

# 中国女性群体皮肤本态洞察

## 蓝皮书 (2025)



上海肤焕科技有限公司

上海微谱检测科技集团股份有限公司

上海日用

“

”

5000

18-65

6

”

“

+

“

”



\*

\*

\*

|       |             |    |
|-------|-------------|----|
|       | .....       | 1  |
| 1.1   | .....       | 1  |
| 1.2   | “ ” .....   | 1  |
| 1.3   | .....       | 3  |
| 1.4   | .....       | 3  |
|       | “ × ” ..... | 7  |
| 2.1   | .....       | 7  |
| 2.2   | .....       | 10 |
| 2.2.1 | .....       | 10 |
| 2.2.2 | .....       | 12 |
| 2.3   | .....       | 15 |
| 2.4   | .....       | 19 |
| 2.5   | .....       | 23 |
| 2.5.1 | .....       | 23 |
| 2.5.2 | alpha ..... | 24 |
| 2.6   | .....       | 25 |
| 2.6.1 | .....       | 25 |
| 2.6.2 | .....       | 30 |
| 2.7   | .....       | 31 |
| 2.8   | .....       | 34 |
| 2.9   | .....       | 36 |
| 2.9.1 | .....       | 36 |
| 2.9.2 | alpha ..... | 38 |
|       | “ ” .....   | 42 |
| 3.1   | .....       | 42 |

|       |   |       |    |
|-------|---|-------|----|
| 3.1.1 | — | ..... | 42 |
| 3.1.2 |   | ..... | 43 |
| 3.1.3 | — | ..... | 44 |
| 3.1.4 | — | ..... | 45 |
| 3.1.5 | — | ..... | 46 |
| 3.2   |   | ..... | 48 |
| 3.2.1 |   | ..... | 48 |
| 3.2.2 |   | ..... | 49 |
| 3.2.3 | — | ..... | 50 |



1.1

“ ”

1.2

“ ”

• 5000 “ 18-25 /26-35 /36-45 /46-55

•

1

2

DermaLab Hydration Pin  
 Tewameter TM nano  
 Meibometer MB560  
 illumina PE 250

- 
- 
- 

### 1.3

#### 1.

1 - ANOVA  
 K-W  
 2 -  
 Tukey HSD Test  
 Dunn  
 3 /  $\chi^2$  /

#### 2.

:  
 1 :  
 Spearman Pearson  
 pH  
 2 / :  
 “ ” L\*

#### 3.

$\alpha$  Shannon Simpson  
 / Propionibacterium Staphylococcus

### 1.4

2018





2019

Simpicare

“ ”

1

“ x ”

“ x ”

200

“ ”

## 2.1

L b

1 ITA

ITA

44%

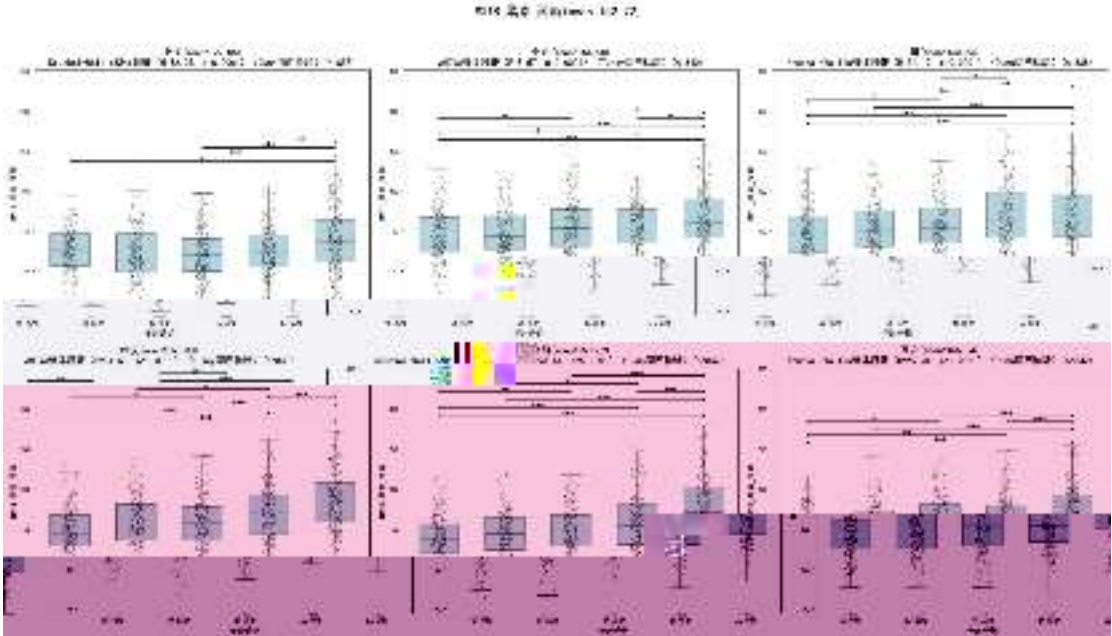
ITA

35

18

65

2



2.2 MX18\_ \_

2.2

10%

55

3

3



“ × ”



2.4 Vplus\_ %

2.4 %

20%

5

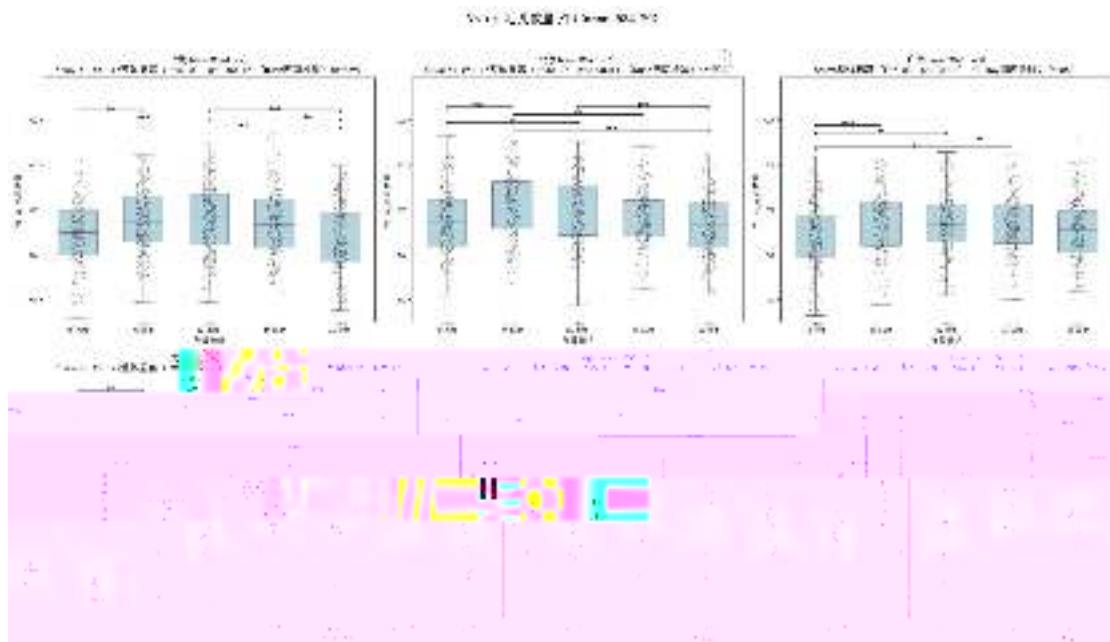
“

”

2.2



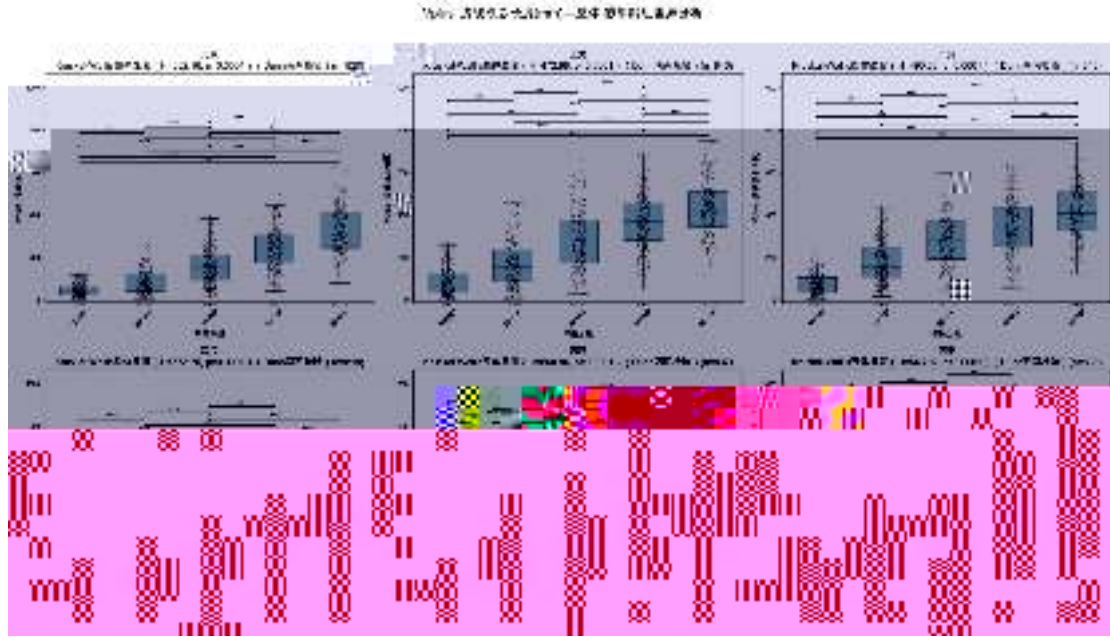
2



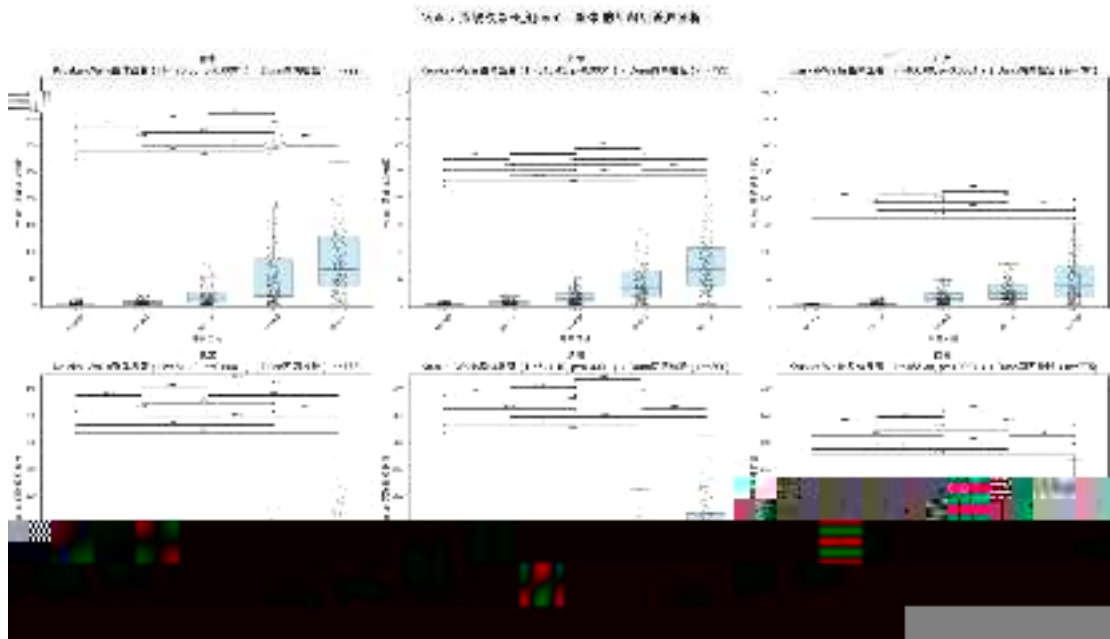
## 2.6 Vplus\_

“ ” “ ”

“ X ”



2.8 Vplus\_ mm



2.9 Vplus\_ mm

2.8 2.9

“ × ”



2.10 Vplus\_  $\mu\text{m}$  -

2.10 35

4

25

35

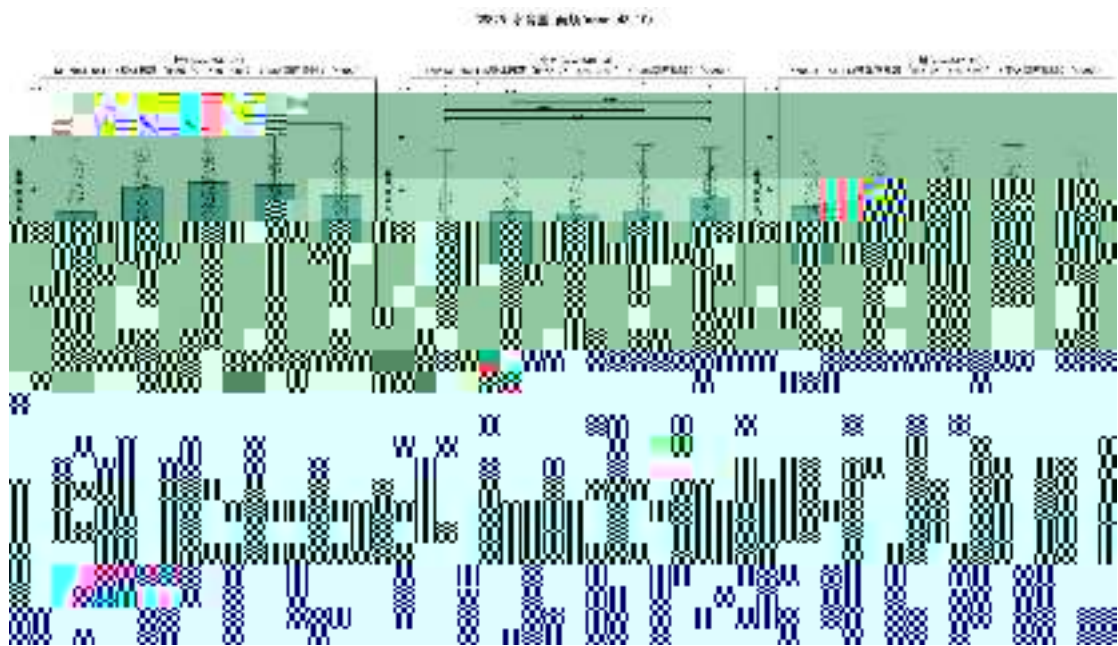
2.3

“ ” “ ”

TEWL

pH

1



2.11 CM825\_ \_

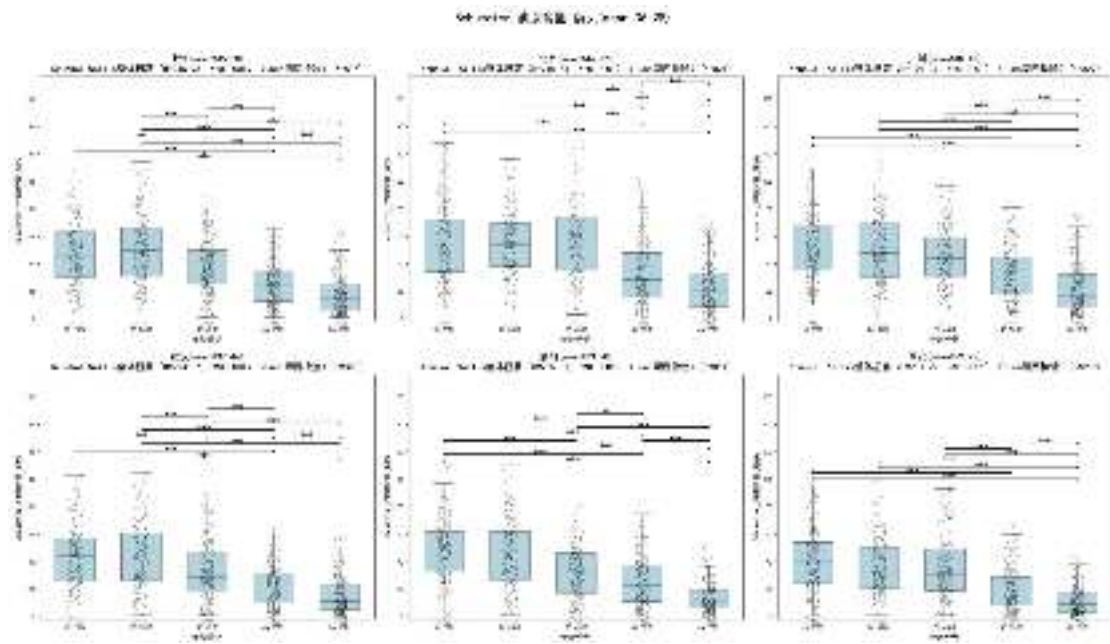
2.11

40

20 60

2 TEWL

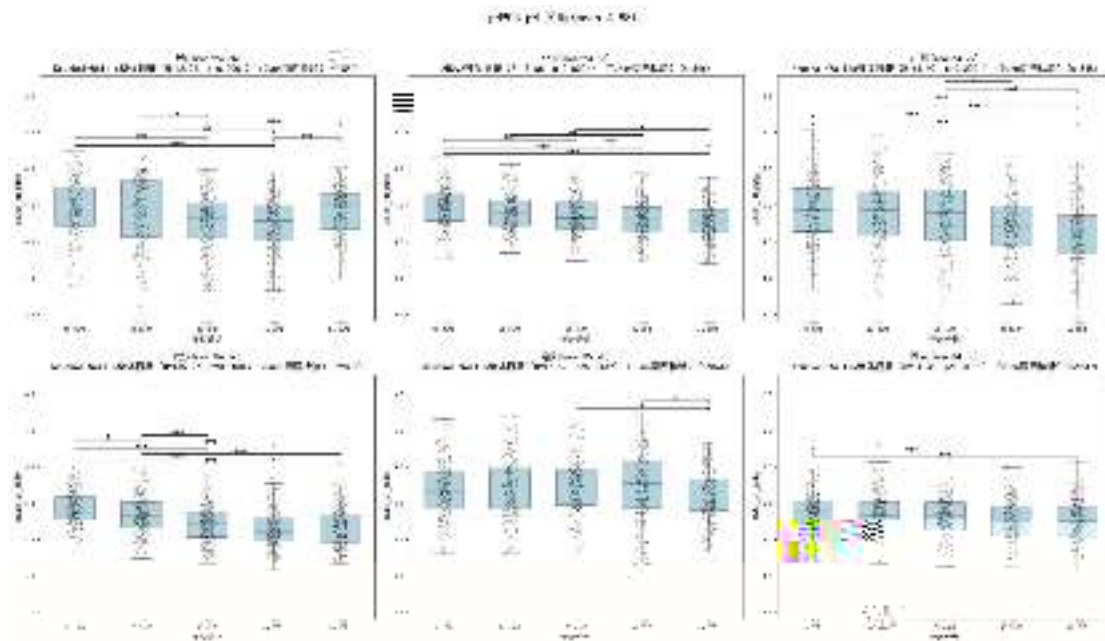




2.13 Sebumeter\_

2.13

“ x ”



2.14 pH905\_pH\_

pH 4.0-5.5

2.14

pH

3

“ pH

”

5000

pH

45

pH

pH

4.5

3

pH

U

25

45

pH

45

pH

5

pH

5

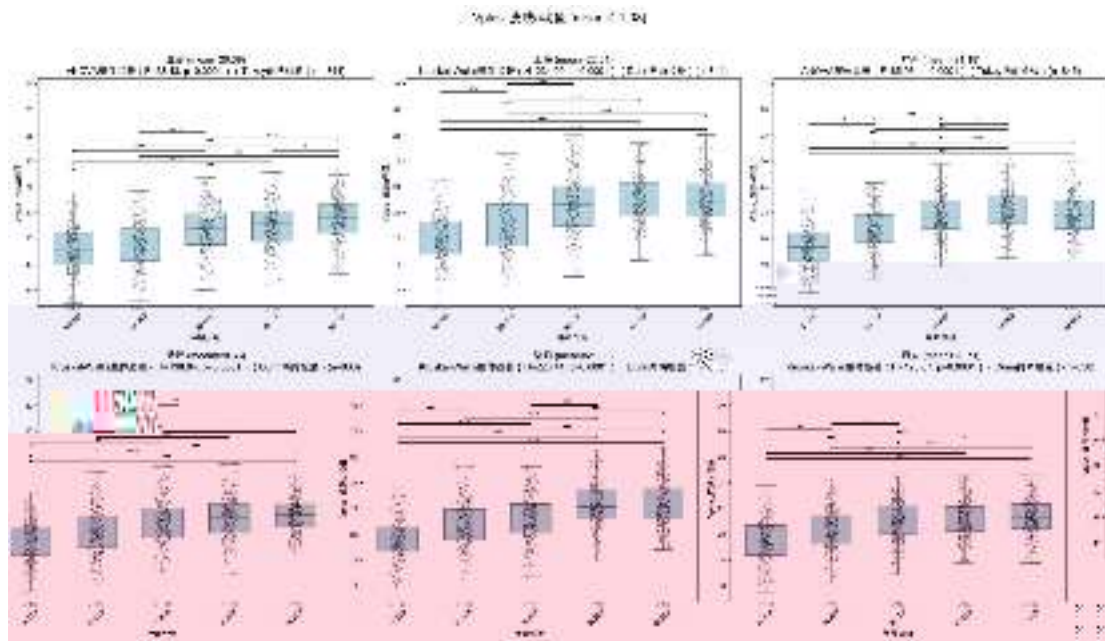
40

“

”

2.4

“ × ”



2.16 Vplus\_ a

a

2.16

18

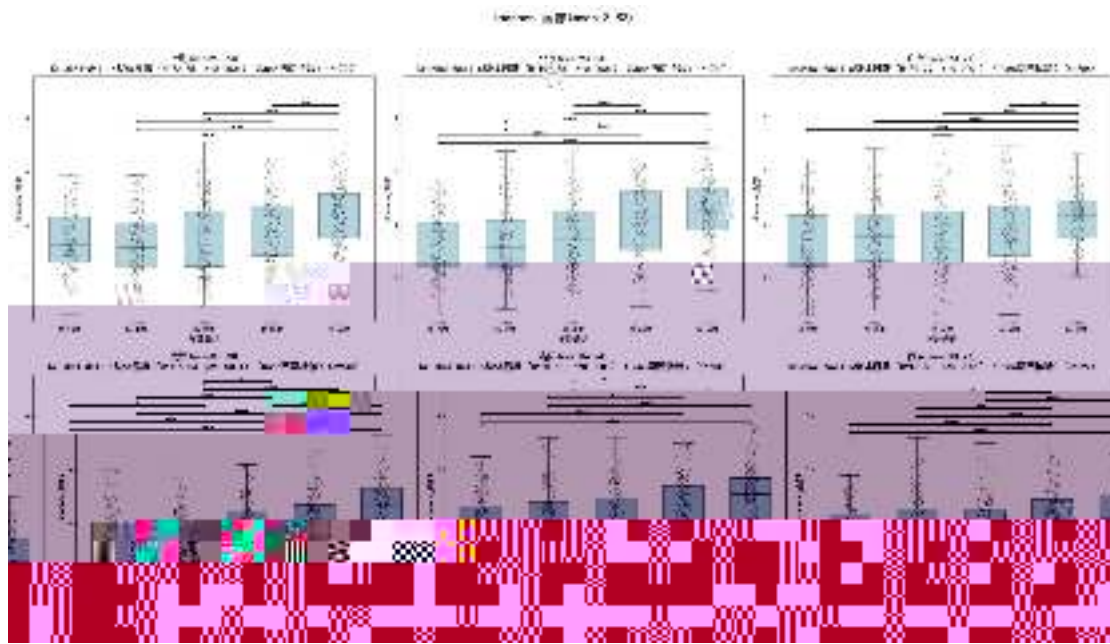
45

45

“ × ”

## 2.5

## 2.5.2 alpha

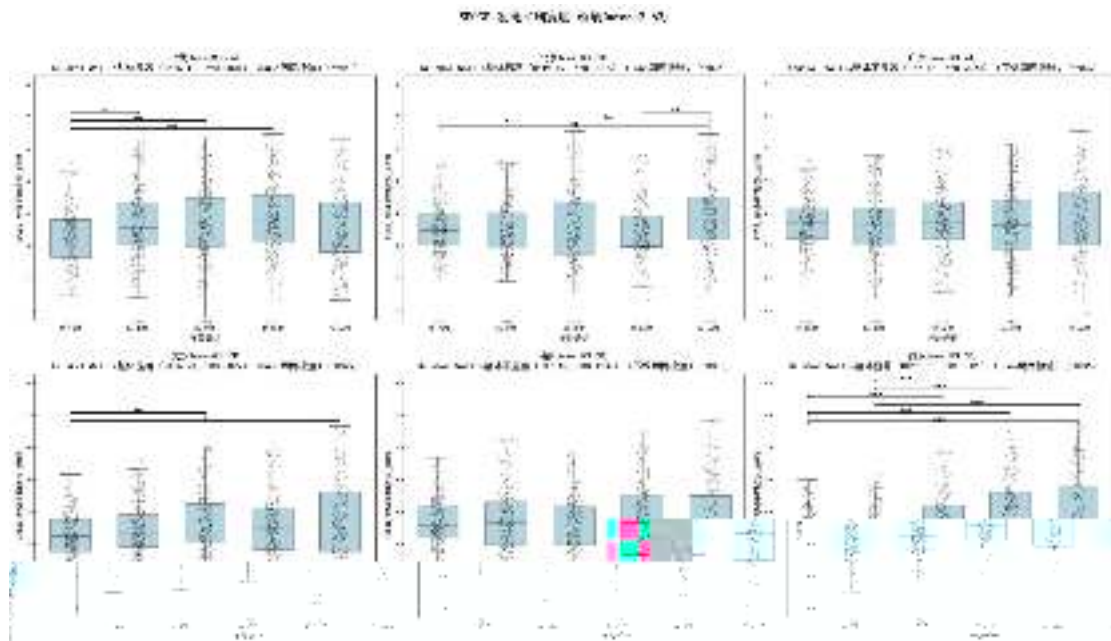


2.21 shannon

Shannon

$\alpha$

1



2.22 SPOCS\_

2.22

18-25

46-55

26-45

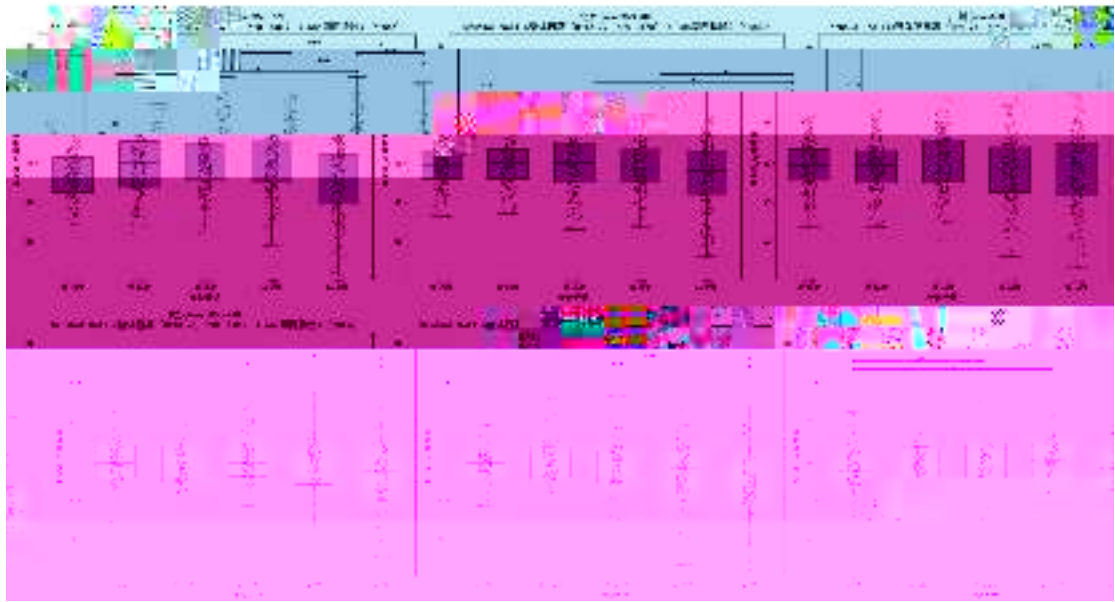
26

36

56

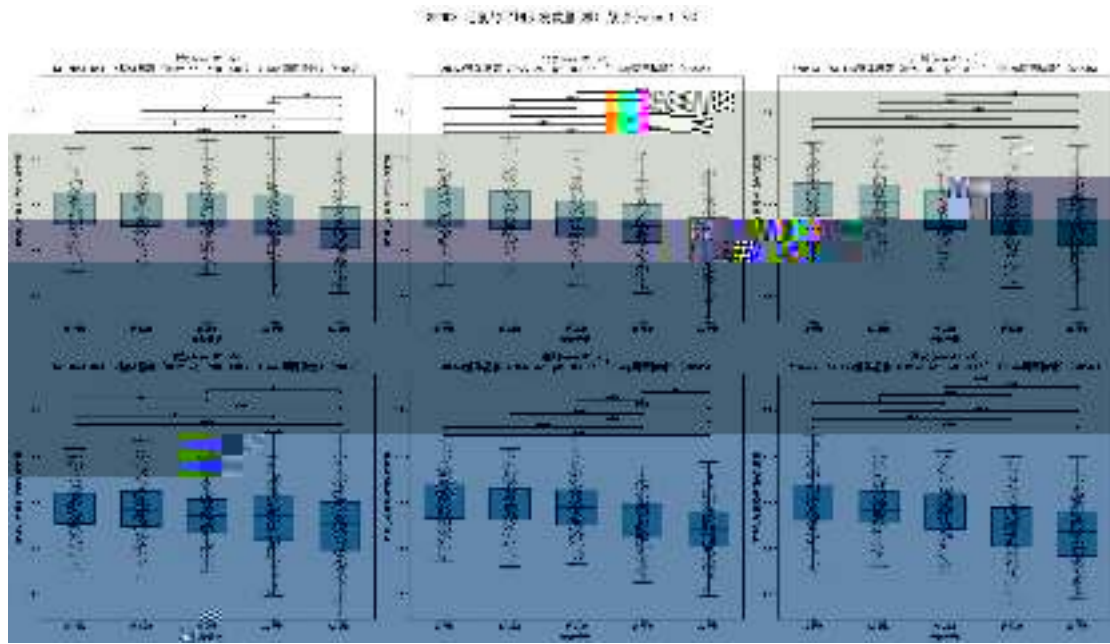
2

图 2.23 点云数据可视化 (a) (b) (c) (d)



2.23 SPOCS\_

## 2.23



2.24 SPOCS\_

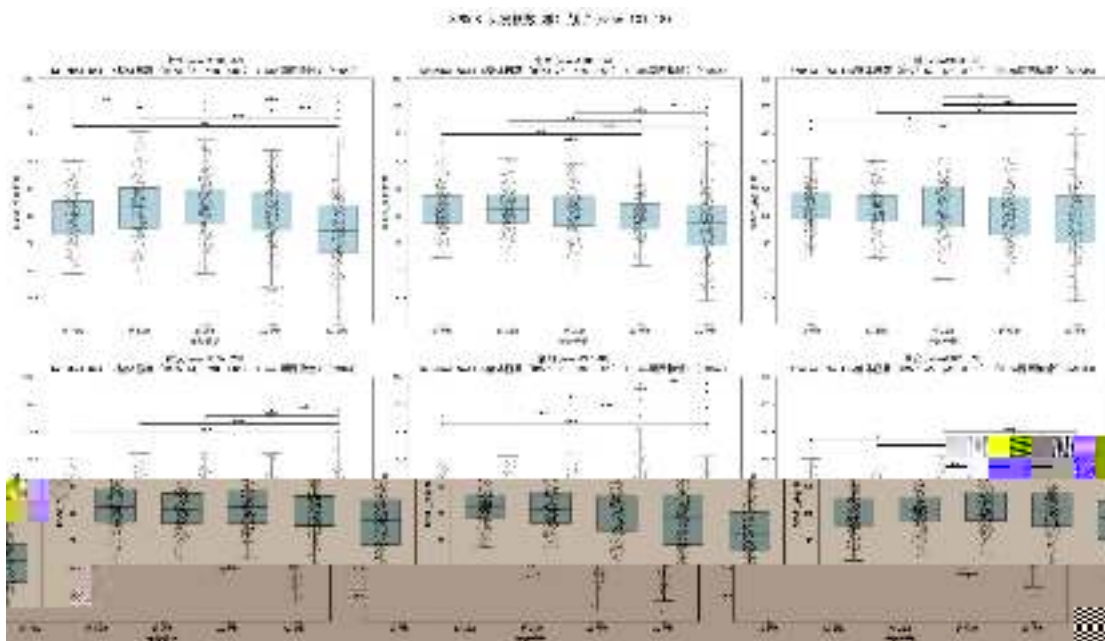
2.24

18-25

35-45

55-65

“ X ”



2.25 SPOCS\_

2.25

18-35

46-65

36-45

5

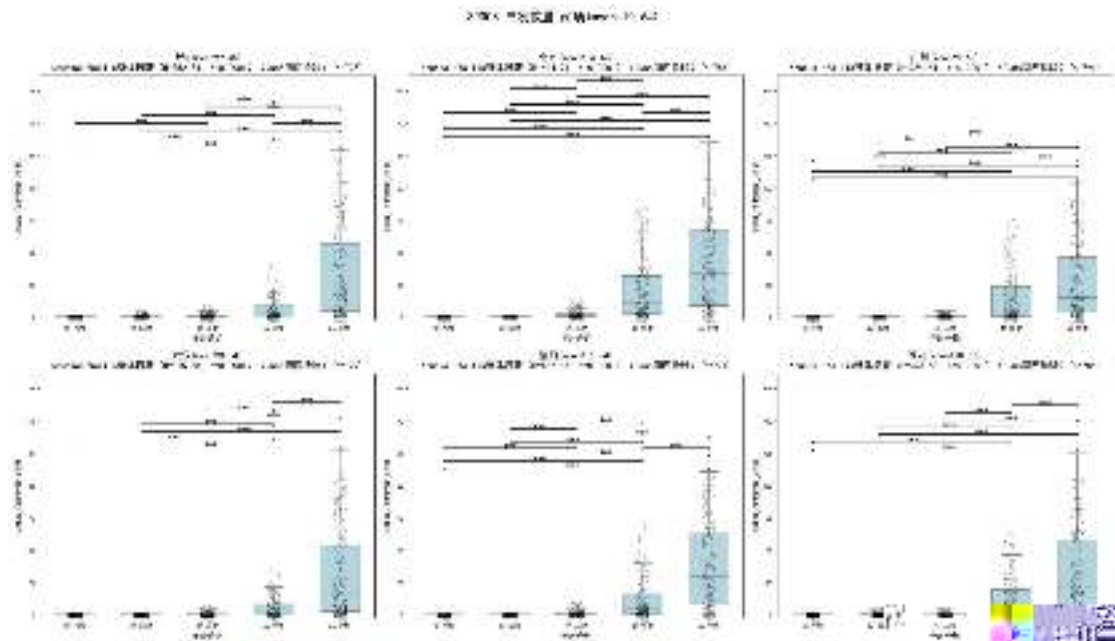
“ ” “ ”

—

—

## 2.6.2

1



2.26 SPOCS\_

2.26

80 100 18-25 150% 36-55 56-65 30-40% 5%

2

“ x ”

46

2.7

TEWL

pH

2.27 deramlab\_ \_

2.27

18-35

46-65

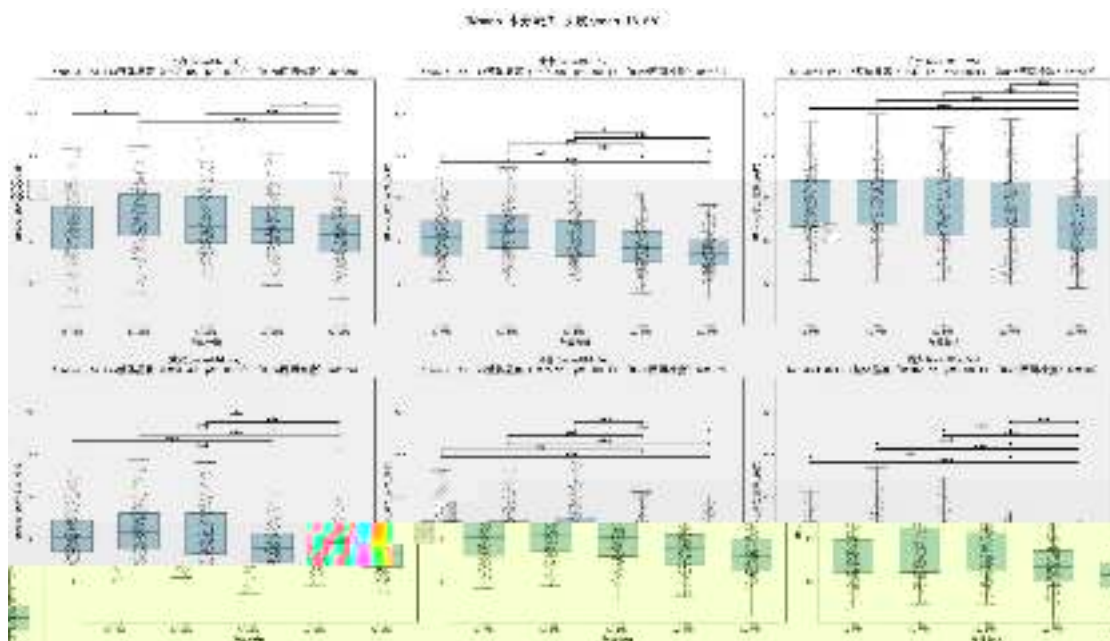
30%

36-45

“ ”

2

TEWL



2.28 TM nano\_ \_

TEWL

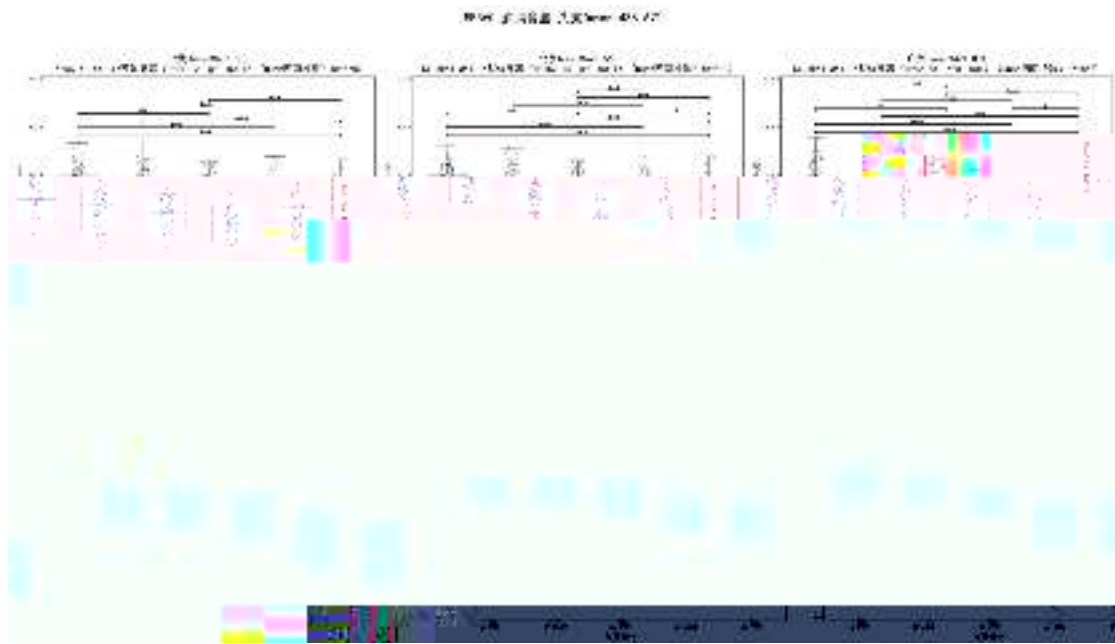
—TEWL

2.28

TEWL

18-35





2.30 MB560\_

2.30

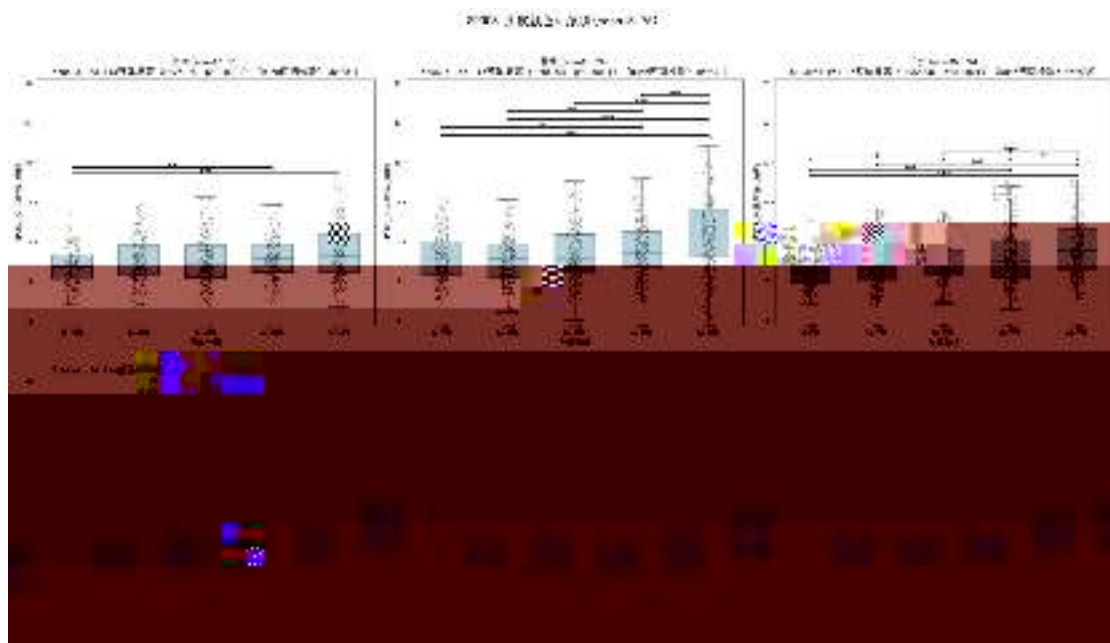
5

TEWL pH

“ ”

2.8

1



2.31 SPOCS\_ a\_



2.32 SPOCS\_

## 2.32

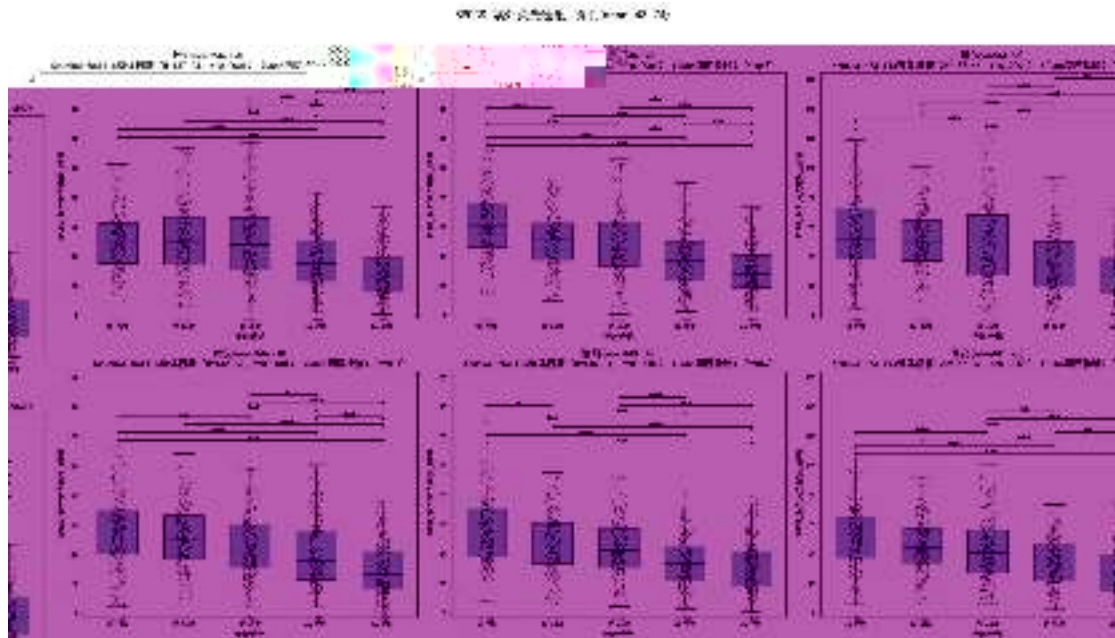
### 3

## 2.9

### 2.9.1

“ x ”

1



2.33 SPOCS

2.33

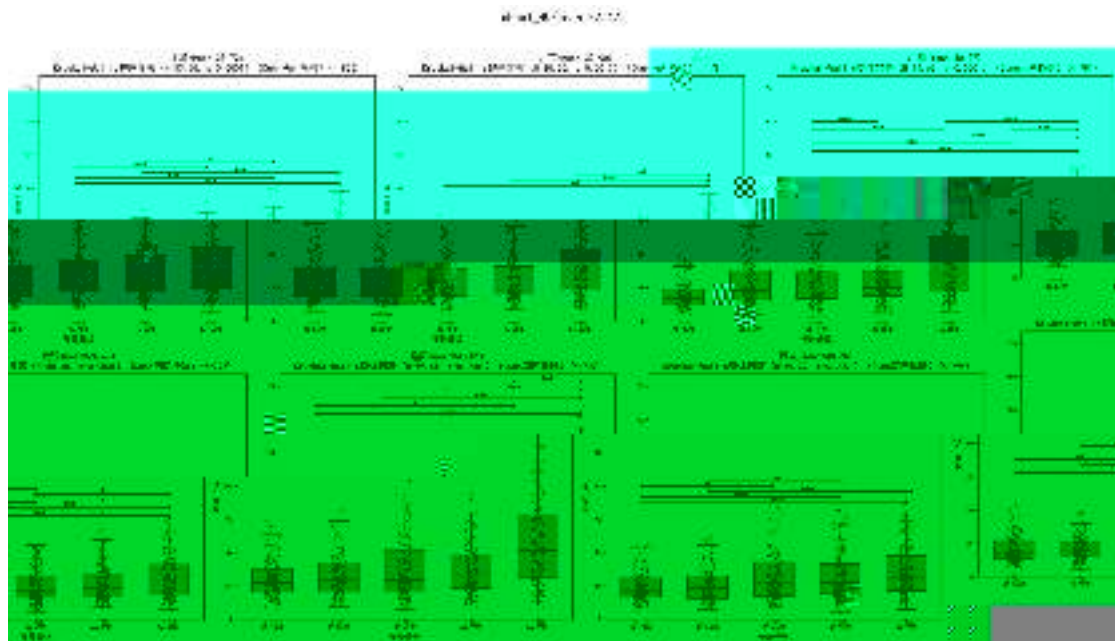
18-35

46-65

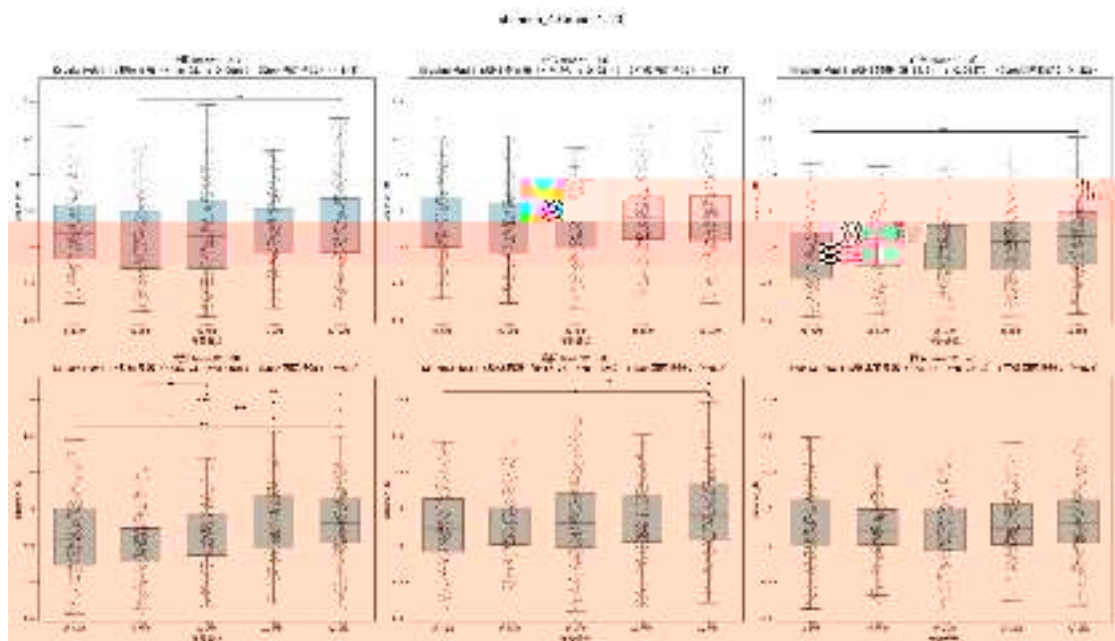
36-45

“ ” “ ”

“ × ”



2.35 chao1



2.36 shannon

2.35 2.36

Chao1

Shannon

Chao1



“ x ”

2.37 2.38

Chao1

56 – 65

18 – 25

94%

Shannon

Chao1

chao1

shannon

18 55

3

chao1

shannon

alpha

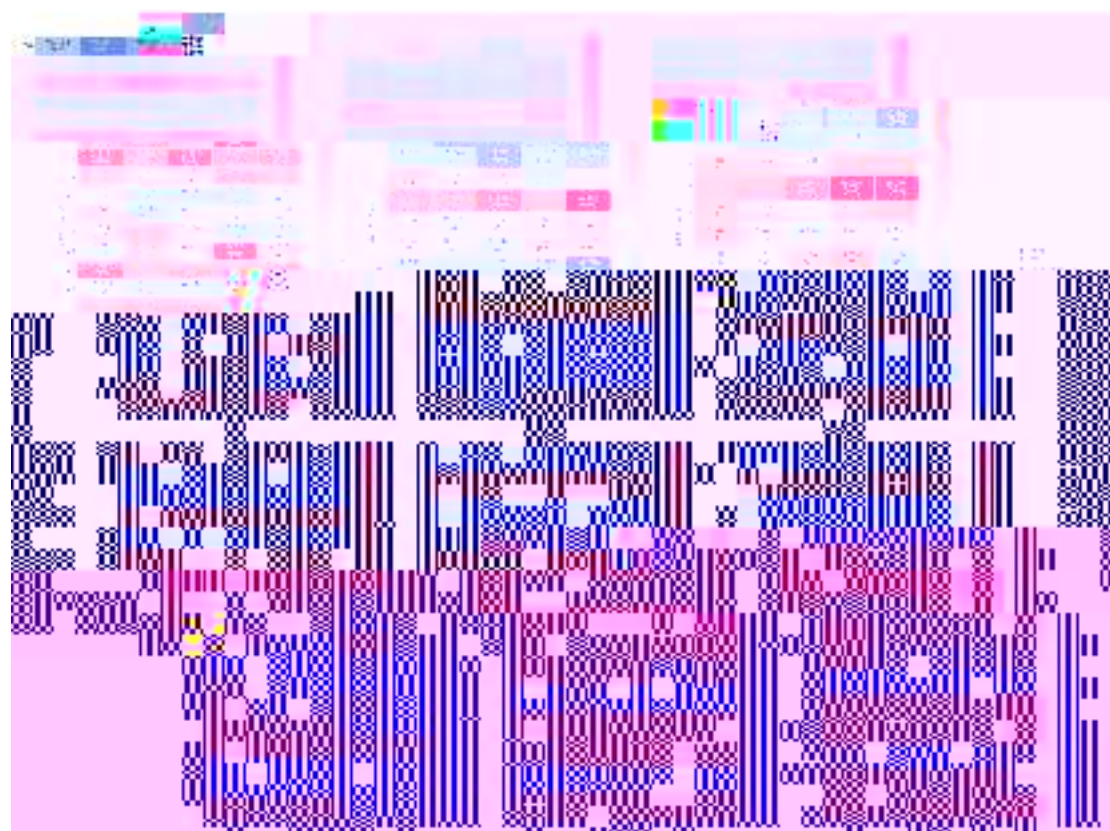
“ ”

“ ”

“ ”

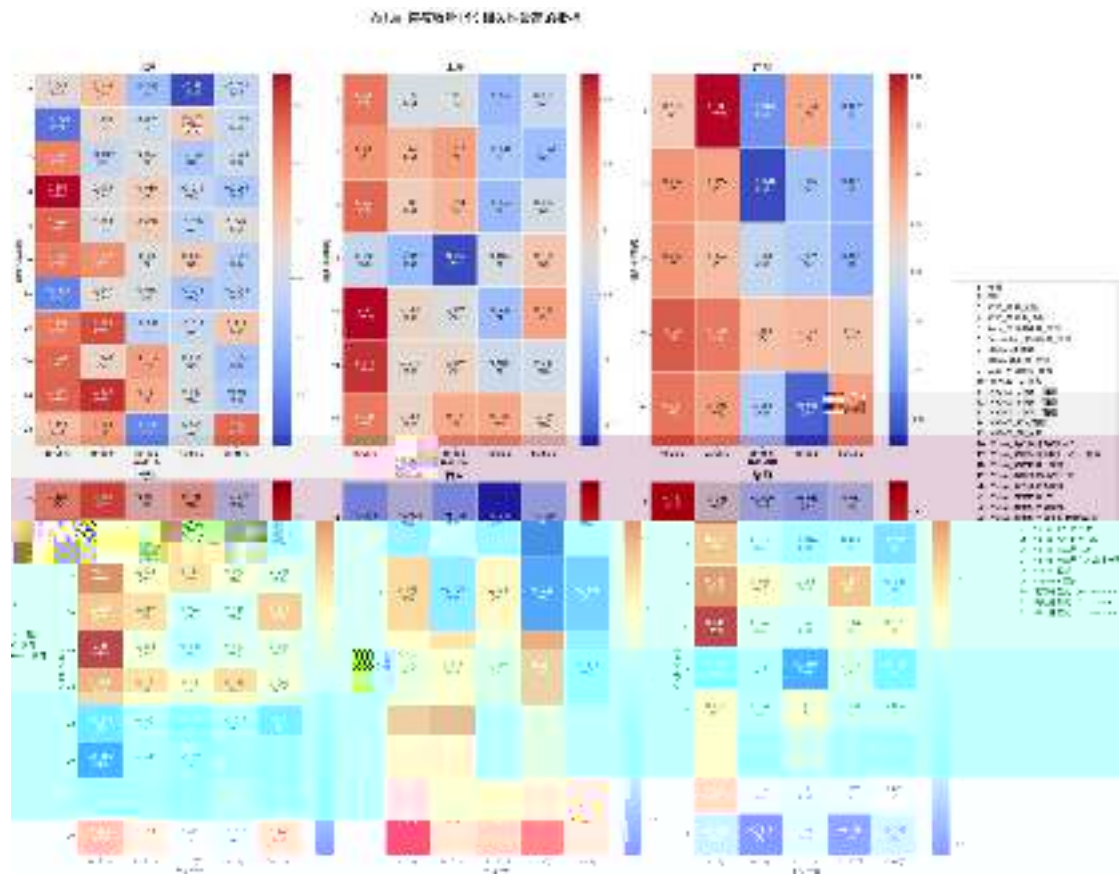
### 3.1

图 10-1-1 中国人口分布图





0.34 \*\*\*



3.3 Vplus\_

### 3.1.4

3.4

36-45

0.601 \*\*\*

27-Vplus\_

MX18\_

13-CM26DG\_b (D65)\_

18-25

-0.551 \*\*\*

36-45

1

13

0.6

|             |       |    |
|-------------|-------|----|
|             | 56-65 | 27 |
| - 0.409 *** |       |    |

C

“ ”

|      |           |     |    |
|------|-----------|-----|----|
|      | 24-Vplus_ | 0.4 | 18 |
| - 25 | 0.576 *** |     |    |

|   |          |
|---|----------|
|   | 26 - 35  |
| 1 | 12 0.692 |

|         |           |
|---------|-----------|
| 18 - 25 | 0.576 *** |
|---------|-----------|

C

3.5 MX18\_ \_

### 3.2

“ ”

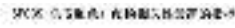
#### 3.2.1

|         |             | 3.6 | 1-deramlab_ _ |            |
|---------|-------------|-----|---------------|------------|
| pH      | 3-pH905_pH_ |     | 18-25         | -0.236 *** |
| 36-45   | 46-55       |     | -0.528 ***    | -0.544 *** |
| “ ”     |             |     |               |            |
|         |             |     |               | pH 4.5-5.5 |
| “ ”     |             |     |               |            |
|         |             | pH  |               |            |
| 46 – 55 |             | pH  | 1             | 0.54       |
| pH      |             |     |               |            |

“ ”



**a**



**a**

---

**26-35**

**-0.448 \*\*\***

"

**0.45**

40

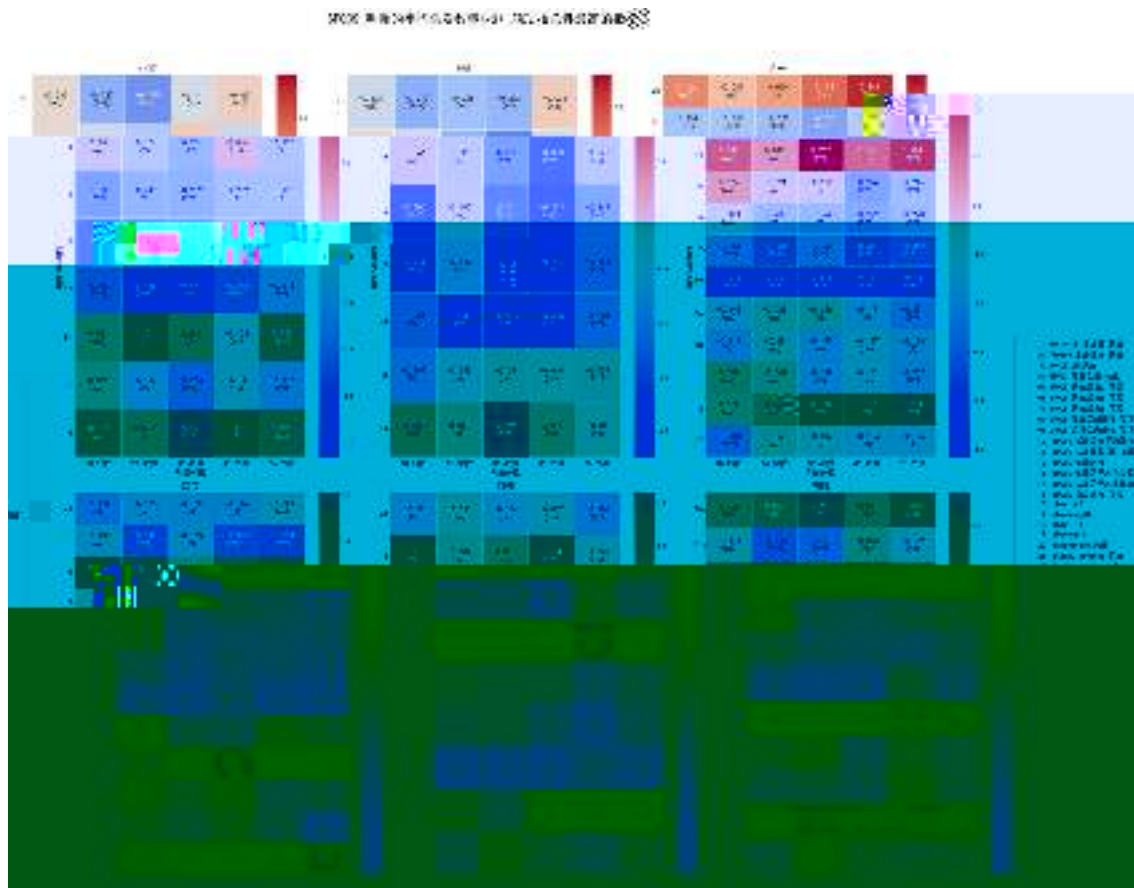
## 36-45

“ ”

-0.386\*\*\*

“ ” 26-35

0.4



3.8 SPOCS\_

### 3.2.4

3.9

1.

chao1\_41 shannon\_41

0.45 56-65 0.555

“

” “ ”

chao1\_41 23-Corynebacterium\_ \*\*\* 56-65

0.487 \*\*\*

2. /

chao1\_41 21-Staphylococcus\_ 56-65

-0.36 \*\*\*

20-Malassezia\_ \*\*\* 56-65

-0.385 \*\*\*

Chao1

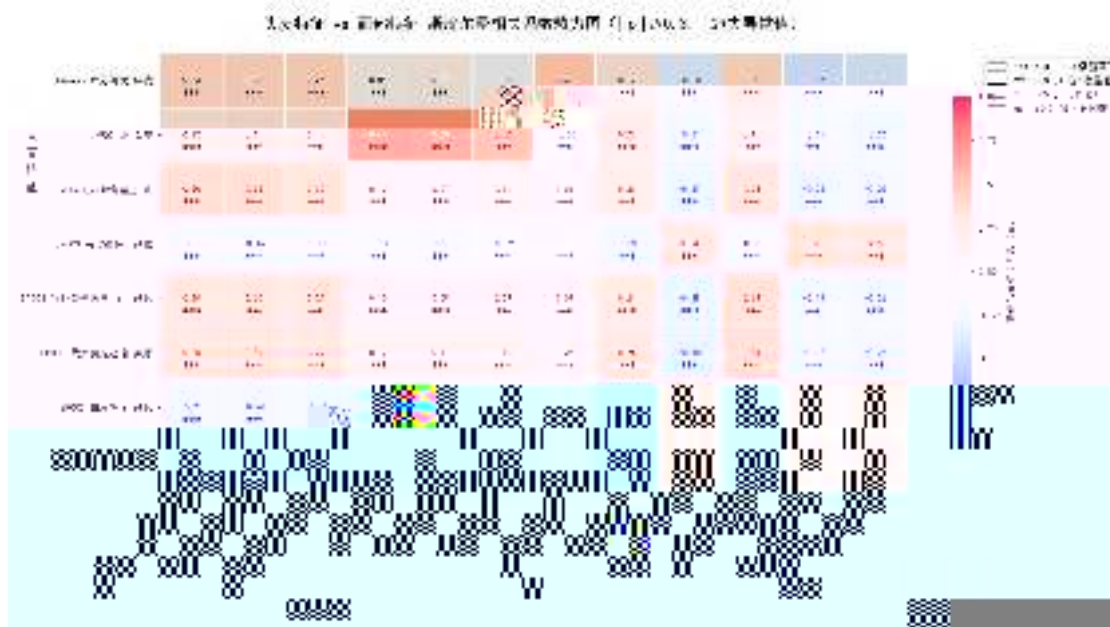
Corynebacterium

Staphylococcus

“ ”

### 3.3

#### 3.10



3.10 vs Spearman

#### 3.3.1

a

“ ”

“ ”

#### 3.3.2

MB560\_

Sebumeter\_



### 3.3.5

## 4.1

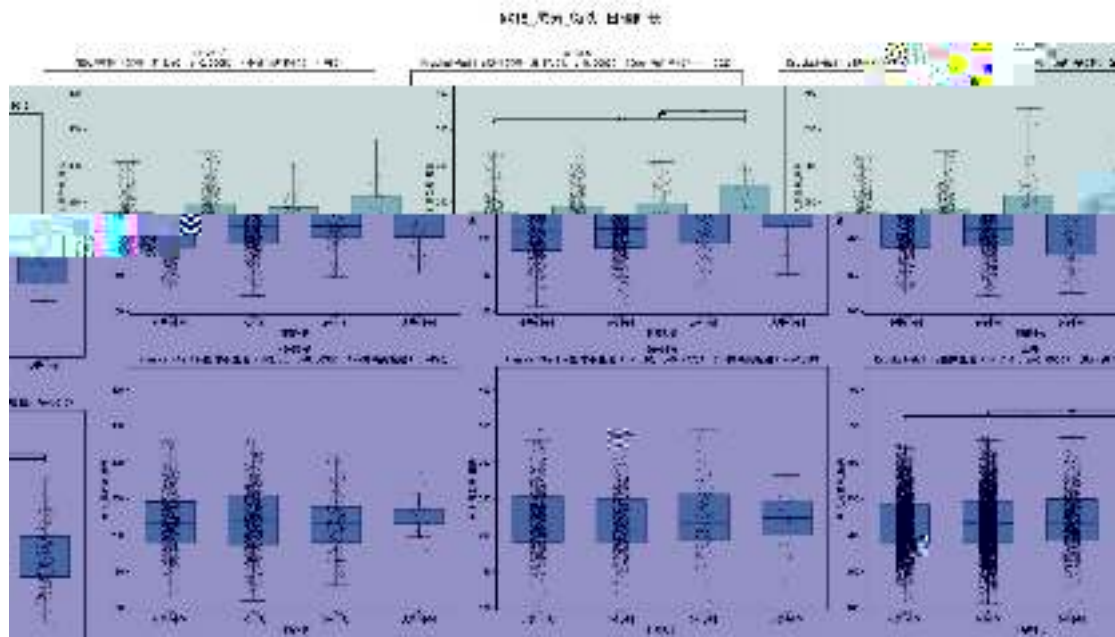
“ ”

“ ”

+

45

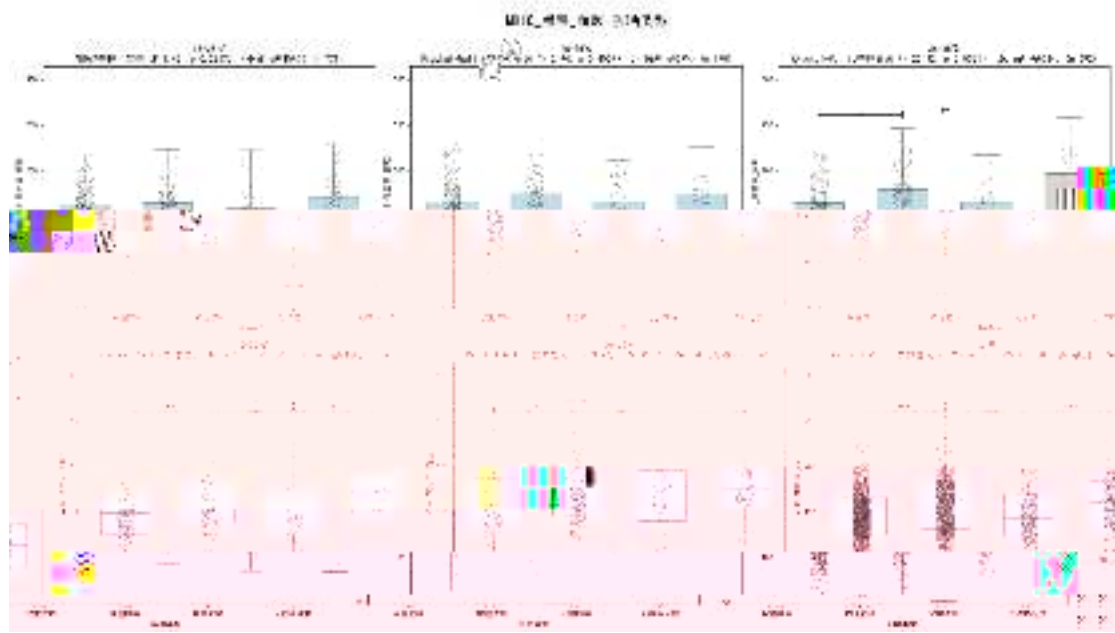




4.1.2 MX18\_ \_ X

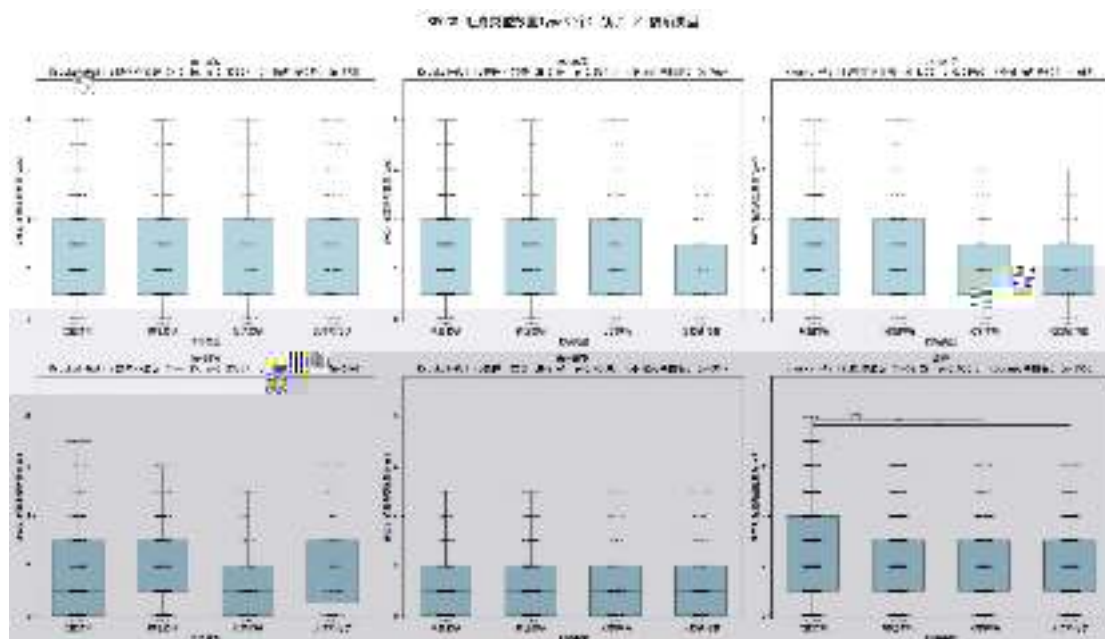
UVA

“ ”



4.1.3 MX18\_ \_ X

“ ”



4.1.4 SPOCS\_ Type3 X

66 99

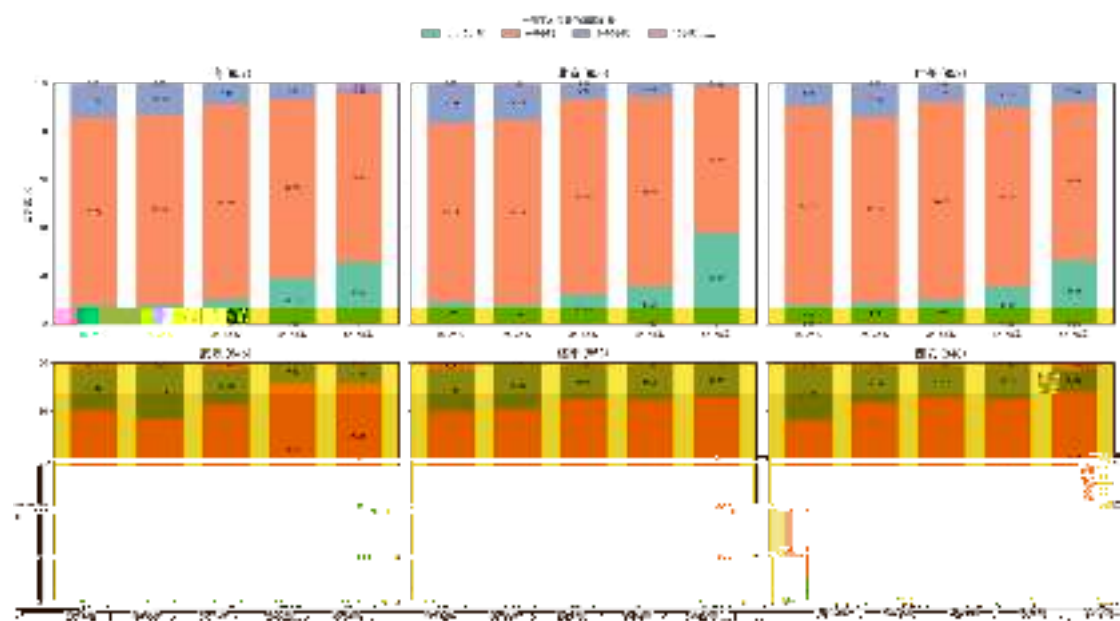
3

4.2

6

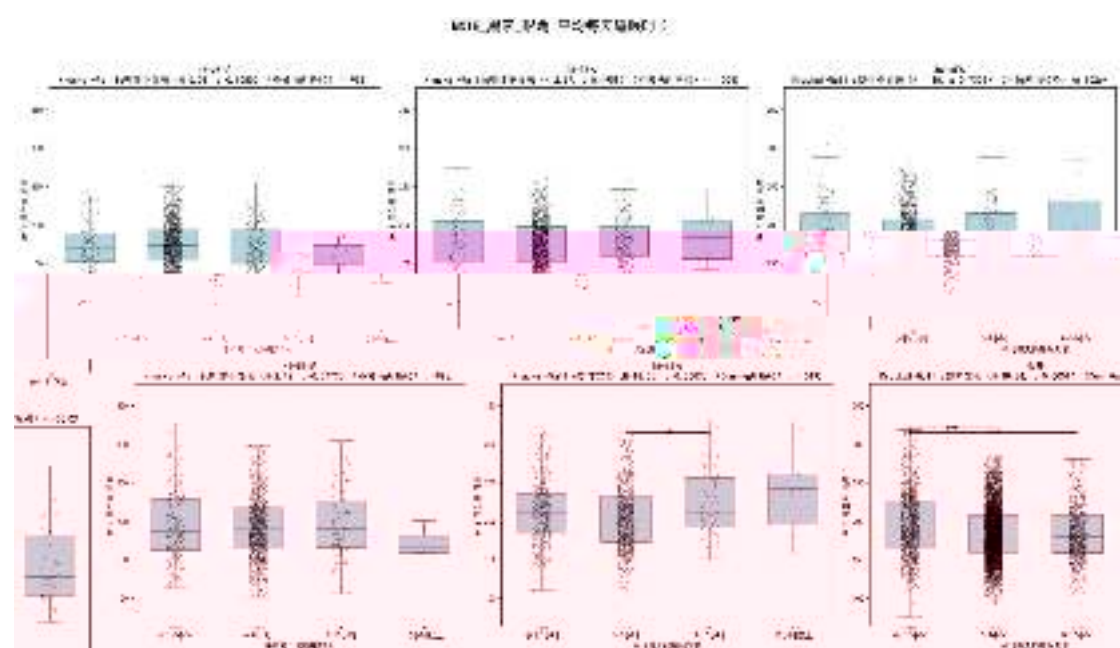
23%

16%

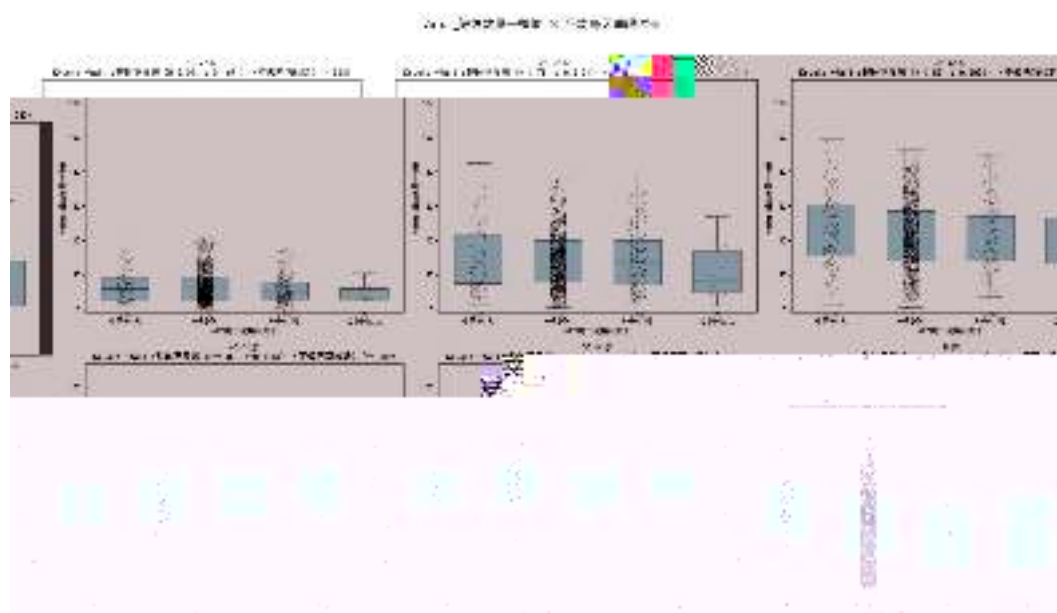


4.2.1

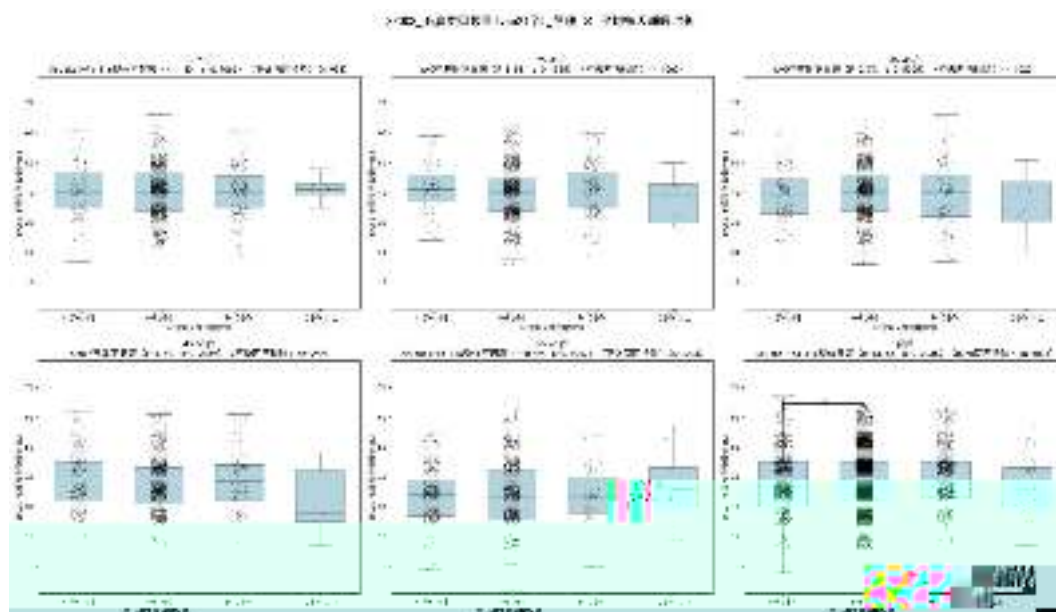
1



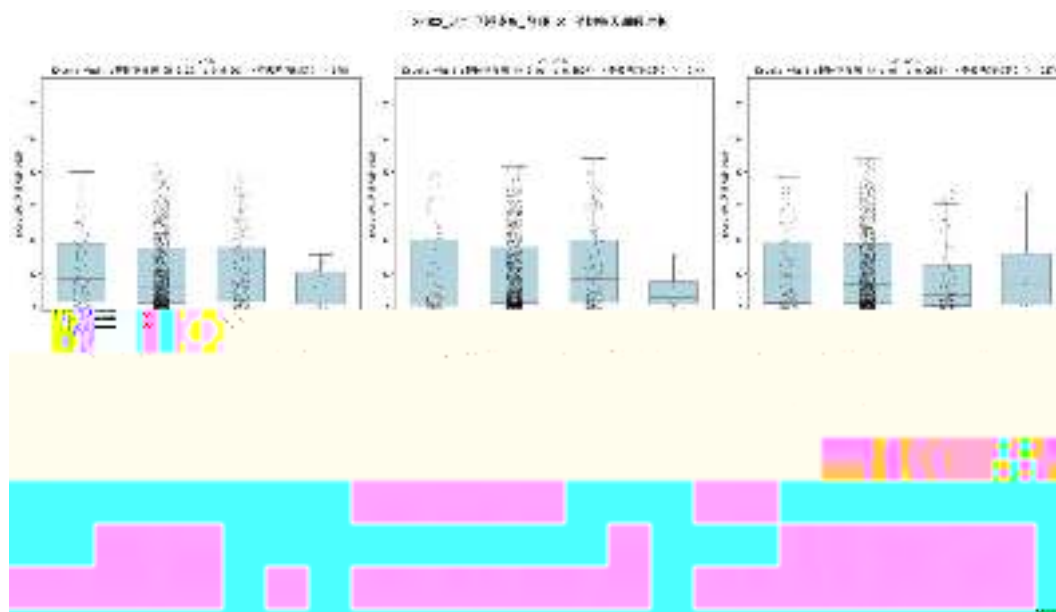
4.2.2 MX18\_ X



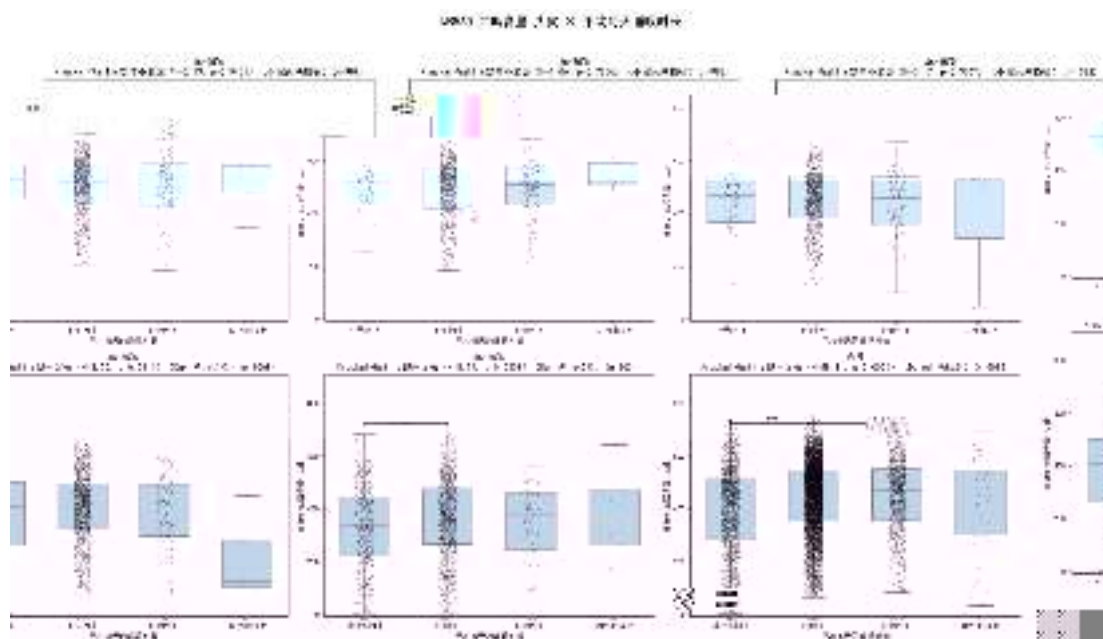
4.2.3 vplus\_ -- X



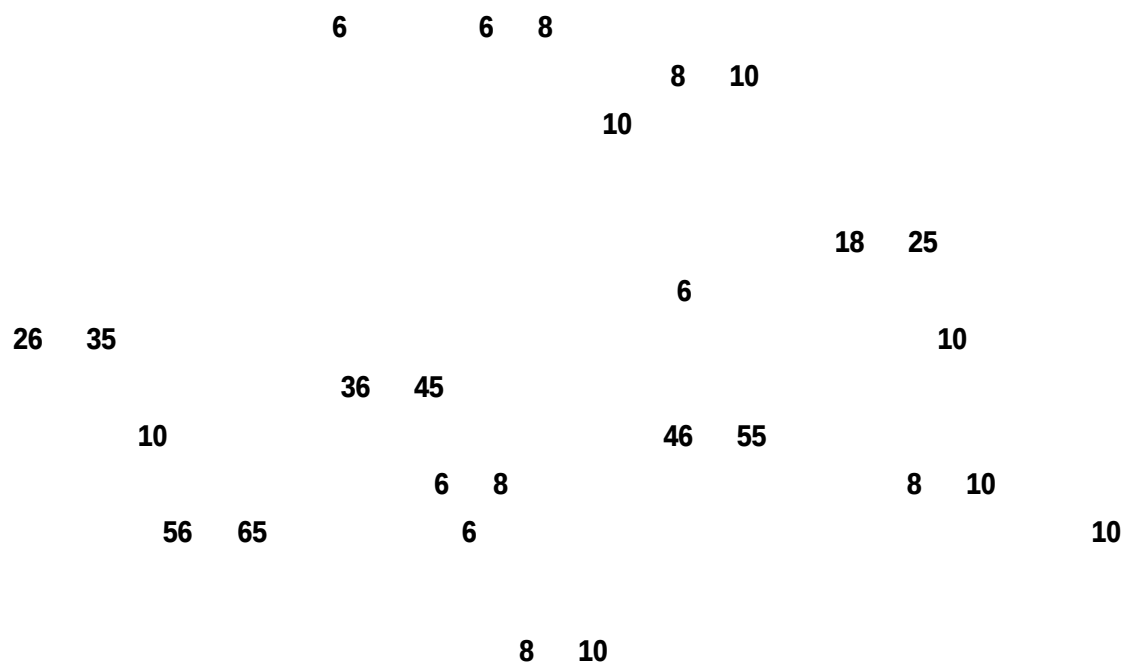
#### 4.2.4 SPOCS\_ Type2X

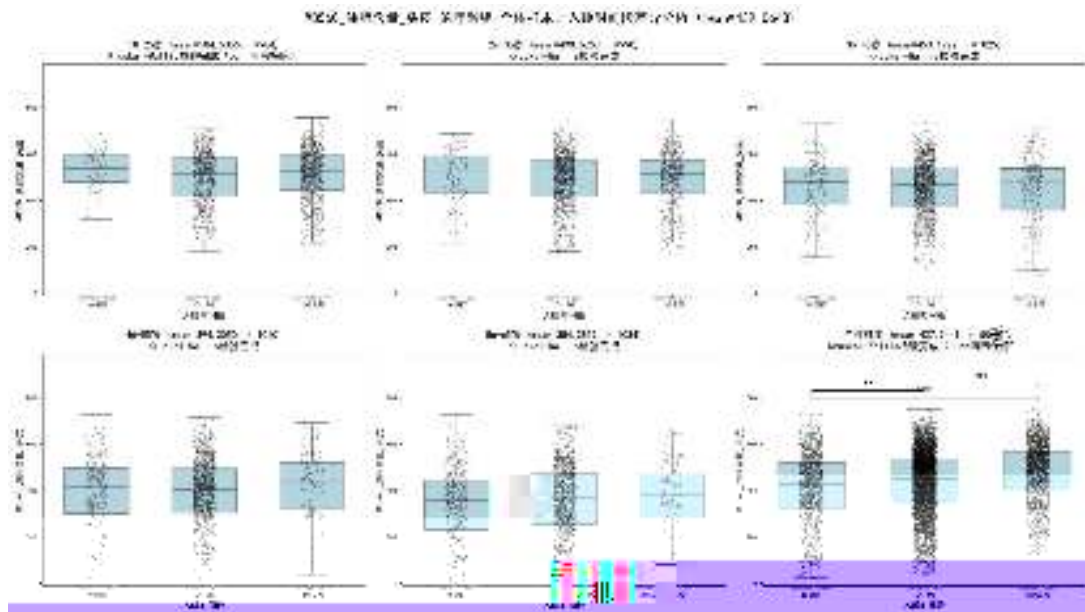


4.2.5 SPOCS\_ X

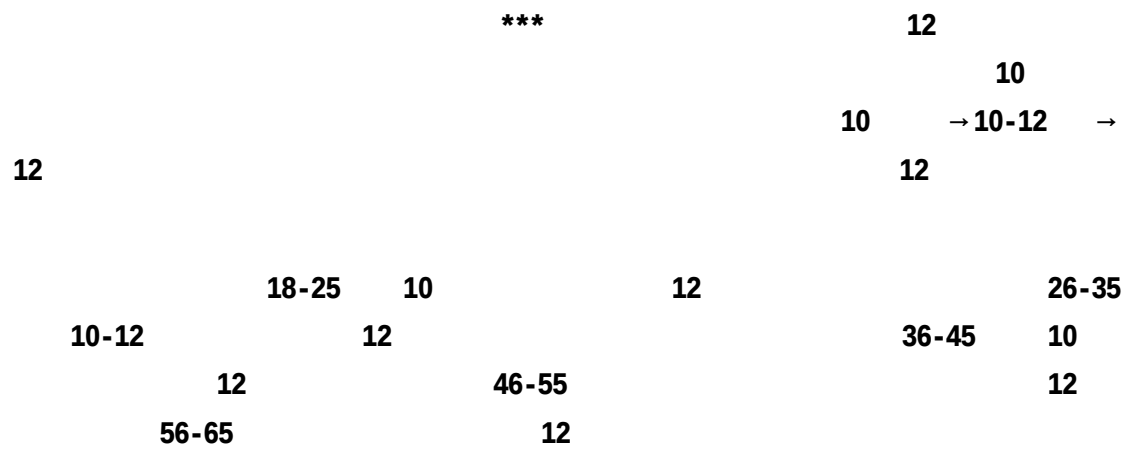


4.2.6 MB560\_ X





4.2.7 MB560\_ — X

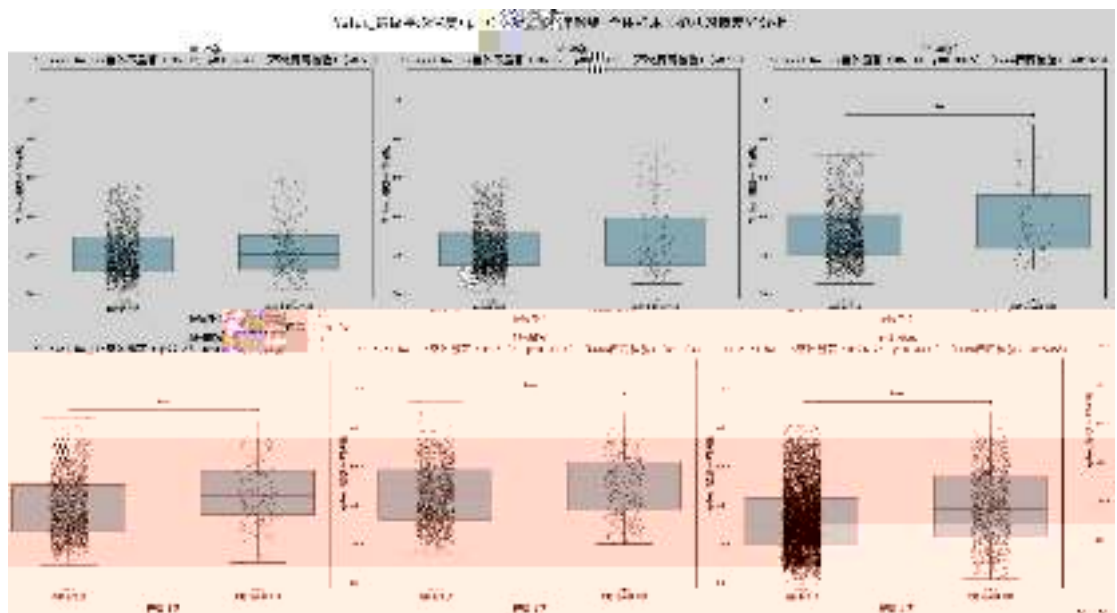




## 4.3

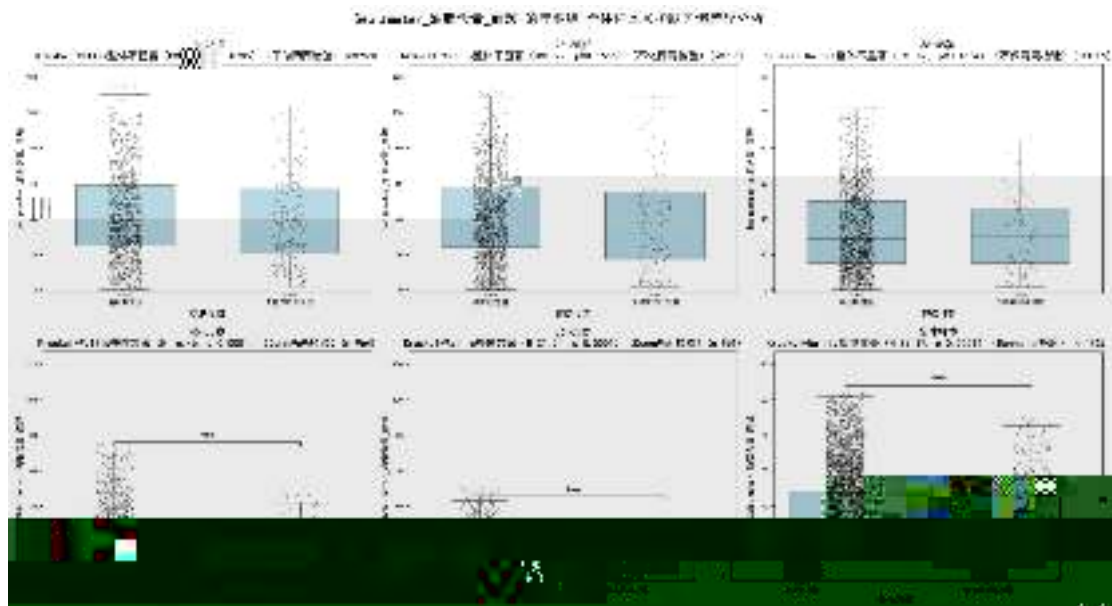


4.3.2 CM825\_ X



4.3.3 Vplus\_ X

” ”



4.3.4 Sebumeter\_ \_ X

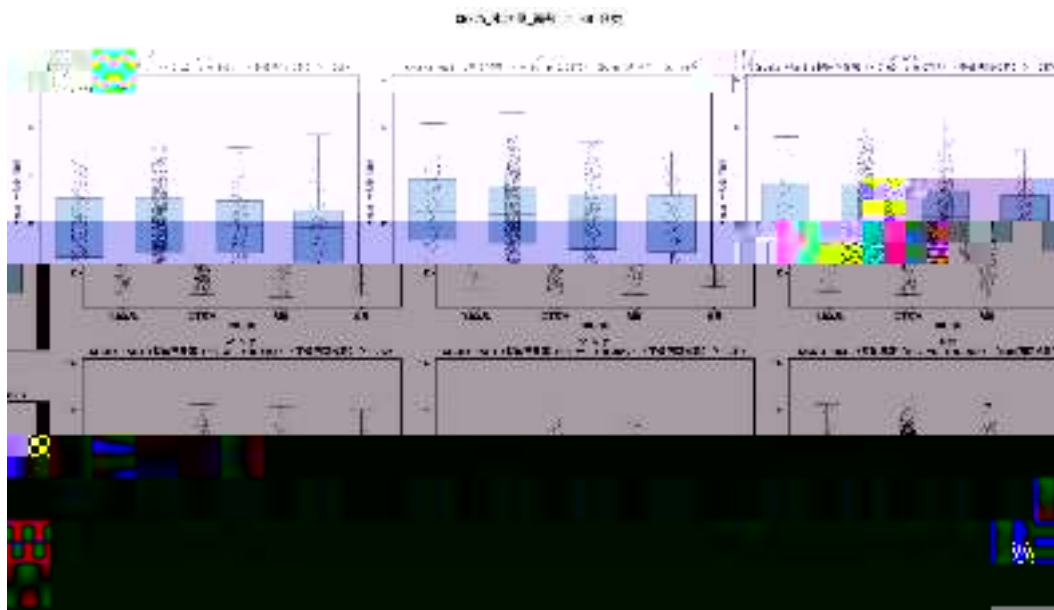
## 4.4

5000  
BMI  
BMI 18.5 / BMI ≥ 24.0  
BMI 18.5-24.0 “ ”

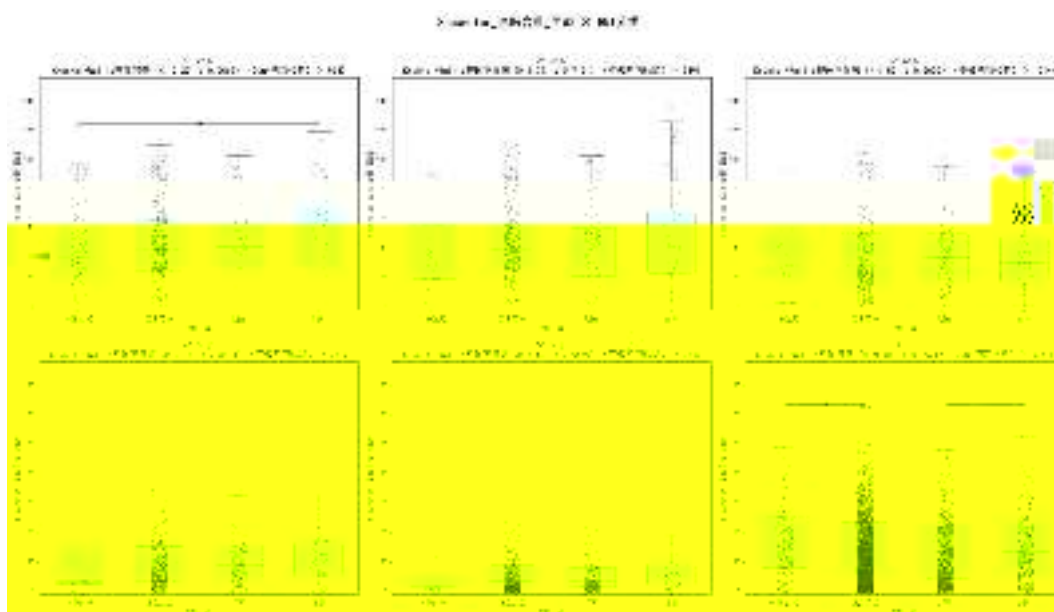
1

“ ” BMI

“ ”



4.4.1 CM825\_ \_ XBM I

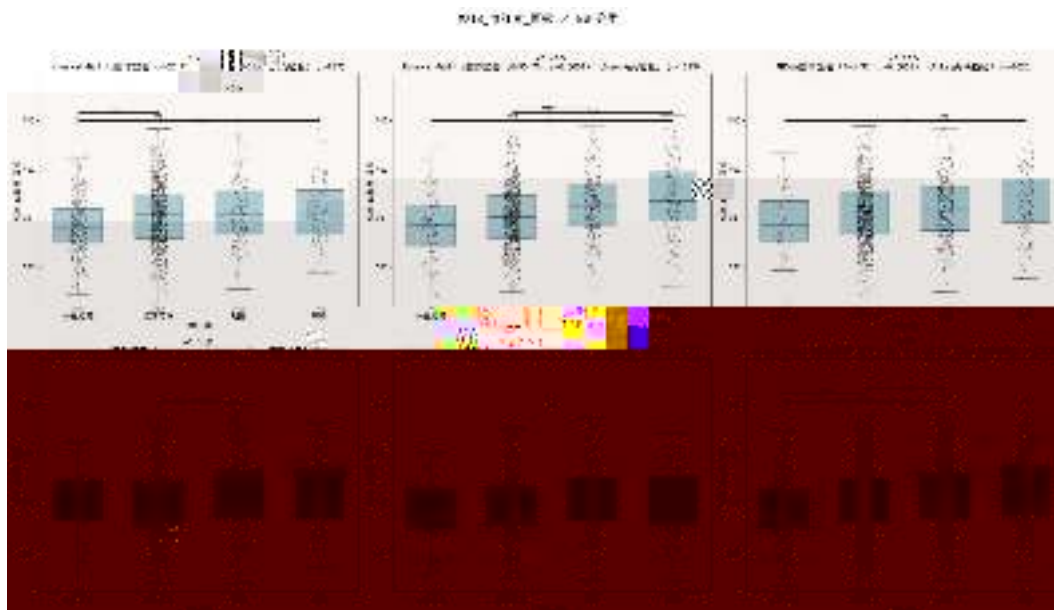


4.4.2 Sebumeter\_ \_ X BMI

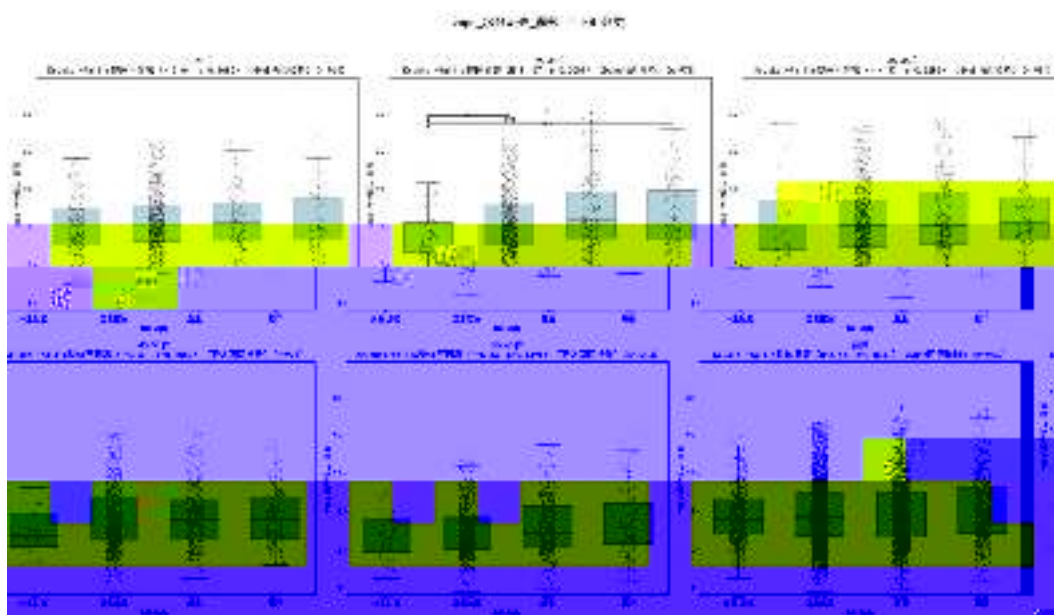
BMI

24.0

BMI



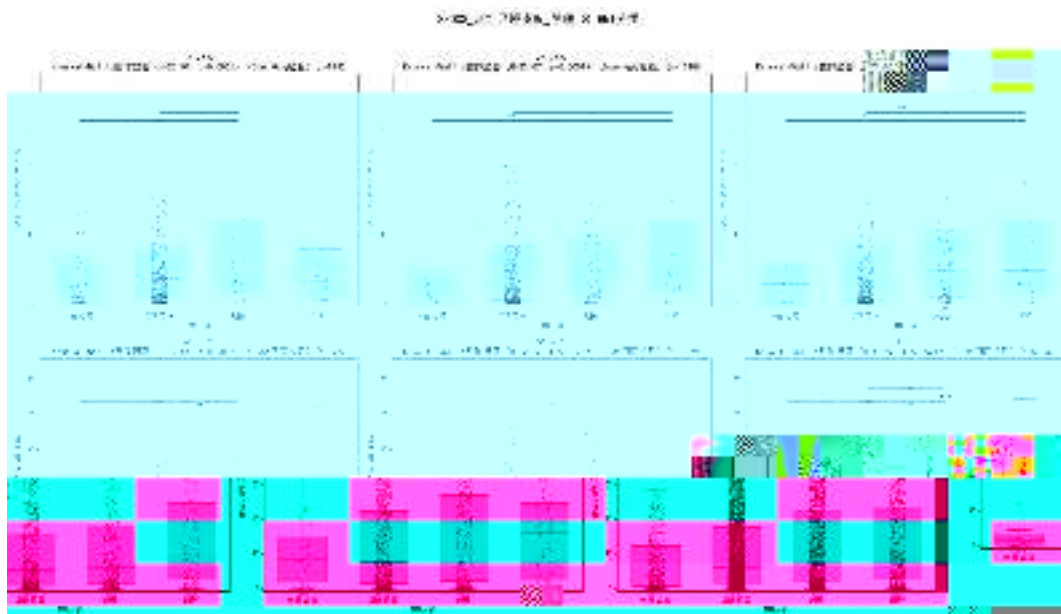
4.4.3 MX18\_ X BMI



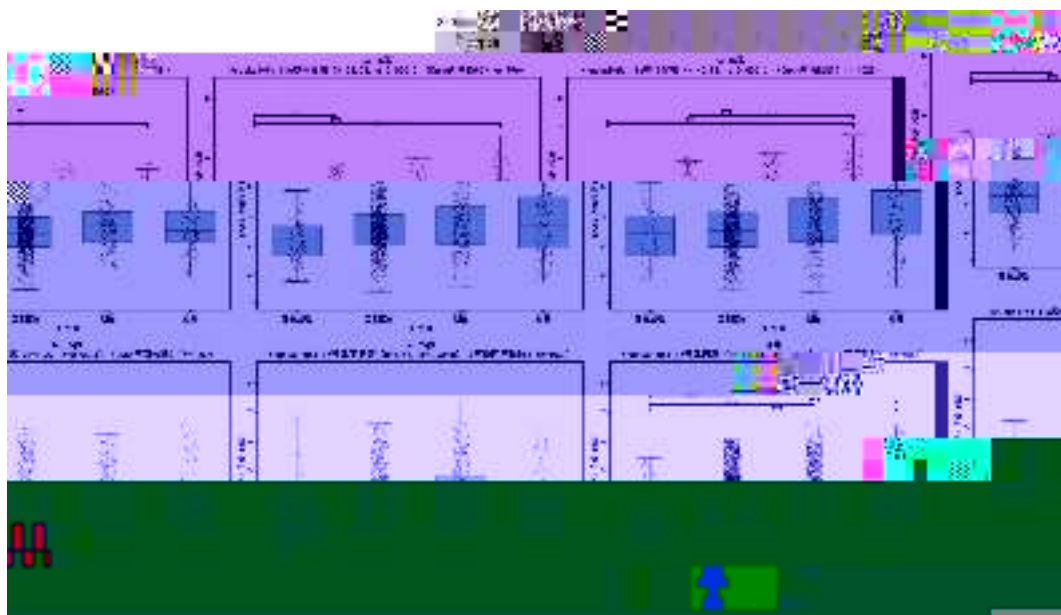
4.4.4 vapo\_ X BMI

BMI  
 Lab L BMI a  
 “ ”  
 BMI  
 BMI  
 “ ”  
 BMI





4.4.6 SPOCS\_ X BMI



4.4.7 SPOCS\_ X BMI

BMI

BMI

Lab

a

b

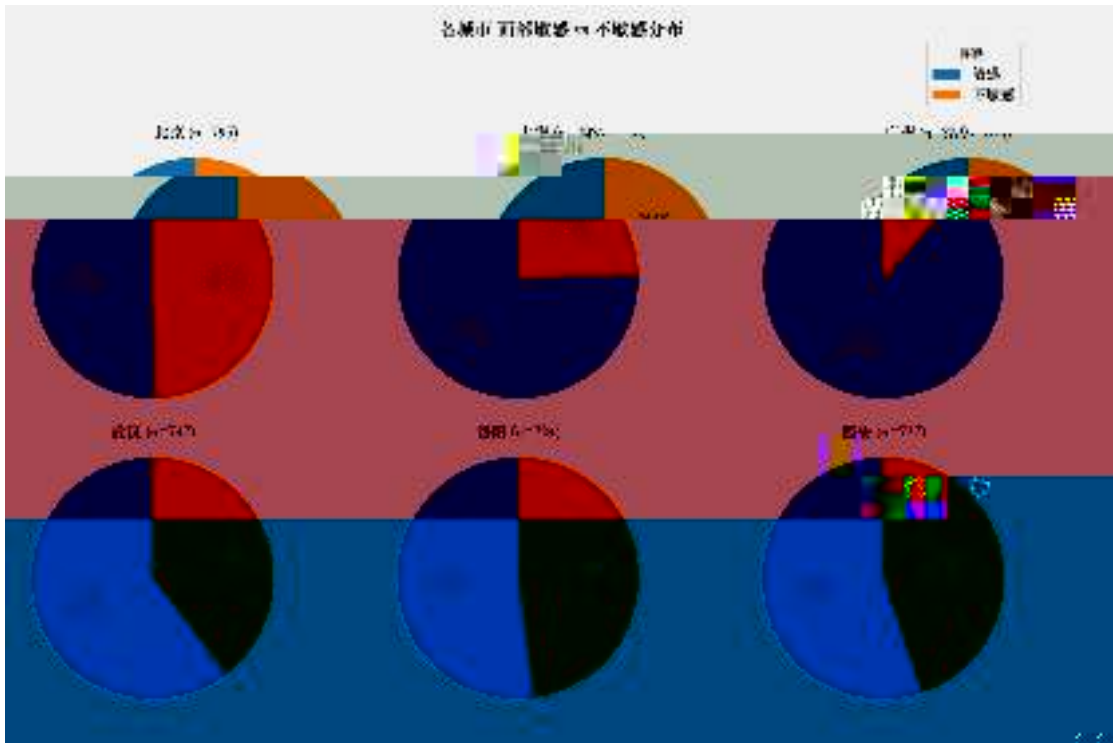
3

BMI

BMI

4.5

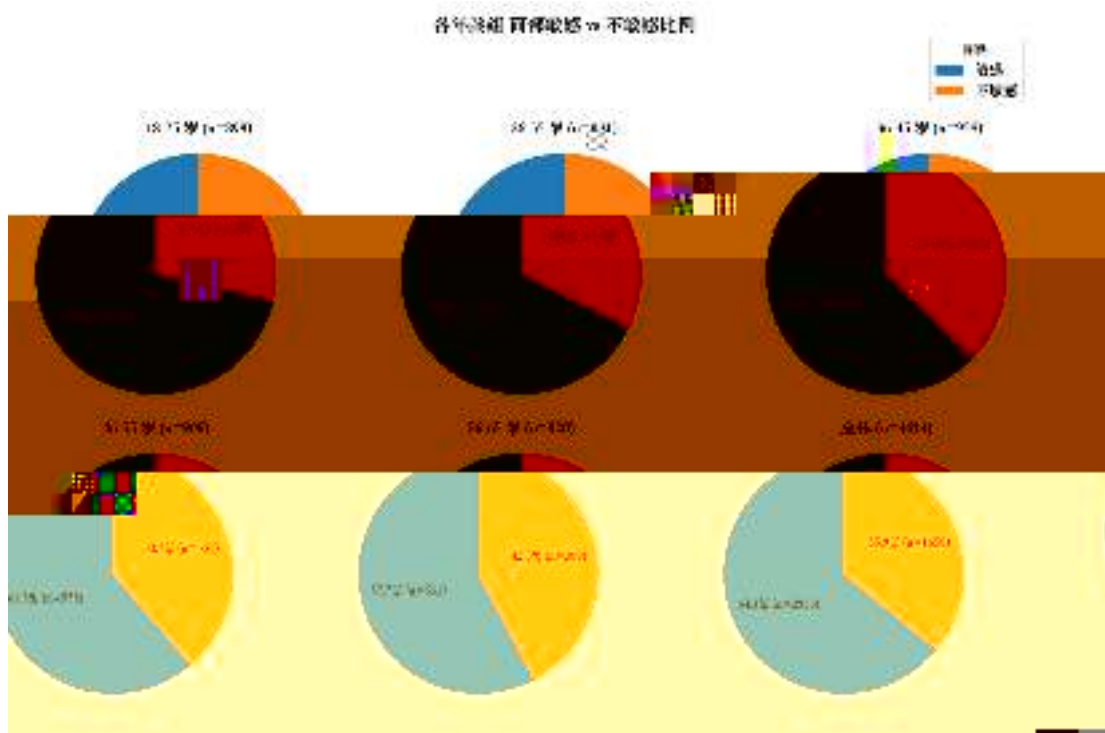
4.5.1



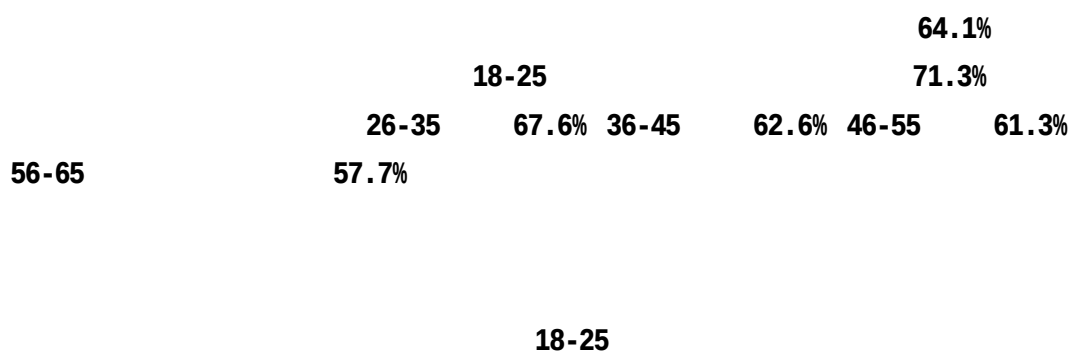
4.5.1



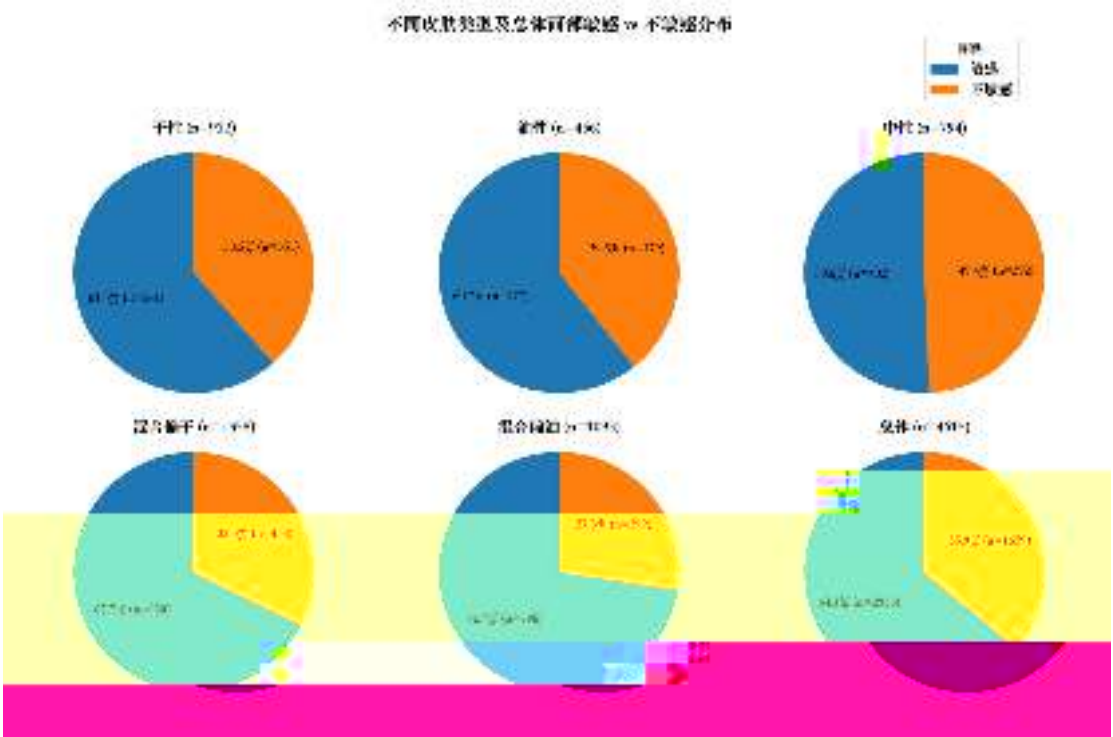
## 4.5.2



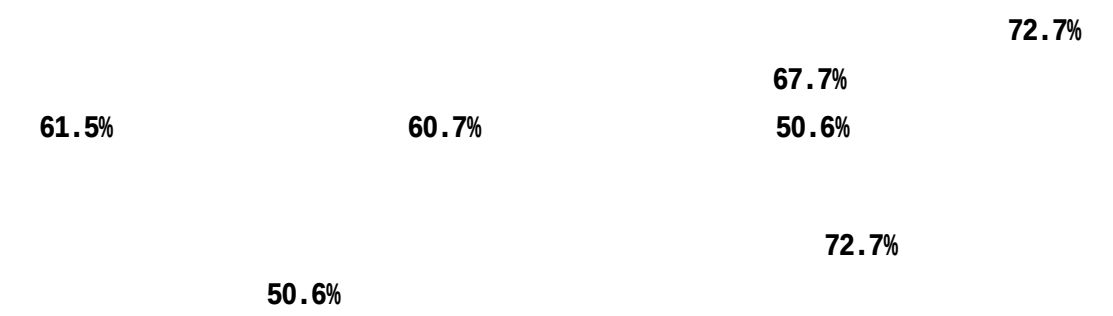
4.5.2



4.5.3

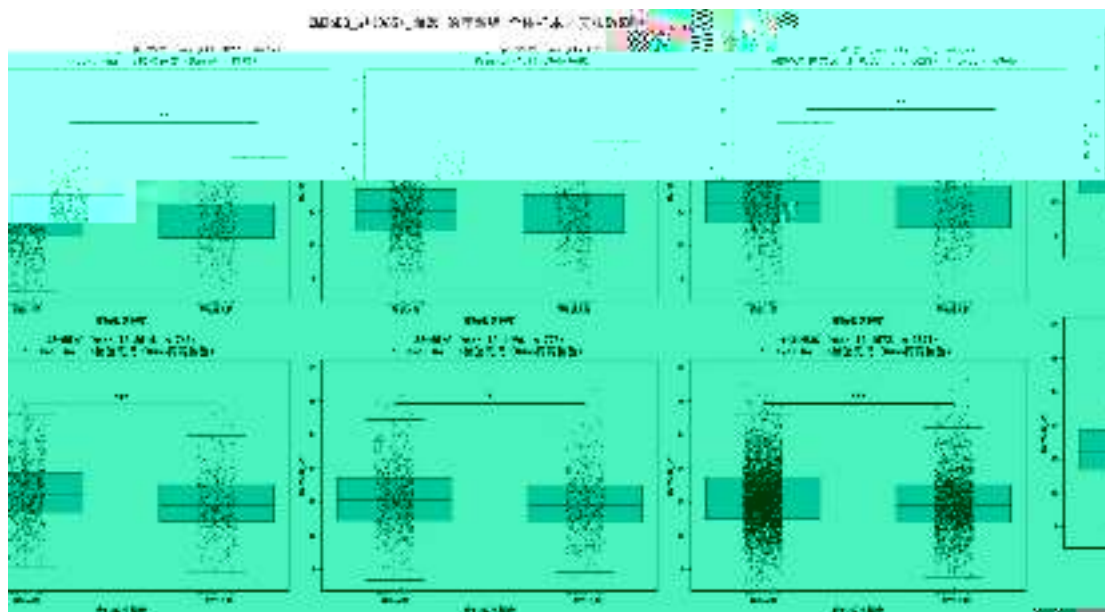


4.5.3



4.5.4

1



4.5.4 CM26DG\_a\* D65 \_ X

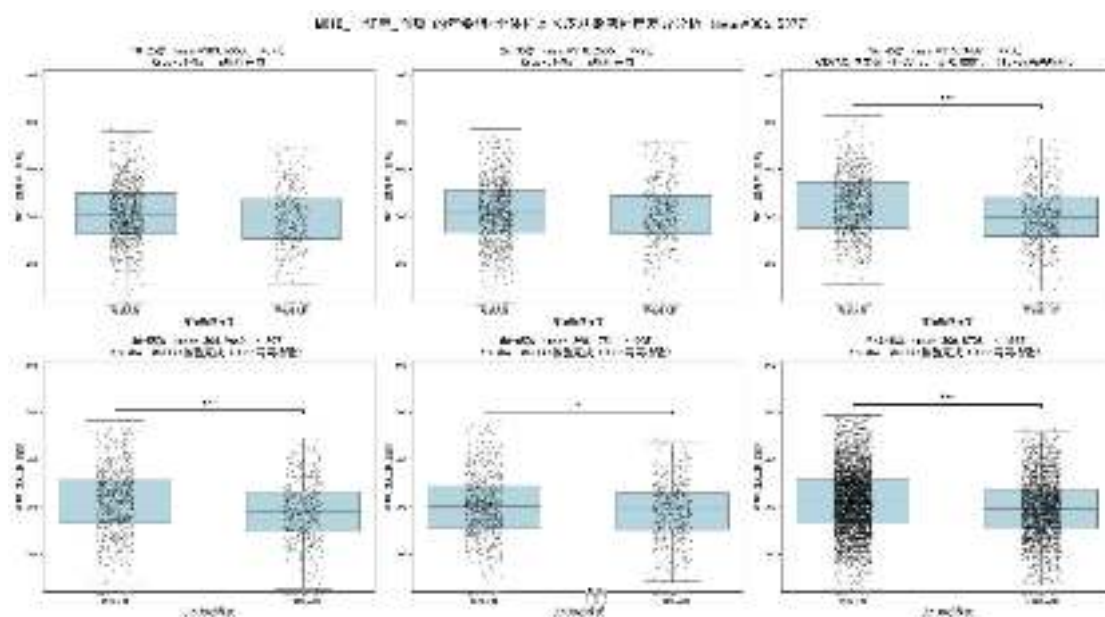
CIE Lab

a

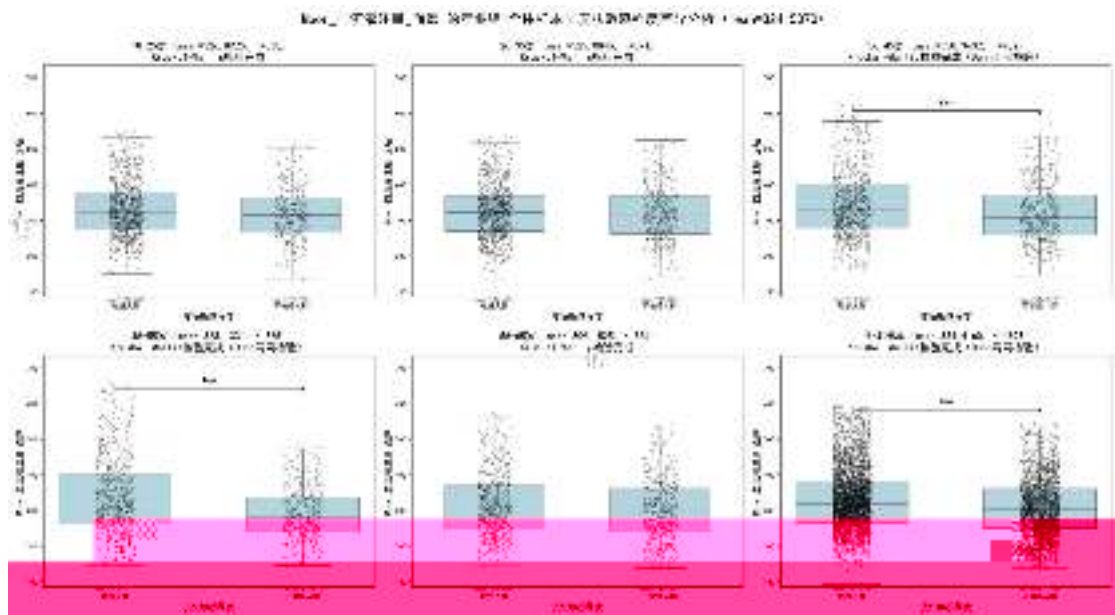
b

L

a



4.5.5 MX18\_ \_ X

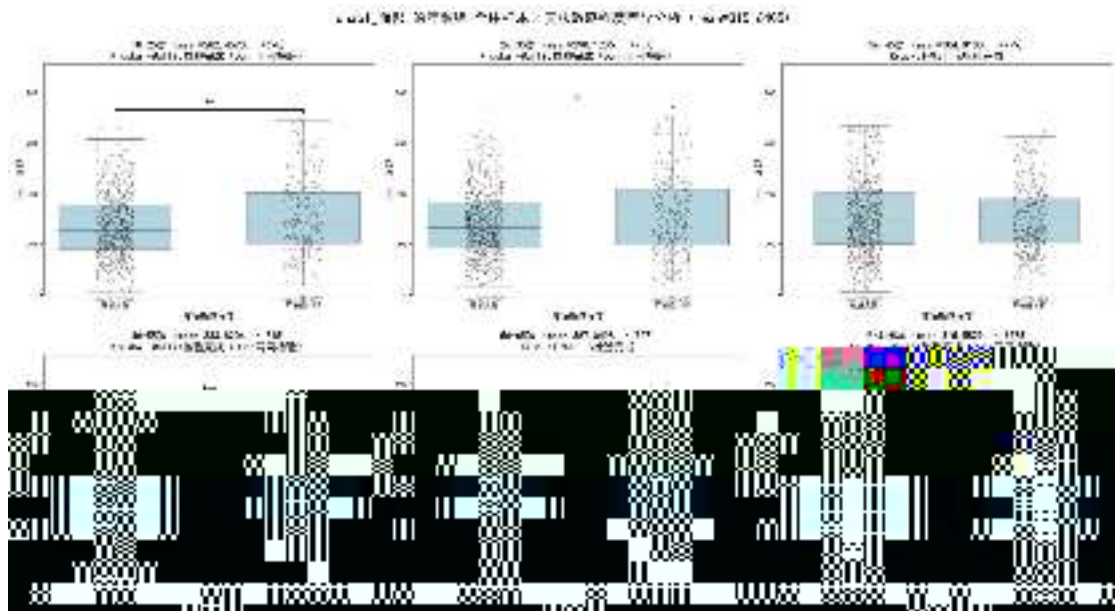


4.5.6 Moor\_1 X

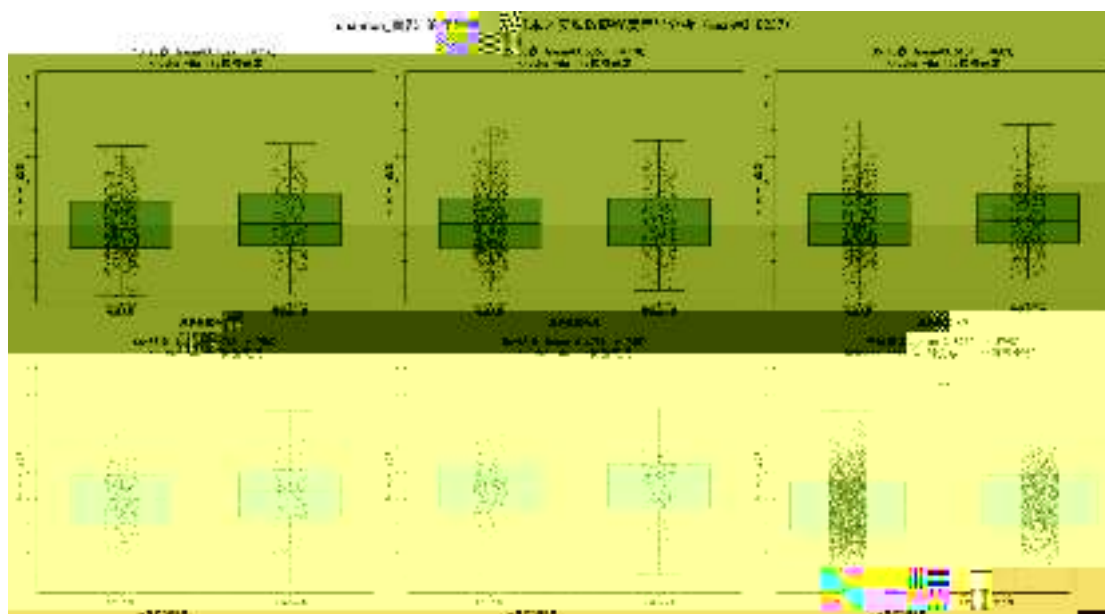
4.30

4.30

2



4.5.7 chao1\_1 X



4.5.8 shannon\_ X

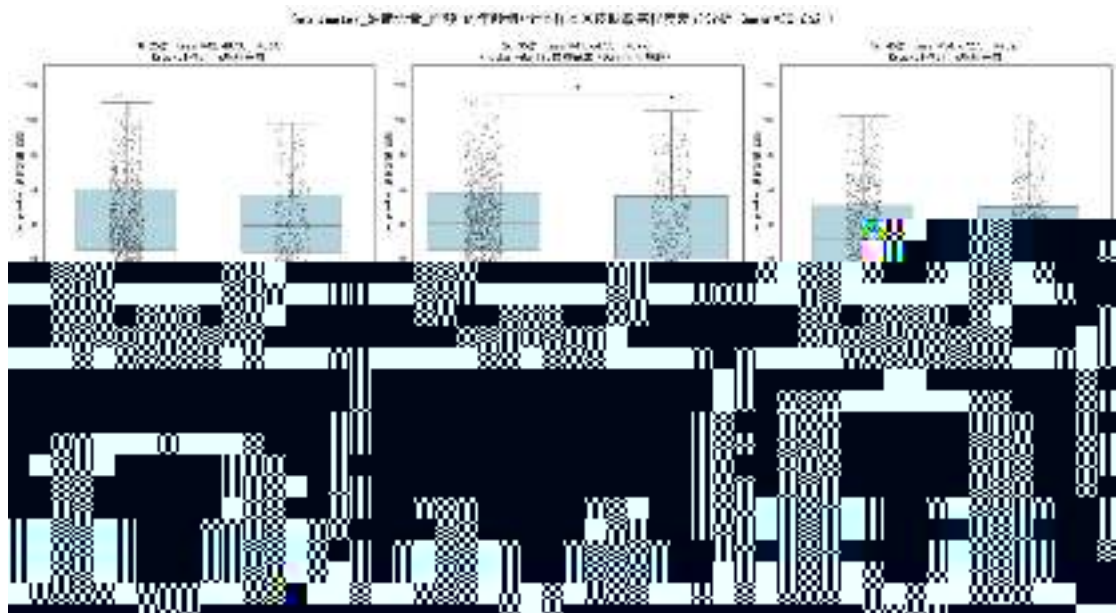
Chao1

Shannon

pH

TEWL

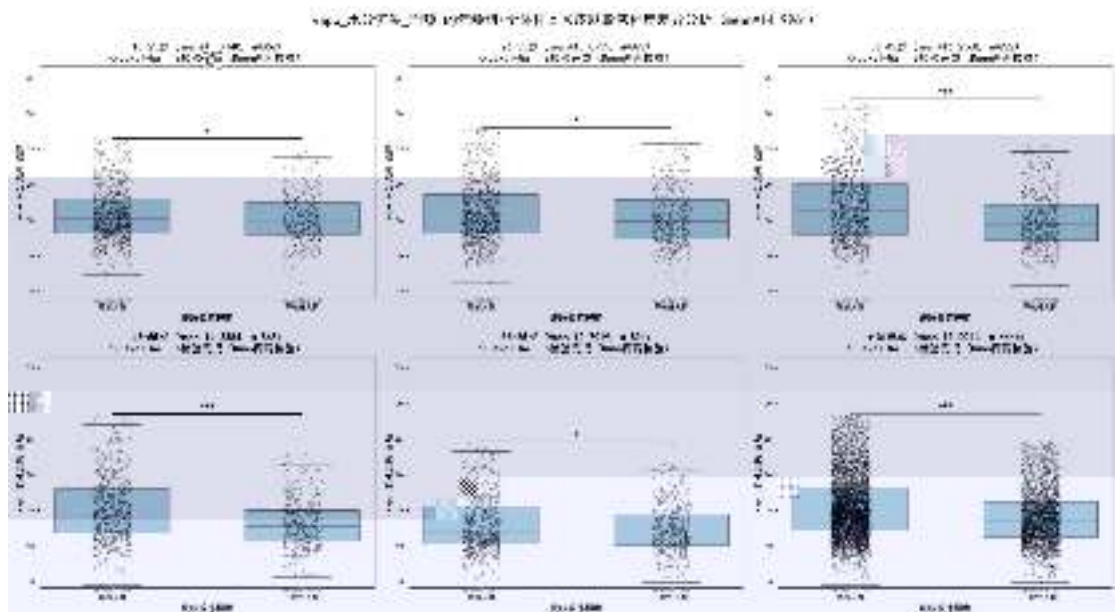
“ — — ”



4.5.9 Sebumeter\_ \_ X

TEWL

TEWL

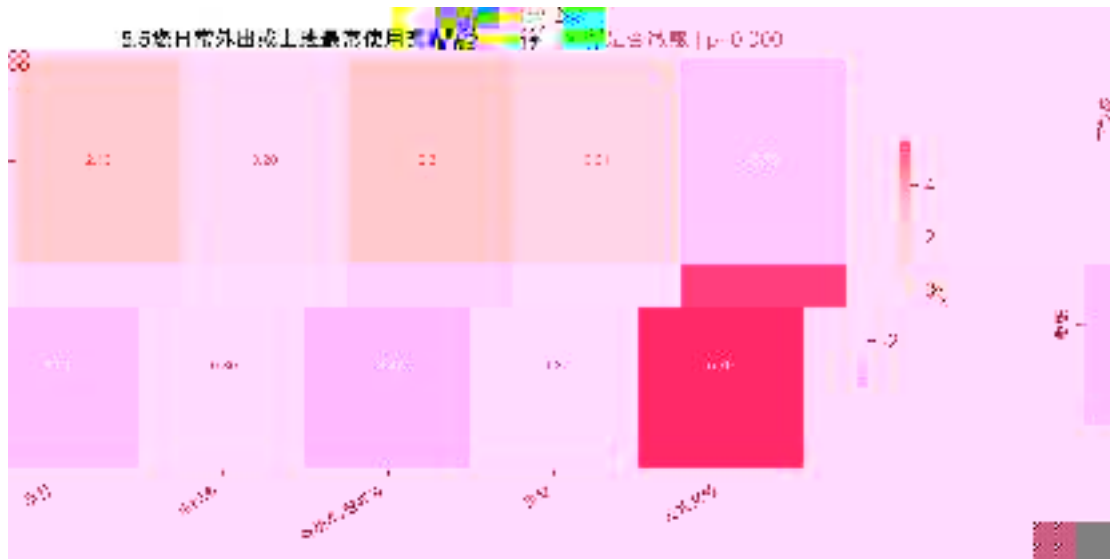


4.5.10 vapo\_ \_ X





4.5.14 X



4.5.15 X

“  $\leq 1$  ”

“  $1 - 2$  ” “  $2 - 4$  ”

OR

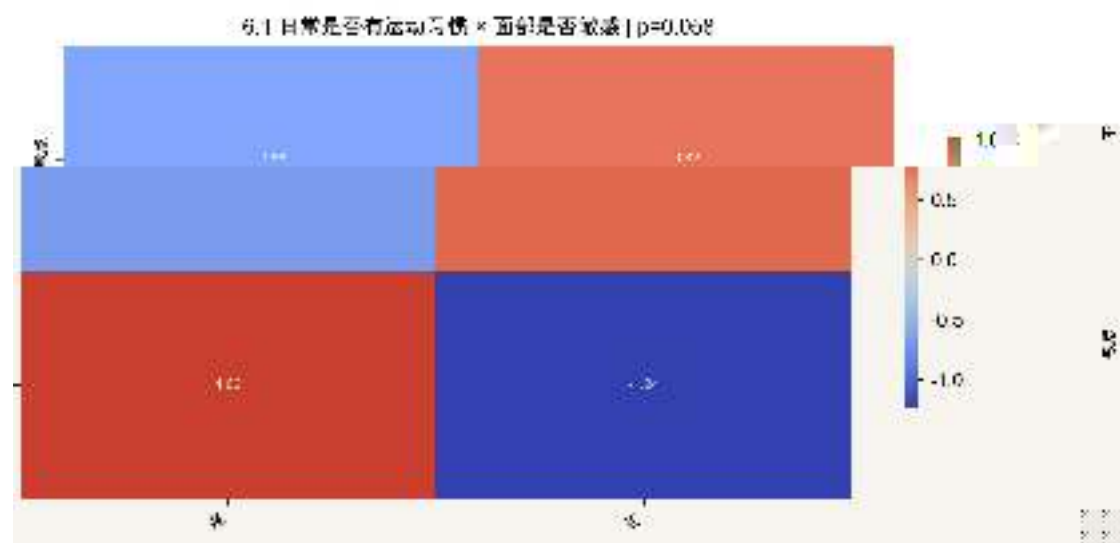
“ ”

“ ”

OR

1

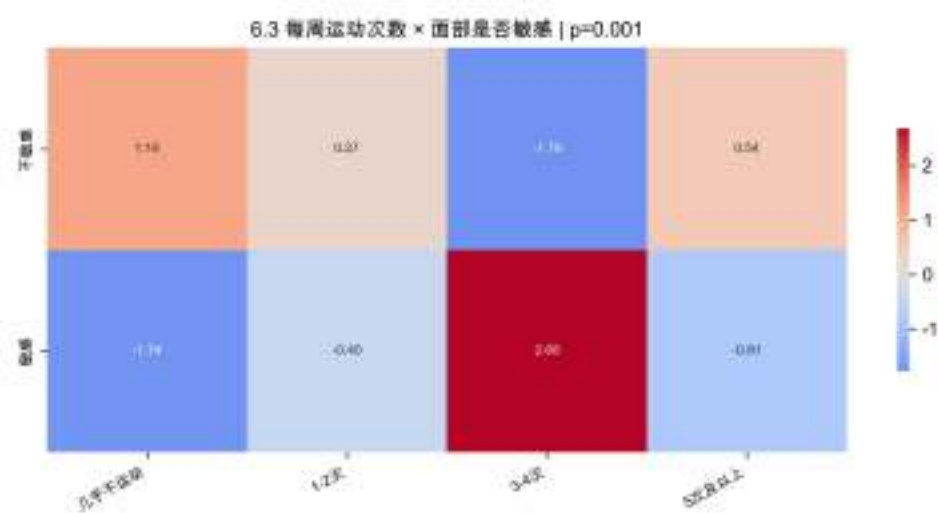
3



4.5.16 X



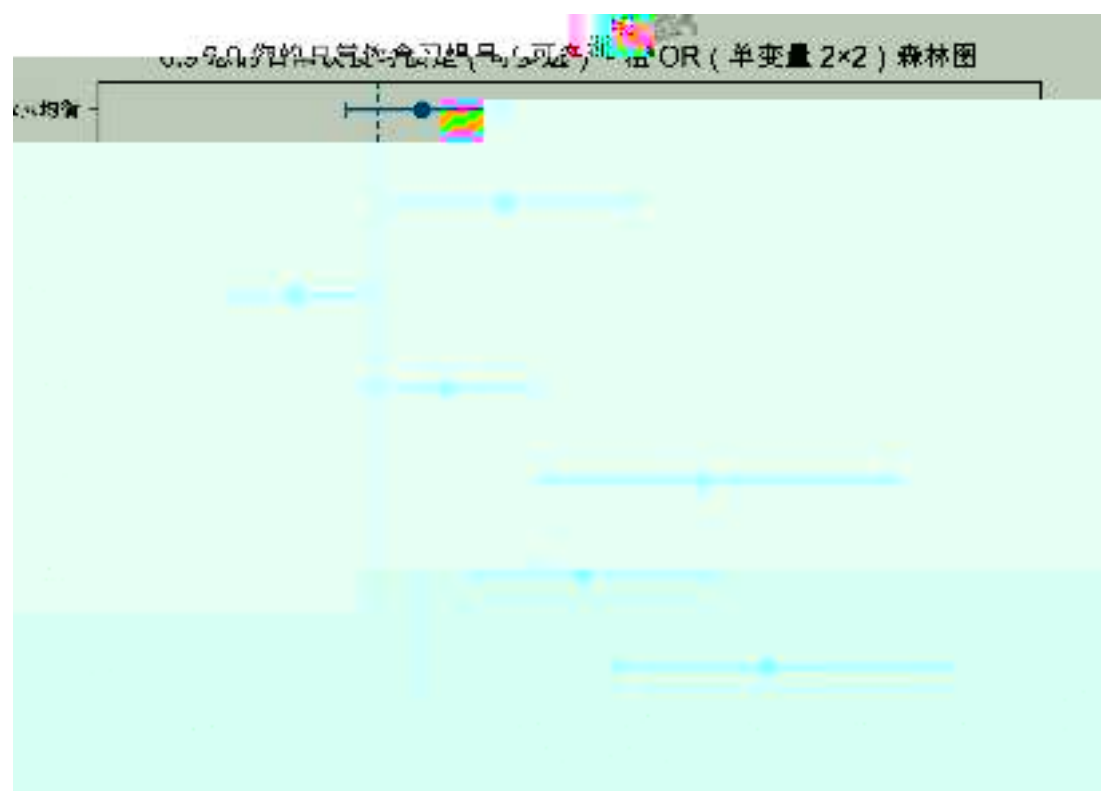
4.5.17 X



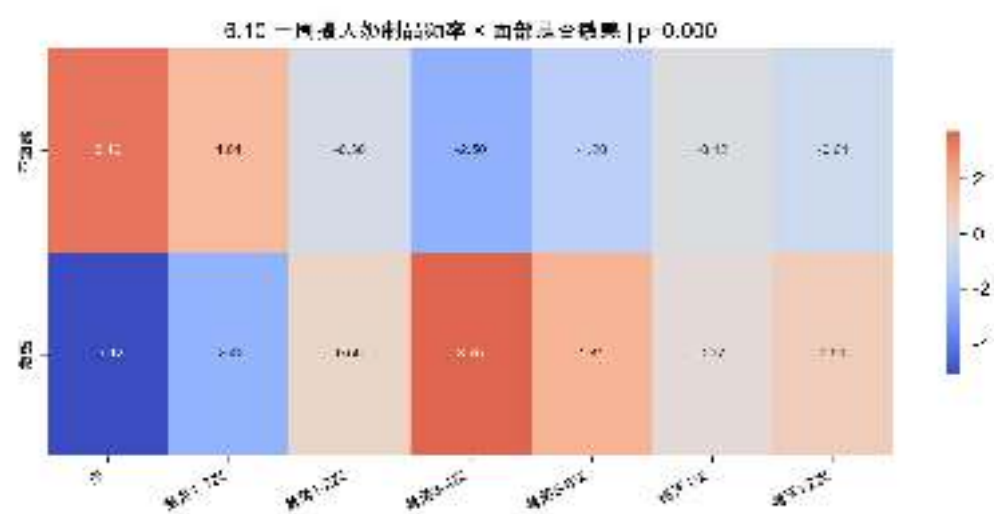
4.5.18 X



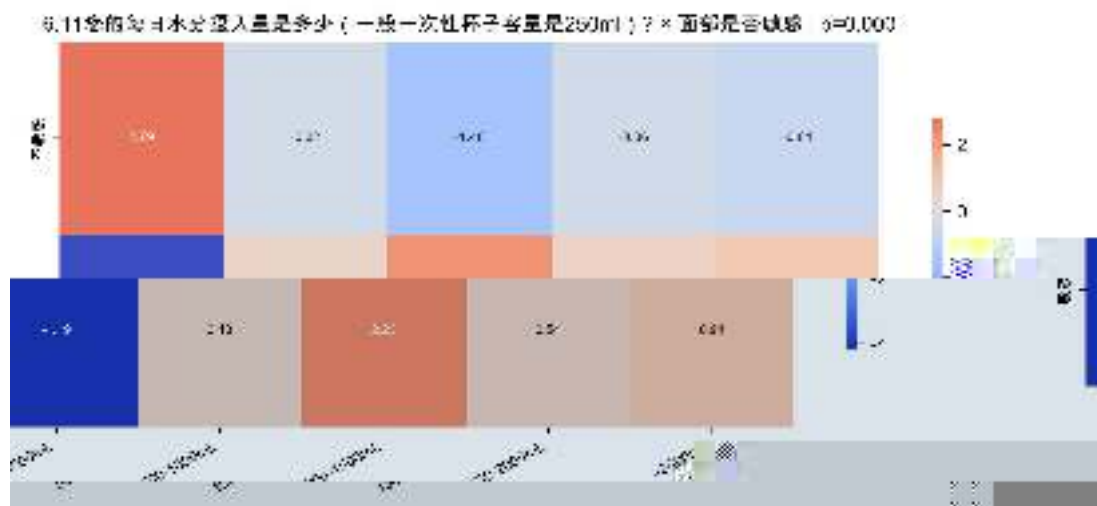
4.5.19 X



4.5.20 X



4.5.21 X

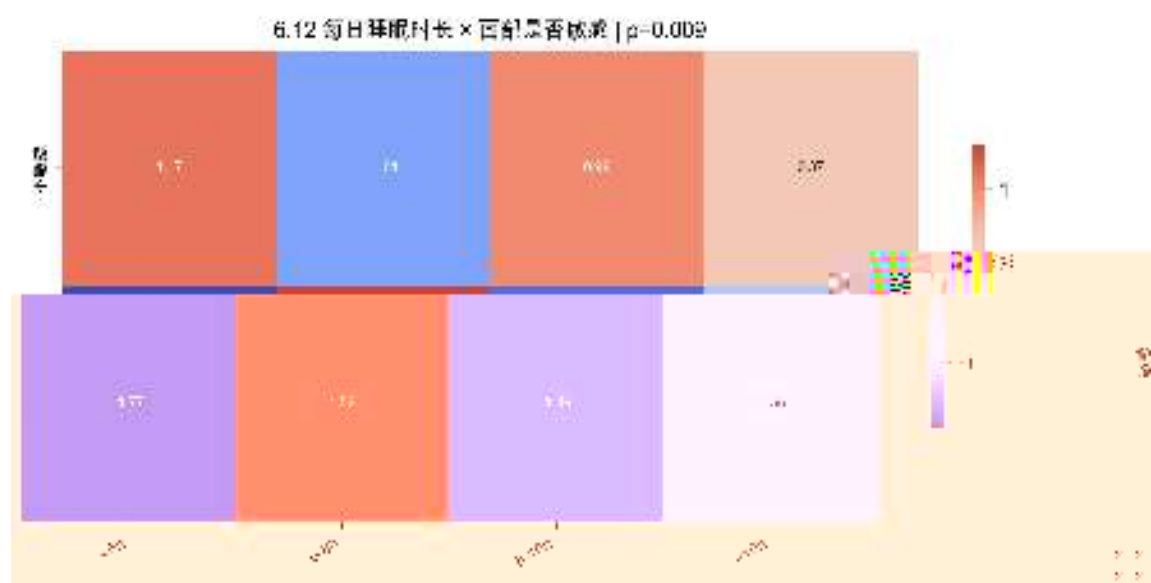


4.5.22 X

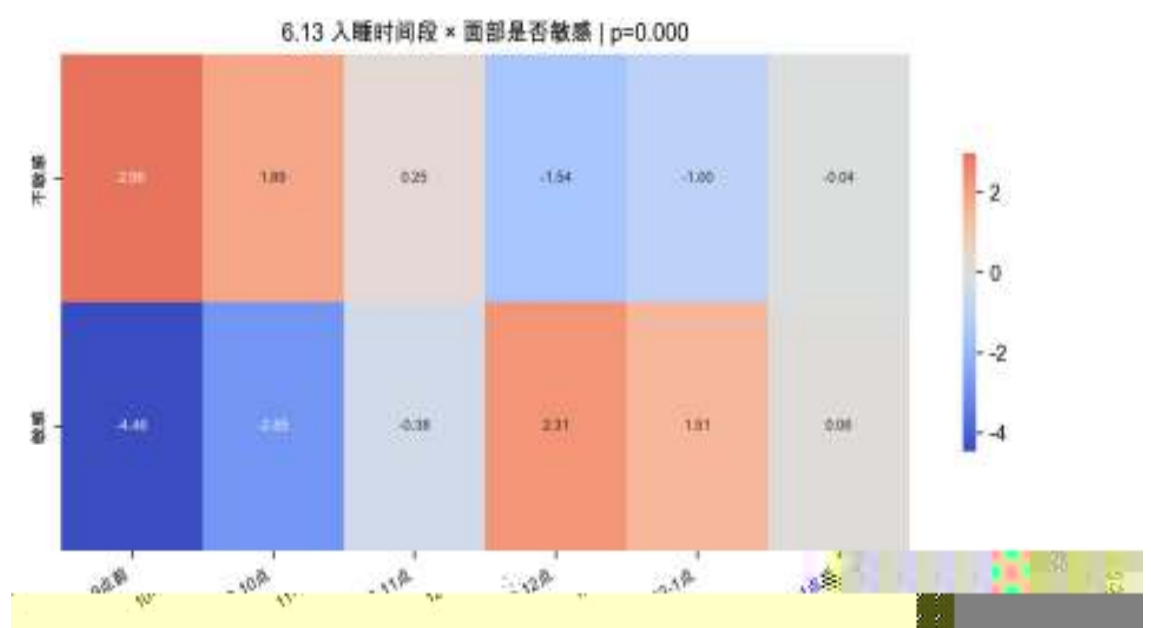
3-6

1000 mL

500 mL



4.5.23 X



4.5.24 X

6.12

6

8-10

6-8

6.13

9

9-10

11

11-12

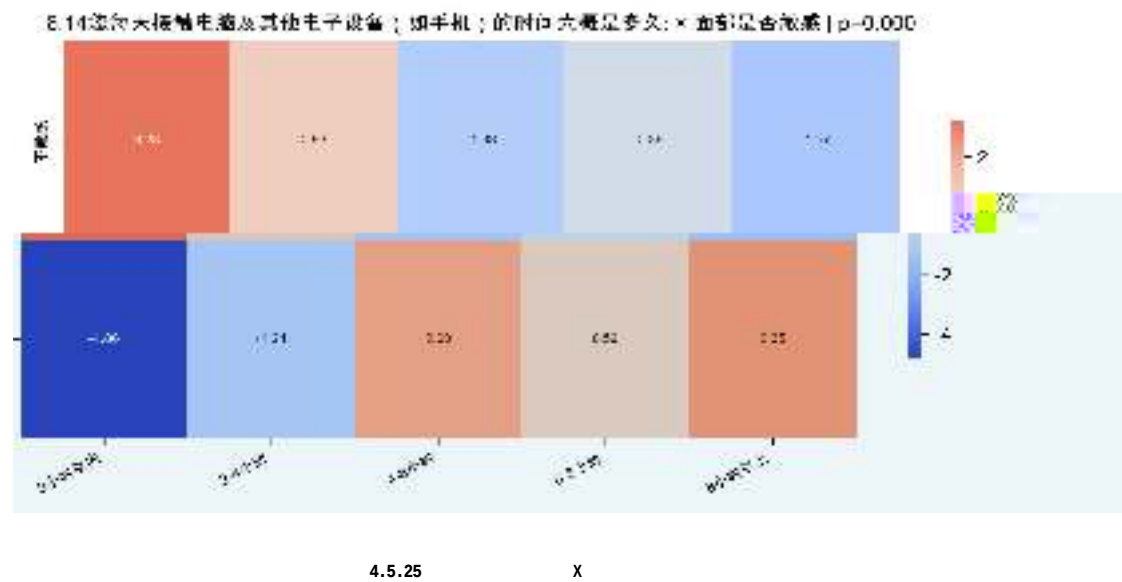
12 -1  
”

“

“

”

## 6

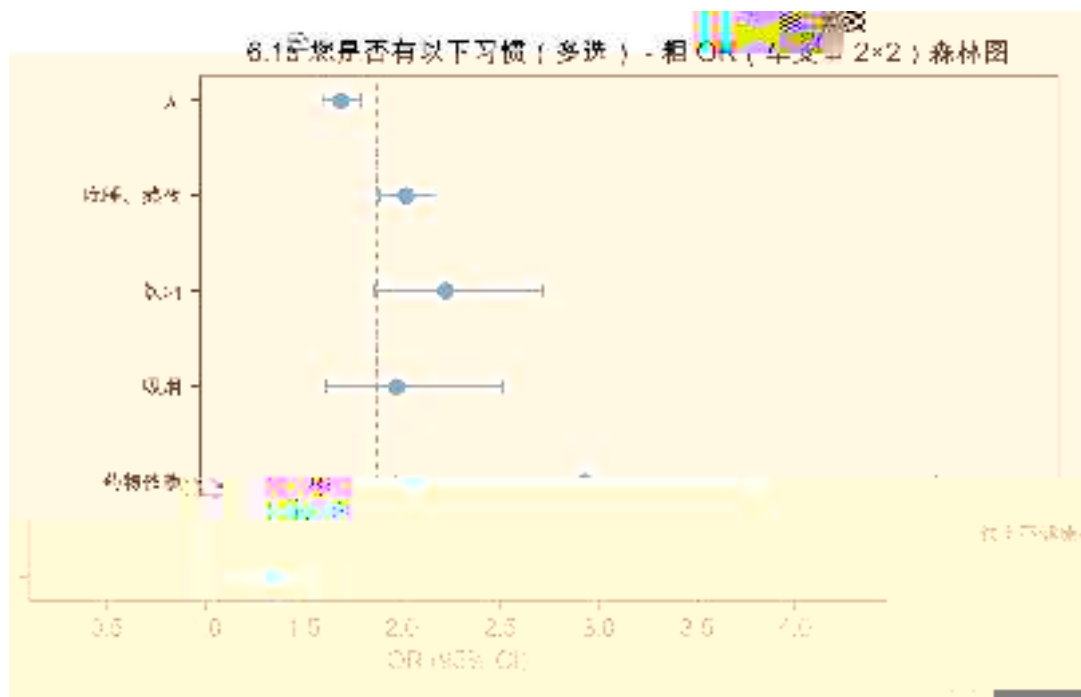


## 2

4-6

8

## 7



4.5.26 X

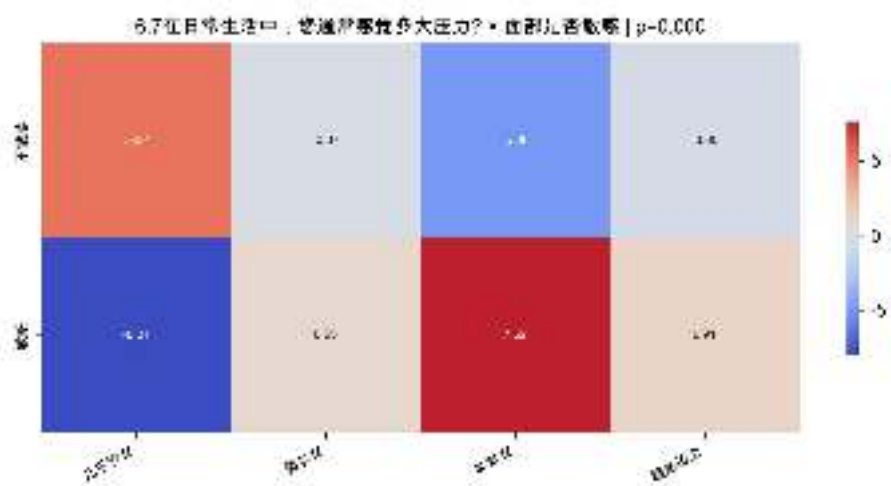


4.5.27 X

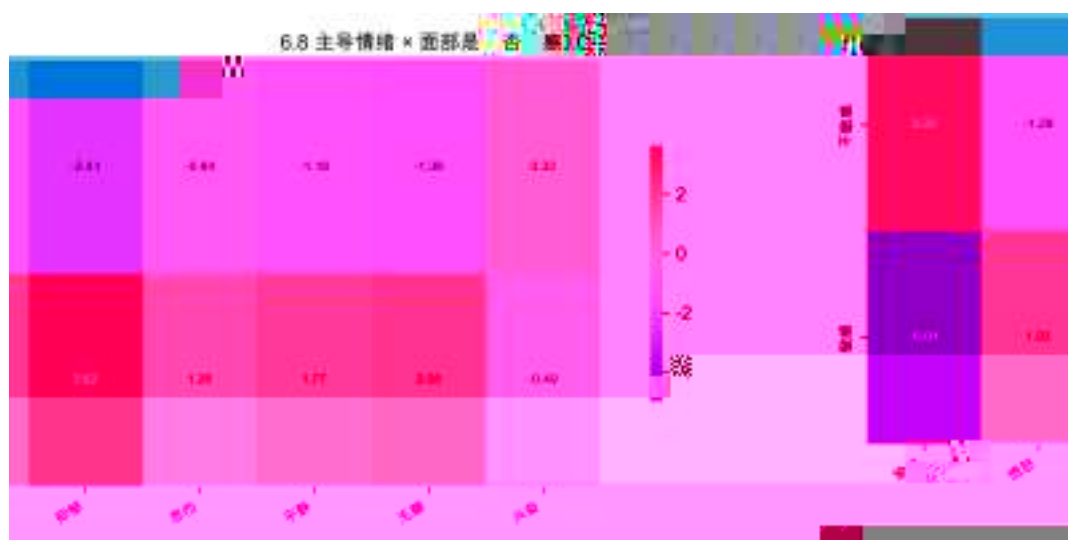
**OR**

**6.15** “ ” “ ” “ ” / ”

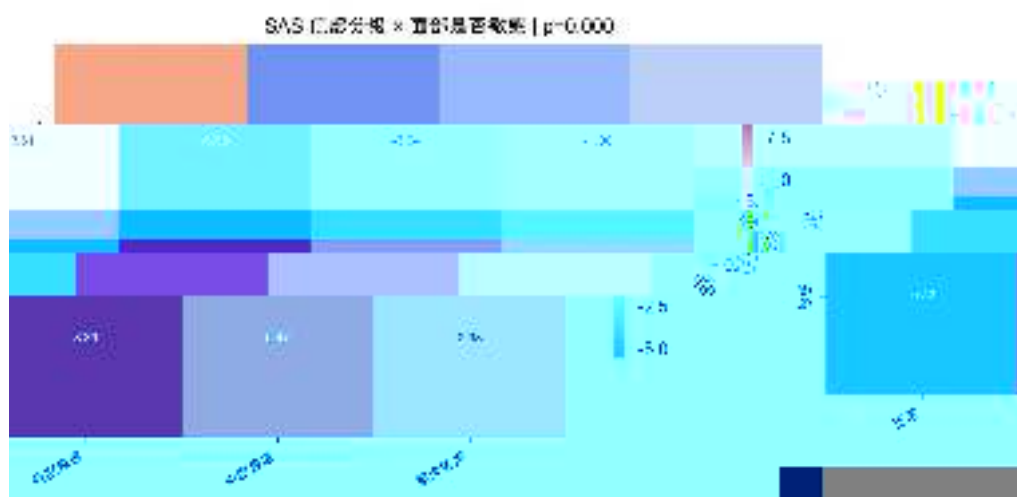
8



4.5.28 X



4.5.29 X



4.5.30 SAS X

SAS

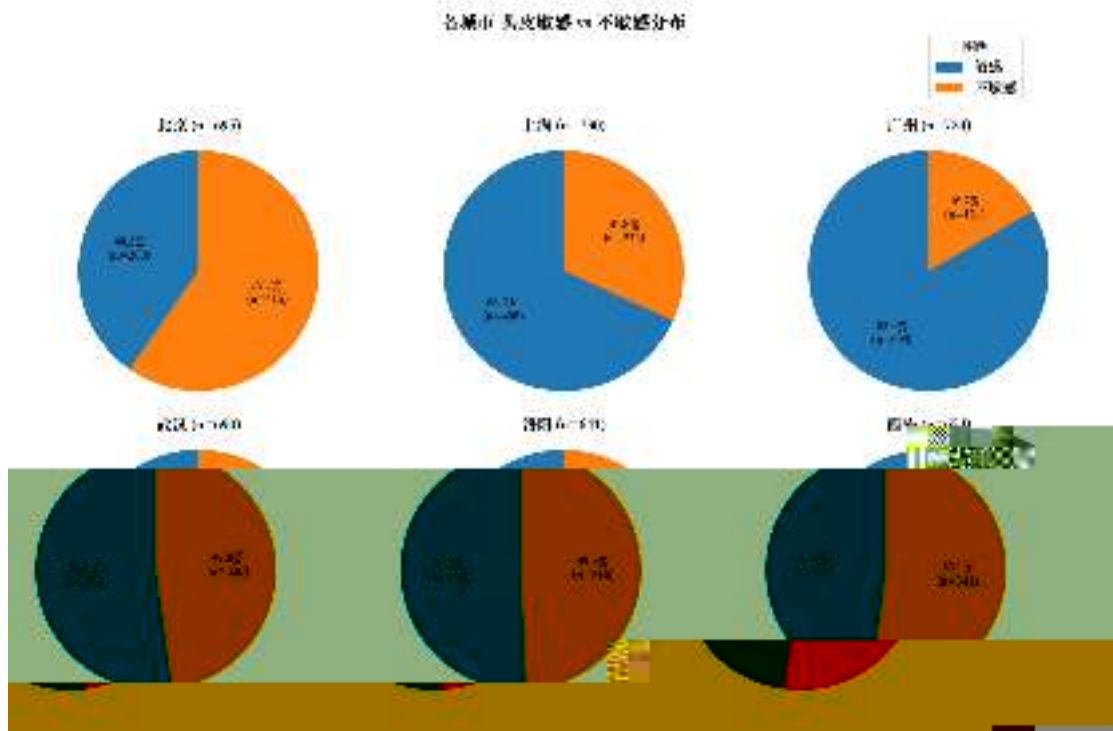
“ → → → ”

“ ” “

”

## 4.6

### 4.6.1



### 4.6.1

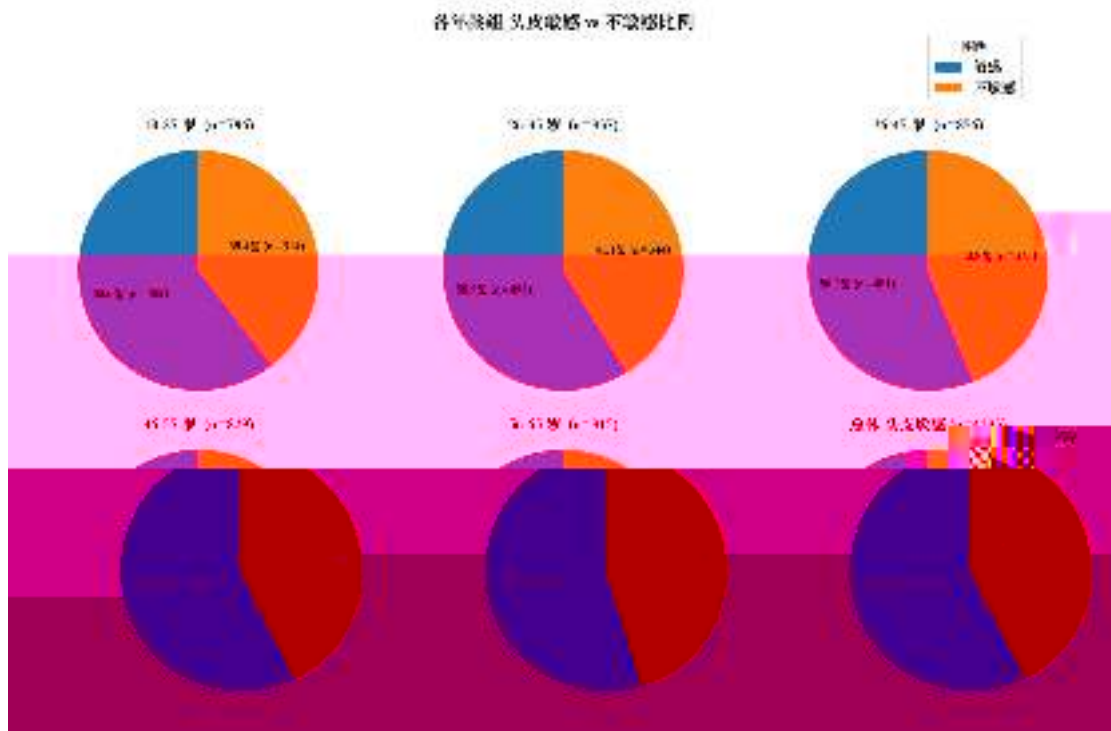
**57.5%**

**83.3%**

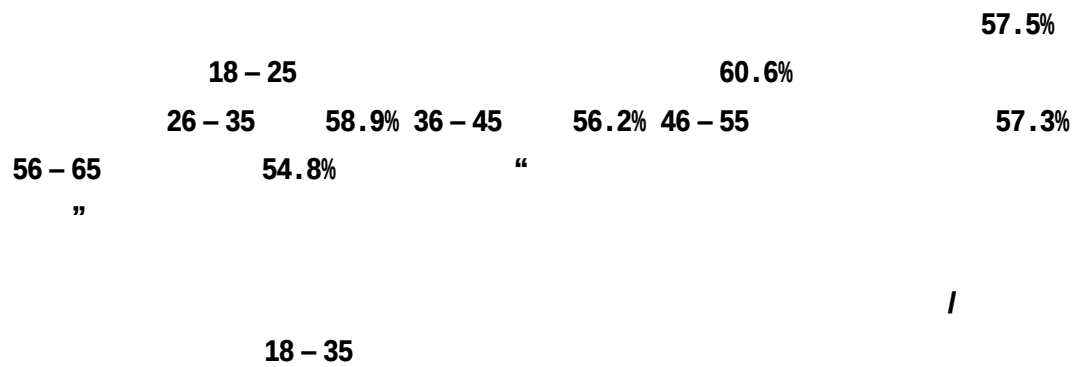
**68.2%3**

) **7%**

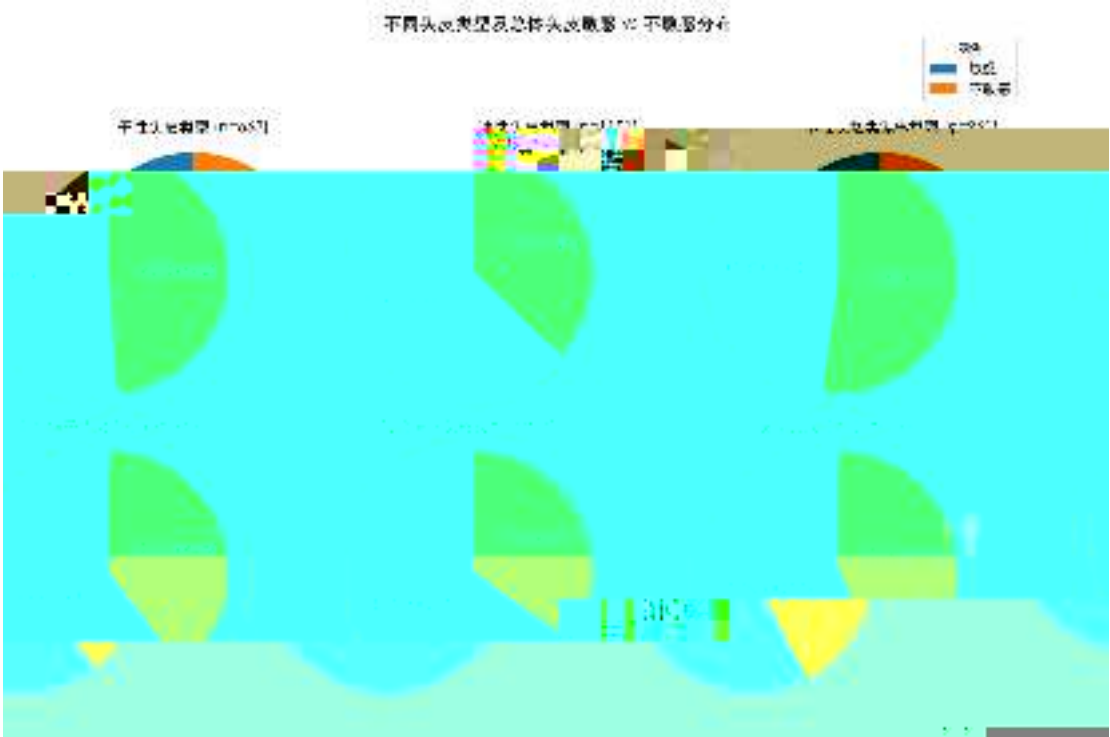
## 4.6.2



4.6.2

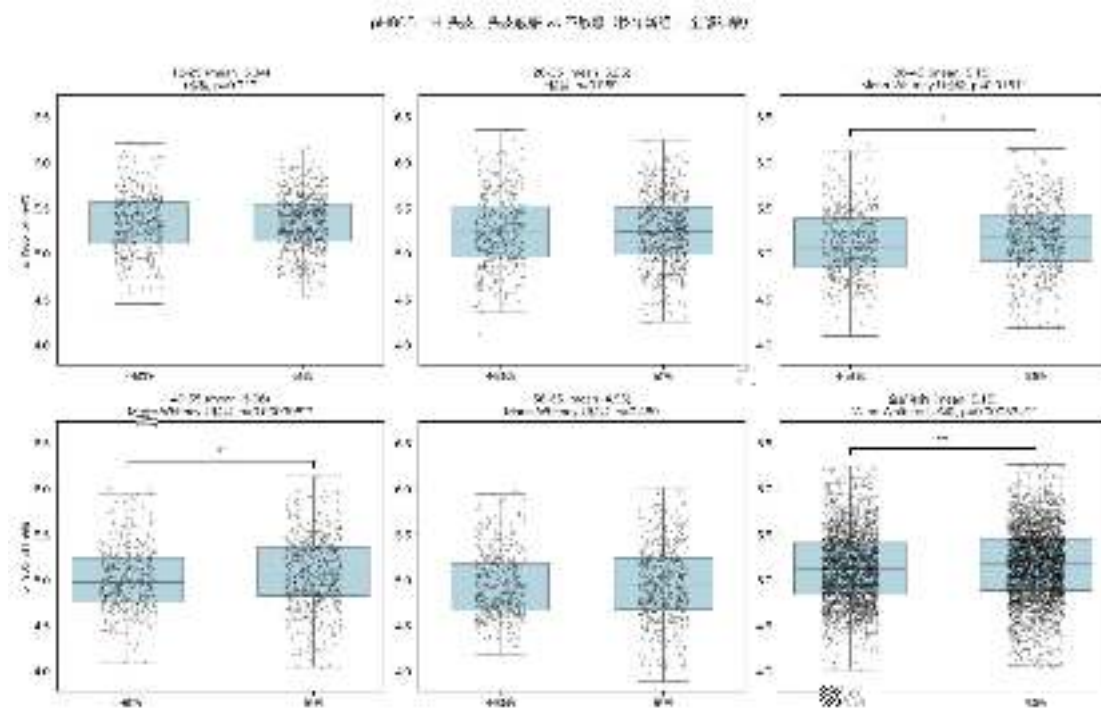


4.6.3



4.6.3

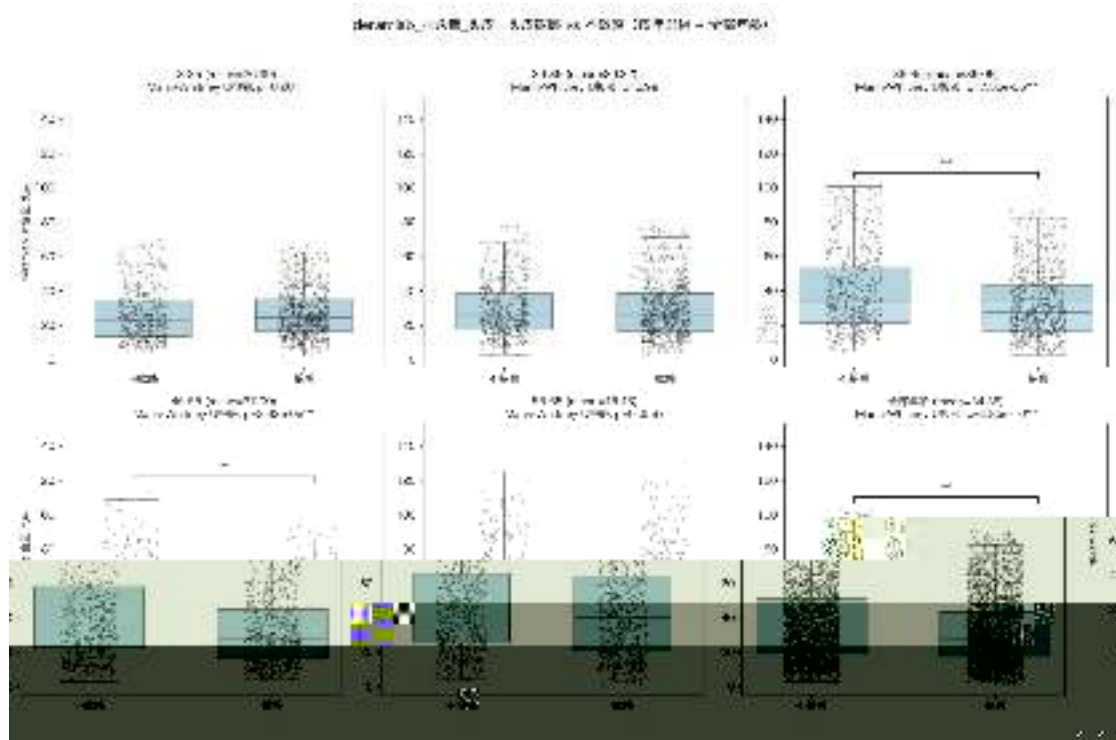




4.6.4 pH05\_pH\_ X

|         |         |         |           |         |         |
|---------|---------|---------|-----------|---------|---------|
|         |         | pH      | 4.5 – 5.5 | 18 – 25 | 26 – 35 |
| 56 – 65 |         |         |           |         | 36 –    |
| 45      | 46 – 55 | pH      |           |         |         |
|         |         | pH      |           |         |         |
|         |         | pH      |           | 5.2     |         |
|         |         | p<0.001 |           |         | “       |
| ”       |         |         |           |         |         |

2



4.6.5 deramlab\_1 X

18 – 25

26 – 35

56 – 65

Mann-Whitney U

36 – 45

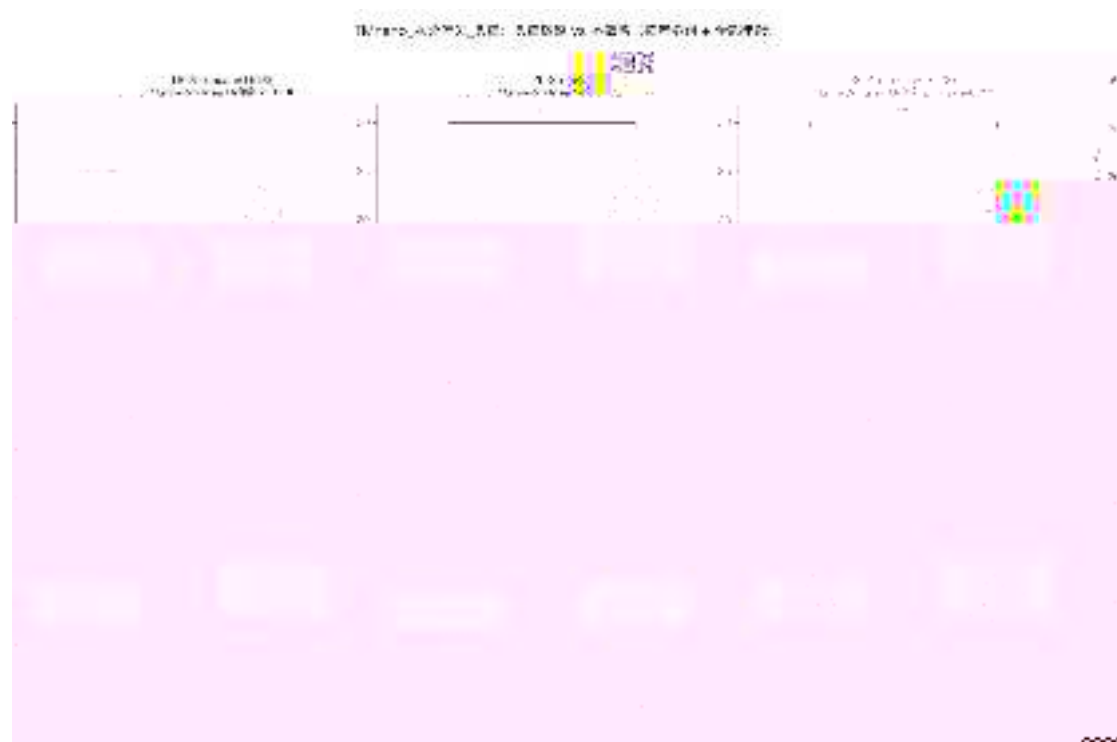
46 – 55

p

0.001

p 0.001

3

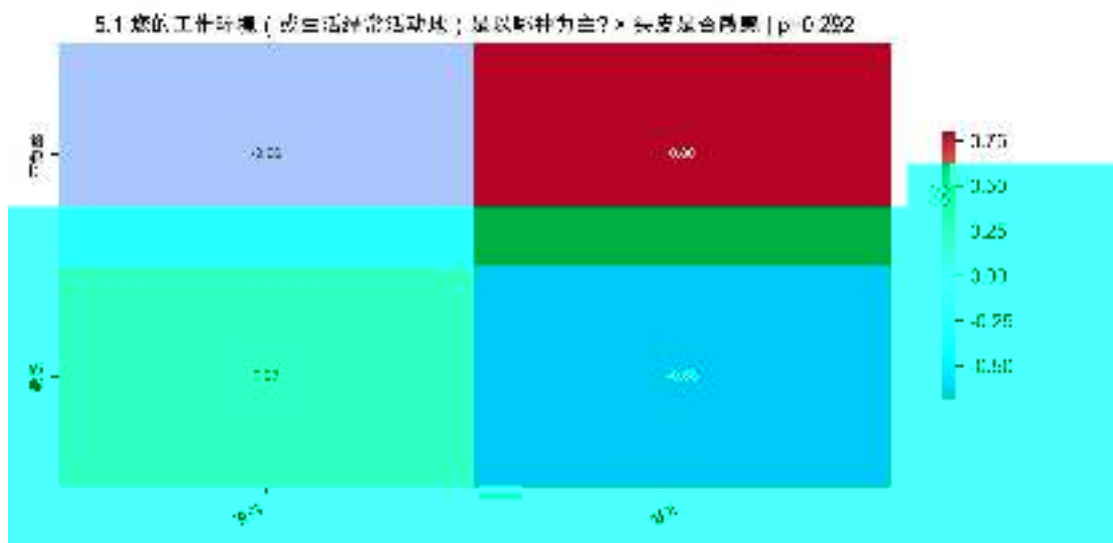


pH

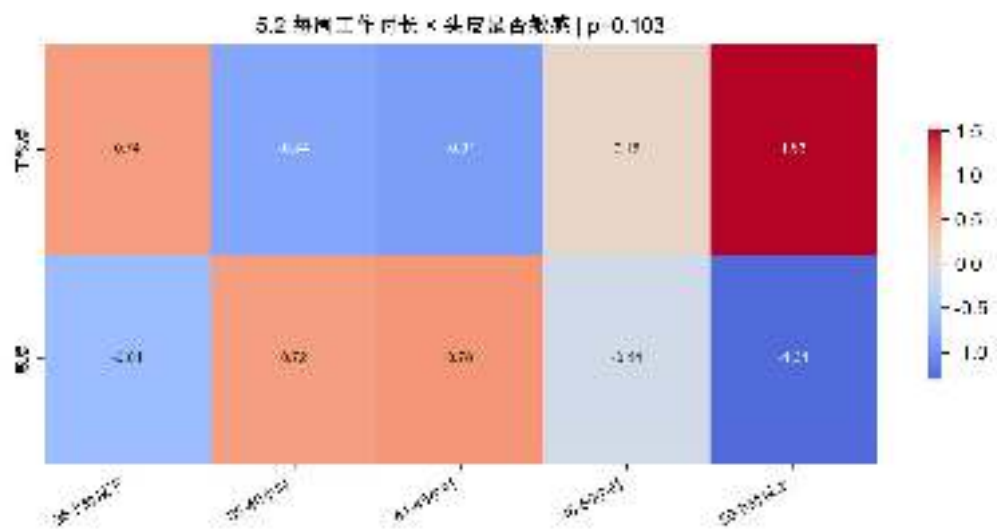
TEWL

## 4.6.5

1



4.6.9 X



4.6.10 X

/

p=0.292

/

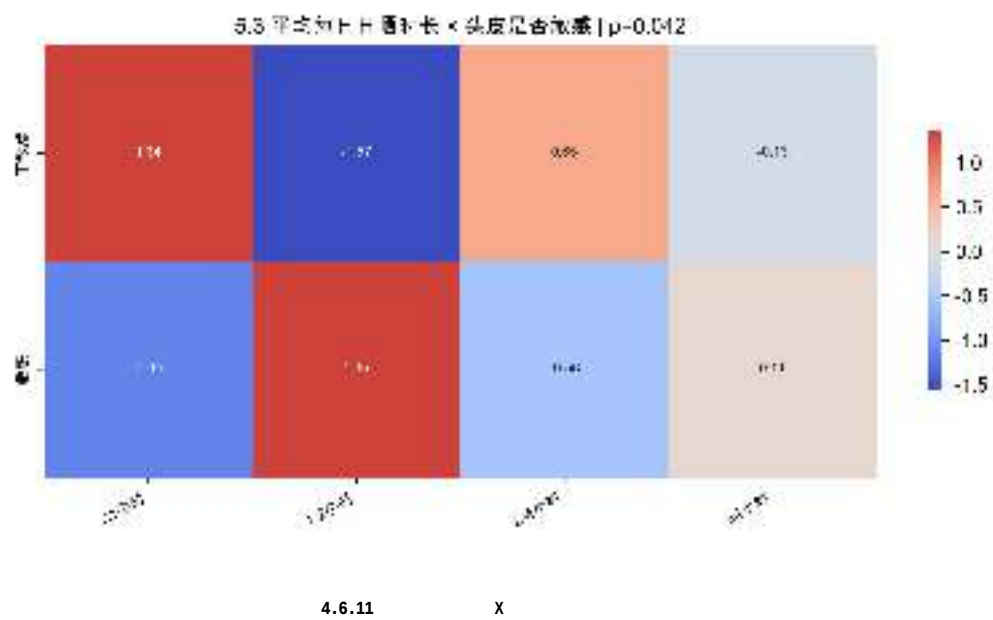
p=0.103

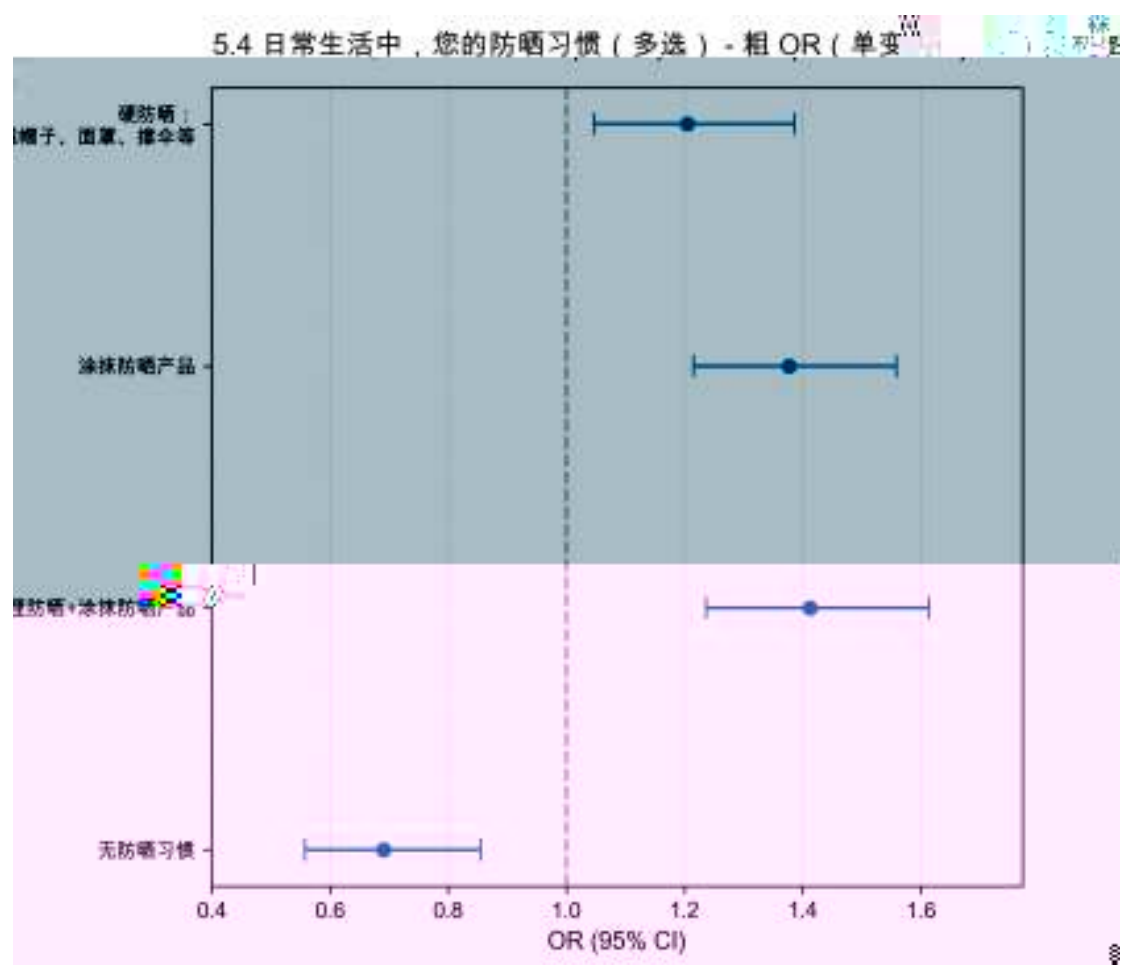
35

36 – 45

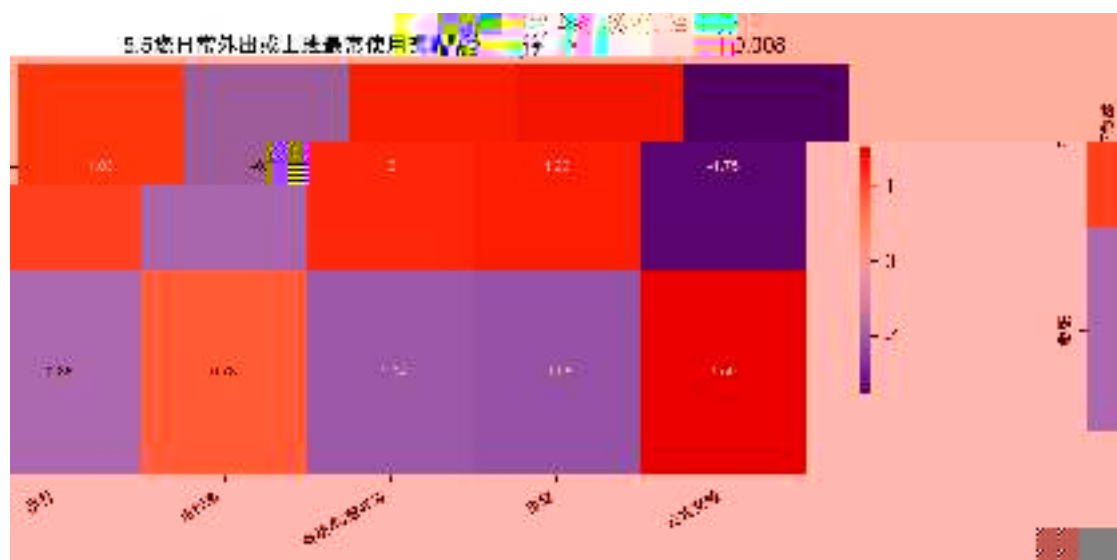
50

2





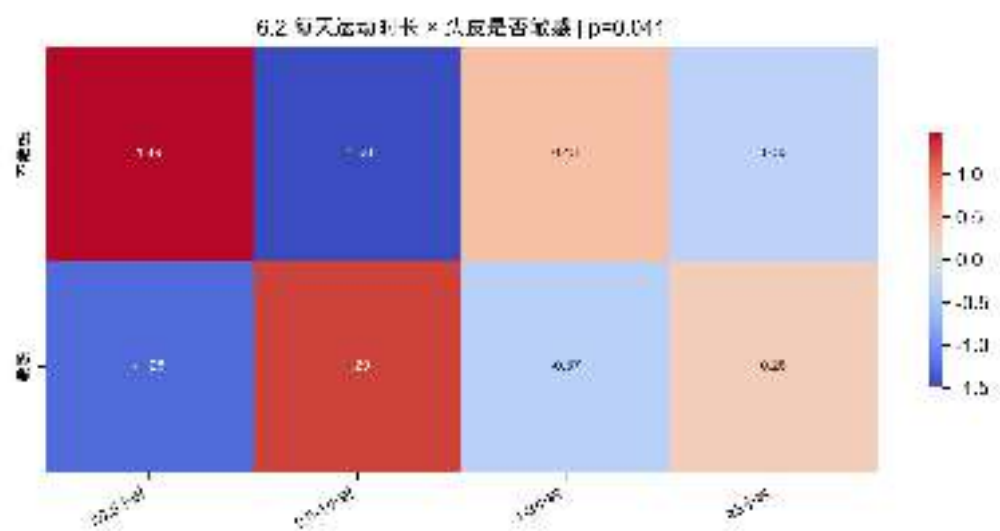
4.6.12 X



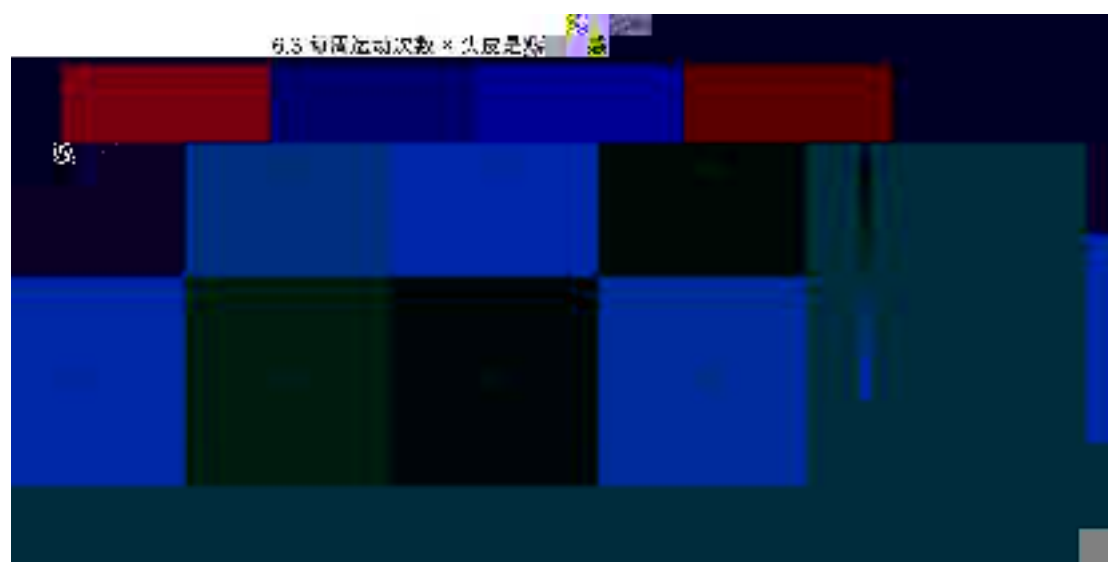
4.6.13 X

≤1

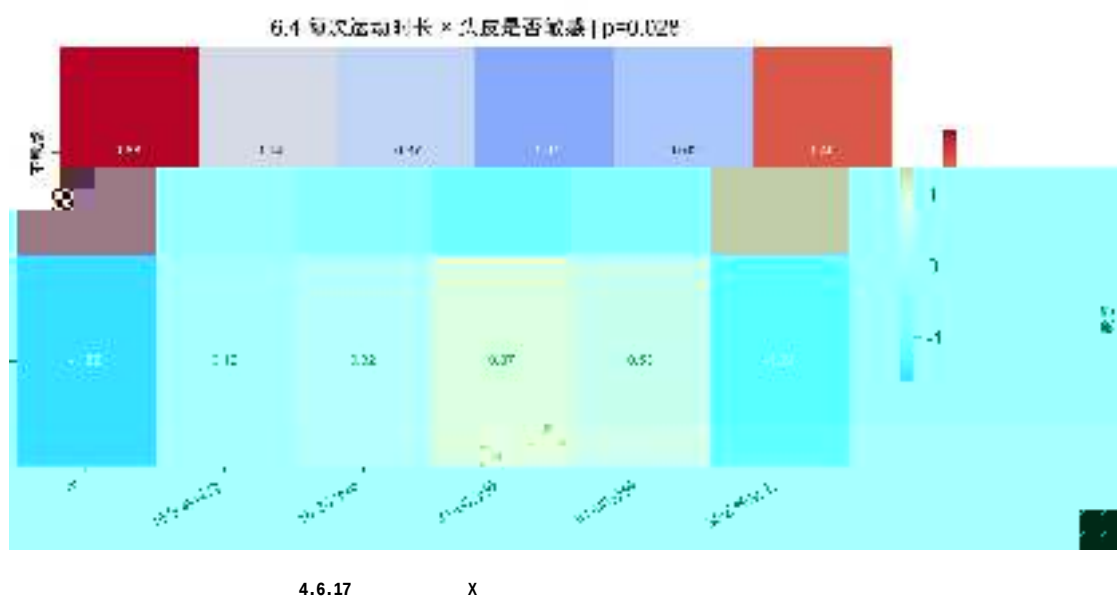




4.6.15 X



4.6.16 X



“ ” 6.1  $\approx 0.95$

$\approx 1.38$

6.2  $\leq 0.5$

$\approx 1.49$  0.5 - 1  $\approx 1.29$  1

“ ”

6.3 “ ”

$\approx 1.92$  3 - 4  $\approx 1.52$

$\geq 5$

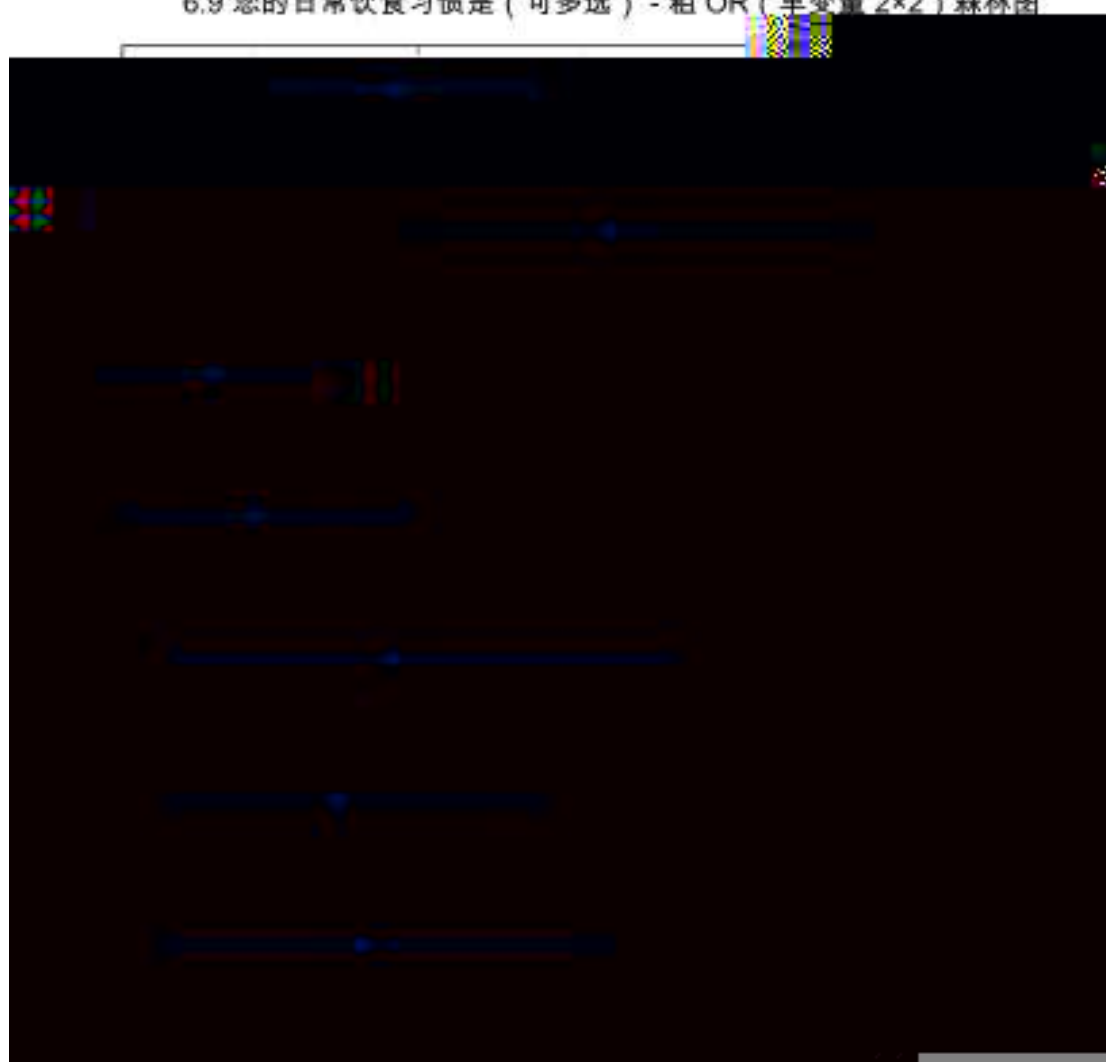
6.4 “ ”

$\approx 1.88$  31 - 60  $\approx 0.87$

$\geq 90$   $\approx 1.45$

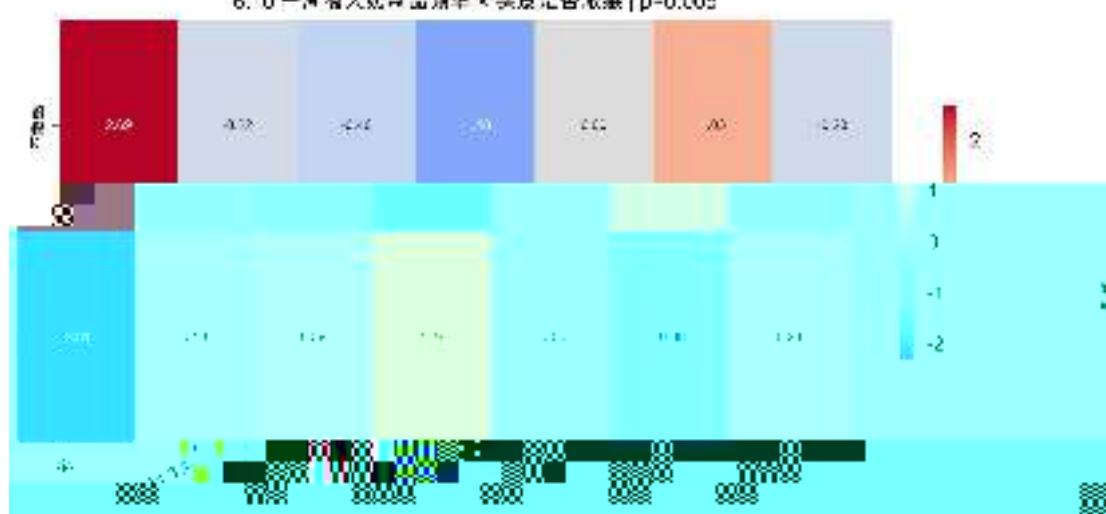
—— “ ” “ ”

6.9 您的日常饮食习惯是 ( 可多选 ) - 粗 OR ( 单变量 2×2 ) 森林图

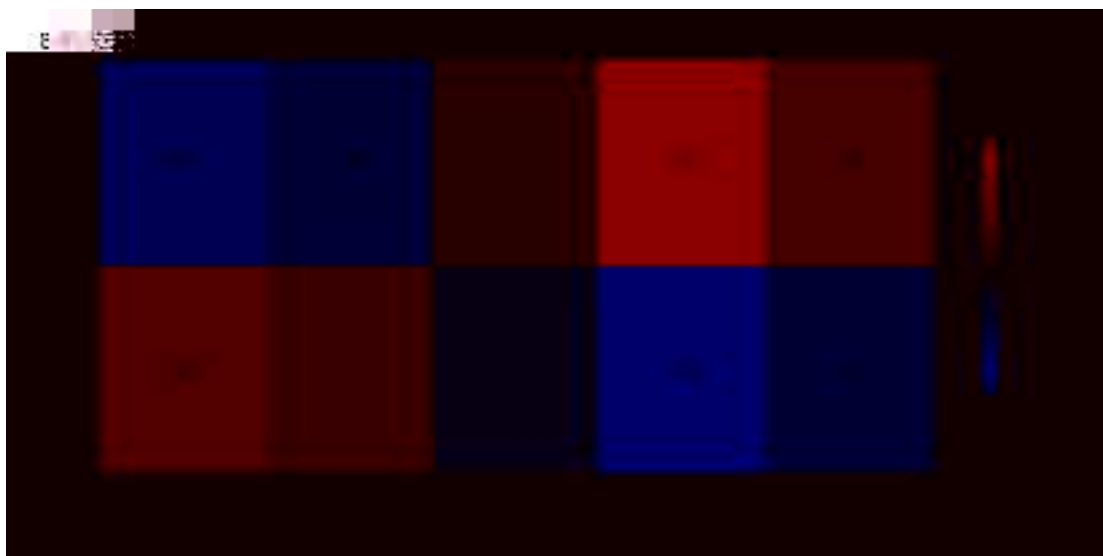


4.6.18 X

6.10 一周摄入坚果品频率 × 头部是否敏感 |  $p=0.005$



4.6.19 X



4.6.20 X

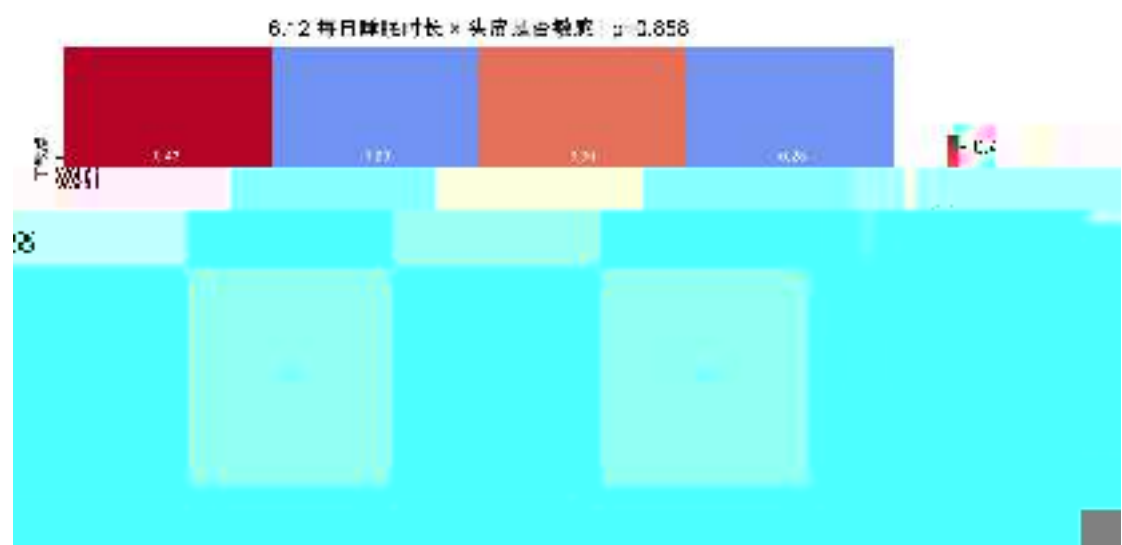
OR “ ” “ ”

OR 1  
 p=0.005 “ ” 3 – 4  
 “ ”

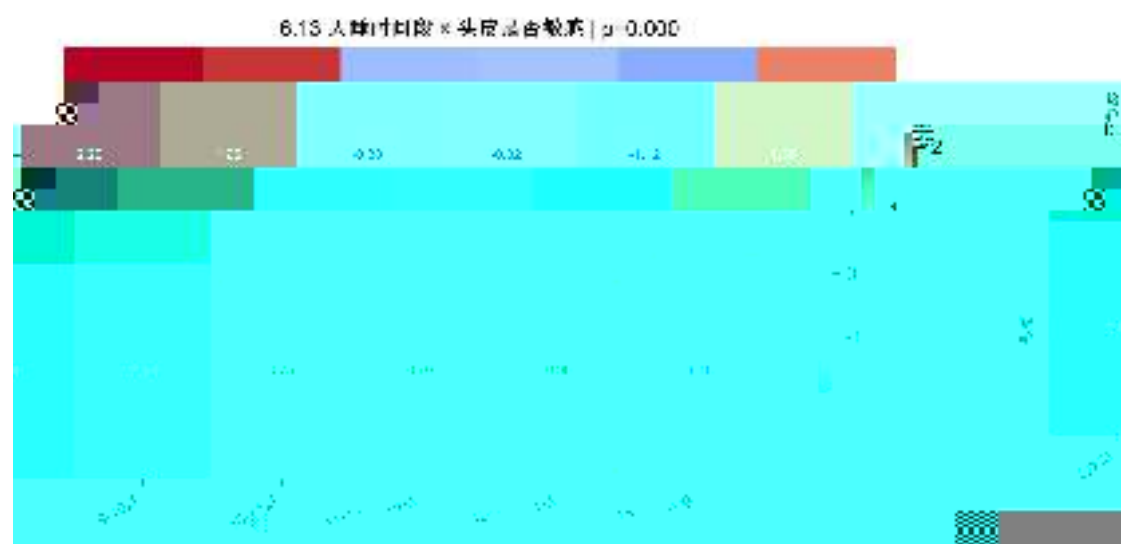
p=0.074

1500 – 2000 mL <1000 mL

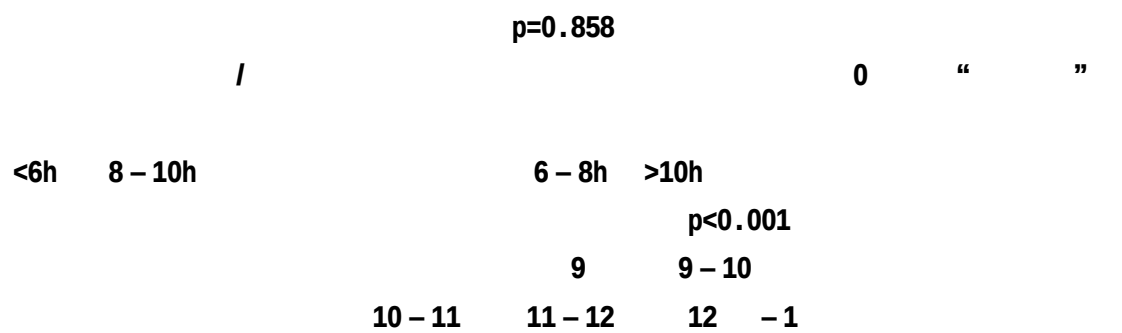
5



4.6.21 X



4.6.22 X

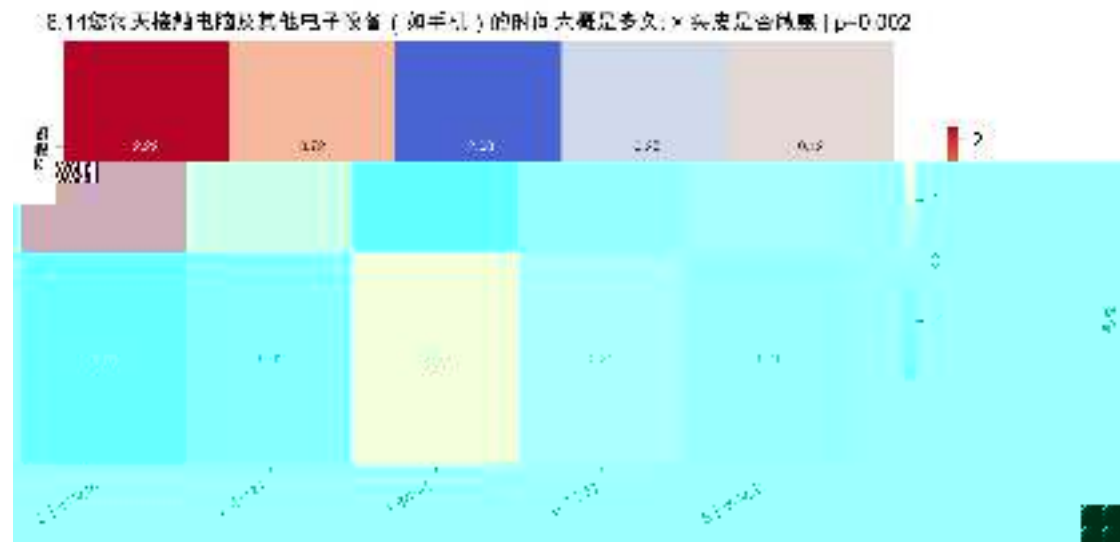


1

“ ”

“ ”

## 6

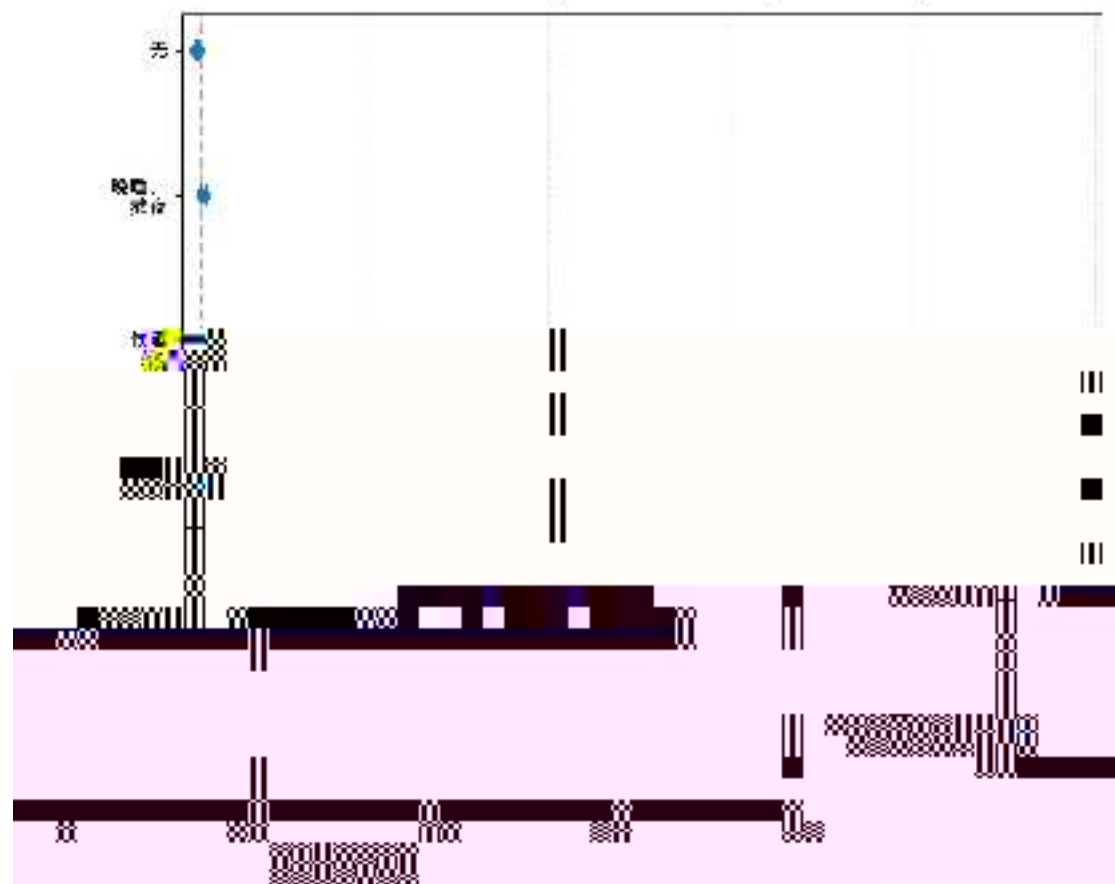


4.6.23

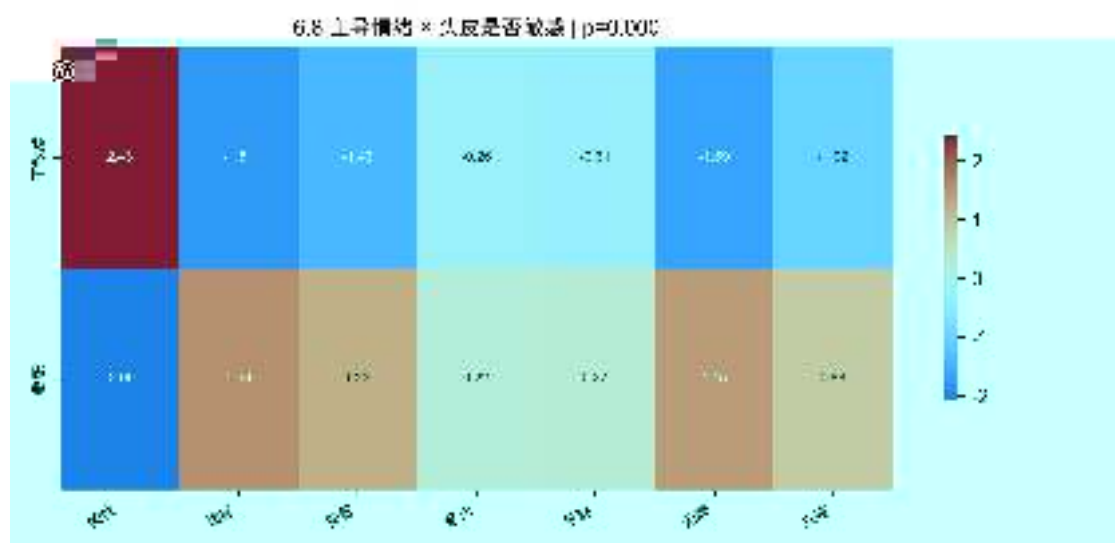
X

$p=0.002$

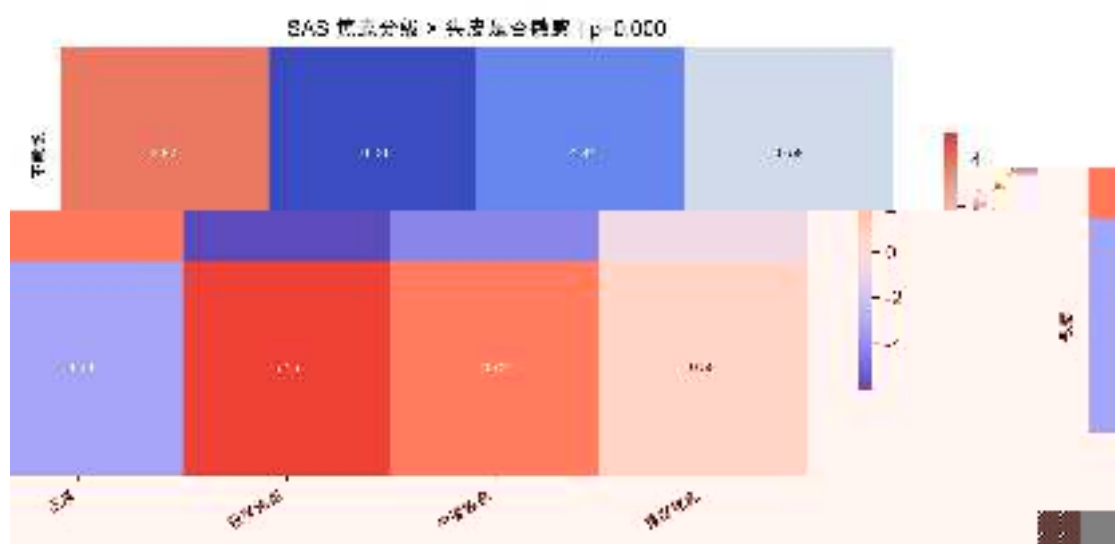
6.15 您是否有以下习惯 ( 多选 ) - 粗 OR ( 单变量 2×2 ) 森林图







4.6.27 X



4.6.28 SAS X





- [14] , , , , , .  
[J]. , 2022, 45(2): 25-30.
- [15] , , . [J].  
,2020,50(9):5.D0I:10.3969/j.issn.1001-1803.2020.09.010.
- [16] , , , .  
[J]. ,2024, (03):35-39.  
DOI:10.20099/j.issn.1000-4475.2024.0048.
- [17]Watanabe K, Yamada A, Masuda H, Kashiwazaki E, Nakayama S, Kadokura T, Sakai K, Tashiro Y. Sample collecting methods for bacterial community structure analysis of scalp hair: non-invasive swabbing versus intrusive hair shaft cutting. *SciRep*. 2024 Sep 28;14(1):22461.
- [18]Saxena R, Mittal P, Clavaud C, Dhakan DB, Roy N, Breton L, Misra N, Sharma VK. Longitudinal study of the scalp microbiome suggests coconut oil to enrich healthy scalp commensals. *Sci Rep*. 2021 Mar 31;11(1):7220. doi: 10.1038/s41598-021-86454-1.
- [19]Shibagaki N, Suda W, Clavaud C, Bastien P, Takayasu L, Iioka E, Kurokawa R, Yamashita N, Hattori Y, Shindo C, Breton L, Hattori M. Aging-related changes in the diversity of women's skin microbiomes associated with oral bacteria. *Sci Rep*. 2017 Sep 5;7(1):10567.
- [20] . T/ZGKSL 018—2024 [S].  
2024.

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