

Prediction Intervals

Registered Florida Pleasure Craft (in tens of thousands)
and
Watercraft Related Manatee Deaths

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Boats	68	68	67	70	71	73	76	81	83	84
Manatee Deaths	53	38	35	49	42	60	54	67	82	78

Find the best point estimate for the number of manatee deaths for 750,000 (75) registered pleasure craft. Construct a 95% prediction interval estimate for the number of manatee deaths for 750,000 (75) registered pleasure craft.

Enter your data into L1 and L2 on your TI-83/84.

L1	L2	L3	2
68	53		
68	38		
67	35		
70	49		
71	42		
73	60		
76	54		
L2(?) = 54			

Test for significant linear correlation.

Note: $r \approx 0.922$, $P\text{-Value} \approx 0.0002$

Conclusion: Significant Positive Linear Correlation

```
LinRegTTest
Xlist:L1
Ylist:L2
Freq:1
B & P: [ ] <0 >0
RegEQ:Y1
Calculate
```

```
LinRegTTest
y=a+bx
B≠0 and P≠0
t=6.712077207
p=1.5081766E-4
df=8
↓a=-112.7098976
↑b=2.274087687
s=6.612348727
r²=.8492044984
r=.9215229234
```

Calculate best point estimate:

VARs > Y-VARS

1: Y1

Y1

add parens, x val & enter

Y1(75)
57.84667892

$\hat{y} \approx 58$ manatees

Construct 95% P.I.

Run Program: PREDIN

T Critical Value
from Table A-3 OR
Program INVT

Enter your x

```
PREDICTION
INTERVAL FOR Y
ENTER T CV
T=?2.306
ENTER X
X=?75
```

```
Y:57.84667892
E: 16.00776807
41.83891085
Y POP
73.85444699
```

95% P.I. $\approx (42, 74)$