This discussion paper has been written by officials of the Welsh Government. Ministers have not had an opportunity to comment on the contents. Exemplifications of changes are provided simply to inform discussion by DSG members. They are not Welsh Government proposals or statements of Government policy for or against changes.

PSS Sparsity Analysis

Summary

1. This paper follows on from the *2015-09-16 - Distribution Sub Group (DSG) - Paper 19 - Indirect costs of PSS* and provides a critical analysis of the Welsh Government Cartographics estimates and the estimates from the data collection exercise from Local Authorities.

2. Since the aforementioned paper, the Welsh Government Cartographics team has updated average travelling speed (mph) estimates and the Local Government Finance Policy team have quality assured the methodology and the estimates.

Views Sought

3. To note the basis of the Welsh Government Cartographics estimates as detailed in paras 12 to 15.

4. To agree the most robust data source available is the Welsh Government Cartographics' average travelling speed (mph) estimates.

5. To note the impact to the SSA formula as illustrated in Annex E.

Background

6. The PSS Sparsity Working Group commissioned work to validate the Welsh Government Cartographics estimates in relation to the estimates collected through the Local Authority data collection exercise.

7. Paper 19 (2015) was presented to DSG members in the September 2015 meeting which addressed the datasets from the data collection exercise and the Cartographics department within Welsh Government.

8. In the aforementioned paper it was stated [para 22] that there was no statistically significant difference between the sampled data and the Cartographics data. Since then Local Government Finance Policy team have quality assured the exercise and applied a matched pairs t-test. When this test is applied there is a statistical significant difference between the two datasets. Further information of the statistical t-tests can be found in Annex A.

9. Although there is a statistical significant difference between the sampled data and the Cartographics data it is worth stating this simply means the two datasets are different. It does not say one dataset is 'better' than the other.

10. The proposal to use the WG Cartographics travel speeds remains the most prudent approach and there no reason not to use the Cartographics estimates in the formula. The table below summaries the advantages and the disadvantages of each.

WG Cartographics data	**Sample data**
Advantages	Advantages
• Cheaper • Readily accessible. • The data can be obtained quicker and more frequently. • A more comprehensive, 'neutral' methodology. • Shown to be reasonable estimates of 'real world' travel speeds.	• Relates to journeys actually recorded by care workers • May mitigate any possibility of care workers experiencing different road conditions to 'average' journeys travelled (e.g. in terms of the types of road / time of day travelled)
Disadvantages	Disadvantages
• Based on general, 'global' methodology rather than actual journeys recorded by care workers	• Sample only contains 8 authorities. It might be possible to somehow extrapolate figures for the other 14 but the method used would in itself be subjective. • Would be difficult to justify further time & resource on extending the sample; would it lead to better / different results than the pre-existing WG data? • Sample was not designed for direct use in formula calculation – its completeness & representativeness become crucial. Differences in sample sizes between authorities. • Travel speeds are on average slower than the WG data, so calculated 'lost time' would be higher (hence higher sparsity weighting). Difficult to justify this without proof that data is 'better'.

WG Cartographics Estimates

11. The data is sourced from Trafficmaster[1] through Department for Transport. Trafficmaster count the number of vehicles and calculate the journey speed of each vehicle. The data is attached Ordnance Survey Integrated Transport Network (ITN) Layer. For this analysis, we have used the period between November 2013 and April 2014 where 105 million vehicles were counted. The average travel speeds only include weekday travel and exclude Motorways, Private Roads, Alleys, and Pedestrianized Streets.

12. The Welsh Government has used data from Trafficmaster in several high profile projects including the M4 Relief and Welsh Index of Multiple Deprivation (WIMD).

13. The Cartographics travelling time is split into three time periods:
    i) Morning peak: 07:00 – 10:00
    ii) Inter-peak: 10:00 – 16:00
    iii) Evening peak: 16:00 – 19:00

A day average has been calculated using arithmetic mean.

Table below shows a simple descriptive statistics of the WG Cartographics estimates, sorted by miles by hour (whole day).

Local Authority	Mph	Rank
Powys	32.25	1
Ceredigion	31.40	2
Isle of Anglesey	30.56	3
Pembrokeshire	30.53	4
Carmarthenshire	29.57	5
Monmouthshire	29.49	6
Denbighshire	29.28	7
Conwy	29.14	8
Gwynedd	28.55	9
Flintshire	27.73	10
Wrexham	25.76	11
NPT	24.30	12
Merthyr Tydfil	23.99	13
Vale of Glamorgan	23.79	14
Caerphilly	23.03	15
Newport	22.38	16
Blaenau Gwent	22.29	17
Torfaen	22.03	18
RCT	21.66	19
Bridgend	21.48	20
Swansea	21.09	21
Cardiff	18.81	22

[1] http://www.basemap.co.uk/what-is-trafficmaster-data/

The table below shows the resultant average travelling speeds for the authorities in the sample and compares these with the results calculated by WG Cartographics:

Authority		Average travelling speed (mph)		
Category	**Name**	**Local Authority data collection exercise (2012)**	**Welsh Government Cartographics estimate (original – 2012?)**	**Welsh Government Cartographics estimate (Nov 2013 to Apr 2014)**
Urban	Cardiff	17	15.8	18.8
	Newport	14	18.4	22.4
	Wrexham	21	22.4	25.8
Urban / rural	Rhondda Cynon Taf	19	22.2	21.7
Rural	Powys	28	30.4	32.2
	Pembrokeshire	27	27.5	30.5
	Gwynedd	28	32.2	28.6
	Ceredigion	25	30.9	31.4

14. The table shows that the updated Cartographics data is higher than the sampled data and slightly higher than the previous Cartographics data.

Reflecting the cost of the unproductive time in the formula

15. The Local Government Finance Policy team have completed the validation and agreed with the methodology proposed. There were updates to the average travel speeds and the indicators.

16. In the original data collection exercise it was found that a small number of authorities did not compensate home carers for travel time (partially or at all); however all authorities compensated other occupational groups.

17. It might be possible to argue, therefore, that the cost of home carers' unproductive time is a result of individual authorities' policy decisions rather than being wholly unavoidable. The Working Group decided to take a "prudent" approach to this issue by omitting the cost of home carers' unproductive time from the calculations. The analysis below therefore includes the estimated cost of travelling time for other occupations (social workers, occupational therapists and support workers) but <u>not</u> home carers.

18. The direct costs data have remained unchanged. The Working Group undertook a data collection exercise to identify the actual direct costs of travel within PSS in each authority in Wales. Following verification and checking of the data, it was established that total direct travelling costs in 2007/08 were £16.3m; details (including the split between the three main client groups i.e. children and young persons aged 0-17, younger adults aged 18-64, and older adults aged 65+) are shown in Annex B.

19. The methodology of the calculating the unproductive travel time has remained unchanged. However, we have used the WG Cartographics updated travel speeds. The NJC allowance rate for 2007/08 (44.2p / mile) and the average rate of pay for

social workers in Wales (£18.34 / hour)[2] have remained unchanged and used to convert the direct costs of travel into an estimate of the additional cost of unproductive travelling time for each authority. The resultant estimate of the total cost of unproductive time is £12.9m; details including the split between the three client groups are given in Annex C.

20. Annex D shows that the best-fitting thresholds are the same as for direct costs, i.e. 7500 for Adult Services and 300 for Children's' Services.

Weighting

21. The table below summarises the total calculated cost of travel for the three main client groups, and shows these as proportions of total service spend across Wales.

Total Wales cost of travel <u>for social workers, OTs, support workers</u> (2007/08)

	Children's services £'000	**Adult services 18-64 £'000**	**Adult services 65+ £'000**
Direct travel costs	3,884	1,931	2,283
Cost of unproductive travel time	6,191	3,100	3,572
= Total travel costs	10,075	5,030	5,855
Total service spend (RO data)	318,165	369,732	445,833
Total travel costs as % of service spend	**3.2%**	**1.4%**	**1.3%**

Exemplifying the effects

22. As was previously done for direct travel costs, we need to apply the above weightings[3] to the appropriate dispersion indicators in order to form the 'cost' component of the formula, reducing the 'need' component pro-rata.

23. The resultant adjustments to the formulae are as follows:

[2] Includes NI and pension on-costs. Based on *CIPFA Local Authority Workforce Statistics 2008* mean annual basic pay for social workers in Wales (£28,393), adjusted for 2008 pay award.
[3] The indicators for the travel cost of Home Carers (dispersion threshold 300) are left unchanged, since the above analysis does not include the cost of their travelling time.

PSS IBA	Current formula	Adjusted formula recognising cost of unproductive time
Children and Young Persons	0.699 x dependent children in out of work families 0.055 x children in wards with weighted density > Welsh average 0.135 x dependent children in social rented housing 0.099 x dependent children in overcrowded housing 0.012 x dispersion (300)	0.685 x dependent children in out of work families 0.054 x children in wards with weighted density > Welsh average 0.132 x dependent children in social rented housing 0.097 x dependent children in overcrowded housing 0.032 x dispersion (300)
Younger Adults	0.606 x population aged 18-64 0.013 x adults aged 18-64 in non-white ethnic groups 0.174 x SDA / DLA claimants aged 18-64 0.159 x households where head aged 18-64 with no carer 0.040 x IS, JSA & pension credit claimants aged 18-64 0.003 x dispersion (300) 0.005 x dispersion (7500)	0.601 x population aged 18-64 0.013 x adults aged 18-64 in non-white ethnic groups 0.172 x SDA / DLA claimants aged 18-64 0.158 x households where head aged 18-64 with no carer 0.040x IS, JSA & pension credit claimants aged 18-64 0.003 x dispersion (300) 0.014 x dispersion (7500)
Older Adults	0.323 x pensioners with LLTI 0.147 x pension credit claimants aged 65 and over 0.305 x pensioners living alone in households 0.204 x population aged 85 and over 0.016 x dispersion (300) 0.005 x dispersion (7500)	0.320 x pensioners with LLTI 0.146 x pension credit claimants aged 65 and over 0.303 x pensioners living alone in households 0.202 x population aged 85 and over 0.016 x dispersion (300) 0.013 x dispersion (7500)

24. Annex E provides exemplification of the effect of applying the above formula adjustments. In addition we have used the latest updated 2016/17 indicators data and PSS SSA total in the calculations. Annex E is for illustrative purposes and to inform a discussion.

Conclusion

25. The proposal to use the WG Cartographics' travel speeds remains the most prudent approach in terms of costs, accessibility and timeliness, compared to the sample data.

26. The evidence suggests that the updated travel speeds calculated by WG Cartographics is suitable to be use to estimate the cost of care workers' unproductive travelling time.

27. All data have been kept constant at 2007/08. The resultant formula is still valid as a reflection of cost patterns in that year. Using the assumption that the data is constant over time then there is no immediate need to update the data. Furthermore, this part of the formula would still be more current than most, e.g. the 'need' elements of the same PSS formulae are partly derived from 2003-based modelling, and elements of many other IBAs go back further than that.

28. Whilst this would represent an improvement on the current formula, it will still not fully take sparsity costs into account and it is recommended that this is considered as part of the wider work programme being undertaken on the formula.

Local Government Finance Policy
Welsh Government

Annex A: T-test (Paired Two-Sample Difference of Mean)

A paired t-test is used to compare two population means when you have two samples in which observations in one sample can be paired with observations in the other sample.

In the previous analysis, the *2-sample difference of mean t-test* was employed which compares the population mean of the two samples. However, for the purpose of this analysis we want to compare the data for each Local Authority and therefore need to employ a *paired 2-sample difference of mean t-test*.

A paired 2-sample difference of mean t-test investigates the difference between the two samples for each Local Authority. For example, this ensures that Cardiff's data from the Local Authority data collection exercise is matched with Cardiff's data from Welsh Government Cartographics estimates. In the previous analysis the data was not being matched.

Paired 2-sample difference of mean t-test

Procedure:

1. Calculate the difference $(d_i = y_i - x_i)$ between the two observations on each pair, making sure you distinguish between positive and negative differences.
2. Calculate the mean difference, $\bar{d}$.
3. Calculate the standard deviation of the differences, s_d, and use this to calculate the standard error of the mean difference, $SE(\bar{d}) = \frac{s_d}{\sqrt{n}}$
4. Calculate the t-statistic, which is given by $T = \frac{\bar{d}}{SE(\bar{d})}$. Under the null hypothesis, this statistic follows a t-distribution with n-1 degrees of freedom.
5. Use tables of the t-distribution to compare your value for T to the t_{n-1} distribution. This will give the p-value for the paired t-test.

Hypothesis test:

Null hypothesis: H_0: the true average travel time of the two datasets are equal to other

Alternative Hypothesis: H_a: the true average travel time of the two datasets are not equal to other

Criteria: Reject H_0 if p-value is less than 0.05 and fail to reject H_0 if p-value is greater than 0.05.

t-Test: Paired Two Sample for Means using the old Cartographics data

	Variable 1	*Variable 2*
Mean	22.375	24.938
Variance	29.125	38.634
Observations	8	8
Pearson Correlation	0.925	
Hypothesized Mean Difference	0	
Degrees of freedom	7	
t Statistic	-3.042	
P(T<=t) one-tail	0.009	
t Critical one-tail	1.895	
P(T<=t) two-tail	0.019	
t Critical two-tail	2.365	

This t-test used the Local Authority collected data and the previous Welsh Government Cartographics data.

Interpretation: As the p-value of 0.019 is less than 0.05 we can conclude there is enough evidence to reject the null hypothesis and that the two datasets averages (travel time) are different at the 0.05 significance level.

Another way of interpreting the results is using the t-stat. The t-stat of -3.042 lies outside the critical limits (-2.365, 2.365) at the 0.05 significance level and therefore we can conclude that there is enough evidence to reject the null hypothesis and that the two datasets averages (travel time) are different.

t-Test: Paired Two Sample for Means using the updated Cartographics data

	Variable 1	*Variable 2*
Mean	22.375	26.418
Variance	29.125	25.373
Observations	8	8
Pearson Correlation	0.886	
Hypothesized Mean Difference	0	
Degrees of Freedom	7	
t Statistic	-4.546	
P(T<=t) one-tail	0.001	
t Critical one-tail	1.895	
P(T<=t) two-tail	0.003	
t Critical two-tail	2.365	

This t-test used the Local Authority collected data and the updated Cartographics data.

Interpretation: As the p-value of 0.003 is less than 0.05 we can conclude there is enough evidence to reject the null hypothesis and that the two datasets averages (travel time) are different at the 0.05 significance level.

Another way of interpreting the results is using the t-stat. The t-stat of -4.546 lies outside the critical limits (-2.365, 2.365) at the 0.05 significance level and therefore we can conclude that there is enough evidence to reject the null hypothesis and that the two datasets averages (travel time) are different.

Annex B: Adjusted direct costs of travel by client group, 2007-08

£'000

	Direct Costs of Travel - Adult services 18-64	Direct Costs of Travel - Adult services 65+	Direct Costs of Travel - Childrens' services including care leavers	Total Direct Costs of Travel
Isle of Anglesey[1]	213	397	87	697
Gwynedd	350	549	336	1,235
Conwy	98	349	55	502
Denbighshire	133	371	209	713
Flintshire	127	562	188	877
Wrexham	209	330	162	701
Powys	0	1,368	440	1,808
Ceredigion	143	385	280	808
Pembrokeshire	82	386	118	587
Carmarthenshire	361	1,781	420	2,562
Swansea	330	103	247	679
Neath Port Talbot[2]	65	426	153	644
Bridgend	84	219	0	303
The Vale of Glamorgan	133	118	157	408
Rhondda Cynon Taf	181	782	403	1,366
Merthyr Tydfil	64	116	70	250
Caerphilly[3]	121	309	0	430
Blaenau Gwent	26	78	43	147
Torfaen	20	69	54	144
Monmouthshire	59	208	183	450
Newport[4]	56	197	0	253
Cardiff	197	246	307	751
Wales	**3,053**	**9,349**	**3,912**	**16,314**

Source: PSS Travel Costs Data Collection, 2009

1. Cost of home carers apportioned across adult client groups using other authorities' spend.
2. Support worker costs apportioned across 18-64s and >65s using other authorities' spend.
3. Social worker costs in <18s ignored; unable to identify domiciliary costs.
4. Total costs allocated apportioned to client groups using other authorities' spend.

Annex C: Estimated costs of unproductive travel time by client group, 2007-08 [1]

£'000

	Cost of unproductive travel time - Adult services 18-64	Cost of unproductive travel time - Adult services 65+	Cost of unproductive travel time - Childrens' services including care leavers	Total cost of unproductive travel time
Isle of Anglesey	141	53	113	307
Gwynedd	509	71	488	1,068
Conwy	95	37	78	211
Denbighshire	189	112	296	597
Flintshire	133	268	282	683
Wrexham	337	92	261	690
Powys	0	845	566	1,411
Ceredigion	149	78	369	596
Pembrokeshire	71	53	160	284
Carmarthenshire	171	247	589	1,007
Swansea	108	142	485	735
Neath Port Talbot	111	213	261	586
Bridgend	0	0	0	0
The Vale of Glamorgan	184	75	274	533
Rhondda Cynon Taf	186	590	772	1,548
Merthyr Tydfil	57	40	121	218
Caerphilly	150	173	0	323
Blaenau Gwent	16	48	47	111
Torfaen	33	54	98	186
Monmouthshire	63	79	250	393
Newport	25	103	0	128
Cardiff	370	199	678	1,247
Wales	**3,100**	**3,572**	**6,191**	**12,863**

1. Cost of unproductive time includes social workers, occupational therapists and support workers but not home carers.

Annex D: Calculation of settlement thresholds for the dispersion indicators

Using client number data we can calculate total travel costs of social workers etc. per number of clients – see table below.

Unit travel costs, including cost of travel time, for Other Occupations [1]

£'000

	Adult Services - per number of adult clients supported in the community	Childrens Services - per number of children provided with services [2]
Isle of Anglesey	£163.59	£624.04
Gwynedd	£260.66	£637.47
Conwy	£62.03	£155.38
Denbighshire	£140.91	£772.52
Flintshire	£163.33	£534.24
Wrexham	£231.33	£776.18
Powys	£334.57	£869.25
Ceredigion	£141.54	£1,384.00
Pembrokeshire	£55.12	£653.71
Carmarthenshire	£158.37	£851.03
Swansea	£57.31	£444.29
Neath Port Talbot	£121.03	£291.34
Bridgend	£0.00	£0.00
The Vale of Glamorgan	£149.84	£446.45
Rhondda Cynon Taf	£143.83	£532.47
Merthyr Tydfil	£74.79	£281.43
Caerphilly	£69.79	£0.00
Blaenau Gwent	£33.87	£160.90
Torfaen	£42.72	£167.75
Monmouthshire	£108.01	£753.87
Newport	£50.04	£0.00
Cardiff	£133.30	£360.60
Wales	**£122.47**	**£428.46**

Source: PM1, PM2 client number data

1. Other occupations consist of Social Workers, Occupational Therapists and Support Workers.
2. Costs for Children's PSS contain a very small element of direct costs for Home Carers, which is too small to analyse separately.

The table below shows the Pearson correlation between these calculated unit costs and the 2001 dispersion indicators (at varying settlement size thresholds).

Correlation between unit travel costs (social workers etc.) and dispersion indicators

Dispersion Indicator Thresholds	Correlation Coefficient (home care)	Correlation Coefficient (Social Workers / OT/ Supp Workers)
d300	**0.649**	0.636
d500	0.616	0.628
d1000	0.599	0.624
d2500	0.307	0.645
d5000	0.410	0.751
d7500	0.442	**0.779**
d10000	0.389	0.777
d12500	0.386	0.768
d15000	0.372	0.765
d20000	0.336	0.746
d25000	0.339	0.744
d30000	0.336	0.744
d40000	0.335	0.744
d50000	0.316	0.737

Adult Services was the most correlated with the 7500 threshold indicator whilst Children's Services was most correlated with the 300 threshold. These findings are consistent with the previous results for direct travel costs.

Annex E: Modelled impact of applying adjusted formulae

Table 1: Exemplification of adjusted formula for total PSS IBA
(To note: The table on the left – 2015/16 SSA with formula adjustment is identical to the previous paper Emyr produced)

								£'000s
	2015/16 SSA	**2015/16 SSA with formula adjustment**			**2016/17 SSA**	**2016/17 SSA with formula adjustment**		
Isle of Anglesey	30,882	31,420	538	1.7%	32,074	32,604	530	1.7%
Gwynedd	52,248	53,563	1,315	2.5%	54,475	55,757	1,282	2.4%
Conwy	53,999	53,965	-34	-0.1%	56,327	56,299	-28	0.0%
Denbighshire	45,812	46,050	238	0.5%	47,924	48,157	233	0.5%
Flintshire	60,150	60,019	-130	-0.2%	62,920	62,795	-125	-0.2%
Wrexham	59,693	59,330	-363	-0.6%	62,267	61,920	-347	-0.6%
Powys	55,296	58,290	2,994	5.4%	57,583	60,493	2,910	5.1%
Ceredigion	30,923	32,205	1,281	4.1%	32,171	33,416	1,246	3.9%
Pembrokeshire	53,327	53,895	568	1.1%	55,528	56,089	561	1.0%
Carmarthenshire	82,886	83,753	867	1.0%	86,731	87,571	840	1.0%
Swansea	109,332	108,360	-972	-0.9%	114,219	113,270	-949	-0.8%
Neath Port Talbot	69,370	68,955	-414	-0.6%	72,252	71,853	-398	-0.6%
Bridgend	61,931	61,404	-527	-0.9%	64,980	64,463	-517	-0.8%
Vale of Glamorgan	51,566	51,368	-198	-0.4%	53,961	53,765	-195	-0.4%
Rhondda Cynon Taf	113,013	112,121	-892	-0.8%	118,019	117,158	-861	-0.7%
Merthyr Tydfil	30,004	29,762	-242	-0.8%	31,505	31,266	-239	-0.8%
Caerphilly	83,983	83,236	-746	-0.9%	87,431	86,714	-717	-0.8%
Blaenau Gwent	36,135	35,766	-369	-1.0%	37,674	37,321	-353	-0.9%
Torfaen	43,998	43,567	-431	-1.0%	46,165	45,744	-421	-0.9%
Monmouthshire	34,289	34,462	173	0.5%	35,613	35,785	172	0.5%
Newport	70,155	69,384	-771	-1.1%	73,777	73,019	-758	-1.0%
Cardiff	155,961	154,076	-1,885	-1.2%	163,618	161,751	-1,866	-1.1%
Wales	**1,384,952**	**1,384,952**			**1,447,212**	**1,447,212**		

Table 2: Exemplification of adjusted formula for Children's PSS IBA
(To note: The table on the left – 2015/16 SSA with formula adjustment is identical to the previous paper Emyr produced)

£'000s

	2015/16 SSA	2015/16 SSA with formula adjustment		
Isle of Anglesey	8,062	8,259	197	2.4%
Gwynedd	11,924	12,395	471	3.9%
Conwy	12,623	12,733	110	0.9%
Denbighshire	12,549	12,653	103	0.8%
Flintshire	16,325	16,321	-4	0.0%
Wrexham	18,117	17,945	-172	-0.9%
Powys	10,794	11,944	1,151	10.7%
Ceredigion	5,974	6,729	755	12.6%
Pembrokeshire	14,269	14,688	419	2.9%
Carmarthenshire	20,199	20,824	624	3.1%
Swansea	30,972	30,574	-398	-1.3%
Neath Port Talbot	19,842	19,670	-172	-0.9%
Bridgend	18,488	18,248	-239	-1.3%
Vale of Glamorgan	14,328	14,230	-98	-0.7%
Rhondda Cynon Taf	36,188	35,728	-461	-1.3%
Merthyr Tydfil	10,450	10,293	-157	-1.5%
Caerphilly	28,373	27,941	-432	-1.5%
Blaenau Gwent	12,058	11,865	-194	-1.6%
Torfaen	14,344	14,142	-202	-1.4%
Monmouthshire	7,173	7,343	169	2.4%
Newport	25,752	25,329	-423	-1.6%
Cardiff	55,170	54,122	-1,048	-1.9%
Wales	**403,975**	**403,975**		

£'000s

	2016/17 SSA	2016/17 SSA with formula adjustment		
Isle of Anglesey	8,332	8,530	198	2.4%
Gwynedd	12,478	12,945	467	3.7%
Conwy	13,279	13,387	108	0.8%
Denbighshire	13,202	13,303	102	0.8%
Flintshire	17,285	17,280	-5	0.0%
Wrexham	18,779	18,616	-163	-0.9%
Powys	11,252	12,388	1,136	10.1%
Ceredigion	6,246	6,992	745	11.9%
Pembrokeshire	14,833	15,251	418	2.8%
Carmarthenshire	21,510	22,120	611	2.8%
Swansea	32,515	32,121	-394	-1.2%
Neath Port Talbot	20,725	20,560	-165	-0.8%
Bridgend	19,700	19,460	-240	-1.2%
Vale of Glamorgan	15,110	15,010	-100	-0.7%
Rhondda Cynon Taf	38,089	37,635	-454	-1.2%
Merthyr Tydfil	11,123	10,966	-157	-1.4%
Caerphilly	29,521	29,102	-419	-1.4%
Blaenau Gwent	12,676	12,487	-189	-1.5%
Torfaen	15,331	15,128	-204	-1.3%
Monmouthshire	7,351	7,522	171	2.3%
Newport	27,285	26,862	-424	-1.6%
Cardiff	58,147	57,106	-1,042	-1.8%
Wales	**424,769**	**424,769**		

Table 3: Exemplification of adjusted formula for Younger Adults PSS IBA
(To note: The table on the left – 2015/16 SSA with formula adjustment is identical to the previous paper Emyr produced)

£'000s

	2015/16 SSA	2015/16 SSA with formula adjustment		
Isle of Anglesey	9,827	9,995	168	1.7%
Gwynedd	17,349	17,761	412	2.4%
Conwy	16,196	16,156	-39	-0.2%
Denbighshire	14,244	14,319	75	0.5%
Flintshire	21,610	21,541	-69	-0.3%
Wrexham	20,300	20,204	-96	-0.5%
Powys	18,586	19,475	888	4.8%
Ceredigion	11,115	11,366	252	2.3%
Pembrokeshire	17,154	17,235	81	0.5%
Carmarthenshire	27,275	27,410	135	0.5%
Swansea	37,226	36,956	-271	-0.7%
Neath Port Talbot	22,800	22,693	-106	-0.5%
Bridgend	21,528	21,385	-143	-0.7%
Vale of Glamorgan	17,959	17,909	-50	-0.3%
Rhondda Cynon Taf	36,426	36,223	-203	-0.6%
Merthyr Tydfil	9,699	9,654	-45	-0.5%
Caerphilly	27,981	27,818	-163	-0.6%
Blaenau Gwent	11,259	11,176	-82	-0.7%
Torfaen	13,965	13,857	-108	-0.8%
Monmouthshire	12,314	12,320	6	0.0%
Newport	22,280	22,104	-176	-0.8%
Cardiff	56,204	55,740	-464	-0.8%
Wales	**463,297**	**463,297**		

£'000s

	2016/17 SSA	2016/17 SSA with formula adjustment		
Isle of Anglesey	10,170	10,340	170	1.7%
Gwynedd	18,018	18,429	411	2.3%
Conwy	16,819	16,782	-37	-0.2%
Denbighshire	14,839	14,916	77	0.5%
Flintshire	22,407	22,341	-66	-0.3%
Wrexham	21,235	21,139	-95	-0.4%
Powys	19,248	20,132	884	4.6%
Ceredigion	11,498	11,748	249	2.2%
Pembrokeshire	17,831	17,912	81	0.5%
Carmarthenshire	28,376	28,507	132	0.5%
Swansea	38,850	38,578	-272	-0.7%
Neath Port Talbot	23,704	23,596	-108	-0.5%
Bridgend	22,401	22,257	-143	-0.6%
Vale of Glamorgan	18,697	18,648	-50	-0.3%
Rhondda Cynon Taf	37,803	37,604	-199	-0.5%
Merthyr Tydfil	10,076	10,032	-44	-0.4%
Caerphilly	29,052	28,892	-159	-0.5%
Blaenau Gwent	11,679	11,600	-79	-0.7%
Torfaen	14,498	14,393	-105	-0.7%
Monmouthshire	12,757	12,763	5	0.0%
Newport	23,395	23,220	-175	-0.7%
Cardiff	58,971	58,493	-478	-0.8%
Wales	**482,324**	**482,324**		

Table 4: Exemplification of adjusted formula for Older Adults PSS IBA
(To note: The table on the left – 2015/16 SSA with formula adjustment is identical to the previous paper Emyr produced)

£'000s

	2015/16 SSA	2015/16 SSA with formula adjustment		
Isle of Anglesey	12,993	13,166	173	1.3%
Gwynedd	22,974	23,407	432	1.9%
Conwy	25,181	25,076	-105	-0.4%
Denbighshire	19,019	19,078	59	0.3%
Flintshire	22,215	22,157	-58	-0.3%
Wrexham	21,275	21,181	-95	-0.4%
Powys	25,916	26,871	955	3.7%
Ceredigion	13,835	14,109	274	2.0%
Pembrokeshire	21,903	21,972	68	0.3%
Carmarthenshire	35,412	35,520	108	0.3%
Swansea	41,134	40,830	-304	-0.7%
Neath Port Talbot	26,728	26,592	-136	-0.5%
Bridgend	21,915	21,771	-144	-0.7%
Vale of Glamorgan	19,279	19,230	-49	-0.3%
Rhondda Cynon Taf	40,398	40,171	-228	-0.6%
Merthyr Tydfil	9,856	9,814	-41	-0.4%
Caerphilly	27,629	27,477	-152	-0.6%
Blaenau Gwent	12,818	12,726	-92	-0.7%
Torfaen	15,689	15,568	-121	-0.8%
Monmouthshire	14,802	14,800	-2	0.0%
Newport	22,122	21,951	-172	-0.8%
Cardiff	44,587	44,214	-373	-0.8%
Wales	**517,680**	**517,680**		

£'000s

	2016/17 SSA	2016/17 SSA with formula adjustment		
Isle of Anglesey	13,572	13,734	162	1.2%
Gwynedd	23,979	24,383	404	1.7%
Conwy	26,230	26,131	-99	-0.4%
Denbighshire	19,883	19,938	55	0.3%
Flintshire	23,229	23,174	-55	-0.2%
Wrexham	22,253	22,165	-88	-0.4%
Powys	27,083	27,973	890	3.3%
Ceredigion	14,426	14,677	251	1.7%
Pembrokeshire	22,864	22,926	62	0.3%
Carmarthenshire	36,846	36,944	98	0.3%
Swansea	42,853	42,570	-283	-0.7%
Neath Port Talbot	27,822	27,697	-125	-0.4%
Bridgend	22,879	22,746	-133	-0.6%
Vale of Glamorgan	20,154	20,107	-46	-0.2%
Rhondda Cynon Taf	42,127	41,919	-209	-0.5%
Merthyr Tydfil	10,306	10,268	-38	-0.4%
Caerphilly	28,858	28,719	-139	-0.5%
Blaenau Gwent	13,319	13,234	-85	-0.6%
Torfaen	16,336	16,224	-112	-0.7%
Monmouthshire	15,505	15,501	-4	0.0%
Newport	23,096	22,937	-159	-0.7%
Cardiff	46,499	46,153	-346	-0.7%
Wales	**540,119**	**540,119**		

Annex F
Related papers:

Distribution sub-group (2015)

- Paper 19: Indirect costs of PSS

Distribution sub-group (2011)

- Paper 19: The additional cost of providing Social Services in rural areas

Distribution sub-group (2010)

- Paper 38: The cost of travel incurred in providing social services