

Novel Application of Digital Dementia Phenotyping and Risk Classification For Insurance and Longevity Risk Modeling



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Background/Introduction

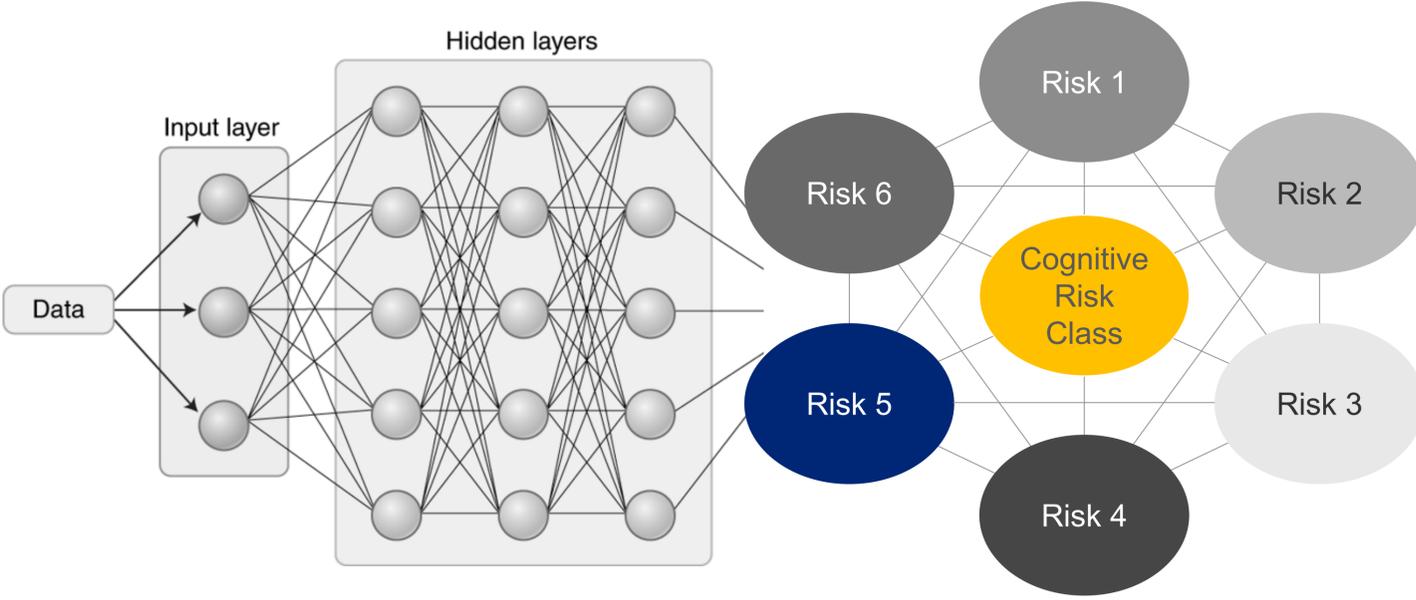
As the global prevalence of Alzheimer’s disease and related dementias (ADRD) continues to soar, risk bearing entities in both the public and private insurance and financial services sector will be faced to evaluate and estimate the cost of care, morbidity, and mortality for ADRD patients. Historically, insurance actuaries have evaluated ADRD from a homogenous risk perspective. Risk variability in dementia and multi-morbid risk is not considered during actuarial insurance risk modeling practices across various types of insurance products including long term care insurance (LTCI), pension longevity risk, life insurance, and health insurance in the public and private sector.

Methods

In a multi-carrier insurance deployment, Neurocern Inc, a neuroinformatics and data analytics company, applied a novel method to collect neurobehavioral and morbidity risk attributes for potential ADRD patients who were applying for LTCI claims benefits. Utilizing Neurocern’s proprietary analytics, risk attributes were collected on each ADRD patient over a 10-month time frame from carriers that represented over 1 million lives, and approximately more than \$50B in claims exposure. Digital dementia phenotypes and risk classifications were developed using Neurocern’s predictive analytics.

Figure:

Neurocern’s Neuroinformatics and Predictive Analytics



Results

A total of 228 patients (F=154, M=74) were assessed and the following cognitive domains were included: memory, visuospatial, behavioral, executive, language, and motor. Additional data such as functional status, claims data, and prescription data was collected on a subset of patients. MMSE and SPMSQ ranged between 1-30 and 0-10 respectively. Education level ranged from 8th grade to postgraduate level. Neurocern’s analytics created clustered risk classifications and the cost of care varied significantly between risk classes.

Conclusions

Neurocern’s predictive analytics created a first to market proprietary digital dementia risk classification score for insurance and longevity risk modeling. This research highlights the application of a multivariate ADRD actuarial risk modeling approach in insurance and longevity markets for estimating cost of care, morbidity, and mortality.