# Emergency homeless shelter use in the Dublin region 2012–2016: Utilizing a cluster analysis of administrative data

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A B S T R A C T

Arising out of a decade of economic recession and austerity, Ireland is currently in the grip of a severe housing crisis marked by weak housing supply, rapidly rising house prices and rents and a dramatic increase in homelessness that is placing severe pressure on the State's emergency accommodation system. This article utilises data from a national homelessness services database (PASS system), which captures live information on service user interactions for all state funded NGO and local authority homeless services, to examine the patterns of emergency accommodation use by the homeless population in Dublin City. The paper applies a k-means cluster analysis to determine different subgroups of Dublin's homeless population (*n* = 12,734) and analyses their rate of movement through homeless services between the years 2012 and 2016. A temporary cluster (78%) experienced a small number of homeless episodes for relatively short periods of time, while an episodic cluster (10%) experienced multiple homeless episodes also for a short period of time. The chronic cluster (12%) experienced a small number of homeless episodes but with long stays in emergency shelter. Results for Ireland show patterns similar to those reported in the US, Canada and Denmark, where a small number of chronic users of homeless accommodation account for a disproportionately large share of resources (*i.e. 50% of total bed nights*). The findings have implications for the operation of emergency homeless accommodation in Ireland and, in particular, the targeting of interventions and the re-directing of resources away from emergency accommodation responses towards a more effective emergency accommodation system for all stakeholders.

## 1. Introduction

In the decade following the financial crisis, incidences of homelessness in Ireland have increased dramatically. Between July 2014 and December 2016 the number of individuals who sought access to emergency homeless accommodation increased by a staggering 130%, from 3226 to 7421 individuals (Department of Housing, 2016). Recent research has demonstrated that the demographic profile of homeless individuals is changing, with a growing proportion of young families entering emergency homeless services provision and often those are lone parent households headed by women (Morrin & O'Donoghue-Hynes, 2018). A multitude of interrelated factors arising out of Ireland's experience of, and response to, the economic recession from 2008 have led to these conditions, including: ongoing issues with mortgage arrears and home repossessions following the collapse of the property market and banking sectors (Waldron & Redmond, 2016); weak housing supply

conditions which have helped to dramatically increase house prices since 2012 (Kitchin, Hearne, & O'Callaghan, 2015); the re-emergence of investors in the rental sector which has fuelled rents (Byrne, 2016; Waldron, 2018); and weak levels of social housing provision following a succession of austerity budgets (Norris & Byrne, 2017).

Given the scale of the homelessness crisis in Ireland, there is a need to develop understanding of the needs of a growing and increasingly diverse homeless population in order to inform both policy development and programme implementation with regard to the allocation of resources for emergency accommodation provision. Indeed, one of the key objectives of the Irish Government's (2016, 33) recent strategy for the housing sector is to "*provide early solutions to address the unacceptable level of families in emergency accommodation.*" As part of this objective, local government recognised the need to map patterns of emergency accommodation use among the homeless population in order to fully consider the most appropriate deployment of resources. As such, policy

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development and intervention strategies can benefit from research that utilises cluster analysis to identify unique subgroups within the homeless population based on the frequency and duration of homeless events they experience. This paper uses Kuhn and Culhane's (1998) pioneering typology of homeless stay patterns to cluster Dublin's homeless population into three distinct groups (*transitional, episodic* and *chronic*) based the duration of stay and rate of readmission by analysing administrative data on emergency accommodation use by adults in Dublin between 2012 and 2016.

The aim of this paper is, therefore, to examine individuals' emergency homeless accommodation stay records to gain insight into the patterns of use of different sub-groups of the homeless population in order to create strategies for intervention and a better alignment of homeless resources to need. This overarching aim is broken down further into a number of specific objectives. Firstly, the paper analyses patterns of the utilisation of emergency accommodation stays in Dublin to determine if the Kuhn and Culhane (1998) typology can fit the Irish case. Secondly, we seek to establish the proportions of people staying in Dublin's emergency shelters between 2012 and 2016 by these cluster types and determine how these clusters compare to other international case studies. To do so, the article draws on administrative data gleaned from the Dublin Region Homeless Executive's (DRHE) 'Pathway Accommodation and Support System' (PASS), which is a national shared services database that captures live information on service users' interactions with all state funded NGO and local authority homeless services. Thirdly, we seek to examine the socio-demographic profiles of the homeless clusters in the Dublin case and analyse their patterns of emergency homeless accommodation use. Finally, we reflect on the implications of the research findings for the development and implementation of policies and programmes designed to address the diverse needs of the respective homeless clusters in the Irish case.

## 2. Literature review

Research has demonstrated the value of using administrative data to study homelessness (Benjaminsen & Andrade, 2015; Parsell, Petersen, & Culhane, 2016; Welsh Government, 2015). Such data is valued for its longitudinal nature, systematic recording and for its policy relevance for public agencies (Culhane, 2016). Research using administrative data can be used to develop homeless policy and programme interventions, while also providing an empirical basis for reviewing programmes and can guide the effective distribution of homeless resources (*ibid*). A key tool to inform homelessness intervention strategies is the creation of cluster typologies of homeless individuals based on their usage patterns of emergency shelters. Such an approach identifies sub-groups within the homeless population based on the regularity with which they access emergency accommodation and the duration of their stays, which can inform more targeted interventions.

The use of administrative data is not necessarily new and many studies have used cluster analyses to examine the experiences of sub-groups within the homeless population. Several studies have differentiated between groups of homeless individuals based on their health records, often clustering individuals based on variables relating to mental health and substance abuse (Bonin, Fournier, & Blais, 2009; Mowbray, Bybee, & Cohen, 1993). Here groups of higher functioning individuals are identified at one end of a continuum, while groups who experience severe mental health and dependency issues are placed at the other end of the continuum (Aubry, Klodawsky, & Coulombe, 2012). Others have grouped homeless individuals based on their experiences of stressful life events, such as economic problems, bereavements or childhood trauma (Muñoz, Panadero, Santos, & Quiroga, 2005). Marr, DeVerteuil, and Snow (2009) develop a cluster analysis that categorises differing urban-place types in Los Angeles County into prime, transitional and marginal spaces and examine the survival strategies of homeless individuals across these types of urban space. Some studies have clustered homeless individuals according to their

experiences of incarceration in the criminal justice system (Greenberg & Rosenheck, 2008; Solarz & Bogat, 1990), while others focus on clusters within specific homeless populations, such as veterans (Tsai, Kasprow, & Rosenheck, 2013) or young adults (Mallett, Rosenthal, Myers, Milburn, & Rotheram-Borus, 2004).

Increasingly, scholars have used administrative data from emergency accommodation services to classify homeless populations based on their patterns of emergency accommodation use rather than on individual characteristics. In their seminal article, Kuhn and Culhane (1998) developed a typology of shelter users in Philadelphia and New York based on their length of stay and frequency of readmission. They identified three distinct clusters of homeless individuals: transitional, episodic and chronic. Transitional users display a small number of short-term stays in emergency shelters, such as those who have experienced relationship dissolution or temporary unemployment and require immediate, but short-term, support. Episodic users experience frequent shelter stays that are short in duration, often combining shelter stays with periods of rough sleeping or stays in health facilities or other institutions. Chronic users experience a relatively small number of homeless episodes, but the duration of these stays are for long periods. Culhane, Metraux, Park, Schretzman, and Valente (2007) applied this same typology among homeless families in six US cities across multiple years, finding similar clusters of service usage. This research has challenged misconceptions about the homeless population, demonstrating that the vast majority of the homeless population are in fact infrequent users of emergency accommodation and not in fact chronically homeless (Kneebone, Bell, Jackson, & Jadidzadeh, 2015). The typology has also demonstrated to policymakers that targeted interventions can be developed to address the needs of different sub-groups within the homeless population.

The Kuhn and Culhane (1998) typology has since been applied in a number of other national and metropolitan contexts. Aubry, Farrell, Hwang, and Calhoun (2013) found similar clusters of shelter pattern use in the Canadian cities of Toronto, Ottawa and Guelph over the period from 2004 to 2007. In this study, transitional users accounted for the largest proportionate share of homeless services users (c. 87%–93%), while episodic users accounted for between 8%–10%, and chronic users accounted for only 2%–4% of shelter users. However, the authors found that the episodic and chronic groups utilised about half of all emergency bed spaces, despite their relatively small proportion of overall service users. Similar findings are reported by Rabinovitch, Pauly, and Zhao (2016) from Victoria, British Columbia and by Kneebone et al. (2015) from Calgary, demonstrating the consistency in the finding that a small proportion of service users consume the greatest number of emergency resources. In one of the few studies to examine patterns of homeless accommodation use in the European context, Benjaminsen and Andrade (2015) found that Denmark experienced markedly lower levels of shelter use than in the US, but that the relative proportions of homeless clusters are similar.

Kuhn and Culhane's (1998) cluster typology, however, has not been without criticism. McAllister, Lennon, and Kuang (2011) have argued that the limiting of homeless clusters to just three categories might overlook more-nuanced patterns of shelter use, while elsewhere they argue that the typology's approach of aggregating shelter stay data might lose valuable insights into the temporal patterns of individual's shelter stays (McAllister, Kuang, & Lennon, 2010). In response, McAllister et al. (2011) propose a time-patterned approach where the sequencing and timing of shelter stays are examined over time to produce a 10 cluster typology of service users. However, as Rabinovitch et al. (2016) note an immediate difficulty in distinguishing between patterns of service among such a large numbers of clusters. The utilisation of a ten cluster typology becomes much too unwieldly in the carrying out of statistical tests of significance, while the '*time-patterned*' typology has not been sufficiently developed for wider replication. Furthermore, the Kuhn and Culhane (1998) typology has been applied more widely across a greater range of international contexts, which

allows for greater comparability of the Dublin findings.

## 3. Methodology

The research examines the patterns of homelessness services usage across multiple years for each of the four Dublin local authorities - Dublin City, Fingal, Dun Laoghaire/Rathdown and South Dublin (Map 1). As outlined above, Ireland is currently in the grip of a severe homelessness crisis and this crisis is most pronounced within Dublin, which accounts for approximately 73% of the total homeless population of Ireland (DRHE, 2018). Between June 2016 and June 2017 the number of individuals accessing emergency homeless accommodation in Dublin increased by almost 20% from 4765 to 5676 (DRHE, 2017). Most concerning is that 40% of these homeless individuals are children. Indeed, there has been a particularly sharp rise in incidences of family homelessness in Dublin, with 1115 families (*and 2270 child dependents*) in emergency homeless accommodation in June 2017 (*ibid*).

Since 2011, the Dublin Region Homeless Executive (DRHE) has operated the Pathway Accommodation and Support System (PASS), which is an online system that provides '*real-time*' information in relation to homeless presentation and bed occupancy, as well as basic profile data relating to service users across the Dublin region. All Section 10[1] funded services are required to use PASS which represents approximately 90% of bed occupancy in the region. As such, rather than relying on snapshots of data from individual emergency accommodation services, the PASS dataset offers a unique opportunity to examine the patterns of emergency accommodation use among the full Dublin homeless population. Indeed, the PASS dataset is comprehensive in its recording of all individuals in search of emergency accommodation, their admission and departure dates and information on gender, date of birth, country of origin and the client's local authority. Additionally, the name of the emergency accommodation provider, the category of accommodation provided and the classification of service provided are also recorded for each contact with the PASS system. Each client is assigned an individual identification number which is linked to their Personal Public Service (PPS) number, which is a unique reference number used to access public services in Ireland. The final dataset for the years 2012–2016 was comprised of 377,678 contacts to the PASS system, which corresponded to 16,005 individuals.

### 3.1. Data treatment

In order to minimize problems of right and left censoring bias, it was necessary to adjust the PASS dataset in a number of ways. Only cases where homeless episodes had occurred after the 1st of January 2012 were included and 37,692 PASS contacts made before this date were removed. A further 4739 entries were removed where a departure date was not entered for the individual homeless episode, while a further 758 entries were removed where the departure date was after the 31st of December 2016. This was a necessary step, as to include these cases would create problems of left-censoring bias and would cause some cases to show much less intense emergency accommodation utilisation patterns than they actually do.

The PASS dataset records all contacts with the emergency accommodation system, regardless of whether the individual client utilised emergency accommodation on a given night. To ensure consistency with Kuhn and Culhane (1998), the dataset was adjusted to ensure only nights spent within emergency accommodation are counted and all 'no-

shows' were removed. Some 21,624 entries were recorded where the client did not, in fact, stay overnight in emergency accommodation, while a further 412 duplicate entries were also identified. These rows of data were removed from the final data file.

### 3.2. Data analysis

In order to analyse the data at the individual level, it was necessary to aggregate the number of PASS contacts so that they correspond to the number of individual homeless clients. This was completed by grouping multiple stays to the unique client ID numbers generated by the PASS system. Following aggregation, the final PASS database contained 312,444 contacts with the PASS system, which relates to 12,734 individual clients.

To implement Kuhn and Culhane's (1998) typology, it was necessary to create a number of new variables before a k-mean cluster analysis could be applied. Firstly, a new variable was created to record the total number of nights stayed in emergency accommodation for each client by calculating the number of nights an individual was admitted to and departed from homeless services. Secondly, a '*Total Homeless Episodes*' variable was created such that higher order episodes of homelessness are only considered distinct from previous episodes if the two stays are separated by 30 days or more. Thirdly, stays separated by fewer than 30 days were collapsed into a single episode. Finally, standardised Z scores were created for both the '*total nights stayed*' and '*total homeless episodes*' variables so that each variable was standardised to have a mean of zero and a standard deviation of 1. This ensures that the variables are scaled similarly and have equal weighting in the cluster analysis.

A number of additional categorical variables were created from the existing data. The age of the client was calculated from their date of birth on the 31st of December 2016 and was categorised into five groups: Youth (aged ≤19 years); Young Adult (20–39 years); Middle Age (40–59 years); Senior (≥60 years); and a final group where the age is Unknown. Approximately, one-third of homeless service users indicated a country of origin other than Ireland and 87 countries were represented in the data. These countries were categorised into three different groups, including (1) Ireland; (2) countries from within the European Economic Area (EEA)[2]; and (3) countries not from the European Economic Area, as well as a fourth Unknown category. A new variable was also created for the number of homeless accommodation providers utilised by clients, which was comprised of six groups: 1 provider, 2 providers, 3–5 providers, 6–10 providers, 11–20 providers and > 20 providers.

A k-means cluster analysis was conducted within SPSS to create three unique clusters of homeless clients using the Z scores for the '*total nights stayed*' and '*total homeless episodes*' variables. This approach groups data points into clusters such that similar cases are arranged together in the same cluster. The procedure firstly creates a centroid for each of the clusters, which begins the sorting procedure where individual cases are iteratively added to produce the most closely associated model of group divisions within the constraints of the user's specification of the number of clusters and the scaling of the variables. Following Kuhn and Culhane (1998), the model was set to produce three distinct clusters of service users. These clusters were categorised as 'transitional' (*i.e. small number of homeless episodes and small number of bed-nights*), 'episodic' (*i.e., large number of homeless episodes and small number of bed-nights*), or 'chronic' (*i.e., small number of homeless episodes and large number of bed-nights*).

Thereafter, a series of Chi-Square tests examined whether statistically significant relationships exist between the homeless clusters and the demographic and patterns of use variables. Relationships are only

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[1] Section 10 of the 1988 Housing Act conferred powers upon Local Authorities to respond to homelessness by directly arranging and funding emergency accommodation, making arrangements with a health board or voluntary body for the provision of emergency accommodation and/or making contributions to voluntary bodies towards the running costs of accommodation provided by them.

[2] The EEA is comprised of the 24 European Union member countries as well as Norway, Switzerland, Lichtenstein and Iceland.
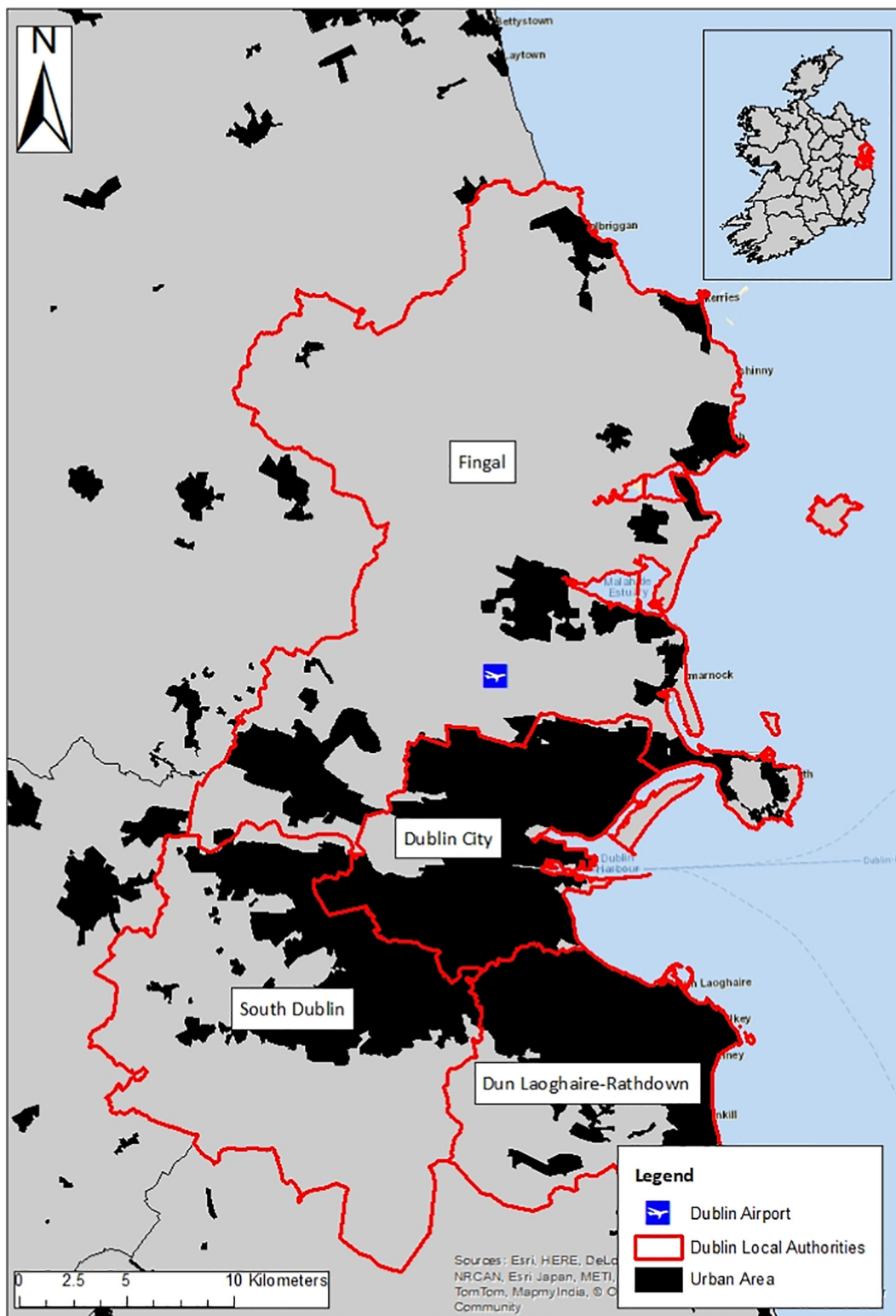
**Map 1.** Four Dublin local authority administrative areas.

considered significant at an alpha level of 0.05 (Field, 2009). Cramer's V tests were also conducted to measure the strength of association between the variables. Cramer's V takes account of sample size and degrees of freedom and is expressed as a value between 0 (*complete independence*) and 1 (*complete dependence*). Rea and Parker (1997) note that most significant relationships are found to be moderate (*> 0.20 and < 0.40*) or relatively strong (*> 0.40 and < 0.60*) and that Cramer's

V rarely achieves a value of 0.80 or above.

## 4. Results

Across the full PASS dataset, 12,734 individuals were homeless for > 2 million bed-nights during the period 2012 to 2016 (Table 1). While the average length of stay was 158 nights, the maximum

**Table 1**
Descriptive statistics of the number of nights stayed in accommodation by clients.

|  | n |
|---|---|
| Total clients | 12,734 |
| Total homeless nights | 2,019,895 |
| Min homeless nights | 1 |
| Max homeless nights | 1714 |
| Mean homeless nights | 158.62 |
| Std. deviation | 231.206 |

recorded stay was 1714 nights, indicating that some clients have been homeless for very long periods. Indeed, 32% of clients demonstrated stays that exceeded this average figure. Across the full database, 65% of clients were men and 35% were female, while the average age of service users was 37 years old. The youngest recorded client was 18 while the oldest was 87 years. Approximately 65% of PASS users were from Ireland, while a further 9% were from European Economic Area countries and 10% were from non-EEA countries. The country of origin is unknown in 17% of cases.

### 4.1. Identification of homeless clusters in Dublin's PASS database

Table 2 presents the patterns of emergency accommodation use across the homeless clusters. The transitional cluster was the largest of the three, representing 78% of clients ($n = 9915$). The transitional group has the lowest average number of bed-nights ($M = 73.02$) and the lowest average number of homeless episodes ($M = 1.33$). While the transitional clusters accounts for 78% of clients, they consumed just 36% of bed-nights over the period ($n = 723,947$). The minimum number of nights stayed was 1 and the maximum recorded was 373. The transitional group's ratio of percentage of nights stayed relative to their proportionate client share was 0.46, reflecting how transitional users consume the least emergency resources relative to their proportionate share of clients.

The episodic cluster accounts for the smallest proportionate share of PASS clients (10%) and was comprised of 1252 individuals. On average, episodic individuals used emergency accommodation for 236 nights, yet they record the highest average number of homeless episodes ($M = 5.91$). The minimum number of nights recorded within the episodic cluster was 4, while the maximum recorded was 1146. The minimum number of episodes recorded was 3, while the maximum recorded was 17. While accounting for 10% of total clients, the episodic cluster consumes 15% of total bed nights ($n = 295,599$).

The chronic homeless cluster demonstrated the largest number of total client nights ($n = 1000,349$), or 50% of total bed-nights. This is despite the fact that the chronic cluster accounts for just 12% of total clients, giving it a ratio of percentage nights stayed to percentage of clients of 4.13. The average number of bed-nights stayed among the chronically homeless was 639, with a minimum recorded stay of 323

**Table 2**
Homeless cluster sizes and means.

|  | Transitional | Episodic | Chronic | Total |
|---|---|---|---|---|
| Sample size (n) | 9915 | 1252 | 1567 | 12,734 |
| Percentage of clients | 78% | 10% | 12% | 100% |
| Average no. of nights | 73.02 | 236.10 | 638.38 | 158.62 |
| Minimum no. of nights | 1 | 4 | 323 | 1 |
| Maximum no. of nights | 373 | 1146 | 1714 | 1714 |
| Average no. of episodes | 1.33 | 5.91 | 2.08 | 1.87 |
| Minimum no. of episodes | 1 | 3 | 1 | 1 |
| Maximum no. of episodes | 3 | 17 | 7 | 17 |
| Client nights (sum) | 723,947 | 295,599 | 1000,349 | 2,019,895 |
| Percentage of client nights | 36% | 15% | 50% | 100% |
| Ratio %nights/%clients | 0.46 | 1.46 | 4.13 | 1.00 |

nights and a maximum of 1714, meaning that some clients remained within emergency accommodation for almost the duration of the study period. The chronic cluster displayed the second highest average number of homeless episodes (2.08), with a minimum recorded number of episodes of 1 and a maximum of 7 over the study period.

Table 3 presents a comparison of the Dublin findings with a range of comparable international cases and demonstrates a clear gradient from the liberal welfare model of the United States, with its minimal social safety net and emphasis on market-based solutions to social problems, to the more interventionist models of Denmark, Ireland and Canada, where greater emphasis is placed on social welfare expenditure and rights of access to benefits and social services (Stephens & Fitzpatrick, 2007). While the transitional cluster of homeless service users is the largest grouping across all case studies, there is a significant range in the proportion of transitional cases with the US cities demonstrating markedly lower ranges (*72%–80%*) than the European (*77%–78%*) and Canadian cases (*85%–94%*). The US cities also witness considerably higher proportions of homeless individuals within the long-term, chronic cluster of emergency accommodation users (*18%–22%*) than the Canadian cities (*2–4%*), while the European cases of Denmark and Ireland demonstrate an interim range (*12%–16%*). It is perhaps surprising that European states should display similar cluster patterns to the US cases, as we might expect lower levels of chronically homeless individuals in Denmark and Ireland given their more extensive welfare systems and public housing sectors (*ibid*). Benjaminsen and Andrade (2015) suggest that in countries with less extensive welfare systems, like the US, homelessness affects a broader range of demographic groups and is more associated with poverty and housing affordability problems. In contrast, countries with more extensive welfare systems, lower levels of poverty and larger public housing sectors, homelessness is more concentrated among specific groups with complex support needs, for example due to mental illness or substance abuse issues.

### 4.2. Patterns of emergency accommodation use among homeless clusters

Table 4 demonstrates the result of chi-square tests to determine whether statistically significant relationships can be observed between patterns of accommodation use within the clusters. Clear relationships are evident for the variables related to nights stayed and homeless episodes that are significant at the 0.001 level and the strength of the association is strong in both cases. Some 72% of transitional users demonstrate stays of < 100 days and 75% have their immediate housing problem resolved after one homelessness episode. Most episodic clients (56%) of demonstrate stays of between 100 and 500 nights and the majority (53%) experience between 3 and 5 homeless episodes. Such individuals consistently move in and out of homeless services and may be alternating their patterns of emergency accommodation use with periods of rough sleeping, 'couch surfing' and staying temporarily with family or friends, and/or periods of hospitalisation or incarceration. Indeed, Kuhn and Culhane (1998) have demonstrated a higher proportion of those in the episodic and chronic clusters display difficulties with physical or mental health and addiction problems. Such difficulties, alongside their intermittent use of emergency accommodation, may mean that they do not gain sufficient access to additional social supports related to their health and dependency issues. Unfortunately, it has not been possible to link PASS records to other social protection datasets and as such we are unclear as to the extent to which other causal factors might be influencing the emergency accommodation stay patterns of the episodic users.

The chronic cluster is clearly correlated with longer patterns of emergency accommodation use: 51% demonstrate stays of between 500 and 1000 nights, while a further 11% have stays in excess of 1000 nights. However, in 64% of chronic cases these long stays are a single continuous homeless episode, meaning such clients find it very difficult to transition into more stable housing. This difficulty may be related to health or substance abuse issues; however, another explanation might

**Table 3**
International application of homeless cluster methodology.

| Source | Location | Time (years) | Final population | Transitional | Episodic | Chronic |
|---|---|---|---|---|---|---|
| Culhane et al. (2007) | New York City | 3 | 10,461 | 73% | 5% | 22% |
| | Massachusetts | 2 | 494 | 74% | 6% | 20% |
| | Philadelphia | 3 | 1673 | 72% | 8% | 20% |
| | Columbus | 2 | 674 | 80% | 2% | 18% |
| Benjaminsen and Andrade (2015) | Denmark | 11 | 25,326 | 77% | 7% | 16% |
| | **Dublin** | **5** | **12,734** | **78%** | **10%** | **12%** |
| Kuhn and Culhane (1998) | New York City | 3 | 73,263 | 81% | 9% | 10% |
| | Philadelphia | 2 | 6897 | 79% | 12% | 10% |
| Aubry et al. (2013) | Toronto | 4 | 56,533 | 88% | 9% | 4% |
| | Guelph | 4 | 1016 | 94% | 3% | 3% |
| | Ottawa | 4 | 18,879 | 88% | 11% | 2% |
| Kneebone et al. (2015) | Calgary | 5 | 32,972 | 86% | 12% | 2% |
| Rabinovitch et al. (2016) | Victoria | 4 | 4332 | 85% | 14% | 2% |

be the recent increase in families experiencing homelessness. Until recently, the PASS system only logged individual adults contacting homeless services without distinguishing whether these adults presented with or without children. While information about accompanying children was gathered, it was not systematically reported on until 2014. As such, it has been difficult to precisely identify the numbers of families experiencing homelessness over the 2012–2016 period. However, recent research has suggested a dramatic increase in homeless families in recent years (DRHE, 2017; Morrin & O'Donoghue-Hynes, 2018).

It is worth noting that government policy has also contributed to the exacerbation of the homelessness crisis in a number of ways. Firstly, following the country's economic collapse from 2008, the development of social housing was severely curtailed through a series of austerity budgets which saw capital expenditure on social housing construction fall from €1.4bn (2008) to just €167m (2014). Secondly, it is government policy to support homeless families through the subsidisation of private rents rather than through social housing provision. Through schemes like the Housing Assistance Payment (HAP), the Irish State essentially pays the majority of an applicant's rent to a private landlord on the tenant's behalf, in a similar fashion to the Housing Benefit Scheme in the UK. However, once a family received HAP assistance, their housing need was deemed to be met and they were considered ineligible to apply for social housing and placed instead on a social housing transfer list. While some allocations were made to those on the transfer list, significantly more allocations were made to families who had been prioritised as homeless. This incentivised some families to voluntarily remain within homeless services rather than have their social housing application status changed (Holland, 2018). This increased the duration of their stays and the likelihood that they would progress into the chronic cluster of homeless. Recently, attempts have been made to address this issue. In June 2018, Dublin City Council removed homeless priority as a classification and increased allocations to families on the transfer waiting list in order to encourage families to utilise HAP to access housing in the private rental sector.

The PASS database records the placement of each homeless client into an emergency accommodation provider and the dates of each placement. These emergency accommodation providers can include accommodation services managed by local authorities, non-government organisations and voluntary charities. Table 4 highlights a strong statistically significant relationship between the number of emergency accommodation providers utilised by clients and the homeless clusters. Those in the transitional cluster are significantly more likely to use one (44%) or two (20%) providers, while the majority of those in the episodic and chronic clusters use a significantly greater number of emergency accommodation providers. Some 40% of episodically homeless and 17% of the chronic homeless use between eleven and twenty providers, while both are also over-represented among those using > 20

**Table 4**
Relationship between homeless clusters and patterns of emergency accommodation use.

| | Transitional | | Episodic | | Chronic | | Total | | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | |
| Total clients | 9915 | 100% | 1252 | 100% | 1567 | 100% | 12,734 | 100% | |
| Homeless nights | | | | | | | | | |
| 1–100 | 7155 | 72% | 406 | 33% | – | – | 7561 | 60% | $\chi^2 = 7589.057$ |
| 101–500 | 2760 | 28% | 701 | 56% | 605 | 38% | 4066 | 32% | $p = 0.000$ |
| 501–1000 | – | – | 143 | 11% | 795 | 51% | 938 | 7% | Cramer's V = 0.546 |
| > 1000 | – | – | 2 | 0% | 167 | 11% | 169 | 1% | |
| Homeless episodes | | | | | | | | | |
| 1 | 7399 | 75% | 0 | 0% | 689 | 44% | 8088 | 64% | $\chi^2 = 8359.200$ |
| 2 | 1809 | 18% | 0 | 0% | 392 | 25% | 2201 | 17% | $p = 0.000$ |
| 3–5 | 707 | 7% | 666 | 53% | 458 | 29% | 1831 | 14% | Cramer's V = 0.573 |
| 6–10 | 0 | 0% | 538 | 43% | 28 | 2% | 566 | 4% | |
| 11–20 | 0 | 0% | 48 | 4% | 0 | 0% | 48 | 0% | |
| Accommodation providers | | | | | | | | | |
| 1 | 4346 | 44% | 4 | 0% | 242 | 15% | 4592 | 36% | $\chi^2 = 4399.283$ |
| 2 | 1984 | 20% | 23 | 2% | 216 | 14% | 2223 | 17% | $p = 0.000$ |
| 3–5 | 2211 | 22% | 156 | 12% | 394 | 25% | 2761 | 22% | Cramer's V = 0.416 |
| 6–10 | 1007 | 10% | 392 | 31% | 352 | 22% | 1751 | 14% | |
| 11–20 | 340 | 3% | 504 | 40% | 273 | 17% | 1117 | 9% | |
| > 20 | 27 | 0% | 173 | 14% | 90 | 6% | 290 | 2% | |
| Total | 9915 | 100% | 1252 | 100% | 1567 | 100% | 12,734 | 100% | |

**Table 5**
Relationship between homeless clusters and demographic variables.

| | Transitional | | Episodic | | Chronic | | Total | | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | |
| Total clients | 9915 | 100% | 1252 | 100% | 1567 | 100% | 12,734 | 100% | |
| Age | | | | | | | | | |
| Youth (≤19 years) | 55 | 1% | 0 | 0% | 1 | 0% | 56 | 0.4% | $\chi^2 = 504.479$ |
| Young adult (20–39 years) | 5379 | 54% | 809 | 65% | 902 | 58% | 7090 | 56% | $p = 0.000$ |
| Middle age (40–59 years) | 2855 | 29% | 411 | 33% | 611 | 39% | 3877 | 30% | *Cramer's V = 0.141* |
| Senior (≥60 years) | 421 | 4% | 29 | 2% | 53 | 3% | 503 | 4% | |
| Unknown | 1205 | 12% | 3 | 0% | 0 | 0% | 1208 | 9% | |
| Gender | | | | | | | | | |
| Female | 3558 | 36% | 299 | 24% | 590 | 38% | 4447 | 35% | $\chi^2 = 76.330$ |
| Male | 6357 | 64% | 953 | 76% | 977 | 62% | 8287 | 65% | $p = 0.000$ |
| | | | | | | | | | *Cramer's V = 0.077* |
| Country of origin | | | | | | | | | |
| Ireland | 5944 | 60% | 968 | 77% | 1305 | 83% | 8217 | 65% | $\chi^2 = 451.949$ |
| EEA countries | 917 | 9% | 84 | 7% | 87 | 6% | 1088 | 9% | $p = 0.000$ |
| Non-EEA countries | 1109 | 11% | 46 | 4% | 96 | 6% | 1251 | 10% | *Cramer's V = 0.133* |
| Unknown | 1945 | 20% | 154 | 12% | 79 | 5% | 2178 | 17% | |

sources of emergency shelter.

## 4.3. Demographic profile of PASS service users by cluster

Table 5 outlines the statistical relationships between the homeless clusters and a number of demographic variables. With regard to age, the majority of homeless clients are young adults (56%) or middle-aged individuals (30%). Comparatively, the proportionate shares of young and older homeless individuals were much lower, with just 0.4% of clients aged 19 years or younger and 4% of clients aged 60 years or older. However, statistically significant variance was noted in the age profiles of both the episodic and chronic clusters, where the shares of younger and middle-aged adults were greater. Some 65% of episodic clients are young adults who oscillate in and out of emergency accommodation more regularly, while middle aged clients are more likely to use emergency accommodation for extended periods of time and experience the greatest difficulties in securing long term accommodation. That noted, the greatest number of senior clients ($n = 421$) is found within the transitional cluster. It may be that some of these older clients are in fact long-term homeless individuals who engage in rough sleeping for the most part, but who are forced into emergency accommodation for short spells during periods of severe weather (Smith, 2015). This would suggest that more targeted interventions are required to house older, chronic homeless individuals in accommodation more suited to more senior citizens, for example with community support networks, more easily accessible dwellings and additional social welfare supports.

There were few statistically significant differences observed between the clusters in relation to gender, with 65% of clients being men and 35% women. However, some variance is identified in the episodic group, where a significantly larger proportion of males is identified (76%). Rabinovitch et al. (2016) suggest that because the majority of emergency bed spaces are often specifically allocated for men, it may mean that males are more confident in seeking out more long-term accommodation as they are more confident that emergency shelter will be available to them should they need it. The relatively fewer allocations of specifically female bed spaces may lead women to be more cautious about attempting to find housing as they are less assured of regaining their shelter space. While we cannot be conclusive in this interpretation from the PASS dataset, it is worth noting that somewhat higher rates of female service users are observed among the transitional (36%) and chronic homeless clusters (38%). These patterns might be explained by the fact that adult service users with children, who are predominantly women, are more likely to leave services within six

months to take up HAP supported tenancies in the private rental sector or stay in services to wait for a social housing allocation (Morrin & O'Donoghue-Hynes, 2018).

In recent years it has been suggested that non-Irish homeless migrants have been regularly refused access to emergency accommodation and are routinely "…*turned away at the door…after cursory questioning as regards their nationality and/or period of residence in the country*" (Holland, 2015). However, the PASS data demonstrates that some 10% of clients were from countries within the European Economic Area (EEA), while a further 12% are from non-EEA countries. The greatest number of clients from non-EEA countries are those from Nigeria ($n = 381$), Somalia ($n = 136$) and the Democratic Republic of Congo ($n = 81$). The cluster analysis in Table 4 demonstrates that Irish nationals are statistically more likely to be found among the episodic (77%) and chronic (83%) groups and are under-represented among the transitional group (60%) relative to their share of the total dataset (65%). Comparatively, individuals from non-EEA countries are significantly less likely to be found among the episodic (4%) and chronic groups (6%). However, it is acknowledged that certain factors may be influencing the under-representation of non-EEA homeless individuals within these clusters, including difficulties in identifying migrants' needs due to language barriers and information gaps about migrants' rights and entitlements. Additionally, they may experience difficulties in navigating the wider social welfare system because of communication difficulties with housing and social welfare officers or due to difficulties with the irregular legal status of some migrants.

## 4.4. Limitations of the data

While this analysis allows for a better understanding of the patterns of emergency accommodation use among the homeless population of Dublin, the dataset and analysis is limited by a number of considerations. Firstly, it is acknowledged that the PASS dataset only represents cases of reported homelessness whereby an individual has sought emergency accommodation support. As such, the dataset does not record the 'hidden homeless' or those who may seek temporary accommodation by couch surfing with friends or family or those who choose to rough sleep. Indeed, due to concerns regarding substance abuse or safety issues within emergency shelters, some homeless individuals may prefer not to seek emergency accommodation. Women, in particular, might choose not to stay in emergency accommodation due to fears related to safety or child welfare, while some migrants, particularly those residing in the country illegally, might fear arrest and deportation. Additionally, some individuals identified as transitional homeless

individuals may in fact be long term homeless individuals who consistently sleep rough but who occasionally use emergency accommodation. Further research is required to understand homeless individuals' patterns of rough sleeping and to identify those rough sleepers who also engage with the emergency accommodation system.

Secondly, as discussed above, one of the major trends in recent years has been the dramatic rise in families that are experiencing homelessness. However, until 2014, the PASS system did not report the familial status of clients presenting to emergency homeless services, nor did it keep a systematic record of the number of children presenting with adults in search of emergency homeless accommodation. While the PASS system has begun to report client information with regard to families since 2015, it is necessary to retrospectively identify these family units within the data for the years 2012–2014 in order to give a fuller account of their patterns of service use over time. This analysis is currently underway, and it is hoped to be able to report on the particular shelter usage patterns of families to inform bespoke policy responses to address the needs of this particularly vulnerable sub-group of Dublin's homeless population.

Thirdly, the PASS data is also somewhat limited in the demographic information related to the homeless community and the reasons behind why individuals are experiencing homelessness. While the age, gender and country of origin of homeless individuals are recorded by the placement staff working with PASS, there is limited information with regard to the overall physical and mental health of homeless individuals, while records related to periods of detention within the prison service are also recorded inconsistently and are difficult to extract. Thus far, it has been difficult to link data from the PASS system with other administrative datasets related to the health or the social protection systems due to regulations regarding the protection of personal information. This is a key knowledge gap that must be addressed through greater inter-agency collaboration between homeless services and other social institutions like the Health Service Executive and Department of Social Protection.

## 5. Policy implications

The research findings point to the need to develop a range of targeted interventions to address the needs of the homeless based on their experience of transitional, episodic or chronic homelessness. As highlighted by Aubry et al. (2013), such analysis allows for the better deployment of scarce resources based on cluster groups, targeting those most in need. In terms of efficiency, targeting resources towards those in the long-term, chronic homeless cluster should yield the most significant benefits as they are a relatively small proportion of the overall homeless population who utilise the greatest level of bed-nights. Supporting these individuals into more long-term and supported accommodation options in permanent social or affordable housing, with adequate social, mental health and dependency supports, should be prioritised. In this regard, the analysis provides an empirical basis for reviewing existing programmes related to supporting individuals exit emergency homelessness support and provides a guiding framework for the implementation of new policies, such as the Housing First model which seeks to provide affordable, permanent accommodation to the long-term homeless as well as wrap around social and welfare supports to address their other issues (*e.g. substance abuse problems, inadequate income*). Indeed, through its 'Rebuilding Ireland' strategy, the Irish Government has committed to tripling the number of tenancies that can be provided through the Housing First programme which is financed by the Dublin Region Homeless Executive. A new '*Housing First National Implementation Plan*' was to be introduced in 2018, and it is hoped that the results of the study will be used, in part, to guide this strategy.

A second key outcome is that, contrary to some public misconceptions, Dublin's emergency homeless accommodation provision system broadly responds as well to emergency housing needs as similar systems in comparable international contexts. The vast majority of individual

transition out of the emergency accommodation system after relatively short periods of time, and the majority of individuals experience a single episode of homelessness. However, this is not to underplay the scale or severity of Dublin's homelessness crisis. Indeed, the numbers of individuals reporting to emergency accommodation services indicates that the Irish housing system and market are quite dysfunctional. Rather, we suggest that in the face of considerable operational pressure, the emergency accommodation placement system (PASS) has in fact operated to a reasonable degree of efficiency, particularly when compared to similar international cases. What is worth highlighting, however, is that the speed of transition through the system is slowing and that greater numbers of individuals appear to be progressing into episodic and chronic homelessness over time. It would seem that the homeless families, in particular, are getting 'stuck' within the emergency accommodation system and are finding it increasingly difficult to transition into affordable, long-term accommodation. As such, programmes that prioritise the movement of long-term homeless families into secure and affordable housing should be prioritised.

Finally, interventions directed at the transitional cluster of homeless individuals should remain focused on supporting them to become rehoused as quickly as possible. Such interventions might include the provision of crisis-related payments to homeless individuals, support with meeting rental payments and deposits for a temporary period and on-going rental supplements that can be indexed linked relative to the individual's ability to pay (Culhane, Metraux, & Byrne, 2011). The transitional users require less highly-structured residential programmes to address their needs as they appear to have relatively low rates of readmission and the vast majority of client's experience only one or two episodes of homelessness. As such, individuals in this cluster demonstrate a capacity for independent living and simply require temporary support to make the transition to permanent housing such as community-based homeless prevention interventions or transition supports to enable them move between jobs or housing arrangements. By targeting interventions early among the transitional cluster, it would likely yield in resource savings by stemming the flow of clients moving into the longer-term episodic and chronic clusters. Indeed, as a recommendation for future research, an econometric cost-benefit analysis of the savings and resource efficiencies generated from preventing transitional homeless service users from graduating into the episodic and chronic clusters should be undertaken, as well as an analysis as to how resources might be best re-deployed within the emergency accommodation system.

More broadly, intensive upstream interventions that address the flow of individuals entering the emergency accommodation system in the first instance are required. Clearly, there is a pressing need to develop a more long-term, unitary model of housing provision based on affordable rents and strong tenure security in order to avoid the catastrophic social, economic and psychological consequences of homelessness. Indeed, significantly greater levels of political will and public financing are required to achieve a more equitable and sustainable housing system based around the creation of a cost-rental housing market and the financing of a large scale programme of public housing construction (National Economic and Social Council, 2014a, 2014b, 2015).

## 6. Conclusions

This article has built on previous research in understanding the trajectories and patterns of homeless emergency accommodation use through the application of a k-mean cluster analysis in the manner followed by Kuhn and Culhane (1998). While recognising that limitations exist within this clustering approach, the results nonetheless demonstrate a considerable alignment between the patterns of emergency accommodation use among the Dublin homeless population and comparable research conducted in the United States, Canada and Denmark (Aubry et al., 2013; Benjaminsen & Andrade, 2015; Culhane et al.,

2007; Rabinovitch et al., 2016). Indeed, we demonstrate that while Dublin has experienced a dramatic increase in its homeless population between 2012 and 2016, the majority of homeless individuals use emergency accommodation for relatively short periods of time and frequencies. However, the majority of scarce emergency accommodation resources are used by a relatively small cohort of chronically homeless individuals. With regard to the socio-demographic profile of emergency accommodation users, our results also align with those of comparable studies. Younger homeless individuals are more likely to be transitional users of emergency accommodation, while young and middle-aged adults are significantly more likely to be found among the episodically and chronically homeless. Men are also more likely to be over-represented among episodic users, while a slightly larger proportion of females is also noted among the chronic cluster, which may be a result of the increasing numbers of families experiencing homelessness since 2014.

In considering the implications of the results for homeless services management, it is worth reiterating that the Irish public welfare system, and in particular the provision of homeless services, is under considerable strain following the country's recent economic recession. Indeed, a period of significant budgetary austerity in the immediate aftermath of the economic crisis saw a marked reduction on spending on social housing and an increasing reliance on temporary emergency accommodation for homeless individuals. Even though spending on new social housing has increased in recent years the level of new social housebuilding has been very slow, capacity in the publicly managed system is stretched and increasingly local government must rely on third sector organisations, religious charities and hotels and B&Bs to provide homeless accommodation. However, it also worth acknowledging that the Irish homelessness welfare regime is far from the punitive models witnessed in the United States, characterised by aggressive street-sweeps of rough sleepers, anti-homelessness ordinances and the closure of homeless shelters (DeVerteuil, 2014; DeVerteuil, May, & Von Mahs, 2009). Rather, the Irish system has mirrored developments in the UK, where homeless people have a right of access to a greater array of welfare services and a right to housing that is heavily (if not entirely) subsidised by the local state. There is an emphasis in the Irish model on reintegrating homeless individuals back into mainstream housing through, for example, assisted tenancies in the private rental sector, and on the provision of additional support services. This is not to suggest that the Irish model is an optimum, but rather the findings suggest there are considerable opportunities for policy interventions to promote a more effective utilisation of scarce emergency resources and to develop more tailored interventions to address the long-term needs of such chronic homeless users.

A number of potential opportunities for further research have been identified through this article. A clear research priority is to better understand the homeless accommodation patterns of families with children in the Dublin emergency housing system. There is evidence to suggest that a greater number of families are presenting as homeless in recent years, but the specific patterns of their use of shelters has not been possible to deal with in this paper. Families, given the presence of children, are a particularly vulnerable homeless sub-group who can often find it difficult to transition out of emergency accommodation given their specific space requirements and the needs of their children, including schooling and wider family and social networks. It is likely that homeless families are increasingly sliding into patterns of chronic, long-term stays within emergency accommodation provision and as such understanding the extent of families within the system and their specific patterns of use is important in order to develop tailored responses. Additionally, it is not immediately clear from this study how those individuals who sleep rough engage with emergency accommodation providers. There is considerable opportunity for linking datasets on rough sleepers with administrative data from Dublin's emergency shelters to identify the patterns of those who both sleep rough and use shelters and those who only choose to sleep rough. Again, it is

hoped that by improving understanding of the practices of such subgroups that more tailored intervention strategies can be developed to address emergency housing needs.

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