My rules:

1. in order to predict mental status, feelings and expression are not included in the features.

2. over detailed properties are not required or not necessary for this training.

There are two classes, sources and symptoms. And they all have long term and short period affects. So long term means the properties in a period alternatively the changes of properties present the effect on short term.

??????????? 1 healthy, 0 unhealthy

1 Normally, 0 less normally

add column of marking adding data\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Long term facts (properties)

1. Physical activity (range)(work, leisure)

2. Physical activity (range)(leisure)

3. Disability (binary)

4. Physical difficulty (binary)

5. Healthcare equipment use (binary)

6. Food expenditure percentage of family spending (ratio)

7. Eat out percentage of all food spending (ratio)

8. Home prepared meals percentage (ratio)

9. Dilemma decision on fast food and nutrition (binary)

10. Barely care about nutrition (binary)

11. Consider diet is healthy (binary)

12. consume milk less than normal (binary)

13. drink regular milk (binary)

14. worry about household food security (range)

15. Family poverty level (range)

16. weight loss due to unsafe methods like surgery, vomit or smoke (binary)

17. unintentionally weight change (binary)

18. tried to lose weight (binary)

19. Covered by insurance(binary)

20. if regular drinker? (binary)

21. if heavy drinker ? (binary)

22. Job security (range)

23. Having a history of Drug use(binary)

24. taking prescription medicine recently(binary)

25. frequency of aspirin use(range)

26. own house(range)

27. having asthma or had asthma in past year(binary)

28. episode of hay fever in past year (binary)

29. treatment of anemia past three month(binary)

30. having psoriasis? (binary)

31. Doctor ever said you were overweight (binary)

32. controlling weight or diet or exercising? (binary)

33. having/had celiac desease? (binary)

34. Difficulties in thinking or remembering (binary)

35. having gluten-free diet(binary)

36. ever blood transfusion (binary)

37. having/had arthritis (binary)

38. heart problem like heart failure, heart disease, angina pectoris, heart attack, stroke(binary)

39. had lung problem, emphysema, chronic bronchitis, COPD(binary)

40. had thyroid problem(binary)

41. having thyroid problem(binary)

42. having chronic bronchitis (binary)

43. had liver condition, jaundice (binary)

44. having liver condition (binary)

45. had cancer, malignancy (binary)

46. routine place to go for healthcare (binary)

47. times received healthcare over past year(range)

48. Overnight hospital in last year (binary)

49. overnight hospital times in last year(range)

50. seen mental health professional past year(binary)

51. have head cold or chest cold last month(binary)

52. have stomach or intestinal illness last month(binary)

53. have flu, pneumonia, ear infection? (binary)

54. donated blood in past year (binary)

55. having Taste/Smell problem(range)

56. had persistent dry mouth last year(binary)

57. frequent nasal congestion(binary)

58. Ever had wisdom teeth removed(binary)

59. Ever had Tonsils removed(binary)

60. head injury happened(binary)

61. Broke nose or serious injury to face/skull(binary)

62. ever had two or more sinus infections (binary)

63. ever had 3 or more ear infections (binary)

64. past year need dental but couldn't get it(binary)

65. aching in mouth last year(range)

66. serious dental problems affected work or attending school(range)

67. embarrassed due to mouth last year(range)

68. Ever had treatment for gum(binary)

69. teeth loose or having problem without injury(binary)

70. use dental floss/ device or mouthwash (ratio)

71. have diabetes(binary)

72. risk for diabetes, or having prediabetes (binary)

73. having high blood pressure(binary)

74. if take prescribed medicine for high blood pressure(binary)

75. if take blood pressure at home(binary)

76. having high cholesterol level (binary)

77. if take prescription medicine for cholesterol(binary)

78. trouble in sleeping(binary)

79. Kidney problem, kidney stone...(binary)

80. Leak urine during physical activities(binary)

81. Leak urine during non-physical activities (binary)

82. Urinated before reaching the toilet (binary)

83. Cardiovascular disease like pain, shortness of breath (binary)

84. have sunburn in last year (binary)

85. Broken or fractured hip/wrist/spine/osteoporosis/brittle bones (binary)

86. ever had Hepatitis B/C(binary)

87. Received Hepatitis A vaccine (range)

88. Received Hepatitis B vaccine (range)

89. Received HPV vaccine (range)

90. muscles sore/painful (range)

91. now smoke/use tobacco (binary)

92. quit smoking or tried to (binary)

93. Second-hand smoke exposure (binary)

94. Household Smokers (range)

Short period activities (changes)

1. recently doesn’t work

DCQ150(3+4+missing) check if missing SP input any other question in DCQ

2. Health compared with 1 year ago

HUQ020 1 is 1, 2 is 0, others are 0.5

How to generate features from data source

1. 2.Physical activity (MET scores)

keep binary questions PAQ605, PAQ620, PAQ635, PAQ650, PAQ665

| **Variable** | **Label**  **per week** | **Score** |
| --- | --- | --- |
| PAD615 \* PAQ610 | Vigorous work-related activity | 8.0 |
| PAD630\* PAQ625 | Moderate work-related activity | 4.0 |
| PAD645\* PAQ640 | Walking or bicycling for transportation | 4.0 |
| PAD660\* PAQ655 | Vigorous leisure-time physical activity | 8.0 |
| PAD675\* PAQ670 | Moderate leisure-time physical activity | 4.0 |

Further feature is MET scores which are calculated by summed of above all variables.

MET: One MET is defined as 1 kcal/kg/hour and is roughly equivalent to the energy cost of sitting quietly

vigorous is 1, moderate is 0.5, other is 0 (work, leisure)

1. work-related physical activities

PAQ605, PAQ620, PAQ635, vigorous is 1, moderate is 0.5, walk is also 0.5, other is 0

2. leisure-time physical activities

PAQ650, PAQ665 vigorous is 1, moderate is 0.5, other is 0

3. disability

summary of DLQ010, DLQ020, DLQ040, DLQ050, DLQ060, DLQ080, any one true is true

4. Physical difficulty (binary)

Summary of PFQ.049, PFQ.051, PFQ.057 AND PFQ.059, any one true is true

5. Healthcare equipment use (binary)

Summary of PFQ.054, PFQ.090, any one true is true

6. Food expenditure percentage of family spending (ratio)

(CBD070+ CBD110+CBD120+CBD130) /(CBD070+ CBD110+CBD120+CBD130+CBD 090)

7. Eat out percentage of all food spending (ratio)

(CBD120+CBD130)/(CBD070+ CBD110+CBD120+CBD130)

8. Home prepared meals percentage (ratio).

DBD895 / 21

9. Dilemma decision on fast food and nutrition (binary)

[CBQ540(1)] in CBQ505

10. Barely care about nutrition when eat-out(binary)

CBQ545,CBQ590, choose 3 or 4 in either will be 1

11. Consider diet is healthy (binary)

DBQ700 (1 + 2 +3) is 1 others are 0

12. consume milk less than normal (binary)

DBQ197 (0 + 1) is 0 others are 1

13. drink regular milk (binary)

DBQ223A(10) is 1 others are 0

14. worry about food security (range)

FSDHH 1 is 1, 2 is 0.7, 3 is 0.4, 4 is 0 others are 0.7

15. Family poverty level (range)

INDFMMPC 1is 0, 2 is 0.5, 3 is 1 others are 0.5

16. weight loss due to surgery, vomit, smoke, Non-RX medicines (binary)

WHD080K, WHD080J, WHD080P, WHD080u

17. unintentionally weight change (binary)

WHQ060 2 is 0 others are 1

18 tried to lose weight

WHQ070 1 is 1 others are 0

19. Covered by insurance(binary)

HIQ011 1 is 1 others are 0, but if HIQ270(2) or HIQ210(1) and HIQ011(1) then give a value of 0.5

20. if regular drinker? (binary)

ALQ120QALQ120UALQ141QALQ141U

21. if heavy drinker ? (binary)

ALQ151(1), ALQ160(4~30) or ALQ130(4~25) are 0

22. Job security (range)

make it levels like government full-time,. Business part-time ….

OCQ180, ocq390g

23. Drug use

ever in DUQ positive is 1

24. taking prescription medicine recently(binary)

RXDUSE 1 is 0, 2 is 1 other is 0

25. frequency of aspirin use(range)

RXQ525G 1is 0, 2 is 0.25, 3 is 0.5, others are 1

26. own house(range)

HOQ065 1 is 1, 2 is 0, 3 is 0.5,

27. having asthma or had asthma in past year(binary)

if any of MCQ010 + MCQ035 + MCQ040 + MCQ050 is 1, 0 others are 1

28. episode of hay fever in past year (binary)

AGQ030 1 is 0, 2 or others are 1

29. treatment of anemia past three month(binary)

MCQ053 1 is 0, 2 or others are 1

30. having psoriasis? (binary)

MCQ070(1) or MCQ075(1,2,3,4) is 0, 2 or others are 1

31. Doctor ever said you were overweight (binary)

any of MCQ080, MCQ365a, MCQ365b, MCQ365c, MCQ365d: 1 is 0, 2 or others are 1

32. lose weight now or exercise, diet

any of MCQ370a, MCQ370b, MCQ370c, MCQ370d, : 1 is 0, 2 or others are 1

33. having/had celiac desease? (binary)

MCQ082 1 is 0, 2 or others are 1

34. Difficulties in thinking or remembering (binary)

MCQ084 1 is 0, 2 or others are 1

MCQ380 1,2,3,4 are 0, others are 1

35. having gluten-free diet(binary)

MCQ086 1 is 0, 2 or others are 1

36. ever blood transfusion (binary)

MCQ092 1 is 0, 2 or others are 1

37. having/had arthritis (binary)

MCQ160a 1 is 0, 2 or others are 1

38. heart problem like heart failure, heart disease, angina pectoris, heart attack(binary)

any of MCQ160b, MCQ160c, MCQ160d, MCQ160e, MCQ160f: 1 is 0, 2 or others are 1

39. had lung problem, emphysema(binary)

MCQ160g, MCQ160k, MCQ160o :1 is 0, 2 or others are 1

40. had thyroid problem(binary)

MCQ160m :1 is 0, 2 or others are 1

41. having thyroid problem(binary)

MCQ170m :1 is 0, 2 or others are 1

42. having chronic bronchitis (binary)

MCQ170k: :1 is 0, 2 or others are 1

43. had liver condition (binary)

MCQ160i, MCQ203:1 is 0, 2 or others are 1

44. having liver condition (binary)

MCQ170i:1 is 0, 2 or others are 1

45. had cancer, malignancy (binary)

MCQ220:1 is 0, 2 or others are 1

46. routine place to go for healthcare (binary)

HUQ030 1 and 3 are 1, 2 is 0

47. times received healthcare over past year(range)

HUQ051 0 is 1, 1 is 0.9, 2 is 0.8 ,…. 8 is 0, others are 1

48. Overnight hospital in last year (binary)

HUQ071 1 is 0, 2 is 1, others are 0.5

49. overnight hospital times in last year(range)

HUQ080 others are 1, 1 is 0.8, 2 is 0.6, 3 is 0.4, 4 is 0.2, 5 and 6 are 0

50. seen mental health professional past year(binary)

HUQ090, 1 is 0, 2 is 1, others are 0.5

51. have head cold or chest cold last month(binary)

HSQ500 1 is 0, 2 is 1, others are 0.5

52. have stomach or intestinal illness last month(binary)

HSQ510 1 is 0, 2 is 1, others are 0.5

53. have flu, pneumonia, ear infection? (binary)

HSQ520 1 is 0, 2 is 1, others are 0.5

54. donated blood in past year (binary)

HSQ571 1 is 0, 2 is 1, others are 0.5

55. having Taste/Smell problem(range)

any of [csq160(1) csq180(1) csq190(1)] is 0, any of [csq010(1), csq040(1), csq080(1)] is 0.3

[csq030(1), csq090A(2), csq090B(2), csq090C(2), csq090D(2), csq110(1)] is 0.6

[csq100(1)] is 0.9

others are 1

56. had persistent dry mouth last year

CSQ202, 1 is 0, 2 is 1, others are 1

57. frequent nasal congestion(binary)

csq204 1 is 0, 2 is 1, others are 1

58. Ever had wisdom teeth removed(binary)

csq210 1 is 0, 2 is 1, others are 1

59. Ever had Tonsils removed(binary)

csq220 1 is 0, 2 is 1, others are 1

60. head injury happened(binary)

csq240 1 is 0, 2 is 1, others are 1

61. Broke nose or serious injury to face/skull

csq250 1 is 0, 2 is 1, others are 1

62. ever had two or more sinus infections (binary)

csq260 1 is 0, 2 is 1, others are 1

63. ever had 3 or more ear infections (binary)

AUQ136 1 is 0, 2 is 1, others are 1

64. past year need dental but couldn't get it(binary)

OHQ770 1 is 0, 2 is 1, others are 1

65. aching in mouth last year(range)

OHQ620 1 is 0, 2 is 0.3, 3 is 0.6, 3 is 0.9, 5 or others are 1

66. serious dental problems affected work or attending school(range)

OHQ640 1 is 0, 2 is 0.3, 3 is 0.6, 3 is 0.9, 5 or others are 1

67. embarrassed due to mouth last year(range)

OHQ680 1 is 0, 2 is 0.3, 3 is 0.6, 3 is 0.9, 5 or others are 1

68. Ever had treatment for gum(binary)

OHQ850 1 is 0, 2 is 1, others are 1

69. teeth loose or having problem without injury(binary)

any of [OHQ855 OHQ865] 1 is 0, 2 is 1, others are 1

70. use dental floss/ device or mouthwash (ratio)

any [OHQ870 OHQ875]: 0 to 7 are number/7, others are 0;

71. have diabetes(binary)

DIQ010 :1 is 0, 2 is 1, others are 1

72. risk for diabetes, or having prediabetes (binary)

any[DIQ160, DIQ170, DIQ172]: 1 is 0, others are 1

73. having high blood pressure(binary)

any[BPQ020 BPQ030]: 1 is 0 others are 1

74. if take prescribed medicine for high blood pressure(binary)

any[BPQ040A, BPQ050A]: 1 is 0 others are 1

75. if take blood pressure at home(binary)

any [ BPQ056, BPQ059 ] : 1 is 0 others are 1

76. having high cholesterol level (binary)

BPQ080: 1 is 0 others are 1

77. if take prescription medicine for cholesterol(binary)

any [BPQ090D, BPQ100D]: 1 is 0 others are 1

78. trouble in sleeping(binary)

any [ SLQ050, SLQ060 ]: 1 is 0 others are 1

79. Kidney problem, kidney stone...(binary)

any [KIQ022, KIQ026] : 1 is 0 others are 1

80. Leak urine during physical activities(binary)

KIQ042: 1 is 0 others are 1

81. Leak urine during non-physical activities (binary)

KIQ046: 1 is 0 others are 1

82. Urinated before reaching the toilet (binary)

KIQ044: 1 is 0 others are 1

83. Cardiovascular disease like pain, shortness of breath (binary)

any [ CDQ001, CDQ002, CDQ003, CDQ005, CDQ008, CDQ010 ]: 1 is 0 others are 1

84. have sunburn in last year (binary)

DEQ038G : 1 is 0 others are 1

85. Broken or fractured hip/wrist/spine (binary)

any [OSQ010a, OSQ010b, OSQ010c, OSQ080, OSQ060]: 1 is 0 others are 1

86. ever had Hepatitis B/C(binary)

any [ HEQ010, HEQ030 ]: 1 is 0 others are 1

87. Received Hepatitis A vaccine (range)

IMQ011: 1 is 1, 2 is 0.5, 3 or others are 0

88. Received Hepatitis B vaccine (range)

IMQ020: 1 is 1, 2 is 0.5, 3 or others are 0

89. Received HPV vaccine (range)

any [IMQ040, IMQ070]: 1 is 1, 2 is 0, others are 0

90. muscles sore/painful (range)

any [ CKQ020, CKQ030, CKQ040, CKQ060 ]: 1 is 0, 2 and others are 1

91. now smoke (binary)

SMQ040: 1 is 0, 2 is 0.5, 3 or others are 1

SMQ681: 1 is 0, others are 1

SMDANY: 1 is 0, others are 1

92. quit smoking or tried to (binary)

SMQ050Q: 1to90 and 66666 are 1, others are 0

SMQ670: 1 is 1, others are 0

SMQ863: 1 is 1, others are 0

93. Second-hand smoke exposure (binary)

any [SMQ858, SMQ862, SMQ868, SMQ872, SMQ876, SMQ880] 1 is 0, others are 1

94. Household Smokers (range)

any [SMD460, SMD470] 3 is 0, 2 is 0.4, 1 is 0.7, 0 and others are 1

SMD480: 7 is 0, 6 is 0.1, 5 is 0.2, 4 is 0.3, 3 is 0.4, 2 is 0.5, 1 is 0.7, 0 and others are 1