STAT 400 Data Analysis Nov 25, 2005

Tong,Yee	1. Quantile plots	25-Nov
Voo,Jessie	8. Coplots (pp 181-193)	25-Nov

Follow up to discussion of normal plots:

What do normal plots look like when data distribution is

1. normal
2. skewed right: gamma(3)
3. skewed left: - gamma(3)
4. thick tails – t
5. thin tails – truncated normal
6. very thin tails – uniform

Here as a program to produce these:

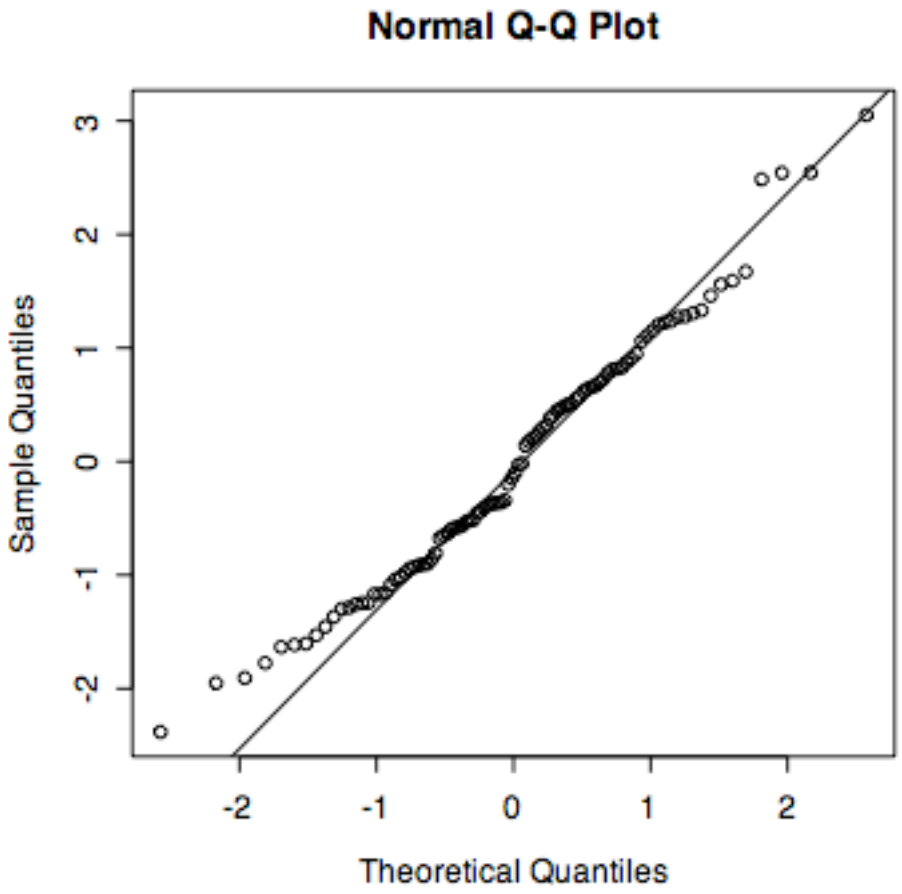
First you need:

```
my.normplot
function (x)
{
        quartz()
        qqnorm(x)
        qqline(x)
}
```

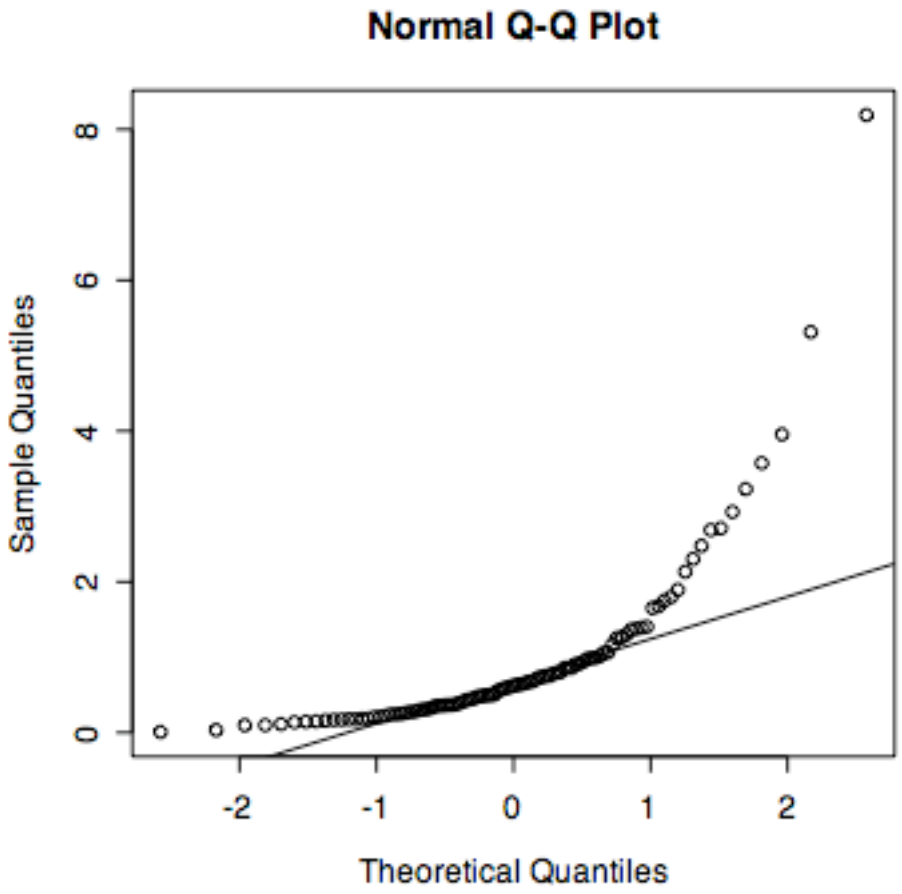
Then use

```
normplot.demo
function (n=100)
{
        x=rnorm(n)       #normal
        my.normplot(x)
        x=rexp(n)        #skewed right
        my.normplot(x)
        x=-rexp(n)       #skewed left
        my.normplot(x)
        x=rt(n,2)        # t thick tails
        my.normplot(x)
        x=rnorm(100)
        x=x[x<1.5]
        x=x[x>-1.5]  # thin tails (truncated)
        my.normplot(x)
        x=runif(100)  # very thin tails!
        my.normplot(x)
}
```

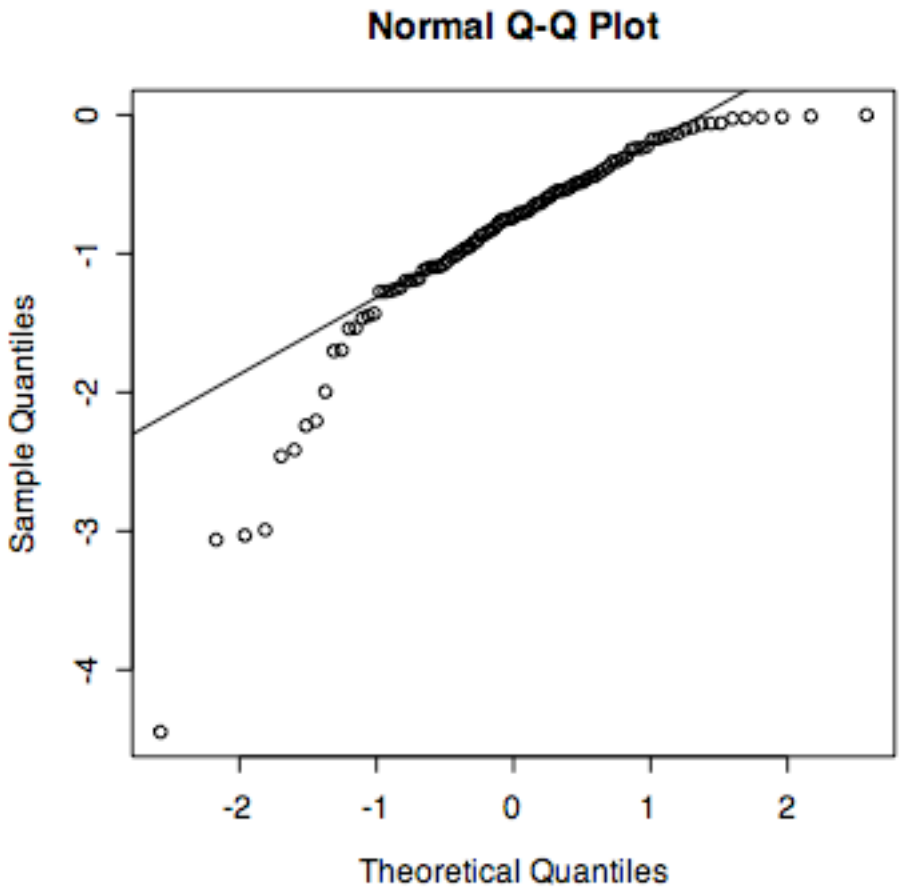
Here is what you get ...


Normal Q-Q Plot
Sample Quantiles
Theoretical Quantiles
-2
-1
0
1
2
3

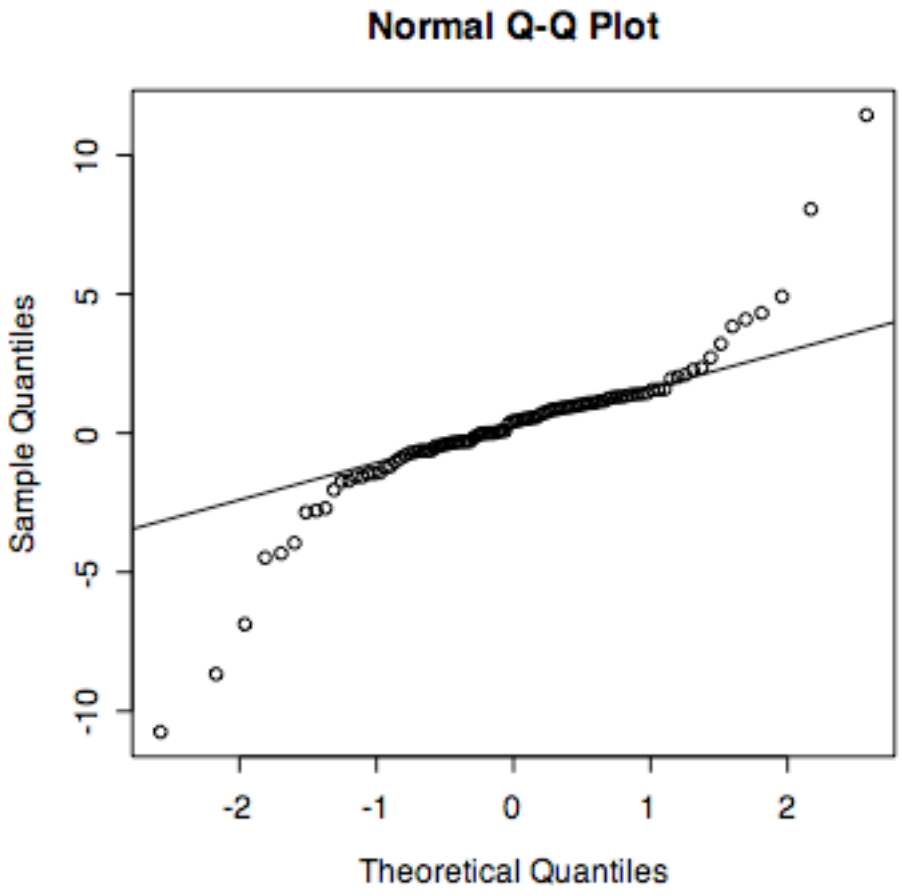
normal data



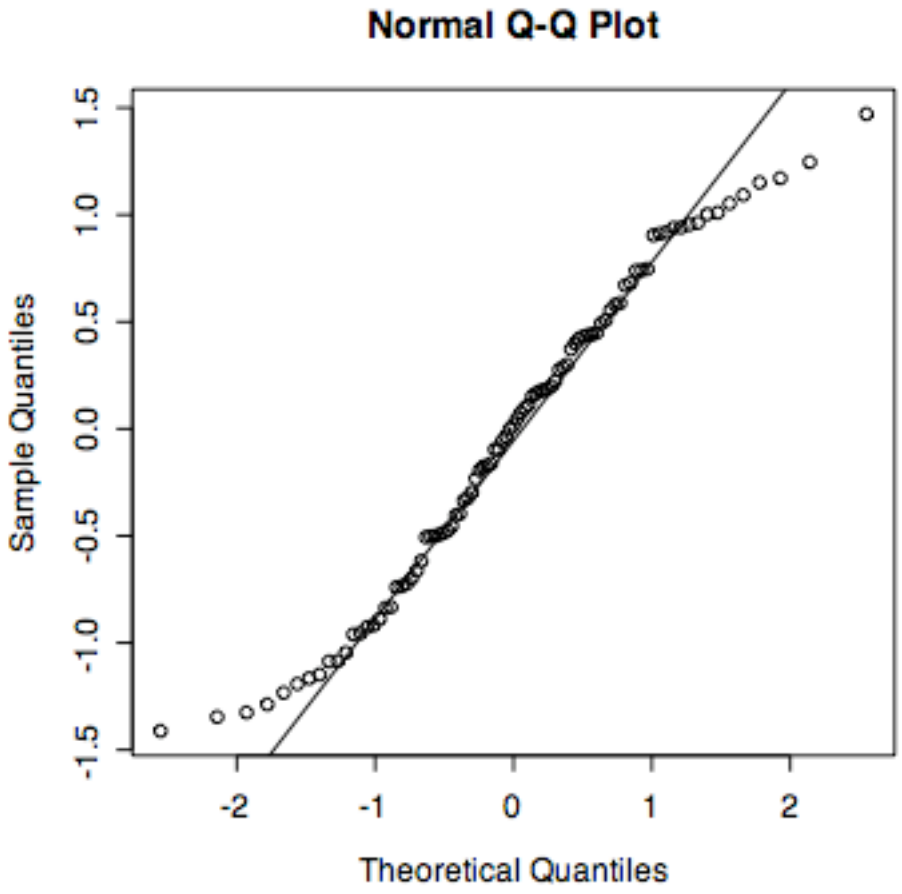
skewed right


Normal Q-Q Plot
Sample Quantiles
Theoretical Quantiles
0
-1
-2
-3
-4
-2
-1
0
1
2

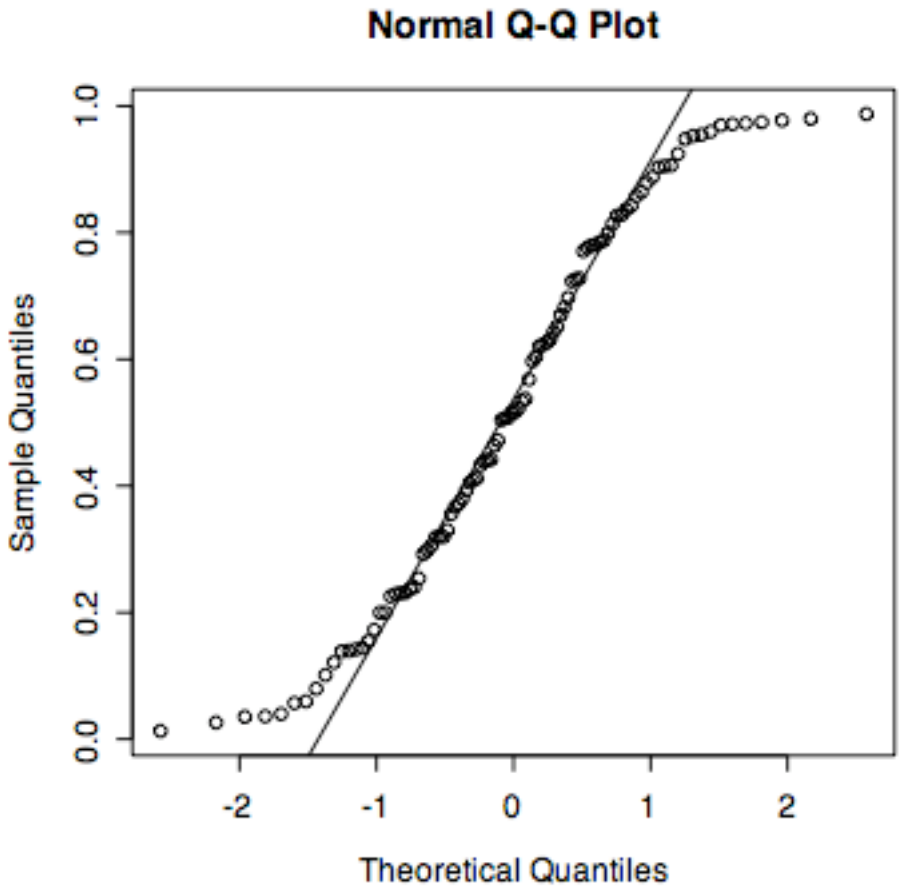
skewed left



thick tails (t)



Thin tails (truncated normal)



very thin tails (uniform)

In summary,

normal tends to be a straight line
skewed right is curved like a cup
skewed left is curved like a cap
thick tails looks like a sideways S
thin tails looks like an S