Socioeconomic inequalities in arts engagement and depression among older adults in the United Kingdom: Evidence from the English Longitudinal Study of Ageing

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Abstract

Objectives: Arts engagement has been positively linked with mental health and wellbeing; however, socioeconomic inequalities may be prevalent in access to and uptake of arts engagement reflecting on inequalities in mental health. This study estimated socioeconomic inequality and horizontal inequity (unfair inequality) in arts engagement and depression symptoms of older adults in England. Trends in inequality and inequity were measured over a period of ten years.

Study Design: Repeated cross-sectional study

Methods: In this analysis we used data from six waves (waves 2 to 7) of the nationally representative English Longitudinal Study of Ageing. We estimated socioeconomic inequality using concentration curves that plot the distribution of arts engagement and depression symptoms against the distribution of wealth. Concentration index was used to measure the magnitude of the inequality. Unfair inequality was then calculated for need-standardised arts engagement using a horizontal inequity index (HII).

Results: The study sample included adults aged 50 and older from waves 2 (2004/2005, n=6,620) to 7 (2014/2015, n=3,329). Engagement with cinema, galleries, and theatre was pro-rich unequal i.e. concentrated among the wealthier, but inequality in depression was pro-poor unequal i.e. concentrated more among the less wealthy. While pro-rich inequality in arts engagement decreased from wave 2 (conc. index: 0·291, 95% CI 0·27 to 0·31) to wave 7 (conc. index: 0·275, 95% CI 0·24 to 0·30), pro-poor inequality in depression increased from wave 2 (conc. index: -0·164, 95% CI -0·18 to -0·14) to wave 7 (conc. index: -0·189, 95% CI -0·21 to -0·16). Depression-standardised arts engagement showed horizontal inequity that increased from wave 2 (HII: 0·455, 95% CI 0·42 to 0·48) to wave 7 (HII: 0·464, 95% CI 0·42 to 0·50).

Conclusions: Our findings suggest that while socioeconomic inequality in arts engagement might appear to have reduced over time, once arts engagement is standardised for need, inequality has actually worsened over time and can be interpreted as inequitable (unfair). Relying on need-unstandardised estimates of inequality might thus provide a false sense of achievement to policy makers and lead to improper social prescribing interventions being emplaced.

Keywords: arts engagement; depression; inequalities; horizontal equity.

1. Introduction

Despite being the most common and most treatable mental health problem in older age, depression affects approximately a quarter of men and women aged 65 or over.[1,2] Depression in older age often goes undiagnosed and untreated. It has been estimated that among older people with depression 85% receive no help from the National Health Service (NHS) and only 6% are referred to mental health services compared with 50% of their younger counterparts. Socioeconomic inequalities across the life-course further exacerbate the risk of developing mental health problems and not receiving appropriate treatment [3,4]. Approximately one in five patients who consult their primary care doctors present with nonmedical problems which have social or socioeconomic roots.[5,6]. For instance, previous research shows that medically unexplained or non-specific symptoms can be a sign of lower emotional well-being [7] and may be brough up by patients during healthcare consultations as a means to obtain emotional support or reassurance from the healthcare professionals [8]. Meta-analyses further demonstrate the role of specific self-help and psychological interventions (such as dedicated online support groups or psychotherapist-led) in improving the quality of life of patients suffering from unexplained or non-specific symptoms [9,10].

Increasingly over the last two decades, social prescribing schemes across the UK have been developed which enable healthcare professionals to refer their patients to local community activities, organisations, and voluntary support services which can aid their health and wellbeing outside of the clinical healthcare setting.[11] Increasing evidence suggests favourable effects on population health and return on investment of Arts on Prescription schemes.[6,12,13] Arts-based initiatives such as Arts on Prescription are part of the wider social prescribing efforts commonly delivered in partnership with local arts and voluntary community organisations[13] with a focus on prevention initiatives through community engagement and patient centred care.[14]

As such, it is believed that an incorporation of arts and culture activities in social prescribing may contribute to strengthening communities and promoting resilience and health particularly in those whose health conditions may worsen due to socioeconomic inequalities and, therefore, limit the pressure on the more acute services in the long-term.[12,15]

Offering arts to those disproportionately suffering from poor health may contribute to tackling persistent inequalities in access to arts engagement, which in the general population continues to display a strong socioeconomic gradient[12,16,17] as does poor health. For instance, an analysis of the nationally-representative longitudinal Understanding Society dataset of over 30,000 participants in the UK demonstrated that lower educational attainment, household income and parent's socioeconomic status were associated with lower likelihood of engagement in participatory arts and attendance of cultural events.[17] Another large-scale survey of UK adults further demonstrated that the lack of opportunities to engage is considered as the main barrier to arts engagement in groups with lower socioeconomic status, while poor physical and mental health remain an important barrier to participation through perceived capability and motivation to engage.[16] Socioeconomic status has been found to explain half of the association between cultural engagement and depression in older adults[18] and that the association between cultural engagement and mental wellbeing outcomes is in some population-based studies fully explained by health and socioeconomic confounders.[19]

The ability to engage with the arts is likely to differ across sub populations given the heterogeneity of their geographical distribution as well as the differences in related barriers (e.g. cost, mobility and transport, and social isolation). Notably the concentration of efforts in specific types of venues for arts engagement may hinder the extent to which social prescribing of arts engagement may improve equity in access and take up of arts engagement as a catalyst for the mitigation of inequalities in health and wellbeing.

In the UK a universal free admission scheme in state-sponsored museums and galleries was launched in 2001 and has been found to lead to an increase in the number of visitors. However, the evidence on the change in the socioeconomic and demographic profile of the new visitors is less robust.[20] Indeed, and despite these efforts, financial (as well as mobility and access) barriers still remain key barriers for engagement in cultural and sports activities among those who suffered from a chronic health condition.[21] Recent surveys suggest these barriers remain important determinants of poor engagement among the elderly (ACE survey of 700 adults aged 65+ in England) and adolescents (survey of 1,700 young people aged 13 to 19), alongside with the lack of awareness of the cultural offer as well as the lack of social companionship to take part in the art activities, particularly for those in lower socioeconomic grades.[22,23]

In this article, in order to investigate socioeconomic inequalities in arts engagement and depression symptoms of older adults further, we use the English Longitudinal Study of Ageing and examine concentration curves and concentration indices of engagement with: i) the cinema, (ii) art galleries, exhibitions, or museums, (iii) the theatre, concerts, or the opera, as well as overall frequent arts engagement. We further examine the extent of horizontal equity – i.e., if individuals with equal need receive equal treatment irrespective of socioeconomic status. Once standardized for need, any inequality in the uptake of arts engagement related to socioeconomic status is then not just unequal but inequitable (i.e., unfair). To measure horizontal inequity, we examine whether arts engagement in older adults in England is distributed in proportion to need: the depression burden across the wealth groups. Finally, we also assess the trend in inequality and horizontal inequity over time from 2004 to 2015.

2. Methods

Inequalities in arts engagement and depression were analysed using standard inequalities methodologies, namely concentration curves which plot cumulative proportion of the population ranked by wealth variable against the cumulative proportion of arts engagement (overall arts score, cinema, gallery and theatre engagement) and the cumulative proportion of depressive symptoms.[24] If the distribution of arts engagement and depressive symptoms is proportional to the distribution of wealth in the population, the concentration curve is a 45-degree line – the "Equality line". If the concentration curve lies above the equality line, the variable of interest is concentrated disproportionately among the socioeconomically disadvantaged (henceforth labelled as *pro-poor* inequality). For example, a curve for depressive symptoms above the equality line indicates that depression is more concentrated among the poor i.e. pro-poor inequality. In contrast, a concentration curve below the equality line indicates *pro-rich* inequality, i.e. the variable of interest is concentrated more among the socioeconomically better off.

While concentration curves provide a visual assessment of inequality, they do not provide information on the degree of inequality. To assess the magnitude of the inequality we calculate concentration indices. The concentration index (CI) is defined as twice the area between the concentration curve and the Equality line and ranges between -1 and 1.[24] If there is no socioeconomic-related inequality in arts engagement and depression, the concentration index equals zero. A statistically significant negative value of the index for arts engagement or depression indicates that the concentration curve lies above the equality line, thus is disproportionately concentrated among the socioeconomically disadvantaged, while a positive value indicates the opposite, the concentration curve lies below the equality line and the variable is disproportionately concentrated among the socioeconomically advantaged, better-off groups.[24]

Horizontal Equity

The concept of horizontal equity requires that individuals with equal need receive equal treatment (need can be conceived as degree of illness), regardless of any other characteristics irrelevant to need. As such unequal distribution of arts engagement among income groups after controlling for need are unwarranted and therefore considered unequitable.[24] If arts engagement is advocated as a social prescribing scheme to reduce the prevalence of depression, then socioeconomic inequality in arts engagement can be considered unfair if it is not distributed in proportion to mental health need. To measure the extent of horizontal inequity in arts engagement we compare the distribution of arts engagement with the distribution of depression, across the wealth ranking. If the two curves coincide, the arts engagement is distributed across the wealth groups in proportion to their share of depressive symptoms. However, if the more disadvantaged groups have less (more) arts engagement than what is considered a fair share in relation to their need, their arts engagement concentration curve will lie below (above) their depressive symptoms curve, thus favouring the better-off (worse-off) and resulting in unequal *pro-rich* (*pro-poor*) distribution of arts engagement across wealth groups, meaning that the share of arts engagement among the wealthier groups is higher (lower) than their share of depressive symptoms. The extent of inequity is assessed through the *horizontal inequity index* which is computed as the difference between the concentration index for arts engagement and that for depression.

Statistical significance of the differences between concentration curves was assessed through dominance testing consistent with the "interception union principle". This method applies a stricter decision rule requiring a significant difference at all points of comparison of the curves in order to reject the null of non-dominance.[24]

Data

Data used for these analyses come from the English Longitudinal Study of Ageing (ELSA), a large, ongoing longitudinal cohort study of people aged 50 years and older on enrolment in 2002-2003 and designed as a stratified random sample of private households drawn originally from 1998, 1999, and 2001 Health Survey for England.[25] The participants are followed-up at 2-yearly intervals and the original sample has been refreshed with additional Health Survey for England respondents to maintain the general population representativeness.[25] For these analyses we specifically worked with data from 'core' ELSA members (we excluded participants who are partners living in the same household as 'core' study members) who took part in study waves 2 (2004/2005) to 7 (2014/2015). Our analytical sample consisted of participants with complete arts engagement, wealth and depression data at each study wave, resulting in sample sizes of: wave 2 (n=6,620), wave 3 (n=5,110), wave 4 (n=4,950), wave 5 (n=4,779), wave 6 (n=4,304), wave 7 (n=3,329).

Arts engagement

At every study wave arts engagement was self-reported by the participants through three items measuring the frequency of visits to: (i) the cinema, (ii) art galleries, exhibitions, or museums, (iii) the theatre, concerts, or the opera. Each arts engagement item was rated on a five-point scale: 0 (never), 1 (less than once a year), 2 (once or twice a year), 3 (every few months), 4 (once a month or more). The engagement at the level of "every few months or more" has been previously demonstrated as a meaningful cut-point for health-related models of arts engagement in ELSA.[26] To assess the overall frequency of arts engagement, we created an *arts score* summing the number of arts activities engaged on an "every few months or more" basis, ranging from 0 to 3.

Socioeconomic position

Socioeconomic position was assessed with net non-pension wealth variable which measures the accumulation of assets over the lifespan and have been previously reported as the most salient socioeconomic position indicator in the ELSA cohort.[27] This measure includes all financial assets, property, other physical assets and any businesses owned by the individual and their partner (where applicable) and is net of debt, including mortgages.

Depression

Depression was measured at every study wave using the 8-item version of the Centre for Epidemiologic Studies Depression Scale (CES-D), a well-established self-report instrument used to detect people at risk of developing depression in the general population.[27,28] Each CES-D item assesses the presence (Yes/No) of symptoms of negative affect or somatic problems experienced in the past week, and the total score ranges between 0 and 8. A cut-point of 3 or more CES-D symptoms has been previously established to represent the presence of depression[28,29], thus for these analyses we identified participants with CES-D scores of ≥3 across all study waves and classified them as depression cases.

3. Results

Over the 10-year period of the study (2004/2005-2014/2015), there was a slight increase in arts engagement. For instance, frequent *gallery engagement* increased from 14·61% at wave 2 to 18·11% at wave 7 (Table 1) and *no engagement* has fallen from 35·95%, 41·12%, 41·84% to 31·93%, 37·94%, 36·29% for *theatre*, *gallery* and *cinema engagement*, respectively (Figure 1). There was a slight decrease in participants scoring ≥3 CES-D symptoms from 22·00% at wave 2 to 18·33% at wave 7. Mean wealth has increased over the study period from £272,949·5 at wave 2 to £404,689·5.

Across all study waves, the concentration curves for *arts score* as well as *cinema*, *gallery*, and *theatre engagement* lie below the Equality line signifying *pro-rich* inequality in the arts engagement (Figures 2, 3). The *arts score* which captures frequent arts engagement as well as *gallery engagement* show the largest inequalities, followed by *theatre engagement*, and lastly *cinema engagement*. In all study waves, concentration curves for depression lie above the equality line, thus the depressive symptoms are concentrated more among the socioeconomically disadvantaged (Figures 2, 3).

These results are further confirmed by concentration indices (Table 2, Figure 4), which are significantly negative for depression and for arts engagement. There is very little temporal change in the concentration curves and indices. The results of dominance testing show that concentration curves for depression dominated those for all arts engagement variables within each study wave, while among the arts engagement variables concentration curve for *cinema engagement* dominated that for the *arts score* and *gallery engagement* (and additionally that for *theatre engagement* at wave 2 only), while the concentration curve for *theatre engagement* dominated that for *gallery engagement* at each study wave, except at wave 3. In the ten-year study period, we observe that inequality in arts engagement has decreased slightly from wave 2 to wave 7.

The results from horizontal equity analyses are presented in Table 3 and Figure 5 and show *inequity in arts* engagement favouring the wealthier groups, as demonstrated by the positive horizontal inequity index values for all arts engagement variables. These results indicate that the share of arts engagement among the wealthier groups is higher than would be expected from their share of depressive symptoms, in particular for *arts score* (which captures frequent arts engagement) and *gallery engagement*, followed by *theatre engagement* and that for *cinema engagement*. Unlike the results in Table 2 which showed a slight decrease in the concentration index from wave 2 to wave 7, in Table 3 we observe that inequity has

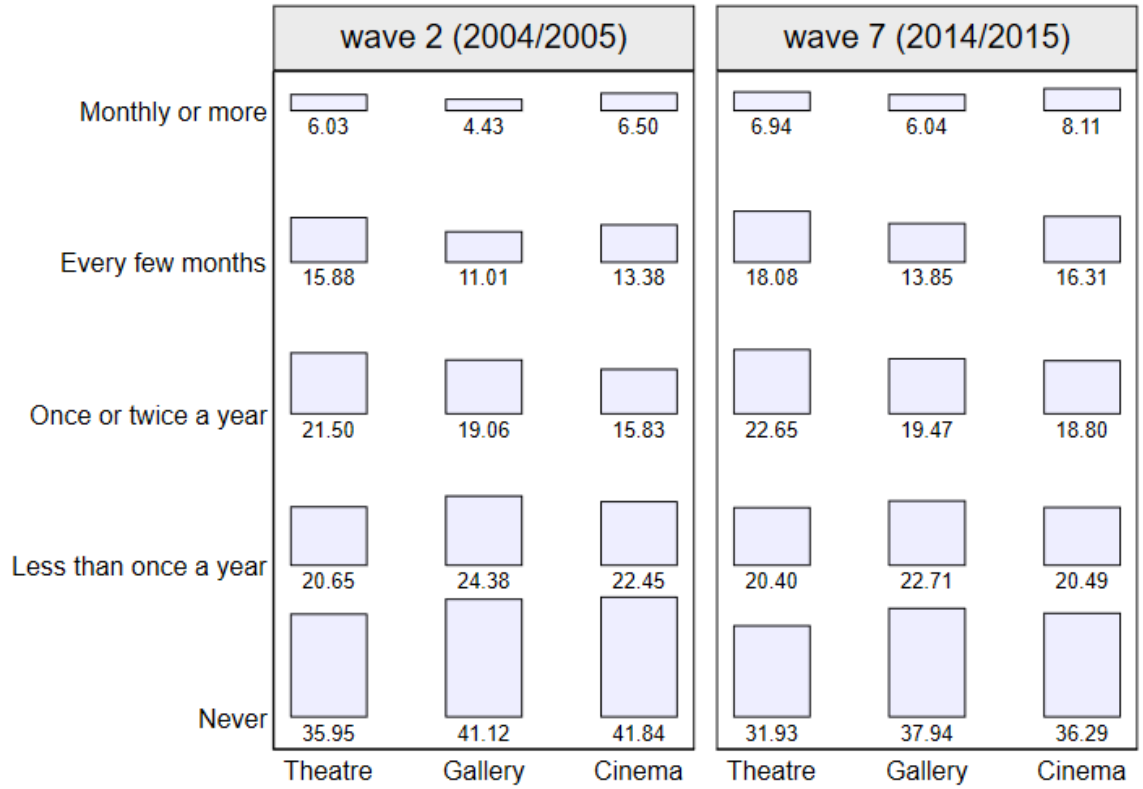
increased from wave 2 to wave 7 – i.e. once standardised for the burden of depression, socioeconomic inequality has actually increased.

Table 1 Descriptive characteristics of participants included in the analyses. Data come from ELSA study waves 2 to 7 (2004/2005-2014/2015).

	Wave 2 N=6,620	**Wave 3** N=5,110	**Wave 4** N=4,950	**Wave 5** N=4,779	**Wave 6** N=4,304	**Wave 7** N=3,329
Age, mean(SD)	65·78 (10·04)	66·63 (9·34)	68·98 (9·60)	70·36 (8·86)	71·69 (8·51)	72·74 (8·18)
Gender: women, n(%)	52·41%	51·76%	53·38%	53·49%	53·43%	53·62%
Frequent engagement with cinema, n(%)	19·21%	17·99%	18·68%	16·72%	19·57%	22·57%
Frequent engagement with galleries/exhibitions/museums, n(%)	14·61%	16·93%	15·30%	16·13%	16·59%	18·11%
Frequent engagement with theatre/concerts/opera, n(%)	20·74%	21·88%	20·61%	21·24%	21·15%	22·55%
Depressive cases, n(%)*	22·00%	20·79%	21·06%	22·05%	19·12%	18·33%
Wealth, mean(SD)	272,949·5 (405,915·1)	317,724·6 (567,709·3)	314,919·6 (585,127·7)	325,269·9 (429,104·4)	357,796·3 (646,250)	404,689·5 (644,350·9)

Frequent engagement is defined as engagement occurring every few months or more often; depressive cases are defined as CESD score ≥3

Figure 1 Percentages of frequency of engagement for each arts activity in ELSA wave 2 (2004/2005) and wave 7 (2014/2015).



Percentages of frequency of engagement for each arts activity in wave 2 and wave 7

Figure 2 Concentration curves for arts scores and depression symptoms at wave 2 (2004/2005) and wave 7 (2014/2015).

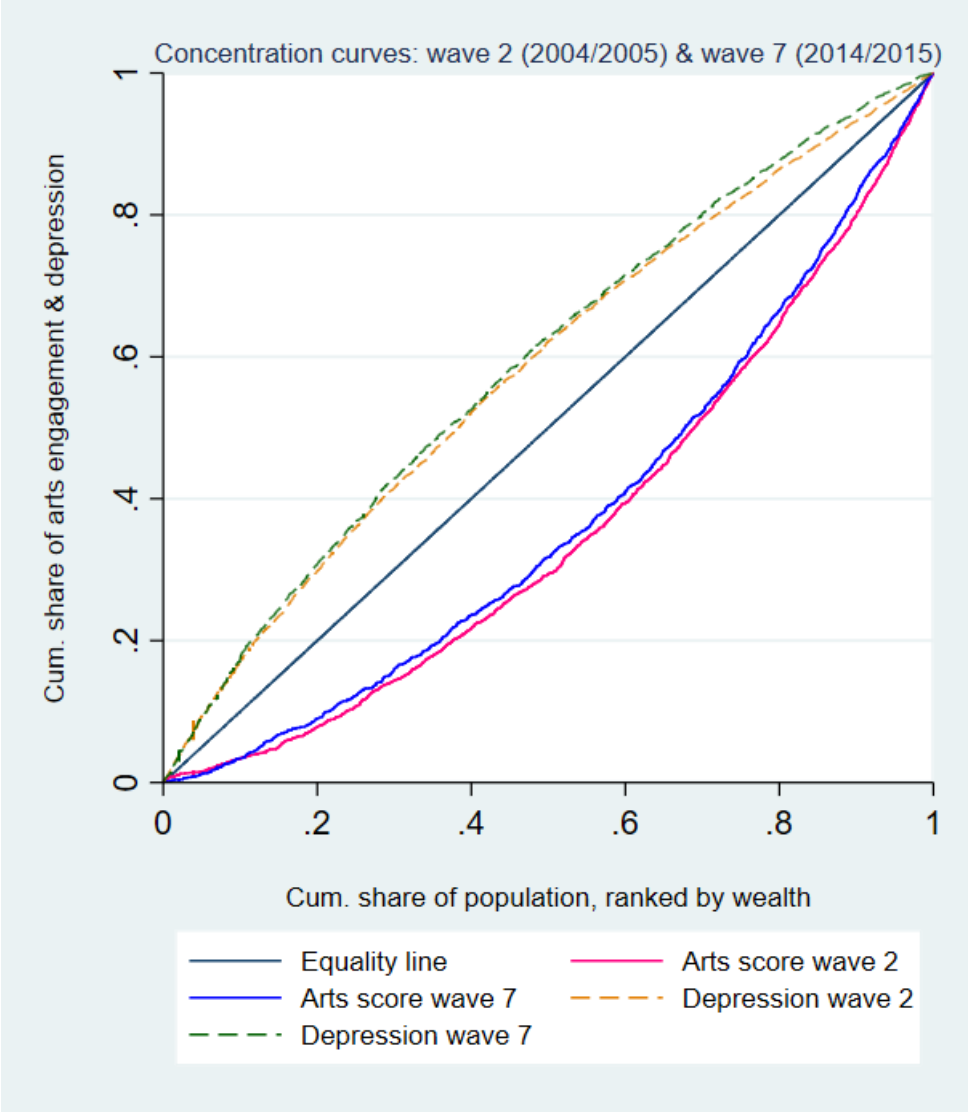


Figure 3 Concentration curves for arts scores and depression symptoms for each ELSA study wave (2004/2005-2014/2015).

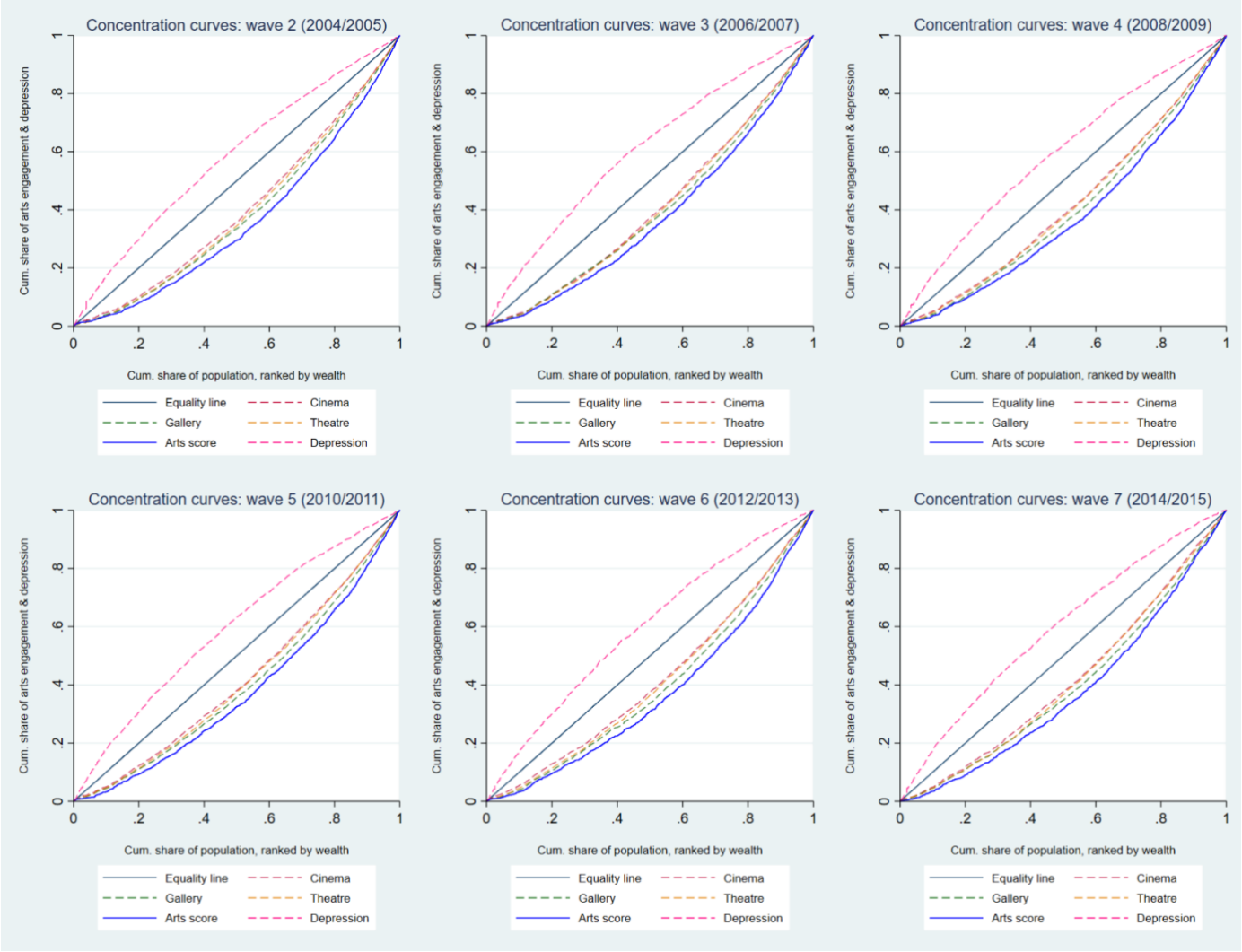


Table 2 Concentration Indices for arts engagement and depression, ELSA study waves 2 (2004/2005) to 7 (2014/2015).

	Wave 2 N=6,620				Wave 3 N=5,110				Wave 4 N=4,950			
	CI	**95% confidence interval**		***p-value***	**CI**	**95% confidence interval**		***p-value***	**CI**	**95% confidence interval**		***p-value***
Arts score	0·291	0·270	0·312	<0·001	0·263	0·239	0·287	<0·001	0·258	0·234	0·283	<0·001
Cinema	0·199	0·185	0·214	<0·001	0·196	0·180	0·212	<0·001	0·182	0·165	0·199	<0·001
Gallery	0·236	0·222	0·250	<0·001	0·213	0·198	0·228	<0·001	0·217	0·200	0·233	<0·001
Theatre	0·220	0·208	0·232	<0·001	0·205	0·192	0·219	<0·001	0·189	0·175	0·203	<0·001
Depression	-0·164	-0·181	-0·147	<0·001	-0·207	-0·227	-0·186	<0·001	-0·179	-0·200	-0·157	<0·001
	Wave 5 N=4,779				**Wave 6 N=4,304**				**Wave 7 N=3,309**			
	CI	**95% confidence interval**		***p-value***	**CI**	**95% confidence interval**		***p-value***	**CI**	**95% confidence interval**		***p-value***
Arts score	0·263	0·238	0·289	<0·001	0·286	0·261	0·312	<0·001	0·275	0·248	0·303	<0·001
Cinema	0·177	0·160	0·194	<0·001	0·187	0·169	0·204	<0·001	0·185	0·166	0·204	<0·001
Gallery	0·214	0·197	0·231	<0·001	0·233	0·216	0·251	<0·001	0·227	0·208	0·246	<0·001
Theatre	0·191	0·177	0·206	<0·001	0·202	0·187	0·217	<0·001	0·202	0·185	0·219	<0·001
Depression	-0·187	-0·208	-0·166	<0·001	-0·189	-0·213	-0·165	<0·001	-0·189	-0·215	-0·163	<0·001

Figure 4 Concentration Indices for arts engagement and depression, ELSA study waves 2 (2004/2005) to 7 (2014/2015).

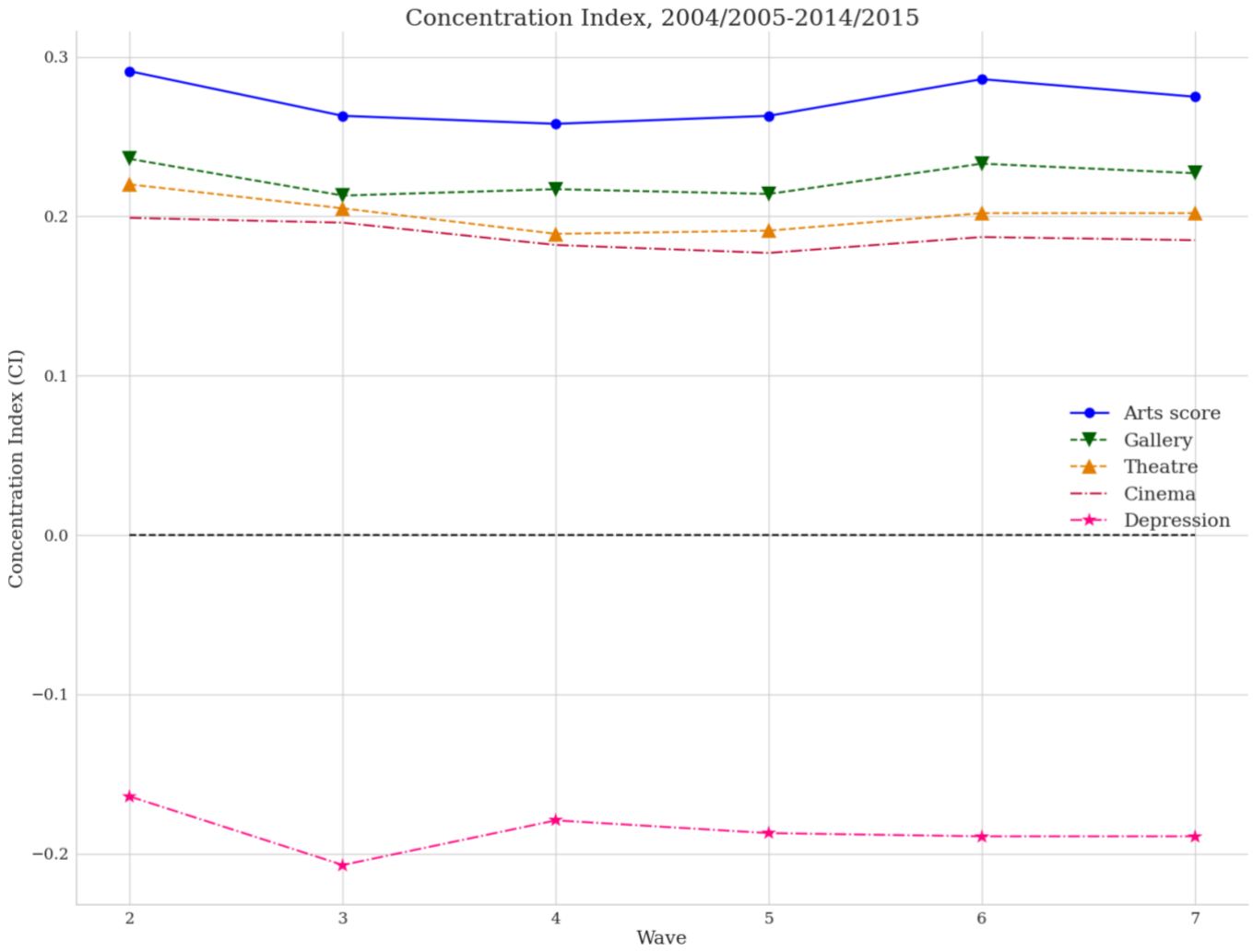
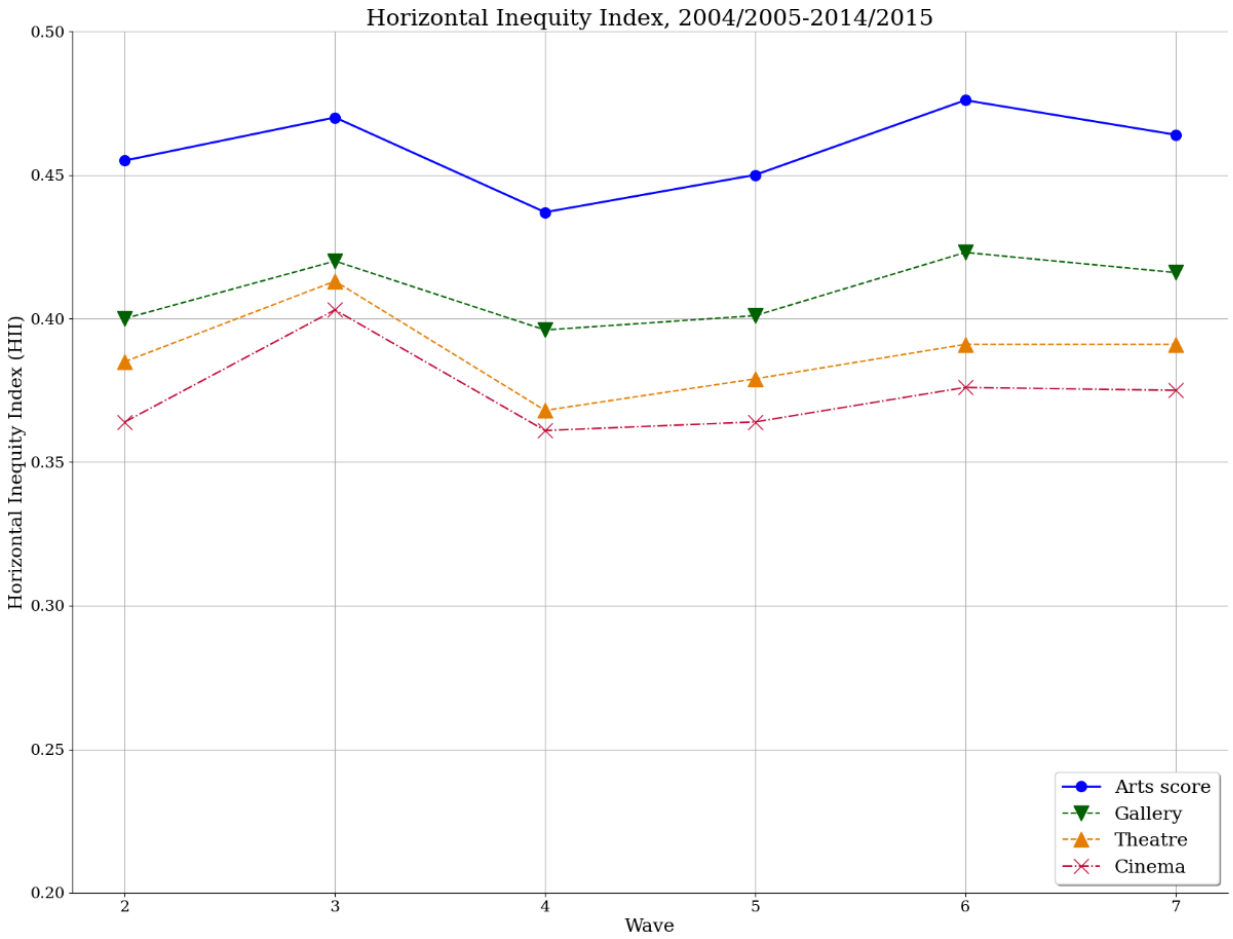


Table 3 Horizontal Inequity Index, ELSA study waves 2 (2004/2005) to 7 (2014/2015).

	Wave 2 N=6,620				Wave 3 N=5,110				Wave 4 N=4,950			
	HII	**95% confidence interval**		***p-value***	**HII**	**95% confidence interval**		***p-value***	**HII**	**95% confidence interval**		***p-value***
Arts score	0·455	0·427	0·484	<0·001	0·470	0·438	0·503	<0·001	0·437	0·403	0·471	<0·001
Cinema	0·364	0·340	0·387	<0·001	0·403	0·376	0·431	<0·001	0·361	0·332	0·390	<0·001
Gallery	0·400	0·377	0·423	<0·001	0·420	0·394	0·447	<0·001	0·396	0·367	0·424	<0·001
Theatre	0·385	0·362	0·407	<0·001	0·413	0·387	0·439	<0·001	0·368	0·341	0·395	<0·001
	Wave 5 N=4,779				**Wave 6 N= 4,304**				**Wave 7 N=3,309**			
	HII	**95% confidence interval**		***p-value***	**HII**	**95% confidence interval**		***p-value***	**HII**	**95% confidence interval**		***p-value***
Arts score	0·450	0·416	0·485	<0·001	0·476	0·439	0·513	<0·001	0·464	0·425	0·504	<0·001
Cinema	0·364	0·336	0·393	<0·001	0·376	0·345	0·407	<0·001	0·375	0·341	0·408	<0·001
Gallery	0·401	0·373	0·430	<0·001	0·423	0·392	0·454	<0·001	0·416	0·382	0·450	<0·001
Theatre	0·379	0·352	0·406	<0·001	0·391	0·361	0·421	<0·001	0·391	0·358	0·424	<0·001

Figure 5 Horizontal Inequity Index, ELSA study waves 2 (2004/2005) to 7 (2014/2015).



4. Discussion

The benefits of the arts for the society and public health at large has been increasingly recognised through policy such as universal free admission and Arts on Prescription schemes[20,30], as well as documented through the burgeoning of academic [12,13] as well as policy evidence coming from, among others, Age UK and the Baring Foundation.[31,32] Previous research using the ELSA dataset has demonstrated that more frequent arts engagement in older adults can contribute to prevention of depression and loneliness as well as promotion of wellbeing before and after accounting for socioeconomic and health factors.[18,26] Here, we find a clear socioeconomic gradient in the distribution of arts engagement (*pro-rich,* concentrated more among the wealthier) against a backdrop of depressive symptoms affecting disproportionately those in lower socio-economic status groups.

Our findings may further illuminate why engagement with art galleries, exhibitions, or museums often presents the most robust associations with mental health and social outcomes in the ELSA dataset, in particular when compared with engagement with cinema.[26] Frequent arts engagement (every few months or more) across the three arts activities and engagement with art galleries, exhibitions, or museums are the most unequal and thus are likely to be prone to residual socioeconomic confounding despite adjustment for socioeconomic variables in the regression models. These results are further in line with evidence from evaluation of the universal free admission scheme in state-sponsored museums and galleries which suggest that more support and funding is required to sustain outreach programs in order to attract a wider socioeconomic and demographic profile of the visitors[20] as well as successful museum-based intervention programs for isolated-older adults which stress the importance of dedicated programs and facilitators in enabling older adults access and sustained engagement.[33] These findings further support the wider calls for caution when defining arts engagement in the population in order to avoid a bias towards "high-brow", formal interpretation of arts engagement occurring in state-sponsored venues, which reinforces socioeconomic gradient in engagement with creative and cultural activities.[17,34,35]

The results from horizontal equity analyses indicated an inequitable allocation of arts engagement, namely the share of arts engagement among the wealthier groups is higher than would be expected from their share of depressive symptoms, in particular for overall frequent arts engagement and engagement with art galleries, exhibitions, or museums. Our findings contribute to and extend prior literature that shows a social gradient in arts engagement and mental health. Fancourt and Steptoe[18] show a robust association between cultural engagement and mental health, and explore the socioeconomic gradient only between the lowest two versus the highest three wealth quintiles. Here, we assess inequalities in the two variables across the entire distribution of socioeconomic status using new methods that facilitate direct comparisons across years, thus allowing us to estimate trends in inequality. In addition, we are able to comment on the extent of inequity – i.e., unfair inequality – by calculating the concentration index for need-standardised arts engagement. Most importantly, the difference in findings on the trends in inequality versus inequity shows that it is important to standardise for need when estimating inequalities, which if ignored, can lead to erroneous conclusions.

These results are further in line with previous overwhelming evidence on the interplay of ill health and socioeconomic deprivation in creating barriers to arts engagement in the population.[16,17,21] The evidence from our study further suggests that unless arts engagement is subsidised or incentivised among the less wealthy older adults, their mental health is not going to benefit from arts engagment to the same extent as that of wealthier counterparts. This is in line with previous All-Party Parliamentary Group reports calling for public subsidy to the participatory arts in order to increase the fairness of its allocation across the socioeconomic groups, and as a result help to tackle inequalities in wellbeing.[12,36]

While these are important findings, our study does not enable disentangling the role of other factors that may correlate with socio economic status. Notably it has been suggested that early life experiences (e.g. education, cultural upbringing) may impact life course trajectories of leisure activities.[37,38,39] These factors may well be correlated with SES trajectories over the life course and therefore contribute for the observed inequities. Disentangling these effects is an important avenue for future research that can better shed light on complementary interventions to mitigate the observed inequities.

Author statements

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Ethical approval
Ethical approval for all waves of ELSA was granted by the National Research and Ethics Committee. No additional approval is necessary to analyse these data.

Competing interests
We declare no competing interests.

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