

mcmccheck

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Simple run without sampling variance

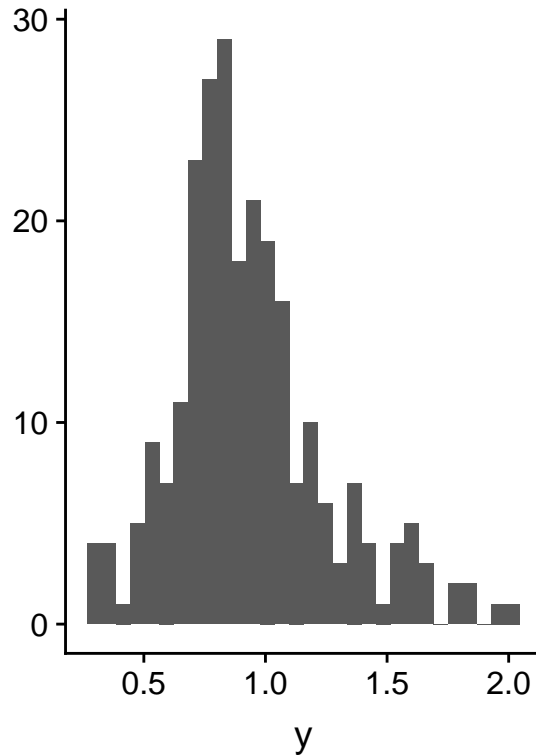
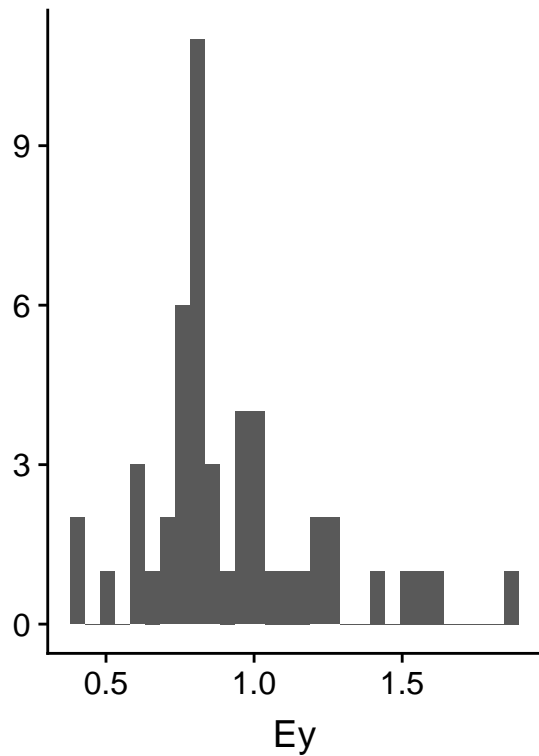
Hyperparameters are fixed

```
a=0.1
b=0
p=0
mu=1
svar=0.1
ss=0
epi=1
replicates=5
ss=0
n=50
m=10
FITmode=2

maf=mafsim(m)
X=A <- Xsim(n,m,maf)
s= ssim(m,svar)
Ey=wsim(X,s,mode=FITmode,epi = epi,mu = mu)
y=sampleW(Ey,a,b,p,rep = replicates)
h=sort(rep.int(1:n,replicates))
title <- ggdraw() + draw_label(paste("h2= ",format(var(Ey) / var(y),digits=2)),fontface = 'bold')
plot_grid(title,
            plot_grid(qplot(Ey),qplot(y)),
            ncol = 1, rel_heights = c(0.1, 1)
            )

## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

h2= 0.94



```
x<-napMCMCwrap()
```

```
## The provided vector s is a good start
```

```
## Starting c++ MCMC
```

```
## rGWA start for vector s is better than proposed start
```

```
## Starting c++ MCMC
```

```
LIKELIHOOD(y,h-1,wC(X,BMridge(X,My(y,h)),FITmode),b,a,p,mu,epi,verbose = F)
```

```
## [1] 204.4449
```

```
LIKELIHOOD(y,h-1,wC(X,x$shat,FITmode),b,a,p,mu,epi,verbose = F)
```

```
## [1] 201.7672
```

```
LIKELIHOOD(y,h-1,wC(X,s,FITmode),b,a,p,mu,epi,verbose = F)
```

```
## [1] 212.7335
```

```
# x<-napMCMC(y,h,X,m=1:m,n=1:n,  
#           rnorm(m,0,0.1),  
#           # BMridge(X,My(y,h), lambda=10),  
#           # s+rnorm(m,0,0.01),  
#           test=F,  
#           verbose=F,  
#           iterations=5000 * m,  
#           FITmode = FITmode,PRImode = 1,LIKmode = 2,  
#           bw=0.001)  
#
```

```

# LIKELIHOOD(y,h-1,wC(X,BMridge(X,My(y,h)),FITmode),b,a,p,mu,epi,verbose = F)
# LIKELIHOOD(y,h-1,wC(X,x$shat,FITmode),b,a,p,mu,epi,verbose = F)
# LIKELIHOOD(y,h-1,wC(X,s,FITmode),b,a,p,mu,epi,verbose = F)
#
#
# x<-napMCMC(y,h,X,m=1:m,n=1:n,
#           x$shat,
#           test=F,
#           verbose=F,
#           iterations=5000 * m,
#           FITmode = FITmode,PRImode = 1,LIKmode = 2,
#           bw=0.05)
#
# LIKELIHOOD(y,h-1,wC(X,BMridge(X,My(y,h)),FITmode),b,a,p,mu,epi,verbose = F)
# LIKELIHOOD(y,h-1,wC(X,x$shat,FITmode),b,a,p,mu,epi,verbose = F)
# LIKELIHOOD(y,h-1,wC(X,s,FITmode),b,a,p,mu,epi,verbose = F)

```

```

# qplot(x$shat,BMridge(X,My(y,h)), xlab = "NAP",ylab="rGWA") +
#   geom_abline(slope = 1,intercept = 0, color=transparent("grey"))

```

```

pnap<-scorplot(s,x$shat)
pgwa<-scorplot(s,BMridge(X,My(y,h)))
pfinal<-plot_grid(
  pnap$psel,
  pgwa$psel,
  labels=c("NAP","mGWA")
)

```

```

# pfinal

```

```

inap<-indplot(y,h,wC(X,x$shat,FITmode,epi = x$par["epi",] ,mu= x$par["mu",]))
igwa<-indplot(y,h,X %*% BMridge(X,My(y,h))+mu)
trueplot<-indplot(y,h,wC(X,s,FITmode,epi = epi ,mu= mu))
pfin2<-plot_grid(
  inap,
  igwa,
  labels=c("NAP","mGWA")
)

```

```

## Warning: Removed 1 rows containing missing values (geom_hline).

```

```

## Warning: Removed 1 rows containing missing values (geom_vline).

```

```

## Warning: Removed 1 rows containing missing values (geom_smooth).

```

```

## Warning: Removed 1 rows containing missing values (geom_hline).

```

```

## Warning: Removed 1 rows containing missing values (geom_vline).

```

```

# pfin2

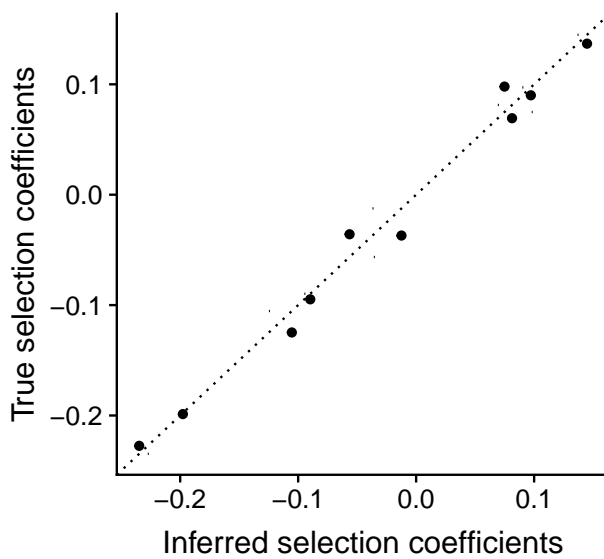
```

```

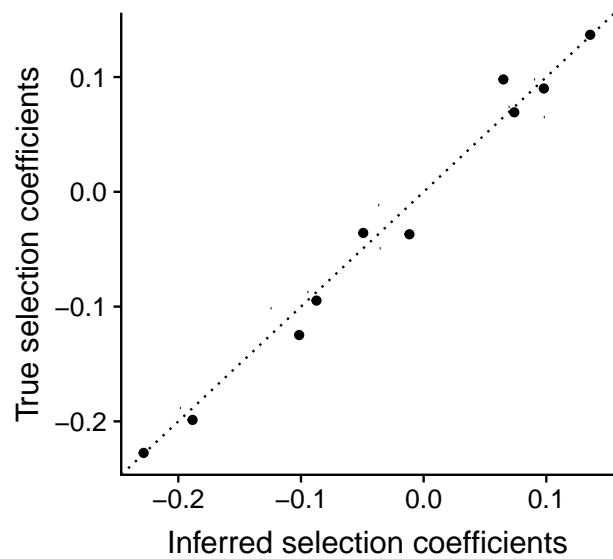
plo<-plot_grid(pfinal,pfin2,ncol=1)
print(plo)

```

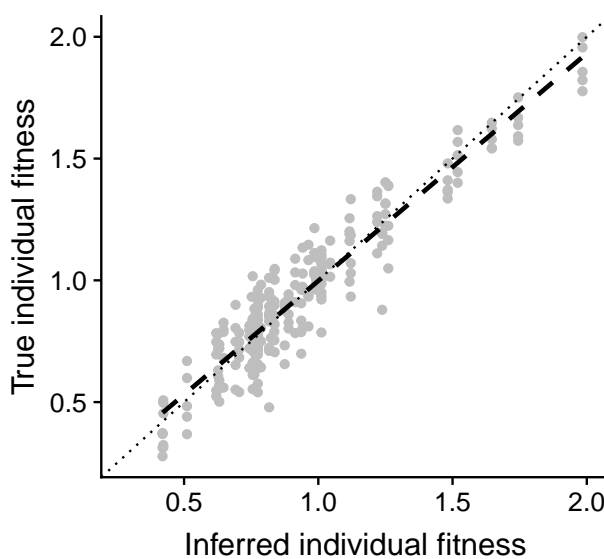
NAP $R^2 = 0.985$, $\beta = 0.988$, $a = 0.043$



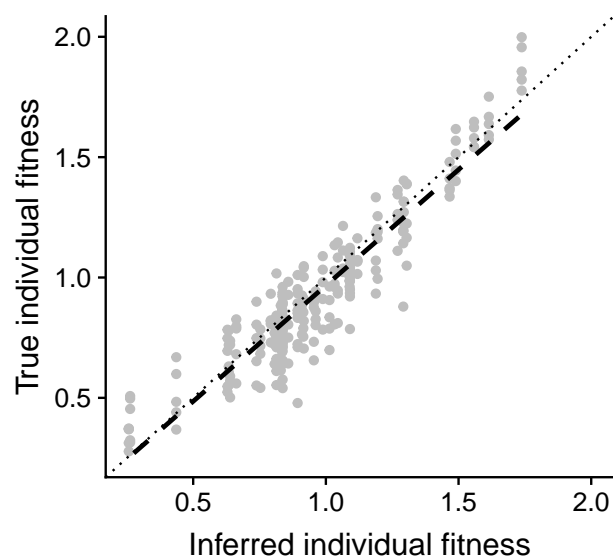
mGWA $R^2 = 0.984$, $\beta = 1.034$, $a = 0.047$



NAP $R^2 = 0.887$, $\beta = 0.934$, $a = 0.021$



mGWA $R^2 = 0.864$, $\beta = 0.963$, $a = 0.024$



#What it should be

```
inap<-indplot(y,h,wC(X,x$shat,FITmode,epi = x$par["epi",] ,mu= x$par["mu",]))
inapfalse<-indplot(y,h,wC(X,x$shat,1,epi = x$par["epi",] ,mu= x$par["mu",]))
igwa<-indplot(y,h,X %%% BMridge(X,My(y,h))+mu)
trueplot<-indplot(y,h,wC(X,s,FITmode,epi = epi ,mu= mu))
```

```
plot_grid(inap,igwa,trueplot,ncol=1,labels=c("NAP","mGWA","Truth"))
```

```
## Warning: Removed 1 rows containing missing values (geom_hline).
```

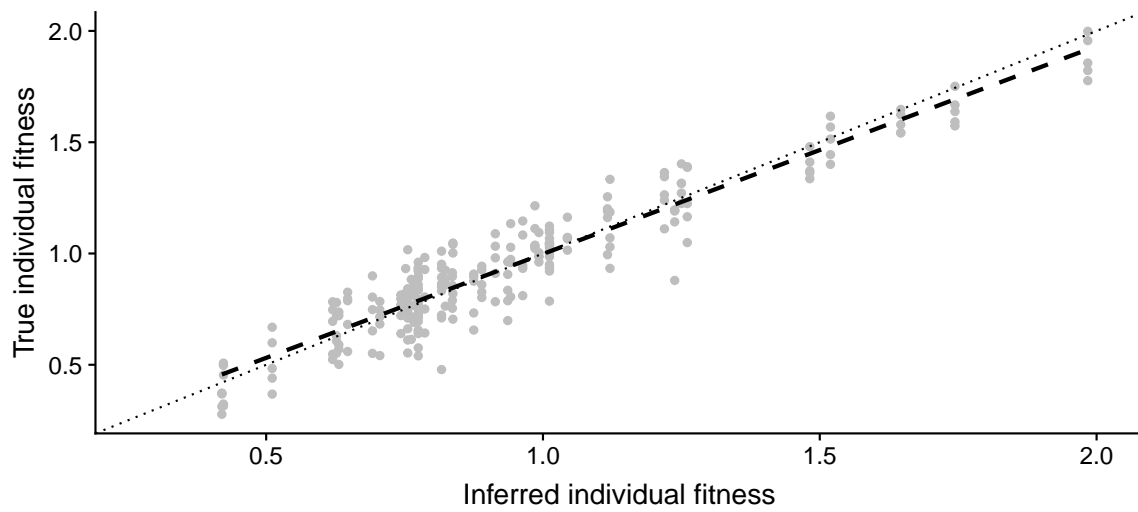
```
## Warning: Removed 1 rows containing missing values (geom_vline).
```

```
## Warning: Removed 1 rows containing missing values (geom_smooth).
```

```
## Warning: Removed 1 rows containing missing values (geom_hline).  
## Warning: Removed 1 rows containing missing values (geom_vline).  
## Warning: Removed 1 rows containing missing values (geom_hline).  
## Warning: Removed 1 rows containing missing values (geom_vline).
```

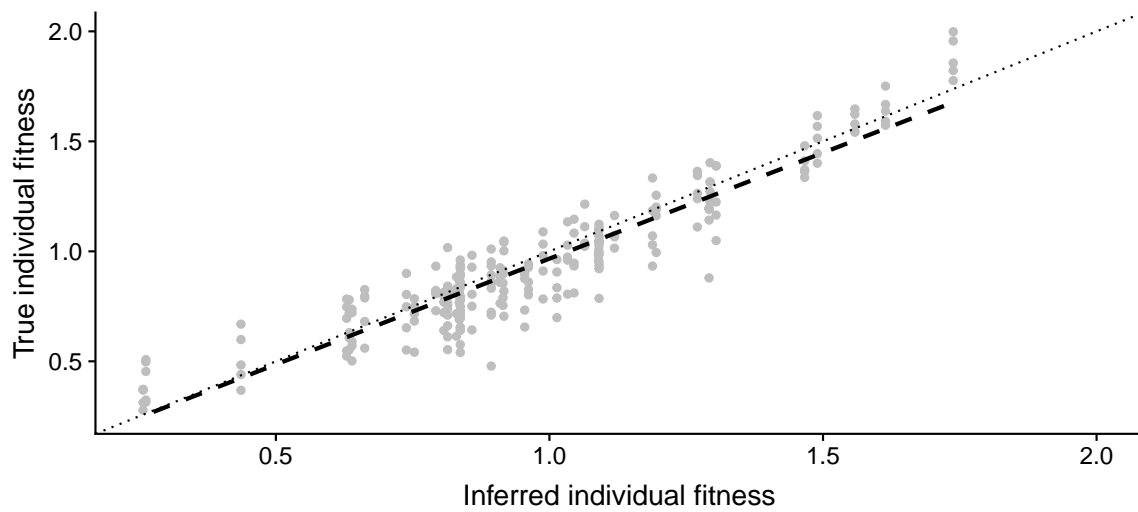
NAP

$$R^2 = 0.887, \beta = 0.934, a = 0.021$$



mGWA

$$R^2 = 0.864, \beta = 0.963, a = 0.024$$



Truth

$$R^2 = 0.892, \beta = 0.985, a = 0.022$$

