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//              HK Tourist data analytics              //

//                  26 April, 2021                     //


import excel "F:\Users\admin\Desktop\CUHK (DSPS)\CUHK tourist data\Courseware
grant\hk_visitors_sampledata.xlsx", sheet("data") firstrow clear


tsset time

tsline total_va, name(graph1, replace) title("{bf: Total visitor arrivals in HK, Jan 2016-Dec 2020}")
ytitle("") ttitle("")


* Descriptive statistics

gen period = "1. Normal_times" if inrange(time, td(1jan2016), td(31may2019))

replace period = "2. Ebill_times" if inrange(time, td(1jun2019), td(31jan2020))

replace period = "3. COVID-19 times" if inrange(time, td(1feb2020), td(31dec2020))


sum total_va if period=="1. Normal_times", d

sum total_va if period=="2. Ebill_times", d

sum total_va if period=="3. COVID-19 times", d


graph box total_va, over(period) noout ytitle("") name(graph2, replace)


* Confidence interval

gen Mainland_proportion = total_va_mainland_china/total_va

ci means Mainland_proportion if period=="1. Normal_times"

ci means Mainland_proportion if period=="2. Ebill_times"

ci means Mainland_proportion if period=="3. COVID-19 times"

twoway (scatter Mainland_proportion time) (lfitci Mainland_proportion time if period=="1.
Normal_times", ciplot(rline)), ytitle("") name(graph3, replace)

twoway (scatter Mainland_proportion time) (lfitci Mainland_proportion time if period=="2.
Ebill_times", ciplot(rline)), ytitle("") name(graph4, replace)
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twoway (scatter Mainland_proportion time) (lfitci Mainland_proportion time if period=="3. COVID-19 times", ciplot(rline)), ytitle("") name(graph5, replace)

* Hypothesis testing

graph box total_va_usa, over(period) noout ytitle("") name(graph6, replace)

gen USA_va1 = total_va_usa if period=="1. Normal_times"

gen USA_va2 = total_va_usa if period=="2. Ebill_times"

gen USA_va3 = total_va_usa if period=="3. COVID-19 times"

ttest USA_va1 = USA_va2, unpaired

ttest USA_va2 = USA_va3, unpaired

ttest USA_va1 = USA_va3, unpaired

twoway (scatter total_va_usa time) (lfitci total_va_usa time if period=="1. Normal_times", ciplot(rline)), ytitle("") name(graph7, replace)

twoway (scatter total_va_usa time) (lfitci total_va_usa time if period=="2. Ebill_times", ciplot(rline)), ytitle("") name(graph8, replace)

twoway (scatter total_va_usa time) (lfitci total_va_usa time if period=="3. COVID-19 times", ciplot(rline)), ytitle("") name(graph9, replace)