



Population Forecasting Study

Population Forecasts for New Dwellings 2014.

Cognisant Research for Northamptonshire County Council

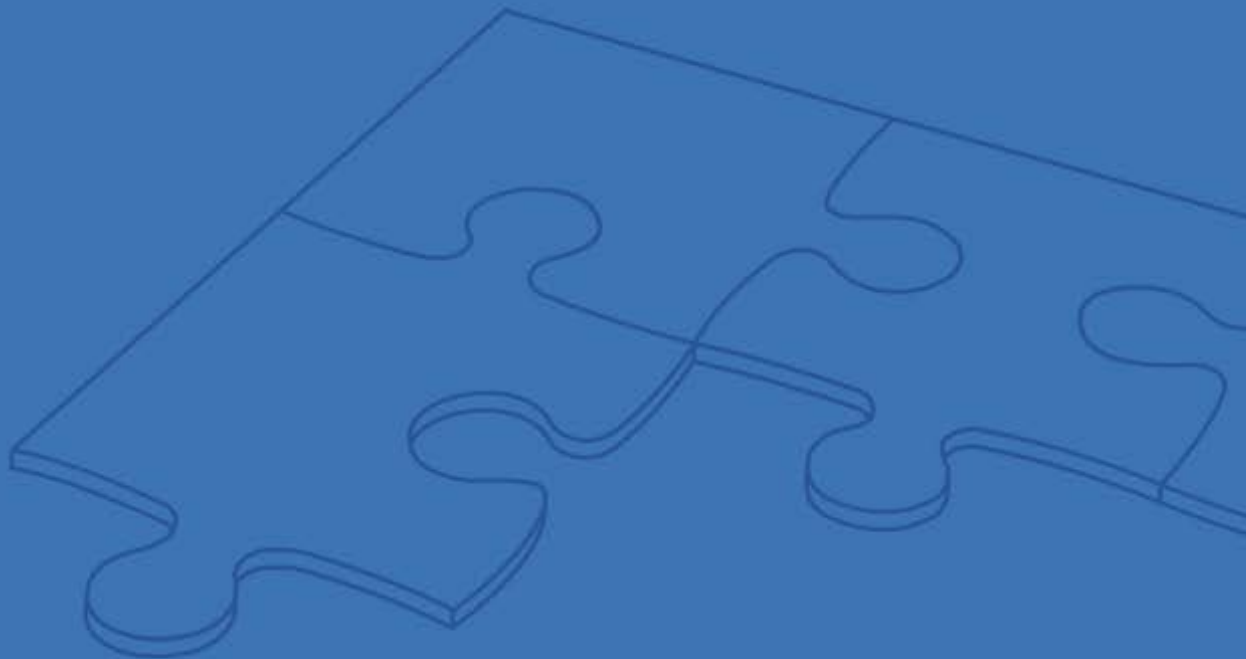


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1 Introduction

In November 2013 Northamptonshire County Council (Northants) commissioned a research project to establish the Population Forecasts for new housing developments across the County. In particular, the project was designed to establish robust Pupil Product Ratios (PPRs); the number of school age children, or pupils, typically generated by a new housing development. These figures are used to support proposed levels of developer contributions, required under Section 106 of the Town and Country Planning Act 1990. PPRs are also used to assist with the production of pupil forecasts.

This report sets out the results of the Population study. Section 2 of this report details the methodology that was used to conduct the research and identify the PPRs. Section 3 sets out the PPR data collected across the different types of dwellings in Northants. Section 4 provides a summary of the resident population ratios related to the new dwellings visited, detailing the total number of all residents, including children. In addition, section 4 includes data related to residents with disabilities and transportation behaviour.

Appendix 1 contains additional data tables created as part of this study.

For the purposes of consistency in this report, the following phrases are defined as follows:

Child – a household member aged between 0 -19 years.

Resident – a household member living at the address during school term time.

2 Methodology

This section sets out the methodology used to conduct the Northants Population study. The methodology described in this report has been developed by Cognisant Research Ltd. Any queries regarding the data collected and reported for the project should be addressed to Cognisant Research Ltd (Cognisant).

2.1 Questionnaire Design

The questionnaire was paper based and designed so that it could be completed with or without the assistance of an interviewer.

This questionnaire was piloted on 100 dwellings across new housing developments in North East Somerset. The pilot included both door-to-door and postal interviews. The pilot confirmed that research subjects were capable of accurately completing the questionnaire, both with and without assistance.

This core questionnaire has been successfully used in PPR studies conducted across West Sussex, Berkshire, South Gloucestershire, Wiltshire, Telford and the Wrekin, Havering, Redbridge and a new housing development in Hampshire.

2.2 Population

Cognisant used the Postcode Address File (PAF) to identify properties registered from January 2011. This accounted for an estimated 7,326 dwellings.

2.3 Sample

In order to achieve the target number of completed interviews, 2985 addresses were chosen at random. This provides a robust indication of child yield, within the margins of error described in section 3 of this report.

2.4 Fieldwork

Four fieldwork researchers conducted interviews across Northants during the period November 2013 to January 2014. The fieldwork researchers used for this study operated according to the Market Research Society Code of Conduct.

Face-to-face interviews were conducted with residents who agreed to participate. When residents were unavailable a questionnaire, covering letter and reply-paid envelope were posted through the letterbox.

The covering letter explained to respondents why the research was taking place and provided basic instructions on how to complete and return the questionnaire. This mixed method approach of using face-to-face interviews

and a postal survey was chosen because it was the most effective way of maximising participation. Whilst the face to face interview style and self-completion methods represent two different data collection techniques, neither can be considered any more robust than the other, in the event that a participant wishes to provide erroneous information.

Where an address could not be found by a fieldworker, the dwelling was flagged to be re-visited by the Project Manger, Ian Nockolds. Fieldworkers were instructed that when a property was confirmed as a retirement home or commercial property, the dwellings concerned were not to be included in the study, along with dwellings which had not been completed or were clearly vacant.

Previous experience of conducting PPR research has highlighted the problem that households with children are more likely to participate than those without. Cognisant's experience of conducting door to door interviews would suggest that this differential participation is caused by households without children believing that a study of this nature is not relevant to them.

In order to compensate for differential participation, Cognisant conducted a separate study across 303 randomly selected dwellings in the population, in order to assess the proportion with and without children resident.

2.5 Data Validation

Prior to data entry, Cognisant conducted a back check by telephone of 5% of all completed questionnaires (face-to-face and self completion, where possible). The back checks included confirmation that the interview had taken place and confirmed the response of at least 1 question. The respondents chosen for back checking were randomly selected.

Completed questionnaires were entered for analysis using specialist software. The software enables rules to be created, ensuring that keystrokes used for data entry relate to a value appropriate to the question concerned.

Rules were also established to ensure that only appropriate questions were served up for data entry (e.g. it would not be possible to enter data related to the age of a child, or the type of school a child attended, if the respondent indicated that they had no children). Using data entry rules in this way greatly reduces the potential for error during the process of data entry.

Following data entry a final audit was conducted of the raw data file, confirming the quantitative totals for the number of children identified, cross-referenced against the ages recorded and the types of school (Primary, Secondary, etc.) attended.

2.6 Weighting

In order to compensate for response bias, caused by the differential participation described earlier in this section of the report, the results calculated in this project have been weighted.

To ensure that the overall proportion of households participating in the project was not skewed to reflect a larger number of households with children, Cognisant conducted a separate study to identify the proportion of new built dwellings with children resident across Northants.

The results of this research, compared with the results collected from participants in the PPR study, are set out in table 1, along with the weights used to compensate for the differential participation experienced in this category. These weights have been calculated in the same way as described above.

Table 1 – Northants Dwellings with Children Weighting Information

		Study	Target	Weight
Are there any children (aged 0-19 years) living at this property?	Yes	49%	46%	0.94
	No	51%	54%	1.06

3 Pupil Product Ratio

This section of the report identifies how many children are produced by the newly built dwellings across Northants. These figures are broken down across the different years of school, including pre-school and those eligible for post-16 education. All statistics have been rounded up to 2 decimal places.

Where a respondent indicated that a child was resident, they were required to indicate which type of schooling, if any, the child attended. Respondents could choose from a variety of categories covering pre-school, primary, secondary and post-16 education.

Table 2, below, shows that the pupil product ratio for secondary school children in Northants is 0.15. This figure would have been larger (0.16) if the data had not been weighted to take into account response bias.

Therefore, for every new dwelling created in Northants, 0.15 secondary school age children will be created. Alternatively, if 100 new dwellings were to be created, 15 secondary school age pupils would be produced.

The mean number of children, 0.83, represents the number of children (aged 0-19) resident across all new dwellings relevant to this study.

Table 2 - Top Level PPR Statistics

	Un-weighted	Weighted
Pre School Children	0.34	0.32
Primary School Children	0.30	0.29
Secondary School Children	0.16	0.15
Post 16 Children	0.07	0.07
Mean Number of Children	0.87	0.83

3.1 PPR by Dwelling Size

Table 3, below, shows how many pupils are produced when a new dwelling is built in Northants, broken down by the size of the dwelling as defined by the number of bedrooms. The results show that a 2-bedroom dwelling typically generates 0.13 Primary school pupils, whilst a dwelling of 4 bedrooms or more generates 0.37 Primary school pupils.

Table 3 – PPR Across all Sizes of Dwelling

No. of Bedrooms in Dwelling	1¹	2	3	+4
Pre School Children	0.00	0.30	0.32	0.34
Primary School Children	0.00	0.13	0.32	0.37
Secondary School Children	0.00	0.03	0.17	0.22
Post 16 Children	0.00	0.03	0.07	0.09
Mean	0.00	0.49	0.89	1.03
Standard Error	0.00	0.01	0.02	0.03
95% Confidence Interval	0.00	0.52	0.91	1.06
	0.00	0.48	0.87	1.00

Two measures of reliability for a statistic are the standard error and 95% confidence interval. The standard error gives an indication of how far individual scores deviate from the Mean score. The larger the sample, and/or the closer the individual scores are to the Mean score, the smaller the standard error.

The 95 per cent confidence interval is the range within which the sample mean would fall for 95 per cent of the times a sample survey was repeated. It is a standard way of expressing the statistical accuracy of a survey-based estimate. If an estimate has a high error level, the corresponding confidence interval will be very wide.

Calculated to two decimal places, the 95 per cent confidence interval increases when a weighting is applied. The 95 per cent confidence interval for +4-bed dwellings is ± 0.03 from the mean, meaning that the lowest number of children generated from +4-bed dwellings is likely to be no more than 1.00, whilst the highest would be 1.06.

Table A in appendix 1 sets out the number of completed interviews achieved across the different sizes of dwelling, detailed in table 3, above.

¹ Only 13 dwellings were interviewed in the 1-bed category, making this data potentially unreliable.

3.2 PPR by Dwelling Type

Table 4, below, shows how many pupils are produced when a new dwelling is built in Northants, broken down by the type of dwelling. The results show that a Detached house generates 0.28 Primary school pupils, whilst a Flat/Apartment generates 0.02 Primary school pupils.

Table A in appendix 1 sets out the number of completed interviews achieved across the different types of dwelling, detailed in table 4, below.

Table 4 – PPR Across Dwelling Type

Type of Dwelling	Detached	Semi Detached	Flat / Apartment	Terrace/ End terrace
Pre School Children	0.27	0.36	0.10	0.35
Primary School Children	0.28	0.31	0.02	0.30
Secondary School Children	0.15	0.15	0.02	0.17
Post 16 Children	0.08	0.06	0.00	0.08
Total Number of Children	0.77	0.89	0.15	0.89

3.3 PPR by Dwelling Tenure

Table 5, below, shows how many pupils are produced when a new dwelling is built in Northants, broken down by the tenure of dwelling. The results show that an Owned (inc. mortgaged) dwelling generates 0.24 Primary school pupils, whilst a Housing Association/Council dwelling generates 0.46 Primary school pupils.

Table 5 – PPR Across Dwelling Tenure

Type of Dwelling	Owned (inc. mortgaged)	Privately rented	Shared ownership (part own/part rent)	Housing Association / Council	Other ²
Pre School Children	0.24	0.32	0.37	0.57	0.47
Primary School Children	0.24	0.28	0.24	0.46	0.71
Secondary School Children	0.13	0.18	0.02	0.24	0.00
Post 16 Children	0.04	0.08	0.10	0.13	0.00
Total Number of Children	0.65	0.87	0.72	1.40	1.18

² Only 4 dwellings were interviewed in the Other ownership category, making this data potentially unreliable.

Table B in appendix 1 sets out the number of completed interviews achieved across the different tenures of dwelling, detailed in table 5, above.

Cross-referencing the data collected from properties classified as social housing shows what the PPR is in these dwellings. Table 6 below shows that 0.19 primary school children are resident in a 2 bed social property, whilst 0.58 primary school age children are resident in a 4 bed social house.

Table 6 – PPR Across all Sizes of Dwelling for Social Housing

No. of Bedrooms in Dwelling	1³	2	3	4⁴
Pre School Children	0.00	0.52	0.63	0.92
Primary School Children	0.00	0.19	0.83	0.58
Secondary School Children	0.00	0.04	0.41	1.00
Post 16 Children	0.00	0.05	0.19	0.58

3.4 Other Child Data

Of the 883 children recorded in the study, ages were recorded for all of them. Just over two fifths (40.3%) of all children resident are aged 4 or under. The biggest single age category is children aged 2, who account for 11% of all children resident.

This age profile is very different to that identified in the 2011 census for Northants. Census data shows that children aged 0-4 account for only 23.6%⁵. Table C in Appendix 1 provides a full count of how many children of different ages have been recorded as resident in newly built developments across Northants.

³ Only 5 dwellings were interviewed in the 1-bed Social Housing category, making the data collected potentially unreliable.

⁴ Only 125 dwellings were interviewed in the 4-bed Social Housing category, making the data collected potentially unreliable.

⁵

<http://neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=3567647&c=Northamptonshire&d=180&e=16&g=472090&i=1001x1003x1004&m=0&r=1&s=1309765689156&enc=1&dsFamilyId=91>

4 Northants New Build Population

This section of the report identifies the total number of residents, including children, resident in newly built dwellings across Northants, referred to as the residential product ratio (RPR). All statistics have been rounded up to 2 decimal places.

Table 7, below, shows that the weighted RPR for the average newly built dwelling in Northants is 2.63.

Table 7 – Top Level RPR Statistics

	Un-weighted	Weighted
Number of Residents	2.69	2.63
Standard Error	0.03	0.03
95% Confidence Interval	2.66	2.60
	2.72	2.66

4.1 Dwelling Size

Table 8, below, shows how many people, of all ages, are produced when a new dwelling is built in Northants, broken down by the size of the dwelling as defined by the number of bedrooms. The results show that a 2-bedroom dwelling typically generates 2 people, whilst a dwelling of 4 bedrooms generates 3 people. Participation data for size categories can be found in table A of Appendix 1.

Table 8 – RPR Across all Sizes of Dwelling

How many bedrooms in this property?	Weighted
1	1.23
2	2.00
3	2.71
4+	3.06

4.2 Dwelling Type

Table 9 sets out the RPR for dwelling types across Northants. The data in this table has been weighted to take into account participation across dwelling size and households with and without children resident.

Table 8 shows that the average number of residents produced by one Detached house is 2.7, whilst 1.45 residents are created for every one Flat/Apartment. Participation data for type categories can be found in table A of Appendix 1.

Table 9: No. of Residents Produced by New Dwelling Broken Down by Dwelling Type

What type of dwelling do you live in?	Weighted
Detached	2.74
Semi detached	2.68
Flat/Apartment	1.45
Terrace/End terrace	2.63
Other	2.38

4.3 Tenure

Table 10, below, sets out the RPR for different newly built dwelling tenures across Northants. All the data in this table has been weighted to take into account participation across dwelling size and households with and without children resident.

Table 10 shows that the average number of residents produced by one Owned (inc. mortgaged) dwelling is 2.53, whilst 2.98 residents are created for every Housing Association/Council dwelling. Participation data for tenure categories can be found in table B of Appendix 1.

Table 10: No. of Residents Produced by New Dwelling Broken Down by Tenure

What is the tenure of this property?	Weighted
Owned (inc. mortgaged)	2.53
Privately rented	2.69
Shared ownership (part own/part rent)	2.47
Housing Association/Council	2.98
Other	2.94

4.4 Age Product Ratio by Dwelling Size

Table 11, below, shows how many residents, broken down by age group, are produced when a new dwelling is built in Northants, broken down by the size of the dwelling as defined by the number of bedrooms. The results show that a 2-bedroom dwelling typically generates 0.74 residents aged 20-30, whilst a dwelling of 4 or more bedrooms generates only 0.31 residents in the same age group.

Table 11 – PPR Across all Sizes of Dwelling

Age Band	1	2	3	+4
0-19	0.00	0.49	0.89	1.03
20-30	0.77	0.74	0.58	0.31
31-50	0.15	0.37	0.88	1.08
51-64	0.08	0.21	0.23	0.41
65-74	0.08	0.12	0.11	0.18
75+	0.15	0.07	0.02	0.04

4.5 Other Occupancy Data

84% of the households participating in the study indicated that they were the first to occupy the dwelling.

Occupation of the Main Earner in the Household

Elementary occupations made up the single largest category of main household earners at 19%, followed by Professional occupations at 13%, the Skilled trades at 12% and Associate professional and technical occupations at 11%.

Occupancy

70% of all households surveyed had moved to their new home from an address within Northamptonshire.

Figure 1 – Previous Location

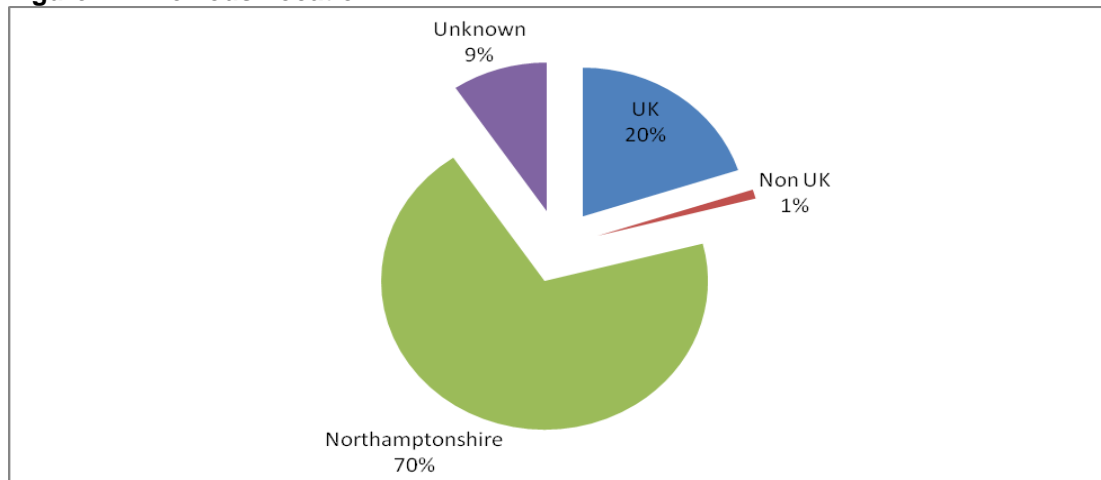
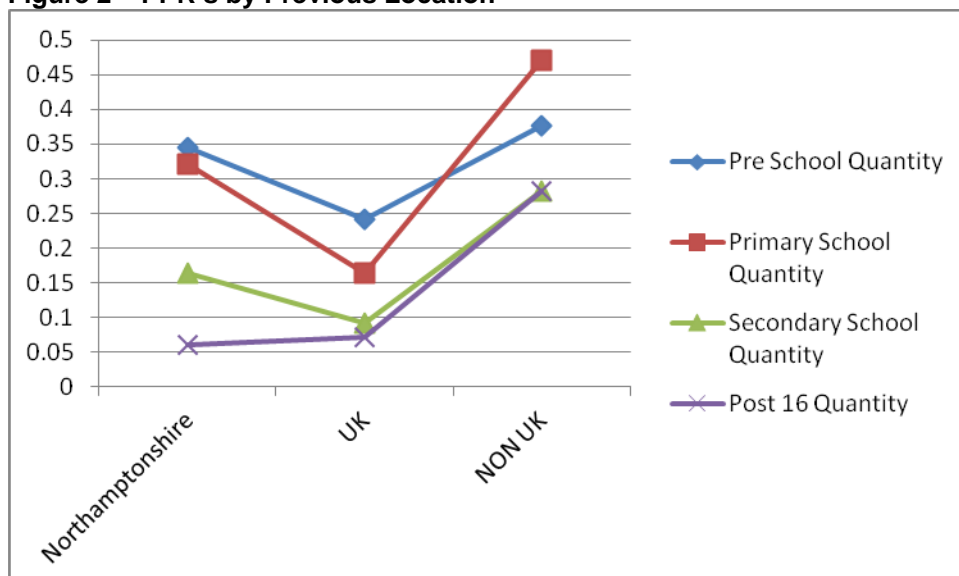


Figure 2, below, shows the weighted pupil product ratios, broken down by where households have moved from. Households moving from outside the UK have the highest proportion of children across all categories.

Figure 2 – PPR's by Previous Location



4.6 Disabled Residents

12% of households interviewed included an individual with a disability. Across the 121 households, 158 separate disabilities were recorded. Table 12 sets out the proportion of households containing each specific type of disability recorded.

Table 12 – Disabled Residents

What is the specific type of disability recorded?	
Physical Disability	7%
Eyesight	2%
Hearing	2%
Learning Disability	2%
Mental Health	2%

4.7 Transport

Table 13, below, sets out car and bicycle access across dwellings of different sizes, broken down by the number of bedrooms. The table shows that a 4-bed dwelling is likely to have access to 1.73 cars and 1.50 bikes.

Table 13 – Transport Ownership Across all Sizes of Dwelling

How many bedrooms in this property?	Car	Bike
1	0.77	0.23
2	1.14	0.57
3	1.43	1.04
4	1.73	1.50
5+	2.08	1.89

Appendix 1

Table A – Completed Interviews by Dwelling Size and Type

		Base	Missing No reply	Dwelling Size				
				1	2	3	4	+5
Base		1007	-	13	241	428	276	49
Missing	No reply	-	-	-	-	-	-	-
		-	-	-	-	-	-	-
What type of dwelling do you live in?	Detached	298	-	-	17	54	184	43
		29.59%	-	-	7.05%	12.62%	66.67%	87.76%
	Semi detached	338	-	1	91	186	56	4
		33.57%	-	7.69%	37.76%	43.46%	20.29%	8.16%
	Flat/Apartment	36	-	10	24	2	-	-
		3.57%	-	76.92%	9.96%	0.47%	-	-
	Terrace/End terrace	326	-	2	106	182	34	2
		32.37%	-	15.38%	43.98%	42.52%	12.32%	4.08%
	Other	9	-	-	3	4	2	-
	0.89%	-	-	1.24%	0.93%	0.72%	-	

Table B – Completed Interviews by Dwelling Size and Tenure

		Base	Missing No reply	Dwelling Size				
				1	2	3	4	+5
Base		1007	-	13	241	428	276	49
Missing	No reply	-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Is this property?	Owned (inc. mortgaged)	643	-	4	80	273	241	45
		63.85 %	-	30.77 %	33.20 %	63.79 %	87.32 %	91.84 %
	Privately rented	116	-	4	35	55	19	3
		11.52 %	-	30.77 %	14.52 %	12.85 %	6.88% %	6.12% %
	Shared ownership (part own/part rent)	48	-	-	24	21	2	1
		4.77%	-	-	9.96%	4.91%	0.72%	2.04%
	Housing Association/Council	196	-	5	102	77	12	-
		19.46 %	-	38.46 %	42.32 %	17.99 %	4.35% %	- %
	Other	4	-	-	-	2	2	-
		0.40%	-	-	-	0.47%	0.72%	-

Table C – Ages of Children Identified

Age	Number of Children Recorded	
0	61	6.91%
1	66	7.47%
2	98	11.10%
3	76	8.61%
4	55	6.23%
5	59	6.68%
6	51	5.78%
7	54	6.12%
8	42	4.76%
9	36	4.08%
10	31	3.51%
11	45	5.10%
12	34	3.85%
13	27	3.06%
14	34	3.85%
15	27	3.06%
16	21	2.38%
17	32	3.62%
18	22	2.49%
19	12	1.36%