

Region: Cornwall and Devon
Project ID: project 1
Impact of new settlement near Exeter

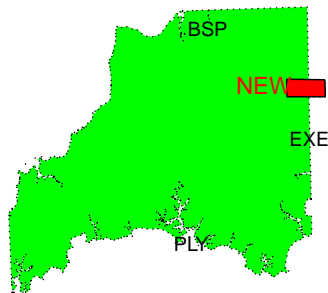
Property Value Uplift Calculator
IFS and CeMMAP

1 Introduction

2 Type of project

The project is a new **settlement** in the **Cornwall and Devon** region. Figure 1 displays a map of the new settlement.

Location of new settlement



New settlement

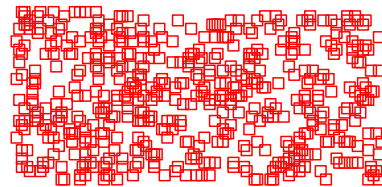


Figure 1: Map of new settlement

The new settlement consists of 5,571 houses near Exeter. Tables 1 and 2 present some summary statistics for the new settlement.

Table 1: Settlement details

Variable	Value
Location	Near Exeter
Centroid (longitude,latitude)	(-3.5525973, 50.8204122)
Area (square km.)	87.16
Number of dwellings	5,571
Population density	35

Table 2: Summary statistics for new settlement near Exeter

Statistic	N	Mean	St. Dev.	Min	Max
location_value	5,571	1.96	0.03	1.89	2.05
builtuparea_pct	5,571	2.26	0.55	2.16	5.39
busyland_pct	5,571	10.58	9.02	9.00	62.05
restrictedland_pct	5,571	0.09	0.00	0.09	0.09
localplanrate	5,571	0.01	0.001	0.01	0.01
lu_domestic_shr	5,571	0.08	0.05	0.03	0.18
lu_gardens_shr	5,571	0.21	0.09	0.08	0.36
lu_nondom_shr	5,571	0.05	0.04	0.003	0.16
lu_road_shr	5,571	0.11	0.04	0.06	0.21
lu_rail_shr	5,571	0.01	0.01	0.00	0.06
lu_greenpace_shr	5,571	0.43	0.18	0.16	0.71
lu_water_shr	5,571	0.02	0.03	0.0000	0.08
popdensityOA	5,571	35.00	0.00	35	35
greenbelt	5,571	0.00	0.00	0	0
distance_coast	5,571	17.32	2.28	12.29	22.25
drive_station	5,571	28.26	3.49	20.20	35.47
drive.BSP	5,571	55.11	1.27	52.83	57.68
drive.EXE	5,571	28.04	2.29	23.37	33.87
drive.FAL	5,571	120.69	3.08	114.61	125.96
drive.PLY	5,571	66.32	2.37	62.27	72.90
drive_station.1	5,571	28.26	3.49	20.20	35.47
trans.BSP	5,571	115.81	3.24	108.53	122.46
trans.EXE	5,571	53.20	3.86	46.08	63.22
trans.FAL	5,571	249.03	3.53	241.47	256.19
trans.PLY	5,571	137.46	3.07	131.86	144.82

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 Exeter 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 4 locations are the dominant factors for property values in this region. These locations are: (**Barnstaple, Exeter, Falmouth, Plymouth**).
- 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 5571.

4 Impact on prices

Table 3: Property prices (units = year 2017)

Statistic	Mean	Min	Pctl(25)	Median	Pctl(75)	Max
newprice	231,994.9	53,177.5	175,071.9	209,679.2	260,517.7	746,039.8
deltaprice_lo	216,530.5	37,713.1	159,607.5	194,214.8	245,053.3	730,575.4
deltaprice_hi	193,333.9	14,516.5	136,410.9	171,018.2	221,856.7	707,378.8
deltaprice_hi.1	193,333.9	14,516.5	136,410.9	171,018.2	221,856.7	707,378.8

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.

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6 Model

Section 6.1 shows how log prices depend on building characteristics 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

	<i>Dependent variable:</i>
	logprice
year2009	−0.066*** (0.004)
year2010	−0.003 (0.004)
year2011	−0.022*** (0.004)
year2012	−0.016*** (0.004)
year2013	−0.011** (0.004)
year2014	0.029*** (0.004)
year2015	0.068*** (0.004)
year2016	0.103*** (0.004)
year2017	0.129*** (0.005)
propertytypeF	−0.269*** (0.007)
propertytypeO	−0.026* (0.014)
propertytypeS	−0.212*** (0.002)
propertytypeT	−0.314*** (0.002)
newbuildY	0.091*** (0.003)
tenureL	−0.146*** (0.006)
bSize1	0.281*** (0.011)
bSize2	0.459*** (0.009)
bSize3	0.757*** (0.010)
bSize4	1.281*** (0.011)
bSize5	1.387*** (0.015)
bLat1	2.460*** (0.115)
Observations	100,000
R ²	0.682
Adjusted R ²	0.681
Residual Std. Error	0.256 (df = 99859)
F Statistic	1,528.639*** (df = 140; 99859)
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

6.2 Model 2

Table 5: Dependence of log property values on locational amenities

	<i>Dependent variable:</i>
	location_value
builtuparea_pct	−0.0004*** (0.0001)
busyland_pct	−0.0005*** (0.0002)
restrictedland_pct	
localplanrate	−11.657*** (0.873)
lu_domestic_shr	−0.125* (0.069)
lu_gardens_shr	0.317*** (0.041)
lu_nondom_shr	0.805*** (0.101)
lu_road_shr	−0.314*** (0.080)
lu_rail_shr	−0.542*** (0.102)
lu_greenpace_shr	0.124*** (0.036)
lu_water_shr	0.148*** (0.039)
popdensityOA	−0.0001*** (0.00002)
imddecile2	−0.002 (0.004)
imddecile3	0.006 (0.004)
imddecile4	0.005 (0.004)
imddecile5	0.008** (0.004)
imddecile6	0.014*** (0.004)
imddecile7	0.011*** (0.004)
imddecile8	0.018*** (0.004)
imddecile9	0.031*** (0.004)
imddecile10	0.040*** (0.005)
prob_4bandHigh	0.042 (0.056)
prob_4bandLow	0.046 (0.056)
prob_4bandMedium	0.061 (0.056)
prob_4bandNone	0.051 (0.056)
prob_4bandVery Low	0.089 (0.057)
noiseclass>=75.0	0.027 (0.056)
noiseclass55.0-59.9	−0.012*** (0.003)
noiseclass60.0-64.9	−0.005 (0.005)
noiseclass65.0-69.9	−0.006 (0.007)
noiseclass70.0-74.9	−0.015 (0.015)
greenbelt	
log(distance_coast)	−0.010*** (0.001)
log(drive_station)	0.026*** (0.008)
Constant	1.501*** (0.122)
Observations	9,751
R ²	0.828
Adjusted R ²	0.826
Residual Std. Error	0.056 (df = 9662)
F Statistic	526.885*** (df = 88; 9662)

Note: *p<0.1; **p<0.05; ***p<0.01

7 Figures

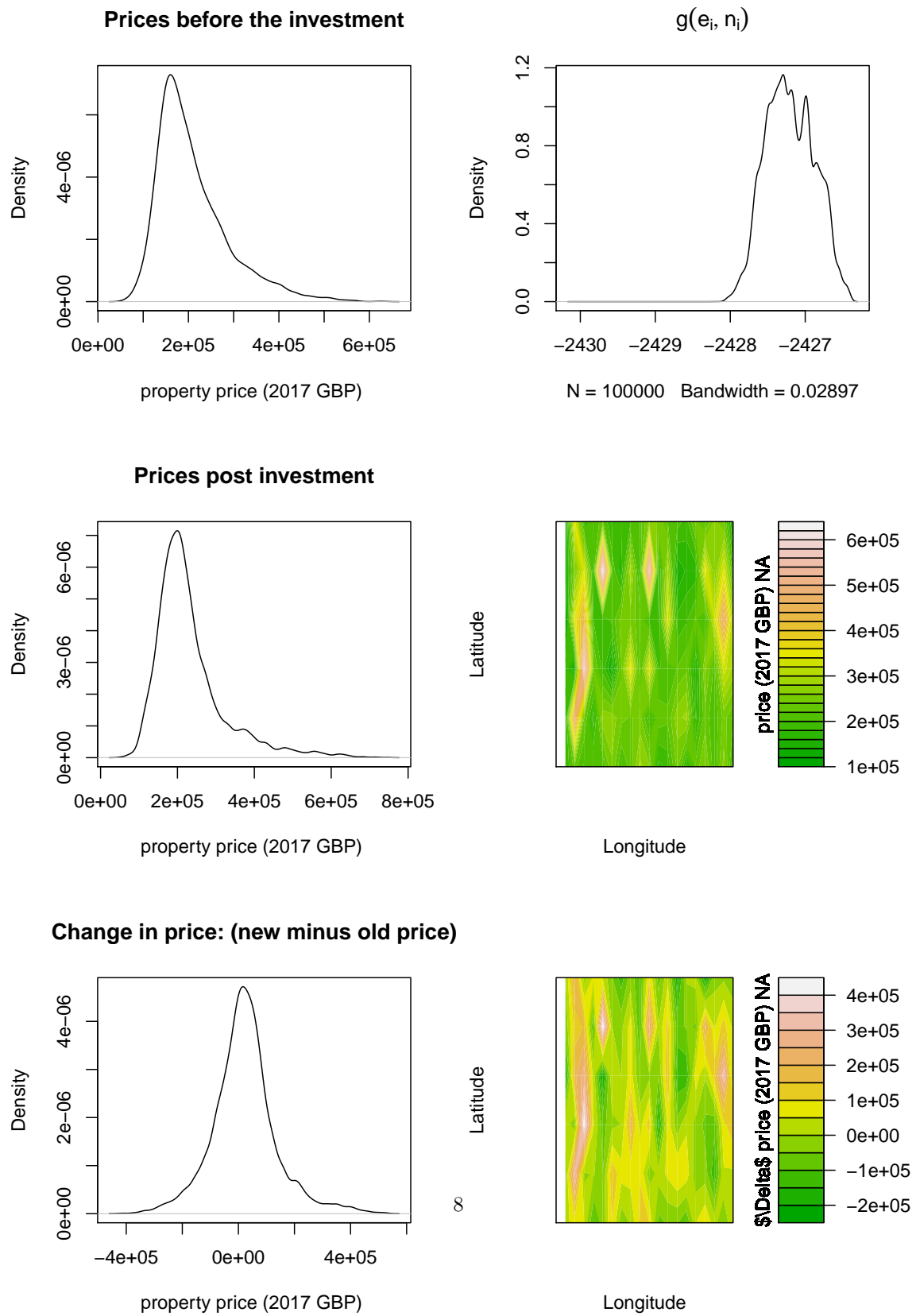


Figure 2: Impact of project on prices