Social Work[er] Model:

a supervised machine learning model to predict mental health statuses from self-reported lifestyles factors for social work use

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Social workers access the mental health statuses among patients *before meetings to…*

build a mutual understanding
for timely referrals
to improve workflows
& more

utilizing a dataset of 250,000 surveyed, we can train a supervised machine learning model to predict on a lifestyle factor like mental health

Incidence of End-Stage Renal Disease Attributed to Diabetes Among Persons with Diagnosed Diabetes — United States and Puerto Rico, 2000–2014

Nilka Rios Burrows, MPH[1]; Israel Hora, PhD[1]; Linda S. Geiss, MA[1]; Edward W. Gregg, PhD[1]; Ann Albright, PhD[1]

250,000+ were surveyed across 20 lifestyle factors

Perceived Health

- Mental Health
- Health Burden Score*
- Physical Health
- General Health
- Difficulty Walking

Key:
(X) factors removed for
output variable in red

Background

- Age
- Any Healthcare
- Last DR's Visit
- Education
- Income

Health Factors

- Smoker
- BMI
- [Pre]Diabetes or Not
- Stroke
- (X) Heart Disease
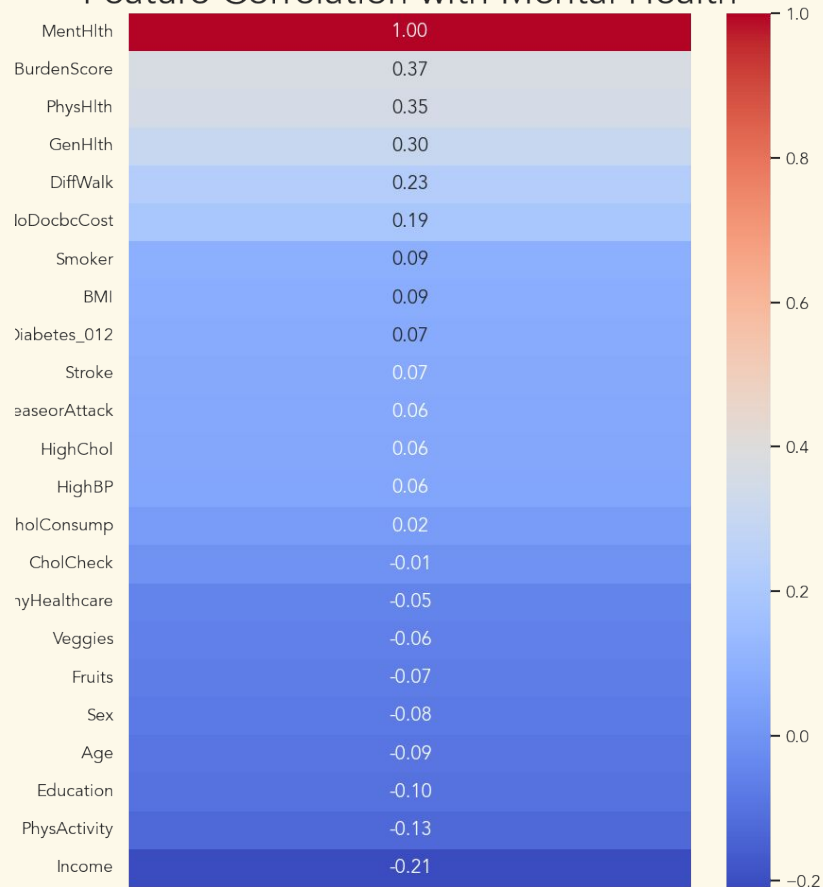- High Cholesterol
- High BP
- Heavy Alc.

Other

- Physical Activity
- (X) Veggies
- (X) Fruits

some factors correlated with mental health better than others...

Feature Correlation with Mental Health

MentHlth	1.00
BurdenScore	0.37
PhysHlth	0.35
GenHlth	0.30
DiffWalk	0.23
NoDocbcCost	0.19
Smoker	0.09
BMI	0.09
Diabetes_012	0.07
Stroke	0.07
easeorAttack	0.06
HighChol	0.06
HighBP	0.06
holConsump	0.02
CholCheck	-0.01
nyHealthcare	-0.05
Veggies	-0.06
Fruits	-0.07
Sex	-0.08
Age	-0.09
Education	-0.10
PhysActivity	-0.13
Income	-0.21

Model for Predicting Poor Avg. Mental Health Days

Random Forest Regression
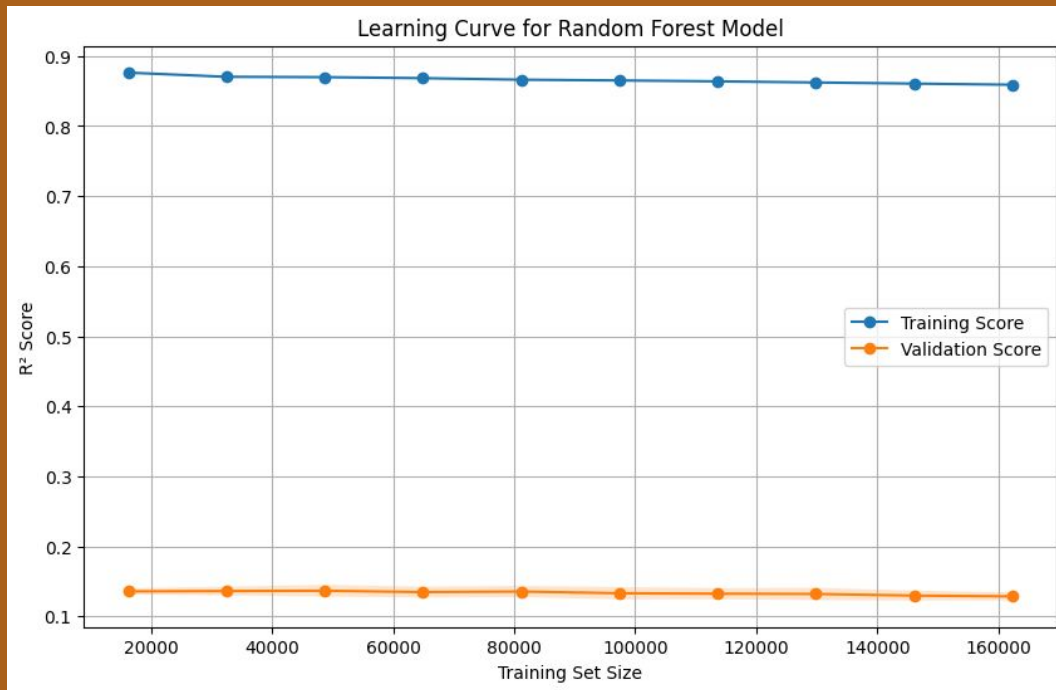
the model could likely be overfit... so, more attempts to follow!

TRAIN

R2: 0.85

MAE: 1.67

RMSE: 2.81

TEST

R2: 0.86

MAE: 1.63

RMSE: 2.81

CONCLUSIONS :
- *likely overfit…*
- *adding or removing factors / creating synthetic factors could help tune the model!*
- *a good first attempt*