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Appendix 1: R Functions Used in the Analysis of the Report.

1. Simulation of Values from a Multivariate Normal Distribution.

```
randdat<-function(muvect,Sigmat,n){
# requires package bayesurv
#
rawdat<-rMVNorm(n,muvect,Sigmat)
roundat<-round(rawdat,0)
orig<-1:60
ind1<-sample(orig,5)
ind2<-sample(orig[-ind1],9)
ind3<-sample(orig[-c(ind1,ind2)],4)
roundat[ind1,1]<-roundat[ind1,1]+0.25
roundat[ind2,1]<-roundat[ind2,1]+0.5
roundat[ind3,1]<-roundat[ind3,1]+0.75
ind11<-sample(orig,11)
roundat[ind11,2]<-roundat[ind11,2]+0.5
ind21<-sample(orig,9)
roundat[ind21,3]<-roundat[ind21,3]+0.5
ind31<-sample(orig,3)
roundat[ind31,4]<-roundat[ind31,4]+0.5
roundat<-cbind(1:n,roundat)
dat<-as.data.frame(roundat)
names(dat)<-c("subject","ht","wt0","wt1","wt2")
return(dat)
}
```

2. Compare "suspect" data records to averages of other pairs.

```
checkavging<-function(dat,suspectno){
 suspect<-dat[dat$subject==suspectno,]
 rdat<-dat[-suspectno,]
 rn<-dim(rdat)[1]
 npairs<-rn*(rn-1)/2
 res<-c(rep(0,7))
 cnt1<-0
 repeat{
  cnt1<-cnt1+1
  t1<-rdat[cnt1,]
  cnt2<-cnt1
  repeat{
   cnt2<-cnt2+1
   t2<-rdat[cnt2,]
   tsubs<-c(rdat$subject[cnt1],rdat$subject[cnt2])
#cat("tsubs: ",tsubs,fill=T)
   tavg<-0.5*(t1+t2)
   flag1<-(tavg$ht==suspect$ht)
   flag2<-(tavg$wt0==suspect$wt0)
   flag3<-(tavg$wt1==suspect$wt1)
   flag4<-(tavg$wt2==suspect$wt2)
   nflags<-flag1+flag2+flag3+flag4
   if(nflags>0){
   tres<-c(tsubs,nflags,flag1,flag2,flag3,flag4)
   res<-rbind(res,tres)}
   if(cnt2==rn) break
```

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```
    }
    if(cnt1==rn-1) break
    }
  return(res)
  }
  #-------------------------------------------------------------------------
  summarycheckavg<-function(dat,suspectnos){
   sk<-length(suspectnos)
   res1<-NULL; res2<-NULL; res3<-NULL; res4<-NULL; res5<-NULL
   res6<-NULL; res7<-NULL; res8<-NULL
   cnt<-0
   repeat{
    cnt<-cnt+1
    tsus<-suspectnos[cnt]
    tres<-checkavging(dat,tsus)
    rs<-dim(tres)[1]
   if(is.null(rs)==FALSE){
    if(rs==1){
    res1<-c(res1,tsus)
    res2<-c(res2,tres[1])
    res3<-c(res3,tres[2])
    res4<-c(res4,tres[3])
    res5<-c(res5,tres[4])
    res6<-c(res6,tres[5])
    res7<-c(res7,tres[6])
    res8<-c(res8,tres[7])
    }
```

```
 if(rs>1){
  cnt2<-0
  repeat{
   cnt2<-cnt2+1
   ttres<-tres[cnt2,]
   res1<-c(res1,tsus)
   res2<-c(res2,ttres[1])
   res3<-c(res3,ttres[2])
   res4<-c(res4,ttres[3])
   res5<-c(res5,ttres[4])
   res6<-c(res6,ttres[5])
   res7<-c(res7,ttres[6])
   res8<-c(res8,ttres[7])
   if(cnt2==rs) break
   } } }
 if(cnt==sk) break
 }
res<-data.frame(suspect=res1,other1=res2,other2=res3,nflags=res4,
                flag1=res5,flag2=res6,flag3=res7,flag4=res8)
res2<-res[res$other1!=0,]
return(res2)
}
```

3. Examine distributions of trailing digits.

```
digitdist<-function(dat){
 ht<-dat$ht
 wt0<-dat$wt0

wt1<-dat$wt1
wt2<-dat$wt2
ht<-floor(ht)
wt0<-floor(wt0)
wt1<-floor(wt1)
wt2<-floor(wt2)
ldht<-ht-10*floor(ht/10)
ldwt0<-wt0-10*floor(wt0/10)
ldwt1<-wt1-10*floor(wt1/10)
ldwt2<-wt2-10*floor(wt2/10)
htfs<-NULL; wt0fs<-NULL; wt1fs<-NULL; wt2fs<-NULL
cnt<--1
repeat{
 cnt<-cnt+1
 thtf<-sum(ldht==cnt)
 twt0f<-sum(ldwt0==cnt)
 twt1f<-sum(ldwt1==cnt)
 twt2f<-sum(ldwt2==cnt)
 htfs<-c(htfs,thtf)
 wt0fs<-c(wt0fs,twt0f)
 wt1fs<-c(wt1fs,twt1f)
 wt2fs<-c(wt2fs,twt2f)
 if(cnt==9) break
 }
res1<-data.frame(digit=0:9,ht=htfs,wt0=wt0fs,wt1=wt1fs,wt2=wt2fs)
tstht<-sum((res1$ht-6)^2/6)
tstwt0<-sum((res1$wt0-6)^2/6)
```

```
tstwt1<-sum((res1$wt1-6)^2/6)
tstwt2<-sum((res1$wt2-6)^2/6)
pht<-1-pchisq(tstht,9)
pwt0<-1-pchisq(tstwt0,9)
pwt1<-1-pchisq(tstwt1,9)
pwt2<-1-pchisq(tstwt2,9)
res2<-data.frame(var=c("ht","wt0","wt1","wt2"),
                 tst=c(tstht,tstwt0,tstwt1,tstwt2),
                 pval=c(pht,pwt0,pwt1,pwt2))
res<-list(res1,res2)
return(res)
}
```

4. Compute influence values.

```
influencefctn<-function(dat){
 wt2<-dat$wt2
 wt1<-dat$wt1
 wtdif<-wt1-wt2
 mn<-mean(wtdif)
 v2<-var(wtdif)
 n<-length(wtdif)
 realt<-mn/sqrt(v2/n)
 subs<-NULL; infls<-NULL
 cnt<-0
 repeat{
  cnt<-cnt+1
  tsub<-dat$subject[cnt]
```