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. set more off
```

```
. version 14
```

```
. /* UCSF School of Nursing  
> Dissertation: Alert Driven Rescue  
> PI: Daniel Linnen  
> KPNC Division of Research  
> March 2018  
>  
> RQ: Do alert-driven sepsis interventions differ between decedents and survivors  
> among adult sepsis patients on general hospital wards after matching derived  
> comparabale groups?  
>  
> Outcome: 30-day survival/mortality  
>  
> Sepsis interventions:  
> Fluid bolus time to alert  
> Fluid bolus volume within 24 hs followin alert  
> New IV antibiotic  
> Transfer to ICU  
> Number of vital signs and vital signs sets  
> Number of lab orders  
>  
>  
>  
> */
```

```
. import delimited J:\SRINPROJECTS\ADR\adr3_full_dataset_20180310.csv,  
varnames(1)  
(52 vars, 517 obs)
```

```
. // group 1 is matched survivors  
. // group 2 is matched decedents  
. // group 3 is unmatched survivors  
. // group 4 is unmacthed decedents
```

```
. describe
```

```
Contains data
```

```
obs:      517  
vars:      52  
size:     127,699
```

```

-----
storage display value
variable name type format label variable label
-----

```

```

id          int    %8.0g
group       byte   %8.0g
pat_enc_csn_id double %10.0g
mrn         double %10.0g
episode_id  long   %12.0g
fac_id      str3   %9s
icd_cd      str7   %9s
admit_cat   str14  %14s
ed_door_ts  str14  %14s
het         str14  %14s
edip_ts     str14  %14s
tx_icu      str14  %14s
disch_dhms  str14  %14s
time_ed_to_ward str5   %9s
time_ward_to_~t float %9.0g
time_alert_to~c float %9.0g
los_days    float %9.0g
time_alert_to~b int   %8.0g
death       byte   %8.0g
decedent    byte   %8.0g
age_at_admit byte %8.0g
male        byte   %8.0g
race        str8   %9s
laps2_het   int    %8.0g
laps2_at_alert int   %8.0g
laps_delta  int    %8.0g
cops2       int    %8.0g
aam_score   float %9.0g
fluid_overload byte %8.0g
care_order_at~t str12 %12s
full_code   byte   %8.0g
dnr_aam_flag byte %8.0g
lactate     byte   %8.0g
hypotension byte %8.0g
fb_1st_ts   str16  %16s
fb_2nd_ts   str14  %14s
fbp_2_before int   %8.0g
fbp_2_after int   %8.0g
fbp2_ipa    byte   %8.0g
new_abx     byte   %8.0g
new_abx_ts  str14  %14s

```

```
new_abx_ipa  byte  %8.0g
icu_transfer byte  %8.0g
vs_set_count byte  %8.0g
vs_count     int   %8.0g
laps2_lab_count byte %8.0g
shift_at_alert str1 %9s
weekday      str9  %9s
neuro_24     byte  %8.0g
dnr_admit_flag byte %8.0g
in_icu_b4_alert byte %8.0g
drop         byte  %8.0g
```

---

Sorted by:

Note: Dataset has changed since last saved.

```
.
.
. // Test variables for normality, linearity, outliers/influential points, and check distribution
across hospitals
. hist age_at_admit, percent by(group)

. graph box age_at_admit

. qnorm age_at_admit

. pnorm age_at_admit

.
. hist aam_score, percent by(group)

. graph box aam_score

. qnorm aam_score

. pnorm aam_score

.
. hist cops2, percent by(group)

. graph box cops2

. qnorm cops2

. pnorm cops2

.
```

```

. hist los_day, percent by(group)

. graph box los_day

. qnorm los_day

. pnorm los_day

.

. hist los_day, percent by(group)

. graph box los_day

. qnorm los_day

. pnorm los_day

. hist time_ward_to_alert, percent by(group)

. graph box time_ward_to_alert

. qnorm time_ward_to_alert

. pnorm time_ward_to_alert

. gen age65 = 0

. replace age65 = 1 if (age_at_admit >= 65)
(348 real changes made)

. rename laps_delta laps2_delta

. save "J:\SR\PROJECTS\ADR\adr3_full_datatset.dta", replace
file J:\SR\PROJECTS\ADR\adr3_full_datatset.dta saved

.

. //table 1 full cohort, cohort characteristics, descriptive statistics
.

. bysort group: sum age_at_admit, detail

-----
-----
-> group = 1

-> group = 2

-> group = 3

```

```

-> group = 4

. sum age_at_admit, detail

. bysort group: sum aam_score, detail

. sum aam_score, detail

. bysort group: sum laps2_het, detail

. bysort group: sum laps2_delta, detail

. sum laps2_delta, detail

. tab group age65 , row

. tab group male, row

. tab group race , row

. tab group admit_cat , row

. tab group care_order_at_alert, row

. tab group hypotension, row

. tab group lactate, row

. tab group death, row

. tab group decedent, row

. // matched cohort analyses of survivors and decedents
. clear

. import delimited J:\SR\PROJECTS\ADR\adr3_matched_dataset_20180310.csv,
varnames(1)
(54 vars, 134 obs)

. save "J:\SR\PROJECTS\ADR\adr3_matched_datatset.dta", replace
file J:\SR\PROJECTS\ADR\adr3_matched_datatset.dta saved

.

. label define group 1 "Survivors" 2 "Decedents" , replace

```

```

.
. gen age65 = 0

. replace age65 = 1 if (age_at_admit >= 65)
(109 real changes made)

.

. rename laps_delta laps2_delta

.

. gen weekend = 0

. replace weekend = 1 if weekday == "Saturday"
(21 real changes made)

. replace weekend = 1 if weekday == "Sunday"
(19 real changes made)

.

. // step 1: verify matching: standardized difference scores two show matching created
like groups
.
. pbalchk decedent male age_at_admit full_code aam_score laps2_het cops2 los_days,
graph

. graph save Graph "J:\SR\PROJECTS\ADR\STATA graphs\standardized difference
graph after matching.gph", replace
(file J:\SR\PROJECTS\ADR\STATA graphs\standardized difference graph after
matching.gph saved)

.

. //fill in table 2 results
. bysort group: sum time_ed_to_ward, detail

. bysort group: sum time_ward_to_alert, detail

. bysort group: sum time_alert_to_dc, detail

-. bysort group: sum los_days, detail

. bysort group: sum time_alert_to_fb, detail

. bysort group: sum fbp_2_before, detail

. bysort group: sum fbp_2_after, detail

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```
. bysort group: sum vs_count, detail
. bysort group: sum vs_set_count, detail
. bysort group: sum laps2_lab_count, detail
. tab group fbp_2, row
. tab group fbp_2_ipa, row
. tab group new_abx, row
. tab group new_abx_ipa, row
. tab group icu, row
. tab group dnr_aam_flag, row
. tab group shift_at_alert, row
. tab group weekend, row
.
. // table 1: independent t-test and chi2 difference tests
.
. ttest age_at_admit, by(group)
. ttest aam_score, by(group)
. ttest laps2_het, by(group)
. ttest laps2_at_alert, by(group)
. ttest laps2_delta, by(group)
. ttest cops2, by(group)
. ttest los_days, by(group)
. ttest time_ward_to_alert, by(group)
. tab group age65 , row chi2
. tab group male, row chi2
. tab group race , row chi2
. tab group admit_cat , row chi2
```

```

. tab group care_order_at_alert, row chi2

. tab group hypotension, row chi2

. tab group lactate, row chi2

. // table 2: between group difference testing of sepsis intervention processes etc.
.
. ttest time_ed_to_ward, by(group)

. ttest time_ward_to_alert, by(group)

. ttest time_alert_to_dc, by(group)

. ttest los_days, by(group)

. ttest time_alert_to_fb, by(group)
. ttest fbp_2_before, by(group)

. ttest fbp_2_after, by(group)

. ttest vs_count, by(group)

. ttest vs_set_count, by(group)

. ttest laps2_lab_count, by(group)

. tab group fbp_2, row chi2

. tab group fbp_2_ipa, row chi2

. tab group new_abx, row chi2
. tab group new_abx_ipa, row chi2

. tab group icu, row chi2

. tab group dnr_aam_flag, row chi2
. tab group shift_at_alert, row chi2

. tab group weekend, row chi2

. //sensitivity analyses
. // remove patients with e/o fluid overload (fbp2 results)
.
. save "J:\SRINPROJECTS\ADR\adr3_sensitivity_analyses.dta", replace
file J:\SRINPROJECTS\ADR\adr3_sensitivity_analyses.dta saved

```



```

.
. ttest time_alert_to_fb, by(group)

. ttest fbp_2_before, by(group)

. ttest fbp_2_after, by(group)

T. drop if fluid_overload == 1
(25 observations deleted)

. ttest time_alert_to_fb, by(group)

. ttest fbp_2_before, by(group)

. ttest fbp_2_after, by(group)

. // remove one outlier decedent who received 10 liters of fluid boluses
. clear

.
. use "J:\SR\PROJECTS\ADR\adr3_sensitivity_analyses.dta"

.
. drop if id == 106
(1 observation deleted)

. ttest time_alert_to_fb, by(group)

. ttest fbp_2_before, by(group)

. ttest fbp_2_after, by(group)

.
. // combine both drops
. clear

.
. use "J:\SR\PROJECTS\ADR\adr3_sensitivity_analyses.dta"

.
. drop if fluid_overload == 1
(25 observations deleted)

. drop if id == 106
(1 observation deleted)

```

```
. ttest time_alert_to_fb, by(group)

. ttest fbp_2_before, by(group)
. ttest fbp_2_after, by(group)

. clear

.
.
. log close
  name: <unnamed>
  log: I:\DOR\Dissertation\Paper 3 Matching\Stata\ADR3_Linnen.smcl
```