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Summer 2020
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Another Benefit to Going to Museums? You May Live Longer

Despite the advancements in medicine and improvement in human standard of living around the world over the past few centuries, there is a persistent desire to relate lifestyle choices with our lifespan. This intention is fueled by diseases such as cancer that plague a large population of the developed countries, spurring people to find the cause for why they affect certain individuals while sparing the others. Recently, reports of heart diseases have increased among the younger population that seems to suggest that there are lifestyle and environmental factors that are causing negatively impacting life span of some people versus others who live longer. A 2019 article in the New York Times, reports that a research study done by British researchers shows that being involved in cultural expeditions like going to museums, theatre and opera reduces the likelihood of death.

The data cited in the article is from a research, published in the British Medical Journal, done on the English Longitudinal Study of Ageing on a cohort of 6710 community members of the age 50 and above. The article points out that according to the study, people who went to museums or theater a few times a month had a 31% reduced risk of dying compared to the people who didn't. It also points out that the study had controlled for socioeconomic factors such as income, education level and mobility. It must be pointed out at this time that the discussion in this essay presents a critique of the NYTimes article and not the original research study. The causal relationship is claimed in the newspaper article, while the original research only presents a correlational analysis on the data. The causal relationship, according to the article, is that "*people who expose themselves to the arts are likely to be more engaged in the world*" and that this leads to a longer life with a sense of purpose and meaning. The article also mentions arts "*reduce loneliness, promote empathy and emotions intelligence, and keep people from becoming sedentary – all factors that contribute to a longer life.*"

If we believe the claim to be true, we have to believe that the differentiating factor that causes some people to live longer than others is only their interest in art (museums, theatres and operas). It is possible that people who are interested in art activities are also conscious about good eating habits that leads to better health and longer life. Generally, art exhibitions and theatres are costly hobbies and it is possible that people who can afford these activities are wealthy enough to also afford healthy food, exercise habits (e.g. going to the gym, personal trainer), access to good health care and regular medical checkups. The observational study presented in the article, is presenting data about individuals who chose to engage in these activities instead of being recorded while performing these activities, randomly. There is a systematic bias in the observation: people who are choosing to engage in theatre, museum and

opera could potentially also be choosing to undertake other habits of healthy eating, exercise, regular visits to the doctor etc. which could contribute equally or more to their increased life spans. The article's author also claims that art engagement leads to *"reduced loneliness, higher empathy and higher emotional intelligence"* and that these factors, in turn, result in longer lifespans. This conclusion seems to be assuming that going to theatre and opera positively contribute to the above desired personal attributes. Besides, the author also assumes that these attributes do result in a longer lifespan but there isn't any data presented in the article that supports this claim. Lastly, the original research mentions that only people above the age of 50 were sampled for this experimental study but the news article generalizes the correlational results to all human populations.

Even though the study's researchers controlled for some of the socioeconomic variables during the study, it is impossible to control for all possible variables that can impact a person's lifespan. In order to test the causal claims of the new article, an experiment is required that observes a few thousand individuals over their adult life span. A selection of people should be sampled from population across multiple counties in a state. Then they should be assigned randomly to the treatment and control groups. In order to reduce the effects of interference between subjects in treatment and control, assignment can be done using a clustering method in which people in one county are all assigned to either treatment or control. Different counties can still be assigned randomly to either treatment or control groups. People in the treatment group will engage in art related activities like going to museums, operas and theatres while the people in the control group will never engage in these activities during the experiment. After a period of 50 years (sufficient such that there are enough deceased people to create a reasonably sized dataset), we can perform a statistical analysis on the life spans obtained from both groups. We start with the null hypothesis that there is no effect of art engagement on lifespan and check if the experimental data refutes that hypothesis.

Strong correlation is not a statement of causality. The article at question here demonstrates that there is a strong correlation (albeit in a limited dataset) between art engagement and longevity and makes the fallacious leap that there must be a causal relationship as well. In fact, as the discussion above has pointed out, there are many hidden variables that may be resulting in an overestimation of art engagement's impact on human lifespan. Observational studies use statistical analysis to lay out the strong correlations and measure (using statistical methods) on how certain correlation coefficients are likely given the observed data. These methods are useful but cannot be used to answer the causality question. For determining a causal relationship, we must use experimental methods that use randomization to remove sampling bias and perform an "apples-to-apples" between isolated variables by randomly assigning participants to treatment and control groups.