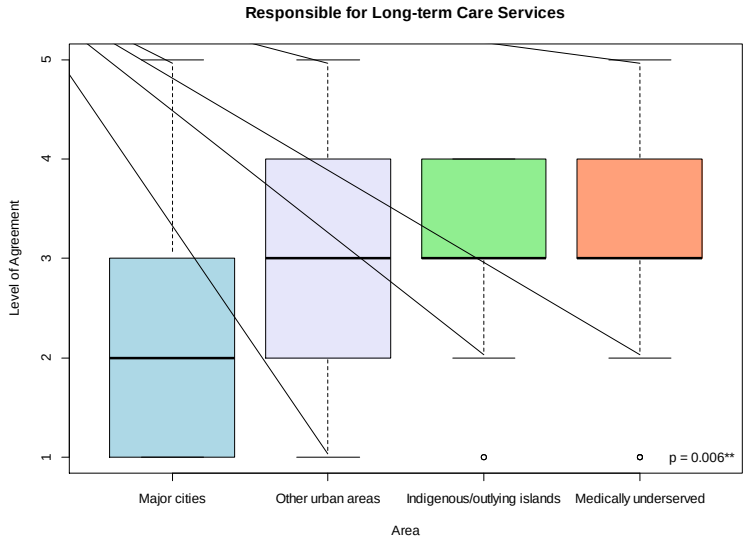
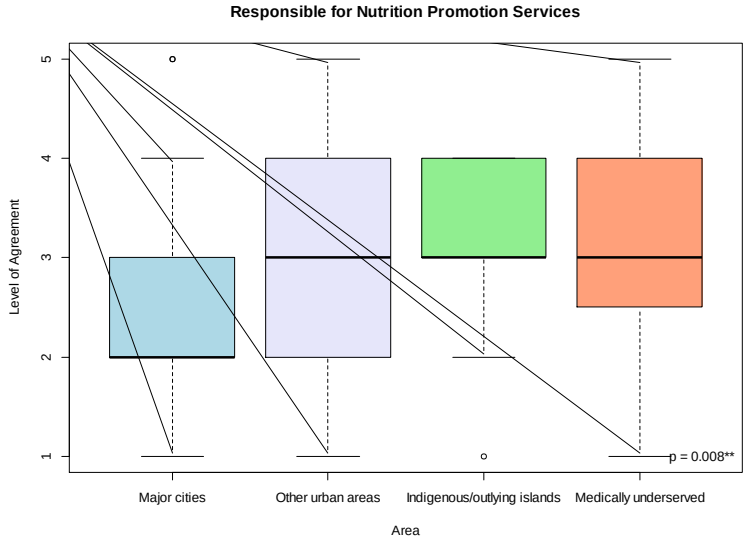
Part 0a: Significant between-area differences in perceptions on PHC functions *(won't be included in SEM)*

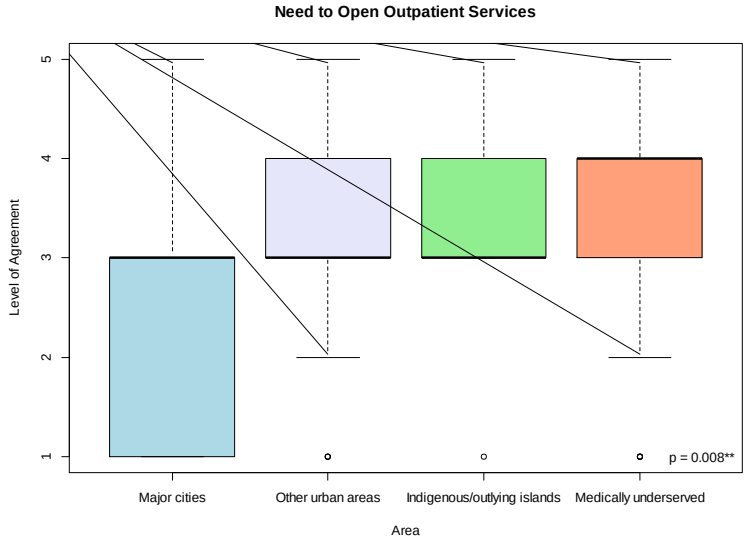
Health_Center_2 (less perceived need in major cities)



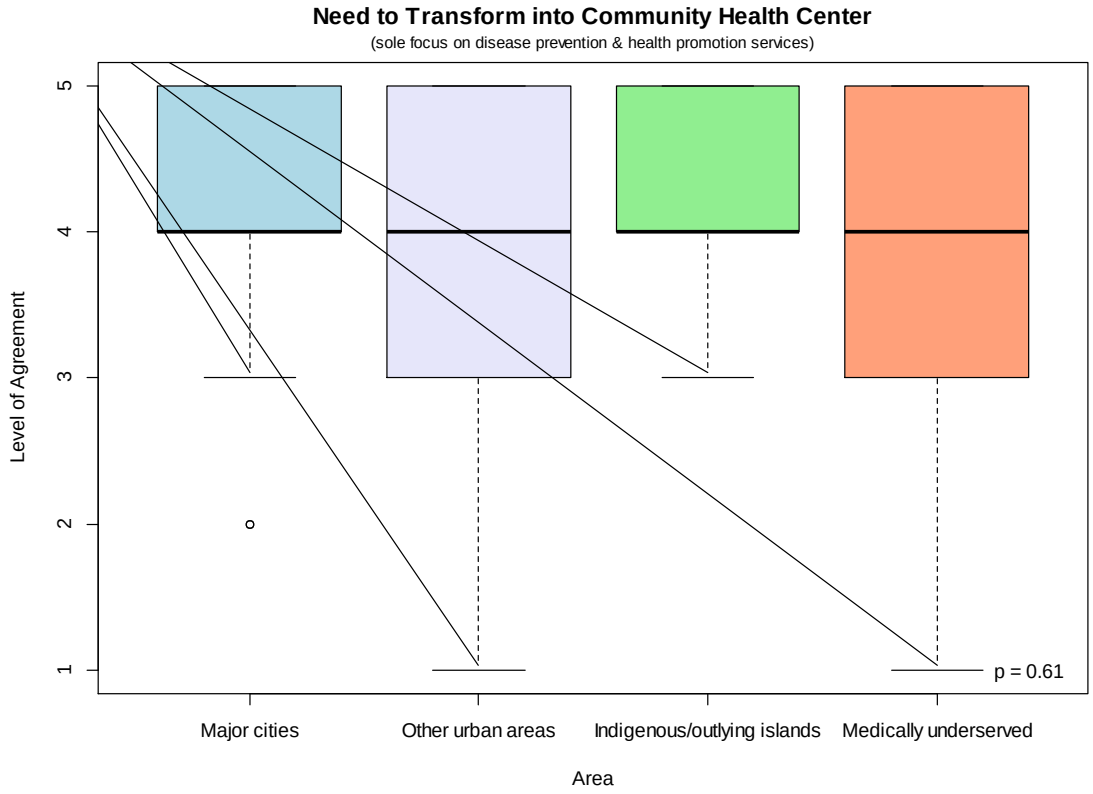
Health_Center_6 (less perceived need in major cities)



Health_Center_7 (more perceived need in medically underserved areas)



Part 0b: Perceived need of transforming Public Health Centers into Community Health Centers focused only on disease prevention & health promotion services



There is no significant difference between areas. It seems like PHC workers all across Taiwan, regardless of area, feel inclined to support a functional transformation of PHCs.

➔ If area is not the main determining predictor, then what factors influence this perception?

Part 1: Exploratory Factor Analysis

4 hypothesized latent factors:

```
test_fa <- df[, c("fatigue_01", "fatigue_02", "fatigue_03", "fatigue_04","fatigue_05", "Job_Burnout", "KPI_Stress", # stress-related
                  'Responsibility_Clarity', 'Workload_Reasonable', 'Authority_Understanding', 'Opinion_Expression', 'cowork_help',
                  'boss_flex', 'talk_boss', # working environment
                  'Health_Center_1', 'Health_Center_2', 'Health_Center_3', 'Health_Center_4', 'Health_Center_5', 'Health_Center_6',
                  'Health_Center_7', # PHC functions
                  "CareSystem", "Understand_CommunityNeeds", "TailoredServices", "ResourceIntegration", "BuildCommunityTrust",
                 "CooperationWithInstitutions", "CompetitionWithInstitutions" # external relations
                  )]
```

5 levels were suggested in the first screening:

```
> print(fa_test$loadings, cutoff = 0.3)

Loadings:
                           PA3    PA2    PA1    PA5    PA4
fatigue_01                  0.678
fatigue_02                  0.752
fatigue_03                  0.879
fatigue_04                  0.837
fatigue_05                  0.934
Job_Burnout                 0.357              -0.409
KPI_Stress                                     -0.440  0.379
Responsibility_Clarity                          0.552
Workload_Reasonable                             0.826
Authority_Understanding                         0.562
Opinion_Expression                              0.611
cowork_help                                            0.519
boss_flex                                       0.572
talk_boss                                              0.537
Health_Center_1                        0.490    0.391
Health_Center_2                        0.579
Health_Center_3                        0.533
Health_Center_4                        0.577
Health_Center_5                        0.748
Health_Center_6                        0.881
Health_Center_7                        0.637
CareSystem                      0.866
Understand_CommunityNeeds       0.799
TailoredServices                0.879
ResourceIntegration             0.863
BuildCommunityTrust             0.348
CooperationWithInstitutions     0.476
CompetitionWithInstitutions                                   -0.373
```

Remove variables that load to >1 factors (KPI_Stress, Job_Burnout, Health_Center_1). 4 levels were suggested.

```
> print(fa_test$loadings, cutoff = 0.3)

Loadings:
                           PA3    PA1    PA2    PA4
fatigue_01                  0.763
fatigue_02                  0.823
fatigue_03                  0.870
fatigue_04                  0.799
fatigue_05                  0.958
Responsibility_Clarity                            0.435
Workload_Reasonable                               0.416
Authority_Understanding             0.446
Opinion_Expression                                0.584
cowork_help                                       0.345
boss_flex                                         0.584
talk_boss                                         0.415
Health_Center_2                     0.649
Health_Center_3                     0.516  0.307
Health_Center_4                     0.474
Health_Center_5                     0.823
Health_Center_6                     0.885
Health_Center_7                     0.530
CareSystem                                 0.850
Understand_CommunityNeeds                  0.757
TailoredServices                           0.832
ResourceIntegration                        0.782
BuildCommunityTrust                 0.432
CooperationWithInstitutions                0.491
CompetitionWithInstitutions
```

Remove variables that don't load to any factor (CompetitionWithInstitutions and later cowork_help)

```
Loadings:
                           PA3    PA2    PA1    PA4
fatigue_01                  0.762
fatigue_02                  0.817
fatigue_03                  0.853
fatigue_04                  0.795
fatigue_05                  0.956
Responsibility_Clarity                            0.463
Workload_Reasonable                               0.603
Authority_Understanding                    0.327  0.351
Opinion_Expression                                0.662
boss_flex                                         0.589
talk_boss                                         0.309
Health_Center_2                            0.621
Health_Center_3                            0.561
Health_Center_4                            0.520
Health_Center_5                            0.862
Health_Center_6                            0.942
Health_Center_7                            0.582
CareSystem                          0.872
Understand_CommunityNeeds           0.776
TailoredServices                    0.850
ResourceIntegration                 0.812
BuildCommunityTrust                        0.392
CooperationWithInstitutions         0.483
```

Remove the variable with the lowest loading (talk_boss)

```
Loadings:
                           PA3    PA2    PA1    PA4
fatigue_01                  0.722
fatigue_02                  0.791
fatigue_03                  0.845
fatigue_04                  0.799
fatigue_05                  0.949
Responsibility_Clarity                            0.537
Workload_Reasonable                               0.707
Authority_Understanding                           0.448
Opinion_Expression                                0.638
boss_flex                                         0.589
Health_Center_2                            0.603
Health_Center_3                            0.543
Health_Center_4                            0.534
Health_Center_5                            0.835
Health_Center_6                            0.937
Health_Center_7                            0.589
CareSystem                          0.875
Understand_CommunityNeeds           0.789
TailoredServices                    0.865
ResourceIntegration                 0.835
BuildCommunityTrust                 0.304  0.356
CooperationWithInstitutions         0.477
```

Remove the variable that load to >1 factors (BuildCommunityTrust)

```
Loadings:
                           PA3    PA2    PA1    PA4
fatigue_01                  0.724
fatigue_02                  0.795
fatigue_03                  0.844
fatigue_04                  0.797
fatigue_05                  0.951
Responsibility_Clarity                            0.537
Workload_Reasonable                               0.702
Authority_Understanding                           0.446
Opinion_Expression                                0.641
boss_flex                                         0.590
Health_Center_2                            0.606
Health_Center_3                            0.540
Health_Center_4                            0.531
Health_Center_5                            0.805
Health_Center_6                            0.920
Health_Center_7                            0.582
CareSystem                          0.868
Understand_CommunityNeeds           0.777
TailoredServices                    0.855
ResourceIntegration                 0.819
CooperationWithInstitutions         0.477
```

➔ Cleaned. We can use these latent factors to calculate alphas.

Alphas

Latent factor	Raw alpha	Recommendation	New alpha
Fatigue	0.9067		
Working Environment	0.7125	Drop boss_flex	0.7396
PHC Functions	0.8309		
Community Participation	0.8580	Drop CooperationWithInstitutions	0.8883
All	0.8718 (95% CI: 0.8225-0.8993)		

Part 2: Confirmatory Factor Analysis

```
cfa_model <- '
  Working_Environment =~ Responsibility_Clarity + Workload_Reasonable + Authority_Understanding + Opinion_Expression
  Fatigue =~ fatigue_01 + fatigue_02 + fatigue_03 + fatigue_04 + fatigue_05
  PHC_task =~ Health_Center_2 + Health_Center_3 + Health_Center_4 + Health_Center_5 + Health_Center_6 + Health_Center_7
  Community =~ Understand_CommunityNeeds + CareSystem + TailoredServices + ResourceIntegration
'
```

Model	χ^2	*df*	χ^2/df	*p*	CFI	TLI	RMSEA [90% CI]	SRMR	AIC	BIC
Model 1	256.79	146	1.76	< .001	.92	.90	.07 [.06, .09]	.00	5,232.76	5,360.91
Common guidelines[a]	—	—	**< 2 or 3**	**> .05**	**≥ .95**	**≥ .95**	**< .05 [.00, .08]**	**≤ .08**	**Smaller**	**Smaller**

[a]Based on Schreiber (2017), Table 3.

```
> AVE(fit_cfa) # > 0.36 = acceptable
Working_Environment             Fatigue
              0.424               0.679
           PHC_task           Community
              0.473               0.669
```

➔ Goodness of fit indicators and AVEs all look good. Proceed to SEM.

Part 3: Structural Equation Modeling

Earlier steps are not included for conciseness. See R code for the full testing process.

```
sem_test4 <- '
  Working_Environment =~ Responsibility_Clarity + Workload_Reasonable + Authority_Understanding + Opinion_Expression
  Fatigue =~ fatigue_01 + fatigue_02 + fatigue_03 + fatigue_04 + fatigue_05
  PHC_task =~ Health_Center_2 + Health_Center_3 + Health_Center_4 + Health_Center_5 + Health_Center_6 + Health_Center_7
  Community =~ Understand_CommunityNeeds + CareSystem + TailoredServices + ResourceIntegration

  Fatigue ~ Working_Environment
  PHC_task ~ Working_Environment + Fatigue
  TransformToHealthCenter ~ PHC_task + Community

  PHC_task ~~ Community
  Community ~~ Fatigue
'
```

Model	χ^2	*df*	χ^2/df	*p*	CFI	TLI	RMSEA [90% CI]	SRMR
Model 1	219.86	163	1.35	.002	.99	.99	.05 [.03, .07]	.06
Common guidelines[a]	—	—	**< 2 or 3**	**> .05**	**≥ .95**	**≥ .95**	**< .05 [.00, .08]**	**≤ .08**

[a]Based on Schreiber (2017), Table 3.

(may need to recheck, nice_fit fetches standard values, but we might want to refer to the scaled values → for discussion)