

Supplementary Material

Machine learning to Determine Risk Factors for Myopia Progression in Primary School Children: the Anyang Childhood Eye Study

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The meanings of variables in this study

Continuous variables

SE: Spherical equivalent after cycloplegia

DUCVA: Distant uncorrected visual acuity

NUCVA: Near uncorrected visual acuity

CCT: Central corneal thickness

ACD: Anterior chamber depth

LT: Lens thickness

AL: Axial length

K1: The flat keratometry readings

K2: The steep keratometry readings

PUPIL_SIZE: Pupil diameter

NEARWORK_TIME: Time spent on near work (including schooldays and holidays)

TIME_OUTDOORS: Time outdoors (including schooldays and holidays)

ST: Total sleeping Time per day

BL: Birth length

HEIGHT: Height

PULSE: Pulse

IOP: Intraocular pressure

DBP: Diastolic blood pressure

SBP: Systolic blood pressure

HC: Head circumference

WAIST: Waist

WEIGHT: Weight

HOUSING_AREA: Area of living space

Categorical variables (Nominal variables)

MOTHER_AMBLYOPIA: Did the natural mother suffer from amblyopia?

MOTHER_STRABISMUS: Did the natural mother suffer from strabismus?

FATHER_STRABISUMUS: Did the natural father suffer from strabismus?

ALLERGY: Any allergic history on some foods? Such as milk, fish and shrimp, etc.

READ_IN_BED: Do you often read something when lie in bed?

GLASS: Do you wear glasses?

EYE_EXERCISES: Do you do Chinese eye exercises?

DESK_LAMP: When you are reading or doing close work, do you use a desk lamp?

OMT: Did your children receive any other myopia treatment?

ETEST: Do the children regularly take an eye test?

TUTOR1: Do your children take part in the tutoring class (outdoor sports) in their spare time?

TUTOR2: Do your children take part in the tutoring class (indoor learning class) in their spare time?

SIESTA: Do you have a siesta habit?

SHIFT: Do you exchange your seat with other students at regular intervals?

SOYMILK: Do you drink soya bean milk regularly?

GENDER: Gender

Remark:

The above variables are two classification variables. The variable selected into the model means "yes", and gender selected into the model means "girl".

ORIENTATION: The orientation of the child's bedroom window

Remark:

The above variable 'ORIENTATION' is more classification variables. In the multivariable analysis, ORIENTATION 1 means south, ORIENTATION 2 means west, ORIENTATION 3 means north. They are all compared with the east direction.

Categorical variables (Ordered variables)

COLA: How often do you drink a carbonated drink in the past 4 weeks? Including Coca Cola, Sprite, Mirinda, Jianlibao.

COFFE: How often do you drink coffee in the past 4 weeks?

SPORTDRINK: How often do you drink a sports drink in the past 4 weeks? Including pulsation,

red bull, treasure and so on.

TEA: How often do you drink tea in the past 4 weeks?

PUREWATER: How often do you drink pure water or mineral water in the past 4 weeks?

EGGEAT: How often do you eat eggs in the past 4 weeks?

FASTFOOD: How often do you usually eat a McDonald's, Kentucky, and other fast food in the past 4 weeks?

FRIES: How often do you eat a fried food in the past 4 weeks? Including French fries, potato chips, Pringles, bugles etc.

SWEETS: How often do you eat sweets in the past 4 weeks? Including cakes, snacks, ice cream, ice cream, etc.

JUICE: How often do you drink 100% fruit juice once in the past 4 weeks? As apple juice or orange juice.

MEATS: How often do you eat meat in the past 4 weeks? Including sausages, sausages, meat pies, etc.

MILK: How much milk do you usually drink a day? (including all types of milk)

NUTS: How often do you eat nuts in the past 4 weeks? Including walnuts, melon seeds, peanuts, almonds, cashew nuts, etc.

REDMEAT: How often do you eat red meat in the past 4 weeks? Including pork, beef, mutton, etc.

WATERDAILY: How much do you have a daily amount of water?

WHITEMEAT: How often do you eat white meat such as fish and chicken in the past 4 weeks?

D_TV: What is the distance between a child's seat from the TV when watching TV?

D_COMPUTER: When your child uses a computer, what is the distance between his / her seat and the computer?

D_VIDEO: When your child plays video games, such as a game machine, what is the distance between his / her seat and the screen?

D_BOOK: When your child reads / writes, please estimate the distance from the child's face to the book.

D_FTP: The distance between the tip of finger and pen when holding a pen.

READWEEKLY: Time on reading weekly.

BREAK: How long do your children usually keep reading or doing close work before a break?

MYOPICPARENTS: The number of myopia parents.

BOOKBORROW: How often do you borrow (or buy) a book from the library?

SUN1: What time is the sun shine appearing in the house in the morning?

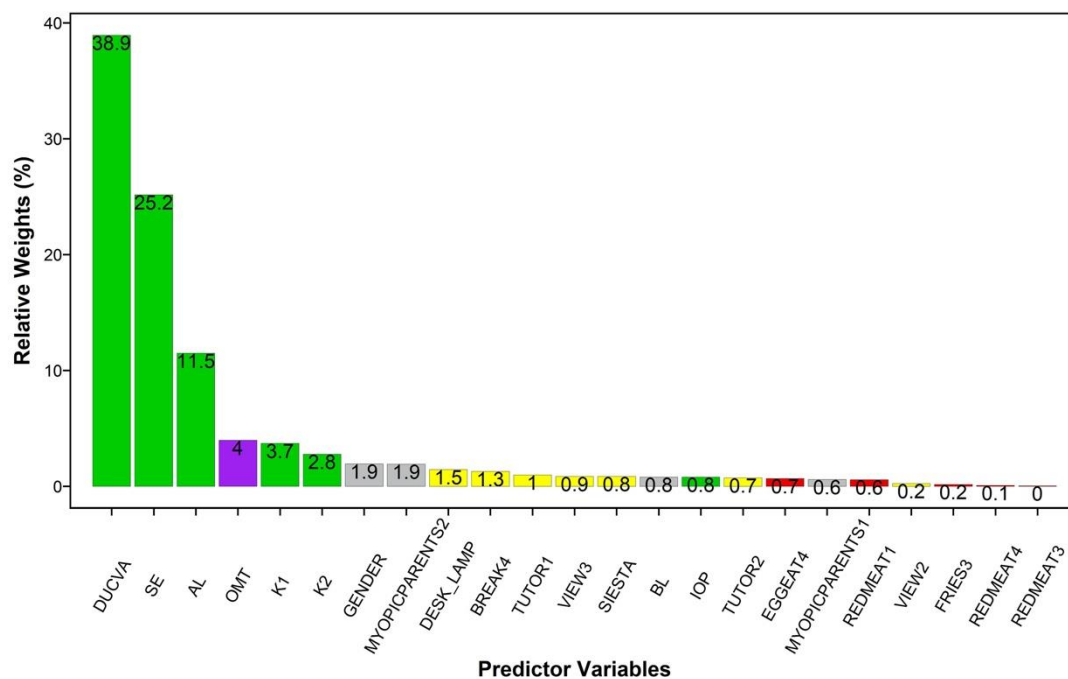
SUN2: What time is the sunshine disappearing in the house in the afternoon?

VIEW: How far can you see from the window of the child's bedroom window?

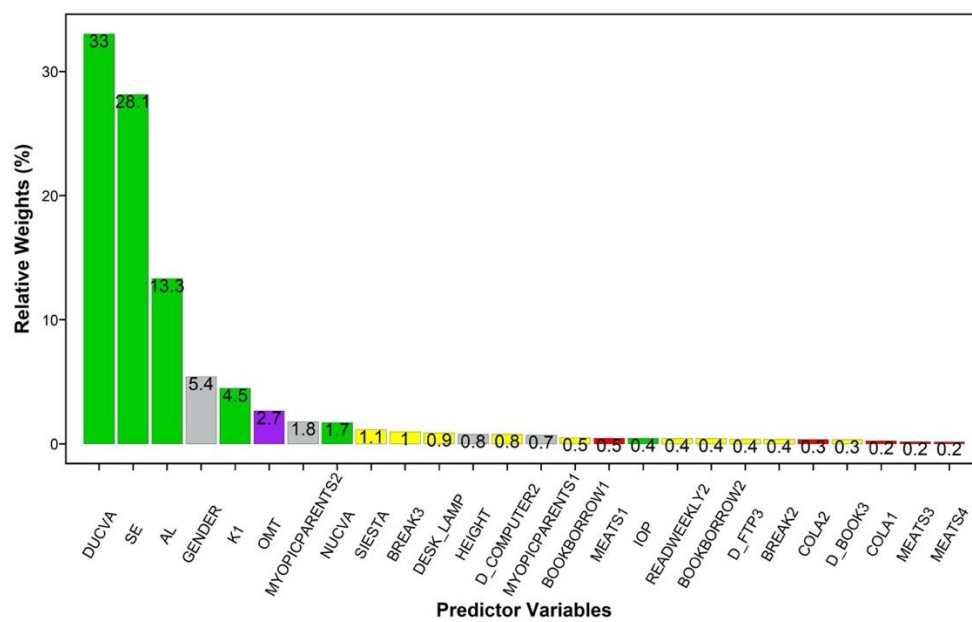
ROW: Which row do you sit in the classroom?

Remark:

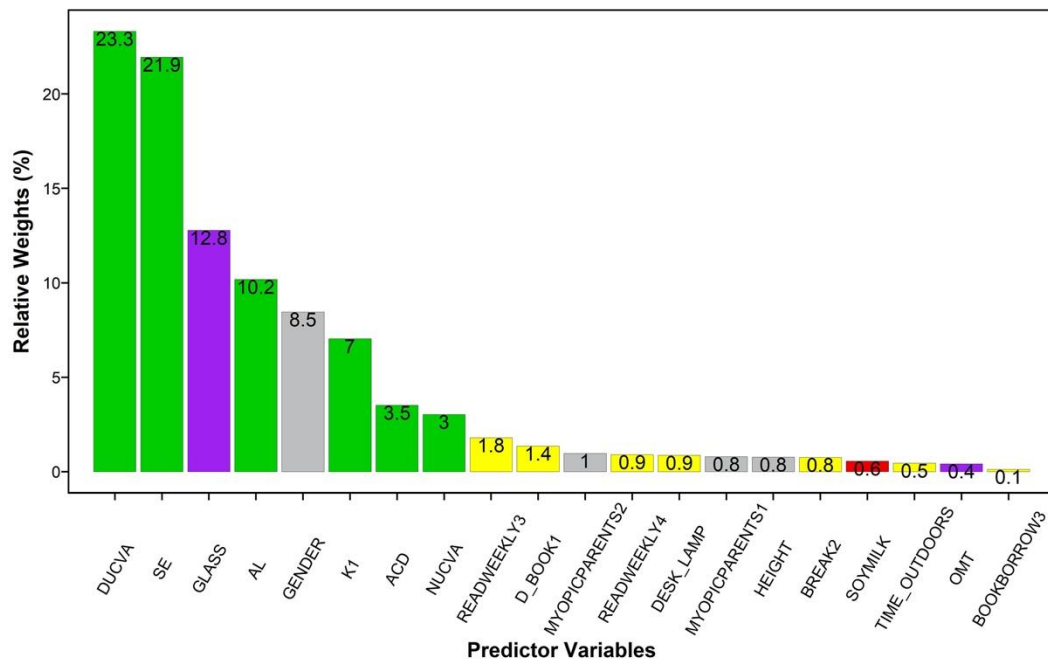
The above variables are ordered variables. In the multivariable analysis, the larger the number in the variable, the higher the rank is.



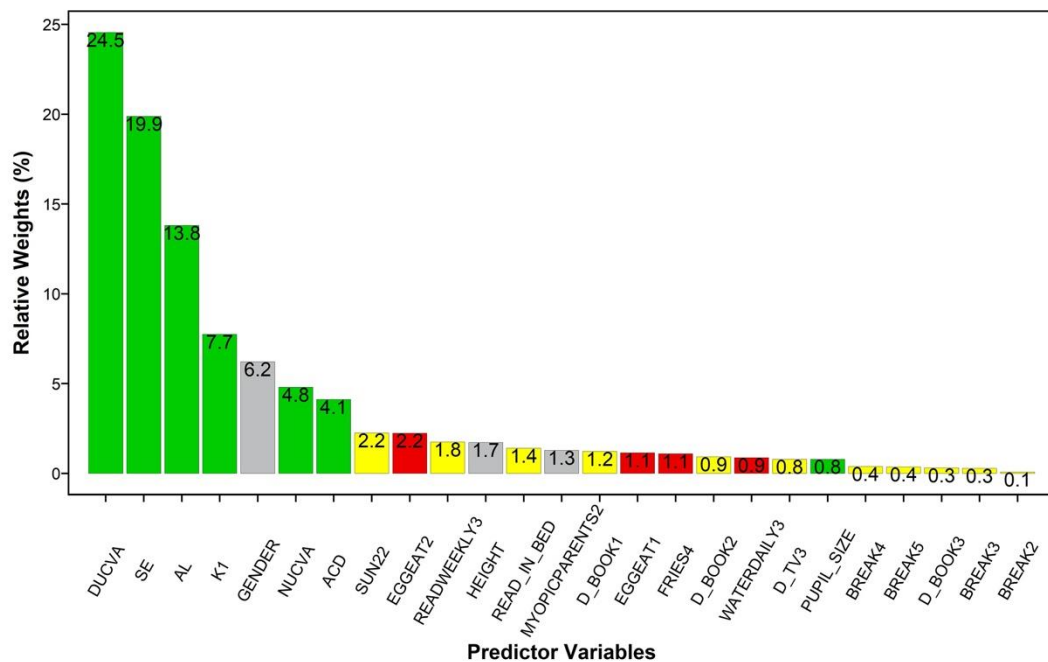
Supplementary Figure 1. Weights of variables in the models of the second year. Ocular parameters were shown in green, environmental factors in yellow, nutrition factors in red, genetic factors and gender in grey, myopia interventions in purple.



Supplementary Figure 2. Weights of variables in the models of the third year. Ocular parameters were shown in green, environmental factors in yellow, nutrition factors in red, genetic factors and gender in grey, myopia interventions in purple.



Supplementary Figure 3. Weights of variables in the models of the fourth year. Ocular parameters were shown in green, environmental factors in yellow, nutrition factors in red, genetic factors and gender in grey, myopia interventions in purple.



Supplementary Figure 4. Weights of variables in the models of the fifth year. Ocular parameters were shown in green, environmental factors in yellow, nutrition factors in red, genetic factors and gender in grey.