

Final Project

EPIB 677, Winter 2020, McGill University

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Abstract (1 page)

Introduction (1 page)

Analysis Plan (2 pages)

State the methods used

Explain why those methods were chosen

Descriptive and Univariate Analyses (3 pages)

Basic descriptive analyses: means, medians, percentages, etc.

Graphics: histograms, scatter plots, etc. You do not need to be complete here, aim for including the descriptive results which best set up the inferential analyses which are to follow.

Data Cleaning

Hong Kong line list of COVID-19

##	Region	District	Cases	Deaths
##	Kong Kong Island:4	Central and Western: 1	Min. : 4.00	Min. :0.0000
##	Kowloon :5	Eastern : 1	1st Qu.:10.00	1st Qu.:0.0000
##	New Territories :9	Islands : 1	Median :15.00	Median :0.0000
##		Kowloon City : 1	Mean :22.83	Mean :0.2222
##		Kwai Tsing : 1	3rd Qu.:37.00	3rd Qu.:0.0000
##		Kwun Tong : 1	Max. :62.00	Max. :2.0000
##		(Other) :12		
##	Age	P.male	Proxy	Imported
##	Min. :29.25	Min. :0.3636	Min. : 0.000	Min. : 0.00
##	1st Qu.:37.50	1st Qu.:0.4690	1st Qu.: 0.000	1st Qu.: 4.25
##	Median :43.68	Median :0.5550	Median : 4.000	Median : 8.50
##	Mean :41.27	Mean :0.5787	Mean : 8.056	Mean :10.56
##	3rd Qu.:44.74	3rd Qu.:0.6373	3rd Qu.:11.500	3rd Qu.:11.75
##	Max. :49.64	Max. :1.0000	Max. :40.000	Max. :36.00
##				

```
## Resident
## Min. : 4.00
## 1st Qu.:10.00
## Median :15.00
## Mean :21.83
## 3rd Qu.:34.00
## Max. :53.00
##
```

Hong Kong covariates dataset

Merging case dataset with covariates dataset

```
## District Region.x Cases Deaths
## Central and Western: 1 Kong Kong Island:4 Min. : 4.00 Min. :0.0000
## Eastern : 1 Kowloon :5 1st Qu.:10.00 1st Qu.:0.0000
## Islands : 1 New Territories :9 Median :15.00 Median :0.0000
## Kowloon City : 1 Mean :22.83 Mean :0.2222
## Kwai Tsing : 1 3rd Qu.:37.00 3rd Qu.:0.0000
## Kwun Tong : 1 Max. :62.00 Max. :2.0000
## (Other) :12

## Age P.male Proxy Imported
## Min. :29.25 Min. :0.3636 Min. : 0.000 Min. : 0.00
## 1st Qu.:37.50 1st Qu.:0.4690 1st Qu.: 0.000 1st Qu.: 4.25
## Median :43.68 Median :0.5550 Median : 4.000 Median : 8.50
## Mean :41.27 Mean :0.5787 Mean : 8.056 Mean :10.56
## 3rd Qu.:44.74 3rd Qu.:0.6373 3rd Qu.:11.500 3rd Qu.:11.75
## Max. :49.64 Max. :1.0000 Max. :40.000 Max. :36.00
##

## Resident Region.y Male.Count Female.Count
## Min. : 4.00 Hong Kong Island:4 Min. : 71700 Min. : 88600
## 1st Qu.:10.00 Kowloon :5 1st Qu.:140700 1st Qu.:164625
## Median :15.00 New Territories :9 Median :185550 Median :220200
## Mean :21.83 Mean :186339 Mean :219600
## 3rd Qu.:34.00 3rd Qu.:233975 3rd Qu.:266850
## Max. :53.00 Max. :309800 Max. :367800
##

## Total.Population Pop.prop Area_km2 Pop.Density
## Min. :160300 Min. :2.190 Min. : 6.99 Min. : 915.4
## 1st Qu.:305950 1st Qu.:4.190 1st Qu.: 10.33 1st Qu.: 4655.9
## Median :406200 Median :5.560 Median : 31.09 Median :14056.0
## Mean :405928 Mean :5.557 Mean : 59.96 Mean :20318.5
## 3rd Qu.:500900 3rd Qu.:6.857 3rd Qu.:117.96 3rd Qu.:38190.8
## Max. :677600 Max. :9.270 Max. :175.12 Max. :58926.3
##

## Count.Labor.force prop.labor.force Female.labor.count Female.labor.prop
## Min. : 88100 Min. :50.69 Min. : 44900 Min. :43.94
## 1st Qu.:159350 1st Qu.:53.03 1st Qu.: 77250 1st Qu.:47.90
## Median :217850 Median :54.17 Median :106400 Median :49.95
## Mean :219261 Mean :54.44 Mean :108461 Mean :49.91
## 3rd Qu.:267050 3rd Qu.:55.97 3rd Qu.:130600 3rd Qu.:51.53
## Max. :360400 Max. :58.72 Max. :178000 Max. :56.09
##

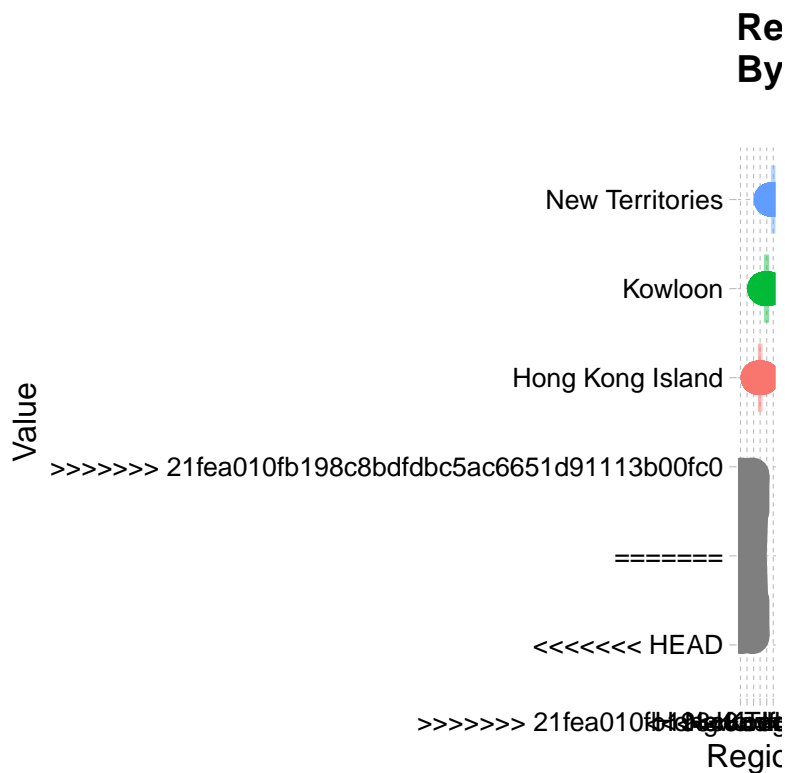
## Male.Labor.count Male.labor.prop Num_hosp Num_beds
## Min. : 43100 Min. :57.87 Min. :1.000 Min. : 247.0
```

```

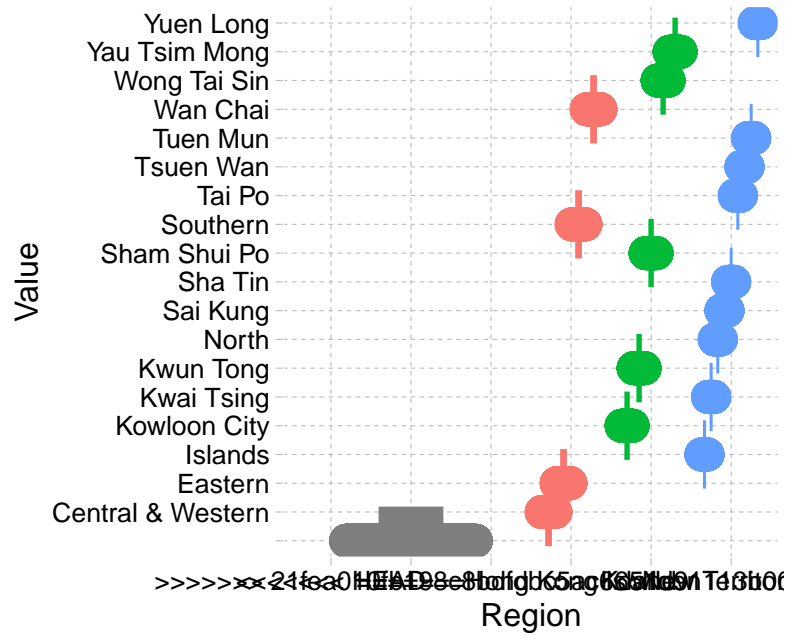
## 1st Qu.: 83875    1st Qu.:58.63    1st Qu.:1.000    1st Qu.: 937.2
## Median :108150    Median :59.45    Median :2.000    Median :1196.0
## Mean   :110783    Mean   :59.76    Mean   :2.278    Mean   :1596.1
## 3rd Qu.:138875    3rd Qu.:60.91    3rd Qu.:2.750    3rd Qu.:2376.5
## Max.   :182400    Max.   :62.45    Max.   :7.000    Max.   :3591.0
##
## Monthly.income..HKD.  No..households    Pct_0.14    Pct_15.24    Pct_25.64
## Min.   :22000        146 200 : 2    11.5   : 2    10     :4    Min.   :60.70
## 1st Qu.:25000        101 900: 1    11.9   : 2    9.5    :3    1st Qu.:61.73
## Median :29550        125 800: 1    10.5   : 1    10.1   :2    Median :62.25
## Mean   :29778        143 100: 1    10.6   : 1    10.3   :2    Mean   :62.25
## 3rd Qu.:32575        151 900: 1    11.4   : 1    9.9    :2    3rd Qu.:62.77
## Max.   :42000        174 800: 1    11.5   : 1    8.5    :1    Max.   :64.30
##
##                (Other) :11    (Other):10    (Other):4
##
##      Pct_65.      Pct_Sec.Educ    Pct_PostSec.w..degree
## Min.   :15.00    Min.   :77.00    32.4   : 2
## 1st Qu.:15.53    1st Qu.:79.80    17.8   : 1
## Median :16.05    Median :82.60    17.9   : 1
## Mean   :16.28    Mean   :82.84    18.1   : 1
## 3rd Qu.:16.88    3rd Qu.:85.58    19.6   : 1
## Max.   :18.30    Max.   :91.00    24.7   : 1
##
##                                (Other):11

```

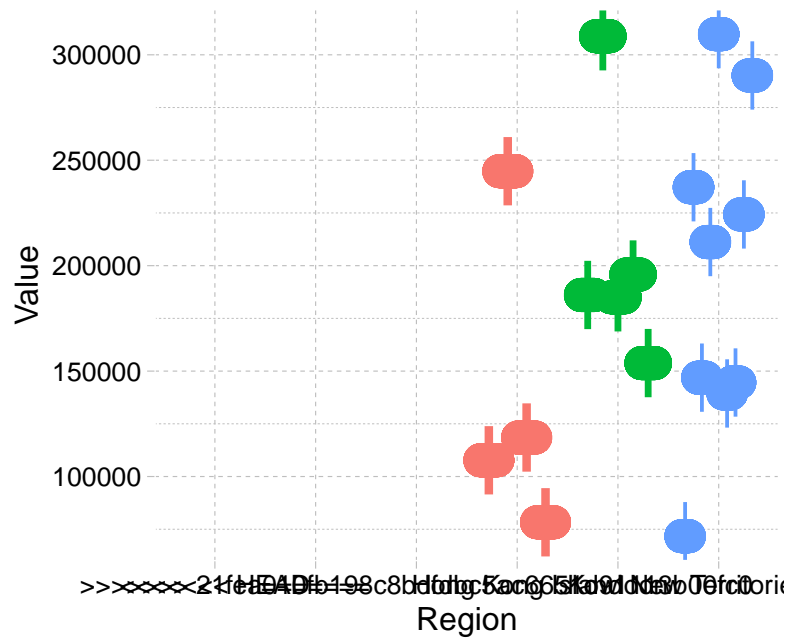
Boxplots by district and region



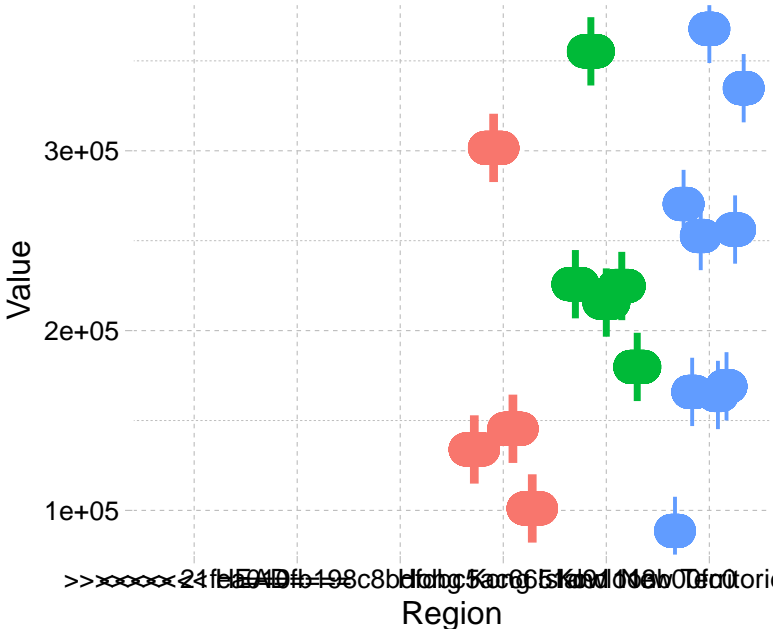
District By Region



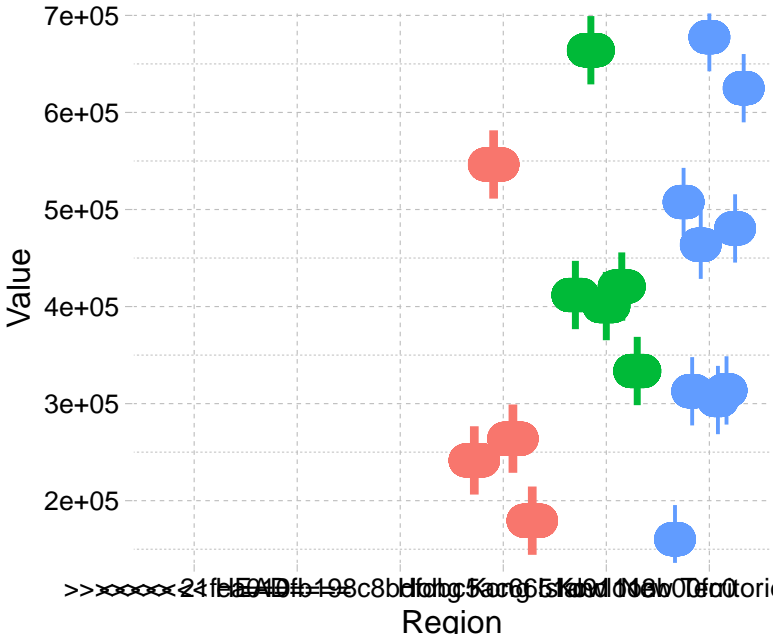
Male.Count By Region

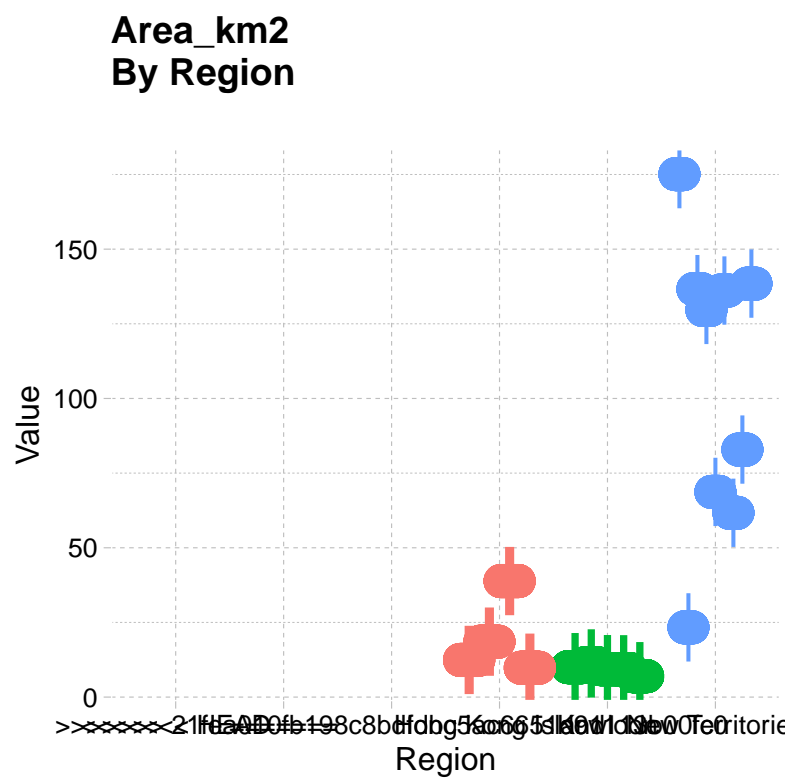
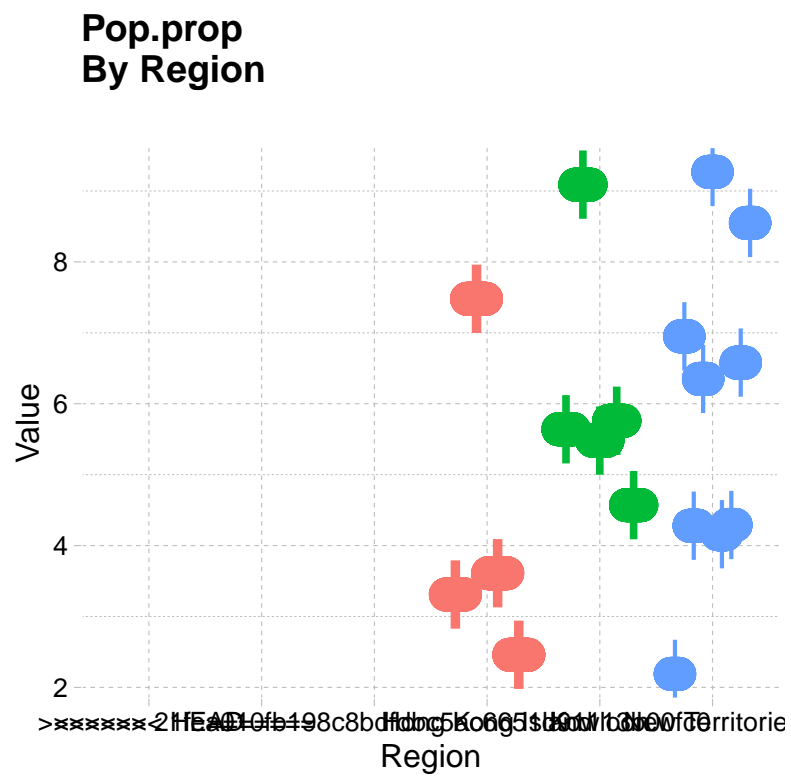


Female.Count By Region

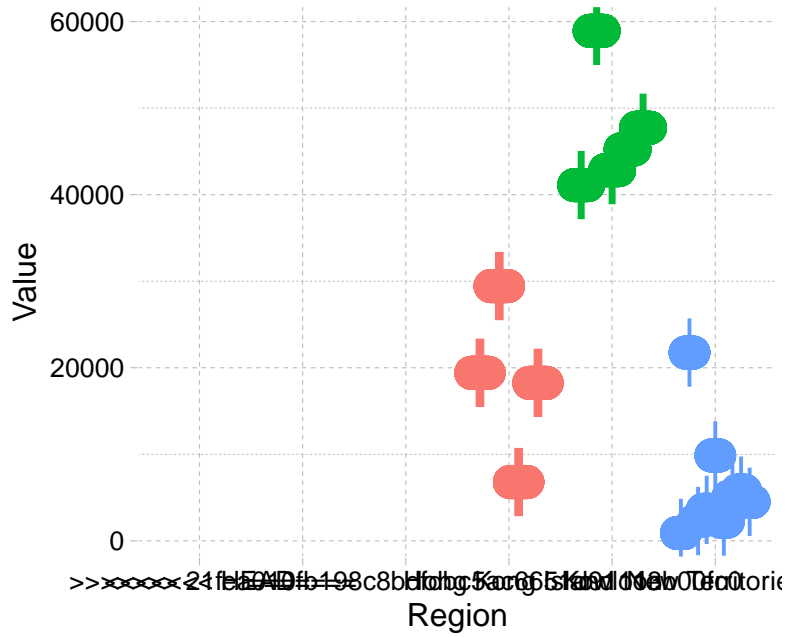


Total.Population By Region

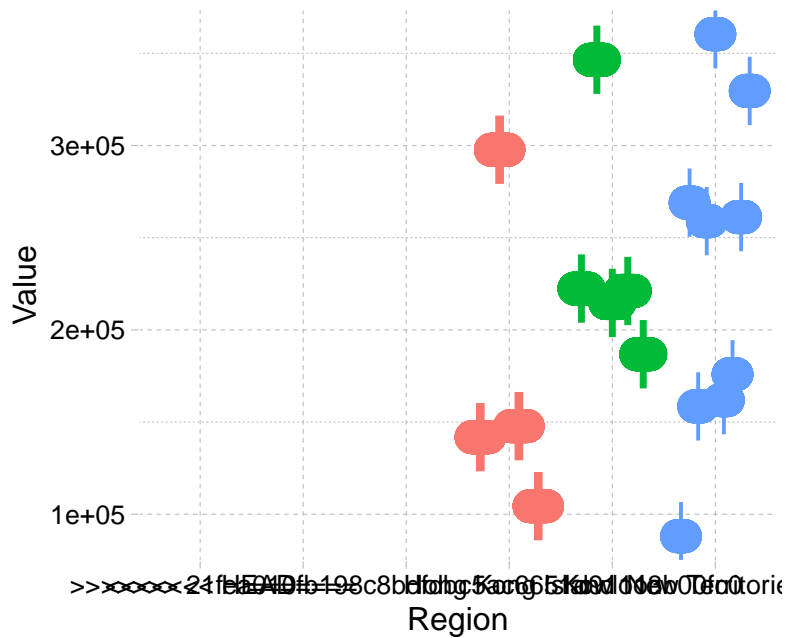




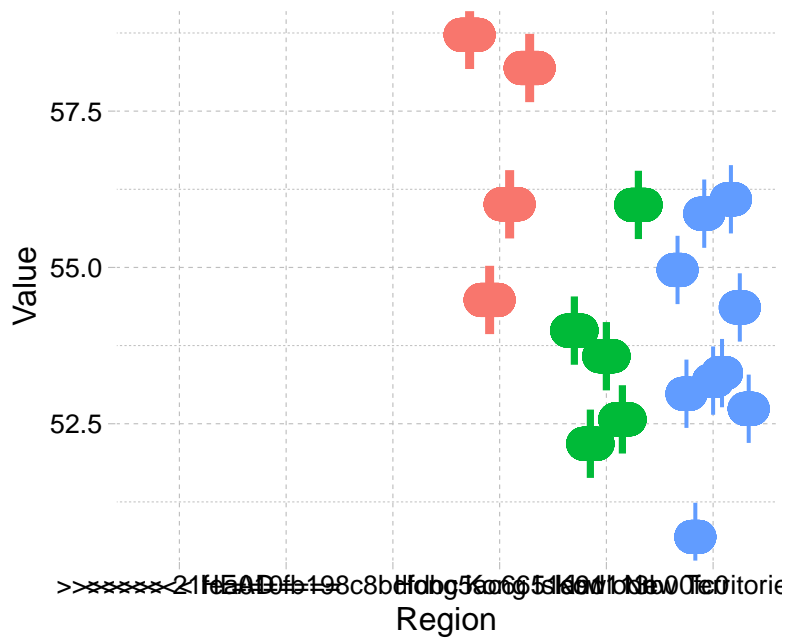
**Pop.Density
By Region**



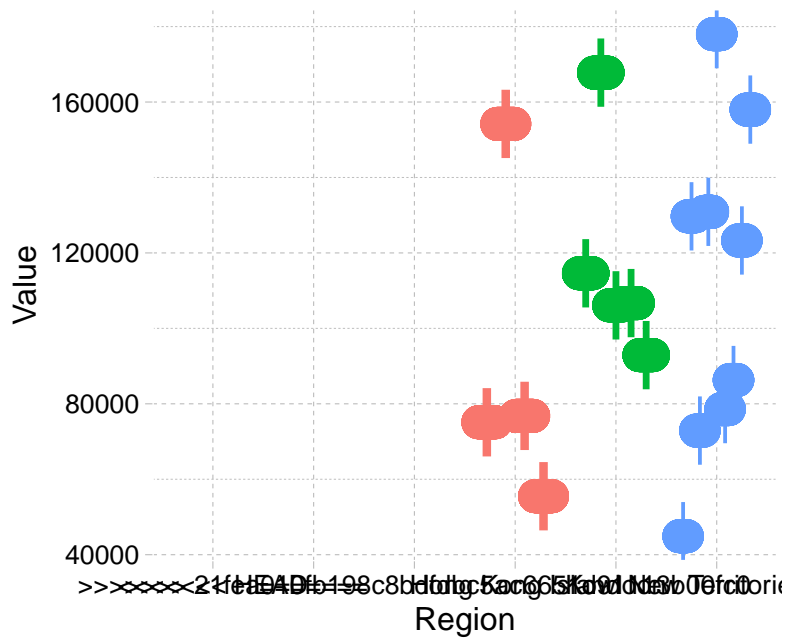
**Count.Labor.force
By Region**



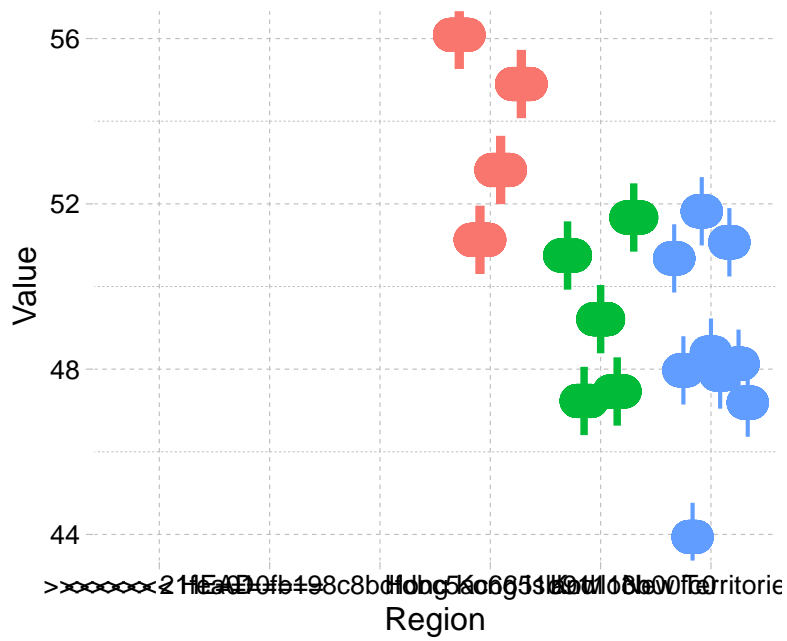
prop.labor.force By Region



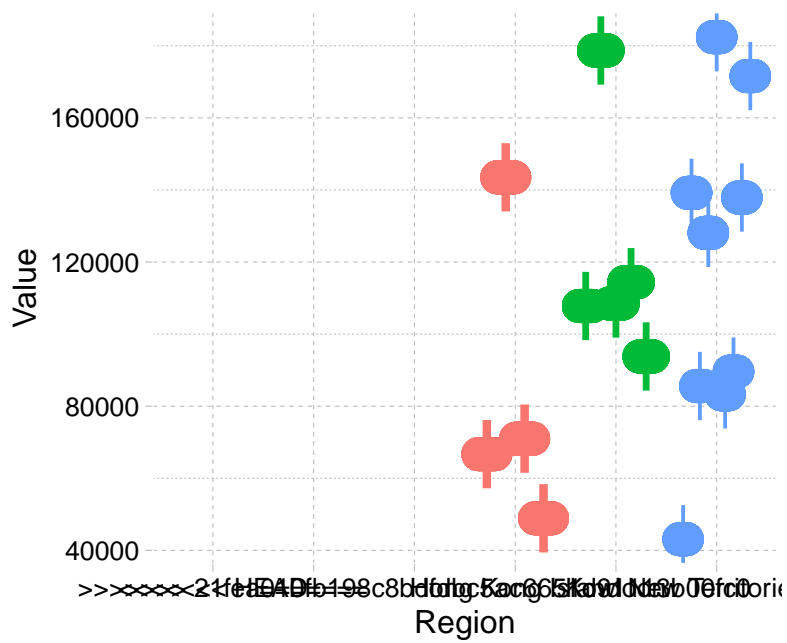
Female.labor.count By Region



Female.labor.prop By Region

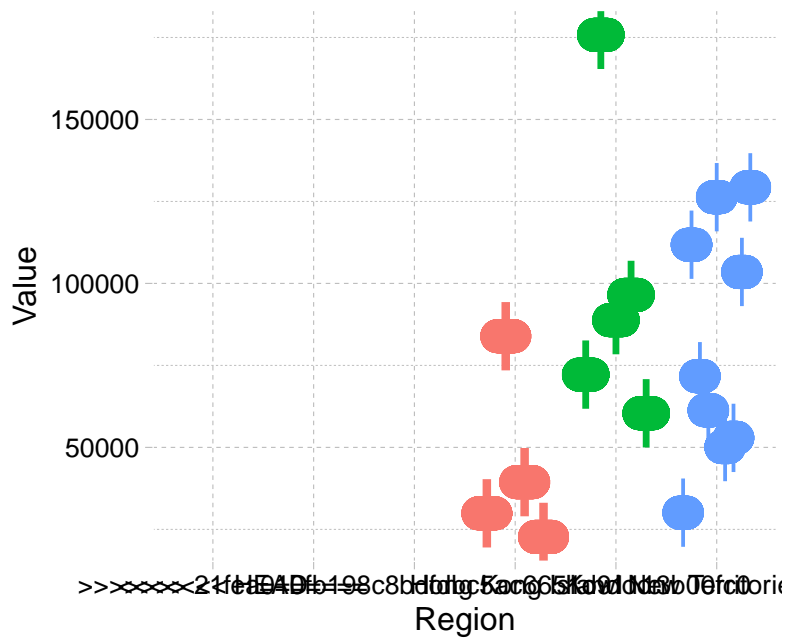


Male.Labor.count By Region

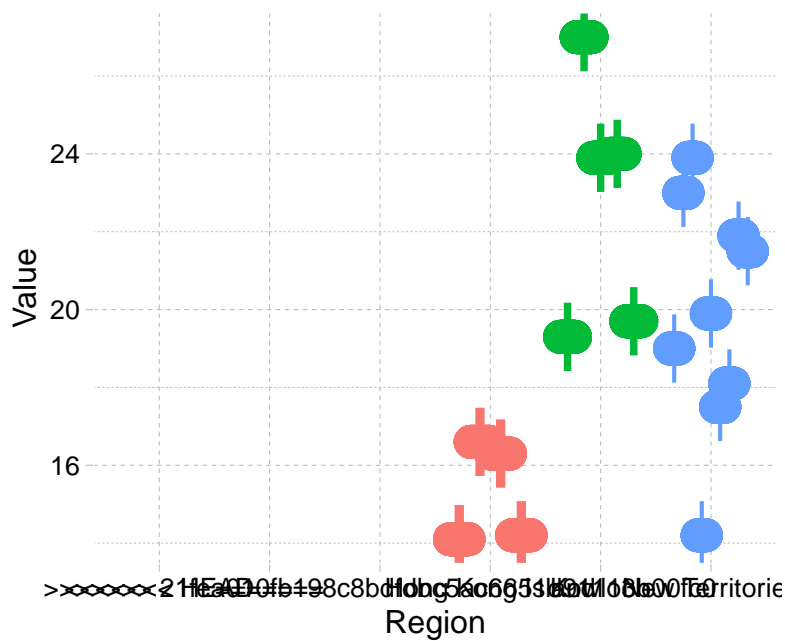


[illegible]

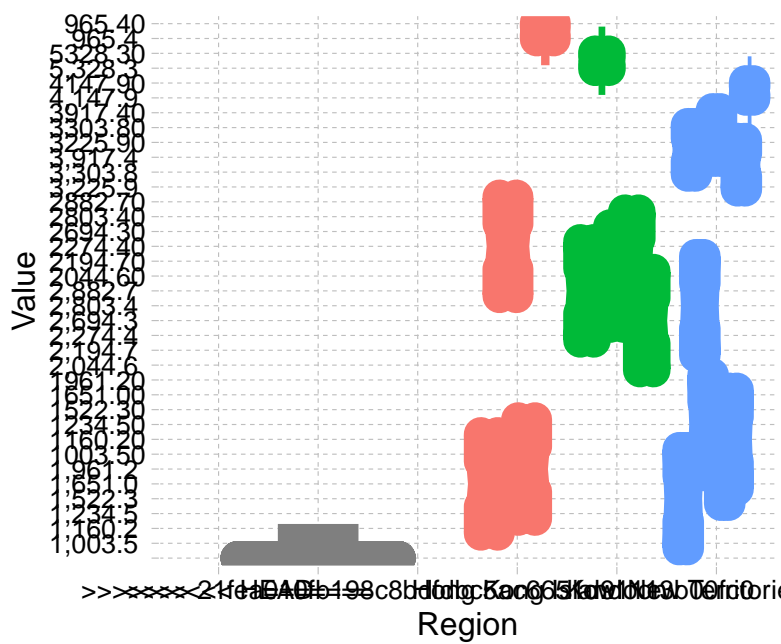
poor.individuals.000s
By Region



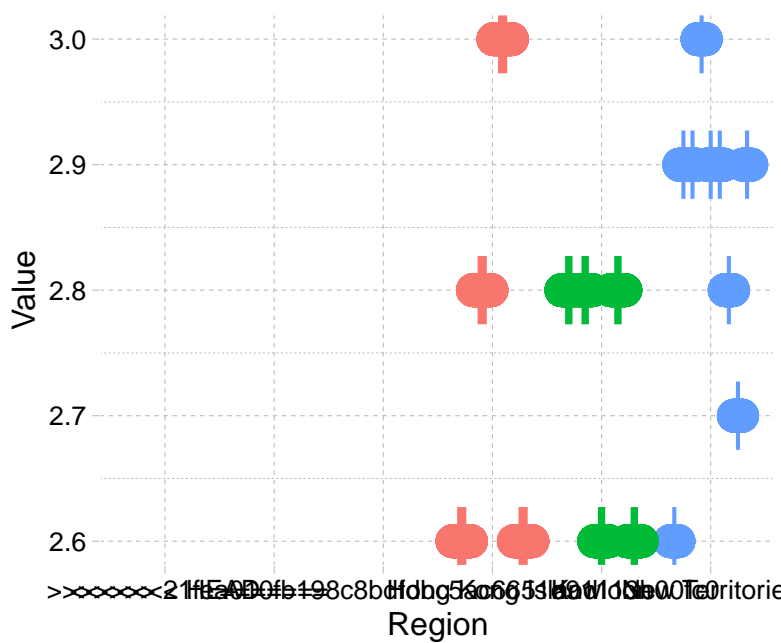
household.poverty.rate
By Region



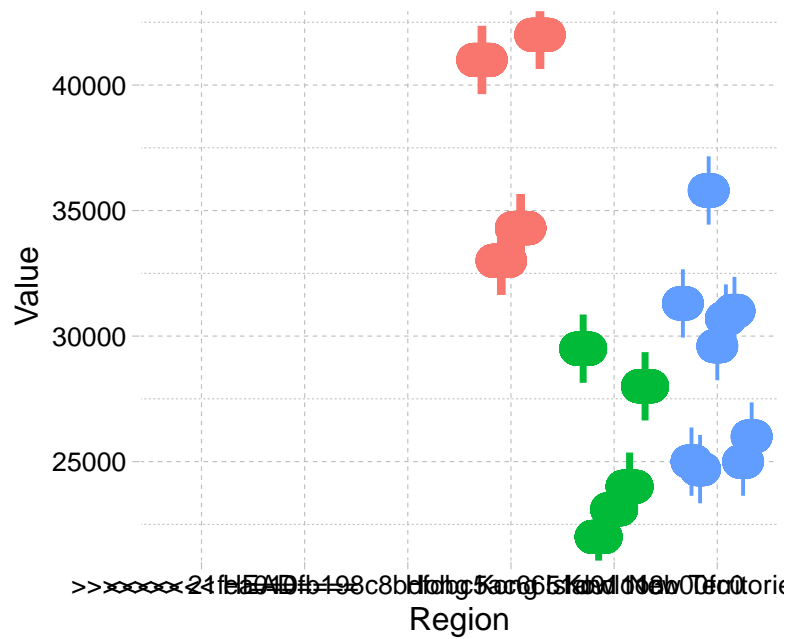
household.annual.total.poverty.gap
By Region



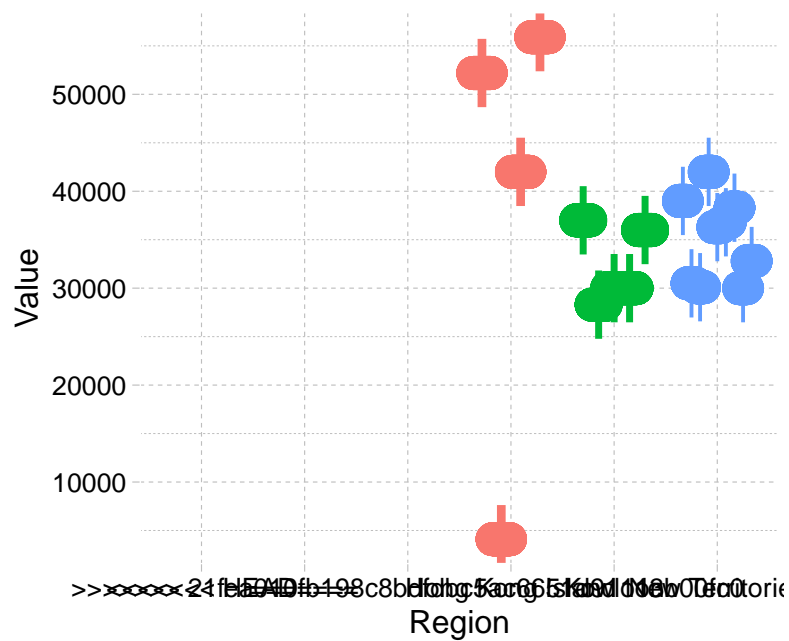
Household.size
By Region



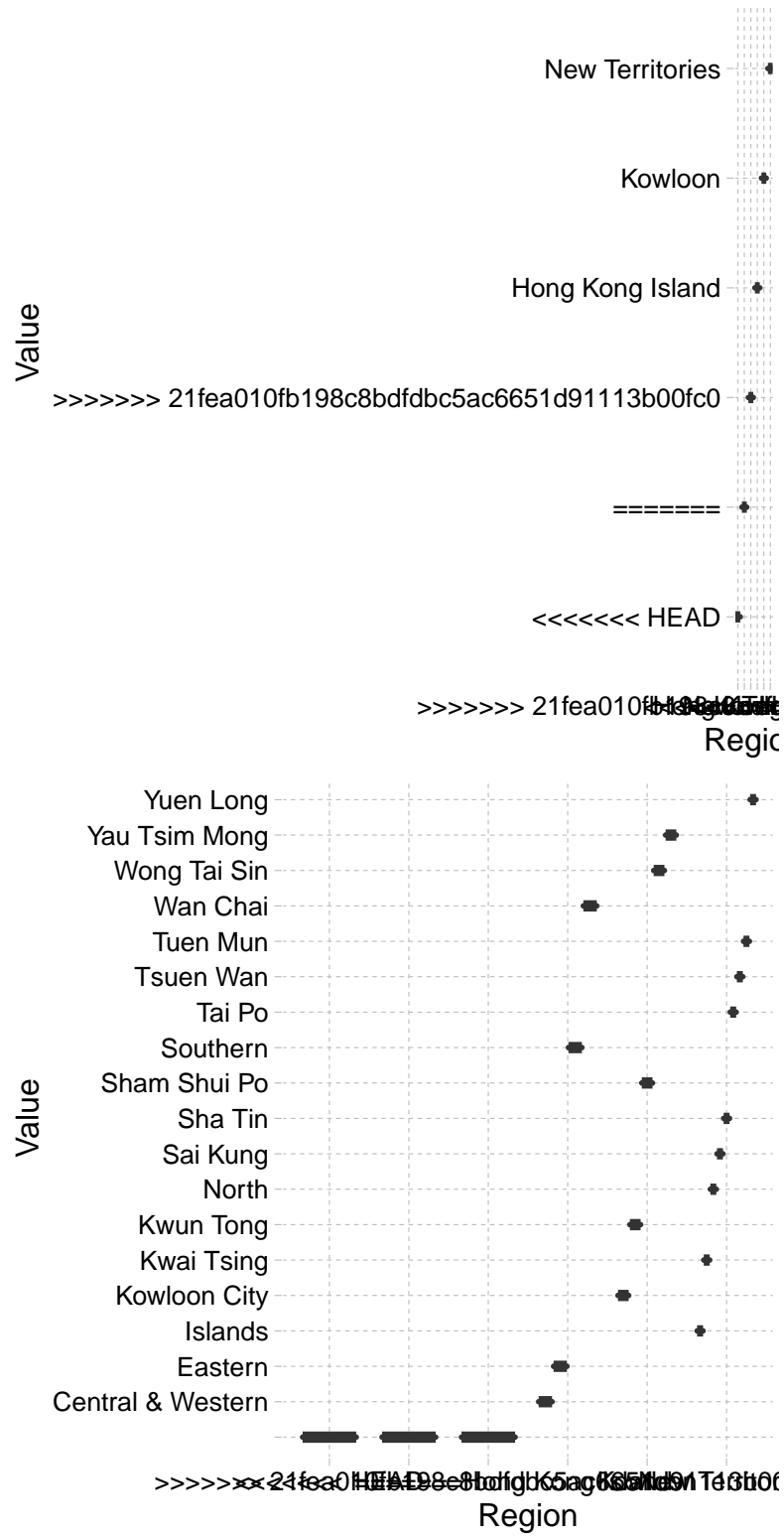
Total.Median.Income By Region

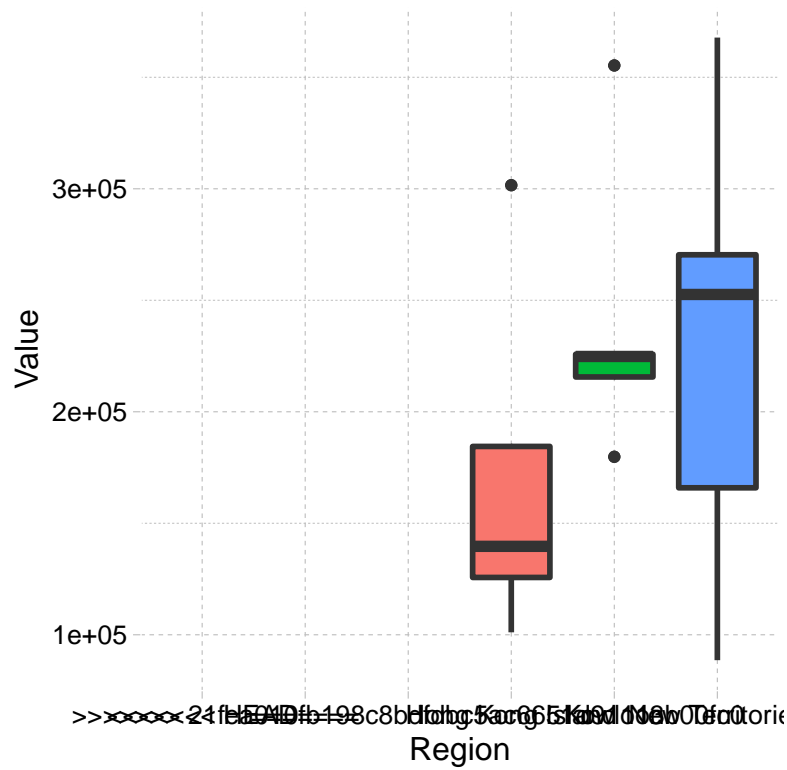
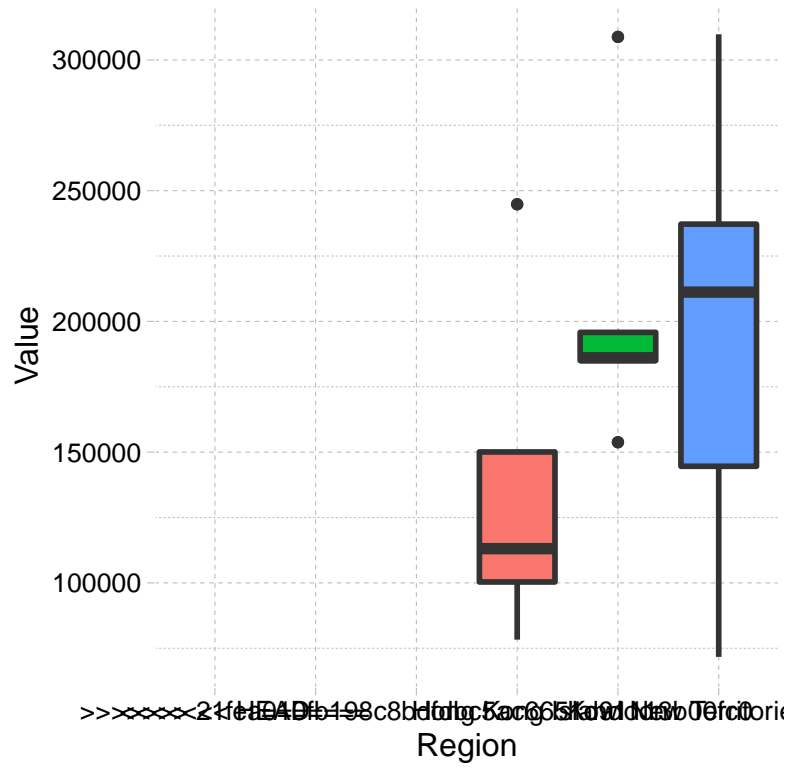


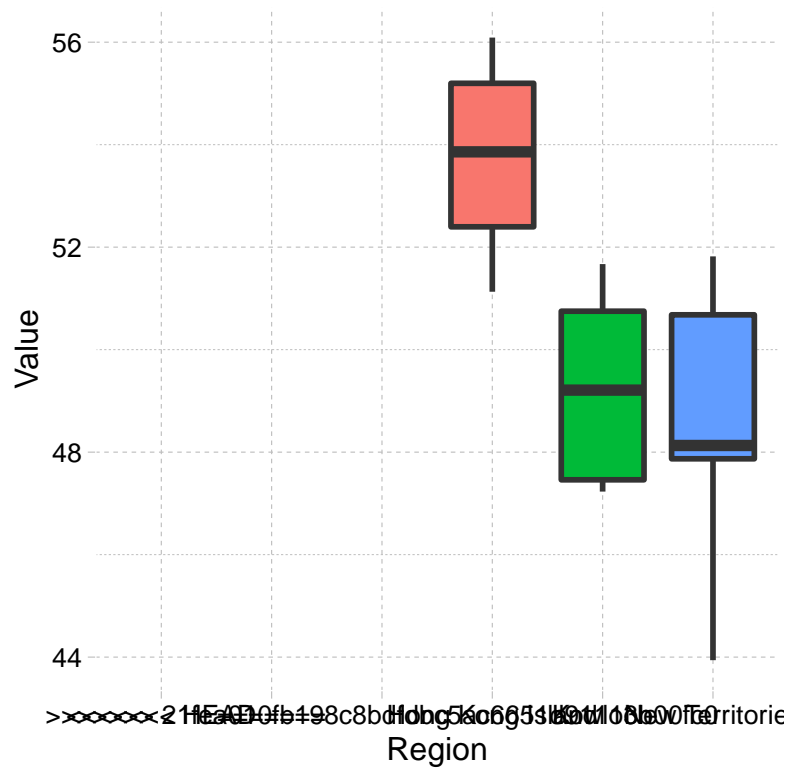
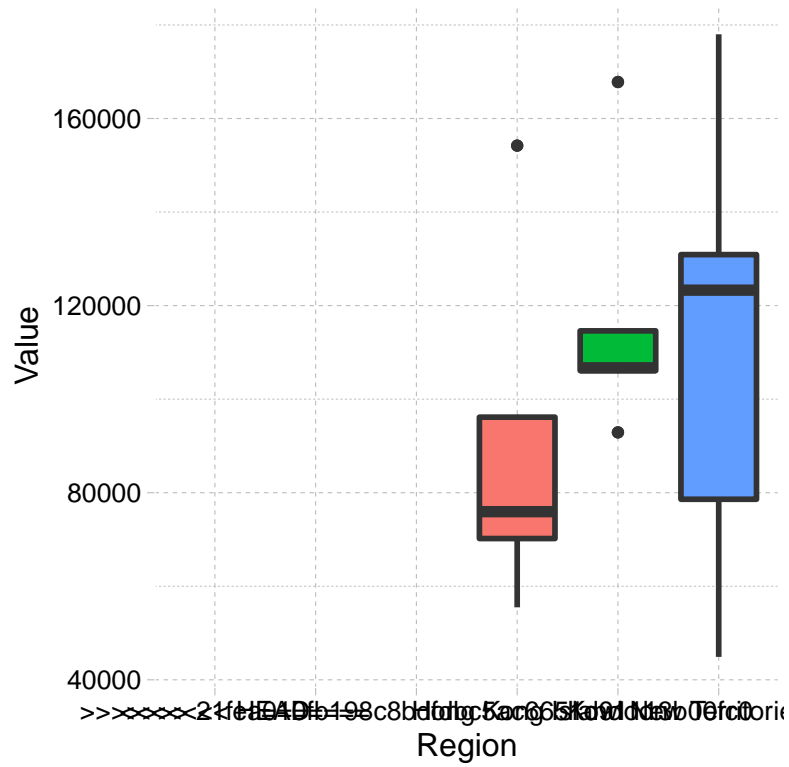
Econ.active.median.income By Region

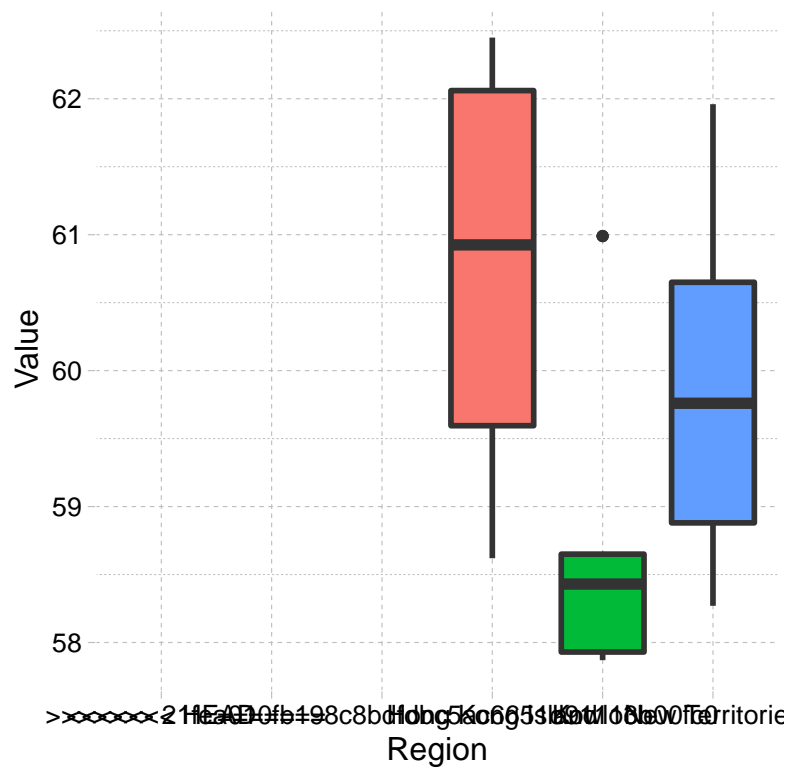
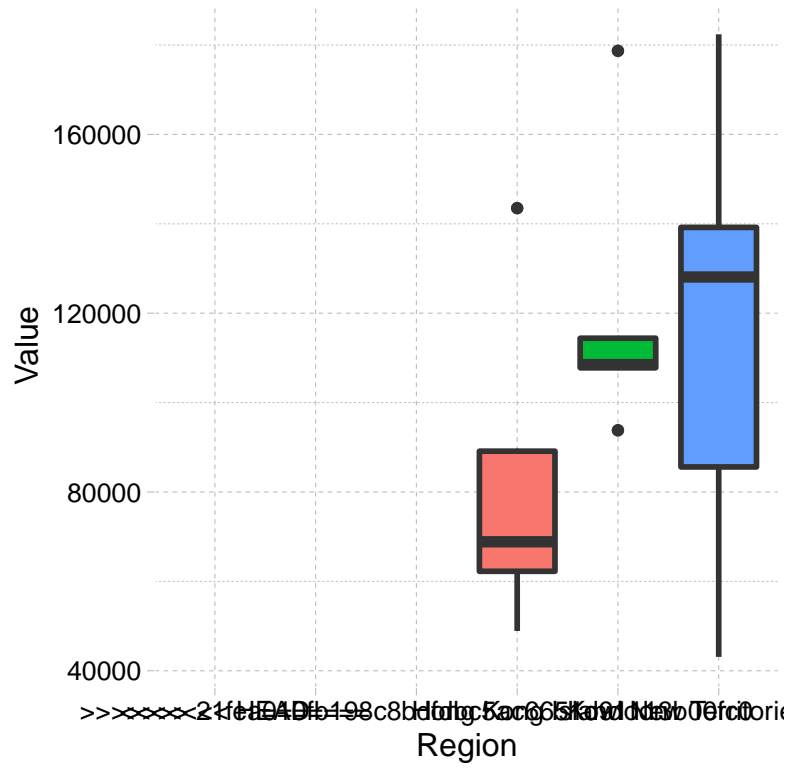


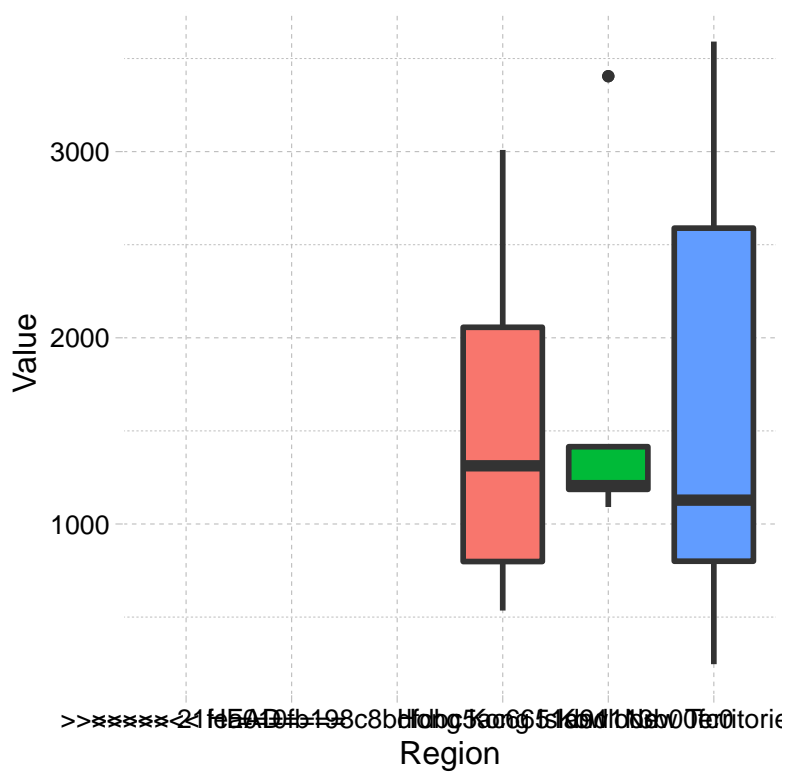
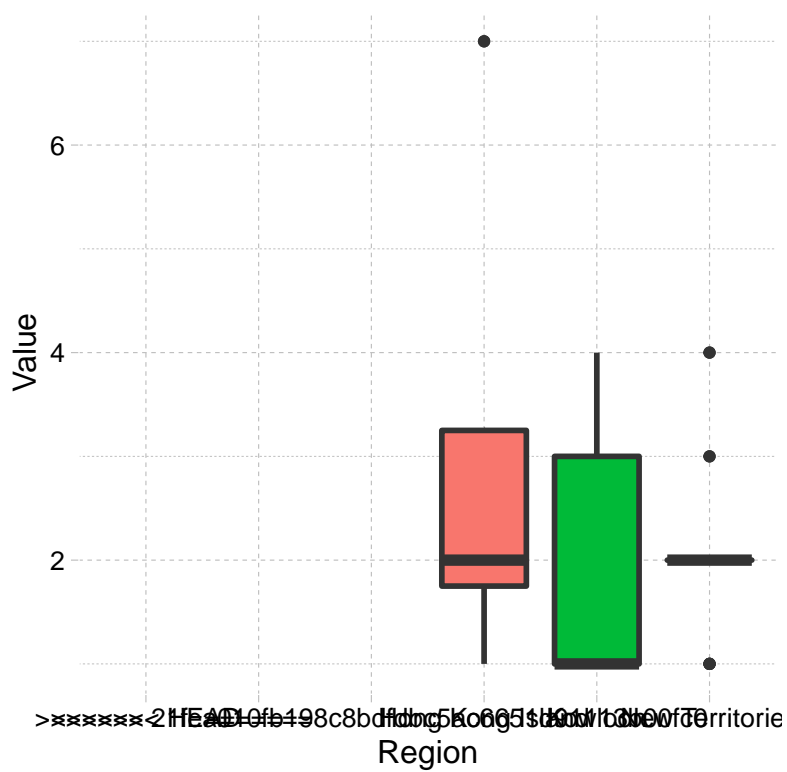
Boxplot by region

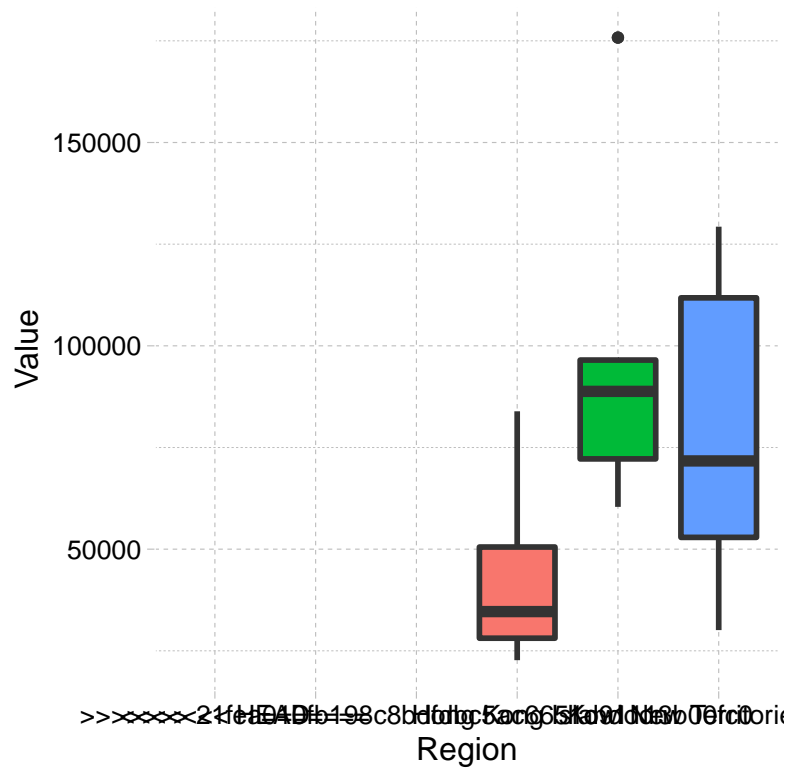
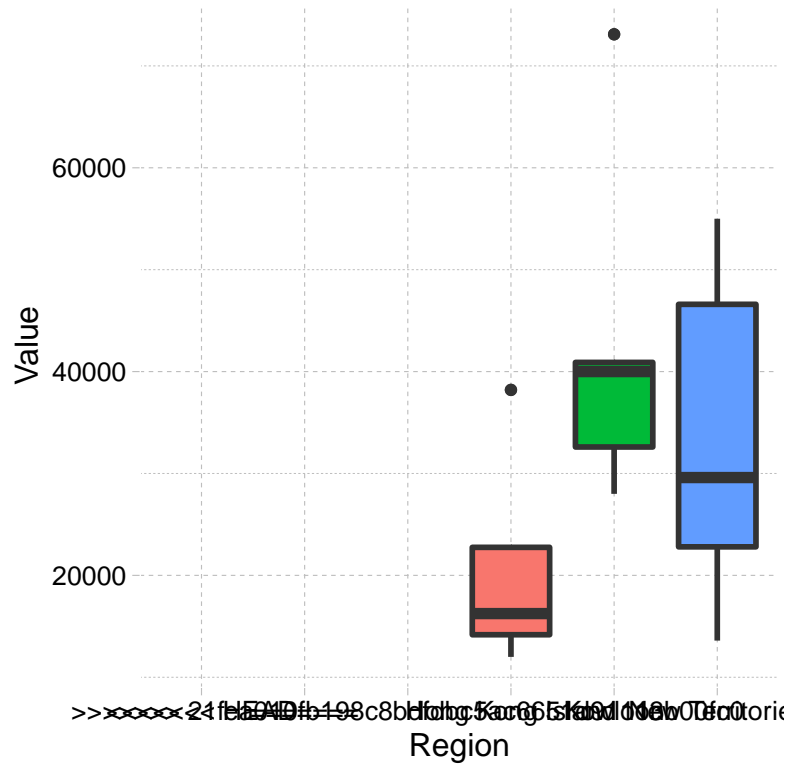


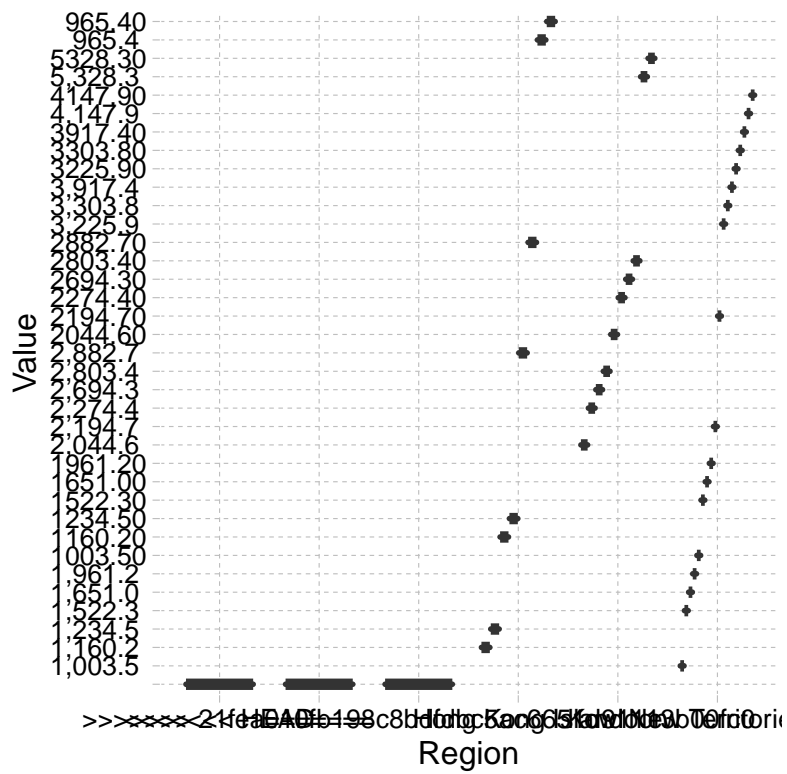
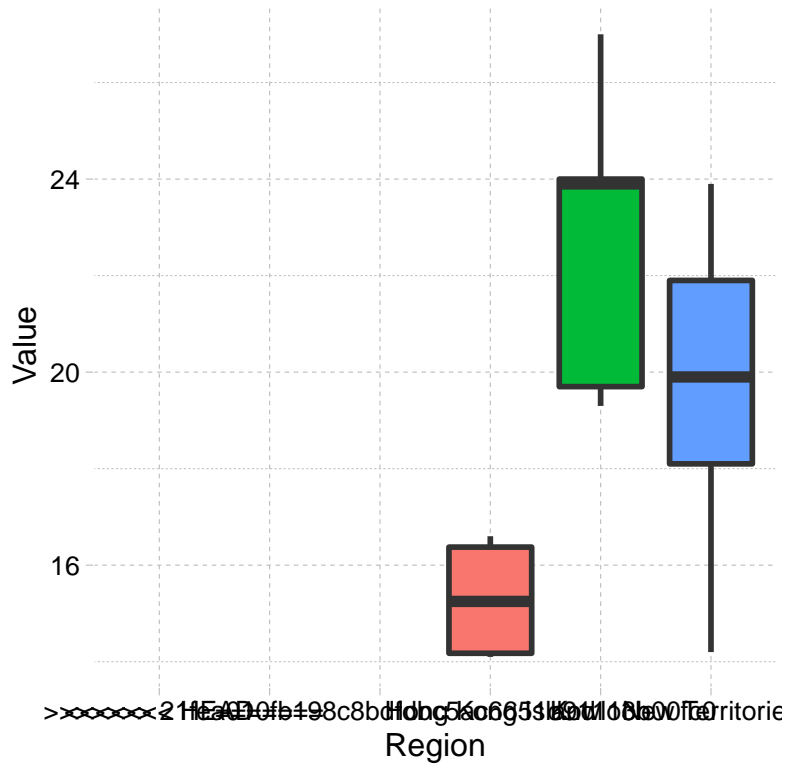


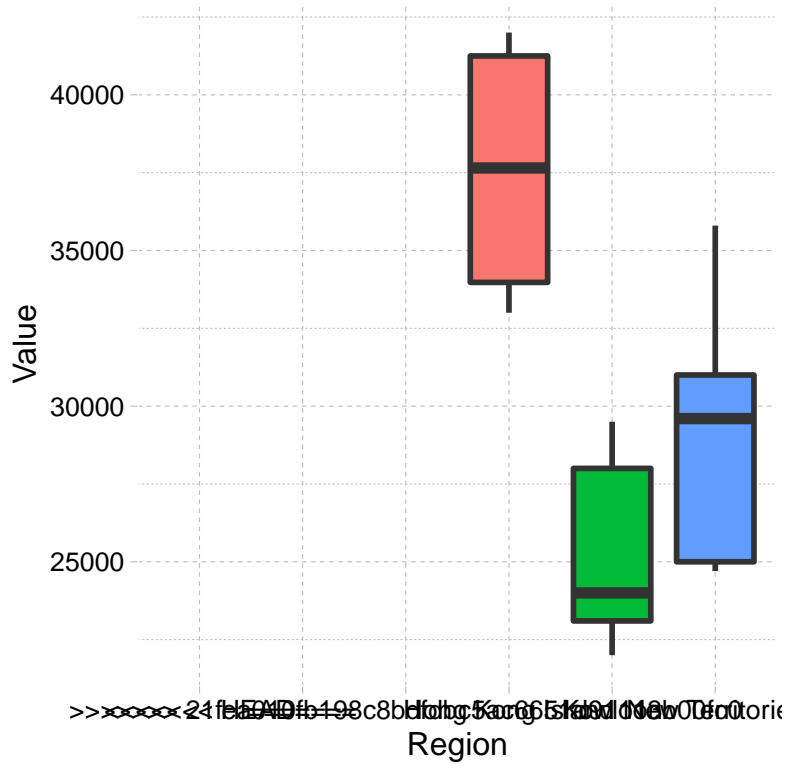
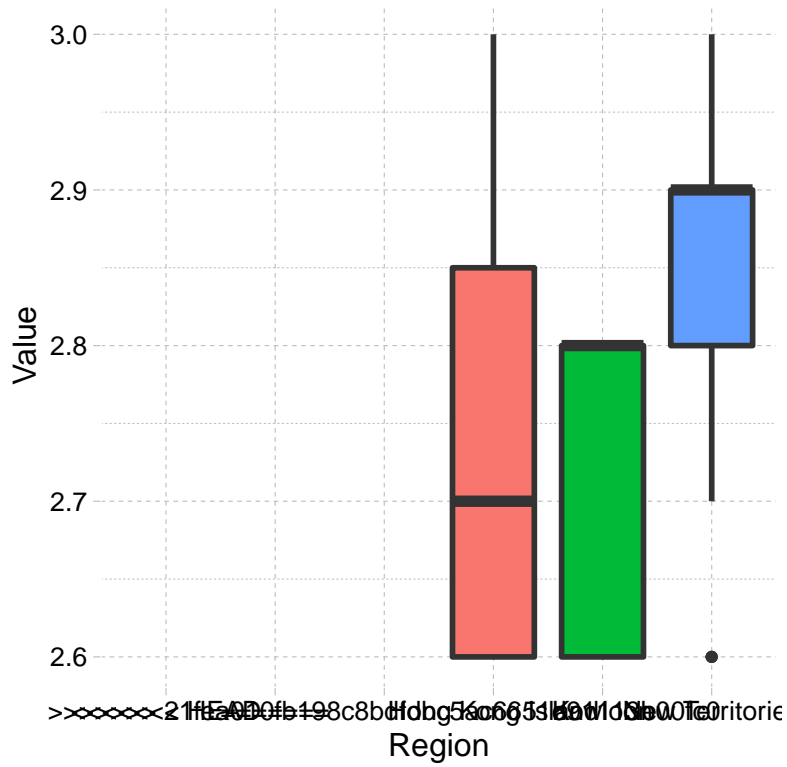


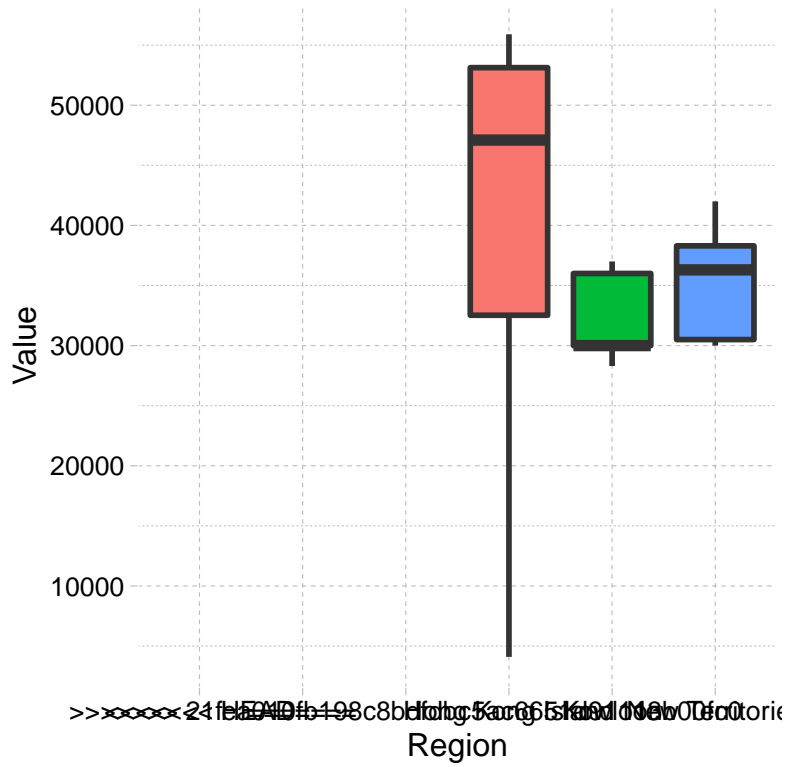




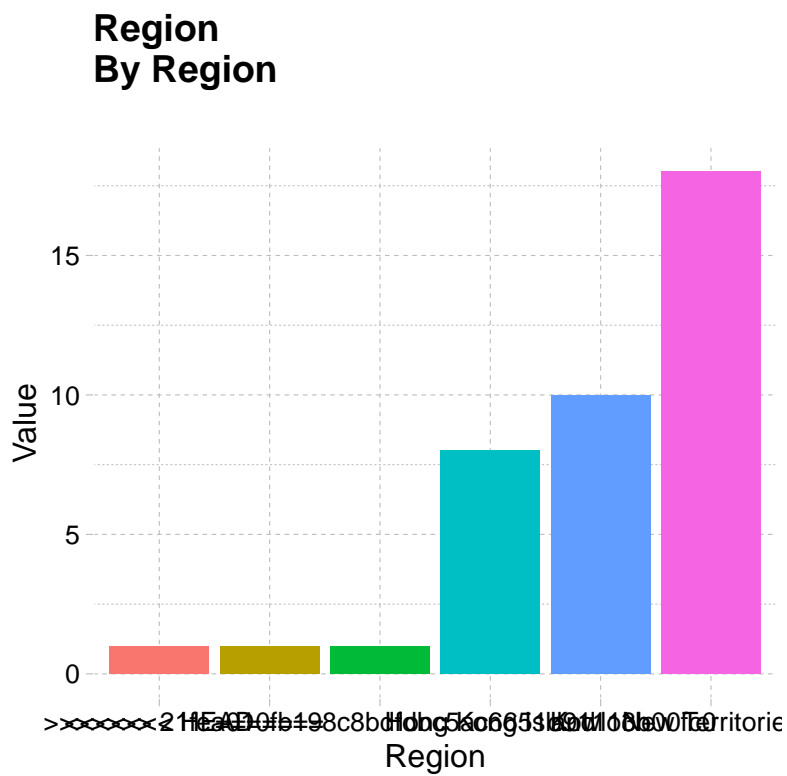




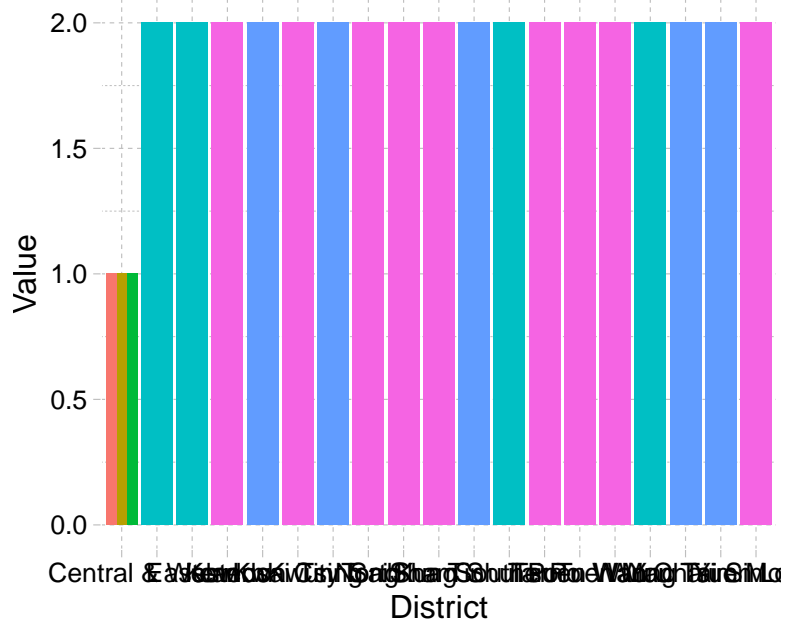




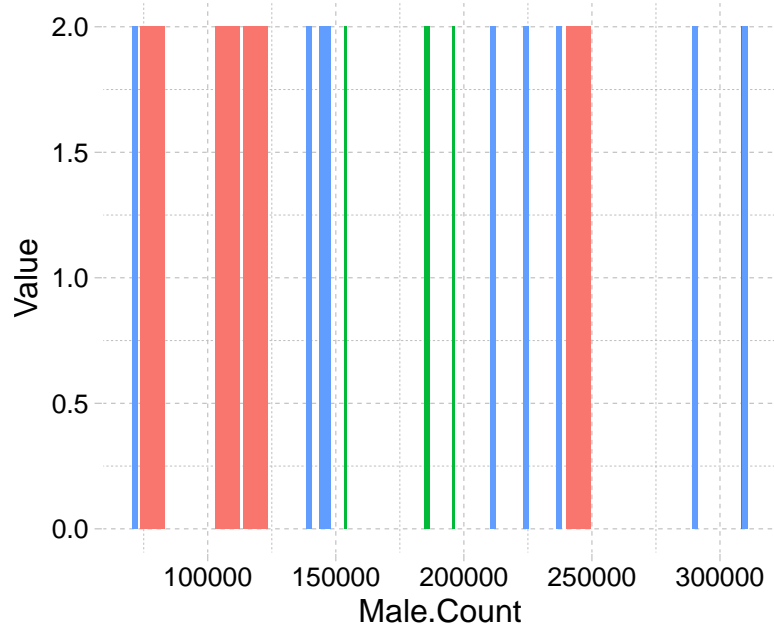
Histograms



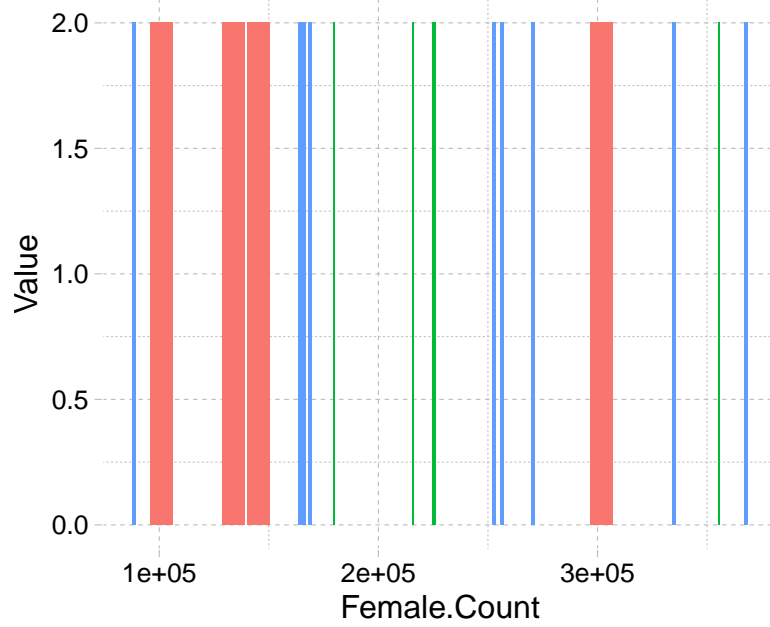
**District
By Region**



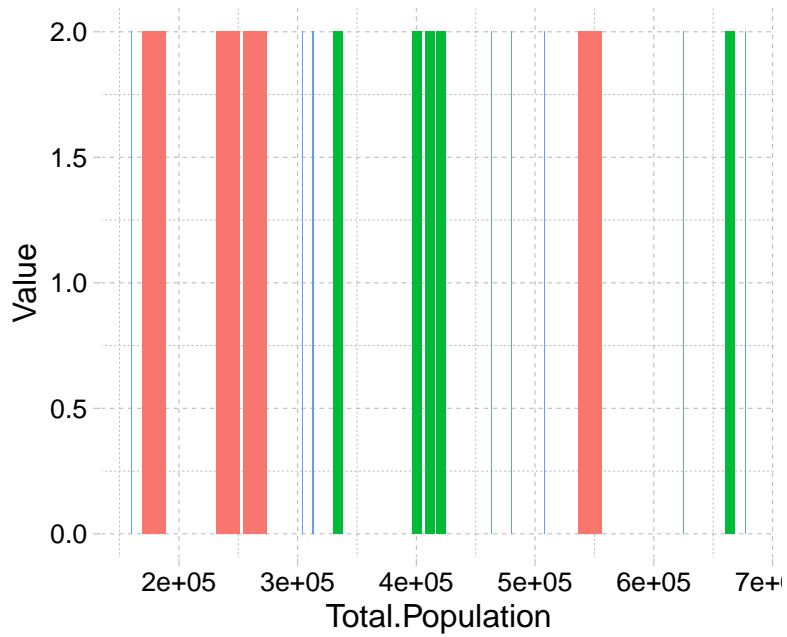
**Male.Count
By Region**



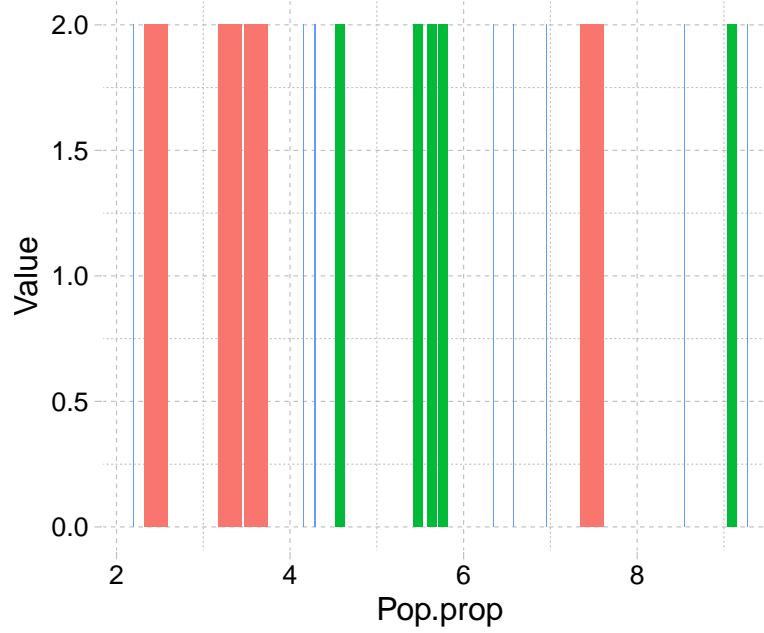
**Female.Count
By Region**



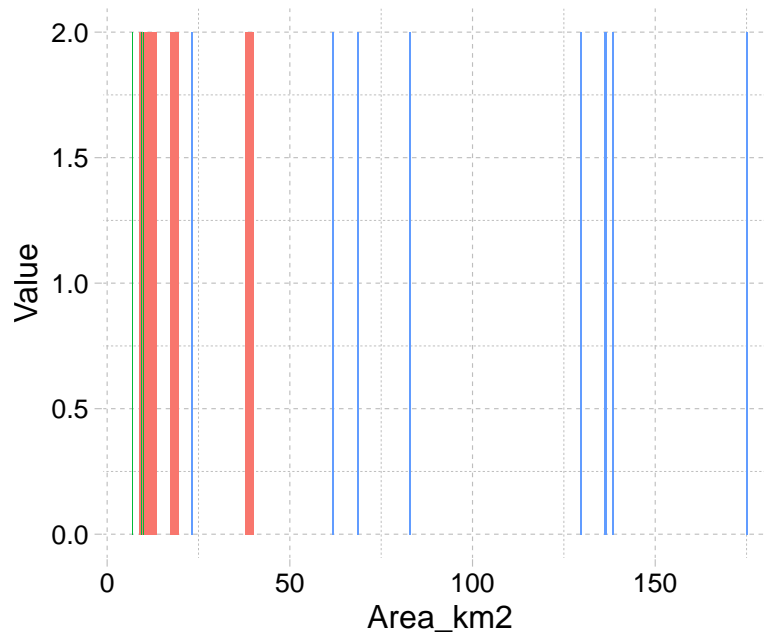
**Total.Population
By Region**



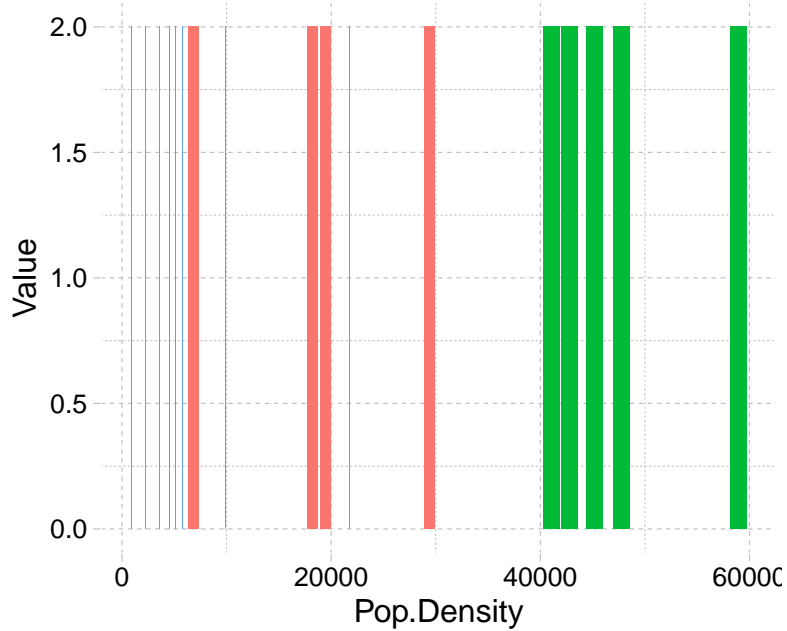
**Pop.prop
By Region**



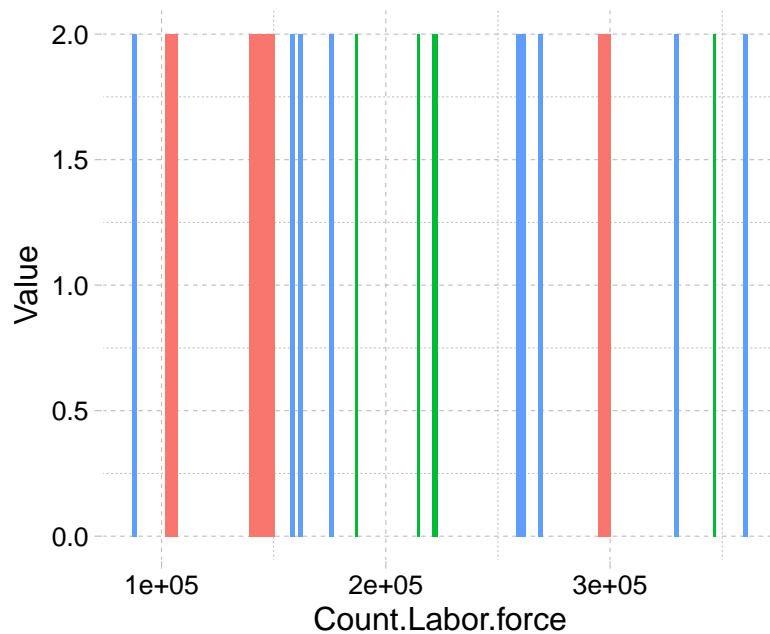
**Area_km2
By Region**



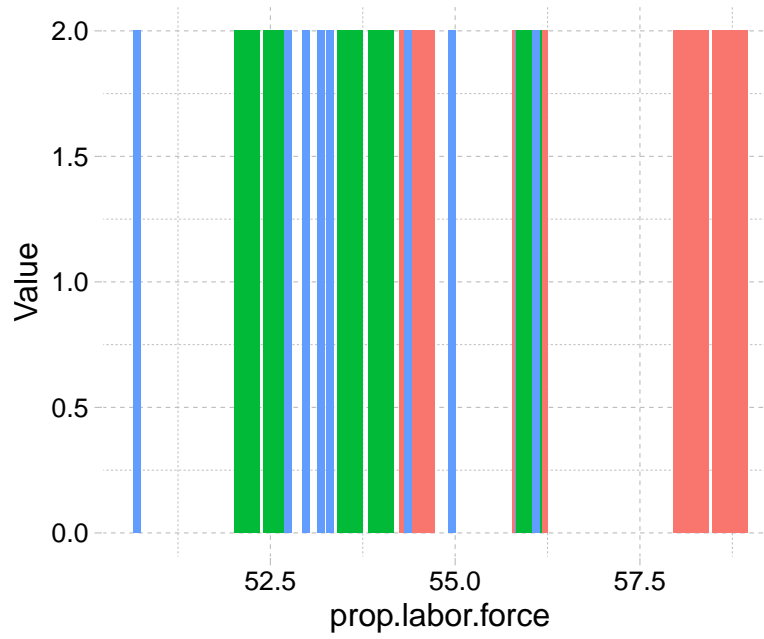
**Pop.Density
By Region**



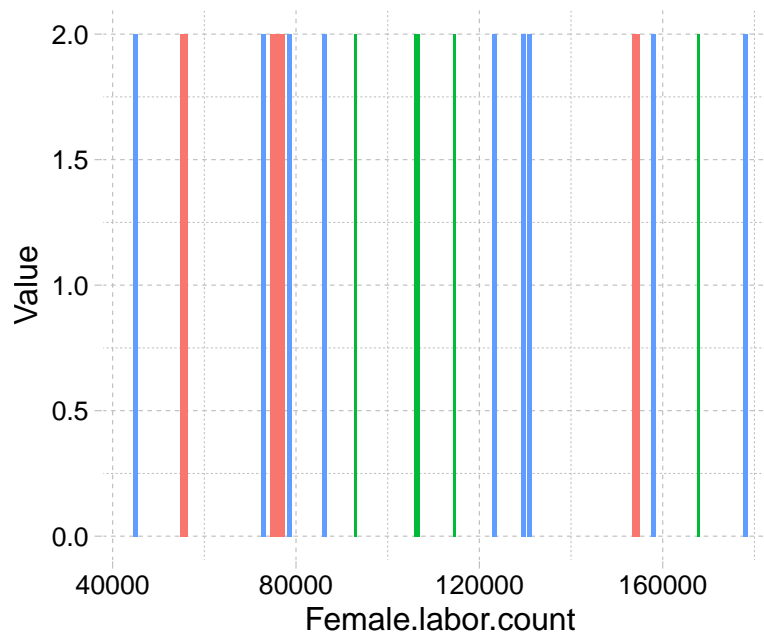
**Count.Labor.force
By Region**



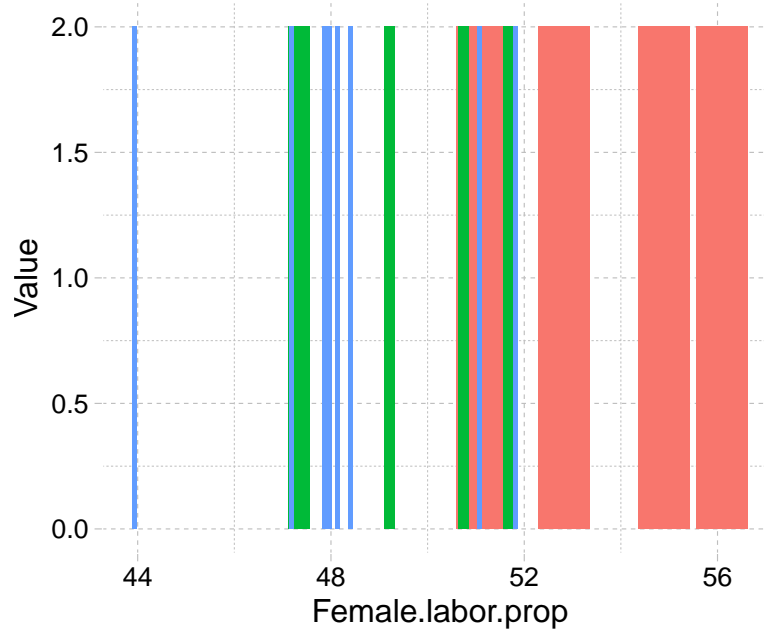
**prop.labor.force
By Region**



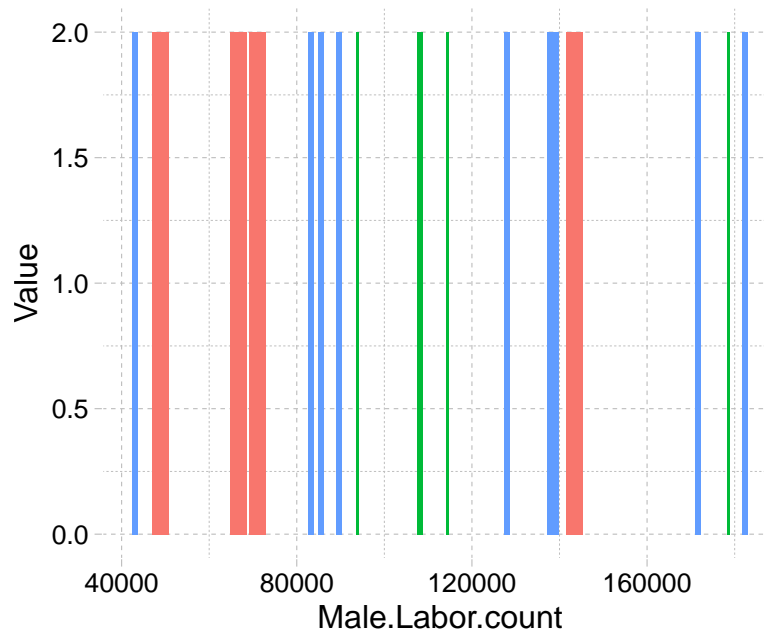
**Female.labor.count
By Region**



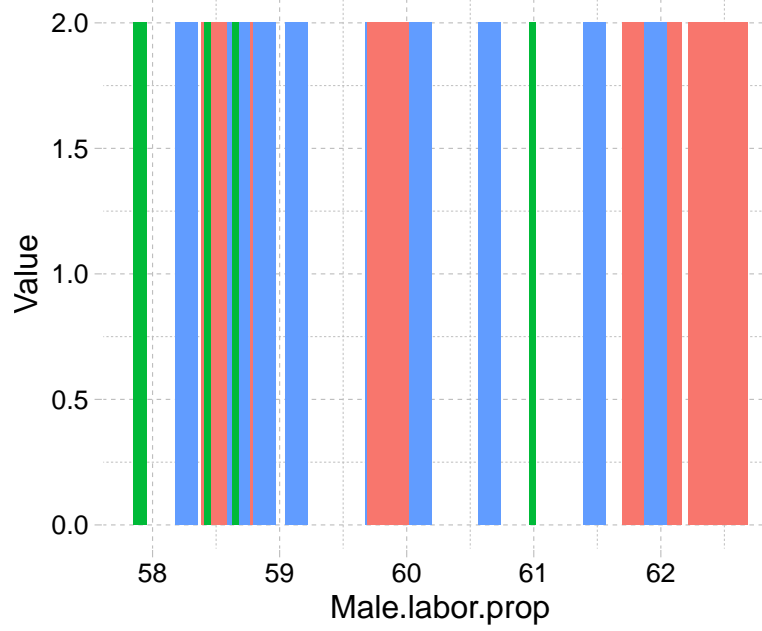
**Female.labor.prop
By Region**



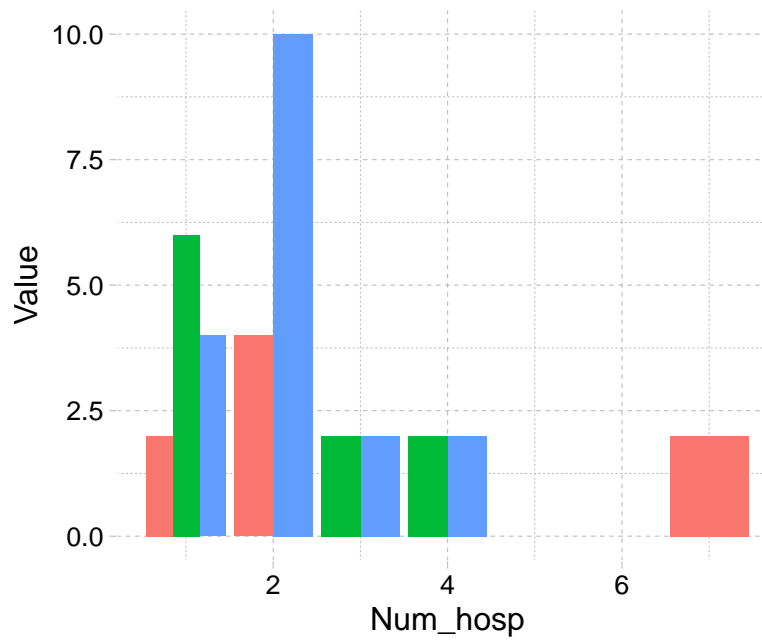
**Male.Labor.count
By Region**



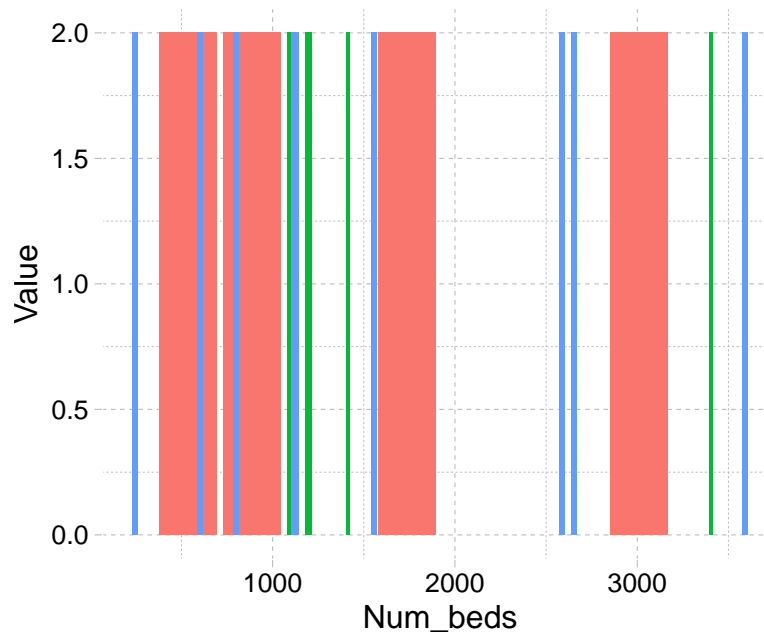
**Male.labor.prop
By Region**



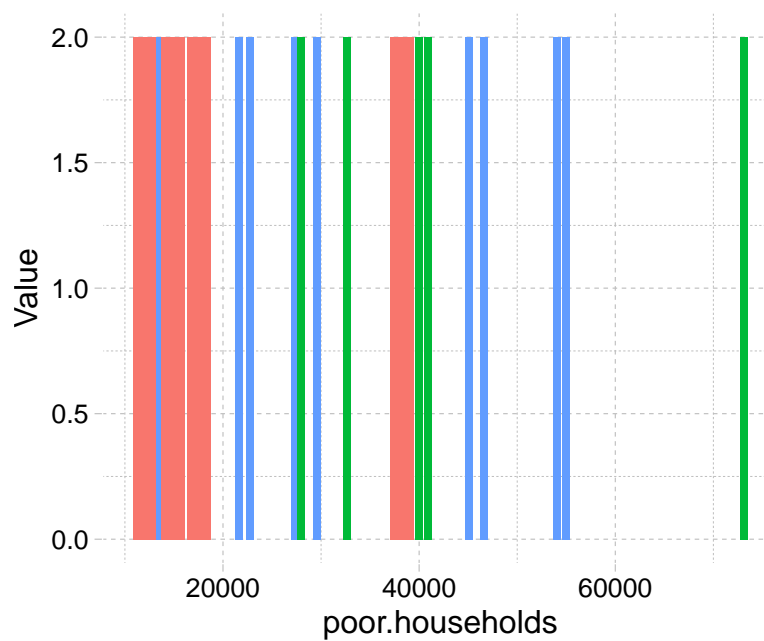
**Num_hosp
By Region**



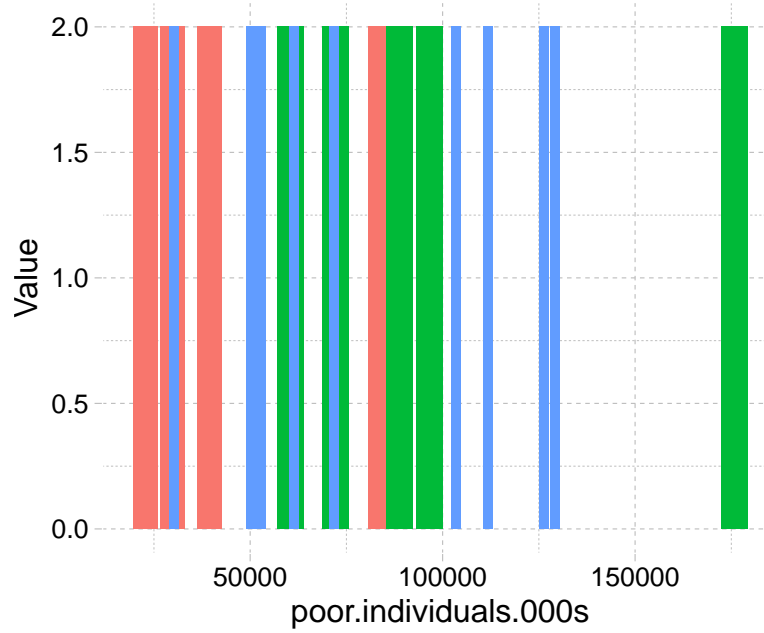
**Num_beds
By Region**



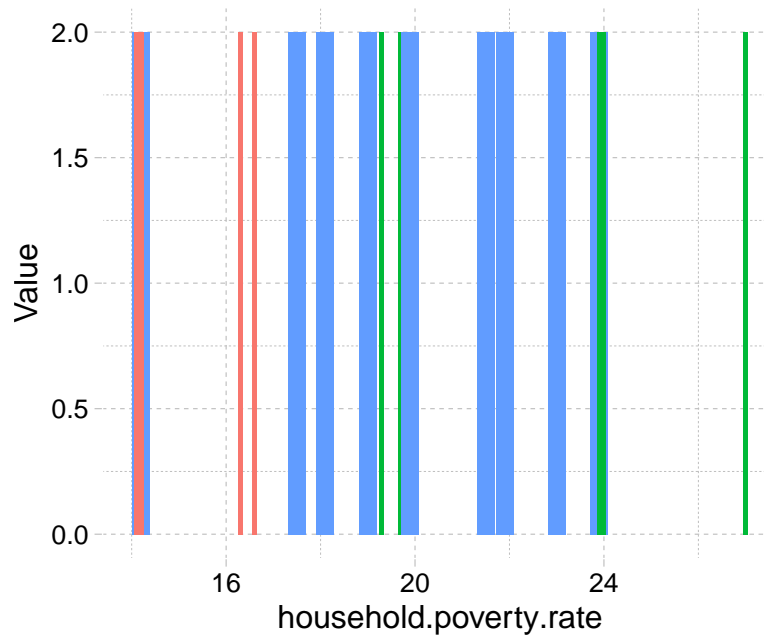
**poor.households
By Region**



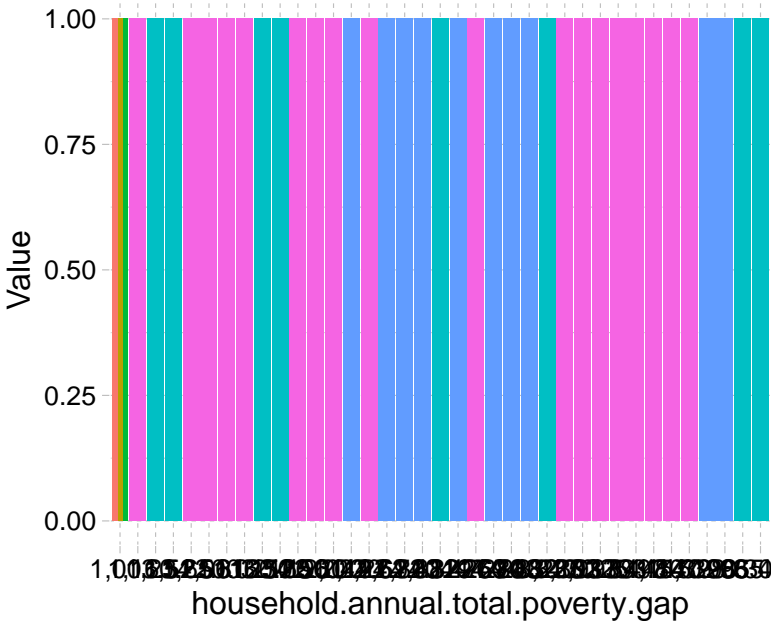
poor.individuals.000s
By Region



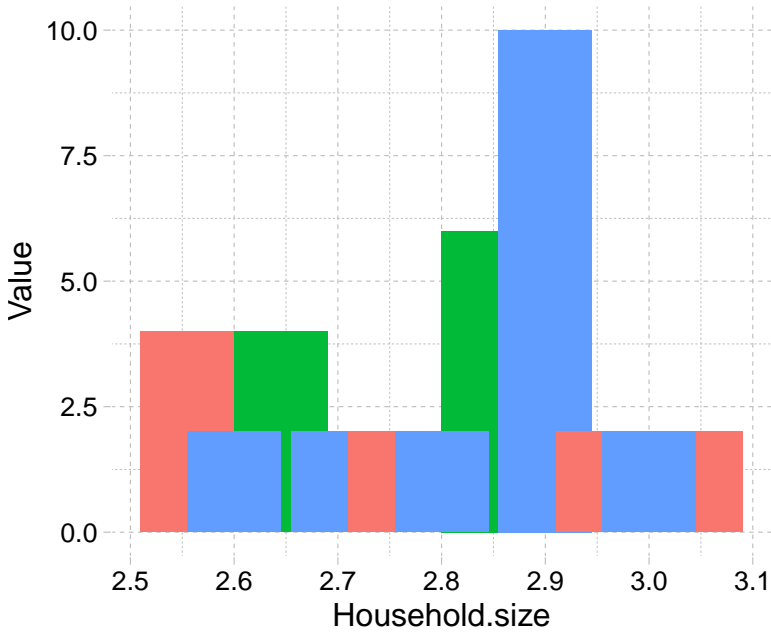
household.poverty.rate
By Region



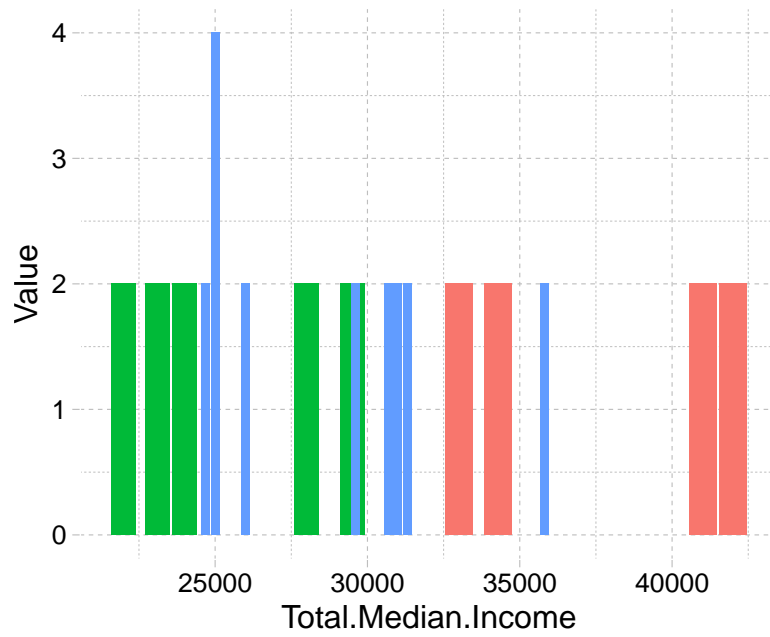
household.annual.total.poverty.gap By Region



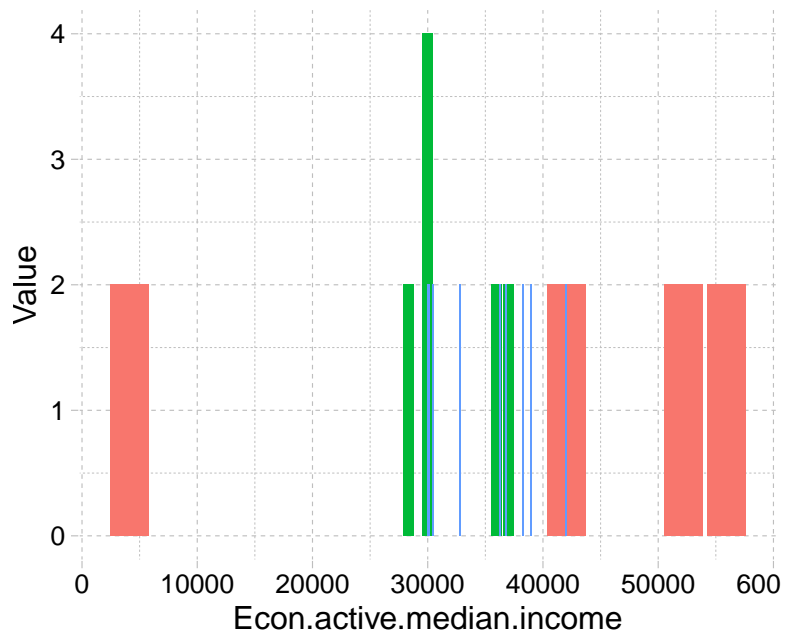
Household.size By Region



**Total.Median.Income
By Region**



**Econ.active.median.income
By Region**



Summary of Inferential Results (3 pages)

Conclusion (1 page)

Appendix