Inequalities in excess weight for reception children 2012/13 – 2015/16

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LEAP

Lambeth Early Action Partnership

Introduction

Lambeth Early Action Partnership (LEAP) is a programme to better the lives of children in four wards of Lambeth (Stockwell, Coldharbour, Vassall and Tulse Hill). LEAP aims to support the diet and nutrition of children in the area, as well as their social and emotional and communication and language development. Child weight at 5 is an outcome we can measure to provide some indication of the diet and nutrition needs of our community.

Prevalence of excess weight (overweight and obese) for reception children in Lambeth had shown some decrease in recent years, and sits at 24% for 2016/17. However, children living in the LEAP wards have higher excess weight prevalence than children from other Lambeth wards.

- The four wards were selected for A Better Start because they showed greatest need in priority outcome areas.
- Child obesity is said to be a visual marker of inequality in the 21st century.
- LEAP aims to effect positive change in these areas.

Aim

- Understand more about the differences in weight between reception-age children who live in the LEAP area and those who do not, and the inequalities that underpin this.
- Consider what this means for the LEAP programme and wider early years strategy.

Notes and data analysis

- Multi-year analysis: 2013/13 – 2015/16 (inclusive).
- Using National Child Measurement Programme data (NCMP). Information on this dataset can be found here.
- Analysis of reception pupils only (age 4-5).
- Weight classifications are based on population BMI categories.
- Geographical comparisons are based on the ward of residence of pupils at the time of data collection.
- Non-Lambeth residents are excluded from analysis.
- Data does not include reception pupils who attend school outside of Lambeth due to national data collection processes.

Contents

* Body mass index, a valued based on the weight and height of a person. These values are then categorised into population BMI groups: underweight, healthy weight, overweight and very overweight (obese).

Contents cont.

Key findings and messages

Children from Lambeth are significantly more likely to be overweight or obese at school entry if they live in areas of higher deprivation or if they are from BAME groups. The relationship with ethnicity is likely to be mediated by deprivation.

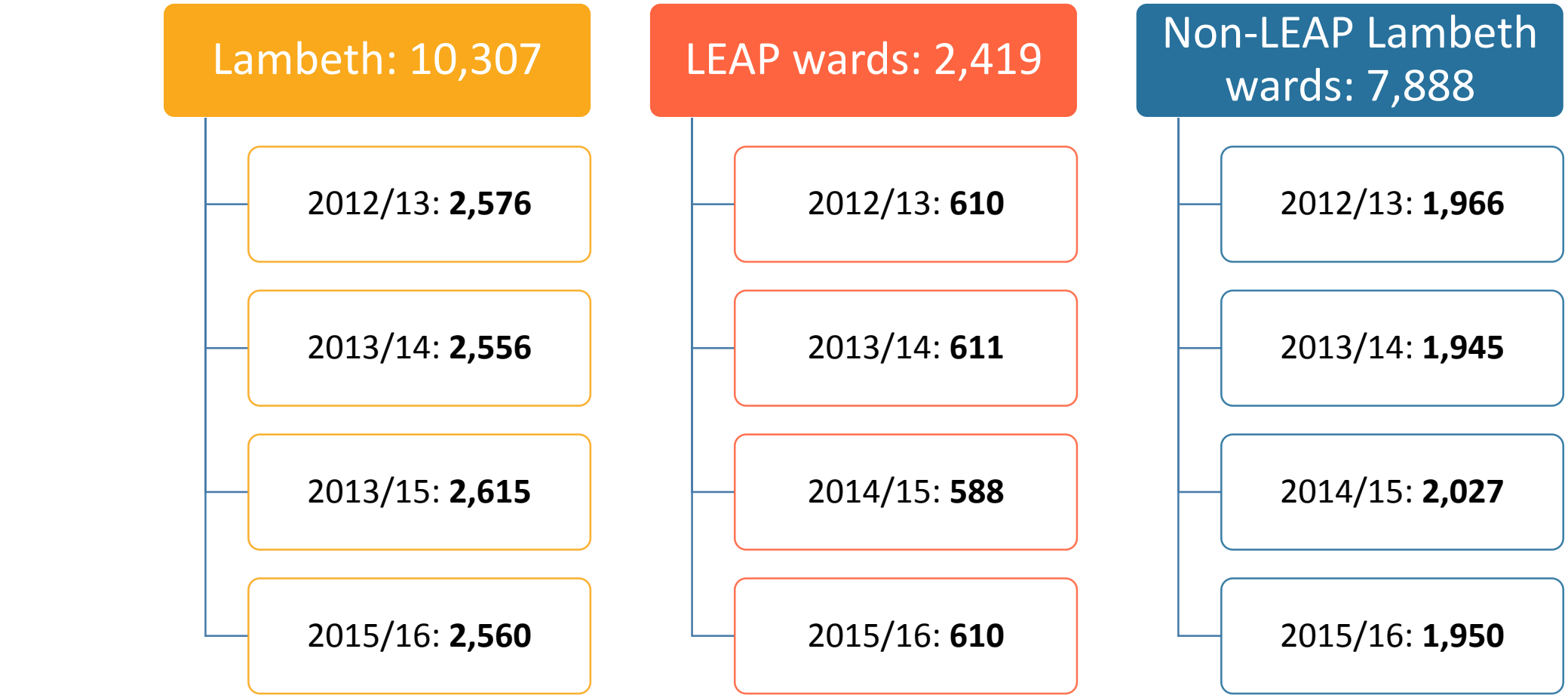
The four wards that form LEAP have significantly higher levels of deprivation than other wards in Lambeth. Reception children living in the LEAP area are therefore more likely to have higher levels of excess weight. Comparison of LEAP wards with non-LEAP wards found this to be significant.

There are multiple, complex causes of excess weight. International (WHO, 2016) and national (PHE , 2017) evidence suggests that the wider environment is part of the picture. These wider environmental factors include density of fast food outlets and the availability of appropriate space for physical activity. Further analysis of local data would increase understanding of the impact the wider environment has on the weight of 5-year olds in Lambeth. Geo-spatial analysis of NCMP data and deprivation scores with data about green space and fast food outlets would enable us to explore further the relationship between where a child lives in Lambeth and their weight.

If a child is overweight or obese at an early age they are more likely to be obese later in life, which associates with multiple health conditions (WHO). The higher prevalence of excess weight in year 6 NCMP data (NHS Digital) suggests that child obesity becomes a growing problem as children age. It is vital to tackle unhealthy weight as early as possible to support healthy outcomes and reduce inequality for children in the LEAP area and beyond.

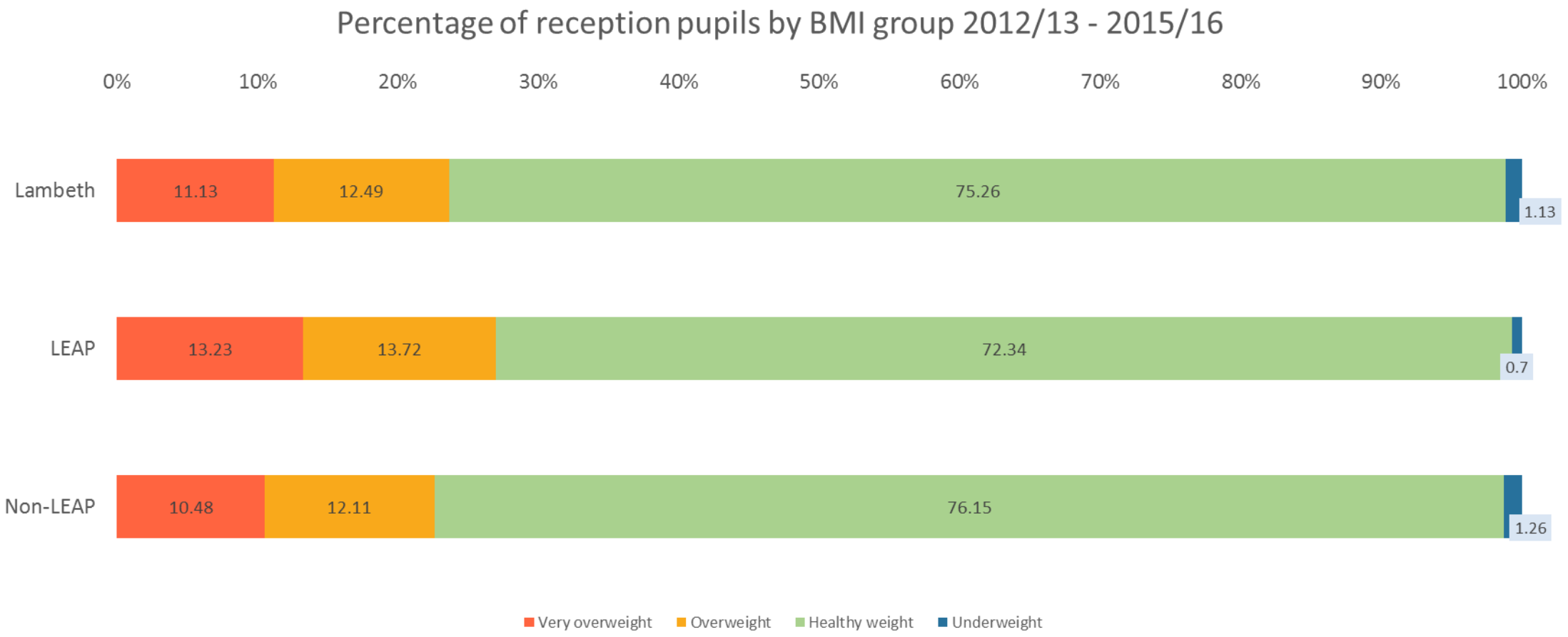
1. Cohort

Number of children with accurate weight and height measurements per year

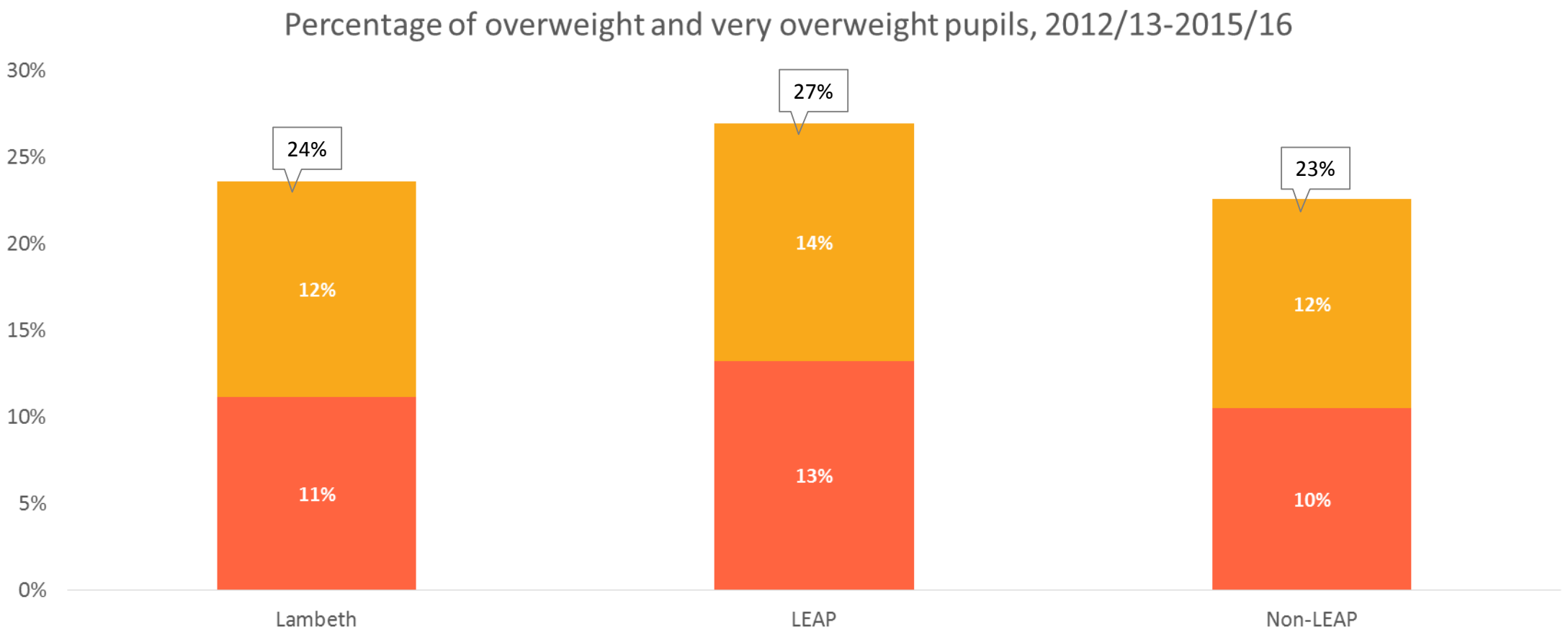


Descriptive charts illustrating geographic comparisons of excess weight prevalence:

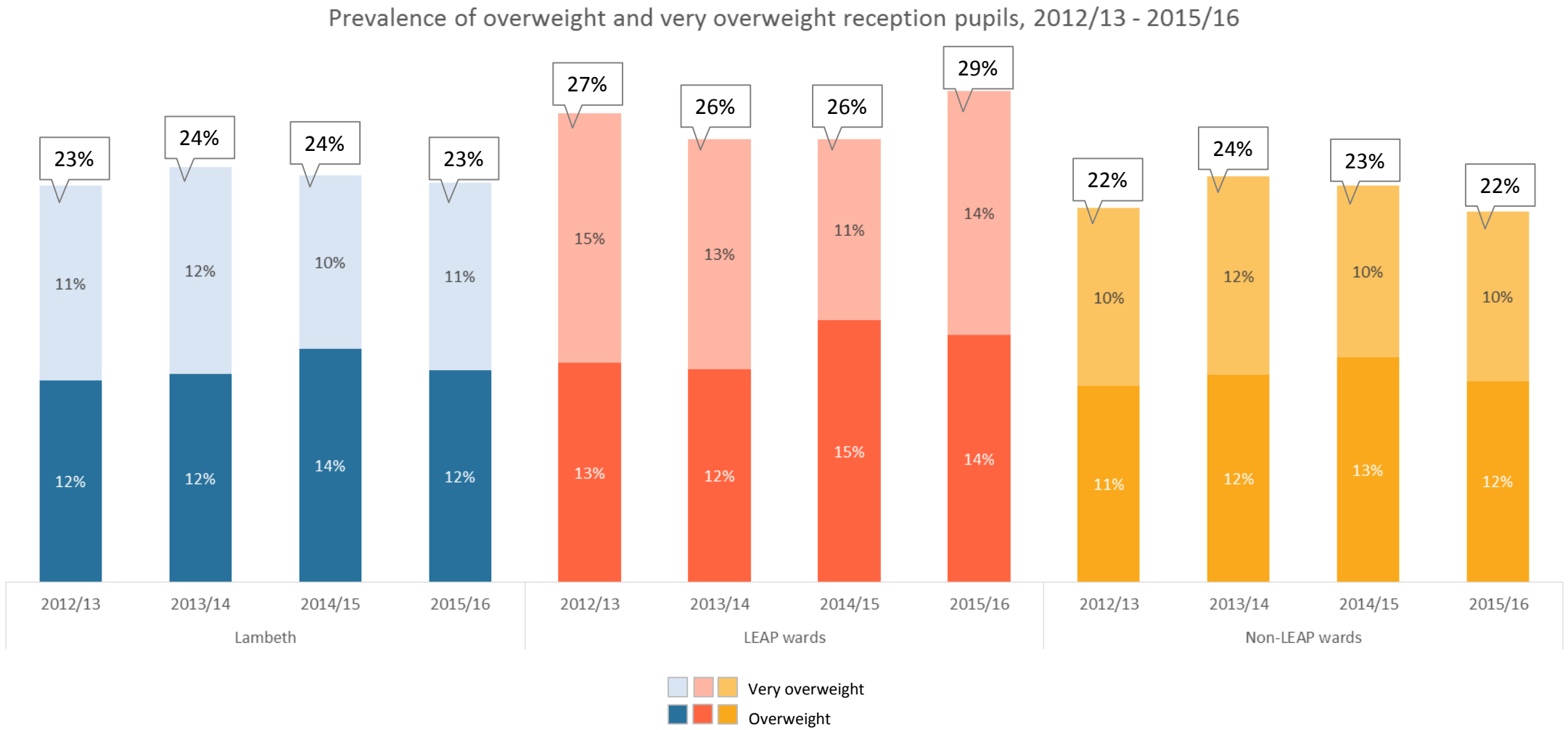
2. Percentage of reception pupils by weight classification (BMI group) and geographic area



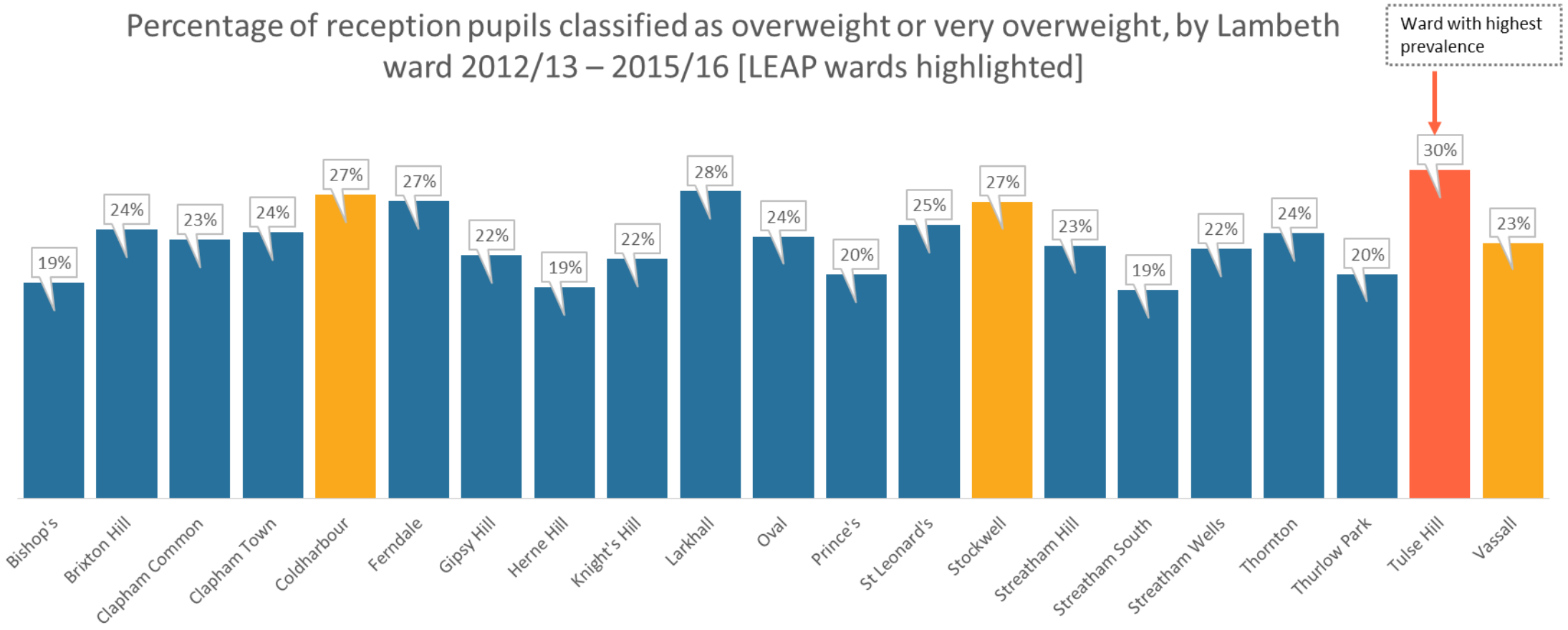
3. Percentage of pupils classified as overweight and obese by geographic area



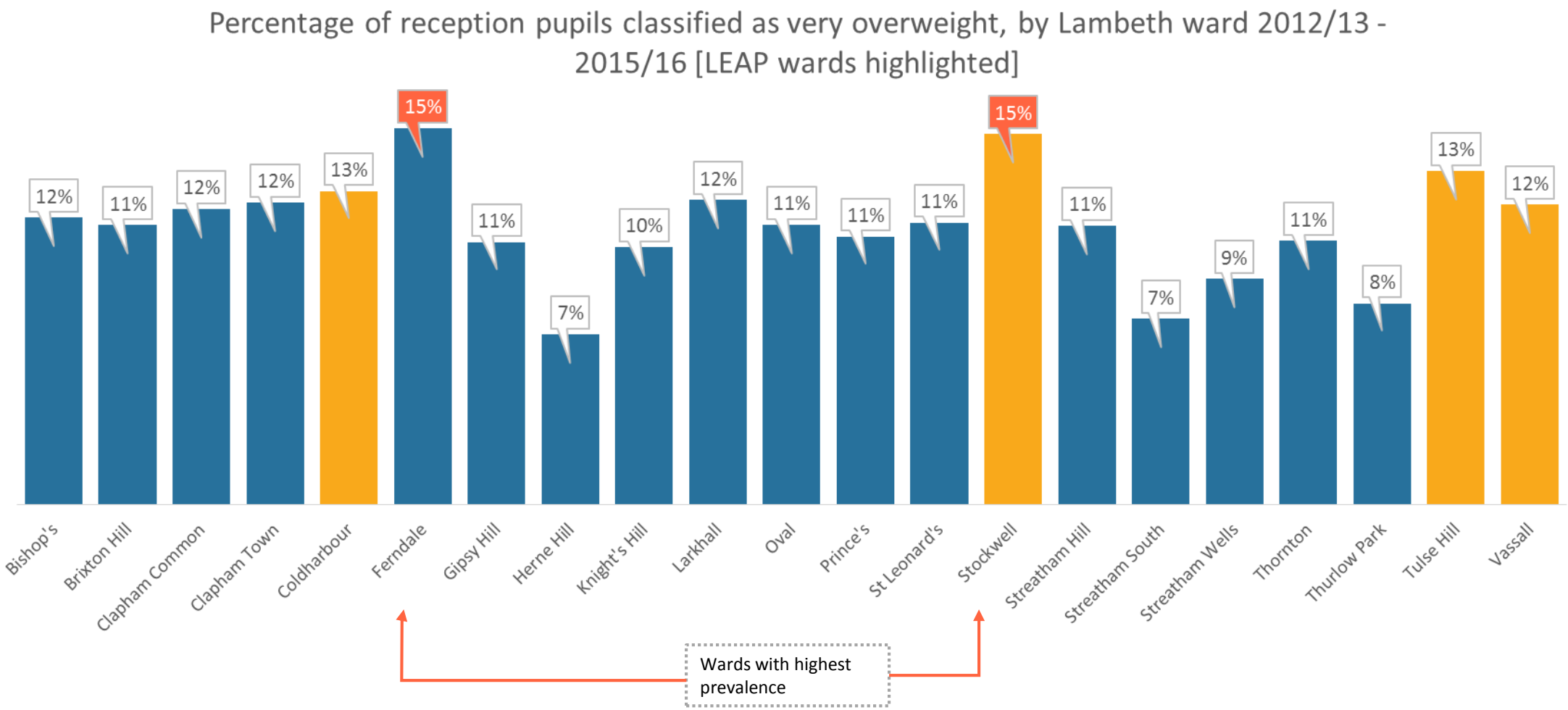
4. Percentage of pupils classified as overweight and obese by geographic area, 2012/13 – 2015/16



5. Percentage of pupils classified as overweight or obese by each Lambeth ward



6. Percentage of pupils classified as **obese** by each Lambeth ward



Tables presenting area demographics:

7. Number and percentage of reception pupils by sex and geographic area

Cohort summary: Sex

	Lambeth				LEAP				Non-LEAP			
	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16
Male	1,310	1,288	1,260	1,328	296	307	269	296	1,014	981	991	1,032
%	50.9%	50.4%	48.2%	51.9%	48.5%	50.2%	45.8%	48.5%	51.6%	50.4%	48.9%	52.9%
Female	1,266	1,268	1,355	1,232	314	304	319	314	952	964	1,036	918
%	49.1%	49.6%	51.8%	48.1%	51.5%	49.8%	54.2%	51.5%	48.4%	49.6%	51.1%	47.1%

8. Number and percentage of reception pupils by locally relevant ethnic groups and geographic area

	Lambeth				LEAP				Non-LEAP			
	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16
British	425	401	457	470	52	47	65	57	373	354	392	413
%	16.5%	15.7%	17.5%	18.4%	8.5%	7.7%	11.1%	9.3%	19%	18.2%	19.3%	21.2%
African	378	373	456	396	123	117	154	131	255	256	302	265
%	15.7%	14.6%	17.4%	15.5%	20.2%	19.2%	26.2%	21.5%	13%	13.2%	14.9%	13.6%
Any other Black	356	333	277	283	113	107	86	91	243	226	191	192
%	13.8%	13%	10.6%	11.1%	18.5%	17.5%	14.6%	14.9%	12.4%	11.6%	9.4%	9.9%
Any other White	424	411	473	485	87	91	83	106	337	320	390	379
%	16.5%	16.1%	18.1%	19%	14.3%	14.9%	14.1%	17.4%	17.1%	16.5%	19.2%	19.4%
Caribbean	330	264	317	313	99	96	85	95	231	168	232	218
%	12.8%	10.3%	12.1%	12.2%	16.2%	15.7%	14.5%	15.6%	11.8%	8.6%	11.5%	11.2%
Asian	124	129	122	126	25	31	19	23	99	98	103	103
%	4.8%	5.1%	4.7%	4.9%	4.1%	5.1%	3.2%	3.8%	5%	5%	5.1%	5.3%
Mixed	218	224	248	261	44	50	50	50	174	174	198	211
%	8.5%	8.8%	9.5%	10.2%	7.2%	8.2%	8.5%	8.2%	8.6%	8.9%	9.8%	10.8%
Other / not known	321	421	265	226	67	72	46	57	254	349	219	169
%	12.5%	16.5%	10.1%	8.8%	11%	11.8%	8.8%	9.3%	12.9%	17.9%	10.8%	8.7%

9. Number and percentage of reception pupils by locally derived deprivation quintiles and geographic area

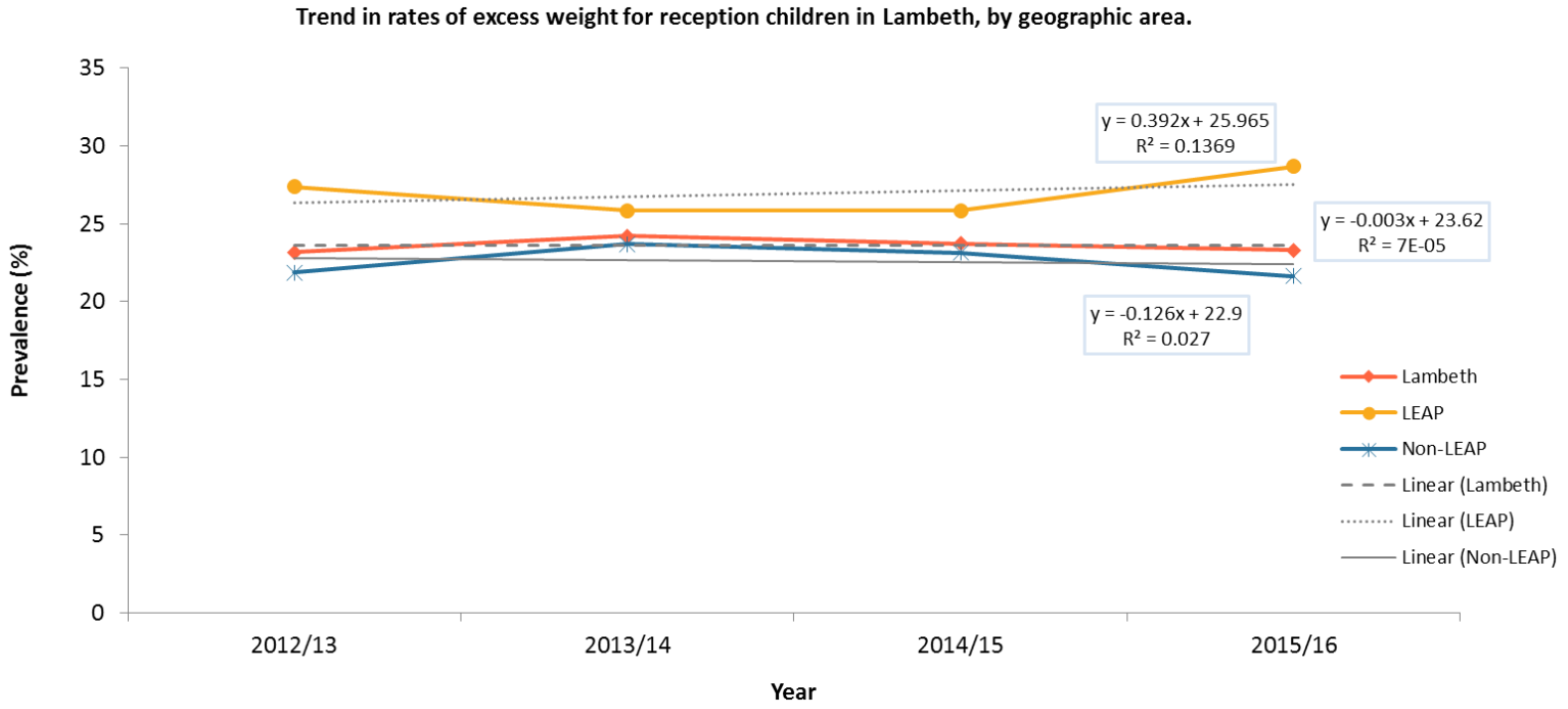
	Lambeth				LEAP				Non-LEAP			
	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16
Most deprived	517	505	472	497	293	279	255	258	224	226	217	239
%	20.1%	19.8%	18.1%	19.4%	48%	45.7%	43.4%	42.3%	11.4%	11.6%	10.7%	12.3%
Deprived	496	539	548	522	140	159	139	159	356	380	409	363
%	19.3%	21.1%	21%	20.4%	23%	26%	23.6%	26.1%	18.1%	19.5%	20.2%	18.6%
Mid-point	521	514	515	522	116	122	123	121	405	392	392	401
%	20.2%	20.1%	19.7%	20.4%	19%	20%	20.9%	19.8%	20.6%	20.2%	19.3%	20.6%
Not deprived	486	487	524	542	50	40	54	60	436	447	470	482
%	18.9%	19.1%	20%	21.2%	8.2%	6.6%	9.2%	9.8%	22.2%	23%	23.2%	24.7%
Least deprived	556	511	556	477	11	11	17	12	545	500	539	465
%	21.6%	20%	21.3%	18.6%	1.9%	1.9%	2.9%	2%	27.7%	25.7%	26.6%	23.9%

10. Number and percentage of reception pupils by BMI classification and geographic area

	Lambeth				LEAP				Non-LEAP			
	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16	2012/13	2013/14	2014/15	2015/16
Underweight	26	25	35	30	*	*	*	*	20	23	30	26
%	1%	1%	1.%	1.2%	*	*	*	*	1%	1.2%	1.5%	1.3%
Healthy weight	1,953	1,912	1,959	1,933	437	451	431	431	1,516	1,461	1,528	1,502
%	75.8%	74.8%	74.9%	75.5%	71.6%	73.8%	73.3%	70.7%	77.1%	75.1%	75.4%	77%
Overweight	303	311	356	317	78	76	90	88	225	235	266	229
%	11.8%	12.2%	13.6%	12.4%	12.8%	12.4%	15.3%	14.4%	11.4%	12.1%	13.1%	11.7%
Very overweight	294	308	265	280	89	82	62	87	205	226	203	193
%	11.4%	12%	10.1%	10.9%	14.6%	13.4%	10.5%	14.3%	10.4%	11.6%	10%	9.9%

Results of statistical analysis for overweight and obese pupils (all excess weight).
Linear and multivariate regression:

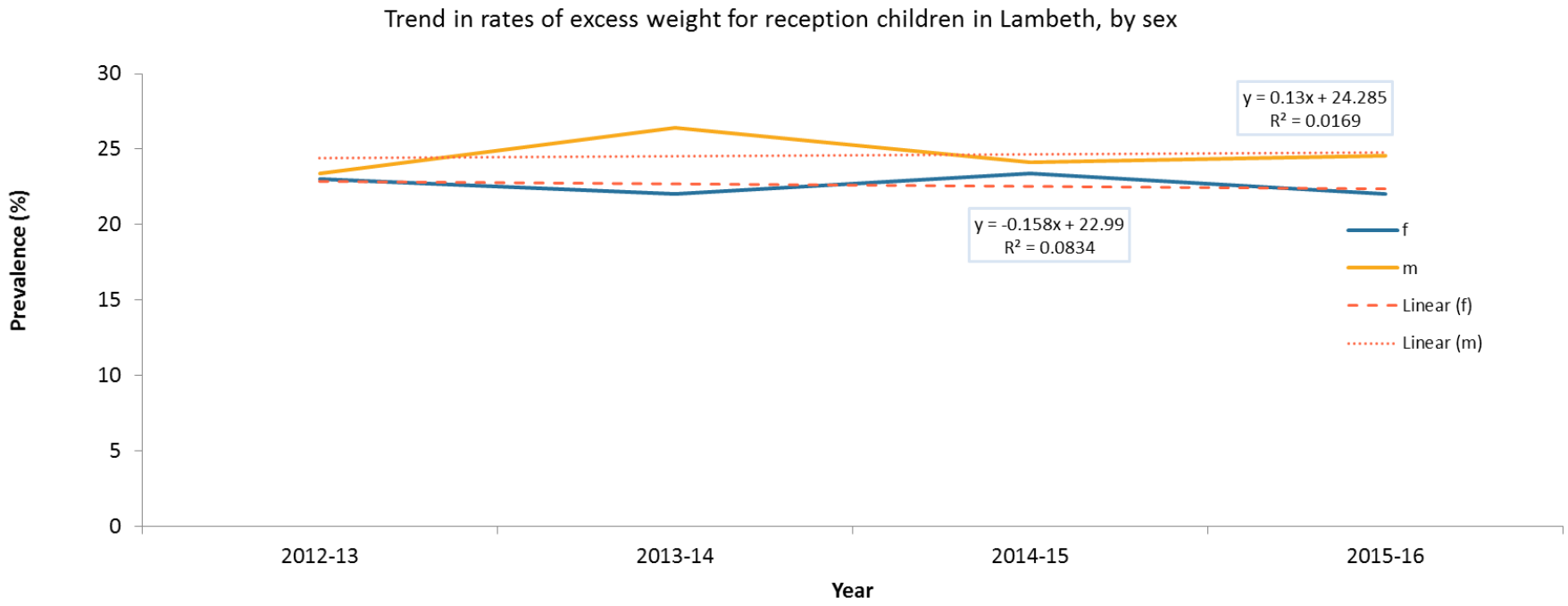
11. Trends and parameter estimates of excess weight prevalence (% children classified as overweight/obese), by geographic area



Proportion of children classified as overweight or obese at reception			
Year	Lambeth	LEAP	Non-LEAP
2012/13	23.17	27.38	21.87
2013/14	24.22	25.86	23.7
2014/15	23.74	25.85	23.13
2015/16	23.32	28.69	21.64

Lambeth	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	-0.003	0.258192	-0.01	0.992	-1.11391	1.10791
_cons	23.62	0.707087	33.4	0.001	20.57765	26.66235
LEAP	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	0.3920004	0.695858	0.56	0.63	-2.60203	3.386034
_cons	25.965	1.905684	13.63	0.005	17.7655	34.1645
Non-LEAP	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.1260006	0.535268	-0.24	0.836	-2.42907	2.177072
_cons	22.9	1.465892	15.62	0.004	16.59278	29.20723

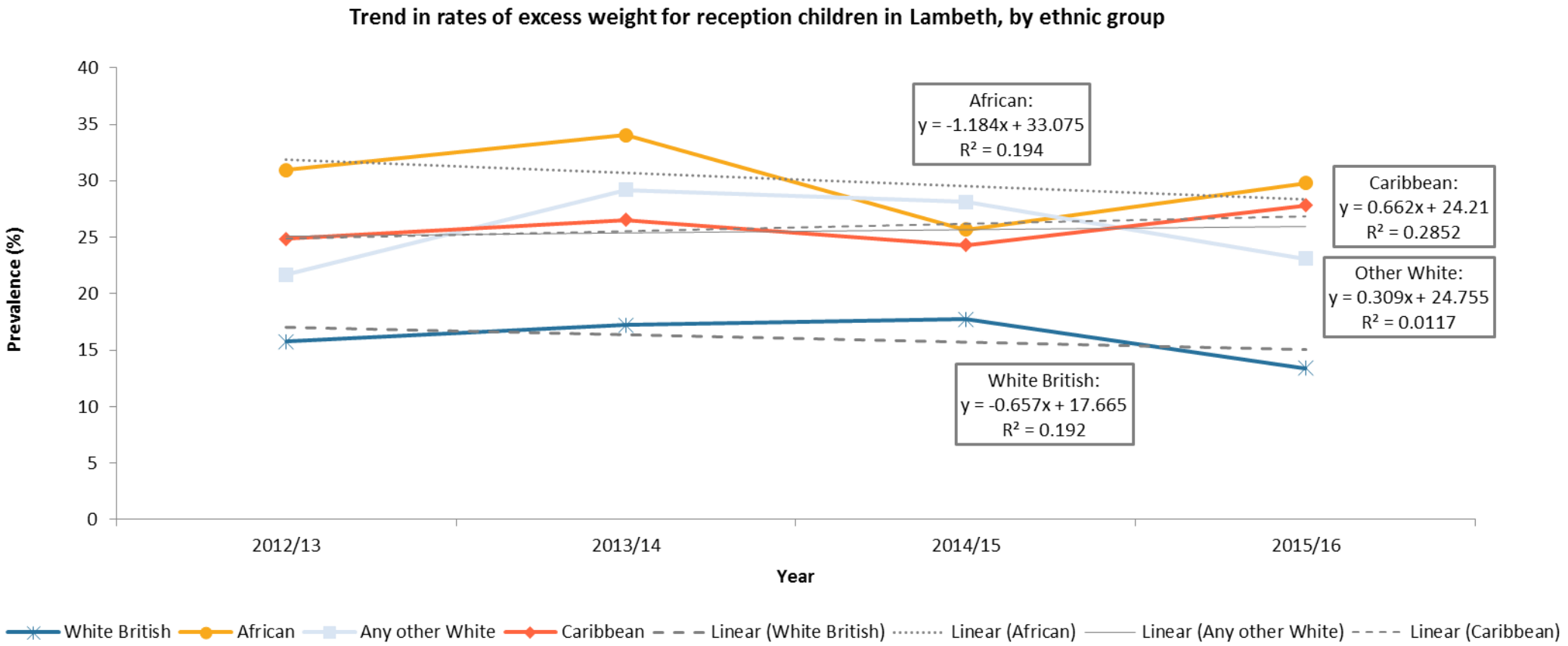
12. Trends and parameter estimates of excess weight prevalence (% children classified as overweight/obese), by sex. All Lambeth.



Proportion of children classified as overweight or obese at reception		
Year	Female	Male
2012-13	23%	23.4%
2013-14	22%	26.4%
2014-15	23.4%	24.1%
2015-16	22%	24.6%

Male	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	0.13	0.701149	0.19	0.87	-2.8868	3.146801
_cons	24.285	1.920176	12.65	0.006	16.02315	32.54685
Female	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.158	0.370308	-0.43	0.711	-1.75131	1.435307
_cons	22.99	1.01413	22.67	0.002	18.62655	27.35345

13. Trend in excess weight prevalence (% children classified as overweight/obese) by locally relevant ethnic groups. All Lambeth.



13. Parameter estimates of excess weight prevalence (% children classified as overweight/obese) by locally relevant ethnic groups. All Lambeth.

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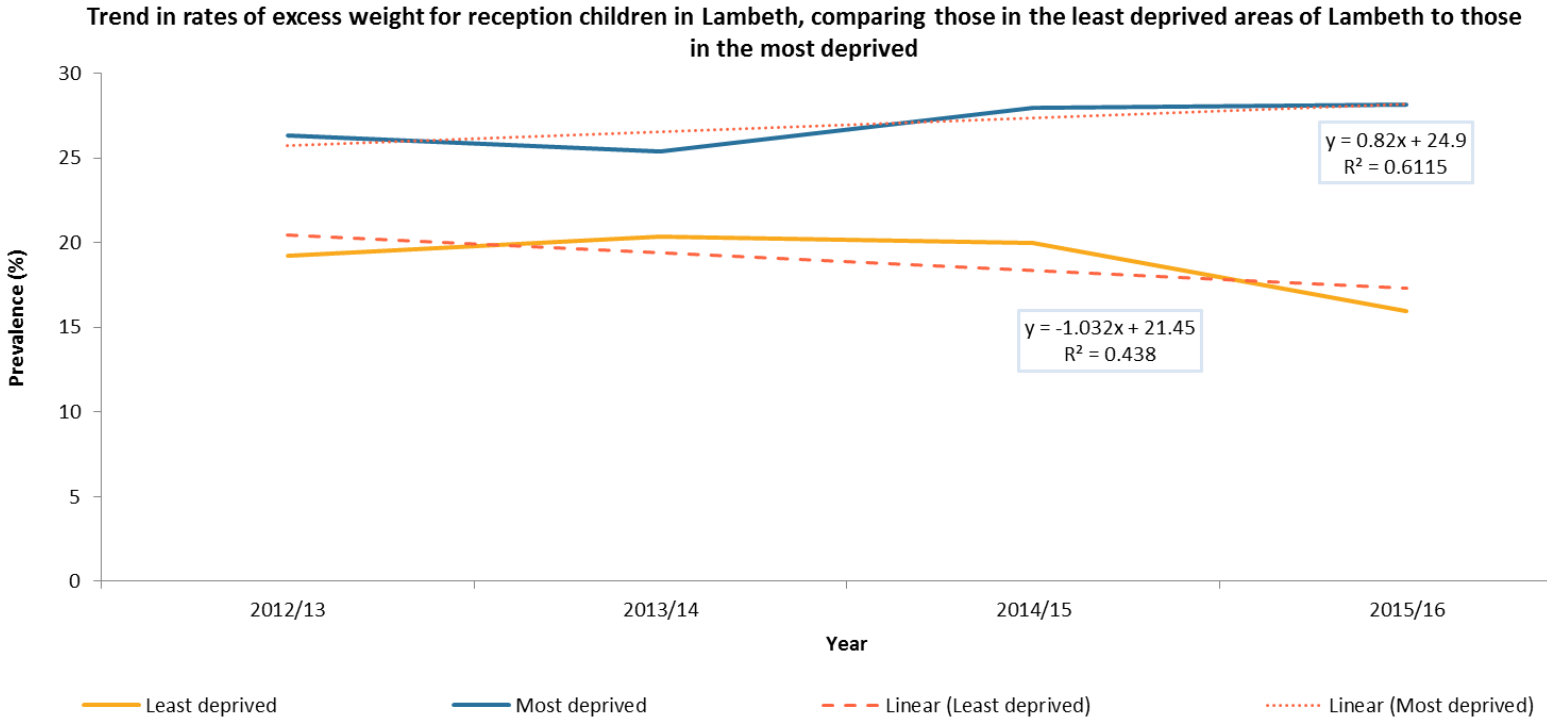
Proportion of children classified as overweight or obese at reception				
Year	White British	African	Any other White	Caribbean
2012/13	15.76	30.95	21.7	24.85
2013/14	17.21	34.05	29.2	26.52
2014/15	17.72	25.66	28.12	24.29
2015/16	13.4	29.8	23.09	27.8

White British	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	-0.657	0.952881	-0.69	0.562	-4.75692	3.442918
_cons	17.665	2.609573	6.77	0.021	6.436913	28.89309
African	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-1.184	1.706412	-0.69	0.56	-8.5261	6.158098
_cons	33.075	4.673202	7.08	0.019	12.96784	53.18216
Other White	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	0.309	2.008036	0.15	0.892	-8.33088	8.94888
_cons	24.755	5.499232	4.5	0.046	1.093714	48.41629
Caribbean	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	0.662	0.74114	0.89	0.466	-2.52687	3.850867
_cons	24.21	2.029695	11.93	0.007	15.47693	32.94307

14. Trends and parameter estimates of excess weight prevalence (% children classified as overweight/obese) comparing the least deprived and most deprived pupils. All Lambeth.



Proportion of children classified as overweight or obese at reception		
Year	Least deprived	Most deprived
2012/13	19.24	26.31
2013/14	20.35	25.35
2014/15	19.96	27.97
2015/16	15.93	28.17

Most deprived	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	0.82	0.462212	1.77	0.218	-1.16874	2.808738
_cons	24.9	1.26582	19.67	0.003	19.45362	30.34638
Least deprived	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-1.032	0.826673	-1.25	0.338	-4.58889	2.524886
_cons	21.45	2.263937	9.47	0.011	11.70907	31.19093

15. Logistic regression analysis comparing rates of excess weight (children classified as overweight/obese) by geographic area.

Number of obs	10307
LR chi2	19.12
Prob> chi2	0.000001
Pseudo R2	0.0017

	Odds ratio	Std. Err	z	P>[z]	95% conf.interval	
Non-LEAP	1	base				
LEAP resident	1.264329	0.0671954	4.41	0	1.139256	1.403134
_cons	0.291844	0.0078578	-45.74	0	0.276842	0.307659

Lambeth geographic differences model:
Predictor – LEAP Vs Non-LEAP wards;
Binary outcome - Excess weight Vs No excess weight

LEAP residents are 1.26 times more likely to have excess weight than non-LEAP residents p<0.0001

16. Multivariate analysis comparing rates of excess weight (children classified as overweight/obese) by sex, locally relevant ethnic groups and local deprivation quintiles. All Lambeth.

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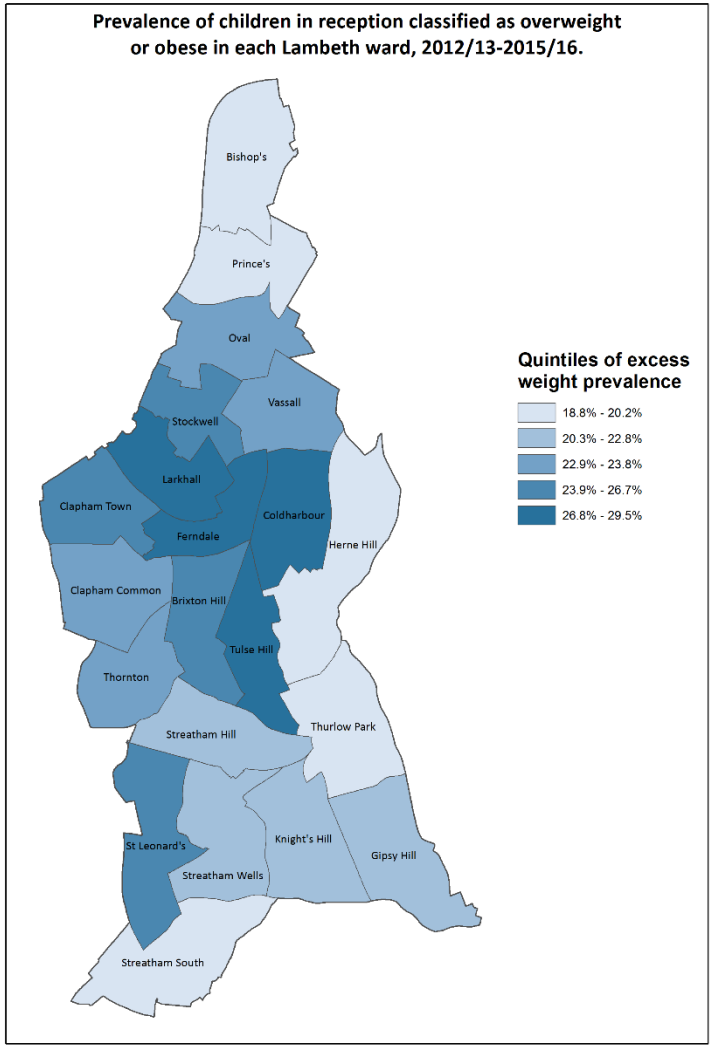
Multivariate model – factors associated with childhood excess weight. Binary outcome - Excess weight Vs No excess weight.

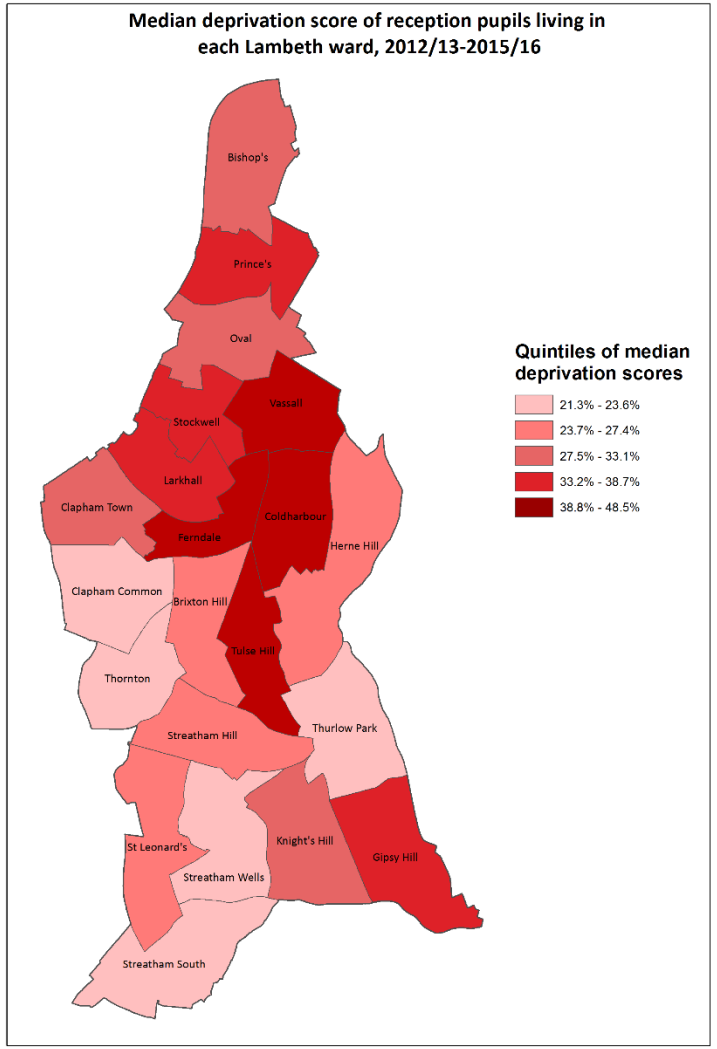
- Boys are 1.14 times more likely to have excess weight than girls p<0.05
- All groups are more likely to have excess weight than White British pupils (African pupils twice as likely, p<0001)
- All groups are more likely to have excess weight than the least deprived pupils (Most deprived pupils 1.38 times more likely, p<0.0001

Obs:	10,307
LR chi2(12)	155.17
Prob>chi2	0
Pseudo R2	0.0138
Log likelihood	5556.238

		Odds ratio	Std. Err.	z	P>z	[95% Conf. interval]	
Sex	female	1	(base)				
	male	1.136823	0.053222	2.74	0.006	1.037153	1.246071
Ethnic groups	British	1	(base)				
	African	2.013825	0.177081	7.96	0	1.695014	2.3926
	Any other black	1.404408	0.13516	3.53	0	1.162984	1.69595
	Any other white	1.718516	0.147193	6.32	0	1.452939	2.032638
	Caribbean	1.658101	0.156862	5.35	0	1.377477	1.995895
	Asian	1.194318	0.157184	1.35	0.177	0.922771	1.545774
	Mixed	1.28863	0.134356	2.43	0.015	1.050461	1.580798
	Any other group & not stated	1.788965	0.165854	6.27	0	1.49172	2.14544
Local deprivation quintiles	Least deprived	1	(base)				
	Most deprived	1.383702	0.10825	4.15	0	1.187001	1.612999
	Deprived	1.431398	0.109497	4.69	0	1.2321	1.662932
	Mid point	1.181006	0.091812	2.14	0.032	1.014097	1.375387
	Not deprived	1.119237	0.08765	1.44	0.15	0.959981	1.304912
	_cons	0.155752	0.012691	-22.82	0	0.132763	0.182721

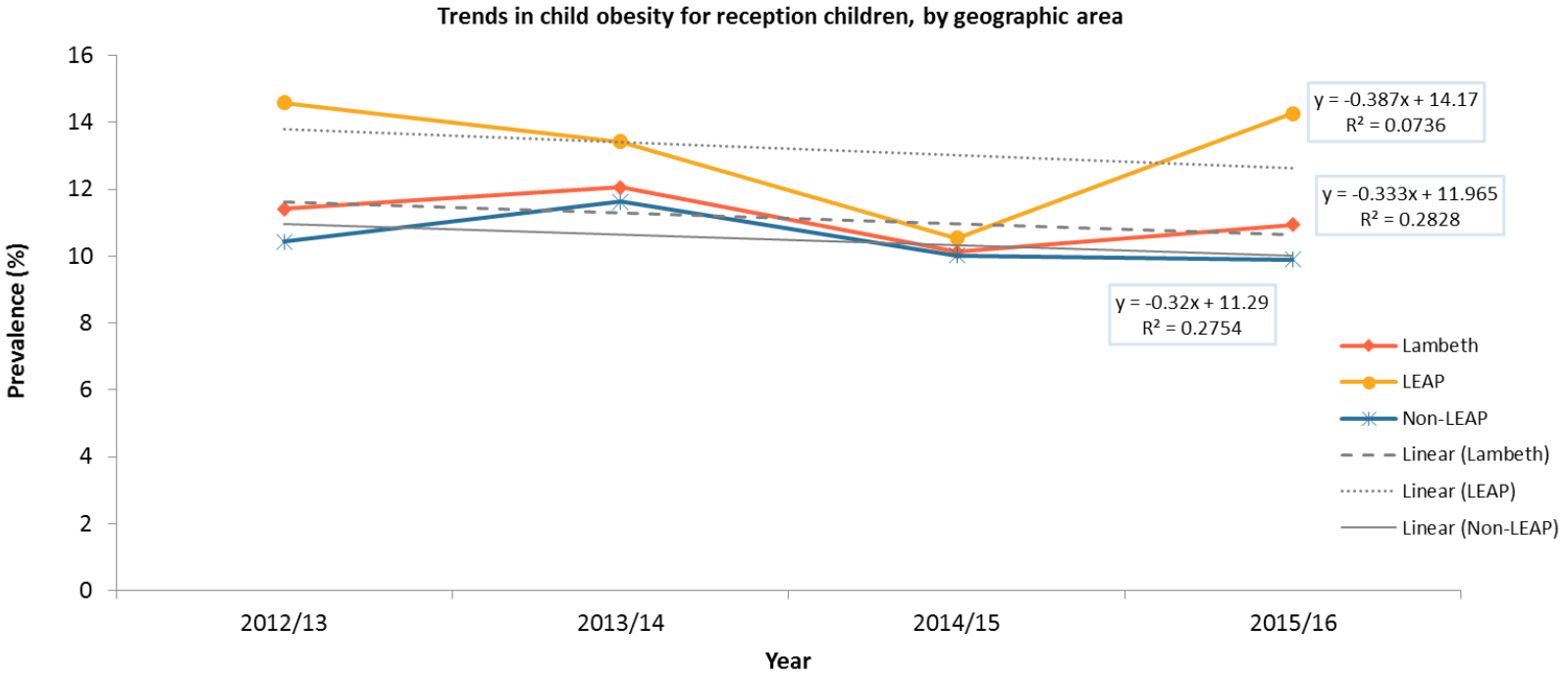
17. Visual maps: prevalence of excess weight (left; darker = higher prevalence) and median deprivation score (right; darker = higher median score) across Lambeth electoral wards.





Results of statistical analysis for obese pupils only.
Linear and multivariate regression:

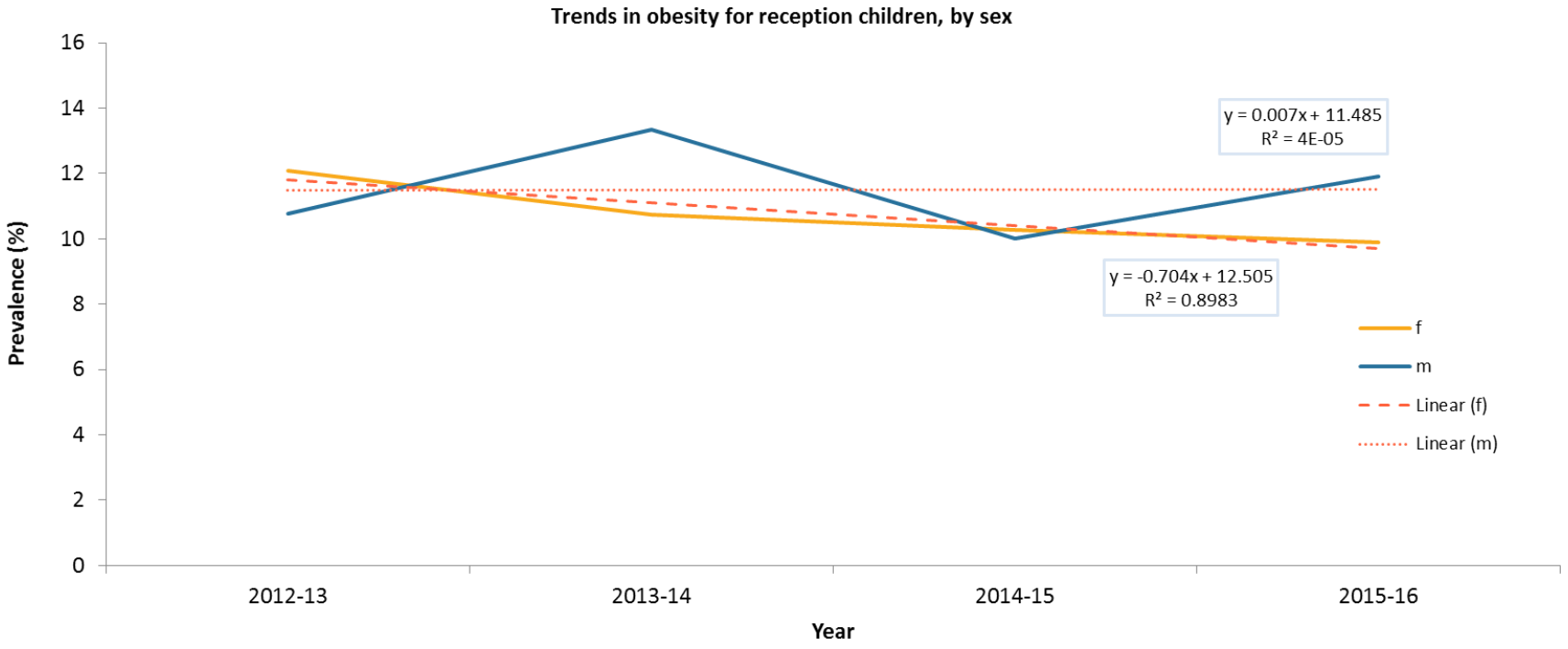
18. Trends and parameter estimates of obesity prevalence (% children classified as obese), by geographic area



Proportion of children classified as obese at reception			
Year	Lambeth	LEAP	Non-LEAP
2012/13	11.41	14.59	10.43
2013/14	12.05	13.42	11.62
2014/15	10.13	10.54	10.01
2015/16	10.94	14.26	9.9

Lambeth	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	0.333	0.375024	-0.89	0.468	-1.9466	1.280598
_cons	11.965	1.027045	11.65	0.007	7.54598	16.38402
LEAP	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.387	0.971125	-0.4	0.729	-4.56541	3.791412
_cons	14.17	2.659534	5.33	0.033	2.726947	25.61305
Non-LEAP	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.32	0.367015	-0.87	0.475	-1.89914	1.259138
_cons	11.29	1.005112	11.23	0.008	6.965354	15.61465

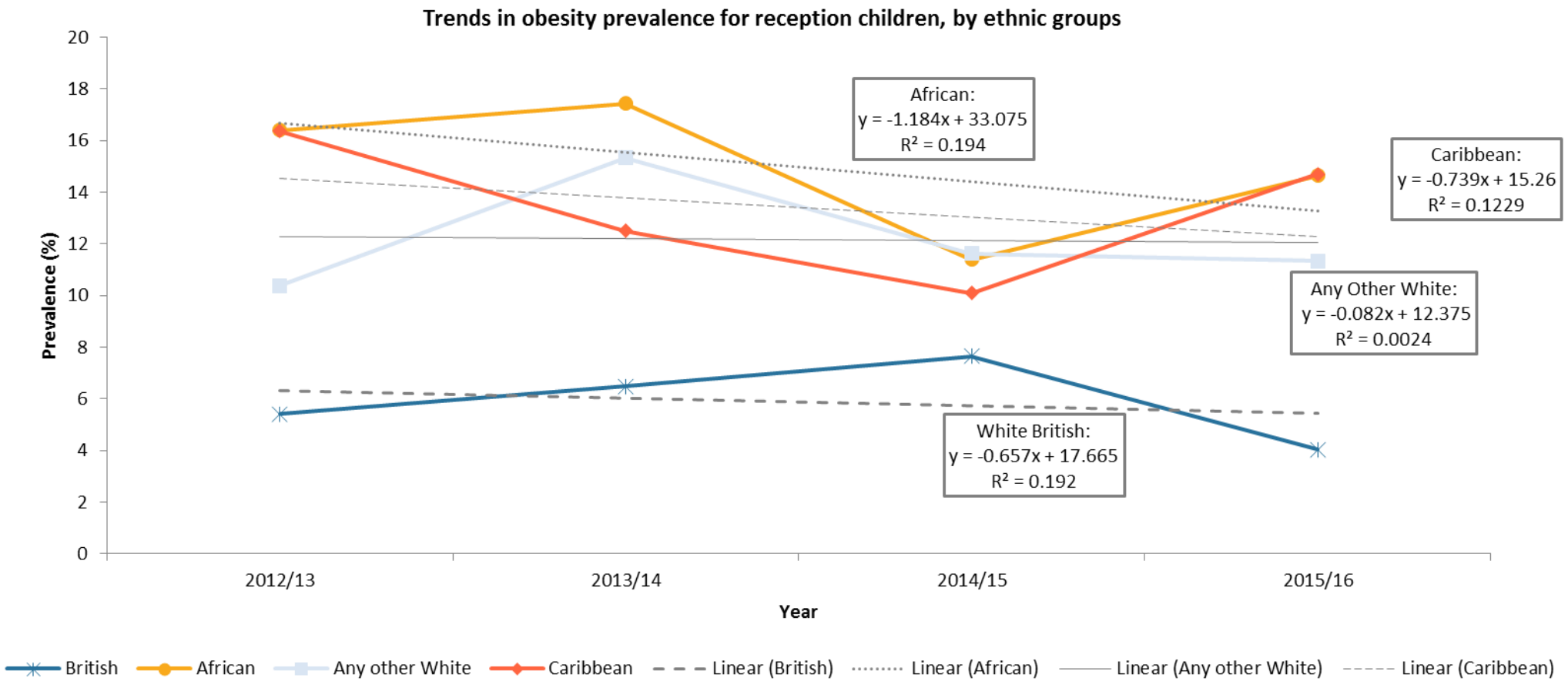
19. Trends and parameter estimates of obesity prevalence (% children classified as obese), by sex. All Lambeth.



Proportion of children classified as obese at reception		
Year	Female	Male
2012-13	12.09	10.76
2013-14	10.73	13.35
2014-15	10.26	10
2015-16	9.9	11.9

Male	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	0.007	0.798738	0.01	0.994	-3.42969	3.443694
_cons	11.485	2.187435	5.25	0.034	2.073226	20.89677
Female	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.704	0.167458	-4.2	0.052	-1.42451	0.016512
_cons	12.505	0.458601	27.27	0.001	10.5318	14.4782

20. Trend in obesity prevalence (% classified as obese) by locally relevant ethnic groups. All Lambeth.

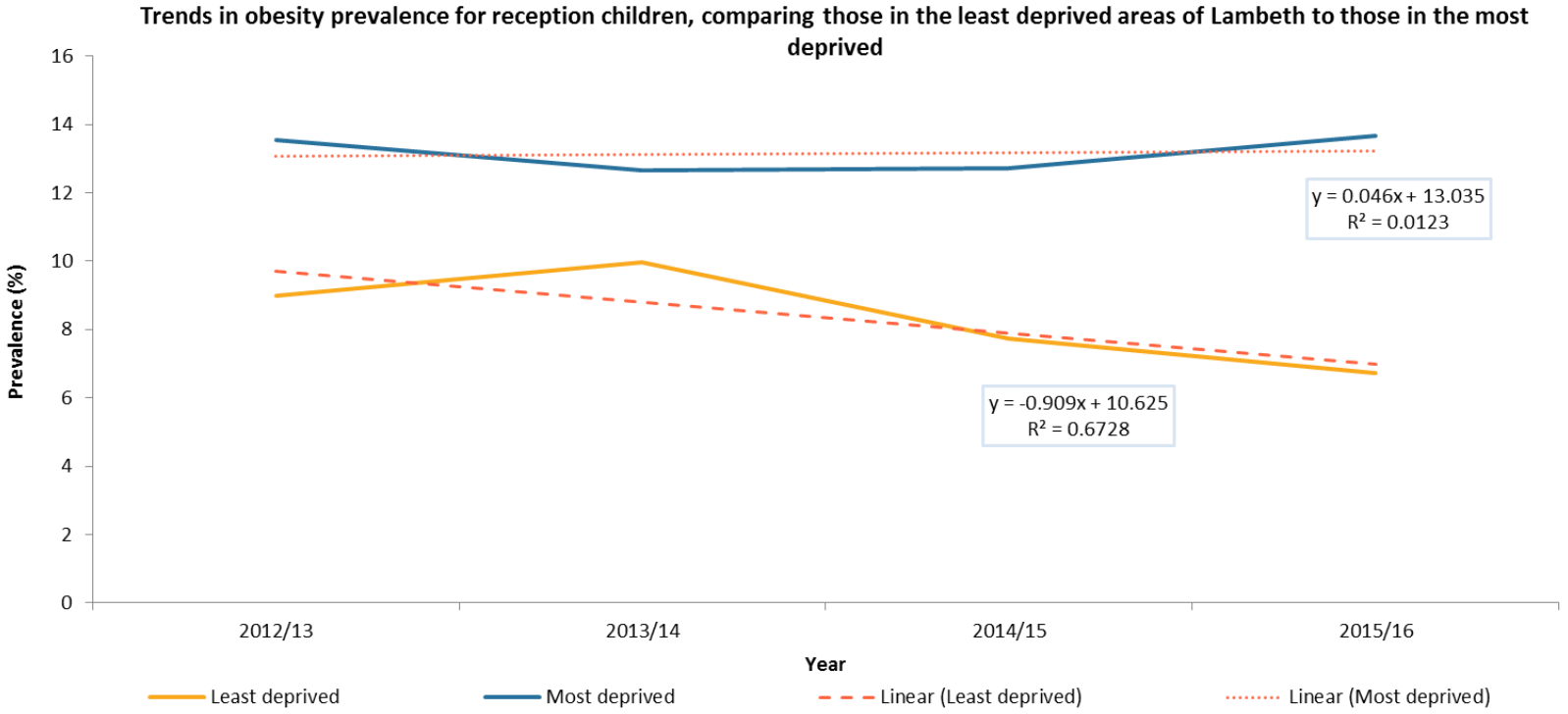


20. Parameter estimates of obesity prevalence by locally relevant ethnic groups. All Lambeth.

Proportion of children classified as obese at reception				
Year	British	African	Any other White	Caribbean
2012/13	5.41	16.4	10.38	16.36
2013/14	6.48	17.43	15.33	12.5
2014/15	7.66	11.4	11.63	10.09
2015/16	4.04	14.65	11.34	14.7

White British	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	-0.293	0.818806	-0.36	0.755	-3.81604	3.230037
_cons	6.63	2.242392	2.96	0.098	-3.01824	16.27823
African	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-1.128	1.207555	-0.93	0.449	-6.32369	4.067688
_cons	17.79	3.307025	5.38	0.033	3.561021	32.01898
Other White	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.082	1.188973	-0.07	0.951	-5.19774	5.03374
_cons	12.375	3.256138	3.8	0.063	-1.63503	26.38503
Caribbean	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	0.739	1.395939	-0.53	0.649	-6.74524	5.267243
_cons	15.26	3.822938	3.99	0.057	-1.18877	31.70877

21. Trend in rates of obesity and parameter estimates comparing the least deprived and most deprived pupils. All Lambeth.



Proportion of children classified as obese at reception		
Year	Least deprived	Most deprived
2012/13	8.99	13.54
2013/14	9.98	12.67
2014/15	7.73	12.71
2015/16	6.71	13.68

Most deprived	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Year	0.046	0.290933	0.16	0.889	-1.20578	1.297784
_cons	13.035	0.796753	16.36	0.004	9.606849	16.46315
Least deprived	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
Year	-0.909	0.448226	-2.03	0.18	-2.83756	1.019563
_cons	10.625	1.227519	8.66	0.013	5.343413	15.90659

22. Logistic regression analysis comparing rates of obesity by geographic area.

Number of obs	10307
LR chi2	13.61
Prob> chi2	0.0002
Pseudo R2	0.0019

	Odds ratio	Std. Err	z	P>[z]	95% conf.interval	
Non-LEAP	1	base				
LEAP resident	1.301662	0.0916007	3.75	0	1.133959	1.494167
_cons	0.117122	0.0043046	-58.35	0	0.108982	0.125871

Lambeth geographic differences model:
Predictor – LEAP Vs Non-LEAP wards;
Binary outcome – Obese Vs Not obese

LEAP residents are 1.3 times more likely to be obese than non-LEAP residents p<0.0001

23. Multivariate analysis comparing rates of obesity by sex, locally relevant ethnic groups and local deprivation quintiles. All Lambeth.

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Multivariate model – factors associated with child obesity. Binary outcome – Obesity Vs No obesity.

- There is no significant difference in child obesity at reception between boys and girls.
- All groups are more likely to have excess weight than White British pupils (African pupils 2.43 times more likely, p<0001)
- All groups are more likely to have excess weight than the least deprived pupils (Most deprived pupils 1.38 times more likely, p<0.0001)

	lo3a	Odds ratio	Std. Err.	z	P>z	[95% Conf. interval]	
Sex	female	1	(base)				
	male	1.098581	0.069317	1.49	0.136	0.970786	1.243198
Ethnic groups	British	1	(base)				
	African	2.433587	0.309827	6.99	0	1.896173	3.123316
	Any other black	1.809252	0.250199	4.29	0	1.37971	2.372522
	Any other white	2.078545	0.261601	5.81	0	1.624161	2.66005
	Caribbean	2.212452	0.297822	5.9	0	1.699386	2.880418
	Asian	1.888711	0.332914	3.61	0	1.33699	2.668103
	Mixed	1.635127	0.245142	3.28	0.001	1.218814	2.193641
	Any other group & not stated	1.820107	0.250925	4.34	0	1.389145	2.384767
Local deprivation quintiles	Least deprived	1	(base)				
	Most deprived	1.376818	0.146895	3	0.003	1.117018	1.697043
	Deprived	1.540202	0.159434	4.17	0	1.257377	1.886644
	Mid point	1.184369	0.127114	1.58	0.115	0.95969	1.46165
	Not deprived	0.9865209	0.1102	-0.12	0.903	0.792541	1.227978
	_cons	0.0530564	0.006476	-24.06	0	0.041768	0.067395