Region: East Midlands
Project ID: project 1
Impact of new settlement near Nottingham

Property Value Uplift Calculator
IFS and CeMMAP

1 Introduction

2 Type of project

The project is a new **settlement** in the **East Midlands** region. Figure 1 displays a map of the new settlement.

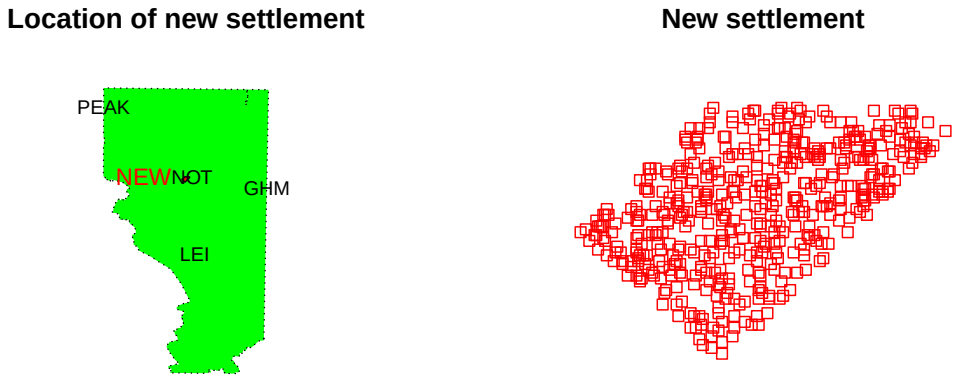

Figure 1: Map of new settlement

The new settlement consists of 10,000 houses near Nottingham. Tables 1 and 2 present some summary statistics for the new settlement.

Table 1: Settlement details

Variable	Value
Location	Near Nottingham
Centroid (longitude,latitude)	(-1.2016786, 52.8687234)
Area (square km.)	4.88
Number of dwellings	10,000
Population density	35

Table 2: Summary statistics for new settlement near Nottingham

Statistic	N	Mean	St. Dev.	Min	Max
location_value	10,000	−0.91	0.01	−0.92	−0.90
builtuparea_pct	10,000	13.00	17.69	8.72	86.16
busyland_pct	10,000	51.66	10.64	49.08	95.66
restrictedland_pct	10,000	0.31	0.00	0.31	0.31
localplanrate	10,000	0.02	0.002	0.01	0.02
lu_domestic_shr	9,865	0.10	0.03	0.04	0.16
lu_gardens_shr	9,865	0.28	0.10	0.06	0.58
lu_nondom_shr	9,865	0.05	0.04	0.01	0.16
lu_road_shr	9,865	0.15	0.04	0.08	0.24
lu_rail_shr	9,865	0.01	0.01	0.00	0.03
lu_greenspace_shr	9,865	0.31	0.14	0.04	0.58
lu_water_shr	9,865	0.01	0.02	0.00	0.10
popdensityOA	10,000	35.00	0.00	35	35
greenbelt	10,000	0.04	0.19	0	1
distance_coast	10,000	81.48	0.79	79.56	83.16
drive_station	9,990	26.08	0.34	25.43	26.84
drive_LEI	10,000	36.68	0.36	35.72	37.37
drive_NOT	10,000	27.16	0.07	27.02	27.36
drive_PEAK	10,000	68.96	0.74	67.38	70.46
drive_GHM	10,000	47.84	0.92	45.65	49.97
drive_BAN	10,000	76.70	0.36	75.99	77.50
drive_station.1	9,990	26.08	0.34	25.43	26.84
trans_LEI	10,000	76.39	0.50	75.37	77.42
trans_NOT	10,000	63.10	0.54	61.98	64.08
trans_PEAK	10,000	135.98	0.54	134.87	136.99
trans_GHM	10,000	89.54	1.77	85.28	93.44
trans_BAN	10,000	205.56	0.53	204.45	206.70

The summary statistics for the new town are based on an "average" local authority in the region. Currently, the characteristics are chosen so that the average characteristics of the new town are

similar to Nottingham local authority.

To predict, new property values, this report assumes:

- House prices are determined by 1) property size and structure and 2) location. Details of the data used to estimate the model are presented in Section 5. Model details are presented in Section 6.
- Location values are primarily determined by travel time to various locations, land use in the surrounding area, local demographics, distance to the coast and various local amenities and disamenities including greenbelt status and road noise.
- Travel times to 5 locations are the dominant fators for property values in this region. These locations are: (**Leicester, Nottingham, Peak District National Park, Grantham, Banbury**).
- All travel times are estimated using Google Maps.
- The model does not account for changes in congestion or any other changes in travel time induced by the new settlement.
- The model provides short-run predictions only. In the long run, commuting patterns, job locations and the importance of destinations will likely change. The model does not account for these long run changes.
- The model provides the best approximation to the short run impact of the new settlement.

3 Impact of the new settlement

The new settlement increases the housing supply by 10000.

4 Impact on prices

Table 3: Property prices (units = year 2017)

Statistic	Mean	Min	Pctl(25)	Median	Pctl(75)	Max
newprice	200,029.1	89,602.4	149,335.1	177,536.1	223,446.4	791,562.5
deltaprice_lo	199,546.9	89,120.2	148,853.0	177,053.9	222,964.2	791,080.4
deltaprice_hi	198,823.8	88,397.1	148,129.8	176,330.8	222,241.1	790,357.2
deltaprice_hi.1	198,823.8	88,397.1	148,129.8	176,330.8	222,241.1	790,357.2

This table shows the distribution of property prices of the new properties.

The variables "deltaprice_lo", "deltaprice_med", and "deltaprice_hi" measure the gain in property value assuming all land in the settlement previously was farmland and was purchased at prices per acre of £4000, £7000, and £10000 respectively.

5 Data

The data for this project are derived from several sources.

TO BE COMPLETED¿

6 Model

Section 6.1 shows how log prices depend on building characterstics and time.

Section 6.2 shows how log prices depend on travel times to important cities and destinations in the region as well as on other local amenities and disamenities.

6.1 Model 1

Table 4: Dependence of log property values on structure and time

	Dependent variable:
	logprice
year2009	-0.082^{***} (0.005)
year2010	-0.038^{***} (0.005)
year2011	-0.050^{***} (0.005)
year2012	-0.030^{***} (0.004)
year2013	-0.011^{***} (0.004)
year2014	0.040^{***} (0.004)
year2015	0.090^{***} (0.004)
year2016	0.150^{***} (0.004)
year2017	0.199^{***} (0.005)
propertytypeF	-0.437^{***} (0.007)
propertytypeO	-0.053^{***} (0.020)
propertytypeS	-0.262^{***} (0.002)
propertytypeT	-0.432^{***} (0.002)
newbuildY	0.143^{***} (0.003)
tenureL	-0.082^{***} (0.006)
bSize1	0.140^{***} (0.014)
bSize2	0.203^{***} (0.011)
bSize3	0.273^{***} (0.011)
bSize4	0.566^{***} (0.011)
bSize5	1.037^{***} (0.014)
bSize6	1.219^{***} (0.017)
bLat1	-0.695^{**} (0.279)
Observations	100,000
R^2	0.678
Adjusted R^2	0.677
Residual Std. Error	0.267 (df = 99848)
F Statistic	$1{,}391.033^{***}$ (df = 151; 99848)
Note:	*p<0.1; **p<0.05; ***p<0.01

6.2 Model 2

Table 5: Dependence of log property values on locational amenities

	Dependent variable:
	location_value
builtuparea_pct	0.001^{***} (0.0001)
busyland_pct	-0.001^{***} (0.0001)
restrictedland_pct	
localplanrate	-0.386 (0.267)
lu_domestic_shr	-0.120^{*} (0.069)
lu_gardens_shr	0.358^{***} (0.036)
lu_nondom_shr	0.696^{***} (0.080)
lu_road_shr	0.694^{***} (0.066)
lu_rail_shr	0.300^{***} (0.072)
lu_greenspace_shr	0.322^{***} (0.032)
lu_water_shr	0.424^{***} (0.042)
popdensityOA	-0.00002 (0.00002)
imddecile2	0.013^{***} (0.003)
imddecile3	0.028^{***} (0.003)
imddecile4	0.036^{***} (0.003)
imddecile5	0.033^{***} (0.003)
imddecile6	0.037^{***} (0.003)
imddecile7	0.038^{***} (0.003)
imddecile8	0.040^{***} (0.003)
imddecile9	0.042^{***} (0.003)
imddecile10	0.058^{***} (0.004)
prob_4bandHigh	0.001 (0.042)
prob_4bandLow	-0.013 (0.041)
prob_4bandMedium	-0.017 (0.041)
prob_4bandNone	-0.008 (0.041)
prob_4bandVery Low	0.099^{**} (0.042)
noiseclass55.0-59.9	-0.007^{**} (0.003)
noiseclass60.0-64.9	-0.0001 (0.004)
noiseclass65.0-69.9	-0.001 (0.008)
noiseclass70.0-74.9	0.0005 (0.022)
greenbelt	-0.008^{*} (0.004)
log(distance_coast)	-0.069^{***} (0.018)
I(log(distance_coast)^2)	0.007 (0.005)
log(drive_station)	-0.260^{***} (0.079)
I(log(drive_station)^2)	0.058^{***} (0.013)
Constant	-0.657^{***} (0.245)
Observations	9,923
R^2	0.816
Adjusted R^2	0.814
Residual Std. Error	0.058 (df = 9818)
F Statistic	418.802^{***} (df = 104; 9818)
Note:	*p<0.1; **p<0.05; ***p<0.01

7 Figures

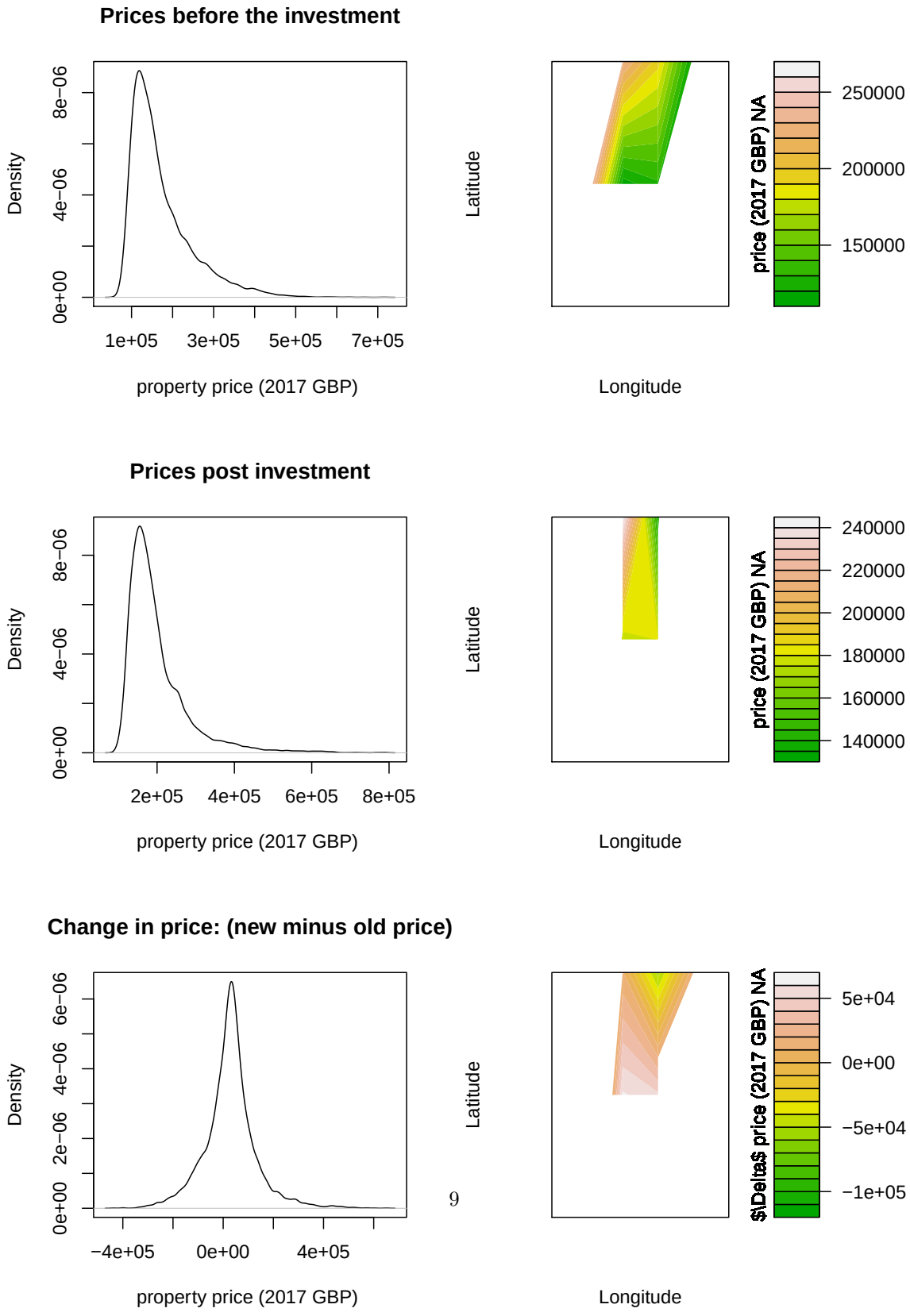

Figure 2: Impact of project on prices