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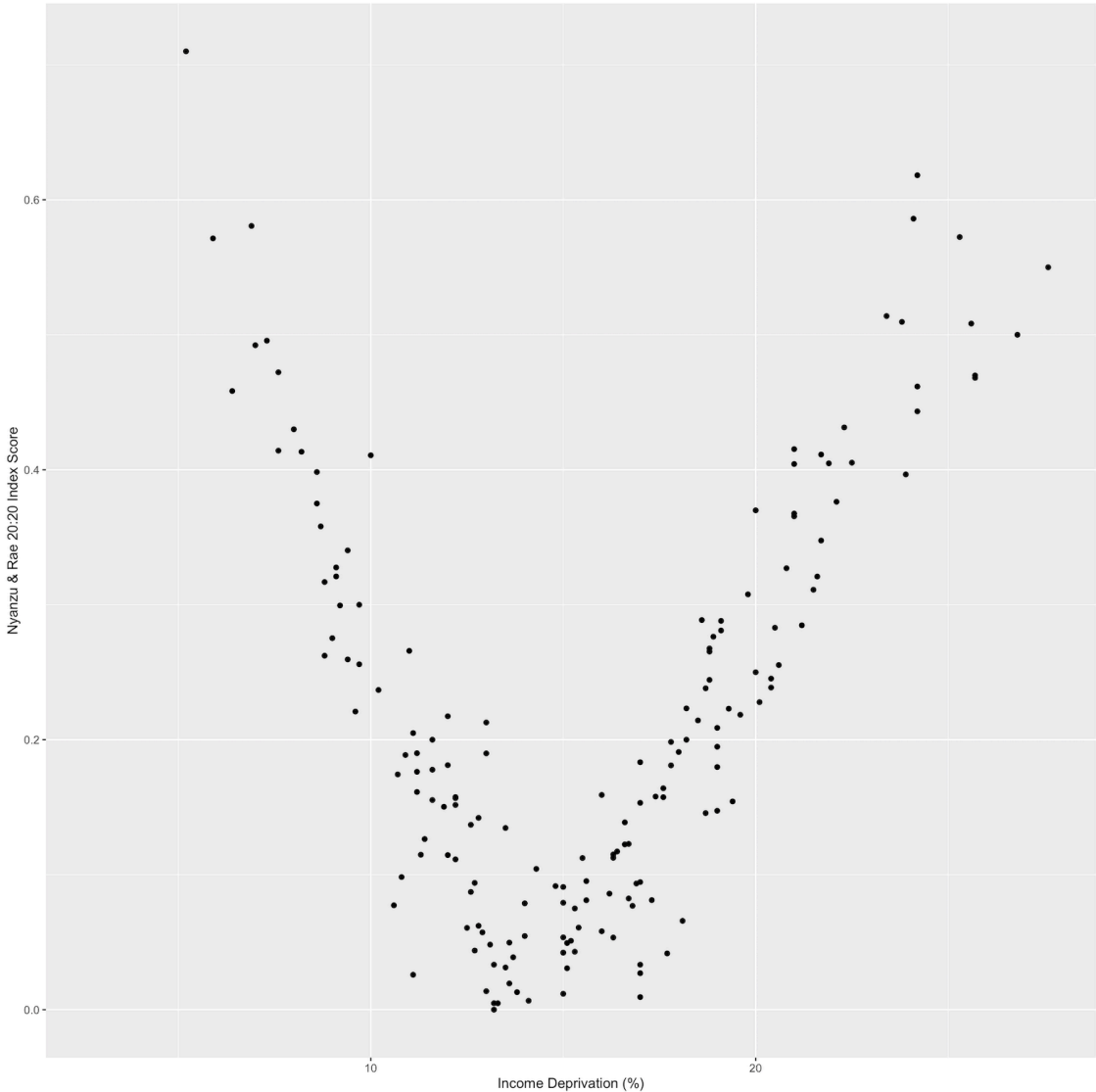
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**Appendix 1: Concurvity between Rae & Nyanzu 20:20 Index and Income Deprivation**



## Appendix 2: Full Child Protection Plan/Register Models

Predictors	CP Model 1			CP Model 2			CP Model 3 <sup>1</sup>			CP Model 4 <sup>1</sup>			CP Model 5			CP Model 6		
	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p	Estimates	CI	p
(Intercept)	3.82	3.78 – 3.86	<0.001	3.82	3.78 – 3.86	<0.001	3.81	3.78 – 3.85	<0.001	3.81	3.78 – 3.85	<0.001	3.81	3.78 – 3.85	<0.001	3.83	3.78 – 3.87	<0.001
Income Deprivation % z-score	0.17	0.09 – 0.24	<0.001				0.16	0.10 – 0.23	<0.001	0.16	0.10 – 0.23	<0.001	0.16	0.09 – 0.23	<0.001	0.17	0.10 – 0.24	<0.001
Gini coefficient z-score	0.01	-0.06 – 0.08	0.843	0.01	-0.06 – 0.08	0.844										0.00	-0.07 – 0.07	0.925
Wales = 1	-0.13	-0.27 – -0.00	<b>0.050</b>	-0.11	-0.27 – -0.05	0.194	0.28	-0.47 – 1.03	0.465	0.28	-0.47 – 1.03	0.465	0.28	-0.40 – 0.96	0.422	-0.21	-0.41 – -0.01	<b>0.036</b>
Asian Population % z-score	-0.05	-0.10 – 0.00	0.067	-0.05	-0.10 – 0.00	0.065	-0.05	-0.10 – -0.00	<b>0.048</b>	-0.05	-0.10 – -0.00	<b>0.048</b>	-0.05	-0.10 – 0.00	0.050	-0.05	-0.10 – -0.00	<b>0.033</b>
Black Population % z-score	-0.04	-0.10 – 0.02	0.150	-0.04	-0.10 – 0.02	0.149	-0.04	-0.10 – 0.02	0.156	-0.04	-0.10 – 0.02	0.156	-0.04	-0.09 – 0.02	0.171	-0.05	-0.10 – 0.01	0.119
Infant Mortality z-score	0.02	-0.02 – 0.06	0.352	0.02	-0.02 – 0.06	0.326	0.03	-0.01 – 0.07	0.203	0.03	-0.01 – 0.07	0.203	0.03	-0.01 – 0.07	0.159	0.04	-0.00 – 0.08	0.069
Q4 Education % z-score	-0.04	-0.10 – 0.01	0.130	-0.04	-0.10 – 0.01	0.133	-0.04	-0.10 – 0.01	0.114	-0.04	-0.10 – 0.01	0.114	-0.04	-0.10 – 0.01	0.125	-0.04	-0.09 – 0.02	0.178
Income Deprivation × Wales	-0.09	-0.42 – 0.24	0.597				-0.14	-0.49 – 0.20	0.405	-0.14	-0.49 – 0.20	0.405						
Gini × Wales	0.33	-0.04 – 0.70	0.084	0.31	-0.06 – 0.68	0.101										1.33	0.55 – 2.11	<b>0.001</b>
s(Income Deprivation - England)				1.00		<b>&lt;0.001</b>												
s(Income Deprivation - Wales)				1.48		0.687												
s(Gini - England)							1.00		0.902	1.00		0.902	1.00		0.808			
s(Gini - Wales)							3.90		0.112	3.90		0.112	3.80		0.058			
Gini coefficient <sup>2</sup> (Wales only)																-0.76	-3.10 – 1.57	0.519
Gini coefficient <sup>3</sup> (Wales only)																-3.32	-6.40 – -0.25	<b>0.034</b>
Gini coefficient <sup>4</sup> (Wales only)																3.07	-0.54 – 6.68	0.095
Income Deprivation × Gini																-0.01	-0.05 – 0.02	0.422
Income Deprivation × Gini <sup>2</sup> (Wales only)																-1.60	-3.58 – 0.38	0.112
Income Deprivation × Gini <sup>3</sup> (Wales only)																-3.82	-9.19 – 1.55	0.162
Income Deprivation × Gini <sup>4</sup> (Wales only)																4.08	-0.47 – 8.63	0.079
Income Deprivation × Gini × Wales																1.48	-0.42 – 3.38	0.127
Observations	171			171			171			171			171			171		
R <sup>2</sup> / R <sup>2</sup> adjusted	0.432 / 0.401			0.449			0.475			0.475			0.472			0.477 / 0.423		
AIC	16.238			15.928			12.598			12.598			11.569			16.215		

1. Model 3 and Model 4 have identical structures as model fit and statistical significance testing in the iterative process determined that there was no evidence to support additional parameters for non-linearity in the income deprivation effect, but evidence to support the inclusion of a non-linear effect in Gini coefficient effect. Hence, the model specification of model 4, used to test whether county-differences in effects were statistically significant using Tukey HSD tests, was identical to the model specification for model 3. To remain consistent with the iterative steps outlined in the methods, both models have been recorded discretely in the appendix despite being structurally identical.

### Appendix 3: Full Children Looked After Rate Models

<i>Predictors</i>	CLA Model 1			CLA Model 2			CLA Model 3			CLA Model 4			CLA Model 5			CLA Model 6		
	<i>Estimates</i>	<i>95% CI</i>	<i>p</i>	<i>Estimates</i>	<i>CI</i>	<i>p</i>	<i>Estimates</i>	<i>95% CI</i>	<i>p</i>	<i>Estimates</i>	<i>95% CI</i>	<i>p</i>	<i>Estimates</i>	<i>95% CI</i>	<i>p</i>	<i>Estimates</i>	<i>95% CI</i>	<i>p</i>
(Intercept)	4.14	4.10 – 4.17	<0.001	4.14	4.11 – 4.17	<0.001	4.14	4.11 – 4.17	<0.001	4.15	4.11 – 4.18	<0.001	4.14	4.11 – 4.18	<0.001	4.26	4.19 – 4.32	<0.001
Income Deprivation % z-score	0.21	0.15 – 0.27	<0.001				0.22	0.16 – 0.28	<0.001							0.30	0.22 – 0.37	<0.001
Gini coefficient z-score	0.09	0.03 – 0.15	0.003	0.08	0.01 – 0.14	0.016										0.06	-0.01 – 0.13	0.075
Wales = 1	0.23	0.11 – 0.35	<0.001	0.23	0.05 – 0.42	0.014	0.22	0.11 – 0.33	<0.001				0.18	0.08 – 0.29	0.001			
Asian Population % z-score	-0.10	-0.15 – -0.06	<0.001	-0.11	-0.15 – -0.07	<0.001	-0.09	-0.14 – -0.05	<0.001	-0.10	-0.15 – -0.06	<0.001	-0.10	-0.14 – -0.06	<0.001	-0.10	-0.15 – -0.06	<0.001
Black Population % z-score	-0.01	-0.05 – 0.04	0.812	-0.01	-0.06 – 0.04	0.602	-0.03	-0.08 – 0.02	0.247	-0.03	-0.08 – 0.02	0.202	-0.03	-0.08 – 0.02	0.268	-0.06	-0.11 – -0.01	0.023
Infant Mortality z-score	0.04	0.00 – 0.07	0.042	0.04	0.01 – 0.08	0.017	0.03	-0.00 – 0.07	0.067	0.04	0.00 – 0.07	0.045	0.03	-0.00 – 0.07	0.063	0.02	-0.01 – 0.06	0.222
Q4 Education % z-score	-0.04	-0.09 – 0.01	0.099	-0.04	-0.09 – 0.01	0.109	-0.02	-0.07 – 0.03	0.357	-0.03	-0.07 – 0.02	0.289	-0.03	-0.08 – 0.02	0.230	-0.01	-0.06 – 0.04	0.676
Income Dep. × Wales	0.13	-0.16 – 0.41	0.380				0.12	-0.16 – 0.40	0.409									
Gini × Wales	-0.06	-0.38 – 0.26	0.719	-0.08	-0.40 – 0.24	0.638												
s(Income Deprivation - England)				1.96		<0.001				1.66		<0.001						
s(Income Deprivation - Wales)				2.78		0.063				3.46		0.109						
s(Gini - England)							1.86		0.001	1.78		0.010						
s(Gini - Wales)							1.00		0.793	1.53		0.313						
s(Income Deprivation)													1.95		<0.001			
s(Gini)													2.10		0.022			
Income Deprivation <sup>2</sup>																-0.06	-0.12 – 0.00	0.061
Gini coefficient <sup>2</sup>																-0.09	-0.16 – -0.01	0.023
Income Deprivation × Gini																0.07	-0.02 – 0.16	0.124
Gini × Income Deprivation <sup>2</sup>																-0.03	-0.08 – 0.02	0.217
Income Deprivation × Gini <sup>2</sup>																0.02	-0.03 – 0.07	0.468
Income Deprivation <sup>2</sup> × Gini <sup>2</sup>																0.00	-0.02 – 0.02	0.874
Observations	172			172			172			172			172			172		
R <sup>2</sup> / R <sup>2</sup> adjusted	0.726 / 0.710			0.754			0.752			0.760			0.753			0.725 / 0.704		
AIC	-34.846			-38.330			-40.684			-40.976			-42.938			-28.422		