

دراسة المتغيرات المؤثرة على زيادة أعداد الحيوانات المنوية النشطة باستخدام نموذج توبيت (Tobit Model)

الخلاصة

(Tobit Regression model)

150

Abstract

The no parity problem causes determining is the most interesting case by doctors and researchers in this filed, because it helps them to pre-discovering of it, from this point the important of this paper is came, which tries to determine the priority causes and its fluency, thus it helps doctors and researchers to determine the problem and it's fluency of increase or decrease the active sperm which fluencies of peregrinating. We use the censored regression (Tobit) model to analyze the data that contains 150 observations may be useful to whom it concern.



(Tobit Model)

1- المقدمة

(())
 (())
 (tobit model)
 (150) () ()
 (%38)

(Conventional regression model)

()

2- هدف البحث

()

3- نموذج توبيت (tobit model) [1][2][4][5]
 (regression analysis)

()

(conventional regression model)

()
 (censored data)
 (biased)

(logistic regression model)
 ()

(inconsistent)

() (censored regression model)
 (truncated regression model)
 (extreme data)



(Tobit Model)

(Mixed function) (cdf) (pdf)

$$y = a \quad \text{if } y^* \leq a$$

$$y = y^* \quad \text{if } y^* > a \quad \text{--- (1)}$$

$$y^* = b_0 + b_1 X_1 + \dots + b_k X_k + e_i$$

$$e_i \sim N(0, \sigma^2)$$

$$y^* \sim N(X\beta, \sigma^2)$$

- : a
- : y
- : y*
- (j=0,1,2,...,k) : b_j
- (j=1,2,...,k) : X_j
- : e_i

$$y = 0 \quad \text{if } y^* \leq 0$$

$$y = y^* \quad \text{if } y^* > 0 \quad \text{--- (2)}$$

$$a = 0$$



(Tobit Model)

$$P(y) = \left[\frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(y_i - XB)^2}{2\sigma^2}} \right] \left[1 - \Phi\left(\frac{a - XB}{\sigma}\right) \right] \quad \text{--- (3)}$$

a=0

$$P(y) = \left[\frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(y_i - XB)^2}{2\sigma^2}} \right] \left[1 - \Phi\left(\frac{-XB}{\sigma}\right) \right] \quad \text{--- (4)}$$

$$P(y) = \left[\frac{1}{\sigma} \phi\left(\frac{y_i - XB}{\sigma}\right) \right] \left[1 - \Phi\left(\frac{-XB}{\sigma}\right) \right] \quad \text{--- (5)}$$

.(c.d.f)

 $\Phi(\cdot)$ (p.d.f) $\phi(\cdot)$

$$\ln P(y) = \sum_{i=1}^n \left[\left[-\ln \sigma + \ln \phi\left(\frac{y_i - XB}{\sigma}\right) \right] + \ln \left[1 - \Phi\left(\frac{-XB}{\sigma}\right) \right] \right] \quad \text{--- (6)}$$

(6)

.(Easy Reg)

4- عينة البحث ومتغيرات الظاهرة المدروسة

(150)

. (2008)

()

:

()

:X₁
:X₂
X₃
X₄



(Tobit Model)

$$(1) \quad (X_1, X_2, X_4) \quad (X_3)$$

(EASY REG INTERNATIONAL)

5- تفسير النتائج

R	Adj. R square	R square
0.852	0.718	0.726

(1) (R Square) (R) (Adj. R square) (R Square) (0.718) (0.726) (72%) ((%54)) (%55)

S.O.V	d.F	S.S	M.S	F
Regression	4	209734.9	52433.725	94.79
Residual	145	80756.7	553.13	
Total	149	290491.6		

(F)

(0.05 0.01)

1-5 تفسير القيم التقديرية للمعالم المجهولة (b_0, b_1, b_2, b_3, b_4)

(3)

(t)

			t	
b_0	0.0012	0.11000	1.5677	
b_1	-4.6135	0.00000	-8.8213	
b_2	1.7654	0.00000	9.5979	
b_3	-0.8537	0.03211	-6.345	
b_4	0.0 728	0.73388	0.3400	



(Tobit Model)

)		(b)	
		(pus cells)	(X ₁)	-
		(Y)	(b ₁)	
b ₁	.		(X ₁) (pus cells)	
)	(4.6134)		
	.	461340	(4.6134*100000)	(
			(X ₂)	-
			(fractional) ()
			(b ₂)	
(X ₂)			()
		(Y)	(X ₂)	
		b ₂	.	
(1.7654)				
176540	((1.7654*100000))
				.
		(X ₃)	(X ₃)	-
			b ₃	
			b ₃	
)	(0.8537)		(
	.	(85370)	(0.8537*100000)	
			X ₄	-
		(b ₄) X ₄		
(b ₄)				
	((0.0728)	
(0.0728*100000)			.	7280



(Tobit Model)

2-5 تحديد أولوية تأثير المتغيرات المستقلة على المتغير المعتمد

$$\begin{aligned}
 & (t) \\
 &) X_2 \quad (3) \\
 & \quad \quad \quad ((fractionous) (\quad) \\
 & \quad \quad \quad ((pus \quad cells) \quad) (X_1) \\
 &) \quad \quad \quad) (X_3) \\
 & (\quad \quad \quad) X_4 \quad (\\
 & \quad \quad \quad . (\quad \quad \quad) \\
 & \quad \quad \quad X_4 \quad \quad \quad . \quad \quad \quad (X_1, X_2, X_3)
 \end{aligned}$$

6- الاستنتاجات

.1

(461340)

(10)

(4613400)

(() (X₂)) .2

(176540)

(fractionous)

()

(1765400)

(10)

.3

(85370)

(X₄)

.4

(7280)

(()) (R-Square)

.(Y)

(72.6%)

.5

(()) (X₂) -(X₂)

(t)

.(Y) -

(t) (X₁) -

.(Y)

(X₁)(t) (X₃) -

.(Y)

(X₃)(X₄) -

(

(Y)



(Tobit Model)

المصادر

- 1- Cramer, J. S. (1986), " Econometric applications of Maximum Likelihood Methods", Cambridge university press
- 2- Kenneth ,Y .Chay and James,L, powell(2001) "semi parametric censored regression models "Economic perspectives Vol 15 Num 4 pp 29-42
- 3- Herman j, Bierens (2008)"Multivariate linear regression" Pennsylvania stat university
- 4- William H, Greene (2002)"Econometric Analysis" (fifth edition) New York University
- 5- Tobin, James (1958)"Estimation of Relation ships for limited dependent variabiles" Econometrica, January 26, pp24-36