

## Appendix 3

### **A Review of the Local Data Company's Report *An independent analysis of betting shops and their relationship to deprivation along with their profile relative to other high street business occupiers***

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## Introduction

Landman Economics has been commissioned by the Campaign for Fairer Gambling to review the Local Data Company (LDC)'s April 2014 report *An independent analysis of betting shops and their relationship to deprivation along with their profile relative to other high street business occupiers* (Local Data Company, 2014). The LDC conducted its analysis for the Association of British Bookmakers (ABB), and the ABB's press release of the LDC's research in April 2014 stated that the report "refutes claims that bookies prey on the poor" (SBC News, 2014). This report examines the robustness of the LDC's claims.

### 1 The number of betting shops by "deprivation quartile"

The LDC report claims that "areas [of the UK] with the highest levels of deprivation have the lowest numbers of betting shops (17%), while the least deprived areas have the highest numbers of betting shops (35%)". On this basis, LDC concludes that "the majority of betting shops are in the least deprived town centres."

However, a recent mapping analysis by Geofutures for the Campaign for Fairer Gambling reaches very different conclusions. Using data on where each betting shop is located, Geofutures divides England into four "deprivation quartiles" each containing approximately a quarter of the adult population, using local authority data. Table 1 below shows the total number of betting shop licences as of December 2013 in each deprivation quartile and the percentage of all betting shop licences in each quartile. Over 34 percent of all betting shops are located in the most deprived quartile compared to only 16 percent in the least deprived quartile. Thus, areas with the highest levels of deprivation have more than twice as many betting shops as areas with the lowest levels of deprivation – **the exact opposite of the LDC results** (which are shown in the right hand column of Table 1 for comparison purposes).

**Table 1. Total number and proportion of betting shop licences by deprivation quartile in England – Geocities analysis December 2013, and comparison with LDC analysis**

Quartile	Geofutures analysis		LDC analysis
	Number of betting shop licences	Proportion of all betting shop licences in England	Proportion of betting shops analysed
Most deprived	2,691	34.2%	21%
2 <sup>nd</sup> most deprived	2,160	27.5%	35%
3 <sup>rd</sup> most deprived	1,756	22.3%	27%
Least deprived	1,258	16.0%	17%
Total	7,865	100.0%	100%

To understand why the Geofutures analysis reaches opposite conclusions to the LDC analysis, we need to look at how the LDC report constructs the four "deprivation quartiles" used in its analysis. The LDC report uses the Index of Multiple Deprivation (IMD), a measure of deprivation which combines census data with other government data on income, unemployment, health, crime, education, housing and living environment. LDC mapped around 9,000 Licensed Betting Outlets (LBOs) in England, Scotland and Wales to the relevant IMDs at the level of "Lower-layer Super Output Areas" (LSOAs), of which there are around 41,000 in the UK, each containing a minimum of 1000 people and 400 households. LDC divided the towns in its database into four "quartiles" by IMD score as shown in Table 2 below.

**Table 2. LDC mapping of deprivation indices by "quartile"**

Quartile	IMD score
1 (least deprived)	0-13.2
2	13.2-26.6
3	26.7-39.6
4 (most deprived)	39.7+

A major drawback of the LDC research is that the LDC analysis uses population data from **urban areas only**, rather than total population by local authority<sup>1</sup>. This is likely to mean that the overall size of population (including people living outside urban

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<sup>1</sup> More precisely, "the town level analysis was based on 533 towns across Great Britain. This number was derived from where a match was achieved to the deprivation index and the industry gross win data" (LDC 2014, p3)

areas) in the "least deprived areas" measured by LDC is much higher than the overall population in the most deprived areas. Without correcting the data for population size in the manner used by the Geofutures analysis, the figures for the proportions of betting shops in the most deprived and least deprived areas cited by LDC are potentially misleading. By contrast, the Geofutures analysis counts the whole population and so is able to divide the population into deprived and non-deprived areas in a much more equal fashion, and so the Geofutures results are much more reliable.

A possible criticism of the Geofutures analysis is that Geofutures only analyses the data at local authority level, whereas the LDC uses data at the much more fine-grained Lower-layer Super Output Area level. It is possible, therefore, that the LDC analysis is capturing the relationship between deprivation and the density of betting shops at a more local level than the Geofutures analysis. To address this possibility, Landman Economics has performed a new analysis of the data on IMDs and adult population at the LSOA level for England to find out how many LSOAs, and what proportion of the population, fell into the deprivation categories used by LDC.

Table 3 shows the results of the Landman Economics analysis: when the whole population of England is included, the most deprived group in the LDC analysis comprises 36.4% of the population (and 35.9% of LSOAs) whereas LDC's least deprived group comprises 18.3% of the population and 19.1% of LSOAs. The "deprivation quartiles" which LDC uses therefore do not contain anything even close to an equal share of 25 percent of the population in each "quartile" when the whole adult population of England is considered. Over two thirds of the English adult population are resident in the two least deprived quartiles, with less than one third in the two most deprived quartiles. This statistic needs to be borne in mind when assessing LDC's statistics on the distribution of betting shops by deprivation quartile.

**Table 3. Landman Economics analysis: Proportion of English adult population in each LDC deprivation "quartile"**

Quartile	Proportion of England adult population	Proportion of LSOAs
1 (least deprived)	36.4%	35.9%
2	30.5%	30.0%
3	14.8%	15.0%
4 (most deprived)	18.3%	19.1%

Table 4 below shows the over- or under-representation of betting shops relative to population size. If betting shops were distributed evenly according to population size throughout England we would expect the proportions of betting shops in each deprivation quartile hand to match the population proportions shown in Table 3.

However, in actual fact only 21% of betting shops are located in the least deprived quartile, compared with 36.4% of the population. Whereas quartile 3 has only 14.8% of the population but 27% of the betting shops. The most deprived quartile has 18.3% of the population and 17% of the betting shops. Thus, the population density of betting shops is lower for the most deprived quartile (quartile 4) than for the next most deprived quartile (quartile 3), but still much higher than for the least deprived quartile. The right hand column of Table 4 shows that the most deprived quartile has around 60% more betting shops per person than the least deprived quartile, while the second most deprived quartile has over three times as many betting shops per person than the least deprived quartile.

**Table 4. Number of betting shops relative to population size: analysis of LDC data**

<b>Quartile</b>	<b>Proportion of betting shops</b>	<b>Additional population density of betting shops (relative to least deprived quartile)</b>
1 (least deprived)	21%	n/a
2	35%	99%
3	27%	217%
4 (most deprived)	17%	62%

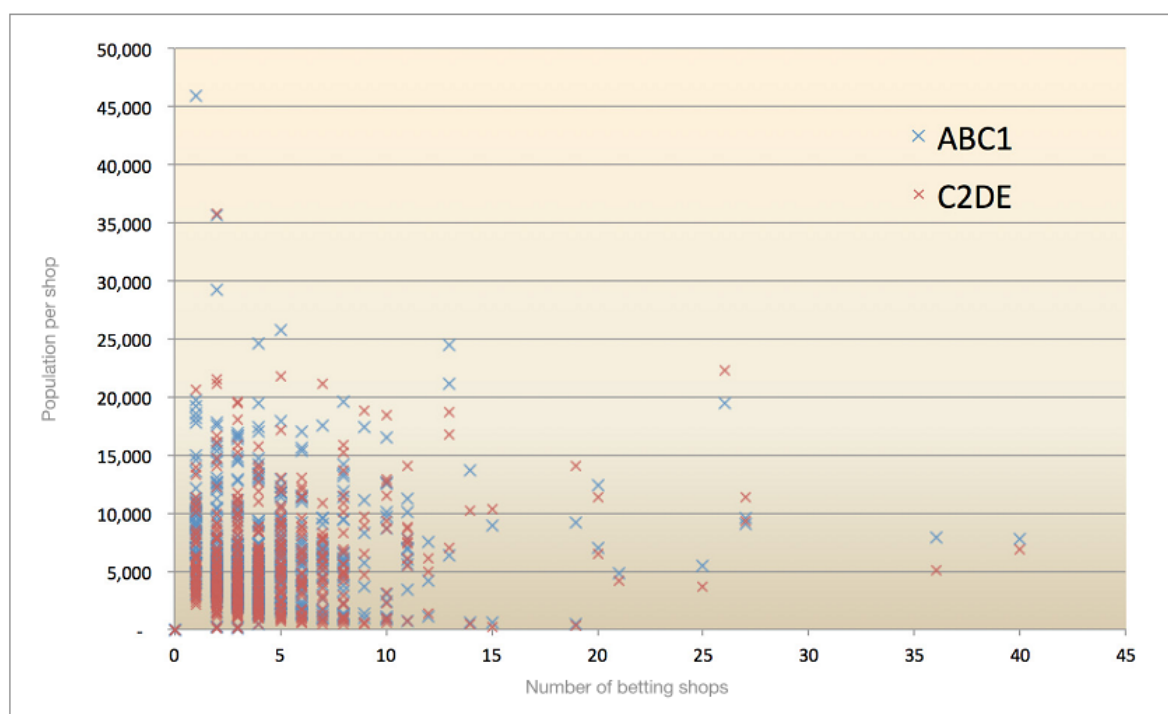
The clear message from the analyses of the relationship between deprivation and number of betting shops undertaken by Geofutures and by Landman Economics is that overall, the most deprived areas in England contain substantially more betting shops per head than the least deprived areas. This is in direct contradiction to the LDC report's findings. The discrepancy between LDC's results and the results from Geofutures and Landman Economics appears to be a result of LDC using data on betting shop location and deprivation for urban areas only, rather than a full nationwide dataset.

## **2 Graphical analysis of the relationship between betting shop density and population characteristics**

An analysis in Section 2 of the LDC report claims to show "no significant difference between [socio-economic category] ABC1 and C2DE with respect to density of the existing population of betting shops." Figure 1 below, reproduced from the LDC report, shows the analysis on which this conclusion is based. The LDC methodology graphs number of betting shops in each town against a measure of population density (population in socio-economic groups ABC1 and C2DE, with ABC1 being the

higher socioeconomic categories and C2DE being the lower categories). This is not a very clear method for showing the relationship between socio-economic group and the density of betting shops as the data being displayed on the horizontal axis – the number of betting shops per town – is essentially irrelevant to the issue, being a function of the size of each town as well as the density of betting shops, which is already being graphed on the horizontal axis. It is very difficult to discern anything about the relationship between density of betting shops and composition of the population by socioeconomic group from Figure 1.

**Figure 1. LDC analysis of the relationship between number of betting shops and population per shop for ABC1 and C2DE socioeconomic group populations**

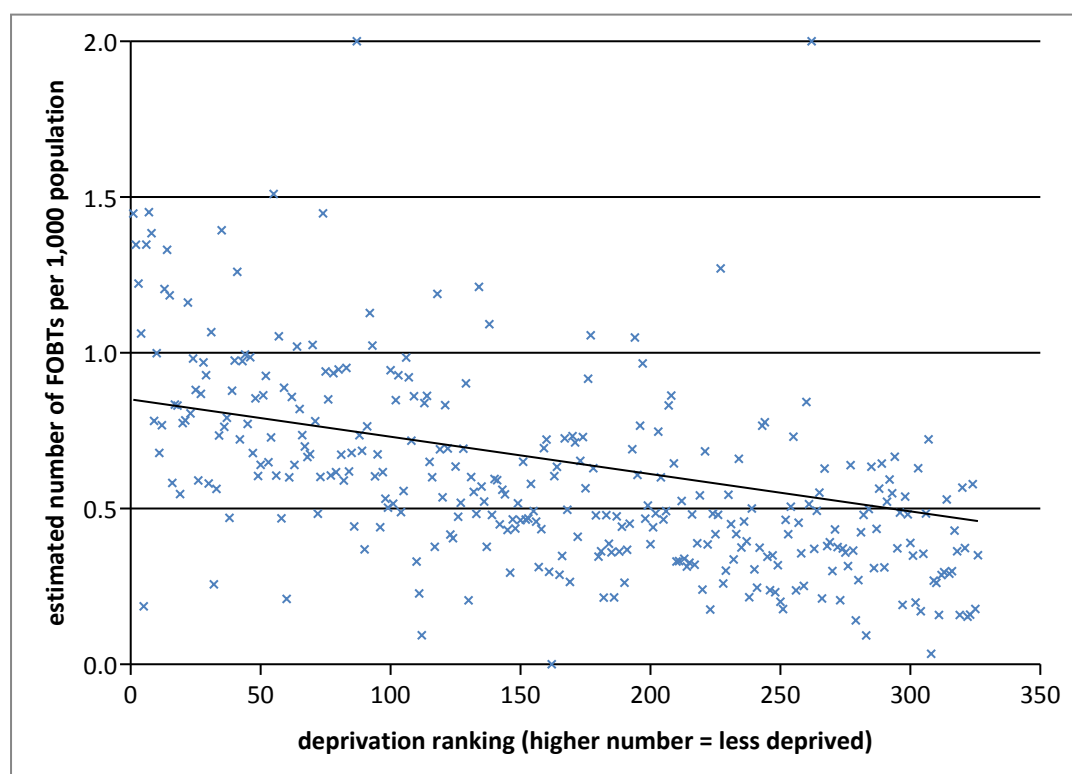


A more sophisticated analysis at the local authority level of the relationship between the number of Fixed Odds Betting Terminals<sup>2</sup> (FOBTs) per head of population based on Geofutures mapping of FOBTs in England and the 2010 indices of multiple deprivation for England (Ramesh, 2014) shows a much clearer relationship, as illustrated in Figure 2 below; the number of FOBTs per adult is higher on average for more deprived local authorities than it is for less deprived local authorities. The 50

<sup>2</sup> FOBTs – also known as "B2 gaming machines" – are electronic terminals situated in betting shops (a maximum of four machines per outlet under current rules).

most deprived local authorities in England average 0.90 FOBTs per 1,000 adult population, whereas the 50 least deprived local authorities in England average 0.38 FOBTs per 1,000 adult population – less than half the number of FOBTs per head. Figure 2 shows a clear trend whereby more deprived local authorities (towards the left hand side of the graph) have more FOBTs per 1,000 adult population than less deprived local authorities (towards the right hand side of the graph). The Geofutures analysis shows the clear positive association between density of betting shops and deprivation which the LDC analysis claims to disprove.

**Figure 2. Index of Multiple Deprivation and number of FOBTs per 1,000 adult population: analysis for local authorities in England**

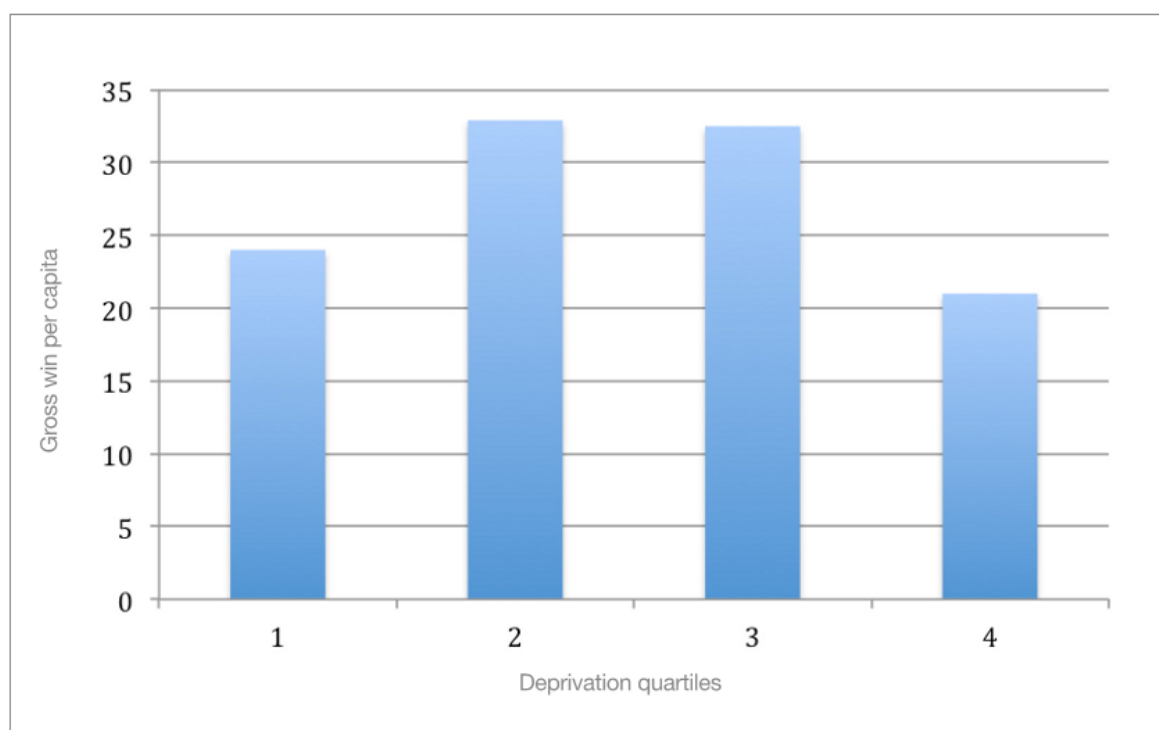


Source: author's calculations using Geofutures mapping data

### 3 Betting shop profitability and area deprivation

The LDC report analyses average gross win per capita for betting shops (an industry measure used as a proxy for profitability in each betting shop) across the four "deprivation quartiles". Figure 4 (a reproduction of the figure on Page 9 of the LDC report) shows that gross win per capita is slightly larger in quartiles 2 and 3 than in quartiles 1 and 4. Gross win per capita in quartile 1 and quartile 4 are roughly equal. LDC concludes from this data that the betting industry "makes more profit in the least deprived areas". However, this statement takes no account of the fact that average incomes are significantly lower in more deprived areas of the UK. As gross betting shop profits per customer are approximately equal in the most and least deprived quartile, this suggests that betting shop profits are a significantly higher *proportion* of income in more deprived areas.

**Figure 4. LDC analysis of gross win per capita in each "deprivation quartile"**



New analysis of the 2012 Living Costs and Food Survey (the most reliable source of data on household expenditure by category of goods and services in the UK) by Landman Economics confirms this hypothesis, as shown in Table 5 below. On average, gambling expenditure is a much higher share of household disposable income (3.1 percent) for households in the lowest income quartile than for households in the highest income quartile (0.6 percent).



**Table 5. Gambling expenditure as a share of household income: households with positive gambling expenditure in the 2012 Living Costs and Food Survey, by income quartile**

<b>Quartile</b>	<b>Gambling expenditure as share of household disposable income</b>
1 (poorest)	3.1%
2	2.1%
3	1.2%
4 (richest)	0.6%

Further evidence of a relationship between low income and a higher density of betting shops is found by Pollock (2014) who analyses the number of "payday" lenders (high cost, short-term lenders) and the number of betting shops at UK local authority level. Pollock finds that local authorities with higher numbers of betting shops are significantly more likely to have large numbers of payday lenders<sup>3</sup>, and that numbers of betting shops and numbers of payday lenders are both strongly correlated with the Index of Multiple Deprivation in local authorities<sup>4</sup>. Given that previous research finds a clear correlation between use of payday loans and low income, the fact that payday loan outlets are much more likely to be in evidence in areas where there are large numbers of betting shops suggests that bookies are "preying on the poor", contrary to the ABB's claim in its initial press release of the LDC's research.

## 4 Conclusion

This report has shown that the Local Data Company's finding that betting shops are more likely to be located in areas of low deprivation seems to be an artefact of the fact that their analysis is restricted to urban areas only. Two separate analyses using the complete set of data for urban and non-urban areas in England – one from Geofutures and one from Landman Economics – reach the opposite conclusion; betting shops are more likely to be located in areas of high deprivation. Furthermore, whereas LDC claims that the betting industry makes more profit in the least deprived areas of the UK, there is substantial evidence that gamblers on low incomes are more likely to spend a larger share of their income on betting. There is

<sup>3</sup> The "R-squared" value for a scatterplot of number of payday lenders against number of betting shops by local authority is 0.902, which is a very strong result.

<sup>4</sup> In England, betting shop numbers correlated with local authority IMD scores with an R-squared of 0.618, while payday lenders correlated with IMD scores with an R-squared of 0.662.

also evidence that the presence of payday loan outlets on high streets is positively linked to a preponderance of betting shops, with both types of outlets linked to deprivation. Overall, the results of the LDC analysis are very misleading, and are contradicted by more careful and robust research from a variety of sources.

## References

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Pollock, L (2014) - ???

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