



Spurious Correlation: Fallacies when taking ratios



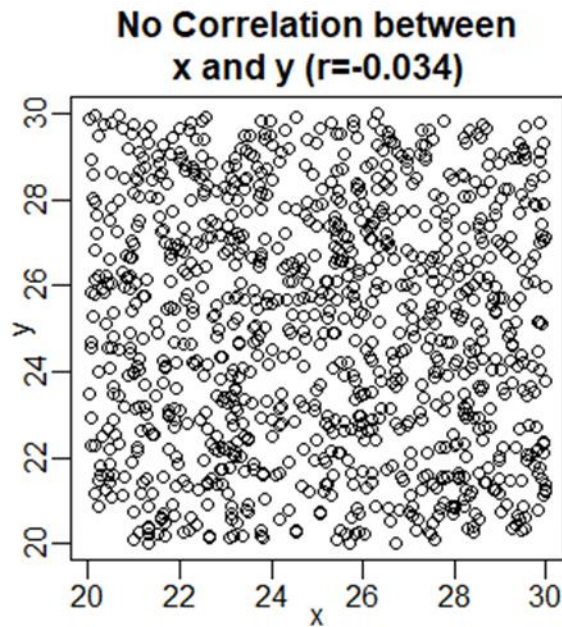
SPURIOUS CORRELATION

- > Correlation between ratios of absolute measurements
- > Also Called:
 - Spurious Self-Correlation
 - Virtual Correlation
- > https://en.wikipedia.org/wiki/Spurious_correlation
- > See: SpuriousCorrelation.R



SPURIOUS CORRELATION

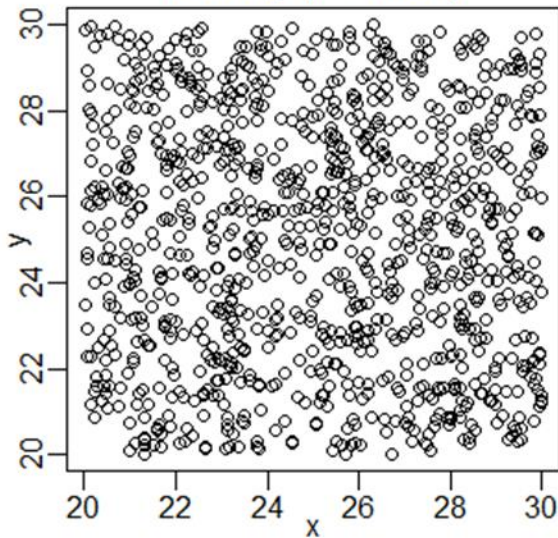
```
corrcoeff(x, y)    -0.034
```



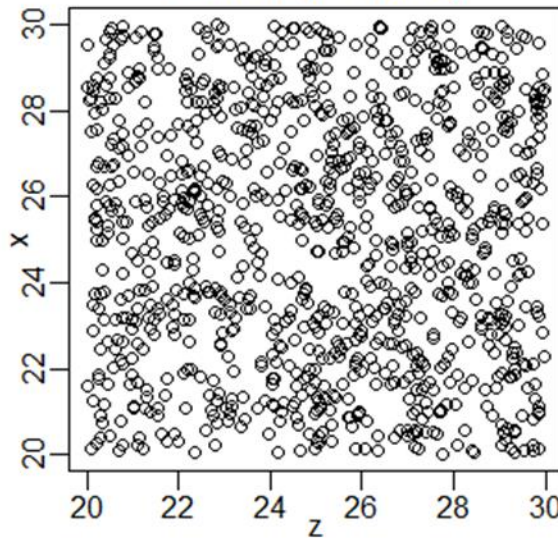
SPURIOUS CORRELATION

```
corrcoeff(x, y)    -0.034  
corrcoeff(z, x)    -0.025  
corrcoeff(z, y)     0.006
```

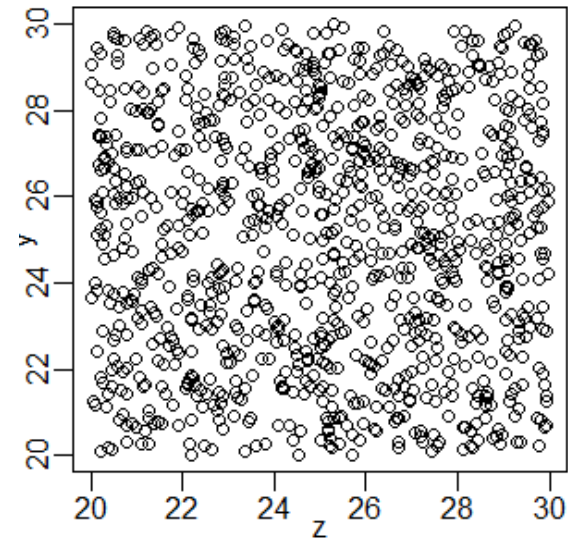
No Correlation between
x and y ($r=-0.034$)



No Correlation between
z and x ($r=-0.025$)



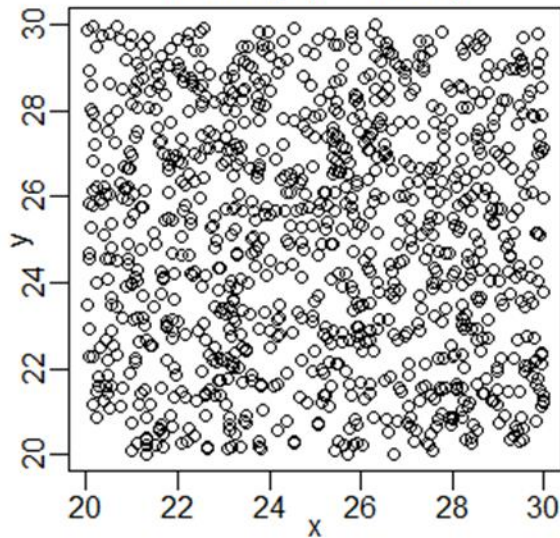
No Correlation between
z and y ($r=0.006$)



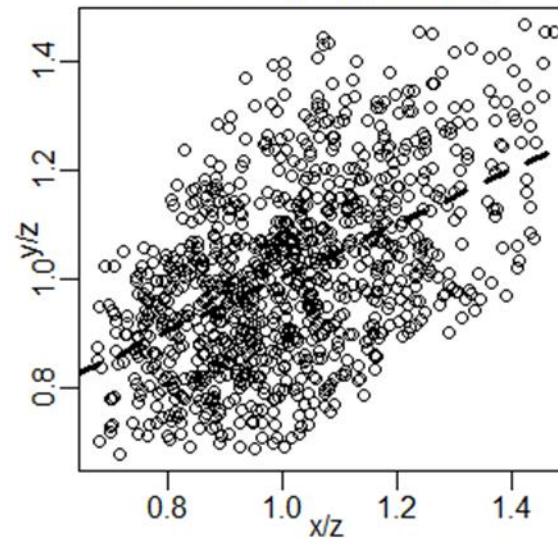
SPURIOUS CORRELATION

```
corrcoeff(x, y)      -0.034  
corrcoeff(z, x)      -0.025  
corrcoeff(z, y)       0.006  
corrcoeff(x/z, y/z)  0.504
```

No Correlation between
x and y ($r=-0.034$)

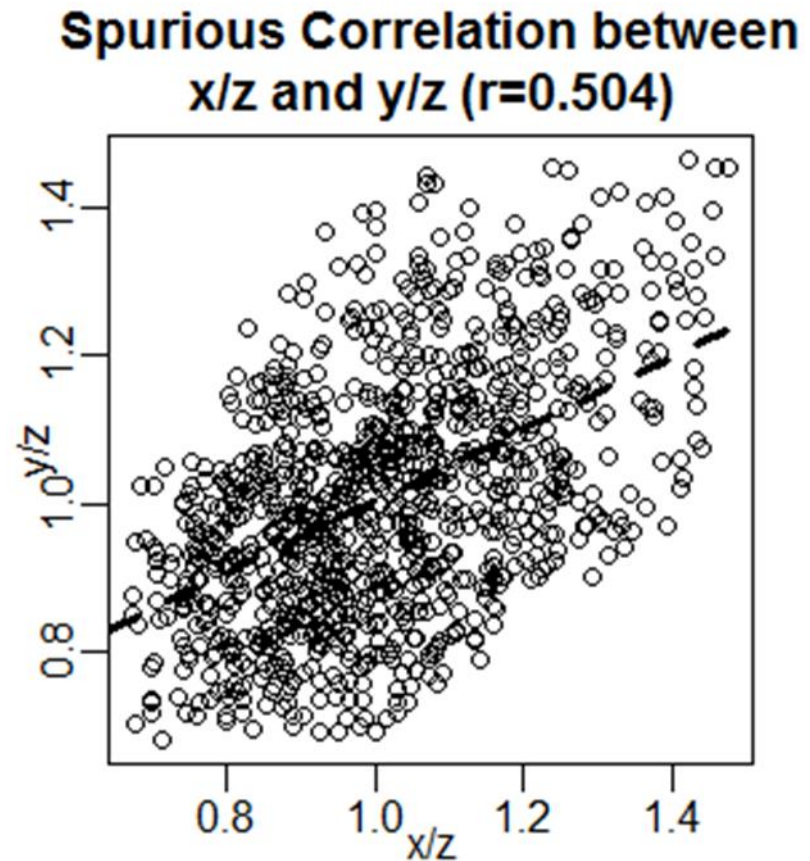


Spurious Correlation between
 x/z and y/z ($r=0.504$)



W

SPURIOUS CORRELATION



SPURIOUS CORRELATION

20 < **z** < **22**

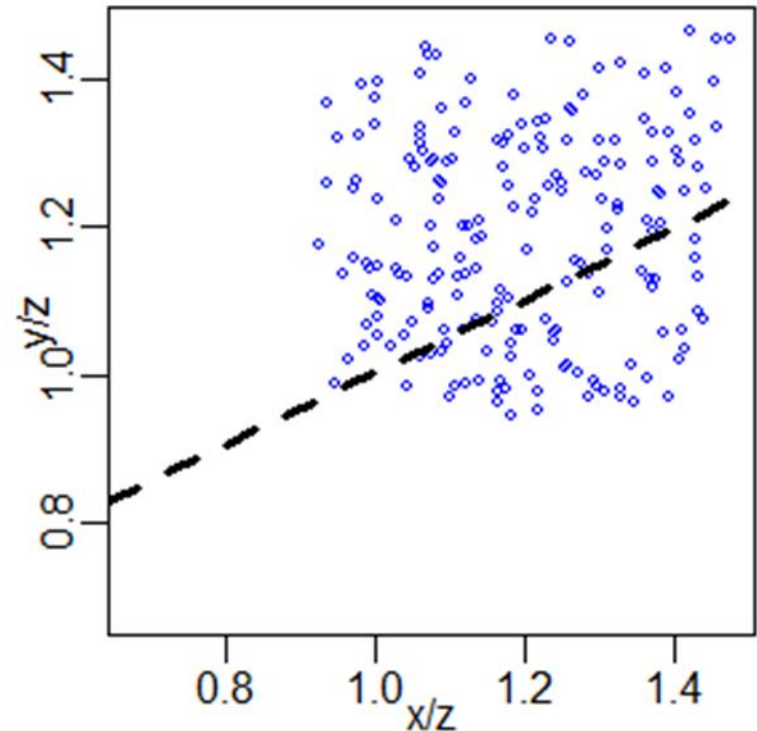
22 < z < 24

24 < z < 26

26 < z < 28

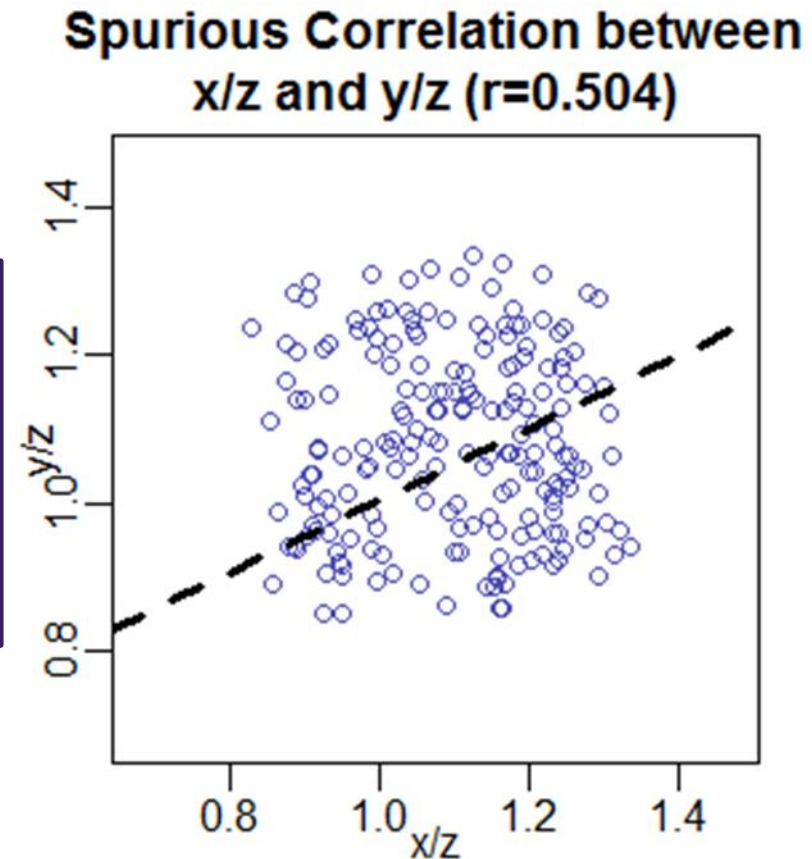
28 < z < 30

Spurious Correlation between
 x/z and y/z ($r=0.504$)



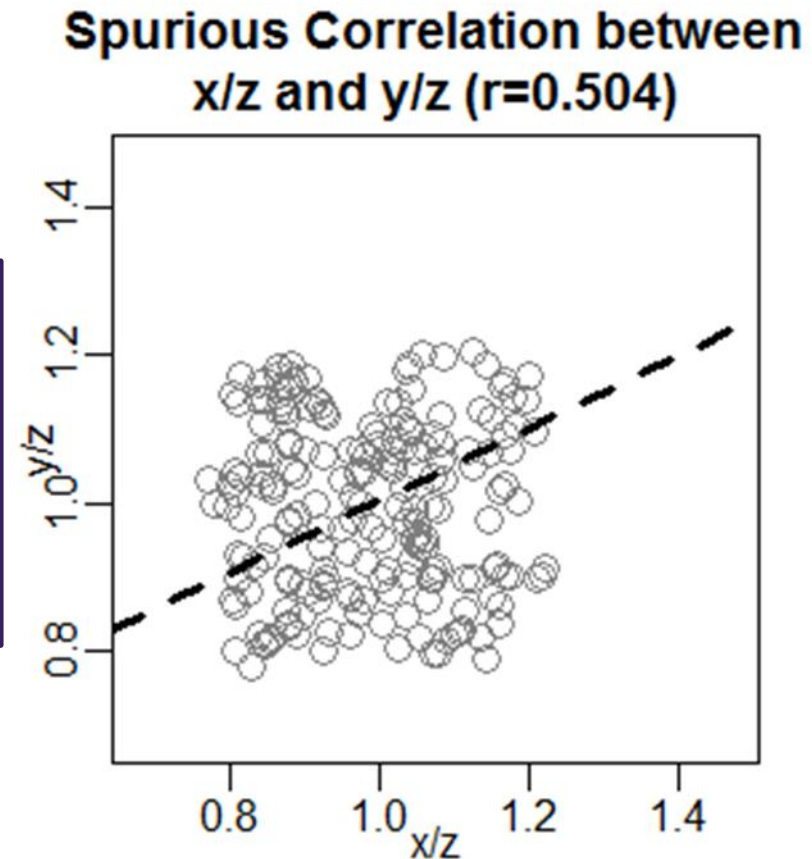
SPURIOUS CORRELATION

20	<	z	<	22
22	<	z	<	24
24	<	z	<	26
26	<	z	<	28
28	<	z	<	30



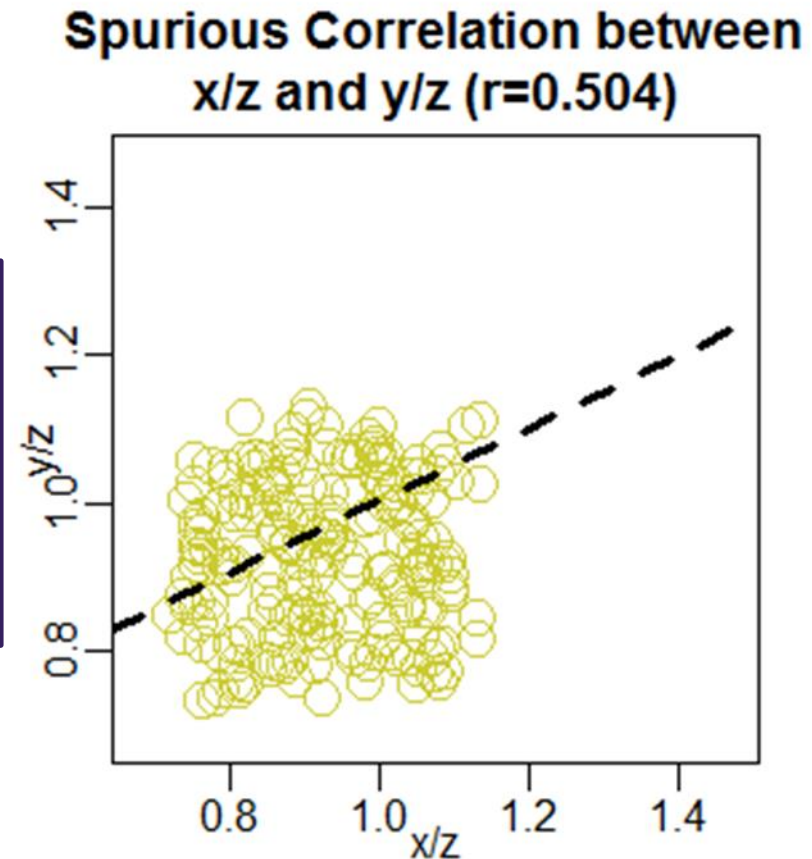
SPURIOUS CORRELATION

20	<	z	<	22
22	<	z	<	24
24	<	z	<	26
26	<	z	<	28
28	<	z	<	30



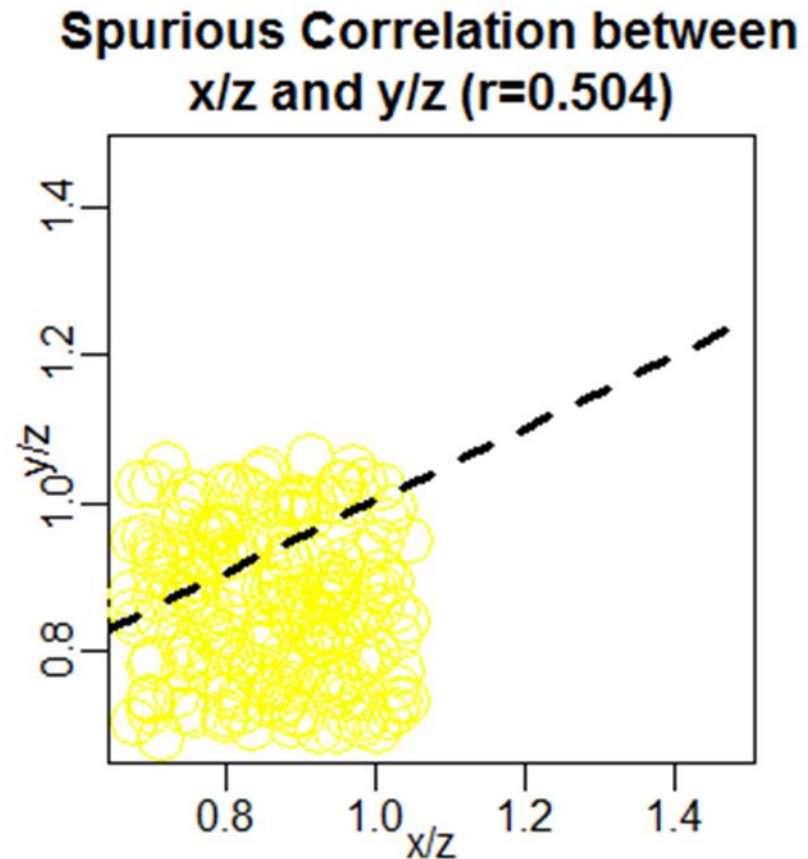
SPURIOUS CORRELATION

20	<	z	<	22
22	<	z	<	24
24	<	z	<	26
26	<	z	<	28
28	<	z	<	30



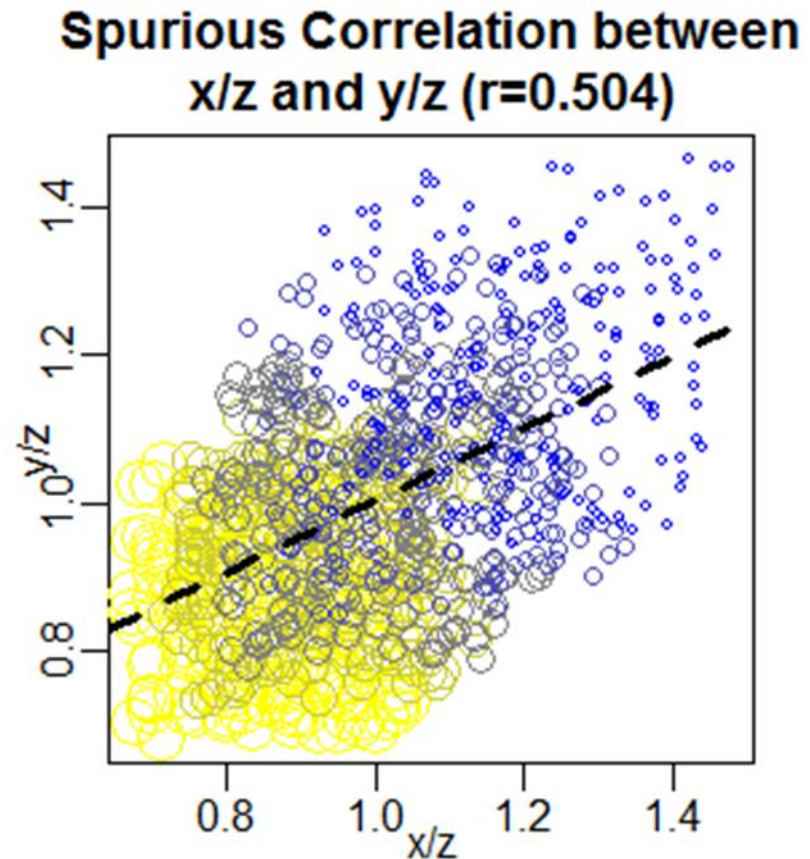
SPURIOUS CORRELATION

20 < z < 22
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SPURIOUS CORRELATION

20 < z < 22
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