch over time. Applying different standards to justice provides flexibility to morally assess a given distribution from different legitimate perspectives that should also be open for debate.

6.6 Conclusion
In this paper, a model for assessing match and mismatch of housing distribution is presented and applied to the case of social housing in Amsterdam in the year
2012. The distribution of social housing at one moment in time is assessed for the dimensions of affordability and physical adequacy, exposing different mismatches and inequalities. Inadequacy and ineffectiveness exist on both dimensions, and expensive and inexpensive mismatch exist in markedly great numbers.

The model for assessing match and mismatch shows to have potential in regards of assessing housing distributions and identify mismatch and potentially also distributive injustice on a small scale. While the analysis may provide input for the improvement of the match between households and the housing stock, an additional standard is required for the normative valuation of the distribution in terms of distributive justice. Different standards can be applied to distributions of (social) housing, which may provide different valuations. The application of the two standards introduced in the previous section will, for example, lead to different conclusions on observed inequalities. The limitations of the model, looking at one moment in time, also become clear. A longitudinal approach would shed further light on the emergence and development of mismatch and how the position of different groups—including those worse off—changes over time. A better understanding of the emergence and development of mismatch is needed to be able to further distinguish between “friction mismatch” and mismatch with other causes that could be avoided by different measures. A longitudinal view furthermore opens up the possibility to assess the impact different policies have on the distributive outcome. For instance, scrutinizing the development of mismatch in conjunction with policy changes and changes in the housing stock could add valuable insight in regards to evaluating policy in a very dynamic and complex environment.

Critiques on distributive approaches to justice focus on their limited scopes. Several dimensions that also determine the justice of a city are not regarded and the focus on affordability and physical appropriateness in turn is a confined view of what housing is. The model, however, can be used to assess the distribution of a basic good for individuals and households. While the model in itself does not provide a judgement in terms of distributive justice, it does identify inequalities and the flexibility to explicitly apply different standards for such moral judgement. It can be used to further explore the complex of housing allocation, changing housing distributions and the resulting outcomes in terms of distributive justice.