

# **The Effects of Housing Interventions for the Homeless: Targeting of interventions and selection effects**

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## **Abstract**

This article aims at testing the effects of housing interventions on housing chances for former users of homeless hostels based on combined survey and register data. The analysis shows positive effects on the chances of staying housed five years later both for a group who have received transitional housing and for a group who have been referred to public housing, when we control for selection effects. However, the selection for the two types of interventions is different most notably with a tendency for substance users being more likely to receive transitional housing. The results are interpreted within a theoretical frame of typologies of housing interventions. However the effects of interventions and particularly the pattern of selection for different intervention types must be understood in relation to specific characteristics of the welfare system. Interventions towards the homeless in Denmark are anchored on municipal level, mainly publicly organised and there is a relatively high degree of targeting of interventions and assignment procedures towards particular user-groups.

## **Introduction**

In recent years the range of interventions for the homeless has generally been expanded in many countries by developing new forms of social interventions. There has been a shift from institutionalised low-intensity care (shelters, hostels etc.) towards more individualised interventions and so-called ‘wrap around’ services, such as various forms of supported housing and floating support. However, compared to many other domains of the welfare state, homeless services are still an area under development and there is a considerable need for more evidence based knowledge on what types of interventions actually works better for specific groups among the homeless.

The research literature has distinguished between different types of interventions and most notably the so-called ‘housing first’ approach has had an important impact, emphasising the need to establish a permanent housing solution early within a course of intervention. Recently more elaborated typologies have distinguished between different underlying interventions models such as the normalising model, the tiered model and the staircase model. Empirically, the relatively few effect studies within this field based on randomised controlled trials have mainly pointed to the relative benefits of housing first based interventions (e.g. Tsemberis 2004). These randomised studies contribute with valuable knowledge on the effects of particular interventions towards selected groups among the homeless such as the mentally ill, substance users, and those with a dual diagnosis.

However, the underlying selection processes towards different types of interventions and the relations between the selection process and the more general characteristics of the welfare system and the homeless service provision system is generally not modelled in the literature on effects of homeless interventions. The group of homeless people is heterogeneous with regards to characteristics such as mental and somatic illnesses, substance use, duration of homelessness etc. When it comes to designing efficient policies it is crucial to understand the interplay between the heterogeneity of the homeless group and the targeting of interventions. This implies a contextualisation of the actual types of interventions available, their organisation, procedures of assignment etc.

This paper aims at assessing the effects of transitional housing and referral to public housing for the homeless taking into consideration selection effects based on the heterogeneity of the homeless population and the selection procedures towards different intervention types which are inherent in the social welfare system. The analysis is based on a

combination of survey data and register data. A group of former users of homeless hostels were surveyed five years later.

We take a point of departure in different theories and models of interventions for the homeless in section one where we discuss the ‘housing first’ approach and further developments such as the normalising model and the tiered model. In section two we contextualise the understanding of different intervention types in relation to more specific characteristics of the welfare system and in relation to the targeting of services and the heterogeneity of the homeless group. We discuss characteristics of the Danish welfare system which is generally integrated into the general social service provision with a range of interventions specified within the law of social services and where the services are mainly municipally anchored, and there is a relatively large public housing sector which is integrated into the intervention system by assignment mechanisms.

In section three we discuss the data and methods used with a particular focus on the use of selection equations into the analysis on effects of interventions. Section four presents the findings.

### **Theoretical models of housing interventions**

An important theoretical framework for understanding different typologies of housing interventions have been the distinction between on one hand the ‘housing first’ model and on the other hand the staircase of transition which has also been labelled the housing ready model. The housing first model describes a type of intervention based on securing a permanent housing solution relatively early on in the course of an intervention towards homelessness. Especially if there are other severe problems such as substance use or medical illness a stable housing situation is seen a precondition for a successful intervention on other parameters for instance substance use treatment or psychiatric treatment.

Contrary to the housing first model the ‘housing ready’ model is based on the philosophy that a certain capability of social functioning has to be achieved before a former homeless person with severe addiction problems etc. can successfully live in an own dwelling. By reducing problematic behaviour and by receiving adequate social training the skills which are necessary to be able to live in an own dwelling can be learned. Especially the ‘housing ready’ model has been developed along with connecting the assignment to more permanent housing to a successful outcome on ending substance misuse. Therefore the

housing ready model has also been referred to as the staircase of transition. Progressing one step on the ladder towards permanent housing is dependent on success on aspects such as reducing substance misuse or acquiring other relevant life skills essential to living independently.

The typologies of interventions and particular their use as a base for empirical research are inherently based on the epistemology that a particular type of interventions can be applied across a wide segment of the homeless population and effects of what intervention works best may be compared. However, the development of homelessness policies in recent years have been characterised by the targeting of services to particular subsegments among the homeless population. This has both theoretical and methodological implications.

Theoretically there is a need for more fine-grained typologies. In an elaboration of Harvey's systematization of intervention types in European homeless services Dyb has argued for a distinction between the normalisation model, the tiered model and the staircase of transition. The normalisation models aims at independent living by moving into ones own dwelling. The tiered model aims at independent living after an intermediate phase of breaking the negative circle whereas the staircase model aims at independent living for those who qualify (Dyb 2005).

Especially there are various forms of supported housing which on one hand is of a non-permanent character and which aim at stabilisation or improvement of the social situation and social skills but which at the same time do not have requirements of progress or success on aspects such as substance use treatment or anti-social behaviour related to the following housing career. Particularly the use of transitional housing without a punitive element but with an aim to learn social skills and to have a period of adjustment to life outside of a hostel etc. calls for other conceptualisations related to the variation in supported accommodation.

Empirically and methodologically the effects of interventions must incorporate the selection into different kinds of services not only as a potential bias of effect estimates but also as an inherent condition for assessing the actual effects of the interventions. In other words the randomised controlled trials can give us knowledge on the effects of particular intervention types only at a later stage in the selection chain – after a specific target group has been singled out for specific types of interventions. However, the more the selection process is institutionalised through local assignment procedures targeting out certain subsegments

among the homeless for certain interventions the selection process itself becomes an interesting process for analysis. Not only must the selection process be modelled empirically to correct potential bias to effects estimators but the selection process in itself sheds light on the workings of the social system. In the following section we shall address the context of homeless interventions in the Danish social system.

### **Homeless interventions and welfare services in Denmark**

Interventions towards the homeless in Denmark are regulated by the law on social services and mainly anchored at municipal level. The law defines a range of interventions of which the most important are § 107, 108 and 110 accommodations. The § 110 accommodation mainly consists of homeless hostels aimed at people who do not have or cannot use the dwelling they have because of social problems. The hostels are aimed at shorter stays. These accommodation facilities can be used directly off the street or users can be referred by municipalities.

§ 107 accommodation covers intermediate term accommodation aimed at different vulnerable groups such as the homeless, substance users, mentally ill etc. and § 108 are long term accommodation also aimed at vulnerable groups. The forms of transitional housing/halfway houses which we include as one of the interventions in our empirical study are usually set up under either §107 or § 110.

Besides the interventions defined by the Law on Social Service the Housing Law gives municipalities a right to refer 25 pct. of vacant public housing to vulnerable groups following a municipal waiting list. This is the other type of intervention we include into our study. The remaining part of vacant public housing is referred through ordinary waiting lists open for all.

Besides these housing interventions there is a range of other interventions defined by the service law aimed at vulnerable groups such as social cafés, contact persons etc.

The service provision system is almost solely publicly funded and administratively anchored at municipal level. In all municipalities there are assignment teams that assign social clients to particular types of interventions depending on clients' needs and local supply and availability of the different types of intervention.

The Danish housing intervention system is mainly oriented towards securing a permanent housing solution and aimed at reintegration into society. In relation to the theoretical typologies the two types of interventions we study can be argued to follow the normalising model and the tiered model. The direct referral to public housing, eventually with some floating support, follows the normalising model whereas the other intervention follow the tiered model, where a training period is integrated into a course of intervention. The staircase model is generally not applied in the Danish intervention system. There may locally be examples where absence of substance or alcohol use is a requirement for a stay in transitional housing, but the strict punitive element coupled to steps on a housing ladder found in for instance Sweden is not found and instead progress is usually focused on when the individual is capable of moving on into own housing. On the other hand there are contradictory elements in the local practices. For instance it is commonplace in some municipalities not to refer active substance users to a dwelling in public housing because of considerations towards the neighbours. In this way elements of the staircase model are de facto present, which may impose more or less unintended barriers for obtaining permanent housing though the staircase model is generally not expressed as a local strategy.

Evidence of the coherence and robustness of the intervention system is at stake if there are no clear effects of specific interventions on future housing chances, or if there are no clear patterns of assigning different services to different sub-segments of the homeless population. When we compare the effects of two important types of interventions - transitional housing and referral to public housing - we would expect that both interventions have a positive effect on housing chances but we would also expect to see a differentiation in the pattern of selection towards the two intervention types. All other things equal we would expect the users of transitional housing to be relatively more marginalised on certain parameters such as for instance substance use, mental illness or other aspects which may characterise the heterogeneity of the homeless population. However, we would also expect those who are referred to public housing to have relatively complex problems as having social problems besides being in need of housing is a condition for being eligible to referral through the prioritised municipal lists.

## **Data and Methods**

The relatively integrated character of the service provision system and especially the system of local assignment procedures affects the methodological conditions for evaluating effects of social interventions. In Denmark there is very little use of randomised experiments as this is more or less contradictory to the needs-based assignment of interventions to clients. Instead selection effects must be controlled through background characteristics. A relatively well-developed system of public registers makes it possible to control for a wide range of possible selection factors.

The data for this analysis is a combination of survey and register data. Initially a survey was conducted among users of homeless hostels (§110 accommodations). With permission from the National Data Authority approximately 4000 personal numbers were gathered on users of homeless hostels in 5 counties in 1997. In 2004 a survey was carried out with a random selection of approx. 1600 of these former hostel users for interviews. 824 former users of the hostels were interviewed five years later. The attachment of register data to the data set showed that there were no significant differences between those selected for interviewing and the group which was actually interviewed. The general findings of the survey were previously published in a national report (Geerdsen 2005).

The initial analysis in the national report suggested that there was a negative effect of transitional housing on the chances of staying housed. However, it was concluded that selection effects probably were an important reason for the negative effect of transitional housing as this intervention type was probably assigned to a relatively weaker segment of the homeless population. The following analysis aims to control for selection effects for a wide range of observable characteristics by including longitudinal retrospective register based data, and also including effects from unobservables into the analysis. Data registers from Statistics Denmark has been attached from 1980-1997 on diagnosis from health registers including data on diagnosis of mental illness and substance use, somatic diagnosis, labour market and educational history, crime history, foster care in childhood etc. The analysis also includes variables from the survey such as having childhood friends, and own perception of mental health and substance use problems.

The analysis estimates the effects of the two different interventions: the effects of transitional housing and referral to public housing. Three subsets of the data has been identified. Those who have received transitional housing, those who have received referral to public housing, and those who have received no housing related intervention. The subset

excludes those who have not been homeless at any point in time after the initial stay at the homeless hostels, as those individuals cannot have been in the target group for transitional housing. Furthermore a small group who is still in transitional housing has been eliminated from the subset. This gives a final data set of 373 persons, divided into 96 persons who have received transitional housing, 115 who have received municipal referral to public housing, and 162 who have received none of these interventions.

Three separate comparisons have been carried out: a comparison of the transitional housing group with those who received no intervention, a comparison of those who received referral to public housing with those who received no intervention, and finally a comparison of those who received transitional housing with those who received referral to public housing.

Five different analyses have been carried out within each of these comparisons. A bivariate logistic regression (1), an elaborated logistic regression (2), a logistic regression using propensity scores to control for selection (3), a mixture model which adds a control for unobserved heterogeneity by adding latent classes to the model (4) and finally a matching model (5).

The multivariate logistic model is described by:

$$2) \quad P(Y = 1) = \frac{\exp(a + b_1D + b_2X)}{1 + \exp(a + b_1D + b_2X)}$$

The logistic propensity score model adds a selection equation

$$P(D = 1) = P(D = 1 | X) = \Phi(bX)$$

which captures the effect of observed explanatory variable of selection into the different kinds of interventions. This equation is then inserted into 2) as an independent variable W where we get

$$3) \quad P(Y = 1) = \frac{\exp(a + b_1D + b_2X + b_3W)}{1 + \exp(a + b_1D + b_2X + b_3W)}$$

The mixture model then adds to this model an estimation of different latent classes giving a correction of the effects estimates from unobservables:

$$4) \quad \sum_{j=1}^{j=2} \frac{\exp(\alpha_j + \beta D + \varepsilon) P(J = j)}{1 + \exp(\alpha_j + \beta D + \varepsilon)}$$

Furthermore, to reduce the number of observables included into the analyses we use principal component analysis to extract a number of factors from the background variables so that we keep controlling for otherwise insignificant background variables in the analysis.

In addition we apply fifth model - a matching model with propensity scores which gives the possibility to assess average treatment effects not only for those who have received the intervention but also for those who have not received the intervention. In this way we can assess whether those who did not receive the intervention are likely to would have benefitted from it.

## Findings

Table 1 illustrates how the effect of both types of interventions compared to no housing intervention becomes still more positive when controlling for selection effects in the successive models. When not controlling for selection effects, there is a only a small and non-significant positive effect of transitional housing on the chances of staying housed five years later. However, when applying the more complex models the positive effects of both transitional housing and referral to public housing becomes highly visible. Especially when applying the mixture model which takes into account the influence of unobserved selection effects, there is a significant and relatively large, positive effect of transitional housing on the chances of being in stable housing five years after a stay in a homeless hostel with a log-odds value of 0,64 ( $p=0,03$ ). There is also a positive effect on being in stable housing of referral to public housing with a log-odds of 0,76 ( $p=0,00$ ).

Table 1: Effects of transitional housing and referral to public housing on chances of being in stable housing after five years.

	Transitional housing		Referral to public housing	
	Effect estimate (log-odds)	P-value	Effect estimate	P-value
Bivariate	0,19	0,50	0,38	0,16
Elaborated	0,32	0,32	0,59	0,05
Propensity score	0,42	0,21	0,59	0,05
Mixture	0,64	0,03	0,76	0,00

The more complex models – the propensity score and the mixture models give an estimation of the process of selection into the two different kinds of interventions. Table 2 gives the section equation for transitional housing.

Table 2: Selection into transitional housing

	Estimate	Std. error	P-value
Age	0,00	0,01	0,90
Immigrant	0,20	0,32	0,54
Woman	-0,39	0,26	0,13
Retirement/Early retirement	0,59	0,31	0,06
Activation	0,54	0,22	0,02
Duration on welfare	0,11	0,08	0,18
Alcohol problem	-0,61	0,18	0,00
Substance use	0,59	0,23	0,01
Prison sentence	-0,28	0,21	0,19
Years since last employment	0,00	0,03	0,96
No. of reasons for stay in a hostel	0,30	0,08	0,00
Interaction – Years since last employment – and reasons for stay	-0,02	0,01	0,05
Constant	-0,90	0,49	0,07

There is clear evidence that especially substance use problems and also receiving early retirement benefits and having many reasons for enrolment in the hostel in the first place load high on chances of receiving a transitional housing intervention. This shows that transitional housing is aimed at a ‘weaker’ group among the homeless with highly complex problems. However, there is also a positive effect on selection of participation in an activation program which may indicate that the individuals receiving transitional housing still show some kind of motivation.

Table 3: Selection into referral to public housing

	Estimate	Std. error	P-value
Age	0,01	0,01	0,29
Immigrant	-0,09	0,32	0,77
Woman	0,05	0,23	0,84
Retirement/Early retirement	0,62	0,28	0,03
Activation	0,20	0,23	0,37
Duration on welfare	0,18	0,08	0,02
Alcohol problem	-0,31	0,17	0,07
Education	0,09	0,09	0,31
Prison sentence	0,19	0,19	0,30
Years since last employment	0,02	0,02	0,38
No. of reasons for stay in a hostel	0,29	0,08	0,00
Interaction – Duration on welfare – and reasons for hostel stay	-0,02	0,01	0,05
Constant	-1,61	0,49	0,00

The pattern of selection into public housing is also relatively clear. There is a tendency that people on early retirement and relatively complex problems (number of reasons for a stay) have a higher probability of receiving referral to public housing. This corresponds to the fact that to receive this kind of referral (surpassing ordinary waiting lists) a person has to have other social problems besides lack of residence. However, substance use is insignificant in the model (an could not be included into the final model due to reasons of balancing the propensity score model) and there is a negative though not significant effect of having an alcohol problem. This reflects the reluctance in many municipalities to refer people with active addiction problems to public housing.

The mixture model is the most complex of the four logistic models we apply as there is both a selection equation included in the model and the model is also adjusted for unobservable heterogeneity.

Table 4 shows chances of staying housed in the model for transitional housing compared to no housing intervention.

Table 4 Mixture model of effects of transitional housing

Variable	Estimate	Standard error	P-value
Transitional housing	0,64	0,30	0,03
Age	0,02	0,02	0,39
Woman	1,62	1,22	0,18
Immigrant	0,65	0,56	0,25
Working	0,13	0,25	0,61
Alcohol problem	0,01	0,22	0,98
Substance use problem	-0,06	0,21	0,78
Activation	0,28	0,32	0,38
Friends from childhood	0,09	0,21	0,67
Weak social background	0,42	0,11	0,00
Early retirement	-0,62	0,99	0,53
Reasons for stay in hostel	-0,19	0,35	0,59
Years since last work	-0,04	0,04	0,39
Propensity	-1,73	1,82	0,34
Constant 1	-1,73	2,92	0,55
Constant 2	2,52	1,51	0,10

Besides the significant effect on staying housed from having received transitional housing there are two constants included in the model. They describe how the effect from unobservables can be described by two groups. Constant 1 represents 20 pct. of the cases in

the model and they have a far smaller chance of exiting homelessness than the other 80 pct. This effect from unobservables contributes to adjusting the effect estimate of transitional housing. Besides a relatively large but non-significant effect of being a woman the other variables only show relatively small and non-significant effects. This is mainly because the effects of other characteristics such as for instance being a substance user mainly influence the selection into receiving transitional housing captured by the propensity score. The negative coefficient of the propensity score illustrates that those who receive transitional housing generally have a profile which is attached to a lower chance of exiting homelessness and including the selection equation together with the coefficients for unobservables reduces an otherwise downward bias on the effect estimator for transitional housing.

The equivalent mixture model for referral to public housing is shown in table 5.

Table 5: Mixture model of referral to public housing.

Variable	Estimate	Standard error	P-value
Referral to public housing	0,76	0,23	0,00
Age	0,02	0,03	0,55
Woman	1,18	0,24	0,00
Immigrant	1,46	0,49	0,00
Working	-0,01	0,17	0,95
Alcohol problem	0,09	0,16	0,55
Substance use problem	0,07	0,17	0,67
Activation	0,08	0,24	0,73
Friends from childhood	0,25	0,17	0,14
Weak social background	0,00	0,17	0,99
Early retirement	-0,07	0,57	0,90
Reasons for stay in hostel	-0,32	0,32	0,31

Years since last work	-0,10	0,04	0,02
Propensity	0,21	2,64	0,94
Constant 1	-0,74	1,90	0,70
Constant 2	1,77	0,92	0,06

Besides the significant effect of referral to public housing the model also shows relatively large independent effects of being a woman and immigrant. Women are generally known to have a higher chance of exiting homelessness than men. The effect for immigrants may reflect that immigrants are more vulnerable to structural causes of homelessness such of a general lack of public housing, but therefore at the same time does not necessarily have the same profile of other complex problems (addiction problems, mental illness etc.) that many other homeless people have.

We have also estimated models which compare the effects of transitional housing with referral to public housing. Table 6 shows only the effect estimators suppressing information on control variables for the complex models.

Table 6: Effects of transitional housing compared to referral to public housing.

	Referral to public housing compared to transitional housing	Std. error	P-value
Bivariate	0,20	0,31	0,53
Elaborated	0,32	0,34	0,35
Propensity score	0,16	0,36	0,66
Mixture	0,20	0,44	0,47

The analysis shows that though there is a small positive effect of referral to public housing compared to transitional housing this effect is not significant. However, we know from selection equations that there is a difference in the selection towards these two types of interventions. Therefore the findings indicate that both types of interventions benefit their target groups.

The last analysis addresses the question of whether some of those who did not receive any of these interventions might have benefitted from either transitional housing or referral to public housing. To address this question we have used a matching model which gives us the possibility to estimate not only the average effect of those treated but also to estimate the average effect of those untreated if they had received the intervention. Table 7 gives the estimated probability for having a normal housing situation for those who received the intervention, for those who did not receive the intervention and the estimated probability for those who did not receive the intervention *if* they had received it.

Table 7:

	Estimated probability for a normal housing situation		
	Participants	Non-participants	Non participants if they had participated
Transitional housing	73 pct.	59 pct.	62 pct.
Referral to public housing	76 pct.	62 pct.	78 pct.

The positive effects of both types of interventions are clearly reflected in the higher probability compared to the non-participants. However, we also see a clear difference for the non-participants. For those who did not receive transitional housing, and on the basis of their profiles, the model estimates that they would also not have had any significant effect of having received transitional housing. Together with the results from the selection equations from the propensity models this indicates that transitional housing is mainly targeted towards a subgroup among the homeless who also may benefit the most from it due to their complex problems especially including problems with substance use. However, for those who did not receive referral to public housing (and did not receive transitional housing either) there is a group whom according to the model would very likely also have benefitted from referral to public housing, in terms of a higher chance of having a normal housing situation. This is an important finding as it touches upon the influence of structural factors on homelessness. There is generally quite tight criteria and waiting lists for referral to public housing, especially in the capital due to a lack of cheap public housing. The results indicate that a larger group among the homeless might benefit from municipal referral to public housing.

## **Conclusion**

The homeless is not a homogeneous group. The heterogeneity of the group must be taken into consideration when estimating effects of social interventions not only in terms of selection to the interventions but also because different sub-segments may benefit differently from different interventions.

The analysis shows both a positive effect of transitional housing and of municipal referral to public housing. When we control for selection there is no significant difference on the chances of staying housed when we compare those who have received transitional housing and those who have received referral to public housing. Transitional housing is mainly assigned to a 'weaker' group among the homeless, and mainly substance use is associated with having received transitional housing. However, also referral to public housing is assigned to individuals with relatively complex problems and in this way the conditions in the assignment processes is recognised in the empirical results. We find that transitional housing has mainly been assigned to those who would actually benefit from it, whereas referral to public housing probably would have benefited a larger group among the former hostel users. The results confirm that the different interventions are aimed at targeted sub-segments among the homeless.

On a theoretical level the two intervention types falls respectively within the normalisation model and the tiered model. Thereby the analysis suggests that both of these approaches of social interventions hold value as ways to increase the housing chances of the homeless, but the analysis also highlights the importance of understanding selection mechanisms and thereby the underlying institutional and organisational context which characterises the welfare system.

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