

## Report

2. What is the target variable in the dataset? What is the meaning of CDR score?

**Answer:** The target variable is the CDR score. The score determines if the patient has AD. CDR of 0 indicates no dementia and a CDR of 0.5, 1, 2, and 3 represent very mild, mild, moderate, and severe AD, respectively

3. Propose the hypothesis about the subject features that, in your opinion, can be connected with the further progress of AD disease. Explain your suggestions. For example:

"I expect to see different CDR score depending on the normalized whole brain volume (nWBV). Because during the AD progress, the brain volume reduces significantly"

**Answer:** Socioeconomic status and gender interact also in the development of Alzheimer's disease. Previous research found that low occupational status is associated with increased disease risk.[1,2]

Hasselgren et al., 2018; Qiu et al., 2003

4. Propose a similar hypothesis about possible features that can be extracted from MRI scans.

For example:

"I expect to see higher hippocampus volume for healthy group than for AD patients. Because the hippocampus is a first part of the brain which gets damaged after the onset of AD"

**Answer:** I expect to see a high volume of the entorhinal cortex (EC) and hippocampus in patients without Alzheimer's. EC and hippocampus are among the earliest parts of the brain affected by Alzheimer's Disease (AD). Kirsi Juotone et al found that volumetric measurements of both the entorhinal cortex and hippocampus have comparably high discriminative power in diagnosing Alzheimer's disease. They also found patients with Alzheimer's disease had significantly smaller volumes of the entorhinal cortex and hippocampus.

1. C. Hasselgren, H. Ekbrand, M.M. Fässberg, A. Zettergren, H. Zetterberg, K. Blennow, I. Skoog, B. Halleröd APOE  $\epsilon$ 4 and the long arm of social inequity: Estimated effects of socio-economic status and sex on the timing of dementia onset Ageing & Society, published online ahead of print (2018), pp. 1-25, 10.1017/S0144686X18000351
2. C. Qiu, A. Karp, E. von Strauss, B. Winblad, L. Fratiglioni, T. Bellander Lifetime principal occupation and risk of Alzheimer's disease in the kungsholmen project American Journal of Industrial Medicine, 43
3. Kirsi Juottonen, Mikko P. Laakso, Kaarina Partanen and Hilka Soininen American Journal of Neuroradiology January 1999, 20 (1) 139-144;  
Comparative MR Analysis of the Entorhinal Cortex and Hippocampus in Diagnosing Alzheimer Disease