



The health benefits of taking part in the arts – follow the science

Online event, Friday 19 May 2023

Full event transcript

BARBARA: Hello everybody. And welcome to this session which I promise you is going to be really interesting. I have met our speaker already and she knows this subject so well.

So just before we set off though, for those of you who don't know Making Music, we're the UK association for leisure time music groups. We have about 4,000 members throughout the UK, of which about two thirds are vocal groups, and a third are instrumental groups. There is a small percentage also of what we call amateur promoters, so they are volunteers who are putting together professional concerts in their areas.

We give our members lots of practical support to run their groups and we connect them to each other through meetings like this and many other Zoom meetings that we hold throughout the year.

And finally, we speak on behalf of leisure time music where it is necessary, either because there's a threat, or to improve the situation in which you work and at the moment we're doing quite a lot of work on the spaces and venues, which are an issue, especially since corona.

This event is one in a series, we do about two or three every term where we invite visiting speakers on a particular subject to talk to us about their specialities. So, do have a look on the website or sign up for the newsletter if you're not already, to be kept up to date with further events come up. My colleague Sharon will no doubt put the link to our website where you can read more about us in the chat.

So, now it is my great pleasure to introduce you to Dr Karen Mak, who is Senior Research Fellow in Epidemiology and Statistics at the University College London. She will talk to us about this report that she's co-authored, The Health Benefits of Taking Part in the Arts. Karen, without further ado, over to you.

KAREN: Thank you, Barbara. It is lovely to meet you all. Let me share my screen quickly. I hope you can see my screen okay. Lovely, great.

Thanks everyone for coming and joining us today. It is a pleasure to be presenting to you today. I'm going to be speaking about the Health Benefits of Taking Part in the Arts.

Now, in 2019, the World Health Organization has published a report about the role of the arts in improving health and wellbeing. Now, this report shows that arts and culture activities combine lots of different components that we know are beneficial to our health. For example, imagination, sensory activation, cognitive stimulation, and social interaction.

Now, these components with prompt psychological, physiological, social and behavioural responses that could help prevent illnesses, manage and treatment mental or physical health conditions, and also promotes healthy behaviours.

Now, in the past five years, our team has been building on this evidence by using various research approaches, including using population survey data to ask more questions about arts and health, such as whether the benefits of the arts could be found at a population level, whether the benefits become stronger if we engage more frequently, and whether the associations that we have been seeing between

the arts and health remain after considering a range of individual factors, such as our education and social background, and if so, how long do these benefits last.

But before answering these questions, it is important to define what arts is. Now, arts can include a wide range of activities, including digital arts such as photography, performing arts like making music and dancing, literature arts like reading and writing poetry and cultural engagement such as visiting museums, galleries, and concerts and musicals.

Now, with a very rich set of existing data, researchers are able to measure arts and cultural activities in many different ways, such as exploring the arts using an umbrella approach incorporating all activities related to arts and culture, or categorising the activities into groups like active participation, or receptive engagement. We have also analysed specific activities such as listening to music, or visiting museums.

Right now I'm going to share with you some research findings on the health benefits of the arts and we will start with mental health and wellbeing, where it receives substantial attention in the arts and arts research. One focus is how the arts can reduce stress levels. For example, in this intervention study that compared an intervention group who was encouraged to listen to the same type of music for 30 minutes every night before going to sleep to those who were not engaged found that music reduced blood pressure, heart rate, respiratory rates, and depression levels as indicated in a triangle line. This suggests that music may be able to exert a soothing effect on the stress induced biological and psychological responses. Not only does listening to music have an impact on stress and depression levels, culture engagement, for example, going to museums and theatre, was also shown to help reduce depression.

Now, in this study, it is really interesting, what it shows is if we followed 100 participants who never engaged in cultural activities for one year, we would expect on average five people being diagnosed with depression during the year of observation. This is compared to only 2 or three depression cases amongst those who engaged in these activities once a month or more. When we compared the people who never or infrequently engaged in cultural activities, those who engaged every few months or more had 32 to 48% lower odds of developing depression over the following ten years. So, we can see here that there are substantial differences in depression levels between those who never engaged in cultural activities and those who engaged regularly.

But can this relationship be explained by our social background? This next study used a matching technique to match participants based on their age, gender and social background and to test whether engaging in cultural activities continues to associate with lower instance of depression. The results show that even when we match people based on their social demographic backgrounds, engaging with cultural activities continued to reduce the incidence of depression. This suggests that while our social background is an important predictor of whether or not we engage in cultural activity, it is not an overall explanation for the relationship between cultural engagement and depression and that's the protective effects of such engagement can be found amongst people with lower or higher wealth, education ...

BARBARA: Karen, you went to mute.

KAREN: Okay, shall I start? Let me start with what the results about the matching.

BARBARA: Yes.

KAREN: Right, okay. This matching study shows if we match people based on their social demographic backgrounds, engaging with cultural activities continued to reduce the incidence of depression. This suggests that while our social background is a very strong predictor of whether or not we engage in cultural activities, it is not an overall explanation for the relationship between cultural engagement and depression and that the protective effects of such engagement can be found amongst people with lower or higher education background, occupational status and also our wealth.

Now, the arts could also improve our mental wellbeing. In this study, we found that participating in arts activities and attending cultural events were associated with lower mental distress and better mental functioning over three years. These benefits were shown if participants participated in arts activities at least once a year. If you attend cultural events like museums, musicals and theatre as minimal as once or twice a year, we can start seeing an improvement in life satisfaction. These results were very robust because the models here that we use had already factored in all time constant variables like gender, ethnicity, and medical history, which are the variables that don't change over time. We were also able to factor in variables that change over time such as age, marital status, health behaviours, physical activities and social supports variables.

So, after factoring in all of these influential factors, we still be able to see the relationship between arts engagement and mental wellbeing over three years. And similarly, in the US, we also found that older adults participated in arts groups such as choir, dancing, photography, theatre and music reported greater life satisfaction, positive effects four years later.

Does arts also make our life worthwhile? This very interesting study that followed adults over 50 and role modeller over four years found that those who increased their arts and cultural activities had increases in how worthwhile their lives were. Feeling ones life is meaningful in older age is important because it can lead to wide ranging health benefits, including better reported health, fewer chronic disease, improving immuno systems and increase our health behaviours. And these relationships are important for how we think about using arts and cultural engagement for promoting wellbeing amongst older adults.

This leads to another large research focus looking at the impacts of the arts on cognition and dementia, which are related to healthy ageing. For example, cultural engagement which involves visiting museums, theatres, concerts, operas, has been shown to improve older adults' cognition and reduce their risk of dementia.

Now, this study asked participants or invited participants to complete a semantic fluency test were participants were asked to think of as many words from a particular category, such as animals, as possible in under one minute. This study shows that going to exhibitions and going to live performances could have benefits for semantic influence even after factoring in a range of demographic health-related and activity-related variables.

The study also find that there may be a relationship for both gallery and museum and theatre and concerts and opera, meaning that the more frequently that we visit these places, the greater the benefits we may receive on cognition. For dementia, engaging in cultural activities every few months or more was associated with lower risk of developing dementia and what's also interesting about this study is that the findings are found even when considering all identified social factors, including marital status, loneliness, social network size and social support, which could also contribute to the risk of dementia. In fact, this study shows that the social factors only accounted for 9% to 10% of the association between cultural engagements and dementia.

So, what this is suggesting is that it is not just the case that such engagement has protective associations just by compensating for deficit in social interactions, but instead cultural engagement may have additional cognitive factors that social factors do not provide.

Now, there is also evidence showing the benefits of the arts on physical health. For example, we found that the arts can help prevent the condition. This research shows that older adults aged fifty or above who engaged in cultural events were 25% less likely to have chronic pain within ten years and results were comparable to the risk reduction related to vigorous exercise and chronic pain. Not only could the arts prevent the risk of chronic pain, they could also have the potential to support people with chronic pain.

In this chart, on the right-hand side, it shows that we used the US data. The study found that for adults experiencing chronic pain for at least two years engaging in these activities once a month or more was related to fewer daily living activities, such as bathing, eating, taking medication. For participants with moderate to severe chronic pain, engagement in these activities monthly or more was associated with greater levels of life satisfaction. This is an example to show how the arts can prevent chronic pain but it to also manage the symptoms.

And similarly, older adults who engaged in cultural activities every few months or more had a reduced risk of becoming frail and a slower progression of frailty over time. In this analysis, 83% of participants engaged in cultural activities, only 41% -- 31% do so at a level required for benefits on frailty incidence to be felt. Such engagement may also promote longevity in older adults.

This study followed a nationally representative sample of adults aged fifty and older in England for 14 years and used linked mortality data from NHS records and found that cultural engagement could have a protective association with longevity in older adults where the risk of dying at any point during the follow-up period amongst people who engaged every few months or more was 31% lower than those with no engagement, which is indicated in the pink line.

Now, this association could partly be explained by differences in clinician, mental health and physical activity amongst those who do and do not engage in the arts, but even then, the association between cultural engagement and mortality remains when these factors were also considered.

So, so far, we have seen what the health benefits of arts engagement are but we also wanted to find out why and how the arts influence our health, which brings to my final topic of this first session, Wimbledon is the active ingredients and mechanisms.

Now, to understand how the arts influence our health, we can use these active ingredient formula. The term "active ingredient" has its origins in pharmaceutical research, for example, paracetamol is an active ingredient that helps block pain imposers, and block pains impulses and inhibiting productions of inflammatory compounds. When applying this formula, we can work backwards to understand how the arts can influence health through identifying the mechanisms, the underlying mechanisms of action behind these impacts and then to identify what the active ingredients are which trigger these mechanisms to take action.

Now, to give an example, making music may activate four mechanisms that we know are beneficial to our health and wellbeing. This includes social mechanisms where group music can foster for social behaviour, support social bonding and build social identities. Psychological mechanisms where it could provide meaning and purpose in life and develop self-efficacy and self-esteem.

Music can also influence our health through biological pathways such as increasing our brain activation, change hormone levels and lower proinflammatory markers. And through behavioural mechanisms, including increasing health behaviours. For example, this intervention study which involved adults aged 50 and above participating in the music and learning programme increased their frequency of physical activity which is a behavioural mechanism and also increased their spiritual growth which is psychological mechanism. Both of these have been shown in other studies that they can help support our wellbeing.

So then what are the potential active ingredients that lead those mechanisms to take place. These may include the sound of music, the instrumentation of music, physical involvement such as the bodily actions required to produce a sound like singing or playing an instrument, as well as any strong musical vibrations that may have been perceived by participants. Social engagement including whether a participant socialises with others and personal response, including whether participants were familiar with the music whether they liked or disliked, or whether it provoked an emotional response.

Now, I have provided more information in the references about active ingredients here and also the euro immunological model of music, which explains more about the active ingredients and how they lead to mechanisms of actions and, therefore, the outcome.

So, I think I should stop here now for a Q&A and a break. After the break, we will come back and we will have a look at who the people are who engage in the arts more frequently, what the barriers are in preventing some groups of people from engaging in the arts and what we could do to overcome the barriers.

BARBARA: Brilliant. Thank you very much, Karen. So, shall we take the questions that we already now? Alison, do you have one already? Otherwise, I'm looking at one I saw in the chat.

ALISON: I think some of these questions may be covered in your next part. So, let's look at the one about lung health, shall we? Let's see if you might cover this. "I'm interested in randomised control trial studies on singing for lung health. Has anyone from your team done systematic studies?"

KAREN: We have not done anything on lung health. We did a report on postnatal depression and about the mothers who joined a singing group after the birth.

BARBARA: Do we want to ask -- I don't know whether that is something that you will cover -- the question from Jeremy. "Many people are told as children that they can't sing or draw, et cetera. What is the ongoing wellbeing impact on those individuals? What happens if they start singing or drawing later in life?"

KAREN: That's a good question. We haven't had a chance to look at the impacts of telling children not to do it. We did have a research looking at children's engagement in the arts and their self-esteem and what we found is that children do not have to excel in these activities in order to receive the benefits from the arts. We found that as long as they do it, and engage in the arts, they will start receiving the benefits particularly in their development and also their self-esteem.

BARBARA: Great. Thank you. And, "Are there similar studies for participation in sports? This may not be your area. If so, are there any key differences?" Do you happen to know this?

KAREN: These are very popular questions. We have not really compared the differences. We haven't really compared the differences between arts engagement and physical activity. But when we look at the relationship between the engagement in the arts and health, we usually control for physical activity. What this is suggesting is that even when we factor in low frequently people do exercise, we can still see the effects of arts engagement in health. And in one of the studies, we also found that the impacts of arts engagement on chronic pain prevention may be comparable to vigorous exercise. So, they might have very similar impacts. I do think more research should be done.

BARBARA: Great. That's really interesting and helpful. So, I don't know whether ... "Is social prescribing without access to talking therapies or other support effective? Or is it sometimes used in place of person-centred support? "

KAREN: So, my understanding about social prescribing is there will be a link worker to personalise healthcare for you according to your preferences and interests and to give you more control to empower to control your health and to improve your health. So, I think what is really interesting and I think what would work with the social prescribing is that it is using alternative healthcare that is not involving medications to improve people's health. And particularly, I think that social prescribing works because it tries to address the social causes of our health problems which actually more than 80% of our health problems are related to causes, such as poverty and finance worries. So, by using the social prescribing schemes which includes arts activities, or volunteering, sports, we can then connect people with poorer mental health to the society. Which may then improve their wellbeing overall.

BARBARA: Thank you. That is very good to hear. I think this one is still sort of in this area. You just said that about children but here's someone asking, "Are the health benefits for adults also independent of whether they excel or what their ability level is?"

KAREN: For ability, I'm not quite sure for adults. We would only be able to find it for children at the moment. It might be something that we can explore further for adults.

BARBARA: In other words, I guess the question is, is participation more important than excellence, I guess, right? That's the question here.

KAREN: Yes, but from my feeling, it is that I always think that participation is more effective because when you participate, you will then go through the four different mechanisms, for example, when you participate with groups then you have the social benefits, and when you participate, it could also provoke biological effects such as your hormonal changes or reduce your pro-inflammatory rate compounds, which then enables the mental health and wellbeing to happen.

BARBARA: Great. Thank you. There's a question here, "Are there any particular songs or genre of songs that have proved to be more successful than others in if promoting wellness particularly helping those with Parkinson's disease?"

KAREN: Ah, we haven't had the chance to look into that but there might be some research out there that can compare different types of musics and their impacts on Parkinson's.

BARBARA: "Is there any difference in the wellbeing impact of listening to live music and recorded music? If there is, is it explained by the social interaction or is there something more?"

KAREN: That's a good question. In our team we haven't been able to look at the listening to music but I think we did look at singing, whether singing virtual/online versus in-person. I remember that the findings of this research is that the participants felt more if it was in-person you because of the social interactions, which they would not be able to find or feel it online, but they did find it continued to support their health. This research, I remember was taking place during the pandemic.

ALISON: Can I butt in and ask a supplementary. Sorry, Barbara. I was so interested when you were talking about active ingredients and about the sound and the vibe rakeses. With would that come into play with the difference between listening to live and recorded music because you can feel the impact of the vibrations on your body? Is that what found in your research?

KAREN: We haven't looked into the active ingredients in that research but that might be one of the potential explanations why they might be different and how different contexts of activities may activate different types of mechanisms which will then may lead to different mental health and wellbeing.

BARBARA: Okay. There's a question but I think that is answered. Someone is asking to have a link to the study of what you referred to about the children's engagement in the arts and self-esteem. But I think in the whole study, which Sharon is probably putting the link in the chat to or has already, it is referenced in there.

KAREN: That's right.

BARBARA: Alison, sorry. I've lost ...

ALISON: Jane's asking a question about how do you carry out the research? "Are the effects you describe due to association or causation? Is there enough evidence to say that participation in the arts causes these outcomes or are people who participate a selected group?"

KAREN: Yes, that's a good question as well. Ha-ha! So most of the research that ... in our team we have different researchers that use various research techniques. We have intervention studies, we also have interviews and focus groups, and we also have a research team, a sub-research team that uses the

population survey data which my main responsibility is in. So, with this population survey data, it is really interesting because it actually follows participants when they were younger until nowadays. This is what we call a cohort study. In the UK I think we have five cohort studies. The earliest ones started in 1946, right after the Second World War. We also have 1950 it's, 1960s, millennials. With these surveys, it asks hundreds and thousands of variables about the respondents. They also ask your family, your teacher, your doctors, your nurses, your siblings and partners, everyone, just to know about you. So, with this these data sets, we are able to measure the long-term effects of arts engagement and different types of health and wellbeing while considering and factor lots of different factors. We do find a longitudinal relationships between arts and health but we cannot be say for very sure that arts causes health and mental wellbeing. I think what's more likely to happen is that there is a bi-directional relationships. The more you engage in the arts, the healthier you become. The healthier you become, the more likely you engage in the arts. It is more likely a bi-directional. But, of course, there's two ways to interrupt this cycle, either to increase our arts engagement in order to have our health improved or we can improve our health so that we can continue to engage in more arts. But I think by changing or by changing how frequently we engage in the arts, it is the more flexible approach to improve our wellbeing.

BARBARA: Excellent. Thank you so much. I'm going to quickly read this comment from someone who is working in schools in areas of significant deprivation and trying to convince heads of schools to engage in more music activities. She could really do with a simple "why taking part in music matters" fact sheet to engage head teachers and get them to commit. There are Music Education Hub resources being pointed to. Karen, I think it would be fair to say that your reports are written in quite plain English so if people do want to go and find the relevant bit, yes, or is there anything specific that you produce that would be helpful, like those bite sized kind of things?

KAREN: Yes. So, school engagement is one of the topics that I'm very passionate about. There's one study that I really want to highlight. We tried to look at predictors of children's engagement in school and outside of school. What we found is there is a clear social gradient for children who engage out of school, meaning that children with parents or children from high socio backgrounds are more likely to engage in the arts outside of school and if they have parents who engage in the arts, they're more likely to engage in the arts. But these social gradients is not found for children who engage in school, which makes sense, because if school provides activities, they usually are mandatory and compulsory. So there should not be a gradient, there's no differences between children's engagements. What this research is suggesting is that it is important to have schools to continue to provide arts activities if we want to reduce inequalities in arts engagement.

BARBARA: Yes, great. So, folks, I think it is important that we have a short break now right, Alison and Sharon. I'm looking at my colleagues. Yes, so, we will have five minutes. My computer says 10.42 am on London time. We will come back at 1047 am if that's okay. Thank you very much.

[Break]

BARBARA: Thank you very much everybody. Welcome back. I think, Karen, I will just hand over to you for your second part.

KAREN: Sure. Let me just share my screen. Wonderful. Welcome back everyone. So, in the first session, we have gone through the wide ranging health benefits of arts and cultural engagement. Unfortunately, not everyone can enjoy the benefits that the arts bring and so in the next 15 minutes, we will see who is more likely to engage in arts, why some people are less likely to engage, and how we can overcome these barriers.

Now, in the UK, we have around one million arts assets, including libraries, historic places, museums, book clubs, and dance groups. On average, over 70% of adults have engaged with the arts and visited a heritage site. Just over half visited a museum or gallery. While as the maturity of the adult population having aged

with arts and cultural activities, the proportion has been studied for the past ten years, meaning that there has been no improvements in engagement in the last decade.

So, what are the reasons for people to not engage, to not get involved, or stay involved in the arts? Now, the UK Department for Digital, Culture, Media and Sport's run an annual survey called a Taking Part survey where they start the national engagement rate every year. In the survey, they ask participants who did not engage in any of the activities about the barriers that they experienced.

Now lack of interest and time were the main reasons that respondents' gave for not engaging. Difficulty to getting to an arts event or heritage place, feeling out of place, having a health problem or having a disability, and they I don't have anyone to go with are other reasons. While engaging in the arts is quite personal, such as lack of interest and time, some people are still disproportionately less likely to participate in the arts.

Who are these people? Now as I show you different types of inequalities to engagement, I would like for you to have a think about whether or not we have been provided the same opportunities to engage. Now, when it comes to barriers, there are different layers of barriers and for some population groups, they may experience multi levels of barriers.

Let's start with individual barriers. One of the strongest predictors of our arts and cultural engagement is socioeconomic position. We found that engagement levels in arts, cultural and heritage activities have always been lower amongst people from lower socioeconomic groups. This is particularly notable for cultural engagement such as attending musicals, opera and visiting museums, possibly reflecting how cultural engagement involves paying for attendance. Also, people who have fewer educational qualifications do not engage in the arts and culture as much as those with higher education levels.

So a social gradients in arts and cultural participation is very clearly shown. However, the effects of our social background may change when our situation and circumstances change as well. Now, the first lockdown in the UK during the COVID-19 pandemic provided some insights into this. When asking participants their home-based arts engagement during a time when all cultural venues and events were closed, we found that people with greater educational level continued to engage more than their peers.

However, the pattern was different for household income. It shows that groups with different income actually shared very similar engagement levels. Now we can understand this through the behavioural change framework, which suggests that our behaviours can be changed via capabilities like skills and abilities, opportunities, and motivations.

So, on the one hand, people with high income might have been affected more by COVID because they were more likely to engage in activities that required fees, like entry fees for exhibitions or tickets for performances. So, once these arts venues were closed dip to, their engagement got interrupted. On the other hand, people with lower income might also have been increased their engagement because of greater opportunities, for example, an online platform increases accessibility to engage in the arts making them more available for people with internet, including those with lower income households, such as digital arts activities like virtual museum tours, online groups like internet book clubs, and virtual choirs, and streamed performances, such as concerts and plays.

Now, these findings are very encouraging because it shows that socioeconomic predictors may not be so fixed and that if we improve opportunities amongst people with lower income, we can then potentially narrow the gap in engagement between higher and lower income groups.

Now, in other influential predictor is gender. It has been shown that females are more likely to engage in the arts. Now, there are several theories explaining the gender inequality in engagement. These include a lack of role model, particularly at school where many arts teachers were females. We can say in these charts that in many cultural industries workforce over 50% of staff were females. Having said that, on average,

there are higher proportions of men in lead creative positions, decision making and executive roles such as museum governance.

Also, general expectations and socialisation may have linked to the idea of femininity (?) which have encouraged the cultivation of arts engagement amongst females. Females may also be more likely to invest in cultural capital by participating in arts and cultural activities in order to compensate for their less favourable social position.

Ethnicity is also a powerful predictor of arts and cultural engagement. In general, people of ethnic minorities engaged less than those from white ethnic backgrounds. However, different minority groups have various relationships with the arts. For example, with can see here at the bottom left chart, that individuals of Black or Black British background were more like to engage in performing arts, than people of white ethnic backgrounds. This could be related to religious or traditional events, cultural community celebrations, parades, festivals and involve activities like dancing and singing. So, it is important to differentiate ethnic minority groups and investigate their unique relationships with the arts.

However, sometimes this can be hard to do because of a lack of data particularly people of ethnic minority backgrounds tend to have a lower response rate in surveys. So, if we look at ethnic minorities as a whole and compare their engagement rate with the white majority, we found that they continuously engage less. There are three reasons for that. First, it is the psychological barriers. People from ethnic minority groups tends to have concerns about feeling uncomfortable when engaging in cultural and heritage and arts activities. They are also disproportionately more likely to be in lower socioeconomic poxes, which as we seen earlier that tends to associate with lower engagement levels.

Now we can see from these charts where ethnic minorities were more likely to be in the bottom fifth of incomes, although the proportions can vary again greatly amongst ethnic minority groups. And the final reasons for that, the final potential reasons for that could be where they live which may also affect their engagement rate.

Now, to understand how the impacts of where they live may influence their arts engagement, it is also quite interesting to understand how places or how neighbourhoods are characterised by the Office for National Statistics. Now, to understand the population size and statistics in different areas across the UK, the Office for National Statistics generate a radial plot and categorise areas on the basis of the distributions across five main statistics, including demographic structure, housing composition, socioeconomic position, and employment. Each area is assigned to one of these eight supergroups. So, including countryside living, cosmopolitan and student neighbourhoods.

What we found is that areas that are characterised as ethnically diverse professionals, which is here, have higher engagement rates particularly in cultural activities than industrial communities. Now, this is likely to be associated with residents, socioeconomic factors, which we can see from the table here that as soon as we can see there are the socioeconomic factors, the association disappeared. Which basically is suggesting that the reason why people living in these areas are more likely to engage in cultural activities possibly because of their socioeconomic backgrounds.

However, this is not the cases for those living in multicultural living neighbourhoods where their engagement rate is lower even when we conceded their socioeconomic factors. This suggests that individual backgrounds influence how likely people engage in the arts, place matters too, which brings to my next inequality, geographical barriers.

Now, given that our socioeconomic characteristics are reflected in the areas we live, it is expected that engagement rate is lower in more deprived areas, specifically in areas where there are lack of attainment and skills in local population, poorer local employment levels, higher numbers of people experiencing

income deprivation, and a greater risk of health conditions. Poor physical accessibility to housing and local services are also associated with reduced participation in the arts.

But there are other geographical differences that remained even after accounting for socioeconomic status. We also found that, for instance, those living in the northern parts of England engaged less than those in the south, and engagement is higher in the countryside than in industrial y and also in cosmopolitan student neighbourhoods where they offer various cultural events and activities.

But what is encouraging about the results is that in another study when we tried to look at the cultural attendance and mental health functioning by area deprivation levels, we found that regardless of where we live the impacts of cultural attendance on our mental health functioning can be seen amongst people living in deprived areas or people living in the least deprived areas. And particularly what is also very interesting is that we can see a steeper increase for those living in the most 10% deprived areas. This suggests that the mental health benefits of cultural attendance may be stronger for those living in more deprived areas.

However, inequalities do not just exist within a country, but also across countries where policies, norms and values, resources and investment may influence how likely people engage in the arts and cultural engagement. In the most recent study, we found we explored the proportions of older adults aged 65 and above engaging in creative hobbies across 16 countries, including the US, England, some parts of the European countries, China, and Japan. We found that Denmark, Sweden and Switzerland had the highest engagement levels, whereas Spain, Italy and China had the lowest engagement levels.

We then were very interested to explore some of the country-level predictors which may explain the differences in engagement rate across countries. So, when plotting the country engagement rate against some country-level predictors such as the country GDP and the world happiness index, we found a positive correlation meaning that oliving in countries with higher GDP or higher levels of country happiness are more likely to engage in hobbies.

But what is also interesting from this study is that even in countries where having a hobby is not as popular or where the GDP is comparatively lower or the country is less happier, having a creative hobby is still shown to support and improve citizens' mental health, so suggesting that the mental health benefits of creative hobbies may be universal.

Now, I have to admit that more research is needed to explore the country-level barriers and how all three layers of barriers, the individuals, geographical, and country levels, may interact with each other to influence our cultural behaviours.

So, I think I will ends my presentation here. Thank you so much for listening. I hope you enjoyed it. Please let me know if you have any questions.

BARBARA: Hello. Thank you so much, Karen. That is so interesting. I know, because I have looked at the full research, that literally you could talk for hours about different aspects, you know. So, obviously, we asked Karen to focus on particular aspects today but I think my colleagues have put the link to the full research in the chat. Do go and have a look at that. They've broken it down into chunks as well, so you can read bits of it and pick those things that you may find most interesting. Now Alison, have you got some questions ready?

ALISON: Yes. A useful first question, Karen is, "In your study, how do you define cultural activities or arts activities, that phrase? For example, would you include social clubs or pubs with entertainment. What defines a cultural activity?" The point was made that different socioeconomic groups have different cultural interests. And also, I think as you alluded to, that the cultures of ethnic minorities are different as well and especially in urban environments, right.

KAREN: Yes, that's right. It is a good question. In terms of defining the cultural activities we usually look at museum attendance or opera or attending opera, musicals, concerts, live performances, and heritage sites, and also galleries and art exhibitions. So, you're right: Cultural attendance and cultural engagement may be more influenced by our socio backgrounds. So, it might reflect that in terms of the activities, there may be a social class related in terms of the activities. I hope that answered the question.

BARBARA: Alison, yes?

ALISON: I'm trying to remember, Karen. Maybe you remember in the taking parts the Arts Council England survey, they include reading books as one of the activities or going to the cinema. Is that correct?

KAREN: Yes, so I have to think about the Taking Part. I can't remember the Taking Part survey, how they define the arts activities and whether or not they include reading for pleasure. As I mentioned at the very beginning of the presentation, it is that we try to measure arts and cultural engagement in lots of different ways, so we either group them together or we can categorise it between performing arts versus literature arts, or looking at specific activities. But one thing that we tried to change or we tried to change in the focus using categories is look at the active ingredients. They are likely to share common active ingredients. I think this is more important to categorise activities by active ingredients. It is, therefore, linked to health outcomes. We can try when categorising activities, we can have a different way to look into it.

BARBARA: Great. I think that's really clear and helpful. I just have a little follow up because there's been a few questions I think that have touched on this in the margins. When you talk about the active ingredients, do you find there's a difference between, you know, if you listen to music, watch a film, do whatever at home, or if you go and do that with other people in a room like in a cinema, or you go out to the theatre or a concert hall? And then thirdly, to actually playing an instrument or singing in a choir yourself? Is there a difference between active ingredients and outcomes between those three levels of engagement?

KAREN: I would say so but we haven't tested the active ingredients. We have theorised it but more empirical research would need to be done. I would say that these three types of engagement, they're very likely to share some common active ingredients while also have their own unique active ingredients which then leads to different types or similar types of mechanisms.

BARBARA: Thank you, that's really helpful. Alison, do you have another one?

ALISON: No, well, I do, there's a couple that follow-up from what we're talking about which is video games, do they get included? And, you know, there's a couple of questions that are about ... is there a bias coming in because of the types of cultural activity that are being counted? And also Sarah was asking about are people is this self-reported information from individuals or are they coming from certain venues and how would those venues be selected? Sorry, that's a long question, Karen.

KAREN: Yes, I will try to answer it. So, we do measure the cultural activities in different ways using different data. So just to be clear, we don't include video games. It is just the arts and cultural engagements. So, if we use population survey data, then we will use what the data is available, which may vary between different survey data. We'll try to group the activities together or categorise it into active participates or receptive engagement, or we try to look specific activities. We have done all three different measures when looking into wellbeing and health. We also conduct intervention study and very recently we have been looking at social prescribing schemes for children, looking at different types of activities and what might work and would interest children in taking part in social prescribing activities and what the outcomes are. In my presentation, I might have chosen some of the interesting research findings that might not have covered all types of research that use different measures. Please do read the full report. It might answer some of the questions.

ALISON: Thank you. I realise we're scrutinising you quite carefully! I put the link in already. We will send it too you, to the full report. If any data fans want to go back and look at the data, it is very available.

BARBARA: I just had a -- I think that's also made clear in the research. Is there research that you look at, is it just Europe, is it global? You alluded to it. If you just say quickly about that.

KAREN: Yes, most of the research has been done in the UK but we also look use US data and very recently we have also worked with scholars from across different countries, including from Japan, China and Europe, so then we are able to make comparison studies.

BARBARA: Somebody asked if we can save the chat. Yes, we are saving the chat. It will be cleaned up and sent to you as well. Alison, have you got the next question?

ALISON: Yes. A question on genre. "I'm interested in including paragraphs in funding or grant applications describing qualitatively the health benefits of classical music on an audience or a performer, is there anything in your research we could use?"

KAREN: Classical music, I'm not sure if we have looked specifically looked at classical music. We do look at music in general, listening to music or making music. I don't know if that might be helpful.

BARBARA: Yes, I think Jeff who asked the question, you will probably find that it's not genre dependent. That it is generally the participation or listening of music. Alison, I don't know, there's a question on long COVID and whether anybody's studied arts participates and the effect on that, do you know anything about that?

KAREN: Not on the long COVID, no. But we in our team, we run one of the largest UK survey data called COVID-19 Social Study where we followed over 70,000 participants across the UK to track their social and psychological experiences during lockdowns and through the pandemic between 2020 and 2022. In this data, we have looked into their engagement with the arts, whether it has been changed before and after the pandemic and also what were the barriers and who are the people more likely to engage in what types of arts. If you are interested, I'm very happy to send you the link as well.

BARBARA: Yes, I think that would be great. Someone asks, "Were the evidence of participation in the arts was clearly demonstrated in your slides. I had some difficulty in seeing quantitative increase in value. I wonder if you can comment on this."

KAREN: Yes, so it depends on how we measure the activities and also the outcomes. Sometimes we might standardise which makes the value quite small. But, on the other hand, we do find some of our findings do have quite minimal effects but I think what is also quite interesting is that even the effects might have been minimal, particularly we have also considered lots of different variables, like our social backgrounds, which are very influential to our health. We continue to see the impacts of arts, I think that's quite interesting to look at.

BARBARA: Brilliant. Thank you. And so we have talked about the positive effects. Do have any thoughts on the sudden deprivation of arts on women or children in refugee camps?

KAREN: We haven't been able to look at engagement in conflict zones but what we're trying to do, we are trying to gather as many data sets as possible around the globe, including across different continents and hopefully we will be able to see a fuller picture about the impacts of the arts and health and also the barriers and enablers of engagement particularly what might work in some other countries that might not work in different countries how we can learn from each other. Baa shall barb I guess this is in the same area.

BARBARA: Someone says, you know, is there any research on how long or a commitment ... so, for instance, if you're learning an instrument and I've been playing the trumpet for five years and every week I do something, is that different to me just doing a short choir project for four weeks? Can you see anything on that?

KAREN: Yes, we have researched looking into ... well, we have used different types of data to look at different periods of engagement. So, with the population survey data we are able to look at the effects of engagement in the arts and the health outcomes in, like, three or four or ten years after. We also have intervention study which followed participants for ten weeks when doing a programme and see what the impacts are or what the outcomes are. We have not been able to compare this -- they are different data sources so it is just a different research focus, but I think what is also very interesting which is a project that we would very much like to do and very much related to the question that you just asked is, how long we engage in the arts and whether that is more important or whether a specific time that we engage in the arts is more important in our health. So, we're not quite sure yet but we would love to find out more about. Is it a sensitivity period or length of period that matters or whether they both matter.

BARBARA: That's really interesting because you may find that the outcomes are different. So, if I play in the same band for five years, there's different social benefits to me just meeting people for one or two meetings, right.

KAREN: Exactly.

BARBARA: Yes, that's interesting. Thank you. We look forward to some research on that in due course. Alison, do you have something else?

ALISON: We did talk about social prescribing, is there some data that is specifically about music and social prescribing as different from other creative activities prescribed?

KAREN: I'm not sure about music in particular because I think the analysis on the effectiveness of the social prescribing is relatively preliminary and it is quite early analysis. I think more work would need to be done. And also it depends on the take-up rate of social prescribing schemes, so if it is quite low it is hard to have meaningful research calculations. So, we're trying to collect more data. But what is very exciting is that not only that we're conducting an intervention study on children's social prescribing schemes, but in one of the large data in the UK, they're going to -- in the next data collection, they will be collecting data around social prescribing, asking participants that are around 8,000 to 10,000 participants across the UK aged 15 and above and whether they have taken part in a social prescribing schemes and what types of activities they've taken part in, and what the impacts are. And so, I'm very looking forward to analysing the data.

BARBARA: Absolutely. It is so early days and we are trying to support groups with resources alongside we're working with the Singing for Health Network too to make it easier for music organisations to engage with social prescribing because it's quite difficult both for the social prescribers who might not know about music groups, and the music groups who don't know how to engage with the social prescribing. Sharon or Alison, if you could put the link to those resources in the chat, that might be useful to people.

ALISON: Here's a great question which is about sport and other things. Related to the question about intensity of engagement. It is often said that taking up any kind of exercise for any length of time at any age is beneficial, is that true for arts engagement?

KAREN: This is one of the research focus that I would love to do. So, we are trying to see whether there's a sensitivity period and whether we would need to participate at a particular age to receive the benefits or whether or not we can just participate at any time and we can still see the benefits. But I think what is also very interesting is that I think for physical activities, we have a lot of conceit evidence showing how great exercise is and now the focus on the arts provides an alternative activities for people to engage in that they might fit into different personal preferences in terms of activities' engagement.

ALISON: It would be fascinating to see. I'm interested in the research about the impact of playing music on your chances of developing dementia. Like, when would you have to start doing that to make it actually have those benefits? I'm trying to pick up the last questions. There's a lots of very interesting comments and there's some questions within them. We have got about another five minutes to ask questions. If you like

we haven't represented your question that was in a comment well, could you put the question in again and we will try and pick up a few more of those. Sue is asking, "Have you done any research on writers?" That's an interesting question.

KAREN: We haven't been able to do any research on writers yet. We did look at ... I think we did look at literature arts as a whole, so reading for pleasure, poetry writing, and creative writing, but not specifically on writing.

BARBARA: Great. I think we've done all of the questions that we could find and nobody seems to be unhappy that their question has not been answered. Karen has put her contact details in the slides as well, which you will have emailed too you after this event as well as a recording an edited version of the chat. So, I don't know, my brain is well on the way to exploding! So, you probably all feel like that. You can digest all of the fantastic information that Karen has condensed for us here into a mere hour and a half.

So, I just want to thank Karen very much for joining us today and to take the time to take us through some of these research findings. Please do go and look at the full research because it's really written in a way that, you know, non-scientists can understand which is really, really helpful for you to use it for, to talk to people about your activity or to apply for funding or whatever it is. Thank you very much, Karen. Thank you very much everybody for coming. Thank you to my colleagues for helping us wrestle the technology and questions. Have a good Friday and a lovely weekend! I look forward to seeing you another time. Thank you.

KAREN: Thank you.