DAPS Air Pollution Monitor Differences, Correlation and Basic Plots

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In this case, no outliers were removed.
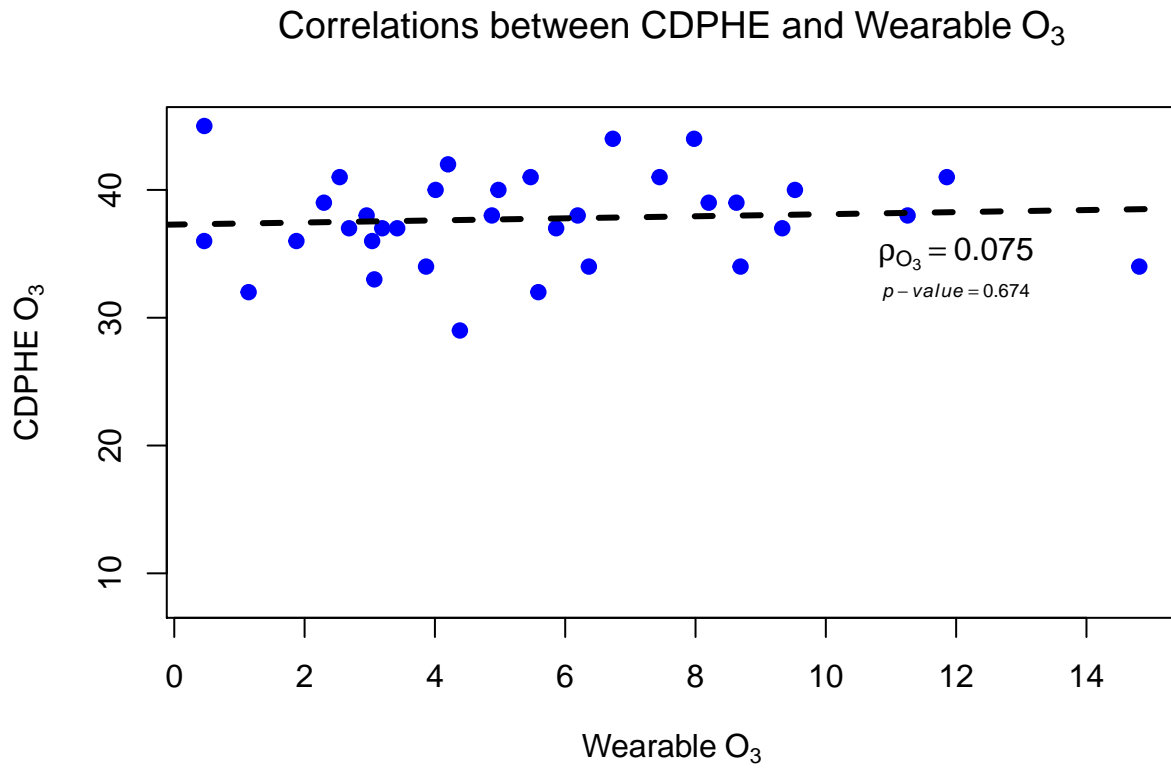
Data Steps:

Basic Correlations

Correlation of CDPHE Mean Ozone and Wearable Ozone

```
##
##  Pearson's product-moment correlation
##
## data:  daps$vest_O3 and daps$CDPHE_O3_mean
## t = 0.42427, df = 32, p-value = 0.6742
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.2702091  0.4027696
## sample estimates:
##        cor
## 0.0747906
```
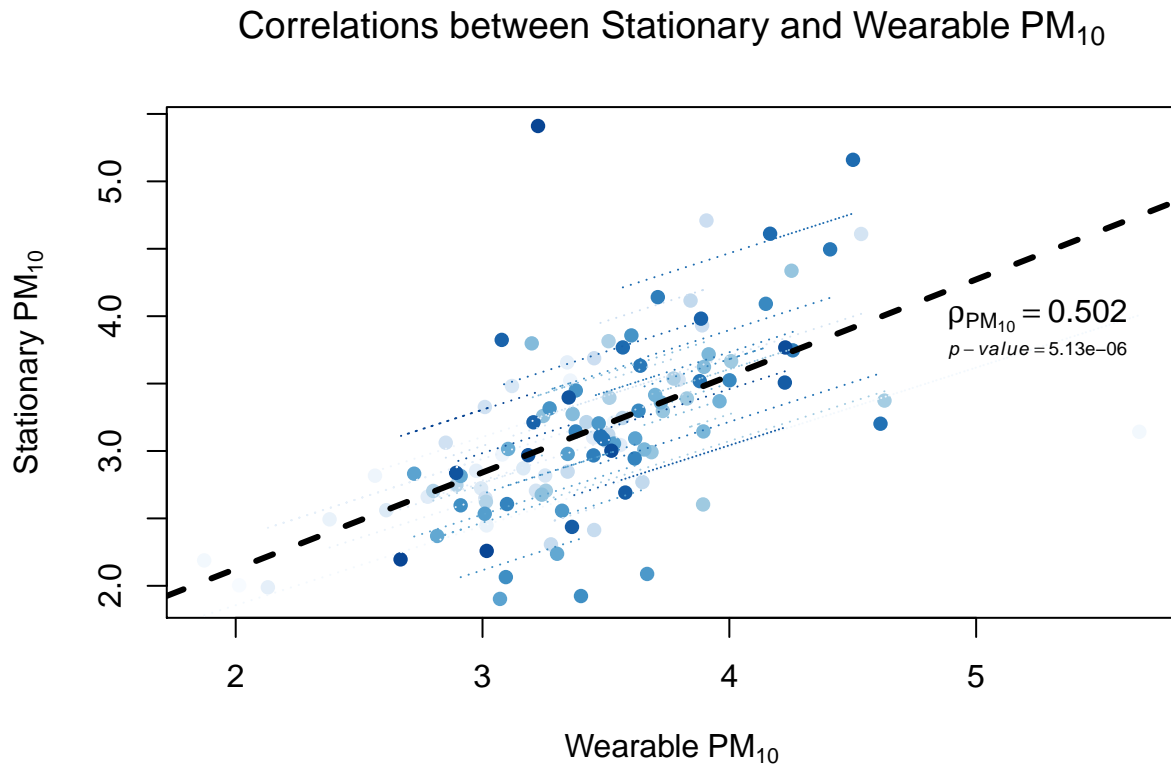
Plot

Correlations between CDPHE and Wearable O_3

$\rho_{O_3} = 0.075$

$p\text{-}value = 0.674$

(Y-axis: CDPHE O_3; X-axis: Wearable O_3)

Correlation of Stationary PM1O and Wearable PM10

```
## 
## Repeated measures correlation
## 
## r
## 0.5022392
## 
## degrees of freedom
## 72
## 
## p-value
## 5.131506e-06
## 
## 95% confidence interval
## 0.3061977 0.6574155
```
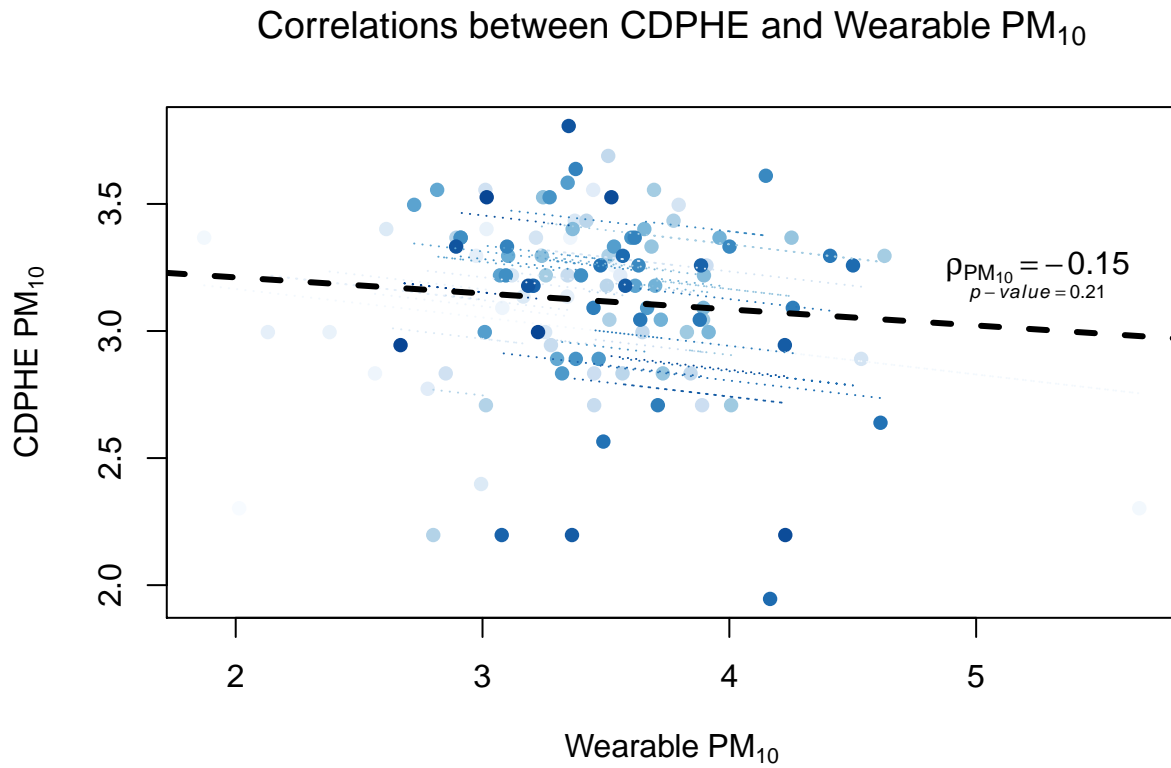
Plot

Correlations between Stationary and Wearable PM_{10}

Correlation of CDPHE mean PM10 and wearable PM10

```
##
## Repeated measures correlation
##
## r
## -0.1460296
##
## degrees of freedom
## 74
##
## p-value
## 0.2081324
##
## 95% confidence interval
## -0.3624347 0.08531597
```

Plot

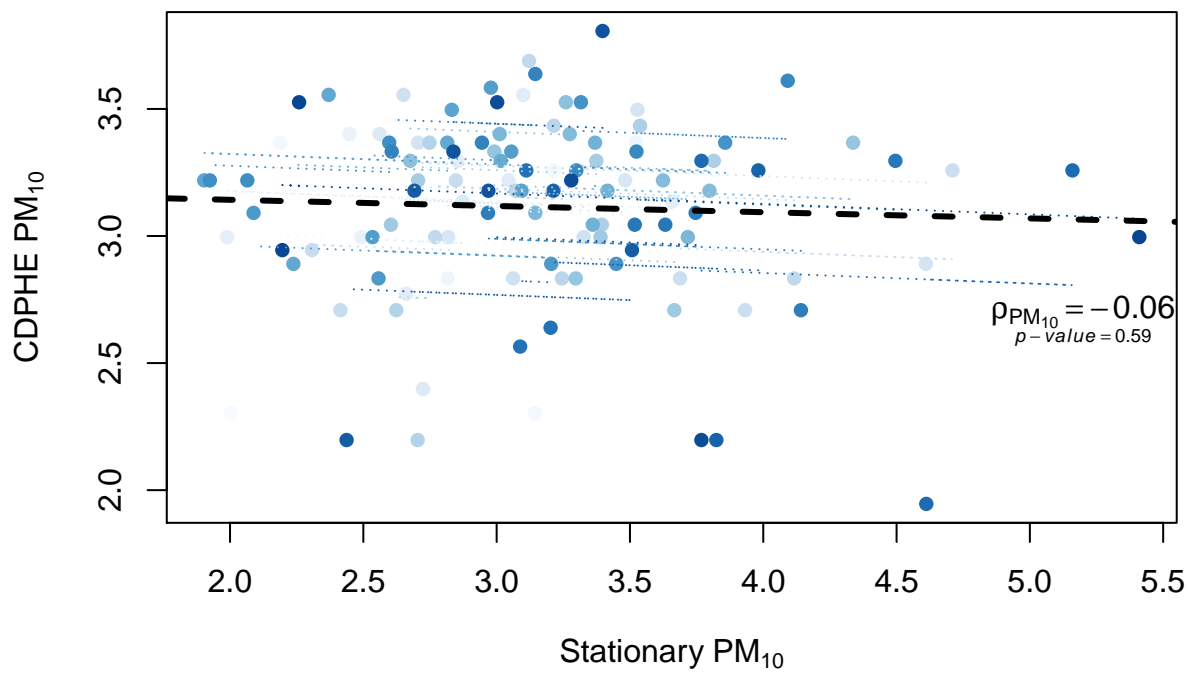## Correlations between CDPHE and Wearable PM_{10}

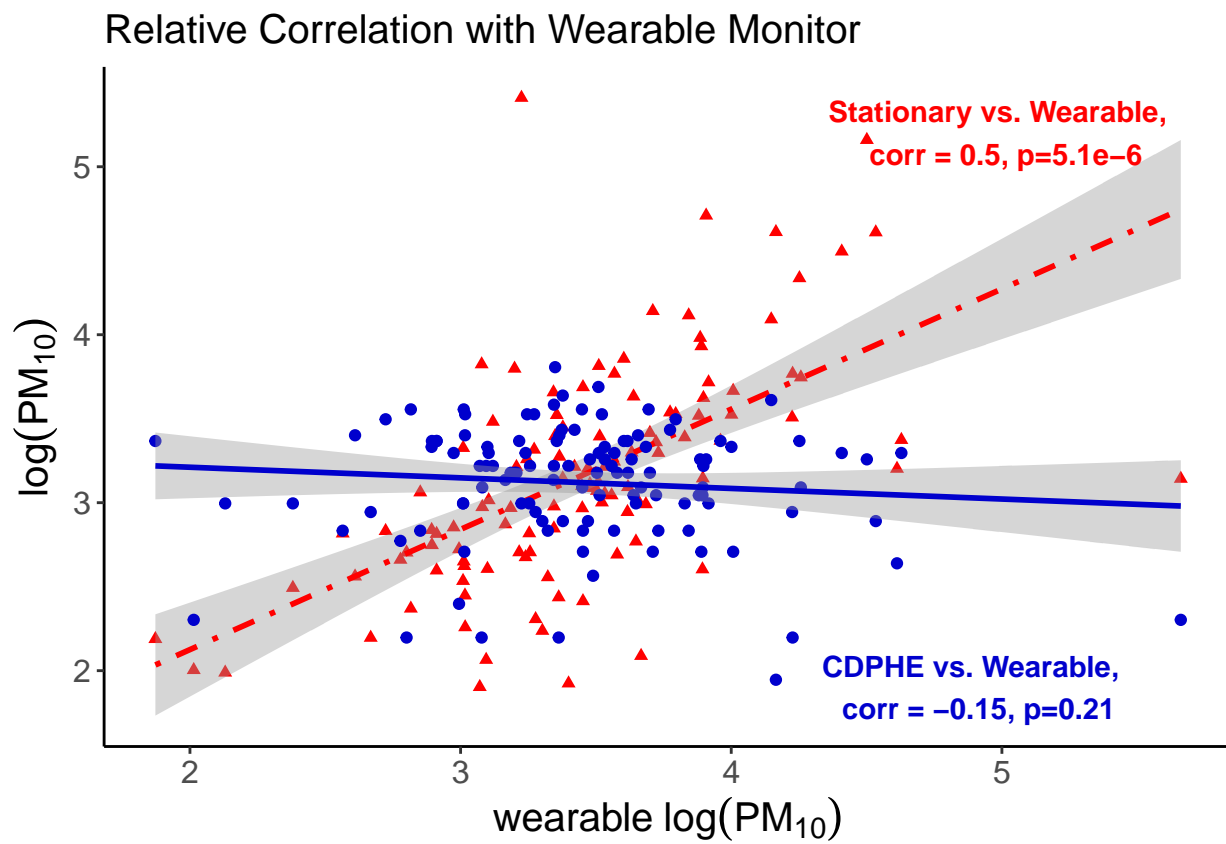**Correlation of Stationary PM10 and CDPHE PM10**

```
## 
## Repeated measures correlation
## 
## r
## -0.06262704
## 
## degrees of freedom
## 73
## 
## p-value
## 0.5934931
## 
## 95% confidence interval
## -0.2885369 0.1698881
```
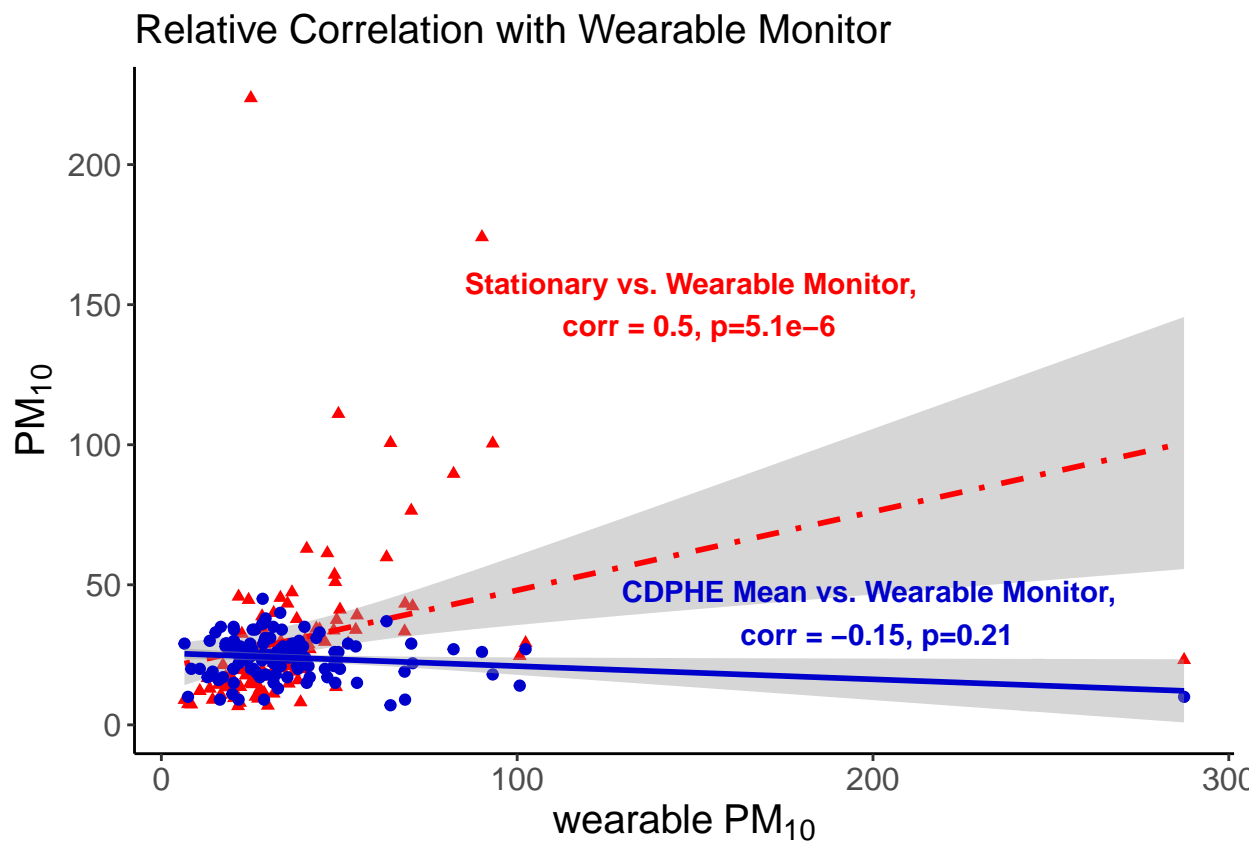
Correlations between CDPHE and Stationary PM$_{10}$

$\rho_{PM_{10}} = -0.06$
$p-value = 0.59$

CDPHE PM$_{10}$

Stationary PM$_{10}$

Relative Correlation with Wearable Monitor

Relative Correlation with Wearable Monitor

Stationary vs. Wearable Monitor,
corr = 0.5, p=5.1e−6

CDPHE Mean vs. Wearable Monitor,
corr = −0.15, p=0.21

PM$_{10}$

wearable PM$_{10}$

Brief look at health outcomes with exhaled nitric oxide and PM10.

Here, we can see the moderate weakness of the relationship between PM10 and FeNO.
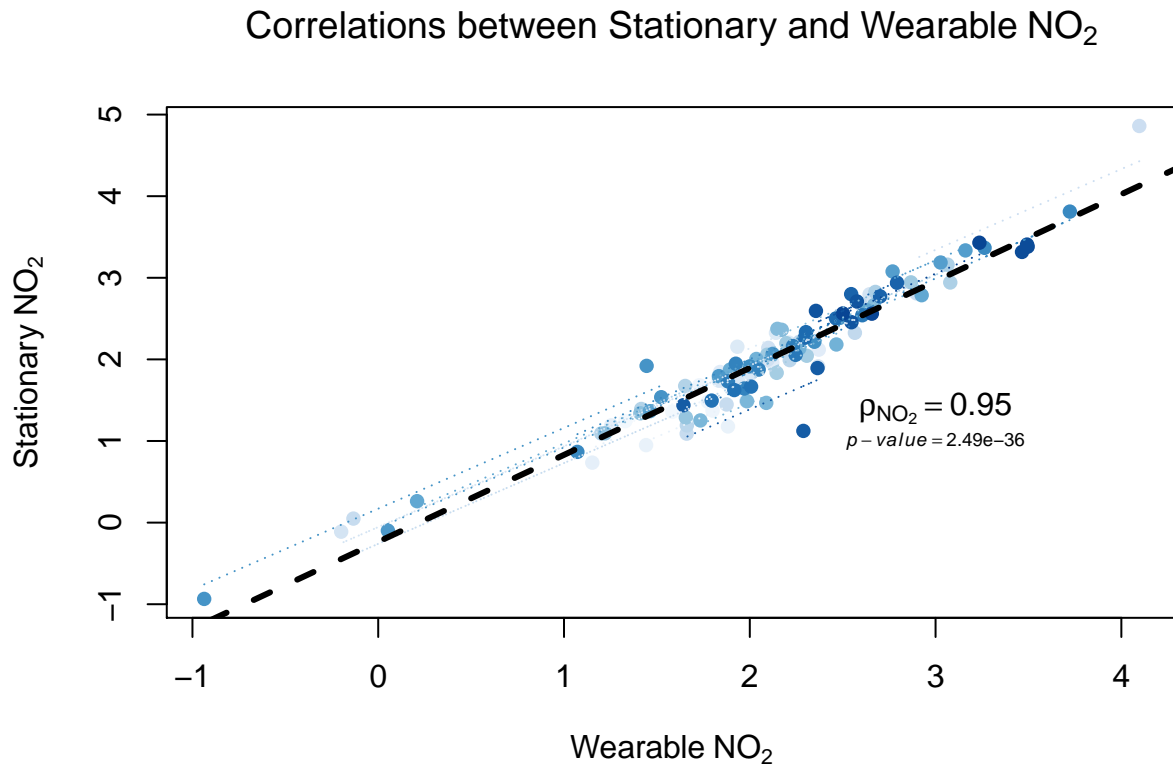
Exhaled Nitric Oxide and PM$_{10}$ Exposure
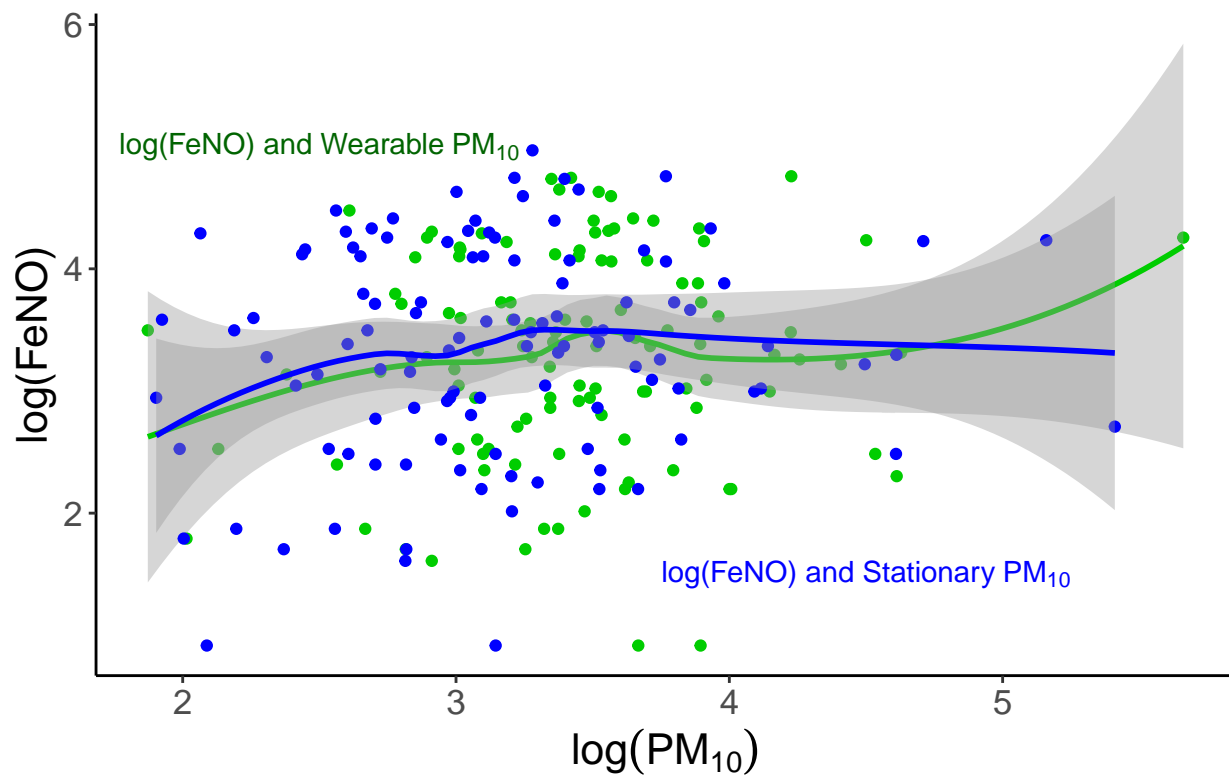
Correlation between stationary NO2 and wearable NO2

```
##
## Repeated measures correlation
##
## r
## 0.9508126
##
## degrees of freedom
## 68
##
## p-value
## 2.487073e-36
##
## 95% confidence interval
## 0.9212276 0.9694628
```
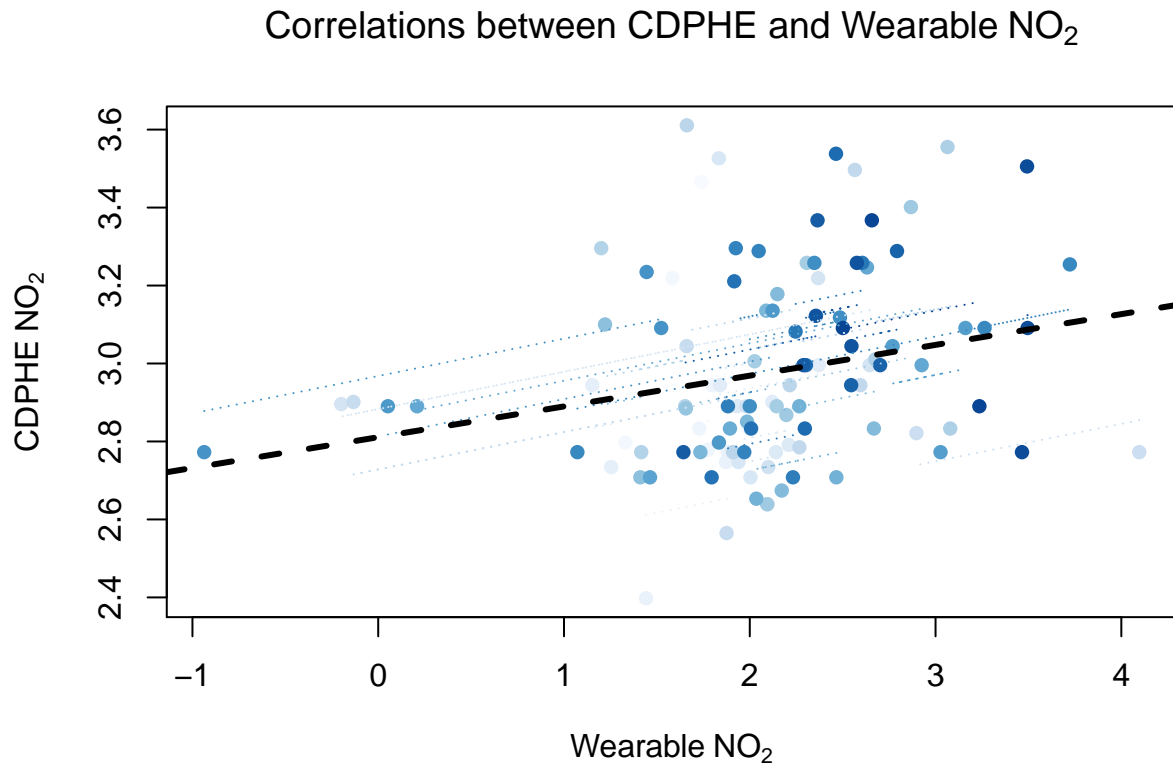
Plot

Correlations between Stationary and Wearable NO$_2$

Correlation between CDPHE mean NO2 and wearable NO2

```
##
## Repeated measures correlation
##
## r
## 0.2307828
##
## degrees of freedom
## 68
##
## p-value
## 0.05458875
##
## 95% confidence interval
## -0.00808728 0.4447365
```
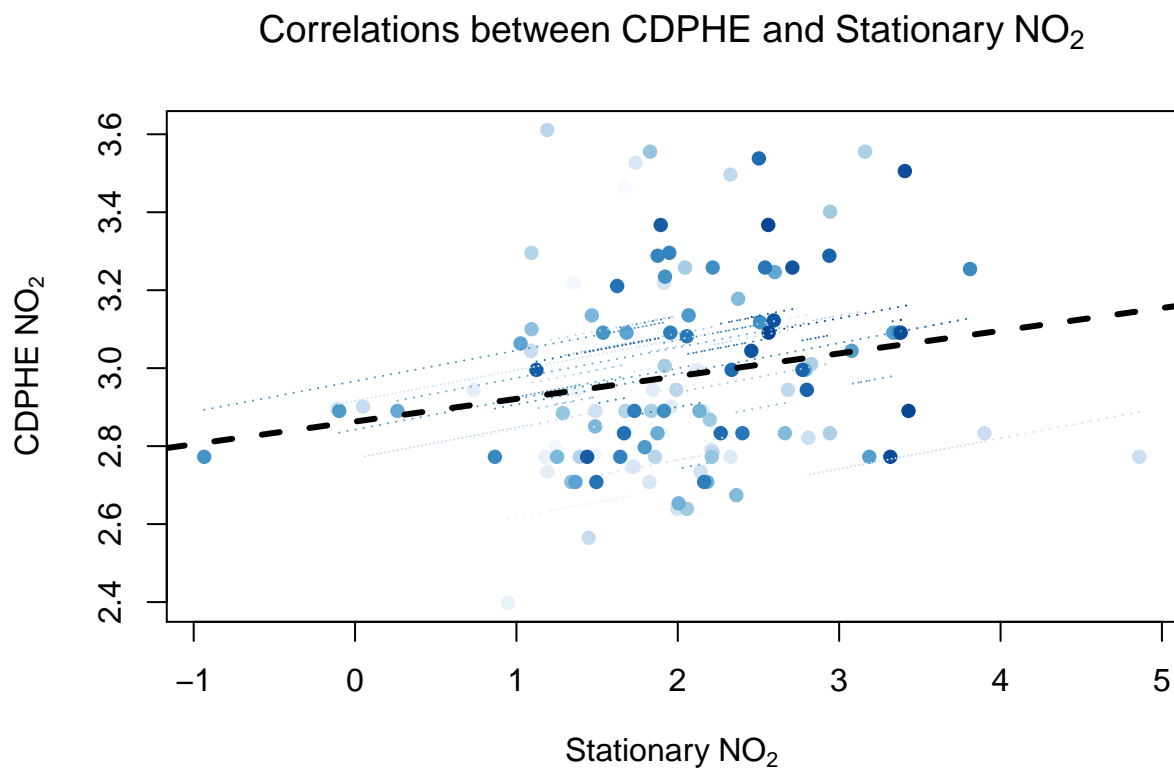
Plot

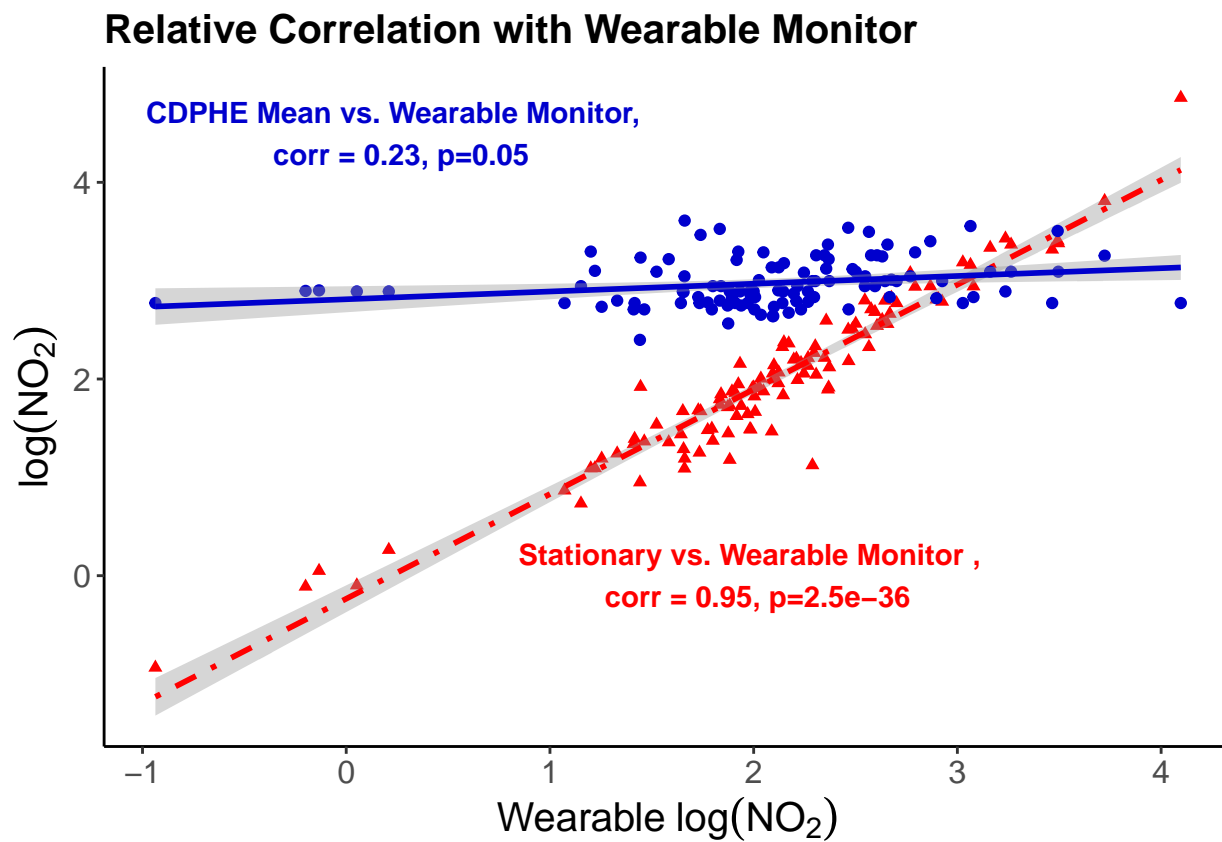## Correlations between CDPHE and Wearable NO$_2$

Correlation between CDPHE mean NO2 and stationary NO2

```
##
## Repeated measures correlation
##
## r
## 0.1874692
##
## degrees of freedom
## 75
##
## p-value
## 0.1025449
##
## 95% confidence interval
## -0.04124765 0.3975173
```

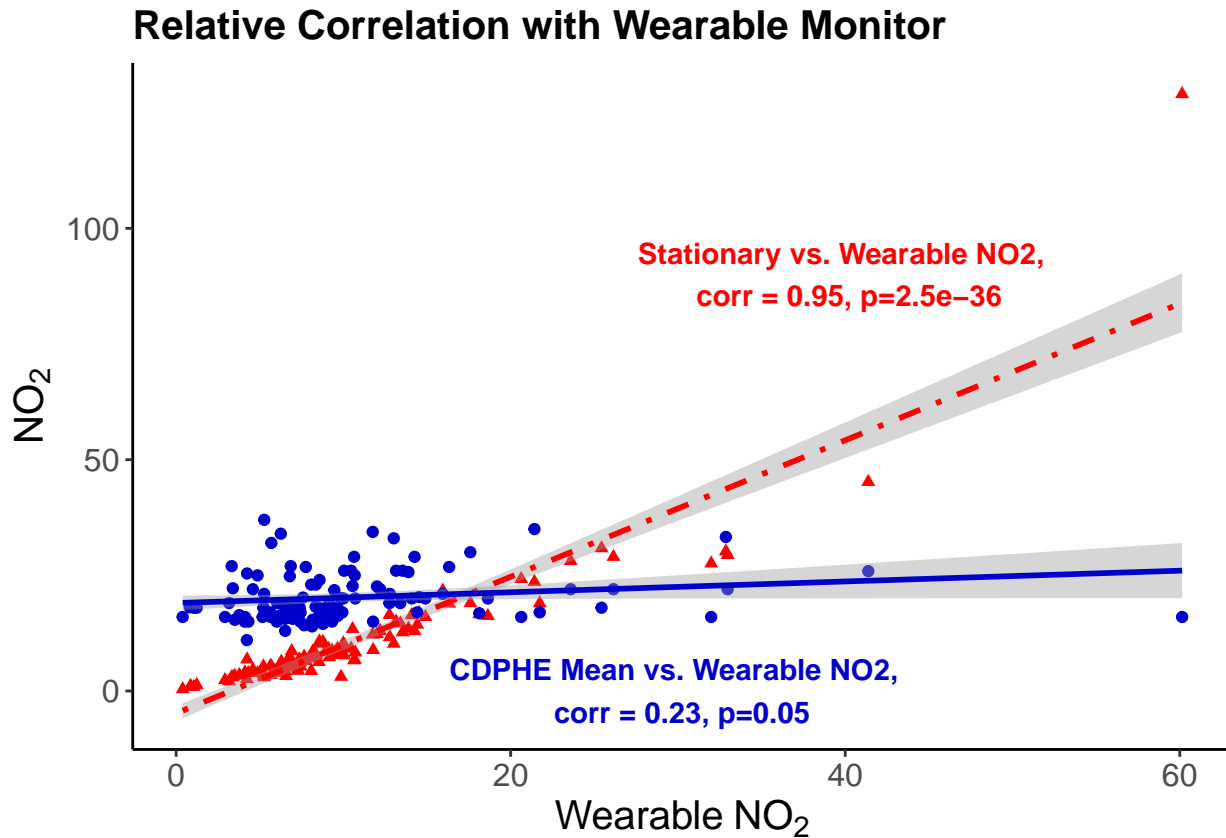Correlations between CDPHE and Stationary NO$_2$

Relative Correlation with Wearable Monitor

CDPHE Mean vs. Wearable Monitor,
corr = 0.23, p=0.05

Stationary vs. Wearable Monitor ,
corr = 0.95, p=2.5e−36

$\log(NO_2)$

Wearable $\log(NO_2)$

Plot of Relative Correlation with Wearable Monitor for PM10 - includes unlogged values

Relative Correlation with Wearable Monitor

Correlation of glucans with endotoxins

```
##
##  Pearson's product-moment correlation
##
## data:  daps$gluc_m3 and log(daps$endo_m3)
## t = 3.6936, df = 39, p-value = 0.0006762
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.2388288 0.7061327
## sample estimates:
##       cor
## 0.5090746
```

Correlations between Glucans and Endotoxins

ρ = 0.51
p − value = 6e−04

Glucan Value

Log(Endotoxin) Value