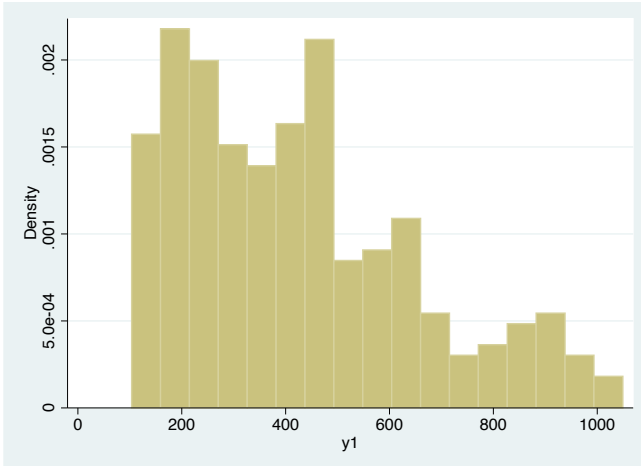


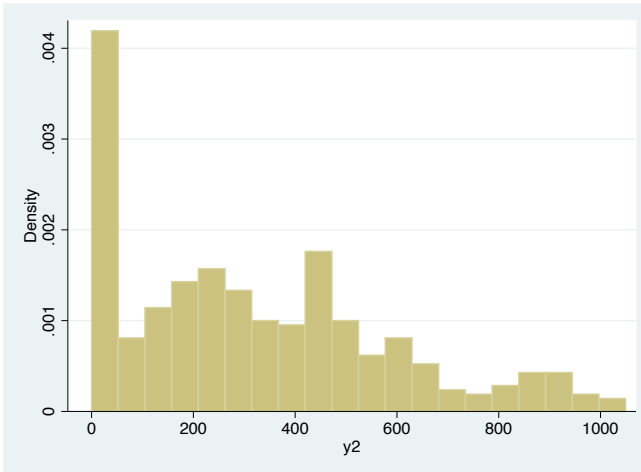
1.

. histogram y1



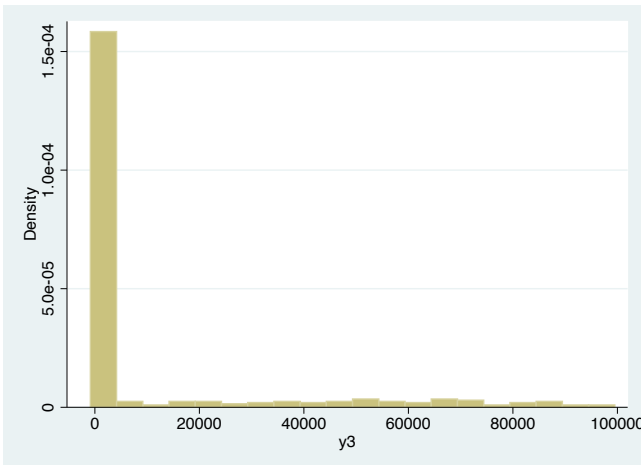
Truncated data (only 4)

. histogram y2



Censored data

. histogram y3



outlier

2.

```
summarize y1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
y1	297	423.1683	227.8976	103.4663	1049.314

```
. reg y1 x
```

Source	SS	df	MS	Number of obs	=	297
Model	1431905.59	1	1431905.59	F(1, 295)	=	30.30
Residual	13941534.7	295	47259.4396	Prob > F	=	0.0000
Total	15373440.3	296	51937.2982	R-squared	=	0.0931
				Adj R-squared	=	0.0901
				Root MSE	=	217.39

y1	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x	123.1693	22.37637	5.50	0.000	79.13176 167.2069
_cons	69.01677	65.56422	1.05	0.293	-60.01611 198.0496

```
. predict y1_hat  
(option xb assumed; fitted values)
```

```
. est store m_y1hat
```

```
. truncreg y1 x, ll(100) nolog  
(note: 0 obs. truncated)
```

Truncated regression

Limit: lower =	100	Number of obs	=	297
upper =	+inf	Wald chi2(1)	=	23.70
Log likelihood =	-1975.456	Prob > chi2	=	0.0000

y1	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
x	243.9104	50.10515	4.87	0.000	145.7061 342.1147
_cons	-431.5919	172.0405	-2.51	0.012	-768.7851 -94.39859
/sigma	302.9879	25.65687	11.81	0.000	252.7013 353.2744

```
. predict truncated, e(0,.)
```

```
. est store m_y1trunc
```

```
. lrtest m_y1hat m_y1trunc, force
```

Likelihood-ratio test	LR chi2(1)	=	86.66
(Assumption: m_y1hat nested in m_y1trunc)	Prob > chi2	=	0.0000

Truncated regression model would solve the limitation determined in (1)
From LR-test H_0 is rejected truncated model is appropriate

```
. reg y2 x
```

Source	SS	df	MS	Number of obs	=	400
Model	4567087.34	1	4567087.34	F(1, 398)	=	76.58
Residual	23737174.2	398	59641.1413	Prob > F	=	0.0000
				R-squared	=	0.1614
				Adj R-squared	=	0.1592
Total	28304261.6	399	70937.9989	Root MSE	=	244.22

y2	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x	179.8325	20.55046	8.75	0.000	139.4315 220.2335
_cons	-179.3679	58.08821	-3.09	0.002	-293.566 -65.1698

```
. predict y2_hat  
(option xb assumed; fitted values)
```

```
. est store m_y2hat
```

```
. tobit y2 x, ll(0)
```

```
Tobit regression                               Number of obs   =       400  
                                                LR chi2(1)      =       73.17  
                                                Prob > chi2     =       0.0000  
Log likelihood = -2389.3077                 Pseudo R2      =       0.0151
```

y2	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x	219.1562	24.86468	8.81	0.000	170.2741 268.0383
_cons	-318.6265	70.93087	-4.49	0.000	-458.0714 -179.1816
/sigma	284.9073	11.56717			262.1671 307.6475

```
72 left-censored observations at y2 <= 0  
328 uncensored observations  
0 right-censored observations
```

```
. predict censored, ystar(0,.)
```

```
. est store m_y2censor
```

```
. lrtest m_y2hat m_y2censor, force
```

```
Likelihood-ratio test                               LR chi2(1) =       752.97  
(Assumption: m_y2hat nested in m_y2censor)        Prob > chi2 =       0.0000
```

Tobit model wahlte selbe Kombination in ①

LR-test: H_0 ist richtig, Tobit model is appropriate

```
reg y3 x
```

Source	SS	df	MS	Number of obs	=	400
Model	1.3359e+10	1	1.3359e+10	F(1, 398)	=	26.43
Residual	2.0115e+11	398	505402183	Prob > F	=	0.0000
				R-squared	=	0.0623
				Adj R-squared	=	0.0599
Total	2.1451e+11	399	537616802	Root MSE	=	22481

y3	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
x	9726.042	1891.765	5.14	0.000	6006.941	13445.14
_cons	-16431.39	5347.288	-3.07	0.002	-26943.85	-5918.932

```
predict y3_hat  
(option xb assumed; fitted values)
```

```
est store m_y3hat
```

```
tobit y3 x, ul(2000)
```

```
Tobit regression                               Number of obs   =       400  
                                                LR chi2(1)      =       52.03  
                                                Prob > chi2     =       0.0000  
Log likelihood = -2693.1735                    Pseudo R2      =       0.0096
```

y3	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
x	581.8005	79.00741	7.36	0.000	426.4777	737.1233
_cons	-961.6042	221.4967	-4.34	0.000	-1397.051	-526.1579
/sigma	911.3804	39.08073			834.5505	988.2103

```
0 left-censored observations  
315 uncensored observations  
85 right-censored observations at y3 >= 2000
```

```
predict y3censored  
(option xb assumed; fitted values)
```

```
est store m_y3censor
```

```
lrtest m_y3hat m_y3censor, force
```

```
Likelihood-ratio test                               LR chi2(1) = 3763.14  
(Assumption: m_y3hat nested in m_y3censor)        Prob > chi2 = 0.0000
```

H₀ is rejected. Tobit model is appropriate w/ upper limit